



GRAIN AUGER

WR 60/80 X 26' - 41' MD MODELS ASSEMBLY & OPERATION MANUAL



WR MD Augers covered in this manual:

60-26, 60-31, 60-36, 60-41

80-26, 80-31, 80-36, 80-41

ORIGINAL INSTRUCTIONS



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: 30252 R2

Revised: 3/8/15



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

[illegible]

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



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1. Introduction

Thank you for purchasing Westfield Grain Auger. This equipment will allow safe and efficient operation when you read and follow all of the instructions contained in this manual. With proper care, your Grain Auger will provide you with many years of trouble-free operation.

Keep this manual handy for frequent reference and to review with new personnel. A sign-off form is provided on the inside front cover for your convenience. If any information in this manual is not understood or if you need additional information, please contact your local distributor or dealer for assistance.

This manual should be regarded as part of the equipment. Suppliers of both new and second-hand equipment are advised to retain documentary evidence that this manual was provided with the equipment.



Serial Number:	
If one long tube, serial number is found on the right, in the middle of the tube. If more than one tube, number is on the right, at the top of the lower tube.	

1.1. Equipment Purpose

1.1.1. General Description

Your grain auger is designed to transport dry, free-flowing grains. The auger must be operated with all guards installed and can be used in any non-extreme weather. Although the auger is designed for on-farm use, it can be transported on public roadways with the addition of a Westfield lighting and marking kit.

1.1.2. Intended Use

This equipment is designed solely for use in customary agricultural or similar operations. Use in any other way is considered as contrary to the intended use. Compliance with and strict adherence to the conditions of operation and maintenance as specified by the manufacturer, also constitute essential elements of the intended use.

This equipment should be operated, maintained, serviced, and repaired only by persons who are familiar with its particular characteristics and who are acquainted with the relevant safety procedures.

Accident prevention regulations and all other generally recognized regulations on safety and occupational medicine must be observed at all times.

Any modifications carried out to this equipment may relieve the manufacturer of liability for any resulting damage or injury.

1.1.3. Misuse

When operating or maintaining the auger, **never**:

- auger material other than dry, free-flowing grains
- enter a grain bin or truck while loading or unloading grain with the auger
- operate the auger empty for extended periods of time
- overfeed or overload the auger
- change the size of the electric motor or pulleys to alter the auger speed
- modify the equipment
- use the auger as a hoist

2. Safety

2.1. Safety Alert Symbol and Signal Words



This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury or death, carefully read the message that follows, and inform others.

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



DANGER Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death.



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



CAUTION Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.



NOTICE Indicates a potentially hazardous situation that, if not avoided, may result in property damage.

2.2. Basic Operator Safety, Responsibilities, & Qualifications



The safety information found throughout this complete Safety Section of the manual applies to all safety practices. Additional instructions specific to a certain safety practice (such as Operation Safety), can be found in the appropriate section.

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. All accidents can be avoided.

- It is the equipment owner, operator, and maintenance personnel's responsibility to read and understand **ALL** safety instructions, safety decals, and manuals and follow them when assembling, operating, or maintaining the equipment.
- 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.
- This equipment is not intended to be used by children.
- Use this equipment for its intended purposes only.
- Do not modify the equipment in any way without written permission from the manufacturer. Unauthorized modification may impair the function and/or safety, and could affect the life of the equipment. Any unauthorized modification of the equipment will void the warranty.



2.2.1. Personal Protective Equipment (Required to be Worn)

Ear Protection

- Wear ear protection to prevent hearing damage.



Work Gloves

- Wear work gloves to protect your hands from sharp and rough edges.



Steel-Toe Boots

- Wear steel-toe boots to protect feet from falling debris.



Safety Glasses

- Wear safety glasses at all times to protect eyes from debris.



Dust Mask

- A dust mask may be needed to prevent breathing potentially harmful dust.



Hard Hat

- Wear a hard hat to help protect your head.



Coveralls

- Wear coveralls to protect skin.



2.2.2. Safety Equipment Required

First-Aid Kit

- Have a properly-stocked first-aid kit available for use should the need arise, and know how to use it.



Fire Extinguisher

- Provide a fire extinguisher for use in case of an accident. Store in a highly visible and accessible place.



2.3. Drives and Lockout Safety

Inspect the power source (drive) before using and know how to shut down in an emergency. Whenever you service or adjust your equipment, make sure you shut down and lock out your power source to prevent inadvertent start-up and hazardous energy release. Know the procedure(s) that applies to your equipment from the following power sources.

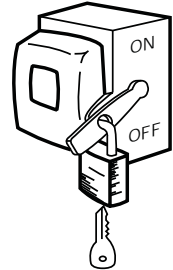
2.3.1. Electric Motor Safety

WARNING

Power Source

- Electric motors and controls shall be installed and serviced by a qualified electrician and must meet all local codes and standards.
- A magnetic starter should be used to protect your motor.
- You must have a manual reset button.
- Reset and motor starting controls must be located so that the operator has full view of the entire operation.
- Locate main power disconnect switch within reach from ground level to permit ready access in case of an emergency.
- Motor must be properly grounded.
- Guards must be in place and secure.
- Ensure electrical wiring and cords remain in good condition; replace if necessary.
- Use a totally enclosed electric motor if operating in extremely dusty conditions.

SERVICE DISCONNECT



Lockout

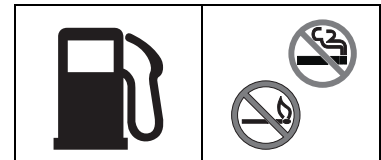
- The main power disconnect switch should be in the locked position during shutdown or whenever maintenance is performed.
- If reset is required, disconnect all power **before** resetting motor.

2.3.2. Gas Engine Safety

WARNING

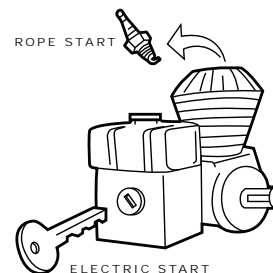
Power Source

- Keep guards in place and secure.
- Properly ventilate surrounding area.
- Never fill the fuel tank while smoking or near an open flame. Always shut down and allow engine to cool before filling with fuel.
- Never overfill the tank or spill fuel. If fuel is spilled, clean it up immediately.
- Be sure to use the correct type and grade of fuel.
- Ground the fuel funnel or nozzle against the filler neck to prevent sparks that could ignite fuel vapors.
- Be sure to replace the fuel fill cap when you are done.



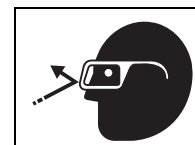
Lockout

- For engines with an electric start, remove the ignition key, the spark plug wire, or the spark plug.
- For engines with a rope or crank start, remove the spark plug wire or the spark plug.



2.4. Battery Safety

- Wear safety glasses when working near batteries.
- Make certain the battery or terminal covers are in place and in good working order.
- Keep all sparks and flames away from batteries; gas given off by electrolyte is explosive.
- Avoid contact with battery electrolyte. Wash off any spilled electrolyte immediately.
- Do not tip batteries more than 45° to avoid electrolyte loss.
- To avoid injury from sparks or short circuits, disconnect battery ground cable before servicing any part of an electrical system.



2.5. Rotating Parts Safety

⚠ WARNING

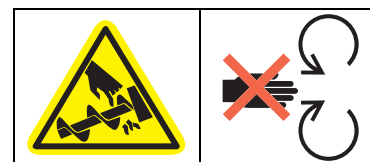
- Keep body, hair, and clothing away from rotating pulleys, belts, chains, and sprockets.
- Do not operate with any guard removed or modified. Keep guards in good working order.
- Shut off and remove key or lock out power source before inspecting or servicing machine.



2.6. Rotating Flighting

⚠ DANGER

- KEEP AWAY from rotating flighting.
- DO NOT remove or modify flighting guards, doors, or covers. Keep in good working order. Have replaced if damaged.
- DO NOT operate the equipment without all guards, doors, and covers in place.
- NEVER touch the flighting. Use a stick or other tool to remove an obstruction or clean out.

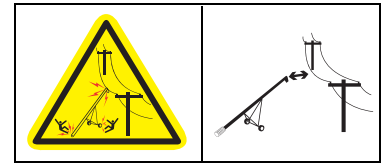


- Shut off and lock out power to adjust, service, or clean.

2.7. Overhead Power Lines



- When operating or moving, keep equipment away from overhead power lines and devices.
- This equipment is not insulated.
- Electrocution can occur without direct contact.



2.8. Tire Safety

- Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion that may result in serious injury or death.
- DO NOT attempt to mount a tire unless you have the proper equipment and experience to do the job.
- Have a qualified tire dealer or repair service perform required tire maintenance.
- When replacing worn tires, make sure they meet the original tire specifications. Never undersize the replacement tire.
- DO NOT weld to the tire rim with the tire mounted on the rim. This action may cause an explosion which could result in serious injury or death.
- Inflate tires to the manufacturer's recommended pressure.
- Tires should not be operated at speeds higher than their rated speed.
- Keep wheel lug nuts tightened to manufacturer's recommendations.
- Never reinflate a tire that has been run flat or seriously under-inflated without removing the tire from the wheel. Have the tire and wheel closely inspected for damage before remounting.



