

VOLUME 3

MonTag[®]

OPERATORS MANUAL



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1. INTRODUCTION / GENERAL INFORMATION

1.1 INTRODUCTION

Read and understand this manual before using your fertilizer applicator, and follow all of the safety instructions. Keep all manuals in a safe place inside your tractor at all times.

Some components on your fertilizer applicator may have separate instruction manuals. Where this manual indicates that you should read another manual, and you do not have that manual, contact your dealer or Montag Manufacturing for assistance.

Information provided in this manual was current as of the issue date. Montag Manufacturing reserves the right to make design changes without further notice or liability.

1.2 HYDRAULIC REQUIREMENTS

The following tractor hydraulic capacity requirements apply for any dry fertilizer application.

Rows	Hydraulic Capacity	Hydraulic Pressure	Minimum Hydraulic Hose Size		
			Pressure	Return	Case Drain
8 OR 12	16 gpm (61 lpm)	2500 psi (172 bar)	½ inch	¾ inch	½ inch
16	18 gpm (68 lpm)	2600 psi (179 bar)	¾ inch	¾ inch	½ inch
18 OR 24	20 gpm (76 lpm)	2850 psi (197 bar)	¾ inch	1 inch	½ inch

1.3 SPECIFICATIONS

1.3.1 AUTO STEERING CART

Description	Model #	Capabilities	Tire Options
6 Ton Cart	C06B	Can carry any 6 ton dry or 1200 gallon liquid tank.	Standard: 420/85 R34" Options: 380/90 R46" 480/80 R42" 320/90 R46"
9 Ton Cart	C09B	Can carry any 9 ton dry or 1700 gallon liquid tank.	Standard: 380/90 R46" Options: 480/80 R42"
12 Ton Cart	C12B	Can carry any 9 ton dry or 1700 gallon liquid tank.	Standard: 380/90 R46" Options: 24.5"x 32"
6 Ton Lift Assist	C06BLA	Can carry any 6 ton dry or 1200 gallon liquid tank and an additional 6000 lbs (2722 kg).	Standard: 380/90 R46" Options: 480/80 R42"
9 Ton Lift Assist	C09BLA	Can carry any 9 ton dry or 1700 gallon liquid tank and an additional 6000 lbs (2722 kg).	Standard: 380/90 R46" Options: 24.5"x 32"

1.3.2 DRY FERTILIZER METER

Model	Maximum Rated Capacity	Minimum Rated Capacity	Hose Size
Standard Meter			
8 Row Standard	500 lbs. /Acre @ 5 mph*	50 lbs. /Acre @ 5 mph*	2 inch
12 Row Standard	500 lbs. /Acre @ 5 mph*	50 lbs. /Acre @ 5 mph*	2 inch
16 Row Standard	500 lbs. /Acre @ 5 mph*	50 lbs. /Acre @ 5 mph*	2 inch
18 Row Standard	400 lbs. /Acre @ 5 mph*	50 lbs. /Acre @ 5 mph*	2 inch
High Output Meter			
8 Row High Output	800 lbs. /Acre @ 5 mph*	100 lbs. /Acre @ 5 mph*	2½ inch
12 Row High Output	800 lbs. /Acre @ 5 mph*	100 lbs. /Acre @ 5 mph*	2½ inch
16 Row High Output	800 lbs. /Acre @ 5 mph*	100 lbs. /Acre @ 5 mph*	2½ inch
18 Row High Output	500 lbs. /Acre @ 5 mph*	100 lbs. /Acre @ 5 mph*	2½ inch
24 Row High Output	500 lbs. /Acre @ 5 mph*	100 lbs. /Acre @ 5 mph*	2½ inch

Model	Maximum Rated Capacity	Minimum Rated Capacity	Hose Size
Twin Bin Meter			
8 Row Twin-Bin	300 lbs. /Acre @ 5 mph. ea. Tank*	100 lbs. /Acre @ 5 mph. ea. Tank*	2½ inch
12 Row Twin-Bin	300 lbs. /Acre @ 5 mph. ea. Tank*	100 lbs. /Acre @ 5 mph. ea. Tank*	2½ inch

* Capacities are based on fertilizer weighing 64 lbs./cubic ft. and 30" row spacing with standard hose length equipped with cart.

1.3.3 LIQUID FERTILIZER CART

Model	Steering Cart	Tank Description
850 Gallon Cart	6 Ton	850 Gallon Elliptical
1200 Gallon Cart	6 Ton	1200 Gallon 15 Degree Cone Bottom
1700 Gallon Cart	9 Ton	1700 Gallon 15 Degree Cone Bottom

1.4 WARRANTY INFORMATION

MONTAG MANUFACTURING, INC.

LIMITED WARRANTY FOR NEW MONTAG EQUIPMENT

What this Limited Warranty Covers - Montag Manufacturing, Inc. ("Montag") warrants equipment manufactured by it to be free from defects in material and workmanship for the warranty period.

What this Limited Warranty Does Not Cover - Montag is not responsible for, and this limited warranty does not cover: (1) used parts, (2) any part that has been altered or modified in ways not approved by Montag, (3) depreciation or damage caused by normal wear and tear, (4) unauthorized repair or adjustments, (5) reimbursement for work completed by an unauthorized service center, (6) other equipment, crops, or property with which Montag equipment comes into contact, (7) components manufactured and warranted by other manufacturers such as tires and hydraulic equipment, (8) loss of time, loss of use, towing charges, or other incidental or consequential damages, or (9) to equipment which has been damaged as the result of, misuse, abuse, lack of proper protection during storage, accident, failure to follow the operating instructions and perform routine maintenance as provided in the operator's manual, fire, flood, "Acts of God" or other contingencies beyond Montag's control.

Warranty Term and Coverage - This limited warranty provides coverage for three years from the date the equipment is delivered to the first purchaser and extends to the original purchaser and any subsequent owner.

What Montag Will Do – (1) Montag will provide telephone consultation with a trained representative regardless of the location of the equipment. (2) For equipment located in the general geographic area served by a Montag dealer, Montag may, if Montag deems it necessary or expedient, send a trained technician to work on the equipment at the owner's place of business. (3) Equipment that requires service or repair at the Montag manufacturing facility or at an authorized Montag dealership must be transported or shipped to and from the Montag manufacturing facility or Montag authorized dealership at the owner's sole expense.

To Get Warranty Service – To get warranty service the owner must (1) report the defect to an authorized dealer and request repair within the warranty term, (2) present evidence of the warranty start date, and (3) make the product available to the dealer within a reasonable time. The owner can also contact Montag by U.S. Mail at 3816 461st Ave. Emmetsburg, Iowa 50536; by telephone at (712)-852-4572; by facsimile at (712)-852-4574; or by e-mail at support@montagmfg.com

Limitation of Implied Warranties and Other Remedies – To the extent permitted by law, Montag makes no warranties, representations or promises as to the quality, performance or freedom from defect of its equipment covered by this limited warranty. IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE TO THE EXTENT APPLICABLE, SHALL BE LIMITED IN DURATION TO THE APPLICABLE PERIOD OF WARRANTY SET FORTH IN THIS LIMITED WARRANTY. THE OWNER'S ONLY REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ARE SET FORTH IN THIS LIMITED WARRANTY. IN NO EVENT WILL MONTAG OR ANY MONTAG DEALER BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. (Note: Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages so the above limitations may not apply to you.) This warranty gives you specific legal rights, and you have also have other rights which vary from state to state.

No Dealer Warranty – The selling dealer makes no warranty of its own and the dealer has no authority to make any representation on behalf of Montag, or to modify the terms or limitations of this warranty in any way.


2. SAFETY

2.1 SECTION OVERVIEW

This section explains the level of risk and potential hazards associated with operating and maintaining Montag Fertilizer Application Systems. The safety signs and their locations on the machine are also identified.

2.2 SAFETY

This Owner's Manual covers the fertilizer applicator produced by Montag Manufacturing. Before operating or servicing the fertilizer applicator, you must read, understand and follow the instructions and safety warnings in this manual. Your fertilizer applicator may not be equipped with some of the optional equipment shown in the illustrations in this manual.

The safety information in this manual is denoted by the safety alert symbol: 

The level of risk is indicated by the following signal words.

DANGER

Indicates an imminently hazardous situation that, if not avoided, *will* result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

WARNING

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE

Indicates a situation that could result in damage to the machine or other property.

2.2.1 KEEP ALL GUARDS IN PLACE

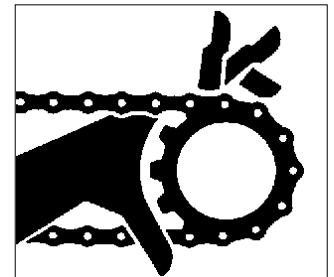
Remove guards only for adjustment and maintenance, install immediately when task is completed. Do not operate meter or fan with covers removed. Do not wear loose fitting clothing that can catch in rotating equipment.

WARNING

Severing hazard.

Rotating fans and moving chains can sever digits.

Always keep all guards and shields in place.



2.2.2 STAY AWAY FROM ROTATING AUGERS

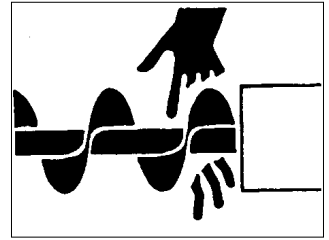
Keep hands and fingers away from metering augers unless chain has been removed from auger drive sprocket.

⚠ WARNING

Severing hazard.

Rotating augers can sever digits.

Remove chain from auger drive sprocket before touching metering augers.



2.2.3 KEEP RIDERS OFF EQUIPMENT

Never allow people on or near the equipment while it is moving. Riders can be thrown off or under the equipment, which may result in death or serious injury. Never climb on equipment while equipment is moving. Keep children away from equipment at all times.

Never climb onto cart when it is not attached to an implement. Cart could tip, which may result in death or serious injury.

⚠ WARNING

Crushing hazard.

Riders can fall from equipment, resulting in death or serious injury.

Never allow riders on the equipment.

Never climb on cart not attached to implement.



2.2.4 AVOID HOT PARTS

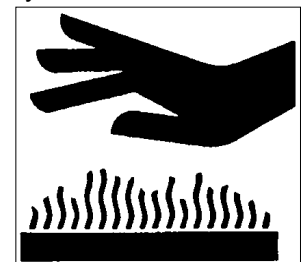
After several minutes of equipment operation, surfaces containing hydraulic fluid can become very hot.

⚠ WARNING

Burn hazard.

Do not touch hot hydraulic surfaces.

Do not work on hydraulic system when it is hot.



2.2.5 AVOID HIGH PRESSURE HYDRAULIC FLUID

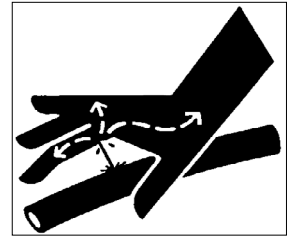
Always relieve hydraulic system pressure before performing any work on the system. Use a piece of cardboard or paper, not your hand, to check for leaks.

⚠ WARNING

Relieve pressure before disconnecting hydraulic lines.

Tighten all connections before applying pressure.

Seek medical attention immediately if fluid is injected into skin.



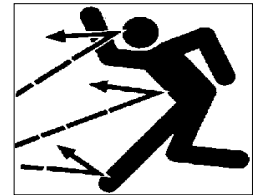
2.2.6 AVOID FLYING OBJECT INJURIES

When fan is running, debris can be thrown from the air outlet, causing injury or possible loss of sight.

⚠ WARNING

Projectile hazard.

Do not stand in front of air outlet while fan is operating.



2.2.7 AVOID LOSS OF CONTROL

Transporting cart at excessive speed can result in loss of cart control, causing death or serious injury.

⚠ WARNING

Danger of loss of control when transporting cart.

Remove all product from tank before transporting on roads. With empty tanks, maximum speed for cart on roads is 30 mph.

Maximum speed for cart with full tank is 10 mph.

2.2.8 AVOID TIPPING CART

If stairs and platform are installed on rear of dry tank, tank can tip over if people climb on stairs with cart disconnected from implement, resulting in death or serious injury.

⚠ WARNING

Crushing hazard.

Do not climb on tank stairs or platform when cart is disconnected from implement.

2.2.9 CLEARANCE

⚠ WARNING

Collision hazard.

Know the height, width and length of the equipment.

Always be aware of clearances.

2.2.10 MAINTENANCE

⚠ WARNING

Crushing hazard.

Before performing inspections, service or maintenance:

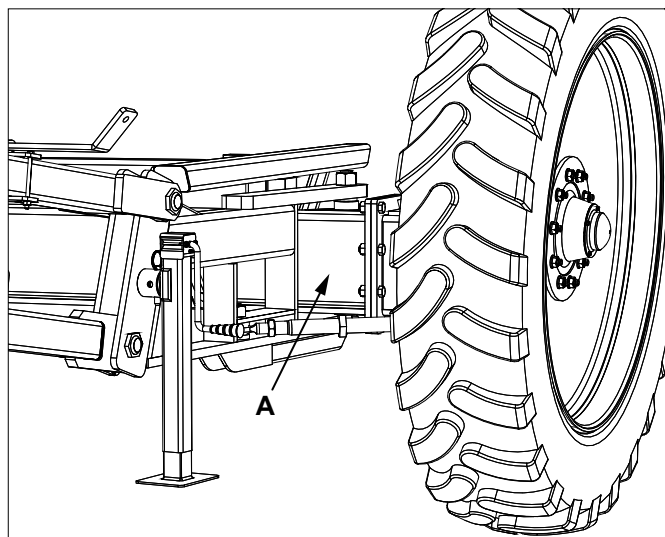
- **Park the equipment on firm, level surface.**
- **Place tractor transmission in park, turn tractor engine off and remove ignition key.**
- **Verify service locks are properly engaged or lower tool bar and lower row units to the ground or pavement.**

2.2.11 HAZARDS FROM MODIFYING YOUR FERTILIZER APPLICATOR

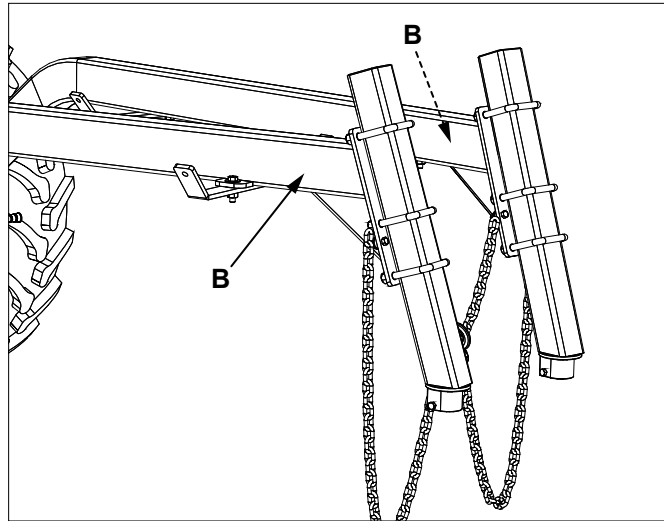
Before making any alteration, contact your dealer or Montag Manufacturing and describe the alteration you are contemplating. Altering may void the manufacturer's warranty.

2.2.12 SAFETY WARNING LABEL LOCATIONS

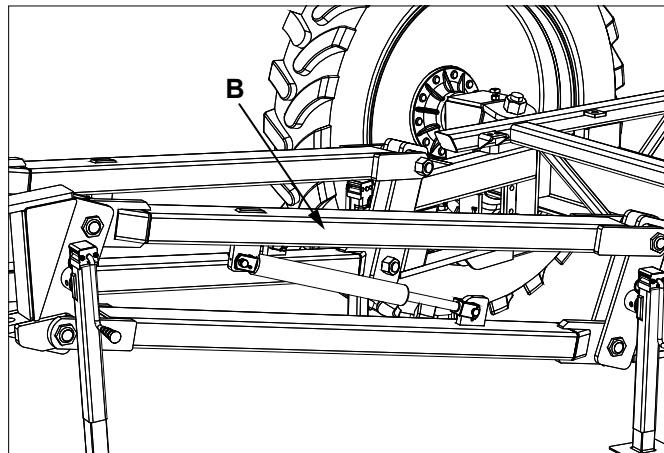
CART WARNING LABELS



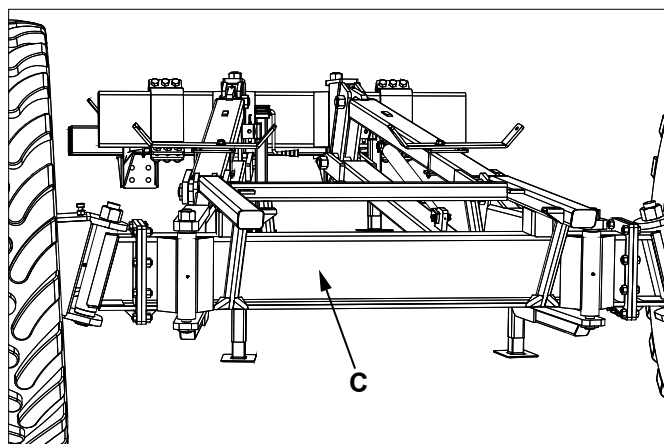
Center Frame - Tie-Rod Area



Arms (Except 9 Ton With Lift Assist)

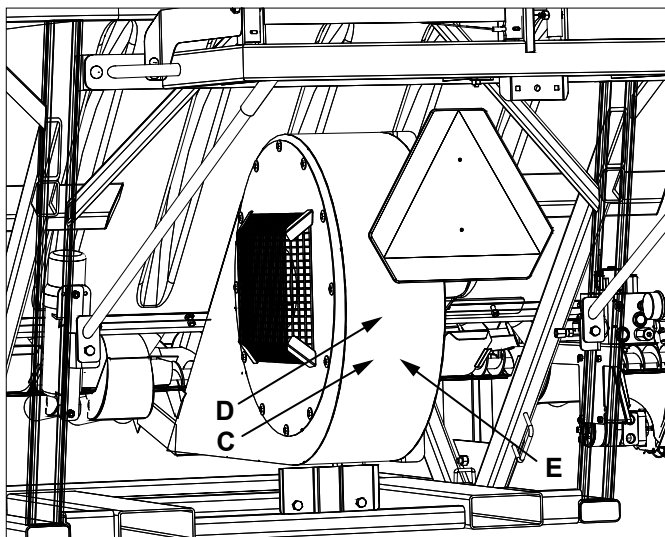


Arms (9 Ton With Lift Assist)

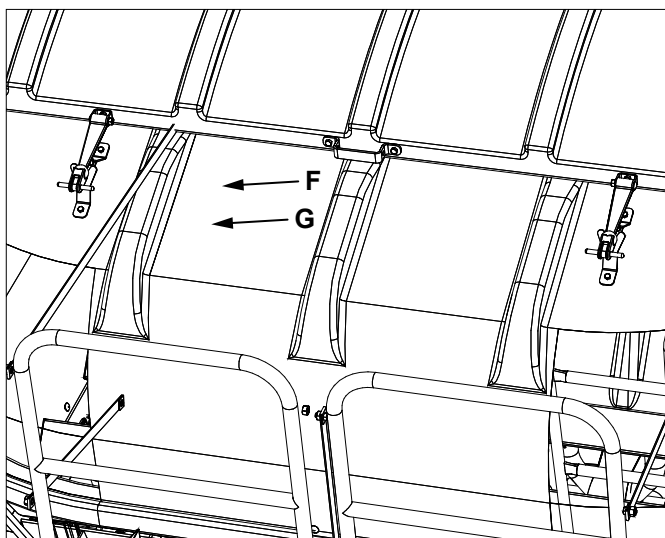


Rear Of Center Frame

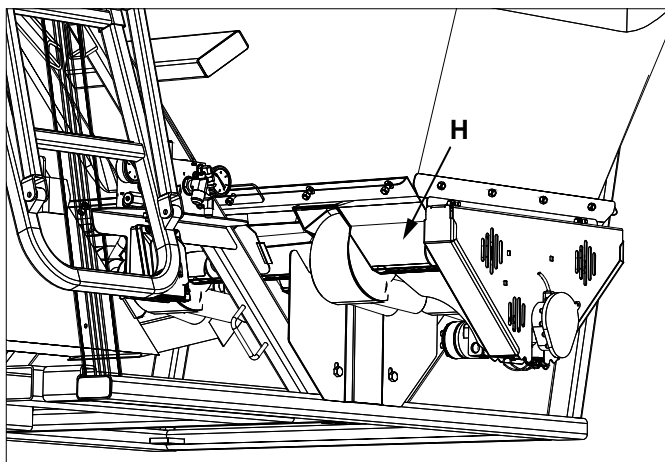
DRY TANK WARNING LABELS



Fan Housing

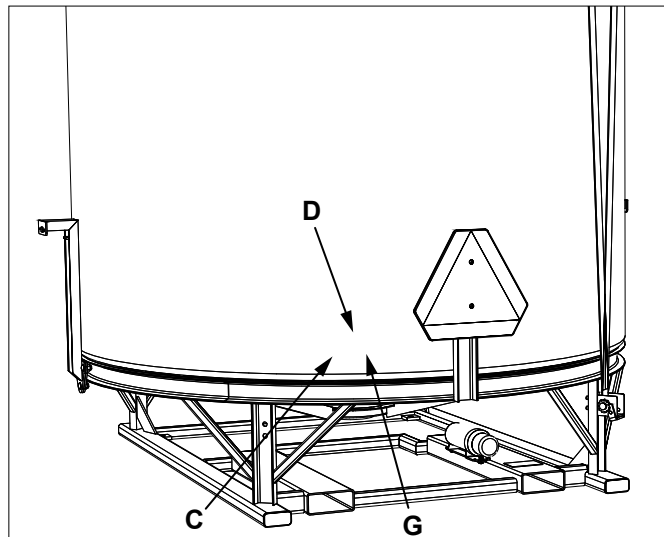


Top Of Tank



Auger Motor

LIQUID TANK WARNING LABELS



2.2.13 SAFETY WARNING LABELS



Label A



Label B



Label C



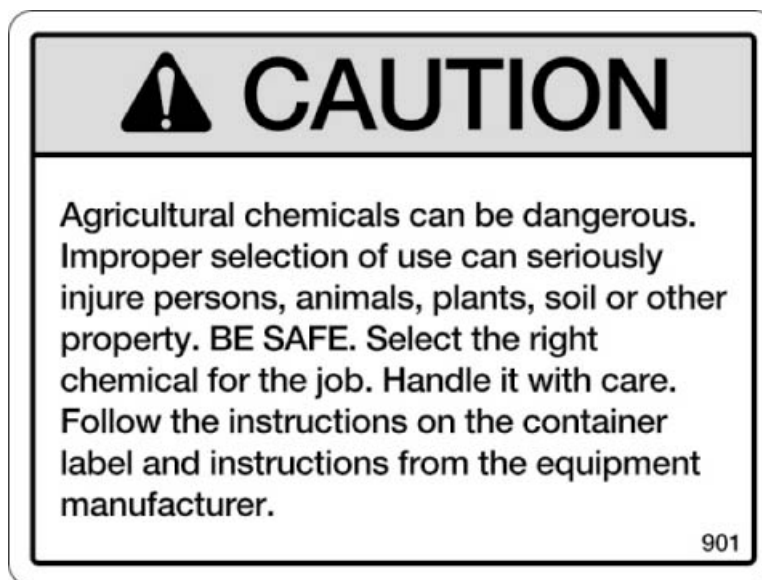
Label D



Label E



Label F



Label G



Label H

⚠ WARNING

To protect against death or serious injury, all labels must be on the machine and must be legible.

