

1720CCS 12X2 Twin Row Planter (S.N. 750101-)



OPERATOR'S MANUAL 1720CCS 12X2 Twin Row Stack-Fold Integral Planter OMA94092 ISSUE E2 (ENGLISH)

CALIFORNIA Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

If this product contains a gasoline engine:

WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

The State of California requires the above two warnings.

Additional Proposition 65 Warnings can be found in this manual.

John Deere Seeding Group
North American Edition
LITHO IN U.S.A.



Introduction

Import Information

If specific import information is required, it appears on this page.

If page is blank, no import information is required.

OUC6045,0000033 -19-11JUL08-1/1

A62775 —19—08JUL08

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



1720 CCS 12X2 Twin Row Integral Planters

OUO6064,00004A5 -19-10MAY11-1/1

A71455 —UN—10MAY11

A Message to Our Customers

We appreciate the confidence placed in us by your purchase of this machine. Before this machine was brought to market, countless hours were spent designing and testing to ensure that its performance would be at the highest level. To achieve maximum performance, it is imperative this machine be 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 modules.

These modules are encased in boxes with principle modules identified with a heading at the top left side of the

box. Two-part page numbers identify both the section and page of that section.

By reviewing this manual often, one will quickly learn which section to go to for specific information. For instance, machine adjustments would be found in the Operating Machine section, lubrication intervals in the Lubrication section, opener maintenance in the Service and Adjustments section, and so on. A detailed Table of Contents is found immediately behind this page, and an Index is provided at the back of the manual.

Thanks again for purchasing this machine.

OUO6064,000006A -19-06APR10-1/1

ADDITIONAL INFORMATION REQUIRED

Optional Manuals

The following operator manuals are required when machine is equipped with these options. Some options are not available on every machine.

SEEDSTAR 2™ and SEEDSTAR XP™ Monitor Operator's Manual:

This manual is used when planter is equipped with SEEDSTAR™ seed monitor or variable rate drive.

OUO6064,0000446 -19-29MAR11-1/1

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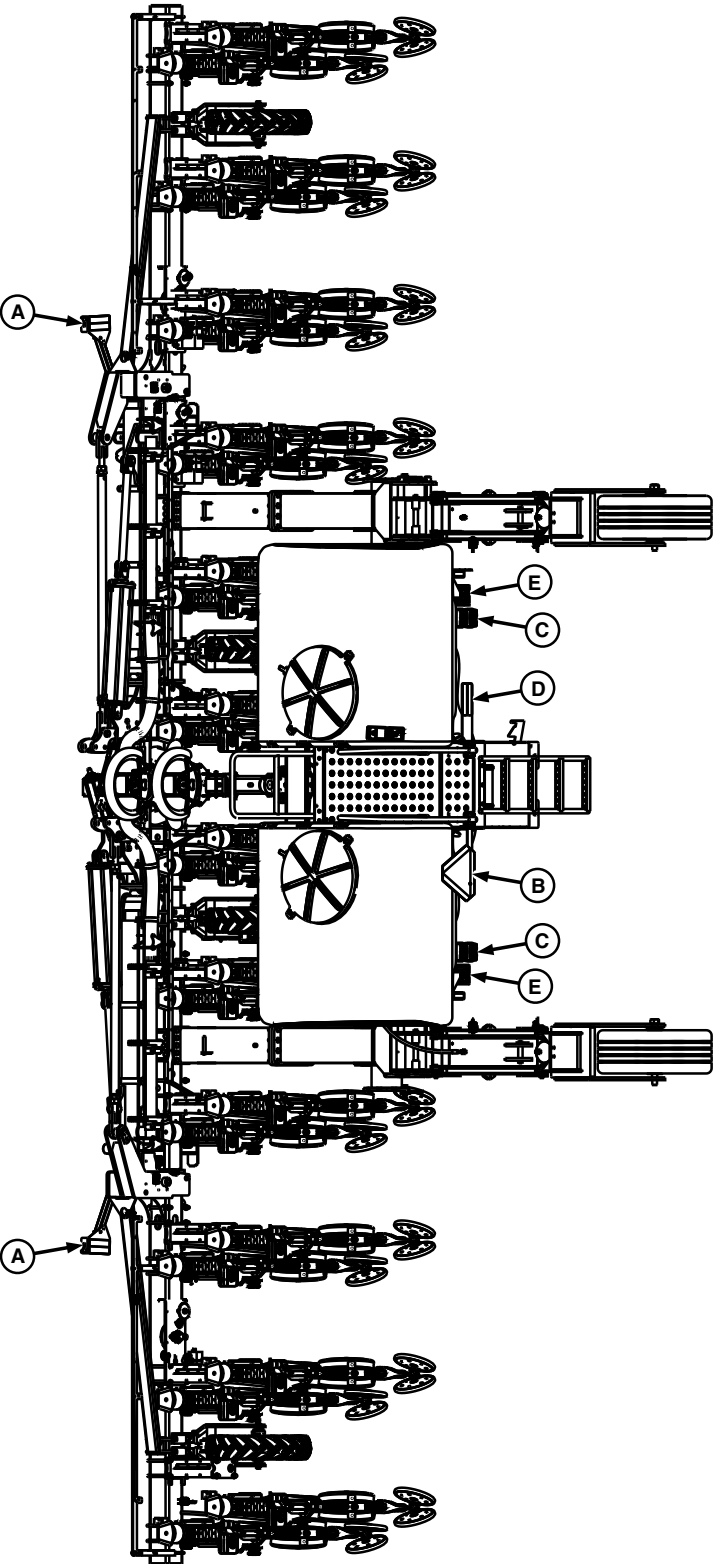
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Safety Features



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OUC6064.0000004 -19-12NOV10-1/2

A66472 —UN—10FEB10

A—Roadway Transport Lights C—Roadway Lights (Red)
B—Slow Moving Vehicle Emblem D—Reflectors

E—Roadway Lights (Amber)

1720CCS 12X2 TWIN ROW PLANTER: In addition to the safety features shown here, other components and systems, safety signs on the machine, and safety messages and instructions in the Operator's Manual contribute to the safe operation of this machine when combined with the care and concern of a capable operator.

The construction of this implement 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 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.

OUO6064,0000004 -19-12NOV10-2/2

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.



TS1389 — UN—07DEC88

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

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.



⚠ WARNING

⚠ CAUTION

TS187 — 19—30SEP88

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

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

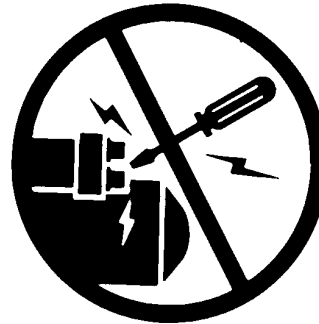
TS201 —UN—23AUG88

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.



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

TS177 —UN—11JAN89

Operate the Machine Safely

Be careful when operating machine to avoid injury.

If the machine must be in a raised position while working on or near it, be certain service locks are installed or machine is adequately supported.

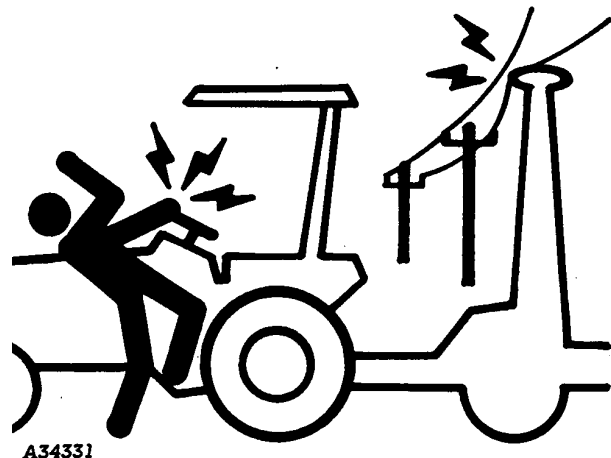
Serious injury or death can result from contact with electric lines. Use care when moving or operating this machine near electric lines to avoid contact.

Stand clear of machine when hydraulic components are being used. Mechanical or hydraulic failure can allow machine components to move rapidly.

Be sure cylinder and attaching hoses are fully charged with oil before operating system.

Be careful when operating system on hillsides; tractor can tip sideways if it strikes a hole, ditch or other irregularity.

Permit only one person, the operator, on tractor platform while tractor and machine are in operation.



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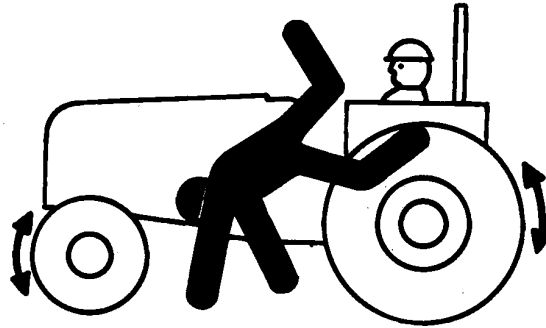
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A34331 —UN—13OCT88

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 Tip-Overs

Use a seat belt when present.

Avoid holes, ditches, and obstructions which may cause the machine to tip, especially on hillsides.

Never drive near the edge of a ditch, creek, gully or steep embankment.

Slow down when turning or traveling over rough ground, and when turning on hillsides.



N39084 —UN—30MAR89

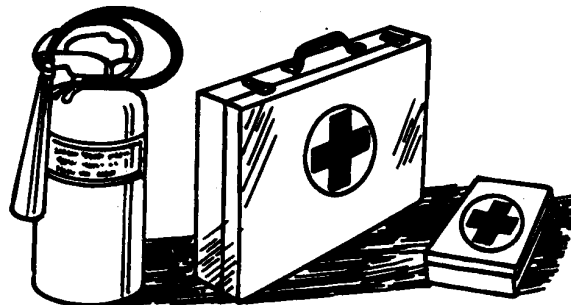
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Prepare for Emergencies

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—23AUG88

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

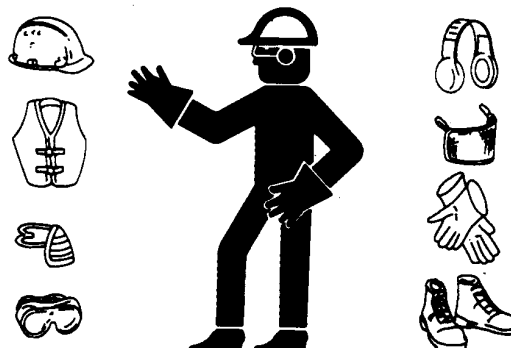
Wear Protective Clothing

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—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.

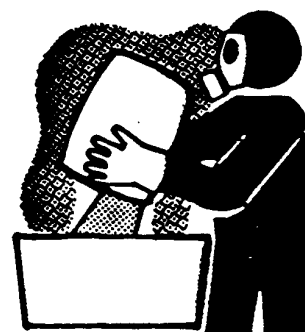
Always follow all label directions for effective, safe, and legal use of agricultural chemicals.

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

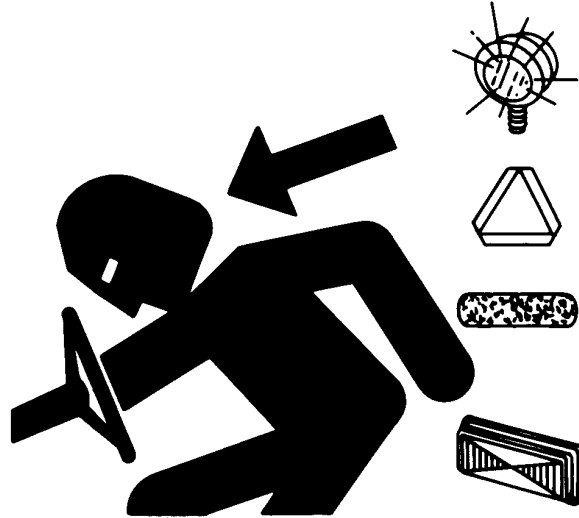
TS220 —UN—23AUG88

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.



TS951—UN—12APR90

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

Transport Safely

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

Always raise parking stand before transporting.

Tractor brakes must be latched together.

Attach a properly sized safety chain between machine and any towed load.

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

Always travel at a reasonable and safe speed. Never exceed 24 km/h (15 mph).

Never transport machine when more than half full.

Never exceed 13 600 kg (30 000 lb.) of towed weight behind machine while in field.

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

Keep reflective material and SMV emblem clean and visible on implement and any towed load.

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

Everyone must be clear of machine.

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

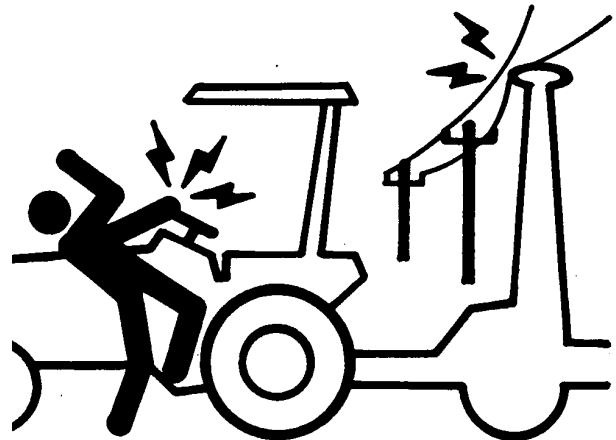
If tractor has ROLL-GARD™ Safety Canopy, keep seatbelt fastened when transporting.

Know transport height and width of machine.

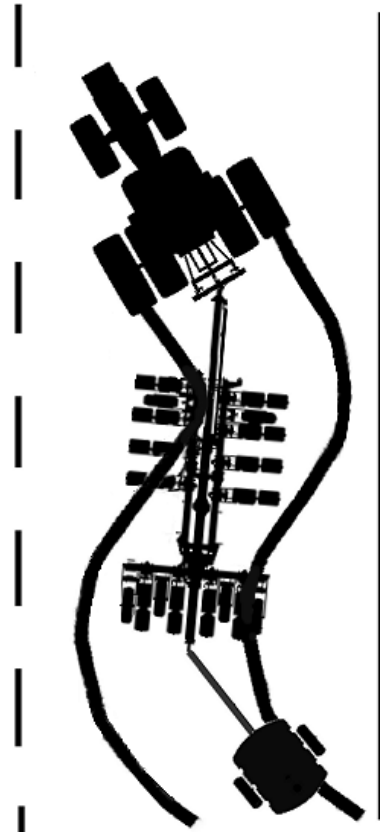
Keep marker arms away from overhead power lines. Serious injury or death can result. Proceed cautiously under overhead power lines and around utility poles. Know the transport height of machine.

This implement does 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 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.

ROLL-GARD is a trademark of Deere & Company



A34331



A34331 —UN—13OCT88

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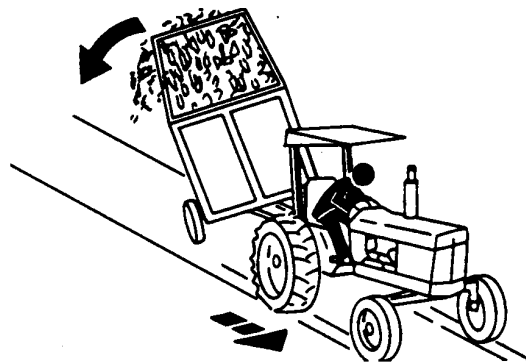
Tow Loads Safely

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 24 km/h (15 mph) and do not tow loads more than 1.5 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.

OUO6064,00002CB -19-13OCT10-1/1

TS216 —UN—23AUG88

Observe Maximum Transport Speed

The maximum transport speed for this implement is 24 km/h (15 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.

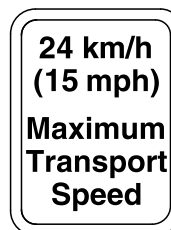
Exceeding the implement's maximum transport speed can result in:

- 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.



OUO6064,000007A -19-08APR10-1/1

A65027 —UN—17JUL09

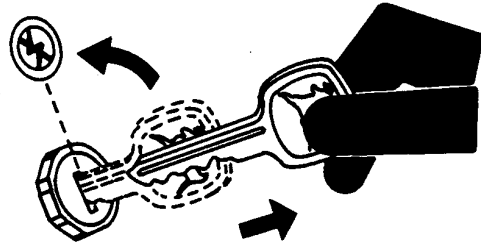
Service Machine Safely

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

If the machine must be in a raised position while working on or near it, be certain service locks are installed or machine is adequately supported.

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.



OM63945A,05F -19-22OCT03-1/1

TS230 —UN—24MAY89

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.



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

TS218 —UN—23AUG88

Remove Paint Before Welding or Heating

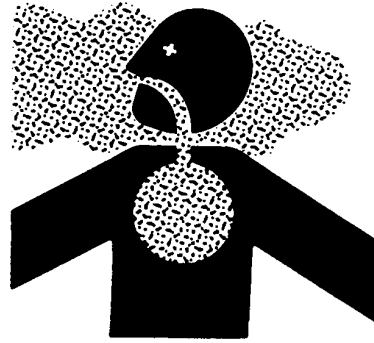
Avoid potentially toxic fumes and dust.

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—23AUG88

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.

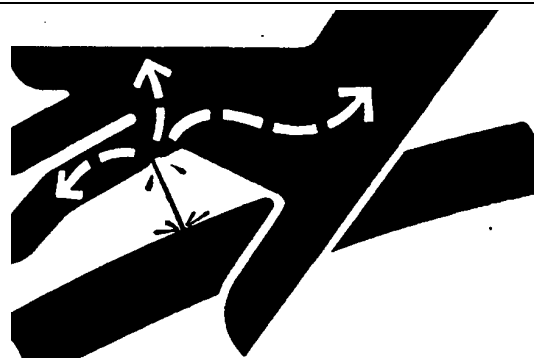
Replace worn or damaged hose assemblies immediately with John Deere approved replacement parts.

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

Store Attachments Safely

Stored attachments such as dual wheels, cage wheels, and loaders can fall and cause serious injury or death.

Securely store attachments and implements to prevent falling. Keep playing children and bystanders away from storage area.



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

TS219 —UN—23AUG88

Dispose of Waste Properly

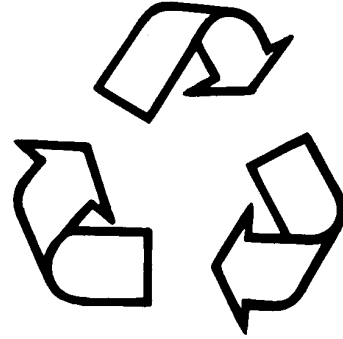
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.



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

TS1133 —UN—26NOV90

Safety Signs

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.



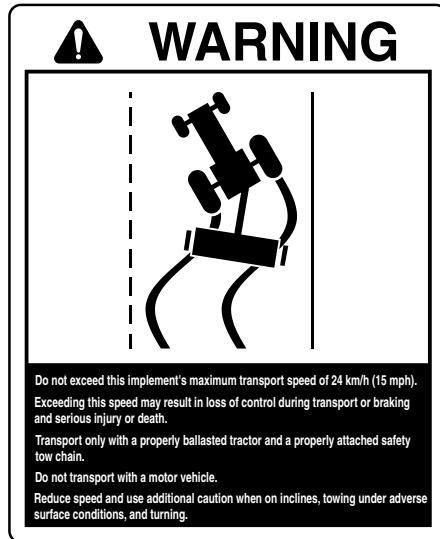
TS201—UN—23AUG88

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

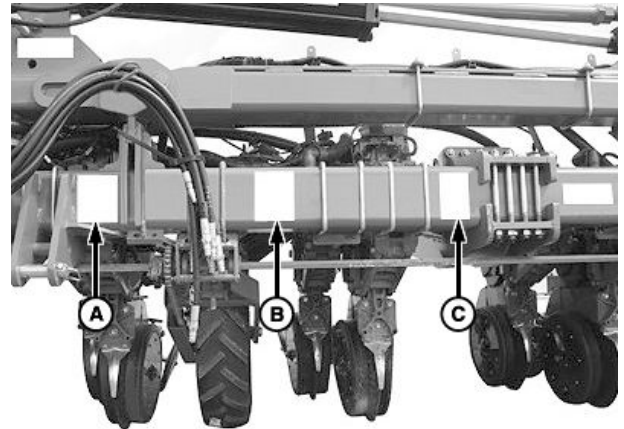
Safety Signs



C—Warning



A—Warning



SSA62253 —19—30MAR07

A86770 —UN—22MAR10



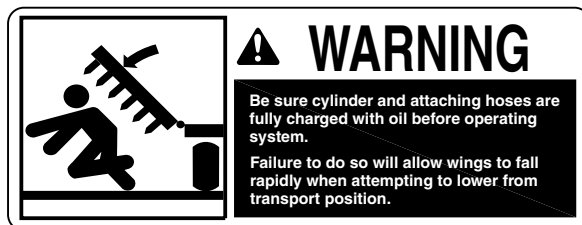
B—Warning

SSA89183 —19—10MAY12

SSA83699 —19—16JAN07

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OUC0604,0000447 -19-10MAY12-1/7

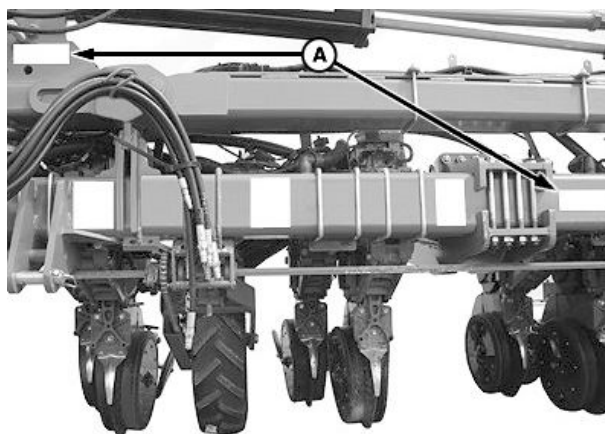


A—Warning



Right Side of Machine

A68924 —UN—30SEP10



Left Side of Machine

A66752 —UN—22MAR10

SSA72516 —19—18MAR05

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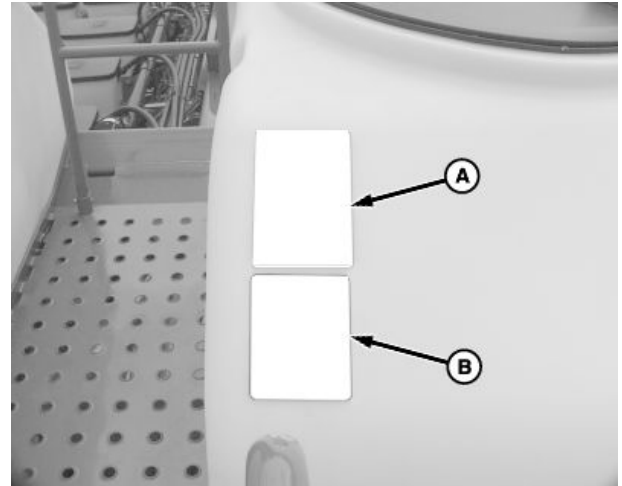
OOU6064,0000447 -19-10MAY12-2/7



A—Warning



B—Warning



CCS Tank

SSA91843 —19—25MAR11

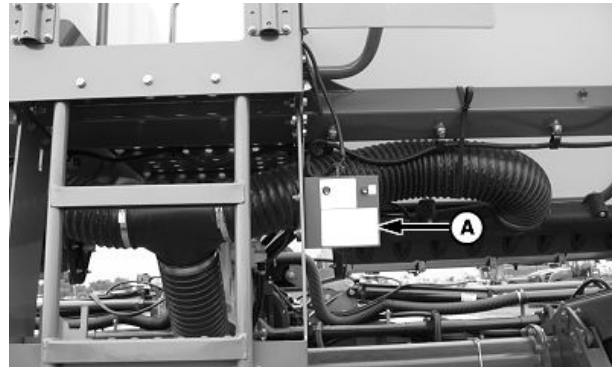
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OUC6064,0000447 -19-10MAY12-3/7



A—Warning

SSA81341 —19—30MAR06



CCS Frame

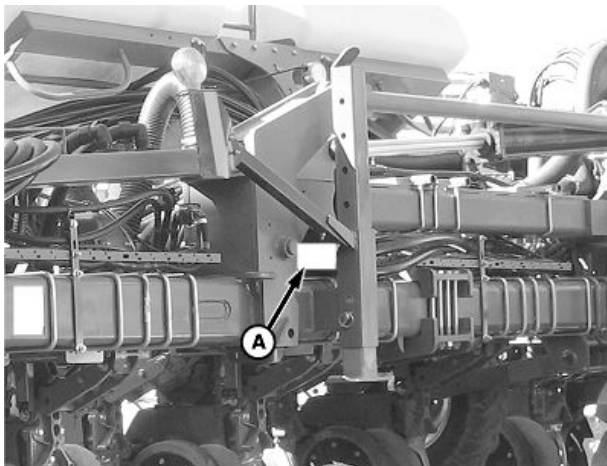
A63335 —UN—01OCT08

OOU6064,0000447 -19-10MAY12-4/7



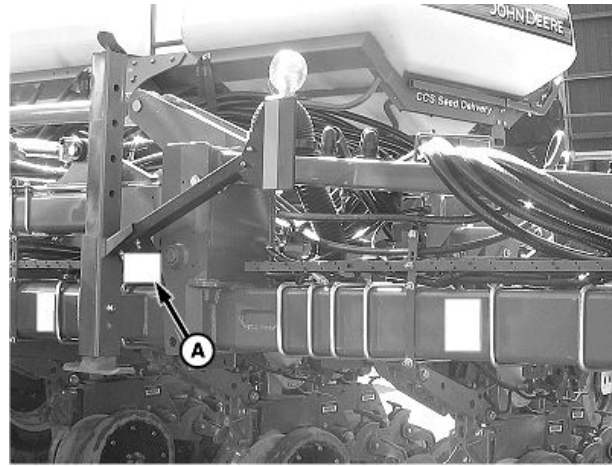
A—Danger

SSA54038 —19—03DEC08



Right-Hand Side Shown

A68928 —UN—30SEP10

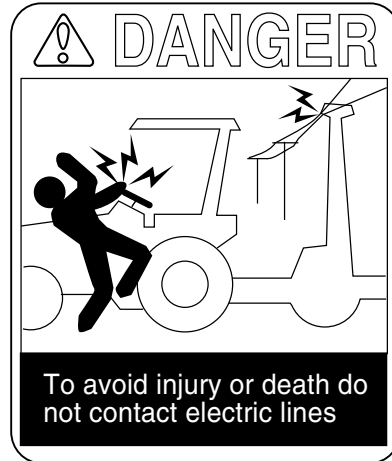


Left-Hand Side Shown

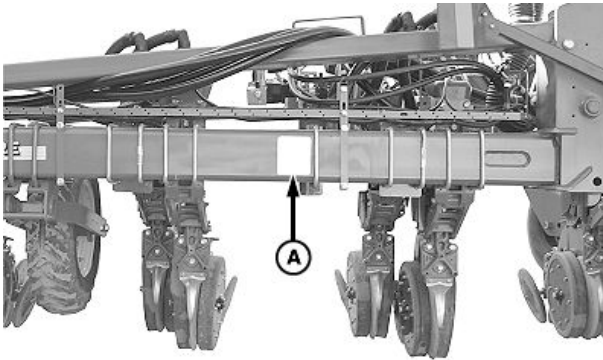
A68929 —UN—30SEP10

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OOU6064,0000447 -19-10MAY12-5/7

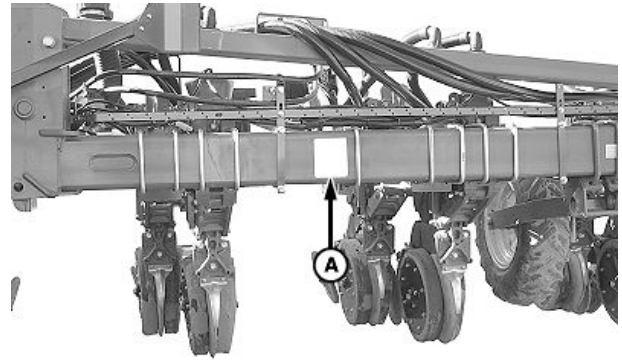


A—Danger



Right-Hand Wing

A68926—UN—30SEP10



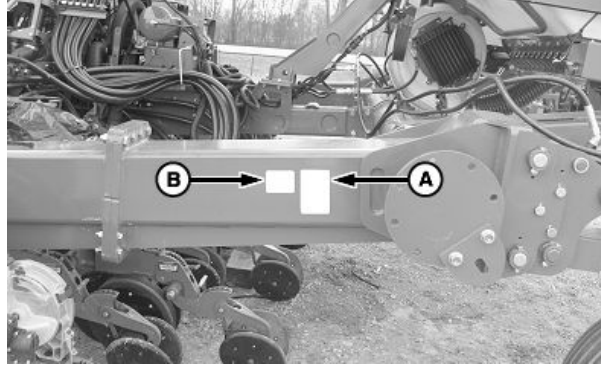
Left-Hand Wing

A68925—UN—30SEP10

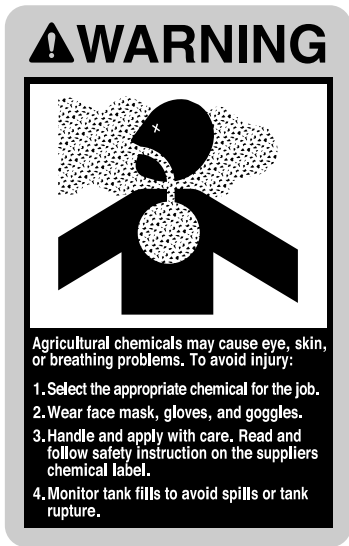
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OUC6064.0000447 -19-10MAY12-6/7

SSA54611—19—23MAY05



Lift Assist Wheel Arm



A—Warning



B—Caution

SSA77616 —19—30MAR06

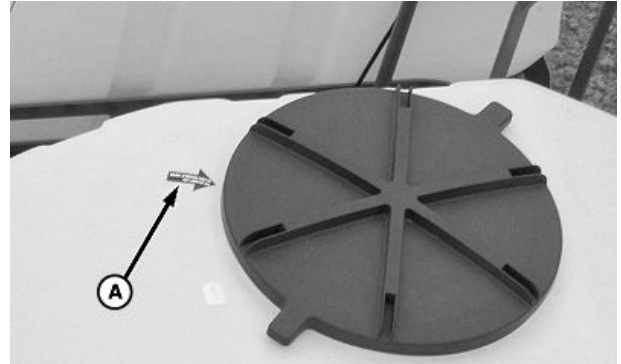
A66769 —UN—22MAR10

SSA53336 —19—08FEB07

OUC6064,0000447 -19-10MAY12-7/7

Information Signs

Information Signs



A72785—UN—31JAN12

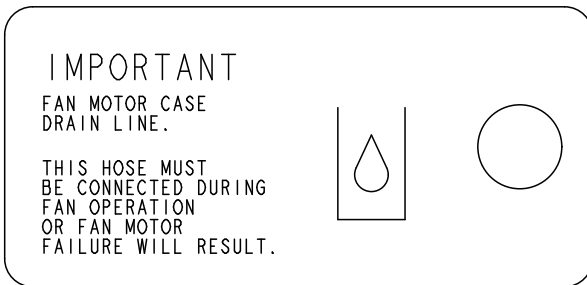
A74097—UN—26JAN12

A—Decal, Lid Index

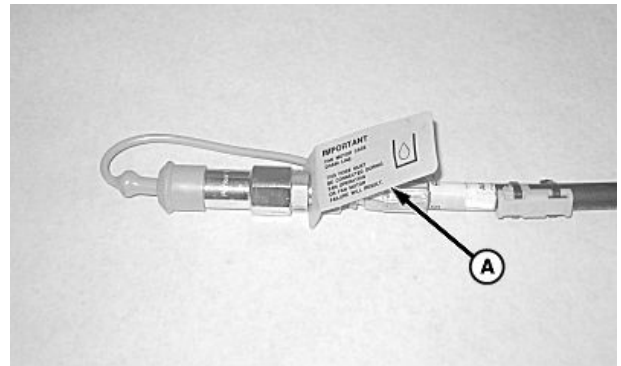
TO START LID ALIGN HANDLE HERE

(See OPERATING TANK LIDS in Central Commodity System section.)

OOU6064,0000539 -19-26JAN12-1/6



A71384—UN—06MAY11



A71439—UN—11MAY11

A—Decal, Case Drain

IMPORTANT

FAN MOTOR CASE DRAIN LINE.

THIS HOSE MUST BE CONNECTED DURING FAN OPERATING OR FAN MOTOR FAILURE WILL RESULT.

(See LOW PRESSURE CASE DRAIN CONNECTION in Prepare Tractor section.)

Continued on next page

OOU6064,0000539 -19-26JAN12-2/6

HYDRAULIC COUPLING INSTRUCTIONS

To connect couplers:

1. Lower planter and position tractor SCV to forward detent (continuous flow position)
2. Switch fan control switch to OFF position
3. Connect hydraulic couplers
4. Pull hydraulic valve knob to enable oil flow

To disconnect couplers:

1. Push hydraulic valve knob to disable oil flow
2. Disconnect hydraulic couplers
3. Turn fan control switch to ON position
4. Reposition tractor SCV to "Neutral" position

A72821—UN—31JAN12



A74099—UN—26JAN12

A—Decal, Hydraulic Coupling Instruction

TO CONNECT COUPLERS: 1. LOWER PLANTER AND POSITION TRACTOR SCV TO FORWARD DETENT (CONTINUOUS FLOW POSITION) 2. SWITCH FAN CONTROL SWITCH TO OFF POSITION 3. CONNECT HYDRAULIC COUPLERS 4. PULL HYDRAULIC VALVE KNOB TO ENABLE OIL FLOW

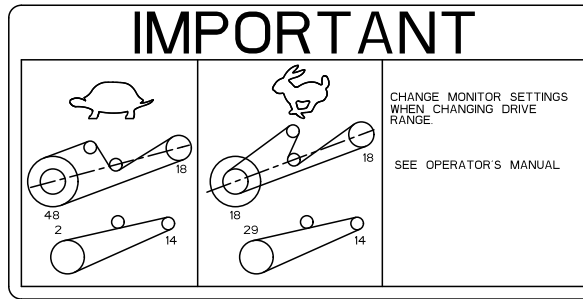
TO DISCONNECT COUPLERS: 1. PUSH HYDRAULIC VALVE KNOB TO DISABLE OIL FLOW 2. DISCONNECT

HYDRAULIC COUPLERS 3. TURN FAN CONTROL SWITCH TO ON POSITION 4. REPOSITION TRACTOR SCV TO "NEUTRAL" POSITION

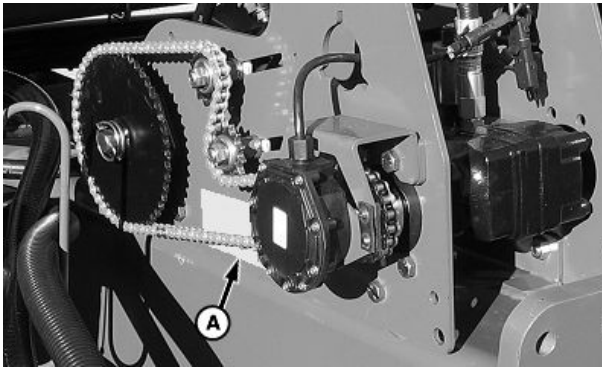
(See AUXILIARY HYDRAULIC ATTACHMENT OPERATION in General Attachments section.)

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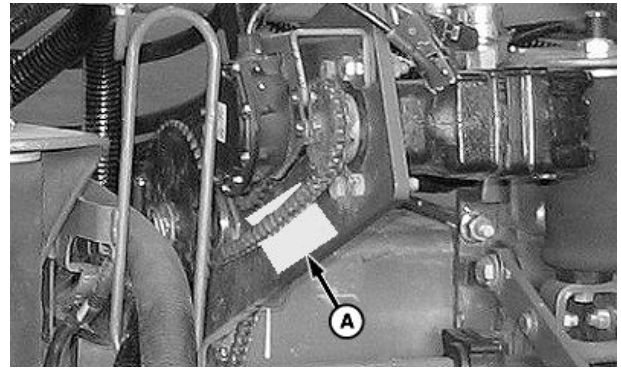
OUC6064,0000539 -19-26JAN12-3/6



A—Decal, Hi/Low Range



Center Frame VRD Motor



Wing VRD Motors

IMPORTANT

CHANGE MONITOR SETTINGS WHEN CHANGING DRIVE RANGE.

SEE OPERATOR'S MANUAL.

(See ADJUST HIGH-LOW DRIVE RANGE (VARIABLE RATE DRIVE MACHINES ONLY) in Service and Adjustments section.)

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OUC6064,0000539 -19-26JAN12-4/6

A73218—UN—02NOV11

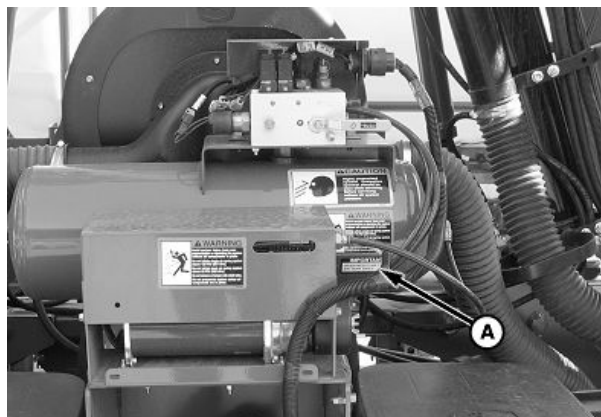
A73219—UN—01NOV11

A73220—UN—01NOV11

IMPORTANT

DRAIN MOISTURE FROM AIR TANK DAILY

A72784 —UN—31JAN12



A74096 —UN—26JAN12

A—Decal, Air Tank Drain

IMPORTANT

DRAIN MOISTURE FROM AIR TANK DAILY.

(See DRAIN AIR STORAGE TANK in Integrated Pneumatic Down Force section in your SeedStar™ 2 and SeedStar™ XP Monitor Manual.)

OUC6064,0000539 -19-26JAN12-5/6

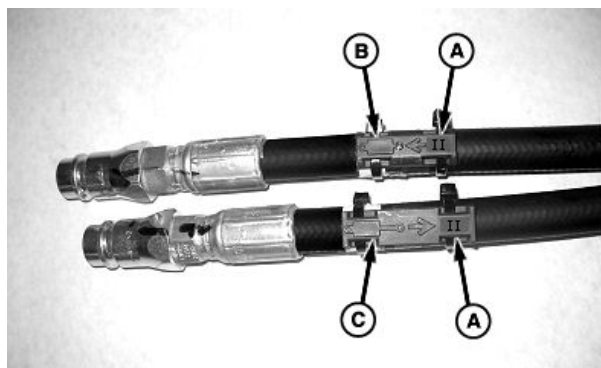
Identification tags are installed on end of hydraulic hoses.

(A) Identifies tractor SCV circuit to connect too.

(B and C) Identifies “flow direction” and connects to the matching ports on the tractor.

A—SCV Number
B—Flow Direction

C—Flow Direction



A71412 —UN—05MAY11

OUC6064,0000539 -19-26JAN12-6/6

Prepare Tractor

Tractor Requirements

HORSEPOWER REQUIREMENT for **1720CCS 12X2 TWIN ROW MACHINE**: All configurations for this model

require a minimum PTO 225 hp. tractor with MFWD or similar series later tractor. Dual rear tires and a full set of front weights.

OUO6064,0000424 -19-24MAR11-1/1

Use Your 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 will vary by equipment.



TS190 —UN—17JAN89

NX,1200V,A1 -19-18MAR99-1/1

Add Weight to Front End

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

Install full set of tractor weights (22 weights) for the 1720CCS 12X2 Twin Row planter. (See your tractor operator's manual).



A68930 —UN—30SEP10

OUO6064,0000425 -19-24MAR11-1/1

Tractor Front Ballast Codes

Refer to appropriate tractor operator's manual for tractor codes.

OUO6064,000005C -19-12NOV10-1/1

Tractor Hitch Lift Codes

Refer to appropriate tractor operator's manual for implement codes.

OUO6064,000006B -19-12NOV10-1/1

Setting Tractor Wheel Spacing

Dual Wheels: Set dual wheels with center of tread as close as possible between planter rows. Wheel spacing is

typically four times the center distance between twin row pairs for twin row machines.

OUO6064,000005D -19-12NOV10-1/1

Recommended Tractor Settings

Refer to tractors operator's manual for complete operating instructions.

1720CCS 12X2 Twin Row Planter	
Item to set	Tractor Settings
Drawbar	Remove drawbar
Sway Blocks	Refer to tractor operators manual to shim draft arms.
Three Point Links	Refer to tractor operators manual to set lateral float for minimum sway.
Quick Coupler	Removed
Three-Point Center Link	Removed or in Storage position
Hitch Control	Set to position control
Front End Weights	Full Set (22 Weights)
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 Operators 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.

OUO6064,0000421 -19-24MAR11-1/1

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).

OUO6074,0000A10 -19-21MAY09-1/1

Low Pressure Case Drain Connection

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

IMPORTANT: Use the connection kits listed in table on John Deere tractors. If low-pressure drain connection kit is already installed, ensure that it matches what is listed on table.

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

NOTE: John Deere Connection Kits include Installation Instructions.



Flush Face Case Drain Hose Tip

Case Drain Connection Kits	
Tractor Model	Kit Number
6000 and 10 Series 7420 and 7520 Series with serial numbers (-12451)	BA30216 ^a
6020, 7220, 7320, 7420, 7520 Series	AL169965
6030 Series	RE228000
6D Series	SJ288860
7200, 7400, 7600, 7700, 7800 and 10 Series	BA30218 ^a
7720, 7820 and 7920 Series	RE211441
7030 Small Frame and Premium Tractors	RE228000
7030 Large Frame Tractors	RE211441
7R Series Tractors	RE327561
8000, 8000T, 8010, 8010T, 8020, 8020T, 8030, 8030T, 8R, and 8RT Series	RE222721
9000, 9000T, 9010, 9010T, 9020, 9020T, 9030 and 9030T Series	RE218665
9R Series	RE299261

^aOrder through service parts.

OUO6074,0000968 -19-24FEB12-1/1

A53392—UN—25NOV03

Prepare Machine

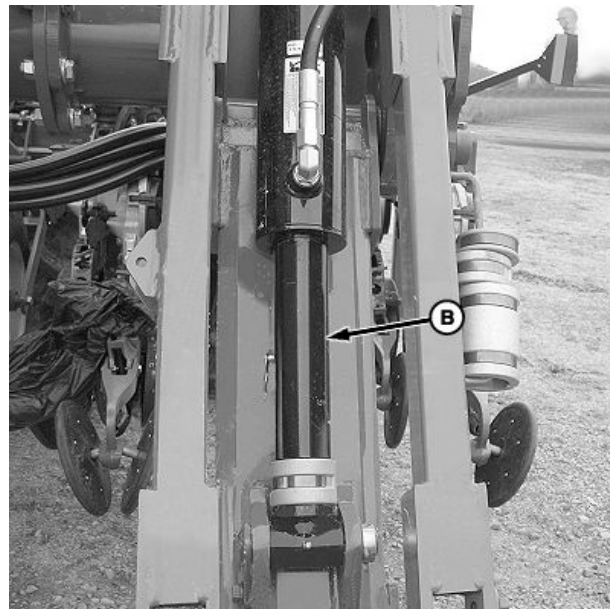
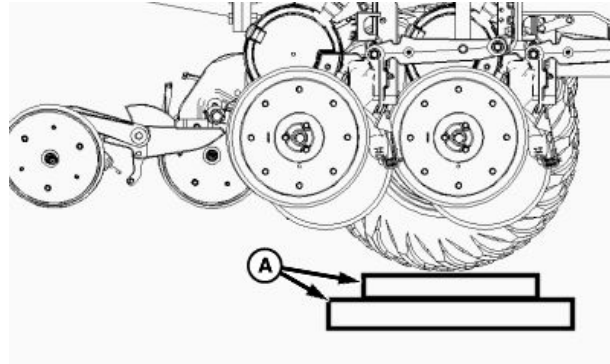
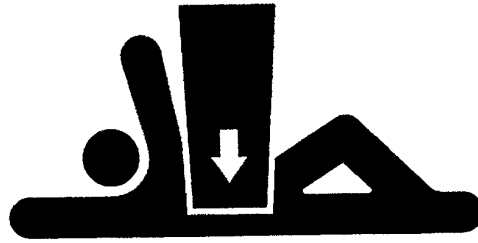
Support Machine Before Service

CAUTION: Avoid crushing injury or death from falling machine. Ensure that service locks are installed on lift assist wheel cylinders and machine is supported on blocks before performing any service or adjustments.

1. Raise machine.
2. Unfold the machine.
3. Lower parking stands on mainframe and place blocks under stands as needed.
4. Place support blocks (A) under gauge wheels on the wing.
5. Install service locks (B) on lift assist wheel cylinders.
6. Lower machine onto support blocks (A) and parking stands.
7. Shift tractor to PARK or set parking brake.
8. Stop engine and remove key.

A—Support Blocks

B—Service locks



A44347 —UN—16DEC97

A66897 —UN—05APR10

A66896 —UN—05APR10

OUC6064,0000001 -19-18MAY11-1/1

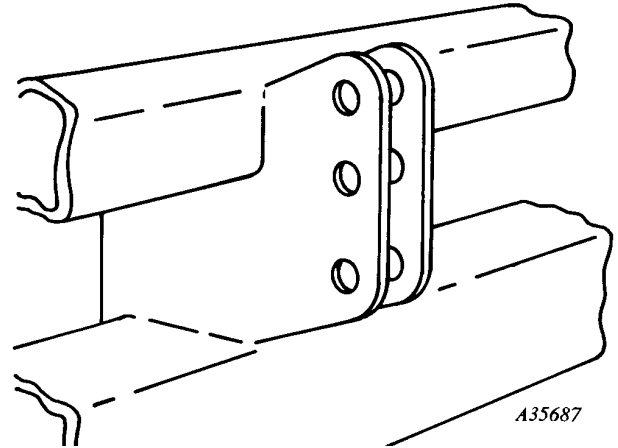
Prior to Use

Refer to **Lubrication** and **Service and Adjustments** sections for more information.

OUC6045,0000034 -19-03JUN09-1/1

Setup Using No Mast

No pin or third link connection is installed between machine and tractor. Machine must be able to pivot on tractor draft links when raised and lowered or when uneven ground is encountered during operation.



A35687 —UN—22NOV93

OUC6064,0000019 -19-12NOV10-1/1

Tighten Wheel Bolts

IMPORTANT: Check torque on wheel lug nuts before operation, after initial 10 hours of use and after every 50 hours.

Tighten wheel bolts to specification before operation, after first 10 hours of operation and every 50 hours of operation.

Specification

Drive Gauge Wheel	
Bolts—Torque.....	176 N·m (130 lb.-ft.)
Lift Assist Wheel	
Nuts-to-Wheel	
Bolts—Torque.....	230 N·m (170 lb.-ft.)

WP29706,00002BF -19-20MAR12-1/1

Check Tire Inflation

Tire Pressures	
Tires Size	Pressure
Frame Drive Gauge Wheels (7.60-15 6 ply)	276 kPa (2.7 bar) (40 psi)
Lift Assist Wheels (16.5L-16.1SL 14 ply)	234 kPa (2.34 bar) (34 psi)

OUC6064,0000521 -19-14JUN11-1/1

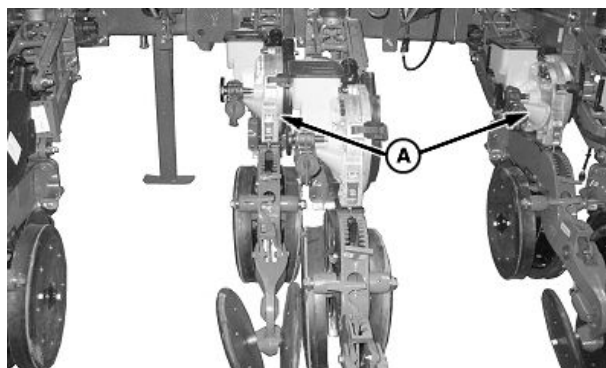
Change from Twin Row to Single Row

This procedure is for locking up all front rank row units (A).

Check List for Following Procedure:

- ☐ Release pneumatic pressure from front rank rows.
- ☐ Remove seed from CCS tanks and row units.
- ☐ Lock up front rank row units.
- ☐ Install yellow plugs on all front rank row units (vacuum and seed delivery hoses).
- ☐ Disconnect meter drives on front rank row units.
- ☐ Lift assist wheels moved for single row planting.
- ☐ Frame gauge wheels moved for single row planting.
- ☐ Adjust variable rate drive range sprocket (If equipped).
- ☐ Tractor hitch moved for single row planting.
- ☐ Configure seed monitor to detect only active rows.
(See your SeedStar™ 2 and SeedStar™ XP operator's manual.)
- ☐ Adjust vacuum level.
- ☐ Adjust transmission (if equipped) for seed population.
- ☐ Adjust CCS tank pressure.

1. Support machine. (See SUPPORT MACHINE BEFORE SERVICE in this section.)
2. Empty CCS tanks and row units. (See CLEANING OUT CCS TANK in Central Commodity System section and CLEANOUT AND INSPECTION OF SEED HOPPERS AND METER UNIT in Service and Adjustments section.)
3. Lower machine.
4. Open pneumatic valve to depressurize front rank.
(See DEPRESSURIZE PNEUMATIC DOWN FORCE



A—Front Rank Row Units

SYSTEM in your SeedStar 2™ and SeedStar XP™ Monitor Operator's Manual.)

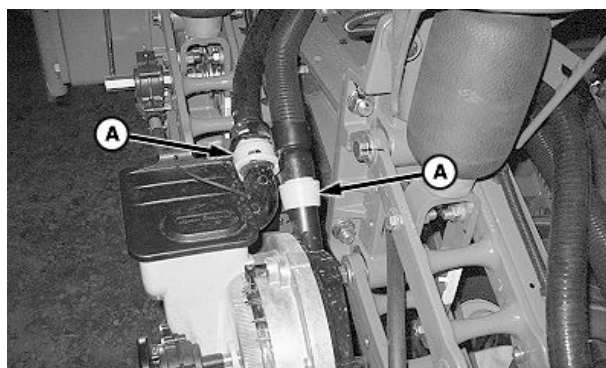
IMPORTANT: Adjust closing system for front rows over to the left most position to prevent contact of rear row gauge wheels.

5. Lock up front rank row units. (See LOCKING UP AND UNLOCKING FRONT RANK ROW UNITS in Service and Adjustments section.)
6. Remove seed from front rank row meters. (See CLEAN OUT AND INSPECTION OF SEED HOPPERS AND METER UNITS in Service and Adjustments section.)

OUO6064,00005A8 -19-15FEB12-1/4

7. Install yellow plugs (A) between front rank row meters and hoses.
8. Disengage meter drive on all front rank row units. (See DISENGAGING AND ENGAGING METER DRIVE in Service and Adjustments section.)

A—Plugs

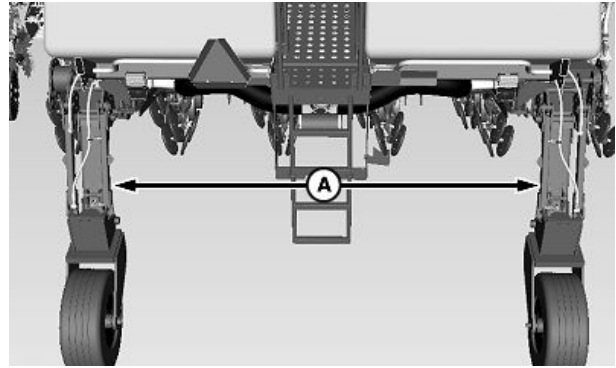


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OUO6064,00005A8 -19-15FEB12-2/4

9. Lift assist wheels moved for single row planting. (See CONFIGURE LIFT ASSIST WHEEL ASSEMBLIES FOR TWIN ROW OR SINGLE ROW PLANTING in Service and Adjustments section.)
10. Center frame gauge wheels. (See CONFIGURE FRAME GAUGE WHEELS FOR TWIN ROW OR SINGLE ROW PLANTING in Service and Adjustments section.)
11. **Variable Rate Drive Machines Only:** Check variable rate drive range to verify High or Low Range depending on seed and population. (See ADJUST HIGH-LOW DRIVE RANGE in Service and Adjustments section.)

A—Lift Assist Wheel Assemblies

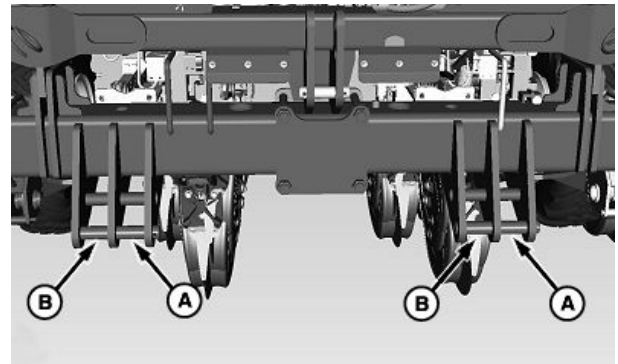


A66443 —UN—04FEB10

OUC6064,00005A8 -19-15FEB12-3/4

CAUTION: Do not detach machine with wings folded. Detach in unfolded position to maintain stability.

12. Detach tractor from twin row position (A). (See DETACH FROM TRACTOR in Detach Tractor section.)
13. Attach tractor to single row position (B). (See ATTACH MACHINE TO TRACTOR in Attach Machine section.)
14. Check planting unit openers to ensure that seed tubes and openers are free of dirt or other foreign material.
15. Configure SeedStar™ monitor for single row planting. (See SeedStar 2™ and SeedStar XP™ operator's manual.)
16. Install proper seed disks in meters.
17. Fill hoppers and meter with seed.
18. Set vacuum level. (See SET VACUUM LEVELS in Set Vacuum Levels section.)



A—Dual Row Position

B—Single Row Position

A66444 —UN—04FEB10

OUC6064,00005A8 -19-15FEB12-4/4

Change from Single Row to Twin Row

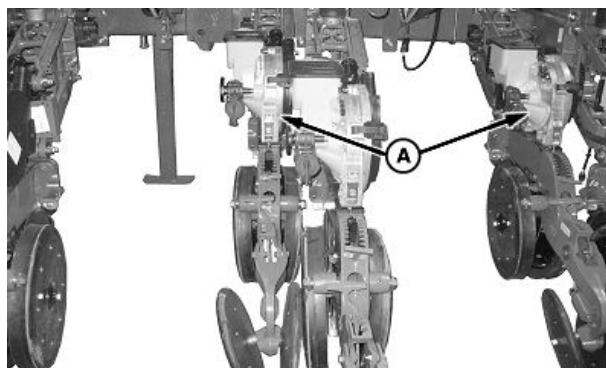
This procedure is for unlocking all front rank row units (A).

Check List for Following Procedure:

- ☐ Manually unlock front rank row units.
- ☐ Connect vacuum and seed delivery hoses on front rank row units .
- ☐ Connect meter drives on front rank row units.
- ☐ Install correct seed disks on row units.
- ☐ Move lift assist wheels to twin row planting position.
- ☐ Move frame gauge wheels to twin row planting position.
- ☐ Adjust variable rate drive range sprocket (If equipped).
- ☐ Engage pneumatic down force pressure to front rank rows.
- ☐ Change tractor hitch position for twin row planting.
- ☐ Configure seed monitor for twin row planting. (See your SeedStar™ 2 and SeedStar™ XP operator's manual.)
- ☐ Adjust vacuum level.
- ☐ Adjust transmission (if equipped) for seed population.
- ☐ Adjust CCS tank pressure.

1. Support machine. (See SUPPORT MACHINE BEFORE SERVICE in this section.)

IMPORTANT: Adjust closing system to normal spacing configuration.



A—Front Rank Row Units

2. Unlock front rank row units. (See LOCKING UP AND UNLOCKING FRONT RANK ROW UNITS in Service and Adjustments section.)

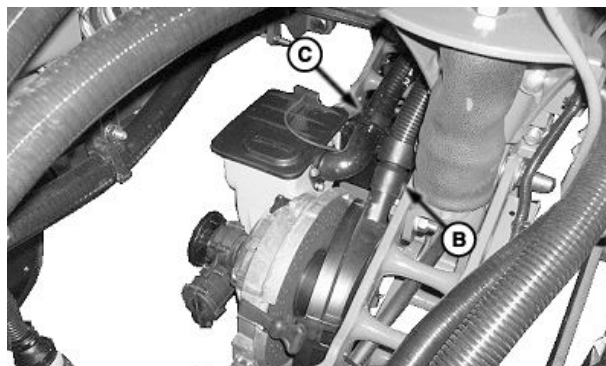
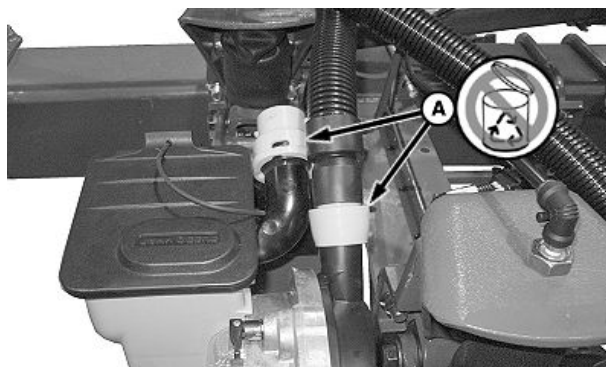
A66396—UN—01FEB10

OUC6064,00005AB -19-29AUG11-1/5

3. Remove yellow plugs (A) and retain.
4. Connect vacuum hoses (B) and seed delivery hoses (C).
5. Engage meter drive on all front rank row units. (See DISENGAGING AND ENGAGING METER DRIVE in Service and Adjustments section.)

