



Fisher Engineering

50 Gordon Drive, Rockland, Maine 04841-2139 • www.fisherplows.com

**69400, 69450, 69450-1
69450-2, 69450-3, 69450-4**

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HT Series™ SNOWPLOW

Installation Instructions

▲ CAUTION

Read this document before installing the snowplow.

▲ CAUTION

See your FISHER® outlet/website for specific vehicle application recommendations before installation. The eMatch selection system has specific vehicle and snowplow requirements.

SAFETY DEFINITIONS

⚠ WARNING

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

⚠ CAUTION

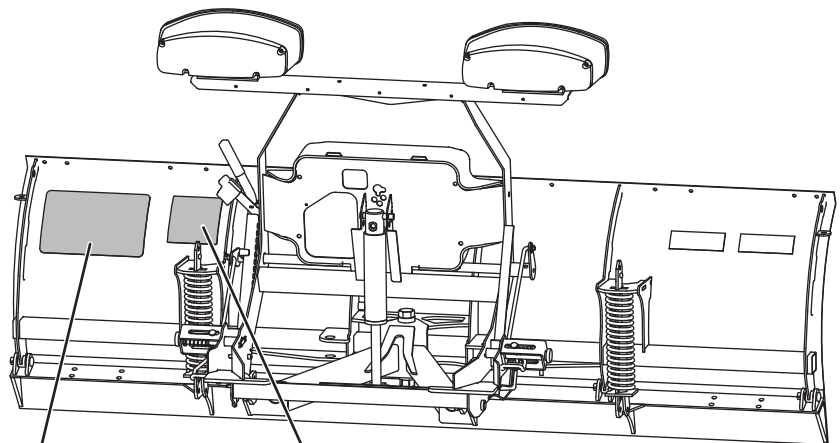
Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

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

WARNING/CAUTION AND 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.

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



Instruction Label

Warning/Caution Label

ATTACH

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

Read Owner's Manual for complete instructions.

DETACH

1. Activate **Lower/Float** and fully lower blade to ground.
2. Pull out and hold **Jack Lock**. Lower **Jack** to ground. Release **Jack Lock**. Verify lock by trying to lift **Jack**. Repeat on opposite side.
3. Stand in front of blade. Push each side of **Headlight Bracket** (DO NOT push on headlamps) toward vehicle while pulling **Pin Release Handle**. Make sure both **Connecting Pins** are fully retracted.
4. Disconnect all electrical connectors.

U.S. patents 6,944,978; 7,400,058; 7,430,821; 7,681,334; 7,737,576; 7,797,856; CAN patents 2,358,036; 2,632,102; and other patents pending.

⚠ WARNING

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

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

⚠ CAUTION

Read Owner's Manual before operating or servicing snowplow.

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

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

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

SP200-14

SAFETY PRECAUTIONS

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

⚠ WARNING

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

⚠ WARNING

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

⚠ 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.

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

Remove blade assembly before placing vehicle on hoist.

⚠ CAUTION

Refer to the current eMatch selection system for minimum vehicle recommendations and ballast requirements.

HYDRAULIC SAFETY

⚠ WARNING

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

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

FUSES

The FISHER® electrical and hydraulic systems contain several automotive-style fuses. If a problem should occur and fuse replacement is necessary, the replacement fuse must be of the same type and amperage rating as the original. Installing a fuse with a higher rating can damage the system and could start a fire. Fuse Replacement, including fuse ratings and locations, is located in the Maintenance section of the Owner's Manual.

PERSONAL SAFETY

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

FIRE AND EXPLOSION

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

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

CELL PHONES

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

VENTILATION

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

BATTERY SAFETY

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

- Batteries contain sulfuric acid, which burns skin, eyes, and clothing.
- Disconnect the battery before removing or replacing any electrical components.

