



Fisher Engineering

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ATTACHMENT & HYDRAULIC ASSEMBLY INSTRUCTIONS

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⚠ CAUTION

Read this manual before installing or operating
the snowplow.

ASSEMBLY INSTRUCTIONS

Safety Information

Read this manual and labels on the snowplow before installing or operating the snowplow.

 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.

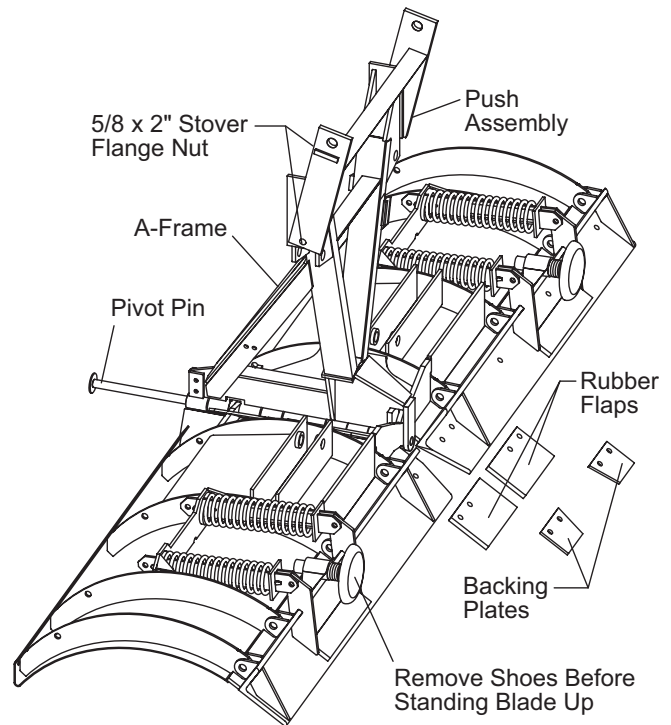
NOTE: Identifies tips, helpful hints and maintenance information the reader should know.

Torque all fasteners according to the torque chart. For proper fit, do not tighten fasteners until instructed to do so.

NC FASTENER TORQUE (FT-LB)			
DIAMETER- THREADS PER INCH	GRADE		
			
	G2	G5	G8
1/4 - 20	6	9	13
5/16 - 18	11	18	28
3/8 - 16	19	31	46
7/16 - 14	30	50	75
1/2 - 13	45	75	115
9/16 - 12	66	110	165
5/8 - 11	93	150	225
3/4 - 10	150	250	370
7/8 - 9	150	378	591
1 - 8	220	583	893

Blade and A-frame

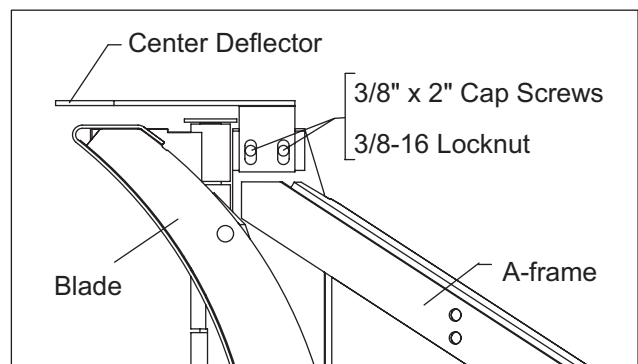
1. Place some cardboard or wood supports on the floor where the blade will be assembled. Remove the blade halves from the pallet. Place face down on the cardboard or wood with the hinges facing each other. Push the blade halves together so that the holes in the hinges are aligned.
2. Insert the A-frame assembly between the blade halves so the flat hinges on the A-frame straddle the flat hinges on the blade. Slide the pivot pin through all the hinges once all the hinge holes are aligned. Install a 1/4" x 2" spring pin through the bottom of the pivot pin.
3. Install the push assembly to the outside of the A-frame ears with the flat side of the crossmember center angle up. Install two 5/8" x 2" Gr. 8 stover flange cap screws into the front holes of the push assembly and A-frame from the outside. Secure with two 5/8" Gr. 8 stover flange nuts. Tighten the two fasteners until snug. Do not torque at this time. The rear holes in push assembly will be drilled later.
4. Remove disc shoes and stand the blade up.



