

Fisher Engineering

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the snowplow professionals



Solenoid Electric Hydraulic Pak

Owner's Manual

⚠ CAUTION

Read this manual before operating or servicing snowplow.

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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. 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.

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.

⚠ WARNING

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

⚠ CAUTION

Indicates a situation that, if not avoided, could result in minor personal injury and/or damage to product or property.

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

BEFORE YOU BEGIN

- Park the vehicle on a level surface, place shift lever in PARK or NEUTRAL and set parking brake.

⚠ WARNING

Remove blade assembly before placing vehicle on hoist.

- Leave the snowplow mounted on the vehicle and lowered for most service procedures, unless told otherwise.

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.
- Be especially careful near moving parts such as fan blades, pulleys and belts.
- 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 handy, rated BC for flammable liquids and electrical fires.

⚠ WARNING

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

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.

If you work on the vehicle or snowplow in a garage or other enclosed area, be sure to vent exhaust gas directly to the outside through a leakproof exhaust hose.

FIRE AND EXPLOSION

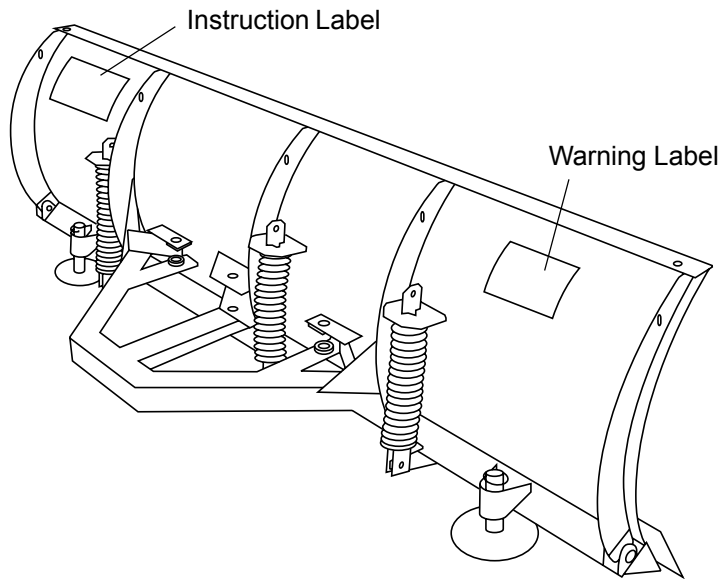
⚠ WARNING

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.

SAFETY INFORMATION

Please become familiar with and make users knowledgeable of the Warning and Instruction labels on the back of the blade!



Warning Label

WARNING
<p>LOWER BLADE WHEN VEHICLE IS PARKED. REMOVE BLADE ASSEMBLY BEFORE PLACING VEHICLE ON HOIST. DO NOT EXCEED GVWR OR GAWR INCLUDING BLADE AND BALLAST.</p>
CAUTION
<p>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.</p>

Instruction Label

<p>MOUNTING PLOW</p> <p>A. 1. Drive vehicle forward fully engaging pinplates into attachment arms.</p> <p>B. 1. Twist connecting pin to release tension. 2. Remove electrical covers on vehicle. 3. Attach electrical connector to corresponding connector on vehicle. 4. Repeat steps B 1-3 on passenger side of vehicle. 5. Connect hydraulic hoses to quick disconnects. (BELT DRIVE ONLY)</p> <p>C. 1. Release carrying chain and reattach it leaving plenty of slack. 2. Push hoistgear upward toward vehicle until connecting pins snap in place. 3. Pull jack lever outward and raise the jack stand.</p>	<p>REMOVING PLOW</p> <p>A. 1. Place cab control in "Lower/Floater". 2. Push lift arm down. 3. Pull jack lever outward. Jack stand will adjust to proper height.</p> <p>B. 1. Disconnect electrical connector and reinsert in protective cover. Insert release rod under jack collar. 2. Push down on release rod as you pull end of belt connecting pin. 3. Repeat Steps B 1-3 on passenger side. 4. Disconnect hydraulic hose couplings and cover with dust plugs.</p> <p>C. 1. Remove slack from carrying chain and reattach. 2. Back vehicle away from plow.</p>

HYDRAULIC SAFETY

WARNING

Hydraulic oil under pressure could 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.

