

July 15, 2021
Lit. No. 52308, Rev. 07



8600

SPEEDWING™ Snowplow

77740, 77840, 77840-1, 77840-3

Installation Instructions



⚠ CAUTION

Read this document before installing the snowplow.

⚠ CAUTION

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

SAFETY

SAFETY DEFINITIONS

⚠ WARNING

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

⚠ CAUTION

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

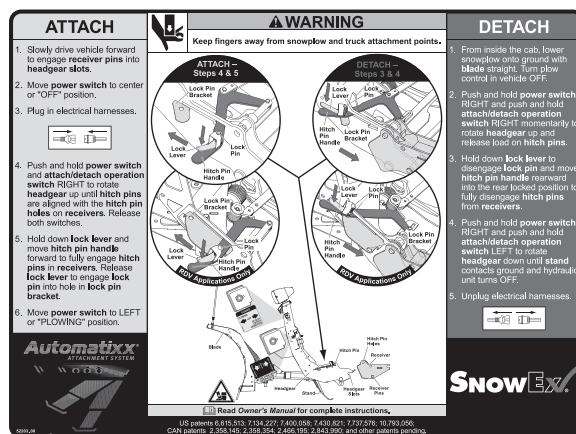
NOTE: Indicates a situation or action that can lead to damage to your snowplow and vehicle or other property. Other useful information can also be described.

WARNING/CAUTION AND INSTRUCTION LABELS

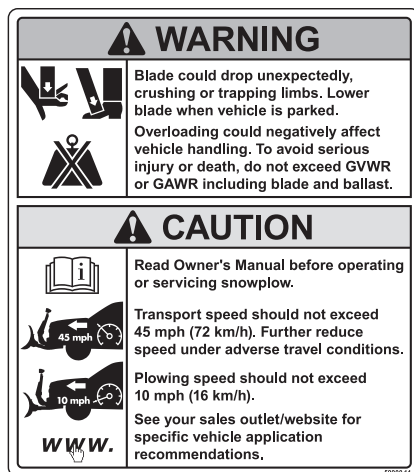
Become familiar with and inform users about the warning/caution and instruction labels on the back of the blade.

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

Instruction Label



Warning and Caution Label

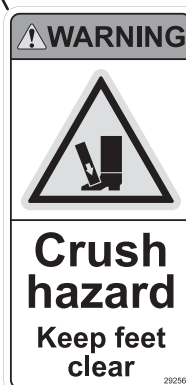


Warning Label



**POWER PLOW™ &
SPEEDWING™ Blades Only
(both sides)**

Warning Label



SAFETY

SAFETY PRECAUTIONS

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

WARNING

Lower the blade when 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 the vehicle and the 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 Power Match 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 SnowEx® 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.

SAFETY

FIRE AND EXPLOSION

⚠ WARNING

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

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

CELL PHONES

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

VENTILATION

⚠ WARNING

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

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.					

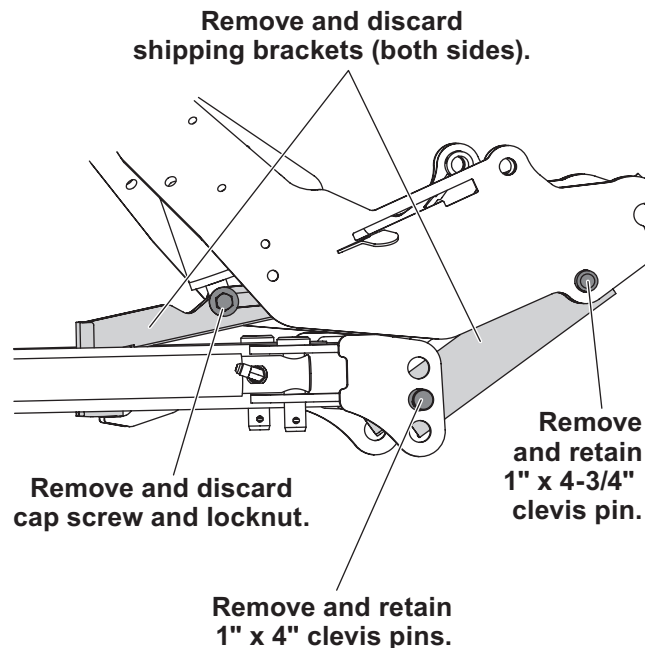
INSTALLATION INSTRUCTIONS

UNPACKING AND REMOVING SHIPPING BRACKETS

1. Set aside the blade guides and parts bags. The vehicle electrical harnesses and Owner's Manual packet are in the bag with the headlamp box. Move the attach/detach lever to unpin the receivers and set the receivers aside.

