

WESTFIELD®

GRAIN AUGERS

MK 100/130 PLUS X 91' - 111'
ASSEMBLY & OPERATION MANUAL



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: 30260 R1

Revised: 11/8/11

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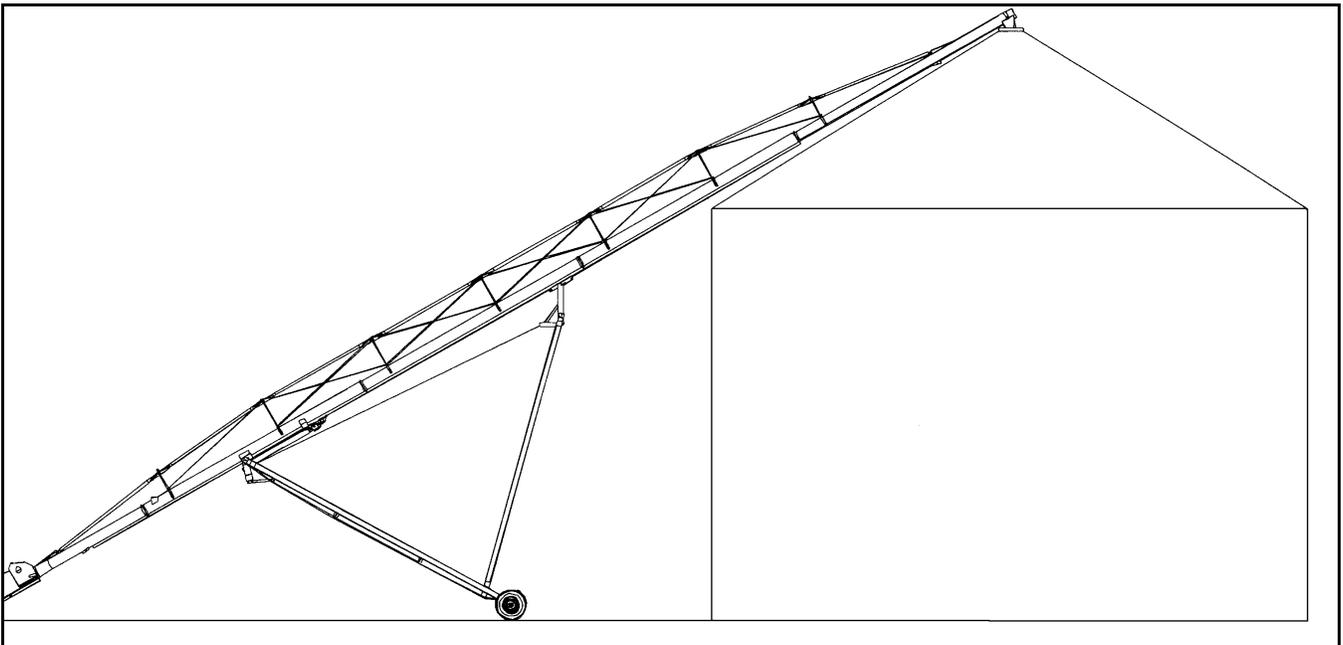
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1. Introduction

Congratulations. As the new owner of a grain auger, you will be working with equipment designed to complement and improve your farming operation. Before using this auger, please read this manual and all safety labels and familiarize yourself with the various features of the machine and the necessary precautions for efficient and safe operation.

In addition, anyone using this auger is required to comply with all safety precautions in this manual and in safety labels attached to the auger. A sign-off form is supplied on the inside front cover to record your safety reviews.

Thank you.



Serial Number:	
*Serial number is located on the lower tube.	

2. Safety First



The Safety Alert symbol to the left 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 to you?

Three big reasons:

- 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.

The Safety Alert symbol means: "ATTENTION, BE ALERT! YOUR SAFETY IS INVOLVED".

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.

2.1. GENERAL SAFETY

Important: *The general safety section includes instructions that apply to all safety practices. Any instructions specific to a certain safety practice (e.g., assembly 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.*

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.

- It is the equipment owner and the operator's responsibility to read and understand **ALL** safety instructions, safety decals, and manuals and follow them before 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. Unauthorized modification may impair the function and/or safety, and could affect the life of the equipment. Any modification to the equipment voids the warranty.
- Do not allow children, spectators, or bystanders within the work area.
- Have a first-aid kit available for use should the need arise, and know how to use it.
- Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.
- Wear appropriate protective gear. This list includes, but is not limited to:
 - a hard hat
 - gloves
 - protective shoes with slip-resistant soles
 - protective goggles
 - hearing protection
 - dust mask or respirator
- For Powered Equipment: before servicing, adjusting, or repairing powered equipment, unplug, place all controls in neutral or off position, stop the engine or motor, remove ignition key or lock out power source, and wait for all moving parts to stop.



- Follow good shop practices:
 - keep service area clean and dry
 - be sure electrical outlets and tools are properly grounded
 - use adequate light for the job at hand
 - Think SAFETY! Work SAFELY!



2.2. ASSEMBLY SAFETY

- Read through the instructions to get to know the sub-assemblies and hardware that make up the equipment.
- 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 2 or more people assembling the equipment. Because of the weight, do not attempt assembly alone.

2.3. OPERATION SAFETY

- Have another trained person nearby who can shut down the auger in case of accident. Always work with a second trained person around augers.
- Do not operate with any of the safety guards removed.
- Keep body, hair, and clothing away from moving parts. Stay away from intake during operation.
- Inspect lift cable before using auger. Replace if frayed or damaged. Make sure it is seated properly in the cable sheaves and that cable clamps are secure.
- Operate auger on level ground free of debris. If ground is uneven, anchor the auger to prevent tipping or upending.
- Augers are not insulated. Keep away from electrical lines. Electrocution can occur without direct contact.
- Support the discharge end and/or anchor the intake end before operating to prevent upending.
- Do not use auger as a hoist.
- Empty auger before raising or lowering.
- Lower auger at completion of operation or when not in use. Auger could drop rapidly in case of cable break or hydraulic failure (where applicable).
- Do not operate auger with the service or cleanout doors open or unlatched.
- Do not get on or beneath auger when raising or lowering intake hitch jack, or when auger is supported by hitch jack.

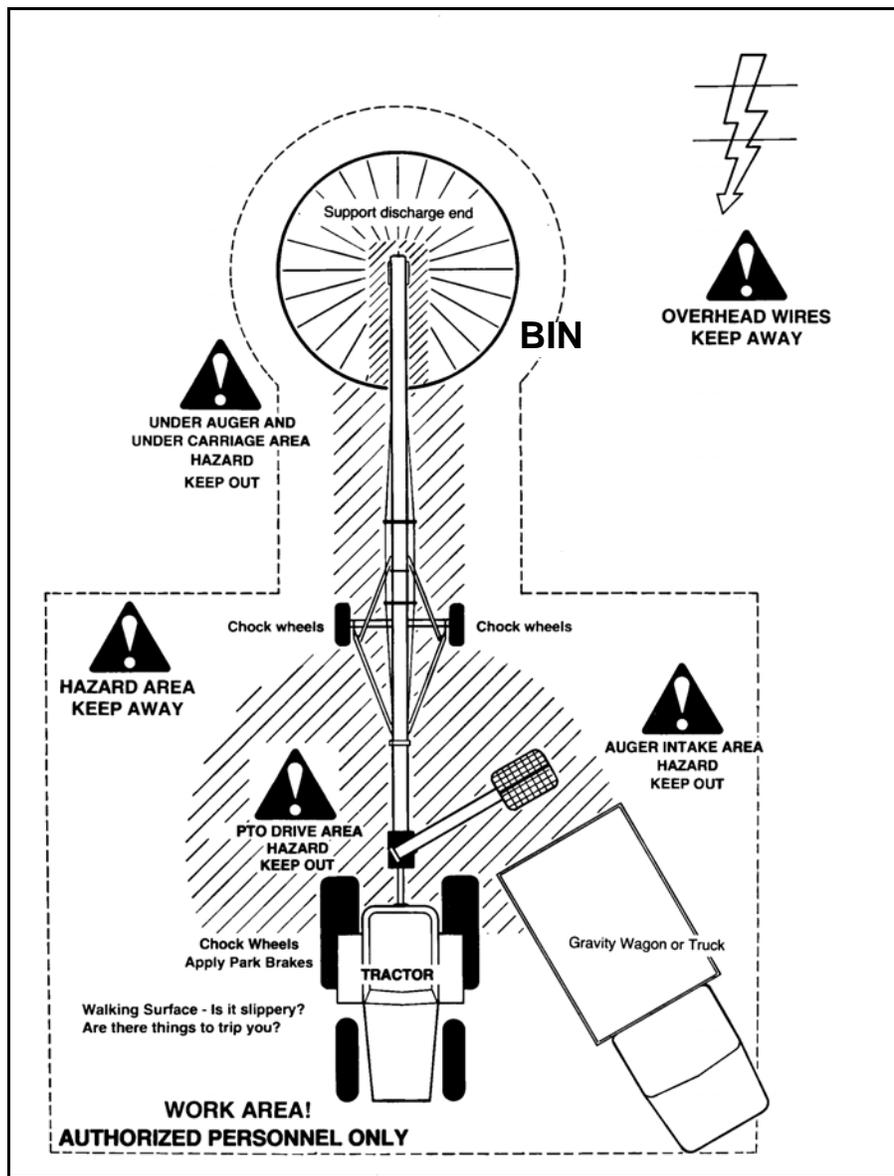


Figure 2.1

2.4. PTO SAFETY

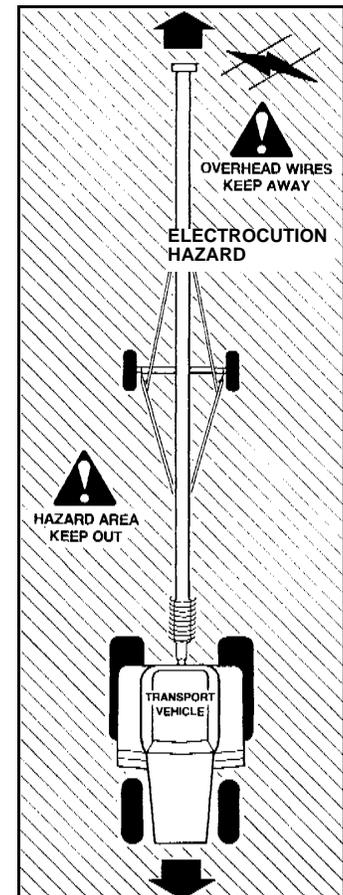
- Never use a PTO driveline without a rotating shield in good working order.
- Ensure PTO driveline is securely attached at both ends before operating.
- Before starting tractor, turn power to PTO to the off position (where applicable).
- Keep body, hair, and clothing away from rotating PTO driveline.
- Ensure the PTO driveline shields turn freely on the PTO driveline.
- Do not exceed operating speed of 540 rpm.
- Keep u-joint angles small and equal. Do not exceed recommended operating length for PTO driveline.

2.5. HYDRAULIC SAFETY

- Wear proper hand and face protection when searching for hydraulic leaks. Escaping fluid under pressure can penetrate the skin, causing serious injury like gangrene. In case of accident, see a doctor immediately.
- Fluid leaks in the hydraulic lift cylinders or hoses will allow the auger to lower inadvertently. Repair all leaks and breaks immediately. Rupture could cause damage and/or personal injury.
- A hydraulic lift is faster than a conventional hand crank—always clear area of personnel before raising or lowering.
- Do not disconnect hydraulic couplers when hydraulic system is pressurized. For the correct procedure, consult this manual or your tractor manual.
- Relieve pressure before unhooking hydraulic lines.
- Inspect hydraulic fittings and hoses for damage on a daily basis. Repair if damaged.
- Ensure that the hydraulic line(s) is (are) properly connected and secure.
- Keep hydraulic line(s) away from moving parts.
- Clean connections before connecting to equipment.

2.6. TRANSPORT & PLACEMENT SAFETY

- Transport auger in full down position with slight tension on cable.
- Properly place hitch pin and securely attach safety chain. Use a type of hitch pin that will not allow auger to separate from towing vehicle.
- Always attach an SMV (slow moving vehicle) sign before transporting auger. Equip the auger with the necessary lights for transportation where required by law. Always use hazard warning flashers on the tractor/towing vehicle when transporting unless prohibited by law.
- Always travel at a safe speed, never exceeding 15 mph (24 km/hr). Reduce speed on rough surfaces and be cautious when turning corners or meeting traffic.
- Before raising/lowering/moving the auger, make sure the area around the auger is clear of obstructions and/or untrained personnel. Never allow anyone to stand on or beneath auger while transporting or placing auger.
- Do not transport auger on slopes greater than 20°.
- Wheels must be free to move when raising or lowering auger.
- Never attempt to move auger manually. To do so will result in serious injury.



- Before moving auger, check and double check for overhead obstructions and/or electrical wires. Electrocution can occur without direct contact.
- Disconnect PTO driveline from tractor before moving auger or tractor and secure in transport saddle (where applicable).
- Raise intake feed hopper into transport position and lock hopper lift winch before transporting or moving auger. Intake feed side of hopper must face main auger when in transport position.
- Do not operate auger with intake hopper in transport position. This will cause damage to the u-joint.
- This auger is LONG and WIDE. Be careful when turning corners. Watch for low overhead objects. Not intended for transport on public roads. If auger must be moved, check local length and width regulations.

Important: *The 111' auger weighs over 7500 lb and must be towed with appropriate equipment. A tractor or minimum 1-ton truck is recommended.*

2.7. MAINTENANCE SAFETY

- Shut down and lock out all power before attempting maintenance of any kind. **If applicable**, disconnect PTO driveline from tractor or hydraulic hoses on units with hydraulic drive hoppers.
- After maintenance is complete, replace and secure all safety guards and safety devices, and if applicable, service doors and cleanout covers.
- Support auger tube before attempting maintenance on the undercarriage assembly. Auger should be in full down position for maintenance.
- Use only genuine Westfield replacement parts or equivalent. Replacement parts such as intake guards, pulley guards, PTO driveline shields, winches, and lift cables must meet ASABE standards or serious injury may result. Use of unauthorized parts will void warranty. If in doubt, contact Westfield or your Westfield dealer.
- Do not modify any auger components without authorization from Westfield. Modification can be dangerous and result in serious injuries.

2.8. SAFETY DECAL LOCATIONS

- 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.
- Safety decals are available from your distributor, dealer, or factory.

2.8.1. DECAL INSTALLATION

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.

2.8.2. DECAL LOCATIONS

Replicas of the safety decals that are attached to the equipment are shown in the figure(s) that follow. Proper safety procedures require 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.

