



DCY

Deere/Bauer Planters (S.N. 745101-)

OPERATOR'S MANUAL Deere/Bauer Planters John Deere Components

OMA91942 ISSUE G1 (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

Export Edition
LITHO IN U.S.A.



OMA91942

Introduction

Foreword

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

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

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

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

WRITE PRODUCT IDENTIFICATION NUMBERS (P.I.N.) in the Specification or Identification Numbers 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.

BEFORE DELIVERING THIS MACHINE, your dealer performed a predelivery inspection.

THIS MACHINE IS DESIGNED SOLELY for use in customary agricultural or similar operations ("INTENDED USE"). Use in any other way is considered as contrary to the intended use. The manufacturer accepts no liability for damage or injury resulting from this misuse, and these risks must be borne solely by the user. Compliance with and strict adherence to the conditions of operation, service and repair as specified by the manufacturer also constitute essential elements for the intended use.

THIS MACHINE SHOULD BE OPERATED, serviced and repaired only by persons familiar with all its particular characteristics and acquainted with the relevant safety rules (accident prevention). The accident prevention regulations, all other generally recognized regulations on safety and occupational medicine and the road traffic regulations must be observed at all times. Any arbitrary modifications carried out on this machine will relieve the manufacturer of all liability for any resulting damage or injury.

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.

OUO6435,0001DCF -19-13OCT09-1/1

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 the Machine section, lubrication intervals in the Lubrication section, opener maintenance in the Service section, etc. 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.

AG,OUO6074,1160 -19-04AUG00-1/1

ADDITIONAL INFORMATION REQUIRED

Required Manuals	Optional Manuals
SEEDSTAR 2™ and SEEDSTAR XP™ Monitor, Variable Rate Drive, and Variable Rate Fertilizer Manual: This manual is used when planter is equipped with SEEDSTAR™ seed monitor, variable rate drive, or variable rate fertilizer.	The following operator manuals are required when planter is equipped with these options. Some options are not available on every planter model.
	Refuge Plus Seed Delivery Operator's Manual: This manual is used when planter is equipped with refuge plus seed delivery system.
	Central Insecticide System Operator's Manual: This manual is used when planter is equipped with central insecticide system.

OUO6064,00004D3 -19-24MAY11-1/1

Contents

	Page		Page
Safety		Checking Tire Inflation.....	20-3
Recognize Safety Information	05-1	Change Row Spacing From 38 cm (15	
Understand Signal Words.....	05-1	in.) To 76 cm (30 in.) DB60 47 Row.....	20-3
Follow Safety Instructions.....	05-1	Change Row Spacing From 76 cm (30	
Prevent Machine Runaway.....	05-2	in.) To 38 cm (15 in.) DB60 47 Row.....	20-5
Operate the Machine Safely	05-2	Adjust Markers.....	20-8
Keep Riders Off Machine	05-2		
Avoid Tip-Overs	05-3	Pro-Series™XP Vacuum Meter Setup	
Prepare for Emergencies.....	05-3	Vacuum Meter Operating Characteristics.....	25-1
Wear Protective Clothing.....	05-3	Meter Settings	25-2
Handle Agricultural Chemicals Safely	05-4	Accessing The Vacuum Meter.....	25-2
Granular Chemical Lid Fill Closed		Remove Seed Disk.....	25-3
Handling System	05-4	Brush Installation	25-4
Use Safety Lights and Devices.....	05-5	Double Eliminator Operation	25-5
Transport Safely	05-5	Install Double Eliminator Plate for	
Use a Safety Chain.....	05-5	ProMax 40, Small Sweet Corn, or	
Tow Loads Safely	05-6	Edible Bean Disks	25-7
Practice Safe Maintenance.....	05-6	Seed Disk Selection Guidelines	25-8
Remove Paint Before Welding or Heating.....	05-7	Select The Correct Field Corn Seed	
Avoid Heating Near Pressurized Fluid Lines.....	05-7	Disk For Optimum Performance.....	25-9
Avoid High-Pressure Fluids	05-7	Seed Disk Recommendations For	
Store Attachments Safely	05-8	Crops Other Than Field Corn.....	25-11
Charge Row Marker Hydraulic System	05-8	Checking Seed Disk Cell.....	25-12
Dispose of Waste Properly	05-8	Install Seed Disk.....	25-13
Replace Safety Signs	05-9	Adjust Meter Hub.....	25-13
		Seed Knockout Wheel Operation	25-16
Safety Signs		Install Knockout Wheel Assembly	25-17
Safety Signs	10-1	OPTIMIZING SEED SPACING.....	25-18
		CHECKING METER PERFORMANCE	25-18
Prepare Tractor		Install Hopper Extensions (Pro Only)	25-18
Use Your Tractor Operator's Manual	15-1		
Calculating Minimum Tractor Weight		MaxEmerge™XP Vacuum Meter Setup	
for Safe Road Transport.....	15-1	Vacuum Meter Operating Characteristics.....	30-1
Check Tractor Hydraulic System	15-1	Meter Settings	30-2
Tractor Requirements	15-2	Accessing The Vacuum Meter.....	30-2
Hitch Loads.....	15-2	Select Correct Vacuum Meter Brush	30-4
Setting Selective Control Valves—8000		Changing Vacuum Meter Brush.....	30-4
and 9000 Series Tractors	15-2	Adjust Vacuum Meter Baffle	30-5
Low Pressure Case Drain Connection	15-3	Seed Knockout Wheel Operation	30-6
Recommended Tractor Settings.....	15-4	Install Knockout Wheel Assembly	30-7
		Checking Seed Disk Cell.....	30-8
Prepare Machine		Install Seed Disk.....	30-8
Initial Use of CCS System	20-1	Adjust Meter Hub.....	30-9
Before Use.....	20-1	Install Double Eliminator for ProMax	
Determine Tractor Drawbar and		40, Small Sweet Corn, or Edible	
Implement Clevis Compatibility	20-2	Bean Disks	30-11

Continued on next page

Original Instructions. All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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Page	Page
Adjust Double Eliminator for 50 Percent Hole Coverage with ProMax 40 Disk30-12	Adjust Planting Depth45-5
Install Meter Inlet Screen30-14	Closing Wheel
Seed Disk Selection Guidelines30-15	Down Force45-6
Select The Correct Field Corn Seed	Centering45-6
Disk For Optimum Performance30-16	Spacing45-7
Seed Disk Recommendations For	Staggering45-7
Crops Other Than Field Corn30-18	Remove Pro-Series™ XP Seed Meter
OPTIMIZING SEED SPACING30-20	Assembly From Row Unit45-8
CHECKING METER PERFORMANCE30-20	Install Pro-Series™ XP Seed Meter
	Assembly on Row Unit45-9
	Cleaning Out Pro-Series™ XP Seed
	Hoppers and Vacuum Metering Units45-10
	Replacing Pro-Series™ XP Meter
	Shear Handle45-15
	Replacing Shear Protection Pins45-16
	Inspecting Pro-Series™ XP Metering Units45-16
	Filling MaxEmerge™ XP Seed Hoppers45-17
	Cleanout and Inspection of
	MaxEmerge™ XP Seed Hoppers
	and Metering Units45-19
	Disengage Meter Drive45-21
	Engage Meter Drive45-22
Attach Machine	
Use Your Tractor Operator's Manual35-1	
CCS Fan and VacuMeter™ Motor	
(Case) Drain Requirements35-1	
VacuMeter™ Hydraulic Motor and	
Variable Rate Drive Return Coupler35-1	
Check Hydraulic System35-2	
Attach Warning Light Harness35-2	
Connect SeedStar™ Monitor Harness35-2	
Connect Frame Control Harness35-3	
Connect AMS and Compressor Power	
Harness35-3	
Connect Pneumatic Down Force Air	
Compressor Remote Air Filter Hose35-3	
Hydraulic Connections Recommendations35-5	
Level Hitch Tube35-6	
Pro-Series™ XP CCS Seed Delivery	
CCS Seed Delivery Operation40-1	
Operating Tank Fill Lights—Optional40-1	
Operating Tank Lids40-2	
Tank Level Sensors40-2	
Filling Seed Delivery Tanks40-3	
Leveling Seed in CCS Tanks40-3	
Filling Row Unit Hoppers40-3	
Setting CCS Tank Pressure All	
Machines Except DB12040-4	
Setting CCS Tank Pressure DB12040-5	
Operating CCS System—Heavily	
Treated Seed or Large Seed Corn40-5	
Operating CCS System When Planting	
Sorghum and Small Popcorn40-6	
Operating CCS System When Planting	
Standard Seed Sizes40-7	
Planting Seed Plots with CCS Systems40-8	
Partially Cleaning Out CCS Tanks40-8	
Cleaning Out CCS Tanks40-9	
Bridged and Blocked CCS System40-10	
Oil Reservoir for CCS Fan Motor40-11	
Operate Machine	
General45-1	
VacuMeter™ Hydraulic System Operation45-1	
Unfold and Fold Planters (Non-Fold	
Assist Machines)45-2	
Unfold and Fold Planters (Fold Assist	
Equipped Machines)45-3	
	Use of Talc and Graphite Lubricants
	Use of Talc Lubricant50-1
	Set Vacuum Levels
	Use of Talc Lubricant55-1
	Set Vacuum Level55-1
	Vacuum Level for Corn Using H136478,
	A43215, A50617 or A52391 Seed Disks55-2
	Vacuum Level for Oil Sunflower55-3
	Vacuum Level for Confectionary Sunflower55-4
	Vacuum Level for Sweet Corn55-5
	Vacuum Level Seed Chart—Flat
	Edible-Bean Disk55-6
	Vacuum Level for Cotton, Using Flat
	Edible-Bean Disk55-6
	Vacuum Level for Peanuts55-7
	Vacuum Level for Sugar Beet Seed55-8
	Check Seed Population
	Checking Seed Population60-1
	General Attachments
	General65-1
	SEEDSTAR™ Integrated Pneumatic
	Down Force System65-1
	Hopper Extensions for the Pro-Series™
	Row Unit65-2
	SeedStar™ Variable Rate Drive System65-2
	RowCommand Attachment65-3
	Walking Gauge Wheels65-3
	106 L (3.0 Bu) Hopper65-3
	Seed Tubes65-4
	Rigid Scraper65-4
	Heavy-Duty Scraper65-4

Continued on next page

	Page
Heavy-Duty Closing Wheels	65-5
Unit Mounted Coulter	65-5
Unit Mounted Row Cleaners	65-7
Row Cleaner for Unit Mounted Coulter	65-8
Ballast Attachment	65-9

MaxEmerge™XP Granular Chemical

Granular Chemical Attachment	70-1
Determining Application Rate and Initial Meter Setting	70-4
Insecticide Application Rates	
Clay Granules - 56 Cm	70-6
Clay Granules, 70 Cm	70-8
Sand Granules - 56 Cm	70-10
Sand Granules, 70 Cm	70-11
Clay Granules - 76 Cm to 97 Cm	70-13
Sand Granules - 76 Cm to 97 Cm	70-15
Herbicide Application Rates	
Clay Granules - 56 Cm	70-16
Clay Granules - 76 Cm to 97 Cm	70-18
Clay Granules, 70 Cm	70-20
Calibrating Insecticide-Herbicide Meter	70-21
Idler Options	70-24
Insecticide Seed-Furrow Placement Bracket	70-24
Insecticide Band Spreader (Front Mounted)	70-24

Lubrication

Lubricate and Maintain Machine Safely	75-1
Perform Lubrication and Maintenance Procedures	75-1
Grease	75-1
Lubrication Symbols	75-2
Alternative Lubricants	75-2
Lubrication Intervals	75-2
Use of Talc Lubricant	75-5
Roller Chain and Pesticide Sprocket Lubrication	75-6
Lubrication—Frame	75-6

Troubleshooting

Drives	80-1
Row Units	80-1
Pro-Series™XP Vacuum Meter	80-2
MaxEmerge™XP Vacuum Meter	80-7
CCS Fan Assembly	80-11
CCS Product Delivery	80-13

Service and Adjustments

Service Intervals	85-1
Relay and Fuse Location for Optional Compressor Power Harness	85-2
Using Safe Service Procedures	85-3
Practice Safe Maintenance	85-4
Service and Operate Chemical Sprayers Safely	85-5
Welding Near Electronic Control Units	85-5

Keep Electronic Control Unit

Connectors Clean	85-6
Tighten Drive Chains	85-6
Service Tires Safely	85-7
Adjust Main Frame Height	85-7
Adjust Wing Frame Height	85-8
Cleaning CCS Tank Level Sensors	85-8
Zeroing CCS Fan Pressure Gauge	85-8
Cleaning Pro-Series™XP Row Unit Hopper Screen	85-9
Install and Remove Standard Flush Face Seed Tubes	85-9
Install and Remove Optional Seed Tubes	85-10
Clean Seed Tube Sensor	85-11
Cleaning Vacuum Manifold System	85-11
Inspect Row Command™ Drive Chains and Sprockets	85-12
Adjusting MaxEmerge™XP Seed Chain Drive Mechanism	85-13
Adjusting MaxEmerge™XP Seed Cable Drive Mechanism	85-14
Aligning MaxEmerge™XP Chemical Meter Drive	85-15
MaxEmerge™XP High-Residue Chain Idler	85-15
Install New Vacuum Seal	85-16
Replace Seed Opener Blades and Seed Tube Guard	85-16
Inspect and Adjust Seed Opener Blades	85-18
Adjust Gauge Wheels	85-20
Setting CCS Row Unit Fan Switch	85-20
Calibrating Insecticide/Herbicide Meter	85-21
Bridged and Blocked CCS System	85-24
Cleaning MaxEmerge™XP Meter Drive	85-25
Coulter Maintenance	85-25
MaxEmerge™XP Chemical Meter Maintenance	85-25
Cleaning MaxEmerge™XP Insecticide and/or Herbicide Hoppers	85-25
Inspect Vacuum Motor	85-26
Inspect and Clean Vacuum Impeller and Housing	85-26
Clean Carrier Tank Strainer	85-28
MaxEmerge™XP 106 L (3.0 Bu) Hopper Latch	85-28
CCS Fan Gauge Filter	85-28
Drain CCS Fan Motor Oil Reservoir	85-29
MaxEmerge™XP Vacuum Meter Inspection and Service	85-29
Tightening Pro-Series™XP Meter Latch	85-33
Pro-Series™XP Vacuum Meter Inspection and Service	85-33

Storage

Removing From Storage	90-1
Storing Machine	90-3
Keep Proof of Ownership	90-4
Keep Machines Secure	90-5
Record Serial Number	90-5

Continued on next page

	Page
The EC Declaration of Conformity applies only to machines which bear the CE mark. EC Declaration of Conformity ..	90-6
Specifications	
Unified Inch Bolt and Screw Torque Values.....	95-1
Metric Bolt and Screw Torque Values.....	95-2

Safety

Recognize Safety Information

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

Follow recommended precautions and safe operating practices.



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.

 **DANGER**

 **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.



TS201 —UN—23AUG88

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

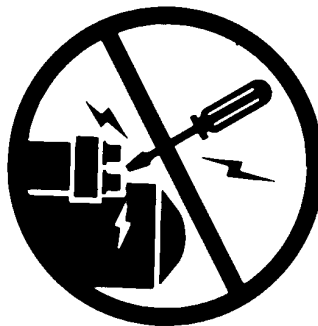
DX,READ -19-16JUN09-1/1

Prevent Machine Runaway

Avoid possible injury or death from machinery runaway.

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

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



TS177 —UN—11JAN89

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

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. Anytime hydraulic work must be done, lower the machine.

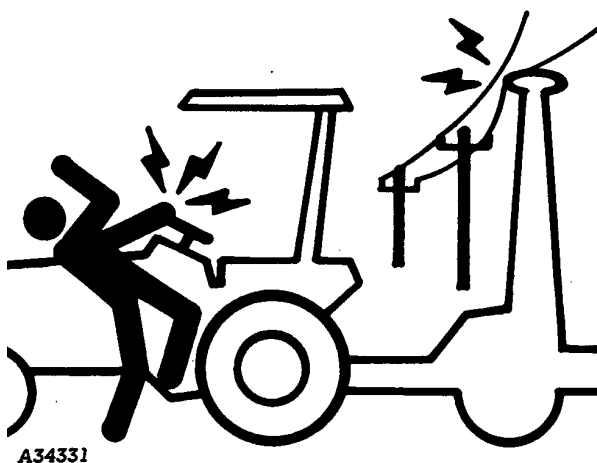
Serious injury or death can result from contact with electric lines. Use care when moving or operating this machine near electric lines to avoid contact.

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.



A34331

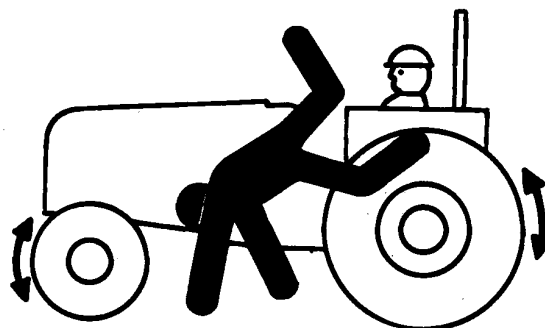
A34331 —UN—13OCT88

AG,OUO6074,1162 -19-22OCT03-1/1

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

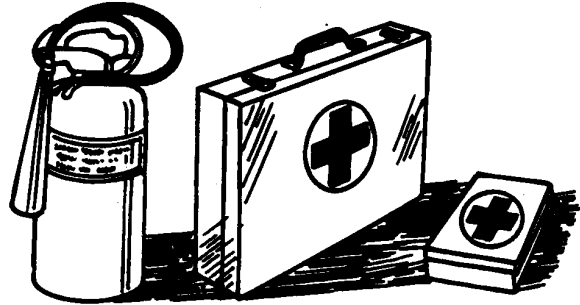
OM63945A,05B -19-20OCT98-1/1

Prepare for Emergencies

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

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



TS291 —UN—23AUG88

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

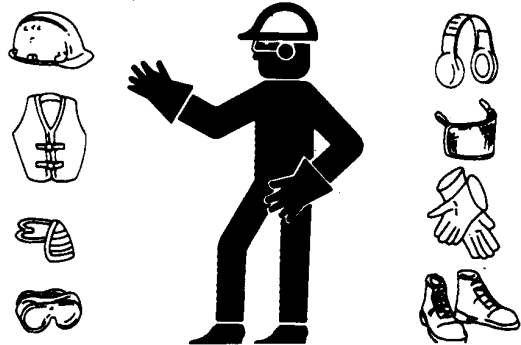
Wear Protective Clothing

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.



TS206 —UN—23AUG88

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

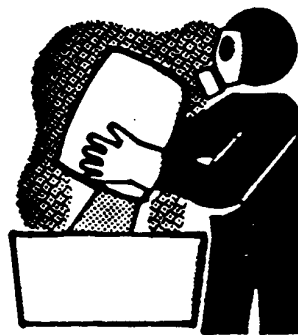
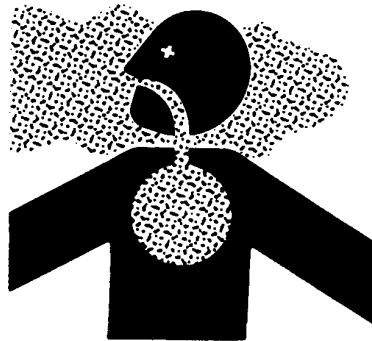
Handle Agricultural Chemicals Safely

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.

TS220 —UN—23AUG88

A34471 —UN—11OCT88

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

Granular Chemical Lid Fill Closed Handling System

CAUTION: Chemicals may cause eye, skin, or breathing problems. Wear long sleeve shirt, gloves and goggles. Refer to and follow safety instruction on the chemical supplier's label.

Chemical residue should be placed in the original or accepted container and disposed of in an approved manner. Follow instruction of the chemical manufacturers for disposal methods.

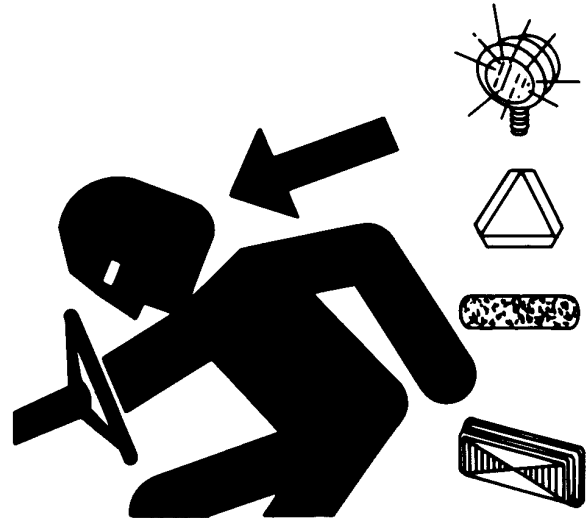
If hoppers are not washed, chemically treated dust may be on the hopper walls, resulting in exposure.

AG,OUO6074,1164 -19-04AUG00-1/1

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

Install marker lockup straps (if equipped), to prevent injury from lowered marker.

The maximum transport speed for this machine is 20 mph (32 km/h). DO NOT EXCEED. Never travel at any speed which does not permit adequate control of steering and stopping.

Reduce speed over rough ground.

Never tow this implement behind a truck or other motor vehicle.

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



A34333

A34333 —UN—13OCT88

roadway transport. The customer is responsible for understanding and complying with all local, regional, and national requirements regarding roadway transport.

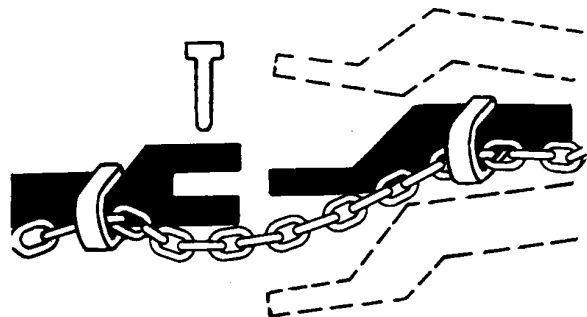
AG,OUO6074,1165 -19-06APR06-1/1

Use a Safety Chain

A safety chain will help control drawn equipment should it accidentally separate from the drawbar.

Using the appropriate adapter parts, attach the chain to the tractor drawbar support or other specified anchor location. Provide only enough slack in the chain to permit turning.

See your John Deere dealer for a chain with a strength rating equal to or greater than the gross weight of the towed machine. Do not use safety chain for towing.



TS217 —UN—23AUG88

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

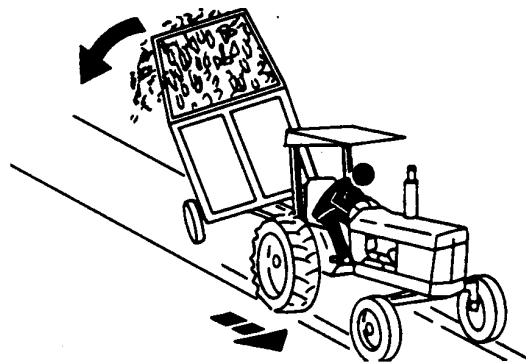
Tow Loads Safely

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

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

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

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



TS216 —UN—23AUG88

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

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

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

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—15WAY90

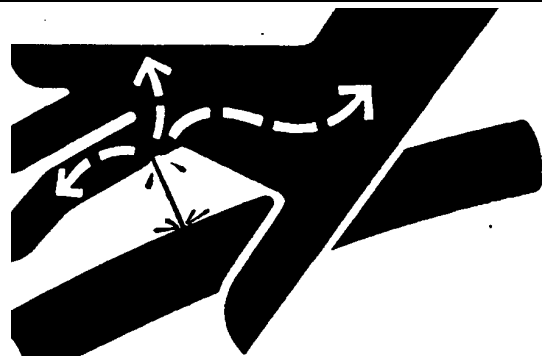
Avoid High-Pressure Fluids

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 -19-20AUG09-1/1

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.



TS219 —UN—23AUG88

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

Charge Row Marker Hydraulic System

Falling row markers can cause personal injury. Be sure cylinders and attaching hoses are fully charged with oil before operating. Failure to do so will allow markers to fall rapidly.

ALWAYS stay clear of markers when raising or lowering.



N39213 —UN—22SEP88

NX,515,C9 -19-05APR91-1/1

Dispose of Waste Properly

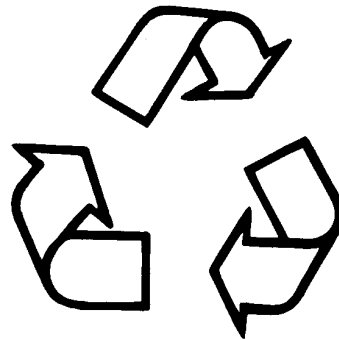
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

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.



TS1133 —UN—26NOV90

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

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.



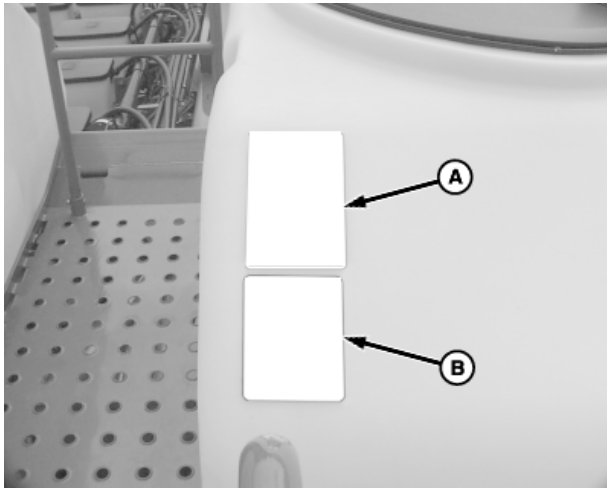
TS201 —UN—23AUG88

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

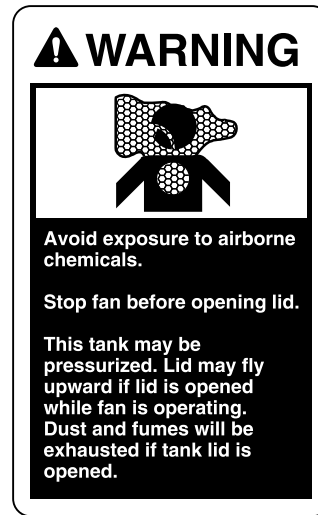
Safety Signs

Safety Signs

CCS machines only.



A57675 —UN—30MAR06



A—Warning



B—Warning

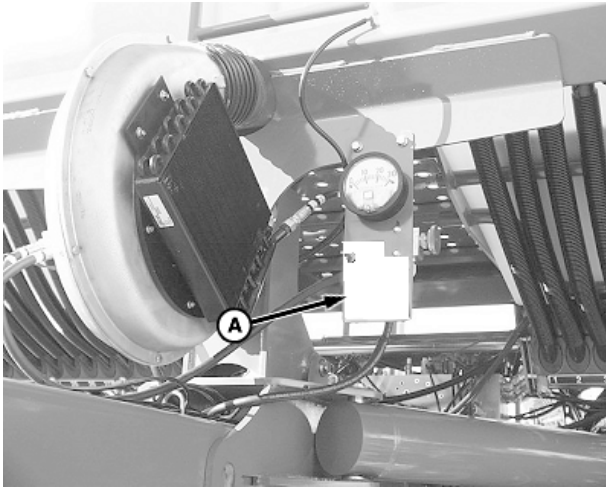
SSA74150 —19—30MAR06

SSA91843 —19—25MAR11

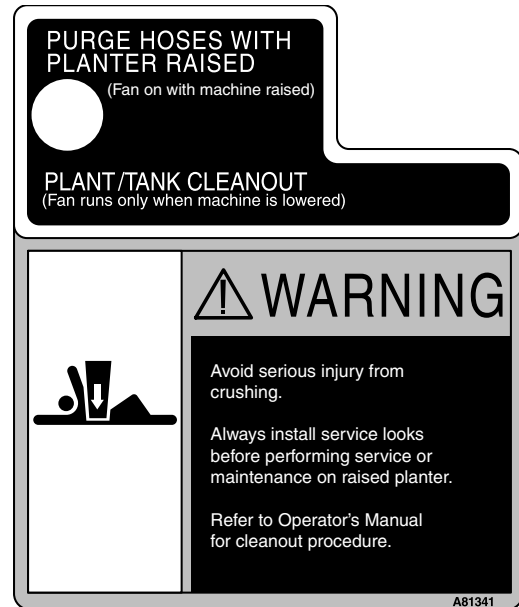
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OUO6064,0000475 -19-19APR11-1/2

CCS machines only.



A57676 —UN—30MAR06



SSA81341 —19—30MAR06

A—Warning

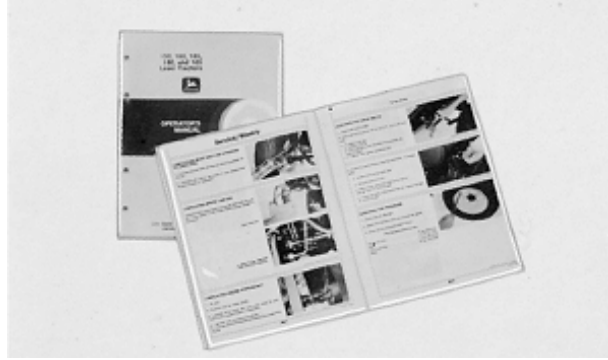
OUO6064,0000475 -19-19APR11-2/2

Prepare Tractor

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

Calculating Minimum Tractor Weight for Safe Road Transport

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

CAUTION: Do not transport a planter in folded position with product in tanks. Do not transport a towed load (such as a fertilizer tank) unless it is empty.

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

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

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

OUC1074,00013A6 -19-21JUN06-1/1

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).

OUC6074,0000A10 -19-21MAY09-1/1

Tractor Requirements

NOTE: Tractors with additional horsepower are required when operating with additional machine attachments or when planting in soft seedbeds and rolling ground.

MACHINE	ENGINE Kilowatt (Horsepower)
DB44 24 Row 56 cm (22 in.)	175 kW (235)
DB58 32 Row 56 cm (22 in.)	175 kW (235)
DB60 24 Row 76 cm (30 in.)	175 kW (235)
DB60 36 Row 51 cm (20 in.)	175 kW (235)
DB60 47 Row 38 cm (15 in.)	186 kW (250)
DB66 36 Row 56 cm (22 in.)	175 kW (235)
DB80 32 Row 76 cm (30 in.)	175 kW (235)
DB80 48 Row 51 cm (20 in.)	186 kW (250)
DB88 48 Row 56 cm (22 in.)	186 kW (250)
DB90 36 Row 76 cm (30 in.)	209 kW (280)
DB120 48 Row 76 cm (30 in.)	242 kW (325)

OUC6064,000052A -19-15JUN11-1/1

Hitch Loads

IMPORTANT: It is recommended that product tanks are empty when machine is folded.

NOTE: Weights are with typical optional equipment. Weights with other optional equipment can vary.

The maximum static vertical load occurs for implement when it is folded in road transport position.

Static Vertical Load on Tractor Drawbar	
Machine	Maximum Empty Weight kg (lb.)
DB44 Non CCS	2313 (5100)
DB44 CCS	2177 (4800)
DB58 Non CCS	3405 (7508)
DB58 CCS	3220 (7100)
DB60 24R30 CCS	3493 (7700)
DB60 36R20 Non CCS	3583 (7900)
DB60 36R20 CCS	3561 (7850)
DB60 47R15 CCS	3783 (8340)
DB66 Non CCS	3810 (8400)
DB66 CCS	3239 (7141)
DB80 CCS	4309 (9500)
DB88 CCS	5956 (13 131)
DB90 CCS	5579 (12 300)
DB120 CCS	7983 (17,600)

OUC6064,000052B -19-17JUN11-1/1

Setting Selective Control Valves—8000 and 9000 Series Tractors

See HYDRAULIC CONNECTIONS RECOMMENDATIONS in Attach Machine section.

OUC6045,000011D -19-07APR09-1/1

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
8000, 8000T, 8010, 8010T, 8020, 8020T, 8030, 8030T, 8R, and 8RT Series	RE222721
9000, 9000T, 9010, 9010T, 9020, 9020T, 9030 and 9030T Series	RE218665

^aOrder through service parts.

A53392—UN—25NOV03

OUC6074,0000968 -19-17MAY10-1/1

Recommended Tractor Settings

See Tractors Operator's Manual for complete operating instructions.

Tractor Settings	
Item to set	All DB Series Planter Models
Drawbar Distance From Ground	430 mm (17 in.)
Drawbar Position	Centered in Short Position
Drawbar Support	Drawbar Support Installed
Drawbar Category	All DB planters Except DB120 require a category 4 drawbar DB120 requires a category 5 drawbar
Tire Ballast	Limit liquid or cast weight on rear tires ^{a,b}
All DB planters except DB120 Tractor Hydraulics Requirements	Closed Center Only Minimum tractor hydraulic pressure - 15 513 kPa (155 bar) (2250 psi) Working pressure - 20 684 kPa (207 bar) (3000 psi)
DB120 Tractor Hydraulic Requirements	High Flow Hydraulic System Closed Center Only Minimum tractor hydraulic pressure - 15 513 kPa (155 bar) (2250 psi) Working pressure - 20 684 kPa (207 bar) (3000 psi)
Tire Pressures	See Tractor Operator's Manual.
Hydraulic Controls	See HYDRAULIC CONNECTIONS RECOMMENDATIONS in Attach Machine section.

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

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

OUC6045,000011C -19-17APR09-1/1

Prepare Machine

Initial Use of CCS System

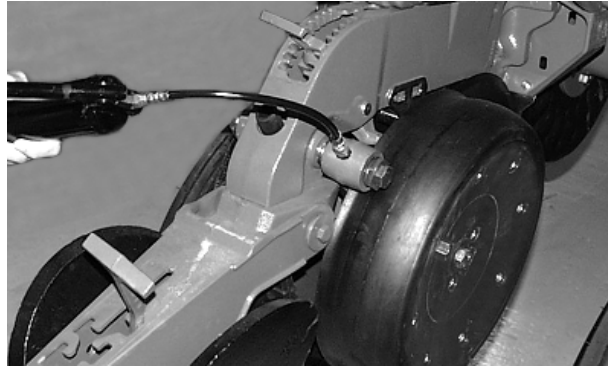
The first time a new seed tank is used, coat inside bottom of bulk seed tanks with a thin layer of talc. Mix triple amount of talc into first two or three bushels of seed

placed in bulk tank. (See USE OF TALC AND GRAPHITE LUBRICANTS section) This provides CCS system and hoses with a protective layer to resist buildup of seed coatings.

OUO6074,0000EC8 -19-24MAR09-1/1

Before Use

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



A53141 —UN—04NOV03

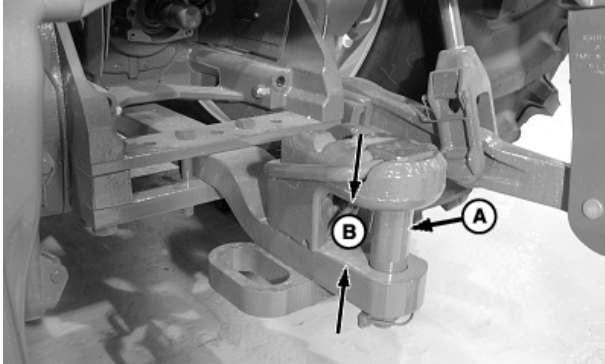
AG,OUO6074,1171 -19-21MAY09-1/1

Determine Tractor Drawbar and Implement Clevis Compatibility

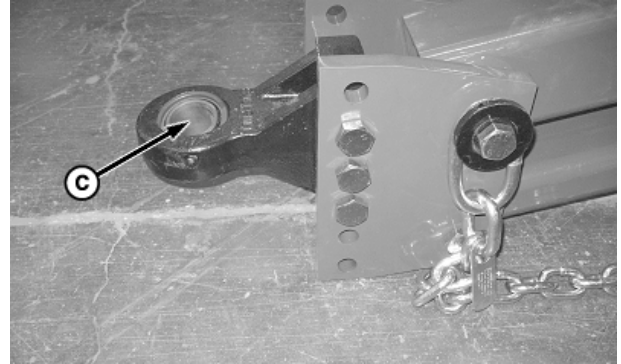
IMPORTANT: Avoid machine damage. Match tractor drawbar and implement clevis. Refer to tractor operators manual for specific drawbar information.

Do not exceed static vertical load capacity of tractor drawbar. See Specifications section

for vertical load and see tractor manual for drawbar limits and heavy duty supports.



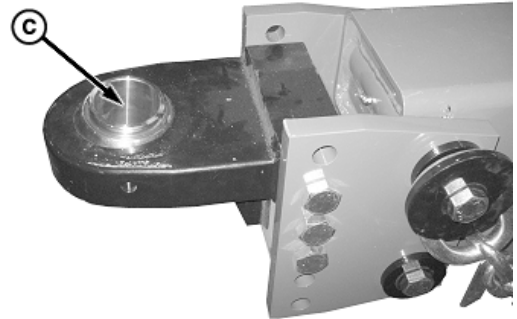
A60572—UN—08AUG07



A71336—UN—21APR11

All Deere-Bauer Planters - Except DB120

Match tractor drawbar and implement clevis. The only exception is a category 4 clevis used with a category 3 drawbar that has a 90 mm (3.54 in.) opening. Never exceed vertical load limits.



A71337—UN—21APR11

DB120 Planter

A—Drawbar Pin
B—Drawbar Opening

C—Slot

Drawbar and Clevis Compatibility					
Drawbar and Clevis Category	Tractor Drawbar		Implement Clevis		
	Drawbar Pin (A) Diameter	Drawbar Opening (B)	Slot (C) Length	Slot (C) Width (Minimum)	Clevis Thickness
3	38 mm (1.50 in.)	70—90 mm (2.75—3.54 in.)	41—66 mm (1.61—2.60 in.)	41 mm (1.61 in.)	48 mm (1.89 in.)
4	51 mm (2.00 in.)	90 mm (3.54 in.)	55—70 mm (2.17—2.75 in.)	55 mm (2.17 in.)	50 mm (1.97 in.)
5	70 mm (2.75 in.)	100 mm (3.94 in.)	73—85 mm (2.87—3.35 in.)	73 mm (2.87 in.)	60 mm (2.36 in.)

OUO6064,0000476 -19-27APR11-1/1

Checking Tire Inflation

Tire Pressures	
Tires Size	Pressure
16.5 x 16.1	172 kPa (1.72 bar) (25 psi)
31-13.5 x 15	221 kPa (2.21 bar) (32 psi)
445/50R22.5	862 kPa (8.6 bar) (125 psi)
Transmission Drive Tire	165 kPa (1.65 bar) (24 psi)
18 x 8.5-8 Marker Tire	152 kPa (1.5 bar) (22 psi)
4.8-8 Marker Tire	276 kPa (2.75 bar) (40 psi)
4.80 x 8	551—689 kPa (5.5—6.9 bar) (80—100 psi)
31-13.5 x 15 6-Ply	124—207 kPa (1.2—2.0 bar) (18—30 psi) ^a
31-13.5 x 15 14-Ply	482—620 kPa (4.8—6.2 bar) (70—90 psi)

^aCan be used to adjust frame height.

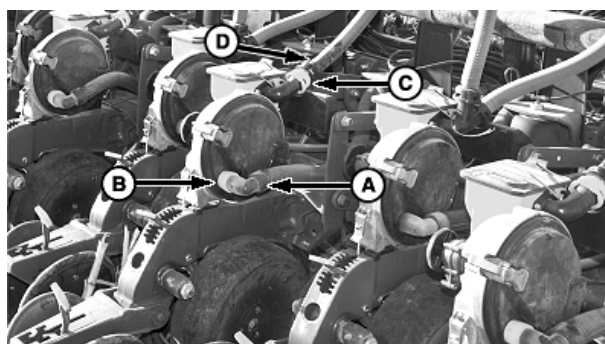
OUO1074,00013F0 -19-03AUG10-1/1

Change Row Spacing From 38 cm (15 in.) To 76 cm (30 in.) DB60 47 Row

Check List for Following Procedure:

- ☐ Remove seed from CCS tanks and row units.
- ☐ Drawbar in center position.
- ☐ Install yellow plugs on all rear rank row units (vacuum and seed delivery hoses).
- ☐ If equipped, release pneumatic pressure from rear rank rows.
- ☐ Manually lock up rear rank row units.
- ☐ Disconnect meter drives on rear rank row units.
- ☐ Remove and install correct seed disks.
- ☐ Configure seed monitor to read only active rows.
- ☐ Adjust vacuum level.
- ☐ Adjust seed population.
- ☐ Adjust CCS tank pressure.
- ☐ Adjust markers to proper length.

1. Remove seed from all row unit meters. See CLEAN OUT PRO-SERIES XP™ SEED HOPPERS AND METERING UNITS in Operate Machine section.
2. Clean out CCS tanks. See CLEANING OUT CCS TANKS in Pro Series XP CCS Seed Delivery section.
3. Tractor drawbar in center position.
4. Remove vacuum hose (A) from all rear rank row unit meters. Insert provided plug (B) into vacuum port, and reconnect vacuum hose to meter.



A62717 —UN—24JUN08

A—Vacuum Hose
B—Plug

C—Seed Delivery Hose
D—Plug

5. Remove seed delivery hose (C) from rear rank row unit meters. Insert provided plug (D) into meter inlet and reconnect seed delivery hose on meters.
6. Exhaust pressure from rear rank rows. (See DEPRESSURIZE PNEUMATIC DOWN FORCE SYSTEM in your SeedStar 2™ and SeedStar XP™ Monitor Operator's Manual.)

Continued on next page

OUO6064,0000477 -19-19APR11-1/5

Prepare Machine

7. Remove row unit lock-up bar from storage location (A) under rear CCS tank steps.

A—Location

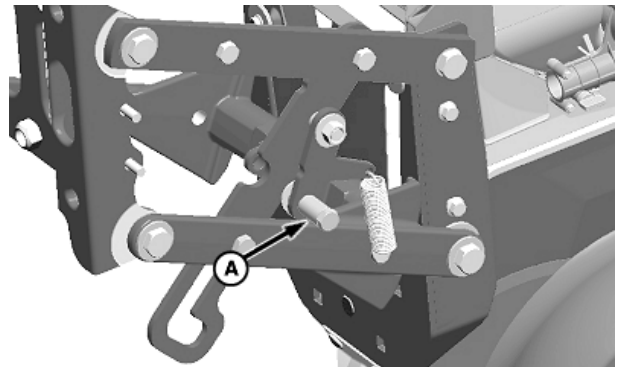


A62715 —UN—24JUN08

OUO6064,0000477 -19-19APR11-2/5

8. Place row unit lock-up latch (A) in position shown.

A—Latch



A62716 —UN—24JUN08

OUO6064,0000477 -19-19APR11-3/5

NOTE: On machines with the rear hitch option, there is not enough clearance for lock-up bar (A) to attach to row unit nearest hitch. Extend drawbar cylinder and slowly lower frame until remaining unit locks.

9. Use lock-up bar (A) to raise and lock rear row units up as shown.
10. **On machines with rear hitch**, raise hitch and slowly lower frame until row units are at full length of travel.
11. Raise machine and confirm rear row units are locked up.
12. Disengage meter drive on all rear rank row units. See DISENGAGE METER DRIVE in Operate Machine section.