VEHICLE APPLICATION INFORMATION

⚠ CAUTION

See your FISHER® outlet for application recommendations.

Vehicle application recommendations are based on the following:

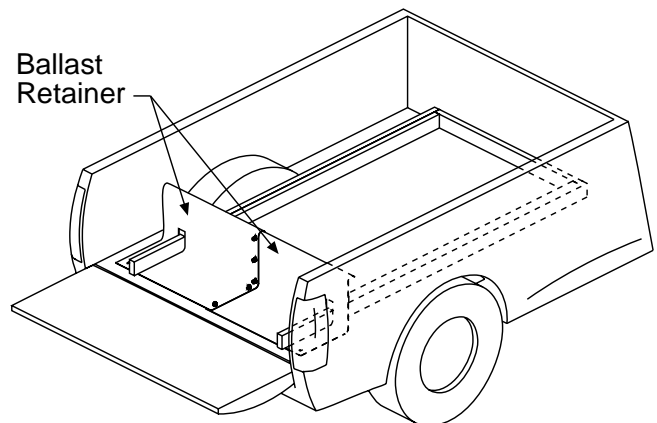
- The vehicle with the snowplow installed must comply with applicable Federal Motor Vehicle Safety Standards (FMVSS).
- The vehicle with the snowplow installed must comply with the vehicle manufacturer's stated gross vehicle and axle weight ratings (found on the driver-side door cornerpost of the vehicle) and the front and rear weight distribution ratio. Rear ballast may be required in some cases to comply with these requirements.
- Available capacity for the snowplow equipment is based on a representative vehicle equipped with options commonly used for plowing and with 300 lb. of front seat occupant weight.
- In some cases there may be additional limitations and requirements such as special vehicle options and recommendations or airbags/lift kits.
- Installation, modification and addition of accessories must comply with published recommendations and instructions. Available capacity decreases as the vehicle is loaded with cargo or other truck equipment 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 recommended 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.



GETTING TO KNOW YOUR SNOWPLOW

MINUTE MOUNT® SYSTEM

The Minute Mount System from Fisher Engineering sets the industry standard for detachable snowplow design. It's the quickest and easiest mounting system available.

Now most of the snowplow mount is removed from the truck whenever 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!

LD Series

Available in 6' 9" and 7-1/2' widths, the FISHER LD Series snowplows are designed for compact and light 1/2 ton four-wheel-drive trucks, as well as some sport-utility vehicles. The plows are ideal for homeowners and noncommercial plowing situations. They come standard with a polymer cutting edge. SnoFoil® Assembly (7-1/2' only), Steel Cutting Edge (7-1/2' only), Deflector and Shoe Kit are sold separately.

RD Series

Available in 7' and 7-1/2' widths, the FISHER RD Series snowplows are designed for mid-size and 1/2 ton four-wheel-drive trucks, as well as full-size sport-utility vehicles. Our most popular model, these plows are ideal for homeowners, small businesses, and light commercial plowing. An accessory Steel Cutting Edge (7-1/2' only), SnoFoil Assembly, and Deflector are sold separately.

HD Series

These popular 8' 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. An accessory Steel Cutting Edge, SnoFoil Assembly, and Deflector are sold separately.

MC Series

Designed for trucks in the 17,000–27,500 GVW range, these all-new FISHER 9' and 10' snowplows are now available with the famous FISHER trip-edge design and the Minute Mount System. Built for municipalities and contractors who need to clear parking lots, narrow streets, and intersections, both plows include a trip-edge design (10' – two 5' sections), 8" center punched, reversible cutting edge, and 10" SEHP with 2" x 16" angle cylinders. An optional SnoFoil Assembly or Rubber Deflector is also available.