NOTE: Leave handle in the detach position during entire assembly process.

2. Remove the lag screws and wood blocks securing the headlamp channel to the headgear and set the headlamp channel aside.
3. Remove the packaging hardware securing the headgear to the A-frame, except for the clevis pins and the shipping brackets.
4. Remove the fasteners and blocking securing the A-frame to the pallet.
5. While supporting the headgear, remove and retain the clevis pins and discard the shipping brackets and hairpin cotters. Remove and discard the shipping brackets and cap screw and locknut from the lift cylinder.

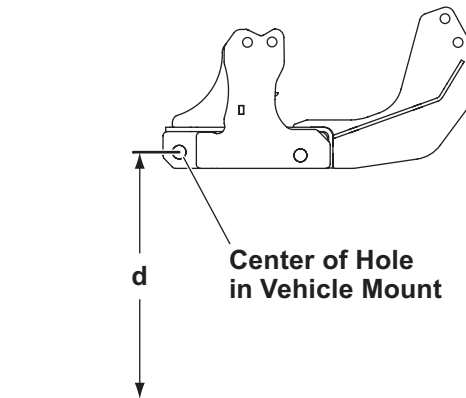


A-FRAME HOLE POSITION

IMPORTANT! Before assembling headgear to A-frame, measure the vehicle mount height to confirm whether standard receivers or tall receivers are required, and which A-frame holes to use for installation. (If the truck is not available, use the middle position. Make any adjustments later.)

Before measuring the vehicle mount height, the mount must be installed on the vehicle, ballast (if required) must be installed, and the vehicle must be parked on a level surface.

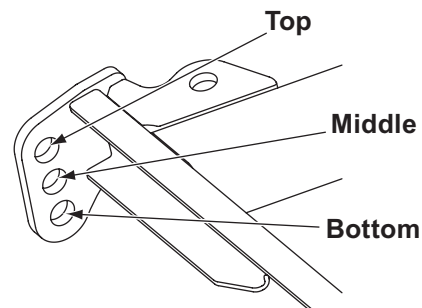
1. Measure the distance "d" from the ground to the center of the hole in the vehicle mount. Measure the distance on both sides of the vehicle and determine average value for "d."



2. Use the following chart to determine the proper hole position.

A-Frame Hole Position Chart	
Distance "d"	Hole Position
11.5" – 13.0"	Bottom
13.0" – 14.5"	Middle
14.5" – 16.5"	Top
16.5" – 18.5"†	Top

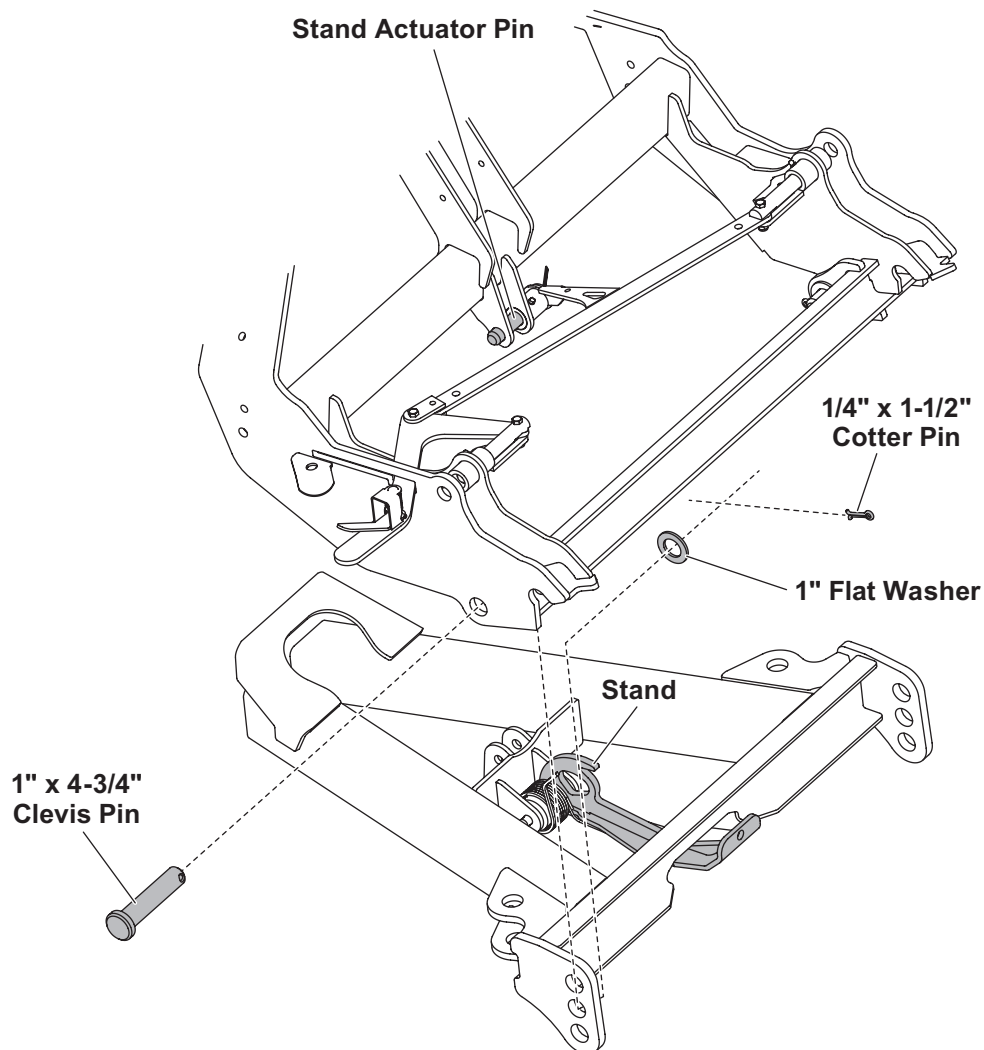
† Tall receivers (85121 & 85122) required in place of standard receivers.