A—Plugs
B—Vacuum Hose

C—Seed Delivery Hose



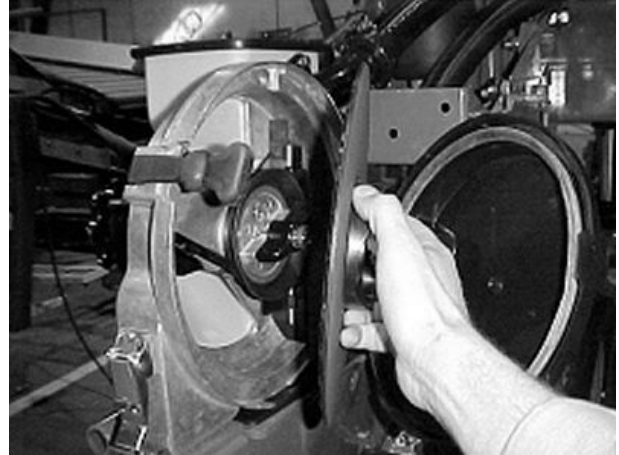
A66387—UN—31MAR10

A66473—UN—09FEB10

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OUC6064,00005AB -19-29AUG11-2/5

6. Install proper seed disks.

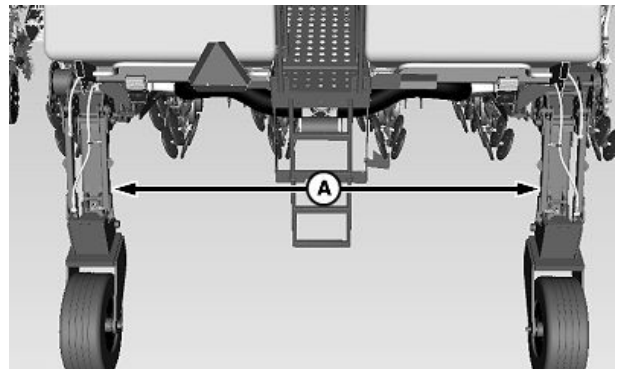


Seed Disk

A50391 —UN—26SEP02

OUC6064,00005AB -19-29AUG11-3/5

7. Lift assist wheels moved for twin row planting. (See CONFIGURE LIFT ASSIST WHEEL ASSEMBLIES FOR TWIN ROW OR SINGLE ROW PLANTING in Service and Adjustments section.)
8. Center frame gauge wheels. (See CONFIGURE FRAME GAUGE WHEELS FOR TWIN ROW OR SINGLE ROW PLANTING in Service and Adjustments section.)
9. **Variable Rate Drive Machines Only:** Check variable rate drive range to verify High or Low Range depending on seed and population. (See ADJUST HIGH-LOW DRIVE RANGE in Service and Adjustments section.)
10. Close pneumatic valve to pressurize front rank. (See INTEGRATED PNEUMATIC DOWN FORCE in your SeedStar 2™ and SeedStar XP™ Monitor Operator's Manual.)



A—Lift Assist Wheel Assemblies

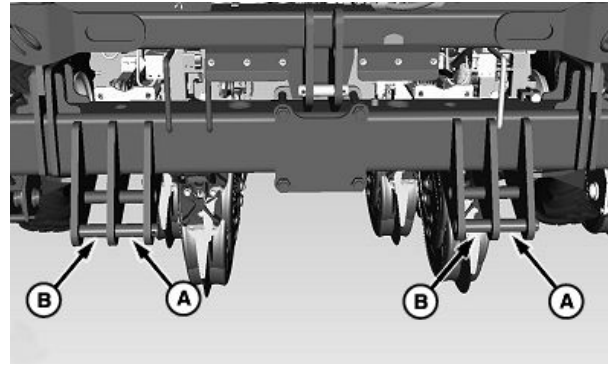
A66443 —UN—04FEB10

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OUC6064,00005AB -19-29AUG11-4/5

CAUTION: Do not detach machine with wings folded. Detach in unfolded position to maintain stability.

11. Detach tractor from single row position (B). (See DETACH FROM TRACTOR in Detach Tractor section.)
12. Attach tractor to twin row position (A). (See ATTACH MACHINE TO TRACTOR in Attach Machine section.)
13. Check planting unit openers to ensure that seed tubes and openers are free of dirt or other foreign material.
14. Configure SeedStar™ monitor for twin row planting. (See your SeedStar 2™ and SeedStar XP™ operator's manual.)
15. Install proper seed disks in meters.
16. Fill hoppers and meters with seed.
17. Set vacuum level. (See SET VACUUM LEVEL in Set Vacuum Levels section.)



A66444 —UN—04FEB10

A—Twin Row Position

B—Single Row Position

18. Fill hoppers and meter with seed, then set vacuum levels.

OUO6064,00005AB -19-29AUG11-5/5

Attach Machine

Use Your Tractor Operator's Manual

Always refer to tractor operators manual for specific detailed information regarding operation of 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 equipment.



TS190 —UN—17JAN89

OUC1074,00014B5 -19-12MAY09-1/1

CCS Fan and VacuMeter™ Motor (Case) Drain Requirements

IMPORTANT: CCS fan and VacuMeter™ case drain hose (A) **MUST** be attached to low-pressure drain connection **PRIOR** to any hoses being connected. Case drain **MUST** have **LESS THAN 172 kPa (1.72 bar) (25 psi)** or fan motor will be damaged.

The hydraulic motors used on the CCS fan and VacuMeter™ are a low flow, high pressure motors and are designed to operate on a closed-center hydraulic system. Connecting the CCS fan or the VacuMeter™ to an open-center system is not recommended. See your John Deere dealer for more information.



Flush Face Fitting

A—Motor Seal (Case) Drain Hose

A53393 —UN—25NOV03

DT31797,00002F1 -19-01MAY09-1/1

VacuMeter™ Hydraulic Motor and Variable Rate Drive Return Coupler

All machines are equipped with a special return coupler on the Variable Rate Drive and Vacuum Motor return hoses.

Return couplers are equipped with check valves to eliminate the possibility of turning the motors backwards.

Relieve pressure when shutting off hydraulic motors. Place SCV in "Float" position and allow the motors to stop gradually.



A53457 —UN—02MAR04

OUC6074,000098A -19-22MAY09-1/1

Hitch Methods

		CCS
Machine Settings	Lift Assist Type	Dual Acting
	Lift Assist Control	Independent (Use IMS)
	Mast	Top Pin Removed
	Front to Rear Leveling Procedure	Adjust LAW Cylinder Stops
	Gauge Wheel Direction	Forward or Rearward
	Gauge Wheel Purpose	Stabilizer
	Hitch Setting	Set For 20—22 in. Frame Height
	Gull-Wing Plumbing	Integrated in Planter Valve Block
LAW: Lift Assist Wheel		
CCS: Central Commodity System		
IMS: Implement Management System		

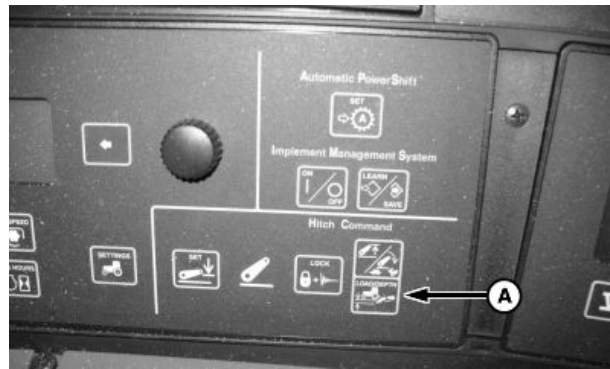
OOU6064,00002E5 -19-12NOV10-1/1

Attach Machine to Tractor

CAUTION: Do not stand between tractor and machine unless tractor transmission is in **PARK**.

1. Place hitch load-depth control (A) in “POSITION” setting. (See your tractor operator's manual for more information.)

A—Load-Depth Control



8020 and 8030 Series



8R—Series

Continued on next page

OOU6064,000041F -19-24MAR11-1/4

A64944 —UN—06JUL09

A68913 —UN—27SEP10

IMPORTANT: Quick hitch and center link are not used for this machine. Remove quick hitch. Remove center link or place in the storage position.

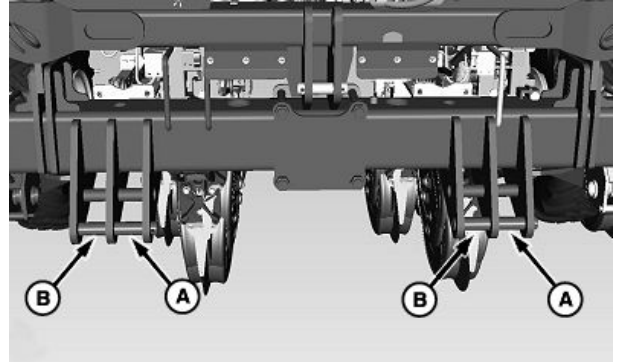
IMPORTANT: Use caution when crossing ditches or valleys to be sure that machine does not contact rear of tractor.

NOTE: Single row planting hitch pins (A) are located on the left, twin row planting hitch pins (B) are on the right.

2. Lower rockshaft until draft links are in-line with machine hitch pins. Slowly back tractor up to machine.
3. Pin machine directly to tractor draft links.

CAUTION: To prevent possible injury, do not use hitch control switch while attaching machine. Hitch control switch is only used for raising and lowering in the field only.

NOTE: Check tractor dual wheel tire clearance.



A—Twin Row Planting Hitch Pins

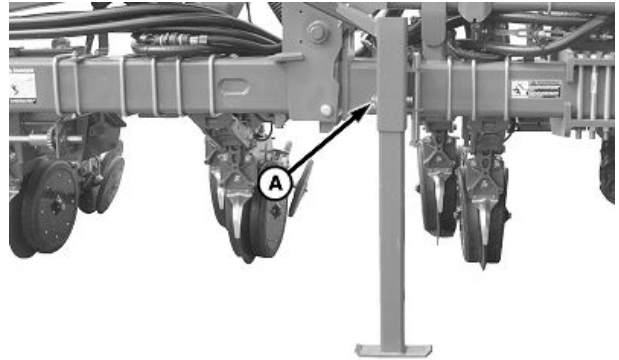
B—Single Row Planting Hitch Pins

A66444 —UN—04FEB10

OUC6064,000041F -19-24MAR11-2/4

4. After machine is attached to tractor, raise machine to remove weight from parking stands.
5. Remove spring locking pin and drilled pin (A). Install stand in raised position with drilled pin and spring locking pin.

A—Drilled Pin



A69258 —UN—27OCT10

A66736 —UN—16MAR10

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OUC6064,000041F -19-24MAR11-3/4

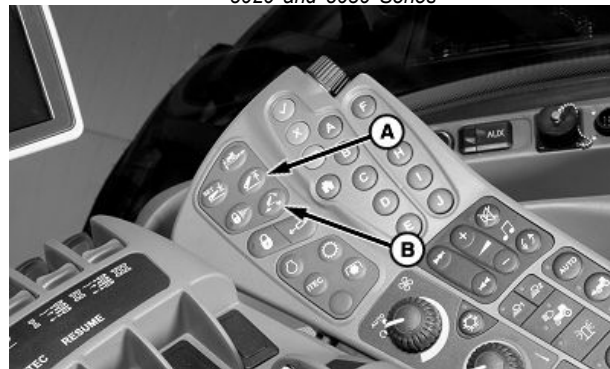
6. Adjust tractor height control (A). (See your tractor operator's manual for more information.)
7. Adjust tractor rate control (B). (See your tractor operator's manual for more information.)

A—Height Control

B—Rate Control



8020 and 8030 Series



8R —Series

OUO6064,000041F -19-24MAR11-4/4

A64946 —UN—06JUL09

A68947 —UN—04OCT10

Attaching Warning Light Harness

Attach warning light harness to 7-pin connector.



OUO1074,0000042 -19-22JAN01-1/1

RW20845 —UN—07MAY92

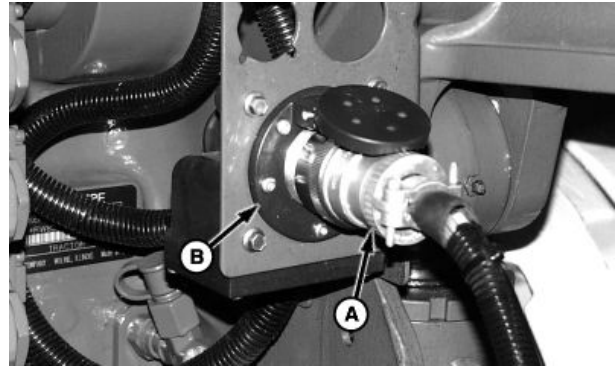
Connect SeedStar™ Monitor Harness

NOTE: Harness locations vary from tractor to tractor.

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

A—Monitor Harness

B—Connector



A47096—UN—02FEB01

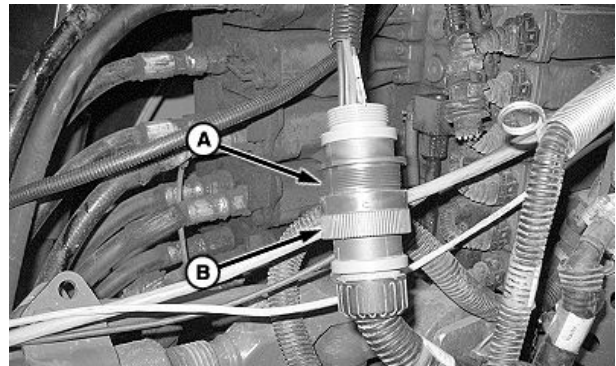
OUO6064,0000073 -19-12NOV10-1/1

Connect AMS and Compressor Power Harness

Connect AMS and compressor power harness (A) to implement harness (B).

A—AMS and Compressor
Power Harness

B—Implement Harness



A68082—UN—08JUL10

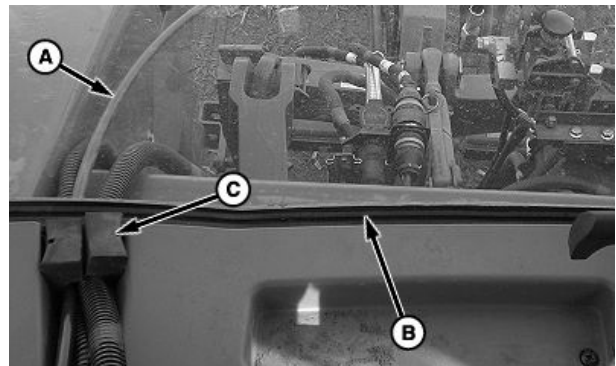
OUO6064,00001FD -19-13JUL10-1/1

Connect Pneumatic Down Force Air Compressor Remote Air Filter Hose

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

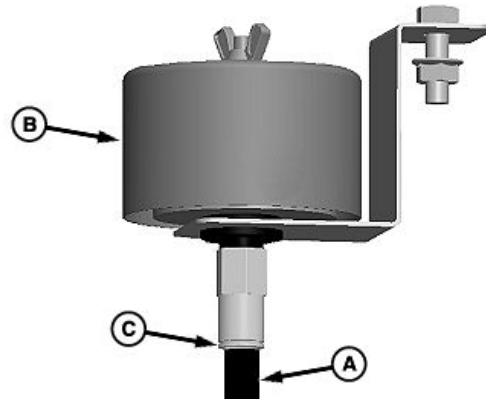


A71714—UN—03JUN11

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OUO6064,00004F3 -19-03JUN11-1/2

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.).



OUO6064,00004F3 -19-03JUN11-2/2

A71709 —UN—03JUN11

Connect Third-Width Disconnect Harness (Variable Rate Drive Machines)

On variable rate drive machines connect the third-width disconnect harness.



Third-Width Disconnect

OUO6064,00002D1 -19-12NOV10-1/1

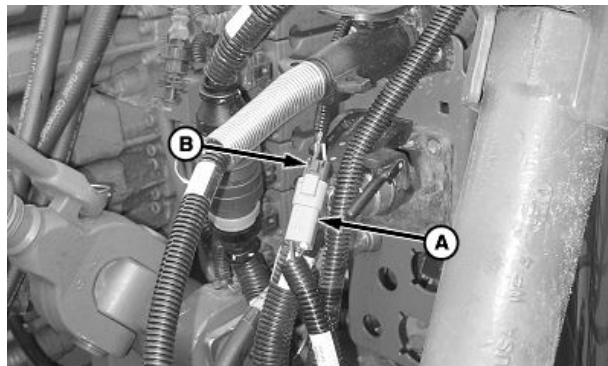
A52135 —UN—07APR03

Connect Lift Assist Steering Harness (Optional)

Connect lift assist steering harness connector (A) to CAN extension harness connector (B).

A—Lift Assist Steering Connector

B—CAN Extension Harness Connector



Lift Assist Steering Harness

OUO6064,0000294 -19-12NOV10-1/1

A68948 —UN—04OCT10

Check Hydraulic System

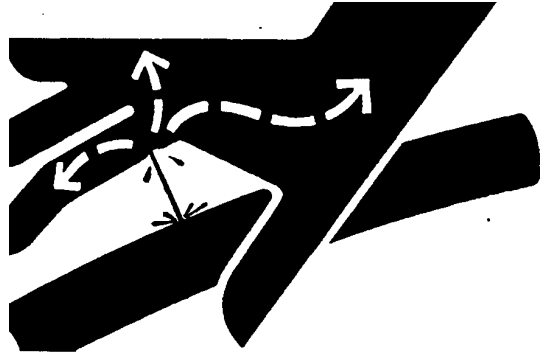
⚠ CAUTION: Escaping fluid under pressure can penetrate skin causing serious injury.

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

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

If an accident occurs, see a doctor immediately. Any fluid injected into 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 Deere & Company Medical Department in Moline, Illinois, U.S.A.

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



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

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

X9811 —UN—23AUG88

AG,OUO6074,1191 -19-24APR09-1/1

Hydraulic Connections Recommendations

A64361 —UN—11MAR09

A64362 —UN—11MAR09

Extend and Retract symbols are on SCV cover.

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

IMPORTANT: Case Drain, Load Sense, and Power Beyond Return hoses MUST be attached PRIOR to any other hoses being connected.



Extend Symbol



Retract Symbol

Hose Connections ^a				Function Settings For John Deere Tractors	
Hose Identification	SCV	Pressure	Return	Flow	Detent (Time)
Lift Assist Wheels ^b Hydraulic Wing Down Force ^c	I	Extend	Retract	10 Maximum	Constant "C"
Wing Fold	II	Extend	Retract	10 Maximum	60 seconds or as required for full extend and retract
CCS System	III	Retract	Extend	10 Maximum CCS pressure controlled with CCS Valve	Constant "C"
Vacuum System (Connected to one SCV with external control valves)	IV	Retract	Extend	10 Maximum Vacuum level controlled with external flow control valves	Constant "C"
Vacuum System (Connected to separate SCVs)	IV and V	Retract	Extend	Start at 4 and adjust as required to obtain desired vacuum level	Constant "C"
Variable Rate Drive and Lift Assist Steering on Power Beyond		Power Beyond Pressure	Power Beyond Return		

^aCase drain hose MUST be attached PRIOR to any hose being connected.

^b1720CCS 12X2 Twin Row lift assist wheels must not be connected to hitch.

^cPower Beyond Return connection required.

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

IMPORTANT: Vacuum and Variable Rate Drive RETURN hoses, with special tip, MUST be connected to tractor EXTEND port. Avoid

damaging pressure spikes; shut vacuum motor and variable rate drive off by placing SCV lever in "Float" position.

SeedStar™ system is used to control variable rate drive (if equipped).

OUO6064,000001A -19-15DEC10-1/1

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

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.

OUO6064,00002EC -19-12NOV10-1/1

Adjust Frame Height and Level Machine

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

NOTE: Bed height and soil conditions require operator to adjust frame gauge wheels to maintain proper frame height and firm ground contact.

1. Drive tractor and machine onto level ground. Lower to planting position while driving forward.
2. Set frame to ground height to 510—560 mm (20—22 in.) with hitch depth stop or draft arm length. If using single lever SCV control, fully lower hitch and adjust tractor lift links to proper length to achieve 20 - 22" frame height.
3. Adjust frame gauge wheels to have firm contact with ground.
4. Recheck frame height.

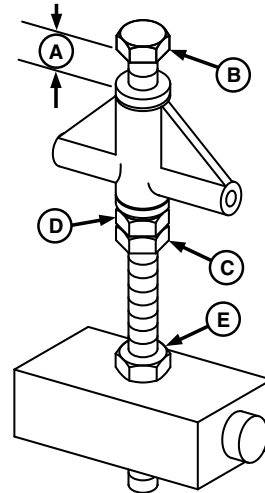
IF EQUIPPED WITH VARIABLE RATE DRIVE: Adjust floating drive-gauge wheel (wheel with motion sensor installed) as follows:

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

1. Loosen nut (C).

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

2. Adjust nut (D) until dimension (A) is 51 mm (2 in.) for normal terrain conditions.



Floating Drive-Gauge Wheels

A—Dimension
B—Cap Screw
C—Nut

D—Nut
E—Nut

3. Tighten nut (C).
4. Loosen nut (E).
5. Adjust cap screw (B) until wheel is firm on the ground.
6. Tighten nut (E) against lower casting.

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OUC6064,0000429 -19-25MAR11-1/2

A48818 —UN—04MAR02

NOTE: Machine frame height must be set before leveling machine.

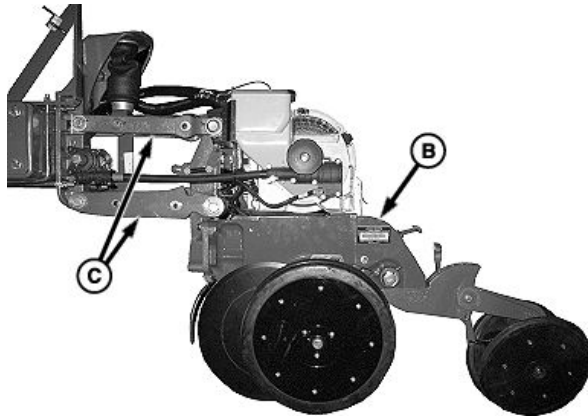
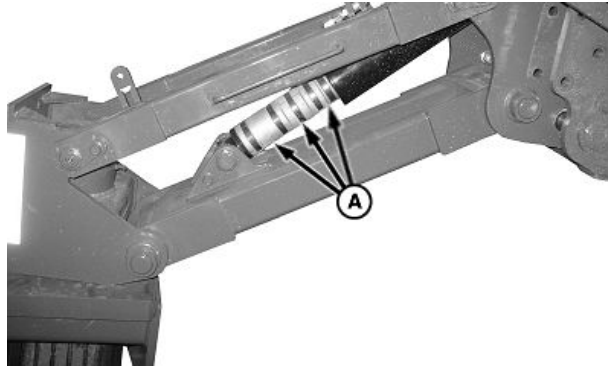
NOTE: During operation, parallel arms must be parallel to ground or angled slightly upward toward frame.

NOTE: Periodically check machine to be certain planting units are running level.

1. Level machine front to rear by extending lift assist wheel cylinders and installing appropriate cylinder stops (A).
2. Check to be sure planting units (B) are parallel with ground when in planting position.
3. When planting, parallel arms (C) are parallel or slightly upward towards machine frame.

A—Cylinder Stops
B—Planting Unit

C—Parallel Arms



A66707—UN—04MAR10

A66833—UN—24MAR10

OUC6064,0000429 -19-25MAR11-2/2

Detach 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 implement near electric lines.

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

Avoid transporting implement with seed tanks more than half full. Excessive weight can cause poor front-end stability, possible loss of steering, and excessive frame loading.

Verify that everyone is clear of machine.

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

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.
- Shift tractor into lower gear when transporting down steep slopes or hills; never coast.

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

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 machine 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 approval 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 that 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 towed load. Use additional caution when towing loads under adverse surface conditions, when turning, and on inclines.

OUO6064,000042A -19-25MAR11-1/1

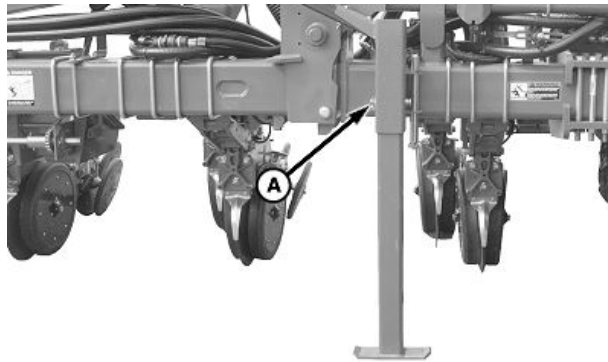
Detach from Tractor

CAUTION: Do not detach machine with wings folded. Machine must be detached in unfolded position to maintain stability.

1. Unfold machine.
2. Pin wings in rigid position. (See FLEX AND RIGID FRAME CONFIGURATIONS in Operating Machine section.)
3. Lower parking stand and fasten with drilled pin (A) and spring-locking pin.
4. Lower machine to ground.
5. Place SCV levers in "Float" position.
6. Turn tractor key switch off.

CAUTION: Avoid injury from escaping hydraulic oil under pressure, relieve pressure in system before removing hoses from breakaway couplers.

7. Disconnect all hydraulic hoses.
8. Disconnect warning light harness from 7-pin connector.
9. Disconnect monitor wiring harness.
10. Attach dust covers to harness connectors.
11. Disconnect machine from tractor.



A—Drilled Pin

A66736 —UN—16MAR10

A69258 —UN—27OCT10

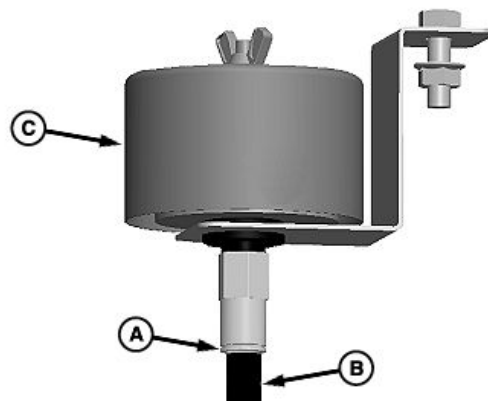
OUC06064,0000003 -19-12NOV10-1/1

Disconnect Pneumatic Down Force Air Compressor Remote Air Filter Hose

1. Push in ring (A) on fitting and remove filter hose (B) from air filter assembly (C).

A—Ring
B—Filter Hose

C—Air Filter Assembly



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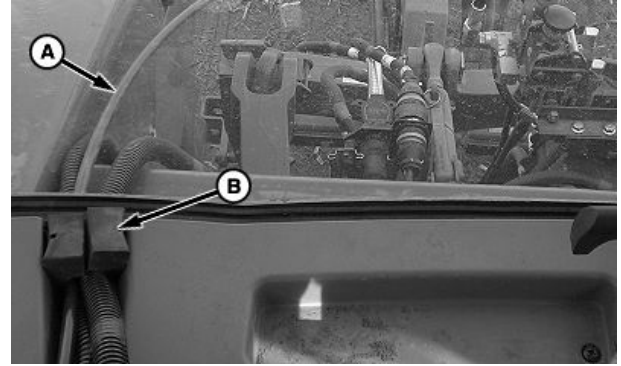
OUC06064,00004F4 -19-03JUN11-1/2

A71715 —UN—03JUN11

2. Remove filter hose (A) from tractor rear window grommet (B).

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

3. Coil filter hose (A) and secure to machine.



A71716—UN—03JUN11

OUO6064,00004F4 -19-03JUN11-2/2

Operate Machine

General

IMPORTANT: 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.

For proper machine operation, it is important that the machine frame is 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 can be warranted: Reduce

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

1. Use recommended size tractor. (See TRACTOR REQUIREMENTS in Prepare Tractor section.)
2. Verify that tractor and machine have been properly prepared. (See Preparing Tractor and Preparing Machine sections.)
3. Use clean seed for best results.
4. Check seed rates carefully.
5. Check tire pressure before seeding.
6. Allow tractor hydraulic oil to warm up thoroughly before planting.

OUO6064,000006C -19-12NOV10-1/1

VacuMeter™ Hydraulic System Operation

Vacuum motor hydraulic hoses must be connected to the tractor with pressure hose connected to “Retract” coupler on tractor.

To engage vacuum system, move SCV lever forward and lock it into forward (retract) detent.

To avoid damaging pressure spikes in hydraulic system. Move SCV lever forward into “Float” position, not “Neutral”, to stop vacuum system.

Once hydraulic vacuum motors and fans have come to a stop, SCV lever can be returned to “Neutral” position.

OUO6064,000006D -19-12NOV10-1/1

Raising and Lowering Machine

IMPORTANT: To prevent plugging of seed tubes or seed openers, lower machine only when moving forward.

Raise and lower front of machine using rockshaft control lever. When lowering lift assist wheels place SCV in

forward “Detent” position. When raising lift assist wheels it is not required to place SCV in constant position. Use IMS (Implement Management System) on 8000 series (or later) tractors to synchronize the hitch and SCV. See your tractor operator's manual.

OUO6064,000001D -19-15DEC10-1/1

Unfolding Machine

⚠ CAUTION: Stay clear of folding sections during raising or lowering.

IMPORTANT: Machine must be in raised position.

Lower wings using SCV lever.

Install wing pins for flex or rigid operation. (See FLEX AND RIGID FRAME CONFIGURATIONS in Operate Machine section.)

OUO6045,00001F7 -19-12NOV10-1/1

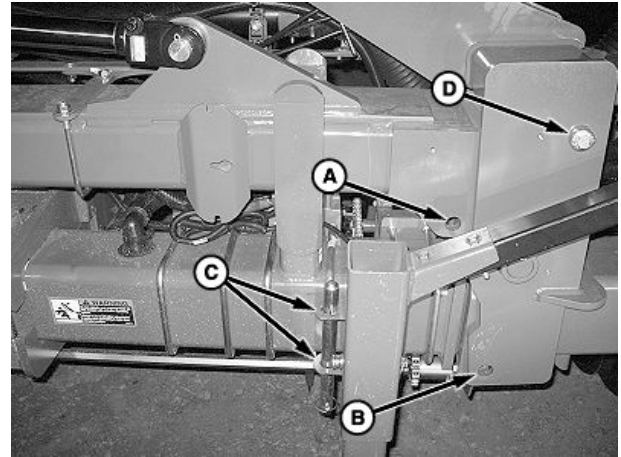
Folding Machine

⚠ CAUTION: Stay clear of folding sections during raising or lowering.

1. Remove pin from wing lock-down (A) position and place it in storage (C) position. Remove pin from rigid lock (B) position and place it in storage (D) position.
2. Raise machine until planting units are clear of ground.
3. Fold machine completely using SCV lever.

A—Wing Lock-Down
B—Rigid Lock

C—Storage
D—Storage



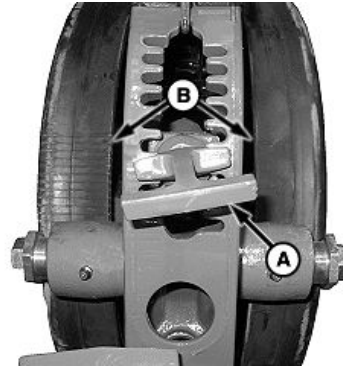
A66785 —UN—22MAR10

OUC6064,0000035 -19-12NOV10-1/1

Set 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.



A66475 —UN—09FEB10



A57709 —UN—05APR06



A57710 —UN—05APR06

"Walking" The Handle in 6 mm (1/4 in.) Increments

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

1. Raise machine to remove weight from gauge wheels.
2. Lift depth-adjusting handle (A). 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 same initial setting.

IMPORTANT: Prevent seed tubes from plugging.

When operating in field, lower machine when tractor is moving forward.

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

A—Depth-Adjusting Handle

B—Gauge Wheels

Continued on next page

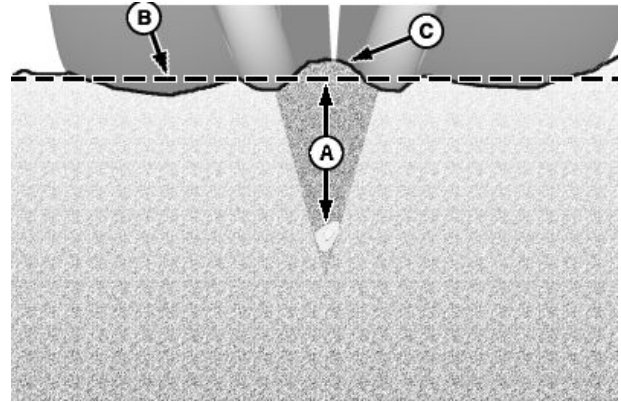
OUC6064,00002D2 -19-12NOV10-1/2

5. Check planting depth on each row.

- a. Dig down vertically through soil to locate seed.
- b. Measure 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

OUC6064,00002D2 -19-12NOV10-2/2

A57713 —UN—20APR06

Setting Closing Wheel Down Force

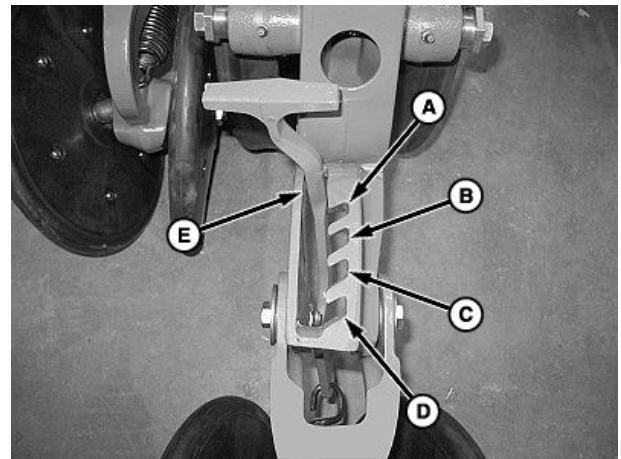
NOTE: Closing-wheel down force can affect seed placement and depth. Do not use more force than necessary to close seed furrow, especially in light soils.

NOTE: In some light soil conditions a half rate spring A61582 can be used to reduce closing wheel down force. (See your John Deere™ dealer for more information.)

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

NOTE: Right-hand closing wheel of front row unit has a more vertical angle to allow clearance for trailing twin row unit.

Place handle in slots (A), (B), (C) and (D) to adjust down force for varying ground conditions. Placing handle in middle slot (E) allows lowest down force available for closing wheel system on soil surface.



A—Slot A - 130 lbs.
B—Slot B - 150 lbs.
C—Slot C - 160 lbs.

D—Slot D - 180 lbs. (Maximum)
E—Slot E - 80 lbs. (Minimum)

OUC6064,000078D -19-15FEB12-1/1

A66786 —UN—22MAR10

Third-Width Planting Drive Disconnect—Machine Equipped with SeedStar™ Variable Rate Drive

The clutch disengage switch is used when machine is equipped with SeedStar™ Variable Rate Drive. Allows you to disconnect the drive on any section of the machine. Disconnect outside sections for planting point rows.



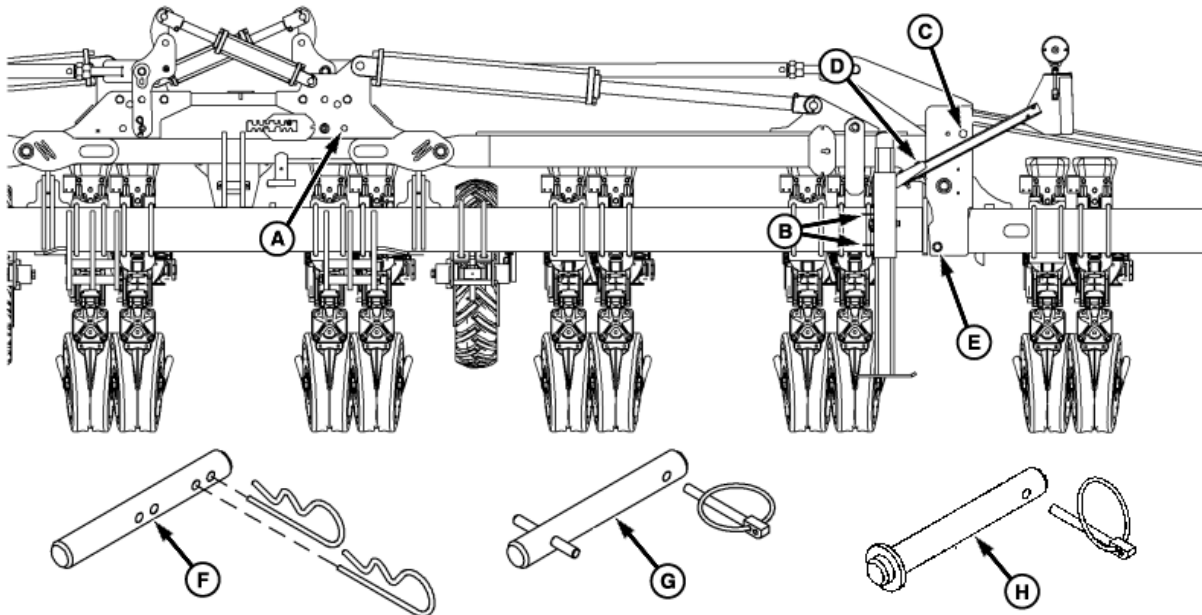
Triple VRD Motor— Third-Width Disconnect Switch Box

SeedStar is a trademark of Deere & Company

OUO6064,0000070 -19-12NOV10-1/1

A52135—UN—07APR03

Flex and Rigid Frame Configurations



A—Storage Position for Pin 1
B—Storage Position for Pin 2

C—Storage Position for Pin 3
D—Wing Lock Position

E—Flex Lock Position (If Needed)
F—Pin 1
G—Pin 2
H—Pin 3

Flex Frame

NOTE: Follow procedure on both sides of machine.

1. Place pin 1 (F) in storage position (A).
2. Place pin 2 (G) in wing lock position (D).

IMPORTANT: Install pin 3 (H) in flex lock position (E) when operating conditions are causing

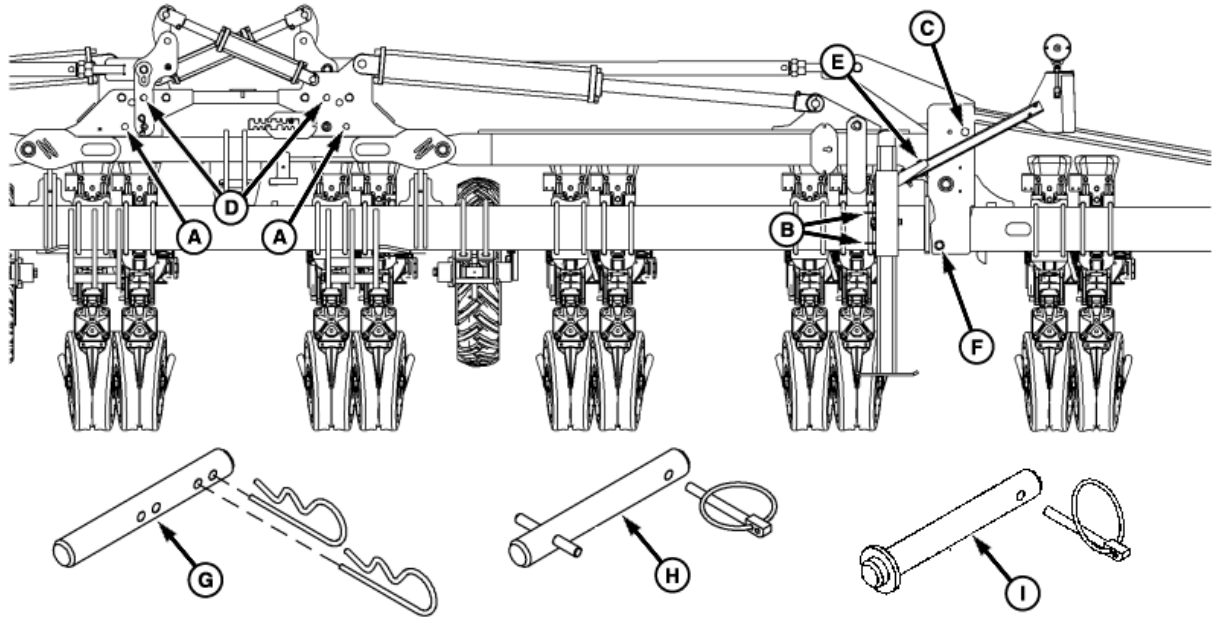
wing to raise. This pin must be removed to fold machine. Store pin 3 (H) in storage position (C) when not in use.

NOTE: Periodical repressurization of the fold cylinders can be necessary, it is not recommended to leave the fold circuit SCV in the detent setting. Use pin 3 (H) if wing continues to rise to an unacceptable level.

Continued on next page

OUO6064,00004E0 -19-23MAY11-1/2

A69145—UN—15OCT10



A—Storage Position for Pin 1
B—Storage Position for Pin 2

C—Storage Position for Pin 3
D—Flex Lock Position

E—Wing Lock Position
F—Flex Lock Position (If Needed)

G—Pin 1
H—Pin 2
I—Pin 3

Rigid Frame

NOTE: Follow procedure on both sides of machine.

1. Place Pin 1 (G) in flex lock position (D).
2. Place Pin 2 (H) in wing lock position (E) to lock arm down when planting.

IMPORTANT: Install pin 3 (I) in flex lock position (F) when operating conditions are causing

wing to raise. This pin must be removed to fold machine. Store pin 3 (I) in storage position (C) when not in use.

NOTE: Periodical repressurization of the fold cylinders can be necessary, it is not recommended to leave the fold circuit SCV in the detent setting. Use pin 3 (I) if wing continues to rise to an unacceptable level.

OUC06064.00004E0 -19-23MAY11-2/2

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 uses an electric air compressor to supply pressurized air to the air storage tank(s). The air storage tanks provide extra air capacity for fast row unit down force changes.

With SEEDSTAR™ integrated pneumatic down force:

- Operator can manually make “on-the-go” down force changes from the tractor cab.
- Operator can change down force pressure for differing soil types or to irrigated versus dry land soils.

For more information, see your SeedStar™ 2 and SeedStar™ XP Monitor Operators Manual.

OUC06064.0000438 -19-16JUN11-1/1

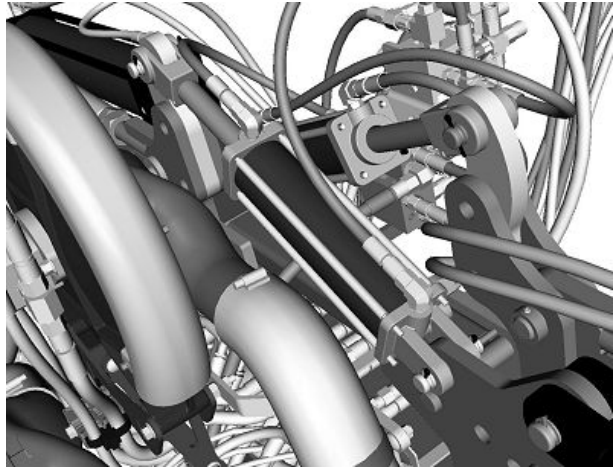
A71553—UN—23MAY11

Gull Wing Down Force

The gull wing down force system transfers weight from the center section of the planter frame to the wings using hydraulic pressure in the gull wing cylinders.

Gull wing down force is connected to the lift assist circuit and is pressurized when the lift assist is lowered with the SCV placed in continuous detent position.

NOTE: *If the planter frame does not stay level during operation, see your John Deere Dealer for gull wing down force adjustment.*



A69139 —UN—14OCT10

OUO6064,00004BD -19-16MAY11-1/1

Central Commodity System

CCS Operation

Seed treatments, field conditions, humidity, and seed size alters CCS pressures required to deliver seed to all rows. Talc or graphite 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. (See SETTING CCS TANK PRESSURE in this section) before adjusting for field conditions.

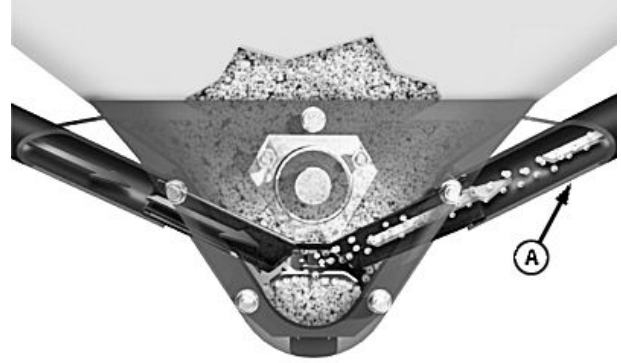
Generally, the CCS system performs best when using the lowest possible pressure setting to deliver seed to all row units.

Some light weight varieties of seed, such as sorghum or 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.

Verify 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

OUC6064,0000074 -19-31MAY11-1/1

Tank Level Sensors

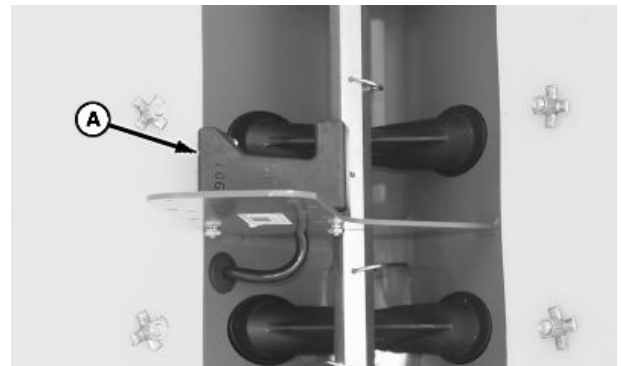
CCS tank level sensors are provided on all CCS planters. On drawn planters equipped with a frame control box, a Low Hopper warning light illuminates when the sensor is exposed.

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

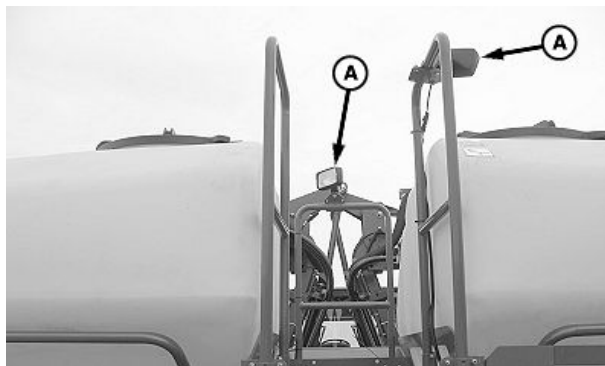
IMPORTANT: Tractor field lights must be on for fill lights to operate.

IMPORTANT: Never transport with field or fill lights on.

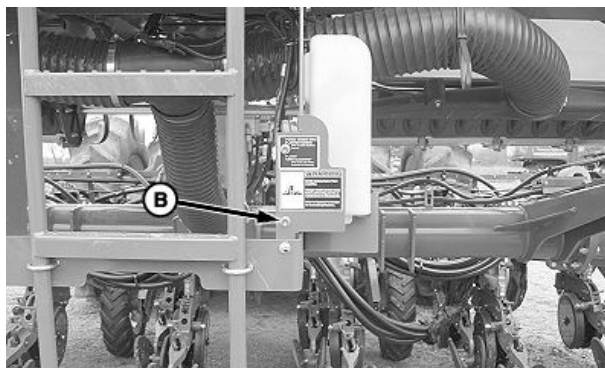
With tractor field lights on, toggle fill light switch (B) to operate fill lights (A).

A—Fill Lights

B—Fill Light Switch



A66837—UN—25MAR10



A66838—UN—25MAR10

OUO6064,000003E -19-12NOV10-1/1

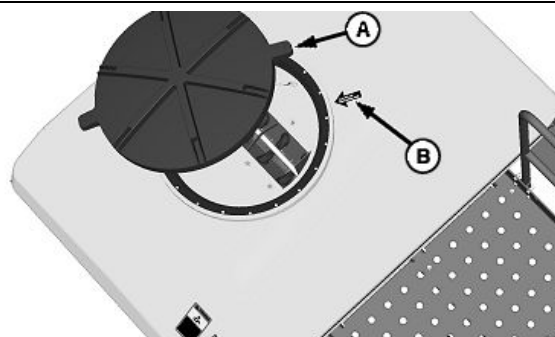
Operating Tank Lids

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

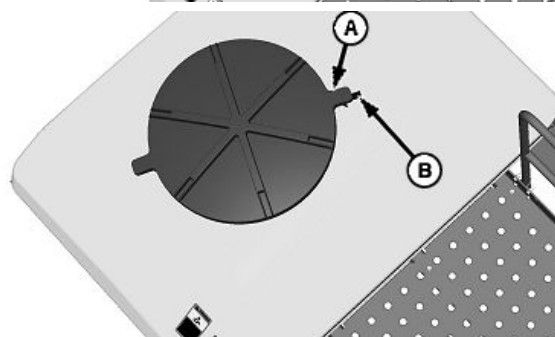
To open, turn lid counterclockwise. To close lid, line up handle (A) with arrow (B) and turn clockwise.

A—Handle

B—Arrow



A53374—UN—20NOV03



A53375—UN—20NOV03

OUO6074,00009BC -19-17FEB04-1/1

Filling CCS Tanks

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

Do not open tank lids when CCS blower is running. Lids and harmful chemicals can be blown into face. Seed lines plug if CCS fan is left running during fill.

CAUTION: 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.

IMPORTANT: Keep seed free of debris. Debris can cause blockage at CCS nozzles. Optional fill screen is available, see your John Deere dealer.

IMPORTANT: Clean seed level sensor before filling seed tanks.

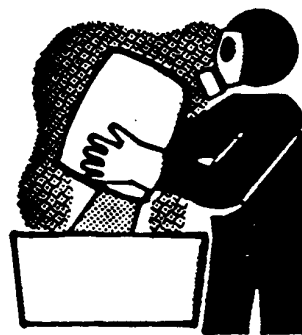
The first time a tank is used, coat inside bottom of tank. Use talc to coat inside of tank if using a vacuum meter. Mix triple the amount of talc into the first two or three bushels of seed placed in bulk tank. (See USE OF TALC in Use of Talc and Graphite Lubricants section.)

Extra talc coats the inside of CCS system with a protective layer to help resist buildup of seed coatings.

Avoid plugging delivery hoses at CCS tank. Tank agitators always run when machine is lowered and tractor key is "On". Agitator operation without CCS fan air flow can cause some seed types to plug in hoses at tank. If machine is lowered for extended periods with seed in CCS tank, turn tractor key off or unplug agitator.

Crops approved for delivery through the CCS system are Corn, Soybeans, Sorghum, Cotton, and Sunflower. All

A34471



other seed types must be placed directly in the row unit hoppers.

Row unit mini hopper extensions are available to provide additional capacity for planting non-approved crops with PRO-SERIES meters. See your John Deere Dealer.

For best performance, level off 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.

OUO6064,0000075 -19-12NOV10-1/1

A34471 —UN—11OCT88

A49921 —UN—20AUG02

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.

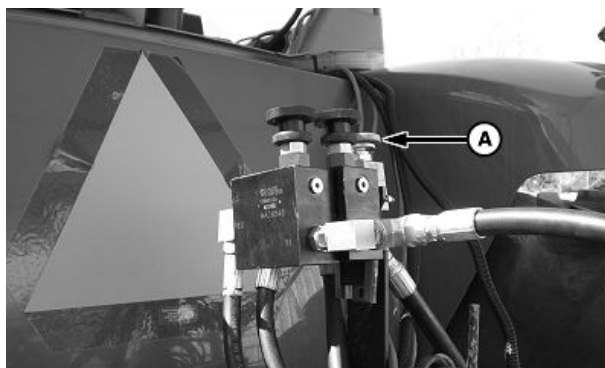
To set the tank pressure proceed as follows:

1. Make sure that tank lids are closed.

IMPORTANT: Warm oil by running vacuum blowers (if equipped) or install a hose loop in 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 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	Nozzle Insert	Small Seed Discharge Elbow (Vacuum Only)
Soybeans	12	NO	NO
Small Corn Over 4400 seeds/kg (2000 seeds/lb.)	10	NO	NO
Medium Corn From 4400 through 2640 seeds/kg (2000 and 1200 seeds/lb.)	12	NO	NO
Large Corn Less than 2640 seeds/kg (1200 seeds/lb.)	14	NO	NO
Large Popcorn Over 9900 seeds/kg (4500 seeds/lb.)	10	NO	NO
Small Popcorn Less than 9900 seeds/kg (4500 seeds/lb.)	10	NO	NO
Sweetcorn	10	NO	NO
Cotton	10	NO	NO
Sorghum	8	YES ^a	YES
Sunflowers	6	NO	NO

^aRefer to Operating CCS System section when planting Sorghum, Small Popcorn, and Cotton.

NOTE: These are typical settings for average conditions. Increasing CCS pressure can be necessary in certain conditions when plugging occurs.

OUO6064,0000061 -19-31MAY11-1/1

Operating 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.

OUO6064,0000076 -19-12NOV10-1/1

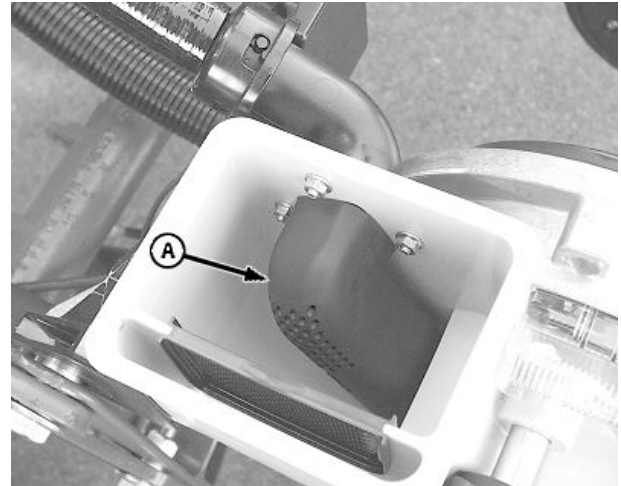
Bridged and Blocked CCS System

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

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

Remove CCS Hose Blockage

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



Pro-Series™ Hopper Shown

A—Hopper Discharge Elbow

5. Start CCS fan and check that seed flows into hopper.
6. If no seed flow is observed, repeat procedure.

DT31797,0000303 -19-01MAY09-1/2

A54895—UN—22SEP04

Product Has Bridged in CCS Tank Manifold

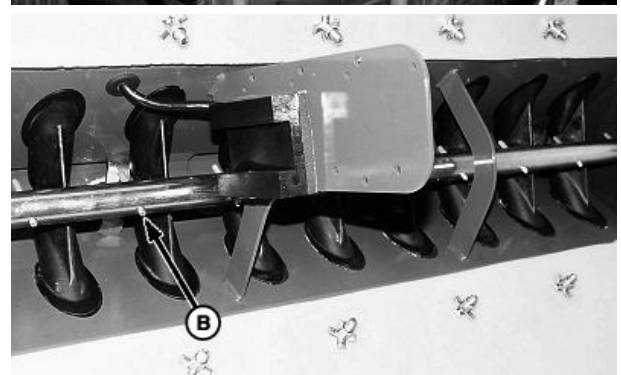
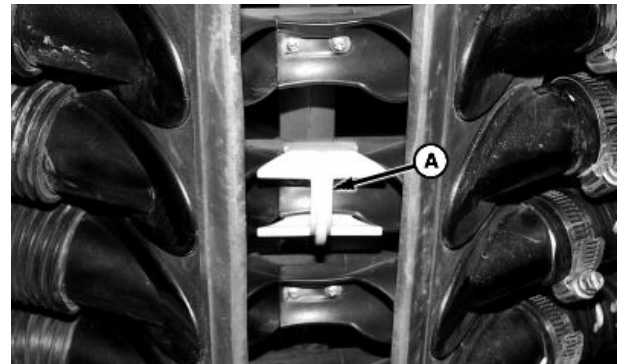
1. The following items must be checked to ensure proper operation of CCS system:
 - CCS tank pressure set to recommended setting for crop being planted.
 - Tank agitator turning when CCS fan is on.
2. Nozzle inserts (A) installed or removed for specific crop being planted.
3. Agitator pins (B) centered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

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

4. If all conditions are addressed and bridging still occurs, increase CCS tank pressure in 1 inch increments until seed flows properly to all rows.

A—Nozzle Insert

B—Pins



DT31797,0000303 -19-01MAY09-2/2

A50710—UN—17OCT02

A62189—UN—06MAR08

Operating CCS System When Planting Sorghum and Small Popcorn

IMPORTANT: Remove nozzle inserts (A) before switching to crop with larger seed. Larger seed will not come out of tanks with nozzle inserts installed. Tanks will then have to be drained, nozzle inserts removed, and refilled.

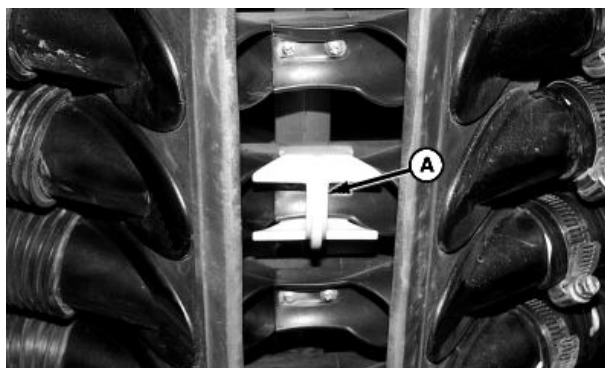
NOTE: Cotton seeds that are especially small in size can require nozzle inserts and discharge elbows.

NOTE: See *SETTING CCS TANK PRESSURE* for application requirements.

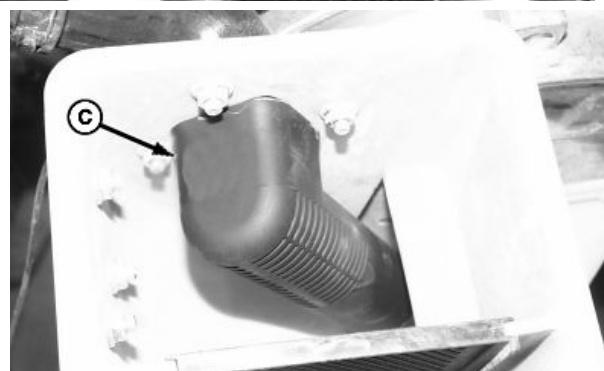
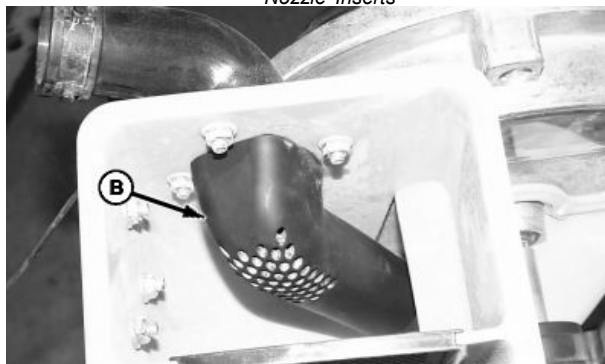
1. Install nozzle inserts (A) over all nozzles prior to filling tank.
2. Remove elbow (B) with small holes from mini hoppers.
3. Install elbow (C) with slotted holes in mini hoppers.