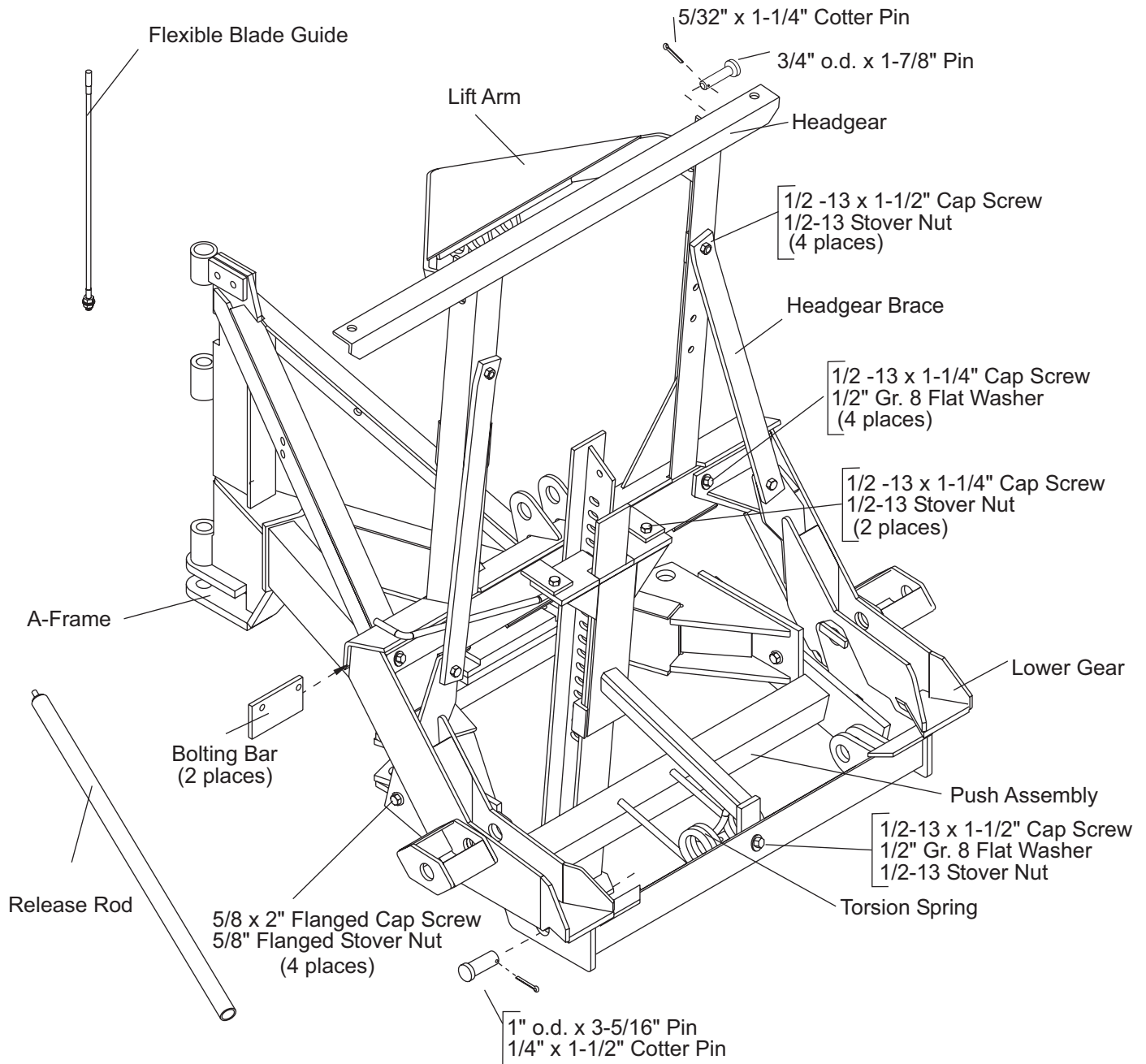
5. Install the rubber flaps on each base angle with two 1/2" x 2" cap screws. Insert the cap screws through the front of the base angle and through the rubber flaps and backing plates. Secure with locknuts.

Center Deflector

1. Slide the center deflector into place over the top of the hinge.
2. Fasten the center deflector to the A-frame using two 3/8" x 2" Gr. 5 cap screws and two 3/8" locknuts.
3. Allow 1/2" clearance between the blade and the center deflector. Torque the two 3/8" fasteners on the center deflector to 31 ft.-lb.
4. Install the blade guides on each end of the top of blade.

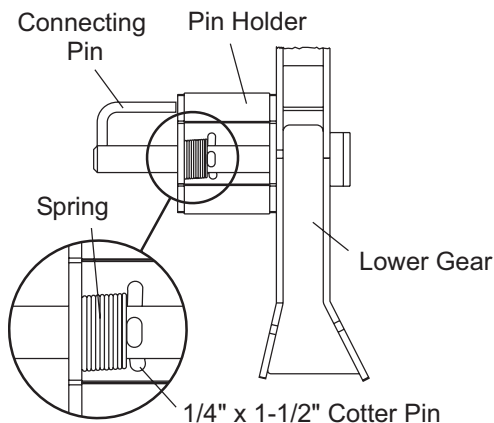


ASSEMBLY INSTRUCTIONS

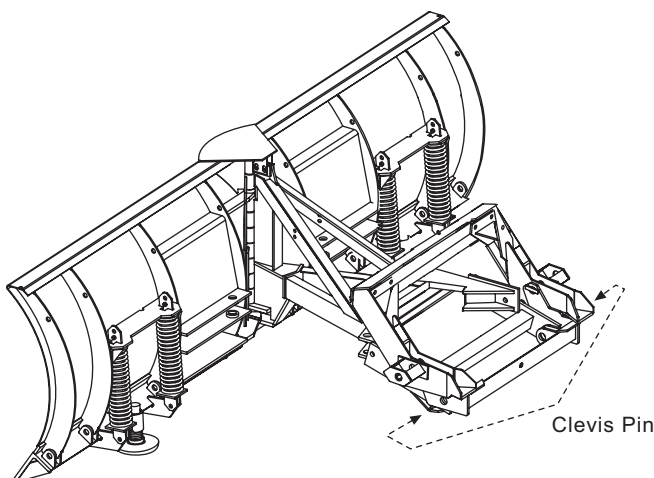


Lower Gear/Headgear Assembly

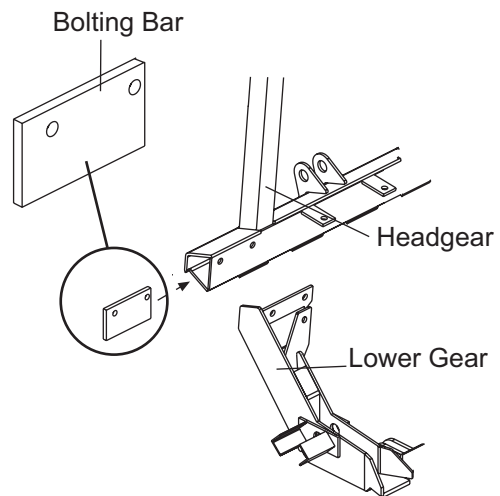
1. To assemble connecting pins to lower gear, insert springs in pin holders. Then insert the connecting pin through all three holes with the pin handles away from vehicle. Position cotter pin hole flush with inside plate. Pull back on the spring and install $1/4 \times 1-1/2$ " cotter pins. **Bend both legs of cotter pins around connecting pins for proper clearance.**



2. Align holes in lower gear assembly with rear holes in the push assembly. Insert $1 \times 3-5/16$ " clevis pins through ears, from the **outside to the inside** of the headgear. Secure with two $1/4 \times 1-1/2$ " cotter pins.