2.9. Safety Decals

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

2.9.1. Decal Installation/Replacement

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

2.9.2. Safety Decal Locations and Details

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

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

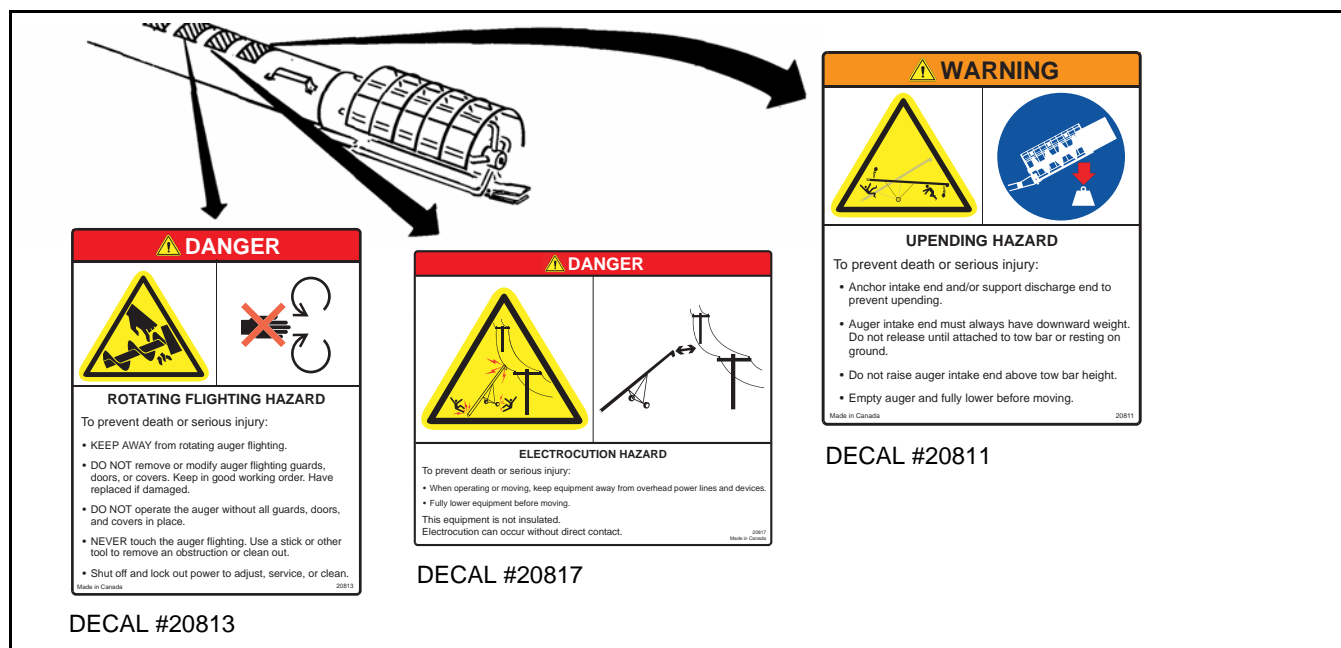


Figure 2.1

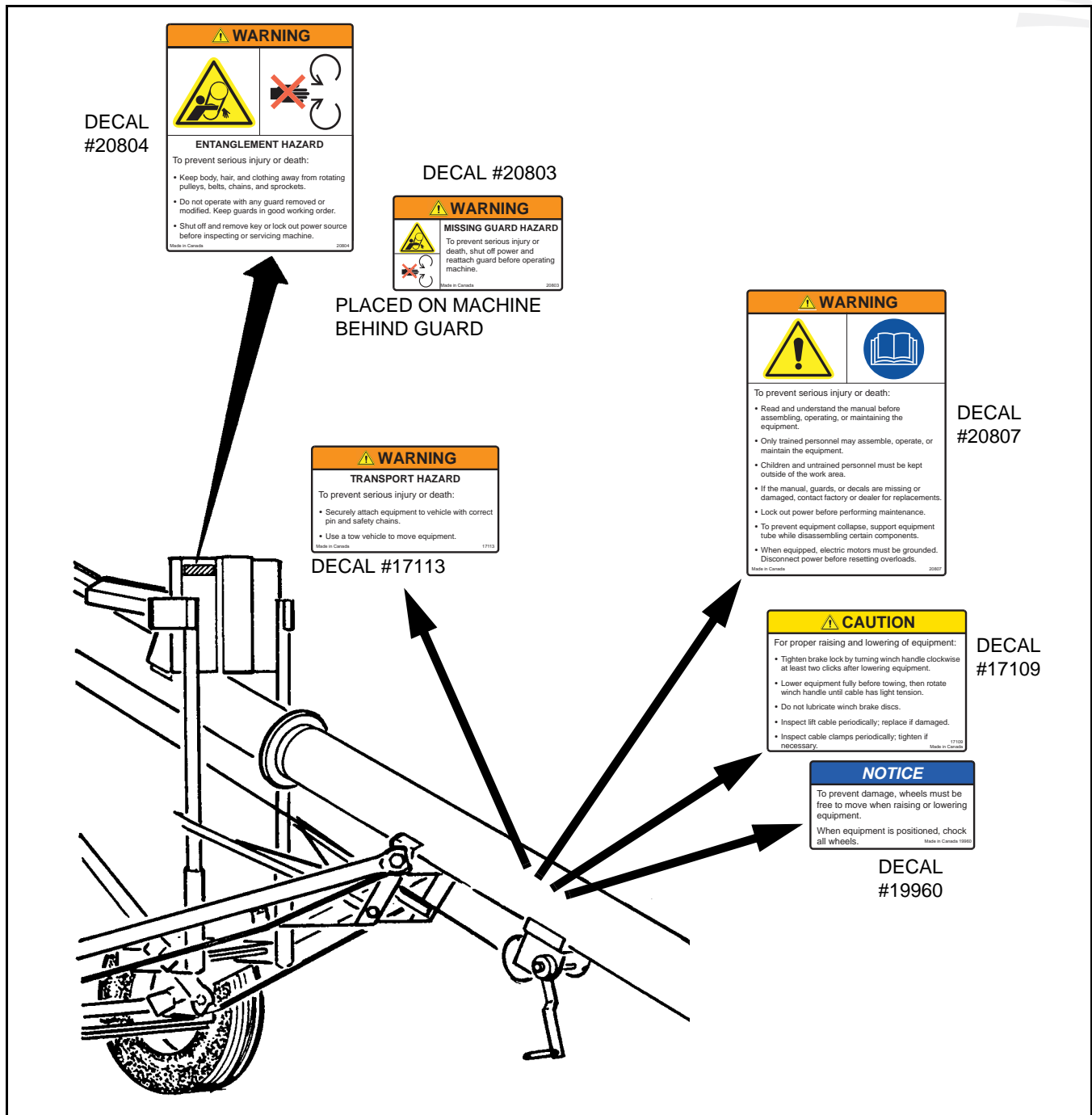


Figure 2.2

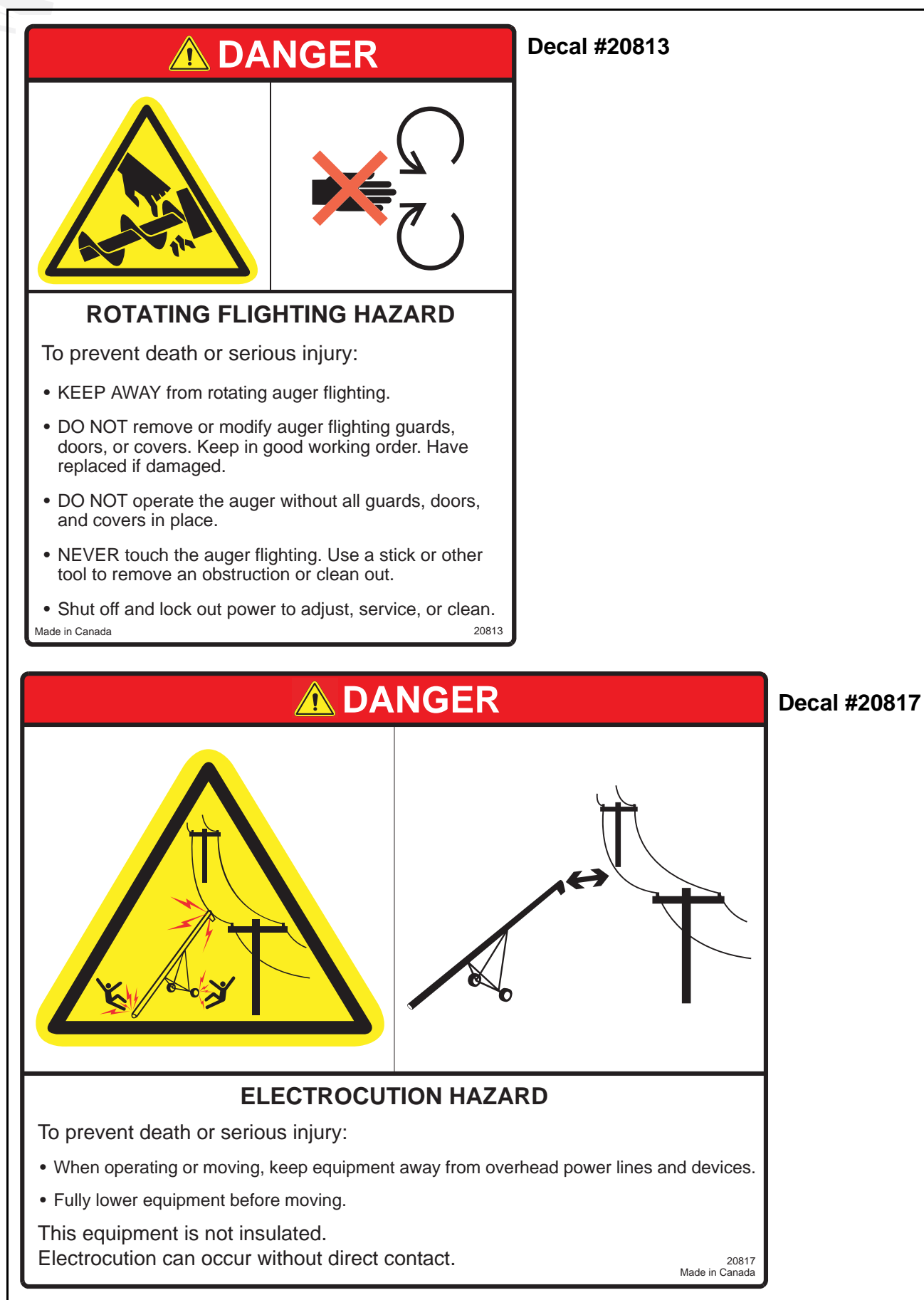





Figure 2.3 Safety Decal Details

**WARNING**



To prevent serious injury or death:

- Read and understand the manual before assembling, operating, or maintaining the equipment.
- Only trained personnel may assemble, operate, or maintain the equipment.
- Children and untrained personnel must be kept outside of the work area.
- If the manual, guards, or decals are missing or damaged, contact factory or dealer for replacements.
- Lock out power before performing maintenance.
- To prevent equipment collapse, support equipment tube while disassembling certain components.
- When equipped, electric motors must be grounded. Disconnect power before resetting overloads.

Made in Canada

20807

Decal #20807

Decal #20803

**WARNING**



MISSING GUARD HAZARD

To prevent serious injury or death, shut off power and reattach guard before operating machine.

Made in Canada

20803

Decal #17113

**WARNING**

TRANSPORT HAZARD

To prevent serious injury or death:

- Securely attach equipment to vehicle with correct pin and safety chains.
- Use a tow vehicle to move equipment.

Made in Canada

17113

Figure 2.4 Safety Decal Details

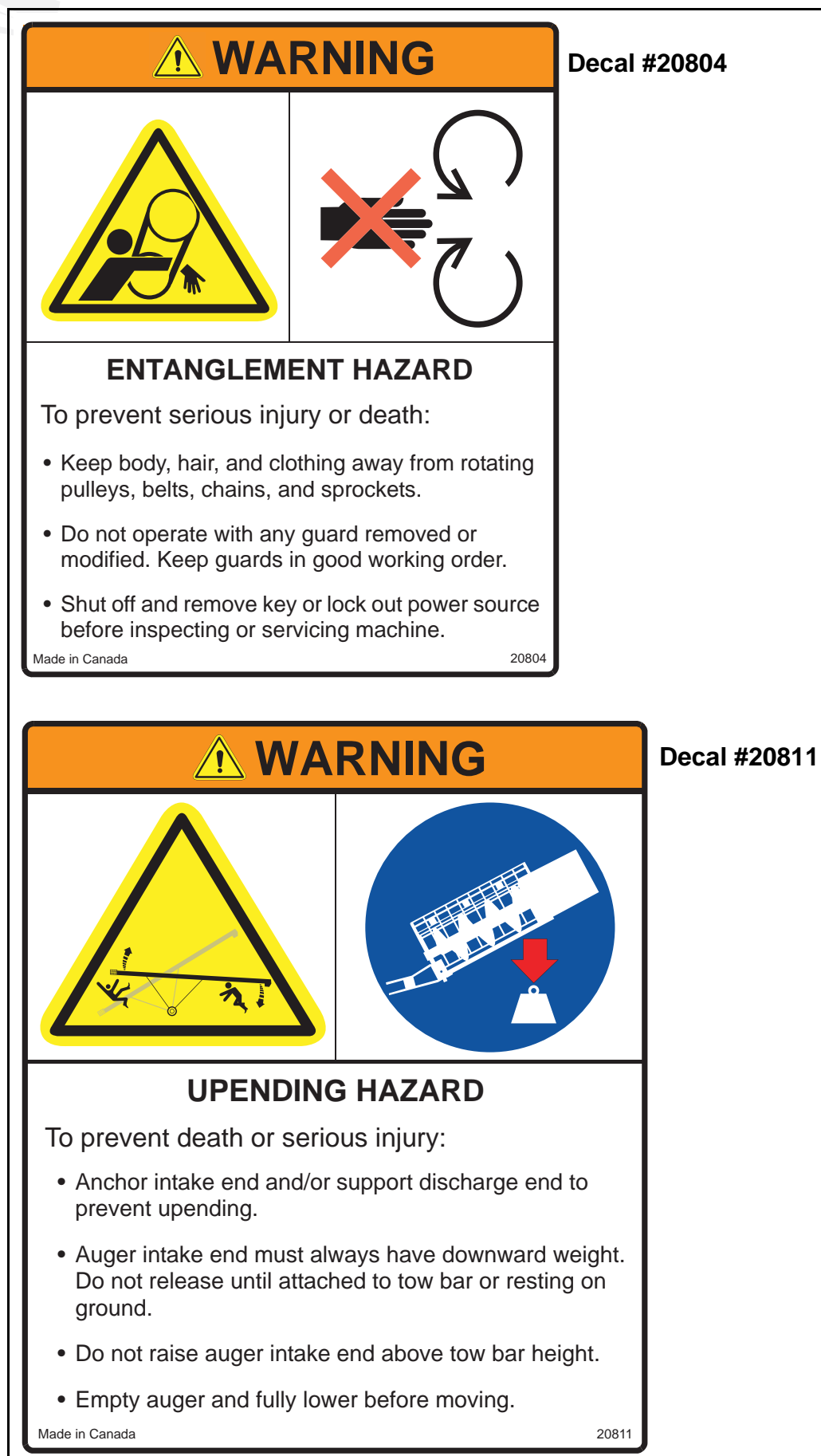


Figure 2.5 Safety Decal Details



CAUTION

Decal #17109

For proper raising and lowering of equipment:

- Tighten brake lock by turning winch handle clockwise at least two clicks after lowering equipment.
- Lower equipment fully before towing, then rotate winch handle until cable has light tension.
- Do not lubricate winch brake discs.
- Inspect lift cable periodically; replace if damaged.
- Inspect cable clamps periodically; tighten if necessary.

17109
Made in Canada

NOTICE

Decal #19960

To prevent damage, wheels must be free to move when raising or lowering equipment.

When equipment is positioned, chock all wheels.

Made in Canada 19960

Figure 2.6 Safety Decal Details



3. Assembly



Before continuing, ensure you have completely read and understood this manual's Safety chapter, in addition to the safety information in the section(s) below.

3.1. Assembly Safety

WARNING

- Do not take chances with safety. The components can be large, heavy, and hard to handle. Always use the proper tools, rated lifting equipment, and lifting points for the job.
- Always have two or more people assembling the equipment.
- Make sure you have sufficient lighting for the work area.
- Tighten all fasteners according to their specifications. Do not replace or substitute bolts, nuts, or other hardware that is of lesser quality than the hardware supplied by the manufacturer.

3.2. Check Shipment

Unload the parts at the assembly site and inspect them thoroughly while comparing the packing slip to the shipment. Ensure that all items have arrived and that none are damaged.

It is important to report missing or damaged parts immediately to ensure that proper credit is received from either the manufacturer or from your distributor/dealer, and to ensure that any missing parts can be shipped quickly to avoid delaying the assembly process.

Note: Do not attempt to assemble or install a damaged component.

3.3. List of Required Tools

- 2-4 pipe stands
- Two sawhorses (1200 lb / 544 kg bearing capacity)
- One standard socket set and wrench set
- One torque wrench
- One standard 25' (7.62 m) tape measure
- One 2' (600 mm) level
- One 8" (200 mm) level magnetic
- Two C-clamps or vise grips
- One picker with minimum reach of 12' (3.66 m) and 4000-6000 lb and (1814 - 2722 kg) lifting capacity
- One 100' (30 m) measuring tape
- One tire pressure gauge
- One tire chuck

- 6-10 wood blocks (2x4's or smaller)
- Grease
- Impact wrench and sockets
- 2+ steel punches (for aligning bolt holes)

3.4. Before You Begin

- Perform assembly on a firm and level surface in an area large enough to allow access to all sides of the equipment.
- Before beginning assembly, familiarize yourself with all the sub-assemblies, components, and hardware that make up the equipment.
- Have all parts and components on hand, and arrange them for easy access.
- Separate the hardware (bolts, nuts, etc.) and lay them out into groups for easier identification during assembly.

Note: When options or more than one configuration is available for the equipment and the assembly information varies, additional instructions will be included.



These additional instructions will be indicated with an arrow.

- If assembling inside a building, be sure the ceiling is at least 14' (4.27 m) high to provide clearance when installing the undercarriage.
- Ensure there is adequate space to remove the assembled machine from the assembly area.

3.5. Tubes & Flighting



The 26' model has only one flighting and tube section and does not require assembly.

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

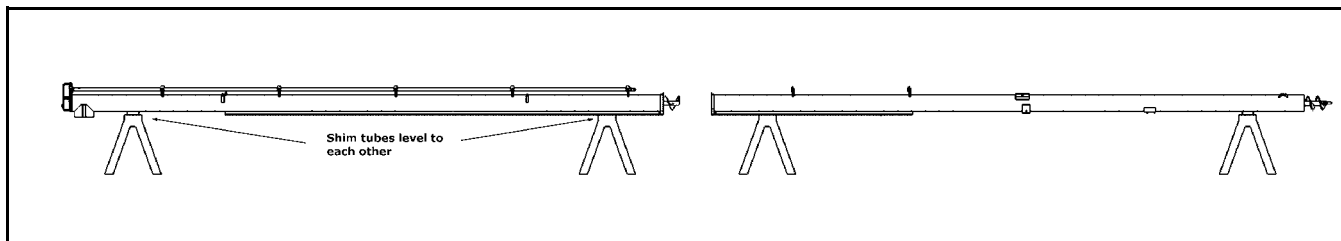


Figure 3.1



WARNING

Do not drop. Damage to equipment or serious personal injury will result.

Note: When assembling more than 2 sections, start from spout end and work towards intake.

2. **For 6" diameter augers**, screw lower flight into threaded connector on upper flight using 2 pipe wrenches until flight ends butt together and flighting spiral matches up. Tighten set screw (Figure 3.2A).
3. **For 8" diameter augers**, slide lower flight shaft into upper flight shaft until flight ends butt together and flighting spiral matches up. Secure with two 7/16" x 2-1/4" bolts and locknuts (Figure 3.2B).

4. Screw or slide lower flight shaft into upper flight shaft until flight ends butt together and flighting spiral matches up. Secure with hardware listed in the table below. Repeat, if necessary, for any remaining flight shafts (See Table 3.1).

Note: Flight shaft connections, as well as flight connection bolts should slide into place easily. Do not force into place.

5. Slide tube sections together and secure. Make sure to align upper and lower track ends and then tighten bolts. Secure with hardware listed in the table below.

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

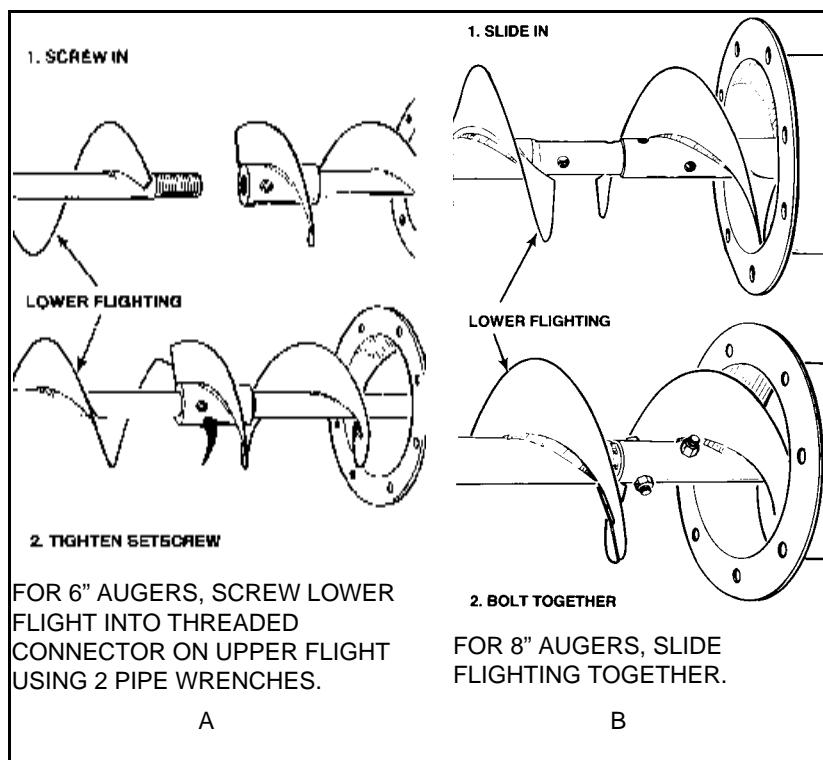


Figure 3.2

Table 3.1

Details for fastenings:				
Auger	For Flighting	Qty	For Tubes	Qty
26'	n/a	-	n/a	-
6"	<ul style="list-style-type: none"> use pipe wrenches set screw 	2 1	<ul style="list-style-type: none"> 7/16" x 1" bolts and lock-nuts 	6
8"	<ul style="list-style-type: none"> 7/16" x 2-1/4" GR 8 bolts and locknuts 	2	<ul style="list-style-type: none"> 7/16" x 1" bolts and lock-nuts 	8

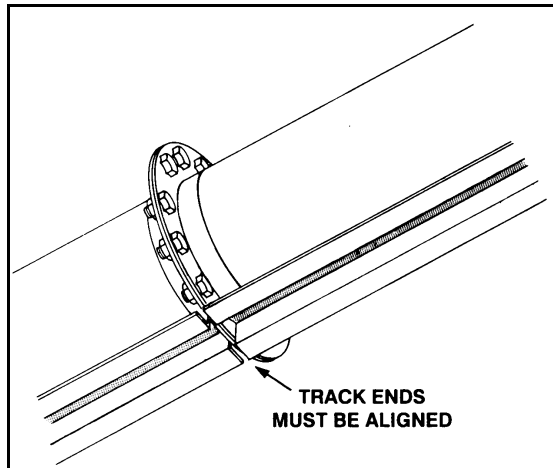


Figure 3.3

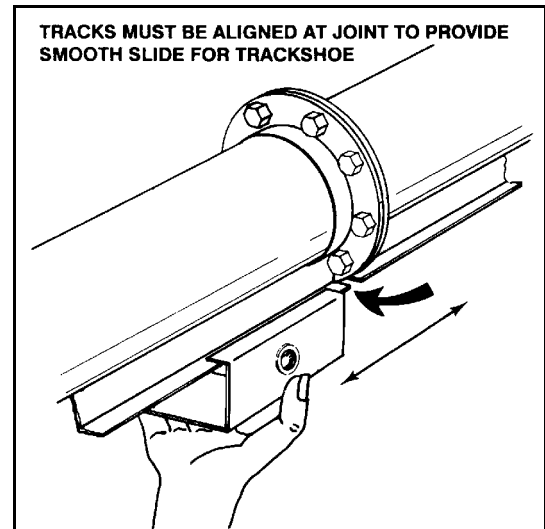


Figure 3.4

3.6. Track Shoe & Track Stop

1. Slide roller track shoe onto track.
2. Attach the upper angle iron track stop with 7/16" x 1" bolts, heavy flat washers, and locknuts (Figure 3.5). For correct positioning of the upper track stop, see below.
- ➔ 3. **36' Auger:** Attach lower angle-iron track stop with two 7/16" x 1" bolts and locknuts. All other augers have a welded-on lower track stop.

