

FLEETFLEX

ELECTRICAL SYSTEM

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SNOWPLOW OWNER'S MANUAL

Original Instructions



Minute Mount²

SYSTEM

⚠ CAUTION

Read this document before operating or servicing snowplow.

This manual supersedes all editions with an earlier date.

SNOWPLOW OWNER DATA SHEET

Register your snowplow online at www.fisherplows.com

Owner Name: _____

Date Purchased: _____

Dealer Name: _____ Phone: _____

Dealer Address: _____

Vehicle Model/Year: _____

Snowplow Model/Year: _____

Snowplow Type/Size: _____ Weight: _____ lb/kg

Ballast: No ___ Yes ___ Amount _____ lb/kg

Insta-Act® Hydraulic Unit Serial Number: _____

Blade Serial Number (located above Warning/Caution label): _____

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PREFACE

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

Before installing a snowplow, make sure that your vehicle is equipped with all the vehicle manufacturer's and our required options for plowing. This will help ensure profitable and trouble-free operation of your snowplow. Keep this manual accessible. It is a handy reference in case minor service is required.

Your FISHER snowplow Insta-Act® hydraulic unit and blade both have a serial number. Record these serial numbers on the Snowplow Owner Data Sheet at the front of this manual for future reference.

When service is necessary, bring your snowplow to your local FISHER 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.

Most of the information in this Owner's Manual applies to all Minute Mount® 2 applications. Differences among straight-blade, HC, HD2™, HDX™, HT Series™, XtremeV™, XV2™, and XLS™ applications are called out in the text or under separate headings, as applicable.

SAFETY

SAFETY DEFINITIONS

WARNING

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

CAUTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTE: Indicates a situation or action that can lead to damage to your snowplow and vehicle or other property. Other useful information can also be described.

WARNING/CAUTION & INSTRUCTION LABELS

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

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

SAFETY

Instruction Labels

ATTACH

1. Pull **Pin Release Handle** to retract **Connecting Pins**.
2. Drive vehicle forward slowly until **Pushplates** engage **Attachment Arms**.
3. Connect all electrical connectors. With ignition in "ON" position, turn control ON and activate **Lower/Float**.
4. Stand in front of blade. Fully raise **Pin Release Handle** to release **Connecting Pins**.
5. Using **Headlamp Bracket** (DO NOT push on headlamp), push **Headgear** toward vehicle until **Connecting Pins** fully engage **Pushplates**.
6. Pull out and hold **Jack Lock**. Use **Jack Handle** to raise **Jack** the way up. Release **Jack Lock**. Repeat on opposite side.

U.I. SERIES INSTRUCTIONS

1. Read Owner's Manual for complete instructions.

1. Activate **Lower/Float** and fully lower blade to ground.
2. Pull out and hold **Jack Lock**. Lower **Jack** to ground. Release **Jack Lock**. Verify lock by trying to lift **Jack**. Repeat on opposite side.

1. Stand in front of blade. Push each side of **Headlight Bracket** (DO NOT push on headlamp) toward vehicle while using **Pin Release Handle**. Make sure both **Connecting Pins** are fully retracted.
2. Disconnect all electrical connectors.

DETACH

1. U.S. Patents 6,944,376; 6,938,338; 6,945,082; 7,085,124; 7,177,576; 7,287,095; 6,920,476; 6,822,482; 6,776,575; 6,785,059; 6,999,554; 6,983,251; 6,954,155; 6,955,002; 6,942,792; and other patents pending.

or

1. Push **Pin Release Handle** down to pull out **Connecting Pins**.
2. Drive vehicle slowly to engage **Pushplates** into **Attachment Arms**.
3. Stand in front of blade, Fully raise **Pin Release Handle** to release **Connecting Pins**.
4. Push **Headgear** toward vehicle to allow **Connecting Pins** to fully engage **Pushplates**. If unable to push **Headgear** from in front of blade, stand in front of **Headgear** on driver side and push **Headlamp Bracket**.
5. Pull out **Jack Lock**. Push **Pin Release Handle** into **Stop**.
6. While holding **Jack Lock** out, use **Jack Handle** to raise **Jack** fully. Release **Jack Lock**.
7. Attach all electrical connectors.

ATTACH

1. Place control in Lower/Float to put blade down.
2. Pull out and hold **Jack Lock** out. **Jack** will drop to ground. Then pull **Pin Release Handle** away from **Stop** and **Jack Lock**. Release **Jack Lock**. Verify that **Jack** is locked by trying to lift **Jack**.

1. Stand in front of blade. While pushing **Headgear** toward vehicle with left hand, push **Pin Release Handle** down to disengage **Connecting Pins**. Make sure **Connecting Pins** are fully retracted. If unable to push **Headgear** from in front of blade, stand in front of **Headgear** on driver side and push **Headlamp Bracket**.
2. Detach all electrical connectors.

DETACH

1. U.S. Patents 6,944,376; 6,938,338; 6,945,082; 7,085,124; 7,177,576; 7,287,095; 6,920,476; 6,822,482; 6,776,575; 6,785,059; 6,999,554; 6,983,251; 6,954,155; 6,955,002; 6,942,792; and other patents pending.

Warning/Caution Label

WARNING

Blade could drop unexpectedly, crushing or trapping limbs. Lower blade when vehicle is parked.

CAUTION

Overloading could negatively affect vehicle handling. To avoid serious injury or death, do not exceed GVWR or GAWR including blade and ballast.

CAUTION

Read Owner's Manual before operating or servicing snowplow.

Transport speed should not exceed 45 mph (72 km/h). Further reduce speed under adverse travel conditions.

Plowing speed should not exceed 10 mph (16 km/h).

See your sales outlet/website for specific vehicle application recommendations.

W.W.

Multiple Pinch Points Label

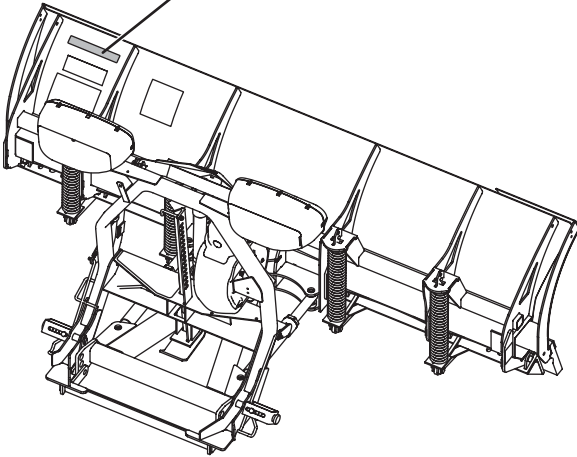
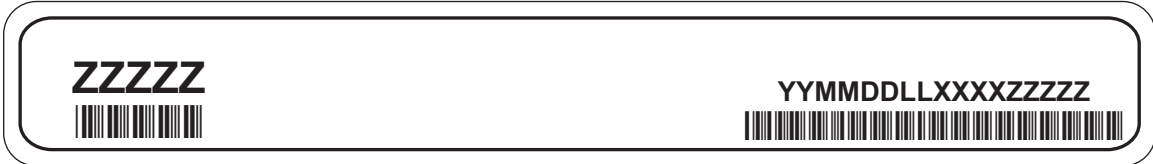
WARNING

Multiple Pinch Points

**XLSTM Blades Only
(both sides)**

SAFETY

Serial Number Label



Code	Definition
YY	2-Digit Year
MM	2-Digit Month
DD	2-Digit Day
LL	2-Digit Location Code
XXXX	4-Digit Sequential Number
ZZZZZZ	5- or 6-Digit Blade Assembly PN

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 the blade when the 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

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 (72 km/h). Further reduce speed under adverse travel conditions.

CAUTION

Plowing speed should not exceed 10 mph (16 km/h).


CAUTION

See your FISHER® outlet for application recommendations.

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.

FUSES

The FISHER® electrical and hydraulic systems contain several automotive-style fuses. If a problem should occur and fuse replacement is necessary, the replacement fuse must be of the same type and amperage rating as the

original. Installing a fuse with a higher rating can damage the system and could start a fire. Fuse Replacement, including fuse ratings and locations, is located in the Maintenance section of this Owner's Manual.

PERSONAL SAFETY

- Remove ignition key and put the vehicle in PARK or in gear to prevent others from starting the vehicle during installation or service.
- Wear only snug-fitting clothing while working on your vehicle or snowplow.
- Do not wear jewelry or a necktie, and secure long hair.
- Wear safety goggles to protect your eyes from battery acid, gasoline, dirt, and dust.
- Avoid touching hot surfaces such as the engine, radiator, hoses, and exhaust pipes.
- Always have a fire extinguisher rated BC handy, for flammable liquids and electrical fires.

SAFETY

FIRE AND EXPLOSION

WARNING

Gasoline is highly flammable and gasoline vapor is explosive. Never smoke while working on vehicle. Keep all open flames away from gasoline tank and lines. Wipe up any spilled gasoline immediately.

Be careful when using gasoline. Do not use gasoline to clean parts. Store only in approved containers away from sources of heat or flame.

CELL PHONES

A driver's first responsibility is the safe operation of the vehicle. The most important thing you can do to prevent a crash is to avoid distractions and pay attention to the road. Wait until it is safe to operate mobile communication equipment such as cell phones, text messaging devices, pagers, or two-way radios.

VENTILATION

WARNING

Vehicle exhaust contains lethal fumes. Breathing these fumes, even in low concentrations, can cause death. Never operate a vehicle in an enclosed area without venting exhaust to the outside.

SAFETY

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.

VIBRATION

Operating snowplow vibration does not exceed 2.5 m/s² to the hand-arm or 0.5 m/s² to the whole body.

VEHICLE APPLICATION INFORMATION

CAUTION

See your FISHER® outlet/website for specific vehicle application recommendations before installation. The eMatch selection system 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" in this section.
- FISHER eMatch selection system is based on available vehicle capacity for snowplow equipment on a representative vehicle equipped with options commonly used for plowing and with 300 lb (136 kg) of front seat occupant weight.
- Weights of front seat occupants can be adjusted above 300 lb (136 kg), 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 FISHER 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.

VEHICLE APPLICATION INFORMATION

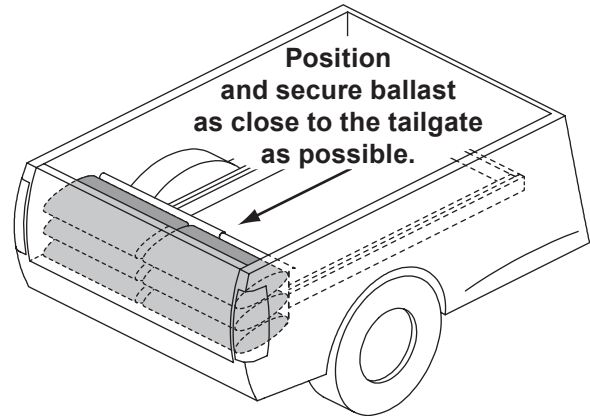
BALLAST REQUIREMENTS

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 FISHER® outlet (PN 62849).

NOTE: The ballast retainer kit is for snowplow vehicles requiring ballast. See your FISHER 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.

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

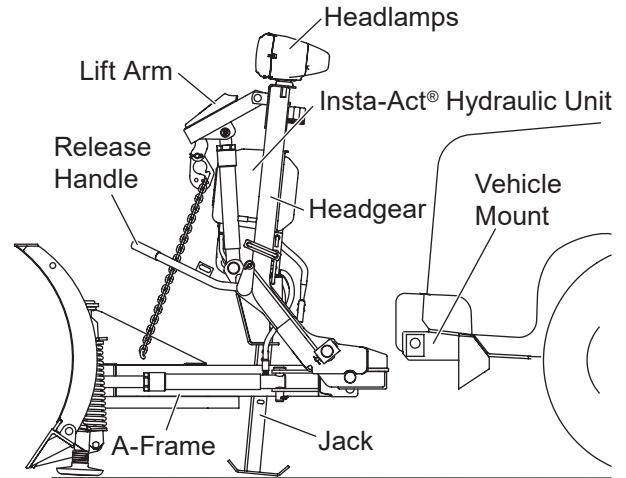


GETTING TO KNOW YOUR SNOWPLOW

Minute Mount® 2 SYSTEM

The Minute Mount 2 system from Fisher Engineering continues to set the industry standard for detachable snowplow design. *The quickest and easiest mounting system available, the Minute Mount 2 system is twice the mount because it takes half the time.* The Minute Mount 2 system should be installed according to the instructions supplied. FISHER® outlets are trained to perform this and other services for your snowplow.

Most of the snowplow mount can now be removed easily from the truck when it's not being used for plowing. By removing the headgear, lift arm, and headlamps every time you remove the snowplow, you eliminate over 100 lb of weight on the front suspension and tires, resulting in less wear all year long! This also means improved appearance of your four-wheel-drive or sport/utility vehicle.



GETTING TO KNOW YOUR SNOWPLOW

A-FRAME/T-FRAME

Straight Blade A-Frames

The A-frame is attached to the blade assembly with a center pivot pin (HD2™, HDX™, and HT Series™ A-frames use a center bolt). The pivot pin allows the blade assembly to angle left or right, providing excellent snow displacement. The heavy 1" pivot pin is shear-proof under normal operation, assuring a solid connection.

XLS™ A-Frame

The A-frame is attached to the blade assembly with a centered pivot bolt. The pivot bolt allows the blade assembly to angle left or right 25°, providing excellent snow displacement. The heavy 1" (2.5 cm) pivot bolt is shear-proof under normal operation, assuring a solid connection.

HC Series, XtremeV™ & XV2™ T-Frame/Push Assembly

The T-frame is designed to provide optimum strength-to-weight ratio and is adjustable to accommodate variations in vehicle height. The leveling feature ensures that blade edges can be kept parallel to the road surface when plowing. Diagonal bracing supports the upper end of the pivot bolt and keeps the blade vertical.

GETTING TO KNOW YOUR SNOWPLOW

HEADGEAR

The headgear assembly is composed of the headgear, linkage mechanism, lift arm, and jack. The headgear is connected to the pushplates, which are mounted directly to the vehicle frame. The headgear also provides the mounting framework for the FISHER® Insta-Act® hydraulic unit and the lift arm. The lift ram raises and lowers the blade by moving the lift arm and lift chain. The jack, when lowered, supports the snowplow during and after its removal from the vehicle.