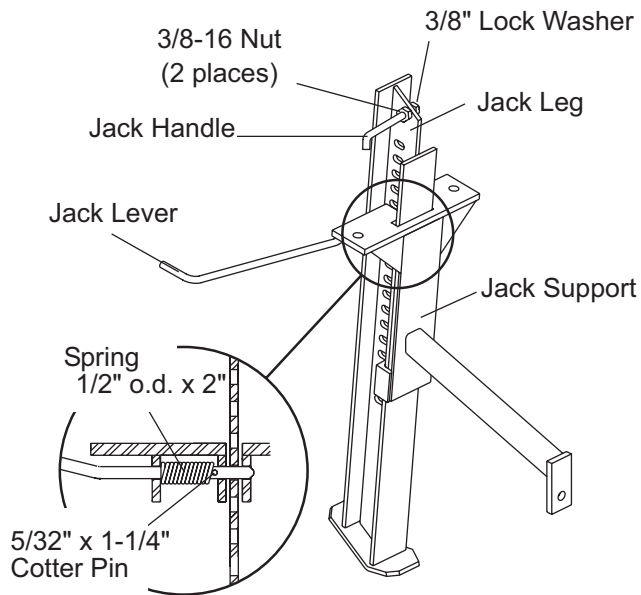
3. Attach headgear to lower gear. Position bolting bar inside headgear as shown below. Place headgear on front end of lower gear. Insert four $1/2 \times 1-1/4$ " cap screws with Gr. 8 flat washers through the holes in lower gear and bolting bar. Do not fully tighten.



NOTE: Use a 6" piece of $1/2$ " threaded rod to hold each bolting bar in place and to align headgear to lower gear. Thread into tapped hole after sliding bolting bar in place.

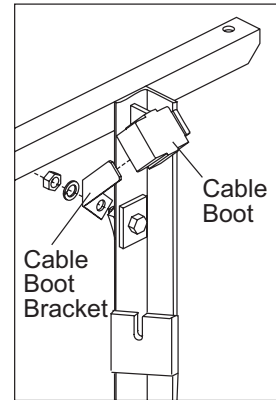
4. Ensure the A-frame cross member is parallel to the blade. Add wood blocking under A-frame cross member until A-frame is parallel with ground.
5. Insert jack lever through the three holes on jack support to clean out paint before assembling. Place jack lever spring between ear and guide on jack support. Insert the jack lever through ear until cotter pin hole is flush with jack guide. Pull back on spring and install $5/32 \times 1-1/4$ " cotter pin.

ASSEMBLY INSTRUCTIONS

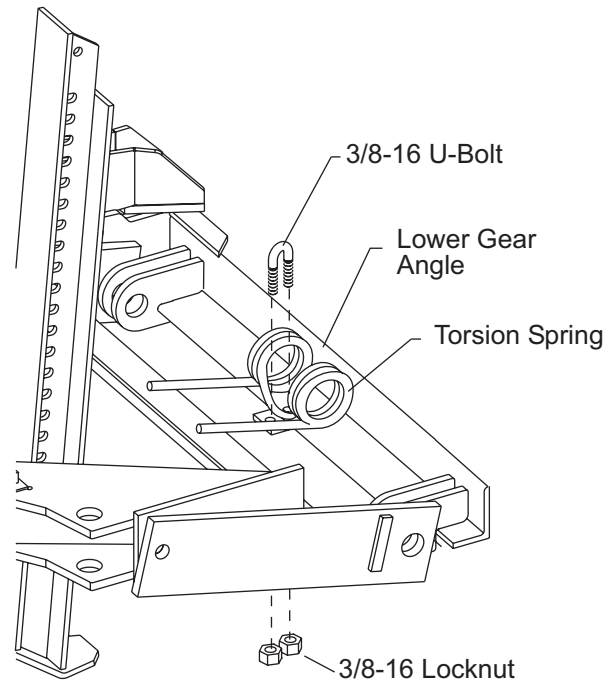


6. Insert jack leg up through jack support and engage jack lever when four slots are visible. Install one 3/8" nut on jack handle and insert into top round hole on jack leg. Fasten with one 3/8" lock washer and nut.
7. Attach jack support assembly to tabs on rear of headgear. Use two 1/2" x 1-1/4" cap screws, lock washers and nuts. Attach the jack support stiffener to the lower gear beam with one 1/2" x 1-1/2" cap screw, Gr. 8 flat washer and stover nut.
8. Install headgear braces to each side of headgear and ot lower gear tab. Top end of brace is bent and bottom of brace is installed on rear of tab. Fasten with four 1/2" x 1-1/2" cap screws and stover nuts. Do not fully tighten.

9. Install the cable boot and cable boot bracket on the driver side heagear brace. Tighten all fasteners on headgear/lower gear assembly.

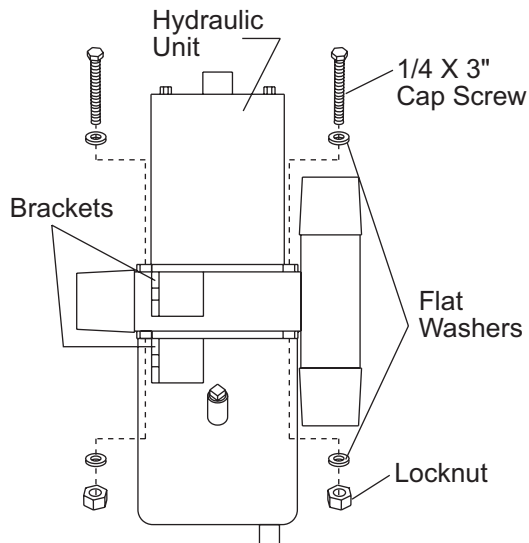


10. Pivot the upper and lower gear assembly away from the blade. Place torsion spring in center of the lower gear angle. Place 3/8" U-bolt over the loop of spring, through holes in the angle and the tab under the angle. Fasten with two 3/8" locknuts. Tighten both down evenly.



