Fisher Engineering

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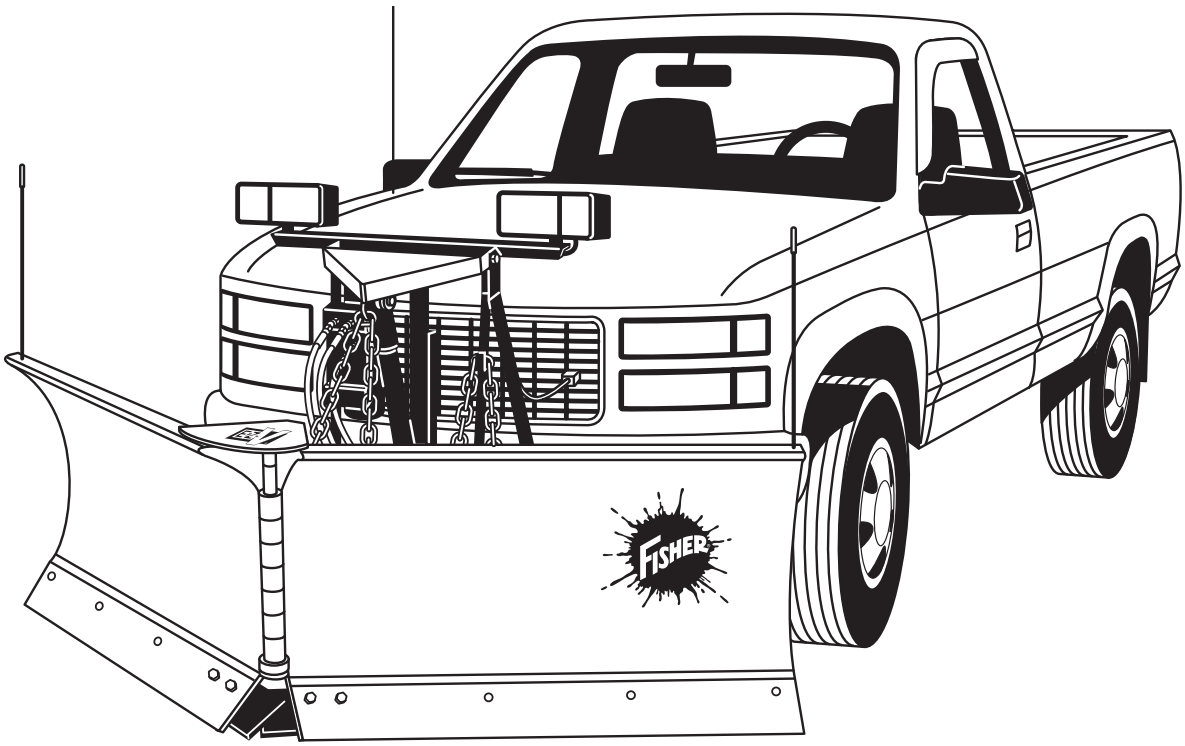
EZ-V® SNOWPLOW

OWNER'S MANUAL



⚠ CAUTION

Read this manual before operating or servicing snowplow.

This document supercedes all editions with an earlier date.

TABLE OF CONTENTS

PREFACE

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

Before installing a snowplow, make sure your vehicle is equipped with all 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 has a serial number. Record this serial number on the next 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.

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: _____

* 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.

INTRODUCTION

⚠ 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.

HYDRAULIC SAFETY

⚠ WARNING

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

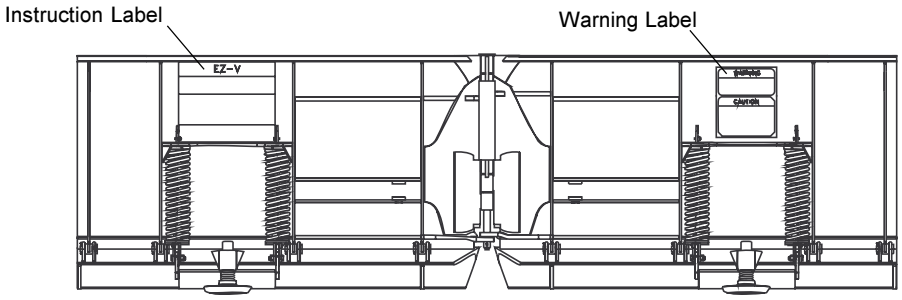
FUSES

NOTE: The FISHER® vehicle control harness (part of the Isolation Module system) contains two automotive-style ATC fuses. One fuse is for the plow park/turn lamp power and the other is for the plow 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.

Please become familiar with and make users knowledgeable of the warning and instruction labels on the back of the blade!



Instruction Label

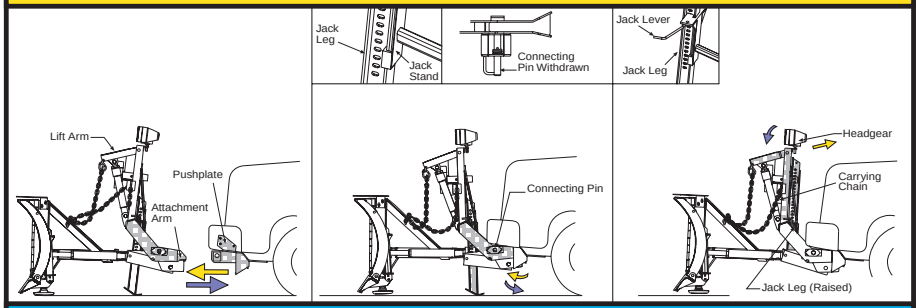
FISHER

EZ-V™ Snowplow

U.S. Patent
4,280,062, 4,999,935
5,353,530, 5,420,480
and other patents pending

MOUNTING PLOW

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 these steps 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 leg.