A62754 —UN—01JUL08

A—Lock-Up Bar

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OUO6064,0000477 -19-19APR11-4/5

13. Replace seed disks on front rank row units.

NOTE: See your SeedStar™ Monitor Operator's Manual.

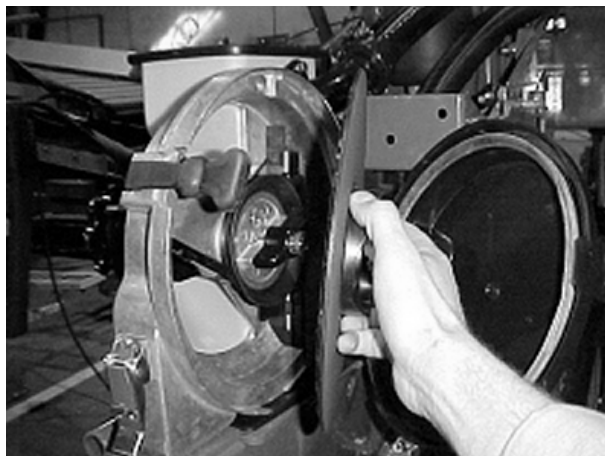
14. Change monitor settings to match number of rows planting.

- Select Menu >> Planter button >> Rates softkey >> Select crop name for crop to be planted, and check appropriate check box for number of rows planting.

15. Reset vacuum level.

16. Make necessary adjustments to the front rank row units for correct seed placement and seed trench closing.

17. Adjust marker to correct length for desired row spacing. See ADJUST MARKERS in this section.



Seed Disk

A50391—UN—26SEP02

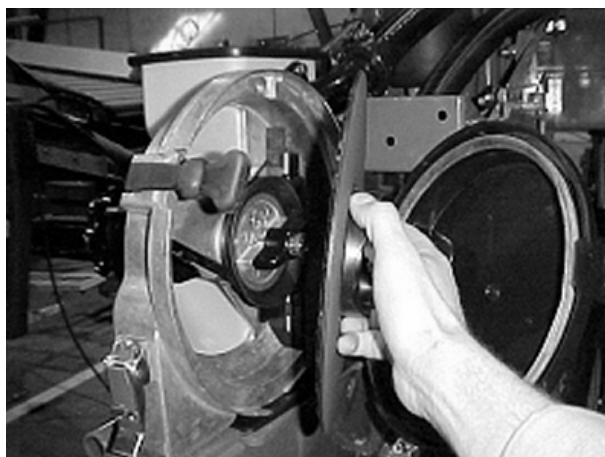
OUC6064,0000477 -19-19APR11-5/5

Change Row Spacing From 76 cm (30 in.) To 38 cm (15 in.) DB60 47 Row

Check List for Following Procedure:

- ☐ Drawbar in center position.
- ☐ Remove seed from CCS tanks and row units.
- ☐ Remove and install correct seed disks.
- ☐ Manually unlock and lower rear rank row units.
- ☐ Connect meter drives on rear rank row units.
- ☐ Remove yellow plugs from all rear rank row units (vacuum and seed delivery hoses).
- ☐ If equipped, set pneumatic pressure on rear rank rows.
- ☐ Adjust vacuum level.
- ☐ Adjust CCS tank pressure.
- ☐ Configure seed monitor to read all rows.
- ☐ Adjust seed population.
- ☐ Adjust markers to proper length.

1. Drawbar hitch in center position.
2. Empty seed from all row unit meters. See CLEAN OUT PRO-SERIES XP™ SEED HOPPERS AND METERING UNITS in Operate Machine section.
3. Clean out CCS tanks. See CLEANING OUT CCS TANKS in Pro Series XP CCS Seed Delivery section.



Seed Disk

A50391—UN—26SEP02

4. Install identical seed disks in all meters.

Continued on next page

OUC6064,0000478 -19-19APR11-1/5

5. Remove row unit lock-up bar from storage location (A) under rear CCS tank steps.

A—Location



A62715 —UN—24JUN08

OUC06064.0000478 -19-19APR11-2/5

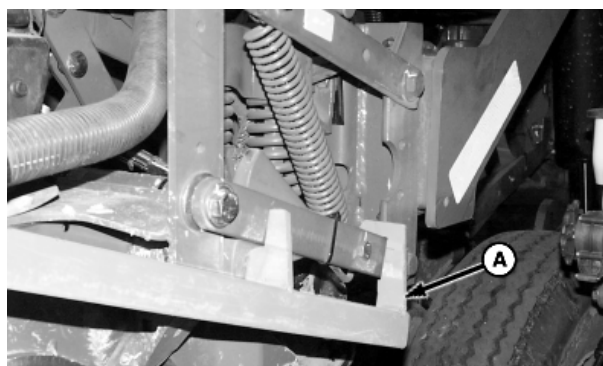
6. Place row unit lock-up latch (C) in notch (B) as shown.

NOTE: On machines with the rear hitch option, there is not enough clearance for lock-up bar (A) to attach to row unit nearest hitch. Extend drawbar cylinder and slowly lower frame until remaining row units unlock.

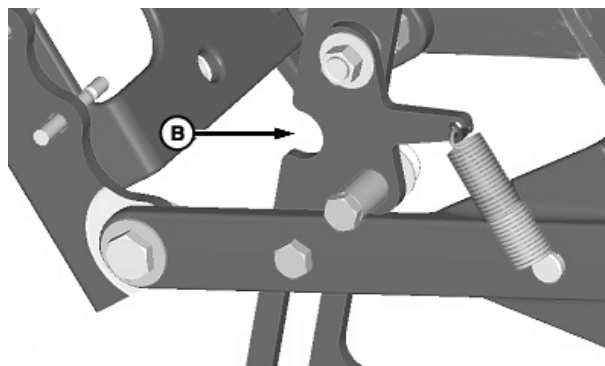
7. Unlock row units on rear rank using lock-up bar (A) as shown.
8. **Machines with rear hitch**, raise hitch and slowly lower frame until row units are at full length of travel.
9. Raise machine and confirm row units are in unlocked position.
10. Engage meter drive on all rear rank row units. See ENGAGE METER DRIVE in Operate Machine section.

A—Lock-Up Bar
B—Notch

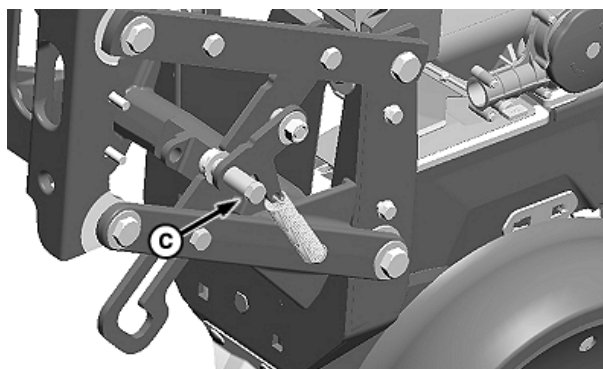
C—Lock-Up Latch



A51033 —UN—08NOV02



A60505 —UN—26JUL07



A60517 —UN—26JUL07

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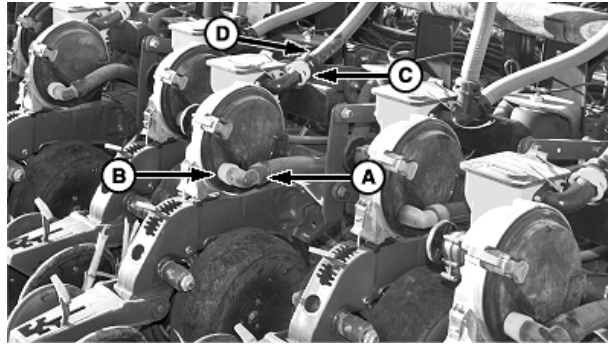
OUC06064.0000478 -19-19APR11-3/5

NOTE: Save all vacuum and seed delivery plugs for future use.

11. Remove vacuum hose (A) from row unit meters. Remove plug (B) from meter vacuum ports, and reinstall vacuum hoses to meters.
12. Remove seed delivery hose (C) from row unit meters. Remove plugs (D) from meter inlets and reinstall seed delivery hose to meters.

A—Vacuum Hose
B—Plug

C—Seed Delivery Hose
D—Plug



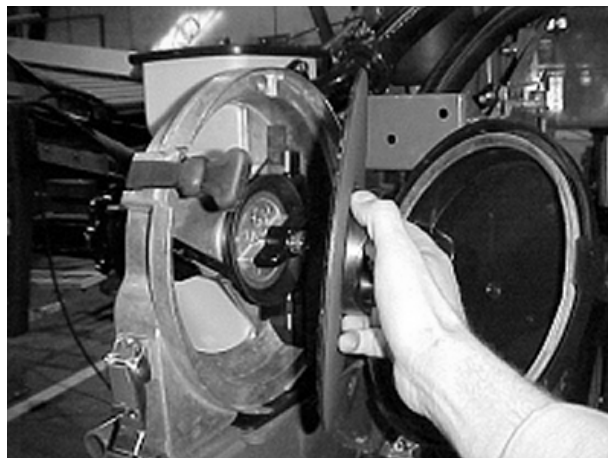
A62717—UN—24JUN08

OUO6064,0000478 -19-19APR11-4/5

13. Install proper seed disk in rear rank row units.
14. Pressurize all rows. (See INTEGRATED PNEUMATIC DOWN FORCE in your SeedStar 2™ and SeedStar XP™ Monitor Operator's Manual.)
15. Reset vacuum level.

NOTE: See your SeedStar™ Monitor Operator's Manual.

16. Change monitor settings to match number of rows planting.
 - Select Menu >> Planter button >> Rates softkey >> Select crop name for crop to be planted, and check appropriate check box for number of rows planting.
17. Make necessary adjustments to front rank row units for correct seed placement and seed trench closing.
18. Adjust marker to correct length for desired row spacing. See ADJUST MARKERS in this section.



Seed Disk

A50391—UN—26SEP02

OUO6064,0000478 -19-19APR11-5/5

Adjust Markers

1. Lower each marker and check length. If adjustment is necessary, proceed with following steps.
2. Loosen set screws (A).
3. Adjust marker tube (B) to correct dimension (C).

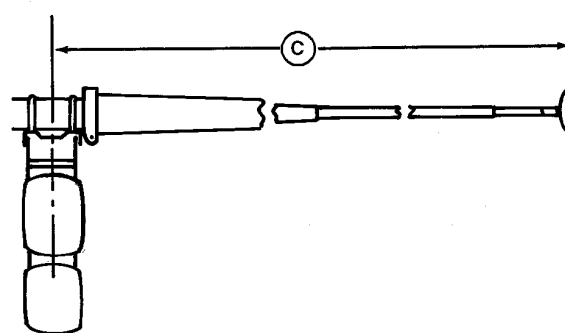
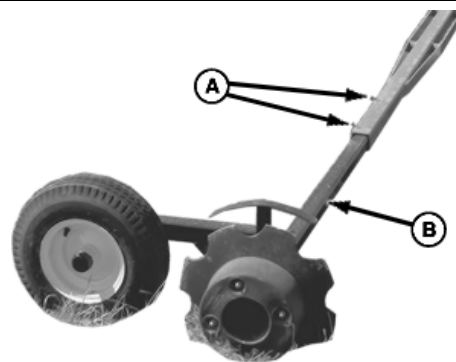
Measure from the center line of the planting unit to the marker disk with the marker in the lowered position.

Planter	Dimension "C"
DB44	6985 mm (275 in.)
DB58	9220 mm (363 in.)
DB60	9398 mm (370 in.)
DB60 24R 76 cm (30 in.) ^a	9525 mm (375 in.)
DB60 47R 38 cm (15 in.) ^b	9144 mm (360 in.)
DB66	10 338 mm (407 in.)
DB80	12 573 mm (495 in.)
DB88	12 573 mm (495 in.)
DB90	14 097 mm (555 in.)

^aDB60 24/47 row machine with rear row units locked up.

^bDB60 24/47 row machine using all rows.

4. Tighten nuts.
5. Dimension is approximate and must be verified in the field.



A—Set Screws
B—Marker Tube

C—Dimension

A50717 —UN—17OCT02

A50718 —UN—21OCT02

OUO6045.0000004 -19-09JUL09-1/1

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.

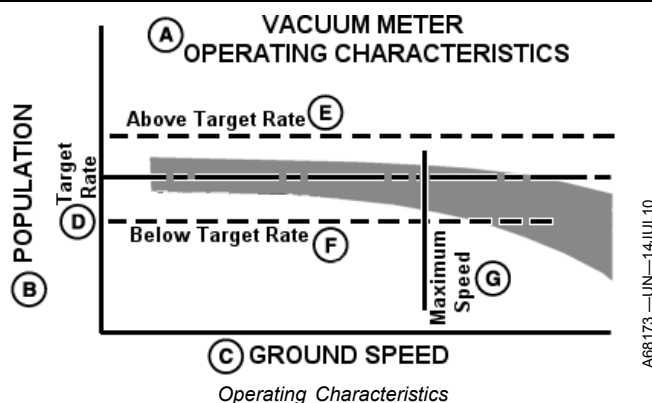
The maximum speed can vary based upon field conditions. Rough field conditions can knock seed off seed disks and can cause row unit bounce which can severely affect seed placement. Adding attachments such as pneumatic down force can improve seed placement in rough field conditions.

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.

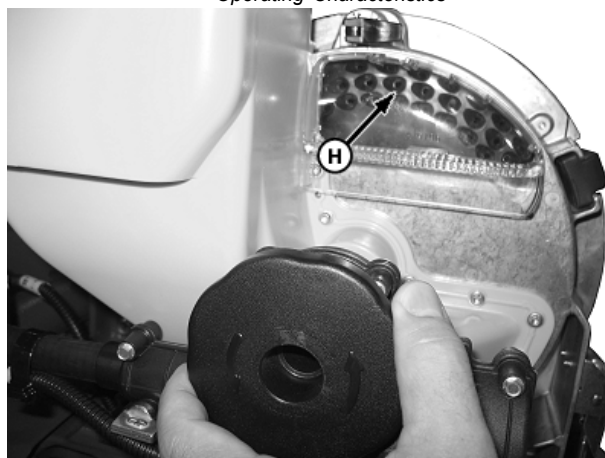
If seed varies widely in size and shape, a flat disk and double eliminator can provide better population control.

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)



A68173—UN—14JUL10



A68174—UN—14JUL10

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

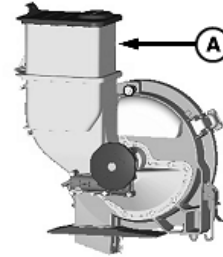
Agonomic Factors = Seed Germination + Soil Temperature + Moisture + Nutrients + Pest Control + Weather

OUO6045,0000706 -19-16JUL10-1/1

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.



A60365 —UN—27 JUN07

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.

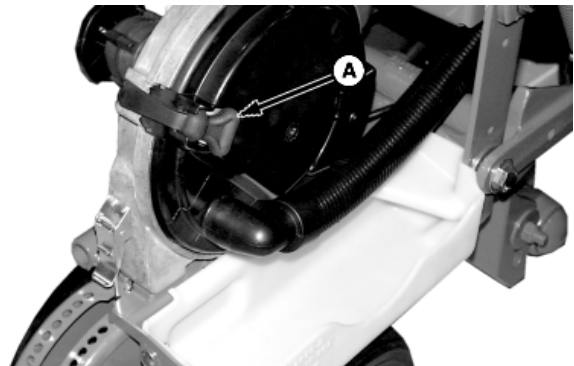
Pro-Series XP is a trademark of Deere & Company

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

Accessing The Vacuum Meter

Unhook rubber strap (A) and open meter door.

A—Rubber Strap



A49693 —UN—03DEC02

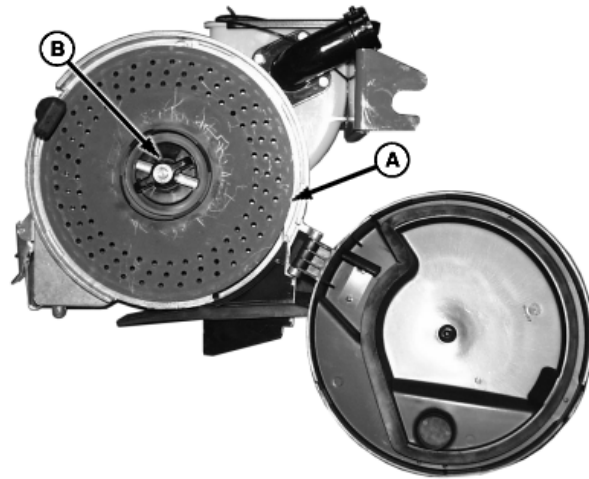
OUO6045,00006D3 -19-17APR09-1/1

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



A64538—UN—08APR09

OUC6045,000011F -19-09APR09-1/1

Brush Installation

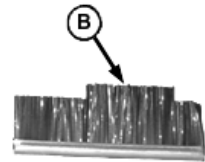
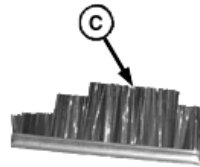
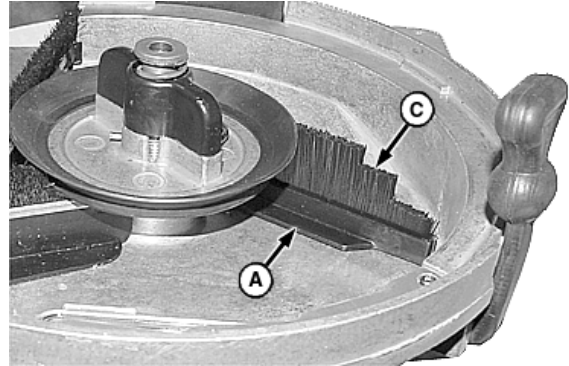
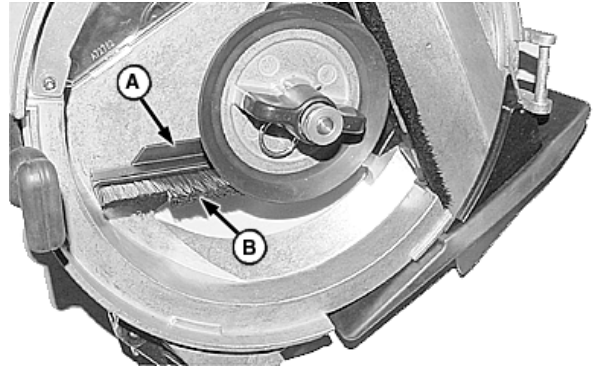
1. Open vacuum meter and remove seed disk.
2. Firmly hold brush holder (A) against meter housing with one hand while pulling brush from holder with other hand.

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



A53448 —UN—05DEC03

A53449 —UN—05DEC03

A53450 —UN—05DEC03

OUC6045,00006D4 -19-07JUN10-1/1

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.

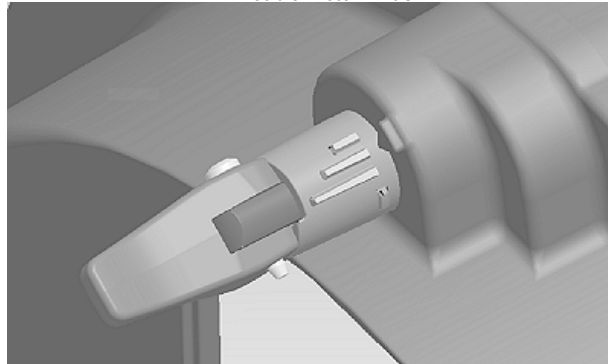
Double Eliminator Operating Tips:

- 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.



A60184 —UN—06JUN07

Double Notch Brush

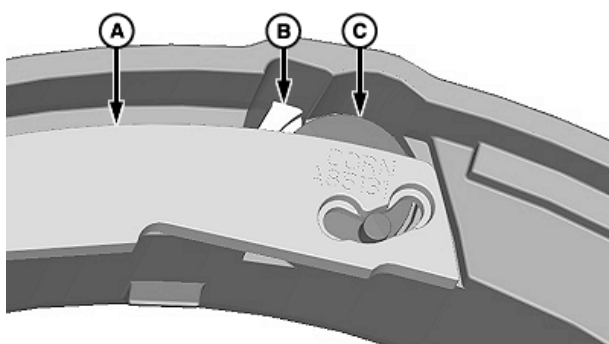


Latched and in Normal Operating Position

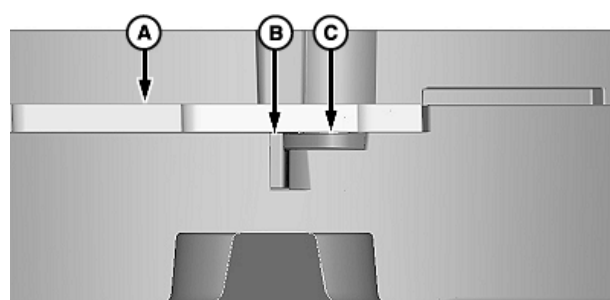
A60109 —UN—31MAY07

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OUC6045,0000A0E -19-08APR09-1/3



A60192 —UN—07JUN07



A60193 —UN—07JUN07

A—Plate

B—Detent Assembly

C—Crank

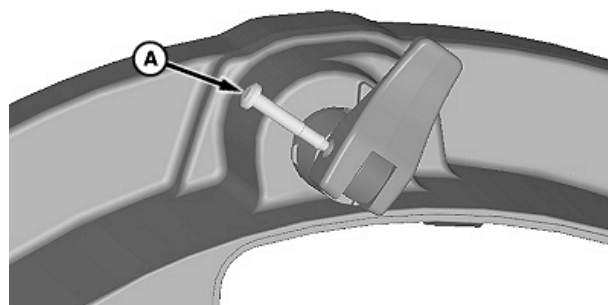
- If excessive wear is on surface of double eliminator plate (A) due to contact with seed disk, check the following:
 - a. Detent assembly (B) is seated fully in pocket.
 - b. Crank (C) is seated fully in bore.

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

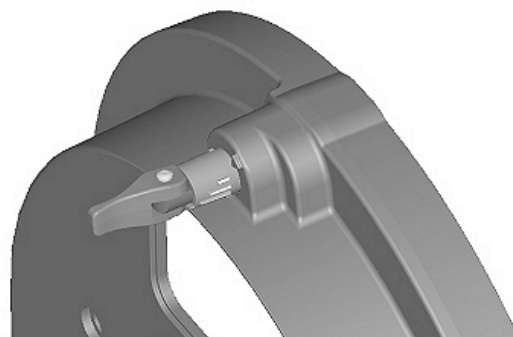
Double Eliminator Operation with Celled Disks:

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



A60198 —UN—07JUN07

A—Pin



A60180 —UN—06JUN07

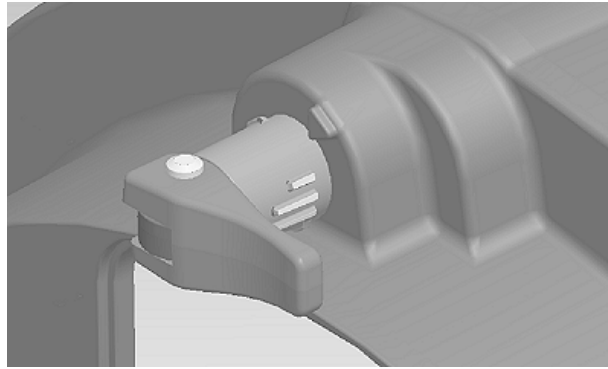
Latched in Storage Position, Celled Disk Use

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OUC6045,0000A0E -19-08APR09-2/3

Storage:

- Leave double eliminator unlatched in storage position.



Unlatched and in Storage Position

A60108 —UN—31MAY07

OOU6045,0000A0E -19-08APR09-3/3

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



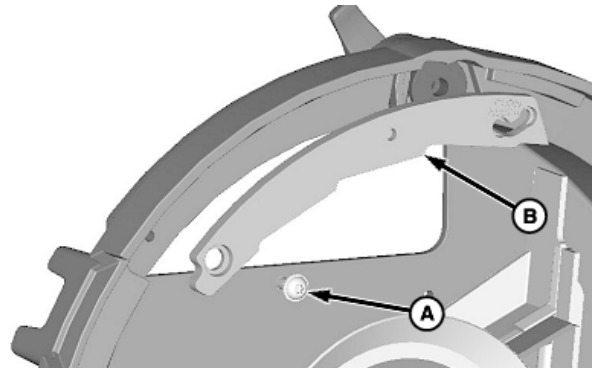
A49693 —UN—03DEC02

OOU6064,000016C -19-08JUN10-1/3

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

OOU6064,000016C -19-08JUN10-2/3

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

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

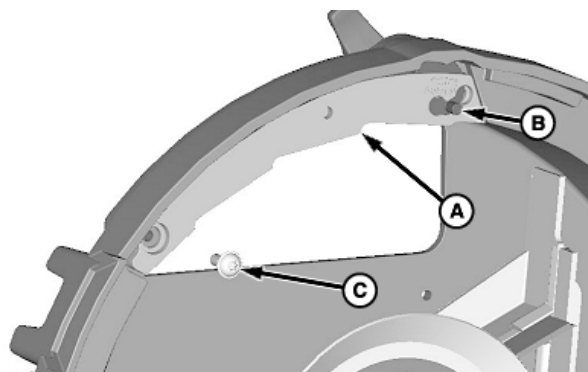
IMPORTANT: Make sure that shoulder screw is fully tightened against housing.

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

OUO6064,000016C -19-08JUN10-3/3

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.

OUO6074,0000ECD -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.

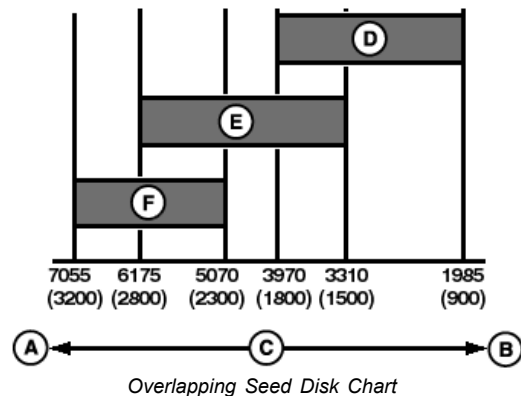
Metering performance is directly dependent on the consistency of seed sizing. Seeds that are mixed in shape and size do not perform optimally with cell-type disks. The ProMax 40 Disk (A52391) with double eliminator is required for optimum seed singulation and seed release when seeds vary in size.

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



A68464—UN—27 JUL 10

40 requires higher vacuum levels than cell type disks and requires the installation of a double eliminator and knockout wheel in each meter assembly.

- 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)

Continued on next page

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

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.

- 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.

SeedStar is a trademark of Deere & Company

- Use round seed. Round seed remains in the cell of a cell type disk better and reduces the chance for doubles.

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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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

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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.

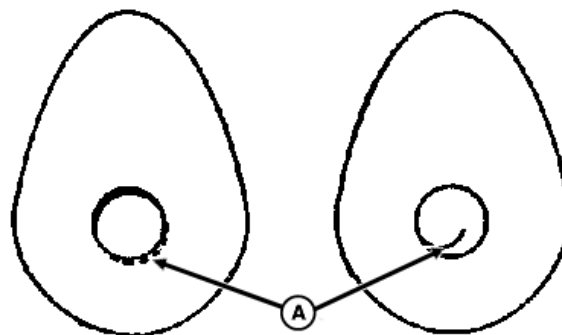
OUC6074,0000C40 -19-08APR09-2/2

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



A46242 —UN—27JUL00

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Install Seed Disk

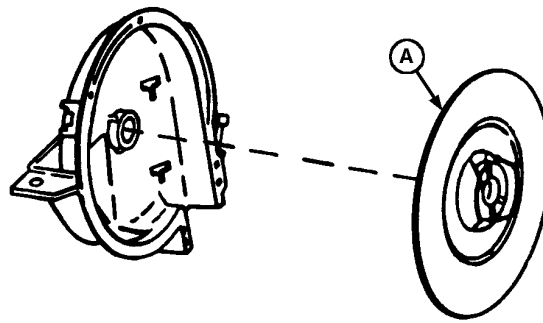
1. Open vacuum meter.
2. Fit seed disk (A) into housing. Hold seed disk stationary and rotate hub handle (B) into locked position.
3. Inspect hub adjustment. See ADJUST METER HUB in this section if the following conditions are not met.
 - ☐ Verify that the seed disk (A) continues to rotate approximately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



A51177 —UN—19NOV02



A46247 —UN—13JUN00

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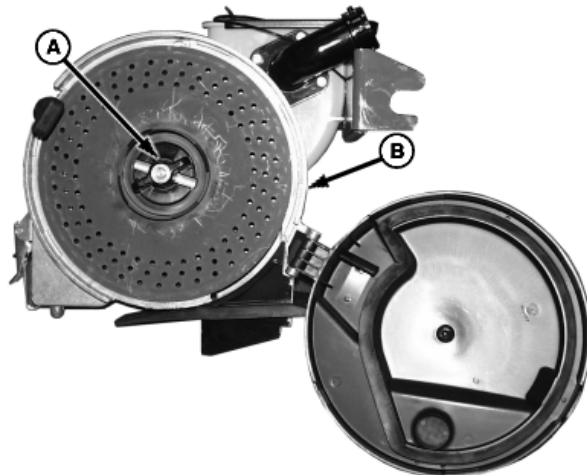
Adjust Meter Hub

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



A50298 —UN—11OCT02

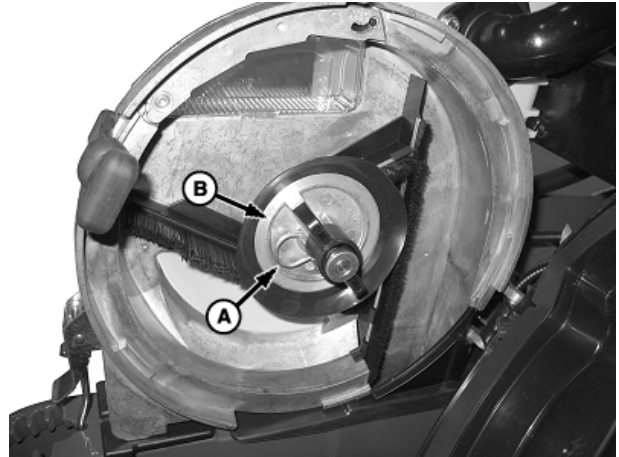
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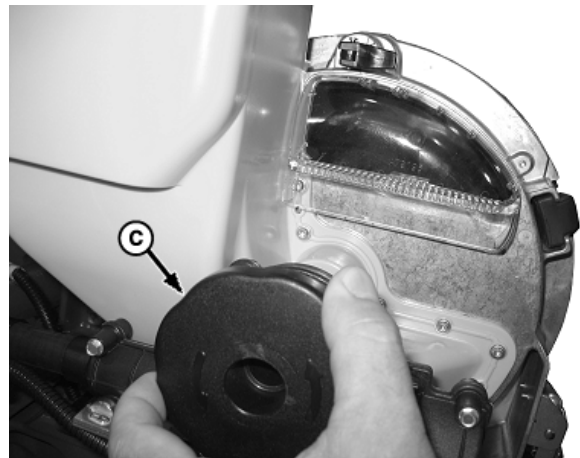
3. Remove spring clip (A).
4. Adjust hub (B).
 - Make small adjustments.
 - Hold meter hub handle (C).
 - Thread hub (B) clockwise to move seed disk closer to meter housing.
 - Thread hub (B) counterclockwise to move seed disk away from meter housing.
5. Align slot in hub with hole in shaft and install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

A—Spring Clip
B—Hub

C—Meter Hub Handle



A68171 —UN—14JUL10



A68172 —UN—14JUL10

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OUC6045,00006D9 -19-14JUL10-2/3

6. Install seed disk (A) and lock hub handle (B).
7. Inspect adjustment.
 - a. Spin and release disk rapidly by hand.
 - b. Observe 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



A61059 —UN—16OCT07



Storage

A44241 —UN—19NOV07

OUO6045,00006D9 -19-14JUL10-3/3

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).

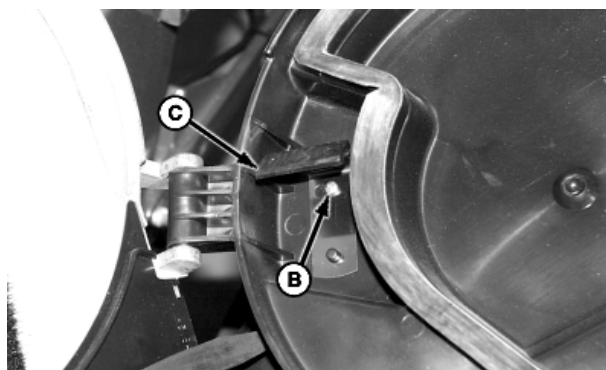
NOTE: When closing dome, verify that wheel is aligned with row of seed cells on seed disk.

A—Knockout Wheel
B—Screw

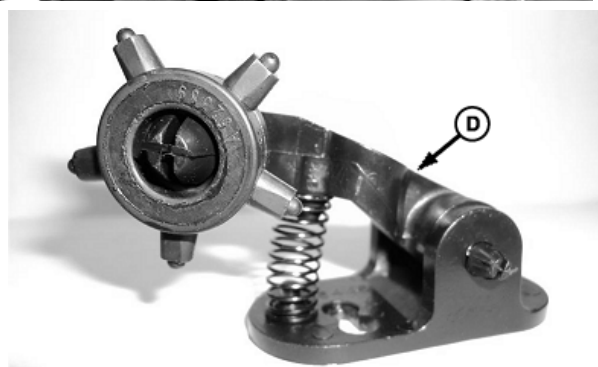
C—Wiper Assembly
D—Knockout Assembly



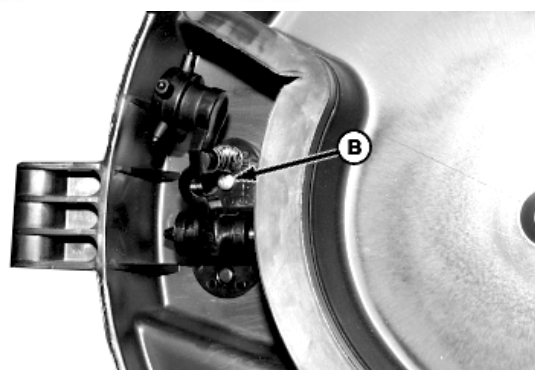
A51650—UN—04FEB03



A51175—UN—19NOV02



A68268—UN—16JUL10



A51651—UN—04FEB03

AG,OUO6074,1181 -19-16JUL10-1/1

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.

OUO6074,0000ED0 -19-08APR09-1/1

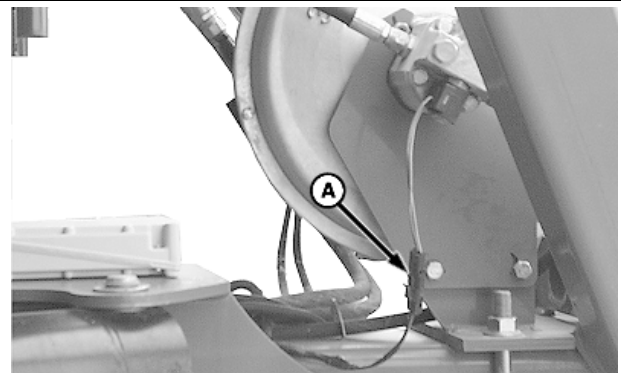
Install Hopper Extensions (Pro Only)

NOTE: When sugar beets are used or when using seed not approved for CCS bulk tank delivery, the seed 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.

Disable CCS fan when using the mini-hopper.

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

A—CCS Solenoid Harness



A54350 —UN—18MAY04

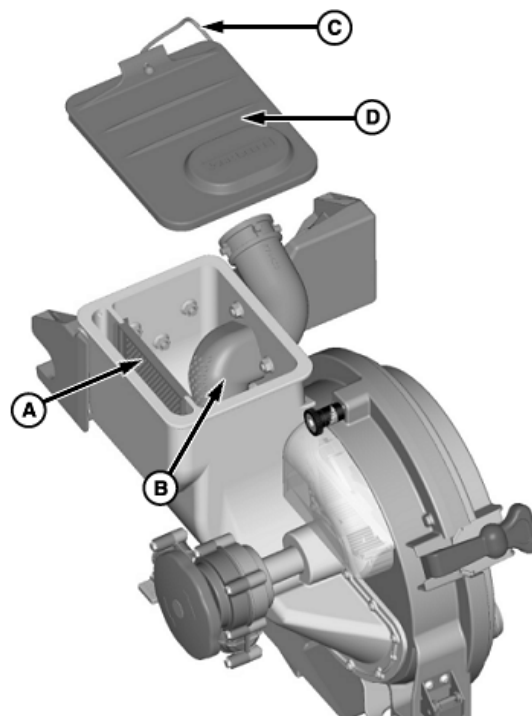
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OUO6435,0001DC1 -19-16JUL10-1/3

- 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

OUC6435,0001DC1 -19-16JUL10-2/3

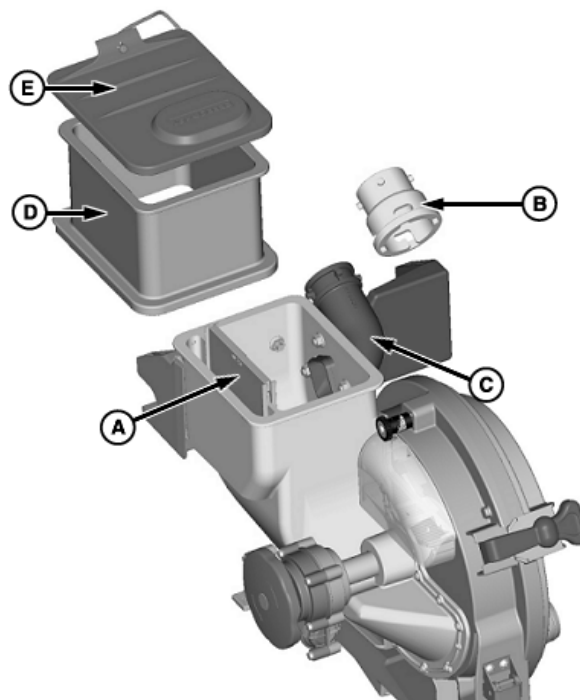
NOTE: Do not install more than two extensions onto a mini-hopper. If two extensions are added, order cap (B) from your John Deere™ dealer and install onto the CCS elbow (C). The cap prevents seed from flowing back into the CCS hose.

- 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
B—Cap
C—Elbow

D—Extension
E—Lid



A55144 —UN—31MAR06

OUC6435,0001DC1 -19-16JUL10-3/3

MaxEmerge™ 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.

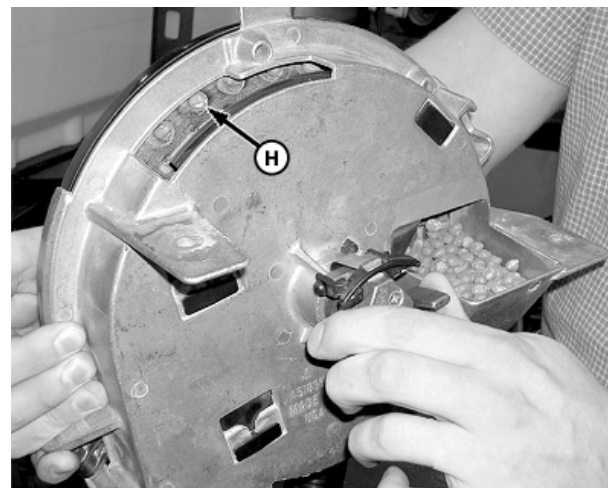
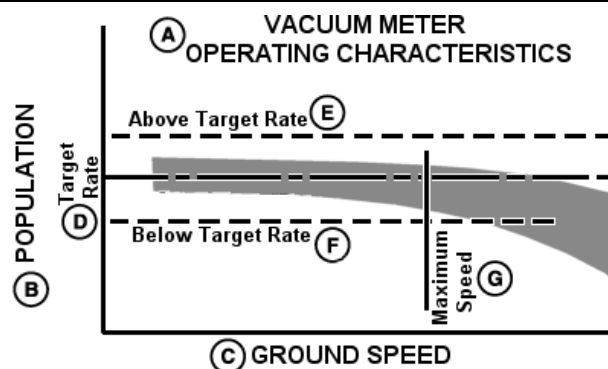
The maximum speed can vary based upon field conditions. Rough field conditions can knock seed off seed disks and can cause row unit bounce which can severely affect seed placement. Adding attachments such as pneumatic down force can improve seed placement in rough field conditions.

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:

- Remove meter from seed hopper.
- 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 (A) fits into each cell.



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—Seed

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

OUO6045,0000704 -19-14JUL10-1/1

A68173 —UN—14JUL10

A68177 —UN—14JUL10

Meter Settings

Crop	Disk	Brush	Baffle Position	Doubles Eliminator Initial Setting	Knockout Wheel
This table can be used as a quick reference for some common settings. For additional recommendations and adjustment information, see recommendations and adjustment procedures outlined in this section.					
Corn	Corn	Long	Upper	See Footnote ^a	No
Corn	ProMax 40	Long	Upper	Use inner cam slot. See Footnote ^b	Yes
Sweet Corn	ProMax 40 or Small Sweet Corn	Long	Upper	Use inner cam slot. See Footnote ^c	Yes
Oil Sunflower	Sunflower or Popcorn	Long	Lower	See Footnote ^a	No
Confectionary Sunflower	ProMax 40 or Small Sweet Corn	Long	Upper	Use inner cam slot. See Footnote ^c	Yes
Low Rate Cotton	Cotton 32 Cell	Long	Upper	See Footnote ^a	No
Cotton	Cotton 64 Cell	Long	Upper	See Footnote ^a	No
Cotton	Edible Bean Flat Type	Long	Upper	Use outer cam slot. See Footnote ^c	Yes
Four Seed Cotton Hilldrop	Cotton 48 Cell (4 seed drop)	Short	Upper	See Footnote ^a	No
Two Seed Cotton Hilldrop	Cotton 64 Cell (2 seed drop)	Long	Upper	See Footnote ^a	No
Low Rate Sorghum	Sorghum 45 Cell	Long	Lower	See Footnote ^a	Yes
High Rate Sorghum	Sorghum 90 Cell	Long	Lower	See Footnote ^a	Yes
Sorghum	Sugar Beet	Long	Lower	See Footnote ^a	Yes
Soybean	Soybean	Long	Upper	See Footnote ^a	No
Soybean	Cotton 64 Cell	Long	Upper	See Footnote ^a	No
Sugar Beet	Sugar Beet	Long	lower	See Footnote ^a	Yes
Small Edible Bean	Small Edible Bean Cell Type	Long	Upper	See Footnote ^a	No
Medium Edible Bean	Medium Edible Bean Cell Type	Short	Upper	See Footnote ^a	No
Large Edible Bean	Large Edible Bean Cell Type	Short	Upper	See Footnote ^a	No
Small, Medium and Large Edible Beans	Edible Bean Flat Type	Long	Upper	Use outer cam slot. See Footnote ^c	Yes
Runner and Spanish Peanut	Large Edible Bean Cell Type	Short	Upper	See Footnote ^a	No
Virginia Peanut	Virginia Peanut	Short	Upper	See Footnote ^a	No

^aDouble eliminator not used with this disk. If installed, move tip of eliminator away from center of meter as far as possible.

