

1512FX, 1516FX & 1524FX Planter



OPERATOR'S MANUAL 1512FX, 1516FX & 1524FX Planter OM15FXMY16EN ISSUE D6 (ENGLISH)

Deere & Company (XG)
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Introduction

Foreword

READ THIS MANUAL carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or equipment damage. This manual and safety signs on your machine may also be available in other languages. (See your John Deere dealer to order.)

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and should remain with the machine when you sell it.

MEASUREMENTS in this manual are given in both metric and customary U.S. unit equivalents. Use only correct replacement parts and fasteners. Metric and inch fasteners may require a specific metric or inch wrench.

RIGHT-HAND AND LEFT-HAND sides are determined by facing in the direction the implement will travel when going forward.

WRITE PRODUCT IDENTIFICATION NUMBERS (P.I.N.) in the Specification section. Accurately record all the numbers to help in tracing the machine should it be stolen. Your dealer also needs these numbers when you order parts. File the identification numbers in a secure place off the machine.

WARRANTY is provided as part of John Deere's support program for customers who operate and maintain their equipment as described in this manual. The warranty is explained on the warranty certificate or statement which you should have received from your dealer

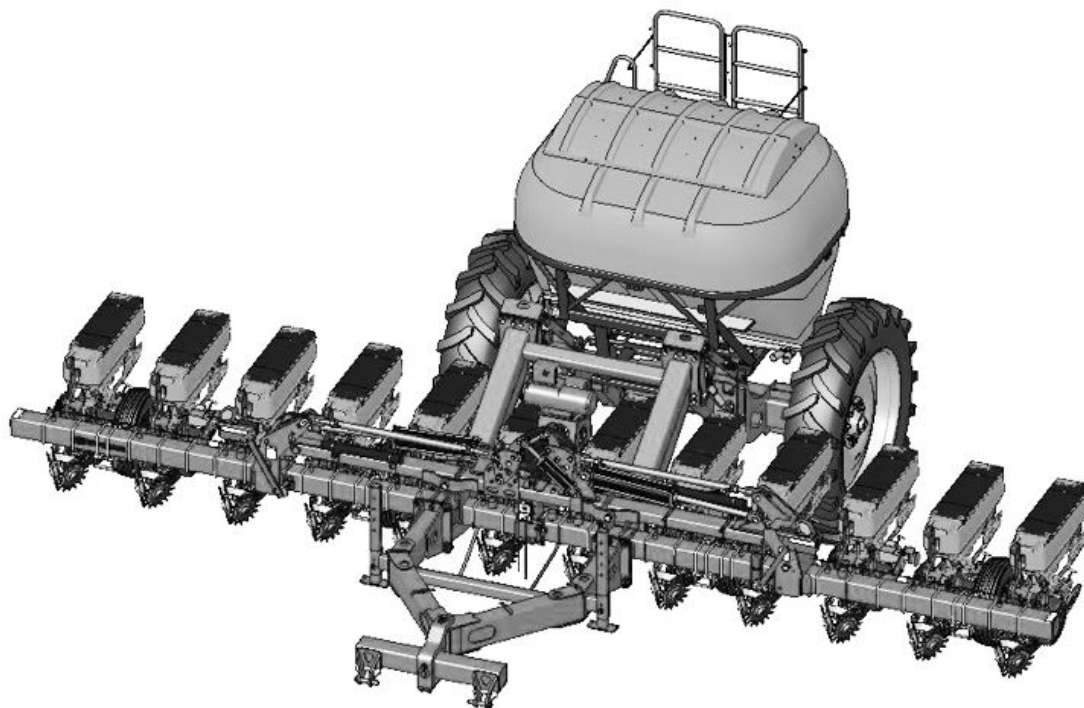
This warranty provides you the assurance that John Deere will back its products where defects appear within the warranty period. In some circumstances, John Deere also provides field improvements, often without charge to the customer, even if the product is out of warranty. Should the equipment be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and field improvements may be denied. Setting fuel delivery above specifications or otherwise overpowering machines will result in such action.

THE TIRE MANUFACTURER'S warranty applicable to your machine may not apply outside the U.S.

If you are not the original owner of this machine, it is in your interest to contact your local John Deere dealer to inform them of this unit's serial number. This will help John Deere notify you of any issues or product improvements.

DX,IFC2 -19-03APR09-1/1

Machine Photo (12R/ 16R/ 24R)

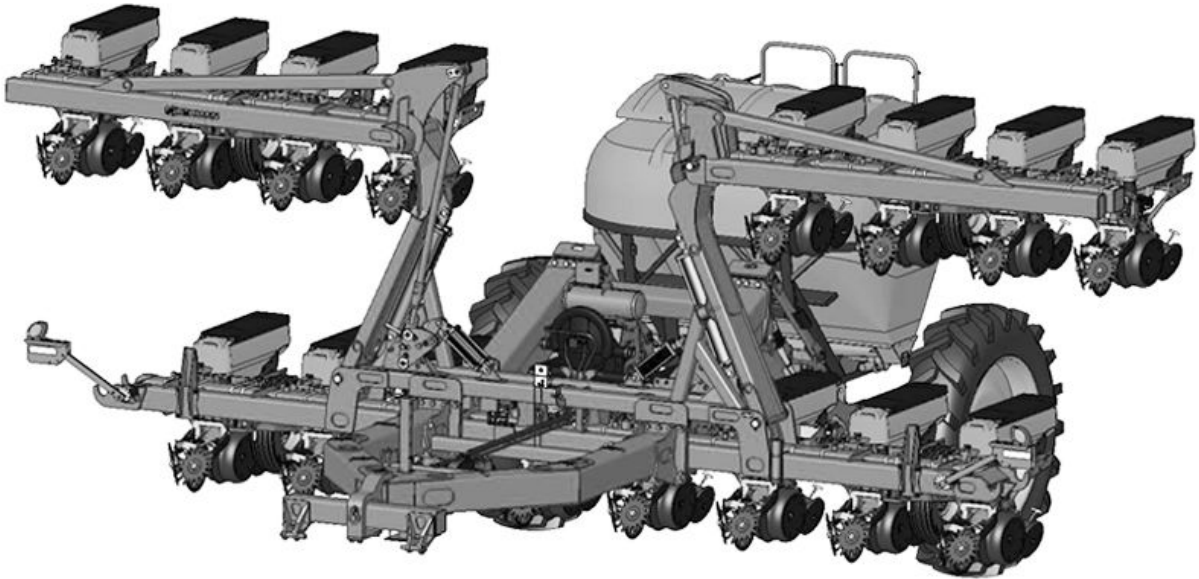


12 Row

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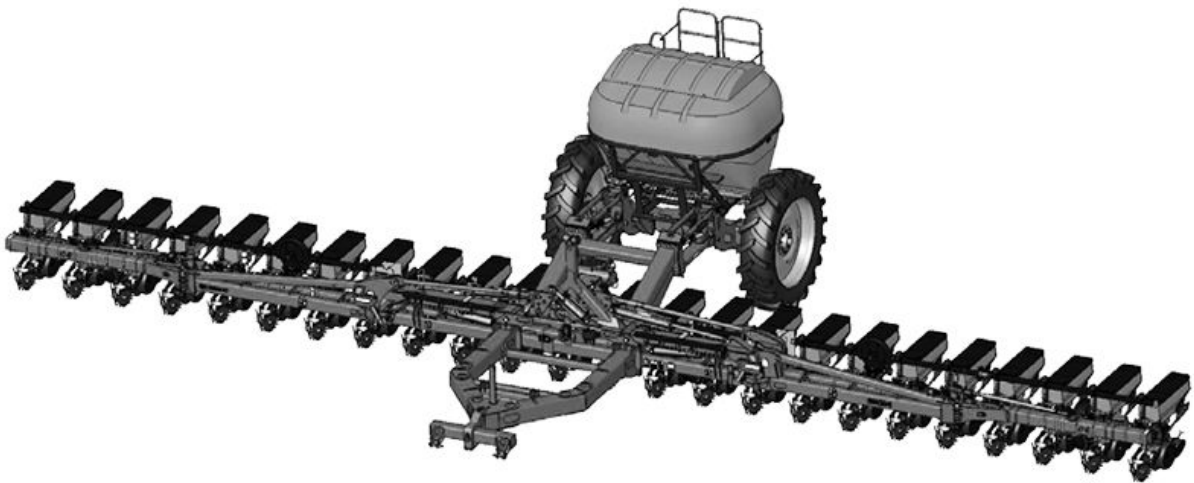
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16 Row

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PY24812—UN—08FEB16



24 Row

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PY24813—UN—10MAR16

A Message to Our Customers

We appreciate the confidence placed in us by your purchase of this machine. Before this machine was produced, countless hours were spent designing and testing to ensure that the machine performs at the highest level. To achieve the maximum performance, it is imperative that this machine is operated in accordance with the procedures outlined in this manual.

Information in this manual is divided into sections. These sections are identified at the top of each page. Specific information within each section is organized into topic modules.

The modules are encased in boxes. The initial box for a topic contains the topic heading at the top left (see A

Message to Our Customers on this page). Topics that span more than one page are marked with "Continued on next page" at the bottom of a page. Two-part page numbers identify both the section number and the page number of each page. The table of contents displays every section name. Every module topic within a section is listed along with the section number and page number. The index lists common search topics and page numbers.

Review this manual often to learn where to look for information. For instance, machine adjustments are found in the Operating section and maintenance information is found in the Service section.

Thanks again for purchasing this machine.

AG,OUO6074,1160 -19-29MAR16-1/1

ADDITIONAL INFORMATION REQUIRED

Required Manuals	Optional Manuals
RATE CHARTS AND SETTINGS This manual is used with the planter operator's manual. This manual contains the following. All setup information for seed meters All setup information for granular chemical All settings for the seed transmission All seed rate charts All vacuum settings All meter lubrication information. (Talc and Graphite)	The following operator manuals are required when the planter is equipped with these options. Some options are not available on every planter model.
SeedStar™ 2 and SeedStar™ XP This manual is used when the planter is equipped with a SeedStar™ monitor.	Refuge Plus Seed Delivery This manual is used when a planter is equipped with the refuge plus seed delivery system.
	Central Insecticide System This manual is used when a planter is equipped with the central insecticide system.
	Liquid-Fertilizer Block Manifold This manual is used when a planter is equipped with the liquid fertilizer delivery system.

SeedStar is a trademark of Deere & Company

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A John Deere ILLUSTRATION™ Manual

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Safety

Recognize Safety Information

This is a safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.



DX,ALERT -19-29SEP98-1/1

TS1389 —UN—28JUN13

Understand Signal Words

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

 **DANGER**

 **WARNING**

 **CAUTION**

DX,SIGNAL -19-03MAR93-1/1

TS187 —19—30SEP88

Follow Safety Instructions

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your John Deere dealer.

There can be additional safety information contained on parts and components sourced from suppliers that is not reproduced in this operator's manual.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.



If you do not understand any part of this manual and need assistance, contact your John Deere dealer.

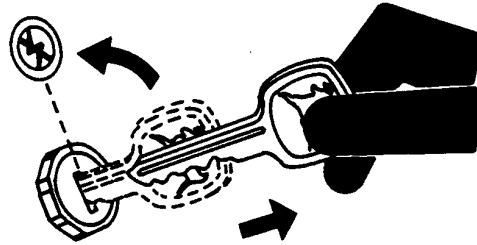
DX,READ -19-16JUN09-1/1

TS201 —UN—15APR13

Park Machine Safely

Before working on the machine:

- Lower all equipment to the ground.
- Stop the engine and remove the key.
- Disconnect the battery ground strap.
- Hang a "DO NOT OPERATE" tag in operator station.



TS230 —UN—24MAY89

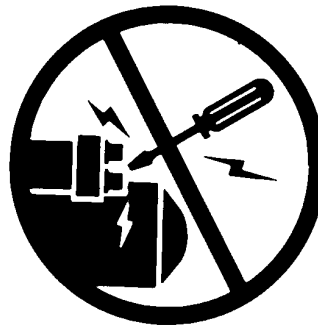
DX,PARK -19-04JUN90-1/1

Prevent Machine Runaway

Avoid possible injury or death from machinery runaway.

Do not start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

NEVER start engine while standing on ground. Start engine only from operator's seat, with transmission in neutral or park.



TS177 —UN—11JAN89

DX,BYPAS1 -19-29SEP98-1/1

Operating the Tractor Safely

You can reduce the risk of accidents by following these simple precautions:

- Use your tractor only for jobs it was designed to perform, for example, pushing, pulling, towing, actuating, and carrying a variety of interchangeable equipment designed to conduct agricultural work.
- This tractor is not intended to be used as a recreational vehicle.
- Read this operator's manual before operating the tractor and follow operating and safety instructions in the manual and on the tractor.
- Follow operation and ballasting instructions found in the operator's manual for your implements/attachments, such as front loaders
- Make sure that everyone is clear of machine, attached equipment, and work area before starting engine or operation.
- Keep hands, feet, and clothing away from power-driven parts

Driving Concerns

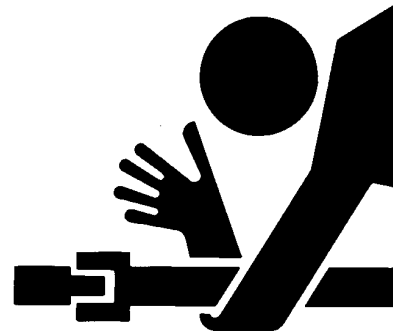
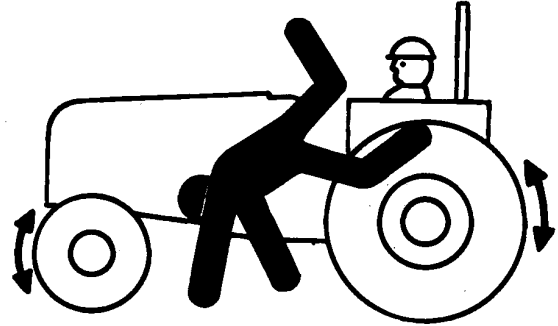
- Never get on or off a moving tractor.
- Keep all children and nonessential personnel off tractors and all equipment.
- Never ride on a tractor unless seated on a John Deere approved seat with seat belt.
- Keep all shields/guards in place.
- Use appropriate visual and audible signals when operating on public roads.
- Move to side of road before stopping.
- Reduce speed when turning, applying individual brakes, or operating around hazards on rough ground or steep slopes.
- Couple brake pedals together for road travel.
- Pump brakes when stopping on slippery surfaces.

Towing Loads

- Be careful when towing and stopping heavy loads. Stopping distance increases with speed and weight of towed loads, and on slopes. Towed loads with or without brakes that are too heavy for the tractor or are towed too fast can cause loss of control.
- Consider the total weight of the equipment and its load.
- Hitch towed loads only to approved couplings to avoid rearward upset.

Parking and Leaving the Tractor

- Before dismounting, shut off SCVs, disengage PTO, stop engine, lower implements/attachments to ground



and securely engage park mechanism, including the park pawl and park brake. In addition, if tractor is left unattended, remove key.

- Leaving transmission in gear with engine off will NOT prevent the tractor from moving.
- Never go near an operating PTO or an operating implement.
- Wait for all movement to stop before servicing machinery.

Common Accidents

Unsafe operation or misuse of the tractor can result in accidents. Be alert to hazards of tractor operation.

The most common accidents involving tractors:

- Tractor rollover
- Collisions with motor vehicles
- Improper starting procedures
- Entanglement in PTO shafts
- Falling from tractor
- Crushing and pinching during hitching

DX,WW,TRACTOR -19-21AUG09-1/1

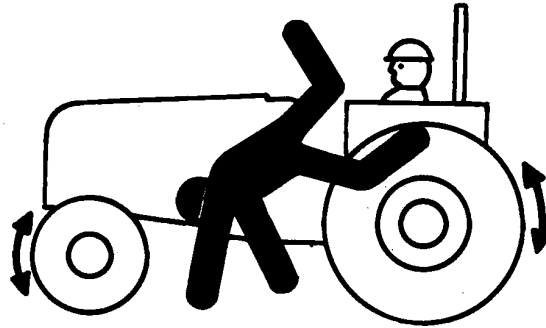
TS290 —UN—23AUG88

TS276 —UN—23AUG88

Keep Riders Off Machine

Only allow the operator on the machine. Keep riders off.

Riders on machine are subject to injury such as being struck by foreign objects and being thrown off of the machine. Riders also obstruct the operator's view resulting in the machine being operated in an unsafe manner.



TS290 —UN—23AUG88

DX,RIDER -19-03MAR93-1/1

Avoid Backover Accidents

Before moving machine, be sure that all persons are clear of machine path. Turn around and look directly for best visibility. Use a signal person when backing if view is obstructed or when in close quarters.

Do not rely on a camera to determine if personnel or obstacles are behind the machine. The system can be limited by many factors including maintenance practices, environmental conditions, and operating range.



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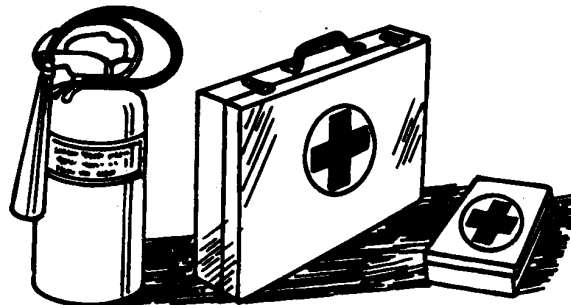
DX,AVOID,BACKOVER,ACCIDENTS -19-30AUG10-1/1

Prepare for Emergencies

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



TS291 —UN—15APR13

DX,FIRE2 -19-03MAR93-1/1

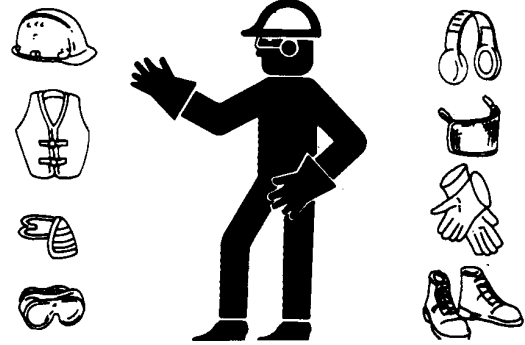
Wear Protective Clothing

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



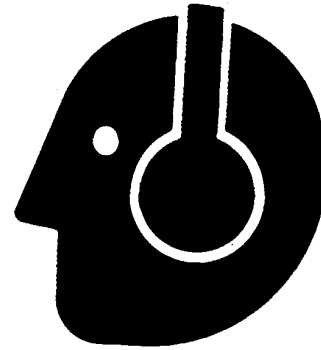
DX,WEAR -19-10SEP90-1/1

TS206 —UN—15APR13

Protect Against Noise

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



DX,NOISE -19-03MAR93-1/1

TS207 —UN—23AUG88

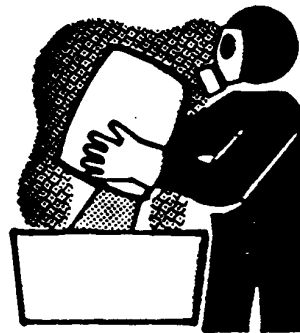
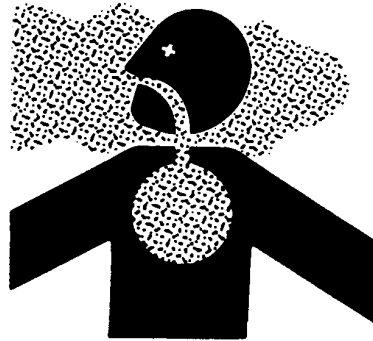
Handle Agricultural Chemicals Safely

Chemicals used in agricultural applications such as fungicides, herbicides, insecticides, pesticides, rodenticides, and fertilizers can be harmful to your health or the environment if not used carefully.

Always follow all label directions for effective, safe, and legal use of agricultural chemicals.

Reduce risk of exposure and injury:

- Wear appropriate personal protective equipment as recommended by the manufacturer. In the absence of manufacturer's instructions, follow these general guidelines:
 - Chemicals labeled **'Danger'**: Most toxic. Generally require use of goggles, respirator, gloves, and skin protection.
 - Chemicals labeled **'Warning'**: Less toxic. Generally require use of goggles, gloves, and skin protections.
 - Chemicals labeled **'Caution'**: Least toxic. Generally require use of gloves and skin protection.
- Avoid inhaling vapor, aerosol or dust.
- Always have soap, water, and towel available when working with chemicals. If chemical contacts skin, hands, or face, wash immediately with soap and water. If chemical gets into eyes, flush immediately with water.
- Wash hands and face after using chemicals and before eating, drinking, smoking, or urination.
- Do not smoke or eat while applying chemicals.
- After handling chemicals, always bathe or shower and change clothes. Wash clothing before wearing again.
- Seek medical attention immediately if illness occurs during or shortly after use of chemicals.
- Keep chemicals in original containers. Do not transfer chemicals to unmarked containers or to containers used for food or drink.



A34471

- Store chemicals in a secure, locked area away from human or livestock food. Keep children away.
- Always dispose of containers properly. Triple rinse empty containers and puncture or crush containers and dispose of properly.

DX,WW,CHEM01 -19-24AUG10-1/1

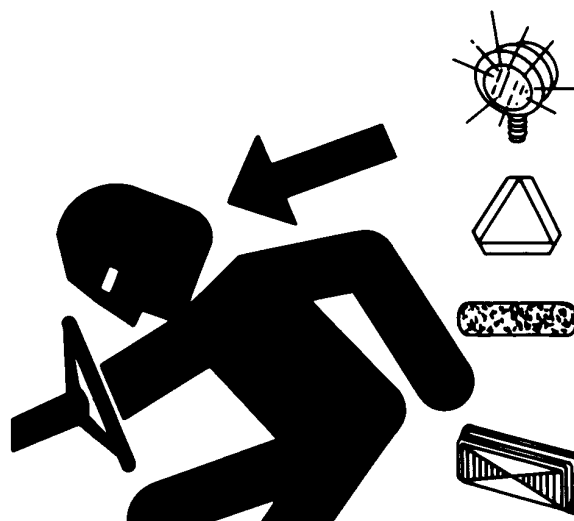
TS220 —UN—15APR13

A34471 —UN—11OCT88

Use Safety Lights and Devices

Prevent collisions between other road users, slow moving tractors with attachments or towed equipment, and self-propelled machines on public roads. Frequently check for traffic from the rear, especially in turns, and use turn signal lights.

Use headlights, flashing warning lights, and turn signals day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible, clean, and in good working order. Replace or repair lighting and marking that has been damaged or lost. An implement safety lighting kit is available from your John Deere dealer.



DX,FLASH -19-07JUL99-1/1

TS951 —UN—12APR90

Avoid Contact with Agricultural Chemicals

This enclosed cab does not protect against inhaling vapor, aerosol or dust. If pesticide use instructions require respiratory protection, wear an appropriate respirator inside the cab.

Before leaving the cab, wear personal protective equipment as required by the pesticide use instructions. When re-entering the cab, remove protective equipment and store either outside the cab in a closed box or some other type of sealable container or inside the cab in a pesticide resistant container, such as a plastic bag.

Clean your shoes or boots to remove soil or other contaminated particles prior to entering the cab.



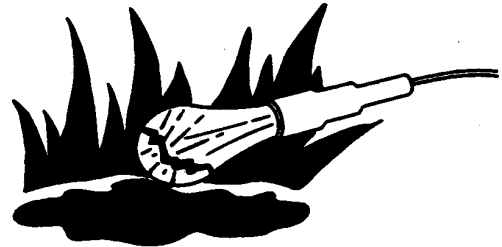
TS220 —UN—15APR13

TS272 —UN—23AUG88

DX,CABS -19-25MAR09-1/1

Illuminate Work Area Safely

Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.



TS223 —UN—23AUG88

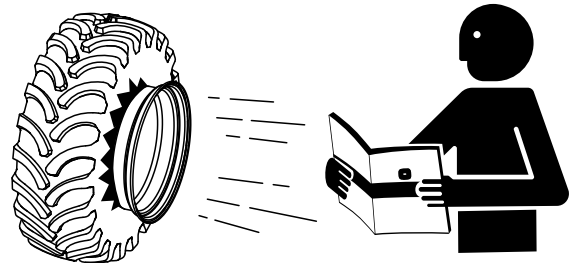
DX,LIGHT -19-04JUN90-1/1

Follow Tire Recommendations

Keep your machine in proper working order.

Use only prescribed tire sizes with correct ratings and inflate to the pressure specified in this manual.

Use of other than prescribed tires may decrease stability, affect steering, result in premature tire failure, or cause other durability or safety issues.



H111235 —UN—13MAY14

DX,TIRE,INFO -19-19MAY14-1/1

Transport Safely

Avoid serious injury or death resulting from loss of control or rear end collision while transporting the implement and any towed load behind the implement.

Always raise the parking stand before transport.

Tractor brakes must be latched together.

Attach a properly sized safety chain at each drawbar connection.

Shift the tractor into a lower gear when transporting down steep slopes or hills.

Always travel at a reasonable and safe speed. (See Tow Loads Safely in this section.)

Never transport the machine when more than half full of product.

Always use flashing warning lights, both day and night, when transporting on a public roadway.

Keep all reflective material clean and visible.

Prevent collisions between motorists and slow moving equipment on public roads. Frequently check for traffic from the rear, especially during turns. Use the turn signals.

Keep everyone clear of the machine.

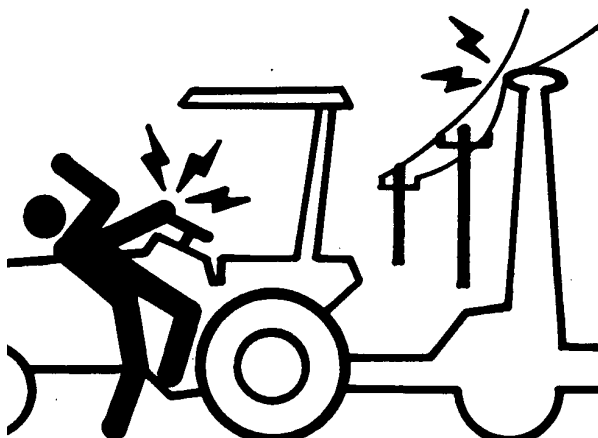
For stability and operator safety, the tractor must be properly ballasted.

If the tractor has Roll-Gard™ Safety Canopy, keep the seat belt fastened.

Know the transport height and width of machine.

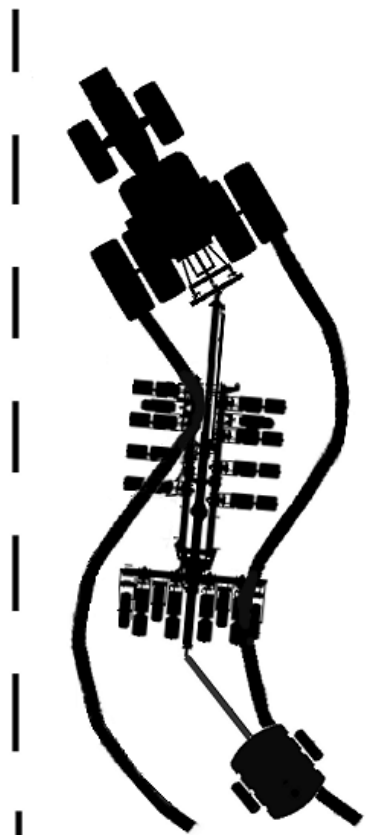
Avoid serious injury or death. Keep the marker arms away from overhead power lines. Proceed cautiously under overhead power lines and around utility poles. Know the transport height of machine.

The construction of this planter may not meet all local or national requirements for transport on a public roadway. In regions or countries that have national certification requirements for roadway transport, it may be possible for this planter to be approved for such roadway transport. The customer is responsible for understanding and complying with all local, regional, and national requirements regarding roadway transport.



A34331

A34331 —UN—13OCT88



A53085 —UN—23OCT03

Roll-Gard is a trademark of Deere & Company

OUC6074,0000937 -19-15FEB16-1/1

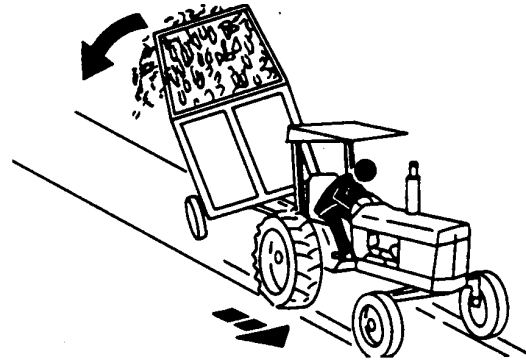
Tow Loads Safely

Stopping distance increases with speed and weight of towed loads, and on slopes. Towed loads with or without brakes that are too heavy for the tractor or are towed too fast can cause loss of control. Consider the total weight of the equipment and its load.

Observe these recommended maximum road speeds, or local speed limits which may be lower:

- If towed equipment does not have brakes, do not travel more than 32 km/h (20 mph) and do not tow loads more than 1.5 times the tractor weight.
- If towed equipment has brakes, do not travel more than 40 km/h (25 mph) and do not tow loads more than 4.5 times the tractor weight.

Ensure the load does not exceed the recommended weight ratio. Add ballast to recommended maximum for tractor, lighten the load, or get a heavier towing unit. The



tractor must be heavy and powerful enough with adequate braking power for the towed load. Use additional caution when towing loads under adverse surface conditions, when turning, and on inclines.

DX,TOW -19-02OCT95-1/1

T5216 —UN—23AUG88

Observe Maximum Transport Speed

The maximum transport speed for this implement is 32 km/h (20 mph).

Some tractors are capable of operating at speeds that exceed the maximum transport speed of this implement. Regardless of the maximum speed capability of the tractor being used to tow this implement, do not exceed the implement's maximum transport speed.

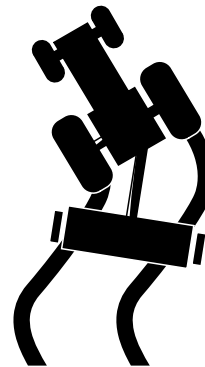
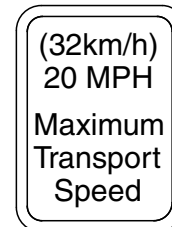
Exceeding the implement's maximum transport speed can result in:

- Loss of control of the tractor/implement combination
- Reduced or no ability to stop during braking
- Implement tire failure
- Damage to the implement structure or its components

Use additional caution and reduce speed when towing under adverse surface conditions, when turning, and when on inclines.

Do not attempt transport if the fully loaded implement weighs more than 1.5 t (3 300 lb) and more than 1.5 times the weight of the tractor.

Never tow this implement with a motor vehicle. Tow only with a properly ballasted tractor.



DX,TOW2 -19-11APR07-1/1

A46805 —19—16JUL10

Remove Paint Before Welding or Heating

Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Remove paint before heating:

- Remove paint a minimum of 100 mm (4 in.) from area to be affected by heating. If paint cannot be removed, wear an approved respirator before heating or welding.
- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

Do not use a chlorinated solvent in areas where welding will take place.



Do all work in an area that is well ventilated to carry toxic fumes and dust away.

Dispose of paint and solvent properly.

DX,PAINT -19-24JUL02-1/1

TS220 —UN—15APR13

Avoid Heating Near Pressurized Fluid Lines

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can accidentally burst when heat goes beyond the immediate flame area.



DX,TORCH -19-10DEC04-1/1

TS953 —UN—15MAY90

Avoid High-Pressure Fluids

Inspect hydraulic hoses periodically – at least once per year – for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid or any other signs of wear or damage.

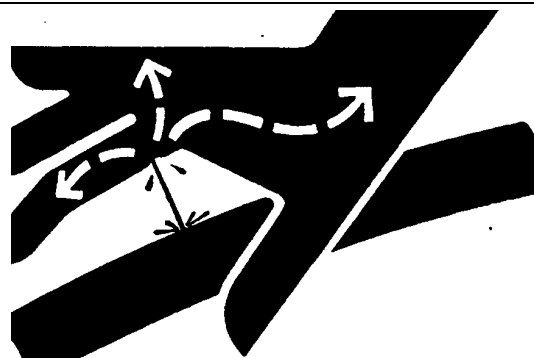
Replace worn or damaged hose assemblies immediately with John Deere approved replacement parts.

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within



a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

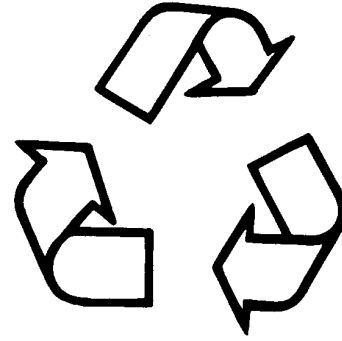
DX,FLUID -19-12OCT11-1/1

X9811 —UN—23AUG88

Decommissioning — Proper Recycling and Disposal of Fluids and Components

Safety and environmental stewardship measures must be taken into account when decommissioning a machine and/or component. These measures include the following:

- Use appropriate tools and personal protective equipment such as clothing, gloves, face shields or glasses, during the removal or handling of objects and materials.
- Follow instructions for specialized components.
- Release stored energy by lowering suspended machine elements, relaxing springs, disconnecting the battery or other electrical power, and releasing pressure in hydraulic components, accumulators, and other similar systems.
- Minimize exposure to components which may have residue from agricultural chemicals, such as fertilizers and pesticides. Handle and dispose of these components appropriately.
- Carefully drain engines, fuel tanks, radiators, hydraulic cylinders, reservoirs, and lines before recycling components. Use leak-proof containers when draining fluids. Do not use food or beverage containers.
- Do not pour waste fluids onto the ground, down a drain, or into any water source.
- Observe all national, state, and local laws, regulations, or ordinances governing the handling or disposal of waste fluids (example: oil, fuel, coolant, brake fluid);



filters; batteries; and, other substances or parts. Burning of flammable fluids or components in other than specially designed incinerators may be prohibited by law and could result in exposure to harmful fumes or ashes.

- Service and dispose of air conditioning systems appropriately. Government regulations may require a certified service center to recover and recycle air conditioning refrigerants which could damage the atmosphere if allowed to escape.
- Evaluate recycling options for tires, metal, plastic, glass, rubber, and electronic components which may be recyclable, in part or completely.
- Contact your local environmental or recycling center, or your John Deere dealer for information on the proper way to recycle or dispose of waste.

DX,DRAIN -19-01JUN15-1/1

TS1133 —UN—15APR13

Replace Safety Signs

Replace missing or damaged safety signs. Use this operator's manual for correct safety sign placement.

There can be additional safety information contained on parts and components sourced from suppliers that is not reproduced in this operator's manual.



DX,SIGNS -19-18AUG09-1/1

TS201 —UN—15APR13

Practice Safe Maintenance

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.



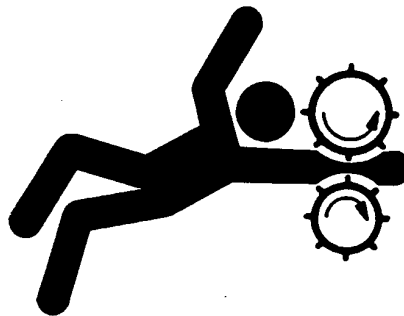
TS218 —UN—23AUG88

DX,SERV -19-17FEB99-1/1

Service Machines Safely

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



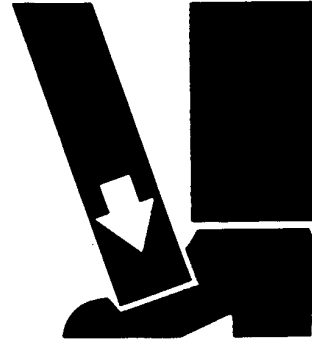
TS228 —UN—23AUG88

DX,LOOSE -19-04JUN90-1/1

Use Proper Lifting Equipment

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.



TS226 —UN—23AUG88

DX,LIFT -19-04JUN90-1/1

Use Proper Tools

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting John Deere specifications.



TS779 —UN—08NOV89

DX,REPAIR -19-17FEB99-1/1

Safety Signs

Safety Signs

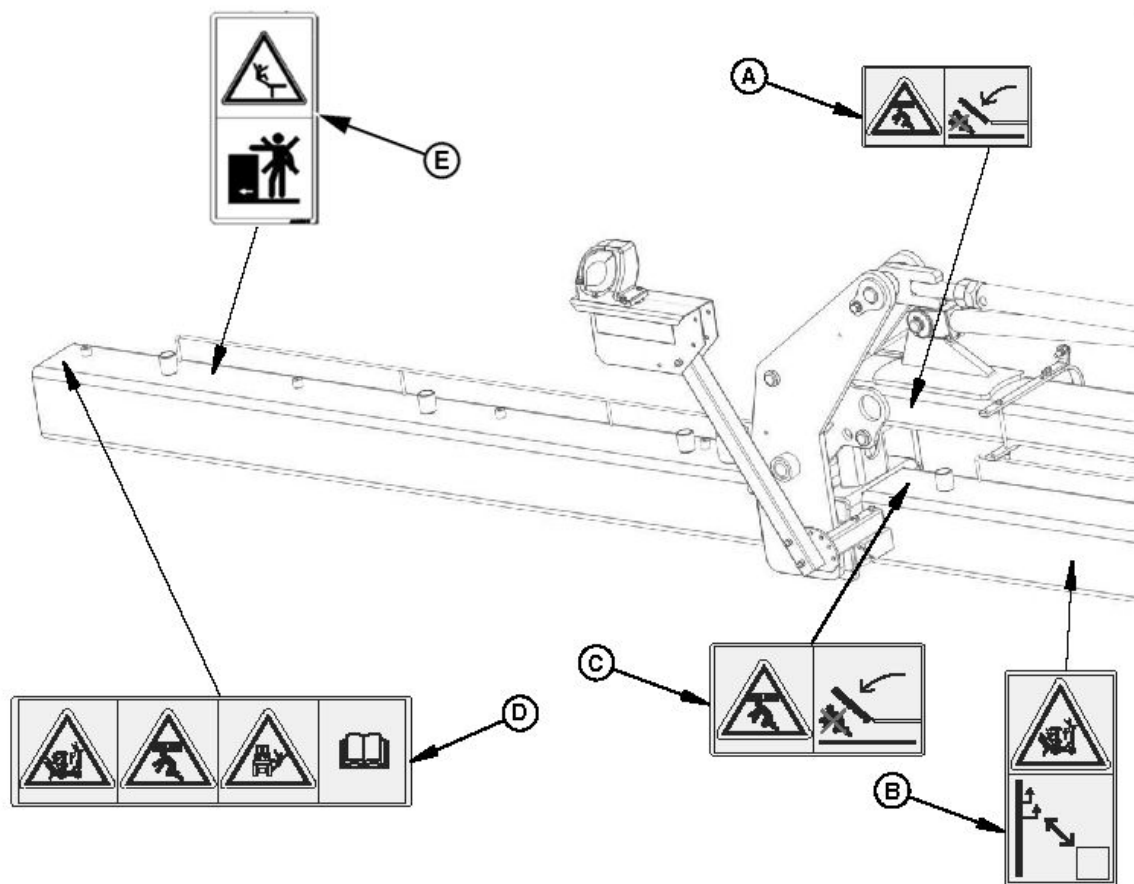
The types of safety sign and locations on the equipment are shown in the illustration.

Good safety requires that you familiarize with the various safety signs, the type of warning and the area or particular function related to that area, that requires your safety awareness.

IMPORTANT: If safety signs have been damaged, removed, become illegible or parts replaced without signs, new safety signs must be applied. New Safety signs are available from your authorized John Deere Dealer.

RM87422,00003B8 -19-09FEB16-1/1

Safety Decals - Wing Section - Front of Toolbar



A— Wing Crush; Small
B— Electrical Shock

C— Wing Crush; Large
D— End of Toolbar Caution

E— Do Not Ride

Continued on next page

RM87422,00004A2 -19-01APR16-1/7

PY24742—UN—29FEB16

Wing Crush; Small or Large - Warning: Avoid injury or death from crushing beneath unfolding wing. Be sure all persons are clear of machine before operating.



PY24883 —UN—29FEB16

RM87422,00004A2 -19-01APR16-2/7

Electrical Shock - Warning: Avoid injury or death by electrocution. Machine components making contact with overhead electrical power lines may cause injury or death to operator. Be aware of and avoid all overhead electrical power lines when machine is folded.



PY24885 —UN—29FEB16

RM87422,00004A2 -19-01APR16-3/7

Do Not Ride - Caution: Avoid injury from falling from moving machine. Serious injury can occur when falling from an elevated position. Never allow riders on machine during operation.



PY24889 —UN—29FEB16

Continued on next page

RM87422,00004A2 -19-01APR16-4/7

End of Toolbar - Caution: Be advised of the safety risks. Read Operator's Manual.

- Avoid Electrocution - Be aware of overhead power lines. Contact or close proximity to power lines can result in injury or death. Use extreme care when operating implement near power lines.
- Avoid Crushing - Make sure all personnel are clear of implement at all times implement is in motion. Be aware of obstructions above, below, and around implement when in operation or transport. Injury or death can result from being struck by the implement.
- Never Allow Riders on Tractor or Implement - Riders hinder operator visibility and can be thrown from the implement and/or be struck by foreign objects resulting in injury or death.

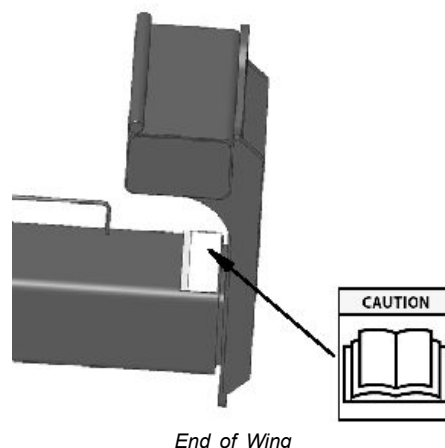


PY24882 —UN—29FEB16

RM87422,00004A2 -19-01APR16-5/7

CAUTION:

1. Read and understand all operator manuals before implement use.
2. Follow all tractor or towing device operating procedures and safety guidelines.
3. Do not allow riders on implement.
4. Lower Implement to the ground, place tractor in park, turn off engine, and remove key. Wait for all moving parts to come to a complete stop before working on implement.
5. Be extremely careful working around unshielded sharp edges
6. Make sure that all safety lighting and decals are clean. Use hazard lights when in transport.
7. Engage all safety devices before transporting or working beneath implement.
8. Contact or close proximity to power lines can result in electrocution.
9. Review all safety instructions with all operators on a frequent basis.



End of Wing

PY24815 —UN—10MAR16

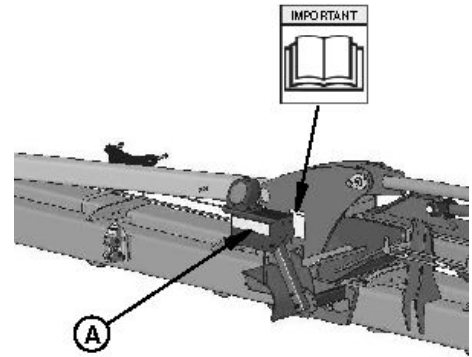
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RM87422,00004A2 -19-01APR16-6/7

IMPORTANT:

1. Stay clear of wing sections when raising or lowering.
2. Engage all transport locking devices prior to transport. (See operator's manual)
3. Use extreme caution when in transport. Be aware of overhead power lines and any other obstructions.
4. Reduce speed as raised implement reduce tractor maneuverability.

A—Amber Retro-reflective

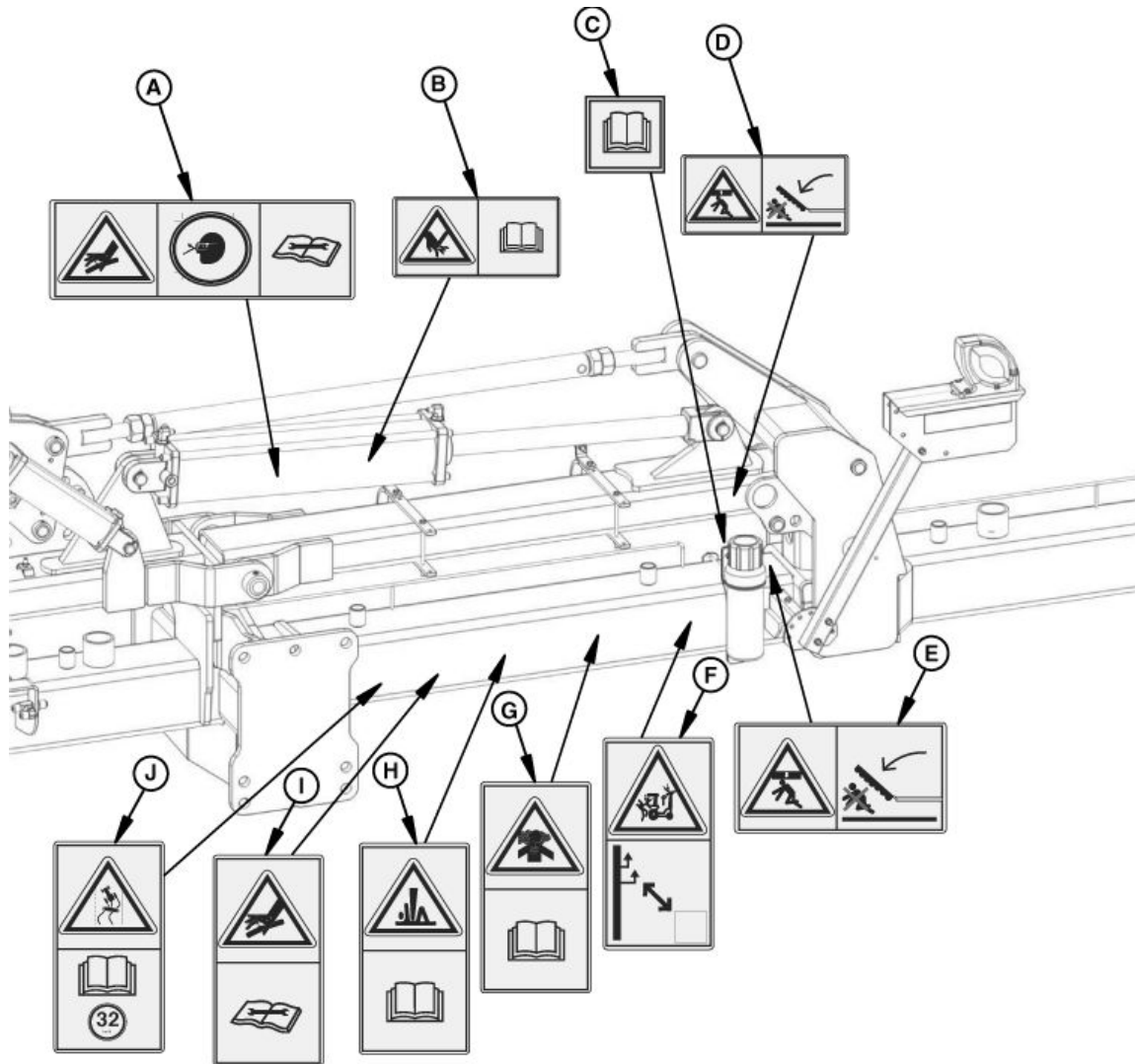


Front of Center Section

RM87422,00004A2 -19-01APR16-7/7

PY24816—UN—10MAR16

Safety Decals - Center Section - Front of Toolbar



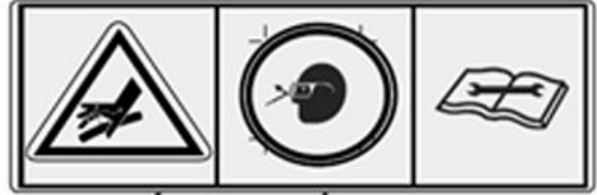
- | | | |
|--|----------------------|-------------------------------------|
| A— Hydraulic Injection; Cylinder Service | D— Wing Crush; Small | H— Falling Implement |
| B— Hand Crushing | E— Wing Crush; Large | I— Hydraulic Injection; Service |
| C— Operator's Manual Location | F— Electrical Shock | J— Maximum Transport Speed 32 km/hr |
| | G— Inhale Risk | |

Continued on next page

RM87422,00003AF -19-07MAR16-1/9

PY24743 — UN — 08FEB16

Hydraulic Injection; Cylinder Service - Caution: Avoid injury from escaping pressurized fluid. Fluid injection can occur from escaping pressurized fluid. Wear eye and hand protection when servicing parts associated with pressurized fluid.



PY24887 —UN—29FEB16

RM87422,00003AF -19-07MAR16-2/9

Hand Crushing - Caution: Avoid injury from pinching. Hands, fingers, etc. can become pinched between moving parts. Keep all bodily parts away from pinch points during machine operation. See Operator's Manual.



PY24886 —UN—29FEB16

RM87422,00003AF -19-07MAR16-3/9

Operator's Manual Location - Caution: Be advised of the safety risks. Operator's manual is located here. Read Operator's Manual. The Operator's manual contains important information necessary for safe machine operation and explanation of safety signs. Carefully observe all safety rules to avoid accidents.



PY24888 —UN—29FEB16

Continued on next page

RM87422,00003AF -19-07MAR16-4/9

Wing Crush; Small or Large - Warning: Avoid injury or death from crushing beneath unfolding wing. Be sure all persons are clear of machine before operating.



PY24883 —UN—29FEB16

RM87422.00003AF -19-07MAR16-5/9

Inhale Risk - Warning: Avoid injury or death from inhaling toxic chemicals. Inhalation of toxic chemicals can cause severe injury to the lungs, mouth, or throat, and can eventually lead to death. Read operator's manual for instructions to properly handle toxic chemicals.



PY24891 —UN—29FEB16

RM87422.00003AF -19-07MAR16-6/9

Falling Implement - Warning: Avoid injury or death from crushing beneath machine. A machine that is not properly supported could fall and cause injury or death to person below. Read operator's manual for proper supporting of machine before servicing.



PY24897 —UN—29FEB16

Continued on next page

RM87422.00003AF -19-07MAR16-7/9

Hydraulic Injection; Service - Caution: Avoid injury from fluid penetration. Escaping pressurized fluid can inject into the skin, causing injury. Wear protective clothing while service parts associated with pressurized fluid.



PY24890 —UN—29FEB16

RM87422,00003AF -19-07MAR16-8/9

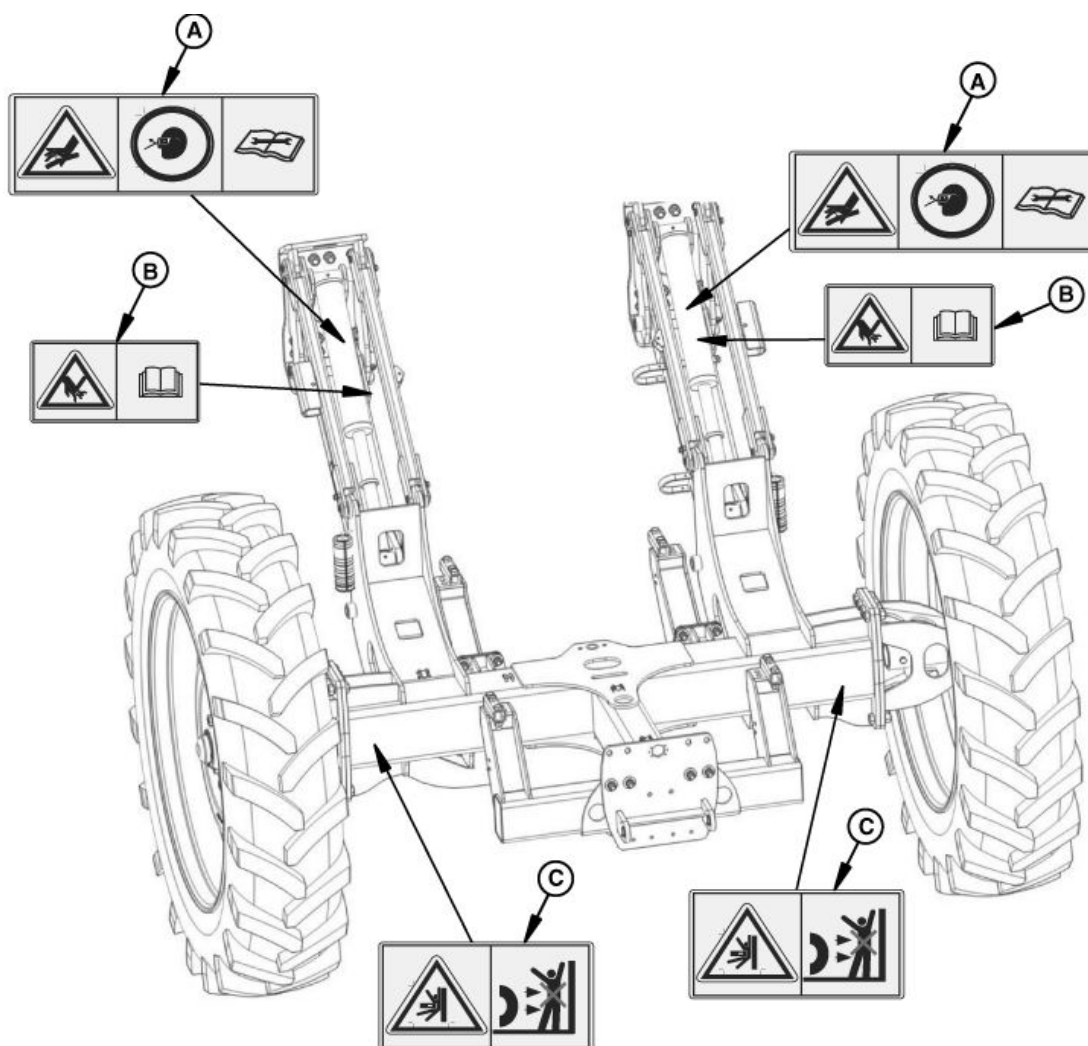
Maximum Transport Speed - Caution: Avoid loss of control from traveling above maximum transport speed. The maximum transport speed is 32 k/hr. Read the operator's manual for safe transport.



PY24898 —UN—29FEB16

RM87422,00003AF -19-07MAR16-9/9

Safety Decals - Rear Chassis

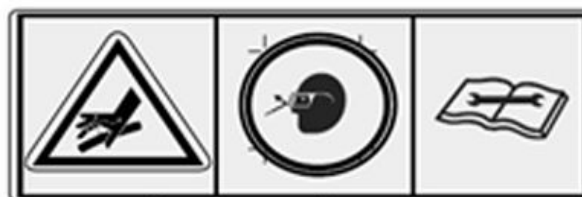


A— Hydraulic Injection; Cylinder Service
B— Hand Crushing
C— Crushing; Rear Machine

PY24744 —UN—11FEB16

RM87422,00003B0 -19-29FEB16-1/4

Hydraulic Injection; Cylinder Service - Caution: Avoid injury from escaping pressurized fluid. Fluid injection can occur from escaping pressurized fluid. Wear eye and hand protection when servicing parts associated with pressurized fluid.



PY24887 —UN—29FEB16

Continued on next page

RM87422,00003B0 -19-29FEB16-2/4

Hand Crushing - Caution: Avoid injury from pinching. Hands, fingers, etc. can become pinched between moving parts. Keep all bodily parts away from pinch points during machine operation. See Operator's Manual.



PY24886 —UN—29FEB16

RM87422,00003B0 -19-29FEB16-3/4

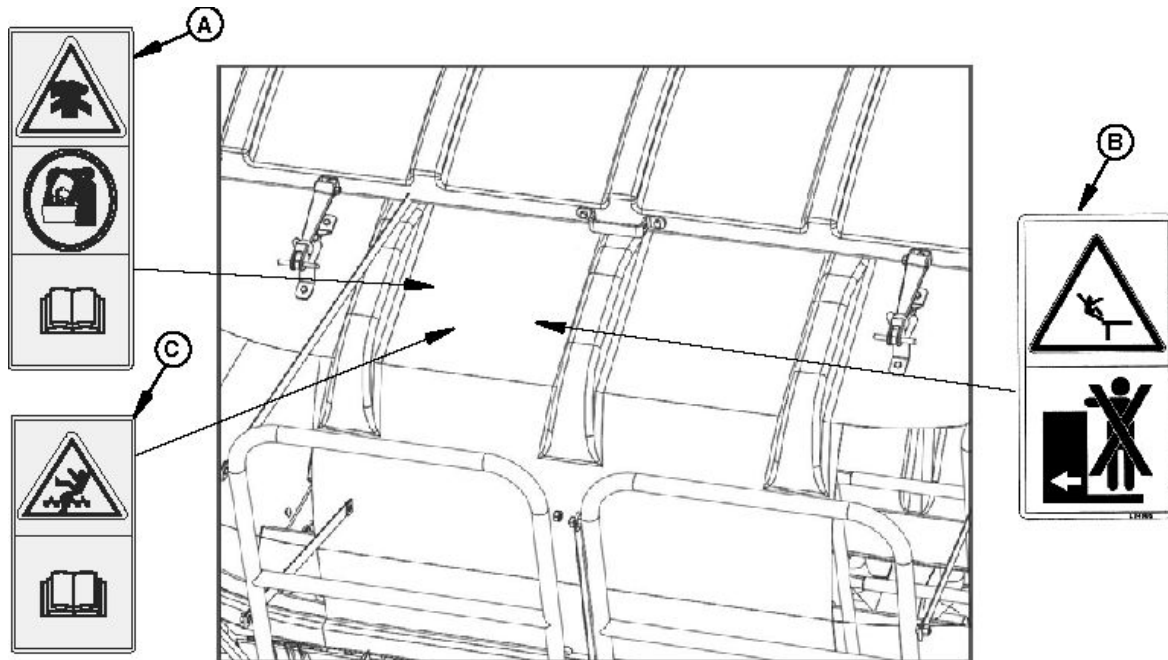
Crushing; Rear Machine - Warning: Avoid injury or death from crushing between rear of machine and another object. Keep all persons clear of machine while operating. Never pass between rear of machine and another object while machine is operating.



PY24892 —UN—29FEB16

RM87422,00003B0 -19-29FEB16-4/4

Safety Decals - Top of Fertilizer Tank



A— Hazardous Chemical; Fill Tank

B— Do Not Ride
C— Entanglement

PY24745 —UN—14MAR16

RM87422,000044E -19-23MAR16-1/4

Hazardous Chemical; Fill Tank - Warning: Avoid injury or death from inhaling toxic chemicals. Inhalation of toxic chemicals can cause severe injury to the lungs, mouth, or throat, and can eventually lead to death. Wear a respirator and gloves while filling fertilizer tank. Read operator's manual for instructions to properly handle toxic chemicals.



PY24893 —UN—29FEB16

Continued on next page

RM87422,000044E -19-23MAR16-2/4

Do Not Ride - Warning: Avoid injury or death from falling from an elevated position. Stay on ladder or platform when climbing onto fertilizer tank. Never allow riders on machine during operation.



RM87422,000044E -19-23MAR16-3/4

PY24885 —UN—14MAR16

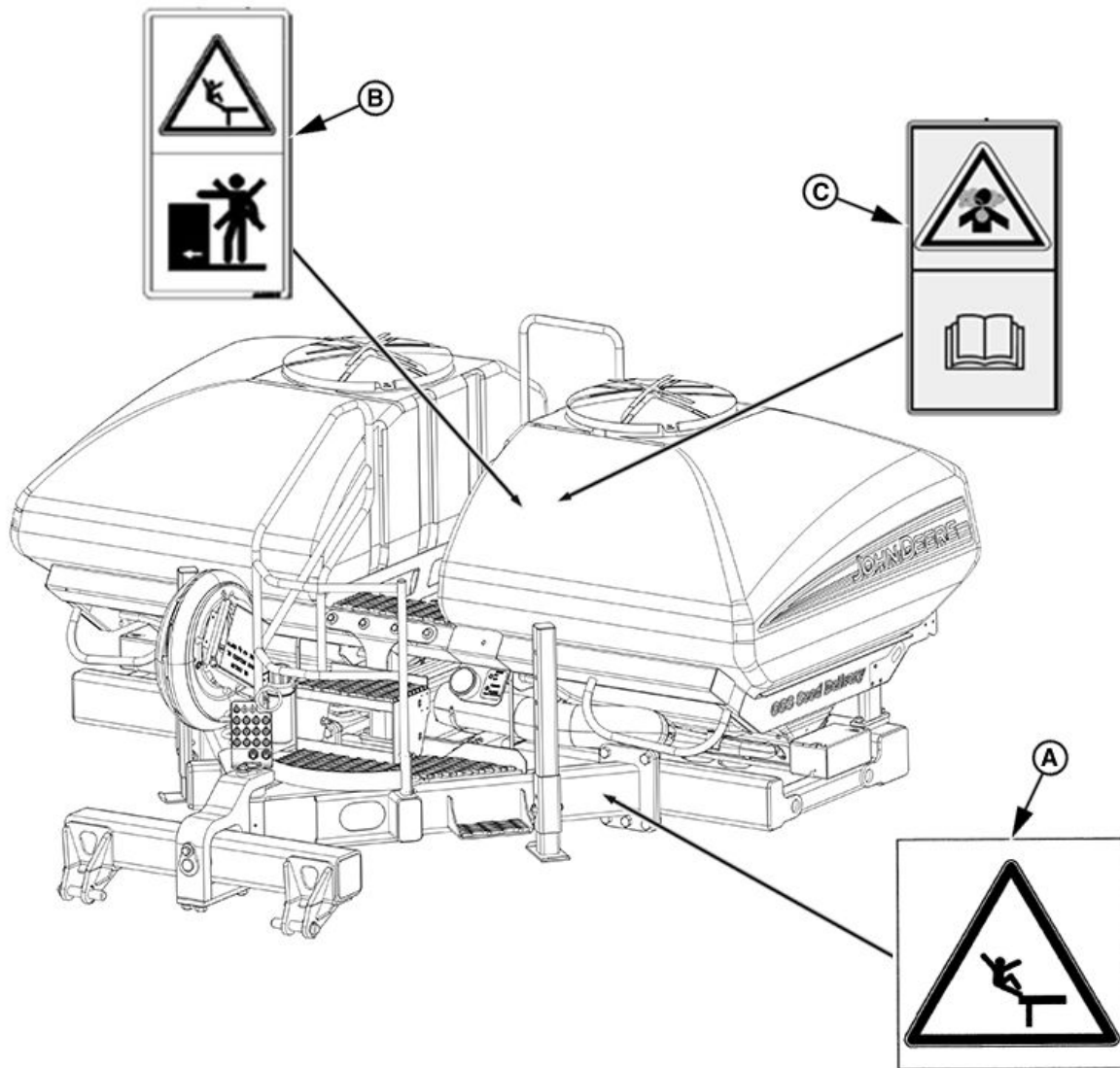
Entanglement - Caution: Avoid injury from bodily entanglement in moving auger. Never enter tank while moving parts or operating. Severe injury can occur from entangling foot and/or legs in fertilizer meter auger.



RM87422,000044E -19-23MAR16-4/4

PY24894 —UN—29FEB16

Safety Decal - Tongue (CCS Equipped)



A— Do Not Ride

B— Do Not Ride

C— Inhale Risk

Continued on next page

RM87422,00004AF -19-04APR16-1/4

PY29503 —UN—04APR16

Do Not Ride - Caution: Avoid injury from falling from moving machine. Serious injury can occur when falling from an elevated position. Never allow riders on machine during operation.



PY24917 —UN—14MAR16

RM87422,00004AF -19-04APR16-2/4

Do Not Ride - Warning: Avoid injury or death from falling from an elevated position. Stay on ladder or platform when climbing onto fertilizer tank. Never allow riders on machine during operation.



PY24895 —UN—14MAR16

RM87422,00004AF -19-04APR16-3/4

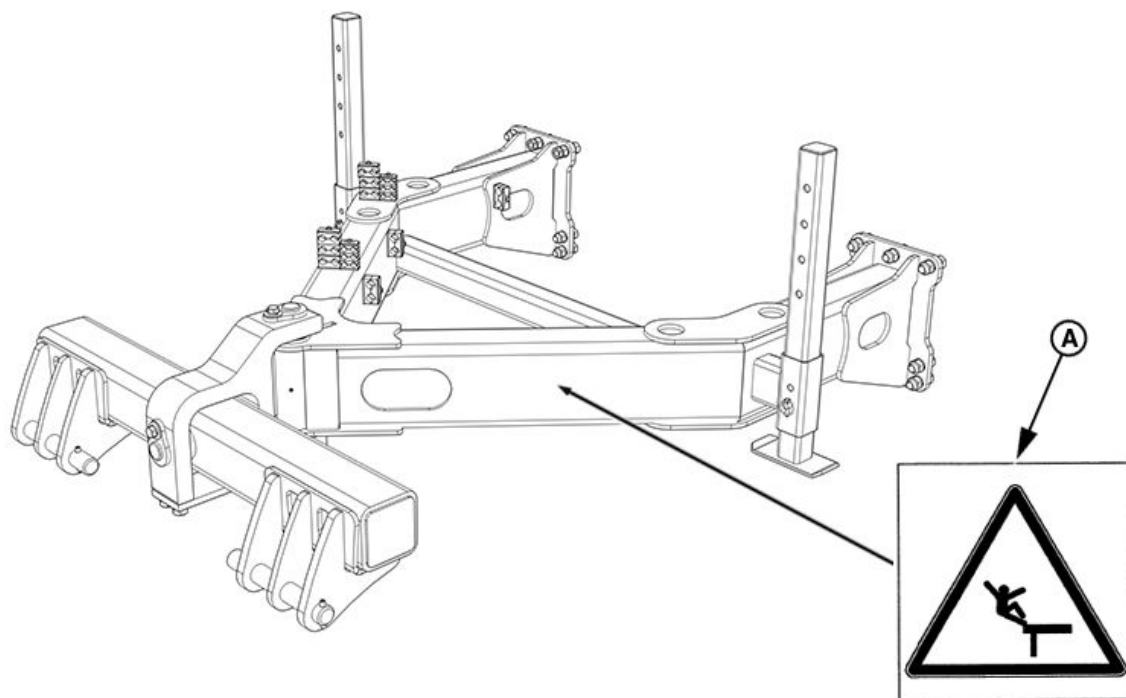
Inhale Risk - Warning: Avoid injury or death from inhaling toxic chemicals. Inhalation of toxic chemicals can cause severe injury to the lungs, mouth, or throat, and can eventually lead to death. Read operator's manual for instructions to properly handle toxic chemicals.



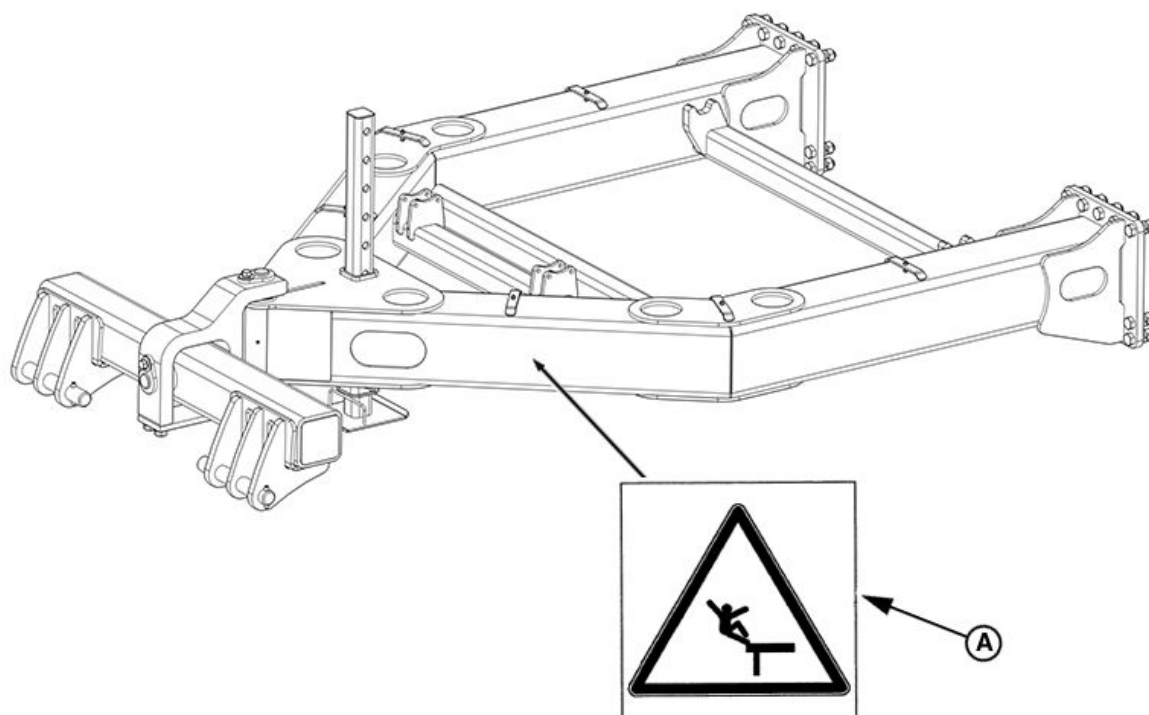
PY24891 —UN—29FEB16

RM87422,00004AF -19-04APR16-4/4

Safety Decal - Tongue (Non - CCS Equipped)



Small Frame Machines



Large Frame Machines

A— Do Not Ride

Continued on next page

RM87422,000049D -19-22MAR16-1/2

PY29504 —UN—23MAR16

PY29505 —UN—23MAR16

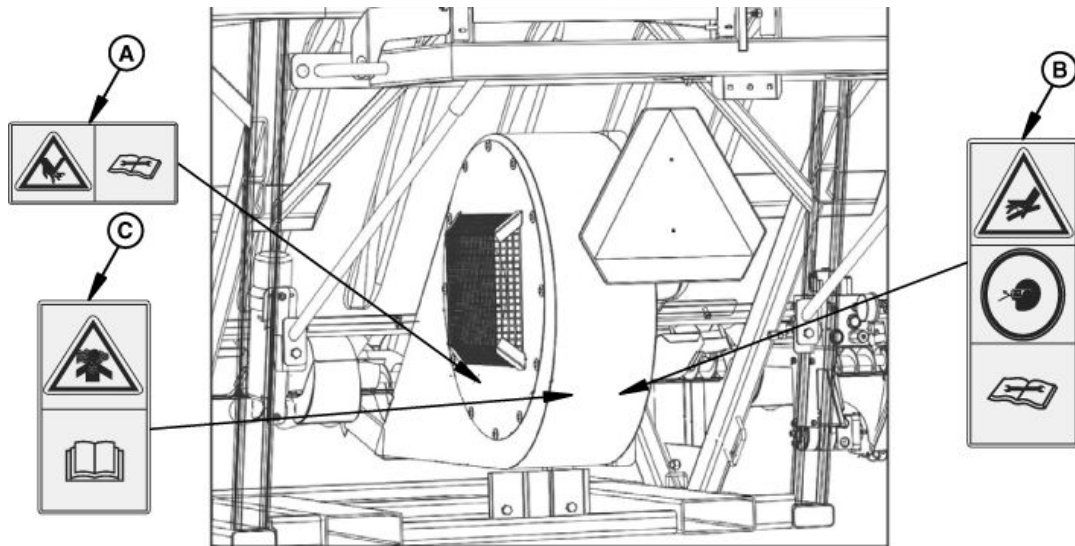
Do Not Ride - Caution: Avoid injury from falling from moving machine. Serious injury can occur when falling from an elevated position. Never allow riders on machine during operation.



PY24917 —UN—14MAR16

RM87422,000049D -19-22MAR16-2/2

Safety Decals - Fan Housing - Rear of Fertilizer Tank



A— Hand Crushing; Service

B— Hydraulic Injection; Meter

C— Inhale Risk

PY24746 —UN—08FEB16

RM87422,00004A0 -19-23MAR16-1/4

Hand Crushing; Service - Caution: Avoid injury from pinching. Hands, fingers, etc. can become pinched between moving parts. Keep all bodily parts away from pinch points during machine operation. Always keep fan shields and screen in place during operation. See Operator's Manual.

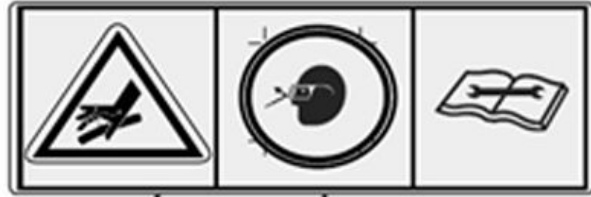


PY24886 —UN—29FEB16

Continued on next page

RM87422,00004A0 -19-23MAR16-2/4

Hydraulic Injection; Meter - Caution: Avoid injury from escaping pressurized fluid. Fluid injection can occur from escaping pressurized fluid. Wear eye and hand protection when servicing parts associated with pressurized fluid.



PY24887 —UN—29FEB16

RM87422,00004A0 -19-23MAR16-3/4

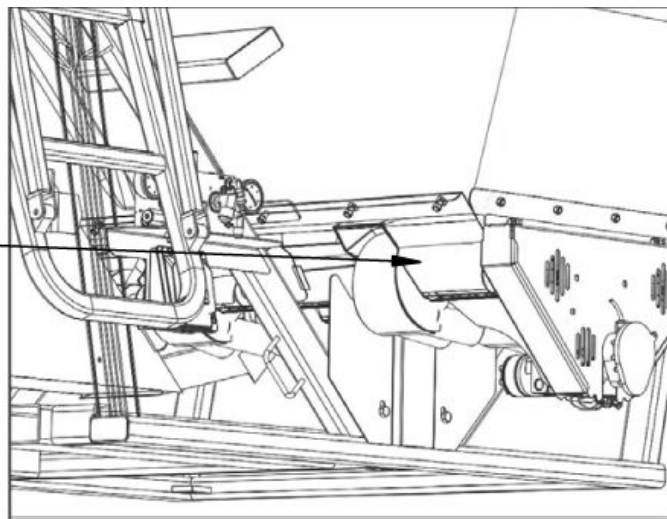
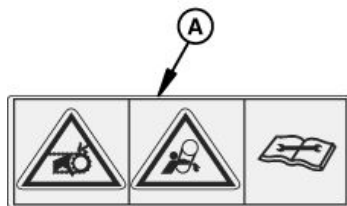
Inhale Risk - Warning: Avoid injury or death from inhaling toxic chemicals. Inhalation of toxic chemicals can cause severe injury to the lungs, mouth, or throat, and can eventually lead to death. Read operator's manual for instructions to properly handle toxic chemicals.



PY24891 —UN—29FEB16

RM87422,00004A0 -19-23MAR16-4/4

Safety Decals - Fertilizer Meter



A— Entanglement; Service

PY24747 —UN—08FEB16

Continued on next page

RM87422,00003B3 -19-29FEB16-1/2

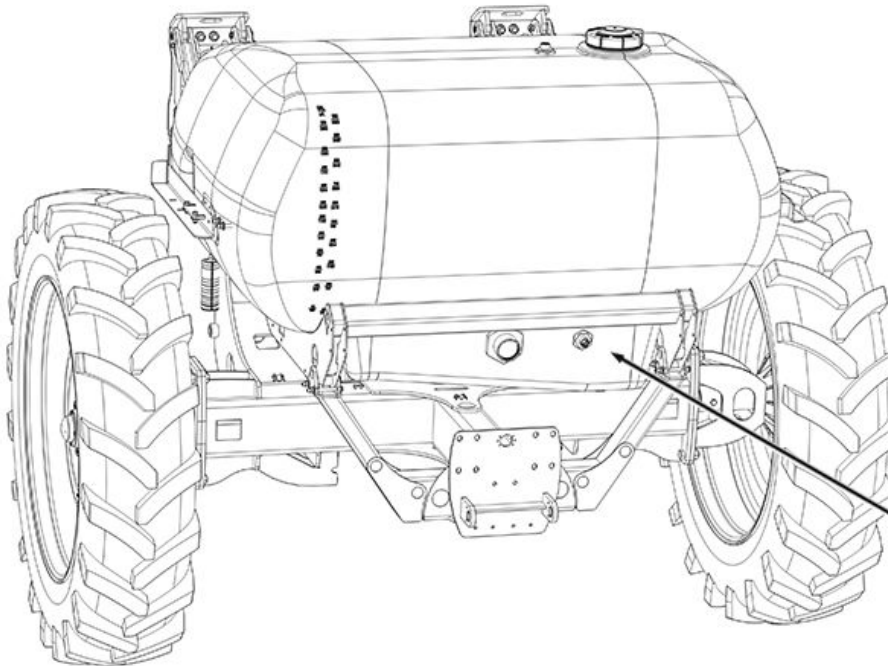
Entanglement; Service - Caution: Avoid injury from entangling bodily parts in moving objects. Before servicing chains and/or belts, be sure machine is off. Never service a machine while operating.



PY24896 —UN—29FEB16

RM87422,00003B3 -19-29FEB16-2/2

Safety Decals - Liquid Fertilizer Tank



PY29506 —UN—23MAR16

A— Filling Fertilizer Tank

Continued on next page

RM87422,000049F -19-23MAR16-1/2

Filling Fertilizer Tank - Warning:: Avoid injury or death from inhaling toxic chemicals. Inhalation of toxic chemicals can cause severe injury to the lungs, mouth, or throat, and can eventually lead to death. Wear a respirator and gloves while filling fertilizer tank. Read operator's manual for instructions to properly handle toxic chemicals.



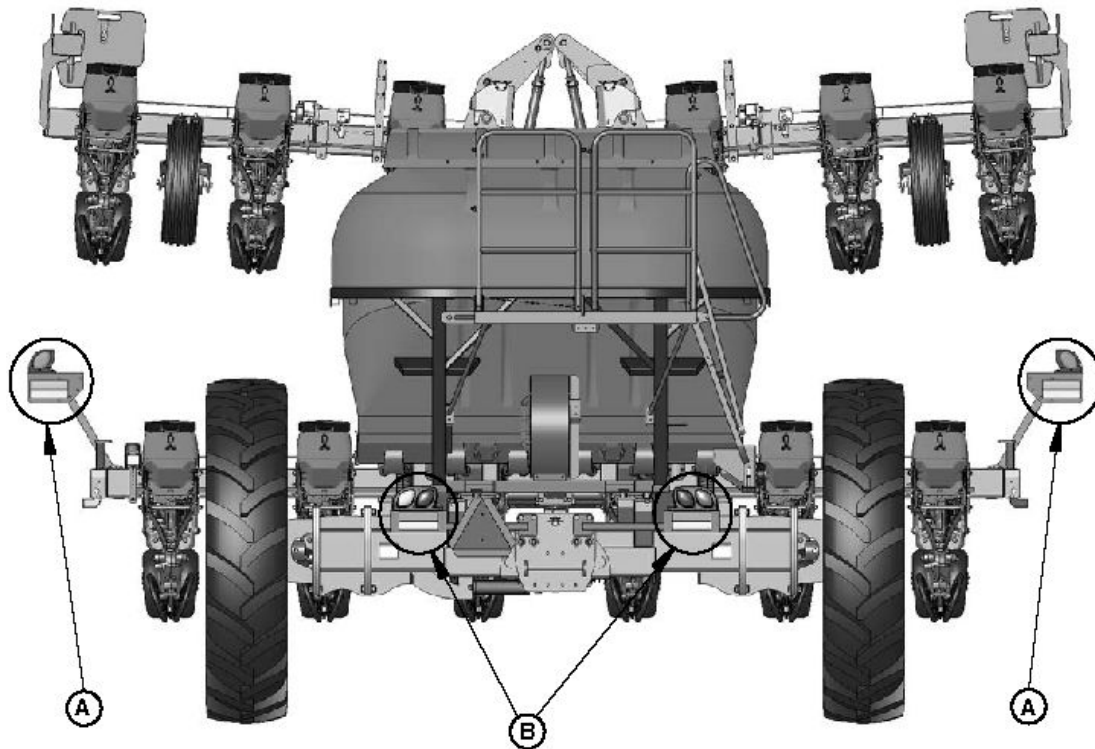
PY29507—UN—23MAR16

RM87422,000049F -19-23MAR16-2/2

Safety Lighting - Rear View of Machine - (12R/16R/24R)

safety lights are operational and viewable from both the front and rear of the machine before transporting.

- Safety lighting and reflectors ensure safe transport of the machine on public roadways. Be sure that the



12 Row

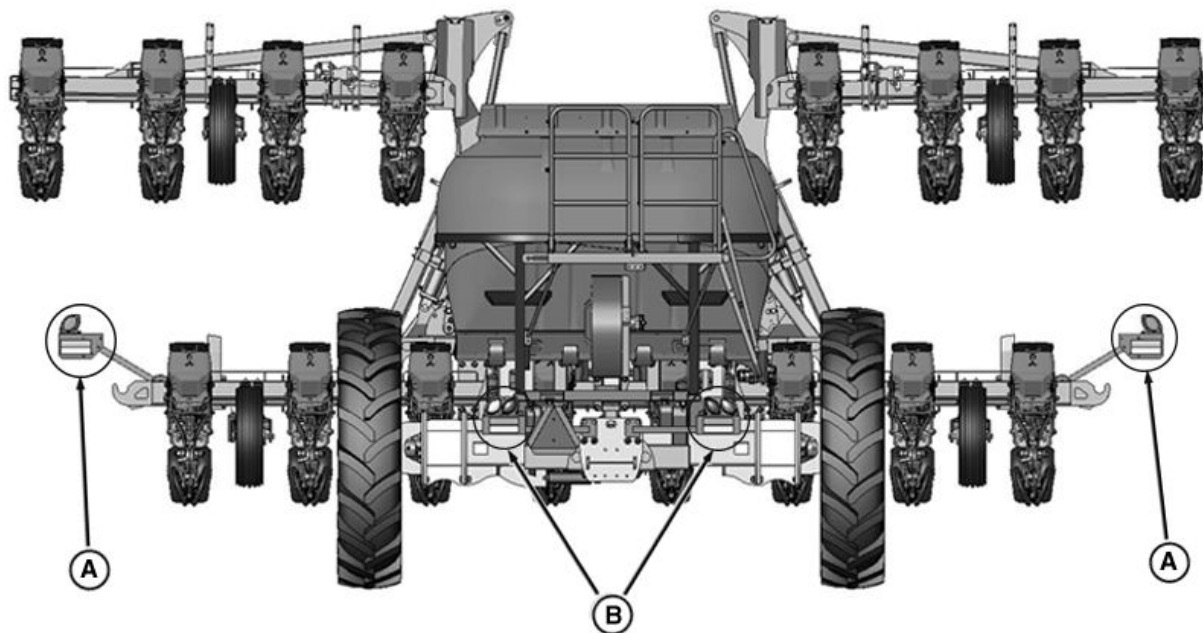
A—Outer Center Section Light and Reflector

B—Rear Lights and Reflector

Continued on next page

RM87422,00004A3 -19-29MAR16-1/3

PY24749 —UN—25FEB16



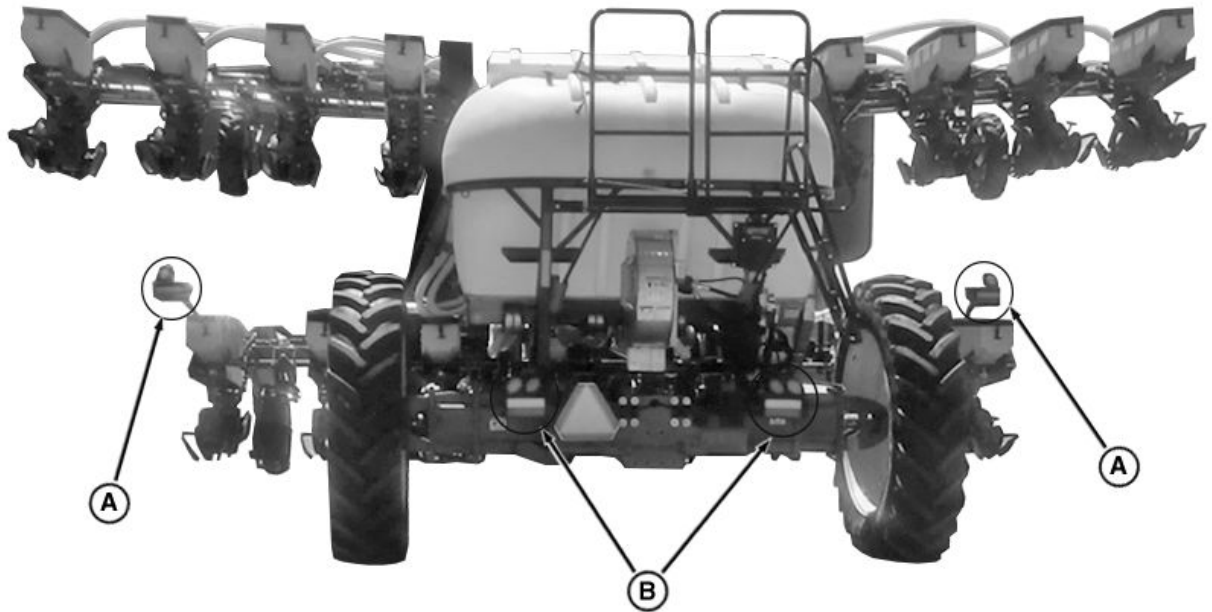
16 Row

A—Outer Center Section Light and Reflector B—Rear Lights and Reflector

PY24811 —UN—25FEB16

Continued on next page

RM87422,00004A3 -19-29MAR16-2/3



24 Row

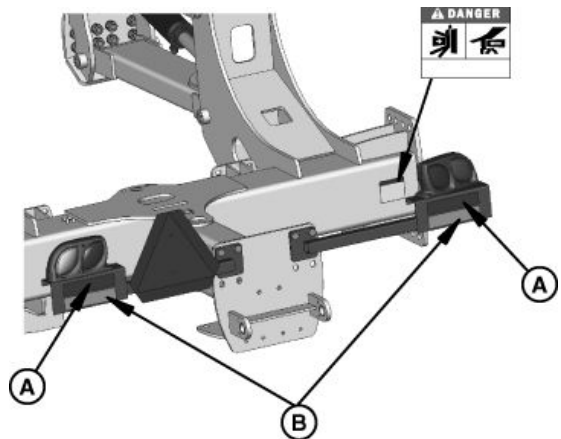
A—Outer Center Section Light and Reflector B—Rear Lights and Reflector

RM87422,00004A3 -19-29MAR16-3/3

PY24880 —UN—25FEB16

CAUTION: Keep all persons and objects clear while any part of this machine is in motion. Serious injury or death can result from being pinched.