PLOW REMOVAL

9. Remove slack from carrying chain and reattach.
10. Back vehicle away from plow.
1. Position blade in the "straight" mode before removing.
2. Place control in "Lower" mode.
3. Push lift arm down.
4. Pull jack lever outward. Jack leg will adjust to proper height.
5. Disconnect electrical connectors and cover with protective covers.
6. Insert release rod in lowest possible slot on jack leg above A-frame.
7. Push down on release rod as you pull and twist connecting pin.
8. Repeat these steps on passenger side of vehicle.

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Warning 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.

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⚠ CAUTION

See your FISHER® outlet for application recommendations.

Vehicle application recommendations are based on the following:

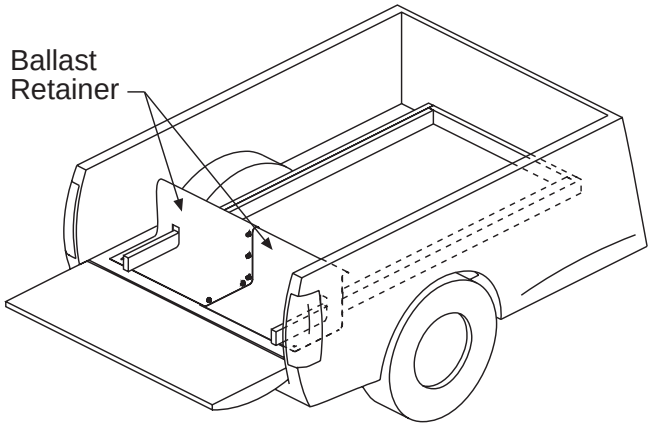
- The vehicle with the snowplow installed must comply with applicable Federal Motor Vehicle Safety Standards (FMVSS).
- The vehicle with the snowplow installed must comply with the vehicle manufacturer's stated gross vehicle and axle weight ratings (found on the driver-side door cornerpost of the vehicle) 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 occupants 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® SYSTEM

Fisher Engineering is pleased to add the EZ-V® snowplow to its family of detachable snowplows. The Minute Mount system allows quick and easy removal of the blade, A-frame, and headgear assemblies between storms and during the off-season.

The Minute Mount system shall be installed according to instructions supplied. FISHER® outlets are trained to perform this service and other services for this snowplow.

EZ-V SNOWPLOW

The FISHER® difference, the integral trip edge design, is incorporated in the EZ-V snowplow. When an obstacle is encountered, only the edge trips, not the entire blade. The trip action works in all blade configurations. The plowed snow stays in front of the vehicle even when the edges trip because the blade remains upright.

The blade halves are constructed of heavy gauge steel with a formed top edge. The blades are reinforced with a steel framework to increase rigidity and strength, and are designed using the latest advances in computer design techniques.

The blade is curved to pick up snow and cast it aside smoothly—rolling snow instead of pushing it. This action allows you to move more snow faster, using less power, saving fuel and reducing wear and tear on the vehicle and snowplow.

The base angle is designed with a unique trip edge. Each end of the trip edge is backed with a hardened steel wear bar welded behind the base angle. Heavy compression springs hold each edge in the plowing position. The springs are a safety device that allow the trip edge to ride over obstacles without damaging the blade, vehicle or injuring the driver. The springs need no adjustments and offer protection in all blade configurations.

COMMON ATTACHMENT KIT

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

A-Frame

The A-frame is designed with a connecting assembly that allows adjustment for variations in vehicle height. This feature ensures that blade edges are parallel to the road surface when plowing. The brace assembly holds the top of the hinge pin and the blade vertical; replacing the angle frame found on FISHER straight blades.

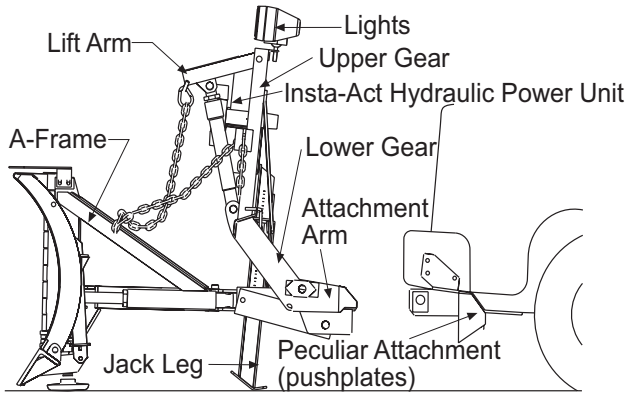
Headgear Kit

The headgear consists of the upper gear, lower gear, lift arm, jack support, and jack leg. The lower gear is connected to the pushplates, which are mounted directly to the vehicle frame. The upper gear provides the mounting framework for the Insta-Act® Hydraulic Power Unit and the lift arm. The lift arm raises and lowers the blade using the lift cylinder and lift chain. The jack stand, with jack leg 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 snowplow 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.

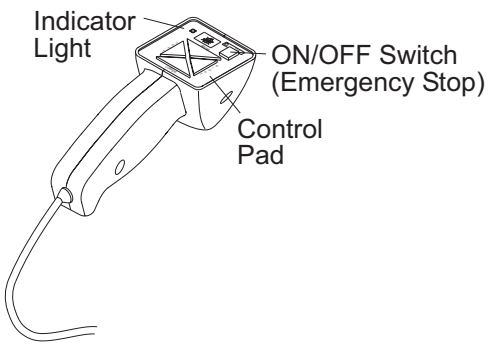
FISH-STIK® HAND-HELD CONTROL

⚠ 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.

The EZ-V® snowplow is equipped with a special Fish-Stik hand-held control. The control allows you to go from a v-plow, to a scoop, to a standard straight-blade plow, all at the push of a button.

The control is electrically powered through the ignition switched Isolation Module and is protected by a replaceable ATC blade type 7.5-amp fuse. The ON/OFF switch allows you to turn off the control and prevent blade movement even when the vehicle ignition is on. The ON/OFF switch serves as an emergency stop when required.