NOISE









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

VIBRATION

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

TORQUE CHART

⚠ CAUTION
Read instructions before assembling. Fasteners should be finger tight until instructed to tighten according to torque chart. Use standard methods and practices when attaching snowplow including proper personal protective safety equipment.

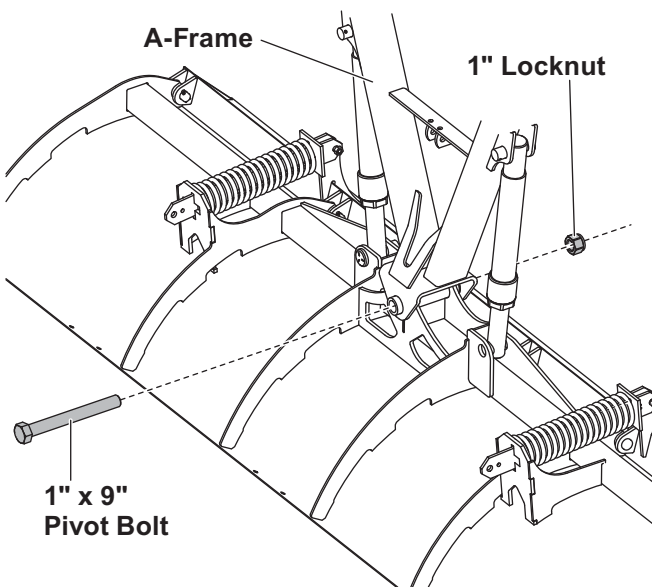
Recommended Fastener Torque Chart					
Inch Fasteners Grade 5 and Grade 8					
Size	Torque (ft-lb)		Size	Torque (ft-lb)	
	 Grade 5	 Grade 8		 Grade 5	 Grade 8
1/4-20	8.4	11.9	9/16-12	109	154
1/4-28	9.7	13.7	9/16-18	121	171
5/16-18	17.4	24.6	5/8-11	150	212
5/16-24	19.2	27.3	5/8-18	170	240
3/8-16	30.8	43.6	3/4-10	269	376
3/8-24	35.0	49.4	3/4-16	297	420
7/16-14	49.4	69.8	7/8-9	429	606
7/16-20	55.2	77.9	7/8-14	474	669
1/2-13	75.3	106.4	1-8	644	909
1/2-20	85.0	120.0	1-12	704	995
Metric Fasteners Class 8.8 and 10.9					
Size	Torque (ft-lb)		Size	Torque (ft-lb)	
	 Class 8.8	 Class 10.9		 Class 8.8	 Class 10.9
M6 x 1.00	7.7	11.1	M20 x 2.50	325	450
M8 x 1.25	19.5	26.9	M22 x 2.50	428	613
M10 x 1.50	38.5	53.3	M24 x 3.00	562	778
M12 x 1.75	67	93	M27 x 3.00	796	1139
M14 x 2.00	107	148	M30 x 3.50	1117	1545
M16 x 2.00	167	231	M33 x 3.50	1468	2101
M18 x 2.50	222	318	M36 x 4.00	1952	2701
These torque values apply to fasteners except those noted in the instructions.					

BLADE, A-FRAME, AND HEADGEAR

1. Remove the headlamp box and small parts box from the carton. Remove the carton wall sleeve by sliding it up and over the box contents. Remove and discard the four corner tubes and place the sleeve flat on the floor. Remove the two lag screws (located on either side of the lift ram) securing the A-frame to the pallet.