A—Red Retro-Reflective B—Orange Fluorescent



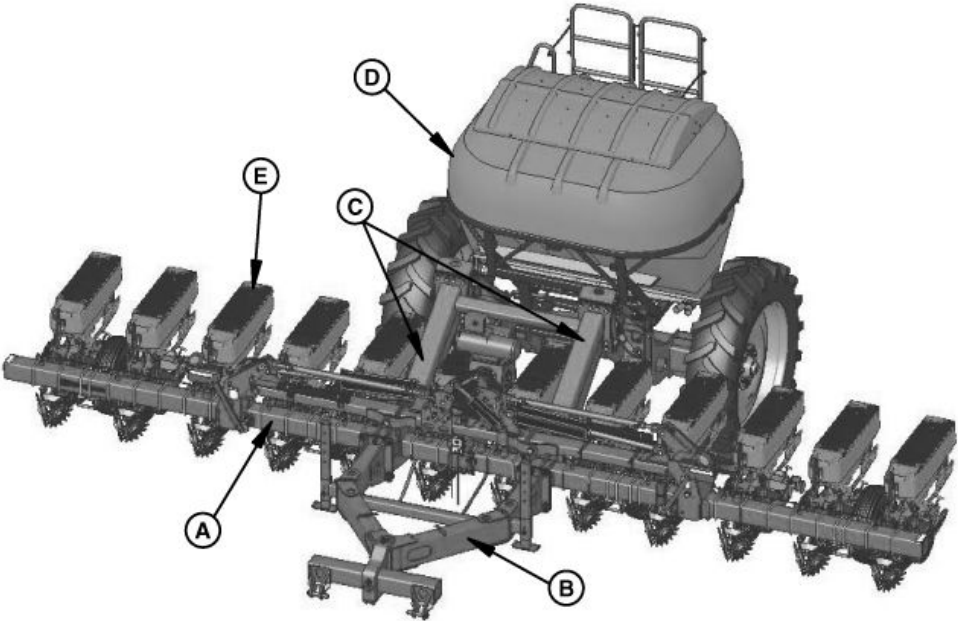
Rear of Rear Chassis

RM87422,00004A3 -19-29MAR16-4/3

PY24817 —UN—08FEB16

Component Identification

Planter Component Identification (12R/16R/24R)

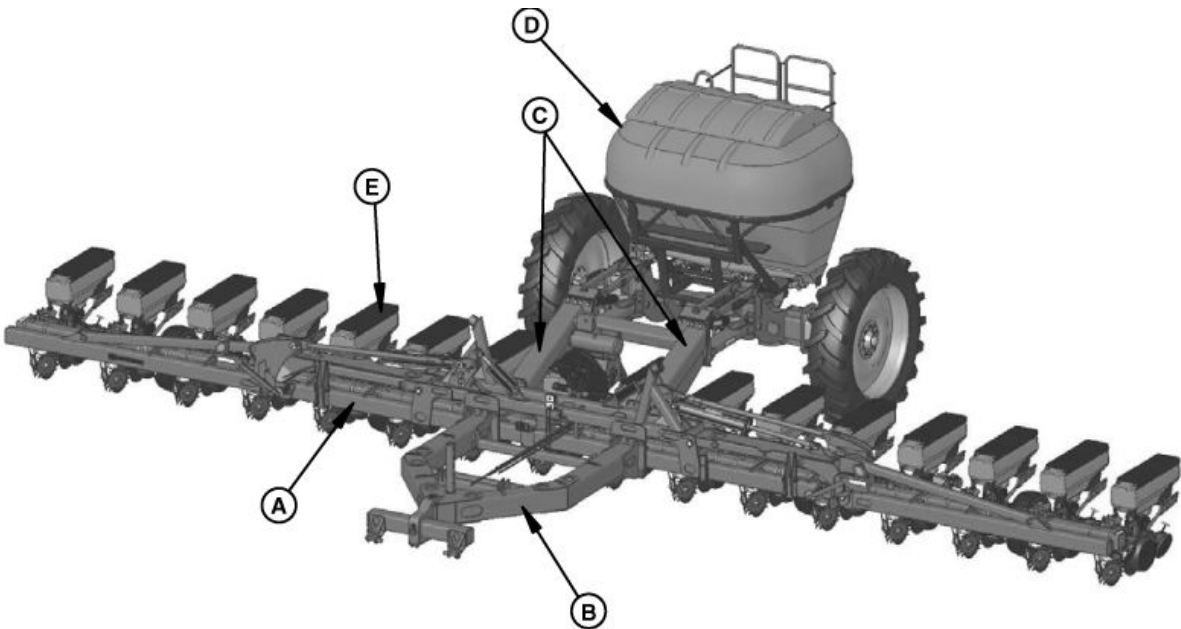


A— Planter Toolbar
B— Tongue

C— Stringers
D— Rear Chassis Assembly

E— Planter Row Units

12 Row



16 Row

PY24850 —UN—09FEB16

PY24833 —UN—09FEB16

Continued on next page

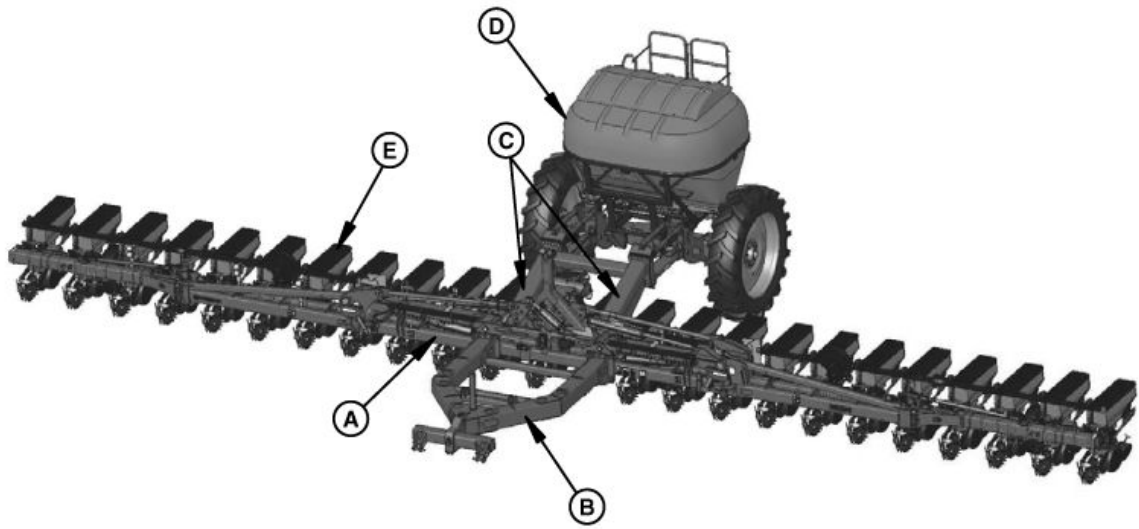
RM87422,000040B -19-10FEB16-1/2

Component Identification

A— Planter Toolbar
B— Tongue

C— Stringers
D— Rear Chassis Assembly

E— Planter Row Units

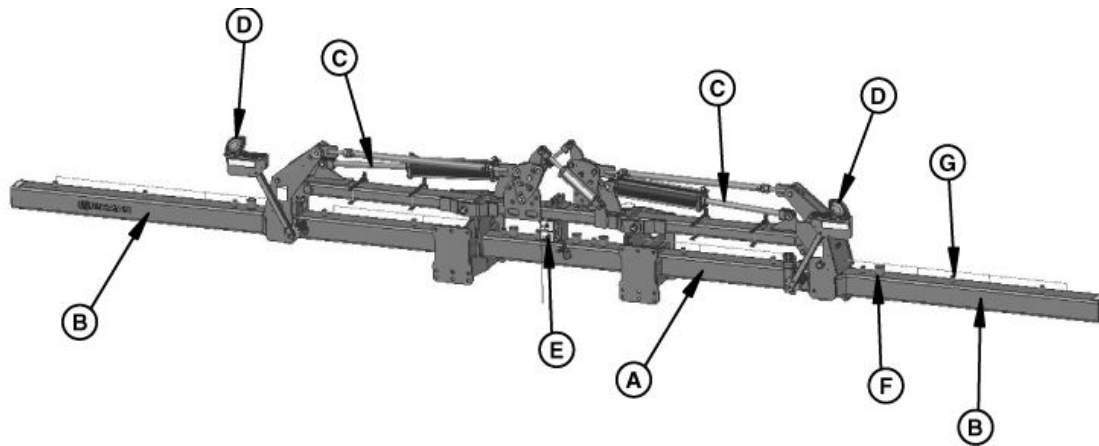


24 Row

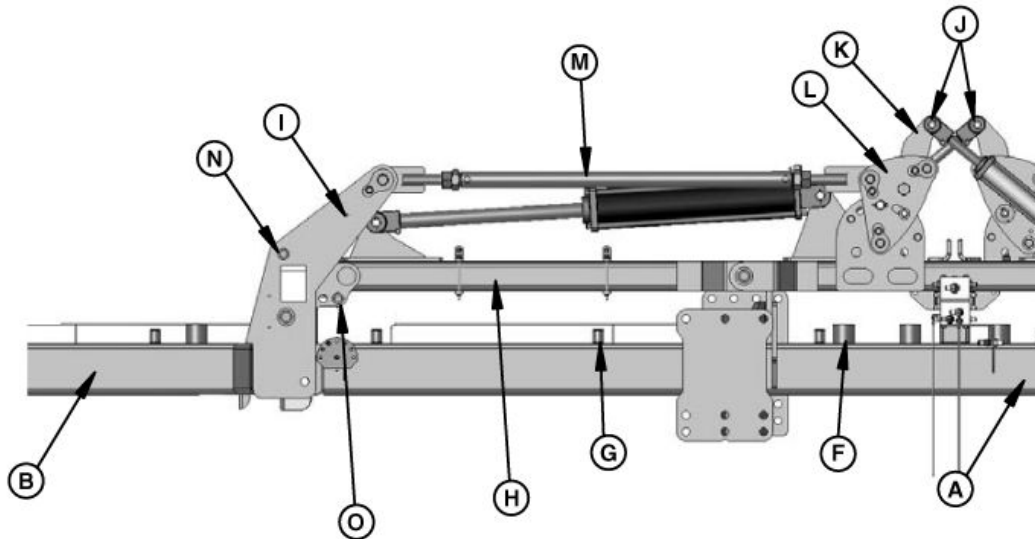
RM87422.000040B -19-10FEB16-2/2

PY24820—UN—09FEB16

Toolbar Component Identification (12R/16R)



12 Row



12 Row

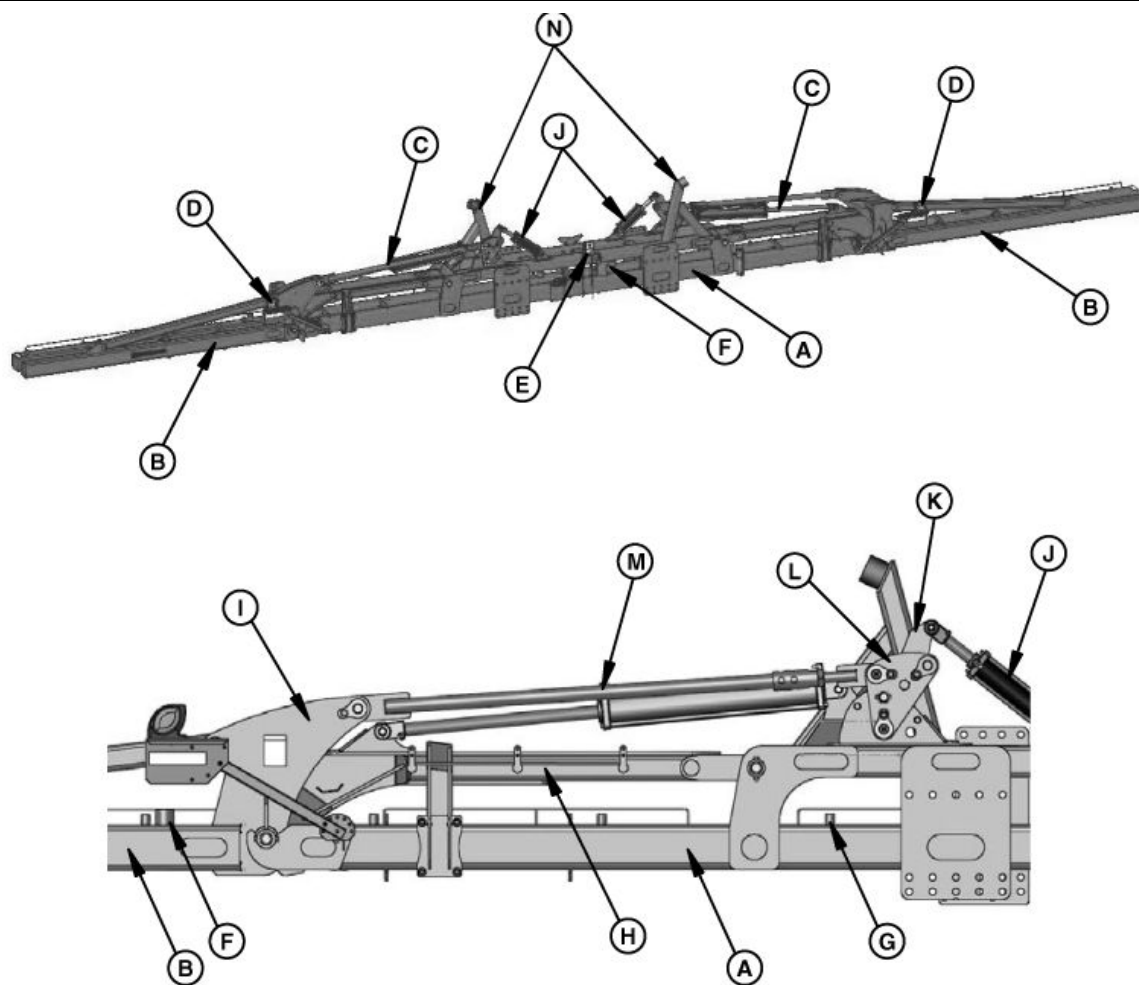
- | | | | |
|----------------------------------|--|----------------------------------|-------------------------|
| A— Center Section | F— Main Internal Toolbar Vacuum Outlet | I— Wing Head | N— Wing Lock Pin |
| B— Wings | G— Individual Row Unit Vacuum Outlet | J— Gull Wing Hydraulic Cylinders | O— Swing Truss Lock Pin |
| C— Wing Fold Hydraulic Cylinders | H— Swing Truss | K— Gull Wing Link | |
| D— Safety Lights | | L— Float Link | |
| E— Hydraulic Manifold Blocks | | M— Wing Strut | |

PY24751 —UN—08FEB16

PY24752 —UN—08FEB16

Continued on next page

RM87422,000040C -19-10FEB16-1/2



16 Row

A— Center Section
B— Wings
C— Wing Fold Hydraulic
Cylinders
D— Safety Lights

E— Hydraulic Manifold Blocks
F— Main Internal Toolbar Vacuum
Outlet
G— Individual Row Unit Vacuum
Outlet

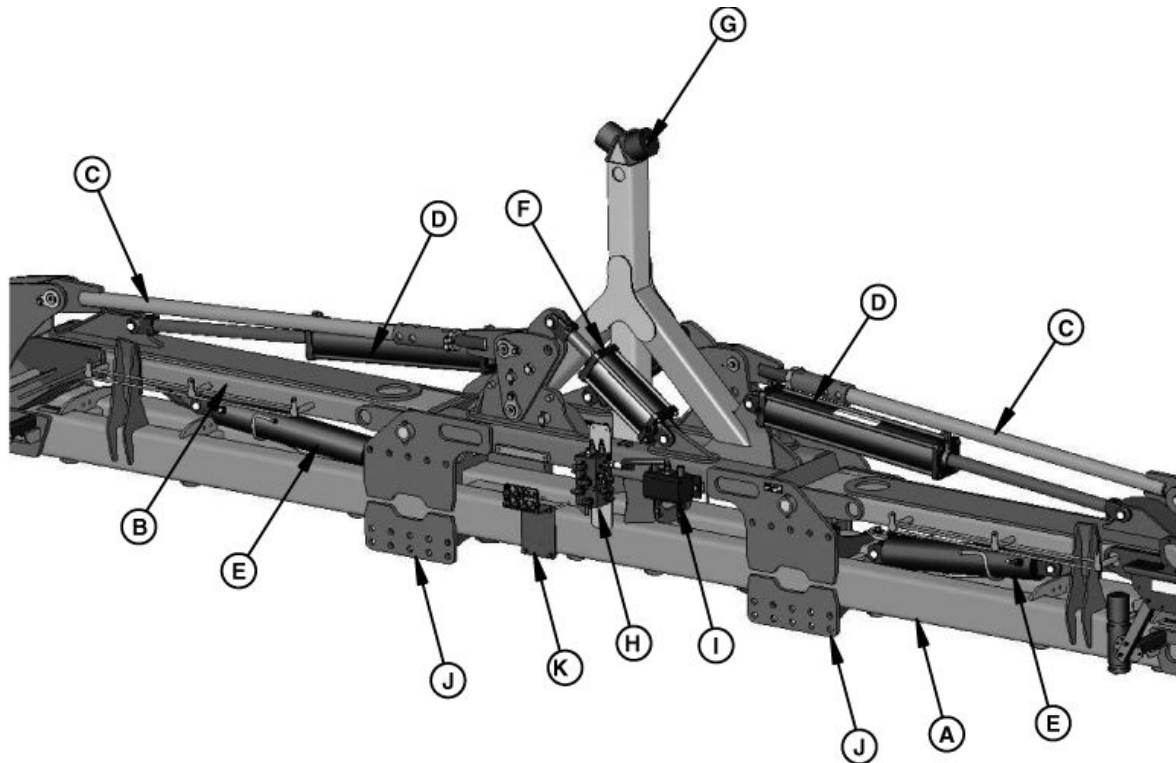
H— Swing Truss
I— Wing Head
J— Gull Wing Hydraulic
Cylinders
K— Gull Wing Link

L— Float Link
M— Wing Strut
N— Wing Rests

RM87422,000040C -19-10FEB16-2/2

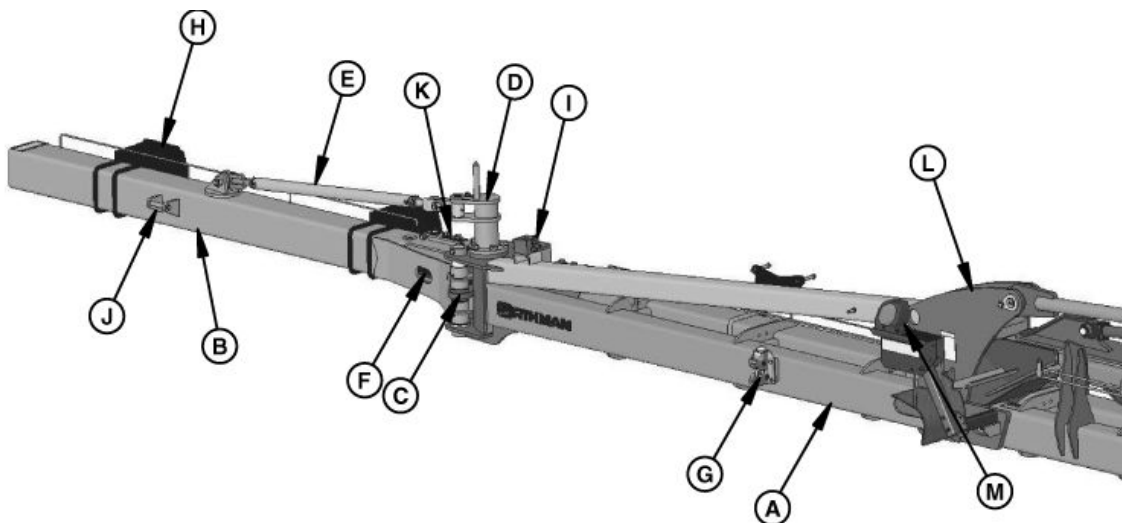
PY24834 —UN—10FEB16

Toolbar Center and Wing Section Component Identification (24R)



Center Section

- | | | | |
|--|--|------------------------------|---------------------------------|
| A— Center Section | E— Secondary Wing Fold Hydraulic Cylinders | G— Wing Rest | K— Secondary Hydraulic Bulkhead |
| B— Wings Swing Truss | F— Gull Wing Hydraulic Cylinders | H— Hydraulic Manifold Blocks | |
| C— Wing Strut | | I— Gear Flow Divider | |
| D— Primary Wing Fold Hydraulic Cylinders | | J— Tongue Mounting Plates | |



Wing Section

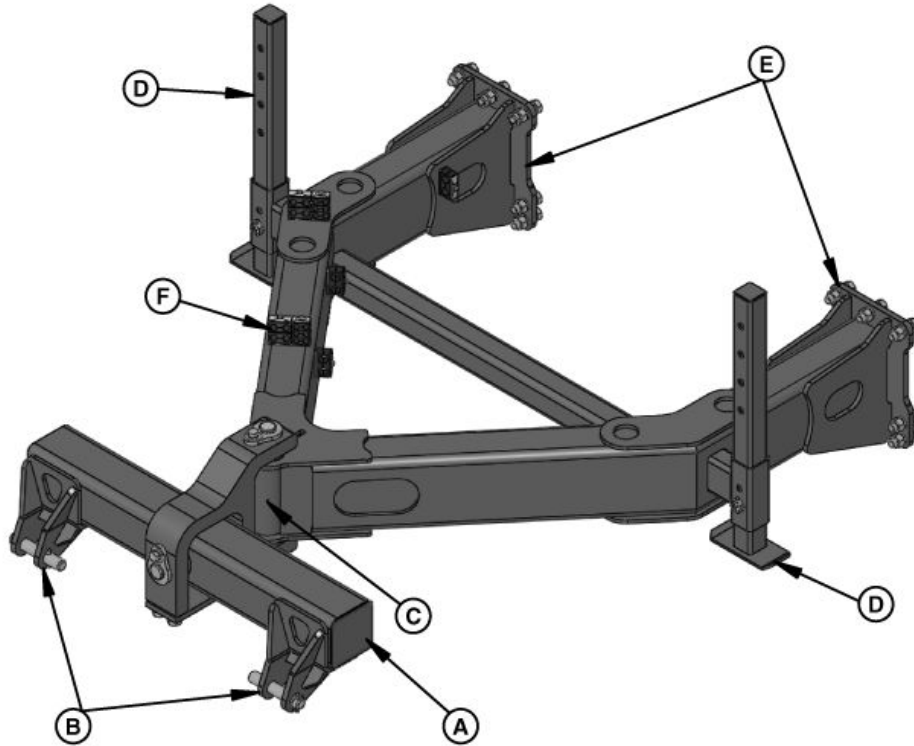
- | | | | |
|---------------------------|--|-----------------------------|---------------------|
| A— Mid Wing | E— Outer Wing Strut | H— Weight Holder | L— Mid Wing Coupler |
| B— Outer Wing | F— Outer Wing Fold Hydraulic Cylinders | I— Hydraulic Manifold Block | M— Safety Lights |
| C— Outer Wing Hinge | | J— Outer Wing Latch Pin | |
| D— Outer Wing Brace Tower | G— Outer Wing Latch Assembly | K— Row Unit Mounts | |

RM87422,000040D -19-10FEB16-1/1

PY24824 —UN—08FEB16

PY24825 —UN—08FEB16

Tongue Component Identification (12R/16R)



A— Swivel Hitch Cross Bar
B— Hitch Tugs

C— Hitch Pivot Point
D— Tongue Bar Stand

12 Row

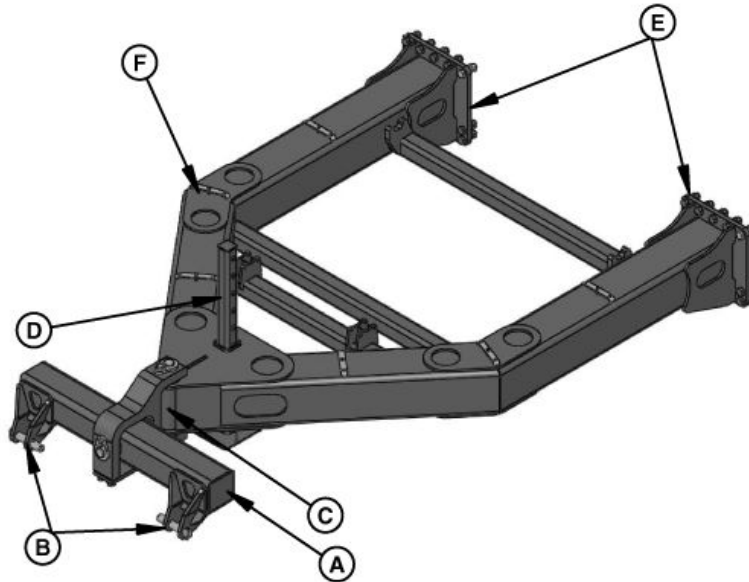
E— Connection Plates
F— Hydraulic Hose Clamp

PY24753 —UN—08FEB16

Continued on next page

RM87422.000040E -19-10FEB16-1/2

Component Identification



16 Row

A— Swivel Hitch Cross Bar
B— Hitch Tugs

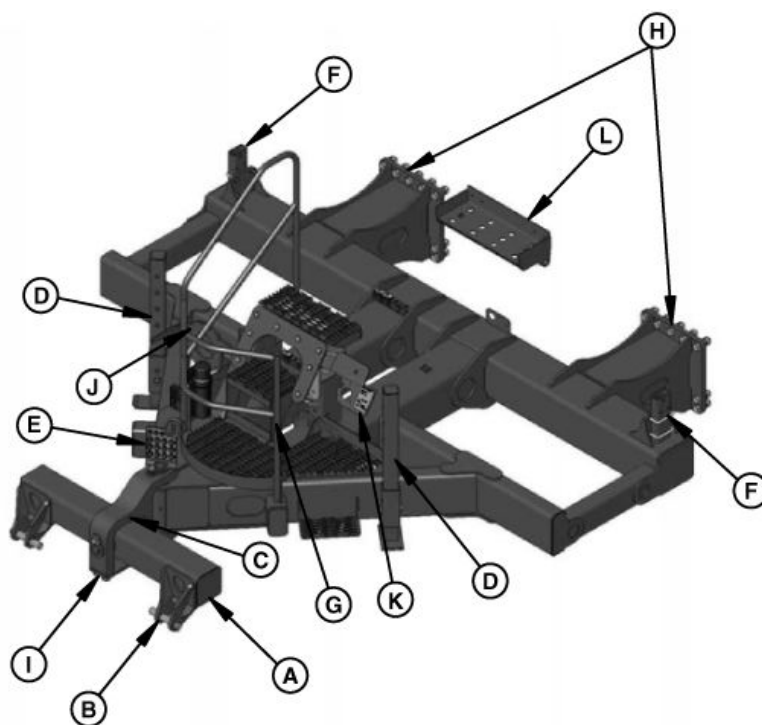
C— Hitch Pivot Point
D— Tongue Bar Stand

E— Connection Plates
F— Hydraulic Hose Clamp

RM87422,000040E -19-10FEB16-2/2

PY24835—UN—08FEB16

Tongue Component Identification - CCS Equipped (24R)



A— Swivel Hitch Cross Bar
B— Hitch Tugs
C— Hitch Knuckle
D— Tongue Bar Stands

E— Hydraulic Bulkhead
F— CCS Cradle Support Tubes
G— Seed Fill Platform Hand Rail

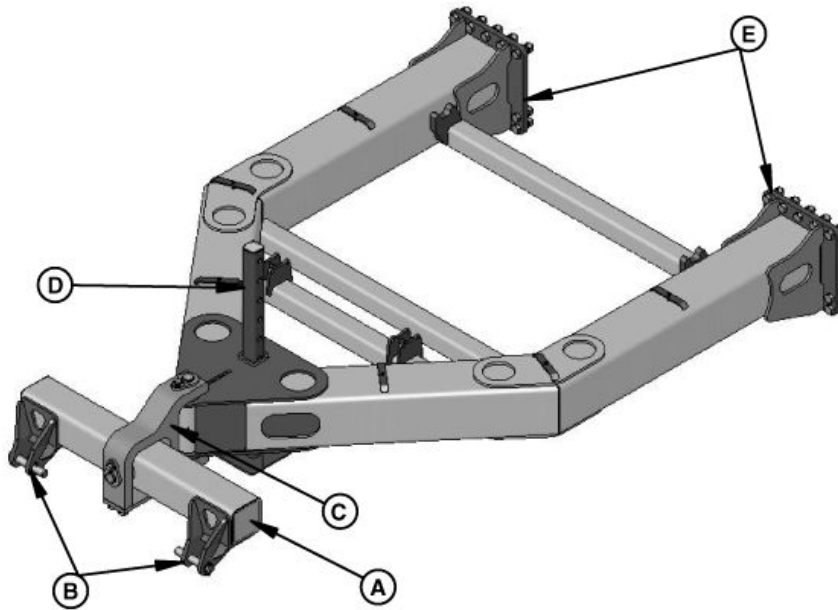
H— Connection Plates
I— Hitch Knuckle Bottom Plate
J— CCS Blower Mount
K— Gauge and Switch Plate

L— Rear Seed Fill Platform

RM87422,000040F -19-10FEB16-1/1

PY24821 —UN—08FEB16

Tongue Component Identification - Row Hopper Equipped (24R)



A— Swivel Hitch Cross Bar
B— Hitch Tugs

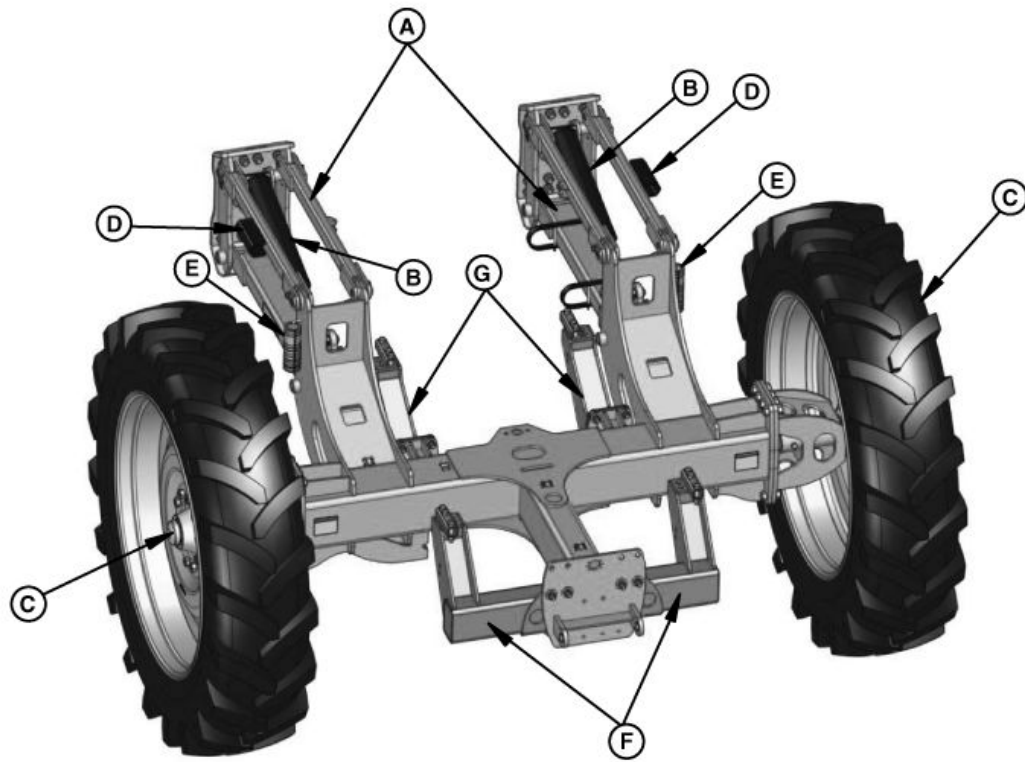
C— Hitch Pivot Point
D— Tongue Bar Stand

E— Connection Plates

PY24822 —UN—08FEB16

RM87422,0000410 -19-10FEB16-1/1

Rear Chassis Component Identification (12R/16R/24R)



A— Machine Lift Arms
B— Machine Lift Hydraulic
Cylinders

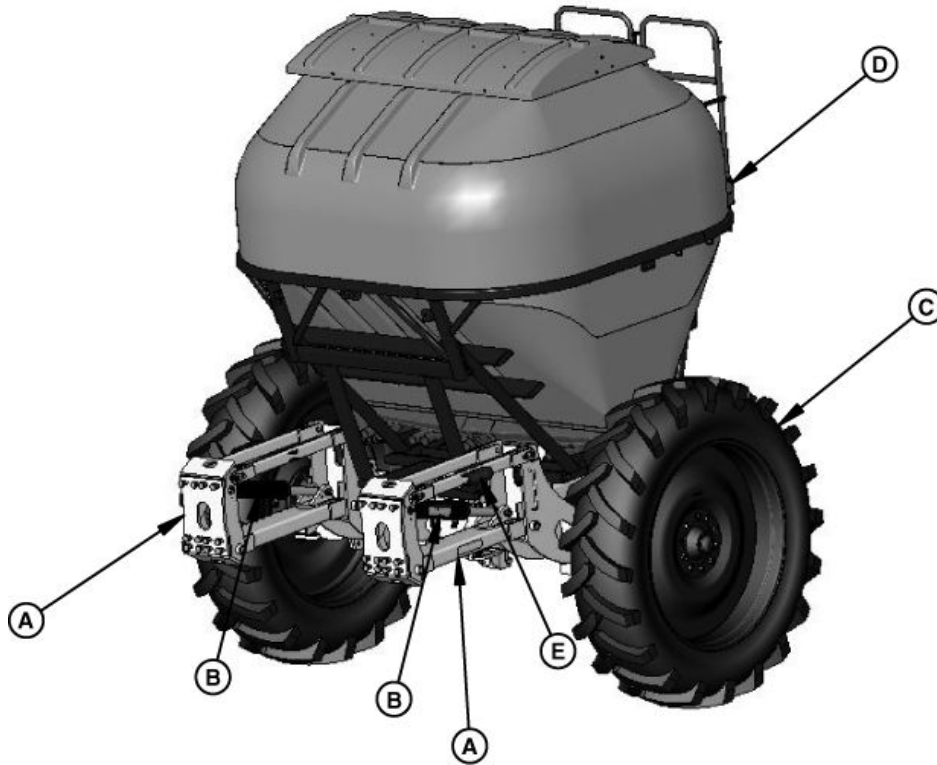
C— Wheel and Hub Assembly
D— Safety Transport Locks

E— Cylinder Stops
F— Rear Tank Mounts
G— Front Tank Mounts

RM87422,0000411 -19-10MAR16-1/1

PY24754 —UN—08FEB16

Rear Chassis Component Identification (12R/16R/24R)



A— Machine Lift Arms
B— Machine Lift Hydraulic
Cylinders

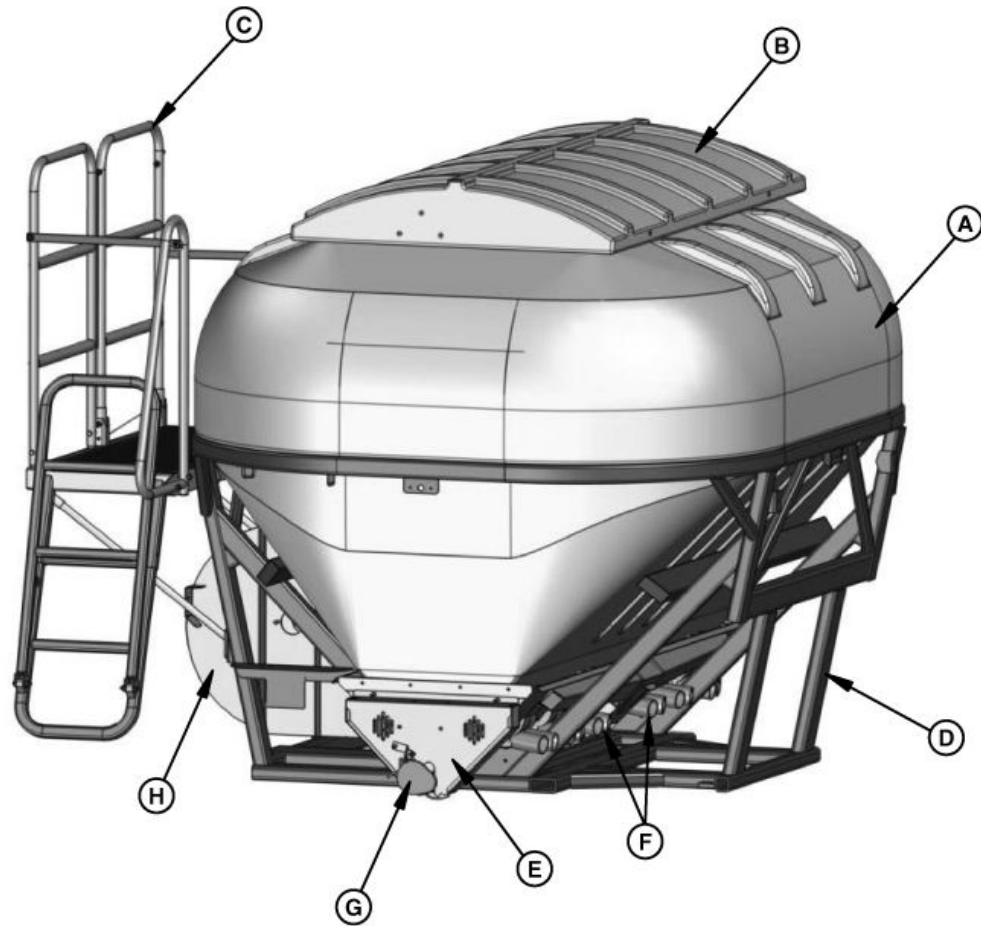
C— Wheel and Hub Assembly
D— Dry Fertilizer Delivery System

E— Safety Transport Lock

PY24823 —UN—08FEB16

RM87422,0000412 -19-10MAR16-1/1

Dry Fertilizer Tank and Meter Component Identification (12R/16R/24R)



A— Fertilizer Tank
B— Tank Lid
C— Fill Platform and Ladder

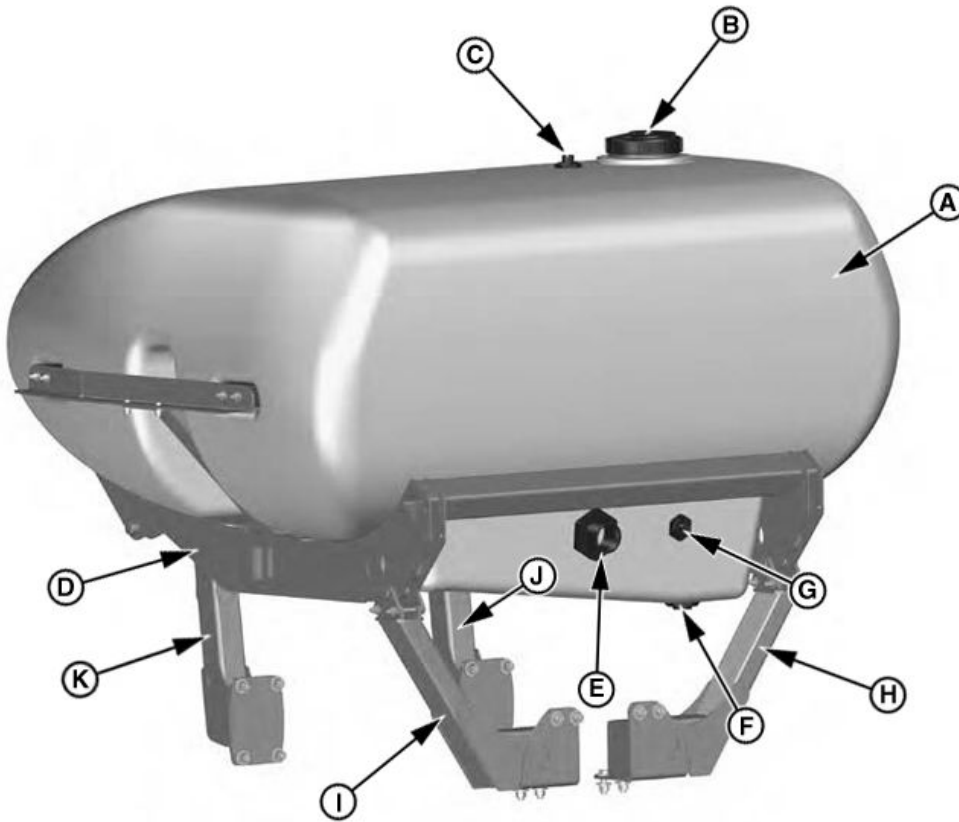
D— Tank Cradle and Skid
E— Metering Assembly

F— Metering Manifold Outlets
G— Encoder
H— Blower Assembly

RM87422,0000456 -19-10MAR16-1/1

PY24756 —UN—02MAR16

Liquid Application Package Component Identification



- | | | |
|---------------------------------|---------------------------|----------------------------|
| A— Tank | F— Sump Fitting | I— Rear LH Tank Mount Arm |
| B— Tank Lid | G— Return Fitting | J— Front RH Tank Mount Arm |
| C— Return Fitting | H— Rear RH Tank Mount Arm | K— Front LH Tank Mount Arm |
| D— Tank Cradle | | |
| E— Suction or Tank Fill Fitting | | |

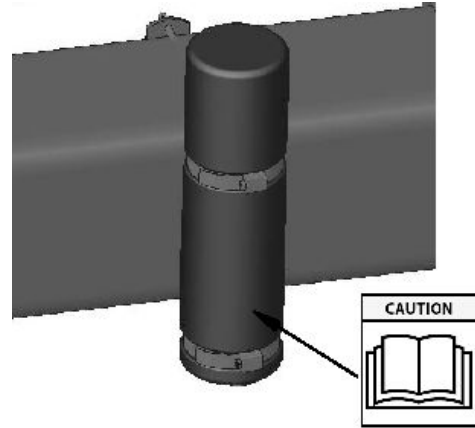
PY24899 —UN—03MAR16

RM87422,0000457 -19-02MAR16-1/1

Information Signs

Information Signs

CAUTION: Equipment operators should understand the enclosed manual before operating this equipment.



Manual Storage

RM87422,00003CD -19-29MAR16-1/2

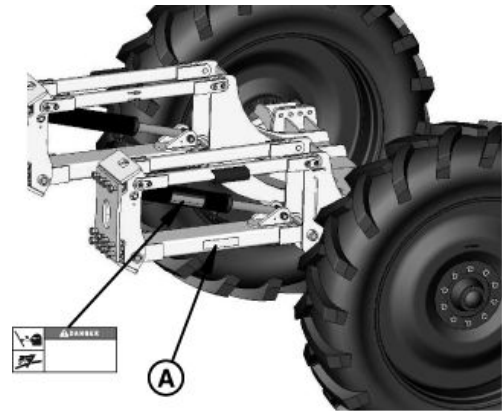
PY24814 —UN—10MAR16

CAUTION: High-Pressure Fluid Hazard

To prevent serious injury or death:

- Relieve pressure on hydraulic system before servicing or disconnecting hoses.
- Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
- Keep all components in good repair.

A—Amber Retro-Reflective



Rear Chassis and Stackfold Hydraulic Cylinder

RM87422,00003CD -19-29MAR16-2/2

PY24818 —UN—08FEB16

Preparing Tractor

Use Your Tractor Operator's Manual

Always refer to the tractor operators manual for specific tractor information.

The following tractor-related information uses John Deere™ tractors to illustrate preparation, attachment, and operational procedures. Use your tractor manual for detailed information, because the procedures vary by tractor model.



TS190 —UN—17JAN89

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OUC1074,00014B5 -19-25FEB16-1/1

Rear Wheel Weighting

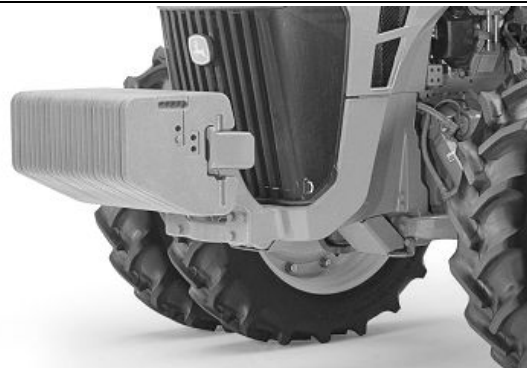
Limit liquid or cast wheel weights on the rear tractor tires. This decreases the tire load carrying capacity which is needed to carry the machine for transporting.

AG,OUO6076,351 -19-17JUL00-1/1

Tractor Requirements

CAUTION: Even with front-end ballast, stability is reduced if the tractor is driven too fast over rough ground with machine in raised position. Be safe and drive slow under these conditions.

HORSEPOWER REQUIREMENT: These stack-folding machines require a minimum 225 hp. tractor with MFWD or similar series later model tractor. Tractor must have a full set of front weights.



AG8930 —UN—30SEP10

RM87422,000047B -19-08MAR16-1/1

Setting Tractor Wheel Spacing

Single Wheels or Inner Dual Wheels Set wheels in as far as possible with center of treads between planter rows (typically twice the row spacing).

Dual Wheels Set dual wheels with center of tread as close as possible between planter rows (typically four times the row spacing).

OUC6074,00000A8 -19-24APR09-1/1

Recommended Tractor Settings

See Tractors Operator's Manual for complete operating instructions.

Tractor Settings	
Item to set	Setting
Sway Blocks	See Tractor Operators Manual to shim draft arms.
Hitch Control	Set to position control.
Tire Ballast	Limit liquid or cast weight on rear tires ^{a,b}
Tractor Hydraulics	Closed Center Only Minimum tractor hydraulic pressure - 15 513 kPa (155 bar) (2250 psi) Working pressure - 20 684 kPa (207 bar) (3000 psi)
Tire Pressures	See Tractor Operator's Manual.
Hydraulic Controls	See HYDRAULIC CONNECTIONS RECOMMENDATIONS in Attach Machine section.

^aDual rear tractor tires are recommended for stability and for load carrying capacity, especially when the machine is folded for transport.

^bTo carry the machine for transport, limit liquid or cast wheel weights on rear tractor tires as tire load carrying capacity is decreased.

RM87422,000042A -19-15FEB16-1/1

Check Tractor Hydraulic System

IMPORTANT: Do not use an open center tractor hydraulic system to operate machine. Permanent damage to tractor pump can result.

For complete tractor operating instructions, refer to the tractor operator's manual.

The vacuum motor and variable rate drive hydraulic systems are designed to be operated with closed-center tractor hydraulic systems. Tractors with load sensing or pressure on-demand hydraulics are classified as

closed-center systems. Open center tractor hydraulics are NOT compatible with this system.

Minimum required tractor standby pressure is approximately 15 513 kPa (155 bar) (2250 psi) depending on frame configuration, planting speed, and number of rows.

Hydraulic system working pressure is 20 684 kPa (207 bar) (3000 psi). Hydraulic system burst pressure is 82 737 kPa (827 bar) (12 000 psi).

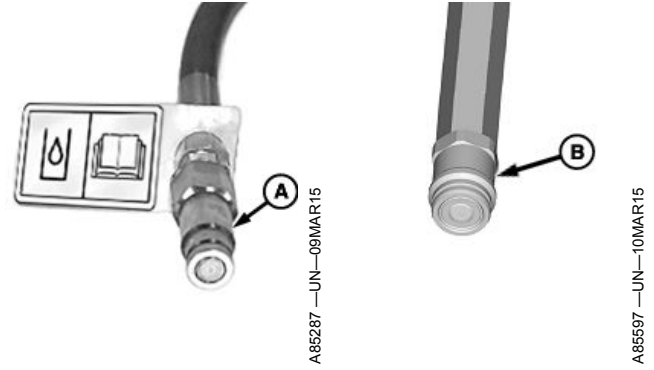
OUC06074,0000A10 -19-21MAY09-1/1

Case Drain and Hydraulic Motor Requirements

IMPORTANT: Avoid damage to hydraulic motors, equip the tractor with a low-pressure drain coupler. Install the coupler in a port with less than 172 kPa (1.72 bar) (25 psi). See Case Drain Connection Kits table.

Use the connection kits listed in the table on John Deere™ tractors. If a drain kit is already installed, verify that it matches what is listed on table.

The case drain hose (A) must be attached to a low-pressure drain connection before any other hose connection.



A—Machine Drain Coupler

B—Tractor Drain Connection

Order one of the following kits for a John Deere™ tractor. For other tractors, see the tractor dealer for a suitable connection kit.

Some hydraulic motors are low flow, high-pressure motors. The motors are designed to operate on a closed-center hydraulic system. Connecting low flow, high-pressure hydraulic motors to an open-center system

is not recommended. See your John Deere™ Dealer or qualified service provider for more information.

NOTE: John Deere™ connection kits include installation instructions.

Case Drain Connection Kits ^a	
Tractor Model	Kit Number
8000, 8000T, 8010, 8010T, 8020, 8020T, 8030, and 8030T 8R and 8RT Series (Through 2014)	RE222721
8R and 8RT Series (2014 and later)	RE327561
9000, 9000T, 9010, 9010T, 9020, 9020T, 9030 and 9030T Series	RE218665
9R and 9RT Series	RE299261

^aAll available kits are shown. Match the kit to the tractor.

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RM87422.000047C -19-08MAR16-1/1

Calculate Minimum Tractor Weight for Safe Transport

CAUTION: Use of a tractor ballasted to less than the minimum tractor weight can result in loss of control and serious injury or death.

CAUTION: Do not transport a planter that is more than one half full of seed and or fertilizer. Do not transport a towed load (such as a fertilizer tank) unless it is empty.

IMPORTANT: Always refer to the tractor operator's manual for further safe transport information.

If a towed load is attached to the rear of the implement, add the towed loads weight to the total weight of the implement before dividing by 1.5.

FORMULA: Total Weight of Implement ÷ 1.5 = Minimum Tractor Weight for Safe Transport

RM87422.00004A1 -19-23MAR16-1/1

Weight the Front End 12 and 16 Row

Install the proper amount of weight on the front of the tractor as recommended in your tractor operator's manual.

Machine	Implement Code
12-Row	310
16-Row	385

See your John Deere dealer for proper front-end weighting.



A68930—UN—30SEP10

OUO6064,0000467 -19-17FEB16-1/1

Weight Front End 24 Row

To calculate the implement code for the planter, refer to the following chart. To determine the total implement code, add the implement code values for the optional equipment your planter is equipped with to the implement code value for the base machine.

Install the proper amount of weight on the front of the tractor as recommended in the tractor operator's manual.



A50871—UN—05NOV02

Base Machine	Implement Code	
	7000 and 8000 Series Tractors	55 Series Tractors
Twenty-Four Row 76 cm (30 in) Central Commodity System	455	435
Markers		
Tri-fold	52	50
Less Markers	0	0
Wing Frame Assemblies		
Four 7.6 x 15-6 PR Load Range F High Flotation Tires	17	16
Row Unit Parallel Arms		
Regular	0	0
Long	21	20
Liquid Tanks		
Less Tank and Mounting Brackets	0	0
Insecticide Tank and Mounting Brackets	57	54
Fertilizer Pump, Delivery System, and Openers		
Less Pump, Delivery System, and Openers	0	0
Piston Pump, Flow Divider with Hoses and Frame Mounted Single Disk Fertilizer Openers	57	54
Piston Pump, Flow Divider with Hoses, Less Openers	0	0
Piston Pump, Less Delivery System, Less Openers	0	0
Variable Rate Piston Pump, Flow Divider with Hoses and Frame Mounted Single Disk Openers	57	54
Variable Rate Piston Pump, Flow Divider with Hoses, Less Openers	0	0
Variable Rate Piston Pump, Less Delivery System, Less Openers	0	0

See your John Deere™ dealer for proper front-end weighting.

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RM87422,000047D -19-10MAR16-1/1

Tractor Tire Recommendation

Dual rear tractor tires are recommended for stability and load carrying capacity with machine in folded transport position.

720016ROM,PT,F -19-24SEP92-1/1

Connect Non John Deere Tractors

See your John Deere dealer if connecting Non John Deere tractor to implement.

OUO6045,000002C -19-27MAY08-1/1

Preparing Machine

Initial Use of CCS™ System

The first time a new seed tank is used, coat the inside bottom of bulk seed tanks with a thin layer of meter lubricant. Mix triple the amount of into the first two or

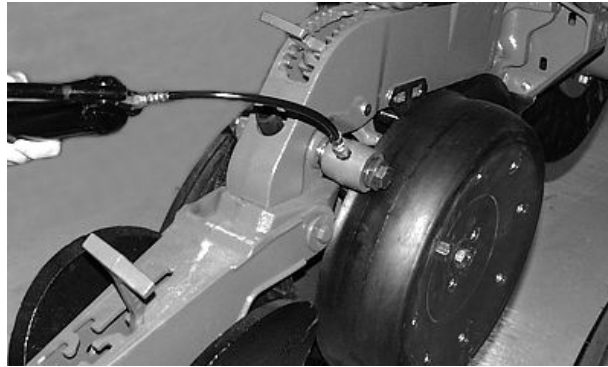
CCS is a trademark of Deere & Company

three bushels of seed placed in bulk tank (See Meter Lubrication section). The lubricant coats the inside of CCS™ system and hoses with a protective layer to help resist buildup of seed coatings.

OUO6074,0000EC7 -19-05JUN14-1/1

Before Use

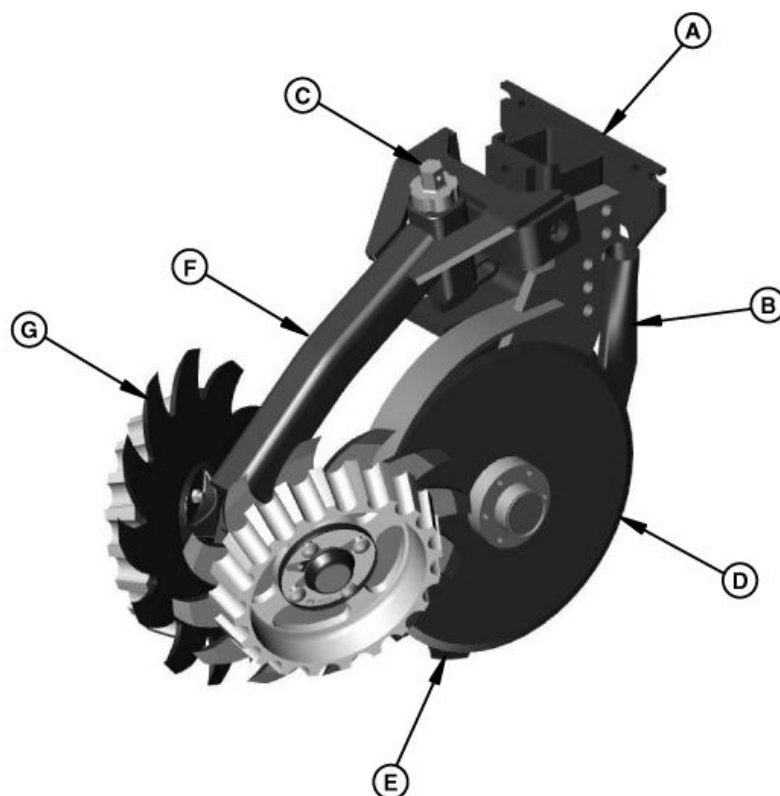
Refer to **Machine Lubrication** section for more information.



A53141 —JUN—04NOV03

AG,OUO6074,1171 -19-24MAR15-1/1

Row Unit Mounted Double Disc Fertilizer Opener



A— Unit Mount
B— Fertilizer Tube
C— Row Cleaner Height Adjustment Screw

D— Smooth Opener Disc
E— Notched Opener Disc

F— Row Cleaner Arm
G— Row Cleaner Blade

RM87422,00003C8 -19-11FEB16-1/1

PY24755 —UN—09FEB16

Planter Toolbar

The planter must arrive from the dealership fully assembled. Take time to verify and prepare planter for field use before going to the field by following the below procedures of preparation.

1. Ensure that all safety and reflective decals are properly in place and in good, clean condition, and verify proper function of the planter warning lights.
2. Make sure tractor hydraulic system is in working order. Planter toolbar hydraulic systems are designed for a 3000 psi system
3. Make sure that the hydraulic tips and outlets are free of foreign material, as foreign material can ruin hydraulic components.
4. Be sure that toolbar wing float and wing lock pins are in the proper position. Pin position for planter transport differs from recommended pin position for field use.
5. Before folding the toolbar, review the information in the "WING FOLDING" section of this manual.
6. Be sure that the machine tires are inflated, refer to the Check Tire Inflation chart in same section.
7. Be sure to lubricate all grease points on machine.

RM87422,00003CF -19-08MAR16-1/1

Check Tire Inflation

Inflate machine tires to specification.

Frame Tires—Specification

10.00-15 8	
ply—Pressure.....	276 kPa (2.76 bar) (40 psi)
7.60 x 15-6	
PR—Pressure.....	200 kPa (2 bar) (29 psi)
480/80R50—Pressure.....	317 kPa (3.17 bar) (46 psi)
10.00-15 FI LR D on Six	
Bolt Hub—Pressure.....	276 kPa (2.76 bar) (40 psi)

10.00-15 FI LR D on Eight

Bolt Hub—Pressure.....	379 kPa (3.79 bar) (55 psi)
------------------------	-----------------------------------

11R22.5 TL LR

F—Pressure.....	414 kPa (4.14 bar) (60 psi)
-----------------	-----------------------------------

Seed/Fertilizer Contact Drive Tire—Specification

16 x 6.50-8 4	
ply—Pressure.....	193 kPa (1.9 bar) (28 psi)

24R Marker Gauge Wheel—Specification

4.8-12 LR B marker	
gauge wheel—Pressure.....	414 kPa (4.1 bar) (60 psi)

RM87422,000048D -19-10MAR16-1/1

Attaching and Detaching

Use Tractor Operator's Manual

Always refer to your tractor Operator's manual for specific detailed information regarding operation of your equipment.

Following tractor-related information uses John Deere tractors to illustrate preparation, attachment, and operational procedures. Use your tractor OM for detailed information, as procedures vary by tractor.



TS190 —UN—17JAN89

NX,1200V,A1 -19-22MAY09-1/1

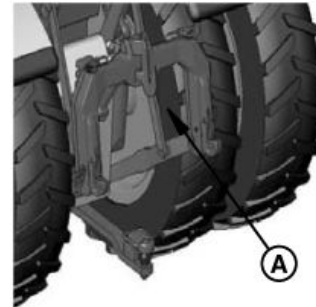
Planter to Tractor Connection

CAUTION: Do not stand between tractor and implement when connecting or disconnecting implement. Injury or death can result from being trapped between the tractor and implement.

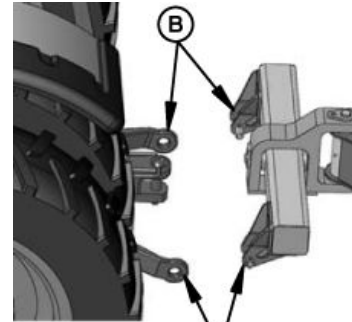
IMPORTANT: Make sure that all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

A— Quick Coupler
B— Lower Hitch Point
C— ISO 9 Pin Connection

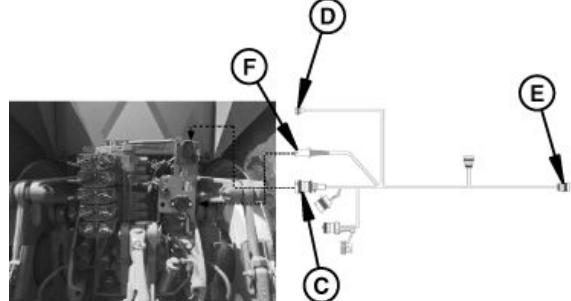
D— Section Control
E— To Controller
F— Safety Light Plug



Quick Coupler



Lower Hitch Points



Electrical Connections

PY24758 —UN—08FEB16

PY24759 —UN—08FEB16

PY24760 —UN—08FEB16

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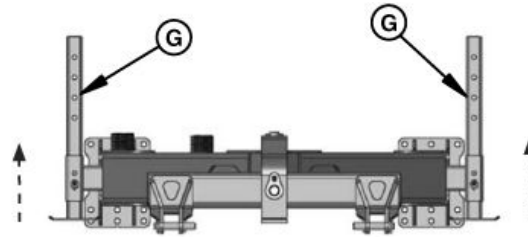
RM87422,00003E3 -19-08MAR16-1/2

Pre-Connection Note:

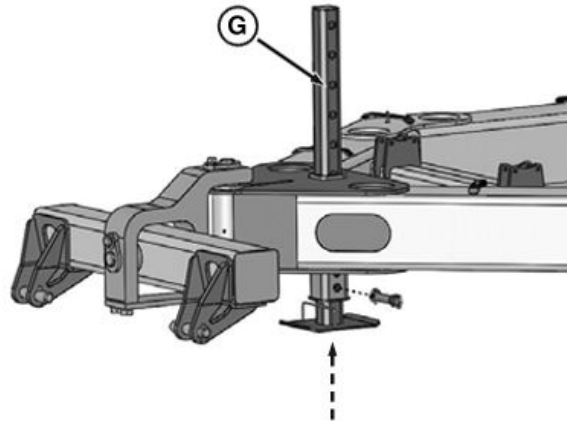
It is recommended that the tractor to be used to operate the planter has at least 5 hydraulic SCV remote ports and a “power beyond” hydraulic port for proper hydraulics connection between the tractor and planter.

1. Set your tractor’s quick coupler lift links, lateral float pins, and sway blocks.
2. Hitch lift links must be adjusted to the operating depth dimensions indicated in the tractor operator’s manual.
3. Lateral float pins must be placed in the lower holes to allow machine to float and follow the ground surface.
4. Sway blocks and bumpers must be installed if no implement guidance is being utilized with machine.
5. Connect the quick coupler lower hitch points to the swivel hitch on the planter tongue at the hitch tug pins.
6. Once planter is properly attached to tractor, attach planter hydraulic hoses to the tractor.
7. Hydraulic hoses are labeled on the bulkhead on the tongue. (See “Hydraulic Connection Recommendations” block)
8. Attach planter controller electrical connections and toolbar safety lights to the tractor.
9. Raise the tongue stand (G) to highest point and reinstall stay pin.

G— Tongue Stand



Raise Tongue Stands (12 Row)



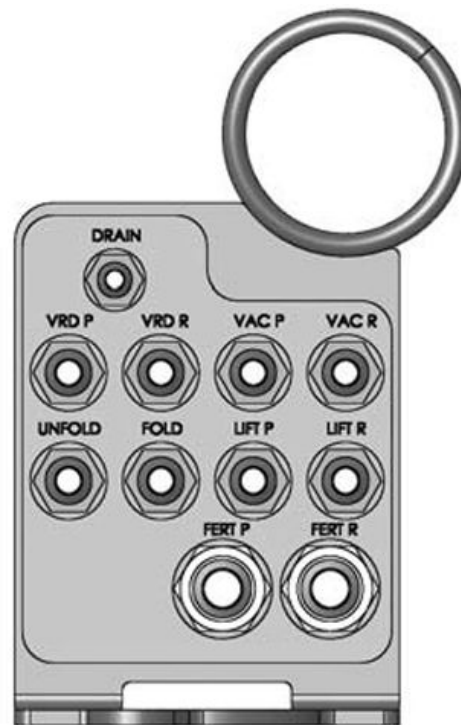
Raise Tongue Stands (16 Row)

PY24761 —UN—08FEB16

PY24836 —UN—09FEB16

RM87422,00003E3 -19-08MAR16-2/2

Hydraulics Identification (12R/16R/24R)



Tongue Hydraulic Bulkhead Plate (12R)

PY24762 —UN—09MAR16

Continued on next page

RM87422,00003E4 -19-09MAR16-1/2

Planter is equipped with a labeled hydraulic bulkhead plate located on the machine tongue, and a hydraulic manifold block on the toolbar. Below is a description of each port on the bulkhead plate.

DRAIN: Case drain hose routing from vacuum blower, fertilizer applicator motor, and/or CCS blower fan to tractor case drain port.

IS P: Not Applicable

IS R: Not Applicable

CCS P: Pressure hose routing from CCS blower fan pressure port to tractor SCV remote. Connect to the same tractor SCV remote as CCS R hose.

CCS R: Return hose routing from CCS blower fan return port to tractor SCV remote. Connect to the same tractor SCV remote as CCS P hose.

VAC P: Pressure hose routing from vacuum blower pressure port to tractor SCV remote. Connect to same tractor SCV remote as VAC R hose.

VAC R: Return hose routing from vacuum blower return port to tractor SCV remote. Connect to same tractor SCV remote as VAC P hose.

VAC1 P: Pressure hose routing from vacuum blower 1 pressure port to tractor SCV remote. Connect to same tractor SCV remote as VAC1 R hose.

VAC1 R: Return hose routing from vacuum blower 1 return port to tractor SCV remote. Connect to same tractor SCV remote as VAC1 P hose.

VRD P: Pressure hose routing from VRD motors' pressure ports to tractor SCV remote. Connect to same tractor SCV remote as VRD R.

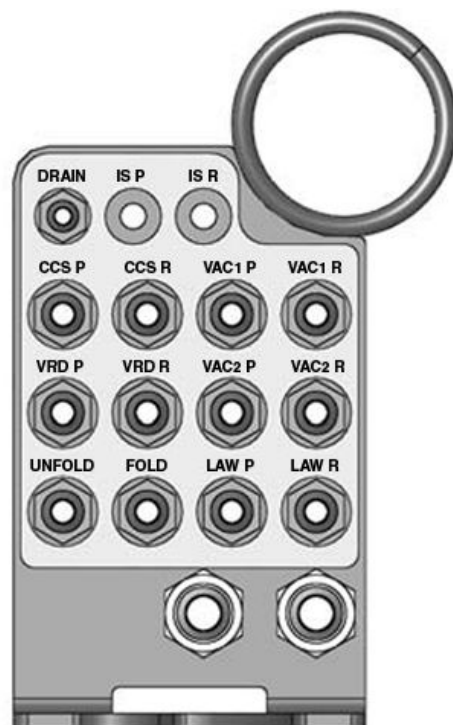
VRD R: Return hose routing from VRD motor's return ports to tractor SCV remote. Connect to same tractor SCV remote as VRD P hose.

VAC2 P: Pressure hose routing from vacuum blower 2 pressure port to tractor SCV remote. Connect to same tractor SCV remote as VAC2 R hose.

VAC2 R: Return hose routing from vacuum blower 2 return port to tractor SCV remote. Connect to same tractor SCV remote as VAC2 P hose.

UNFOLD: Pressure hose routing from wing fold cylinders' base ends to tractor SCV remote. Connect to same tractor SCV remote as FOLD hose.

FOLD: Retract hose routing from wing fold cylinders' rod ends to tractor SCV remote. Connect to same tractor SCV remote as UNFOLD hose.



Tongue Hydraulic Bulkhead Plate (16R/24R)

LIFT P: Pressure hose routings from machine lift hydraulic cylinders' base ends to tractor SCV remote. Connect to same tractor SCV remote as LIFT R hose.

LIFT R: Retract hose routing from machine lift hydraulic cylinders' rod ends to tractor SCV remote. Connect to same tractor SCV remote as LIFT P hose.

FERT P: Pressure hose routing to fertilizer applicator hydraulic manifold block.

FERT R: Return hose routing to fertilizer applicator hydraulic manifold block.

LAW P: Pressure hose routing from machine lift hydraulic cylinders' base ends to tractor SCV remote. Connect to same tractor SCV remote as LAW R hose.

LAW R: Retract hose routing from machine lift hydraulic cylinders' rod ends to tractor SCV remote. Connect to same tractor SCV remote as LAW P hose.

PY24909 —UN—08MAR16

RM87422,00003E4 -19-09MAR16-2/2

Toolbar Manifold Port Identification

The description of each port on the manifold block as mentioned below.

RH Lift Cylinder Pressure Base end of cylinder.

LH Lift Cylinder Pressure Rod end of cylinder.

RH Gull Wing Pressure Rod end of cylinder.

LH Gull Wing Pressure Rod end of cylinder.

RH Wing Fold Pressure/Unfold Return Rod end of cylinder.

LH Wing Fold Pressure/Unfold Return Rod end of cylinder.

RH Wing Unfold Pressure/Fold Return Base end of cylinder.

LH Wing Unfold Pressure/Fold Return Base end of cylinder.

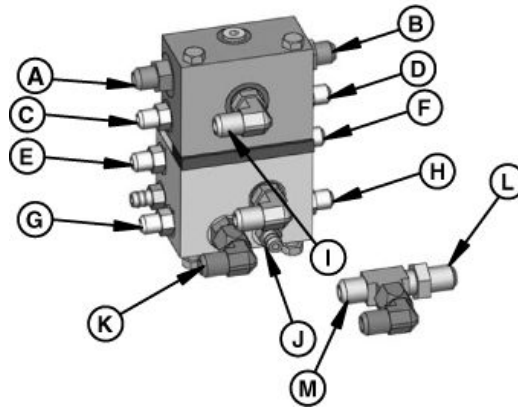
Machine Lift Supply Routes to tongue bulkhead plate.

Machine Fold Supply/Unfold Return Routes to tongue bulkhead plate.

Machine Unfold Supply/Fold Return Routes to tongue bulkhead plate.

Machine Lift Return "Tee" Rod end of each cylinder.

Machine Lift Return Routes to tongue bulkhead plate.



Toolbar Hydraulic Manifold Blocks and Stack Fold Return "Tee"

- | | |
|---------------------------------------|---------------------------------------|
| A—RH Lift Cylinder Pressure | H—LH Wing Unfold Pressure/Fold Return |
| B—LH Lift Cylinder Pressure | I—Machine Lift Supply |
| C—RH Gull Wing Pressure | J—Machine Fold Supply/Unfold Return |
| D—LH Gull Wing Pressure | K—Machine Unfold Supply/Fold Return |
| E—RH Wing Fold Pressure/Unfold Return | L—Machine Lift Return "Tee" |
| F—LH Wing Fold Pressure/Unfold Return | M—Machine Lift Return |
| G—RH Wing Unfold Pressure/Fold Return | |

PY24763—UN—08FEB16

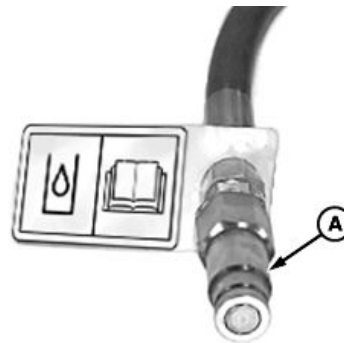
RM87422,00003E5 -19-10FEB16-1/1

Blower Motor Hydraulic Requirements

IMPORTANT: Avoid blower motor damage. Ensure that tractor case-drain has less than 172 kPa (1.72 bar) (25 psi).

Case drain hose (A) must be attached to low-pressure drain connection before any other hose connection.

The hydraulic blower motors are low flow, high-pressure motors. The motors are designed to operate on a closed-center hydraulic system. Connecting the blower motor to an open-center system is not recommended. See your John Deere™ Dealer for more information.



Case Drain Connected First

A—Motor (Case) Drain Hose

A85599—UN—11MAR15

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WP29706,00007FE -19-21OCT15-1/1

Hydraulic Motor Return Coupler

All hydraulic motors are equipped with a special coupler on the return hoses.

Each return coupler has a check valve that prevents the motor from turning backward.

IMPORTANT: Avoid a pressure spike. Use the recommended procedure to connect and deactivate hydraulic motors.

Place the selective control valve (SCV) in "Float" position to deactivate hydraulic motors. (See Hydraulic Connection Recommendations for more information.)



A53457 —UN—02MAR04

WP29706,00007F1 -19-17JUN15-1/1

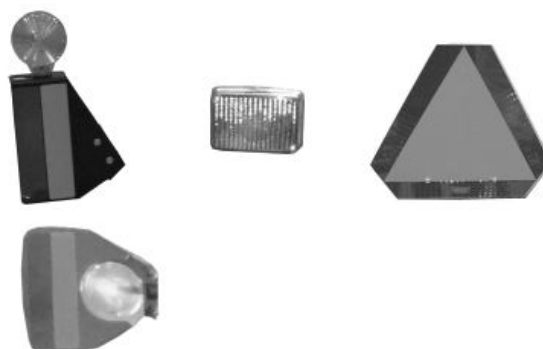
Warning Lights and Signaling Panel—(Style A)

CAUTION: When transporting the planter on a roadway, use flashing warning lights and turn signals day and night. Prevent collisions between other road users.

IMPORTANT: The construction of this planter may not meet all local or national requirements for transport on a public roadway. In regions or countries that have national certification requirements for roadway transport, it may be impossible for this planter to be approved for such roadway transport. The customer is responsible for understanding and complying with all local, regional, and national requirements regarding roadway transport.

NOTE: Keep reflective material and signaling panel clean and visible.

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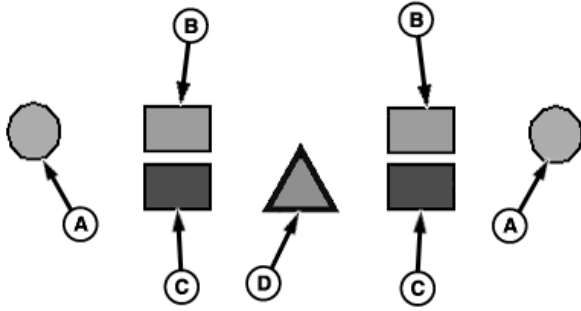
Keep lights visible, clean, and in working order.

Check local governmental regulations. Various safety devices are available from your John Deere™ dealer. Keep safety items in good condition. Replace missing or damaged items.

A80138 —UN—18FEB14

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WP29706,00008F5 -19-27MAY15-1/2



A80352 —UN—11MAR14

Drawn and Integral Components

NOTE: For operation in Australia, remove the light enhancement module (E). The specific functions of the enhancement module are not used in Australia.

Light and emblem placement vary according to local, regional, and national government regulations.

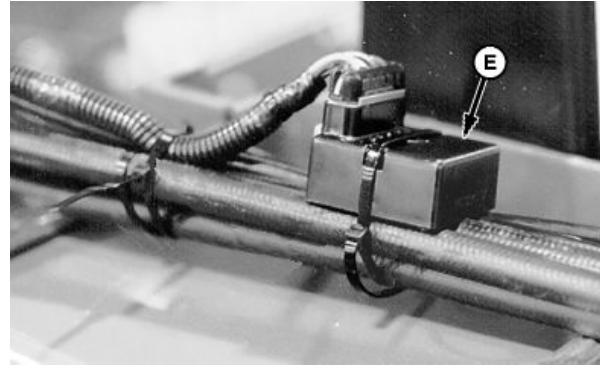
Light and emblem placement varies slightly on some planter models. Check with your John Deere™ dealer for more information.

Amber warning lights (A) are positioned on outer edge of each side of planter. On integral planters, amber lights (B) are also positioned next to red lights.

Red warning lights (C) are installed approximately 1.52 m (5 ft.) from center of planter.

Slow moving vehicle emblem (D) is centralized on rear of planter.

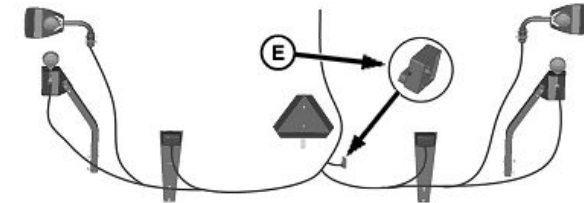
Remove module (E) from planters used in Australia.



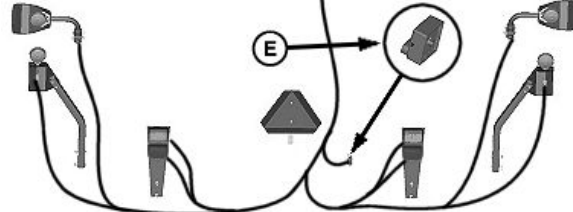
A80339 —UN—10MAR14

Light Enhancement Module

A82235 —UN—16APR14



Light Configuration Drawn Planters



Light Configuration Integral Planters

A82273 —UN—16APR14

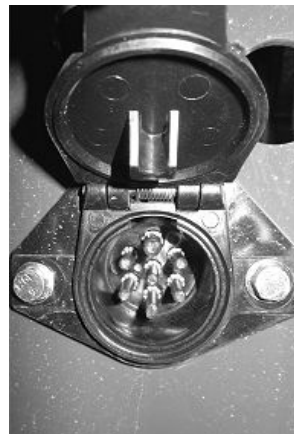
A—Amber Warning Lights
B—Amber Warning Lights
C—Red Warning Lights

D—Slow Moving Vehicle Emblem
E—Light Enhancement Module

WP29706,00008F5 -19-27MAY15-2/2

Attach The Warning Light Harness

Attach the warning light harness to the 7-pin connector.



A85921 —UN—25MAR15

Style A



A85922 —UN—25MAR15

Style B

OUC1074,0000042 -19-07MAR16-1/1

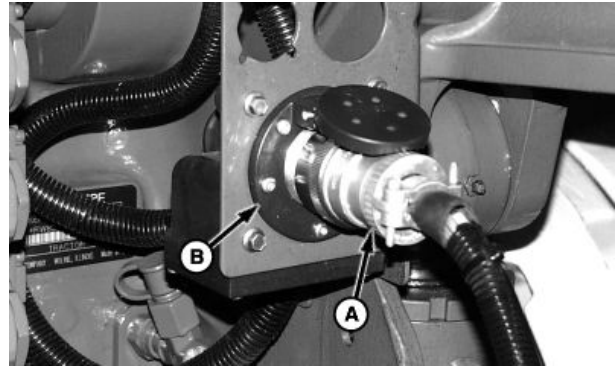
Connect SeedStar™ Monitor Harness

NOTE: Harness locations will vary from tractor to tractor.

Connect SeedStar™ monitor harness (A) to connector (B).

A—Monitor Harness

B—Connector



A47096—UN—02FEB01

OUO6064,000007D -19-14APR10-1/1

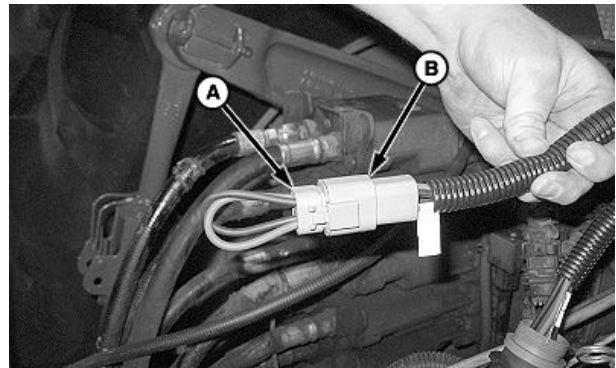
Connect Battery-Power Harness

NOTE: Electric downforce compressors only.

Remove dust cap (A) and connect battery power harness (B).

A—Dust Cap

B—Battery Power Harness



A68083—UN—08JUL10

OUO6064,00001FD -19-27MAY15-1/1

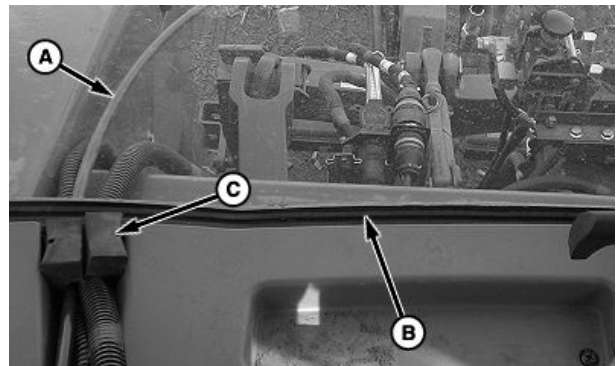
Connect Pneumatic Down Force Air Compressor Remote Air Filter Hose

NOTE: Electric downforce compressors only.

1. Route filter hose (A) through tractor rear window (B).
2. Install filter hose (A) in grommet (C).

A—Filter Hose
B—Rear Window

C—Grommet

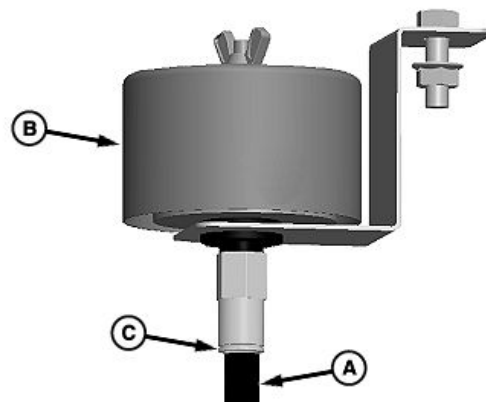


A71714—UN—03JUN11

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OUO6064,00004F3 -19-27MAY15-1/2

3. Install filter hose (A) in air filter assembly (B), push in ring (C) on fitting and push filter hose into fitting approximately 17 mm (11/16 in.).



A71709 —UN—03JUN11

OUC6064,00004F3 -19-27MAY15-2/2

Check The Hydraulic System

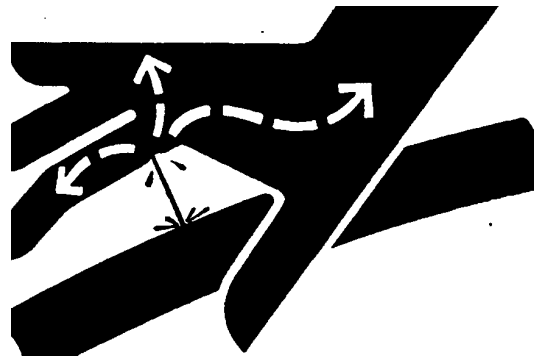
CAUTION: Escaping fluid under pressure can penetrate the skin and cause serious injury.

Relieve the hydraulic pressure before disconnecting the hydraulic or other lines to avoid this hazard . Tighten all of the hydraulic connections before applying pressure.

Search for leaks with a piece of cardboard. Protect your hands and your body from high-pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into your skin must be surgically removed within a few hours or gangrene can result. Doctors unfamiliar with this type of injury must reference a knowledgeable medical source. Such information is available from the Deere & Company Medical Department in Moline, Illinois, U.S.A.

Hydraulic hoses can fail due to physical damage, kinks, age, and exposure. Check the hoses regularly. Replace the damaged hoses.