MOUNT KITS

Fisher Engineering has designed a mount kit for most vehicles. Due to the differences between vehicle models, the kits are not interchangeable.

The mount kit fastens to the vehicle frame. It is engineered to provide the primary connecting points between the snowplow assembly and the vehicle. The weight of the Minute Mount® 2 system is distributed to the frame of your vehicle by the pushplates.

GETTING TO KNOW YOUR SNOWPLOW

INTENSIFIRE™ SNOWPLOW HEADLAMPS

WARNING

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

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

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

Replacement parts are available through your local FISHER® outlet.

GETTING TO KNOW YOUR SNOWPLOW

CAB CONTROLS

WARNING

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

FISHER® snowplows come equipped with one of two controls: the Fish-Stik® hand-held control or a joystick-style control.

The XtremeV™ and XV2™ snowplow controls allow you to go from a V-plow, to a scoop, to a standard straight-blade snowplow, all at the touch of a button or with a single lever movement.

The XLS™ snowplow controls allow you to go from an extra-wide snowplow, to a scoop, to a standard straight-blade snowplow, all at the touch of a button.

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.

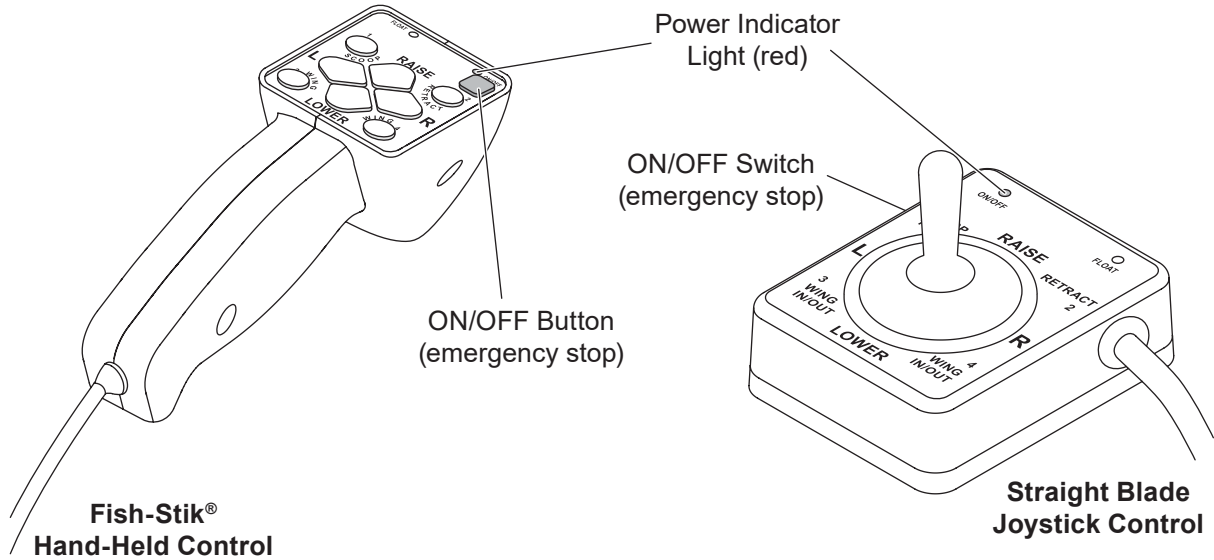
The ON/OFF switch on the cab control allows you to turn OFF the control and prevent blade movement even when the ignition switch is ON.

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

All controls are protected by a replaceable fuse located in the under hood snowplow electrical system. See "Fuse Replacement" in the Maintenance section of this Owner's Manual.

GETTING TO KNOW YOUR SNOWPLOW

Snowplow Controls with FLEET FLEX System



ACCESSORIES AND OPTIONS



SnoFoil® ASSEMBLY

The SnoFoil accessory improves visibility and plowing efficiency by deflecting light snow away from the windshield. This rigid, curved extension bolts to the top of the snowplow blade.

BLADE WINGS

Blade wings extend out and forward, increasing the length and improving the overall operating performance of your snowplow.

STEEL DEFLECTOR

Keeps fluffy snow from flowing over the top of the blade. Easily installed and attractively priced.

RUBBER DEFLECTOR

This flexible deflector keeps fluffy snow from flowing over the top of the blade. Easily installed and attractively priced.

ACCESSORIES AND OPTIONS

REPLACEABLE CUTTING EDGES

Carbon Steel

Cutting edges made of high-carbon steel bolt to the base angle for maximum blade life.

Depending on the blade series, cutting edges are $\frac{3}{8}$ ", $\frac{1}{2}$ ", or $\frac{5}{8}$ " (1 cm, 1.3 cm, or 1.6 cm) thick, and 6" or 8" (15 or 20 cm) wide.

Carbide Steel

Carbide steel edges provide superior durability and performance with longer wear compared to a traditional steel cutting edge. Unmatched wear resistant properties ensure long life and exceptional performance.

UHMW Polymer

These 1"-thick (2.5 cm) cutting edges made of durable, lightweight polymer absorb much of the shock and vibration when the blade encounters rough surfaces.

Rubber

6" (15 cm) wide rubber cutting edges conform to the surface being plowed rather than scraping the plowing surface, making them perfect for concrete, parking garages, brick, pavers, cobblestone, or any other sensitive or uneven surface. Rubber edges are made of a tough, high-wear compound that provides a clean and quiet "squeegee" action.

ACCESSORIES AND OPTIONS

FISHER® EZ Flow HYDRAULIC FLUID

Improve the performance of your hydraulic systems, especially in extremely cold weather, with FISHER EZ Flow hydraulic fluid. Special anti-wear and anti-foaming additives keep your system running longer and smoother.

ANTI-WEAR SHOES

Anti-wear shoes offer maximum protection against blade and/or base angle wear on rocky and/or abrasive surfaces (hard pack, gravel).

WEAR/CURB SHOE KIT

These shoes offer two types of wear protection. The flat bottom section protects the cutting edge surface from wear against rough surfaces. An abrasion resistant material that extends beyond the edge of the snowplow also protects against scraping the bottom edge of the blade against curbs and sidewalks.

CURB GUARD KIT

Designed to fit on the ends of the trip edge, these guards protect against scraping the bottom edge of the blade against curbs and sidewalks.

TOUCH-UP PAINT

FISHER touch-up paint is available to keep your snowplow protected from rust.

Minute Mount® 2 SYSTEM SKID PLATES

These off-season inserts for the Minute Mount 2 system pushplates offer protection by filling and covering the receiver portion of the pushplates. They also add to the vehicle's off-season appearance.

ACCESSORIES AND OPTIONS

ProTube™ BUMPER/GRILLE GUARD

Available in black powder-coated finish, this attractive, off-season grille guard mounts to most existing Minute Mount® 2 system pushplates. The mounting brackets double as skid plates. Tabs are provided for mounting auxiliary fog lights (not included).

PLOW PARKA

This long lasting plow cover is constructed of heavy-duty nylon with a gathered elastic band sewn into the bottom edge for a tight, weather-resistant fit. The plow parka takes just seconds to install and provides protection for your snowplow's electrical and hydraulic systems.

DIELECTRIC GREASE

Specially formulated to protect all your electrical connections in severe winter conditions. Fisher Engineering recommends all snowplow owners use dielectric grease on a regular basis.

EMERGENCY PARTS TOOL BOX KIT

This tool box contains necessary service parts to make on-the-spot repairs to your snowplow. There's also a quart (0.95 L) of FISHER® EZ Flow hydraulic fluid and a knit cap to keep your ears warm while you're out in the cold.

ATTACHING SNOWPLOW TO VEHICLE

ATTACHING SNOWPLOW

WARNING

Keep 8' (2.4 m) clear of the blade when it is being raised, lowered, or angled. Do not stand between vehicle and blade or directly in front of the blade. If the blade hits 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.

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

Attaching Steps:

1. Pull pin release handle and push down to pull out connecting pins.
2. Drive vehicle slowly to engage pushplates into attachment arms.

HT Series™ Blades Only: Attach all electrical connectors. With the ignition in the "ON" position, turn ON the control and activate the FLOAT mode.
3. Stand in front of blade. Fully raise pin release handle to release connecting pins.

ATTACHING SNOWPLOW TO VEHICLE

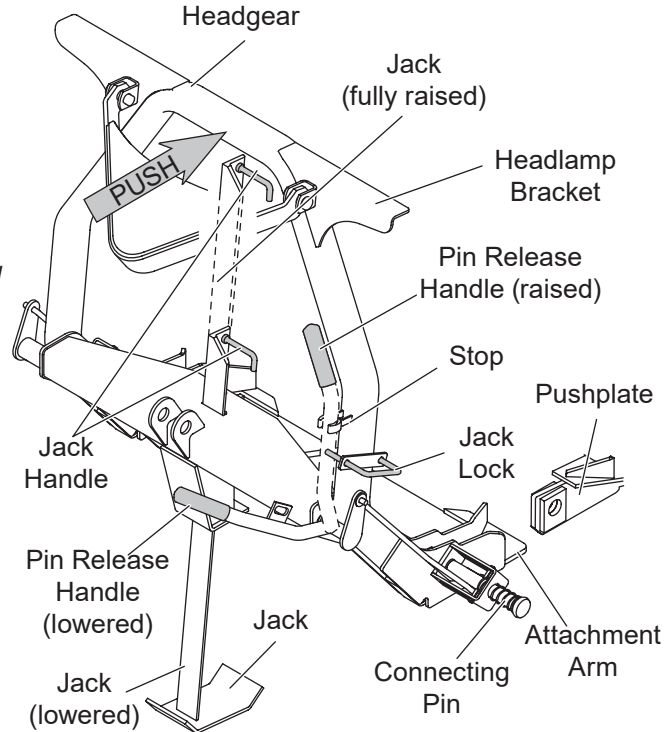
4. Push headgear toward vehicle to allow connecting pins to fully engage pushplates. If unable to push headgear from in front of blade, stand in front of headgear on driver's side and push headlamp bracket.

HT Series™: Using headgear push bar, push headgear toward vehicle to allow connecting pins to fully engage pushplates. See following page for illustrations.

5. Pull out jack lock. Push pin release handle into stop.

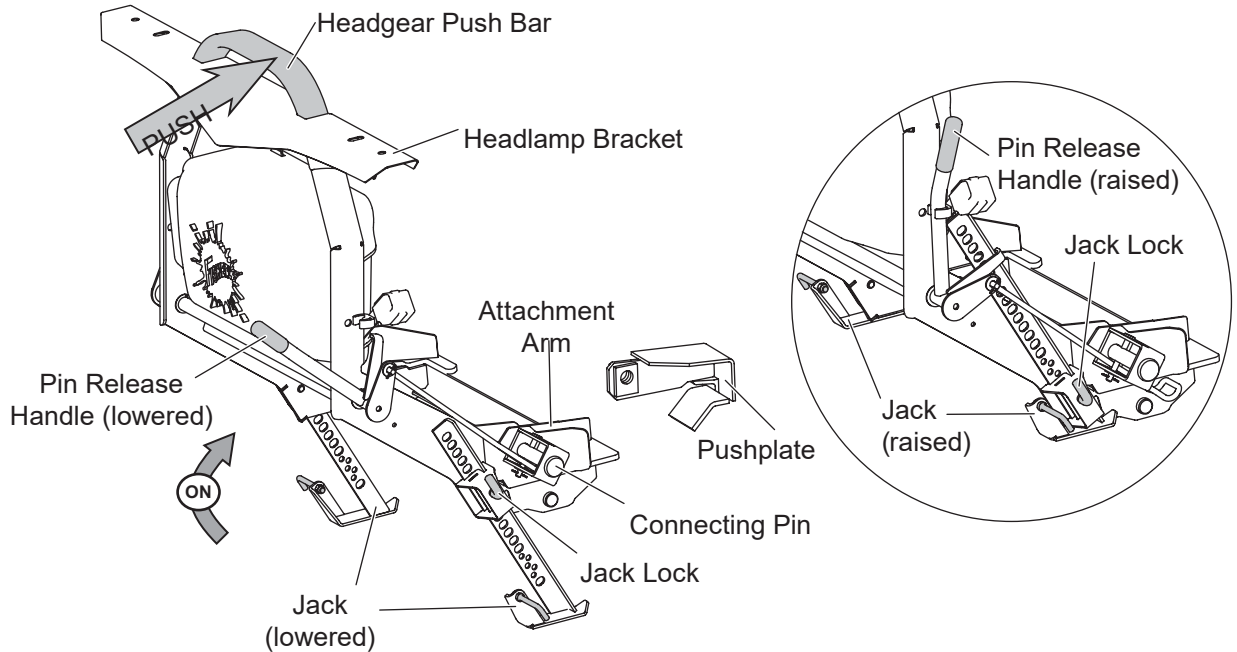
HT Series: Pull and hold jack lock out. Use jack handle to raise jack fully and release jack lock. Repeat on opposite side. Stop here; attachment is complete.

6. While holding jack lock out, use jack handle to raise jack fully. Release jack lock.
7. Attach all electrical connectors.



ATTACHING SNOWPLOW TO VEHICLE

Attach HT Series™ Blade



OPERATING YOUR SNOWPLOW

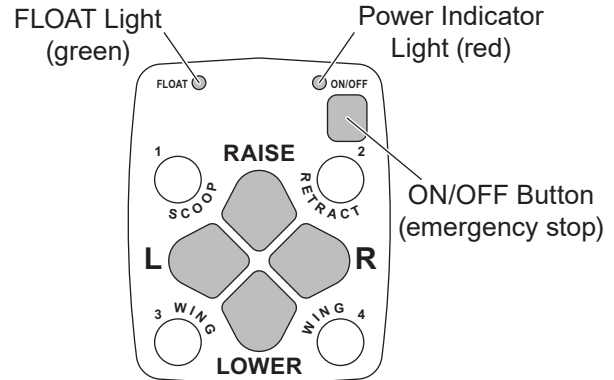
Fish-Stik® HAND-HELD CONTROL

⚠ WARNING

To prevent accidental movement of the blade, always push the ON/OFF button to switch the control OFF whenever the snowplow is not in use. The power 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 button operates as an emergency stop if required.



