Fisher Engineering

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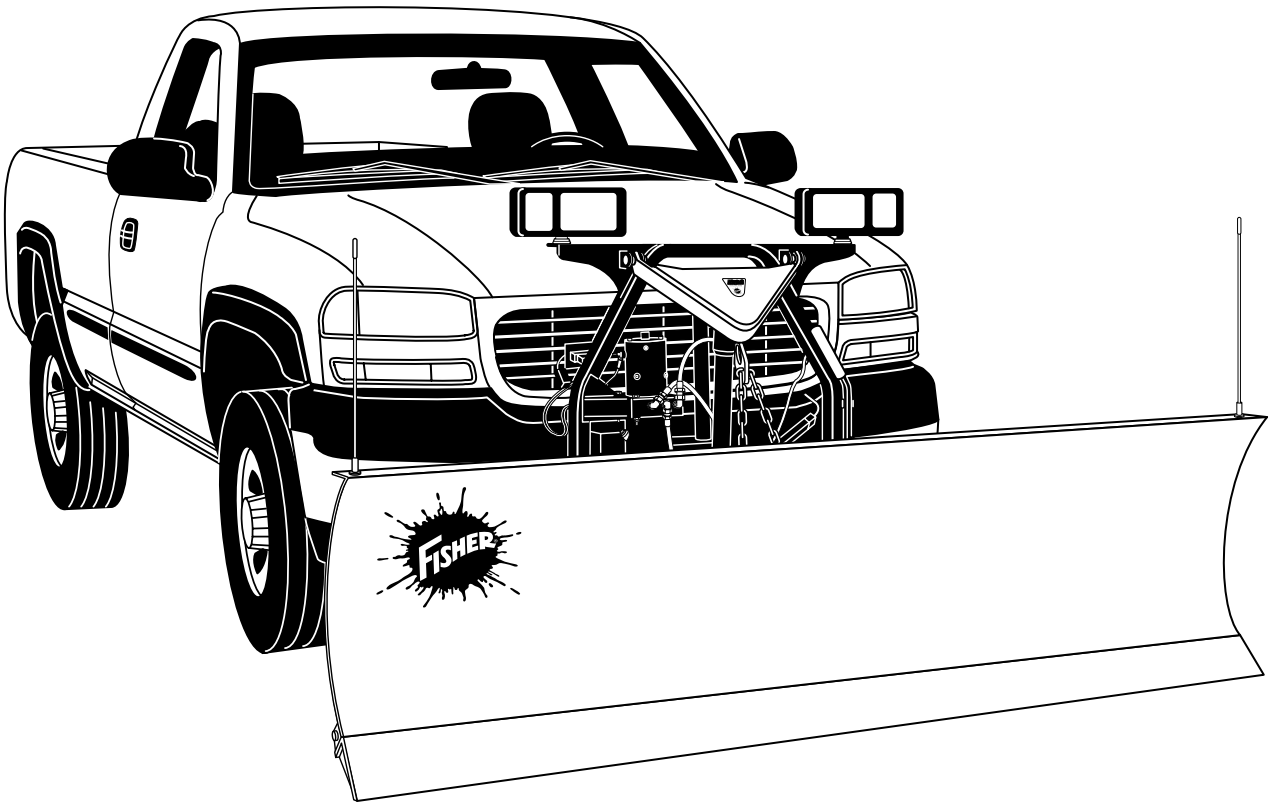
Lit. No. 26982

Minute Mount® 2 SYSTEM

Owner's Manual



⚠ CAUTION

Read this manual before operating or servicing snowplow.

This document supercedes all editions with an earlier date.

SNOWPLOW OWNER'S DATA SHEET

Owner's Name: _____

Date Purchased: _____

Outlet Name: _____ Phone: _____

Outlet Address: _____

Vehicle Model/Year: _____

Plow Model/Year*: _____

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

Ballast: No___ Yes___ Amount _____lbs/kg

Insta-Act® Hydraulic Power Unit Serial Number: _____

Blade Serial Number (located above installation label) _____

* The year of manufacture is found on the blade size label. The six-character code shows the last digit of the year of manufacture as fifth character.

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 your vehicle is equipped with all the vehicle manufacturer's and our required options for snowplowing. 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 previous page so that you can refer to it when necessary.

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.

Table of Contents

SAFETY INFORMATION

Read these instructions and labels on the snowplow before beginning installation.

⚠WARNING

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

⚠CAUTION

Indicates a potentially hazardous situation that may result in minor or moderate injury and/or property damage if not avoided.

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

WARNING/CAUTION & INSTRUCTION LABELS

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

Warning/Caution Label

⚠ WARNING

LOWER BLADE WHEN VEHICLE IS PARKED.

REMOVE BLADE ASSEMBLY BEFORE PLACING VEHICLE ON HOIST.

DO NOT EXCEED GVWR OR GAWR INCLUDING BLADE AND BALLAST.

⚠CAUTION

READ *OWNER'S MANUAL* BEFORE OPERATING OR SERVICING SNOWPLOW.

TRANSPORT SPEED SHOULD NOT EXCEED 45 MPH. REDUCE SPEED UNDER ADVERSE TRAVEL CONDITIONS.

PLOWING SPEED SHOULD NOT EXCEED 10 MPH.

REMOVE SLACK FROM CARRYING CHAIN BEFORE TRAVELING.

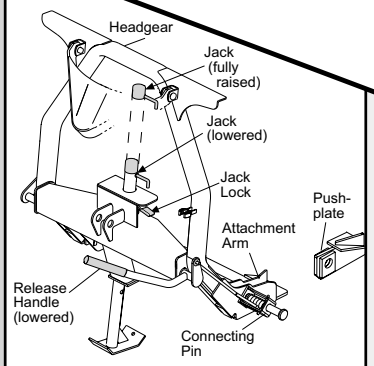
SEE YOUR FISHER OUTLET FOR APPLICATION RECOMMENDATIONS.