INSTALLATION INSTRUCTIONS

A-FRAME TO HEADGEAR

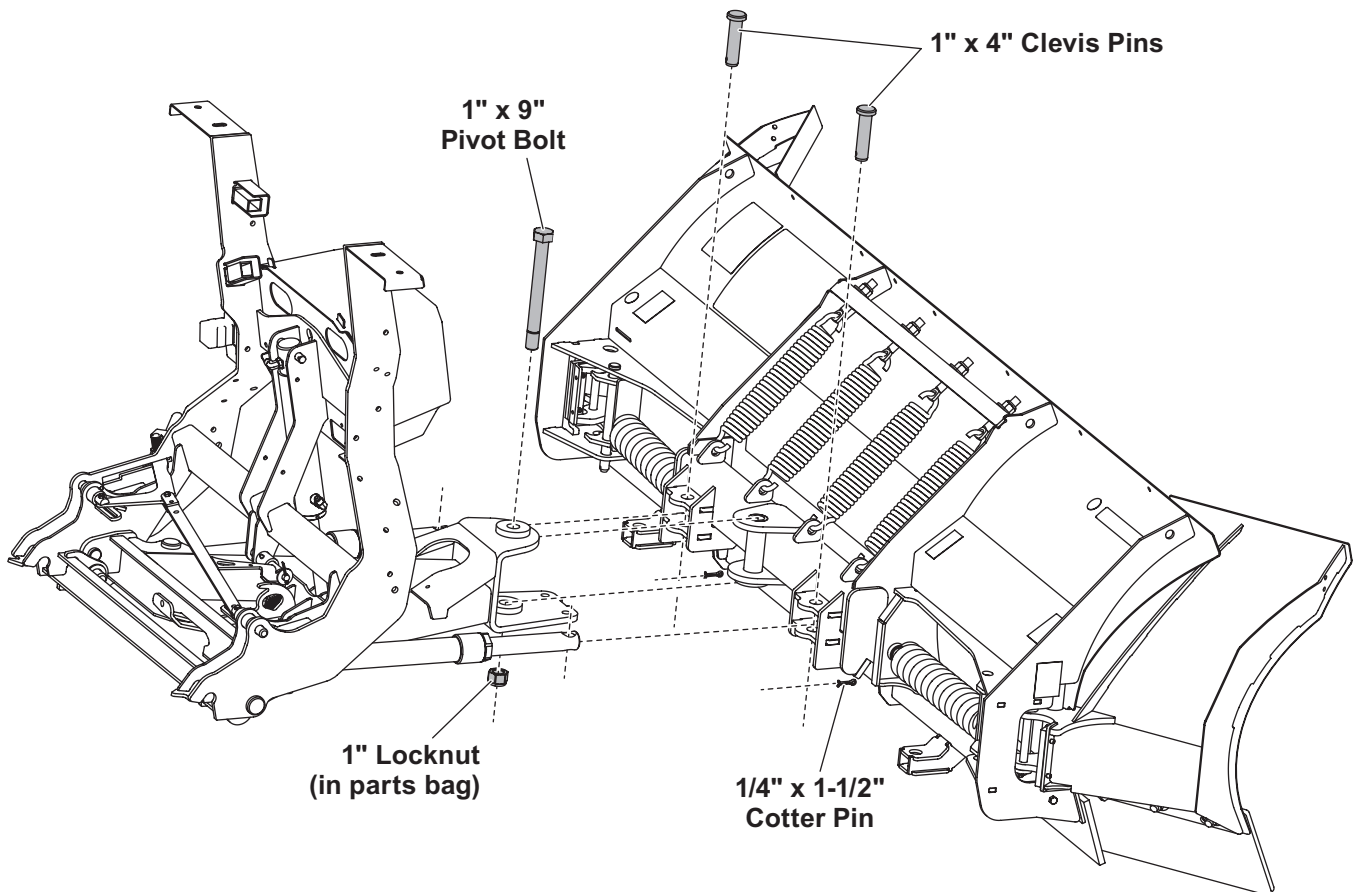
1. Position the A-frame between the headgear strut and inner ear, aligning the appropriate hole in the A-frame that is determined by distance "d."
2. On each side, insert 1" x 4-3/4" clevis pins (from the shipping bracket) from the outside of the headgear through the correct A-frame holes. Secure the clevis pins with 1" flat washers and 1/4" x 1-1/2" cotter pins found in the parts bag.
3. Fold the headgear forward and pin the lift cylinder to the A-frame using a 2-1/8" x 1/2" clevis pin and 1-1/2" x 5/32" cotter pin from the parts bag.
4. Verify that the stand actuator pin is on top of the stand.