Function Time-Outs

To limit the amount of electrical energy required from the vehicle, all control functions, except LOWER/FLOAT, time out (stop) automatically after a period of time. The blade will coast to a stop. The time-outs are written into the programming and vary by snowplow model.

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

OPERATING YOUR SNOWPLOW

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.

Optional Control Features

The control ships from the factory with the Smooth Stop feature enabled and the one-touch FLOAT feature disabled. To change these default settings, see "Smooth Stop" and "One-Touch FLOAT" later in this section of the Owner's Manual.

Control Functions

RAISE, LOWER, FLOAT, Angle

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

Function	Description of Operation
RAISE	Press this button to raise the blade and cancel FLOAT mode.
LOWER	Press this button to lower the blade. Release the button to stop the blade at desired height.
FLOAT [†]	Press the LOWER button and hold $\frac{3}{4}$ second to activate this mode. The FLOAT 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. Press the RAISE button momentarily to cancel FLOAT. Angling left or right will not interrupt (pause) the FLOAT function.

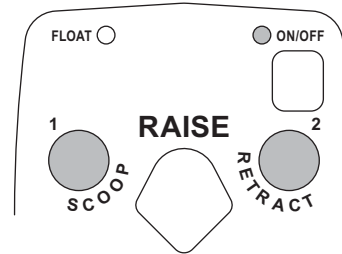
[†] FLOAT mode activates immediately when one-touch FLOAT feature is enabled. See "One-Touch FLOAT" in this section for more information.

OPERATING YOUR SNOWPLOW

Function	Description of Operation
L (Angle Left)	<p>Straight blades: Press this button to angle the blade to the left.</p> <p>All others: With wings in a straight line, press the L button to move both wings to the angle left position. The left wing retracts while the right wing extends (XtremeV™, XV2™).</p>
R (Angle Right)	<p>Straight blades: Press this button to angle the blade to the right.</p> <p>All others: With wings in a straight line, press the R button to move both wings to the angle right position. The right wing retracts while the left wing extends (XtremeV, XV2).</p>

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

Scoop/Retract Blade Position XtremeV, XV2, and XLS™ Blades



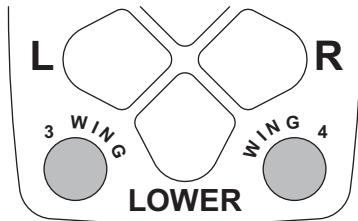
The two round buttons located to the left and right of the RAISE button move both wings at the same time into the blade positions described in the following table.

Function	Description of Operation
SCOOP	Press this button to extend both wings forward into the scoop position.
RETRACT	Press this button to draw both wings into the fully retracted/vee position.

OPERATING YOUR SNOWPLOW

Wing Positions

XtremeV™, XV2™, and XLS™ Blades



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

SECURITY GUARD™ System (1, 2, 3, 4)

The four round buttons located to the left and right of the LOWER and RAISE buttons will also operate the SECURITY GUARD system (if equipped). See "SECURITY GUARD System" in this section for more information.

Function	Description of Operation
L WING	Press this 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..
R WING	Press this 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.

OPERATING YOUR SNOWPLOW

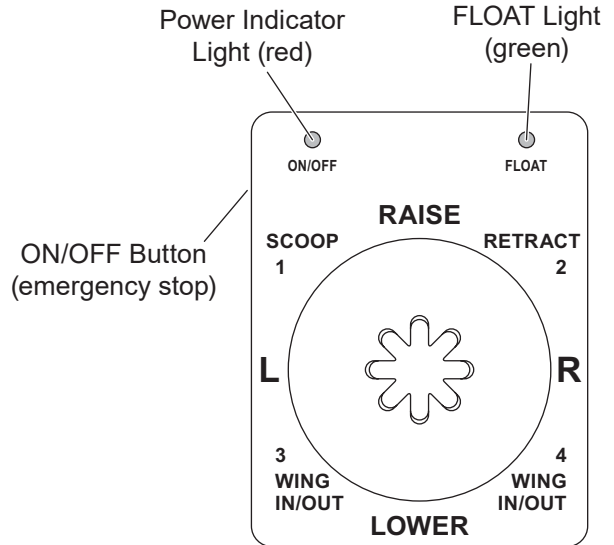
JOYSTICK CONTROL

⚠ WARNING

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

1. Turn the vehicle ignition switch to the "ON" or "ACCESSORY" position.
2. Move the ON/OFF switch on the side of the control to the "ON" position. The power 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 and the electrical connections to the snowplow are completed.

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



OPERATING YOUR SNOWPLOW

Function Time-Outs

To limit the amount of electrical energy required from the vehicle, all control functions, except LOWER/FLOAT, time out (stop) automatically after a period of time. The blade will coast to a stop. The time-outs are written into the programming and vary by snowplow model.

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

Automatic Shutdown

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

Optional Control Features

The control ships from the factory with the Smooth Stop feature enabled and the One-Touch FLOAT feature disabled. To change these default settings, see "Smooth Stop" and "One-Touch FLOAT" later in this section of the Owner's Manual.

Control Lever Movement

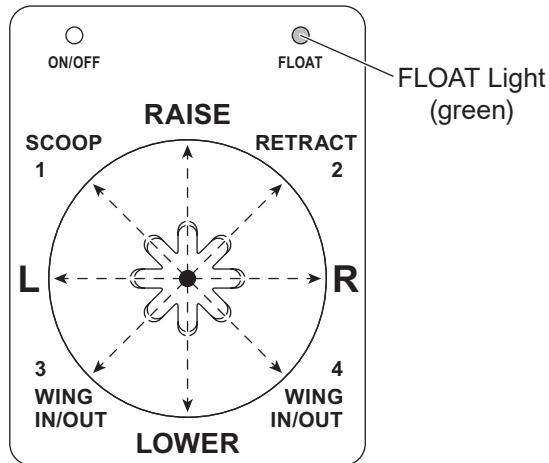
From the center position, the control lever can be moved in one of eight directions to control various movements of the snowplow blade. To change from one movement of the blade to another, the control lever must be moved back to the center position before selecting the desired function. Whenever the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

OPERATING YOUR SNOWPLOW

Control Functions

RAISE, LOWER, FLOAT, Angle

Moving the control lever straight up and down or from side to side on the control body will result in the blade movements described in the following tables.



FLOAT Light
(green)

Function	Description of Operation
RAISE	Move the control lever toward the top of the control body to raise the blade and cancel the FLOAT mode.
LOWER	Move the control lever toward the bottom of the control body to lower the blade. Release the lever to stop the blade at the desired height.
FLOAT†	Move the control lever to the LOWER position and hold $\frac{3}{4}$ second to activate this mode. The FLOAT 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. Move lever to the RAISE position momentarily to cancel FLOAT. Angling left or right will not interrupt (pause) the FLOAT function.

† FLOAT mode activates immediately when one-touch FLOAT feature is enabled. See "One-Touch FLOAT" in this section for more information.

OPERATING YOUR SNOWPLOW

Function	Description of Operation
L (Angle Left)	Straight blades: Move the control lever straight to the left to angle the blade left. All others: With wings in a straight line, move the control lever straight to the left to move both wings to the angle left position. The left wing retracts while the right wing extends (XtremeV™, XV2™).
R (Angle Right)	Straight blades: Move the control lever straight to the right to angle the blade right. All others: With wings in a straight line, move the control lever straight to the right to move both wings to the angle right position. The right wing retracts while the left wing extends (XtremeV, XV2).

Scoop/Retract Blade Position XtremeV, XV2, and XLS™ Blades

Moving the control lever from the center position toward the word "SCOOP" or "RETRACT" on the face of the control body will cause both 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.
RETRACT	Move the control lever toward the word RETRACT on the control face to draw both wings into the fully retracted/vee position.

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

OPERATING YOUR SNOWPLOW

Wing Positions

XtremeV™, XV2™, and XLS™ Blades

Moving the control lever from the center position toward the words WING IN/OUT, on either side of the face of the control body will cause either wing to move independently of the other as described in the following table.

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

SECURITY GUARD™ System (1, 2, 3, 4)

Moving the control lever from the center position toward any of the four digits on the face of the control body will also operate the SECURITY GUARD system (if equipped). See "SECURITY GUARD System" in this section for more information.

Function	Description of Operation
L WING IN/OUT	Move the control lever toward the <i>left</i> side of LOWER on the control face to move the left wing. 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 the lever in the same slot, without using another function, results in movement in the opposite direction from the previous movement.
R WING IN/OUT	Move the control lever toward the <i>right</i> side of LOWER on the control face to move the right wing. 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 the lever in the same slot, without using another function, results in movement in the opposite direction from the previous movement.

FLEET FLEX ELECTRICAL SYSTEM

Your Minute Mount® 2 system snowplow comes standard with user-controlled programmable features. These include:

- SECURITY GUARD™ electrical anti-theft system
- Smooth stop/soft stop
- One-touch FLOAT

This section provides more information about each feature, as well as instructions on how to enable or disable them. These features are offered to give you the ability to secure your snowplow and customize your plowing experience.

SECURITY GUARD™ System

Activation & Establishing a 4-Digit Security Code

NOTE: The snowplow must be attached to the vehicle, and all the electrical connections must be connected prior to activating the security code function.

The SECURITY GUARD feature was developed as an electrical anti-theft system. The system provides a deterrent from theft and/or non-permitted use by allowing you to electronically lock the snowplow's hydraulic functions.

All multiplex snowplow controls come equipped with the SECURITY GUARD system. To use this function, you must complete the activation process.

1. Turn the vehicle ignition switch to the "ON" or "ACCESSORY" position. (It is not necessary to start the vehicle.)
2. Verify that the control power indicator is OFF. If the power indicator light is red, the control is ON. Move the ON/OFF switch to "OFF" or push the ON/OFF button to turn the control OFF.
3. To activate the SECURITY GUARD mode, move the control lever to the #1 position or press the #1 button four consecutive times, then move the lever to the #4 position or press the #4 button four consecutive times (sequence: 1, 1, 1, 1, 4, 4, 4, 4). The green FLOAT light will flash quickly and the red power indicator light will turn ON, indicating that the system is ready to accept your 4-digit security code.

Enter your 4-digit security code by moving the control lever to (or pressing the button for) any of the eight following positions: UP, DOWN, LEFT, RIGHT, 1, 2, 3, or 4.

Once you have entered your 4-digit security code, the FLOAT light will stop flashing and the power indicator light will turn OFF. This indicates that your 4-digit security code is entered and stored in the SECURITY GUARD™ system.

NOTE: If the control is turned ON prior to completing the programming procedure, your 4-digit security code will be cancelled.

4. Once a 4-digit security code is established and the plow/vehicle electrical connection are lost/disconnected, the SECURITY GUARD system will recognize any control that has been programmed with the same 4-digit security code. Any control not programmed with the correct 4-digit security code will require the user to enter the established security code before activating the snowplow (see the Manual Unlock procedure).

Manual Unlock

If the SECURITY GUARD system is activated and you are using a control with a different 4-digit code than the established security code, you will be required to manually enter the 4-digit security code before operating a locked snowplow.

1. Turn the vehicle ignition to the "ON" or "ACCESSORY" position.
2. Move the ON/OFF switch to the "ON" position or push the ON/OFF button to switch the control ON.
3. The power indicator light will flash rapidly, indicating that the snowplow is locked.
4. Enter the 4-digit security code.

5. After the correct security has been entered, the power indicator light will change from rapid flashing to steady ON, indicating that the snowplow has been successfully unlocked.

NOTE: If the plow/vehicle electrical connection is lost or disconnected, the SECURITY GUARD™ system will reset, requiring any control that is not programmed with the established 4-digit security code to manually re-enter the security code to activate the snowplow.

Clearing an Established 4-Digit Security Code

1. Turn the vehicle ignition switch to the "ON" or "ACCESSORY" position.
2. If the snowplow is locked (the control power indicator light will be flashing rapidly), unlock the snowplow by following the Manual Unlock procedure.

3. Move the ON/OFF switch to the "OFF" position or push the ON/OFF button to switch the control OFF. Verify that the power indicator light is OFF.

4. With the control OFF, move the control lever to the #2 position or press the #2 button four consecutive times, then move the lever to the #3 position or push the #3 button four consecutive times. This sequence (2, 2, 2, 2, 3, 3, 3, 3) will clear the 4-digit security code from the SECURITY GUARD system. The FLOAT light will flash to indicate that the 4-digit security code was cleared.

NOTE: To enter a new 4-digit security code see Activation & Establishing a 4-Digit Security Code.

Light Flash Indicators

POWER – Red	Function
OFF	Control is OFF
Solid ON	Control is ON and active
Slow Flash	No communication
Fast Flash	Snowplow is locked—enter 4-digit security code to unlock

FLOAT – Green	Function
Solid ON	FLOAT function is active
Fast Flash	Security code activation in progress

Additional Notes

- The SECURITY GUARD™ system requires any control (other than the one with the assigned 4-digit security code) to enter the security code before the snowplow can be activated. Once the security code is established, the SECURITY GUARD system recognizes that a control with the

same security code is attached, and does not require a manual unlock to activate the snowplow. The system will recognize the control as "safe" and will automatically unlock.

- The SECURITY GUARD system is only fully functional with joystick control PN 49700 & 49900 and hand-held controls PN 29800 & 49800.
- In the event that a snowplow is locked and cannot be manually unlocked or reset, contact your Authorized Dealer.
- **REMINDER:** Record your security code for future reference.

Smooth Stop/Soft Stop

Smooth stop, or "soft" stop, is a feature that allows the blade to coast to a stop when the button/lever is released. The result is smoother operation, reduction in shock to the hydraulic system, and an increase in hose and valve life.

While there are advantages to having this feature, there are also advantages to temporarily disabling this feature. For example, to allow for more precise movements of the blade while operating in close distances to buildings and other obstacles.

All controls come standard with this feature ENABLED. To enable/disable this feature, perform the following steps. Performing the sequence multiple times will toggle the feature between enabled and disabled.

Enable/Disable Procedure

1. Turn the vehicle ignition switch to the "ON" or "ACCESSORY" position. (It is not necessary to start the vehicle.)
2. Verify that the control power indicator is OFF. If the power indicator light is red, the control is ON. Move the ON/OFF switch to "OFF" or push the ON/OFF button to turn the control OFF.
3. Move and hold the control lever to the "R" position or press and hold the R button while turning the control ON. The power indicator light will turn ON and the FLOAT light will flash, indicating the status of the feature.