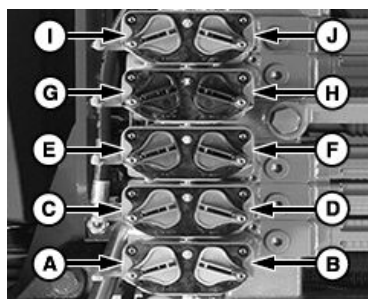
X9811 —UN—23AUG88

After applying pressure to system, check all of the hydraulic connections and the hoses for leaks.

IMPORTANT: The tractor hydraulic oil level can drop below the operating level when operating the machine for the first time. Check the tractor hydraulic oil level after filling the cylinders with oil for the first time.

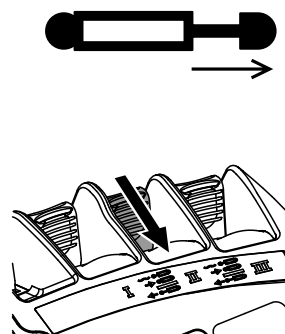
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Hydraulic Connection Recommendations

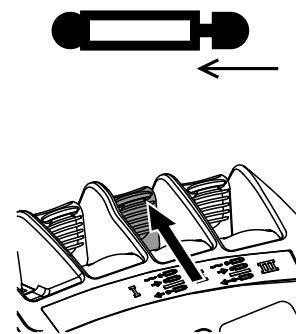


Tractor Valves

A82588 —UN—23MAY14



Extend



Retract

A82585 —UN—15MAY14

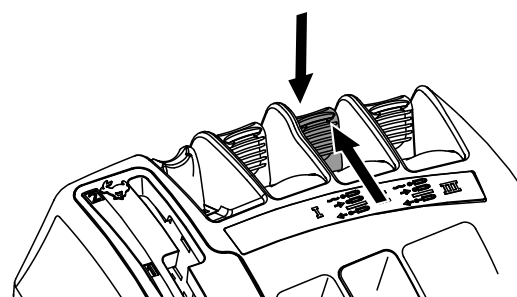
Extend and Retract symbols are on tractor selective control valve (SCV) cover.

Refer to tractor operator's manual for specific hydraulic operational details.

CAUTION: Avoid hydraulic hose failure due to physical damage, kinks, age, and exposure. Inspect hoses regularly. Replace damaged hoses.

IMPORTANT: Avoid motor seal damage. Connect the case drain hose before any other hose. Connect vacuum and variable rate drive (VRD) return hoses to a tractor "extend" SCV.

Avoid motor seal damage. Move tractor SCV lever to float (not neutral) position to shut off vacuum and VRD.



Float

A82587 —UN—15MAY14

Hose Connections						Function Settings For John Deere™ Tractors	
Tractor SCV	SCV Color	SCV Port	SCV Symbol	Hose Tag	Implement Function	SCV Flow ^a	SCV Time ^a
	Yellow			"Case Drain"	Non-pressurized hydraulic return Connect case drain before any other hose.		
I	Green	A	Extend	"Frame Press"	Frame-Lift Assist Wheels, Raise ^{b,c}	Start at 5 and adjust as necessary	10 seconds or as required for full extend and retract
		B	Retract	"Frame Ret"	Frame-Lift Assist Wheels, Lower		
II	Blue	C	Extend	"Ret"	CCS™, Hydraulic Return	10 Maximum	Continuous "C"
		D	Retract	"Pres"	CCS™, Activate		
			Float		CCS™, Deactivate		
III	Brown	E	Extend	"Fold Press"	Wing Unfold	Start at 5 and adjust as necessary	10 seconds or as required for full extend and retract
		F	Retract	"Fold Ret"	Wing Fold		
IV	Black	G	Extend	"Vac Ret"	Vacuum, Hydraulic Return	10 Maximum	Continuous "C"
		H	Retract	"Vac Pres"	Vacuum, Activate ^d		
			Float		Vacuum, Deactivate		
V	Violet	I	Extend	"VRD Ret"	VRD, Hydraulic Return	10 Maximum	Continuous "C"
		J	Retract	"VRD Press"	VRD, Activate		
			Float		VRD, Deactivate		

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OUC6074.0000DCD -19-09JUN14-1/2

Hose Connections						Function Settings For John Deere™ Tractors	
Tractor SCV	SCV Color	SCV Port	SCV Symbol	Hose Tag	Implement Function	SCV Flow ^a	SCV Time ^a
Power Beyond	Red	“P” Pressure		Port locations for pressure, return, and load-sense vary by tractor model. (See your tractor manual.) Power-beyond hydraulic flow is active when the tractor engine is running. Connect vacuum or variable rate drive to the power-beyond circuit when an SCV is not available or not chosen.			
	Black	“R” Return					
	Orange	“LS” Load Sense					

^aAdjust as necessary for proper response.

^bFor single lever control of lift assist and hitch, see specific procedures in this section.

^cCCS Machines: Lift assist wheels must not be connected to hitch.

^dWith two or more vacuum motors connected to a single tractor SCV, external planter flow control valves must be used to control vacuum level.

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OUO6074,0000DCD -19-09JUN14-2/2

Independent Hitch and Lift Assist Wheel Control—8000 Series Row-Crop Tractors equipped with Implement Management System (Preferred Method)

For independent hitch control and lift assist wheel operation, connect lift assist wheel hoses to SCV 1. Adjust

SCV 1 flow for lift assist to match hitch raise speed. Then adjust hitch lower speed to match lift assist wheel lower speed. Use the tractor Implement Management System to control the hitch and lift assist wheels together. See your tractor operator's manual for more specific information on programming Implement Management System to operate multiple functions.

OUO6045,0000059 -19-24JUN09-1/1

Adjust Frame Height and Level Machine

NOTE: During operation, parallel arms must be parallel to the ground or angled slightly upward toward frame.

NOTE: If machine is equipped with variable rate drive, the gauge wheel with the motion sensor is designed to float and uses a separate adjustment procedure.

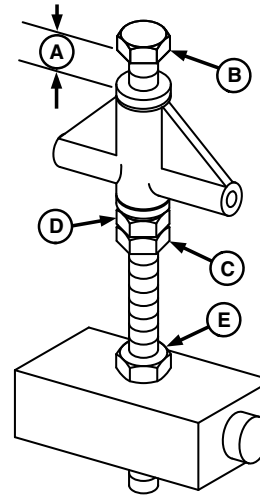
1. Drive tractor and machine onto level ground. Lower to planting position while driving forward.
2. Set frame height to 510—560 mm (20—22 in.) above ground with hitch depth stop. Adjust tractor hitch lift links if necessary.
3. Level planter front to rear by extending lift assist wheel cylinders and install appropriate cylinder stops.
4. Check to be sure that planting units are parallel with ground when in planting position.
5. Adjust frame gauge wheels to have firm contact with the ground.
6. Recheck frame height.

IF EQUIPPED WITH VARIABLE RATE DRIVE: Adjust floating drive-gauge wheel (wheel with motion sensor installed) as follows:

NOTE: Dimension (A) is measured between bottom of cap screw (B) head and top of washer.

1. Loosen jam nut (C).

NOTE: In uneven terrain conditions, set dimension (A) to 70 mm (2-3/4 in.).



Floating Drive-Gauge Wheels

A—Dimension
B—Cap Screw
C—Jam Nut

D—Nut
E—Jam Nut

2. Adjust nut (D) until dimension (A) is 51 mm (2 in.) for normal terrain conditions.
3. Tighten jam nut (C).
4. Loosen jam nut (E).
5. Adjust cap screw (B) until wheel is firm on the ground.
6. Tighten jam nut (E) against lower casting.

OUO6045,0000196 -19-16JUL09-1/1

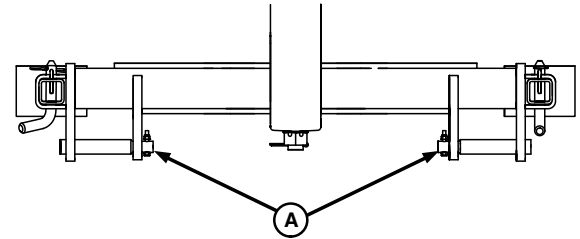
A48818—UN—04MAR02

Position Two-Point Hitch, Rockshaft Hitch Pins

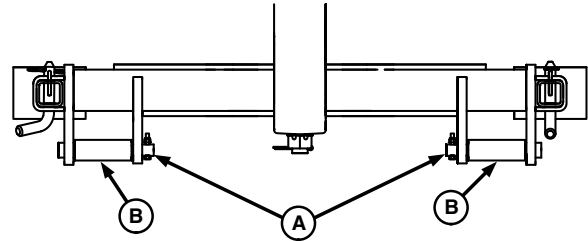
1. Position hitch pins (A) for tractor hitch being used.
2. Bushings (B) are required to attach machine to tractors with a category 4N hitch with quick coupler. For parts, see your John Deere™ dealer.

A—Hitch Pins

B—Bushings



Hitch Pins (Category 3A with Quick Coupler)



Hitch Pins (Category 4N with Quick Coupler)

John Deere is a trademark of Deere & Company

OUC6074,000080C -19-28AUG15-1/1

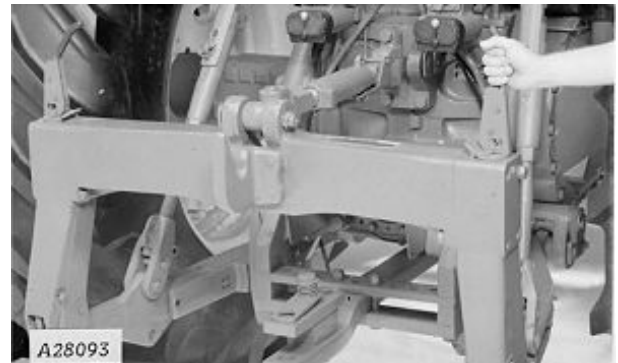
A51106 —UN—13NOV02

A51105 —UN—13NOV02

Attach Two-Point Hitch Machine to Tractor

CAUTION: Refer to the Safety section before machine transport.

1. Raise both latch levers.



Continued on next page

RM87422,00004A4 -19-23MAR16-1/4

A28093 —UN—13OCT88

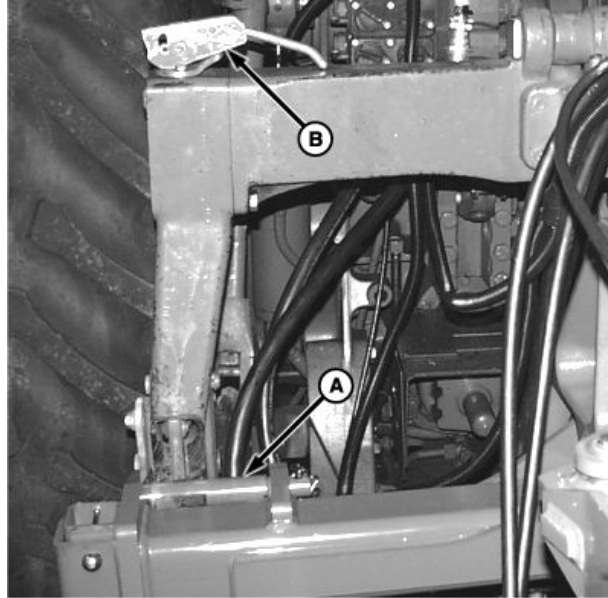
2. Lower the rockshaft until the quick coupler hooks are lower than the machine hitch pins and slowly back the tractor up to the machine.

CAUTION: When latches are properly locked, handles are horizontal and against coupler frame.

3. Raise the rockshaft enough to engage the machine hitch pins (A) in the quick coupler hooks. Push both latch levers (B) down to lock the machine to quick coupler.
4. After attaching machine to tractor, raise 3-point hitch.

A—Machine Hitch Pins

B—Latch Levers



A47886 —UN—31OCT01

RM87422,00004A4 -19-23MAR16-2/4

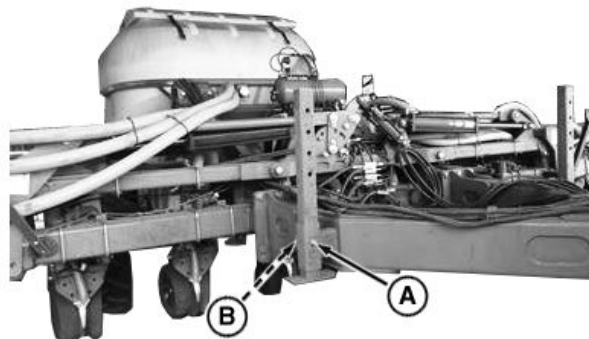
IMPORTANT: Avoid damage to hitch stands and draft tubes while turning sharply. Remove hitch stands to avoid damage.

NOTE: When installing drilled pin (A), handle of pin faces the front of machine.

5. Raise and secure stands to hitch crossbar with drilled pin (A) and spring locking pin (B).

A—Drilled Pin (2 used)

B—Spring Lock Pin (2 used)



PY24865 —UN—11FEB16

Continued on next page

RM87422,00004A4 -19-23MAR16-3/4

IMPORTANT: Blower motor case drain hose must be attached to low-pressure drain connection before other hoses are connected. Case drain must have less than 172 kPa (1.72 bar) (25 psi) or blower motor damages occurs.

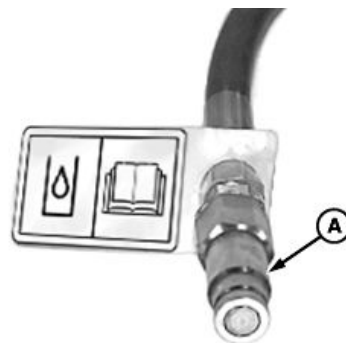
IMPORTANT: Install a Low-Pressure Drain Line Kit when towing tractor is not so equipped.

IMPORTANT: Do not use other ports at the rear of the tractor which are similar in appearance and size to low-pressure drain port. Due to high backpressure (over 172 kPa (1.72 bar) (25 psi)), drain connection to these ports results in blower motor damage.

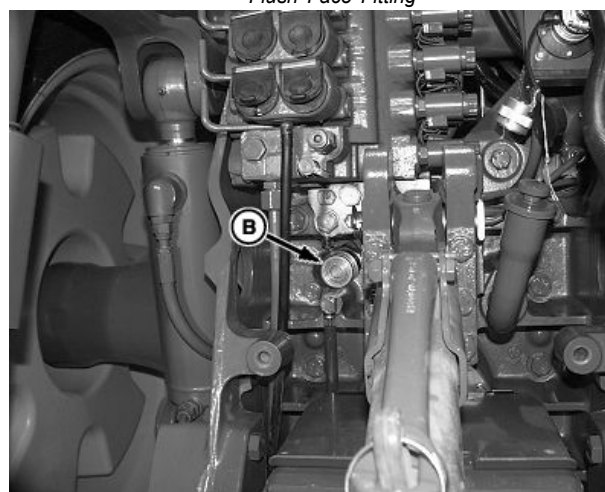
6. Route case drain hose (A) under quick coupler and attach to tractor low-pressure drain coupler (B).

A—Case Drain Hose

B—Low-Pressure Drain Coupler



Flush Face Fitting



8000 Series Tractor Shown

RM87422,00004A4 -19-23MAR16-4/4

A55599 —UN—11MAR15

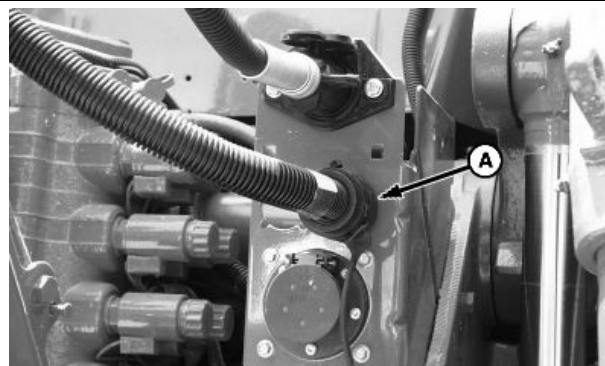
A53855 —UN—19FEB04

Connect Frame Control Harness

NOTE: Harness locations will vary from tractor to tractor.

Connect frame control harness (A).

A—Frame Control Harness



OUC6074,0000987 -19-22MAY09-1/1

A52382 —UN—02JUL03

Rockshaft Control Lever Height Stop

IMPORTANT: If the tractor rockshaft is accidentally lowered during transport, damage can occur to the machine hitch.

To prevent accidental lowering of rockshaft during transport, place rockshaft control lever in full up, locked position. Refer to tractor Operators Manual for more information.

OUC6074,00003CD -19-15FEB16-1/1

Detaching Planter from Tractor

CAUTION: Do not stand between tractor and implement when connecting or disconnecting implement. Injury or death can result from being trapped between the tractor and implement.

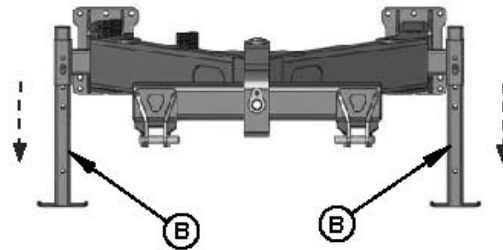
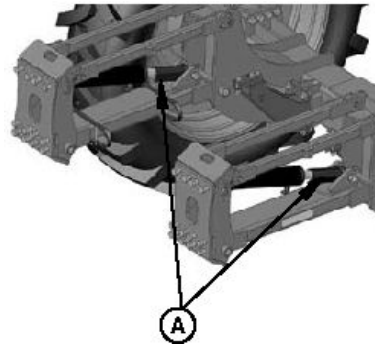
IMPORTANT: Make sure that all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

IMPORTANT: Always place the tractor in park and turn off the engine before dismounting the tractor to detach an implement.

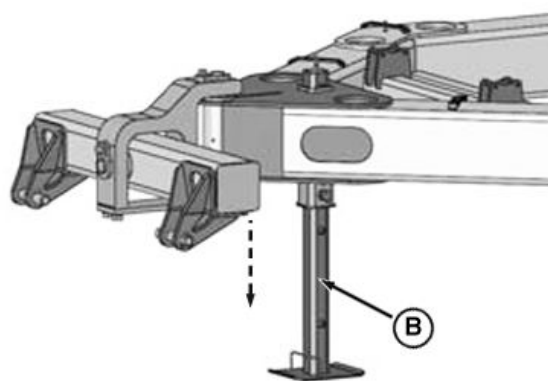
1. Planter should be detached/parked on a clean, level surface strong enough to support the weight of the machine.
2. Unfold the toolbar.
3. Install the safety transport locks (A) around the machine lift hydraulic cylinders rods.
4. Lower the tongue stand (B).
5. Lower machine onto safety transports locks and lower the tongue onto the tongue stand by placing tractor 3-point hitch and machine lift hydraulic cylinders into the down position
6. Relieve hydraulic pressure in all hydraulic lines.
7. Turn off the tractor.
8. Disconnect hydraulic hoses from tractor SCVs.
9. Disconnect all machine electrical connections from tractor.
10. Disconnect tractor 3-point hitch draft links from the machine tongue hitch tugs.

A— Transport Locks

B— Tongue Stand



Lower Tongue Stands (12 Row)



Lower Tongue Stands (16 Row)

PY24765—UN—12FEB16

PY24766—UN—12FEB16

PY24837—UN—12FEB16

RM87422.000047E -19-08MAR16-1/1

Disconnect Pneumatic Down Force Air Compressor Remote Air Filter Hose

NOTE: Electric downforce compressors only.

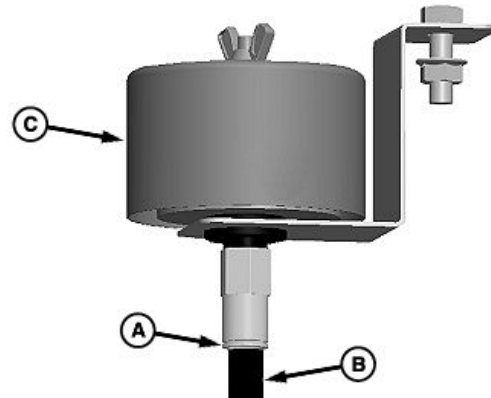
1. Push in ring (A) on fitting and remove filter hose (B) from air filter assembly (C).
2. Remove filter hose from tractor rear window grommet.

IMPORTANT: To avoid damage or crushing to the filter hose secure in a location away from pinch points on machine.

3. Coil filter hose and secure to machine.

A—Ring
B—Filter Hose

C—Air Filter Assembly



RM87422,00004A5 -19-23MAR16-1/1

A71715 —UN—03JUN11

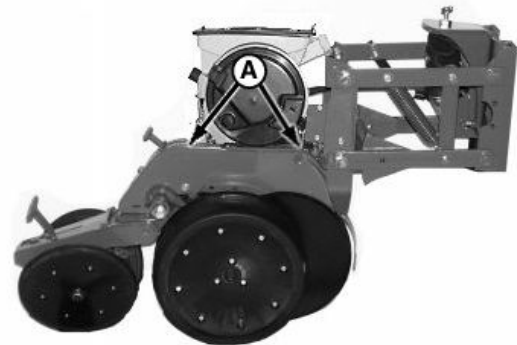
Level Two-Point Hitch Machine

Periodically check that hitch tube and planting unit frames (A) are parallel to the ground during operation.

NOTE: Adjustments are more accurate when performed in field conditions.

NOTE: If center frame of machine is higher or lower than wings, rephase hydraulic lift system. Lower machine and hold SCV lever for several seconds to rephase.

1. Set any adjustable down force system to zero pressure.
2. Lower machine on level ground.
3. Adjust rockshaft until hitch tube is parallel to the ground.
4. With machine in planting position and adjustable down force systems set to zero pressure, check clearance from bottom of main frame tube to the ground. If frame is not 510—560 mm (20—22 in.) above ground, see ADJUST FRAME HEIGHT in Service and Adjustment section before continuing this procedure.
5. Raise and lower machine.



A—Planting Unit

6. Adjust rockshaft until hitch tube is parallel to the ground.
7. Set rockshaft mode to “Position”. See your tractor Operator’s Manual for more information.

Continued on next page

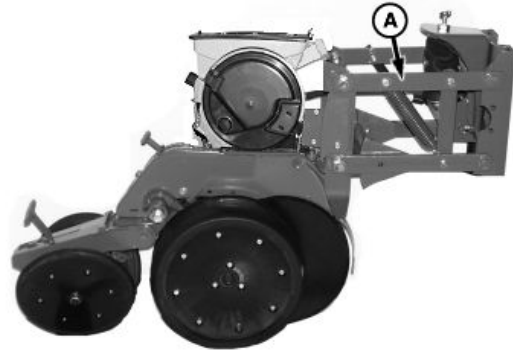
RM87422,00004A6 -19-23MAR16-1/2

PY24874 —UN—23MAR16

8. During operation, parallel arms (A) are parallel to the ground or angle slightly upward toward frame.

If center frame of machine becomes higher or lower than wings during operation, rephase hydraulic lift system.

A—Parallel Arms



A78850—UN—07OCT13

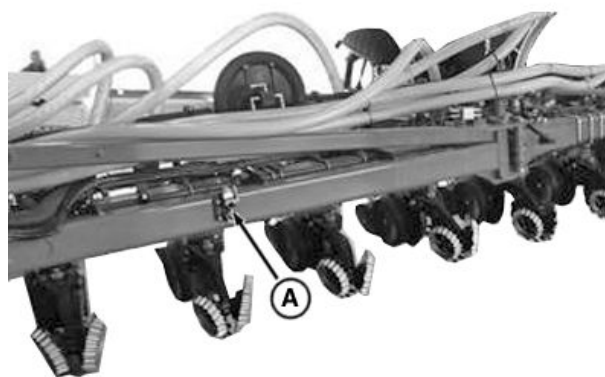
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Wing Folding

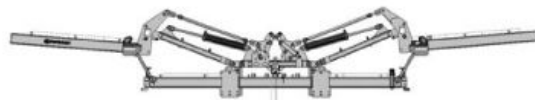
CAUTION: Avoid Crushing: Make sure all personnel are clear of implement at all times implement is in motion. Be aware of obstructions above, below, and around implement when in operation or transport. Injury or death can result from being struck by the implement.

CAUTION: Be extremely careful working around unshielded sharp edges. Injury may result from contact with sharp edges.

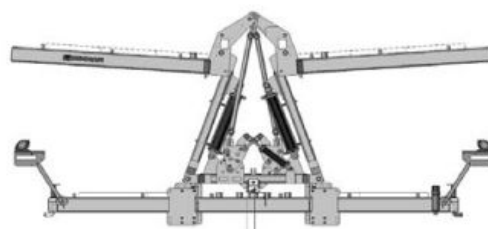
A— Wing Lock (Latch)



Wing Lock (Latch)



Toolbar Folding



Toolbar Folded

RM87422,000047F -19-10MAR16-1/1

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PY24770 —UN—08FEB16

PY24771 —UN—08FEB16

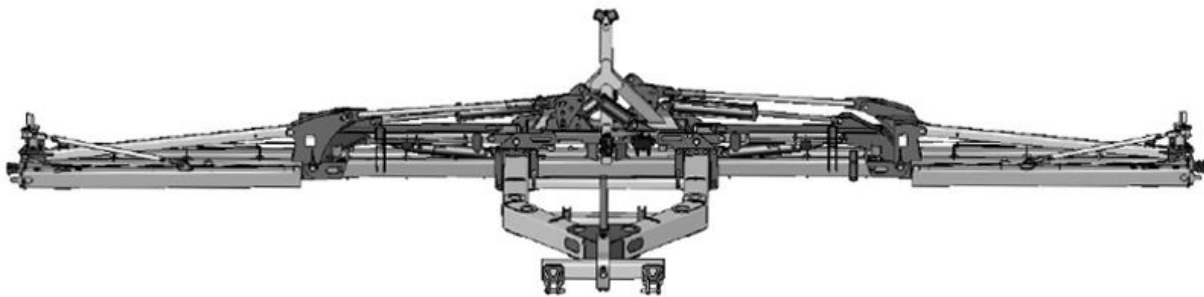
Wing Folding (24R)

The Planter wing folding process is a two-step process, controlled with one tractor hydraulic SCV.

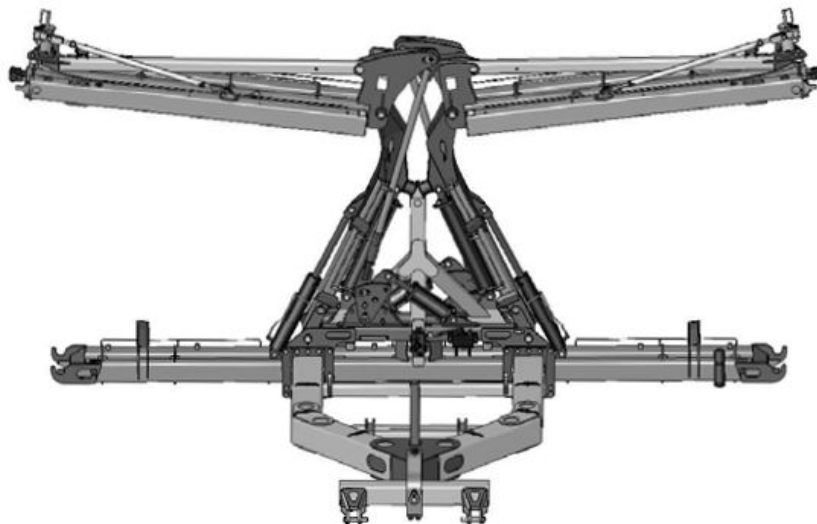
- A hydraulic manifold block on the toolbar automatically sequences the outer wings and stack folding functions.
- A flow divider keeps the stacking wings balanced while folding.



Planter Toolbar Unfolded



Outer Wings Folded in and Latched - First Function



Wing Stacked - Second/Final Function - Toolbar Completely Folded

Continued on next page

RM87422,0000422 -19-04MAR16-1/5

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PY24857 —UN—10FEB16

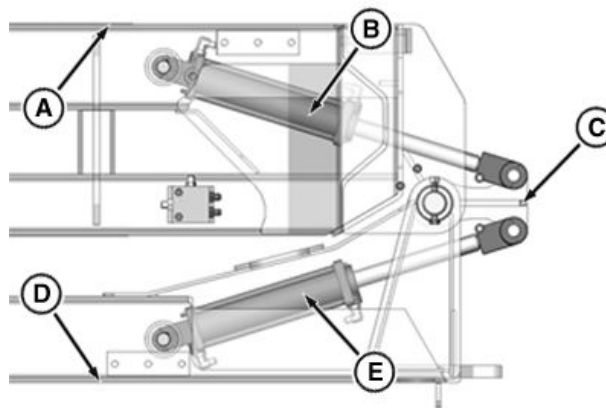
PY24858 —UN—10FEB16

Outer Wing Components

- The outer wing (D) fold mechanism is contained of two cylinders and an intermediate hinge (C).
- The cylinders are mounted internally in the mid and outer wings (A and D).
- Each cylinder is connected to the intermediate hinge which shares a pivot point with the outer wing.
- The two cylinders (B and E) are plumbed in parallel and work together to fold and unfold the outer wings.

A— Mid wing
B— Mid wing Cylinder
C— Intermediate Hinge

D— Outer Wing
E— Outer Wing Cylinder



RM87422,0000422 -19-04MAR16-2/5

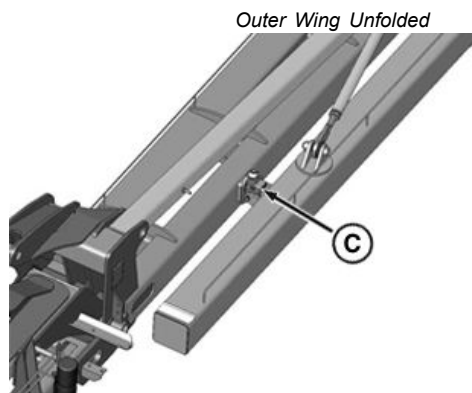
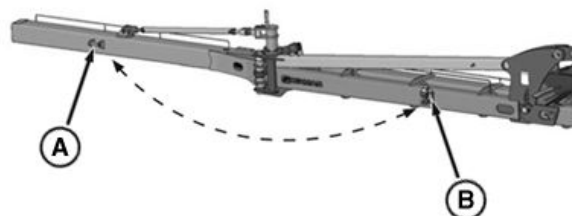
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Outer Wing Latch

- In the folded position, a spring-loaded latch (B) holds the outer wing to the mid wing, much like an automobile door latch.
- The latch prevents the wing from swinging freely, if hydraulic pressure is lost while transporting the machine.
- During the wing folding process, the outer wing swings in and automatically latches itself to the midwing.
- During the wing unfolding process, the latch is hydraulically charged to release the spring pressure on the latch and allow the outer wing the swing out away from the mid wing.

A— Latch Pin
B— Spring Latch

C— Spring Latch



Outer Wing Folded and Latched

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RM87422,0000422 -19-04MAR16-3/5

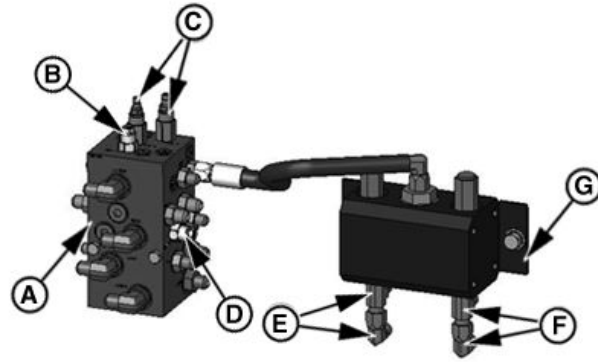
PY24853 —UN—10FEB16

PY24854 —UN—10FEB16

Flow Control Manifold

CAUTION: It is important that the toolbar wings fold in the proper sequence. Machine rollover may occur if the toolbar wings are not sequenced properly.

- The flow control manifold (A) contains components that regulate oil flow in order to control the toolbar.
- Two counter-balance valves regulate the motion of the wings when they fold over center.
- Two sequence valves (B and D) control the timing of the outer wings and stack fold.
- Adjust the counter balance valves (C) in order to change the fold performance of the toolbar. See "Adjusting the Flow Control Manifold" in operator manual.



PY24855 —UN—10FEB16

Adjusting the Flow Control Manifold

For the best results, make sure that the wing row units have all attachments and are fully loaded before adjusting the valves.

It is recommended to adjust the counter balance valves first. The counter balance valves restrain the motion of the wings by regulating the flow of oil out of the cylinders.

Positive-pressure oil inflow is required in order for the wings to move.

Adjust the Counter Balance Valves

1. Loosen the jam nut of the top of the cartridge.
2. Adjust the set screw with a hex-head wrench. Be careful adjusting the cartridges as the full adjustment range is three full turns of the set screw.
3. Counterclockwise adjustment of the counter balance valve increases the pressure required for oil flow; clockwise adjustment reduces the required pressure. The counter balance valve labeled "CBV-F" controls the fold sequence.
4. If the outer wings move too quickly when folded past the center or the stacking wings fall on to the rests too rapidly, adjust the "CBV-F" counterclockwise in one-quarter turn increments until satisfactory fold motion is achieved.
5. The counter balance valve labeled "CBV-UF" controls the unfold sequence. If the unstacking wings move down too quickly, adjust the "CBV-UF"

A— Flow Control Manifold
B— Sequence Valve
C— Counter Balance Valves
D— Sequence Valve

E— "Tee" R
F— "Tee" L
G— Stack Cylinder Flow Divider

counterclockwise in one-quarter turn increments until satisfactory fold motion is achieved.

Adjust the Fold Timing

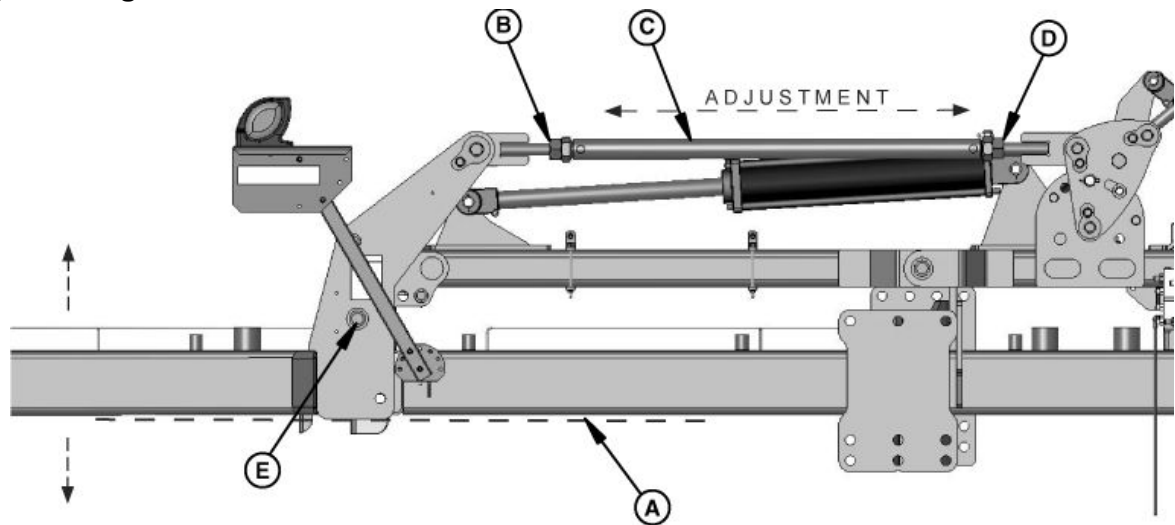
To alter the fold timing, adjust the sequence valves:

1. Loosen the jam nut on the top of the cartridge.
2. Adjust the set screw with a hex-head wrench. Use caution when adjusting the cartridges as a small turn can have a significant effect.
3. Clockwise adjustment of the sequence valve increases the delay between fold functions; counterclockwise adjustment reduces the delay.
4. The sequence valve labeled "SEQ-F" controls the fold sequence. If the wings start to stack before the outer wings are fully folded, then adjust "SEQ-F" clockwise in one-quarter turn increments in order to increase the delay between functions.
5. The sequence valve labeled "SEQ-UF" controls the unfold sequence. If the outer wings start to unfold before the staking wings are fully down then adjust "SEQ-UF" clockwise in one-quarter turn increments in order to increase the delay.

Continued on next page

RM87422,0000422 -19-04MAR16-4/5

Wing Leveling



A—Wing Section And Center
Section Should Be Level With
Each Other

B—Jam Nut
C—Strut
D—Jam Nut

E—Hinge Point

The planter leaves the factory with the toolbar wings leveled, however, if weights are added to the toolbar wings, releveling will most likely be necessary to return the wings to factory specifications. The levelness of the wings must also be checked over the life of the toolbar to ensure proper performance.

Wings can be leveled by adjusting the Wing Strut (C) on each wing. Refer to instructions below for leveling the wings.

CAUTION: Avoid Crushing: Make sure that all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

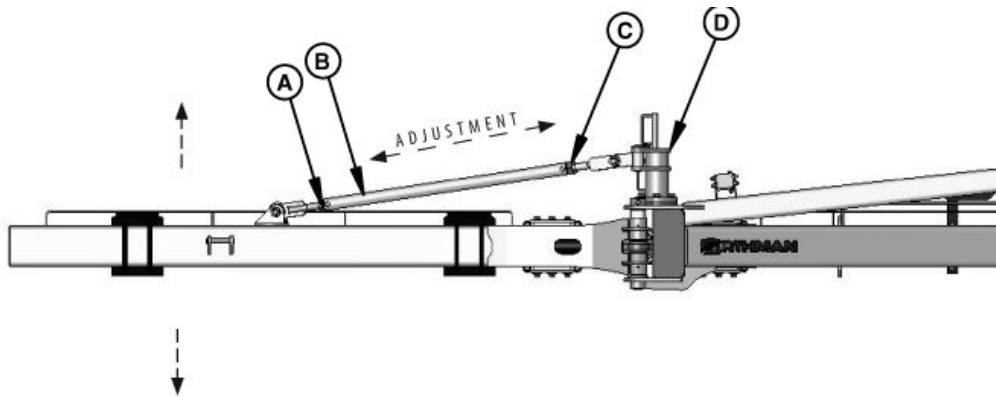
Use Bar Stands To Support The Implement: Park implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage. Securely support all implement components that must be raised.

1. Begin with parking the toolbar on a level surface and place the float link lock pins in the rigid position to lock the float link in place.
2. Using a level, check the levelness of the toolbar center section (A). If a completely level surface cannot be achieved, make note of the center section's levelness and adjust the wings to that reference point on the level.
3. Place the level on the wing.
4. Loosen the jam nuts (B and D) on each end of the Strut (C) and turn the center portion of the Strut with a large pipe wrench to adjust the wings.
5. The wings pivot up and down about the hinge point (E) between the wing and the swing truss. A jack placed beneath the wing may be necessary to aid in lifting up the wing for adjustment.
6. Once wing has achieved the proper levelness, retighten the jam nuts on each end of the Strut (C).
7. Repeat the process for the opposite wing.

PY24772—UN—08FEB16

RM87422,00003E8 -19-04MAR16-1/1

Outer Wing Leveling (24R)



A— Jam Nut
B— Strut

C— Jam Nut
D— Brace Tower

- The planter is equipped with an additional outer wing strut (B) that braces the outer wing.
- All planters leave the factory with the toolbar wings leveled, however, if weights are added to the toolbar wings, releveing will most likely to be necessary to return the wings to factory specifications.
- The levelness of the wings must also be checked over the life of the toolbar to ensure proper performance.
- Proper adjustment of the outer wing strut also ensures that the latch aligns correctly in the transport position.
- Wings can be leveled by adjusting the Strut on each wing. Refer to instructions below for leveling the outer wings.

NOTE: Be sure that mid wings are adjusted to level before adjusting outer wings.

CAUTION: Avoid Crushing: Make sure that all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

1. Begin with parking the toolbar on a level surface and place the float link lock pins in the rigid position to lock the float link in place.
2. Make sure the hardware fastening the outer wing brace tower (D) to the midwing is tightened to the specifications found in the "Maintenance" section of this manual.
3. Using a level, check the levelness of the toolbar midwing. This is the reference point for leveling the outer wing. Then check the levelness of the outer wing.
4. If the two reference points are not approximately the same, adjust the outer wing strut by following the below instructions.
5. Loosen the jam nuts (A and C) on each end of the strut and rotate the center portion of the strut in order to adjust the outer wing.
6. With the level still placed towards the end of the outer wing bar, adjust the wing up or down until the reference levelness on the level is approximately the same as the reference levelness point found earlier on the mid wing.
7. Once wing has achieved the proper levelness, retighten the jam nuts on each end of the strut.
8. Repeat the process for the opposite wing.

PY24860—JUN—11FEB16

RM87422,0000423 -19-04MAR16-1/1

Straightening the Front fold Outer Wings (24R)

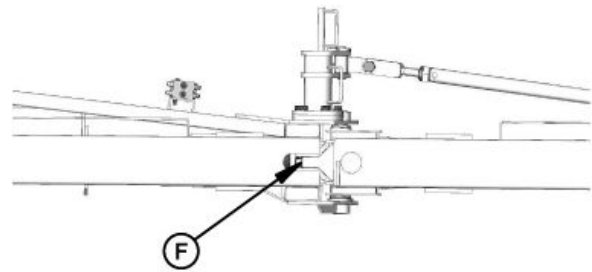
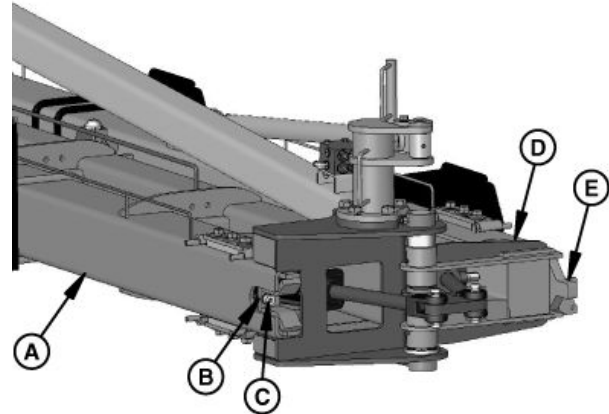
- The front-folding outer wings can be adjusted to become parallel with the toolbar. When the outer wings (D) unfold, the alignment peg on the outer wing meets an adjustable stop (C) on the mid-wing (A).
- The position of this stop may be altered in order to align the outer wings correctly.

CAUTION: Avoid Crushing: Make sure that all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

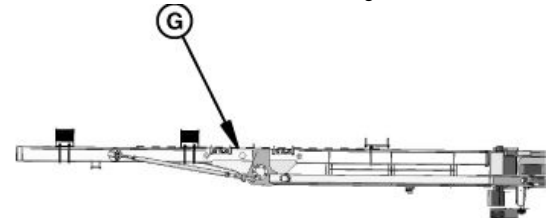
1. Begin with parking the toolbar on a level surface and place the float link lock pins in the rigid position to lock the float link in place.
2. Unfold the outer wing (D) as far as it goes.
3. Place the level on the back face of the mid-wing (A) across the outer wing hinge.
4. Use the back face of the mid-wing (A) as a reference and determine if the outer wing is correctly aligned.
5. The adjustable stop is contained a tapped stop and a series of spacer washers (B). If the outer wing unfolds too far, add additional washers behind the stop in order to reduce the unfolded angle.
6. If the outer wing does not unfold far enough, remove the stop and washers in order to increase the fold angle. Repeat the alignment procedure for both outer wings.

A— Mid-Wing
B— Washers
C— Adjustable Stop
D— Outer Wing

E— Alignment Peg
F— Alignment Peg Makes Contact With Stop
G— Outer Wing must be Parallel With Mid-Wing



Rear View Of Outer Wing



Top View Of Outer Wing

RM87422,0000424 -19-04MAR16-1/1

PY24861 —UN—11FEB16

PY24862 —UN—11FEB16

PY24863 —UN—11FEB16

Fertilizer Application System

- The planter may be equipped with a dry fertilizer application system consisting of a 6 ton tank, metering assembly, and row unit-mounted dry fertilizer application unit.
- Before using the fertilizer application system, perform the following steps for preparing the system.
- Make sure to read and follow the instructions for operation of the Dry Rate Controller in the supplied John Deere® Dry Rate Controller operator's manual.

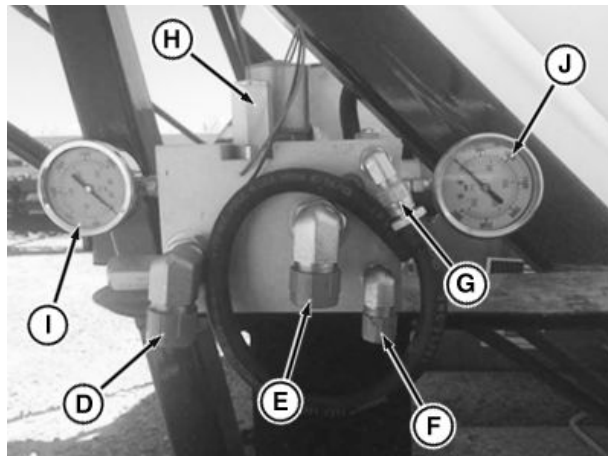
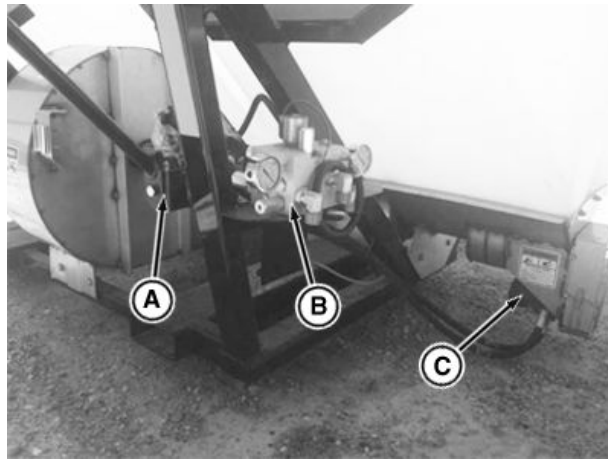
Hydraulics:

CAUTION: Avoid Fluid Penetration: Escaping pressurized hydraulic fluid can penetrate skin, resulting in injury or death. Relieve hydraulic system pressure before connecting or disconnecting tractor.

CAUTION: Use cardboard or wood, Not Body Parts, to check for suspected hydraulic leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. If an accident occurs, see a doctor immediately for proper treatment.

- Be sure that hydraulic hoses are properly connected. (See "hydraulics identification" in operator's manual.)

NOTE: The fertilizer fan drive motor (A) case drain hose **MUST** be connected to the tractor case drain coupler before operation of the fan drive motor. Damage may occur to the fan drive motor if the case drain hose is not connected.



- | | |
|---|--|
| A— Fan Drive Motor | F— Case Drain To Tractor (Zero Pressure) |
| B— Hydraulic Block and PWM Closed Valve | G— Case Drain Emergency Relief Dump |
| C— Auger Drive Motor | H— PWM Closed Solenoid |
| D— Pressure From Tractor | I— Inlet Line Pressure Gauge |
| E— Return To Tractor | J— Outlet Line Pressure Gauge |

Continued on next page

RM87422,00003E9 -19-04MAR16-1/3

PY24773 —UN—08FEB16

PY24774 —UN—08FEB16

Fertilizer Hose

- Be sure that all fertilizer hoses are properly connected and routed to their respective row unit.

Controller

1. Be sure that all electronic connections are made correctly and all cables are fastened and out of the way of moving parts.
2. Refer to the "System Calibration" in operator's manual to perform the proper steps to calibrate the application controller.

First Time Use Test

1. Before filling tank with fertilizer, perform a system operation test. Check operation of system to include direction of fan rotation and air flow from air chamber outlet tubes.
2. Fan rotation should be clockwise as viewed from fan opening.

NOTE: The fertilizer fan drive motor case drain hose **MUST** be connected to the tractor case drain coupler before operation of the fan drive motor. Damage may occur to the fan drive motor if the case drain hose is not connected.

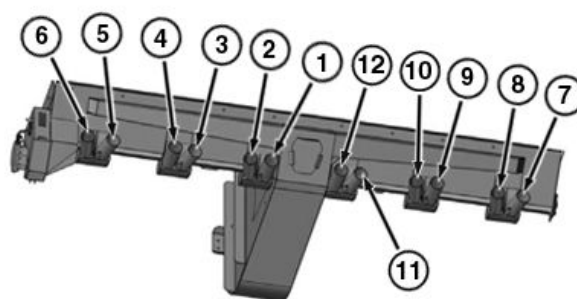
3. Check the pressure gauges on the hydraulic block. The gauges should read as follows:
 - Inlet Pressure Gauge - 1500 - 2800 psi (103 - 197 bar).
 - Outlet Pressure Gauge - 0 - 200 psi (0 - 14 bar). If pressure is higher than specified, verify that return hose is connected to motor return port on tractor. Look for restrictions at fittings, couplers, and hoses.

Fill Fertilizer Tank

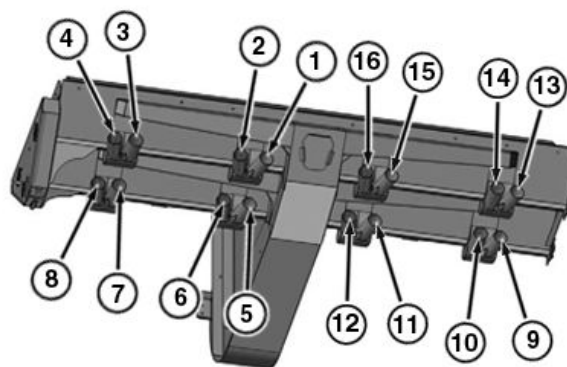
CAUTION: Falling Hazard: Stand on platform only. Do not climb onto tank or stand on screen.

CAUTION: Inhalation Hazard: Dust from dry fertilizer is dangerous if inhaled. Always wear the proper safety equipment and clothing before being exposed to dry fertilizer.

1. Be sure that tank screen is installed before filling the tank with dry fertilizer. This screen prevents foreign objects from falling into the tank and causing potential damage to the metering components.
2. Only fill the tank with the amount of fertilizer intended to be applied for that day.
3. Fertilizer left in tank for extended periods can absorb moisture and cause compaction of the fertilizer, resulting in system blockage.
4. If fertilizer is still present in the tank at the end of the day's operation period, empty the tank by removing the side shields of the meter.



12 Row Hose Connections



16 Row Hose Connections

5. Park machine on firm, level surface.
6. Lower and secure ladder.
7. Climb up platform.
8. Secure safety strap when on platform.
9. Unhook straps and remove lid.
10. Use foot cable to release hand rail.

NOTE: Handrail folds forward toward tank for improved access by loading auger.

11. Position loading auger over tank and fill tank to desired level.
12. Once filled to desired level, secure the handrail in upright position, pull over lid back to tank opening, resecure lid, and climb off of platform.
13. Raise and secure ladder.

System Calibration

Refer to the John Deere® Dry Rate Controller operator's manual for instructions on calibrating the application system. For system parameters, refer to the chart below:

Attaching and Detaching

System Parameters	
Component	Parameter
Flow Control Valve	PWM Closed 12 Volt 110 Hertz
Meter Control Valve Calibration Number	1023 (See Controller Manual For Fine-Tuning)
Encoder	Raven 5 Volt 36 Pulse
Auger Drive	14 Tooth Drive Sprocket (Encoder) 22 Tooth Driven Sprocket (Auger) 1.57 To 1 Ratio
Meter Speed Sensor Calibration Number	$36 \times 1.57 = 56$ (Pulses Per Auger Revolution)
Tank Capacity	6 Tons / 5443 kg

RM87422,00003E9 -19-04MAR16-3/3

Row Unit Mounted Double Disc Fertilizer Opener

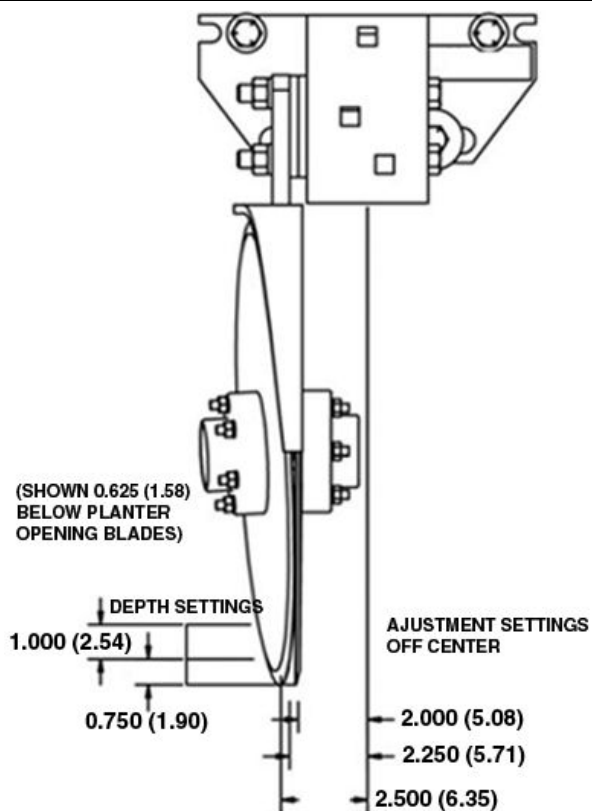
Adjusting Depth Of Double Disc

The Double Disc Opener depth may be adjusted by moving the Double Disc Opener mount arm up or down on the unit mount.

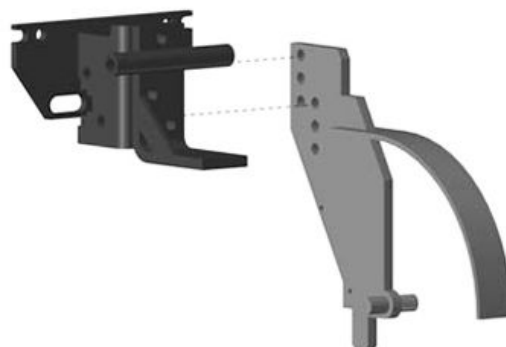
CAUTION: Avoid Crushing: Make sure that all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

1. Remove the 2 bolts fastening the Double Disc Opener Mount Arm to the unit mount and realign the holes to correspond with the desired depth adjustment.

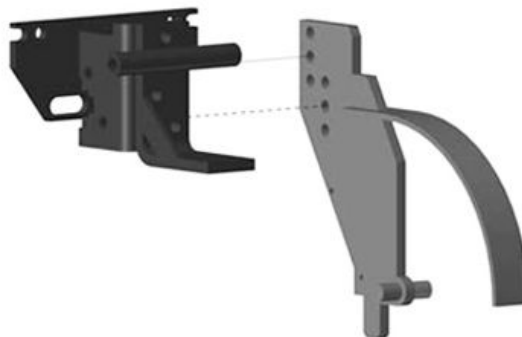
NOTE: Keep in mind that the planter row unit gauge wheels regulate the depth of the double disc openers.



Dimension are in. (cm)



Deep Setting (0.625 in / 1.59 cm Below Seed Depth)



Middle Setting (0.75 in / 1.91 cm Above Deep Setting)

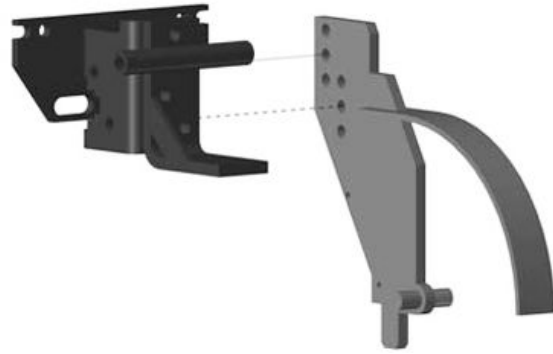
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RM87422,00003EA -19-23MAR16-1/5

PY24776 —UN—23MAR16

PY24777 —UN—08FEB16

PY24846 —UN—08FEB16



Shallow Setting (1 in / 2.54 cm Above Middle Setting)

RM87422,00003EA -19-23MAR16-2/5

PY24847 —UN—08FEB16

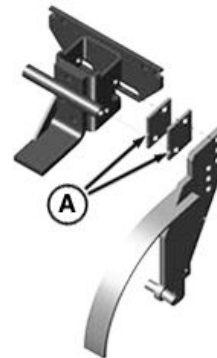
Adjusting Spacing Between Fertilizer Furrow and Seed Furrow

With the use of 1/4 in (.64 cm) spacer plates, the horizontal spacing between the seed furrow and fertilizer furrow can be adjusted.

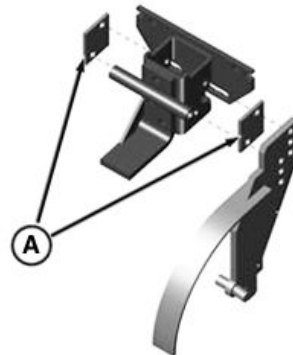
CAUTION: Avoid Crushing: Make sure that all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

1. Remove the two bolts fastening the double disc opener mount arm to the unit mount and relocate the spacer plates (A) to the correct orientation illustrated below to correspond with the desired setting.

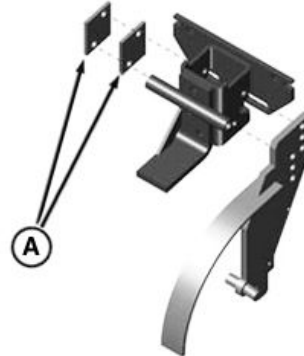
A— Spacers, 1/4 in (.64 cm)



2.5 in / 6.35 cm Off Row Center



2.25 in / 5.72 cm Off Row Center



2 in / 5.1 cm Off Row Center

Continued on next page

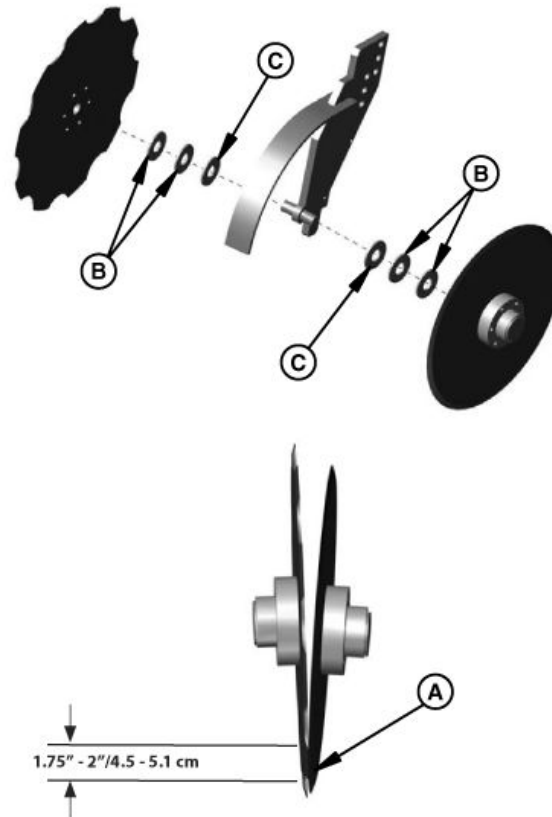
RM87422,00003EA -19-23MAR16-3/5

PY24778 —UN—08FEB16

PY24779 —UN—08FEB16

PY24780 —UN—08FEB16

Double Disc Contact



A— Area Of Contact

B— Washers (4 used)

C— Bushing (2 used)

1. To properly form the fertilizer furrow, the double disc openers need to function similar to the "V-Disc" openers of the planter row unit.
2. There must be 1.75 in - 2 in (4.5 - 5.1 cm) of disc surface contact (A) at all time between the smooth and notched discs.
3. In order to maintain this contact, washers (B) / bushings (C) are located in between each disc and disc mount arm on the spindle.

4. Add or remove these washers/bushing to maintain the 1.75 in - 2 in (4.5 - 5.1 cm) of disc surface contact.

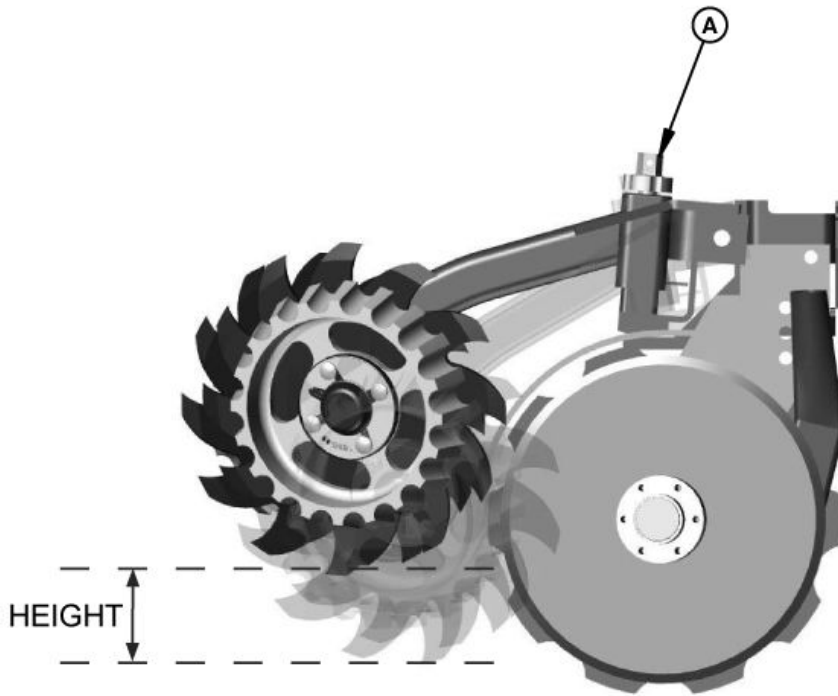
⚠ CAUTION: Be careful while working around unshielded sharp edges. Injury may result from contact with sharp edges.

Continued on next page

RM87422,00003EA -19-23MAR16-4/5

PY24781—UN—08FEB16

Adjusting Row Cleaner Height



A— Adjustment Screw

1. The row cleaner discs may be adjusted up or down to modify tooling aggression.
2. To adjust the row cleaner discs, use a 7/8 in wrench and rotate the adjustment screw (A) clockwise (to raise) or counter-clockwise (to lower).

⚠ CAUTION: Be careful while working around unshielded sharp edges. Injury may result from contact with sharp edges.

RM87422,00003EA -19-23MAR16-5/5

PY24782 —UN—08FEB16

Liquid Fertilizer Package Assembly

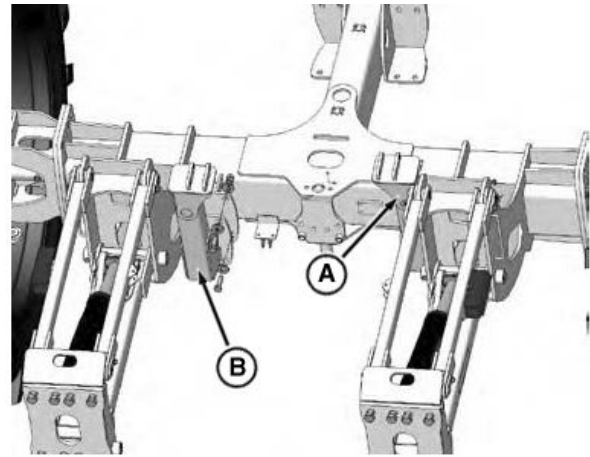
CAUTION: Avoid Crushing: Make sure that all personnel are clear of the implement and all other components while elevated.

Attach Tank Mounts To Carrier:

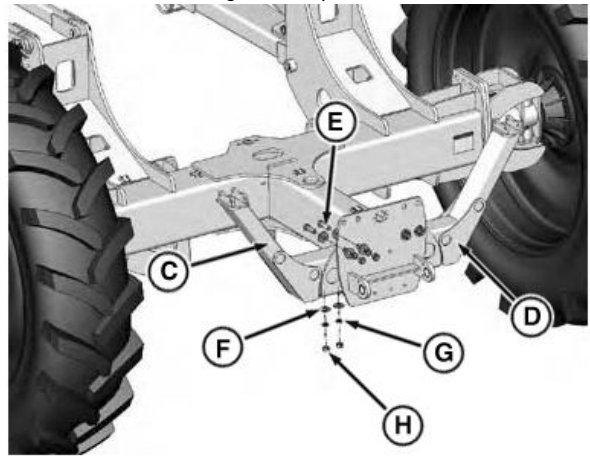
1. Attach the front LH and RH tank mounts (A and B) to the carrier using bolts (E), flat washer (F), lock washer (G), and nuts (H) per mount.
2. Attach the rear LH and RH tank mounts (C and D) to the carrier using bolts (E), flat washer (F), lock washer (G), and nuts (H) per mount.

Mount Tank and Tank Saddle Assembly To Tank Mounts:

- | | |
|------------------------|---------------------------------|
| A— Front LH Tank Mount | E— Bolt, 3/4" x 2 1/2" (4 used) |
| B— Front RH Tank Mount | F— Flat Washer, 3/4" (8 used) |
| C— Rear LH Tank Mount | G— Lock Washer, 3/4" (4 used) |
| D— Front RH Tank Mount | H— Nuts, 3/4" (4 used) |



Attaching Front Liquid Tank Mounts



Attaching Rear Liquid Tank Mounts

Continued on next page

RM87422,0000458 -19-15MAR16-1/2

PY24900 —UN—03MAR16

PY24901 —UN—03MAR16

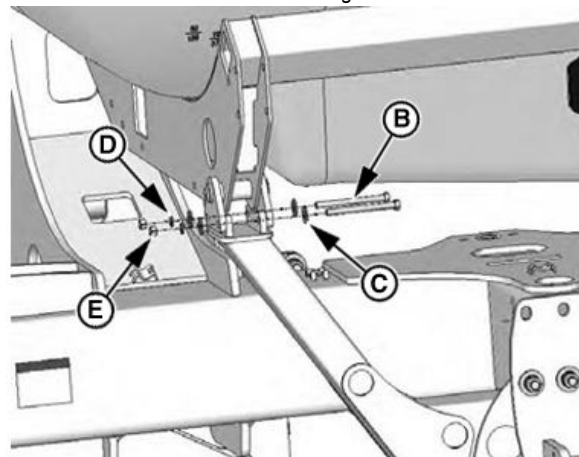
1. The tank and tank saddle assembly mounts (A) to the tank mounts at four points and with bolts (B) at each connection point. Remove these bolts before lowering tank and tank saddle assembly onto the tank mounts.
2. Once tank and tank saddle assembly is in position for attaching, replace the bolts through connection plates and tank mounts at each connection point. Attach with flat washers (C), lock washers (D), and nuts (E) at each connection point.
3. Remaining installation of non-provided components of a liquid fertilizer component are to be done at the option of the customer/dealer.

A— Tank and Tank Saddle
Assembly Mounts
B— Bolt, 1/2" x 5 1/2" (2 used)
C— Flat Washer, 1/2" (4 used)

D— Lock Washer, 1/2" (2 used)
E— Nuts, 1/2" (2 used)



Tank Mounting Points



Fastening Tank To Tank Mounts

PY24902 —UN—03MAR16

PY24903 —UN—03MAR16

RM87422,0000458 -19-15MAR16-2/2

Transporting

Transport Safely

IMPORTANT: Do not transport when machine is resting on the service locks. Raise machine to high lift (off the service locks) position before transport.

In transport position, use caution in learning the tracking path of the machine behind the tractor when turning corners.

⚠ CAUTION: Serious injury or death can result from contact with electric lines. Use care when moving or operating this machine near electric lines to avoid contact.

Be aware of height and width restrictions to avoid collision with overpasses or other road users.

⚠ CAUTION: When transporting machine on roadways, seed and pesticide hoppers must be half full (1.6 bushel and 3.0 bushels, it will be 0.8 Bushel and 1.5 Bushels) or less and towed load must be empty. Exceeding this weight leads to poor front-end stability, possible loss of steering, and excessive frame loading.

NOTE: Please verify the configuration and refer to full capacities specifications that are as follows, 6 ton dry fertilizer tank, 1.6 bushel (56 l) seed hopper, 3.0 bushel (106 l) seed hopper and 1.2 bushels (42 l) granular chemical hopper.

When towing, remember that towed loads can swerve, upset, or cause loss of control. Follow these guidelines:

- Use a tractor large enough to maintain control. Properly ballast tractor. See tractor operator's manual.
- Latch tractor brakes together.
- If tractor has ROLL-GARD™ Safety Canopy, keep seatbelt fastened when transporting.
- Shift tractor into a lower gear when transporting down steep slopes or hills; never coast.

⚠ CAUTION: When transporting machine on a road or highway always use flashing warning lights for adequate warning to operators of other vehicles.

⚠ CAUTION: Check local governmental regulations, for maximum permissible transport widths.

⚠ CAUTION: Never transport machine with field lights illuminated.

- Always use flashing warning lights, day, and night, when transporting on a roadway. Keep reflective material and SMV emblem clean and visible.
- Construction of implement cannot meet all local or national requirements for transport on a public

roadway. In regions or countries that have national certification requirements for roadway transport, it can be impossible for implement to be approved for such roadway transport. The customer is responsible for understanding and complying with all local, regional, and national requirements regarding roadway transport.

- Prevent collisions between motorists and slow-moving equipment on public roads. Frequently check for traffic from rear, especially in turns, and use turn signals.

⚠ CAUTION: When transporting, never travel at any speed which would not permit adequate control of steering and stopping.

- Stopping distance increases with speed and weight of towed loads and on slopes. Observe these recommended maximum road speeds, or local speed limits which can be lower.

⚠ CAUTION: When transporting machine on a smooth surface road, do not exceed 32 km/h (20 mph) tractor speed. Reduce speed considerably when traveling over rough ground.

Be certain everyone is clear of machine.

- Do not travel more than 32 km/h (20 mph) and do not tow loads more than 1.5 times tractor weight.

⚠ CAUTION: Avoid serious injury or death resulting from loss of control of implement and towed load.

Use a properly sized tractor. Refer to CALCULATING MINIMUM TRACTOR WEIGHT FOR SAFE TRANSPORT in Prepare Tractor section.

When towing on a roadway, refer to TOW LOADS SAFELY in the Safety section.

- Ensure that load does not exceed recommended weight ratio. Add ballast to recommended maximum for tractor, lighten load, or get a heavier towing unit. Tractor must be heavy and powerful enough with adequate braking power for the towed load. Use additional caution when towing loads under adverse surface conditions, when turning and on inclines.

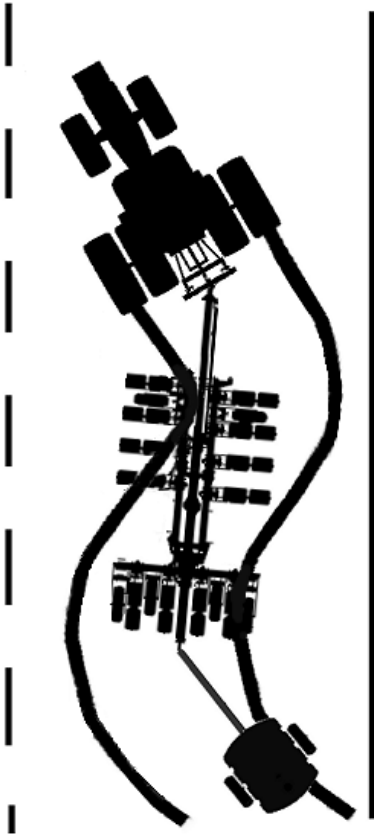
⚠ CAUTION: Never tow machine behind a truck or other motor vehicle. The ability to maintain control and brake the machine is compromised. The ability to attach the implement hitch and safety chain properly can be marginal. With most motor vehicles, it is not possible to operate the warning lights properly on the machine.

The following are capacities:

- Fertilizer tank (rear) – 6 Tons (half full is 3 Tons)

Continued on next page

RM87422.0000480 -19-29MAR16-1/2



A53085—UN—23OCT03

- 3.0 bushels hopper (half full is 1.5 bushels – 53 liters)
- 1.2 bushels hopper (half full is 0.6 bushels – 21 liters)

NOTE: Please verify the configuration and refer to full capacities specifications that are as follows, 6 ton dry fertilizer tank, 1.6 bushel (56 l) seed hopper, 3.0 bushel (106 l) seed hopper and 1.2 bushels (42 l) granular chemical hopper.

⚠ CAUTION: To maintain planter stability and reduce the possibility of an accident:

Never transport with the seed hoppers more than half full.

Reduce speed when turning and avoid dropping inside or outside rear wheels into a ditch, drainage way, or embankment.

In the folded transport position, the machine is towed like a two-wheel cart. Use caution while learning the tracking path of the machine behind the tractor when turning corners. The long wheelbase of the machine causes rear machine wheels to “cut the corner”.

- 1.6 bushel hopper (half full is 0.8 bushels - 28 liters)

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RM87422,0000480 -19-29MAR16-2/2

Preparation for Planter Transport

NOTE: Please verify the configuration and refer to full capacities specifications that are as follows, 6 ton dry fertilizer tank, 1.6 bushel (56 l) seed hopper, 3.0 bushel (106 l) seed hopper and 1.2 bushels (42 l) granular chemical hopper.

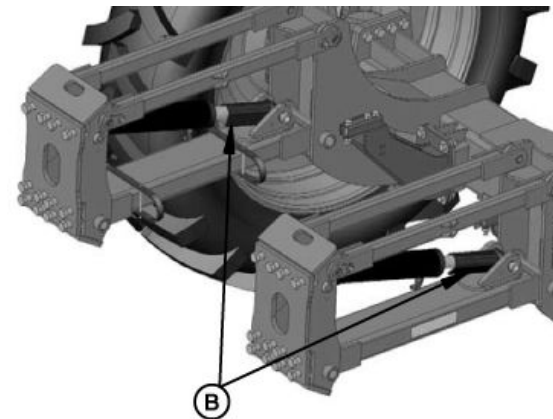
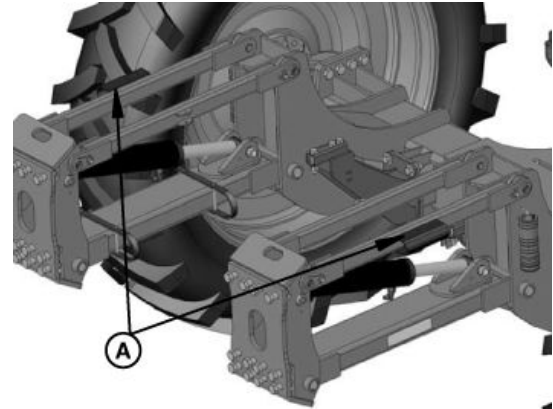
CAUTION: Do not attempt to transport the machine fully loaded. Pesticide and seed load must be at or below half capacity before machine is transported.

Know implement transport height and gross weight. Avoid overhead obstructions not allowing your transport height. Do not use bridges rated below combined implement and tractor weight.

IMPORTANT: Avoid Electrocutation: Be aware of overhead power lines. Contact or close proximity to power lines can result in injury or death. Use extreme care when operating implement near power lines.

IMPORTANT: Avoid Rollover: Do not fold or unfold implement and avoid sharp turns when on a hillside, as shift of weight could cause rollover. Operate implement at a safe distance from terrain irregularities and other obstructions that could cause rollover.

1. Planter should be transported in the raised position with the wings folded. The transport locks (A) should be removed from their storage position, placed around each lift cylinder rod (B), and pinned securely.
2. Enable tractor safety lights and avoid roadways with heavy traffic.



A— Transport Locks

B— Transport Locks Around Lift Cylinder Rods

RM87422,0000481 -19-28MAR16-1/1

PY24767 —UN—08FEB16

PY24768 —UN—08FEB16

Operating Machine

Roadway Transport Safety

⚠ CAUTION: Avoid collisions day and night by using warning flashers, accessory lights, turn signals, and other devices for adequate warning to other vehicles. For maximum permissible transport widths, check local regulations.

Serious injury or death can result from contact with electric lines. Use care when moving or operating this machine near electric lines.

When transporting, always travel at a safe speed for adequate control of steering and stopping.

Avoid transporting machine with seed and pesticide hoppers more than half full (1.6 bushel and 3.0 bushels, it will be 0.8 Bushel and 1.5 Bushels). Exceeding this weight can cause poor front-end stability, possible loss of steering, and excessive frame loading.

Verify everyone is clear of machine.

⚠ CAUTION: Do not exceed 24 km/h (15 mph) when traveling over rough ground.

When towing, remember that towed loads can swerve, upset, or cause loss of control. Follow these guidelines:

- Use a tractor large enough to maintain control.
- Properly ballast tractor. See tractor operator's manual.
- Latch tractor brakes together.
- If tractor has Roll-Gard™ Safety Canopy, keep seatbelt fastened when transporting.
- Shift tractor into lower gear when transporting down steep slopes or hills; never coast.

Learn and observe tracking path of machine, behind tractor, when turning corners.

Roll-Gard is a trademark of Deere & Company

Avoid collision with obstacles and other road users by being aware of height and width restrictions.

Keep reflective material and SMV emblem clean and visible.

Frequently check for traffic from rear, especially in turns.

This implements construction cannot meet all local or national requirements for transport on public roadways. In regions or countries that have national certification requirements for roadway transport, it can be impossible for implement to be approved for such roadway transport. The customer is responsible for understanding and complying with all local, regional, and national requirements regarding roadway transport.

Stopping distance increases with speed, on slopes, and with increased weight of towed loads.

Observe recommended maximum road speeds and local speed limits.

Do not travel more than 24 km/h (15 mph) and do not tow loads more than 1.5 times tractor weight.

Ensure load does not exceed recommended weight ratio. Add ballast up to recommended maximum for tractor, lighten load, or get a heavier tractor. Tractor must be heavy and powerful enough, with adequate braking power, for the towed load. Use additional caution when towing loads under adverse surface conditions, when turning, and on inclines.

Never tow implement behind a truck or other motor vehicle.

RM87422,0000447 -19-29MAR16-1/1

General

IMPORTANT: For proper machine operation, it is important that the machine frame be fully lowered into correct planting position. Achieving this position can be difficult with some attachment combinations, especially when planting in hard to penetrate soil conditions. If this situation is encountered, the following action may be warranted:

Reduce attachment down force levels. Avoid using more attachment down force than required.

Add frame ballast when conditions warrant. This may be particularly important if the frame mounted coulter is being used.

When using single lever control of lift-assist wheels, DO NOT put SCV lever in FLOAT when raising and lowering machine. Correct procedure for raising and lowering machine is to POWER completely UP or DOWN.

To prevent plugging of seed tubes or seed openers, lower the machine when moving forward.

DO NOT back up with machine lowered.

1. Use recommended size tractor. See Preparing Tractor section.
2. Be sure tractor and machine have been properly prepared. See Preparing Tractor and Preparing Machine sections.
3. Check seed rates carefully.
4. Check tire pressure before seeding.
5. Allow tractor hydraulic oil to warm up thoroughly prior to seeding.
6. Use clean seed for best results.

OUO6045,00001A5 -19-16JUL09-1/1

Fold Tractor Warning Lights

Contact between tractor side warning lights (A) and planter winglets can occur in extreme uneven terrain when the wings are folded. Fold tractor warning lights in to avoid contact while in the field. Return tractor warning lights to outer position for road transport.

A—Warning Lights



A65104 —UN—06AUG09

OUO6045,00001D3 -19-06AUG09-1/1

Hydraulic Motor Operation

Connect hoses correctly. (See Attaching Machine section.)

To engage hydraulic motors, move the selective control valve (SCV) lever forward (retract function) and engage the detent.

Avoid motor damage from pressure spikes in the hydraulic system. Move the SCV lever forward into "Float" position, not into "Neutral" position, to shut off hydraulic motors.

Once the hydraulic motors come to a stop, the SCV lever can be returned to "Neutral" position.

WP29706,00008BB -19-12MAR15-1/1

Adjust Planting Depth

NOTE: Closing-wheel down force can affect seed placement and depth. Do not use more force than necessary to close seed furrow, especially in light soils.

Gauge wheels (A) control seed depth. Adjust planting depth as follows:

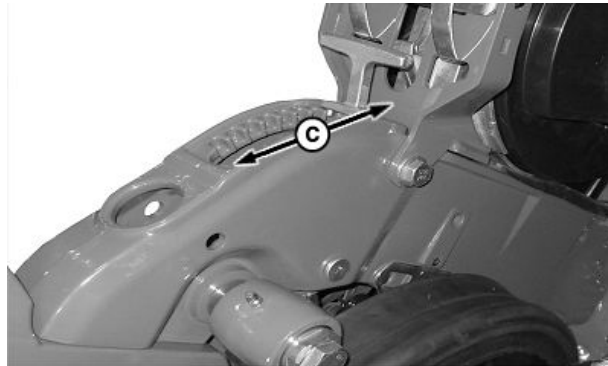
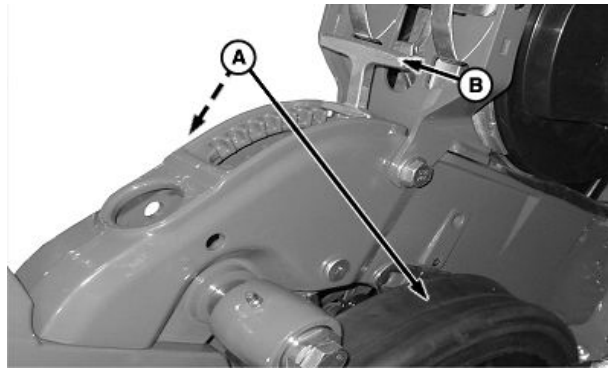
1. Raise machine to remove weight from gauge wheels.
2. Lift depth-adjusting handle (B). Move it forward to decrease planting depth or rearward to increase planting depth. If small increments are desired, "walk" handle from side to side. Each adjusting position changes planting depth 6 mm (1/4 in.).
3. Adjust all rows to the same initial setting.

IMPORTANT: Prevent seed tubes from plugging.
When operating in the field, lower machine when tractor is moving forward.

4. Lower machine and drive a short distance at normal planting speed.

A—Gauge Wheels
B—Depth-Adjusting Handle

C—Direction Of Movement For
Handle



A79045—UN—28OCT13

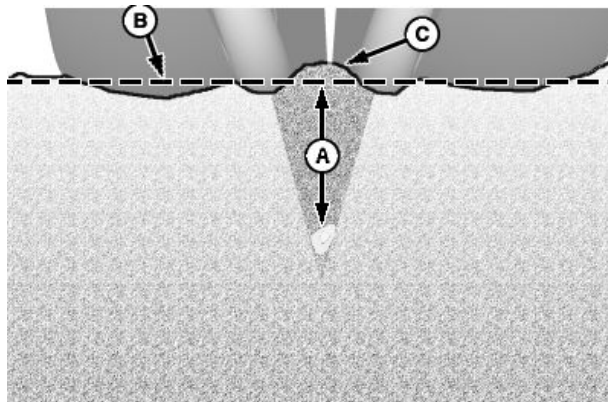
A79082—UN—21NOV13

OUO6074,00009B4 -19-05NOV13-1/2

5. Check planting depth on each row.
 - a. Dig down vertically through soil to locate seed.
 - b. Measure the depth (A) from seed to top of soil profile (B). Do not measure to top of ridge (C) created by closing wheels.

A—Depth
B—Top of Soil Profile

C—Ridge



Soil Cross Section

A57713—UN—20APR06

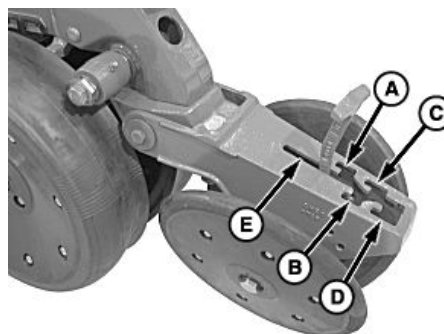
OUO6074,00009B4 -19-05NOV13-2/2

Adjusting Closing Wheel Down Force

NOTE: Closing-wheel down force can affect seed placement and depth. Do not use more force than necessary to close seed furrow, especially in light soils.

Angled closing wheels trail behind seed opener and close the seed trench created by openers. The closing wheels firm soil on each side of seed, not directly over seed. Adjustable spring-force permits proper closing of seed trench.

Place handle in slots (A), (B), (C) and (D) to adjust down force for varying ground conditions. Placing handle in middle slot (E) will allow closing wheels to "Float" with only the weight of closing wheel system on soil surface.