INSTALLATION INSTRUCTIONS

A-FRAME TO BLADE ASSEMBLY

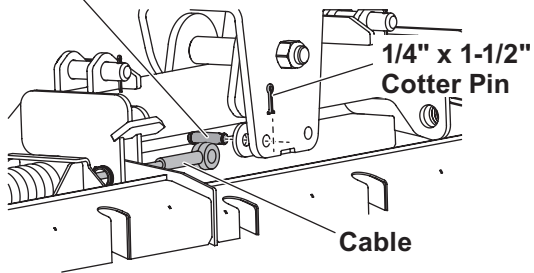
1. Align the pivot bolt hole on the A-frame with the pivot bolt hole on the quadrant.
2. Install the pivot bolt from the top. Secure with a 1" locknut (found in the parts bag) and tighten the locknut as much as possible while allowing the A-frame and quadrant to pivot.
3. Move the snowplow into a normal operating position.
4. Remove the protective packaging from the angle rams.
5. Align the holes in the rod end of the angle ram with the corresponding holes on the back of the quadrant.
6. Install a 1" x 4" clevis pin (from the shipping bracket) from the top down to attach each rod. Secure the clevis pins with 1/4" x 1-1/2" cotter pins from the parts bag.



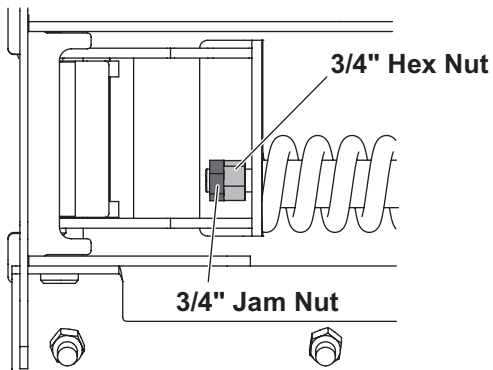
INSTALLATION INSTRUCTIONS

7. Insert the threaded end of the cable through the driver-side pivot bushing from the center out. Slide the cable through the spring until the eyelet hole lines up with the driver-side mounting clevis on the A-frame. Insert the eyelet into the clevis and secure with a 5/8" x 2-5/16" clevis pin and 1/4" x 1-1/2" cotter pin. Repeat on passenger's side.