If any of these labels are missing or cannot be read, call Montag Manufacturing at 1-712-852-4572, or e-mail support@montagmfg.com, for replacement labels.

2.2.14 SAFETY DECAL CARE

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or have become illegible.
- Replaced parts that displayed a safety sign should also display the current sign.
- Safety signs are available from your Distributor or Dealer Parts Department or the factory.

How to Install Safety Signs:

- Be sure that the installation area is clean and dry.
- Decide on the exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of decal backing paper.

2.2.15 TIRE SAFETY

- Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which 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.
- Inflating or servicing tires can be dangerous. Whenever possible, trained personnel should be called to service and/or mount tires.
- Always order and install tires and wheels with appropriate capacity to meet or exceed the anticipated weight to be placed on the equipment.
- The rims and tires should be mounted on the cart with the valve stem to the outside. Be sure you have proper tire pressure and the lug nuts are properly tightened.

2.2.16 LIGHTING AND MARKING

- It is the responsibility of the customer to know the lighting and marking requirements of the local highway authorities and to install and maintain the equipment to provide compliance with the regulations. Add extra lights when transporting at night or during periods of limited visibility.
- Lighting kits are available from your dealer or from the manufacturer.

2.3 HIGHWAY AND TRANSPORT OPERATIONS

- Adopt safe driving practices:
 - Keep the brake pedals latched together at all times. NEVER USE INDEPENDENT BRAKING WITH MACHINE IN TOW AS LOSS OF CONTROL AND/OR UPSET OF UNIT CAN RESULT.
 - Always drive at a safe speed relative to local conditions and ensure that your speed is low enough for an emergency stop to be safe and secure. Keep speed to a minimum.
 - Reduce speed prior to turns to avoid the risk of overturning.
 - Avoid sudden uphill turns on steep slopes.
 - Always keep the tractor or towing vehicle in gear to provide engine braking when going downhill. Do not coast.
 - Do not drink and drive!
- Comply with state and local laws governing highway safety and movement of farm machinery on public roads.
- Use approved accessory lighting flags and necessary warning devices to protect operators of other vehicles on the highway during daylight and nighttime transport. Various safety lights and devices are available from your dealer.
- The use of flashing amber lights is acceptable in most localities. However, some localities prohibit their use. Local laws should be checked for all highway lighting and marking requirements.
- When driving the tractor and equipment on the road or highway under 40 kph (20 mph) at night or during the day, use flashing amber warning lights and a slow moving vehicle (SMV) identification emblem.
- Plan your route to avoid heavy traffic.
- Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc.
- Be observant of bridge loading ratings. Do not cross bridges rated lower than the gross weight as which you are operating.
- Watch for obstructions overhead and to the side while transporting.
- Always operate equipment in a position to provide maximum visibility at all times. Make allowances for increased length and weight of the equipment when making turns, stopping the unit, etc.
- Pick the levellest possible route when transporting across fields. Avoid the edges of ditches or gullies and steep hillsides.
- Be extra careful when working on inclines.
- Maneuver the tractor or towing vehicle at safe speeds.
- Avoid overhead wires or other obstacles. Contact with overhead lines could cause serious injury or death.
- Avoid loose fill, rocks and holes; they can be dangerous for equipment operation or movement.
- Allow for unit length when making turns.
- Operate the towing vehicle from the operator's seat only.
- Never stand alongside of unit with engine running or attempt to start engine and/or operate machine while standing alongside of unit.
- Never leave running equipment attachments unattended.
- As a precaution, always recheck the hardware on equipment following every 100 hours of operation. Correct all problems. Follow the maintenance safety procedures.

3.1 CART ASSEMBLY OVERVIEW

Cart assembly procedures are about the same regardless of cart size. The exception is the lift-assist cart which has a different arm configuration.

3.2 CART SHIPPING CONFIGURATION

Standard Carts are shipped with the following components for assembly:

- Center Frame
- Spindle Assemblies (Left /Right)
- Arms (2) - (Left /Right)
- Wheels (2)
- Adjustable Hitches (2)
- Hitch Balls (2-5/16 inch) (2)
- Floating Saddles (4) (Dry fertilizer use only)
- Jacks (2)

Lift Assist Carts are shipped with the following components for assembly:

- Center Frame
- Spindle Assemblies (Left /Right)
- Arms (4) (Top/Bottom, Left/Right)
- Arm Support Brackets (Front/Rear, Left/Right)
- Wheels (2)
- Toolbar Mounted Hitch
- Floating Saddles (2) (Dry fertilizer use only)
- Hydraulic Cylinders (2)
- Jacks (4)

3.3 CART ASSEMBLY (STANDARD CARTS)

3.3.1 INSTALL AXLE SPACERS (IF EQUIPPED)

Note: If cart is not equipped with axle spacers, go to 3.3.2.

⚠ WARNING

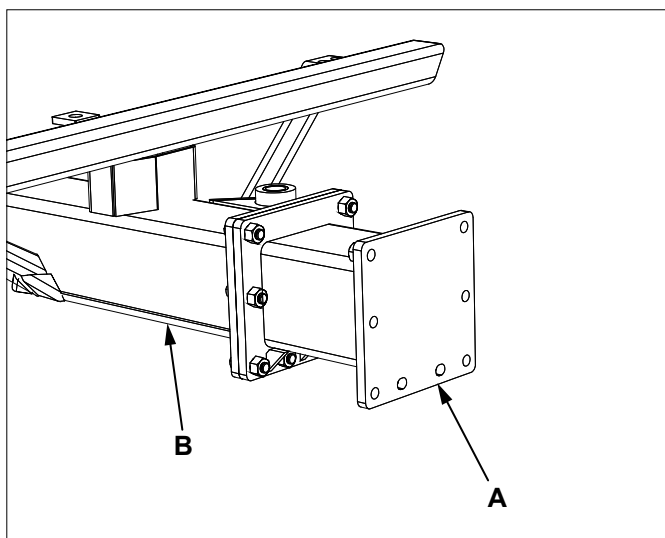
Prevent death or serious injury.

Center frame assembly weighs approximately 750 lbs (340 kg).

Axle spacer weighs approximately 165 lbs (75 kg).

Use adequate lifting and support devices.

1. Raise and support center frame using adequate lifting and support devices capable of supporting up to 10,000 lbs (4536 kg) total assembly weight.
2. Install axle spacer (A) to center frame (B) with $\frac{3}{4}$ -10 x $2\frac{1}{2}$ inch bolts and $\frac{3}{4}$ inch lock nuts. Tighten bolts to 250 lb/ft (339 Nm) of torque.



3.3.2 INSTALL KING PIN END CAPS

⚠ WARNING

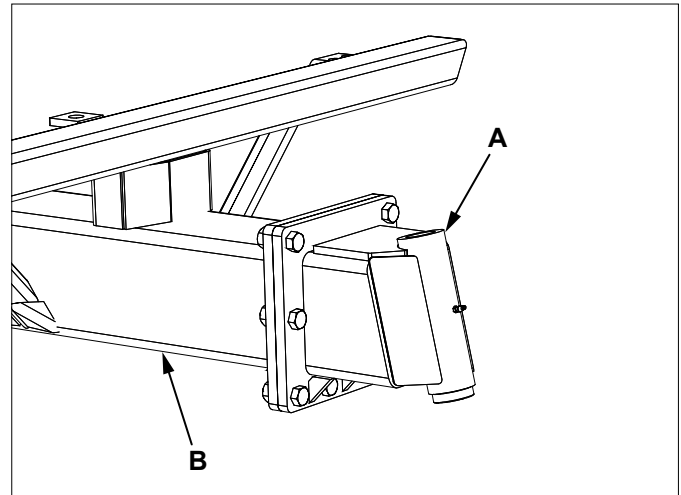
Prevent death or serious injury.

Center frame assembly weighs approximately 750 lbs (340 kg).

King pin end cap weighs approximately 100 lbs (45 kg).

Use adequate lifting and support devices.

1. Raise and support center frame using adequate lifting and support devices capable of supporting up to 10,000 lbs (4536 kg) total assembly weight.
2. Install end cap (A) to center frame (B) or optional axle spacer with $\frac{3}{4}$ -10 x 2 $\frac{1}{2}$ inch bolts and $\frac{3}{4}$ inch lock nuts. Tighten bolts to 250 lb/ft (339 Nm) of torque.
3. Repeat step 2 for other side.



3.3.3 INSTALL SPINDLE ASSEMBLIES

⚠ WARNING

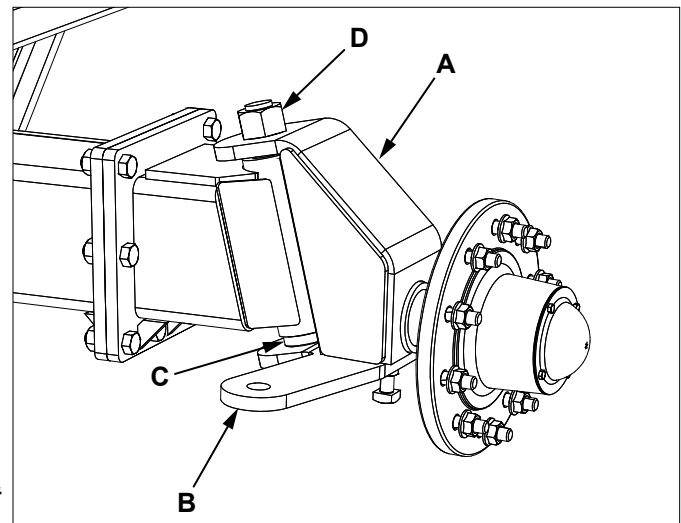
Prevent death or serious injury.

Spindle assembly weighs approximately 360 lbs (163 kg).

Use adequate lifting and support devices.

1. Raise and position spindle assembly (A) on king pin end cap.

Note: Tie-rod mounting bracket (B) faces forward. Pins are inserted from bottom (nut on top) to permit pin removal without removal of fertilizer tank skid.



2. Insert spindle pin from bottom through lower spindle assembly bracket. Bearing (C) must be between spindle assembly and king pin end cap as shown.
3. Install lock nut (D) on spindle pin. Tighten as securely as possible without bending plates.
4. Repeat Steps 1-3 for other side.

3.3.4 INSTALL ARMS TO CENTER FRAME

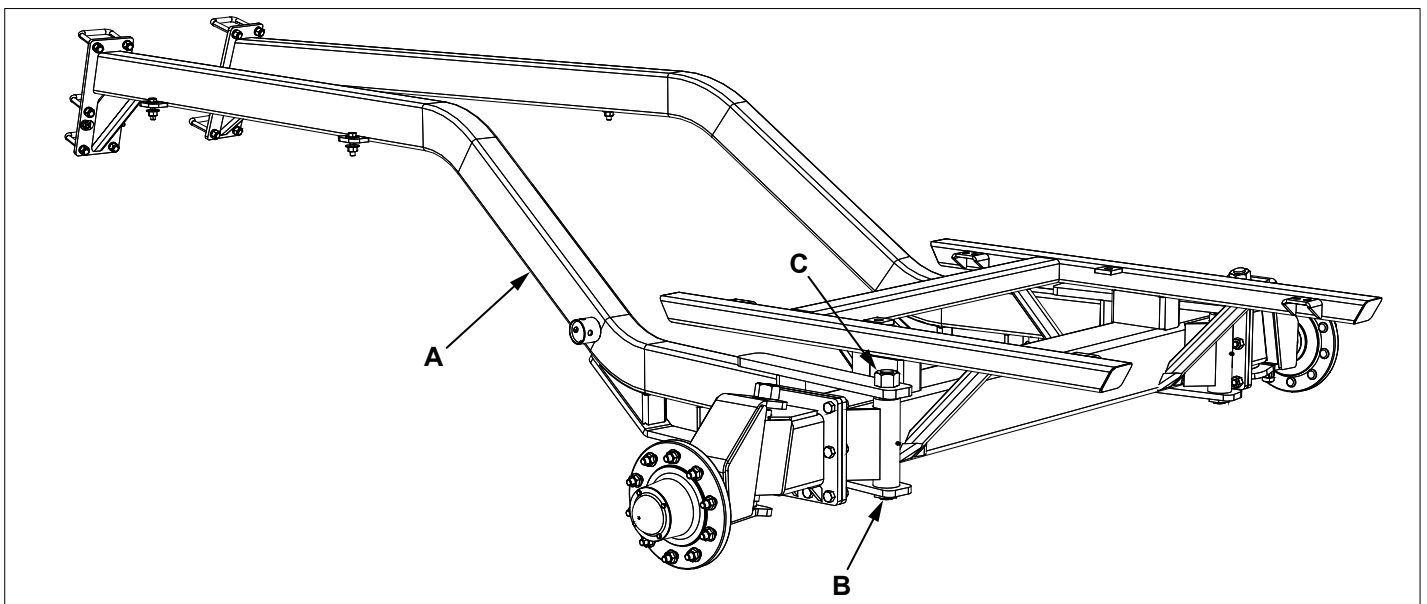
⚠ WARNING

Prevent death or serious injury.

Arm assembly weighs approximately 470 lbs (213 kg).

Use adequate lifting and support devices.

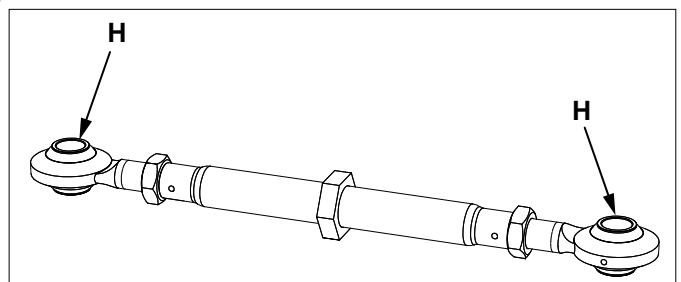
1. Position arm (A) on center frame.
2. Insert 1½ inch arm pin (B) from bottom up through brackets.
3. Install 1½ inch lock nut (C) on pin and tighten nut to eliminate any space between upper or lower arm support bracket and center frame. Arm should move freely after tightening nut.
4. Rest free end of arm on a suitable support device and remove lifting device.
5. Repeat steps 1-4 for other side.



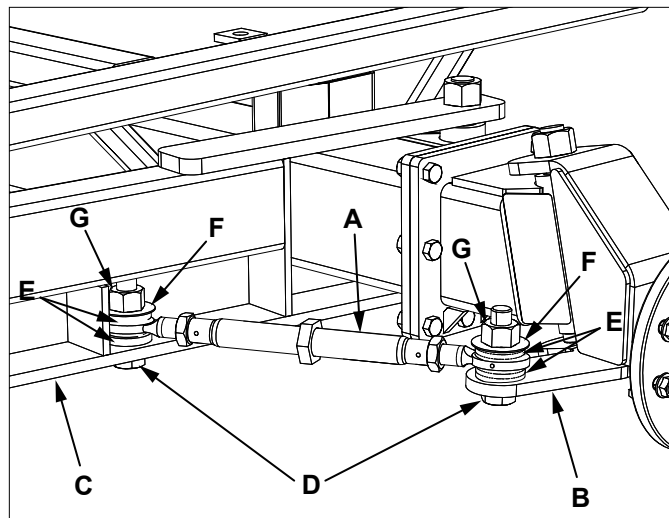
3.3.5 INSTALL TIE-RODS

Note: Install bolts from bottom (nut on top) to take advantage of strength of bolt shaft through bracket.

1. Tie rod end must be lubricated prior to installation. Rotate inner collar (H) while pumping grease into fitting to lubricate entire surface of the joint.



2. Install tie-rod (A) on spindle assembly bracket (B) and arm (C) with grease zerks facing forward.
3. Install 1¼ inch bolts (D), foam gaskets (E), washers (F) and 1¼ inch nuts (G).
4. Tighten bolts to 1000 lb/ft (1357 Nm) of torque.
5. Lubricate tie rod ends again.
6. Repeat steps 1-5 for other side.



3.3.6 INSTALL WHEELS

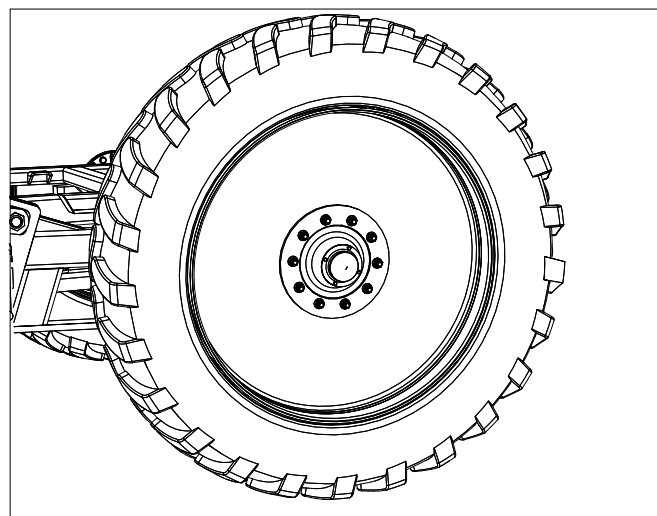
⚠ WARNING

Prevent death or serious injury.

Tire/wheel assembly weighs approximately 765 lbs (347 kg).

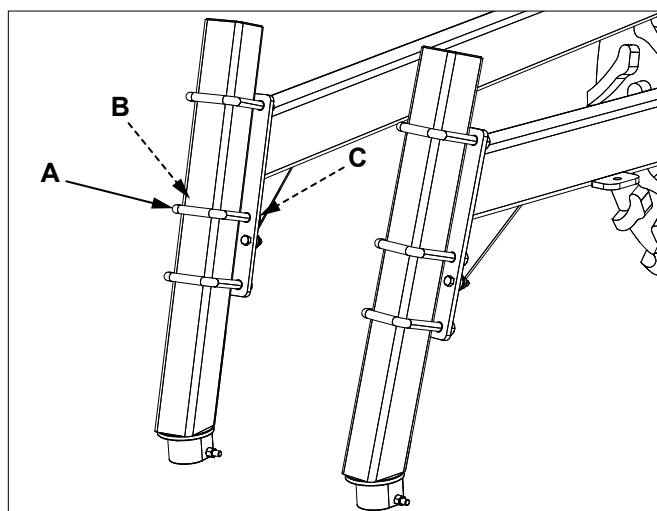
Use adequate lifting and support devices.

1. Position wheel on spindle with an adequate lifting device.
2. Install ¾-16 lug nuts. Tighten lug nuts to 275 lb/ft (373 Nm) of torque in a crisscross star pattern.
3. Repeat steps 1-2 for other side.
4. Check torque on lug nuts after first hour of use and again after first day of use.



3.3.7 INSTALL ADJUSTABLE HITCHES

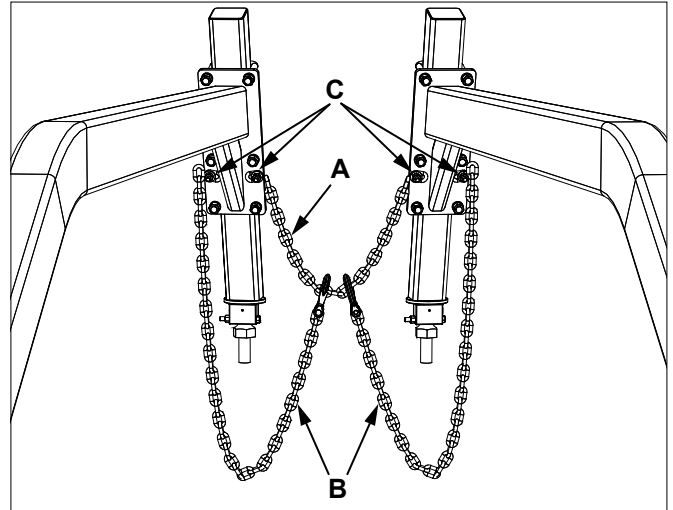
1. Install ball hitch or knuckle hitch on each arm as illustrated using three ¾-10 x 4 wide x 5½ inch long U-bolts with lock washers and nuts. Tighten nuts until all six nuts are in contact with plate.
2. Starting with middle U-bolt (A), alternate tightening nut (B) and nut (C) in 25 lb/ft (34 Nm) increments until each nut is tightened to 150 lb/ft (204 Nm) of torque. Then tighten each nut to 160 lb/ft (217 Nm) of torque. Avoid over tightening either side.
3. Repeat tightening procedure for top and bottom U-bolts.



3.3.8 INSTALL SAFETY CHAINS

Follow this procedure if chains were not installed at the factory.

1. Install 26 in. (660 mm) short chain (A) and long chains (B) as shown. Place four $\frac{1}{2}$ x $2\frac{1}{2}$ inch bolts (C) from front of cart through plate, long chain, washer and lock nut.
2. Tighten bolts to 57 lb/ft (77 Nm) of torque.
3. Install clevis hook on end of each long chain.



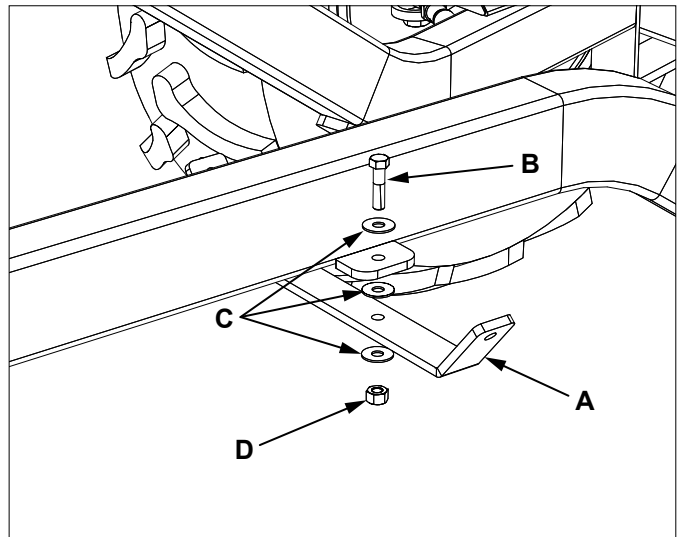
3.3.9 INSTALL FLOATING SADDLES (DRY FERTILIZER USE ONLY)

Note: Four floating saddles (A) are provided on standard carts.