A—Slot A (Minimum)
B—Slot B
C—Slot C

D—Slot D (Maximum)
E—Slot E (Float)

OOU6064,0000248 -19-13AUG10-1/1

A68212 —UN—15JUL10

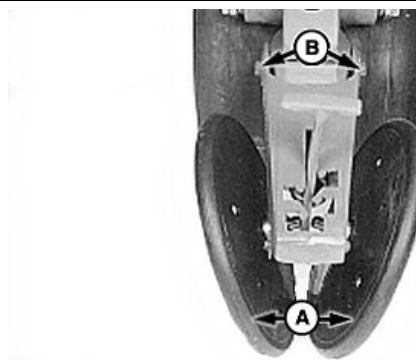
Center The Closing Wheels

If the closing wheels (A) are not centered over the seed furrow, proceed as follows:

1. Raise the machine.
2. Loosen the cap screws (B) and adjust the closing wheels to the right or left. Visually center the closing wheels as required.
3. Tighten the cap screws (B).

A—Closing Wheels

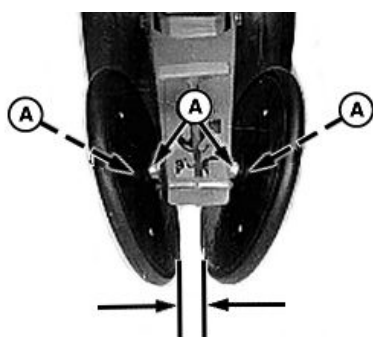
B—Cap Screws



AG,OOU6074,1204 -19-02MAR16-1/1

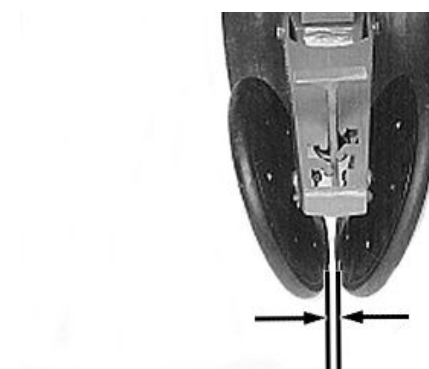
A46773 —UN—12OCT00

Adjust The Closing Wheel Spacing



A—Nuts and Spacers

NOTE: The closing wheels can be adjusted to match the soil conditions and the depth of the planted seeds. Use the standard (wide) spacing for the majority of planting conditions. For planting small seeds at shallow depth, use the narrow spacing.



A46774 —UN—13OCT00

To change the spacing, remove nuts and spacers (A). Install the closing wheels with the spacers located to the outside (for narrow spacing) or to the inside (for wide spacing).

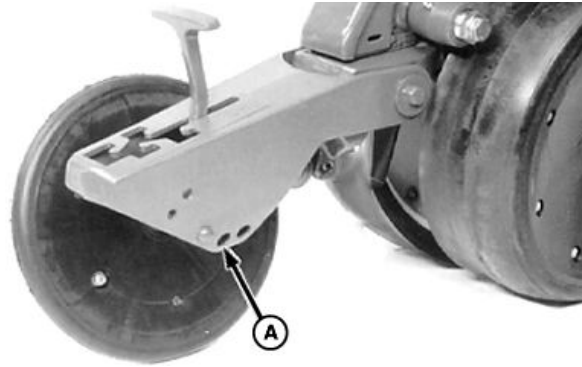
OOU6064,0000249 -19-09MAR16-1/1

A46775 —UN—12OCT00

Stagger The Closing Wheels

If residue or root balls lodge between the closing wheels in mulch till or no-till conditions, remove one closing wheel from the planting unit and install it in the rear hole (A) of the casting.

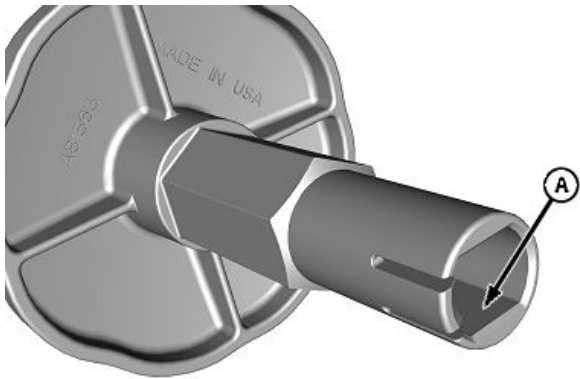
A—Rear Hole



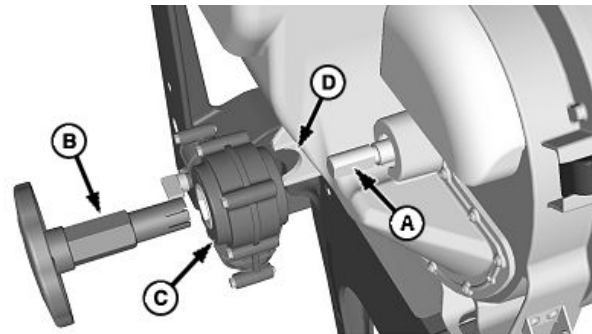
A46776—UN—12OCT00

AG,OUO6074,1206 -19-02MAR16-1/1

Shear Protection Points



A57648—UN—13MAR06

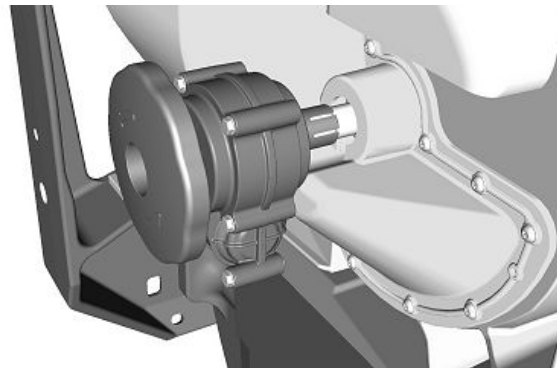


A57649—UN—13MAR06

Replacement meter handle is located on center variable rate drive motor. If meter handle breaks; remove broken pieces, align flat surfaces (A) and insert new handle (B) through gearbox (C) until handle snaps into groove on shaft. Gearbox must seat into cutout (D).

A—Flat Surfaces, Aligned
B—New Handle

C—Gearbox
D—Cutout

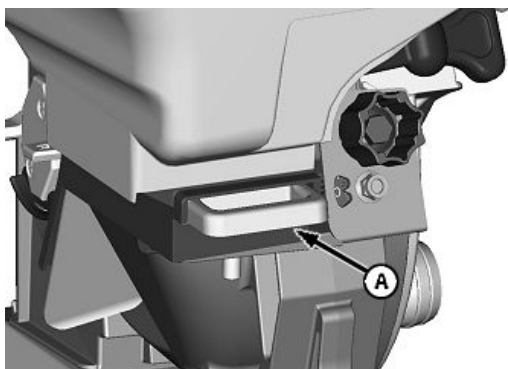


Assembled

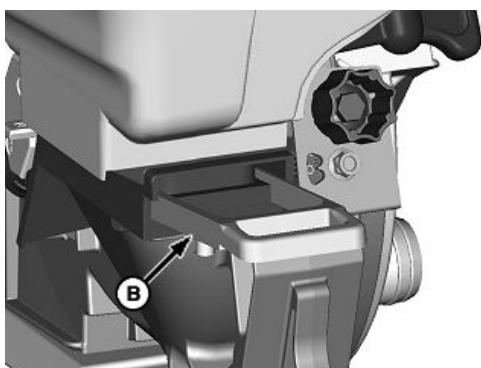
A57650—UN—13MAR06

OUO6045,00001A7 -19-17JUL09-1/1

Cleanout and Inspection of Seed Hoppers and Vacuum Meters



Open Position



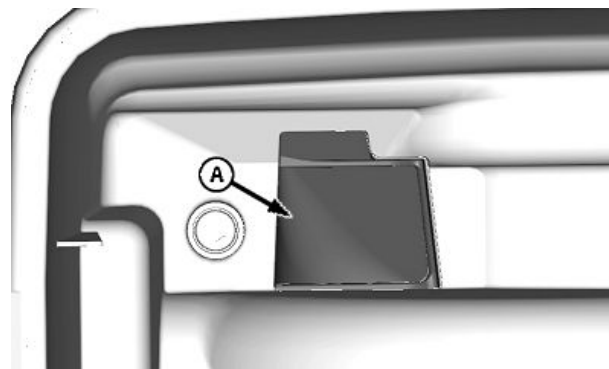
Closed Position

A—Gate, Open Position

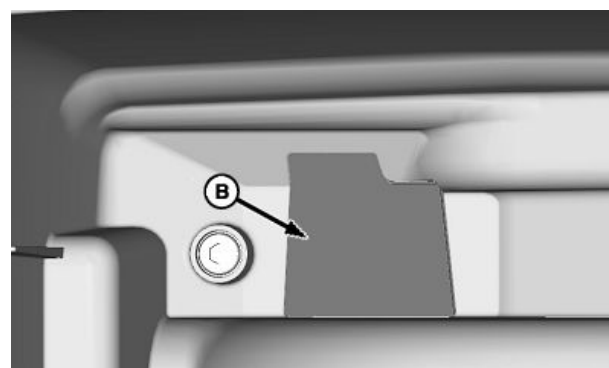
B—Gate, Closed Position

1. For best operation, empty hoppers thoroughly after daily use to remove chaff, dust, and other foreign material.

NOTE: If bridging occurs, ensure that handle is open and add more talc to seed.



Open Position



Closed Position

1.6 and 3 bu. hoppers are equipped with shutoff gates. Move gate to the open position (A) when meter is in use.

2. Move gate to closed position (B) before opening meter cover for cleanout or inspection.

RM87422,000042C -19-08MAR16-1/6

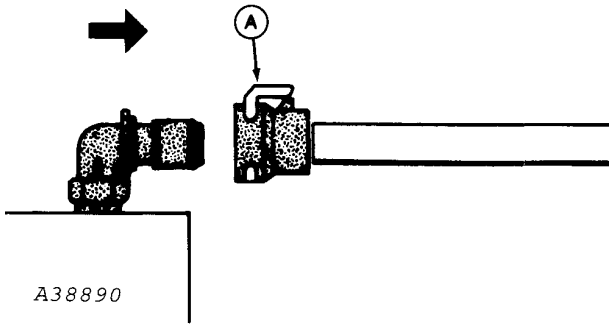
3. Remove vacuum hose (A) from vacuum meter.

A—Vacuum Hose

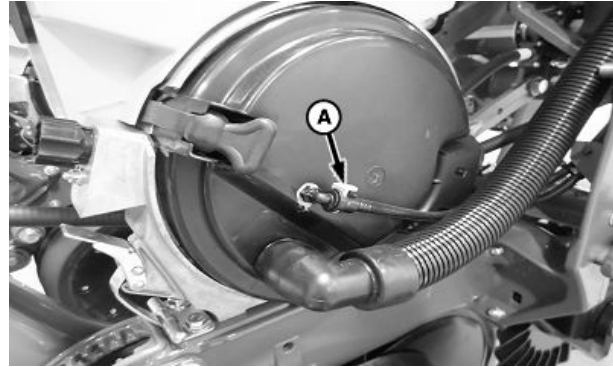


Continued on next page

RM87422,000042C -19-08MAR16-2/6



A38890 —UN—12JAN96



A78915 —UN—17OCT13

A—Retainer

4. On vacuum meters equipped with vacuum gauge hose, squeeze retainer (A) and disconnect hose.

Continued on next page

RM87422,000042C -19-08MAR16-3/6

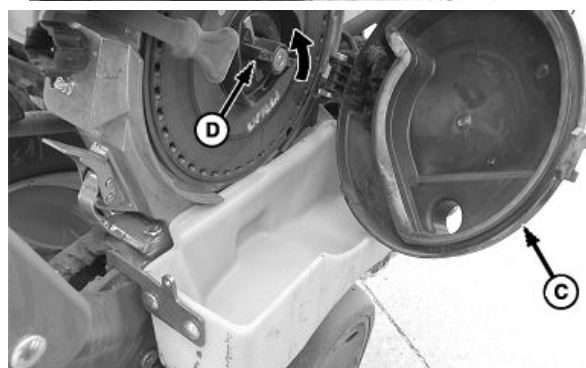
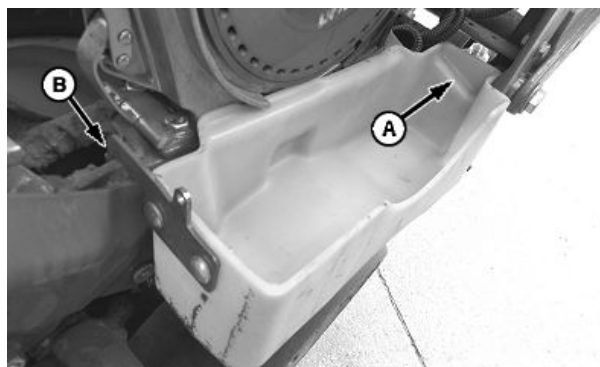
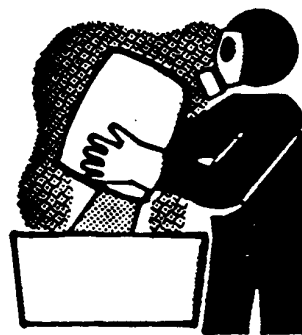
CAUTION: Avoid chemical injury to eyes, skin, or lungs. If using seed treatments, use caution when opening meter domes and handling parts coated with seed treatment. Read and follow safety instructions on the chemical treatment label.

5. Install catch pan onto row unit with plastic edge (A) into position near parallel arms.
6. Install hooked plate (B) into indented edge as shown.
7. Open meter cover (C), rotate handle (D) into unlocked position, and remove seed disk.

A—Plastic Edge
B—Hooked Plate

C—Meter Cover
D—Handle

A34471



Continued on next page

RM87422,000042C -19-08MAR16-4/6

A34471—UN—11OCT88

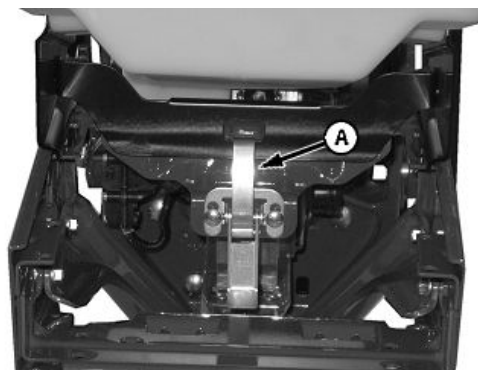
A82664—UN—29MAY14

A82665—UN—29MAY14

8. To remove seed hopper from planting unit, disengage hopper latch (A) or meter latch (B). Rotate meter and hopper forward then lift upward to remove.

A—Hopper Latch

B—Meter Latch



A80234 —UN—28FEB14

106 L (3 bu.) Seed Hopper

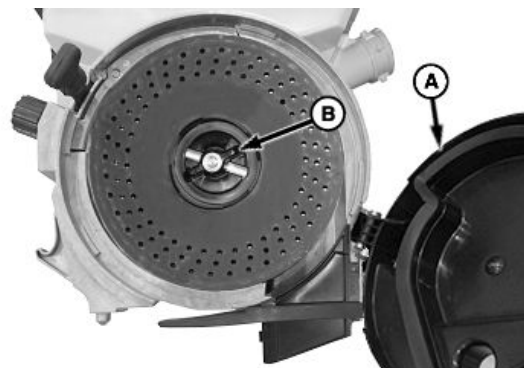


A78914 —UN—06NOV13

RM87422.000042C -19-08MAR16-5/6

NOTE: If using seed treatments, remove any buildup from bottom of hopper.

9. To inspect meter, lay hopper on side and open meter cover (A) to remove seed disk. Turn meter hub (B) by hand to determine if mechanism is free of dirt, chaff, or other foreign material. Inspect brush for gaps, hub seal for cracks, and vacuum seal for cracks and wear areas. If repair or replacement is necessary, see meter procedures in the Service and Adjustments section.
10. Install seed disk back into meter.
11. Install meter and hopper back onto planting unit. Engage hopper latch and meter latch.
12. Return seed meter catch pan to storage position.



Vacuum Meter

A—Meter Cover

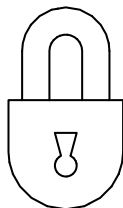
B—Meter Hub

A78557 —UN—15OCT13

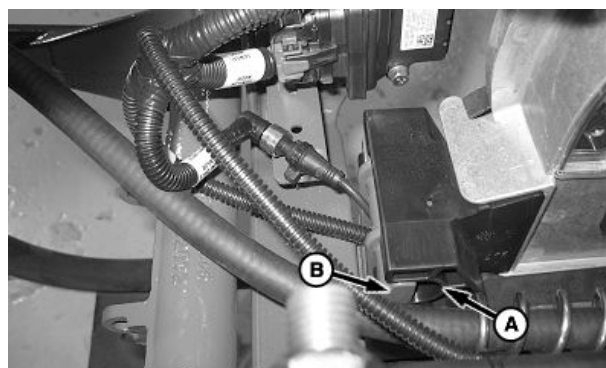
RM87422.000042C -19-08MAR16-6/6

Install Vacuum Meter Assembly on Row Unit

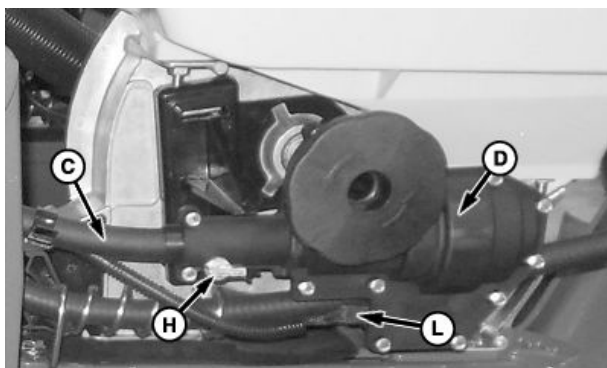
A62347 —UN—27MAR08



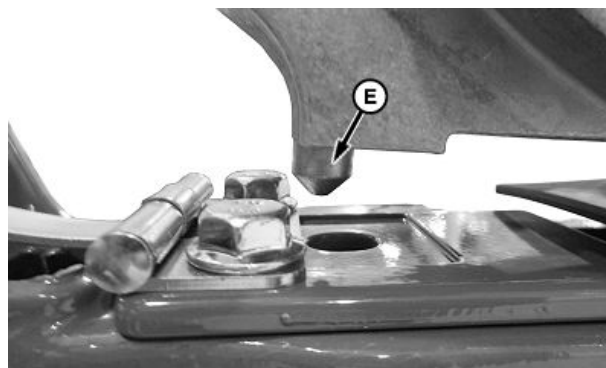
Locked Symbol Up



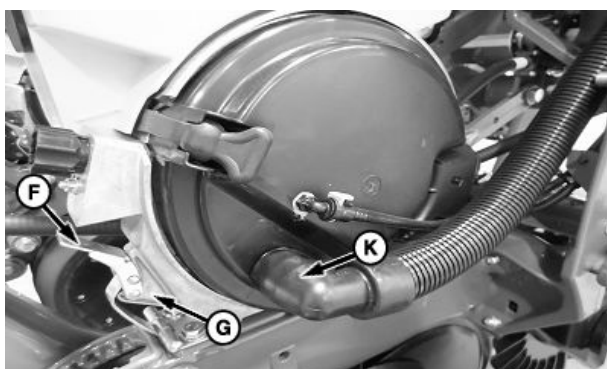
A77480 —UN—21MAR13



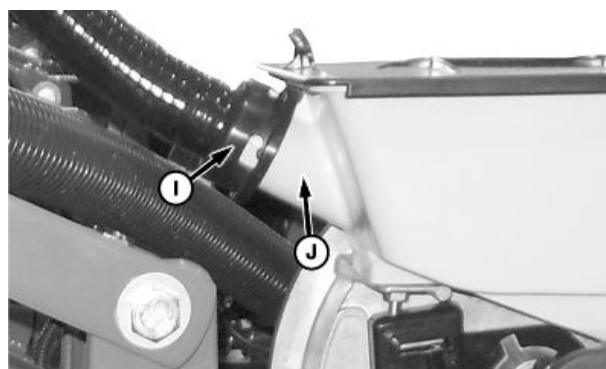
A78831 —UN—04OCT13



A77482 —UN—21MAR13



A77484 —UN—06NOV13



A78830 —UN—04OCT13

A—Alignment Notch
B—Support Plate
C—Cable
D—Clutch

E—Alignment Pin
F—Latch
G—Meter Hook
H—Lock Pin

I—Seed Delivery Hose
J—Hopper Fill Neck
K—Vacuum Hose

L—Electrical Connector

1. Push hopper alignment notch (A) over support plate (B).
2. Push Pro-Shaft Drive cable (C) into Row Command clutch (D) while rotating meter down.
3. Verify alignment pin (E) on bottom of meter is aligned with hole on row unit latch plate.
4. Align latch (F) on meter hook (G) and push up until latch snaps into position.
5. Rotate lock pin (H) 180 degrees until "locked" symbol is on top.
6. Push CCS seed delivery hose (I) onto hopper fill neck (J) and rotate clockwise until it snaps into place.
7. Install vacuum hose (K).
8. Connect electrical connector (L) to Row Command clutch (if equipped).

WP29706,0000594 -19-06NOV13-1/1

Operate Through Wet Soil

Wet soil should be avoided. If planting in wet soil and tractor loses traction, do not extend wheel cylinders. This

pushes wheels further down into soil and transfers weight off rear of tractor.

OUO1074,00000B4 -19-13MAY09-1/1

Raise and Lower Machine

IMPORTANT: Case drain hose must be connected or damage to machine occurs.

IMPORTANT: Avoid machine damage. Do not place SCV in "Float" position to lower machine. Machine must be powered up and down.

NOTE: Due to the high hydraulic pressure requirements of large machines, the SCV lever used to raise and lower the machine cannot function in the automatic retract or automatic extend position.

Move SCV I rearward to extend lift cylinders and raise machine. Move SCV I forward to retract lift cylinders and lower machine.

After raising or lowering machine, hold SCV lever for approximately 5 seconds to verify machine raises and lowers completely.

Verify that machine is moving forward when raising or lowering in the unfolded position to avoid plugging seed and fertilizer openers.

SCV I must be in forward detent position when lowering machine for planting. CCS blower operates only when SCV I, is in forward detent.

When raising or lowering machine in the folded position, frame and hitch must be activated simultaneously. This allows machine to raise or lower evenly, preventing damage to seed and fertilizer openers.

OUO6074,00009A9 -19-22FEB16-1/1

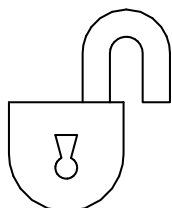
Rephase the Machine

The hydraulic system is rephased each time the machine is lowered.

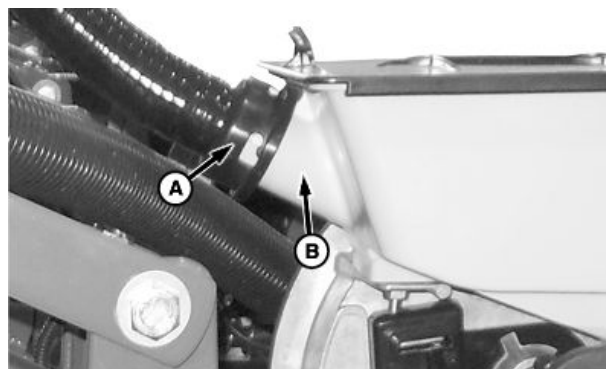
OUO6074,00003E5 -19-17FEB16-1/1

Remove Vacuum Meter Assembly From Row Unit

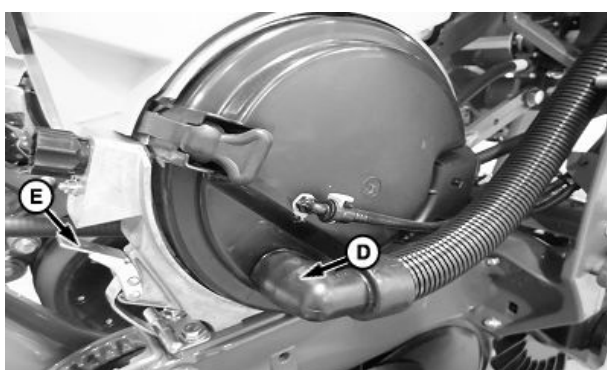
A62348 —UN—27MAR08



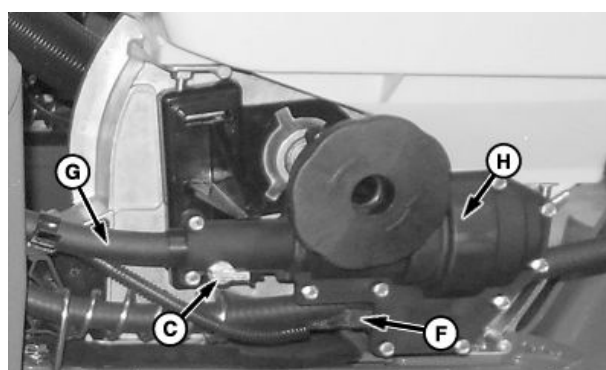
Unlocked Symbol Up



A78828 —UN—04OCT13



A77478 —UN—06NOV13



A78829 —UN—04OCT13

A—Delivery Hose
B—Fill Neck

C—Lock Pin
D—Vacuum Hose
E—Latch

F—Electrical Connector
G—Cable

H—Clutch

1. Rotate CCS seed delivery hose (A) counterclockwise until it unsnaps from hopper fill neck (B) and pull off hose.
2. Rotate lock pin (C) 180 degrees until the “unlocked” symbol is on top.
3. Remove vacuum hose (D).
4. Push down on latch (E) to unlock meter assembly from row unit.
5. Disconnect electrical connector (F) from Row Command clutch (if equipped).
6. Pull Pro-Shaft Drive cable (G) from Row Command clutch (H) while raising rear of meter upward and rearward.

WP29706,0000593 -19-06NOV13-1/1

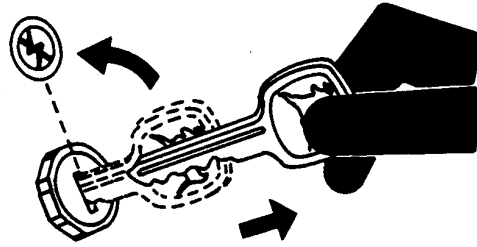
Pneumatic Down Force

Service Machine Safely

To help prevent personal injury caused by unexpected movement, be sure to service machine on level surface.

If machine is connected to tractor, engage parking brake and/or place transmission in "PARK", shut off engine and remove key.

If machine is detached from tractor, block wheels and use safety stands to prevent movement.



TS230 —UN—24MAY89

OM63945A,05F -19-20OCT98-1/1

SeedStar™ Integrated Pneumatic Down Force System

SeedStar™ Integrated Pneumatic Down Force system provides "on-the-go" down force pressure changes to the planting row units. The system air compressor supplies pressurized air to an air storage tank. The air storage tank provides extra air capacity for fast down force changes.

With SeedStar™ integrated pneumatic down force:

- Operator can manually make "on-the-go" down force changes from the tractor cab.

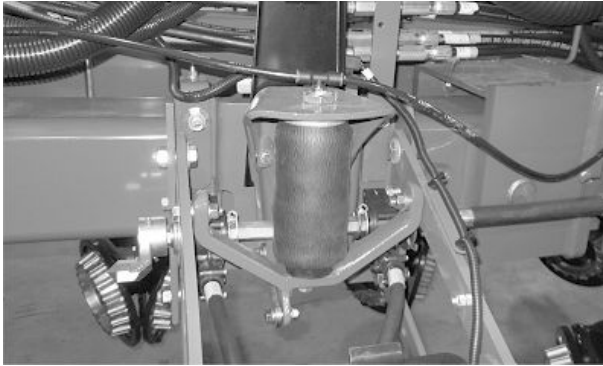
SeedStar is a trademark of Deere & Company

- Operator can change down force pressure for differing soil types or for irrigated versus dry land soils.

For more information, see your SeedStar™ Monitor Operators Manual.

OUC6064,0000438 -19-01MAY14-1/1

Pneumatic Down Force



Properly Rolled Air Spring



Improperly Rolled Air Spring

CAUTION: Avoid serious injury from exploding parts due to over-pressurization or operating the system without all components in place.

- Do not inflate air springs above 827 kPa (8.2 bar) (120 psi) air pressure or 1779 N (400 lb.) down force.
- Do not remove pressure relief valve.
- Do not pressurize system unless all row unit components are in place.

IMPORTANT: Avoid kinks in air spring. Do not lower the machine with less than 34—55 kPa (0.3—0.5 bar) (5—8 psi) air pressure or 76—120 N (17—27 lb.) down force in the system. If air spring kinks, raise machine and pressurize the system until air spring straightens out.

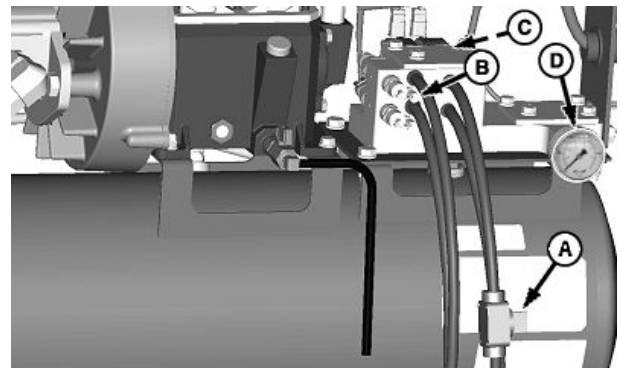
Do not operate with a pinched or unrolled air spring. Lower system pressure to roll air springs by hand. Roll air spring over lower piston. Incremental lowering of machine is required to start air spring rolling over lower piston.

NOTE: It is normal for system air pressure to drop when frame is raised and increase when frame is lowered.

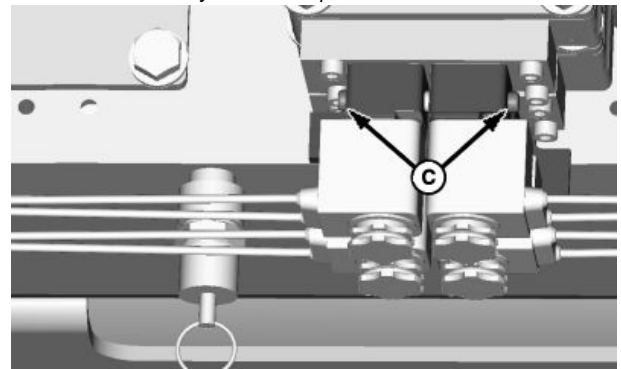
NOTE: If more down force is needed on row units that follow tractor tires, install an extra non-adjustable spring on these row units. See your John Deere™ Dealer for more information.

1. If Equipped: Align valve (A) with air hose to pressurize split-row units. Turn valve perpendicular to air hose to depressurize split-row units.
2. If compressor system fails, charge the air-spring circuit at fill valves (B) with shop air.
3. If the control system fails, use manual overrides (C) to increase or decrease air-spring pressure. Check air-spring pressure with a tire pressure gauge at fill valve (B).

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Hydraulic Compressor Illustrated



Manual Override

A—Valve, Split Row
B—Fill Valve (one per block)

C—Manual Overrides, (two per block)
D—Tank Gauge

Tank gauge (D) displays pressure in the tank, **not** pressure in the air springs. Normal operating range for tank pressure is 790—1000 kPa (7.9—10 bar) (115—145 psi)

For more information, see your SeedStar™ Monitor Operator's Manual.

Continued on next page

WP29706,00008C5 -19-09JUN15-1/3

Clean or Replace Air Filter on Electrical Air Compressor

IMPORTANT: Avoid compressor damage. Clean or replace the air filter element yearly or at the beginning of each season. Filter cleanliness is critical to maintain the performance and service life of the air compressor.

1. Remove wing nut and seal washer (A).
2. Remove and retain the weather shield (B).
3. Remove filter element (C).

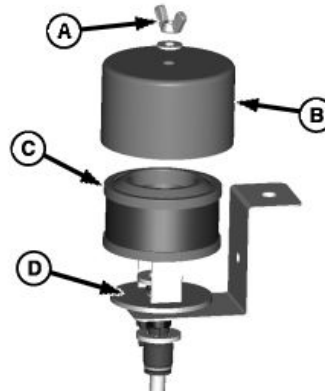
IMPORTANT: Avoid filter and compressor damage. Do not damage filter element while cleaning. To clean filter, tap filter lightly on a firm surface.

4. Clean the air filter or purchase a new air filter from your John Deere™ Dealer.

IMPORTANT: Avoid compressor damage. Clean all excess material from filter base (D) before installing filter.

5. Install cleaned or new filter.

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A—Wing Nut and Seal Washer C—Filter Element
B—Weather Shield D—Filter Base

6. Install previously removed weather shield, wing nut, and seal washer.
7. Tighten wing nut.

A85643—UN—12MAR15

WP29706,00008C5 -19-09JUN15-2/3

Clean or Replace Air Filter on Hydraulic Air Compressor

CAUTION: Avoid injury from sudden activation of compressor. Turn off tractor before service.

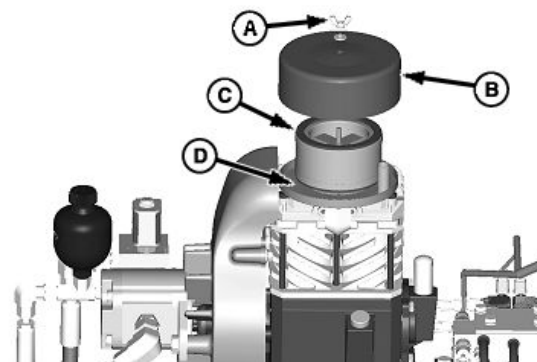
IMPORTANT: Avoid compressor damage. Clean air filter element every 50 operating hours. Replace the air filter element every 100 operating hours or at the beginning of each season. Filter cleanliness is critical to maintain the performance and service life of the air compressor.

1. Clean dust from area around the compressor air filter.
2. Remove wing nut and seal washer (A).
3. Remove the weather shield (B).
4. Remove filter element (C).

IMPORTANT: Avoid filter and compressor damage. Do not damage filter element while cleaning. To clean filter, tap filter lightly on a firm surface.

5. Clean the air filter or purchase a new air filter from your John Deere™ Dealer.

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A—Wing Nut and Seal Washer C—Filter Element
B—Weather Shield D—Filter Base

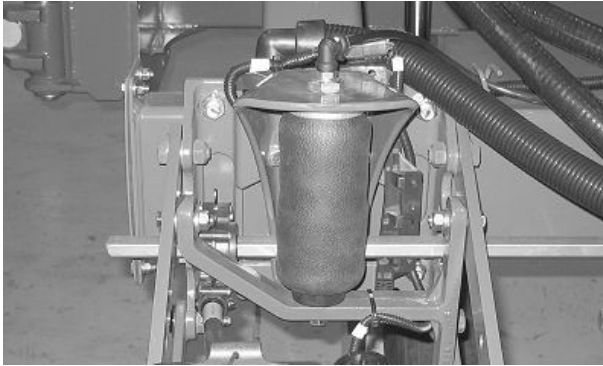
IMPORTANT: Avoid compressor damage. Clean all excess material from filter base (D) before installing filter.

6. Install cleaned or new filter.
7. Install previously removed weather shield, wing nut, and seal washer.
8. Tighten wing nut.

A85644—UN—12MAR15

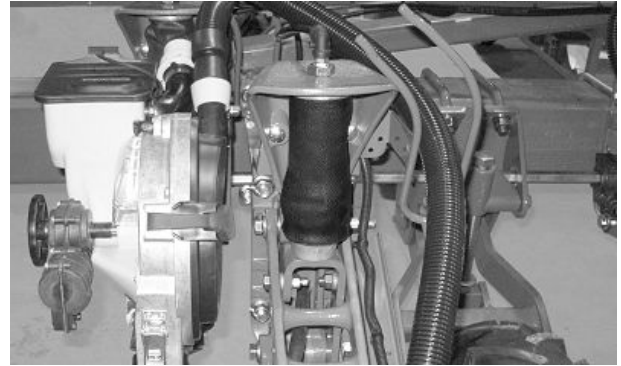
WP29706,00008C5 -19-09JUN15-3/3

Pressurize Pneumatic Down Force System



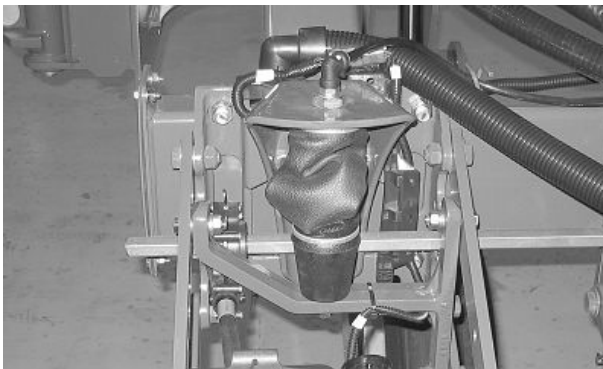
Properly Rolled Air Spring

A68216 —UN—22JUL10



Properly Rolled Air Spring (Twin Row Planters)

A66834 —UN—25MAR10



Improperly Rolled Air Spring

A68217 —UN—22JUL10



Improperly Rolled Air Spring (Twin Row Planters)

A66835 —UN—25MAR10

- To fill the planters down force air springs for the first time after removing from storage:
 - In Auto mode, system begins filling the air springs to achieve the target margin when lowered to planting position.
 - In Set-Point mode, system begins filling the air springs to achieve the target down force when lowered to planting position.
- Pressurize system to a minimum of 16 kg (35 lb.) of down force displayed on monitor or approximately 83 kPa (0.8 bar) (12 psi) on gauge.
- Minimum down force during operation is 16 kg (35 lb.) displayed on monitor or approximately 103 kPa (1.0 bar) (15 psi) on gauge. Failure to maintain this pressure can result in damage to air springs.

OUC6064,0000612 -19-10NOV11-1/1

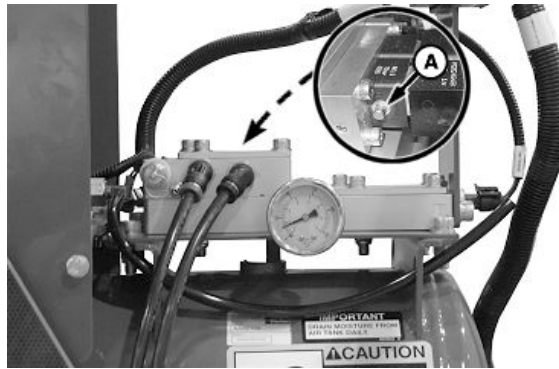
Depressurize Single Rank Pneumatic Down Force System

NOTE: Location and orientation of air reservoir varies based on planter model. Procedure is similar for all models.

1. Lower planter to planting position.
2. On SeedStar™ Monitor, reduce down force pressure to 66 N (15 lb).
3. On rear of valve stack left-hand side, press manual override button (A) to release residual air pressure from air spring circuit.

A—Manual Override Button

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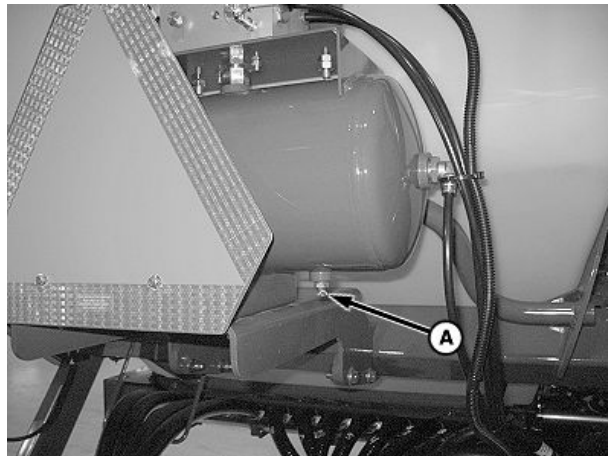
Exhaust Manual Override

A87674—UN—17SEP15

OUO6064,00005D9 -19-12OCT15-1/2

4. Release reservoir air pressure by opening drain valve (A).

A—Drain Valve

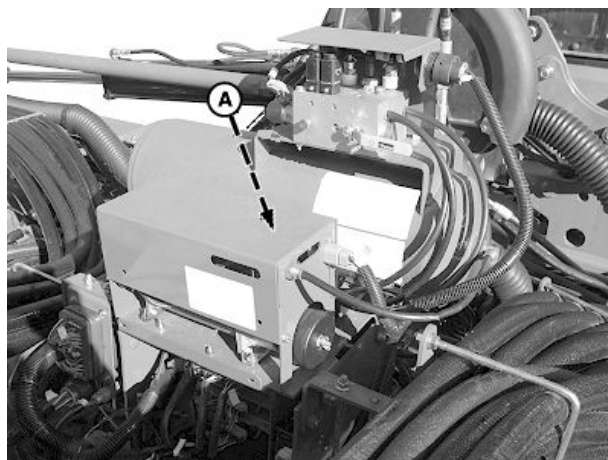


A88065—UN—07JUL10

OUO6064,00005D9 -19-12OCT15-2/2

Single Set-Point Compressor Relay Location

A—Relay

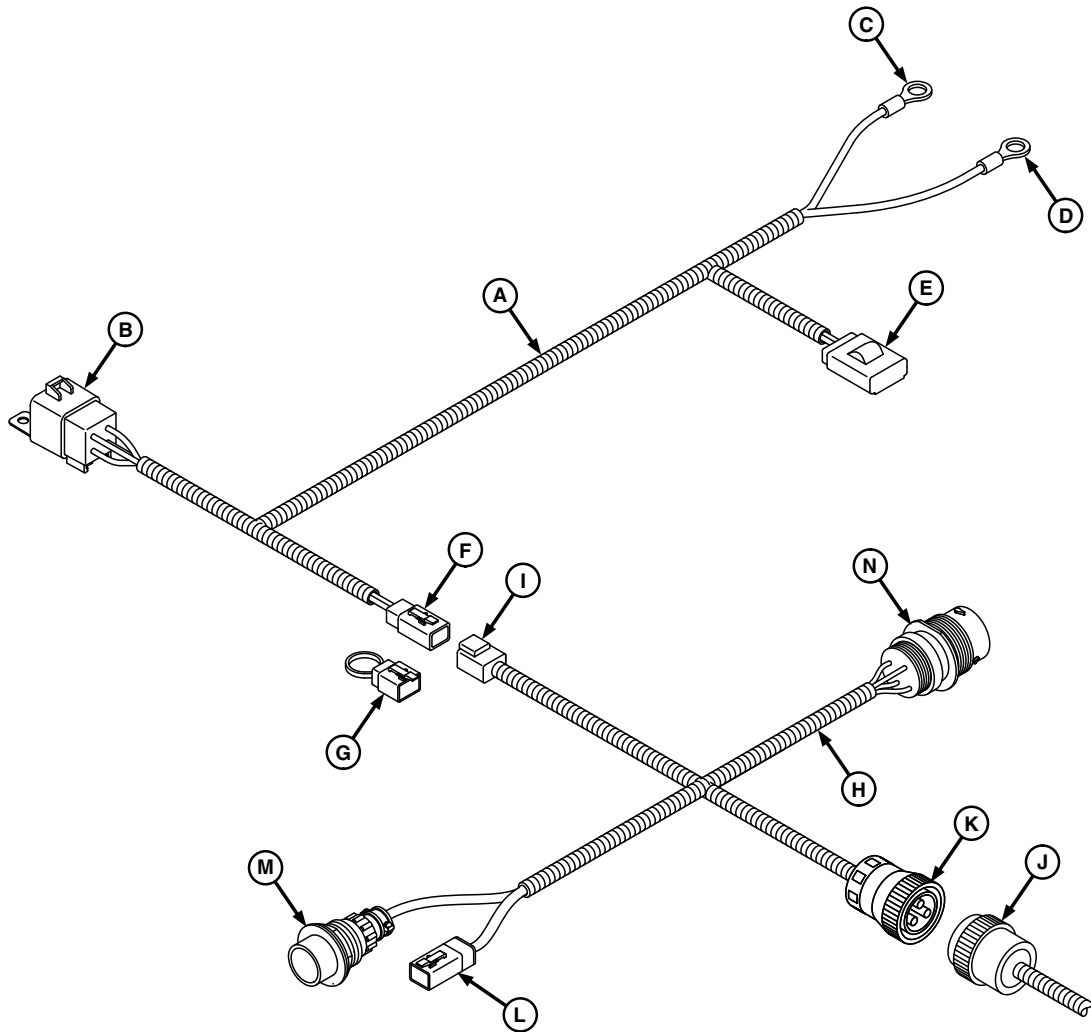


Compressor Relay

A82738—UN—09JUN14

OUO6074,0000DCE -19-09JUN14-1/1

Electric Compressor—Relay and Fuse Location for Power Harness



All Planters Except DB Series

A—Compressor Battery Harness

B—40A Relay

C—Battery Terminal (+)

D—Battery Terminal (-)

E—40A Fuse

F—Convenience (4-pin)

G—Jumper Connector

H—9-Pin Bulkhead Harness

I—Battery Power

J—AMS Harness (If Equipped)

K—Unswitched Power

L—Air Compressor Connector

M—CAN Connector (Planter Bulkhead)

N—CAN Connector (Tractor)

The compressor battery harness (A) supplies power from the tractor battery to the planter 9-pin bulkhead harness (H) through connector (F) and (I).

Battery power is supplied to the compressor through connector (L).

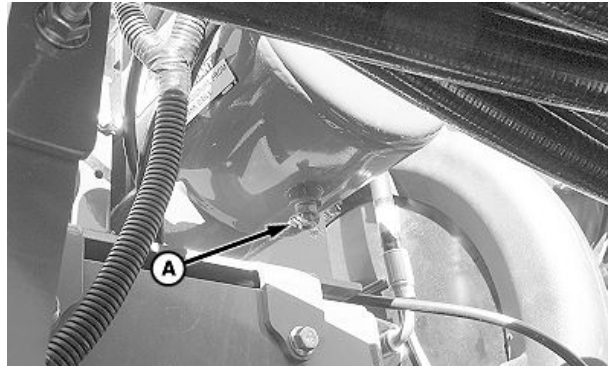
RM87422,000042D -19-15FEB16-1/1

AT2214—UN—08AUG11

Drain Air Storage Tank

Open water drain valve (A). Keep valve open until all water is drained from tank. Drain air storage tank daily and before placing planter in storage.

A—Water Drain Valve



Air Tank Drain Valve

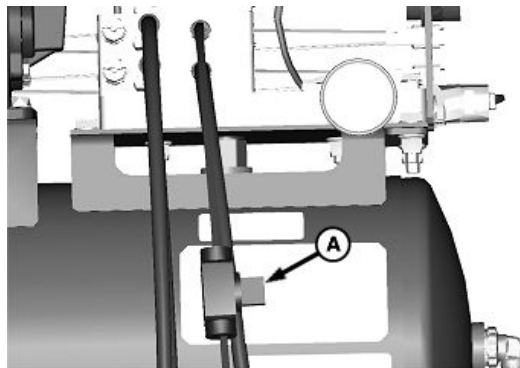
OUC6064,00005E6 -19-08JUN15-1/1

A88880—UN—06OCT10

Relieve Rear Rank Pneumatic Down Force When Locking Up Rear Rows

1. **Setpoint Down Force Systems:** Open in-line valve (A) that supplies pressure to rear rows until pressure is relieved.
2. **Active Down Force Systems:** System automatically relieves the air pressure from the rear rows when the seed setup is completed and the front rows are selected. (See Seed Rate Configuration section in this manual.)

A—In-Line Valve



WP29706,0000905 -19-09JUN15-1/1

A86721—UN—08JUN15

Central Commodity System

CCS Operation

Seed treatments, field conditions, humidity, and seed size alters CCS pressures required to deliver seed to all rows. Talc lubrication is required on ALL crops to lubricate seed. Chemically treated seed can require two to three times the rate of lubrication to avoid plugging. When changing crops, use the initial setting found in SETTING CCS TANK PRESSURE in this section before adjusting for field conditions.

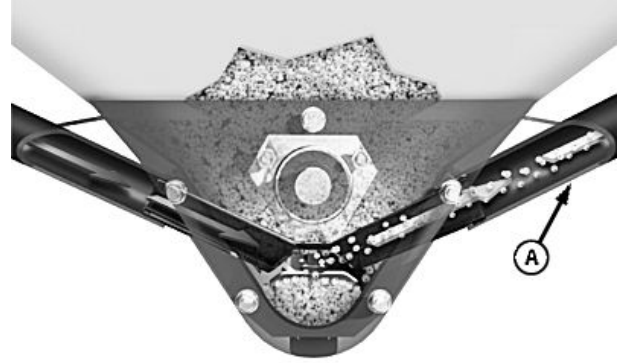
Generally, the CCS system performs best when using the lowest possible pressure setting to deliver seed to all row units.

Some light weight varieties of seed, such as sorghum-milo, are picked up too easily by the nozzles. Nozzle inserts are installed over the nozzles to restrict the opening slightly, limiting the amount of seed a nozzle picks up. Nozzle inserts allow light weight seeds to flow at optimum rates and reasonable pressures ensuring reliable seed delivery to all rows.

IMPORTANT: Avoid hydraulic motor and tank lid damage. DO NOT exceed 24 in. of tank pressure.

Random drops in population that last only short periods (5—20 seconds) can indicate the CCS system is not maintaining adequate seed flow.

Make sure meters and vacuum system is functioning properly before adjusting CCS system.



A—Delivery Hose

Increase CCS pressure in 2 inch increments until random population drops stop.

If monitor issues a “Row Failed” warning, first determine if the failure is caused by bridging or plugging.

Correcting Nozzle Bridging and Seed Delivery Hose Plugging:

See BRIDGED AND BLOCKED CCS SYSTEM in this section.

A53379 —UN—20NOV03

OUC6435,0001DBD -19-31MAY11-1/1

Tank Level Sensors

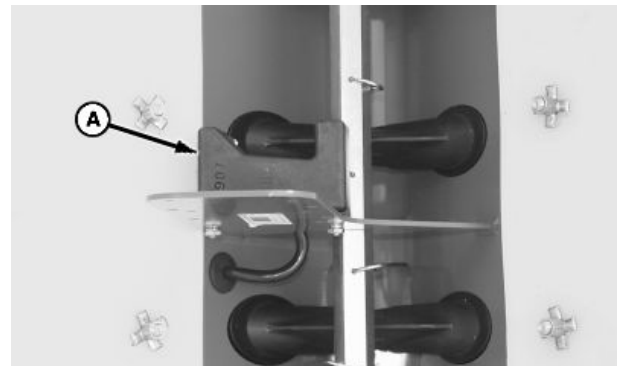
CCS tank level sensors are provided on all CCS planters. On drawn planters equipped with a frame control box, a Low Hopper warning light illuminates when the sensor is exposed.

If machine is not equipped with a frame control box, the tank level sensors are not used. Use the Seed Estimator functions in the SeedStar™ monitor to estimate when the CCS tanks are about to run empty.

IMPORTANT: Clean tank level sensors before filling CCS tanks. Use a “brush” to clean seed level sensor.

NOTE: Tank level sensor is factory installed at the lowest setting. Sensor can be moved higher up on bracket to receive an earlier warning.

When the sensor is exposed in either tank, a Low Hopper warning is illuminated on frame control box. If machine



A—Tank Level Sensor

is not equipped with a frame control box, use the Seed Estimator functions on the monitor to estimate when tanks are about to run empty.

A49868 —UN—12AUG02

OUC6045,000004F -19-12AUG10-1/1

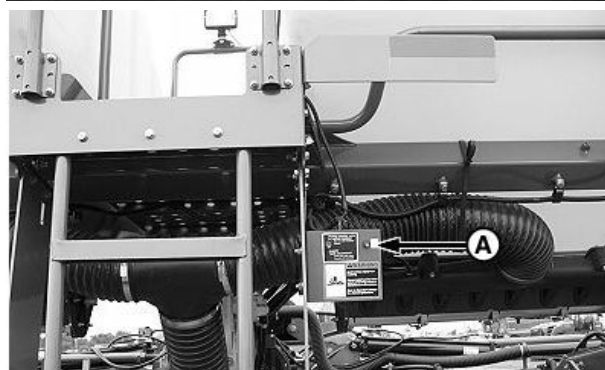
Operating CCS Tank Fill Lights

IMPORTANT: Tractor field lights must be on for fill lights to operate.

IMPORTANT: Never transport with field or fill lights on.

With tractor field lights on, toggle fill light switch (A) to operate fill lights.

A—Fill Light Switch



RM87422,0000436 -19-18FEB16-1/1

PY24873 —UN—18FEB16

PY24872 —UN—18FEB16

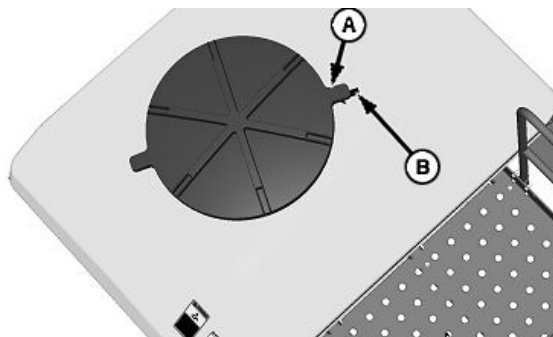
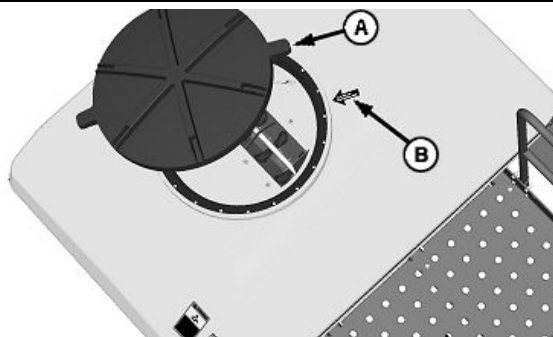
Operate Tank Lids

CAUTION: Do not open lids when CCS blower is running. Lids and harmful chemicals may be blown into face and seed lines will plug.

To open, turn lid counterclockwise. To close lid, line up handle (A) with arrow (B) and turn clockwise.

A—Handle

B—Arrow

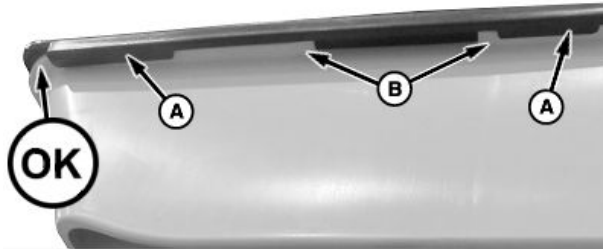


OOU6074,00009BC -19-17FEB16-1/1

A53374 —UN—20NOV03

A53375 —UN—20NOV03

Operate The Mini-Hopper Lids

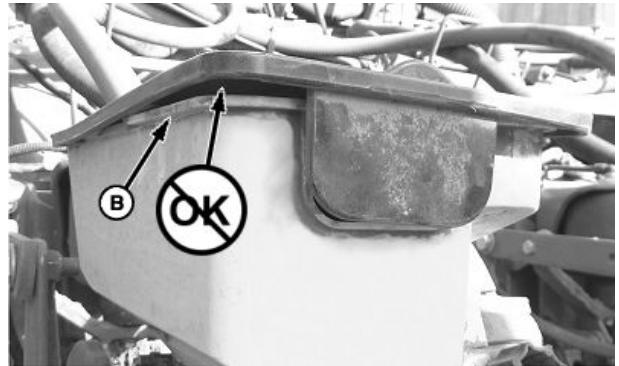


Lid Sealed Properly

A—Lid Tabs

B—Hopper Tabs

⚠ CAUTION: Do not open the lids when the CCS blower is running. The lids and harmful chemicals may be blown into your face and the seed lines will plug.



Lid Not Sealed Properly

To avoid loss of seed and treatments, the lid tabs (A) must seal properly on the hopper tabs (B).

WP29706,0000904 -19-09MAR16-1/1

Fill CCS™ Tanks

CAUTION: Never transport machine with CCS™ tanks more than half full.

Avoid physical or chemical injury from lids or chemicals blowing in to face. Do not open tank lids when CCS™ blower is running. Seed lines plug if CCS™ blower is running during fill.

Follow chemical manufacturers precautions when handling parts coated with seed treatments. Use proper skin, eye, and respiratory protection.

IMPORTANT: Remove any buildup of seed treatments or talc between CCS™ tank fills.

Avoid blockages at tank nozzles. Keep seed free of debris. Optional fill screen is available, see your John Deere dealer.

Clean seed level sensor before filling seed tanks.

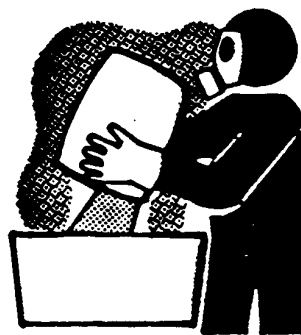
The first time a new tank is used, coat inside bottom of tank with talc. Mix triple the amount of talc into the first 2 or 3 bushels of seed placed in bulk tank. (See Meter Lubrication section.)

Extra talc coats the inside of CCS™ system with a protective layer to resist buildup of seed coatings. Add talc as bulk tank is filled.

Avoid plugging delivery hoses at CCS™ tank. Tank agitators always run when machine is lowered and tractor key is on. Do not run agitator when CCS™ blower is off. If machine is lowered for extended periods with seed in CCS™ tank, turn off tractor key or unplug agitator.

Crops approved for delivery through the CCS™ system are corn, soybeans, sorghum, cotton, sunflower, and sugar beat. All other seed types must be placed directly in the row unit hoppers.

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A34471



Row unit mini hopper extensions are available to provide more capacity for planting non-CCS™ approved crops. See your John Deere Dealer.

For best performance, level the seed in tanks after filling to minimize amount of seed remaining in tanks when planting ends. Use a 203 mm (8 in) wide, stiff bristled broom with 1372 mm (4.5 ft) handle to level seed in CCS™ tanks.

Close lids tightly after filling to avoid plugging of delivery lines when CCS™ system is activated.

A34471 —UN—11OCT88

A49921 —UN—20AUG02

OOU6074,0000E08 -19-23FEB16-1/1

Zero The CCS Blower Pressure Gauge

With the CCS blower shut off and the CCS gauge in a vertical position, disconnect the CCS blower monitor line to vent the gauge to the atmosphere. Use the zero adjusting screw (A) to set the gauge pointer exactly on the zero mark. Connect the monitor line.

A—Zero Adjusting Screw



A51170 —UN—18NOV02

OOU1074,00014B4 -19-03MAR16-1/1

Setting CCS Tank Pressure

CAUTION: Do not operate CCS blower without tank lids installed. Harmful chemicals can be blown into face and seed delivery lines plug.

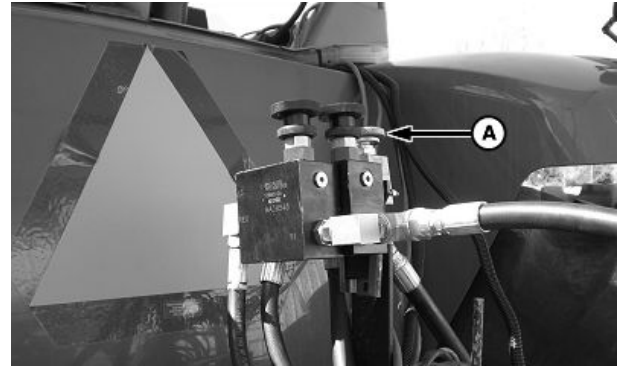
To set the tank pressure proceed as follows:

1. Make sure that tank lids are closed.

IMPORTANT: Warm oil by running vacuum blowers (if equipped) or install a hose loop in selective control valve (SCV) per tractor operator's manual. Do not use CCS fan to warm oil or seed delivery hoses can plug.

2. Warm oil for 15 minutes before setting pressure.
3. Lower machine.
4. Place CCS™ SCV in constant retract detent.
5. Open CCS fan flow control valve handle (A) (counterclockwise) until seed starts flowing to row hoppers.

IMPORTANT: Do not exceed 24 in. of tank pressure or damage can occur to the hydraulic motor and seed tank lids.



A—Flow Control Valve Handle

NOTE: If low warnings are received while planting and row meters are empty, increase tank pressure by 2 inches until meters stay full.

6. When hoppers are full and machine is not moving, adjust pressure according to crop being planted. See the following CCS Tank Pressure Settings table.

Product	Pressure in Inches of Water ^a			Nozzle Insert			Small Seed Discharge Elbow (Vacuum Only)		
	12 Row	16, 18, and 24R30	24R20 and 24R22	12 Row	16, 18, and 24R30	24R20 and 24R22	12 Row	16, 18, and 24R30	24R20 and 24R22
Soybeans	12	14	12	NO	NO	NO	NO	NO	NO
Small Corn Over 4400 seeds/kg (2000 seeds/lb.)	10	12	10	NO	NO	NO	NO	NO	NO
Medium Corn Between 4400—2640 seeds/kg (2000 and 1200 seeds/lb.)	12	14	12	NO	NO	NO	NO	NO	NO
Large Corn Less than 2640 seeds/kg (1200 seeds/lb.)	14	16	14	NO	NO	NO	NO	NO	NO
Large Popcorn Over 9900 seeds/kg (4500 seeds/lb.) ^b	10	12	10	NO	NO	NO	NO	NO	NO
Small Popcorn Less than 9900 seeds/kg (4500 seeds/lb.) ^c	10	12	10	YES	YES	YES	Optional	Optional	Optional
Sweetcorn	10	12	10	NO	NO	NO	NO	NO	NO
Cotton ^c	10	12	10	NO	YES	NO	NO	Optional	NO
Sorghum ^c	8	10	8	YES	YES	YES	YES	YES	YES
Sunflowers	6	12	6	NO	NO	NO	NO	NO	NO

^aFor other configurations, pressure can be adjusted as needed.

^bRefer to Operating CCS System section When Planting Sorghum, Small Popcorn, and Cotton.

^cRefer to Operating CCS System When Planting Sorghum, Small Popcorn, and Cotton section.

These settings are typical for average conditions. Increasing CCS pressure may be necessary in certain conditions.

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OUC6064,00000DE -19-28MAY15-1/1

A63281—UN—17SEP08

Operate CCS System with Heavily Treated Seed or Very Large Seed Corn

IMPORTANT: Talc or graphite must be mixed thoroughly during filling of tanks.

IMPORTANT: Remove any buildup of seed treatment or talc with stiff bristled 1372 mm (4.5 ft) handle 203 mm (8 in) wide broom.

VACUUM METERS: When operating CCS system with heavily treated seed or large seed corn, use 2 to 3 times the rate of talc. See SEED TREATMENT RECOMMENDATIONS in your Rate Charts and Settings Operator's Manual.

OUO6435,0001DBC -19-23FEB16-1/1

Bridged and Blocked CCS System

If the seed monitor issues a Row Failed warning, first determine if the seed delivery tube is plugged or the product is bridged in the CCS tank. To determine the cause, do the following:

1. Start the CCS blower.
2. Remove the lid from the affected row unit hopper.
3. Observe the amount of air flowing through the hopper inlet (A).
 - If **Low Air Flow** is noted, the CCS delivery hose is plugged. See Remove CCS Hose Blockage in this procedure.
 - If **High Air Flow** is noted, product has bridged in the CCS manifold. See Product Has Bridged in the CCS Tank Manifold in this procedure.

Remove CCS Hose Blockage

1. Turn the CCS blower off.
2. Remove the seed delivery hose from the affected row unit.
3. Shake the hose vigorously from the hopper to the CCS tank until the blockage spills from the end of the hose.



A—Hopper Inlet

4. Reconnect the hose.
5. Start the CCS blower and verify that the seed flows into hopper.
6. If no seed flow is observed, repeat the procedure.

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A78939 —UN—21OCT13

Product Has Bridged in the CCS Tank Manifold

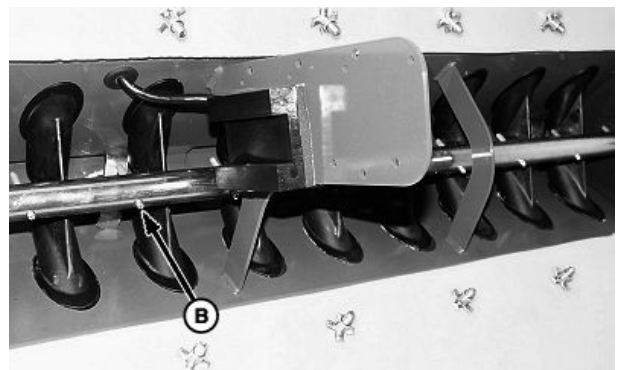
1. The following items must be checked to verify the proper operation of the CCS system:
 - CCS tank pressure is set to the recommended setting for the crop being planted.
 - Tank agitator is turning when the CCS blower is on.
2. Nozzle inserts (A) are installed or removed for the specific crop being planted.
3. Agitator pins (B) are centered between the tank nozzles.

IMPORTANT: DO NOT exceed 24 in of tank pressure or damage can occur to the hydraulic motor and seed tank lid.

4. If all of the conditions are addressed and bridging still occurs, increase the CCS tank pressure in 1 inch increments until the seed flows properly to all of the rows.

A—Nozzle Insert

B—Pins

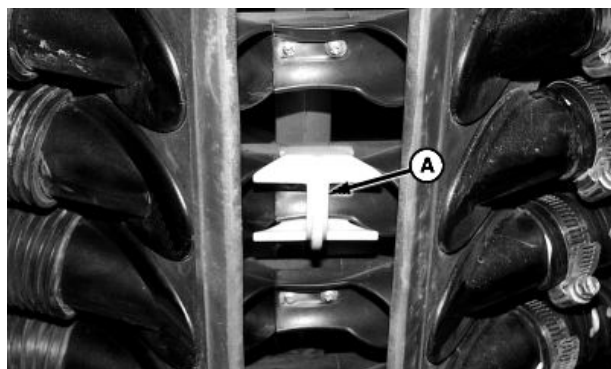


A50710 —UN—17OCT02

A62189 —UN—06MAR08

OUC6045,0000001 -19-03MAR16-2/2

Operate The CCS System When Planting Sorghum and Small Popcorn



Nozzle Inserts

A50710 —UN—17OCT02



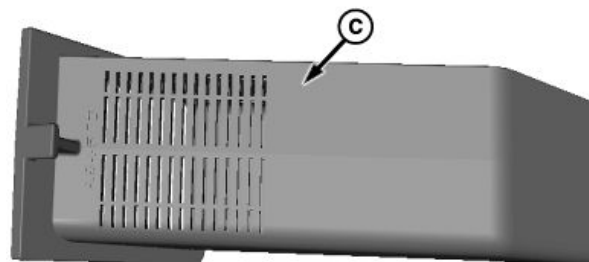
A79241 —UN—21NOV13

IMPORTANT: Remove the nozzle inserts (A) before switching to a crop with larger seed. Larger seed will not come out of the tank with the nozzle inserts installed. The tank will have to be drained, the nozzle inserts removed, and then refilled.

NOTE: Cotton seeds that are especially small in size can require nozzle inserts and discharge elbows.

NOTE: See *Setting The CCS Tank Pressure* for the application requirements.

1. Install the nozzle inserts (A) over all of the nozzles before filling the tank.
2. Remove elbow (B) with small holes from the mini hoppers.
3. Install elbow (C) with slotted holes in the mini hoppers.



Elbow - Sorghum

A79121 —UN—21NOV13

A—Nozzle Inserts
B—Elbow (Standard Seed)

C—Elbow (Sorghum)

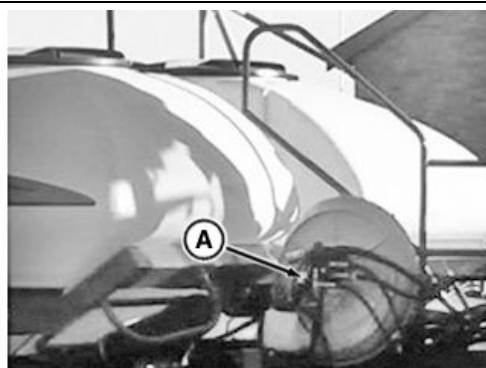
OUC6074,0000878 -19-09MAR16-1/1

Planting Seed Plots with CCS Systems

NOTE: Due to the small quantity of seed being planted, removing the CCS system from operation and filling row units individually is recommended.

- Disconnect harness connector (A) from CCS fan.
- Fill row units individually instead of using CCS tanks.

A—CCS Fan Harness
Connector



PY24867 —UN—18FEB16

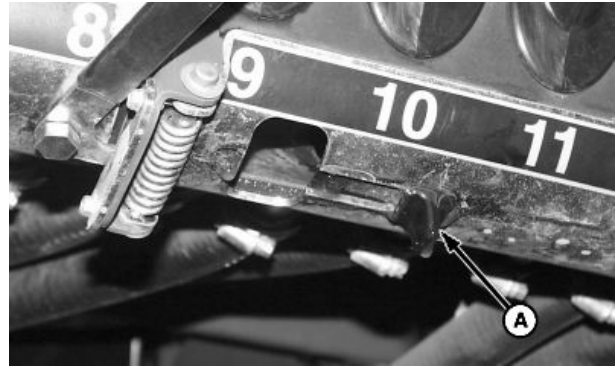
RM87422,0000431 -19-17FEB16-1/1

Partially Cleaning Out CCS Tanks

To remove only a portion of seed from CCS tanks, there is a small variable cleanout door that can be opened or closed to control the amount of seed being removed.

Slide door (A) until desired amount of seed is coming out.

A—Door



A52501—UN—01JUN04

OUO1074,0001425 -19-16OCT03-1/1

Clean Out CCS™ Tanks

IMPORTANT: Avoid damage to cleanout doors.
Verify that cleanout doors on CCS™ tanks are closed before folding machine.

NOTE: Cleanout door (B) is used to even out the level of seed in tanks and for a controlled cleanout.

Cleanout door (D) cannot be closed once cleanout has been started.

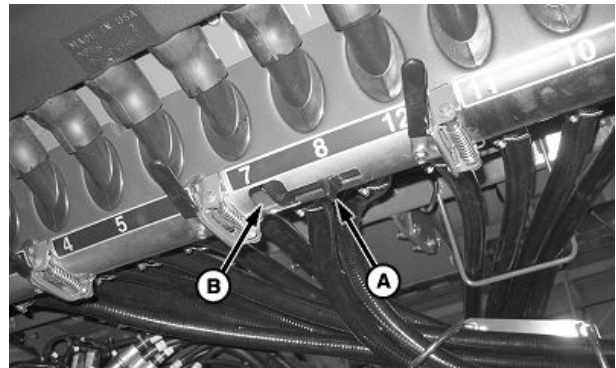
When cleaning tank for certified seed, remove all seed from tank with a broom that has stiff 203 mm (8 in.) wide bristles and a 1372 mm (4.5 ft.) handle.

Remove any buildup of seed treatment or talc with a broom that has stiff 203 mm (8 in.) wide bristles and a 1372 mm (4.5 ft.) handle.

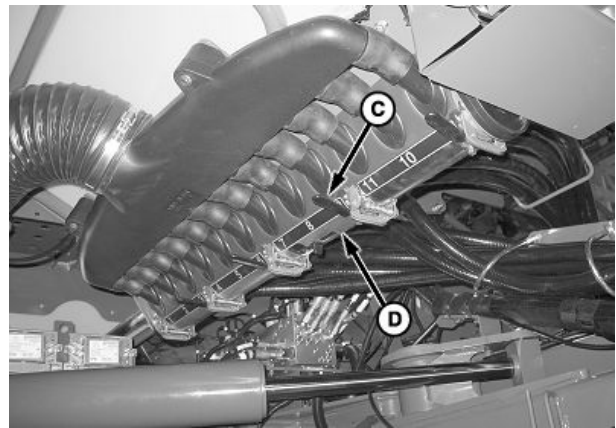
1. To catch seed from tank, place a container under cleanout doors.
2. Slide handle (A) to operate cleanout door (B). Once most of seed has been removed, close door.
3. Rotate lever (C) to open cleanout door (D) to catch remaining seed from tank.
4. Close cleanout door.
5. Repeat for all other cleanout doors.

A—Handle
B—Cleanout Door

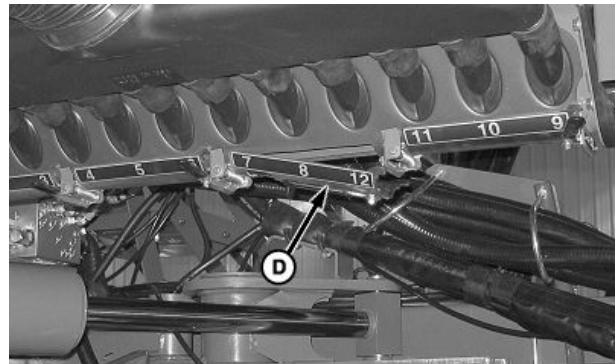
C—Handle
D—Cleanout Door



A68219—UN—20JUL10



A68218—UN—20JUL10



A68220—UN—20JUL10

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OUO6074,00009BF -19-12AUG14-1/1

Cleaning Out Delivery Hoses and Vacuum Metering Units

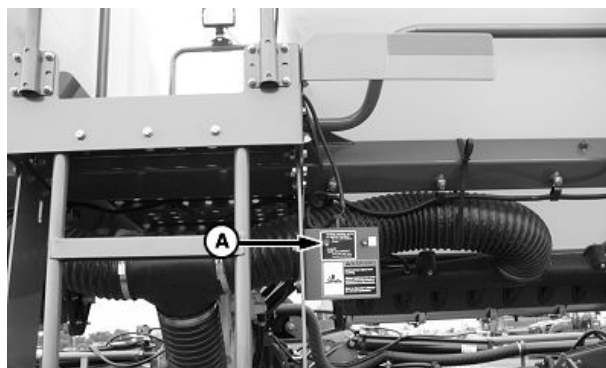
CAUTION: Avoid injury from crushing. Planter can lower when CCS fan switch is moved to Plant/Tank Cleanout position. Frame control box Plant/Trans switch must be in Trans position, service locks must be installed, and the following procedure must be followed as outlined.

The Purge/plant switch (A) allows the fan to operate while machine is in a raised position. This switch enables the operator to clean out the CCS™ tanks and purge the hoses without climbing in and out of the tractor cab. The following procedure must be completed in the order given to avoid possible injury and machine damage.

1. Raise machine and install lift assist wheel cylinder service locks.
2. Place tractor in park.

NOTE: With frame in raised position, the CCS row unit switch disables CCS fan.

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A—Purge/Plant Switch

3. Place CCS fan hydraulic selective control valve (SCV) lever into retract-detent position.
4. Ensure that Purge/Plant switch is in Plant/Tank Cleanout position.

A63283—UN—17SEP08

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RM87422,000042E -19-15FEB16-1/5

CAUTION: Use caution if using seed treatments when opening meter doors. Chemical can cause eye, skin, or breathing problems. Wear mask, gloves, and goggles. Read and follow safety instructions on the chemical manufactures label.

IMPORTANT: When cleaning tank for certified seed, remove all seed from tank with stiff bristled 1372 mm (4.5 ft.) handle 203 mm (8 in.) wide broom.

IMPORTANT: Remove any buildup of seed treatment or talc with stiff bristled 1372 mm (4.5 ft.) handle 203 mm (8 in.) wide broom.

IMPORTANT: Make sure that cleanout doors on CCS tanks are closed before folding machine or they can be damaged.

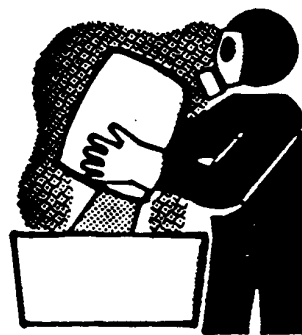
5. If tanks contain large amounts of seed, use slide door (A) to reduce seed to a manageable level. Once cleanout doors (B) are open they cannot be closed completely until seed stops flowing. Repeat on each tank.

NOTE: Purge/Plant switch must be in Tank Cleanout position or CCS fan forcefully expels seed from cleanout doors.

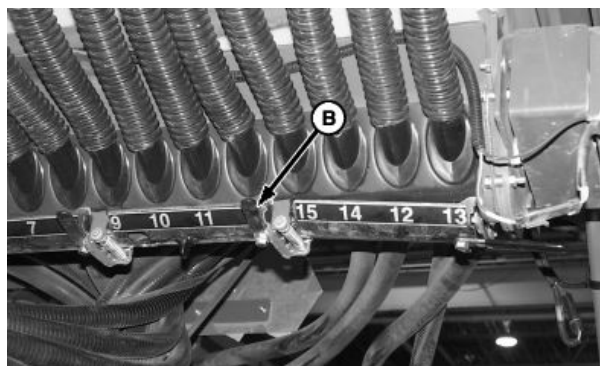
6. Place a bucket (C) or other container under cleanout door (B) and open door to clean out remaining seed.
7. Close cleanout door.
8. Repeat on remaining cleanout doors.

A—Slide Door
B—Cleanout Door

C—Bucket



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A34471 —UN—11OCT88

A52501 —UN—01JUN04

A54392 —UN—01JUN04

A54393 —UN—01JUN04

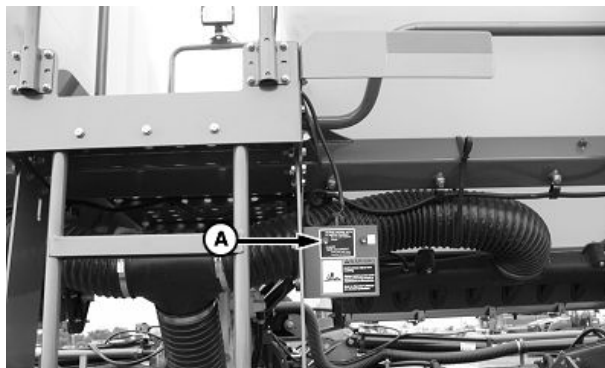
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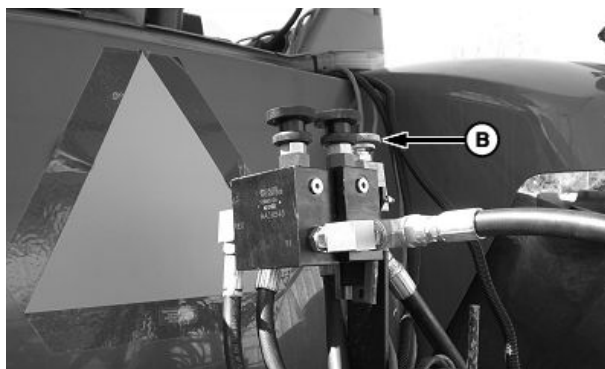
9. Flip Purge/Plant switch (A) to the Purge Hoses position.
10. Adjust CCS fan control knob (B) until 24 inches of tank pressure is achieved to guarantee good cleanout.

A—Purge/Plant Switch

B—CCS Fan Control Knob



A63283 —UN—17SEP08



A63284 —UN—17SEP08

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RM87422,000042E -19-15FEB16-3/5

A34471



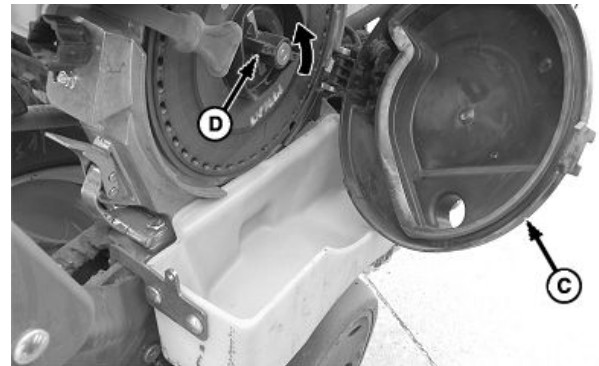
A34471—UN—11OCT88



A82664—UN—29MAY14

CAUTION: Use caution if using seed treatments when opening meter doors. Chemical can cause eye, skin, or breathing problems. Wear mask, gloves, and goggles. Read and follow safety instructions on the chemical manufactures label.

11. Install catch pan onto row unit with plastic edge (A) into position near parallel arms.
12. Install hooked plate (B) into indented edge as shown.
13. Open meter cover (C), rotate handle (D) into unlocked position, and remove seed disk.
14. Install seed disk back in meter. Repeat on all rows.
15. Return seed meter catch pan to storage position.



A82665—UN—29MAY14

A—Plastic Edge
B—Hooked Plate

C—Meter Cover
D—Handle

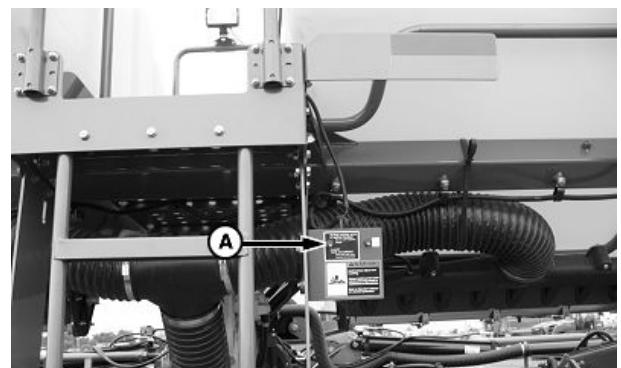
RM87422,000042E -19-15FEB16-4/5

CAUTION: Avoid injury from sudden CCS fan start-up. If Purge/Plant switch is left in Purge Hoses position, CCS fan operates any time SCV is activated, even in folded position.

NOTE: The Purge/Plant switch must be returned to the Plant/Tank Cleanout position for best planter performance.

16. Place Purge/Plant switch (A) in Plant/Tank Cleanout position.
17. Place tractor CCS fan hydraulic SCV in float position.

NOTE: Purge/plant switch location may differ from one model to the other.



A—Purge/Plant Switch

A63283—UN—17SEP08

RM87422,000042E -19-15FEB16-5/5

General Attachments

General

IMPORTANT: For proper machine operation, it is important that the machine frame be fully lowered into the correct planting position. Achieving this position can be difficult with some attachment combinations, especially when planting in hard to penetrate soil

conditions. If this situation is encountered, the following action may be warranted:

**Reduce attachment down force levels.
Avoid using more attachment down force than is required.**

Add frame ballast when conditions warrant.

AG,OUO6074,1609 -19-03MAR16-1/1

SeedStar™ Variable Rate Drive System

The variable rate drive system uses hydraulic motors to drive the seed meters. The speed of each motor can be changed from the cab to change seed population while planting.

- Operator can match seed population to different seed varieties, soil types, and irrigation practices.

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- Multiple rate selections and prescriptions can be programmed and applied.

For more information, see your SeedStar™ Operator's Manual.

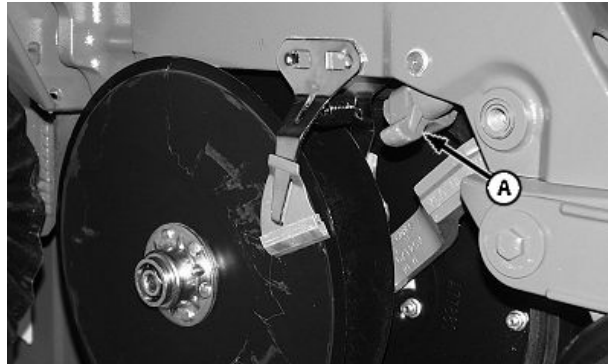
OUO6064,000024A -19-13MAR14-1/1

Walking Gauge Wheels

The walking gauge-wheel attachment (A) should be used in rocky conditions or in fields with rough surface conditions due to soil clods or residue. In these conditions, the walking gauge-wheel reduces the vertical movement of the opener when one gauge wheel rolls over a solid obstacle. Reduced opener movement increases the seed depth control.

Walking action is reduced when planting very deep or very shallow.

Walking gauge wheels are not for light soil or well-tilled soil conditions. In these conditions, the gauge wheels can run at different heights relative to each other. This results in poor seed-depth consistency and possible poor closing action which may affect emergence.



A—Walking Gauge Wheels Attachment

A54018—UN—08MAR04

OUO6074,00009D9 -19-03MAR16-1/1

Seed Tubes

Large curved and regular curved seed tubes are available for all seed metering systems.

Large curved seed tubes are recommended for planting large edible beans, large peanuts, and other large seeds.

Regular curved seed tubes are recommended for planting acid-delinted cotton, corn, soybeans, sorghum, small edible beans, sugar beets, and other small seeds.