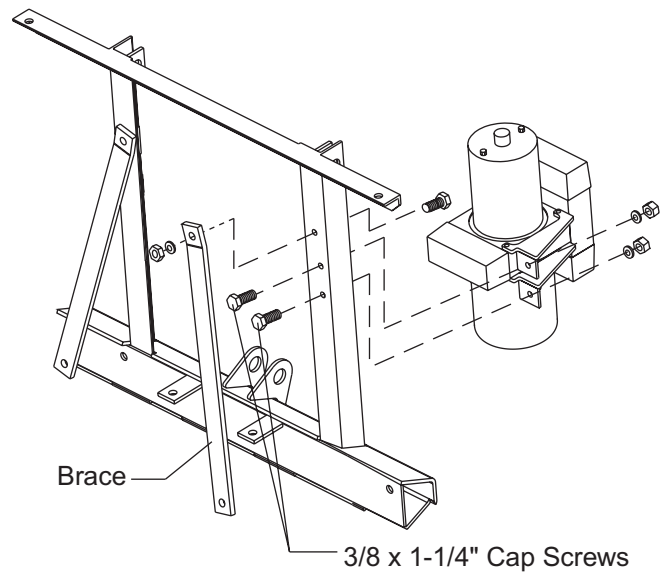
Hydraulic Unit Installation

1. Attach the two mounting brackets to the hydraulic unit using two 1/4 x 3" cap screws, flat washers and locknuts.



2. Remove the top cap screw from the passenger-side brace and swing out of the way.

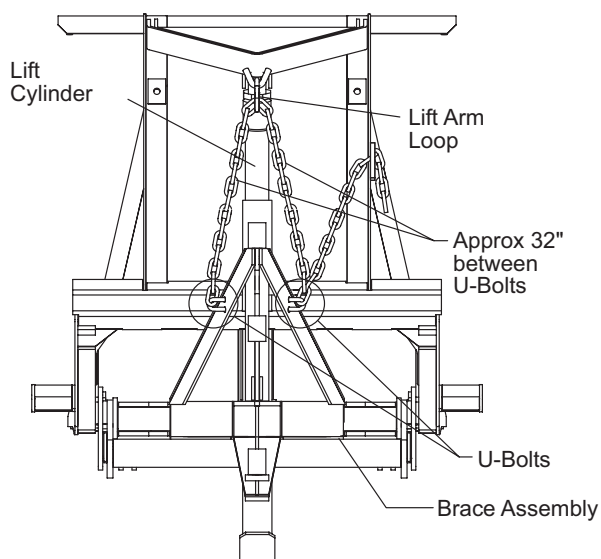
3. Bolt the upper and lower bracket of the hydraulic unit to the passenger-side upright using two 3/8" x 1-1/4" cap screws and locknut.
4. Reattach and tighten the headgear brace .



5. Install 90° elbow and breather cap in tapped port on driver side or primary valve block, after removing 3/8" plug.

ASSEMBLY INSTRUCTIONS

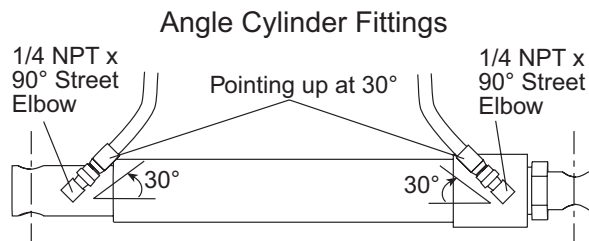
Lift Arm, Lift Cylinder and Lift Chain Installation



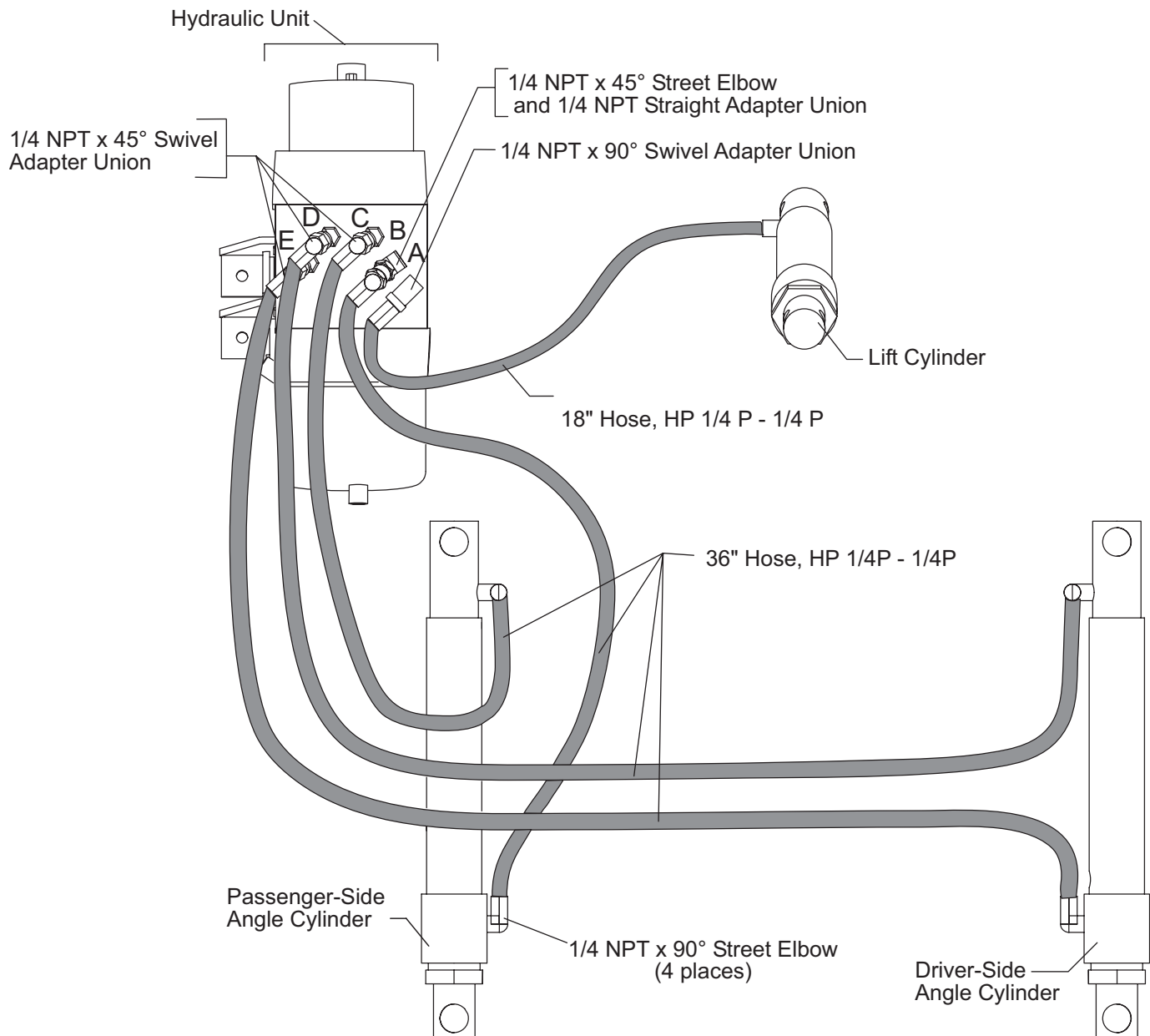
1. Install the lift arm with two 3/4 x 1-7/8" machine pins and 5/32 x 1-1/4" cotter pins. Attach the lift cylinder to the lift arm and lower cross member of headgear with 1" x 3-5/16" clevis pins and cotter pins.
2. Slide the chain through the loop on lift arm. Attach one end of the lift chain to the passenger side of the brace assembly using the enclosed U-bolt.
3. Attach the chain to the driver side of the brace assembly with a U-bolt. The loose end is approximately 32 inches. Do not tighten U-bolts at this time.
4. Retract all cylinders. Fill the reservoir with FISHER® High Performance Hydraulic Fluid with the plow lowered and in the "vee" position.

