



8-1/2' and 9-1/2' HDV™ Snowplow

77770, 77780, 77775, 77785, 77870, 77870-1

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

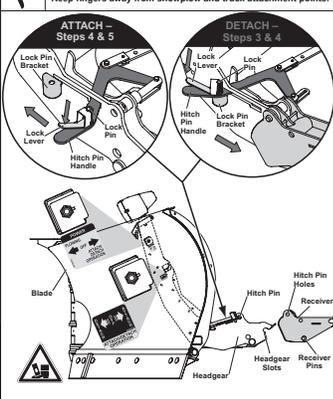
Become familiar with and inform users about the warning/caution and instruction labels on the back of the blade.

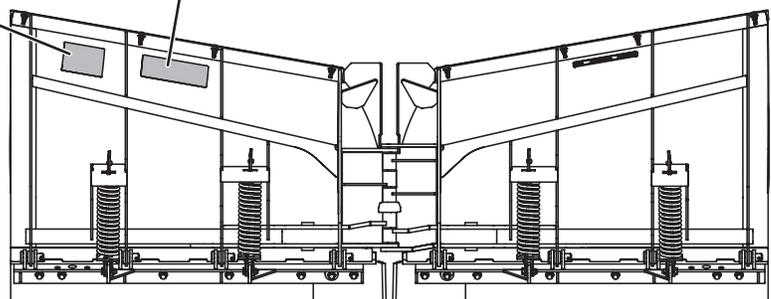
NOTE: If labels are missing or cannot be read, see your sales outlet.

Warning and Caution Label

⚠ WARNING	
	Lower blade when vehicle is parked.
	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/Web site for specific vehicle application recommendations. 52900

Attach/Detach Label

ATTACH <ol style="list-style-type: none"> Slowly drive vehicle forward to engage receiver pins into headgear slots. Move power switch to center or "OFF" position. Plug in electrical harnesses. Push and hold power switch and attach/detach operation switch RIGHT to rotate headgear up until hitch pins are aligned with the hitch pin holes in receivers. Release both switches. Hold down lock lever and move hitch pin handle forward to fully engage hitch pins in receivers. Release lock lever to engage lock pin into hole in lock pin bracket. Move power switch to LEFT or "PLOWING" position. 	⚠ WARNING Keep fingers away from snowplow and truck attachment points.	DETACH <ol style="list-style-type: none"> From inside the cab, lower snowplow onto ground with blade in vee position. Turn plow control in vehicle OFF. Push and hold power switch RIGHT and push and hold attach/detach operation switch RIGHT momentarily to rotate headgear up and release load on hitch pins. Hold down lock lever to disengage lock pin and move hitch pin handle rearward into notch in end of slot to fully disengage hitch pins from receivers. Push and hold power switch RIGHT and push and hold attach/detach operation switch LEFT to rotate headgear down until stacking stop contacts T-frame and hydraulic unit turns OFF. Unplug electrical harnesses.
		
Automattix <small>US patents 5,638,618; 5,899,007; 6,178,669; 6,253,476; 6,276,076; 6,393,737; 6,448,549; 6,412,169; 6,442,877; 6,815,513; 7,134,227; 7,400,058; 4,30,821; 7,137,976; 9,201,416; CAN patents 2,164,922; 2,229,783; 2,239,906; 2,358,145; 2,368,354; 2,468,795; 2,552,633; and other patents pending.</small>		



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 T-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 blade-style automotive 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 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