^bSet eliminator with far right tooth covering 50 percent of the hole for most corn seed sizes (See Adjust Double Eliminator section).

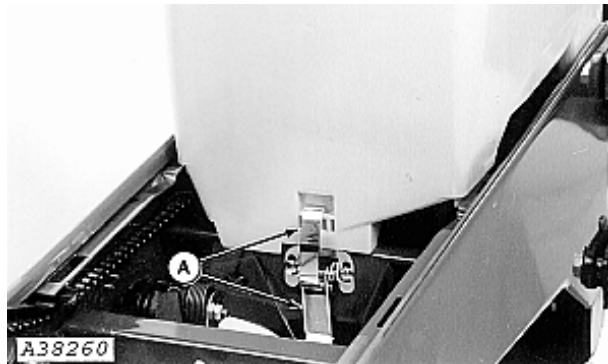
^cAdjust tip of eliminator towards center of meter as far as possible.

OUO6074,0000E64 -19-14JUL10-1/1

Accessing The Vacuum Meter

1. Disengage hopper latch (A). Lift hopper upward then rearward to remove from planting unit.

A—Hopper Latch



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AG,OUO6074,1177 -19-09APR09-1/4

2. Remove vacuum hose (A) from metering unit.

A—Vacuum Hose

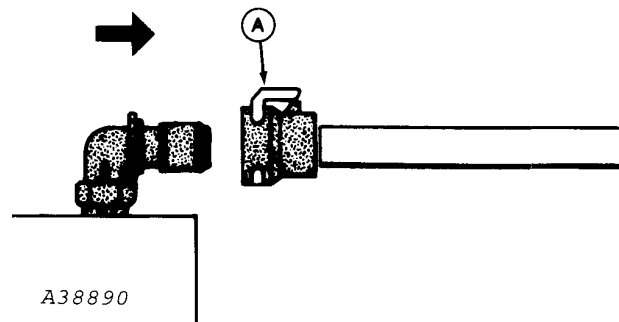


A54242 —UN—08APR04

AG,OUO6074,1177 -19-09APR09-2/4

3. Squeeze retainer (A) and pull vacuum monitoring hose out of connector on units attached to monitor.

A—Retainer



A38890

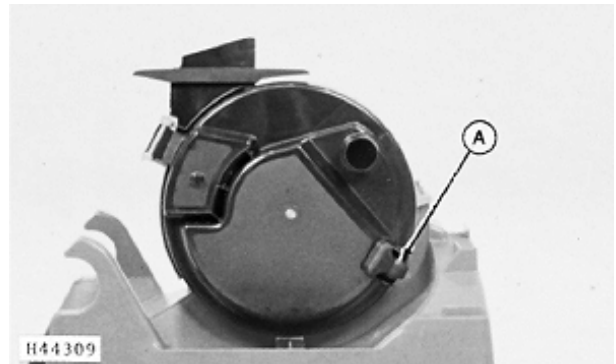
A38890 —UN—12JAN96

AG,OUO6074,1177 -19-09APR09-3/4

IMPORTANT: Use precautions as recommended by chemical manufacturers when handling parts coated with seed treatments. Use proper skin, eye and respiratory protection.

4. Disengage handle (A) and swing vacuum chamber open.

A—Handle



H44309

H44309 —UN—14APR92

AG,OUO6074,1177 -19-09APR09-4/4

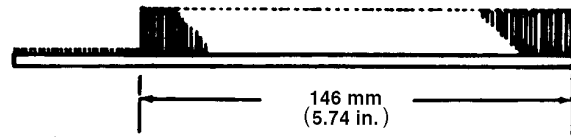
Select Correct Vacuum Meter Brush

An incorrect vacuum meter brush can cause under population of edible beans, peanuts, and hilldrop cotton.

Two vacuum meter brushes are available:

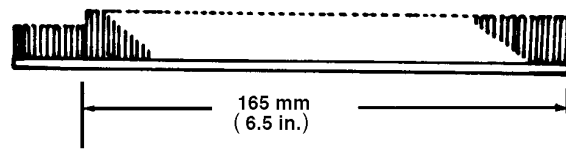
- Use short brush for medium and large edible beans, peanuts, and four cell hilldrop cotton disks.
- Use regular (long) brush for all other crops.

Refer to METER SETTINGS in this section for brush selection recommendations.



Short Brush

A45377 —UN—21SEP00



Regular (Long) Brush

A45378 —UN—21SEP00

OUO6074,0000C02 -19-13JUL10-1/1

Changing Vacuum Meter Brush

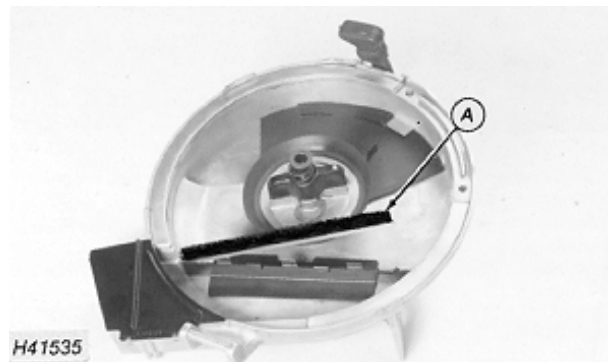
1. Open vacuum meter. See ACCESSING THE VACUUM METER in this section.
2. Remove existing brush.
3. Install either the long or short brush as recommended in the Vacuum Meter Rate Charts section.

NOTE: Brush must be installed with notch (A) on side shown for proper operation.

4. Snap brush into slot until it contacts side of meter housing (B).

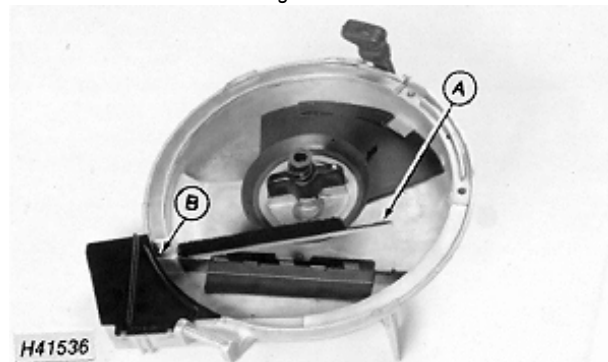
A—Notch

B—Meter Housing



Long Brush Shown

H41535 —UN—04MAY90



Short Brush Shown

H41536 —UN—04MAY90

AG,OUO6074,1186 -19-09APR09-1/1

Adjust Vacuum Meter Baffle

1. Open vacuum meter. (See METER SETTINGS in this section.)

NOTE: Lower position (B) is recommended for smaller seeds such as: sugar beets, sorghum, oil sunflower, and popcorn.

Upper position (C) is recommended for larger seeds such as: corn, soybeans, cotton, edible beans, peanuts, sweet corn, and confectionary sunflower.

2. Move tab (A) to the position recommended in the METER SETTINGS table in this section.

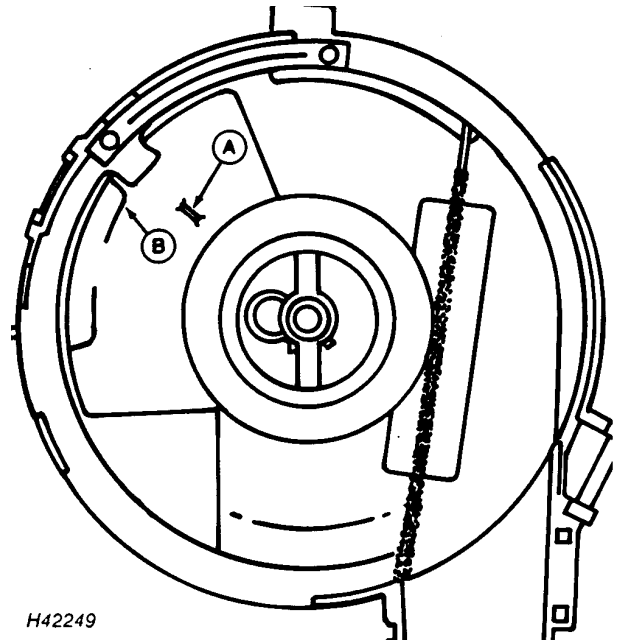
Seed bridging at meter inlet can result in long skips when planting. If this condition occurs, adjust baffle to upper position (C) and add talc lubricant generously.

NOTE: Lowering the baffle does NOT eliminate an overfilled vacuum meter caused by extremely rough field conditions. Increase down force on row unit and reduce planting speed to avoid overfilling.

If meters overfill or overpopulation occurs when planting on hillsides, reduce planting speed. Overfilled meters can occur when planting on hillsides. Overpopulation can occur on hillsides because the tabs on seed disks can hold and carry seed past the meter brush and into seed tube. When planting in hillside conditions, use round seeds and, in some conditions, flat seed disks to provide the best performance.

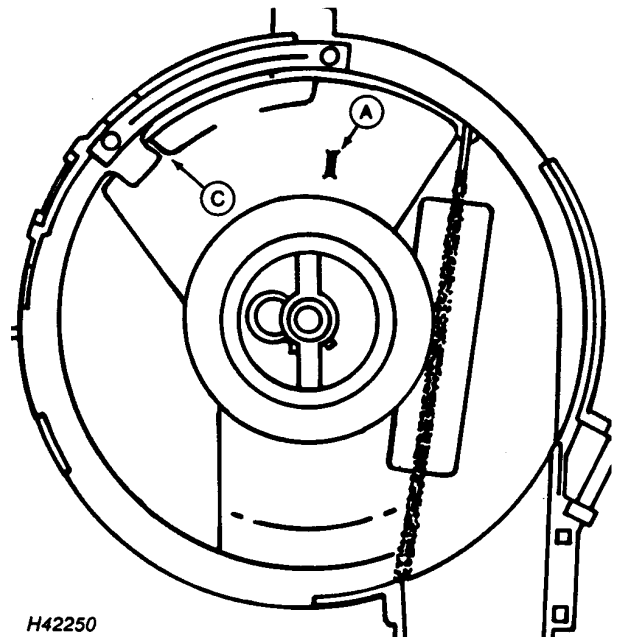
A—Tab
B—Lower Position

C—Upper Position



H42249

Lower Baffle Position



H42250

Upper Baffle Position

H42249 —UN—19JUN90

H42250 —UN—19JUN90

AG,OUO6074,1178 -19-14JUL10-1/1

Seed Knockout Wheel Operation

The seed knockout wheel (A) is used to ensure that certain seed types are fully released from seed cell. Wheel projections engage seed cell holes, forcing all seeds and foreign material to be ejected.

The seed knockout wheel is required when planting sorghum, mono-germ sugar beet and seed planted with flat type seed disks. Sugar beet and sweet corn seed can have sharp edges and is typically irregular in shape, creating a potential for seeds to become lodged in the seed cell. Some sorghum seed contains large amounts of foreign material which can also become trapped in cell or cell holes.



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.

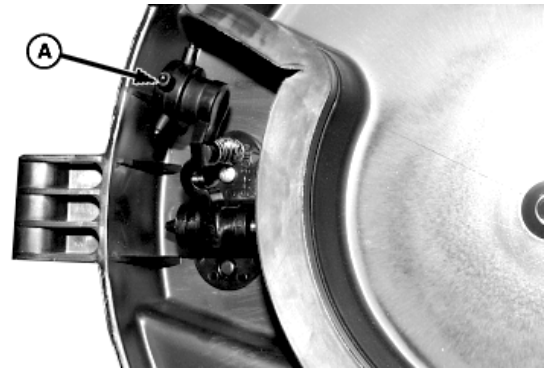
NOTE: Refer to **METER SETTINGS** in this section for knockout wheel recommendations.

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).

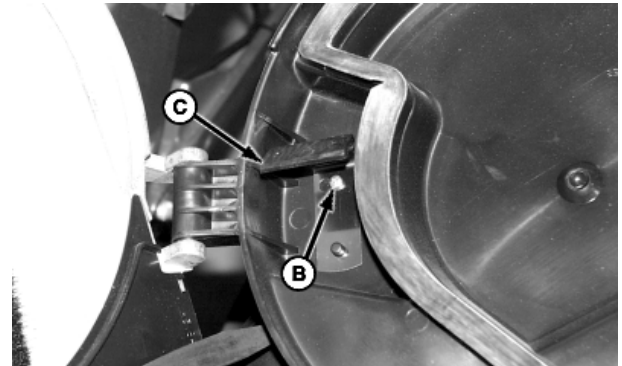
NOTE: When closing dome, verify that wheel is aligned with row of seed cells on seed disk.

A—Knockout Wheel
B—Screw

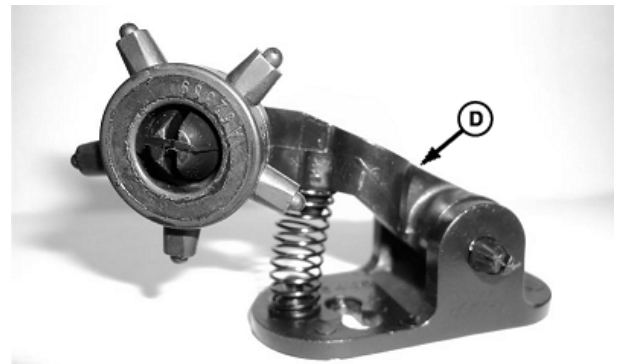
C—Wiper Assembly
D—Knockout Assembly



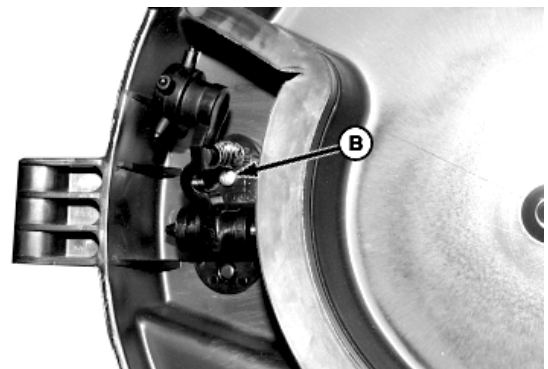
A51650 —UN—04FEB03



A51175 —UN—19NOV02



A68268 —UN—16JUL10



A51651 —UN—04FEB03

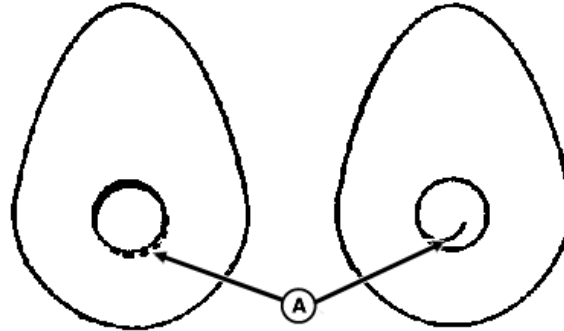
AG,OUO6074,1181 -19-16JUL10-1/1

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



A46242 —UN—27JUL00

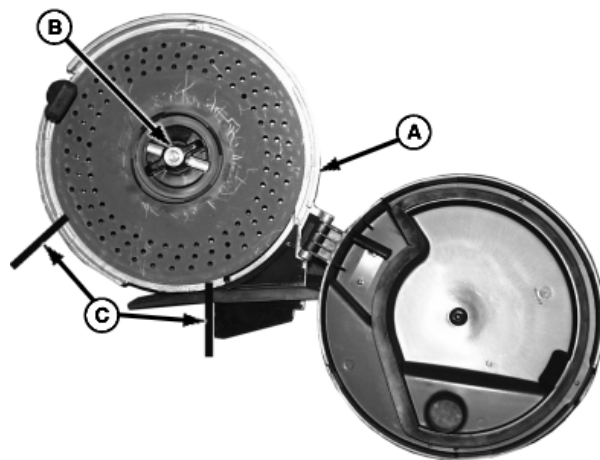
AG,OUO6074,1176 -19-09APR09-1/1

Install Seed Disk

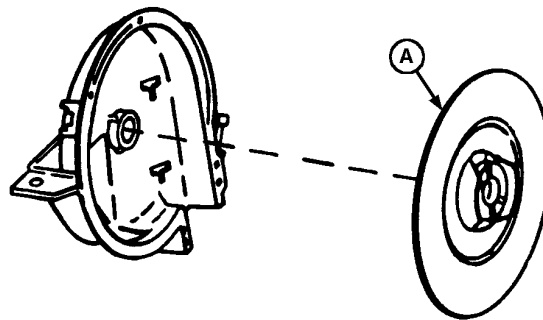
1. Open vacuum meter.
2. Fit seed disk (A) into housing. Hold seed disk stationary and rotate hub handle (B) into locked position.
3. Inspect hub adjustment. See ADJUST METER HUB in this section if the following conditions are not met.
 - ☐ Verify that the seed disk (A) continues to rotate approximately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



A51177 —UN—19NOV02



A46247 —UN—13JUN00

OUO6045,00006D8 -19-14JUL10-1/1

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



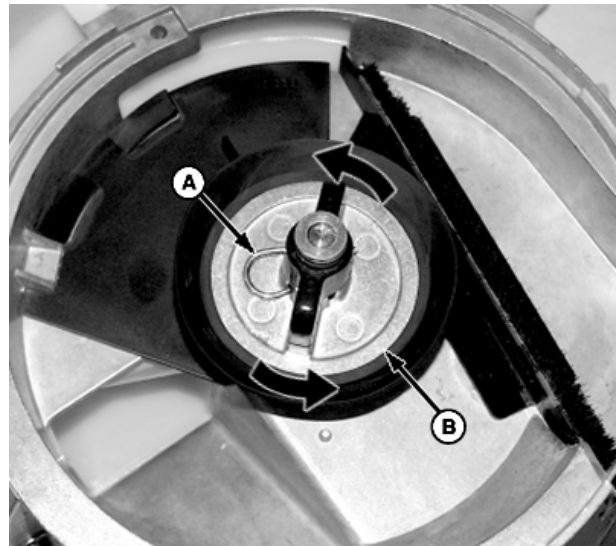
A51176 —UN—19NOV02

OUC6074,00008A0 -19-17APR09-1/3

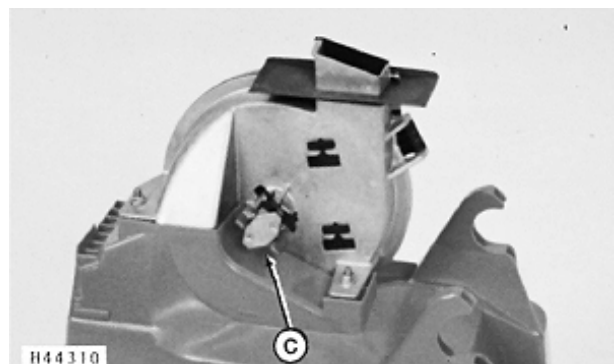
3. Remove spring clip (A).
4. Adjust hub (B).
 - Make small adjustments.
 - Hold meter drive (C).
 - Thread hub (B) clockwise to move seed disk closer to meter housing.
 - Thread hub (B) counterclockwise to move seed disk away from meter housing.
5. Align slot with hole in shaft and install spring clip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

A—Spring Clip
B—Hub

C—Meter Drive



A51320 —UN—02DEC02



H44310 —UN—14APR92

Continued on next page

OUC6074,00008A0 -19-17APR09-2/3

6. Install seed disk (A) and lock hub handle (B).
7. Inspect adjustment.
 - a. Spin and release disk rapidly by hand.
 - b. Observe 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 hole. Store away from high heat and sunlight.

8. Rotate disk slowly by hand and observe disk contact with housing in area (C). If a gap appears as disk is rotated, replace disk.

A—Seed Disk
B—Hub Handle

C—Area



A61059 —UN—16OCT07



Storage

A44241 —UN—19NOV07

OUC6074,00008A0 -19-17APR09-3/3

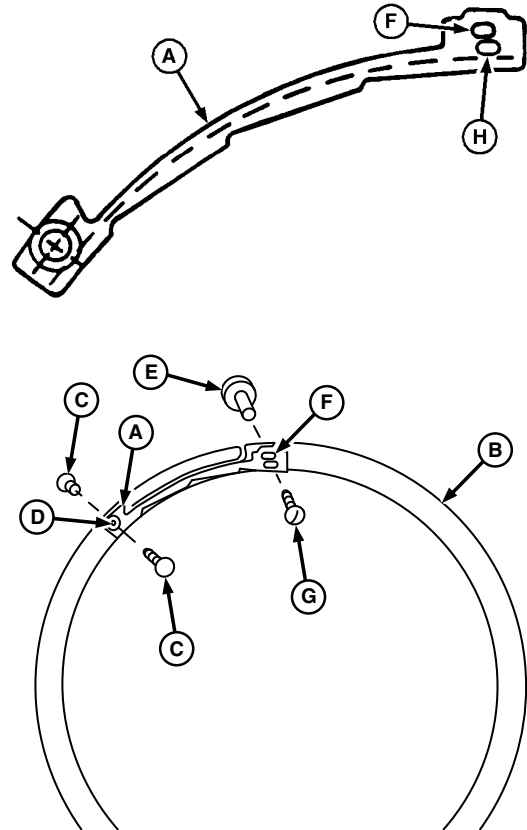
Install Double Eliminator for ProMax 40, Small Sweet Corn, or Edible Bean Disks

Double eliminator (A) is used to remove one of two seeds covering a single hole in disk. The ridged design and slotted holes allow gradual coverage of hole in disk.

Hole (H) is used for ProMax 40 and small sweet corn disk.
Hole (F) is used for the edible bean disk.

1. Open vacuum meter. See ACCESS THE VACUUM METER in this section.
2. Remove meter from hopper. Save wing nuts.
3. Install double eliminator (A) in housing (B).
4. Insert dual-lock fasteners (C) through housing and hole (D) of double eliminator (A).
5. Insert cam nut (E) and screw (G) through hole (F) or (H) (depending on seed disk). DO NOT tighten.

A—Double Eliminator Cam	E—Cam Nut
B—Housing	F—Hole, Edible Bean
C—Fasteners	G—Screw
D—Hole, Dual-Lock Fastener	H—Hole, ProMax 40, or Small Sweet Corn

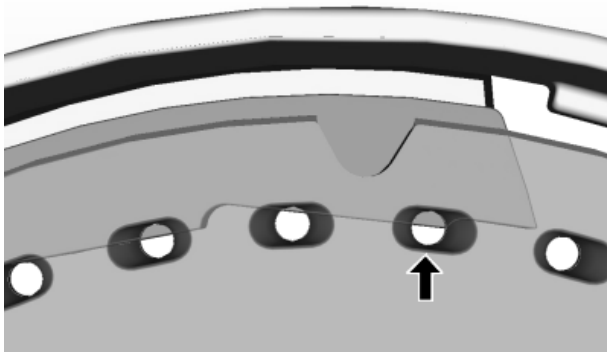


A60576 —UN—09AUG07

A60577 —UN—09AUG07

OUO6074,000083C -19-07JUL10-1/1

Adjust Double Eliminator for 50 Percent Hole Coverage with ProMax 40 Disk



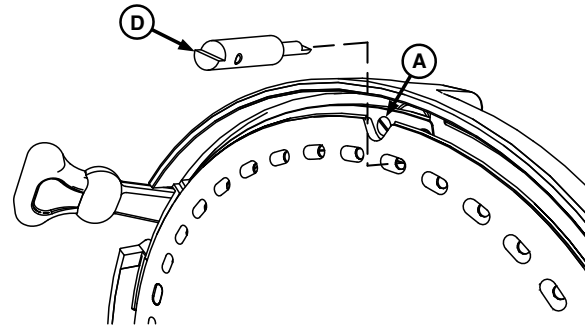
A68132 —UN—14JUL10

Outline of 50 Percent Hole Coverage

1. Loosen double eliminator screw (A). Double eliminator must move freely.
2. Ensure double eliminator is set for ProMax 40 disk. (See INSTALL DOUBLE ELIMINATOR in this section.)
3. Install a ProMax 40 disk in meter.
4. Turn handle clockwise to latch disk in place.
5. Rotate disk until screw (A) is centered in notch (B) of disk.

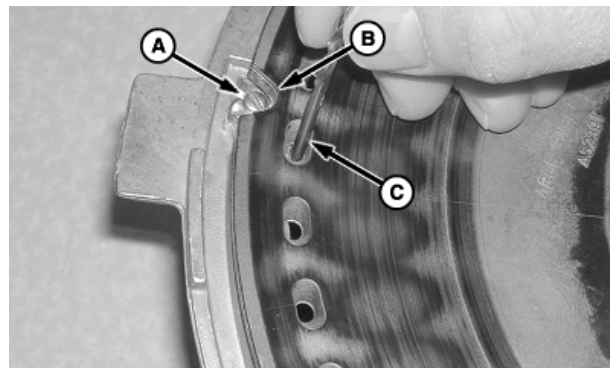
NOTE: Contact your John Deere™ dealer for adjustment tool JDG10965.

6. Insert adjustment tool (D) or shank of a 2.5 mm (3/32 in.) drill bit (C) into disk hole.
7. Position double eliminator against tool or drill bit, so highest ridge on double eliminator is in light contact with tool or drill bit.
8. Press firmly on disk, double eliminator, and cam nut. Tighten screw so double eliminator cannot move.
9. Remove tool or drill bit. Double eliminator is now set for 50 percent hole coverage.
10. A setting with 50 percent hole coverage is optimal for most sizes of field corn. For extremely small or large



A68131 —UN—13JUL10

Adjustment Tool Method



A64539 —UN—08APR09

Drill Bit Method

A—Screw
B—Notch

C—Shank of 2.5 mm (3/32 in.)
Drill Bit
D—Adjustment Tool

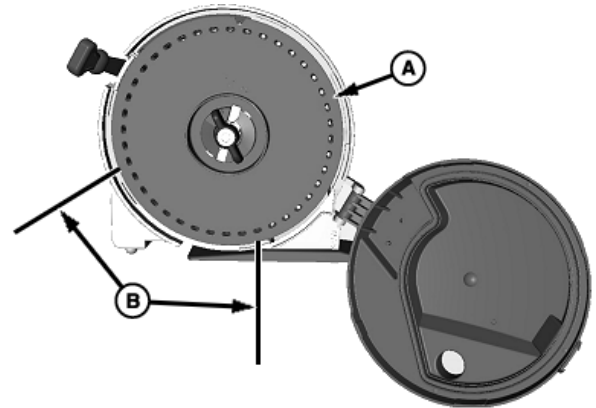
seeds, loosen screw (A) and turn cam nut to increase or decrease hole coverage. The objective is to adjust the double eliminator to dislodge one of two seeds covering a single hole while allowing single seeds covering a single hole to pass by undisturbed. When double eliminator is in position, tighten screw.

Continued on next page

OUC6074,0000A46 -19-14JUL10-1/2

NOTE: Seed disk must turn smoothly with light contact. A small gap between seed disk and housing is acceptable. Seed must not pass between disk and meter. To improve inspection process, place a small amount of seed in meter.

11. Turn seed disk (A) by hand and inspect gap between disk and meter in area (B). If disk turns too hard or if seed passes through gap, adjust hub position. (See ADJUST METER HUB in this section.)
12. Close meter and attach to hopper using wing nuts previously removed.
13. Set all rows the same.
14. Plant a short distance, then perform a field check to determine seed delivery and meter performance. Adjust individual meters as necessary.



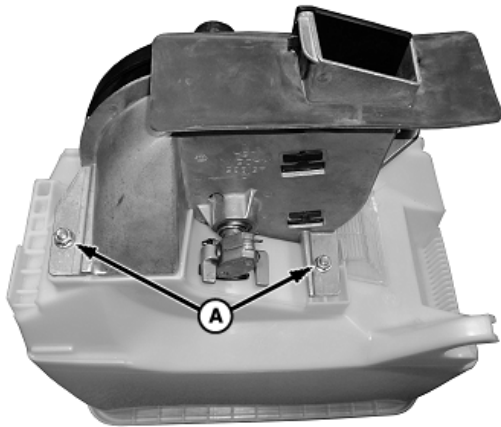
A—Disk

B—Inspection Area

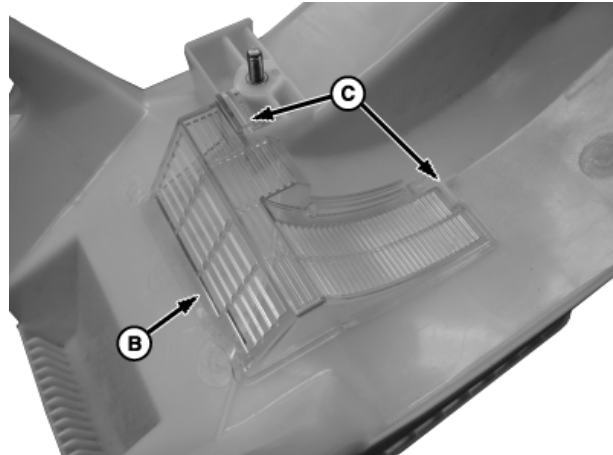
A68133 —UN—13JUL10

OUO6074,0000A46 -19-14JUL10-2/2

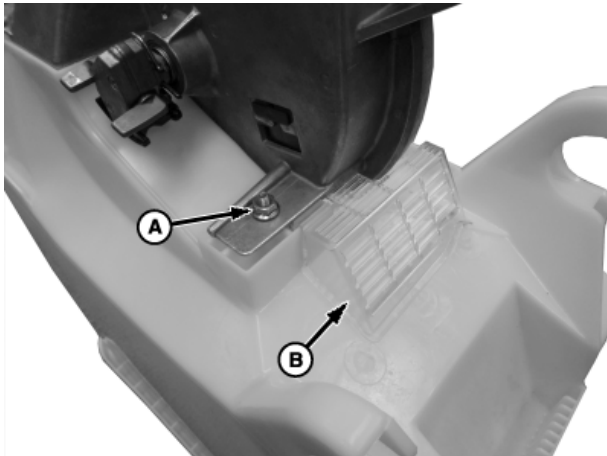
Install Meter Inlet Screen



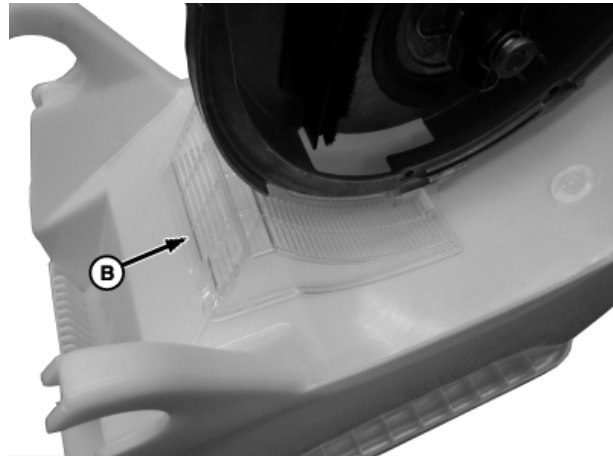
A68445 —UN—26JUL10



A68446 —UN—26JUL10



A68447 —UN—26JUL10



A68448 —UN—26JUL10

A—Nuts

B—Screen

C—Tabs

Planting in high residue field conditions can cause pieces of crop residue to build up in the vacuum meter. Meter inlet screens (B) are available from a John Deere™ dealer to prevent crop residue from entering the meter.

To install:

1. Remove hopper and meter from row unit (refer to ACCESSING THE VACUUM METER in this section).
2. Loosen meter nuts (A) and remove meter from hopper.
3. Place inlet screen (B) onto hopper and align with tabs (C).
4. Replace meter and tighten meter nuts.
5. Install meter and hopper on row unit.

OUO6074,0000A51 -19-26JUL10-1/1

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.

OUC6074,0000ECD -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.

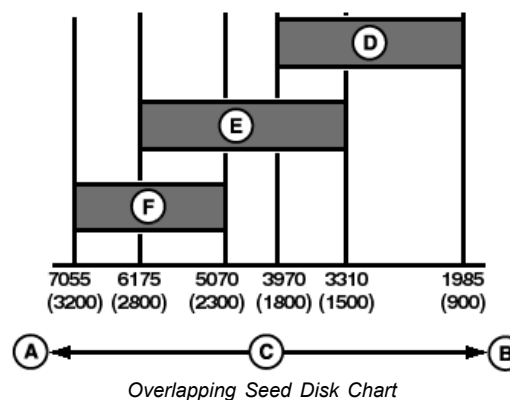
Metering performance is directly dependent on the consistency of seed sizing. Seeds that are mixed in shape and size do not perform optimally with cell-type disks. The ProMax 40 Disk (A52391) with double eliminator is required for optimum seed singulation and seed release when seeds vary in size.

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



- 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

40 requires higher vacuum levels than cell type disks and requires the installation of a double eliminator and knockout wheel in each meter assembly.

- 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)

Continued on next page

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

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.

- 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.

SeedStar is a trademark of Deere & Company

- Use round seed. Round seed remains in the cell of a cell type disk better and reduces the chance for doubles.

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.

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.

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

MONO-GERM SUGAR BEETS

Disk Name	Part Number	Seed Size	Number of Cells	Hole Diameter (mm)
Small Sugar Beet	A51712	2.6—3.2 mm Seed	45	1.5
Small and Medium Sugar Beet	H136445	3.0—3.6 mm Seed	45	1.5
Large Sugar Beet	A51713	3.4—4.0 mm Seed	45	1.6

PELLETED SUGAR BEETS

Disk Name	Part Number	Seed Size	Number of Cells	Hole Diameter (mm)
Small and Medium Sugar Beet	H136445	3.2—4.0 mm Seed	45	1.5
Large Sugar Beet	A51713	3.6—4.6 mm Seed	45	1.5
Sorghum	A43066	3.6—4.6 mm Seed	45	1.5

SMALL EDIBLE BEAN - Cell Disk H136468

Seed	Seeds/kg	Seeds/lb	Number of Cells	Hole Diameter (mm)
Black Turtle	4180 to 5720	1900 to 2600	108	3.5
Navy	3960 to 5500	1800 to 2500	108	3.5
Pink Viva	3740 to 4290	1700 to 1950	108	3.5
Small White	5280 to 6600	2400 to 3000	108	3.5
Smooth Pea	6160 to 7040	2800 to 3200	108	3.5

MEDIUM EDIBLE BEAN - Cell Disk A51696

Seed	Seeds/kg	Seeds/lb	Number of Cells	Hole Diameter (mm)
Blackeyed Pea	3520 to 4400	1600 to 2000	56	4
Green Beans (Garden)	2200 to 4840	1000 to 2200	56	4
Kidney (Small)	2530 to 3080	1150 to 1400	56	4
Pinto	1760 to 3080	800 to 1400	56	4
Red Mexican (Small)	2640 to 3300	1200 to 1500	56	4
Wrinkle Pea	3960 to 5060	1800 to 2300	56	4

LARGE EDIBLE BEAN - Cell Disk H136092

Seed	Seeds/kg	Seeds/lb	Number of Cells	Hole Diameter (mm)
Cranberry Bean	1760 to 2640	800 to 1200	50	4.8
Kidney (Medium)	2090 to 2530	950 to 1150	50	4.8
Great Northern	1980 to 2860	900 to 1300	50	4.8
Garbanzo	1650 to 1980	750 to 900	50	4.8
Peanuts (Runner)	1430 to 1760	650 to 800	50	4.8
Peanuts (Spanish)	2200 to 2750	1000 to 1250	50	4.8

EDIBLE BEAN - Flat Disk A52903 Small

Edible Bean Seed - Small	Seeds/kg	Seeds/lb	Number of Cells	Hole Diameter (mm)
Green Garden, Small	3520 to 5280	1600 to 2400	50	3.75
Black Turtle	4180 to 5720	1900 to 2600	50	3.75
Navy	3960 to 5720	1800 to 2600	50	3.75
Small White	5280 to 7260	2400 to 3300	50	3.75
Edible Peas	Seeds/kg	Seeds/lb	Number of Cells	Hole Diameter (mm)
Wrinkle	3740 to 5060	1700 to 2300	50	3.75

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OUO6074,0000ECF -19-09APR09-2/3

EDIBLE BEAN - Flat Disk A52904 Medium

Edible Bean Seed - Medium	Seeds/kg	Seeds/lb	Number of Cells	Hole Diameter (mm)
Green Garden, Medium	2640 to 3520	1200 to 1600	50	4.5
Small Red	2640 to 3300	1200 to 1500	50	4.5
Pinto	All Sizes		50	4.5
Medium Kidney	2530 to 3080	1150 to 1400	50	4.5
Lima	2640 to 3520	1200 to 1600	50	4.5
Corn Seed	3300 to 7040	1500 to 3200	50	4.5
Pink Viva	3740 to 4180	1700 to 1900	50	4.5
Edible Peas	Seeds/kg	Seeds/lb	Number of Cells	Hole Diameter (mm)
Black-eyed	3520 to 4400	1600 to 2000	50	4.5
Smooth	6160 to 7040	2800 to 3200	50	4.5

EDIBLE BEAN - Flat Disk A52878 Large

Edible Bean Seed - Large	Seeds/kg	Seeds/lb	Number of Cells	Hole Diameter (mm)
Green Garden, Large	1540 to 2640	700 to 1200	50	5.0
Cranberry	1760 to 2640	800 to 1200	50	5.0
Large Kidney	1870 to 2530	850 to 1150	50	5.0
Great Northern	1980 to 2860	900 to 1300	50	5.0
Garbanzo	1650 to 1980	750 to 900	50	5.0

VIRGINIA PEANUT

Part No. H138722 is recommended for seed sizes ranging from 1100 seeds/kg to 1760 seeds/kg (500 seeds/lb to 800 seeds/lb). It has 46 cells with 5.3 mm diameter holes.

BLANK SEED DISK

Part No. A52554

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

OUO6074.0000ECF -19-09APR09-3/3

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.

OUO6074.0000ED0 -19-08APR09-1/1

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 can be damaged.

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



Connect Case Drain First

A—Motor Seal (Case) Drain Hose

A53393 —UN—25NOV03

OUC6074,0000984 -19-12MAY09-1/1

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

OUC6074,0000984 -19-22MAY09-1/1

Check Hydraulic System

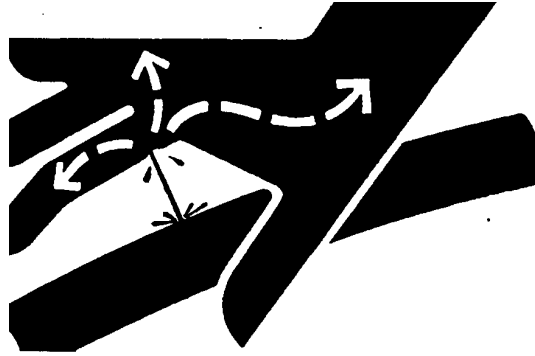
CAUTION: Escaping fluid under pressure can penetrate skin causing serious injury.

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 removed within a few hours or gangrene can occur. 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.

X9811—UN—23AUG88

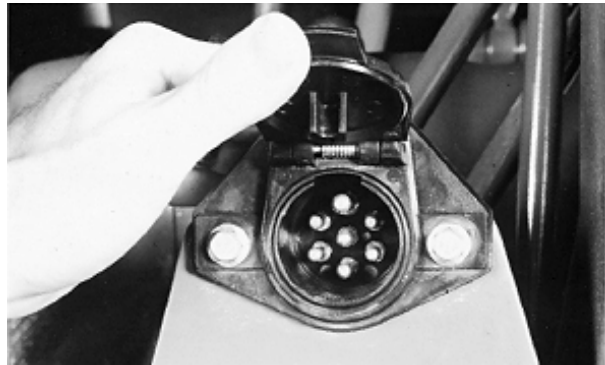
OUC6074,000080D -19-21MAY09-1/1

Attach Warning Light Harness

NOTE: Before connecting 7-pin connector, verify pins and connectors are clean and in good condition.

NOTE: Harness locations vary from tractor to tractor.

Attach light harness to 7-pin connector.



RW20845—UN—07MAY92

OUC1074,0000042 -19-04JUN09-1/1

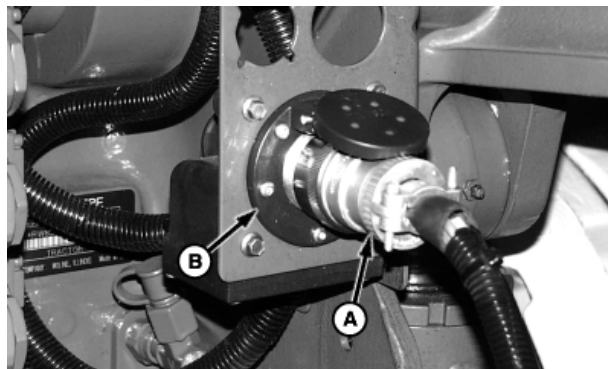
Connect SeedStar™ Monitor Harness

NOTE: Harness locations will vary from tractor to tractor.

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

A—Monitor Harness

B—Connector



A47096—UN—02FEB01

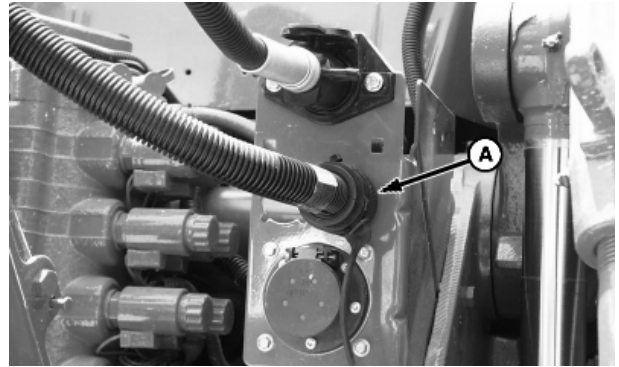
OUC6064,00000B5 -19-28APR10-1/1

Connect Frame Control Harness

NOTE: Harness locations will vary from tractor to tractor.

Connect frame control harness (A).

A—Frame Control Harness



A62382—UN—02JUL03

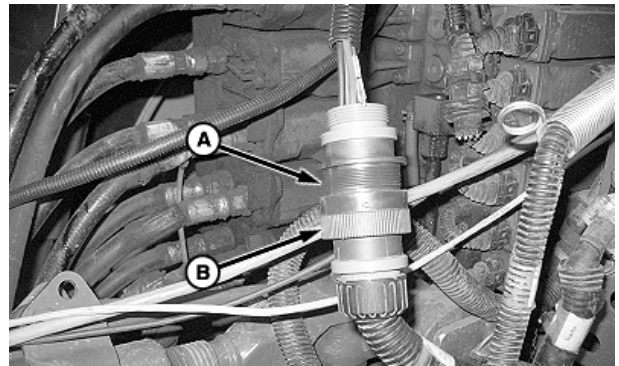
OUC6074,0000987 -19-22MAY09-1/1

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

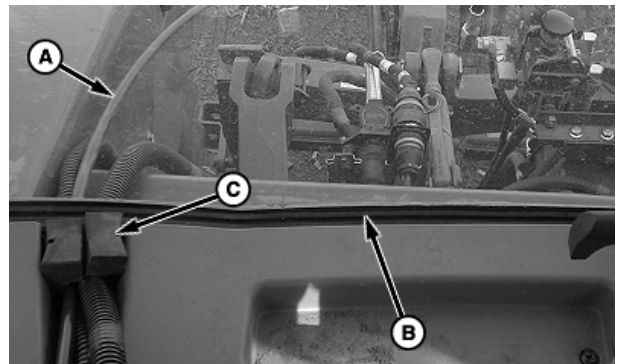
OUC6064,00001FD -19-13JUL10-1/1

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

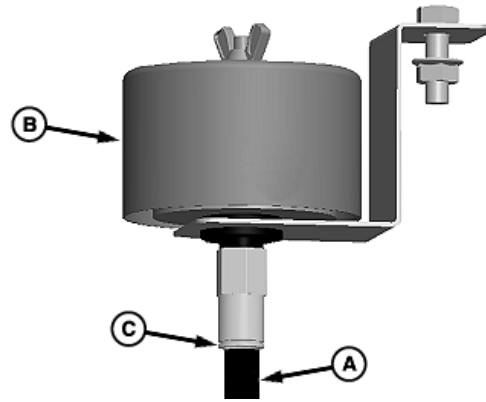


A71714—UN—03JUN11

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OUC6064,00004F3 -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.).