Hydraulic Hose and Angle Cylinder Installation

1. Attach the fittings and hoses as shown on the following page. Start attaching the fittings at point A and go to point E.
2. Attach the angle cylinders to the A-frame and blade on their respective sides with anchor pins and cotter pins.

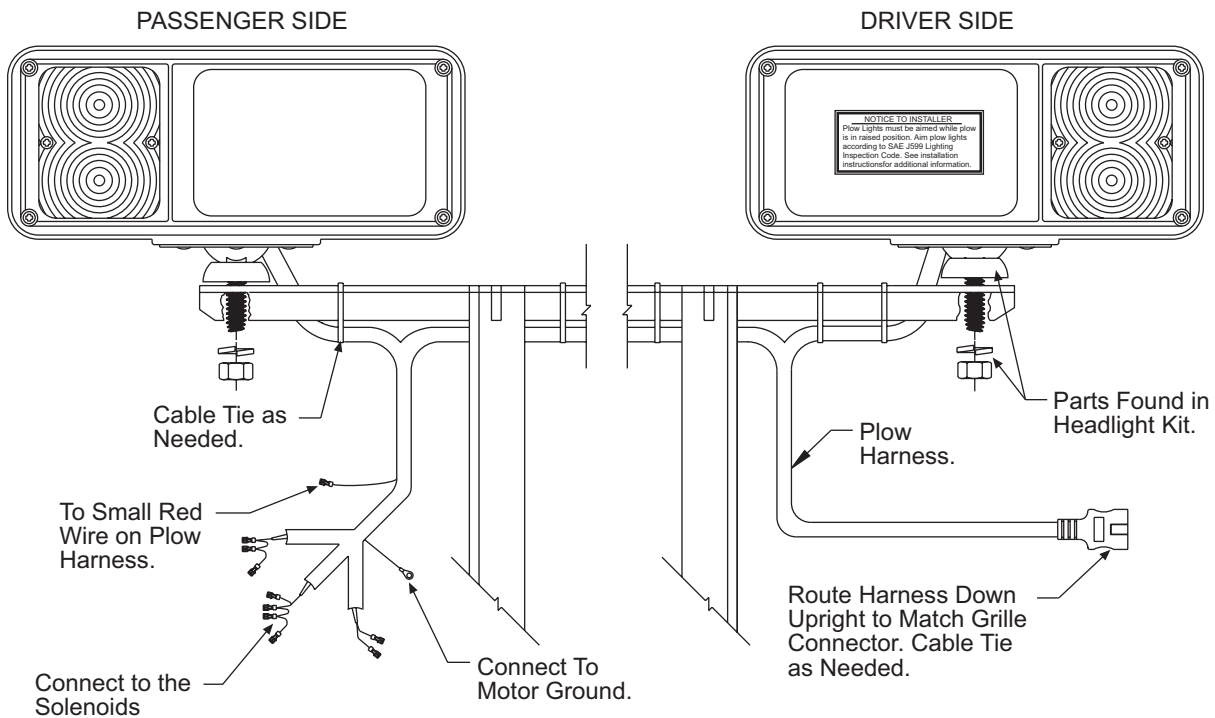


Hose Routing

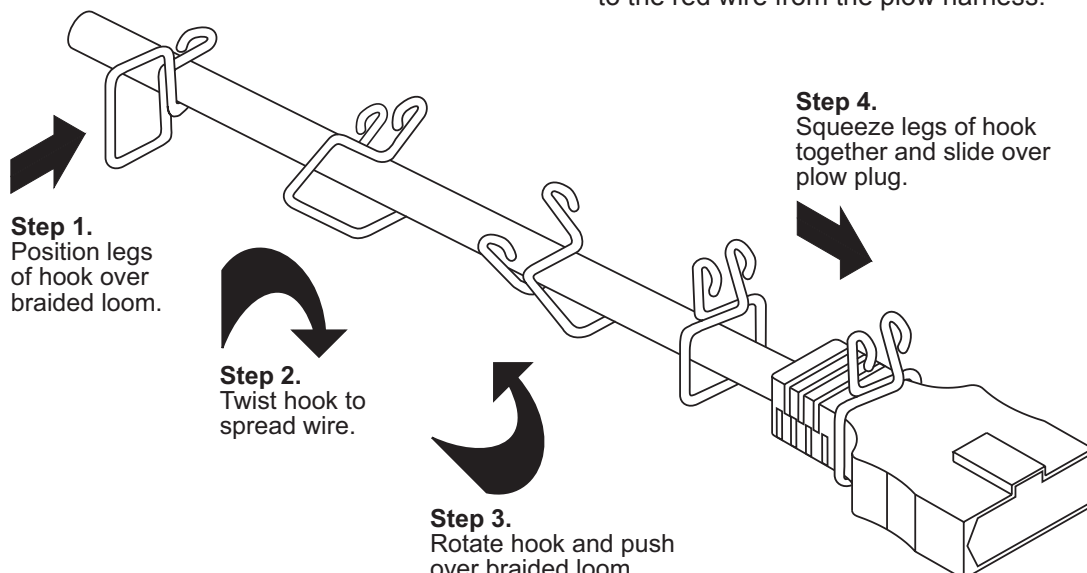


ASSEMBLY INSTRUCTIONS

Plow Light Installation



1. Attach the plow lights with harness to the headgear with the park/turn lights to the outside. Remove label on the driver-side headlamp lens. Route the plow harness down the driver-side upright to match the vehicle harness plug. Aim the headlamps after the installation is complete.
2. Secure the harness to the headgear with cable ties.
3. Install the hook as shown below.
4. Attach the plow cable to the terminals on the motor. Attach the small red wire on the plow cable to the red wire from the plow harness.