**5/8" x 2-5/16"
Clevis Pin**



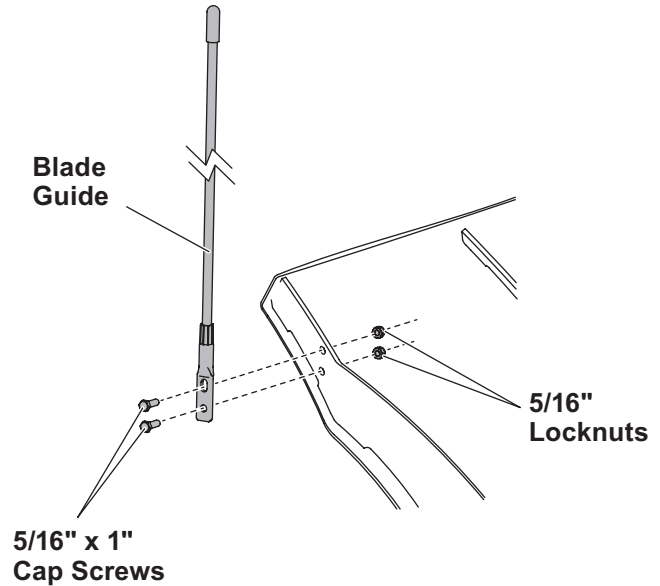
8. Assemble a 3/4" hex nut and 3/4" jam nut loosely onto the threaded end of the driver-side cable.



Thread the nuts on just flush with the end of the cable. Repeat on the passenger's side.

NOTE: Final adjustment of the cables will take place in the Operational Test and Final Adjustments section of this document.

9. Stand the blade and A-frame assembly upright and support it in a level position using a block under the main A-frame tube. Install the blade guides using 5/16" x 1" cap screws and 5/16" locknuts.



INSTALLATION INSTRUCTIONS

HEADLAMPS

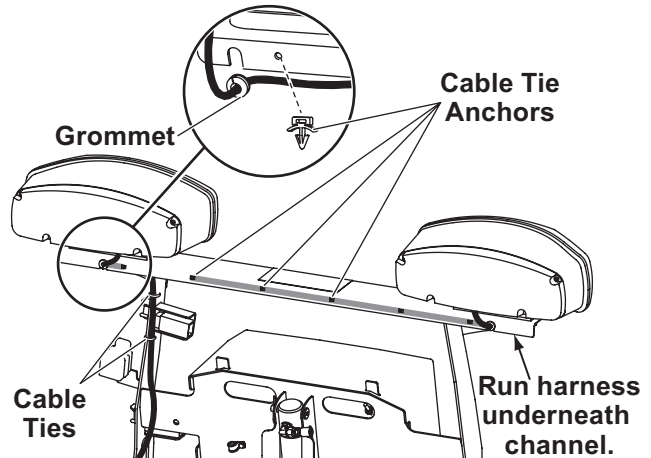
⚠ WARNING

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

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

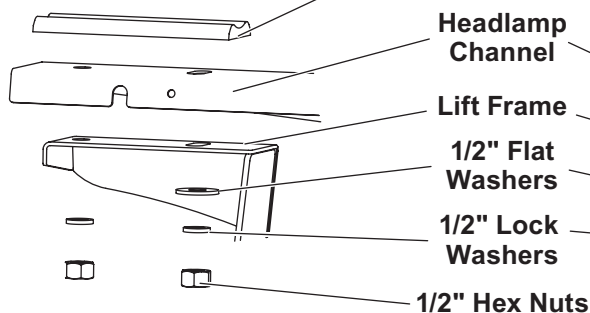
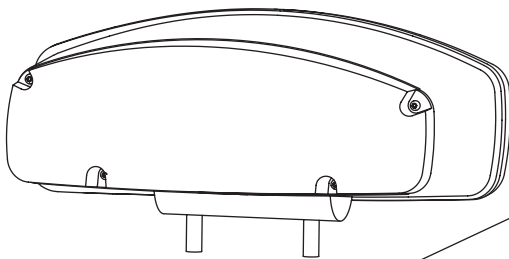
1. Install the vehicle wiring according to the instructions provided.
2. Set the headlamp channel on the headgear, label to the front, with the holes aligned.
3. With the correct headlamp on the correct side, set each headlamp and swivel into place as shown.
4. Secure the headlamps with the correct hardware 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.
5. Connect the headlamp wires to the headlamps.
6. Aim the headlamps according to the Snowplow Headlamp Beam Aiming Instructions (Lit. No. 27769). For LED headlamps, tighten the fasteners to 22 ft-lb (30 N·m). For halogen headlamps, tighten the fasteners to 50 ft-lb (68 N·m).

7. From inside the headlamp channel, insert the cable tie anchors into the holes as shown. The anchor locking tabs should be horizontal.

