

WHEATHEART

X-SERIES 13" AUGERS

X130-74, X130-84, X130-94

ASSEMBLY AND OPERATION MANUAL



ORIGINAL INSTRUCTIONS

AGI 
AG GROWTH INTERNATIONAL



Read this manual before using product. Failure to follow instructions and safety precautions can result in serious injury, death, or property damage. Keep manual for future reference.

Part Number: 30787 R2

Revised: 20/8/2015

This product has been designed and constructed according to general engineering standards^a. Other local regulations may apply and must be followed by the operator. We strongly recommend that all personnel associated with this equipment be trained in the correct operational and safety procedures required for this product. Periodic reviews of this manual with all employees should be standard practice. For your convenience, we include this sign-off sheet so you can record your periodic reviews.

[illegible]

- a. Standards include organizations such as the American Society of Agricultural and Biological Engineers, American National Standards Institute, Canadian Standards Association, International Organization for Standardization, EN Standards, and/or others.

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1. Introduction

Congratulations on the purchase of your new Wheatheart X13 Series Auger. This equipment will complement your agricultural operation by safely and efficiently moving grain, pulse crops, fertilizer, and any other granular materials.

Many of the features incorporated into this machine are the result of suggestions made by customers like you. Your new Wheatheart auger will serve you well if you understand how it operates, and if you use it and care for it properly. This manual is intended to help you learn how to operate and maintain your equipment in a safe, efficient, and trouble-free manner. Please read this manual before you use your new grain auger.

This manual covers all X13 Series augers built by Wheatheart Manufacturing. Use the table of contents as a guide when searching for specific information. Keep this manual in a safe place for future reference and for ordering replacement parts.

Should any information remain unclear after thoroughly reviewing this manual, contact your Wheatheart Dealer for clarification before operating your auger. Knowing the serial number and date of purchase will save time in getting your questions answered. Please write down this information in the space provided below.



Manufactured by Wheatheart Mfg. Ltd. Rosenort, Manitoba Canada	
SERIAL NO.	<input type="text"/>
Made in Canada	
30594	

1.1. OVERVIEW

X13 augers are equipped with standard features that include a hydraulically controlled main auger tube lift, a low-profile grain hopper (left or right side operation), service access doors, and a PTO driveline for auger power.

Available option kits include:

- Hydraulic Winch
- Hydraulic Power Swing for Hopper
- Electric Power Swing for Hopper
- Right Angle Drive
- 540 RPM PTO Reverser
- 1000 RPM PTO Drive and Reverser

1.1.1. AUGER POWER SOURCE

The power source for the auger is a standard 540 RPM tractor PTO (see Figure 1.1). An optional Right-Angle PTO Drive kit allows the auger to be powered by a tractor positioned at a 90 degree angle to the auger (Figure 1.2).

An optional 1000 RPM PTO Drive kit provides a speed reducer that allows use with 1000 RPM PTO tractors, as well as reverser capability that is used to rotate the auger flightings in the reverse direction (transferring grain in the auger tube back to the hopper).

An optional 540 RPM Reverser kit provides a similar reverser capability for 540 RPM PTO connections.

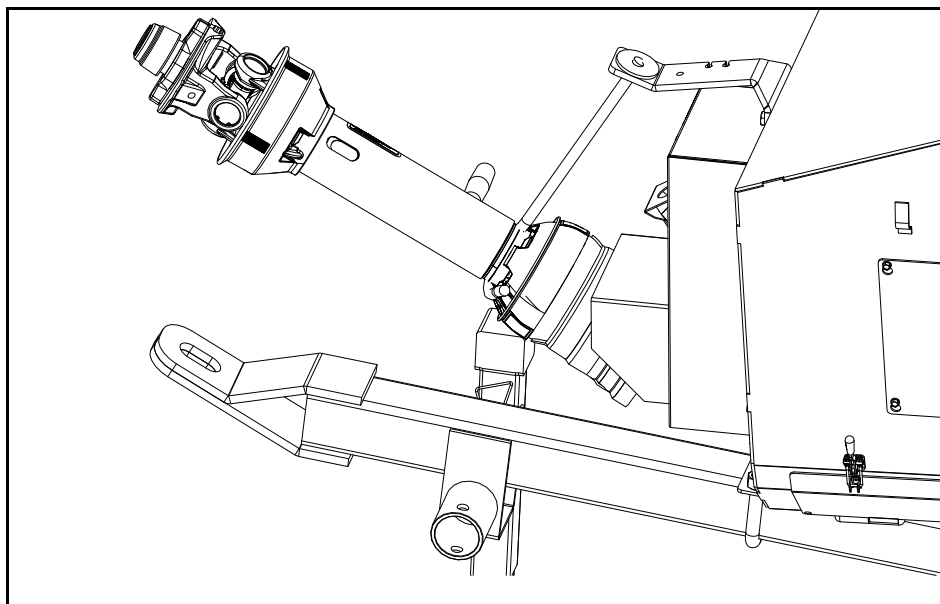


Figure 1.1 Standard PTO Driveline

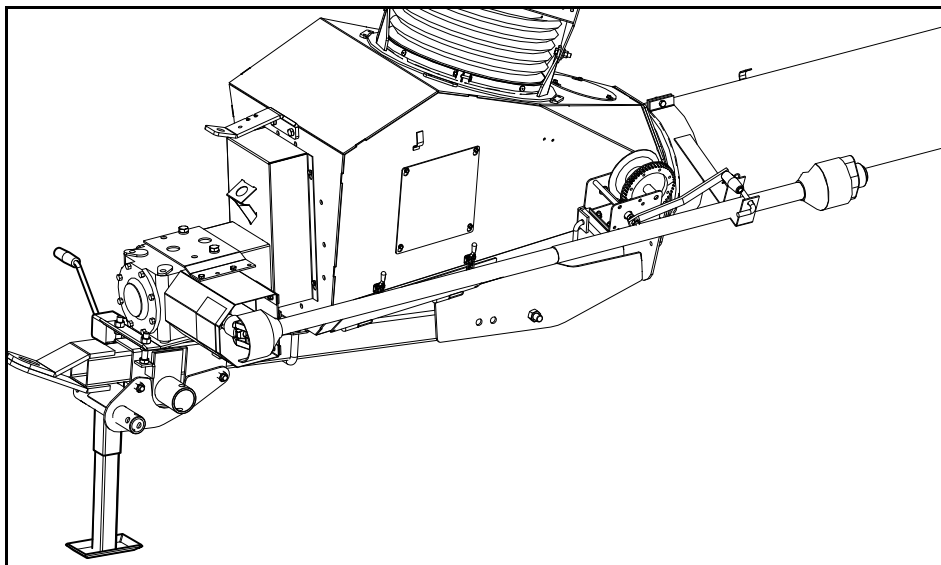


Figure 1.2 Right Angle PTO Driveline Kit

1.1.2. GRAIN TRANSFER BOOT

The grain transfer boot is located at the bottom of the main auger tube, and contains gearing for power transfer as well as flights for transferring grain.

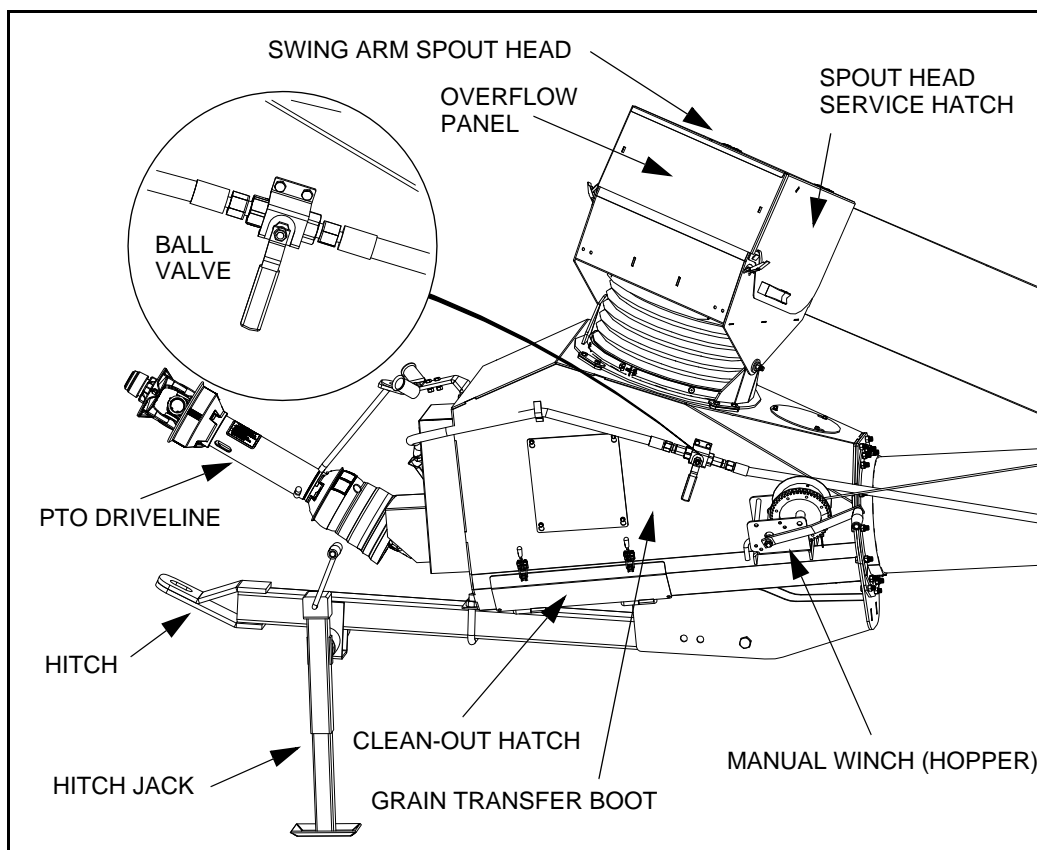


Figure 1.3 Grain Transfer Boot

PTO driveline connection (including connection to the optional 540 RPM PTO Reverser and 1000 RPM PTO Drive) is provided on the back of the boot, above the tractor hitch (and hitch jack).

The ball valve used to raise or lower the main auger tube is located on the side of the boot (see figure below), as is the manual winch used to raise and lower the grain hopper (see Section 6.2. Operator Controls on page 90 for further information on auger controls).

Several access hatches are provided for maintenance and repair (the swing arm spout head access hatch is shown below), as well as an overflow panel on the swing-arm spout head and a clean-out hatch at the bottom of the boot.


1.1.3. GRAIN HOPPER

The low-profile grain hopper is designed to be rolled into position to receive grain for transfer through the boot to the auger discharge spout. Ground clearance can be adjusted by raising or lowering the position of the hopper wheel axles.

The grain hopper must be lifted and secured for transport using the hopper lift arm, winch (hydraulic or manual operation, according to the installed option), and transport chain and hook (see Figure 1.5).

The grain hopper provides service to the side of the auger that it is installed on, but the hopper, lift arm, and winch can be quickly reconfigured to install the hopper on the other side if required.

Do not approach, open or close the maintenance hatch located on the transition between the swing are tube and the hopper unless all power to the auger is locked out.

DANGER	
	Rotating Auger Hazard
	Contact with rotating flighting will result in amputation or severe laceration.
	DO NOT operate with guards removed or modified.
	Keep hands and feet away from rotating auger.
	Tie up long hair and remove jewelry.
	DO NOT wear loose-fitting clothing or items that could become caught.
	Shut off and lock out the power source before unplugging or cleaning.

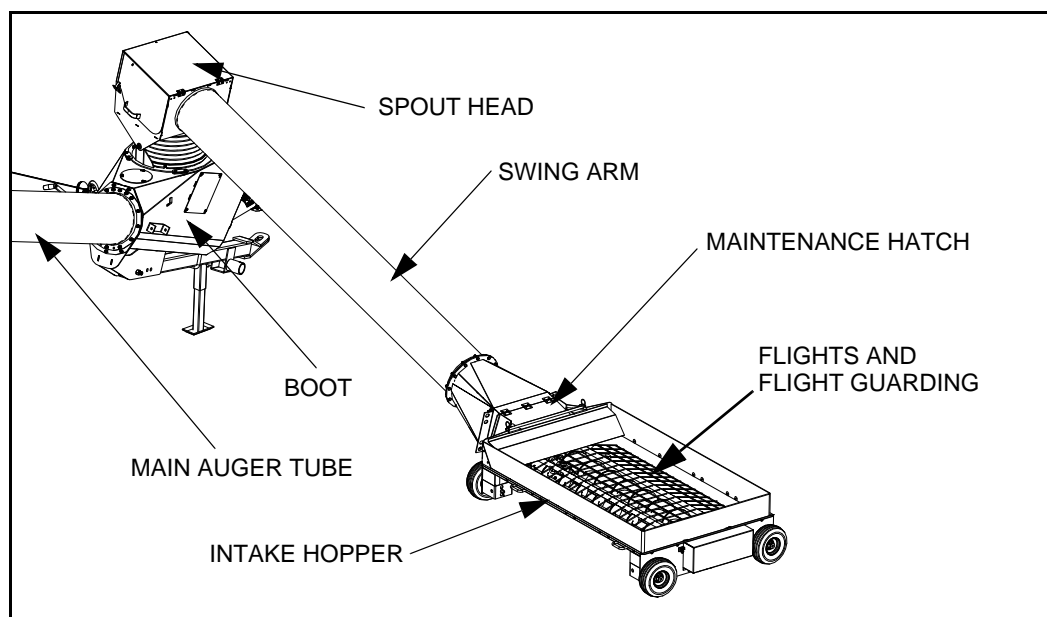


Figure 1.4 Grain Hopper

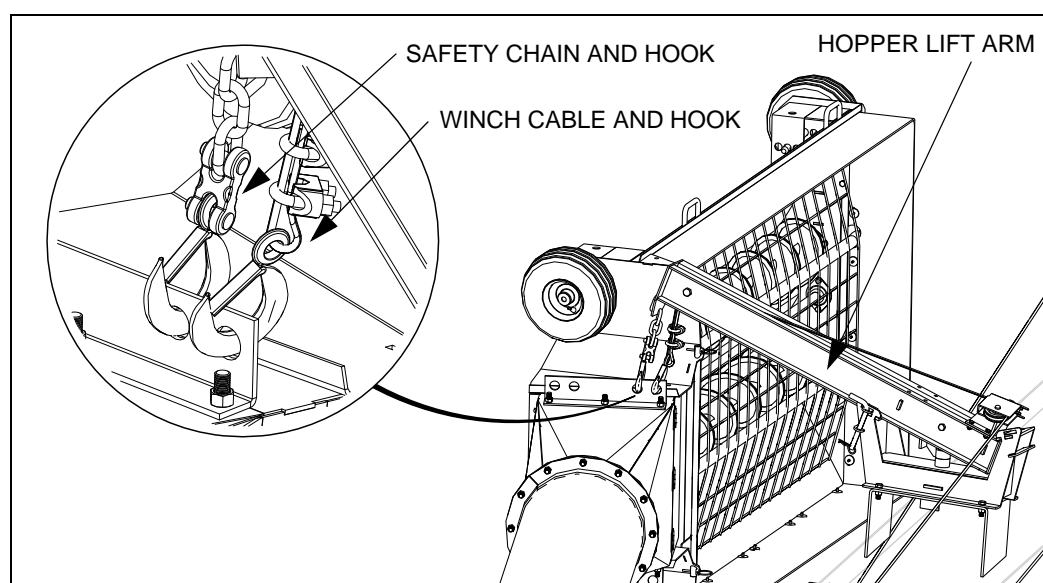


Figure 1.5 Grain Hopper Lifted into Transport Position


1.1.4. AUGER TUBE HYDRAULIC LIFT

The auger tube is raised and lowered using two single-acting hydraulic cylinders powered by the hydraulic supply of the connected tractor. The main auger tube is raised by extending the cylinders, and lowered by allowing the cylinders to retract.

A hydraulic ball valve mounted on the side of the grain pick-up boot controls flow of hydraulic fluid to the lift cylinders, and with appropriate use of the hydraulic controls on the connected tractor, allows the main auger tube to be raised, lowered, or locked at a specific height during operation (see “Operator Controls” on page 90).

2. Safety

2.1. GENERAL SAFETY INFORMATION





The Safety Alert symbol identifies important safety messages on the product and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety messages.

Why is SAFETY important?

- Accidents disable and kill.
- Accidents cost.
- Accidents can be avoided.

SIGNAL WORDS: Note the use of the signal words **DANGER**, **WARNING**, **CAUTION**, and **NOTICE** with the safety messages. The appropriate signal word for each message has been selected using the definitions below as a guideline.

DANGER	
	Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death.
WARNING	
	Indicates a hazardous situation that, if not avoided, could result in serious injury or death.
CAUTION	
	Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.
NOTICE	
Indicates a potentially hazardous situation that, if not avoided, may result in property damage.	

YOU are responsible for the **SAFE** use and maintenance of your equipment. **YOU** must ensure that you and anyone else who is going to work around the equipment understands all procedures and related **SAFETY** information contained in this manual.

Remember, **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program.

Important: *Below are general instructions that apply to all safety practices. Any instructions specific to a certain safety practice (e.g., Operational Safety), can be found in the appropriate section. Always read the complete instructional sections and not just these safety summaries before doing anything with the equipment.*



- It is the equipment owner, operator, and maintenance personnel's responsibility to read and understand **ALL** safety instructions, safety decals, and manuals and follow them when assembling, operating, or maintaining the equipment. All accidents can be avoided.
- Equipment owners must give instructions and review the information initially and annually with all personnel before allowing them to operate this product. Untrained users/operators expose themselves and bystanders to possible serious injury or death.
- Use this equipment for its intended purposes only.
- Do not modify the equipment in any way without written permission from the manufacturer. Unauthorized modification may impair the function and/or safety, and could affect the life of the equipment. Any unauthorized modification of the equipment voids the warranty.
- Do not allow any unauthorized person in the work area.

2.2. ASSEMBLY SAFETY

- Read and understand the assembly instructions to get to know the sub-assemblies and hardware that make up the equipment before proceeding to assemble the product.
- Do not take chances with safety. The components are large, heavy, and can be hard to handle. Always use the proper tools, stands, jacks, and hoists for the job.
- Always have two or more people assembling the equipment. Because of the weight, do not attempt assembly alone.

2.3. OPERATING SAFETY

- Ensure guards are installed and secure.
- Clear the work area of untrained people.
- Clean the work area to prevent slipping or tripping.
- Have a fully equipped first aid kit and fire extinguisher on hand and know how to use them.
- Be certain the PTO driveline is securely attached to the auger and to the tractor.
- Before starting the tractor, be certain that the PTO is in the off position.
- Keep hands, feet, hair, and clothing away from all moving or rotating parts.

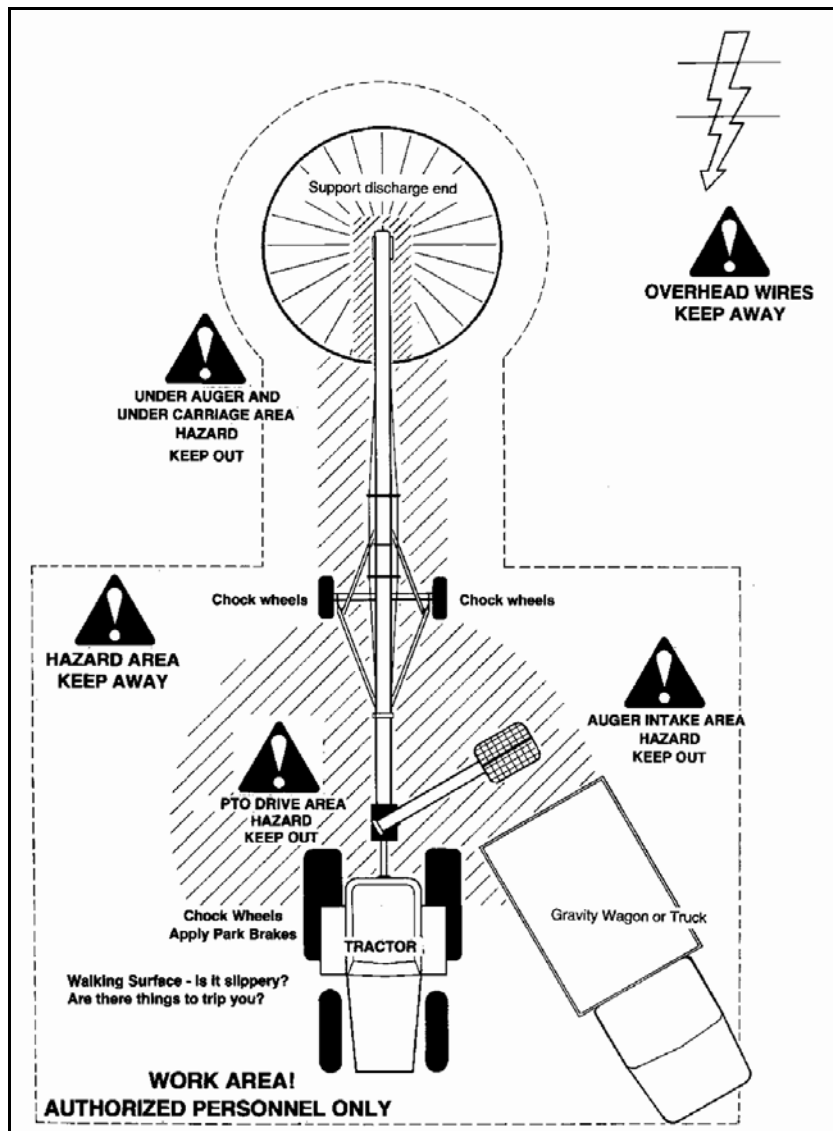
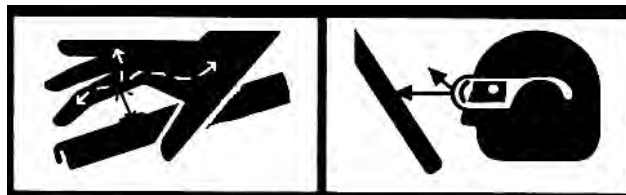


Figure 2.1

2.4. HYDRAULIC SAFETY

- Always place all tractor hydraulic controls in neutral before disconnecting from tractor or working on hydraulic system.
- Make sure that all components in the hydraulic system are kept in good condition and are clean.
- Replace any worn, cut, abraded, flattened, or crimped hoses.

- Do not attempt any makeshift repairs to the hydraulic fittings or hoses by using tape, clamps, or cements. The hydraulic system operates under extremely high-pressure. Such repairs create a hazardous and unsafe condition because they will fail suddenly.
- Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Do not use hands. Use a piece of wood or cardboard as a backstop to isolate and identify a leak.
- If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.



2.5. PTO DRIVELINE SAFETY

- To prevent serious injury or death:
- Keep body, hair, and clothing away from rotating PTO driveline.
- Do not operate equipment unless all driveline, tractor, and equipment shields are in place and in good working order.
- Make certain the driveline shields turn freely on driveline.
- Make certain the driveline is securely attached at both ends.
- Do not exceed operating speed of 540 rpm.
- Keep u-joint angles small and equal. Do not exceed maximum recommended length for PTO driveline.
- Do not exceed manufacturer's recommended operating length.
- Set the tractor brake and block wheels on the tractor and the implement to insure proper spacing of the PTO shaft at all times.
- Make sure driveline is properly secured to prevent damage during transport.

2.6. TIRE SAFETY

- Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion that may result in serious injury or death.
- Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
- Have a qualified tire dealer or repair service perform required tire maintenance.
- When replacing worn tires, make sure they meet the original tire specifications. Never undersize the replacement tire.
- Do not weld to the tire rim with the tire mounted on the rim. This action may cause an explosion which could result in serious injury or death.
- Inflate tires to the manufacturer's recommended pressure.

2.7. TRANSPORT SAFETY

- Ensure tires are inflated to the tire manufacturer's recommended pressure.
- Make sure that all lights and reflectors required by the local highway and transport authorities are in place, are functioning, and can be seen clearly by all overtaking and oncoming traffic. Check with local authorities regarding transportation of agricultural equipment on public roads. Obey all applicable laws and regulations.
- Be sure the unit is hitched securely to the towing vehicle.
- Do not allow riders while transporting.
- Display a Slow Moving Vehicle (SMV) emblem when transporting below 15 mph (24 km/h).
- Use hazard-warning flashers when transporting with a tractor unless prohibited.
- Keep to the right and yield the right-of-way to allow faster traffic to pass.
- Never transport faster than the road terrain or conditions will safely allow.
- Use caution when turning corners or meeting traffic.
- Use caution when approaching height-limiting objects.
- Be especially careful when transporting during times of limited visibility (rain, snow, fog, dusk, or at night). If you can, wait for a more appropriate time to move the equipment.
- Do not transport auger on a slope greater than 20°—the auger may overturn.
- The manual winch must be in the locked position. To lock, turn handle clockwise until you hear two clicks. Also ensure that the locking pin and clips are in place on the hopper lift arm.

2.8. STORAGE SAFETY

- Store in an area away from human activity.
- Do not permit children to play on or around the stored machine.

2.9. MAINTENANCE SAFETY

- Shut off and disable the power source before working on the machine.
- Ensure service area is clean and dry.
- Ensure electrical outlets and tools are properly grounded.
- Use proper tools for the job and wear appropriate safety gear.
- Ensure there is adequate lighting to perform the job safely.
- Place chocks in front and behind the wheels to prevent the machine from rolling.
- Use extra caution when cleaning and servicing augers because flying edges can be sharp.
- Follow proper procedures when mounting a tire on a rim. If in doubt, have a qualified tire repair service perform the required maintenance.
- Install and secure all guards after maintenance work is completed.

2.10. SAFETY DECALS

- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible. See decal location figures that follow.
- Replaced parts must display the same decal(s) as the original part.
- Replacement safety decals are available **free of charge** from your distributor, dealer, or factory.

2.10.1. DECAL INSTALLATION/REPLACEMENT

1. Decal area must be clean and dry, with a temperature above 50°F (10°C).
2. Decide on the exact position before you remove the backing paper.
3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
4. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
5. Small air pockets can be pierced with a pin and smoothed out using the sign backing paper.

2.10.2. SAFETY DECAL LOCATIONS AND DETAILS

Replicas of the safety decals that are attached to the equipment and their messages are shown in the figure(s) that follow. Safe operation of the equipment requires that you familiarize yourself with the various safety decals and the areas or particular functions that the decals apply to, as well as the safety precautions that must be taken to avoid serious injury, death, or damage.

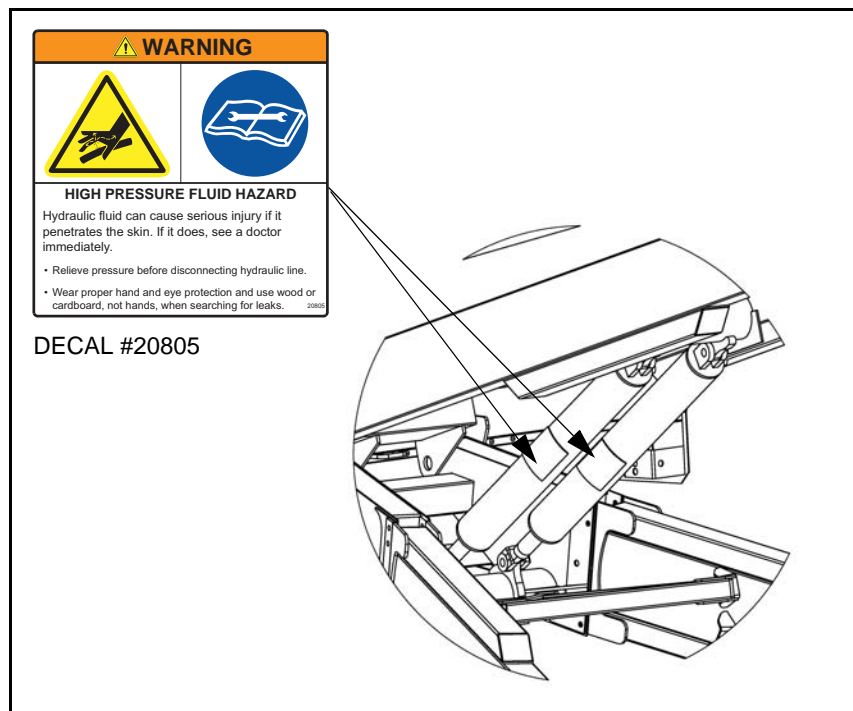


Figure 2.2

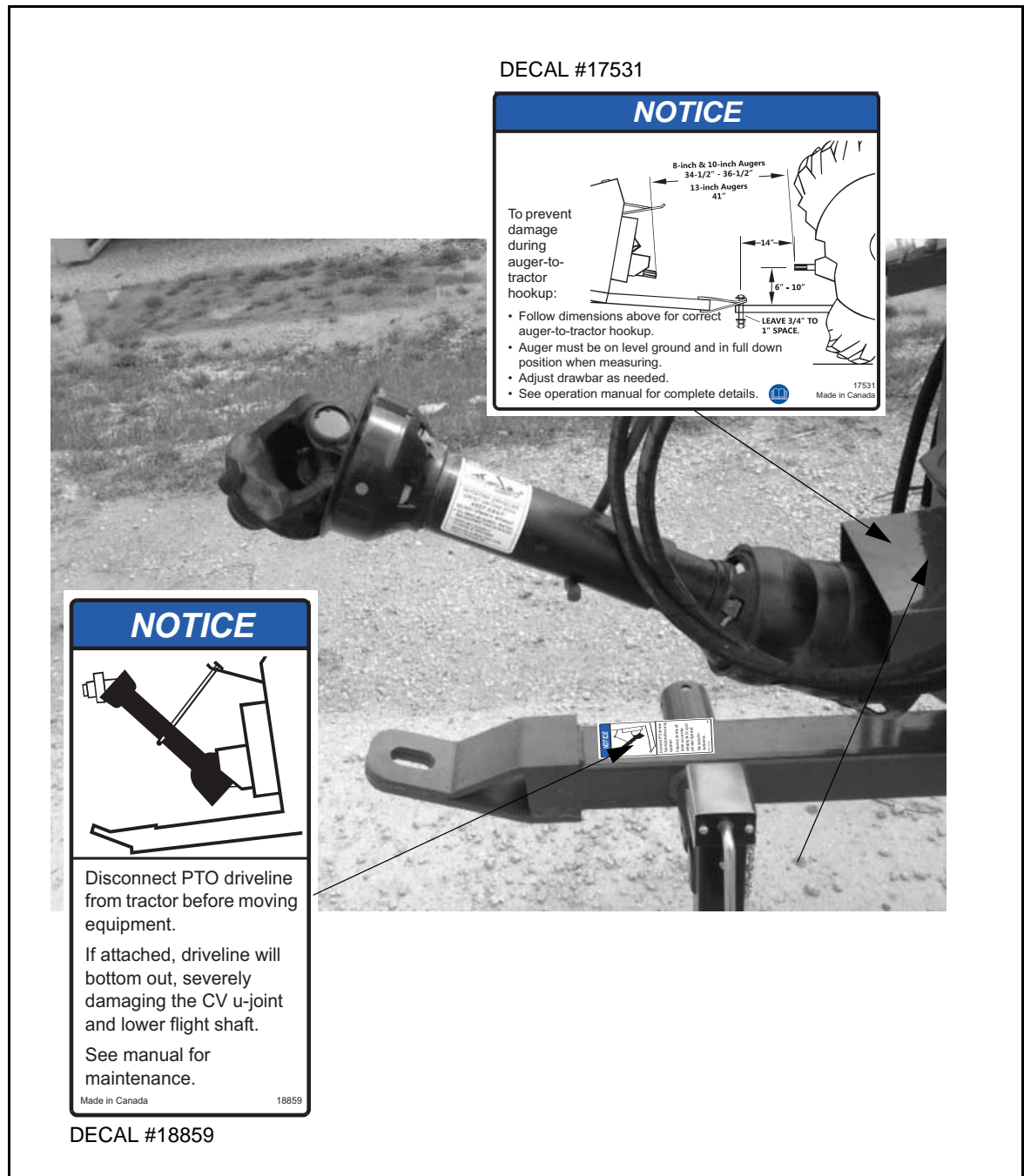
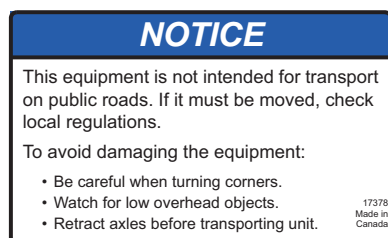
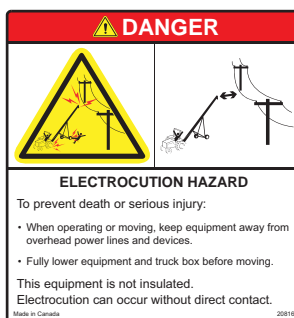


Figure 2.3

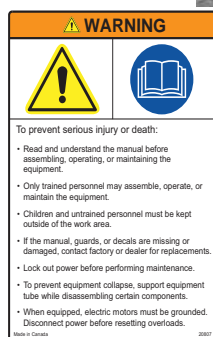
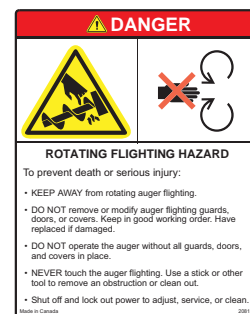
DECAL # 17378



DECAL #20816



DECAL #20813



DECAL #20807



DECAL #20811



DECAL #17113



DECAL #20804
(LOCATED ON HOPPER
CHAIN GUARD)

Figure 2.4

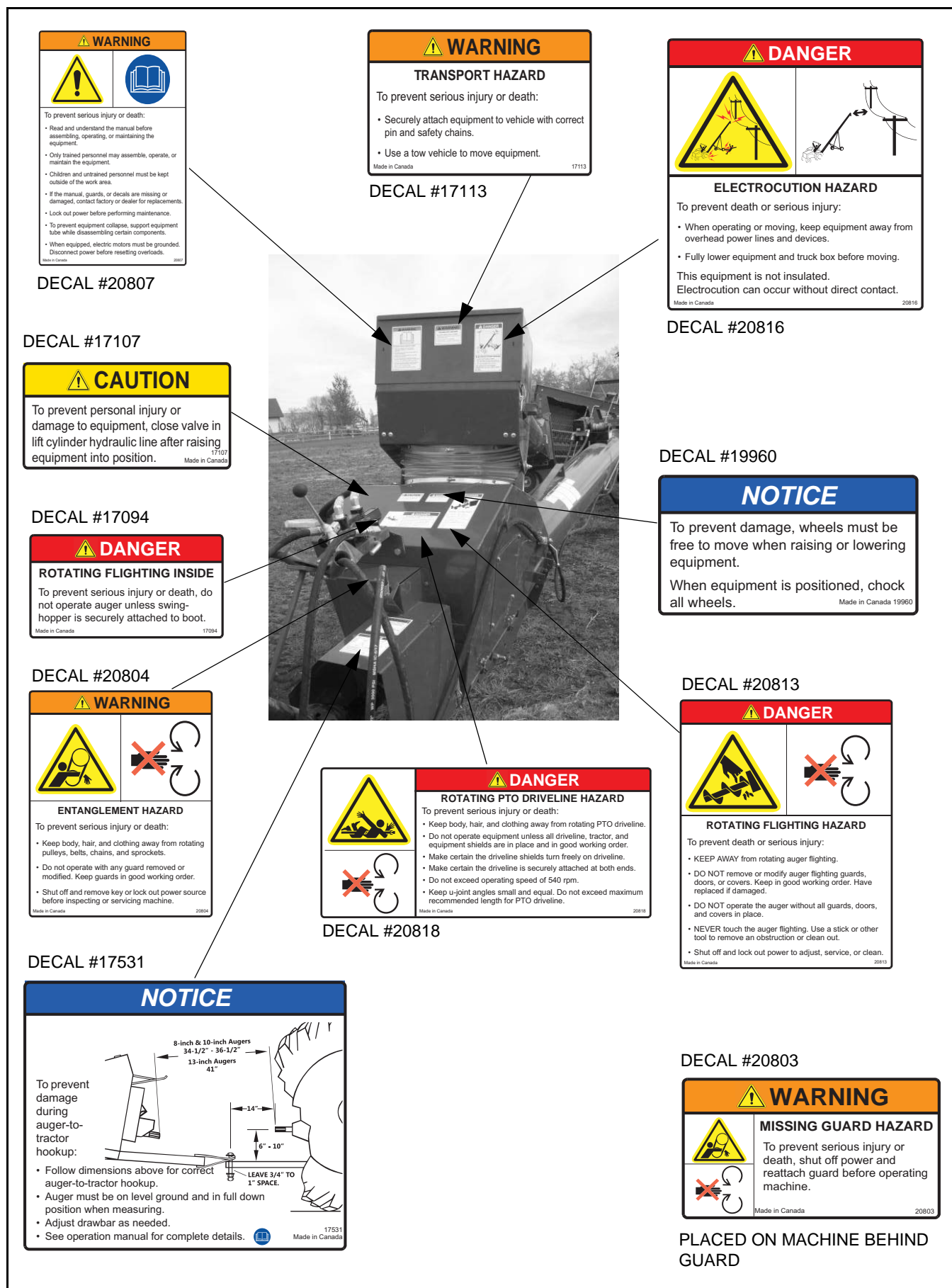


Figure 2.5



Figure 2.6

3. Assembly

WARNING Before continuing, ensure you have read and understand the relevant information in the safety section. Safety information is provided to help prevent serious injury, death, or property damage.