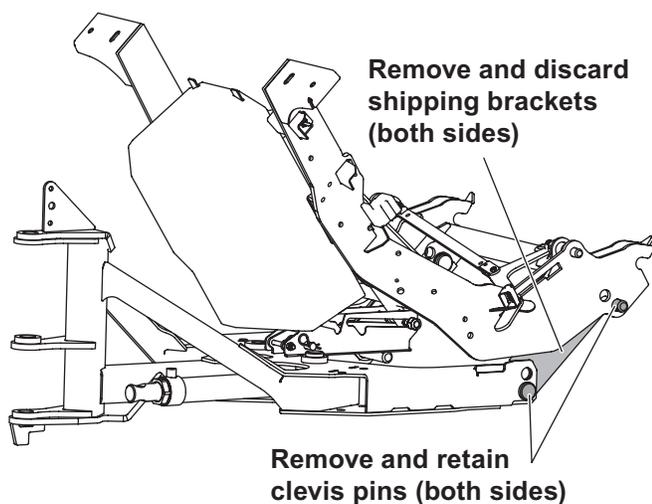
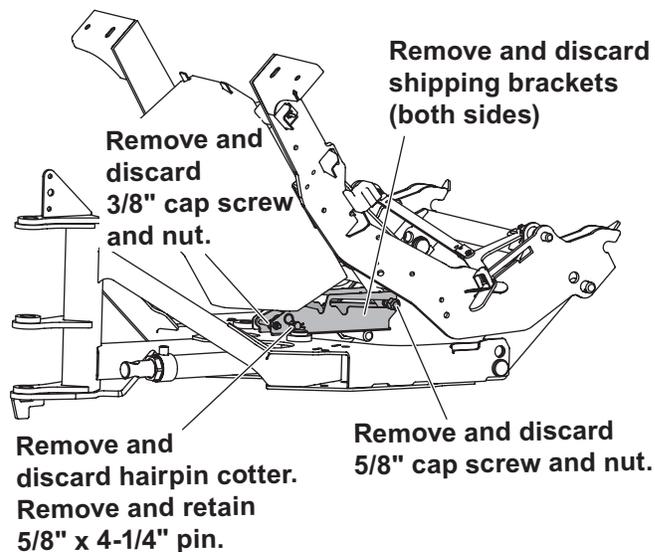
UNPACKING AND REMOVING SHIPPING BRACKETS

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 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 T-frame, except for the clevis pins and the shipping brackets.
4. Remove the fasteners and blocking securing the T-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 the two cap screws and locknuts from the lift cylinder.



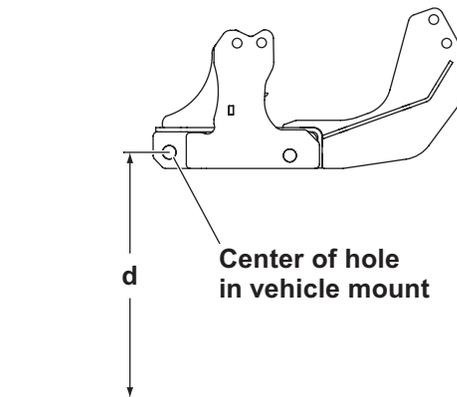
INSTALLATION INSTRUCTIONS

T-FRAME HOLE POSITION

IMPORTANT! Before assembling headgear to T-frame, measure the vehicle mount height to confirm whether standard receivers or tall receivers are required, and which T-frame and headgear holes to use for installation. (If the vehicle is not available, use the Position 2 holes on headgear and T-frame. Make 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.

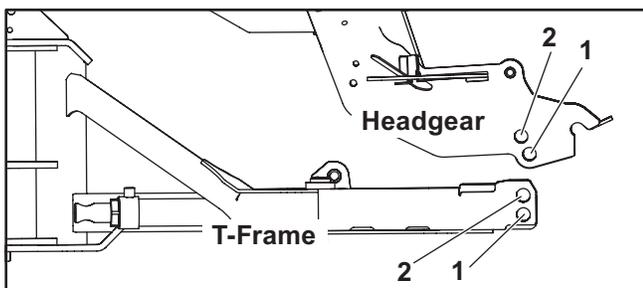
1. Measure the distance "d" from the ground to the center of the hole in the vehicle mount. Measure the distance on both sides of the vehicle and determine average value for "d".