A—Nozzle Inserts (A73214)
B—Elbow (A75164)

C—Elbow (Sorghum) (A75165)



Nozzle Inserts



Elbow - Sorghum

OUO6074,0000878 -19-17MAY11-1/1

A50710—UN—17OCT02

A51047—UN—08NOV02

A51048—UN—08NOV02

Planting Seed Plots with CCS Systems

NOTE: Due to the small quantity of seed being planted, removing 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



OUO6064,000003F -19-12NOV10-1/1

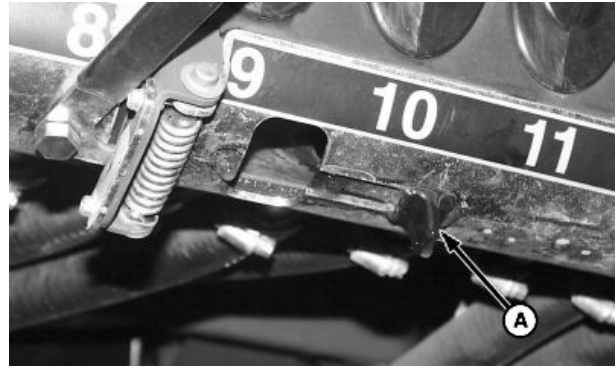
A66839—UN—25MAR10

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

Cleaning Out CCS Tanks

NOTE: Cleanout door (B) is used to even out tanks and for a controlled cleanout.

Cleanout door (D) cannot be closed once cleanout has been started.

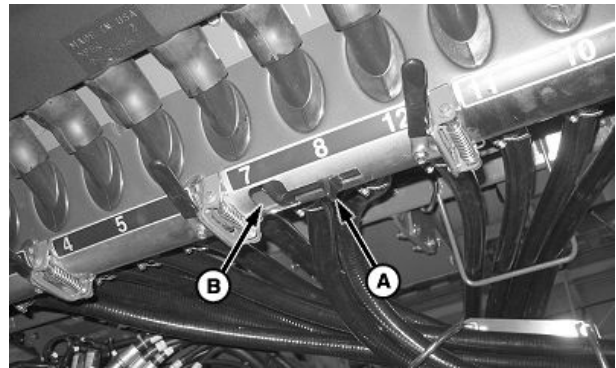
When cleaning tank for certified seed, remove all seed from tank with stiff bristled 1372 mm (4.5 ft.) handle 203 mm (8 in.) wide broom.

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

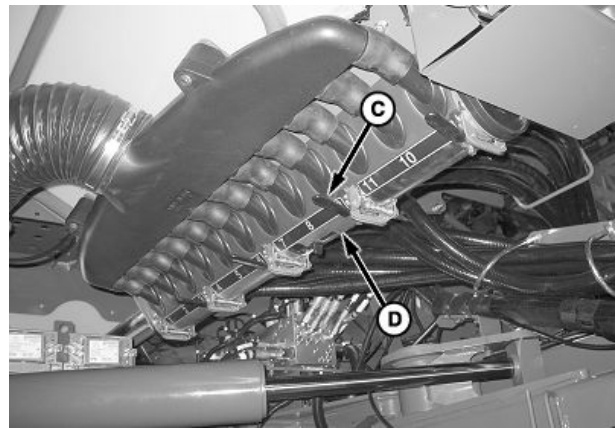
1. Place a container under cleanout doors to catch seed from tank.
2. Slide handle (A) to operate cleanout door (B). Once majority of seed has been removed, close door.
3. Rotate lever (C) to open cleanout door (D) to catch remaining seed from tank.
4. Close cleanout door.
5. Repeat for all other cleanout doors.

A—Handle
B—Cleanout Door

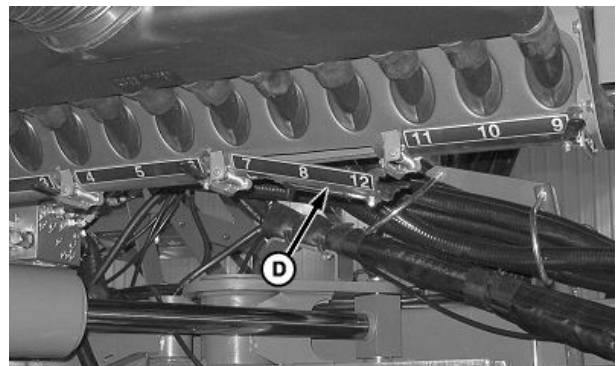
C—Handle
D—Cleanout Door



A68219—UN—20JUL10



A68218—UN—20JUL10



A68220—UN—20JUL10

OUO6064,000028A -19-12NOV10-1/1

Cleaning Out Seed Delivery Hoses

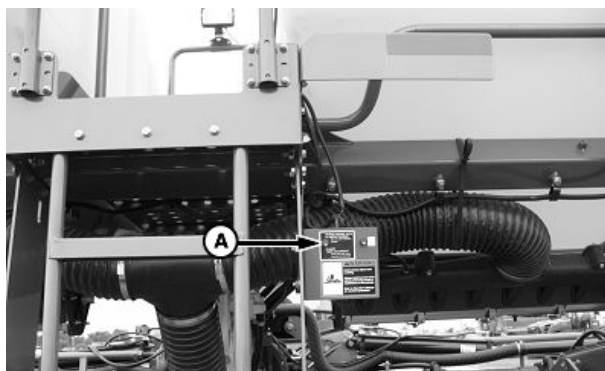
CAUTION: Avoid injury from crushing. Planter can lower when CCS fan switch is moved to PLANT/TANK CLEANOUT position. Frame control box PLANT/TRANS switch must be in TRANS position, service locks must be installed on frame gauge wheels and lift assist wheels, and the following procedure must be followed as outlined.

The Purge/plant switch (A) allows the fan to operate while machine is in a raised position. This 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.
2. Place tractor in park and apply parking brake.

NOTE: With frame in raised position, the CCS row unit switch disables CCS fan.

3. Place CCS fan hydraulic SCV lever into retract-detent position.



A—Purge/Plant Switch

4. Ensure that Purge/Plant switch is in PLANT/TANK CLEANOUT position and it must remain in that position for tank cleanout.

Continued on next page

OOU6064,00004F1 -19-02JUN11-1/4

A63283—UN—17SEP08

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 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.

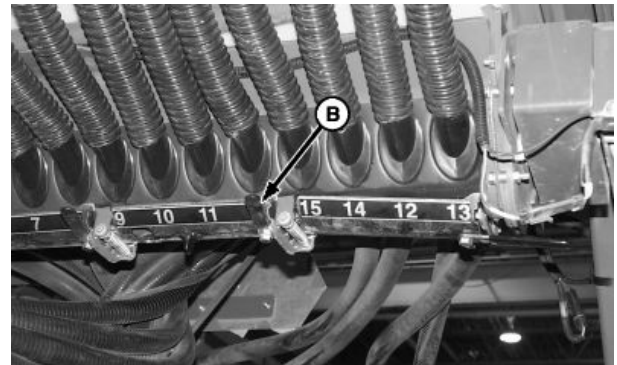
6. Place a bucket (C) or other container under cleanout door (B) and open door to clean out remaining seed.
7. Close cleanout door.
8. Repeat on remaining cleanout doors.

A—Slide Door
B—Cleanout Door

C—Bucket



A34471



Continued on next page

OUC6064,00004F1 -19-02JUN11-2/4

A34471 —UN—11OCT88

A52501 —UN—01JUN04

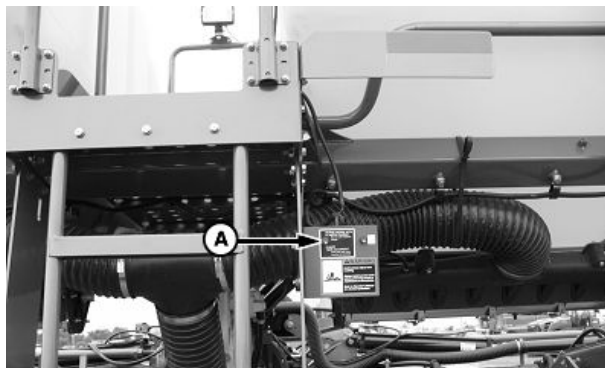
A54392 —UN—01JUN04

A54393 —UN—01JUN04

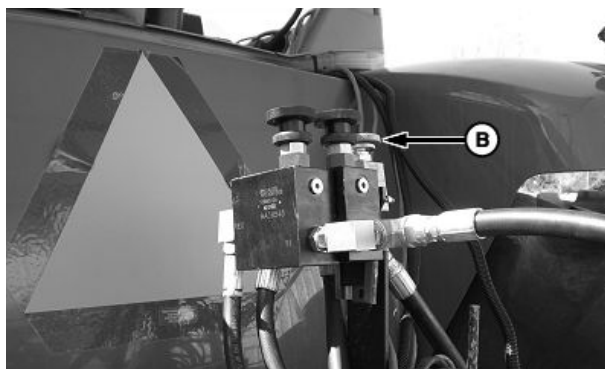
9. Flip Purge/Plant switch (A) to the PURGE HOSES position.
10. Adjust CCS fan control knob (B) until 24 inches of tank pressure is achieved to guarantee good cleanout.

A—Purge/Plant Switch

B—CCS Fan Control Knob



A63283—UN—17SEP08



A63284—UN—17SEP08

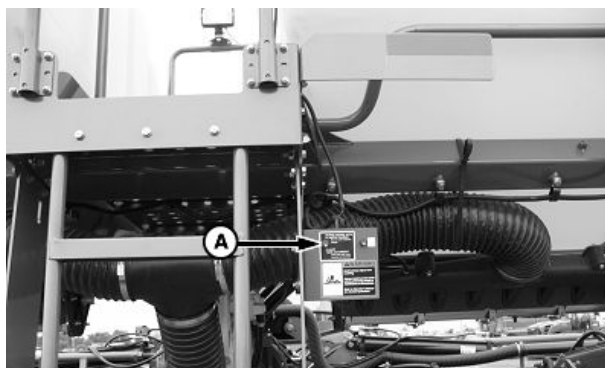
OOU6064,00004F1 -19-02JUN11-3/4

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.

11. Place Purge/Plant switch (A) in PLANT/TANK CLEANOUT position.
12. Place tractor CCS fan hydraulic SCV in float position.

A—Purge/Plant Switch



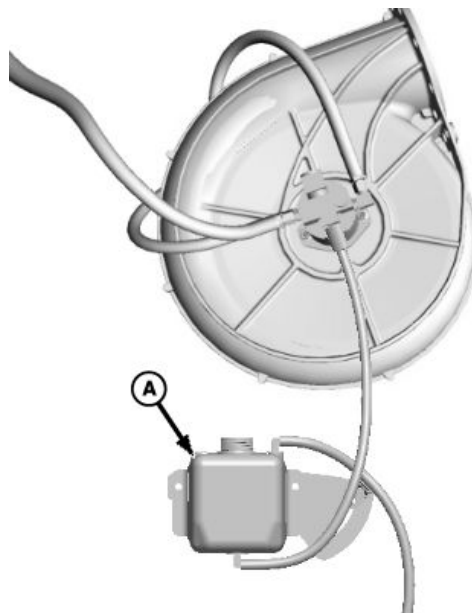
A63283—UN—17SEP08

OOU6064,00004F1 -19-02JUN11-4/4

Oil Reservoir for CCS Fan Motor

Under certain conditions, the CCS fan motor allows a small amount of oil to leak past the motor shaft seal. This leakage is considered normal. Normal leakage of oil does not fill the reservoir (A) during a planting season. If reservoir fills completely, inspect the motor for seal failure. See your John Deere™ dealer.

A—Reservoir



John Deere is a trademark of Deere & Company

OUO6074,0000A4D -19-19JUL10-1/1

A68295—UN—19JUL10

Implement Steering

Overview

IMPORTANT: Make mechanical and hydraulic connections to the tractor before making the electrical connection. This procedure prevents unexpected movement of the Implement Steering Wheels while there is a potential of people being around the planter during the attachment process. Implement Steering Wheels move any time the tractor gearshift selector is in the Reverse position. The Implement Steering Wheels automatically move until they match the position of the tractor steer tires.

NOTE: Implement steering only works in Reverse and when the Implement Steering Wheels are within their steer range. If the system does not engage, drive forward until the wheels get within their steer range then shift back into reverse.

The Implement Steering system steers the planter lift assist wheels when the tractor is moving in the reverse

direction. Implement steering prevents the lift assist wheels from castering and disturbing the soil. When the tractor is moving forward, implement steering is disabled and the lift assist wheels are allowed to caster normally.

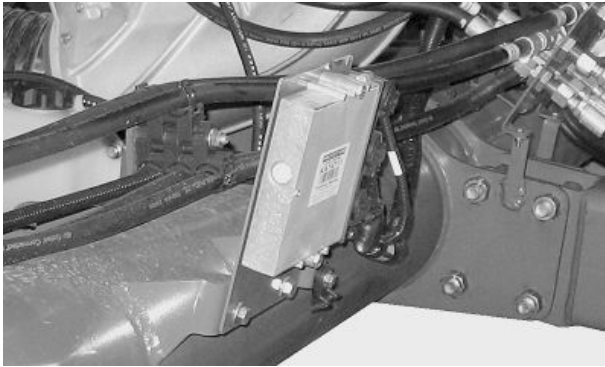
The implement steering software application is a standalone application on the Implement CAN Bus and does not require operator attention when system is operating normally. There is no communication between the implement steering application and the SeedStar™ monitoring application.

The implement steering control unit uses the backup alarm electrical circuit to detect when the operator has placed the tractor into reverse. Electrical signals from the tractor steering angle sensor and the lift assist steering angle sensors are used to calculate the target steering angle of the lift assist wheels. The steering control unit energizes solenoid valves in the implement steering control valve to direct hydraulic pressure the steering cylinders on each lift assist wheel.

OUO6064,000042B -19-25MAR11-1/1

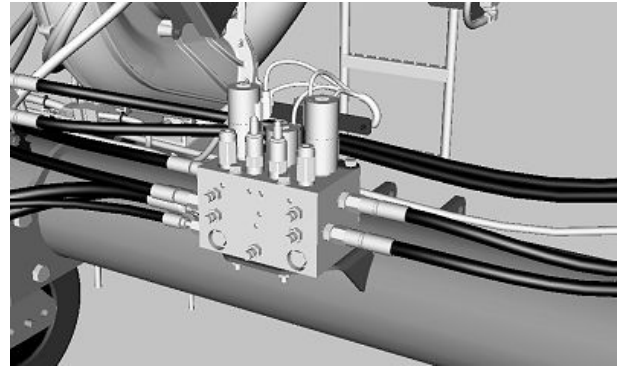
Component Identification and Location

Implement Steering



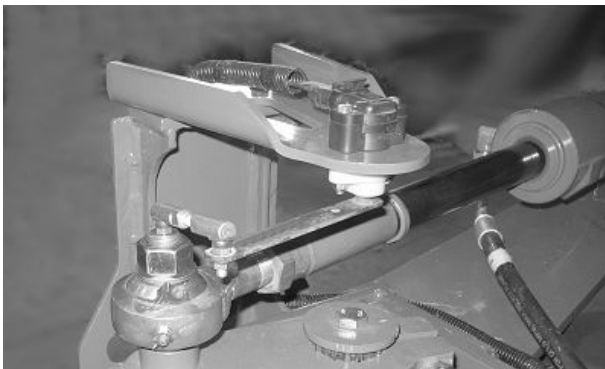
A69031 —UN—12OCT10

Implement Steering Controller



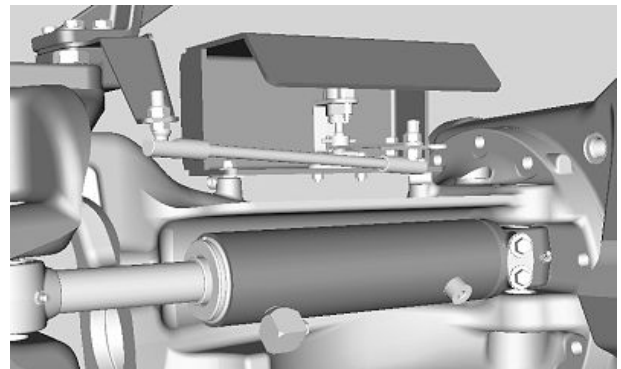
A69033 —UN—20OCT10

Implement Steering Control Valve



A69034 —UN—12OCT10

Lift Assist Wheel Angle Sensor



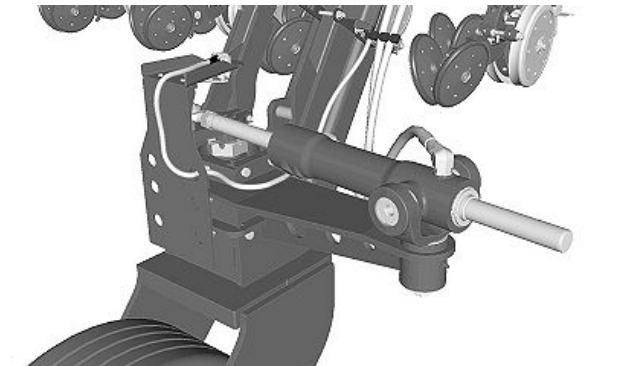
A69035 —UN—12OCT10

Tractor Steering Angle Sensor



A69259 —UN—21OCT10

Implement Steering Harness Connector



A69260 —UN—21OCT10

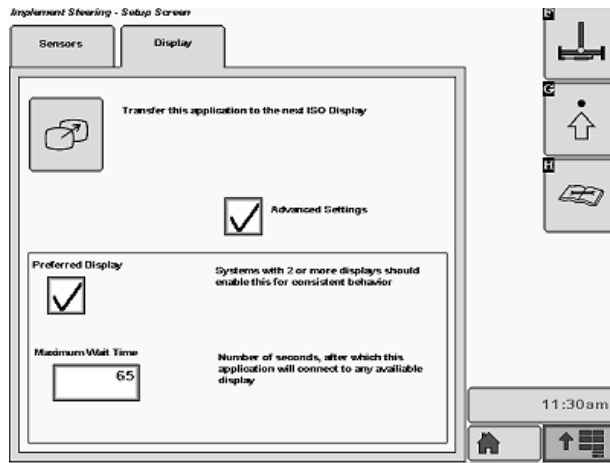
Implement Steering Cylinder

OOU6064,00002BF -19-12NOV10-1/1

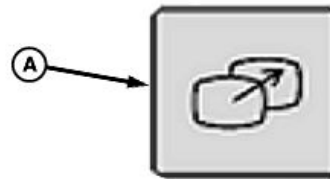
Setup Implement Steering

1. The "Next VT" button (A) is only shown if there are additional ISO virtual terminal (VT) displays available in the system which this application could connect to.
2. Pressing the "Next VT" button (A) causes this VT application to move to one of the other available VTs.

A—Next VT Button (Next Virtual Terminal)



Display Setup Screen



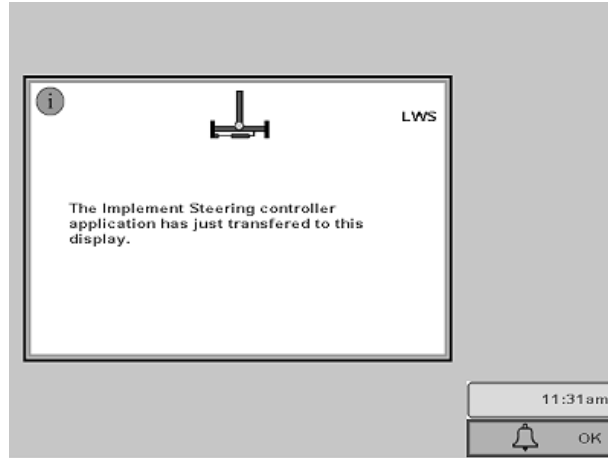
Next VT Icon

OUO6064.00002C0 -19-12NOV10-1/2

A69192 —UN—19OCT10

A69383 —UN—27OCT10

3. Once being transferred to a different VT the ISO virtual terminal (VT) displays a popup window message (for 5 seconds) to provide a chance for the operator to notice the display the application has been transferred to.
4. The Implement Steering application supports transfers between up to three different VTs.
5. An "Advanced Settings" checkbox is provided to enable of display the "Preferred Display" options.
6. If the "Preferred Display" checkbox is checked, the Implement Steering application attempts to connect to the display which it was previously connected to. Otherwise, the Implement Steering application connects to the first Virtual Terminal display available.
7. If the previous display does not appear for the "Maximum Wait Time" entered, the Implement Steering application connects to another virtual terminal display that is on the implement CAN Bus.



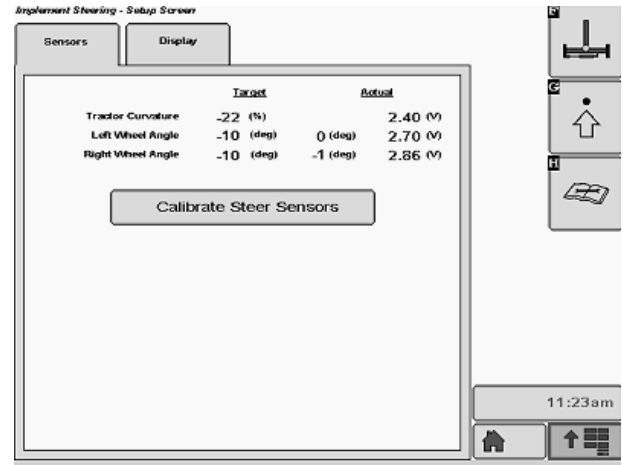
"Next VT" transfer complete message.

OUO6064.00002C0 -19-12NOV10-2/2

A69193 —UN—19OCT10

Calibrate Implement Steering System

To calibrate the Lift Assist Steering system select **CALIBRATE STEER SENSORS** button.

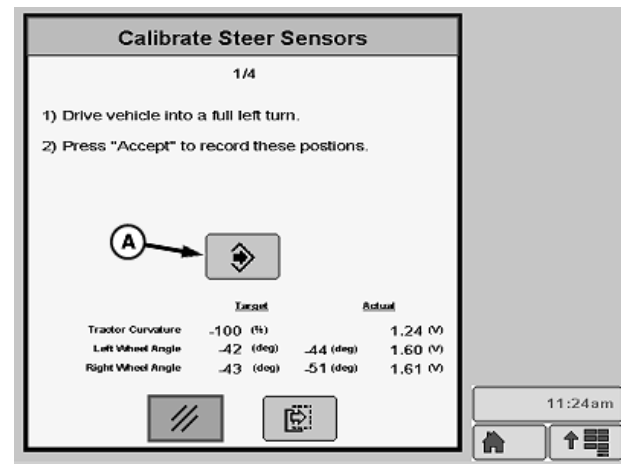


LAW Steering – Setup Screen

OUO6064,00004F2 -19-02JUN11-1/5

1. Drive vehicle forward into a full left turn. Drive far enough that implement steering tires have reached their final turning position.
2. Select the ACCEPT button (A) to record position data.

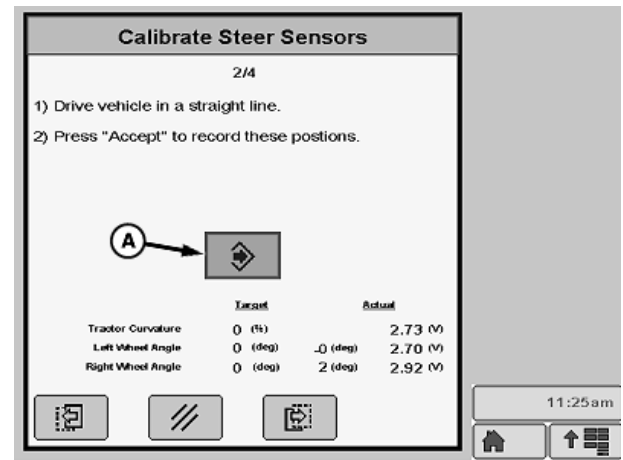
A—Accept Button



OUO6064,00004F2 -19-02JUN11-2/5

3. Drive vehicle forward in a straight line. Drive far enough that implement tires are in straight-line position.
4. Select ACCEPT button (A) to record position data.

A—Accept Button

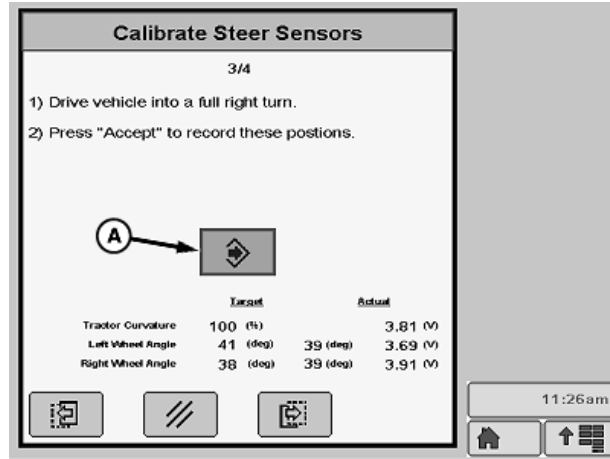


Continued on next page

OUO6064,00004F2 -19-02JUN11-3/5

5. Drive vehicle forward into a full right turn. Drive far enough that implement steering tires have reached their final turning position.
6. Select ACCEPT button (A) to record position data.

A—Accept Button

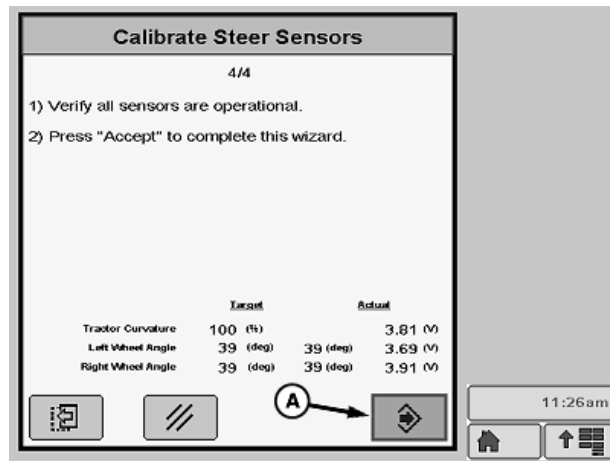


A71690—UN—02JUN11

OOU6064,00004F2 -19-02JUN11-4/5

7. Verify that all sensors are operational.
8. Select ACCEPT button (A) to complete calibration.

A—Accept Button



A71691—UN—02JUN11

OOU6064,00004F2 -19-02JUN11-5/5

Operate Implement Steering System

IMPORTANT: Make mechanical and hydraulic connections to the tractor before making the electrical connection. This step prevents unexpected movement of the Lift Assist Wheels while people are around the planter during attachment process. Lift assist wheels can move any time the tractor gearshift selector is in the Reverse position. The Lift Assist Wheels automatically move until they match the position of the tractor steer tires.

NOTE: Lift assist steering only works in Reverse and when the Lift Assist Wheels are within their Steer range. If the system does not engage, drive forward until the wheels get within their Steer range then shift back into reverse.

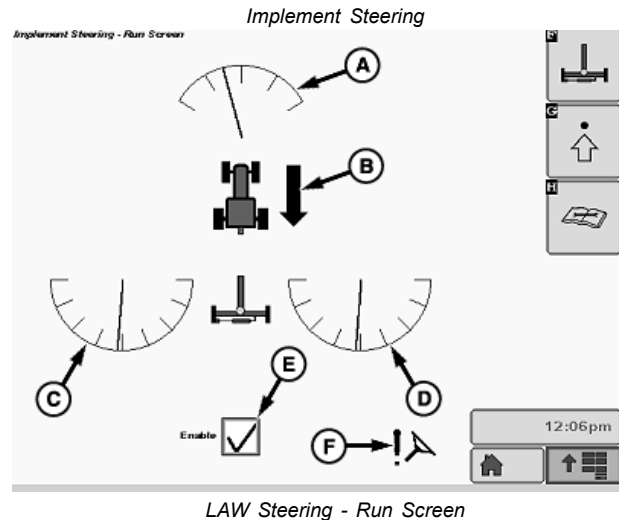
- (A) Tractor steer gauge
- (B) Tractor reverse engage icon appears when the tractor is shifted into Reverse.
- (C) Left lift assist wheel steer gauge.
- (D) Right lift assist wheel steer gauge.
- (E) Enable checkbox activates Implement Steering System.
- (F) Implement steering system fault icon indicates that there is a fault with the steering system and that the steering has been disabled.

Selecting the IMPLEMENT STEERING softkey takes the operator to the implement steering run screen.

The implement steering run screen indicator gauges provide the current angle of the tractor steering wheels.

Select the checkbox to enable or disable the lift assist steering system.

The LAW currently active icon is displayed whenever the lift assist steering system is enabled and within range of operation.



- | | |
|--------------------------------------|--|
| A—Tractor Steer Gauge | D—Right Lift Assist Wheel Steer Gauge |
| B—Tractor Reverse Engaged Icon | E—Enable - Disable Checkbox |
| C—Left Lift Assist Wheel Steer Gauge | F—Implement Steering System Fault Icon |

Warning Screens

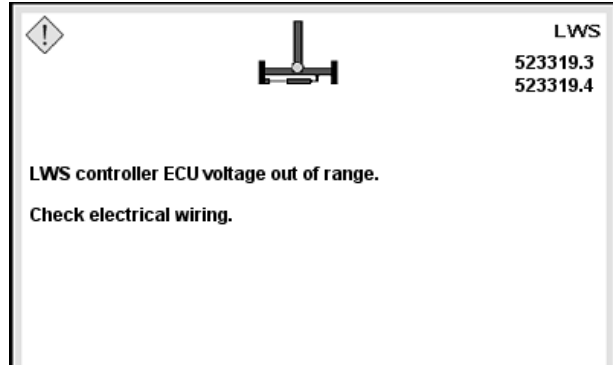
The Lift Wheel Steering (Implement Steering) application provides warning messages when DTC conditions become active.

Each warning message list the associated active DTCs in the upper right-hand corner and provide some descriptive text in the main part of the screen.

The Lift Wheel Steering (Implement Steering) application supports the following warning messages.

Lift Wheel Steering (Implement Steering) control unit ECU voltage out of range.

Check electrical wiring.

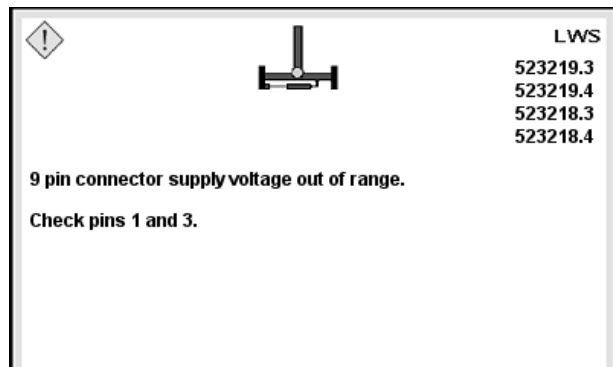


A69311—UN—25OCT10

OUO6064,000042D -19-25MAR11-1/21

9 Pin connector supply voltage out of range.

Check pins 1 and 3.

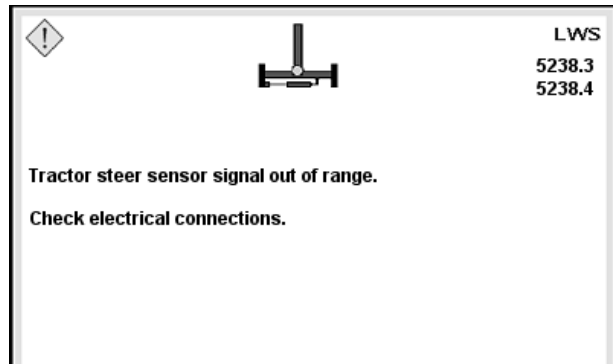


A69194—UN—25OCT10

OUO6064,000042D -19-25MAR11-2/21

Tractor steer sensor signal out of range.

Check electrical connections.

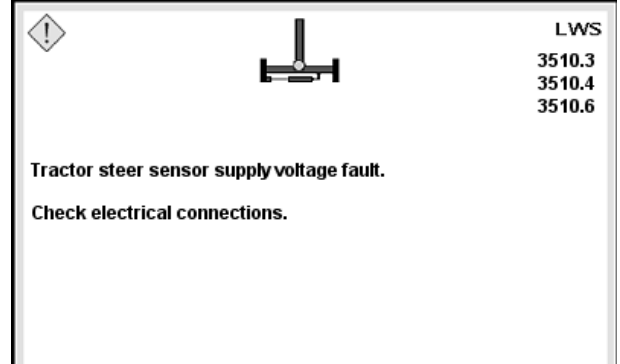


A69312—UN—25OCT10

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OUO6064,000042D -19-25MAR11-3/21

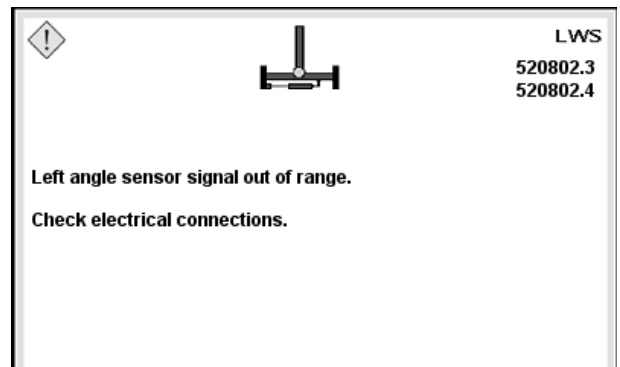
Tractor steer sensor supply voltage fault.
Check electrical connections.



A69313 —UN—25OCT10

OUC6064,000042D -19-25MAR11-4/21

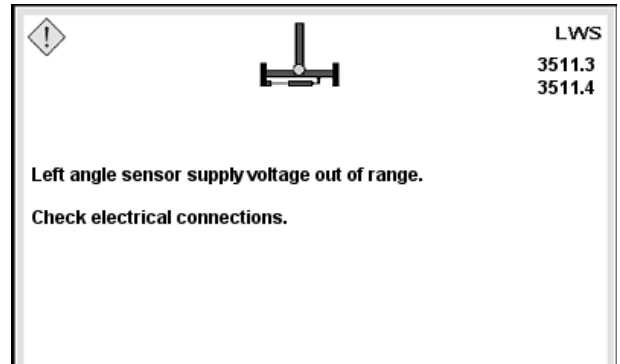
Left angle sensor signal out of range.
Check electrical connections.



A69314 —UN—25OCT10

OUC6064,000042D -19-25MAR11-5/21

Left angle sensor supply voltage out of range.
Check electrical connections.

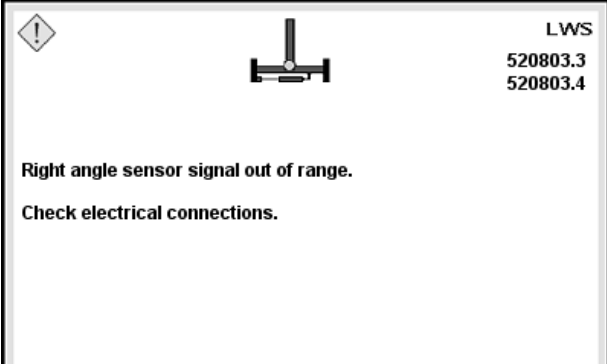


A69315 —UN—25OCT10

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OUC6064,000042D -19-25MAR11-6/21

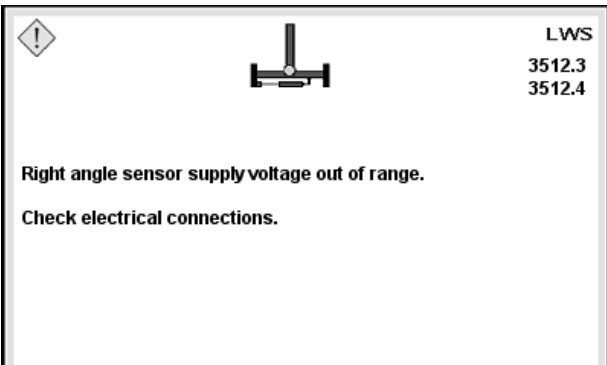
Right angle sensor signal out of range.
Check electrical connections.



A69316 —UN—25OCT10

OUO6064,000042D -19-25MAR11-7/21

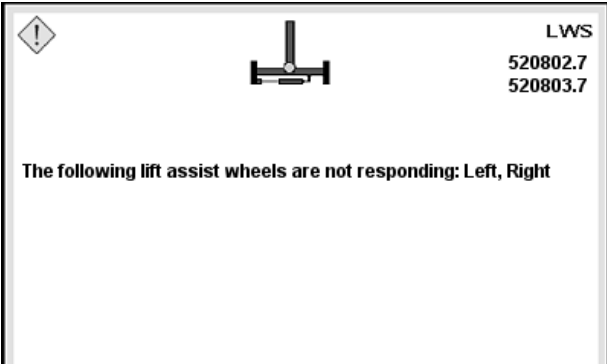
Right angle sensor supply voltage out of range.
Check electrical connections.



A69317 —UN—25OCT10

OUO6064,000042D -19-25MAR11-8/21

The following lift assist wheels are not responding: Left,
Right



A69318 —UN—25OCT10

Continued on next page

OUO6064,000042D -19-25MAR11-9/21

The following lift assist wheels are outside the controllable range: Left, Right

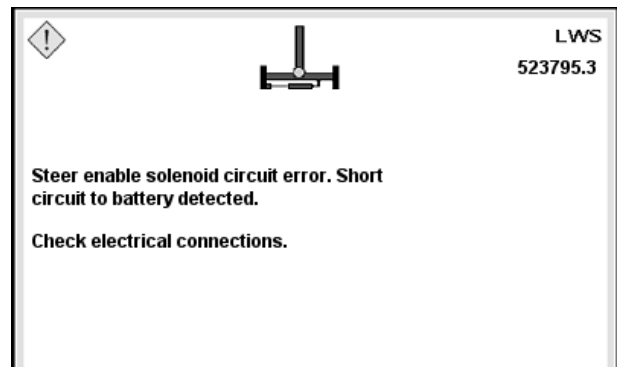


A69319 —UN—25OCT10

OUO6064,000042D -19-25MAR11-10/21

Steer enable solenoid circuit error. Short circuit to battery detected.

Check electrical connections.

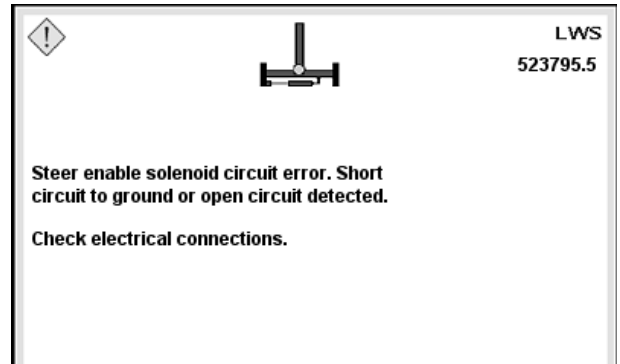


A69320 —UN—25OCT10

OUO6064,000042D -19-25MAR11-11/21

Steer enable solenoid circuit error. Short circuit to ground or open circuit detected.

Check electrical connections.



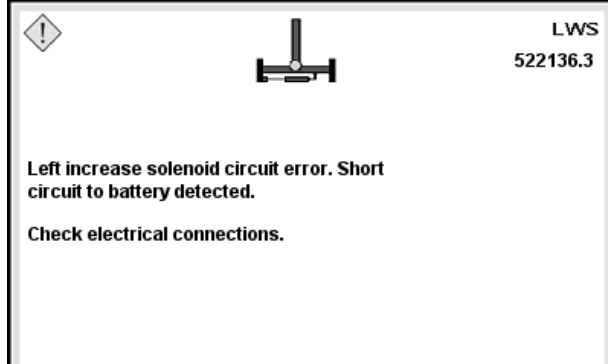
A69321 —UN—25OCT10

Continued on next page

OUO6064,000042D -19-25MAR11-12/21

Left increase solenoid circuit error. Short circuit to battery detected.

Check electrical connections.

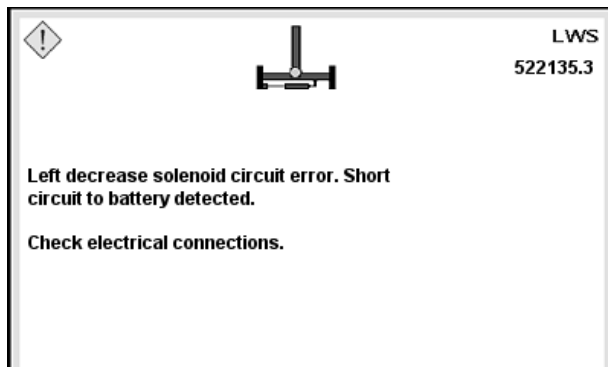


A69322 —UN—25OCT10

OUO6064.000042D -19-25MAR11-13/21

Left decrease solenoid circuit error. Short circuit to battery detected.

Check electrical connections.

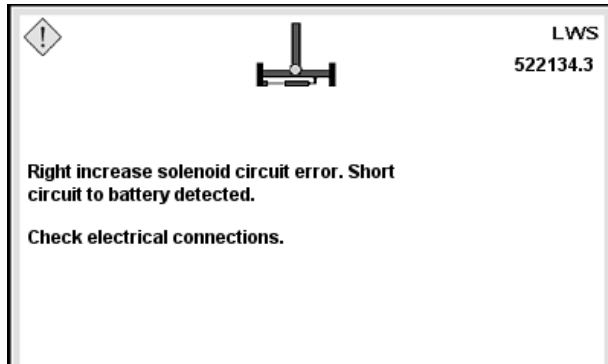


A69323 —UN—25OCT10

OUO6064.000042D -19-25MAR11-14/21

Right increase solenoid circuit error. Short circuit to battery detected.

Check electrical connections.



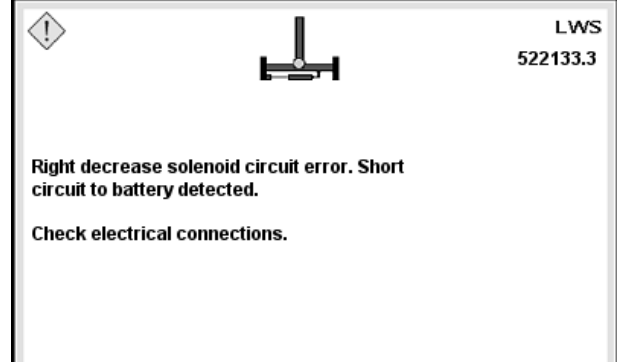
A69324 —UN—25OCT10

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OUO6064.000042D -19-25MAR11-15/21

Right decrease solenoid circuit error. Short circuit to battery detected.

Check electrical connections.

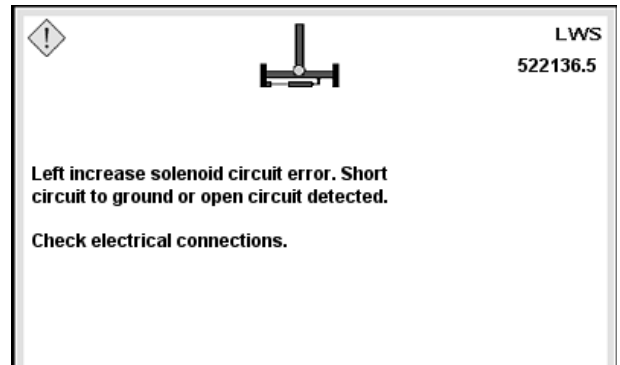


A69325 —UN—25OCT10

OUO6064,000042D -19-25MAR11-16/21

Left increase solenoid circuit error. Short circuit to ground or open circuit detected.

Check electrical connections.

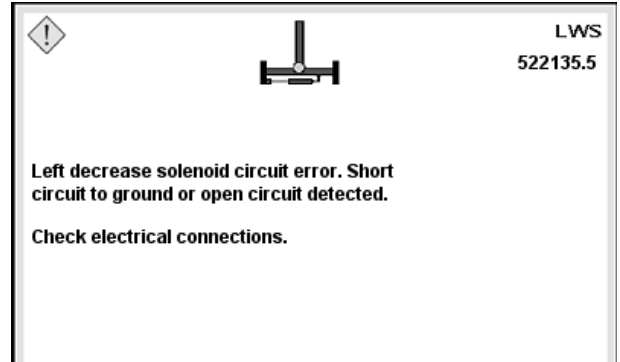


A69326 —UN—25OCT10

OUO6064,000042D -19-25MAR11-17/21

Left decrease solenoid circuit error. Short circuit to ground or open circuit detected.

Check electrical connections.



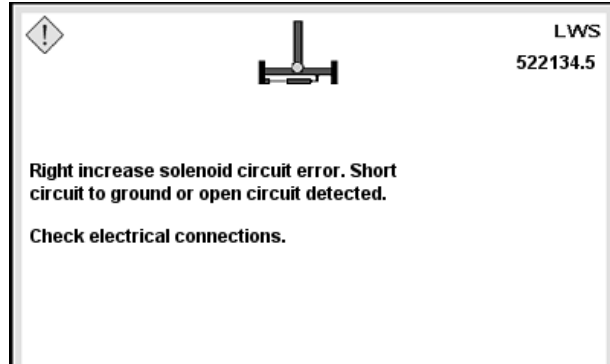
A69327 —UN—25OCT10

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OUO6064,000042D -19-25MAR11-18/21

Right increase solenoid circuit error. Short circuit to ground or open circuit detected.

Check electrical connections.

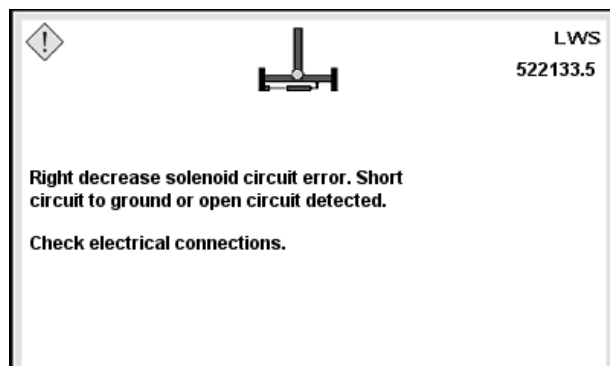


A69329 —UN—25OCT10

OUO6064.000042D -19-25MAR11-19/21

Right decrease solenoid circuit error. Short circuit to ground or open circuit detected.

Check electrical connections.



A69330 —UN—25OCT10

OUO6064.000042D -19-25MAR11-20/21

System calibration error.

Run the sensor calibration wizard.



A69355 —UN—25OCT10

OUO6064.000042D -19-25MAR11-21/21

Pro-Series™ XP Vacuum Meter Setup

Vacuum Meter Operating Characteristics

The operating band (gray area) illustrates how a vacuum meter performs in relation to target population (indicated by horizontal line).

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.

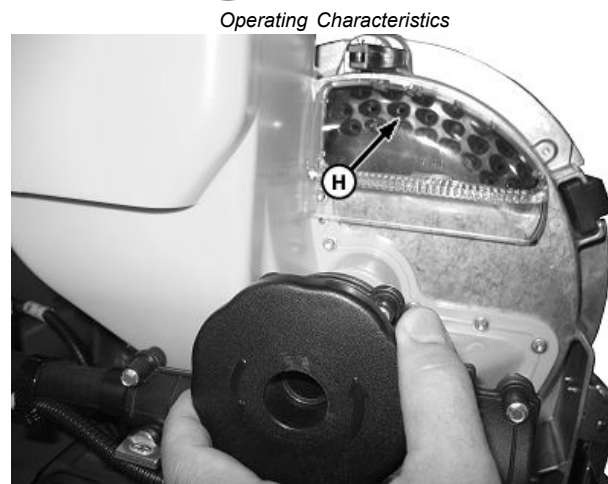
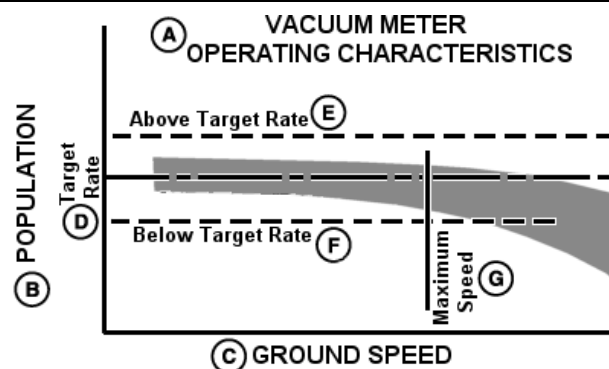
The maximum speed can vary based upon field conditions. Rough field conditions can knock seed off seed disks and can cause row unit bounce which can severely affect seed placement. Adding attachments such as pneumatic down force can improve seed placement in rough field conditions.

Always verify that the correct seed disk is used for seed selection. If the seed is unusually sized or shaped, a disk for a different crop may work better. See SEED DISK RECOMMENDATIONS in this Section or your John Deere™ dealer.

If seed varies widely in size and shape, a flat disk and double eliminator can provide better population control.

To check for the proper seed disk application:

- Place seed in meter
- Connect vacuum hose to meter dome
- Activate vacuum to recommended level for crop
- Turn meter by hand to verify that only one seed fits into each cell (H)



A—Vacuum Meter Operating Characteristics
B—Population
C—Ground Speed
D—Target Rate

E—Above Target Rate
F—Below Target Rate
G—Maximum Speed
H—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

Agonomic Factors = Seed Germination + Soil Temperature + Moisture + Nutrients + Pest Control + Weather

OUC6045,0000706 -19-16JUL10-1/1

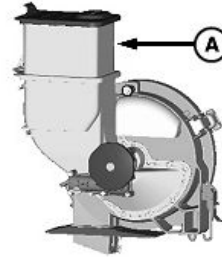
A68173 —UN—14JUL10

A68174 —UN—14JUL10

Meter Settings

Crop and disk variations require different brush and double eliminator setup. See following table and DOUBLE ELIMINATOR OPERATION or CHANGE VACUMETER BRUSH in this section.

John Deere flat disks meter a wide variety of seed sizes and shapes that are non-approved crops for the CCS system. Pro-Series XP™ mini hopper extensions (A) are available through Service Parts to aid in planting crops non-approved for the CCS system.



A—Mini Hopper Extension

Crop	Disk	Single Notch Brush	Double Notch Brush	Double Eliminator Used	Knockout Wheel
Corn	Corn	Yes	No	No	No
Corn	ProMax 40	No	Yes	Yes ^a	Yes
Sweet Corn	ProMax 40 or Small Sweet Corn	No	Yes	Yes ^a	Yes
Popcorn	Sunflower, Popcorn, or Sorghum	Yes	No	No	No
Oil Sunflower	Sunflower or Popcorn	Yes	No	No	No
Confectionary Sunflower	ProMax 40 or Small Sweet Corn	No	Yes	Yes ^a	Yes
Cotton	Delinted or Hilldrop Cotton	Yes	No	No	No
Cotton	Flat Type Edible Bean	No	Yes	Yes ^b	Yes
Soybeans	Soybean or Cotton	Yes	No	No	No
Sorghum or Sugar Beet	Sorghum or Sugar Beet	Yes	No	No	Yes

^aUse A85131 plate when using double eliminator.

^bUse A85715 plate when using double eliminator.

Pro-Series XP is a trademark of Deere & Company

OUO6045,0000708 -19-14JUL10-1/1

Accessing The Vacuum Meter

Unhook rubber strap (A) and open meter door.

A—Rubber Strap



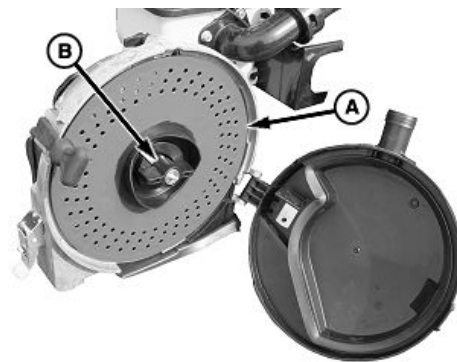
OUO6064,000028B -19-12NOV10-1/1

Remove Seed Disk

1. Open vacuum meter. (See ACCESSING THE VACUUM METER in this section.)
2. Rotate hub handle (B) until it aligns with slots in seed disk (A).
3. Pull seed disk from hub.

A—Seed Disk

B—Hub Handle



OUO6064,000028C -19-12NOV10-1/1

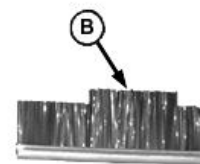
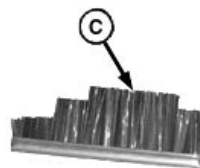
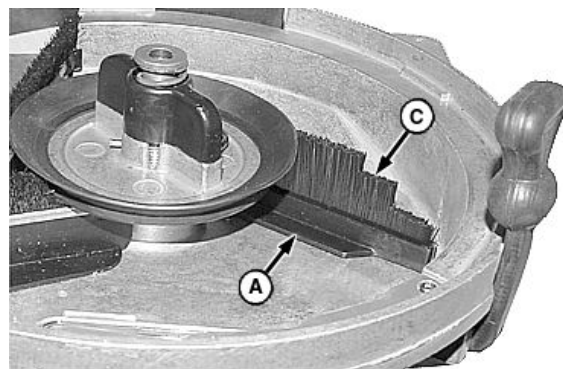
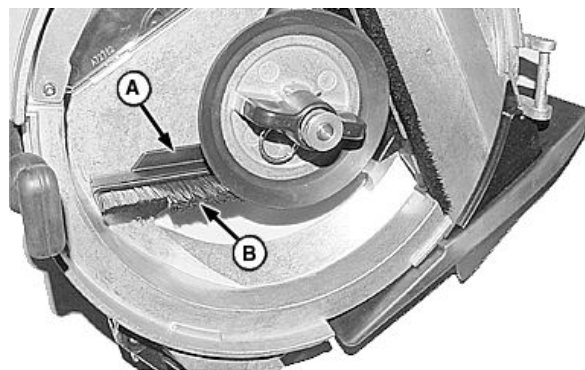
A66843 —UN—25MAR10

Brush Installation

1. Open vacuum meter and remove seed disk.
 2. Firmly hold brush holder (A) against meter housing with one hand while pulling brush from holder with other hand.
- NOTE: Install brush (C) so it contacts outside of meter housing.*
3. Install appropriate brush.
 - Install single notch brush (B) when double eliminator is NOT used.
 - Install double notch brush (C) when double eliminator IS used.

A—Brush Holder
B—Single Notch Brush

C—Double Notch Brush



OUO6045,00006D4 -19-07JUN10-1/1

A53448 —UN—05DEC03

A53449 —UN—05DEC03

A53450 —UN—05DEC03

Double Eliminator Operation

NOTE: When using the Double Eliminator, set vacuum level to approximately 15 and install double notch brush. (See *CHANGE VACUUM METER BRUSH* in this section.)

There are 3 indicator marks on the dial, however it can be set at any location in the range of the dial and then latched to hold that position. The middle position has a detent to represent 1/2 of the hole covered.

Small Indicator Mark: Less hole covered.

Middle Indicator Mark: 1/2 of hole covered. Detent position.

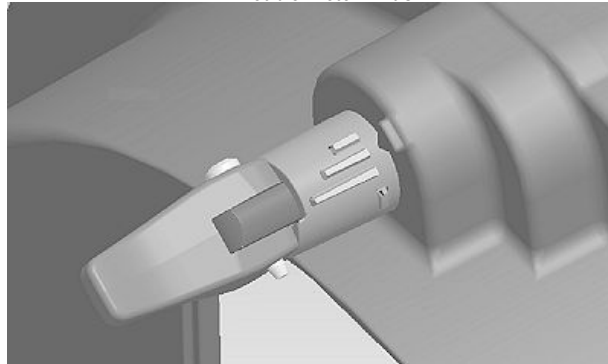
Large Indicator Mark: More hole covered.

Double Eliminator Operating Tips:

- Normal operating position is middle indicator mark aligned with pointer on the meter housing. This is approximately 1/2 of the seed disk hole covered 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 vacuum level or reducing planting speed, it might be necessary to move the adjustment to the smaller indicator mark (less hole covered) or large mark (more hole covered).
- Seed disk hub height adjustment 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 turn when the hub is spun rapidly by hand.



Double Notch Brush



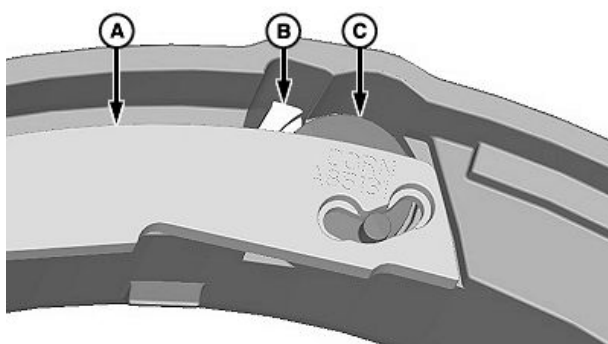
Latched and in Normal Operating Position

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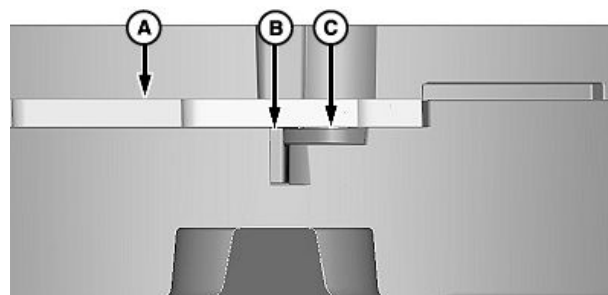
OQO6064,000042E -19-25MAR11-1/3

A60184 —UN—06JUN07

A60109 —UN—31MAY07



A60192 —UN—07JUN07



A60193 —UN—07JUN07

A—Plate
B—Detent Assembly
C—Crank

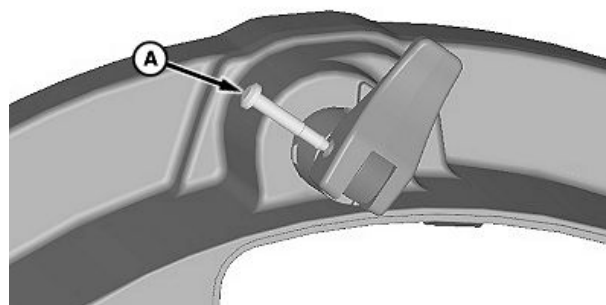
- If excessive wear is on surface of double eliminator plate (A) due to contact with seed disk, check the following:
 - a. Detent assembly (B) is seated fully in pocket.
 - b. Crank (C) is seated fully in bore.

NOTE: Remove pin by prying under head if disassembly is required. Assembly/disassembly of pin and latch can be accomplished a limited number of times, before replacement.