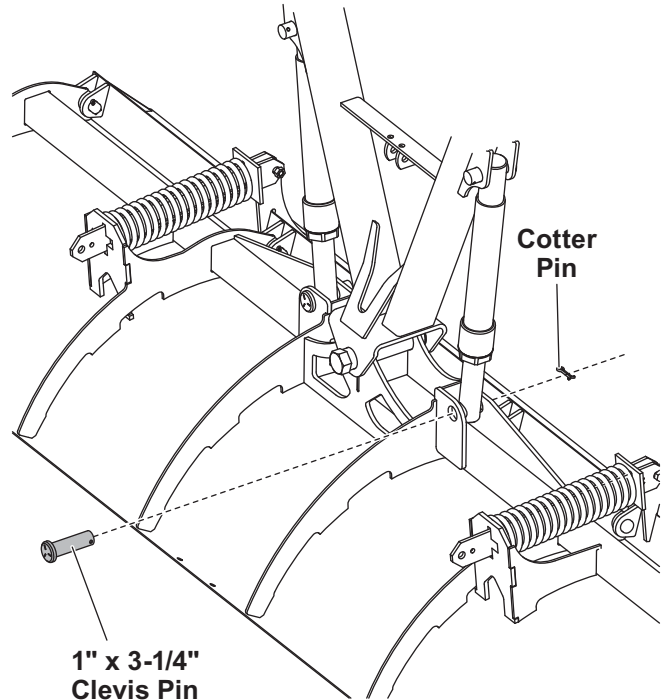
NOTE: When the lift ram is pinned, the headgear can still rotate forward when loaded. A relief valve is built into the lift portion of the hydraulic circuit.

2. Insert the 5/8" x 3-1/2" clevis pin through the top hole on the headgear to secure the base end of the lift ram to the lift frame. Remove the headgear, A-frame, and power unit assembly from the box and place it on the carton sleeve.
3. Place cardboard or wood on the floor where the blade will be assembled. Remove the blade from the pallet and set face down on the cardboard or wood. Place the A-frame nose plate over the blade pivot bracket. Insert the 1" x 9" pivot bolt from top to bottom through all holes. Secure with a 1" locknut. Tighten the locknut as much as possible while still allowing the A-frame and blade to pivot.

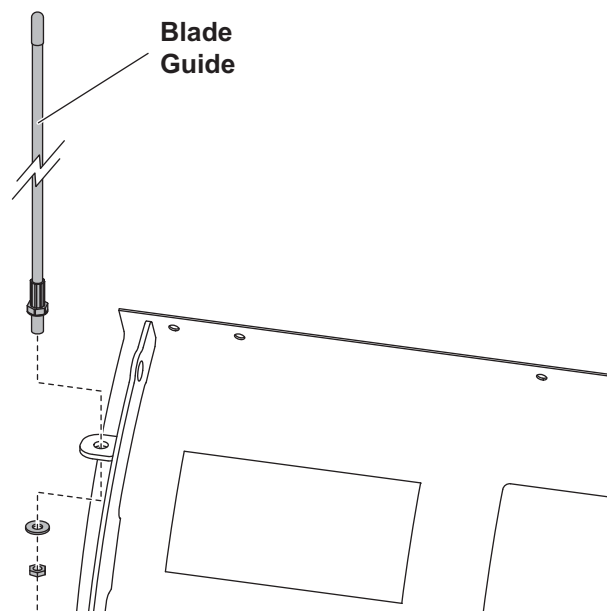


4. Cut the tie holding the angle rams to the A-frame. Align the hole in the rod end of one angle ram with the bracket on the back of the blade.

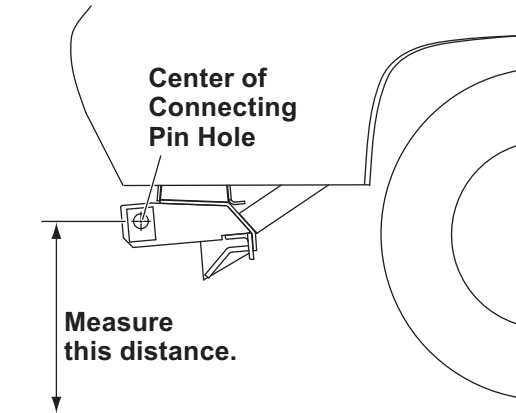
5. Install a 1" x 3-1/4" clevis pin from the top down through the rod end of the angle ram and the bracket on the blade. Secure with a 1/4" x 1-1/2" cotter pin. Repeat Steps 4 and 5 for the second angle ram.