GETTING TO KNOW YOUR SNOWPLOW

COMMON ATTACHMENT KIT

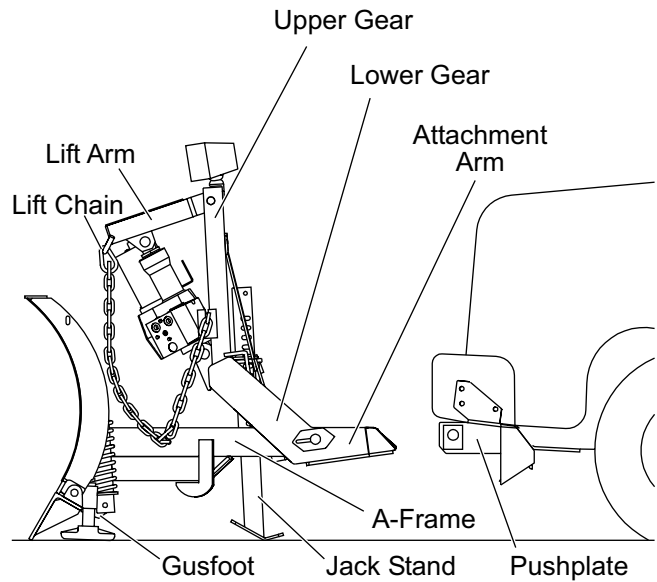
The common attachment kit is composed of the A-frame, upper and lower gear, jack stand, and lift arm.

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 upper gear, lower gear, and lift arm are the primary links between the snowplow and the vehicle. The upper and lower gear are connected to the pushplates, which are mounted directly to the vehicle frame. The upper gear provides the mounting framework for the Solenoid Electric Hydraulic Pak (SEHP) and the lift arm. The lift cylinder raises and lowers the blade by moving the lift arm and lift chain.

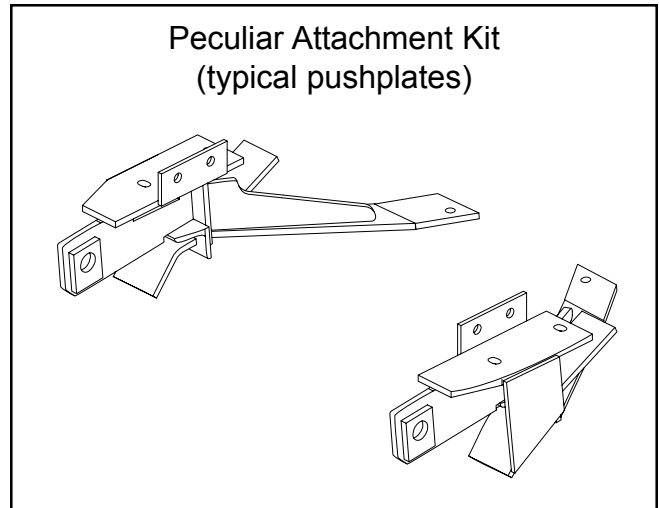


GETTING TO KNOW YOUR SNOWPLOW

PECULIAR ATTACHMENT KIT

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

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



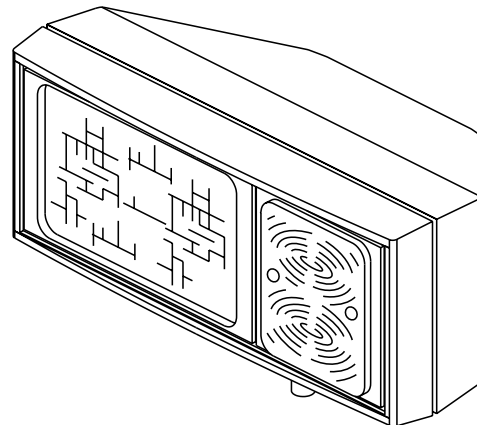
SNOWPLOW LIGHTS

⚠ 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 the Federal Motor Vehicle Safety Standards (FMVSS).