21793

Instruction Label

ATTACH

1. Verify that release handle is lowered. Fully engage vehicle pushplates into attachment arms.
2. Raise release handle, push headgear toward vehicle. Verify connecting pins have engaged pushplates.
3. Push down on jack lock while fully raising jack handle. Verify jack retaining pin is engaged.
4. Attach all electrical connectors.



DETACH

1. Place control in lower/float position.
2. Push headgear toward vehicle while lowering release handle.
3. Detach all electrical connectors.

Minute Mount 2 SYSTEM

US Patents 4,280,062, 4,999,935, 5,353,530, 5,420,480, RE 35,700 and other patents pending

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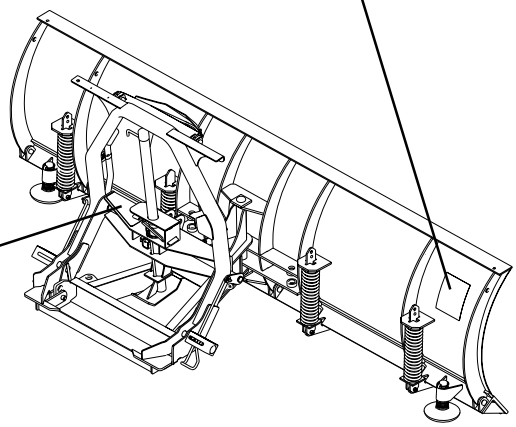


SAFETY PRECAUTIONS

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

⚠ WARNING

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

⚠ WARNING

Remove blade assembly before placing vehicle on hoist.

⚠ WARNING

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

⚠ CAUTION

Read Owner's Manual before operating or servicing snowplow.

⚠ CAUTION

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

⚠ CAUTION

Plowing speed should not exceed 10 mph.

⚠ CAUTION

See your FISHER® outlet for application recommendations.

PERSONAL SAFETY

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

FIRE AND EXPLOSION

⚠ WARNING

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

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

VENTILATION

⚠ WARNING

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

HYDRAULIC SAFETY

⚠ WARNING

Hydraulic oil under pressure can cause skin injection injury. If you are injured by hydraulic oil, get medical attention immediately.

- Always inspect hydraulic components and hoses before using. Replace any damaged or worn parts immediately.
- If you suspect a hose leak, DO NOT use your hand to locate it. Use a piece of cardboard or wood.

BATTERY SAFETY

⚠ CAUTION

Batteries normally produce explosive gases which can cause personal injury. Therefore, do not allow flames, sparks or lit tobacco to come near the battery. When charging or working near a battery, always cover your face and protect your eyes, and also provide ventilation.

Batteries contain sulfuric acid which burns skin, eyes and clothing.

Disconnect the battery before removing or replacing any electrical components.

FUSES

NOTE: The FISHER® vehicle control harness contains two automotive-style fuses. One fuse is for the snowplow park/turn lamp power and the other is for the snowplow control power. If a problem should occur and fuse replacement is necessary, the replacement fuse should be of the same value as the original. Installing a fuse of a larger value could damage the system.

NOISE

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

⚠ CAUTION

See your FISHER® outlet for application recommendations.

Vehicle application recommendations are based on the following:

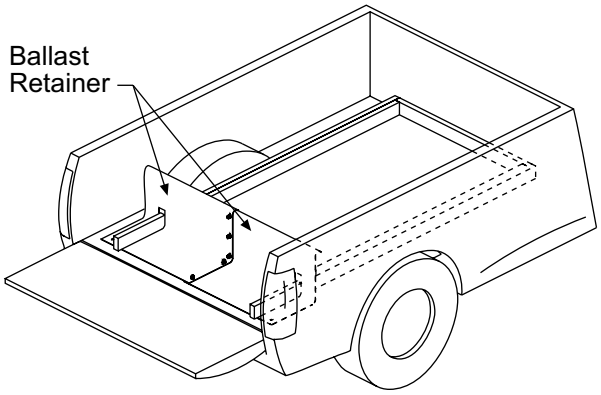
- The vehicle with the snowplow installed must comply with applicable Federal Motor Vehicle Safety Standards (FMVSS).
- The vehicle with the snowplow installed must comply with the vehicle manufacturer's stated gross vehicle and axle weight ratings (found on the driver-side door cornerpost of the vehicle) and the front and rear weight distribution ratio. Rear ballast may be required to comply with these requirements.
- FISHER® *Kit Selection Guide* is based on the available vehicle capacity for snowplow equipment using a representative vehicle equipped with options commonly used for plowing and with 300 lbs. of front seat occupant weight. The weight of front seat occupant can be adjusted above or below 300 lbs. but vehicle with plow must not exceed vehicle GVWR or GAWR.
- Additional limitations and requirements, such as special vehicle options and recommendations or airbags/lift kits may apply.
- 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 and/or snowplow accessories are installed.
- If there is uncertainty as to whether available capacity exists, the actual vehicle as configured must be weighed.

BALLAST REQUIREMENTS

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

If ballast is required, it is important that it be secured properly behind the rear axle. A ballast retainer kit is available.

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.



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 is twice the mount because it takes half the time.* The Minute Mount 2 System should be installed according to instructions supplied. FISHER® outlets are trained to perform this service and other services for this 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 lights every time you remove the plow, you eliminate over 100 lbs. 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.