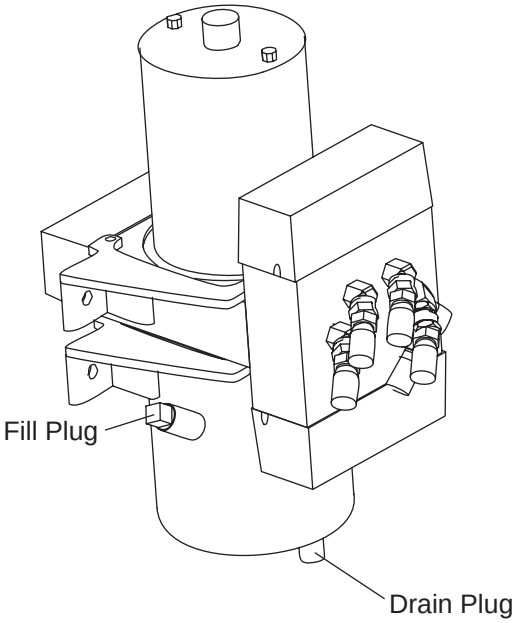


INSTA-ACT® HYDRAULIC POWER UNIT

The Insta-Act Hydraulic Power Unit gives you full control of the snowplow from within the cab. A double-acting hydraulic cylinder moves each wing independently or as a single unit. The cylinders are operated by the control.

The hydraulic power unit valve manifold has four relief valves built in to prevent damage to the blade or vehicle if obstacles are hit.

When the force against the blade causes the pressure in an extended cylinder to exceed set limits, the cushion valves open allowing oil to escape and the cylinder rod to retract.



Pump Motor Specifications

12 volt DC with +/- connection
1450-2100 psi pump relief valve
2500-3800 psi angling relief valve
4.5” dia. 1.04 kw motor
.000477 GAL/REV Pump
Hydraulic Hose SAE 100R

REPLACEABLE CUTTING EDGE

The two cutting edges are made of high carbon steel that bolt onto the base angle for maximum blade life.

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.

RUBBER DEFLECTOR

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

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.

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.

ADAPTER CABLE

The EZ-V® adapter cable enables the EZ-V harness to be used on a standard, straight blade system with a straight blade control.

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 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.

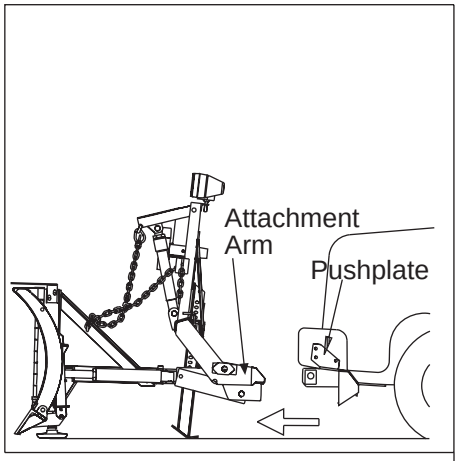
⚠ CAUTION

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

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

Mounting Steps:

1. Drive vehicle forward fully engaging pushplates into attachment arms.

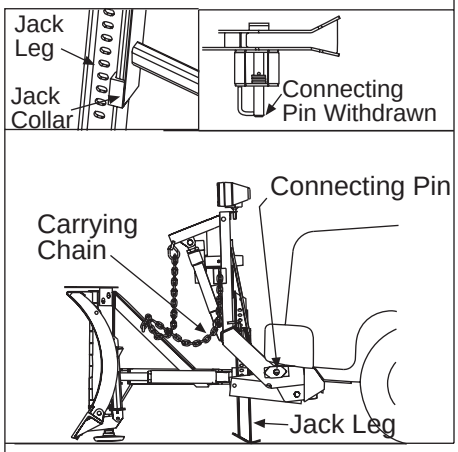


2. Twist connecting pin to release spring tension.

3. Remove electrical covers on vehicle. Disconnect mating harness connectors (ISOLATION MODULE ONLY).

4. Attach electrical connector to corresponding connector on vehicle.

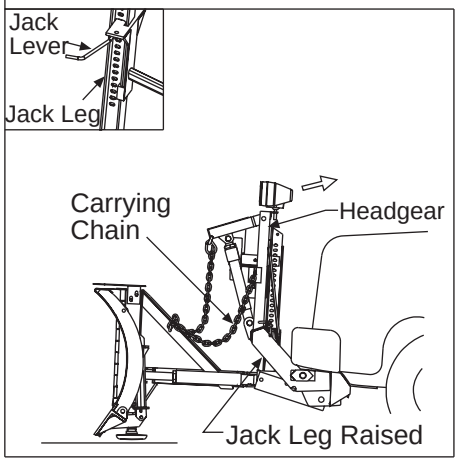
5. Repeat steps 2-4 on opposite side of vehicle.



6. Release carrying chain and reattach it leaving plenty of slack.

7. Push headgear toward vehicle until connecting pins snap in place.

8. Pull jack lever out and raise the jack leg. Release the jack lever and then the jack leg.



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

FISH-STIK® HAND-HELD CONTROL

⚠ WARNING

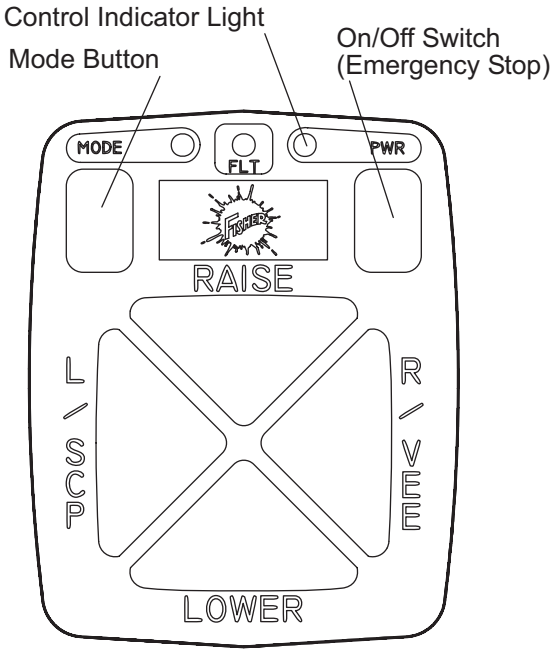
The driver shall keep bystanders clear of the blade when it is being raised, lowered or angled. Do not stand between the vehicle and the blade, or within 8 feet of a moving blade. A moving or falling blade could cause personal injury.