** Westfield reserves the right to update safety decals without notice. Safety decals may not be exactly as shown.*

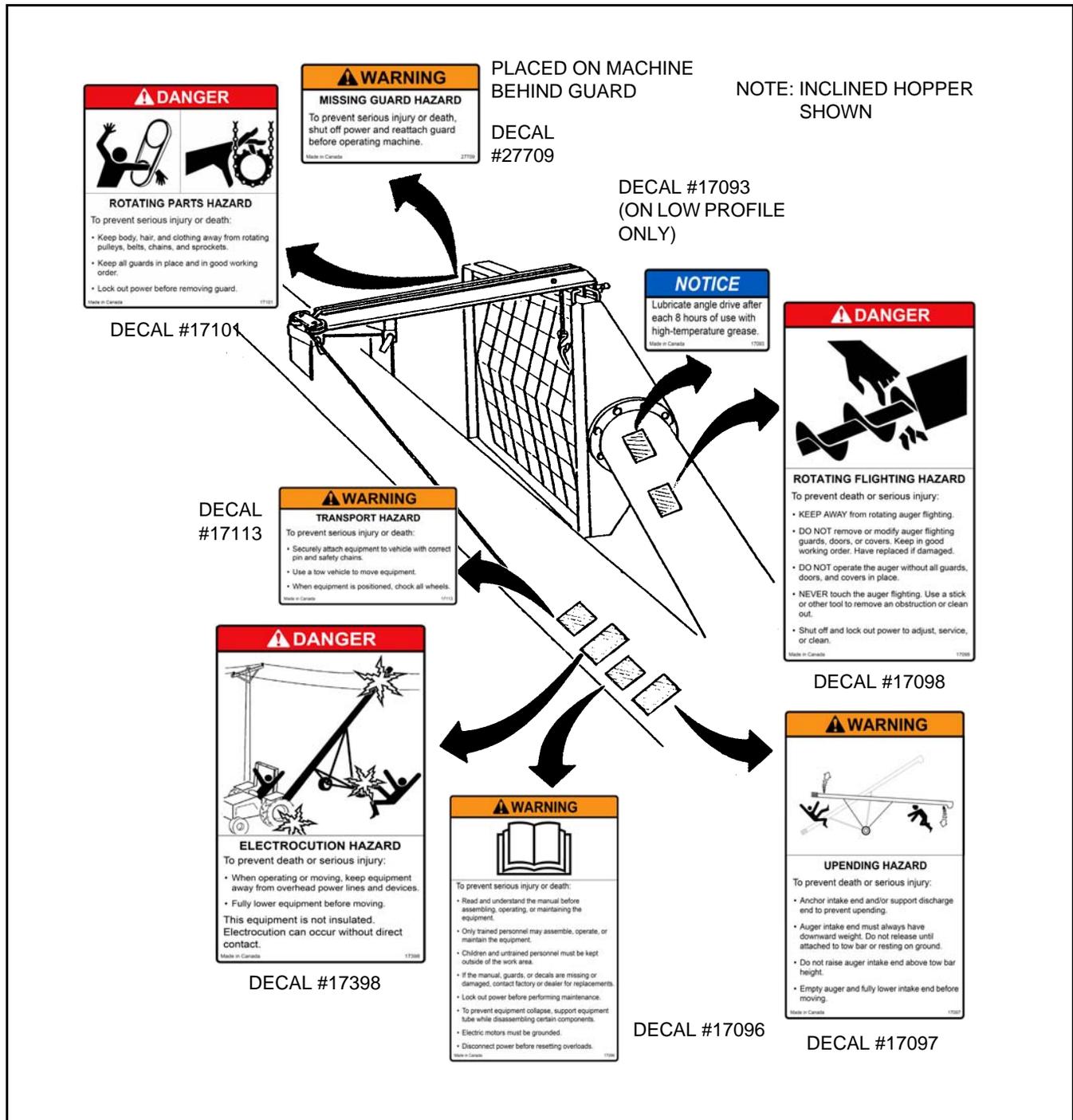


Figure 2.2

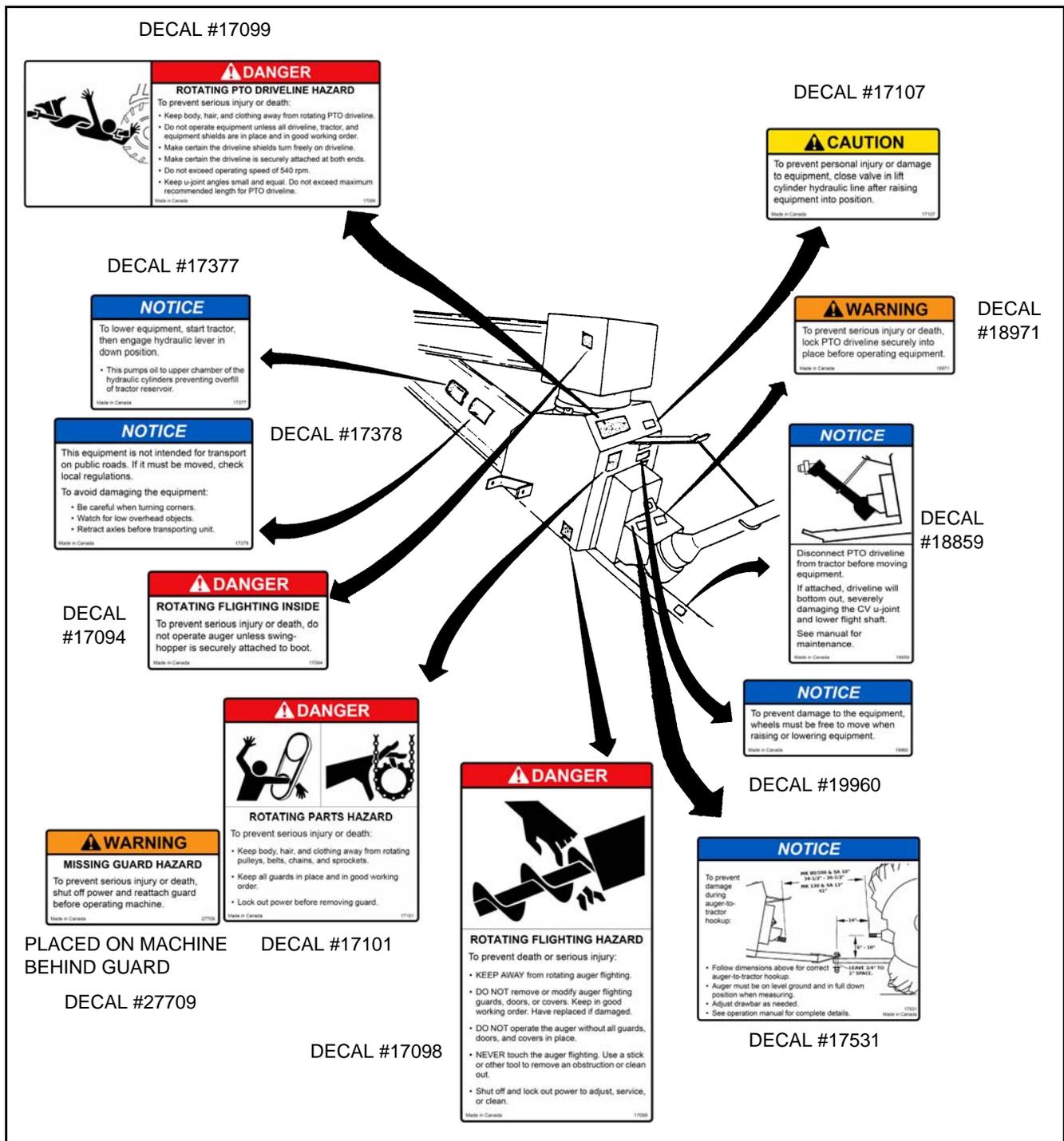


Figure 2.3

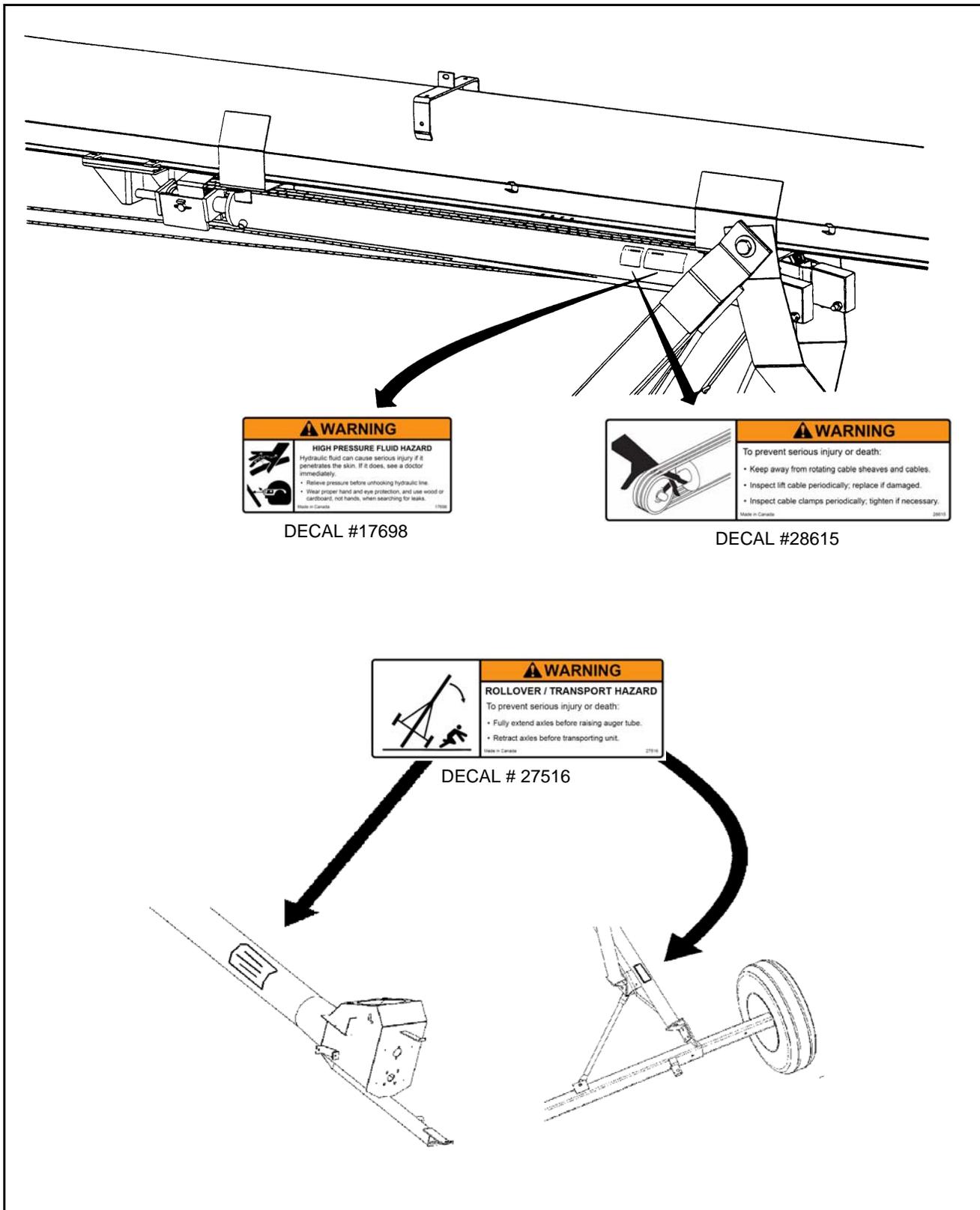


Figure 2.4

Important: Please review the decals shown. If your auger does not have these decals, they are available upon request. Please specify which decals you need.

3. Assembly

Warning: Before continuing, please read the safety information relevant to this section in the safety section of this manual. Failure to follow the safety instructions can result in serious injury, death, or property damage.

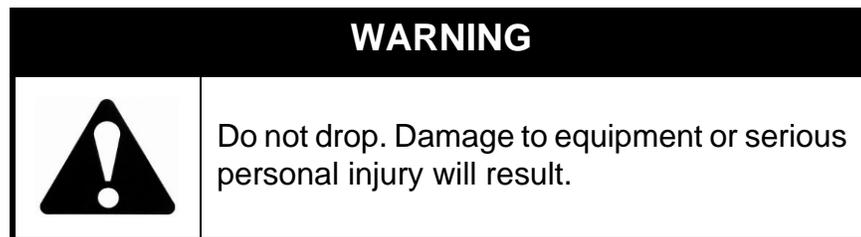
Before beginning assembly, familiarize yourself with all the sub-assemblies and hardware making up the auger. Have all parts on hand and arrange them for easy access. Carry out assembly in a large open area with a level surface.

Important: *Always have 2 or more people assembling the equipment. Because of the weight, do not attempt assembly alone.*

➔ Augers are available in various combinations. In most cases, the following instructions will apply to all augers. Where the assembly information varies, additional instructions will be included and will be indicated with an arrow.

3.1. TUBES & FLIGHTING

1. Position tube sections. Align tube sections on a flat surface or on a series of benches.



- The 91' has 5 tubes, numbered 1, 2, 3, 4, and 5.
 - The 111' has 6 tubes, numbered 1, 2, 2a, 3, 4, and 5.
 - Top tube No. 1 has the spout hole and top bearing.
 - Tubes No. 2 and 3 (2, 2a, and 3 for 111') are the same; all have the track-stop holes in the track.
 - Tube No. 4 has the lift cylinder brackets welded to bottom side.
 - Tube No. 5 is 10' (3.05 m) long with a short track.
 - See Figure 3.14.
2. Slide the four-roller track shoe onto the track on Tube No. 2.
 3. **Lift cylinders:** To attach cylinders, rotate Tube No. 4 so track is facing upward.
 - a. Attach the lift cylinders to the attach brackets as shown in Figure 3.1 using 7/16" x 1-1/4" bolts and locknuts.
 - Outside tabs - use regular bolts.
 - Inside tabs - use bolts with extension rods welded to head.
 - b. Slide the lift ram guide onto track on Tube No. 4, then insert the ram ends into brackets on guide as shown in Figure 3.1. Secure with two roll pins.
 - c. Return this tube section to the track down position.

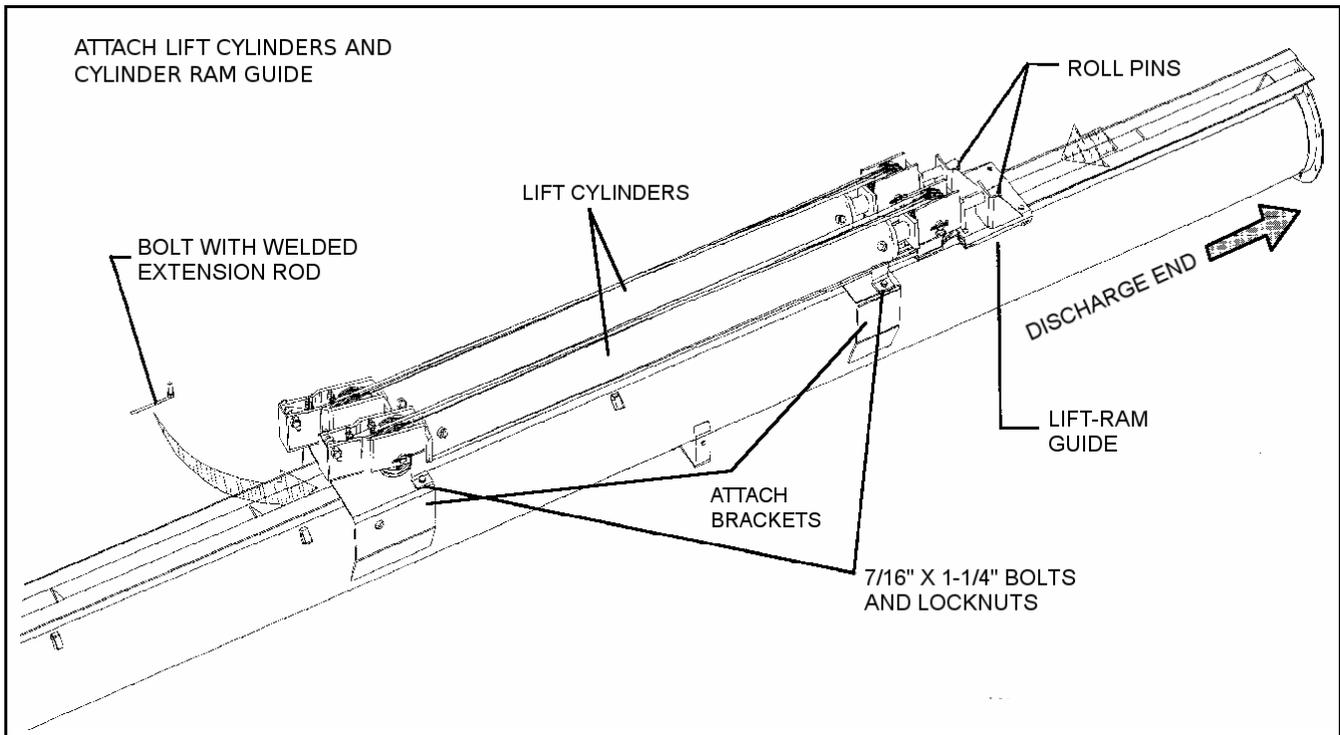


Figure 3.1

4. Slide lower flight shaft onto upper flight shaft until flight ends butt together and flighting spiral matches up. Secure with hardware listed in table below. Repeat, if necessary, for any remaining flight shafts. See Figure 3.2.
5. Slide tube sections together and secure. Make sure to align upper and lower track ends and then tighten bolts. Secure with hardware in table below.

Important: *Track ends must align to allow track shoe to smoothly slide over track joint. Misalignment may cause jamming.*

6. Bolts the track ends together.

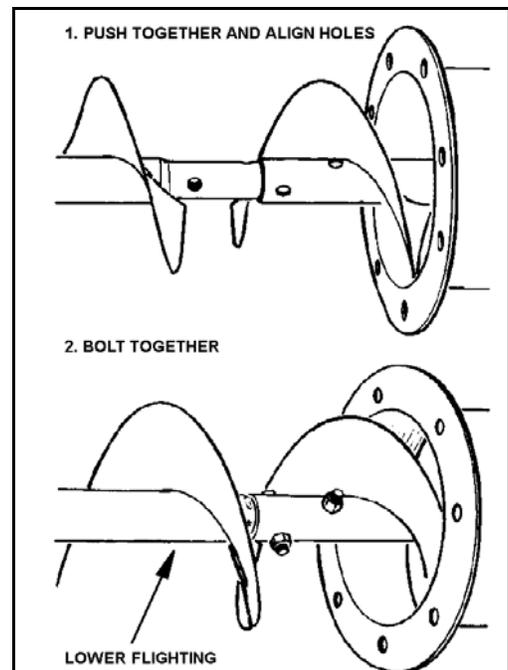


Figure 3.2

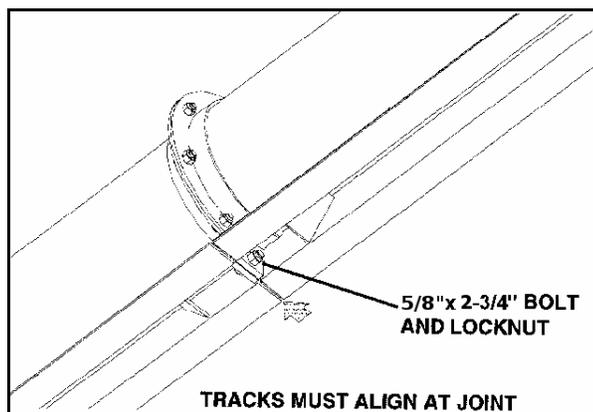


Figure 3.3

Details for fastenings:				
Auger	For Flighting	Qty	For Tubes	Qty
10"	1/2" x 2-3/4" GR 8 bolts and locknuts	2	7/16" x 1" bolts and locknuts	8
13"	5/8" x 4-1/2" GR 8 bolts and locknuts	2	7/16" x 1-1/4" bolts and locknuts	12
Track End				
5/8" x 2-3/4" bolt and locknut		1		

3.2. TRACK SHOE, TRACKSTOP, & LIFT-ASSIST ARM

1. Attach the trackstop to the upper end of the track on Tube No. 2 with eight 7/16" x 1-1/4" bolts and locknuts.

➔ *The 91' auger trackstop should be 132" (3.35 m) from intake end of Tube No. 2, while the 111' trackstop should be 59-1/2" (1.51 m) from intake end of Tube No. 2 (Figure 3.4).*

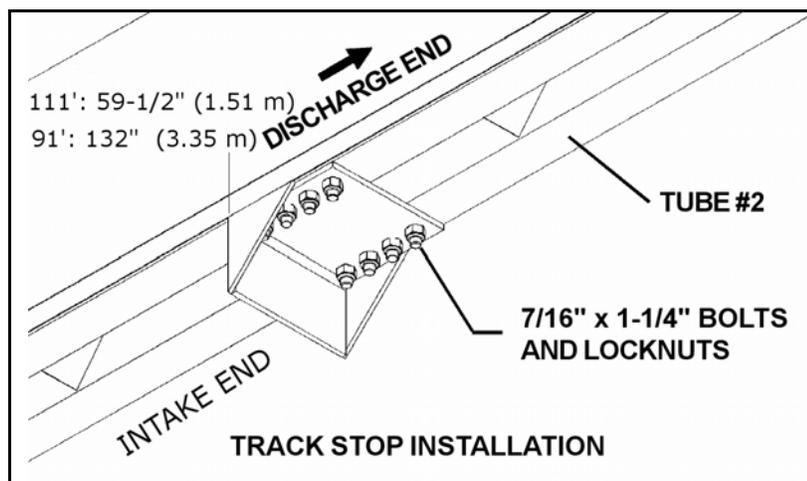


Figure 3.4

2. Slide the track shoe along tracks on Tubes No. 2 and 3 to make sure there is no binding and that track ends are properly aligned. Adjust tube joints if necessary (see 3.).
3. Attach the lift-assist arm to center hole on track shoe with an 11/16" short spacer and flat washer on each side, and a 1" x 10" bolt and locknut (Figure 3.19 on page 30). Tighten securely.

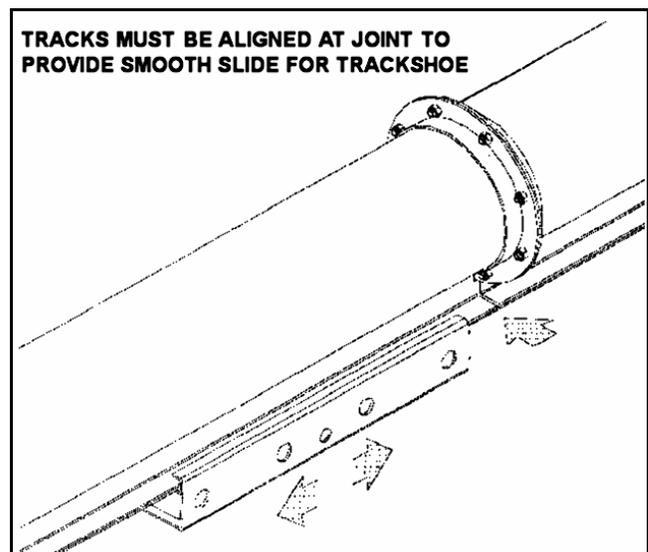


Figure 3.5

3.3. TOW BAR

➔ *The MK130 Plus auger has an adjustable tow bar. The tow bar is installed as seen in Figure 3.6.*

1. Insert the tow bar into the boot channel. Secure with a 3/4" x 6-1/2" long bolt and locknut through the back hole in the boot channel, under the boot.
2. Insert a 5/8" x 4-1/2" long bolt and locknut vertically into the hole at the front of the boot so that the towbar comes straight out of the boot.
 - This bolt must be inserted from the bottom with the nut on top.

Note: *The tow bar can be adjusted if a speed reducing gearbox is used with the system. In this case, the tow bar is extended and pinned on an angle using the vertical bolt. This will line up the PTO with the PTO connection on the gearbox.*

3. Install the PTO cradle bracket on the boot. Attach bracket with two 7/16" x 1-1/4" bolts and locknuts.

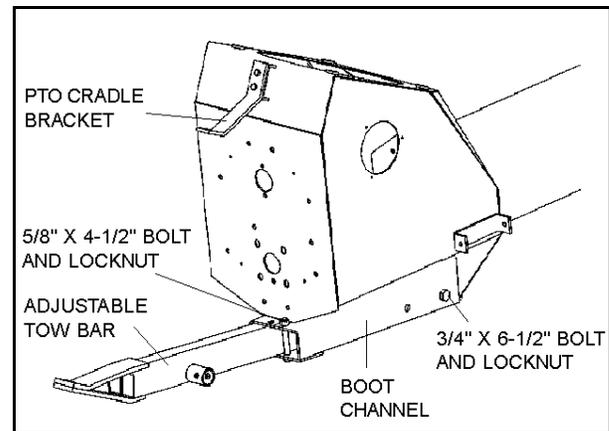


Figure 3.6

3.4. BOOT

Note: *The gearbox is sent from the factory filled halfway with EP90 oil. Before further assembly, check oil level to make certain the gearbox is half full. Add oil if necessary. Do not use grease.*

Important: *Complete assembly in the order listed to prevent premature failure of the lower bearing.*

➔ 1. **MK100-91' Only:** Slide short flight section onto lower flight shaft and secure. Make sure flight ends butt together and spiral matches up.