1. Position floating saddles (A) under brackets on cart arms with short sides of arms to outside of cart.

Note: Floating saddles must move freely to accommodate movement of hoses. Do not fully tighten lock nuts.

2. Install $\frac{5}{8}$ x $1\frac{1}{2}$ inch bolt (B), $\frac{5}{8}$ inch spacers (C) and $\frac{5}{8}$ inch lock nut (D). Tighten lock nut so it is snug, but saddle can still move freely.
3. Repeat steps 1-2 for other side.



3.4 CART ASSEMBLY (WITH LIFT ASSIST)

3.4.1 INSTALL AXLE SPACERS (IF EQUIPPED)

Note: If cart is not equipped with axle spacers, go to 3.4.2.

⚠ WARNING

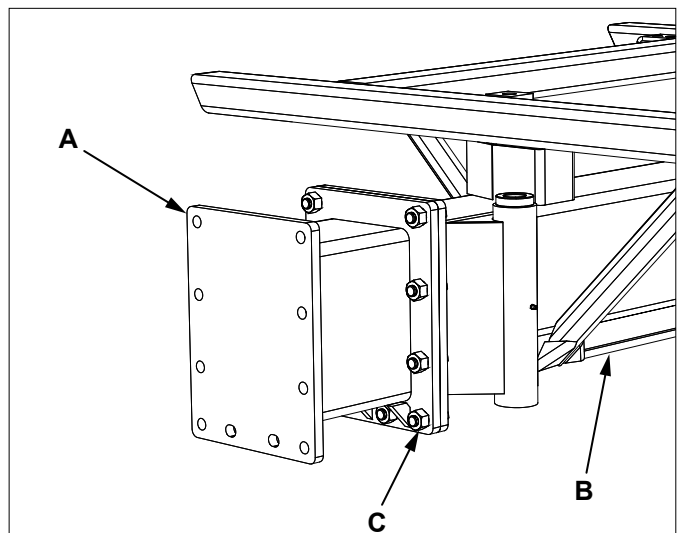
Prevent death or serious injury.

Center frame assembly weighs approximately 750 lbs (340 kg).

Axle spacer weighs approximately 165 lbs (75 kg).

Use adequate lifting and support devices.

1. Raise and support center frame using adequate lifting and



support devices capable of supporting up to 10,000 lbs (4536 kg) total assembly weight.

2. Install axle spacer (A) to center frame (B) with $\frac{3}{4}$ -10 x 2 $\frac{1}{2}$ inch bolts and $\frac{3}{4}$ inch lock nuts (C). Tighten bolts to 250 lb/ft (339 Nm) of torque.
3. Repeat step 2 for other side.

3.4.2 INSTALL KING PIN END CAPS

⚠ WARNING

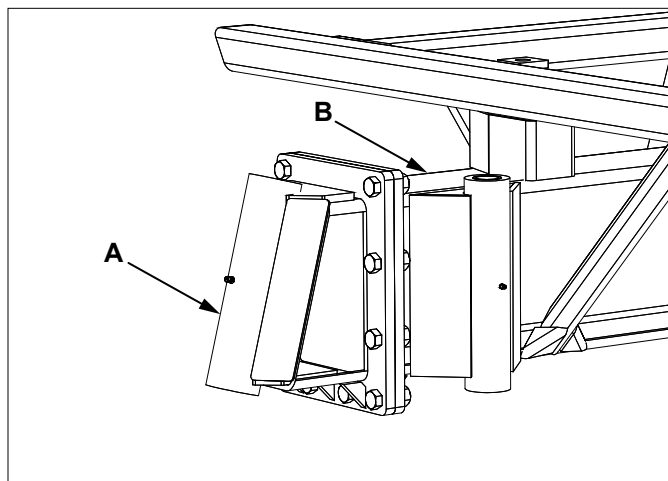
Prevent death or serious injury.

Center frame assembly weighs approximately 750 lbs (340 kg).

King pin end cap weighs approximately 100 lbs (45 kg).

Use adequate lifting and support devices.

1. Raise and support center frame using adequate lifting and support devices capable of supporting up to 10,000 lbs (4536 kg) total assembly weight.
2. Install end cap (A) to center frame (B) or optional axle spacer with $\frac{3}{4}$ -10 x 2 $\frac{1}{2}$ inch bolts and $\frac{3}{4}$ inch lock nuts. Tighten bolts to 250 lb/ft (339 Nm) of torque.
3. Repeat step 2 for other side.



3.4.3 INSTALL SPINDLE ASSEMBLIES

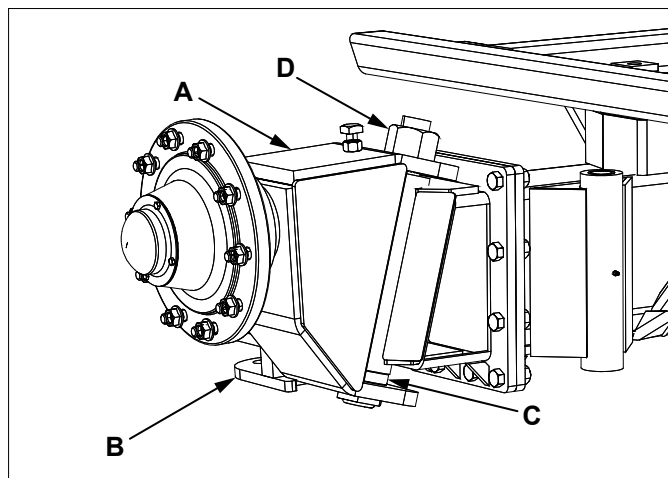
⚠ WARNING

Prevent death or serious injury.

Spindle assembly weighs approximately 360 lbs (163 kg).

Use adequate lifting and support devices.

1. Raise and position spindle assembly (A) on king pin end cap.



Note: Tie-rod mounting bracket (B) faces forward. Pins are inserted from bottom (nut on top) to permit pin removal without removal of fertilizer tank skid.

2. Insert spindle pin from bottom through lower spindle assembly bracket. Bearing (C) must be between spindle assembly and king pin end cap as shown.
3. Install lock nut (D) on spindle pin. Tighten as securely as possible without bending plates.
4. Repeat steps 1-3 for other side.

3.4.4 INSTALL REAR ARM SUPPORTS

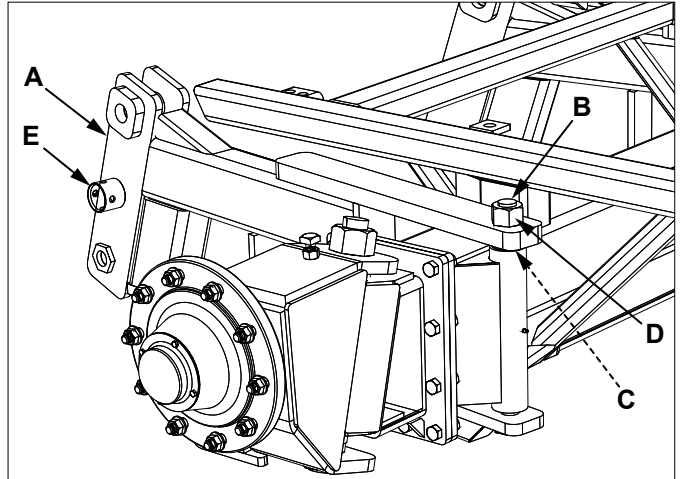
⚠ WARNING

Prevent death or serious injury.

Arm support weighs approximately 295 lbs (134 kg).

Use adequate lifting and support devices.

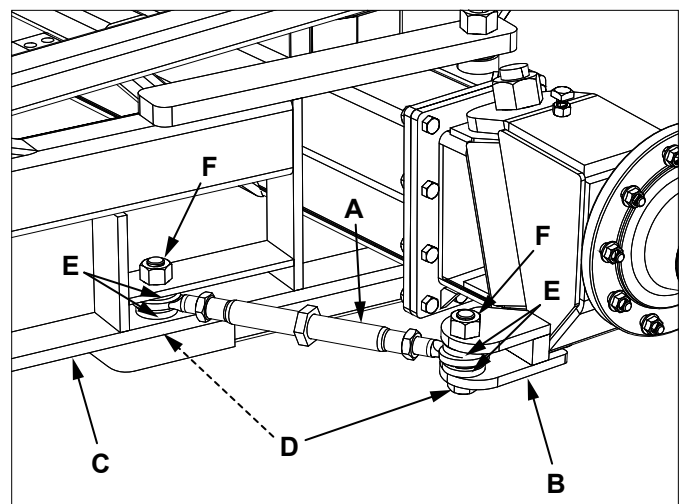
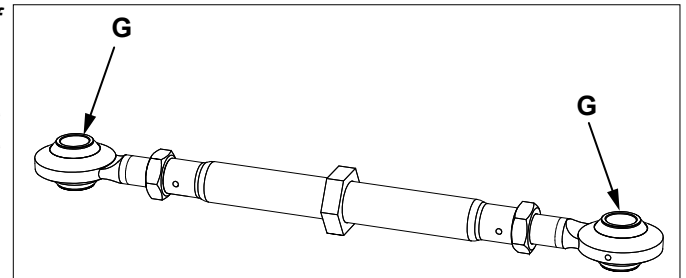
1. Position arm support (A) on center frame with jack mount (E) facing out.
2. Install bearing (C) as shown under top of arm.
3. Insert $1\frac{1}{2}$ x $19\frac{1}{4}$ inch pin (B) from bottom up through brackets.
4. Install $1\frac{1}{2}$ inch lock nut (D) on pin and tighten nut to eliminate any space between upper or lower arm support bracket and center frame. Arm should move freely after tightening nut.
5. Repeat steps 1-4 for other side.



3.4.5 INSTALL TIE-RODS

Note: Install bolts from bottom (nut on top) to take advantage of strength of bolt shaft through bracket.

1. Tie rod end must be lubricated prior to installation. Rotate inner collar (G) while pumping grease into fitting to lubricate entire surface of the joint.
2. Install tie-rod (A) on spindle assembly bracket (B) and arm (C) with grease zerk facing forward.
3. Install $1\frac{1}{4}$ inch bolts (D), foam gaskets (E) and $1\frac{1}{4}$ inch nuts (F).
4. Tighten bolts to 1000 lb/ft (1357 Nm) of torque.
5. Lubricate tie rod end grease fittings again.
6. Repeat steps 1-5 for other side.



3.4.6 INSTALL WHEELS

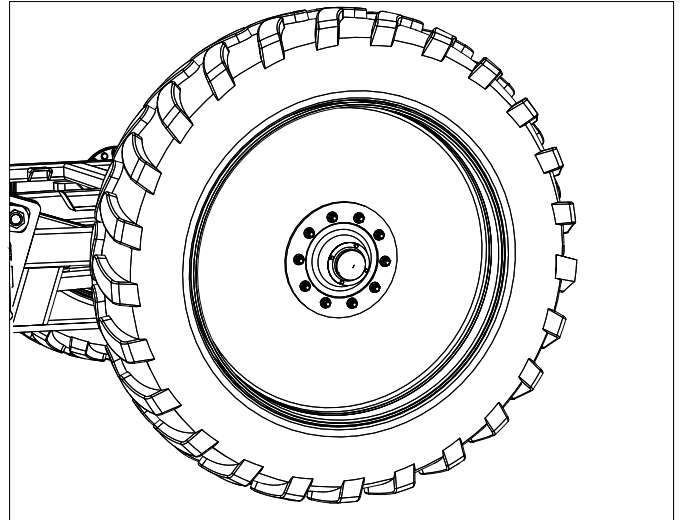
⚠ WARNING

Prevent death or serious injury.

Tire/wheel assembly weighs approximately 765 lbs (347 kg).

Use adequate lifting and support devices.

1. Position wheel on spindle with an adequate lifting device.
2. Install $\frac{3}{4}$ -16 lug nuts. Tighten lug nuts to 275 lb/ft (373 Nm) of torque in a crisscross star pattern.
3. Repeat steps 1-2 for other side.
4. Check torque on lug nuts after first hour of use and again after first day of use.



3.4.7 INSTALL ARMS

Note: Hydraulic cylinder brackets must be positioned on the bottom of the upper arms and on the top of the lower arms.

⚠ WARNING

Prevent death or serious injury.

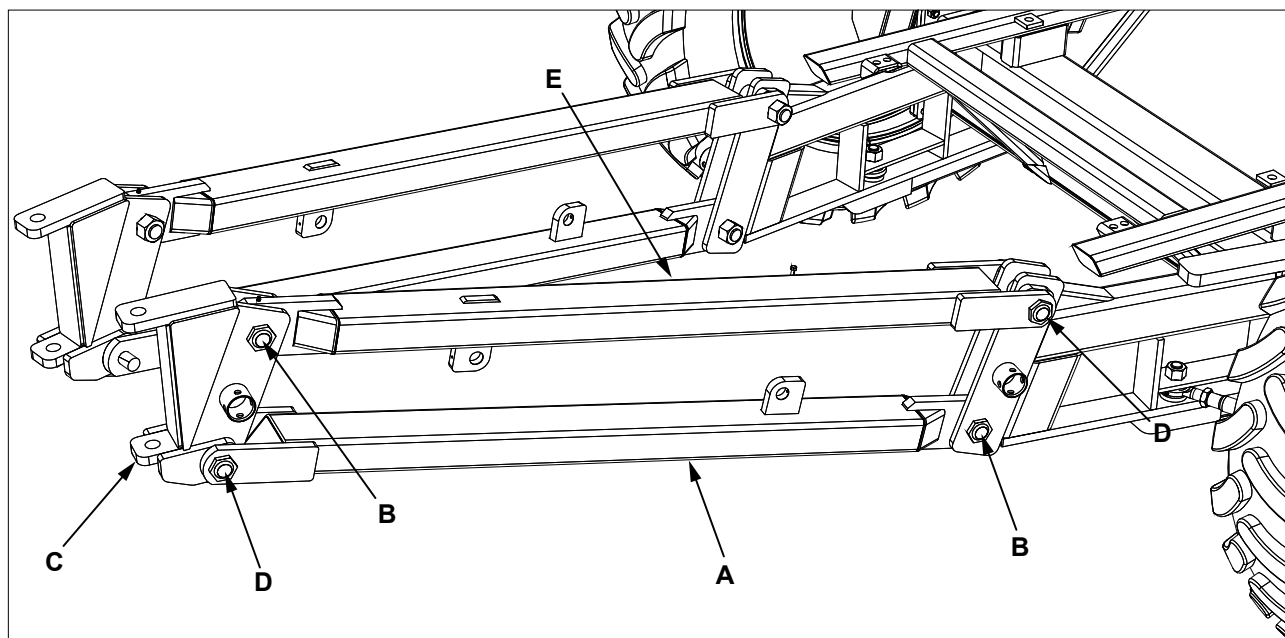
Each lift arm weighs approximately 170 lbs (77 kg).

Front arm support bracket weighs approximately 112 lbs (51 kg).

Use adequate lifting and support devices.

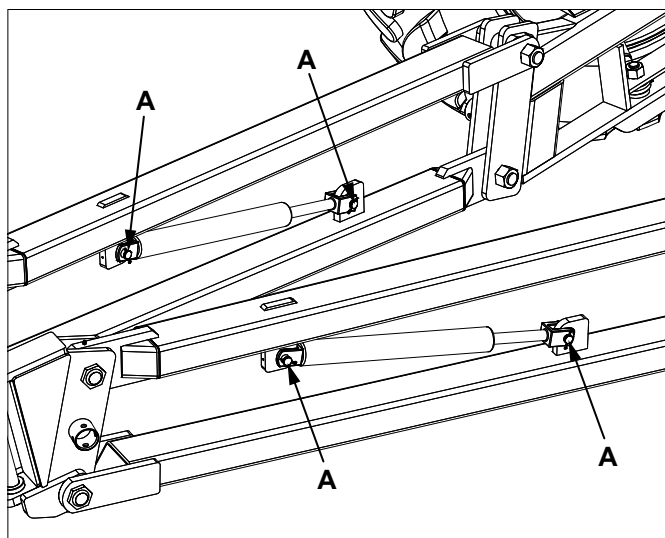
1. Position tapered end of lower arm (A) at lower holes of rear arm support with hydraulic cylinder bracket facing up as shown.
2. Install $1\frac{1}{2}$ x $5\frac{5}{8}$ inch bolt (B) through rear arm support bracket. Install $1\frac{1}{2}$ inch lock nut on bolt. Tighten as securely as possible without bending plates.
3. Position U-bracket end of lower arm (A) at lower holes of front arm support bracket (C).
4. Install $1\frac{1}{2}$ x $9\frac{3}{4}$ inch bolt (D) through U-bracket and front arm support bracket. Install $1\frac{1}{2}$ inch lock nut. Tighten until gap between plate and arm is removed. Arm should still rotate freely.
5. Position U-bracket end of upper arm (E) at rear arm support with hydraulic cylinder bracket facing down as shown.
6. Install $1\frac{1}{2}$ x $9\frac{3}{4}$ inch bolt (D) through U-bracket and rear arm support. Fasten with lock nut.
7. Tighten until gap between plate and arm is removed. Arm should still rotate freely.
8. Position tapered end of upper arm at front arm support bracket.
9. Install $1\frac{1}{2}$ x $5\frac{5}{8}$ inch bolt (B) through front arm support bracket. Install $1\frac{1}{2}$ inch lock nut on bolt. Tighten as securely as possible without bending plates.

10. Repeat steps 1-9 for other side.



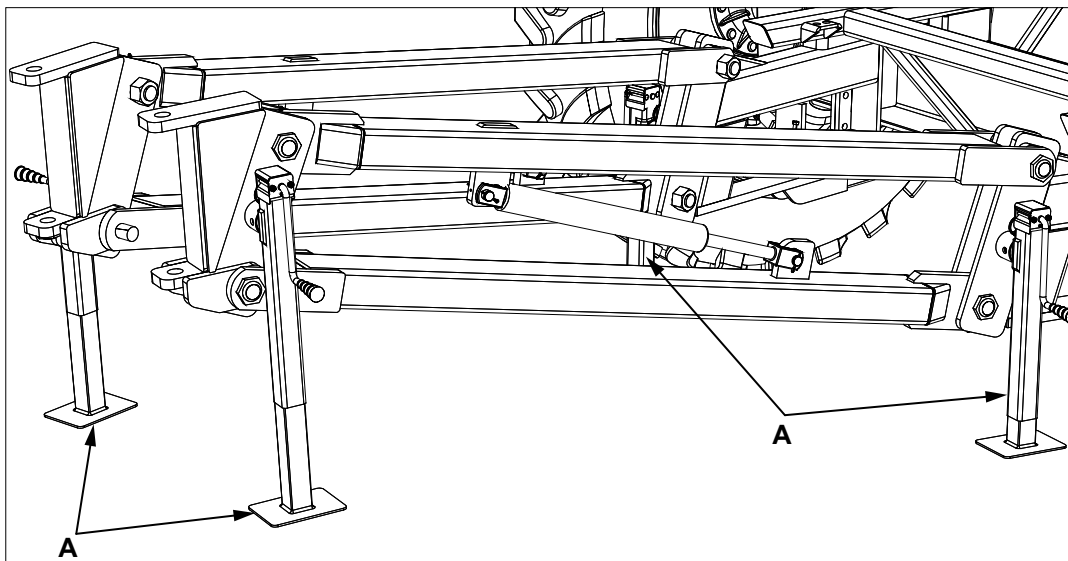
3.4.8 INSTALL HYDRAULIC CYLINDERS

1. Position cylinders as shown.
2. Install pins (A) through cylinder ends and brackets and install spring pins on each side of pins.



3.4.9 INSTALL JACKS

1. Install jacks (A) and extend to firmly contact the ground.
2. Remove lifting and support devices.



3.4.10 TOOLBAR HITCH

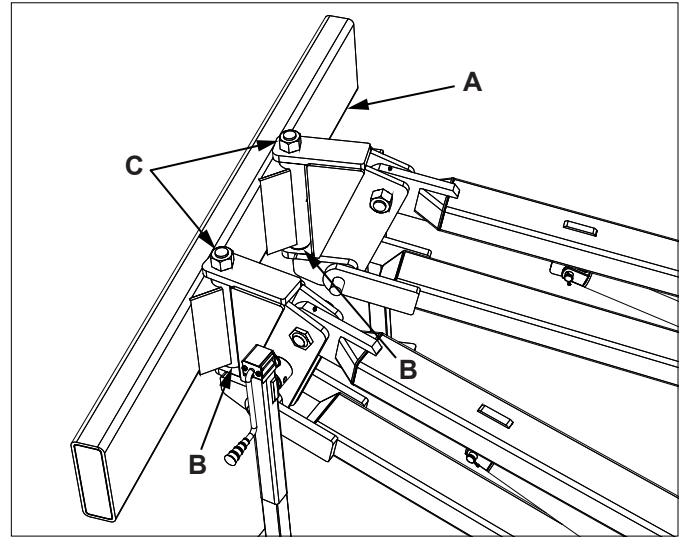
⚠ WARNING

Prevent death or serious injury.

Main hitch weighs approximately 330 lbs (150 kg).

Use adequate lifting and support devices.

1. Raise main hitch (A) with an adequate lifting device and position on lift assist arms.
2. Install 1½ x 18½ bolts up from bottom through lift arm plates and main hitch. Bearing (B) must be installed between lower plate and main hitch as shown.
3. Install 1½ inch nuts (C). Tighten nuts as securely as possible without bending plates.