Familiarize yourself with all the sub-assemblies and hardware making up the auger. Do not take chances with safety. The components are large, heavy, and can be hard to handle. Be sure to use the proper tools, stands, jacks, and hoists for the job.

Important: These instructions are written on the assumption that 2 or more people will be available for the assembly procedure. Because of the weight, it is unwise to attempt assembly of the auger alone.

Note: When tightening all fasteners, see the Appendix for proper torque specifications.

3.1. GENERAL ASSEMBLY

1. Select an assembly area that is level, has a firm or hard surface and is free of debris. Be sure it is large enough to allow access from all sides when the components are being assembled.
2. If assembling inside a building, be sure the ceiling is at least 14' (4.27 m) high to provide clearance when installing the undercarriage
3. Bring all the tools, blocks, stands, jacks, and hoists to the assembly area before starting.
4. The following tools and equipment are required to assemble the machine:
 - 11-14 support stands (tube section supports, three per tube)
 - Four saw horses (1200 lb / 544.3 kg bearing capacity)
 - One Standard socket set and wrench set
 - One torque wrench
 - One standard 25' (7.62 m) tape measure
 - One 2' level
 - One 8" level magnetic
 - Two C-clamps or vise grips
 - One picker with minimum reach of 12' (3.66 m) 4000-6000 lb (1 814 - 2 722 kg) lifting capacity
 - One 100' (30 m) measuring tape
 - One tire gauge
 - One tire chuck
 - 6-10 wood blocks (2x4's or smaller)
 - Grease
 - Impact wrench and sockets
 - Two or more steel punches (for aligning bolt holes)

See Table 3.1. for a list of assembly procedures.

Table 3.1. X13 Auger Assembly Procedures

Procedure	Page
Identify Auger Tube Sections	page 27
Assemble the Main Auger Tube	page 30
Install the Boot on the Auger tube	page 31
Install the Boot Tow Bar	page 34
Install the Discharge Spout	page 35
Set the Thrust Adjuster	page 35
Apply Logo and Model Decals	page 36
Auger Tube Truss Assembly	page 37
Assemble the Auger Frame	page 50
Installing the Hydraulic Cylinders	page 57
Assemble Wheel Hubs and Install Tires	page 58
Attaching the Auger Tube to the Frame	page 59
Connecting Hydraulic Hose to Cylinders	page 62
Install Low Profile Intake Hopper	page 66
Installing the Hopper Lift Arm and Winch	page 70
Install the Hitch Jack	page 74
Connecting the PTO Driveline	page 74
Auger-to-Tractor Hookup	page 76

3.2. IDENTIFY AUGER TUBE SECTIONS

Note: See Table 3.2 for the number of tube sections and their part numbers and lengths. Assemble the auger starting with the discharge section and working toward the intake section.

Table 3.2 Tube Section Information, by Model

Model	Total Number of Tube Sections	Tube Bundle Part Numbers (Starting from Boot [intake] moving toward Discharge)				
		Lower Tube	Lower Middle Tube	Middle Tube	Upper Middle Tube	Upper Tube
X130-74	4	29932*	29934*	--	29936**	29940*
X130-84	4	20097*	20099*	29938*	--	29940*
X130-94	5	20101*	20103*	29938*	29936**	29940*

*20' [6.10 m]
**10' [3.05 m]

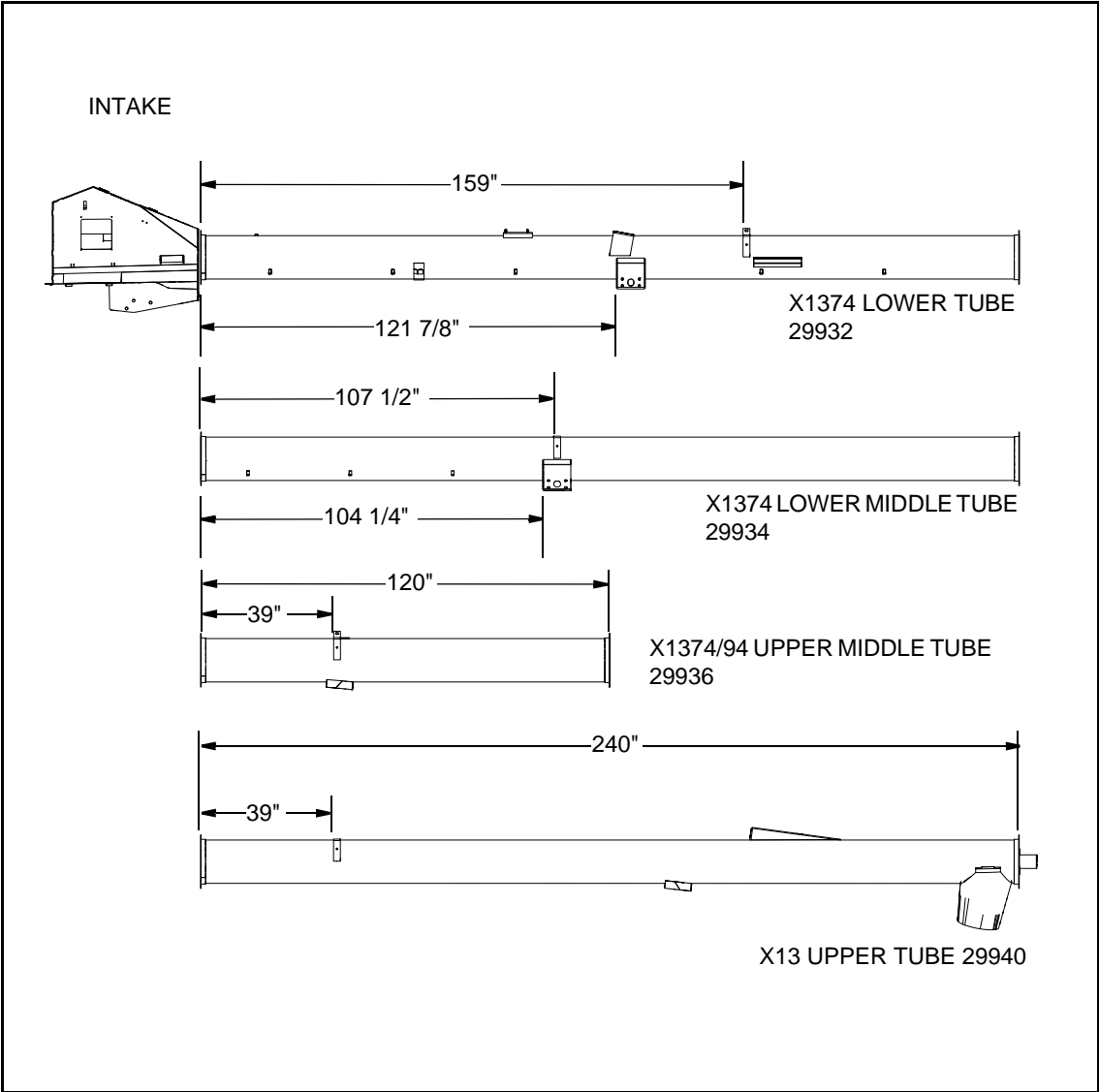


Figure 3.1 X130-74 Auger Tube Sections

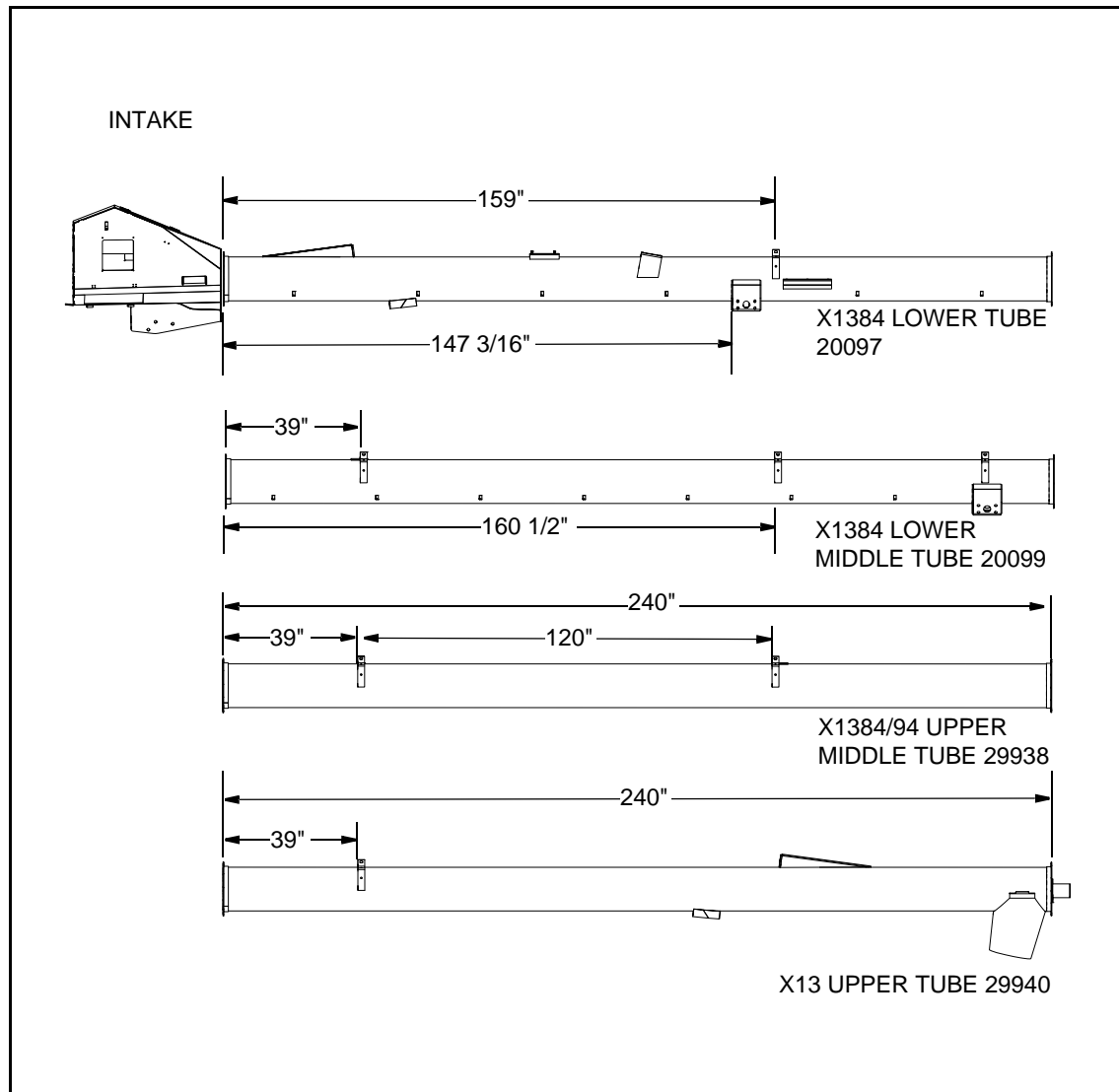


Figure 3.2 X130-84 Auger Tube Sections

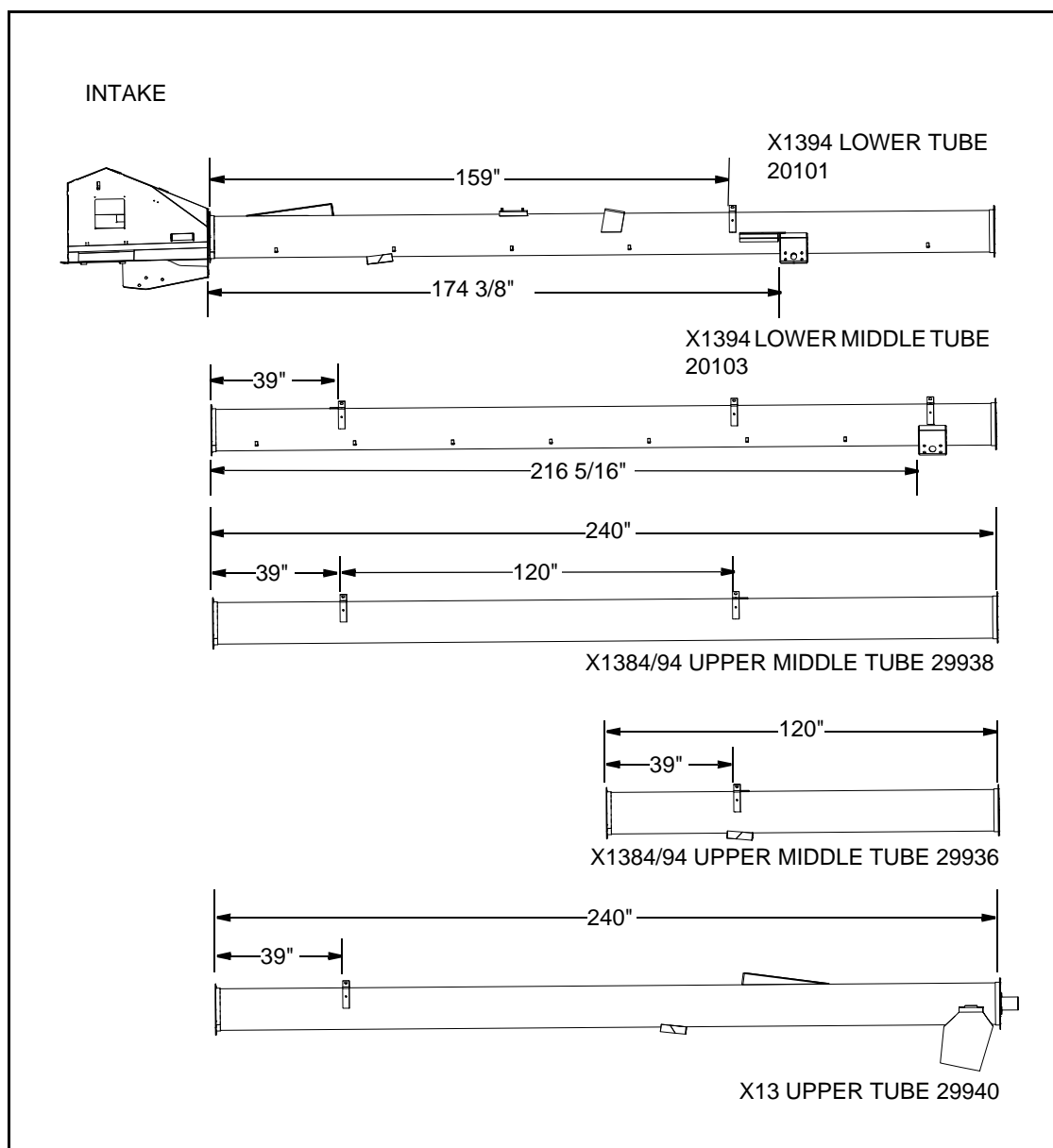


Figure 3.3 X130-94 Auger Tube Sections

3.3. ASSEMBLE THE MAIN AUGER TUBE

See Table 3.3. for a list of hardware required to assemble the main auger tube.

Table 3.3. Parts Required, Assembling the Main Auger Tube

Part Number	Description	X130-74	X130-84	X130-94
18947	1/2" x 4" bolts	3	3	4
17750	1/2" locknuts	3	3	4
18698	7/16" X 1-1/4" bolts	48	48	64
17593	7/16" locknuts	48	48	64

1. Align tube sections on a series of support stands, placing a support stand at the end of each tube. If possible, make sure that support stand height is equal across all tubes to ensure that tubes are level with each other. Otherwise, use some form of shim to keep the tubes level across all of the support stands.

Important: *Always strap tubes to the support stands to prevent the tubes from rolling off the stands and onto the floor.*

2. Working from the spout end (upper tube) to the discharge end (lower tube), connect the tubes together as shown in Figure 3.4, as described below:
 - a. Align flightings to ensure a continual spiral of auger surface, and connect flight shafts with 1/2" x 4" bolts and 1/2" locknuts.
 - b. As flight shafts are connected, slide tube sections together and secure with 7/16" X 1-1/4" GR8 bolts and 7/16" locknuts.

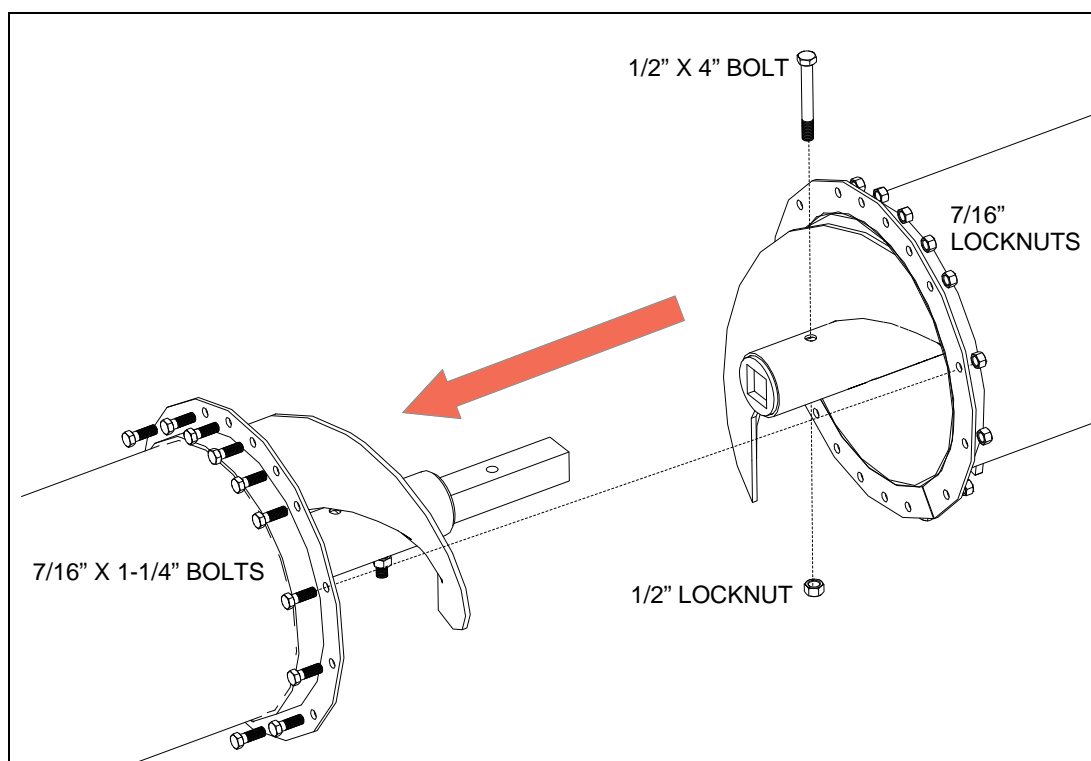


Figure 3.4 Connecting Auger Tubes and Flights

3.4. INSTALL THE BOOT ON THE AUGER TUBE

See Table 3.4. for a list of parts required to install the boot on the auger tube.

Table 3.4. Parts Required, Installing the Boot on the Auger Tube

Part Number	Description	Amount
29991	X13 boot assembly	1
29999	X13 boot-tube attach plate	1
18698	7/16" X 1-1/4" bolts	21
17593	7/16" locknuts	21

WARNING



Components are heavy and create a crushing hazard if improperly handled. Be sure to use proper hoisting equipment and procedures, and ensure lifting apparatus is secure. Lock out the lifting apparatus before working around or under the raised components; failure to do so may cause serious personal injury.

Note: The boot gearbox is sent from the factory filled half way with EP90 gear oil (2.5 L [0.66 gal]). Before further assembly, check oil level to make certain the gearbox is half full. Add oil if necessary. Do not use grease.

1. The boot flighting comes pre-installed on the end of the lower tube flighting shaft (See Figure 3.5). Ensure that the flighting is fastened with a 5/8" X 5-1/2" GR8 bolt and 5/8" locknut before proceeding.

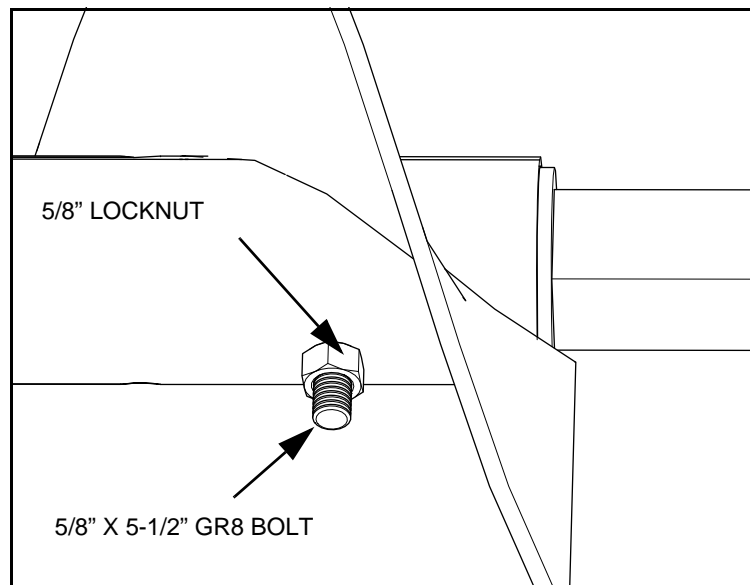


Figure 3.5 Check Boot Flight Bolt and Nut

2. Slip the boot-tube attach plate over the boot flighting. Position the plate with flat edge facing up (see Figure 3.6), and fasten with five $\frac{7}{16}$ " x $1\frac{1}{4}$ " GR8 bolts inserted from the boot side of the flange and $\frac{7}{16}$ " locknuts.
3. Slip the boot assembly over the lower flighting shaft and attach it to the flange on the lower tube with 14 $\frac{7}{16}$ " x $1\frac{1}{4}$ " GR8 bolts and $\frac{7}{16}$ " locknuts (see Figure 3.6).

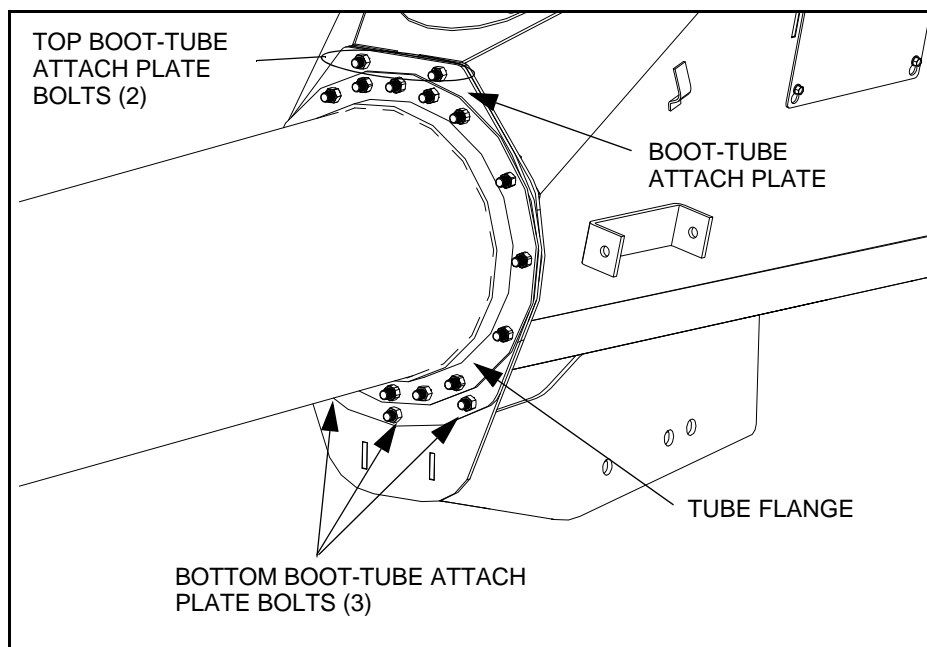


Figure 3.6 Installing the Boot on the Auger Tube

4. Insert the remaining boot attach plate bolts, secure with locknuts, and tighten all flange and boot attach plate nuts fully (do not overtighten).

3.5. INSTALL BOOT BEARING, LOWER SPROCKET, AND DRIVE CHAIN

See Table 3.5. for a list of parts required to install the boot bearing, lower sprocket, and drive chain.

Table 3.5. Parts Required, Installing the Boot Bearing, Lower Sprocket, and Drive Chain

Part Number	Description	Amount
20084	2" rim washer	1
20015	2" lower bearing, 4-bolt flange, lock collar	1
18541	Square key, 3/8" x 3-3/8"	1
18525	Lower sprocket, 80b18 x 1-3/4"	1
19781	Drive chain (80b37 roller chain)	1
19323	#80 chain connector	1
19991	5/8" x 2" bolts	4
19600	5/8" locknuts	4

1. Install the lower sprocket as follows:
 - a. Slide the 2" wide rim flat washer onto lower flight shaft.
 - b. Slide the lower bearing over the fighting shaft, and bolt it loosely in place with four 5/8" X 2" bolts and 5/8" locknuts.
 - c. Ensure that the flight shaft shoulder is seated against washer and lower bearing.
 - d. Position the lock collar tightly against the bearing, then tighten the collar set screw against the fighting shaft.
 - e. Install the 3/8" x 3-3/8" square key on the fighting shaft, then slide the lower sprocket onto the fighting shaft. Align lower sprocket face with upper sprocket face using a straight edge, then tighten set screws.

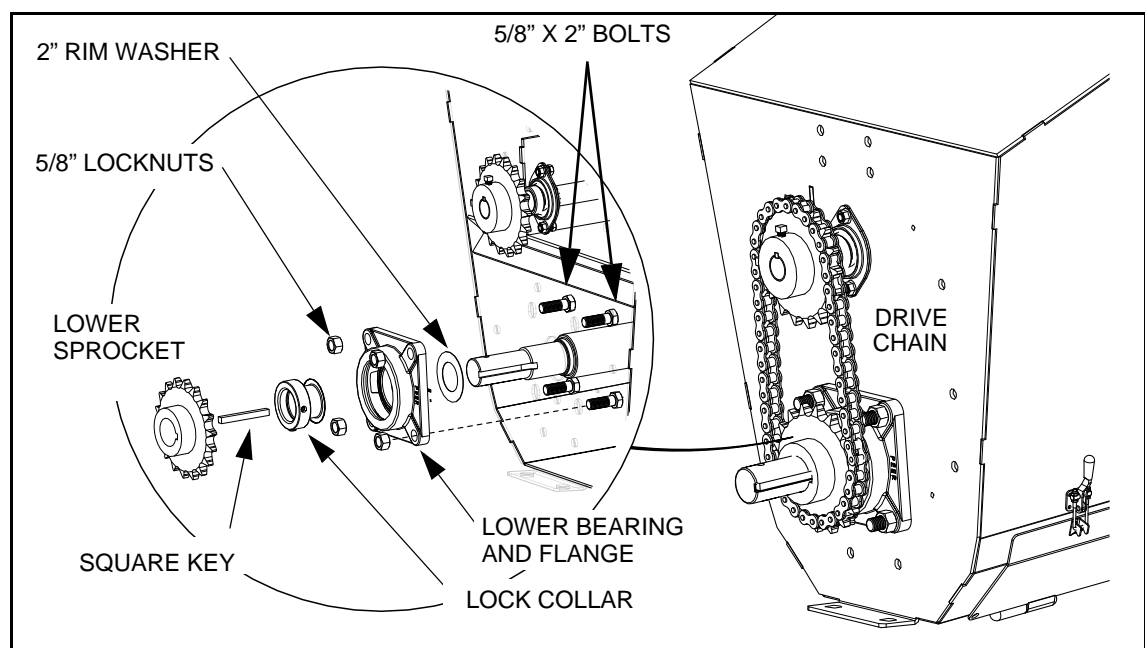


Figure 3.7 Installing Boot Bearing, Sprocket, and Chain

Note: *It is recommended you use a thread locking compound that meets or exceeds Loctite Blue® on all set screws.*

Important: *To prevent premature failure of the lower bearing, ensure it has been assembled in the correct sequence.*

2. Loop the drive chain around upper and lower sprockets. Push the flighting shaft down until the chain is tensioned to within about 1/4" deflection, then tighten the 4 bolts on the bottom bearing. Oil the chain lightly.

Note: *For ease of PTO installation, sprocket shield should be attached after the installation of the PTO driveline. See "Connecting the PTO Driveline" on page 74.*

3.6. INSTALL THE BOOT TOW BAR

See Table 3.6. for a list of parts required to install the boot tow bar.

Table 3.6. Parts Required, Installing the Boot Tow Bar

Part Number	Description	Amount
29983	Tow bar	1
29997	3/4" x 5-1/2" bolt	1
19601	3/4" locknut	3
28487	3/4" x 3-1/2" x 5" square U-bolt	1

1. Insert the tow bar into the boot channel, and secure the back end loosely with a 3/4" x 5-1/2" bolt and 3/4" locknut through the back hole in the boot channel (under the boot).
2. Tightly secure the middle of the tow bar in the channel with a 3/4" x 3-1/2" x 5" square U-bolt and two 3/4" locknuts.
3. Fully tighten the 3/4" nut on the 3/4" x 5-1/2" bolt.

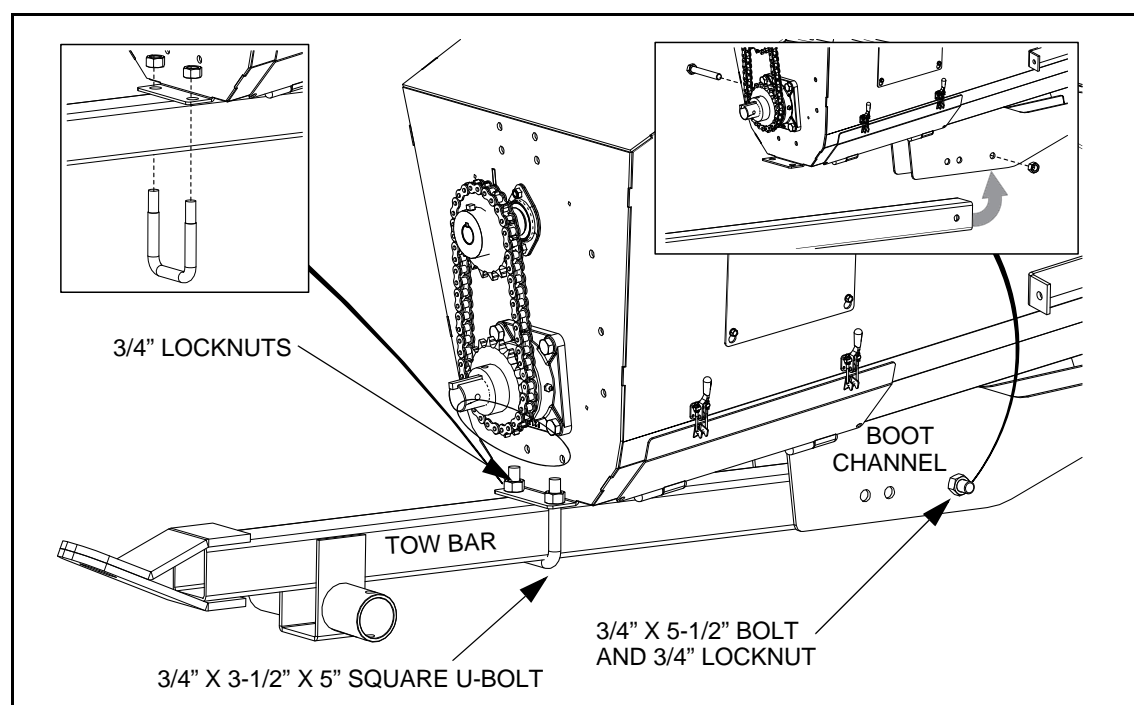


Figure 3.8 Installing the Boot Tow Bar

3.7. INSTALL THE DISCHARGE SPOUT

1. Align the discharge spout over the opening in the upper tube.
2. Attach the discharge spout with two 7/16" x 1-1/4" GR 8 bolts [18698] and 7/16" locknuts [17593].

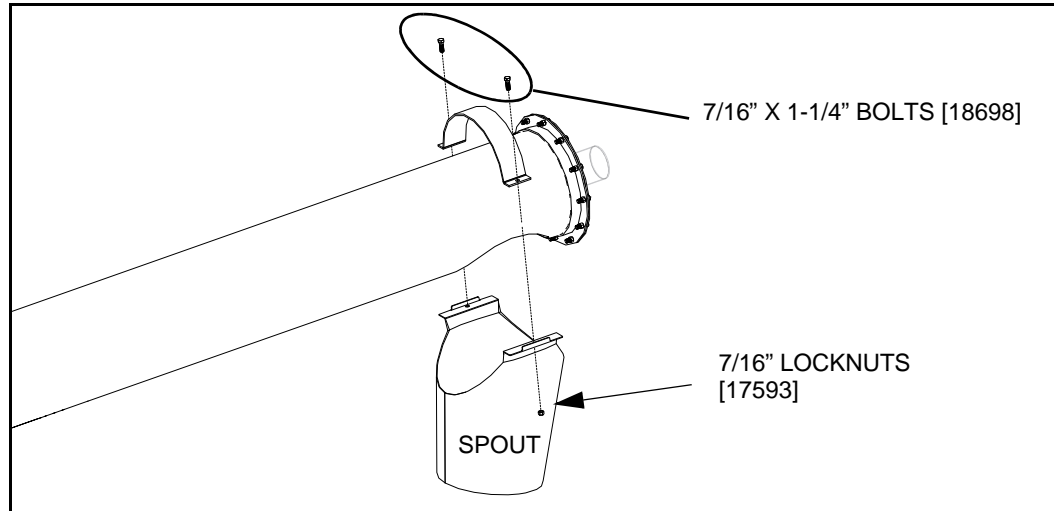


Figure 3.9 Installing the Discharge Spout

3.8. SET THE THRUST ADJUSTER

1. Remove the upper bearing lock collar (if necessary).
2. Slide the lock collar and bushing onto the shaft and attach the 1-1/2" nut.
3. Turn the nut until it is snug against the bushing, then turn it so that the shaft moves an additional 1/4" away from the top plate.
4. Secure the lock collar and tighten the set screw.
5. Install the cover over the two longer 5/8" bolts. Secure with two 5/8" whiz-nuts.