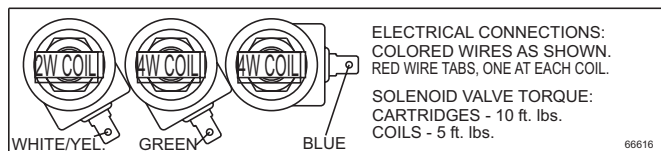
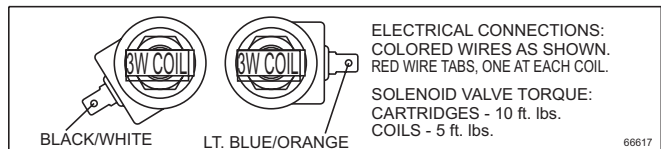
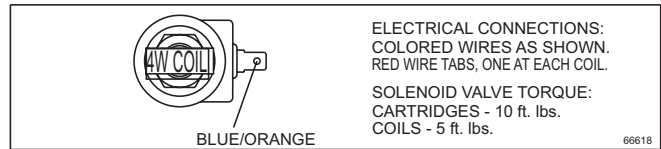
ASSEMBLY INSTRUCTIONS

Solenoid Coil Wiring

Remove the solenoid covers. Wire the solenoids according to the diagrams below. These diagrams are also found inside the solenoid covers.

Reinstall the solenoid covers when finished wiring the solenoids.

NOTE: The strain reliefs must be inside the covers to prevent the connections from coming loose.

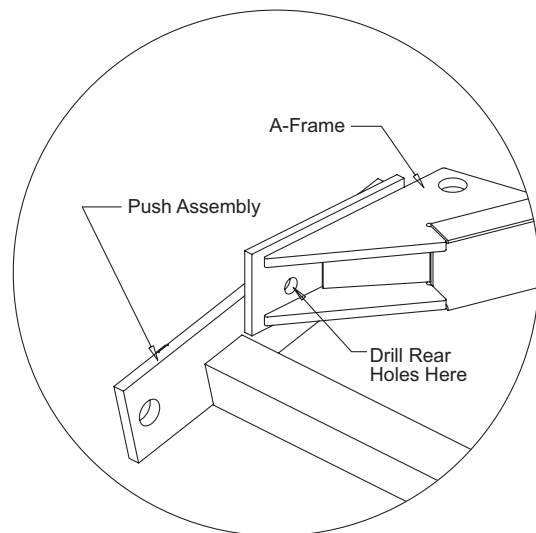


Push Assembly

NOTE: The vehicle is needed to complete the installation. Do all necessary installation to the vehicle at this time, if not already done.

1. Attach the plow to the vehicle according to the label on the back of the blade. Connect the hydraulic power unit. Retract the blade to the "vee" position. Remove shoes.
2. Make sure the cutting edges are level on the floor. Tighten the two 5/8" fasteners holding the push assembly to the A-frame. Using the rear holes on the A-frame as a guide, mark the location of the holes to be drilled on the push assembly.
3. Disconnect the unit from the truck, according to the instructions on the back of the blade.
4. Drill the rear holes in the push assembly. Fasten the push assembly with two additional 5/8" x 2" Gr. 8 stover flange cap screws and two Gr.8 stover flange nuts.

5. Make sure all stover flange bolts (Gr. 8) and nuts (Gr. 8) on the A-frame are fastened to the proper torque. Torque the 5/8" fasteners to 225 ft.-lb.



ASSEMBLY INSTRUCTIONS

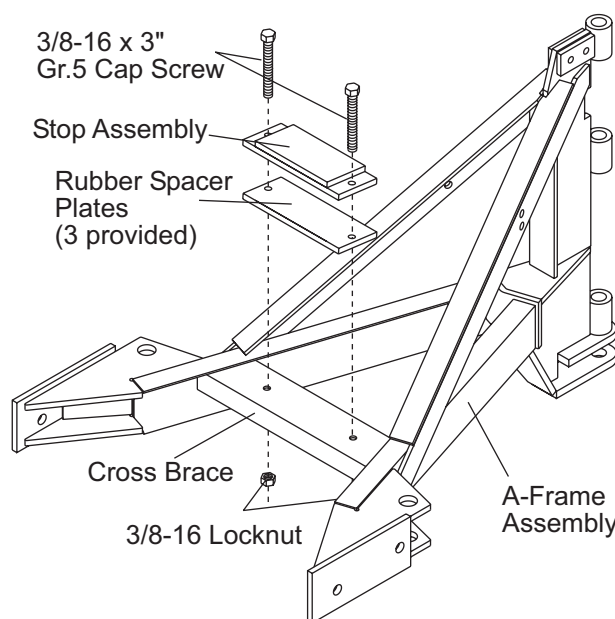
Final Adjustments

⚠ WARNING

Keep clear of the blade when it is being raised, lowered, 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.

1. Fill with FISHER® High Performance hydraulic fluid to top of filler port.
System Capacity:
Reservoir—1-3/4 quart
Complete System—2-1/2 quarts
2. Extend and retract the driver-side wing several times. Return to the retracted position.
3. Extend and retract the passenger-side wing several times. Return to the retracted position.
4. Add hydraulic fluid to top of filler port if required.
5. Raise and lower the snowplow several times. Return to the lower position retracting the cylinder completely.
6. With angling cylinders and the lift cylinder retracted, refill the system through the fill hole to the top of the filler port without overflowing.
7. Raise lift cylinder to full extension. The lift cylinder should have approximately 10" of lift and the A-frame stop assembly should contact the headgear. Lower the blade. Adjust the length of

the lift chain and adjust the number of rubber plates on the stop kit so that the A-frame hits the headgear gear when the lift cylinder is fully raised.