Light Flash Indicators

Light	Description
POWER – Red	Solid ON = Control is ON
FLOAT – Green	1 Flash = Smooth stop enabled 2 Flashes = Smooth stop disabled

One-Touch FLOAT

One-touch FLOAT immediately activates the FLOAT mode and releases the blade to the ground, without having to hold the button or lever in LOWER. This can improve transition time when backing up to plow forward again, eliminating the time spent holding the control and waiting for the blade to fully drop.

All controls come standard with this feature DISABLED. To enable/disable this feature, perform the following steps. Performing the sequence multiple times will toggle the feature between enabled and disabled.

Enable/Disable Procedure

1. Turn the vehicle ignition switch to the "ON" or "ACCESSORY" position. (It is not necessary to start the vehicle.)
2. Verify that the control power indicator is OFF. If the power indicator light is red, the control is ON. Move the ON/OFF switch to the "OFF" position or push the ON/OFF button to turn the control OFF.
3. Move and hold the control lever to the LOWER position or press and hold the LOWER button while turning the control ON. The power indicator light will turn ON and the FLOAT light will flash, indicating the status of the feature.

Light Flash Indicators

Light	Description
POWER – Red	Solid ON = Control is ON
FLOAT – Green	1 Flash = One-touch FLOAT disabled 2 Flashes = One-touch FLOAT enabled

OPERATING YOUR SNOWPLOW

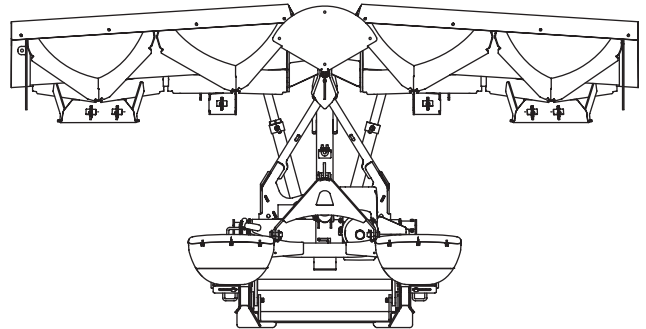
V-PLOW BLADE POSITIONS

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

The V-plow can be used in five basic plowing positions.

Straight Blade

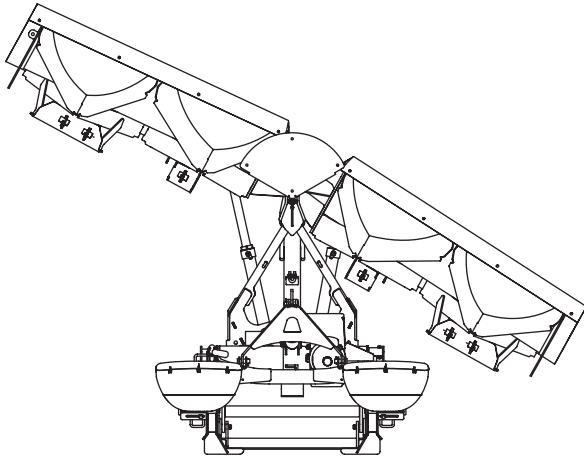
Move both wings to form a straight blade for wide path plowing or "stacking" snow.



OPERATING YOUR SNOWPLOW

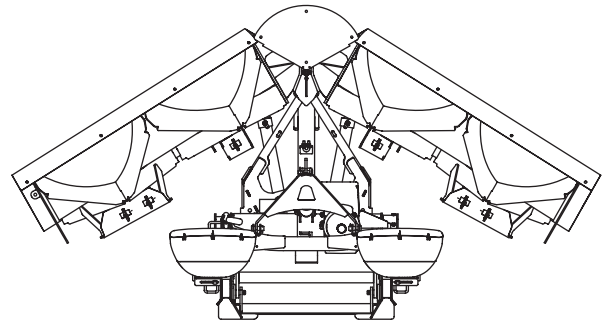
Angled Blade

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



Retracted (Vee) Blade

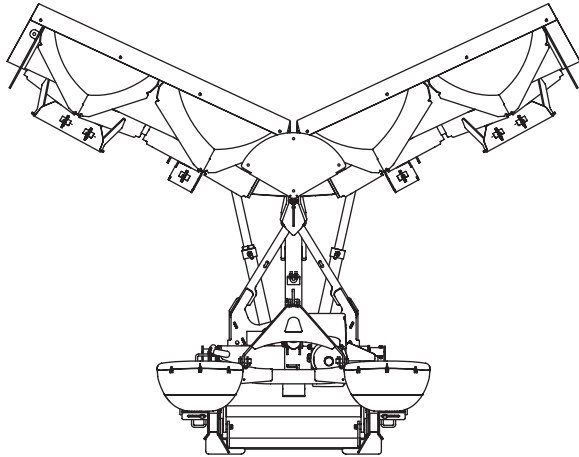
Move both wings "IN" toward the vehicle for initial break-through plowing and plowing paths or walkways.



OPERATING YOUR SNOWPLOW

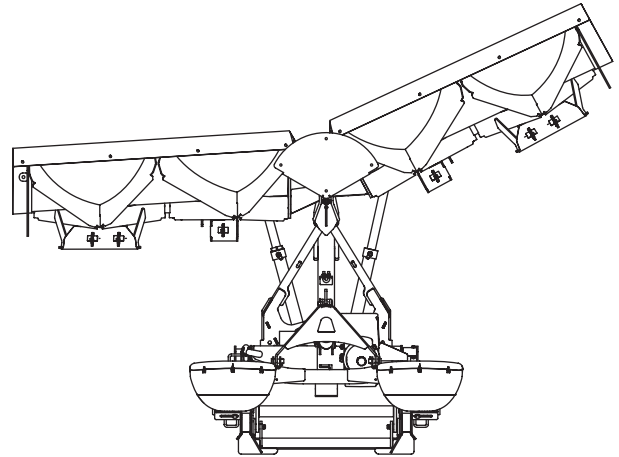
Scoop Blade

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.



OPERATING YOUR SNOWPLOW

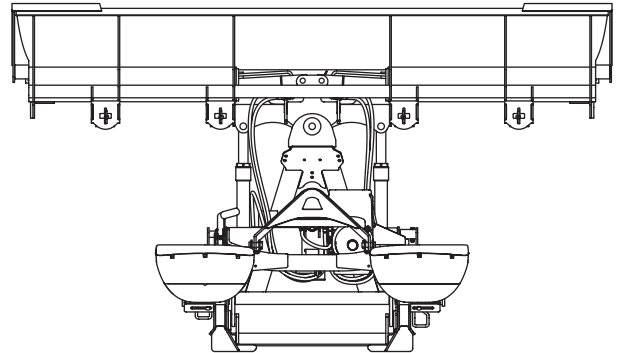
XLS™ BLADE POSITIONS

The XLS snowplow can be used in four basic plowing positions.

NOTE: Always transport the XLS snowplow with both wings fully retracted.

Retracted Blade

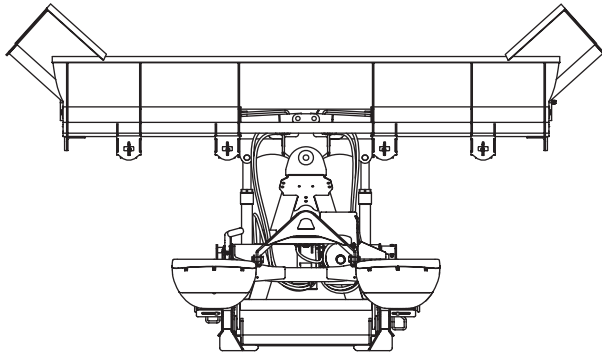
Move both wings "IN" to form a standard straight blade.



OPERATING YOUR SNOWPLOW

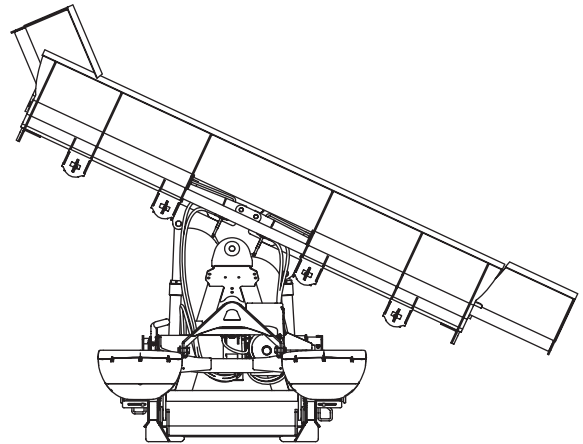
Scoop Blade

Move both wings "OUT" and ahead of the vehicle to form a scoop to "carry" snow with minimum spilloff.



Dogleg Blade

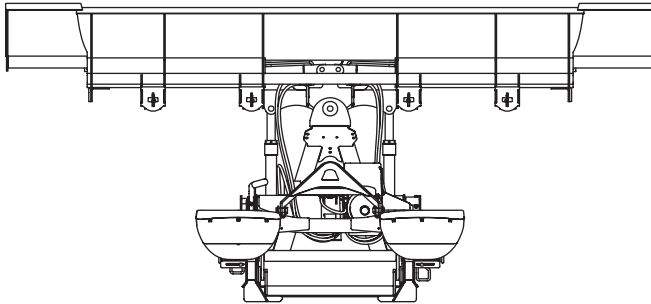
Move one wing to extended blade position and the other "OUT" to scoop blade position for clean up of windrows.



OPERATING YOUR SNOWPLOW

Extended Blade

Move both wings "OUT" straight for an extra-wide blade for clearing large areas.



OPERATING YOUR SNOWPLOW

SNOWPLOW HEADLAMP CHECK

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

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

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

- Electrical plugs **DISCONNECTED** – Vehicle headlamps function normally.
- Electrical plugs **CONNECTED** – Vehicle headlamp functions transfer to the snowplow headlamps. On some DRL systems, both the vehicle and snowplow headlamps will function.

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.

OPERATING YOUR SNOWPLOW

ANTI-WEAR SHOE ADJUSTMENT

⚠ WARNING

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

⚠ CAUTION

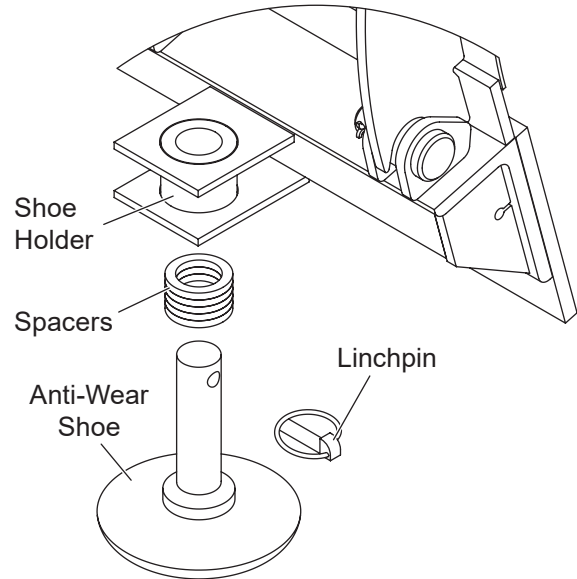
Do not store unused spacers on top of the shoe holder. This could damage the blade.

Recommended Shoe Adjustments

For gravel surfaces: The bottom surface of the shoe should be $\frac{1}{4}$ " to $\frac{1}{2}$ " (0.6 to 1.3 cm) below the cutting edge.

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

Adjustment Procedure



Standard shoe kit shown. Optional shoe kits, available for most models, have a bolt-on shoe holder.

OPERATING YOUR SNOWPLOW

1. Raise the blade 1 foot off the road surface, turn the control OFF and, from in front of the blade, place jack stands under the cutting edge.
2. Turn the control ON and lower the blade onto the jack stands or blocking. Turn the control and vehicle ignition OFF.
3. Remove the linchpin and slide the anti-wear shoe down and out of the shoe holder.
4. Remove one or more spacers from the shoe stem and reinstall the shoe into the shoe holder.
5. Reinstall the linchpin.
6. Turn the control and vehicle ignition ON. Raise the blade slightly from the jack stands. Turn the control OFF and remove the jack stands.
7. Stand 8 feet clear of the blade when checking the height adjustment of the cutting edge to the road surface.
8. **DO NOT** store unused spacers on top of the shoe holder.

OPERATING YOUR SNOWPLOW

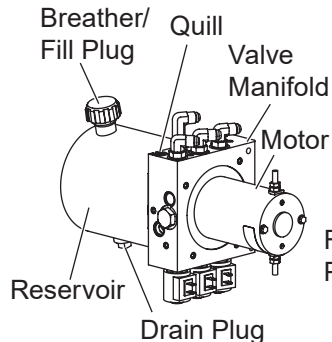
HYDRAULIC SYSTEM

The Insta-Act® hydraulic unit's valve manifold includes relief valves to prevent damage to the blade or vehicle if an obstacle is hit at either end of the blade. When force against the blade causes the pressure in an **extended ram** to exceed

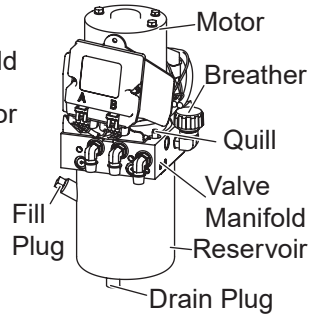
set limits, the relief valve opens allowing fluid to escape and the ram retracts.

For hydraulic fluid type and filling instructions, see "Annual Fluid Change" under "Hydraulic System" in the Maintenance section of this manual.