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



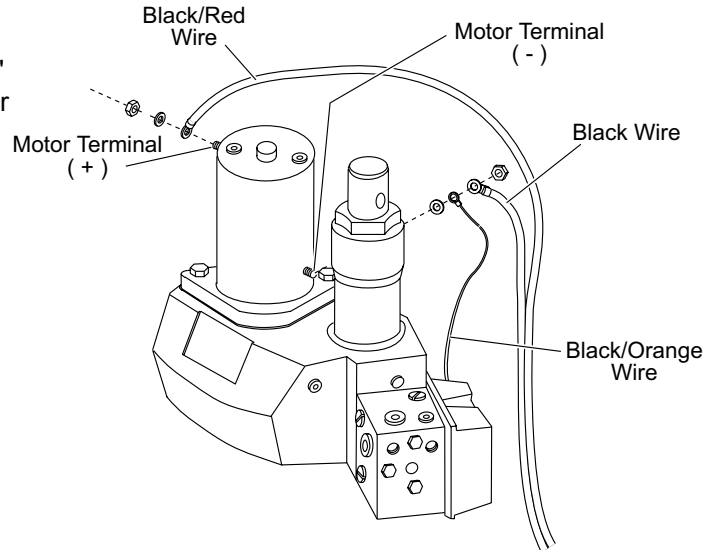
GETTING TO KNOW YOUR SNOWPLOW

HYDRAULIC UNIT

The FISHER® Solenoid Electric Hydraulic Pak (SEHP) provides a fast and uniform speed for lifting and angling. The system raises the blade in 2 seconds for the 1-1/2" x 6" lift cylinder, and 3 seconds for the 1-1/2" x 10" lift cylinder. It angles side to side in 6 seconds for all SEHP units.

The SEHP power 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 cylinders are operated by the solenoid joystick control.

The SEHP valve manifold includes two cushion valves to prevent damage to the blade or vehicle if obstacles are hit. 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.

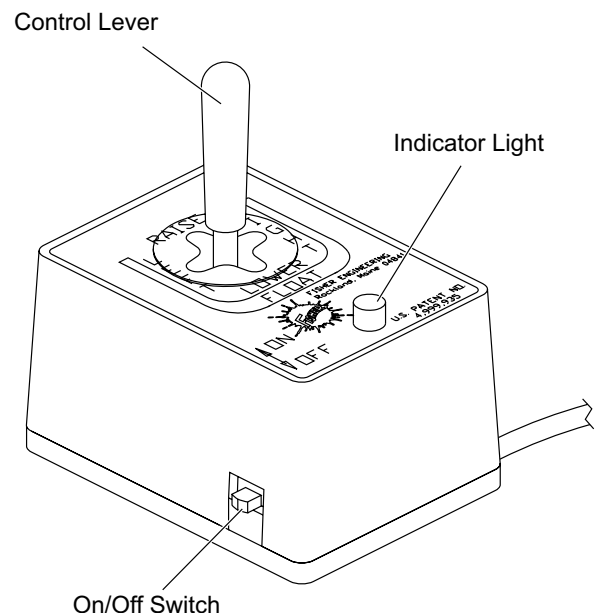


SOLENOID JOYSTICK CONTROL

⚠ CAUTION

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

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



ACCESSORIES AND OPTIONS

SnoFoil® Assembly

A rigid curved extension attached to the top of your snowplow blade to deflect light snow away from the windshield. It improves your plows visibility, efficiency and speed. The SnoFoil assembly bolts onto your existing blade. Available for 7', 7-1/2', 8', 9' and 10' blades.

Deflector

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

Rubber Deflector

For the LD, RD, HD, and MC Series blades. The flexible deflector keeps the snow from flowing over the top of the blade. It is designed not to get damaged when encountering obstacles.

Replaceable Steel Cutting Edge

The 3/8" or 1/2" thick cutting edges are made of high carbon steel and bolt onto the base angle for maximum blade life. Available for the LD, RD, and HD Series blades in 7-1/2', 8' and 9' sizes, and for the 10' Commercial Series blades.

Replaceable Polymer Cutting Edge

The 1" thick cutting edges are made of very durable polymer. They are lightweight and absorb most of the shock and vibration from the blade encountering rough surfaces. Designed for our LD Series blades, they are available in 6'9" and 7-1/2' lengths.

SEHP Pin Lock

Protect your SEHP from theft with this two-piece lock. A custom bracket prevents access to attaching points. Secure the bracket and hydraulic unit with a chrome plated deadbolt lock that comes with a covered key slot and two keys.

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.

Fish-Stik® Hand-held Control

The optional Fish-Stik hand-held control can be used with the FISHER Solenoid Electric Hydraulic Pak. The Fish-Stik hand-held control offers a comfortable, ergonomically designed handle for use in either hand with easy push button controls.