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

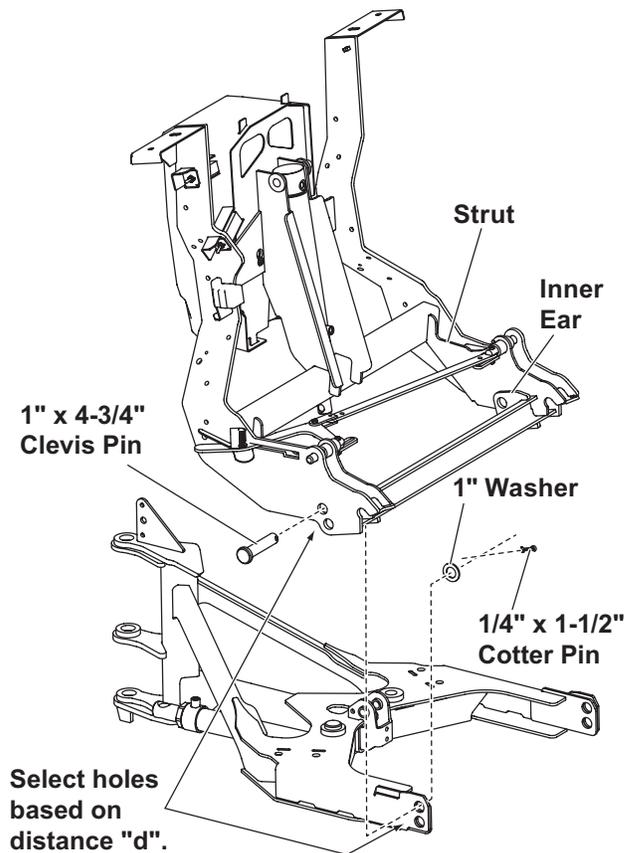
Hole Position Chart		
Distance "d"	Headgear Hole Position	T-Frame Hole Position
11.5" – 13.0"	2	1
13.0" – 14.5"	2	2
14.5" – 16.5"	1	2
16.5" – 18.5" [†]	1	2

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



T-FRAME TO HEADGEAR

1. Position the T-frame between the headgear strut and inner ear, aligning the appropriate T-frame and headgear holes selected from the Hole Position Chart.
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 T-frame holes. Secure the clevis pins with 1" flat washers and 1/4" x 1-1/2" cotter pins found in the parts bag.