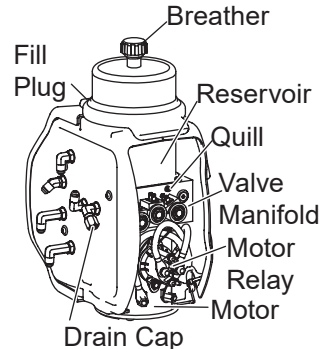
HT Series Blades



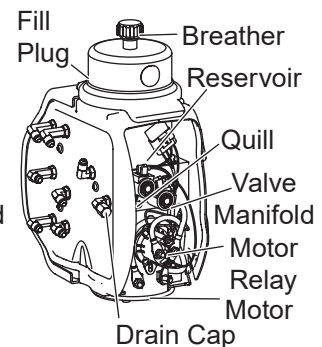
Straight Blades



XtremeV™ & XV2™ Blades



XLS™ Blades



OPERATING YOUR SNOWPLOW

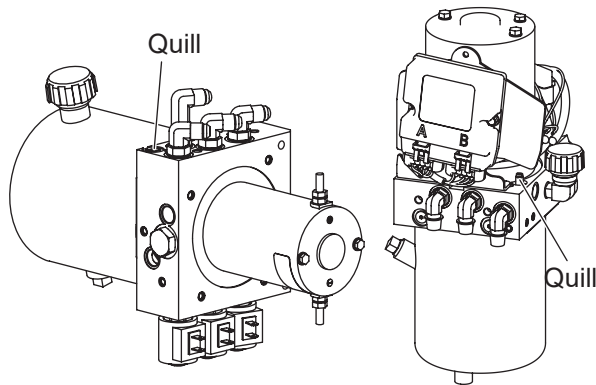
BLADE DROP SPEED ADJUSTMENT

⚠ WARNING

Keep 8' (2.4 m) clear of the blade when it is being raised, lowered, or angled. Do not stand between vehicle and blade or directly in front of the blade. If the blade hits or drops on you, you could be seriously injured.

HT Series™ Blades

Straight Blades



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

1. Lower the blade to the ground before making the adjustment.
2. Remove the hydraulic unit cover.

XtremeV™, XV2™, and XLS™ hydraulic units: Raise the top cover retainer, remove the bottom cover retainer, and remove the rear cover.

3. Turn the quill IN (clockwise) to decrease drop speed. Turn the quill OUT (counterclockwise) to increase drop speed.
4. Stand 8 feet (2.4 m) clear of the blade when checking adjustment.

OPERATING YOUR SNOWPLOW

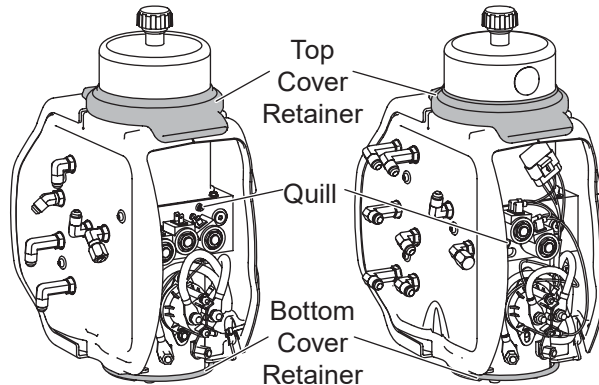
5. Replace the hydraulic unit cover.

XtremeV™, XV2™, and XLS™ units:

Replace the cover and reinstall the top and bottom cover retainers.

XtremeV & XV2 Blades

XLS Blades



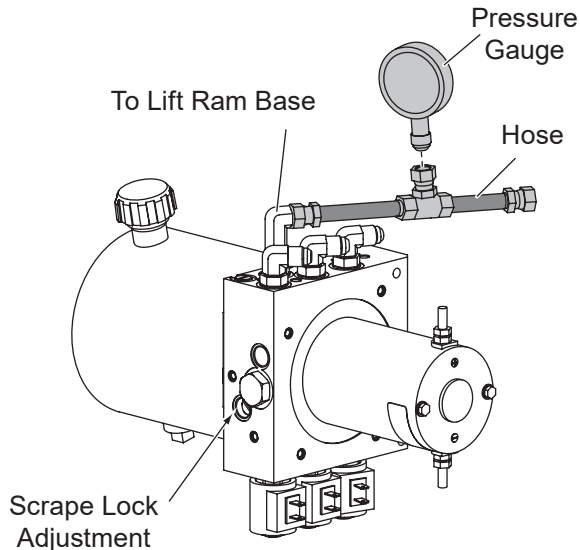
SCRAPE LOCK ADJUSTMENT

Follow the instructions below to increase the pressure setting of the HT Series™ blade's scrape lock feature. The snowplow must be attached to the vehicle, and the snowplow battery cable and lighting harness must be connected before beginning this procedure.


1. Park the vehicle on a smooth, level, hard surface, such as concrete. Lower the blade to the ground and turn the control OFF. Leave the snowplow attached to the vehicle. Turn the vehicle ignition to the "OFF" position.
2. Disconnect the snowplow battery cable from the vehicle battery cable.
3. Remove the hydraulic unit cover.
4. Loosen the breather/fill plug slowly to relieve any pressure in the reservoir.

OPERATING YOUR SNOWPLOW

- Using a tee fitting, install a 500–600 psi gauge in the lift ram base hose.



 = Increase Pressure

 = Decrease Pressure

- Retighten the breather/fill plug.
- Reconnect the snowplow battery cable to the vehicle battery cable.
- Turn the vehicle ignition to the "ON" or "Accessory" position. Turn the control ON.
- While pressing the RAISE button on the snowplow control, note the hydraulic gauge pressure reading as the blade is rising. (The pressure can *only* be read as the blade is rising. It may be necessary to perform this process more than once to obtain an accurate reading.) The recommended pressure is 350 psi.

CAUTION

Never operate the unit while adjusting the scrape lock valve. Doing so will damage the scrape lock valve O-rings.

OPERATING YOUR SNOWPLOW

10. If the hydraulic pressure reading is less than 350 psi, increase the pressure by turning the scrape lock valve stem clockwise $\frac{1}{4}$ turn and retest pressure.

NOTE: Adjustments should be made in $\frac{1}{4}$ -turn increments.

11. Repeat Steps 9 and 10 until the recommended pressure (350 psi) is obtained.

NOTE: Adjusting the scrape lock pressure in excess of the recommended pressure will increase amperage draw and will shorten the life of the plow motor.

12. Once the recommended pressure is obtained, lower the blade completely and turn the control OFF. Turn the vehicle ignition to the "OFF" position.
13. Disconnect the snowplow battery cable from the vehicle battery cable.

14. Loosen the breather/fill plug slowly to relieve any pressure in the reservoir.
15. Remove the hydraulic testing tee fitting and gauge from the lift ram base hose.
16. Reconnect the lift ram base hose and tighten securely.

CAUTION

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

17. Check the hydraulic fluid level and add if necessary.
18. Retighten the breather/fill plug.
19. Replace the hydraulic unit cover.

OPERATING YOUR SNOWPLOW

TRANSPORTING SNOWPLOW

WARNING

Position blade so it does not block headlamp beams.

Do not change blade position while traveling. You could suddenly lower blade accidentally.

CAUTION

Transport speed should not exceed 45 mph (72 km/h). Further reduce speed under adverse travel conditions.

NOTE: For V-plows, use care when driving or entering driveways with the snowplow in the retracted (vee) position. The outer ends of the cutting edges could contact the ground.

NOTE: Always transport the XLS™ snowplow with both wings fully retracted.

1. Completely raise the blade.
2. Adjust the blade height for maximum snowplow headlamp illumination.
3. Adjust the blade to the straight position.
4. Turn the control 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 slightly to correct overheating.

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

OPERATING YOUR SNOWPLOW

DRIVING AND PLOWING ON SNOW AND ICE

WARNING

Drinking then driving or plowing is very dangerous. Your reflexes, perceptions, attentiveness, and judgment 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 your vehicle owner's manual instructions for driving in snow and ice conditions. Remember, when you drive on snow or ice, your tires 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.

OPERATING YOUR SNOWPLOW

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.

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 (16 km/h).

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

OPERATING YOUR SNOWPLOW

General Instructions

1. Before plowing, make sure that 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 km/h) 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 shoes, raise the anti-wear shoes so that the cutting edge comes into direct contact with the pavement. **DO NOT stack spare spacers on top of shoe holder.**
2. Use the lowest gear to place maximum power behind the cutting edge.
3. An angled blade is more effective for removing hard-packed snow.

Deep Snow

1. For straight blades, shear off top layers by plowing with the blade raised 3 to 4 inches (8 to 10 cm) for the initial pass. For V-plows, move the blade into the fully retracted (vee) position and make an initial pass.

OPERATING YOUR SNOWPLOW

2. Bite into the edges using only a partial blade width until the job is cut down to size for full blade plowing.

Rule of thumb:

6" (15 cm) of snow – plow with entire blade width;

9" (23 cm) of snow – plow with $\frac{3}{4}$ blade width;

12" (30 cm) of snow – plow with $\frac{1}{2}$ of the blade.

For XLS™ blades in scoop position, plow all depths with entire 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 axle. 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 the 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 the remaining snow to the building. Drop the blade and back drag the snow away from the building at least one vehicle length. Repeat if necessary.
4. Back the vehicle up to the building and plow forward, removing the remaining snow from the driveway. Check municipal ordinances for proper disposal of snow.

OPERATING YOUR SNOWPLOW

Clearing Parking Lots

1. Clear areas in front of buildings first. With the blade raised, drive up to the building. Drop the blade and back drag the snow away from the building. When snow is clear of the buildings, turn the vehicle around and push snow away from the buildings toward the outer edges of the lot.
2. Plow a single path down the center in the lengthwise direction.
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 the outer edges.
4. If snow is too deep to clear in the above manner, clear main traffic lanes as much as possible.

PARKING WITH SNOWPLOW ATTACHED

WARNING

Lower the blade when the vehicle is parked. Keep 8' (2.4 m) clear of the blade. 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.

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

TOWING DISABLED OR STUCK VEHICLE

CAUTION

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

DETACHING SNOWPLOW FROM VEHICLE & STORAGE

DETACHING SNOWPLOW

WARNING

Keep 8' (2.4 m) clear of the blade when it is being raised, lowered, or angled. Do not stand between vehicle and blade or directly in front of the blade. If the blade hits 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.

CAUTION

Never pull jack lock when blade assembly is not attached to vehicle. The headgear assembly will suddenly drop.

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

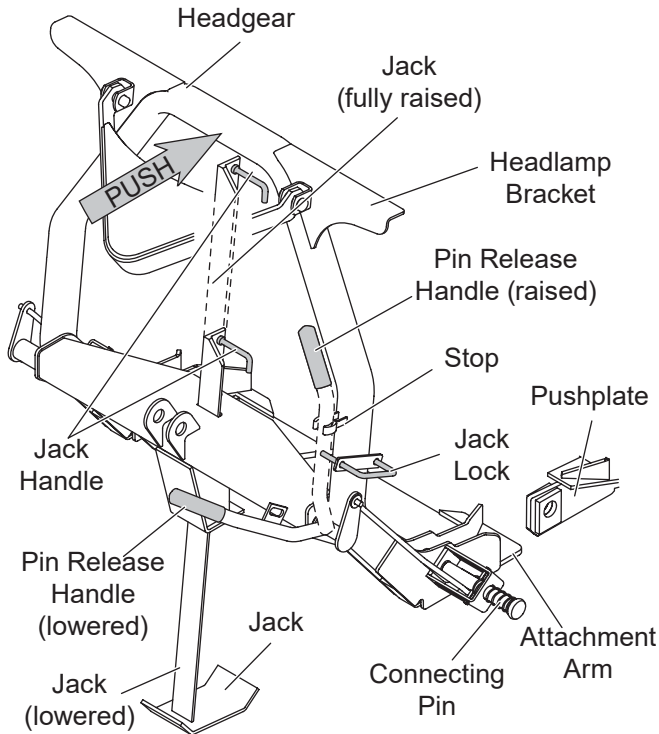
During the off-season, the control can be removed. Disconnect the connector in the cab and store the control in the glove box of the vehicle.

Detaching Steps:

1. Park the vehicle on a smooth, level, hard surface, such as concrete. Lower the blade to the ground.
2. Pull and hold jack lock out. Jack will drop to ground. Then pull pin release handle away from stop and jack lock. Release jack lock. Verify that jack is locked by trying to lift jack.

HT Series™ Blades: Pull and hold jack lock out. Lower jack until it contacts the ground. Release jack lock. Verify that jack is locked by trying to lift jack. Repeat on opposite side. *For illustration, see p. 68.*

DETACHING SNOWPLOW FROM VEHICLE & STORAGE



3. Stand in front of blade. While pushing headgear toward vehicle with left hand, push pin release handle down to disengage connecting pins. Make sure that connecting pins are fully retracted. If unable to push headgear from in front of blade, stand in front of headgear on the driver's side and push headlamp bracket.
4. Detach all electrical connectors.

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

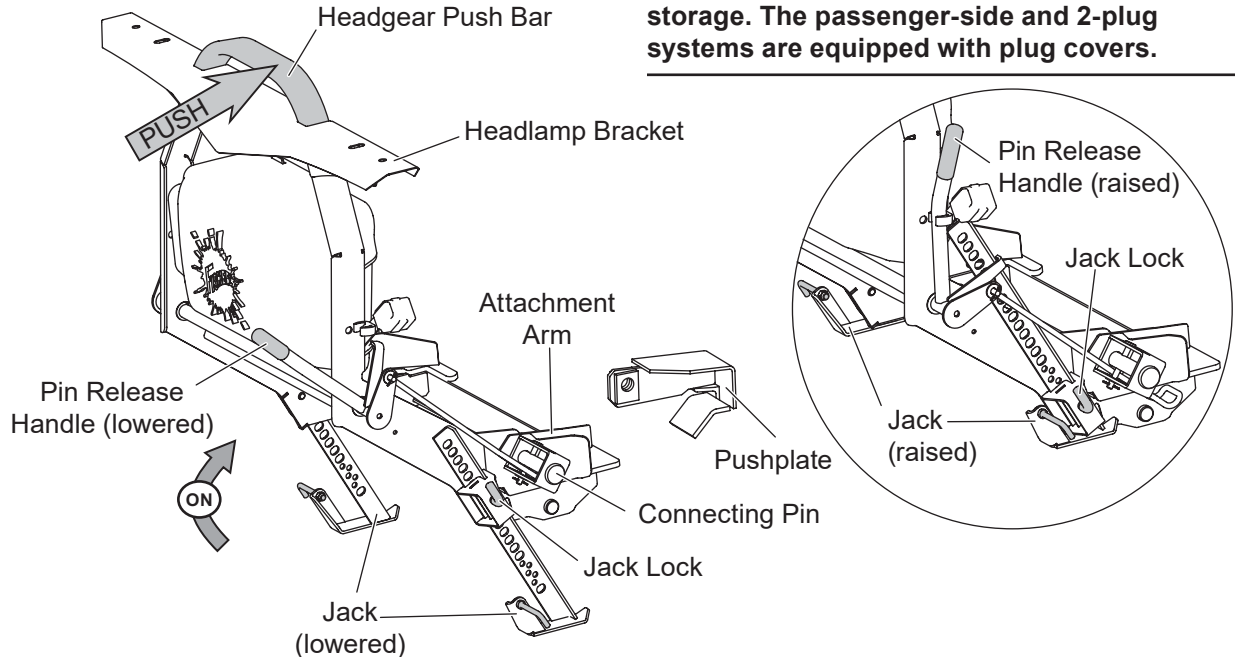
⚠ CAUTION

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

DETACHING SNOWPLOW FROM VEHICLE & STORAGE

Detach HT Series™ Blade

NOTE: Place electrical plugs in storage position. The driver-side and center plug on 3-plug electrical systems are joined for storage. The passenger-side and 2-plug systems are equipped with plug covers.