Note: *This lock collar is replaced in Section 3.5. step 4.*

2. At upper end of auger tube, loosen set screw and remove lock collar from upper bearing.
3. Slip boot over lower flight shaft and attach to flange on lower tube. Tighten securely.
4. Slide the wide rim flat washer onto lower flight shaft.
 - a. Install lower bearing, seating flight shaft shoulder against washer and lower bearing.
5. Seat flight shaft shoulder against washer and lower bearing. Secure lock collar. Tighten bearing bolts after step 8.

➔ 6. **For mechanical drive units only:**

- a. Install square key and slide sprocket onto flight shaft.

- b. Align lower sprocket with upper sprocket using straight edge, then tighten set screws.
- c. Install drive chain on sprockets and adjust tension to about 1/4" deflection. Tighten the 4 bolts on lower bearing. Oil chain lightly.

Note: Attach sprocket guard after installing the PTO driveline.

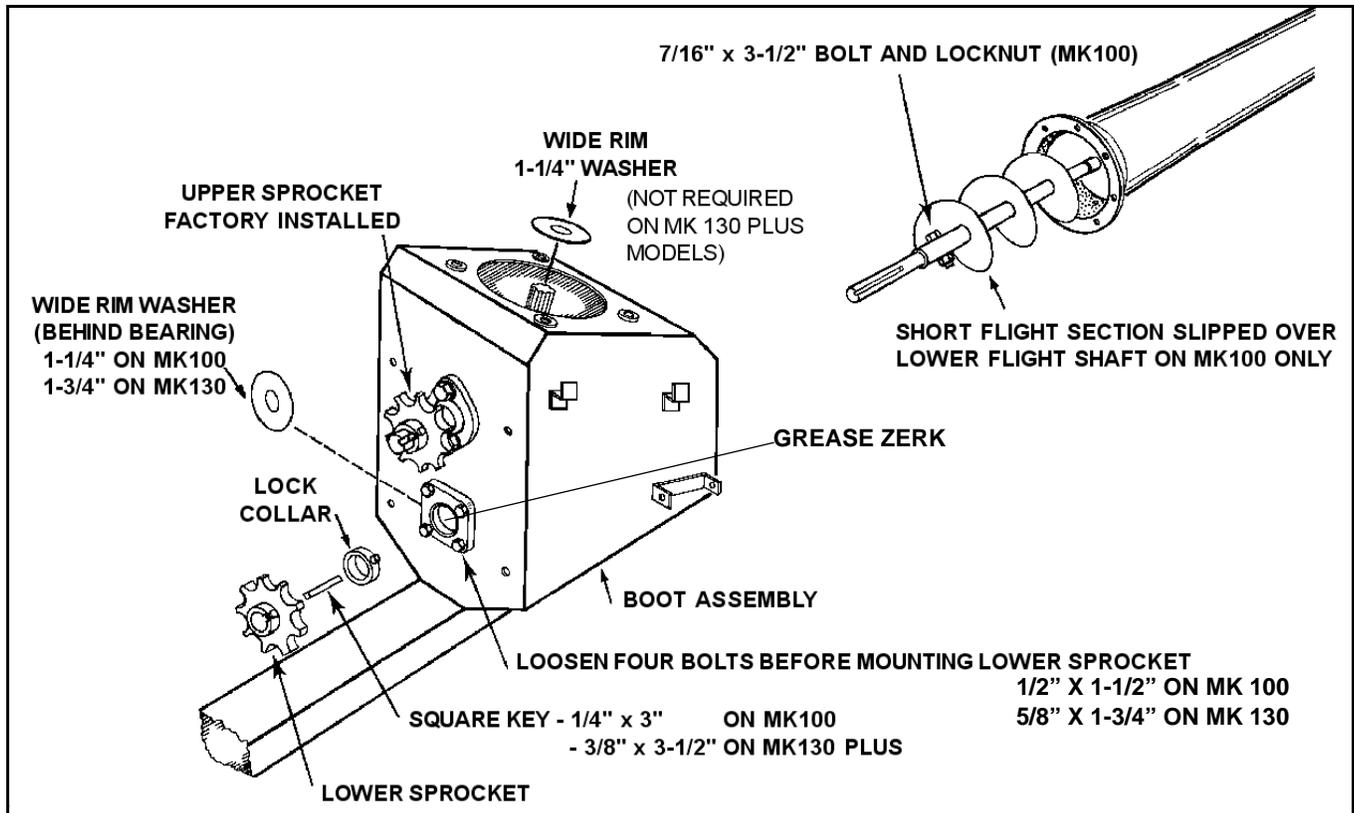


Figure 3.7

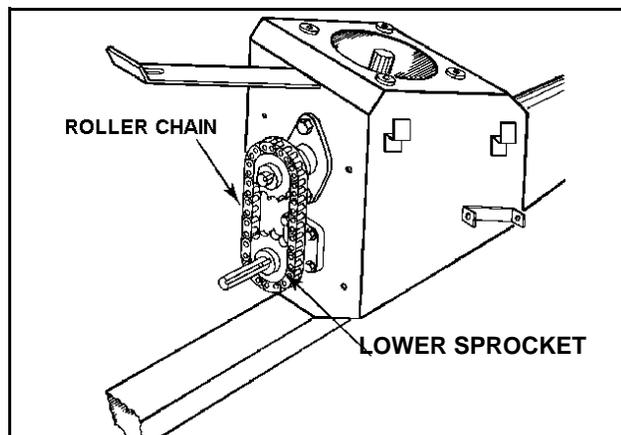


Figure 3.8

Part	Hardware	Qty
To attach flighting	7/16" x 3-1/2" bolt and locknut	1
To attach boot to flange	10"-7/16" x 1" bolts and locknuts	8
	13"-7/16" x 1-1/4" bolts and locknuts	12

Part	Hardware	Qty
Wide rim flat washer	10"-1-1/4"	1
	13"-1-3/4"	1
Square key	10"-1/4" x 3"	1
	13"-3/8" x 3-1/2"	

3.5. DISCHARGE SPOUT AND THRUST ADJUSTER

1. Attach discharge spout with 7/16" x 1-1/4" bolts and locknuts (Figure 3.9).

The thrust adjuster is designed to transfer some pressure from the lower flight bearing to the upper flight bearing.



MK100 91'(Figure 3.9):

2. Remove the upper bearing lock collar (if necessary).
3. Screw out the 4 bolts on the adjuster plate so plate rests against head plate and foam gasket is fully compressed.
4. Secure lock collar on upper bearing and tighten set screw.
5. Adjust the 4 bolts on the adjuster plate alternately, keeping it parallel to the head plate until all slack is taken up. Tighten until plate moves about 1/4" more.
6. Lock the nuts against the welded nuts on the adjuster plate.

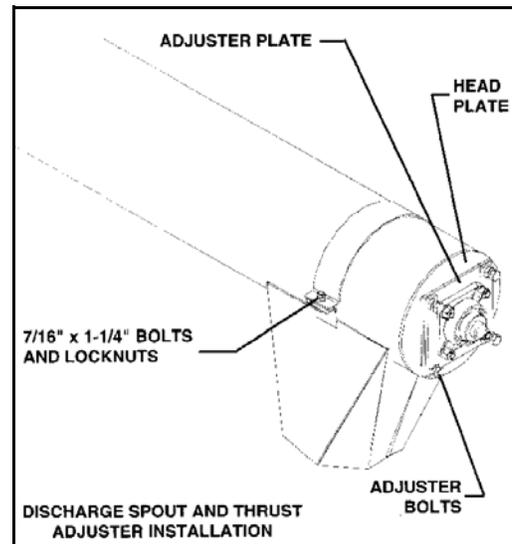


Figure 3.9



MK 130 Plus models (Figure 3.10):

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".
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" whiznuts.

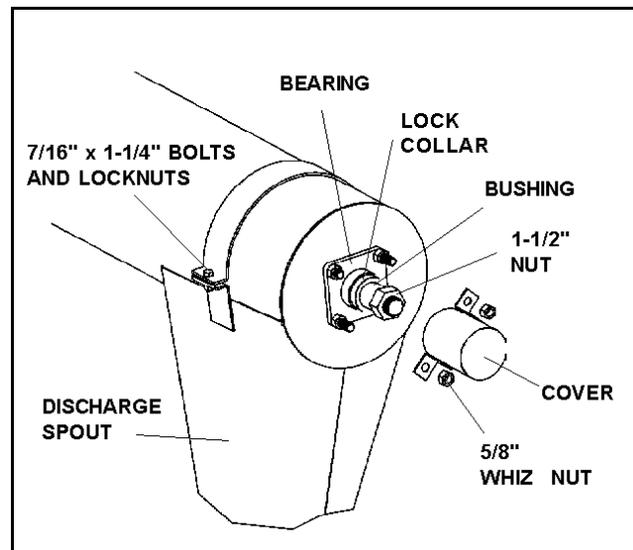


Figure 3.10

3.6. TRUSS

See Figure 3.11 and 3.14.

When assembling the truss system, **do not tighten** any bolts until all components are in place. Refer to Figure 3.11 and for correct positioning of the truss components.

1. Loosely attach the 2 **low** (D) and (5 on 91') (7 on 111') **high** (C) pairs of truss towers to the truss-attach brackets welded to auger tube with 7/16" x 1-1/4" bolts and locknuts.
2. Loosely join the ends of two 10' (3.05 m) truss-tubes (A) and two crossbrace tubes (B) **between** the top end of each pair of **high** truss towers using 1/2" x 2-3/4" bolts and locknuts.
3. Thread a 3/4" nut onto each adjust-tube, then insert threaded end into truss-anchors on lower and upper auger tubes. Join the adjust tubes and 10' truss tubes at the two **low** (D) truss towers with 1/2" x 2-3/4" bolts and locknuts.

Note: *A single crossbrace is positioned between the **low** (D) truss towers and adjacent **high** (C) truss towers.*

4. Loosely join all the crossbrace tubes to tabs welded to top of truss-attach brackets using 1/2" x 1-1/2" bolts and locknuts.

Note: *Attach these tubes to same side of tab as they are attached to the truss tower.*

5. Tighten all bolts and nuts.
6. Install the (3 on 91') (5 on 111') pairs of x-clamps where the crossbrace tubes meet (between the 5/7 **high** (C) truss towers) with two 7/16" x 1" bolts and locknuts each.
7. Adjust the threaded adjust tubes until upper and lower auger tubes have a slight (just noticeable) upward bow. Lock the adjust nuts against bracket.

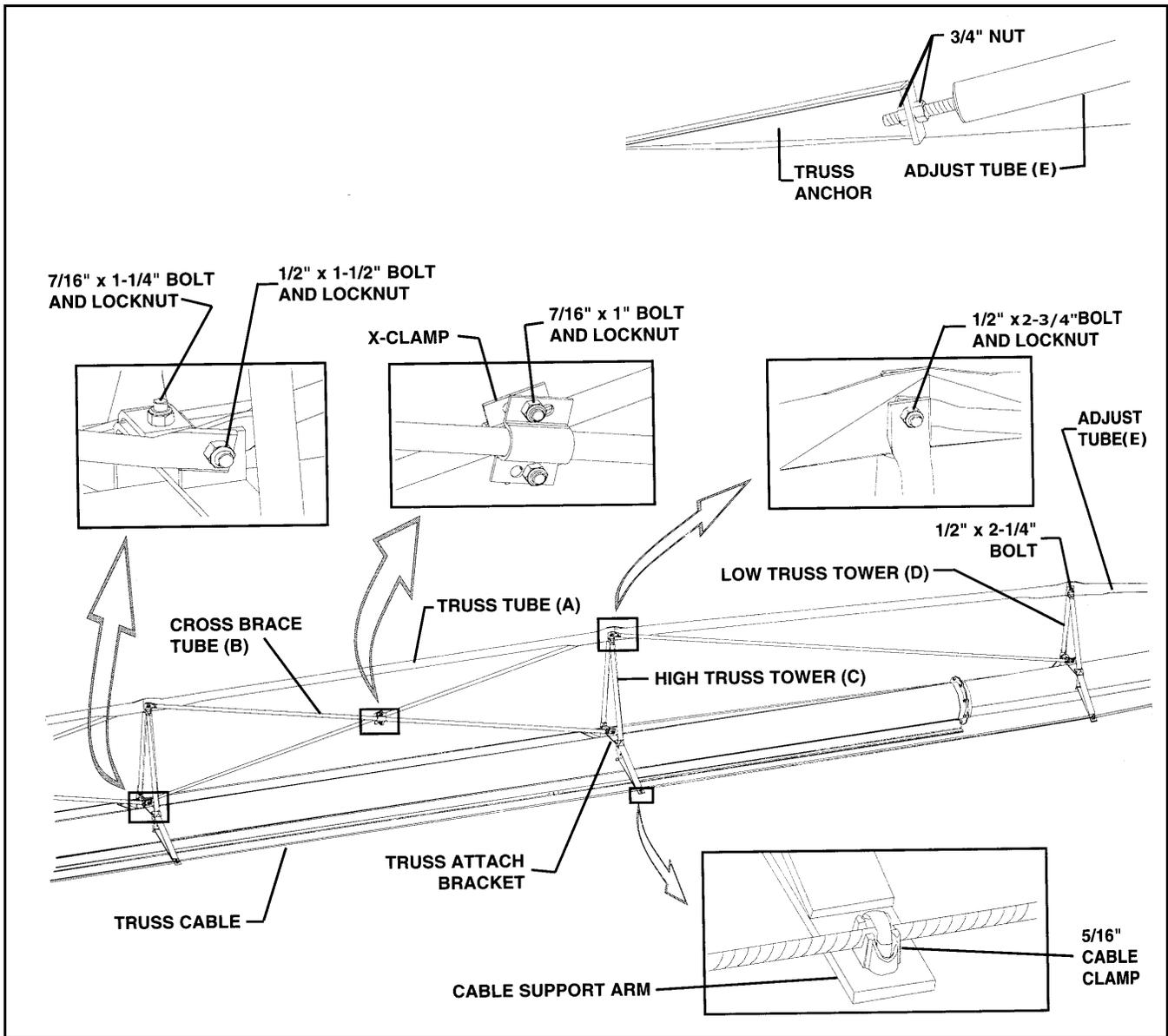


Figure 3.11

3.6.1. CABLE TRUSSING

See Figure 3.12, 3.13, and 3.14.

1. Attach an eyebolt to one end of each truss cable with two 3/8" cable clamps using about 10" (25.4 cm) - 12" (30.5 cm) of cable. Tighten securely.

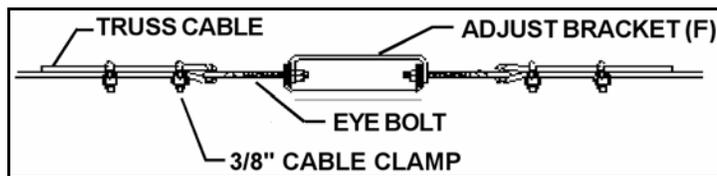


Figure 3.12

2. Insert eyebolts into adjust bracket (E) and thread on nut about 1/2".

3. Starting between the third and fourth truss-cable supports on one side, and fourth and fifth supports on the other side (see Figure 3.14), loosely attach the truss cables to each truss-cable support with a 5/16" cable clamp as shown in 3.6.1.
4. Pull cable around truss cable anchors at top and bottom end of auger tube and loosely attach with a 5/16" cable clamp.
5. Attach remaining eyebolts to adjust bracket and thread on nuts about 1/2".
6. Thread loose ends of the cable through eyebolt, pull tight, then secure with two 3/8" cable clamps. Tighten securely.
7. Adjust tension of both truss cables by tightening the eyebolts at the adjust brackets. These cables must be very tight. Also adjust for side alignment.
8. Now tighten all of the cable clamps at cable supports and arms.

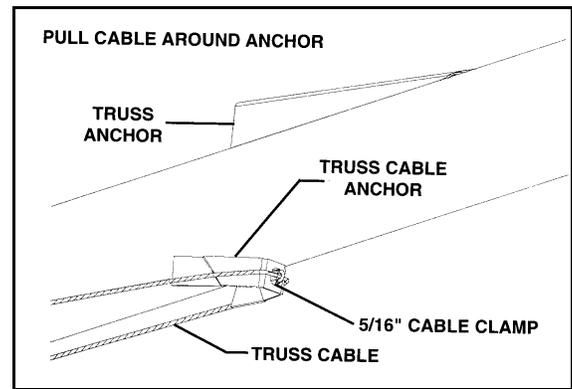


Figure 3.13

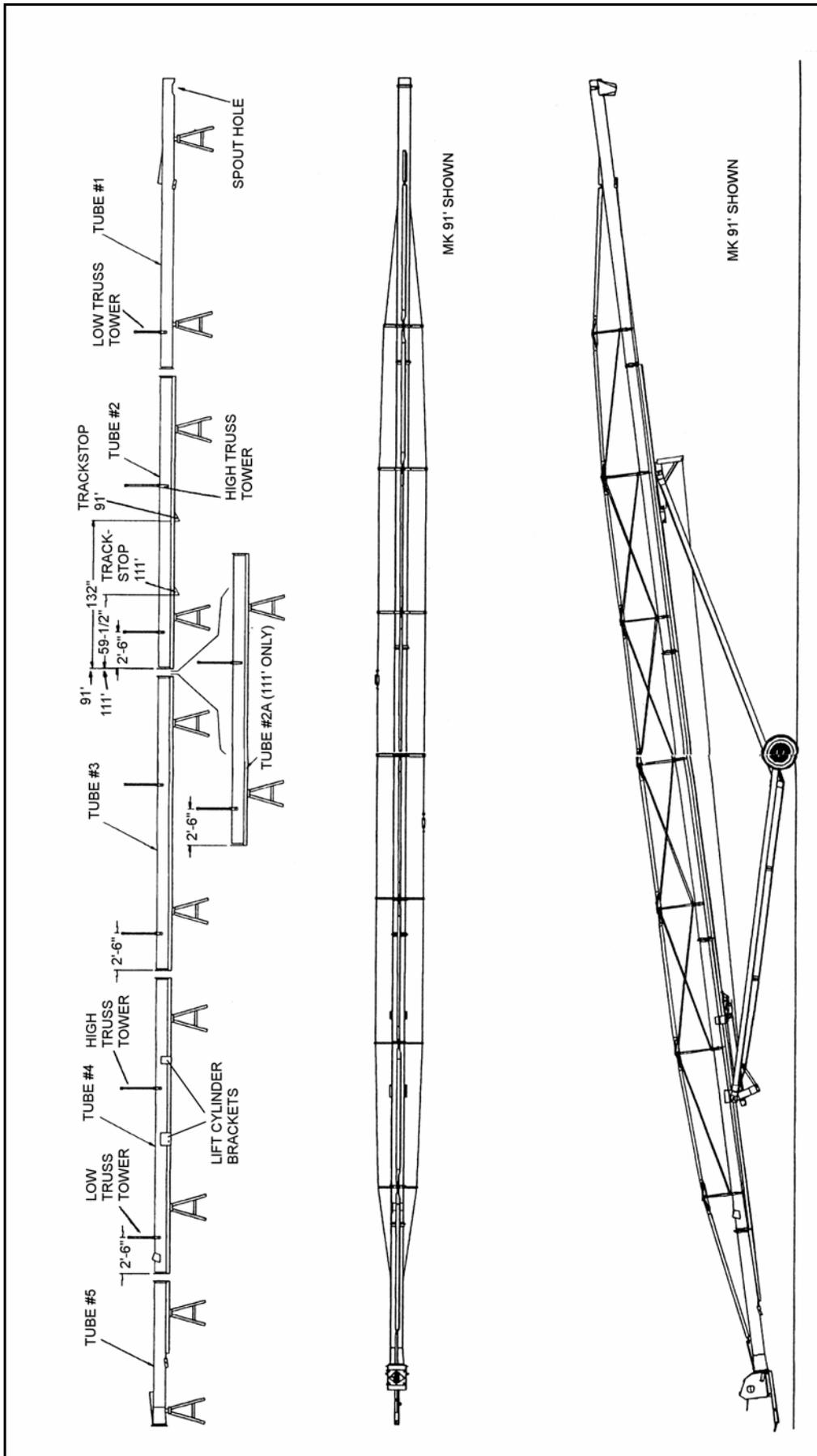


Figure 3.14

3.7. TRANSPORT UNDERCARRIAGE

See Figure 3.16.