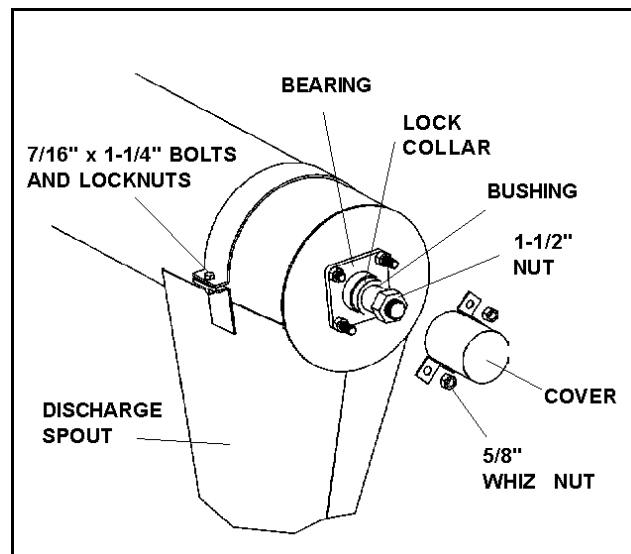


Figure 3.10

3.9. APPLY LOGO AND MODEL DECALS

1. Prepare surface by cleaning thoroughly with soap and water. Surface must be clean and free of dirt, grime, rust and oil. To clean oily surface, wipe with clean cloth and solvent cleaner or isopropyl alcohol.
2. Position the decal on the tube and apply masking tape along the top, creating a gate hinge. Figure A demonstrates.
3. Remove backing paper from decal 6" from the top and use the squeegee to adhere decal to the tube, as seen in Figure B. Start at the top center of the decal and work your way outward both left and right using overlapping strokes.
4. As you work your way down the decal, peel back the backing paper 6" at a time. Repeat Step 3 until the entire decal has been applied to the tube. See Figure C as an example.
5. Once the entire decal has been properly adhered to the tube, carefully remove tape.
6. Inspect the decal for air pockets; if found, remove them by punching a tiny hole with a pin and then squeegee the surface flat.
7. Squeegee the corners and edges of the decal to ensure proper adhesion and to prevent premature peeling.

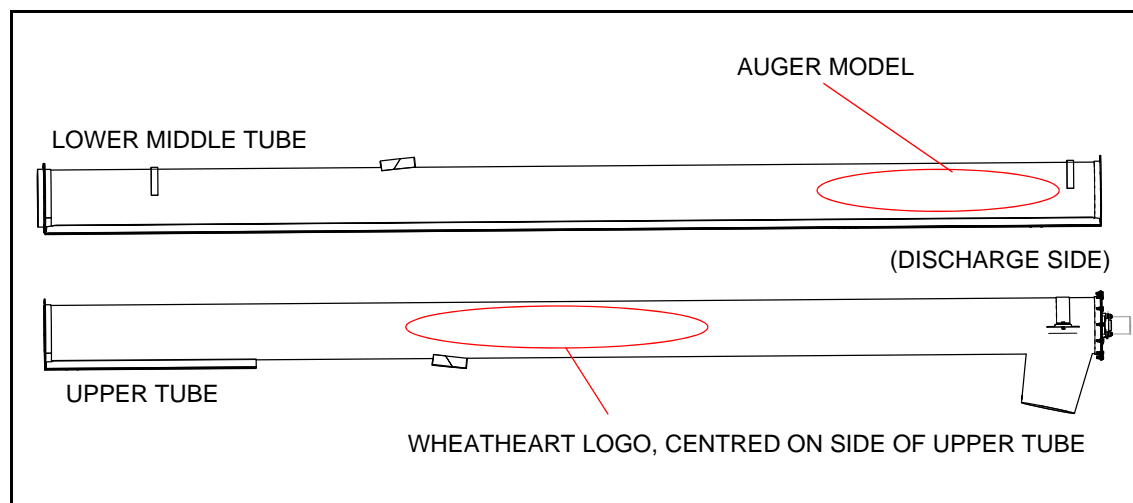
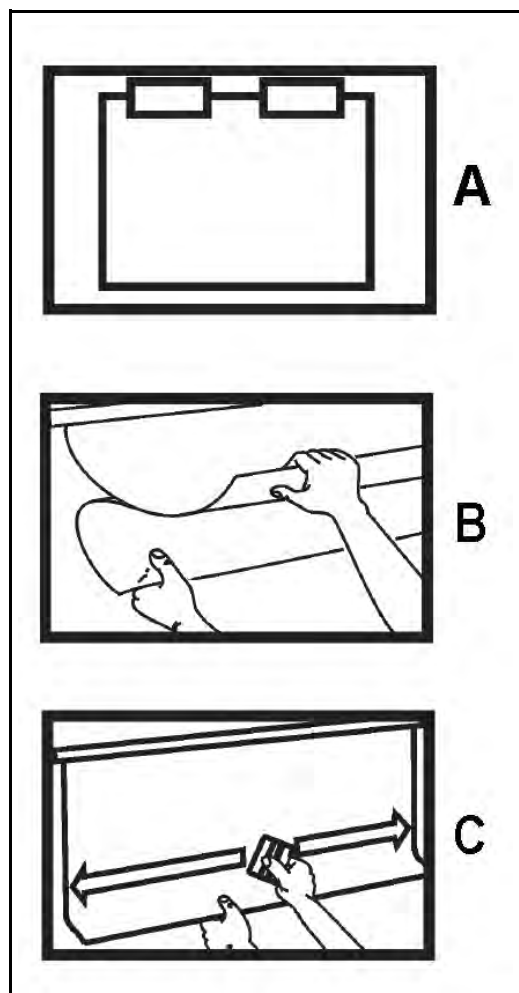


Figure 3.11 Logo and Model Decal Locations

3.10. AUGER TUBE TRUSS ASSEMBLY

- X130-74 augers use a double cable truss on the top of the auger tube “X130-74 Auger Tube Truss Assembly” on page 37).
- X130-84 and X130-94 augers use a combination of rigid tube trussing on top of the auger tube and cable trussing on the sides of the auger tube (see “X130-84/X130-94 Auger Tube Truss Assembly” on page 42).

3.10.1. X130-74 AUGER TUBE TRUSS ASSEMBLY

INSTALL THE X130-74 CABLE BRIDGES

See Table 3.7. for a list of parts required to install the X130-74 cable bridges. See Figure 3.12 for a detailed diagram.

Table 3.7. Parts Required, Installing X130-74 Cable Bridges

Part Number	Description	Amount
20017	High truss tower	1
18988WH	Low truss towers	2
20105	Truss cable attach bracket	1
18698	7/16" x 1-1/4" GR8 bolts	8
17593	7/16" locknut	8

1. Fasten the three truss towers to the provided brackets (welded to the appropriate tube sections):
 - a. Position the high truss tower in the centre position, and position the low truss towers toward the spout and intake ends.
 - b. Use two 7/16" x 1-1/4" GR8 bolts and 7/16" locknuts to fasten each cable bridge in place.
2. Install the truss cable attach bracket as shown in the diagram, using two 7/16" x 1-1/4" GR8 bolts and 7/16" locknuts.

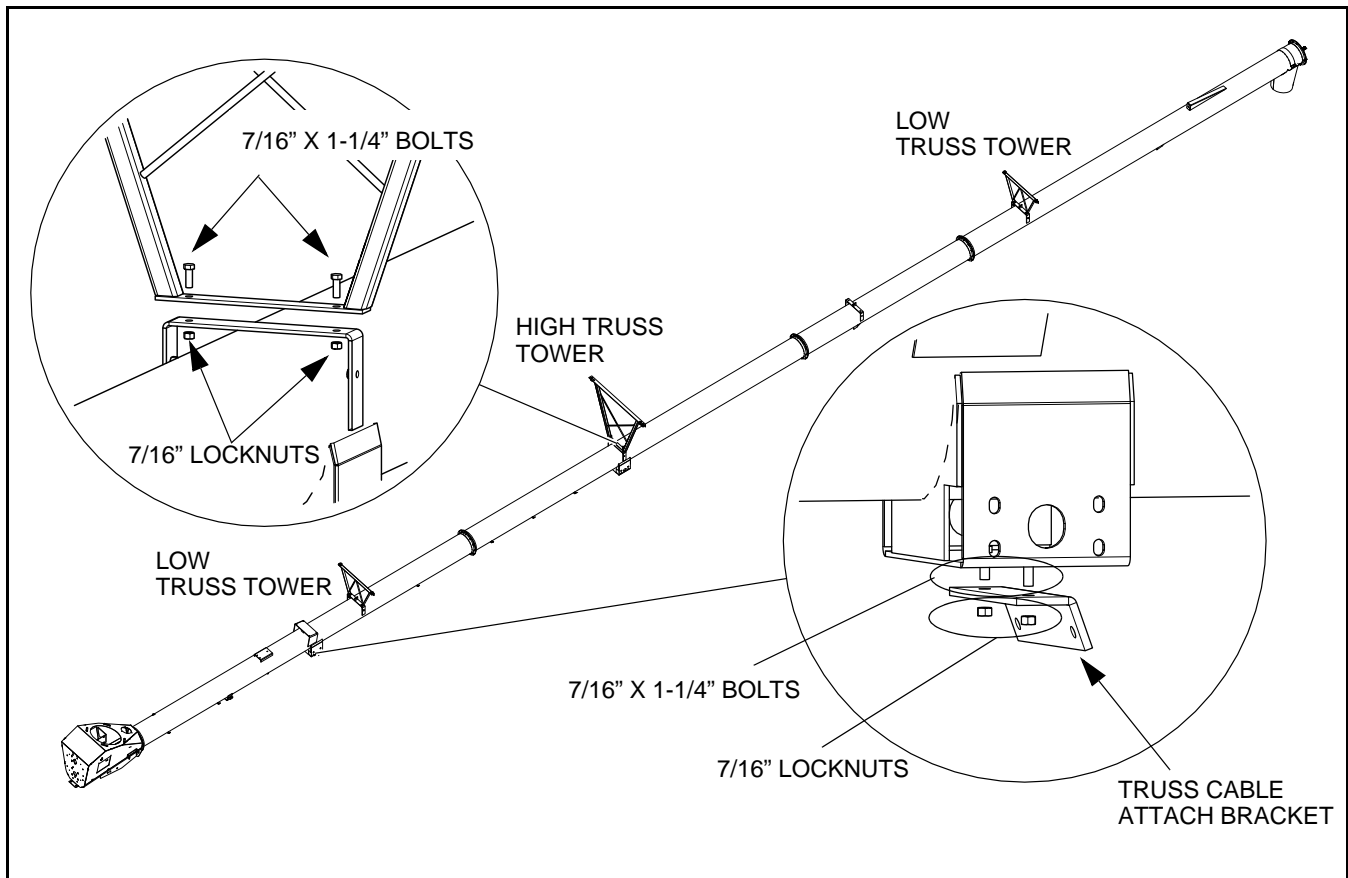


Figure 3.12 X130-74 Truss Towers and Truss Cable Attach Brackets

INSTALL THE X130-74 TRUSS CABLES

There are two cable runs on the X130-74, a long cable run between the upper tube and the lower tube, and a short cable run between the lower tube and the upper middle tube:

- The first (short) run is made up of a single 73' cable.
- The second (long) run is made up of two separate cables: one 85' 6" long and one 36' long.

See Table 3.8. for a list of parts required to install the X130-74 truss cables. See Figure 3.13 for a detailed diagram.

Table 3.8. Parts Required, X130-74 Truss Cables

Part Number	Description	Amount
27502	73' cable	1
27503	85' 6" cable	1
20090	36' cable	1
17464	Turnbuckle	2
19331	1/2" eyebolts	6
18990	3/8" cable clamps	12
19333	5/16" cable clamps	10
17750	1/2" locknuts	6

Note: *X130-74 truss cables should be tightened to provide a 1" upward bow in the auger tube, as measured at the auger tube spout end.*

1. Ensure that the tube is supported by at least 3 stands (one at each end and one in the middle).
2. Shim the stands (use wood blocks) at the spout end approximately 7" (17.8 cm) higher than the other stands to provide the required curve.
3. For the first (short) cable run, attach an eyebolt to each end of the 73' truss cable using two 3/8" cable clamps, doubling-back about 12" (30.5 cm) of cable.
4. Connect one of the eyebolts to one side of the truss cable attach bracket using a 1/2" locknut threaded fully onto the eyebolt shaft, but not further than 1/4".
5. Pull the cable:
 - over the high (middle) truss tower,
 - under the tube and around the middle cable return bracket,
 - back over the middle cable bridge,
 - and back to the truss cable attach bracket
6. Connect the second eyebolt on the remaining end of the cable to the other side of the truss cable attach bracket using a 1/2" locknut threaded fully onto the eyebolt shaft, but not further than 1/4".
7. For the second (long) cable run:
 - Thread the 36' cable through the cable guide on the underside of the lower tube, and pull the cable through until there is an equal length of cable on each side of the tube.

- Attach eyebolts to the ends of the 36' cable [20090] with two 3/8" cable clamps [18990], using about 10" (25.4 cm) - 12" (30.5 cm) of cable. Tighten securely.
 - Insert each eyebolt into a separate turnbuckles, and secure by threading on a 1/2" locknut fully onto the eyebolt shaft, but not further than 1/4".
8. Starting at the lower tube, pull the 85'6" cable:
- over the low and high truss towers (fasten loosely with 5/16" cable clamps)
 - under the tube and around the cable return bracket at the upper tube (fasten loosely with a 5/16" cable clamp)
 - back over the truss towers on the opposite side (fasten loosely with 5/16" cable clamps), providing equal lengths of cable on both sides of the tube.

Important: *The 85' 6" cable must be installed on the outside of the high (middle) truss tower.*

9. Insert an eyebolt into the unconnected side of each of the turnbuckles (whose other sides are connected to the 36' cable), and secure by threading on a 1/2" locknut fully onto the eyebolt shaft, but not further than 1/4".
10. Thread the end of each side of the 85'6" cable through the appropriate turnbuckle eyebolt, and pull the cable snug. Double-back the cable and secure in place with 2 cable clamps doubling-back about 12" (30.5 cm) of cable.

Note: *If there isn't enough cable, loosen the clamps on the opposite eyebolt and adjust the cable. Retighten clamps.*

Important: *Truss cables must be tightened to provide a 1" upward bow on the spout end. Blocks and shims can be used to elevate the spout to help create the required bow while tightening the truss cables, but the 1" bow is measured with the spout end unsupported.*

11. Tighten the eyebolts on the second (long) cable run evenly to take the remaining slack out of the truss cable. Once this cable run is tightened, repeat for the first (short) cable run.
12. Check for proper side-to-side alignment and then tighten the cable clamps on the cable bridges and the cable return brackets.

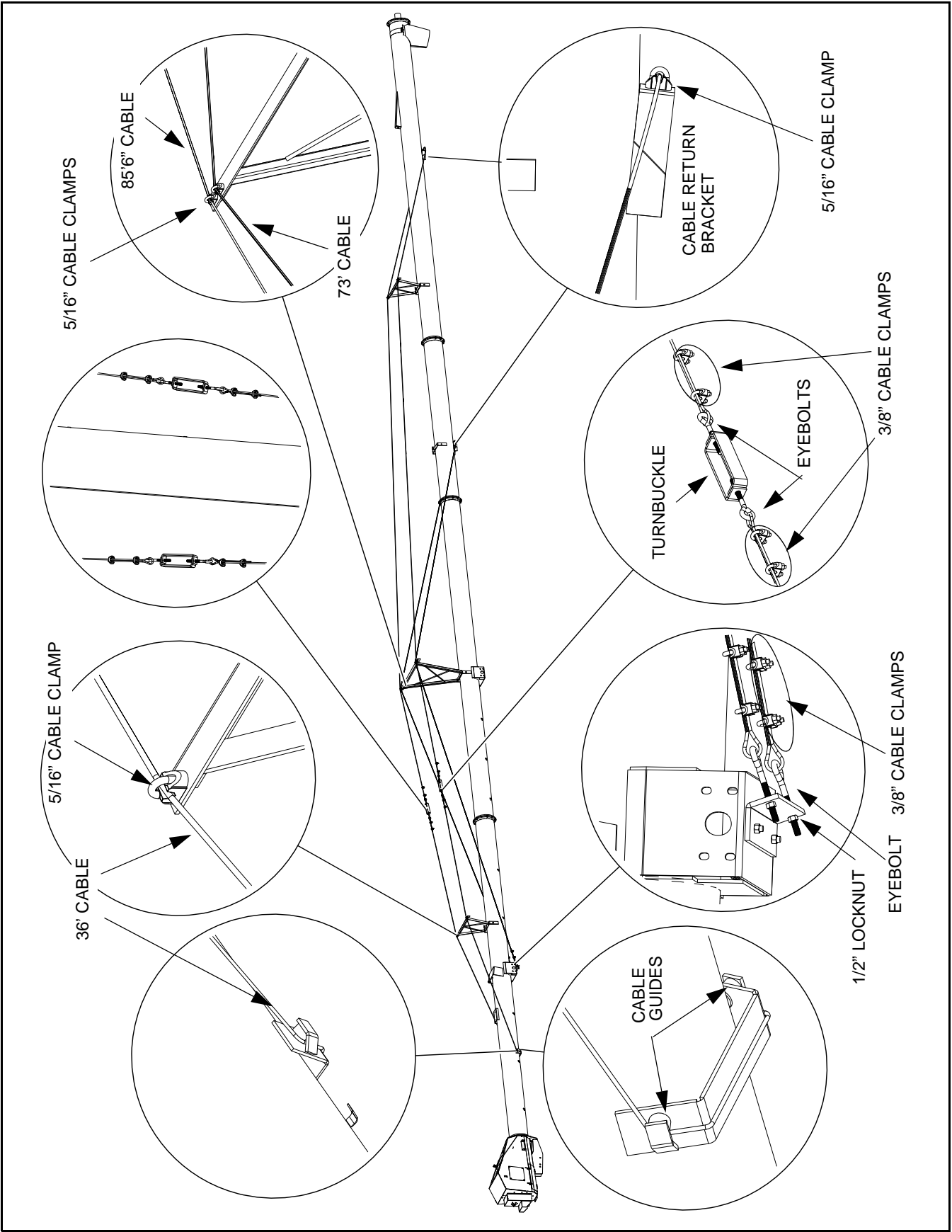


Figure 3.13 X130-74 Truss Cable Installation

3.10.2. X130-84/X130-94 AUGER TUBE TRUSS ASSEMBLY

INSTALL X130-84/X130-94 TRUSS TOWERS AND TRUSS TUBES

See Table 3.9. for a list of parts required to install the X130-84/X130-94 truss towers and truss tubes, as well as for figure references that apply to the diagrams below.

- For the X130-84 models, see Figure 3.14 and Figure 3.15.
- For the X130-94 models, see Figure 3.16 and Figure 3.17.

Note: *Due to rigidity of the tubular trussing, truss tubes should be tightened to provide only a small upward bow (approximately 1") at the auger tube spout end.*

Note: *When assembling the truss system, **do not fully tighten** any bolts until specifically instructed to do so.*

1. Ensure that auger tube sections are supported in such a way that the tube is as straight as possible. Use additional supports, shims, and blocks as required.
2. Attach pairs of **low** and **high** truss tower brackets to the truss-attach brackets welded to auger tube.
3. Install the following truss components:
 - tube connect plates between truss tower bracket pairs
 - the truss adjuster plate
 - truss adjust tubes (short and long), with 1" nuts installed far apart
 - cross-brace tubes

Note: *Seven bolt truss tube connect plates must be oriented so the three 7/16" bolt holes are closest to the discharge spout.*

4. Adjust the long truss adjust tubes:
 - Rotate the 1" hex nut pairs on both long truss adjust tubes until they lock together tightly on either side of their truss tube anchors.
 - When fully tightened, the truss tower brackets should be positioned at a 90 degree angle with respect to the auger tube, and should not lean to either side.
5. Adjust the short truss adjust tubes:
 - Tighten the two 1" hex nuts on the inside of the tube adjust plate until there is enough tension in the truss tubes to create a slight upward bow in the tube (no more than 1" as measured from the tube support and the top of the tube, just before the tube cap).
 - When tightening the nuts, alternate between the two nuts frequently enough to ensure that they are tightened equally, and that the same amount of threaded rod is exposed on each side.
 - Rotate the outer 1" nuts until they lock tightly on each side of the tube adjust plate.
6. Install pairs of cross-brace clamps where the cross-brace tubes cross in an "X" pattern, and tighten fully.
7. Fully tighten cross-brace tube nuts at the truss joiner plates and at the tab between truss tower pairs.
8. Check that all nuts are firmly tightened.

Table 3.9. X130-84 and X130-94 Truss Towers and Tubes Parts Reference

Fig Ref	Part #	Part Description
1	17459WH	Low truss tower bracket
2	17460WH	High truss tower bracket
3	21301WH	Long truss adjuster tube
4	n/a	Truss tube anchor
5	21310WH	Truss tube
6	20078WH	Cross-brace tube
7	17405	Cross-brace clamps
8	20036	Truss tube adjuster plate
9	21328	Short truss adjuster tube
10	21304WH	Seven-bolt tube connect plate
11	21305WH	Seven-bolt tube connect plate
12	20080	1" nut
13	18698	7/16" x 1-1/4" bolts
	17593	7/16" locknuts
14	19545	7/16" x 2-1/4" GR8 bolts
	17593	7/16" locknuts
15	27484	5/8" X 2-1/4" GR8 bolt
	19600	5/8" locknut
16	19589	1/2" X 1-1/2" bolt
	17750	1/2" locknut
17	19542	7/16" x 1" bolts
	17593	7/16" locknuts
18	19974	1/2" x 1-3/4" GR8 Bolt
	17750	1/2" locknut

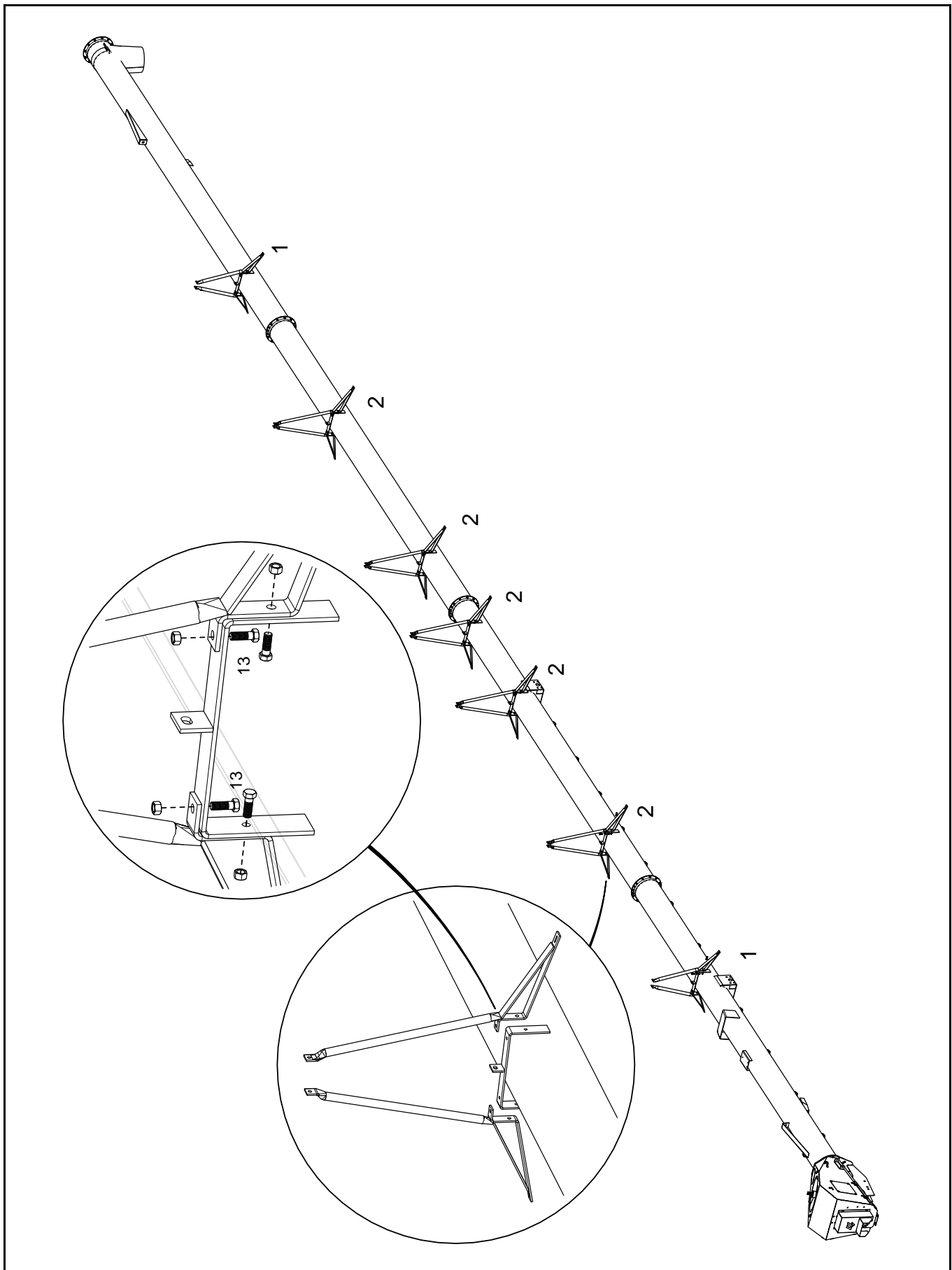


Figure 3.14 X130-84 Truss Towers

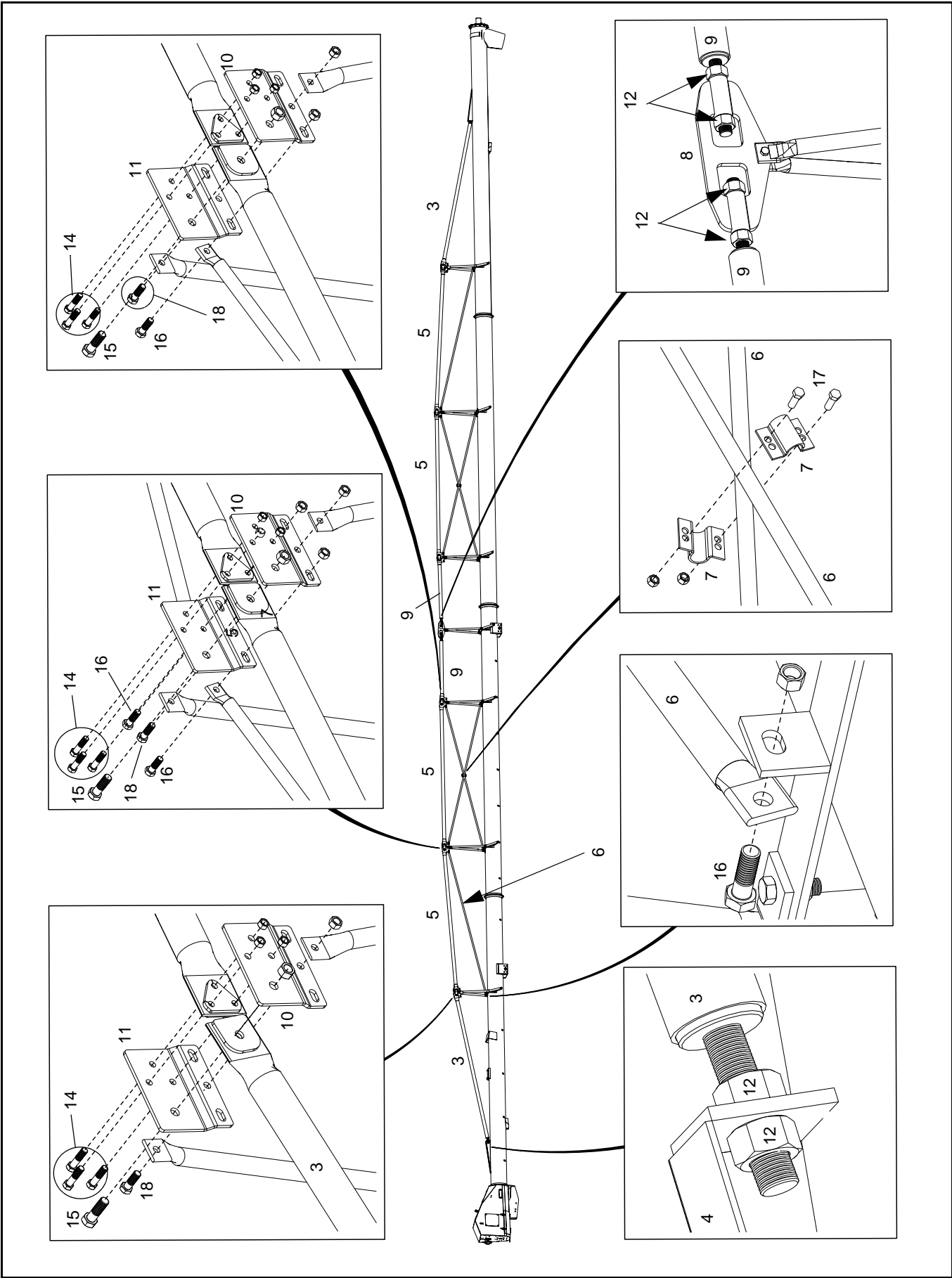


Figure 3.15 X130-84 Truss Tubes

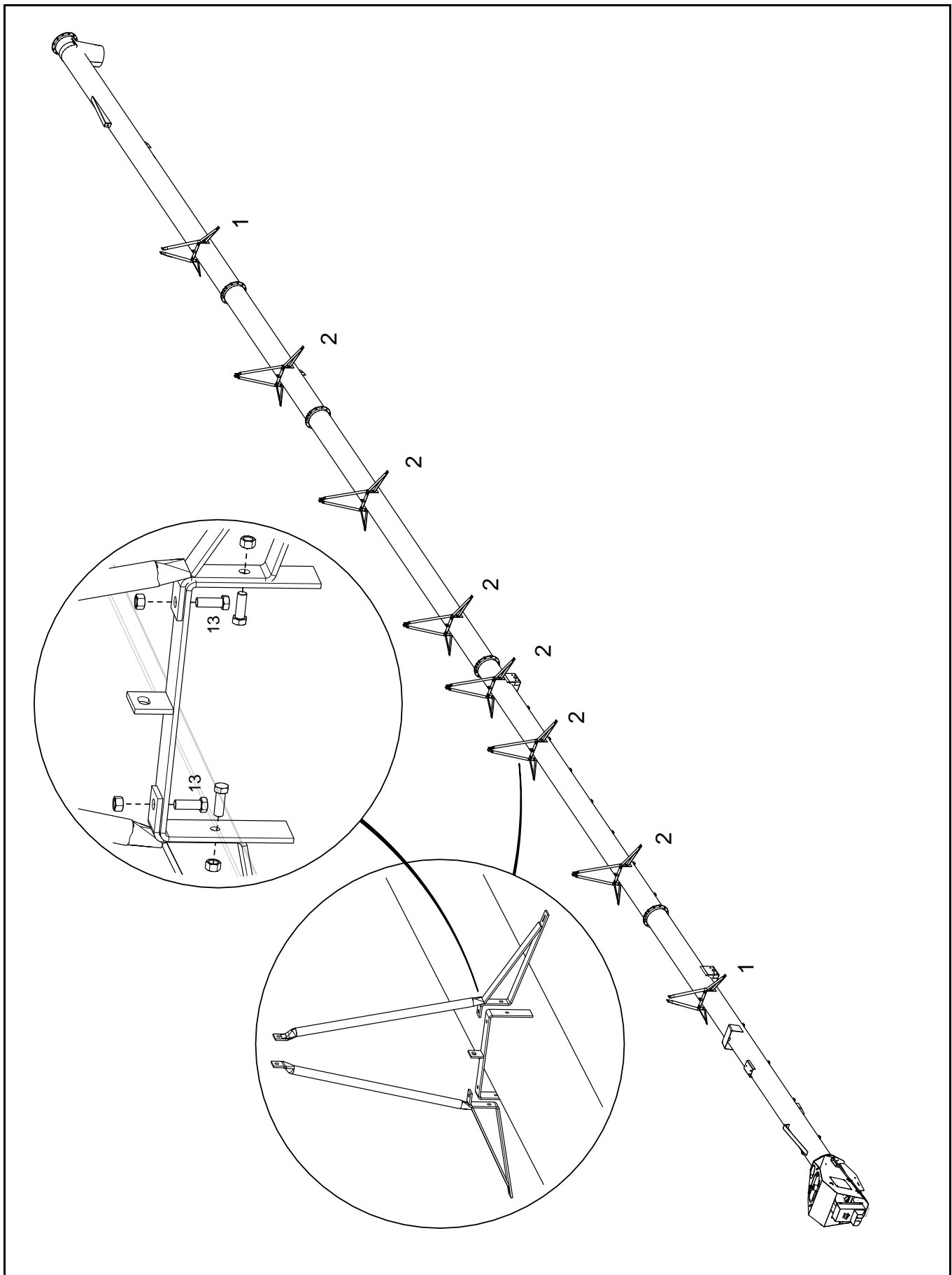


Figure 3.16 X130-94 Truss Towers

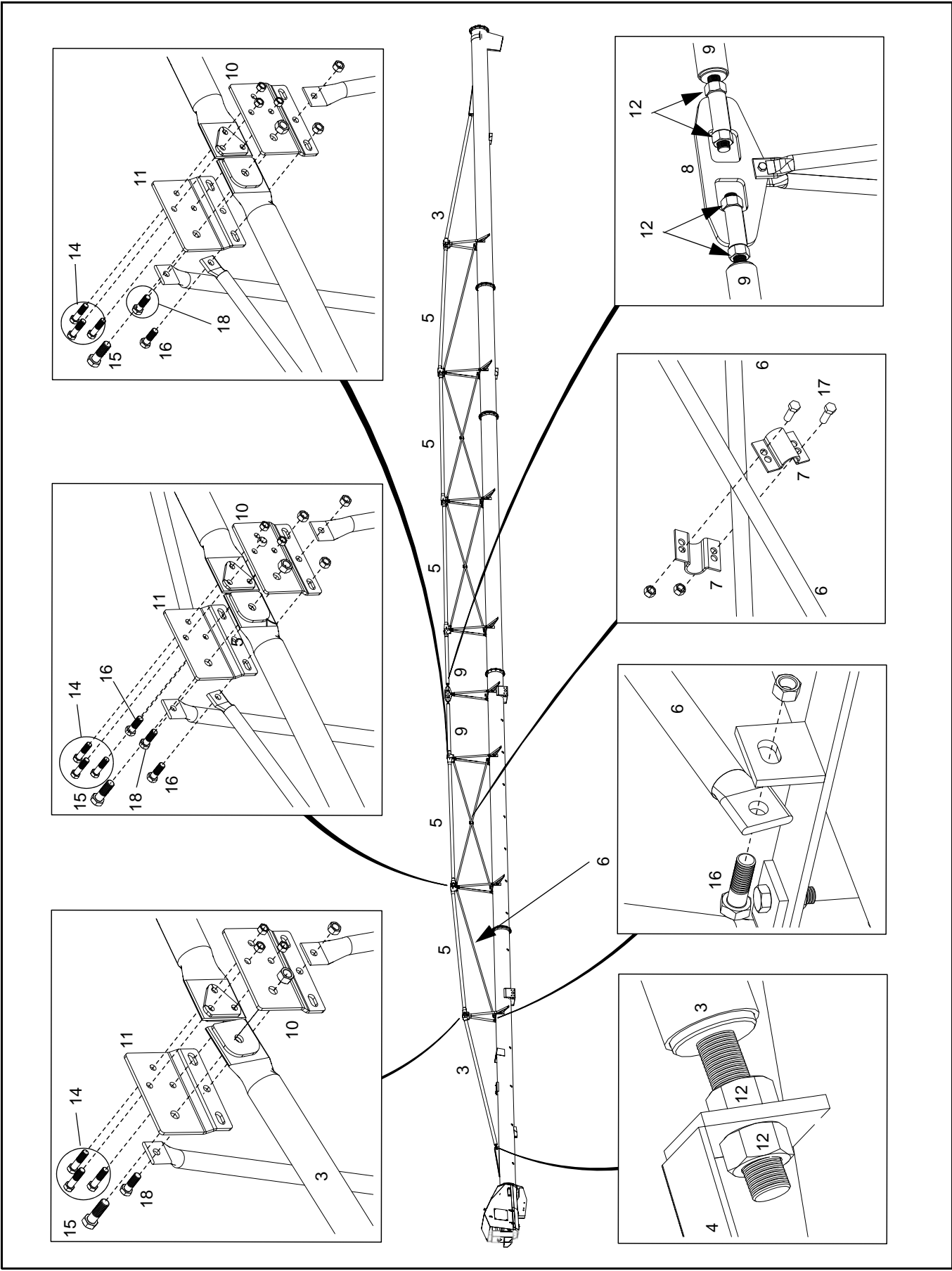


Figure 3.17 X130-94 Truss Tubes

INSTALL X130-84/X130-94 CABLE TRUSSING

See Table 3.10. for a list of parts required to install the X130-84/X130-94 truss cables, as well as for figure references that apply to the Figure 3.18 (X130-84 shown, X130-94 is similar).