A71709 —UN—03JUN11

OUC6064,00004F3 -19-03JUN11-2/2

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 hose MUST be attached PRIOR to any hose being connected.



Extend Symbol



Retract Symbol

Hose Connections - Non-Fold Assist Machines ^a				Function Settings For John Deere Tractors	
Hose Identification	SCV	Pressure	Return	Flow	Detent (Time)
Frame Functions and CCS System (if equipped)	I	Extend	Retract	10 Maximum	Constant "C" CCS level controlled with CCS Valve
Independent Markers/Fold (if equipped)	II	Extend	Retract	Start at 5 and adjust as necessary	10 seconds or as required for full extend and retract
Vacuum System (Connected to Separate SCVs and controlled with Flow Control Valves)	III and IV	Retract	Extend	10 Maximum	Constant "C"
Vacuum System (Connected to power beyond and controlled with in line valve)		Power Beyond Pressure	Power Beyond Return		
Variable Rate Drive on Power Beyond with Load Sense		Power Beyond Pressure	Power Beyond Return		

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

Hose Connections - Fold Assist Equipped Machines ^a				Function Settings For John Deere Tractors	
Hose Identification	SCV	Pressure	Return	Flow	Detent (Time)
Frame Functions and CCS System (if equipped)	I	Extend	Retract	10 Maximum	Constant "C" CCS level controlled with CCS Valve
Independent Markers/Fold (if equipped)	II	Extend	Retract	Start at 5 and adjust as necessary	10 seconds or as required for full extend and retract
Tongue	III	Extend	Retract	Start at 5 and adjust as necessary	0
Vacuum System (Connected to Separate SCVs and controlled with Flow Control Valves)	IV and V	Retract	Extend	10 Maximum	Constant "C"
Vacuum System (Connected to power beyond and controlled with in line valve)		Power Beyond Pressure	Power Beyond Return		
Variable Rate Drive on Power Beyond with Load Sense		Power Beyond Pressure	Power Beyond Return		

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

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.

CCS control valve is used to control CCS tank pressure.

SeedStar™ system is used to control variable rate drive.

OUO6064,00000D3 -19-21JAN11-1/1

Level Hitch Tube

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

IMPORTANT: If tractor has Category 4 drawbar, it must be used with a Category 4 clevis on planter. If tractor has Category 5 drawbar, it must be used with a Category 5 clevis on planter. (See **INSTALL PROPER DRAWBAR CLEVIS.**)

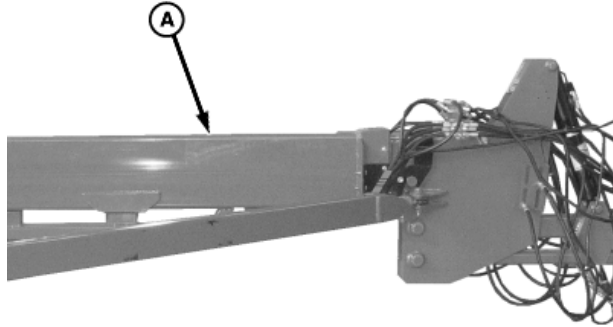
NOTE: Adjustments are more accurate when performed in field conditions.

*NOTE: If center frame of machine is higher or lower than wings, rephase hydraulic lift system. Raise machine and hold SCV lever for several seconds to rephase. If center frame on machine is lower than wings after rephasing see **ADJUST MAIN FRAME HEIGHT** in Service section.*

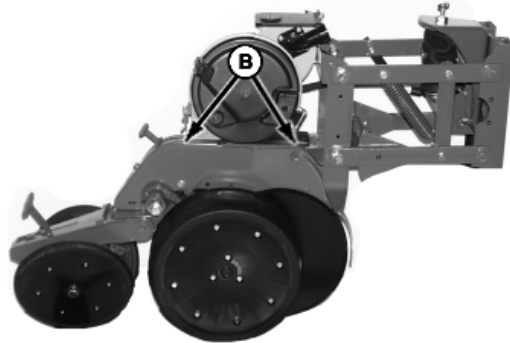
1. Set adjustable down force system to zero pressure.
2. Lower machine on level ground.

A—Hitch Tube

B—Planting Unit Frame



A68031—UN—02JUL10

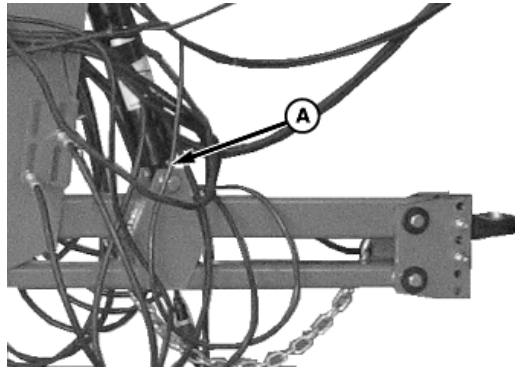


A50703—UN—16OCT02

OOU6064,0000479 -19-27APR11-1/4

3. Completely retract drawbar hitch cylinder (A).
4. Raise and lower machine.
5. Verify hitch tube is parallel with ground. If hitch is not parallel, proceed with remaining steps.

A—Drawbar Hitch Cylinder



A68033—UN—02JUL10

Continued on next page

OOU6064,0000479 -19-27APR11-2/4

6. Place planter in parking position, see Detach Planter section. Disconnect clevis from tractor.

NOTE: Turn clevis over for minor adjustment. Move clevis to a new hole for major adjustment.

7. Reposition clevis (A) so hitch becomes parallel to ground when reattached to tractor.

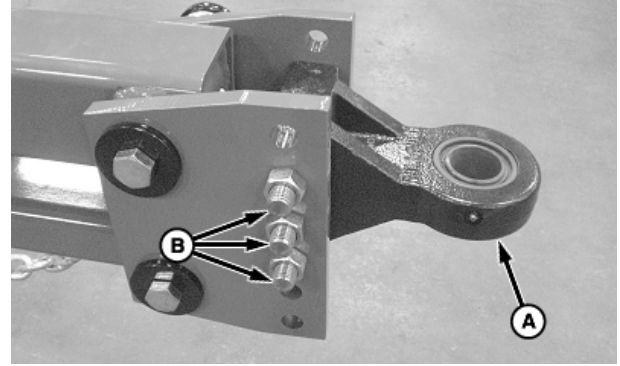
IMPORTANT: Cap screws must be tightened before load is placed on hitch to obtain accurate torque values.

8. Tighten clevis cap screws (B) to specification.

Cap Screws—Specification

Clevis—Torque..... 1150 N·m
(850 lb.-ft.)

9. Attach tractor to drawbar, unfold planter and put in plant position, retract drawbar cylinder completely.
10. Verify entire length of hitch tube is parallel with ground. If hitch is not parallel, reposition and tighten clevis until hitch tube is parallel.



A—Clevis

B—Cap Screws, Clevis

A71353 —UN—27APR11

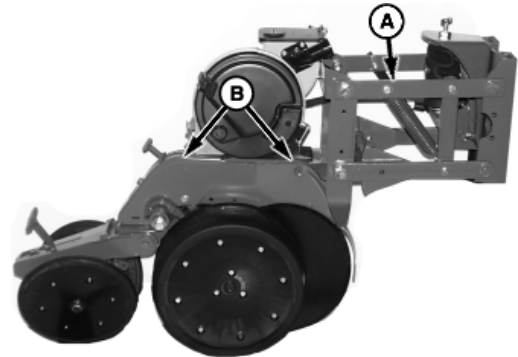
OUO6064,0000479 -19-27APR11-3/4

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

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

A—Parallel Arms

B—Planting Unit Frames



A68213 —UN—16JUL10

OUO6064,0000479 -19-27APR11-4/4

Pro-Series™ XP CCS Seed Delivery

CCS Seed Delivery Operation

Seed treatments, field conditions, humidity, and seed size alters fan pressure 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 found in **SETTING CCS SEED DELIVERY TANK PRESSURE** in this section before adjusting for field conditions.

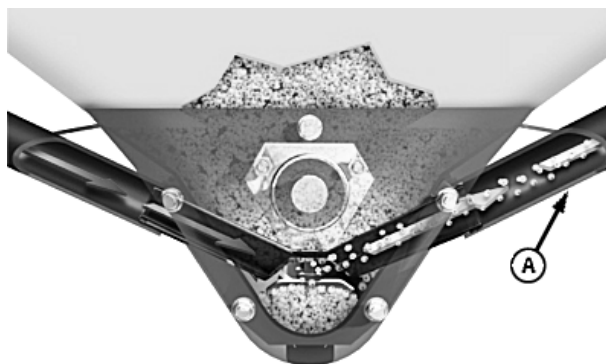
Generally, this system performs best when using the lowest possible pressure setting to deliver seed to all row units.

Some light weight varieties of seed, such as sorghum-milo, are picked up too easily by the nozzles. Nozzle inserts are installed over the nozzles to restrict the opening slightly, limiting the amount of seed picked 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 system is not maintaining adequate seed flow.

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



A53379—UN—20NOV03

A—Delivery Hose

Increase 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 Service section.

OUO6074.0000C4C -19-31MAY11-1/1

Operating Tank Fill Lights—Optional

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

IMPORTANT: Never transport with field or fill lights on.

With tractor field lights on, fill lights (A) can be operated at the fill light switch (B).

A—Fill Lights

B—Fill Light Switch



A53001—UN—03OCT03

OUO6074.0000B21 -19-25MAR09-1/1

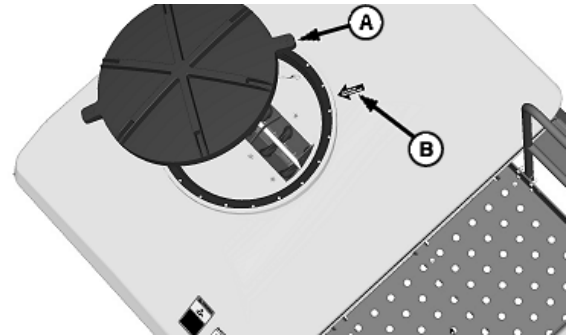
Operating Tank Lids

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

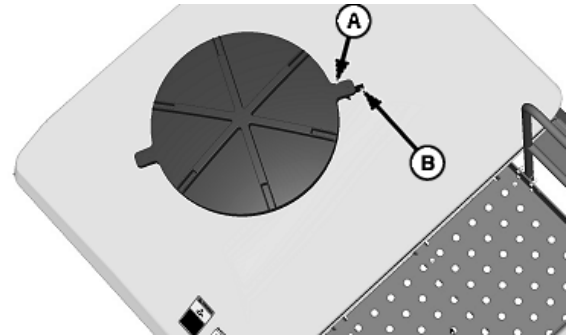
To open, turn lid counterclockwise. To close lid, line up handle (A) with arrow (B) and turn clockwise.

A—Handle

B—Arrow



A53374 —UN—20NOV03



A53375 —UN—20NOV03

OUO6074,0000B22 -19-26MAR04-1/1

Tank Level Sensors

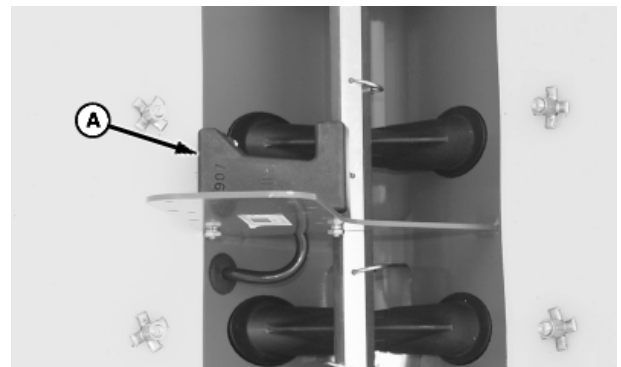
IMPORTANT: Clean tank level sensors prior to filling CCS tanks. Use “brush” to clean seed level sensor.

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

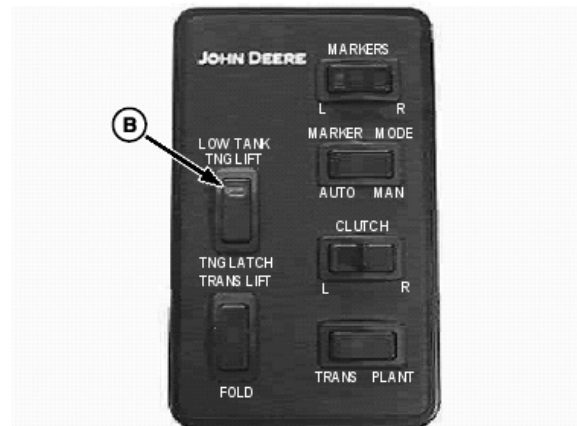
Tank level sensors (A) are optical sensors. When the sensor is exposed in either tank, the tank low warning light (B) on the frame control console will come on.

A—Tank Level Sensor

B—Tank Low Warning Light



A49868 —UN—12AUG02



A53315 —UN—12NOV03

OUO6074,0000B23 -19-26MAR04-1/1

Filling Seed Delivery Tanks

CAUTION: When transporting machine on roadways, tanks must be empty.

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

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

IMPORTANT: Cleanout any buildup of seed treatments or talc between tank fills.

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

Clean seed level sensor before filling seed tanks

The very first time a new tank is used, coat the inside bottom of bulk tanks with a thin layer of talc. Mix triple the amount of talc into the first two or three bushels of seed placed in bulk tank (See USE OF TALC LUBRICANT in your Rate Charts and Settings Operator's Manual). This will coat the inside of CCS system and hoses with a protective layer of talc, to resist buildup of seed coatings.

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

See USE OF TALC LUBRICANT in Operating Vacuum Meter section.

For best performance, level off seed in tanks after filling to minimize amount of seed remaining in tanks when



A34471

A34471—UN—11OCT88



A49921—UN—20AUG02

planting ends. Recommend using a 203 mm (8 in.) wide, stiff bristled broom with 1372 mm (4.5 ft.) handle to level seed when tanks are full and after low tank level sensor warning light comes on.

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

LD45720,00001AE -19-31MAR09-1/1

Leveling Seed in CCS Tanks

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

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

When a row unit, low rate warning occurs or a low tank level sensor light comes on, use an 203 mm (8 in.) wide, stiff bristled broom with 1372 mm (4.5 ft.) handle to evenly distribute seed in CCS tanks. Also use this brush to level seed after filling CCS tanks, and to periodically clean tank level sensor.

OUO6074,0000B25 -19-26MAR04-1/1

Filling Row Unit Hoppers

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

Lower machine until CCS fan starts operating and begins to fill row units. Row unit hoppers will usually be at operating level in under 30 seconds, however large seeds and wide planters may increase this time to 2 minutes.

OUO6074,0000B26 -19-26MAR04-1/1

Setting CCS Tank Pressure All Machines Except DB120

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 up tractor oil for 15 minutes.
3. Lower machine, leave SCV in constant retract detent position.
4. Open flow control valve (A) counterclockwise until seed starts flowing to hoppers.

IMPORTANT: DO NOT exceed 24 inches of tank pressure or damage to hydraulic motor and seed tank lids can occur.

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

5. When row hoppers are full and machine is not moving, adjust pressure as follows:

DB44			
Product	Pressure in Inches of Water	Nozzle Insert Required	Small Seed Discharge Elbow (Vacuum Only)
Soybeans	12	No	No
Small Corn (Over 2000 seeds/lb.)	10	No	No
Medium Corn (Between 2000 and 1200 seeds/lb.)	12	No	No
Large Corn (Less than 1200 seeds/lb.)	14	No	No
Cotton	10	No	No
Sorghum	8	Yes	Yes
Sunflowers	6	No	No



A—Flow Control Valve

DB58, DB60, and DB66			
Product	Pressure in Inches of Water	Nozzle Insert Required	Small Seed Discharge Elbow (Vacuum Only)
Soybeans	14	No	No
Small Corn (Over 2000 seeds/lb.)	12	No	No
Medium Corn (Between 2000 and 1200 seeds/lb.)	14	No	No
Large Corn (Less than 1200 seeds/lb. acre)	16	No	No
Cotton	12	Yes	Optional
Sorghum	10	Yes	Yes
Sunflowers	6	No	No

DB80, DB88, and DB90			
Product	Pressure in Inches of Water	Nozzle Insert Required	Small Seed Discharge Elbow (Vacuum Only)
Soybeans	16	No	No
Small Corn (Over 2000 seeds/lb.)	14	No	No
Medium Corn (Between 2000 and 1200 seeds/lb.)	16	No	No
Large Corn (Less than 1200 seeds/lb.)	18	No	No
Cotton	12	Yes	Optional
Sorghum	10	Yes	Yes
Sunflowers	6	No	No

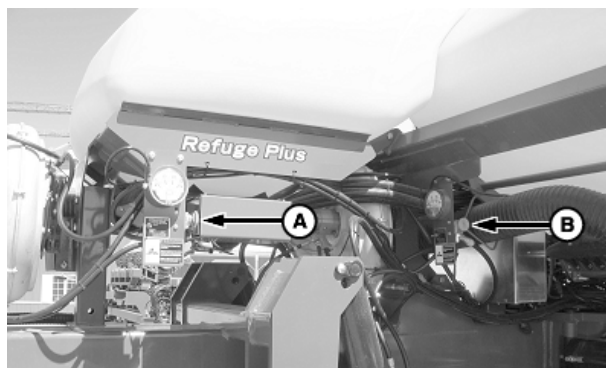
OUO6074,0000B28 -19-03APR09-1/1

Setting CCS Tank Pressure DB120

1. CCS fan Control:

- Front fan flow control knob (A) controls CCS pressure for inner 29 rows. (Right-hand 50 bushel CCS Tank and Refuge Tank)
- Rear fan flow control knob (B) controls CCS pressure for outer 19 rows. (Left-hand 50 bushel CCS tank)

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.



A64620—UN—30APR09

2. Warm up tractor oil for 15 minutes.
3. Lower machine, leave SCV in constant retract detent position.

NOTE: If starving of any row occurs, determine what fan controls pressure to that row. Increase pressure on that fan in increments of 1 in. of pressure until row unit stays full.

NOTE: If plugging on any of the CCS hoses or splitters occurs, determine what fan controls pressure to that row. Decrease pressure on that fan in increments of 1 in. of pressure until plugging no longer occurs.

4. Open flow control valves counterclockwise until seed starts flowing to hoppers.

A—Front Fan Flow Control Knob

B—Rear Fan Flow Control Knob

IMPORTANT: DO NOT exceed 24 inches of tank pressure or damage to hydraulic motor and seed tank lids can occur.

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

5. When row hoppers are full and machine is not moving, adjust pressure as follows:

DB120				
Product	Pressure in Inches of Water for Right-Hand CCS and Refuge Tanks	Pressure in Inches of Water for Left-Hand CCS Tank	Nozzle Insert Required	Small Seed Discharge Elbow (Vacuum Only)
Soybeans	15	17	No	No
Small Corn (Over 2000 seeds/lb.)	13	15	No	No
Medium Corn (Between 2000 and 1200 seeds/lb.)	15	17	No	No
Large Corn (Less than 1200 seeds/lb.)	17	19	No	No
Cotton	11	13	No	No
Sorghum	9	11	Yes	Yes
Sunflowers	7	9	No	No

OUO6045,0000115 -19-03JUN09-1/1

Operating CCS System—Heavily Treated Seed or 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 broom, 203 mm (8 in.) wide with 1372 mm (4.5 ft.) handle .

VACUUM METERS: When operating CCS system with heavily treated seed or large seed corn, DOUBLE the rate of talc. See SEED TREATMENT RECOMMENDATIONS in Operating Vacuum Meter section.

LD45720,00001AF -19-31MAR09-1/1

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: Nozzle is recommended for sorghum.

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

1. Install nozzle inserts (A) over all nozzles prior to filling tank.

NOTE: Changing elbows is optional for small popcorn.

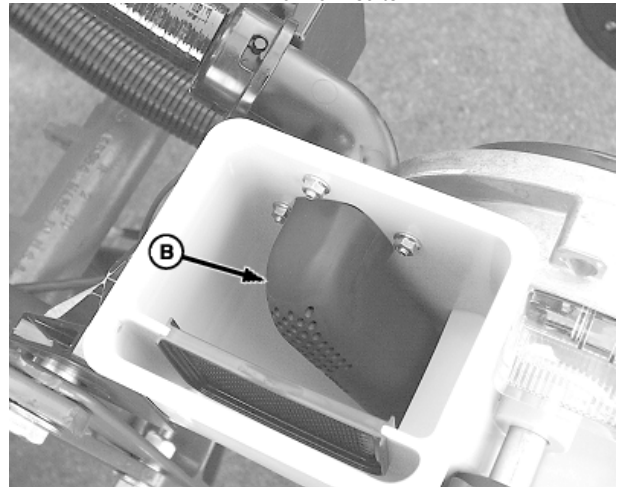
2. Remove elbow (B) with small holes from mini hoppers.
3. Install elbow (C) with slotted holes in mini hoppers.

A—Nozzle Inserts (A73214) C—Elbow (Sorghum) (A75165)
B—Elbow (A75164)

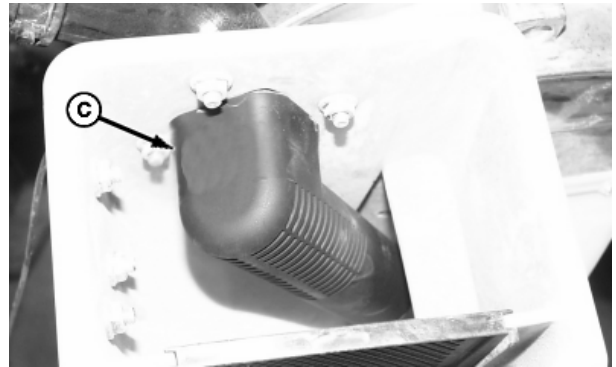


A50710 —UN—17OCT02

Nozzle Inserts



A60389 —UN—02JUL07



A51048 —UN—08NOV02

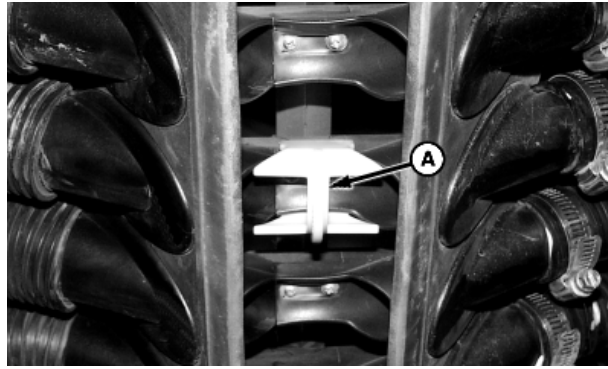
Elbow - Sorghum

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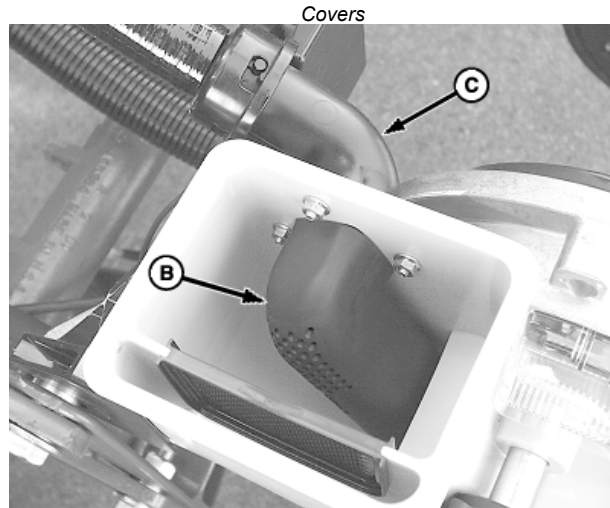
Operating CCS System When Planting Standard Seed Sizes

1. Remove covers (A). Larger seeds will not come out of tanks with covers installed.
2. Install black discharge elbow (with small holes) (B) on rows with single inlet elbow (C).
3. **36 Row or Larger Machines Only:** Install gray discharge elbow (with small holes) (D) on rows with splitter inlet elbows (E) and rows fed by hose from splitter inlet elbows.

A—Cover
 B—Black Discharge Elbow (Standard)
 C—Single Inlet Elbow
 D—Gray Discharge Elbow (Splitter)
 E—Splitter Inlet Elbow

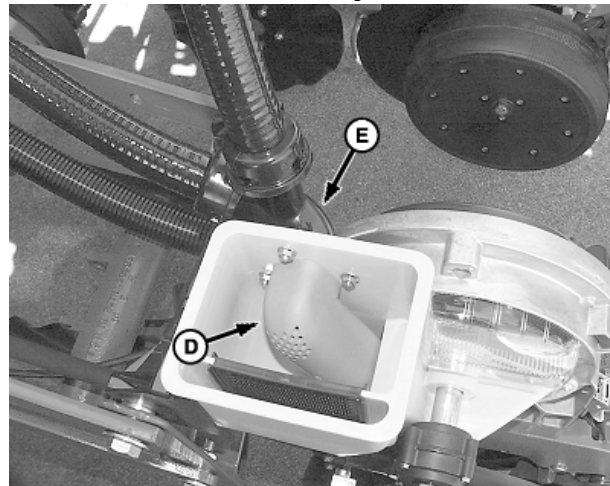


A50710—UN—17OCT02



A54896—UN—22SEP04

Black Discharge Elbow



A54897—UN—22SEP04

Gray Discharge Elbow

OUC6074,0000D5A -19-30APR09-1/1

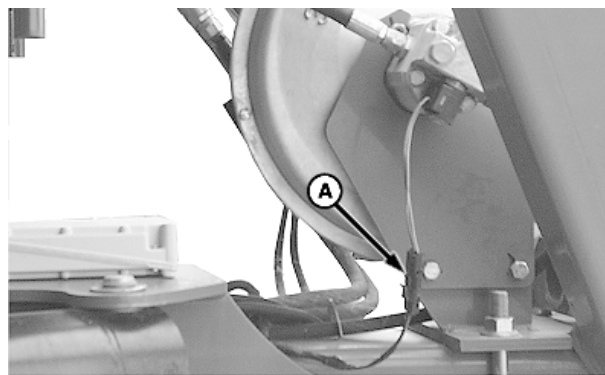
Planting Seed Plots with CCS Systems

NOTE: Due to the small quantity of seed being planted, removing the CCS system from operation and filling row units individually is recommended.

Disconnect harness connector (A) from CCS fan.

Fill row units individually instead of using CCS tanks.

**A—CCS Fan Harness
Connector**



A54350 —UN—18MAY04

OUC6074,0000D2C -19-02JUL07-1/1

Partially Cleaning Out CCS Tanks

To remove only a portion of seed from CCS tanks, there is a small variable cleanout door that can be opened or closed to control the amount of seed being removed.

Slide door (A) until desired amount of seed is coming out.

A—Door



A52501 —UN—01JUN04

OUC6074,0000B2B -19-26MAR04-1/1

Cleaning Out CCS Tanks

IMPORTANT: Make sure cleanout doors on CCS tanks are closed prior to folding machine or they can be damaged.

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

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

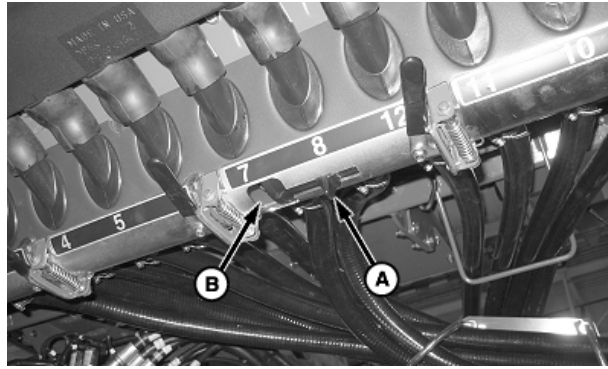
When cleaning tank for certified seed, remove all seed from tank with stiff bristled 1372 mm (4.5 ft.) handle 203 mm (8 in.) wide broom.

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

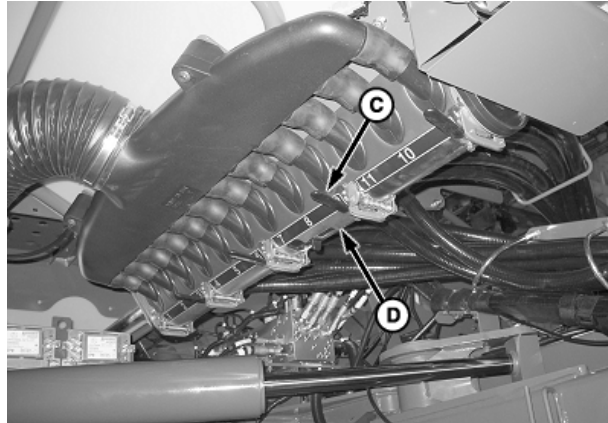
1. Place a container under cleanout doors to catch seed from tank.
2. Slide handle (A) to operate cleanout door (B). Once majority of seed has been removed, close door.
3. Rotate lever (C) to open cleanout door (D) to catch remaining seed from tank.
4. Close cleanout door.
5. Repeat for all other cleanout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

A—Handle
B—Cleanout Door

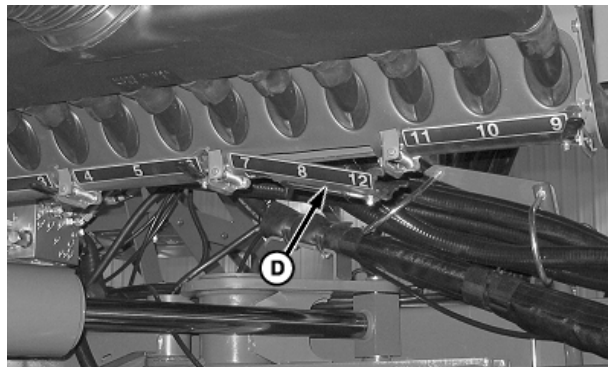
C—Handle
D—Cleanout Door



A68219—UN—20JUL10



A68218—UN—20JUL10



A68220—UN—20JUL10

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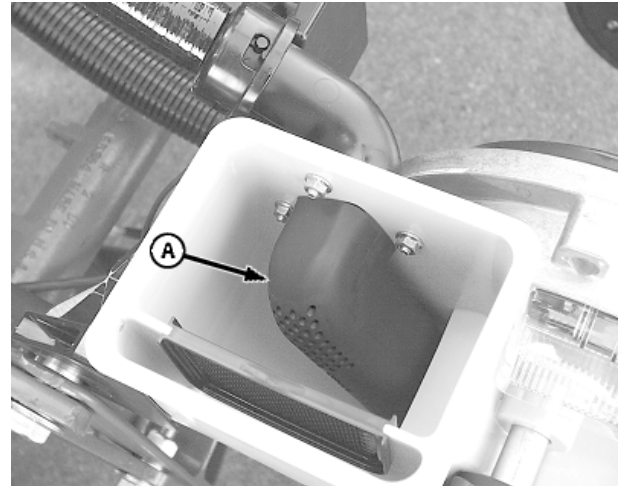
Bridged and Blocked CCS System

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.

OUC6045,0000001 -19-27MAY09-1/2

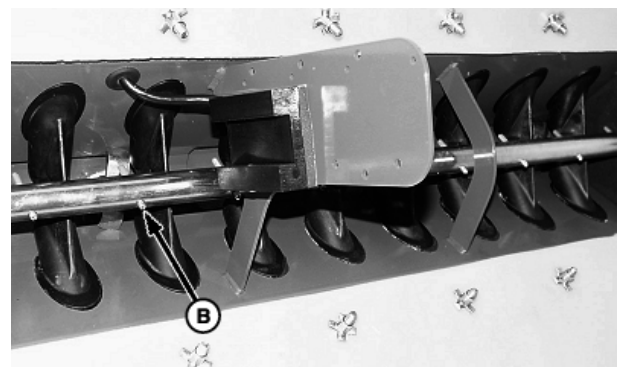
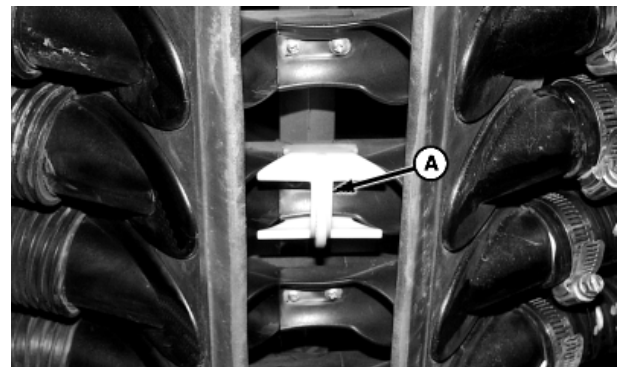
A54895—UN—22SEP04

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



OUC6045,0000001 -19-27MAY09-2/2

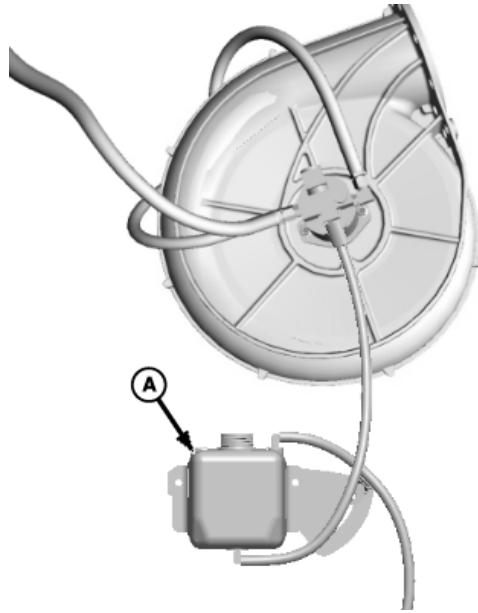
A50710—UN—17OCT02

A62189—UN—06MAR08

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



A68295 —UN—19JUL10

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OUC6074,0000A4D -19-19JUL10-1/1

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 be fully lowered into correct planting position. Achieving this position can be difficult with some attachment combinations, especially when planting in hard to penetrate soil conditions. If this situation is encountered, the following action is warranted:

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

1. Use recommended size tractor.

2. Be sure tractor and machine have been properly prepared. See Preparing Tractor and Preparing Machine sections.
3. Check seed and fertilizer rates carefully.
4. Check tire pressure before seeding.
5. Allow tractor hydraulic oil to warm up thoroughly before seeding. Cold oil can cause slower fan speeds.
6. Run CCS fan at recommended speed; excessive speed can cause increased wear on air system and damage seed.
7. Whenever machine has been standing for an hour or more during period of high humidity or damp, rainy days, or after sitting overnight, run CCS fan at recommended rpm, with machine stationary for 10 minutes.
8. Use clean seed for best results.

LD45720,00001A8 -19-31MAR09-1/1

VacuMeter™ Hydraulic System Operation

The vacuum motor hydraulic hoses must be connected to the tractor with the pressure hose connected to the "Retract" coupler on the tractor.

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

Avoid damaging pressure spikes in the hydraulic system. Move the SCV lever forward into "Float" position, not "Neutral", to stop the vacuum system.

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

OUC6045,00008B4 -19-21MAY09-1/1

Unfold and Fold Planters (Non-Fold Assist Machines)

NOTE: These steps are based on the planter hydraulic system connected as recommended. See HYDRAULIC CONNECTIONS RECOMMENDATIONS in Attach Machine section.

Unfold Machine:

1. Press PLANT-TRANS switch to TRANS.
2. Hold TRANS LIFT switch while activating SCV II to lower machine from transport.
3. Hold TRANS LIFT switch while activating SCV I to lower wing wheels.
4. Hold TONGUE LIFT switch while activating SCV II to lower tongue until wing arms are unlocked.

NOTE: Allow tractor to roll as planter wings are unfolded.

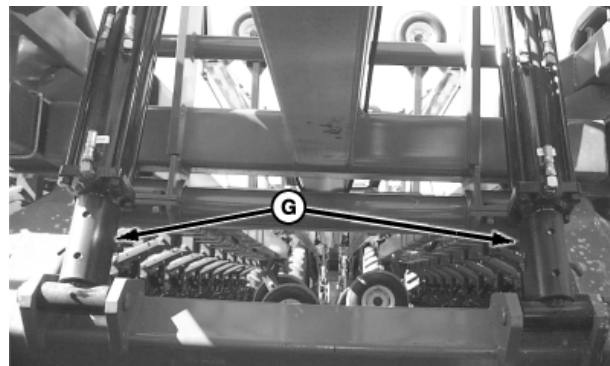
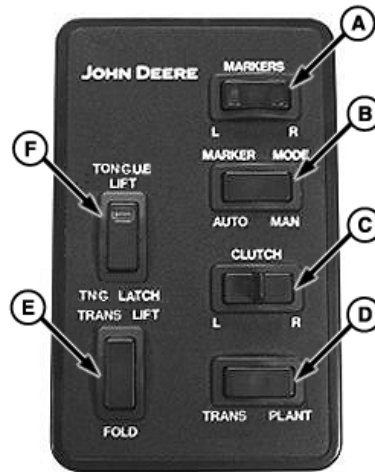
5. Hold FOLD switch while activating SCV II to unfold machine.
6. Hold TONGUE LATCH switch while activating SCV II to lock hitch latch.
7. To service, install center frame service locks (G) and wing service locks (H).

Fold Machine:

1. Press PLANT-TRANS switch to PLANT. Activate SCV I to raise machine.
2. Press PLANT-TRANS switch to TRANS.
3. Hold TONGUE LATCH switch while activating SCV II to disengage hitch latch.

NOTE: Allow tractor to roll as planter wings are folded.

4. Hold FOLD switch while activating SCV II to fold machine.
5. Hold TONGUE LIFT switch while activating SCV II to raise tongue until wing arms are locked over hitch.
6. Hold TRANS LIFT switch while activating SCV I to raise wing wheels until they contact each other.
7. Hold TRANS LIFT switch while activating SCV II to raise machine into transport position.



Center Frame Wheels



Wing Wheels

A—Markers
B—Marker Mode
C—Clutch
D—Trans-Plant

E—Trans Lift-Fold
F—Tongue Lift-Tongue Latch
G—Service Lock, Center Frame
H—Service Lock, Wing

A50678 —UN—15OCT02

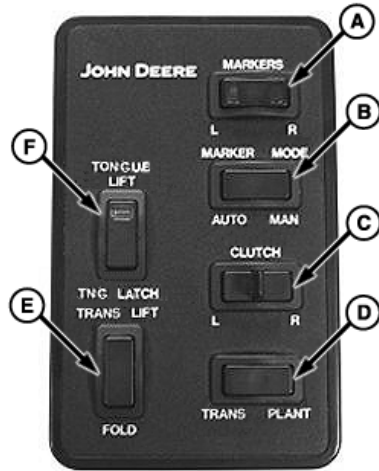
A64952 —UN—08JUL09

A64953 —UN—08JUL09

OUO6064,0000201 -19-14JUL10-1/1

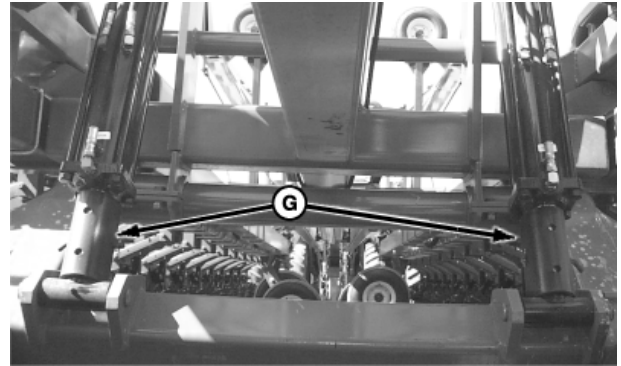
Unfold and Fold Planters (Fold Assist Equipped Machines)

NOTE: These steps are based on the planter hydraulic system connected as recommended.



A50678 —UN—15OCT02

See **HYDRAULIC CONNECTIONS RECOMMENDATIONS** in Attach Machine section.



A64952 —UN—08JUL09

Center Frame Wheels

Unfold Machine:

1. Press PLANT-TRANS switch to TRANS.
2. Hold TONGUE LIFT switch while activating SCV II to unlatch wings.
3. Hold TRANS LIFT switch while activating SCV II to lower machine from transport.
4. Hold TRANS LIFT switch while activating SCV I to lower wing wheels.
5. Activate SCV III to lower tongue until wing arms are unlocked.

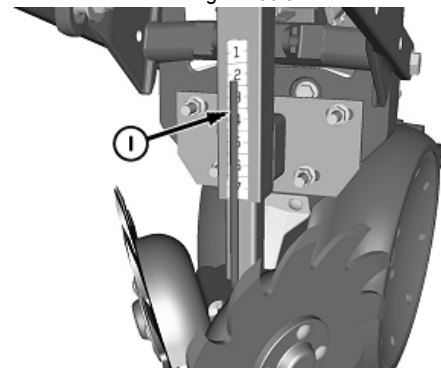
NOTE: Allow tractor to roll as planter wings are unfolded.

6. Hold FOLD switch while activating SCV II to unfold machine.
7. Hold TNG LATCH switch while activating SCV II to lock the hitch latch.
8. (DB120 only) To unfold winglets:
 - Press PLANT-TRANS switch to PLANT.
 - Place MARKER MODE switch in MANUAL position.
 - Press MARKER L switch and activate SCV II to lower left-hand winglet.
 - Press MARKER R switch and activate SCV II to lower right-hand winglet.
 - Place MARKER MODE switch in AUTO position.
9. To service, install center frame service locks (G) and wing service locks (H).
10. (DB120 only) Row Cleaners On Winglets: Set row cleaner gauge (I) to same number as row cleaners on main frame.



A64953 —UN—08JUL09

Wing Wheels



A64949 —UN—08JUL09

Unit Mount Row Cleaner

A—Markers
B—Marker Mode
C—Clutch
D—Trans-Plant
E—Trans Lift-Fold

F—Tongue Lift-Tongue Latch
G—Service Lock, Center Frame
H—Service Lock, Wing
I— Gauge

Continued on next page

OUC6064,0000266 -19-27AUG10-1/2

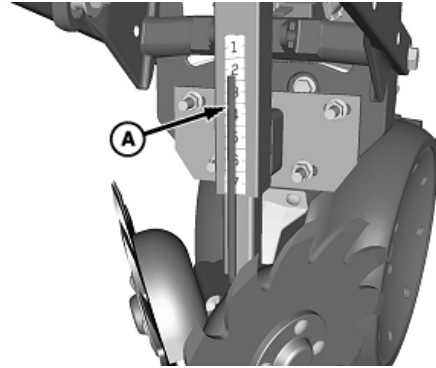
Fold Machine:

IMPORTANT: (DB 120 only) Avoid damage when folding. Adjust unit mount row cleaners on winglet row units. Maintain a minimum of 69 kPa (0.7 bar) (10 psi) in pneumatic down force system (if equipped).