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.

MOUNTING SNOWPLOW TO VEHICLE

⚠ 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.

⚠ CAUTION

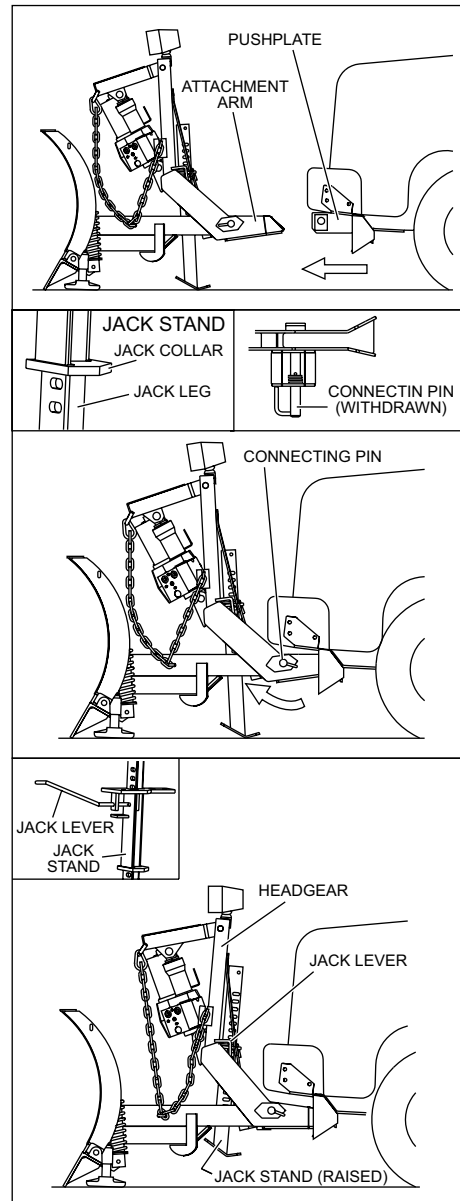
Never use a finger to check an alignment. If the snowplow moves, your finger could be crushed.

MOUNTING THE SNOWPLOW

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

1. Drive vehicle forward fully engaging pushplates into attachment arms.
2. Twist connecting pin to release tension.
3. Remove electrical covers on vehicle.
4. Attach electrical connector to corresponding connector on vehicle.
5. Repeat steps 2-4 on passenger side of vehicle.
6. Release carrying chain and reattach it leaving plenty of slack.
7. Push headgear upward toward vehicle until connecting pins snap in place.
8. Pull jack lever outward and raise the jack stand.

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



OPERATING YOUR SNOWPLOW

CONTROLLING THE BLADE

⚠ CAUTION

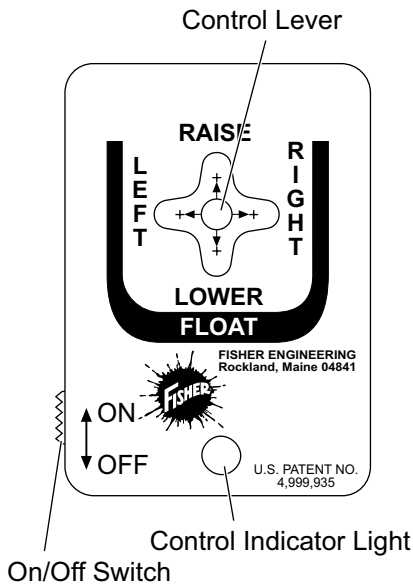
To prevent accidental movement of the blade, always turn the ON/OFF switch to OFF whenever the snowplow is not in use. The control indicator light will turn off.

⚠ CAUTION

DO NOT hold control lever in RAISE, ANGLE LEFT or ANGLE RIGHT position after blade has reached desired position. To do so could result in the hydraulic fluid overheating.

Turn the vehicle ignition switch on. Turn control on. The control indicator light should be on.

Solenoid Joystick Control



ON/OFF: Slide the control power switch to the ON position to activate the hydraulic system. Turn the control OFF to lock the blade in place. This will prevent accidental movement of the blade.