1. Attach eyebolts to both ends of a truss cable with two 3/8" cable clamps using about 10" (25.4 cm) - 12" (30.5 cm) of cable. Tighten securely.
2. Thread the cable through the cable return bracket on the underside of the lower tube, and pull the cable through until there is an equal length of cable on each side of the tube. Secure the cable to the cable return bracket with a 5/16" cable clamp.
3. Insert the cable eyebolts into separate turnbuckle bodies and secure with 1/2" locknuts threaded fully onto the eyebolt shaft, but not further than 1/4".
4. Attach eyebolts to the unconnected ends of both turnbuckle bodies, and secure with 1/2" locknuts threaded fully onto the eyebolt shaft, but not further than 1/4".
5. Thread the second cable through the cable return bracket on the underside of the upper tube, and pull the cable through until there is an equal length of cable on each side of the tube.
6. Pull the ends of both cables over the truss cable supports, loosely attaching the truss cables to each truss cable support with a 5/16" cable clamps.
7. Thread the unconnected ends of the second cable through the unconnected eyebolts on the turnbuckle bodies, pull tight, and then secure with two 3/8" cable clamps. Tighten securely.
8. Tighten the cables by adjusting the eyebolt locknuts. These cables must be very tight.
9. Tighten the 5/16" cable clamps at the lower tube and upper tube cable return brackets.
10. If the tube has a curve to one side, tighten the turnbuckle on the opposite side, while loosening the other turnbuckle slightly if required.
11. Tighten the cable clamps on all cable supports and arms.

Table 3.10. Parts Required, X130-84 and X130-94 Truss Cables

Fig Ref	Part #	Part Description	X130-84	X130-94
1	19331	Eyebolt	4	4
	17750	1/2" locknut	4	4
2	18990	3/8" cable clamp	8	8
3	20085	70' Cable	2	--
	17576	80' Cable	--	2
4	n/a	Lower tube cable return bracket	1	1
5	19333	5/16" cable clamp	16	18
6	17464	Turnbuckle	2	2
7	n/a	Upper tube cable return bracket	1	1
8	n/a	Truss cable supports	7	7

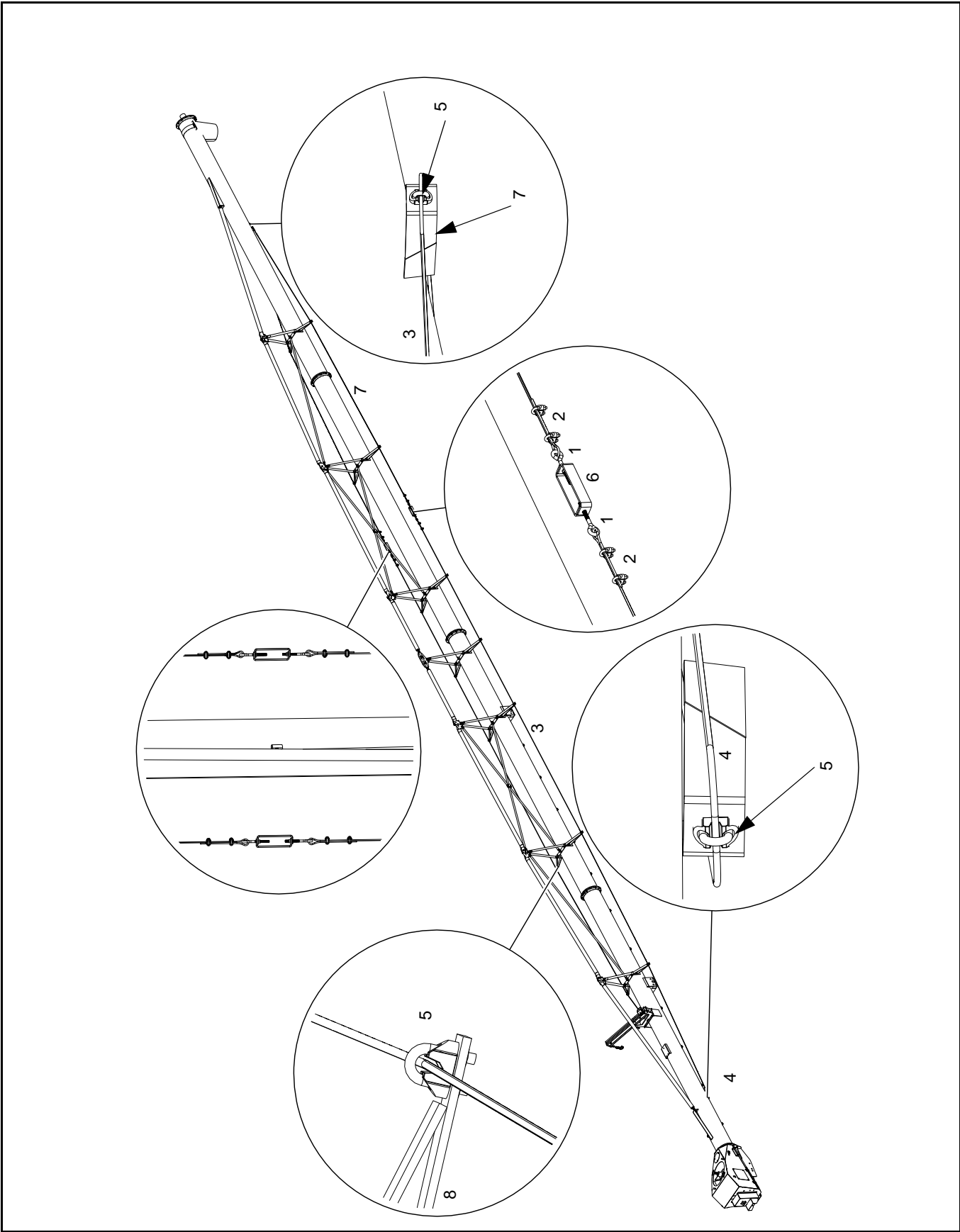


Figure 3.18 X130-84, X130-94 Truss Cables

3.11. ASSEMBLE THE AUGER FRAME

Table 3.11. provides a list of parts required to assemble the auger frame.

Table 3.11. Parts Required, Assemble Auger Frame

X130-74	X130-84	X130-94	Description	Amount
20035	20035	20035	3-piece axle	1
29912	29917	29922	Frame arm	2
29951	29951	29951	Stabilizer cross member	1
29954	29954	29954	Scissor rest	1
20241	20241	20241	Scissor support	1
29914	29919	29924	Lower scissor	2
20049	20049	20049	Lower scissor attach pin	2
18097	18097	18097	1" rim washer	4
18098	18098	18098	1/4" x 1-3/4" cotter pin	4
29910	29910	29910	Bowtie	1
29911	29911	29911	Bowtie cross brace	1
29916	29921	29926	Upper scissor	1
20240	20240	20240	Transport stand	1
29929	29929	29929	Scissor pin	2
29962	29962	29962	Frame attach spacer	2
19975	19975	19975	3/8" x 1-1/4" bolt	4
17402	17402	17402	3/8" locknut	4
19589	19589	19589	1/2" x 1-1/2" bolt	22
19974	19974	19974	1/2 x 1-3/4" bolt	4
17750	17750	17750	1/2" locknut	26
19592	19592	19592	3/4" x 2" bolt	8
19601	19601	19601	3/4" locknut	8
19991	19991	19991	5/8" x 2" bolts	8
19600	19600	19600	5/8" locknuts	8
18698	18698	18698	7/16" x 1-1/4" bolt	2
19598	19598	19598	7/16" nut	2
n/a	n/a	n/a	4" wood blocks (2x4, similar)	2

WARNING



Components are heavy and create a crushing and pinching hazard if improperly handled. Be sure to use proper hoisting equipment and procedures, and ensure lifting apparatus is secure. Lockout the lifting apparatus before working around or under the raised components. Failure to do so may cause serious personal injury.

1. Ensure the workspace is clear and large enough to accommodate assembly of the auger.
2. Lower the assembled 3-piece axle to the floor, supported on two 4" blocks under each side, and positioned so that the lower frame arm flanges face toward the assembly area.
3. Install frame arms on each side of the 3-piece axle:
 - a. Position frame arms so that the pin-flange ends are angled toward the centre of the work area, and position the opposite ends (flanged, with bolt holes) so that the frame arm flange bolt holes align with the 3-piece axle bolt holes.
 - b. Use four 3/4" x 2" bolts and 3/4" locknuts to connect each lower frame arm to respective axle end flanges.
 - c. Support the frame arms along their length with 4" blocks.
4. Install the stabilizer cross member (bolt loosely, until tube is dropped into place) using four 1/2" x 1-1/2" bolts and 1/2" locknuts on each side.
5. Install the scissor rest (bolt loosely, until tube is dropped into place) using 1/2" x 1-1/2" bolts and 1/2" locknuts.
6. Install the scissor rest on the 3-piece axle using four 3/8" x 1-1/4" bolts and 3/8" locknuts for each tube. Ensure that the scissor rest is oriented as shown in the diagram.

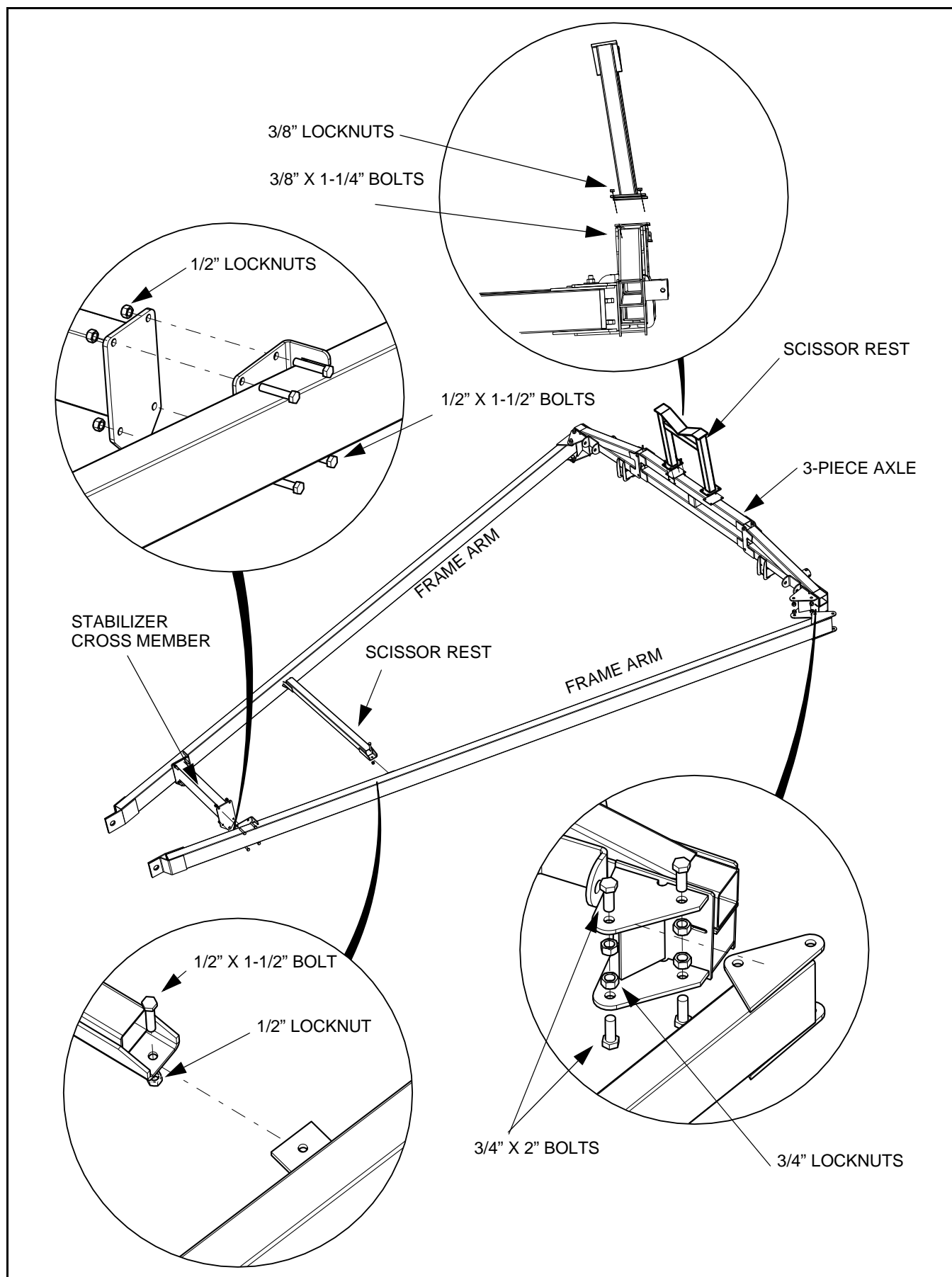


Figure 3.19 Assembling the Lower Frame Arms to the 3-Piece Axle

7. Elevate the frame arm with a support stand placed under the stabilizer cross member, and place another support stand so it can be used to support the bowtie end of the lower scissor arms as they are installed.
8. Lift the lower scissors into position, with the narrow ends positioned at the pins flanges on the 3-piece axle, and the wide ends elevated on the support stands. Use lower scissor attach pins to attach the narrow ends of the arms to the flanges on the 3-piece axle, and secure each pin with a 1" SAE washer and 1/4" x 1-3/4" cotter pin.

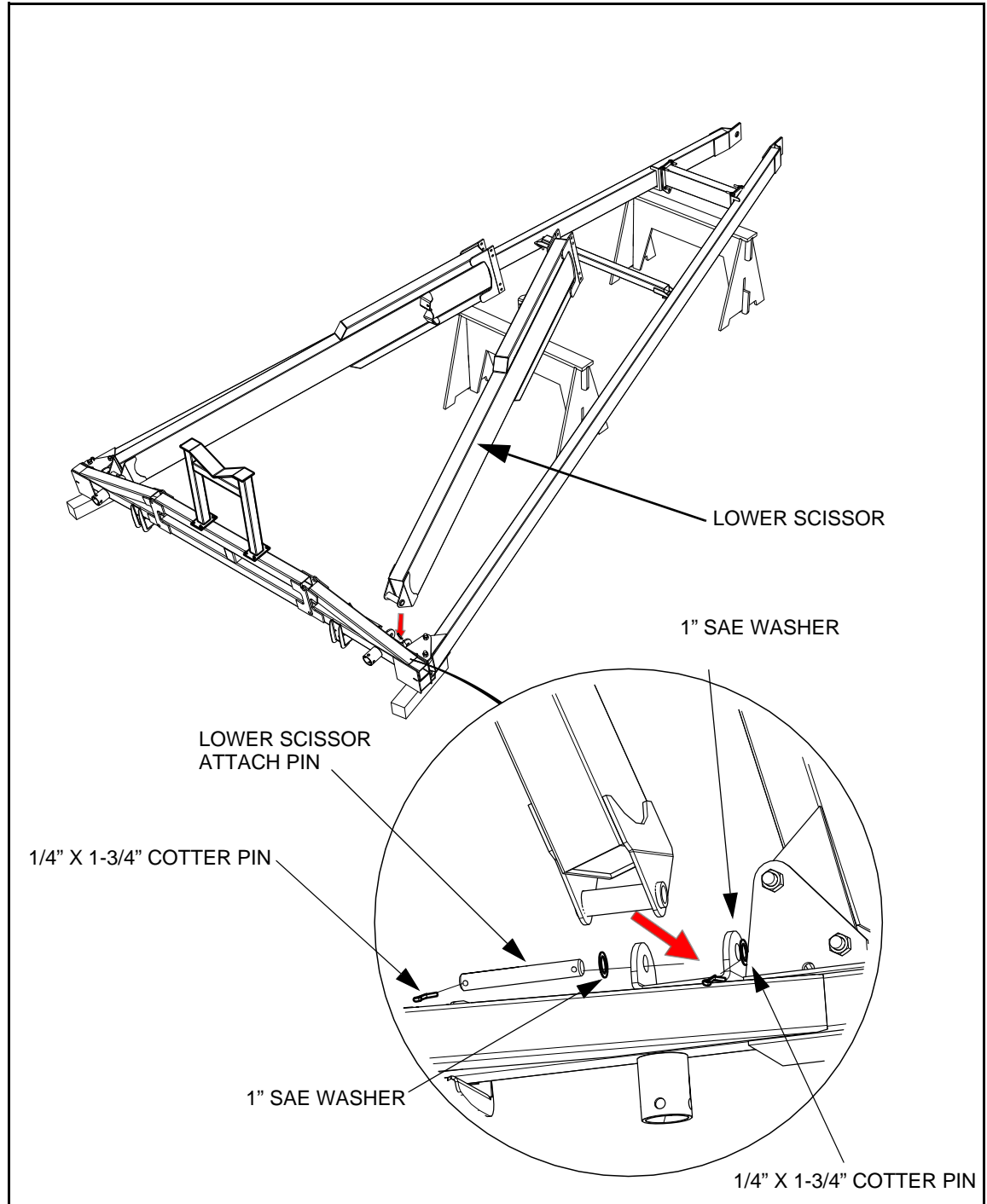


Figure 3.20 Installing the Lower Scissors

9. Lift the bowtie into place, and bolt it to the lower scissors with eight $5/8"$ x $2"$ bolts and $5/8"$ locknuts per side. A steel punch may be necessary to align bolt holes.
10. Install the bow tie cross-brace using four $1/2"$ x $1-1/2"$ bolts and $1/2"$ locknuts.

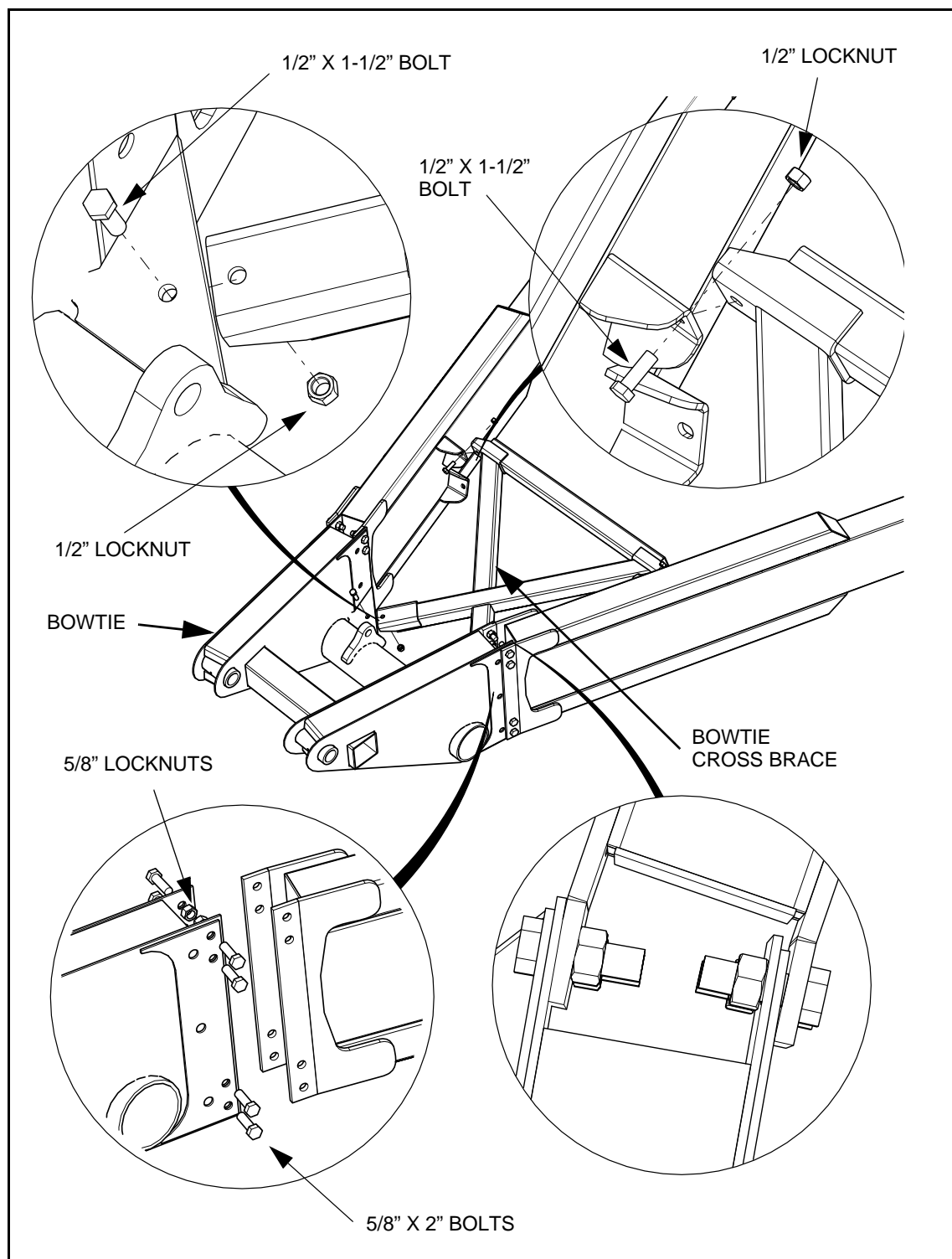


Figure 3.21 Installing the Bowtie and Bowtie Cross-Brace

11. Install the upper scissor:

- a. Install the scissor support on the upper scissor using 1/2" x 1-3/4" GR8 bolts and 1/2" locknuts.
- b. Lift and position the upper scissor with pin flanges aligned with pin flanges of the bowtie.
- c. Connect the upper scissor to the lower scissors with a greased scissor pin inserted in each side of the bowtie.
- d. Lock the scissor pins in place with 7/16" x 1-1/4" bolts and 7/16" locknuts.

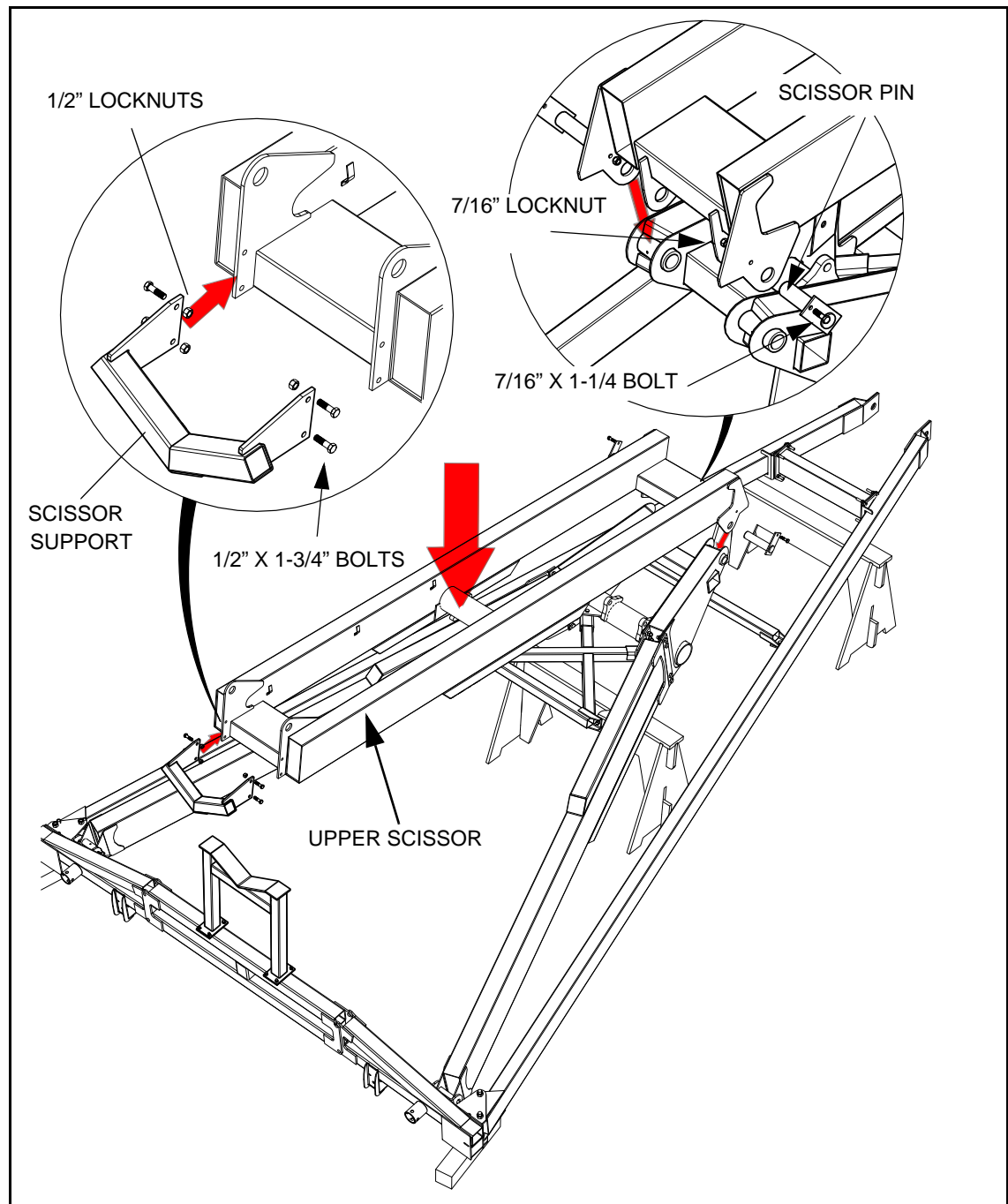


Figure 3.22 Attaching the Scissor Support and the Upper Scissor

12. Use four 1/2 x 1-1/2 bolts and four 1/2" locknuts to loosely install four frame attach spacers on the four upper and lower tube attach brackets (the spacers must be free to move during the tube installation process).

Note: *The frame attach spacer bolts should remain loose until after the tube has been installed on the frame, then tightened fully.*

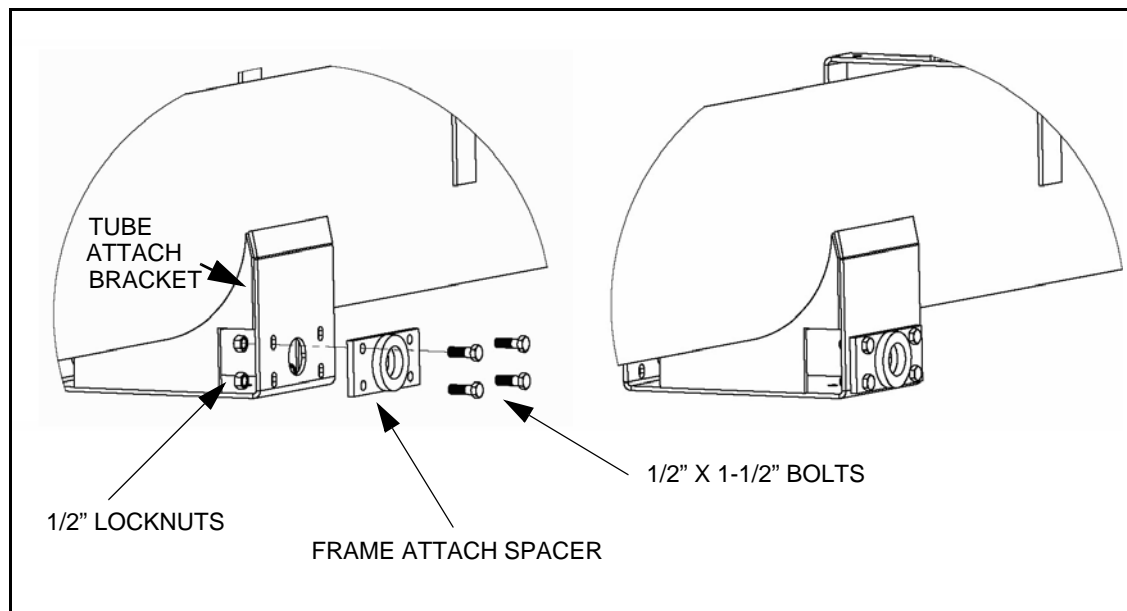


Figure 3.23 Installing Frame Attach Spacers on Tube Attach Brackets

13. Mount wheels to hubs on axle with 6 wheel bolts (See “Assemble Wheel Hubs and Install Tires” on page 58.)

Note: *Before installing the wheels check to make sure the hub and wheel mounting surfaces are free from rust and debris.*

14. Install tires, finger tighten the wheel bolts, and verify that the wheel is sitting flush on the hub. Torque the wheel bolts to 80 ft-lb (± 10 ft-lb) of torque while using the appropriate criss-cross pattern, refer to the Appendix for specifications. If in doubt have a qualified tire repair service perform the required maintenance.
15. Install hydraulic cylinders (See “Installing the Hydraulic Cylinders” on page 57.)

3.12. INSTALLING THE HYDRAULIC CYLINDERS

1. Position the cylinders on the cylinder lugs. The rod end of the cylinder must be attached to the bowtie so that the rod extends towards the intake (Figure 3.31).

Note: *The cylinder ports must face each other.*

2. Pin the cylinder in place using 1" x 3-3/8" cylinder pins and 1" external hitch clips (see Figure 3.24).

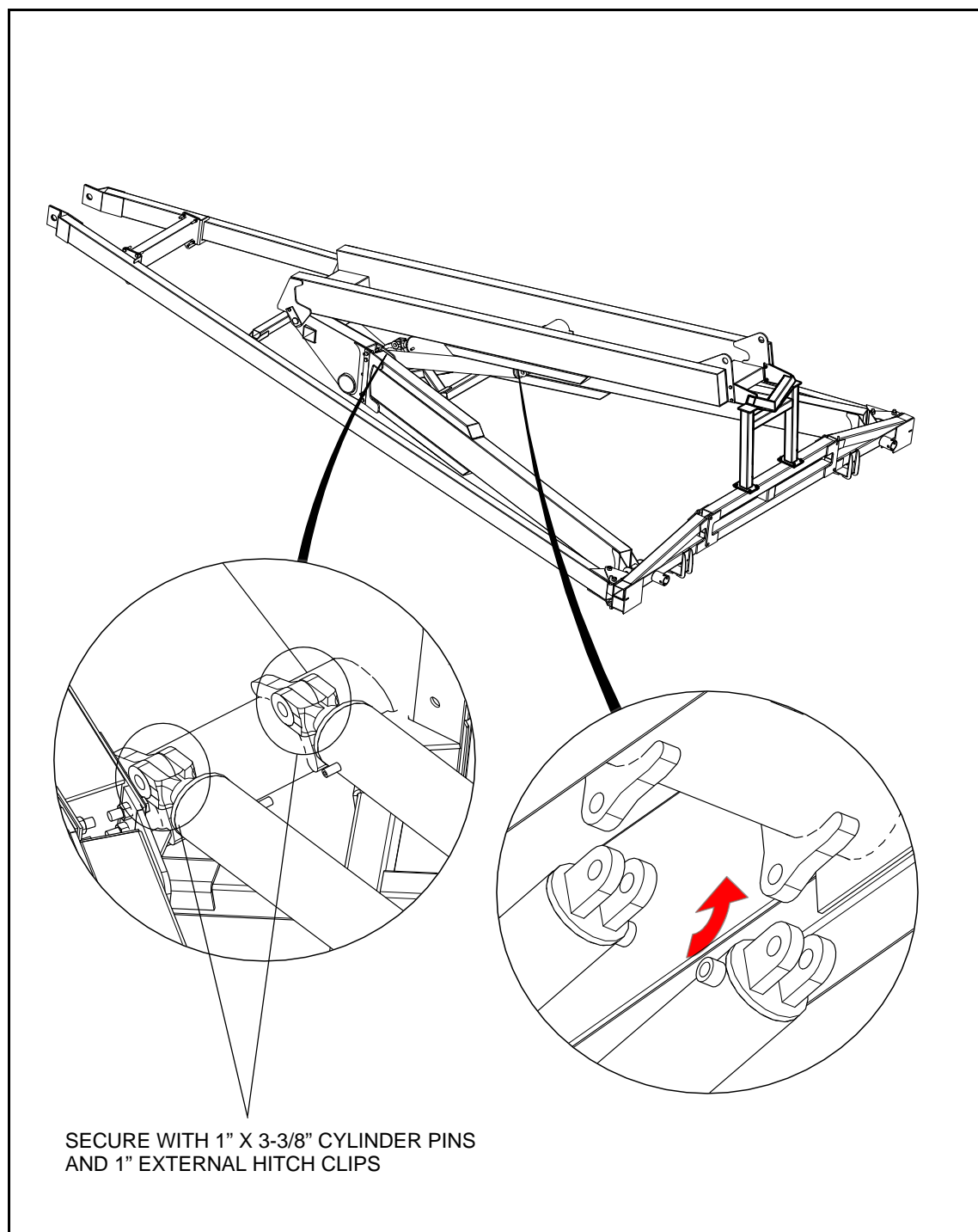


Figure 3.24 Installing Hydraulic Cylinders

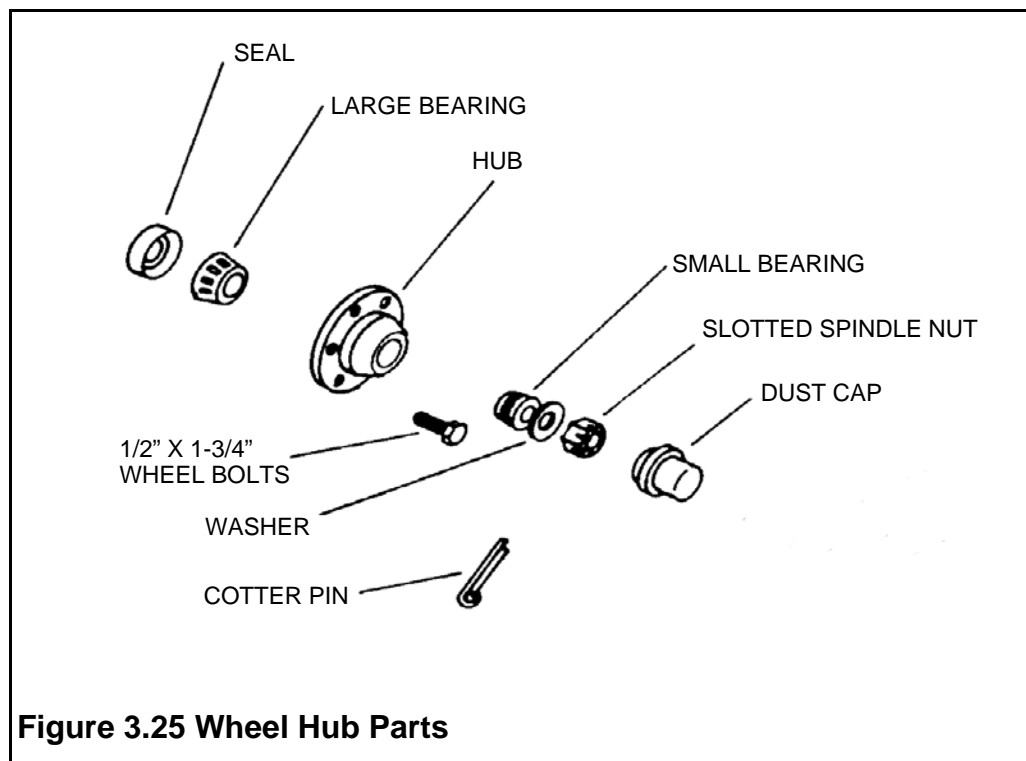
3.13. ASSEMBLE WHEEL HUBS AND INSTALL TIRES

For each axle extension (29961WH) and hub assembly (17013) pair:

1. Remove any dirt from spindle and hub.
2. Thoroughly pack wheel bearings and cups with a good grade of bearing grease.
3. Place large bearing into hub and carefully tap in seal.
4. Slip hub onto the axle extension spindle and insert small bearing and washer.
5. Tighten slotted spindle nut until hub drags slightly. Back off nut about 1/4 turn until hub turns freely.
6. Install cotter pin and dust cap.