All seed tubes have snap-in tabs for quick seed tube placement.

Remove seed tubes as needed. (See Install and Remove Seed Tubes in Service and Adjustments section.)



AG6648 —UN—01MAR10

OUO6064,0000560 -19-24FEB15-1/1

Rigid Scraper

The rigid scraper (A) is recommended for use in only moist and sticky soil conditions.

Inspect scraper insert for wear at beginning of season and periodically during season.

IMPORTANT: Avoid disk wear. Only use scraper in moist and sticky soil conditions. Remove in all other conditions.

A—Rigid Scraper



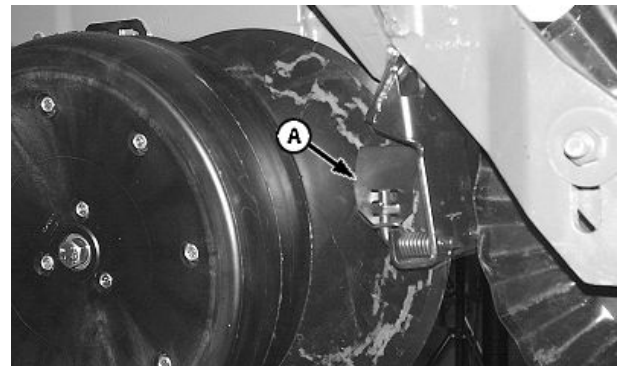
A71644 —UN—26MAY11

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Heavy-Duty Scraper

Use the heavy-duty scraper (A) to clean sticky soils from the opener blades.

A—Heavy-Duty Scraper



A54020 —UN—08MAR04

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Disk Closing Attachment

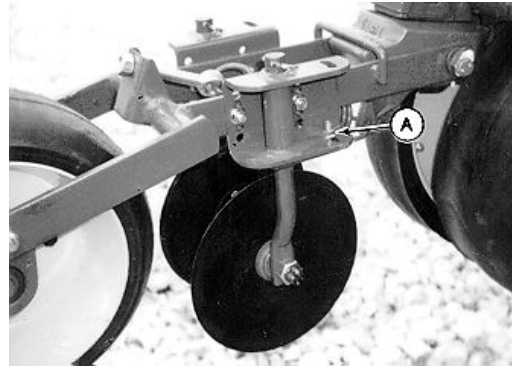
Angle Adjustment

NOTE: The following adjustment should be made in the field.

Soil is squeezed from each side of trench around seed to close trench. There are five possible angle settings for varying soil conditions. Use minimum angle required to close seed trench.

Loosen nut and cap screw (A). Pivot disk to desired setting then tighten nut and cap screw.

A—Cap Screw



A41128—UN—21APR97

OOU6435,0001E29 -19-28SEP05-1/3

Depth Adjustment

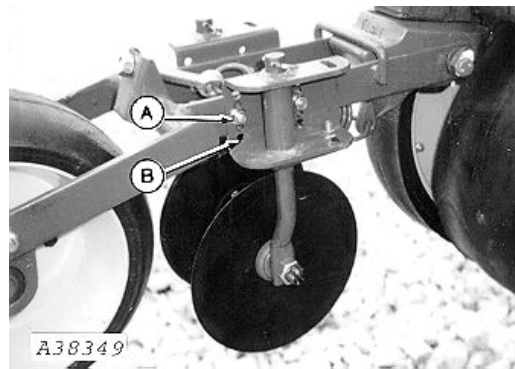
NOTE: The following adjustment should be made in the field.

Depth of the closing disks should be approximately 10 mm to 15 mm (3/8 in. to 5/8 in.) deeper than planting depth. There are five settings available.

Remove nut and cap screw (A). Raise or lower adjusting bracket (B) as necessary. Align holes and install nut and cap screw.

A—Cap Screw

B—Bracket



A38349—UN—17APR97

OOU6435,0001E29 -19-28SEP05-2/3

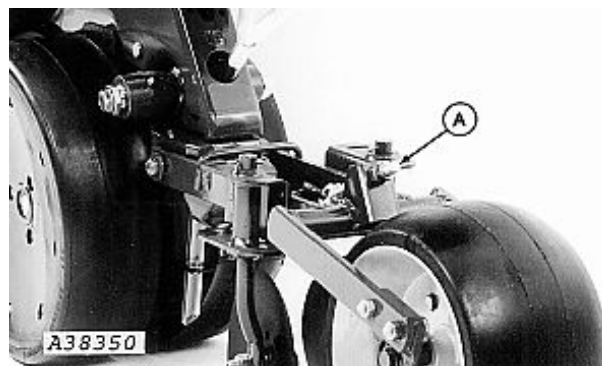
Spring Pressure Adjustment

NOTE: The following adjustment should be made in the field.

Set press wheel down force at the minimum pressure necessary to close disk tracks and establish a soil surface profile for proper drainage.

Turn nut on eyebolt (A) to adjust spring pressure.

A—Eyebolt



A38350—UN—09APR96

OOU6435,0001E29 -19-28SEP05-3/3

Install The Hopper Extension (Mini-Hopper Only)

IMPORTANT: Avoid interference with the frame tube. Do not use the mini-hopper extension on the 1795 rockshaft near the mainframe.

NOTE: When sugar beets are used or when using seed not approved for CCS™ seed tank delivery, the seed must be added to the hoppers, not the CCS™ tank. The extensions allow for more seeds to be planted. The extensions are useful when planting seed plots.

Disable the CCS™ blower when using the mini-hopper extension.

Do not install more than one extension on a mini-hopper.

When filling the mini-hopper extension, do not fill the seed over the screen vent holes.

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A—CCS™ Solenoid Harness

1. Disconnect harness (A) to disable the CCS™ blower.

A86748—UN—17JUN15

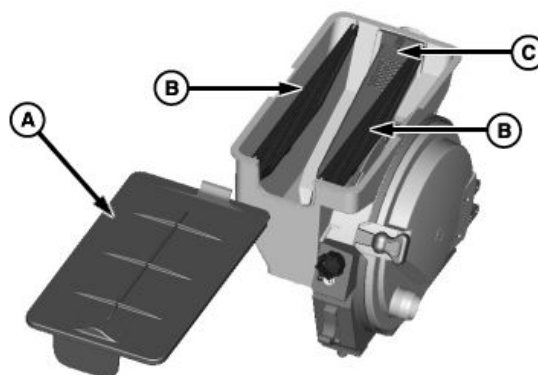
MH69740,000054F -19-04MAR16-1/3

2. Remove the lid (A), the screened dividers (B), and the discharge tube (C).

A—Lid

B—Screened Dividers

C—Discharge Tube



Continued on next page

MH69740,000054F -19-04MAR16-2/3

A78492—UN—31JUL13

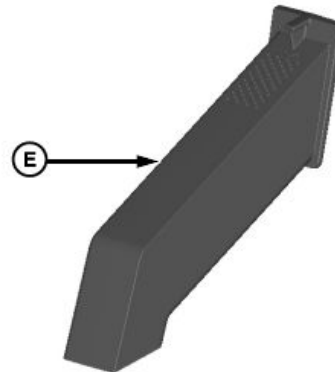
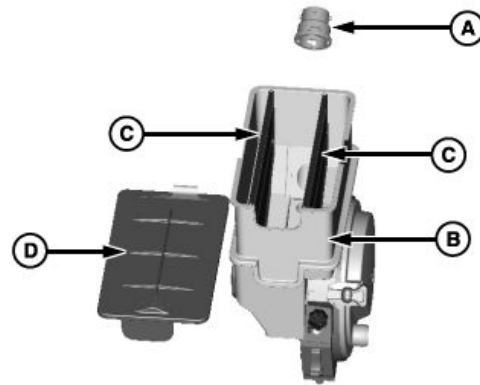
3. Install cap (A) between the CCS™ tube and the hose.

NOTE: Mini-hopper extensions are compatible with the CCS™ delivery system. To return to CCS™ system use, install the discharge tube (E) removed in step 2, reconnect the CCS™ blower harness, and remove the cap (A) (if used).

NOTE: Do not fill the mini hopper higher than the bottom of the screens. If seeds restrict the airflow through the screens, meter performance suffers.

4. Install extension (B) onto the mini-hopper.
5. Install the dividers (C) into the mini-hopper and the extension (B).
6. Reinstall the lid (D).

A—Cap	D—Lid
B—Mini-Hopper Extension	E—Discharge Tube
C—Non-Screened Dividers	



A78493—UN—31JUL13

A78494—UN—31JUL13

MH69740,000054F -19-04MAR16-3/3

RowCommand Attachment

The RowCommand system incorporates an electrical clutch at each seed meter to manage seed output, reduce yield loss, and improve harvest capability. Individual meters are grouped into RowCommand sections.

Swath Control Pro is a trademark of Deere & Company

RowCommand sections can be operated manually or in conjunction with Swath Control Pro™ for automatic operation. See your John Deere dealer for additional information.

OUC6045,00001A0 -19-16JUL09-1/1

Unit Mounted Coulter

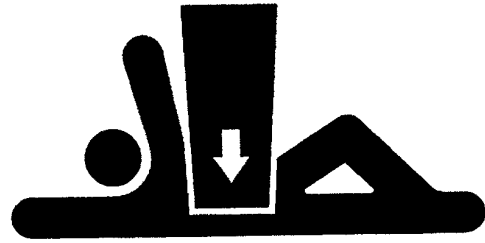
CAUTION: Avoid crushing injury or death from a falling implement. Install service locks before performing any service or adjustments under a raised machine:

Shift tractor to "Park" or set the parking brake, stop engine, and remove the key.

CAUTION: Coulter blades are sharp. Use gloves when handling blades.

IMPORTANT: Bottom edge of coulter blade is placed approximately 10 mm (3/8 in.) up from bottom edge of seed openers in normal conditions. (Check this dimension with machine in planting position on any level surface.) The force required for penetration and the help to maintain a constant seed depth is minimized.

As coulter blade wears, adjust coulter depth.



IMPORTANT: An option in heavy straw is to position bottom edge of coulter blade under bottom edge of seed openers, but doing so can affect seed depth.

OUO6074,00000B8 -19-24JUN09-1/3

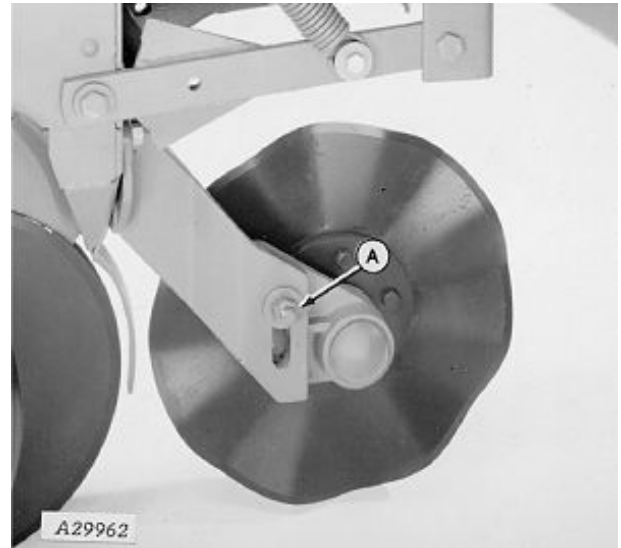
The unit mounted coulter can be used to assist the TRU-VEE™ opener to penetrate tough soil conditions and to cut or displace residue commonly found in reduced tillage conditions.

The coulter blade depth is controlled with the opener gauge wheels, weight adjustment, and cap screw (A). As blade wear occurs, loosen cap screw (A), lower arm to next notch and tighten nut.

If the soil is dry on top but moist underneath and the coulter blade is lifting mud to the surface, mud can accumulate on the gauge wheels and alter the seed depth. Either raise the coulter slightly, use a less aggressive blade, or remove coulter in these soil conditions.

Down force springs are recommended with this attachment.

A—Cap Screw



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Continued on next page

OUO6074,00000B8 -19-24JUN09-2/3

A44347 —UN—16DEC97

A29962 —UN—06OCT88

Adjust coulter blade so it is directly in front of TRU-VEE™ opener and is not running at an angle to direction of travel.

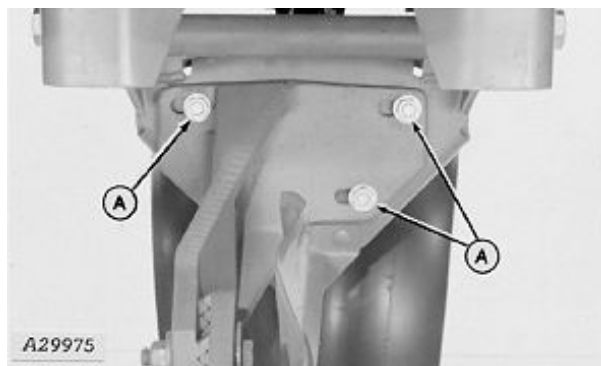
To align side-to-side, loosen cap screws (A) and slide coulter.

If coulter blade is running at an angle different from the direction of travel do the following:

- Remove cap screws (A).
- Add washers, as required, between back surface of coulter casting and front of planting unit.
- Reinstall cap screws (A).

A—Cap Screws

TRU-VEE is a trademark of Deere & Company



A29975—UN—06OCT88

OUC6074,00000B8 -19-24JUN09-3/3

Frame Mounted Coulter

The frame mounted coulter can be used to assist the Tru-Vee™ opener to penetrate tough soil conditions. The frame mounted coulter cuts and displaces residue commonly found in no-till planting conditions.

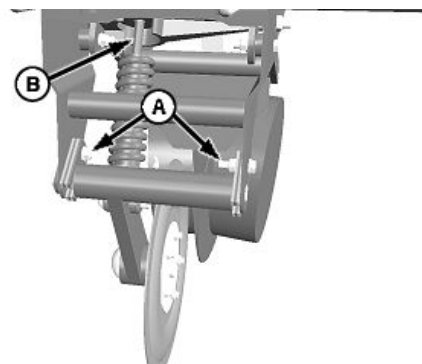
The frame mounted coulter blade must be directly in front of the seed opener. To adjust the coulter blade side-to-side, do the following:

- Remove cap screws (A).
- Align blade with Tru-Vee™ opener by moving spacers from one side and placing on opposite side.
- Reinstall cap screws.

IMPORTANT: Bottom edge of coulter blade is placed approximately 10 mm (3/8 in.) up from bottom edge of seed openers in normal conditions. (Check this dimension with machine in planting position on any level surface.) The force required for penetration and the help to maintain a constant seed depth is minimized.

As coulter blade wears, adjust coulter depth.

IMPORTANT: An option in heavy straw is to position bottom edge of coulter blade under bottom edge of seed openers, but doing so can affect seed depth.



A56252—UN—29APR05

A—Cap Screws

B—Cap Screw

To adjust depth of the coulter blade do the following:

- Turn cap screw (B) clockwise to raise blade.
- Turn cap screw (B) counterclockwise to lower blade.

Use the lightest setting possible to avoid over penetrating and disturbing seed bed in lighter soils.

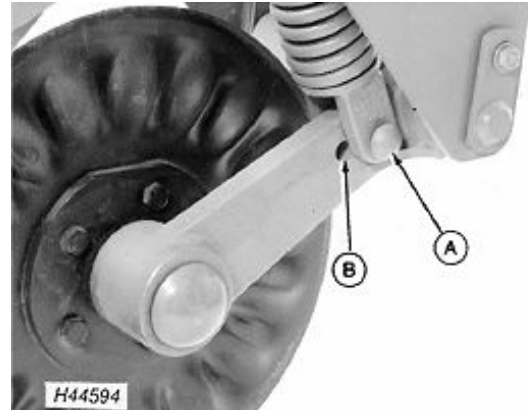
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OUC6074,00008D3 -19-30JUN08-1/2

In heavier field conditions, commonly found in no-till planting conditions, install pin (A) in hole (B) for increased penetrating force.

A—Pin

B—Hole



H44594 —UN—29MAY92

OUO6074,00008D3 -19-30JUN08-2/2

Row Cleaner for Unit Mounted Coulter

CAUTION: Avoid injury. Row cleaner blades are sharp. Safely support machine before service.

IMPORTANT: Avoid machine damage. Pin (A) must be installed through bracket (B), below or through arm (C).

IMPORTANT: Avoid machine damage. If set in a high rigid position, row cleaner can contact frame when row unit travels over rough surfaces.

Ground conditions, depth adjustment, and ground speed affect the width of path cleared.

Operate at sufficient speed 6.5—9.5 km/h (4—6 mph) to maintain good residue flow.

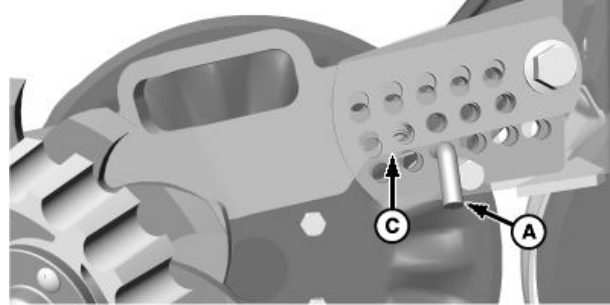
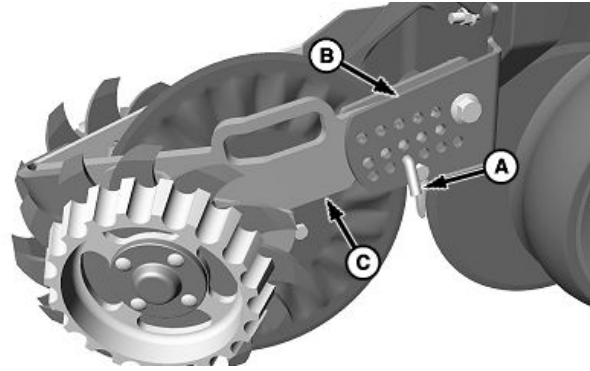
Do not expect 100% removal of crop residue. Complete residue removal is not necessary. Complete removal requires engagement of soil, which is not recommended.

Expect row cleaners to stop turning occasionally when they are properly adjusted above soil surface.

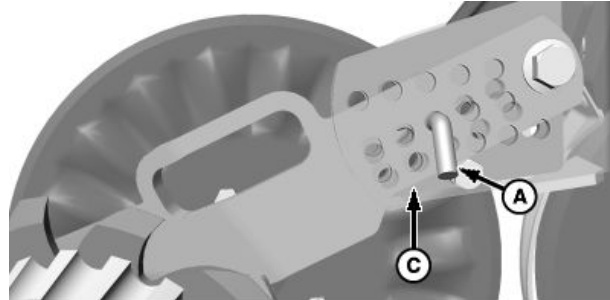
Adjust row unit down force to match residue conditions and maintain desired seed depth.

Adjust planter frame height and level planter for proper row cleaner operation (See Prepare Machine section).

If the residue clearing action is too aggressive, standard tine tooth wheels are available from your dealer.



Transparency of Float Position (Example)



Transparency of Rigid Position (Example)

A—Pin
B—Mounting Bracket

C—Row Cleaner Arm

Floating Operation	Rigid Operation	Operation Without Coulter
Place pin (A) through bracket (B) in the lowest hole possible, so blades engage residue and not soil. Install pin so arm (C) rides on top of pin and is allowed to float upward over obstacles. Test for proper operation and continue to adjust until height is correct. Note the hole used and set remaining row cleaners to same position. Verify correct operation of all row cleaners.	IMPORTANT: Avoid damage. Do not set in highest positions in very rough field conditions. When pinned rigid, contact with obstacles can raise entire row unit and alter seed depth. Only use rigid operation when necessary. If residue is too heavy and row cleaners float over the residue, place pin (A) through bracket (B) and arm (C) for rigid operation. Adjust blades just above soil surface. Test for proper operation and continue to adjust until height is correct. Note the hole used and set remaining row cleaners to same position. Verify correct operation of all row cleaners.	If the soil is dry on top but moist underneath and the coulter blade is lifting mud to the surface, mud can accumulate on the gauge wheels and alter the seed depth. Either raise the coulter slightly, use a less aggressive blade, or remove coulter in these soil conditions. If coulter blade is removed, reposition row cleaner wheels to a staggered orientation. On right-hand side of planter, reposition right-hand wheel and scraper to front set of holes. On left-hand side of planter, reposition left-hand wheel and scraper to front set of holes. If coulter is reinstalled, return row cleaner wheels and scrapers to rear holes.

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A64725—UN—08JUL09

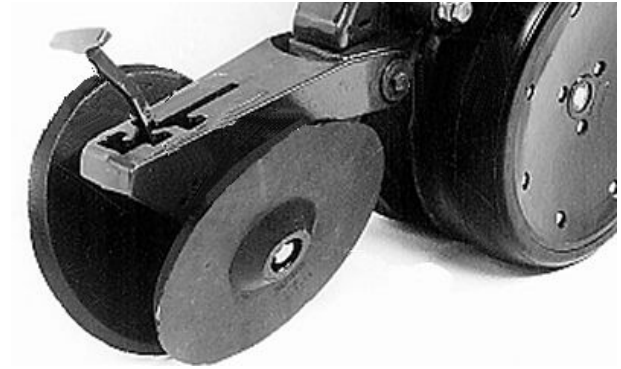
A64858—UN—08JUL09

A64859—UN—08JUL09

Heavy-Duty Closing Wheels

NOTE: The heavy-duty closing wheels are not recommended for conventional planting conditions.

In hard to penetrate soils or seed beds with considerable residue, it may be difficult to completely close the seed furrow with regular closing-wheels. Heavy-duty closing wheels are made of heavy cast material and have an aggressive edge to more effectively close the seed furrow in severe soil conditions.



Heavy-Duty Closing Wheels

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A47303—UN—07APR01

Vacuum Meter Setup

Vacuum Meter Operating Characteristics

The operating band (gray area) illustrates how a vacuum meter performs in relation to target rate (D).

The width of the operating band varies based upon:

- Various sizes and shapes of seeds
- Planting rate variations
- Field Conditions

In most cases, meter accuracy does not decline unless maximum planting speed is exceeded.

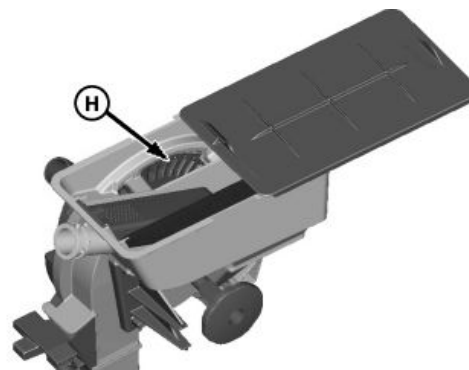
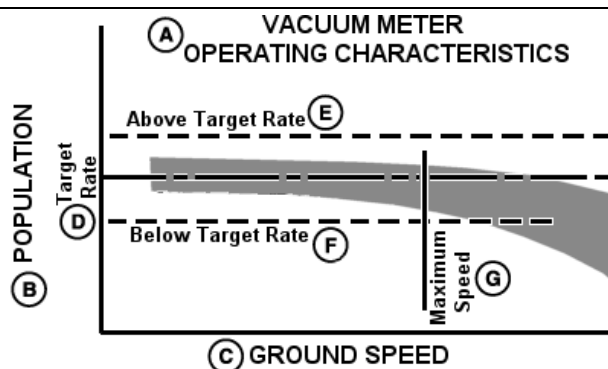
The maximum speed varies based upon field conditions. Rough field conditions can knock seed off seed disks and can cause row unit bounce which severely affects seed placement. Adding attachments such as pneumatic down force improves seed placement in rough field conditions.

Always verify that the correct seed disk is used for seed selection. If the seed is unusually sized or shaped, try a disk for a different crop and re-evaluate the performance. See SEED DISK RECOMMENDATIONS in this section or your John Deere™ dealer.

If seed varies widely in size and shape, try a flat disk and double eliminator for improved population control.

To check for the proper seed disk application with mini-hoppers:

- Remove lid from seed hopper.
- Place seed in meter.
- Connect vacuum hose to meter dome.
- Activate vacuum to recommended level for crop.
- To verify that only one seed fits into each cell (H), turn meter by hand.



A—Vacuum Meter Operating Characteristics
B—Population
C—Ground Speed
D—Target Rate

E—Higher Than Target Rate
F—Lower Than Target Rate
G—Maximum Speed
H—Seed Cell

CROP STAND = SEED SINGULATION + SEED PLACEMENT + AGRONOMIC FACTORS

Seed Singulation = Seed Selection + Seed Disk Selection + Vacuum Level + Field Conditions + Maintenance

Seed Placement = Row Unit Maintenance + Speed + Field Conditions + Planter Attachments + Observation & Adjustment

Agronomic Factors = Seed Germination + Soil Temperature + Moisture + Nutrients + Pest Control + Weather

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OUO6074,0000CF5 -19-23APR14-1/1

Seed Meter Settings



Wheel A



Wheel B

A86283 —UN—08MAY15



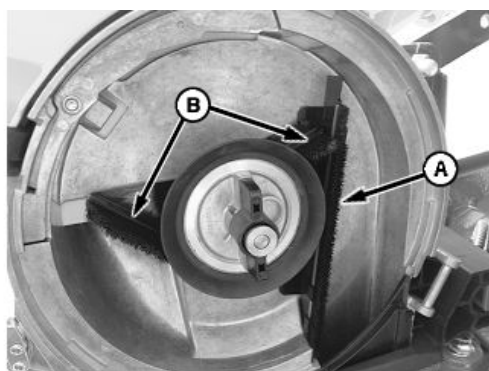
Wheel C

A86284 —UN—08MAY15



Wheel D

A82573 —UN—09MAY14



Rear Brush Only on 1795 and DB120

A82570 —UN—09MAY14



Front Brush on All Planters

A82571 —UN—09MAY14

A—Front Brush

B—Rear Brush

CCS™ Compatible	Crop	Disk	Front Brush (A)	Baffle Position ^a	Doubles Eliminator	Knockout Wheel
This table can be used as a quick reference for some common settings. For more recommendations and adjustment information, see the recommendations and adjustment procedures outlined in this section.						
Yes	Corn	Standard or Small Corn	Long	Upper	See Footnote ^b	No ^c
Yes	Corn	ProMax 40	Long	Upper	See Footnote ^d	Wheel C
Yes	Sweet Corn	ProMax 40	Long	Upper	See Footnote ^e	Wheel C
Yes	Sweet Corn	Small Sweet Corn	Long	Upper	See Footnote ^e	Wheel C
Yes	Popcorn	Sunflower and Popcorn 30 Cell	Long	Lower	See Footnote ^b	No ^c
Yes	Popcorn	Sorghum	Long	Lower	See Footnote ^b	Wheel B
Yes	Oil Sunflower	Sunflower and Popcorn 30 Cell	Long	Lower	See Footnote ^b	No ^c
Yes	Oil Sunflower	Oil Sunflower 40 Cell	Long	Lower	See Footnote ^b	Wheel A
Yes	Confectionary Sunflower	ProMax 40	Long	Upper	See Footnote ^e	Wheel C
Yes	Confectionary Sunflower	Small Sweet Corn	Long	Upper	See Footnote ^e	Wheel C
Yes	Low Rate Cotton	Cotton 32 Cell	Long	Upper	See Footnote ^b	No ^c
Yes	Cotton	Cotton 64 Cell	Long	Upper	See Footnote ^b	No ^c
Yes	Cotton	Edible Bean Flat Type	Long	Upper	See Footnote ^e	Wheel D
Yes	4 Seed Cotton Hill drop	Cotton 48 Cell (4 seed drop)	Short	Upper	See Footnote ^b	No ^c
Yes	2 Seed Cotton Hill drop	Cotton 64 Cell (2 seed drop)	Long	Upper	See Footnote ^b	No ^c
Yes	Low Rate Sorghum	Sorghum 45 Cell	Long	Lower	See Footnote ^b	Wheel B
Yes	High Rate Sorghum	Sorghum 90 Cell	Long	Lower	See Footnote ^b	No ^c
Yes	Sorghum	Sugar Beet	Long	Lower	See Footnote ^b	Wheel B
Yes	Soybean	Soybean	Long	Upper	See Footnote ^b	No ^c
Yes	Soybean	Cotton 64 Cell	Long	Upper	See Footnote ^b	No ^c
Yes	Sugar Beet	Sugar Beet	Long	Lower	See Footnote ^b	Wheel B
The following crops are not approved for Central Commodity System (CCS™) delivery.						

Continued on next page

OUC06074.0000CF3 -19-02MAR16-1/2

Vacuum Meter Setup

CCS™ Compatible	Crop	Disk	Front Brush (A)	Baffle Position ^a	Doubles Eliminator	Knockout Wheel
No	Small Edible Bean	Small Edible Bean Cell Type	Long	Upper	See Footnote ^b	No ^c
No	Medium Edible Bean	Medium Edible Bean Cell Type	Short	Upper	See Footnote ^b	No ^c
No	Large Edible Bean	Large Edible Bean Cell Type	Short	Upper	See Footnote ^b	No ^c
No	Small, Medium, and Large Edible Beans	Edible Bean Flat Type	Long	Upper	See Footnote ^e	Wheel D
No	Runner and Spanish Peanut	Large Edible Bean Cell Type	Short	Upper	See Footnote ^b	No ^c
No	Virginia Peanut	Virginia Peanut	Short	Upper	See Footnote ^b	No ^c

^aWith 1.6, 2, and 3 bushel hoppers.

^bDouble eliminator not used with this disk. Set double eliminator to position "0" with adjustment knob.

^cInstall wiper attachment when knockout wheel is not used.

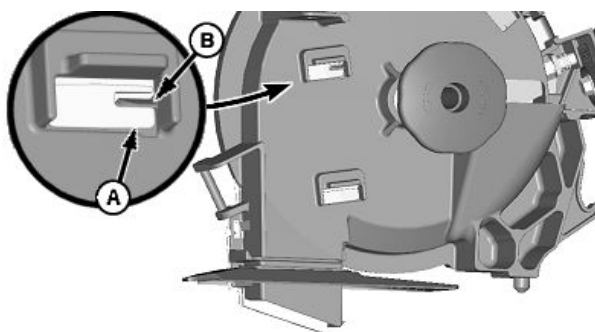
^dSet eliminator with far right tooth covering 50 percent of the hole for most corn seed sizes (See Double Eliminator Operation in this section).

^eAdjust tip of eliminator towards center of meter as far as possible.

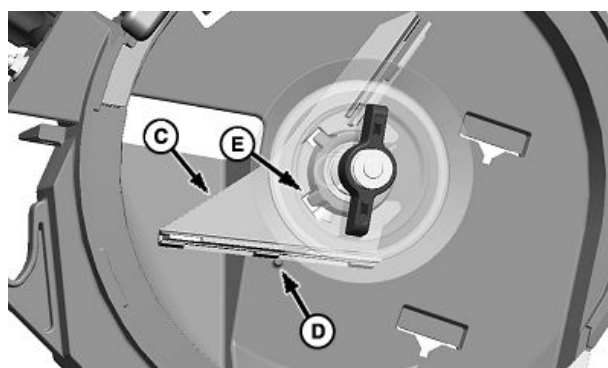
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Change the Vacuum Seed Meter Brush



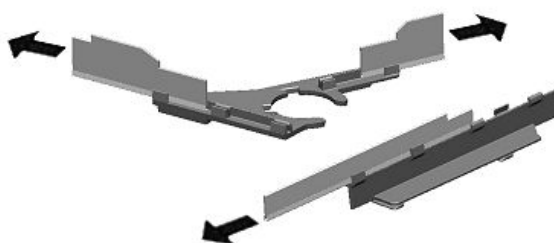
A77792 — UN—01MAY13



A77793 — UN—01MAY13

Rear Brush on 1795 and DB120 Only

1. Open the seed meter. (See Access and Cleanout the Vacuum Seed Meter in this section.)
2. Inspect brushes for wear and replace as needed. (See Seed Meter Settings in this section for recommended brushes.)
3. Pry the front brush tab (A) over the lock (B) and remove brush holder from meter.
4. On 1795 and DB120 planters, rotate rear brush (C) until it contacts pin (D) and the grooves and tabs (E) align. Lift and remove the brush holder.
5. The brushes slide out and into holders. Install recommended front brush for crop planted.



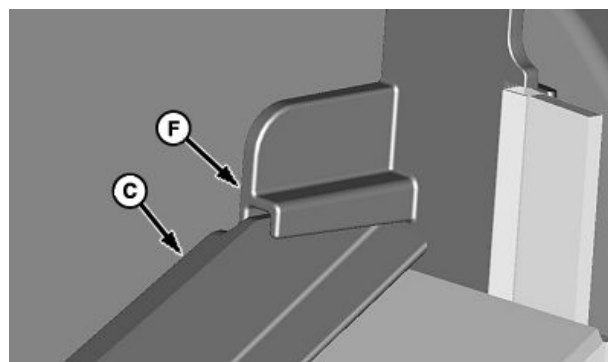
A77794 — UN—01MAY13

NOTE: On 1795 and DB120 planters, install rear brush assembly first.

6. Reinsert brush holder in meter and verify that holder is locked into position.
7. On 1795 and DB120 planters, verify that rear brush (C) is seated under front brush (F).

A—Front Brush Tab
B—Lock
C—Rear Brush

D—Pin
E—Grooves and Tabs
F—Front Brush



A77795 — UN—01MAY13

WP29706,00008CF -19-13JUL15-1/1

Adjust the Vacuum Seed Meter Baffle

NOTE: The baffle is used on all meters except meters with mini hoppers.

1. Open vacuum meter. (See Seed Meter Settings in this section.)

NOTE: Lower position (B) is recommended for smaller seeds such as: sugar beets, sorghum, oil sunflower, and popcorn.

Upper position (C) is recommended for larger seeds such as: corn, soybeans, cotton, edible beans, peanuts, sweet corn, and confectionary sunflower.

2. Move tab (A) to the position recommended in the Meter Settings table in this section.

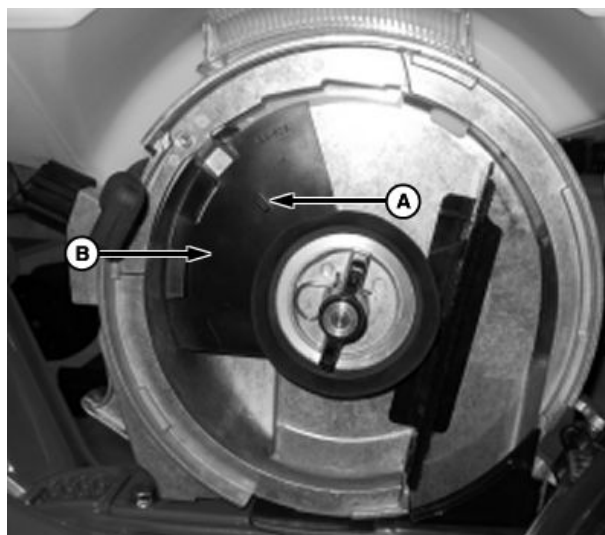
Seed bridging at the meter inlet can result in long skips when planting. If this condition occurs, adjust baffle to upper position (C) and add talc lubricant generously.

NOTE: Lowering the baffle does NOT eliminate an overfilled vacuum meter caused by rough field conditions. To avoid overfilling, increase down force on row unit and reduce planting speed.

If meters overfill or overpopulation occurs when planting on hillsides, reduce planting speed. Overfilled meters can occur when planting on hillsides. Overpopulation can occur on hillsides because the tabs on seed disks can hold and carry seed past the meter brush and into seed tube. When planting in hillside conditions, use round seeds and, in some conditions, flat seed disks to provide the best performance.

A—Tab
B—Lower Position

C—Upper Position



Lower Baffle Position



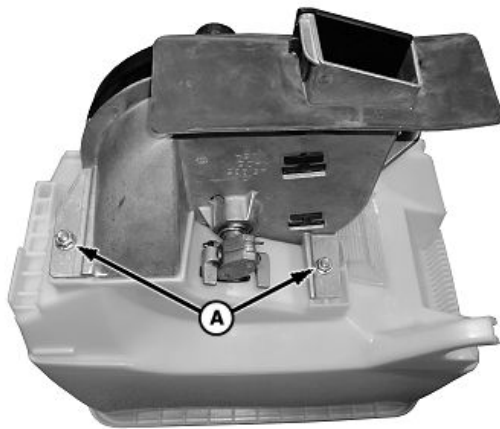
Upper Baffle Position

A78486 —UN—31JUL13

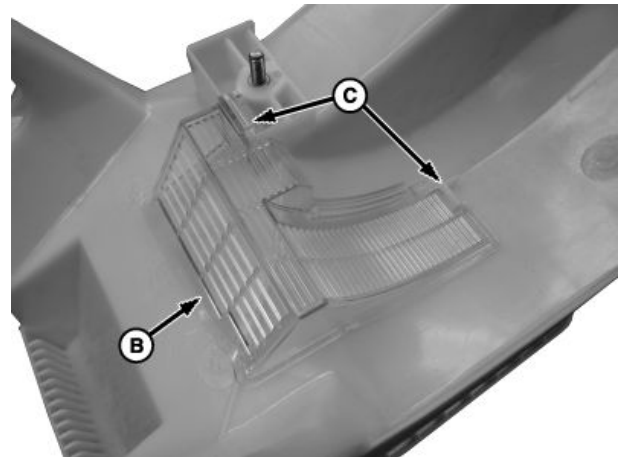
A78487 —UN—31JUL13

OUC6074,0000CF4 -19-13JUL15-1/1

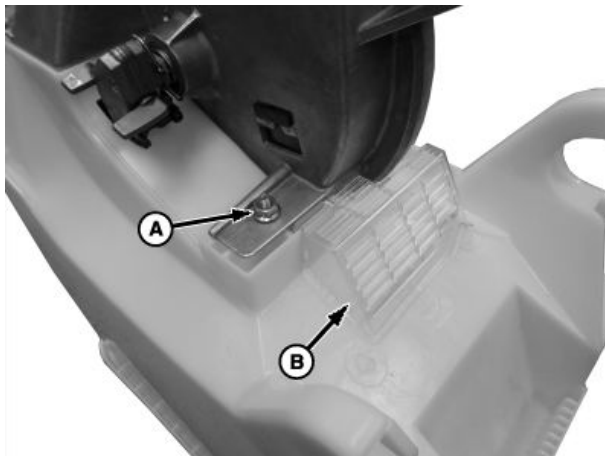
Install Meter Inlet Screen



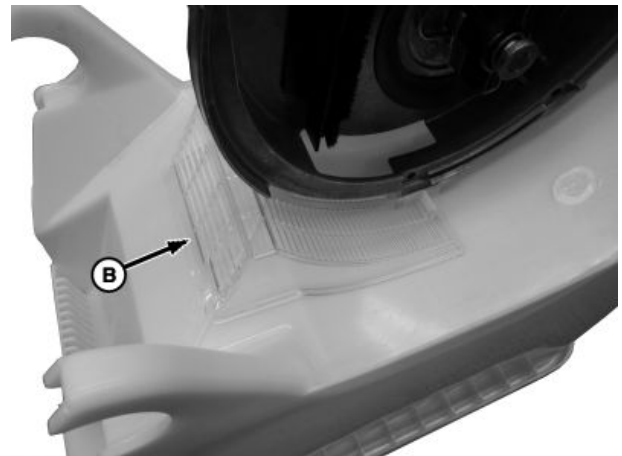
A68445 —UN—26JUL10



A68446 —UN—26JUL10



A68447 —UN—26JUL10



A68448 —UN—26JUL10

A—Nuts

B—Screen

C—Tabs

Planting in high residue field conditions can cause pieces of crop residue to build up in the vacuum meter. Meter inlet screens (B) are available from a John Deere™ dealer to prevent crop residue from entering the meter.

To install:

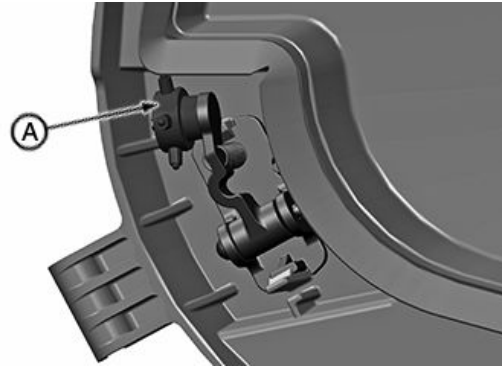
1. Remove hopper and meter from row unit (refer to ACCESSING THE VACUUM METER in this section).
2. Loosen meter nuts (A) and remove meter from hopper.
3. Place inlet screen (B) onto hopper and align with tabs (C).
4. Replace meter and tighten meter nuts.
5. Install meter and hopper on row unit.

OUC6074.0000A51 -19-26JUL10-1/1

Seed Knockout Wheel Operation

The seed knockout wheel (A) is used to ensure that certain seed types are fully released from seed cell. Wheel projections engage seed cell holes, forcing all seeds and foreign material to be ejected.

The seed knockout wheel is required when planting sorghum, mono-germ sugar beet, and seed planted with flat type seed disks. Sugar beet and sweet corn seed can have sharp edges and is typically irregular in shape, creating a potential for seeds to become lodged in the seed cell. Some sorghum seed contains large amounts of foreign material which can also become trapped in cell or cell holes.

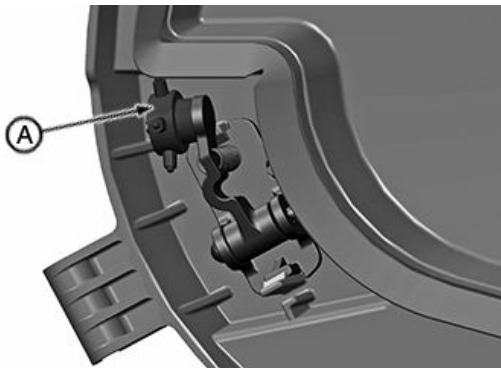


A—Seed Knockout Wheel

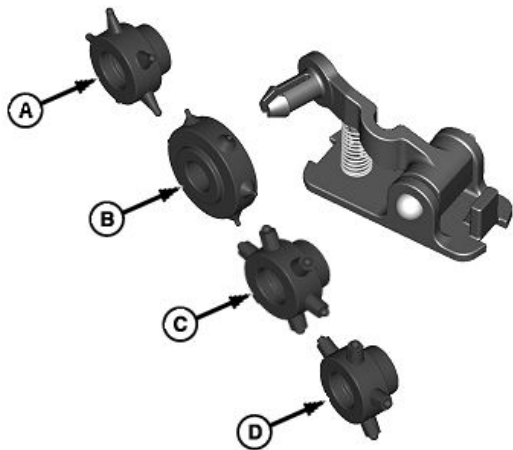
CQ297999 —JUN—26FEB14

WP29706,000051F -19-08MAY14-1/1

Install Knockout Wheel Assembly



CQ297999 — UN — 26FEB14



A86304 — UN — 08MAY15

NOTE: The knockout wheel is used to ensure that irregular shaped seeds are fully released from vacuum hole. Wheel projections engage vacuum holes to eject all seeds and foreign material from seed cell.

There are four knockout wheels available for use with different seed disks and seed types. (Refer to Seed Meter Settings in this section for knockout wheel recommendations.)

To remove the wheel, squeeze the wheel hub. Press alternate wheel onto hub.

Knockout Wheel Identification	
Knockout Wheel	Part Number
Type A	A102718
Type B	H136448
Type C	A52389
Type D	A53272

A—Knockout Wheel (Type A) C—Knockout Wheel (Type C)
B—Knockout Wheel (Type B) D—Knockout Wheel (Type D)



A86283 — UN — 08MAY15

Wheel A



A86264 — UN — 08MAY15

Wheel B



A82573 — UN — 09MAY14

Wheel C



A82576 — UN — 09MAY14

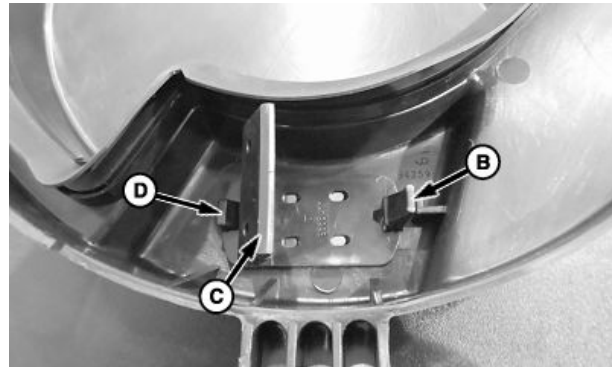
Wheel D

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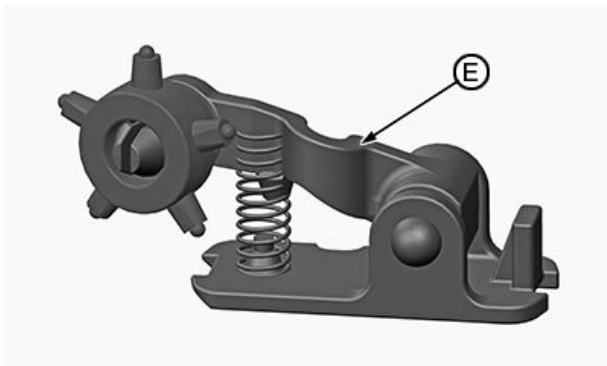
WP29706,0000520 -19-13JUL15-1/2



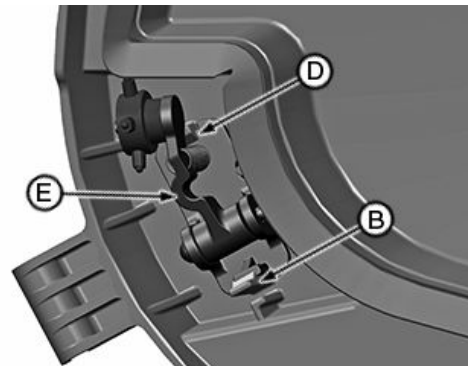
A77660 —UN—08NOV13



A77663 —UN—27AUG13



CQ298000 —UN—26FEB14



CQ298001 —UN—26FEB14

A—Handle
B—Retaining Clip

C—Wiper Assembly
D—Fastener Clip

E—Knockout Assembly

1. Disengage handle (A) and open vacuum seed meter.
2. To remove wiper assembly (C), push retaining clip (B) and pull wiper assembly away from fastener clip (D).
3. Install knockout assembly (E) between retaining clip (B) and fastener clip (D).

NOTE: When closing the cover, verify that the wheel is aligned with the row of seed cells on seed disk.

Close and latch the meter cover.

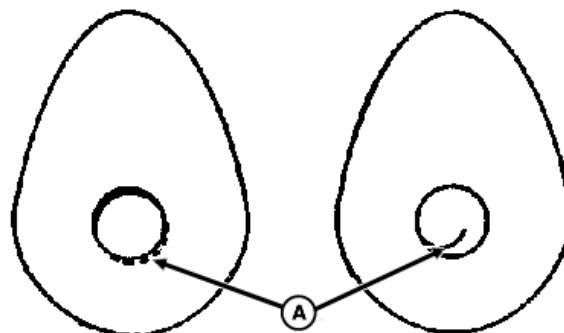
WP29706,0000520 -19-13JUL15-2/2

Inspect the Seed Disk Cell

NOTE: To determine seed meter accuracy, perform a field check. If metering performance is satisfactory, it is not necessary to replace any seed disk.

Check seed cell and hole for flash (A) (particles of material left behind in molding process). Remove any flash before installing seed disk. If flash cannot be easily removed, replaced the disk.

A—Flash

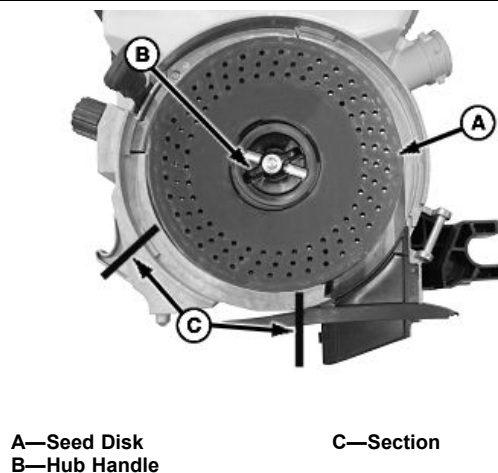


A46242 —UN—27JUL00

WP29706,00005B9 -19-13JUL15-1/1

Install Seed Disk

1. Open the vacuum seed meter.
2. Fit the seed disk (A) into housing. Hold the seed disk stationary and rotate hub handle (B) into locked position.
3. Inspect hub adjustment. See Adjust Meter Hub in this section if the following conditions are not met.
 - ☐ Verify that the seed disk (A) continues to rotate approximately a quarter revolution after the hub is spun rapidly by hand and quickly released.
 - ☐ Verify that there is light contact between disk and meter housing in section (C) as disk is rotated.
 - ☐ Verify that no seed loss occurs through any gap in section (C) as disk is rotated.



WP29706,0000521 -19-13JUL15-1/1

A77666 —UN—15OCT13

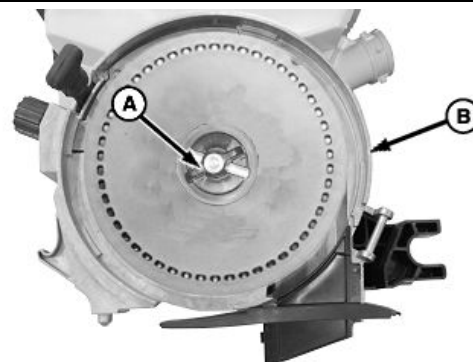
Adjust Meter Hub

Improve meter accuracy and minimize seed damage with a properly adjusted meter hub. Check this adjustment whenever seed disks are changed. If there is a gap between seed disk and meter housing (B) or if disk is difficult to turn, adjust meter hub as follows.

1. Open the vacuum seed meter.
2. Turn hub handle (A) counterclockwise. Remove seed disk.

A—Hub Handle

B—Housing



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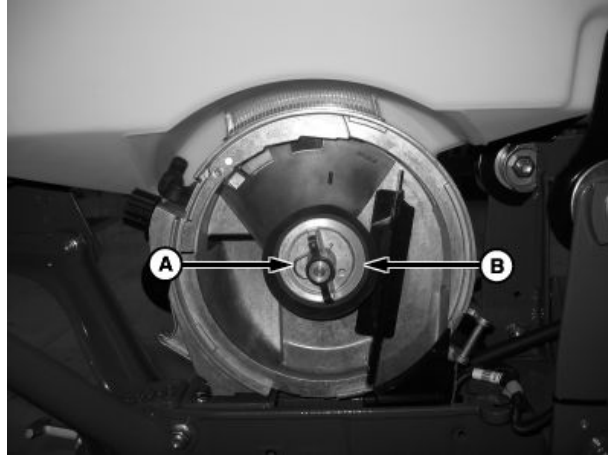
WP29706,0000522 -19-13JUL15-1/3

A86266 —UN—06MAY15

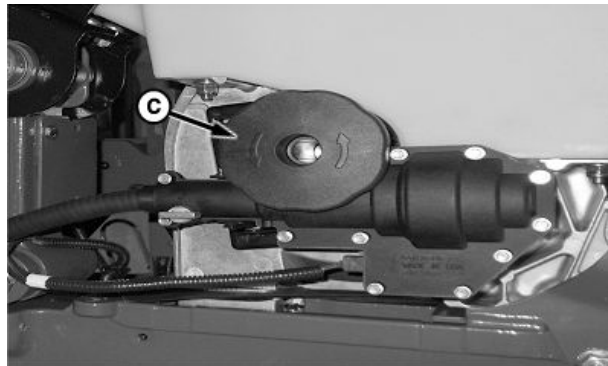
3. Remove spring clip (A).
4. Adjust hub (B).
 - Make small adjustments.
 - Hold meter handle (C) or meter drive (D).
 - Thread hub (B) clockwise to move seed disk closer to meter housing.
 - Thread hub (B) counterclockwise to move seed disk away from meter housing.
5. Align slot with hole in shaft and install spring clip (A).

A—Spring Clip
B—Hub

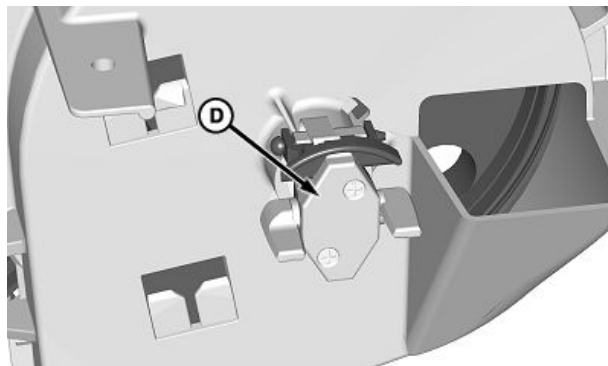
C—Meter Handle
D—Meter Drive



A78484 —UN—30JUL13



A78485 —UN—11NOV13



A78490 —UN—31JUL13

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WP29706,0000522 -19-13JUL15-2/3

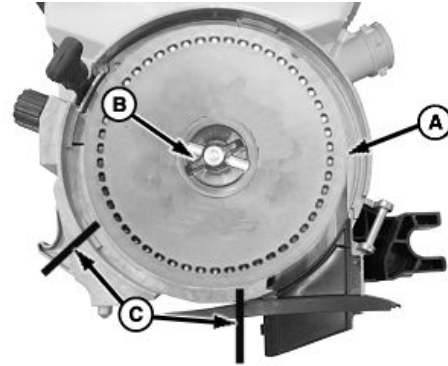
6. Install seed disk (A) and lock hub handle (B).
7. Inspect adjustment.
 - a. Spin and release disk rapidly by hand.
 - b. Observe the distance the disk rotates. If disk rotates approximately 1/4 to 1/2 revolution and stops, hub is adjusted properly.
 - c. Repeat hub adjustment until correct.

IMPORTANT: Avoid warped disks. Do not store disks in meters. Store disks flat on hub or hang on wall from hub. Do not store under heavy items or hang from seed hole. Store away from high heat and sunlight.

8. Rotate disk slowly by hand and observe disk contact with housing in area (C). If a gap appears as disk is rotated, replace disk.

A—Seed Disk
B—Hub Handle

C—Area



Storage

A86267 —UN—06MAY15

A44241 —UN—19NOV97

WP29706,0000522 -19-13JUL15-3/3

Calibrate MaxEmerge™ 5 Double Eliminator

Calibrate MaxEmerge™ 5 double eliminator setting "5" to equal 50% hole coverage on seed plate.

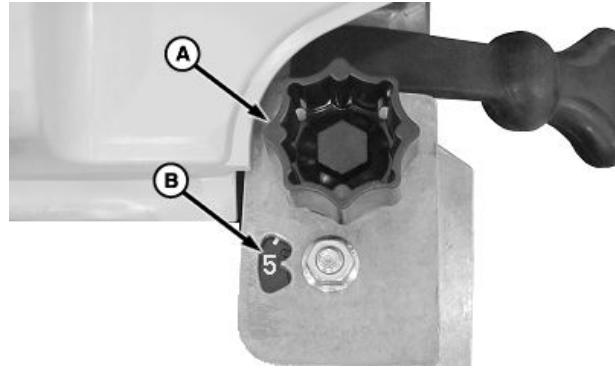
NOTE: Procedure shown with meter attached to hopper. Remove hopper to provide more clearance if necessary.

1. Turn adjustment knob (A) to set double eliminator to setting "5" (B).
2. Install ProMax 40 seed disk in meter.

A—Adjustment Knob

B—Setting "5"

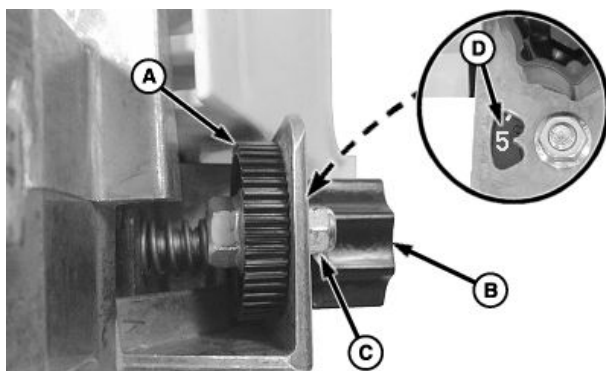
MaxEmerge is a trademark of Deere & Company



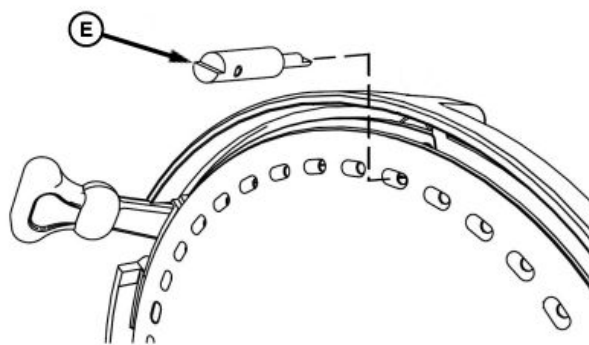
A86028—UN—20APR15

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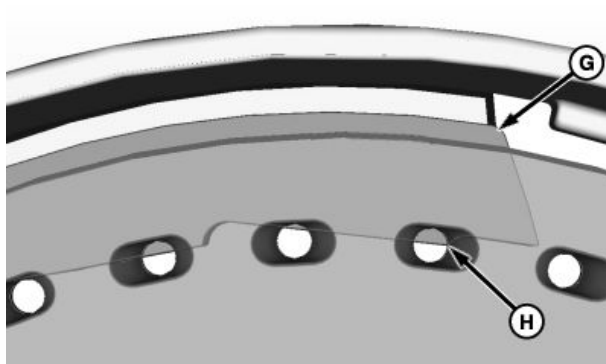
WP29706,00008CE -19-05AUG15-1/3



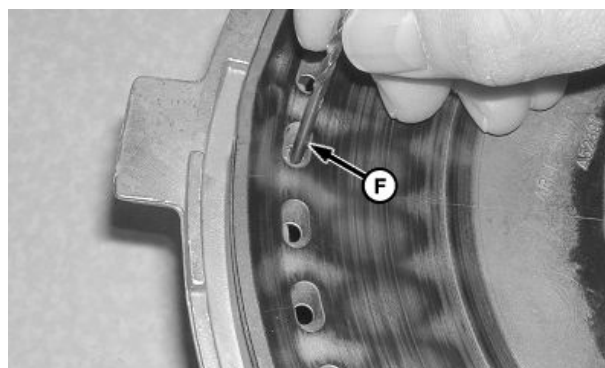
Double Eliminator Knob



Adjustment Tool Method



50% Coverage



Drill Bit Method

A—Dial
B—Adjustment Knob
C—Nut

D—Setting
E—Double Eliminator Tool

F—Drill Bit
G—Double Eliminator Plate

H—High Point

NOTE: Contact your John Deere™ dealer for adjustment tool JDG10965.

3. Insert double eliminator tool (E) or shank of 2.5 mm (3/32 in) drill bit (F) into seed disk hole.
4. Position tool or drill bit in line with high point (H) of double eliminator plate (G).
5. Turn adjustment knob (B) until high point of double eliminator lightly contacts tool or drill bit.

6. If setting (D) is 4.5—5.5 in center of window, no adjustment is needed.
7. If setting is beyond 4.5 or 5.5 in center of window, loosen nut (C) enough to move dial (A).
8. Reposition dial with "5" in center of window.
9. Tighten nut.
10. Remove tool or drill bit from seed disk.

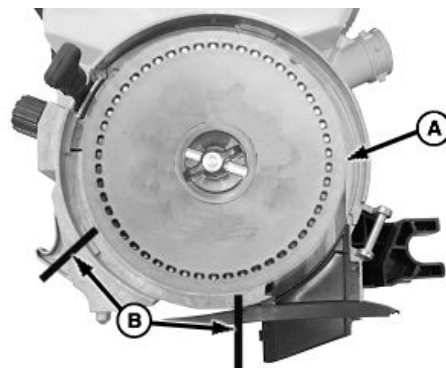
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WP29706,00008CE -19-05AUG15-2/3

NOTE: Seed disk must turn smoothly with light contact. A small gap between seed disk and housing is acceptable. Seed must not pass between disk and meter. To improve inspection process, place a small amount of seed in meter.

11. Turn seed disk (A) by hand and inspect gap between disk and meter in area (B). If disk turns too hard or if seed passes through gap, adjust hub position. (See Adjust Meter Hub in this section.)
12. Close meter and if previously removed, attach meter to hopper.
13. Set all rows the same.
14. Plant a short distance, then perform a field check to determine seed delivery and meter performance. Adjust individual meters as necessary.



A—Disk

B—Inspection Area

WP29706,00008CE -19-05AUG15-3/3

A86177—UN—22APR15

Operate Double Eliminator

NOTE: Set vacuum level using vacuum chart and disk for seed used.

NOTE: Number indicator on meter has a range of 0—10.

There is a number indicator (A) next to the knob for consistent adjustment.

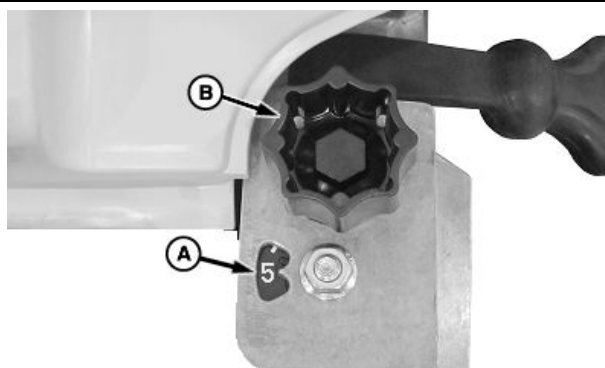
Lower Numbers on Indicator = Less hole covered.

Middle Numbers on Indicator = 1/2 of hole covered. Detent position.

Higher Numbers on Indicator = More hole covered.

Double Eliminator Operating Tips:

- Use adjustment knob (B) to adjust position of eliminator plate (C) to cover more or less of the holes on the seed disk. Normal operating position is number 5 on the indicator for flat corn disk. When in position number 5, the double eliminator plate covers 1/2 of the seed disk hole and provides good seed singulation for a wide variety of seed sizes and shapes. If seed singulation performance is inconsistent and cannot be corrected by varying the vacuum level, adjust double eliminator to lower setting. If doubles are occurring, adjust double eliminator to a higher setting to cover more of the hole.
- Disk hub height is critical for proper performance. Adjust seed-disk hub, so seed disk is in light contact with the meter housing. Proper adjustment is achieved when the seed disk turns approximately 1/4 to 1/2 turn when the hub is spun rapidly by hand. (See Adjust Meter Hub in this section.)



Indicator and Adjustment Knob



Eliminator Plate

A—Indicator

B—Adjustment Knob

C—Eliminator Plate

WP29706,0000523 -19-01JUN15-1/1

A86638—UN—01JUN15

A86639—UN—01JUN15

Seed Disk Selection Guidelines

IMPORTANT: These seed disk recommendations are based on seed testing from a variety of sources. Because seed size and shape changes from year to year, there is always a possibility that an alternative disk can provide better performance. Consult your John Deere dealer for the most complete and up to date listing of available seed disks and recommendations.

The following seed disk recommendations show a seed size range where optimum performance can be expected with each seed disk. Select a disk which best handles the seed to be planted or best represents the majority of seed sizes to be planted.

If several seed sizes are planted and their seed size falls within overlapping areas of two seed disks, it is

recommended that BOTH seed disks are ordered to optimize performance to individual seed shape.

To determine proper disk usage, place a sample of seed into the cells of seed disk. If two seeds easily fit in the cell, a smaller disk must be used. If one seed does not fit properly in the cell, a larger disk must be used. If two disks work well for a particular seed size, always use the smaller disk. Increase vacuum to compensate for skips (and rough fields). Lower vacuum to eliminate doubles.

For seed sizes outside ranges listed, seed disks for other crops can be used. As with any seed disk change, population and spacing must always be checked in the field.

OU06074,0000ECD -19-14APR09-1/1

Select The Correct Field Corn Seed Disk For Optimum Performance

Corn Seed Disk Selection Guide					
Seed Shape	Seed/kg (Seed/lb.)	Disk Name	Part Number	Number of Cells (Hole Diameter [mm])	If population is difficult to control:
Non-Uniform (mixed shapes)	Mixed Sizes (Mixed Sizes)	ProMax 40 With Double Eliminator	A52391	40 (4.5)	If over or under populating with starting disk, adjust double eliminator
Uniform Flat	Less than 3308 (1500)	ProMax 40 With Double Eliminator	A52391	40 (4.5)	If over or under populating with starting disk, adjust double eliminator
Uniform Flat	3308-6175 (1500-2800)	Small Corn Disk	A43215	30 (3.6)	Adjust vacuum first. If problems persist, switch to overlapping disk shown in vacuum level chart ^a
Uniform Flat	Greater than 6175 (2800)	Sunflower and Popcorn	H136478	30 (2.6)	Adjust vacuum first. If problems persist, switch to Small Corn Disk (A43215)
Uniform Round	Less than 3308 (1500)	Standard Corn Disk	A50617	30 (3.6)	Adjust vacuum
Uniform Round	3308-6175 (1500-2800)	Small Corn Disk	A43215	30 (3.6)	Adjust vacuum first. If problems persist, switch to Standard Corn Disk (A50617)
Uniform Round	Greater than 6175 (2800)	Sunflower and Popcorn	H136478	30 (2.6)	Adjust vacuum first. If problems persist, switch to Small Corn Disk (A43215)

^aFor larger seed sizes less than 3970 seeds/kg (1800 seeds/lb.), switch to Standard Corn Disk (A50617). If population control problems persist, switch to ProMax 40 Disk (A52391) with double eliminator. For smaller seed sizes greater than 5072 seeds/kg (2300 seeds/lb.), switch to Sunflower and Popcorn Disk (H136478). If population control problems persist, switch to ProMax 40 Disk (A52391) with double eliminator.

To determine the recommended seed disk, first use the Corn Seed Disk Selection Guide chart and then refer to vacuum level chart for initial vacuum setting.

Nearly 100 percent of target population is achievable, when the proper vacuum level and the small corn or standard corn seed disks (with seed cells) are used.

Using cell-type disks (Small and Standard Corn Seed Disks) requires careful seed selection for proper performance.

Metering performance is directly dependent on the consistency of seed size. Seeds that are mixed shapes and sizes do not perform optimally with cell-type disks. The ProMax 40 Disk (A52391) with double eliminator is required for optimum seed singulation and seed release when seeds vary in size.

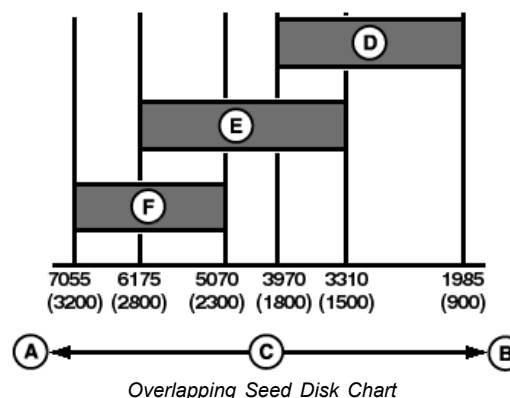
NOTE: A knockout wheel is required when using John Deere™ flat disks.

For seed sizes that overlap the Small Corn Disk (A43215) and the Standard Corn Disk (A50617), choose the Small Corn Disk for initial setting. If population is difficult to control, switch to Standard Corn Disk.

DIFFICULT TO PLANT SEEDS

IMPORTANT: Avoid population errors. Adjust all settings on the planter and monitor when using the ProMax 40 disk.

- Difficult to plant seeds include varieties with mixed sizes, mixed shapes, combinations of sizes and shapes,



A—Small Seeds
B—Large Seeds
C—Seed Size, Seeds/kg
(Seeds/lb.)
D—Standard Corn Disk
E—Small Corn Disk
F—Sunflower and Popcorn
Disk

long and slender seeds, seeds with a sharp point (germ), and others.

- A ProMax 40 Disk is a flat disk used to improved seed singulation with difficult to plant seeds. The ProMax 40 requires higher vacuum levels than cell type disks and requires the installation of a double eliminator and knockout wheel in each meter assembly.
- Quality graded seed also requires proper seed disk selection for optimal performance.

PLANTING CORN IN HILLSIDE CONDITIONS

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MH69740,0000550 -19-03FEB16-1/2

Diminished meter performance is possible on steep hillsides or when changing directions on a hillside. If the left side of machine is the downhill side, skips are possible due to the seeds falling away from the seed disk and a smaller seed reservoir next to the seed disk. If the right side of machine is the downhill side, overpopulation is possible due to the seeds forced against the seed disk and a large seed reservoir next to the seed disk. To maximize vacuum meter performance on hillsides, follow these steps:

- Use a disk with the fewest holes possible when using Cell Disks. Fewer holes provide less opportunity for doubles.

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- Use round seed. Round seed remains in the cell of a cell type disk better and reduces the chance for doubles.

IMPORTANT: Avoid population errors. Adjust all settings on the planter and monitor when using the ProMax 40 disk.

- If round seed is not available or hillsides are steep, use a flat disk with double eliminator. The flat disk has no seed cells and requires higher vacuum levels, a double eliminator, and a knockout wheel. The double eliminator is used to remove one of two seeds covering a single hole in seed disk. The knockout wheel is used to remove debris from holes in seed disk.

MH69740,0000550 -19-03FEB16-2/2

Seed Disk Recommendations For Crops Other Than Field Corn

John Deere flat disks meter a wide variety of seed sizes and shapes that are non-approved crops for the CCS system.

SWEET CORN

Disk Name	Part Number	Seed/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
ProMax 40	A52391	<8 600 (<3 900)	40	4.5
Small Sweet Corn	A52390	>7 700 (>3 500)	40	3.75

POPCORN

Disk Name	Part Number	Seed/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
Sunflower/ Popcorn	H136478	5 500—9 900 (2 500—4 500)	30	2.6
Sorghum	A43066	>9 900 (>4 500)	45	1.5

On difficult to plant seeds, use of the Small Sweet Corn disk (Part No. A52390) improves performance. Sometimes a Small Corn (Part No. A43215) or Sunflower (Part No. H136478) cell type disk can provide satisfactory performance.

CONFECTIONARY SUNFLOWER

Disk Name	Part Number	Seed/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
ProMax 40 Flat Type with Double Eliminator	A52391	5 000—7 200 (2 250—3 250)	40	4.5
Small Sweet Corn Flat Type with Double Eliminator	A52390	7 200—11 600 (3 250—5 250)	40	3.75

OIL SUNFLOWER

Disk Name	Part Number	Seed Sizes	Number of Cells	Hole Diameter (mm)
Sunflower/ Popcorn	H136478	4 (Small) 3 (Medium) 2 (Large)	30	2.6
Oil Sunflower	A102717	4 (Small) 3 (Medium) 2 (Large)	40	2.5

For oil sunflower seed sizes 1 (Extra Large) and 5 (Extra Small), see the recommendations for confectionary sunflowers. Part No. H136478 is recommended for oil sunflower seed sizes 4 (small), 3 (medium) and 2 (large). This disk is Not recommended for oil sunflower seed sizes 1 (extra large) and 5 (extra small) or confectionary sunflower seeds.

DRILLED COTTON

Disk Name	Part Number	Seed/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
Acid Delinted Cotton	A56251	8 800—13 200 (4 000—6 000)	64	2.5
Low Rate Acid Delinted Cotton	A70163	8 800—13 200 (4 000—6 000)	32	2.5

For small seeds that result in doubles on the Acid-Delinted Cotton disk, using a Small Edible Bean Disk (Part No. A52903) with Double Eliminator is recommended.

4-CELL HILLDROP COTTON

Disk Name	Part Number	Seed/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
4-Cell Hill drop	A65622	8 800—13 200 (4 000—6 000)	48	2.5

For small seeds that result in dropping more than four seeds, use of the 2-Cell Hill drop Cotton disk is recommended.

2-CELL HILLDROP COTTON

Disk Name	Part Number	Seed/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
2-Cell Hill drop	A74961	8 800—13 200 (4 000—6 000)	64	2.5

COTTON USING EDIBLE BEAN - Flat Disk A52903 Small

Cotton Seed	Seeds/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
Small	3 520—7 260 (1 600—3 300)	50	3.75

Small cotton seed can also be planted using this disk when cotton disks result in doubles (double eliminator is recommended).

SOYBEANS

Disk Name	Part Number	Seed/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
Soybean	A42586	<7 700 (<3 500)	108	4.4
Cotton	A56251	>7 700 (>3 500)	64	2.5

For smaller seed sizes that result in doubles, a Cotton Seed disk (Part No. A56251) can provide improved performance.

LOW-RATE SORGHUM

Disk Name	Part Number	Seed/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
Low-Rate Sorghum	A43066	22 000—35 300 (10 000—16 000)	45	1.5

For smaller seed sizes, a Medium Sugar Beet disk (Part No. H136445) or a Small Sugar Beet disk (Part No. A51712) can provide improved performance.

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HIGH-RATE SORGHUM

Disk Name	Part Number	Seed/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
High-Rate Sorghum	A52802	22 000—35 300 (10 000—16 000)	90	1.5

MONO-GERM SUGAR BEETS

Disk Name	Part Number	Seed Size	Number of Cells	Hole Diameter (mm)
Small Sugar Beet	A51712	2.6—3.2 mm Seed	45	1.5
Small and Medium Sugar Beet	H136445	3.0—3.6 mm Seed	45	1.5
Large Sugar Beet	A51713	3.4—4.0 mm Seed	45	1.6

PELLETED SUGAR BEETS

Disk Name	Part Number	Seed Size	Number of Cells	Hole Diameter (mm)
Small and Medium Sugar Beet	H136445	3.2—4.0 mm Seed	45	1.5
Large Sugar Beet	A51713	3.6—4.6 mm Seed	45	1.5
Sorghum	A43066	3.6—4.6 mm Seed	45	1.5

SMALL EDIBLE BEAN - Cell Disk H136468

Seed	Seeds/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
Black Turtle	4 180—5 720 (1 900—2 600)	108	3.5
Navy	3 960—5 500 (1 800—2 500)	108	3.5
Pink Viva	3 740—4 290 (1 700—1 950)	108	3.5
Small White	5 280—6 600 (2 400—3 000)	108	3.5
Smooth Pea	6 160—7 040 (2 800—3 200)	108	3.5

MEDIUM EDIBLE BEAN - Cell Disk A51696

Seed	Seeds/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
Black-eyed Pea	3 520—4 400 (1 600—2 000)	56	4
Green Beans (Garden)	2 200—4 840 (1 000—2 200)	56	4
Kidney (Small)	2 530—3 080 (1 150—1 400)	56	4
Pinto	1 760—3 080 (800—1 400)	56	4
Red Mexican (Small)	2 640—3 300 (1 200—1 500)	56	4
Wrinkle Pea	3 960—5 060 (1 800—2 300)	56	4

LARGE EDIBLE BEAN - Cell Disk H136092

Seed	Seeds/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
Cranberry Bean	1 760—2 640 (800—1 200)	50	4.8
Kidney (Medium)	2 090—2 530 (950—1 150)	50	4.8
Great Northern	1 980—2 860 (900—1 300)	50	4.8
Garbanzo	1 650—1 980 (750—900)	50	4.8
Peanuts (Runner)	1 430—1 760 (650—800)	50	4.8
Peanuts (Spanish)	2 200—2 750 (1 000—1 250)	50	4.8

EDIBLE BEAN - Flat Disk A52903 Small

Edible Bean Seed - Small	Seeds/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
Green Garden, Small	3 520—5 280 (1 600—2 400)	50	3.75
Black Turtle	4 180—5 720 (1 900—2 600)	50	3.75
Navy	3 960—5 720 (1 800—2 600)	50	3.75
Small White	5 280—7 260 (2 400—3 300)	50	3.75
Edible Peas	Seeds/kg (Seeds/lb.)	Number of Cells	Hole Diameter (mm)
Wrinkle	3 740—5 060 (1 700—2 300)	50	3.75

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EDIBLE BEAN - Flat Disk A52904 Medium

Edible Bean Seed - Medium	Seeds/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
Green Garden, Medium	2 640—3 520 (1 200—1 600)	50	4.5
Small Red	2 640—3 300 (1 200—1 500)	50	4.5
Pinto	All Sizes	50	4.5
Medium Kidney	2 530—3 080 (1 150—1 400)	50	4.5
Lima	2 640—3 520 (1 200—1 600)	50	4.5
Corn Seed	3 300—7 040 (1 500—3 200)	50	4.5
Pink Viva	3 740—4 180 (1 700—1 900)	50	4.5
Edible Peas	Seeds/kg (Seeds/lb.)	Number of Cells	Hole Diameter (mm)
Black-eyed	3 520—4 400 (1 600—2 000)	50	4.5
Smooth	6 160—7 040 (2 800—3 200)	50	4.5

EDIBLE BEAN - Flat Disk A52878 Large

Edible Bean Seed - Large	Seeds/kg (Seed/lb.)	Number of Cells	Hole Diameter (mm)
Green Garden, Large	1 540—2 640 (700—1 200)	50	5.0
Cranberry	1 760—2 640 (800—1 200)	50	5.0
Large Kidney	1 870—2 530 (850—1 150)	50	5.0
Great Northern	1 980—2 860 (900—1 300)	50	5.0
Garbanzo	1 650—1 980 (750—900)	50	5.0

VIRGINIA PEANUT

Part No. H138722 is recommended for seed sizes ranging from 1 100—1 760 seeds/kg (500—800 seeds/lb.). It has 46 cells with 5.3 mm diameter holes.

BLANK SEED DISK

Part No. A52554

The blank seed disk allows custom drilling of specific hole sizes for specialty crops. See your John Deere dealer for details.

WP29706,00005BA -19-12JUN15-3/3

Optimize Seed Spacing

Match the seed disk to the seed for optimal meter performance. Seed spacing is dependent on ground conditions, meter speed, and ground speed.

IMPORTANT: Avoid poor seed spacing. Avoid rough ground conditions, high metering speeds, and high ground speeds. The operator determines if the planting timeline is more important than optimal spacing.

Observe the following to optimize seed spacing.

GROUND CONDITIONS—To achieve optimal spacing, slow down in rough ground conditions.

METER SPEED—With high seed populations, reduce ground speed to reduce meter speed.

GROUND SPEED—Ground speed directly affects in-ground seed spacing. As ground speeds rise above 8 km/h (5 mph), seed spacing performance decreases.

OOU6074,0000ED1 -19-10APR14-1/1

Check Meter Performance

IMPORTANT: After a Seed Disk is selected, in ground spacing checks are required to determine the level of metering performance. (See Checking Seed Population section.)

The seed-disk selection guidelines are recommendations resulting from tests with seed from various sources. Because of changes in seed shape and size from year to year, there is always the possibility that an alternative disk provides better performance.

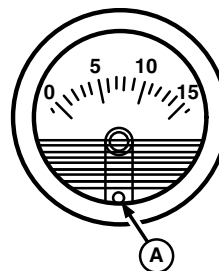
OOU6074,0000ED0 -19-10APR14-1/1

Setting Vacuum Levels

Zero The Vacuum Gauge

NOTE: To zero the SeedStar™ monitor vacuum sensors, refer to your SeedStar™ monitor operator's manual.

1. Shut off the vacuum system.
2. With the vacuum gauge in a vertical position, disconnect the vacuum gauge hose to equalize the gauge with atmospheric pressure.
3. Use the zero adjusting screw (A) to set the gauge pointer exactly on the zero mark.
4. Connect the gauge hose.
5. Adjust the vacuum level to the recommended setting. (See the Set The Vacuum Level in this section.)



A—Zero Adjusting Screw

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OUO6074,00009C3 -19-02MAR16-1/1

A53396 —UN—26NOV03

Set The Vacuum Level

IMPORTANT: When using the CCS™ seed delivery system, the only approved crops are corn, soybeans, sorghum, sunflower, sugar beet, and cotton.

IMPORTANT: Some very small or large seed sizes require vacuum levels that are slightly higher or lower than the recommended settings. Always verify the proper vacuum level with a field check. The charts provided in this section are guides and are accurate in most conditions. Some situations require a higher or lower vacuum level.

NOTE: To view the vacuum level on the monitor, select Menu >> Planter button >> Configuration softkey >> Sensor tab. Select Vacuum from the drop-down box. When the machine is equipped with more than one vacuum blower, the screen image is divided by the number of blowers on the machine.

The vacuum level is indicated on the vacuum gauge or on the monitor display. (See the SeedStar™ operator's manual.)

VACUUM LEVEL CHART	
Crop	Vacuum Level
Sugar Beets	See Chart
Corn	See Chart
Sweet Corn	See Chart
Popcorn	See Chart
Small, Medium, and Large Edible Beans—Cell Type Seed Disk	8 in ^a
Small, Medium, and Large Edible Beans—Flat-Type Seed Disk	See Chart
Cotton	8 in
Cotton Hilldrop	8 in
Cotton Using Flat Edible Bean Disk	See Chart
Peanuts (Runner, Spanish, and Virginia)	See Chart
Sorghum	8 in
High Rate Sorghum	8 in
Oil Sunflower	See Chart
Confectionary Sunflower	See Chart
Soybeans	8 in
Soybeans Using Cotton Disk	5—7 in
Acid-Delinted Cotton	8 in

^aSmall edible beans—For seeds that have 6160 seeds/kg (2800 seeds/lb) or more, set vacuum level at 6 in Medium edible beans—for garden beans that have 3960 seeds/kg (1800 seeds/lb) or more, set vacuum level at 6 in

NOTE: The vacuum level is slightly lower during tractor and vacuum motor start-up or when seeds are not covering cells on disk.

Before adjusting, observe the vacuum level¹ during planting conditions.

Set the vacuum level as follows:

1. Refer to the tractor operator's manual: Move the selective control valve (SCV) lever to the forward detent position to start the vacuum motor. Let the oil warm up for 15 minutes.
2. Fill the hoppers or CCS™ bulk tanks with seed.

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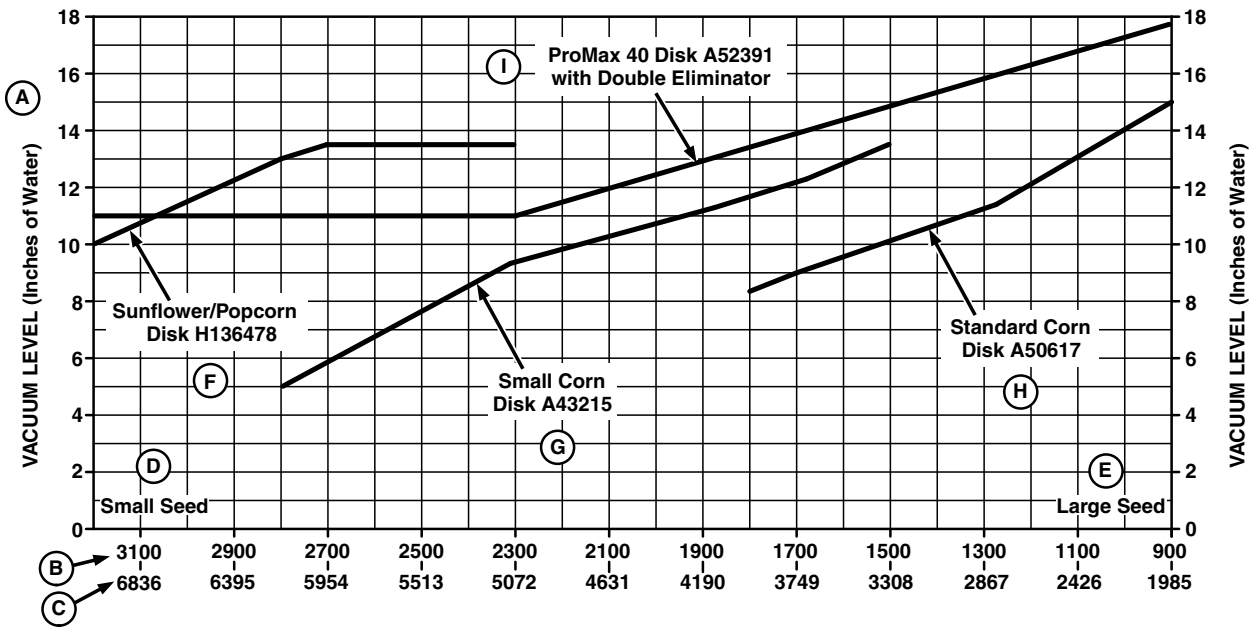
¹ Order Sugar Beet Vacuum Gauge through service parts only.