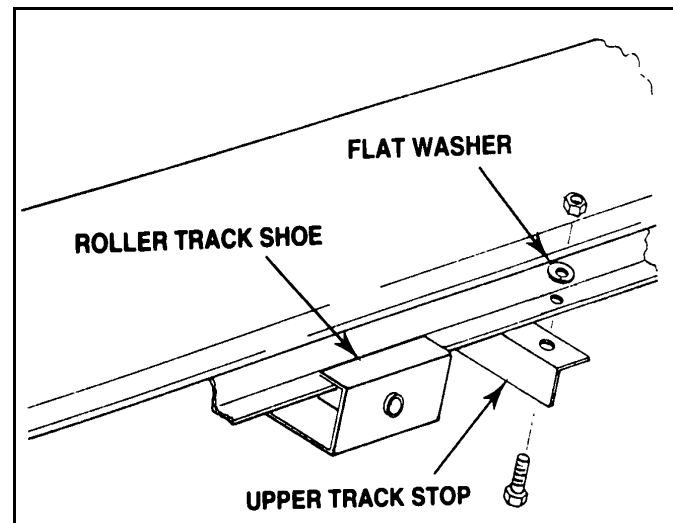


Figure 3.5

Auger	Upper Track Stop
26'	1st set of holes from top end of track
31'	1st set of holes from top end of track
36'	2nd set of holes from top end of track
41'	4th set of holes from top end of track

CAUTION Failure to locate track stops in the proper holes can result in damage to the auger and/or personal injury.

3.7. Intake Hitch

1. Clean dirt and paint from lower flight stub and intake bushing.
2. Attach intake hitch to lower auger tube and tighten securely.
3. Maintain 1/4" (0.64 cm) clearance between bushing and shoulder of flight.
4. Attach clevis to intake hitch with clevis pin and gripclip.

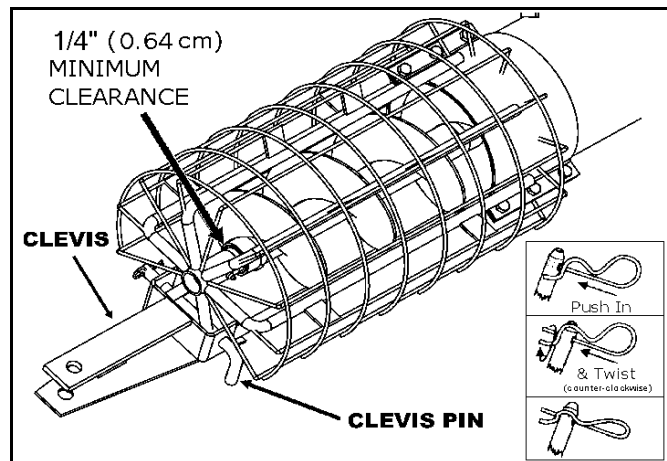


Figure 3.6

Part	Size	Qty
Intake Hitch	7/16" x 1" bolt and locknut	6
Clevis Pin	5/8" for 8"	1

3.8. Multi-Stage Driveshaft

Although most sections of the driveshaft are factory installed, an additional section must be added on the 41', 46', and 51' augers. Ensure that you have the correct length first:

- The 6" and 8" x 41' auger requires an additional 3'9"-1/2" length shaft.

1. Clean paint and dirt from driveshaft ends and shaft connectors.
2. Slide shaft connector halfway onto the last pre-installed driveshaft segment.
3. Slip lower driveshaft segments through bearings on lower tube section. Install a Woodruff key, and slide into shaft connector.
4. Place a few drops of oil at each driveshaft bearing to allow for break-in.
5. Tighten all set screws on shaft connectors.

3.9. Driveshaft Shield

Refer to Table 3.2 for the proper sequence for your particular auger.

Table 3.2 Driveshaft Shielding

Auger Length	Step 1		Step 2		Step 3		Step 4	
	No.	Length	No.	Length	No.	Length	No.	Length
26'	1	42" (1.07 m)	2	48" (1.22 m)	1	42" (1.07 m)	-	-
31'	1	42" (1.07 m)	3	48" (1.22 m)	1	42" (1.07 m)	-	-
36'	1	42" (1.07 m)	4	48" (1.22 m)	1	42" (1.07 m)	-	-
41'	1	48" (1.22 m)	1	42" (1.07 m)	4	48" (1.22 m)	1	42" (1.07 m)

1. Start from bottom end and working towards upper discharge end of auger. (Shielding is installed working from the first bearing above the engine carriage-attach bracket up to the discharge end.) Guard must overlap at the bearing support brackets (Figure 3.7).
2. Fasten with guard strap and self-tapping screws. Do not tighten until all guards are in place.

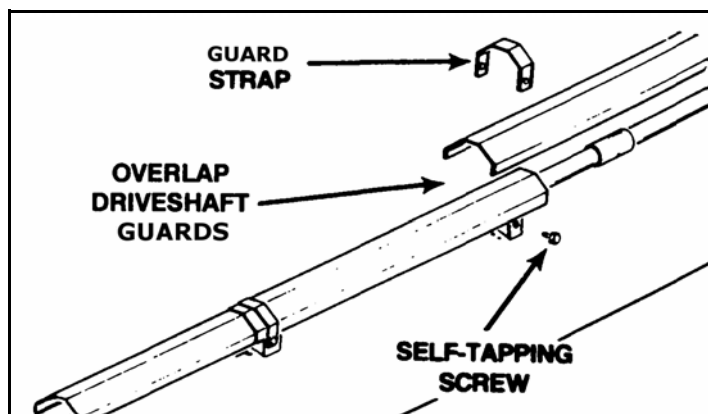


Figure 3.7

3.10. Upper Housing Lubrication

Fill enclosed upper drive housing with grease.

WR60	550 g	20 oz
WR80	750 g	26 oz

For continuous use in extreme cold conditions, semi-fluid arctic grease or heavy oil may be used.

3.11. Transport Undercarriage

See Figure 3.8.

1. To assemble undercarriage, fasten the lower reach arms to axle with three 7/16" x 1" bolts and locknuts on each side.
2. Attach long crossmember to bottom of undercarriage brackets (Figure 3.8) with two 7/16" x 1" bolts and locknuts.

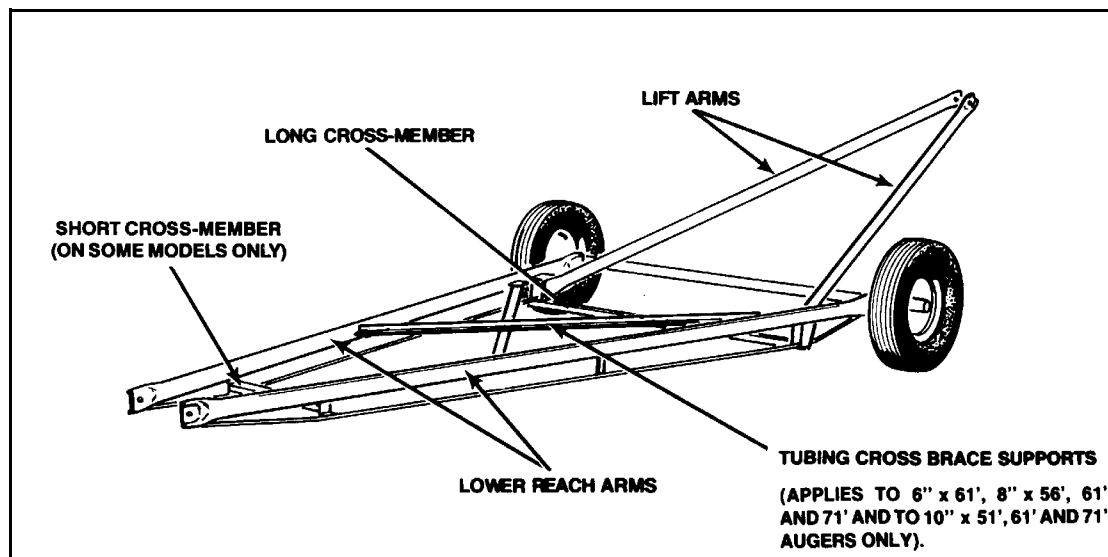


Figure 3.8

3. Attach crisscross leveler bracket to the lower reach arm (Figure 3.9) with two 1/2" x 1-1/4" bolts and locknuts.

4. Wheel hub assembly:

- a. Remove any dirt or paint 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.

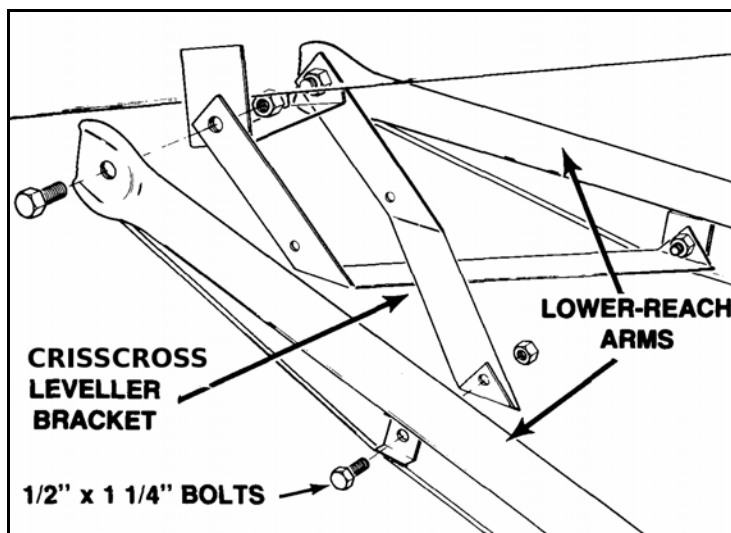


Figure 3.9

- d. Slip hub onto spindle and insert small bearing.
- 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.

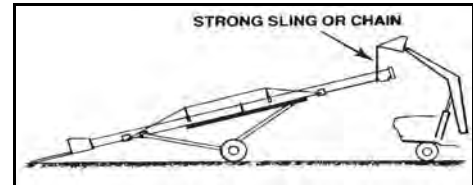
Note: Installing tires may not leave you with enough clearance to position and attach undercarriage once auger tube is raised. If so, install wheels after assembly is complete.

- g. Check that pressure of pre-inflated tires matches pressure indicated on tire sidewall. Mount wheels on hubs and attach with six 1/2" x 1-3/4" wheel bolts.
5. Fasten upper lift arms to lower reach arms with 5/8" x 1-1/2" bolts and locknuts. **Do not overtighten.** Tighten snug only; these bolts act as pivot points.
6. Slip drive belt(s) over the intake end of auger and position above lower reach arm bracket. Belts must be installed at this point in the assembly. Once undercarriage is attached, belt installation is not practical.



One belt is required for the 6" auger, two belts are required for the 8" augers.

7. Raise the discharge end of auger with a front end loader and a strong sling/chain or block and tackle. The height should be sufficient to clear undercarriage assembly.



WARNING Do not remove tube support until auger is fully assembled.

8. Position transport undercarriage beneath tube assembly and attach lower reach arms and leveler bracket to the lower reach arm mounting bracket with 5/8" x 1-1/2" bolts and locknuts. **Do not overtighten.** Tighten snug only; these bolts act as pivot points (see Figure 3.9).