DETACHING SNOWPLOW FROM VEHICLE & STORAGE

STORAGE

Your snowplow is designed to be moved into a storage location using your vehicle and plow attaching system. For easier attaching of the snowplow, store it on a hard, level surface.

MAINTENANCE

MAINTENANCE VIDEOS

Video demonstrations of several snowplow maintenance tasks, including "Preseason Plow Maintenance" and "Annual Fluid Change," are available under the *Support* heading at www.fisherplows.com.

PRESEASON CHECK

WARNING

Lower the blade when the vehicle is parked. Keep 8' (2.4 m) clear of the blade. 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.

Before the snow season, check your equipment to make sure that it is 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" under "Hydraulic System" in this section of the manual.
- Replace worn or damaged parts.
- Check all mounting points and tighten fasteners, on both snowplow and vehicle. Verify that all cotter pins are in place.
- Repaint blade assembly and attachments, as necessary, to protect the metal.

MAINTENANCE

- 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

CAUTION

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

NOTE: Coat all electrical connections with dielectric grease.

- Clean and paint blade and attachments as needed.
- Be sure lift ram is fully collapsed so the rod is not exposed.
- Apply general purpose petroleum grease to exposed chrome surfaces of the rams to prevent rust.
- Lubricate all pivot points (e.g., connecting pin assembly and lower spring anchor) with general purpose petroleum grease.

MAINTENANCE

MAINTENANCE AND ADJUSTMENT

⚠ WARNING

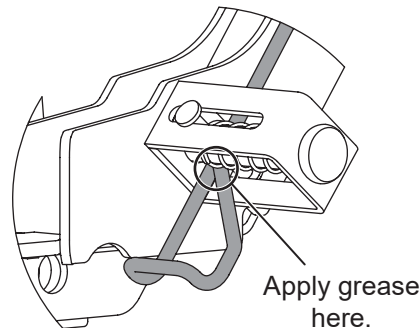
Lower the blade when the vehicle is parked. Keep 8' (2.4 m) clear of the blade. Temperature changes could change hydraulic pressure, causing the blade to drop unexpectedly or damaging hydraulic components. Failure to do this could result in serious personal injury.

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

Check the following before and frequently during the plowing season:

1. Make sure that all fasteners, mounting bolts, and hydraulic connections are tight.

2. Make sure that all electrical connections including grounds are clean, tight, free of rust or corrosion, and are coated with dielectric grease.
3. Check all plugs and seals for hydraulic fluid leaks. Repair as necessary.
4. Lubricate all moving parts, especially the connecting pin extractors, as shown below. Not doing so will make operation of the mount difficult and possibly damage components.



MAINTENANCE

HDX™ ADJUSTABLE ATTACK ANGLE

⚠ CAUTION

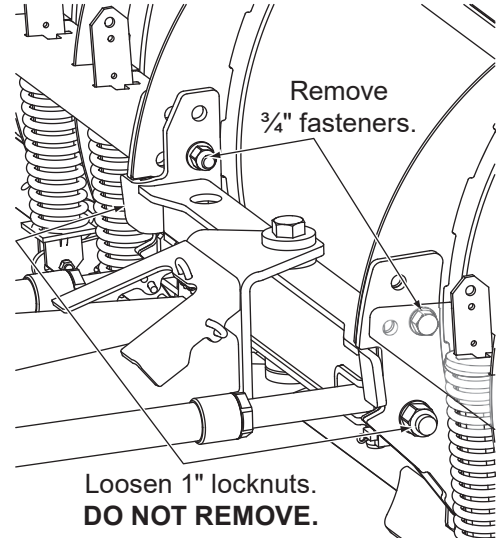
If the snowplow is not attached to the vehicle, lean the headgear forward. Failure to do so could result in the headgear shifting unexpectedly and causing personal injury.

The HDX blade can be adjusted to three attack angles—55°, 65°, and 75°.

The snowplow does not need to be attached to the vehicle to perform this adjustment.

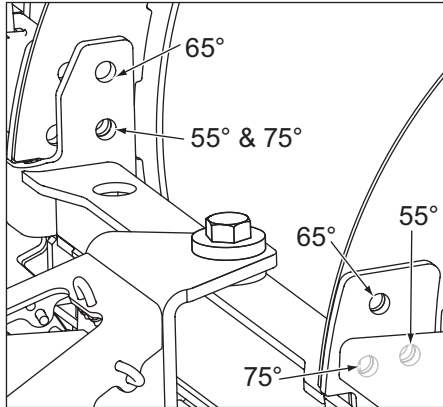
Blade Adjustment

1. To adjust the attack angle, loosen (DO NOT REMOVE) the lower quadrant 1" locknuts. Remove the upper quadrant 3/4" locknuts, washers, and cap screws.

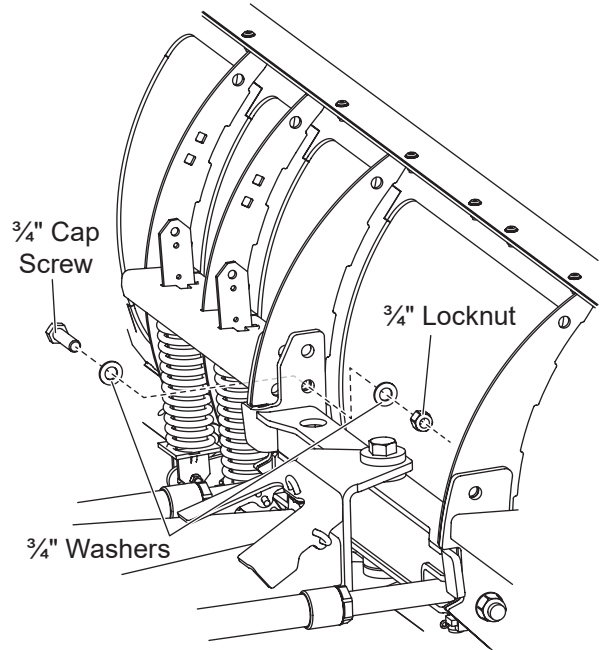


MAINTENANCE

2. Align the desired attack angle holes in the quadrant and blade as shown.

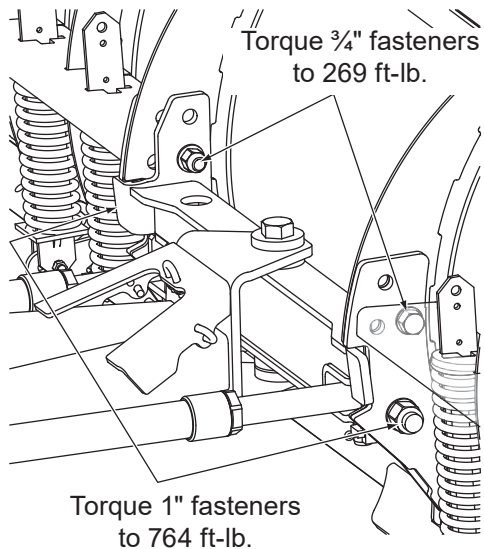


3. Reinstall the upper quadrant fasteners on both sides of the quadrant as shown.



MAINTENANCE

4. Torque upper and lower fasteners as shown:

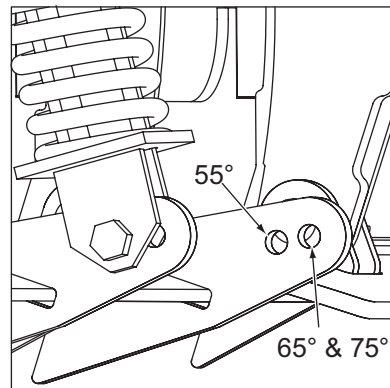


NOTE: Lower 1" locknuts must be torqued to 764 ft-lb and the upper $\frac{3}{4}$ " locknuts must be torqued to 269 ft-lb.

⚠ CAUTION

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

5. If the attack angle has been changed to or from 55° , the lower mounting position of the springs must be changed as shown.



MAINTENANCE

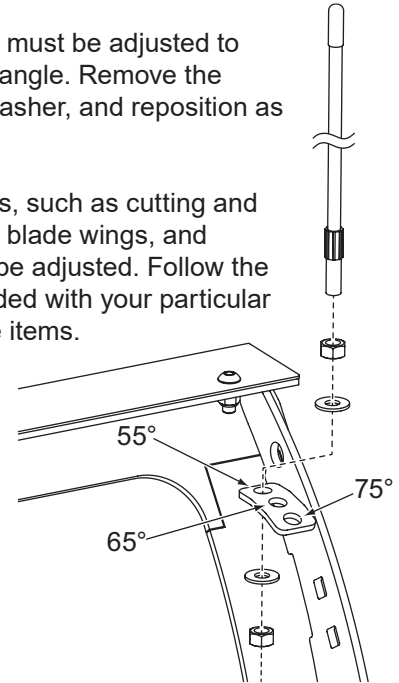
6. A special spring removal tool (20043-1) must be used to safely make this adjustment. NEVER ATTEMPT SPRING REMOVAL WITHOUT THE SPECIAL TOOL. Follow the instructions in the spring tool kit for proper tool usage.

NOTE: If the springs are not adjusted to match the attack angle setting, blade damage may occur.

Accessories Adjustment

The blade guides must be adjusted to match the attack angle. Remove the bottom nut and washer, and reposition as shown.

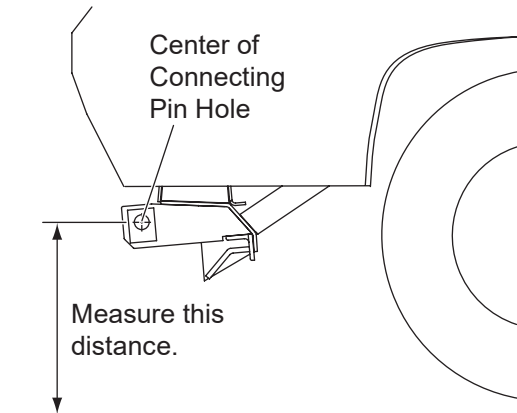
Other accessories, such as cutting and back drag edges, blade wings, and shoes must also be adjusted. Follow the instructions included with your particular kit to adjust these items.



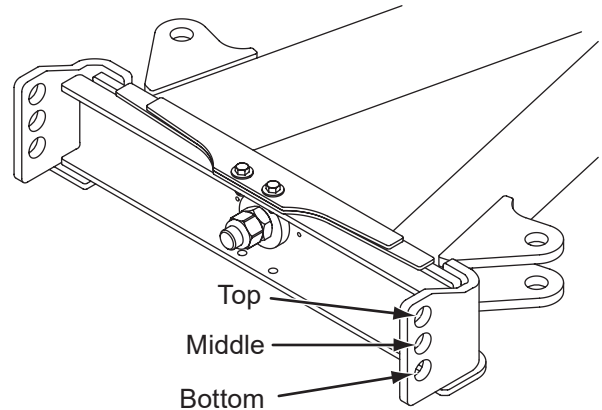
MAINTENANCE

LEVELING THE HDX™ OR HD2™ A-FRAME

After adjusting the attack angle, it might be necessary to level the A-frame. Measure the distance from the center of the connecting pin hole to the ground.



Find the appropriate range for your attack angle setting, and verify that the headgear is connected to the corresponding A-frame hole.



HD2 Snowplow		
Mount Height (in)	Mount Height (cm)	A-Frame Hole
15.85–17.35	40.26–44.07	Top
14.35–15.85	36.45–40.26	Middle
12.85–14.35	32.64–36.45	Bottom

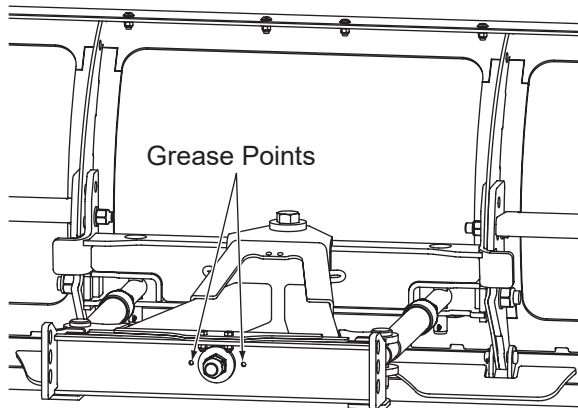
MAINTENANCE

HDX™ Snowplow			
Attack Angle	Mount Height (in)	Mount Height (cm)	A-Frame Hole
75°	16.75–18.25	42.54–46.36	Top
	15.25–16.75	38.74–42.54	Middle
	13.75–15.25	34.92–38.74	Bottom
65°	15.75–17.25	40.00–43.82	Top
	14.25–15.75	36.20–40.00	Middle
	12.75–14.25	32.39–36.20	Bottom
55°	13.95–15.45	35.43–39.24	Top
	12.45–13.95	31.62–35.43	Middle
	10.95–12.45	27.81–31.62	Bottom

If your truck's mount height falls outside of the ranges listed above, the specified attack angle cannot be achieved with your vehicle.

GREASING HDX PIVOT BEAM

1. Using a rubber-tipped seal-off coupler, apply good quality multipurpose grease through the two grease points in the rear of the pivot beam.