6. Stand the blade, headgear, and A-frame assembly upright while resting the A-frame on the ground. Install the blade guides.



7. With the vehicle parked on a solid, level surface, measure the distance from the center of the connecting pin hole to the ground. This distance is the pushplate height. Refer to the hole selection chart below to determine which of the headgear rear holes to use.

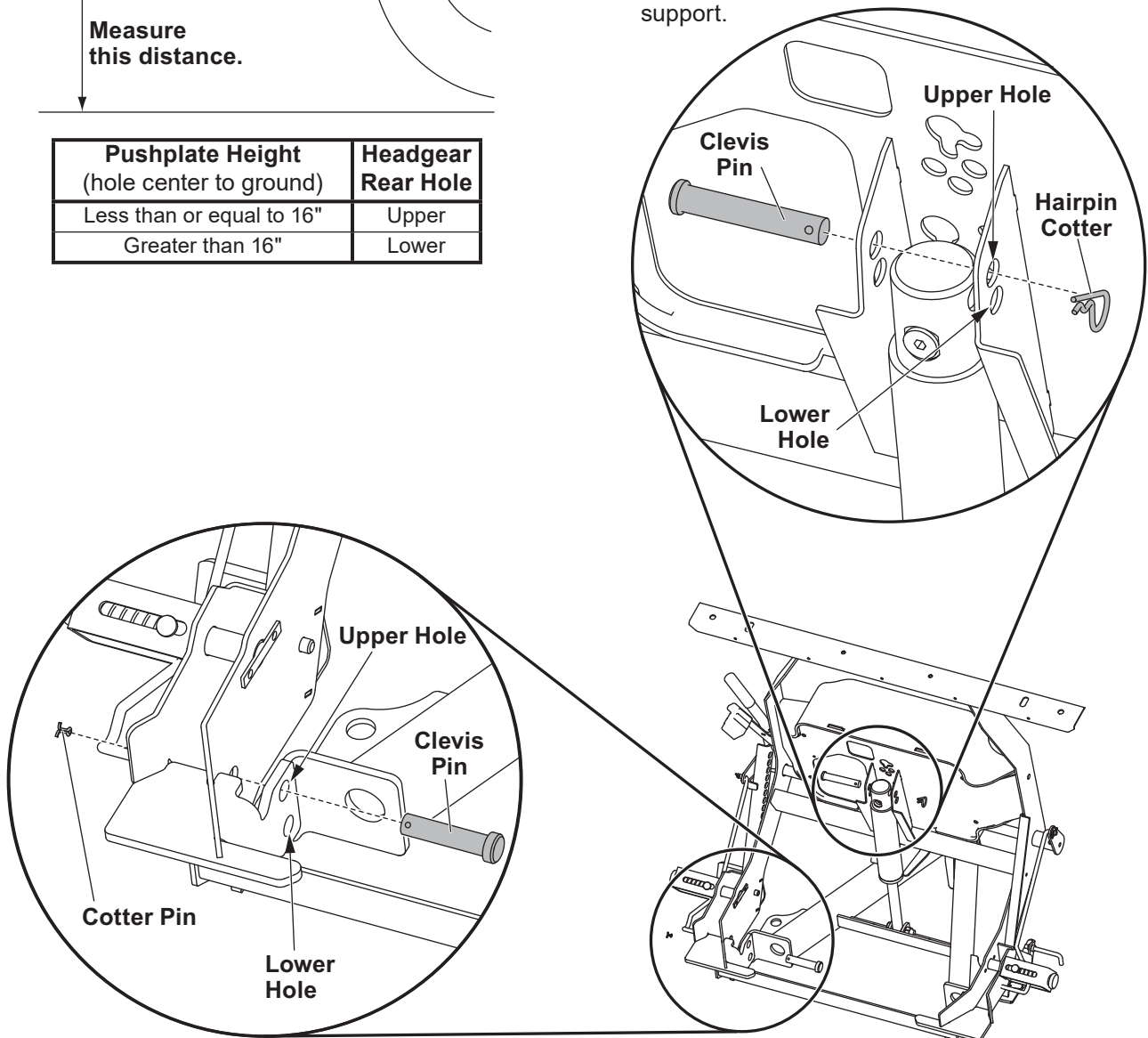


Pushplate Height (hole center to ground)	Headgear Rear Hole
Less than or equal to 16"	Upper
Greater than 16"	Lower

8. **If the pushplate height is 16" or less**, pin the A-frame to the upper headgear holes with the 3/4" x 3-1/4" clevis pins and 5/32" x 1-1/2" cotter pins. Install the lift ram to the upper hole with the 5/8" x 3-1/2" clevis pin and hairpin cotter.

If the pushplate height is greater than 16", pin the A-frame to the lower headgear holes with the 3/4" x 3-1/4" clevis pin and 5/32" x 1-1/2" cotter pins. Install the lift ram to the lower hole with the 5/8" x 3-1/2" clevis pin and hairpin cotter.