1. With truss on axle positioned as shown in Figure 3.16, fasten the lower reach arms to brackets on axle with four 5/8" x 2" bolts and locknuts on each side.
2. Attach short crossmember loosely with two 5/8" x 2" bolts and locknuts, sandwiching flat braces (B) between crossmember and frame bracket. Do not tighten bolts until undercarriage is beneath tube assembly (Figure 3.18).
3. Secure the tubing crossbraces to welded lugs on lower reach arms with four 1/2" x 1-1/4" bolts and locknuts, plus a fifth one where the braces cross.



On the 111' auger, add a tie tube between the bottom welded lugs. Use 1/2" x 1-3/4" bolts and locknuts.

4. Attach the corner braces on the 91' auger (axle crossbraces on the 111' auger) with two 1/2" x 1-1/4" bolts and locknuts each.
5. Insert axle extensions into axle and pin in place using a 3/8" x 5-1/2" pin and hair pin.

6. Wheel hub assembly:
 - a. Remove any dirt from spindle and hub.
 - b. Thoroughly pack wheel bearings and cups with a good grade of bearing grease.
 - c. Place large bearing into hub and carefully tap in seal.
 - d. Slip hub onto spindle and insert small bearing and washer.
 - e. Tighten slotted spindle nut until hub drags slightly. Back off nut about 1/4 turn until hub turns freely.
 - f. Install cotter pin and dust cap.

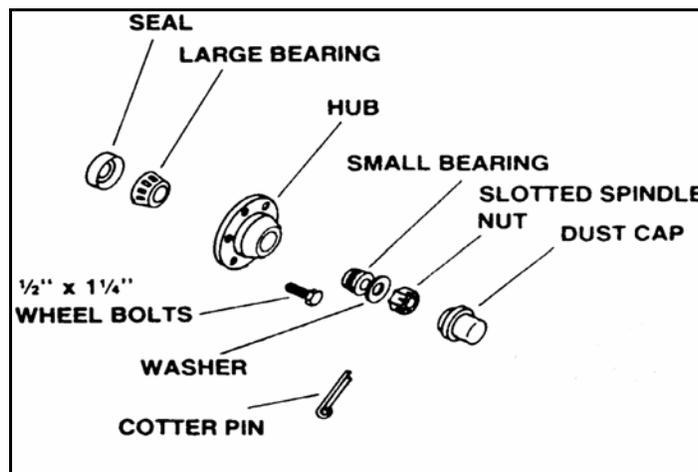


Figure 3.15

- g. Inflate tires to recommendations on tire side wall. Wheels may be mounted on hubs at this time using 6 wheel bolts.

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.*

Important: *The 91'/111' augers are heavy and require heavy-duty tires. Use new 11L-15/8 ply tires.*

7. Fasten upper lift arms to lower reach arms using two medium length 15/16" spacer bushings, flat washers, and 1" x 3-1/2" bolts and locknuts. Tighten securely; lift arms pivot on the spacer bushings (Figure 3.17).

8. Secure the tubing crossbraces to welded lugs on upper lift arms with four 1/2" x 1-1/4" bolts and locknuts plus a fifth one where the braces cross.

➔ On the 111' auger, add a tie tube between the bottom welded lugs as shown in Figure 3.16. Use 1/2" x 1-3/4" bolts and locknuts.

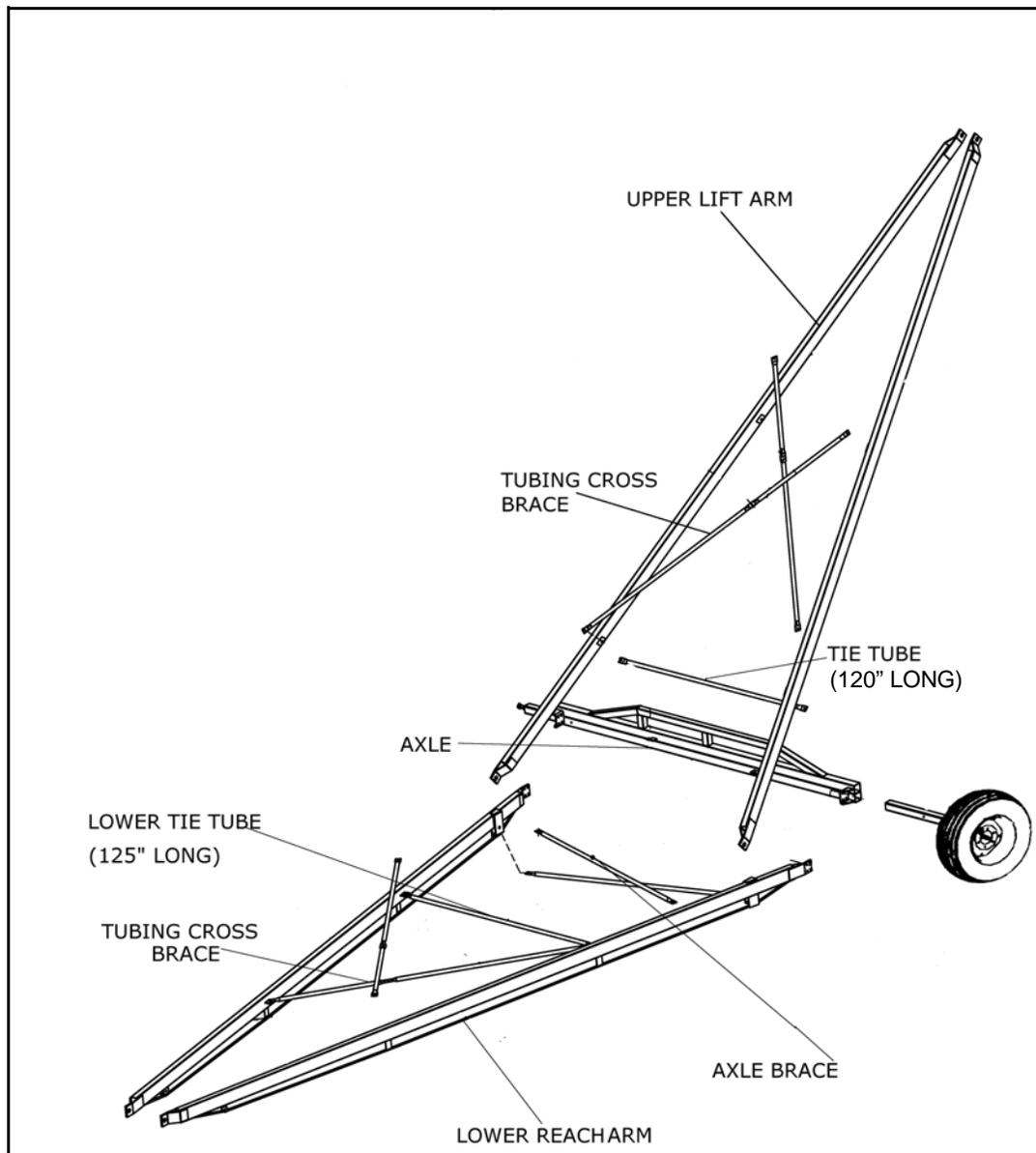
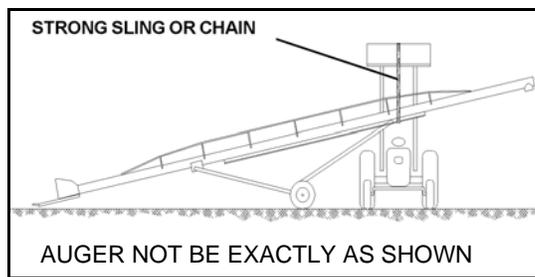


Figure 3.16

9. Lower auger intake to the ground.
10. Raise the upper end of auger with a block and tackle or a front-end loader. Securely attach a strong sling or chain about 36" (91.4 cm) above trackstop. Secure tube to prevent it from turning while lifting. Raise sufficiently to clear undercarriage.



WARNING	
	Do not remove tube support until assembly in this section has been completed.

11. Place undercarriage beneath tube assembly.
12. Position stabilizer braces (A) (Figure 3.18) and attach lower reach arms to bracket on tube with long spacer bushings (1-1/8" long), flat washers, and 1" x 3-1/2" bolts and locknuts. **Tighten securely.** Reach arms pivot on the spacer bushings.

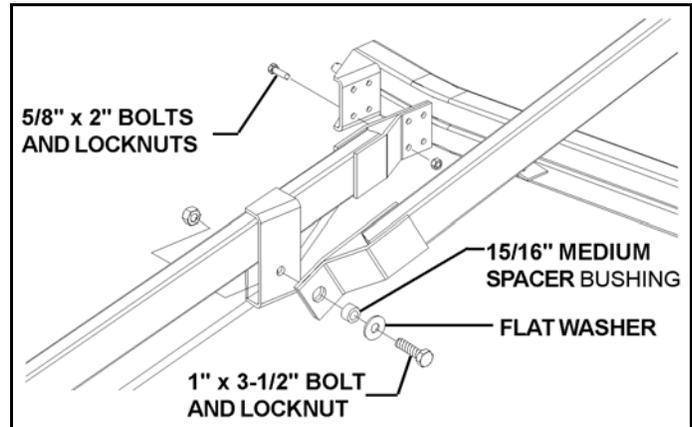


Figure 3.17

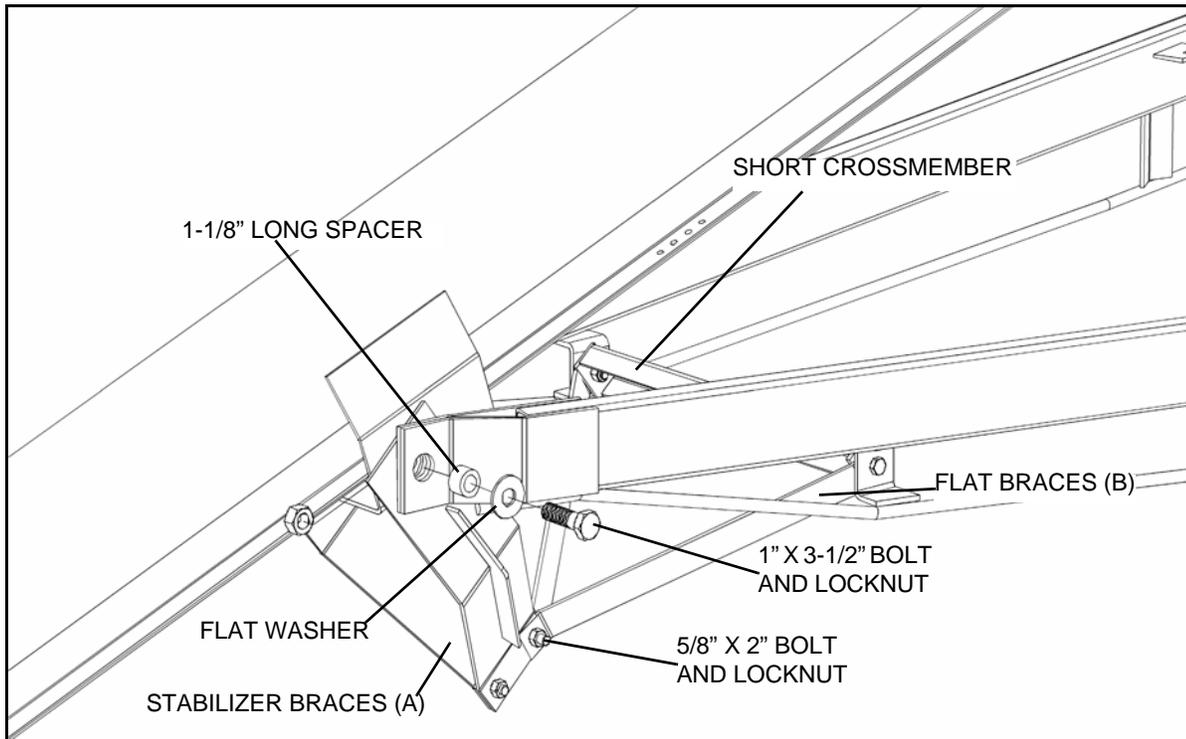


Figure 3.18

13. Fasten flat braces (B) to first set of holes (furthest from intake) on stabilizer braces (A) with one 5/8" x 2" bolt and locknut. Place one 5/8" x 1-1/2" bolt and locknut in other hole of stabilizer brace.

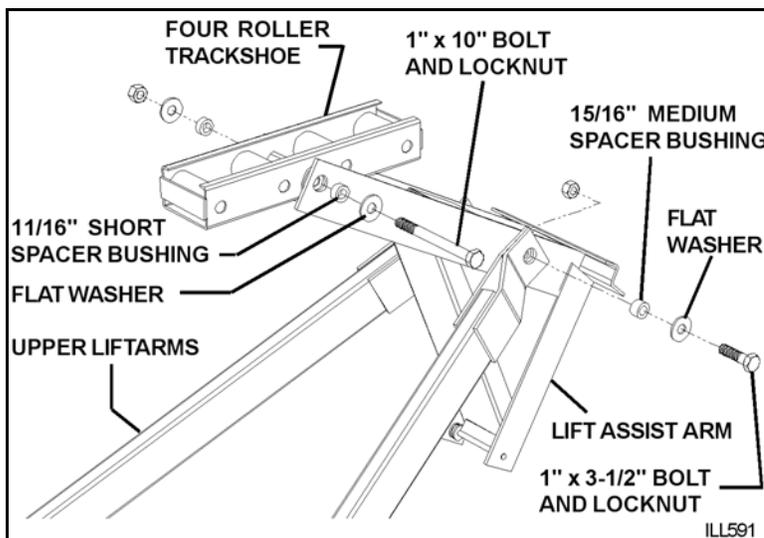


Figure 3.19

14. Attach upper lift arms to center hole on the lift-assist arms (Figure 3.19) with two 15/16" medium spacers, flat washers, and two 1" x 3-1/2" bolts and locknuts. **Tighten securely**; lift arms will pivot on the spacer bushings.
15. Lower discharge end of auger slowly until track shoe rests against trackstop and the lift-assist arm rests against track.

3.8. LIFT CABLES

1. Make certain that the lift-assist arm is seated against the track and both lift cylinders are in full down position (fully retracted).

Important: *Lift cables may stretch with use. Check frequently and adjust when necessary.*

2. Thread the lift cables over the respective pulleys on the lift-assist arm, pull cables tight, and secure with 3 cable clamps on each cable (5/16" on 91', 3/8" on 111'). **Tighten securely.** Do not crisscross cables (Figure 3.20).

Note: *Although the lift cables are factory installed on the lift cylinders, make certain the cable clamps at the cylinders are secure and the cables are properly seated in the cable sheaves before attaching the cables to the lift-assist arm.*

CAUTION	
	<p>Track shoe must rest against trackstop when adjusting cable.</p> <p>Failure to follow, can allow auger to raise higher than designed, resulting in damage to auger and possible injury to personnel.</p>

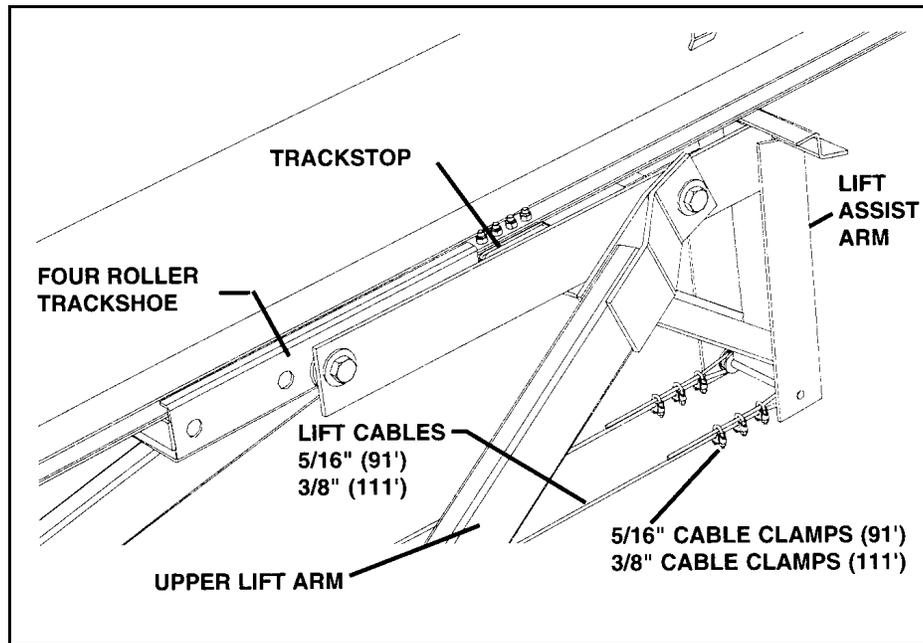


Figure 3.20

3.9. HYDRAULIC HOSES

Note: Determine right or left side of auger by standing at intake end facing top discharge end.

- **Lower** fittings refer to those closer to boot end of auger.
- **Upper** fittings refer to those closer to discharge end of auger.

Note: Use thread sealant (not supplied) on all hydraulic connections.

1. Position both elbow fittings on **right lift cylinder**. The **lower** one should face forward and downward at approximately 45°. The **upper** one should face rearward and downward at approximately 45° (Figure 3.21). Make certain they are tight.
2. Secure the solid connector end of the short (17" / 43.1 cm) cylinder-connector hydraulic hose to the lower elbow fitting.
3. Secure the solid connector end of the long (32" / 81.3 cm) cylinder-connector hydraulic hose to the upper elbow fitting.

Note: Before attaching short connector hydraulic hose to left side lift cylinder, make certain lift cables are tightly stretched and that this hose is positioned beneath lift cable on left side lift cylinder (Figure 3.21). If lift cable is not installed above this hose, it could result in the hoses wearing through during operation, causing a hazardous condition.

WARNING



Wear on hose can cause auger to drop suddenly, causing serious injury or death and damage to the equipment.

4. Position the elbow fittings on the **left lift cylinder**. The **lower** one should face forward and downward at approximately 45°. The **upper** one should face rearward and upward at approximately 10°.
5. Secure the tee fittings to the left cylinder elbow fittings and position them as shown in Figure 3.21. Make certain they are securely tightened.
6. Secure the swivel ends of the upper (32" / 81.3 cm) and lower (17" / 43.1 cm) cylinder-connector hoses to the tees as shown.
7. Check upper 32" (81.3 cm) cylinder-connector hose position to ensure there is 8-1/2" clearance to lift cables as shown in Figure 3.21.
8. Attach the 336" (8.53 m) long (392" (9.96 m) long on 111) pressure hydraulic hose with shutoff valve to the lower tee fitting (nearest auger intake).
9. Attach the 403" (10.2 m) long (473" (12.0 m) long on 111) return hydraulic hose without shutoff valve to the upper tee fitting (nearest auger discharge end).
10. Thread hoses through back arm attach bracket as shown in Figure 3.21.