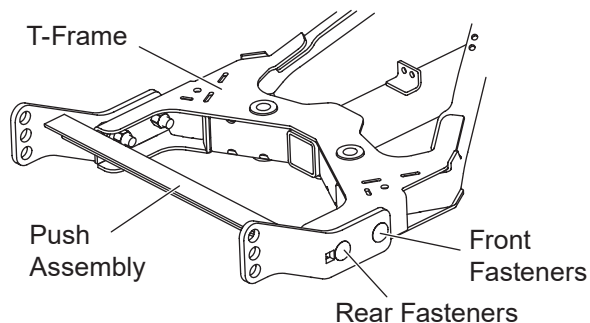
2. Grease the pivot beam at the beginning of the snowplow season. Reapply as needed during the season and before putting the snowplow in storage.

MAINTENANCE

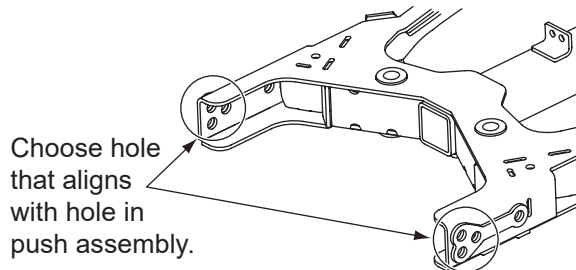
XtremeV™ & XV2™ CUTTING EDGE WEAR AND LEVELING ADJUSTMENT PROCEDURE

Once the snowplow has been installed on the vehicle in the correct configuration, a fine adjustment can be done to bring the blade cutting edges into full contact with the ground. Make further adjustments as the cutting edges wear in order to ensure good scraping action.

1. The snowplow must be installed in the correct configuration on a properly ballasted vehicle. Vehicle and snowplow must be parked on a level surface.
2. Place the blade wings in the scoop position on the ground with no tension on the lift chain.
3. Remove the rear push assembly to T-frame fasteners. Loosen the front fasteners and allow the blade to find a level position.



4. Select the hole in the rear of the T-frame that is best aligned with the rear hole in the push assembly and reinstall the rear fasteners. Tighten all four fasteners to 250 ft-lb.



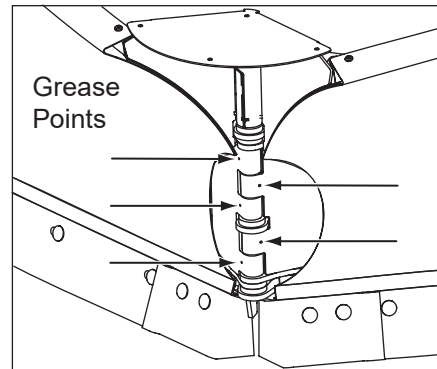
MAINTENANCE

5. Raise and lower the blade several times. The cutting edge should contact the level surface across the full length of the cutting edge.
6. Verify that the cutting edges remain in full contact with the ground while the wings are shifted from the scoop position to a retracted (vee) position.

Complete this procedure as often as required to provide even cutting edge wear. Replace the cutting edge(s) on your XtremeV™ or XV2™ blade when worn to within 1" of the carriage bolts.

GREASING XV2™ PIVOT PIN HINGE

Using a rubber-tipped seal-off coupler, apply a good quality multipurpose grease at the five grease points along the center pivot pin hinge.



Grease the hinge at the beginning of the snowplow season. Reapply as needed during the season and before putting the snowplow in storage.

MAINTENANCE

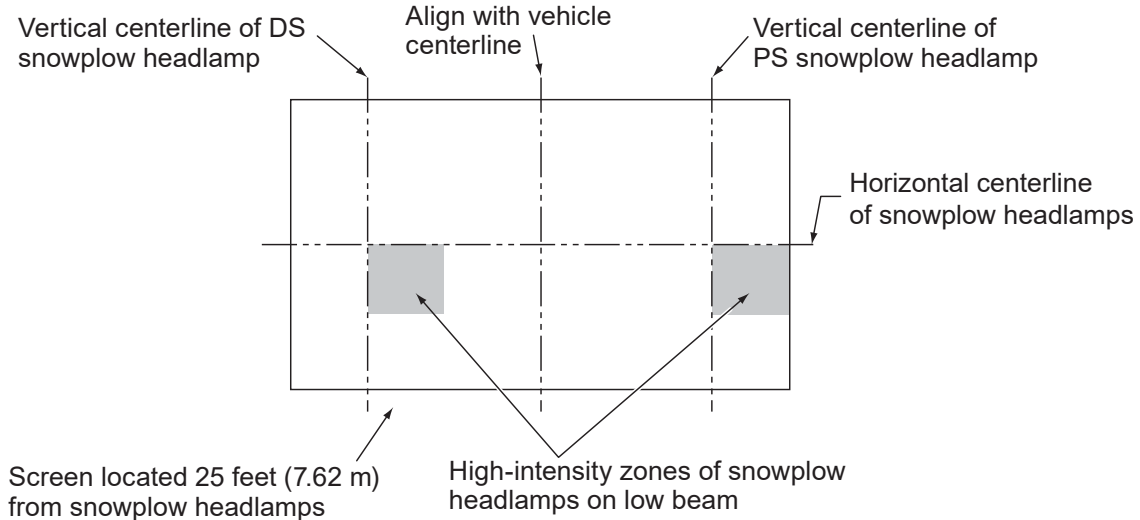
AIMING HEADLAMP BEAMS

Tighten headlamp fasteners to 22 ft-lb or 30 N·m with rubber gasket, once correct visual aim is achieved.

1. Place vehicle on a level surface 25 feet (7.62 m) 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.
 - 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 eMatch selection system.
 - 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.
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 eMatch selection system.
 - 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.

MAINTENANCE

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 the diagram below.)



MAINTENANCE

HYDRAULIC SYSTEM

Fluid Level

⚠ CAUTION

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

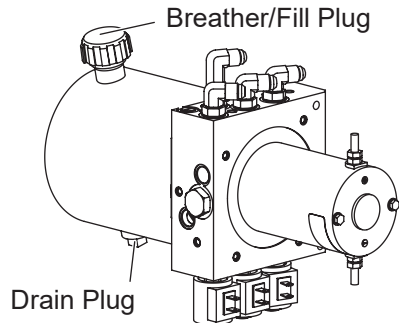
NOTE: On XtremeV™, XV2™, and XLS™ blades, add fluid only when all rams are retracted.

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

1. With the Minute Mount® 2 system attached to the vehicle, activate the control.

2. For straight blades, any angle will do, but for XtremeV, XV2, and XLS blades, move the blade wings to the fully retracted (vee) position.
3. Activate the control FLOAT function and manually collapse the lift ram all the way.
4. Turn the control OFF.
5. Remove the fill plug.

HT Series Blades



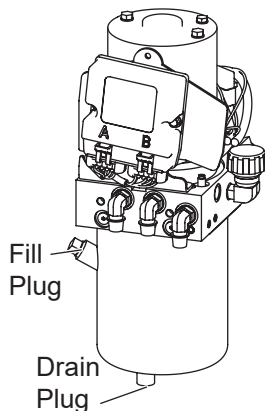
MAINTENANCE

6. **HT Series™ Blades:** Fill the reservoir to within 2½" from the top of the fill hole and replace the fill plug.

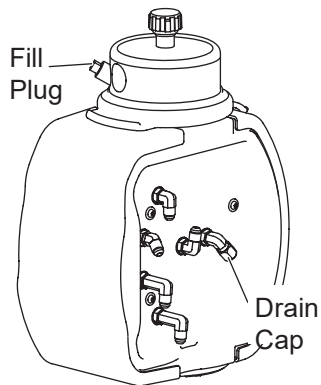
For fluid recommendations see "Annual Fluid Change" in this section.

XtremeV™, XV2™, XLS™, and other Straight Blades: Fill the reservoir to the top of the fill hole and replace the fill plug.

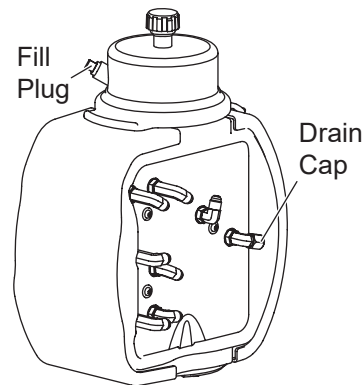
Straight Blades



XtremeV & XV2 Blades



XLS Blades



MAINTENANCE

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-plowing season.

CAUTION

Do not mix different kinds 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. Disable the one-touch FLOAT feature, if enabled. (See "One-Touch FLOAT" in the Operating Your Snowplow section of this manual.)
2. Place a sturdy block under the A-frame/T-frame so the blade will be suspended a few inches off the ground when lowered.
3. Lower the blade until its weight is supported by the block.
4. Activate the control FLOAT function and manually collapse the lift ram all the way. (Not required for HT Series™ blades.) Turn the control OFF.
5. Remove the drain plug in the bottom of the hydraulic reservoir for straight blades, or the drain cap located on the fitting side of the hydraulic unit for XtremeV™, XV2™, and XLS™ blades. (See illustrations on previous page.)

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

MAINTENANCE

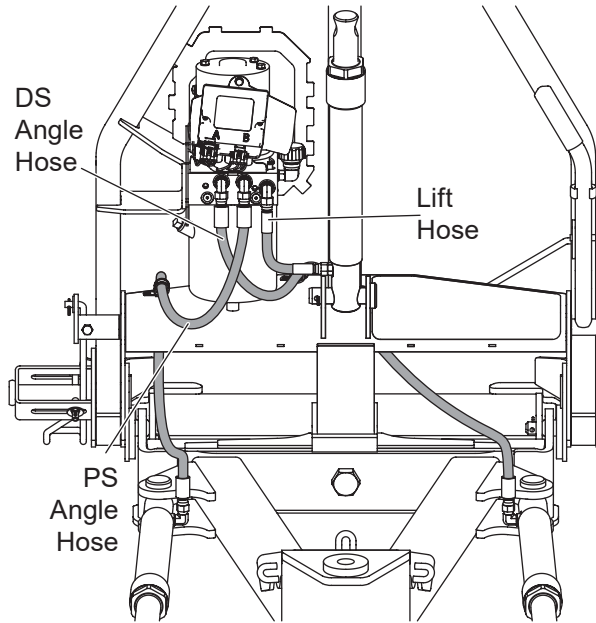
6. Completely drain the reservoir and replace the drain plug/cap.
7. Carefully note hose routings and the positions of any protective hose wraps for proper reassembly.
8. Remove the angle ram hoses from the fittings on the hydraulic unit and place in a drain pan or suitable container. **(See the following illustrations and the "Hose or Fitting Replacement" instructions later in this section.)**
9. Manually angle the blade fully in each direction to remove fluid from the angle rams. Do not allow the hose(s) from the extending ram or the opposite side of the ram (XtremeV™ and XV2™ blades only) to take fluid back in.
10. Reconnect the angle ram hoses to the proper fittings. Reinstall all protective hose wraps in their original positions. **(See the following illustrations for your snowplow type and Hydraulic Hose or Fitting Replacement instructions.)**

WARNING

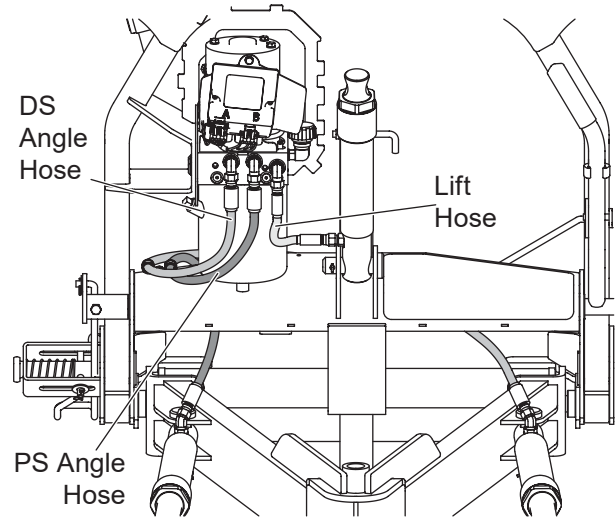
Keep 8' (2.4 m) clear of the blade when it is being raised, lowered, or angled. Do not stand between vehicle and blade or directly in front of the blade. If the blade hits or drops on you, you could be seriously injured.

MAINTENANCE

Hose Routing – HC, HD2™, HDX™, and MC Straight Blades

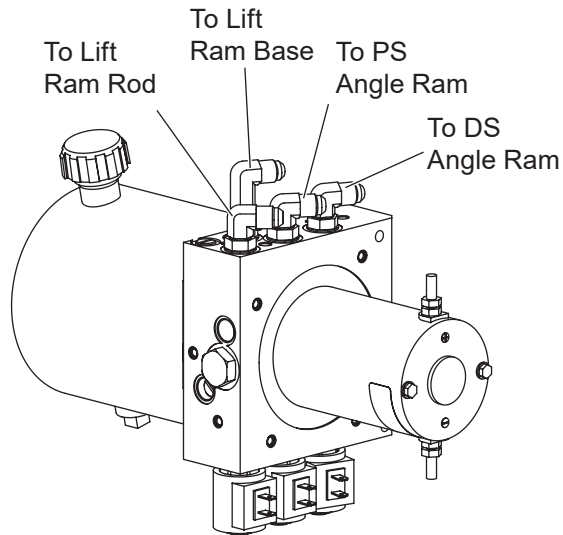


Hose Routing – SD Series Straight Blades

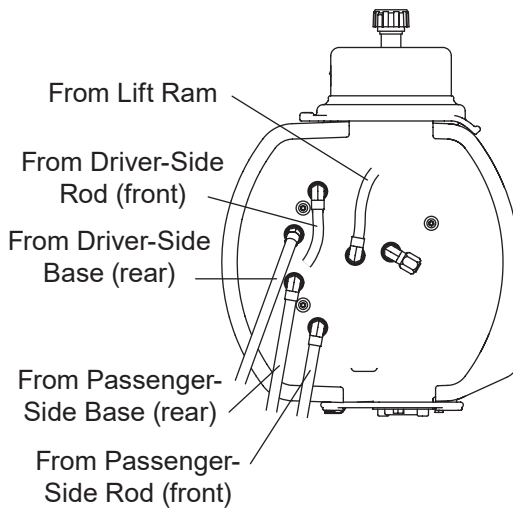


MAINTENANCE

Hose Routing – HT Series™ Straight Blades

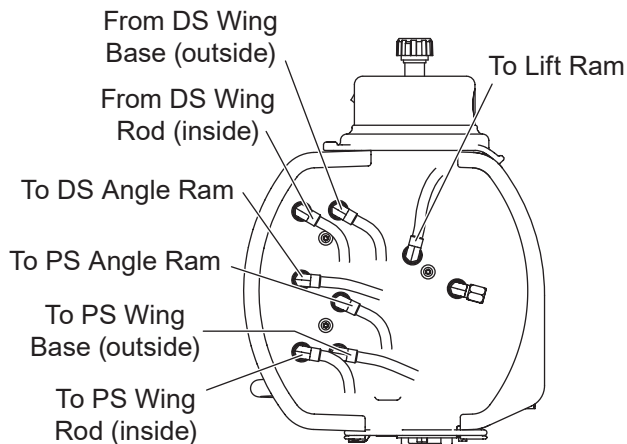


Hose Routing – XtremeV™ and XV2™ Blades



MAINTENANCE

Hose Routing – XLS™ Blades



⚠ CAUTION

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

11. For straight blades, any angle will do, but XtremeV™, XV2™, and XLS blades must be in the fully retracted (vee) position. With the lift ram fully retracted, fill the reservoir with FISHER® EZ Flow hydraulic fluid rated to -40°F (-40°C), or other fluid conforming to Military Specification MIL-H-5606 A, such as Mobil Aero HFA or Shell AeroShell® Fluid 4. Replace the fill plug.