RAISE: Place the control in the RAISE position until the blade has reached the desired height. Blade movement will stop when either the control is released or the blade reaches its upper limit.

ANGLE RIGHT: Placing the control in the RIGHT position will angle the blade right. Release the control when you reach the desired angle.

ANGLE LEFT: Placing the control in the LEFT position will angle the blade left. Release the control when you reach the desired angle.

LOWER/FLOAT: Moving the lever of the control to the LOWER position will automatically lower the blade to the surface and activate the float mode.

Cancel Float: Float can be canceled by momentarily placing the control in the RAISE position, turning off the control or turning off the vehicle ignition. Angling left or right will not cancel float.

OPERATING YOUR SNOWPLOW

LIGHT CHECK

With both snowplow plugs (harness and power cable) 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 snowplow harness plug should switch between the vehicle and snowplow headlamps as follows:

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

NOTE: Both plugs must be connected to the harness connectors for the snowplow lights to function.

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

PARKING WITH SNOWPLOW ATTACHED

⚠ WARNING

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

TRANSPORTING SNOWPLOW

⚠ WARNING

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

⚠ CAUTION

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

⚠ CAUTION

Remove slack from carrying chain before traveling.

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

1. Completely raise the blade.
2. Place the blade half way between the fully angled and straight positions. This configuration allows for:
 - 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 when the snowplow is attached for transport.

OPERATING YOUR SNOWPLOW

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.

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 when the snowplow is attached for plowing.

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.
2. 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.

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.

REMOVING SNOWPLOW & STORAGE

⚠ WARNING

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

⚠ 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.

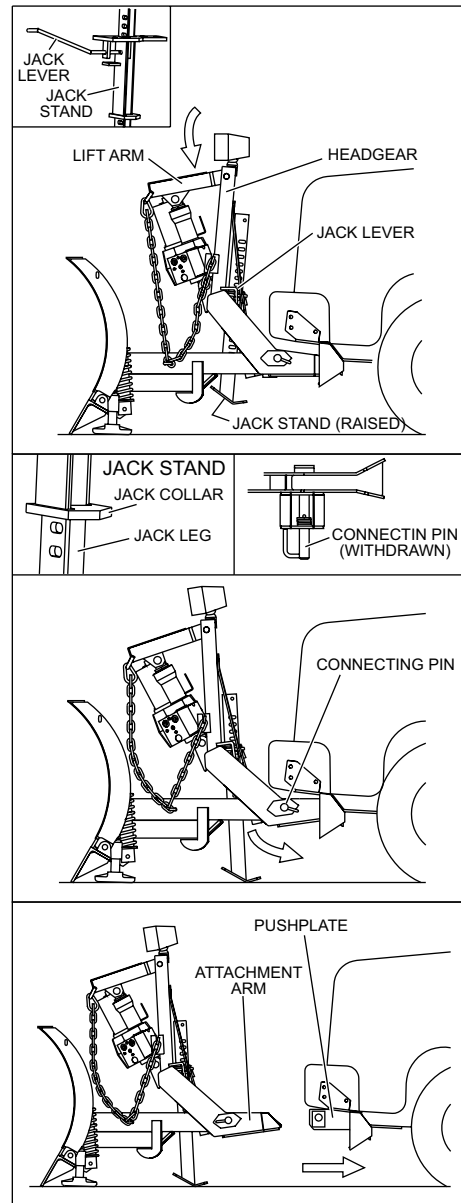
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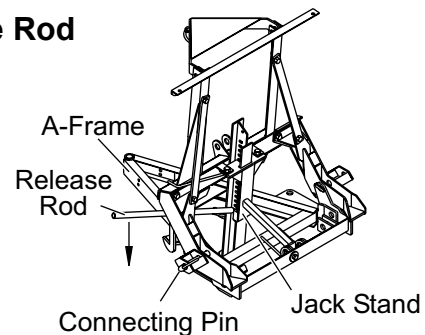
REMOVING SNOWPLOW

1. Position blade parallel to front of vehicle before removing.
2. Place solenoid joystick control in "Lower/Float".
3. Push lift arm down.
4. Pull jack lever outward. Jack stand will adjust to proper height.
5. Disconnect electrical connector and reinsert in protective cover.
6. Insert release rod under jack collar.
7. Push down on release rod as you pull and twist connecting pin.
8. Repeat steps 5-7 on passenger side of vehicle.
9. Remove slack from carrying chain and reattach.
10. Back vehicle away from plow.