BLADES

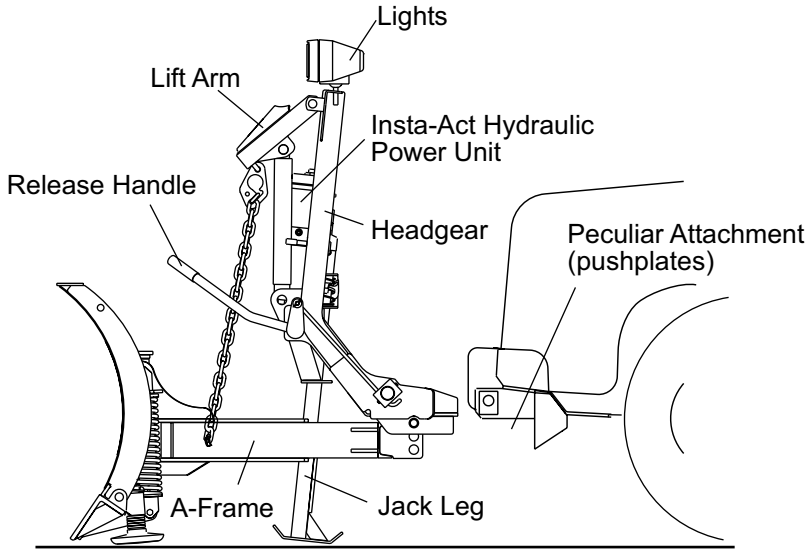
The FISHER® snowplow incorporates a trip-edge design. When the blade strikes an obstacle, the lower edge trips back, compressing the springs on the back side of the blade. When the obstacle is cleared, spring tension is released and the edge is returned to its normal plowing position. Because the blade itself remains upright, plowed snow out in front of the blade stays put. A rigid blade allows you to plow and stack more snow quickly and easily!

RD Series

Available in a 7-1/2' width, the FISHER RD Series snowplow is designed for mid-size and 1/2-ton four-wheel-drive trucks, as well as full-size sport-utility vehicles. This snowplow is ideal for homeowners, small businesses, and light commercial plowing. Steel Cutting Edge, SnoFoil® Assembly, and Deflectors (steel and rubber) are sold separately.

HD Series

These popular 8', 8-1/2' and 9' snowplows are the choice of the plowing professional. Built for the business of snowplowing, these rugged plows will withstand the rigors of any and all commercial applications. Designed for 3/4-ton and 1-ton 4x4 trucks, as well as today's new "Super-Duty" vehicles. Steel Cutting Edge, SnoFoil® Assembly, and Deflectors (steel and rubber) are sold separately.



COMMON ATTACHMENT KIT

The common attachment kit is composed of the A-frame and the headgear kit.

A-Frame

The A-frame is attached to the blade assembly with a centered pivot pin. The pivot pin allows the blade assembly to angle left or right 28 degrees, providing excellent snow displacement. The heavy 1" pivot pin is shear-proof under normal operation, assuring a solid connection.

Headgear Kit

The headgear kit is composed of the headgear, linkage mechanism, lift arm, and jack leg. 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 Power Unit and the lift arm. The lift cylinder raises and lowers the blade by moving the lift arm and lift chain. The jack leg, when lowered, supports the snowplow during and after its removal from the vehicle.

PECULIAR ATTACHMENT KIT

Fisher Engineering has designed a peculiar (custom) attachment kit for most vehicles. Due to the differences between vehicle models, the kits are not interchangeable.

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

SNOWPLOW LIGHTS

⚠ WARNING

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

The snowplow lights include a set of rectangular, dual-beam halogen headlamps with combination park and turn signals. They come prewired with a plug-in harness. These lights conform to Federal Motor Vehicle Safety Standards (FMVSS).

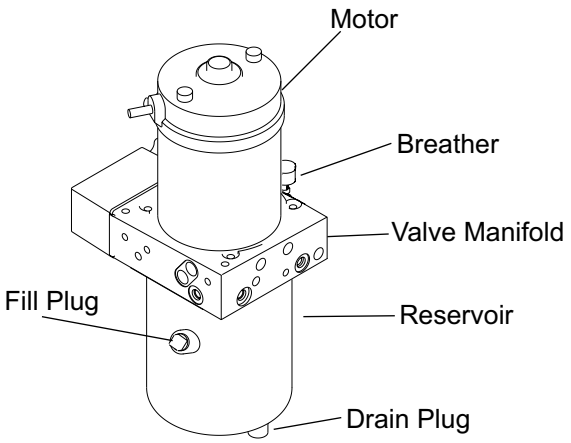
When electrical plugs are **connected** during snowplow mounting, the vehicle headlamps, when turned on, automatically switch to the snowplow headlamps. When the electrical plugs are **disconnected** during snowplow removal, the snowplow headlamps automatically switch back to the vehicle headlamps.

INSTA-ACT® HYDRAULIC POWER UNIT

The Insta-Act Hydraulic Power Unit delivers a fast and uniform speed for lifting and angling. It raises the blade in approximately 3 seconds and angles side to side in approximately 6 seconds.

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

The Insta-Act Hydraulic Power Unit's valve manifold includes two cushion 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 cylinder to exceed set limits, the cushion valve opens allowing oil to escape and the cylinder retracts. Oil from the retracting cylinder flows into the opposite angle cylinder as it extends.



Pump Motor Specifications

12 volt DC with +/- connection
1750 psi pump relief valve
4000 psi angling relief valve
4.5” dia. 1.04 kw motor
.000477 GAL/REV Pump
Hydraulic Hose SAE 100R

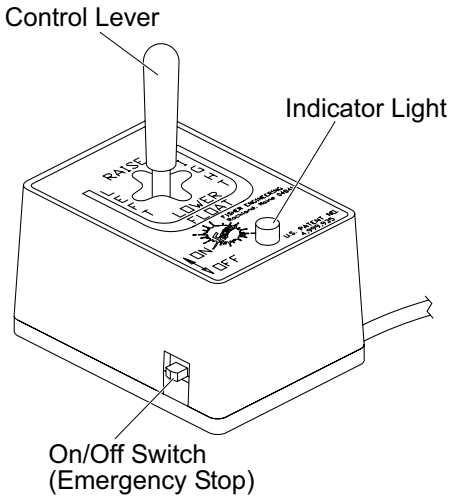
CONTROLS

⚠ WARNING

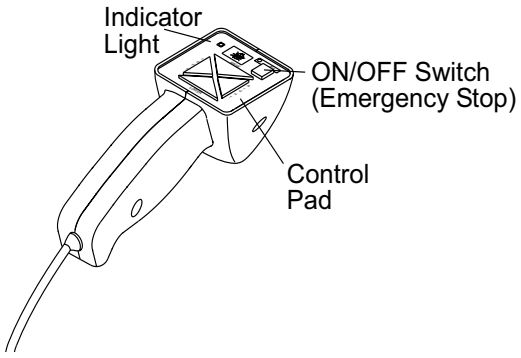
To prevent accidental movement of the blade, always turn the ON/OFF switch to OFF whenever the snowplow is not in use. The control indicator light will turn off.