- If double eliminator movement becomes difficult, do the following:
 - a. Remove pin (A).
 - b. Disassemble double eliminator.
 - c. Lubricate double eliminator assembly with powered graphite.
 - d. Assemble double eliminator in reverse order of removal.
 - e. Move double eliminator through its complete range to ensure smooth operation.

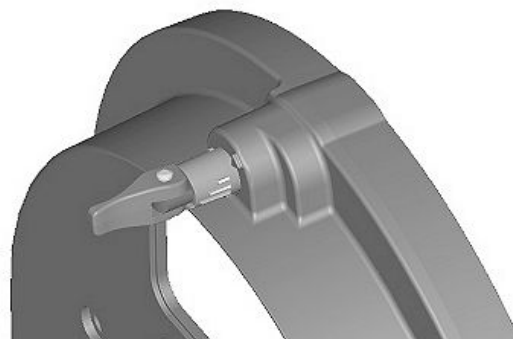
Double Eliminator Operation with Celled Disks:

- Latch double eliminator in storage position when using celled disks.



A60198 —UN—07JUN07

A—Pin



A60180 —UN—06JUN07

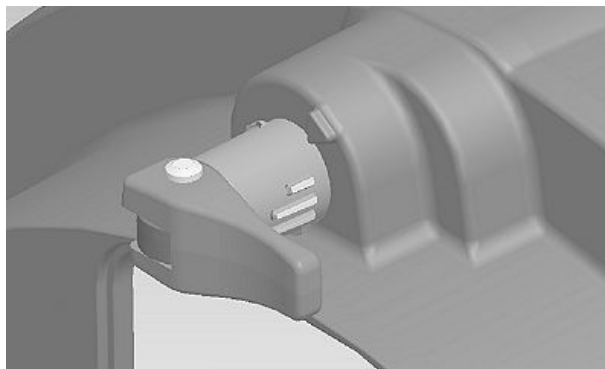
Latched in Storage Position, Celled Disk Use

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OUO6064,000042E -19-25MAR11-2/3

Storage:

- Leave double eliminator unlatched in storage position.



Unlatched and in Storage Position

A60108 —UN—31MAY07

OUC6064,000042E -19-25MAR11-3/3

Install Double Eliminator Plate for ProMax 40, Small Sweet Corn, or Edible Bean Disks

There are two double eliminator plates available. The ProMax 40 and small sweet corn disks use the plate with the characters CORN stamped on the side. The edible bean disk only has the part number stamped on the side.

Install or change double eliminator plate as follows:

1. Unhook rubber strap (A) and open meter door.
2. Remove seed disk.

A—Rubber Strap



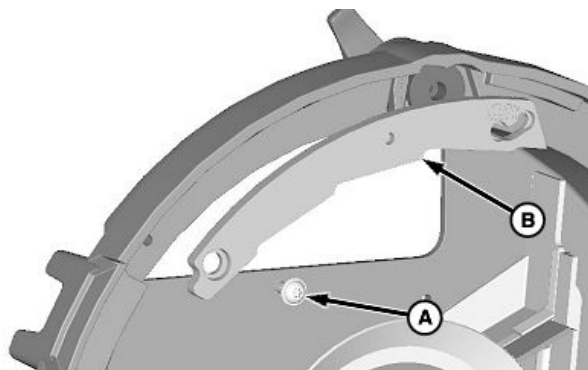
A66842 —UN—25MAR10

OUC6064,000028D -19-12NOV10-1/3

3. Remove shoulder screw (A) and existing plate (B). Save shoulder screw and existing plate for reuse.

A—Shoulder Screw

B—Existing Plate



A67620 —UN—08JUN10

Continued on next page

OUC6064,000028D -19-12NOV10-2/3

NOTE: Edible bean plate is not shipped with machine.
Order from your John Deere™ dealer.

4. Position plate (A) over stud (B).

IMPORTANT: Make sure that shoulder screw is fully tightened against housing.

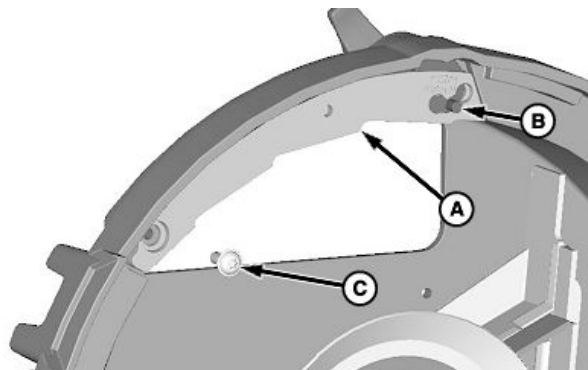
5. Install shoulder screw (C). Tighten shoulder screw to specification.

Specification

Double Eliminator	
Plate Shoulder	
Screw—Torque.....	2 N·m (20 lb.-in.)

6. Install seed disk.

7. Close and latch meter door.



A—Plate, Edible Bean, or Corn C—Shoulder Screw
B—Stud

A67621—UN—08JUN10

OOU6064,000028D -19-12NOV10-3/3

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.

OOU6074,0000ECD -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.

Use the **Corn Seed Disk Selection Guide** chart first to determine the recommended seed disk and then refer to vacuum level chart for initial vacuum setting.

Most corn seed can be planted near 100 percent of desired population when using proper vacuum levels and the small corn or standard corn seed disks (which have seed cells).

Using cell-type disks (Small and Standard Corn Seed Disks) requires careful seed selection for proper performance.

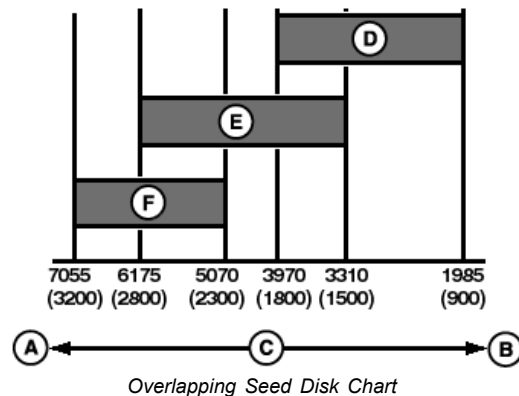
Metering performance is directly dependent on the consistency of seed sizing. Seeds that are mixed in shape and size do not perform optimally with cell-type disks. The ProMax 40 Disk (A52391) with double eliminator is required for optimum seed singulation and seed release when seeds vary in size.

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

- Difficult to plant seeds include varieties with mixed sizes, mixed shapes, combinations of sizes and shapes, 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.



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

- ProMax 40 disks have 40 holes per revolution. Machines with Mechanical Meters: Set seed transmission according to Corn Using ProMax 40 Disk rate chart when ProMax 40 disk is used to plant field corn. Machines with Variable Rate Drive (VRD): Select ProMax 40 seed disk from list in SeedStar™ monitor. (See Setup Seed Rates section in SeedStar™ Operator's Manual)

IMPORTANT: When using ProMax 40 disks, if cell type rate charts are used to set the transmission or the incorrect seed disk is programmed for VRD in the monitor, overpopulation occurs. Cell type disks have 30 cells.

Continued on next page

OUO6074,0000ECE -19-27JUL10-1/2

- Quality graded seed also requires proper seed disk selection for optimal performance.

PLANTING CORN IN HILLSIDE CONDITIONS

The angle of a hillside or changing directions on a hillside can affect meter performance. 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. Fewer holes provide less opportunity for doubles.
- Use round seed. Round seed remains in the cell of a cell type disk better and reduces the chance for doubles.

SeedStar is a trademark of Deere & Company

IMPORTANT: Properly set the mechanical transmission or program the VRD monitor when ProMax 40 disks are used to plant field corn. When using ProMax 40 disks, if cell type rate charts are used to set the transmission or the incorrect seed disk is programmed for VRD in the monitor, overpopulation occurs. Cell type disks have 30 cells.

- Use a flat disk with double eliminator, if round seed is not available or hillsides are steep. 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.

OUO6074,0000ECE -19-27JUL10-2/2

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. Pro-Series XP™ mini hopper extensions are available through Service Parts to aid in planting crops non-approved for the CCS system.

SWEET CORN

Disk Name	Part Number	Seed/kg	Seed/lb	Number of Cells	Hole Diameter (mm)
ProMax 40	A52391	<8600	<3900	40	4.5
Small Sweet Corn	A52390	>7700	>3500	40	3.75

POPCORN

Disk Name	Part Number	Seed/kg	Seed/lb	Number of Cells	Hole Diameter (mm)
Sunflower/Popcorn	H136478	5500 to 9900	2500 to 4500	30	2.6
Sorghum	A43066	>9900	>4500	45	1.5

On difficult to plant seeds use of the Small Sweet Corn disk (Part No. A52390) may improve performance.

In some cases a Small Corn (Part No. A43215) or Sunflower (Part No. H136478) cell type disk may provide satisfactory performance depending upon seed size and shape.

CONFECTIONARY SUNFLOWER

Disk Name	Part Number	Seed/kg	Seed/lb	Number of Cells	Hole Diameter (mm)
ProMax 40 Flat Type with Double Eliminator	A52391	5000 to 7200	2250 to 3250	40	4.5
Small Sweet Corn Flat Type with Double Eliminator	A52390	7200 to 11 600	3250 to 5250	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

For oil sunflower seed sizes 1 (Extra Large) and 5 (Extra Small) see the recommendations above 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	8800 to 13 200	4000 to 6000	64	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 Hilldrop	A65622	8800 to 13 200	4000 to 6000	48	2.5

For small seeds that result in dropping more than four seeds, use of the 2-Cell Hilldrop Cotton disk is recommended.

2-CELL HILLDROP COTTON

Disk Name	Part Number	Seed/kg	Seed/lb	Number of Cells	Hole Diameter (mm)
2-Cell Hilldrop	A74961	8800 to 13 200	4000 to 6000	64	2.5

COTTON USING EDIBLE BEAN - Flat Disk A52903 Small

Cotton Seed	Seeds/kg	Seeds/lb	Number of Cells	Hole Diameter (mm)
Small	3520 to 7260	1600 to 3300	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	Below 7700	Below 3500	108	4.4
Cotton	A56251	Above 7700	Above 3500	64	2.5

For smaller seed sizes that result in doubles, a Cotton Seed disk (Part No. A56251) can provide improved performance.

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OOU6074,0000C40 -19-08APR09-1/2

LOW-RATE SORGHUM

Disk Name	Part Number	Seed/kg	Seed/lb	Number of Cells	Hole Diameter (mm)
Low-Rate Sorghum	A43066	22 000 to 35 300	10 000 to 16 000	45	1.5

For smaller seed sizes that result in doubles, a Medium Sugar Beet disk (Part No. H136445) or a Small Sugar Beet disk (Part No. A51712) can provide improved performance.

HIGH-RATE SORGHUM

Disk Name	Part Number	Seed/kg	Seed/lb	Number of Cells	Hole Diameter (mm)
High-Rate Sorghum	A52802	22 000 to 35 300	10 000 to 16 000	90	1.5

Pro-Series XP is a trademark of Deere & Company

SORGHUM USING SUGAR BEET DISK

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—4.0 mm Seed	45	1.5

BLANK SEED DISK

Part No. A52554

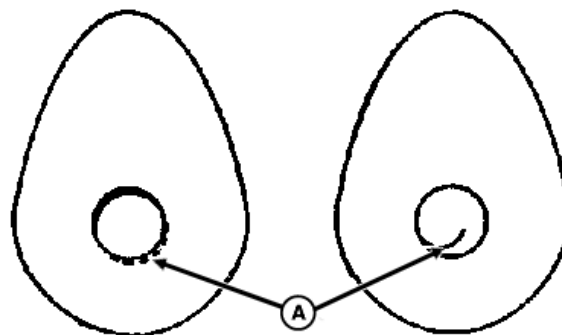
The blank seed disk allows custom drilling of specific hole sizes for specialty crops. See your John Deere dealer for details.

Checking Seed Disk Cell

NOTE: Perform a field check to determine seed meter accuracy. It is not necessary to replace any seed disk if metering performance is satisfactory.

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 can not be easily removed, disk should be replaced.

A—Flash

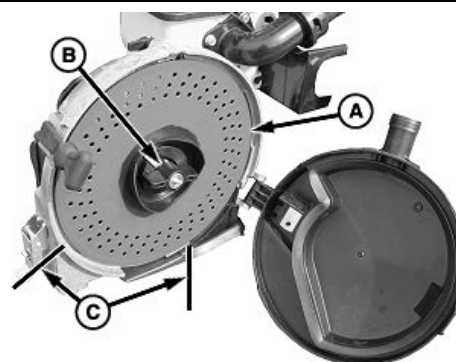


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OUO6045,00006D2 -19-08APR09-1/1

Install Seed Disk

1. Open vacuum meter.
2. Fit seed disk (A) into housing. Hold seed disk stationary and rotate hub handle (B) into locked position.
3. Inspect hub adjustment. If the following conditions are not met (see ADJUST METER HUB in this section).
 - ☐ Verify that the seed disk (A) continues to rotate approximately one 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.



A—Seed Disk
B—Hub Handle

C—Section

A66844 —UN—25MAR10

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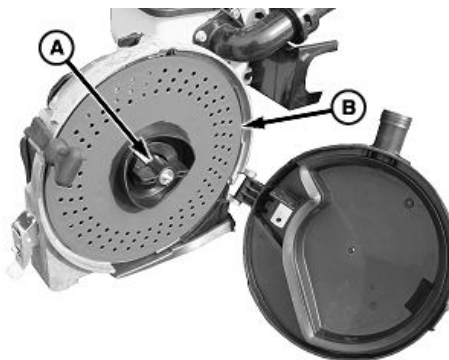
Adjust Meter Hub

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 vacuum meter.
2. Turn hub handle (A) counterclockwise. Remove seed disk.

A—Hub Handle

B—Housing



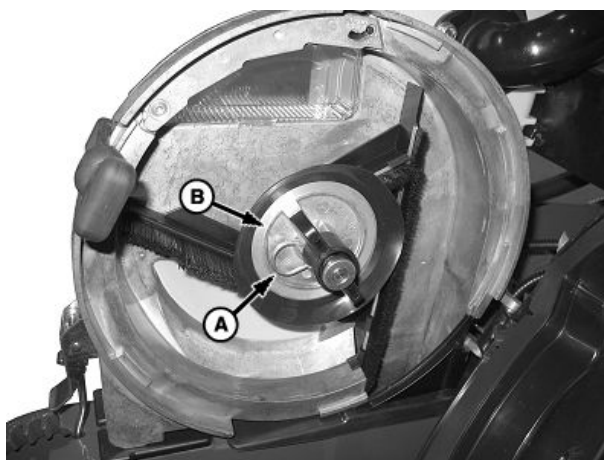
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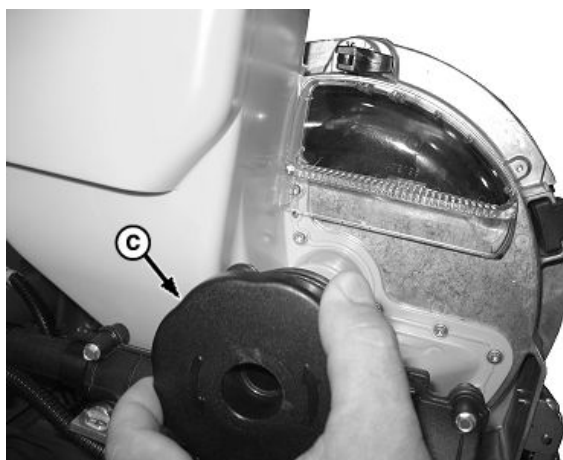
3. Remove spring clip (A).
4. Adjust hub (B).
 - Make small adjustments.
 - Hold meter hub handle (C).
 - Thread hub (B) clockwise to move seed disk closer to meter housing.
 - Thread hub (B) counterclockwise to move seed disk away from meter housing.
5. Align slot in hub with hole in shaft and install spring clip (A).

A—Spring Clip
B—Hub

C—Meter Hub Handle



A88171—UN—14JUL10



A88172—UN—14JUL10

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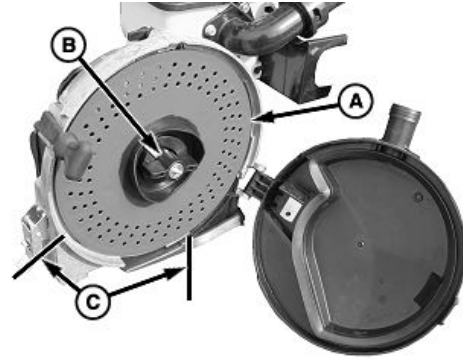
6. Install seed disk (A) and lock hub handle (B).
7. Inspect adjustment.
 - a. Spin and release disk rapidly by hand.
 - b. Observe distance disk rotates. If disk rotates approximately one revolution and stops, hub is adjusted properly.
 - c. Repeat hub adjustment until correct.

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 cell. 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 (large enough for seed to wedge between disk and housing) is apparent as disk is rotated, disk replacement is recommended.

A—Seed Disk
B—Hub Handle

C—Area



Storage

OUO6064,000028F -19-12NOV10-3/3

A66844 —UN—25MAR10

A44241 —UN—19NOV97

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.



A51650—UN—04FEB03

A—Seed Knockout Wheel

AG,OUO6074,1180 -19-09APR09-1/1

Install Knockout Wheel Assembly

NOTE: The knockout wheel (A) 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.

NOTE: Refer to **METER SETTINGS** in this section for knockout wheel recommendations.

1. Open vacuum meter. See **ACCESSING THE VACUUM METER** in this section.
2. Loosen screw (B) and remove wiper assembly (C).
3. Install knockout assembly (D) with screw (B).

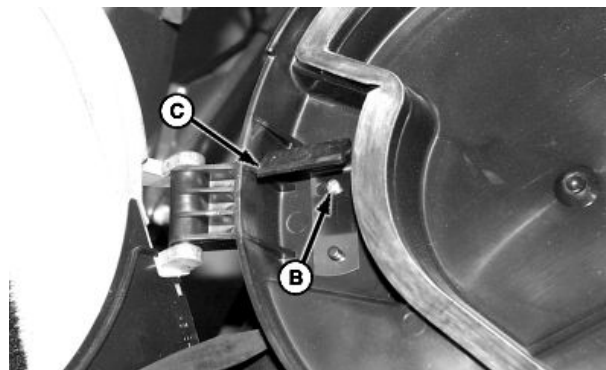
NOTE: When closing dome, verify that wheel is aligned with row of seed cells on seed disk.

A—Knockout Wheel
B—Screw

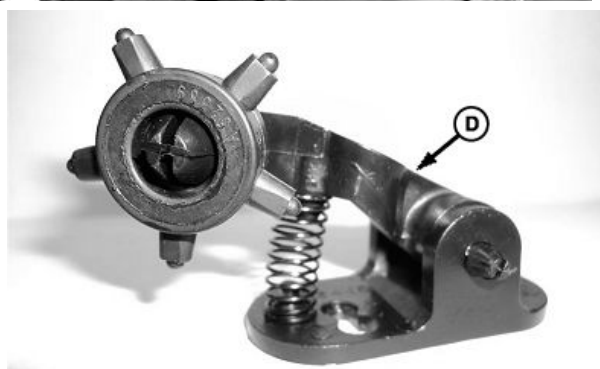
C—Wiper Assembly
D—Knockout Assembly



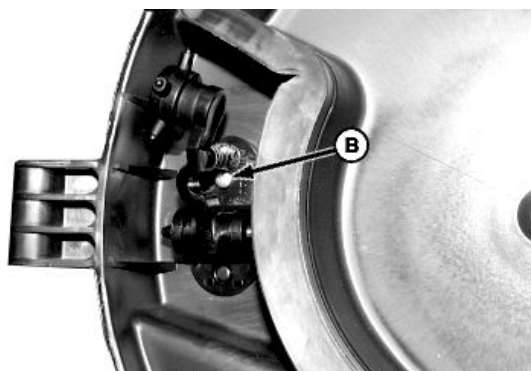
A51650 —UN—04FEB03



A51175 —UN—19NOV02



A68268 —UN—16JUL10



A51651 —UN—04FEB03

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OPTIMIZING SEED SPACING

Choosing the correct seed disk for the seed being planted is the first step in optimal meter performance. Seed spacing is also dependent on ground conditions, meter speed and ground speed.

IMPORTANT: The row unit can meter seeds in rough ground conditions, at higher metering speeds and higher ground speeds, but at a reduced rate of seed spacing performance. The operator needs to determine if the planting timeline is more important than achieving optimal spacing.

GROUND CONDITIONS

The rougher the ground conditions during planting, the more seed spacing will vary. Slow down in rougher ground conditions to achieve optimal spacing.

METER SPEED

The higher the meter speed, the more difficult it is to meter the seed at optimal spacing. For higher populations, reduce ground speed to reduce meter speed.

GROUND SPEED

Ground speed directly affects in-ground seed spacing performance. As ground speeds are increased above 8 km/h (5 mph), seed spacing performance will decrease.

OUO6074,0000ED1 -19-14APR09-1/1

CHECKING METER PERFORMANCE

IMPORTANT: After a Seed Disk is selected, seed singulation checks in the meter and in ground spacing checks are required for determining the level of metering performance. See Checking Seed Population section.

The seed disk selection guidelines are recommendations based on seed testing from a variety of sources. Because of the changes in shape and size from year to year, there is always the possibility that an alternative disk will provide better performance.

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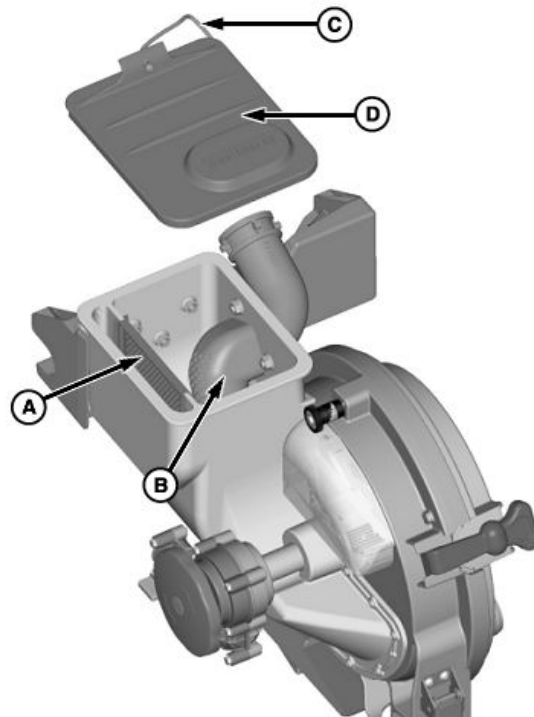
Install Hopper Extensions (Pro Only)

NOTE: When planting sugar beets or when using seeds not approved for CCS bulk tank delivery, seeds must be added to the hoppers not the CCS tanks. The extensions allow for more seeds to be planted. Extensions can be used when planting seed plots.

1. Remove screened divider (A), discharge elbow (B) and tether (C) from lid (D).

A—Screened Divider
B—Discharge Elbow

C—Tether
D—Lid



A55143 —UN—31MAR06

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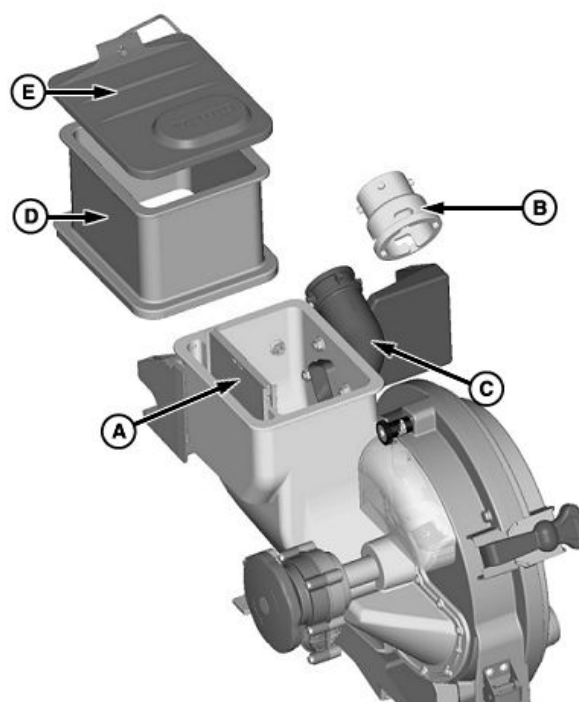
OUO6064,00002D4 -19-12NOV10-1/3

NOTE: Do not install more than two extensions onto a mini-hopper. If two extensions are added, order cap (B) from your John Deere™ dealer and install onto the CCS elbow (C). The cap prevents seed from flowing back into the CCS hose.

2. Install non-screened divider (A), one or two extensions (D) onto the mini-hopper, and lid (E) onto the upper extension.

NOTE: Hopper extensions can be left on the mini-hopper when using CCS delivery system. To return to CCS system use, install vented screen removed in step 2, reconnect CCS fan harness, and remove cap (if used). If solid screen (A) is not replaced, the mini-hopper overfills and seed spills out of the mini-hopper.

A—Non-Screened Divider D—Extension
B—Cap E—Lid
C—Elbow



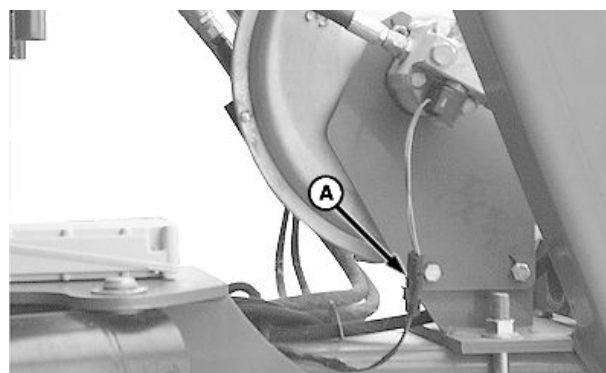
A55144 —UN—31MAR06

OUO6064,00002D4 -19-12NOV10-2/3

NOTE: Disable CCS fan when using the mini-hopper.

3. Disconnect harness (A) to disable CCS fan.

A—CCS Solenoid Harness



A54350 —UN—18MAY04

OUO6064,00002D4 -19-12NOV10-3/3

Set Vacuum Levels

Use of Talc Lubricant

See Use Of Talc and Graphite Lubricants section.

OUC6045,0000705 -19-06JAN06-1/1

Zero the Vacuum Gauge

NOTE: To zero SeedStar™ monitor vacuum sensors, refer to your SeedStar™ monitor operator's manual.

SeedStar is a trademark of Deere & Company

OUC6064,00002DB -19-12NOV10-1/1

Set Vacuum Level

IMPORTANT: When using CCS Seed Delivery system, the only crops that can be delivered are corn, soybeans, sorghum, sunflower, and cotton.

IMPORTANT: Some small or large seed sizes and shapes require vacuum levels slightly higher or lower than settings shown. Always verify vacuum level with field check. The charts provided in this section are guides and are accurate in most conditions. Some situations require a higher or lower vacuum setting.

Vacuum level is indicated on a monitor display mounted in the tractor cab. (See SeedStar™ operator's manual) for vacuum level display on monitor.

VACUUM LEVEL CHART	
Crop	Vacuum Level
Corn	See Chart
Sweet Corn	See Chart
Popcorn	See Chart
Cotton	8 in.
Cotton Hill drop	8 in.
Cotton Using Flat Edible Bean Disk	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.

SeedStar is a trademark of Deere & Company

Initial vacuum levels are readings taken AT PLANTING SPEED.

NOTE: The vacuum level is slightly lower during tractor and vacuum motor start-up. Allow hydraulic oil to warm up for most accurate readings.

Set vacuum level as follows:

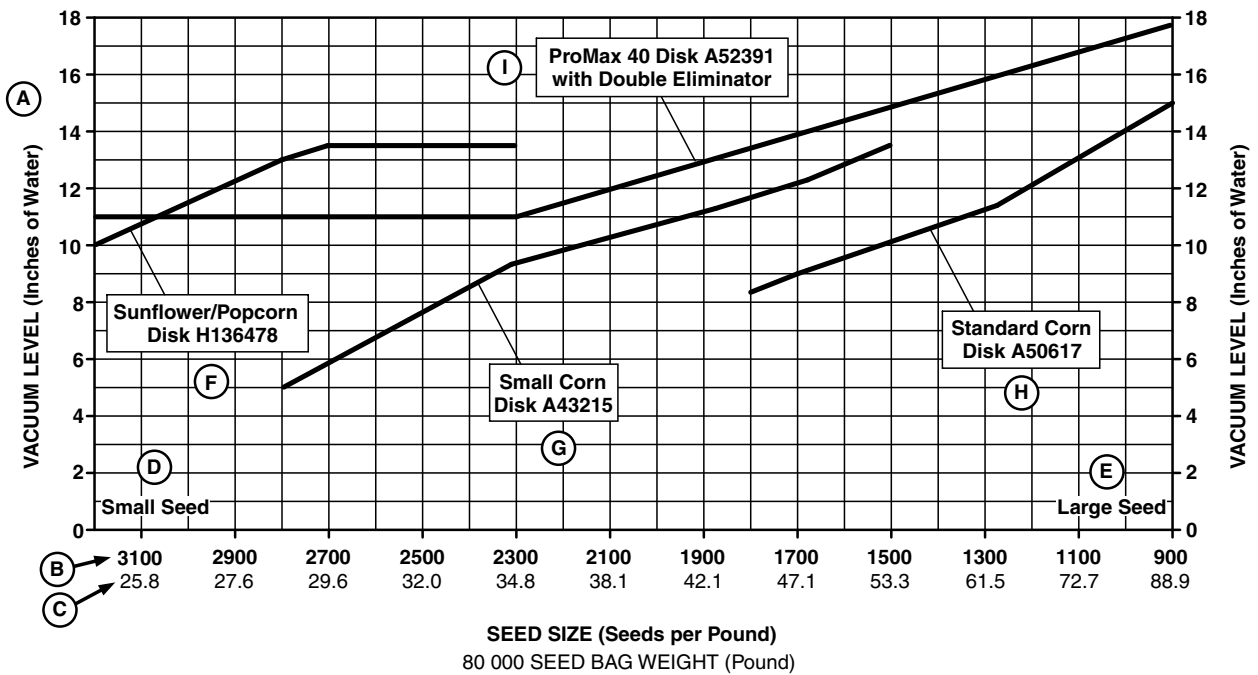
1. Refer to tractor operator's manual. Move lever to forward detent position to start vacuum motor. Allow oil to warm up for 15 minutes.
2. Fill hoppers or CCS bulk tanks with seed.
3. Press "Rotate Seed Meters" button twice on VRD monitor or plant approximately 5 m (15 ft.) to cover seed disks with seed. Empty seed disks affect vacuum readings.

IMPORTANT: The hydraulic connections determine whether the tractor flow control valve or planter flow control valve is used to control vacuum level. See Attach Machine section in planter operator's manual and verify type of connection.

4. Adjust flow control valve on planter or flow control in tractor until vacuum level is at initial level recommended in table for the target planting speed.
5. Perform field checks to verify that population is accurate. Perform meter and vacuum adjustments as needed. Refer to planter manual for troubleshooting and planter adjustments. Refer to this manual for meter adjustments.

OUC6064,00004EB -19-31MAY11-1/1

Vacuum Level for Corn Using H136478, A43215, A50617 or A52391 Seed Disks



A—Vacuum Level (Inches of Water)

B—Seeds Per Pound

C—Pounds in Seed Bag (80 000 seeds)

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 pound.

IMPORTANT: The proper vacuum level must be calculated for each seed variety. Calculate seeds per pound by dividing the number of seeds in bag by the weight of bag.

EXAMPLE: If there are 1889 seeds/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.

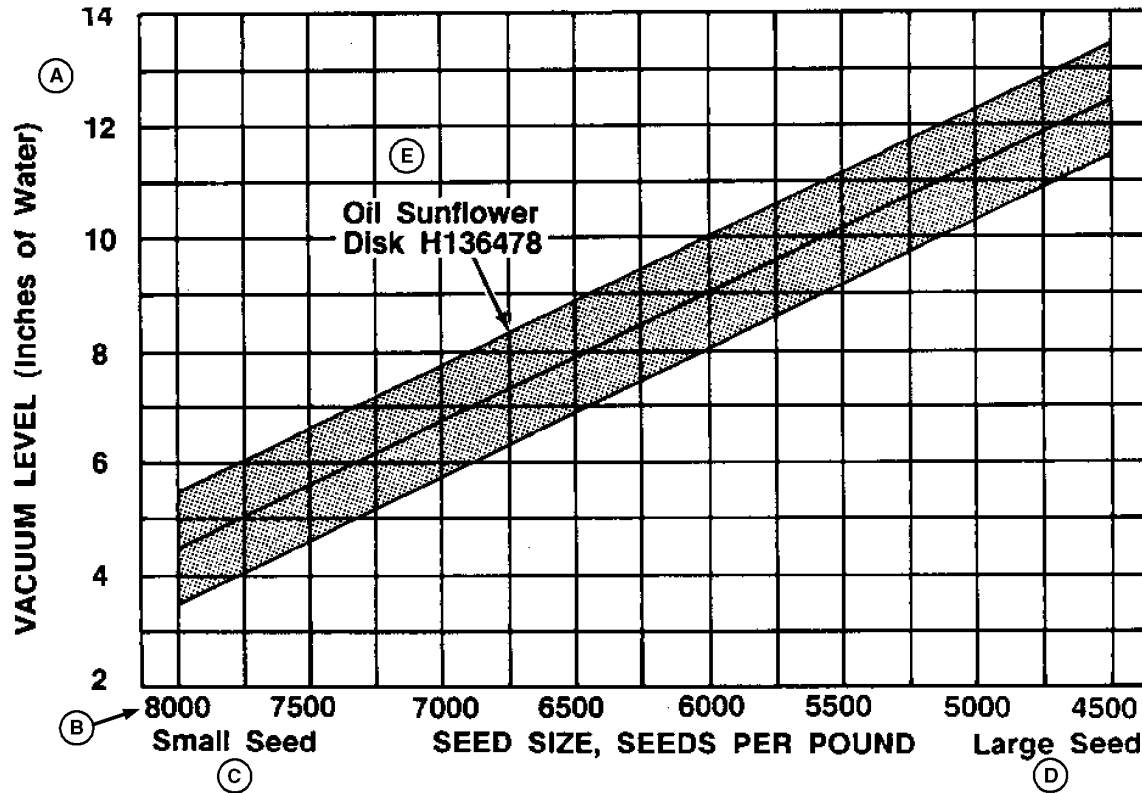
Select the Small Corn Disk initially when seed sizes overlap the Small Corn Disk (A43215) and the Standard Corn Disk (A50617) levels in chart. If population is difficult to control, switch to Standard Corn Disk.

OUC6074,000101B -19-08AUG07-1/1

A60563 —UN—08AUG07

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—Small Seed

D—Large Seed
E—Oil Sunflower Disk

Use information from seed supplier to calculate seeds per pound.

IMPORTANT: The proper vacuum level must be calculated for each seed variety. Calculate seeds per pound by dividing the number of seeds in bag by the weight of bag.

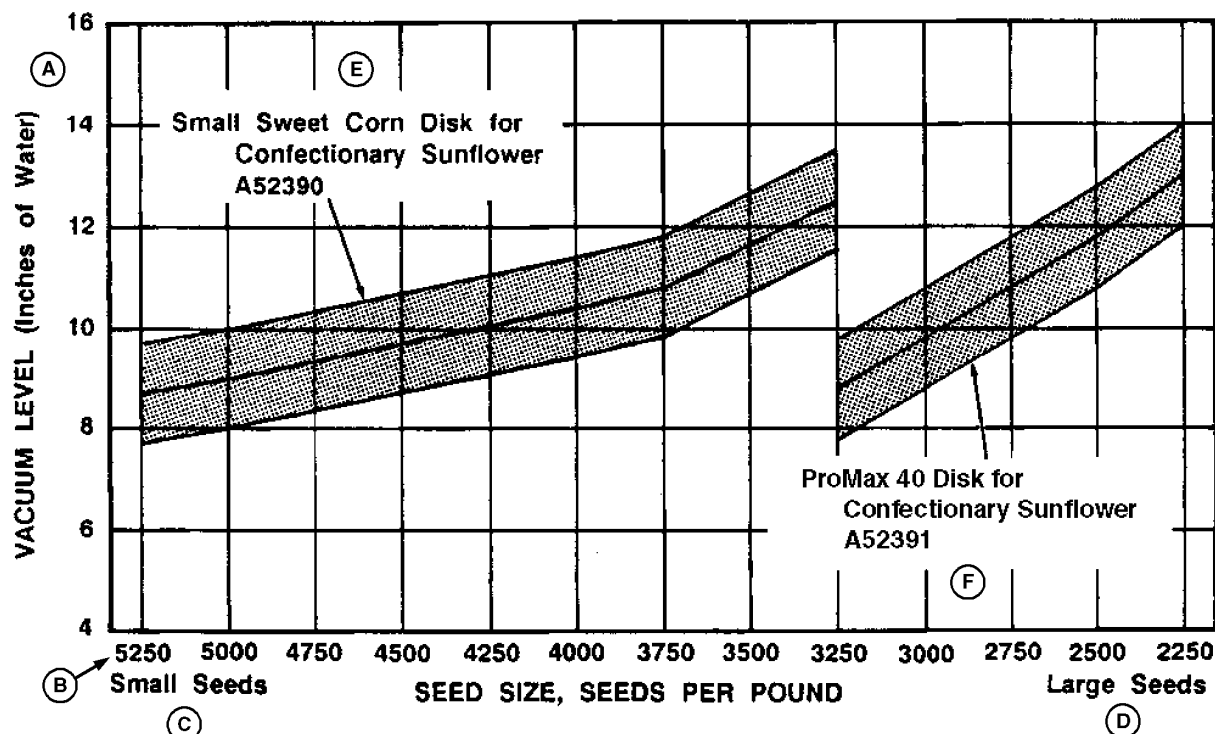
EXAMPLE: If there are 5500 seeds/lb, the chart indicates a vacuum level of 10 in. with Oil Sunflower Disk.

OUO6074,000101C -19-03AUG07-1/1

A60565—UN—07AUG07

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—Small Seed

D—Large Seed
E—Small Sweet Corn Disk

F—ProMax 40 Disk

Use information from seed supplier to calculate seeds per pound.

IMPORTANT: The proper vacuum level must be calculated for each seed variety. Calculate seeds per pound by dividing the number of seeds in bag by the weight of bag.

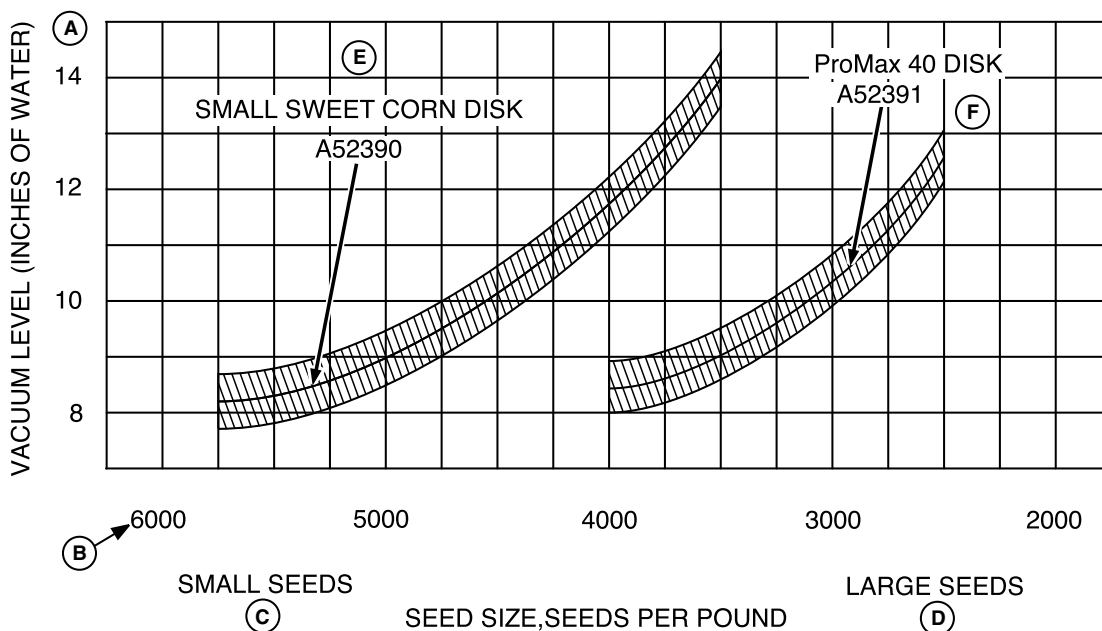
EXAMPLE: If there are 4250 seeds/lb, the chart indicates a vacuum level of 10 in. with Small Sweet Corn Disk.

OUO6074,000101D -19-03AUG07-1/1

A60567—UN—07AUG07

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—Small Seed

D—Large Seed
E—Small Sweet Corn Disk

F—ProMax 40 Disk

Use information from seed supplier to calculate seeds per pound.

IMPORTANT: The proper vacuum level must be calculated for each seed variety. Calculate

seeds per pound by dividing the number of seeds in bag by the weight of bag.

EXAMPLE: If there are 4250 seeds/lb, the chart indicates a vacuum level of 11 in. with Small Sweet Corn Disk.

OUO6074,000101E -19-03AUG07-1/1

AG0569—UN—19JUL10

Vacuum Level for Cotton, Using Flat Edible-Bean Disk

Vacuum Seed Chart Using Flat Edible Bean Disk						
Crop Types	Edible Bean Flat Type Disks			Vacuum Inches of Water	Doubles Eliminator Percent of Hole Covered	Seed Size Recommendations
	Small A52903	Medium A52904	Large A52878			
Small Cotton	X			12 - 18	0 - 50	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 fan.

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.

OUO6074,0001022 -19-16JUL10-1/1

Vacuum Meter Rate Charts

How to Use Planting Rate Charts

IMPORTANT: Actual planting rate must be checked in the field. See Checking Seed Population section.

NOTE: All rates in the following charts are based on typical drive wheel slippage. Drive wheel slippage is affected by crop residue, unit downforce, tire pressure, and soil conditions.

1. Select desired row spacing and seed population under proper column.
2. Choose proper input sprocket:

A higher population can require the use of the high range input sprocket and HIGH RANGE chart for that particular seed.

A lower population can require the use of the low range input sprocket and LOW RANGE chart for that particular seed.

3. Determine correct seed drive transmission sprocket combination.
4. Determine recommended planting speed range. The faster speed in the speed range is for optimum field conditions. Reduce speed and increase unit downforce if planting in rough conditions.

AG,OU06074,1224 -19-17APR09-1/1

Corn—36 in. and 38 in. Rows Using 30 Cell Disk

Corn using 30 cell seed disks A50617, A43215, and H136478.

Rates are approximate. Perform a rate check before planting.
See Vacuum Meter Setup section to configure the meter.
(See HOW TO USE RATE CHARTS in this section) for assistance with chart.

HIGH RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	2.7	65 413	130 825	61 970	123 940
	26	2.9	60 381	120 762	57 203	114 406
	28	3.1	56 068	112 136	53 117	106 234
	30	3.3	52 330	104 660	49 576	99 152
	35	3.9	44 854	89 709	42 494	84 987
29	24	3.2	54 199	108 398	51 346	102 693
	26	3.5	50 030	100 060	47 397	94 793
	28	3.8	46 456	92 913	44 011	88 022
	30	4.0	43 359	86 718	41 077	82 154
	35	4.7	37 165	74 330	35 209	70 418
24	24	3.9	44 854	89 709	42 494	84 987
	26	4.2	41 404	82 808	39 225	78 450
	28	4.5	38 447	76 893	36 423	72 846
	30	4.9	35 883	71 767	33 995	67 990
	35	5.7	30 757	61 515	29 138	58 277
18	24	5.2	33 641	67 282	31 870	63 740
	26	5.6	31 053	62 106	29 419	58 837
	28	6.0	28 835	57 670	27 317	54 635
	30	6.5	26 913	53 825	25 496	50 992
	35	7.6	23 068	46 136	21 854	43 708
14	24	6.7	26 165	52 330	24 788	49 576
	26	7.2	24 152	48 305	22 881	45 762
	28	7.8	22 427	44 854	21 247	42 494
	30	8.3	20 932	41 864	19 830	39 661
	35	9.7	17 942	35 883	16 997	33 995

LOW RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	7.5	24 530	49 059	23 239	46 477
	26	8.1	22 643	45 286	21 451	42 902
	28	8.7	21 025	42 051	19 919	39 838
	30	9.4	19 624	39 248	18 591	37 182
	35	10.9	16 820	33 641	15 935	31 870
29	24	9.0	20 325	40 649	19 255	38 510
	26	9.8	18 761	37 522	17 774	35 548
	28	10.6	17 421	34 842	16 504	33 008
	30	11.3	16 260	32 519	15 404	30 808
	35	13.2	13 937	27 874	13 203	26 407

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OUC6064,00003C7 -19-14MAR11-1/2

Vacuum Meter Rate Charts

LOW RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth			Approximate Seed Population Per Acre			
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
24	24	10.9	16 820	33 641	15 935	31 870
	26	11.8	15 527	31 053	14 709	29 419
	28	12.8	14 417	28 835	13 659	27 317
	30	13.7	13 456	26 913	12 748	25 496
	35	15.9	11 534	23 068	10 927	21 854
18	24	14.6	12 615	25 231	11 951	23 903
	26	15.8	11 645	23 290	11 032	22 064
	28	17.0	10 813	21 626	10 244	20 488
	30	18.2	10 092	20 184	9561	19 122
	35	21.3	8650	17 301	8195	16 390
14	24	18.7	9812	19 624	9295	18 591
	26	20.3	9057	18 114	8580	17 161
	28	21.9	8410	16 820	7968	15 935
	30	23.4	7850	15 699	7436	14 873
	35	27.3	6728	13 456	6374	12 748

OUO6064,00003C7 -19-14MAR11-2/2

Corn or Small Sweet Corn—36 in. and 38 in. Rows Using ProMax 40 Cell Disk

Corn or small sweet corn using ProMax 40 cell disks A52390, A52391, and A52554.

Rates are approximate. Perform a rate check before planting.
See Vacuum Meter Setup section to configure the meter.
(See HOW TO USE RATE CHARTS in this section) for assistance with chart.

HIGH RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	2.0	87 217	174 434	82 626	165 253
	26	2.2	80 508	161 016	76 271	152 541
	28	2.3	74 757	149 515	70 823	141 645
	30	2.5	69 773	139 547	66 101	132 202
	35	2.9	59 806	119 612	56 658	113 316
29	24	2.4	72 265	144 531	68 462	136 924
	26	2.6	66 706	133 413	63 196	126 391
	28	2.8	61 942	123 883	58 682	117 363
	30	3.0	57 812	115 625	54 770	109 539
	35	3.5	49 553	99 107	46 945	93 891
24	24	2.9	59 806	119 612	56 658	113 316
	26	3.2	55 205	110 411	52 300	104 600
	28	3.4	51 262	102 524	48 564	97 128
	30	3.6	47 845	95 689	45 327	90 653
	35	4.2	41 010	82 019	38 851	77 703
18	24	3.9	44 854	89 709	42 494	84 987
	26	4.2	41 404	82 808	39 225	78 450
	28	4.5	38 447	76 893	36 423	72 846
	30	4.9	35 883	71 767	33 995	67 990
	35	5.7	30 757	61 515	29 138	58 277
14	24	5.0	34 887	69 773	33 051	66 101
	26	5.4	32 203	64 406	30 508	61 016
	28	5.8	29 903	59 806	28 329	56 658
	30	6.2	27 909	55 819	26 440	52 881
	35	7.3	23 922	47 845	22 663	45 327

LOW RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	5.3	32 706	65 413	30 985	61 970
	26	5.8	30 190	60 381	28 601	57 203
	28	6.2	28 034	56 068	26 559	53 117
	30	6.7	26 165	52 330	24 788	49 576
	35	7.8	22 427	44 854	21 247	42 494
29	24	6.4	27 100	54 199	25 673	51 346
	26	7.0	25 015	50 030	23 698	47 397
	28	7.5	23 228	46 456	22 006	44 011
	30	8.0	21 680	43 359	20 539	41 077
	35	9.4	18 583	37 165	17 604	35 209

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OUC6064,00003C8 -19-14MAR11-1/2

Vacuum Meter Rate Charts

LOW RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
24	24	7.8	22 427	44 854	21 247	42 494
	26	8.4	20 702	41 404	19 612	39 225
	28	9.1	19 223	38 447	18 212	36 423
	30	9.7	17 942	35 883	16 997	33 995
	35	11.3	15 379	30 757	14 569	29 138
18	24	10.4	16 820	33 641	15 935	31 870
	26	11.2	15 527	31 053	14 709	29 419
	28	12.1	14 417	28 835	13 659	27 317
	30	12.9	13 456	26 913	12 748	25 496
	35	15.1	11 534	23 068	10 927	21 854
14	24	13.3	13 083	26 165	12 394	24 788
	26	14.4	12 076	24 152	11 441	22 881
	28	15.5	11 214	22 427	10 623	21 247
	30	16.6	10 466	20 932	9915	19 830
	35	19.4	8971	17 942	8499	16 997

OUO6064,00003C8 -19-14MAR11-2/2

Oil Sunflower—36 in. and 38 in. Rows Using 30 Cell Disk

Oil sunflower using 30 cell disk H136478.

Rates are approximate. Perform a rate check before planting.
See Vacuum Meter Setup section to configure the meter.
(See HOW TO USE RATE CHARTS in this section) for assistance with chart.

HIGH RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	2.7	65 413	130 825	61 970	123 940
	26	2.9	60 381	120 762	57 203	114 406
	28	3.1	56 068	112 136	53 117	106 234
	30	3.3	52 330	104 660	49 576	99 152
	35	3.9	44 854	89 709	42 494	84 987
29	24	3.2	54 199	108 398	51 346	102 693
	26	3.5	50 030	100 060	47 397	94 793
	28	3.8	46 456	92 913	44 011	88 022
	30	4.0	43 359	86 718	41 077	82 154
	35	4.7	37 165	74 330	35 209	70 418
24	24	3.9	44 854	89 709	42 494	84 987
	26	4.2	41 404	82 808	39 225	78 450
	28	4.5	38 447	76 893	36 423	72 846
	30	4.9	35 883	71 767	33 995	67 990
	35	5.7	30 757	61 515	29 138	58 277
18	24	5.2	33 641	67 282	31 870	63 740
	26	5.6	31 053	62 106	29 419	58 837
	28	6.0	28 835	57 670	27 317	54 635
	30	6.5	26 913	53 825	25 496	50 992
	35	7.6	23 068	46 136	21 854	43 708
14	24	6.7	26 165	52 330	24 788	49 576
	26	7.2	24 152	48 305	22 881	45 762
	28	7.8	22 427	44 854	21 247	42 494
	30	8.3	20 932	41 864	19 830	39 661
	35	9.7	17 942	35 883	16 997	33 995

LOW RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	7.1	24 530	49 059	23 239	46 477
	26	7.7	22 643	45 286	21 451	42 902
	28	8.3	21 025	42 051	19 919	39 838
	30	8.9	19 624	39 248	18 591	37 182
	35	10.4	16 820	33 641	15 935	31 870
29	24	8.6	20 325	40 649	19 255	38 510
	26	9.3	18 761	37 522	17 774	35 548
	28	10.0	17 421	34 842	16 504	33 008
	30	10.7	16 260	32 519	15 404	30 808
	35	12.5	13 937	27 874	13 203	26 407

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OUC6064,00003C9 -19-14MAR11-1/2

Vacuum Meter Rate Charts

LOW RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth			Approximate Seed Population Per Acre			
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
24	24	10.4	16 820	33 641	15 935	31 870
	26	11.2	15 527	31 053	14 709	29 419
	28	12.1	14 417	28 835	13 659	27 317
	30	12.9	13 456	26 913	12 748	25 496
	35	15.1	11 534	23 068	10 927	21 854
18	24	13.8	12 615	25 231	11 951	23 903
	26	15.0	11 645	23 290	11 032	22 064
	28	16.1	10 813	21 626	10 244	20 488
	30	17.3	10 092	20 184	9561	19 122
	35	20.1	8650	17 301	8195	16 390
14	24	17.8	9812	19 624	9295	18 591
	26	19.2	9057	18 114	8580	17 161
	28	20.7	8410	16 820	7968	15 935
	30	22.2	7850	15 699	7436	14 873
	35	25.9	6728	13 456	6374	12 748

OUO6064,00003C9 -19-14MAR11-2/2

Confectionary Sunflower—36 in. and 38 in. Rows Using 40 Cell Disk

Confectionary sunflower using 40 cell seed disks A52391 and A52390.

Rates are approximate. Perform a rate check before planting.
See Vacuum Meter Setup section to configure the meter.
(See HOW TO USE RATE CHARTS in this section) for assistance with chart.

HIGH RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	2.0	87 217	174 434	82 626	165 253
	26	2.2	80 508	161 016	76 271	152 541
	28	2.3	74 757	149 515	70 823	141 645
	30	2.5	69 773	139 547	66 101	132 202
	35	2.9	59 806	119 612	56 658	113 316
29	24	2.4	72 265	144 531	68 462	136 924
	26	2.6	66 706	133 413	63 196	126 391
	28	2.8	61 942	123 883	58 682	117 363
	30	3.0	57 812	115 625	54 770	109 539
	35	3.5	49 553	99 107	46 945	93 891
24	24	2.9	59 806	119 612	56 658	113 316
	26	3.2	55 205	110 411	52 300	104 600
	28	3.4	51 262	102 524	48 564	97 128
	30	3.6	47 845	95 689	45 327	90 653
	35	4.2	41 010	82 019	38 851	77 703
18	24	3.9	44 854	89 709	42 494	84 987
	26	4.2	41 404	82 808	39 225	78 450
	28	4.5	38 447	76 893	36 423	72 846
	30	4.9	35 883	71 767	33 995	67 990
	35	5.7	30 757	61 515	29 138	58 277
14	24	5.0	34 887	69 773	33 051	66 101
	26	5.4	32 203	64 406	30 508	61 016
	28	5.8	29 903	59 806	28 329	56 658
	30	6.2	27 909	55 819	26 440	52 881
	35	7.3	23 922	47 845	22 663	45 327

LOW RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	5.3	32 706	65 413	30 985	61 970
	26	5.8	30 190	60 381	28 601	57 203
	28	6.2	28 034	56 068	26 559	53 117
	30	6.7	26 165	52 330	24 788	49 576
	35	7.8	22 427	44 854	21 247	42 494
29	24	6.4	27 100	54 199	25 673	51 346
	26	7.0	25 015	50 030	23 698	47 397
	28	7.5	23 228	46 456	22 006	44 011
	30	8.0	21 680	43 359	20 539	41 077
	35	9.4	18 583	37 165	17 604	35 209

Continued on next page

OUO6064,00003CA -19-14MAR11-1/2

Vacuum Meter Rate Charts

LOW RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
24	24	7.8	22 427	44 854	21 247	42 494
	26	8.4	20 702	41 404	19 612	39 225
	28	9.1	19 223	38 447	18 212	36 423
	30	9.7	17 942	35 883	16 997	33 995
	35	11.3	15 379	30 757	14 569	29 138
18	24	10.4	16 820	33 641	15 935	31 870
	26	11.2	15 527	31 053	14 709	29 419
	28	12.1	14 417	28 835	13 659	27 317
	30	12.9	13 456	26 913	12 748	25 496
	35	15.1	11 534	23 068	10 927	21 854
14	24	13.3	13 083	26 165	12 394	24 788
	26	14.4	12 076	24 152	11 441	22 881
	28	15.5	11 214	22 427	10 623	21 247
	30	16.6	10 466	20 932	9915	19 830
	35	19.4	8971	17 942	8499	16 997

OUO6064,00003CA -19-14MAR11-2/2

Cotton—36 in. and 38 in. Rows Using 64 Cell Disk

Cotton using 64 cell seed disk A56251.

Rates are approximate. Perform a rate check before planting.
See Vacuum Meter Setup section to configure the meter.
(See HOW TO USE RATE CHARTS in this section) for assistance with chart.

HIGH RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	1.2	139 547	279 094	132 202	264 405
	26	1.4	128 813	257 625	122 033	244 066
	28	1.5	119 612	239 223	113 316	226 633
	30	1.6	111 638	223 275	105 762	211 524
	35	1.8	95 689	191 379	90 653	181 306
29	24	1.5	115 625	231 249	109 539	219 078
	26	1.6	106 730	213 461	101 113	202 226
	28	1.8	99 107	198 214	93 891	187 781
	30	1.9	92 500	184 999	87 631	175 263
	35	2.2	79 285	158 571	75 113	150 225
24	24	1.8	95 689	191 379	90 653	181 306
	26	2.0	88 329	176 657	83 680	167 359
	28	2.1	82 019	164 039	77 703	155 405
	30	2.3	76 551	153 103	72 522	145 045
	35	2.7	65 616	131 231	62 162	124 324
18	24	2.4	71 767	143 534	67 990	135 980
	26	2.6	66 246	132 493	62 760	125 520
	28	2.8	61 515	123 029	58 277	116 554
	30	3.0	57 414	114 827	54 392	108 784
	35	3.5	49 212	98 423	46 622	93 243
14	24	3.1	55 819	111 638	52 881	105 762
	26	3.4	51 525	103 050	48 813	97 626
	28	3.6	47 845	95 689	45 327	90 653
	30	3.9	44 655	89 310	42 305	84 610
	35	4.6	38 276	76 551	36 261	72 522

LOW RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	3.3	52 330	104 660	49 576	99 152
	26	3.6	48 305	96 609	45 762	91 525
	28	3.9	44 854	89 709	42 494	84 987
	30	4.2	41 864	83 728	39 661	79 321
	35	4.9	35 883	71 767	33 995	67 990
29	24	4.0	43 359	86 718	41 077	82 154
	26	4.4	40 024	80 048	37 917	75 835
	28	4.7	37 165	74 330	35 209	70 418
	30	5.0	34 687	69 375	32 862	65 723
	35	5.9	29 732	59 464	28 167	56 334

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OUO6064,00003CB -19-14MAR11-1/2

Vacuum Meter Rate Charts

LOW RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
24	24	4.9	35 883	71 767	33 995	67 990
	26	5.3	33 123	66 246	31 380	62 760
	28	5.7	30 757	61 515	29 138	58 277
	30	6.1	28 707	57 414	27 196	54 392
	35	7.1	24 606	49 212	23 311	46 622
18	24	6.5	26 913	53 825	25 496	50 992
	26	7.0	24 842	49 685	23 535	47 070
	28	7.6	23 068	46 136	21 854	43 708
	30	8.1	21 530	43 060	20 397	40 794
	35	9.4	18 454	36 909	17 483	34 966
14	24	8.3	20 932	41 864	19 380	39 661
	26	9.0	19 322	38 644	18 305	36 610
	28	9.7	17 942	35 883	16 997	33 995
	30	10.4	16 746	33 491	15 864	31 729
	35	12.1	14 353	28 707	13 598	27 196

OUO6064,00003CB -19-14MAR11-2/2

**Cotton —36 in. and 38 in. Rows Using 50
Hole Edible Bean Flat-Type Seed Disk and
Double Eliminator**

Cotton using double eliminator and 50 hole edible bean flat-type seed disk A52903.