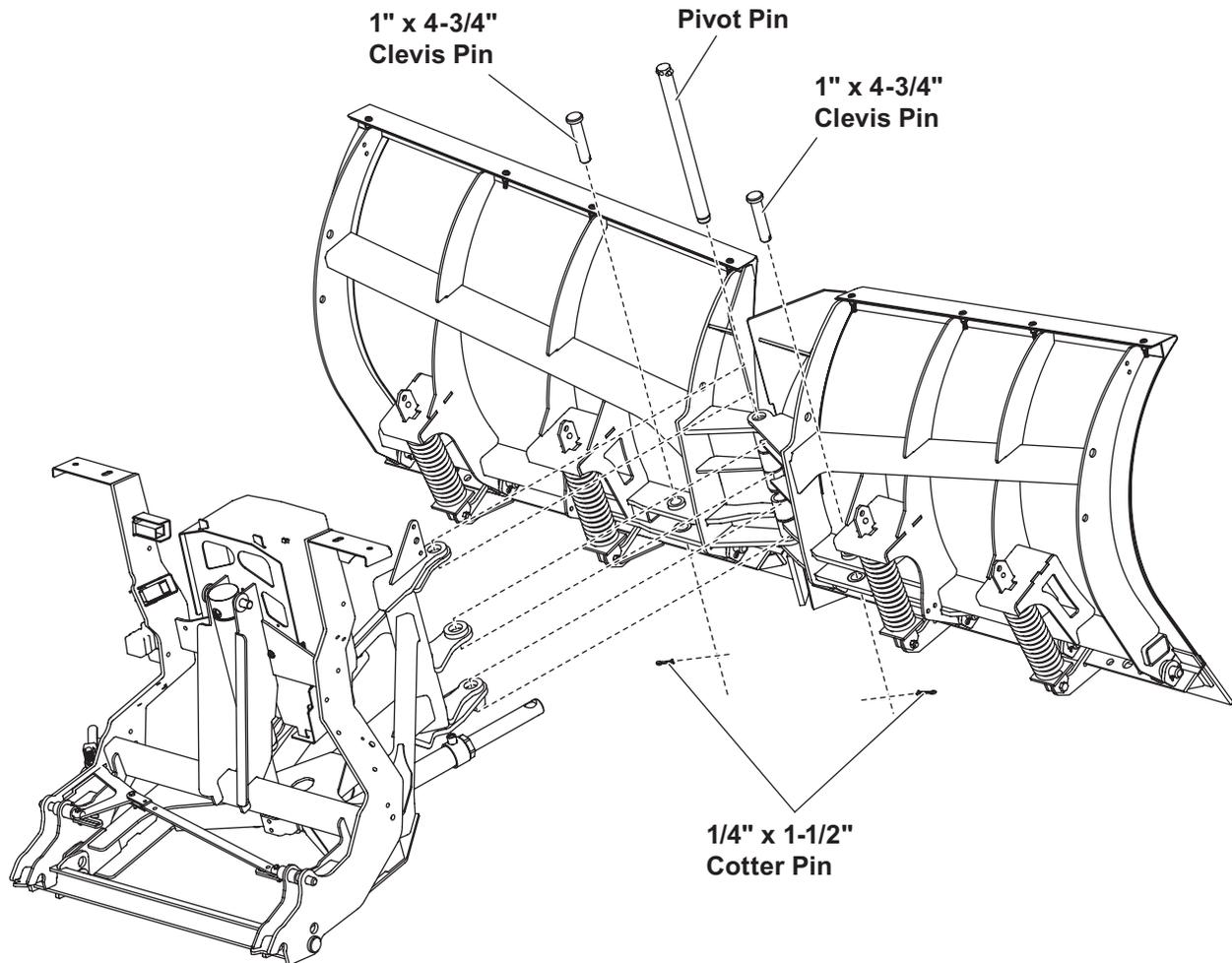


3. Fold the headgear forward and pin the lift cylinder to the T-frame using a 5/8" x 4-1/4" clevis pin and 1-1/2" x 5/32" cotter pin from the parts bag.

INSTALLATION INSTRUCTIONS

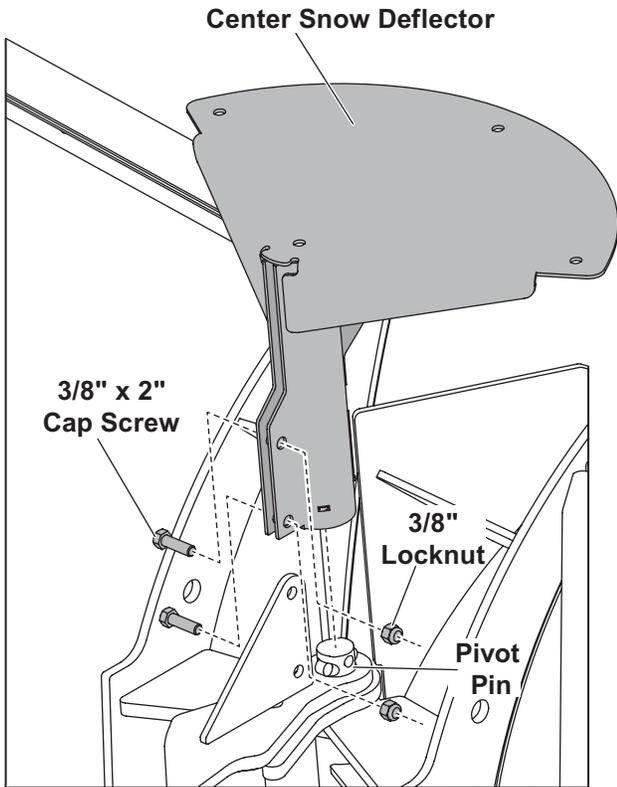
T-FRAME TO BLADE ASSEMBLY

1. Remove the blade wings from the crate. Remove the four shipping straps, then replace the cutting edge hardware.
2. Align the hinges of each wing. Position the T-frame assembly between the blade wings so the holes in the T-frame are aligned with the holes in wing hinges.
3. Insert the pivot pin from top to bottom through all hinges as shown.
4. Move the snowplow into a normal operating position.
5. Remove the protective packaging from the angle rams.
6. Align the holes in the rod end of the angle ram with the corresponding holes on the back of the blade.
7. Install a 1" x 4-3/4" 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.