NOTE: On XtremeV, XV2, and XLS blades, add fluid only when all rams are retracted.

AeroShell® is a registered trademark (®) of Shell Oil Company.

MAINTENANCE

Air Removal – HT Series™ and Straight Blades

12. Turn the control ON and completely angle the blade to the left and right several times. Turn the control OFF.
13. Fill the reservoir to the top of the fill hole and replace the fill plug.

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

14. Turn the control ON and raise and lower the snowplow several times. Activate the control FLOAT function and manually collapse the lift ram all the way (not required for HT Series blades) after each lowering of the blade. Turn the control OFF.

15. **HT Series Blades:** Fill the reservoir to within 2½" (6 cm) from the top of the fill hole and replace the fill plug.

All Other Straight Blades: Fill the reservoir to the top of the fill hole and replace the fill plug.

WARNING

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

MAINTENANCE

Air Removal – XtremeV™ and XV2™ Blades

11. Turn the control ON and completely extend and retract the driver-side wing several times. With all rams fully retracted, turn the control OFF.
12. Fill the reservoir to the top of the fill hole and replace the fill plug.
13. Repeat Steps 11 and 12 for the passenger-side wing.
14. Turn the control ON and raise and lower the snowplow several times. Activate the control FLOAT function and manually collapse the lift ram all the way after each lowering of the blade. With all rams fully retracted, turn the control OFF.
15. Fill the reservoir to the top of the fill hole and replace the fill plug.

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

WARNING

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

MAINTENANCE

Air Removal – XLS™ Blades

11. Turn the control ON and completely extend and retract the driver-side wing several times. Repeat for the passenger-side wing. With the wing and lift rams fully retracted, turn the control OFF.
12. Fill the reservoir to the top of the fill hole and replace the fill plug.

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

13. Turn the control ON. Angle the blade fully left and right and raise and lower the snowplow several times. Activate the control FLOAT function and manually collapse the lift ram all the way after each lowering of the blade. With all rams fully retracted, turn the control OFF.
14. Fill the reservoir to the top of the fill hole and replace the fill plug.

WARNING

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

MAINTENANCE

Hose or Fitting Replacement

⚠ WARNING

Lower the blade when the vehicle is parked. Keep 8' (2.4 m) clear of the blade. 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.

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

1. Lower the snowplow completely and turn the control OFF.

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

2. Carefully note hose routings and the positions of any protective hose wraps for proper reassembly.
3. Loosen hoses or fittings slowly to relieve any residual pressure.
4. To remove a hose, loosen and unscrew the hose flare nut from the fitting.
5. To remove a fitting, loosen the jam nut and unscrew the fitting from the port.

MAINTENANCE

Installing Hydraulic Fittings and Hoses

NOTE: Overtorquing 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.

Installing SAE O-Ring Fittings in Valve Block and Rams

1. Turn the jam nut on the fitting as far back as possible.
2. Lubricate the O-ring with clean hydraulic fluid.

3. Screw the fitting into the port by hand until the washer contacts the port face and shoulder of the jam nut threads.
4. Unscrew the fitting to the proper position no more than one full turn.
5. Using two wrenches, hold the fitting body in position and tighten the jam nut until the washer again contacts the port face, then tighten an additional $\frac{1}{8}$ – $\frac{1}{4}$ turn to lock the fitting in place. Final torque on the jam nut should be approximately 20 ft-lb.

MAINTENANCE

Installing Hydraulic Hoses

1. Screw the flare nut onto the fitting flare and hand tighten.
2. Align the hose so there are no twists or sharp bends and so it will not be pinched or pulled by moving parts.
3. Using a pair of adjustable pliers, hold the hose in position and use a wrench to tighten the flare nut $\frac{1}{8}$ – $\frac{1}{4}$ turn beyond hand tight. Final torque on the flare nut should be approximately 20 ft-lb.
4. Reinstall any protective hose wraps in their original positions.

FUSE REPLACEMENT

The vehicle electrical system contains several automotive-style fuses. The snowplow park/turn and control power is covered by fuses in the under hood snowplow wiring. The control fuse is "hot" when the vehicle ignition switch is ON and the electrical connections to the snowplow are completed.

The XtremeV™ and XV2™ hydraulic unit harness system contains four automotive-style mini fuses. The 3-solenoid harness (to port B on the hydraulic unit module) and 8-solenoid harness (to port C) each contain two 4A mini fuses.

The XLS™ hydraulic unit harness system contains four automotive-style mini fuses. The 2-solenoid harness (to port B on the hydraulic unit module) and 6-solenoid harness (to port C) each contain two 4A mini fuses.

MAINTENANCE

The straight blade and HT Series™ hydraulic unit harness systems each contain two 4A automotive-style mini fuses in the 3-solenoid harness (to port B on the hydraulic unit module).

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.

SNOWPLOW VEHICLE BATTERY BEST PRACTICES

- Keep all battery connections tight and clean. Poor connections cause higher power consumption.
- Before the snow season, confirm that the battery is fully charged: 12.7V to 12.8V with the engine OFF. Beginning the plowing season with a weak battery results in deep-cycle depletion of the battery charge.

- If the battery charge level is low or questionable, hook up a battery charger when the vehicle is not in use. If the battery cannot achieve or maintain a full charge, replace it. (On dual-battery vehicles, always replace both batteries even if only one of them is bad.)
- Avoid leaving the snowplow vehicle parked (unused) for 3 weeks or longer.
- Parking a vehicle with the battery in a discharged state can result in permanent battery damage.
- Avoid operating the snowplow without the vehicle engine running.

VEHICLE

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

MAINTENANCE

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. The balance of the parts made of plastic shall be disposed of in a customary manner.

EMERGENCY PARTS/TOOLS

- 10" (25 cm) adjustable wrenches (2)
- Medium flat blade screwdriver
- Common pliers
- #20 & #30 TORX® drivers
- Automotive-style fuses (See previous page for correct fuse ratings for your snowplow.)
- 4A automotive-style mini fuses
- Funnel
- 12V DC test light
- Flashlight
- 1/8" & 3/16" Allen wrenches
- 1/4" ratchet, 6" (15 cm) extension, 1/4" & 5/16" sockets
- Electrical tape
- Small pencil magnet
- 1 quart (0.95 L) FISHER® EZ Flow hydraulic fluid

TORX® is a registered (®) trademark of Textron, Inc.

TROUBLESHOOTING

If you have followed all of the guidelines in the Maintenance section of this manual and cannot resolve issues with the operation of your FISHER® snowplow, contact one of our authorized outlets for repair information, or visit us online at www.fisherplows.com. Our website has a complete listing of authorized outlets in your area as well as a complete library of Parts Lists, Mechanic's Guides, and service information to assist the qualified mechanic with repair.

Fisher Engineering does not recommend repairs by other than our factory-trained outlets. Failure to use an authorized outlet could affect the warranty coverage on your snowplow.

SPECIFICATIONS & ACCESSORIES

Weights: Off-Truck Assembly with Blade							
Size	Blade Assembly	Wt (lb)	Wt (kg)	Size	Blade Assembly	Wt (lb)	Wt (kg)
7'6"	HT Series™ Snowplow (MS)	412	187	9'6"	XV2 Snowplow	1042	473
6'9"	SD Snowplow (MS)	470	213	7'6"	XtremeV™ Snowplow	847	384
7'6"	SD Snowplow (MS)	485	220	8'6"	XtremeV Snowplow	897	407
7'6"	HD2™ Snowplow (MS)	684	310	9'6"	XtremeV Snowplow	1011	458
8'	HD2 Snowplow (MS)	734	333	8'-10'	XLS™* Snowplow	983	446
8'6"	HD2 Snowplow (MS)	750	340	8'-10'	XLS‡ Snowplow	1107	502
9'	HD2 Snowplow (MS)	770	349	8'6"-11'	XLS Snowplow	1140	517
8'	HDX™ Snowplow (SS)	859	390	9'	MC Snowplow (MS)	1172	532
9'	HDX Snowplow (SS)	900	408	10'	MC Snowplow (MS)	1306	592
7'6"	XV2™ Snowplow	912	413	9'	HC Snowplow	1100	499
8'6"	XV2 Snowplow	955	433	10'	HC Snowplow	1187	538
MS = Mild Steel				SS = Stainless Steel			

* Snowplows with serial numbers beginning with 180209 and lower.

‡ Snowplows with serial numbers beginning with 180210 and higher.

SPECIFICATIONS & ACCESSORIES

Snowplow	HT Series™	SD Series	HD2™	HDX™	HC Series	MC Series
Vehicle	½-Ton 4WD	½-Ton 4WD, SUV	Midsize, ½-Ton, ¾-Ton, 1-Ton, 4WD, SUV, Super-Duty	¾-Ton, 1-Ton, 4WD, Super-Duty	17,000–27,500 GVW	17,000–27,500 GVW
Blade Widths	7'6" (2.29 m)	6'9" (2.06 m) 7'6" (2.29 m)	7'6" (2.29 m) 8' (2.44 m) 8'6" (2.59 m) 9' (2.74 m)	8' (2.44 m) 9' (2.74 m)	9' (2.74 m) 10' (3.05 m)	9' (2.74 m) 10' (3.05 m)
Cutting Edge/ Curb Guards	–	–	–	–	Standard	–
Accessories						
Cutting Edges	⅜" Steel ½" Steel 1" Poly	1" Poly	⅝" (1.6 cm) Steel, Carbide, Poly, Rubber	⅝" (1.6 cm) Steel, Carbide, Poly, Rubber	–	Center-punched, Reversible
Deflector	Rubber	–	Rubber or Steel	Rubber or Steel	Rubber	Rubber
SnoFoil® Assembly	✓	–	✓	✓	✓	✓
Curb Guards	✓	✓	✓	✓	–	–
Anti-Wear Shoes	✓	✓	✓	✓	✓	–
Commercial Blade Guides	–	–	✓	✓	–	–
Blade Wing Kit	–	–	✓	✓	–	–
Back Drag Edges	–	–	✓	✓	–	–

SPECIFICATIONS & ACCESSORIES

Snowplow	XtremeV™ Series	XV2™	XLS™
Blade Widths	7'6" (2.29 m) 8'6" (2.59 m) 9'6" (2.9 m)	7'6" (2.29 m) 8'6" (2.59 m) 9'6" (2.9 m)	8' (2.44 m) retracted; to 10' (3.05 m) expanded straight blade; 9' (2.74 m) scoop
Cutting Edges	Standard	Standard	
Accessories			
Cutting Edges	–	–	–
Deflector	Rubber	Rubber	–
Curb Guards	–	–	–
Anti-Wear Shoes	–	–	✓
Wing Extensions	✓	✓	–
Back Drag Edge	✓	✓	–

SPECIFICATIONS & ACCESSORIES

HYDRAULIC UNITS: PUMP MOTOR SPECIFICATIONS

BLADE	Straight Blades	HT Series™	XtremeV™ & XV2™	XLS™
Insta-Act® Unit Reservoir	1¼ qt (1.66 L)			
Insta-Act System Total	2¾ to 2¾ qt (2.25 L to 2.6 L)			
Pump Motor	12V DC with ± Connection			
Pump Relief Valve	2200–2300 psi	1600–1700 psi	2200–2300 psi	2200–2300 psi
Angling Relief Valve	4000 psi	4000 psi	–	–
Plowing Relief Valve	–	–	4550–4650 psi	4000 psi
Back Dragging Relief Valve	–	–	3650–3750 psi	–
Wing Plowing Relief Valves	–	–	–	2200 & 2400 psi
Motor Diameter	4.5" (11.4 cm)	3" (8 cm)	4.5" (11.4 cm)	4.5" (11.4 cm)
Motor	1.5 kW	0.8 kW	1.5 kW	1.5 kW
Pump (gal/rev)	0.000477	0.000477	0.000652	0.000652
Hydraulic Hose	¼ SAE 100R1 ⅜ SAE 100R17	SAE 100R1	¼ SAE 100R1 ⅜ SAE 100R17	¼ SAE 100R1 ⅜ SAE 100R17
Raise	3 seconds	4 seconds	2 seconds	2 seconds
Angle Side-to-Side	6 seconds	3 seconds	2 seconds	2 seconds
Wing Extends	–	–	–	2 seconds
Wing Retracts	–	–	–	2 seconds
Both Wings Extend	–	–	–	4 seconds
Both Wings Retract	–	–	–	3 seconds
Scrape Lock Feature	–	✓	–	–



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This product conforms to EU Machinery Directive 2006/42/EC and Directive 2011/65/EC (RoHS2).



This product conforms to UK Supply of Machinery (Safety) Regulations 2008 and 2012 (RoHS2).

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