⚠ WARNING

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

1. Turn the vehicle ignition switch to the ON or the ACCESSORY position.

2. Press the ON/OFF switch on the control. The control indicator light glows red indicating the control is on. The control indicator light glows red whenever the control and the vehicle ignition switch are both on. The ON/OFF switch operates as an emergency stop when required.



Function Time Outs

All control functions, except for LOWER, automatically time out—stop—after a period of time. This is to help prolong the battery charge. The time-out period for the RAISE function is 2.5 seconds, while all others are 4.25 seconds.

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

Smooth Stop

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

Straight Blade Mode (Default)

The control automatically defaults to the straight blade mode when turned on. The MODE LAMP, near the MODE button in the upper left corner of the keypad, is not illuminated or flashing when the control is in the straight blade mode.

The following functions are performed in the straight blade mode:

Button	Description of Operation
RAISE	Press this button to raise the snowplow and to cancel the float mode. NOTE: Snowplow automatically stops raising after 2.5 seconds. To resume raising the snowplow, release the button and press again.
LOWER	Press this button to lower the snowplow. NOTE: After reaching the desired height, release the button. Holding the button down for more than 3/4 second activates the float mode, indicated by green FLT LAMP.
L / SCP	Press this button to angle both wings to the left.
R / VEE	Press this button to angle both wings to the right.

Vee/Scoop Mode

Quickly press and release the MODE button to put the control into the vee/scoop mode. The MODE LAMP, near the upper left corner of the keypad, lights. Quickly pressing and releasing the MODE button toggles the control between straight blade mode and vee/scoop mode.

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

Button	Description of Operation
RAISE	Press this button to raise the snowplow and to cancel the float mode. NOTE: Snowplow automatically stops raising after 2.5 seconds. To resume raising the snowplow, release the button and press again.
LOWER	Press this button to lower the snowplow. NOTE: After reaching the desired height, release the button. Holding the button down for more than 3/4 second activates the float mode, indicated by green FLT LAMP.
L / SCP	Press this button to extend both wings to the scoop position.
R / VEE	Press this button to retract both wings to the vee position.

Wing Mode

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

The following functions are performed in the wing mode:

Button	Description of Operation
RAISE	Press this button to raise the snowplow and to cancel the float mode. NOTE: Snowplow automatically stops raising after 2.5 seconds. To resume raising the snowplow, release the button and press again.
LOWER	Press this button to lower the snowplow. NOTE: After reaching the desired height, release the button. Holding the button down for more than 3/4 second activates the float mode, indicated by green FLT LAMP.
L / SCP	Pressing this button the first time retracts the left wing. Pressing this button the next time extends the left wing.
R / VEE	Pressing this button the first time retracts the right wing. Pressing this button the next time extends the right wing.

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

DRIVING AND PLOWING ON SNOW AND ICE

Follow your 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.

⚠ 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.

LIGHT CHECK

⚠ CAUTION

Before traveling, position the wings so they do not block the headlamp beam. Do not change blade position while traveling.

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

Parking Lamps: Both the vehicle and snowplow lamps should be on.

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

Left Turn Signal: Both the vehicles and snowplow lamps should be on.

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

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

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

PARKING WITH SNOWPLOW ATTACHED

⚠ WARNING

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

TRANSPORTING SNOWPLOW

⚠ WARNING

Your vehicle must be equipped with snowplow headlamps and directional lights. Verify the snowplow and vehicle lights are operating before transport. Position the 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. Never exceed posted road speeds.

⚠ 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 and place in pickup box.

1. Completely raise the blade.
2. Place the blade half way between the "vee" and the straight positions. This configuration allows:
   - full light illumination
   - ample vehicle cooling
   - 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: Use care when driving or entering driveways with the snowplow in the vee position. The outer ends of the cutting edges could contact the ground.

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

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.

TOWING DISABLED OR IMMOBILE VEHICLES

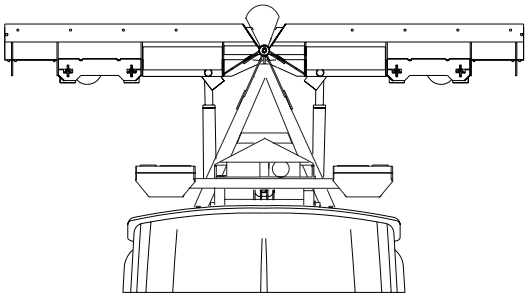
Do not use ***any*** snowplow component as an attaching point when retrieving, towing or winching a disabled or immobile vehicle.

BLADE POSITIONS

The EZ-V® snowplow can be used in five basic plowing positions:

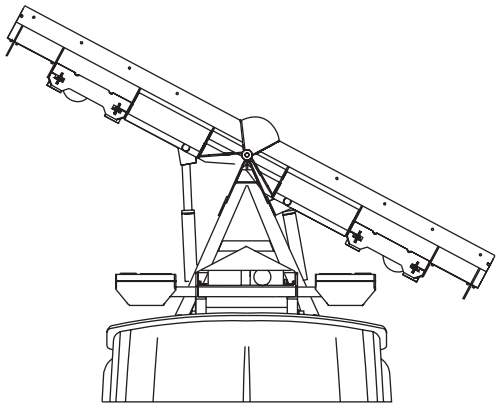
Straight Blade

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



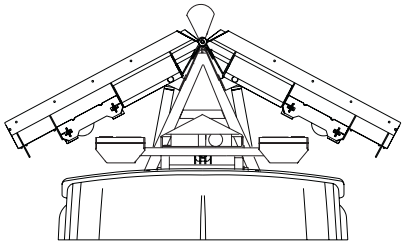
Angled Blade

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



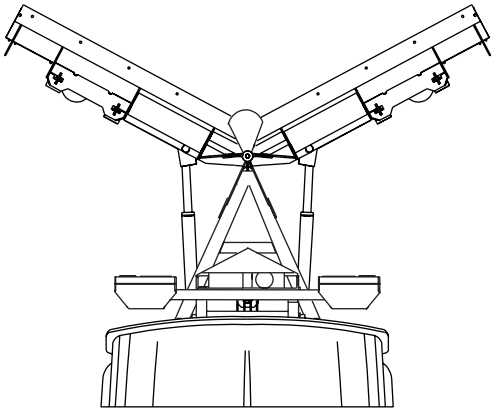
Vee Blade

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



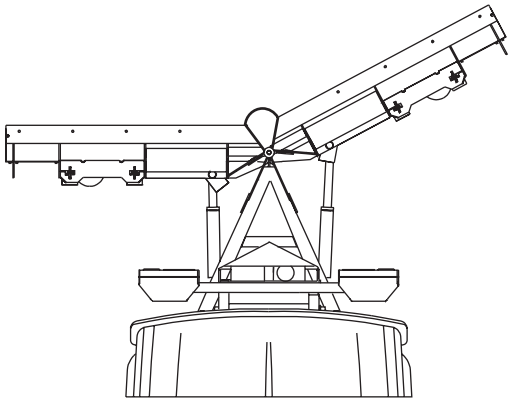
Scoop Blade

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



Dogleg Blade

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



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

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 area to be plowed, have someone familiar with 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. Raise the antiwear shoes so that the cutting edge comes into direct contact with the pavement. (See Antiwear Shoe Adjustment, page 17)
2. Use the transmission's low gear to place maximum power behind cutting edge and maintain charge in battery.
3. Use an angled blade or vee position to effectively remove hard-packed snow.

DEEP SNOW

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

   Rule of thumb:

   6" snow–use the entire blade width.

   9" snow–use 3/4 of the blade.

   12" snow–use 1/2 of the 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. Use tire chains where legal for increased traction.

PLOWING SNOW

CLEARING DRIVEWAYS

1. Head into the driveway with the blade in the vee position. Stay to the building side of the driveway. Widen the driveway by rolling snow away from building.

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 straight 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 the 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 with the blade in the vee position.

3. Angle the blade in either the scoop or wing position. Plow successive strips lengthwise until the area is cleared and snow is stacked around the outer edges.

4. If snow is too deep for the vehicle to push, scoop away the edges of the pile until it can be pushed by the vehicle.

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.

⚠ CAUTION

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

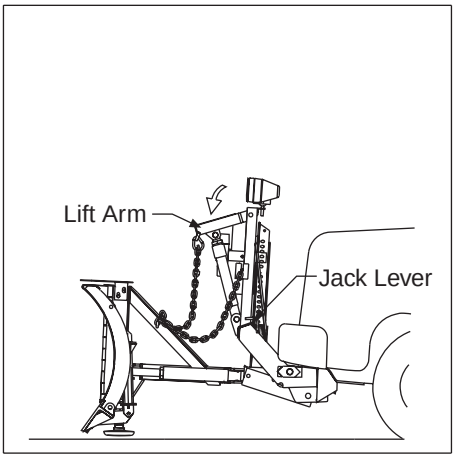
LIFTING

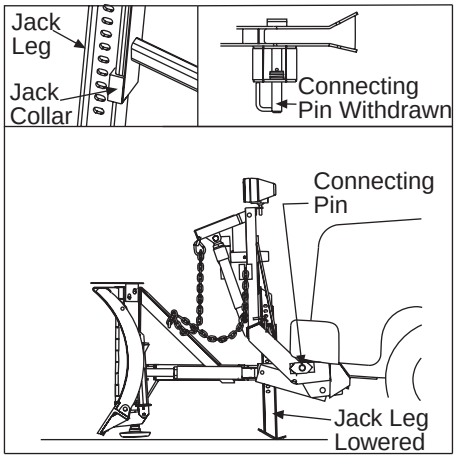
The lift arm hook can be used as attachment point to lift and move this snowplow following recommended mechanical lifting cautions and procedures.

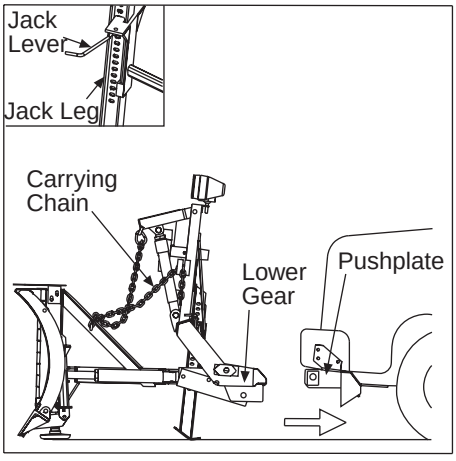
NOTE: The blade must be in the straight position when mounting or removing the snowplow.

Removing Steps:

1. Position blade in the "straight" mode before removing.
2. Place control in "Lower" mode.
3. Push lift arm down.
4. Pull jack lever outward. Jack leg will adjust to proper height.
5. Disconnect electrical connectors and cover with protective covers. Disconnect electrical harness connectors and plug male into female on snowplow and vehicle (ISOLATION MODULE SYSTEM ONLY).
6. Insert release rod in lowest possible slot on jack leg above A-frame.
7. Push down on release rod as you pull and twist connecting pin.
8. Repeat these steps on passenger side of vehicle.
9. Remove slack from carrying chain and reattach.
10. Back vehicle away from plow.