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

Joystick Solenoid Control



Fish-Stik® Hand-Held Control



SnoFoil® Assembly

A rigid curved extension attached to the top of your snowplow blade deflects light snow away from the windshield. It improves your plowing visibility and efficiency. The SnoFoil Assembly bolts onto your existing blade and is available for 7-1/2', 8', 8-1/2' and 9' blades.

Steel Deflector

Keeps fluffy snow from flowing over the top of the blade. It fits FISHER® RD, and HD Series blades. Easily installed and attractively priced.

Rubber Deflector

Attaches to RD and HD Series blades. The flexible deflector keeps snow from flowing over the top of the blade.

Replaceable Steel Cutting Edge

The cutting edges are made of high carbon steel and bolt onto the base angle for maximum blade life. Cutting edges are available for RD and HD Series blades in 7-1/2', 8', 8-1/2' and 9' sizes. Depending on the blade series, cutting edges are 3/8" or 1/2" thick.

FISHER® High Performance Hydraulic Fluid

Improve the performance of your hydraulic systems, especially in extremely cold weather, with FISHER High Performance Hydraulic Fluid. Special anti-wear and antifoaming additives keep your system running longer and smoother.

Antiwear Shoes

These shoes offer maximum protection against blade wear. The more the blade is used, the more important the shoes become.

Touch-up Paint

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

Minute Mount® System Skid Plates

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

Emergency Parts Tool Box Kit

This tool box contains necessary service parts to make many repairs to your plow, on the spot. Along with these parts the kit contains a knit cap to keep your ears warm while out in the cold and also a quart of FISHER High Performance Hydraulic Fluid.

ATTACHING SNOWPLOW

⚠ WARNING

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

⚠ CAUTION

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

⚠ WARNING

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

NOTE: The blade must be in the straight position when mounting or removing the snowplow.

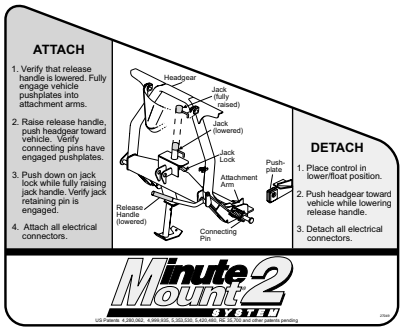
Attaching Steps:

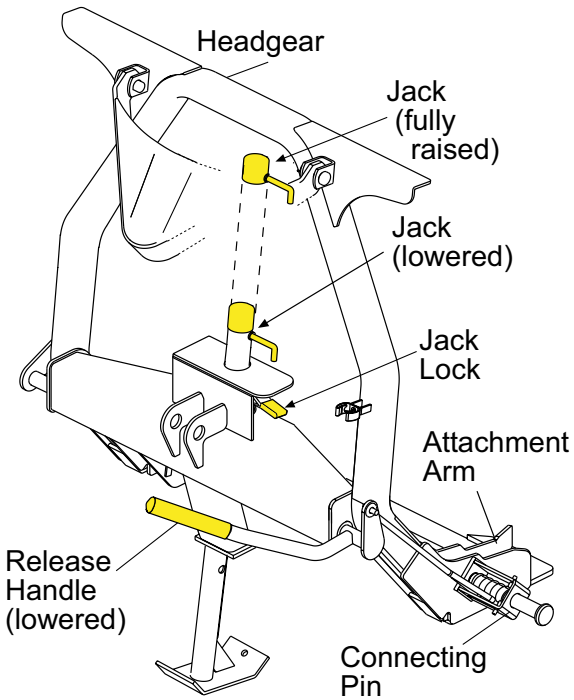
1. Verify that the release handle is lowered, which insures that the connecting pins are fully extracted. Drive the vehicle forward to fully engage the vehicle pushplates into attachment arms of the mount.

2. Raise the release handle, which allows the spring-loaded connecting pins to engage the attaching arms when aligned. Push the headgear toward the vehicle. In doing so, the connecting pins and the pushplate holes align to each other allowing connection. Verify that both the connecting pins have **fully** engaged the pushplate.

3. Push down on the jack lock and **fully** raise the jackleg until you hear the audible click of the retaining pin engaging the jackleg. Push down on the jack leg to confirm the pin engagement.

4. Attach all electrical connectors.





DRIVING AND PLOWING ON SNOW AND ICE

⚠ CAUTION

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

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

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

Here are some tips for driving in these conditions:

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

JOYSTICK SOLENOID CONTROL

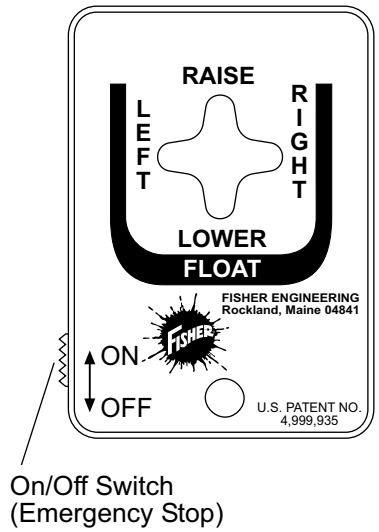
⚠ WARNING

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

⚠ CAUTION

DO NOT hold control lever in RAISE, ANGLE LEFT or ANGLE RIGHT position after blade has reached desired position. To do so will use excess current and overheat components.