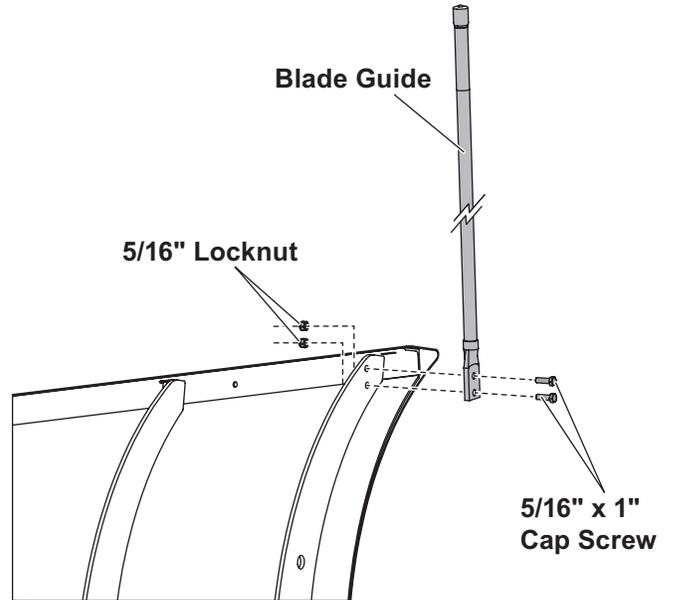


INSTALLATION INSTRUCTIONS

8. Install the center snow deflector using two 3/8" x 2" cap screws and 3/8" locknuts.



9. Install the blade guides with 5/16" x 1" cap screws and 5/16" locknuts, as shown.



INSTALLATION INSTRUCTIONS

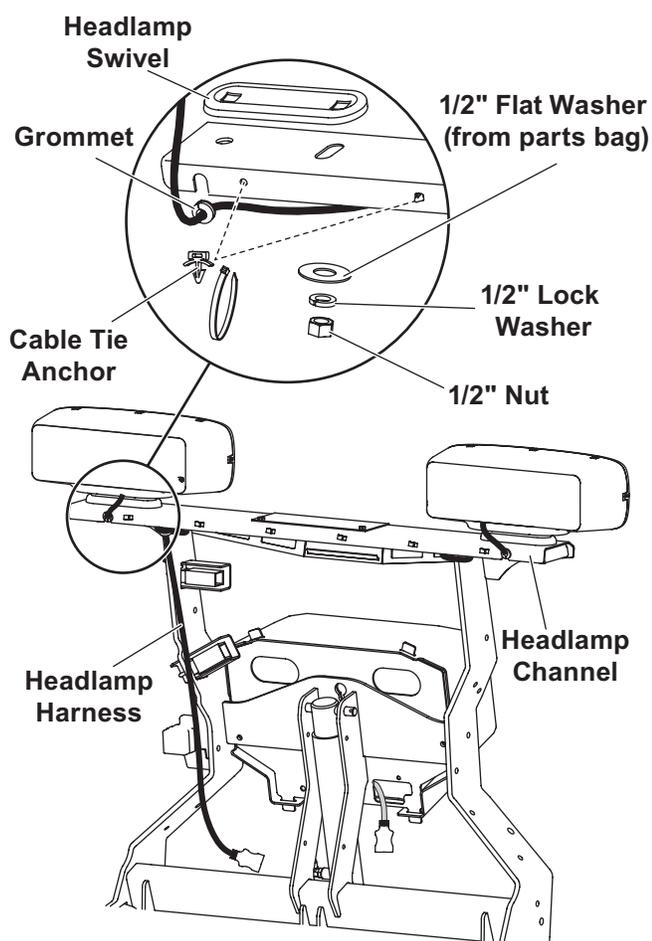
HEADLAMPS

⚠ WARNING

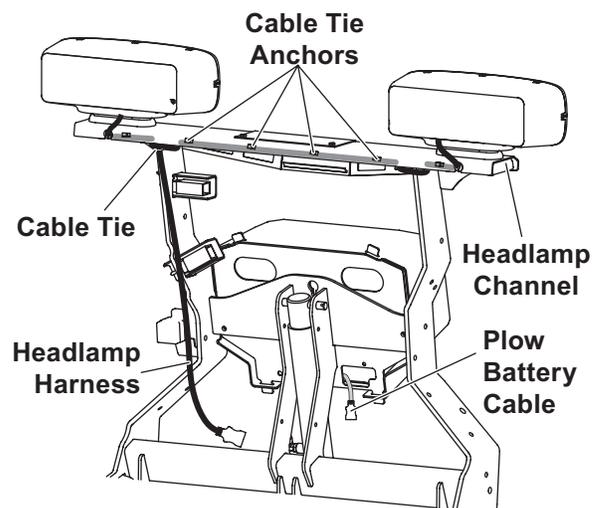
Your vehicle must be equipped with snowplow headlamps and directional lights.