Note: *Installing tires may not leave you with enough clearance to position and attach undercarriage once auger tube is raised. If so, install wheels after assembly is complete.*

7. Inflate tires to recommendations on tire side wall. Wheels may be mounted on hubs at this time using 6 wheel bolts.
8. Raise the three-piece axle, fully insert the axle extension and wheel, and secure the axle extension with an axle pin (20008) and a 7/16"-3/4", 1/8" DIA hairpin (19463).



3.14. ATTACHING THE AUGER TUBE TO THE FRAME

Table 3.12. provides a list of parts required to attach the auger tube to the frame.

Table 3.12. Parts Required, Attaching the Auger Tube to the Frame

X130-74/84	X130-94	Description	Amount
29950	29950	Stabilizer brackets	2
29952	29953	Stabilizer braces	2
29995	29995	1-3/4" x 19" lower frame attach pin	2
28584	28584	5/16" x 2-1/2" roll pin	4
20079	20079	1-3/4" x 18" upper scissor frame attach pin	2
28584	28584	5/16" x 2-1/2" roll pin	2
27484	27484	5/8" x 2-1/4" bolts	1
19590	19590	5/8" x 1-1/2" bolts	1
19600	19600	5/8" locknuts	2

WARNING



Components are heavy and create a crushing and pinching hazard if improperly handled. Be sure to use proper hoisting equipment and procedures, and ensure lifting apparatus is secure before working around or under the raised components. Failure to do so may cause serious personal injury.

1. Ensure that the four frame attach spacers are loosely installed on the upper and lower tube attach brackets (see Figure 3.23).
2. Arrange a strong sling around the auger tube. Attach the sling to a crane, block and tackle, or a front end loader, and lift the auger tube high enough to remove the stands from underneath the auger.
3. Move tube over top of the assembled frame, ensuring that the tube is centered on the scissor frame before proceeding.
4. Connect tube to the lower frame arms:
 - a. Lift the lower frame arms to align with the lower frame attach spacers.
 - b. Grease the 1-3/4" x 19" lower frame attach pin.
 - c. Insert stabilizer brackets between the lower frame arm and the tube frame attach spacers, and insert them through the lower frame arm tube connection flange holes, stabilizer brackets, and through the frame attach spacers.
 - d. Secure the lower frame attach pin with 5/16" x 2-1/2" roll pins.

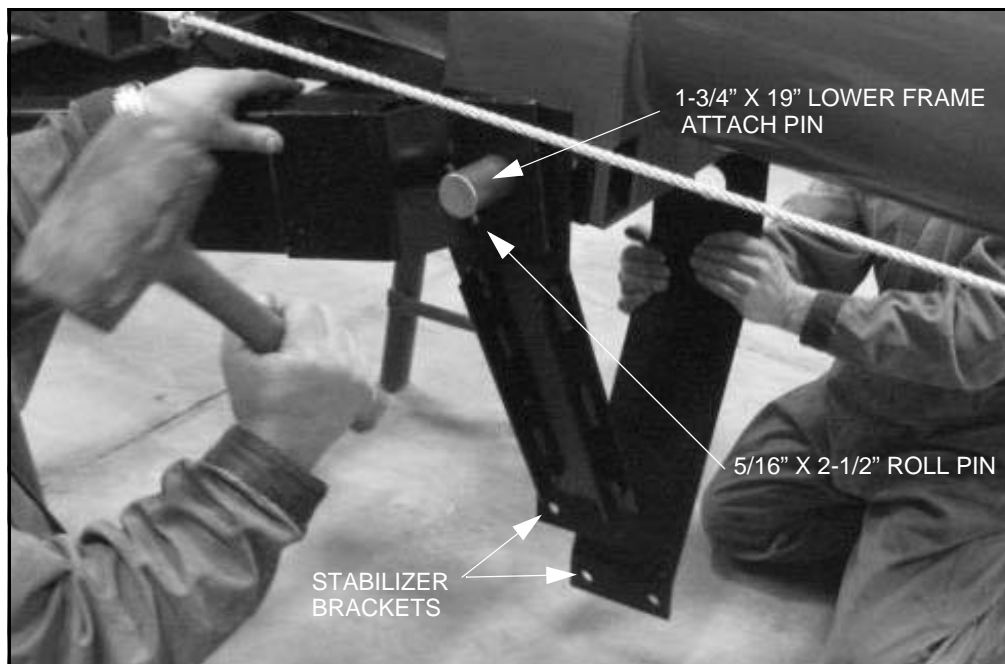


Figure 3.26 Inserting the Lower Frame Attach Pins

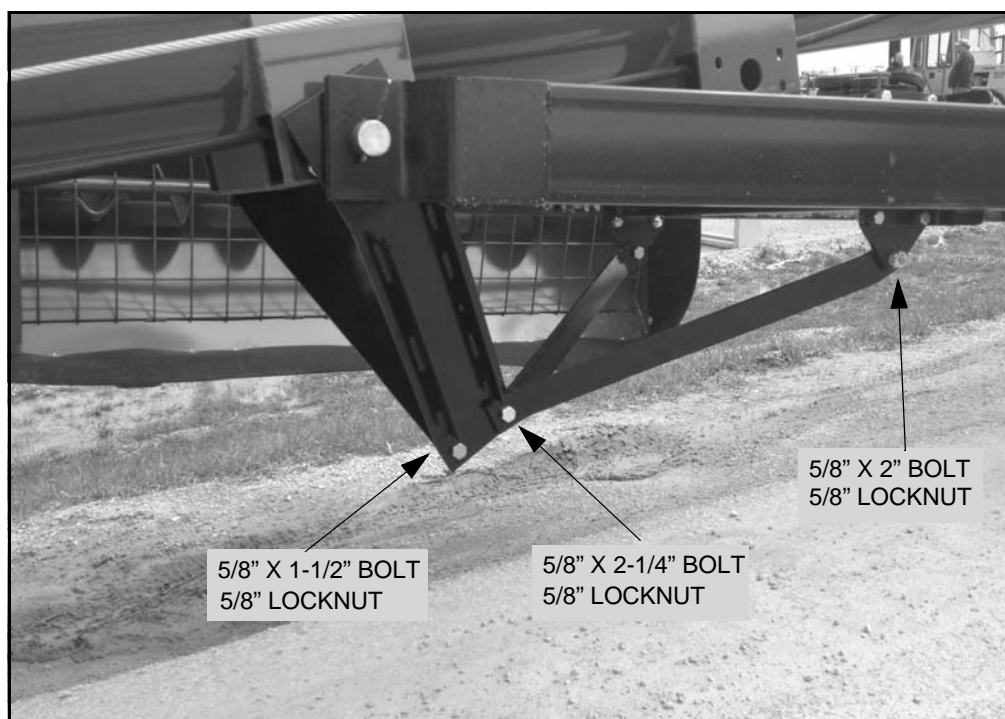


Figure 3.27 Stabilizer Braces (Installed)

5. Attach the two stabilizer braces between the Stabilizer brackets and the stabilizer cross members as follows: use a 5/8" x 1-1/2" bolt [19590] and locknut [19600] and a 5/8" x 2-1/4" bolt [27484] and locknut [19600] to connect the stabilizer braces to the Stabilizer brackets, and connect the remaining ends of the stabilizer braces to the stabilizer cross member (one on each side, using the end flanges at the frame) with two 5/8" x 2" bolts and locknuts.

6. Connect tube to the scissor lift:
 - e. Adjust the tube height and frame position until the upper frame attach spacers are aligned with the tube connection flange holes at the top of the upper scissor arm.
 - f. Grease the 1-3/4" x 18" upper scissor frame attach pin, and insert it through the upper scissor flange hole (one on either side), through the frame attach spacer, and then through the frame spacer and upper scissor flange hole on the opposite side.
 - g. Secure the upper scissor attach pins with two 5/16" x 2-1/2" roll pins.
 - h. Lower the scissor lift until it rests lightly on the frame.

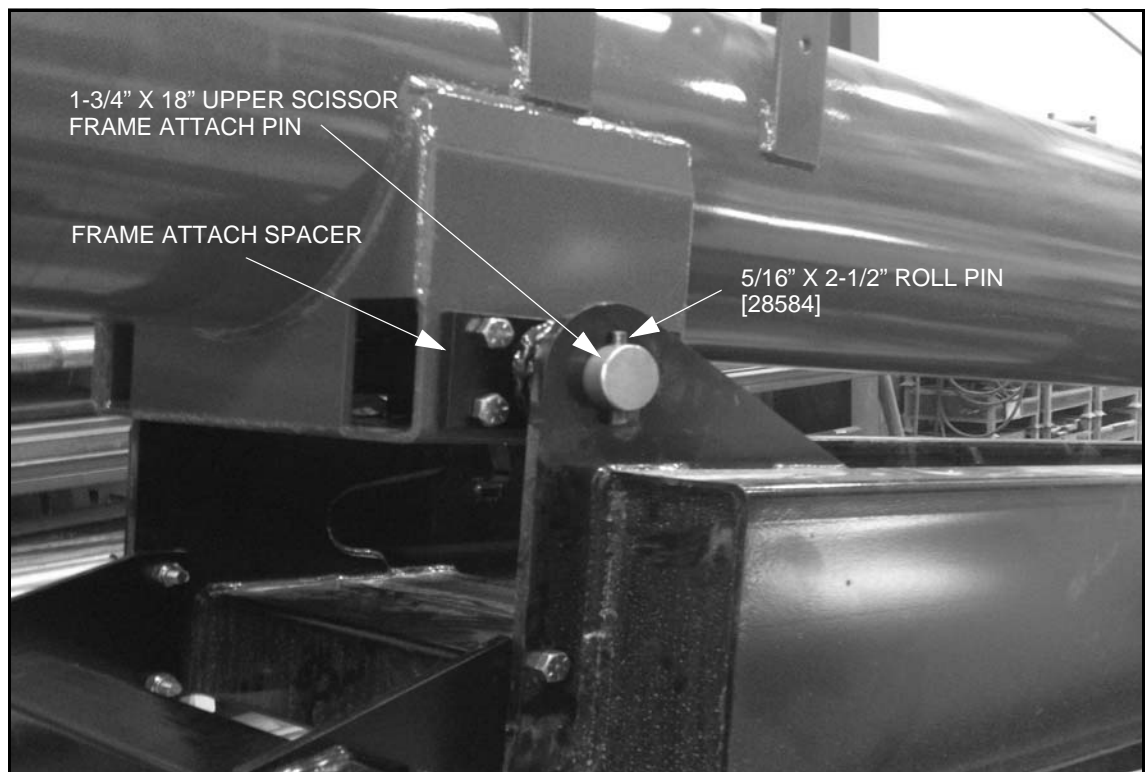


Figure 3.28 Connecting Tube to the Scissor Lift

3.15. CONNECTING HYDRAULIC HOSE TO CYLINDERS

Table 3.13. provides a list of parts required to connect hydraulic hose to the lift cylinders.

Table 3.13. Parts Required, Connecting Hydraulic Hose to Cylinders

Part Number	Description	Amount
28480	Steel T	1
28478	Steel elbow	1
20058/20059/20060	X13 hydraulic hose assembly	1
28468	Hose, 3/8" X 2', 2500 PSI	1
18084	Ball valve	1
9900800	1/4" x 3/4" bolt	2
28449	1/4" locknuts	2

Note: Refer to the Appendix for hydraulic fitting tightening specifications.

1. Remove plugs from the hydraulic cylinder.
2. Install a steel elbow fitting on the port of either of the two cylinders.
3. Attach steel T fitting to the port on the other cylinder.
4. Connect one end of the short hydraulic hose between one steel T fitting port, and connect the remaining end to the elbow fitting on the other cylinder.
5. Connect the end of the long hose to the remaining steel T fitting port.
6. Lay the long hose along the upper scissor frame and tube (Figure 3.31).
7. Secure the hydraulic hose along the top of the upper scissor and on the tube using the welded hose clips.
8. Provide slack or a loop between each secured point.
9. Bend tops of welded clips over slightly to retain hose.
10. Connect ball valve to the boot using the ball valve bracket and two 1/4" x 3/4" bolts and locknuts (see Figure 3.32).

Important: Do not make bends in hydraulic hose too tight. The bends must have a radius of at least 4" to prevent failure of the hose.

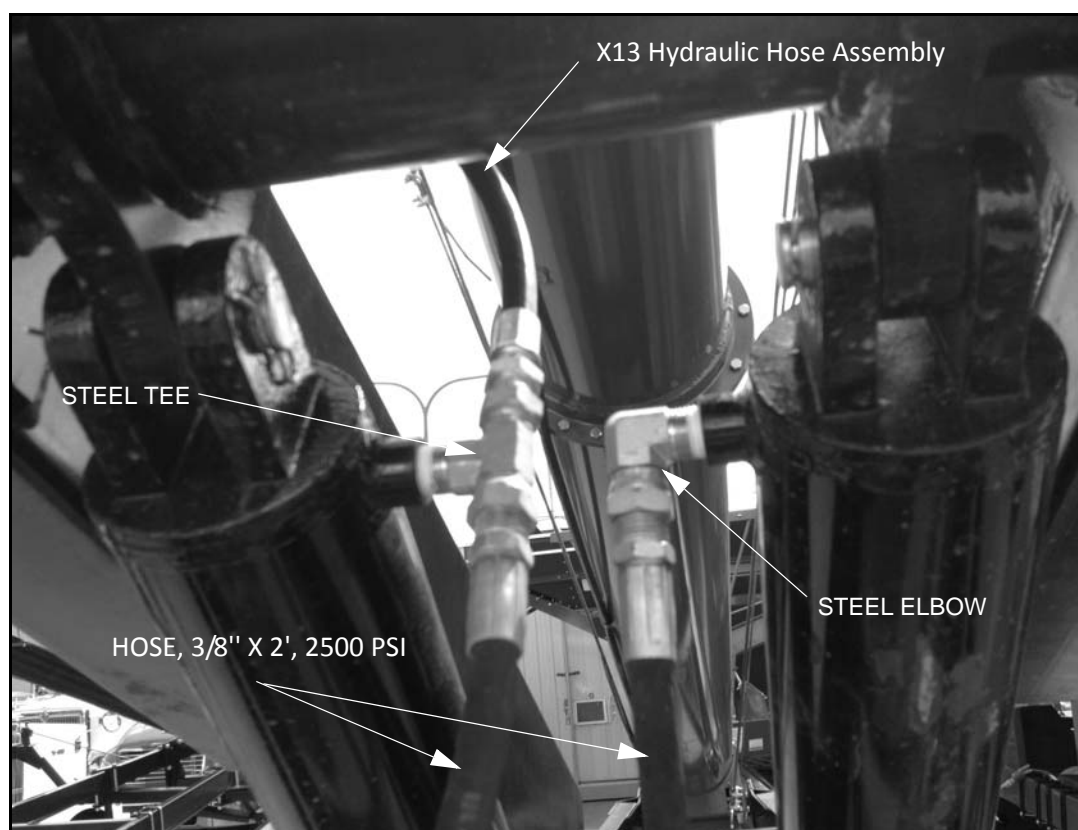


Figure 3.29 Hydraulic Fittings on Cylinders

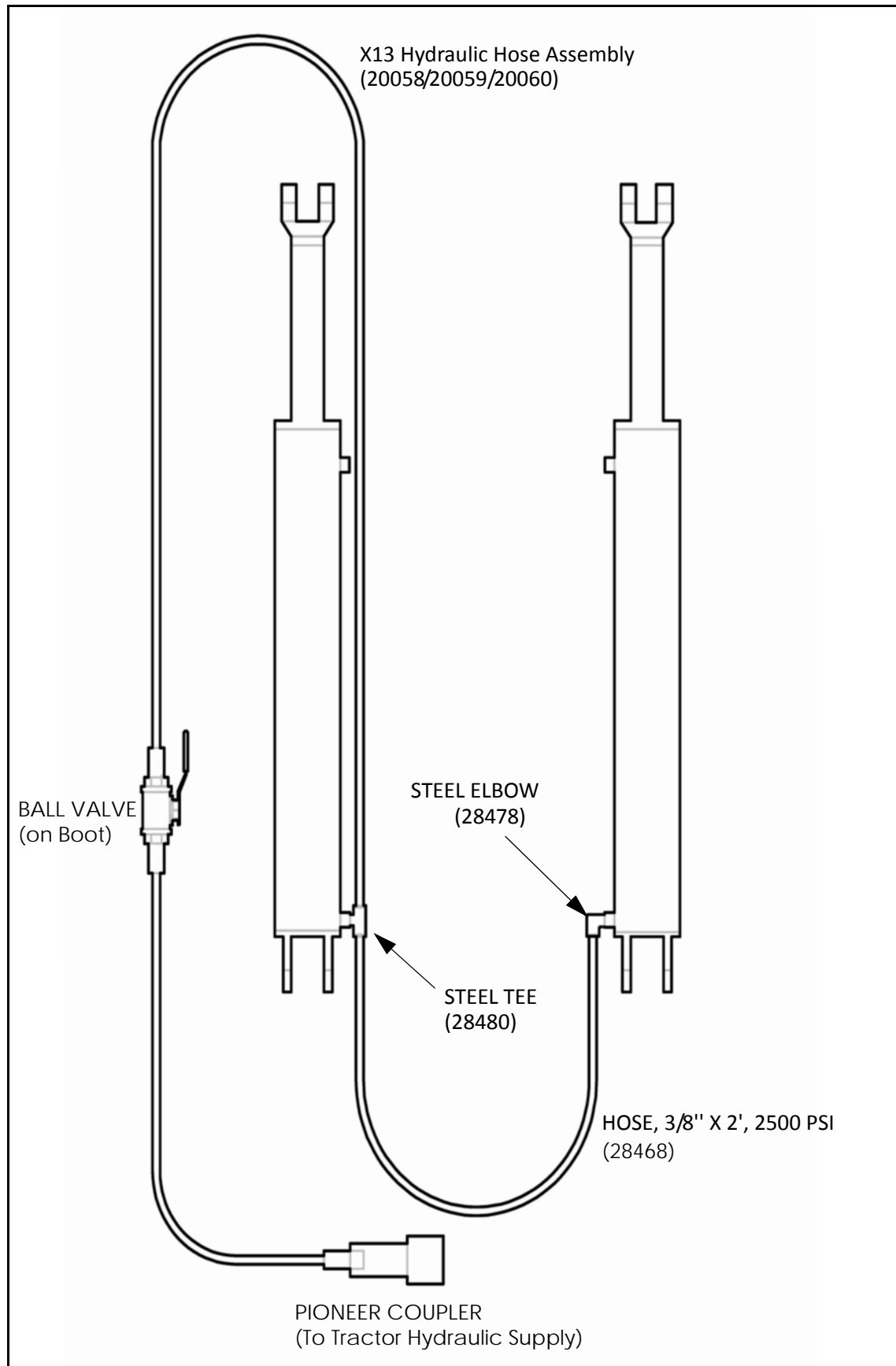


Figure 3.30 X13 Scissor Lift Hydraulics

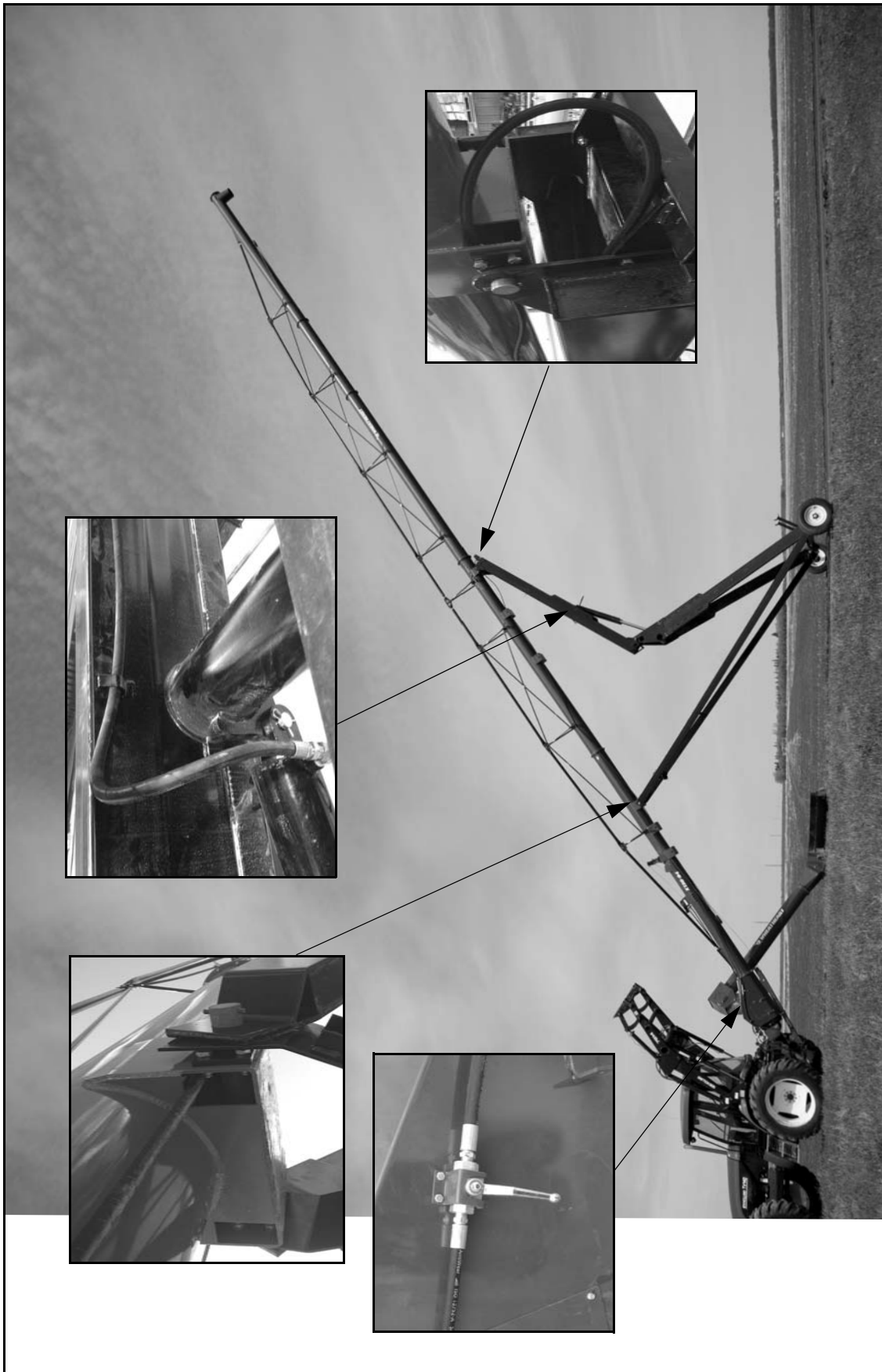


Figure 3.31 Running Hydraulic Hose Through Frame

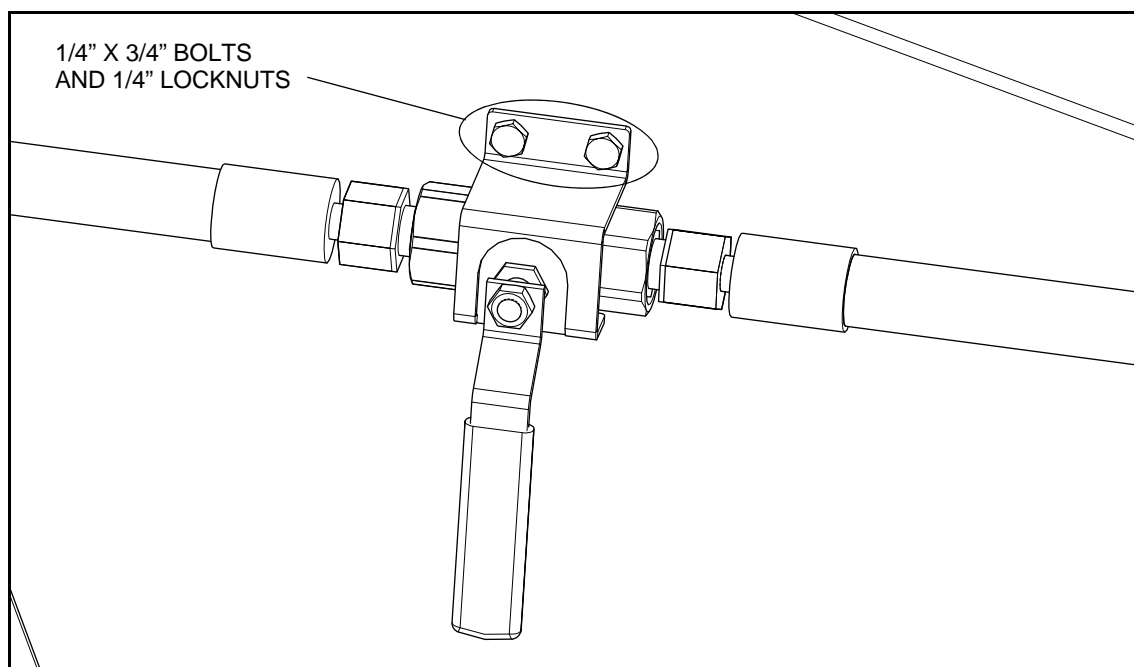


Figure 3.32 Installing the Ball Valve on the Boot

3.16. INSTALL LOW PROFILE INTAKE HOPPER


WARNING	
	<p>Components are heavy and create a crushing hazard if improperly handled. Be sure to use proper hoisting equipment and procedures, and ensure lifting apparatus is secure. Lockout the lifting apparatus before working around or under the raised components. Failure to do so may cause serious personal injury.</p>

Table 3.14. provides a list of parts required to install the low profile intake hopper.

Table 3.14. Parts Required, Install Low Profile Intake Hopper

Part Number	Description	Amount
29978	Low profile hopper	1
21299	Spout head and tube	1
29977	Transition	1
20051	Cable attach bracket	1
17522	Wheel	4
17394	Wheel pins	4
20461	Inspection hatch bar	1
19463	Hairclip connectors	1
19224	Woodruff key	1
29166	Spout head retainer	4
29152	Spout head spacer	4
19538	5/16" x 3/4" bolt	10
18698	7/16" x 1-1/4" bolt	15
17593	7/16" locknut	15
19590	5/8" x 1-1/2" bolts	2
19600	5/8" locknuts	2

1. Attach the transition to the intake hopper with two 5/8" x 1-1/2" bolts and 5/8" locknuts (19600). **DO NOT** over-tighten; tighten to a slightly loose fit only as these bolts act as pivot points (Figure 3.33).

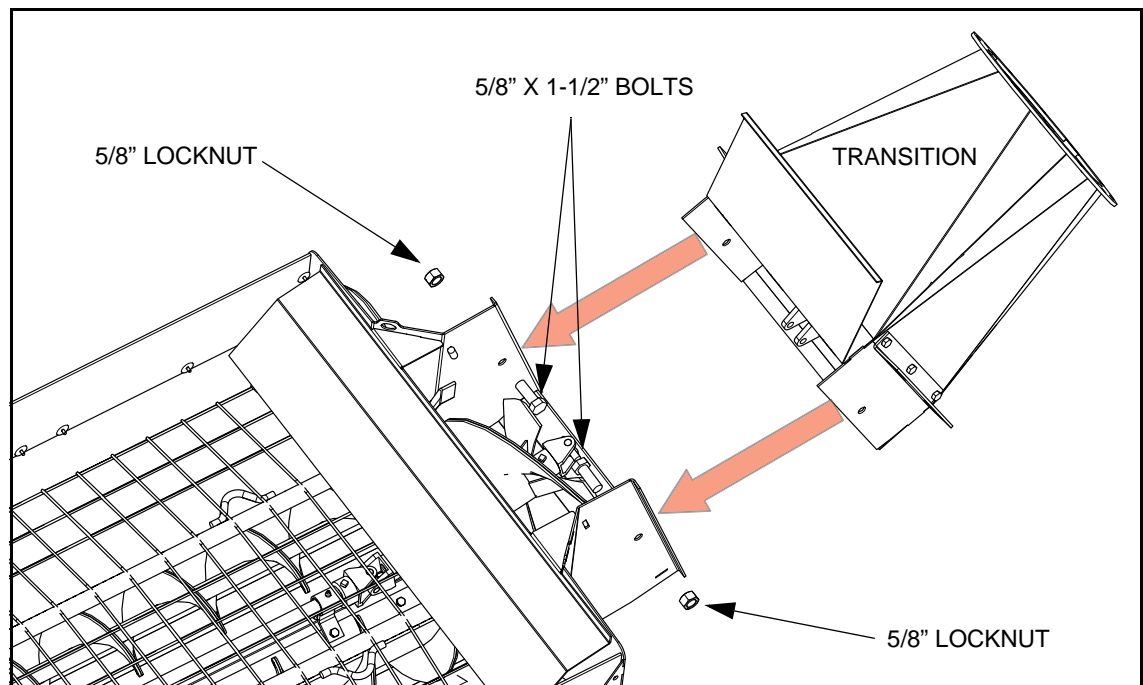


Figure 3.33 Installing the Transition

2. Clean dirt and paint from inside the u-joint and flighting shaft end, grease the shaft end, then insert a Woodruff key (Figure 3.34).
3. Raise and support the hopper tube spout head on a stand about 50" high.
4. Open the service door on the transition, then bring the tube and transition together guiding the flight shaft into the u-joint (Figure 3.34).
5. Secure the tube to the pivot-connector on the hopper with twelve 7/16" x 1-1/4" bolts and 7/16" locknuts.
6. Tighten set screws on u-joints, then close and secure the service door.

7. Attach the 4 solid wheels to the 4 hopper corners with the axle pins and hairpins. There are 3 height settings (Figure 3.35) that can be used according to preference.
8. To connect the intake hopper to the auger boot, the swing head spout door must first be opened. To do so, open the spring clasps and rotate the spout door open, so that it lies down on the top of the swing tube.
9. Check that the u-joint spline and splined shaft on the lower gear box are clean, then apply a light film of grease on this splined shaft.
10. Shift the position of the hopper so that the spout head is supported above the hopper, centred on the shaft of the gear box.
11. Lower the spout head onto the boot while guiding the splined universal joint onto the splined gearbox shaft. Once positioned, the swivel ring should be resting flat on the boot surface.
12. Install spout head spacers, followed by spout-head retainers, using ten $5/16"$ x $3/4"$ GR2 bolts (Figure 3.36).
13. Lubricate the universal joint and then close the safety discharge door.

Important: *Always keep the discharge door closed during operation.*

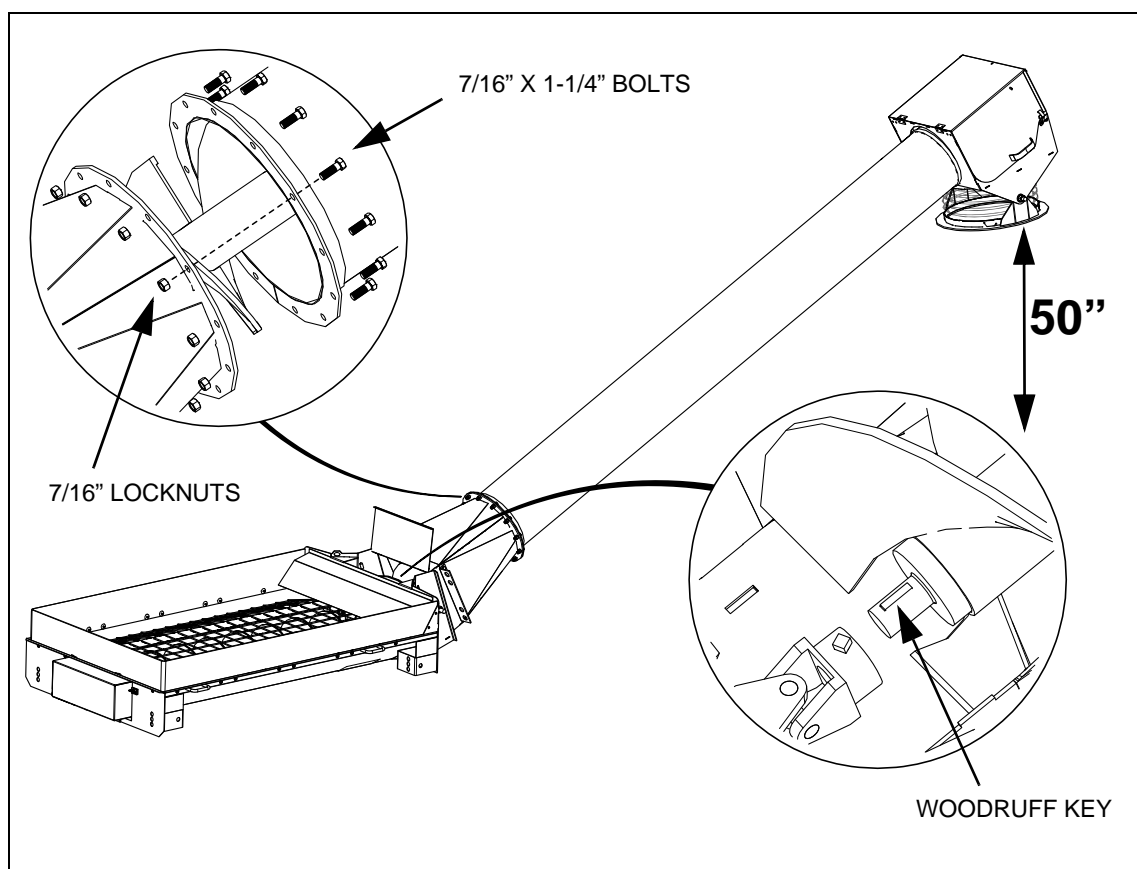


Figure 3.34 Connection the Flighting and Tube

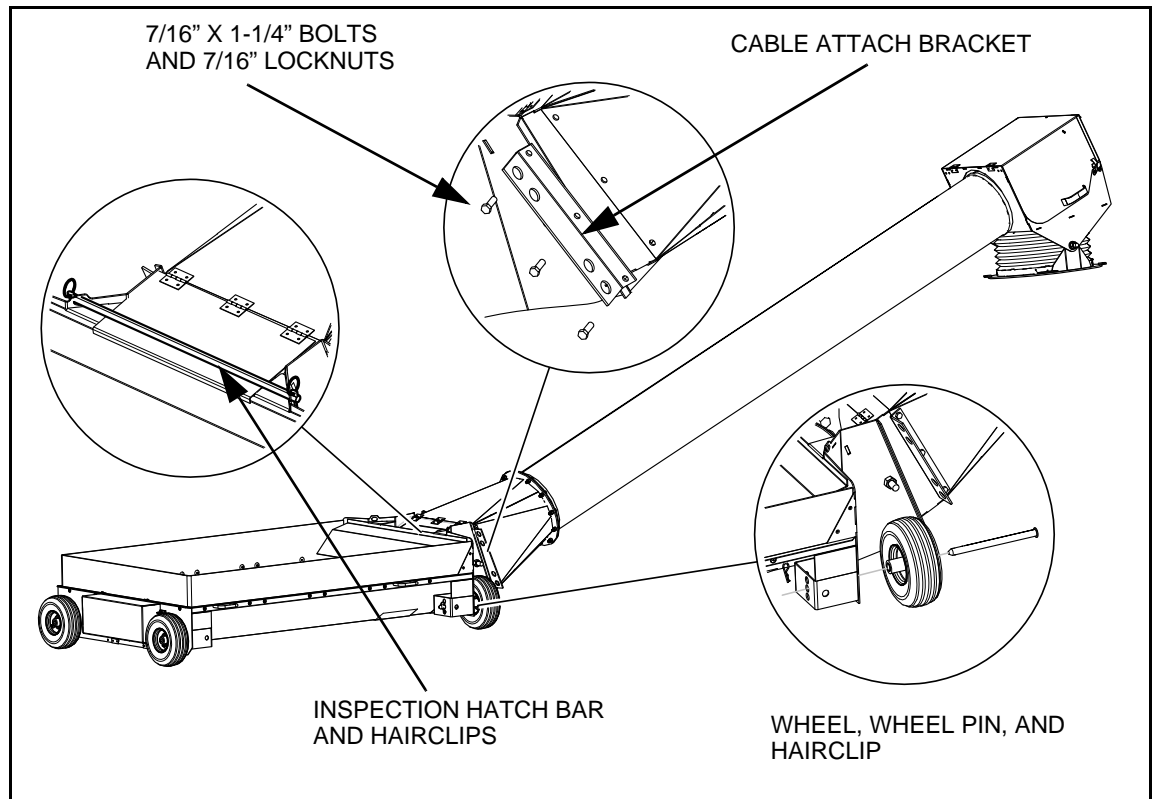


Figure 3.35 Connecting the Wheels, Inspection Hatch Bar, and Hopper Cable Attach Bracket

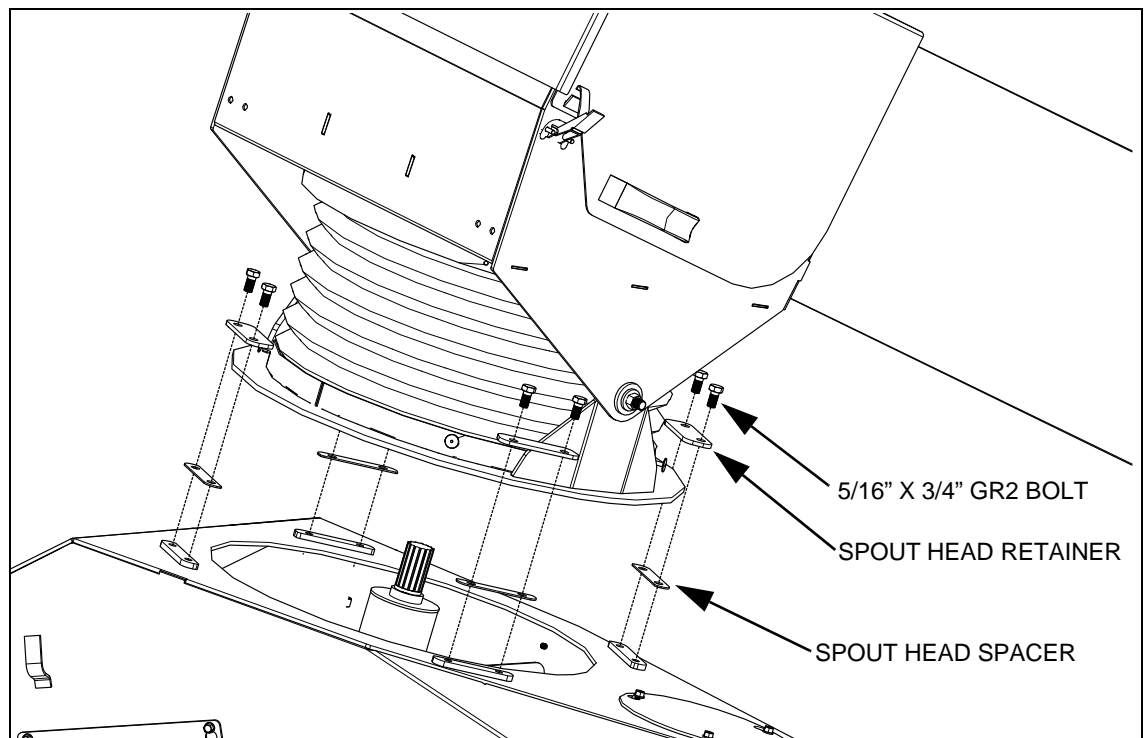


Figure 3.36 Connecting the Spout Head to the Boot

3.17. INSTALLING THE HOPPER LIFT ARM AND WINCH

Table 3.15 provides a list of parts required to install the intake hopper lift arm and winch.