Rates are approximate. Perform a rate check before planting.
See Vacuum Meter Setup section to configure the meter.
(See HOW TO USE RATE CHARTS in this section) for assistance with chart.

HIGH RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	1.6	109 021	218 042	103 283	206 566
	26	1.7	100 635	201 270	95 338	190 676
	28	1.9	93 447	186 893	88 528	177 057
	30	2.0	87 217	174 434	82 626	165 253
	35	2.3	74 757	149 515	70 823	141 645
29	24	1.9	90 332	180 663	85 577	171 155
	26	2.1	83 383	166 766	78 995	157 989
	28	2.3	77 427	154 854	73 352	146 704
	30	2.4	72 265	144 531	68 462	136 924
	35	2.8	61 942	123 883	58 682	117 363
24	24	2.3	74 757	149 515	70 823	141 645
	26	2.5	69 007	138 013	65 375	130 750
	28	2.7	64 078	128 155	60 705	121 410
	30	2.9	59 806	119 612	56 658	113 316
	35	3.4	51 262	102 524	48 564	97 128
18	24	3.1	56 068	112 136	53 117	106 234
	26	3.4	51 755	103 510	49 031	98 062
	28	3.6	48 058	96 117	45 529	91 058
	30	3.9	44 854	89 709	42 494	84 987
	35	4.5	38 447	76 893	36 423	72 846
14	24	4.0	43 608	87 217	41 313	82 626
	26	4.3	40 254	80 508	38 135	76 271
	28	4.7	37 379	74 757	35 411	70 823
	30	5.0	34 887	69 773	33 051	66 101
	35	5.8	29 903	59 806	28 329	56 658

LOW RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	4.3	40 883	81 766	38 731	77 462
	26	4.6	37 738	75 476	35 752	71 504
	28	5.0	35 042	70 085	33 198	66 396
	30	5.3	32 706	65 413	30 985	61 970
	35	6.2	28 034	56 068	26 559	53 117
29	24	5.1	33 874	67 749	32 092	64 183
	26	5.6	31 269	62 537	29 623	59 246
	28	6.0	29 035	58 070	27 507	55 014
	30	6.4	27 100	54 199	25 673	51 346
	35	7.5	23 228	46 456	22 006	44 011

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Vacuum Meter Rate Charts

LOW RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
24	24	6.2	28 034	56 068	26 559	53 117
	26	6.7	25 878	51 755	24 516	49 031
	28	7.3	24 029	48 058	22 764	45 529
	30	7.8	22 427	44 854	21 247	42 494
	35	9.1	19 223	38 447	18 212	36 423
18	24	8.3	21 025	42 051	19 919	39 838
	26	9.0	19 408	38 816	18 387	36 773
	28	9.7	18 022	36 044	17 073	34 147
	30	10.4	16 820	33 641	15 935	31 870
	35	12.1	14 417	28 835	13 659	27 317
14	24	10.7	16 353	32 706	15 492	30 985
	26	11.5	15 095	30 190	14 301	28 601
	28	12.4	14 017	28 034	13 279	26 559
	30	13.3	13 083	26 165	12 394	24 788
	35	15.5	11 214	22 427	10 623	21 247

OUO6064,00003CC -19-14MAR11-2/2

Cotton 4-Seed Hilldrop—36 in. and 38 in. Rows Using 48 Cell Disk

Cotton 4-seed hilldrop using 48 cell seed disk A65622.						
Rates are approximate. Perform a rate check before planting. See Vacuum Meter Setup section to configure the meter. (See HOW TO USE RATE CHARTS in this section) for assistance with chart.						
HIGH RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	1.7	104 660	209 320	99 152	198 304
	26	1.8	96 609	193 219	91 525	183 049
	28	1.9	89 709	179 417	84 987	169 974
	30	2.1	83 728	167 456	79 321	158 643
	35	2.4	71 767	143 534	67 990	135 980
29	24	2.0	86 718	173 437	82 154	164 309
	26	2.2	80 048	160 096	75 835	151 670
	28	2.3	74 330	148 660	70 418	140 836
	30	2.5	69 375	138 750	65 723	131 447
	35	2.9	59 464	118 928	56 334	112 669
24	24	2.4	71 767	143 534	67 990	135 980
	26	2.6	66 246	132 493	62 760	125 520
	28	2.8	61 515	123 029	58 277	116 554
	30	3.0	57 414	114 827	54 392	108 784
	35	3.5	49 212	98 423	46 622	93 243
18	24	3.2	53 825	107 650	50 992	101 985
	26	3.5	49 685	99 370	47 070	94 140
	28	3.8	46 136	92 272	43 708	87 415
	30	4.0	43 060	86 120	40 794	81 588
	35	4.7	36 909	73 817	34 966	69 932
14	24	4.2	41 864	83 728	39 661	79 321
	26	4.5	38 644	77 288	36 610	73 220
	28	4.9	35 883	71 767	33 995	67 990
	30	5.2	33 491	66 983	31 729	63 457
	35	6.1	28 707	57 414	27 196	54 392

LOW RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	4.4	39 248	78 495	37 182	74 364
	26	4.8	36 229	72 457	34 322	68 644
	28	5.2	33 641	67 282	31 870	63 740
	30	5.5	31 398	62 796	29 746	59 491
	35	6.5	26 913	53 825	25 496	50 992
29	24	5.4	32 519	65 039	30 808	61 616
	26	5.8	30 018	60 036	28 438	56 876
	28	6.3	27 874	55 748	26 407	52 813
	30	6.7	26 016	52 031	24 646	49 293
	35	7.8	22 299	44 598	21 125	42 251

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Vacuum Meter Rate Charts

LOW RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth			Approximate Seed Population Per Acre			
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
24	24	6.5	26 913	53 825	25 496	50 992
	26	7.0	24 842	49 685	23 535	47 070
	28	7.6	23 068	46 136	21 854	43 708
	30	8.1	21 530	43 060	20 397	40 794
	35	9.4	18 454	36 909	17 483	34 966
18	24	8.6	20 184	40 369	19 122	38 244
	26	9.4	18 632	37 264	17 651	35 302
	28	10.1	17 301	34 602	16 390	32 781
	30	10.8	16 148	32 295	15 298	30 595
	35	12.6	13 841	27 682	13 112	26 225
14	24	11.1	15 699	31 398	14 873	29 746
	26	12.0	14 491	28 983	13 729	27 457
	28	12.9	13 456	26 913	12 748	25 496
	30	13.9	12 559	25 118	11 898	23 796
	35	16.2	10 765	21 530	10 198	20 397

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Cotton 2-Seed Hilldrop—36 in. and 38 in. Rows Using 64 Cell Disk

Cotton 2-seed hilldrop using 64 cell seed disk A74961.

Rates are approximate. Perform a rate check before planting.
See Vacuum Meter Setup section to configure the meter.
(See HOW TO USE RATE CHARTS in this section) for assistance with chart.

HIGH RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	1.2	139 547	279 094	132 202	264 405
	26	1.4	128 813	257 625	122 033	244 066
	28	1.5	119 612	239 223	113 316	226 633
	30	1.6	111 638	223 275	105 762	211 524
	35	1.8	95 689	191 379	90 653	181 306
29	24	1.5	115 625	231 249	109 539	219 078
	26	1.6	106 730	213 461	101 113	202 226
	28	1.8	99 107	198 214	93 891	187 781
	30	1.9	92 500	184 999	87 631	175 263
	35	2.2	79 285	158 571	75 113	150 225
24	24	1.8	95 689	191 379	90 653	181 306
	26	2.0	88 329	176 657	83 680	167 359
	28	2.1	82 019	164 039	77 703	155 405
	30	2.3	76 551	153 103	72 522	145 045
	35	2.7	65 616	131 231	62 162	124 324
18	24	2.4	71 767	143 534	67 990	135 980
	26	2.6	66 246	132 493	62 760	125 520
	28	2.8	61 515	123 029	58 277	116 554
	30	3.0	57 414	114 827	54 392	108 784
	35	3.5	49 212	98 423	46 622	93 243
14	24	3.1	55 819	111 638	52 881	105 762
	26	3.4	51 525	103 050	48 813	97 626
	28	3.6	47 845	95 689	45 327	90 653
	30	3.9	44 655	89 310	42 305	84 610
	35	4.6	38 276	76 551	36 261	72 522

LOW RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	3.3	52 330	104 660	49 576	99 152
	26	3.6	48 305	96 609	45 762	91 525
	28	3.9	44 854	89 709	42 494	84 987
	30	4.2	41 864	83 728	39 661	79 321
	35	4.9	35 883	71 767	33 995	67 990
29	24	4.0	43 359	86 718	41 077	82 154
	26	4.4	40 024	80 048	37 917	75 835
	28	4.7	37 165	74 330	35 209	70 418
	30	5.0	34 687	69 375	32 862	65 723
	35	5.9	29 732	59 464	28 167	56 334

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Vacuum Meter Rate Charts

LOW RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
24	24	4.9	35 883	71 767	33 995	67 990
	26	5.3	33 123	66 246	31 380	62 760
	28	5.7	30 757	61 515	29 138	58 277
	30	6.1	28 707	57 414	27 196	54 392
	35	7.1	24 606	49 212	23 311	46 622
18	24	6.5	26 913	53 825	25 496	50 992
	26	7.0	24 842	49 685	23 535	47 070
	28	7.6	23 068	46 136	21 854	43 708
	30	8.1	21 530	43 060	20 397	40 794
	35	9.4	18 454	36 909	17 483	34 966
14	24	8.3	20 932	41 864	19 380	39 661
	26	9.0	19 322	38 644	18 305	36 610
	28	9.7	17 942	35 883	16 997	33 995
	30	10.4	16 746	33 491	15 864	31 729
	35	12.1	14 353	28 707	13 598	27 196

OUO6064,00003CE -19-14MAR11-2/2

Sorghum—36 in. and 38 in. Rows Using 45 Cell Disk

Sorghum using 45 cell seed disk A43066.

Rates are approximate. Perform a rate check before planting.
See Vacuum Meter Setup section to configure the meter.
(See HOW TO USE RATE CHARTS in this section) for assistance with chart.

HIGH RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	1.8	98 119	196 238	92 955	185 910
	26	1.9	90 571	181 143	85 804	171 609
	28	2.1	84 102	168 204	79 676	159 351
	30	2.2	78 495	156 990	74 364	148 728
	35	2.6	67 282	134 563	63 740	127 481
29	24	2.1	81 299	162 597	77 020	154 039
	26	2.3	75 045	150 090	71 095	142 190
	28	2.5	69 684	139 369	66 017	132 034
	30	2.7	65 039	130 078	61 616	123 231
	35	3.1	55 748	111 495	52 813	105 627
24	24	2.6	67 282	134 563	63 740	127 481
	26	2.8	62 106	124 212	58 837	117 675
	28	3.0	57 670	115 340	54 635	109 269
	30	3.2	53 825	107 650	50 992	101 985
	35	3.8	46 136	92 272	43 708	87 415
18	24	3.5	50 461	100 922	47 805	95 611
	26	3.7	46 580	93 159	44 128	88 256
	28	4.0	43 252	86 505	40 976	81 952
	30	4.3	40 369	80 738	38 244	76 489
	35	5.0	34 602	69 204	32 781	65 562
14	24	4.4	39 248	78 495	37 182	74 364
	26	4.8	36 229	72 457	34 322	68 644
	28	5.2	33 641	67 282	31 870	63 740
	30	5.5	31 398	62 796	29 746	59 491
	35	6.5	26 913	53 825	25 496	50 992

LOW RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	4.7	36 795	73 589	34 858	69 716
	26	5.1	33 964	67 928	32 177	64 353
	28	5.5	31 538	63 076	29 878	59 757
	30	5.9	29 436	58 871	27 886	55 773
	35	6.9	25 231	50 461	23 903	47 805
29	24	5.7	30 487	60 974	28 882	57 765
	26	6.2	28 142	56 284	26 661	53 321
	28	6.7	26 132	52 263	24 756	49 513
	30	7.1	24 390	48 779	23 106	46 212
	35	8.3	20 905	41 811	19 805	39 610

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Vacuum Meter Rate Charts

LOW RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
24	24	6.9	25 231	50 461	23 903	47 805
	26	7.5	23 290	46 580	22 064	44 128
	28	8.1	21 626	43 252	20 488	40 976
	30	8.6	20 184	40 369	19 122	38 244
	35	10.1	17 301	34 602	16 390	32 781
18	24	9.2	18 923	37 846	17 927	35 854
	26	10.0	17 467	34 935	16 548	33 096
	28	10.7	16 220	32 439	15 366	30 732
	30	11.5	15 138	30 277	14 342	28 683
	35	13.4	12 976	25 951	12 293	24 586
14	24	11.8	14 718	29 436	13 943	27 886
	26	12.8	13 586	27 171	12 871	25 741
	28	13.8	12 615	25 231	11 951	23 903
	30	14.8	11 774	23 549	11 155	22 309
	35	17.3	10 092	20 184	9561	19 122

OUO6064,00003CF -19-14MAR11-2/2

Sorghum Using Sugar Beet Disk—36 in. and 38 in. Rows Using 45 Cell Disk

Sorghum using sugar beet 45 cell seed disks A51712 and H136445.

Rates are approximate. Perform a rate check before planting.
See Vacuum Meter Setup section to configure the meter.
(See HOW TO USE RATE CHARTS in this section) for assistance with chart.

HIGH RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	1.8	98 119	196 238	92 955	185 910
	26	1.9	90 571	181 143	85 804	171 609
	28	2.1	84 102	168 204	79 676	159 351
	30	2.2	78 495	156 990	74 364	148 728
	35	2.6	67 282	134 563	63 740	127 481
29	24	2.1	81 299	162 597	77 020	154 039
	26	2.3	75 045	150 090	71 095	142 190
	28	2.5	69 684	139 369	66 017	132 034
	30	2.7	65 039	130 078	61 616	123 231
	35	3.1	55 748	111 495	52 813	105 627
24	24	2.6	67 282	134 563	63 740	127 481
	26	2.8	62 106	124 212	58 837	117 675
	28	3.0	57 670	115 340	54 635	109 269
	30	3.2	53 825	107 650	50 992	101 985
	35	3.8	46 136	92 272	43 708	87 415
18	24	3.5	50 461	100 922	47 805	95 611
	26	3.7	46 580	93 159	44 128	88 256
	28	4.0	43 252	86 505	40 976	81 952
	30	4.3	40 369	80 738	38 244	76 489
	35	5.0	34 602	69 204	32 781	65 562
14	24	4.4	39 248	78 495	37 182	74 364
	26	4.8	36 229	72 457	34 322	68 644
	28	5.2	33 641	67 282	31 870	63 740
	30	5.5	31 398	62 796	29 746	59 491
	35	6.5	26 913	53 825	25 496	50 992

LOW RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	4.7	36 795	73 589	34 858	69 716
	26	5.1	33 964	67 928	32 177	64 353
	28	5.5	31 538	63 076	29 878	59 757
	30	5.9	29 436	58 871	27 886	55 773
	35	6.9	25 231	50 461	23 903	47 805
29	24	5.7	30 487	60 974	28 882	57 765
	26	6.2	28 142	56 284	26 661	53 321
	28	6.7	26 132	52 263	24 756	49 513
	30	7.1	24 390	48 779	23 106	46 212
	35	8.3	20 905	41 811	19 805	39 610

Continued on next page

OUC6064,00003D0 -19-14MAR11-1/2

Vacuum Meter Rate Charts

LOW RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
24	24	6.9	25 231	50 461	23 903	47 805
	26	7.5	23 290	46 580	22 064	44 128
	28	8.1	21 626	43 252	20 488	40 976
	30	8.6	20 184	40 369	19 122	38 244
	35	10.1	17 301	34 602	16 390	32 781
18	24	9.2	18 923	37 846	17 927	35 854
	26	10.0	17 467	34 935	16 548	33 096
	28	10.7	16 220	32 439	15 366	30 732
	30	11.5	15 138	30 277	14 342	28 683
	35	13.4	12 976	25 951	12 293	24 586
14	24	11.8	14 718	29 436	13 943	27 886
	26	12.8	13 586	27 171	12 871	25 741
	28	13.8	12 615	25 231	11 951	23 903
	30	14.8	11 774	23 549	11 155	22 309
	35	17.3	10 092	20 184	9561	19 122

OUO6064,00003D0 -19-14MAR11-2/2

High-Rate Sorghum—36 in. and 38 in. Rows Using 90 Cell Disk

High-rate sorghum using 90 cell seed disk A52802.

Rates are approximate. Perform a rate check before planting.
See Vacuum Meter Setup section to configure the meter.
(See HOW TO USE RATE CHARTS in this section) for assistance with chart.

HIGH RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	0.9	196 238	392 476	185 910	371 819
	26	1.0	181 143	362 285	171 609	343 218
	28	1.0	168 204	336 408	159 351	318 702
	30	1.1	156 990	313 981	148 728	297 455
	35	1.3	134 563	269 126	127 481	254 962
29	24	1.1	162 597	325 194	154 039	308 079
	26	1.2	150 090	300 179	142 190	284 380
	28	1.3	139 369	278 738	132 034	264 067
	30	1.3	130 078	260 155	123 231	246 463
	35	1.6	111 495	222 990	105 627	211 254
24	24	1.3	134 563	269 126	127 481	254 962
	26	1.4	124 212	248 424	117 675	235 349
	28	1.5	115 340	230 680	109 269	218 539
	30	1.6	107 650	215 301	101 985	203 969
	35	1.9	92 272	184 544	87 415	174 831
18	24	1.7	100 922	201 845	95 611	191 221
	26	1.9	93 159	186 318	88 256	176 512
	28	2.0	86 505	173 010	81 952	163 904
	30	2.2	80 738	161 476	76 489	152 977
	35	2.5	69 204	138 408	65 562	131 123
14	24	2.2	78 495	156 990	74 364	148 728
	26	2.4	72 457	144 914	68 644	137 287
	28	2.6	67 282	134 563	63 740	127 481
	30	2.8	62 796	125 592	59 491	118 982
	35	3.2	53 825	107 650	50 992	101 985

LOW RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	2.4	73 589	147 178	69 716	139 432
	26	2.6	67 928	135 857	64 353	128 707
	28	2.8	63 076	126 153	59 757	119 513
	30	3.0	58 871	117 743	55 773	111 546
	35	3.5	50 461	100 922	47 805	95 611
29	24	2.9	60 974	121 948	57 765	115 530
	26	3.1	56 284	112 567	53 321	106 643
	28	3.3	52 263	104 527	49 513	99 025
	30	3.6	48 779	97 558	46 212	92 424
	35	4.2	41 811	83 621	39 610	79 220

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OUC6064,00003D1 -19-14MAR11-1/2

Vacuum Meter Rate Charts

LOW RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth			Approximate Seed Population Per Acre			
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
24	24	3.5	50 461	100 922	47 805	95 611
	26	3.7	46 580	93 159	44 128	88 256
	28	4.0	43 252	86 505	40 976	81 952
	30	4.3	40 369	80 738	38 244	76 489
	35	5.0	34 602	69 204	32 781	65 562
18	24	4.6	37 846	75 692	35 854	71 708
	26	5.0	34 935	69 869	33 096	66 192
	28	5.4	32 439	64 879	30 732	61 464
	30	5.8	30 277	60 553	28 683	57 366
	35	6.7	25 951	51 903	24 586	49 171
14	24	5.9	29 436	58 871	27 886	55 773
	26	6.4	27 171	54 343	25 741	51 483
	28	6.9	25 231	50 461	23 903	47 805
	30	7.4	23 549	47 097	22 309	44 618
	35	8.6	20 184	40 369	19 122	38 244

OUO6064,00003D1 -19-14MAR11-2/2

Soybeans—36 in. and 38 in. Rows Using 108 Cell Disk

Soybeans using 108 cell seed disk A42586.

Rates are approximate. Perform a rate check before planting.
See Vacuum Meter Setup section to configure the meter.
(See HOW TO USE RATE CHARTS in this section) for assistance with chart.

HIGH RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	0.7	235 485	470 971	223 091	446 183
	26	0.8	217 371	434 742	205 931	411 861
	28	0.9	201 845	403 689	191 221	382 443
	30	0.9	188 388	376 777	178 473	356 946
	35	1.1	161 476	322 951	152 977	305 954
29	24	0.9	195 117	390 233	184 847	369 694
	26	1.0	180 108	360 215	170 628	341 256
	28	1.0	167 243	334 485	158 440	316 881
	30	1.1	156 093	312 186	147 878	295 756
	35	1.3	133 794	267 588	126 752	253 505
24	24	1.1	161 476	322 951	152 977	305 954
	26	1.2	149 055	298 109	141 210	282 419
	28	1.3	138 408	276 816	131 123	262 246
	30	1.3	129 181	258 361	122 382	244 763
	35	1.6	110 726	221 452	104 899	209 797
18	24	1.4	121 107	242 214	114 733	229 466
	26	1.6	111 791	223 582	105 907	211 814
	28	1.7	103 806	207 612	98 342	196 685
	30	1.8	96 885	193 771	91 786	183 572
	35	2.1	83 045	166 089	78 674	157 348
14	24	1.8	94 194	188 388	89 237	178 473
	26	2.0	86 948	173 897	82 372	164 744
	28	2.2	80 738	161 476	76 489	152 977
	30	2.3	75 355	150 711	71 389	142 779
	35	2.7	64 590	129 181	61 191	122 382

LOW RANGE INPUT SPROCKET

Planting Rate Sprockets Number of Teeth		Approximate Seed Population Per Acre				
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
35	24	2.0	88 307	176 614	83 659	167 319
	26	2.1	81 514	163 028	77 224	154 448
	28	2.3	75 692	151 383	71 708	143 416
	30	2.5	70 646	141 291	66 927	133 855
	35	2.9	60 553	121 107	57 366	114 733
29	24	2.4	73 169	146 337	69 318	138 635
	26	2.6	67 540	135 081	63 986	127 971
	28	2.8	62 716	125 432	59 415	118 830
	30	3.0	58 535	117 070	55 454	110 908
	35	3.5	50 173	100 346	47 532	95 064

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OUC6064,00003D2 -19-14MAR11-1/2

Vacuum Meter Rate Charts

LOW RANGE INPUT SPROCKET						
Planting Rate Sprockets Number of Teeth			Approximate Seed Population Per Acre			
Driver	Driven	Average In-Row Seed Spacing (in.)	36 in. Single Rows	36 in. Twin Rows	38 in. Single Rows	38 in. Twin Rows
24	24	2.9	60 553	121 107	57 366	114 733
	26	3.1	55 895	111 791	52 954	105 907
	28	3.4	51 903	103 806	49 171	98 342
	30	3.6	48 443	96 885	45 893	91 786
	35	4.2	41 522	83 045	39 337	78 674
18	24	3.8	45 415	90 830	43 025	86 050
	26	4.2	41 922	83 843	39 715	79 430
	28	4.5	38 927	77 854	36 878	73 757
	30	4.8	36 332	72 664	34 420	68 840
	35	5.6	31 142	62 283	29 503	59 005
14	24	4.9	35 323	70 646	33 464	66 927
	26	5.3	32 606	65 211	30 890	61 779
	28	5.8	30 277	60 553	28 683	57 366
	30	6.2	28 258	56 517	26 771	53 542
	35	7.2	24 221	48 443	22 947	45 893

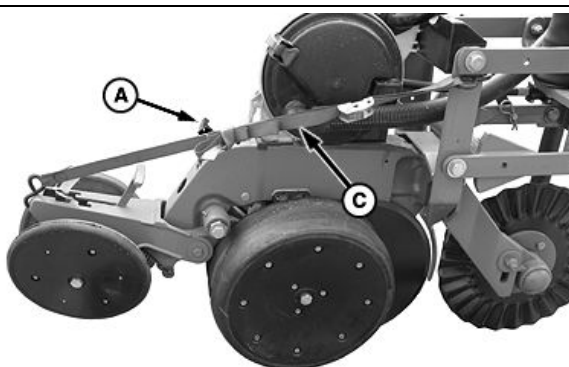
OUO6064,00003D2 -19-14MAR11-2/2

Check Seed Population

Checking Seed Population

NOTE: When planting at a shallow depth with the closing wheels raised, seeds can roll or bounce and can affect seed spacing accuracy.

1. On **PRO-SERIES** row units attach ratchet strap (C) as shown to one or more sets of closing wheels, so seed trench remains open.
2. Set depth-adjusting handle (A) two settings from minimum setting.
3. Plant a short distance and check to see if seeds are visible in trench. Adjust depth-adjusting handle if necessary.
4. Plant approximately 91 m (100 yd.).
5. Consult rate charts. Determine what distance equals 1/1000 of a hectare, 1/1000 of an acre or 1/200 of an acre as it relates to the row width being planted.



Pro Row Unit

A—Depth-Adjusting Handle
B—Chain

C—Ratchet Strap

A34888—UN—12JUN09

Distance to Plant for Population Check

Fraction of acre	36 in.	38 in.
1/1000 if population is more than 100 000 seeds/acre	14.5 ft.	13.8 ft.
1/200 if population is less than 100 000 seeds/acre	72.5 ft.	69 ft.

OUC0604.00002D7 -19-12NOV10-1/2

6. Mark distance selected with flags (A).

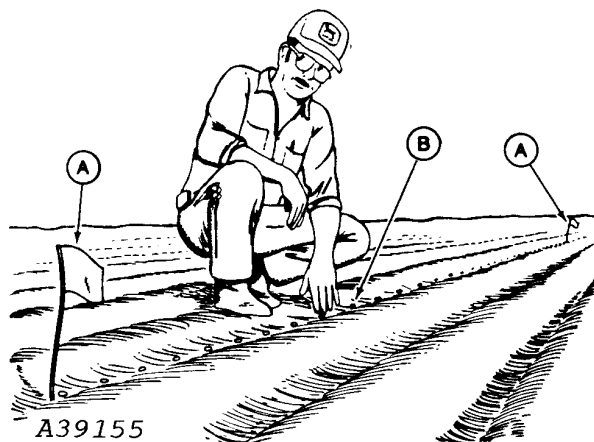
NOTE: When planting at a shallow depth with the closing wheels raised, seeds can roll or bounce and can affect seed spacing accuracy.

7. Count seeds (B) between flags.
8. If 1/1000 of an acre was marked off, multiply number of seeds counted by 1000.
If 1/200 of an acre was marked off, multiply number of seeds counted by 200.
If 1/1000 of a hectare was marked off, multiply number of seeds counted by 1000.

If in-field checks indicate that machine is planting at a rate different than seed transmission rate chart indicates, investigate the following in the order listed:

1. Ensure that ALL transmission sprockets are set according to rate chart.
2. Excessive unit bounce can cause low population and reduced spacing control. Increase unit down force or drive slower to reduce excessive unit bounce.
3. Ensure that machine drive-wheel slippage is close to normal. Crop residue, tire inflation pressure, soil conditions, and unit down force can cause variations in drive-wheel slippage.

FOR VACUUM METER ONLY:



A—Flag

B—Seeds

If all other settings are correct and if population is too high, vacuum level can be reduced in 1 inch increments until correct population is achieved. If actual population is too low, vacuum level can be increased in half inch to 1 inch increments until correct population is achieved.

OUC0604.00002D7 -19-12NOV10-2/2

A39155—UN—13FEB96

Drive-Wheel Slippage—Machines with Seed Transmission

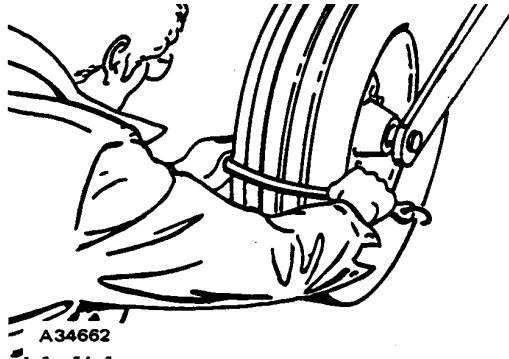
Another item that may cause actual rates of seed or fertilizer to differ from delivery rates shown in the operator's manual is the amount of drive-wheel slippage.

While a certain amount of wheel slippage is normal, excessive drive-wheel slippage may cause undesirable changes in actual rates.

The rates shown in the operator's manual are based on approximately 12 percent drive wheel slippage.

Excessive drive-wheel slippage may be caused by binding or poorly lubricated parts, misaligned bearings or caked material in pesticide or fertilizer hoppers.

Down pressure springs, coulters, tine tooth attachments, or any other attachment that removed weight from drive wheels, may contribute to drive-wheel slippage and lower than expected rates.



The amount of excessive drive-wheel slippage can be calculated.

1. Mark a length of field that would normally represent 30 drive wheel revolutions. Use the following formula to calculate the length of field to drive.

FORMULA:

Revolutions x Drive Wheel Rolling Circumference =
Length of Field to Drive

EXAMPLE:

- 30 revolutions x 2.5 m = 75 m
- 30 revolutions x 8.3 ft = 250 ft

2. Mark drive wheel with a rubber hold-down strap, reflective tape or duct tape. This will help to count wheel revolutions.

3. With all rows planting under normal field conditions, drive a 76 m (250 ft) course at normal planting speed while another person counts drive-wheel revolutions.
4. Subtract number of revolutions observed over the course length from 30. Then divide this difference by 30.

EXAMPLE:

If 28 wheel revolutions are observed, there is 6.6 percent drive-wheel slippage.

$$30 - 28 = 2$$

$$2 \div 30 = 0.066$$

If drive-wheel slippage is greater than or less than 12 percent (baseline slippage), adjust seed transmission to obtain desired population.

AG.OU06074,1270 -19-04AUG00-1/1

A34662 —UN—10OCT88

Seed Transmission

Changing Input Sprocket Combinations

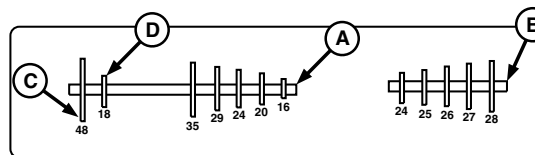
A56188 —UN—12APR05

Wing Transmission

1. Consult planting rate chart to determine desired sprocket combinations.

A—Rear Shaft (Driver)
B—Front Shaft (Driven)

C—Low Range
D—High Range



Number of Sprocket Teeth

OOU6064,0000025 -19-12NOV10-1/8

2. Remove spring (A) from chain tightener.

A—Spring



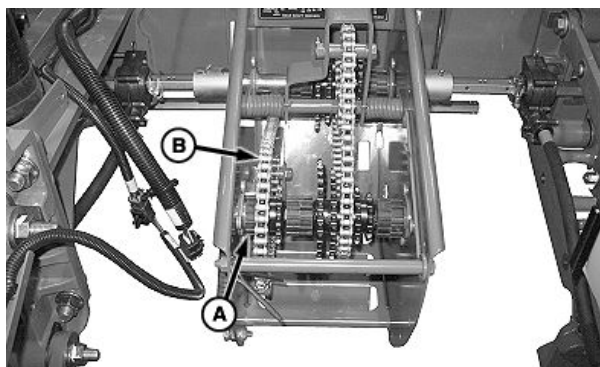
A66714 —UN—05MAR10

OOU6064,0000025 -19-12NOV10-2/8

3. Remove spacer (A).
4. Remove chain (B) from input sprocket.

A—Spacer

B—Chain



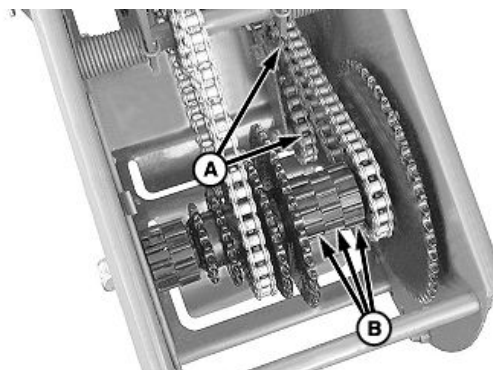
A66716 —UN—05MAR10

OOU6064,0000025 -19-12NOV10-3/8

5. Align desired input sprocket with chain tightener sprockets (A).
6. Install chain on sprocket and spacers (B) on shaft.

A—Sprockets

B—Spacers



A66855 —UN—26MAR10

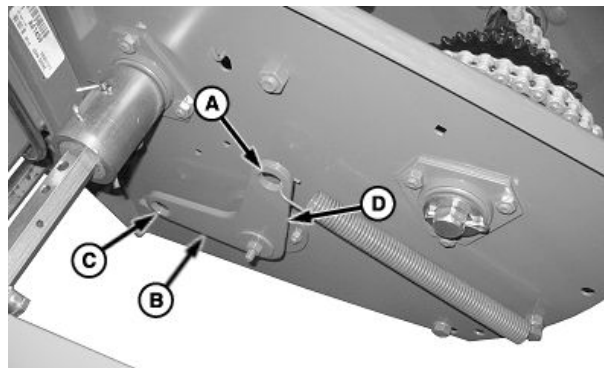
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OOU6064,0000025 -19-12NOV10-4/8

7. If chain is installed on low range input sprocket, locate spring in hole (A). Arm (B) must point forward.
8. If chain is aligned on high range input sprocket, locate spring in hole (C). Arm (D) must point rearward.

A—Hole
B—Arm

C—Hole
D—Arm



A66715 —UN—05MAR10

OUC6064,0000025 -19-12NOV10-5/8

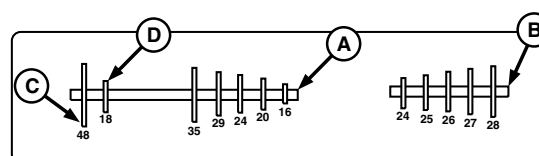
Center Transmission

A56188 —UN—12APR05

1. Consult planting rate chart to determine desired sprocket combinations.

A—Rear Shaft (Driver)
B—Front Shaft (Driven)

C—Low Range
D—High Range



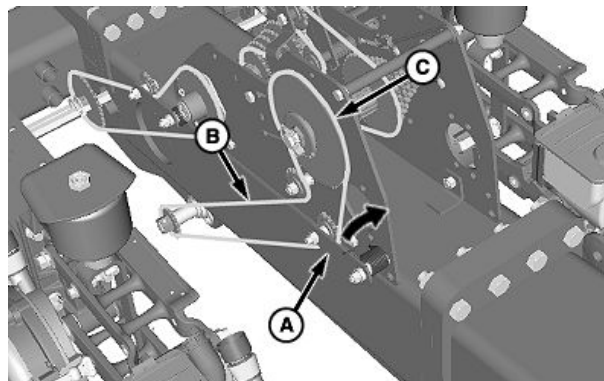
Number of Sprocket Teeth

OUC6064,0000025 -19-12NOV10-6/8

2. Rotate tension idler arm (A) to remove tension on drive chain (B).
3. Remove drive chain from input sprocket (C).

A—Tension Idler Arm
B—Drive Chain

C—Input Sprocket



A69271 —UN—21OCT10

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OUC6064,0000025 -19-12NOV10-7/8

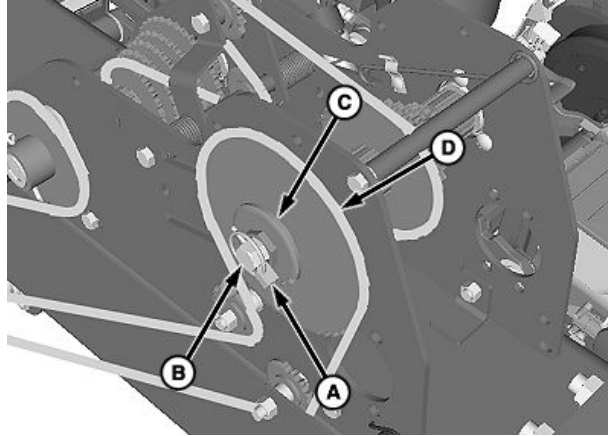
- Remove spring pin (A) from transmission drive shaft (B).

NOTE: Large input sprocket is used for Low Range seed populations, small input sprocket is used for High Range seed populations. (See Vacuum Meter Rate Charts in this manual) for seed populations.

- Remove input sprocket (C) from drive shaft (B) rotate input sprocket (C) and install on drive shaft (B).
- Install spring pin (A).
- Install and tension drive chain (D).

A—Spring Pin
B—Drive Shaft

C—Input Sprocket
D—Drive Chain



A69272 —UN—21OCT10

OOU6064,0000025 -19-12NOV10-8/8

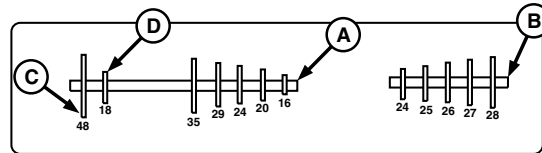
Changing Planting Rate Sprocket Combinations

Wing Transmissions

NOTE: Rate charts are based on average machine wheel slip in tilled soil conditions. No-till conditions result in a higher population than what is shown in rate charts. Adjust accordingly. Always verify population and spacing with a field check.

- Consult planting rate chart to determine desired sprocket combinations.

A56188 —UN—12APR05



Number of Sprocket Teeth

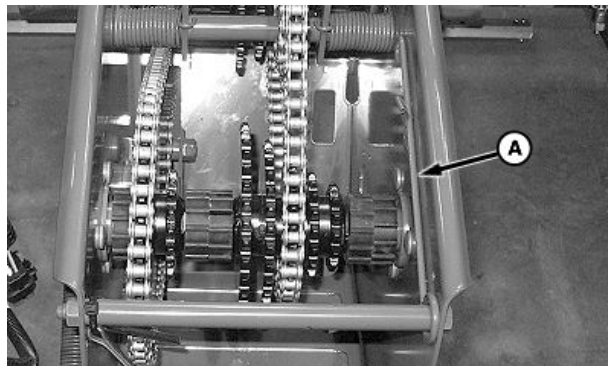
A—Rear Shaft (Driver)
B—Front Shaft (Driven)

C—Low Range
D—High Range

OOU6064,0000026 -19-12NOV10-1/6

- Remove retaining hook (A) from storage position.

A—Hook



A66717 —UN—05MAR10

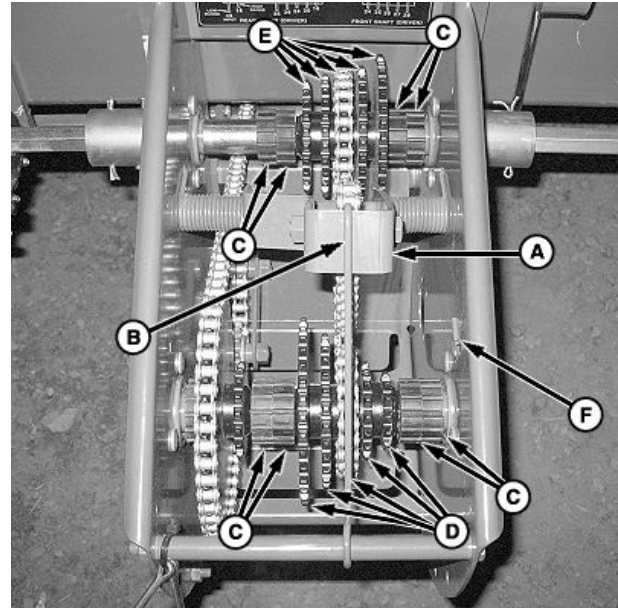
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OOU6064,0000026 -19-12NOV10-2/6

3. Pull chain tightener (A) downward and attach hook (B) to tightener.
4. Remove required number of spacers (C).
5. Remove chain from sprockets. Slide desired driver and driven sprockets (D) and (E) into alignment with chain tightener and reinstall chain.
6. Remove hook from chain tightener. Return hook to storage position by pressing it into clip (F).
7. Replace spacers on upper and lower shafts.

A—Chain Tightener
B—Retaining Hook
C—Rubber Sprocket Spacers

D—Driver Sprockets
E—Driven Sprockets
F—Clip



A66753 —UN—18MAR10

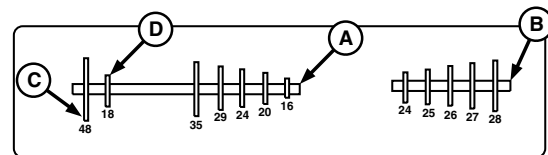
OUO6064.0000026 -19-12NOV10-3/6

Center Transmission

A56188 —UN—12APR05

NOTE: Rate charts are based on average machine wheel slip in tilled soil conditions. No-till conditions result in a higher population than what is shown in rate charts. Adjust accordingly. Always verify population and spacing with a field check.

1. Consult planting rate chart to determine desired sprocket combinations.



Number of Sprocket Teeth

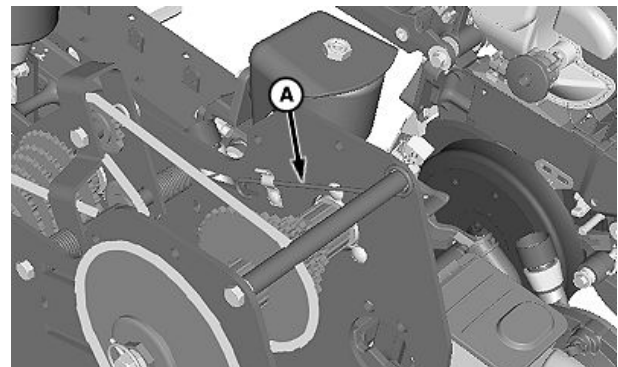
A—Rear Shaft (Driver)
B—Front Shaft (Driven)

C—Low Range
D—High Range

OUO6064.0000026 -19-12NOV10-4/6

2. Remove retaining hook (A) from storage position.

A—Hook



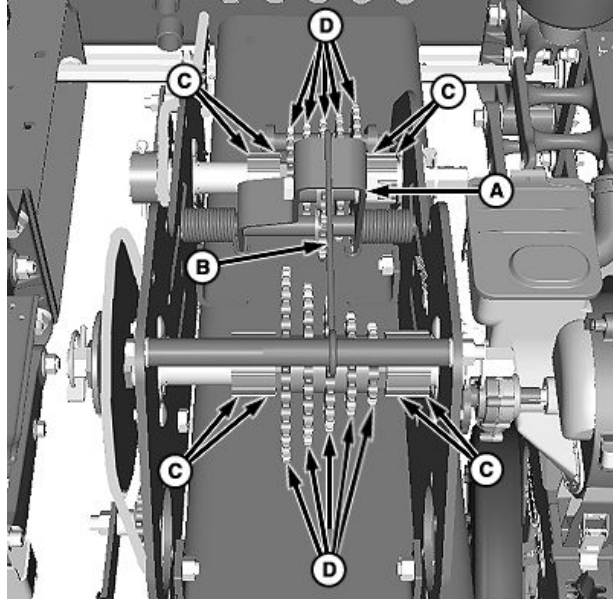
A69284 —UN—21OCT10

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OUO6064.0000026 -19-12NOV10-5/6

3. Pull chain tightener (A) downward and attach hook (B) to tightener.
4. Remove required number of spacers (C).
5. Remove chain from sprockets. Slide desired driver and driven sprockets (D) and (E) into alignment with chain tightener and reinstall chain.
6. Remove hook from chain tightener. Return hook to storage position by pressing it into clip (F).
7. Replace spacers on upper and lower shafts.

A—Chain Tightener	D—Driver Sprockets
B—Retaining Hook	E—Driven Sprockets
C—Rubber Sprocket Spacers	F—Clip



A69285 —UN—21OCT10

OQO6064,0000026 -19-12NOV10-6/6

General Attachments

General

IMPORTANT: For proper operation, it is important that machine frame is lowered to 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 is warranted:

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

OUO6064,0000062 -19-12NOV10-1/1

SeedStar™ Variable Rate Drive System

The variable rate drive system uses hydraulic motors to drive 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 irrigating practices.
- Multiple rate selections and prescriptions can be programmed and applied.

(See your SeedStar™ 2 and SeedStar™ XP operator's manual.)

OUO6064,0000079 -19-12NOV10-1/1

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. RowCommand sections can be operated manually or in conjunction with Swath Control Pro™ for automatic operation. See your John Deere dealer for additional information.

Swath Control Pro is a trademark of Deere & Company

OUO6045,00001A0 -19-16JUL09-1/1

Seed Tubes

Regular curved seed tubes with ACCUCOUNT™ sensors are standard for 1720CCS 12X2 Twin Row for all configurations.

Seed tubes have snap-in tabs for quick seed tube placement.

To Remove. (See INSTALL AND REMOVE SEED TUBES in Service and Adjustments section.)



A66648 —UN—01MAR10

OUO6064,0000027 -19-12NOV10-1/1

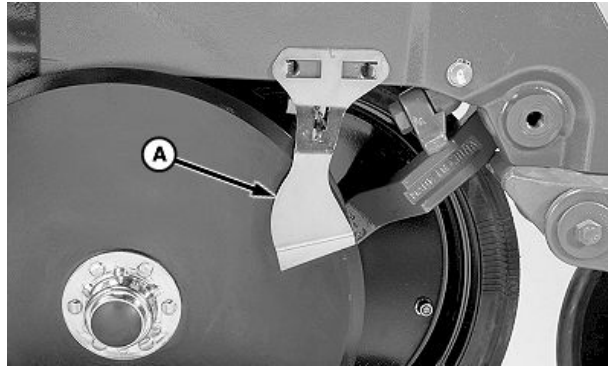
Rigid Scraper

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



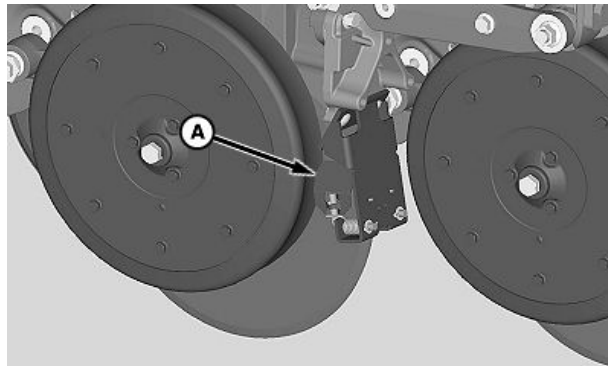
A71644 —UN—26MAY11

OUC6064,0000063 -19-26MAY11-1/1

Heavy-Duty Scraper

Heavy-duty scraper (A) is recommended for sticky soils to clean opener blades.

A—Heavy Duty Scraper



A68895 —UN—05APR10

OUC6064,0000064 -19-12NOV10-1/1

Disk Closing Attachment

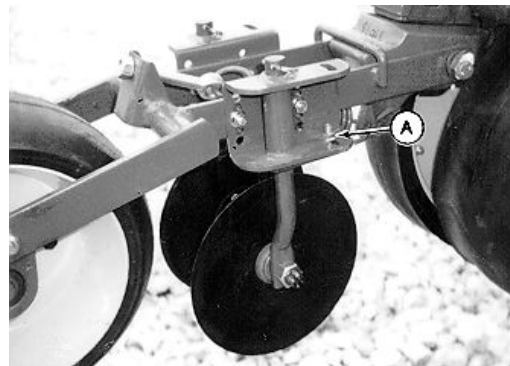
Angle Adjustment

NOTE: Disk closing system can only be used on the rear rank rows.

NOTE: The following adjustments are 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.



A41128 —UN—21APR97

A—Cap Screw

Continued on next page

OUC6064,00002ED -19-12NOV10-1/3

Depth Adjustment

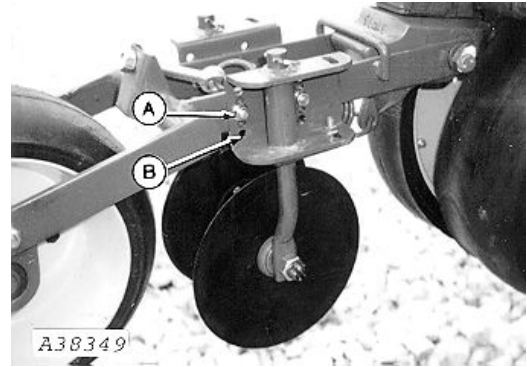
NOTE: The following adjustments are made in the field.

Depth of the closing disks is 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

OUO6064,00002ED -19-12NOV10-2/3

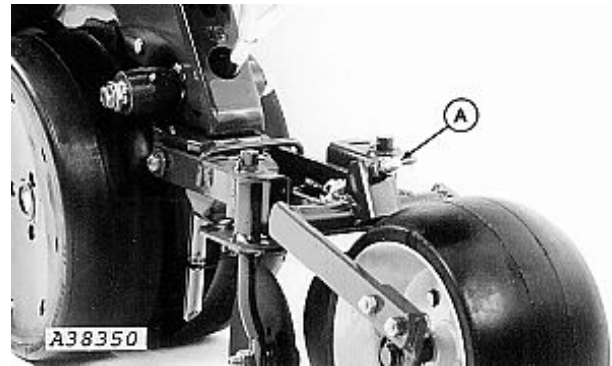
Spring Pressure Adjustment

NOTE: The following adjustments are 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

OUO6064,00002ED -19-12NOV10-3/3

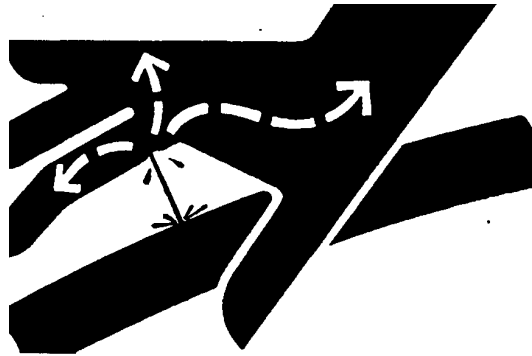
Auxiliary Hydraulic Attachment Operation

Remote hydraulic outlet at rear of machine for auxiliary hydraulic equipment operation.

CAUTION: Escaping fluid under pressure can penetrate skin causing serious injury. Avoid 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.

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

IMPORTANT: All hydraulic couplers must be clear of debris, dust, and sand. Use protective caps on



fluid openings until ready to make connection. Foreign material can damage hydraulic system.

X9811 —UN—23AUG88

OUC6064,0000048 -19-12NOV10-1/2

Hydraulic Coupling Instructions

To connect couplers:

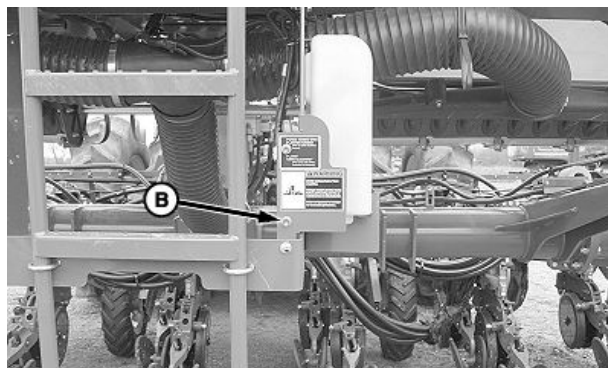
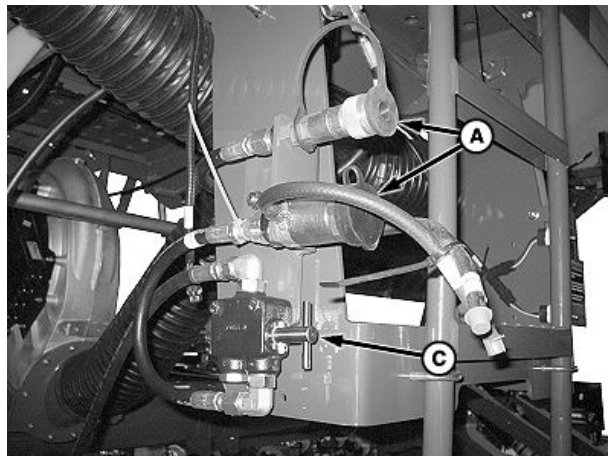
1. Lower machine and position tractor SCV to forward (retract) detent (continuous flow position)
2. Switch fan control switch (B) to OFF (down) position
3. Connect hydraulic couplers (A)
4. Pull hydraulic valve knob (C) to enable oil flow

To disconnect couplers:

1. Push hydraulic valve knob (C) to disable oil flow
2. Disconnect hydraulic couplers (A)
3. Turn fan control switch (B) to ON (up) position
4. Reposition tractor SCV to "Neutral" position

A—Hydraulic Couplers
B—Fan Control Switch

C—Valve Knob



A66857 —UN—26MAR10

A66838 —UN—25MAR10

OUC6064,0000048 -19-12NOV10-2/2

Use of Talc and Graphite Lubricants

Use of Talc Lubricant

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

Talc lubricant is required for optimum performance of vacuum meter and CCS system (if equipped). Seed properly treated with talc releases from seed disk more consistently, leading to more accurate spacing when seed is placed in the ground.

FARMER APPLIED SEED TREATMENT

For best performance, use of farmer-applied seed treatments is **not** recommended. If used, apply any seed treatment to seed and allow to fully dry before placing in tanks.

Apply seed treatment to seed **BEFORE** applying talc lubricant to insure that treatment adheres to seed properly while minimizing buildup on meter components. If buildup of treatment still occurs, contact chemical manufacturers for assistance.

When using seed treatments, clean meters and seed disks as needed. Seed disks can be cleaned with warm, soapy water. Spray graphite on vacuum seal side of disk as needed.

IMPORTANT: If farmer-applied treatments are used, follow chemical manufacturers recommendations carefully. **HIGH-OIL-CONTENT TREATMENTS ARE NOT RECOMMENDED.**

IMPORTANT: Chemical reaction between farmer-applied seed treatments and treatments commercially applied to seed can cause seed treatments to become sticky. Certain temperature and humidity levels can further complicate material compatibility.

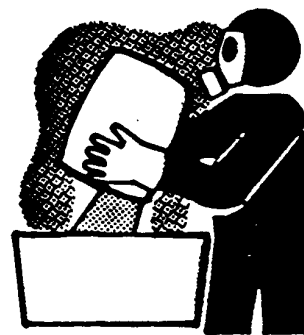
Mixes of seed and seed treatment must be free of clumps.

IMPORTANT: Talc has to be thoroughly incorporated in tanks and hoppers, so all seeds are evenly coated.

COMMERCIALY TREATED SEED

Refer to the following talc application rate charts for planting commercially treated seeds with no farmer-applied seed treatments.

A34471



A34471—UN—11OCT88

Some insecticide-treated seed is coated with commercially applied talc. Even if talc is commercially applied, the required amount of talc shown in the following tables must be added to maintain metering performance.

Use this table when using CCS system to deliver seed to seed meters:

CCS Talc Application Rate	
Note: Talc must be mixed proportionately and thoroughly with seed to ensure movement through the CCS system and proper metering.	
CCS Tank Size	Amount of Talc
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.)

Adjust these rates as necessary so all seeds become coated with talc, while avoiding an accumulation of talc in bottom of tank.

Combinations of sticky seed treatments, large or small seed, and high humidity, it can be necessary to add up to 2 to 3 times the amount of talc shown in the tables.

IMPORTANT: It is necessary to clean any buildup of seed treatments and talc out of hoppers between fills.

If talc builds up in bottom of hopper and vacuum manifolds require frequent cleanout, reduce talc rate accordingly. If a coating of seed treatment is found on seed disks, increase the amount of talc.

When using seed treatments, clean meters and seed disks as needed. Seed disks can be cleaned with warm, soapy water. Spray graphite on vacuum seal side of disk as needed.

OUC6045,00001F5 -19-07APR10-1/1

Lubrication

Lubricate and Maintain Machine Safely

CAUTION: To help prevent serious injury or death to you or others caused by unexpected movement, service machine on a level surface. Lower machine to ground or sufficiently lock or block raised machine before servicing. If machine is connected to tractor, engage parking brake and place transmission in "Park", shut off engine and remove key. If machine is detached from tractor, block wheels and use shop stands to prevent movement.



N40000—UN—28SEP88

AG,OUO6074,1354 -19-11MAY09-1/1

Perform 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.

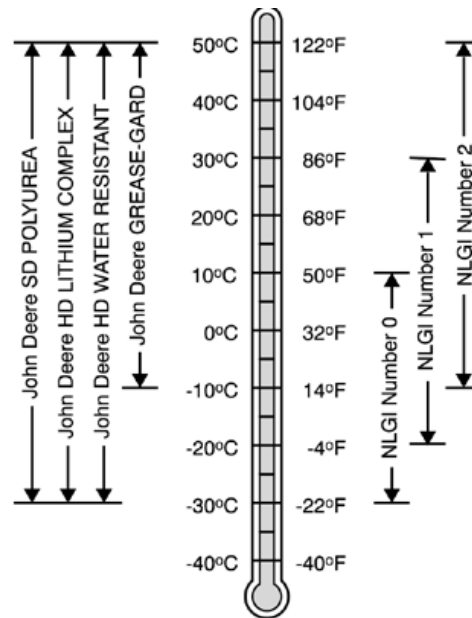
The following greases are also recommended:

- 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,GREAI -19-14APR11-1/1

Lubrication Symbols



Lubricate with grease at hourly interval indicated on lubrication interval chart.



Pack wheel bearings with axle bearing grease at hourly interval indicated on lubrication interval chart.

A54361 —UN—24MAY04



Lubricate with John Deere TY6350 Multipurpose spray lube as required.



Lubricate with SAE 10W oil at hourly interval indicated on lubrication interval chart.

OUC6064,0000065 -19-12NOV10-1/1

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.