Headlamps, hardware and instructions are found in the headlamp box. Additional hardware (two 1/2" flat washers) can be found in the parts bag.

1. Attach the headlamps and the headlamp channel according to the instructions provided in the headlamps box, substituting the 1/2" flat washer from the parts bag for the 1/2" flat washer packed in the headlamps box.



2. Insert cable tie anchors into the 1/4" holes on the rear of the headlamp channel, from inside the channel, with the locking tabs horizontal.
3. Install a split rubber grommet on each headlamp wire 3" from the headlamp and insert the grommet and wire into the slot on the rear of the channel.
4. Route the wires underneath the channel, in back of the vertical supports, and down along the inside of the driver-side vertical support, securing the wires to the anchors with cable ties.



5. Cable tie the harnesses and battery cable to the headgear as shown in illustration.

OPERATIONAL TEST AND FINAL ADJUSTMENTS

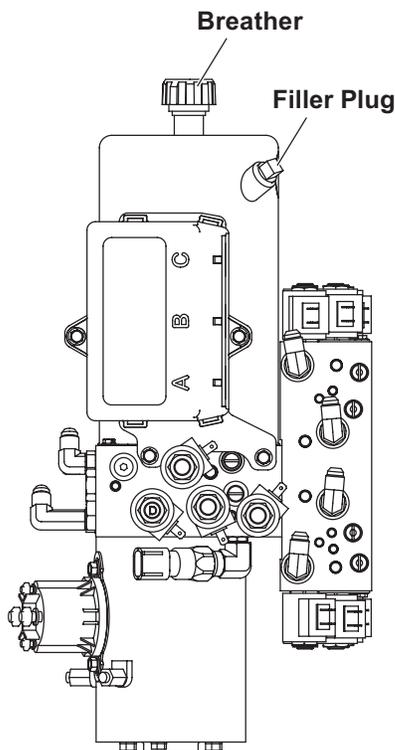
HYDRAULIC UNIT AND HOSE BRACKET INSTALLATION

⚠ 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.

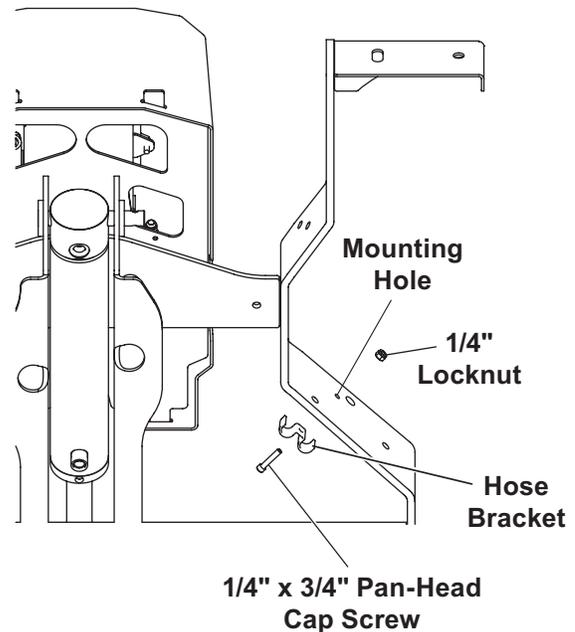
1. Attach the snowplow to the vehicle according to the instructions on the back of the blade.
2. Remove the cover from the hydraulic unit. Remove and discard the factory-installed pipe plug from the top of the reservoir and install the breather.



⚠ 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.