Table 3.15 Parts Required, Installing the Hopper Lift Arm and Winch

Part Number	Description	Amount
20030	Hopper lift arm assembly	1
19152	Manual winch assembly	1
18074	Mount pin	1
19463	Hairpin	1
18698	7/16" x 1-1/4" bolts	4
17593	7/16" locknuts	4

1. Determine which side of the auger the hopper will be operating on.

Note: *Feed side of hopper must face the main auger when in transport.*

2. Position the hopper lift arm assembly on the mount bracket on top of the lower auger tube with the arm overhanging the side of the auger that the hopper will be operating on.
3. Fasten hopper lift arm assembly to the mount bracket with four 7/16" x 1-1/4" bolts and 7/16" locknuts (Figure 3.37).
4. Install winch and winch bracket assembly to auger boot (opposite to side of hopper operation) with one mount pin and a hairpin (Figure 3.38).
5. Thread the cable through the hopper lift arm and pull the cable to the winch.
6. Wrap the over and around the winch spool at least three times, then insert the cable end through the hole provided in the side of the spool and secure the end with the provided cable clamp (Figure 3.39).
7. To place hopper into transport position, attach cable hook to hook on the hopper transition, then fully raise hopper with intake side facing main auger. Secure hopper to lift arm by connecting the safety chain (Figure 3.40) to the hopper cable attach bracket.

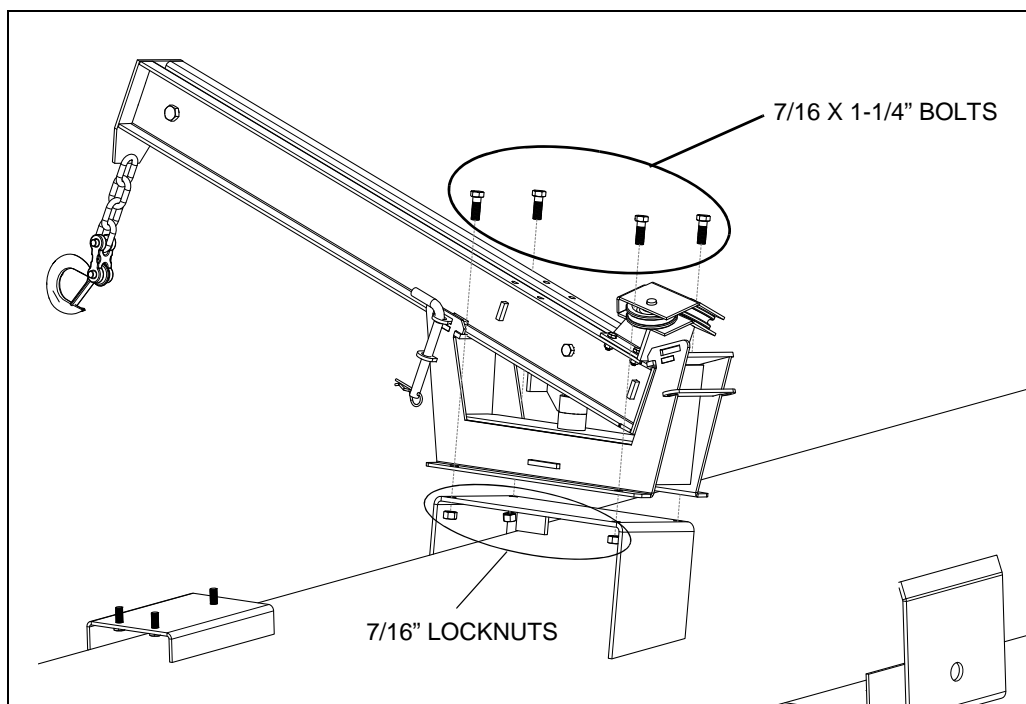


Figure 3.37 Installing the Lift Arm

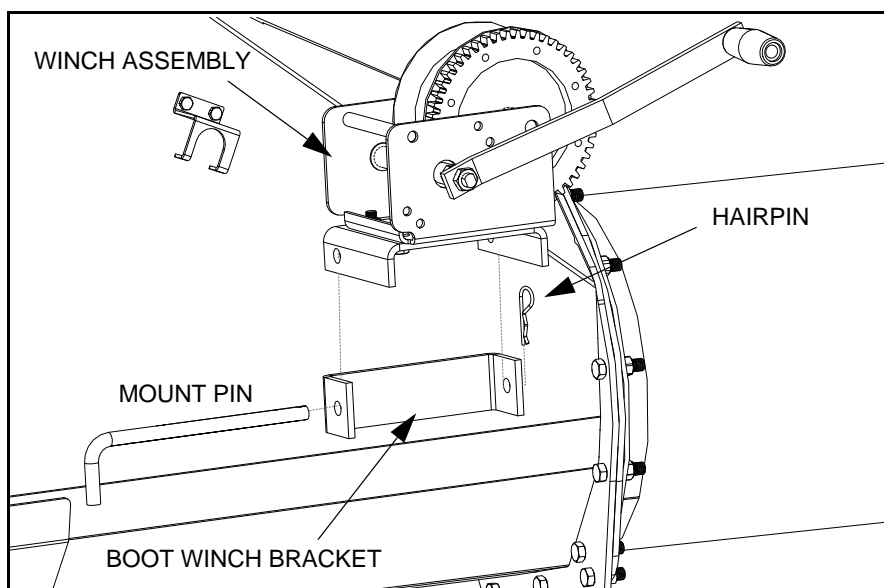


Figure 3.38 Installing the Manual Winch to on the Boot

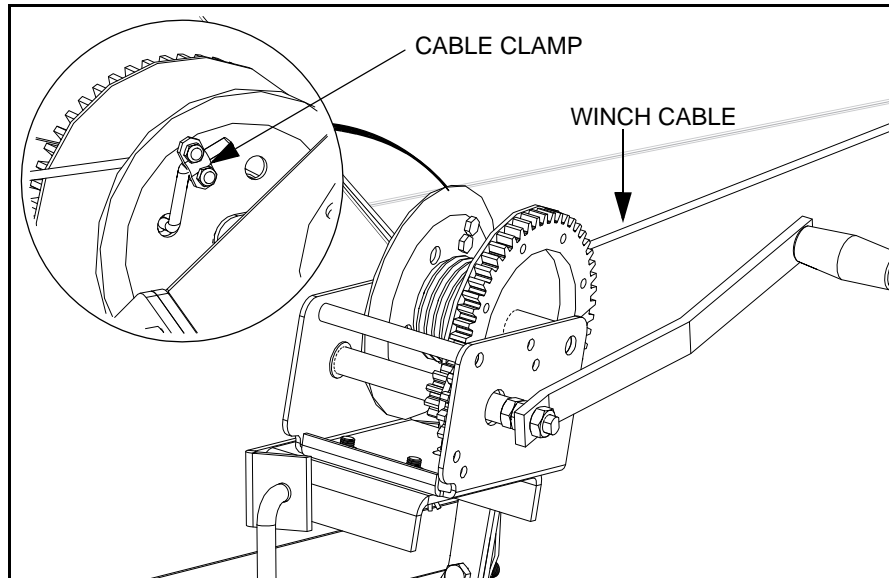


Figure 3.39 Connecting the Winch Cable to Spool

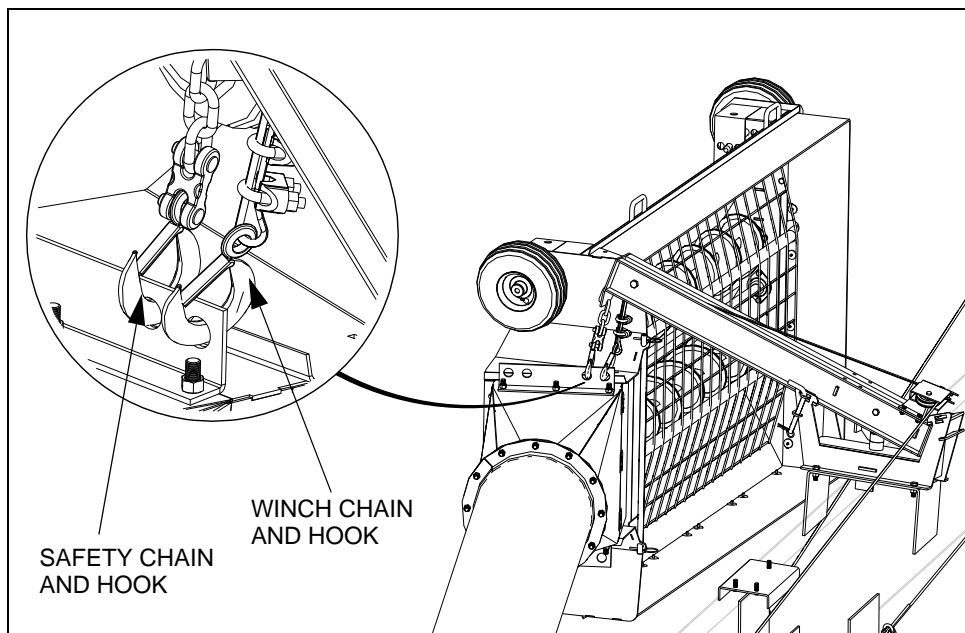


Figure 3.40 Transport Position, Safety Chain and Winch Hook

➡ *If you want to change the side of intake feed hopper operation:*

- Raise auger hitch jack and disconnect from tractor.
- Swing intake feed hopper to opposite side of auger.
- Reverse the position of the hopper lift arm assembly.
- Position the winch upside down on the other side of the boot (see Figure 3.41).
- Reconnect to tractor.

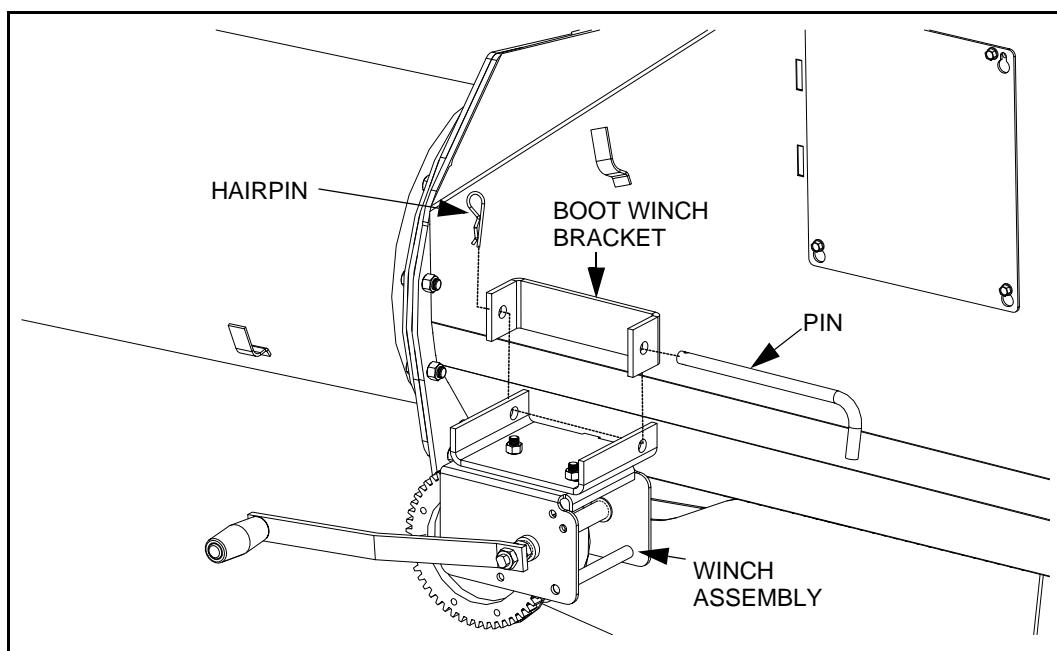



Figure 3.41 Positioning winch on the other side of the boot

3.18. INSTALL THE HITCH JACK

The jack is attached to the auger with a pin at the pivot point. To install:

1. Elevate the auger boot (intake end) approximately 2' (5.08 cm) with a front-end loader and sling, and install the jack in a vertical position. Secure with supplied pin.
2. Place a board beneath the jack before setting it on the ground, then lower the auger until the jack is seated. Remove front-end loader from auger.

Note: Jack can be rotated 90° for transport or operation.

WARNING	
	<p>Jack is designed for raising or lowering auger hitch only.</p> <p>Do not get on or beneath auger while supported by or while jack is being operated.</p>

3.19. CONNECTING THE PTO DRIVELINE

Table 3.16 provides a list of parts required to connect the PTO driveline.

Table 3.16 Parts Required, Connecting the PTO Driveline

Part Number	Description	Amount
20042	PTO transport strap	1
18537	PTO transport saddle	1
29140	PTO CV driveline	1
20062	Sprocket cover	1
18546	3/8" roll pin	1
18541	3/8" x 3-3/8" square key	1
19589	1/2" x 1-1/2" bolt	2
19599	1/2" locknut	2
19538	5/16" x 3/4" bolts	4
19980	5/16" locknuts	4

1. Install the PTO transport strap using two 1/2" x 1-1/2" bolts and two 1/2" nuts.
2. Clean paint or dirt off of PTO driveline and flighting shaft ends before assembly.
3. Ensure that the 3/8" x 2-1/2" square key is in place on the flighting shaft.
4. Slide plain end of PTO driveline onto flighting shaft. Make sure that the 3/8" holes are lined up.
5. Carefully tap in a 3/8" roll pin. Tighten the set screw on the PTO shaft.
6. Install the sprocket shield on the boot using four 5/16" x 3/4" bolts.
7. Loosely install the sprocket shield on the boot using four 5/16" x 3/4" bolts.
8. Slide the PTO transport saddle through the support strap on the boot and rest the PTO driveline in it.
9. Install the sprocket shield using four 5/16" x 3/4" bolts and locknuts.

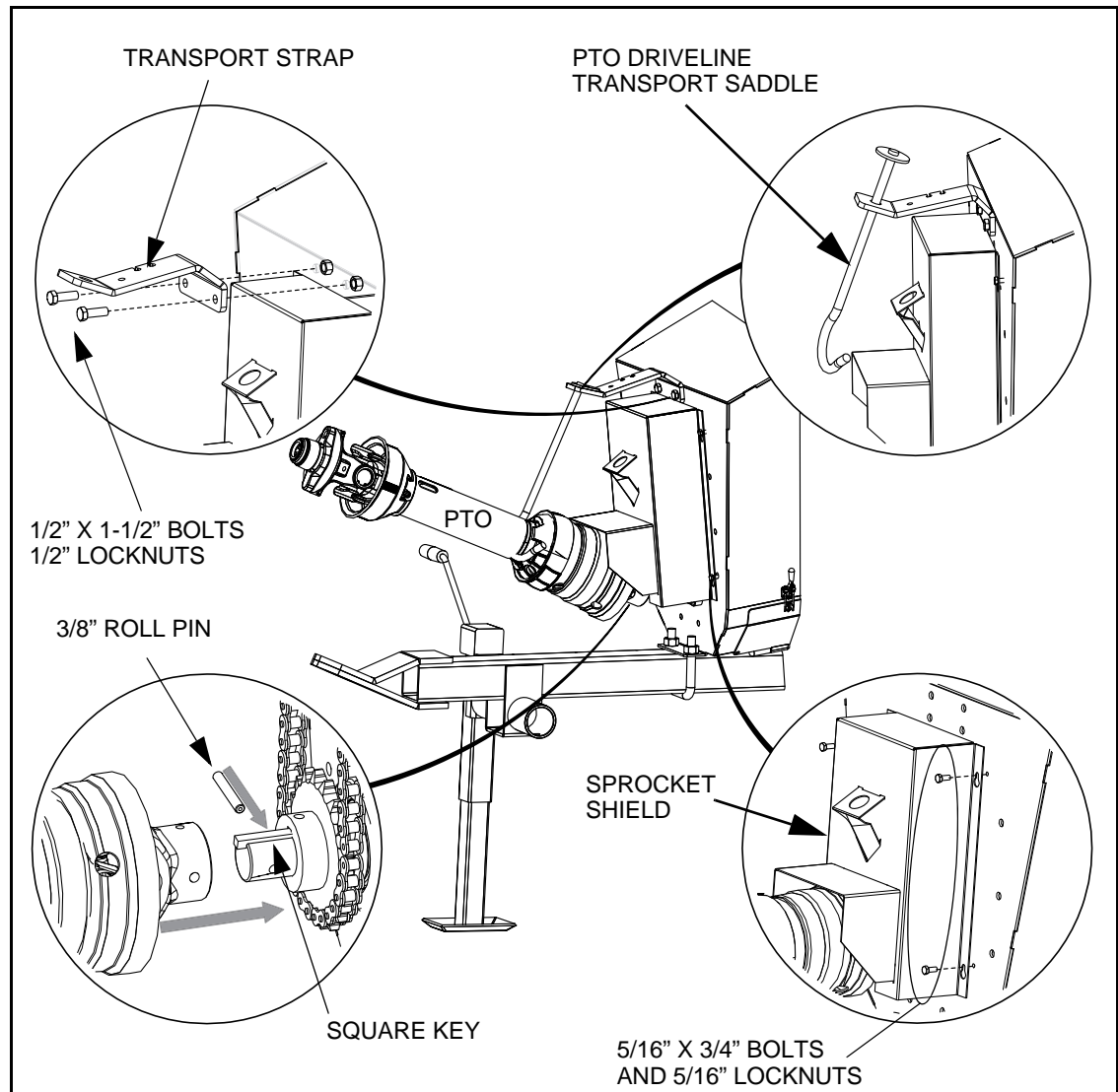


Figure 3.42 PTO Driveline, Parts and Assembly

3.20. AUGER-TO-TRACTOR HOOKUP

Important: *Auger must be correctly connected to the tractor for all operations, including transport, raising, placement, and augering grain.*

The final stage of the assembly is attaching the auger to the tractor.

When attaching the auger to your tractor, you must leave the correct spacing between the bottom of the tractor drawbar and the top of the securing device on the hitch pin.

- To secure, use 2 nuts locked against each other.
- The space should be about 3/4" (1.91 cm) to 1" (2.54 cm) as shown below
- The bolt/hitch pin must be 1" x 5" minimum.

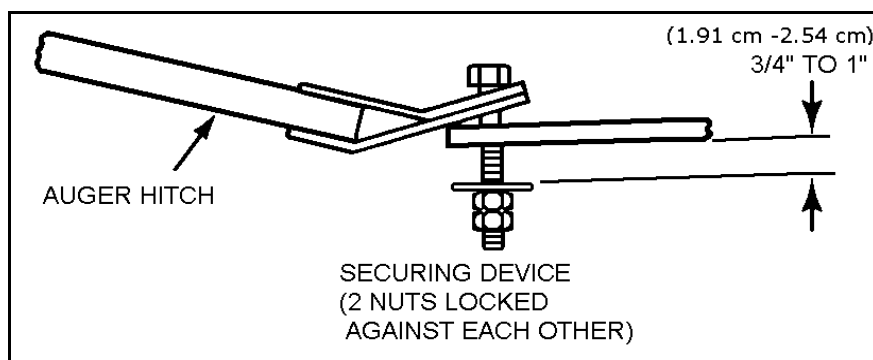


Figure 3.43 Auger-to-Tractor Hookup

MEASUREMENTS BETWEEN DRAWBAR AND DRIVELINE

Since the auger and tractor become an integral unit during transport, placement, and operation, the configuration and measurements between the tractor drawbar and the tractor PTO driveline are very important.

The figure below illustrates the ideal measurements. Most tractors fall into this range.

- Dimension (B) may range from 6" (15.2 cm) to 10" (25.4 cm) with 8" (20.3 cm) being ideal.
- If dimensions (A) and (B) on your tractor are as shown, then dimension (C), which is critical, will be correct.
- If (A) and (B) vary on your tractor from the recommended dimensions, consult the table below for potential problems and their solutions.

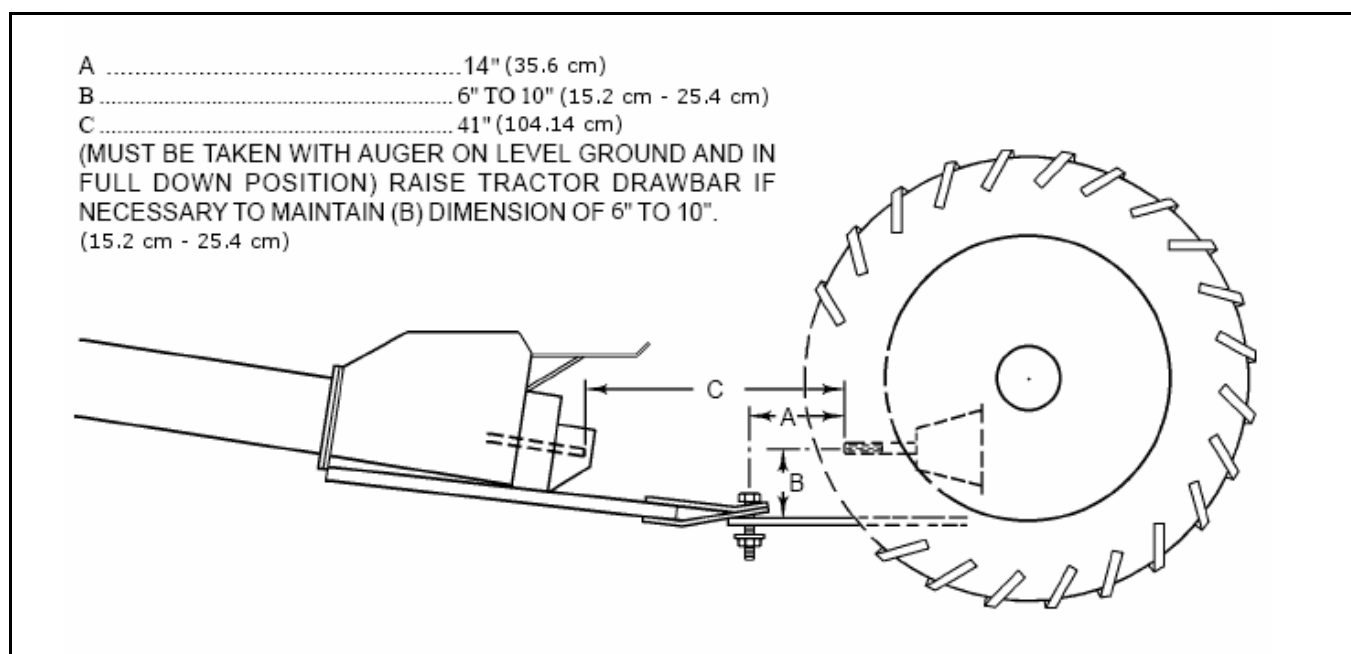




Figure 3.44 Measurements Between Drawbar and PTO Driveline

MEASUREMENT	PROBLEM	SOLUTION
If (A) is less than 14" (35.6 cm) (C) will be less than the recommended 41" (104.1 cm)	<ul style="list-style-type: none"> The PTO driveline will bottom out when auger is in raised position. <ul style="list-style-type: none"> This will cause damage to the PTO driveline, the bearing, or the boot housing. 	<ul style="list-style-type: none"> Pull out or lengthen the tractor drawbar as needed to make (C) 41" (104.1 cm) when the auger is in full down position.
If (A) is more than 14" (35.6 cm) (C) may be more than the recommended 41" (104.1 cm)	<ul style="list-style-type: none"> The PTO driveline will separate from the auger in the lowered position. <ul style="list-style-type: none"> This will cause damage to equipment and/or injury to personnel. 	<ul style="list-style-type: none"> Shorten distance (C) to the recommended 41" (104.1 cm) by attaching hitch to tractor drawbar at a point closer to the tractor PTO shaft.
If (B) is more than 10" (25.4 cm) (C) (between tractor PTO shaft and auger input shaft) shortens more quickly when auger is being raised	<ul style="list-style-type: none"> The u-joint angle on the PTO driveline will be too severe in the raised position. The PTO driveline will bottom out before auger is fully raised. <ul style="list-style-type: none"> This will cause damage to the PTO driveline, flight shaft, bearing, and boot. 	<ul style="list-style-type: none"> Raise the tractor drawbar until dimension (B) is within the recommended 6" to 10" (15.2 cm - 25.4 cm).

4. Transport

WARNING Before continuing, ensure you have read and understand the relevant information in the safety section. Safety information is provided to help prevent serious injury, death, or property damage.

DANGER	
	<p>Electrocution hazard:</p> <ul style="list-style-type: none">• This auger is not insulated.• Keep auger away from overhead power lines and devices.• Electrocution can occur without direct contact.• Fully lower auger before moving. <p>Electrocution will result in serious injury or death.</p>

CAUTION	
	<p>Always tow auger in the lowered position.</p> <p>Disconnect PTO driveline from tractor for transport and placement.</p>

4.1. TRANSPORT PROCEDURE

This auger is designed to be transported and operated without unhitching unit from tractor.

1. Place auger in full down position.
 - Disconnect PTO driveline from tractor.
 - Seat roller track shoe against the upper trackstop with slight tension on the lift cable.
2. Fully retract wheel axles. Jack up each wheel in turn, and secure axles with axle pin and snap pin. See Figure 4.1 for jack lug and axle pin locations.

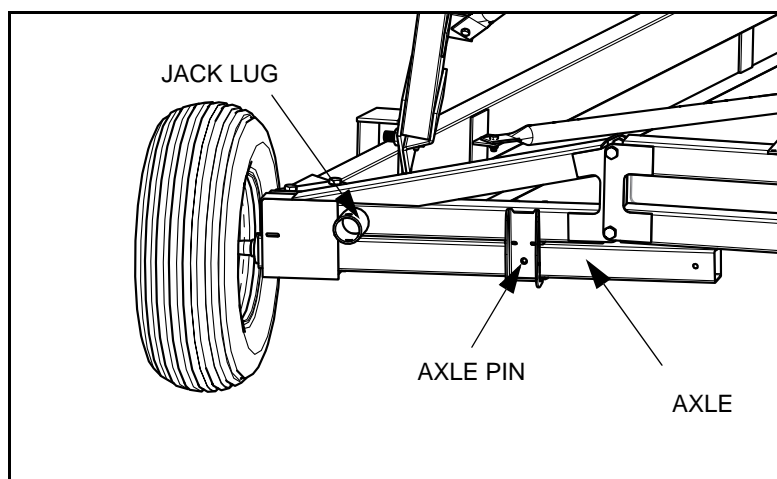


Figure 4.1 Retract Wheel Axles

3. Position and secure hitch pin and safety chain (See Figure 4.2). Place safety chain through clevis welded to auger hitch tube and bolt together before attaching to tractor.

Note: *The chain must have a load rating at least as high as the auger weight.*

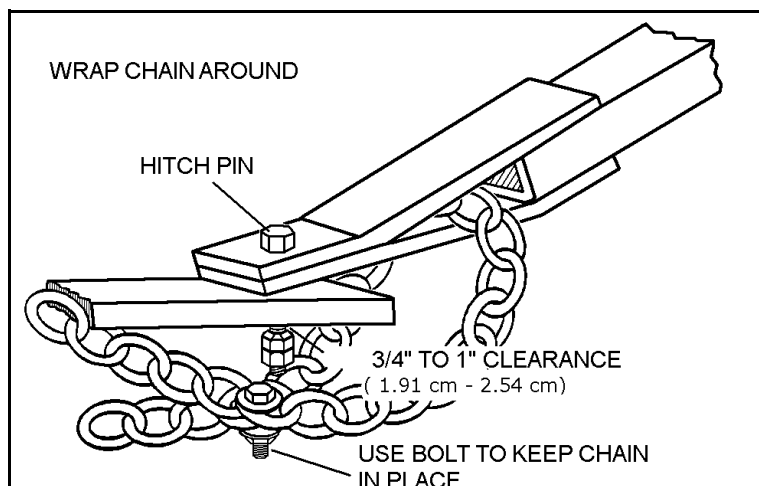


Figure 4.2 Position and Secure Hitch Pin and Safety Chain

4. Place the intake hopper into transport position (see Figure 4.3):
 - a. Attach the winch cable hook to the appropriate hopper lifting point.
 - b. Fully raise the hopper with intake side facing towards the main auger tube.
 - c. Secure the hopper with the transport chain and hook.

Note: *Do not operate auger with intake hopper in transport position. This will damage the u-joint.*

5. Place swivel jack (on side of hitch) in transport position and lock.

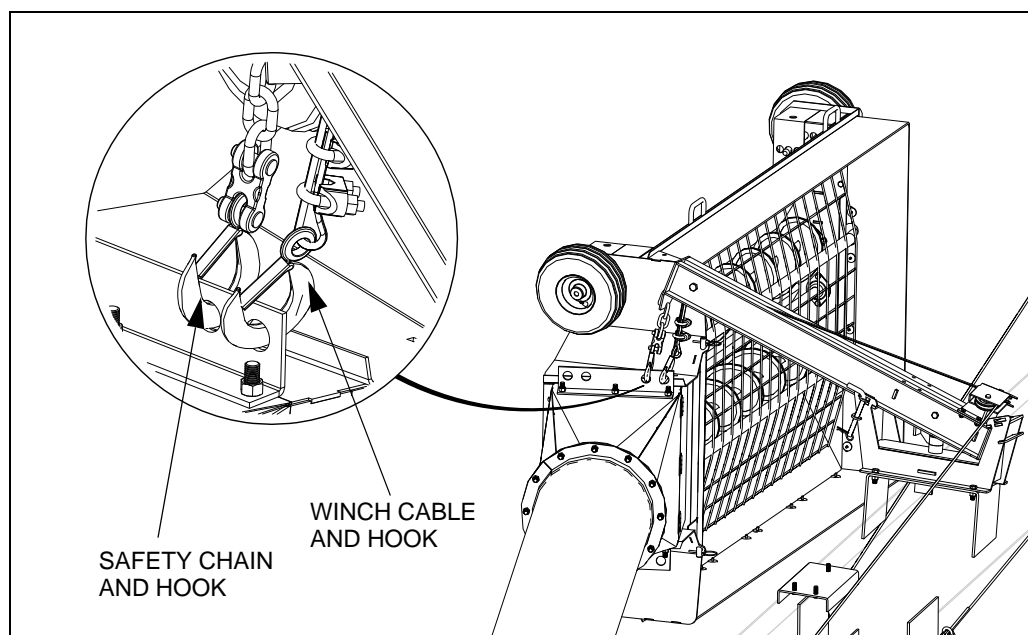


Figure 4.3 Hopper in Transport Position

CAUTION



If auger wheels are partially or fully buried in snow or grain, failure to clear the area around the wheels before moving may cause damage to the auger or result in serious injury.

Important: *Intake feed side of hopper must face main auger when in transport (Figure 4.3)*

6. Clear all untrained personnel from transport zone.

WARNING



Beware of overhead obstructions and electrical wires and devices. X13 augers have minimum clearances from 13'6" to 14'6" (4.11 m to 4.42 m).

NOTICE

Empty the auger before transporting. Transporting a full auger will place excessive loads on the tube assembly, frame, axle assembly, hitch, and towing unit.

If auger wheels are partially or fully buried in snow or grain, do not attempt to move auger until snow or grain has been cleared away from auger wheels.

CAUTION



Failure to secure the unit prior to transporting could cause a serious hazard to the occupants of the towing vehicle or other vehicles.

NOTICE

Transporting with axles extended may cause equipment damage and may be in violation of local transport regulations.

WARNING



Maximum transport speed:

Do not transport faster than 15 mph (24 km/h), or faster than road conditions allow.

A weight imbalance between the towing vehicle and the machine could reduce your vehicle's stability, handling, and braking ability, and lead to an upset or collision.