NOTE: The solenoid control and bracket can be removed for off-season storage. Disconnect the molded connector in the cab and slide control off bracket.



Release Rod



NOTE: The function of the release rod is to relieve pressure on the connecting pins. Use only enough downward pressure on the rod end to effect release of the pins.

REGULAR MAINTENANCE AND ADJUSTMENTS

⚠ WARNING

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

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.

NOTE: Use dielectric grease to prevent corrosion on all electrical connections. Fill receptacles and lightly coat ring terminals and blades before assembly.

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:

- Check hydraulic system for leaks and cracked or damaged hoses.
- Drain and flush hydraulic system and refill with FISHER® High Performance Hydraulic Fluid.
- Replace worn or defective parts.
- Check all mounting points and tighten fasteners.
- Repaint blade assembly and attachments, as necessary, to protect the metal.
- Install auxiliary and flashing lights for safety in accordance with local regulations.
- Check headlamps, auxiliary lights, heater and windshield wipers for proper operation.
- Inspect and test your battery. Recharge or replace as necessary. Suggested MINIMUM vehicle electrical system:

70 amp hr./ 550 CCA battery, 95 amp alternator.

- Ballast may be necessary, or beneficial, on some vehicles to provide maximum traction, braking and handling.
- Any ballast material (sand, blocks, etc.) must be solidly secured to the vehicle preventing it from moving under harsh plowing conditions.
- Clean and tighten all electrical connections and coat with dielectric grease.

Postseason Maintenance

- Clean and paint blade assembly as needed.
- If the blade is to be left in one location for an extended period of time, place blocks under the cutting edge and shoes to eliminate ground contact. This will reduce 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.
- Coat grill plug and snowplow plug terminals with dielectric grease; use dust covers on connector ends.

Antiwear Shoe Adjustment

⚠ CAUTION

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

The antiwear shoes should be adjusted 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 shoe holder.

Cutting Edge

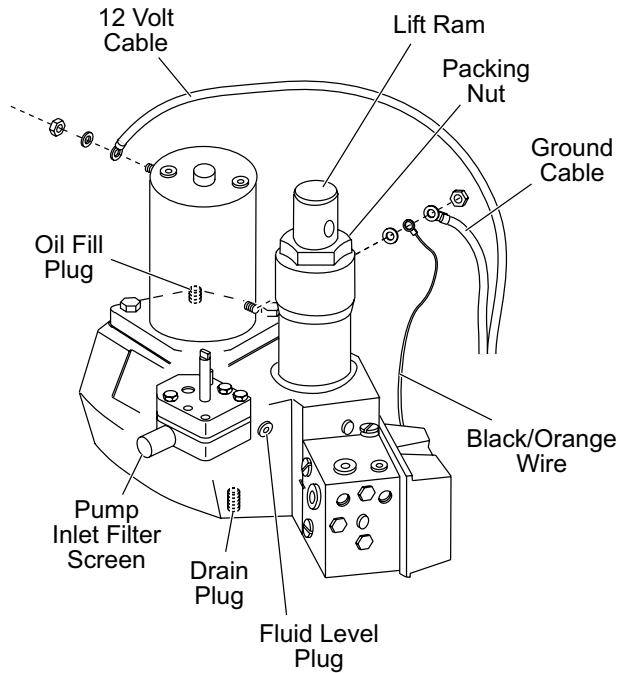
⚠ CAUTION

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

- Replace the cutting edge(s) on your blade when worn within 1" of the carriage bolts, or when gusfoot is about to touch the ground (see pg.5).
- Lubricate all pivot points (i.e. connecting pin assembly, lower spring anchor, etc.).