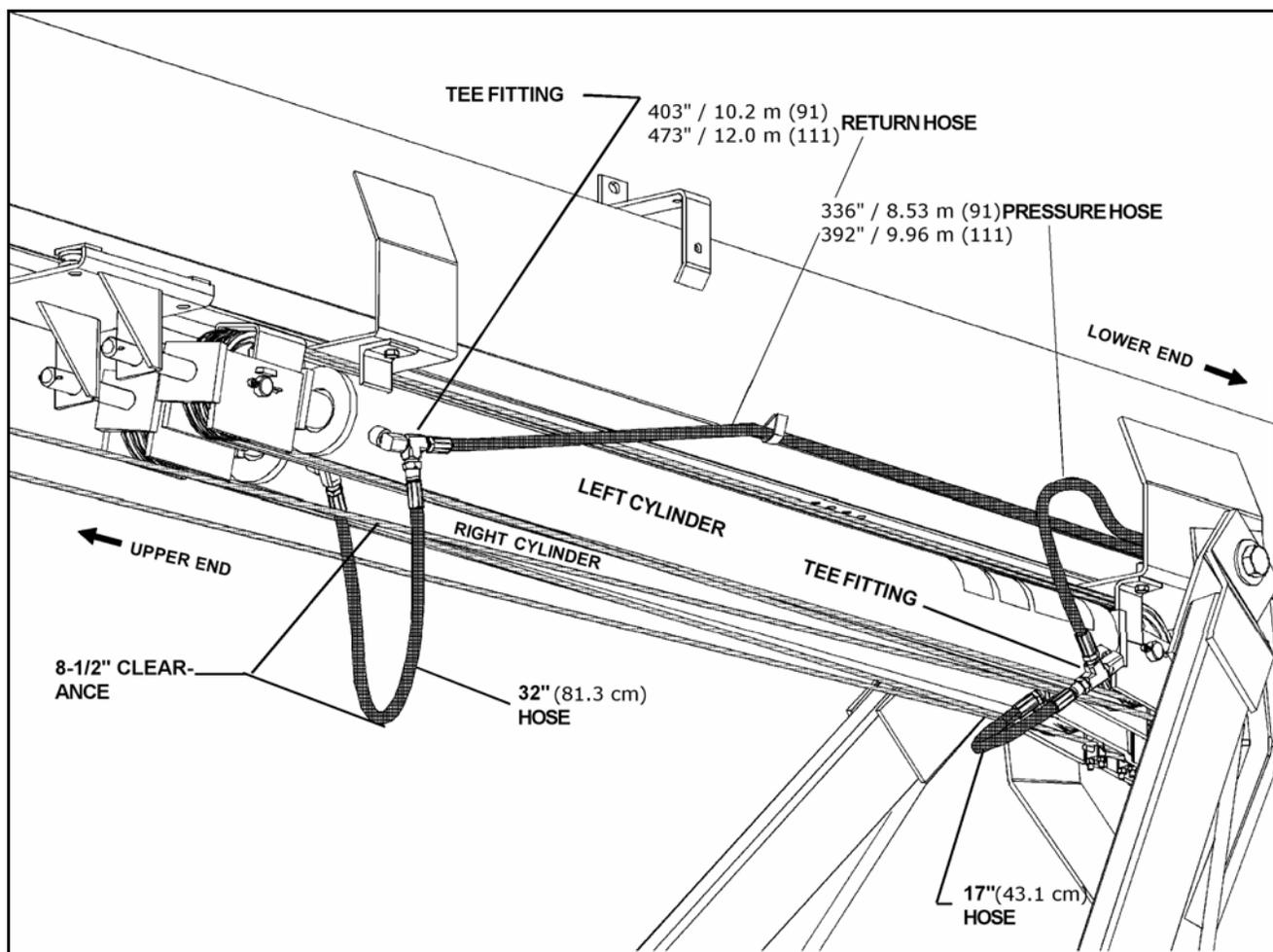


Figure 3.21

6. Place both hoses into retaining brackets welded to side of auger tube and boot. Bend tops of brackets over slightly to hold hoses in place.

Important: *Protect hose ends from dirt.*

7. Recheck that bolts on undercarriage, lift cylinders, and cable clamps are tight, then remove auger tube support.

3.10. PTO (CV) DRIVELINE

1. Clean PTO driveline and flighting shaft ends of any paint or dirt.
2. Slide plain end of PTO driveline onto flighting shaft. Make sure the holes for the roll pin are lined up and square key is in place (where necessary).
 - Roll pins: 5/16" on MK100 and 3/8" on MK130 Plus
3. Making sure eyes are protected, carefully tap in roll pin. Tighten set screw.
4. Install sprocket guard on boot with four 5/16" x 3/4" bolts.
5. Slide PTO transport saddle through support strap on boot and rest PTO driveline in it until connected to tractor.

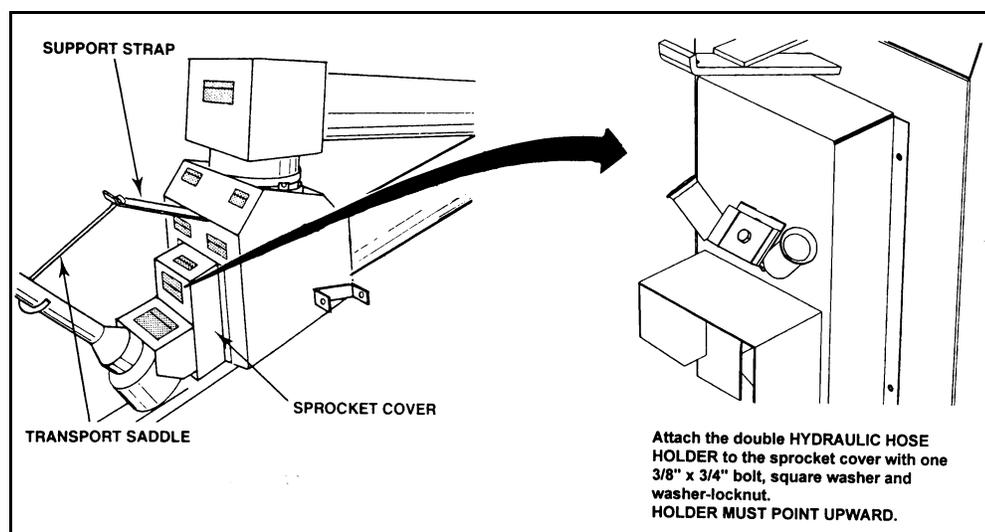


Figure 3.22

3.11. STANDARD INTAKE HOPPER

Note: *The gearbox has been filled at the factory (half full) with EP90 gear oil. Before further assembly, check oil level to make certain the gearbox is half full as required. Add oil if necessary. Do not use grease. **This does not apply to hydraulic drive hoppers.***

See Figure 3.23 and Figure 3.25.

1. Remove access covers, then clean paint and dirt from flight shaft end. Insert Woodruff key into flight shaft end.
2. Raise hopper tube to correct angle (22.5°) and then bring hopper and tube section together, carefully sliding the flight shaft end with Woodruff key into the angle drive.

Note: *Correct angle is achieved when the flight shaft end is inserted in the angle drive and its weight is fully supported by the block and stand.*

3. Connect the hopper and tube section with twelve 7/16" x 1-1/4" (for the MK100, use eight 7/16" x 1") bolts and locknuts.

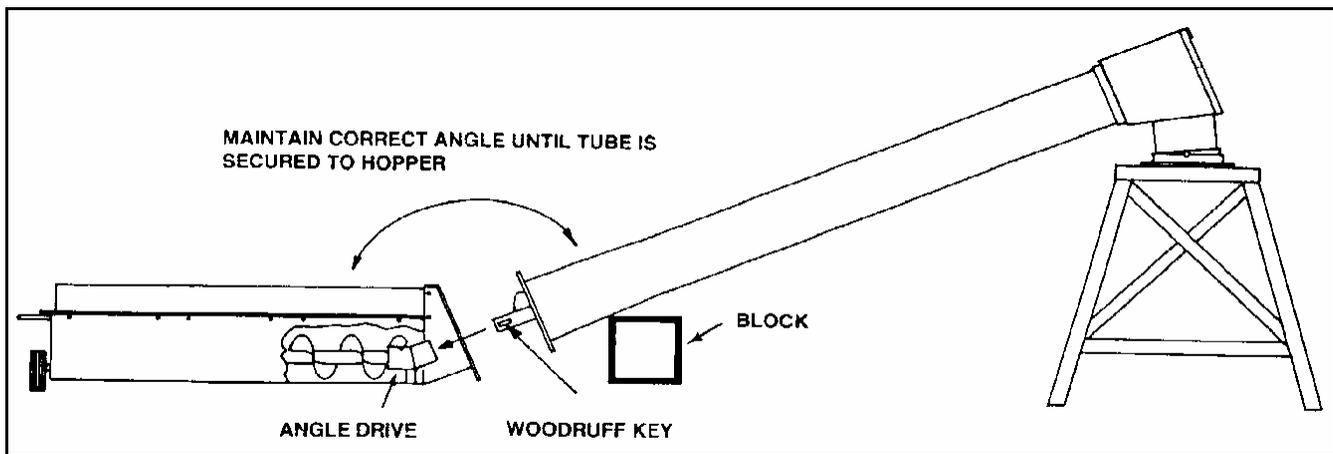


Figure 3.23

NOTICE

To prevent damage, you must maintain the correct angle when inserting flight shaft end into angle drive until tube is secured to the hopper section. Allowing tube or hopper to drop will bend the flight shaft end causing it to bind in the angle drive.

4. Thoroughly lubricate the angle drive, then replace access doors. Keep angle drive well lubricated (after every 8 hours of operation) with high-temperature grease.

Important: *Check angle drive alignment! You should be able to rotate the hopper flight by hand. If not aligned, see "General Maintenance Procedures" on page 57 for adjustment instructions.*

Note: *The angle drive requires a break-in period of at least 2 to 3 loads.*

5. Clean any dirt or paint from the wheel axles on the hopper bottom.
6. Install the 2 wheels to the hopper bottom with a washer and cotter pin each.
7. **MK100:** Install the rubber extension on the inside of the hopper lip with twenty 5/16" x 3/4" bolts and washer locknuts, and 8 long and 2 short flat iron straps.
8. **MK130 Plus:** Install the 2-piece rubber extension on inside of hopper lip with twenty-eight 5/16" x 3/4" bolts and washer locknuts, and 10 long and 2 short flat iron straps, plus the 2-piece extension connector plates (Figure 3.28).

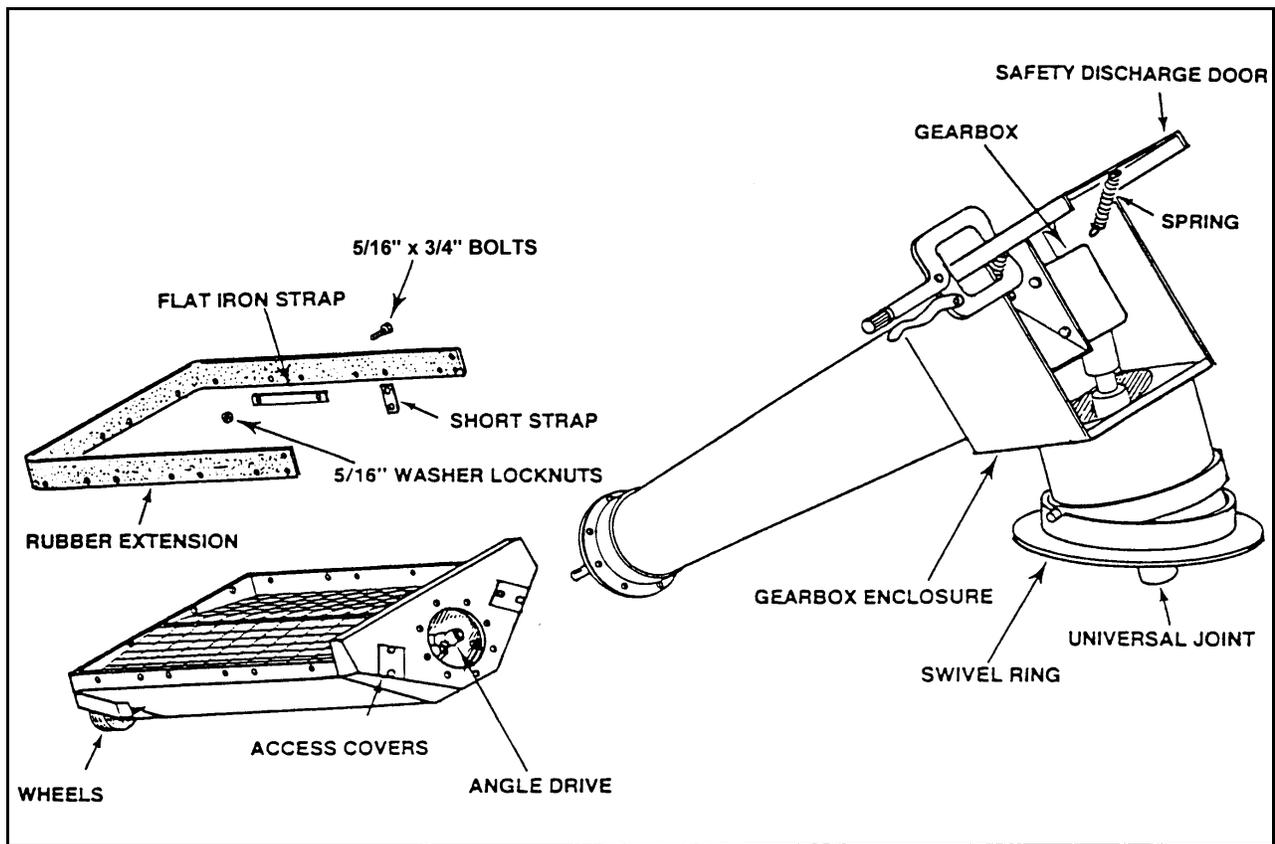


Figure 3.24

9. **Mechanical Drive Units only:** Open safety discharge door to connect intake hopper to auger boot.

- This door is held in place internally with two springs. To open, pull the door down and then up and over the gearbox enclosure. Hold open with a C-clamp vise grip.

- a. Clean u-joint spline and lower gearbox spline, then apply a light film of grease on splined shaft.



- b. **MK100 only:** Slide the wide rim 1-1/4" flat washer over the splined shaft on the lower gearbox, see Figure 3.7.
- c. Guide splined universal joint onto splined shaft as the intake hopper is lowered onto the boot. Once positioned, the swivel ring rests flat on the boot surface and inside the four spacer nuts.
- d. Install four large washers with 3/8" X 3/4" bolts to keep the intake hopper in place on the boot. Once positioned, the swivel ring rests flat on the boot surface and inside the four spacer nuts.

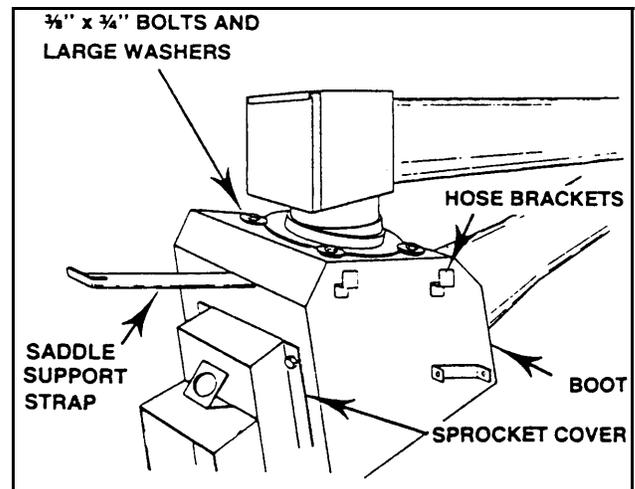


Figure 3.25

- e. Lubricate the universal joint and close the safety discharge door.

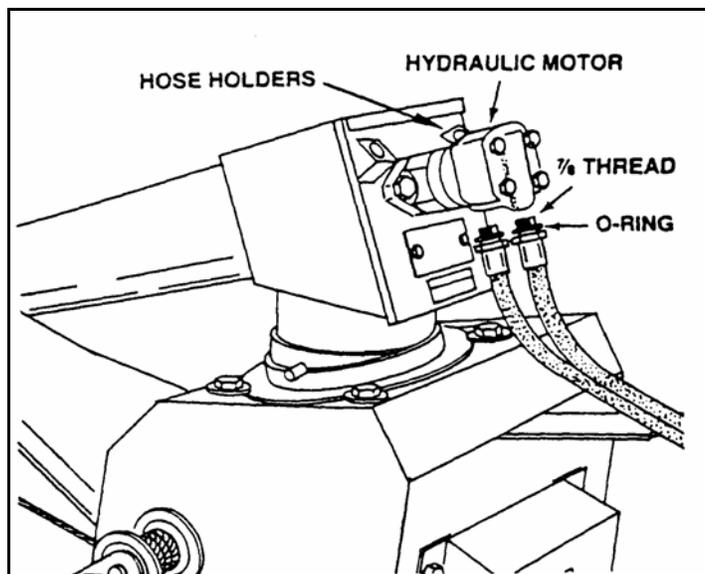


Figure 3.26



10. **MK augers with hydraulic drive hoppers only:** These units are shipped without the mechanical drive components (gearboxes, u-joint, and lower chain drive).
- Lower intake hopper onto boot with swivel ring resting flat on the boot surface and inside the 4 spacer nuts.
 - Install 4 large washers with 3/8" x 3/4" bolts to keep intake hopper in place on the boot.
 - Securely attach the 2 hydraulic hoses to the hydraulic motor. The correct end of hose has the 7/8" thread and o-ring.
 - Attach tractor coupler to tapered pipe thread on the other end of hose. These couplers are not supplied. When not in use, store hoses in handy hose holder on powerhead.



See appendix for MK hydraulic drive hopper requirements.

3.12. OPTIONAL LOW PROFILE HOPPER

Note: *The gearbox has been filled at the factory (half full) with EP90 gear oil. Before further assembly, check oil level to make certain the gearbox is half full as required. Add oil if necessary. Do not use grease. **This does not apply to hydraulic drive hoppers.***

See Figure 3.27–3.29.

- Attach the pivot-connector to the appropriate MK100 or MK130 holes in hopper with two 5/8" x 1-1/2" bolts and locknuts. **Do not over-tighten.** Tighten snug only; these bolts act as pivot points.
- Loosely secure the service door with the 2 square latch-washers and 3/8" locknuts.

Note: *These must be tightened securely after hopper assembly is completed.*

3. Clean dirt from inside u-joint and flight shaft end, then insert Woodruff key.
4. Raise and support hopper tube at about 50" (1.27 m) under spout.
5. Open service door on hopper, then bring tube and hopper together guiding flight shaft into u-joint, see Figure 3.27.
6. Secure tube to pivot-connector on hopper with 7/16" x 1" bolts and locknuts.