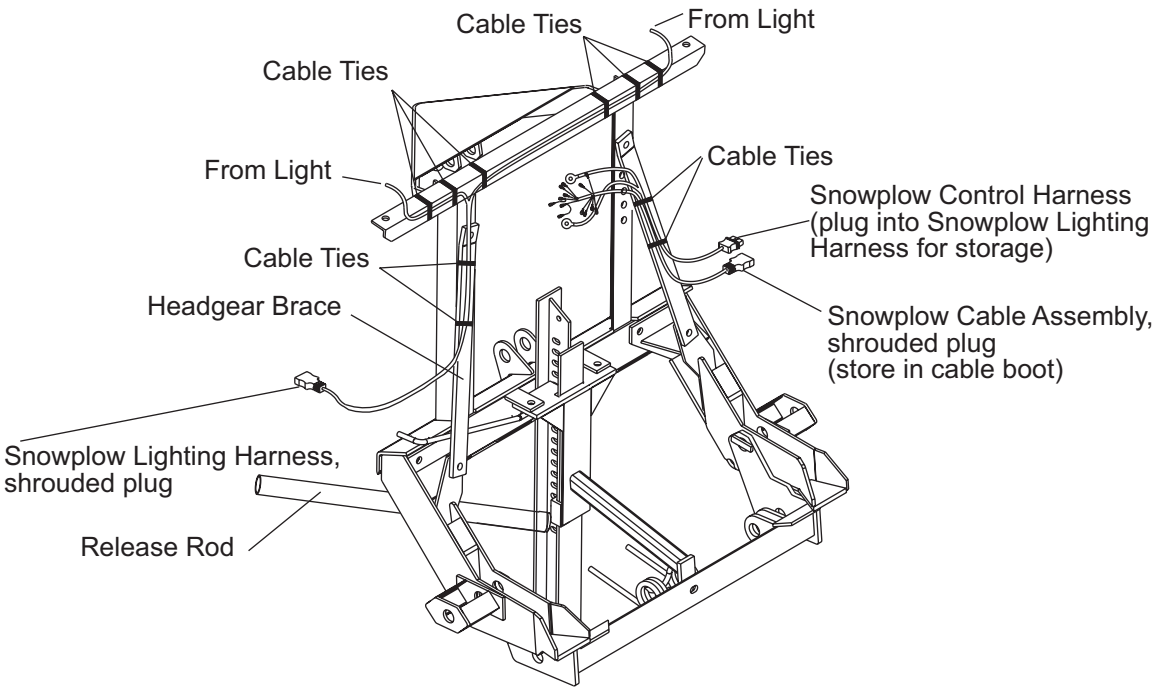


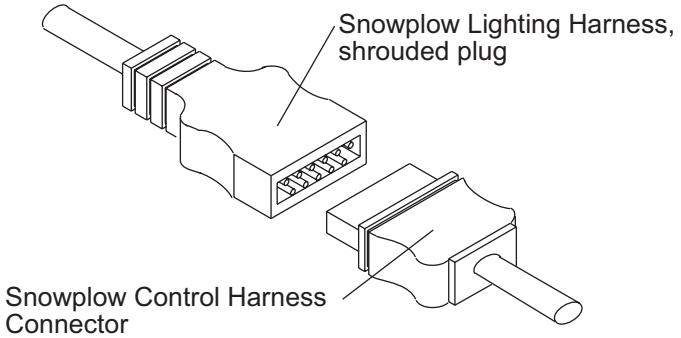


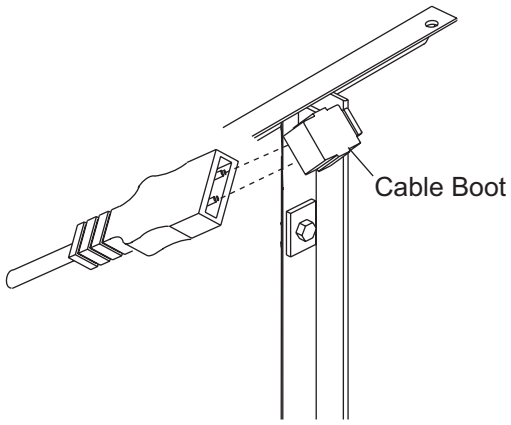
NOTE: The Fish-Stik® hand-held control can be removed for off-season storage. Disconnect the connector in the cab and remove the control.

NOTE: DO NOT push release rod all the way down. This will create pressure on the connecting pins.

REMOVING SNOWPLOW & STORAGE







REGULAR MAINTENANCE AND ADJUSTMENTS

⚠ WARNING

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

Your 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 rings 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 lamps for compliance and visibility in accordance with local regulations.
- ❑ Check headlamps, auxiliary lamps, 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./ 750 CCA battery, 130amp alternator.
- ❑ Counterbalancing may be necessary, or beneficial, on some vehicles to lighten the front end and to provide maximum traction.
- ❑ Any counterbalancing material (such as sand and blocks) 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

⚠ CAUTION

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

- ❑ 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 reduces the chance of rust on the lower part of the snowplow.
- ❑ Collapse lift cylinder so that cylinder rod is not exposed.
- ❑ Coat terminals of grill plug and snowplow plug with dielectric grease.
- ❑ Coat exposed rods of angle cylinders with water resistant grease.
- ❑ For long term storage, grease exposed chrome surfaces of the angle cylinders to prevent rust. Store the snowplow with the lift arm pushed all the way down.

CUTTING EDGE

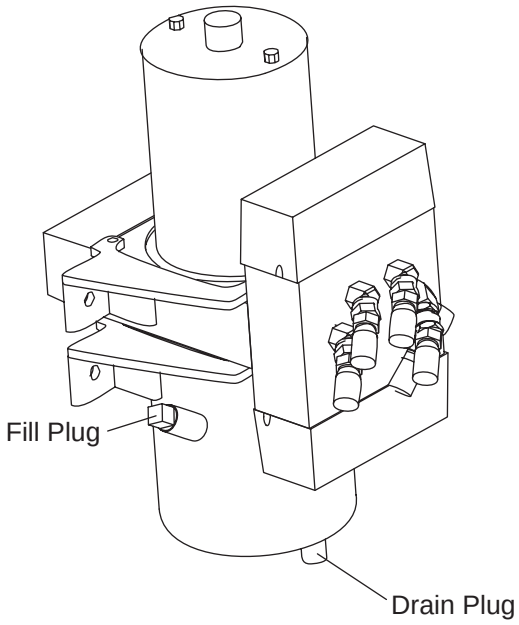
- ❑ Replace the cutting edge(s) on your EZ-V® blade when worn within 1" of the carriage bolts.
- ❑ Lubricate all pivot points. (such as connecting pin assembly, lower spring anchor)