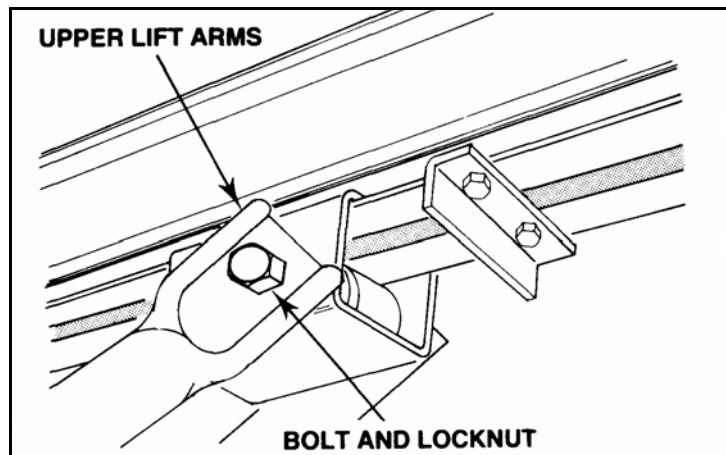


Figure 3.10

9. Attach upper lift arms to roller track shoe with one 5/8" x 6-1/2" bolt and locknut. **Do not overtighten.** Tighten snug only; this bolt acts as a pivot point (Figure 3.10).

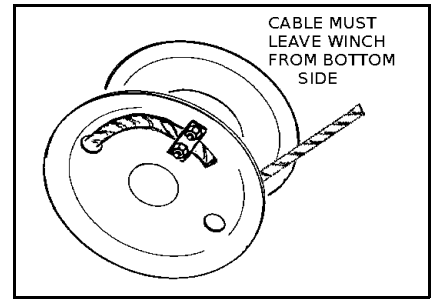
3.12. Winch & Lift Cable

1. Attach cable to winch. Cable must leave winch from bottom side.

Important:

Always keep a minimum of three wraps of cable on the winch drum.

Winch handle must be positioned on the left side of the auger (determine left by standing at the intake end, facing the discharge end).



2. Attach winch to winch mount with three 3/8" washer locknuts.
3. Thread lift cable under and around roller on track shoe, then back to cable attach rod welded to lower end of track.

Note: On augers equipped with a lower angle-iron track stop, the cable must be threaded between track stop and auger tube to cable rests on top of the track stop (See Figure 3.11).

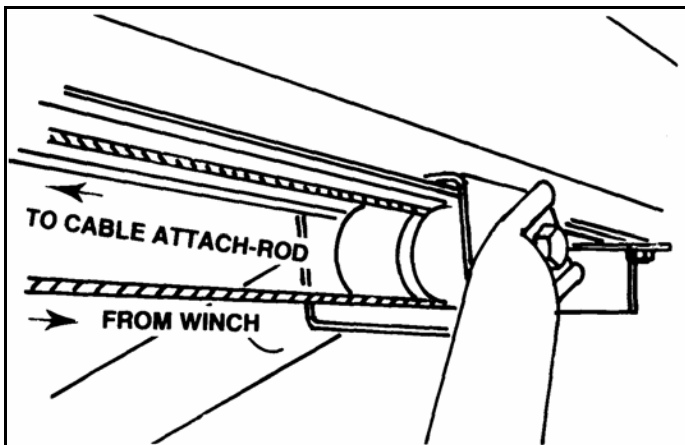


Figure 3.12

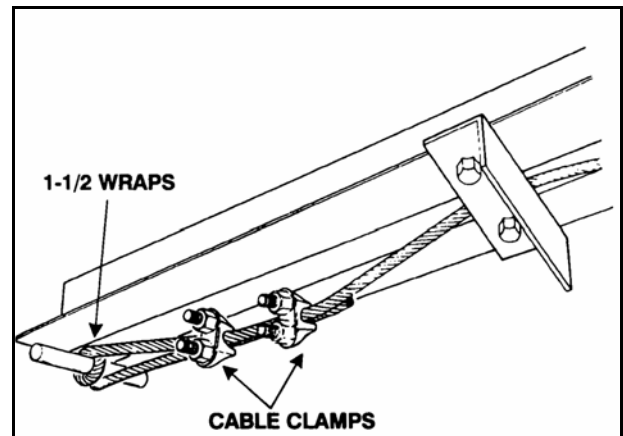


Figure 3.11

4. Wrap cable 1-1/2 times around the cable attach rod and secure with two 1/4" cable clamps. Position cable clamps as shown in Figure 3.11 and 3.13. Tighten clamps securely.

Note: Make certain cable is properly seated in cable groove before raising auger.

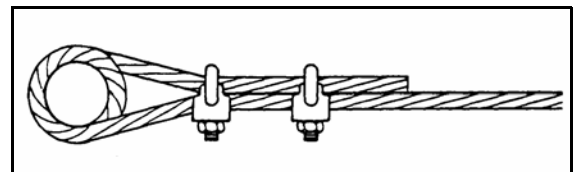


Figure 3.13

3.12.1. Winch Handle

CAUTION Winch handle assembly must follow the instructions below. Improper assembly will result in sudden winch failure causing damage to equipment and/or personal injury.

Refer to Figure 3.14:

1. Slide handle over flat sides of input shaft.
2. Fasten with 1/2" locknut.

Important: Do not remove or loosen the double locknut on the input shaft: it is an important part of the brake system of the winch.

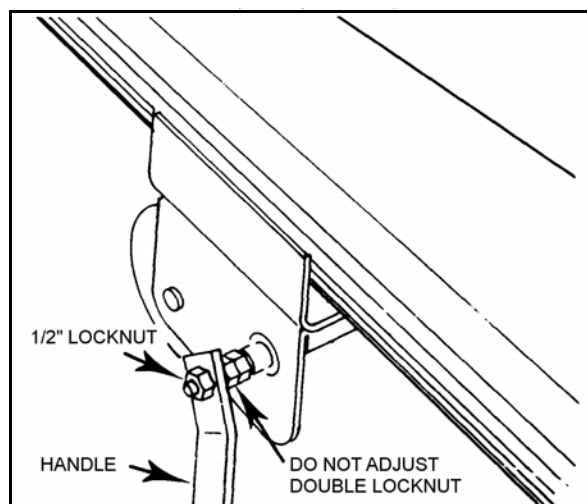


Figure 3.14

3.13. Motor Drive (MD)

See "Maintenance & Storage" on page 45 for belt replacement instructions.

Table 3.3 Horsepower Requirements^a

	6"		8"	
	Gas (hp)	Electric (hp)	Gas (hp)	Electric (hp)
26'	10	3	14	3 - 5
31'	10	3	16	5
36'	12	3	16	5 - 7.5
41'	12	3	16	5 - 7.5

- a. Approximate horsepower requirements under normal conditions. When augering full tube of high moisture grain, additional horsepower will be needed.

1. Mount engine carriage attach-bracket to the welded bracket on auger tube as shown in Figure 3.15 with four 7/16" x 1" bolts and locknuts.
2. Place engine carriage over auger tube (Figure 3.15), and secure to the carriage attach-bracket with two 5/8 x 1-1/2" bolts and locknuts. **Do not overtighten. Tighten snug only.**

Important: Locknuts must be on inside of carriage-attach bracket (Figure 3.15), to allow attaching u-joint guard after locknuts are in place.

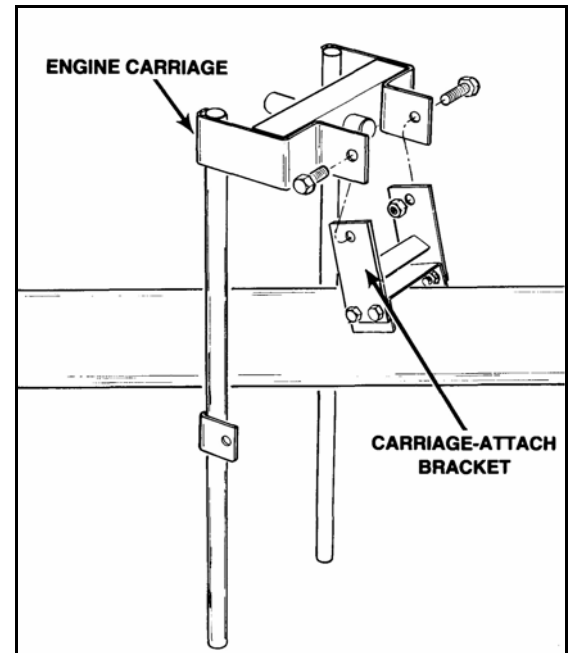


Figure 3.15

3. Fasten short (standard) u-joint with square shaft to the auger driveshaft. Tighten the set screws securely (Figure 3.16).
4. Place longer (slip) u-joint onto the square shaft with the inner yokes in line (Figure 3.16). This prevents vibration and excessive wear.
5. Install Woodruff key and slide longer u-joint onto engine carriage shaft and tighten set screws thoroughly.

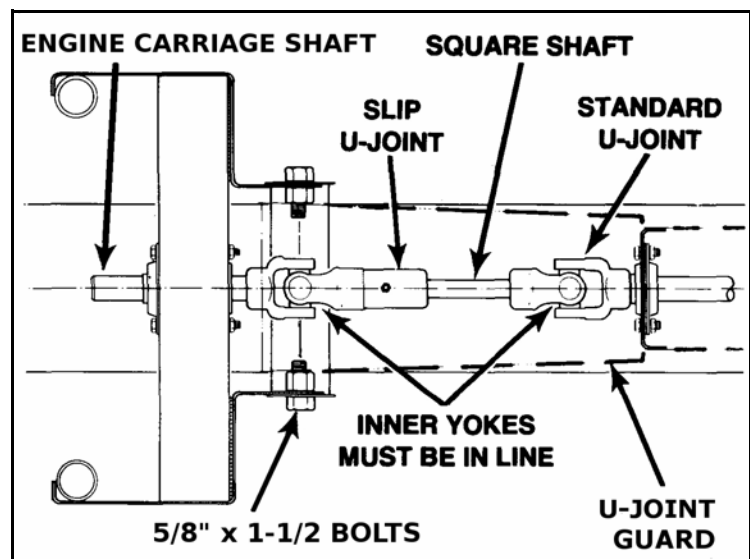


Figure 3.16

6. Snap u-joint guard over 5/8" bolt ends (Figure 3.16).
7. Attach leveler to leveler bracket on the lower-reach arms with two 7/16" x 1" bolts and locknuts. Do not overtighten. Tighten snug only; these bolts act as pivot points (Figure 3.17).
8. Attach release straps to straps on the motor mount with two 7/16" x 1" bolts and locknuts on each side (Figure 3.18).
9. Slip motor mount onto the engine carriage pipes from the bottom (Figure 3.18).
10. Attach leveler and release straps to the engine carriage with two 7/16" x 1 3/4" bolts and locknuts. Do not overtighten. Tighten snug only; these bolts act as pivot points (Figure 3.18).

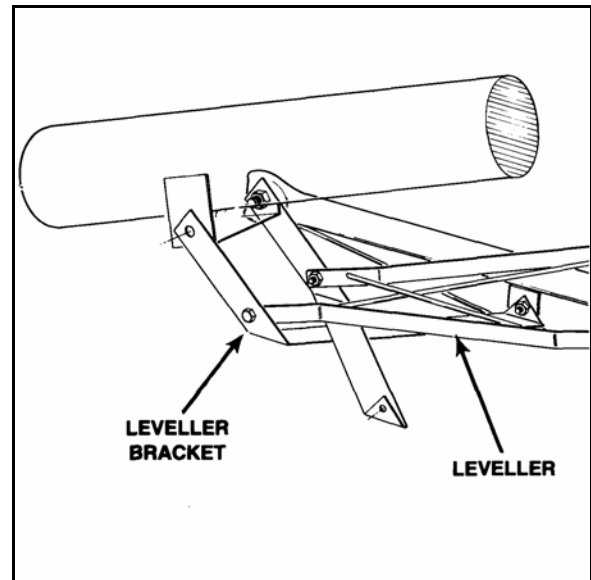


Figure 3.17

Note: Place release straps on the outside of leveler for greater ease in adjusting belt tension. Once motor is in place, adjust the straps for proper belt tension.