5. Placement

Important: *Wheels must be free to move when raising or lowering the auger.*

Important: *Always use a safety chain when transporting the auger.*

Note: *Do not place anything under the wheels of the auger for added height.*

CAUTION



If hose valve remains open, a loss of hydraulic pressure within the tractor system will allow the auger to lower inadvertently, damaging equipment and/or causing personal injury.

Note: *When raising or lowering the auger, the intake hopper must be lifted off the ground.*

5.1. PLACEMENT PROCEDURE

1. Disconnect PTO driveline from tractor and secure in transport saddle.

NOTICE

When positioning the auger, the PTO driveline must be disconnected from the tractor and placed in the transport saddle to prevent damage to auger and PTO driveline.

2. Ensure that tractor and auger are securely hitched together.

Important: *Use a type of hitch pin (see Auger / Tractor Hookup section) that will not allow auger to separate from towing vehicle.*

3. Disconnect the safety chain from the hopper.
4. Connect hydraulic hoses, ensure connections are tight. Check for leaks, binding, flattening, kinks, or wear. Before connecting hose, ensure that the quick-connect coupler on auger and tractor is clean and free of dirt by wiping with a cloth.

Note: *Because of the many different kinds of tractor hydraulic systems, the quick-connect coupler must be supplied by the owner. Please consult your tractor manual or dealer for the proper coupler.*

NOTICE

Replacement hose and hose ends must have a minimum strength of 2500 psi (17200 kPa) working pressure.

CAUTION

Dirt in the hydraulic system can damage the cylinder o-rings, causing leakage and the possible failure of the system and personal injury.

5. Extend the wheel axles:
 - a. Ensure that the auger is on level ground before attempting to extend or retract the axle extensions. **Auger must be attached to tractor at all times.**
 - b. Using the jack supplied, insert it into one of the jack lugs located on one end of the axle (Figure 5.1). See Figure A for jacking point. Jack must be secured to jack lug using pin (attached to jack).

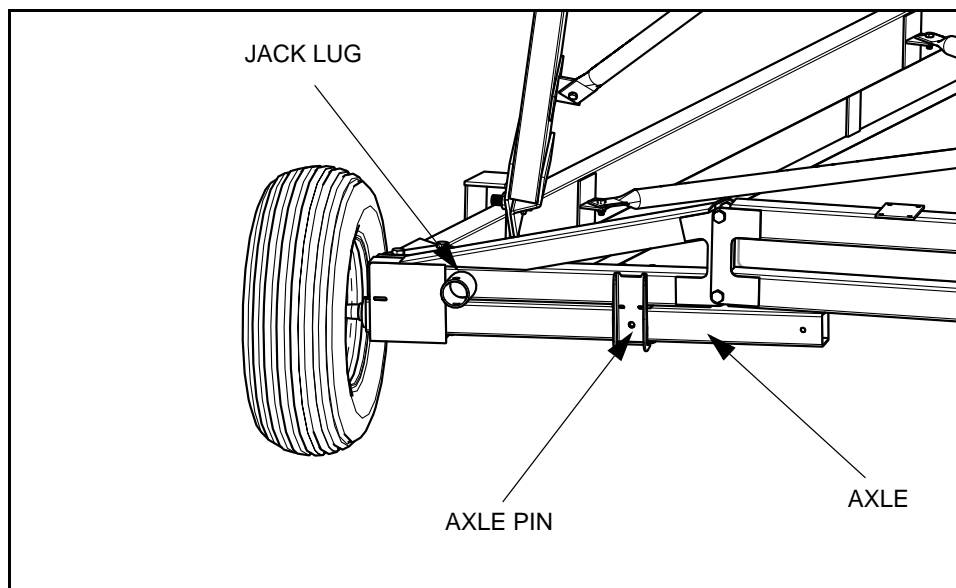


Figure 5.1 Jack Lug, Axle, and Axle Pin (Axle Retracted)

- c. Raise one side at a time. Ensure that the jack is vertical. Turn the crank to start raising the jack. Raise one side of the axle until the tire clears the ground.

- d. Remove the axle pin from the axle and slide the axle outwards until the second set of holes line up (Figure 5.2). Reinsert the axle pin and secure with snap pin. Lower the jack.

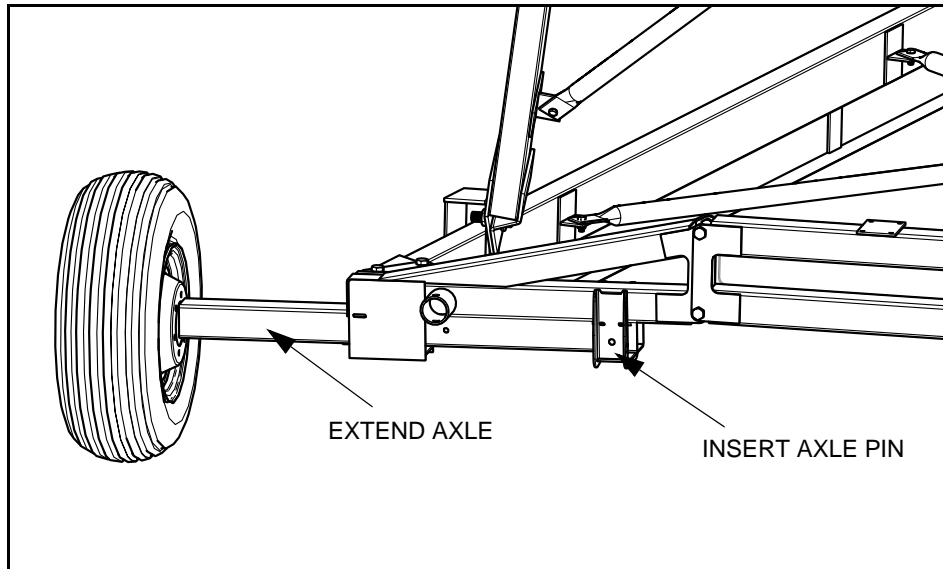


Figure 5.2 Extend Axle and Insert Axle Pin

- e. Repeat the process on the other side of the axle to extend the other side.
6. Raise the main auger tube, if required:
 - a. Check that valve on hose to lift cylinder is open.
 - b. Raise auger to the desired height.
 - c. Close hose valve (after auger is positioned).

WARNING



Do not raise the auger unless the axles are in the extended position.

Do not transport the auger unless the axles are in the retracted position.

NOTICE

The hydraulic cylinders are shipped without oil and must be charged with oil before auger is put into operation. See the appendix for charging instructions.

WARNING



Fluid leaks in the hydraulic cylinder or hose will allow auger to lower inadvertently.

Repair all leaks and breaks immediately.

CAUTION



If hose valve remains open, a loss of hydraulic pressure within in the tractor system will allow the auger to lower inadvertently, damaging the equipment and causing personal injury.

WARNING



Do not disconnect coupler under pressure. Relieve pressure and then disconnect.

CAUTION



Do not use auger as a hoist to raise any object regardless of weight. This will create an unsafe condition and will void warranty.

7. Move the auger into working position slowly. Do not unhitch and attempt to move auger by hand.
8. Once auger is in position, chock wheels on both sides and apply the park brake on the tractor (or chock its wheels as well) to prevent movement during operation.
9. Fully lower hopper to the ground and remove lift cable from the hopper. See ***"Lowering & Completion" on page 99*** for the correct lowering procedure.

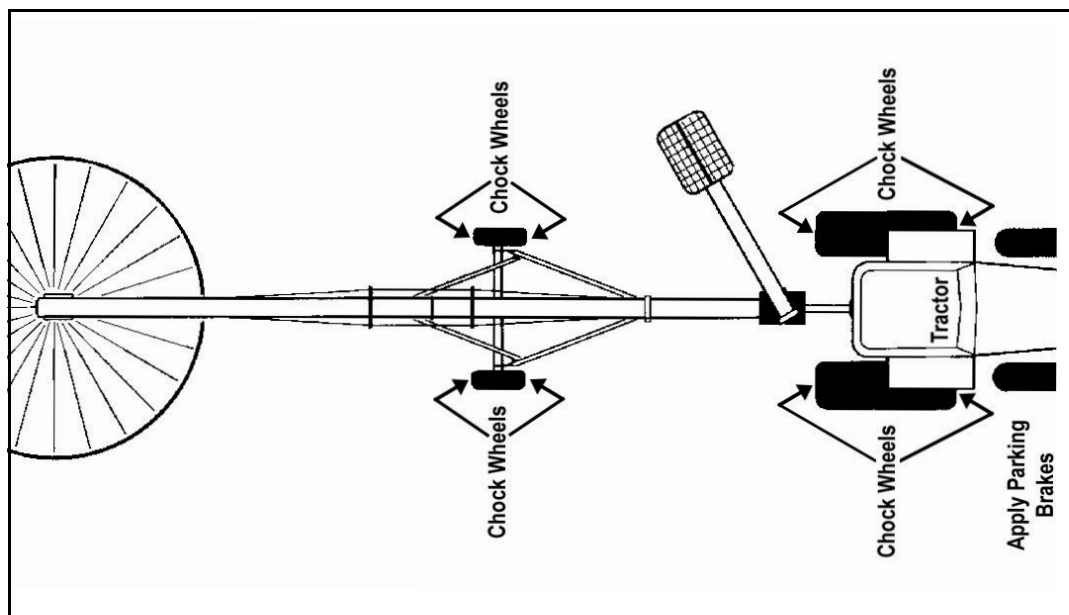


Figure 5.3 Auger Placement (Direct PTO Drive)

5.2. POSITIONING TRACTOR FOR RIGHT-ANGLE DRIVE OPERATION

1. Use the tractor to position the auger at the bin, as described in the previous section, ensuring that the auger wheels are securely chocked, and that the scissor lift valve is closed.
2. Position hitch jack with board underneath, then raise auger hitch slightly.
3. Relieve pressure in hydraulic hose, then disconnect from tractor and place in the auger's hose rack.
4. Remove safety chain and hitch pin, then move tractor.
5. Attach the support leg as shown in Figure 5.4, and secure with pin and hairclip.
6. Place board under support leg if needed, then lower hitch jack until auger intake weight is supported with the support leg. Place hitch jack into transport position.

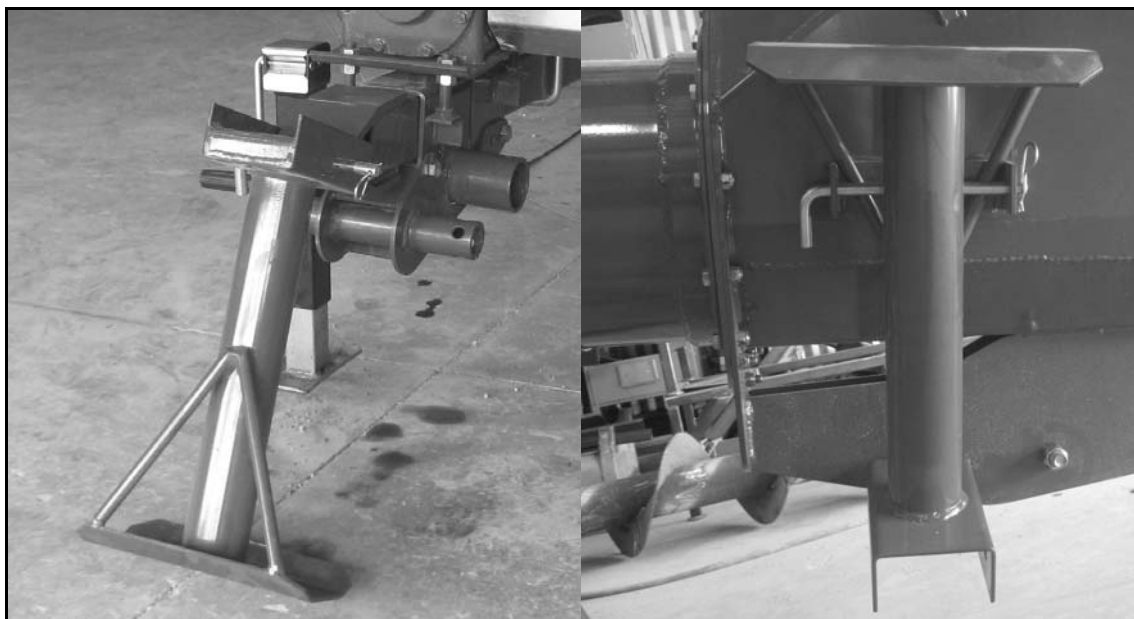


Figure 5.4 Right Angle Drive Support Leg Working (left) and Storage Positions (right)

7. Tractor Hookup to Right Angle Drive
 - i. Position tractor at right angle to auger intake; chock tractor wheels and apply brakes.
 - ii. Securely connect the non-separable PTO driveline to tractor (maximum rpm is 540). Make sure all guards and master guards are in place.
 - iii. Do not exceed the maximum PTO operating length of 80" (2.03 m) or a maximum angularity of 15° from the ideal 90° drive angle.

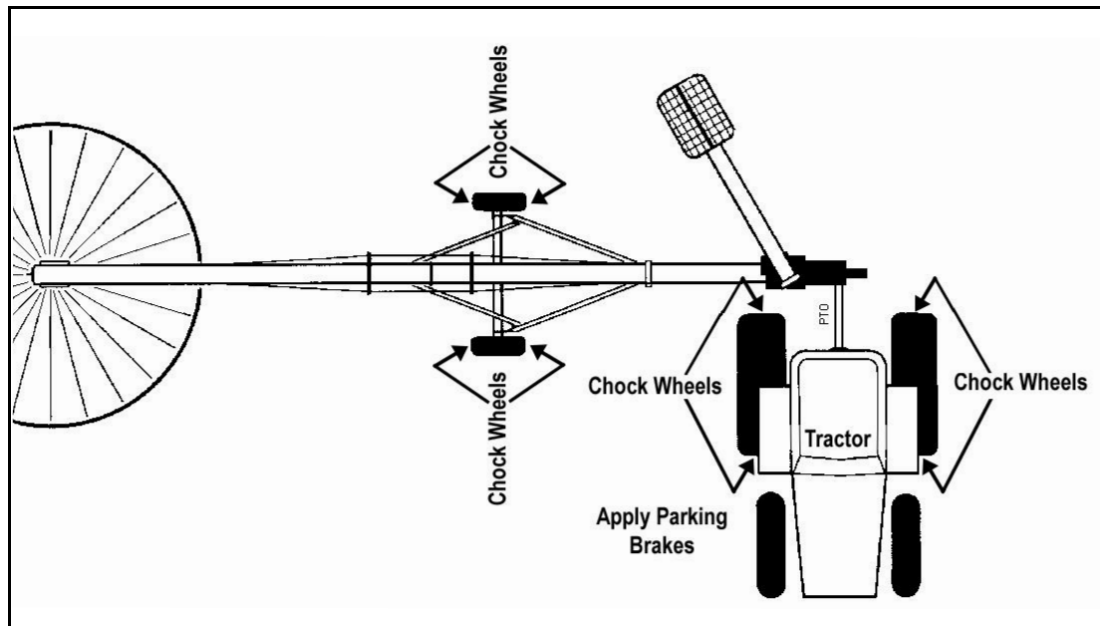


Figure 5.5 Tractor Position for Right Angle PTO Drive (Left Side Drive Configuration)

6. Operation

WARNING *Before continuing, ensure you have read and understand the relevant information in the safety section. Safety information is provided to help prevent serious injury, death, or property damage.*

6.1. PRE-OPERATION CHECKLIST

- Tighten all fasteners.
- Adjust and/or lubricate boot chain and hopper chain.
- Ensure auger rotates freely.
- Check that tire pressure is within the manufacturer's specification.
- Ensure wheel bolt torque is within specification.
- Check hopper winch and lift cable for damage (fraying, kinking, unraveling). Replace as required.
- Ensure cable anchor on the winch drum is tight.
- Check gearbox oil levels.
- Grease and clean machine if needed.
- Ensure hydraulic system is functioning, is free of leaks, and the hoses are not pinched or kinked.
- Check that truss cables are free from damage (fraying, kinking, unraveling). Cables must be tight and properly adjusted for proper auger tube alignment.
- Ensure PTO shaft is properly installed.
- Ensure intake area and discharge spout are free of obstructions.
- Ensure tractor and auger are in line or as close to being in line as possible.
- Ensure tractor park brake is engaged and/or wheels are chocked.
- Ensure that axles are extended during auger operation.

6.2. OPERATOR CONTROLS

Figure 6.1 shows the hydraulic shut-off valve for the main auger tube hydraulic lift cylinders.

Figure 6.2 and Figure 6.3 (respectively) show hydraulic winch and manual winch controls for lifting and lowering the hopper to and from transport position.

For locations for PTO and hydraulic supply controls, please refer to the operating manual for the attached tractor.



Figure 6.1 Main Auger Tube Lift Shut-off Valve



Figure 6.2 Hydraulic Hopper Winch Control (Optional)

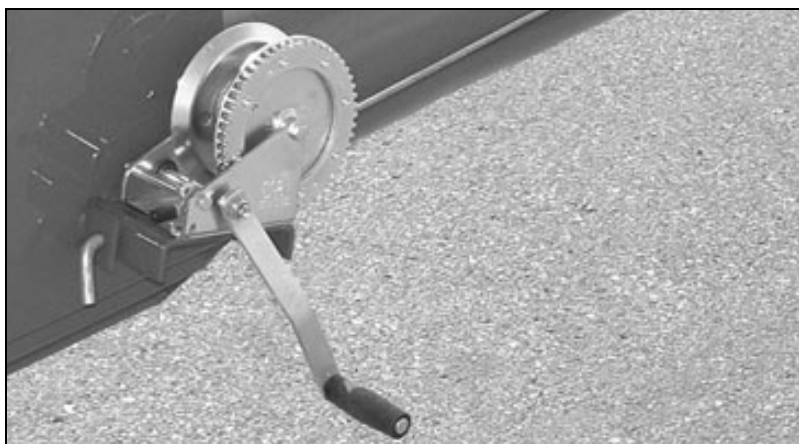


Figure 6.3 Manual Hopper Winch

6.2.1. PTO DRIVE OPERATION

Correct operation of the auger requires pre-inspection of the drive system, operator knowledge on how to shut down the system, and a general monitoring of the system during operation.

NOTICE

When positioning the auger, the PTO driveline must be disconnected from the tractor and placed in the transport saddle to prevent damage to auger and PTO driveline.

GENERAL INFORMATION

Before starting the auger, ensure that:

- The PTO driveline is securely attached to the auger shaft and to the tractor.
- The PTO driveline rotating shield is in place and in good working order.
- The PTO does not exceed the maximum operating angle of 15°.
- All safety shields are in place and secure on both the tractor and the auger.
- The PTO drive on the tractor is in the off position before starting the tractor.
- The auger-to-tractor PTO hookup distances are set as specified in the decal on the PTO shield of the auger.
- Everyone is clear of the PTO hazard area.

Note: *If shear bolt in the PTO driveline fails, shut down and lock out the tractor to replace the bolt (3/8" x 1" GR 8 bolt).*

LOCKOUT

1. Shut down the tractor and remove the ignition key.
2. If step 1 is not possible, remove the PTO driveline from the tractor.


6.2.2. HYDRAULICS OPERATION

X13 series grain augers are equipped with a standard 3/8" Pioneer Coupler used to connect the auger hydraulic system(s) to the tractor.

Before using the hydraulics, ensure that:

- The quick connect couplers on both the auger and the tractor are clean and free of dirt. Wipe the couplers with a clean, dry cloth.
- The hydraulic hoses are properly connected and secured; are free of leaks, wear, and binding; and are routed away from moving parts.
- Hydraulic pressure has been relieved prior to disconnecting.

6.3. OPERATING PROCEDURES

DANGER	
	<p>Rotating Auger Hazard</p> <p>Contact with rotating flighting will result in amputation or severe laceration.</p> <p>DO NOT operate with guards removed or modified.</p> <p>Keep hands and feet away from rotating auger.</p> <p>Tie up long hair and remove jewelry.</p> <p>DO NOT wear loose-fitting clothing or items that could become caught.</p> <p>Shut off and lock out the power source before unplugging or cleaning.</p>

6.3.1. INITIAL START-UP

BREAK IN

Your auger does not require an elaborate break-in. However, following a few simple tips during the initial operation can add to the reliability and life of your machine.

If any unusual noises or vibrations are encountered, determine the source, shut the auger off, lock out the power source, and adjust. If unsure of the problem or procedure, contact your local Wheatheart dealer.

Important: *When starting the auger for the first time, be prepared for an emergency shutdown in case of excessive vibration or noise.*

1. Ensure that you have completed the checklist on page 91.
2. If everything is satisfactory, prepare for a 60 minute operation at half speed.
3. Ensure that the intake hopper is correctly positioned.
4. Ensure that the PTO drive on the tractor is in the OFF position.
5. Start the tractor and idle at low rpm. Slowly engage the PTO drive.

Note: *The auger may run rough until the tube is polished.*

6. Gradually begin feeding grain into the hopper, bringing the auger speed up to about 300 rpm. Do not overfeed the hopper on initial loads; keep the feed of grain at about half capacity.
7. After the auger tube is polished and runs fairly smoothly, proceed to unload at full speed of 540 rpm.
8. Upon completion of the initial run, slow the auger down. Stop the auger when it is empty of grain.

9. Lock out the tractor and conduct a complete inspection of the auger following the checklist on page 91.

Important: *After the initial start-up and inspection, the auger should be shut down and inspected at least 3 more times during the first 10 hours of operation.*

NOTICE

Do not run an empty auger at high speed; this results in excessive wear. Do not exceed 540 RPM.

6.3.2. NORMAL START

NOTICE

Foreign objects can damage the auger. Remove any obstructions from the intake and discharge areas before operating the unit.

1. Complete the checklist on page 91.
2. Place the intake hopper in its working position.
3. Make sure the PTO drive is in the off position when starting the tractor.
4. Engage the PTO with the tractor idling to prevent unneeded stress on the drive components and shear bolts.
5. If everything is operating normally, start running grain through the auger and bring the auger up to speed. Maintain a speed of 300–540 rpm for maximum efficiency and to reduce the chance of plugging.

DANGER



Rotating Flighting Hazard!

To prevent death or serious injury:

- Keep away from rotating auger flighting.
- Do not remove or modify auger flighting guards, doors, or covers. Keep in good working order. Have replaced if damaged.
- Do not operate the auger without all guards, doors, and covers in place.
- Never touch the auger flighting. Use a stick or other tool to remove an obstruction or clean out.
- Shut off and lock out power to adjust, service, or clean.

- Monitor the auger during operation for abnormal noises or vibrations.

- **If grain overflows** through safety discharge door, then the auger is loaded beyond its capacity; reduce volume of feed going into intake hopper. Remember, auger capacity will decrease as the auger's angle increases.

USE OF GRAIN SPREADERS: Many grain spreaders cannot handle the large capacity of some augers. Some augers plug, causing damage to the flighting and other drive components. This type of damage is not covered by warranty. Hints on how to avoid this...

- Make sure spreader is turned on.
- Center auger spout on spreader.
- Get a larger spreader, if available.
- Remove the spreader.
- Do not lower auger spout into spreader.
- Suspend the spreader from bin ceiling leaving extra room for excess grain to flow over the spreader.

BIN LEVEL INDICATORS: These augers are fast and bins fill up quickly. A full bin will cause auger to plug, which can damage the flighting and other drive components. Installing quality grain-level indicators on your bins will allow you to monitor bin filling and help prevent damage to your auger.

6.3.3. NORMAL SHUTDOWN

NOTICE

Prolonged operation of an empty auger will cause unnecessary wear.

1. Near the end of the load, reduce the feed of grain and decrease the auger speed where possible.
2. Run the auger until the tube is empty.
3. When the auger is clear of grain, turn off power to the PTO.
4. Shut down and lock out the power source.

6.3.4. EMERGENCY STOP / FULL-TUBE RESTART

Although it is recommended that the machine be emptied before stopping, in an emergency situation:

1. Stop or shut down the power source immediately.
2. Stop the flow of material (if applicable).
3. Correct the emergency before resuming work.

The tube may be filled with material if the machine is shut down inadvertently or for an emergency. It is recommended that you restart with the following procedure:

4. With the power source locked out, remove as much of the grain as possible from the tube and intake using a piece of wood, vacuum cleaner, or other tool. **Do not** use your hands.
5. If cleanout covers or safety doors have been opened or removed, close or replace them before restarting the unit.
6. Start the tractor and engage the PTO with the tractor idling.


NOTICE

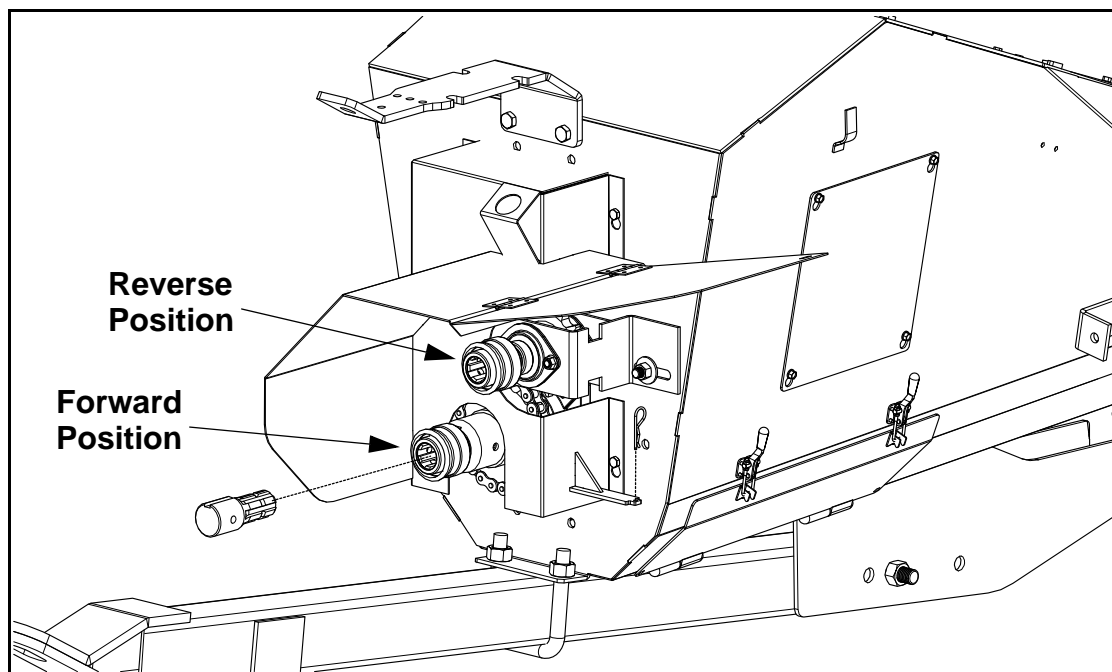
Always engage PTO with tractor engine idling. Engaging PTO at high engine speed will result in equipment damage.

7. Bring slowly up to speed.
8. Once the auger has been started, you may resume normal operation.

6.3.5. REVERSER OPERATION

The following procedures are a supplement to the instructions that begin in "Operating Procedures" on page 92. Read and understand all instructions before operating auger.

CAUTION	
	Shut down and lock out all power before emptying boot and power before changing to forward or reverse modes.
	Ensure that PTO driveline is securely attached before operating. Keep body, hair, and clothing away from all moving parts including PTO driveline.
	Do not exceed reverse operating speed of 100 RPM. Do not exceed forward operating speed of 540 RPM.



**Figure 6.4 Forward and Reverse PTO Positions
(540 RPM PTO Reverser)**

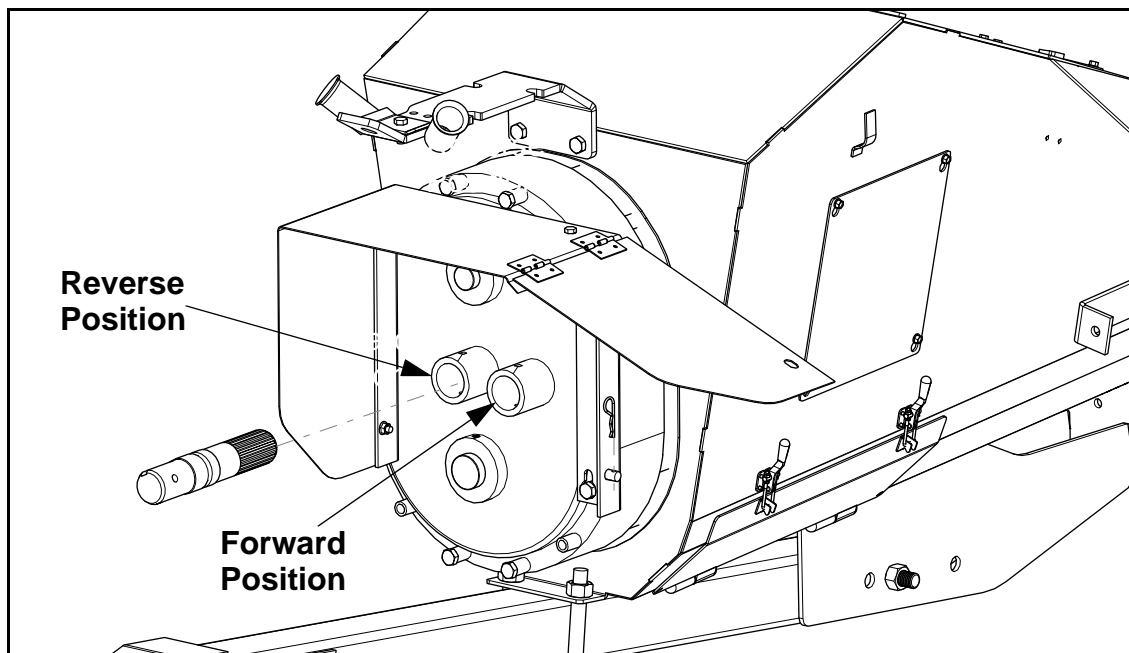


Figure 6.5 Forward and Reverse PTO Positions (1000 RPM PTO Reverser)

Before Operating in the Normal Forward Mode:


1. The stub spline on the PTO driveline must be inserted into the Forward spline coupler (see Figure 6.4 and Figure 6.5) and securely locked into place.
2. Make certain the clean out cover is secured into place on the boot before operating.
3. The PTO drive control on the tractor must be in the off position before starting tractor and the PTO hazard area is clear of all bystanders.

Note: *All safety shields must be in place before operating.*

To Operate in the Reverse Mode:

1. Insert the stub spline on the PTO driveline into the Reverse spline coupler (see Figure 6.4 and Figure 6.5), making certain it is securely locked into place.
2. Remove clean out cover before operating in reverse mode.
3. Operate auger slowly in reverse for a short period of time. **Do not exceed 100 RPM.**
4. When boot is nearly full, shut off and lock out power, then clean out grain from boot using a stick. Do not use hands. Repeat above procedure as needed.

Important: *Reversing is intended to assist in clean out of auger. **It is not designed to unplug auger.** When operating in the reverse mode, auger must be monitored to prevent boot from overfilling. Excessive back pressure will cause extensive damage to the auger which is not covered by warranty.*

DANGER	
	<p>Rotating PTO Driveline Hazard!</p> <p>Make certain the driveline shields turn freely on driveline.</p> <p>Make certain the driveline is securely attached at both ends.</p> <p>Do not exceed operating speed of 540 rpm.</p> <p>Keep u-joint angles small and equal. Do not exceed maximum recommended length.</p> <p>Failure to heed will result in serious injury or death.</p>

Note: *For transport or placement of auger, hook up auger to tractor with appropriate hitch pin and safety chain, and connect hydraulic lift hose as per manual instructions.*

6.3.6. LOWERING & COMPLETION

1. Run the unit to clean out the majority of the grain from the main auger tube, boot, and hopper.
2. Turn off the tractor, and lock out the tractor power source (Refer to page 91 for procedure).
3. Disconnect the PTO driveline, and raise the intake hopper off the ground.
4. Remove all supports and chocks.
5. Move auger away from the bin, and ensure that there is nothing under the auger that would make contact when the auger tube is lowered.
6. Open the main auger tube lift valve on the boot.
7. Open the tractor supply valve for the auger, and feather between on and off to make sure that the auger tube lowers slowly.
8. If necessary, open the clean-out door on the boot and manually clean out grain using a piece of wood, vacuum cleaner, or other tool. **Do not** use your hands. Replace the clean-out cover.
9. Lift the intake feed hopper into transport position, and secure it with the safety chain.

7. Maintenance

WARNING Before continuing, ensure you have read and understand the relevant information in the safety section. Safety information is provided to help prevent serious injury, death, or property damage.

NOTICE

Do not modify equipment.

Unauthorized modification may impair the function or safety of the equipment, could affect the life of the equipment, and will void your warranty.

7.1. MAINTENANCE INTERVALS

For details of service, refer to Section 7.3.

	SECTION	DAILY (8000 BU)	PERIODICALLY (40,000 BU)	BEFORE STORAGE	AFTER STORAGE	3-5 YEARS (DEPENDING ON USE)
VISUALLY INSPECT THE UNIT	7.3.1.	Y	-	Y	-	-
INSPECT HYDRAULIC HOSE AND COUPLER	7.3.2.	Y	-	-	-	-
GREASE MACHINE	7.3.3.	Y	-	Y	-	-
INSPECT HOPPER LIFT CABLE	7.3.4.	-	Y	-	-	-
SERVICE WINCH AND PULLEYS	7.3.5.	-	Y	-	-	-
SERVICE SWING TUBE COUPLER CHAIN	7.3.6.	-	Y	-	-	-
SERVICE BOOT AND HOPPER CHAIN DRIVE	7.3.7.	-	Y	-	-	-
CHECK UPPER/LOWER GEARBOX OIL LEVEL	7.3.8.	-	Y	-	-	-
CHECK SPEED REDUCER GEARBOX OIL LEVEL	7.3.9.	-	Y	-	-	-
CLEAN MACHINE	7.3.10.	-	-	Y	-	-
CHECK TIRE PRESSURE	7.3.11.	-	-	Y	Y	-
REPACK WHEEL BEARINGS	7.3.12.	-	-	-	-	Y
TIGHTEN WHEEL BOLTS	7.3.13.	-	-	-	Y	-
SERVICE TRUSS CABLES	7.3.14.	-	-	-	Y	-
CHANGE GEARBOX OIL	7.3.16.	-	-	-	-	Y
CHANGE SPEED REDUCER GEARBOX OIL	7.3.17.	-	-	-	-	Y

7.2. FLUIDS AND LUBRICANTS

GEAR OIL

Use SAE approved 90W or equivalent gear oil.

GREASE

Use SAE multi-purpose high-temperature grease with extreme pressure (EP) performance or SAE multi-purpose lithium-based grease.

7.3. MAINTENANCE PROCEDURES

7.3.1. VISUAL INSPECTION


Before beginning visual inspection, check auger wheels and ensure that all operators are aware of safety procedures.

When inspecting, look for possible defects and for the following:

- Be sure all guards are in place, functioning, and not damaged.
- Make sure access, service, and cleanout covers are in place and secure.
- Check that all hardware is in place and secure.
- Inspect hydraulic hoses and fittings for leaks and wear. Fix or replace where necessary.
- Inspect around the machine for evidence of hydraulic leaks.
- Examine flighting for damage or unusual wear.
- Inspect the truss cables for proper tension and possible damage such as fraying, kinking, or unwinding.
- Inspect hopper winch cable for fraying, kinking, unwinding, or other possible damage.
- Examine tires for gashes, uneven wear, or loss of air pressure.
- Be sure all safety decals are in place and legible.
- Check the PTO shield & replace if damaged.

7.3.2. HYDRAULIC HOSE AND COUPLER INSPECTION

Using a piece of cardboard or wood, run it along the length of the hose and around all fittings. Replace the hose or tighten/replace the fitting if a leak is found.

WARNING	
	<p>High-pressure hydraulic fluid!</p> <p>Escaping oil under pressure can penetrate the skin and cause serious injury.</p> <ul style="list-style-type: none">• Relieve pressure on system before repairing, adjusting, or disconnecting.• Keep connections tight and components in good repair.• Use a piece of wood or cardboard when searching for leaks. DO NOT use your hand.• Seek medical attention immediately if ANY hydraulic fluid penetrates your skin.