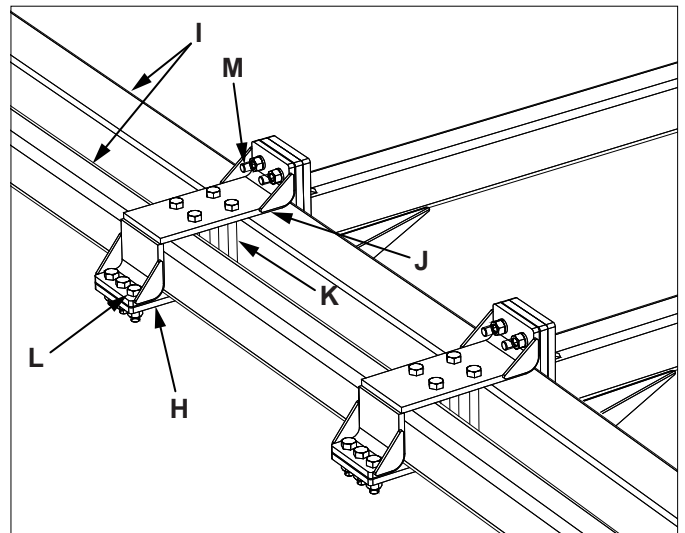
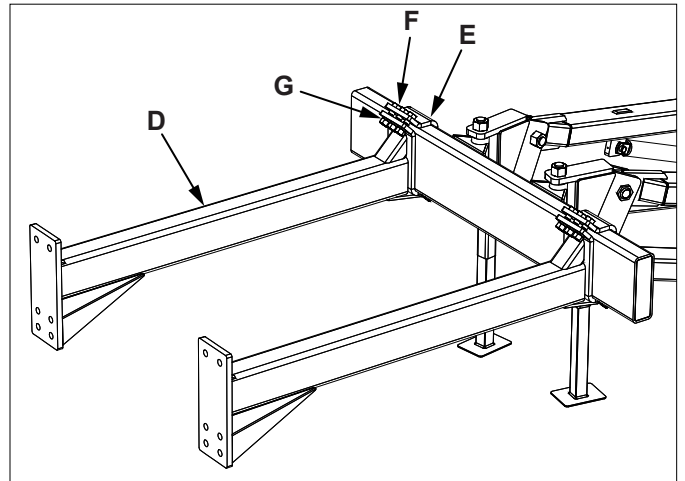
⚠ WARNING

Prevent death or serious injury.

Hitch tube weighs approximately 270 lbs (122 kg).

Use adequate lifting and support devices.

4. Raise hitch tube (D) with an adequate lifting device and position on main hitch.
5. Install clamp plate (E) and install six 1 x 3½ inch bolts (F), 1 inch lock washers (G) and 1 inch nuts.
6. Tighten bolts to 580 lb/ft (787 Nm) of torque.
7. Repeat steps 4-6 for other side.
8. Install lower plate (H) on hitch tube with four 1 x 3½ inch bolts, 1 inch lock washers and 1 inch nuts. Repeat for other side.
9. Position implement up to cart. Place lower hitch plates (H) under implement toolbars (I).
10. Install upper plate (J), two 1 x 4½ inch bolts (K), 1 inch lock washers and 1 inch nuts. Repeat for other side.
11. Install three 1 x 3½ inch bolts (L), 1 inch lock washers and 1 inch nuts. Repeat for other side.
12. Install four 1 x 10 inch bolts (M), 1 inch lock washers and 1 inch nuts. Repeat for other side.



13. Tighten bolts to 580 lb/ft (787 Nm) of torque.

14. Remove lifting and support devices

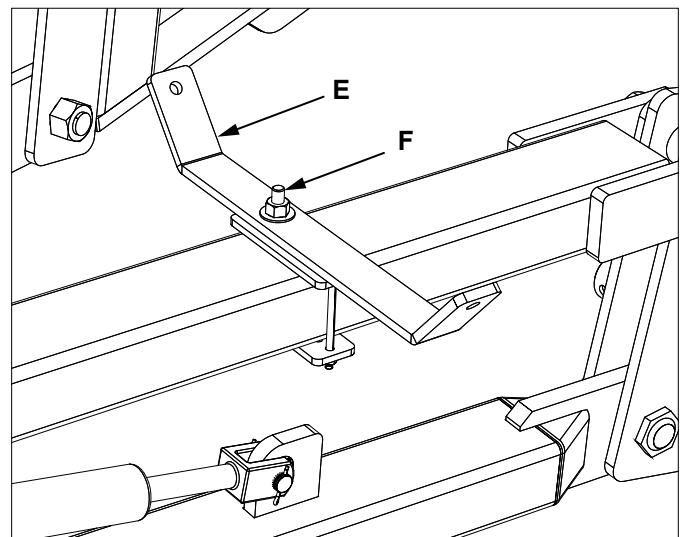
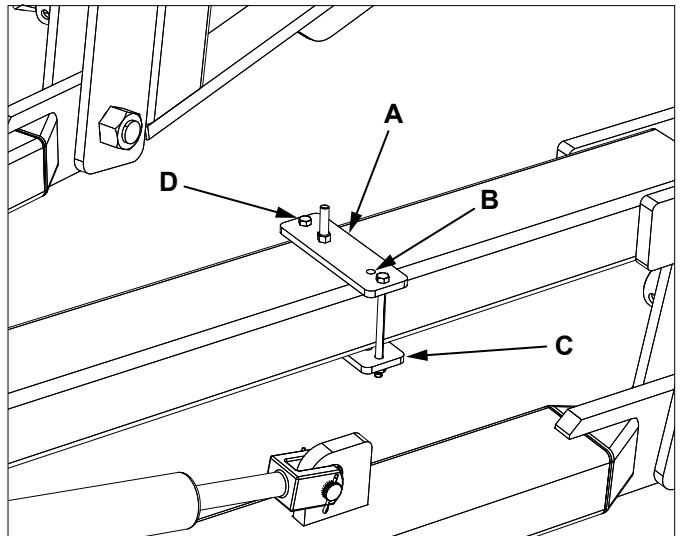
3.4.11 INSTALL FLOATING SADDLES (DRY FERTILIZER USE ONLY)

Note: Two floating saddles (A) are provided on lift assist carts.

1. Position bracket (A) on lift assist arm with hole (B) toward outside of cart.
2. Position lower bracket (C) and install $\frac{3}{8}$ x $5\frac{1}{2}$ inch bolts (D) and $\frac{3}{8}$ inch nuts. Tighten bolts to 26 lb/ft (35 Nm) of torque.

Note: Floating saddles must move freely to accommodate movement of hoses. Do not fully tighten lock nuts.

3. Install $\frac{5}{8}$ inch flatwasher on bolt (F), then saddle (E), another $\frac{5}{8}$ inch flatwasher and $\frac{5}{8}$ inch lock nut. Tighten lock nut so it is snug, but saddle can still move freely.
4. Repeat steps 1-3 for other side.



3.5 DRY FERTILIZER SYSTEM ASSEMBLY

3.5.1 INSTALL DRY FERTILIZER SKID ON CART (WITHOUT OPTIONAL WEIGH BARS)

⚠ WARNING

Prevent death or serious injury.

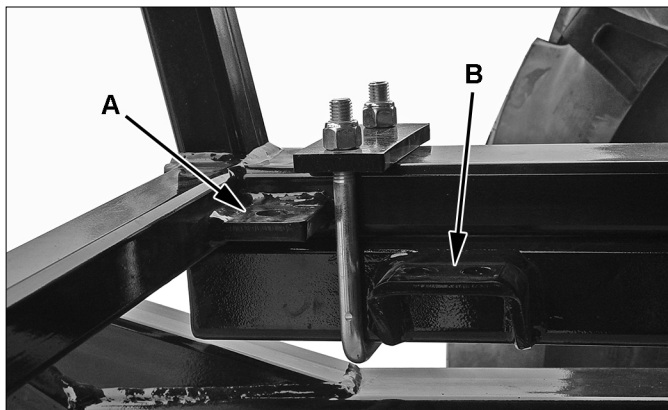
Dry fertilizer skid weighs approximately 2000 lbs (907 kg).

Use adequate lifting and support devices.

1. Carefully position skid onto cart, with skid frame fully aligned with cart frame and ends of frames flush with each other.

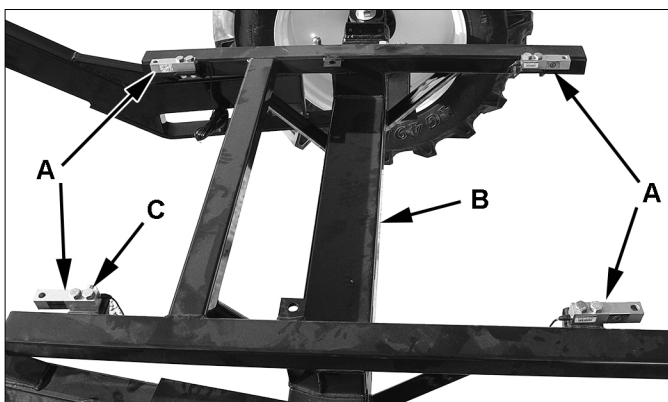
Note: Install U-bolts facing up, with nuts on top. If U-bolts are installed facing down, and need to be removed for any reason, tank skid disassembly may be required.

2. Install $\frac{5}{8}$ x 4 wide x 6½ inch long U-bolts in each corner of skid between skid bracket (A) and cart bracket (B) as shown, with lock nuts on top. Tighten lock nuts until they each contact the plate.
3. Alternate tightening nuts on each leg of U-bolt in 25 lb/ft (34 Nm) increments until each nut is tightened to 75 lb/ft (102 Nm) of torque. Then tighten each nut to 95 lb/ft (129 Nm) of torque. Avoid over tightening either side.



3.5.2 INSTALL DRY FERTILIZER SKID ON CART (WITH OPTIONAL WEIGH BARS)

1. Position weigh bars (A) on cart brackets at each corner with arrows on ends of weigh bars pointing down. Ends of bars with arrows must be farthest from cart center frame (B).
2. Install each weigh bar to bracket loosely with two $\frac{3}{4}$ x 3 inch bolts (C), through two bolt holes closest together, and $\frac{3}{4}$ inch lock nuts. Do not tighten at this time.



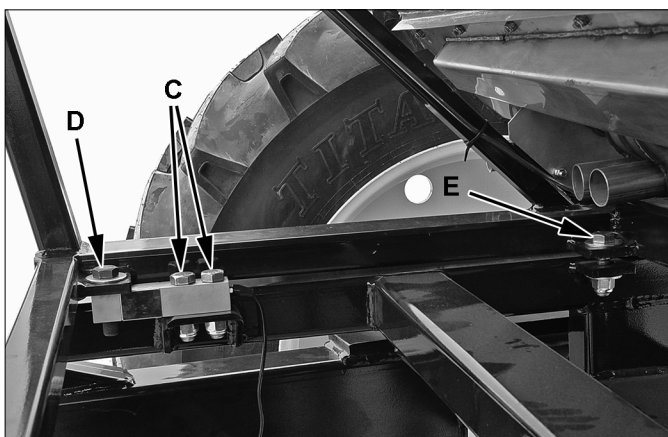
⚠ WARNING

Prevent death or serious injury.

Fertilizer skid weighs approximately 2000 lbs (907 kg).

Use adequate lifting and support devices.

3. Position skid with fertilizer tank onto cart, with skid bolt holes aligned with bolt holes in four weigh bars.
4. Install $\frac{3}{4}$ x 2½ inch bolts (D) with flat washers at each skid corner through skid brackets and weigh bars. Tighten bolts to 220 lb/ft (271 Nm) of torque.

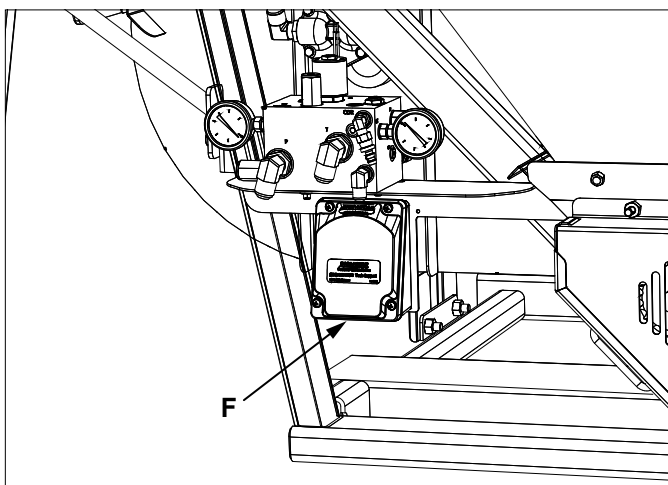


Note: Skid with dry or liquid fertilizer tank is fastened to weigh bars. Tighten weigh bars to prevent skid from coming loose.

5. Tighten bolts (C) to 220 lb/ft (271 Nm) of torque.

Note: Back-up bolts (E) are installed as a safety measure in case any skid mounting bolts come loose or fail. Install both back-up bolts loosely. Fertilizer tank load readings will include any force applied by these bolts.

6. Install back-up bolts (E) on each side of skid below meter with spacers under bolt and lock nut, but do not tighten bolts. Bolts must have approximately $\frac{1}{8}$ inch of play after installation.
7. Route lead from each weigh bar to junction box (F). Connect leads to junction box terminals. See Section 10 Appendix for instructions. Do not cut wires.



3.5.3 INSTALL STEP AND PLATFORM ASSEMBLY

Note: Stairs and platform assembly can be installed on either the front or the rear of the dry fertilizer tank. The installation procedures are the same for either location, but if installed in front of tank, the tank lid will need to be rotated to face the front. Assembly to the rear of the tank is illustrated.

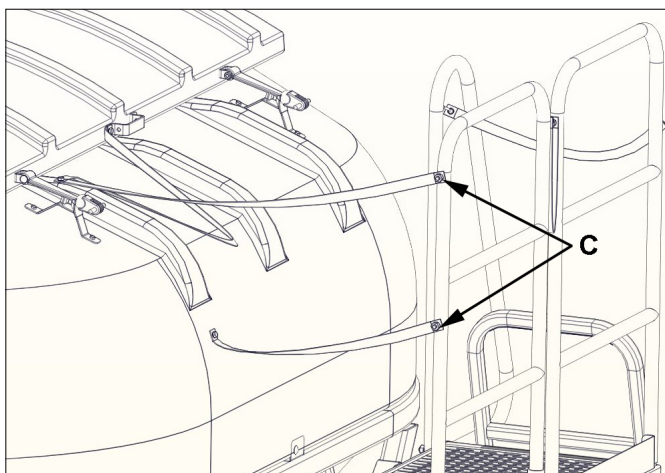
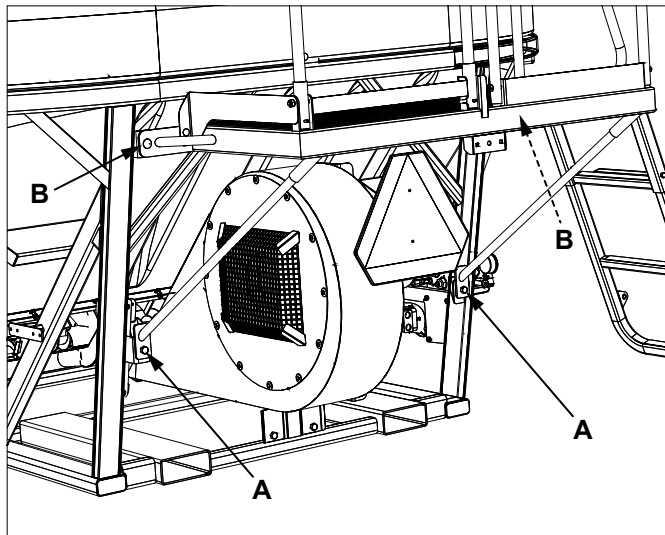
⚠ WARNING

Prevent death or serious injury.

Step/platform assembly weighs approximately 170 lbs (77 kg).

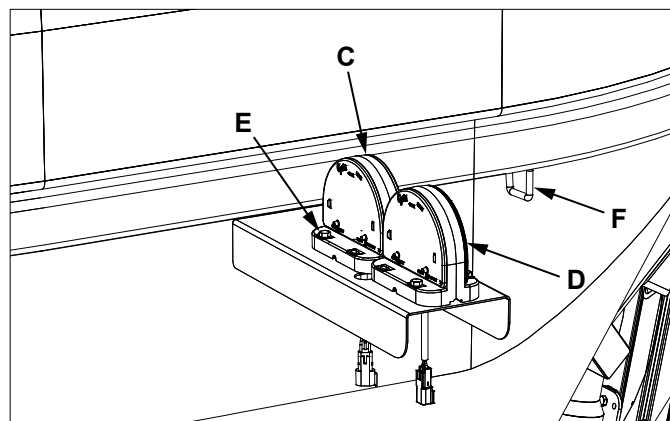
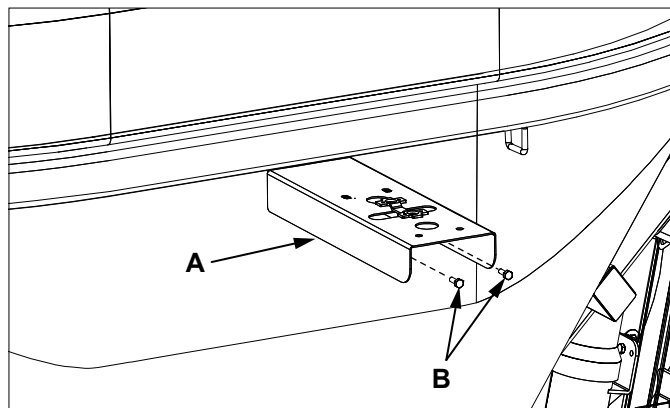
Use adequate lifting and support devices.

1. Position step/platform assembly on tank with an adequate lifting device.
2. Align bolt holes on platform with holes on tank assembly brackets.
3. Install $\frac{1}{2}$ x $1\frac{1}{2}$ inch hex head bolts (A) and $\frac{1}{2}$ inch nuts.
4. Install $\frac{1}{2}$ x $1\frac{1}{4}$ inch round head bolts (B) and $\frac{1}{2}$ inch nuts.
5. Tighten mounting bolts to 57 lb/ft (77 Nm) of torque.
6. Install straps to handrail with $\frac{3}{8}$ x $\frac{3}{4}$ inch bolts and $\frac{3}{8}$ inch nuts (C).
7. Contact Montag Mfg. if pre deck assembly is required.



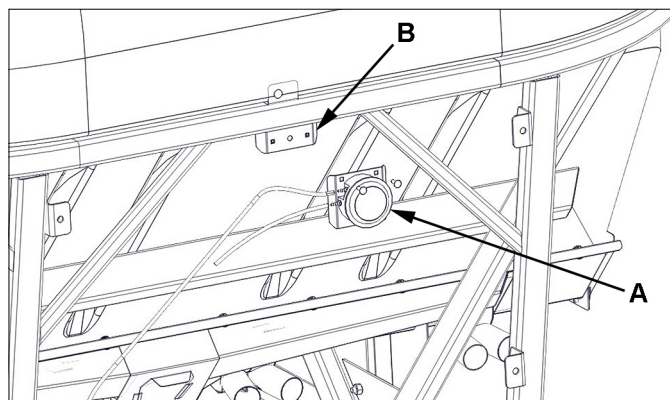
3.5.4 INSTALL LIGHTS

1. Install light bracket (A) to tank bracket with two $\frac{1}{4}$ x $\frac{3}{4}$ inch bolts (B).
2. Install red lamp (C) and amber lamp (D) to bracket with $\frac{1}{4}$ x $\frac{3}{4}$ inch bolts (E), $\frac{1}{4}$ inch washers and $\frac{1}{4}$ nuts. Tighten nuts to 4 lb/ft (5 Nm) of torque.
3. Repeat steps 1-2 for other side.
4. Route wires through loops (F) and follow steering arms to hitch.



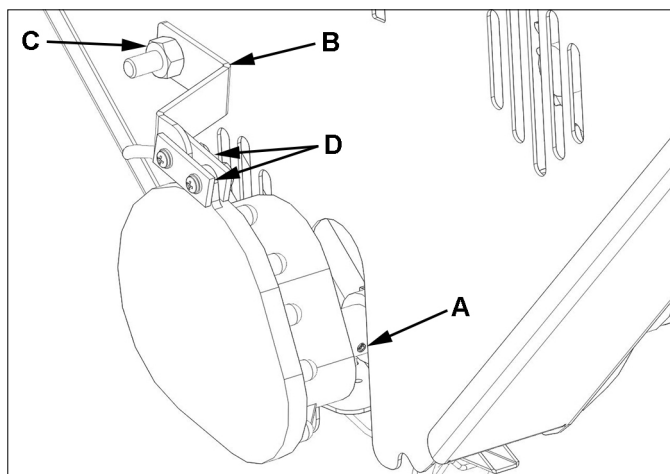
3.5.5 INSTALL AIR PRESSURE GAUGE

1. Install air pressure gauge (A) to tank bracket (B) or platform bracket depending on orientation of the unit with the bolts provided in kit.
2. Attach long $\frac{5}{16}$ O.D. x $\frac{3}{16}$ I.D. hose to top hose barb and short hose to the bottom hose barb.
3. Attach hose to tank frame with provided zip ties with short hose end pointing down.
4. Route long hose to hose barb on fan housing while attaching to frame with zip ties.



3.5.6 INSTALL ENCODER

1. Remove bottom of chain guard.
2. Rotate encoder set screw (A) to bottom of coupler.
3. Position long end of bracket (B) on stud welded to chain guard. Leave nut (C) loose.
4. Position encoder shaft in coupler with flat aligned with set screw.
5. Install two rubber straps (D) with two bolts and nuts.
6. Tighten encoder shaft set screw (A).



7. Adjust mounting bracket so encoder rotates back and forth s

8. Install bottom chain guard/guards.

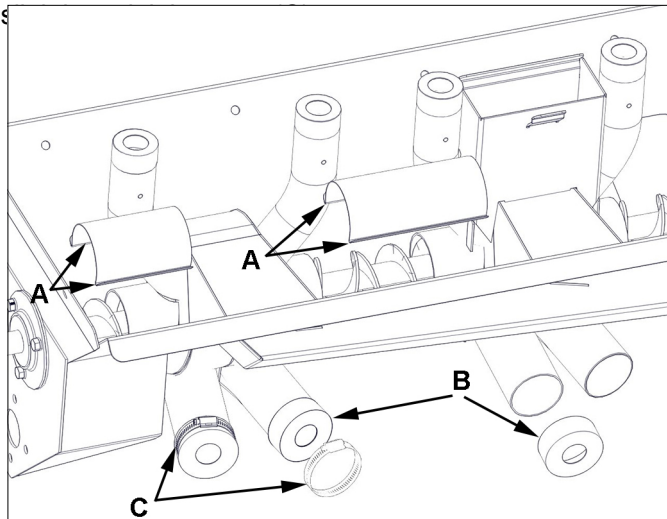
3.5.7 ROW REDUCER INSTALLATION (OPTIONAL)

1. Apply silicone sealant along bottom edge (A) of auger covers from end to end.

2. Place auger cover over auger and snap into place. Single row covers go on ends and double row covers go in the center. Do not place single row covers at double row locations.