INSTA-ACT® HYDRAULIC POWER UNIT System Capacity

	10" Lift Cylinder
Unit reservoir	1-3/4 quarts
System total	2-3/8 to 2-3/4 quarts

⚠ CAUTION

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



Pump Motor Specifications

12 volt DC with +/- connection
1450-2100 psi pump relief valve
2500-3800 psi angling relief valve
4.5” dia. 1.04 kw motor
.000477 GAL/REV Pump
Hydraulic Hose SAE 100R

Oil Level

Lower the blade and place in the "vee" position. Push lift arm all the way down with the Minute Mount system attached to the vehicle. Fill reservoir through the filler hole until the fluid is near the top of the filler hole.

Annual Fluid Change

⚠ CAUTION

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

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

Pump Inlet Filter Screen

The pump inlet filter screen should be cleaned whenever the reservoir is removed. Replace the screen if it is damaged.

PACKING NUT ADJUSTMENT - LIFT CYLINDER

⚠ CAUTION

Do not overtighten the packing nut. Over-tightening affects the operation and life of the packing.

Periodically check lift cylinder nut to see if it has loosened. If loose, or leakage appears while lifting, 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 usage.

GLAND NUT - ANGLE CYLINDERS

Periodically check angle cylinder nuts for tightness. V-Plow angle cylinders are sealed using o-rings. Torque gland nut to 150-180 ft.-lbs.

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 - Quart FISHER High Performance Hydraulic Fluid.

TROUBLESHOOTING GUIDE

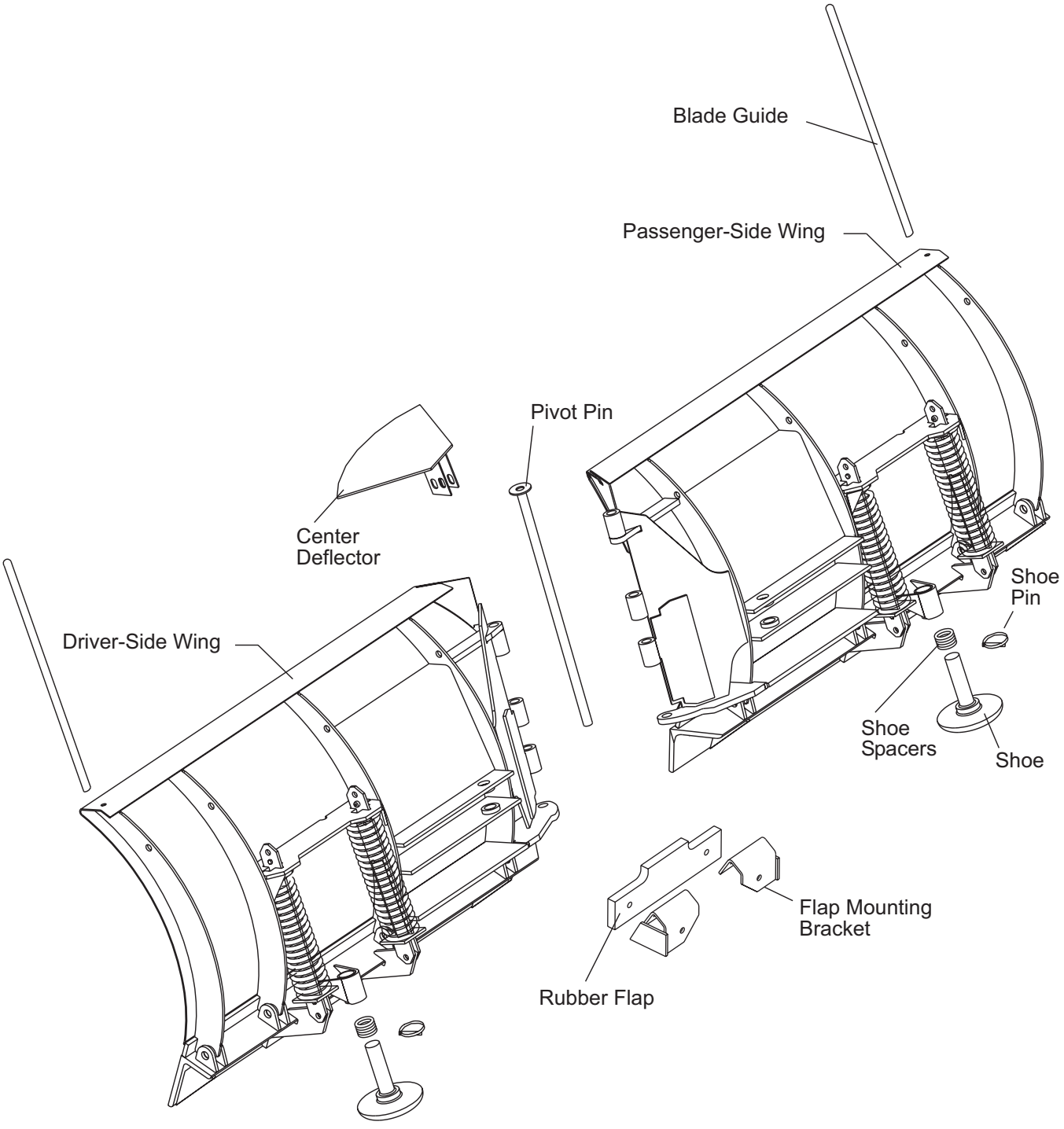
Some of the following guide corrections listed here are complicated. Unless you are very experienced in electrical and hydraulic repair, let your trained FISHER® outlet service personnel do the repairs.