1. (DB120 only) Row Cleaners On Winglets: Ensure unit mounted row cleaners are not in uppermost setting. Lower row cleaners until gauge (A) is within numbered range before folding winglets. Pressurize pneumatic down force system to minimum setting of 69 kPa (0.7 bar) (10 psi).
2. (DB120 only) To fold winglets:
 - Place MARKER MODE switch in MANUAL position.
 - Press MARKER L switch and activate SCV II to raise left-hand winglet.
 - Press MARKER R switch and activate SCV II to raise right-hand winglet.
 - Place MARKER MODE switch in AUTO position.
3. Press PLANT-TRANS switch to PLANT. Activate SCV I to raise machine.
4. Press PLANT-TRANS switch to TRANS.
5. Hold TNG LATCH switch while activating SCV II to unlock the hitch latch.

NOTE: Allow tractor to roll as planter wings are folded.

6. Hold FOLD switch while activating SCV II to fold machine.



A—Gauge

7. Hold TONGUE LIFT switch while activating SCV II to retract the fold assist cylinder and draw the wings into the folded position.
8. Activate SCV III to raise tongue until wing arms are locked over hitch.
9. Hold TRANS LIFT switch while activating SCV I to raise wing wheels until they contact each other.
10. Hold TRANS LIFT switch while activating SCV II to raise machine into transport position.

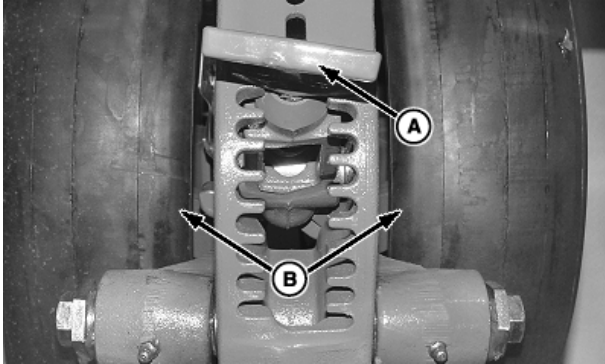
A64951—UN—08JUL09

OUO6064,0000266 -19-27AUG10-2/2

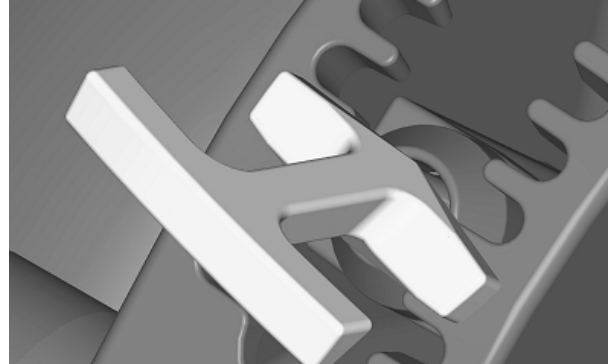
Adjust Planting Depth

NOTE: Closing-wheel down force can affect seed placement and depth. Do not use more

force than necessary to close seed furrow, especially in light soils.



A53159 —UN—23OCT03



A57709 —UN—05APR06

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 the same initial setting.

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

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

A—Depth-Adjusting Handle B—Gauge Wheels

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



A57710 —UN—05APR06

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



A57711 —UN—05APR06

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

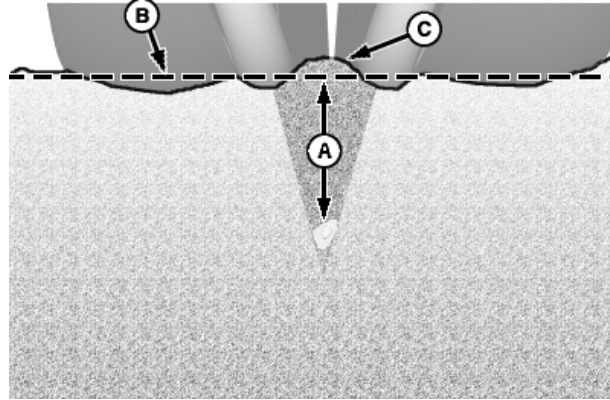
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OUC6074,00009B4 -19-20APR06-1/2

5. Check planting depth on each row.

- Dig down vertically through soil to locate seed.
- Measure the depth (A) from seed to top of soil profile (B). Do not measure to top of ridge (C) created by closing wheels.

A—Depth
B—Top of Soil Profile
C—Ridge



Soil Cross Section

A57713 —UN—20APR06

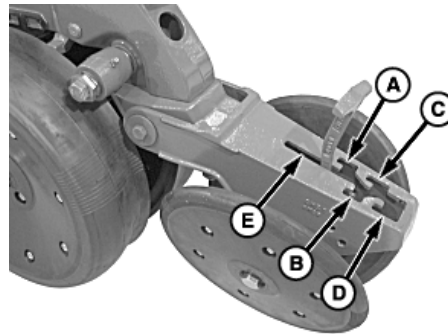
OUO6074,00009B4 -19-20APR06-2/2

Adjust Closing Wheel Down Force

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

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

A—Slot A (Minimum)
B—Slot B
C—Slot C
D—Slot D (Maximum)
E—Slot E (Float)



A68212 —UN—15JUL10

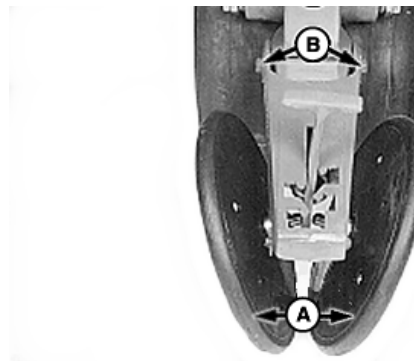
OUO6435,0000427 -19-15JUL10-1/1

Center Closing Wheels

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

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

A—Closing Wheels
B—Cap Screws



A46773 —UN—12OCT00

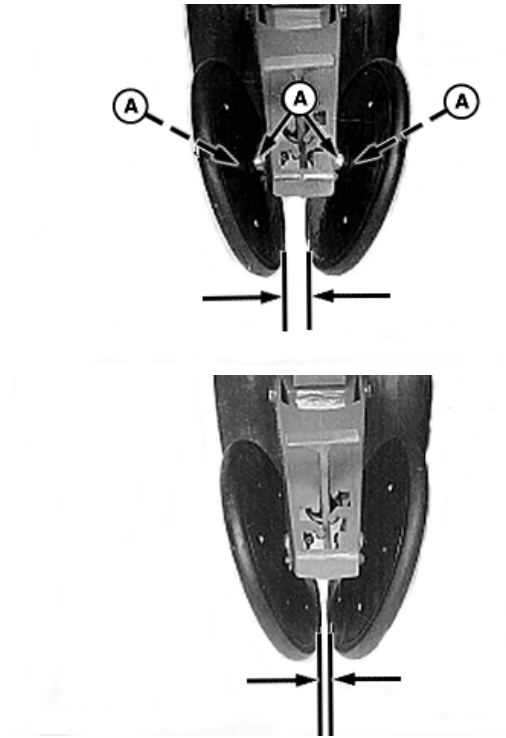
AG,OUO6074,1204 -19-08AUG07-1/1

Adjust Closing Wheel Spacing

NOTE: Spacing between closing wheels is adjustable, so closing system can be tailored to meet the requirements of planting small seeds at shallow depths.

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

A—Nuts and Spacers



A46774 —UN—13OCT00

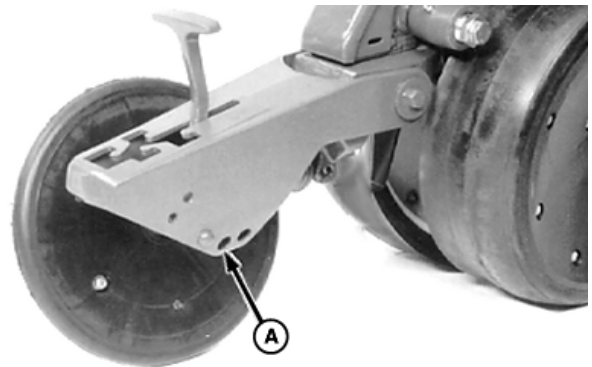
A46775 —UN—12OCT00

AG,OUO6074,1205 -19-08AUG07-1/1

Stagger Closing Wheels

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

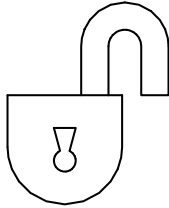
A—Rear Hole



A46776 —UN—12OCT00

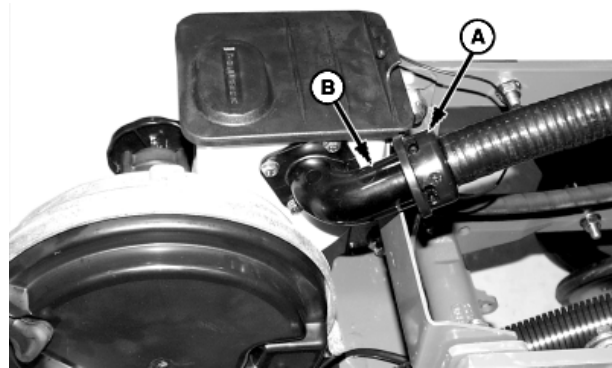
AG,OUO6074,1206 -19-04AUG00-1/1

Remove Pro-Series™ XP Seed Meter Assembly From Row Unit



Unlocked Symbol Up

A62348 —UN—27MAR08

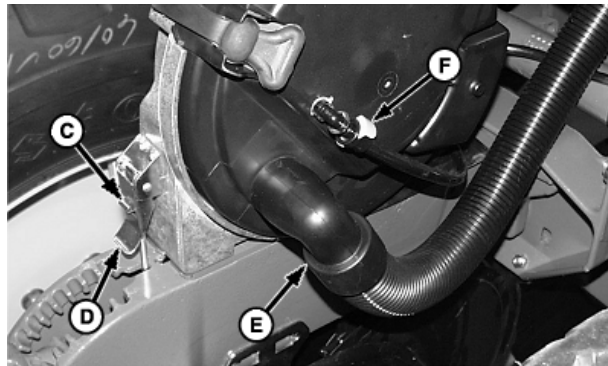


A49955 —UN—03DEC02

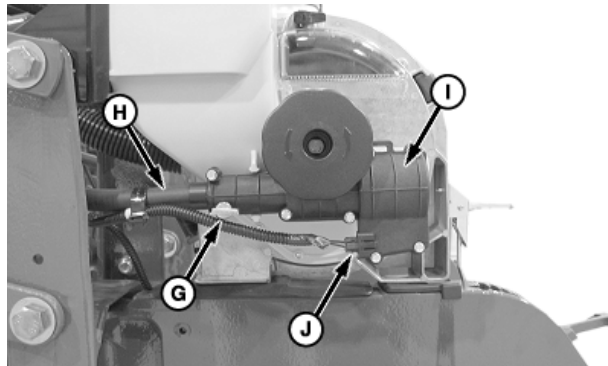
1. Rotate CCS seed delivery hose (A) counterclockwise until it unsnaps from hopper fill neck (B) and pull off hose.
2. Rotate lock pin (G) 180 degrees until the “unlocked” symbol is on top.
3. Remove vacuum hose (E).
4. If row is monitored for vacuum pressure, pull clip (F) sideways to unlock and pull sensor hose off fitting.
5. Push down on clip (C) while lifting up on latch (D) to unlock meter assembly from row unit.
6. Disconnect electrical connector (J) from gearbox housing (if equipped).
7. Pull Pro-Shaft Drive cable (H) from gearbox housing (I) while raising rear of meter upward and rearward.

A—Delivery Hose
B—Fill Neck
C—Clip
D—Latch
E—Vacuum Hose

F—Clip
G—Lock Pin
H—Drive Cable
I—Gearbox Housing
J—Electrical Connector



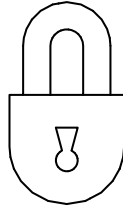
A53366 —UN—20NOV03



A68221 —UN—30JUL10

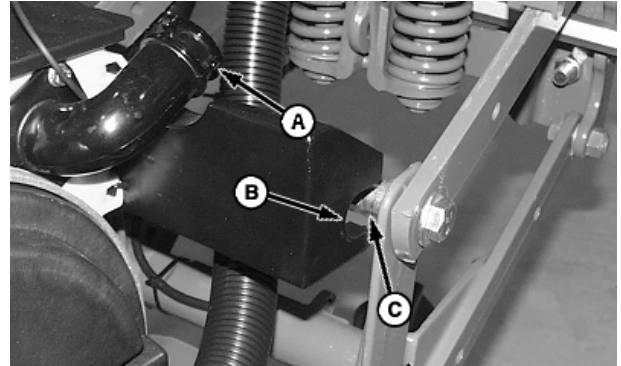
OUO6074,000088B -19-30JUL10-1/1

Install Pro-Series™ XP Seed Meter Assembly on Row Unit



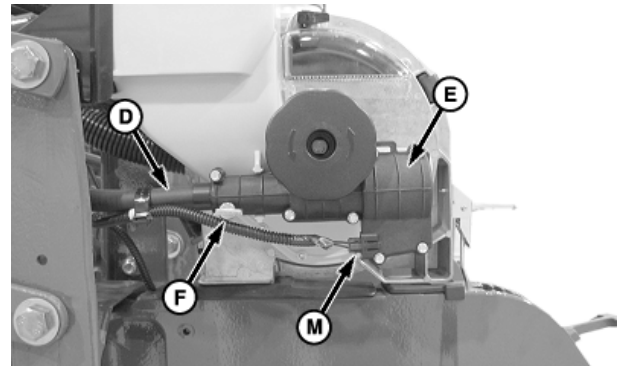
Locked Symbol Up

A62347 —UN—27MAR08

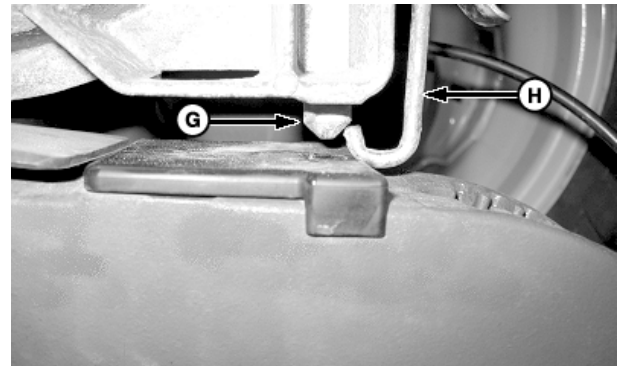


A53368 —UN—20NOV03

1. Push hopper alignment notch (B) over cap screw (C) (both sides).
2. Push Pro-Shaft Drive cable (D) into gearbox housing (E) while rotating meter down.
3. Verify alignment pin (G) on bottom of meter is aligned with hole on row unit and hook (H) is latched into row unit.
4. Position hook (H) as shown and lower latch (I) until clip (J) snaps, securing latch.
5. Rotate lock pin (F) 180 degrees until the "locked" symbol is on top.
6. Push CCS seed delivery hose onto hopper fill neck (A) and rotate clockwise until it snaps into place.
7. Install vacuum hose (K).
8. If row is monitored for vacuum pressure, push sensor hose on fitting and push clip (L) sideways to lock hose onto fitting.
9. Connect electrical connector (M) to gearbox housing (if equipped).



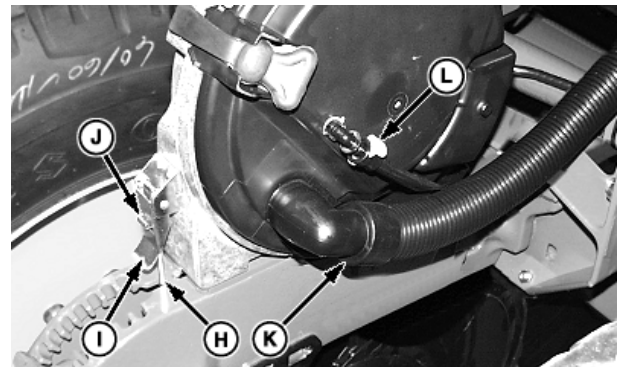
A68526 —UN—30JUL10



A62741 —UN—26JUN08

A—Hopper Fill Neck
B—Alignment Notch
C—Cap Screw
D—Drive Cable
E—Gearbox Housing
F—Lock Pin
G—Alignment Pin

H—Hook
I—Latch
J—Clip
K—Vacuum Hose
L—Clip
M—Electrical Connector



A53371 —UN—22DEC03

OUO6074,000088C -19-07JUN11-1/1

Cleaning Out Pro-Series™ XP Seed Hoppers and Vacuum Metering Units

CAUTION: Avoid injury from crushing. Frame control box PLANT-TRANS switch must be in TRANS position, service locks must be installed and the following procedure must be followed as outlined.

Avoid injury from crushing. When procedure is complete, place tractor selective control valve (SCV) in "Neutral" position before PLANT-/TRANS switch is moved to "PLANT" position.

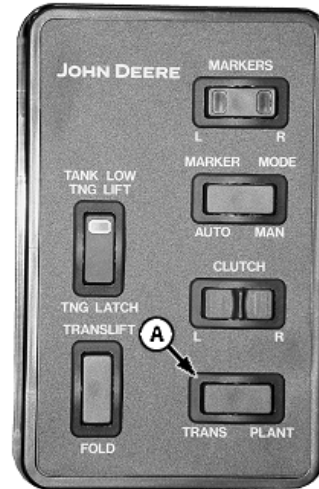
The Purge-Plant switch (C) allows the fan to operate while machine is in a raised position. This enables the operator to clean out the CCS tanks and purge the hoses without climbing in and out of the tractor cab. The following procedure must be completed in the order given to avoid possible injury and machine damage.

1. Raise machine.
2. Place tractor in park and apply parking brake.
3. Install wing and centerframe service locks (B).
4. Place (frame control box) Plant-Transport switch (A) in Transport position.

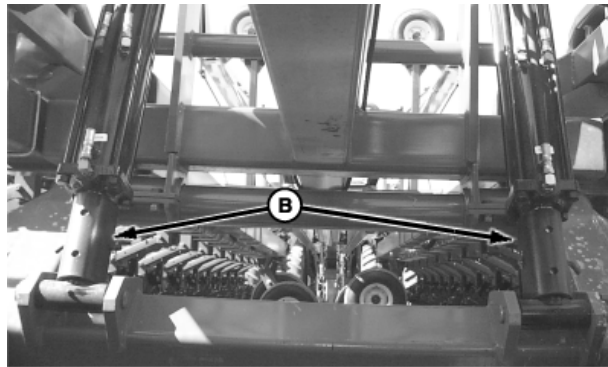
NOTE: With frame in raised position, the CCS row unit switch disables CCS fan.

5. Place SCV lever into frame lower-detent position.
6. Purge-Plant switch should already be in PLANT-TANK CLEANOUT position and should remain in that position for tank cleanout.

A—PLANT/TRANS Switch C—Purge/Plant Switch
B—Service Locks



A54595 —UN—27JUL04



A71110 —UN—04APR11



A54397 —UN—28JUL04

CCS Fan Switch All DB Series Except DB120



A64621 —UN—30APR09

CCS Fan Switches DB120

Continued on next page

OU06064,000047F -19-19APR11-1/6

IMPORTANT: Make sure cleanout doors on CCS tanks are closed prior to folding machine or they can be damaged.

NOTE: Purge-Plant switch must be in PLANT-TANK CLEANOUT position or CCS fan forcefully expels seed from cleanout doors.

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

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

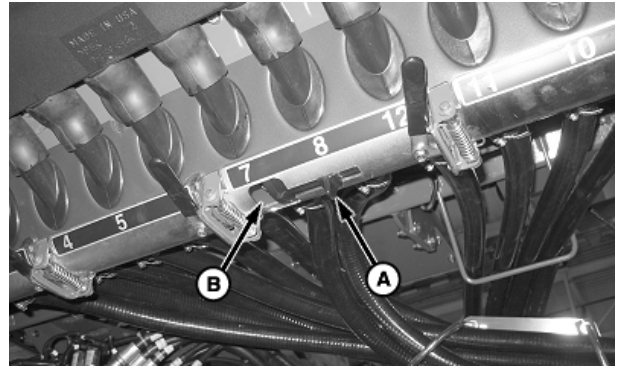
When cleaning tank for certified seed, remove all seed from tank with stiff bristled 1372 mm (4.5 ft.) handle 203 mm (8 in.) wide broom.

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

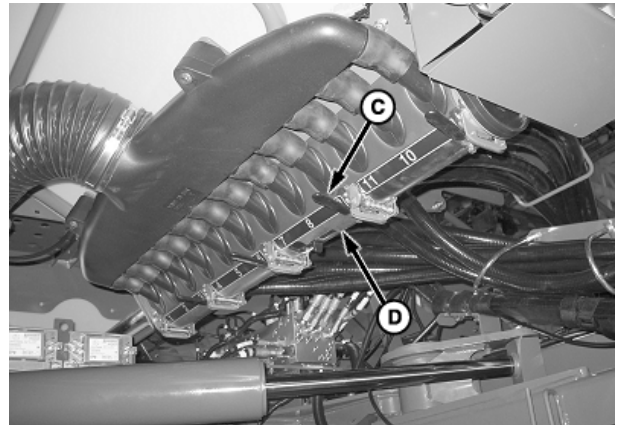
7. Place a container under cleanout doors to catch seed from tank.
8. Slide handle (A) to operate cleanout door (B). Once majority of seed has been removed, close door.
9. Rotate lever (C) to open cleanout door (D) to catch remaining seed from tank.
10. Close cleanout door.
11. Repeat for all other cleanout doors.

A—Handle
B—Cleanout Door

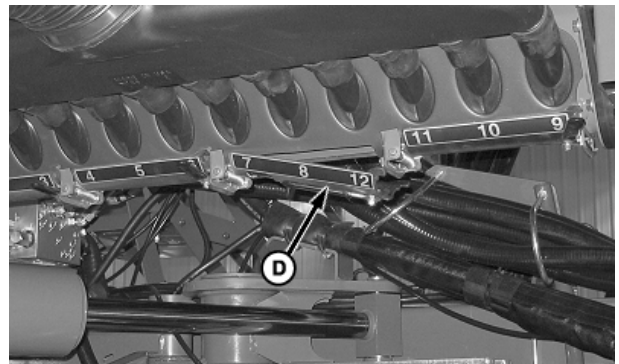
C—Handle
D—Cleanout Door



A68219 —UN—20JUL10



A68218 —UN—20JUL10



A68220 —UN—20JUL10

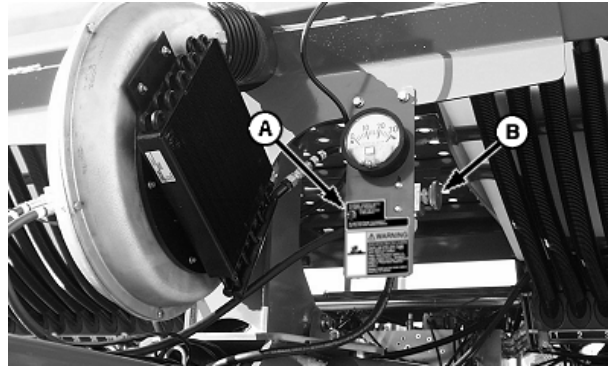
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OUO6064.000047F -19-19APR11-2/6

12. Place Purge/Plant switch (A) in PURGE HOSES position.
13. Adjust CCS fan control knob (B) until 20 inches of tank pressure is achieved for good delivery hose cleanout.

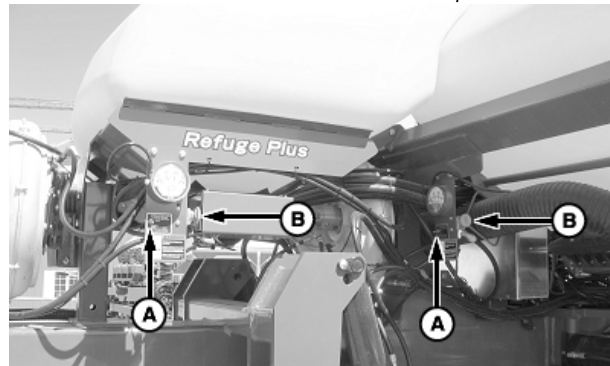
A—Purge-Plant Switch

B—CCS Fan Control Knob



A54379 —UN—28MAY04

CCS Fan Switch All DB Series Except DB120



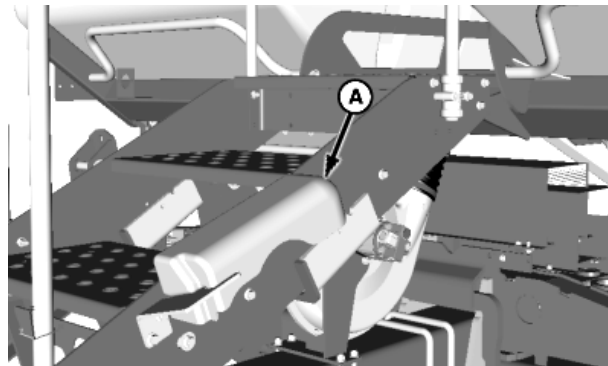
A64622 —UN—30APR09

CCS Fan Switches DB120

OUO6064,000047F -19-19APR11-3/6

14. Remove seed meter catch pan (A) from storage location.

A—Storage Location



A50099 —UN—04SEP02

Continued on next page

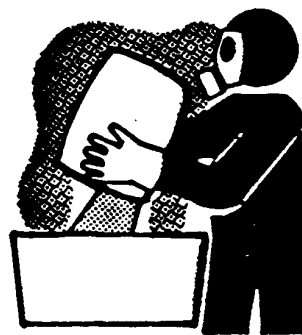
OUO6064,000047F -19-19APR11-4/6

⚠ 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 supplier's label.

15. Install seed meter catch pan (A) on row unit as shown, open vacuum meter dome and slowly remove seed disk to purge seed from hose and meter housing. Repeat for all rows.
16. Return seed meter catch pan to storage position.

A—Seed Meter Catch Pan

A34471



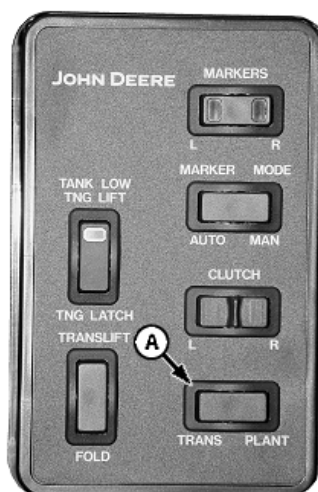
A34471 —UN—11OCT88



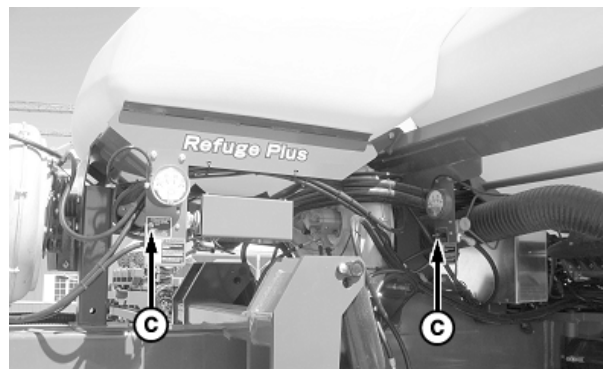
A49902 —UN—03DEC02

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OUO6064,000047F -19-19APR11-5/6



A54595 —UN—27 JUL04



A64621 —UN—30 APR09

CCS Fan Switches DB120

CAUTION: Avoid injury from sudden fan start-ups. If switch is left in PURGE HOSES position, fan will operate 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.

17. Place Purge-Plant switch (C) in PLANT-TANK CLEANOUT position.

CAUTION: Avoid injury from crushing. Place tractor selective control valve (SCV) in Neutral position before PLANT-TRANS switch (A) is moved to PLANT position.

18. Place tractor SCV's in "Neutral" position.

19. Remove service locks (B).

20. Place PLANT-TRANS switch (A) in desired position and resume operation.

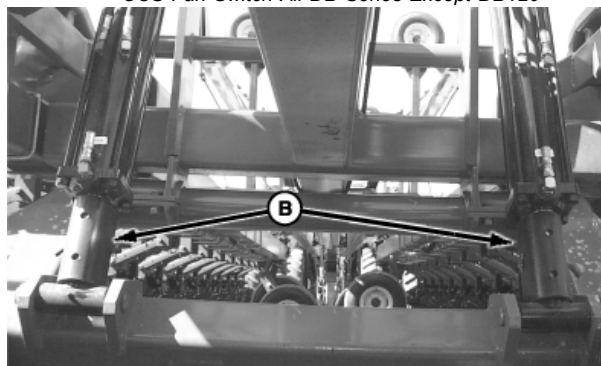
A—PLANT/TRANS Switch
B—Service Locks

C—Purge/Plant Switch



A54397 —UN—28 JUL04

CCS Fan Switch All DB Series Except DB120



A71110 —UN—04 APR11

OUC6064,000047F -19-19APR11-6/6

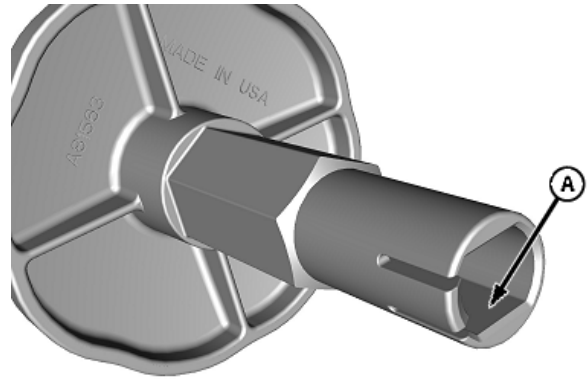
Replacing Pro-Series™ XP Meter Shear Handle

Infrequent or improper lubrication causes “binding” of moving parts within the machine. This “binding” can cause the shear points to fail, preventing breakage of machine parts. Other common causes of binding include compaction of field residue on row unit drives, jammed or misaligned seed meters.

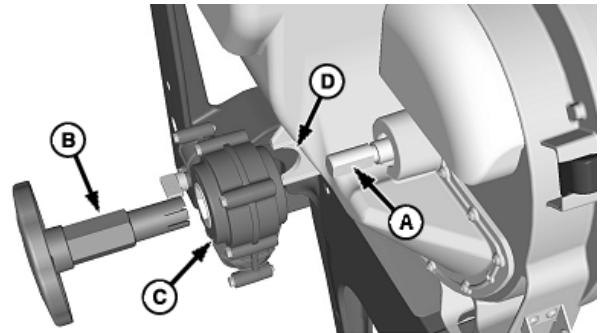
If meter handle breaks; remove broken pieces, align flat surfaces (A) and insert new handle (B) through gearbox (C) until handle snaps into groove on shaft. Gearbox must seat into cutout (D).

A—Flat Surfaces, Aligned
B—New Handle

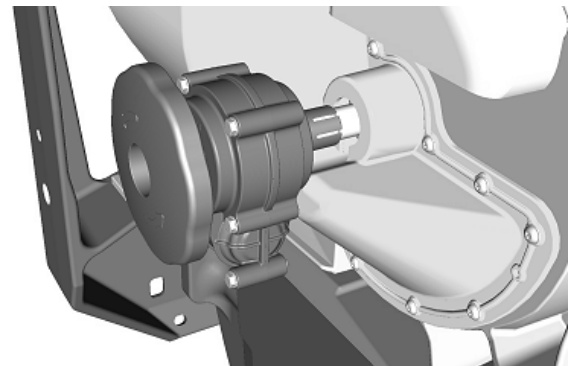
C—Gearbox
D—Cutout



A57648 —UN—13MAR06



A57649 —UN—13MAR06



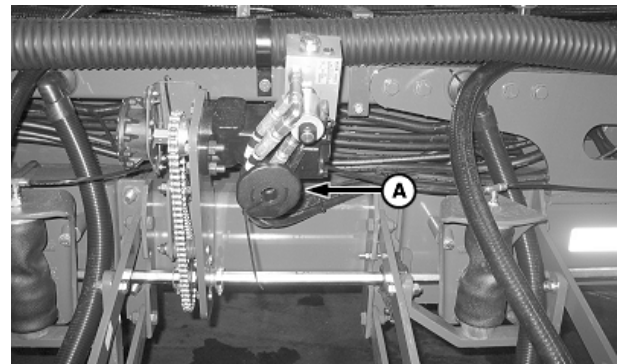
A57650 —UN—13MAR06

Assembled

OUC6064,00004D5 -19-23MAY11-1/2

NOTE: A replacement meter handle (A) is located near the variable rate drive motors.

A—Replacement Meter Handle



A60239 —UN—18JUN07

OUC6064,00004D5 -19-23MAY11-2/2

Replacing Shear Protection Pins

IMPORTANT: All shear protection pins should be replaced annually.

IMPORTANT: Replace shear pins **ONLY** with shear pin of the same size and type. Do not replace with other size or type of pin.

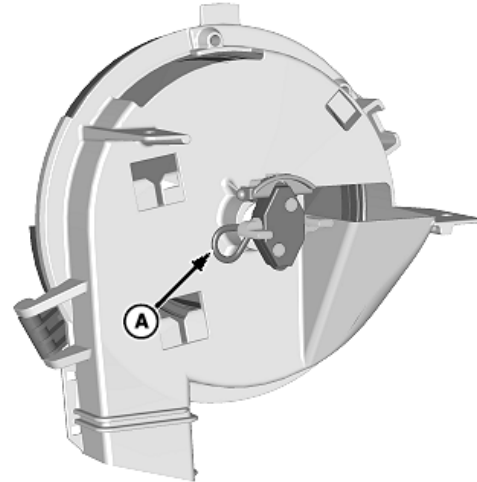
NOTE: If drill shaft binds due to misalignment, loosen bolts on drill shaft bearings on planting units. Make certain shaft turns freely, then tighten bolts.

Shear protection pins (A) may become deformed through normal usage after extended use. In this condition, it is possible for the pins to eventually fail without a machine malfunction.

The shear pins (A), which connect counter shafts will shear when excessive load is put on drills shafts. Meter pins will shear when excessive load occurs in meter.

Infrequent or improper lubrication causes “binding” of moving parts within the machine. This “binding” can cause the shear pins to shear, thus preventing breakage of machine parts. Other common causes of binding include compaction of field residue on row unit chains, jammed or misaligned seed or chemical meters.

If either the left-hand and right-hand drive shear pin shears, turn the drill shaft by hand to locate where the



Vacuum Meter Shown

A—Shear Pins

“binding” is occurring. When the drill shaft can be turned freely by hand, replace the shear pin.

A53593 —UN—08JAN04

OUO6064,000047A -19-19APR11-1/1

Inspecting Pro-Series™ XP Metering Units

Inspecting Vacuum Meter

NOTE: If using seed treatments, remove any buildup that may occur in bottom of hopper.

To inspect meter, lay hopper on side and 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 for gaps, hub seal for cracks and vacuum seal for cracks and wear areas. If replacement is necessary, see Service section.

A—Door

B—Meter Hub



Vacuum Meter

A51186 —UN—19NOV02

OUO6074,0000C4F -19-01MAY09-1/1

Filling MaxEmerge™ XP Seed Hoppers

CAUTION: When transporting machine on roadways, all product tanks must be empty.

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

IMPORTANT: Replace hopper lids after hoppers have been filled. If lids are left off, dust and dirt can accumulate in seed metering mechanism, causing excessive wear.



58 L (1.6 bu) Seed Hopper

A—Lid

If using 58 L (1.6 bu) hoppers, remove lid (A) and latch it to front of hopper.

Continued on next page

LD45720,00001B0 -19-31MAR09-1/2

A52079 —UN—24MAR03

If using 106 L (3 bu) hoppers, unlatch rubber strap (A) and lift lid (B) up and back to slide lid rearward. Tabs on front of lid hold lid in place while filling hopper.

IMPORTANT: 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 the chemical manufacturer for assistance.

Remove any buildup of trash, dust, or seed treatment from bottom of hopper and seed meter before filling hopper with seed.

For more information, see USE OF TALC LUBRICANT in Operating Vacuum Meter section.

A—Rubber Strap

B—Lid



106 L (3 bu) Seed Hopper



106 L (3 bu) Seed Hopper

A48634 —UN—31JAN02

A54038 —UN—09MAR04

LD45720,00001B0 -19-31MAR09-2/2

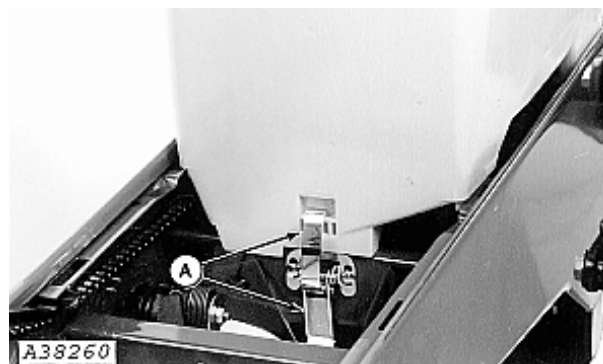
Cleanout and Inspection of MaxEmerge™ XP Seed Hoppers and Metering Units

IMPORTANT: Use precautions as recommended by chemical manufacturers when handling parts coated with seed treatments. Use proper skin, eye and respiratory protection.

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

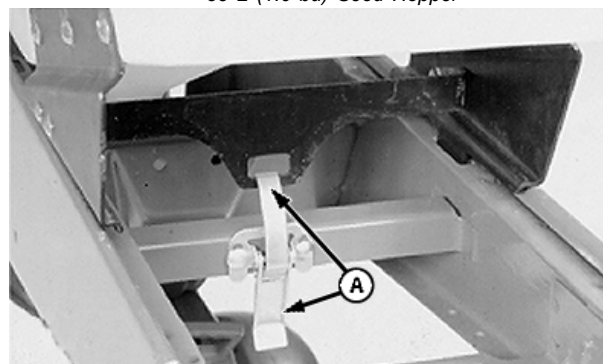
To remove seed hopper from planting unit, disengage hopper latch (A) and lift hopper upward then rearward.

A—Hopper Latch



58 L (1.6 bu) Seed Hopper

A38260 —UN—27NOV95



106 L (3 bu) Seed Hopper

A56981 —UN—15AUG05

OUO6435,0001E05 -19-01MAY09-1/4

Remove vacuum hose (A) from vacuum meter.

A—Vacuum Hose



A54242 —UN—08APR04

Continued on next page

OUO6435,0001E05 -19-01MAY09-2/4

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

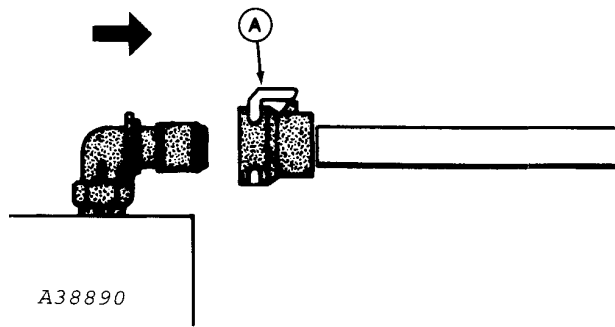
IMPORTANT: Use precautions as recommended by chemical manufacturers when handling parts coated with seed treatments. Use proper skin, eye and respiratory protection.

Empty hopper and vacuum seed meter by inverting hopper. Rotate hopper so seed is slowly poured from LEFT-HAND REAR CORNER. When hopper is empty, some seed will remain in meter housing. To empty this seed, rotate hopper back to operating position. Invert hopper again and pour from LEFT-HAND REAR CORNER to empty seed from meter housing.

NOTE: If using seed treatments, remove any buildup that may occur in bottom of hopper.

IMPORTANT: Avoid damage to meter brush. Do not turn finger pick-up mechanism backwards.

Turn meter shaft by hand to determine if mechanism is free of dirt, chaff, or other foreign material. If mechanism



A—Retainer

is obstructed or further disassembly of finger pick-up unit is required, see Service section.

OUO6435,0001E05 -19-01MAY09-3/4

To inspect meter, lay hopper on side and 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 for gaps, hub seal for cracks and vacuum seal for cracks and wear areas. If replacement is necessary, see Service section.

A—Door

B—Meter Hub



Vacuum Meter

OUO6435,0001E05 -19-01MAY09-4/4

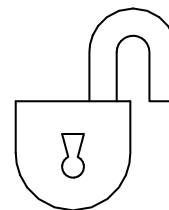
Disengage Meter Drive

A62348 —UN—27MAR08

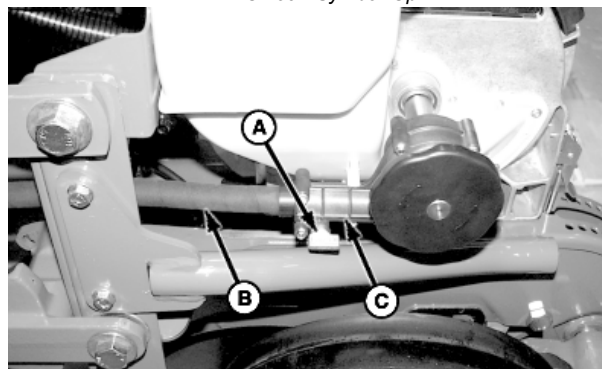
1. Rotate lock pin (A) 180 degrees until the “unlocked” symbol is on top.
2. Pull Pro-Shaft Drive cable (B) approximately 38 mm (1.5 in.) from gearbox housing (C).
3. Rotate lock pin (A) 180 degrees until the “locked” symbol is on top.

A—Lock Pin
B—Cable

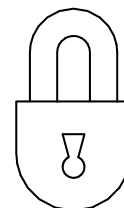
C—Gearbox Housing



Unlock Symbol Up



A62347 —UN—27MAR08



Lock Symbol Up

A49899 —UN—03DEC02

OUO6045,000000E -19-14APR09-1/1

Engage Meter Drive

A62348 —UN—27MAR08

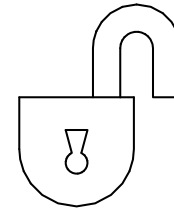
1. Rotate lock pin (A) 180 degrees until the “unlocked” symbol is on top.

NOTE: If Pro-Shaft Drive cable will not slide into housing, rotate meter drive handle (D) until cable slides into gearbox.

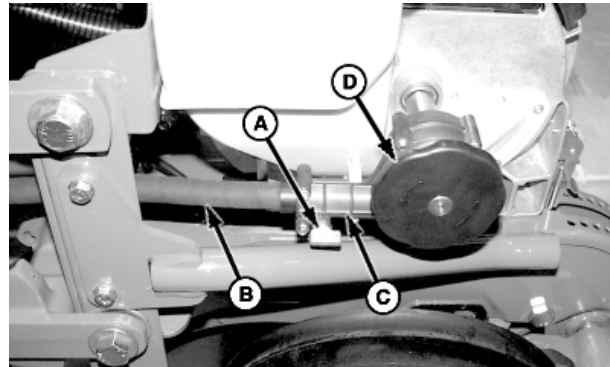
2. Push Pro-Shaft Drive cable (B) into gearbox housing (C).
3. Rotate lock pin (A) 180 degrees until the “locked” symbol is on top.