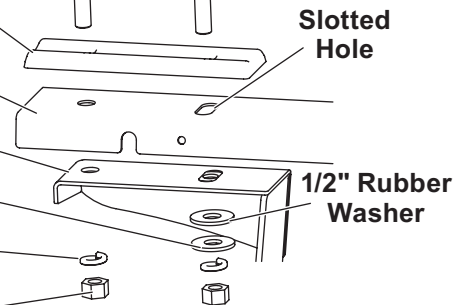
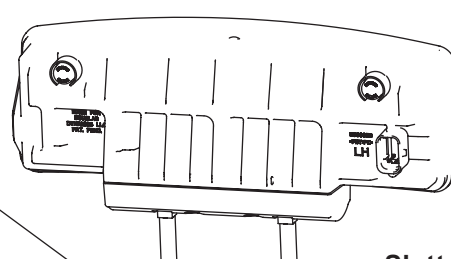


8. For halogen headlamps only, install a split rubber grommet on each headlamp wire 3" from the headlamp. Insert the grommet and wire into the slot on the rear of the channel.
9. Route the wires under the channel and down the back of the driver-side vertical support. Secure the wires to the anchors and the vertical support with cable ties.

Halogen Headlamps



LED Headlamps



OPERATIONAL TEST AND FINAL ADJUSTMENTS

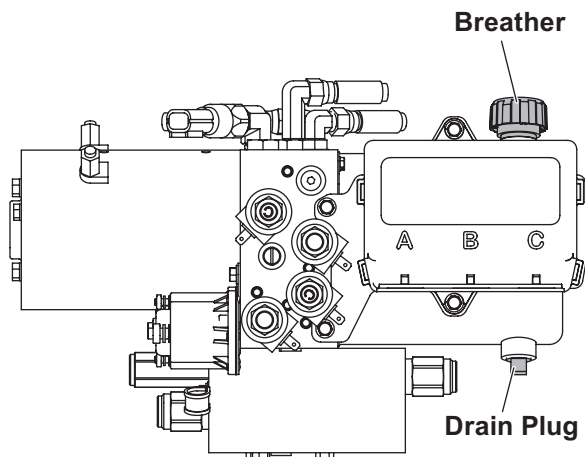
HYDRAULIC UNIT

⚠ WARNING

Keep 8' 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 hydraulic system comes from the factory preassembled, partially filled, and fully tested.

1. Attach the snowplow to the vehicle according to the instructions on the back of the blade.
2. Remove the cover from the hydraulic unit. Remove and discard the factory-installed pipe plug from the top of the reservoir and install the breather.



⚠ 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.

3. Turn the control ON and raise and lower the snowplow several times. With the plow in the raised position, fully angle the plow from right to left several times. Activate the control FLOAT function and make sure the blade is lowered completely to the ground. Turn the control OFF.

⚠ CAUTION

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

4. Remove the breather and check the fluid level. The fluid level should be 1"–1-1/2" below the fill hole. If additional fluid is needed, add SnowEx® Rapid Action 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 until fluid is 1"–1-1/2" below the fill hole.

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

NOTE: Add fluid only when all rams are retracted and blade is resting fully on the ground.

5. Replace and tighten the breather.

OPERATIONAL TEST AND FINAL ADJUSTMENTS

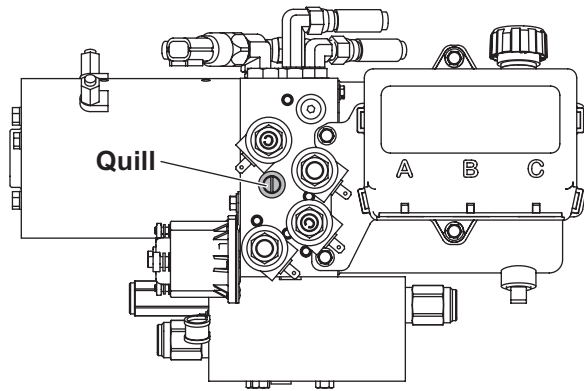
BLADE DROP SPEED ADJUSTMENT

⚠ WARNING

Keep 8' 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.

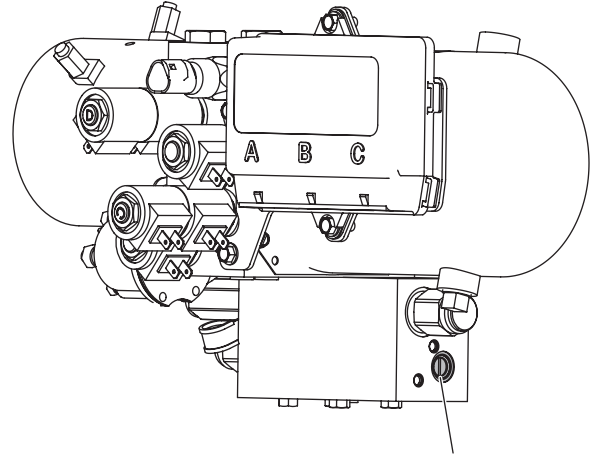
The quill in the valve manifold adjusts the blade drop speed.