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



On/Off Switch
(Emergency Stop)

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

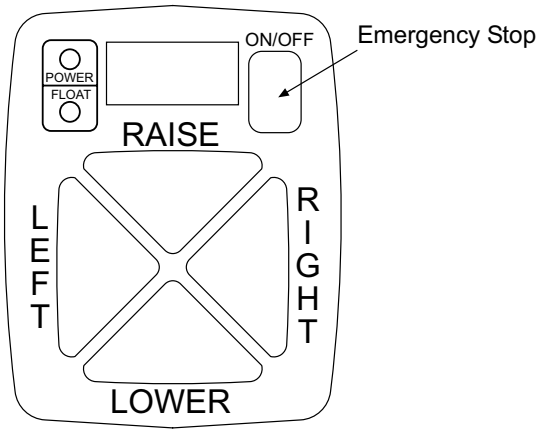
FISH-STIK® HAND-HELD CONTROL

⚠ WARNING

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

⚠ CAUTION

DO NOT hold control lever in RAISE, ANGLE LEFT or ANGLE RIGHT position after blade has reached desired position. To do so will use excess current and overheat components.



1. Turn the vehicle ignition switch to the ON or the ACCESSORY position. The controller logo area illuminates. The ON/OFF switch operates as emergency stop when required.

2. Press the ON/OFF button on the control. The control indicator light glows red indicating the control is on. The control indicator light glows red whenever the control ON/OFF switch and the vehicle ignition switch are both ON.

3. Press the LOWER button for 0.75 seconds to engage the FLOAT mode. The control indicator FLOAT light glows green. Cancel the FLOAT mode by momentarily pressing the RAISE button.

Function Time Outs

All control functions, except for LOWER, automatically time out – stop – after a period of time. This helps prevent unnecessary battery drain. The time-out period for the RAISE function is 4.8 seconds, while the angle function is 9.6 seconds.

The control automatically turns off after being idle for 20 minutes.

Smooth Stop

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

Button	Description of Operation
RIGHT	Press this button to angle blade to the right. NOTE: Plow automatically stops angling after 9.6 seconds.
LEFT	Press this button to angle blade to the left. NOTE: Plow automatically stops angling after 9.6 seconds.
RAISE	Press this button to raise the plow and to cancel the float mode. NOTE: Plow automatically stops raising after 4.8 seconds.
LOWER/ FLOAT	Press this button to lower the plow. NOTE: After reaching the desired height, release the button. Holding the button down for more than 0.75 seconds activates the float mode, indicated by green FLOAT light.
To Cancel Float	Cancel the float mode by pressing the RAISE button, turning control off or turning vehicle ignition off. Angling left or right momentarily cancels float.

LIGHT CHECK

With the plow and vehicle lighting harness plugs connected, check the operation of all vehicle and snowplow lights as follows:

Parking Lights: Both the vehicle and snowplow lights should be on.

Right Turn Signal: Both the vehicle and snowplow signals should be on.

Left Turn Signal: Both the vehicle and snowplow signals should be on.

Headlamps: With the vehicle headlamp switch ON, connecting and disconnecting the lighting harness plugs should switch between the vehicle and snowplow headlamps as follows:

- Plug DISCONNECTED - Vehicle headlamps should be on.
- Plug CONNECTED - Snowplow headlamps should be on.

For proper headlamp adjustment, see your local FISHER® outlet.

PARKING WITH SNOWPLOW ATTACHED

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

⚠WARNING

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

TOWING DISABLED OR IMMOBILE VEHICLES

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

TRANSPORTING SNOWPLOW

⚠WARNING

- **Your vehicle must be equipped with snowplow headlamps and directional signals.**
- **Verify the snowplow and vehicle lights are operating properly before transporting.**
- **Position blade so it does not block headlamp beam.**
- **Do not change blade position while traveling. You could suddenly lower blade accidentally.**

⚠ CAUTION

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

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

1. Completely raise the blade.
2. Place the blade halfway between the fully angled and straight positions. This configuration allows:
   - full headlight illumination
   - ample vehicle cooling
   - ample travel height
3. Turn the control OFF to lock blade in place.
4. Monitor vehicle operating temperature.

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

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

PLOWING SNOW

GENERAL INSTRUCTIONS

⚠ CAUTION

Plowing speed should not exceed 10 mph.

⚠ CAUTION

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

⚠ CAUTION

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

⚠ CAUTION

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

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

1. Before plowing, make sure you know of any obstructions hidden beneath the snow such as: bumper stops in parking lots, curbs, sidewalk, shrubs, fences or pipes sticking up from the ground. If unfamiliar with the area to be plowed, have someone familiar with the area point out obstacles.
2. If possible and you have good visibility, plow during the storm rather than letting snow accumulate.

⚠ CAUTION

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

3. 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.

SPECIAL SNOW CONDITIONS

Hard-packed Snow

1. On blades equipped with a shoe kit, raise the disc 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 lowest gear to place maximum power behind cutting edge.
3. An angled blade is more effective for removing hard-packed snow.

Deep Snow

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

   Rule of thumb:

   6" snow may be plowed with entire blade width;

   9" with 3/4 blade;

   12" with 1/2 blade.

   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.
5. For increased traction use tire chains.

ANTIWEAR SHOE ADJUSTMENT

⚠ CAUTION

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

Adjust the antiwear shoes to provide 1/4" to 1/2" clearance between cutting edge and surface. Place the supplied spacer rings between the shoe bracket and the blade shoe to obtain this clearance. ***DO NOT*** **store unused spacers on top of the shoe holder.**

CLEARING DRIVEWAYS

1. Head into the driveway with the blade angled and plow the snow away from any buildings. Widen driveway by rolling snow away from any buildings.

2. If a building is at the end of the driveway, plow to within a vehicle length of the building. Push as much snow as possible off the driveway.

3. With a raised blade, drive through remaining snow to building. Drop blade and "back-drag" snow away from the building at least one vehicle length. Repeat if necessary.

4. Back vehicle to the building and plow forward, removing the remaining snow from the driveway. Check municipal ordinances for proper disposal of snow.