11. Attach belt release handle to either left or right hand side of the motor mount with two 7/16" x 1" bolts and locknuts (Figure 3.18).
12. After cleaning the inside pulley hub surface and the engine carriage shaft of dirt, secure the 13" drive pulley to engine carriage shaft with a 1/4" x 1-1/2" square key (see Figure 3.16). Position pulley hub away from engine carriage. Tighten the set screws.
13. Slide the small pulley onto motor or engine shaft, hub first, and insert a 2" long square key. Do not tighten set screw at this time.

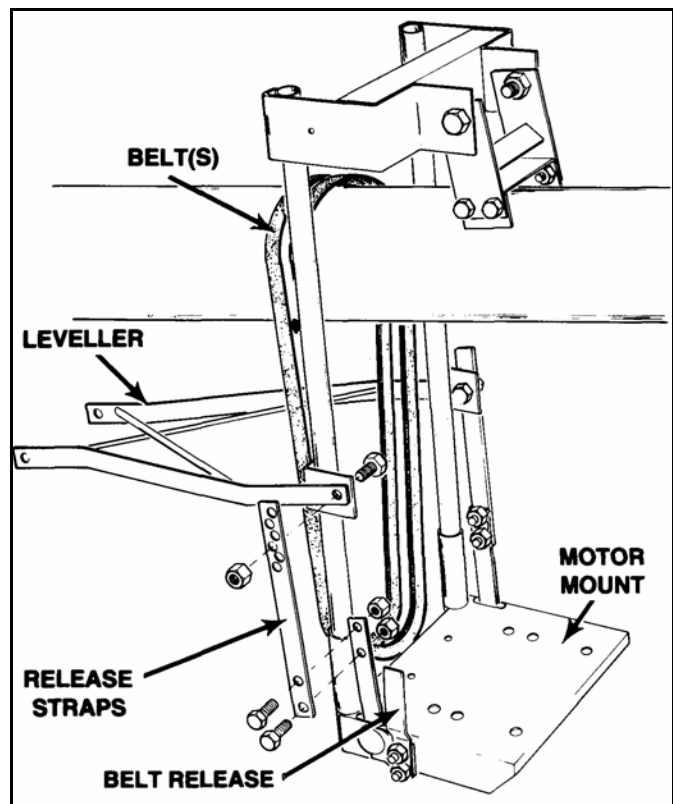


Figure 3.18

Note: Gas engines require a 4.2" (107 mm) diameter drive pulley. Electric motors require a 6.5" (165 mm) to 7" (178 mm) diameter pulley.

14. Install motor or engine onto motor mount with four 3/8" bolts and locknuts. Refer to Section 2.3.1. Electric Motor Safety on page 9 for installation requirements.

15. Place belt(s) onto pulleys, align belt(s), and tighten set screws on pulleys.

Note: To align belt(s), place a straight edge on the outside of the large pulley and sight along the straight edge towards small pulley. Adjust small pulley until it is in line with the large pulley and the belt(s) are parallel with straight edge.

16. Install the 13" drive pulley guard with 2 self-tapping screws (Figure 3.19).
17. Install adjustable engine pulley guard with three 1/4" x 1/2" bolts and washer locknuts (Figure 3.19).

Note: Adjust guard to within 1/8" (3.2 mm) of the belt(s) with belt(s) under tension. This allows belt(s) to fall free of engine pulley when belt release is applied.

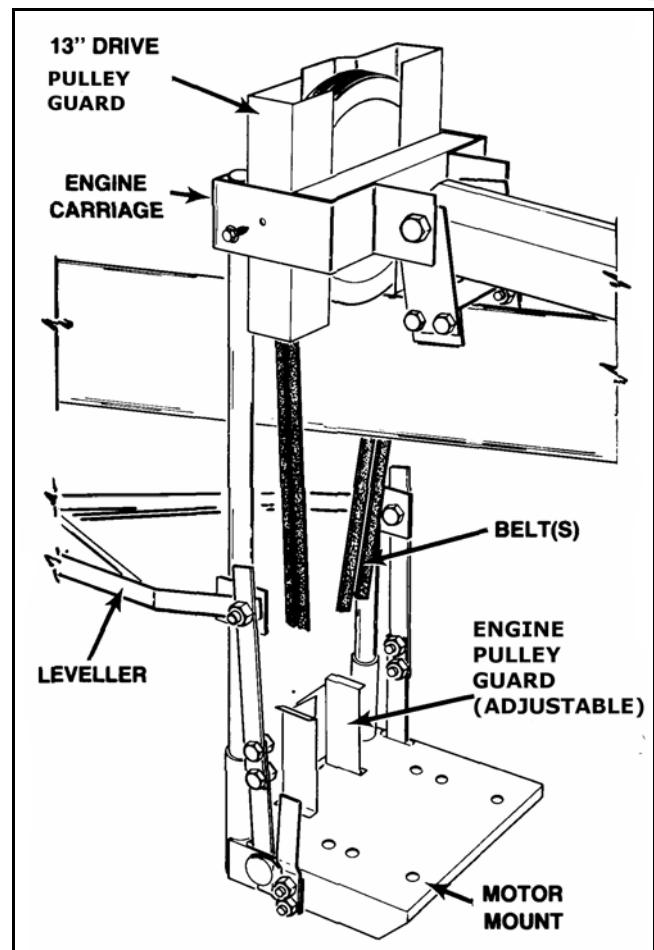


Figure 3.19

18. For augers with electric-start gas engine, a battery holder can be installed with two 7/16" x 1" bolts and locknuts and two engine mounting bolts (Figure 3.20).
19. Install battery in the holder and secure with retaining bracket.
20. Connect battery cables as per instructions in the engine manual.

WARNING Exercise caution when handling batteries. They contain acid which can eat through clothing, burn skin, and cause blindness.

CAUTION Use battery cables with plastic or rubber terminal covers to protect against inadvertent contact with positive terminal. Keep battery terminal covers in place and in good working order. Contact with positive terminal may cause sparks or electrical short which may cause fire or electrical burns.

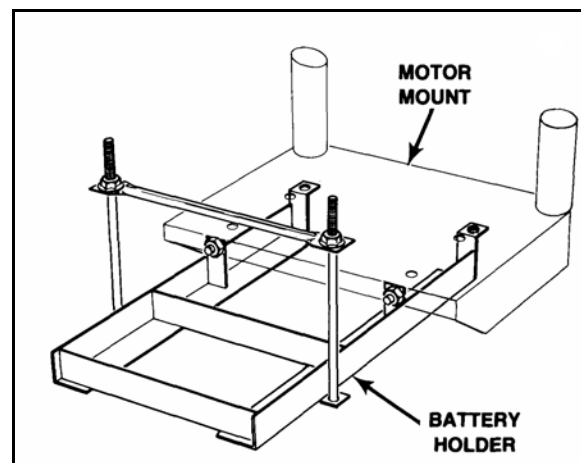


Figure 3.20

3.14. Plastic Manual Container

1. Attach the manual container bracket to the top of the axle, centered between the two wheels, using a 3/8" x 2-1/2" U-bolt, two 3/8" washers, and two 3/8" locknuts (see Figure 3.21).

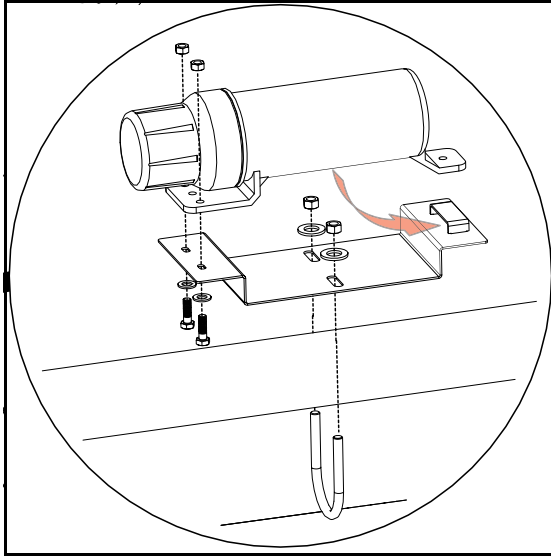


Figure 3.21

2. Slide the tab on the bottom of the manual container into the raised slot in the bracket.
3. Bolt the manual container to the bracket using two 1/4" x 3/4" bolts, two washers, and two 1/4" locknuts.

3.15. Model Decal Placement

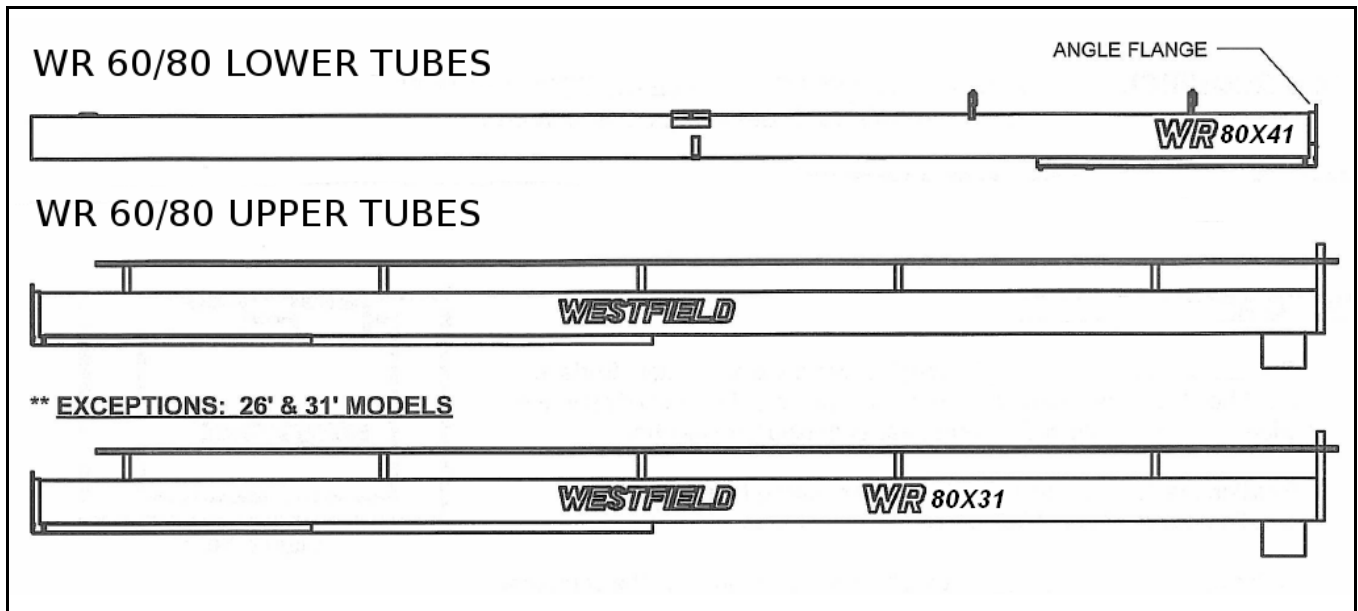


Figure 3.22

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.