7.3.3. MACHINE GREASING

Important: *Most original equipment bearings used by Wheatheart are sealed units and will not accept grease.*

There are 13 grease fittings on the machine (shown in Figure 7.1 and Figure 7.2):

- 1 at the upper flighting bearing (A)
- 3 on the intake hopper—2 bushings (B) and 1 at the U-joint (C)
- 1 at the u-joint between gearboxes (D)
- 1 at the lower flighting bearing (E)
- 1 on each upper scissor arm joint (F)
- 1 on each lower scissor arm joint (G)
- 5 on the PTO

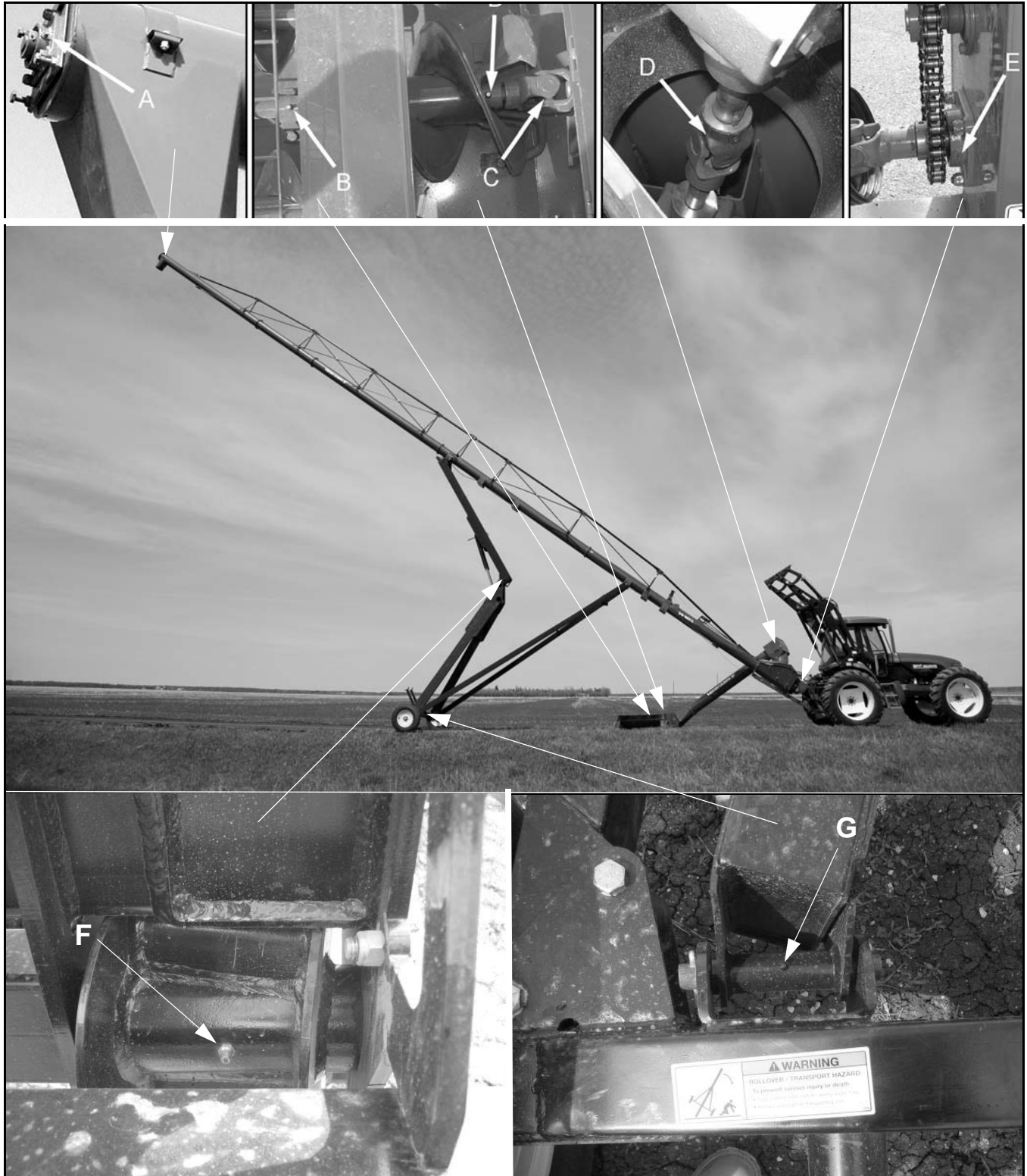


Figure 7.1 Auger Grease Fitting Locations

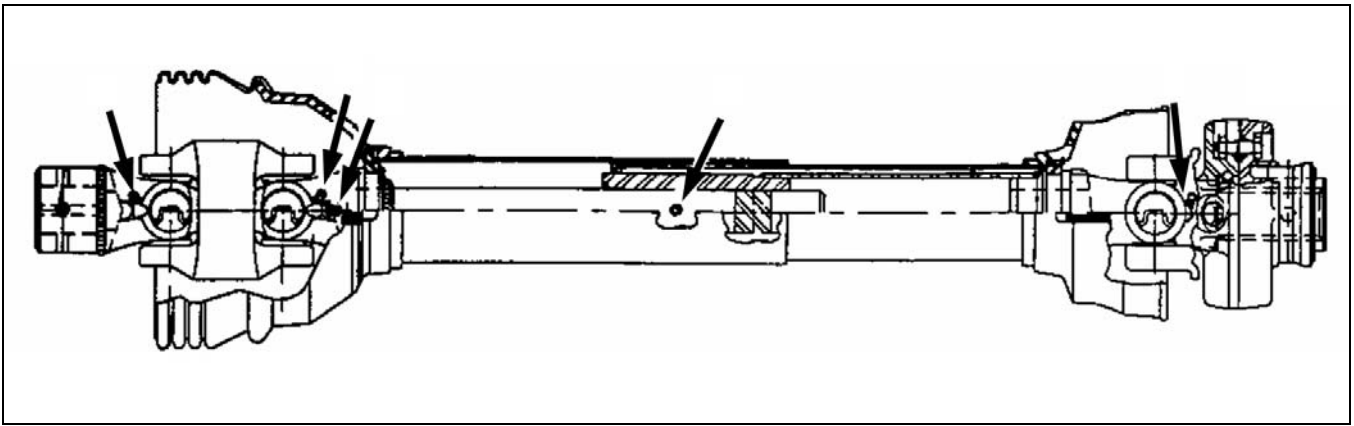


Figure 7.2 PTO Grease Fitting Locations

To grease:

1. Use SAE multi-purpose high-temperature grease with extreme pressure (EP) performance or SAE multi-purpose lithium-based grease.
2. Use a hand-held grease gun only.
3. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
4. If a fitting will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.
5. Replace and repair broken fittings immediately.

7.3.4. HOPPER LIFT CABLE INSPECTION

Check the cable for damage such as fraying, kinking, or unwinding. Replace if damaged.

To replace:

1. Unwind the winch drum and remove the cable clamps.
2. Free the cable from the winch and pulleys.
3. Remove the cable clamps that secure the hook in place.
4. Reverse the above steps to install the new cable.

7.3.5. WINCH AND PULLEY SERVICING

- Ensure the cable is slack before servicing the winch.
- Check to make sure cable clamps are secure.
- Keep a film of grease on the gears. Occasionally oil the bushings, drum shaft, and ratchet.
- Oil cable pulleys as needed (Figure 7.3)

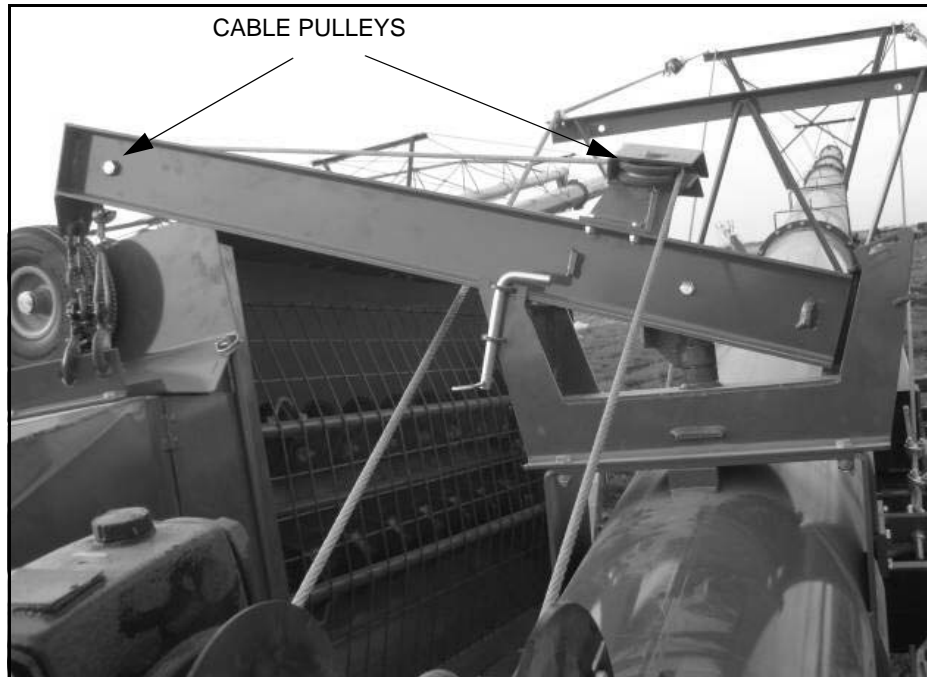


Figure 7.3 Cable Pulleys

7.3.6. SWING TUBE COUPLER CHAIN SERVICING

1. Remove any accumulated debris with a cloth or a soft wire brush.
2. Inspect the power transfer chain for wear.
3. Lightly oil the chain.

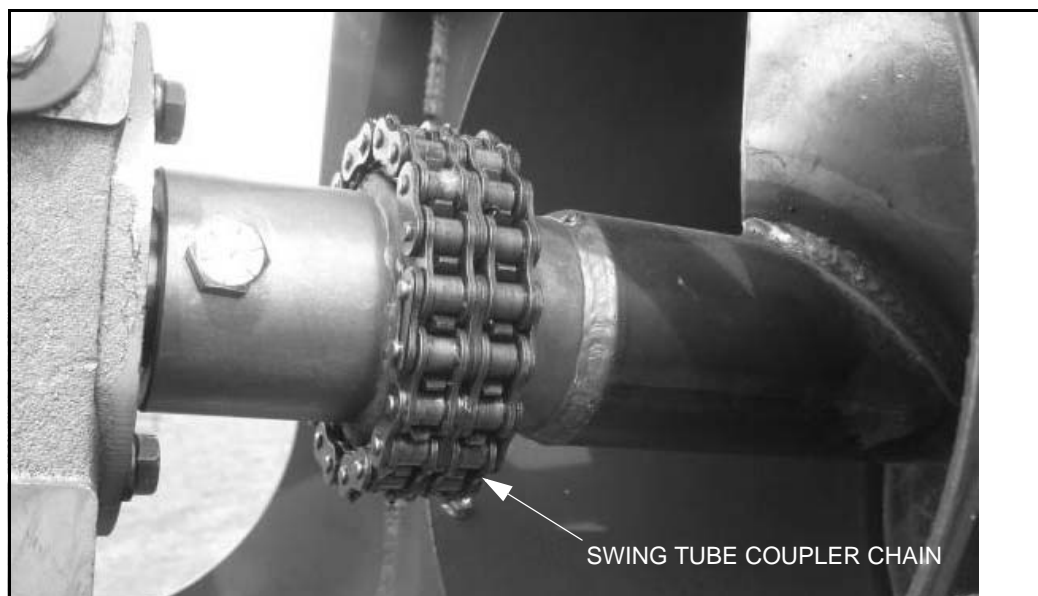



Figure 7.4 Swing Tube Coupler Chain

7.3.7. BOOT AND HOPPER CHAIN DRIVE SERVICING

DANGER	
	<p>Rotating parts hazard:</p> <ul style="list-style-type: none">• Fingers, hands, feet, hair, clothing, and accessories can become caught or drawn into the pinch point.• Shut off and disable power source before adjusting or servicing.• DO NOT operate with guards removed or modified.• Keep away from rotating parts.• Tie up long hair and remove jewelry.• DO NOT wear loose-fitting clothing or items that could become caught.

1. Remove chain cover plate from the boot or hopper.
2. Check chain slack.
 - Chain slack is checked at the midpoint of the longest span. It should be no more than 1/4" (6 mm).

Note: *The Hopper has 2 chains, 1 for each flighting.*

3. Adjust the chain slack.
 - a. For the Boot: loosen the 4 bolts of the lower bearing and adjust the chain slack (Figure 7.5).



Figure 7.5 Boot Chain Drive

Note: *If the chain can't be tightened enough, remove a link from the chain. If the chain will not fit with one link removed, add a half link to the chain and replace.*

- b. For the Hopper: loosen the 2 bolts of the flighting bearing on the side that needs adjustment and set the chain slack (Figure 7.6).

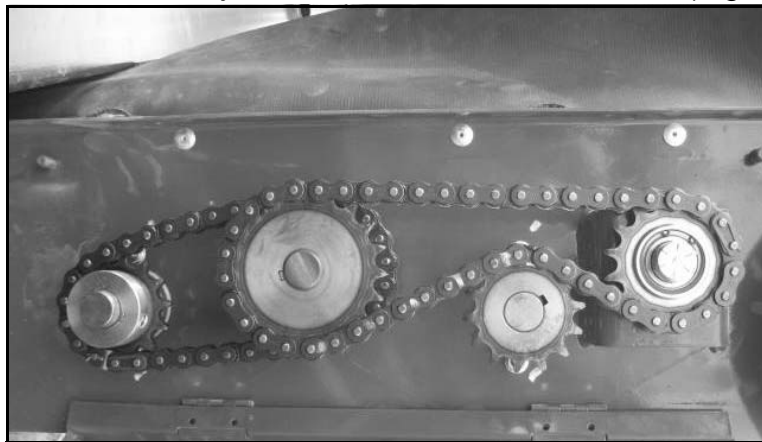


Figure 7.6 Hopper Chain Drive

Note: *If the chain can't be tightened enough, remove a link from the chain. If the chain will not fit with one link removed, add a half link to the chain and replace.*

4. Lightly oil the chain.

NOTICE

Improper adjustment of chain will result in premature wear.

7.3.8. GEARBOX OIL LEVEL

ACCESSING GEARBOX

Upper Gearbox

- Unfasten latches, open spout-head lid, and service gearbox as required.

Lower Gearbox

- Open square service door and service gearbox as required.

CHECKING OIL LEVEL

Gearbox should be level when checking or refilling oil.

1. Remove the oil filler plug located on the side of the gearbox.
2. Insert an improvised dipstick (rolled paper or plastic tie) into the oil filler hole to determine the oil level. Note the level and the condition of the oil.
 - a. If the condition of the oil is poor, consider replacing the oil ahead of schedule.
 - b. If the oil level is not within 1/4" [5 mm] of the oil filler plug, top up the oil level. **Do not overfill.**
3. Replace the oil filler plug, ensuring that it is tightened firmly.

7.3.9. SPEED REDUCER GEARBOX OIL LEVELS

ACCESSING GEARBOX

Remove the hairpin securing the gearbox safety cover, fold up the safety cover, and service gearbox as required. Replace and secure the gearbox safety cover after service is complete.

CHECKING OIL LEVEL

The speed reducer gearbox should be level when checking or refilling oil.

1. Remove the oil filler plug located to the right of the lower flight gearbox shaft.
2. Insert an improvised dipstick (rolled paper or plastic tie) into the oil filler hole to determine the oil level. Note the level and the condition of the oil.
 - a. If the condition of the oil is poor, consider replacing the oil ahead of schedule.
 - b. If the oil level is not within 1/4" [5 mm] of the oil filler plug, top up the oil level. **Do not overfill.**
3. Replace the oil filler plug, ensuring that it is tightened firmly.

7.3.10. MACHINE CLEANING

1. Clean out excess grain from auger tube, boot, and hopper.
2. Make sure water can drain from the auger tube and hopper and then wash the tube with a water hose or pressure washer until all dirt, mud, debris, or residue is gone.
3. Provide sufficient time for the water to drain from the auger.

7.3.11. TIRE PRESSURE CHECK

With a tire pressure gauge, check each tire to make sure it is between 18–24 psi (124 - 165 kPa).

- Ensure tires are cold prior to checking pressure.

7.3.12. WHEEL BEARINGS REPACK

1. Remove the wheel bolts and the wheels.
2. Remove the wheel bearing and pack with grease. Refer to page 102 for recommended grease.

7.3.13. WHEEL BOLT TIGHTENING

5. Clean wheel and hub mounting surfaces to ensure there is no rust or debris.
1. Install the wheel and finger-tighten the wheel bolts. Inspect to make sure the wheel is sitting flush with the hub.
2. Tighten the wheel bolts with a torque wrench to 80 ft-lb (± 10 ft-lb) of torque.

Note: *Tighten the wheel bolts in a diagonal pattern as shown in Figure 7.7.*

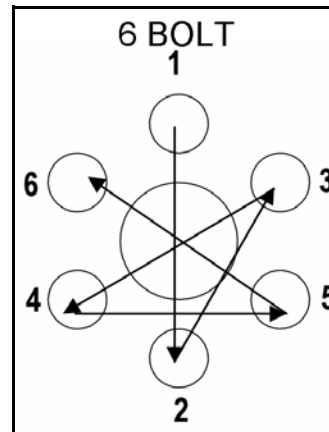


Figure 7.7 Crisscross Pattern

7.3.14. CABLE ADJUSTMENT (X130-74)

The cables are properly tightened when:

- There is no slack in the cables.
- The discharge end is deflected slightly upwards.
- The tube is straight side-to-side.

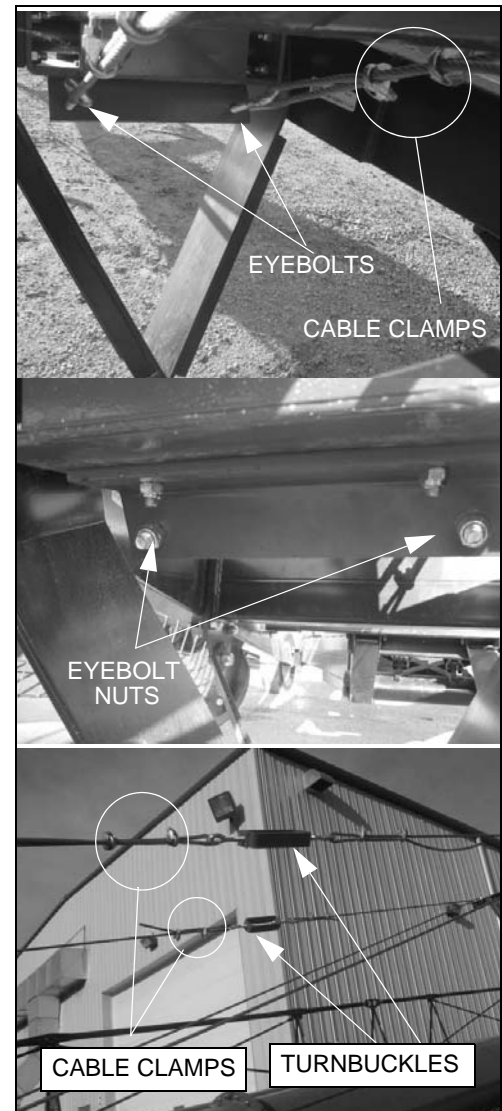
TIGHTENING CABLES

The location of the cable adjustment points are shown in the accompanying figure.

1. Lift the discharge end of the auger with a front end loader so that the tube has a slight upward deflection at the discharge to give the cable some slack.
2. Tighten the left-side and right-side turnbuckles and eyebolts equally to increase the tension in the cable (use eyebolt nuts to tighten eyebolts).
3. If the proper cable tension can't be obtained before the turnbuckles run out of adjustment, then do the following:
 - a. Loosen the turnbuckles and eyebolts.
 - b. At the turnbuckles and eyebolts, loosen the cable clamps, shorten the cables until there is tension on the cable, then tighten the cable clamps fully.
 - c. Return to step 2.

STRAIGHTENING THE TUBE

1. If tube is not straight side-to-side:
 - If the tube is curved to the left, tighten the right-hand turnbuckle and then loosen the left-hand turnbuckle on the long cable.
 - If the tube is curved to the right, tighten the left-hand turnbuckle and then loosen the right-hand turnbuckle on the long cable.
 - Check the short cable for slack and tighten as necessary (tighten eyebolt nuts).
 - After adjusting the unit side-to-side, check that the tube still has a slight upward deflection at the discharge.
2. If the tube is sagging at the discharge:



- Lift the discharge end of the auger with a front end loader or rest on a bin so that the tube has a slight upward deflection at the discharge to give the cable some slack.
- Tighten the long cable's turnbuckles evenly on both sides so the tube stays straight.
- Tighten the cables so there is a slight upwards angle on the discharge end.
- Check the short cable for slack and tighten as necessary.

7.3.15. CABLE ADJUSTMENT (X130-84, X130-94)

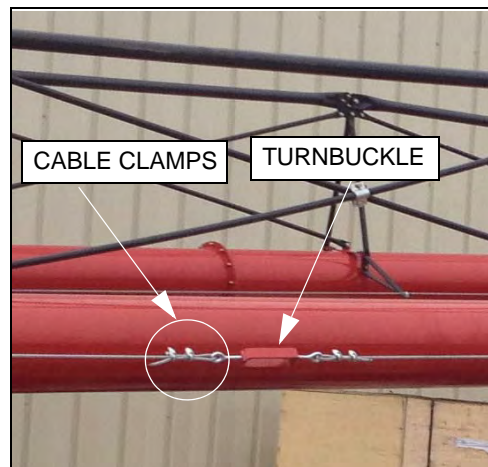
The cables are properly tightened when:

- There is no slack in the cables.
- The tube is straight side-to-side.

TIGHTENING CABLES

The location of the cable adjustment points are shown in the accompanying figure.

1. Lift the discharge end of the auger with a front end loader so that the tube has a slight upward deflection at the discharge to give the cable some slack.
2. Tighten the left-side and right-side turnbuckles equally to increase the tension in the cable.
3. If the proper cable tension can't be obtained before the turnbuckles run out of adjustment, then do the following:
 - a. Fully loosen the turnbuckles.
 - b. At the turnbuckles, loosen the cable clamps, shorten the cables until there is tension on the cable, then tighten the cable clamps fully.
 - c. Return to step 2.



STRAIGHTENING THE TUBE

If tube is not straight side-to-side:

1. Loosen all cable clamps on truss towers.
1. If the tube is curved to the left, tighten the right-hand turnbuckle and then loosen the left-hand turnbuckle.
2. If the tube is curved to the right, tighten the left-hand turnbuckle and then loosen the right-hand turnbuckle.
3. Re-tighten all truss tower cable clamps when the tube is straight.

7.3.16. CHANGING UPPER/LOWER GEARBOX OIL


1. Remove the gearbox and place it on a stable and level work bench.
2. Place a pan under the drain plug.
3. Use a wrench and remove the drain plug.
4. Remove the filler plug on the side of the gear box so air can enter the gearbox and the oil will drain freely.
5. Allow the oil to drain completely.
6. Replace the drain plug, ensuring that it is tightened firmly.
7. Add oil until the gearbox is full up to the filler plug. A flexible funnel may be required. **Do not overfill.**
8. Re-install the gearbox, ensuring that it is tightened firmly.

7.3.17. CHANGING THE SPEED REDUCER GEARBOX OIL

1. The speed reducer gearbox should be level when changing oil.
2. Place a pan under the drain plug located on the bottom of the speed reducer gearbox.
3. Remove the drain plug.
4. Remove the filler plug located to the right of the lower flight gearbox shaft, so air can enter the gearbox and allow the oil to drain freely.
5. When the oil has drained completely, replace the drain plug, ensuring that it is tightened firmly.
6. Add oil to the gearbox until the oil level is up to the middle of the sight glass located to the right of the lower flight gearbox shaft. A flexible funnel may be required. **Do not overfill.**
7. Re-install the filler plug, ensuring that it is tightened firmly.

8. Storage

WARNING Before continuing, ensure you have read and understand the relevant information in the safety section. Safety information is provided to help prevent serious injury, death, or property damage.

WARNING	
	To reduce the risk of injury or death, store in an area away from human activity and do not permit children to play on or around the stored machine.

To ensure a long, trouble-free life, the following procedure should be followed when preparing the unit for storage after the season's use:

1. Fully lower the auger.
2. Remove all residual material from the auger.
3. Remove entangled material from all moving or rotating parts.
4. Wash the entire machine thoroughly using a water hose or pressure washer to remove all dirt, mud, debris, and residue.
5. Repair or replace any worn or damaged components to prevent any unnecessary downtime at the start of the next season.
6. Touch up all paint nicks and scratches to prevent rusting.
7. Position the auger in an area that is dry, level, free of debris, and away from human activity.
8. Support the hitch on blocks to eliminate prolonged contact with the ground.
9. Lubricate all grease fittings (see page 103).
10. Clean and lightly lubricate the spline on the PTO driveline. Cover the PTO driveline with a plastic bag to protect it from the weather and place it in the transport saddle.
11. Check tire pressure and inflate to 24 psi (165 kPa).
12. Chock the wheels.
13. Place the hopper in transport position, ensuring there will be adequate drainage of any moisture.

9. Troubleshooting

The following table lists the causes and solutions to some potential problems you may encounter in operating your swing-away auger.

Table 9.1

PROBLEM	CAUSED BY	SOLUTION
The auger does not turn.	Auger is plugged or obstructed.	Identify and remove obstruction.
	A bearing has seized.	Identify the bearing and replace.
	A chain is broken.	Identify the chain and repair or replace.
	The gearbox has seized.	Fix or replace the gearbox.
	Gearbox coupler bolt is broken or missing.	Replace the bolt.
	PTO shear bolt has failed.	Replace the bolt.
The upper auger sections will not turn.	The coupler bolt below the non-rotating section is broken or missing.	Replace the bolt.
Auger is noisy.	Obstruction in the auger.	Identify and remove obstruction.
	Flighting shaft bolts are loose or damaged.	Tighten or replace bolts.
	Auger shaft is bent.	Repair or replace shaft.
	Flighting is damaged.	Repair or replace flighting.
	Worn bearing.	Repair or replace bearing.
	Low gear oil level.	Inspect the gearbox and repair or replace if damaged. If no damage is found, add oil to gearbox.
	Tube is misaligned.	Adjust truss cables.
The auger will not raise or lower.	Closed hydraulic valve.	Open hydraulic valve.
	Inadequate hydraulic pressure.	Adjust the pressure if possible, or use an alternate hydraulic supply.
	Damaged cylinder.	Fix or replace the cylinder.
	Missing or broken cylinder pin.	Replace cylinder pin.
	Hydraulic system leak.	Identify and repair leak.
	Auger movement is obstructed.	Identify and clear the obstruction.
Low material augering rate.	Tractor PTO speed is too slow.	Increase engine rpm.
	Inadequate material flow from truck or hopper.	Increase flow of material.
	Flow into the auger hopper is restricted.	Clear grating of obstructions.
	Material is too wet or heavy.	Unloading rates are for dry grain.
	Flighting is worn.	Repair or replace as required.
Auger will not stay in elevated position.	Leak in auger hydraulic cylinder or fittings.	Identify and repair leak.
	Leak in tractor hydraulics.	Close hydraulic valve to isolate cylinder from tractor hydraulics.
Tube is misaligned.	Loose truss cables.	Tighten cables as required.

10.Appendix

10.1. SPECIFICATIONS

Important: *Wheatheart Manufacturing reserves the right to change specifications without notice.*

Table 10.1

		X130-74	X130-84	X130-94
CAPACITY				
Unloading Rate		8700 - 9600 Bu/Hr		
DIMENSIONS				
Tube Size		13" (33.0 cm)	13" (33.0 cm)	13" (33.0 cm)
Transport	Length	74'	84'	94'
	Width	11'8" / 15' (3.55 m / 4.57 m)	11'8" / 15' (3.55 m / 4.57 m)	11'8" / 15' (3.55 m / 4.57 m)
	Height	12'1" (3.67 m)	11'8" (3.55 m)	12'4" (3.75 m)
Discharge Clear- ance	Min	9'9" (2.97 m)	9'3" (2.82 m)	9'11" (3.02 m)
	Max	49' (14.9 m)	53'9" (16.4 m)	61'3" (18.7 m)
Reach to Wheels	Min	26'9" (8.15 m)	29'1" (8.84 m)	30'1" (9.06 m)
	Max	35'9" (10.9 m)	42' (12.8 m)	45'2" (13.8 m)
TIRES				
Type	Type	16" Bias Ply		
Inflation Pressure		18 – 24 psi		
Hubs		6 Bolt Automotive Type		
WEIGHT				
Total Weight		4915 lb 2229.4 kg	5550 lb 2517.4 kg	6745 lb est. 3059.5 kg
PTO DRIVE				
Power Requirements		100 HP	120 HP	140 HP
PTO Speed		550 RPM		
PTO Shaft		35R		
OTHER				
Hitch Jack		2000 lb Side Winder		
Upper/Lower Gearbox Oil Capacity		0.9 US quarts (0.85 L)		
Speed Reducer Gearbox Oil Capacity		2.65 US quarts (2.5 L)		

10.2. BOLT TORQUE VALUES

Tables 10.2 and 10.3 give correct torque values for various bolts and capscrews. The bolt diameter is measured to the outside of the threads. When tightening all bolts, tighten the nut on the bolt to the torque specified in the tables, unless otherwise specified. Do not replace or substitute bolts, nuts, or other hardware that is of lesser strength than the hardware supplied by the manufacturer.

Torque values indicated below are valid for non-greased or non-oiled threads and head, unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

Table 10.2 SAE Bolt Torque

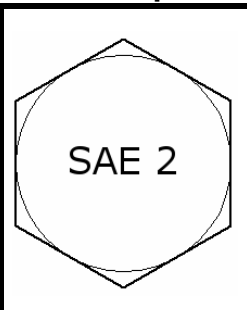
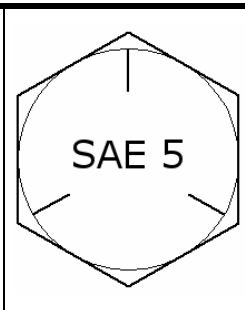
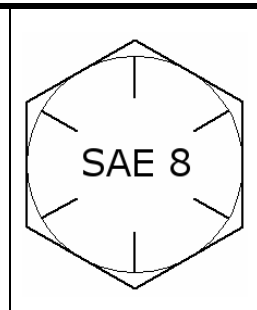
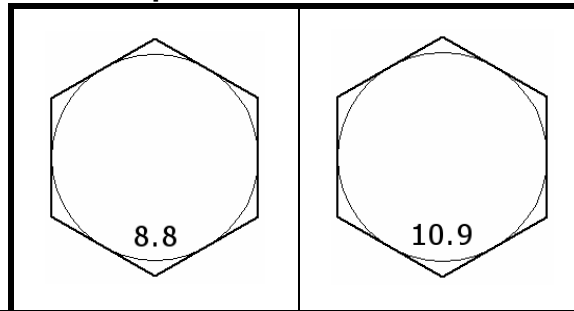
						
Bolt Diameter	(N·m)	(ft·lb)	(N·m)	(ft·lb)	(N·m)	(ft·lb)
1/4"	8	6	12	9	17	12
5/16"	13	10	25	19	36	27
3/8"	27	20	45	33	63	45
7/16"	41	30	72	53	100	75
1/2"	61	45	110	80	155	115
9/16"	95	60	155	115	220	165
5/8"	128	95	215	160	305	220
3/4"	225	165	390	290	540	400
7/8"	230	170	570	420	880	650
1"	345	225	850	630	1320	970

Table 10.3 Metric Bolt Torque



Bolt Diameter	(N·m)	(ft·lb)	(N·m)	(ft·lb)
M3	0.5	0.4	1.8	1.3
M4	3	2.2	4.5	3.3
M5	6	4	9	7
M6	10	7	15	11
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	225	166	310	229
M20	435	321	610	450
M24	750	553	1050	774
M30	1495	1103	2100	1550
M36	2600	1917	3675	2710

WARRANTY REGISTRATION

Wheatheart congratulates you on your new equipment purchase.

The warranty registration form must be filled out within thirty (30) days from delivery date and sent to:

Wheatheart Manufacturing
Box 39 Rosenort, Manitoba, Canada, R0G 1W0

CUSTOMER COPY (Retain this card for warranty and record purposes.)	
PRODUCT:	DEALER'S NAME:
SERIAL #:	ADDRESS:
DELIVERY DATE:	
OWNER'S NAME:	PHONE #:
ADDRESS:	SIGNATURE:
	INVOICE #:
PHONE #:	(Please refer to invoice # when filing claim)

DEALER COPY (Retain this card for warranty and record purposes.)	
PRODUCT:	DEALER'S NAME:
SERIAL #:	ADDRESS:
DELIVERY DATE:	
OWNER'S NAME:	PHONE #:
ADDRESS:	SIGNATURE:
	INVOICE #:
PHONE #:	(Please refer to invoice # when filing claim)

WARRANTY REGISTRATION (Must be filled out and returned to Wheatheart within 30 days of delivery.)	
OWNER'S NAME:	DEALER'S NAME:
ADDRESS:	ADDRESS:
PHONE #:	PHONE #:
SIGNATURE: (I acknowledge the product to be whole and in proper working order.)	SIGNATURE: (I acknowledge the product to be whole and in proper working order. The owner has been given an operation manual and has been informed on proper operation and maintenance.)
PRODUCT: SERIAL #:	DELIVERY DATE:
INVOICE #:	GAS MOTOR SERIAL #:

LIMITED WARRANTY

Wheatheart warrants to the buyer that the new machinery is free from defects in material and workmanship.

This warranty is only effective for any new machinery that has not been altered, changed, repaired, or treated since its delivery to the buyer, other than by Wheatheart or its authorized dealers or employees, and does not apply to accessories, attachments, tools, or parts sold or operated with the new machinery if they have not been manufactured by Wheatheart.

Wheatheart shall only be liable for defects in the material or workmanship attributed to faulty material or bad workmanship that can be proved by the buyer, and specifically excludes liability for repairs arising as a result of normal wear and tear of the new machinery or in any other manner whatsoever, and without limiting the generality of the foregoing, excludes application or installation of parts not completed in accordance with Wheatheart operation manual, specifications, or printed instructions.

A Warranty Registration Form and Inspection Report must be completed at the time of delivery and returned to Wheatheart Manufacturing within thirty (30) days.

Warranty Period

Private Farm Use	One (1) year from date of purchase.
Commercial, Custom, or Rental Use	Ninety (90) days from date of purchase.
Replacement Parts	Ninety (90) days from date of replacement

Defective parts are subject to inspection by a Wheatheart representative prior to approval of a warranty claim. All returned parts must be sent to the factory, freight pre-paid, in order to qualify for warranty replacement. Repaired or replaced parts will be returned freight collect.

If these conditions are fulfilled, Wheatheart shall at its own cost and its own option either repair or replace any defective parts provided that the buyer shall be responsible for all expenses incurred as a result of repairs, labor, parts, transportation, or any other work, unless Wheatheart has authorized such expenses in advance. Normal wear and service items such as belts, hoses, flashing, etc. are excluded from warranty.

The warranty shall not extend to any repairs, changes, alterations, or replacements made to the new equipment other than by Wheatheart or its authorized dealers or employees.

This warranty extends only to the original owner of the new equipment.

This warranty is limited to the terms stated herein and is in lieu of any other warranties whether expressed or implied, and without limiting the generality of the foregoing, excluded all warranties, expressed or implied, or conditions whether statutory or otherwise as to quality and fitness for any purpose of the new equipment, Wheatheart disclaims all liability for incidental or consequential damages.

This machine is subject to design changes and Wheatheart shall not be required to retro-fit or exchange items on previously sold units except at its own option.

WARRANTY VOID IF NOT REGISTERED



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