Condition	Possible Cause	Correction
Control power indicator not on	Control not turned on.	Turn on control.
	No power to the control.	Blown fuse part of the FISHER® control harness. Replace fuse.
	Snowplow/vehicle lighting harness not connected.	Properly connect both harnesses.
Motor does not run	Snowplow/vehicle control harnesses not connected.	Properly connect both harnesses.
	Blown fuse in FISHER vehicle 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 FISHER vehicle 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 or wings move 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 wings 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.

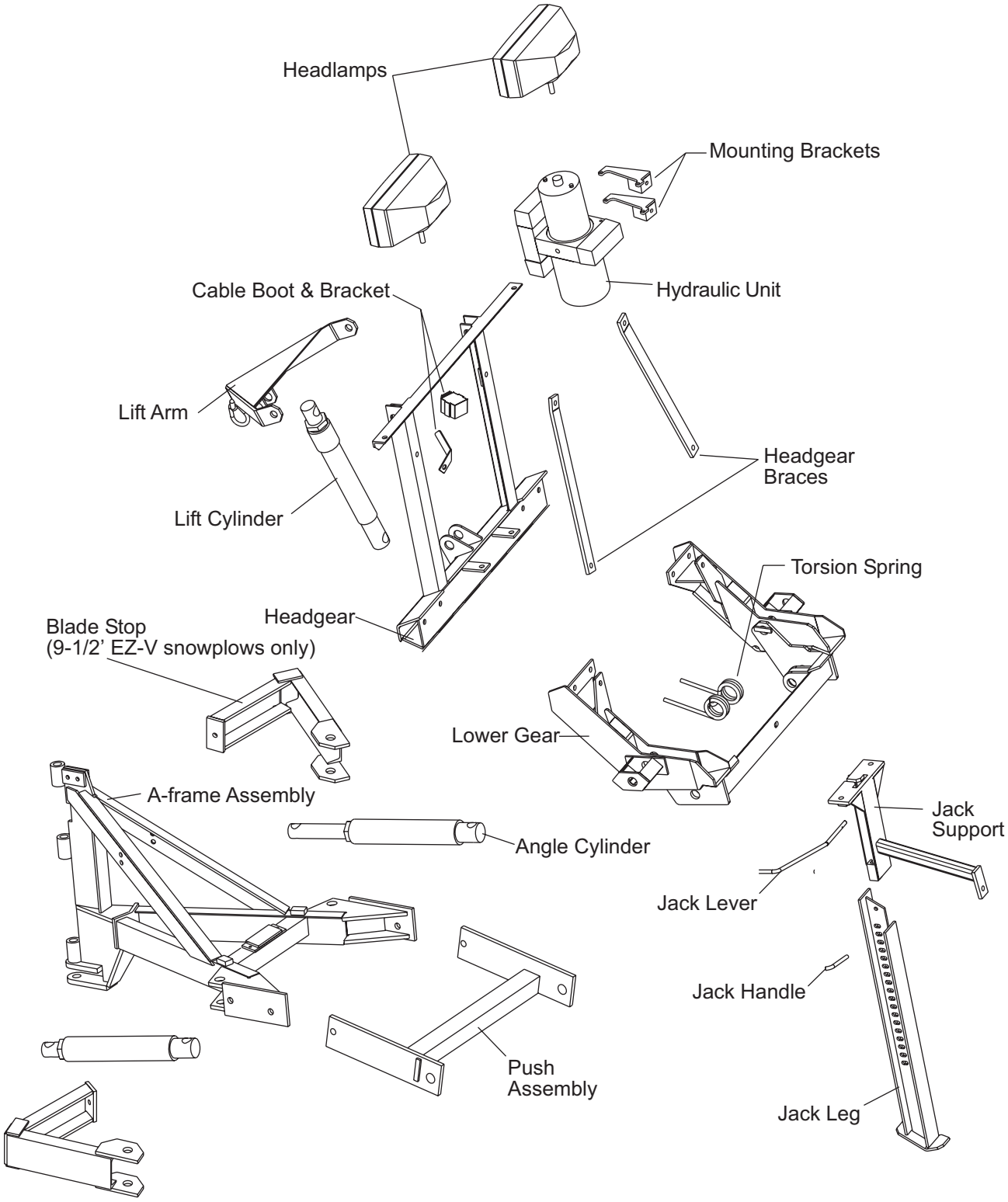
Condition	Possible Cause	Correction
Snowplow won't lower, lowers slowly, or won't float	Hydraulic fluid not correct for outside temperature.	Use recommended fluid.
	Lift cylinder packing nut too tight.	Adjust lift cylinder packing nut. Loosen and retighten according to the procedure.
	Blown fuse in FISHER® vehicle control harness.	Replace blown fuse.
	Hand-held control or hydraulic system malfunction or fault in wiring.	See FISHER outlet for repair.
Snowplow lowers by itself or won't stay in raised position	Lift cylinder packing nut loose.	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.
Wings will not lock hydraulically or hold position.	Hydraulic fittings or hoses loose or damaged.	Tighten or replace components or see FISHER outlet for repair information.
	Air in angle cylinders.	Check fluid level. Cycle wings per procedure to remove air from cylinders.
	Hand-held control or hydraulic system malfunction, or fault in wiring.	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. O-rings or seals damaged.	See FISHER outlet for repair information.
Fuse in FISHER vehicle 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 tin wiring.	See FISHER outlet for repair information.

TROUBLESHOOTING GUIDE

Condition	Possible Cause	Correction
Excessive load on vehicle electrical system while using snowplow	Hydraulic fluid not correct for outside temperature.	Use recommended fluid.
	Lift cylinder packing nut too tight.	Adjust lift 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.
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 and vehicle lighting harnesses are not mated correctly.	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.
Plow park/turn lamps not operating.	Blown fuse. Part of the FISHER vehicle control harness.	Replace fuse.
A separate *Mechanic's Guide* is available. Contact your FISHER outlet for more details.		


Blade Guide
Passenger-Side Wing
Pivot Pin
Center
Deflector
Shoe
Pin
Driver-Side Wing
Shoe
Spacers
Shoe
Flap Mounting
Bracket
Rubber Flap

EZ-V® SNOWPLOW COMPONENTS



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