A—Lock Pin
B—Cable

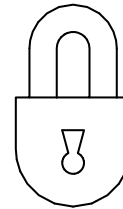
C—Gearbox Housing
D—Meter Drive Handle



Unlock Symbol Up



A62347 —UN—27MAR08



Lock Symbol Up

A51027 —UN—04DEC02

OUC6045,000000F -19-14APR09-1/1

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 the vacuum meter and CCS system (if equipped). Seed properly treated with talc releases from the seed disk more consistently, leading to more accurate spacing when the 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 the chemical manufacturer 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.**

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.

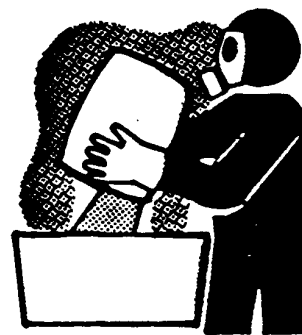
COMMERCIALY TREATED SEED

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

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:

A34471



A34471 —UN—11OCT88

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
1233 L (35 bu.) Bulk Tank	2.6 L (11 cups)
1762 L (50 bu.) Bulk Tank	3.8 L (16 cups)
Per 80 000 kernel seed corn unit	74 mL (5 tbsp.) (2.5 oz.)

Use this table when using 1.6 or 3.0 bushel hoppers (without CCS tanks) to deliver seed to seed meters:

MaxEmerge™ Hopper Talc Application Rate

Note: Talc must be sprinkled over top of seeds in hoppers and thoroughly incorporated, so all seeds have talc coating.

Hopper Size	Amount of Talc
58 L (1.6 bu.)	120 mL (1/2 cup)
106 L (3 bu.)	240 mL (1 cup)

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

Double the talc recommendation when planting small seed, large seed, seeds with heavy treatment, or humid planting conditions.

In certain situations, combinations of sticky seed treatments, large or small seed, and high humidity, it can be necessary to add up to two to three 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.

OJ06045,00006CD -19-12JUL10-1/1

Set Vacuum Levels

Use of Talc Lubricant

(See USE OF TALC LUBRICANT in the Lubrication section.)

OUO6064,00004D4 -19-23MAY11-1/1

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 very 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
Sugar Beets	See Chart
Corn	See Chart
Sweet Corn	See Chart
Popcorn	See Chart
Small, Medium, and Large Edible Beans—Cell Type Seed Disk	8 in. ^a
Small, Medium, and Large Edible Beans—Flat-Type Seed Disk	See Chart
Cotton	8 in.
Cotton Hilldrop	8 in.
Cotton Using Flat Edible Bean Disk	See Chart
Peanuts (Runner, Spanish, and Virginia)	See Chart
Sorghum	8 in.
High Rate Sorghum	8 in.
Oil Sunflower	See Chart
Confectionary Sunflower	See Chart
Soybeans	8 in.
Soybeans Using Cotton Disk	5 to 7 in.
Acid-Delinted Cotton	8 in.

^aSmall edible beans—For seeds that have 6160 seeds/kg (2800 seeds/lb.) or more, set vacuum level at 6 in. Medium edible beans—for garden beans that have 3960 seeds/kg (1800 seeds/lb.) or more, set vacuum level at 6 in.

Initial vacuum levels are readings taken AT PLANTING SPEED.

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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:

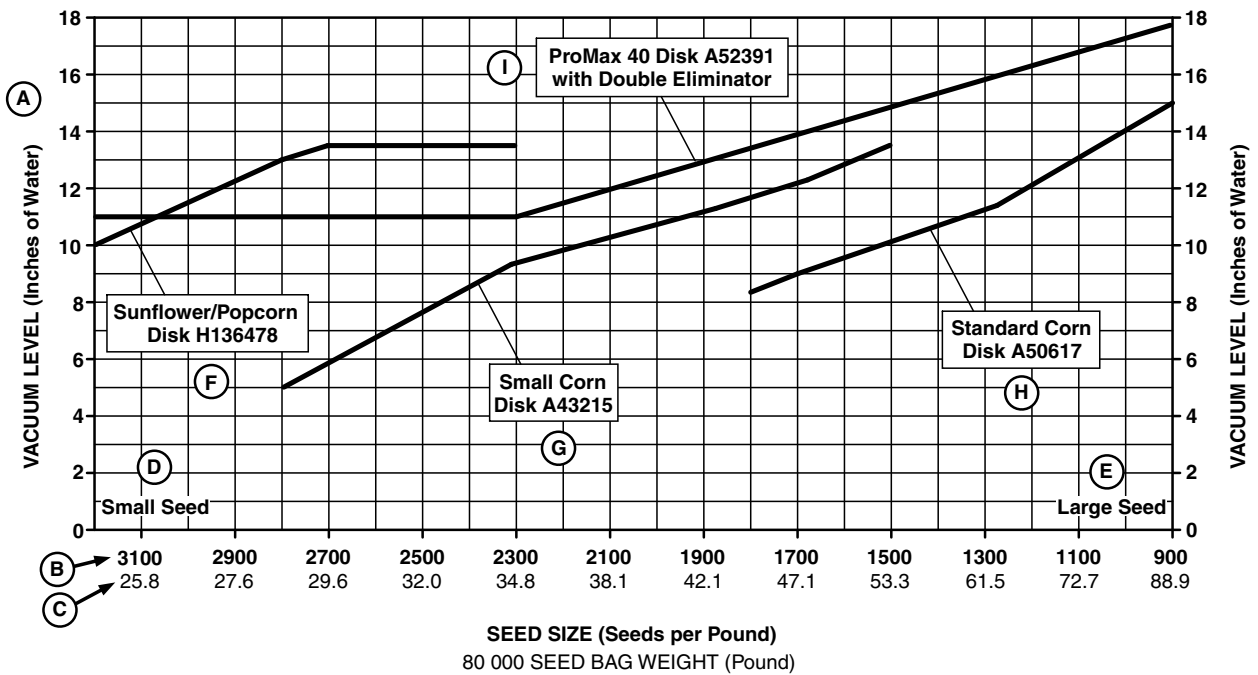
1. Refer to tractor operator's manual. Move hydraulic control lever to forward detent position to start vacuum motor. Allow oil to warm up for 15 minutes.
2. Fill hoppers or CCS bulk tanks with seed.
3. Press "Rotate Seed Meters" button twice on VRD monitor or plant approximately 5 m (15 ft.) to cover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

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.

OUO6064,00004EC -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.

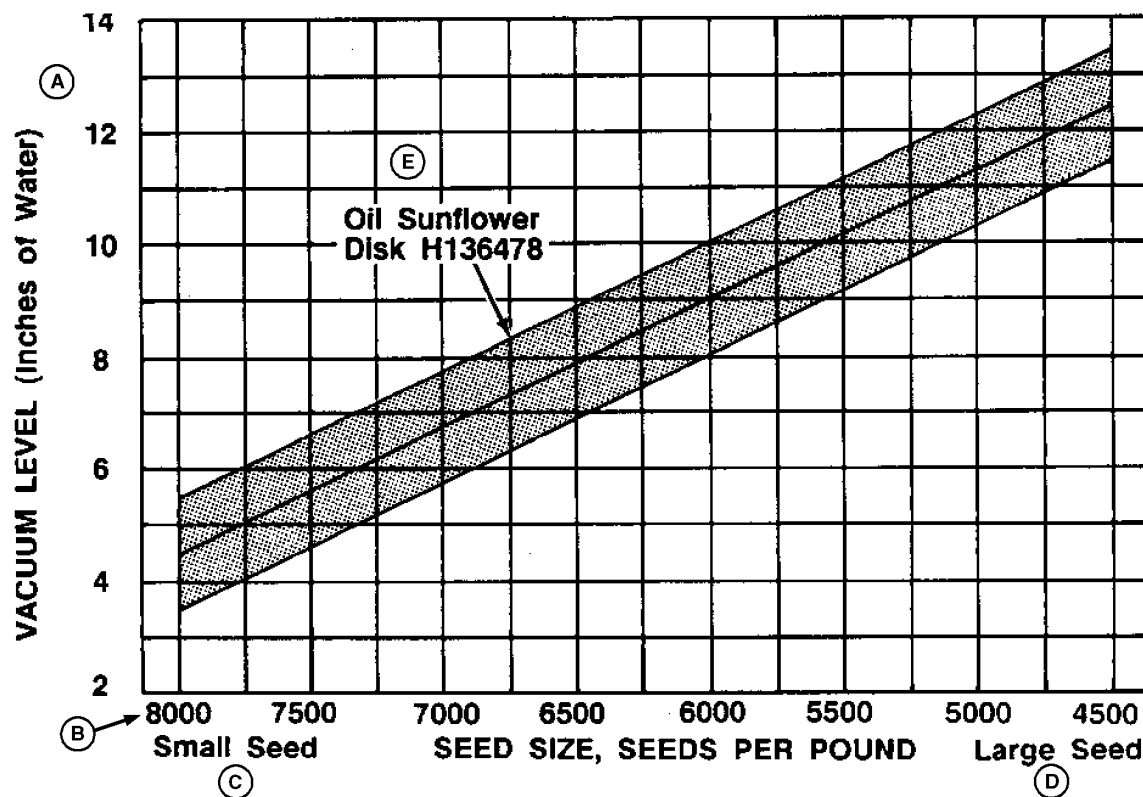
Select the Small Corn Disk initially when seed sizes overlap the Small Corn Disk (A43215) and the Standard Corn Disk (A50617) levels in chart. If population is difficult to control, switch to Standard Corn Disk.

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.

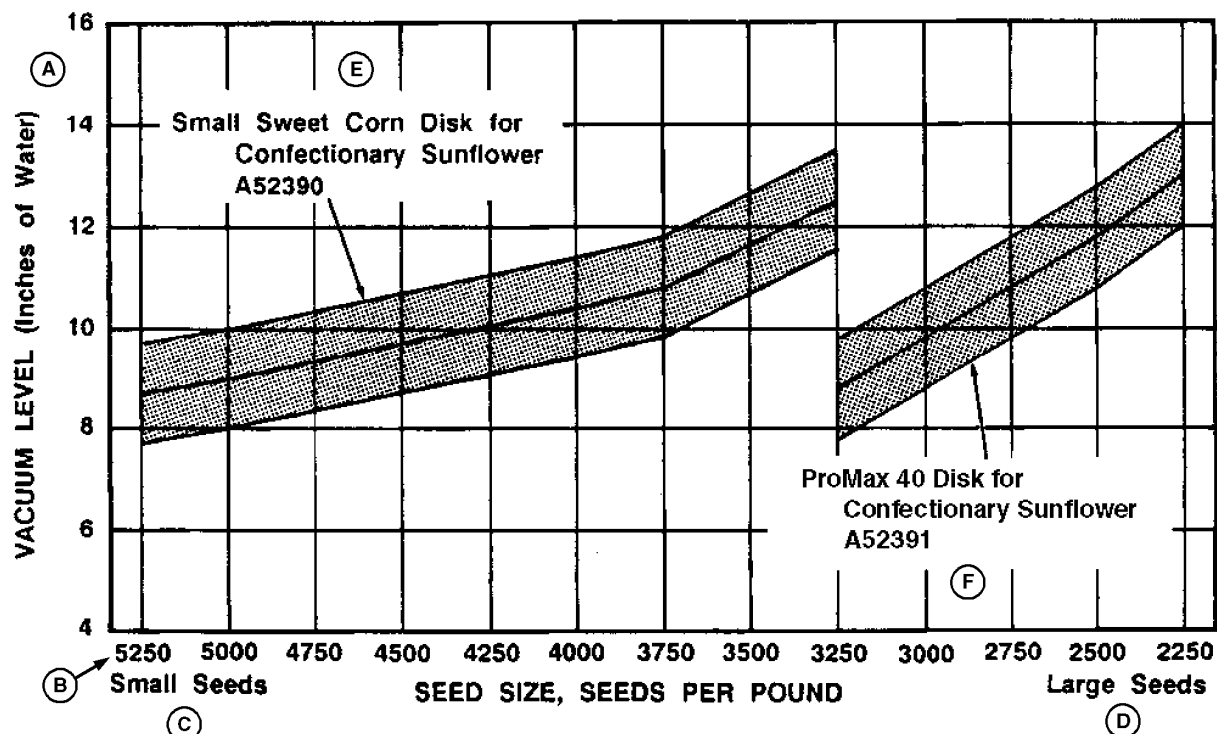
EXAMPLE: If there are 5500 seeds/lb, the chart indicates a vacuum level of 10 in. with Oil Sunflower Disk.

A60565—UN—07/AUG07

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

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.

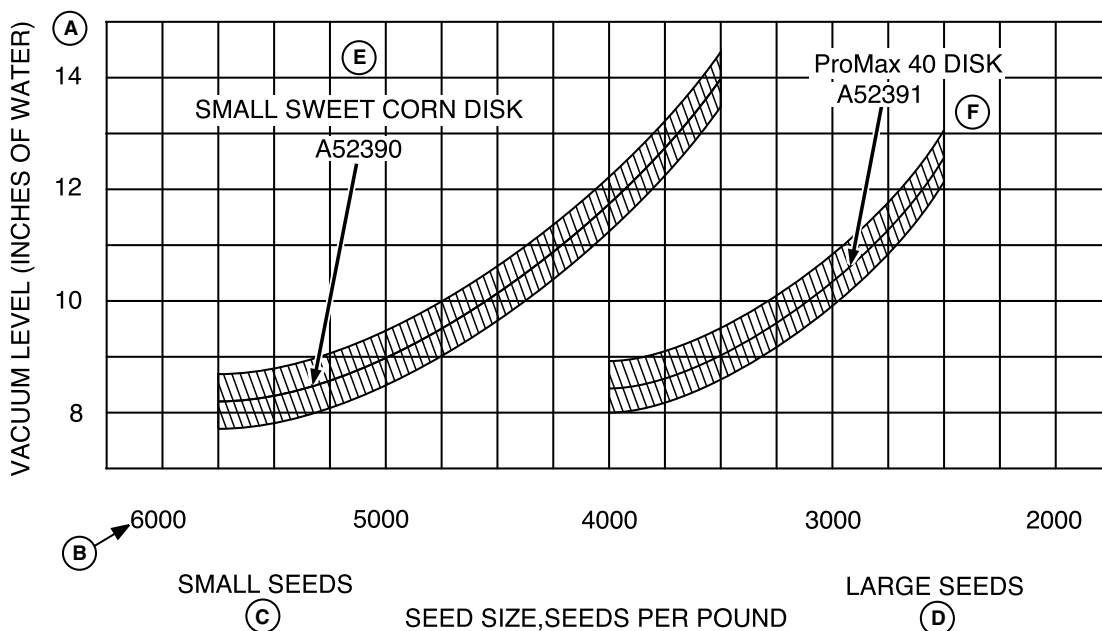
EXAMPLE: If there are 4250 seeds/lb, the chart indicates a vacuum level of 10 in. with Small Sweet Corn Disk.

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.

AG0569—UN—19JUL10

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

Vacuum Level Seed Chart—Flat Edible-Bean Disk

Vacuum Seed Chart Using Flat Edible Bean Disk						
Crop Types	Edible Bean Flat Type Disks			Vacuum	Doubles Eliminator	Seed Size
	Small A52903	Medium A52904	Large A52878	Inches of Water	Percent of Hole Covered	Recommendations
Small Edible Beans						
Small Green Garden	X			16 - 18	0 - 50	1600 - 2400 Seeds/lb.
Black Turtle	X			16 - 18	0 - 50	1900 - 2600 Seeds/lb.
Navy	X			16 - 18	0 - 50	1800 - 2600 Seeds/lb.
Small Whites	X			12 - 14	0 - 50	2400 - 3300 Seeds/lb.
Pink Viva		X		18 - 20	0 - 50	1700 - 1900 Seeds/lb.
Medium Edible Beans						
Medium Green Garden		X		18 - 20	0 - 50	1200 - 1600 Seeds/lb.
Small Red		X		18 - 20	0 - 50	1200 - 1500 Seeds/lb.
Pinto		X		20 - 22	0 - 50	All Sizes
Medium Kidney		X		14 - 16	0 - 50	1150 - 1400 Seeds/lb.
Lima		X		18 - 20	0 - 50	1200 - 1600 Seeds/lb.
Large Edible Beans						
Large Green Garden			X	20 - 22	0 - 25	700 - 1200 Seeds/lb.
Cranberry			X	20 - 22	0 - 50	800 - 1200 Seeds/lb.
Large Kidney			X	18 - 20	0 - 50	850 - 1150 Seeds/lb.
Great Northern			X	18 - 20	0 - 50	900 - 1300 Seeds/lb.
Garbanzo			X	16 - 18	0 - 50	750 - 900 Seeds/lb.
Edible Peas						
Blackeye		X		16 - 18	0 - 50	1600 - 2000 Seeds/lb.
Smooth		X		14 - 16	0 - 50	2800 - 3200 Seeds/lb.
Wrinkle	X			12 - 14	0 - 50	1700 - 2300 Seeds/lb.
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 blower.*

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.

OUO6074,0001021 -19-16JUL10-1/1

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	Doubles Eliminator	Seed Size
	Small A52903	Medium A52904	Large A52878	Inches of Water	Percent of Hole Covered	Recommendations
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.*

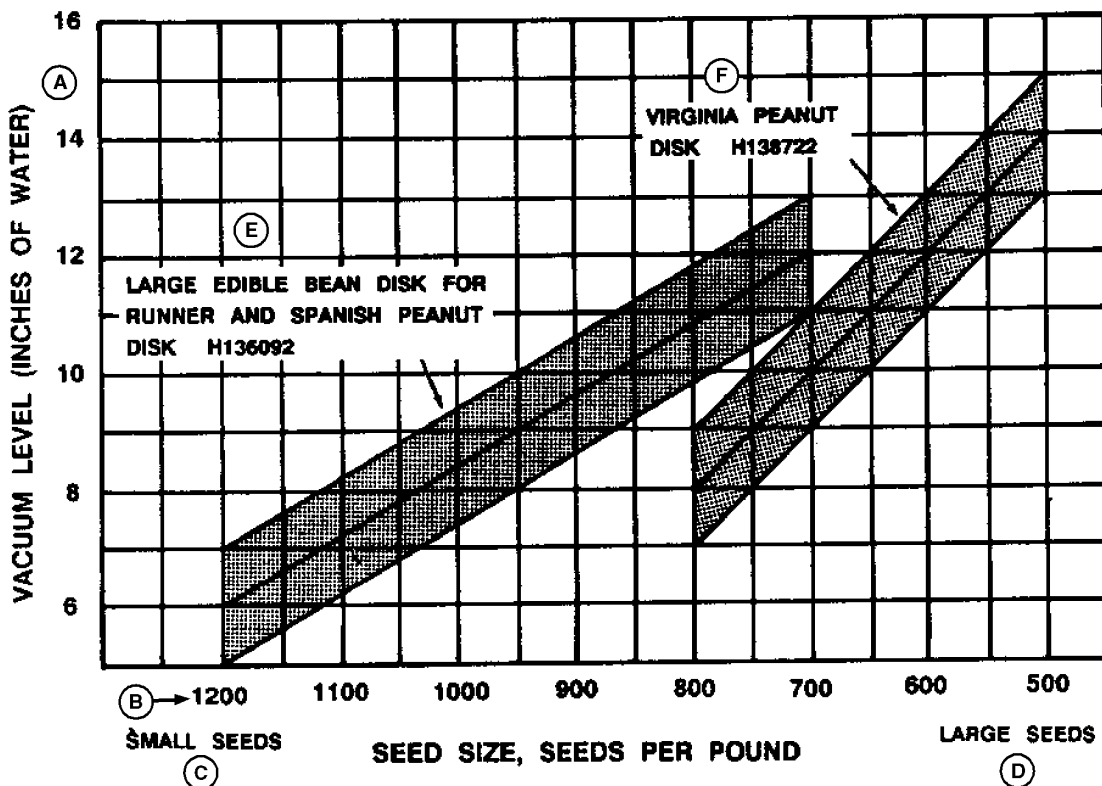
Due to differences in seed sizes and shapes within a seed
variety, actual populations vary at the same vacuum level.

Order the Flat Edible-Bean Vacuum Gauge (AA38407)
through your John Deere dealer.

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

Vacuum Level for Peanuts

IMPORTANT: Vacuum levels are a starting point.
Perform a field check and adjust level to
obtain proper population.



A—Vacuum Level (Inches of Water)
B—Seeds Per Pound

C—Small Seed
D—Large Seed

E—Large Edible Bean Disk for Runner and Spanish Peanut
F—Virginia Peanut 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.

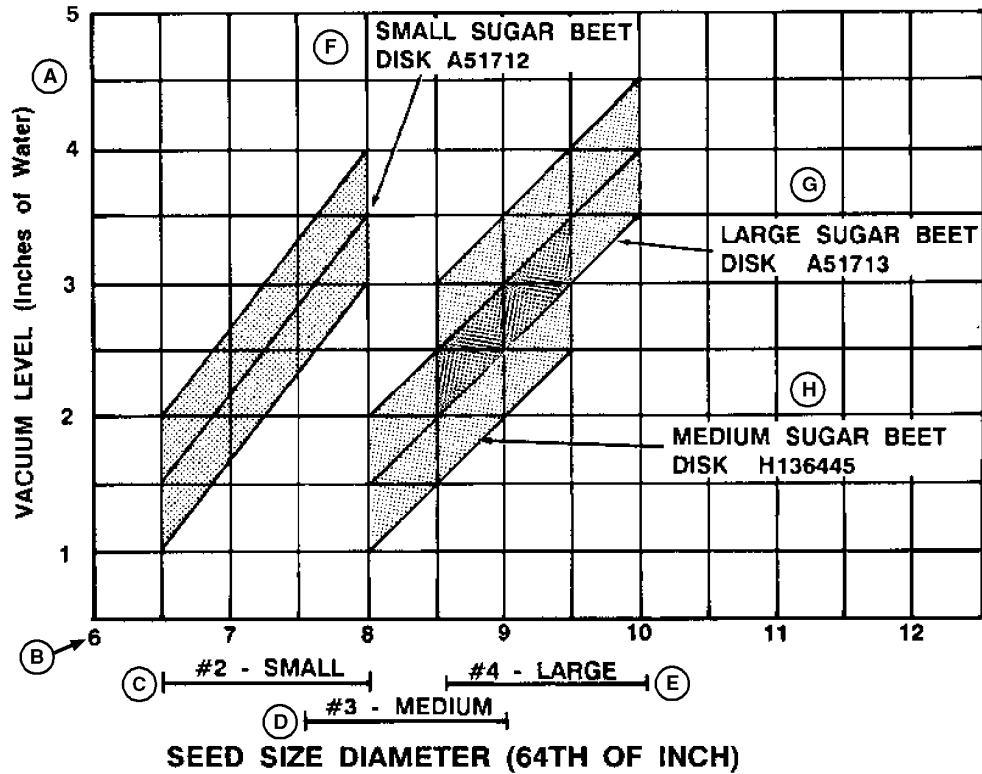
EXAMPLE: If there are 800 seeds/lb, the chart indicates a vacuum level of 11 in. with Large Edible-Bean Disk for Runner Peanuts or a vacuum level of 8 in. with Virginia Peanut Disk.

OUO6074,000101F -19-06AUG07-1/1

A60571—UN—07AUG07

Vacuum Level for Sugar Beet Seed

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



A—Vacuum Level (Inches of Water)
B—Seed Diameter (per 64th of an inch)

C—Small Seed
D—Medium Seed

E—Large Seed
F—Small Sugar Beet

G—Large Sugar Beet
H—Medium Sugar Beet

Use information from seed supplier to calculate seeds per pound.

IMPORTANT: Vacuum levels are a starting point. Perform a field check and adjust level to obtain proper population.

EXAMPLE: If bag label indicates a medium seed diameter of 7.5/64 in. to 9/64 in. Set vacuum level between 1.5 in. to 2.5 in. with Medium Sugar Beet Disk.

OUC6074,0001020 -19-03AUG07-1/1

A60561—UN—07AUG07

Check Seed Population

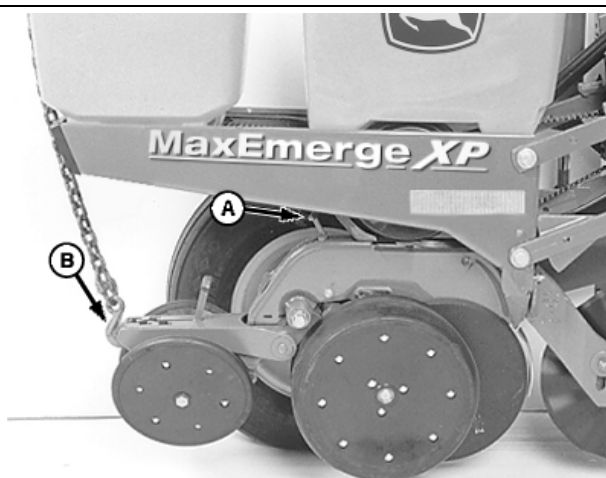
Checking Seed Population

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

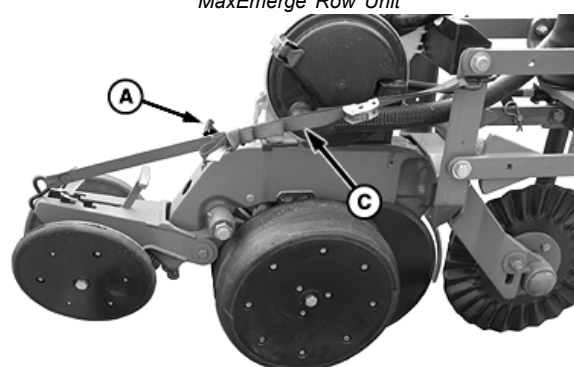
1. On **MaxEmerge** row units attach chain (B) as shown to one or more sets of closing wheels, so seed trench remains open.

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.



MaxEmerge Row Unit



Pro Row Unit

A—Depth-Adjusting Handle
B—Chain

C—Ratchet Strap

Distance to Plant for Population Check									
	Row Width Being Planted								
Fraction of Acre	15 in.	18 in.	19 in.	20 in.	22 in.	30 in.	36 in.	38 in.	40 in.
1/1000 if population is more than 100 000 seeds/acre	34.8 ft.	24.0 ft.	27.6 ft.	26.1 ft.	23.8 ft.	17.4 ft.	14.5 ft.	13.8 ft.	13.1 ft.
1/200 if population is less than 100 000 seeds/acre	174 ft.	145 ft.	138 ft.	131 ft.	119 ft.	87 ft.	72.5 ft.	69 ft.	66 ft.

Distance to Plant for Population Check										
	Row Width Being Planted									
Fraction of Hectare	38 cm	46 cm	48 cm	51 cm	56 cm	70 cm	76 cm	91 cm	97 cm	101 cm
1/1000	26.24 m	21.88 m	20.72 m	19.68 m	17.90 m	14.29 m	13.12 m	10.94 m	10.36 m	9.84 m

Continued on next page

OUC6064,00004D6 -19-23MAY11-1/2

6. Mark distance selected with flags (A).

NOTE: When planting with little depth and with closing wheels raised, seeds tend to roll or jump. Precision of seed spacing is affected.

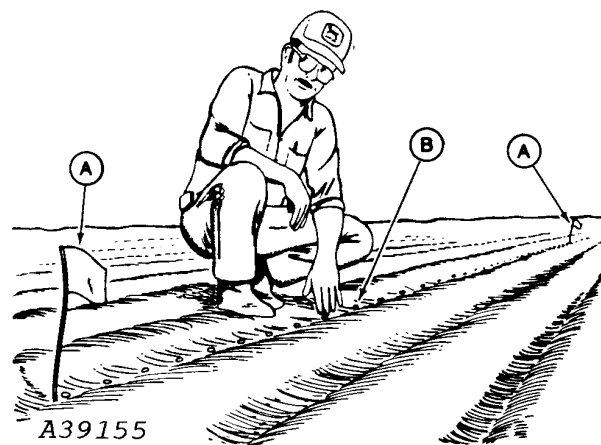
7. Count the seeds (B) between markers.

FOR VACUUM METER ONLY:

If all settings are correct and population is high, reduce vacuum level by units of 1 inch until correct population is reached. If the real population is low, increase vacuum level by half to 1 inch jumps until correct population is reached.

A—Flag

B—Seeds



A39155 —UN—13FEB96

OUO6064,00004D6 -19-23MAY11-2/2

General Attachments

General

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

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

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

AG,OUO6074,1609 -19-07AUG00-1/1

SEEDSTAR™ Integrated Pneumatic Down Force System

SEEDSTAR™ Integrated Pneumatic Down Force system provides “on-the-go” down force pressure changes to the planting row units. The system 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.

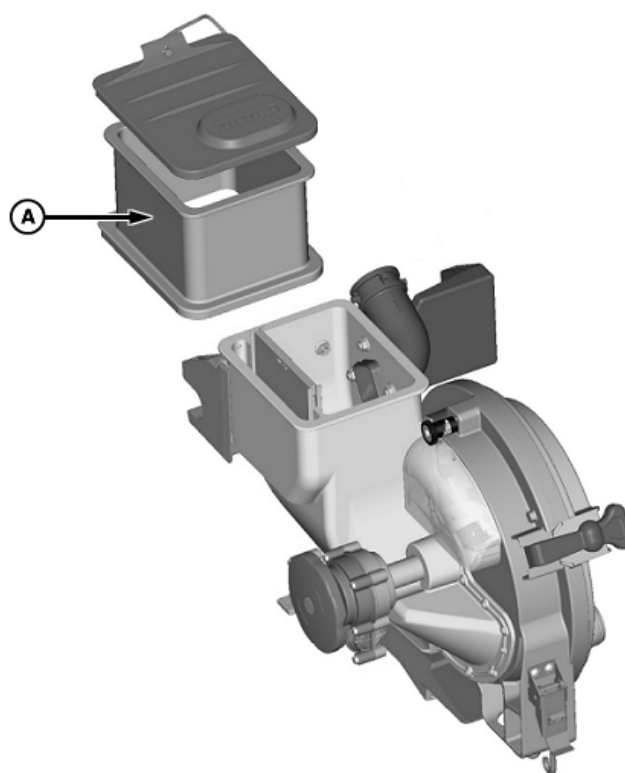
With SEEDSTAR™ integrated pneumatic down force:

- 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.

OUO6064,0000438 -19-16JUN11-1/1

Hopper Extensions for the Pro-Series™ Row Unit



A—Extension

Hopper extensions are available for the Pro-Series row unit seed hopper. These extensions are intended to be used with small-seed crops like sugar beets that are not used in the CCS system or when planting test plots with any seed. They provide additional capacity for the small seeds and provide easier cleanout when changing crop

varieties on a frequent basis. The hopper extensions slide onto the existing hopper and form a tight seal between the hopper and the extension. A maximum of two extensions can be stacked onto the existing hopper. (See **INSTALL HOPPER EXTENSIONS** in Pro-Series™ XP Vacuum Meter Setup section.)

OUO6064,000047B -19-19APR11-1/1

A56609—UN—27JUN05

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 as needed using a SeedStar™ monitor from the tractor cab.

- Operator can match seed population to different soil types or match irrigated versus dry soils.

- Multiple rate selections can be programmed and applied as required.

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

AG,OUO6074,1271 -19-14APR10-1/1

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.

Swath Control Pro is a trademark of Deere & Company

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

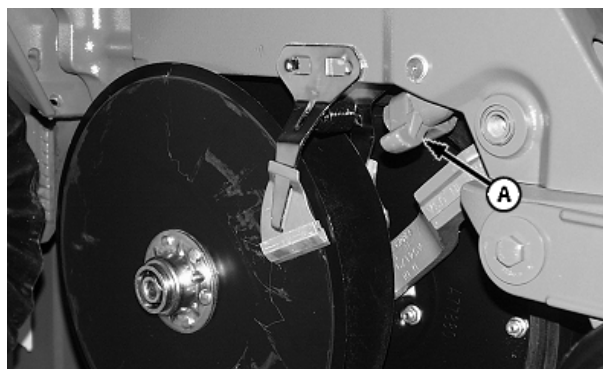
OUO6045,00001A0 -19-16JUL09-1/1

Walking Gauge Wheels

The walking gauge-wheel attachment (A) should be used in rocky conditions or in fields with rough surface conditions due to soil clods or residue. In these conditions, the walking gauge-wheel reduces vertical movement of opener when one gauge wheel rolls over a solid obstacle. Reduced opener movement increases seed depth control.

Walking action is reduced when planting very deep or very shallow.

Walking gauge wheels are not for light soil or well-tilled soil conditions. In these conditions, gauge wheels can run at different heights relative to each other. This results in poor seed-depth consistency and possible poor closing action which may affect emergence.



A54018 —UN—08MAR04

A—Walking Gauge Wheels Attachment

OUO6074,00009D9 -19-08MAR04-1/1

106 L (3.0 Bu) Hopper

106 L (3.0 bu) hoppers are available as an option for plateless and vacuum seed meters.



A54025 —UN—08MAR04

OUO6074,0000C50 -19-13APR09-1/1

Seed Tubes

Large curved, regular curved, regular straight, and small straight seed tubes are available for all seed metering systems.

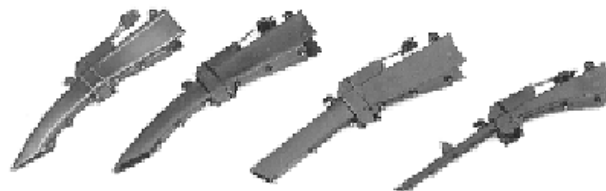
Large curved seed tubes are recommended for planting large edible beans, large peanuts, and other large seeds.

Regular curved seed tubes are recommended for planting acid-delinted cotton, corn, soybeans, sorghum, small edible beans, sugar beets and other small seeds.

Regular straight seed tube plants the same seeds as the regular curved seed tube except it deposits the seed closer to the opener. It is recommended in light, sandy soils which tend to close quickly behind the opener or when planting small, light seeds.

Small straight seed tube is for small seeds such as sorghum. Used with the small seed tube runner it provides better depth control in light, fluffy soils.

A46559 —UN—23AUG00



Seed Tubes

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

To Remove, see **INSTALL AND REMOVE NON-STANDARD SEED TUBES** or **INSTALL AND REMOVE FLUSH FACE SEED TUBES** in Service and Adjustments section.

AG,OUO6074,1275 -19-11MAR10-1/1

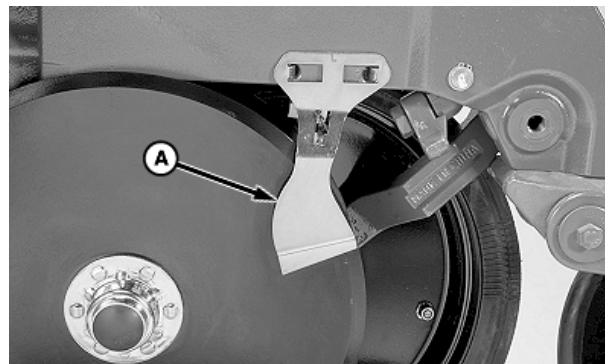
Rigid Scraper

The rigid scraper (A) is recommended for use in only moist and sticky soil conditions.

Inspect scraper insert for wear at beginning of season and periodically during season.

IMPORTANT: Avoid disk wear. Only use scraper in moist and sticky soil conditions. Remove in all other conditions.

A—Rigid Scraper



A71644 —UN—26MAY11

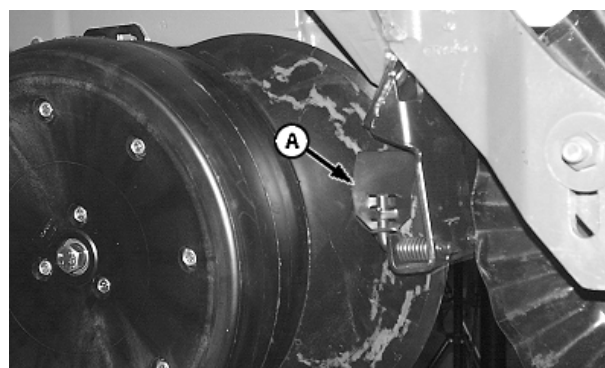
OUO6074,00009D8 -19-26MAY11-1/1

Heavy-Duty Scraper

NOTE: Heavy-duty scrapers can also be used with rotary scrapers.

The heavy duty scraper (A) is recommended for extremely sticky soils to clean Tru-Vee™ opener blades.

A—Heavy Duty Scraper



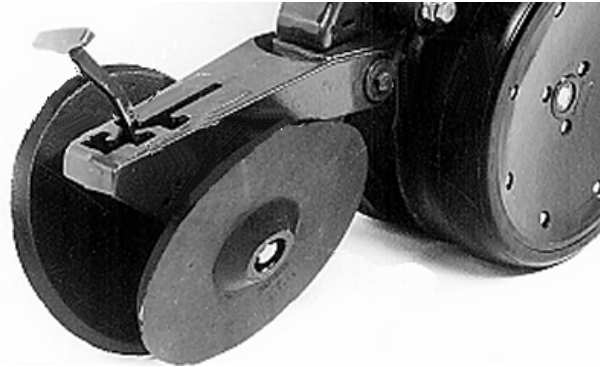
A54020 —UN—08MAR04

OUO6074,00009DA -19-30JUN08-1/1

Heavy-Duty Closing Wheels

NOTE: The heavy-duty closing wheels are not recommended for conventional planting conditions.

In hard to penetrate soils or seed beds with considerable residue, it may be difficult to completely close the seed furrow with regular closing-wheels. Heavy-duty closing wheels are made of heavy cast material and have an aggressive edge to more effectively close the seed furrow in severe soil conditions.



A47303—UN—07APR01

Heavy-Duty Closing Wheels

AG,OUO6074,1278 -19-04AUG00-1/1

Unit Mounted Coulter

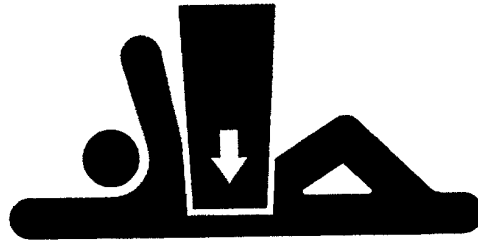
CAUTION: Avoid crushing injury or death from a falling implement. Install service locks before performing any service or adjustments under a raised machine:

Shift tractor to “Park” or set the parking brake, stop engine, and remove the key.

CAUTION: Coulter blades are sharp. Use gloves when handling blades.

IMPORTANT: Bottom edge of coulter blade is placed approximately 10 mm (3/8 in.) up from bottom edge of seed openers in normal conditions. (Check this dimension with machine in planting position on any level surface.) The force required for penetration and the help to maintain a constant seed depth is minimized.

As coulter blade wears, adjust coulter depth.



A44347—UN—18DEC97

IMPORTANT: An option in heavy straw is to position bottom edge of coulter blade under bottom edge of seed openers, but doing so can affect seed depth.

Continued on next page

OUO6074,00000B8 -19-24JUN09-1/3

The unit mounted coulter can be used to assist the TRU-VEE™ opener to penetrate tough soil conditions and to cut or displace residue commonly found in reduced tillage conditions.

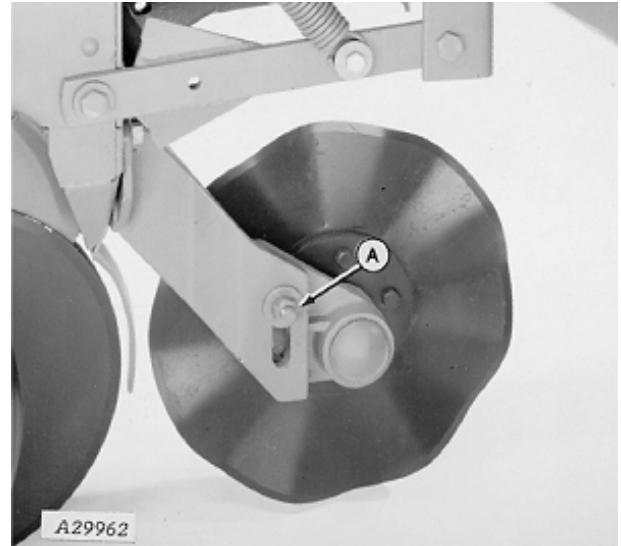
The coulter blade depth is controlled with the opener gauge wheels, weight adjustment, and cap screw (A). As blade wear occurs, loosen cap screw (A), lower arm to next notch and tighten nut.

If the soil is dry on top but moist underneath and the coulter blade is lifting mud to the surface, mud can accumulate on the gauge wheels and alter the seed depth. Either raise the coulter slightly, use a less aggressive blade, or remove coulter in these soil conditions.

Down force springs are recommended with this attachment.

A—Cap Screw

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A29962 —UN—06OCT88

OUO6074,00000B8 -19-24JUN09-2/3

Adjust coulter blade so it is directly in front of TRU-VEE™ opener and is not running at an angle to direction of travel.

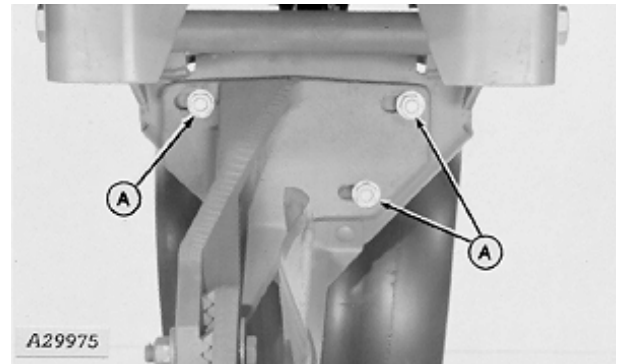
To align side-to-side, loosen cap screws (A) and slide coulter.

If coulter blade is running at an angle different from the direction of travel do the following:

- Remove cap screws (A).
- Add washers, as required, between back surface of coulter casting and front of planting unit.
- Reinstall cap screws (A).

A—Cap Screws

TRU-VEE is a trademark of Deere & Company



A29975 —UN—06OCT88

OUO6074,00000B8 -19-24JUN09-3/3

Unit Mounted Row Cleaners

⚠ CAUTION: Avoid injury. Row cleaner blades are sharp. Safely support machine before service.

The function of the row cleaner is to sweep aside residue without moving soil.

Ground conditions, depth adjustment, and ground speed affect the width of path cleared.

Operate at sufficient speed 6.5—9.5 km/h (4—6 mph) to maintain good residue flow.

Do not expect 100% removal of crop residue. Complete residue removal is not necessary. Complete removal requires engagement of soil, which is not recommended.

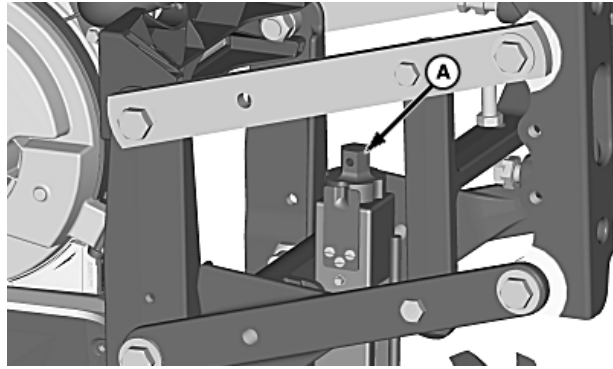
Expect cleaners to stop turning occasionally when row cleaners are properly adjusted above soil surface.