CLEARING PARKING LOTS

1. Clear areas in front of buildings first. Drive up to the building with the blade raised. Drop the blade and "back-drag" the snow away from building. When snow is away from the buildings, turn the vehicle around and push the snow.

2. Plow a single path down the center going the long direction.

3. Angle the snowplow toward the long sides. Plow successive strips lengthwise until area is cleared and snow is stacked around outer edges.

4. If snow is too deep to clear in above manner, clear main traffic lanes as much as possible.

DETACHING SNOWPLOW

⚠ WARNING

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

⚠ WARNING

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

NOTE: The blade must be in the straight position when mounting or removing the snowplow.

Detaching Steps:

1. Place control in lower/float mode and watch to make sure that the lift arm is fully lowered. The lift arm will automatically lower due to the pulldown mechanism.

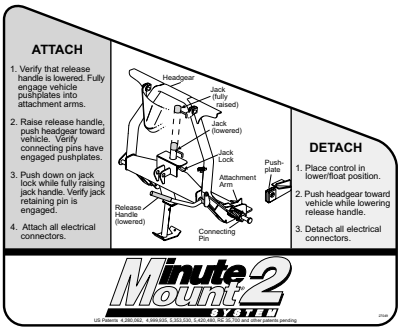
2. Push the headgear towards the vehicle and hold, taking down pressure off of the connecting pins, and pull the release handle towards the blade. Insure that the jackleg has fully dropped before letting go of the headgear. If the headgear is released before the jackleg is in contact with the ground, the mount could possibly move toward the operator. When the release handle is pulled fully toward the blade, the connecting pins will be fully extracted from the vehicle pushplates allowing for removal.

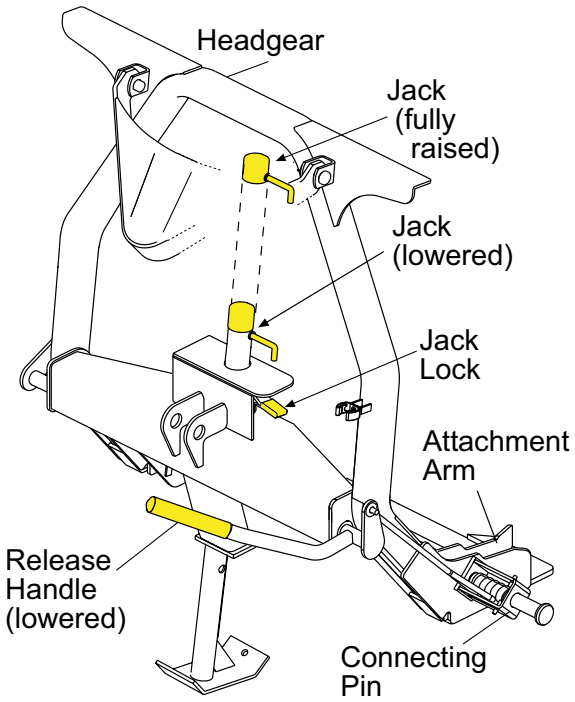
3. Detach electrical connectors.

NOTE: The control can be removed for off-season storage.