3. With the machine lowered in plant position, drive forward approximately 5 m (15 ft) to fill the seed cells.

IMPORTANT: The hydraulic hookup procedure determines whether the tractor flow control valve or the planter flow control valve is used to control the vacuum level. (See Attaching Machine section in the planter operator's manual.)

4. Adjust the flow control valve on the planter or the SCV control in tractor until the vacuum level reaches the target level at planting speed.

Vacuum Level for Corn Using H136478, A43215, A50617 or A52391 Seed Disks



A—Vacuum Level (Inches of Water)
B—Seeds Per Pound

C—Seeds Per Kilogram
D—Small Seed
E—Large Seed

F—Sunflower/Popcorn Disk
G—Small Corn Disk
H—Standard Corn Disk

I— ProMax 40 Disk

Use information from seed supplier to calculate seeds per kg (lb.).

IMPORTANT: The proper vacuum level must be calculated for each seed variety. Calculate seeds per kg (lb.). by dividing the number of seeds in bag by the weight of bag.

EXAMPLE: If there are 4190 seeds per kg (1900 seeds per lb.), the chart indicates a vacuum level of 11 in. with Small Corn Disk.

IMPORTANT: Vacuum levels are a starting point. Perform a field check and adjust level to obtain proper population.

Sticky seed treatments, rough ground conditions, and high ground speeds require higher vacuum levels.

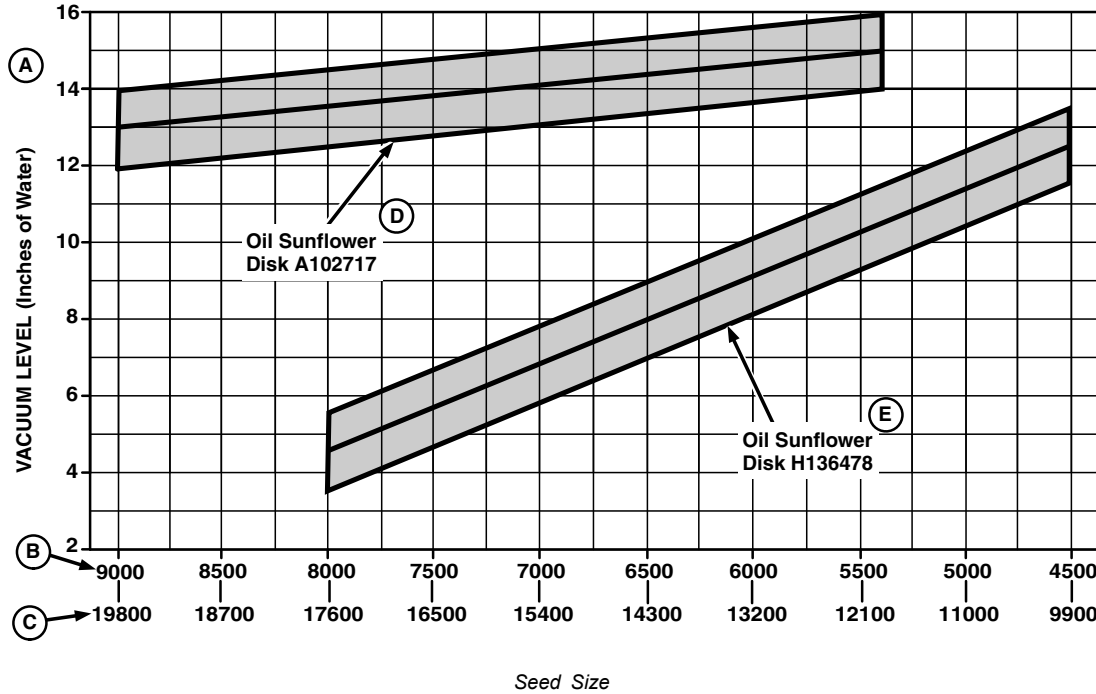
Select the Small Corn Disk initially when seed sizes overlap the Small Corn Disk (A43215) and the Standard Corn Disk (A50617) levels in chart. If population is difficult to control, switch to Standard Corn Disk.

MH69740,000055C -19-21AUG13-1/1

A78495—UN—21AUG13

Vacuum Level for Oil Sunflower

IMPORTANT: Vacuum levels are a starting point.
Perform a field check and adjust level to
obtain proper population.



A—Vacuum Level (Inches of Water)
B—Seeds Per Pound

C—Seeds Per Kilogram
D—Oil Sunflower Disk (A102717)

E—Oil Sunflower Disk (H136478)

Use information from seed supplier to calculate seeds per kg (lb.).

IMPORTANT: The proper vacuum level must be calculated for each seed variety. Calculate seeds per kg (lb.) by dividing the number of seeds in bag by the weight of bag.

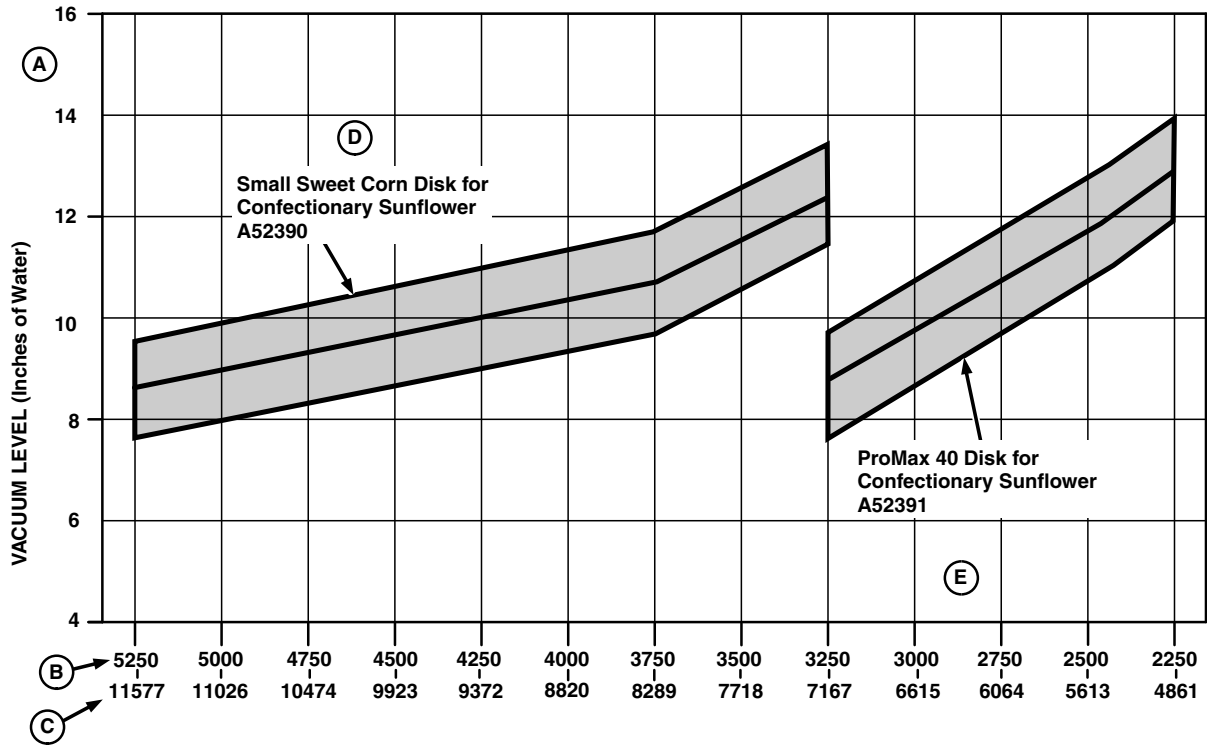
EXAMPLE: If there are 12 100 seeds per kg (5 500 seeds per lb.), the chart indicates a vacuum level of 10 in. with Oil Sunflower Disk (E).

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A86723—UN—11JUN15

Vacuum Level for Confectionary Sunflower

IMPORTANT: Vacuum levels are a starting point.
Perform a field check and adjust level to
obtain proper population.



A—Vacuum Level (Inches of Water)

B—Seeds Per Pound
C—Seeds Per Kilogram

Seed Size

D—Small Sweet Corn Disk
E—ProMax 40 Disk

Use information from seed supplier to calculate seeds per kg (lb.).

IMPORTANT: The proper vacuum level must be calculated for each seed variety. Calculate seeds per kg (lb.) by dividing the number of seeds in bag by the weight of bag.

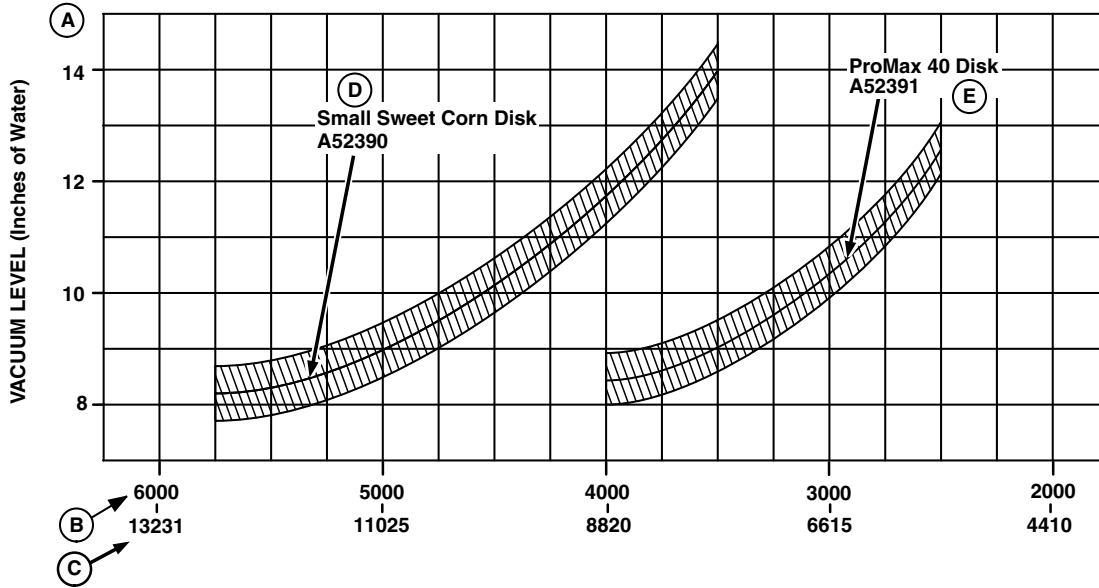
EXAMPLE: If there are 9372 seeds per kg (4250 seeds per lb.), the chart indicates a vacuum level of 10 in. with Small Sweet Corn Disk.

MH69740,000055E -19-21AUG13-1/1

A78497 —UN—21AUG13

Vacuum Level for Sweet Corn

IMPORTANT: Vacuum levels are a starting point.
Perform a field check and adjust level to
obtain proper population.



A—Vacuum Level (Inches of Water)

B—Seeds Per Pound
C—Seeds Per Kilogram

Seed Size

D—Small Sweet Corn Disk
E—ProMax 40 Disk

Use information from seed supplier to calculate seeds per kg (lb.).

IMPORTANT: The proper vacuum level must be calculated for each seed variety. Calculate seeds per kg (lb.) by dividing the number of seeds in bag by the weight of bag.

EXAMPLE: If there are 9370 seeds per kg (4250 seeds per lb.), the chart indicates a vacuum level of 11 in. with Small Sweet Corn Disk.

MH69740,000055F -19-21AUG13-1/1

A78498—UN—21AUG13

Vacuum Level Seed Chart—Flat Edible-Bean Disk

Vacuum Seed Chart Using Flat Edible Bean Disk						
	Edible Bean Flat Type Disks			Vacuum	Doubles Eliminator	Seed Size
Crop Types	Small A52903	Medium A52904	Large A52878	Inches of Water	Percent of Hole Covered	Recommendations
Small Edible Beans						
Small Green Garden	X			16—18	0—50	3528—5292 Seeds/kg (1600—2400 Seeds/lb)
Black Turtle	X			16—18	0—50	4190—5733 Seeds/kg (1900—2600 Seeds/lb)
Navy	X			16—18	0—50	3969—5733 Seeds/kg (1800—2600 Seeds/lb)
Small Whites	X			12—14	0—50	5292—7277 Seeds/kg (2400—3300 Seeds/lb)
Pink Viva		X		18—20	0—50	3749—4190 Seeds/kg (1700—1900 Seeds/lb)
Medium Edible Beans						
Medium Green Garden		X		18—20	0—50	2649—3528 Seeds/kg (1200—1600 Seeds/lb)
Small Red		X		18—20	0—50	2649—3308 Seeds/kg (1200—1500 Seeds/lb)
Pinto		X		20—22	0—50	All Sizes
Medium Kidney		X		14—16	0—50	2536—3087 Seeds/kg (1150—1400 Seeds/lb)
Lima		X		18—20	0—50	2649—3528 Seeds/kg (1200—1600 Seeds/lb)
Large Edible Beans						
Large Green Garden			X	20—22	0—25	1544—2649 Seeds/kg (700—1200 Seeds/lb)
Cranberry			X	20—22	0—50	1764—2649 Seeds/kg (800—1200 Seeds/lb)
Large Kidney			X	18—20	0—50	1874—2536 Seeds/kg (850—1150 Seeds/lb)
Great Northern			X	18—20	0—50	1985—2867 Seeds/kg (900—1300 Seeds/lb)
Garbanzo			X	16—18	0—50	1654—1985 Seeds/kg (750—900 Seeds/lb)
Edible Peas						
Blackeye		X		16—18	0—50	3528—4410 Seeds/kg (1600—2000 Seeds/lb)
Smooth		X		14—16	0—50	6174—7056 Seeds/kg (2800—3200 Seeds/lb)
Wrinkle	X			12—14	0—50	3749—5072 Seeds/kg (1700—2300 Seeds/lb)
Small Cotton	X			12—18	0—50	3520—7260 Seeds/kg (1600—3300 Seeds/lb)

IMPORTANT: Vacuum levels are a starting point. Perform a field check and adjust level to obtain proper population.

NOTE: To maintain vacuum levels when using flat edible-bean disk, do not exceed 12 row units per vacuum blower.

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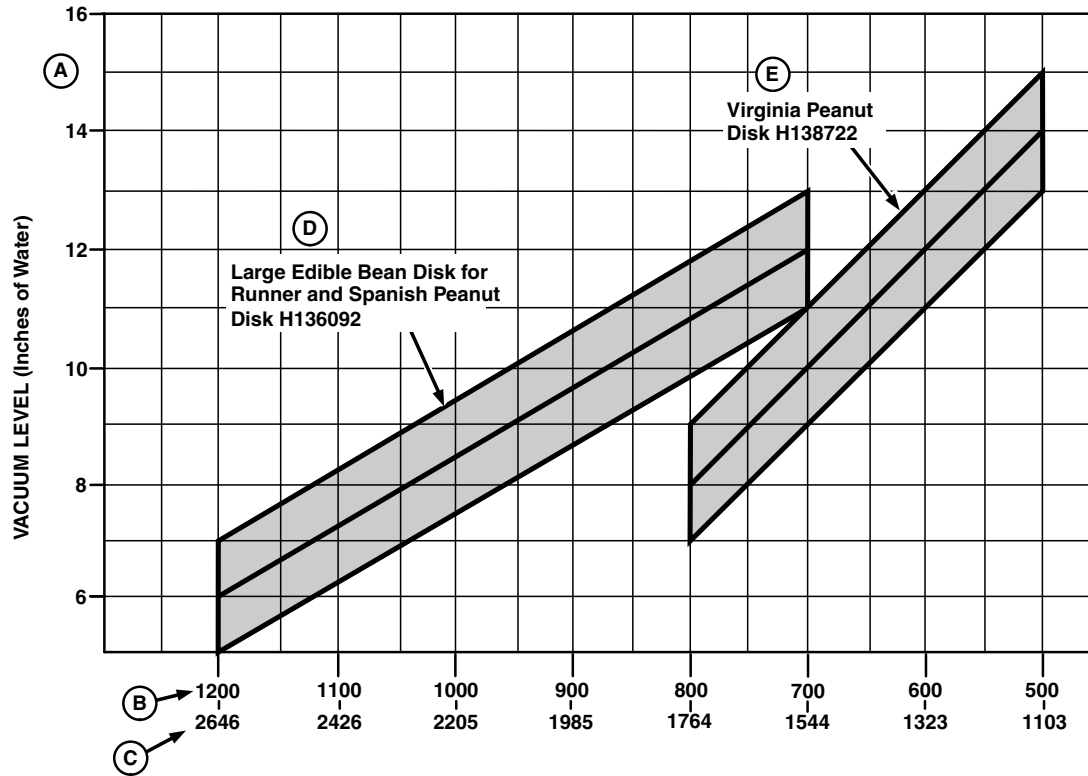
Due to differences in seed sizes and shapes within a seed variety, actual populations vary at the same vacuum level.

Order the Flat Edible-Bean Vacuum Gauge (AA38407) through your John Deere™ dealer.

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Vacuum Level for Peanuts

IMPORTANT: Vacuum levels are a starting point.
Perform a field check and adjust level to
obtain proper population.



A—Vacuum Level (Inches of Water)
B—Seeds Per Pound

C—Seeds Per Kilogram
D—Large Edible Bean Disk for Runner and Spanish Peanut

E—Virginia Peanut Disk

Use information from seed supplier to calculate seeds per kg (lb.).

IMPORTANT: The proper vacuum level must be calculated for each seed variety. Calculate seeds per kg (lb.) by dividing the number of seeds in bag by the weight of bag.

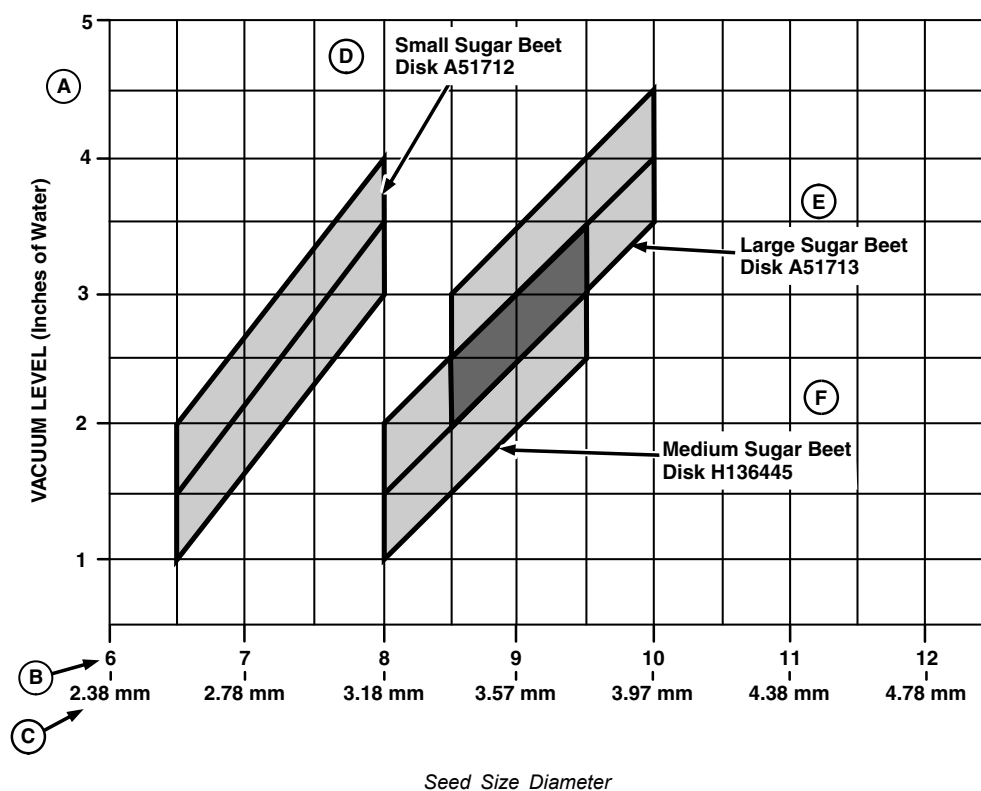
EXAMPLE: If there are 1764 seeds per kg (800 seeds per lb.), the chart indicates a vacuum level of 11 in. with Large Edible-Bean Disk for Runner Peanuts or a vacuum level of 8 in. with Virginia Peanut Disk.

MH69740,0000562 -19-21AUG13-1/1

A78499—UN—21AUG13

Vacuum Level for Sugar Beet Seed

IMPORTANT: The proper vacuum level must be calculated for each seed size.



A—Vacuum Level (Inches of Water)
B—Seed Diameter (per 64th of an inch)

C—Seed Diameter (per Millimeter)
D—Small Sugar Beet
E—Large Sugar Beet
F—Medium Sugar Beet

Use information from seed supplier to calculate seeds per kg (lb.).

IMPORTANT: Vacuum levels are a starting point. Perform a field check and adjust level to obtain proper population.

EXAMPLE: If bag label indicates a medium seed diameter of 3.57mm (9/64 in.). Set vacuum level to 2.5 in. with Medium Sugar Beet Disk.

MH69740,0000563 -19-21AUG13-1/1

A78500 —UN—21AUG13

Meter Lubrication

Use of Talc Lubricant

CAUTION: Avoid chemical injury to eyes, skin, or lungs. If using seed treatments, use caution when handling parts coated with seed treatment. Read and follow safety instructions on the chemical treatment label.

IMPORTANT: Only use approved talc lubricant. (See your John Deere™ dealer.)

At the beginning of each season, add the talc lubricant to the empty CCS™ tanks. Also, add 9 mL (0.6 tbsp) or (0.3 oz) to each empty row unit mini-hopper.

Use of either a talc or wax-based lubricant improves the vacuum seed meter and CCS™ system performance. Wax-based lubricant typically has lower levels of inert and seed treatment dust in the vacuum blower exhaust.

A lubricant (fluency agent) is required for optimum performance of the vacuum meter and CCS™ system. To obtain consistent seed release from the seed disk and improve spacing accuracy, properly lubricate the seed.

FARMER-APPLIED SEED TREATMENT:

Farmer-applied seed treatments are Not recommended.

IMPORTANT: Avoid sticky seeds and meter components. It is possible for seeds to become sticky due to chemical reactions between farmer-applied seed treatments and commercially applied treatments. If farmer-applied treatments are used, follow recommendations of chemical manufacturer carefully. Avoid treatments with high oil content. Certain temperature and humidity levels also complicate material compatibility.

If farmer-applied treatment is used, apply seed treatment to seed before the lubricant and allow seed treatment to dry before placing seed in tanks. If seed treatment accumulates in the meter while using the following lubricant application rates, contact the treatment manufacturer for assistance.

COMMERCIALY TREATED SEED:

Mixes of seed and seed treatment must be free of clumps.

Some treated seed is coated with commercially applied lubricant. To maintain meter performance, apply the recommended amount of lubricant, in addition to the commercial application.

IMPORTANT: Avoid poor seed flow. Thoroughly incorporate the lubricant in tanks and hoppers, so all seeds are evenly coated.

NOTE: Any additives other than John Deere™ powdered lubricants leave a residue on parts that affect planting rates.



A34471

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When using CCS™ system to deliver seed to seed meters, use this table:

Application Rate of Talc in CCS™ Tanks	
Apply lubricant to seed as seed enters tank. All seeds must be coated to ensure movement through the CCS™ system and for proper meter performance. Mix seed and lubricant as necessary.	
CCS™ Tank Size	Amount of Talc
1233 L (35 bu) Bulk Tank	2.6 L (11 cups)
1762 L (50 bu) Bulk Tank	3.8 L (16 cups)
Per 80 000 kernel seed corn unit	74 mL (5 tbsp) (2.5 oz)

When using 1.6, 2.0, or 3.0 bushel hoppers (without CCS™ tanks) to deliver seed to the meters, use this table:

Application Rate of Talc in Row Unit Hoppers	
Thoroughly incorporate lubricant until all seeds are coated.	
Hopper Size	Amount of Talc
58 L (1.6 bu)	120 mL (1/2 cup)
70 L (2 bu)	177 mL (3/4 cup)
106 L (3 bu)	240 mL (1 cup)

NOTE: If lubricant builds up in bottom of hopper, reduce the quantity.

Adjust these rates as necessary so all seeds become coated with lubricant, while avoiding an accumulation of lubricant in bottom of tank.

Double the talc recommendation when planting small seed, large seed, seeds with heavy treatment, or humid planting conditions.

In situations with a combination of sticky seed treatments, large or small seed, and high humidity, add up to 2—3 times the amount of talc shown in the tables.

IMPORTANT: Avoid the formation of lubricant clumps. Clean buildup of seed treatments and talc lubricant out of hoppers between fills.

If lubricant builds up in bottom of hopper and vacuum tubes require frequent cleanout, reduce lubricant rate. If a coating of seed treatment is found on seed disks, increase the amount of lubricant.

Continued on next page

OUC6045,00006CD -19-22OCT15-1/2

Meter Lubrication

When using seed treatments, clean the meters and seed disks as needed. Clean the seed disks with warm, soapy

water. Spray a graphite solution on vacuum seal side of disk as needed.

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OUO6045,00006CD -19-22OCT15-2/2

Use of Wax-Based Lubricant

Use of either talc or wax-based lubricant improves vacuum seed meter and CCS™ system performance. Wax-based lubricant typically has lower levels of inert and seed treatment dust in the vacuum blower exhaust.

CAUTION: Avoid chemical injury to eyes, skin, or lungs. If using seed treatments, use caution when handling parts coated with seed treatment. Read and follow safety instructions on the chemical treatment label.

IMPORTANT: Only use approved wax-based lubricants. (See your John Deere™ dealer.)

Use of either a talc or wax-based lubricant improves the vacuum seed meter and CCS™ system performance. Wax-based lubricant typically has lower levels of inert and seed treatment dust in the vacuum blower exhaust.

A lubricant (fluency agent) is required for optimum performance of the vacuum meter and CCS™ system. To obtain consistent seed release from the seed disk and improve spacing accuracy, properly lubricate the seed.

FARMER-APPLIED SEED TREATMENT:

Farmer-applied seed treatments are Not recommended.

IMPORTANT: Avoid sticky seeds and meter components. It is possible for seeds to become sticky due to chemical reactions between farmer-applied seed treatments and commercially applied treatments. If farmer-applied treatments are used, follow recommendations of chemical manufacturer carefully. Avoid treatments with high oil content. Certain temperature and humidity levels also complicate material compatibility.

If farmer-applied treatment is used, apply seed treatment to seed before the lubricant and allow seed treatment to dry before placing seed in tanks or hoppers. If seed treatment accumulates in the meter while using the following lubricant application rates, contact the treatment manufacturer for assistance.

COMMERCIALLY TREATED SEED:

Mixes of seed and seed treatment must be free of clumps.

Some treated seed is coated with commercially applied lubricant. To maintain meter performance, apply the recommended amount of lubricant, in addition to the commercial application.

IMPORTANT: Avoid poor seed flow. Thoroughly incorporate the lubricant in tanks and hoppers, so all seeds are evenly coated.

NOTE: Any additives other than John Deere™ powdered lubricants leave a residue on parts that affect planting rates.



A34471

A34471—UN—11OCT88

When using CCS™ system to deliver seed to seed meters, use this table:

Application Rate of Approved Fluency Agent in CCS™ Tanks	
Apply fluency agent to seed as seed enters tank. All seeds must be coated to ensure movement through the CCS™ system and for proper meter performance. Mix seed and fluency agent as necessary.	
CCS™ Tank Size	Quantity of Fluency Agent
1233 L (35 bu) Bulk Tank	1.05 L (4-3/8 cups)
1762 L (50 bu) Bulk Tank	1.5 L (6-1/4 cups)
Per 80 000 kernel seed unit	30 mL (1/8 cup)

When using 1.6, 2.0, or 3.0 bushel hoppers (without CCS™ tanks) to deliver seed to the meters, use this table:

Application Rate of Approved Fluency Agent in Row Unit Hoppers	
Thoroughly incorporate fluency agent until all seeds are coated.	
Hopper Size	Quantity of Fluency Agent
58 L (1.6 bu)	48 mL (1/5 cup)
70 L (2 bu)	60 mL (1/4 cup)
106 L (3 bu)	90 mL (3/8 cup)
Per 80 000 kernel seed unit	30 mL (1/8 cup)

Adjust these rates as necessary so all seeds become coated with lubricant, while avoiding an accumulation of lubricant in bottom of tank.

IMPORTANT: Avoid the formation of lubricant clumps. Clean buildup of seed treatments and lubricant (fluency agent) out of hoppers between fills.

If lubricant builds up in bottom of hopper and vacuum tubes require frequent cleanout, reduce lubricant rate. If a coating of seed treatment is found on seed disks, increase the amount of lubricant.

When using seed treatments, clean meters and seed disks as needed. Clean the seed disks with warm, soapy water. Spray a graphite solution on vacuum seal side of disk as needed.

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OUO6074,0000D89 -19-22OCT15-1/2

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OUO6074,0000D89 -19-22OCT15-2/2

Use of Powdered Graphite Lubricant

Use of graphite-based lubricant improves the finger pick-up meter and radial bean meter performance.

CAUTION: Avoid chemical injury to eyes, skin, or lungs. If using seed treatments, use caution when handling parts coated with seed treatment. Read and follow safety instructions on the chemical treatment label.

IMPORTANT: Avoid reduced meter performance. Some insecticide-treated seed is coated with commercially applied graphite. Even if graphite is commercially applied, add the required amount of graphite shown in the following table.

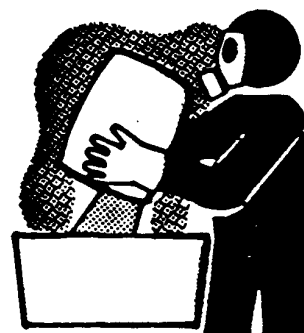
Avoid premature meter wear. Use powdered graphite regularly to reduce wear of meter components and prolong life of meter. Graphite filters down into the meter to ensure proper lubrication.

Avoid sticky residue on meter components. Some types of graphite have an oil base that leaves a residue on parts. John Deere™ graphite provides a dry lubrication.

NOTE: If graphite builds up in bottom of hopper, reduce the quantity.

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Every seed is visibly gray when coated properly.

At the beginning of each season, add graphite 9 mL (0.6 tbsp.) or (0.3 oz.) to each empty row unit hopper.

Row Unit Hopper—Graphite Application Rate	
Hopper Size	Amount of Graphite
58 L (1.6 bu.)	15 mL (1 tbsp.)
106 L (3 bu.)	30 mL (2 tbsp.)
80 000 Kernel Seed Corn Unit	15 mL (1 tbsp.) or (0.5 oz.)
Insecticide Treated Seed	
80 000 Kernel Seed Corn Unit	Additional 15 mL (1 tbsp.) or (0.5 oz.)

OUO6074,0000D09 -19-16APR14-1/1

Machine Lubrication

Lubricate and Maintain The Machine Safely

CAUTION: To help prevent serious injury or death to you or others caused by unexpected movement, service the machine on a level surface. Lower the machine to the ground or sufficiently lock or block the raised machine before servicing. If the machine is connected to a tractor, engage the parking brake and place the transmission in "Park", shut off the engine and remove the key. If the machine is detached from the tractor, block the wheels and use shop stands to prevent movement.



N40000—UN—28SEP88

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Lubrication and Maintenance Procedures

CAUTION: Do not clean, lubricate, or adjust machine while in motion.

IMPORTANT: The recommended service intervals are based on normal conditions; severe or unusual conditions may require more frequent lubrication.

Perform each lubrication and service procedure illustrated in this section at the beginning and end of each season.

Clean grease fittings before using grease gun. Replace any lost or broken fittings immediately. If a new fitting fails to take grease, remove and check for failure of adjoining parts.

AG,OUO6074,1355 -19-04AUG00-1/1

Grease

Use grease based on NLGI consistency numbers and the expected air temperature range during the service interval.

John Deere SD Polyurea Grease is preferred.

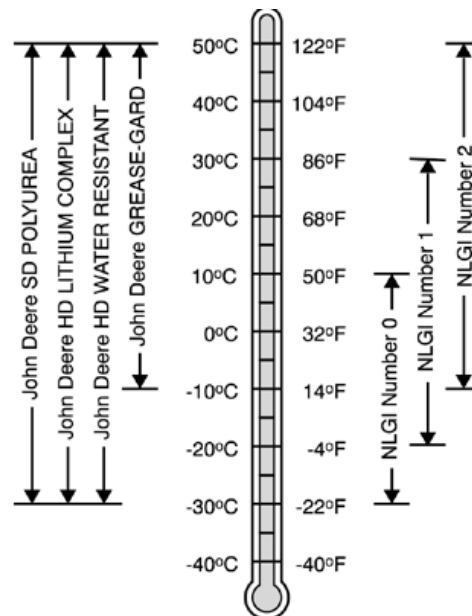
The following greases are also recommended:

- John Deere HD Lithium Complex Grease
- John Deere HD Water Resistant Grease
- John Deere GREASE-GARD™

Other greases may be used if they meet the following:

- NLGI Performance Classification GC-LB

IMPORTANT: Some types of grease thickeners are not compatible with others. Consult your grease supplier before mixing different types of grease.



Greases for Air Temperature Ranges

TS1673—UN—31OCT03

GREASE-GARD is a trademark of Deere & Company

DX,GRE1 -19-14APR11-1/1

Lubrication Symbols



Lubricate with grease at hourly interval indicated on symbol.

A54361 —UN—24MAY04



Lubricate with John Deere TY6350 Multipurpose spray lube as required.



Pack wheel bearings with axle bearing grease at hourly interval indicated on symbol.



Lubricate with SAE 10W oil at hourly interval indicated on symbol.

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Alternative Lubricants

Conditions in certain geographical areas may require special lubricants and lubrication practices which do

not appear in this operator's manual. If there are any questions, consult your John Deere dealer to obtain latest information and recommendation.

AG,OUO6074,1357 -19-04AUG00-1/1

Roller Chain and Pesticide Sprocket Lubrication

IMPORTANT: Do not use any heavy petroleum base lubricant which causes a buildup of dust or dirt in sprocket or gear teeth.

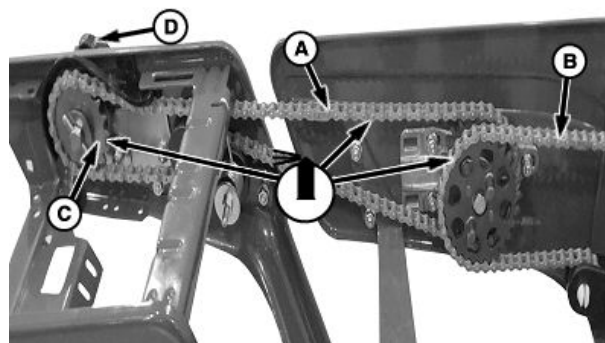
The most effective roller chain lubrication routine varies, depending on environmental conditions and condition of chain. The goal is to maintain complete freedom at every chain link joint.

Lubricate all machine roller chains with John Deere Multipurpose Spray Lube, TY6350 (or equivalent) at intervals sufficient to maintain free chain movement.

When roller chains remain unused for several days, moisture in the air accumulates on chain, causing rust. Rust can cause chain joints to become stiff, restricting their normal free movement. While difficult to detect, this stiffness can disturb smooth rotation of seed meter components and cause a deterioration in performance.

Machines not used for several days, need thorough lubrication on chains with John Deere Multipurpose Spray Lube, TY6350. If roller chains have become stiff during idle period, lubricate before continued usage. Operate or "work" chains sufficiently to ensure all chain joints move freely before normal machine operation is resumed.

Lubricate pesticide drive chain (A) and seed meter drive chain (B).



A—Pesticide Drive Chain
B—Seed Meter Drive Chain

C—Pesticide Drive Sprocket
D—Drive Disconnect Knob

Lubricate pesticide drive sprocket (C). Move drive disconnect knob (D) back and forth while spraying. Lubricant loosens any paint or dirt buildup allowing sprocket to turn freely. In adverse conditions it is necessary to lubricate these sprockets daily.

A78691 —UN—22AUG13

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Lubrication Intervals

Item	Lubrication Intervals							
	Start of Season	As Required	10 Hours or Daily	25 Hours	50 Hours	100 Hours	200 Hours	End of Season
All Roller Chains	•	•						•
Fertilizer Shut Off Valves	•							•
Quick Fill Valve	•							•
Gauge Wheels			•					
Hitch Pivot			•					
Wing Flex Joints			•					
Marker Pivot Pin			•					
Single Disk Fertilizer Opener			•		•			
24R Frame Mounted Coulter (if equipped)			•					
Flex Shaft			•					
12R and 16R Marker Pivot and Control Strap			•					
Piston Pump Shafts (if equipped)			•					
Piston Pump Crankcase			•					
24R Variable Rate Pump Shafts (if equipped)			•					
Tillage Support bracket			•					
24R Fixed rate Pump Shafts (if equipped)			•					
24R Variable Rate Pump Crankcase			•					
24R Fixed rate Pump Crankcase			•					
24R Frame Fold Point			•					
24R Wing Flex Point			•					
24R Fold Cylinder			•					
Frame Weight Distribution Cylinders (If Equipped)					•			
24R Mechanical Transmission			•					
24R Marker			•					
Main Frame Wheel Modules				•				
Wing Wheel Modules				•				
Main Frame Cylinders Rod Ends				•				
Wing Wheel Bearings					•			
Drawbar Hitch (if equipped)					•			
Fold Joints						•		

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RM87422,0000426 -19-11FEB16-1/2

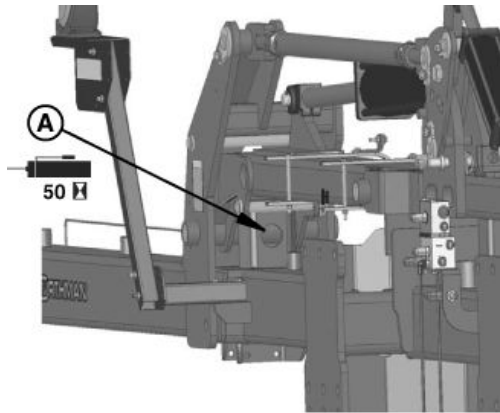
Machine Lubrication

Lubrication Intervals								
Item	Start of Season	As Required	10 Hours or Daily	25 Hours	50 Hours	100 Hours	200 Hours	End of Season
Unit Mounted Single-Disk Fertilizer Openers							•	
Unit Mounted Coulter							•	
Unit Mounted Row Cleaners					•		•	
Unit Mounted Row Cleaner Adjustment Arm							•	

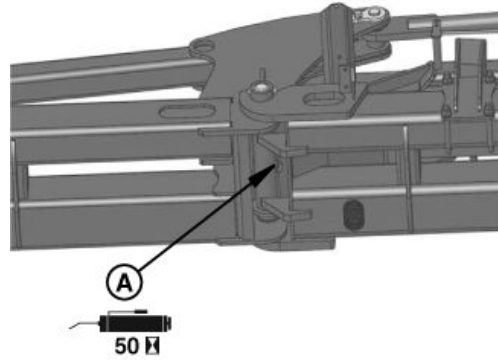
RM87422,0000426 -19-11FEB16-2/2

Lubrication (12R/16R)

Grease: Use high-quality multi-purpose grease.



PY24797 —UN—08FEB16

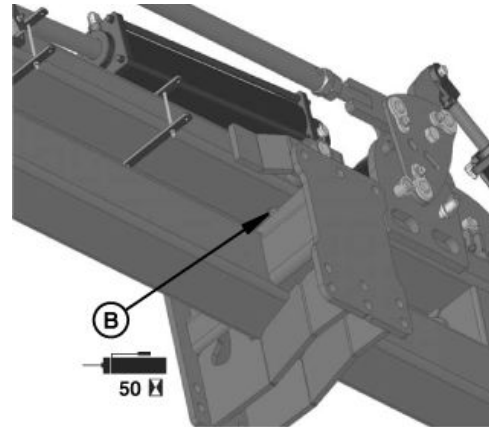


PY24839 —UN—08FEB16

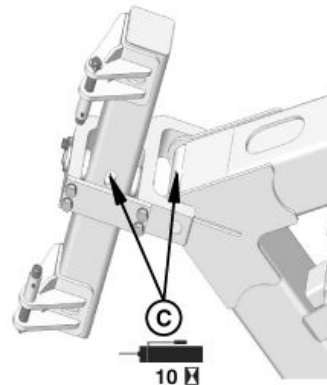
16 Row

A—Wing Pivot Pin
B—Swing Truss Pivot Point

C—Hitch Pivot Points



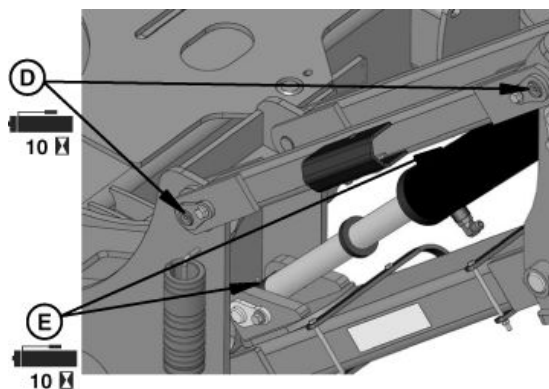
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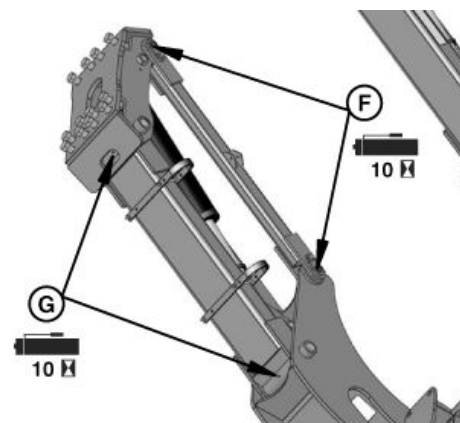
PY24799 —UN—08FEB16

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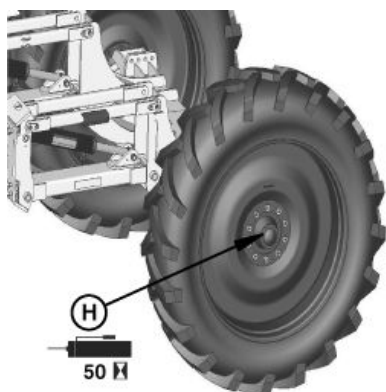
RM87422,00003F1 -19-09FEB16-1/3



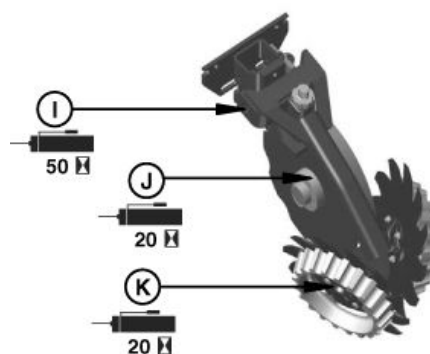
PY24800 —UN—08FEB16



PY24801 —UN—08FEB16



PY24802 —UN—08FEB16

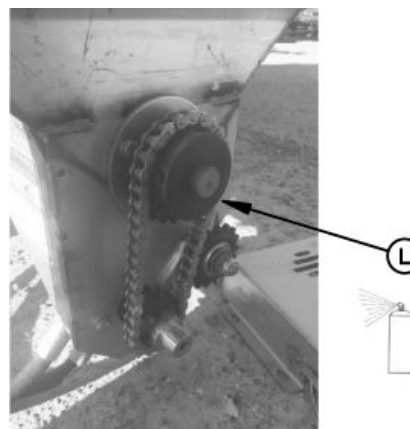


PY24803 —UN—08FEB16

- Chain Lube - use high-quality chain lube.
- Lubricate chains any time there is a chance of moisture, when being stored at the end of the operating season, and before operating each new season.
- Check for chain slack after initial operation and adjust idlers accordingly.
- Check slack on idlers seasonally.

D—Outer Rear Chassis Upper Lift Arm Pins
 E—Hydraulic Lift Cylinder Rod End and Base End Pins
 F—Inner Rear Chassis Upper Lift Arm Pins
 G—Rear Chassis Lower Lift Arm Pins
 H—Wheel Bearing

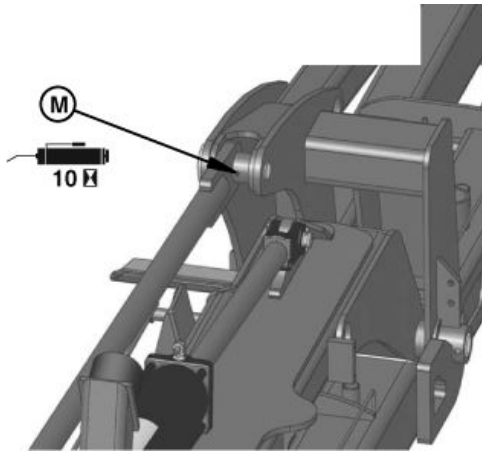
I—Row Cleaner Arm Housing
 J—Disc Hub Bearing (both smooth and notched discs)
 K—Row Cleaner Disc Hub Bearing (both discs)
 L—Auger Drive Chain and Sprockets



PY24804 —UN—08FEB16

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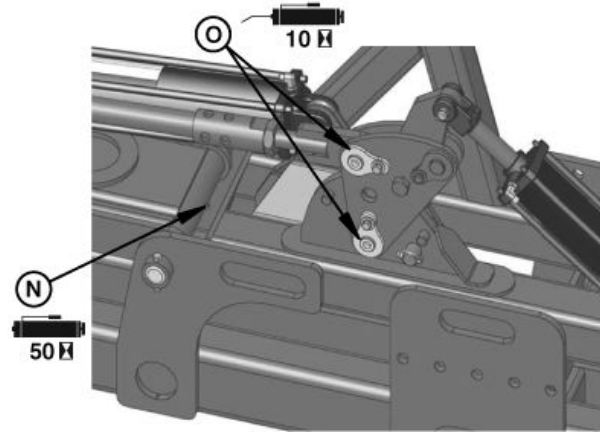
RM87422.00003F1 -19-09FEB16-2/3



16 Row

M—Wing Strut Pin

PY24840 —UN—09FEB16



16 Row

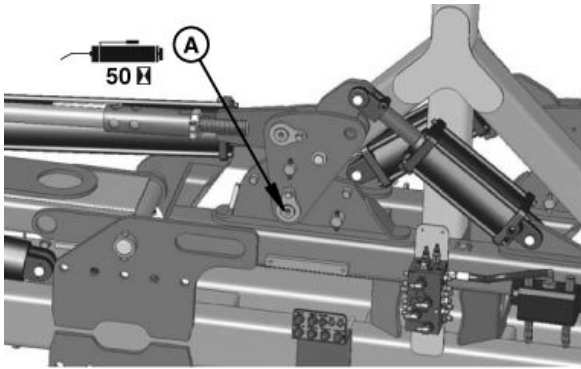
O—Swing Truss Pivot Pn

PY24841 —UN—09FEB16

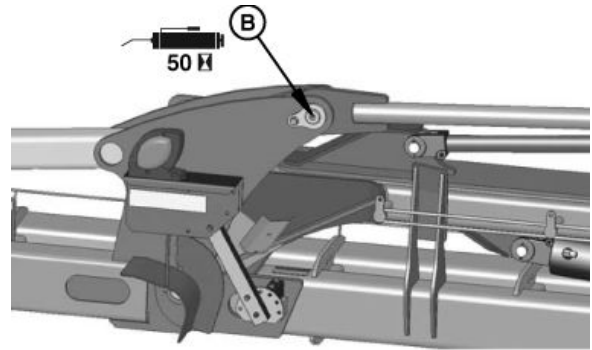
RM87422,00003F1 -19-09FEB16-3/3

Lubrication (24R)

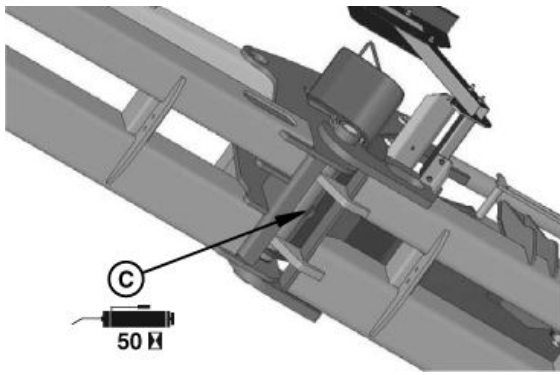
Grease: Use high-quality multi-purpose grease.



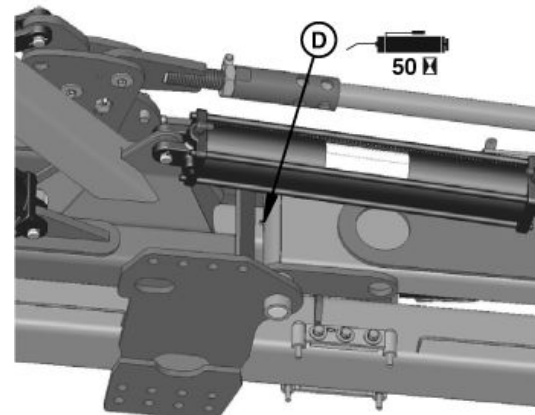
PY24826 —UN—08FEB16



PY24827 —UN—08FEB16



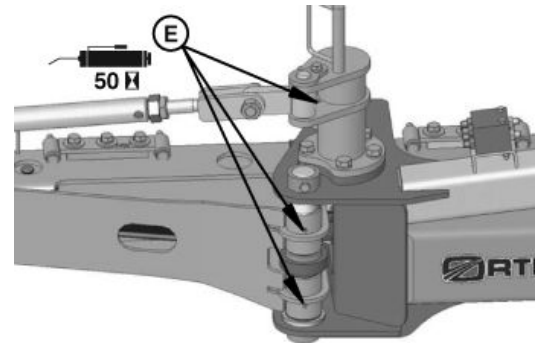
PY24828 —UN—08FEB16



PY24829 —UN—08FEB16

A—Wing Float Linkage Pins
B—Wing Strut Pin
C—Wing Hinge Pivot Pin
(Bottom Side of Toolbar)

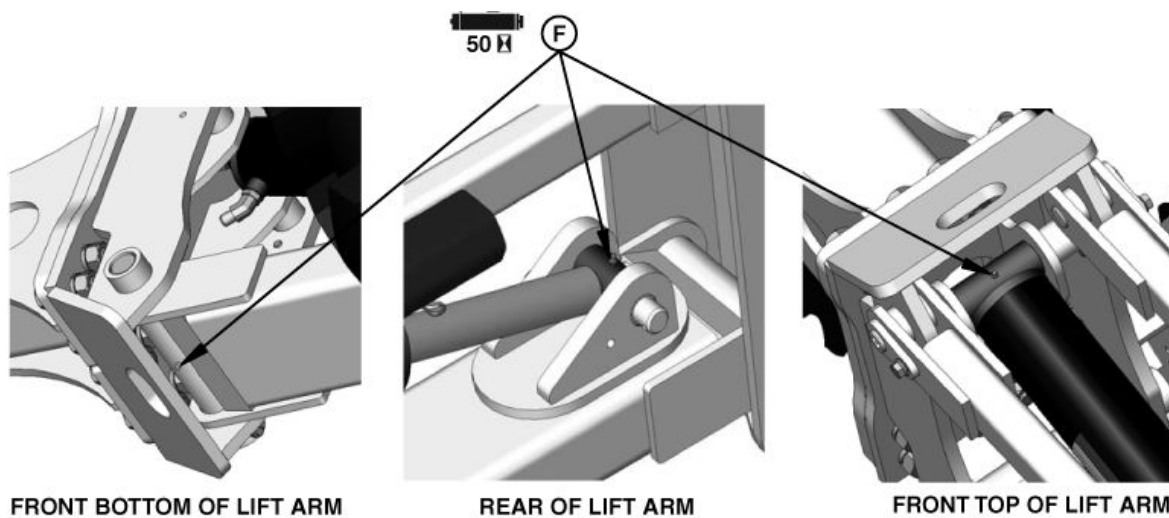
D—Swing Truss Pivot Point Pin
E—Outer Wing Hinge



PY24830 —UN—08FEB16

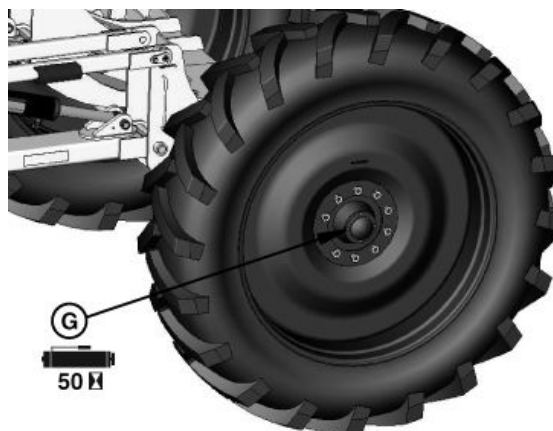
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RM87422,0000415 -19-09FEB16-1/2



F—Lift Arm

G—Wheel Bearing



PY24831—UN—09FEB16

PY24832—UN—08FEB16

RM87422,0000415 -19-09FEB16-2/2

Service and Adjustments

Service Intervals

Service	Intervals						
	As Required	Beginning of Season	10 Hours or Daily	50 Hours	100 Hours	200 Hours	End of Season
Install and Remove optional Seed Tubes	•						
Install and Remove Flush Face Seed Tubes	•						
Clean Seed Tube Sensor	•						
Install New Vacuum Seal	•						
Inspect and Adjust Seed Opener Blades	•						
Replace Seed Opener Blades and Seed Tube Guard	•						
Adjust Gauge Wheels	•						
Disk Closing Attachment	•						
Coulter Maintenance	•	•			•	•	
Wheel Bearings	•	•					
Inspect Vacuum Motor			•				
Clean Vacuum Manifold System				•			
Tighten Wheel Bolts				•			
Vacuum Gauge Filter							•
Vacuum Meter Inspection and Service							•
Drain CCS Fan Motor Oil Reservoir							•

OUO6064,000051F -19-13JUN11-1/1

Use Safe Service Procedures

⚠ CAUTION: To help prevent serious injury or death to you or others caused by unexpected movement, service the machine on a level surface. Lower the machine to the ground or sufficiently lock or block the raised machine before servicing. If the machine is connected to a tractor, engage the parking brake and/or place the transmission in "PARK", shut off the engine and remove the key. If the machine is detached from the tractor, block the wheels and use shop stands to prevent movement.



N40000—UN—28SEP88

AG,OUO6074,1362 -19-03MAR16-1/1

Practice Safe Maintenance

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.



TS218 —UN—23AUG88

DX.SERV -19-17FEB99-1/1

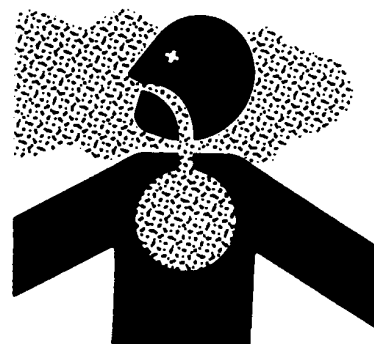
Service and Operate Chemical Sprayers Safely

Chemicals used in agricultural sprayers can be harmful to your health or the environment if not used carefully.

Always follow all label directions for effective, safe, and legal use of agricultural chemicals.

Reduce risk of exposure and injury:

- Wear appropriate personal protective equipment as recommended by the manufacturer. (See 'Handle agricultural chemicals safely' found in the Safety Section.)
- Fill, flush, calibrate, and decontaminate sprayer in an area where runoff will not reach ponds, lakes or streams, livestock areas, or gardens, or near other people.
- Keep children away from the chemicals, chemical solutions, and rinsates.
- If spray or chemical concentrate contacts skin, hands, or face, wash immediately with soap and water. If spray or chemical concentrate gets into eyes, flush immediately with water.
- If nozzle clogs or system malfunctions, stop engine and relieve spray pressure from system.
- Do not place nozzle tips or other components to the mouth to clear obstructions. Keep spare tips on hand for replacement.
- Minimize risk of spray drift.
 - Use large nozzle tips operated at lower pressures
 - Do not operate solution delivery system at pressures exceeding 345kPa (3.5 bar) (50 psi).
 - Do not spray when winds exceed 16 km/h (10 mph).
 - Do not spray when wind is blowing towards a nearby sensitive crop, garden, or populated area.



- Properly dispose of unused chemicals, flushing solution, and empty chemical containers.
- Decontaminate equipment used in mixing, transferring, and applying chemicals after use.

DX,WW,CHEM02 -19-05APR04-1/1

TS272 —UN—23AUG88

TS220 —UN—15APR13

Welding Near Electronic Control Units

IMPORTANT: Do not jump-start engines with arc welding equipment. Currents and voltages are too high and may cause permanent damage.

1. Disconnect the negative (-) battery cable(s).
2. Disconnect the positive (+) battery cable(s).
3. Connect the positive and negative cables together. Do not attach to vehicle frame.
4. Clear or move any wiring harness sections away from welding area.
5. Connect welder ground close to welding point and away from control units.



6. After welding, reverse Steps 1—5.

DX,WW,ECU02 -19-14AUG09-1/1

TS953 —UN—15MAY90

Keep Electronic Control Unit Connectors Clean

IMPORTANT: Do not open control unit and do not clean with a high-pressure spray. Moisture, dirt, and other contaminants may cause permanent damage.

1. Keep terminals clean and free of foreign debris. Moisture, dirt, and other contaminants may cause the terminals to erode over time and not make a good electrical connection.
2. If a connector is not in use, put on the proper dust cap or an appropriate seal to protect it from foreign debris and moisture.
3. Control units are not repairable.
4. Since control units are the components LEAST likely to fail, isolate failure before replacing by completing a diagnostic procedure. (See your John Deere dealer.)
5. The wiring harness terminals and connectors for electronic control units are repairable.

DX,WW,ECU04 -19-11JUN09-1/1

Service Tires Safely

⚠ CAUTION: Explosive separation of a tire and rim parts can cause serious injury or death.

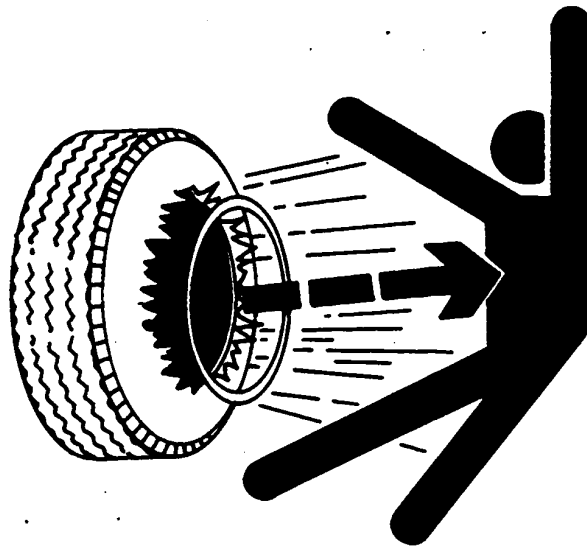
Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure.

Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.



TS211 —UN—15APR13

DX,RIM1 -19-27OCT08-1/1

Tighten Drive Chains

To determine chain deflection, perform the following procedures:

1. Rotate drive to tighten chain.
2. Place straight edge (B) over the slack span of chain.

NOTE: Make sure that one side of the chain is taut during measurement.

3. At center of shaft distance (A), use a ruler (C) to measure deflection from the top of the chain to the underside of the straight edge.

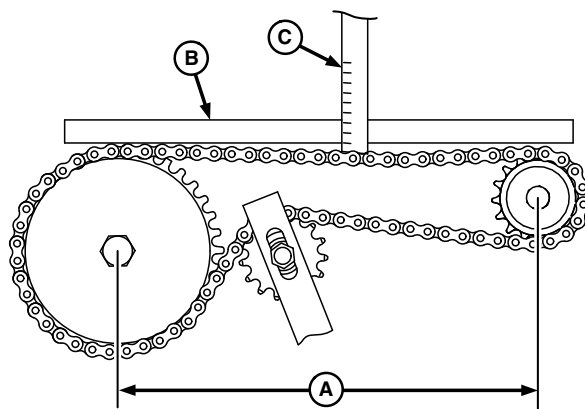
IMPORTANT: Do not over tighten chains or rapid chain wear, shaft, and bearing damage can result.

4. Adjust shaft centers or chain tighteners to specification.

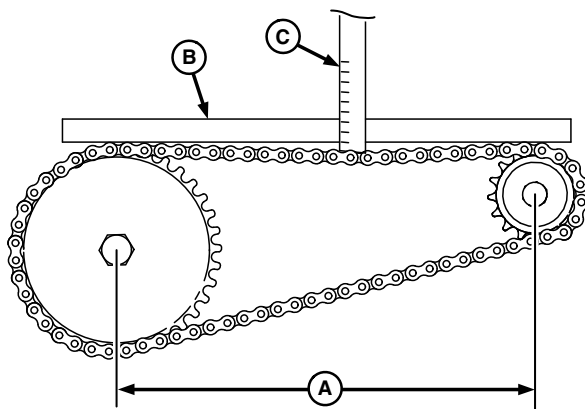
Specification
Chain—Deflection.....6.4 mm (1/4 in.) of
chain deflection per 31 cm (12 in.)

A—Shaft Distance
B—Straight Edge

C—Ruler



Drive Chain With Tension Idler



Drive Chain Without Tension Idler

OUC6064,0000377 -19-04APR13-1/1

A70496—UN—31JAN11

A70495—UN—31JAN11

Tightening Wheel Bolts

Tighten wheel bolts to specification; prior to operation, after first 10 hours of operation and every 50 hours of operation.

Specification
Wheel Bolts—Torque.....176 N·m
(130 lb-ft)

OUC1074,0001491 -19-28APR03-1/1

Checking Tire Inflation

Tire Pressures	
Tires Size	Pressure
7.60-15 8 ply	200 kPa (2 bar) (29 psi)
7.60-15 6 ply	200 kPa (2 bar) (29 psi)
480/80R50	317 kPa (3.17 bar) (46 psi)
12.5 L-15 20 ply	552 kPa (5.5 bar) (80 psi)

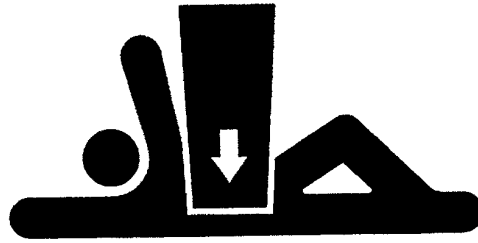
RM87422,0000448 -19-10MAR16-1/1

Support The Machine Before Service

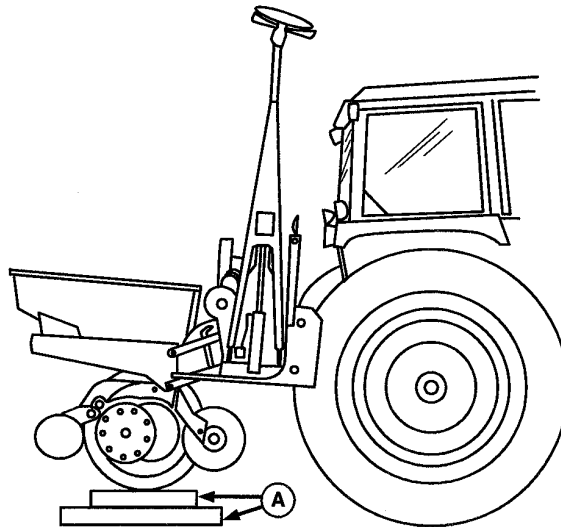
CAUTION: Avoid crushing injury or death from falling machine. Ensure service locks are installed on all cylinders and machine is supported on blocks before performing any service or adjustments.

1. Raise the machine.
2. Place the support blocks (A) under the gauge wheels.
3. Install the service locks on all of the lift cylinders.
4. Lower the machine onto the support blocks
5. Shift the tractor to "Park" and set the parking brake.
6. Stop the engine and remove the key.

A—Support Blocks



A44347 —UN—16DEC97



A44888 —UN—04MAY98

DT31797,0000327 -19-07MAR16-1/1

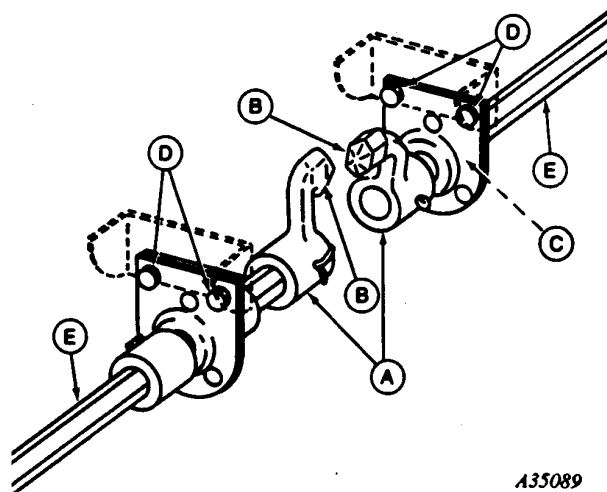
Aligning Countershaft Wing Coupler

It can be necessary to align couplers (A). Flat surfaces (B) on sides of the couplers must be touching and in alignment. To align couplers:

- To adjust laterally, add or remove flat washers (C) until flat surfaces (B) are in alignment.
- To adjust contact of flat surfaces, loosen bolts (D) and align shafts (E).
- After maximum alignment is obtained on flat surfaces (B) and shafts are in alignment, tighten bolts (D).

A—Couplers
B—Flat Surfaces
C—Flat Washers

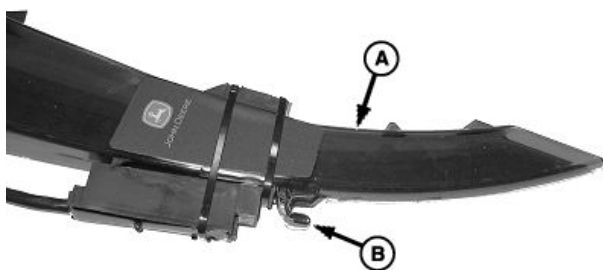
D—Bolts
E—Shafts



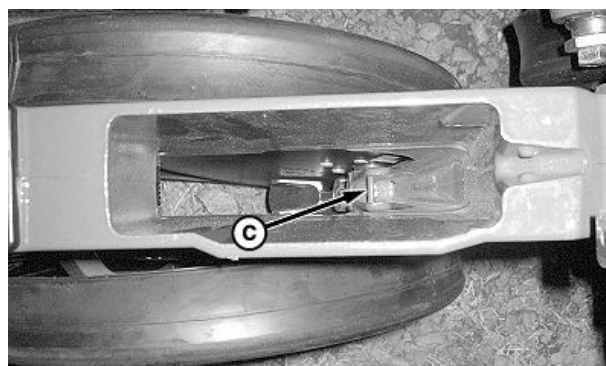
A35089 —UN—16OCT92

OUC6045,0000074 -19-10DEC08-1/1

Install and Remove The Seed Tube



A59900 —UN—02APR07

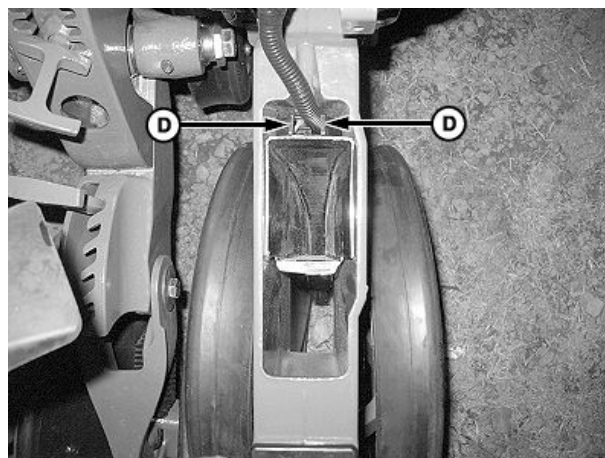


A66859 —UN—26MAR10

1. Connect the monitor harness to the sensor harness.
NOTE: Place the harness connector inside the planting unit at the same time as the seed tube.
2. Insert the seed tube (A) into the planting unit so hook (B) locks onto the alignment pin (C).
3. Position the seed tube so the tabs (D) lock into the holes.
4. To remove the seed tube, squeeze the tabs with your fingers until they release from the casting. Pull the tube upward.

A—Seed Tube
B—Hook

C—Pin
D—Tabs



A66860 —UN—26MAR10

OUC6064,000004B -19-04MAR16-1/1

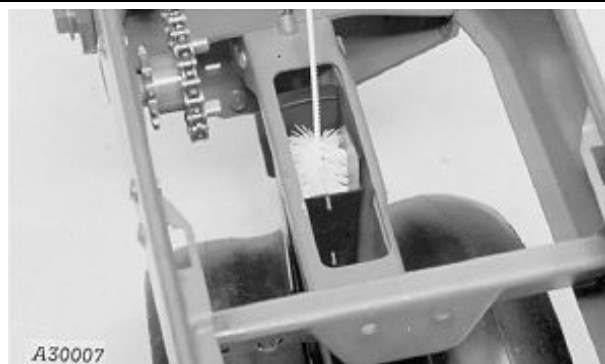
Clean The Seed Tube Sensor

It is possible for extremely dusty conditions or heavily treated seed to cause an excessive buildup of dust and seed treatment inside the seed tube that blocks the seed sensor light. When the sensor light becomes blocked, false low population counts or false low limit warnings appear.

Periodically clean the seed sensor area inside seed tube with the dry brush provided.

IMPORTANT: Do not plant again until all of the interior seed tube surfaces are dry.

If moisture enters the seed tube during a rain or when machine is washed, dust in the seed tube turns to mud. If moisture is present or dry residue is difficult to remove with a dry brush, use a mild detergent and water with the brush. Allow the interior of the seed tube surface to dry.



A30007

A30007 —UN—06OCT88

AG,OUC1074,849 -19-04MAR16-1/1

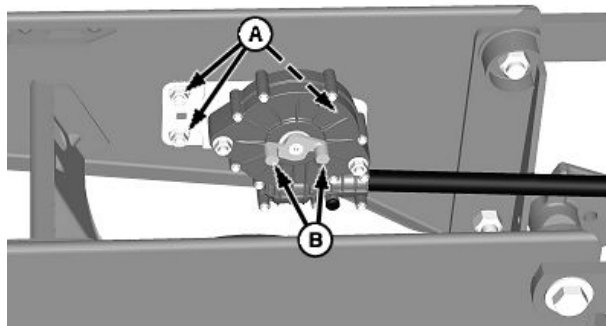
Adjust Meter Pro Shaft Drive

NOTE: It is necessary to align gearbox drive lugs with drive tabs on meter to minimize drive effort.

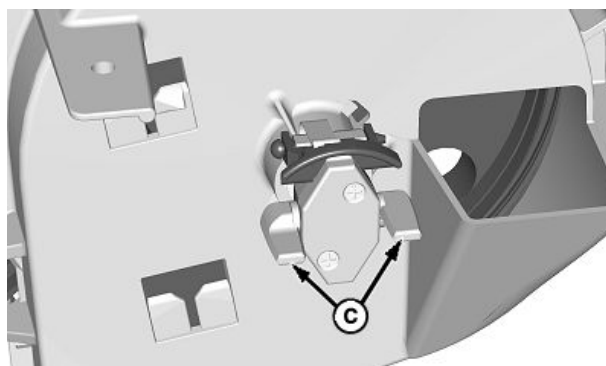
1. Loosen nuts (A) and adjust gearbox assembly so drive lugs (B) align with meter tabs (C).
2. Install hoppers. Use a small mirror to check alignment of drives.
 - When meter drive is misaligned, drive lugs (B) can be seen outside meter tabs (C) as shown.
 - When meter drive is properly aligned, drive lugs (B) and meter tabs (C) are in line as shown.
3. Tighten gearbox mounting nuts securely.
4. After tightening nuts, verify that lugs (B) and tabs (C) are still in alignment.

A—Nuts
B—Drive Lugs

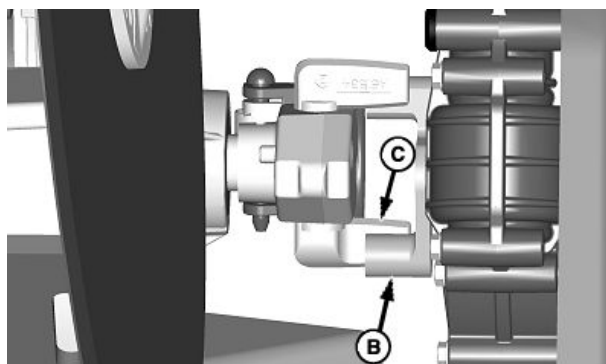
C—Meter Tabs



A54202 —UN—07APR04

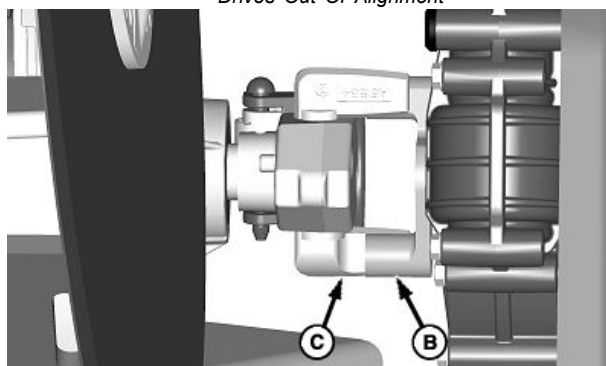


A54203 —UN—07APR04



A54204 —UN—07APR04

Drives Out Of Alignment



A54234 —UN—07APR04

Drives In Alignment

OUO6074,0000C19 -19-22MAY09-1/1

Setting CCS Row Unit Fan Switch

The CCS row unit switch (A) turns the CCS fan on and off as machine is raised and lowered.

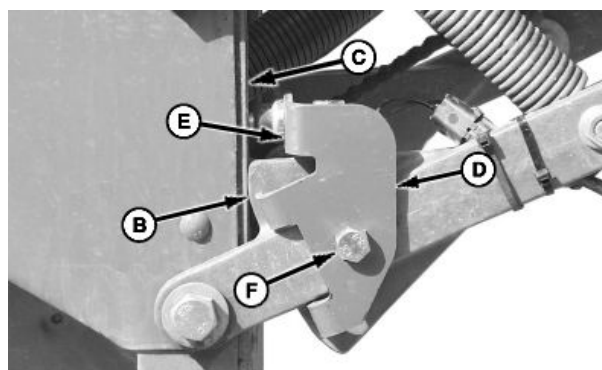
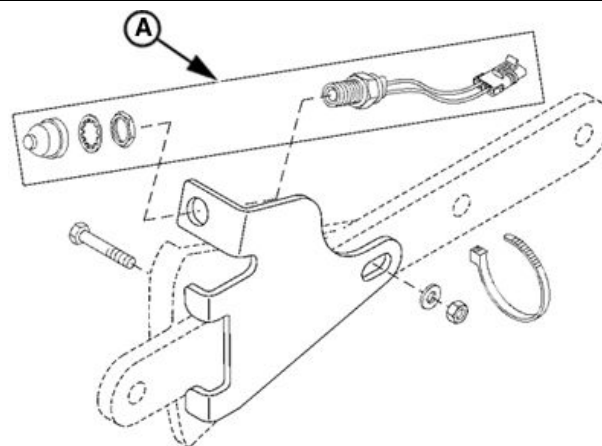
1. Raise machine so lower parallel arm stop (B) touches planting unit frame (C).
2. Rotate sensor bracket (D) until flat surface (E) is 20 mm (3/4 in.) from planting unit frame.
3. Tighten cap screw (F).

IMPORTANT: Avoid machine damage. Agitator will continue to run as long as tractor power is provided, if switch is not adjusted to deactivate when frame is raised.

NOTE: Tractor electrical power must be supplied when adjusting.

4. Observe agitator on CCS tank and adjust switch so agitator will shut off when frame obtains this fully raised position. This adjustment also ensures the CCS fan and agitator will engage the moment this row unit contacts the ground when lowered.

A—Row Unit Switch (3 used)	D—Bracket
B—Stop	E—Flat Surface
C—Frame	F—Cap Screw



RM87422,000048C -19-09MAR16-1/1

PY24910 —UN—09MAR16

A53433 —UN—02DEC03

Install New Vacuum Seal

NOTE: It is not required to empty seed out of hopper.

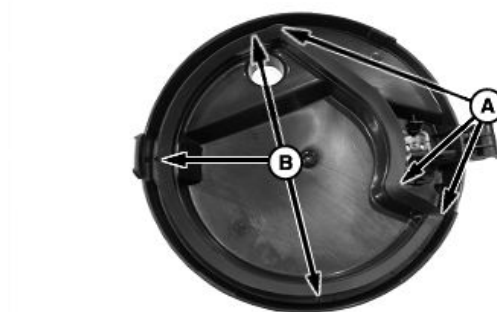
1. Remove seed hopper from planting unit and place hopper on its side.
2. Unlatch handle and swing open the vacuum chamber.
3. Remove and discard old vacuum seal.

NOTE: This procedure prevents excessive slack in seal.

4. Install new seal. Insert corners of seal (A) then insert seal at three locations (B) (dimples on seal align with dimples on housing). Finally, insert remaining portions of seal.

IMPORTANT: Allow lubricant to dry before installation.

5. If seed disk has been used, apply Spray-on Graphite Lubricant TY25797 to vacuum side of disk.



A—Corners

B—Dimple Location

6. Close vacuum chamber and latch handle. Install seed hopper on planting unit.

AG,OUO6074,1367 -19-25AUG14-1/1

A78799 —UN—07APR14

Inspect and Adjust Seed Opener Blades

CAUTION: Avoid injury from sharp edged disks. Wear protective gloves and handle disks carefully.

1. Inspect blade edge contact point (D) as follows:

NOTE: Use business cards or other material with 0.3 mm (0.012 in.) thickness.

- a. Insert two small business cards between blade opening and gently slide cards together until blade contact point is reached.
- b. Measure distance between business cards and compare to specification.

Specification

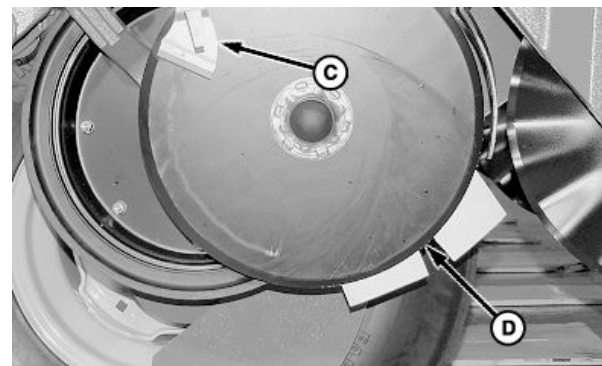
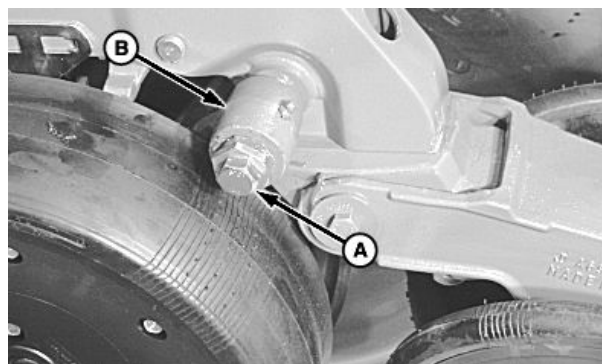
Blade Edge

Contact—Blade Edge

Contact Length.....38—63.5 mm
(1.5—2.5 in.)

- c. If distance does not fall within specifications, proceed as follows:
2. Remove cap screw (A), pivot shaft (B), and gauge wheel from row unit.
 3. Inspect scrapers (C) for excessive wear and replace as necessary.
 4. Inspect blades for wear or damage.

Measure blade diameter and compare to specification. If diameter is below specification, if beveled edge is worn off, or if significant damage is apparent, replace blades. (See Replace Seed Opener Blades and Seed Tube Guards in this section.)



A—Cap Screw
B—Pivot Shaft

C—Scraper
D—Contact Point

Specification

Opener Blades—Minimum Diameter..... 356 mm
(14 in.)

Continued on next page

OQO6074,0000E6A -19-13OCT14-1/2

A53246—UN—29OCT03

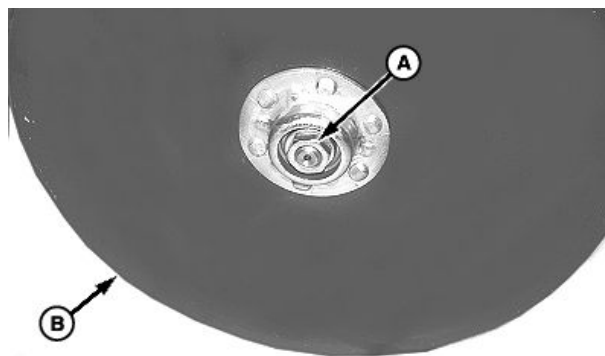
A53250—UN—29OCT03

CAUTION: Avoid injury from sharp edged disks. Wear protective gloves and handle disks carefully.

IMPORTANT: Avoid spindle damage. Nut on left side of shank has left-hand threads.

NOTE: If opener blades are centered on the row unit shank, remove only one blade to adjust contact point. If one opener blade contacts row unit shank, move shims from one side of shank to the other to center the blades.

5. Remove hub cap, nut, flat washer (A), and hardened shims.
 6. Remove blade (B).
 7. While blade is off, inspect seed tube guard. Replace the guard as needed. (See Replace Seed Opener Blades and Seed Tube Guards in this section.)
- NOTE: Do not discard shims. Shims are needed at time of blade replacement.*
8. Relocate enough shims from one side of blade to the other to increase or decrease contact point when assembled. Inspect adjustment and repeat as needed.
 9. During final reassembly, tighten blade nut and gauge wheel arm cap screw to specification.



A—Nut and Washer

B—Disk

Specification

Blade Nut—Torque.....	122 N·m (90 lb.-ft.)
Gauge Wheel Arm Cap Screw—Torque.....	271 N·m (200 lb.-ft.)

OUO6074,0000E6A -19-13OCT14-2/2

A51112—UN—20NOV02

Replace Seed Opener Blades and Seed Tube Guard

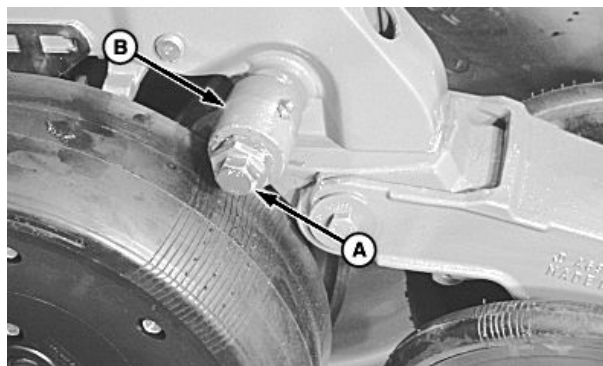
IMPORTANT: Avoid premature wear. Do not use a new blade with a used blade. Install new blades in pairs.

NOTE: If replacing seed tube guard only, the right-hand blade does not need to be removed.

1. Remove cap screw (A), pivot shaft (B,) and gauge wheel from row unit.

A—Cap Screw

B—Pivot Shaft



Continued on next page

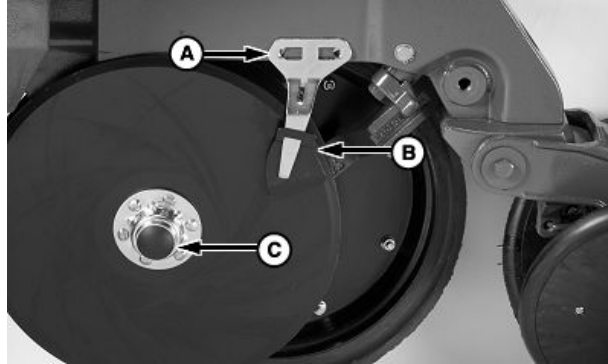
OUO6045,00001A9 -19-16JUL09-1/4

A53246—UN—29OCT03

2. Planting unit equipped with rotary or rigid scraper, pull front engagement pin (A) outward, disengage scraper assembly (B) from shank panels.
3. Remove hub cap (C).