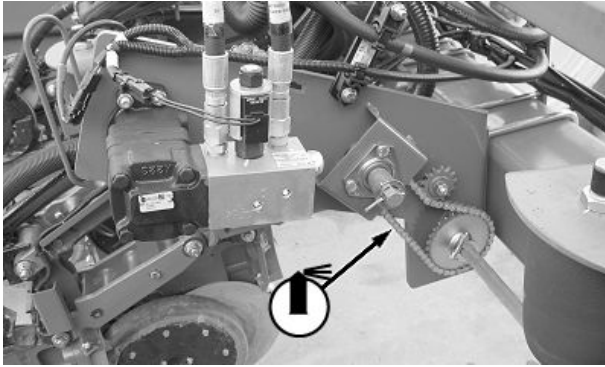
AG,OUC6074,1357 -19-04AUG00-1/1

Lubrication Intervals

Lubrication Intervals							
Item	Start of Season	As Required	10 hours or Daily	50 hours	100 hours	200 hours	End of Season
All Roller Chains	•	•					•
Variable Rate Drive Chain		•					
Frame Drive Gauge Wheel Chain		•					
Seed Transmission Drive Chains		•					
Frame Drive Gauge Wheel Clutch			•				
Frame Drive Gauge Wheel Hub				•			
Lift-Assist Spindle Arm			•				
Row Unit Gauge Wheels			•				
Leveling Linkage				•			
Lower Wing Pivot Point				•			
Lift Arm				•			
Lift-Assist Wheel Hub					•		
CCS Wheel Axle					•		
Lift-Assist Pivot			•				
CCS Lift-Assist Pivot			•				
CCS Lift-Assist Spindle	•						
CCS Lift-Assist Wheel Bearings	•					•	
Lift Assist Steering Cylinder (Rod End)				•			
Lift Assist Steering Cylinder Swivel				•			

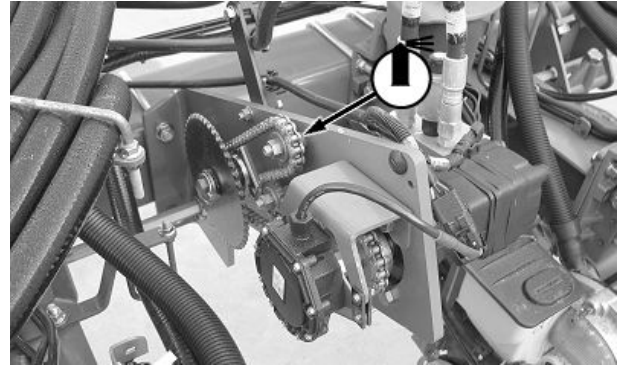
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OUO6064,0000528 -19-15JUN11-1/7



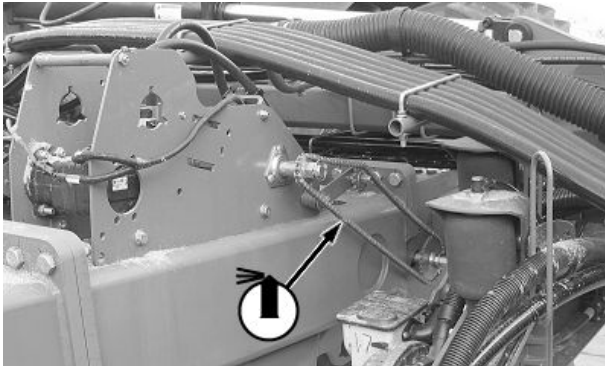
A69154—UN—18OCT10

Variable Rate Drive Chain (Wing Transmission)



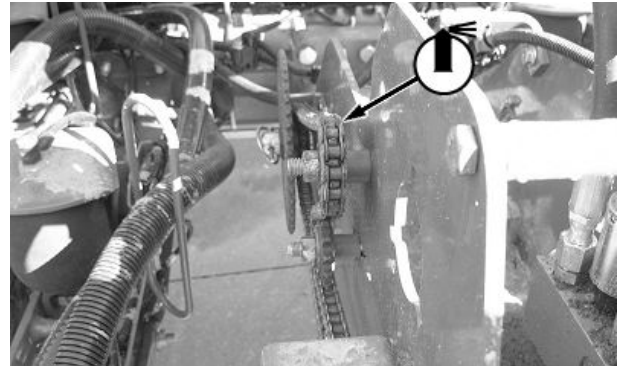
A69155—UN—18OCT10

Variable Rate Drive Chain (Wing Transmission)



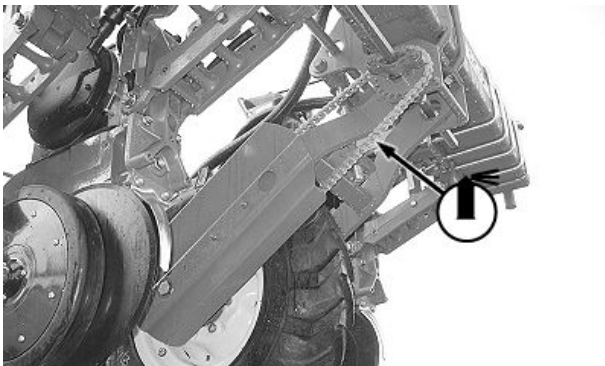
A69156—UN—18OCT10

Variable Rate Drive Chain (Center Transmission)



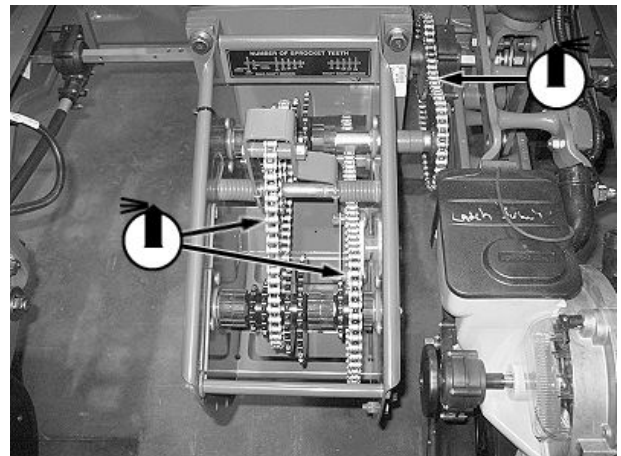
A69157—UN—18OCT10

Variable Rate Drive Chain (Center Transmission)



A66745—UN—17MAR10

Frame Drive Gauge Wheel Chain

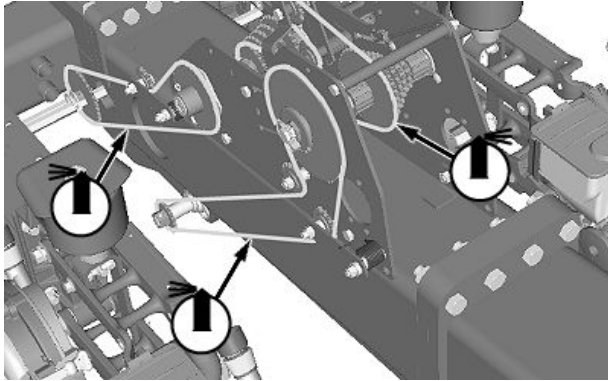


A66744—UN—17MAR10

Wing Seed Transmission Drive Chains

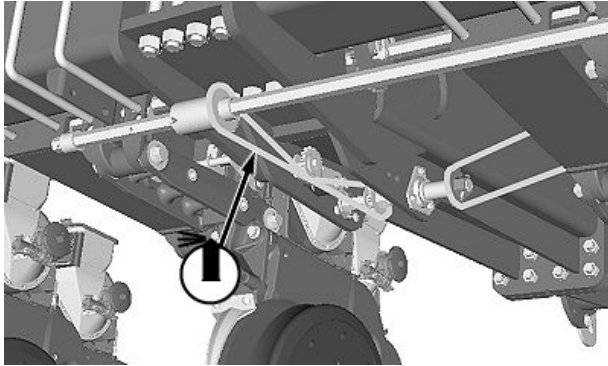
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OUC6064,0000528 -19-15JUN11-2/7



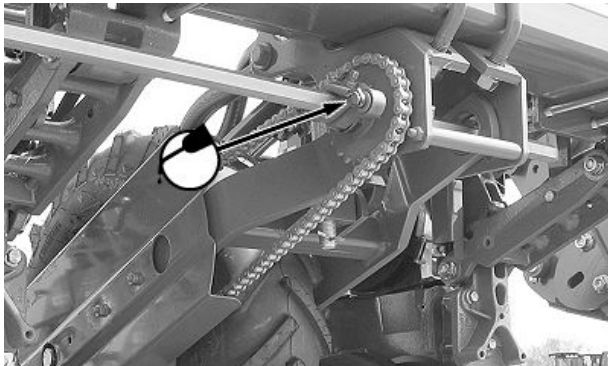
Center Seed Transmission Drive Chains

A69287—UN—21OCT10



Center Transmission Drive Chain

A69288—UN—21OCT10



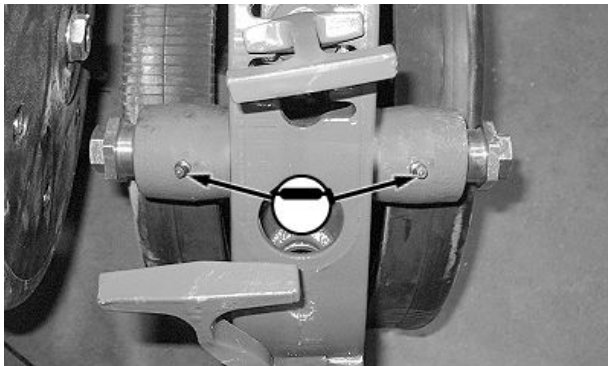
Frame Drive Gauge Wheel Clutch

A66858—UN—26MAR10



Frame Drive Gauge Wheel Hub

A66746—UN—17MAR10

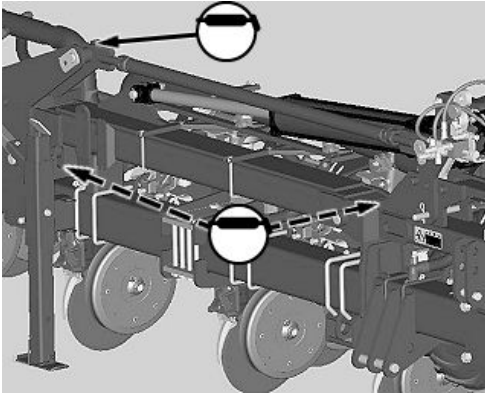


Row Unit Gauge Wheels

A66738—UN—16MAR10

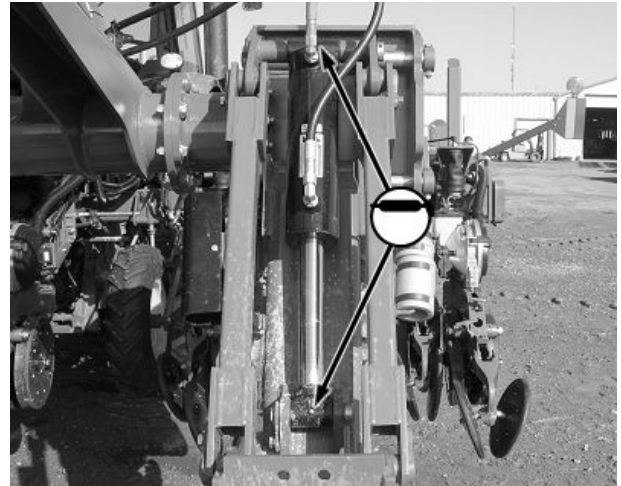
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OUC6064,0000528 -19-15JUN11-3/7



Leveling Linkage, Lift Arm, and Lower Wing Pivot Point

A66751 —UN—17MAR10



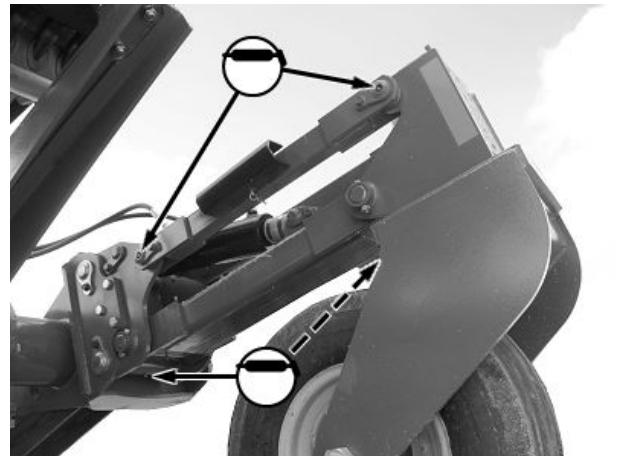
CCS Lift Assist Pivot

A66742 —UN—17MAR10



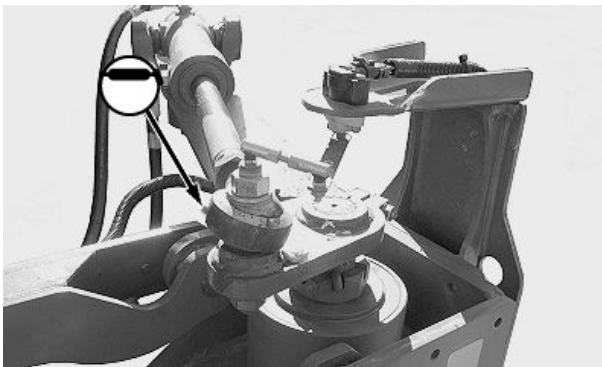
CCS Lift Assist Pivot

A66740 —UN—17MAR10



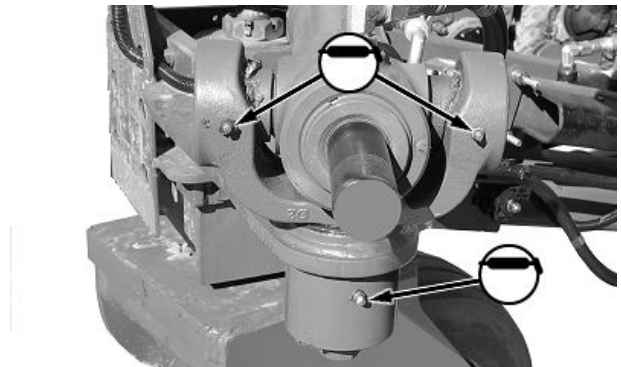
CCS Lift Assist Pivot

A66741 —UN—17MAR10



Lift Assist Steering Cylinder (Rod End)

A66978 —UN—06OCT10

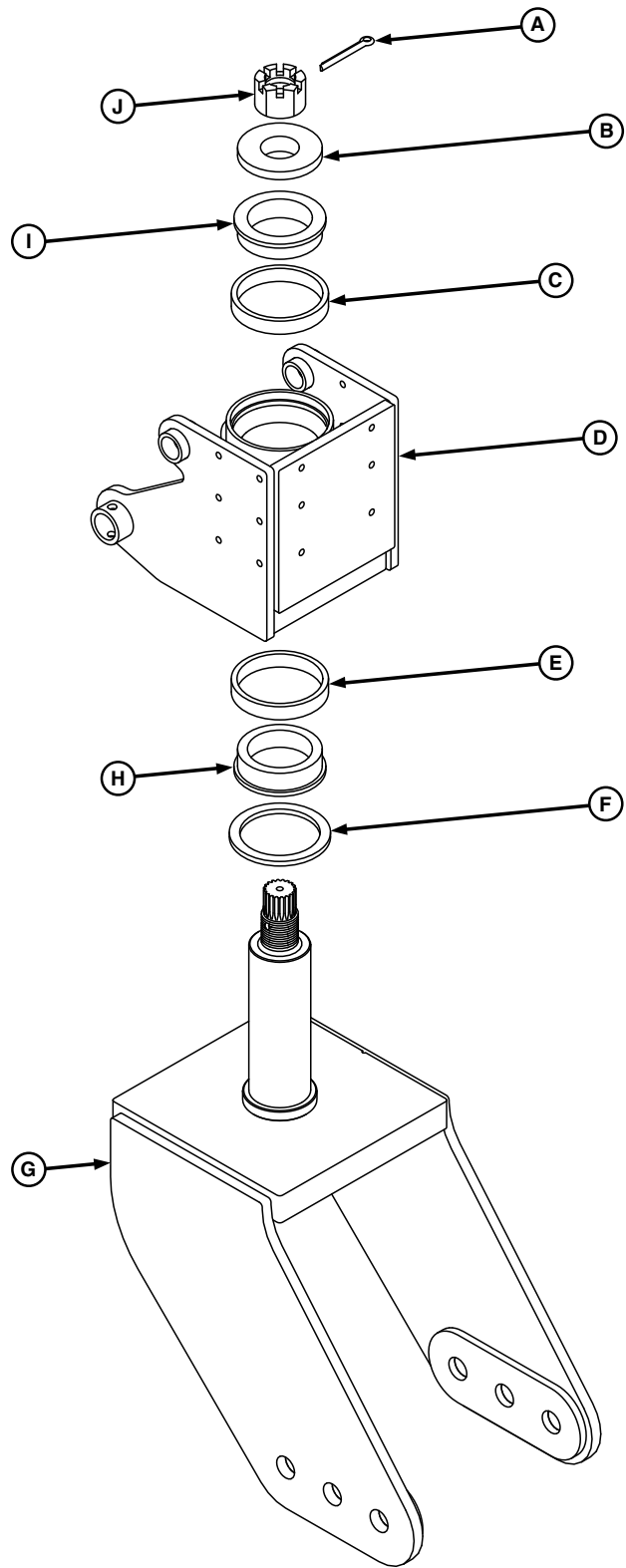


Lift Assist Steering Cylinder Swivel

A66937 —UN—06OCT10

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O06064,0000528 -19-15JUN11-4/7



CCS Lift-Assist Spindle

- | | | | |
|----------------|-----------------|-------------------|----------------|
| A—Cotter Pin | D—Head Assembly | G—Spline Assembly | J—Nut, Slotted |
| B—Washer | E—Bearing Race | H—Bearing Cone | |
| C—Bearing Race | F—Seal | I—Bearing Cone | |

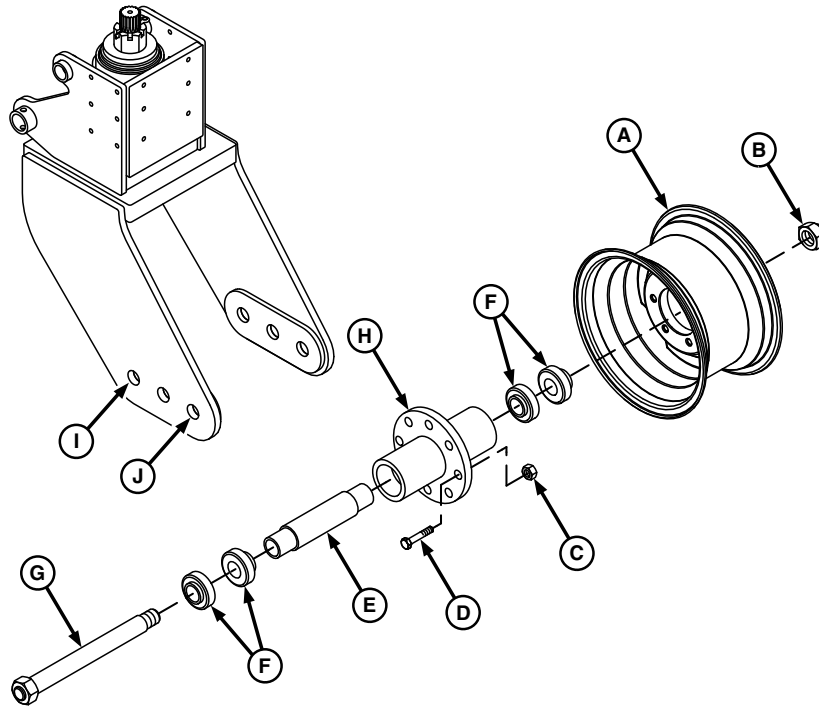
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OUO6064,0000528 -19-15JUN11-5/7

A69161 —UN—19OCT10

Annually inspect the upper and lower cone bearings (H) and (I). Pack both bearings as required with SAE multi-purpose-type grease.

OUC6064,0000528 -19-15JUN11-6/7



CCS Wheel Assembly

A—Wheel
B—Axle Nut
C—Wheel Nut (8 used)
D—Wheel Bolt (8 used)

E—Spacer
F—Bearing Cone (4 used)
G—Axle Bolt
H—Hub
I—Axle Bolt Location On
Machines With Implement
Steering

J—Axle Bolt Location On
Machines Without Implement
Steering

Pack all bearings as required with SAE multi-purpose-type grease.

OUC6064,0000528 -19-15JUN11-7/7

A71815—UN—15JUN11

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
Configure Lift Assist Wheel Assemblies for Twin Row or Single Row Planting	•						
Configure Frame Gauge Wheels for Twin Row or Single Row Planting	•						
Adjust High-Low Drive Range (Variable Rate Drive Only)	•						
Disengaging and Engaging Meter Drive	•						
Locking Up and Unlocking Front Rank Row Units	•						
Install and Remove Seed Tubes	•						
Clean Seed Tube Sensor	•						
Set CCS Row Unit Fan Switch	•						
Install New Vacuum Seal	•						
Inspect and Adjust Seed Opener Blades	•						
Replace Seed Opener Blades and Seed Tube Guard	•						
Adjust Gauge Wheels	•						
Replace Cotter Shear Pins	•						
Shear Protection Points	•						
Cleanout and Inspection of Seed Hoppers and Meter Units	•						
Replace Pro Meter Handle	•						
Service Wheel Bearings	•	•					
Tighten Disk Closing Attachment	•						
Zero CCS Fan Pressure Gauge	•						
Tighten Pro-Series™ TR Meter Latch		•					
Inspect and Service Pro-Series™ TR Vacuum Meter		•					
Tighten LAW Structure Bolts	•						
Inspect Vacuum Motor			•				
Clean Vacuum Manifold System				•			
Tighten Wheel Bolts				•			
Inspect and Service Vacuum Meter							•
Inspect Ratchet Gear	•						
Drain CCS Fan Motor Oil Reservoir							•

WP29706,00002BD -19-20MAR12-1/1

Detailed Service Information—Use TM1721

Refer to the technical (repair) manual for detailed service information or see your John Deere dealer.



TS224 —UN—17JAN89

AG,OUO1018,248 -19-14APR99-1/1

Using Safe Service Procedures

⚠ CAUTION: To help prevent serious injury or death to you or others caused by unexpected movement, service machine on a level surface. Lower machine to ground or sufficiently lock or block raised machine before servicing. 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 shop stands to prevent movement.



N40000 —UN—28SEP88

AG,OUO6074,1362 -19-04AUG00-1/1

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

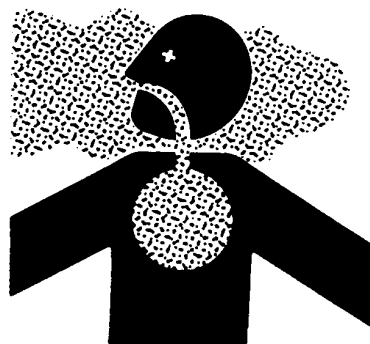
Service and Operate Chemical Sprayers Safely

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—23AUG88

Service Tires Safely

⚠ CAUTION: Explosive separation of a tire and rim parts can cause serious injury or death.

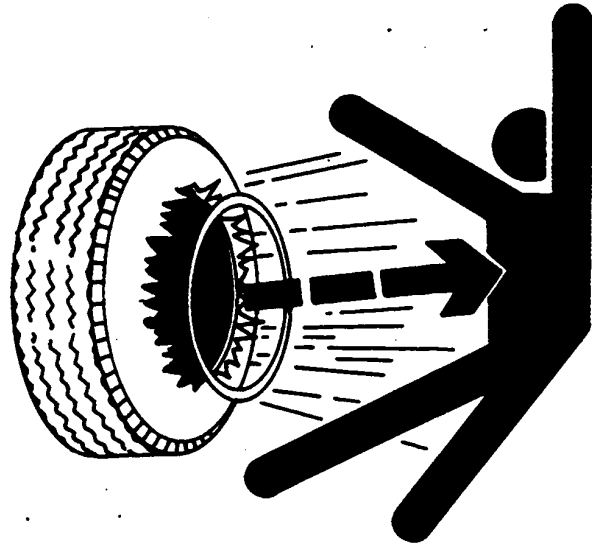
Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

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 —JUN—23AUG88

DX,RIM1 -19-27OCT08-1/1

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.

TS953 —JUN—15MAY90

DX,WW,ECU02 -19-14AUG09-1/1

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

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.

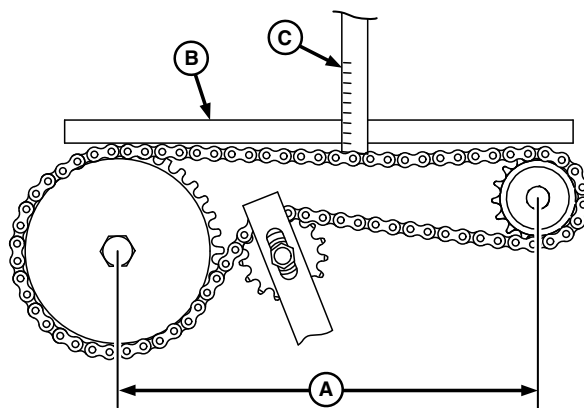
4. Adjust shaft centers or chain tighteners to specification.

Specification

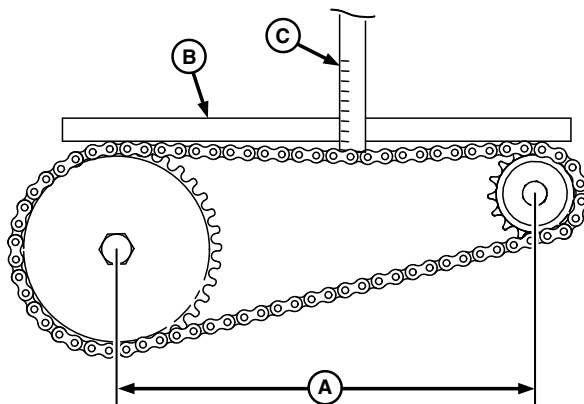
Chain—Deflection.....6.4 mm (1/4 in.) of chain deflection per 31 cm (12 in.)

A—Shaft Distance
B—Straight Edge

C—Ruler



Drive Chain With Tension Idler



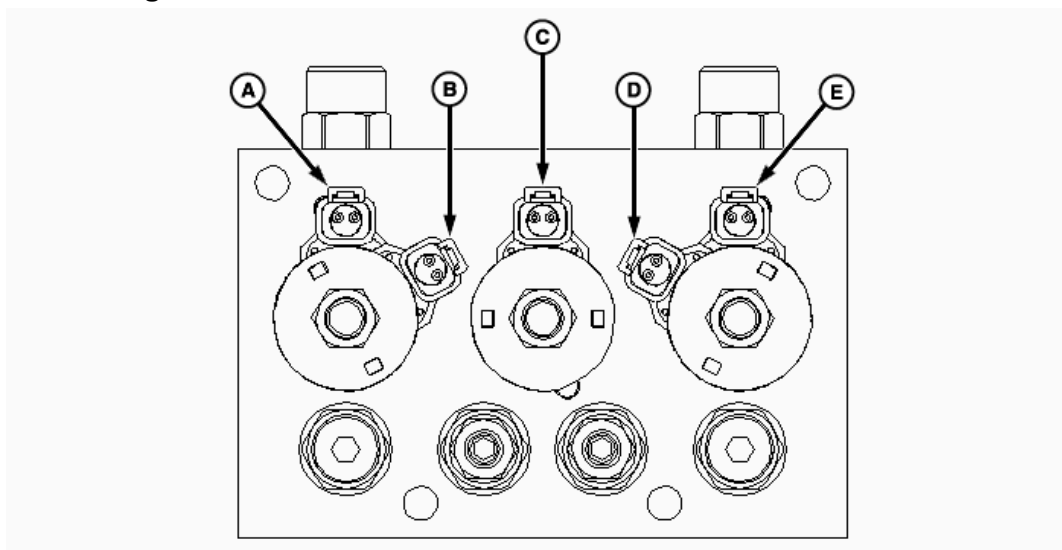
Drive Chain Without Tension Idler

A70496—UN—31JAN11

A70495—UN—31JAN11

OUC6064.0000377 -19-31JAN11-1/1

Implement Steering Solenoid Identification



Implement Steering Solenoid and Valve Assembly

A—SP2—S2 (Right Extend)
(Bottom Connector)
B—SP2—S1 (Right Retract) (Top
Connector)

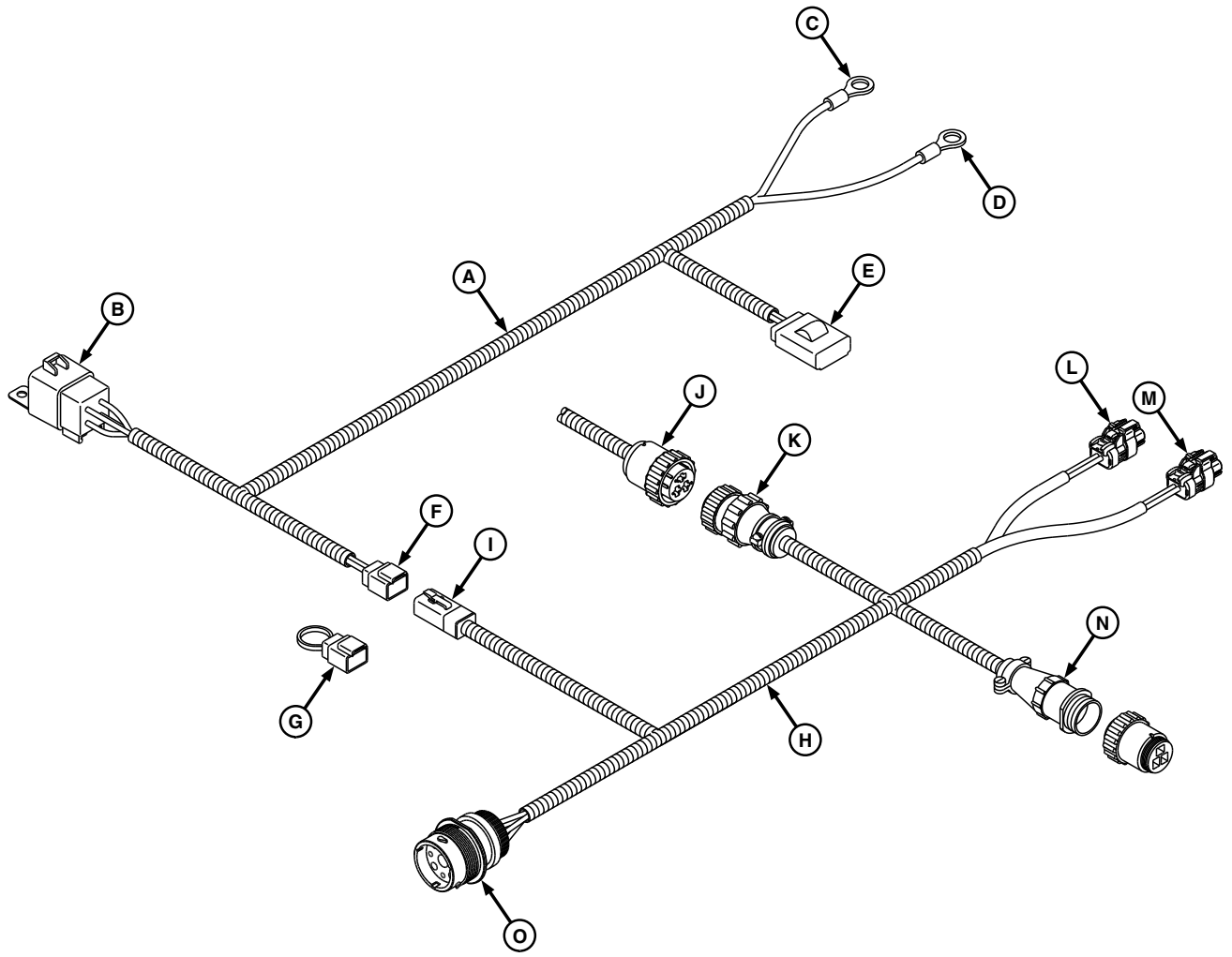
C—SV1 (Float—Lock)
D—SP1—S1 (Left Retract) (Top
Connector)

E—SP1—S2 (Left Extend)
(Bottom Connector)

A69385 —UN—26OCT10

OUC6064,000078F -19-15FEB12-1/1

Relay and Fuse Location for Optional Compressor Power Harness



Optional Compressor Power Harness

- | | | | |
|------------------------------|------------------------------------|------------------------------|-----------------------|
| A—Compressor Battery Harness | E—40A Fuse | I— Convenience (4-pin) | M—Foot Switch |
| B—40A Relay | F—Convenience (4-pin) | J— CIS Harness (If Equipped) | N—Convenience Plug 1 |
| C—Battery Terminal (+) | G—Jumper Connector | K—Convenience Plug 2 | O—Convenience (9-pin) |
| D—Battery Terminal (-) | H—AMS and Compressor Power Harness | L—Switch Box | |

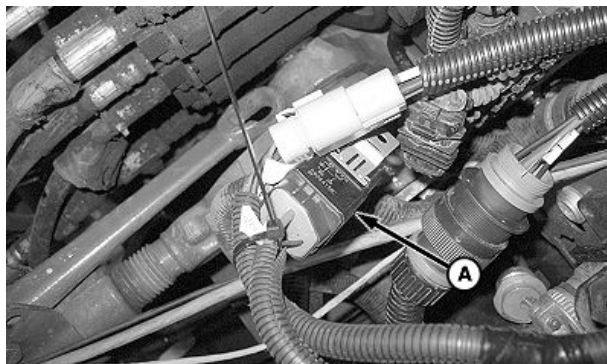
The AMS and Compressor Power Harness supplies power from the tractor to the pneumatic down force compressor and AMS functions (for example, GreenStar Rate Controller and iGuide™).

The following pictures show fuse and relay locations.

Continued on next page

OUO6064,00002E2 -19-12NOV10-1/2

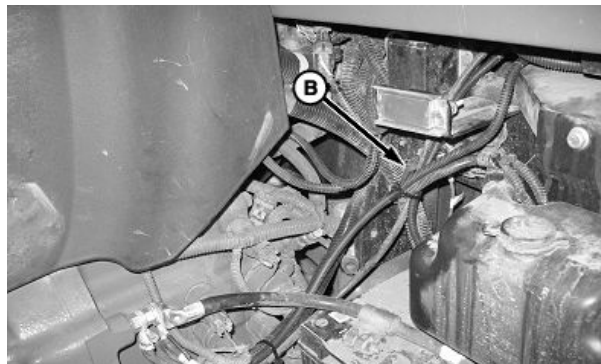
A68115 —UN—19JUL10



Relay, Row Crop Tractor

A—Relay

A68181—UN—15JUL10



Fuse, Row Crop Tractor

B—Fuse

A68183—UN—15JUL10

OUC06064,00002E2 -19-12NOV10-2/2

Check Valves

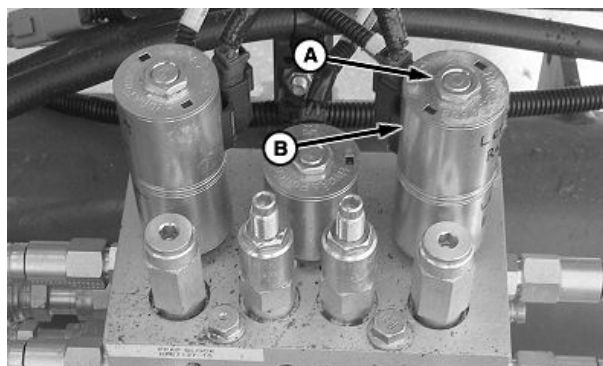
CAUTION: To avoid injury from escaping hydraulic oil, relieve pressure from system.

Foreign material can work its way into the valves and cause them to stick open or closed. To check the valves, proceed as follows:

1. Lower planter with engine running.
2. Place hydraulic lever in "Float" position and PLANT-TRANS switch in "Plant" position. Depress all remaining switches in both directions.
3. Place PLANT-TRANS switch in "Trans" position. Depress all remaining switches in both directions.
4. Leave SCV in "Float" position and shut off engine.
5. Clean area around solenoid of any debris.

NOTE: Some solenoid covers have a thin washer beneath the cover.

6. Remove from solenoid:



A—Nut

B—Cover

- Nut (A)
- Thin Washer (if equipped)
- Cover (B)

7. Lift solenoid from valve.

A69387—UN—27OCT10

Continued on next page

OUC06064,00002E4 -19-12NOV10-1/2

8. Remove valve (A).
9. Place valve in solvent and press poppet inside of valve back and forth to dislodge any foreign material from the valve.
10. Inspect threads on both ends of valve for rust or oxidation. Use a wire brush to clean threads.

IMPORTANT: Do not overtighten valves. Valve bodies distort and cause valves to stick or hang up.

NOTE: SV1 or SV3 is stamped on hex of valve.

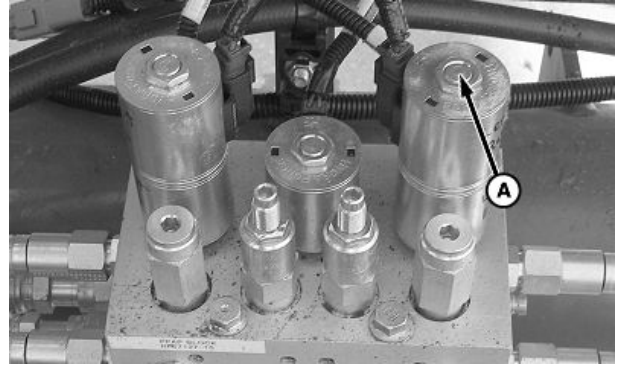
11. Install valve. Tighten SV3 valves (small hex valve) to specification.

Specification	
SV3 Valve—Torque.....	47.5 N·m (35 lb.-ft.)

Tighten SV1 valves (large hex valve) to specification.

Specification	
SV1 Valve—Torque.....	102 N·m (75 lb.-ft.)

12. Install solenoid and washers.
13. Install nut on top of solenoid. Tighten nut to specification.



A—Valve

Specification	
Nut—Torque.....	6.5 N·m (57 lb.-in.)

14. If problem still exists, replace valve.

OUC6064,00002E4 -19-12NOV10-2/2

Tighten Wheel Bolts

IMPORTANT: Check torque on wheel lug nuts before operation, after initial 10 hours of use and after every 50 hours.

Tighten wheel bolts to specification before operation, after first 10 hours of operation and every 50 hours of operation.

Specification	
Drive Gauge Wheel	
Bolts—Torque.....	176 N·m (130 lb.-ft.)
Lift Assist Wheel	
Nuts-to-Wheel	
Bolts—Torque.....	230 N·m (170 lb.-ft.)

WP29706,00002BE -19-20MAR12-1/1

Check Tire Inflation

Inflate machine tires to specifications shown.

Specification	
Frame Gauge	
Wheel Tire—7.60-15	
6—ply—Pressure.....	276 kPa (2.7 bar) (40 psi)

Lift Assist Wheel	
Tire—16.5L-16.1SL	
14—ply—Pressure.....	234 kPa (2.34 bar) (34 psi)

OUC6064,000052D -19-16JUN11-1/1

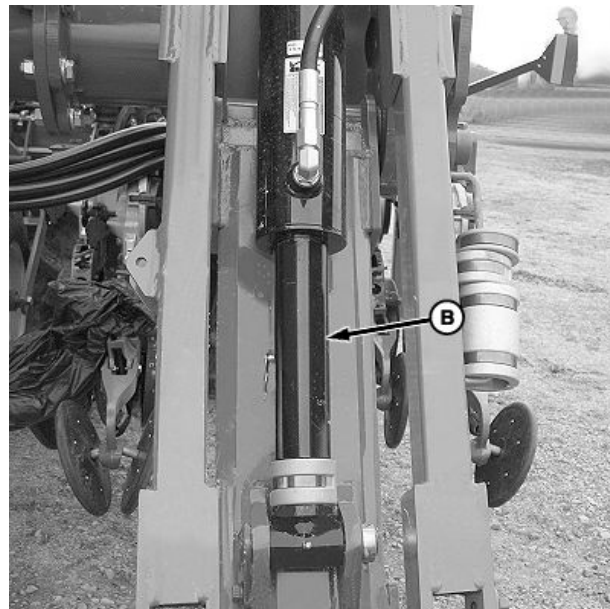
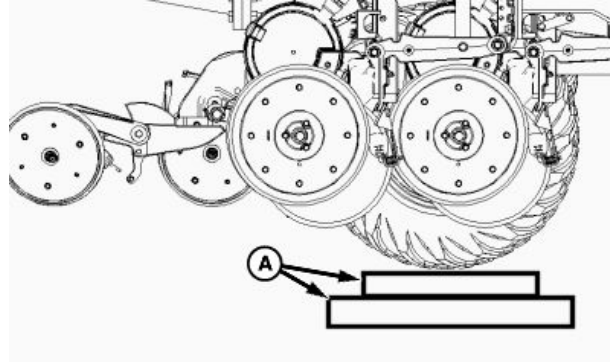
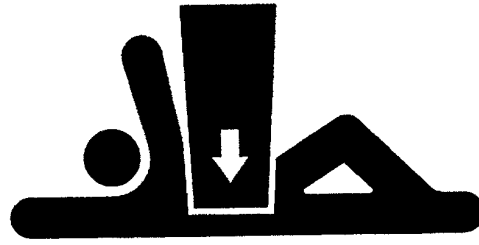
Support Machine Before Service

CAUTION: Avoid crushing injury or death from falling machine. Ensure that service locks are installed on lift assist wheel cylinders and machine is supported on blocks before performing any service or adjustments.

1. Raise machine.
2. Unfold the machine.
3. Lower parking stands on mainframe and place blocks under stands as needed.
4. Place support blocks (A) under gauge wheels on the wing.
5. Install service locks (B) on lift assist wheel cylinders.
6. Lower machine onto support blocks (A) and parking stands.
7. Shift tractor to PARK or set parking brake.
8. Stop engine and remove key.

A—Support Blocks

B—Service locks



A44347 —UN—16DEC97

A66897 —UN—05APR10

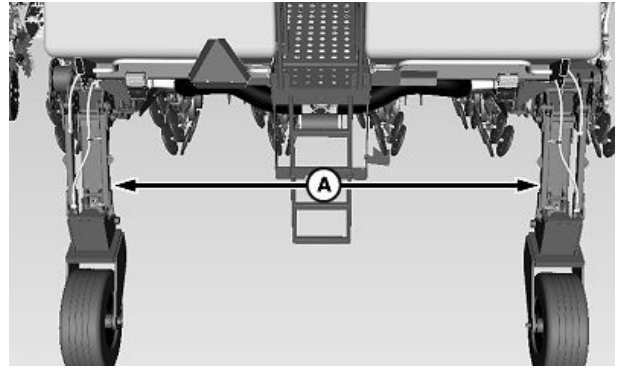
A66896 —UN—05APR10

OUC6064,0000001 -19-18MAY11-1/1

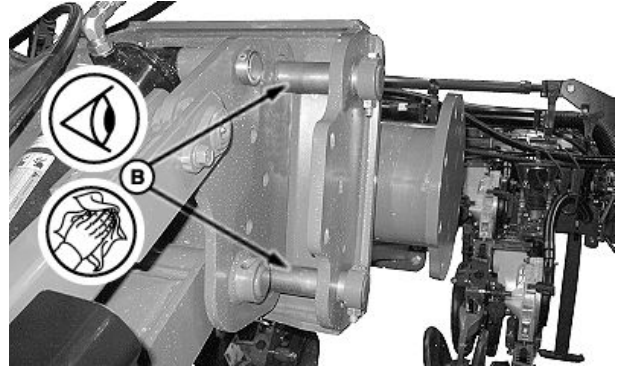
Configure Lift Assist Wheel Assemblies for Twin Row or Single Row Planting

1. Inspect and clean all dirt and debris from lift assist mounting pins (B) before moving lift assist wheel assemblies (A).

A—Lift Assist Wheel Assembly B—Pins
(2 used)



A66443 —UN—04FEB10



A66426 —UN—30MAR10

Continued on next page

OUC6064,0000527 -19-15JUN11-1/4

NOTE: Move one lift assist assembly at a time.

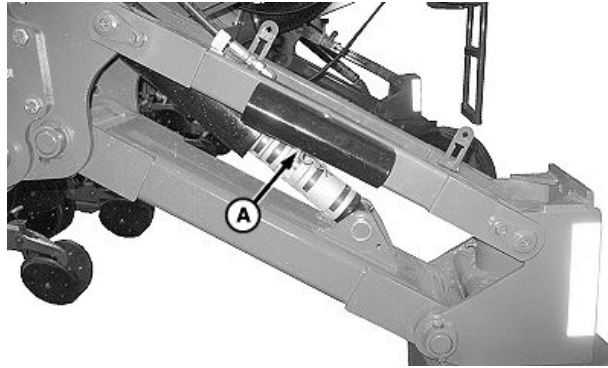
2. To remove weight from one lift assist assembly:

- Support machine. (See SUPPORT MACHINE BEFORE SERVICE in this section.)
- Install service lock (A) on opposite lift assist wheel of one being moved.

NOTE: Position caster wheel in direction of travel to help ease in the moving of the lift assist assembly.

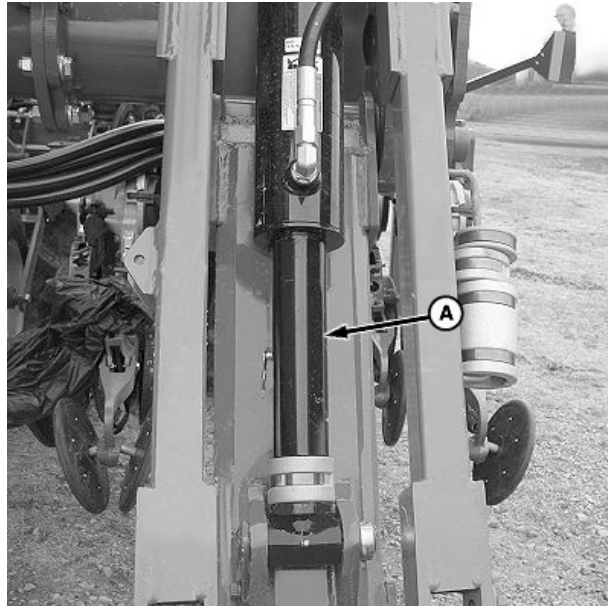
- Lower machine until majority of machine weight is off the lift assist wheel assembly being moved.

A—Service Lock



A66429—UN—03FEB10

Shown in storage location



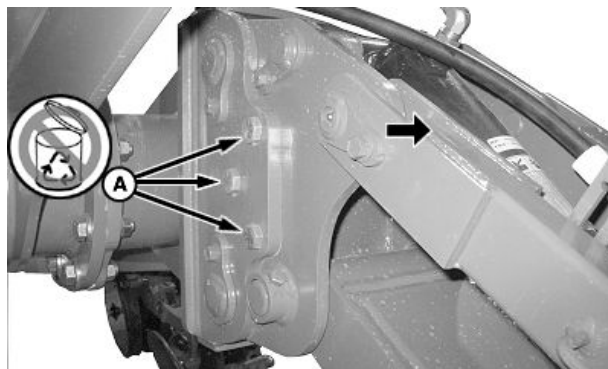
A66886—UN—30MAR10

Service Lock Installed

OOU6064,0000527 -19-15JUN11-2/4

3. Remove and retain cap screws, spacers, and nuts (A).

**A—Cap Screw, Spacer, and Nut
(3 used)**



A66418—UN—30MAR10

Continued on next page

OOU6064,0000527 -19-15JUN11-3/4

NOTE: A jackscrew (A) is provided to aid in moving the lift assist wheel assembly. Support nut (B) while turning jackscrew (A) clockwise. Jackscrew and nut are stored on opposite side of lift assist assembly mounting bracket.

4. Slide lift assist assembly over to opposite side of frame, use jackscrew (A) if necessary.
5. Install previously removed cap screws, spacers, and nuts and tighten to specification.

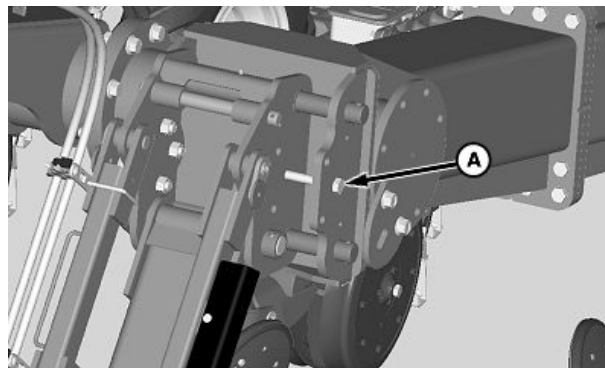
Specification

Lift Assist Wheel
Retaining Cap Screws
and Nuts—Torque.....271 N·m
(200 lb.-ft.)

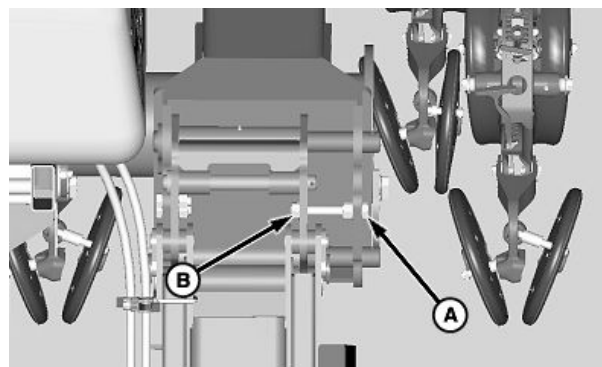
6. Repeat previous steps on opposite lift assist assembly.

A—Jackscrew

B—Nut



A68941—UN—01OCT10



A68942—UN—01OCT10

OUC6064,0000527 -19-15JUN11-4/4

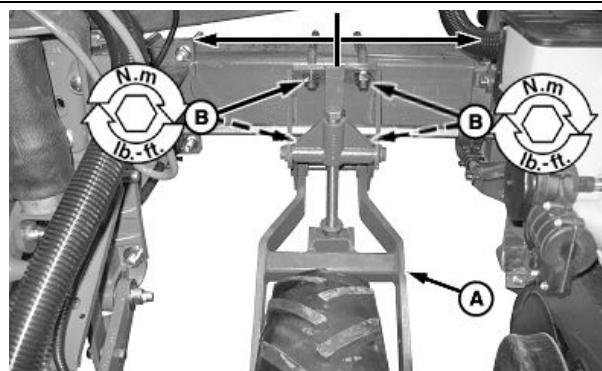
Configure Frame Gauge Wheels for Twin Row or Single Row Planting

1. Loosen U-bolt nuts (B).
2. Center frame gauge wheel (A) between rear rank row units.
3. Tighten nuts (B) equally to specification.

Specification

Frame Gauge Wheel
U-bolt Nuts—Torque.....271 N·m
(200 lb.-ft.)

4. Repeat previous steps on all frame gauge wheels.



A—Frame Gauge Wheel

B—Nut (4 used)

A66439—UN—30MAR10

OUC6064,00002CD -19-12NOV10-1/1

Adjust High-Low Drive Range (Variable Rate Drive Machines Only)

Variable Rate Drive Machines Only: When planting low population crops the variable rate drive sprocket must be switched from high to low range. See table below.

Variable Rate Drive Population Rates at 5 MPH Ground Speed								
Low Range = Large Diameter Sprocket High Range = Small Diameter Sprocket								
Number of Cells in Disk	Single Row Population (Seeds Per Acre)				Twin Row Population (Seeds Per Acre)			
	Low Range		High Range		Low Range		High Range	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
30	8000	37 000	21 000	98 000	16 000	74 000	42 000	196 000
40	11 000	49 000	27 000	131 000	22 000	98 000	54 000	262 000
45	12 000	55 000	31 000	147 000	24 000	110 000	62 000	294 000
48	13 000	59 000	33 000	157 000	26 000	118 000	66 000	314 000
50	13 000	61 000	34 000	164 000	26 000	122 000	68 000	328 000
64	17 000	78 000	43 000	210 000	34 000	156 000	86 000	420 000
90	23 000	111 000	61 000	295 000	46 000	222 000	122 000	590 000
108	28 000	133 000	73 000	355 000	56 000	266 000	146 000	710 000

Low Range and High Range sprockets generate population rates that overlap for a given ground speed.

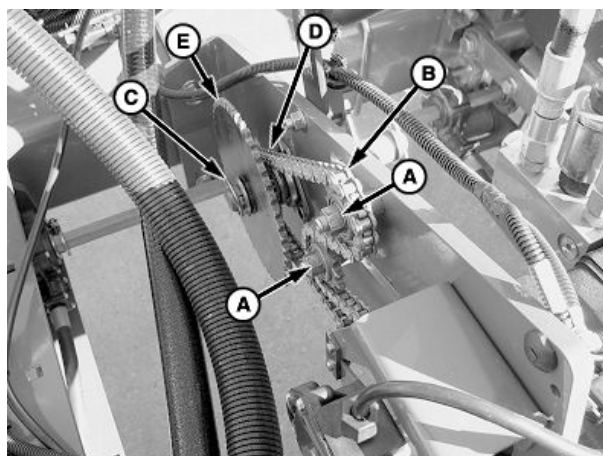
If ground speed is 5 mph or slower and target population is within the low range rates shown in chart, use low range sprocket to avoid low motor speed warning.

The following procedure is used to change sprocket range:

1. Loosen nuts (A) on chain tensioning idlers.
2. Remove chain (B) from high range sprocket (D).
3. Remove and retain pin (C) from sprocket and shaft.
4. Remove sprocket from shaft, flip sprocket, and install back onto shaft with low range sprocket (E) facing in and high range sprocket (D) facing out.
5. Install pin (C) in sprocket and shaft.
6. Install chain (B) on low range sprocket (E).
7. Tension chain (B) and tighten nuts (A).

A—Nuts
B—Chain
C—Pin

D—High Range Sprocket
E—Low Range Sprocket



A68943—UN—01OCT10

OUC6064,00003E5 -19-16MAR11-1/1

Disengaging and Engaging Meter Drive

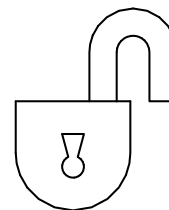
A62348 —UN—27MAR08

Disengage Meter Drive

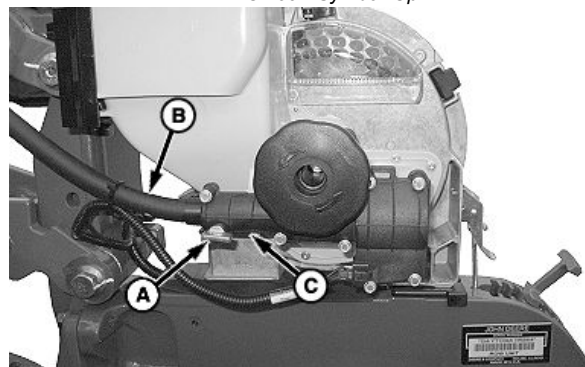
1. Rotate lock pin (A) until "unlocked" symbol is on top.
2. Pull cable (B) approximately 38 mm (1.5 in.) from gear case housing (C).
3. Rotate lock pin (A) until "locked" symbol is on top.

A—Lock Pin
B—Cable

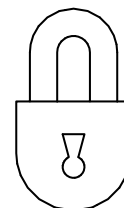
C—Gearbox Housing



Unlock Symbol Up



A62347 —UN—27MAR08



Lock Symbol Up

Continued on next page

OUO6064,00002D0 -19-12NOV10-1/2

A66755 —UN—19MAR10

Engage Meter Drive

A62348 —UN—27MAR08

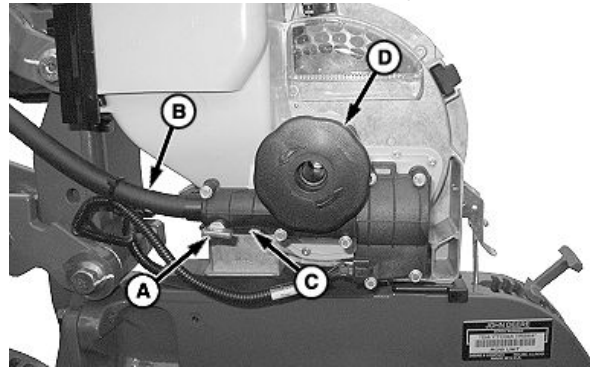
1. Rotate lock pin (A) until “unlocked” symbol is on top.

NOTE: If Pro-Shaft Drive cable does not slide into housing, rotate meter drive handle (D) until cable slides into gear case.

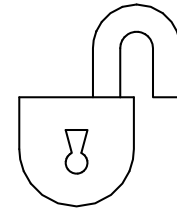
2. Push cable (B) into gear case housing (C).
3. Rotate lock pin (A) until “locked” symbol is on top.

A—Lock Pin
B—Cable

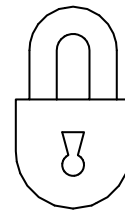
C—Gear Case Housing
D—Meter Drive Handle



A62347 —UN—27MAR08



Unlock Symbol Up



Lock Symbol Up

OUC6064,00002D0 -19-12NOV10-2/2

A66756 —UN—19MAR10

Locking Up and Unlocking Front Rank Row Units

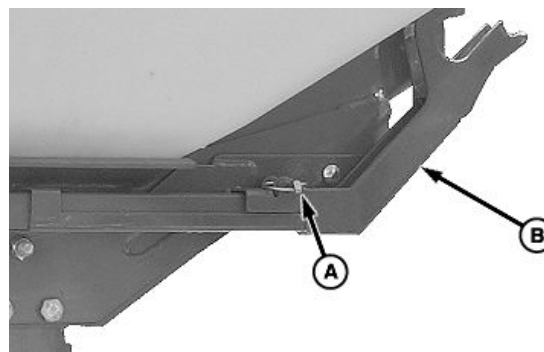
Removing Row Unit Lift Tool

NOTE: Tool (B) is stored on left side of CCS tank support.

1. Remove and retain pin (A) from tool (B) and storage bracket.
2. Slide tool (B) from storage bracket.

A—Pin

B—Tool



A68934 —UN—01OCT10

A68935 —UN—01OCT10

Continued on next page

OUO6064,0000449 -19-30MAR11-1/3

Locking Up Row Units

1. Exhaust pressure from front rank rows. (See DEPRESSURIZE PNEUMATIC DOWN FORCE SYSTEM in your SeedStar 2™ and SeedStar XP™ Monitor Operator's Manual.)

NOTE: Lock out lever (A) is on left-hand side of row unit.