3. Apply silicone around auger cover to seal any openings and let dry.

4. Place orange cap with hole (B) over outlet for auger you have covered and install hose clamp (C) to secure caps. Orange caps with hole must be in place to balance air system for proper operation.



3.6 LIQUID FERTILIZER SYSTEM ASSEMBLY

⚠ WARNING

Crushing hazard.

Be certain tie-downs straps at opposite corners of tank are routed correctly and tight before doing any assembly work.

⚠ WARNING

Fertilizer can be dangerous to people, animals, and the environment.

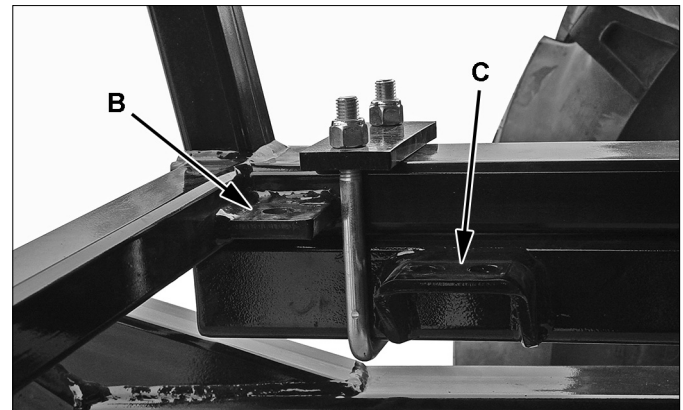
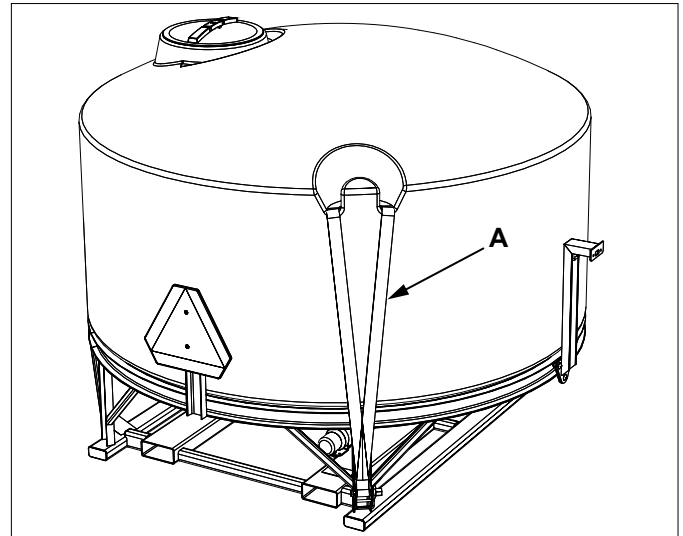
Read and follow the safety and handling instructions provided by the fertilizer manufacturer before filling fertilizer tank.

3.6.1 INSTALL LIQUID FERTILIZER SKID ONTO CART

1. Verify tie down straps (A) are routed correctly as shown and tight.
2. Carefully position skid onto cart, with skid frame fully aligned with cart frame and ends of skid frame overlapping cart frame evenly.

Note: Install U-bolts facing up, with nuts on top. If U-bolts are installed facing down, disassembly may be required if bolts need to be removed.

3. Install $\frac{5}{8}$ x 4 x 6-1/2" U-bolts in each corner of skid between skid bracket (B) and cart bracket (C) as shown, with lock nuts on top. Tighten lock nuts until they each contact the plate.
4. Alternately tighten nuts on each leg of U-bolt in 25 lb increments until each nut is tightened to 75 lb/ft of torque. Then tighten each nut to 95 lb/ft of torque. Do not over tighten.



4. CONNECT CART TO IMPLEMENT

4.1 CONNECT CART TO IMPLEMENT

⚠ WARNING

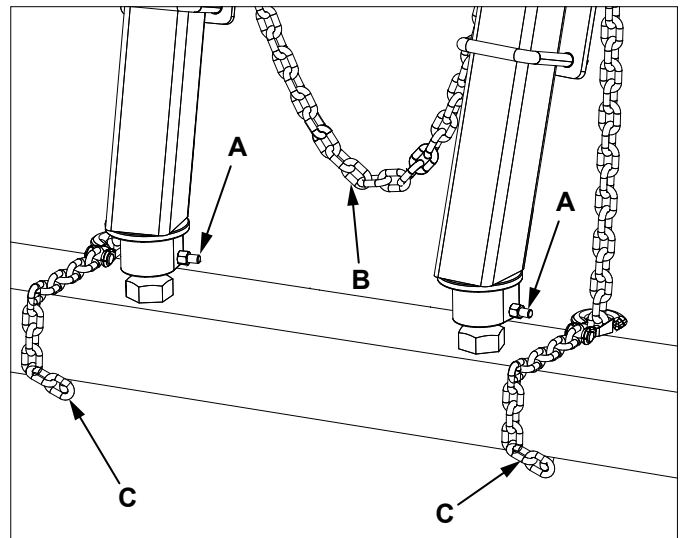
Risk of loss of control when transporting cart.

Remove all product from tank before transporting on roads. With empty tanks, maximum speed for cart on roads is 30 mph.

Maximum speed for cart with full tank is 10 mph.

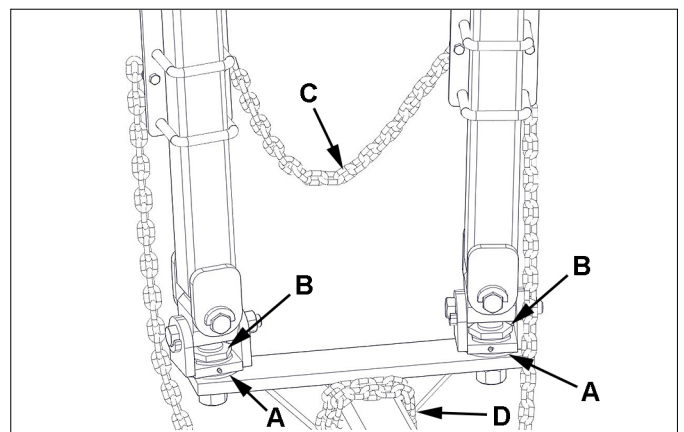
4.1.1 CONNECT CART (STANDARD CART WITH BALL HITCH)

1. Install two 2 $\frac{5}{16}$ inch (30K) hitch balls on implement. Tighten as recommended by manufacturer.
2. Back implement up to cart.
3. Lower adjustable hitch height as needed with jacks to engage ball hitches.
4. Install $\frac{1}{2}$ x 4 $\frac{1}{2}$ inch bolts (A) to fasten arms to ball hitches. Tighten bolts to 57 lb/ft (77 Nm) of torque.
5. Verify chain (B) is installed between two arms to keep arms together if they disconnect from hitch.
6. Wrap long chains (C) around frame as shown. Hook chain and engage hook safety lock.
7. Retract and remove jacks from cart.



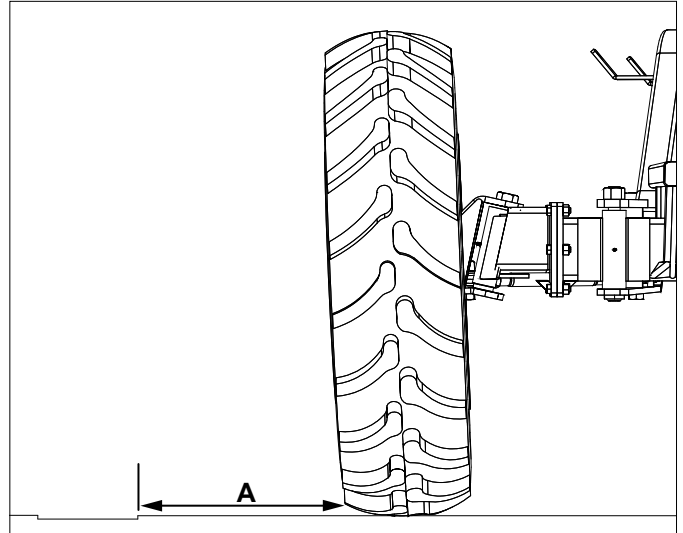
4.1.2 CONNECT CART (STANDARD CART WITH KNUCKLE HITCH)

1. Back implement up to cart.
2. Place large bottom washers (A) over holes on hitch plate.
3. Lower adjustable hitch height as needed with jacks to engage 1 $\frac{3}{8}$ inch knuckle bolts (B) through washers and hitch plate holes.
4. Install 1 $\frac{3}{8}$ inch lock washers and nuts on bolts. Tighten to 559 lb/ft (758 Nm) of torque.
5. Verify chain (C) is installed between two arms to keep arms together if they disconnect from hitch.
6. Wrap long chains around frame as shown. Hook chain and engage hook safety lock.
7. Retract and remove jacks from cart.



4.1.3 ALIGN CART

1. Initial alignment check: Pull cart a short distance on a dirt surface. Measure and note the distance (A) of each cart wheel from implement wheel track. If left tire distance is less than right tire distance, cart is tracking to the left.
2. Toe-in check: Measure and note distance between tire centerlines, at a point level with wheel hub, on front and rear of tires.
3. Determine and make correction: If tire centerline measurement at front is not the same as measurement at rear, split the difference and apply it to a wheel based on which way cart is tracking. For example, if centerline measurement at rear of tires is 122 inches (3099 mm), and the measurement at the front of tires is 118 inches (2997 mm), adjustment will be 2 inches (51 mm). If cart was determined to be tracking to left in step 1, extending right tie-rod to make centerline measurement of 120 inches (3048 mm) would correct tracking to the left as well as the toe-in problem.
4. Repeat step 1 to verify correct alignment.



4.2 DRY FERTILIZER SYSTEM

4.2.1 CONNECT HYDRAULIC HOSES

⚠ WARNING

Pressurized fluids can penetrate the skin.

Hydraulic hoses can fail.

Inspect hoses before operation.

Replace damaged hoses.

NOTICE

Prevent damage to fertilizer fan drive motor.

Fertilizer fan drive motor can be damaged if motor case drain hose is connected to an SCV coupler.

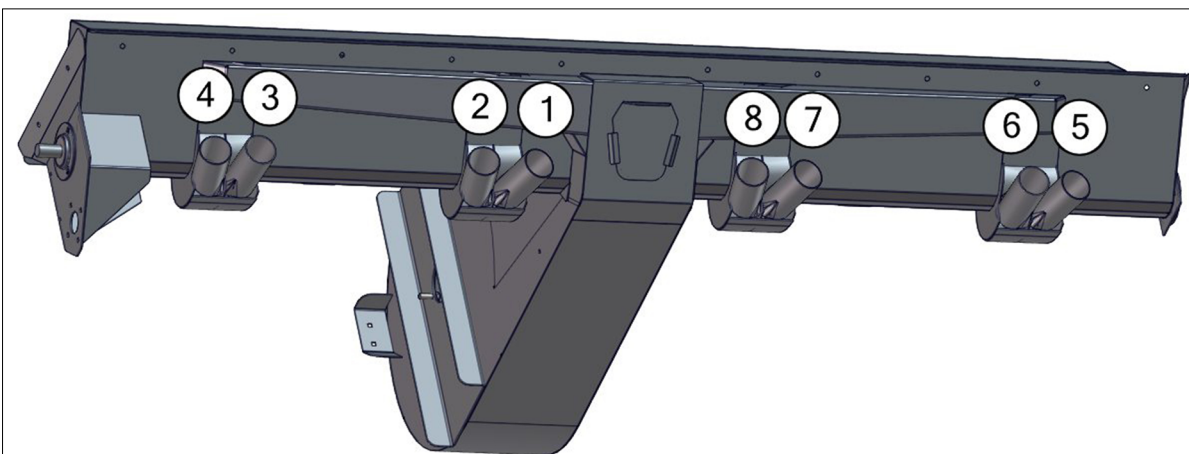
Connect fertilizer fan drive motor case drain hose to sump coupler on tractor.

1. Connect a ½ inch hydraulic hose to CD port on hydraulic block and to case drain (zero pressure) return port on tractor. See tractor operator's manual or tractor dealer for location of this coupler on tractor.
2. Connect hose from P port on hydraulic block to pressure port on tractor hydraulic SCV. See Hydraulic Requirements in Section 1.2 for proper hose size.
3. See Hydraulic Schematics in Section 10 to determine return hose connections. Connect return oil from system to a motor return port on tractor, not SCV stack. See tractor operator's manual or tractor dealer for location of this port on tractor. See Hydraulic Requirements in Section 1.2 for proper hose size.

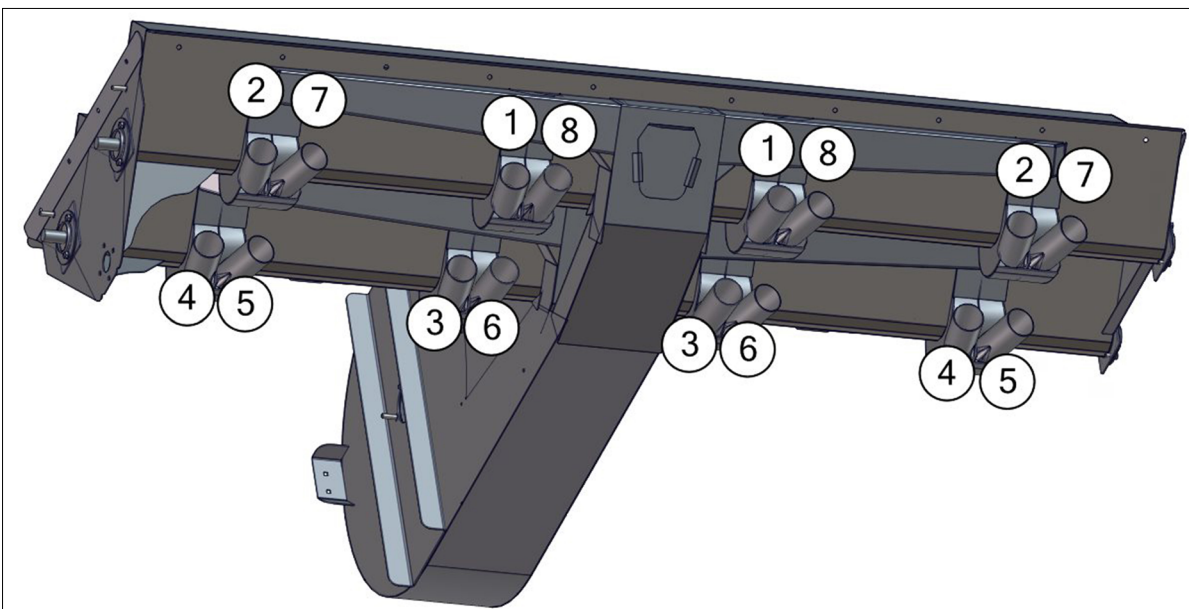
4. Connect flow controller leads and 3-pin encoder connector to control console in tractor.
5. Connect case drain alarm to 12 volt DC power supply in tractor. Alarm will sound if case drain pressure is above 23 psi (30 kPa).
6. First time use: Check operation of system to include direction of fan rotation and air flow from air chamber outlet tubes. Fan rotation should be clockwise as viewed from fan opening. Pressure gauges should read as follows:
 - Inlet Pressure GP Port Gauge - 1500-2850 psi (103-197 bar).
 - Return Pressure GT Port Gauge - 0-200 psi (0-14 bar). If pressure is higher than specified, verify return hose is connected to motor return port on tractor. Look for restrictions at fittings, couplers and hoses.

4.2.2 CONNECT AIR HOSES

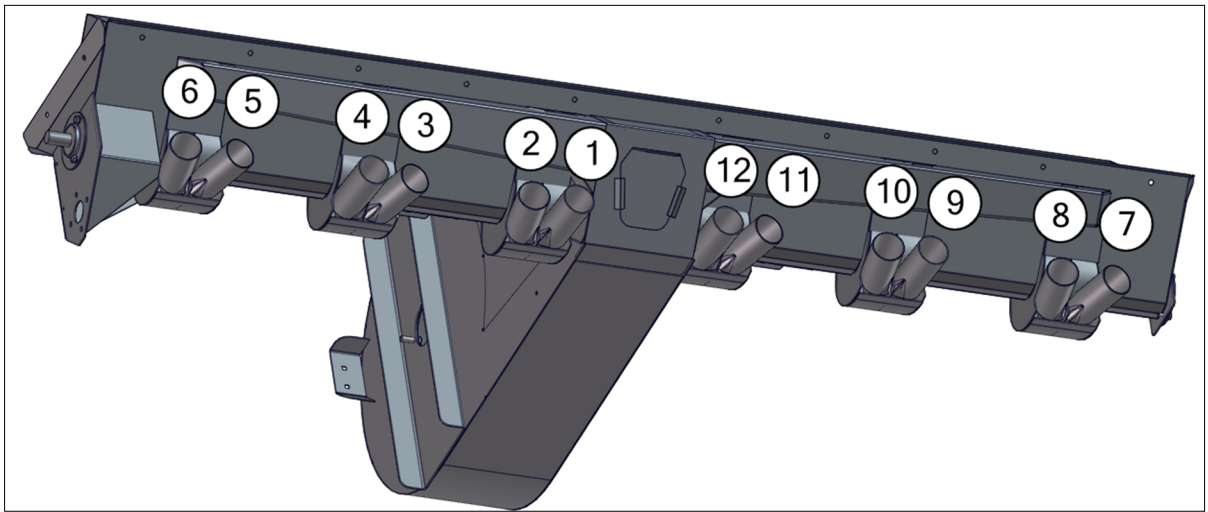
Diagrams below show the Row connection numbers for the auger air chamber outlet tubes on the 8, 12, 16 and 24 row configurations dry fertilizer systems are shown below. Connect air hoses from outlet tube number shown for your row configuration to the corresponding toolbar row.