A—Engagement Pin
B—Scraper

C—Hub Cap



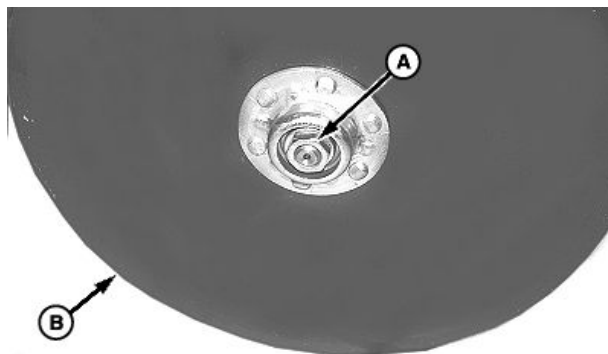
A65026—UN—16JUL09

OUC6045,00001A9 -19-16JUL09-2/4

CAUTION: Disk blades are sharp. Wear protective gloves and handle disks carefully to avoid being injured.

NOTE: Do not discard spacer shims.

4. Remove nut and flat washer (A).
5. Remove blade (B).
6. Remove hardened shims.
7. If replacing blades, remove blade on opposite side of row unit. If replacing seed tube guard only, right-hand blade does not need to be removed.



A—Nut and Washer

B—Disk

A5112—UN—20NOV02

OUC6045,00001A9 -19-16JUL09-3/4

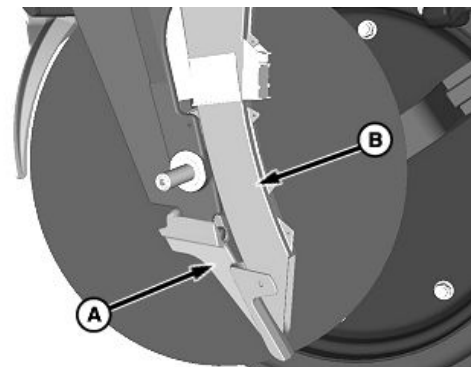
NOTE: Replace seed tube guard, if excessively worn.

8. Remove seed-tube guard (A) by rotating clockwise and sliding forward.
9. Adjust blade contact point during reassembly. See INSPECT AND ADJUST SEED OPENER BLADES in this section.
10. During reassembly, tighten opener blade nut and gauge wheel arm cap screw to specification.

Specification

Opener Blade	
Nut—Torque.....	122 N·m (90 lb.-ft.)
Gauge Wheel Arm Cap	
Screw—Torque.....	271 N·m (200 lb.-ft.)

11. Adjust gauge wheels. See ADJUST GAUGE WHEELS in this section.



A—Seed Tube Guard

B—Seed Tube

A56479—UN—29JUN05

OUC6045,00001A9 -19-16JUL09-4/4

Adjust The Gauge Wheels

IMPORTANT: Avoid excessive wheel wear. Do not overtighten the gauge wheels.

When assembled, the gauge wheels and the disk blades must be free to turn with minimal resistance.

To prevent buildup of soil or residue between the gauge wheels and the opener blades, adjust the gauge wheels.

Rotate the gauge wheel. Verify that the wheel is slightly touching the disk or less than the maximum specification away from the blades at their closest approach.

Specification

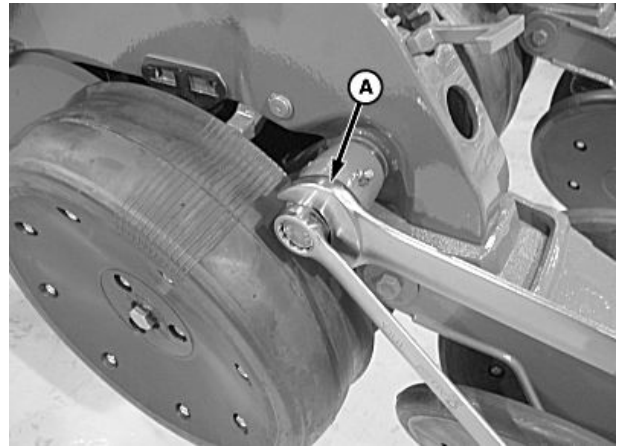
Maximum Gauge Wheel to Opener Blade Clearance—Distance.....	1.5 mm (1/16 in.)
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To adjust the gauge wheel, hold the cap screw with one wrench and turn the adjustment nut with another wrench (A). To move the wheel closer to the blade, turn the nut counterclockwise. To move the wheel away from the blade, turn the nut clockwise.

Tighten the wheel arm cap screw to specification.

Specification

Gauge Wheel Arm Cap Screw—Torque.....	271 N·m (200 lb.-ft.)
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A—Adjusting Wrench

AG,OUO6074,1369 -19-04MAR16-1/1

A68170—UN—14JUL10

A68178—UN—14JUL10

Replace Shear Protection

See Shear Protection Points in Operate Machine section.

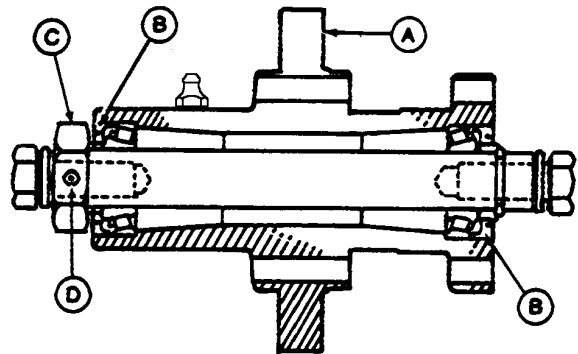
OUO6045,00001AA -19-16JUL09-1/1

Service The Wheel Bearings

If the wheel hub (A) must be disassembled for any reason, clean and repack the bearing with wheel bearing grease and assemble in on the axle. Be careful not to damage the seals (B). Install the special jam nut (C) on the axle shaft. While turning the hub, adjust the jam nut until a slight drag is felt. Once this drag is established, tighten the set screw (D) on the jam nut.

A—Wheel Hub
B—Seals

C—Jam Nut
D—Set Screw



OUO6045,00000A8 -19-03MAR16-1/1

A47962—UN—21SEP01

Inspect and Service The Meter

A34471



A34471 —UN—11OCT88



A78513 —UN—02AUG13

A—Plastic

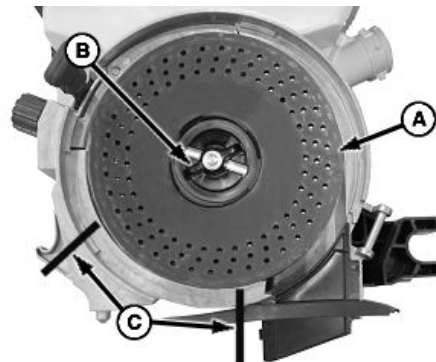
CAUTION: Avoid eye, skin, or breathing problems from exposure to seed treatments. If seed treatments are used, use caution when opening meter domes. Read and follow safety instructions on the chemical manufacturer's label.

1. Annual cleaning of the vacuum meter and the seed disk is recommended. To remove seed treatment buildup, use a mild detergent and a soft brush. Clean behind the plastic (A) in the vacuum meter housing.

Annually inspect the seed meter for wear and seed treatment buildup.

WP29706,0000591 -19-09MAR16-1/6

2. Install the disk (A). Spin the hub (B) rapidly by hand and quickly release the hub. If the disk rotates approximately 1/4 to 1/2 revolution after it is released, the hub is properly adjusted. (If adjustments are needed, see Adjust Meter Hub in the Rate Charts manual.)
3. With the hub properly adjusted, view the edge of the disk in the inspection area. Rotate the hub slowly by hand. If gaps intermittently appear as the disk is rotated (indication of a warped disk), replace the disk.
4. With the hub properly adjusted, hold the meter upright with seed in the meter. Rotate the meter to verify that no seed loss occurs in the inspection area (C). If seed loss occurs, replace the disk.
5. Remove the disk.



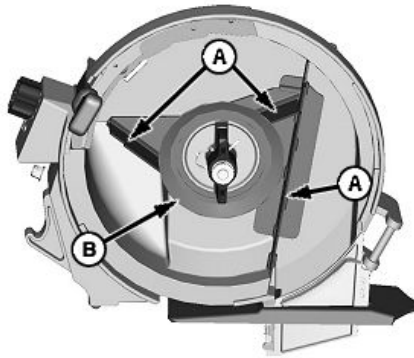
A—Seed Disk
B—Hub

C—Inspection Area

A77686 —UN—15OCT13

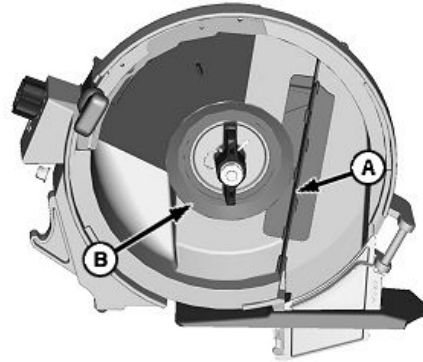
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WP29706,0000591 -19-09MAR16-2/6



1795 and DB120 Meters Only

A80236—UN—01MAY14



All Other Planters

A80237—UN—01MAY14

A—Brush

B—Hub Seal

6. Check the brush (A) bristles for separations and gaps. If the brush is worn enough to allow seed to pass through, replace the brush. (See Change Vacuum Meter Brush in the Rate Charts manual.)

7. Replace the hub seal (B) if it is cracked or weathered.

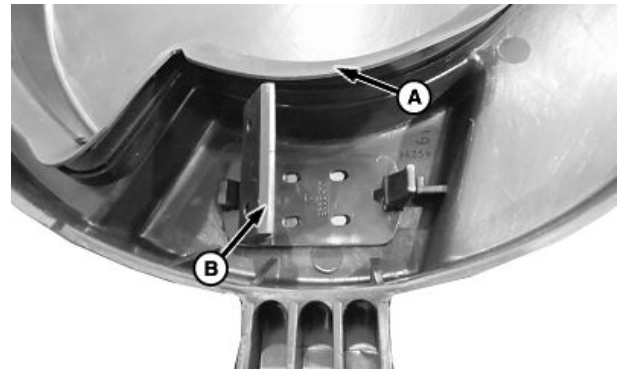
WP29706,0000591 -19-09MAR16-3/6

NOTE: If the vacuum seals are replaced, apply Graphite Spray TY25797 on the vacuum side of the used seed disks. The new seed disks are factory lubricated.

8. Replace the vacuum seals (A) if the seed disks are replaced or when large cracks or wear areas are visible in the seal.
9. Replace the disk wiper (B) if the edge of the wiper is grooved or excessively worn.

A—Seals

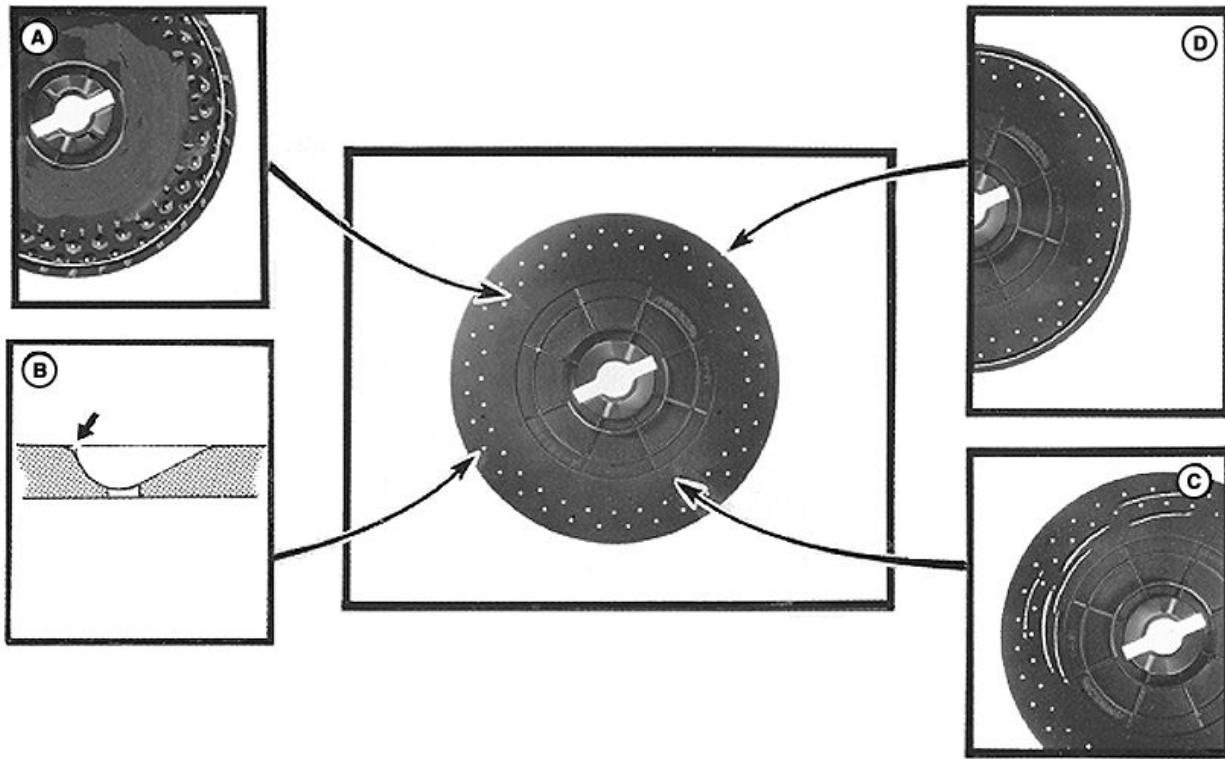
B—Wiper



A78514—UN—02AUG13

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WP29706,0000591 -19-09MAR16-4/6



A55426—UN—22NOV04

- A—Perimeter, Seed Side
B—Worn Edge (Seed Cell Side View)
C—Grooves on Vacuum Side
D—Perimeter, Vacuum Side

NOTE: To verify meter performance before purchasing new disks, perform a field check. (See the *Rate Chart Manual*.)

10. Inspect the seed disks for wear in the following areas and replace the disks as needed.

- Perimeter on the Seed Side (A): A small amount of wear is acceptable. Check for seed loss through the gap between the disk and the housing.
- Edge (B) of Seed Cell: Seed abrasion removes edges on the seed cells and increases the cell size.

Increased cell size causes overpopulation when planting small seed and causes under-population when planting large seed).

- Grooves (C) on the Vacuum Side: Small grooves or scratches are acceptable. Large grooves affect the performance.
- Perimeter on Vacuum Side (D): A wear depth less than 1.0 mm (3/64 in.) is acceptable.

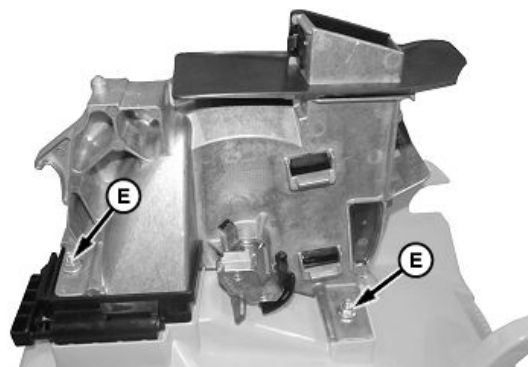
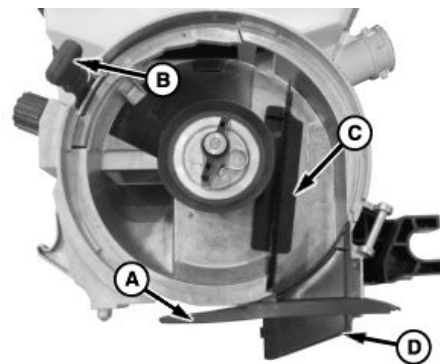
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WP29706,0000591 -19-09MAR16-5/6

11. Replace the vacuum meter dust cover (A), if it does not fit properly, is cracked, or is weathered.
12. Replace the rubber handle (B), if it is cracked or broken.
13. Replace the brush holders (C), if worn.
14. Replace the chute cover (D), if worn.
15. Verify that the drive coupler pivots freely. If the flex drive does not pivot freely, disassemble, clean, and lubricate the drive with grease.
16. Place the vacuum meter assembly on the hopper and attach it with nuts (E).

A—Dust Cover
B—Handle
C—Brush Holder

D—Chute Cover
E—Nuts



WP29706,0000591 -19-09MAR16-6/6

A78515—UN—15OCT13

A78516—UN—07AUG13

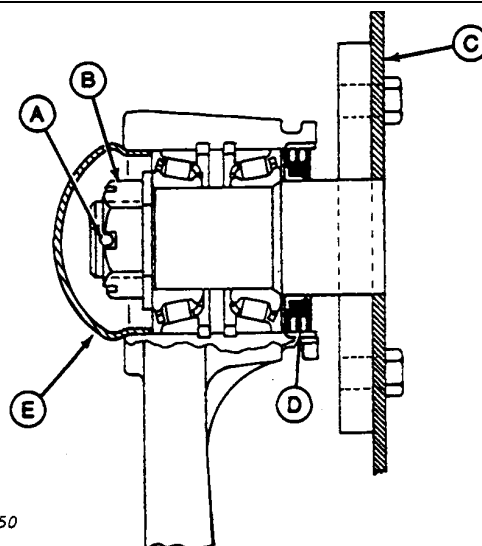
Coulter Maintenance

The bearing has a face-type seal (D). Contact of seal against a machined surface retains grease and excludes dirt. If there is any play in bearing, do the following:

- Clamp coulter blade (C) in vise.
- Disassemble and clean.
- Repack with John Deere TY6341 SD Polyurea grease or equivalent SAE multipurpose-type grease.
- Tighten nut (B) until there is drag on bearing.

NOTE: Apply 1.3 N·m to 2.8 N·m (10 lb.-in. to 25 lb.-in.) of drag on bearing. This drag assures positive sealing. Replace cotter pin (A) into slotted nut to lock in position.

The bearings are packed with grease at the factory. Every 100 hours, inspect bearing and adjust if necessary. Every 200 hours, or before each planting season, disassemble bearing, clean, and repack as previously outlined. Do not use chassis lubricant in bearings.



A22350

A—Cotter Pin
B—Slotted Nut
C—Coulter Blade

D—Face Seal
E—Hub Cap

AG,OU06074,1381 -19-23JUN09-1/1

A22350—UN—13OCT88

Disk Closing Attachment

1. Loosen jam nut (B).
2. Place wrench on flat surfaces of disk bearing bolt (A) and tighten bolt to specification.

Specification

Bearing Bolt—Torque.....203 N·m
(150 lb.-ft.)

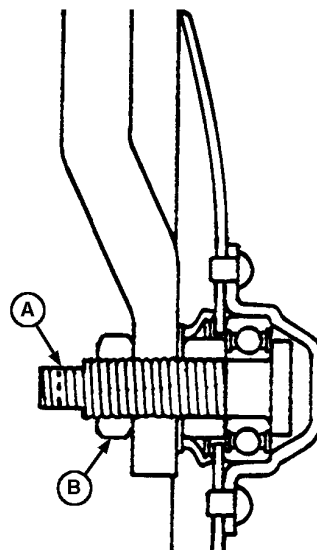
3. Place wrench on flat surfaces of disk bearing bolt to maintain proper torque adjustment of the bolt and tighten jam nut to specification.

Specification

Jam Nut—Torque.....203 N·m
(150 lb.-ft.)

A—Disk Bearing Bolt

B—Jam Nut



A47137 —UN—01MAR01

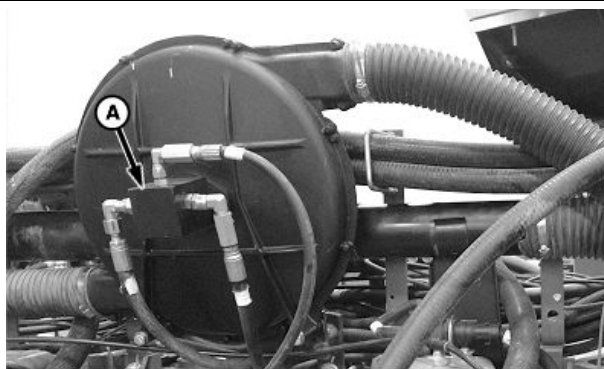
OUC1074,00000BB -19-28FEB01-1/1

Inspect and Replace The Vacuum Motor

Check the vacuum motor (A) for oil leaks.

A small amount of oil leakage is acceptable. If leakage occurs on the motor housing, check for loose hardware on the motor or loose fittings. If oil leakage is excessive or if vacuum levels cannot be maintained, replace the vacuum motor.

A—Motor



A85116 —UN—29JAN15

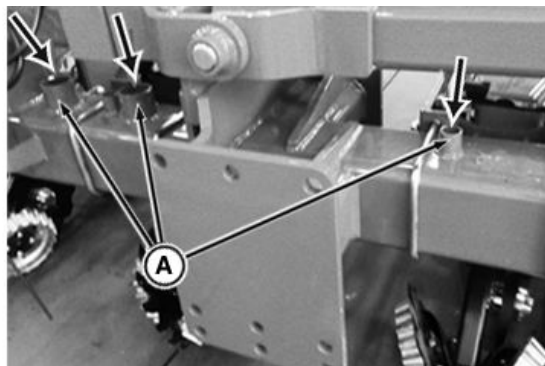
OUC6435,0001FE2 -19-03MAR16-1/1

Inspect and Clean Vacuum Impeller and Housing

CAUTION: Avoid injury from impeller contact or discharged material. Do not operate blower with vacuum hose (A) removed.

IMPORTANT: Maintain proper vacuum operation and reduce the drift of discharged seed treatment dust. Do not operate blower with vacuum hoses removed.

A— Vacuum Hose



PY24868 —UN—18FEB16

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RM87422,0000449 -19-01APR16-1/8

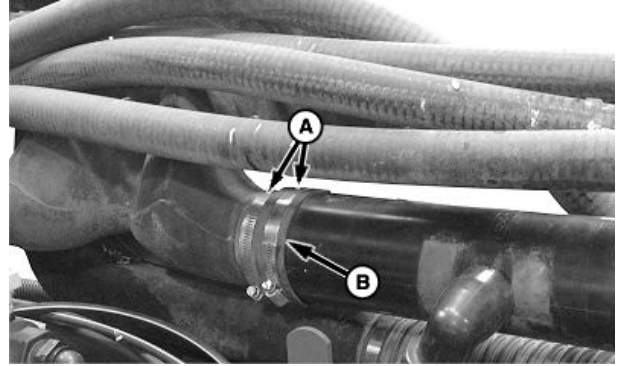
IMPORTANT: Follow chemical manufacturer's precautions when handling parts coated with seed treatments. Use proper skin, eye, and respiratory protection.

NOTE: Repeat any steps on opposite side of vacuum blower as needed.

1. Loosen and retract hose clamps (A) and rubber sleeve (B) from vacuum fan.

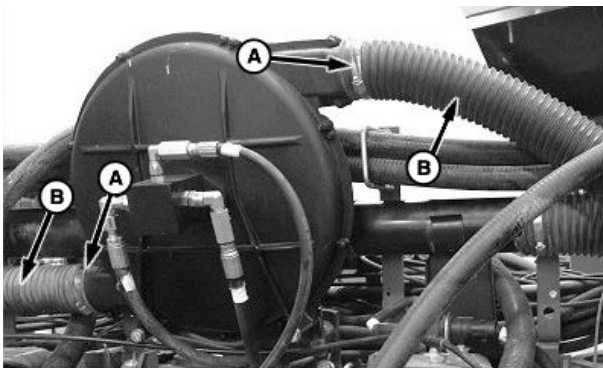
A—Hose Clamps (2 used per side)

B—Rubber Sleeve (1 used per side)

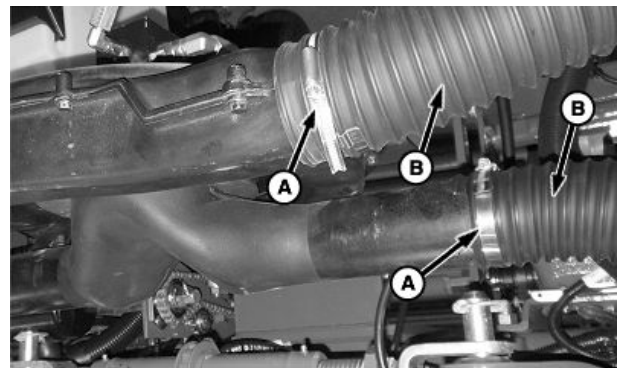


A85117—UN—12FEB15

RM87422,0000449 -19-01APR16-2/8



A85199—UN—12FEB15



A85196—UN—12FEB15

A—Hose clamps

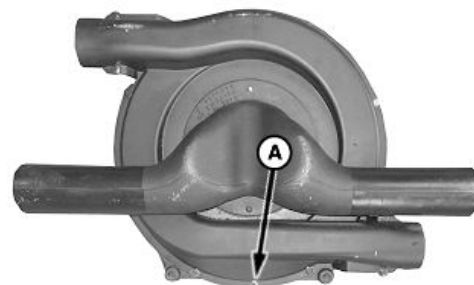
B—Flex Hoses

2. Loosen and retract hose clamps (A) and flex hoses (B) from vacuum blower.

RM87422,0000449 -19-01APR16-3/8

3. Remove cap screws (A).

A—Cap Screws (13 used)



A85118—UN—03FEB15

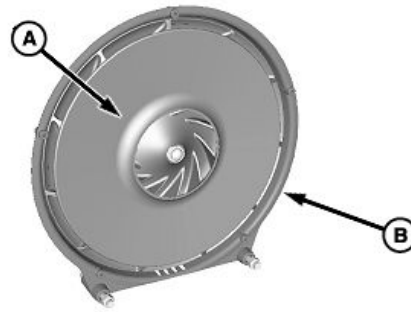
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RM87422,0000449 -19-01APR16-4/8

4. Clean impeller and housing.
5. Inspect impeller (A) for chips or cracks. Replace impeller if damage is found. See your John Deere™ dealer.
6. Inspect vacuum blower housing (B) for signs of impeller contact. Replace vacuum blower housing and impeller if contact is evident. See your John Deere™ dealer.

A—Impeller

B—Housing



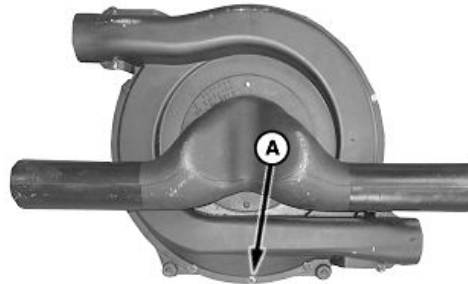
A70792—UN—23FEB11

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RM87422,0000449 -19-01APR16-5/8

7. Install cap screws (A).

A—Cap Screws (13 used)



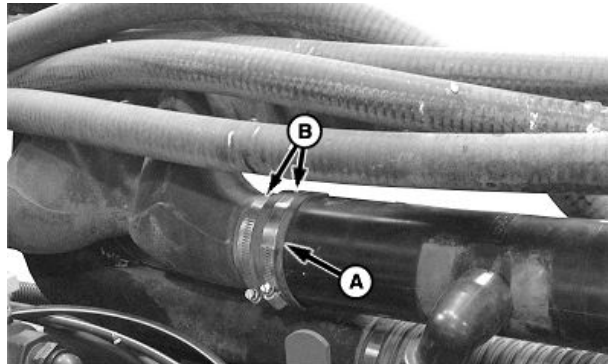
A85118—UN—03FEB15

RM87422,0000449 -19-01APR16-6/8

8. Install rubber sleeve (A) and hose clamps (B) onto vacuum blower. Tighten clamps.

A—Rubber Sleeve (1 used per side)

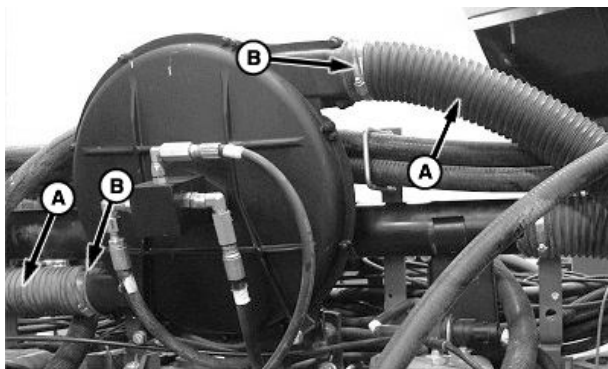
B—Hose Clamps (2 used per side)



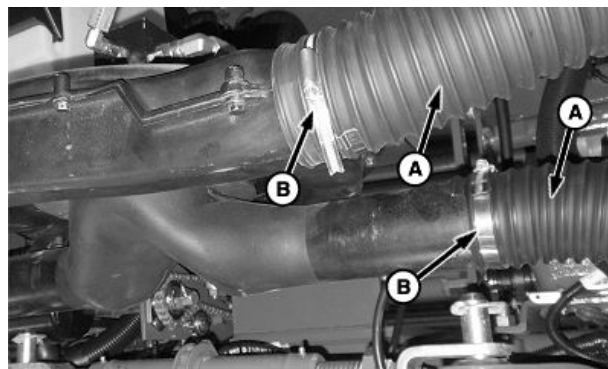
A85119—UN—12FEB15

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RM87422,0000449 -19-01APR16-7/8



A85197 —UN—12FEB15



A85198 —UN—12FEB15

A—Flex Hoses B—Hose Clamps

9. Install flex hoses (A) and hose clamps (B) onto vacuum blower. Tighten clamps.

NOTE: Avoid injury from impeller contact or discharged material. Do not operate fan with exhaust hose removed.

RM87422,0000449 -19-01APR16-8/8

Clean Vacuum System

Avoid loss of meter accuracy from dust or seed treatment buildup in vacuum system. Restricted air flow through vacuum system results in vacuum loss at meters.

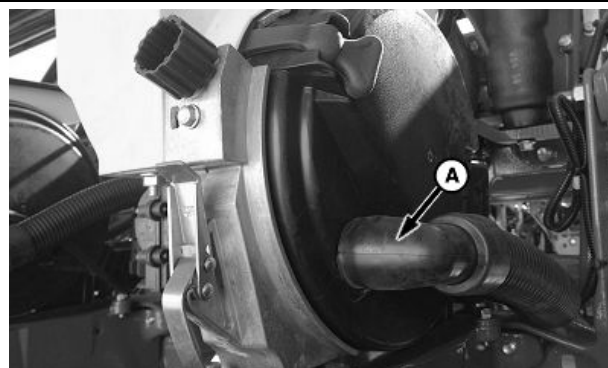
CAUTION: Avoid injury from chemical exposure. Follow chemical manufacturer label when handling parts coated with seed treatments. Use proper skin, eye, and respiratory protection.

Clean vacuum system at least once a week during operation or more often in severe dusty conditions.

Clean as follows:

NOTE: Disconnect vacuum hose (A) at the meter not at the frame.

1. Disconnect one vacuum hose (A) on the outer and inner ends of each vacuum section.
2. Turn on vacuum blower and set hydraulic flow to 75 percent.
3. One at a time, remove vacuum hoses from meters. Inspect and clean all straw and foreign material from both attaching hose ends. Shake hose for a few seconds and reattach it to meter.
4. Remove end caps from vacuum tubes one at a time, then reinstall.
5. Let vacuum blowers run for 10 minutes.
6. Shut vacuum blowers off and replace hose on row units.

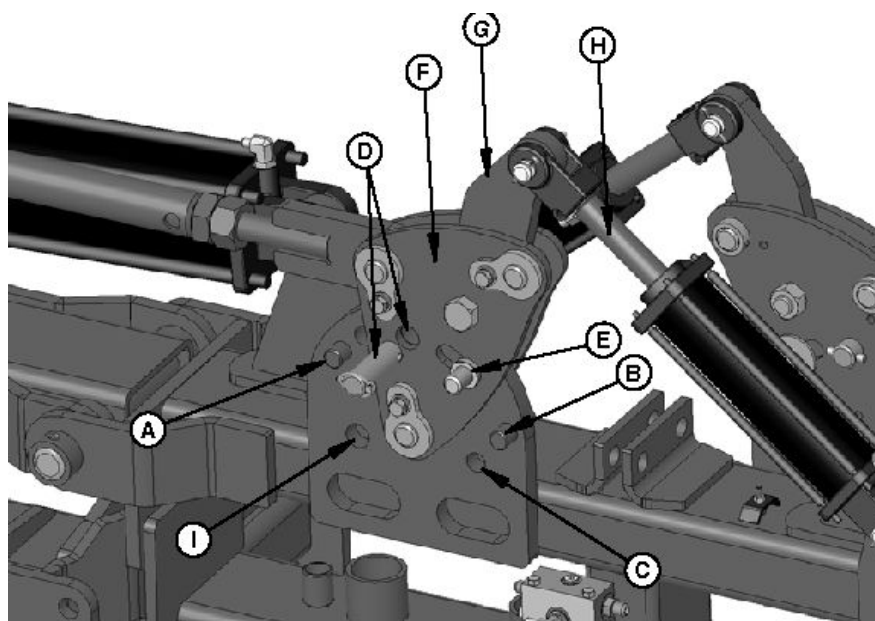


A78552 —UN—06AUG13

A—Vacuum Hose

OOU6435,0001AEC -19-22FEB16-1/1

Gullwing Feature and Toolbar Float



Float and Gullwing Linkage Component Identification

A— Wing Down Stop	D— Float Link Lock Pin and Lock Position	F— Wing Float Link Plates	I— Float Link Lock Pin Storage Position
B— Wing Up Stop	E— Down Float Stop Pin and Stop Position	G— Gullwing Link Plate	
C— Down Float Stop Pin Storage Position		H— Gullwing Hydraulic Cylinder	

1. The planter gullwing feature provides flexibility to the wings of the toolbar for covering uneven field terrain.
2. As a result of this flexibility, the toolbar wings are allowed to flex $\pm 8^\circ$.
3. When the machine is raised at the end of the field, the gullwing hydraulic cylinders retract to “pull” or “gull” the wings up to provide adequate toolbar clearance when turning around.
4. When the machine is lowered, the toolbar wings will “settle” back to the ground surface, which is accomplished by placing the tractor SCV remote controlling the machine lift function in “float”.

A. Wing Down Stop: Welded stop to limit the amount of wing “down float”.

B. Wing Up Stop: Welded stop to limit the amount of wing “up float”.

C. Down Float Stop Pin Storage Position: Pin placement to allow toolbar to float down.

D. Float Link Lock Pin And Lock Position: Float link lock pin placement to lock the wing in the rigid position for storage or maintenance. Float link is not allowed to move, therefore, the wings cannot gull down or up.

NOTE: Gull wing feature will not be able to function with float link lock pin in the rigid position.

CAUTION: Failure to remove the float link lock pin from the rigid position before raising the toolbar may result in damage to the toolbar.

E. Down Float Stop Pin And Stop Position: Float link stop pin prevents the toolbar wing from floating down, while still allowing the gull wing feature to function properly.

F. Wing Float Link Plates: Plates that allow the wings to float up or float down independently from the toolbar center section.

G. Gullwing Link Plate: Link plate connecting the gullwing hydraulic cylinder to the wing float linkage.

H. Gullwing Hydraulic Cylinder: Performs the function of “gulling” the wing up when the machine is raised.

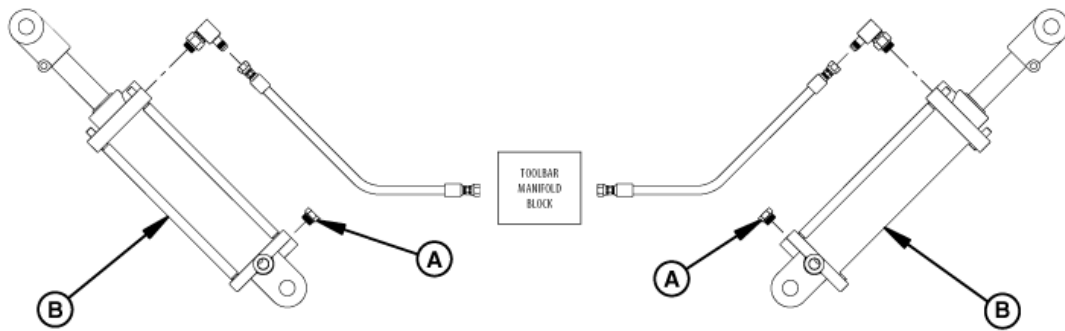
I. Float Link Lock Pin Storage Position: Pin placement to allow function of the toolbar float and gull wing feature. Place the Float Link Lock Pin here before using the machine in the field.

Continued on next page

RM87422,00003EE -19-10FEB16-1/5

PY24783 —UN—19FEB16

Gullwing Hydraulics



A—Breather

B—Gullwing Cylinder

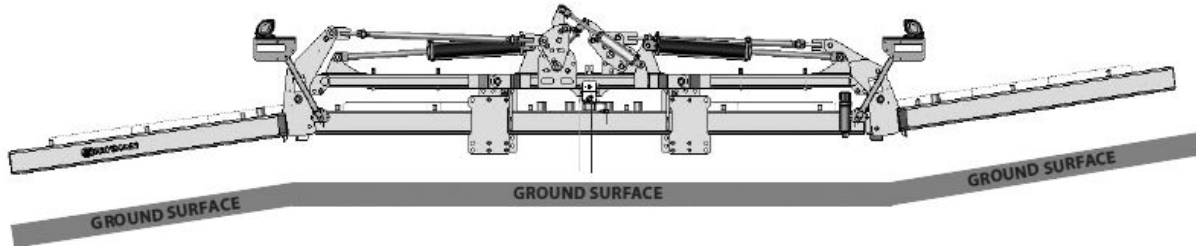
1. The gullwing hydraulic cylinders (B) are plumbed single-acting with hydraulic pressure placed on the cylinders at the rod end and air pressure released through a filtered breather (A) at the base end.
2. The gullwing cylinders are connected in the same circuit as the machine lift wheel hydraulic cylinders.
3. Allowing the wings to “gull up” as the machine is raised at the end of the field and “settle” back to field position when the machine is lowered.
4. Due to this, whenever the machine is lowered, the tractor SCV remote controlling the machine lift function should be placed in the “float” position (see tractor operator’s manual) to allow the wings to return to field position and float over the field terrain.

Continued on next page

RM87422.00003EE -19-10FEB16-2/5

PY24784 —UN—08FEB16

Toolbar Flex



Toolbar Action Of Wings "Flexing"

1. The toolbar flexes in three sections: a rigid center section, right wing, and left wing.
2. To allow for toolbar flex, remove the Float Link Lock Pin and the Down Float Stop Pin from the rigid position and place each in their respective storage positions
3. If toolbar down float is not desired, do not remove the Down Float Stop Pin from the rigid position.

CAUTION: The float link lock pin should always be removed from the rigid position before

operating the machine in the field. If the machine needs to be raised or lowered with the wings locked rigid, the gullwing pin must be removed or damage may occur to toolbar.

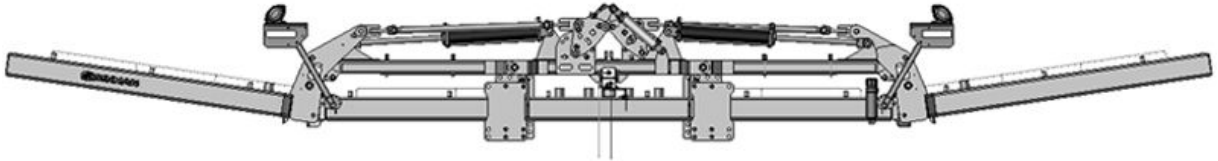
CAUTION: If the gullwing pin is removed with the machine raised, serious injury may occur. Always lower machine to ground before making any adjustments.

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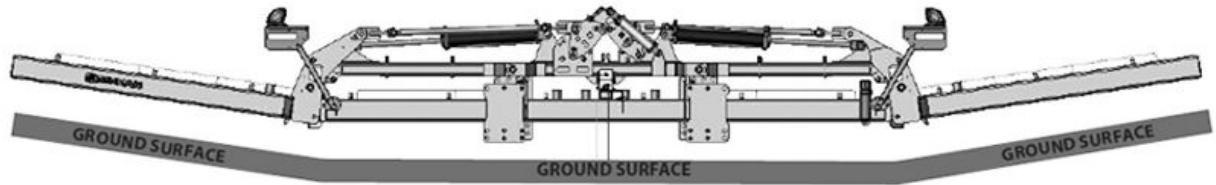
RM87422,00003EE -19-10FEB16-3/5

PY24785 —UN—08FEB16

Gullwing Up/Float Up



Toolbar Action Of Wings "Gulled Up"



Toolbar Action Of Wings "Floating Up"

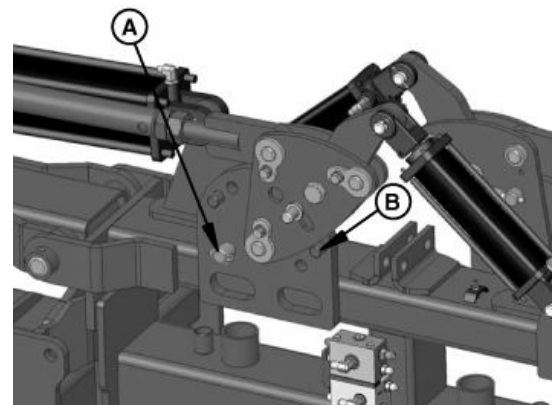
When the machine is raised at the end of the field, the wings "gull up". While the machine is in the field position, the toolbar is allowed to "float up".

CAUTION: Avoid Crushing: Make sure that all personnel are clear of the implement when implement is being operated.

CAUTION: Avoid Pinch Points: Potential pinch points are created when implement is operating. Make sure that all personnel are clear of the implement when implement is being operated.

A—Float Link Lock Pin in Storage Position

B—Float Link Plates Against Wing Up Stop



Float Link Action

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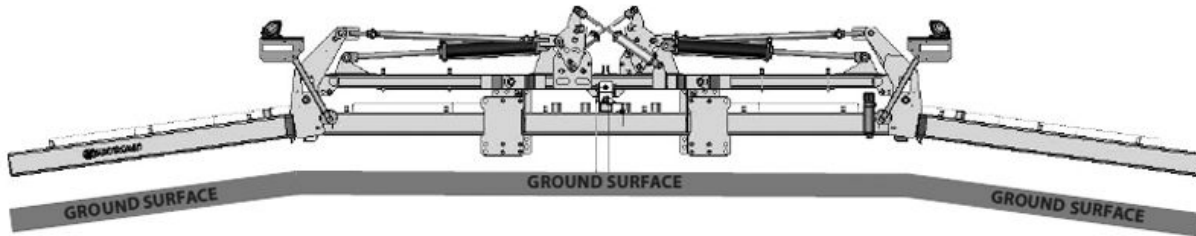
RM87422,00003EE -19-10FEB16-4/5

PY24786 —UN—08FEB16

PY24787 —UN—08FEB16

PY24788 —UN—08FEB16

Float Down

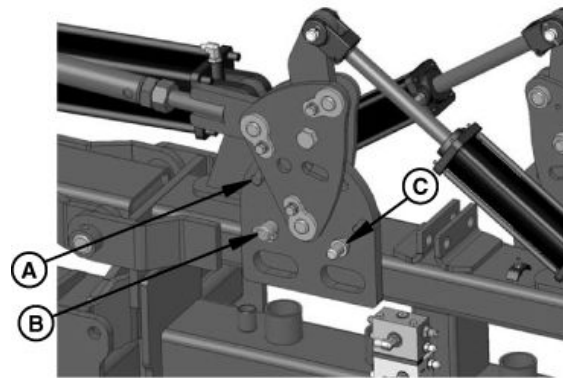


Toolbar Action Of Wings "Floating Down"

1. When the tractor SCV remote controlling the machine lift function is placed in "float" and the machine is lowered at the end of the field, the wings will "settle" back to flat.
2. While the machine is in the field position, the toolbar is allowed to "float down".

CAUTION: Avoid Crushing: Make sure that all personnel are clear of the implement when implement is being operated.

CAUTION: Avoid Pinch Points: Potential pinch points are created when implement is operating. Make sure that all personnel are clear of the implement when implement is being operated.



Float Link Action

A—Float Link Plates Against Wing Down Stop
B—Float Link Lock Pin In Storage Position

C—Down Float Stop Pin In Storage Position

PY24789—UN—08FEB16

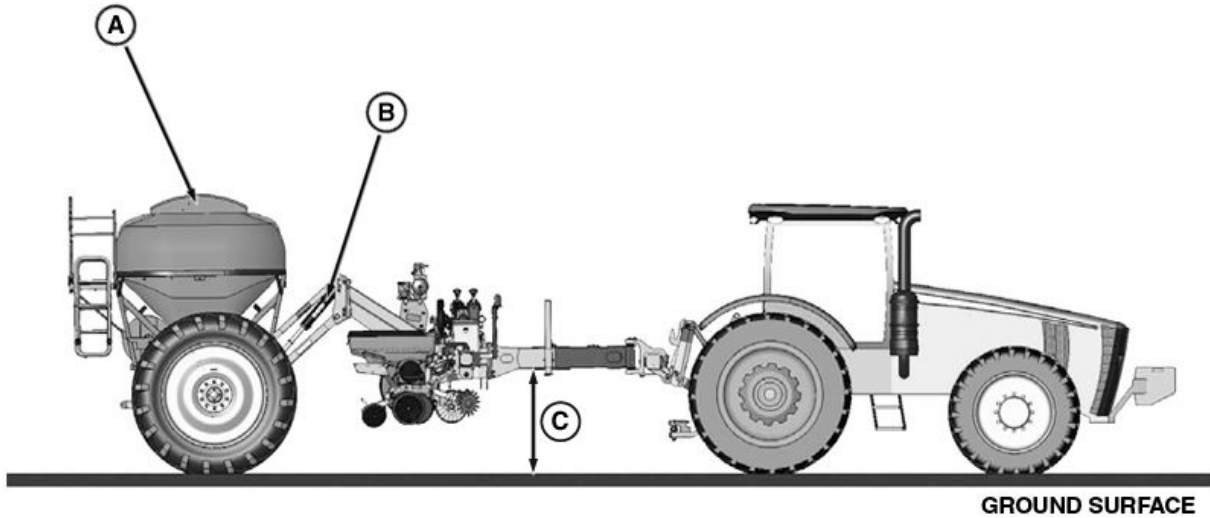
PY24790—UN—08FEB16

RM87422,00003EE -19-10FEB16-5/5

Field Operation

Toolbar Height And Orientation

The planter is designed as a semi-mount implement. The machine raises and lowers with the tractor three-point hitch and rear chassis functioning simultaneously.



Raised Position

A—Dry Fertilizer Application System

B—Fully Stroked Lift Cylinder

C—Height, 48 in./122 cm Approximately

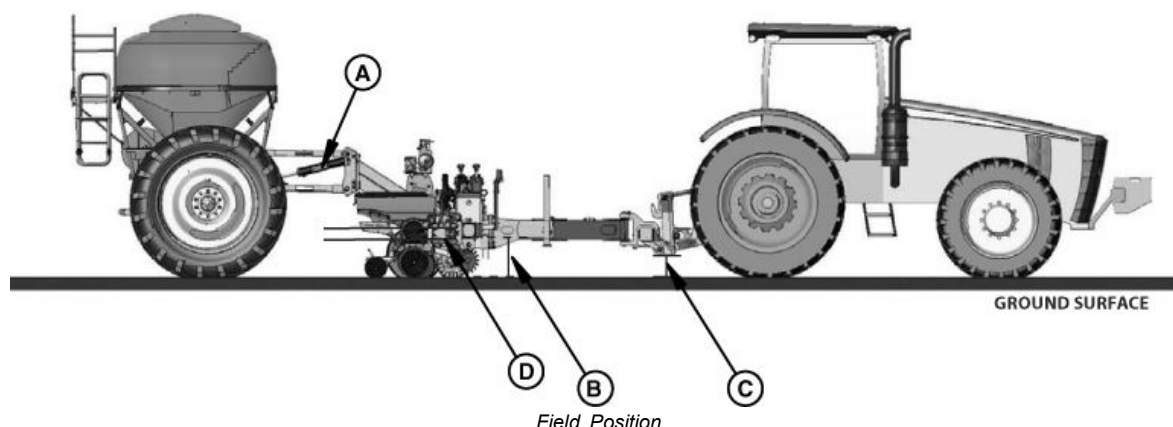
When Planter Is In The Raised Position:

1. Tractor three-point hitch should be raised to its highest point.
2. Hydraulic lift cylinders on the rear chassis should be fully extended.
3. If transporting, transport safety locks should be installed on hydraulic lift cylinders and toolbar should be in the folded position.

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RM87422,00003EF -19-08MAR16-1/2

PY24791 —UN—08FEB16



CAUTION: Avoid Crushing: Make sure that all personnel are clear of the implement before operation.

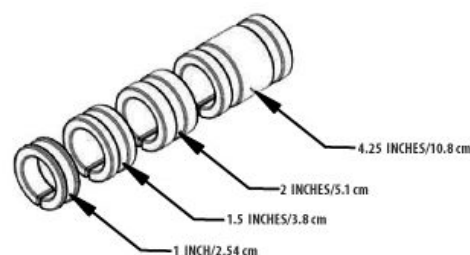
When Planter Is In The Field Position:

1. The tongue and toolbar should run parallel with the ground surface. This can be achieved by setting the tractor three-point hitch lowering limit.
2. Hydraulic lift cylinders on the rear chassis should be fully retracted. This will provide approximately 20 - 22 in (52 - 56 cm) of clearance from the ground surface to the bottom of the toolbar.
3. When lowering planter, place tractor SCV remote in the "float" position to allow the planter to "float" over the ground surface and ensure consistent operating depth.

NOTE: Ground conditions vary from field to field and may warrant the use of provided cylinder stops to reduce toolbar lowering depth.

These cylinder stops, located on the side of the rear chassis lift arms, clamp around the rod of each hydraulic lift cylinder.

4. Row unit parallel linkage arms should run parallel with the ground surface.



- A—Fully Retracted Lift Cylinder
B—Height, 20 - 22 in / 52 - 56 cm Approximately
C—Height, 16 in / 40.5 cm Approximately
D—Parallel Linkage Arms

5. Be sure to set planter gauge wheel height. Planter gauge wheels on the toolbar wings should be set to operate planter at the proper operating height
6. Depending on your particular planter and field conditions, it may be necessary, through a process of trial and error, to manipulate tractor hitch settings, cylinder stops, and toolbar gauge wheels in order to achieve optimum planter operating height.

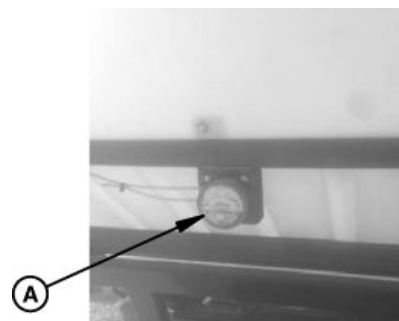
RM87422,00003EF -19-08MAR16-2/2

PY24792 —UN—08FEB16

PY24793 —UN—08FEB16

Fertilizer Application System

1. Start fan by detenting the tractor SCV controlling the fertilizer application fan and auger motors.
2. Adjust hydraulic flow rate until gauge needle of the tank pressure gauge (A) on the fertilizer tank is in the green pressure range (20 - 25 in of water).
3. Verify that augers are turning by running the Air Cart Check Test.
4. Place controller into operating mode and begin application.
5. Verify proper application rate by monitoring controller's total pounds (kilograms) applied and scale read out (if equipped). Adjust calibration settings as needed.
6. Verify product amount in tank by:
 - Tank level display (if installed)
 - Monitor product in tank
 - Scale reading (if equipped)



A—Pressure Gauge

7. Return SCV to float position and then off when application is complete.

RM87422,00003F0 -19-05FEB16-1/1

PY24794 —UN—08FEB16

End Of Season Maintenance

Fertilizer Application System

1. Inspect the following items and replace if damaged or worn:
 - Chains
 - Sprockets
 - Auger Bushings
 - Hydraulic and Fertilizer Hoses
2. Inspect Caulk seal between meter and tank.
 - If caulk is in poor condition or has separated from the join, replace with a high grade silicon caulk.

- The caulk seal prevents moisture from entering the tank and potentially causing fertilizer compaction.
3. Thoroughly wash the inside of the tank and meter assembly.
 - Remove auger covers to reach inner meter and auger parts
 4. Run blower fan to blow out water in the system following washing.
 5. Replace all covers.

RM87422,00003F2 -19-05FEB16-1/1

Implement Inspection

1. When replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore implement to original specifications.
2. Replace broken or worn parts immediately. Contact your John Deere dealer for replacement.
3. During break-in (40 hours), check hardware for proper torque every 10 to 20 hours.

4. Before each use, check hardware for wear and proper torque. Replace damaged or missing hardware with hardware of an identical grade to restore implement to original specifications.
5. Do not allow debris to build up on any surface of the implement.
6. Replace all shields and guards. Be sure that all tools, parts, and service equipment are removed prior to transporting equipment.

RM87422,00003F3 -19-05FEB16-1/1

Implement Storage

1. Clean and touch up paint seasonally to avoid corrosion and rust. Contact your John Deere dealer for touch-up paint.
2. Inspect all safety and John Deere decals and replace if missing or damaged.
3. Grease all zerks regardless of hourly interval prior to storage.
4. Check all hardware according to torque specifications prior to storage.
5. Replace all worn or damaged parts prior to storage.
6. Storing implement inside will prolong the life of the components.

 **CAUTION: Avoid Crushing: Make sure that all personnel are clear of the implement. Lower**

implement to the ground, place tractor in park, turn off engine, and remove key.

7. Storing implement on the ground will relieve the tractor three point hitch of hydraulic pressure.
8. Hydraulic systems tend to settle, endangering anything underneath the implement.

IMPORTANT: Use Bar Stands To Support The Implement: Store implement on a clean, dry, and level surface. An uneven surface could cause implement to shift or fall, resulting in injury or death, as well as implement damage.

Securely support all implement components that must be raised. Stores implement away from human activity.

RM87422,00003F4 -19-05FEB16-1/1

Unit Mounted Single-Disk Fertilizer Opener

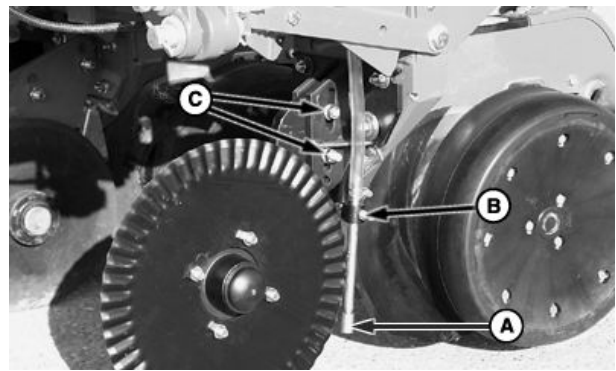
Adjust Unit Mounted Single-Disk Fertilizer Opener

The unit mounted single-disk fertilizer opener is NOT recommended for use in rocky conditions as fertilizer tubes are susceptible to bending.

IMPORTANT: Avoid bending fertilizer tube. It is necessary to perform final nozzle adjustments in the field. Ensure each fertilizer nozzle is directly behind and centered over coulter furrow. Operate machine for a short distance and check each nozzle for correct alignment. Nozzle-to-coulter alignment is adjusted correctly when no fertilizer splatters on coulter during operation.

Select nozzle tip (A) to reach system pressures acceptable for pump range, delivery rate, and travel speed. (See Liquid Fertilizer Rate Charts section for proper tip.)

Set nozzle tip (A) 13 mm (1/2 in.) above soil surface with adjusting bracket (B). Range of coulter adjustment is between zero and 51 mm (2 in.) below seed opener



A—Nozzle Tip
B—Bracket

C—Cap Screw

depth. Coulter depth must not exceed 102 mm (4 in.) below soil surface. Adjust coulter position in relation to seed openers with cap screws (C). Periodically check and adjust to compensate for wear.

AG,OUO6074,1663 -19-31JUL07-1/1

A46048—UN—03APR00

Frame Mounted Single-Disk Fertilizer Opener

Frame Mounted Single-Disk Fertilizer Openers

IMPORTANT: Avoid crop injury. Inspect fertilizer opener depth and offset from seed furrow before operation.

IMPORTANT: Fertilizer openers MUST NOT be locked in a raised position on 15FX planters. Frame and fertilizer opener damage occurs when machine is folded with the openers locked in a raised position.

Frame mounted single-disk fertilizer openers perform in conventional, reduced, no-till, and double crop conditions.

They are designed specifically for band application of liquid fertilizer. The single blade and gauge wheel configuration minimizes disturbance of the seed zone in these conditions and helps preserve seedbed moisture. The gauge wheel helps to maintain a consistent fertilizer depth.

Operating the opener in soils containing many large rocks is not recommended. The upper limit stop on an opener is incapable of supporting the machine frame weight as the opener rides up over large rocks.

RM87422,0000482 -19-08MAR16-1/1

Troubleshooting

Machine Frame

Symptom	Problem	Solution
—	Toolbar does not operate at the proper height.	Make adjustments to toolbar height. Refer "Toolbar Height and Orientation" in manual.
—	Toolbar does not operate level with the ground.	Levelness of the toolbar is governed by the settings of the machine lift hydraulic cylinders and the tractor 3-point hitch. Make adjustment to machine lift cylinders, tractor 3-point hitch or both. Refer "Toolbar Height and Orientation" in manual.
—	Toolbar wings are not level.	Refer "Wing Leveling" in manual.
—	Toolbar does not fold correctly.	Check to see if the hydraulic tips are installed correctly to the correct tractor SCV remotes. Check to make sure that the wings are level. - Refer "Wing Leveling" in manual. The wings may be overloaded. - Try to reducing the seed load or row unit weight. Check to see if the cylinder seals are bad. - Oil leaking out of the cylinder is an indication of faulty seals. Check to see if there is not enough tractor hydraulic pressure. - The 15FX requires a 3000 psi hydraulic pressure. - Tractor SCV remote hydraulic flow rate may need to be increased.
Machine does not lower.	Check tractor hitch.	—
Machine frame raises or lowers slowly.	Low tractor hydraulic pressure.	Tractor standby pressure must be a minimum of 15,513 kPa (155.1 bar) (2250 psi).
	Check tractor lift capacity against machine code.	Use lift-assist wheels on machine.
	Selective control valve (SCV) flow rate mis-adjusted.	Adjust SCV flow control.
	Rockshaft rate of drop set too slow.	Increase drop rate.

Continued on next page

RM87422.0000413 -19-08MAR16-1/2

Troubleshooting

Symptom

Machine does not raise.

Problem

Tractor SCV bypassing oil.

Solution

Readjust SCV lever linkage. See tractor operator's manual.

Adjust rubber stop on vacuum SCV lever.

RM87422,0000413 -19-08MAR16-2/2

Drives

For issues related to variable rate drive. See SeedStar™ Operator's Manual.

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OUO6064,00000AC -19-13MAR14-1/1

12 and 16 Row Folded

IMPORTANT: Before performing any of these checks, verify hydraulic SCVs are set to maximum flow, frame control console has power (backlight

is on), cleanout switch is set to "Plant" position, and the proper buttons are being pushed for the desired function.

Symptom	Problem	Solution
Machine not functioning. (Tractor engine must be running and console power light on.)	Control console not powered.	Check electrical connections at 7-pin connector (tractor and machine side). Check in-line fuses to frame control box.
	Pressure and return hoses not fully engaged in SCV outlets.	Verify connections.
Machine does not unfold.	Not following correct procedure.	See UNFOLD MACHINE in Operate Machine section for proper procedure to unfold planter.
	S8 solenoid not energizing.	Check for 12 volts at the solenoid. Check solenoid.
	S8 valve stuck closed.	Clean or replace valve.
	Machine unfolds when not selected. <i>NOTE: If machine is more than half way unfolded (pivot area frame fold switch is closed), the frame control box in "Plant", and machine is lowered, the machine unfolds. This is normal operation.</i>	See your John Deere dealer.
Machine not raising to high lift or lower.	Frame fold switch malfunctioning (switch located in pivot area). S8 valve is stuck open.	Check for 12 volts at the solenoid. Clean or replace valve.
	Frame control box PLANT-TRANS switch is in "Plant" position.	Place switch in "Trans" position.
	S1 solenoid is not energizing or is stuck.	Check for 12 volts at the solenoid. Clean or replace valve.
	Pilot operated check valve 10B or 10C stuck.	Clean valve. See your John Deere dealer.
	Pilot operated check valve 10A or 10D stuck.	Clean valve. See your John Deere dealer.
Machine not raising to high lift.	S2 or S3 solenoids not energized.	Check for 12 volts at the solenoids. Check solenoid.

Continued on next page

OUO6435,0001F56 -19-15MAY09-1/2

Symptom	Problem	Solution
Machine raises or lowers slowly.	S2 or S3 valves stuck.	Check for 12 volts at the solenoids. Clean or replace valve.
Machine unlevel.	Hydraulics out of phase.	Lower machine in folded position. See LOWER OR RAISE MACHINE IN TRANSPORT POSITION FOR FILLING OR SERVICE in Service and Adjustments section or refer to decal on frame control console.
In transport position, wing wheels fail to retract.	S1, S2, or S3 solenoids or wing rephasing valves malfunction.	Verify S1, S2, or S3 are being energized and repair as necessary. Clean or replace S1, S2, or S3 and rephasing valve. See your John Deere dealer.
In transport position wing wheels fail to extend.	S1, S2, or S3 solenoids or wing rephasing valves malfunctioning.	Verify S1, S2, or S3 are being energized as necessary. Clean or replace S1, S2, or S3 and rephasing valve. See your John Deere dealer.
In transport position, main frame wheels fail to retract.	S1, S2, or S3 solenoids or wing rephasing valves malfunction.	Verify S1, S2, or S3 are being energized and repair as necessary. Clean or replace S1, S2, or S3 and rephasing valve. See your John Deere dealer.
In transport position, main frame wheels fail to extend.	S1, S2, or S3 solenoids or wing rephasing valves malfunctioning.	Verify S1, S2, or S3 are being energized and repair as necessary. Clean or replace S1, S2, or S3 and rephasing valve. See your John Deere dealer.

OUO6435,0001F56 -19-15MAY09-2/2

24 Row Folded

IMPORTANT: Before performing any of these checks, verify hydraulic SCVs are set to maximum flow, frame control console has power

(backlight is on), cleanout switch is set to "Plant" position, and the proper buttons are pushed for the desired function .

Symptom	Problem	Solution
Machine not functioning. (Tractor engine must be running.)	Control console not powered.	Check electrical connections at 7-pin connector (tractor and machine side).
		Check inline fuses to frame control box.
Machine fails to unfold.	Pressure and return hoses not fully engaged in SCV outlets.	Verify connections.
	Not following procedure.	See UNFOLD MACHINE in Operate Machine section for proper procedure to unfold planter.
	Y8 solenoid not energizing.	Check for 12 volts at the solenoid.
		Check solenoid.
Machine unfolds when not selected.	Y8 valve stuck closed.	Clean or replace valve.
	<i>NOTE: If machine is more than half way unfolded (pivot area frame fold switch is closed), the frame control box in "Plant", and machine is lowered, the machine unfolds. This is normal operation.</i>	See your John Deere dealer.
	Frame fold switch malfunction (switch located in pivot area).	
	Y8 valve is stuck open.	Check for 12 volts at the solenoid.
Machine fails to raise or lower.		Clean or replace valve.
	Frame control box PLANT-TRANS switch is in "Plant" position.	Place switch in "Trans" position.
	Check pins 1 and 7 on tractor to planter 7 pin connector for 12 volts.	See your John Deere Dealer.
	Inspect F3, 10 amp fuse in frame control harness.	Replace as needed.
	One or more solenoids; Y1, Y22, Y23, Y24, Y25 not energizing or stuck.	Check for 12 volts at the solenoid.
Machine fails to raise to high lift.		Clean or replace valves.
	Check K34 relay.	See RELAY AND FUSE LOCATION in Service and Adjustments section. Replace as needed.
	One or more solenoids; Y22, Y23, Y24, or Y25 not energizing or stuck.	Check for 12 volts at the solenoids.

Continued on next page

OUC6435,0001EED -19-26MAY09-1/2

Symptom	Problem	Solution
Machine unlevel.	Hydraulics out of phase.	Lower machine in folded position. See LOWER OR RAISE MACHINE IN TRANSPORT POSITION FOR FILL OR SERVICE in Operate Machine section or refer to decal on frame control console.
In transport position, wing wheels fail to retract.	One or more solenoids; Y22, Y23, Y24, or Y25 or wing rephasing valves malfunction.	Verify Y22, Y23, Y24, or Y25 are being energized and repair as necessary. Clean or replace Y22, Y23, Y24, or Y25 and rephasing valve. See your John Deere dealer.
In transport position, wing wheels fail to extend.	One or more solenoids; Y22, Y23, Y24, or Y25 or wing rephasing valves malfunction.	Verify Y22, Y23, Y24, or Y25 are being energized and repair as necessary. Clean or replace Y22, Y23, Y24, or Y25 and rephasing valve. See your John Deere dealer.
In transport position, main frame wheels fail to retract.	One or more solenoids; Y22, Y23, Y24, or Y25 or wing rephasing valves malfunctioning.	Verify Y22, Y23, Y24, or Y25 are being energized and repair as necessary. Clean or replace Y22, Y23, Y24, or Y25 and rephasing valve. See your John Deere dealer.
In transport position, main frame wheels fail to extend.	One or more solenoids; Y22, Y23, Y24, or Y25 or wing rephasing valves malfunctioning.	Verify Y22, Y23, Y24, or Y25 are being energized and repair as necessary. Clean or replace Y22, Y23, Y24, or Y25 and rephasing valve. See your John Deere dealer.

OJ06435,0001EED -19-26MAY09-2/2

12 and 16 Row Unfolded

IMPORTANT: Before performing any of these checks, verify hydraulic SCVs are set to maximum flow, frame control console has power

(backlight is on), cleanout switch is set to "Plant" position, and the proper buttons are pushed for the desired function .

Symptom	Problem	Solution
Machine not functioning. (Tractor engine must be running and console power light on.)	Control console not powered.	Check electrical connections at 7-pin connector. Check tractor 7-pin connector, clean if necessary. Check inline fuses to frame control box.
Erratic or uneven lift.	Pressure and return hoses not fully engaged in SCV outlets. Lift cylinders out of phase.	Verify connections. Completely lower machine and rephase hydraulic system.
Machine does not raise.	Pilot operated check valve 10A and or 10D stuck. Valve S1 not energizing. Valve S1 stuck closed.	Clean valve. See your John Deere dealer. Check for 12 volts DC at the solenoid. Check solenoid. Clean or replace valve.
Machine will not lower.	Pilot operated check valve 10C and or 10B stuck.	Clean valve. See your John Deere dealer.
Machine does not raise or lower.	Solenoid S1 not energizing. Valve S1 stuck closed.	Check for 12 volts DC at solenoid. See your John Deere dealer. Check for 12 volts DC at the solenoid. Clean or replace valve.
Wings are higher than center frame when lowered.	Tractor hydraulic pressure inadequate for planter.	—
Machine raises or lowers slowly.	S2 or S3 valves stuck.	Clean or replace valve.
Machine lowers unevenly and center down first.	S2 or S3 valves stuck. Rephase valve on wings malfunction.	Clean or replace valve. Clean or replace valve.
Machine lowers unevenly with wings down first.	Rephase valve on main frame malfunction.	Clean or replace valve.
Machine raises or lowers unevenly from side to side.	Defective or stuck flow divider valve.	Clean or replace valve. See your John Deere dealer.
Machine does not fold.	PLANT-TRANS switch in "Plant" position.	Switch to "Trans" position.

Continued on next page

OUO6435,0001F57 -19-15MAY09-1/2

Troubleshooting

Symptom	Problem	Solution
	S9 solenoid not energizing.	Check solenoid for 12 volts. Check solenoid.
	S9 valve stuck closed.	Clean or replace valve.
Machine folds when not selected.	S9 valve is stuck open.	Clean or replace valve.
Machine folds too fast.	Verify there is an orifice fitting in the rod end of the fold cylinders.	Install orifice fitting if missing.
Machine frame unequal. (Left wing frame higher or lower than right wing frame.)	Frame lift cylinders out of phase.	Completely lower machine and rephase hydraulic system.
Machine center frame higher than wing frames.	Service locks on center frame wheels.	Remove service locks.
	Frame lift cylinders out of phase.	Completely lower machine and rephase hydraulic system.
	Excessive attachment and planting unit down force.	Reduce down force on row unit and openers (attachments).
	Excessive down force.	Reduce down force.
	SCV set to constant detent in "Raise" position for extended period of time.	Return SCV to "Neutral" position when raised.
Wings bulldoze in soft soil conditions.	Frame height to low.	Increase frame height with wheel module adjustment.
	Unit furrowers, disk openers, gauge wheels, or transport wheels must rotate freely.	—
	Planting too fast.	Reduce operating speed.
	Hitch too low.	Raise and level hitch.
	Excessive down force.	Reduce down force.

OUO6435,0001F57 -19-15MAY09-2/2

24 Row Unfolded

IMPORTANT: Before performing any of these checks, verify hydraulic SCVs are set to maximum flow, frame control console has power

(backlight is on), cleanout switch is set to "Plant" position, and the proper buttons are pushed for the desired function .

Symptom	Problem	Solution
Machine not functioning. (Tractor engine must be running and console power light on.)	Control console not powered.	Check electrical connections at 7-pin connector. Check tractor 7-pin connector, clean if necessary. Check inline fuses to frame control box.
Erratic or uneven lift.	Pressure and return hoses not fully engaged in SCV outlets. Lift cylinders out of phase.	Verify connections. Completely lower machine and rephase hydraulic system.
Machine does not raise.	Solenoid Y1 not energizing.	Check for 12 volts at the solenoid. Check solenoid.
	Valve Y1 stuck closed.	Clean or replace valve.
Machine does not raise or lower.	Check pins 1 and 7 on 7-pin connector at rear of tractor for 12 volts. Inspect F3 10 A fuse in frame control harness. One or more Y1, Y18, Y19, Y20, Y21 solenoids are not energizing or are stuck.	See your John Deere Dealer. Repair as needed. Check for 12 volts at the solenoid.
		Clean or replace valves.
	Check K35 relay.	See RELAY AND FUSE LOCATION in Service and Adjustments section. Replace as needed.
Machine raises or lowers slowly.	One or more Y18, Y19, Y20, or Y21 valves stuck.	Clean or replace valve.
Machine lowers unevenly or center down first.	One or more Y18, Y19, Y20, or Y21 valves stuck. Rephase valve on wings malfunctioning.	Clean or replace valve. Clean or replace valve.
Machine lowers unevenly or wings down first.	Rephase valve on main frame malfunctioning.	Clean or replace valve.
Machine raises or lowers unevenly from side to side.	Defective or stuck flow divider valve.	Clean or replace valve. See your John Deere dealer.
Machine does not fold.	PLANT-TRANS switch in "Plant" position. Y9 solenoid not energizing.	Switch to "Trans" position. Check solenoid for 12 volts.

Continued on next page

OUC6435,0001EEE -19-26MAY09-1/2

Symptom	Problem	Solution
		Check solenoid.
	Y9 valve stuck closed.	Clean or replace valve.
Machine folds when not selected.	Y9 valve is stuck open.	Clean or replace valve.
Machine frame unequal. (Left wing frame higher or lower than right wing frame.)	Frame lift cylinders out of phase.	Completely lower machine and rephase hydraulic system.
Machine center frame higher than wing frames.	Service locks on center frame wheels.	Remove service locks.
	Frame lift cylinders out of phase.	Completely lower machine and rephase hydraulic system.
	Excessive attachment and row unit down force.	Reduce row unit down force.
	SCV set to constant detent in "Raise" position for extended period of time.	Return SCV to "Neutral" position when raised.
Wings bulldoze in soft soil conditions.	Frame height too low.	Increase frame height with wheel module adjustment.
	Planting too fast.	Reduce operating speed.
	Hitch too low.	Raise and level hitch.
	Excessive down force.	Reduce down force.

OUO6435,0001EEE -19-26MAY09-2/2

Row Units

Symptom	Problem	Solution
Row units on right-hand side of machine not planting.	Right-hand drive shaft cotter pin sheared.	Repair cause of pin shearing and replace cotter pin.
	Half-Width Drive Disconnect is engaged.	Move switch to middle position.
Row units on left-hand side of machine not planting.	Left-hand drive shaft cotter pins sheared.	Repair cause of pin shearing and replace cotter pin.
	Half-Width Drive Disconnect is engaged.	Move switch to middle position.
Closing wheels plugging with crop residue.	Insufficient clearance for residue flow.	Stagger closing wheels. See STAGGER CLOSING WHEELS in Operate Machine section.
Closing wheels leave severe imprint in soil.	Too much closing wheel down force.	Decrease closing wheel down force.
Closing wheels not firming soil around seed.	Insufficient closing wheel down force.	Increase closing wheel down force.
Closing wheel running on top of seed furrow.	Improper centering.	Center closing wheels. See CENTER CLOSING WHEELS in Operate Machine section.
	Closing wheel arm casting or pivot bushings worn.	Replace closing wheel arm pivot bushings and or closing wheel arm.
Monitor does not count seeds.	Dirt or debris has collected in seed tube or on sensor.	Clean seed tube and sensor with cleaning brush.

OUO6023,00013C3 -19-27JUN08-1/1

Mechanical Seed Drives

NOTE: For issues related to Variable Rate Drive, see the SeedStar™ Monitor Operators Manual.

Symptom	Problem	Solution
Meters stop driving on one-half or the entire machine.	Binding in a section of the drive system can cause a shear pin to fail, thus protecting the rest of the drive components.	Note: When turning the drive system by hand to check for binding, be sure to rotate all drill shafts in their normal direction of rotation. Compare the torque values required to drive given sections of the machine against similar sections on the opposite side. Shear pins can become deformed after extended use. In this condition, it is possible for the shear pin to fail without a machine malfunction. Replace all shear pins annually. Verify that drives can be turned by hand before replacing pin and resuming planting. Common causes for binding include the following: - Improper care and lubrication of drive components and meters. - Debris caught in row unit chains. - Jammed chemical or seed meters. - For shear pin locations on this machine see REPLACE SHEAR PROTECTION PINS in Service and Adjustments section.
	Half width disconnect failure due to overload.	Inspect half width clutch and repair as needed.
Meters stop driving on the entire machine or drive erratically.	Failed or worn sprockets, chains, or chain idlers within the transmission.	Inspect chains, sprockets, and idlers within the transmission. Repair, align, or replace as necessary.
	Poor maintenance of row unit drives and meters.	Perform maintenance on seed and chemical meters and the components that drive them.
	Improper contact drive tire adjustment.	Adjust contact drive tire to proper specification. See ADJUST SEED AND FERTILIZER TRANSMISSION WHEEL ENGAGEMENT POINT in Service and Adjustments section.

Continued on next page

OUO6064,00000A5 -19-27APR10-1/2

Symptom	Problem	Solution
Meters stop driving on a section of the machine or drive erratically.	Build-up of mud and residue around transmission engagement tire.	Remove obstructions from around contact drive tire and proceed. If the machine is not equipped with mud scrapers on the chassis tire which drives the transmission tire, consider seeing your John Deere dealer about obtaining one.
	Excessive down force setting on row units.	Decrease row unit down force.
	Failed or worn sprockets, chains, chain idlers, or misaligned drive couplers.	Note: When drive couplers become excessively worn, the left-hand and right-hand couplers can be exchanged to provide new wear surfaces. Examine chains, sprockets, and idlers associated with failing section of the machine and fix, align, or replace as necessary. For proper drive coupler alignment, see ADJUST METER CHAIN DRIVE in Service and Adjustments section.
	Failed or disconnected Pro-Shaft™ drive.	Reconnect, or replace PRO-SHAFT drive as necessary. For proper drive coupler alignment, see ADJUST METER PRO-SHAFT DRIVE in Service and Adjustments section.

OUO6064,00000A5 -19-27APR10-2/2

Symptom	Problem	Solution
One or both flex shafts exhibit an extreme bowed or helical shape, and black casing is damaged.	Improper adjustment of drill shafts to which the flex shaft is connected.	<i>NOTE: While adjusting flex shaft, be sure that drive couplers are properly aligned.</i> Flex shaft must slide back and forth freely on level ground. Shaft slides approximately 9 mm (0.34 in.), or full length of the slots in the flex shaft ends. This movement allows for telescoping to occur as the machine travels over uneven terrain. If the cover of the flex shaft has been cut, torn, or worn through, replace it. See ADJUST DRILLSHAFT COUPLERS AND FLEX SHAFTS in Service and Adjustments section.
	Binding between ends of the flex shaft and drill shaft it connects.	<i>NOTE: While adjusting flex shaft, be sure that drive couplers are properly aligned.</i> Clean and lubricate the junction between the flex shaft and the drill shaft ends to which it is connected then reinstall and adjust. See ADJUST DRILL SHAFT COUPLERS AND FLEX SHAFT in Service and Adjustments section.

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OUO6064,00000A5 -19-27APR10-3/2

12 and 16 Row Markers

IMPORTANT: Before performing any of these checks, verify hydraulic SCVs are set to maximum flow, frame control console has power

(backlight is on), cleanout switch is set to "Plant" position, and the proper buttons are pushed for the desired function .

Symptom	Problem	Solution
Marker floats off ground.	Machine not down.	Machine must be fully lowered for proper marker operation.
Markers not alternating in automatic mode.	Marker alternating switch on wheel module seven out of adjustment.	Fully raise machine and check marker alternating switch adjustment. See ADJUST MARKER ALTERNATING SWITCH in Service and Adjustments section.
Left marker lowers when not selected.	Valve S5 stuck open.	Check for 12 volts at solenoid. Check solenoid.
Right marker lowers when not selected.	Valve S6 stuck open.	Check for 12 volts at solenoid. Check solenoid.
Left marker will not lower.	No power to control box.	Check seven pin connector. Check in-line fuses.
	Valve S5 not energized.	Check for 12 volts at solenoid. Check solenoid.
	Valve S5 is stuck closed.	Clean or replace valve.
	Check position of switches on frame control box.	Activate correct switches.
	Check frame fold switch in pivot area.	Broken wires. Carrier damaged or jammed.
Right marker will not lower.	No power to control box.	Check seven pin connector. Check inline fuses.
	Valve S6 not energized.	Check for 12 volts at solenoid. Check solenoid.
	Valve S6 is stuck closed.	Clean or replace valve.
	Check position of switches on frame control box.	Activate correct switches.
	Check frame fold switch in pivot area.	Wires damaged or cut.

Continued on next page

OUO6435,0001F58 -19-15MAY09-1/2

Troubleshooting

Symptom	Problem	Solution
		Carrier jammed.
Marker lowers and disk blade is forced into the ground.	Marker cylinder is not floating in J-slot.	Lengthen marker hydraulic hoses.
Marker operating too fast.	Verify that there is an orifice fitting in the rod end of the cylinder.	Install orifice fitting in rod end of the cylinder.
	Air in hydraulic system.	Disconnect and cycle cylinder to eliminate air.
Shear bolt shears too often.	Marker disk angle too aggressive.	Reduce angle of marker disk blade. See ADJUST MARKER DISK in Service and Adjustments section.
Cannot see marker mark in field.	Marker disk angle not aggressive enough.	Increase angle of marker disk blade. See ADJUST MARKER DISK in Service and Adjustments section.

OUO6435,0001F58 -19-15MAY09-2/2

24 Row Markers

IMPORTANT: Before performing any of these checks, verify hydraulic SCVs are set to maximum

flow, frame control console has power (backlight is on), cleanout switch is set to "Plant" position, and the proper buttons are pushed for the desired function .

Symptom	Problem	Solution
Marker floats off ground.	Machine not down.	Machine must be fully lowered for proper marker operation.
	Leaking tractor SCV.	Repair valve or connections.
Markers not alternating in automatic mode.	Marker alternating switch on inner right-hand wing wheel module out of adjustment.	Add an additional washer on top of spring loaded pin.
Left marker lowers when not selected.	Valve Y3L stuck open.	Check for 12 volts at solenoid. Check solenoid
Right marker lowers when not selected.	Valve Y3R stuck open.	Check for 12 volts at solenoid. Check solenoid
Left marker will not lower.	No power to control box.	Check seven pin connector. Check inline fuses.
	Valve Y3L not energized.	Check for 12 volts at solenoid. Check solenoid.
	Valve Y3L is stuck closed.	Clean or replace valve.
	Check position of switches on frame control box.	Activate correct switches.
Right marker will not lower.	No power to control box.	Check seven pin connector. Check inline fuses.
	Valve Y3R not energized.	Check for 12 volts at solenoid. Check solenoid.
	Valve Y3R is stuck closed.	Clean or replace valve.
	Check position of switches on frame control box.	Activate correct switches.
Marker operating too fast.	Verify there is an orifice fitting in both the rod end and piston end of the cylinder.	Install orifice fitting.
	Air in hydraulic system.	Disconnect cylinder and cycle cylinder to eliminate air.
Shear bolt shears too often.	Marker disk angle too aggressive.	Reduce angle of marker disk blade.

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OUC6074.0000E79 -19-12FEB16-1/2

Troubleshooting

Symptom	Problem	Solution
Cannot see marker mark in field.	Incorrect marker breakaway bolt adjustment.	Adjust marker breakaway bolt exactly as described in REPLACE 24 ROW MARKER BREAKAWAY BOLT- in Service section.
	Incorrect marker shear bolt or marker shear bolt too short.	Replace marker shear bolt with correct M8 x 1.25 x 55 mm Grade 8.8 bolt.
	Marker disk angle not aggressive enough.	Increase angle of marker disk blade.

OUO6074,0000E79 -19-12FEB16-2/2

CCS Blower Assembly

Symptom	Problem	Solution
CCS blower motor leaks.	Case drain line crimped, not connected to low-pressure port, or connected to wrong port with high backpressure.	Repair blower motor. To avoid future failures, verify drain line is connected to low-pressure (sump) return on tractor or place hose in storage position. Case drain must have less than 172 kPa (1.72 bar) (25 psi).
	CCS blower motor seal leaking.	Replace seal. See your John Deere dealer.
	Case drain line pulled out of coupler on tractor.	Check hose routing of hydraulic hoses across hitch. Verify that case drain is properly attached to tractor. Repair blower motor.
CCS blower not turning.	SCV not in continuous detent position.	Place SCV in "Retract" detent position.
	Low hydraulic oil level.	Check and fill reservoir.
	Tractor control valve return line not open.	Cycle control lever in opposite direction momentarily.
	CCS blower motor seal leaking.	Replace seal. See your John Deere dealer.
	Faulty CCS blower motor.	Repair or replace motor. See your John Deere dealer.
	Faulty CCS flow control valve.	Repair or replace valve. See your John Deere dealer.
	Row unit switch is depressed.	Lower machine to ground and adjust switch as needed.
	Row unit switch faulty.	Replace switch.
	Flow control valve incorrectly set.	Increase flow control setting.
CCS blower vibrates.	Dirty blower blades.	Clean blower .
	Broken blower blades; blower out of balance.	Replace blower assembly.
CCS blower surges.	Flow control valve incorrectly set.	Adjust flow control valve or replace.

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OU06435,0001F5B -19-18FEB16-1/3

Symptom	Problem	Solution
Premature CCS blower motor seal failure.	CCS case drain not connected to sump.	Connect case drain hose to sump. Case drain must have less than 172 kPa (1.72 bar) (25 psi).
Tank pressure too low.	CCS pressure gauge was not zeroed.	Zero CCS pressure gauge.
	CCS pressure gauge hose not connected or damaged.	Connect or replace hose.
	Tractor flow control set too low.	Increase valve setting.
	Faulty CCS control valve.	Repair or replace valve. See your John Deere dealer.
	Machine flow control valve set incorrect.	Increase valve setting.
	Tractor pressure too low.	Check and repair tractor hydraulic system. See your John Deere dealer.
	CCS blower motor seal leaking.	Replace seal. See your John Deere dealer.
	Faulty CCS blower motor.	Repair or replace motor. See your John Deere dealer.
	CCS blower turning backward.	Correct hose connections to tractor.
	Excessive air leakage from tank.	Correctly install tank lids.
Pressure gauge does not zero.	Pressure gauge broken.	Repair or replace gauge.
	Gauge not adjusted.	Zero gauge. See ZERO PRESSURE GAUGE in Service and Adjustments section.
	Gauge damaged.	Replace gauge.
CCS blower turning on and off while going through the field.	Moisture in gauge.	Dry out gauge.
	Frame height too high causing the row unit switch to open and close.	Adjust frame height. See ADJUST FRAME HEIGHT in Service and Adjustments section.
	Row unit blower switch misadjusted.	Adjust switch. See SET CCS ROW UNIT BLOWER SWITCH in Service and Adjustments section.
CCS Blower-Agitator does not engage when planter lowered.	Inspect F3 10 amp fuse in frame control harness.	Replace fuse.
	Check pins 1 and 7 on tractor to planter 7 pin connector for 12 volts.	See your John Deere dealer.