9. Raise the rear of the A-frame until it is level and place a temporary support underneath. Lower the jacks according to the instructions on the back of the blade (DETACH Step 2), then remove the support.



HEADLAMPS

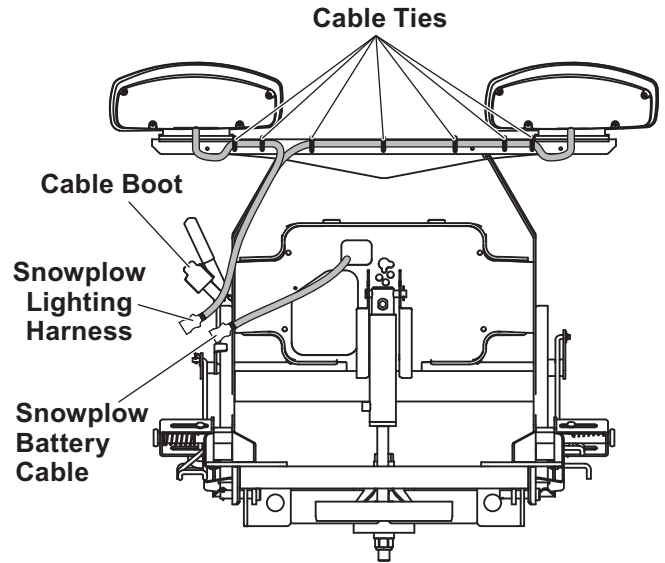
⚠ WARNING

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

Headlamps, hardware, and instructions are found in the headlamp box.

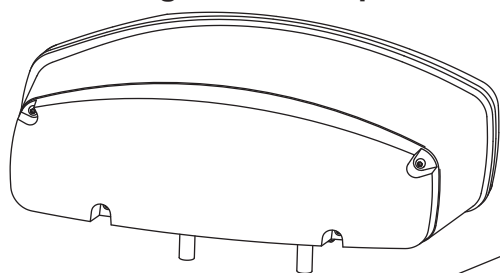
1. With the correct headlamp on the correct side, set each headlamp and swivel into place on the headgear light bar as shown.
2. Secure the headlamps with the correct hardware for the application as shown. Inner and outer posts require different hardware. On LED headlamps, a rubber washer must be installed under the slotted holes. Hand tighten.
3. Connect the headlamp wires to the headlamps.
4. Aim the headlamps according to the Snowplow Headlamp Beam Aiming Instructions (Lit. No. 27769). Tighten the fasteners to 22 ft-lb (30 N·m) if the headlamp has three bulbs or LEDs, or 50 ft-lb (68 N·m) if the headlamp has two bulbs.

5. Insert cable tie anchors into the 1/4" holes on the rear of the headgear light bar from the inside, with the locking tabs horizontal.