Adjust planter frame height and level planter for proper row cleaner operation (See Prepare Machine section).

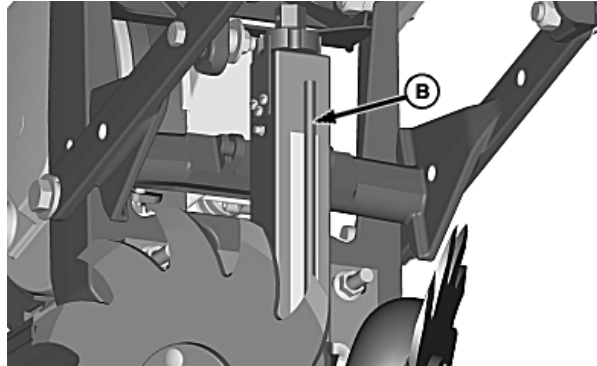
Turn knob (A) to adjust one row cleaner to engage residue and not soil. Test for proper operation and continue to adjust until height is correct. View depth gauge (B) and set remaining row cleaners to same setting. Verify correct operation of all row cleaners.

Adjust row unit down force to match residue conditions and maintain desired seed depth. Avoid operation in excessively rocky conditions. Contact with obstacles can raise entire row unit and alter seed depth.

If the residue clearing action is too aggressive, standard tine tooth wheels are available from your dealer.



A64723—UN—26MAY09



A64724—UN—26MAY09

A—Knob

B—Depth Gauge

NS43404,00001AE -19-08JUN09-1/1

Row Cleaner for Unit Mounted Coulter

CAUTION: Avoid injury. Row cleaner blades are sharp. Safely support machine before service.

IMPORTANT: Avoid machine damage. Pin (A) must be installed through bracket (B), below or through arm (C).

IMPORTANT: Avoid machine damage. If set in a high rigid position, row cleaner can contact frame when row unit travels over rough surfaces.

Ground conditions, depth adjustment, and ground speed affect the width of path cleared.

Operate at sufficient speed 6.5—9.5 km/h (4—6 mph) to maintain good residue flow.

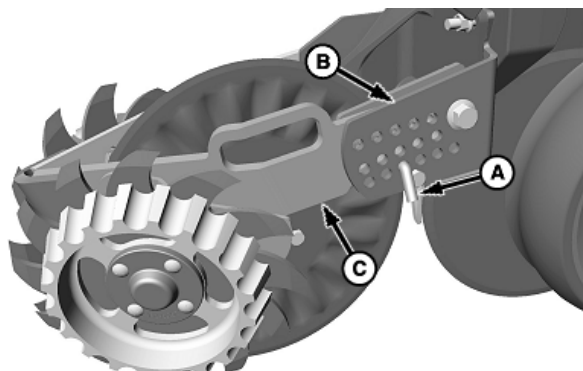
Do not expect 100% removal of crop residue. Complete residue removal is not necessary. Complete removal requires engagement of soil, which is not recommended.

Expect row cleaners to stop turning occasionally when they are properly adjusted above soil surface.

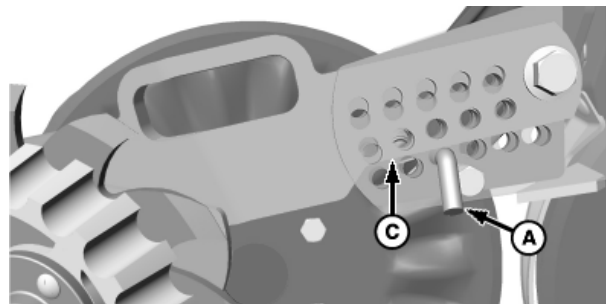
Adjust row unit down force to match residue conditions and maintain desired seed depth.

Adjust planter frame height and level planter for proper row cleaner operation (See Prepare Machine section).

If the residue clearing action is too aggressive, standard tine tooth wheels are available from your dealer.

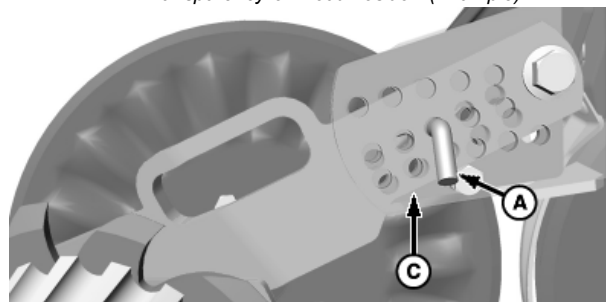


AG4725 —UN—08JUL09



AG4858 —UN—08JUL09

Transparency of Float Position (Example)



AG4859 —UN—08JUL09

Transparency of Rigid Position (Example)

A—Pin
B—Mounting Bracket

C—Row Cleaner Arm

Floating Operation	Rigid Operation	Operation Without Coulter
Place pin (A) through bracket (B) in the lowest hole possible, so blades engage residue and not soil. Install pin so arm (C) rides on top of pin and is allowed to float upward over obstacles. Test for proper operation and continue to adjust until height is correct. Note the hole used and set remaining row cleaners to same position. Verify correct operation of all row cleaners.	IMPORTANT: Avoid damage. Do not set in highest positions in very rough field conditions. When pinned rigid, contact with obstacles can raise entire row unit and alter seed depth. Only use rigid operation when necessary. If residue is too heavy and row cleaners float over the residue, place pin (A) through bracket (B) and arm (C) for rigid operation. Adjust blades just above soil surface. Test for proper operation and continue to adjust until height is correct. Note the hole used and set remaining row cleaners to same position. Verify correct operation of all row cleaners.	If the soil is dry on top but moist underneath and the coulter blade is lifting mud to the surface, mud can accumulate on the gauge wheels and alter the seed depth. Either raise the coulter slightly, use a less aggressive blade, or remove coulter in these soil conditions. If coulter blade is removed, reposition row cleaner wheels to a staggered orientation. On right-hand side of planter, reposition right-hand wheel and scraper to front set of holes. On left-hand side of planter, reposition left-hand wheel and scraper to front set of holes. If coulter is reinstalled, return row cleaner wheels and scrapers to rear holes.

NS43404.00001AF -19-16JUL09-1/1

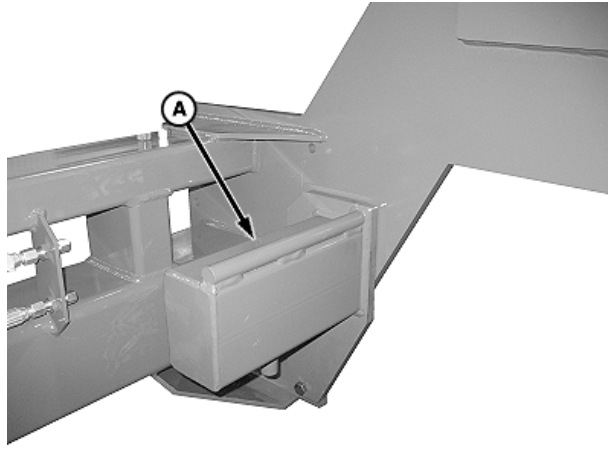
Ballast Attachment

Ballast mounting bracket (A), located in place of markers, accepts tractor weights.

Place weights on bracket as required for proper row unit penetration in hard ground conditions.

NOTE: A full set of weights on ballast bracket is equal to marker weight in raised position.

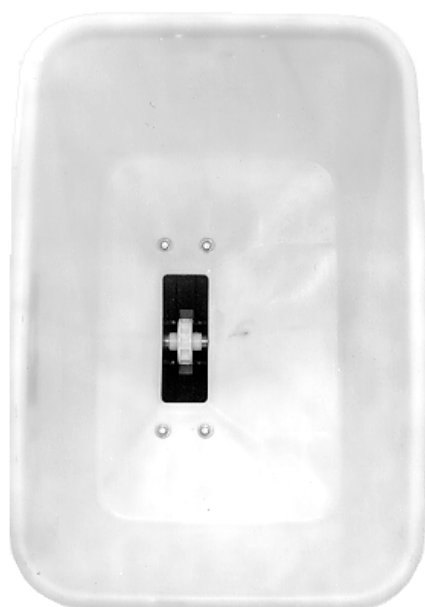
A—Bracket



A68036 —UN—02JUL10

OUC6064,00001F8 -19-13JUL10-1/1

Granular Chemical Attachment



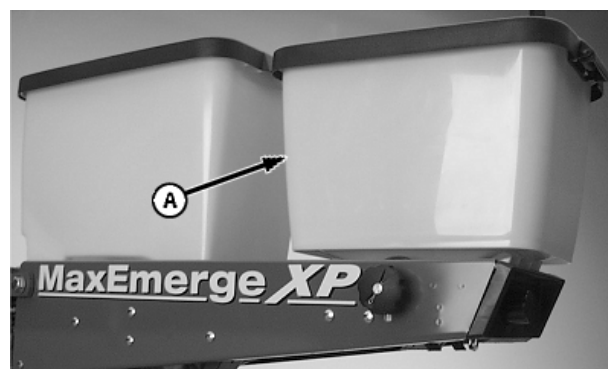
Single Chemical Hopper

A—Granular Hopper

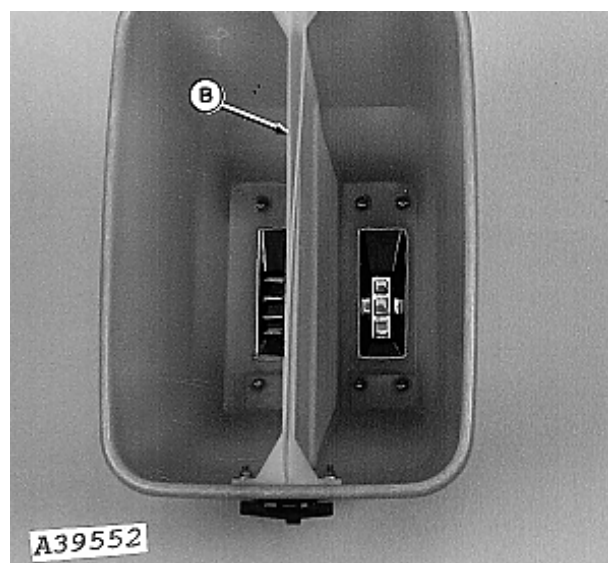
B—Divider

The granular chemical attachment can be used to deliver one or two different granular chemicals.

The granular hopper (A) holds 32 kg (70 lb) of one type of chemical or 16 kg (35 lb) of insecticide and herbicide using a dual chemical hopper with divider (B).



A54021—UN—08MAR04



A39552—UN—29MAR96

Dual Chemical Hopper

A41131—UN—17APR97

The application rate is determined by:

- Size of opening in meter housing assembly
- Planting speed

Continued on next page

OUC6074,00009DB -19-22MAY09-1/3

Turn knobs (A) on rear of granular meters to adjust the opening size. There are 80 increments which indicate the relative application rate. The delivery rate will increase from 1 through 79. Setting 00 closes the opening completely. A fluted roller or CHEMMIZER™ meter delivers the granular chemical to the adjustable opening.

The granular chemical flows through a given opening size at a nearly uniform rate regardless of rotor rpm. Therefore, SPEED has the greatest impact on application rate and resulting chemical concentration in the row.

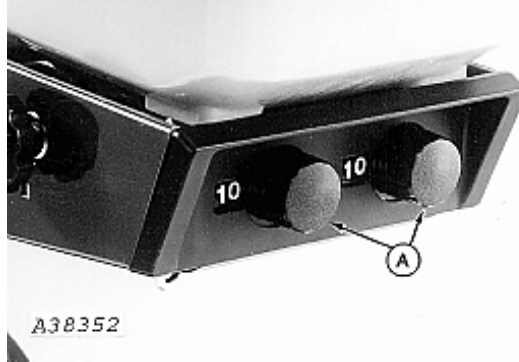
EXAMPLE:

If planting speed is reduced from 10 km/h to 5 km/h (6 mph to 3 mph), chemical concentration will nearly double, since the delivery rate through the orifice remains nearly the same, while distance traveled in a given period of time has been cut in half. Therefore, twice as much chemical is placed on the ground due to the decrease in ground speed.

Rotor rpm will not change the chemical meter delivery rate unless the seed population is changed significantly (± 25 percent or more from the original setting).

The rate charts in this section are approximate and based on a planting speed of 8 km/h (5 mph). They are to be

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A—Knobs

used only as a guide to determine a starting point for the meter dial setting.

Always check rate of application as outlined in this section to confirm desired rate.

Continued on next page

OUO6074,00009DB -19-22MAY09-2/3

A38352—UN—19DEC05

To engage insecticide and/or herbicide drive, rotate knob (A) until spring-loaded knob engages spring pin in insecticide/herbicide drive shaft.

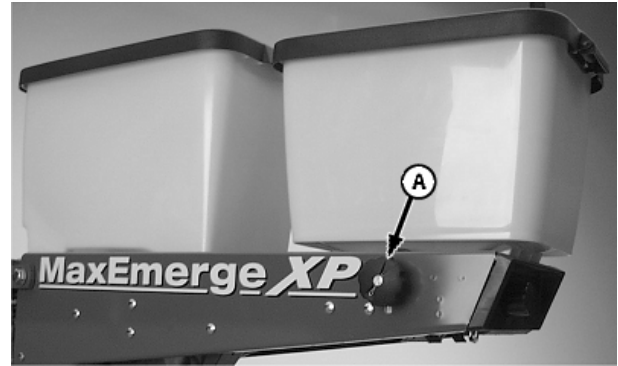
⚠ CAUTION: Agricultural chemicals can be dangerous. Improper selection or use can injure persons, animals, plants, soils, or other property. BE SAFE: Select the right chemical for the job. Use rubber gloves and respirator and apply the chemical with care. Follow instructions of the chemical manufacturer.

Most insecticides and herbicides readily accumulate moisture and may damage the granular attachment if allowed to remain in the hopper when the machine is not in use. Even during periods of operation, deposits of insecticide may build up in the hopper and interfere with working parts. Therefore, the hoppers should be checked every day for any material buildup and thoroughly cleaned if the machine is not to be used for a period greater than two days.

See Service and Adjustments section in machine operator's manual for cleaning instructions.

IMPORTANT: Because the available chemical materials vary widely in consistency and composition, their "flow-ability" is affected by temperature and humidity conditions. It is important to calibrate each individual meter to the particular chemical being used.

NOTE: Application rates greater than 227 gm (8 oz) per 305 m (1000 ft) at 10 km/h (6 mph) require installation of the high rate fluted roller in meter.



A—Knob

Follow chemical manufacturer's application rate and meter setting recommendations as a starting point for the meter dial setting.

If meter setting is not available from chemical manufacturer, use the charts in this section as a starting point for meter dial setting.

To determine application rate and initial meter setting, proceed to DETERMINING APPLICATION RATE AND INITIAL METER SETTING in this section.

A54022—UN—08MAR04

OUC6074,00009DB -19-22MAY09-3/3

Determining Application Rate and Initial Meter Setting

The chemical manufacturer may recommend the rate of application for granular chemicals in the following ways:

- Grams per 305 linear row meters
- Ounces per 1000 linear row feet
- Kilograms per hectare for a given band width and row spacing
- Pounds per acre for a given band width and row spacing
- Kilograms per hectare for complete (broadcast) coverage
- Pounds per acre for complete (broadcast) coverage

When the chemical manufacturer recommends a rate (linear distance or area) for a given band width and row spacing, proceed to the chemical manufacturer's recommended meter setting or to the meter setting recommended in the rate charts in this section.

When the chemical manufacturer recommends a rate (area) for complete (broadcast) coverage only, it is necessary to calculate the appropriate rate for band width and row spacing being planted. This will give the same chemical concentration in the band area as the chemical manufacturer recommends for complete (broadcast) coverage.

NOTE: We recommend measuring the actual band width applied and using this width in application rate calculations.

Use the following formula to convert broadcast coverage into specific band width and row spacing coverage.

FORMULA:

$(A \times B) \div C =$ Delivery rate per area for a given band width and row spacing

A—Chemical manufacturers recommended rate in kilograms per hectare or pounds per acre for complete (broadcast) coverage

B—Band width in cm or in.

C—Row spacing in cm or in.

EXAMPLE:

The chemical manufacturer recommends 5 kg/ha (20 lb/acre) for complete broadcast coverage. The band width is 36 cm (14 in.). The row spacing is 76 cm (30 in.).

$(5 \text{ kg} \times 36 \text{ cm}) \div 76 \text{ cm} = 2.4 \text{ kg/ha}$

$(20 \text{ lb} \times 14 \text{ in.}) \div 30 \text{ in.} = 9.3 \text{ lb/acre}$

The required delivery rate for 36 cm (14 in.) bands and 76 cm (30 in.) row spacings would be 2.4 kg/ha (9.3 lb/acre).

Delivery of 2.4 kg/ha (9.3 lb/acre) of chemical in a 36 cm (14 in.) band area will provide the same chemical

concentration on the soil surface as delivery of 5 kg/ha (20 lb/acre) broadcast coverage.

Proceed to chemical manufacturer's recommended meter setting or to meter setting recommended in the rate charts in this section which will deliver 2.4 kg/ha (9.3 lb/acre).

To check exact number of kilograms per hectare or pounds per acre of chemical that will be delivered, attach a plastic bag to each chemical diffuser, lower machine, and proceed as follows:

Drive 150 m (500 ft) at planting speed. Weigh chemical (in ounces) that was caught in one bag. Multiply amount caught by factor in table, to determine kilograms per hectare or pounds per acre.

Check the chemical caught in each bag in the same manner.

Pounds Per Acre Factor for Given Row Width	
Row Width	Factor
20 in.	3.3
22 in.	3.0
30 in.	2.2
36 in.	1.8
38 in.	1.7

Kilograms Per Hectare Factor for Given Row Width	
Row Width	Factor
51 cm	0.131
56 cm	0.119
70 cm	0.095
76 cm	0.086
91 cm	0.071
97 cm	0.067

EXAMPLES:

- Assume row width is 76 cm and 160 grams are caught in one bag (one row). 160 grams times 0.086 (factor for 76 cm rows) equals 13.8 kg/ha.
- Assume row width is 30 in. and 5.6 ounces is caught in one bag (one row). 5.6 ounces times 2.2 (factor for 30 in rows) equals 12.3 lb/acre.

NOTE: If a significant difference in rate is observed between rows, the meter dial mechanism may require recalibration. See **CALIBRATING INSECTICIDE/HERBICIDE METER** in this section.

If desired amount is not obtained for each row unit with the first setting, turn metering knob and repeat check until desired amount is delivered.

Insecticide Rate Chart—Clay Granules—56 cm Rows

METRIC UNITS OF MEASURE - METER SETTING INSECTICIDE APPLICATION RATES (Clay Granules)						
Meter Setting	APPROXIMATE RATE IN kg/hectare 56 cm Rows			KILOGRAMS PER 305 Row M		
	6.4 km/h	9.6 km/h	12.8 km/h	6.4 km/h	9.6 km/h	12.8 km/h
10	3.8	2.6	1.9	.07	.04	.03
11	4.7	3.1	2.3	.08	.05	.04
12	5.5	3.6	2.8	.09	.06	.05
13	6.6	4.5	3.3	.10	.08	.06
14	8.0	5.4	4.0	.14	.09	.07
15	9.2	6.1	4.6	.16	.10	.08
16	10.4	6.9	5.3	.18	.12	.08
17	11.7	7.8	5.8	.20	.18	.10
18	12.5	8.4	6.3	.21	.14	.11
19	13.4	9.0	6.7	.23	.15	.12
20	14.2	9.5	7.2	.24	.16	.12
21	15.0	10.0	7.5	.26	.17	.13
22	15.7	10.4	7.8	.27	.18	.13
23	16.5	10.9	8.3	.28	.19	.18
24	17.1	16.5	8.6	.29	.19	.15
25	17.8	11.8	8.9	.30	.20	.15
26	18.3	12.1	9.2	.31	.20	.15
27	19.0	12.8	9.5	.32	.21	.16
28	19.5	13.0	9.9	.33	.22	.16
29	20.3	13.6	10.1	.34	.23	.17
30	20.7	13.8	10.4	.35	.24	.18
31	21.2	14.1	10.6	.36	.24	.18
32	21.8	14.6	10.9	.37	.25	.18
33	22.4	14.8	11.2	.38	.25	.19
34	23.2	15.5	11.7	.39	.26	.20
35	24.0	15.9	12.0	.41	.27	.20
36	24.8	16.5	12.3	.42	.28	.21
37	25.3	16.9	12.5	.43	.29	.22
38	26.1	17.4	13.0	.44	.30	.22
39	26.8	17.9	13.3	.46	.30	.23
40	27.7	18.4	13.8	.47	.31	.23
41	28.2	18.9	14.0	.48	.32	.24
42	28.3	19.5	14.8	.50	.33	.24
43	30.7	20.4	15.3	.52	.35	.26
44	32.3	21.5	16.1	.55	.37	.27
45	33.9	22.7	17.0	.58	.38	.29
46	36.0	24.0	17.9	.61	.41	.30
47	37.6	25.0	18.8	.64	.43	.32
48	39.3	26.2	19.6	.67	.45	.35
49	41.1	27.3	25.5	.70	.47	.35
50	42.8	28.6	21.3	.73	.49	.36
51	44.5	29.6	22.3	.75	.51	.38
52	46.5	32.4	24.2	.82	.55	.41
53	48.5	32.4	24.2	.82	.55	.41
54	50.6	33.7	25.3	.86	.57	.43
55	53.0	35.5	26.5	.90	.60	.45

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OUO1074,0001474 -19-07APR09-1/2

MaxEmerge™XP Granular Chemical

METRIC UNITS OF MEASURE - METER SETTING INSECTICIDE APPLICATION RATES (Clay Granules)						
Meter Setting	APPROXIMATE RATE IN kg/hectare 56 cm Rows			KILOGRAMS PER 305 Row M		
	6.4 km/h	9.6 km/h	12.8 km/h	6.4 km/h	9.6 km/h	12.8 km/h
56	55.2	36.9	27.7	.94	.62	.47
57	57.3	38.2	28.7	.97	.65	.48
58	58.7	39.8	29.8	1.01	.68	.51
59	61.9	41.2	31.0	1.05	.70	.63
60	63.8	42.7	31.9	1.08	.72	.54

OUO1074,0001474 -19-07APR09-2/2

Insecticide Rate Chart—Clay Granules—70 cm Rows

Metric Units of Measure - Meter Setting			
Insecticide Application Rates (Clay Granules)			
Approximate Rate in Kilograms/Hectare			
	70 cm ROWS		
	KM/HOUR		
Meter Setting	6.4	9.7	12.9
10	3.1	2.1	1.6
11	3.7	2.4	1.8
12	4.4	2.9	2.2
13	5.4	3.5	2.7
14	6.5	4.3	3.2
15	7.3	4.9	3.7
16	8.3	5.5	4.1
17	9.3	6.2	4.6
18	10.0	6.7	5.0
19	10.6	7.1	5.4
20	11.3	7.6	5.7
21	12.0	7.9	6.0
22	12.6	8.3	6.2
23	13.1	8.7	6.6
24	13.7	9.2	6.8
25	14.2	9.4	7.1
26	14.5	9.6	7.3
27	15.1	10.1	7.6
28	15.5	10.4	7.8
29	16.1	10.7	8.1
30	16.5	11.0	8.3
31	16.8	11.2	8.4
32	17.3	11.6	8.7
33	17.8	11.8	8.9
34	18.4	12.3	9.3
35	19.0	12.7	9.5
36	19.6	13.1	9.8
37	20.1	13.4	10.0
38	20.7	13.8	10.4
39	21.4	14.3	10.6
40	22.0	14.6	11.0
41	22.4	15.0	11.2
42	23.3	15.5	11.7
43	24.4	16.2	12.2
44	25.6	17.1	12.8
45	27.0	18.1	13.5
46	28.6	19.0	14.3
47	29.9	19.9	15.0
48	31.2	20.9	15.6
49	32.7	21.7	16.3
50	34.0	22.7	17.0
51	35.4	23.5	17.7
52	37.0	24.6	18.4
53	38.6	25.7	19.3

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OUO1074.0000087 -19-27JAN01-1/2

MaxEmerge™XP Granular Chemical

Metric Units of Measure - Meter Setting			
Insecticide Application Rates (Clay Granules)			
Approximate Rate in Kilograms/Hectare			
	70 cm ROWS		
	KM/HOUR		
Meter Setting	6.4	9.7	12.9
54	40.3	26.8	20.1
55	42.1	28.1	21.1
56	43.9	29.3	22.0
57	45.6	30.4	22.8
58	47.5	31.6	23.7
59	49.3	32.8	24.6
60	50.8	33.9	25.4

OUO1074,0000087 -19-27JAN01-2/2

Insecticide Rate Chart—Sand Granules—56 cm Rows

METRIC UNITS OF MEASURE - METER SETTING INSECTICIDE APPLICATION RATES (Sand Granules)						
METER SETTING	APPROXIMATE RATE IN kg/hectare 56 cm Rows			GRAMS PER 305 M		
	6.4 km/h	9.7 km/h	12.9 km/h	6.4 km/h	9.7 km/h	12.9 km/h
6	2.3	1.7	1.2	42.5	28.3	19.8
7	3.6	2.4	1.8	59.5	39.7	31.2
8	4.7	3.2	2.5	79.4	53.9	39.7
9	5.9	4.0	3.0	102.1	68.0	51.0
10	7.4	4.9	3.7	124.7	82.2	62.4
11	8.7	5.8	4.5	147.4	99.2	73.7
12	10.3	6.9	5.3	175.8	116.2	87.9
13	11.8	7.8	5.9	201.3	133.2	99.2
14	13.5	9.1	6.7	229.6	153.1	113.4
15	15.1	10.0	7.5	255.1	170.1	127.6
16	16.5	10.9	8.3	277.8	187.1	138.9
17	17.8	11.8	8.8	303.3	201.3	150.3
18	19.1	12.8	9.6	326.0	218.3	161.6
19	20.4	13.7	10.3	345.9	229.6	172.9
20	21.8	14.6	10.9	368.5	246.6	184.3
21	23.2	15.5	11.6	394.1	260.8	195.6
22	24.5	16.5	12.3	416.7	277.8	207.0
23	26.0	17.4	13.0	439.4	292.0	221.1
24	27.3	18.3	13.7	462.1	309.0	232.5
25	28.7	19.1	14.4	487.6	323.2	243.8
26	30.2	20.1	15.2	513.1	343.0	255.1
27	31.6	21.1	15.8	535.8	357.2	269.3
28	33.1	22.1	16.6	561.3	374.2	280.7
29	34.7	23.2	17.4	589.7	391.2	294.8
30	36.1	24.1	18.1	615.2	408.2	306.2
31	37.8	25.3	19.0	643.5	428.1	320.3
32	34.4	26.2	19.8	669.0	445.1	334.5
33	41.1	27.4	20.6	697.4	464.9	348.7
34	42.8	28.6	21.5	725.7	484.8	362.9
35	44.5	29.6	22.3	754.1	504.6	377.0
36	46.2	30.8	23.2	785.3	524.5	394.1
37	48.2	32.0	24.1	816.5	544.3	408.2
38	50.1	33.3	25.0	847.7	567.0	425.2
39	51.8	34.5	26.0	878.8	586.8	439.4
40	53.6	35.7	26.9	910.0	606.7	456.4
41	55.7	37.2	27.9	944.0	629.4	473.4
42	57.7	38.2	28.9	978.1	652.0	490.4
43	59.7	39.8	29.9	1012.1	674.7	507.5
44	61.7	41.1	30.8	1046.1	697.4	524.5
45	63.8	42.4	31.9	1083.0	722.9	541.5
46	65.0	44.0	33.0	1119.8	745.6	558.5
47	68.1	45.5	34.0	1156.7	771.1	578.3
48	70.4	46.9	35.3	1193.5	796.6	598.2
49	72.6	48.4	36.4	1230.4	822.1	615.2
50	75.0	50.1	37.6	1272.9	847.7	637.9

OUO1074,0001478 -19-28APR06-1/1

Insecticide Rate Chart—Sand Granules—70 cm Rows

Metric Units of Measure - Meter Setting			
Insecticide Application Rates (Sand Granules)			
Approximate Rate in Kilograms/Hectare			
	70 cm ROWS		
	KM/HOUR		
Meter Setting	6.4	9.7	12.9
6	2.0	1.3	1.0
7	2.8	1.8	1.5
8	3.8	2.6	2.0
9	4.8	3.2	2.4
10	5.9	3.9	2.9
11	7.0	4.6	3.5
12	8.2	5.5	4.1
13	9.4	6.2	4.8
14	10.7	7.2	5.4
15	12.0	7.9	6.0
16	13.1	8.7	6.6
17	14.2	9.4	7.1
18	15.3	10.1	7.7
19	16.2	10.9	8.2
20	17.3	11.6	8.7
21	18.4	12.3	9.3
22	19.5	13.1	9.8
23	20.6	13.8	10.4
24	21.7	14.5	10.9
25	22.8	15.3	11.5
26	24.0	16.0	12.1
27	25.1	16.7	12.6
28	26.4	17.6	13.2
29	27.6	18.4	13.8
30	28.8	19.2	14.4
31	30.1	20.1	15.1
32	31.4	20.9	15.7
33	32.7	21.8	16.3
34	34.0	22.7	17.1
35	35.4	23.5	17.7
36	36.8	24.5	18.4
37	38.3	25.5	19.2
38	39.8	26.5	19.9
39	41.2	27.5	20.6
40	42.7	28.4	21.4
41	44.3	29.5	22.2
42	45.9	30.6	22.9
43	47.5	31.6	23.8
44	49.0	32.7	24.5
45	50.8	33.8	25.4
46	52.5	35.0	26.2
47	54.2	36.1	27.1
48	56.0	37.3	28.1

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OUO1074.000009F -19-08FEB01-1/2

MaxEmerge™XP Granular Chemical

Metric Units of Measure - Meter Setting			
Insecticide Application Rates (Sand Granules)			
Approximate Rate in Kilograms/Hectare			
	70 cm ROWS		
	KM/HOUR		
Meter Setting	6.4	9.7	12.9
49	57.7	38.4	28.9
50	59.7	39.8	29.9

OUO1074,000009F -19-08FEB01-2/2

Insecticide Rate Chart—Clay Granules—76 cm to 97 cm Rows

METRIC UNITS OF MEASURE - METER SETTING INSECTICIDE APPLICATION RATE Approximate Rate in kg/hectare												
Meter Setting	76 cm Rows			91 cm Rows			97 cm Rows			Kilograms Per 305 Row M		
	6.4 km/h	9.6 km/h	12.8 km/h	6.4 km/h	9.6 km/h	12.8 km/h	6.4 km/h	9.6 km/h	12.8 km/h	6.4 km/h	9.6 km/h	12.8 km/h
10	2.8	1.9	1.4	2.3	1.6	1.2	2.2	1.5	1.1	.07	.04	.03
11	3.4	2.2	1.7	2.8	1.9	1.4	2.7	1.8	1.3	.08	.05	.04
12	4.1	2.7	2.0	3.4	2.3	1.7	3.2	2.1	1.6	.09	.06	.05
13	4.9	3.3	2.5	4.1	2.7	2.0	3.9	2.6	1.9	.10	.08	.07
14	5.9	3.9	2.9	4.9	3.3	2.5	4.6	3.1	2.3	.14	.09	.07
15	6.7	4.5	3.4	5.6	3.7	2.8	5.3	3.5	2.7	.16	.10	.08
16	7.6	5.1	3.8	6.4	4.2	3.2	6.0	4.0	3.0	.18	.12	.08
17	8.5	5.7	4.3	7.1	4.7	3.6	6.7	4.5	3.4	.20	.18	.10
18	9.2	6.1	4.6	7.6	5.1	3.8	7.2	4.8	3.6	.21	.14	.11
19	9.8	6.5	4.9	8.1	5.4	4.1	7.7	5.1	3.9	.23	.15	.12
20	10.4	7.0	5.2	8.7	5.8	4.4	8.2	5.5	4.1	.24	.16	.12
21	11.0	7.3	5.5	9.1	6.1	4.6	8.7	5.8	4.3	.26	.17	.13
22	11.5	7.7	5.8	9.6	6.4	4.8	9.1	6.1	4.5	.27	.18	.13
23	12.0	8.0	6.0	10.0	6.7	5.0	9.5	6.3	4.7	.28	.19	.13
24	12.5	8.3	6.3	10.4	7.0	5.2	9.9	6.6	4.9	.29	.19	.15
25	12.9	8.6	6.5	10.8	7.2	5.4	10.2	6.8	5.1	.30	.20	.15
26	13.3	8.9	6.7	11.1	7.4	5.6	10.5	7.0	5.3	.31	.21	.16
27	13.9	9.2	6.9	11.6	7.7	5.8	10.9	7.3	5.5	.32	.21	.16
28	14.3	9.5	7.1	11.9	7.9	5.9	11.3	7.5	5.6	.33	.22	.16
29	14.8	9.9	7.4	12.3	8.2	6.2	11.7	7.8	5.8	.34	.23	.17
30	15.2	10.1	7.6	12.6	8.4	6.3	12.0	8.0	6.0	.35	.24	.18
31	15.4	10.3	7.7	12.9	8.6	6.4	12.2	8.1	6.1	.36	.24	.18
32	15.9	10.6	8.0	13.3	8.9	6.6	12.6	8.4	6.3	.37	.25	.18
33	16.4	10.9	8.2	13.6	9.1	6.8	12.9	8.6	6.5	.38	.25	.19
34	16.9	11.3	8.5	14.1	9.4	7.0	13.4	8.9	6.7	.39	.26	.20
35	17.5	11.6	8.7	14.6	9.7	7.3	13.8	9.2	6.9	.41	.27	.20
36	18.0	12.0	9.0	15.0	10.0	7.5	14.2	9.5	7.1	.42	.28	.21
37	18.5	12.3	9.2	15.4	10.3	7.7	14.6	9.7	7.3	.43	.29	.22
38	19.0	12.7	9.5	15.9	10.6	7.9	15.0	10.0	7.5	.44	.30	.22
39	19.6	13.1	9.8	16.3	10.9	8.2	15.5	10.3	7.7	.46	.30	.23
40	20.1	13.4	10.1	16.8	11.2	8.4	15.9	10.6	7.9	.47	.31	.23
41	20.6	13.7	10.3	17.2	11.4	8.6	16.3	10.8	8.1	.48	.32	.24
42	21.4	14.3	10.7	17.8	11.9	8.9	16.9	11.3	8.5	.50	.33	.25
43	22.4	14.9	11.2	18.7	12.4	9.3	17.7	11.8	8.8	.52	.35	.26
44	23.5	15.7	11.8	19.6	13.1	9.8	18.6	12.4	9.3	.55	.37	.27
45	24.8	16.5	12.4	20.7	13.8	10.3	19.6	13.0	9.8	.58	.38	.29
46	26.2	17.5	13.1	21.8	14.5	10.9	20.7	13.8	10.3	.61	.41	.30
47	27.4	18.3	13.7	22.9	15.2	11.4	21.7	14.4	10.8	.64	.43	.32
48	28.7	19.1	14.4	23.9	15.9	12.0	22.7	15.1	11.3	.67	.45	.33
49	30.0	20.0	15.0	25.0	16.6	12.5	23.7	15.8	11.8	.70	.47	.35
50	31.2	20.8	15.6	26.0	17.3	13.0	24.6	16.4	12.3	.73	.49	.36
51	32.5	21.7	16.2	27.1	18.0	13.5	25.6	17.1	12.8	.75	.51	.38
52	33.9	22.6	16.9	28.2	18.8	14.1	26.7	17.8	13.4	.79	.53	.39
53	35.4	23.6	17.7	29.5	19.7	14.8	28.0	18.6	14.0	.82	.55	.41
54	37.0	24.6	18.5	30.8	20.5	15.4	29.2	19.5	14.6	.86	.57	.43

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OUO1074.0000086 -19-28APR06-1/2

MaxEmerge™XP Granular Chemical

**METRIC UNITS OF MEASURE - METER SETTING
INSECTICIDE APPLICATION RATE
Approximate Rate in kg/hectare**

	76 cm Rows			91 cm Rows			97 cm Rows			Kilograms Per 305 Row M		
Meter Setting	6.4 km/h	9.6 km/h	12.8 km/h	6.4 km/h	9.6 km/h	12.8 km/h	6.4 km/h	9.6 km/h	12.8 km/h	6.4 km/h	9.6 km/h	12.8 km/h
55	38.6	25.8	19.3	32.2	21.5	16.1	30.5	20.3	15.3	.90	.60	.45
56	40.3	26.9	20.2	33.6	22.4	16.8	31.8	21.2	15.9	.94	.62	.47
57	41.9	27.9	20.9	34.9	23.3	17.4	33.0	22.0	16.5	.97	.65	.48
58	43.5	29.0	21.8	26.3	24.2	18.1	34.4	22.9	17.2	1.03	.68	.51
59	45.2	30.1	22.6	37.7	25.1	18.8	35.7	23.8	17.9	1.05	.70	.53
60	46.2	31.1	23.3	38.9	25.9	19.4	36.8	24.5	18.4	1.08	.72	.54

OUO1074,0000086 -19-28APR06-2/2

Insecticide Rate Chart—Sand Granules—76 cm to 97 cm Rows

METRIC UNITS OF MEASURE - METER SETTING INSECTICIDE RATE CHART—(Sand Granules) APPLICATION RATE in kg/hectare												
	76 cm Rows			91 cm Rows			97 cm Rows			Kilograms Per 305 Row M		
Meter Setting	6.4 km/h	9.6 km/h	12.8 km/h	6.4 km/h	9.6 km/h	12.8 km/h	6.4 km/h	9.6 km/h	12.8 km/h	6.4 km/h	9.6 km/h	12.8 km/h
6	1.8	1.2	0.9	1.5	1.0	0.7	1.4	0.9	0.7	0.04	0.03	0.02
7	2.6	1.7	1.3	2.1	1.4	1.1	2.0	1.4	1.0	0.06	0.04	0.03
8	3.5	2.3	1.7	2.9	1.9	1.4	2.7	1.8	1.4	0.08	0.05	0.04
9	4.4	2.9	2.2	3.6	2.4	1.8	3.4	2.3	1.7	0.10	0.07	0.05
10	5.4	3.6	2.7	4.5	3.0	2.2	4.2	2.8	2.1	0.12	0.08	0.06
11	6.4	4.3	3.2	5.3	3.5	2.7	5.0	3.4	2.5	0.15	0.10	0.07
12	7.5	5.0	3.8	6.3	4.2	3.1	5.9	3.9	3.0	0.18	0.12	0.09
13	8.6	5.7	4.3	7.2	4.8	3.6	6.8	4.5	3.4	0.20	0.13	0.10
14	9.9	6.6	4.9	8.2	5.5	4.1	7.8	5.2	3.9	0.23	0.15	0.11
15	11.0	7.3	5.5	9.1	6.1	4.6	8.7	5.8	4.3	0.26	0.17	0.13
16	12.0	8.0	6.0	10.0	6.7	5.0	9.5	6.3	4.7	0.28	0.19	0.14
17	13.0	8.7	6.5	10.8	7.2	5.4	10.3	6.8	5.1	0.30	0.20	0.15
18	14.0	9.3	7.0	11.7	7.8	5.8	11.1	7.4	5.5	0.33	0.22	0.16
19	14.9	9.9	7.4	12.4	8.3	6.2	11.8	7.8	5.9	0.35	0.23	0.17
20	15.9	10.6	8.0	13.3	8.8	6.6	12.6	8.4	6.3	0.37	0.25	0.18
21	16.9	11.3	8.5	14.1	9.4	7.0	13.4	8.9	6.7	0.39	0.26	0.20
22	17.9	11.9	9.0	14.9	10.0	7.5	14.1	9.4	7.1	0.42	0.28	0.21
23	18.9	12.6	9.5	15.8	10.5	7.9	14.9	10.0	7.5	0.44	0.29	0.22
24	19.9	13.3	10.0	16.6	11.1	8.3	15.7	10.5	7.9	0.46	0.31	0.23
25	20.9	14.0	10.5	17.5	11.6	8.7	16.5	11.0	8.3	0.49	0.32	0.24
26	22.1	14.7	11.0	18.4	12.3	9.2	17.4	11.6	8.7	0.51	0.34	0.26
27	23.1	15.4	11.5	19.2	12.8	9.6	18.2	12.1	9.1	0.54	0.36	0.27
28	24.2	16.1	12.1	20.2	13.4	10.1	19.1	12.7	9.5	0.56	0.37	0.28
29	25.3	16.9	12.7	21.1	14.1	10.5	20.0	13.3	10.0	0.59	0.39	0.29
30	26.4	17.6	13.2	22.0	14.7	11.0	20.9	13.9	10.4	0.62	0.41	0.31
31	27.7	18.4	13.8	23.1	15.4	11.5	21.8	14.6	10.9	0.64	0.43	0.32
32	28.8	19.2	14.4	24.0	16.0	12.0	22.7	15.1	11.4	0.67	0.45	0.33
33	30.0	20.0	15.0	25.0	16.7	12.5	23.7	15.8	11.8	0.70	0.46	0.35
34	31.2	20.8	15.6	26.0	17.4	13.0	24.7	16.4	12.3	0.73	0.48	0.36
35	32.5	21.7	16.2	27.1	18.0	13.5	25.6	17.1	12.8	0.75	0.50	0.38
36	33.8	22.5	16.9	28.2	18.8	14.1	26.7	17.8	13.4	0.79	0.52	0.39
37	35.2	23.4	17.6	29.3	19.5	14.7	27.8	18.5	13.9	0.82	0.54	0.41
38	36.5	24.3	18.3	30.4	20.3	15.2	28.8	19.2	14.4	0.85	0.57	0.43
39	37.9	25.2	18.9	31.5	21.0	15.2	29.9	19.9	14.9	0.88	0.59	0.44
40	39.2	26.1	19.6	32.7	21.8	16.3	30.9	20.6	15.5	0.91	0.61	0.46
41	40.7	27.1	20.3	33.9	22.6	16.9	32.1	21.4	16.0	0.94	0.63	0.47
42	42.1	28.1	21.1	35.1	23.4	17.5	33.2	22.2	16.6	0.98	0.65	0.49
43	43.6	29.0	21.8	36.3	24.2	18.2	34.4	22.9	17.2	1.01	0.67	0.51
44	45.0	30.0	22.5	37.5	25.0	18.8	35.5	23.7	17.8	1.05	0.70	0.52
45	46.6	31.1	23.3	38.8	25.9	19.4	36.8	24.5	18.4	1.08	0.72	0.54
46	48.2	32.1	24.1	40.1	26.8	20.1	38.0	25.3	19.0	1.12	0.75	0.56
47	49.7	33.2	24.9	41.4	27.6	20.7	39.3	26.2	19.6	1.16	0.77	0.58
48	51.4	34.3	25.7	42.8	28.6	21.4	40.6	27.1	20.3	1.19	0.80	0.60
49	53.0	35.3	26.5	44.1	29.4	22.1	41.8	27.9	20.9	1.23	0.82	0.62
50	54.8	36.5	27.4	45.6	30.4	22.8	43.2	28.8	21.6	1.27	0.85	0.64