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OUO6435,0001F5B -19-18FEB16-2/3

Troubleshooting

Symptom	Problem	Solution
	Check CCS row unit switch (left center row unit on parallel arms).	Adjust switch. See SET CCS ROW UNIT BLOWER SWITCH in Service and Adjustments section.
	Check K31 relay.	Replace as needed (relay is tie strapped to harness behind valve block).

OUO6435,0001F5B -19-18FEB16-3/3

CCS Product Delivery

Symptom	Problem	Solution
Plugged delivery hoses.	Foreign material in seed.	Clean seed or use lid screen.
	Tank lids were opened with CCS blower running.	Wait until CCS blower stops before opening lids.
	Excessive CCS blower pressure.	Reduce pressure.
	Tank lid open or leaking excessively.	Close lid, empty hose line.
	Hose pinched or crushed.	Replace or repair hose.
	Air volume too low.	Increase CCS blower speed. See SET CCS TANK PRESSURE in Central Commodity System section.
	Foreign material blocking air system.	Remove hose by pulling straight off (do not twist) from nozzle to remove material causing plug.
	Hoses routed flat or uphill or have large droops.	Route hoses correctly.
	High humidity.	Use more talc and mix thoroughly or wait for drier conditions.
	CCS blower running while not planting for excessive period of time.	Turn off blower when not planting for more than a few minutes.
Uneven product distribution between row units.	Product level too low for accurate delivery.	CCS nozzle must be covered to deliver seed.
	Hopper screen plugged.	Remove screen and tap until clear.
	Discharge elbow plugged.	Remove elbow and clean.
	Air volume too low.	Increase CCS tank pressure. See SET CCS TANK PRESSURE in Central Commodity System section.
	Blockage in air hose.	Clear air hose.
	Blockage in nozzle.	Shut off CCS blower. Remove delivery hose by pulling straight off (do not twist) nozzle and remove material.
	Seed compacted in tank nozzles.	See BRIDGED AND BLOCKED CCS SYSTEM in Central Commodity System section.
	Nozzle inserts installed on nozzles for planting small seed.	Remove nozzle inserts when not planting small seed.

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OUO6435,0001F5C -19-22FEB16-1/4

Troubleshooting

Symptom	Problem	Solution
No seed in meter.	Agitator not running.	Check fuse, power connector, and ground lead.
	Air volume too low.	Verify tank pressure is set to recommended pressure.
	Blockage in air hose.	Cleanout meter using tray. Reinstall seed disc and close vacuum dome. Start CCS blower and shake hose vigorously near meter. Continue shaking hose closer and closer to tank. Increase tank pressure, if necessary to blow seed out easier. If meter fills with seed, repeat process until no more seed is in hose.
		Check that both tank lids are securely closed.
	Blockage in nozzle inside tank.	Engage tractor parking brake, put transmission in "Park", shut off tractor, and remove outlet delivery hose from CCS tank. Check for obstruction. Remove any obstruction. Reconnect seed delivery hose.
	Seed compacted in tank nozzles.	Engage tractor parking brake, put transmission in "Park", shut off tractor, and remove outlet delivery hose from CCS tank. Loosen and remove seed stuck in nozzle. Whenever planter is lowered and stationary for more than a few minutes with seed in CCS tank, shut off tractor and turn key off. Agitators run anytime planter is lowered and key is "On". This causes seed to pack into nozzles.
	High humidity.	Use more talc and mix thoroughly or wait for drier conditions.
	CCS tank lid open.	Close lid.
	Cleanout doors on bottom of tank are open or leaking air.	Close doors.
	Discharge elbow plugged in hopper.	Clear plug and decrease CCS tank pressure.
	Seed bridging in CCS tank.	Check if agitator is running. Check fuse, power connection, and ground lead.
		Increase CCS tank pressure.
		Add more talc and mix thoroughly.

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OUO6435,0001F5C -19-22FEB16-2/4

Troubleshooting

Symptom	Problem	Solution
	CCS tanks empty.	Fill CCS tanks.
	Nozzle inserts installed on nozzles for planting small seed.	Remove nozzle inserts when planting other crops.
Seed damage.	Air volume too high.	Reduce CCS tank pressure. Add talc.
	Old, dry seeds.	Use fresh seeds.
Individual rows overpopulating.	Meter vacuum level too high.	Decrease vacuum level.
	Vacuum hopper vent plugged.	Clean vent.
	Discharge elbow vent plugged.	Clean vent holes in elbow.
Uneven or inaccurate metering or product delivery.	CCS tanks running empty.	Fill or redistribute seed in CCS tanks.
	Product level in seed meter too low for accurate delivery.	Increase CCS tank pressure.
	Foreign material blocking product passages.	Remove blockage. Use screens when filling tanks. Engage tractor parking brake, put transmission in "Park", shut off tractor, and remove outlet delivery hose from CCS tank. Check for obstruction. Remove any obstruction. Reconnect seed delivery hose.
	Hopper screen plugged.	Remove screen and tap until clear.
	Lumps in seed.	Use clean seed. Use screens when filling tanks.
	Seed bridging in tank.	Check if agitator is running. Check fuse, power connection, and ground lead. Increase CCS tank pressure. Add more talc and mix thoroughly.
	Rubber flap on meter not covering the seed tube opening in the shank.	Realign rubber flap to sit flat on row unit when meter is installed.
No seed flow.	Plugged seed delivery hose.	Do not raise and lower machine continuously without planting seed. Excessive blower stopping and starting without planting, plugs seed delivery hoses.

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OU06435,0001F5C -19-22FEB16-3/4

Symptom	Problem	Solution
		Do not operate machine with nearly all meters out of seed as the seed hoses to rows with seed can plug. Stop and fill machine once the first row runs out of seed.
		Adjust CCS blower pressure to recommended level.
	Cold hydraulic oil.	Allow tractor to warm before setting tank pressure.
CCS blower surges.	Faulty flow control valve.	Replace valve.
CCS blower turns on and off while going through the field.	Frame height is too high causing blower switch on row unit between left-hand main frame wheels to open and close.	Adjust frame height.
		Adjust row unit blower switch.
Machine raises slowly.	CCS blower is running during raise cycle.	Row unit blower switch not functioning.
CCS seed delivery flow is low.	Seed hose is pinched.	Straighten or repair hose. Keep hoses as horizontal as possible.
	Foreign material is lodged in hose or manifold.	Locate and remove foreign material blockage.
	Improper tank pressure.	Ensure tank lids are installed correctly.
		Readjust SCV.
		Increase CCS tank pressure by 2 in. of pressure.
CCS tank level sensor light does not come on.	Tank sensor dirty.	Clean tank sensor. See CLEAN TANK LEVEL SENSOR in Service and Adjustments section.
	Tank low warning light inside frame control console burned out (unplug all tank level sensors from harness to test).	Replace tank low warning light inside frame control console.
CCS tank low warning light not functioning.	Tank level sensor dirty.	Clean sensor LEDs with a brush.
	Tank low warning light burned out.	To test, unplug all tank level sensor harness connectors. If light does not come on, replace light inside frame control box.

OUO6435,0001F5C -19-22FEB16-4/4

Vacuum Meter

Symptom	Problem	Solution
False monitor reading.	Dirty seed tube sensors.	Clean sensors. (See CLEAN SEED SENSOR in Service and Adjustments section.)
	Dust and dirt being drawn up seed tube.	Clean meter vent.
No seed being planted.	Row unit hoppers empty.	(See CCS™ PRODUCT DELIVERY in this section.)
	No vacuum.	(See Low Vacuum under VACUUM METER in Troubleshoot section.)
	Seed tubes plugged or damaged.	Inspect seed tubes. Ensure that seed tubes are hooked properly in unit shank. Replace if damaged.
		Clean off mud with cleaning brush.
Poor seed spacing.	Meter drive not engaged.	Engage meter drive.
	Seed disk vacuum holes plugged.	Clean seed disks.
		Install knockout wheel assembly if using a Flat Seed Disk.
	Farmer-applied seed treatment causes buildup, seeds stick.	Follow recommended meter lubrication.
		Clean meter and disks.
	Worn meter brushes.	Replace brushes.
	Low vacuum.	(See Low Vacuum under VACUUM METER in Troubleshoot section.)
	Rusty planting unit or seed drive chains.	Lubricate chains.
	Dirt buildup on herbicide or insecticide drive.	Clean drive.
	Worn meter seals.	Replace seals.
	Seed disk hubs misadjusted.	Readjust hubs.
	Incorrect vacuum for the seed planted.	Adjust vacuum level to recommended setting.
	Faulty vacuum gauge.	Check air line to gauge. Clean if plugged. Replace if cut.
	Worn seed disks.	Replace disks.

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OUO6435,0001F8D -19-22FEB16-1/6

Symptom	Problem	Solution
Low seed population.	Seed tubes improperly installed or worn.	Reinstall or replace seed tubes. Verify that seed tube hook is properly positioned in unit shank.
	Mud inside seed tubes.	Clean off mud with cleaning brush.
	Worn seed tube guard.	Replace guard.
	Treated seed sticking in cell.	Clean disks.
		Increase application rate of meter lubricant.
	Seed disks have not been sprayed with Graphite Lubricant.	Spray seed disks with Spray on Graphite Lubricant TY25797.
	Excessive ground speed.	Plant at speed recommended in planting rate chart.
	If low population displays on monitor and field counts are accurate, sensors are dirty.	Clean seed tubes and sensors.
	Seed disk vacuum holes plugged.	Clean seed disks.
		Flat-Type Disk: Install knockout wheel assembly or replace worn knockout wheel assembly.
	Vacuum holes plugged with dirty seed.	Use clean seed.
		Flat-Type Disk: Install knockout wheel assembly or replace worn knockout wheel assembly.
	Seed disk wiper missing.	Replace wiper.
	Low seed level in CCS™ tank.	Add seed.
	Low seed level in meter.	(See NO SEED IN METER in CCS™ Product Delivery Troubleshoot in this section.)
	"Treated" seed sticking in cells.	Run CCS™ blower 10 minutes before planting (to warm air).
		Inspect planting unit seed meter disks; clean if buildup is present.
		Increase meter lubricant in CCS™ tanks.
	Farmer-applied seed treatment causes buildup, seeds stick.	Discontinue use of treatments or increase use of talc.

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OUO6435,0001F8D -19-22FEB16-2/6

Symptom	Problem	Solution
	Rusty planting unit chains.	Lubricate chains.
	Low vacuum.	Increase vacuum level. (See Low Vacuum under VACUUM METER in Troubleshoot section.)
	Foreign material (chaff) built up in vacuum dome.	Inspect and clean dome .
	Worn meter seals.	Replace seals.
	Worn seed disks.	Replace seed disks.
	Seed “bridging” in hopper or meter.	Increase amount of meter lubricant. Clean vacuum meter and hopper.
	Inadequate seed delivery.	Increase CCS™ tank pressure.
	Plugged inlet or discharge elbows.	Clean elbows.
	Seed size not compatible with seed disks.	Use correct seed disks.
	Excessive drive slippage.	Reduce unit down force. Check air-spring pressure on mechanical seed-transmission . Check drives for binding or misalignment. Readjust seed transmission.
	Planting too fast for rough field conditions.	Plant at speed recommended in planting rate chart. Increase vacuum. Increase unit down force.
	Vacuum level too low.	Increase vacuum level.
	Meter brush improperly installed or worn.	Install brush properly or replace.
	Using incorrect transmission sprocket combination.	Use sprocket combination recommended in planting rate chart or adjust upward due to excess drive slippage.
	Incorrect drive tire or contact tire pressure.	Inflate to proper pressure. (See CHECK TIRE INFLATION in Prepare Machine section.)
	Double eliminator set incorrectly.	(See OPERATE DOUBLE ELIMINATOR in Rate Charts and Settings Operator's Manual.)

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OUO6435,0001F8D -19-22FEB16-3/6

Symptom	Problem	Solution
High seed population.	Vacuum manifold orifices not installed.	Install orifices in correct locations. (See VACUUM MANIFOLD ORIFICE PLACEMENT in Service and Adjustments section.)
	High vacuum.	Adjust vacuum setting.
	Vacuum manifold orifices not installed.	(See VACUUM MANIFOLD TUBE ORIFICE PLACEMENT in Service and Adjustments section.)
	Faulty vacuum gauge.	Check air line to gauge. Clean if plugged. Replace if cut.
	Worn seed disks.	Replace seed disks.
	Seed size not compatible with seed disks.	Use correct seed disks.
	Planting too slow.	Plant at speed recommended in planting rate charts.
	Meter brush improperly installed.	Install brush properly.
	Seed disk hubs loose.	Adjust hubs. (See ADJUST METER HUB in Rate Charts and Settings Operator's Manual.)
	Using incorrect transmission sprocket combination.	Use sprocket combination recommended in planting rate charts or adjust downward due to low drive wheel slippage.
	Mini hopper screens plugged, meter overfilled.	Clean mini hopper screens.
	Discharge elbow holes plugged.	Clean elbows.
	Incorrect drive tire or contact tire pressure.	Inflate to proper pressure. (See CHECK TIRE INFLATION in Prepare Machine section.)
	CCS™ tanks running empty.	Fill or redistribute seed in CCS™ tanks.
Seed sensor tubes plugging.	Double eliminator set incorrectly.	(See OPERATE DOUBLE ELIMINATOR in your Rate Charts and Settings Operator's Manual.)
	Machine rolling backward when lowering.	Lower machine while moving forward.
	Mud inside seed tubes.	Clean off mud with cleaning brush.

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OUO6435,0001F8D -19-22FEB16-4/6

Troubleshooting

Symptom	Problem	Solution
Inconsistent seed depth.	Turning tractor steering wheel when machine is down and stationary. (Four-Wheel Drive or Track tractors only.)	Avoid turning tractor when machine is down and stationary.
	Planting in rough seed bed.	Increase row unit down force.
	Mud building up on gauge wheel tires.	Remove mud from gauge wheel tires. Avoid muddy planting conditions.
	Excessive row unit bounce.	Reduce ground speed. Increase row unit down force.
	Seed tubes partially plugged or improperly installed.	Inspect seed tubes. Ensure that seed tubes are hooked properly in unit shank. Clean off mud with cleaning brush.
Too many skips.	Low vacuum setting.	Increase vacuum.
	Holes in vacuum disk plugged with debris.	Remove debris. Install knockout wheel if using flat disk.
	Planting too fast.	Reduce planting speed.
	Low seed level in hopper.	Increase CCS™ tank pressure.
Premature blower motor seal failure.	Incorrect hydraulic connections.	Verify hose connections.
	SCV control not being moved to "Float" position to stop hydraulic motors.	Move SCV control to "Float" position when stopping hydraulic motors.
	High case drain pressure.	Check for 25 psi or less back pressure at motor. Verify that case drain hose is connected and hose not kinked.
Low vacuum.	Orifices installed incorrectly in manifold tube.	(See VACUUM MANIFOLD TUBE ORIFICE PLACEMENT in Service and Adjustments section.)
	Incorrect hydraulic connections.	Verify hose connections.
	Planting unit vacuum hoses not connected.	Connect vacuum hoses.
	Flow control valve misadjusted.	Adjust control valve knob.
	Vacuum tube system clogged with dust.	Clean vacuum tube system.
	Manifold hoses kinked or pinched.	Reposition hoses.

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OUO6435,0001F8D -19-22FEB16-5/6

Troubleshooting

Symptom	Problem	Solution
Erratic vacuum.	Vacuum exhaust guard clogged with dust or seed treatments.	Clean vacuum exhaust guard.
	Meter housing retaining strap not engaged.	Attach housing retaining strap to chamber.
	Meter seals worn or flipped.	Inspect seals. Reposition or replace.
	Vacuum tube system assembled without O-rings.	Add O-rings.
	Vacuum dome not closed properly.	Make sure vacuum dome closes properly.
	Foreign material (chaff) built up in vacuum dome.	Inspect and clean dome.
	Vacuum tube system clogged with dust.	Clean vacuum tube system.
Vacuum gauge does not zero.	Control valve failed.	Replace control valve.
	Tractor oil level low.	Add oil.
	Tractor not stabilizing flow (when controlled with tractor SCV).	See your John Deere™ dealer.
	Not adjusted.	Zero adjustment. (See ZERO VACUUM GAUGE in your Rate Charts and Settings Operator's Manual.)

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OUO6435,0001F8D -19-22FEB16-6/6

Row Command System

Symptom	Problem	Solution
Row Command system does not function after planter seed tanks are filled.	If the planter is stopped for more than 5 minutes, filling planter, when lowered and stationary or on the road in transport position, the Row Command system goes into Power Management Mode.	To resume normal operation, the planter must be raised, or lowered, or above 1 mph to restart the system.

OUO6045,000004A -19-10DEC08-1/1

Fertilizer Application System

Symptom	Problem	Solution
No Fertilizer Being Delivered - All Rows	Fan and auger not turning.	Verify that 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 H2O	Fan rotation must be clock wise (CW) when viewed from the screen side of fan. If rotation is not clock wise (CW), see Hydraulic Schematics and plumb as shown for your machine.
	Auger turning wrong direction. Auger must be turn same direction as fan CW from fan screen side of unit.	See Hydraulic Schematics and plumb as shown for your machine.
	Fan turning, auger not turning.	Check condition and routing of auger motor chain. Check for auger obstructions (with chain off auger must turn with pliers and minimal force). Clean out any plugged rows and check for auger obstructions.
	Fan turning, auger not turning and not obstructed.	Check controller calibration settings, controller cabling and connections at the controller, PMM valve and encoder, When running a catch test with your controller you must have a 2-12 volt DC signal at the PMM Plug. The higher the rate, higher the voltage, the resistance of the PMM coil must be approximately 7, 1 ohm. To verify that the fertilizer metering system operates you can apply a 12 volt DC + and - source to the pins on the PMM coil with the fan running the metering auger must run at max RPM's.

Continued on next page

RM87422,0000414 -19-08MAR16-1/3

Symptom	Problem	Solution
	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 PMM valve and encoder cables and connections. Check for proper signals from controller to encoder. For Raven 36 pulse encoders check for +5 volts DC between the ground and power socket and the ground and signal socket. If voltage is correct, auger is turning and no rate is being recorded. Replace encoder. For all other encoders contact your John Deere dealer technical department for voltages and pinning.
Actual rate applied is higher than desired rate.	Controller settings are not correct.	Check calibration settings and adjust as needed. Verify CFR and encoder pulse settings. Also check low limit setting, if set to high auger will not run slow enough.
	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.	Clear augers or hoses (check quality of fertilizer as needed).
	Fertilizer bridged in tank.	Clear bridging (check quality of fertilizer).
	Kinked or worn hoses	Check condition of hoses for sharp bends and worn spots and replace as needed.
Eliminating Auger Obstructions IMPORTANT: Avoid Crushing: Make sure that all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key. CAUTION: Inhalation Hazard: Dust from dry fertilizer is dangerous if inhaled. Always wear the proper safety equipment and clothing before being exposed to dry fertilizer. 1. Position meter over large tarp or clean concrete and remove the two access doors. 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 loosened material out of auger area. 5. Position an observer away from cart/tank area. 6. Start tractor and operate the system. Check auger shaft for rotation. - If auger is rotating, return to operation. - If auger is not rotating, proceed with the following steps.		

Continued on next page

RM87422,0000414 -19-08MAR16-2/3

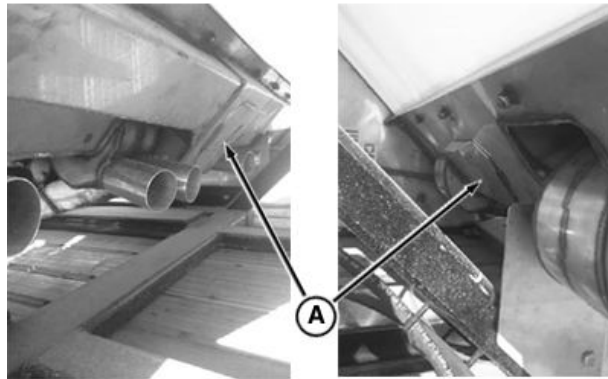
7. Check tractor is it in park, engine is off, and ignition key is removed from ignition.
8. Remove screen on top of tank and enter into the tank.
9. Remove auger covers and clear any obstruction form auger area.

Clearing Air Passages

IMPORTANT: Avoid Crushing: Make sure that all personnel are clear of the implement. Lower implement to the ground, place tractor in park, turn off engine, and remove key.

CAUTION: Inhalation Hazard: Dust from dry fertilizer is dangerous if inhaled. Always wear the proper safety equipment and clothing before being exposed to dry fertilizer.

1. Remove air hoses from affected air chamber tubes.
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.
4. Remove auger covers (A). Inspect area and remove any obstructions.



A—Auger Covers

5. Position an observer away from cart/tank area.
6. Start tractor and operate the system. Check for air and fertilizer blowing out of air chamber outlet tubes.

PY24851—UN—10FEB16

RM87422,0000414 -19-08MAR16-3/3

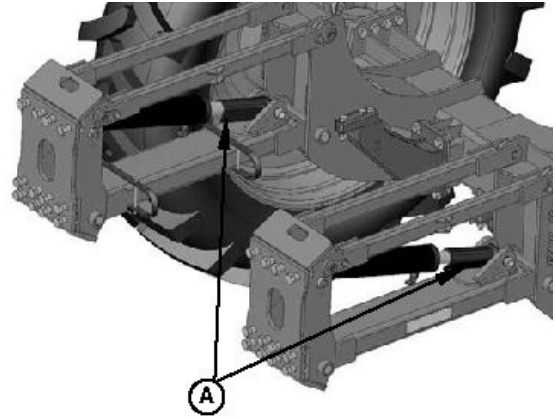
Storage

Removing From Storage

If machine is in the folded transport position and transport locks were installed, raise machine off locks.

Remove transport locks (A) from both outer main frame wheel cylinders.

A— Transport Locks



PY24870 —UN—18FEB16

RM87422,0000433 -19-18FEB16-1/5

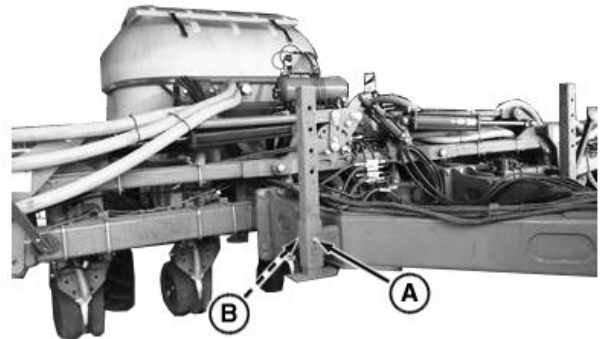
Place main frame service locks in the storage position. Locks are stored on the CCS ladder frame rails.

Remove spring lock pins (B) and raise hitch stands (C) and lock again with drilled pins (A) securely.

A— Drilled Pin (2 used)

B— Spring Locking Pin (2 used)

C— Hitch Stand



PY24865 —UN—11FEB16



PY24871 —UN—18FEB16

Continued on next page

RM87422,0000433 -19-18FEB16-2/5

Remove all plugs (A) from vacuum manifold bells (B)

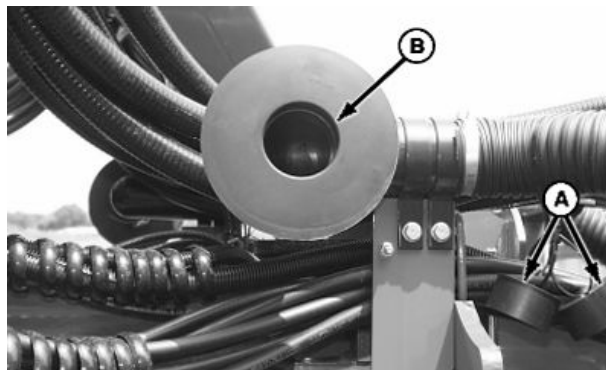
Before using machine after it has been stored, inspect seed hoppers for cleanliness to be certain seed will flow from hoppers freely.

Thoroughly inspect machine for loose parts and adjust as necessary.

IMPORTANT: High-pressure washers can damage electrical components, bearings, hoses, and hoppers when direct contact is applied. Use caution, if power washing machine.

A—Plugs

B—Manifold Bell



A49949—UN—21AUG02

RM87422,0000433 -19-18FEB16-3/5

Clean any dirt or grease which accumulates on moving parts, gears, and chains before operating machine. Cleaning prevents abrasive action that could cause excessive wear.

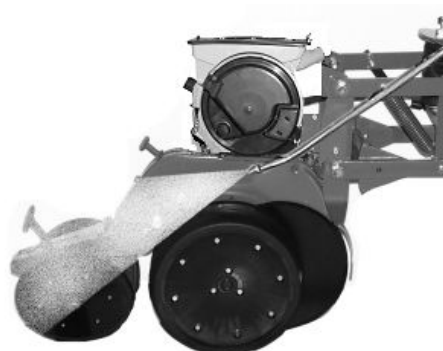
When roller chains remain unused for several days, moisture in the air accumulates on chain, causing chain to rust. Rust can become serious enough in time to cause the chain joints to become stiff, restricting their normal free movement. Stiffness can cause the chains to operate abnormally and disturb the smooth rotation of important meter components causing deterioration in performance.

IMPORTANT: Do not use heavy petroleum base lubricant which causes a buildup of dust or dirt in the sprocket or gear teeth.

If machine is not used for several days or if oil has been removed from chains while cleaning the machine,

thoroughly lubricate chains with John Deere Multipurpose Spray Lube TY6350.

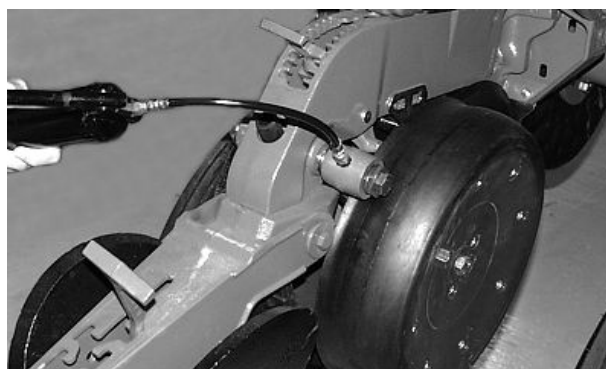
Adjust machine for planting conditions.



A78504—UN—16OCT13

RM87422,0000433 -19-18FEB16-4/5

Lubricate planting units as outlined in the Lubrication section.



A53141—UN—04NOV03

RM87422,0000433 -19-18FEB16-5/5

Storing Machine

When planting is completed for one season, store the machine under cover with all parts in operating condition.

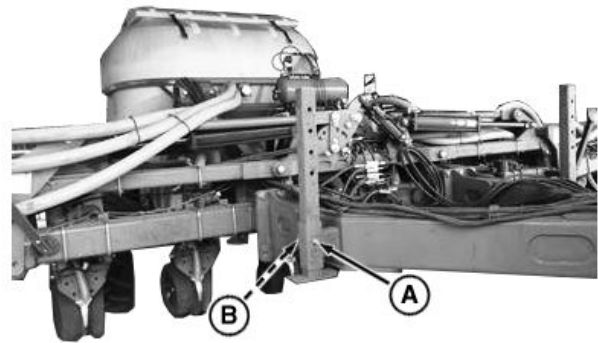
IMPORTANT: Avoid machine settling. Install service locks on frame wheel cylinders and lower machine onto service locks.

- Raise hitch enough to lower stands to storage position
- Remove spring lock pins (B) and drilled pins (A) and lower hitch stands (C)
- Install drilled pins (A) and spring locking pins (B).

IMPORTANT: Avoid machine damage. Flat plate on service lock must be on top side against cylinder.

NOTE: Machine should be stored with wings unfolded.

- A— Drilled Pin (2 used) C— Hitch Stand
B— Spring Locking Pin (2 used)



RM87422.0000434 -19-26FEB16-1/5

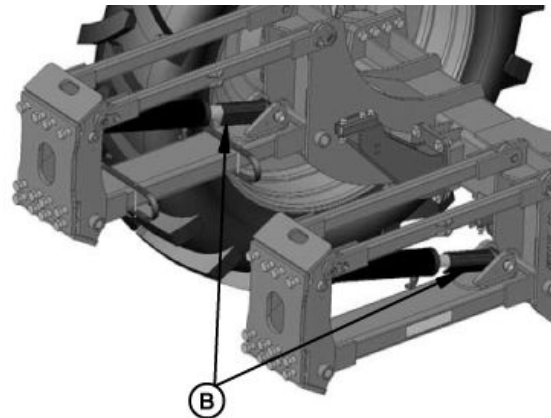
PY24865 —UN—11FEB16

PY24871 —UN—18FEB16

Remove main frame transport locks (A) from storage position. Locks are stored on the CCS™ ladder frame rails.

Raise machine and install transport locks (A) as shown onto both outer main frame wheel cylinders.

- A— Transport Lock



Continued on next page

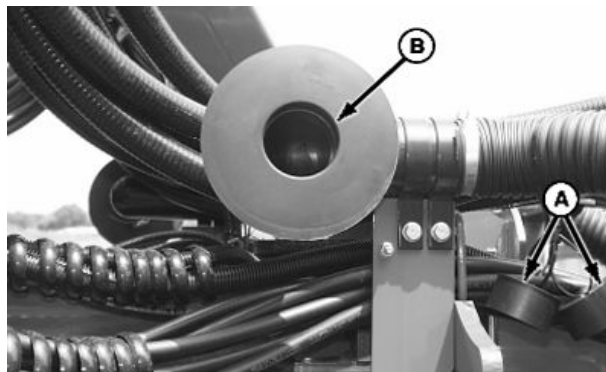
RM87422.0000434 -19-26FEB16-2/5

PY24768 —UN—08FEB16

Install all plugs (A) into vacuum manifold bells (B).

A—Plugs

B—Manifold Bells



A49949—UN—21AUG02

RM87422,0000434 -19-26FEB16-3/5

Paint all parts which are chipped or worn and require repainting.

IMPORTANT: Avoid damage to electrical components, bearings, hoses, and hoppers. Do not direct high-pressure washer spray directly on these parts.

Clean and wash machine thoroughly.

Lubricate the machine as outlined in the Lubrication section, and grease exposed cylinder rods.

Thoroughly lubricate chains with TY6350 John Deere Multipurpose Spray Lube.

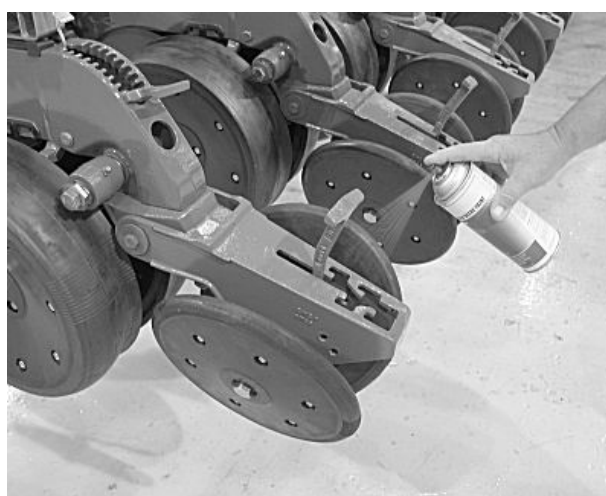
Empty and clean seed hoppers.

Clean insecticide and herbicide hoppers thoroughly.

Inspect the machine for worn, broken, or damaged parts. Replace parts as needed.

Store the machine in a clean, dry place with the planting unit gauge wheels and firming wheels out of the sun.

Relieve all spring tension on closing wheels by placing handle in long slot.



A68112—UN—14JUL10

To prevent damage from freezing, thoroughly flush liquid herbicide system with clean water. Disconnect from tractor and completely drain all lines and components.

Continued on next page

RM87422,0000434 -19-26FEB16-4/5

Remove seed disks from meter. (See VACUUM METER INSPECTION AND SERVICE in Service section.)

Clean meter housing, meter chamber, and seed disk with mild detergent and soft brush.

Spray disks with graphite lubricant.

Store disks (A) in shipping box or hang on wall.

IMPORTANT: Store seed disks away from extreme heat or direct sunlight. Do not leave disks in the meters during the off season. Do not store under heavy parts.

Clean air manifold system. (See CLEAN VACUUM SYSTEM in the Service section.)

Check for hydraulic leaks.

Check and clean out manifolds.

Check and clean vacuum meters.

Check and replace necessary vacuum meter seals.

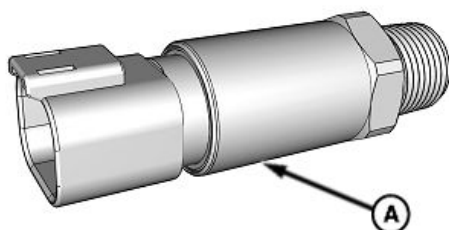
A—Disk



A44241 —UN—19NOV97

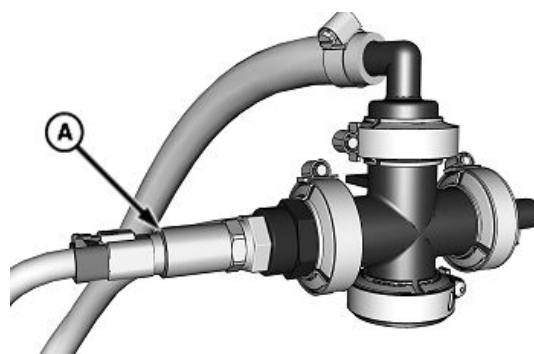
RM87422,0000434 -19-26FEB16-5/5

Liquid Fertilizer Sensor (If Equipped)



A—Liquid Fertilizer Sensor

Remove the sensor (A) and flush it with clean water.



A89995 —UN—30MAR16

A89994 —UN—30MAR16

Do not insert any object or tool into the fluid port.

OUC6064,000057C -19-30MAR16-1/1

Liquid Fertilizer System Storage Procedures with John Blue™ and Demco Pumps

IMPORTANT: To prevent damage to piston pump:

Keep air out of pump. Entrance of air into the pump causes rapid and severe corrosion to the interior pump components, even for short periods of storage.

Keep pump from freezing.

Remove drive chain when not in use.

Suspension fertilizer must be flushed from the pump for any storage period.		
Clear Liquid Fertilizer		
Overnight	Cooling Temperatures	Solution is likely to settle out. Draw fresh water into pump and leave filled. DO NOT admit air.
Overnight	Steady or Rising Temperatures	Leave pump and hoses filled with solution.
One to Two Weeks	Acceptable	Draw fresh water into pump to dilute and flush fertilizer solution. DO NOT DRAIN. Keep pump sealed to exclude air.
One to Two Weeks	Preferred	Use approximately 19—38 L (5—10 gal.) of fresh water and operate pump to flush system thoroughly. Install 19 L (5 gal.) of SPRAY MASTER™ Winterizer Fluid or RV antifreeze ^a to the tank . Operate pump to circulate winterizer into system until the solution starts to come out the openers.
Winter	Preferred	Drain any excess fertilizer from the tank and manifolds. Operate pump to clear fertilizer from distribution hoses and check valves. Use approximately 19—38 L (5—10 gal.) of fresh water and operate pump to flush system thoroughly. Install 19 L (5 gal.) of SPRAY MASTER™ Winterizer Fluid or RV antifreeze ^a to the tank . Operate pump to circulate winterizer into system until the solution starts to come out the openers.

^aMix winterizer fluids to the correct ratio for system protection down to the lowest expected temperature

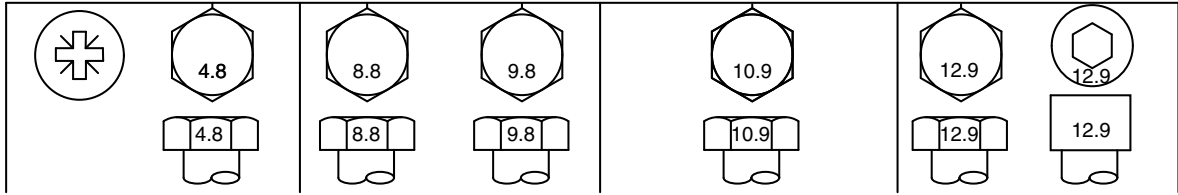
SPRAY MASTER is a trademark of Deere & Company

WP29706,000030B -19-30MAR12-1/1

Specifications

Metric Bolt and Screw Torque Values

TS1670 —UN—01MAY03



Bolt or Screw Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated ^a		Dry ^b		Lubricated ^a		Dry ^b		Lubricated ^a		Dry ^b		Lubricated ^a		Dry ^b	
	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.
M6	4.7	42	6	53	8.9	79	11.3	100	13	115	16.5	146	15.5	137	19.5	172
									N·m	lb.-ft.	N·m	lb.-ft.	N·m	lb.-ft.	N·m	lb.-ft.
M8	11.5	102	14.5	128	22	194	27.5	243	32	23.5	40	29.5	37	27.5	47	35
			N·m	lb.-ft.	N·m	lb.-ft.	N·m	lb.-ft.								
M10	23	204	29	21	43	32	55	40	63	46	80	59	75	55	95	70
	N·m	lb.-ft.														
M12	40	29.5	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	46	80	59	120	88	150	110	175	130	220	165	205	150	260	190
M16	100	74	125	92	190	140	240	175	275	200	350	255	320	235	400	300
M18	135	100	170	125	265	195	330	245	375	275	475	350	440	325	560	410
M20	190	140	245	180	375	275	475	350	530	390	675	500	625	460	790	580
M22	265	195	330	245	510	375	650	480	725	535	920	680	850	625	1080	800
M24	330	245	425	315	650	480	820	600	920	680	1150	850	1080	800	1350	1000
M27	490	360	625	460	950	700	1200	885	1350	1000	1700	1250	1580	1160	2000	1475
M30	660	490	850	625	1290	950	1630	1200	1850	1350	2300	1700	2140	1580	2700	2000
M33	900	665	1150	850	1750	1300	2200	1625	2500	1850	3150	2325	2900	2150	3700	2730
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2770	4750	3500

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For stainless steel fasteners or for nuts on U-bolts, see the tightening instructions for the specific application. Tighten plastic insert or crimped steel type lock nuts by turning the nut to the dry torque shown in the chart, unless different instructions are given for the specific application.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class. Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.

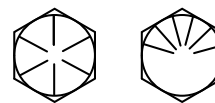
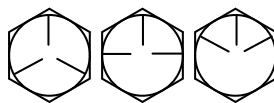
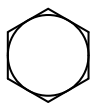
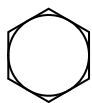
^a"Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

^b"Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B, F13E or F13H zinc flake coating.

DX,TORQ2 -19-12JAN11-1/1

Unified Inch Bolt and Screw Torque Values

TS1671 —UN—01MAY03



Bolt or Screw Size	SAE Grade 1				SAE Grade 2 ^a				SAE Grade 5, 5.1 or 5.2				SAE Grade 8 or 8.2			
	Lubricated ^b		Dry ^c		Lubricated ^b		Dry ^c		Lubricated ^b		Dry ^c		Lubricated ^b		Dry ^c	
	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.	N·m	lb.-in.
1/4	3.7	33	4.7	42	6	53	7.5	66	9.5	84	12	106	13.5	120	17	150
													N·m	lb.-ft.	N·m	lb.-ft.
5/16	7.7	68	9.8	86	12	106	15.5	137	19.5	172	25	221	28	20.5	35	26
									N·m	lb.-ft.	N·m	lb.-ft.				
3/8	13.5	120	17.5	155	22	194	27	240	35	26	44	32.5	49	36	63	46
			N·m	lb.-ft.	N·m	lb.-ft.	N·m	lb.-ft.								
7/16	22	194	28	20.5	35	26	44	32.5	56	41	70	52	80	59	100	74
	N·m	lb.-ft.														
1/2	34	25	42	31	53	39	67	49	85	63	110	80	120	88	155	115
9/16	48	35.5	60	45	76	56	95	70	125	92	155	115	175	130	220	165
5/8	67	49	85	63	105	77	135	100	170	125	215	160	240	175	305	225
3/4	120	88	150	110	190	140	240	175	300	220	380	280	425	315	540	400
7/8	190	140	240	175	190	140	240	175	490	360	615	455	690	510	870	640
1	285	210	360	265	285	210	360	265	730	540	920	680	1030	760	1300	960
1-1/8	400	300	510	375	400	300	510	375	910	670	1150	850	1450	1075	1850	1350
1-1/4	570	420	725	535	570	420	725	535	1280	945	1630	1200	2050	1500	2600	1920
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2140	1580	2700	2000	3400	2500
1-1/2	990	730	1250	930	990	730	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For plastic insert or crimped steel type lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application. Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Replace fasteners with the same or higher grade. If higher grade fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.

^aGrade 2 applies for hex cap screws (not hex bolts) up to 6 in. (152 mm) long. Grade 1 applies for hex cap screws over 6 in. (152 mm) long, and for all other types of bolts and screws of any length.

^b"Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

^c"Dry" means plain or zinc plated without any lubrication, or 1/4 to 3/4 in. fasteners with JDM F13B, F13E or F13H zinc flake coating.

DX,TORQ1 -19-12JAN11-1/1

Specifications

Specifications

NOTE: *Weights are with typical optional equipment.
Weights with other optional equipment will vary.*

The maximum static vertical load for this implement is achieved with the implement folded in road transport position and equipped with authorized attachments.

Machine	12 Row	16 Row	24 Row
FRAME	Stack-Folding	Stack-Folding	Stack-Folding
AIR SYSTEM	Hydraulic drive Horsepower Required: 4.5—10.4 kW (6—14 hp)	Hydraulic drive Horsepower Required: 4.5—10.4 kW (6—14 hp)	Hydraulic drive Horsepower Required: 4.5—10.4 kW (6—14 hp)
PLANTING UNIT TYPES	Vacuum	Vacuum	Vacuum
SEED OPENERS	Tru-Vee™ double disk	Tru-Vee™ double disk	Tru-Vee™ double disk
ROW SPACING	12-Row - 76/91 cm (30/36 in.)	16-Row - 76/91 cm (30/36 in.)	24-Row —76 cm (30 in.)
TYPE OF LIFT	Lift by hitch and fertilizer tank carrier wheels	Lift by hitch and fertilizer tank carrier wheels	Lift by hitch and fertilizer tank carrier wheels
TYPE OF DRIVE	Mechanical Transmission SeedStar™ Variable Rate Drive	Mechanical Transmission SeedStar™ Variable Rate Drive	Mechanical Transmission SeedStar™ Variable Rate Drive
TIRES	Frame Tire Size: 7.60 x 15-6 PR Rear Chassis Carrier Wheels Size: 480/80R50	Frame Tire Size: 7.60 x 15-6 PR Rear chassis carrier wheels: 480/80R50	Frame Tire Size: 7.60 x 15-6 PR Rear chassis carrier wheels: 480/80R50
SEED HOPPERS	1.6 bushels (58 L); 3.0 bushels (106 L)	1.6 bushels (58 L); 3.0 bushels (106 L)	1.6 bushels (58 L); 3.0 bushels (106 L)
MINIMUM TRACTOR SIZE REQUIRED	12 Row - 168 kW (225 hp)	16 Row - 250 kW (335 hp)	24 Row - 276 kW (370 hp)
HYDRAULIC OIL REQUIRED TO OPERATE PLANTER	60.5 L (16 gal/min)	68 L (18 gal/min)	75.7 L (20 gal/min)
TRACTOR STANDBY PRESSURE	15 513 kPa (2250 psi)	15 513 kPa (2250 psi)	17 237 kPa (2500 psi)
HYDRAULIC SYSTEM WORKING PRESSURE	20 684 kPa (3000 psi)	20 684 kPa (3000 psi)	20 684 kPa (3000 psi)
HYDRAULIC SYSTEM BURST PRESSURE	82 737 kPa (12 000 psi)	82 737 kPa (12000 psi)	82 737 kPa (12000 psi)
SEED MONITOR	SeedStar™ Monitor	SeedStar™ Monitor	SeedStar™ Monitor
Specifications and design subject to change without notice.			

NOTE: *Certain row unit attachments may increase transport width.*

RM87422,000044A -19-23MAR16-1/1

Dimensions

when moving or operating this machine near electric lines to avoid contact.

⚠ CAUTION: Serious injury or death can result from contact with electric lines. Use care

NOTE: *Certain row unit attachments may increase transport width.*

Transport Position (Folded)			
Number of Rows	Height	Width	Length (two-point)
12 Row - 30 in. Row Spacing	3.92 m (12.10 ft)	5.46 m (17.11 ft)	7.51 m (24.8 ft)
12 Row - 36 in. Row Spacing	4.23 m (13.11 ft)	6.13 m (20.10 ft)	7.51 m (24.8 ft)
16 Row	4.16 m (13.8 ft)	9.12 m (29.11 ft)	8.45 m (27.8 ft)
24 Row	4.54 m (14.11 ft)	7.01 m (23 ft)	8.45 m (27.8 ft)
Field Position (Unfolded)			
Number of Rows	Height	Width	Length (two-point)
12 Row - 30 in. Row Spacing	3.27 m (10.9 ft)	9.26 m (30.5 ft)	7.51 m (24.8 ft)
12 Row - 36 in. Row Spacing	3.27 m (10.9 ft)	10.80 m (35.5 ft)	7.51 m (24.8 ft)
16 Row	3.28 m (10.9 ft)	14.16 m (46.5 ft)	8.45 m (27.8 ft)
24 Row	3.28 m (10.9 ft)	17.92 m (58.10 ft)	8.45 m (27.8 ft)

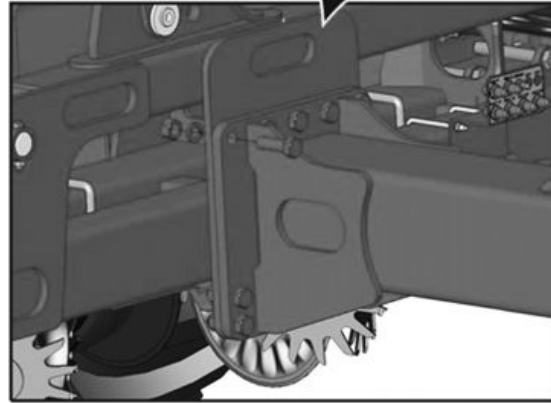
RM87422,0000486 -19-23MAR16-1/1

Record Serial Number

The serial number (A) is located on the main frame. Record in the spaces provided.

Machine	
Serial Number	

A—Serial Number



PY24848—UN—09FEB16

RM87422,0000416 -19-09FEB16-1/1

Tractor Hydraulic System Requirements

Operation of the hydraulically driven motors requires tractor to have either a load sensing hydraulic system or a closed center hydraulic system with flow control. These types of hydraulic systems usually have and do the following:

- Large oil reservoirs.
- Increased oil cooling capacity.
- Consistently deliver oil flow to maintain CCS blower speed at the selected RPMs without surging.

Tractors with open center hydraulic systems are not recommended for the following reasons:

- No means to control volume of oil flow.
- Excessive oil temperature.
- Decreased oil flow to blower motor during operation of other tractor control valves.

- Reduced oil flow to tractor power steering.

IMPORTANT: In addition to these requirements, tractor **MUST** be equipped with a low-pressure drain line connection for the blower motor case drain.

Sump pressure **MUST** be less than 172 kPa (1.72 bar) (25 psi), or blower motor damage occurs.

See your John Deere dealer for installation of a Low-Pressure Drain Line Kit, when tractor is not equipped.

NOTE: See Recommended Tractors and Tractor Hydraulic Compatibility for further information.

Make sure tractor hydraulic system meets all requirements.

OUO6435,0001F91 -19-18FEB16-1/1

Keep Proof of Ownership

1. Maintain in a secure location an up-to-date inventory of all product and component serial numbers.
2. Regularly verify that identification plates have not been removed. Report any evidence of tampering to law enforcement agencies and order duplicate plates.
3. Other steps you can take:
 - Mark your machine with your own numbering system
 - Take color photographs from several angles of each machine

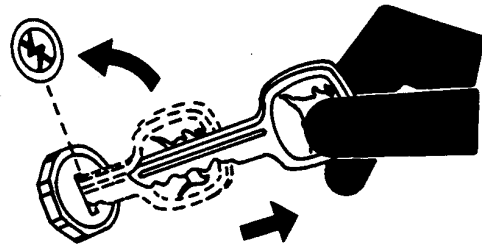


PY24869 —UN—18FEB16

RM87422.0000432 -19-18FEB16-1/1

Keep Machines Secure

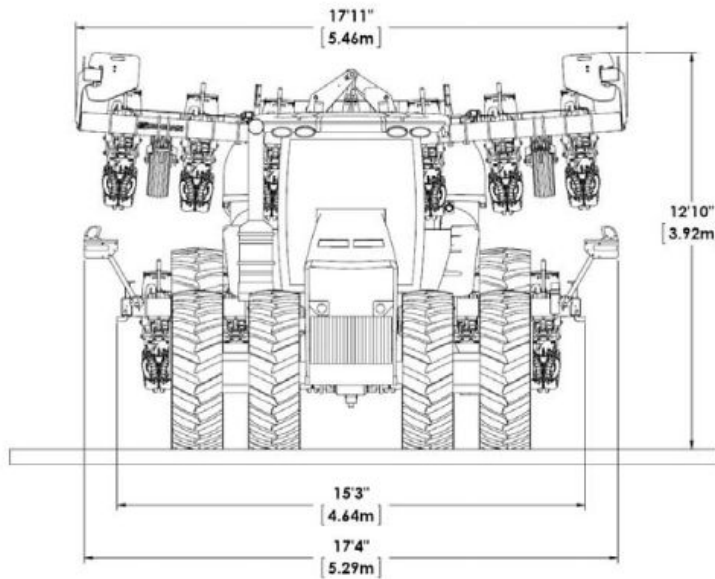
1. Install vandal-proof devices.
2. When machine is in storage:
 - Lower equipment to the ground
 - Set wheels to widest position to make loading more difficult
 - Remove any keys and batteries
3. When parking indoors, put large equipment in front of exits and lock your storage buildings.
4. When parking outdoors, store in a well-lighted and fenced area.
5. Make note of suspicious activity and report any thefts immediately to law enforcement agencies.
6. Notify your John Deere dealer of any losses.



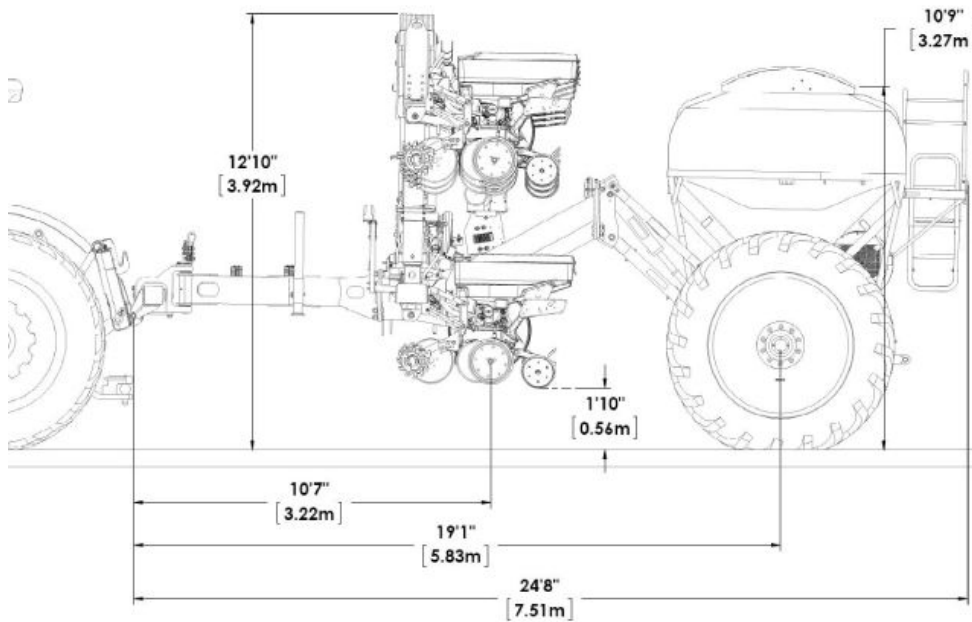
TS230 —UN—24MAY89

DX,SECURE2 -19-18NOV03-1/1

Machine Dimensions - Transport Position - 30" and 36" - 12R



30 Inch Row Spacing



30 Inch Row Spacing

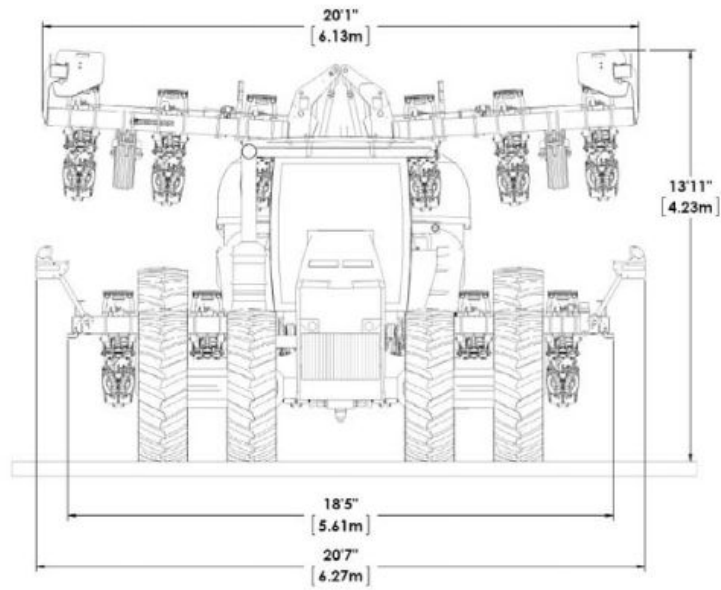
PY24805 —UN—08FEB16

PY24806 —UN—08FEB16

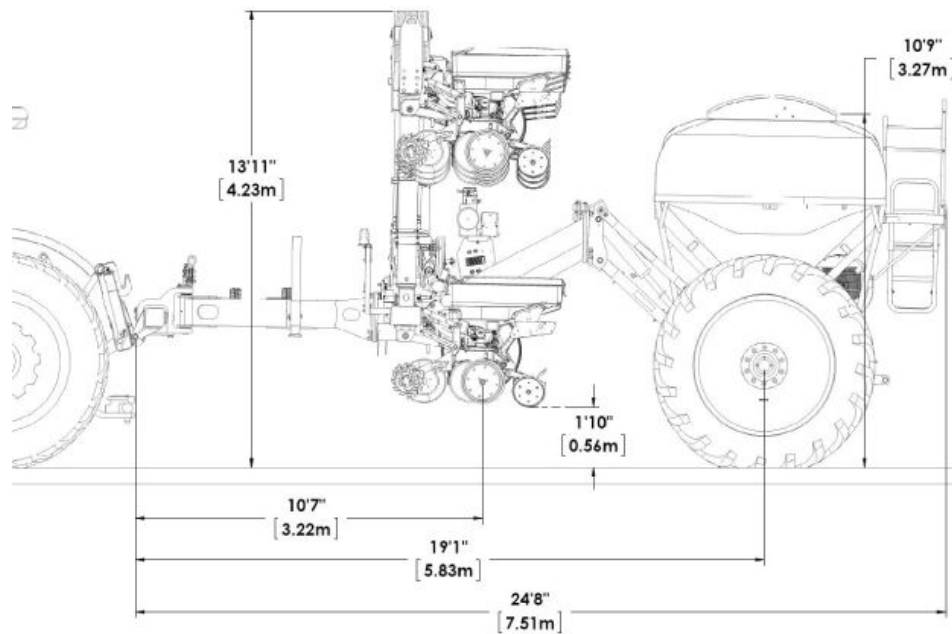
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RM87422.0000419 -19-10FEB16-1/2

Specifications



36 Inch Row Spacing



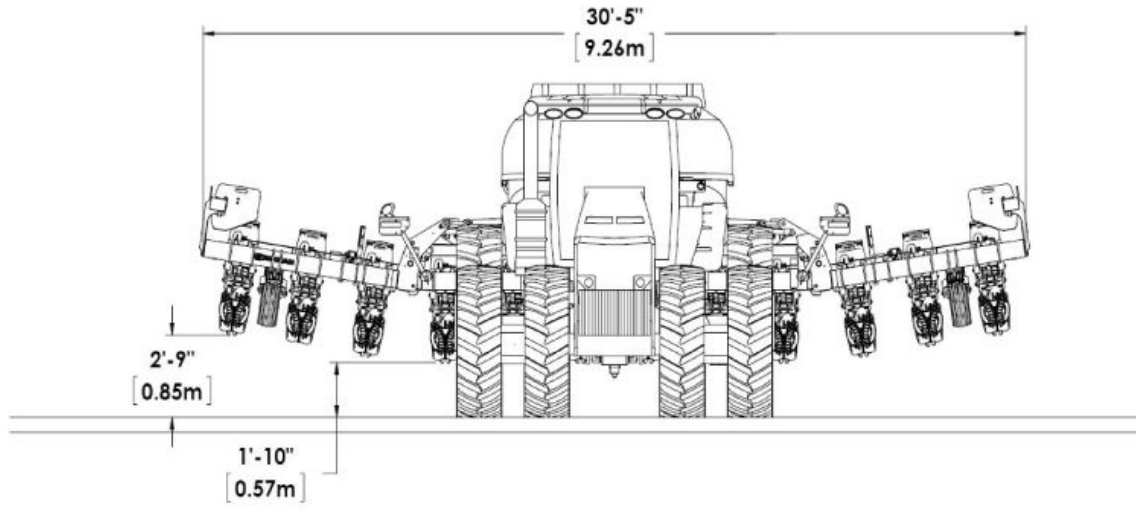
36 Inch Row Spacing

RM87422.0000419 -19-10FEB16-2/2

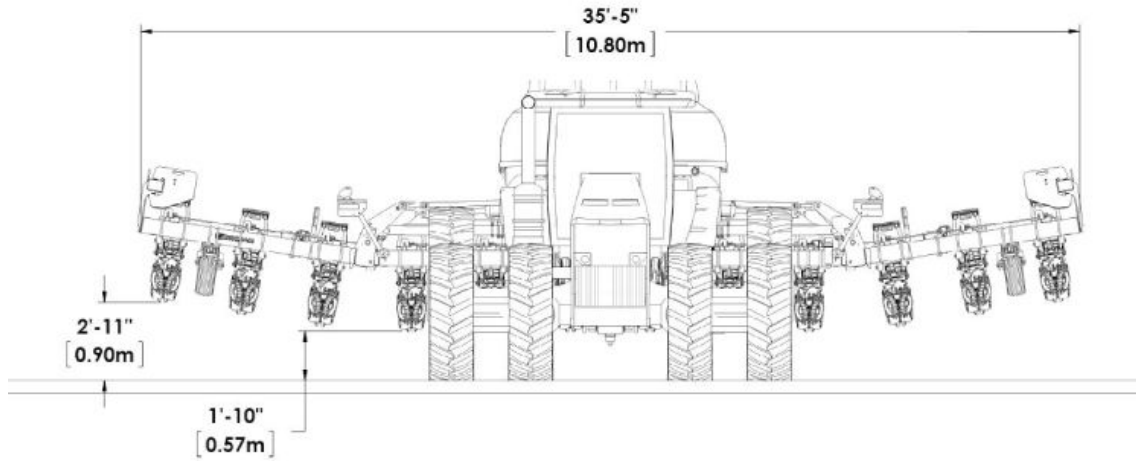
PY24807 —UN—08FEB16

PY24808 —UN—08FEB16

Machine Dimensions - Field Position - 30" and 36" - 12R



30 Inch Row Spacing



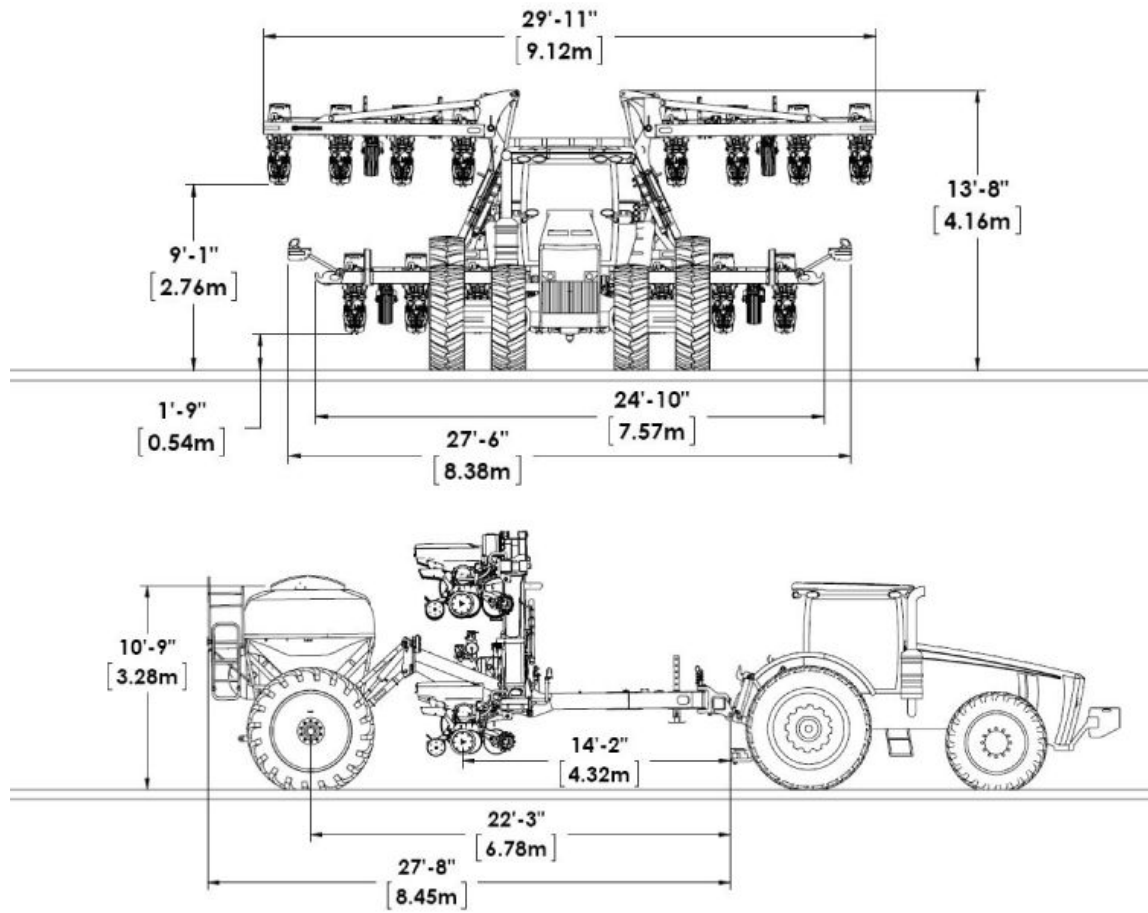
36 Inch Row Spacing

PY24808—UN—08FEB16

PY24810—UN—08FEB16

RM87422,000041A -19-10FEB16-1/1

Machine Dimensions - Transport Position - 16R

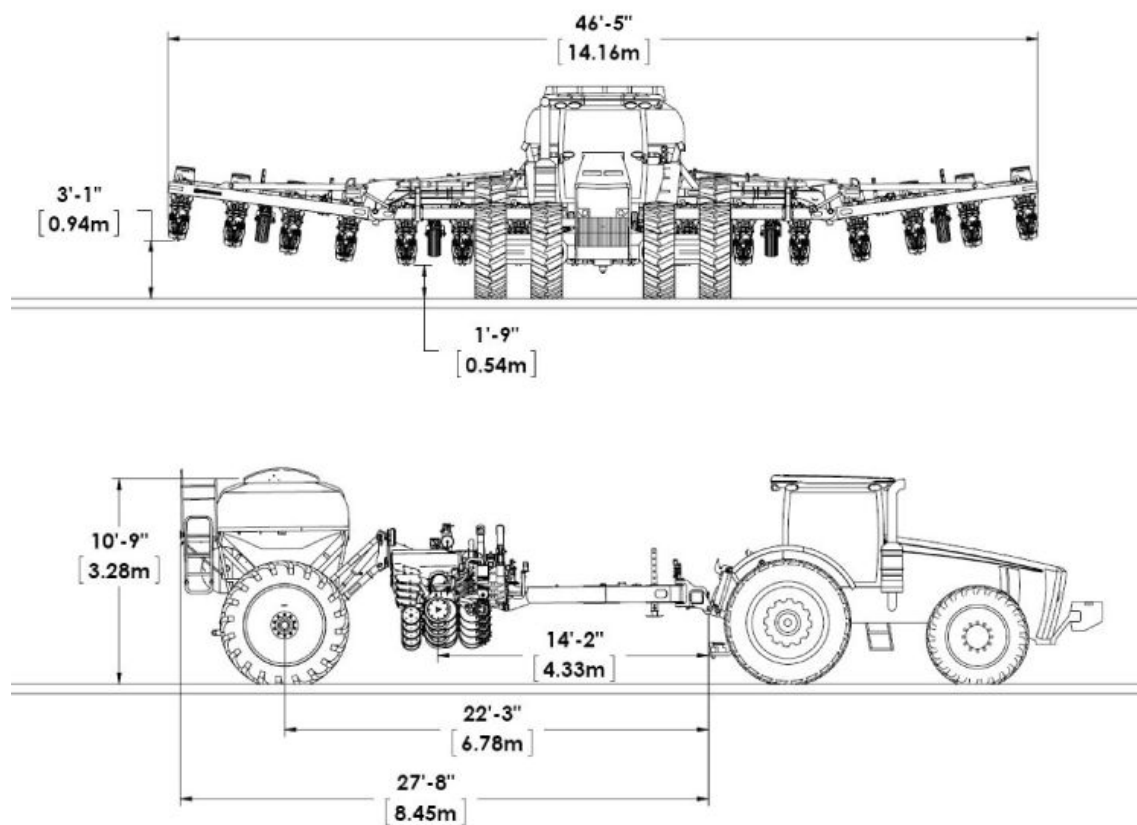


PY24842 —UN—10MAR16

PY24843 —UN—10MAR16

RM87422.000041B -19-10FEB16-1/1

Machine Dimensions - Field Position - 16R

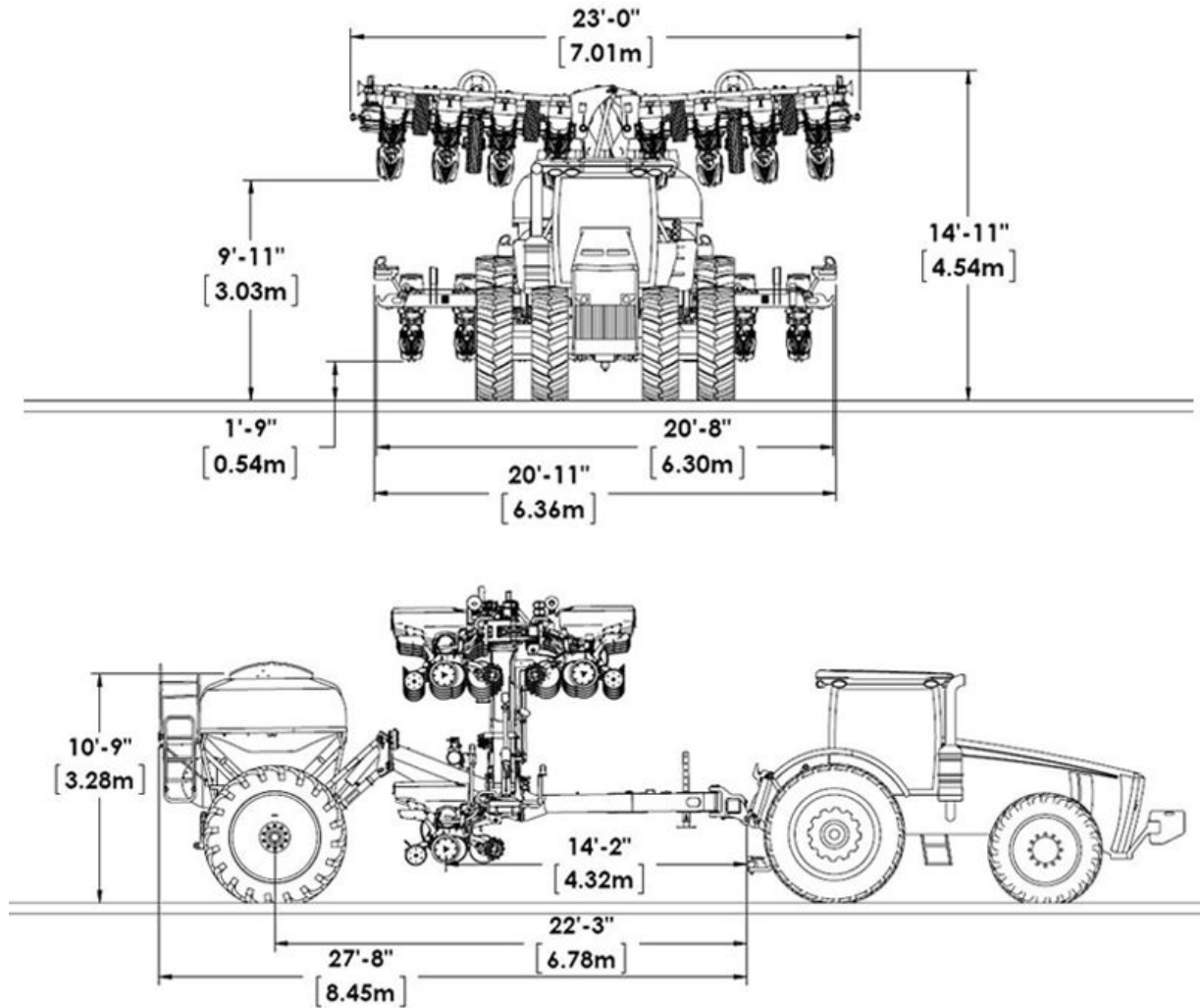


PY24844—UN—10MAR16

PY24845—UN—10MAR16

RM87422,000041C -19-10FEB16-1/1

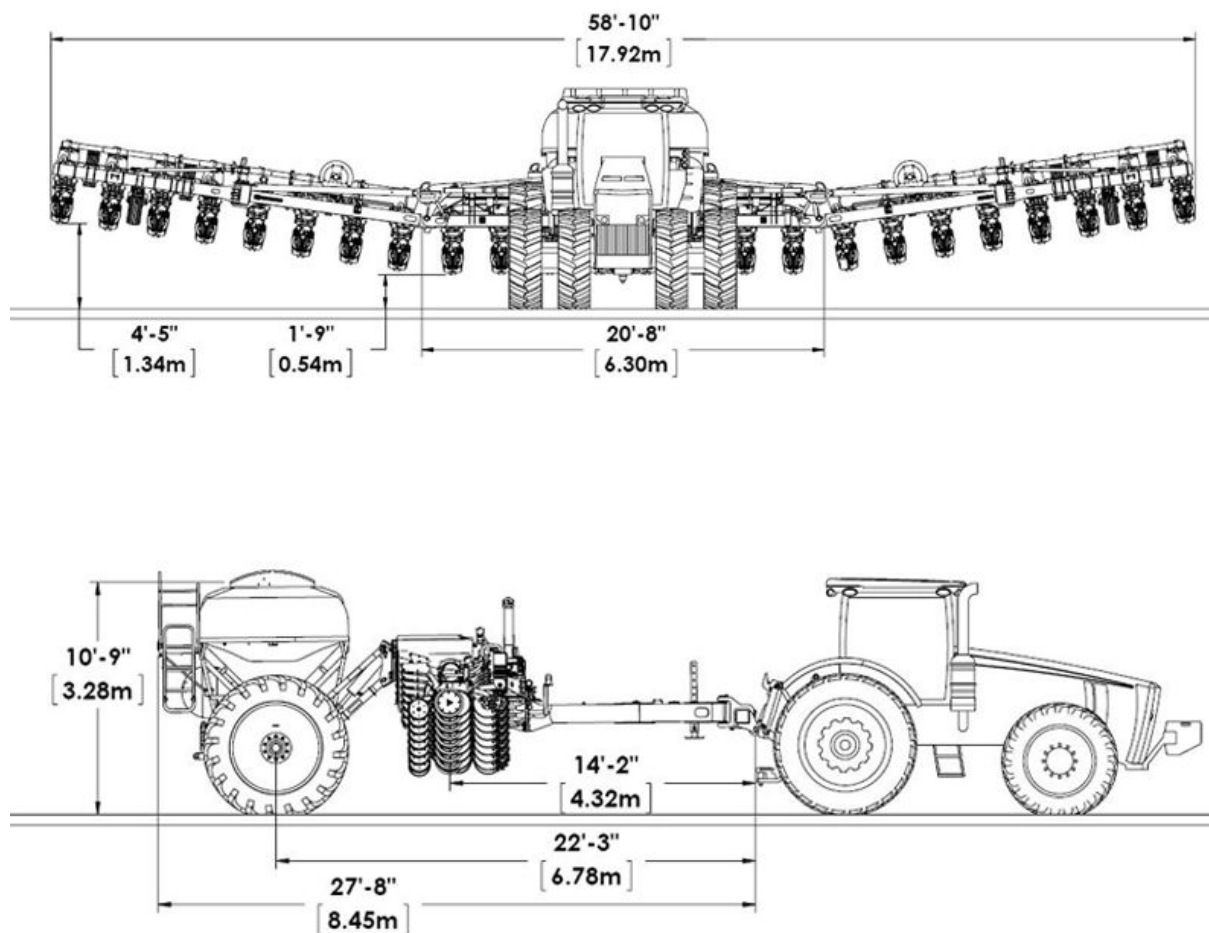
Machine Dimensions - Transport Position - 24R



RM87422,0000483 -19-08MAR16-1/1

PY24907 -UN-10MAR16

Machine Dimensions - Field Position - 24R



PY24908 —UN—10MAR16

RM87422,0000485 -19-08MAR16-1/1

Specifications

Weights and Standards - 30" and 36 " - 12R

Wheel Load (total)	Field Position	Transport Position
Planter Empty	12714 lbs/ 5767 kg	12743 lbs/ 5781 kg
Fully Loaded	26074 lbs/ 11827 kg	26107 lbs/ 11842 kg
Hitch load		
Planter Empty	7232 lbs/ 3281 kg	7203 lbs/ 3268 kg
Fully Loaded	8002 lbs/ 3630 kg	7968 lbs/ 3615 kg
Tire Capacity (per tire at 64 psi/ 440 kPa)		
Transport (20 mph/ 32 kph)	-	13900 lbs/6305 kg
Field (6 mph/ 9.7 kph)	23630lbs/10719 kg	-

For 30 Inch Row Spacing

Wheel Load (total)	Field Position	Transport Position
Planter Empty	13193 lbs/ 5985 kg	13227 lbs/ 6000 kg
Fully Loaded	26539 lbs/ 12038 kg	26587 lbs/ 12060 kg
Hitch load		
Planter Empty	7394 lbs/ 3354 kg	7360 lbs/ 3339 kg
Fully Loaded	8177 lbs/ 3709 kg	8130 lbs/ 3688 kg
Tire Capacity (per tire at 64 psi/ 440 kPa)		
Transport (20 mph/ 32 kph)	-	13900 lbs/6305 kg
Field (6 mph/ 9.7 kph)	23630lbs/10719 kg	-

For 36 Inch Row Spacing

RM87422,000041D -19-12FEB16-1/1

Weights and Standards - 30" and 36 " - 16R

Wheel Load (total)	Field Position	Transport Position
Planter Empty	14808 lbs/ 6716 kg	14808 lbs/ 6716 kg
Fully Loaded	28644 lbs/ 12992 kg	28644 lbs/ 12992 kg
Hitch load		
Planter Empty	8524 lbs/ 3866 kg	8524 lbs/ 3866 kg
Fully Loaded	12288 lbs/ 5573 kg	12288 lbs/ 5573 kg
Tire Capacity (per tire at 64 psi/ 440 kPa)		
Transport (20 mph/ 32 kph)	-	13900 lbs/ 6305 kg
Field (6 mph/ 9.7 kph)	23630 lbs/ 10719 kg	-

For 30 Inch Row Spacing

Wheel Load (total)	Field Position	Transport Position
Planter Empty	17313 lbs/ 7853 kg	17498 lbs/ 7936 kg
Fully Loaded	31436 lbs/ 14259 kg	31462 lbs/ 14270 kg
Hitch load		
Planter Empty	9559 lbs/ 4335 kg	9374 lbs/ 4251 kg
Fully Loaded	10275 lbs/ 4660 kg	10249 lbs/ 4730 kg
Tire Capacity (per tire at 64 psi/ 440 kPa)		
Transport (20 mph/ 32 kph)	-	13900 lbs/ 6305 kg
Field (6 mph/ 9.7 kph)	23630 lbs/ 10719 kg	-

For 36 Inch Row Spacing

RM87422,00004A7 -19-29MAR16-1/1

Specifications

Weights and Standards - 24R

Wheel Load (total)	Field Position	Transport Position
Planter Empty	20395 lbs/ 9252 kg	19213 lbs/ 8714 kg
Fully Loaded	35301 lbs/ 16013 kg	33634 lbs/ 15257 kg
Hitch load		
Planter Empty	11632 lbs/ 5277 kg	12814 lbs/ 5813 kg
Fully Loaded	12986 lbs/ 5891 kg	14653 lbs/ 6647 kg
Tire Capacity (per tire at 64 psi/ 440 kPa)		
Transport (20 mph/ 32 kph)	-	13900 lbs/ 6305 kg
Field (6 mph/ 9.7 kph)	23630 lbs/ 10719 kg	-

RM87422,0000488 -19-10MAR16-1/1

Tractor Requirements and Settings - 12R

Tractor Requirements and Settings	
Requirements	
Horsepower	Minimum 225 hp (168 kw) with MFWD
Ballast	Full Front Weight - Limit Rear (See tractor Operator's Manual)
Wheels	Rear Duals Installed
Hydraulics	3000 psi (20684 kpa) working / 2250 psi (15513 kpa) minimum - capacity = Minimum 2 US gal / 7.5 L.
Settings	
Drawbar	Offset down or removed
Sway Blocks	See tractor Operator's Manual
Three Point Draft Links	See tractor Operator's Manual
Three Point Center Link	If using Quick Coupler, adjust to minimum length / If not using Quick Coupler, remove

RM87422,00003F8 -19-10MAR16-1/1

Tractor Requirements and Settings - 16R

Tractor Requirements and Settings	
Requirements	
Horsepower	Minimum 335 hp (250 kw) with MFWD
Ballast	Full Front Weight - Limit Rear (See tractor Operator's Manual)
Wheels	Rear Duals Installed
Hydraulics	3000 psi (20684 kpa) working / 2250 psi (15513 kpa) minimum - capacity = Minimum 2 US gal / 7.5 L.
Settings	
Drawbar	Offset down or removed
Sway Blocks	See tractor Operator's Manual
Three Point Draft Links	See tractor Operator's Manual
Three Point Center Link	Remove from tractor

RM87422,000048F -19-10MAR16-1/1

Tractor Requirements and Settings - 24R

Tractor Requirements and Settings	
Requirements	
Horsepower	Minimum 370 hp (276 kw) with MFWD
Ballast	Full Front Weight - Limit Rear (See tractor Operator's Manual)
Wheels	Rear Duals Installed
Hydraulics	3000 psi (20684 kpa) working / 2250 psi (15513 kpa) minimum - capacity = Minimum 2 US gal / 7.5 L.
Settings	
Drawbar	Offset down or removed
Sway Blocks	See tractor Operator's Manual
Three Point Draft Links	See tractor Operator's Manual
Three Point Center Link	Remove from tractor

RM87422,000048E -19-10MAR16-1/1

Hydraulic Connection Recommendation - 12R/16R/24R

Hydraulic Connection Recommendation			
Tractor SCV	SCV Port	Hose Identification	Function
I	Left	LAW P	Raise Machine
	Right	LAW R	Lower Machine
II	Left	Unfold	Unfold Wings
	Right	Fold	Fold Wings
III	Left	Plater Component Function (CCS, VAC, or FERT)	
	Right		
IV	Left	Plater Component Function (CCS, VAC, or FERT)	
	Right		
V	Left	Plater Component Function (CCS, VAC, or FERT)	
	Right		
Power Beyond	-	Plater Component Function (VRD)	
Case Drain	-	Required CCS, VAC, and VRD	

NOTE: It is not recommended to connect the machine lift hoses in parallel with the hitch hydraulic cylinders as this will cause issues with hitch and machine lift function.

NOTE: For two or more vacuum motors connected to a single tractor SCV, an external planter flow control valve must be used to control vacuum level.

RM87422,000048A -19-08MAR16-1/1

Fertilizer Output Capacity - 12R/16R

Fertilizer Output Capacity	
Maximum Rated Capacity	Minimum Rated Capacity
800 lbs/acre (kg/ha) at 5 mph (8.1 kph)	100 lbs/acre (kg/ha) at 5 mph (8.1 kph)

RM87422,000041E -19-10FEB16-1/1

Fertilizer Output Capacity - 24R

Fertilizer Output Capacity	
Maximum Rated Capacity	Minimum Rated Capacity
500 lbs/acre (kg/ha) at 5 mph (8.1 kph)	100 lbs/acre (kg/ha) at 5 mph (8.1 kph)

RM87422,000048B -19-08MAR16-1/1

Specifications

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John Deere Service Literature

Technical Information

Technical information can be purchased from John Deere. Some of this information is available in electronic media, such as CD-ROM disks, and in printed form. There are many ways to order. Contact your John Deere dealer. Call **1-800-522-7448** to order using a credit card. Search online from <http://www.JohnDeere.com>. Please have available the model number, serial number, and name of the product.

Available information includes:

- **PARTS CATALOGS** list service parts available for your machine with exploded view illustrations to help you identify the correct parts. It is also useful in assembling and disassembling.
- **OPERATOR'S MANUALS** providing safety, operating, maintenance, and service information. These manuals and safety signs on your machine may also be available in other languages.
- **OPERATOR'S VIDEO TAPES** showing highlights of safety, operating, maintenance, and service information. These tapes may be available in multiple languages and formats.
- **TECHNICAL MANUALS** outlining service information for your machine. Included are specifications, illustrated assembly and disassembly procedures, hydraulic oil flow diagrams, and wiring diagrams. Some products have separate manuals for repair and diagnostic information. Some components, such as engines, are available in separate component technical manuals
- **FUNDAMENTAL MANUALS** detailing basic information regardless of manufacturer:
 - Agricultural Primer series covers technology in farming and ranching, featuring subjects like computers, the Internet, and precision farming.
 - Farm Business Management series examines "real-world" problems and offers practical solutions in the areas of marketing, financing, equipment selection, and compliance.
 - Fundamentals of Services manuals show you how to repair and maintain off-road equipment.
 - Fundamentals of Machine Operation manuals explain machine capacities and adjustments, how to improve machine performance, and how to eliminate unnecessary field operations.



TS189 —UN—17JAN89



TS191 —UN—02DEC88



TS224 —UN—17JAN89



TS1663 —UN—10OCT97

DX,SERVIT -19-31JUL03-1/1

John Deere Service Keeps You on the Job

John Deere Is At Your Service

CUSTOMER SATISFACTION is important to John Deere.

Our dealers strive to provide you with prompt, efficient parts and service:

- Maintenance and service parts to support your equipment.
- Trained service technicians and the necessary diagnostic and repair tools to service your equipment.



TS201 —UN—15APR13

CUSTOMER SATISFACTION PROBLEM RESOLUTION PROCESS

Your John Deere dealer is dedicated to supporting your equipment and resolving any problem you may experience.

1. When contacting your dealer, be prepared with the following information:

- Machine model and product identification number
- Date of purchase
- Nature of problem

2. Discuss problem with dealer service manager.

3. If unable to resolve, explain problem to dealership manager and request assistance.

4. If you have a persistent problem your dealership is unable to resolve, ask your dealer to contact John Deere for assistance. Or contact the Ag Customer Assistance Center at 1-866-99DEERE (866-993-3373) or e-mail us at www.deere.com/en_US/ag/contactus/.

DX,IBC,2 -19-02APR02-1/1