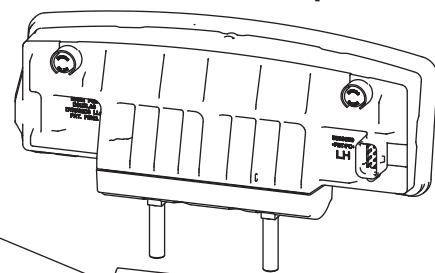


6. Route the wires underneath the light bar, behind the vertical supports, and down along the inside of the driver-side vertical support. Secure the wires to the anchors with cable ties.

Halogen Headlamps



LED Headlamps



Headlamp Swivel

Headgear Light Bar

1/2" Flat Washers

1/2" Lock Washers

1/2" Hex Nuts

Slotted Hole

1/2" Rubber Washer

FILLING THE HYDRAULIC UNIT

⚠ WARNING

Keep 8' (2.5 m) clear of the blade when it is being raised, lowered, or angled. Do not stand between vehicle and blade or directly in front of the blade. If the blade hits or drops on you, you could be seriously injured.

The HT Series™ snowplow hydraulic system comes pre-assembled, filled, and fully tested from the factory.

⚠ WARNING

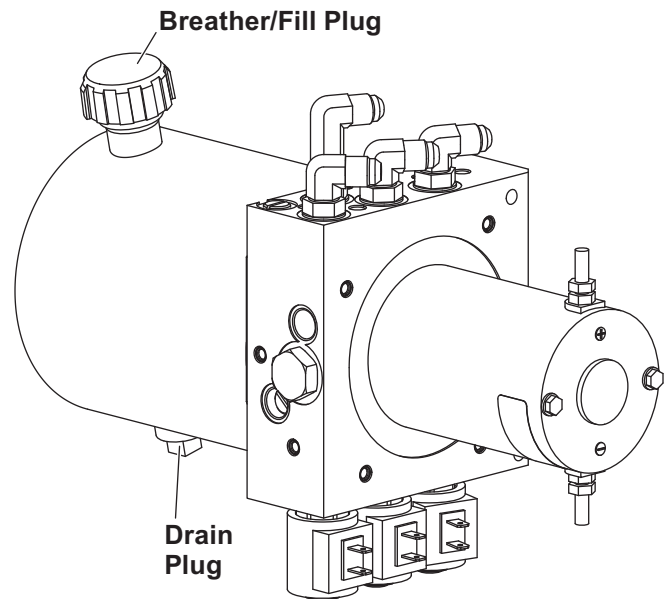
To prevent accidental movement of the blade, always turn the control OFF whenever the snowplow is not in use. The power indicator light will turn OFF.

⚠ CAUTION

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

1. Attach the snowplow to the vehicle according to the instructions on the back of the blade.
2. When checking the fluid level of a hydraulic unit at installation, remove the factory-installed pipe plug. With the blade in the lowered position, the fluid level should be within 2-1/2" from the top of the fill hole. If additional fluid is needed, fill the reservoir with FISHER® EZ Flow Hydraulic Fluid rated to -40°F (-40°C), or other fluid conforming to Military Specification MIL-H-5606 A, such as Mobil Aero HFA or Shell AeroShell® Fluid 4.