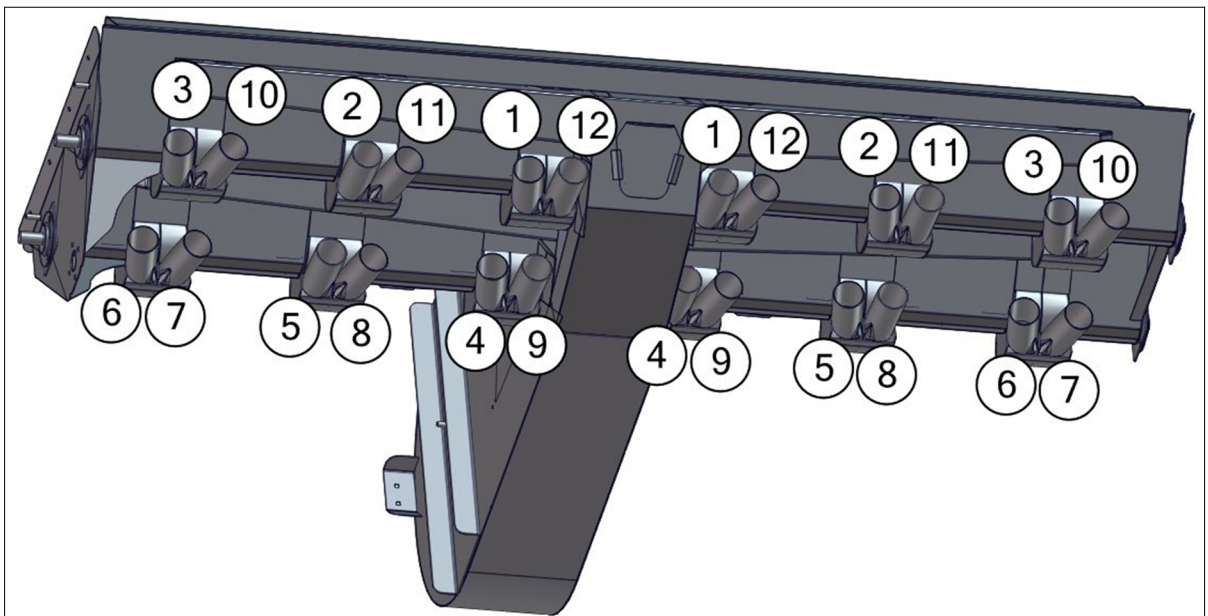
8-Row Single Bin Hose Connections



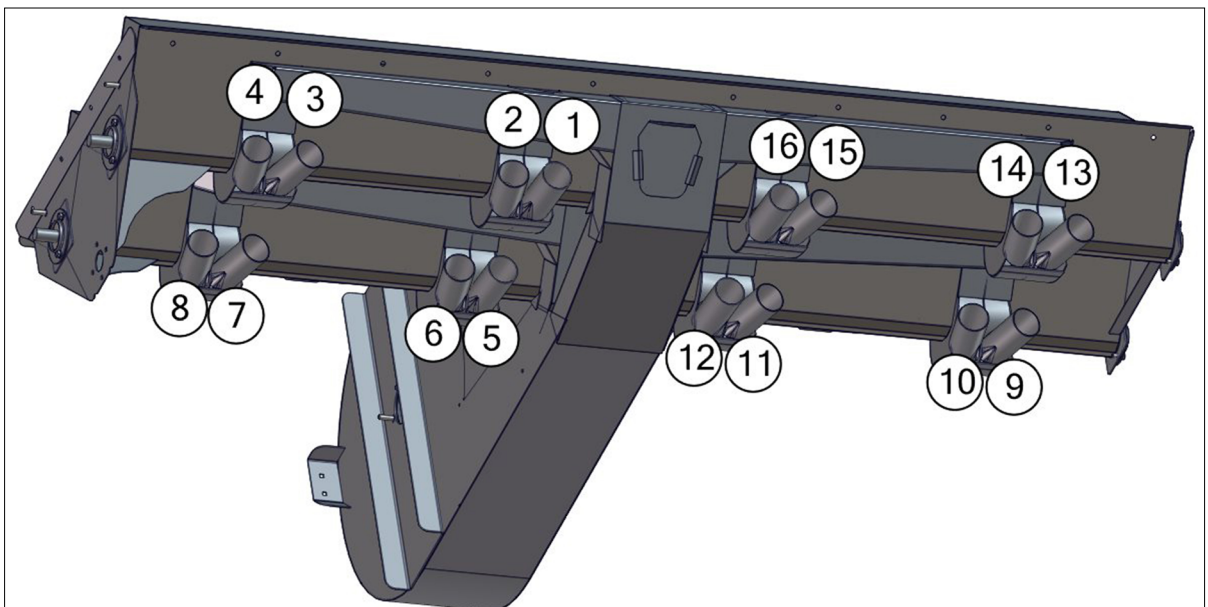
8-Row Twin Bin Hose Connections



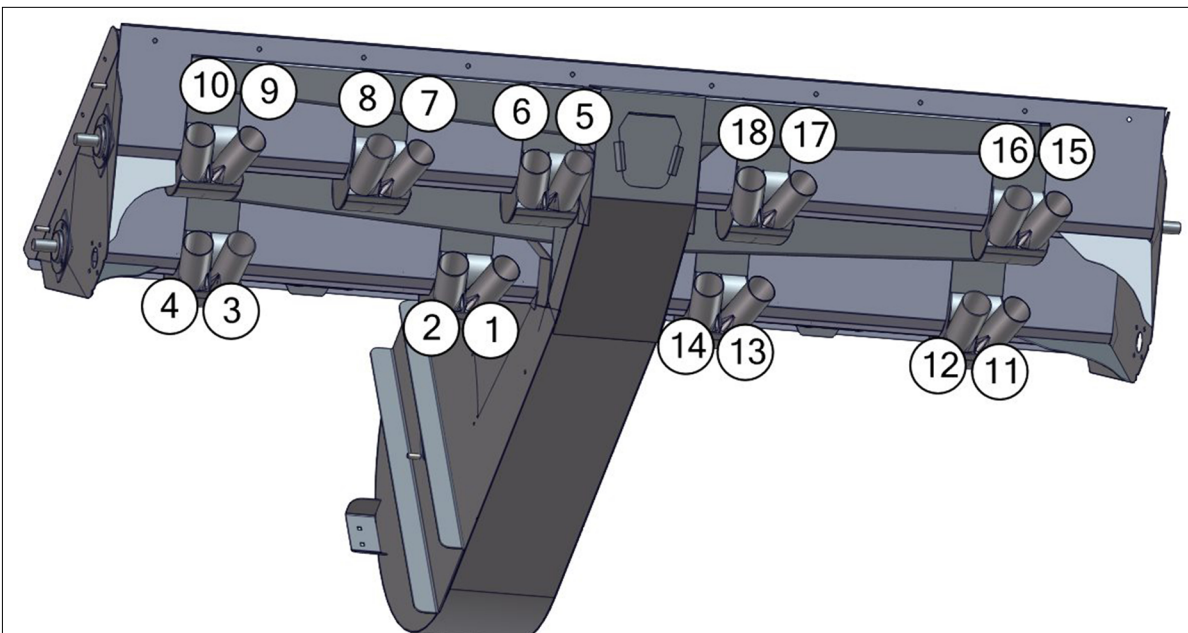
12-Row Single Bin Hose Connections



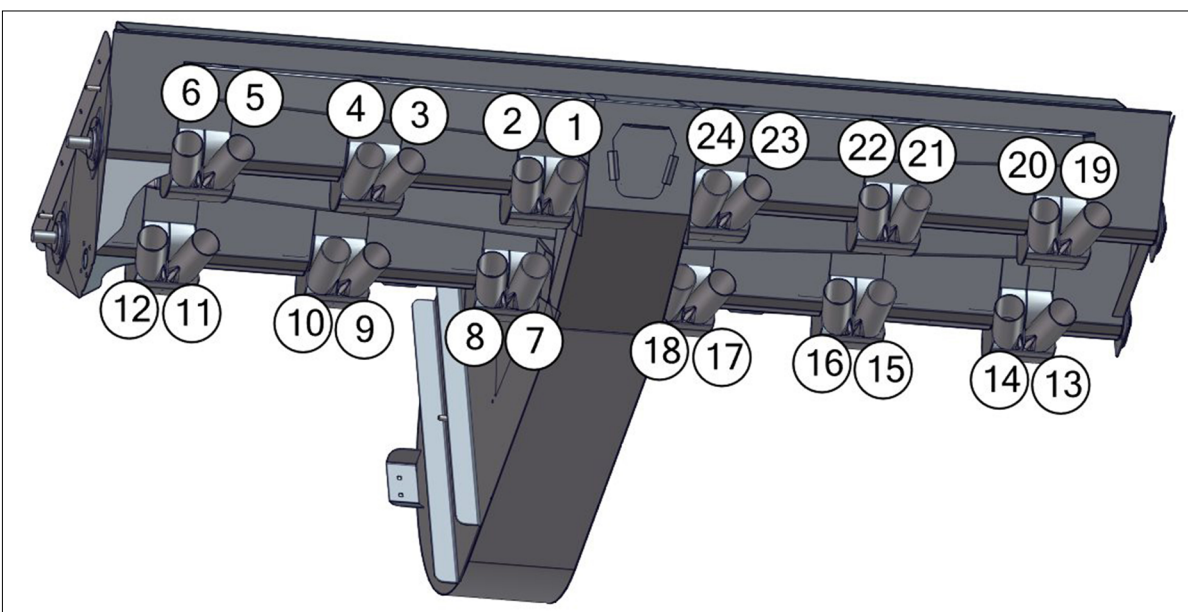
12-Row Twin Bin Hose Connections



16-Row Hose Connections



18-Row Hose Connections



24-Row Hose Connections

4.2.3 CONNECT CUSTOMER SUPPLIED CONTROLLER

1. Follow controller manufacturers instructions and calibration information in section 10.
2. Run meter and check operation before filling tank.

4.2.4 FILL FERTILIZER TANK

⚠ WARNING

Crushing hazard.

Before climbing onto tank platform:

-
- Do not climb on cart unless cart is connected to implement.
 - Park the equipment on firm, level surface.
 - Place tractor transmission in park, turn tractor engine off and remove ignition key.
 - Verify service locks are properly engaged or lower tool bar and lower row units to the ground or pavement.

⚠ WARNING

Falling hazard.

Operator can fall off or into tank resulting in death or serious injury.

- Stand on platform only. Do not climb on tank or stand on screen.
- Keep screen cover on tank fill opening at all times.

⚠ WARNING

Fertilizer can be dangerous to people, animals, and the environment.

Read and follow the safety and handling instructions provided by the fertilizer manufacturer before filling fertilizer tank.

NOTICE

Fill tank only with amount of fertilizer planned for application that day. Empty tank after daily use. Fertilizer left in tank for extended periods can absorb moisture or cause compaction resulting in system blockage.

Install two screens (A) on top of tank.

Stand on platform and fill tank with dry fertilizer.



NOTICE

Moist fertilizer can plug fertilizer application system. Close tank cover immediately after filling to prevent moisture from entering system.

Close and latch fertilizer tank cover.

5. DISCONNECTING FROM IMPLEMENT

5.1 DISCONNECT FROM IMPLEMENT

⚠ WARNING

Crushing hazard.

The hitch may have a negative draft load (upward force).

Before disconnecting from tractor:

- Park the equipment on firm, level surface.
- Place tractor transmission in park, turn tractor engine off and remove ignition key.
- Block the wheels.
- Verify service locks are properly engaged or lower tool bar and lower row units to the ground or pavement.
- Remove all product from tank.

⚠ WARNING

Fertilizer can be dangerous to people, animals, and the environment.

Read and follow the safety and handling instructions provided by the fertilizer manufacturer before working around fertilizer system.

5.1.1 DISCONNECT DRY FERTILIZER SYSTEM

⚠ WARNING

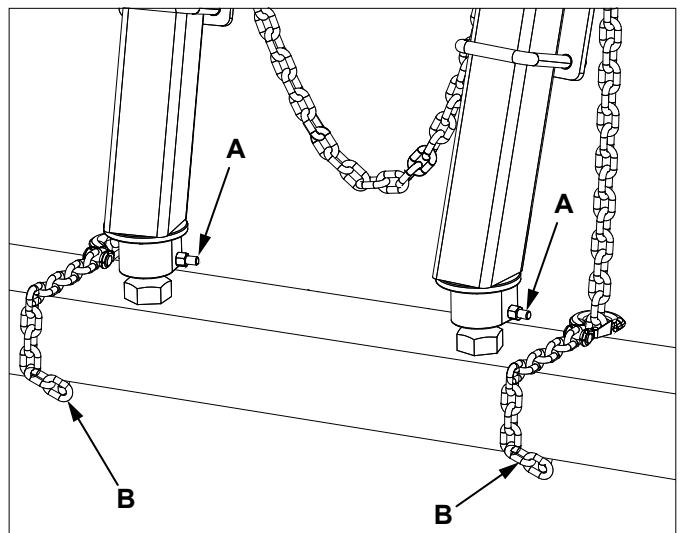
Pressurized fluids can penetrate the skin.

Relieve all hydraulic pressure before disconnecting hydraulic hoses.

1. Disconnect flow controller leads and 3-pin encoder connector to control console in tractor.
2. Relieve hydraulic pressure and disconnect pressure hose, return hose, case drain hose, alarm cable and light connector from tractor.

5.1.2 DISCONNECT CART FROM IMPLEMENT

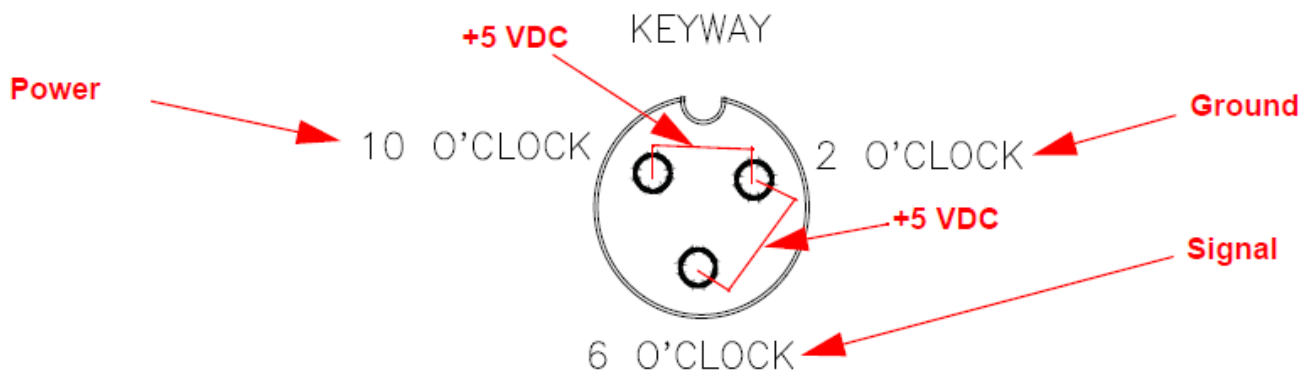
1. Install jacks on cart and remove weight from implement hitch.
2. Disconnect and remove chains (B) from implement.
3. Label and disconnect all air hoses.
4. Remove bolts (A) from ball hitches or remove 1 $\frac{3}{8}$ inch nut on knuckle hitches.
5. Lift cart from hitch with jacks.



6.1 TROUBLESHOOTING

6.1.1 DRY FERTILIZER TROUBLESHOOTING CHART

Symptom	Problem	Solution
No Fertilizer being delivered - all rows	Fan and auger not turning	Verify all hydraulic couplers are fully engaged.
		With hydraulics turned off see if fan rotates by hand. If not replace fan motor.
	Fan air gauge pressure less than 16 inch H ² O	Fan rotation must be clockwise (CW) when viewed from the screen side of fan. If rotation is not CW, see Hydraulic Schematics in Section 10 and plumb as shown for your machine.
		Set gap between fan and shroud to ¼ inch (6 mm).
		Make sure hydraulic gages read within limits stated in Section 4.2.1.
	Auger turning wrong direction. Auger should turn same direction as fan CW from fan screen side of unit.	See Hydraulic Schematics in Section 10 and plumb as shown for your machine.
	Fan running auger not turning	Check condition and routing of auger motor chain.
		Check for auger obstructions (with chain off auger should turn with pliers and minimal force). Clean out any plugged rows and check for auger obstructions.
	Fan running auger not turning and not obstructed.	Check controller calibration settings, controller cabling and connections at the controller, PWM Valve and encoder. When running a catch test with your controller you should have a 2-12 volt DC signal at the PWM Plug. The higher the rate the higher the voltage. The resistance of the PWM coil should be approximately 7.1 ohms.
		To verify the Montag metering system will operate you can apply a 12 volt DC + and – source to the pins on the PWM coil with the fan running the metering auger should run at max RPM's.
	Fan running auger turns then stops – no auger obstructions or controller not recording rate.	Check controller high and low limit calibration settings.
		Check set screw on encoder shaft.
		Check all PWM valve and encoder cables and connections.
		Check for proper signal from controller to encoder. For Montag supplied Raven 36 pulse encoders check for + 5 volts DC between the ground and power socket and the ground and signal socket. See diagram below.

Symptom	Problem	Solution
		
Actual rate applied is higher than desired rate.	Controller settings are not correct.	<p>If voltage is correct, auger is turning and no rate is being recorded. Replace encoder.</p> <p>For all other encoders contact your supplier's technical service department for voltages and pinning.</p>
	Loose or bad connection.	Check all controller cable connections.
	Auger chain drive.	Check condition and routing of auger motor chain.
No Fertilizer being delivered – some rows or actual rate applied is lower than desired rate.	Air passages plugged / obstructed.	Clear air passages at air chamber outlet tubes.
	Build up on augers or in hoses.	Clean augers or hoses (check quality of fertilizer as needed).
	Fertilizer bridged in tank.	Clear bridging and (check quality of fertilizer).
	Kinked or worn hoses	Check condition of hoses for sharp bends and worn spots and replace as needed.

6.1.2 ELIMINATING AUGER OBSTRUCTIONS (DRY FERTILIZER SYSTEM ONLY)

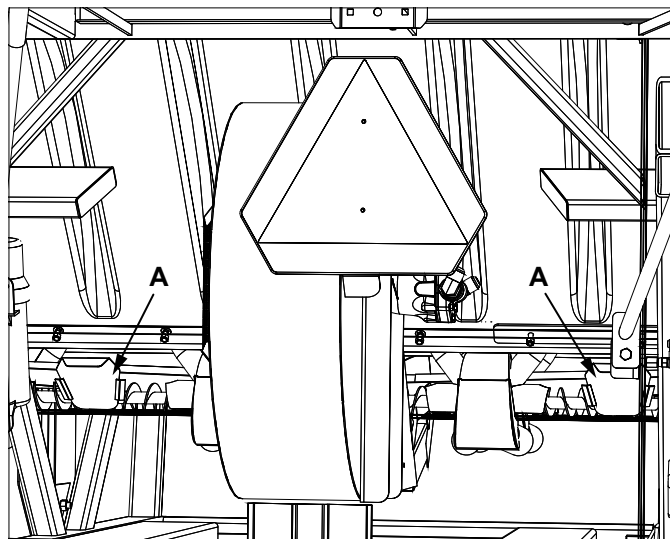
⚠ WARNING

Crushing hazard.

Before entering cart/tank area:

- **Park the equipment on firm, level surface.**
- **Place tractor transmission in park, turn tractor engine off and remove ignition key.**
- **Block the wheels.**
- **Verify service locks are properly engaged or lower implement to the ground or pavement.**

1. Position meter over large tarp or clean concrete and remove two access doors (A).
2. Empty all fertilizer from tank.
3. Insert piece of packing strap or heavy wire through each access door and clean around auger.
4. Remove or vacuum loosened materials out auger area.



⚠ WARNING

Crushing hazard and severing hazard.

Danger of death or serious injury from tractor or cart movement, or from auger operation. Do not enter area between or around the tractor and the cart.

5. Position an observer away from cart/tank area.
6. Start tractor and attempt to operate system. Check the auger shaft for rotation.

Note: If auger is rotating, refill tank with fertilizer, and continue operation. If auger is not rotating, proceed as follows.

⚠ WARNING

Crushing hazard.

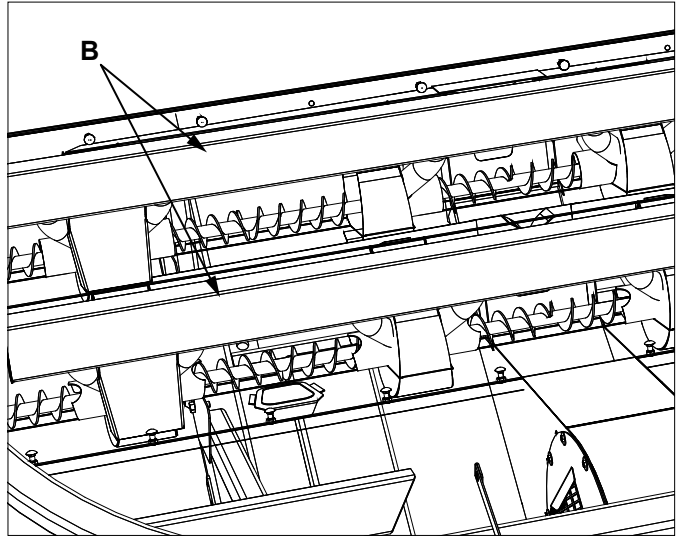
Immediately after checking auger shaft:

- **Park the equipment on firm, level surface.**
- **Place tractor transmission in park, turn tractor engine off and remove ignition key and place do not operate tag on ignition switch.**

⚠ WARNING

Fertilizer can be dangerous to people, animals, and the environment.

Read and follow the safety and handling instructions provided by the fertilizer manufacturer before removing the tank cover and entering tank.



7. Verify tractor transmission is in park, engine is switched off and ignition key is removed from switch and place do not operate tag on ignition switch.
8. Remove screen on top of tank. Enter tank.
9. Remove auger cover(s) (B) and clear any obstructions from auger area.

6.1.3 CLEARING AIR PASSAGES (DRY FERTILIZER SYSTEM ONLY)

⚠ WARNING

Crushing hazard.

Before entering cart/tank area:

- Park the equipment on firm, level surface.
- Place tractor transmission in park, turn tractor engine off and remove ignition key.
- Verify service locks are properly engaged or lower implement to the ground.

⚠ WARNING

Fertilizer can be dangerous to people, animals, and the environment.

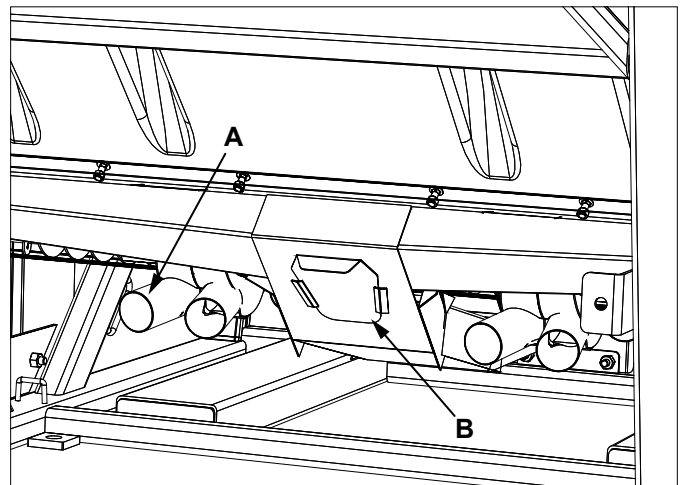
Wear eye protection and proper clothing. Read and follow the safety and handling instructions provided by the fertilizer manufacturer before removing the hoses or performing maintenance.

Note: Rodents may build nest in recesses of air chamber.

1. Remove air hoses from affected air chamber tubes (A).
2. Use packing strap or heavy wire into air chamber tubes to break up obstructions.
3. Clear out any blockage in air hose. Clear debris with vacuum cleaner.

Note: There is one plenum door on single auger meters and two on twin auger meters.

4. Remove plenum door(s) (B). Inspect area and remove any obstructions.



⚠ WARNING

Crushing and severing hazard.

Serious injury or death may result from tractor or cart movement or from auger operation.

Do not enter area between or around tractor and cart.

5. Position an observer away from cart/tank area.

⚠ WARNING

Crushing hazard.

Immediately after checking air chamber outlet tubes:

- **Park the equipment on firm, level surface.**
- **Place tractor transmission in park, turn tractor engine off and remove ignition key.**

6. Start tractor and attempt to operate system. Check for air and fertilizer blowing out of air chamber outlet tubes.

Note: If air chamber outlet tubes are still obstructed, verify tractor transmission is in park, engine is switched off, and ignition key is removed from switch, and repeat Steps 2 through 6.

7.1 SECTION OVERVIEW

Montag Manufacturing uses some components produced by other manufacturers. Refer to the OEM manufacturer's information for specific maintenance instructions. If you do not have the manufacturer's information, contact your dealer or Montag Manufacturing for assistance.

Routine inspections, maintenance and service must be performed on your machine on a regular basis to insure safe and reliable operation. Inspections can be performed by a person trained in spotting potential problems. Service and repairs must be performed by a trained, qualified technician.

Note: In addition to this manual, also check the relevant component manufacturer's manual.

WARNING

Crushing hazard.

Before performing inspections, service or maintenance:

- **Park the equipment on firm, level surface.**
- **Place tractor transmission in park, turn tractor engine off and remove ignition key.**
- **Block the wheels.**
- **Lower all equipment to the ground or pavement.**

7.2 END OF SEASON INSPECTIONS

Perform the following inspections at the end of each season. Repair or replace worn and damaged parts.

- Inspect chains.
- Inspect sprockets.
- Inspect auger bushings.
- Inspect hoses.
- Inspect knuckle hitches.
- Inspect scale controller cable and connection.

7.3 LUBRICATION

7.3.1 LUBRICATION FITTINGS

1. Place tractor transmission in park, stop engine and remove key.
2. Lubricate the following grease fittings at the beginning and end of each season, and after every 1000 acres of use.

All carts except the lift assist and knuckle hitch carts have ten fittings:

- One at each pin for the spindle assembly to center frame.
- One at each pin for arm to center frame,
- One at each hitch to ball connection.
- Lift assist carts have four additional fittings at arm connecting points at arm supports and hitch brackets.
- Carts equipped with knuckle hitches have one additional fitting on each knuckle hitch swivel.

3. Lubricate the following grease fittings at the beginning and end of each season, and every week or after every 1000 acres of use.
 - One on each tie rod end.