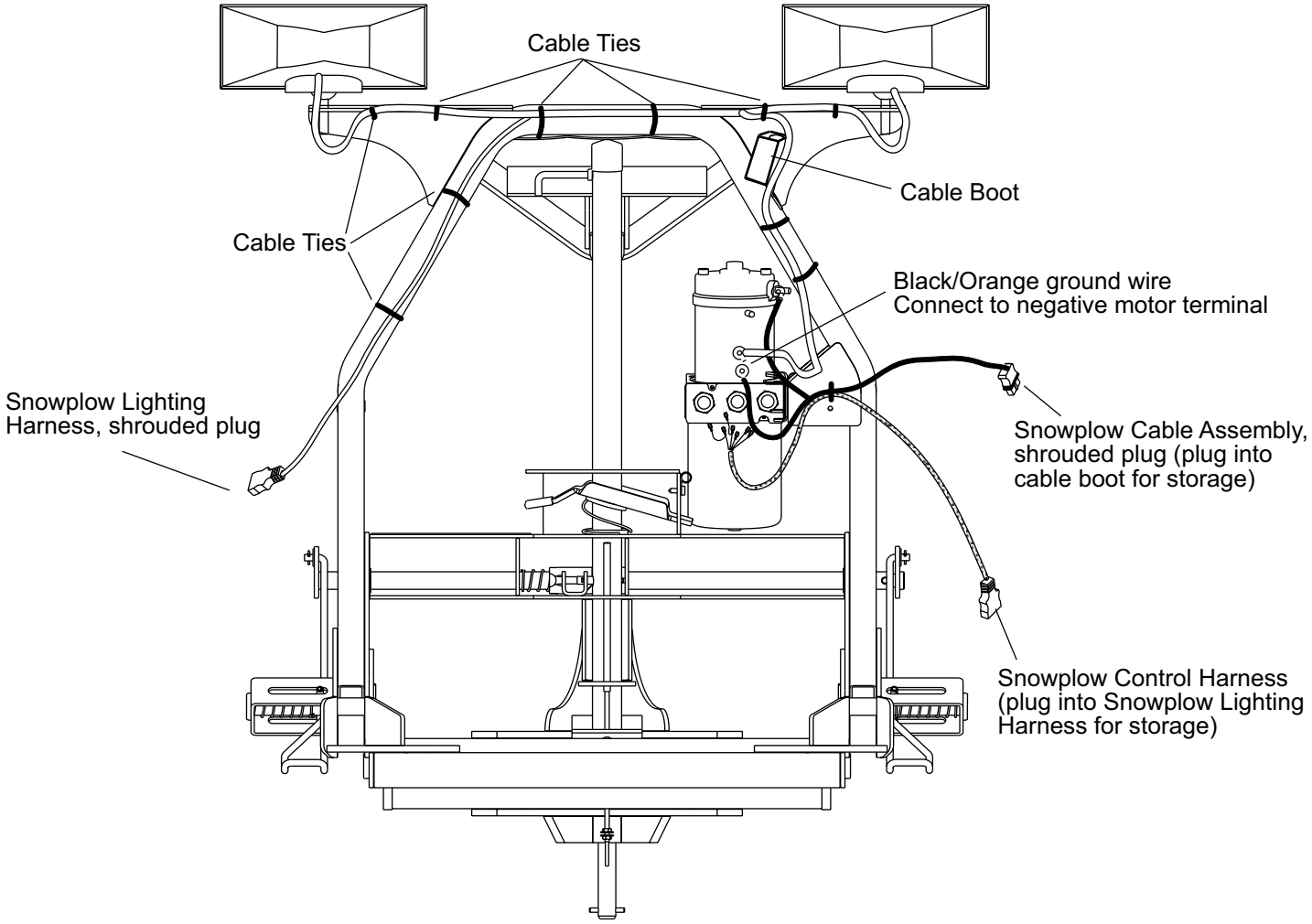
⚠ CAUTION

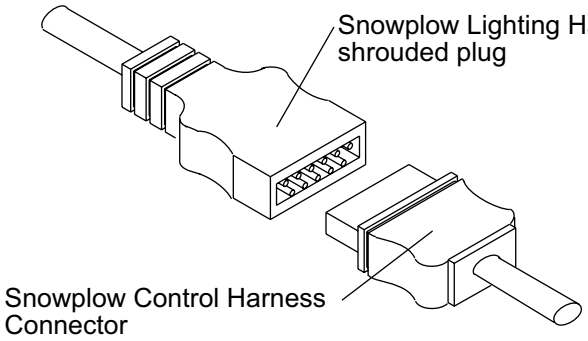
Never use a finger to check an alignment. If the snowplow moves, your finger could be crushed.





ELECTRICAL CABLE ROUTING





REGULAR MAINTENANCE

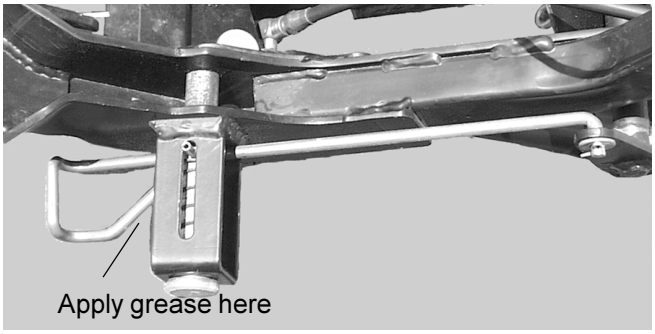
⚠ WARNING

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

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

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

Lubricate all moving parts, especially the connecting pin extractors, for ease of operation. Not doing so will make operation of the mount difficult and possibly damage components.



PRESEASON CHECK

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

- Clean and tighten all electrical connections and coat with dielectric grease to prevent corrosion.
- Check hydraulic system for leaks and cracked or damaged hoses.
- Drain and flush hydraulic system and refill with FISHER® High Performance Hydraulic Fluid.
- Check that the packing nuts on cylinders are "snug".
- Replace worn or defective parts.
- Check all mounting points and tighten fasteners, on both snowplow and vehicle.
- Repaint blade assembly and attachments, as necessary, to protect the metal.
- Install auxiliary and flashing lights for compliance and visibility in accordance with local regulations.
- Check headlamps, auxiliary lights, heater and windshield wipers for proper operation.
- Inspect and test your battery. Recharge or replace as necessary.
- Ballast may be necessary, or beneficial, on some vehicles to provide maximum traction, braking and handling.
- Any ballast material (such as sand and blocks) must be solidly secured to the vehicle preventing it from moving under harsh plowing conditions.

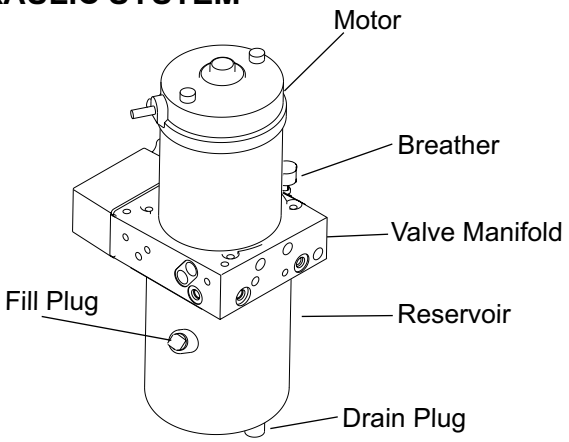
POSTSEASON MAINTENANCE

⚠ CAUTION

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

- Coat all electrical plugs with dielectric grease.
- Clean and paint blade and attachments as needed.
- If the blade is to be left in one location for an extended period of time, place blocks under the cutting edge, shoes and jack leg to eliminate ground contact. This reduces the chance of rust on the lower part of the snowplow.
- Be sure lift cylinder is collapsed so the cylinder rod is not exposed.
- Coat angle cylinder rods with waterproof grease.
- Lubricate all pivot points (for example, connecting pin assembly and lower spring anchor).

HYDRAULIC SYSTEM



System Capacity

Insta-Act® unit reservoir	1-3/4 quarts
Insta-Act system total	2-3/8 to 2-3/4 quarts

Oil Level

With lift cylinder rod fully retracted remove the fill plug. Fill reservoir through the fill plug hole until reservoir is full. Replace fill plug.

Annual Fluid Change

⚠ CAUTION

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

⚠ CAUTION

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

1. Remove drain plug located in the bottom of the hydraulic reservoir.
2. Completely drain the reservoir.
3. Refill through fill hole with FISHER® High Performance Hydraulic Fluid.
4. Recycle used oil according to national and local regulations.