1. Lower the blade to the ground before making any adjustment.
2. On the hydraulic unit, remove the cover.
3. Turn the quill IN (clockwise) to decrease drop speed. Turn the quill OUT (counterclockwise) to increase drop speed.



4. Stand 8 feet clear of the blade when checking adjustment.
5. With the vehicle ignition ON and the control ON, press and hold the LOWER button (hand-held control) or hold the lever in the "LOWER" position (joystick control) until the green FLOAT light flashes twice to indicate that the Scrape Maxx™ mode is activated.
6. The hydraulic unit will activate briefly, then shut off.

7. The hydraulic unit should not activate again for a minimum of five seconds. If the hydraulic unit activates sooner, adjust the RV2 relief valve, located on the side of the hydraulic unit.



RV2 Relief Valve

8. Turn the RV2 relief valve in 1/8 turn at a time until the hydraulic unit remains off for at least five seconds. DO NOT turn the relief valve in more than 1/4 turn total.
9. Deactivate the Scrape Maxx down-force feature by pressing the RAISE button once or holding the joystick lever in the "RAISE" position.
10. Replace the hydraulic unit cover.

OPERATIONAL TEST AND FINAL ADJUSTMENTS

FINAL INSPECTION AND ADJUSTMENT

⚠ WARNING

Keep 8' 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.

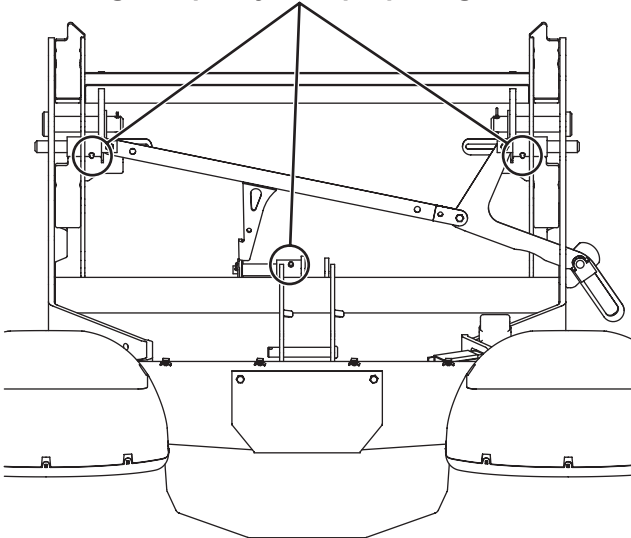
1. Check that the trip springs are adjusted correctly by confirming that the coils of the springs are separated slightly.

⚠ CAUTION

Overtightening of the springs will increase the blade trip force and cause damage to the springs and plow assembly.

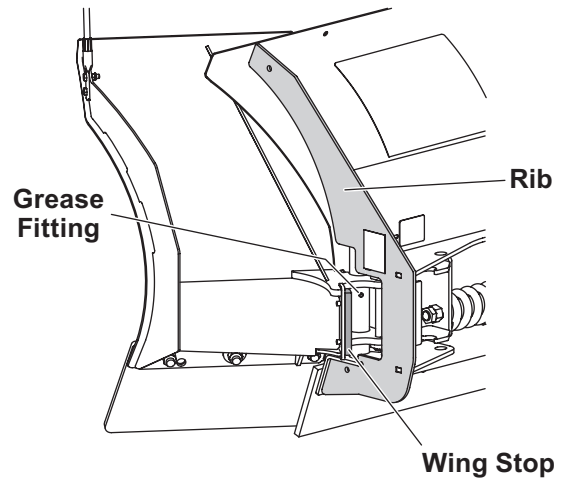
2. Adjust the trip springs by tightening the top nuts until the coils of the springs begin to separate (a piece of paper such as this instruction sheet should pass between the second and third coils).
3. Fully angle the blade in both directions in raised and lowered positions. Adjust hose fittings, wraps, and clamps so hoses do not contact vehicle bumper, have no sharp bends and are wrapped at contact points with, and do not become pinched between the headgear and A-frame.
4. Add grease to the two hitch pins and stand actuator pin.