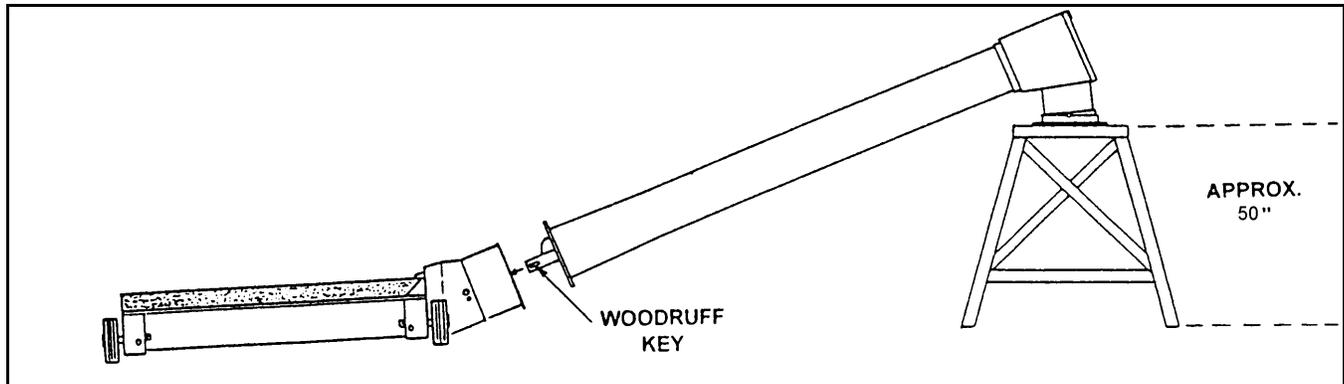


Figure 3.27

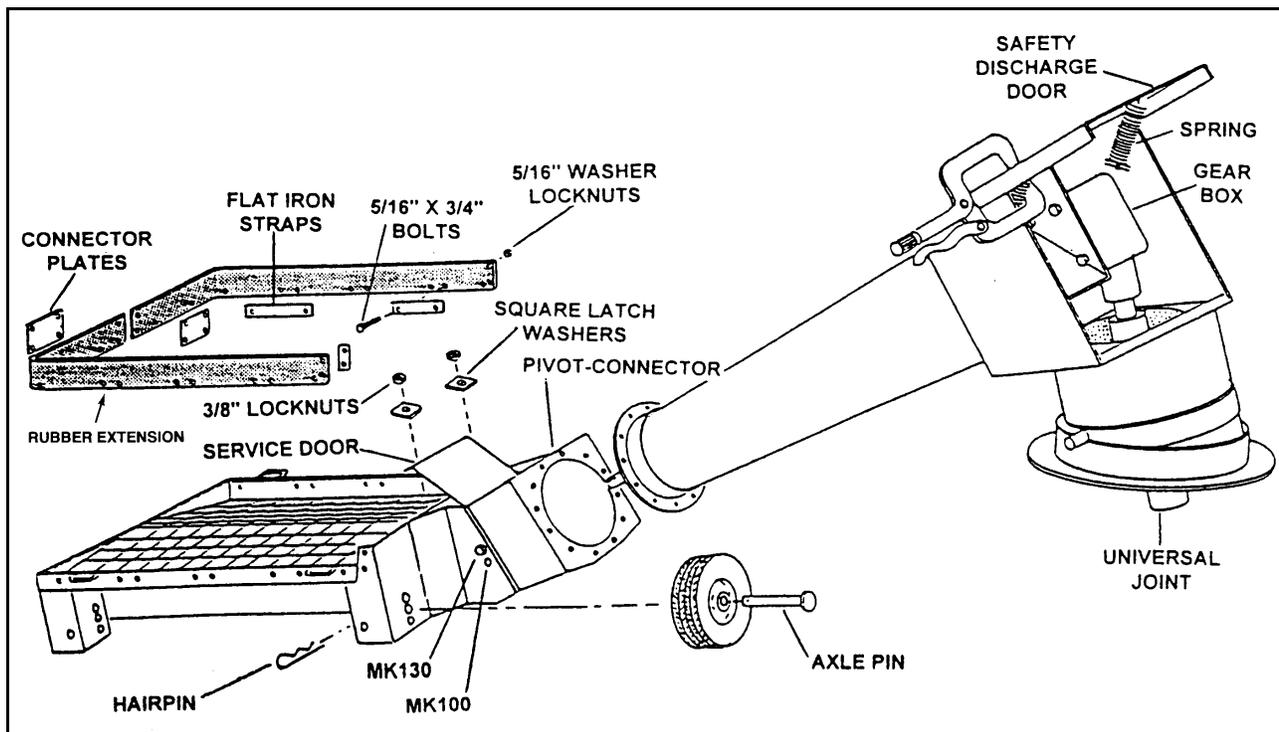


Figure 3.28

7. Tighten set screws on u-joints, then close and secure the service door.
8. Remove the two 5/16" washer locknuts that secure the chain drive guard. Attach the 2-piece rubber extension to inside of hopper lip with 5/16" x 3/4" bolts and washer locknuts and the flat iron straps provided, plus the 2-piece extension connector plates.
9. Attach the 4 pneumatic wheels to the 4 hopper corners with the axle pins and hairpins. The offset portion of the wheel must rest against the hopper.
 - You have a choice of 3 height settings.

- ➔ **10. Mechanical Drive Units Only:**
Open the safety discharge door to connect the intake hopper to the auger boot. This door is held in place internally with 2 springs. To open, pull the door down, and then up and over the gearbox enclosure. Hold open with C-clamp vise grip.

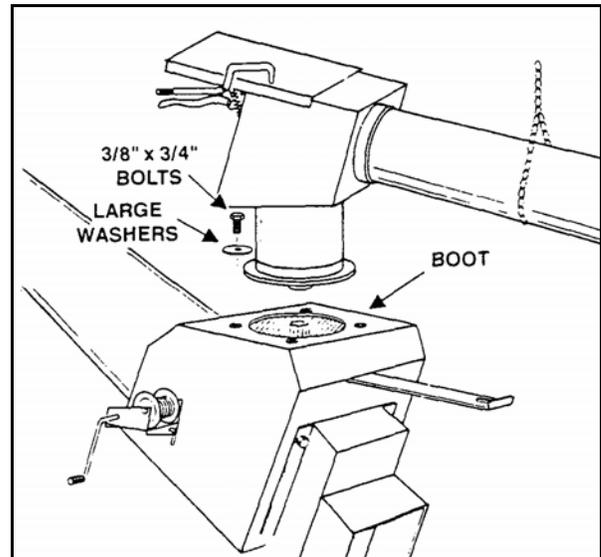


Figure 3.29

- a. **MK100:** Place wide rim 1-1/4" large washer over splined shaft on lower gearbox.
 - b. Clean u-joint spline and splined shaft on lower gearbox, then apply a light film of grease on this splined shaft.
 - c. Guide the splined universal joint onto splined shaft while intake hopper is lowered onto the boot. Once positioned, the swivel ring rests flat on the boot surface and inside the four spacer nuts.
 - d. Install 4 large washers with 3/8" x 3/4" bolts to keep the intake hopper in place on the boot.
 - e. Lubricate the universal joint and then close the safety discharge door.
- ➔ **11. MK100 augers with hydraulic drive hoppers** are shipped without the mechanical drive components (gearboxes, u-joint, and lower chain drive).
- a. Lower intake hopper onto boot with swivel ring resting flat on the boot surface and inside the 4 spacer nuts.
 - b. Install 4 large washers with 3/8" x 3/4" bolts to keep intake hopper in place on the boot (Figure 3.25).
 - c. Securely attach the 2 hydraulic hoses to the hydraulic motor. The correct end of hose has the 7/8" thread and o-ring (Figure 3.26).
 - d. Attach tractor coupler to tapered pipe thread on the other end of hose. These couplers are not supplied. When not in use, store hoses in hose holder on power head.

3.13. 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' (0.62 m) with a front-end loader and sling, and install the jack in a vertical position. Secure it with the 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>

3.14. HOPPER LIFT ARM / WINCH

1. Choose either the right or left side; secure hopper lift arm assembly to the mount bracket on top of the lower auger tube with 2 saddle pins and hairpins, see Figure 3.30.

➔ **The MK100 has 2 of these mount brackets:**

- For the standard hopper, use bracket nearest the intake end.
 - For the low profile hopper, use bracket nearest the discharge end.
2. Install winch and winch bracket assembly to auger boot (opposite to side of hopper operation) with a saddle pin and a hairpin.

TO PLACE HOPPER INTO TRANSPORT POSITION:

1. Attach cable hook to the loops inside the hopper.
2. Fully raise hopper with intake side facing towards the main auger as shown.
3. Secure hopper to lift arm with the hopper lock, saddle pins, and hairpins provided.

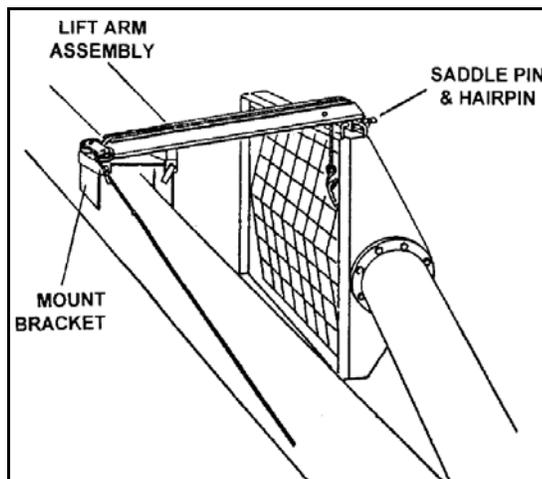


Figure 3.30

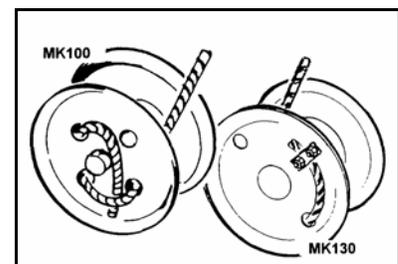


Figure 3.31

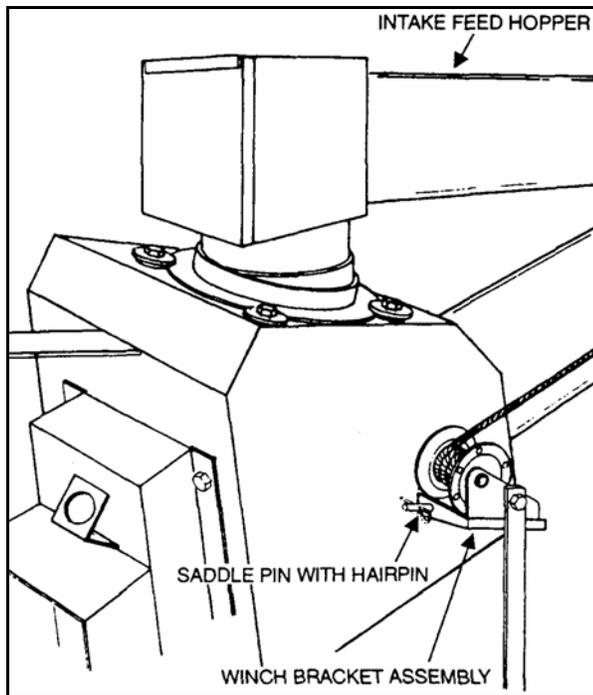


Figure 3.32

NOTE:

Winch (Figure 3.32) is positioned to use hopper on left side of auger (as determined when standing at intake end facing discharge end). To position winch for right side hopper use, the winch with bracket must be attached with drum up, using the saddle pin with a hairpin.

NOTE:

The top "feed" side of hopper must face main auger in transport position.

3.15. AUGER-TO-TRACTOR HOOKUP

Important: Auger must be hooked up to tractor for all operations including transport, raising, placement, and augering grain.

3.15.1. PTO DRIVELINE / DRAWBAR

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

HITCH PIN

When attaching the MK auger to your tractor, you must leave space 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.

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.

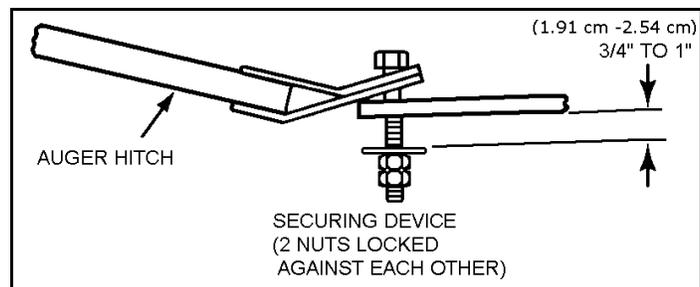


Figure 3.33

Figure 3.34 illustrates the ideal measurements. Most tractors fall into this range.

- Dimension (B) may range from 8" (20.3 cm) to 10" (25.4 cm) with 9" (22.9 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 for potential problems and their solutions.

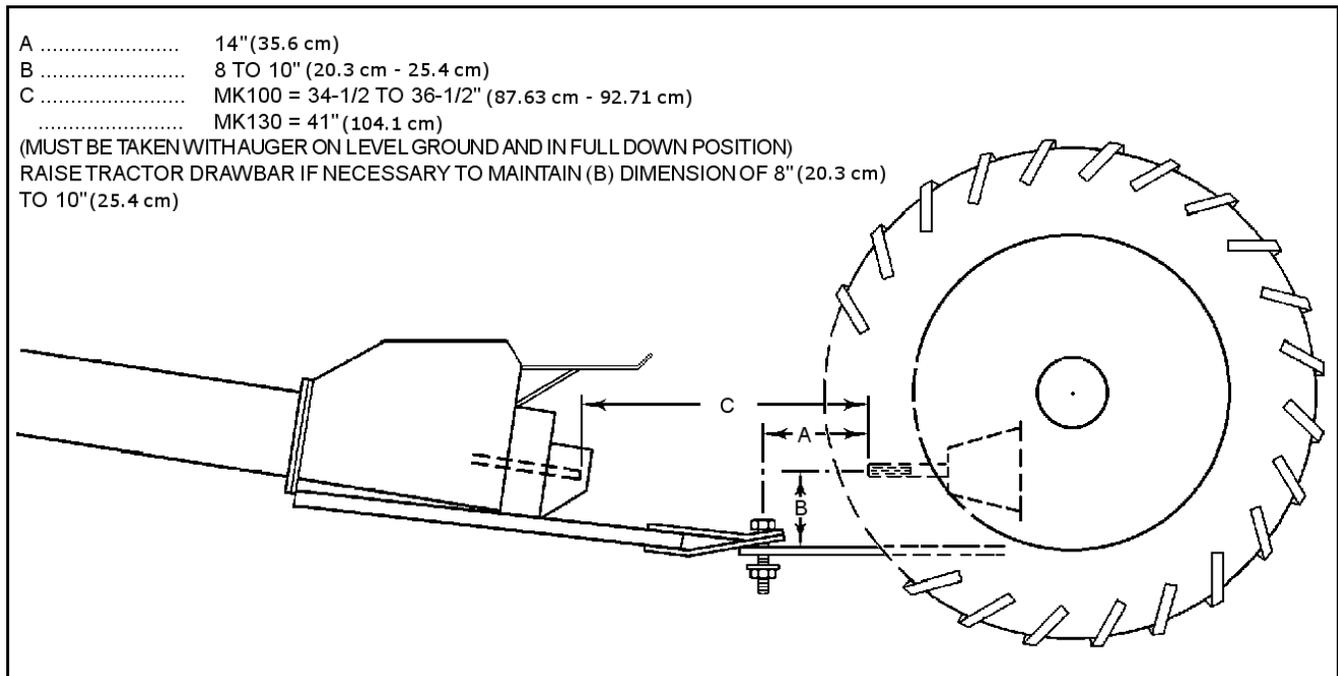


Figure 3.34

MEASUREMENT	PROBLEM	SOLUTION
If (A) is less than 14" (35.6 cm) (C) will be less than the recommended measurement.	The PTO driveline will bottom out when auger is in raised position. This will cause damage to the PTO driveline, the bearing, or the boot housing.	Pull out or lengthen the tractor drawbar as needed to make (C) the correct measurement when the auger is in full down position.
If (A) is more than 14" (35.6 cm) (C) may be more than the recommended measurement.	The PTO driveline will separate from the auger in the lowered position. This will cause damage to equipment and/or injury to personnel.	Shorten distance (C) to the recommended measurement 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.	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. This will cause damage to the PTO driveline, flight shaft, bearing, and boot.	Raise the tractor drawbar until dimension (B) is within the recommended 8" (20.3 cm) to 10" (25.4 cm).

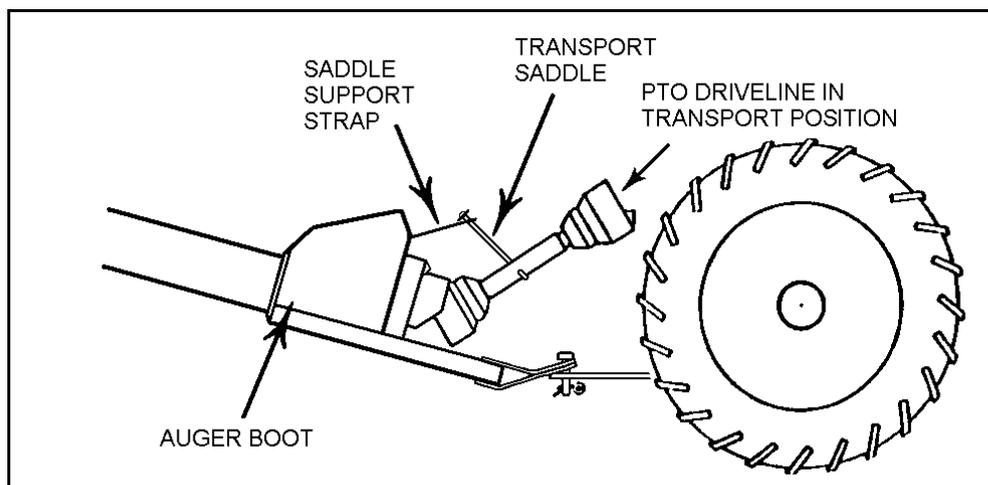


Figure 3.35

Note: *Disconnect PTO driveline from tractor for transport and placement (see Figure 3.35).*

3.15.2. HYDRAULIC HOSE COUPLERS

Check in your tractor manual or with your dealer regarding the correct type of coupler to use on your auger. Make sure hose ends are free of dirt before securing to coupler.

Refer to Section 7. on page 61 for information on the hydraulic system.

3.16. PLASTIC MANUAL HOLDER

Before beginning installation, ensure that all winch / auger lift controls are locked in place and shut down and/or lock out auger.

1. Attach holder to the lower frame arms. Manual holder must be accessible at all times, whether frame is up or down.
2. The manual holder cap must face up (towards the intake end). Attach manual holder with supplied zip ties. Tighten the zip ties, securing the holder in place.

Note: *Where possible, attach the zip ties around a frame brace tab to prevent the manual holder from slipping down the lower frame arms.*

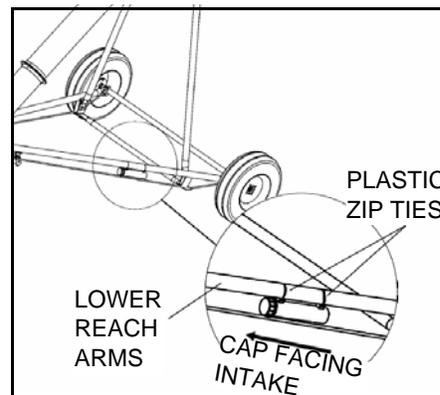


Figure 3.36

3.17. MODEL DECAL PLACEMENT

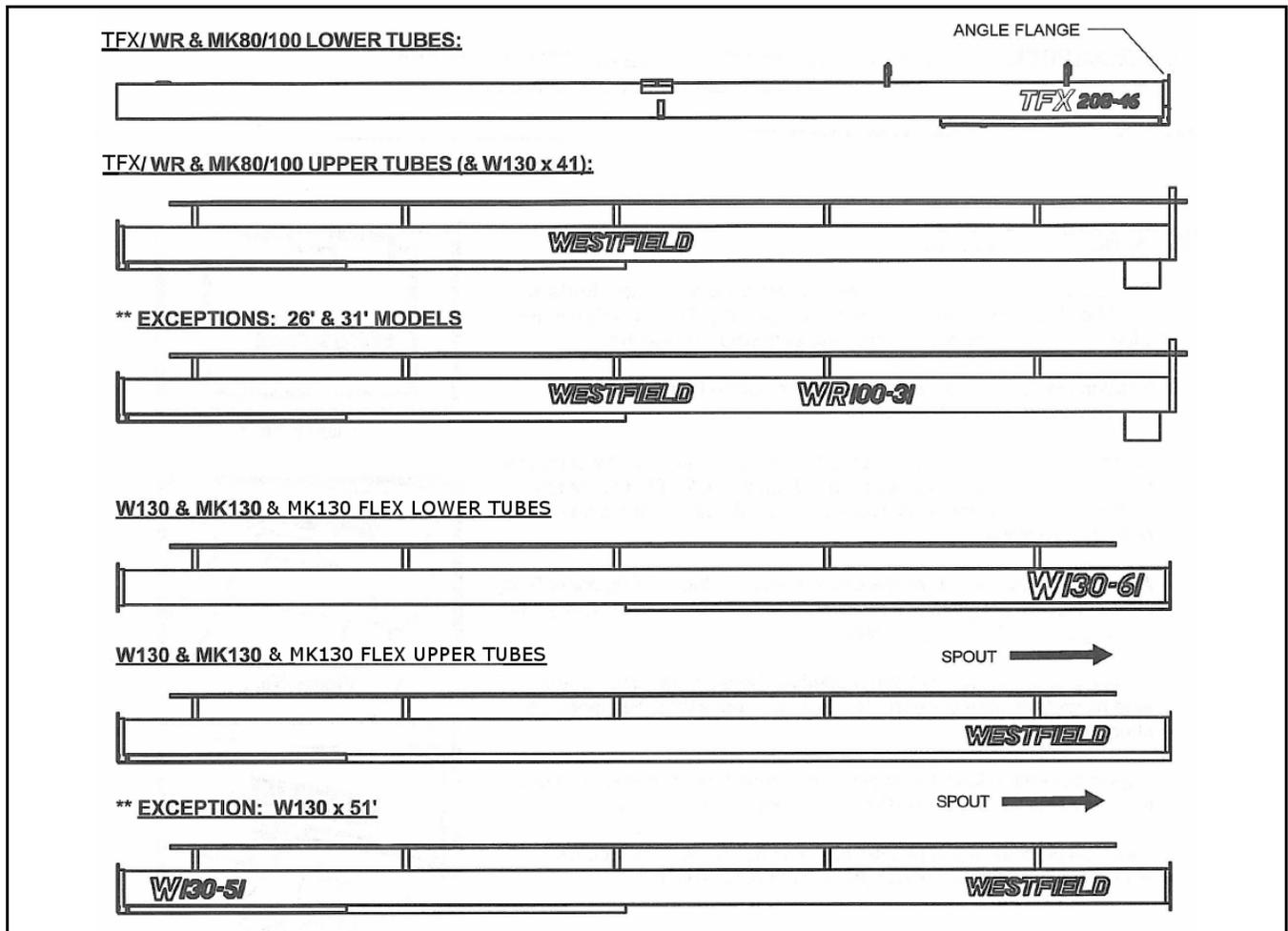


Figure 3.37

Important: Do not cover any existing safety or instruction decals with the model decals.