3. ASSEMBLY
3.15. MODEL DECAL PLACEMENT

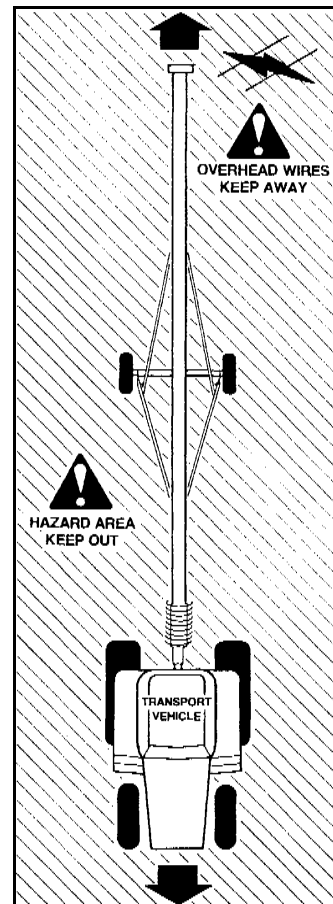
4. Transport & Placement



Before continuing, ensure you have completely read and understood this manual's Safety chapter, in addition to the safety information in the section(s) below.

4.1. 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 for overhead obstructions and/or electrical wires. Electrocuting can occur without direct contact.
- When lowering the auger the track shoe may become stuck; if this happens, do not continue to turn the winch handle counter-clockwise because it will disengage the brake mechanism and will create an unsafe condition. Too much slack in the cable may also cause the auger to drop suddenly.
- The winch must make a clicking sound when raising auger. If clicking sound stops, retain grip on handle, lower auger fully, and repair winch.
- After lowering auger, turn handle clockwise two clicks to lock winch brake.
- Always keep a minimum of 3 cable wraps on the winch drum.



4.2. Transport Procedure

Follow all safety precautions when transporting the auger and use a proper towing vehicle.

1. If auger is raised, place in full down position. The roller track shoe should be seated against the upper track stop with slight tension on the lift cable. Refer to Section 5.3.4. Lowering & Completion on page 43.
2. Lock winch: turn handle clockwise until 2 clicks are heard.
3. Hitch the auger to the towing vehicle with clevis-to-tongue connection. If there is a mismatch, convert one of the clevises to a tongue.

⚠ WARNING For proper and safe transport, DO NOT hitch towing vehicle and auger with clevis-to-clevis connection or tongue-to-tongue connection. Clevis-to-clevis connections limit angular movement and will put extremely high load on the pin which can lead to mechanical failure. Tongue-to-tongue connections could easily result in accidental detachment of the auger, even if a retainer is used.

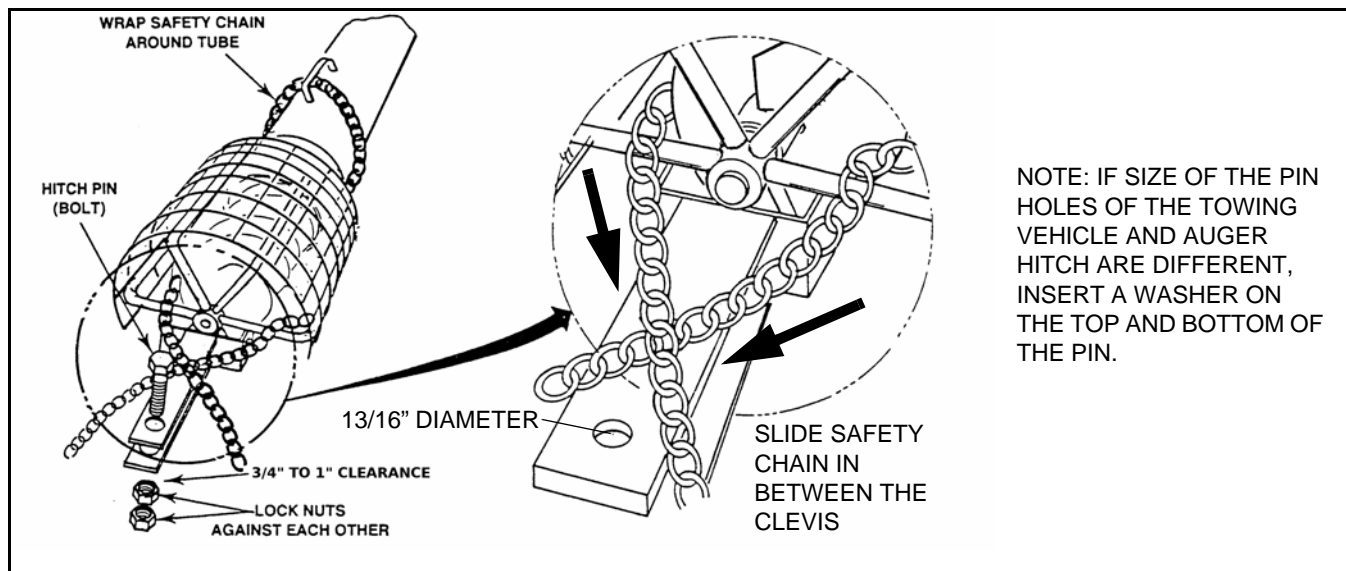



Figure 4.1


4. Place and secure hitch pin. If the towing vehicle has larger pin hole, use the largest pin diameter that will fit through the holes of towing vehicle and auger hitch. Ensure the pin will not slip through the larger holes by inserting a heavy-duty large diameter washer on the top and bottom of the pin.

Important: Use a type of hitch pin (see Figure 4.1) with a load rating that at least matches the carrying capacity of the towing vehicle (class 3 trailer hitch).

5. Thread the safety chain through the handle on the lower tube, wrapped around the auger and slipped through the clevis (see Figure 4.1) before securely attaching to the towing vehicle. Leave chain slack enough for angular movement.
6. If the distance from the hitch pin to the front or rear chain attachment point is more than 9", attach an intermediate chain support.

Important: Choose a safety chain rated with minimum strength at least equal to the gross weight of the auger being towed (545 - 1000 lb). Ensure the safety chain are not worn out, stretched or kinked.

 **WARNING** To prevent accidental break away of the auger that could result to death and serious injury or implement damage, DO NOT tow the auger without securing the hitch pin and without a properly sized and undamaged safety chain.

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

7. Beware of overhead obstructions and electrical wires and devices. The MD augers have minimum clearances from 7'6" (2.29 m) to 13' (3.96 m) in normal transport position.
8. Refer to "Transport & Placement Safety" on page 35 for important safety information before towing.

4.3. Placement Procedure


1. Ensure towing hitch is in place and secure


Important: Use a type of hitch pin (see *Figure 4.1*) that will not allow auger to separate from towing vehicle.

2. 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.
3. Place auger on reasonably level ground when raising, lowering, or positioning.


Note: Make certain cable is properly seated in cable groove before raising auger. Refer to *Figure 3.12*.

4. To raise auger, turn winch handle clockwise. Use a firm grip on winch handle; do not release unless the ratchet pawl is fully engaged.

 **NOTICE** Do not turn winch handle counter-clockwise except when lowering auger or severe damage to winch will occur.

 **WARNING** 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.

5. 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 personal injury.

6. Once auger is in position, chock wheels on both sides to prevent movement during operation.

Important: When releasing auger from the towing vehicle, test the intake end for downward weight. Do not raise the intake end above drawbar height. When the intake end is elevated too high with auger in raised position, the balance of weight quickly transfers to the discharge end, causing it to upend. Ensure proper anchoring / support to intake end of auger.

7. When operating auger in the raised position, tie to bin to prevent wind from toppling auger. When operating the auger in a freestanding position, anchor the intake end.
8. Anchor and/or support auger during operation.
 - When lower half of auger empties of grain, the weight balance transfers to upper end of auger, which can cause upending.

9. For correct lowering procedure, refer to "Lowering & Completion" on page 43.

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

Note: Refuel and check oil in engine before raising auger (where applicable). With auger fully raised, it may be necessary to use secure means such as a step ladder to service the engine.

5. Operation



Before continuing, ensure you have completely read and understood this manual's Safety chapter, in addition to the safety information in the section(s) below.

5.1. 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).
- Lock winch before operating auger.
- Do not grab or touch drive belts during operation for any reason.

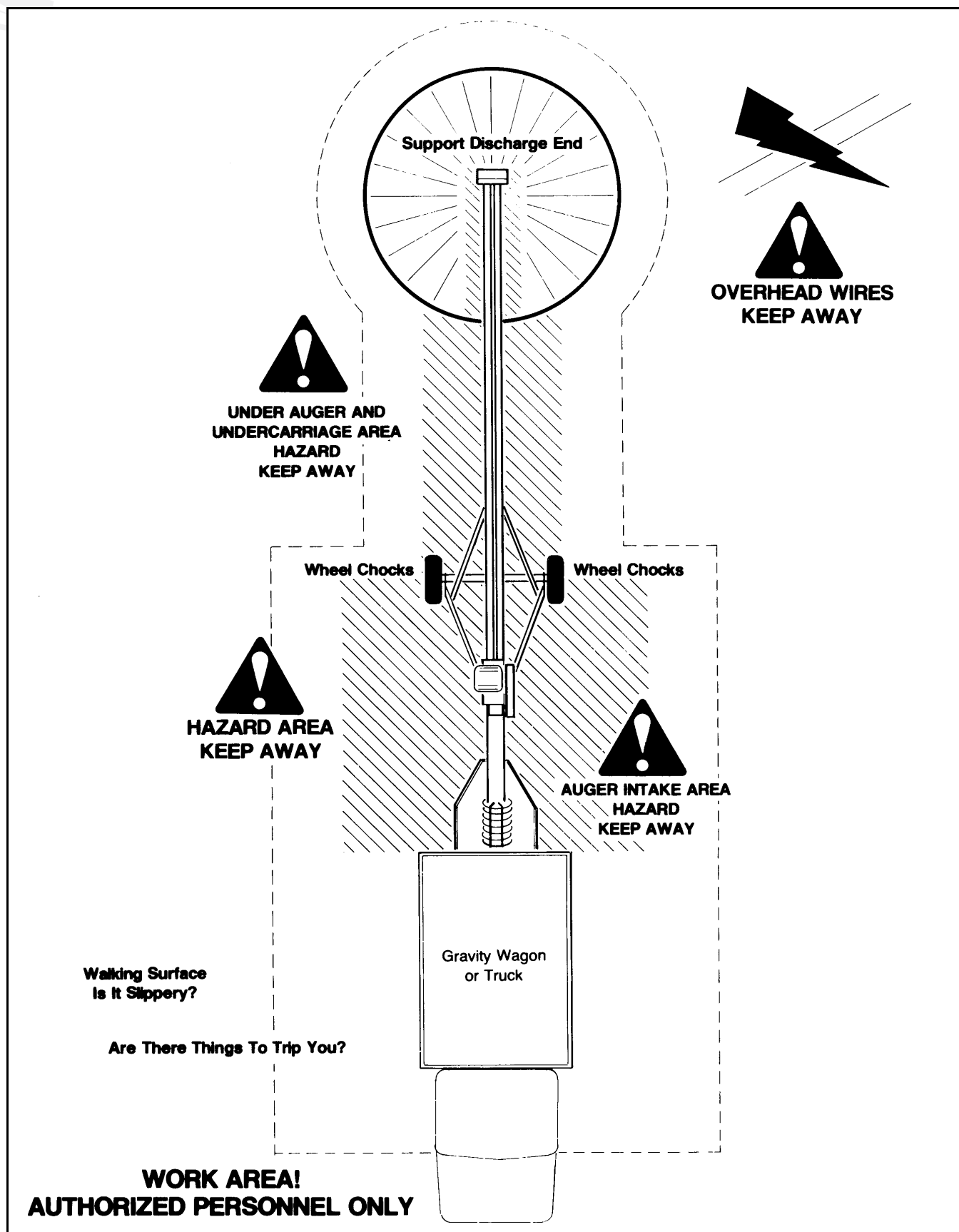


Figure 5.1

5.2. Pre-Operational Checklist

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

- All fasteners are secure as per assembly instructions.
- Drive belt(s) are not frayed or damaged.
- Drive belt(s) are properly adjusted and aligned.
- Before starting gas engine or electric motor, ensure belt release lever is disengaged so that the belt(s) are released from lower motor pulley.
- Lift cable is not frayed or damaged.
- Lift cable is properly seated in cable sheaves.
- Cable clamps are secure.
- Tube alignment is reasonably straight.
- Auger wheels are chocked.
- Intake area and discharge spout are free of obstructions.
- Proper maintenance has been performed.
- Auger is lowered before refuelling or servicing.
- All safety guards are in place and secure.