Use a good quality multipurpose grease.



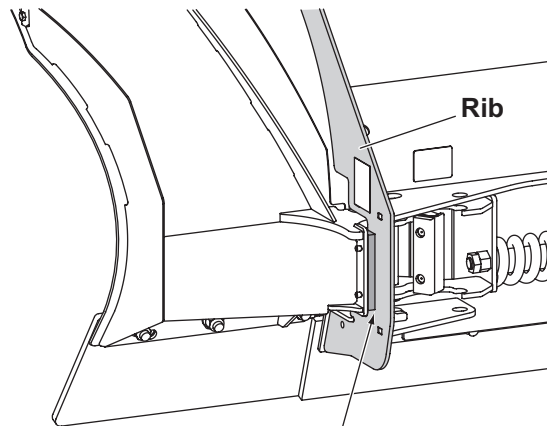
CABLE ADJUSTMENT

1. Angle the blade fully left and inspect the area between the driver-side wing stop and the driver-side blade rib.



2. If there is a gap between the wing stop and the rib, skip to Step 3.

If there is no gap, return the blade to the straight position and loosen the 3/4" jam nut and 3/4" hex nut on the end of the cable 1/4 turn. Repeat this adjustment until a gap can be seen.

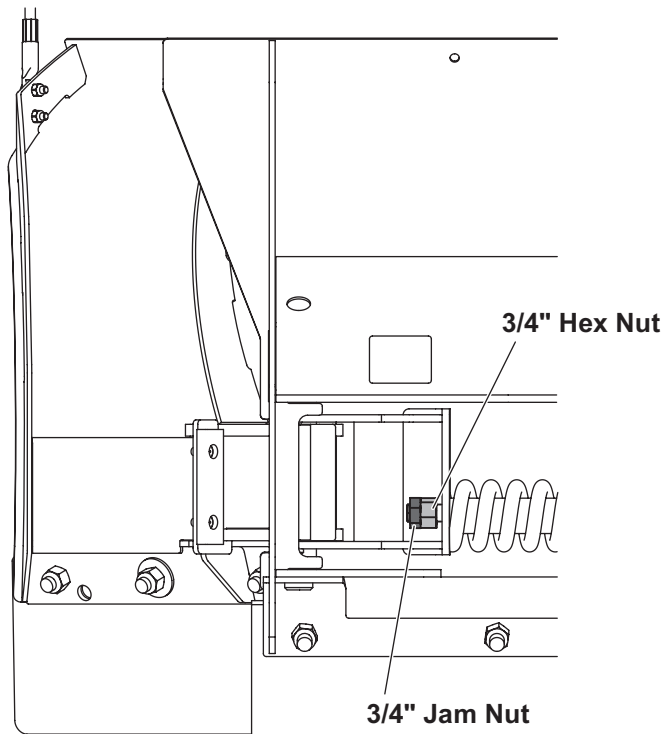


Wing stop must just contact rib when blade is fully angled.

3. Return the blade to the straight position and adjust the hex nut 1/4 turn clockwise. Angle the blade fully left and inspect the area between the wing stop and the rib again.
4. Continue making this adjustment until the wing stop just contacts the rib when the blade is fully angled left.

OPERATIONAL TEST AND FINAL ADJUSTMENTS

5. Once the stop is making contact with the rib, lock the hex nut into position with the 3/4" jam nut.



6. Repeat Steps 1–5 on the passenger's side of the blade assembly, this time angling the blade fully to the right.

NOTE: Adjusting the 3/4" hex nut inward too far will cause the wing stop to contact the blade rib before the blade is fully angled. This condition can stretch the cables and shorten their service life.

7. Grease the fittings on the wing hinges.

OPERATIONAL TEST AND FINAL ADJUSTMENTS

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.

Dimmer switch should toggle headlamps between high and low beams. The high beam indicator on the dash should light when 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 snowplow DRL function per the type of isolation module installed.

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

Joystick or 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) switch are both in the "ON" position.

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

CAUTION

Plug covers shall be used whenever snowplow is disconnected. Vehicle battery cable is 12V unfused source.

5. 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.

OPERATIONAL TEST AND FINAL ADJUSTMENTS

WING LOCK PINS AND LIFT LOCK PINS

The parts bag contains two 3/4" x 9" clevis pins for pinning the wings in the straight position as a plowing option.

Give this parts bag to the snowplow owner. The Owner's Manual contains instructions for using these pins.

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 according to the snowplow checklist.

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.



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