MAINTENANCE

Hydraulic System



System Capacity

	<u>6" SEHP</u>	<u>10" SEHP</u>
SEHP unit reservoir	1-3/4 quarts	1-3/4 quarts
SEHP system total	2-3/8 quarts	2-1/2 quarts

Oil Level

Push lift arm all the way down with the Minute Mount® System attached to the vehicle. Remove the fill plug (behind motor) and fluid level plug. Fill reservoir through the filler plug hole until fluid runs out the fluid level hole. Replace both plugs.

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.

1. Remove drain plug located in the bottom of the hydraulic reservoir.
2. Completely drain the reservoir.

⚠ CAUTION

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

3. Refill through fill hole with FISHER® High Performance Hydraulic Fluid.

Pump Inlet Filter Screen

The pump inlet filter screen should be cleaned whenever the pump is removed. Replace the screen if it is damaged. Torque Die Cast Pump mounting cap screws to 175-185 in-lbs. Torque the motor mounting cap screws to 15-20 ft-lbs.

Packing Nut Adjustment

Periodically check lift and angle cylinder packing nuts to see if they have loosened. If loose, or leakage appears while lifting or angling, tighten not more than 1/4 turn after you feel packing nut contact the packing. Packing not used for a period of time may show signs of oil weep. This will usually disappear after use.

Lift cylinder packing may dry out, making it difficult to completely lower the lift arm. In this case, loosen packing nut, lubricate rod, and work rod in and out using cab control. Snug packing nut when movement is restored.

⚠ CAUTION

Do not overtighten the packing nut. Overtightening affects operation and shortens the life of the packing.

Emergency Parts / Tools

- 1 - 10" Adjustable Wrench
- 1 - Medium Screwdriver
- 1 - Pair of Pliers
- 1 - Quart FISHER High Performance Hydraulic Fluid



TROUBLESHOOTING GUIDE

Condition	Possible Cause	Correction
Motor does not run	Snowplow/vehicle harnesses not connected.	Properly connect both harnesses.
	Blown fuse in hand-held control harness.	Replace blown fuse in hand-held control harness.
	Hand-held control malfunction or fault in wiring.	See FISHER® outlet for repair information.
Motor will not shut off	Motor relay or hand-held 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.
	Lift cylinder packing nut too tight.	Loosen and retighten packing nut according to the procedure.
	Blown fuse in hand-held control harness.	Replace blown fuse.
	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 or leaking internally.	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.
Snowplow won't lower, lowers slowly, or won't float	Hydraulic fluid not correct for outside temperature.	Use recommended fluid.
	Lift cylinder packing nut too tight.	Adjust lift cylinder packing nut. Loosen and retighten according to the procedure.
	Blown fuse on hand-held control harness.	Replace blown fuse.
	Hand-held control or hydraulic system malfunction or fault in wiring.	See FISHER outlet for repair information.

TROUBLESHOOTING GUIDE

Condition	Possible Cause	Correction
Snowplow lowers by itself or won't stay in raised position	Lift cylinder packing nut loose. (external leakage apparent)	Tighten cylinder packing nut according to the procedure.
	Hydraulic fittings or hoses loose or damaged.	Tighten or replace components or see FISHER® outlet for repair information.
	Hand-held 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.
	Hand-held 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	Lift cylinder packing nut loose.	Adjust cylinder packing nut.
	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 hand-held control harness blown	Motor relay or cab 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.
	Lift and/or angle cylinder packing nut too tight.	Adjust cylinder packing nut.
	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.

TROUBLESHOOTING GUIDE

Condition	Possible Cause	Correction
Vehicle battery loses charge when snowplow is not being used.	Vehicle battery weak.	Replace battery.
	Wiring fault.	See FISHER® outlet for repair information.
Snowplow headlamps operate irregularly or not at all (plow attached).	Snowplow harnesses not connected.	Properly connect both harnesses.
	Burned out bulbs or corroded sockets.	Replace bulbs, clean contacts.
	Light relays 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.
	Light relays not operating or fault in wiring.	See FISHER outlet for repair information.
Vehicle daytime running lights (DRL) do not work with snowplow removed.	Parking brake on.	Fully release parking brake.
	Power or DRL circuit has been interrupted.	Turn on light and/or ignition switch on and on to cycle the DRL circuitry.
A separate <i>Mechanic's Guide</i> is available. Contact your FISHER outlet for more details.		



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