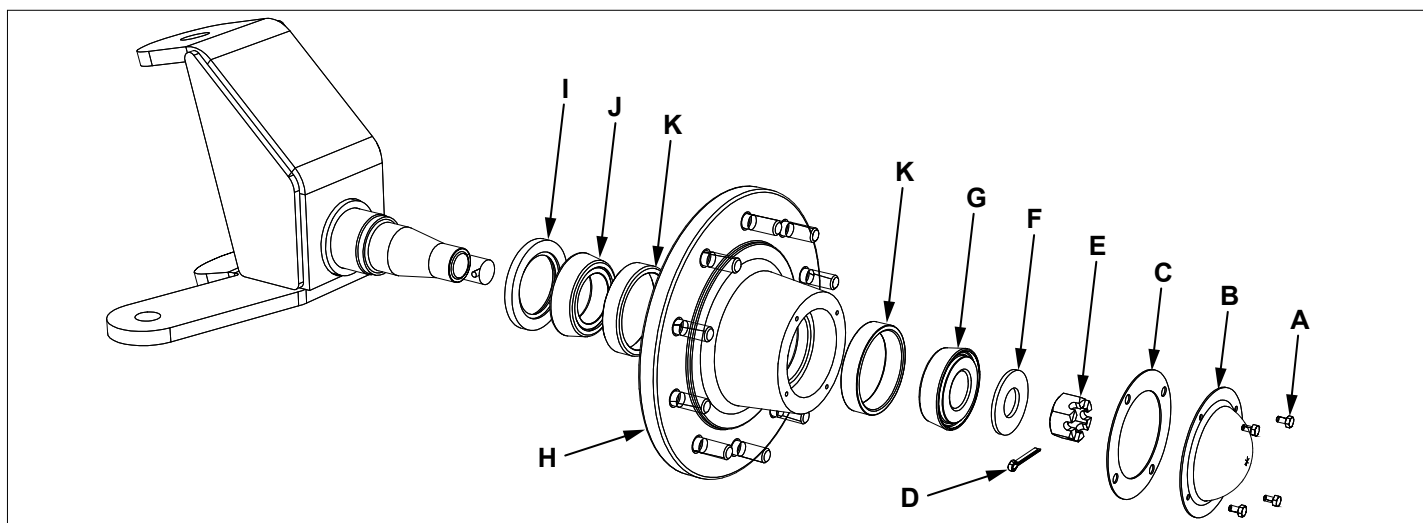
7.3.2 CHAINS

1. Place tractor transmission in park, stop engine and remove key.
2. Each day of use: Spray auger chain with a quality chain lubricant. **Do not** use motor oil or other petroleum base lubricant that can cause a buildup of dirt in the chains and sprockets.

7.4 SERVICE HUB BEARINGS AND SEALS

Note: Perform this service every three years or 5000 acres of use.

1. Place tractor transmission in park, stop engine and remove key.
2. Remove spindle assembly from cart.
2. Remove 4 bolts (A), remove hub cap (B) and seal (C). Discard seal.
3. Remove cotter pin (D), slotted nut (E), washer (F) and outer bearing (G).
4. Remove hub (H) from spindle.
5. Remove seal (I) and inner bearing (J) from hub. Discard seal.
6. Clean and inspect bearings, bearing cups (K), hub and spindle.



7. Replace any parts that are damaged or worn.
8. If a bearing or bearing cup must be replaced, replace both bearings and bearing cups. Do not install a new bearing in a used bearing cup. Use a press and correct size drivers to remove and install bearing cups in hub.
9. Lubricate and install inner bearing.
10. Install new inner seal with flat side facing up, away from the hub with a press installation tool.
11. Install hub on spindle.
12. Install outer bearing, washer and shaft nut.

NOTICE

Prevent damage to hub seals.

Do not use air or electric power tools on slotted nut.

13. Tighten slotted nut.
14. Loosen slotted nut $\frac{1}{2}$ turn, then tighten adequately to preload bearing.

15. Align hole in spindle and install new cotter pin. Bend open end of cotter pin.

16. Install gasket and hub cap. Install four hub cap bolts. Tighten bolts.

7.5 INSPECT CAULK SEAL BETWEEN METER AND TANK

Note: Perform this service before each season of use.

1. Inspect caulk seal between meter and tank, checking condition of caulk and adhesion.
2. If caulk is in poor condition or has separated from the joint, replace with a high grade silicon caulk.

8.1 STORING THE SYSTEM

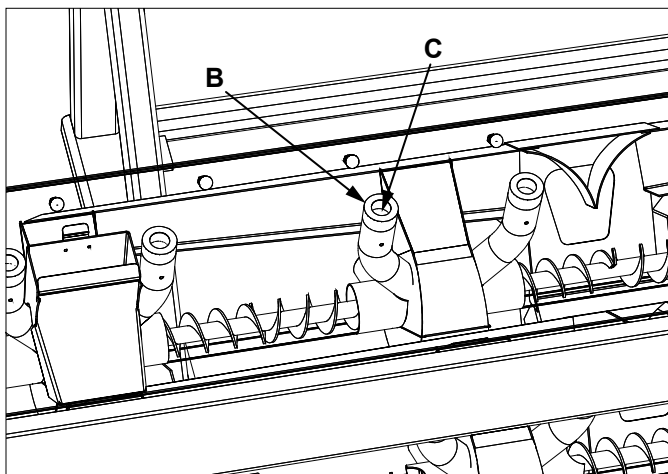
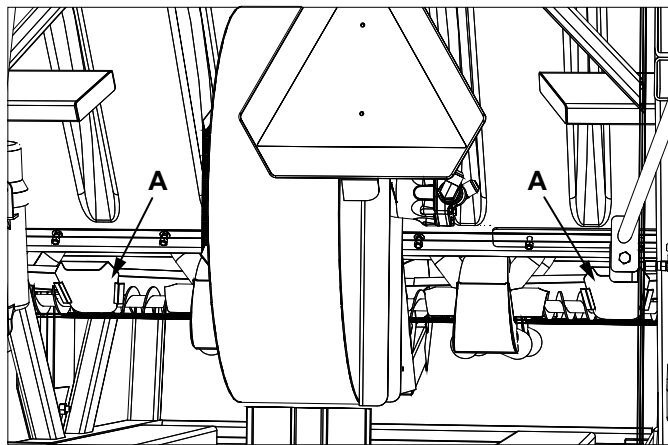
⚠ WARNING

Fertilizer can be dangerous to people, animals, and the environment.

Wear eye protection and proper clothing. Read and follow the safety and handling instructions provided by the fertilizer manufacturer before removing the hoses or performing maintenance.

Perform the following steps before storing your fertilizer application system.

1. Block cart wheels and remove skid and tank from cart.
2. Thoroughly power wash cart, skid and fertilizer tank (inside and out).
3. Remove auger covers (A), plastic caps (B) and balls (C) inside air chambers.
4. Remove row reducers (if equipped),
5. Thoroughly power wash auger assembly and auger covers and clean air chamber covers and balls. Inspect and replace any damaged parts.
6. Run fan to blow water out of system.
7. Store tanks with top lids closed in place.



⚠ WARNING

Crushing hazard.

Before performing inspections, service or maintenance:

- Park the equipment on firm, level surface.
- Place tractor transmission in park, turn tractor engine off and remove ignition key and place do not operate tag on ignition switch.
- Do not disconnect cart from implement for servicing.
- Block the wheels.
- Lower all equipment to the ground or pavement.

9.1 SPINDLE BUSHINGS

Note: Spindle assembly has bushings at top and bottom of pin sleeves. Bushings should be replaced in pairs (top and bottom of sleeve together).

⚠ WARNING

Prevent death or serious injury.

Cart assembly weighs approximately 9000 lbs (4082 kg).

Tire/wheel assembly weighs approximately 765 lbs (347 kg).

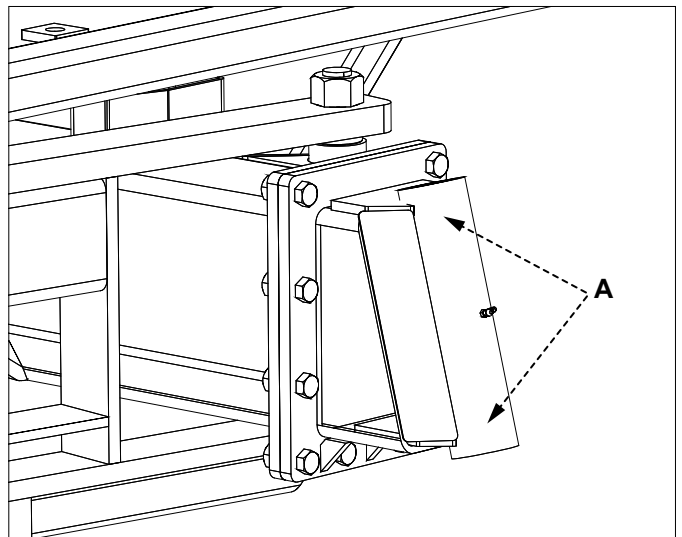
Spindle assembly weighs approximately 360 lbs (163 kg).

Use adequate lifting and support devices.

1. Remove all product from tank.
1. Raise and support cart using adequate lifting and support devices.
2. Remove wheel using an adequate lifting device.
3. Remove spindle assembly using an adequate lifting device.
4. Remove bushing (A).

Note: To avoid damaging bushing, install with a non-marring implement, such as a rubber mallet, or with a block of wood to protect bushing during installation.

5. Install new bushing with a non-marring implement until outer end of bushing is flush with pin sleeve.
6. Install spindle assembly. (See Section 3.3 or 3.4.)
7. Install wheel. (See Section 3.3 or 3.4.)
8. Remove cart supports and lower cart.



9.2 ARM BUSHINGS

Note: Arm assembly has bushings at top and bottom of pin sleeves. Bushings should be replaced in pairs (top and bottom of sleeve together).

⚠ WARNING

Prevent death or serious injury.

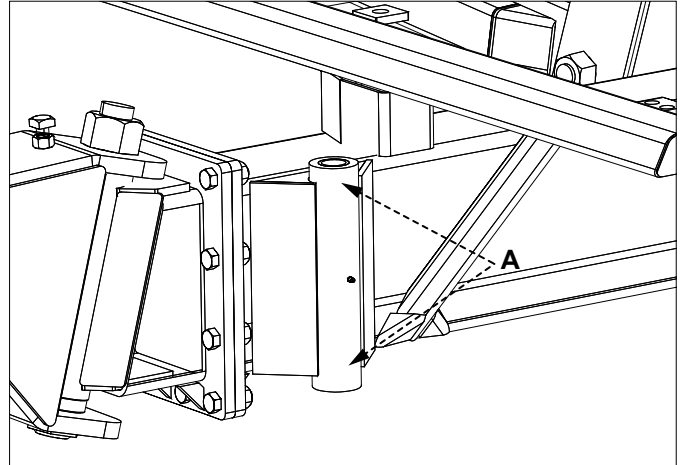
Arm assembly weighs approximately 470 lbs (213 kg).

Use adequate lifting and support devices.

1. Remove all product from tank.
2. Remove arm assembly using an adequate lifting device.
3. Remove bushing (A).

Note: To avoid damaging bushing, install with a non-marring implement, such as a rubber mallet, or with a block of wood to protect bushing during installation.

4. Install new bushing with a non-marring implement until outer end of bushing is flush with pin sleeve.
5. Install arm assembly. (See Section 3.3 or 3.4)



9.3 LIFT ASSIST ARM BUSHING

⚠ WARNING

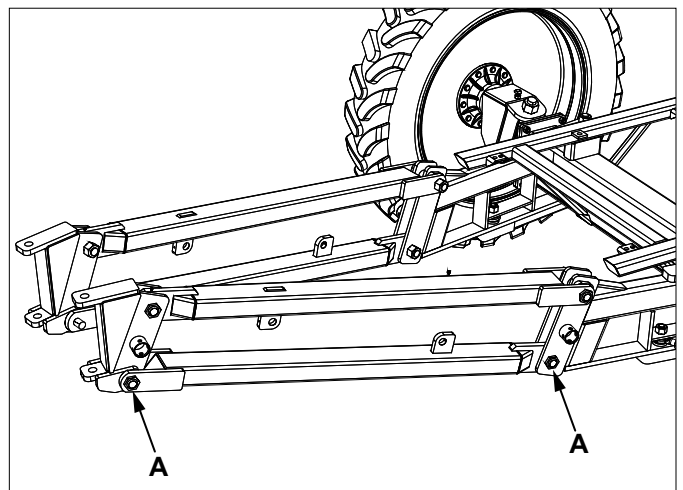
Prevent death or serious injury.

Cart assembly weighs approximately 9000 lbs (4082 kg).

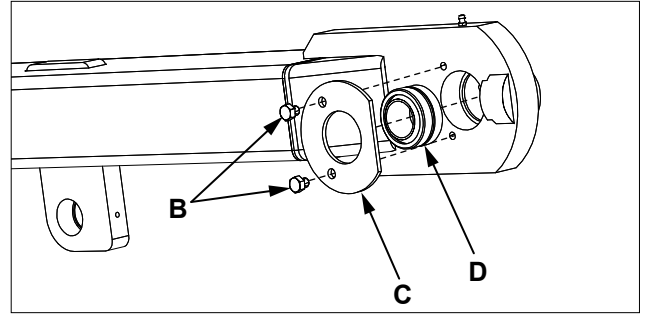
Lift assist arm weighs approximately 170 lbs (77 kg).

Use adequate lifting and support devices.

1. Relieve hydraulic pressure and remove hydraulic cylinder from lift assist arms.
2. Remove bolts (A) from arm support and hitch bracket.
3. Remove arm.



4. Remove bolts (B), plate (C) and bearing (D). Inspect parts for wear and damage. Replace worn or damaged parts.
5. Install bearing, plate and bolts.
6. Install arm. (See Section 3.4.7.)
7. Install hydraulic cylinder. (See Section 3.4.8.)
8. Remove cart supports, lower cart and remove jacks.



9.4 FAN

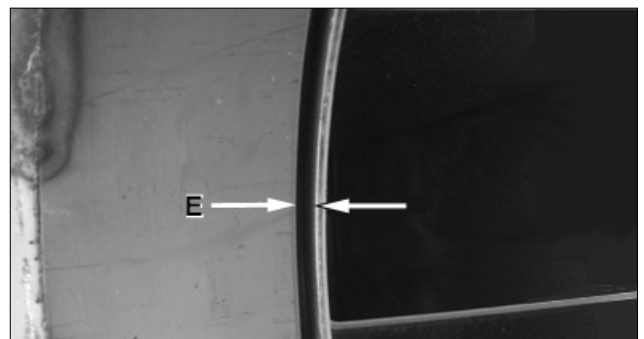
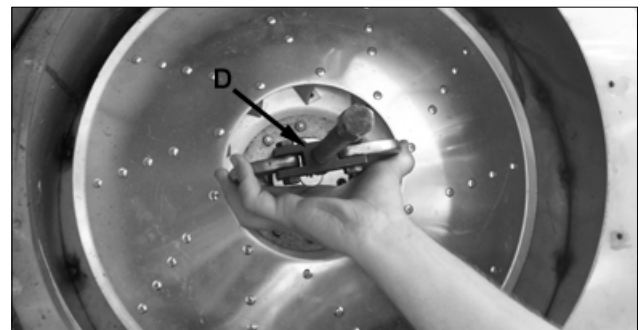
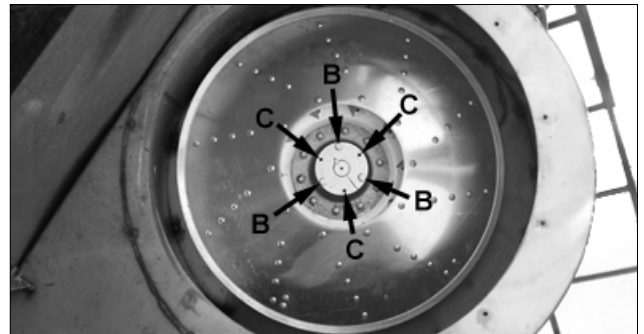
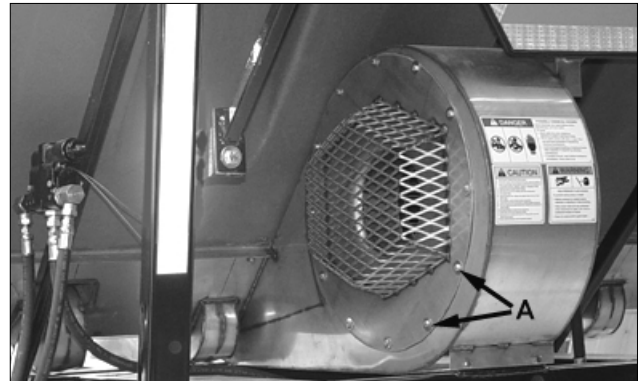
1. Remove 12 bolts (A) from circumference of fan guard. Remove fan guard assembly.

Note: Clean empty bolt holes (C) with tap as necessary to remove rust build-up before installing bolts (B).

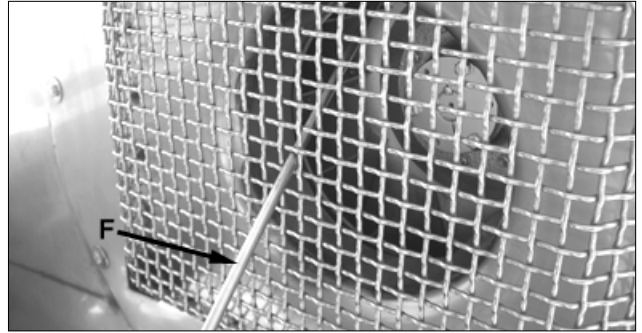
2. Remove bolts (B) from tapered hub and install in bolt holes (C). Tighten bolts evenly in sequence as necessary to loosen tapered hub from fan.
3. Install pulley puller (D) onto tapered hub and remove hub from shaft.
4. Remove fan from shaft.
5. Inspect and replace damaged parts.
6. Before installing fan, cover contact surfaces of fan, hub, shaft, and the three hub bolts with anti-seize.
7. To install fan, position fan and taper lock hub on shaft, and install tapered hub with bolts (B) in original bolt holes. Fan should be nearly flush with end of shaft.

Note: Fan may be damaged if bolts are overtightened.

8. Tighten each bolt evenly in sequence to 25 lb/in (3 Nm). Then tighten each bolt two more times to 25 lb/in (3 Nm). to verify torque of each bolt is correct.
9. Apply anti-seize to guard assembly bolts.
10. Install fan guard assembly with 12 bolts (A) on circumference of assembly. Tighten bolts to 25 lb/in (3 Nm).
11. Check gap (E) between fan and shield. Gap must be ¼ inch (6 mm) or less.



12. Carefully insert a rod (F) through screen and gently rotate fan. It should turn freely without rubbing. If the wheel is difficult to rotate, or if you see or feel the wheel rubbing, remove fan and re-install it.



9.5 FAN DRIVE MOTOR

Relieve hydraulic system pressure before performing any work on hydraulic system. Use wood or cardboard to check for leaks.

⚠ WARNING

Relieve pressure before disconnecting hydraulic lines.

Tighten all connections before applying pressure.

Seek medical attention immediately if fluid is injected into skin.

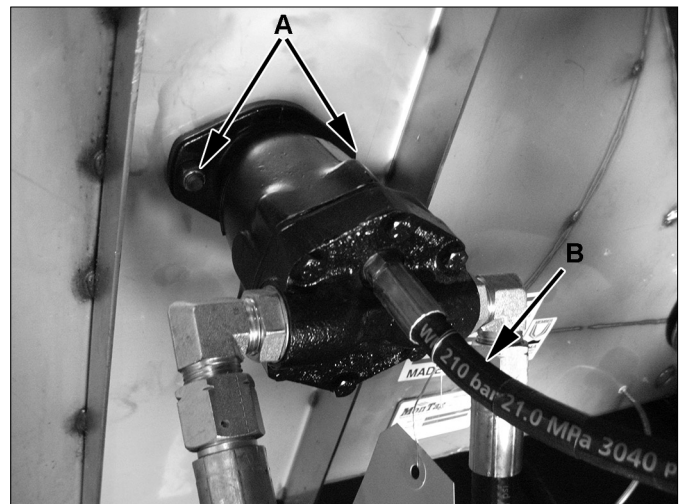
1. Relieve hydraulic pressure. Identify and remove hoses from motor.
2. Remove fan. See section 9.4.
3. Remove nuts (A) and remove motor.

NOTICE

Prevent fan drive motor damage.

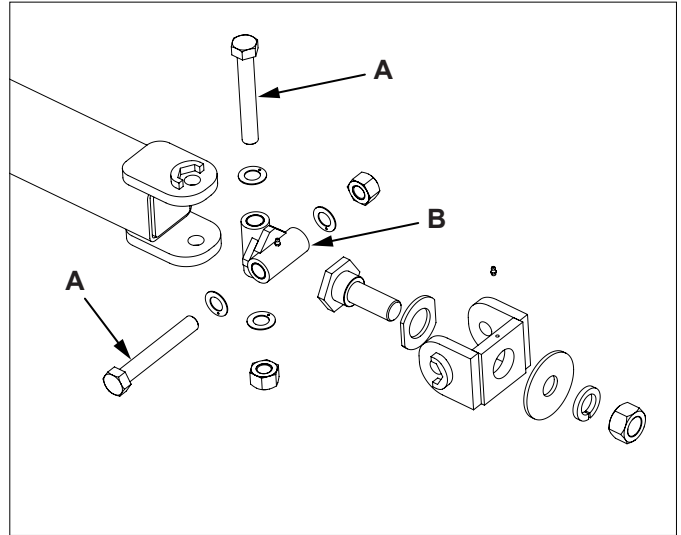
Install motor with case drain port (B) located on top as shown.

4. Position new motor with case drain port (B) located on top as shown.
5. Install and tighten nuts (A) to 16 lb/ft (22 Nm) of torque.
6. Install hoses. See Hydraulic Schematics in Section 10.



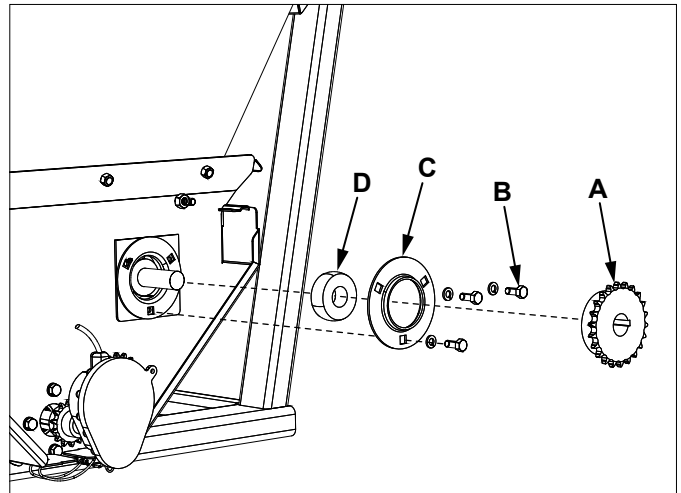
9.6 KNUCKLE HITCHES

1. Remove lock nuts, washers and bolts (A).
2. Remove knuckle universal joint (B).
3. Install new universal joint, bolts, washers and lock nuts.
4. Lubricate universal joint with a high quality grease.