NOTE: In all cases, install at least one rubber spacer plate and the stop assembly.

8. Torque the two 3/8 x 3" full thread cap screws and 3/8" locknuts to 31 ft-lb. **Tighten both U-bolts.**
9. Reinstall the shoes and spacers.

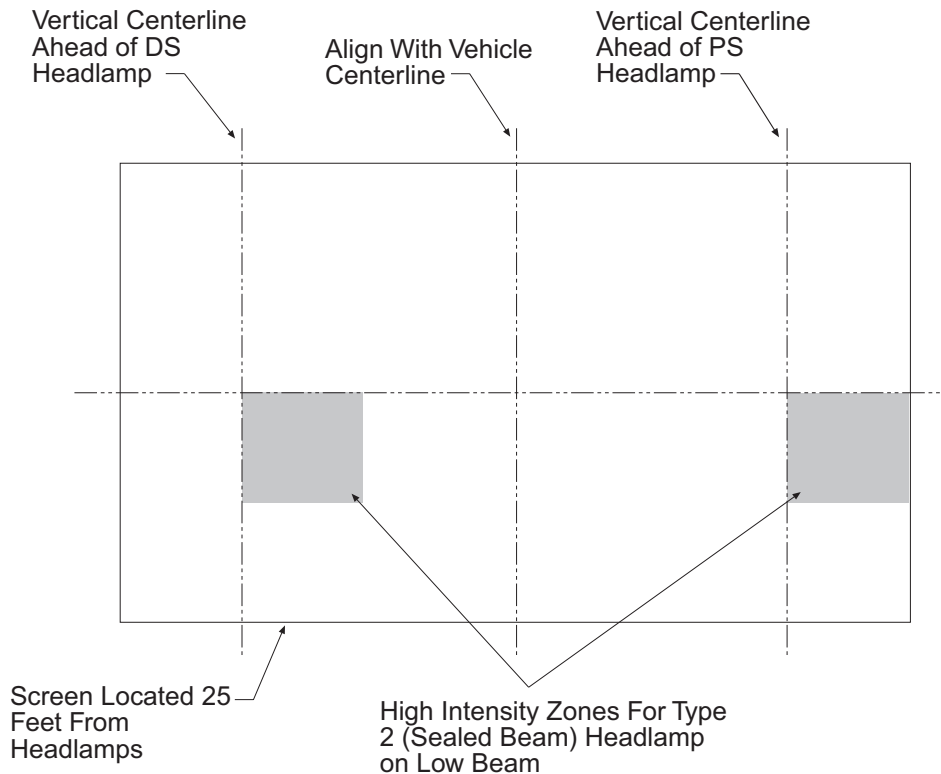
⚠ CAUTION

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

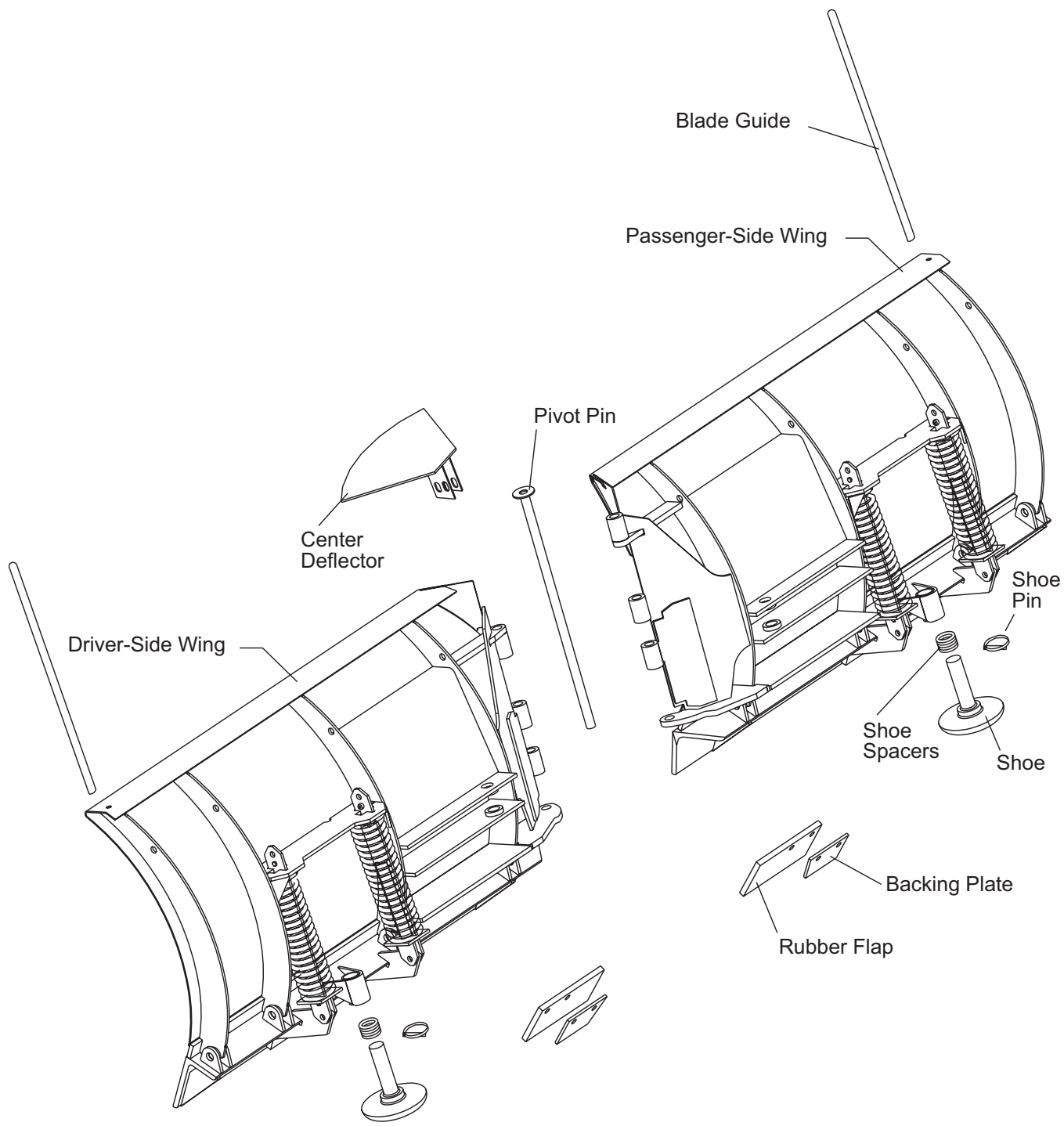
Headlamp Beam Aiming

1. Place vehicle on a level surface 25 feet in front of a matte-white screen, such as a garage door. The screen should be perpendicular both to the ground and to the vehicle center line.
2. The vehicle should be equipped for normal operation, the snowplow blade should be in place and in raised position. Below are steps listed by the Society of Automotive Engineers (SAE) pertinent to headlamp aiming in specification #SAE J599d.
3. Prepare vehicle for headlamp aim or inspection. Before checking beam aim, the inspector will:
 - a. Remove ice or mud from under fenders.
 - b. See that no tire is noticeably deflated.