3. Replace the pipe plug removed in Step 2 with the breather/fill plug (included in the parts box).



FLUID CAPACITY

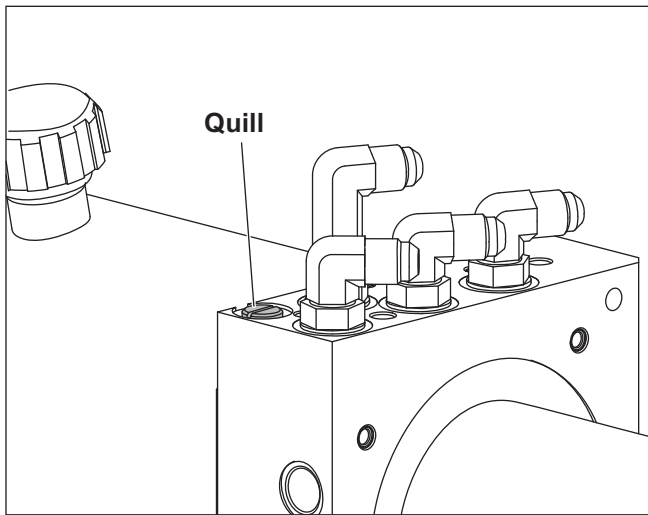
- Insta-Act® Unit Reservoir 1-3/4 quarts
- Insta-Act System Total 2-3/8 to 2-3/4 quarts

BLADE DROP SPEED ADJUSTMENT

⚠ WARNING

Keep 8' (2.5 m) clear of the blade when it is being raised, lowered, or angled. Do not stand between vehicle and blade or directly in front of the blade. If the blade hits or drops on you, you could be seriously injured.

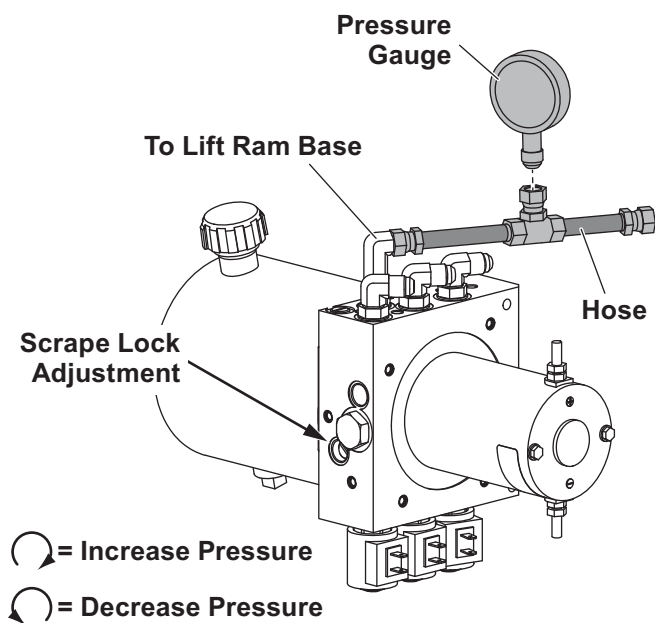
The quill in the valve manifold adjusts the blade drop speed.



1. Lower the blade to the ground before making an adjustment.
2. Turn the quill IN (clockwise) to decrease drop speed. Turn the quill OUT (counterclockwise) to increase drop speed.
3. Stand 8 feet clear of the blade when checking the adjustment.

SCRAPE LOCK ADJUSTMENT

1. Park the vehicle on a smooth, level, hard surface, such as concrete. Lower the blade to the ground and turn the control OFF. Leave the snowplow attached to the vehicle. Turn the vehicle ignition to the "OFF" position.
2. Disconnect the snowplow battery cable from the vehicle battery cable.
3. Remove the hydraulic unit cover.
4. Loosen the breather/fill plug slowly to relieve any pressure in the reservoir.
5. Using a T-fitting, install a 500–600 psi gauge in the lift ram base hose.



6. Retighten the breather/fill plug.
7. Reconnect the snowplow battery cable to the vehicle battery cable.

8. Turn the vehicle ignition to the "ON" or "Accessory" position. Turn the control ON.

⚠ CAUTION

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

9. While pressing the RAISE button on the snowplow control, note the hydraulic gauge pressure reading as the blade is rising. (The pressure can *only* be read *as the blade is rising*. It may be necessary to perform this process more than once to obtain an accurate reading.) The recommended pressure is 350 psi.
10. If the hydraulic pressure reading is less than 350 psi, increase the pressure by turning the scrape lock valve stem clockwise 1/4 turn.