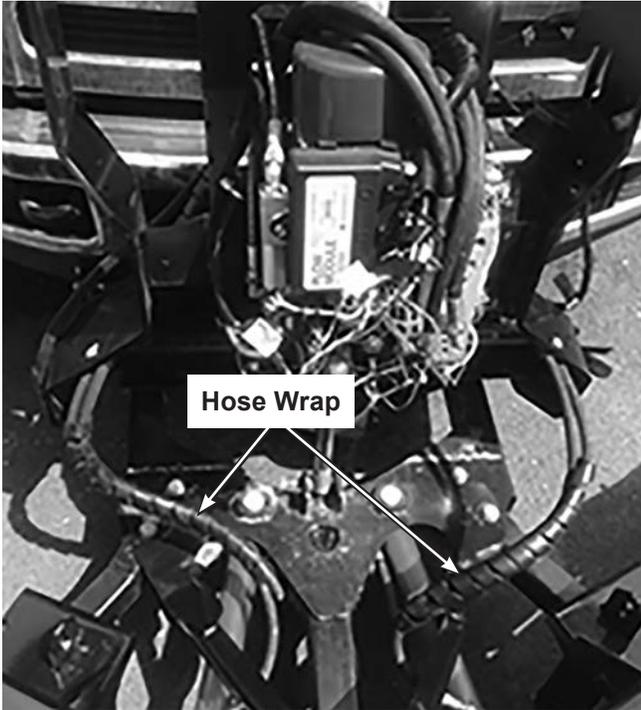
3. Remove the two hose brackets from the parts bag. Position one bracket over the passenger-side angle ram hoses and align it with the hose bracket mounting hole in the headgear upright. Install the bracket to the headgear using a 1/4" x 3/4" pan-head screw and 1/4" locknut, leaving the fasteners slightly loose. Repeat on the driver side.



4. Adjust the position of the hoses so that they will have slack when the lift ram is fully extended and will not be stretched on either side of the hose bracket.

OPERATIONAL TEST AND FINAL ADJUSTMENTS

- Adjust the position of the hose brackets so that the hoses loop out and away from the center of the T-frame as shown in the photo. Tighten the 1/4" locknut to prevent the hose brackets from turning.



- Install the provided hose wrap as shown to prevent the hoses from chafing and premature wear.

NOTE: Failure to complete the installation of the hose brackets and hose wrap may result in premature wear and damage to the hoses.

- 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.

- Remove the filler plug 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 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.

- Replace and tighten the breather.

OPERATIONAL TEST AND FINAL ADJUSTMENTS

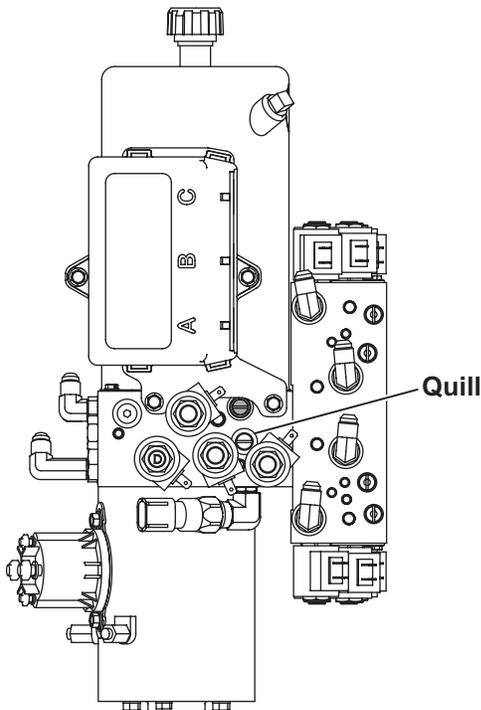
BLADE DROP SPEED ADJUSTMENT

⚠ 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.