 - c. Check springs for sag or broken leaves.
 - d. See that there is no load in the vehicle other than the driver.
 - e. Check functioning of any "level-ride" control.
 - f. Check lens and aiming pad.
 - g. Check for bulb burnout, broken mechanical aiming pads, and proper beam switching.
 - h. Stabilize suspension by rocking vehicle sideways.
4. Mark (or tape) the vertical centerline of the headlamps and the vehicle itself on the screen. Mark the horizontal centerline of the headlamps on the screen (distance from ground to headlamp centers).
5. The correct visual aim for type 2 headlamps (snowplow headlamps are type 2; see number on face of sealed beam) is with the top edge of the high intensity zone of the lower beam below the horizontal centerline and the left edge of the high intensity zone on the vertical centerline. See diagram.

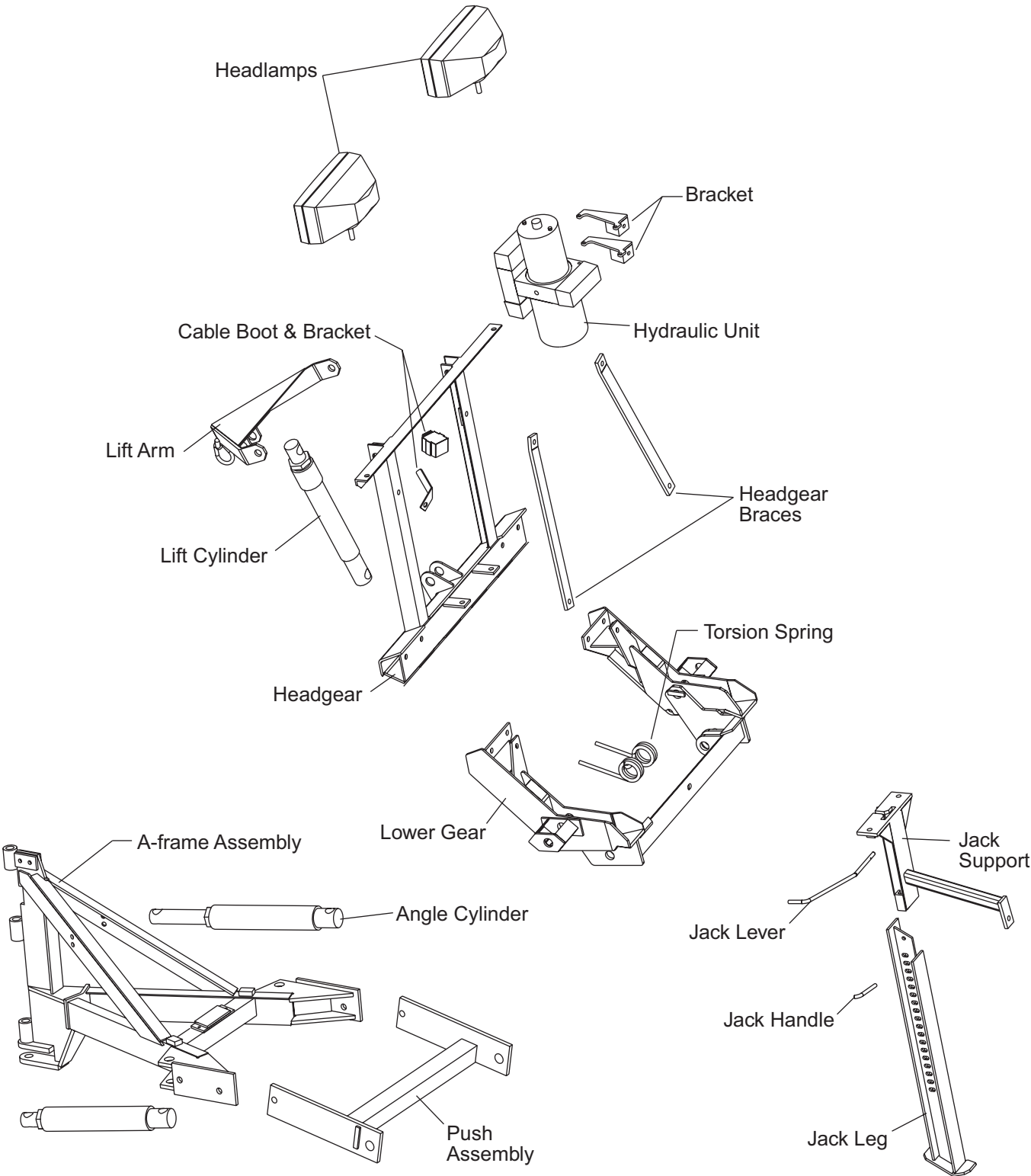
AIMING HEADLAMPS



EZ-V® SNOWPLOW COMPONENTS



EZ-V® SNOWPLOW COMPONENTS





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