9.7 AUGER BEARINGS

1. Remove all product from tank.
2. Remove auger drive chain cover and drive chain.
3. Remove sprocket (A), retainer bolts (B), lock washers, outer bearing flange (C) and bearing (D).
4. Clean and inspect shaft and removed parts. Replace worn or damaged parts.
5. Install bearing, flange, lock washers, bolts and sprocket.
6. Install chain and chain cover.



CONTROLLER CALIBRATION

Row Spacing	Standard Rate	High Output Rate
20 Inch Row Spacing	375 lb/acre	375 lb/acre
22 Inch Row Spacing	341 lb/acre	341 lb/acre
30 Inch Row Spacing	250 lb/acre	250 lb/acre
34 Inch Row Spacing	220 lb/acre	220 lb/acre
36 Inch Row Spacing	208 lb/acre	208 lb/acre
38 Inch Row Spacing	197 lb/acre	197 lb/acre
40 Inch Row Spacing	187 lb/acre	187 lb/acre

	Standard Meter 2 Inch Hose	High Output Meter 2½ Inch Hose
Auger Shaft Speed (RPM)	60	31
Product Density (lb/cu-ft)	62	62
Test Speed (MPH)	5	5
Displacement Per Row (cu-ft/rev)	0.0016	0.0032

Flow Control Valve = PWM Closed
12 Volt
110 Hertz

Meter Control Valve Cal # = 1023 (See Controller manual for fine tuning)

Encoder = Raven 5 Volt 36 Pulse

Auger Drive = 14 tooth #40 drive sprocket (encoder)
22 tooth #40 driven sprocket (auger)
1.57 to 1 Ratio

Meter Speed Sensor Cal # = 36 x 1.57 = 56 (pulses per auger revolution)

Low limit/High limit = (Use default setting see controller manual for instructions)
Auger RPM Standard meter 10 - 130 maximum
Auger RPM High Output meter 10 - 165 maximum

Tank Capacity = 6 Ton 187 cubic ft. or 150 bushels
9 Ton 281 cubic ft. or 225 bushels

Displacement per Row = Standard Meter (2" hoses) 0.0016
High Output Meter (2 ½" hoses) 0.0032

CFR (cubic ft / Revolution) = Displacement per Row X Number of Rows = CFR

Adjust CFR = $\frac{\text{Actual Rate or Scale weight}}{\text{Desired Rate or Weight displayed on controller}} \times \text{Current CFR} = \text{New CFR Cal\#}$

Spreader Constant = $\frac{\text{Meter Speed Sensor Cal\#}}{\text{CFR}} = \text{Spreader Constant}$

Adjust Spreader Constant = $\frac{\text{Spreader Constant}}{\text{Actual Rate}} \times \text{Desired Rate} = \text{New Spreader Constant}$

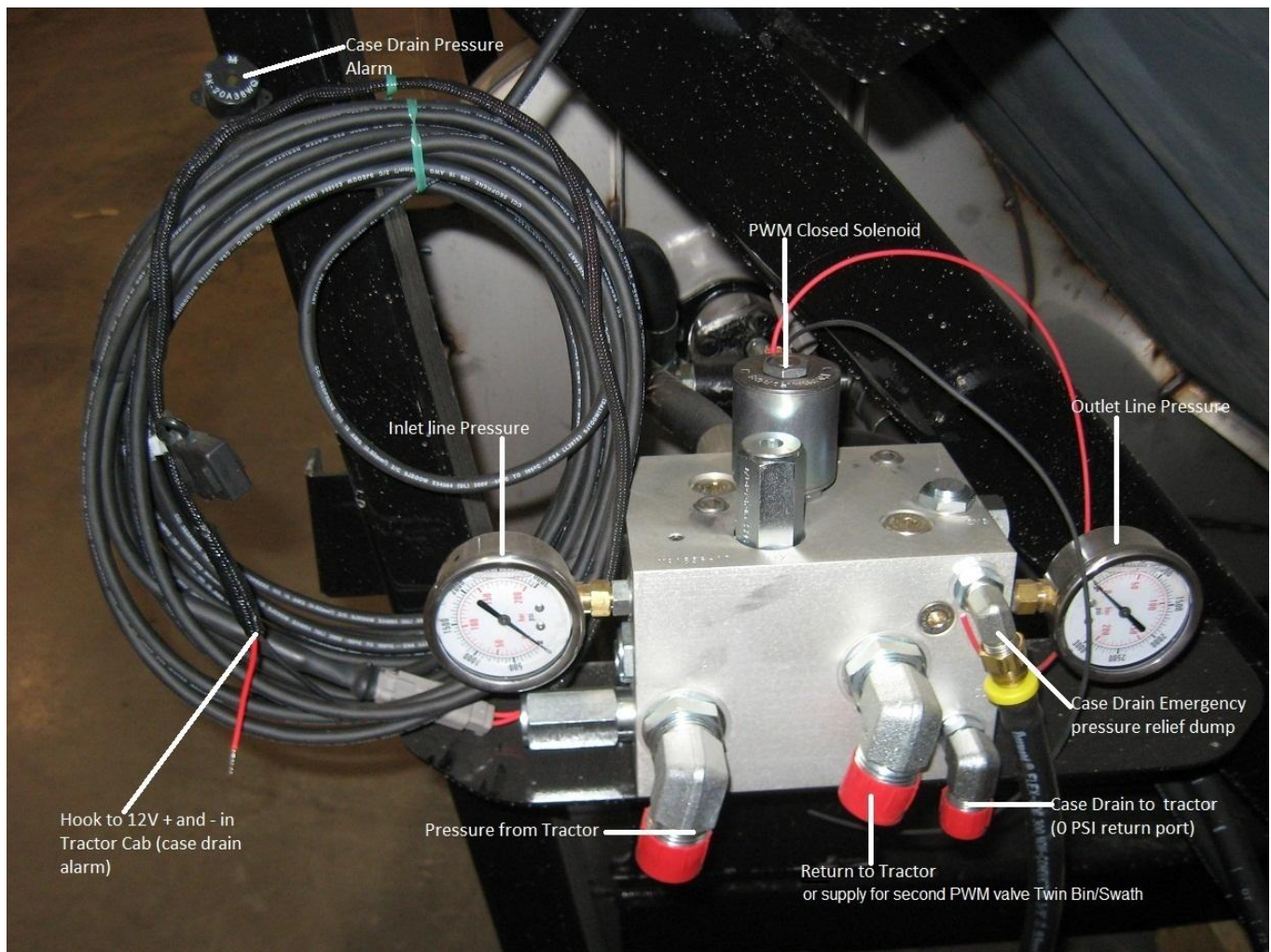
Controllers with Automatic Calibration Functions:

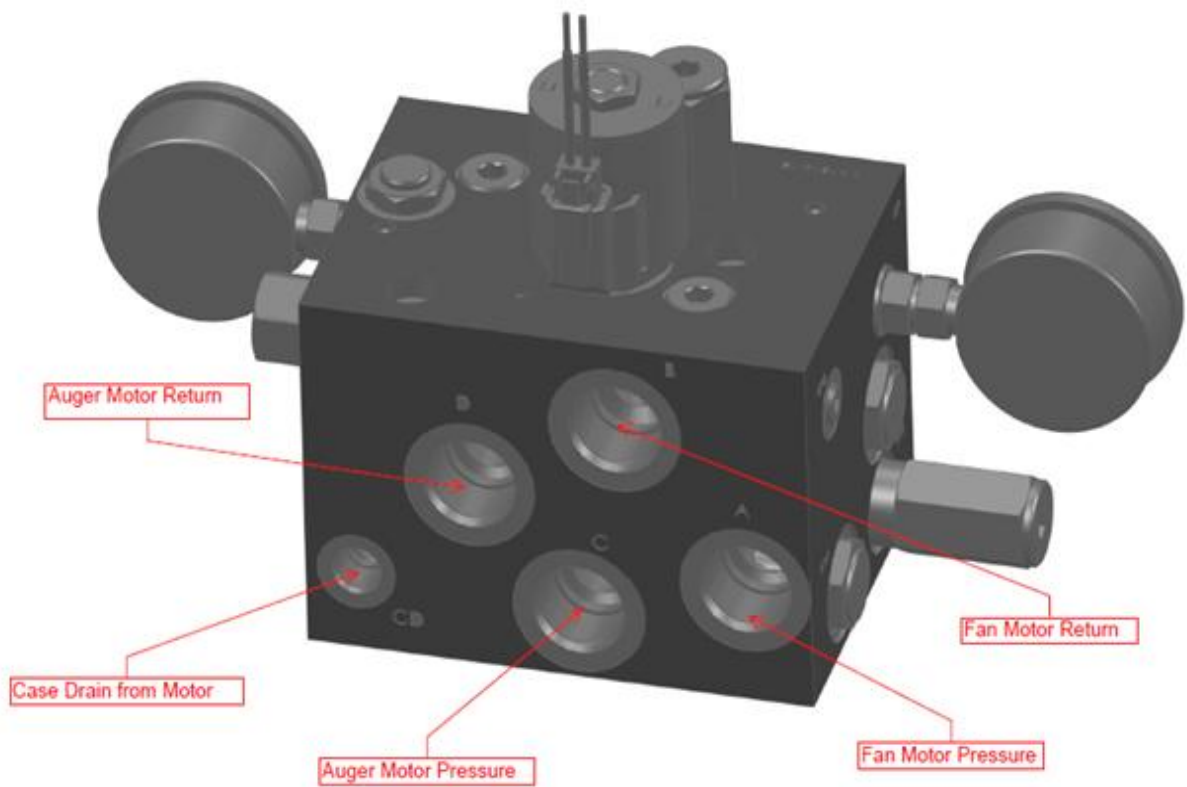
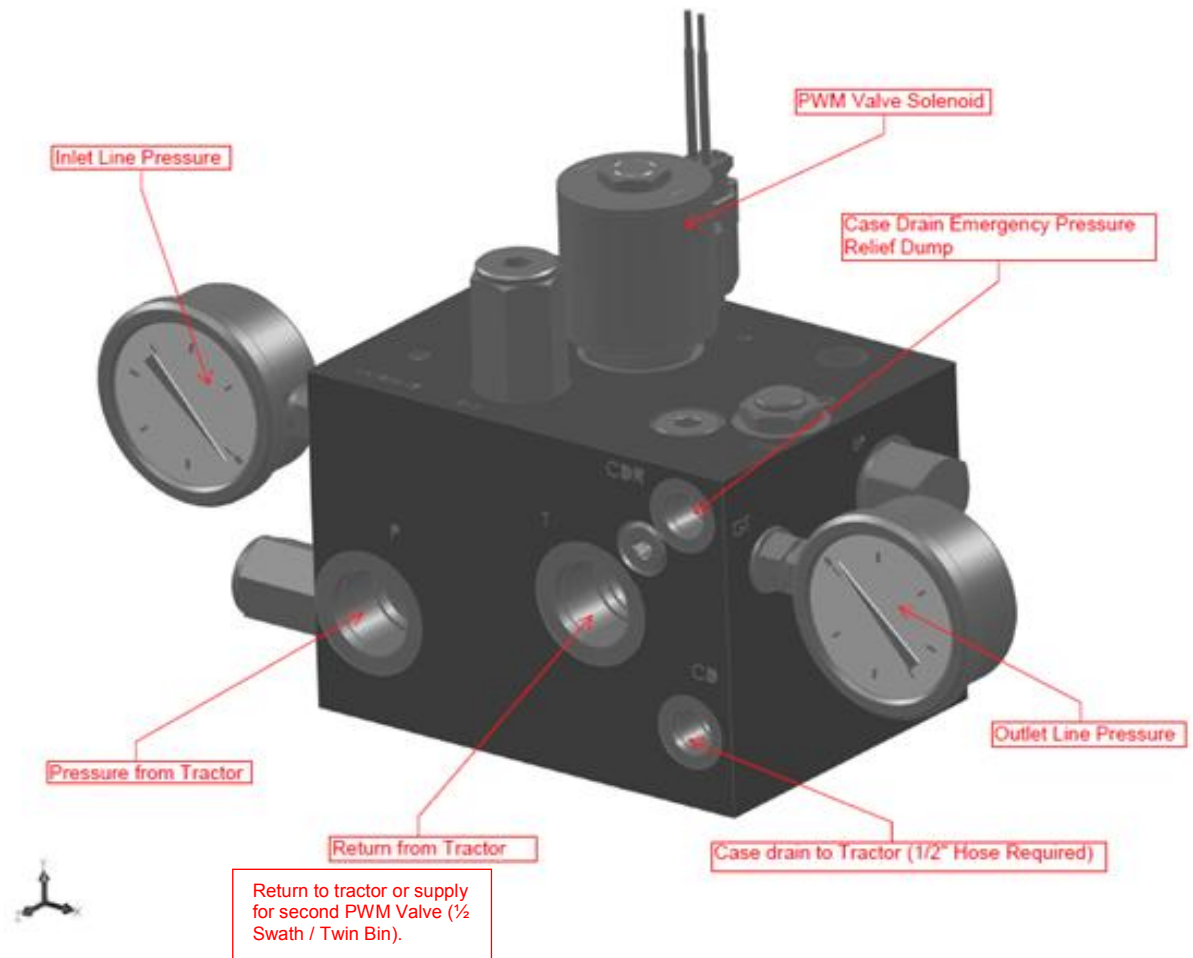
The Montag applicators fan must be running at normal operating pressure when performing automatic calibration functions on a controller such as PWM limits.

Typical Controller Calibration for 30 inch Rows:

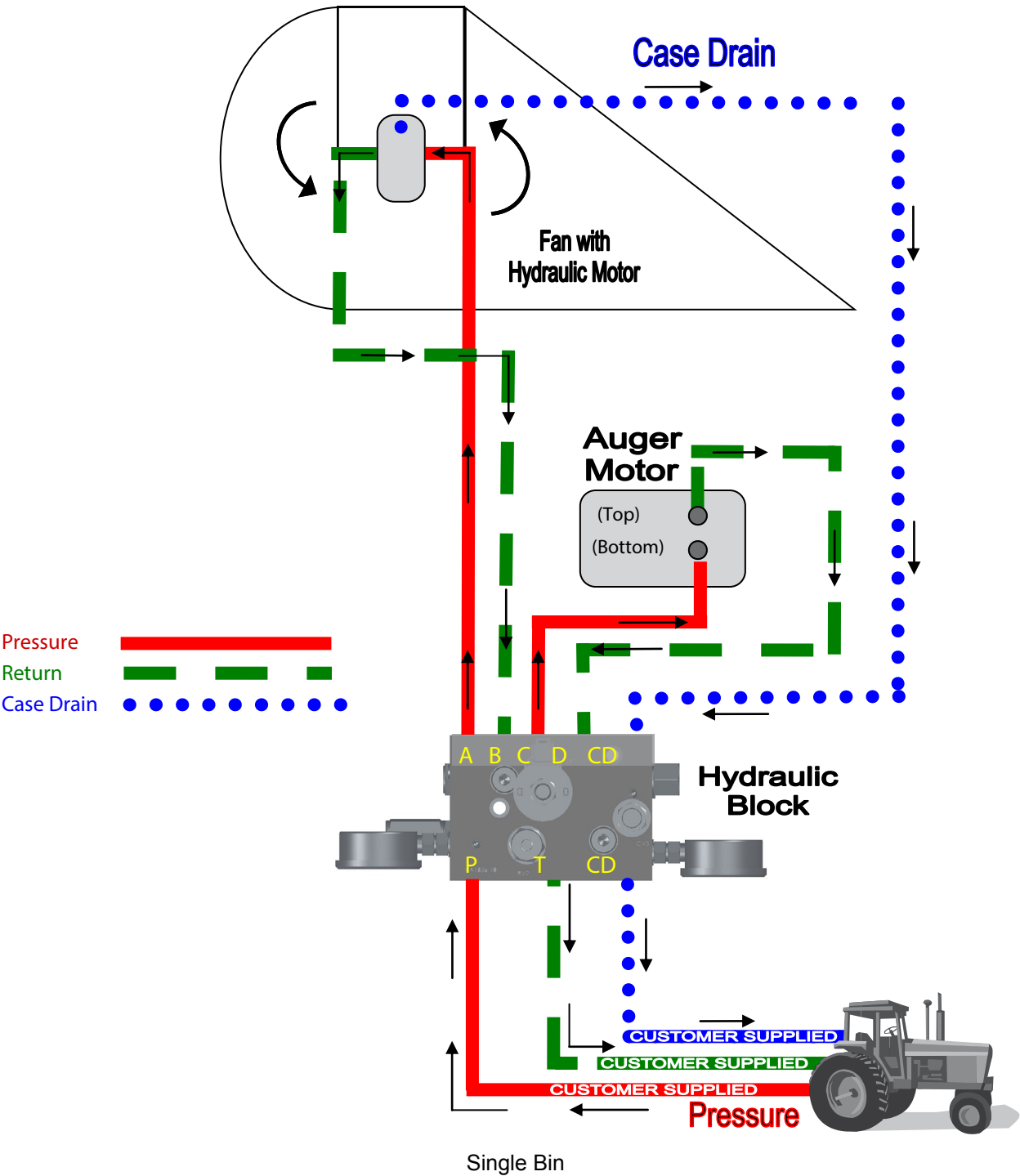
Set your product density to 62, your application rate to 250 lbs. / acre, test speed at 5 MPH and run the controller in test mode. The auger shaft should turn 60 RPM for a standard machine and 31 RPM for a High Output machine. If it does not you can raise or lower your CFR # or Spreader Constant # to achieve the proper RPM.

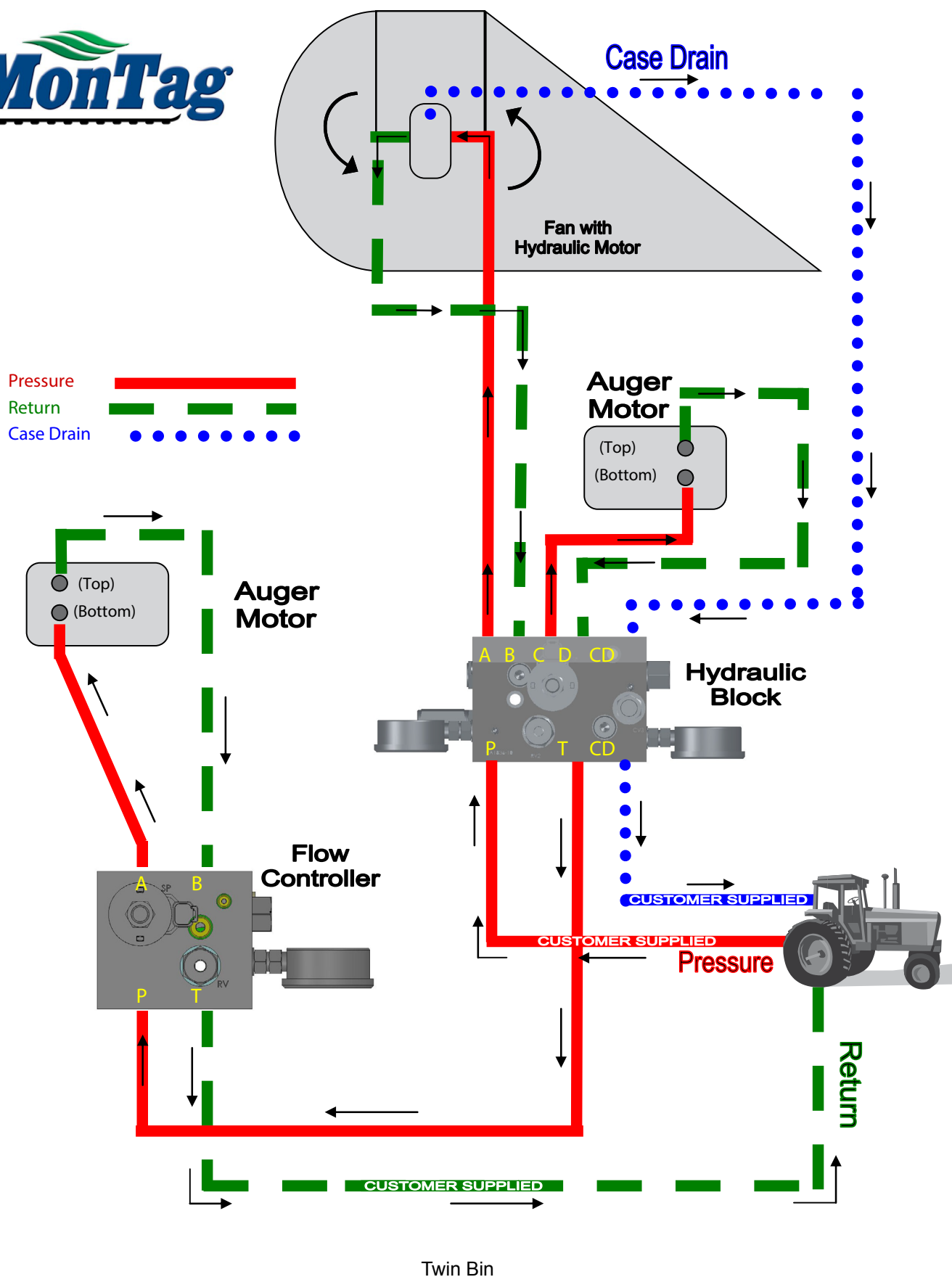
PWM Closed Valve and Port Identification





HYDRAULIC SCHEMATICS







LEVER-NUT J-BOX INSTALLATION

For P/N 406270 CELL-SB10KLBS-21'

Install J-Box

Install J-Box on flat surface and if possible with cables hanging downward using 4 screws (not provided) and washers (provided).

Caution: Use washers provided with mounting screws to prevent damage to housing. Do not over-tighten screws.

Connect Load Cell and J-box Cable

1. Insert load cell and J-box cables through each of the water-tight strain-reliefs. Do not tighten strain relief nuts.
2. Connect **load cell wires** of the same color to the same terminal block as shown above. See instructions below.
3. Connect the **J-box cable wires** according to the table below. (Note: Ignore wiring diagram 404928 Inside cover)

J-box Cable Wire Color	Connect To:	Load Cell Lever-nut Terminal block
WHITE	→	GREEN
GREEN	→	WHITE
RED	→	RED
BLACK	→	BLACK
BARE	→	BARE

4. Tighten nuts on the water-tight strain reliefs. Make sure nuts are clamping down on cable and not the heat shrink tubing.
5. Assure that the cover gasket is properly installed.
6. Attach cover using 4 screws (provided).

Installing wires into Terminal Block

1. Open levers 90° to locked position.
2. Insert individual wires into terminal.
(note: Wire strip length is 7/16" (11mm))
3. Close lever.
4. Tug wires to assure solid connection.