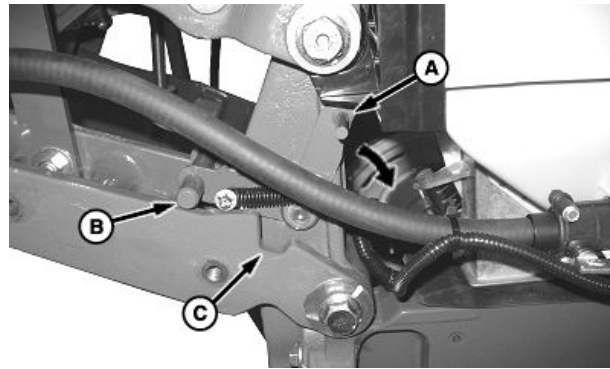
2. Rotate lever (A) down.
3. Raise row unit with tool (D) until pin (B) engages notch (C).
4. Repeat for all front rank row units.
5. Return tool to storage position.

NOTE: To keep locked up front rank row units from bouncing reapply down force pressure.

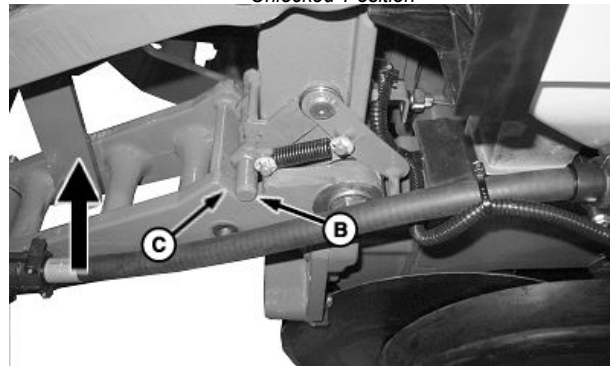
6. Pressurize all rows. (See INTEGRATED PNEUMATIC DOWN FORCE in your SeedStar 2™ and SeedStar XP™ Monitor Operator's Manual.)

A—Lever
B—Pin

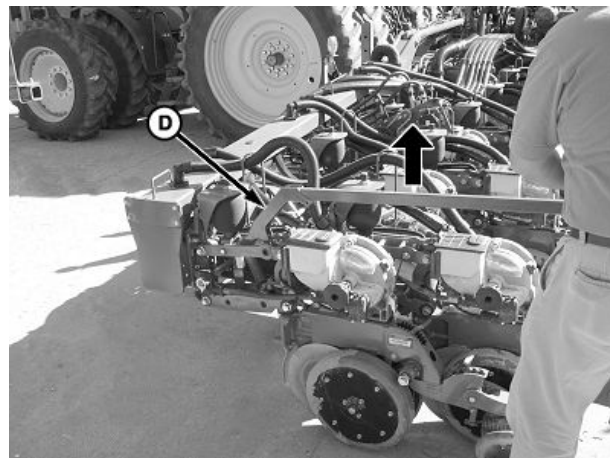
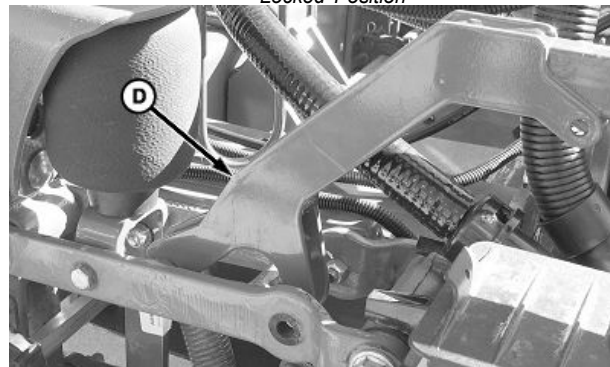
C—Notch
D—Tool



Unlocked Position



Locked Position



A66451—UN—05FEB10

A66417—UN—05FEB10

A69563—UN—10NOV10

A68936—UN—01OCT10

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OOU6064,0000449 -19-30MAR11-2/3

Unlocking Row Units

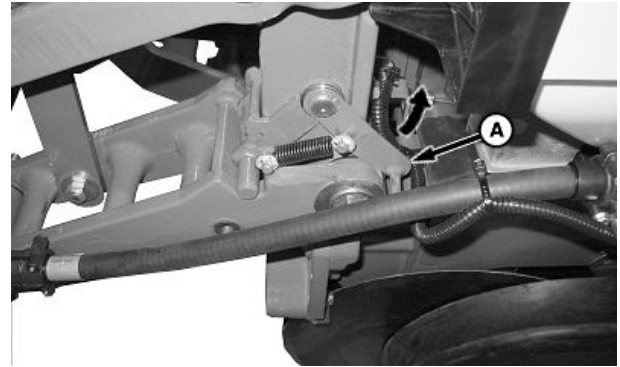
1. Exhaust pressure from front rank rows. (See DEPRESSURIZE PNEUMATIC DOWN FORCE SYSTEM in your SeedStar 2™ and SeedStar XP™ Monitor Operator's Manual.)

NOTE: Lock out lever (A) is on left-hand side of row unit.

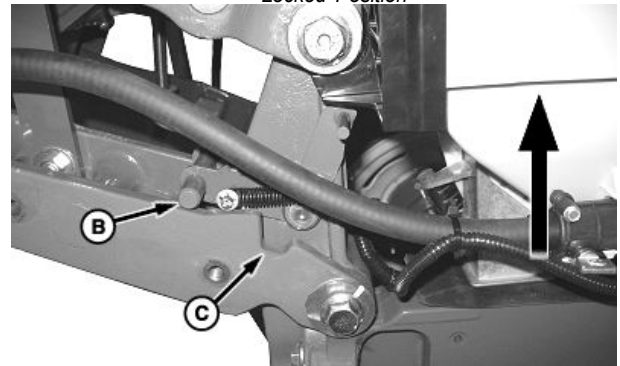
2. Rotate lever (A) up.
3. Raise row unit with tool (D) until pin (B) disengages notch (C) then lower.
4. Repeat for all front rank row units.
5. Return tool to storage position.
6. Pressurize all rows. (See INTEGRATED PNEUMATIC DOWN FORCE in your SeedStar 2™ and SeedStar XP™ Monitor Operator's Manual.)

A—Lever
B—Pin

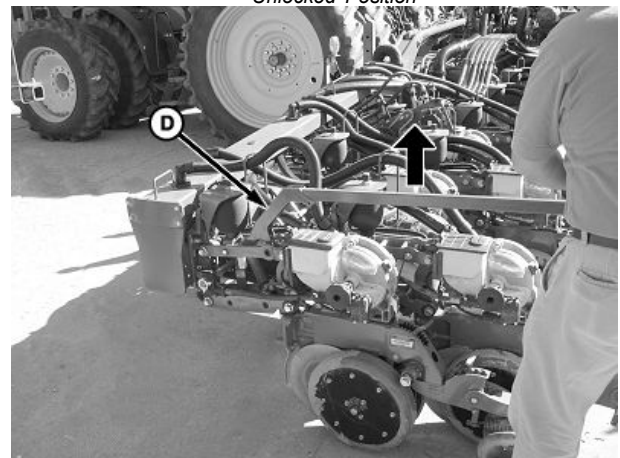
C—Notch
D—Tool



Locked Position



Unlocked Position



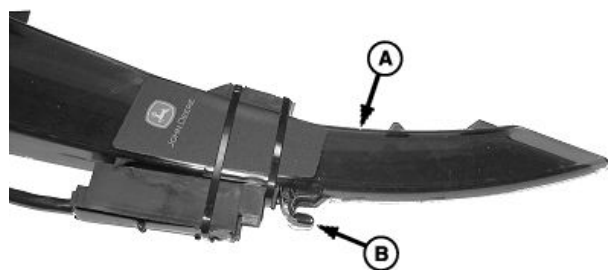
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A66464—UN—08FEB10

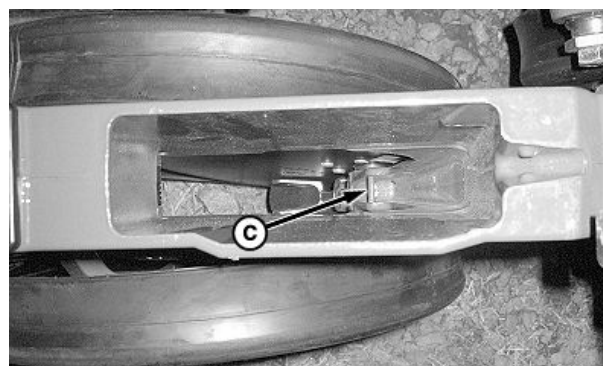
A66936—UN—01OCT10

OUO6064,0000449 -19-30MAR11-3/3

Install and Remove Seed Tubes



A59900—UN—02APR07

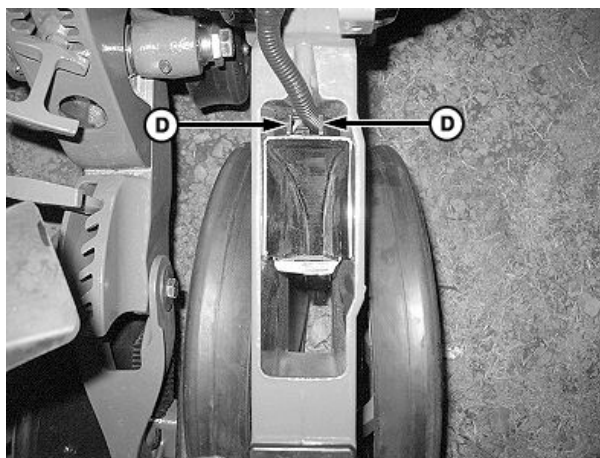


A66859—UN—26MAR10

1. Connect monitor harness to sensor harness.
NOTE: Place harness connector inside planting unit at same time as seed tube.
2. Insert seed tube (A) into planting unit so hook (B) locks on alignment pin (C).
3. Position seed tube so tabs (D) lock into holes.
4. To remove seed tube, squeeze tabs with fingers until they release from casting. Pull tube upward.

A—Seed Tube
B—Hook

C—Pin
D—Tabs



A66860—UN—26MAR10

OUC6064,000004B -19-12NOV10-1/1

Clean Seed Tube Sensor

It is possible for dusty conditions or heavily treated seed to cause an excessive buildup inside seed tubes blocking seed sensor light. When sensor light becomes blocked, false low population counts or false low limit warnings appear.

Periodically clean seed sensor area inside seed tube with dry brush provided.

IMPORTANT: Do not plant again until all interior seed tube surfaces are dry.

If moisture enters seed tube during a rain or when machine is washed, dust in seed tubes turns to mud. If moisture is present or dry residue is difficult to remove with a dry brush, use mild detergent and water with brush. Allow interior seed tube surfaces to dry.



A30007

A30007—UN—06OCT88

OUC6064,000004C -19-12NOV10-1/1

Set CCS Row Unit Fan Switch

CCS row unit switch (A) turns CCS fan on and off as machine is raised and lowered.

1. Raise machine.
2. Loosen nut (B).
3. Rotate row unit switch (A) until flat surface (C) of switch engages parallel arm (D).
4. Tighten nut (B).

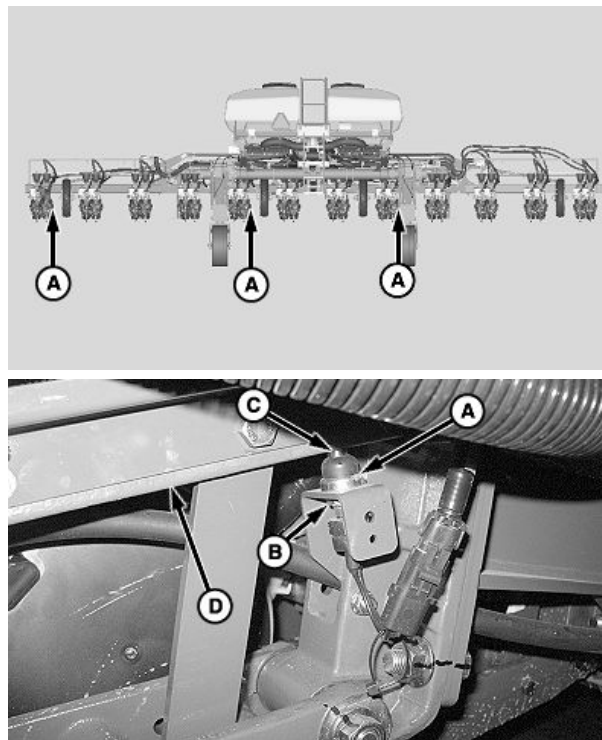
IMPORTANT: Avoid machine damage. If switch is not adjusted to deactivate when frame is raised agitator continues to run as long as tractor power is provided.

NOTE: Tractor electrical power must be supplied when adjusting.

5. Observe agitator on CCS tank and adjust switch so agitator shuts off when frame obtains this fully raised position. This adjustment also ensures that CCS fan and agitator activate the moment this row unit contacts the ground when lowered.

A—Row Unit Switch (3 used)
B—Nut

C—Flat Surface
D—Parallel Arm



A66861—UN—29MAR10

A66862—UN—29MAR10

OUO6064,000004D -19-12NOV10-1/1

Install New Vacuum Seal

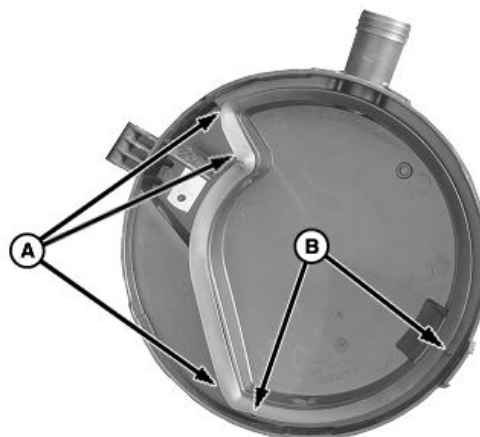
1. Unlatch handle and swing open vacuum chamber.
2. Remove and discard old vacuum seal.

NOTE: This procedure prevents excessive slack in seal.

3. Install new seal. Insert corners of seal (A) then insert seal at locations (B) with dimples on seal aligned with dimples on housing. Finally, insert remaining portions of seal.
4. If seed disk has been used, apply Spray on Graphite Lubricant TY25797 on vacuum seal side.
5. Close vacuum chamber and latch handle.

A—Corners

B—Dimple Location



A66863—UN—29MAR10

OUO6064,000004E -19-12NOV10-1/1

Inspect and Adjust Seed Opener Blades

CAUTION: Avoid injury. Disk blades are sharp. Wear protective gloves and handle disks carefully.

1. Inspect blade edge contact point (D) as follows:
 - a. Insert two small business cards between blade opening and gently slide together until blade contact point is reached.
 - b. Measure distance between business cards and compare to specification.

Specification

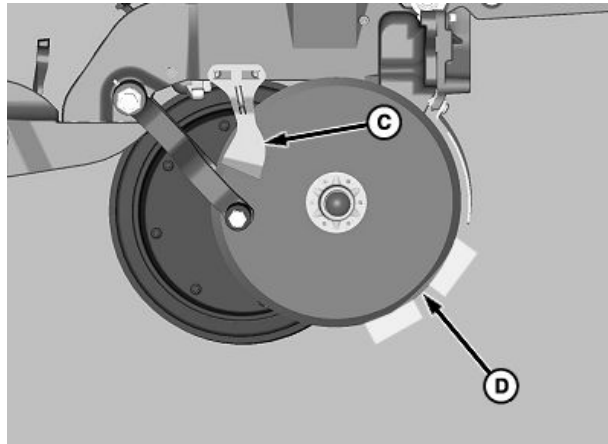
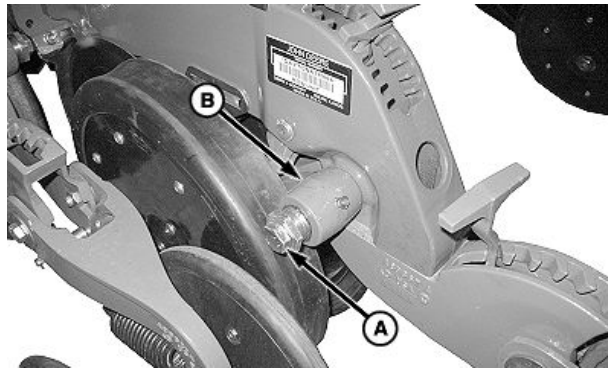
Blade Edge	
Contact—Blade Edge	
Contact Length.....	38—63.5 mm (1.5—2.5 in.)

- 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. Replace blades, if diameter is below specification, if beveled edge is worn off or if significant damage is apparent. (See REPLACE SEED OPENER BLADES AND SEED TUBE GUARDS in this section.)

Specification

Opener Blades—Mini-	
mum Diameter.....	356 mm (14 in.)



A—Cap Screw
B—Pivot Shaft

C—Scraper
D—Contact Point

A66865—UN—29MAR10

A66898—UN—05APR10

Continued on next page

OUC6064,000004F -19-12NOV10-1/2

CAUTION: Disk blades are sharp. Wear protective gloves and handle disks carefully to avoid being injured.

IMPORTANT: Nut on left-hand blade has left-hand threads.

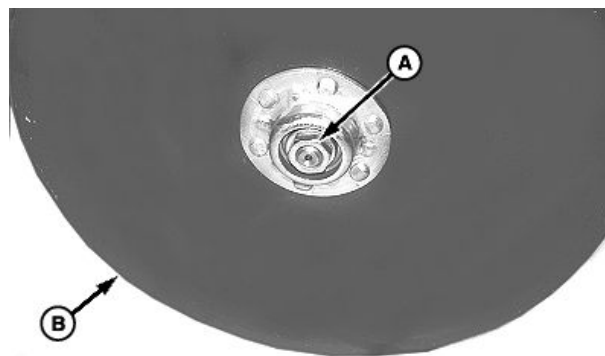
5. Remove only one blade to adjust contact point, as long as opener blades are centered on the row unit shank. If one opener blade contacts row unit shank, move shims side to side so that blades are centered.
6. Remove hub cap, nut, flat washer (A) and hardened shims.
7. Remove blade (B).

NOTE: Do not discard shims. They 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.

Blade can be installed and removed more than once before proper contact point is achieved.

9. While blade is off, inspect seed tube guard and replace, if excessively worn. (See REPLACE SEED OPENER BLADES AND SEED TUBE GUARDS in this section.)



A—Nut and Washer

B—Disk

10. During final reassembly, tighten blade nut and gauge wheel arm cap screw to specification.

Specification

Blade Nut—Torque.....	122 N·m (90 lb.-ft.)
Gauge Wheel Arm Cap Screw—Torque.....	271 N·m (200 lb.-ft.)

OUC6064,000004F -19-12NOV10-2/2

A51112—UN—20NOV02

Replace Seed Opener Blades and Seed Tube Guard

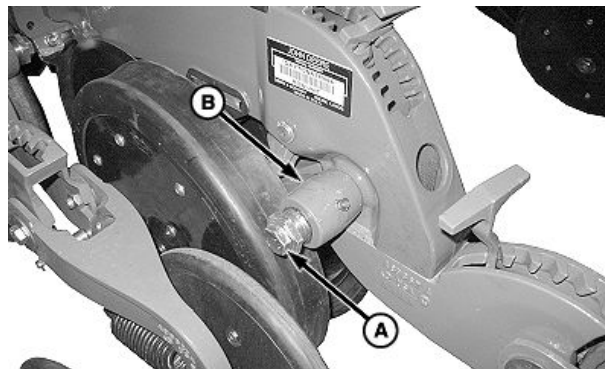
IMPORTANT: Avoid premature wear. Do not use a new blade with a used blade. Install new blades in pairs.

NOTE: If replacing seed tube guard only, do not remove right-hand blade.

1. Remove cap screw (A), pivot shaft (B,) and gauge wheel from row unit.

A—Cap Screw

B—Pivot Shaft



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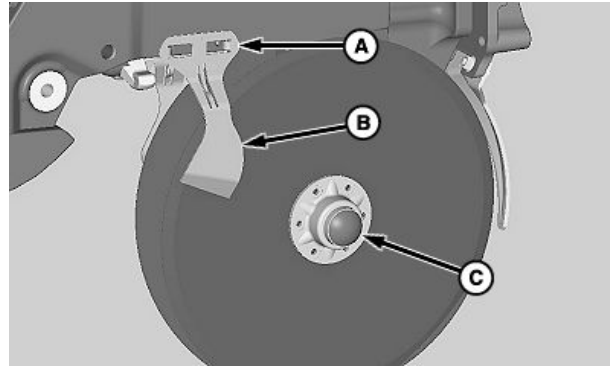
OUC6064,0000050 -19-12NOV10-1/4

A66865—UN—29MAR10

2. Planting unit equipped with 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



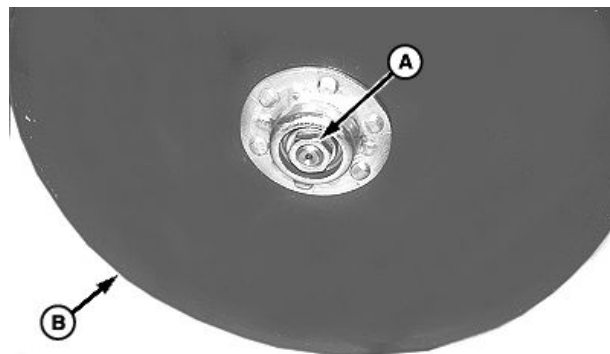
A66899—UN—05APR10

OUC6064,0000050 -19-12NOV10-2/4

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, do not remove right-hand blade.



A—Nut and Washer

B—Disk

A51112—UN—20NOV02

OUC6064,0000050 -19-12NOV10-3/4

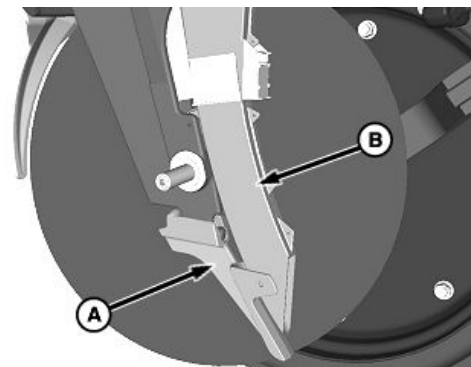
NOTE: Replace seed tube guard, if excessively worn.

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

OUC6064,0000050 -19-12NOV10-4/4

Adjust Gauge Wheels

IMPORTANT: Avoid excessive wheel wear. Do not overtighten gauge wheel.

When assembled, gauge wheels and disk blades must be free to turn with minimal resistance.

Adjust gauge wheels to prevent buildup of dirt or residue between gauge wheels and opener blades.

Adjust gauge wheels to be no more than maximum specification away from blades at their closest point when rotated.

Specification

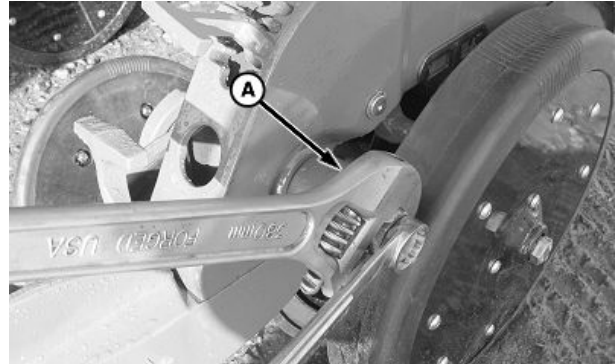
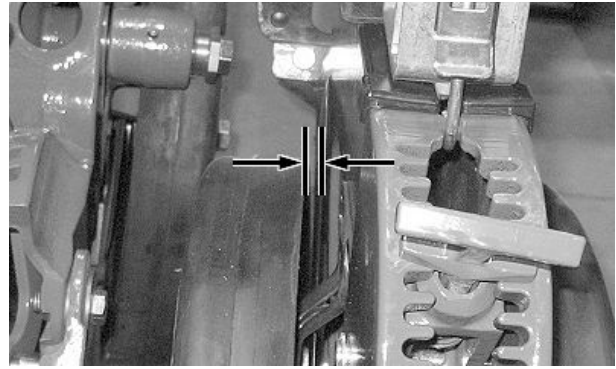
Wheel to Blade	
Maximum—Distance.....	1.5 mm (1/16 in.)

Loosen and hold cap screw with one wrench while turning adjustment nut with another wrench (A). To move wheel closer to blade, turn nut counterclockwise. To move wheel away from blade, turn nut clockwise.

Tighten wheel arm cap screw to specification.

Specification

Wheel Arm Cap	
Screw—Torque.....	271 N·m (200 lb.-ft.)



A—Adjusting Wrench

OUC6064,0000051 -19-12NOV10-1/1

A66866 —UN—29MAR10

A66867 —UN—29MAR10

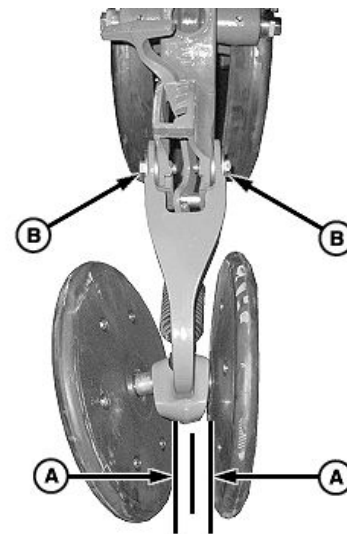
Center Closing Wheels

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

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

A—Closing Wheels

B—Cap Screws



OUC6064,0000037 -19-12NOV10-1/1

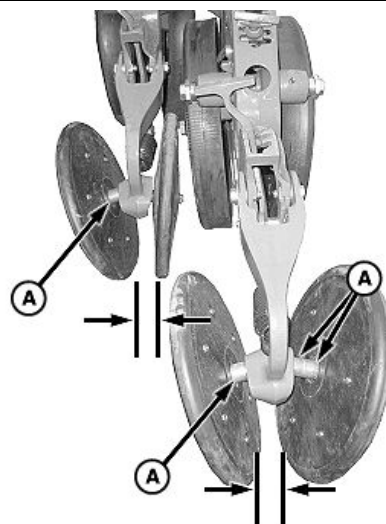
A66788 —UN—22MAR10

Adjust Closing Wheel Spacing

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

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

A—Nuts and Spacers



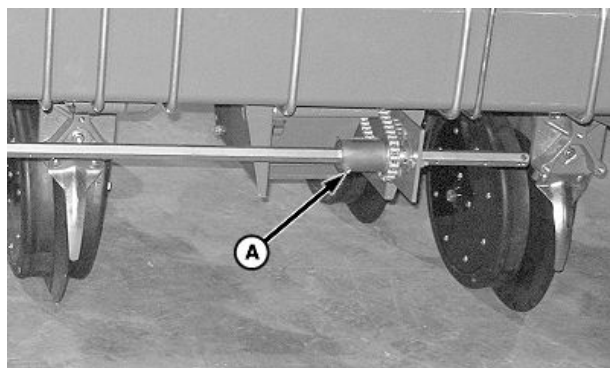
A66789—UN—22MAR10

OUC06064,0000038 -19-12NOV10-1/1

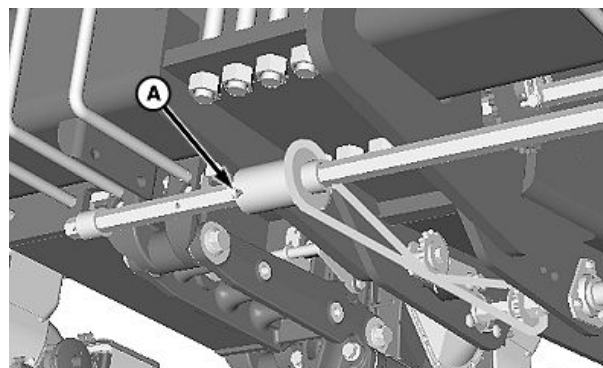
Replace Cotter Shear Pins

Replace Countershaft Cotter Pins

NOTE: Replace cotter shear pins only with cotter shear pins of same size. Do not replace with other type pins.



A66888—UN—29MAR10



A69289—UN—21OCT10

A—Shear Pins

Cotter shear pins (A), which connect countershaft to countershaft sprocket, shear when an excessive load is put on countershaft.

If cotter shear pins become deformed through normal usage after extended use. In this condition, it is possible for cotter pin to fail without a machine malfunction.

Infrequent or improper lubrication causes “binding” of moving parts within machine. This “binding” causes cotter shear pins to shear, thus preventing breakage of machine parts.

Check transmission for binding or loose chains.

If cotter pin shears, turn countershaft by hand to locate where “binding” is occurring. When countershaft can be turned freely by hand, replace cotter pin.

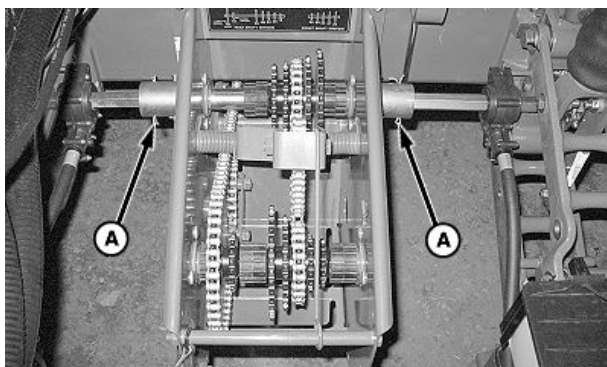
If shaft binds due to misalignment, loosen bolts on shaft bearings. Make certain shaft turns freely, then tighten bolts.

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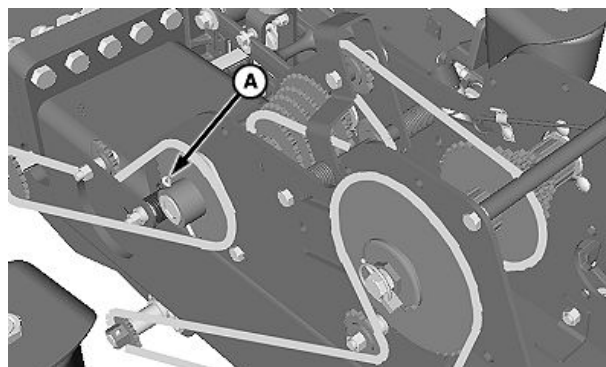
OUC06064,0000052 -19-12NOV10-1/2

Replace Drill Shaft Cotter Pins

NOTE: Replace cotter shear pins only with cotter shear pins of same size. Do not replace with other type pins.



A66869 —UN—29MAR10



A69290 —UN—21OCT10

A—Shear Pins

Cotter shear pins (A), which connect drill shaft to transmission, can shear when an excessive load is put on drill shaft.

Cotter shear pins can also become deformed through normal usage after extended use. In this condition, it is possible for cotter pin to fail without a machine malfunction.

Infrequent or improper lubrication causes “binding” of moving parts within the machine. This “binding” causes

cotter pins to shear, thus preventing breakage of machine parts.

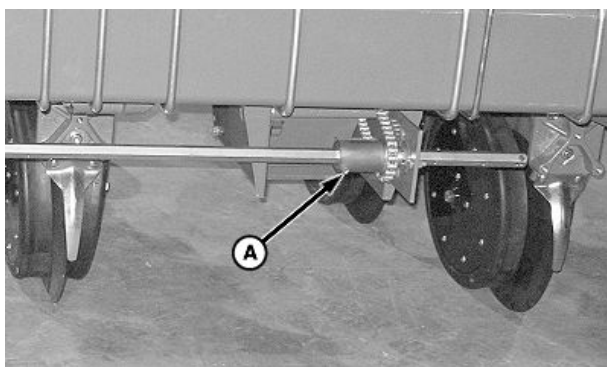
If drill shaft binds due to misalignment, loosen bolts on drill shaft bearings on planting units. Make certain shaft turns freely, then tighten bolts.

If either cotter pin shears, turn drill shaft by hand to locate where binding is occurring. When drill shaft can be turned freely by hand, replace cotter pin.

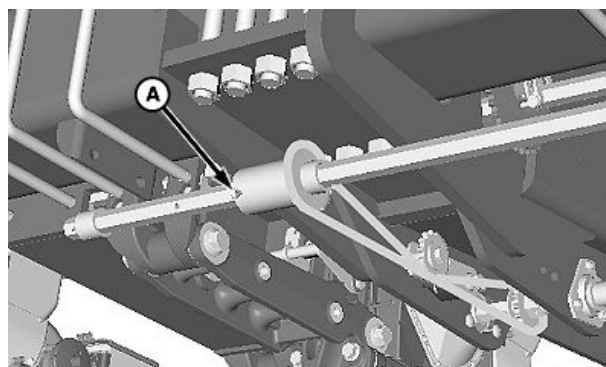
OUC06064.0000052 -19-12NOV10-2/2

Shear Protection Points

NOTE: To replace shear pins. (See **REPLACE COTTER SHEAR PINS** in this section.)



A66868 —UN—29MAR10



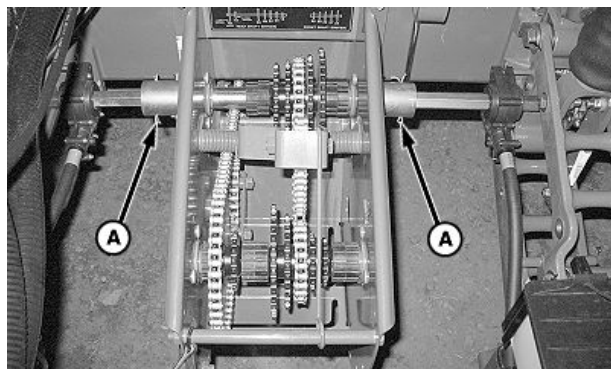
A69289 —UN—21OCT10

A—Shear Pins

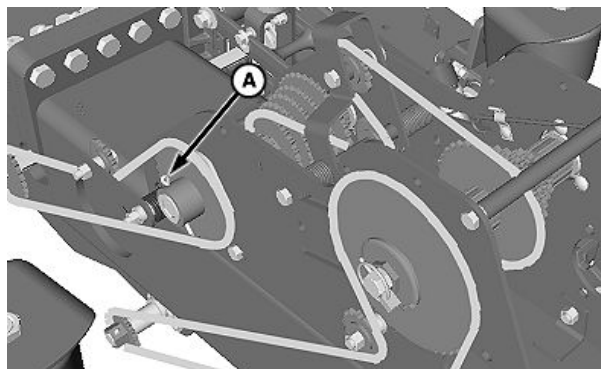
Cotter shear pins (A) connect countershaft to transmission and wing drive.

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OUC06064.0000053 -19-12NOV10-1/2



A66869 —UN—29MAR10



A69290 —UN—21OCT10

A—Shear Pins

Cotter shear pins (A) connect drill shaft to transmission.

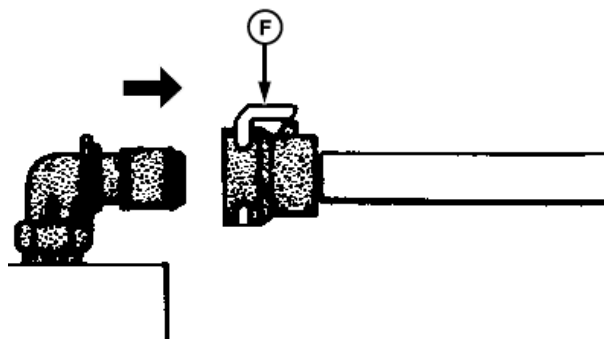
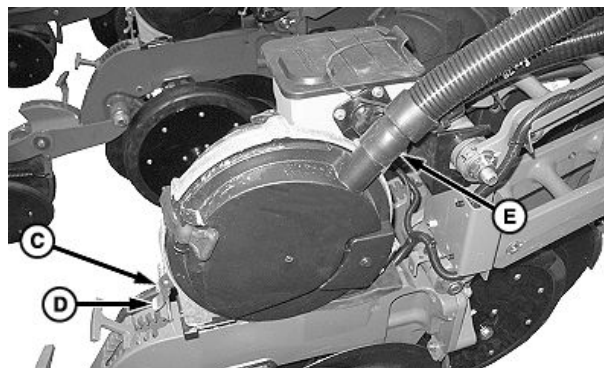
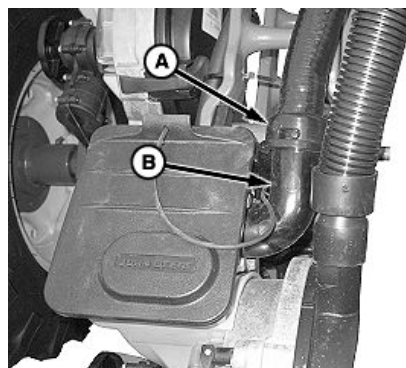
OUC6064,0000053 -19-12NOV10-2/2

Remove Pro-Series™ TR Seed Meter Assembly From Row Unit

1. Rotate CCS seed delivery hose (A) counterclockwise until it unlocks from hopper fill neck (B) and pull off hose.
2. Remove vacuum hose (E).
3. If row is monitored for vacuum pressure, pull clip (F) sideways to unlock and pull sensor hose off fitting.
4. Push down on clip (C) while lifting on latch (D) to unlock meter assembly from row unit.

A—Delivery Hose
B—Fill Neck
C—Clip

D—Latch
E—Vacuum Hose
F—Clip



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OUC6064,000003A -19-12NOV10-1/2

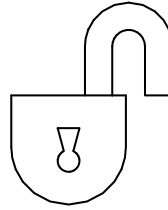
A66822 —UN—24MAR10

A66823 —UN—24MAR10

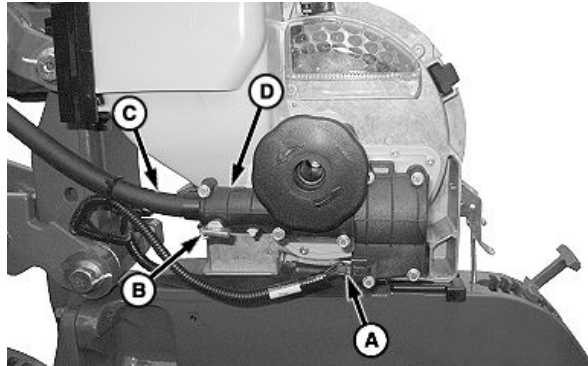
A66825 —UN—31MAR10

5. Disconnect RowCommand™ harness connector (A) (if equipped).
6. Rotate lock pin (B) 180 degrees until “unlocked” symbol is on top.
7. Pull Pro-Shaft Drive cable (C) from housing (D) while raising rear of meter upward and rearward.

A62348 —UN—27MAR08



A—RowCommand™ Harness Connector
B—Lock Pin
C—Drive Cable
D—Housing



A69136 —UN—14OCT10

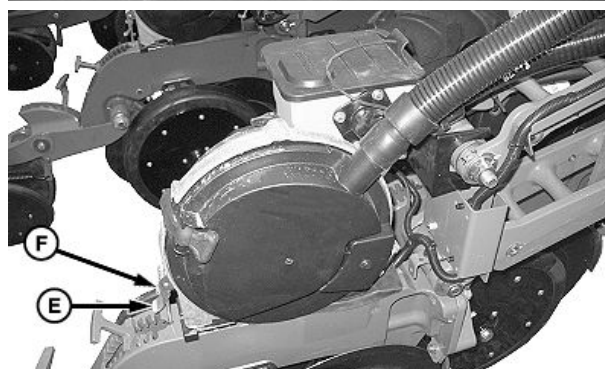
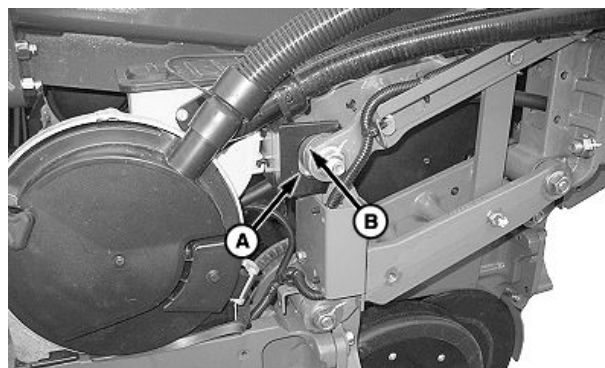
OUO6064,000003A -19-12NOV10-2/2

Install Pro-Series™ TR Seed Meter Assembly on Row Unit

1. Push hopper alignment notch (A) over row unit pivot (B) (both sides).
2. Verify alignment pin (C) on bottom of meter is aligned with hole on row unit and hook (D) is latched into row unit.
3. Position hook (D) as shown and lower latch (E) until clip (F) locks, securing latch.

A—Alignment Notch
B—Row Unit Pivot
C—Alignment Pin

D—Hook
E—Latch
F—Clip



A66888 —UN—01APR10

A66889 —UN—01APR10

A66890 —UN—01APR10

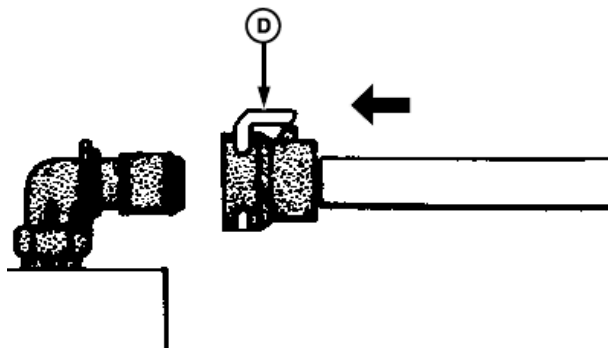
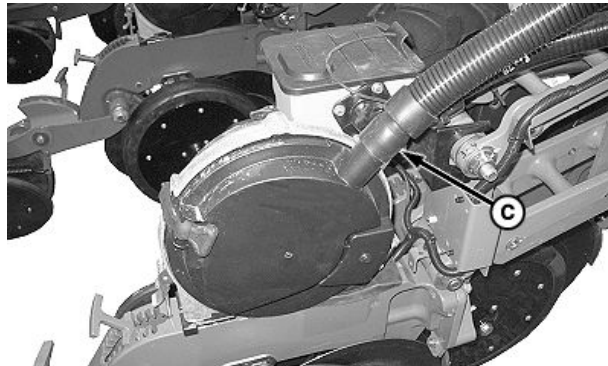
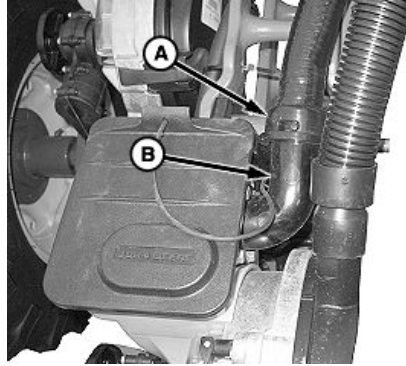
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OUO6064,000003B -19-12NOV10-1/3

4. Push CCS seed delivery hose (A) onto hopper fill neck (B) and rotate clockwise until it locks into place.
5. Install vacuum hose (C).
6. If row is monitored for vacuum pressure, push sensor hose on fitting and push clip (D) sideways to lock hose onto fitting.

A—CCS Seed Delivery Hose
B—Hopper Fill Neck

C—Vacuum Hose
D—Clip



A66822—UN—24MAR10

A66892—UN—01APR10

A66893—UN—01APR10

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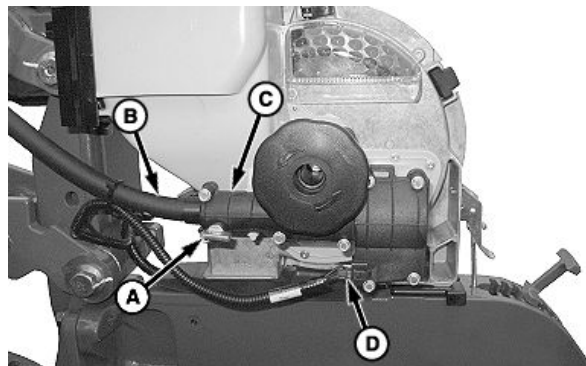
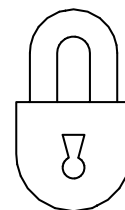
OUC6064,000003B -19-12NOV10-2/3

7. Push Pro-Shaft Drive cable (B) into housing (C) while rotating meter down.
8. Rotate lock pin (A) 180 degrees until "locked" symbol is on top.
9. Connect RowCommand™ harness connector (D) (if equipped).

A—Lock Pin
B—Drive Cable

C—Housing
D—RowCommand™ Harness Connector

A62347 —UN—27MAR08



A69137 —UN—14OCT10

OUO6064,000003B -19-12NOV10-3/3

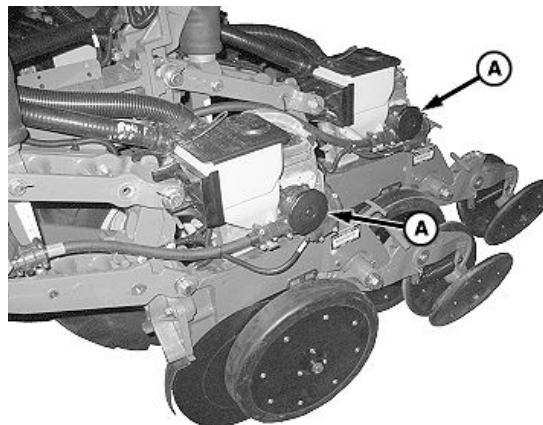
Cleanout and Inspection of Seed Hoppers and Meter Units

Vacuum Meter Cleanout

IMPORTANT: Use precautions as recommended by chemical manufacturers when handling parts coated with seed treatments. Use proper skin, eye, and respiratory protection.

This procedure is for emptying seed hoppers and vacuum meters (A).

1. Remove vacuum meter. (See REMOVE PRO-SERIES™ TR SEED METER ASSEMBLY FROM ROW UNIT in this section.)
2. Empty hopper and vacuum seed meter by inverting unit. When hopper is empty, some seed remains in meter housing. To empty this seed rotate unit back to operating position. Invert unit again and pour remaining seed from meter housing.
3. Repeat this process until all seed is removed.



A—Seed Hoppers and Vacuum Meters

A68931 —UN—30SEP10

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OUO6064,0000039 -19-12NOV10-1/2

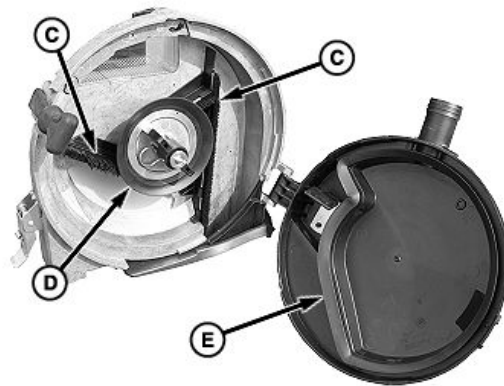
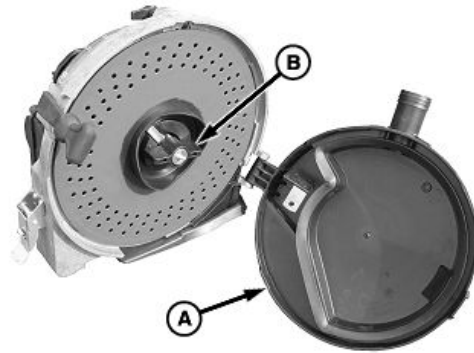
Inspecting Vacuum Meter

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

To inspect meter, open door (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 (C) for gaps, hub seal (D) for cracks and vacuum seal (E) for cracks and wear areas. If replacement is necessary. (See Service and Adjustments section.)

A—Door
B—Meter Hub
C—Brush

D—Hub Seal
E—Vacuum Seal

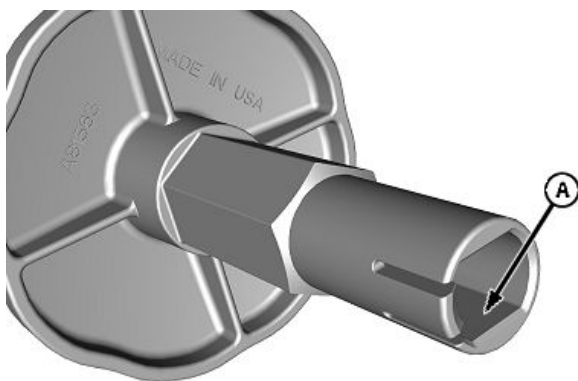


A66809 —UN—23MAR10

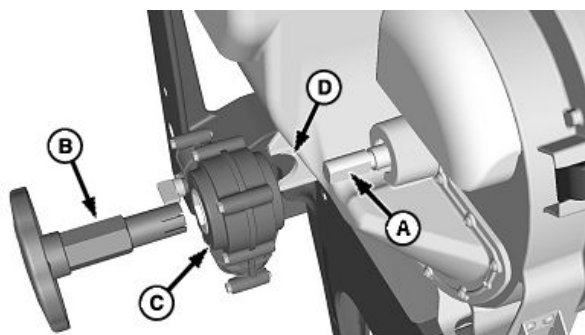
A66821 —UN—23MAR10

OUC6064,0000039 -19-12NOV10-2/2

Replace Pro Meter Handle



A57648 —UN—13MAR06

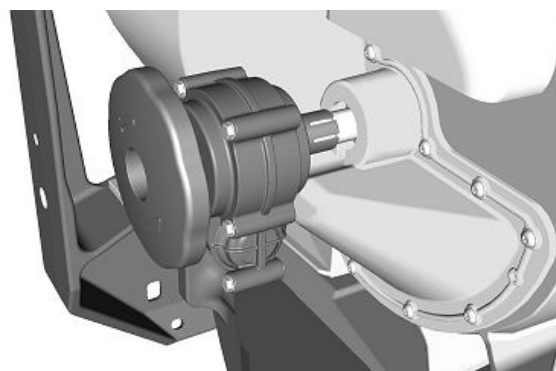


A57649 —UN—13MAR06

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

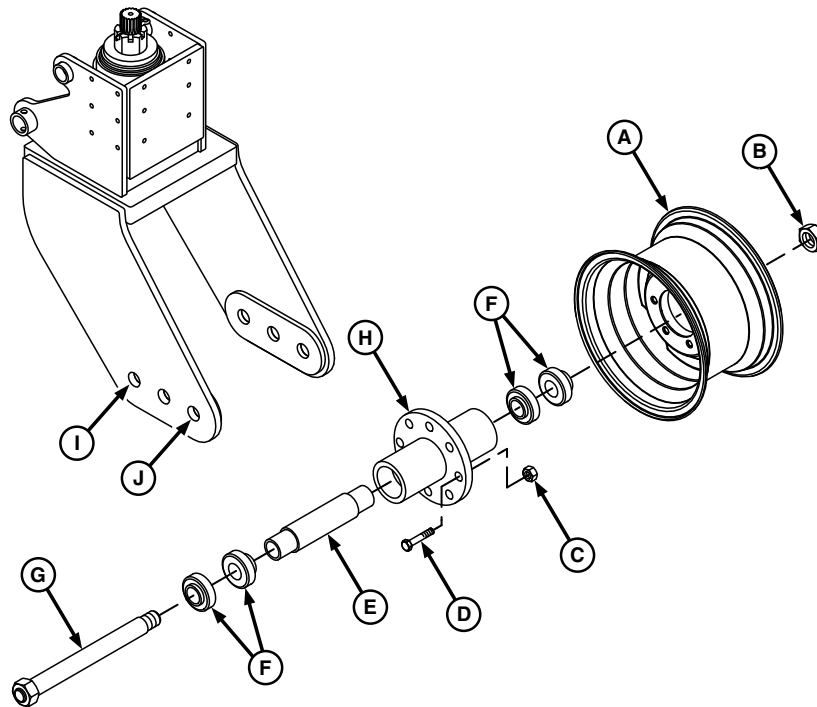


A57650 —UN—13MAR06

Assembled

OUC6045,0000055 -19-01OCT08-1/1

Service Lift Assist Wheel Bearings



A—Rim
B—Nut
C—Lug Nut
D—Stud Bolt
E—Spacer
F—Bearing (4 used)

G—Axle
H—Wheel Hub
I—Axle Bolt Location On
Machines With Implement
Steering

J—Axle Bolt Location On
Machines Without Implement
Steering

Once a year, clean and repack bearings (F) with wheel bearing grease and assemble on axle (G). Be careful not to damage seals in wheel hub (H).

Axle Nut-to-Axle
Bolt—Torque.....1627 N·m
(1200 lb.-ft.)

Specification

Wheel Nuts-to-Wheel
Bolts—Torque.....230 N·m
(170 lb.-ft.)

A71815 —UN—15JUN11

OUC6064,0000529 -19-15JUN11-1/1

Tighten 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)

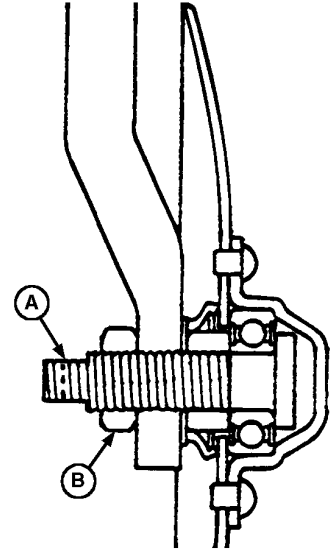
3. Place wrench on flat surfaces of disk bearing bolt to maintain proper torque adjustment of the bolt and tighten jam nut to specification.

Specification

Jam Nut—Torque.....203 N·m
(150 lb-ft)

A—Disk Bearing Bolt

B—Jam Nut



A47137 —UN—01MAR01

DT31797,0000322 -19-07MAY09-1/1

Zero CCS Fan Pressure Gauge

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

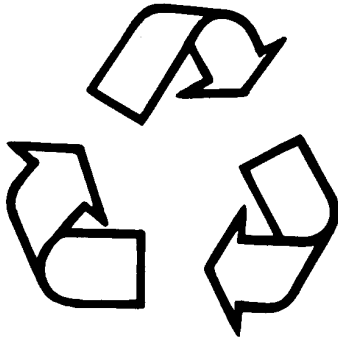
A—Zero Adjusting Screw



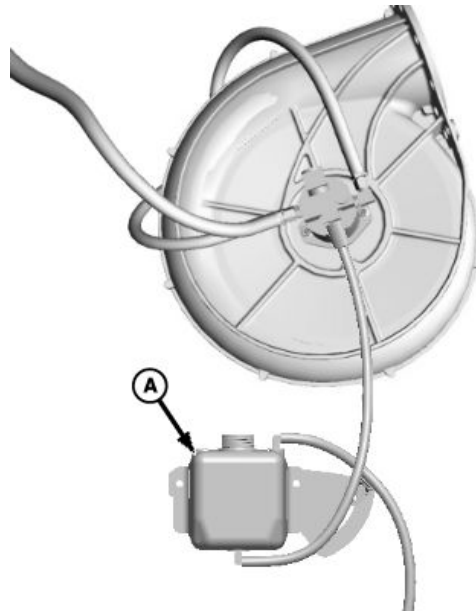
A51170 —UN—18NOV02

DT31797,000031A -19-07MAY09-1/1

Drain CCS Fan Motor Oil Reservoir



TS1133 —UN—26NOV90



A68296 —UN—02AUG10

A—Reservoir

Drain the oil reservoir (A) annually. Open valve on bottom of reservoir, drain oil into a waste oil container, and dispose of oil properly.

OUC6074,0000A4E -19-16AUG10-1/1

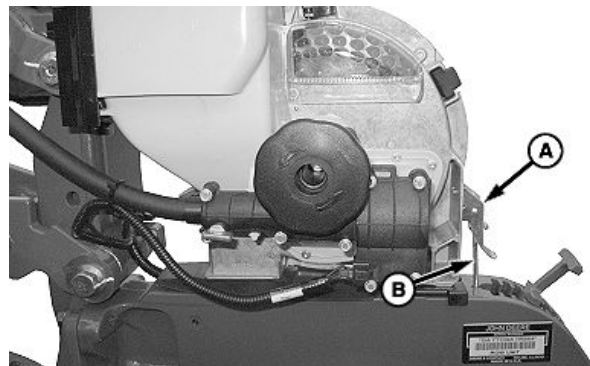
Tighten Pro-Series™ TR Meter Latch

Meter latch (A) closes firmly into locked position when latch hook (B) is seated through notch and hole in row unit. Meter fits securely on row unit. If latch or meter is out of adjustment, proceed as follows;

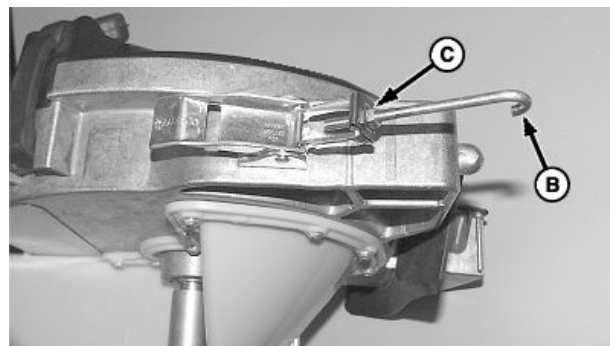
1. Release latch and hook.
2. Loosen nut (C).
3. Rotate hook one full revolution and tighten nut. Hook faces meter alignment pin when tight.
4. Install meter and check for proper adjustment. Repeat as necessary.

A—Latch
B—Latch Hook

C—Nut



A68870 —UN—29MAR10



A68871 —UN—29MAR10

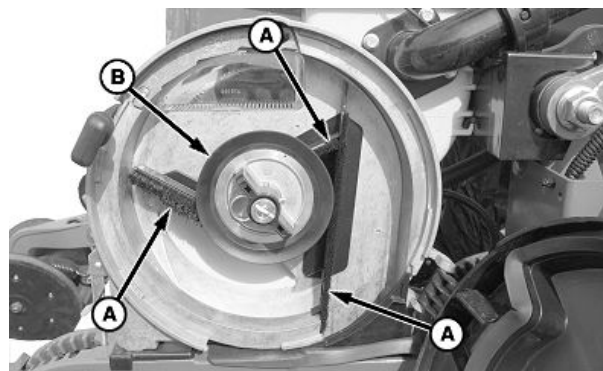
OUC6064,0000054 -19-12NOV10-1/1

Inspect and Service Pro-Series™ TR Vacuum Meter

⚠ CAUTION: Follow chemical manufacturer's precautions when handling parts coated with seed treatments. Use proper skin, eye, and respiratory protection.

Annually inspect seed meter for wear and seed chemical treatment buildup.

1. Check brushes (A) for gaps. If gaps are big enough to allow seed to pass through, replace brush.
2. Replace hub seal (B) if cracked or weathered.