5.3. Operating Procedure

5.3.1. Start-Up & Break-In

1. Complete the pre-operational checklist at the beginning of this chapter. If everything is satisfactory, prepare for a 30-minute operation at half speed (gas motors).
2. Correctly position portable grain hopper and secure it to the auger with both straps (where applicable).

Important: Anchor and/or support auger during operation. When lower half of auger empties of grain, the weight balance transfers to the upper end of auger, which can cause upending.

3. Start gas engine or electric motor and engage belt release, then feed grain to auger. If auger functions normally, check at varying speeds for a period of 30 minutes (gas engine).



CAUTION Do not start auger until area is clear of all unauthorized personnel.

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

4. Upon completion of initial run, shut down auger (see section below for more information on shutting down your auger).
5. Lock out motor and conduct a complete inspection of auger following the checklist at the beginning of this chapter.

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

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

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.

5.3.3. Shutdown

Normal Shutdown:

1. Near the end of a load, decrease auger speed until all grain is clear.
2. Once auger is clear, stop motor and lock out power.

Important: The flighting rpm on augers equipped with electric motors is not adjustable. To clear auger of grain, decrease the grain flow until auger is clear and stop motor.

Emergency / Full-Tube Restart:

1. If auger is full of grain, do not restart at full speed. Engage the belt release gradually until normal operating speed is reached.
2. If the auger is shut down for an emergency, lock out motor 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** (see Section 2.3. Drives and Lockout Safety on page 8 above for lockout procedure.)

NOTICE

Starting the auger under load may result in damage to unit. Be sure there is no blockage.

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 Lowering procedure below).
4. Clean out auger (see Clean out procedure below).
5. Prepare for transport and placement or storage (see appropriate chapters for more information).

Lowering:

1. Ensure area beneath auger is clear.
2. Turn winch counterclockwise to lower (no clicking sound when lowering).
 - Use a firm grip on handle. Do not release unless ratchet pawl is fully engaged.
 - The winch is designed for manual operation only.
 - When lowering, never continue to turn handle counterclockwise if the cable does not keep moving out under load. This will disengage the brake mechanism and create an unsafe condition. If this happens, winch in slack cable and correct problem.
3. After lowering, turn handle clockwise until you hear 2 clicks to lock brake.



Do not leave auger in raised position when not in use. Auger could drop rapidly due to a cable break. High winds may also upset auger.

Clean out:

1. Shut off motor and lock out power.
2. Manually clean out grain with a piece of wood, vacuum cleaner, or other tool. Do not use hands.

6. Maintenance & Storage



Before continuing, ensure you have completely read and understood this manual's Safety chapter, in addition to the safety information in the section(s) below.

6.1. Maintenance Safety

- Shut down and lock out all power before attempting maintenance of any kind.
- 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.

Support auger tube when changing drive belt(s).

6.2. General Maintenance Procedures

Proper maintenance habits on the MD auger mean a longer life, better efficiency, and safer operation. Please follow the guidelines below.

Area	Maintenance	Frequency
General	While auger is in use, observe Section 5.2. Pre-Operational Checklist on page 41.	Daily
General	Check all operating, lifting, and transport components. Replace damaged or worn parts before using auger. For replacement instructions, see Chapter 3.	Regularly
Lift Cable	Check and replace if frayed or damaged. Make sure cable clamps are secure.	Periodically
Wheel Hubs	Repack with lithium-based grease.	Every 2–3 years
Tire Pressure	Check with a pressure gauge. Pressure should be maintained according to tire side-wall recommendations..	Monthly, or if it seems low
Upper Drive Chain	Fill enclosed upper drive housing to plug level with grease. WR60: 550 g (20 oz) WR80: 750 g (26 oz) For continuous use in extreme cold, semi-fluid arctic grease or heavy oil may be used.	Regularly
Drive Chain Adjustment	Maintain 1/4" - 1/2" (0.64 cm - 1.27 cm) chain deflection. To adjust, loosen bolts on top bearing in the upper drive housing, adjust chain to proper tension, and re-tighten bolts	Regularly

Area	Maintenance	Frequency
Intake Bushing	Grease.	Daily
Drive Belt	Check and replace if frayed or damaged. Ensure tension is correct under load (correct tension is the lowest at which the belts will not slip under peak load conditions)	Frequently
Winch Note: Service winch with auger in fully lowered position and cable slack.	Keep a film of grease on gears.	Regularly
	Oil the ratchet pawl pivot, bushings, and pinion threads. Do not get oil or grease on brake discs.	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
Set Screws	Check and re-tighten set screw on pulleys, u-joints, and the square shaft on the standard u-joint.	Regularly
Motor Mount	Lightly oil motor mount pipes and the belt release eccentric for greater ease in disengaging the drive.	Regularly
Truss Cables	Adjust to keep auger tube reasonably straight.	As necessary

To replace belt(s):

1. Slip the belt(s) over the intake end.
2. Support the discharge end of auger with a front-end loader and a strong sling or chain or a block and tackle.
3. Remove the two 5/8" x 1-1/2" bolts and locknuts connecting the lower reach arms to the auger tube.
4. Remove pulley guards and exchange the old belt(s) with the new belt(s).
5. Re-attach lower-reach arms to mounting bracket on the auger tube with two 5/8" x 1-1/2" bolts and locknuts. Do not overtighten. Tighten snug only. These bolts act as pivot points.
6. Adjust belt tension and check belt alignment ("Motor Drive (MD)" on page 28).
7. Replace all pulley guards.
8. Remove auger support.


6.3. Storage Safety

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

6.4. General Storage Procedures

To protect auger in storage during the off season:

1. Lower the auger to full down position with a slight tension on 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 to pressure indicated on tire sidewall.
5. Cover motor with protective cover from weather.
- ➡ 6. Remove battery (where applicable) and store in a cool, dry place. Recharge periodically as required.
- ➡ 7. Drain gas tank (where applicable).
8. Tow auger to storage site and chock wheels.

 **CAUTION** Support discharge end of auger before removing or replacing any parts on the undercarriage.

To prepare auger for use after storage:

1. Check tire pressure and inflate to pressure indicated on tire sidewall if necessary.
2. Tow auger to worksite.
3. Remove protective covering from motor.
- ➡ 4. Replace battery in holder (where applicable).
5. Replace any damaged parts and decals.
6. Conduct general maintenance procedures before using auger.
- ➡ 7. When recharging battery, follow the correct procedures as indicated in the battery manual (where applicable).
8. Check level of lubrication in upper drive annually and add as needed. Refill to plug level.

7. Troubleshooting



Before continuing, ensure you have completely read and understood this manual's Safety chapter, in addition to the safety information in the section(s) below.

This chapter covers possible causes and solutions to problems you may encounter. If you encounter a problem that is difficult to solve, even after having read this chapter, please contact your local Westfield dealer or distributor. Before contacting them, please have this operation manual and your machine's serial number handy.



WARNING

Shut down and lock out all power sources before diagnosing any of the causes or attempting any of the solutions below.

Problem	Possible Cause	Remedy
Excessive noise or vibration. *Remember to follow proper break-in procedures—auger may run rough until tube is polished. If noise is extreme from outset or continuous after several loads of grain are fed, continue with troubleshooting below	Chatter from wooden bearings.	Spray penetrating lubricant between shaft and bearing surface. Bearings will break in over time. *If replacement of a bearing becomes necessary, split bearings are available to avoid having to slide all bearings off driveshaft.
	Truss cables incorrectly adjusted.	Support end of auger and adjust cables so auger is flat or curves slightly upwards.
	Flighting peeled back due to plugging.	Inspect spout end of auger for flight condition. Remove and replace flight sections as necessary.
	Top drive inadequately lubricated.	Fill to appropriate level with grease. Top drive is not designed to be filled with oil.
	Bent flighting sections.	Support auger and remove all flight sections. Check for straightness of flighting and flight stubs by rolling across flat concrete section. Straighten stub or replace as necessary. Take care not to bend flighting when reinstalling.
	Obstruction in tube.	Visually inspect for cloth or trash wrapped around flighting, or buildup of gum from oily crops such as flax or canola.
Drive belts jumping off pulleys.	Motor misaligned.	Ensure drive and driven pulleys are correctly aligned.
	Belts mismatched.	Check assembly section for correct belt sizes and only replace in pairs.
	Belt tension inadequate.	Maintain correct tension as per assembly section.
	Using a lower horsepower motor than recommended.	Contact dealer for recommended motor sizes.

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 the 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 of auger. If necessary, replace flighting.
	Driveline failure (bearing, gearbox, etc.).	See Maintenance Section.
Premature wear on auger tubes.	Auger being run at low capacity or empty for extended period 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.	
	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.

8. Appendix

8.1. Bolt Torque Values

Tables 8.1 and 8.2 give correct torque values for various bolts and capscrews. The bolt diameter is measured to the outside of the threads. When tightening all bolts, tighten the nut on the bolt to the torque specified in the tables, unless otherwise specified. Do not replace or substitute bolts, nuts, or other hardware that is of lesser strength than the hardware supplied by the manufacturer.

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

Table 8.1 SAE Bolt Torque

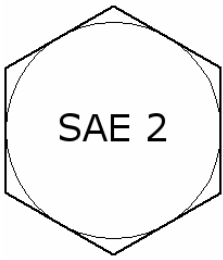
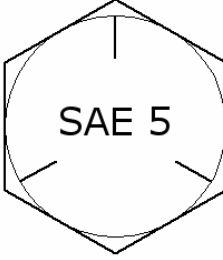
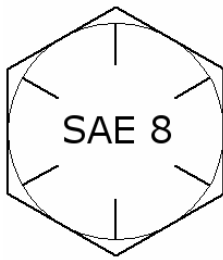
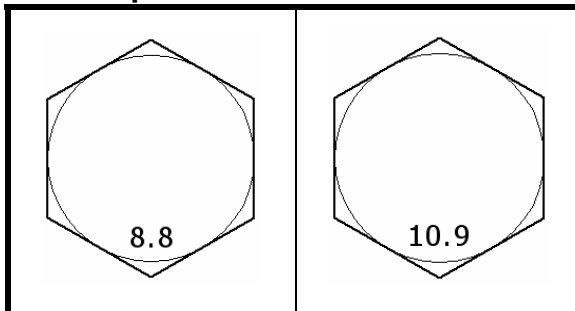
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Bolt Diameter	(N·m)	(ft·lb)	(N·m)	(ft·lb)	(N·m)	(ft·lb)
1/4"	8	6	12	9	17	12
5/16"	13	10	25	19	36	27
3/8"	27	20	45	33	63	45
7/16"	41	30	72	53	100	75
1/2"	61	45	110	80	155	115
9/16"	95	60	155	115	220	165
5/8"	128	95	215	160	305	220
3/4"	225	165	390	290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

Table 8.2 Metric Bolt Torque



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

WARRANTY

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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