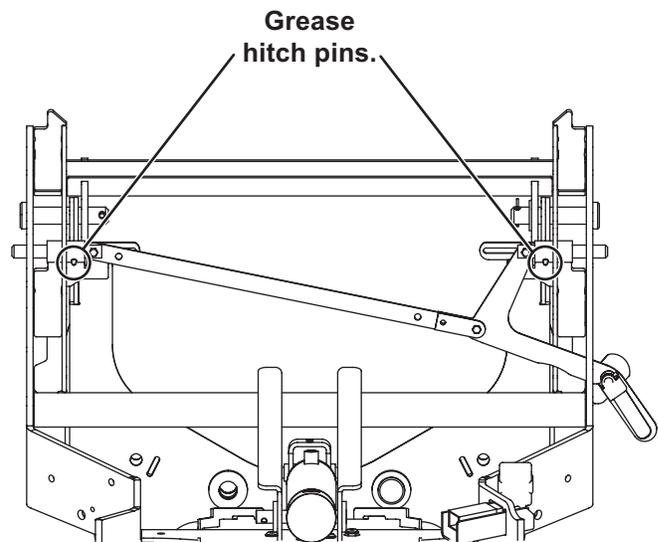
4. Stand 8 feet clear of the blade when checking adjustment.
5. Replace the cover.

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. 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 T-frame.
2. Apply good quality multipurpose grease to the two hitch pins.

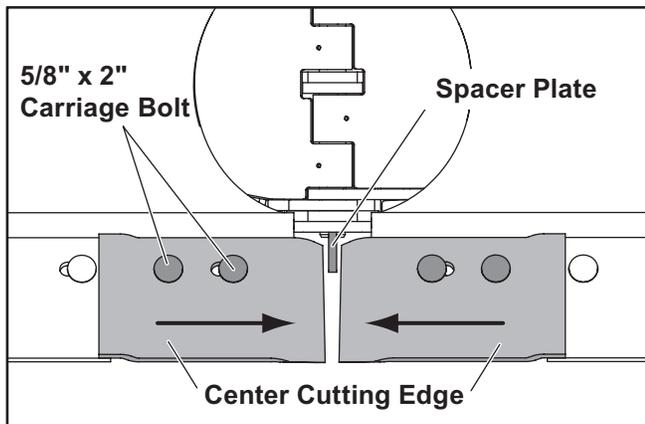


OPERATIONAL TEST AND FINAL ADJUSTMENTS

CENTER CUTTING EDGES

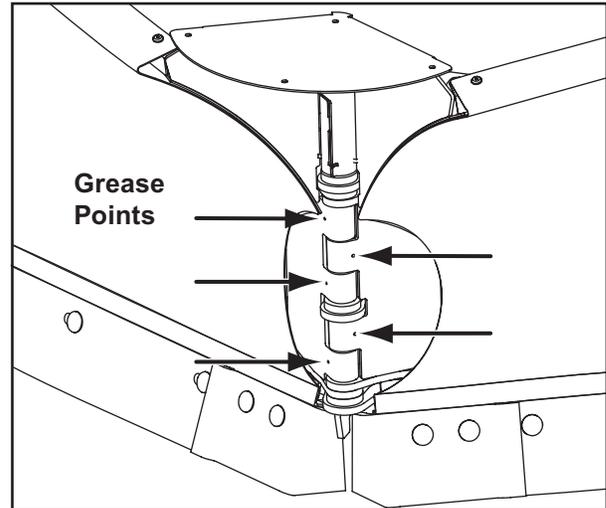
The center cutting edge spacer plate is located on the T-frame below the pivot pin hinges.

1. With the blade wings in straight position, the center cutting edges should touch the center cutting edge spacer plate. If they do not touch the spacer plate, adjust the center cutting edges as follows.
2. Loosen the four 5/8" x 2" center cutting edge carriage bolts, but do not remove them.
3. Slide the center cutting edges inward until they contact the spacer plate.
4. Re-tighten the center cutting edge carriage bolts according to the torque chart.



LUBRICATING THE PIVOT PIN HINGE

Using a rubber-tipped seal-off coupler tip, apply a good quality multipurpose grease at the five grease points along the center pivot pin hinge.



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 12-Volt 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.

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.





TrynEx International, LLC
531 Ajax Drive
Madison Heights, MI 48071-2429
www.snowexproducts.com

 A DIVISION OF DOUGLAS DYNAMICS, LLC

TrynEx International, LLC, 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. TrynEx International, LLC or the vehicle manufacturer may require or recommend optional equipment for snow removal. Do not exceed vehicle ratings with a snowplow. TrynEx International, LLC 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: Automatix®, HDV™, SnowEx®.

Printed in U.S.A.