For most decal placement, follow the figure above. Apply decals to both sides of auger tube.

Lower Tubes: Place decals just below the angle flange, centered on the tube. Decals must be easily seen from the ground when auger assembly is complete. (For 36' augers, the model decal can be located in the center of the lower tube.)

Upper Tubes: Place Westfield decals in the center of the upper tube, where they are easily seen from the ground when auger assembly is complete. For the W130 & MK130 series, the Westfield decal is located at the top end of the upper middle tube.

4. Transport & Placement

Warning: Before continuing, please read the safety information relevant to this section in the safety section of this manual. Failure to follow the safety instructions can result in serious injury, death, or property damage.

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

4.1. TRANSPORT PROCEDURE

1. Place auger in full down position.
 - Disconnect PTO driveline from tractor and secure in transport saddle, see Figure 4.1.
 - Seat lift-assist arm against the track and the track shoe against the trackstop with slight tension on the lift cable, see “Lowering & Completion” on page 55.

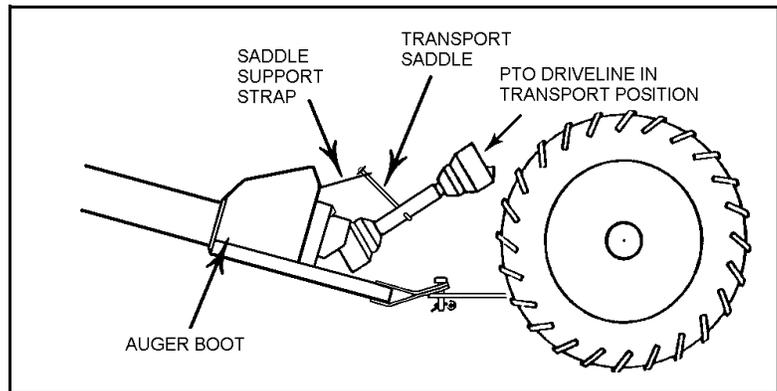


Figure 4.1

NOTICE

If PTO is not disconnected, driveline will bottom out, severely damaging the CV u-joint end lower flight shaft. See manual for maintenance.

2. Position and secure hitch pin and safety chain. Place safety chain through clevis welded to auger hitch tube and bolt together before attaching to tractor. Refer to Figure 4.2.
3. Raise intake feed hopper into transport position and secure with saddle pin and hairpin.

Important: Use a type of hitch pin that will not allow auger to separate from towing vehicle.

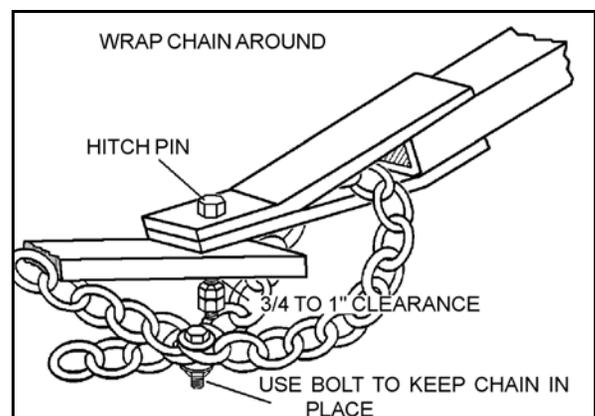


Figure 4.2

4. Raise intake feed hopper into transport position by attaching cable hook to the handle on the side of the hopper, then fully raise hopper with intake side facing toward main auger. Secure hopper to lift arm with the hopper lock, saddle pins, and hairpins provided. See Figure 4.3.

Important: *Intake feed side of hopper must face main auger when in transport, see Figure 4.3.*

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

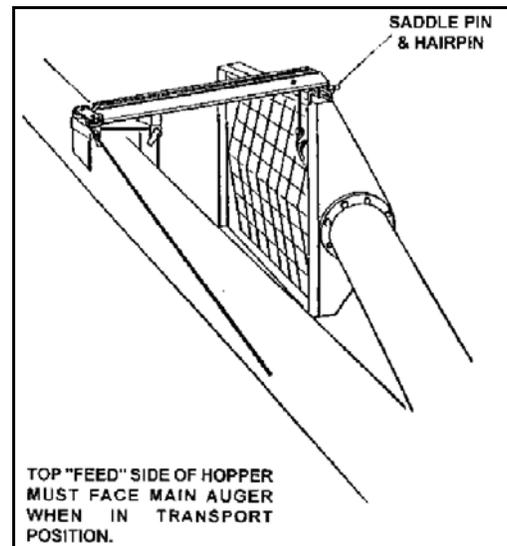


Figure 4.3

NOTICE

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

6. Beware of overhead obstructions and electrical wires and devices. The MK 91' auger has a minimum clearance of 14'6" (4.42 m) and the 111' is at 17'2" (5.25 m).
7. Refer to "Transport & Placement Safety" on page 11 for important safety information before towing.

CAUTION



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

4.2. PLACEMENT PROCEDURE

1. PTO driveline must be disconnected from tractor and secure in transport saddle for placement.

WARNING



Auger must be hooked up to tractor for all operations, including transport, raising, placement, and augering grain.

2. Ensure that towing hitch is in place and secure.

Important: Use a type of hitch pin (see Figure 4.2) that will not allow auger to separate from towing vehicle.

3. Ensure auger is on reasonably level ground when raising, lowering, or positioning.
4. Before raising or positioning auger, make sure that entire area in line of travel, both on the ground and overhead, is clear of any obstructions or electrical wires.

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: 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.

5. Before connecting hose, wipe off quick-connect coupler on auger and tractor.

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

6. Connect hydraulic hoses, ensure connections are tight. Check for leaks, binding, flattening, kinks, or wear.

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

7. If the auger must be raised for positioning:
 - 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	
	Auger must be hooked up to tractor for all operations, including transport, raising, placement, and augering grain.

8. Connect hydraulic hoses, ensure connections are tight. Check for leaks, binding, flattening, kinks, or wear.

Important: The auger features a hydraulic lift system that only needs a small amount of hydraulic oil to raise the auger. This is done by pumping oil into and out of the upper chamber of the cylinder as the auger is raised and lowered. For this system to work, **the tractor must be running** and the down lever must be fully engaged as auger is lowered.

Important: *The hydraulic cylinders are shipped without oil and must be charged with oil before auger is put into operation. See the "How to Charge the Lift System" on page 61 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 the tractor system will allow the auger to lower inadvertently, damaging equipment and/or causing personal injury.

➔ **For MK augers with hydraulic drive intake hoppers:** *If your tractor is equipped with a single hydraulic system, relieve pressure and disconnect lift hose to connect hydraulic motor hoses.*

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

9. Move the auger into working position slowly. Do not unhitch and attempt to move auger by hand.

WARNING	
	Never attempt to increase height of auger by positioning wheels on lumber, blocks, or by any other means. To do so will result in damage to equipment and/or serious injury.

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

10. 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.
11. When operating auger in the raised position, rest the discharge end lightly on the bin roof, or tie to bin to prevent wind from toppling auger.

12. Fully lower hopper to the ground and remove lift cable from the hopper.
13. See Section “Lowering & Completion” on page 55 for correct lowering procedure.

AXLE EXTENSION PROCEDURE:

Place auger on level ground before attempting to extend or retract the axle extensions. **Auger must be attached to tractor at all times.**

Once the auger is located you may begin the axle extension process.

14. Using the jack supplied, insert it into one of the jack lugs located on one end of the axle (Figure 4.4). See Figure A for jacking point. Jack must be secured to jack lug using pin (attached to jack).
15. 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.

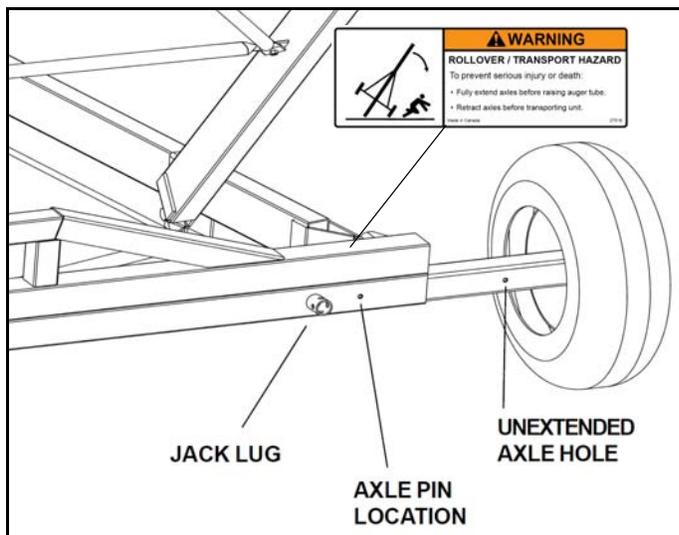


Figure 4.4

16. Remove the axle pin from the axle and slide the axle outwards 16” until the second set of holes line up (Figure 4.4). Reinsert the pin and secure with snap pin. Lower the jack.

WARNING	
	<p>Do not raise the auger unless the axles are in the extended position.</p> <p>Do not transport the auger unless the axles are in the retracted position.</p>

17. Repeat the process on the other side of the axle to extend the other side.

Note: Use the same procedure, in reverse, to retract the axle.

5. Operation

Warning: Before continuing, please read the safety information relevant to this section in the safety section of this manual. Failure to follow the safety instructions can result in serious injury, death, or property damage.

5.1. PRE-OPERATIONAL CHECKLIST

Before operating auger each time, the operator must confirm the following:

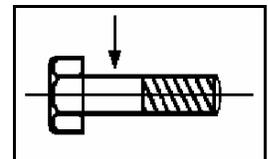
- All fasteners are secure as per assembly instructions.
- Cable clamps are secure.
- Lift cable is not frayed or damaged.
- Lift cable is properly seated in cable sheaves.
- Hydraulic hoses are in good condition.
- Hydraulic connections are in place and secure.
- PTO driveline is connected and secure.
- PTO driveline shield rotates freely.
- Clean-out and service doors and access covers are in place and secure and safety discharge door is closed.
- All safety guards are in place and secure.
- Tube alignment is reasonably straight.
- Intake area and discharge spout are free of obstructions.
- Auger wheels are chocked, and if necessary, tractor wheels are chocked or the parking brake has been engaged.
- Proper maintenance has been performed.
- Tractor and auger are in line or as close to being in line as possible.
- Ensure that the axles are extended during operation (Section 4.2.).
- Know how to safely shut down auger in an emergency.

5.2. AUGER DRIVE & LOCKOUT

Note: *If shearbolt in the PTO driveline fails, shut down and lock out tractor to replace bolt.*

The MK100 uses a 5/16" x 1" GR8 bolt through the shank shear. Part #17126 includes nut.

The MK130 uses a 3/8" x 1" GR8 bolt through the shank shear. Part #18454 includes nut.



Drive Type	Before Operation	Lockout
PTO Driveline	<p>Before starting, ensure</p> <ul style="list-style-type: none"> • PTO driveline is securely attached to the tractor and jackshaft • tractor park brake in engaged and/or wheels are chocked • you are not exceeding the maximum operating length of 40-5/8" of the PTO driveline • PTO drive on the tractor is in the off position 	<p>Shut off tractor's engine and remove key or coil wire from tractor.</p> <ul style="list-style-type: none"> • If removing key is impossible, remove PTO driveline from tractor.

5.3. OPERATING PROCEDURE

5.3.1. START-UP AND BREAK IN

CAUTION	
	<p>Auger must be hooked up to tractor for all operations, including transport, raising, placement, and augering of grain.</p>

Note: *The angle drive on the standard intake hopper requires a break-in period of at least 2 or 3 loads of grain.*

1. Ensure auger is properly placed and complete the pre-operational checklist. If everything is satisfactory, prepare for one hour of operation at half speed.
2. Ensure that the intake hopper is correctly positioned.
3. Ensure that the PTO drive on the tractor is in the OFF position.

Important: *When starting auger for the first time, be prepared for an emergency shutdown in case of excessive vibration or noise. Auger may run rough until tube is polished.*

4. Start tractor and idle at low rpm. Slowly engage PTO drive and hydraulics (on units with hydraulic drive hoppers).
5. Gradually begin feeding grain into hopper, bringing auger speed up to about 300 rpm. Do not overfeed the hopper on initial loads; keep feed of grain at about half capacity.
6. After auger tube is polished and runs fairly smoothly, proceed to unload at full speed of 540 rpm.
7. After initial run, slow auger down until empty of grain and then stop.
8. Lock out tractor and conduct a complete inspection of auger following the pre-operational checklist.

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

NOTICE

Running auger empty at high speeds results in excessive wear. Do not exceed 540 rpm.

Keep operation of empty auger to a minimum, as this results in excessive wear.

After Break-in: Maintain auger speed of 300 to 540 rpm under normal use for maximum efficiency and to reduce chance of plugging.

Once auger is broken in, the checklist should be a part of the daily routine before operating auger.

5.3.2. OPERATING WITH A FULL LOAD

1. When operating the auger, always work with a second person in a position to monitor the operation and initiate a shutdown in case of emergency.
2. Monitor the auger during operation for abnormal noises or vibrations.
3. Shut off all power before making adjustments, servicing, or clearing the machine.
4. If grain overflows through safety discharge door, then the auger is loaded beyond its capacity; reduce volume of feed to intake hopper. Remember, auger capacity will decrease at steeper angles of operation.
5. Engage and disengage PTO drive with tractor engine at idle speed. This will reduce stress on drive components and on shear bolts.
6. Do not exceed 540 rpm on the PTO.

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.

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...

- Get a larger spreader, if available.
- Remove the spreader.
- Make sure spreader is turned on.
- Center auger spout on 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.

5.3.3. SHUTDOWN

NORMAL SHUTDOWN:

1. Near the end of a load, decrease auger speed until all grain is clear of machine.
2. When auger is clear of grain, disengage PTO drive (and hydraulics on units with hydraulic drive hopper).
3. Shut down and lock out tractor.

EMERGENCY SHUTDOWN / FULL-TUBE RESTART:

1. If cleanout covers or safety doors have been opened or removed, close or replace them before restarting the unit.
2. If the auger is shut down for an emergency, lock out tractor before correcting the problem.
 - If the problem is plugging, clear as much of the grain as possible using a piece of wood, wet/dry vac, or other tool before restarting auger. **Do not reach in and use your hands** even if the tractor has been locked out.
3. If auger tube is full of grain, do not restart at full speed. Engage PTO at low rpm, gradually increasing power until normal operating speed is reached.

NOTICE

Starting the auger when there is grain blockage will result in damage.

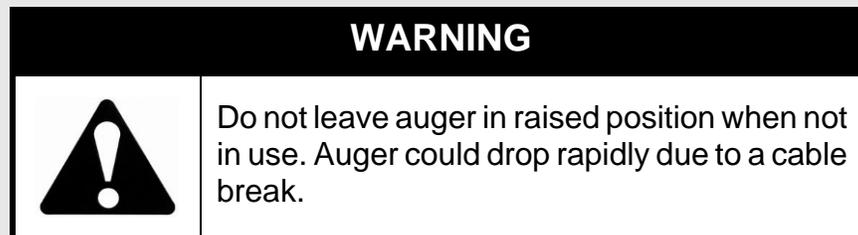
5.3.4. LOWERING & COMPLETION

After operation:

1. Clean entire work area.
2. Remove all supports and chocks.
3. Move auger out of working position and lower fully (see shaded box that follows for lowering procedure).
4. Move auger to the next work area or to a storage area and then clean out.

LOWERING

1. Raise the intake feed hopper slightly. Do not attempt to lift by hand.
 - Never operate auger with intake feed hopper in transport position. This will damage the universal joint.
2. Reconnect hose coupler to tractor, if disconnected.
3. Disconnect PTO driveline from tractor before lowering.
4. Ensure area beneath auger is clear.
5. Open hose valve.
6. Open tractor valve, feathering to prevent too rapid a descent.
 - The tractor must be running while the auger is being lowered.
 - Once valves are open, auger lowers by gravity. As the auger nears the full down position, the rate of descent increases. Do not operate with tractor valve fully open.



7. After auger is fully lowered, raise the intake feed hopper into full transport position. Refer to "Transport Procedure" on page 45 step 3.
 - Never operate auger with intake feed hopper in transport position. This will damage the universal joint.
5. Clean out auger.
 - a. Shut off tractor engine and lock out power.
 - b. If necessary, open cleanout cover on the boot and manually clean out grain with a piece of wood, vacuum cleaner, or other tool. Do not use hands.
 - c. Replace cleanout cover.
 - d. Winch intake feed hopper into transport position and clean out remaining grain using a piece of wood or other tool.
6. Prepare for transport and placement or storage (see appropriate chapters for more information).

6. Maintenance & Storage

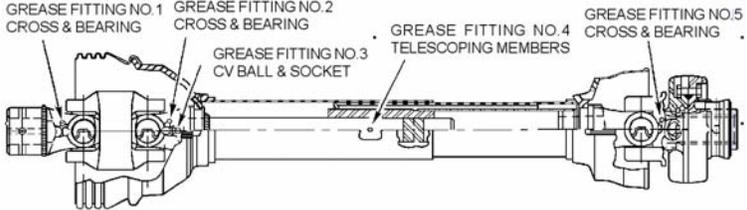
Warning: Before continuing, please read the safety information relevant to this section in the safety section of this manual. Failure to follow the safety instructions can result in serious injury, death, or property damage.

Proper maintenance habits on the MK auger mean a longer life, better efficiency, and safer operation.

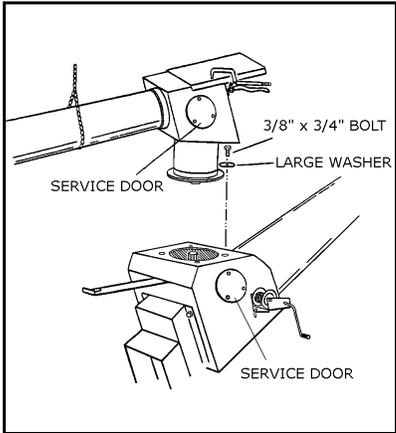
6.1. GENERAL MAINTENANCE PROCEDURES

Please follow the guidelines below.