Pump Motor Specifications

12 volt DC with +/- connection
1750 psi pump relief valve
4000 psi angling relief valve
4-1/2” dia. 1.04 kw motor
.000477 GAL/REV Pump
Hydraulic Hose SAE 100R

Pump Inlet Filter Screen

Clean the pump inlet filter screen whenever the pump is removed. Replace the screen if it is damaged. Torque the die cast pump mounting cap screws to 175-185 in-lbs.

Hose or Fitting Replacement

Follow recommended replacement procedures for fittings and hoses.

VEHICLE

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

RECYCLE

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

EMERGENCY PARTS / TOOLS

1 - 10" Adjustable Wrench

1 - Medium Screwdriver

1 - Pair of Pliers

1 - #20 Torx

7.5, 10, 15 amp ATC fuses

Funnel

Test Light

Flashlight

1/8" Allen Wrench

1/4" rachet, 6" extension, 5/16" socket

electrical tape

1 - Quart FISHER®
High Performance Hydraulic Fluid

Some of the following guide corrections listed here are complicated. Unless you are very experienced in electrical and hydraulic repair, let you trained FISHER® outlet service personnel do the repairs.

Condition	Possible Cause	Correction
Control power indicator not on	Control not turned on.	Turn on control.
	No power to control.	Blown fuse. Part of the FISHER® vehicle control harness. Replace fuse.
	Plow/vehicle lighting harness not connected.	Properly connect both harnesses.
Motor does not run	Plow/vehicle control harnesses not connected.	Properly connect both harnesses.
	Blown fuse in FISHER vehicle control harness.	Replace blown fuse in control harness.
	Control malfunction or fault in wiring.	See FISHER outlet for repair information.
Motor will not shut off	Motor relay or control malfunction or fault in wiring.	See FISHER outlet for repair information.
Snowplow won't raise or raises slowly or partially	Excess weight on blade.	Remove snow and/or ice buildup or aftermarket accessories (excess weight).
	Hydraulic fluid level low or wrong fluid is used.	Fill reservoir to proper level with recommended fluid. **Do not mix different hydraulic fluid types.**
	Vehicle battery weak or charging system defective.	Replace battery and check charging system.
	Motor worn or damaged or fault in wiring.	See FISHER outlet for repair information.
	Pump filter clogged, worn or damaged pump, or hydraulic system malfunction.	See FISHER outlet for repair information.
Snowplow angles slowly or partially	Hydraulic fluid level low or wrong fluid is used.	Fill reservoir to proper level with recommended fluid. **Do not mix different hydraulic fluid types.**
	Vehicle battery weak or charging system defective.	Replace battery and check charging system.
	Air trapped in angle cylinders.	Cycle per procedure to remove air from cylinders.
	Angle cylinders damaged.	See FISHER outlet for repair information.
	Motor worn or damaged, or fault in wiring.	See FISHER outlet for repair information.
	Pump filter clogged, worn or damaged pump, or hydraulic system malfunction.	See FISHER outlet for repair information.

TROUBLESHOOTING GUIDE

Condition	Possible Cause	Correction
Snowplow won't lower, lowers slowly, or won't float	Hydraulic fluid not correct for outside temperature.	Use recommended fluid.
	Blown fuse in FISHER® vehicle control harness.	Replace blown fuse.
	Control or hydraulic system malfunction or fault in wiring.	See FISHER outlet for repair information.
Snowplow lowers by itself or won't stay in raised position	Hydraulic fittings or hoses loose or damaged.	Tighten or replace components or see FISHER outlet for repair information
	Control or hydraulic system malfunction.	See FISHER outlet for repair information.
Snowplow does not perform the selected function or performs a different function	Hydraulic hose routing incorrect.	See FISHER outlet for repair information.
	Control or hydraulic system malfunction, or fault in wiring.	See FISHER outlet for repair information.
Oil leaks from hydraulic system	Reservoir overfilled.	Do not fill reservoir beyond filler plug.
	Failed seal/O-ring.	See FISHER outlet for repair information.
	Loose or damaged hydraulic fittings, hoses, plugs, or hardware.	Tighten loose components. See FISHER outlet for repair information.
Oil leaks from angle or lift cylinder	Hydraulic fittings or hoses loose or damaged.	Tighten or replace components or see FISHER outlet for repair information
	Angle or lift cylinders damaged.	See FISHER outlet for repair information.
Fuse in FISHER control harness blown	Motor relay or control malfunction, or fault in wiring.	See FISHER outlet for repair information.
Vehicle fuse blows	Circuit overloaded, or fault in wiring.	See FISHER outlet for repair information.
Excessive load on vehicle electrical system while using snowplow	Hydraulic fluid not correct for outside temperature.	Use recommended fluid.
	Vehicle battery weak or charging system defective.	Replace battery and check charging system.
	Worn or damaged motor or pump, or fault in wiring.	See FISHER outlet for repair information.
	Vehicle electrical system inadequate.	Check vehicle specifications and FISHER recommendations.
Vehicle battery loses charge when snowplow is not being used.	Vehicle battery weak.	Replace battery.
	Wiring fault.	See FISHER outlet for repair information.

Condition	Possible Cause	Correction
Snowplow headlamps operate irregularly or not at all (plow attached).	Plow and vehicle lighting harnesses are not mated correctly.	Properly connect both harnesses.
	Burned out bulbs or corroded sockets.	Replace bulbs, clean contacts.
	Isolation Module not operating or fault in wiring.	See FISHER® outlet for repair information.
Vehicle headlamps operate irregularly or not at all, with snowplow removed.	Burned out bulbs.	Replace bulbs.
	Defective vehicle fuse.	Replace fuse.
	Fault in peculiar harness wiring.	See FISHER outlet for repair information.
Vehicle daytime running lights (DRL) do not work with snowplow removed.	Parking brake on. Gear selector not in drive. Vehicle light sensor has activated headlamps.	Fully release parking brake.
	Power or DRL circuit has been interrupted.	Turn on light and/or ignition switch to cycle the DRL circuitry.
Plow park/turn lamps not operating.	Blown fuse. Part of the FISHER vehicle control harness.	Replace fuse.

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CE

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