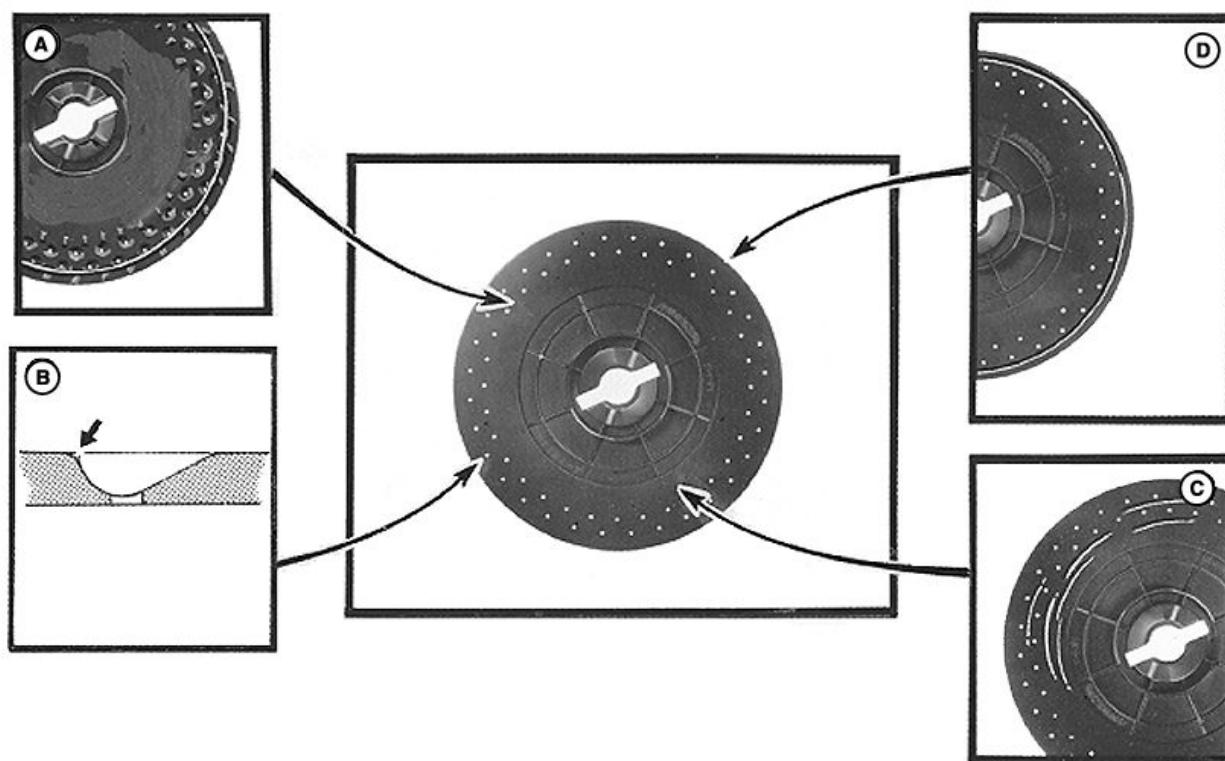
A—Brushes

B—Hub Seal

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OUO6064,0000055 -19-10MAY12-1/5

A66872 —UN—29MAR10



A55426—UN—22NOV04

A—Wear Example
B—Worn Edge (Seed Cell Side View)
C—Wear Example
D—Wear Example

NOTE: Before disk replacement, properly set meters and vacuum. Perform a field check to determine if disk meters seeds accurately. (See Check Seed Population section.)

If metering performance is satisfactory, it is not necessary to replace seed disk.

3. Check seed disks for wear in following areas and replace as needed.

A small amount of wear around perimeter of disk (A) is acceptable. If worn, check for seed loss through gap between disk and housing.

Seed loss can be eliminated with hub adjustments. (See ADJUST METER HUB in Prepare Vacuum Meter section.)

Inspect individual seed cells. Seed abrasion can wear sharp edges on seed cells (B) and increase cell size. (Increased cell size can cause overpopulation when planting small seed or cause under-population when planting large seed). Replace seed disk if cell size is increased and field checks determine a reduction in accuracy.

Small grooves or scratches are acceptable on vacuum side of seed disk (C).

Wear around perimeter of disk (D) is acceptable up to an approximate depth of 1.0 mm (3/64 in.).

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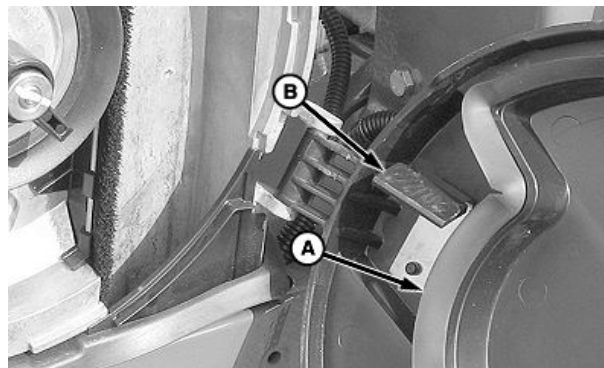
OUC6064,0000055 -19-10MAY12-2/5

NOTE: If vacuum seals are replaced, apply *Spray on Graphite Lubricant TY25797* on vacuum side of used seed disks. (See *Lubrication* section.) New seed disks are factory lubricated.

4. Replace vacuum seals (A) if seed disks are replaced or when large cracks or wear areas are visible.
5. Replace seed-disk wiper (B) if edge of wiper is grooved or excessively worn.

A—Seals

B—Wiper



A66873—UN—29MAR10

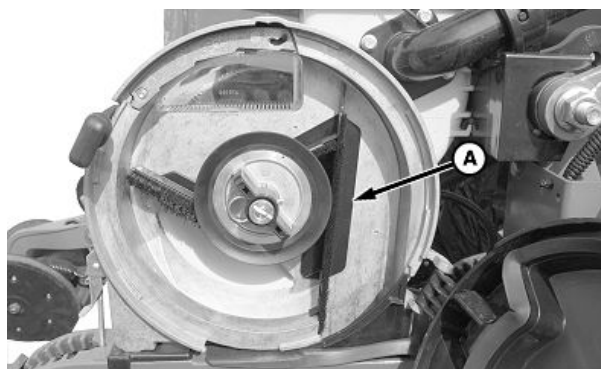
OOU6064,0000055 -19-10MAY12-3/5

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

NOTE: Thoroughly clean seed disk cell area and remove any excessive treatment buildup behind plastic (A) in vacuum meter housing.

6. Annual cleaning of vacuum meters and seed disks is recommended. Use mild detergent and a soft brush.

A—Plastic



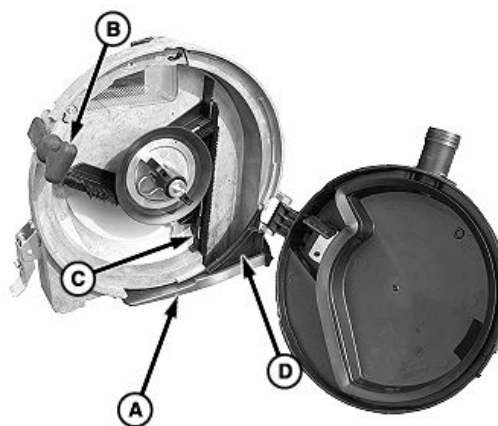
A66874—UN—29MAR10

OOU6064,0000055 -19-10MAY12-4/5

7. Replace vacuum meter dust cover (A) if it does not fit properly, is cracked or weathered.
8. Replace rubber handle (B) if cracked or broken.
9. Replace plastic insert (C) and chute cover (D) if worn.

A—Dust Cover
B—Rubber Handle

C—Plastic Insert
D—Chute Cover



A66875—UN—29MAR10

OOU6064,0000055 -19-10MAY12-5/5

Tighten Lift Assist Wheel Structure Bolts

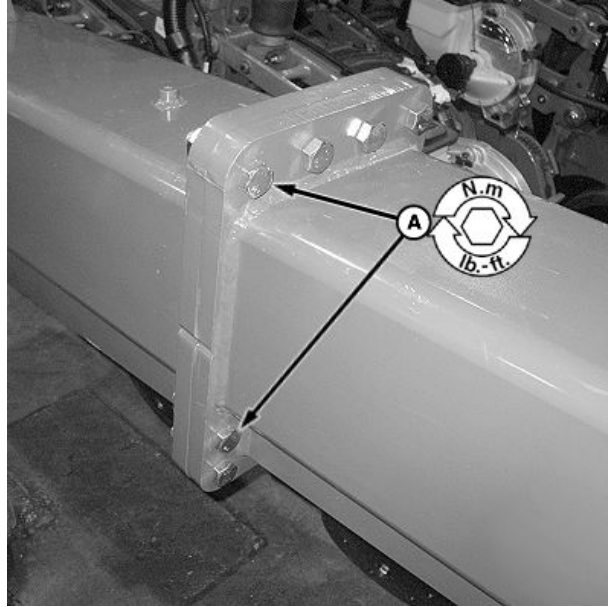
NOTE: After first 10 hours and then beginning of each season.

Tighten lift assist wheel assembly cap screws and nuts (A) to specification.

Specification

Lift Assist Wheel
Assembly Cap Screws
and Nuts—Torque.....675 N·m
(500 lb.-ft.)

**A—Cap Screws and Nuts (10
Used)**



Lift Assist Wheel Assembly Mounting Hardware

A68920—UN—28SEP10

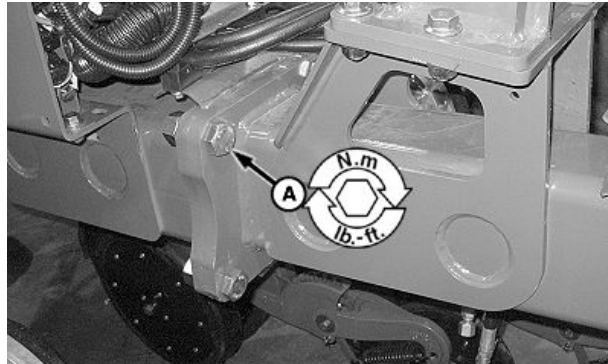
OUC6064,0000299 -19-12NOV10-1/2

Tighten center arm cap screws and nuts (A) to specification.

Specification

Center Arm Cap Screws
and Nuts (A)—Torque.....675 N·m
(500 lb.-ft.)

**A—Cap Screw and Nuts (4
Used)**



Center Arm Mounting Hardware

A68921—UN—28SEP10

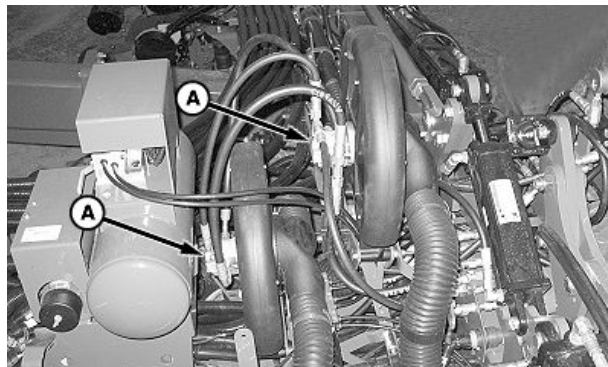
OUC6064,0000299 -19-12NOV10-2/2

Inspect Vacuum Motor

Check vacuum motors (A) for oil leaks.

A small amount of oil leakage is acceptable. If leakage occurs on motor housing, check for loose hardware on motor or loose fittings. If oil leakage is excessive or if vacuum levels cannot be maintained, replace vacuum motor.

A—Motor (2 used)



A68876—UN—29MAR10

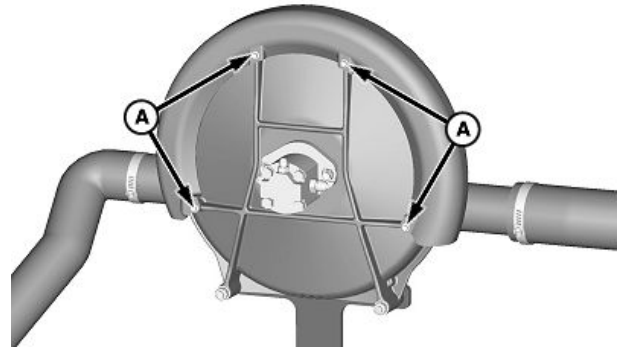
OUC6064,0000056 -19-12NOV10-1/1

Inspect and Clean Vacuum Impeller and Housing

IMPORTANT: Use precautions as recommended by chemical manufacturers when handling parts coated with seed treatments. Use proper skin, eye, and respiratory protection.

1. Remove cap screws (A).

A—Cap Screws



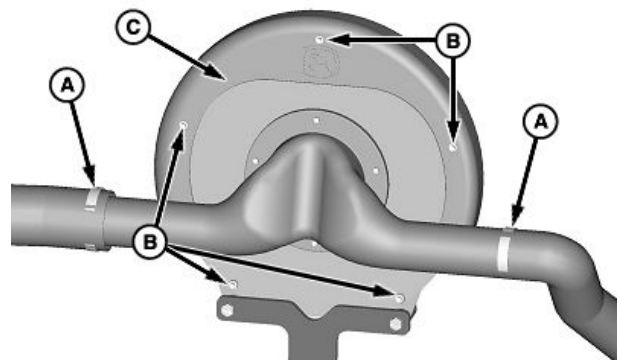
A59230 —UN—15FEB07

OUC6064,00003AE -19-25MAY11-1/5

2. Remove hose clamps (A), cap screws (B), and cover (C) from vacuum fan.

A—Hose Clamps
B—Cap Screws

C—Cover



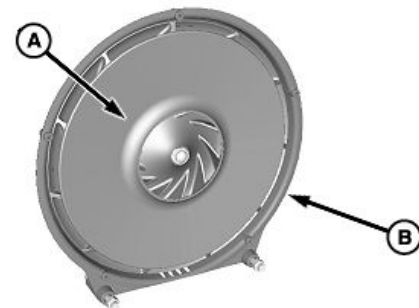
A59231 —UN—15FEB07

OUC6064,00003AE -19-25MAY11-2/5

3. Clean impeller and housing.
4. Inspect impeller (A) for chips or cracks. Replace impeller if damage is found. See your John Deere™ dealer.
5. Inspect vacuum fan housing (B) for signs of impeller contact. Replace vacuum fan housing and impeller if contact is evident. See your John Deere™ dealer.
6. Install parts in reverse order.

A—Impeller

B—Housing



A70792 —UN—23FEB11

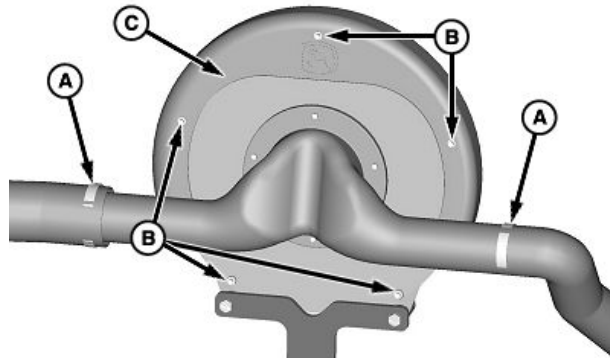
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OUC6064,00003AE -19-25MAY11-3/5

7. Install cover (C), cap screws (B), and hose clamps (A).

A—Hose Clamps
B—Cap Screws

C—Cover

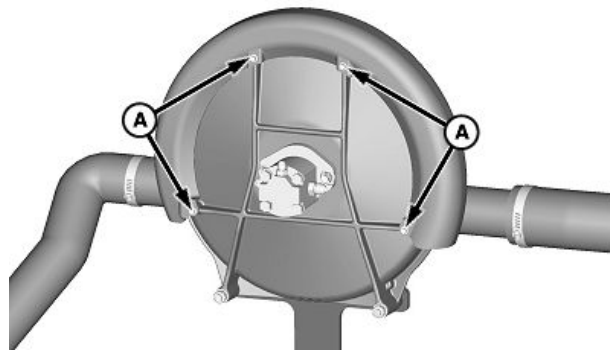


A59231—UN—15FEB07

OUC6064,00003AE -19-25MAY11-4/5

8. Install cap screws (A).

A—Cap Screws



A59230—UN—15FEB07

OUC6064,00003AE -19-25MAY11-5/5

Clean Vacuum Manifold System

Dirt or seed treatment can build up in vacuum manifold system and cause low vacuum at row units. Resulting in loss of seed meter accuracy.

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

Clean air manifold system at least once a week during operation or more often in severe dusty conditions.

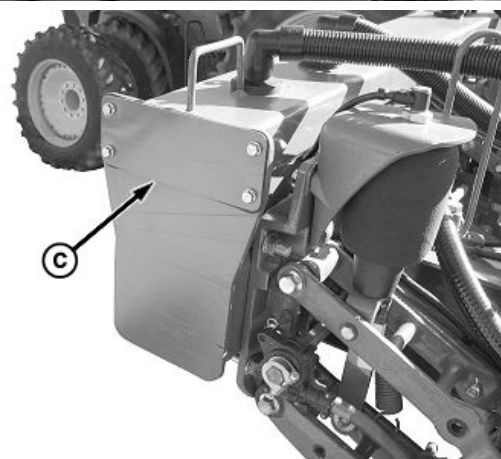
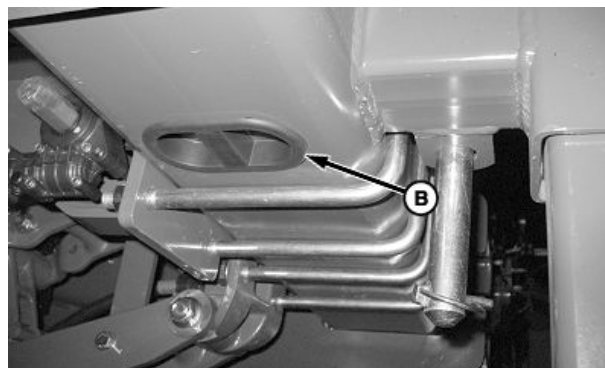
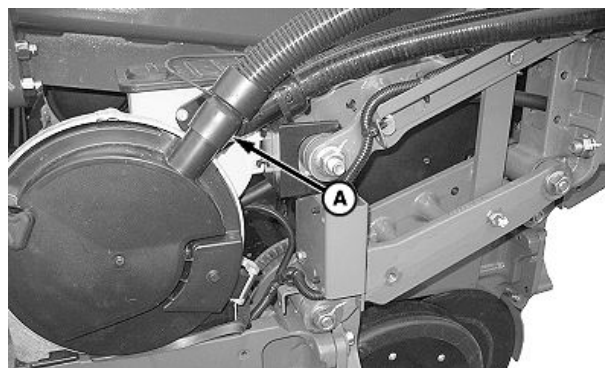
Clean as follows:

NOTE: Disconnect vacuum hose (A) at meter not at frame.

1. Disconnect one vacuum hose on outer and inner ends of each wing.
2. Disconnect one hose to left and to right of center on rear center section.
3. Turn on vacuum blower and set hydraulic flow to 75 percent.
4. 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 replace it on meter.
5. Remove plugs (B) from main tube one at a time, then reinstall.
6. Remove end plates (C) from manifold tubes one at a time, then reinstall.
7. Let vacuum blowers run for 10 minutes.
8. Shut vacuum blowers off and replace hose on row units.

A—Vacuum Hose
B—Plug (2 used)

C—End Plate (2 used)



A66877 —UN—29MAR10

A66878 —UN—29MAR10

A69183 —UN—19OCT10

OUC6064,0000057 -19-12NOV10-1/1

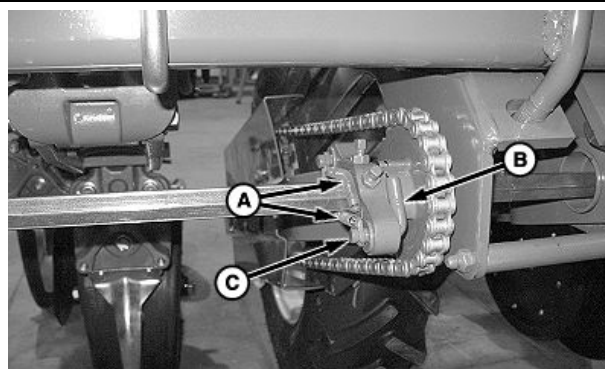
Inspect Ratchet Drive

Ratchet assembly must operate freely and spring (A) must hold dogs (B) back against ratchet.

If springs (A) do not hold dogs (B) against ratchet, push cotter pins (C) in for more tension on springs.

A—Spring
B—Dogs

C—Cotter Pins



A66881 —UN—29MAR10

OUC6064,0000059 -19-12NOV10-1/1

Troubleshooting

Frame

Symptom	Problem	Solution
Machine will 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).
	SCV flow rate mis-adjusted.	Adjust SCV flow control.
Machine will not raise.	Tractor SCV bypassing oil.	Readjust SCV lever linkage. See tractor operator's manual.

OUO6064,00002EF -19-17NOV10-1/1

Drives

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.
Row units on left-hand side of machine not planting.	Left-hand drive shaft cotter pin sheared.	Repair cause of pin shearing and replace cotter pin.
All row units not planting on machine.	Bolt in countershaft sprocket to seed transmission sheared.	Repair cause of pin shearing and replace cotter pin.
Drive wheel chain consistently falls off.	Chain may be too long.	Remove offset link.
	Chain links stiff.	Oil or replace chain.
	Chain dislodged by residue.	Add chain shields.
Consistent shearing of drill shaft cotter pin.	Drill shaft not aligned properly.	Loosen bearing and align shaft.

OUO6074,00002F5 -19-02APR01-1/1

Folding

Symptom	Problem	Solution
Folding wings will not drop.	Hydraulic cylinder malfunction.	Check hydraulic hose connection to tractor outlets.
Folding wings will not raise.	Wings locked in place.	Remove locking pin.
	Wings locked rigid.	Remove locking pins.
	Hydraulic cylinder malfunction.	Check hydraulic hoses for leaks and proper connection to tractor outlets.
	Low tractor hydraulic pressure.	Tractor standby pressure must be a minimum of 15,513 kPa (155.1 bar) (2250 psi).

OUO6074,00002F8 -19-02APR01-1/1

CCS Fan Assembly

Symptom	Problem	Solution
CCS fan motor leaks.	Case drain line crimped, not connected to low-pressure port, or connected to wrong port with high backpressure.	Repair fan motor. To avoid future failures, verify that 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 fan 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 fan motor.
CCS fan 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 lever in opposite direction momentarily.
	CCS fan motor seal leaking.	Replace seal. See your John Deere dealer.
	Faulty CCS fan 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.
	Return hose not fully engaged in SCV outlet. If auxiliary hydraulics system provided, fan switch in the "Off" position.	Fully engage hoses in SCV outlet. Turn fan switch to "On" position. Verify that purge switch is in "Plant".
CCS fan vibrates.	Dirty fan blades.	Clean fan.
	Broken fan blades; fan out of balance.	Replace fan assembly.
CCS fan surges.	Flow control valve incorrectly set.	Adjust flow control valve or replace.

Continued on next page

OUO6064,000006F -19-12NOV10-1/3

Troubleshooting

Symptom	Problem	Solution
Premature CCS fan 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 fan motor seal leaking.	Replace seal. See your John Deere dealer.
	Faulty CCS fan motor.	Repair or replace motor. See your John Deere dealer.
	CCS fan turning backward.	Correct hose connections to tractor.
	Excessive air leakage from tank.	Correctly install tank lids.
	Pressure gauge broken.	Repair or replace gauge.
Pressure gauge does not zero.	Gauge not adjusted.	Zero gauge. (See ZERO PRESSURE GAUGE in Service and Adjustments section.)
	Gauge damaged.	Replace gauge.
	Moisture in gauge.	Dry out gauge.
CCS fan turning on and off while going though the field.	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 fan switch misadjusted.	Adjust switch. (See SET CCS ROW UNIT FAN SWITCH in Service and Adjustments section.)
CCS Fan-Agitator does not engage when machine lowered.	Inspect F3 10 Amp fuse in frame control harness.	Replace fuse.
	Check pins 1 and 7 on tractor to machine 7 pin connector for 12 V.	See your John Deere dealer.

Continued on next page

OUC6064,000006F -19-12NOV10-2/3

Troubleshooting

Symptom	Problem	Solution
	Check CCS row unit switch (left center row unit on parallel arms).	Adjust switch. (See SET CCS ROW UNIT FAN SWITCH in Service and Adjustments section.)
	Check K1 relay.	Replace as needed (relay is located in the frame harness).

OUO6064,000006F -19-12NOV10-3/3

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 fan running.	Wait until CCS fan stops before opening lids.
	Excessive CCS fan 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 fan speed. (See SETTING 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 fan running while not planting for excessive period.	Turn off fan, 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 SETTING CCS TANK PRESSURE in Central Commodity System section.)
	Blockage in air hose.	Clear air hose.
	Blockage in nozzle.	Shut off CCS fan. 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.

Continued on next page

OUO6064,0000068 -19-15NOV10-1/4

Troubleshooting

Symptom	Problem	Solution
No seed in meter.	Agitator not running.	Check fuse, power connector, and ground lead.
	Air volume too low.	Verify that tank pressure is set to recommended pressure.
	Blockage in air hose.	Cleanout meter using tray. Reinstall seed disk and close vacuum dome. Start CCS fan 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.	Shut off tractor, engage park brake, and remove outlet delivery hose from CCS tank (pull straight off—do not twist). Loosen and remove seed stuck in nozzle. Whenever machine is lowered and stationary for more than a few minutes with seed in CCS tank, shut off tractor and turn off key. Agitators run anytime machine 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.

Continued on next page

OUO6064,0000068 -19-15NOV10-2/4

Symptom	Problem	Solution
Seed damage.	CCS tanks empty.	Fill CCS tanks.
	Nozzle inserts installed on nozzles for planting small seed.	Remove nozzle inserts when planting other crops.
	Air volume too high.	Reduce CCS tank pressure.
		Add talc.
Individual rows overpopulation.	Old, dry seeds.	Use fresh seeds.
	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.
		With parking brake engaged, transmission in park and tractor off, remove outlet air hose from 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 fan stopping and starting without planting, plugs seed delivery hoses.

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OUO6064.0000068 -19-15NOV10-3/4

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 fan pressure to recommended level.
	Cold hydraulic oil.	Allow tractor to warm before setting tank pressure.
CCS fan surges.	Faulty flow control valve.	Replace valve.
CCS fan turns on and off while going through the field.	Frame height is too high causing fan switch on row unit between left-hand main frame wheels to open and close.	Adjust frame height.
		Adjust row unit fan switch. (See SETTING CCS ROW UNIT SWITCH in Service and Adjustments section.)
Machine raises slowly.	CCS fan is running during raise cycle.	Row unit fan 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 that tank lids are installed correctly.
		Readjust SCV.
		Increase CCS tank pressure by 2 in. of pressure.
CCS tank level sensor warning does not appear on monitor.	Tank sensor dirty.	Clean tank sensor. (See CLEANING TANK LEVEL SENSOR in Central Commodity System section.)
CCS tank low warning not functioning.	Tank level sensor dirty.	Clean sensor LEDs with a brush.

OUO6064,0000068 -19-15NOV10-4/4

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.
Row units on left-hand side of machine not planting.	Left-hand drive shaft cotter pin sheared.	Repair cause of pin shearing and replace cotter pin.
All row units not planting on machine.	Bolt in countershaft sprocket to seed transmission sheared.	Repair cause of pin shearing and replace cotter pin.
Closing wheels leave severe imprint in soil.	Too much downforce on closing wheels.	Decrease closing wheel downforce.
Closing wheels not firming soil around seed.	Insufficient downforce on closing wheels.	Increase closing wheel downforce.
Closing wheel running on top of seed furrow.	Improper centering.	Realign.
Excessive down force on closing wheels.	To much down force when using spring A74643.	Use half rate spring A61582.
Gauge wheels do not turn.	Too tight against double-disk opener.	Adjust gauge wheel arm.
Seed appears on top of ground and dirt packs between opener blades.	Improper seed opener blades contact.	Adjust blade contact to required dimensions.

OUO6064,000078E -19-15FEB12-1/1

Vacuum Meter

Symptom	Problem	Solution
False monitor reading.	Dirty seed tube sensors.	Clean sensors. (See CLEANING SEED SENSOR in Service and Adjustments section.)
No seed being planted.	Hoppers empty.	Fill hoppers.
	No vacuum.	(See Low Vacuum under VACUUM METER in Troubleshooting section.)
	Seed tubes plugged or damaged.	Inspect seed tubes.
Poor seed spacing.	Seed disk vacuum holes plugged.	Clean seed disks.
	Farmer-applied seed treatment causes buildup, seeds stick.	Follow recommended usage and application procedure.
	Worn meter brushes.	Replace brushes.
	Low vacuum.	(See Low Vacuum under VACUUM METER in Troubleshooting section.)
	Rusty planting unit or seed drive chains.	Lubricate chains and check for freedom of movement.
	Dirt buildup on herbicide or insecticide drive.	Clean drive.
	Worn meter seals.	Replace seals.
	Seed disk hubs misadjusted.	Readjust hubs.
	Incorrect vacuum.	Adjust vacuum to recommended setting.
	Faulty vacuum gauge.	Check air line to gauge. Repair as needed.
	Worn seed disks.	Replace disks.
	Seed tubes improperly installed or worn.	Install seed tubes correctly. Ensure that seed tube hook is properly positioned in unit shank.
	Worn seed tube guard.	Replace guard.
	Treated seed sticking in cell.	Increase application rate of John Deere Talc Lubricant.
	Seed disks have not been sprayed with graphite lubricant.	Spray seed disks with Spray on Graphite Lubricant TY25797.

Continued on next page

OUO6064,0000067 -19-15NOV10-1/4

Symptom	Problem	Solution
Low seed population.	Planting too fast.	Decrease ground speed. Check rate chart for ground speed.
	If low population displays on monitor and field counts are accurate, sensors are dirty.	Clean sensors. (See CLEANING SEED SENSOR in Service and Adjustments section.)
	Seed disk vacuum holes plugged.	Clean seed disks. Flat Type Disk: Install seed knockout assembly or replace worn seed knockout assembly.
	"Dirty" seed plugging vacuum holes.	Use clean seed. Flat Type Disk: Install seed knockout assembly or replace worn seed knockout assembly.
	Seed disk wiper missing.	Replace wiper.
	"Treated" seed sticking in cells.	Add John Deere Talc Lubricant to seed hoppers.
	Farmer-applied seed treatment causes buildup, seeds stick.	Follow recommended usage and application procedure.
	Rusty planting unit chains.	Lubricate chains and check for freedom of movement.
	Low vacuum.	(See Low Vacuum under VACUUM METER in Troubleshooting section.)
	Dirt buildup on herbicide or insecticide drives.	Clean drives.
	Worn meter seals.	Replace seals.
	Worn seed disks.	Replace seed disks.
	Seed "bridging" in hopper.	Add John Deere Talc Lubricant to seed hoppers. Clean vacuum meter and hopper.
	Seed "bridging" in meter.	Open meter baffle. Add John Deere Talc Lubricant to seed hoppers. Clean vacuum meter and hopper.
	Seed size not compatible with seed disks.	Use correct seed disks.

Continued on next page

OUO6064.0000067 -19-15NOV10-2/4

Symptom	Problem	Solution
	Excessive drive slippage.	Reduce unit down force. Check drives for binding or misalignment. Readjust seed transmission.
	Vacuum level too low.	Increase vacuum level.
	Planting too fast for rough field conditions.	Plant at speed recommended in planting rate chart. Increase unit down force.
	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.
	Using incorrect double eliminator setting.	Reduce double eliminator coverage of vacuum hole.
	Incorrect drive tire pressure.	Inflate to proper pressure. (See CHECKING TIRE INFLATION in Service and Adjustments section.)
	High seed population.	Adjust vacuum level to recommended setting.
	Faulty vacuum gauge.	Check air line to gauge. Repair as needed.
	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.	Tighten hubs.
	Using incorrect transmission sprocket combination.	Use sprocket combination recommended in planting rate charts or adjust downward due to low drive wheel slippage.
	Using incorrect double eliminator setting.	Increase double eliminator coverage of vacuum hole.

Continued on next page

OUO6064,0000067 -19-15NOV10-3/4

Symptom	Problem	Solution
	Incorrect drive tire pressure.	Inflate to proper pressure. (See CHECKING TIRE INFLATION in Service and Adjustments section.)
Seed tubes plugging.	Machine rolling backward when lowering.	Lower machine while moving forward.
	Turning tractor steering wheel when machine is down and stationary. (Four Wheel Drive tractors only.)	Avoid turning tractor when machine is down and stationary.
Inconsistent seed depth.	Planting in rough seed bed.	Use additional down force on planting units.
	Seed tubes partially plugged or improperly installed.	Inspect seed tubes. Ensure that seed tubes are hooked properly in unit shank.
Too many skips.	Planting too fast.	Reduce planting speed.
Premature blower motor seal failure.	Case drain line not connected properly.	Connect case drain line to proper port.
	High case drain pressure.	Check for 172 kPa (1.72 bar) (25 psi) or less back pressure at motor.
	Incorrect hydraulic connections.	Verify hydraulic hose connections.
	Shutting off motor to "Neutral".	Move SCV to "Float" position to shut off motor.
Low vacuum.	Incorrect hydraulic connections.	Verify hose connections.
	Planting unit vacuum hoses not connected to meter.	Connect vacuum hoses to meter.
	Vacuum level misadjusted.	Adjust vacuum to recommended setting.
	Air manifold system clogged with dust.	Clean air manifold system.
	Manifold hoses kinked or pinched.	Reposition hoses.
	Blower guard clogged with dust or seed treatments.	Clean blower guard.
	Meter housing handle not engaged.	Attach housing handle to chamber.
	Meter seals worn or flipped.	Inspect seals. Reposition or replace.
	Air manifold system assembled without O-rings.	Add O-rings.
Erratic vacuum.	Air manifold system clogged with dust.	Clean air manifold system.
	Control valve failed.	Replace control valve.
	Tractor oil level low.	Add oil.

OUO6064,0000067 -19-15NOV10-4/4

Troubleshooting

Symptom	Problem	Solution
Mechanical vacuum gauge does not zero.	Tractor not stabilizing flow (vacuum motor surges). Not adjusted.	See your John Deere dealer. Zero vacuum gauge. (See ZEROING VACUUM GAUGE in Vacuum Meter Rate Charts section.)

OUO6064,0000067 -19-15NOV10-5/4

Row Command System

Symptom	Problem	Solution
Row Command system does not function after machine seed tanks are filled.	If machine is stopped for more than 5 minutes, filling machine, when lowered and stationary or on the road in transport position, Row Command system goes into Power Management Mode.	To resume normal operation, machine must be raised, or lowered, or above 1 mph to restart system.

OUO6064,0000071 -19-15NOV10-1/1

Gull Wing Down Force System

Symptom	Problem	Solution
Gull wing down force adjustment is needed	Too much or not enough gull wing down force.	See your John Deere dealer for gull wing down force adjustments.

OUO6064,0000430 -19-25MAR11-1/1

Implement Steering System

Symptom	Problem	Solution
Implement steer icon does not appear on main menu of display.	Controller is not communicating on CAN Bus.	Check connections on steering control unit or harness. Check ECU power, ECU ground, CAN high, and CAN low at the 9 pin connector on back of tractor and planter control units.
Implement steering system does not engage	No electrical power.	Check battery and harness connections. Verify that tractor drive is in reverse. Check power to lift assist steering control unit. Check electrical power to all implement steering sensors. Faulty hydraulic valve.
	Steering system not calibrated.	Calibrate steering system from display.
	Sensor signals are out of range.	Check harness connections. Verify that tractor drive is in reverse. Calibrate sensors.
	No power to control box.	Caster has pivoted around past operating position. Check electrical connections. Check in-line fuses.
	No hydraulic supply or return to or from steering valve	Check power beyond connections including Load Sense.
	Valve SV1 not energized.	Check for 12 volts at solenoid. Check solenoid.
		See your John Deere dealer.
	Valve SV1 stuck open.	Clean or replace valve. See your John Deere dealer.
Implement steering system does not disengage.	Tractor drive is not in Neutral or Forward gear.	Verify that tractor drive is in Neutral or Forward gear.

Continued on next page

OJ06064,00004BE -19-16MAY11-1/2

Symptom	Problem	Solution
	Valve SV1 stuck closed.	Check for 12 volts at solenoid. Check solenoid. See your John Deere dealer.
Implement steering will not maintain proper position.	Tractor load sense line does not have correct orifice installed.	Follow power beyond installation instructions and install provided R285855 orifice into the load sense inlet.
Tractor steering and implement steering out-of-synchronization.	Steering system not calibrated.	Calibrate steering system and sensors. Inspect tractor steering sensor and implement steering system for damage.
Implement steering wheels do not turn left.	Valve SP1 (S2) and/or SP2 (S1) not energized.	Check for voltage at solenoid. Check solenoid. See your John Deere dealer.
	Valve SP1 (S2) and/or SP2 (S1) stuck closed.	Clean or replace valve. See your John Deere dealer.
Implement steering wheels do not turn right.	Valve SP1 (S1) and/or SP2 (S2) not energized.	Check for voltage at solenoid. Check solenoid. See your John Deere dealer.
	Valve SP1 (S1) and/or SP2 (S2) stuck closed.	Clean or replace valve. See your John Deere dealer.
Implement steering wheels only turn left.	Valves SP1 (S2) and/or SP2 (S1) stuck open.	Check for voltage at solenoid. Check solenoid. See your John Deere dealer.
Implement steering wheels only turn right.	Valve SP1 (S1) and/or SP2 (S2) stuck open.	Check for voltage at solenoid. Check solenoid. See your John Deere dealer.

OUO6064,00004BE -19-16MAY11-2/2

Storage

Removing From Storage

IMPORTANT: Do not use chain lube or any other heavy petroleum base lubricant that causes a buildup of dust or dirt in sprocket or gear teeth.

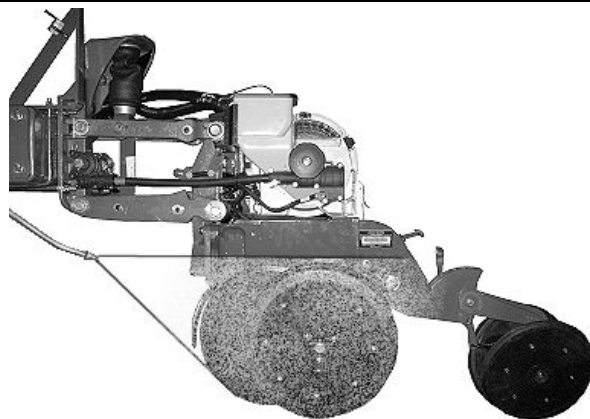
Before using machine after it has been stored, inspect the seed hoppers for cleanliness to verify that seed will flow from hoppers freely.

Thoroughly inspect machine for loose parts and adjust as necessary.

IMPORTANT: Direct contact from high-pressure washers can damage electrical components, bearings, hoses, and hoppers. Use caution, when power washing machine.

Clean any dirt or grease that has accumulated on moving parts, gears, and chains that could cause excessive wear before operating machine.

When roller chains remain unused for several days, moisture in the air accumulates on chain, causing chain to rust. This moisture can and become serious enough in time to cause chain joints to become stiff, restricting their normal free movement. While difficult to detect, this



A66882 —UN—29MAR10

stiffness can encourage chains to operate abnormally and disturb the smooth rotation of important meter components causing deterioration in performance.

Lack of use or if oil has been removed from chains while cleaning, thoroughly lubricate chains with John Deere Multipurpose Spray Lube TY6350.

OUC6064,000001E -19-15NOV10-1/2

Lubricate machine as outlined in Lubrication section.



A66883 —UN—29MAR10

OUC6064,000001E -19-15NOV10-2/2

Storage

When planting is completed for one season, store machine under a cover with all parts in operating condition.

Store machine in RAISED position with service locks installed.

Paint all parts which are chipped or worn as required.

IMPORTANT: Direct contact from high-pressure washers can damage electrical components, bearings, hoses, or hoppers. Use caution, if power washing machine.

Clean machine thoroughly to remove dirt and residue which can hold moisture and cause rusting.

Lubricate machine as outlined in the Lubrication section, and grease exposed cylinder rods.

Thoroughly lubricate chains with John Deere Multipurpose Spray Lube, TY6350, at beginning of idle period.

Empty and clean seed hoppers.

Inspect machine for worn or broken parts. See your John Deere dealer during off season so that parts or service can be acquired when machine is not needed.

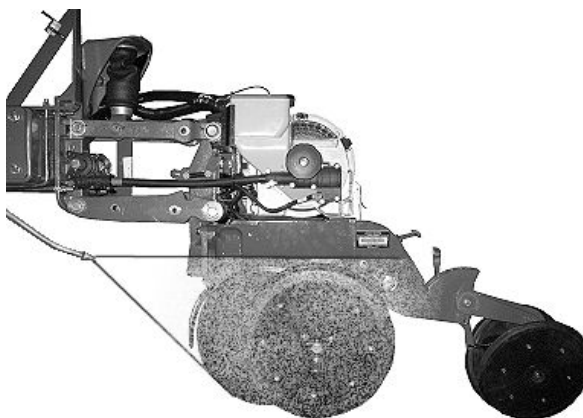
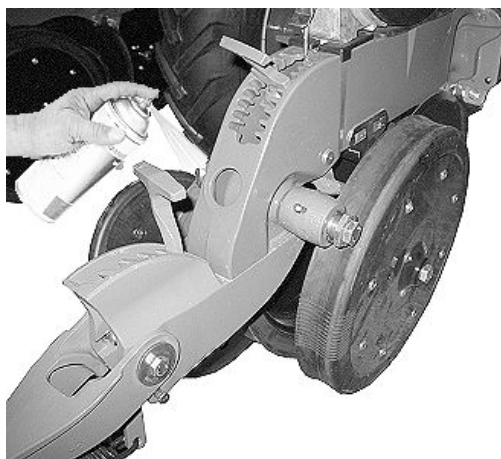
Store machine in a clean, dry place with planting unit gauge wheels, and closing wheels out of direct sun exposure.

Place handle for closing wheel down force in long slot to relieve tension on closing wheels.

Remove seed disks from meter. (See VACUUM METER INSPECTION AND SERVICE in Service and Adjustments section.)

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

Clean meter housing, meter chamber, and seed disk with mild detergent and soft brush.



IMPORTANT: Store seed disks away from extreme heat or direct sunlight. Do not leave disks in the meters during off season. Do not store under heavy parts.

Continued on next page

OUO6064,000001F -19-15NOV10-1/2

A66884 —JUN—29MAR10

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Store disks (A) in shipping box or hang on wall.

Clean vacuum manifold system. (See CLEANING VACUUM MANIFOLD SYSTEM in Service and Adjustments section.)

Check and replace necessary vacuum meter seals.

Check for hydraulic leaks.

A—Disks



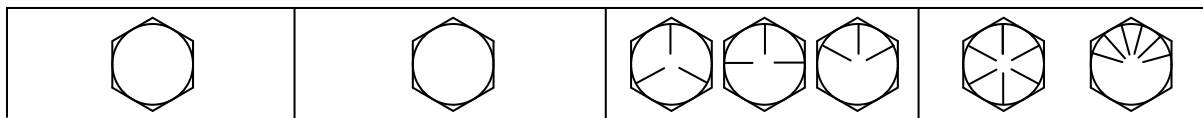
A44241 —UN—19NOV97

OUO6064,000001F -19-15NOV10-2/2

Specifications

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.

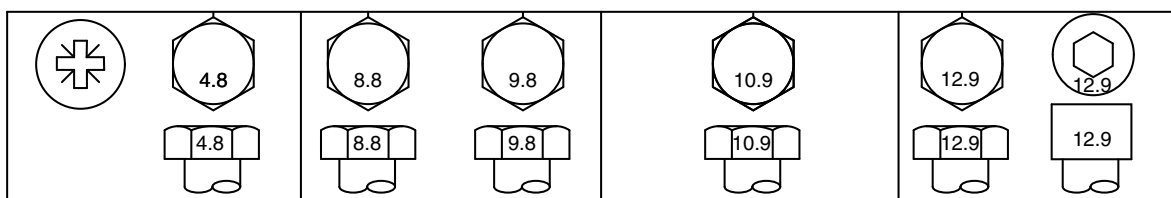
^b"Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

^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

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

Specifications

Specifications

General Specifications	
Frame	Stack-Folding
Frame Flex	8 degrees UP 8 degrees DOWN
Planting Unit Types	Vacuum Meter
Seed Openers	Tru-Vee™ Double Disk
Seed Hoppers	Mini Hoppers CCS bulk tanks, Two 1762 L (50 bushel) capacity
Row Spacing:	
12-Twin Rows (24 Total Row Units)	91 or 97 cm (36 or 38 in.) to center of pair
Twin Rows	19.1 cm (7.5 in.) spacing.
Air System	Hydraulic drive Horsepower Required: 4.5—10.4 kW (6—14 hp.)
Type of Lift	Semi-integral
Type of Drive	Mechanical Transmission SeedStar™ Variable Rate Drive
Tires:	Lift Assist Wheel—16.5L - 16.1SL 14 ply—Implement—234 kPa (2.34 bar) (34 psi).
	Gauge Wheel—7.60-15 6 ply—Traction—276 kPa (2.8 bar) (40 psi)
Transport Clearance	4 m (13.2 ft.) (On 8000 series with 18.4—42 tires)
Tractor Standby Pressure	15 513 kPa (155 bar) (2250 psi)
Minimum Tractor Size Required	186+ kW (250+ hp.)
Hydraulic Requirements	18 961 kPa (190 bar) (2750 psi)
Tractor Requirements	Minimum PTO horsepower 168 kW (225 hp.) tractor with MFWD or similar series later model tractor. Dual rear tires and a full set of front weights
Hydraulic Oil Required To Operate Machine	7.5 L (2 gal.)
Hydraulic System Working Pressure	20 684 kPa (207 bar) (3000 psi)
Hydraulic System Burst Pressure	82 737 kPa (827 bar) (12 000 psi)
Monitor	SeedStar 2™ and SeedStar XP™.
Weight	8390 kg (18 500 lb.)
Specifications and design subject to change without notice.	

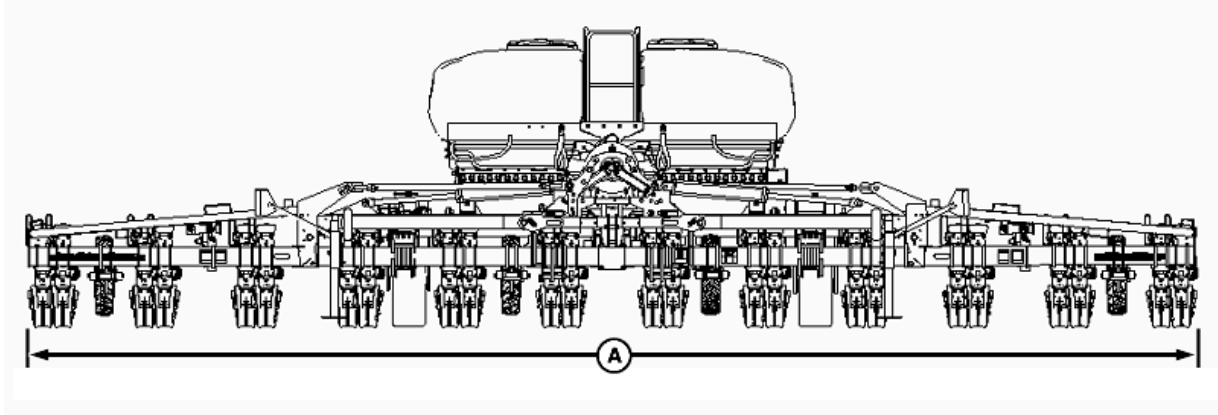
GENERAL—Various hydraulically operated functions are utilized on the 1720CCS 12X2 Twin Row. A fully equipped base machine including vacuum meters, fold, lift, CCS system, and SeedStar™ variable rate drive requires four SCVs and Power Beyond. The wings and center section of the machine each have their own vacuum motor,

plumbed separately, to provide fine-tuning of vacuum level to each. They require two SCVs. Fold, lift assist, CCS system, and variable rate drive each require a separate SCV. If only four SCVs are available, add Power Beyond and run variable rate drive, hydraulic wing down force, and implement steering from that unit.

Tru-Vee is a trademark of Deere & Company

OUO6064,000052F -19-20JUN11-1/1

Machine-Unfolded



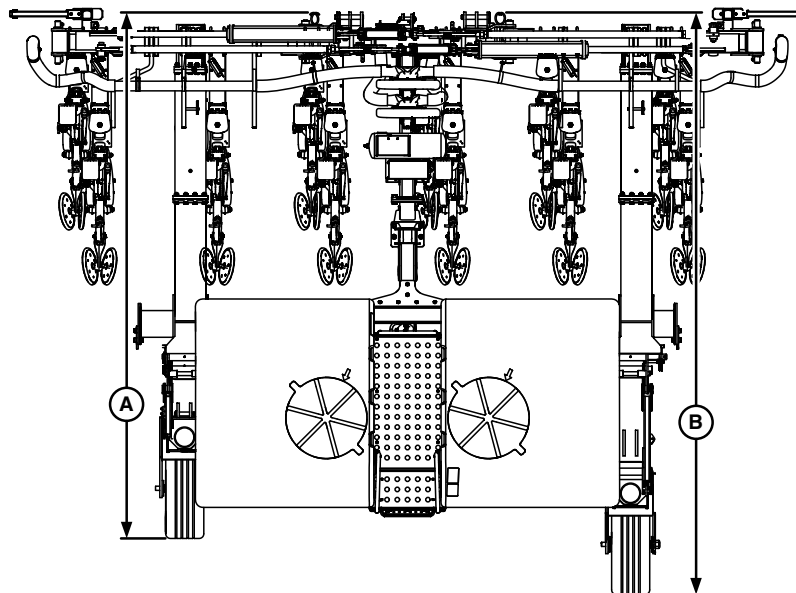
(A)	91—96 cm (36—38 in.)	11.09 m (36.4 ft.)
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CAUTION: Serious injury or death can result from contact with electric lines. Use care

when moving or operating this machine near electric lines to avoid contact.

OUO6064,0000525 -19-15JUN11-1/2

A68981 —UN—06OCT10

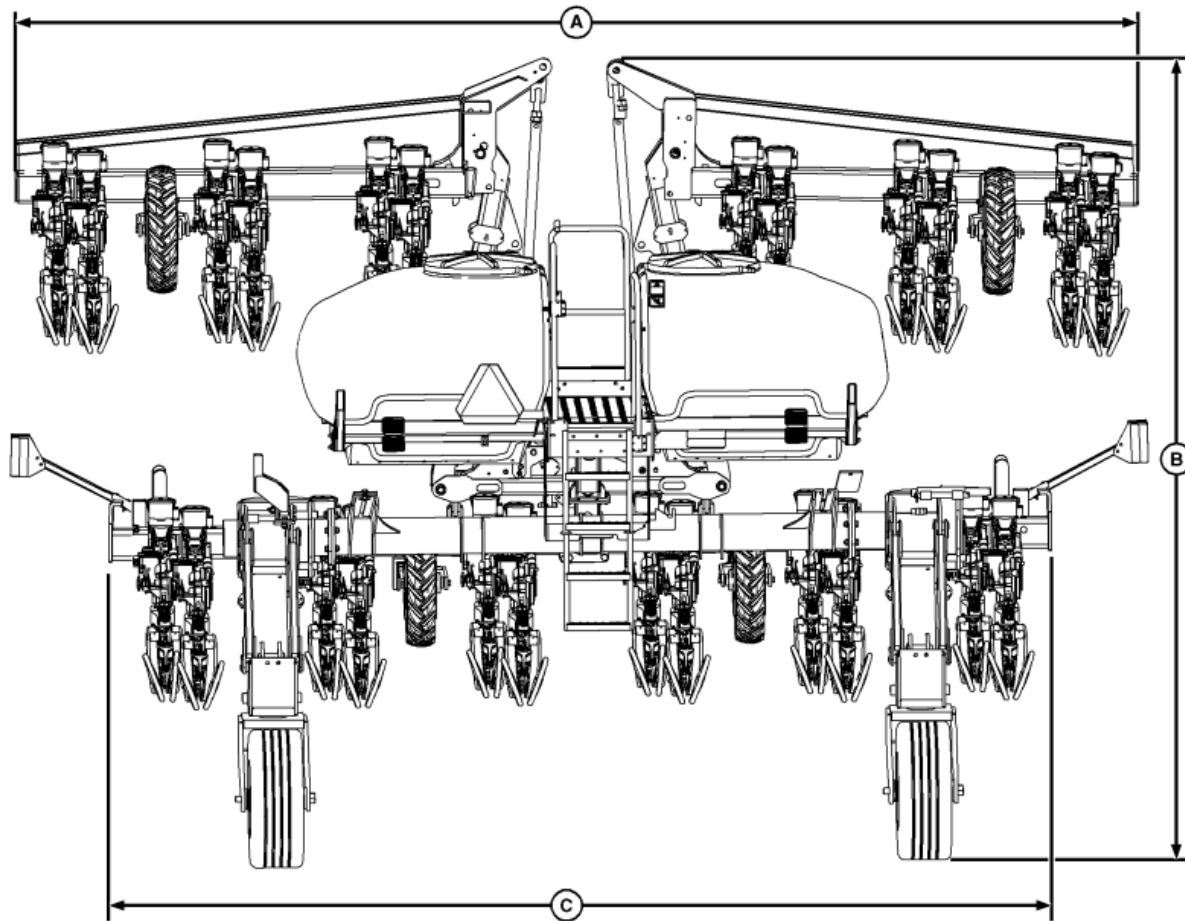


	Without Implement Steering	With Implement Steering
(A) Raised	4.59 m (180.7 in.)	4.39 m (172.7 in.)
(B) Lowered	4.8 m (188.9 in.)	4.59 m (180.9 in.)

OUO6064,0000525 -19-15JUN11-2/2

A66919 —UN—12APR10

Machine—Folded and Hitch Raised



Row Spacing	Dimension "A"	Dimension "B" ^a	Dimension "C"
91—96 cm (36—38 in.)	6.0 m (238 in.)	4.1 m (162.6 in.)	5.6 m (18.4 ft.)

^aDimension "B" is dependent on a tractor two-point hitch height of 1.1 m (44.6 in.) from ground.

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.

OUO6064.000044C -19-30MAR11-1/1

A69591 —UN—17NOV10

The EC Declaration of Conformity applies only to machines which bear the CE mark.

EC Declaration of Conformity

**Deere & Company
Moline, Illinois U.S.A.**

The person named below declares that

Machine type: Planter
Model: 1720CCS 12X2 Twin Row

fulfills all relevant provisions and essential requirements of the following directives:

DIRECTIVE	NUMBER	Certification Method
Machinery Directive	2006/42/EC	Self certified, per Article 5 of the Directive
Electromagnetic Compatibility Directive	2004/108/EC	Self certified, per Annex II of the Directive

Name and address of the person in the European community authorized to compile the technical construction file:

Brigitte Birk
Deere & Company European Office
John Deere Strasse 70
Mannheim, Germany D-68163
EUConformity@johndeere.com

Place of declaration: Moline, Illinois U.S.A.
Date of declaration: May 1, 2009

Name: Donald K. Landphair
Title: Manager, Product Engineering World Wide Seeding
Manufacturing unit: John Deere Seeding Group



N84331 —UN—15APR09

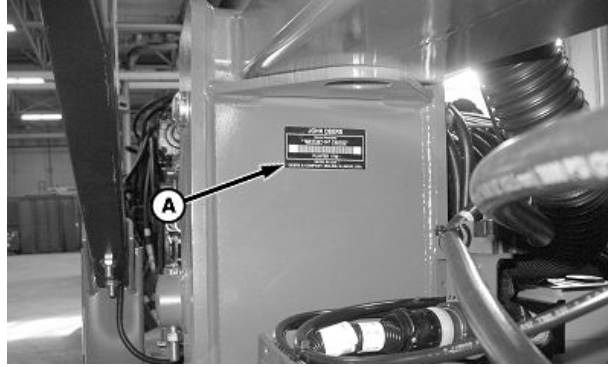
OUC6064,000059A -19-10AUG11-1/1

Record Serial Number

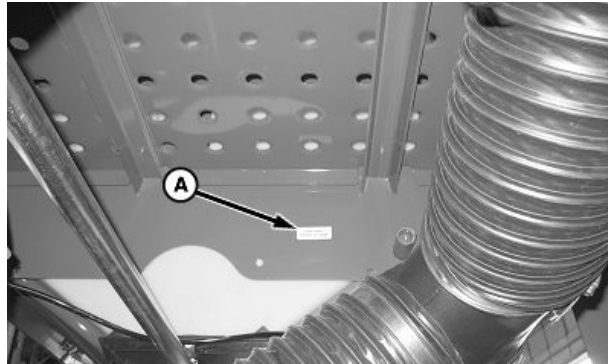
The serial number (A) is located on the main frame and CCS tank support. Record in the spaces provided.

Machine	
Serial Number	

A—Serial Number



Left-Hand Wing



CCS Tank Support

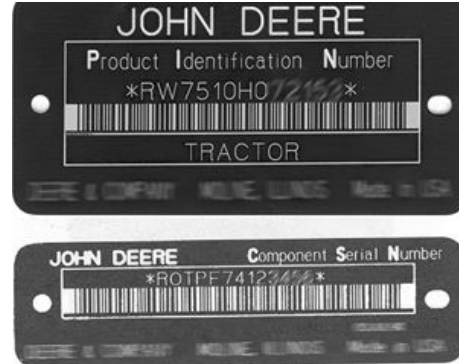
A69467—UN—03NOV10

A69468—UN—03NOV10

OUC6064,0000069 -19-15NOV10-1/1

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

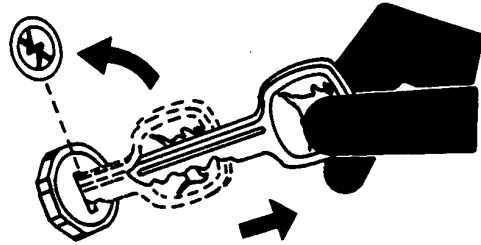


TS1680—UN—09DEC03

DX,SECURE1 -19-18NOV03-1/1

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.



DX, SECURE2 -19-18NOV03-1/1

TS230 —UN—24MAY89

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

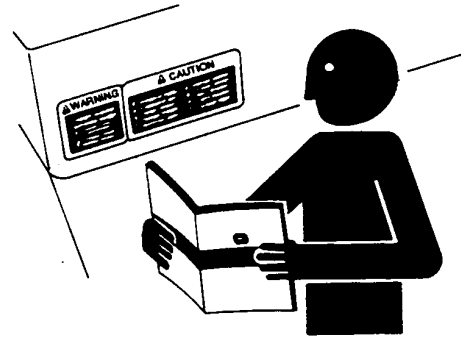
John Deere Service Keeps You on the Job

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—23AUG88

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