Area	Maintenances Procedure	Frequency
General	While auger is in use, observe the “Pre-Operational Checklist” on page 51.	Daily
General	Check all operating, lifting, and transport components. Replace damaged or worn parts before using auger. For replacement instructions, see “Assembly” on page 17.	Regularly
Intake Hopper Angle Drive	Lubricate the angle drive with high-temperature grease. If the angle drive in hopper runs hot AFTER the recommended break-in period, this may mean the angle drive is not properly aligned. To align , lock out power, loosen the bolts securing the angle drive, and then adjust or shim up until the flight can be easily rotated by hand.	After every 8 hours of use
Hydraulic Hose	Using cardboard as a backdrop, check hose and hose coupler for leaks, wear, and damage. Replace if necessary. See “Hydraulic Safety” on page 11. Replacement hose and hose ends must have a minimum strength of 2750 psi (18,961 kPa) working pressure.	Frequently
Lift Cable	Check and replace if frayed or damaged. Make sure cable clamps are secure.	Periodically
Cable Sheaves	Oil sheave pins on lift cylinder.	Twice/year
Truss Cables	Adjust to keep auger tube reasonably straight.	As necessary
Wheel Hubs	Repack with lithium-based grease.	Every 2–3 years
Tire Pressure	Check with a pressure gauge. Pressure should be maintained according to sidewall recommendations.	Monthly, or if it seems low
Hopper Lift Cable	Check and replace if frayed or damaged.	Periodically
Hopper Lift Cable Pulleys	Oil lightly for easier raising of hopper.	Several times a year

Area	Maintenances Procedure	Frequency															
Winch	Keep a film of grease on gears.	Regularly															
	Oil the bushings, drum shaft, and ratchet. Take care not to get oil or grease on brake discs. Service winch with auger in fully lowered position and cable slack.	Occasionally															
	Replace brake discs if less than 1/16" (1.6 mm) thick.	As required															
	Service winch with auger in fully lowered position and cable slack.	Regularly															
PTO Driveline	<p>Lubricate all 5 grease fittings ("Mechanical Drive System:" on page 59) with good quality Lithium Soap Base E.P. Grease meeting NLGI #2 specifications and containing no more than 1% molybdenum disulfide (example: Shell Super Duty).</p> <p>Grease fittings No. 2 and 3 can be reached through hole in implement end portion of the driveline guard.</p> <p>Grease fitting No. 4 can be reached through hole in center portion of the driveline guard.</p>  <table border="1" data-bbox="397 1024 1226 1245"> <thead> <tr> <th colspan="3">LUBE RECOMMENDATIONS^a</th> </tr> <tr> <th>INTERVAL</th> <th>LOCATION</th> <th>AMOUNT</th> </tr> </thead> <tbody> <tr> <td>8 HRS.**</td> <td>CROSS & BEARING</td> <td>1 PUMP</td> </tr> <tr> <td>8 HRS.</td> <td>TELESCOPING MEMBERS</td> <td>4-8 PUMPS</td> </tr> <tr> <td>8 HRS.**</td> <td>CV BALL & SOCKET</td> <td>1-2 PUMPS</td> </tr> </tbody> </table> <p>a. **Constant angle applications must have lube interval of 4 hours.</p> <div style="border: 2px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center; font-weight: bold; font-size: 1.2em;">NOTICE</p> <p>Replacement parts are not lubricated!</p> <p>Replacement parts must be lubricated at time of assembly. Use amount listed above per location, then follow lube recommendations outlined above for lubing intervals.</p> </div>	LUBE RECOMMENDATIONS ^a			INTERVAL	LOCATION	AMOUNT	8 HRS.**	CROSS & BEARING	1 PUMP	8 HRS.	TELESCOPING MEMBERS	4-8 PUMPS	8 HRS.**	CV BALL & SOCKET	1-2 PUMPS	After the first 16–24 hours and then regularly afterward
LUBE RECOMMENDATIONS ^a																	
INTERVAL	LOCATION	AMOUNT															
8 HRS.**	CROSS & BEARING	1 PUMP															
8 HRS.	TELESCOPING MEMBERS	4-8 PUMPS															
8 HRS.**	CV BALL & SOCKET	1-2 PUMPS															
General	Ensure that the set screws and shear-bolt are tight.	Regularly															
Optional Lower Profile Hopper	Loosen the 2 nuts securing the service door. Open door, then grease the 4 bushings and the 2 u-joints. Close door, then securely tighten the two 3/8" nuts.	Frequently															
	Check and adjust the hopper drive chain and lubricate the hopper drive chain. To adjust chain, loosen the bearing bolts and adjust chain tension to about 1/4" deflection. Replace guard.	Occasionally															

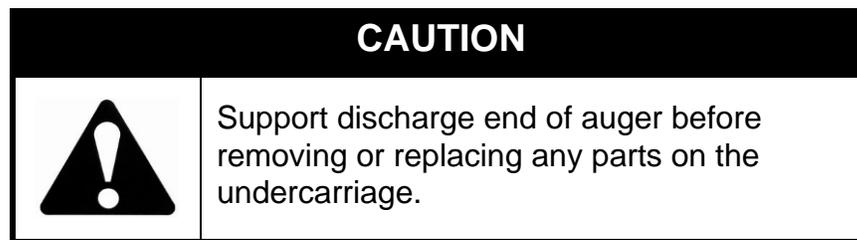
6.2. MECHANICAL DRIVE SYSTEM:

Area	Maintenance Procedures	Frequency
Bottom Chain Drive Replace sprocket guard after maintenance!	Keep drive chain tension adjusted to about 1/4" (0.64 cm) deflection by loosening the four bolts on lower bearing, then re-tighten.	Regularly
	Oil chain often enough to keep film of oil on it (this can be done through the hole in the side of the sprocket guard).	Frequently
Universal Joint	Flip up safety discharge door and lubricate grease fitting in the u-joint. Check set screws and re-tighten if necessary.	After every 8 hours of operation
	Check set screws and re-tighten if necessary.	Regularly
Gearboxes	Check oil levels in both gearboxes. They should be half full of EP90 lube oil. Fill as needed; you may need a flexible funnel. If you notice excessive loss of oil, check more frequently and repair problem. Each gearbox requires 355 mL or 12-1/2 fl oz. Do not overfill. <i>Upper Gearbox:</i> Flip up safety discharge door or open round service door to service gearbox. <i>Lower Gearbox:</i> Open round service door and fill.	At least once a year, depending on use
	<p>For more extensive servicing or repairs, remove hopper from boot assembly by removing the 3/8" x 3/4" bolts and large washers. Lift hopper with front-end loader or other secure method.</p> <p>Check and re-tighten set screws and connecting bolts. Clean and lightly grease the splined shaft. Reattach hopper to boot assembly as per instructions in Section 3.11. or 3.12.</p> <div data-bbox="867 978 1263 1411" style="border: 1px solid black; padding: 5px;">  </div> <div data-bbox="399 1436 1263 1671" style="border: 1px solid black; padding: 10px;"> <p style="text-align: center;">WARNING</p> <div style="display: flex; align-items: center;">  <p>Do not operate auger with intake hopper not in place. Replace and secure service doors before operating auger.</p> </div> </div>	As required

6.3. STORAGE

TO PROTECT AUGER IN STORAGE DURING THE OFF-SEASON:

1. Lower the auger to full down position with slight tension on the cable.
2. Lubricate all grease fittings according to the maintenance procedure.
3. Inspect auger for damage and note any repairs required. Order replacement parts from your dealer.
4. Check tire pressure and inflate if necessary. See tire sidewall for recommendations.
5. Clean and re-lubricate spline on PTO driveline. Cover PTO driveline with plastic bag to protect it from the weather and place in the transport saddle.
6. Tow auger to storage area. Park and chock wheels.



TO PREPARE AUGER FOR USE AFTER STORAGE:

1. Check tire pressure and inflate if necessary. See tire sidewall for recommendations.
2. Tow auger to work site.
3. Remove cover from spline of PTO driveline and re-lubricate.
4. Check oil level in gearbox and refill if necessary (half full only).
5. Replace any damaged parts and decals.
6. Conduct general maintenance before using auger.
7. Before raising auger after storage, make certain cable is in good condition, replacing it if frayed or damaged. Also make sure cable is properly seated in roller track and that cable clamps are secure.

Note: *Use only genuine Westfield replacement parts or equivalent. Replacement parts such as intake guards, pulley guards, PTO driveline shields, winches and lift cables Must meet ASAE standards or serious injury may result. Use of unauthorized parts will void warranty. If in doubt, contact Westfield or your Westfield dealer. Do not modify any auger components.*

7. Appendix

7.1. LIFT CYLINDER HYDRAULICS

The MK 91'/111' auger is elevated with 2, specially designed, single-acting hydraulic cylinders and cables. The following table lists the psi required to raise specific auger sizes (as determined by Westfield testing).

These tests used a hydraulic pressure gauge (4000 psi maximum rating) and are solely intended to be used as a guide. The psi requirements for specific augers may vary slightly. Should your auger require a significantly higher psi to raise, contact either your dealer or Westfield Industries.

AUGER	SIZE	PSI	kPa
MK100	10" x 91'	1800	12,409
MK130 Plus	13" x 91'	1950	13,443
MK130 Plus	13" x 111'	2000	13,790

The approximate quantity of hydraulic fluid required to raise auger is 4 liters.

7.2. HOW TO CHARGE THE LIFT SYSTEM

Important: *The hydraulic cylinders are shipped without oil and must be charged with oil before auger is put into operation.*

The cylinder will require about 19 L (5 US gallons). Check your tractor's operation manual for correct oil type and specifications.

Before charging cylinders, ensure that:

- Tractor is correctly hooked up.
- Hydraulic hoses are connected.
- Shut-off valve is open.
- Auger is parked on level ground.

Note: *Do not raise auger in high winds.*

1. Start with the tractor's hydraulic oil level in a normal operating range.
2. Add about 4 L (1 US gallon) to the tractor's hydraulic oil reservoir.
3. Start tractor, then raise auger until the lift-assist is fully extended and track shoe has moved about 1' from trackstop.
4. **With tractor still running**, lower auger to full down position.
5. Repeat steps 2. 3. and 4. until about 19 L (5 US gallons) have been added and tractor hydraulic oil level in the reservoir remains within the operating range.

7.3. INTAKE FEED HOPPER HYDRAULICS

➔ THIS SECTION ONLY APPLIES TO MK AUGERS WITH HYDRAULIC DRIVE INTAKE HOPPERS!

Intake feed hopper speed is regulated by the volume and pressure generated by the hydraulic system of the tractor. When tractor engine rpm is increased, the speed of the flighting in the hopper is increased.

The speed of the main auger will also increase, effectively preventing the overloading of the main auger under normal conditions. If the intake feed hopper is overloading the main auger, decrease the amount of grain flow from your truck or trailer.

For proper intake feed hopper function, the hydraulic motor must receive adequate gallons per minute (gpm) at the proper pressure (psi). The minimum volumes and pressures are:

- The 10" (25.4 cm) intake feed hopper must receive a minimum of 10 gpm (45.5 Lpm) at 1500 psi (10,342 kPa).

Note: *The minimum requirements listed are essential for efficient auger operation. Additional gallons per minute will increase the speed of the hydraulic motor (flighting rpm) while a higher pressure will create additional torque to maintain motor speed under load.*

7.3.1. HYDRAULIC MOTOR NOTES

Do not exceed a constant back pressure of 300 psi (2068 kPa) in the hydraulic motor.

- The hydraulic system on some tractors is designed so that the return flow of hydraulic fluid from the hydraulic motor to the tractor is restricted. This creates excessive back pressure inside the hydraulic motor and deprives it of an adequate flow of hydraulic fluid. The result will be **seal failure, overheating, rough running, and loss of power.**

To date, these problems occur primarily with certain John Deere tractors. Kits to correct the problem are available from your John Deere dealer (Figure 7.1).

Important: *John Deere Series 50 tractors with a single hydraulic lever will require this kit. Series 50 tractors with double hydraulic levers have the kit pre-installed.*

Note: *The problem discussed in this section may exist on tractors other than the John Deere. Should you experience this situation, contact your tractor dealer or Westfield Industries.*

A remote cylinder control valve oil return kit, which returns oil to the oil filter cover, is available for more efficient use of tractor hydraulics. Order AR71945 Remote Cylinder Control Valve Oil Return kit and AT30197 Ported Cover for transmission filter.

IMPORTANT

A steel-encased filter element must be used with the AT30197 Ported Filter Cover.

W8058

INFORMATION COURTESY JOHN DEERE MANUAL "PREPARING THE TRACTOR."

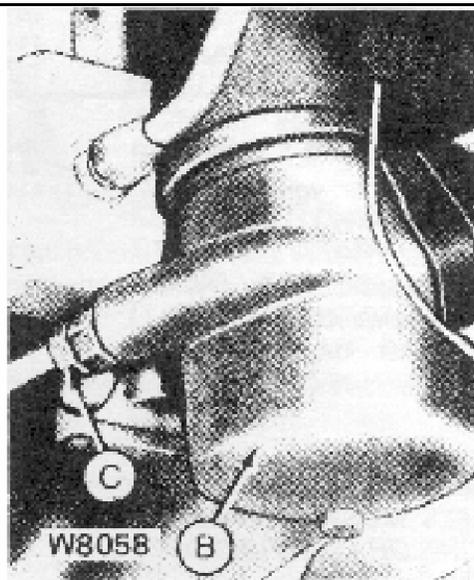


Figure 7.1

8. Troubleshooting

Problem	Possible Cause	Remedy
<p>Excessive noise or vibration.</p> <p>*Remember to follow proper break-in procedures—auger may run rough until tube is polished. If noise is extreme from outset or continues after several loads of grain are fed, continue with troubleshooting below.</p>	<p>Determine if noise originates in main or swing away section of auger. Disconnecting the chain from the sprocket drive can assist in narrowing down the source of the problem. If noise <i>disappears</i> when chain is disconnected, problem is likely in the swing away auger.</p>	
	<p>Hopper flight support bearings are dry or have failed.</p>	<p>Check for flight operation by rotating by hand with sprocket chain disconnected and tractor shut off. Grease or replace as necessary.</p>
	<p>Angle drive is misaligned or has failed (standard hopper).</p>	<p>Refer to appropriate troubleshooting section.</p>
	<p>Universal joint not greased or is faulty (low profile hopper).</p>	<p>Grease or replace as necessary.</p>
	<p>Faulty upper gearbox.</p>	<p>Refer to appropriate troubleshooting section.</p>
	<p>Obstruction in tube.</p>	<p>Visually inspect for cloth or trash wrapped around flighting, or a buildup from oily crops.</p>
	<p>Bent flight stub on swing flighting.</p>	<p>Remove flighting and roll against flat surface to determine if stub is true.</p>
	<p>If noise <i>continues</i> when chain is disconnected, check auger or PTO.</p>	
	<p>CV PTO failure.</p>	<p>Refer to appropriate troubleshooting section.</p>
	<p>Incorrectly adjusted truss cables.</p>	<p>Support end of auger and adjust cables so auger is flat or slightly curved upwards.</p>
	<p>Flighting has peeled back due to plugging.</p>	<p>Inspect spout end of auger for flight condition. Remove and replace flight sections as necessary.</p>
	<p>Faulty lower gearbox.</p>	<p>Refer to appropriate troubleshooting section.</p>
	<p>Lower bearing dry or has failed.</p>	<p>Refer to appropriate troubleshooting section.</p>
	<p>Bent flighting section.</p>	<p>Support auger and remove all flight sections. Check for straightness of flight stubs by rolling across flat section of concrete floor. Straighten stub or replace as necessary. Take care not to bend flighting when reinstalling.</p>
	<p>Obstruction in tube.</p>	<p>Visually inspect for cloth or trash wrapped around flighting, or a buildup of gum from oily crops such as flax or canola.</p>
<p>High spot at flighting joints.</p>	<p>Check with straight edge. If necessary, grind down until even.</p>	

Problem	Possible Cause	Remedy
CV PTO failure.	Try to determine the operation and maintenance habits of the owner in order to avoid multiple repairs and unnecessary frustration.	
	Broken CV ball.	Most frequently occurs when PTO driveline is not disconnected during transport or setup of the auger. Remind all operators to disconnect PTO driveline except when at the bin, in operation.
	Excessive PTO angle.	Check Assembly section for correct dimensions (auger input and tractor PTO output). It may be necessary to raise tractor drawbar to maintain correct dimensions. Extreme side-to-side angles that are necessary because of the bin and tractor placement may be corrected with a right angle drive kit.
	Early series cross-link or non-Westfield part used.	Ensure new "E" series cross links and genuine Westfield replacement parts are used.
	Telescoping part of PTO shaft bottoming out.	Pull out or lengthen tractor drawbar to maintain minimum clearance. Refer to Assembly section.
Bearings not receiving adequate grease.	Check Maintenance section—CV PTO drivelines should be greased as part of daily maintenance procedures.	
Premature gearbox failure.	While all MK gearboxes come from the factory filled with oil, it should be part of the setup procedure to double check that a half full level is maintained.	
	Failed seal.	Check gearbox levels on a regular basis and only fill with EP90 oil.
	1000 rpm tractor input being used.	Use 540 rpm tractor or install speed reducer.
Angle drive fails or runs hot.	Angle drives require 2–3 loads to break in properly. It is normal for the angle drive to run warm to the touch during operation.	
	Bearings not receiving adequate grease.	Grease frequently, especially during break-in period.
	Misaligned angle drive.	Adjust by shimming angle drive until flighting turns freely by hand. See Assembly section for details.
	Swing tube flight stub bent.	Check for straightness of flight stubs by rolling across flat concrete section. Straighten stub or replace as necessary. Maintain correct angle when re-connecting hopper and swing tube.

Problem	Possible Cause	Remedy
Shear bolts fail repeatedly.	Incorrect shear bolt type.	Replace with correct part number. Westfield shear bolts are specifically designed to provide correct driveline protection.
	Shear bolt hole worn out-of-round.	Frequent use of an incorrect shear bolt size can wear the mounting hole creating a “scissor effect,” which will require replacement of the affected parts.
	Corn spreaders in bin unable to keep up with auger output.	Slow down auger or remove corn spreaders.
	Flighting “peeled back” as a result of plugging.	Occurs when bin has overfilled or corn spreaders restrict end of discharge. Inspect flighting at discharge end. If necessary, replace flighting.
	Driveline failures (bearing, gearbox, etc.).	Refer to appropriate troubleshooting section.
Lower bearings repeatedly fail.	Bearings not receiving adequate grease.	See Maintenance section for correct greasing intervals.
	Bearing load not evenly distributed between upper and lower bearings.	Use correct sequence of tightening lock collars when setting up or replacing bearings. On MK130 Plus models, adjust bearing load using threaded upper flight stub.
	Insufficient CV PTO shaft clearance.	Maintain correct tractor hitch dimensions as per manual.
	Failure of bearing seals.	Wet grain or fertilizer will damage seals if left in boot over time. Clean out boot before storing auger.
	Bent lower flight stub.	Check for straightness of flight stub by rolling across flat concrete section. Straighten stub or replace as necessary.
Premature wear on auger tubes.	Auger being at low capacity or empty for extended periods of time.	Frequently occurs on farms using grain wagons. Auger should not be left unattended when filling bins. Depending on application, a belt conveyor may be more appropriate.
	Bent flighting.	Refer to appropriate troubleshooting section.
	Flighting allowed to wear beyond normal point of replacement.	When flighting becomes razor-thin at intake, replacement is critical. Since flight material is double thickness at welded lap joints, high spots on flight occur and can accelerate spot tube wear.
Hydraulic lift settles out over time.	Shut off ball valve is open.	Oil is leaking through tractor calve. Auger ball valve should be closed whenever set up at a bin.
	Shut off ball valve is leaking.	Disconnect hose from tractor and check for leakage.
	Lift cylinder cup seal leaking or cylinder barrel scored or pitted.	See if oil leaks from cylinder breather hole (single action cylinders). Remove and replace cup seal and hone cylinder or replace as needed.

WARRANTY

Westfield Industries Ltd. warrants products of its manufacture against defects in materials or workmanship under normal and reasonable use for a period of one year after date of delivery to the original purchaser.

Our obligation under this warranty is limited to repairing, replacing, or refunding defective part or parts which shall be returned to a distributor or a dealer of our Company, or to our factory, with transportation charges prepaid. This warranty does not obligate Westfield Industries Ltd. to bear the cost of labor in replacing defective parts. Any defects must be reported to the Company before the end of the one year period.

This warranty shall not apply to equipment which has been altered, improperly assembled, improperly maintained, or improperly repaired so as to adversely affect its performance. Westfield Industries Ltd. makes no express warranty of any character with respect to parts not of its manufacture.

The foregoing is in lieu of all other warranties, expressed or implied, including any warranties that extend beyond the description of the product, and the IMPLIED WARRANTY of MERCHANTABILITY is expressly excluded.

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