NOTE: Adjustments should be made in 1/4-turn increments.

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

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

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

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

⚠ CAUTION

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

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

FINAL CHECKS

- With the snowplow attached to the properly ballasted vehicle and the blade lowered to the ground, the A-frame should be parallel with the ground.
- Fully angle the blade in raised and lowered positions. Ensure that the hoses do not contact the vehicle bumper, have no sharp bends, and are wrapped at contact points with the headgear and blade. Adjust hose fittings and wraps if necessary.

VEHICLE LIGHTING CHECK

1. Verify the operation of all vehicle front lighting prior to connecting the snowplow harness.
2. Check the operation of the snowplow lights with snowplow mounted to vehicle and all harnesses connected.

Turn Signals and Parking Lamps

Parking lamps ON:

- Both vehicle and snowplow parking lamps should be ON at the same time.

Driver-side turn signal ON:

- Both vehicle and snowplow driver-side turn signal lamps should flash at the same time.

Passenger-side turn signal ON:

- Both vehicle and snowplow passenger-side turn signal lamps should flash at the same time.

Headlamps

Move the vehicle headlamp switch to the "ON" position. Connecting and disconnecting the snowplow lighting harness plug should switch the lights between vehicle and snowplow as follows:

Snowplow lighting harness DISCONNECTED:

- Vehicle headlamps should be ON.
- Snowplow headlamps should be OFF.

Snowplow lighting harness CONNECTED:

- Snowplow headlamps should be ON.
- Vehicle headlamps should be OFF.

The dimmer switch should toggle the headlamps between high and low beams. The high-beam indicator on the dash should light when the headlamps are placed in high beam.

Daytime Running Lamps (DRLs)

An operational check of the vehicle and snowplow DRLs will depend on the vehicle model, vehicle DRL system and type of isolation module installed. Due to the variations in the OEM DRL systems and the different isolation module options available, checking the functionality of the snowplow DRLs will depend on the type of module installed on the vehicle.

With the headlamp switch OFF, activate the vehicle DRLs.

Snowplow lighting harness DISCONNECTED:

- Vehicle DRLs should be ON.
- Snowplow headlamps should be OFF.

Snowplow lighting harness CONNECTED and vehicle in DRL mode:

- Check the snowplow DRL function per type of isolation module installed.

Refer to the Mechanic's Guide for information on the isolation module DRL functions.

Hand-Held Control

The snowplow plugs **do** need to be connected to the vehicle harness connectors. The control power indicator light should light whenever the control ON/OFF switch and the ignition (key) switches are both in the "ON" position.

1. Connect all snowplow and vehicle harnesses. Raise the snowplow and aim the snowplow headlamps according to the Snowplow Headlamp Beam Aiming instructions included with the headlamps, and any state or local regulations.
2. Check the aim of the vehicle headlamps with the snowplow removed.

⚠ CAUTION

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

3. When the snowplow is removed from the vehicle, install plug covers on the vehicle battery cable and lighting harness. Insert the snowplow battery cable and lighting harness into the cable boot on the snowplow.

OWNER'S MANUAL PACKET

If the completed snowplow will be delivered immediately, the Owner's Manual should be reviewed with and given to the purchaser.

If the snowplow is completed prior to delivery to the purchaser, attach the Owner's Manual packet to the electrical cable of the cab control for safekeeping.

Fisher Engineering reserves the right under its product improvement policy to change construction or design details and furnish equipment when so altered without reference to illustrations or specifications used. Fisher Engineering or the vehicle manufacturer may require or recommend optional equipment for snow removal. Do not exceed vehicle ratings with a snowplow. Fisher Engineering offers a limited warranty for all snowplows and accessories. See separately printed page for this important information. The following are registered (®) or unregistered (™) trademarks of Douglas Dynamics, LLC: FISHER®, HT Series™, Insta-Act®, Minute Mount® 2.

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