OUO1074,0000088 -19-30SEP08-1/1

Herbicide Rate Chart—Clay Granules—56 cm Rows

METRIC UNITS OF MEASURE - METER SETTING HERBICIDE APPLICATION RATES (Clay Granules) Approximate rate in kg/hectare			
Meter Setting	56 cm Rows		
	6.4 km/h	9.6 km/h	12.8 km/h
10	3.3	2.1	1.7
11	3.8	2.4	1.9
12	4.5	2.9	2.3
13	5.4	3.5	2.6
14	6.1	4.0	3.0
15	7.5	4.7	3.5
16	8.5	5.4	4.0
17	9.5	6.2	4.5
18	10.2	6.8	4.8
19	11.1	7.1	5.2
20	12.1	7.8	5.4
21	12.8	8.3	6.1
22	13.7	8.8	6.6
23	14.6	9.4	6.9
24	15.4	9.9	7.1
25	16.3	10.4	7.6
26	17.0	10.9	8.0
27	18.0	11.4	8.3
28	18.7	11.8	8.7
29	19.6	12.3	8.8
30	20.3	12.8	9.4
31	20.6	13.2	9.5
32	21.5	13.7	10.0
33	22.3	14.0	10.2
34	23.2	14.7	10.6
35	24.1	15.2	10.9
36	24.8	15.6	11.3
37	25.5	16.1	11.9
38	26.5	16.1	12.0
39	27.0	17.0	12.3
40	27.5	17.5	12.6
41	28.2	17.7	12.8
42	29.1	18.2	13.3
43	30.3	19.1	13.7
44	31.2	19.6	14.2
45	32.9	20.6	14.8
46	34.3	21.7	15.8
47	36.6	23.2	16.8
48	38.5	24.6	17.8
49	40.5	26.2	18.9
50	43.1	28.1	20.6
51	45.6	30.0	22.0
52	48.2	31.9	23.6
53	50.6	33.8	25.3
54	53.5	35.9	27.0
55	56.5	38.1	29.1

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OUO1074,0001475 -19-28APR06-1/2

**METRIC UNITS OF MEASURE - METER SETTING
HERBICIDE APPLICATION RATES (Clay Granules)**
Approximate rate in kg/hectare

Meter Setting	56 cm Rows		
	6.4 km/h	9.6 km/h	12.8 km/h
56	58.2	39.7	30.8
57	61.3	41.9	32.9
58	63.9	44.0	34.5
59	65.8	45.6	36.0
60	68.2	47.5	37.9

OUO1074,0001475 -19-28APR06-2/2

Herbicide Rate Chart—Clay Granules—76 cm to 97 cm Rows

METRIC UNITS OF MEASURE - METER SETTING HERBICIDE APPLICATION RATES Approximate Rate in kg/hectare									
Meter Setting	76 cm Rows			91 cm Rows			97 cm Rows		
	4.0 km/h	6.0 km/h	8.0 km/h	4.0 km/h	6.0 km/h	8.0 km/h	4.0 km/h	6.0 km/h	8.0 km/h
10	2.4	1.6	1.2	1.9	1.3	1.0	1.9	1.2	1.0
11	2.8	1.8	1.3	2.4	1.6	1.1	2.2	1.5	1.1
12	3.4	2.1	1.6	2.8	1.8	1.3	2.6	1.7	1.2
13	3.9	2.6	1.9	3.3	2.1	1.6	3.1	2.0	1.5
14	4.5	2.9	2.2	3.7	2.5	1.8	3.6	2.4	1.7
15	5.4	3.5	2.6	4.5	2.9	2.1	4.3	2.7	2.0
16	6.2	4.0	2.9	5.2	3.4	2.5	4.9	3.1	2.4
17	6.9	4.5	3.3	5.7	3.7	2.7	5.5	3.6	2.6
18	7.5	4.9	3.6	6.3	4.0	3.0	5.9	3.8	2.8
19	8.1	5.3	3.8	6.7	4.4	3.1	6.4	4.1	3.0
20	8.9	5.7	4.1	7.4	4.7	3.5	6.9	4.5	3.3
21	9.4	6.1	4.5	7.8	5.0	3.7	7.4	4.8	3.5
22	10.1	6.5	4.7	8.4	5.4	3.9	8.0	5.2	3.8
23	10.6	6.8	5.0	8.9	5.7	4.1	8.4	5.4	3.9
24	11.3	7.3	5.3	9.4	6.1	4.4	9.0	5.7	4.1
25	11.9	7.5	5.5	9.9	6.3	4.6	9.4	5.9	4.4
26	12.4	8.0	5.8	10.3	6.6	4.8	9.8	6.3	4.6
27	13.1	8.3	6.1	11.0	6.9	5.0	10.3	6.6	4.8
28	13.8	8.7	6.3	11.5	7.3	5.2	10.8	6.9	4.9
29	14.3	9.1	6.5	12.0	7.5	5.4	11.3	7.2	5.2
30	14.8	9.4	6.8	12.3	7.8	5.7	11.7	7.4	5.4
31	15.1	9.6	7.1	12.7	8.1	5.8	12.0	7.6	5.5
32	15.8	10.0	7.3	13.1	8.4	6.1	12.4	8.0	5.7
33	16.3	10.3	7.5	13.6	8.6	6.3	12.9	8.2	5.9
34	16.9	10.8	7.7	14.1	9.0	6.5	13.3	8.5	6.2
35	17.6	11.1	8.0	14.7	9.3	6.7	13.9	8.7	6.3
36	18.2	11.4	8.3	15.1	9.5	6.9	14.3	9.1	6.5
37	18.6	11.8	8.6	15.6	9.8	7.2	14.7	9.3	6.7
38	19.4	12.2	8.9	16.1	10.1	7.3	15.4	9.6	6.9
39	19.7	12.4	9.0	16.5	10.3	7.5	15.6	9.8	7.1
40	20.2	12.8	9.2	16.8	10.6	7.7	15.9	10.1	7.3
41	20.6	12.9	9.4	17.3	10.8	7.8	16.3	10.2	7.4
42	21.3	13.3	9.8	17.7	11.1	8.1	16.8	10.5	7.6
43	22.2	13.9	10.1	18.5	11.7	8.4	17.5	11.0	8.0
44	22.8	14.3	10.4	18.9	11.9	8.6	17.9	11.3	8.2
45	24.1	15.1	10.9	20.1	12.6	9.1	18.9	12.0	8.6
46	25.1	15.9	11.5	21.0	13.2	9.6	19.8	12.6	9.2
47	26.8	17.0	12.3	22.3	14.2	10.3	21.2	13.5	9.8
48	28.1	17.9	13.1	23.4	14.9	10.9	22.2	14.1	10.3
49	29.7	19.1	13.7	24.8	15.9	11.5	23.4	15.1	10.9
50	31.5	20.5	15.0	26.3	17.1	12.6	24.9	16.1	11.9
51	33.3	21.5	16.1	27.7	18.3	13.5	26.2	17.3	12.7
52	35.2	23.3	17.3	29.4	19.4	14.5	27.8	18.4	13.7
53	37.0	24.7	18.5	30.8	20.6	15.3	29.1	19.5	14.6
54	39.1	26.2	19.7	32.6	21.6	16.5	30.9	20.7	15.6

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OUO1074,0000093 -19-27APR06-1/2

**METRIC UNITS OF MEASURE - METER SETTING
HERBICIDE APPLICATION RATES**
Approximate Rate in kg/hectare

Meter Setting	76 cm Rows			91 cm Rows			97 cm Rows		
	4.0 km/h	6.0 km/h	8.0 km/h	4.0 km/h	6.0 km/h	8.0 km/h	4.0 km/h	6.0 km/h	8.0 km/h
55	41.2	27.8	21.3	34.4	23.2	17.8	32.6	22.0	16.8
56	42.6	29.0	22.6	35.5	24.2	18.8	33.6	23.0	17.8
57	44.8	30.7	24.1	37.4	25.6	20.1	35.4	24.2	19.1
58	46.7	32.2	25.2	38.9	27.0	21.0	36.9	25.4	19.8
59	48.2	33.3	26.3	40.1	27.8	22.0	38.0	26.2	20.8
60	50.0	34.7	27.7	41.6	29.0	23.1	39.5	27.5	21.9

OUO1074,0000093 -19-27APR06-2/2

Herbicide Rate Chart—Clay Granules—70 cm Rows

Metric Units of Measure - Meter Setting			
Herbicide Application Rates (Clay Granules)			
Approximate Rate in Kilograms/Hectare			
	70 CM ROWS		
	KM/HOUR		
Meter Settings	6.4	9.7	12.9
10	2.6	1.7	1.3
11	3.1	2.0	1.5
12	3.7	2.3	1.7
13	4.3	2.8	2.1
14	4.9	3.2	2.4
15	5.9	3.8	2.8
16	6.7	4.4	3.2
17	7.6	4.9	3.5
18	8.2	5.4	3.9
19	8.8	5.7	4.1
20	9.6	6.2	4.5
21	10.2	6.6	4.9
22	11.0	7.1	5.1
23	11.6	7.4	5.5
24	12.3	7.9	5.7
25	12.9	8.2	6.0
26	13.5	8.7	6.3
27	14.3	9.0	6.6
28	14.9	9.5	6.8
29	15.6	9.9	7.1
30	16.1	10.2	7.4
31	16.5	10.5	7.7
32	17.2	10.9	7.9
33	17.8	11.2	8.2
34	18.4	11.7	8.4
35	19.2	12.1	8.7
36	19.8	12.4	9.0
37	20.3	12.8	9.4
38	21.1	13.3	9.6
39	21.5	13.5	9.8
40	22.0	13.9	10.0
41	22.4	14.0	10.2
42	23.2	14.5	10.6
43	24.2	15.1	11.0
44	24.8	15.6	11.3
45	26.2	16.5	11.8
46	27.3	17.3	12.6
47	29.2	18.5	13.4
48	30.6	19.5	14.3
49	32.3	20.7	15.0
50	34.3	22.3	16.3
51	36.2	23.8	17.6
52	38.3	25.4	18.8
53	40.3	26.8	20.1

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OUO1074.0000090 -19-29JAN01-1/2

Metric Units of Measure - Meter Setting			
Herbicide Application Rates (Clay Granules)			
Approximate Rate in Kilograms/Hectare			
70 CM ROWS			
KM/HOUR			
Meter Settings	6.4	9.7	12.9
54	42.6	28.6	21.5
55	44.9	30.3	23.2
56	46.4	31.6	24.6
57	48.8	33.4	26.2
58	50.9	35.0	27.5
59	52.5	36.2	28.7
60	54.4	37.8	30.1

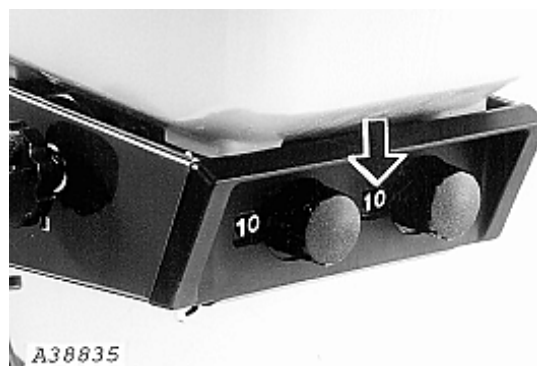
OUO1074,0000090 -19-29JAN01-2/2

Calibrating Insecticide-Herbicide Meter

IMPORTANT: Wear all recommended personal protective equipment. Read the chemical manufactures label for required personal protective equipment.

If it is ever necessary to recalibrate the granular meter on insecticide-herbicide hopper, proceed as follows:

1. Turn knob on rear of hopper to a setting of "10".
2. Remove hopper and turn it upside down on a flat surface.



A38835 —UN—19DEC95

AG,OUO6074,1305 -19-26JUN08-1/5

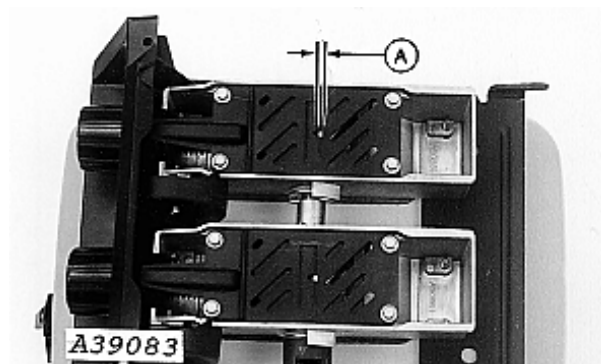
3. Measure the V-notch opening (A) on the meter gate. The opening must be set to a specified width.

Specification

V-Notch Opening—Width..... 4 mm
(0.160 in.)

If measurement is to specification, the meter is calibrated correctly. If measurement is not to specification, the meter must be recalibrated.

A—V-Notch Opening



A39083 —UN—17JAN96

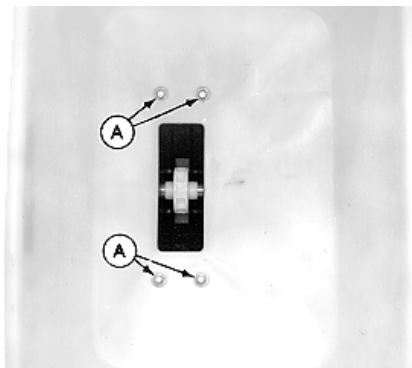
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AG,OUO6074,1305 -19-26JUN08-2/5

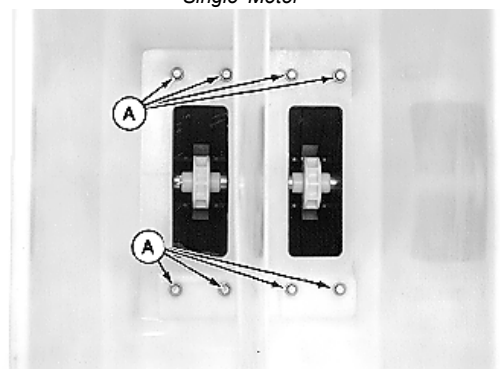
4. Remove four M6 x 20 cap screws (A) securing meter to hopper (eight cap screws if two meters are used). Remove meters from bottom of hopper.
5. Remove four M6 x 16 cap screws (B) and gate cover (C).

A—Cap Screws, M6 x 20
B—Cap Screws, M6 x 16

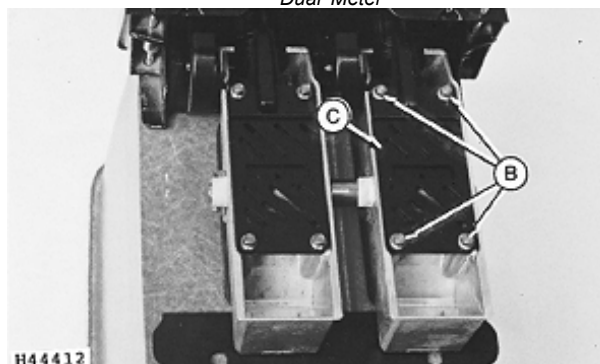
C—Cover



Single Meter



Dual Meter



H44412

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AG,OUO6074,1305 -19-26JUN08-3/5

A41132 —UN—21APR97

A41129 —UN—17APR97

H44412 —UN—20MAY92

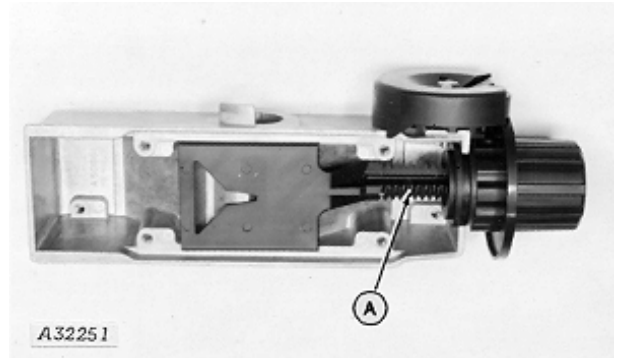
6. Remove entire plastic gate assembly (A) from aluminum housing.
7. Work knob (B) back and forth while pulling apart to remove knob from splined nut (C).
8. Turn nut (C) until V-notch opening is to specification.

Specification

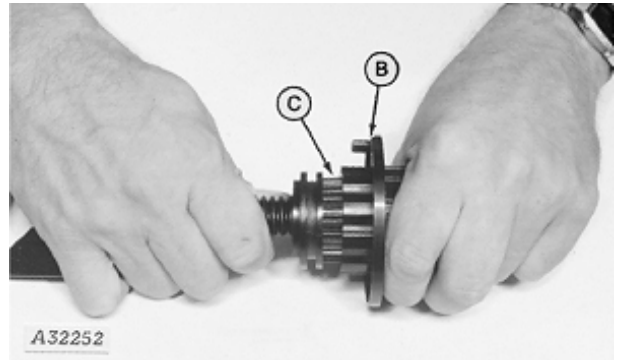
V-Notch Opening—Width..... 4 mm
(0.160 in.)

A—Plastic Gate Assembly
B—Knob

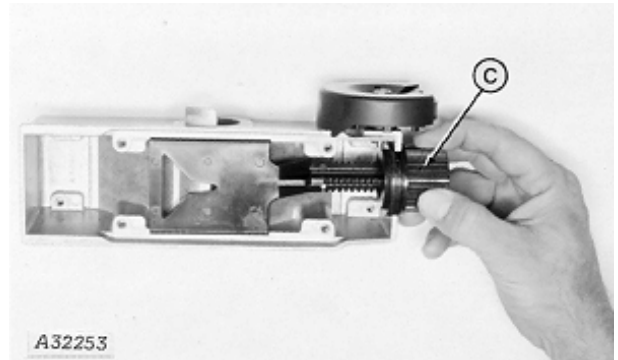
C—Nut



A32251 —UN—12OCT88



A32252 —UN—12OCT88



A32253 —UN—12OCT88

AG,OUO6074,1305 -19-26JUN08-4/5

9. Replace the knob on nut so the number "0" lines up with the number "1" on cam follower. The meter should have a setting of "10".
10. Seat knob to flange on nut.
11. Install gate cover with cap screws previously removed.
12. Install meter on bottom of hopper and attach with cap screws previously removed.



A32254 —UN—12OCT88

AG,OUO6074,1305 -19-26JUN08-5/5

Idler Options

Slide-type idlers are standard equipment.

Sprocket-type are available as optional equipment through Service Parts.

The Slide Type idler is recommended for use with unit-mounted coulters, row cleaners or in fields that

have high levels of residue. They can also be used in conventional or mulch-till.

Sprocket-Type idler is recommended for conventional tilled fields where residue levels are low.

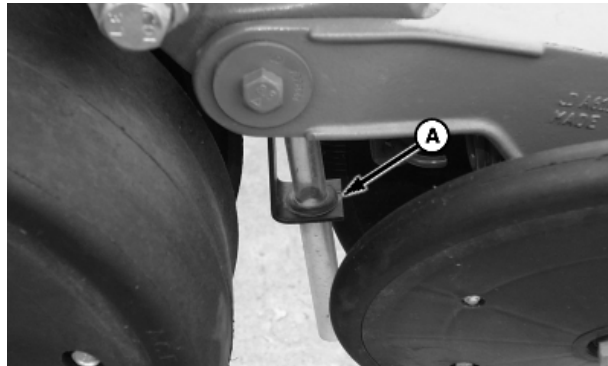
AG,OUO6074,1307 -19-04AUG00-1/1

Insecticide Seed-Furrow Placement Bracket

IMPORTANT: Some insecticides are toxic if they come into direct contact with the seed. Consult the chemical supplier for the proper location to apply the chemical.

Placement bracket (A) holds granular insecticide tube for placement of material in seed-furrow.

A—Bracket



A48632 —UN—29JAN02

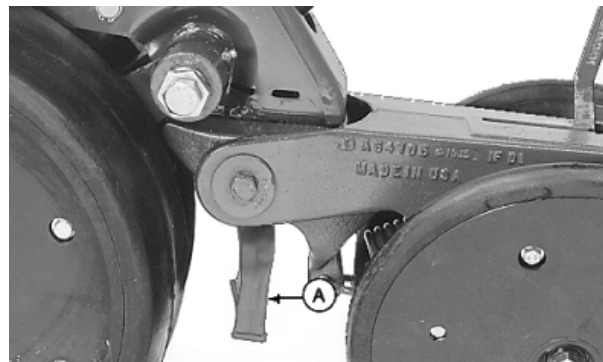
AG,OUO6074,1308 -19-26JUN08-1/1

Insecticide Band Spreader (Front Mounted)

IMPORTANT: Some insecticides are toxic if they come into direct contact with the seed. Consult the chemical supplier for the proper location to apply the chemical.

The insecticide band spreader (A) is designed to apply a band of granular insecticide approximately 18 cm (7 in.) wide on top of ground when planting.

A—Insecticide Band Spreader



A44859 —UN—21APR98

AG,OUO6074,1309 -19-26JUN08-1/1

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.

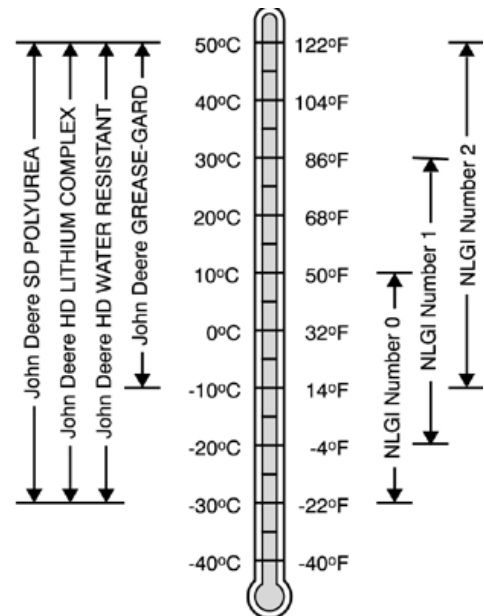
The following greases are also recommended:

- 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

GREASE-GARD is a trademark of Deere & Company

DX,GREA1 -19-14APR11-1/1

TS1673—UN—31OCT03

Lubrication Symbols



Lubricate with grease at hourly interval indicated on symbol.



Lubricate with John Deere TY6350 Multipurpose spray lube as required.



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



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

A54361—UN—24MAY04

AG,OUO6074,1356 -19-14APR09-1/1

Alternative Lubricants

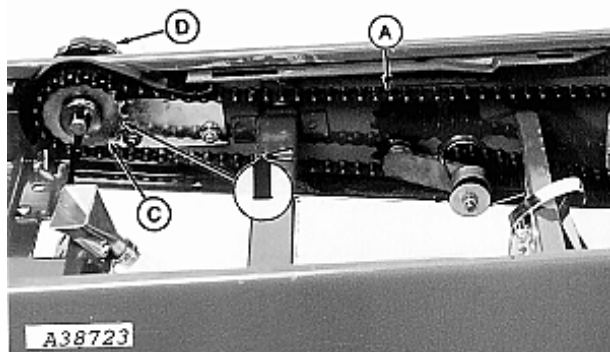
Conditions in certain geographical areas may require special lubricants and lubrication practices which do

not appear in this operator's manual. If there are any questions, consult your John Deere dealer to obtain latest information and recommendation.

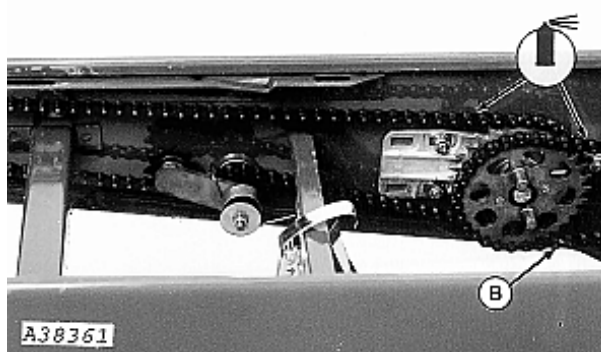
AG,OUO6074,1357 -19-04AUG00-1/1

Lubrication Intervals

Lubrication Intervals							
Item	Start of Season	As Required	10 Hours or Daily	25 Hours	50 Hours	200 Hours	End of Season
All Roller Chains	•	•					•
Drillshafts			•				•
Gauge Wheels			•				
Row Cleaner					•		
Unit Mounted Coulter						•	
Pro-Series Vacuum Seed Meters	•	•					
MaxEmerge Vacuum Seed Meters	•	•					



A38723—UN—27NOV95



A38361—UN—27NOV95

A—Pesticide Drive Chain

B—Seed Meter Drive Chain

C—Pesticide Drive Sprocket

D—Drive Disconnect Knob

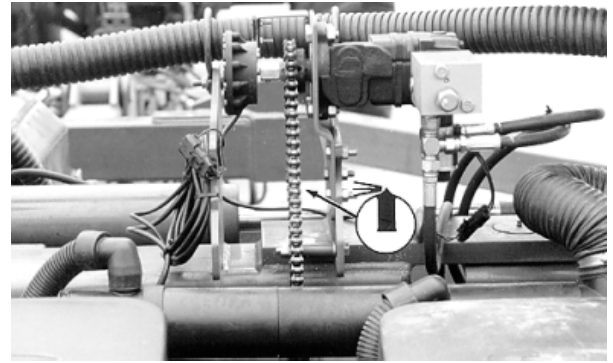
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OUO6064,000047C -19-19APR11-1/5



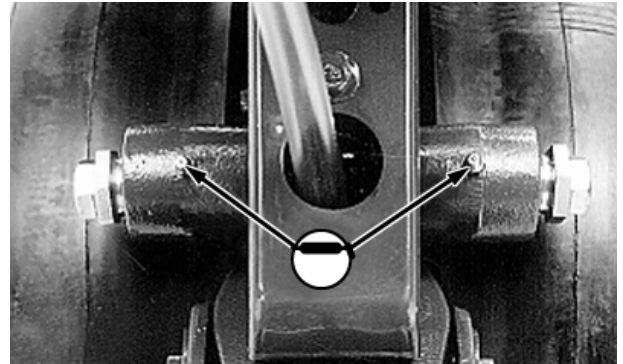
Drive Roller Chains

A40467 —UN—22NOV96



Variable Rate Drive Roller Chain

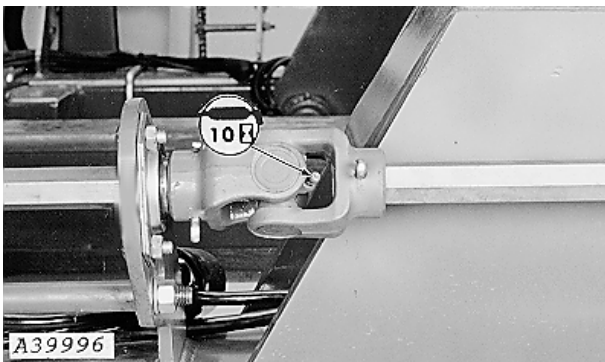
A44250 —UN—06NOV97



Gauge Wheels

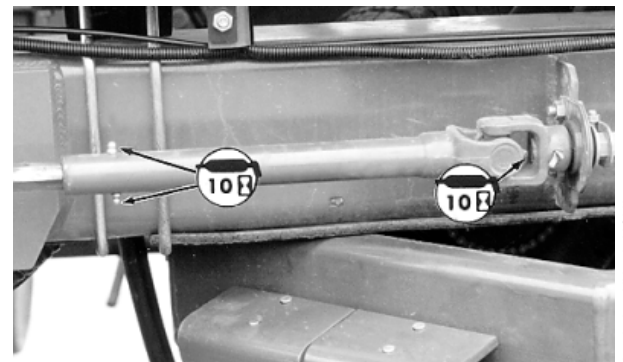
A38363 —UN—16JUL08

OUC6064.000047C -19-19APR11-2/5



Drillshaft

A39996 —UN—28AUG96



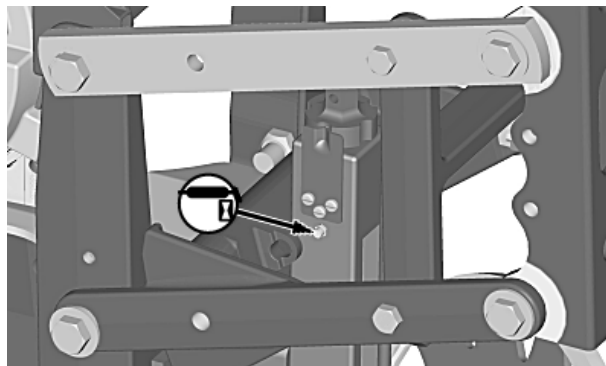
Drillshafts

A44253 —UN—07NOV97

Continued on next page

OUC6064.000047C -19-19APR11-3/5

Row cleaner hubs have sealed bearings factory and regular lubrication is not required. Add grease to hub grease fittings annually or every 200 hours to keep dust away from bearing seal. Add grease slowly until slight resistance is felt or a small amount of grease comes out between hub and blade. If a non-sealed replacement bearing is installed, grease row cleaner hubs at a 50 hour interval.



A64844 —UN—01JUN09

Unit Mounted Row Cleaner Adjustment Arm

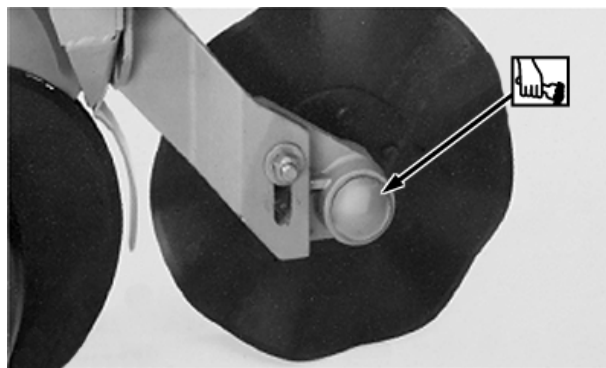


A64843 —UN—01JUN09

View From Under Unit Mounted Row Cleaner

OQO6064,000047C -19-19APR11-4/5

Lubricate coulters with John Deere Multipurpose Lubricant or an equivalent. See COULTER MAINTENANCE—EVERY 200 HOURS in Service section.



A29983 —UN—16JUL08

Unit Mounted Coulters

OQO6064,000047C -19-19APR11-5/5

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 the vacuum meter and CCS system (if equipped). Seed properly treated with talc releases from the seed disk more consistently, leading to more accurate spacing when the 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 the chemical manufacturer 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.**

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.

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:

A34471



A34471 —UN—11OCT88

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
1233 L (35 bu.) Bulk Tank	2.6 L (11 cups)
1762 L (50 bu.) Bulk Tank	3.8 L (16 cups)
Per 80 000 kernel seed corn unit	74 mL (5 tbsp.) (2.5 oz.)

Use this table when using 1.6 or 3.0 bushel hoppers (without CCS tanks) to deliver seed to seed meters:

MaxEmerge™ Hopper Talc Application Rate

Note: Talc must be sprinkled over top of seeds in hoppers and thoroughly incorporated, so all seeds have talc coating.

Hopper Size	Amount of Talc
58 L (1.6 bu.)	120 mL (1/2 cup)
106 L (3 bu.)	240 mL (1 cup)

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

Double the talc recommendation when planting small seed, large seed, seeds with heavy treatment, or humid planting conditions.

In certain situations, combinations of sticky seed treatments, large or small seed, and high humidity, it can be necessary to add up to two to three 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.

OUO6045,00006CD -19-12JUL10-1/1

Roller Chain and Pesticide Sprocket Lubrication

IMPORTANT: Do not use chain lube or any other heavy petroleum base lubricant that may cause a buildup of dust or dirt in sprocket or gear teeth.

The most effective roller chain lubrication routine varies, depending on environmental conditions and/or condition of chain. The goal is to maintain complete freedom at every chain link joint.

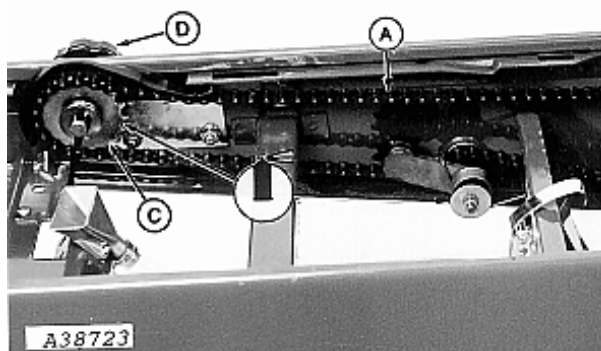
Lubricate all machine roller chains with John Deere Multipurpose Spray Lube, TY6350 (or equivalent) at intervals sufficient to maintain free chain movement.

When roller chains remain unused for several days, moisture in the air will accumulate on chain, causing chain to rust. This can and will become serious enough in time to cause chain joints to become stiff, restricting their normal free movement. While very difficult to detect, this stiffness can disturb smooth rotation of seed meter components and cause a deterioration in performance.

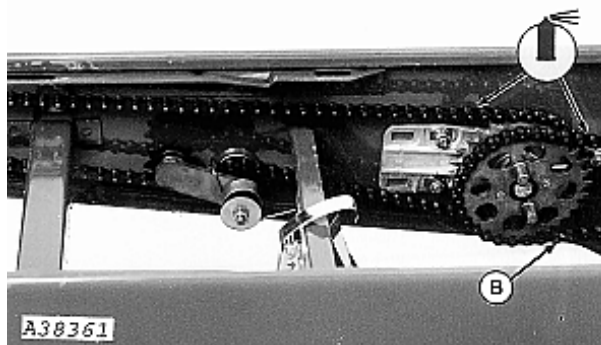
If machine is not to be used for several days, thoroughly lubricate chains with John Deere Multipurpose Spray Lube, TY6350, at the beginning of idle period. If roller chains have become rusty or stiff during idle period, lubricate prior to continued usage and operate or "work" chains sufficiently to ensure all chain joints move freely before normal machine operation is resumed.

Lubricate pesticide drive chain (A) and seed meter drive chain (B) with John Deere Multipurpose Spray Lube, TY6350.

Lubricate pesticide drive sprocket (C) with John Deere Multipurpose Spray Lube, TY6350. Move drive disconnect



A38723—UN—27NOV95



A38361—UN—27NOV95

A—Pesticide Drive Chain
B—Seed Meter Drive Chain
C—Pesticide Drive Sprocket
D—Drive Disconnect Knob

knob (D) back and forth while spraying. This will loosen any paint or dirt buildup and help allow sprocket to turn freely. In adverse conditions it may be necessary to lubricate these sprockets daily.

AG,OUO6074,1358 -19-04AUG00-1/1

Lubrication—Frame

See your Bauer Built MFG. Operator's Manual.

OUO1074,0001497 -19-01MAY03-1/1

Troubleshooting

Drives

Symptom	Problem	Solution
Row units on right-hand side of machine not planting.	Half-Width Drive Disconnect is engaged.	Move switch to middle position.
Row units on left-hand side of machine not planting.	Half-Width Drive Disconnect is engaged.	Move switch to middle position.

OUO6064,00004D7 -19-23MAY11-1/1

Row Units

Symptom	Problem	Solution
Row units on right-hand side of machine not planting.	Half-Width Drive Disconnect is engaged. Right-hand vacuum blower off.	Move switch to middle position. Restart vacuum blower.
Row units on left-hand side of machine not planting.	Half-Width Drive Disconnect is engaged. Left-hand vacuum blower off.	Move switch to middle position. Restart vacuum blower.
Seed tubes plugging.	Machine rolling backward when lowering. Turning tractor steering wheel when machine is down and stationary. (Four Wheel Drive Tractors only.)	Lower machine while moving forward. Avoid turning tractor when machine is down and stationary.
Inconsistent seed depth.	Planting in rough seed bed. Seed tubes partially plugged or improperly installed.	Use down force spring attachment on planting units. Inspect seed tubes. Ensure that seed tubes are hooked properly in unit shank.
Closing wheels leave severe imprint in soil.	Excessive closing wheel down force.	Decrease closing wheel down force.
Closing wheels not firming soil around seed.	Insufficient closing wheel down force.	Increase closing wheel down force.
Closing wheel running on top of seed furrow.	Improper centering.	Align.
Closing wheels not applying equal force.	Closing wheel frame not level.	Level closing wheel frame.
Drive chain consistently falls off.	Chain too long. Chain links stiff. Sprockets misaligned.	Remove links as needed. Oil or replace chain. Align sprockets.
Monitor does not count seeds.	Dirt or debris has collected in seed tube or on sensor.	Clean seed tube and sensor with cleaning brush.

OUO6064,00004D8 -19-23MAY11-1/1

Pro-Series™ XP Vacuum Meter

Symptom	Problem	Solution
False monitor reading.	Dirty seed tube sensors.	Clean sensors. See CLEANING SEED SENSOR in Service section.
	No seed being planted.	See CCS PRODUCT DELIVERY in this section.
Poor seed spacing.	No vacuum.	See Low Vacuum under VACUUM METER in Troubleshooting section.
	Seed tubes plugged or damaged.	Inspect seed tubes. Ensure that seed tubes are hooked properly in unit shank. Replace if damaged.
		Clean off mud with cleaning brush.
	Drive not engaged.	Engage flex-drive.
	Seed disk vacuum holes plugged.	Clean seed disks.
	Farmer-applied seed treatment causes buildup, seeds stick.	Follow recommended talc usage and application procedure. Clean meter and disks.
	Worn meter brushes.	Replace brushes.
	Low vacuum.	See Low Vacuum under VACUUM METER in Troubleshooting section.
	Worn meter seals.	Replace seals.
	Seed disk hubs misadjusted.	Readjust hubs.
	Incorrect vacuum for the seed being planted.	Adjust vacuum level to recommended setting.
	Faulty vacuum gauge.	Check air line to gauge. Clean if plugged. Replace if cut.
	Worn seed disks.	Replace disks.
	Seed tubes improperly installed or worn.	Reinstall or replace seed tubes. Ensure that seed tube hook is properly positioned in unit shank.
	Mud inside seed tubes.	Clean off mud with cleaning brush.
	Worn seed tube guard.	Replace guard.
	Treated seed sticking in cell.	Clean disks.

Continued on next page

OUO6064,00004D9 -19-23MAY11-1/5

Symptom	Problem	Solution
Low seed population.		Increase application rate of John Deere Talc Lubricant.
	Dirty seed tube sensors, if low population is on monitor and field counts are different.	Clean seed tubes and sensors.
	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.
	Low seed level in CCS tank.	Add seed.
	Low seed level in meter.	See NO SEED IN METER in CCS Product Delivery Troubleshooting section.
	"Treated" seed sticking in cells.	Run CCS fan for 10 minutes before planting (to warm air).
		Inspect planting unit seed meter disks; clean if buildup is present.
		Add John Deere Talc Lubricant to CCS tanks.
	Farmer-applied seed treatment causes buildup, seeds stick.	Discontinue use of treatments or increase use of talc.
	Low vacuum.	Increase vacuum level.
		See Low Vacuum under VACUUM METER in Troubleshooting section.
	Foreign material (chaff) built up in vacuum dome.	Inspect dome and clean if necessary.
	Worn meter seals.	Replace seals.
	Worn seed disks.	Replace seed disks.
	Seed "bridging" in hopper.	Increase rate of talc used.
		Clean vacuum meter and hopper.

Continued on next page

OUO6064,00004D9 -19-23MAY11-2/5

Symptom	Problem	Solution
High seed population.	Seed “bridging” in meter.	Increase rate of talc used. Clean vacuum meter and hopper.
	Inadequate seed delivery.	Increase CCS tank pressure.
	Plugged inlet or discharge elbows.	Clean elbows. If required for seed used, make sure that gray discharge elbows are installed properly on 36 row and larger machines. See OPERATING CCS SYSTEM WHEN PLANTING STANDARD SEED SIZES in Pro-Series XP Central Commodity System.
	Seed size not compatible with seed disks.	Use correct seed disks.
	Planting too fast for rough field conditions.	Plant at speed recommended in planting rate chart. Increase vacuum. Increase unit downforce.
	Meter brush improperly installed or worn.	Install brush properly or replace.
	Double eliminator set incorrectly.	See USING DOUBLE ELIMINATOR in Preparing Vacuum Meter section.
	High vacuum.	Adjust vacuum level.
	Faulty vacuum sensor.	Check air line to sensor. Clean if plugged. Replace if cut.
	Worn seed disks.	Replace seed disks.
	Seed size not compatible with seed disks.	Use correct seed disks.
	Planting too slow.	Plant at speed recommended in planting rate charts.
	Meter brush improperly installed.	Install brush properly.
	Seed disk hubs loose.	Tighten hubs.
	Mini hopper screens plugged, meter overfilled.	Clean mini hopper screens.
	Discharge elbow holes plugged.	Clean elbows.
	CCS tanks running empty.	Fill or redistribute seed in CCS tanks.

Continued on next page

OUO6064,00004D9 -19-23MAY11-3/5

Symptom	Problem	Solution
Seed sensor tubes plugging.	Double eliminator set incorrectly.	See USING DOUBLE ELIMINATOR in Preparing Vacuum Meter section.
	Machine rolling backward when lowering.	Lower machine while moving forward.
	Mud inside seed tubes.	Clean off mud with cleaning brush.
Inconsistent seed depth.	Turning tractor steering wheel when machine is down and stationary. (Four Wheel Drive or Track tractors only.)	Avoid turning tractor when machine is down and stationary.
	Planting in rough seed bed.	Use downforce spring attachment 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.		Clean off mud with cleaning brush.
	Low vacuum setting.	Increase vacuum.
	Planting too fast.	Reduce planting speed.
Premature blower motor seal failure.	Low seed level in hopper.	Increase CCS tank pressure.
	Incorrect hydraulic connections.	Verify connections.
	High case drain pressure.	Check for 25 psi or less back pressure at motor.
Low vacuum.		Ensure case drain line is connected and hose not kinked.
	Incorrect hydraulic connections.	Verify connections.
	Planting unit vacuum hoses not connected to meter.	Connect vacuum hoses to meter.
	Flow control valve of tractor SCV misadjusted.	Adjust control valve knob or tractor SCV.
	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 rubber strap not engaged.	Attach housing rubber strap to chamber.
	Meter seals worn or flipped.	Inspect seals. Reposition or replace.
	Air manifold system assembled without O-rings.	Add O-rings.

Continued on next page

OUC6064,00004D9 -19-23MAY11-4/5

Troubleshooting

Symptom	Problem	Solution
Erratic vacuum.	Vacuum dome not closed properly.	Make sure vacuum dome closes properly.
	Foreign material (chaff) built up in vacuum dome.	Inspect dome and clean if necessary.
	Air manifold system clogged with dust.	Clean air manifold system.
	Control valve failed.	Replace control valve.
Vacuum gauge does not zero.	Tractor oil level low.	Add oil.
	Not adjusted.	Zero adjustment. See ZEROING VACUUM GAUGE in Service section.

OUO6064,00004D9 -19-23MAY11-5/5

MaxEmerge™ XP Vacuum Meter

Symptom	Problem	Solution
False monitor reading.	Dirty seed tube sensors.	Clean sensors. See CLEANING SEED SENSOR in Service 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 build-up on herbicide or insecticide drive.	Clean drive.
	Worn meter seals.	Replace seals.
	Seed disk hubs misadjusted.	Readjust hubs.
	Incorrect vacuum.	Adjust vacuum level 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.	Reinstall or replace seed tubes. 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.
Low seed population.	If low population displays on monitor and field counts are accurate, sensors are dirty.	Clean seed tubes and sensors.

Continued on next page

OUC6064,00004DA -19-23MAY11-1/4

Troubleshooting

Symptom	Problem	Solution
	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 build-up 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.
	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.

Continued on next page

OUC6064,00004DA -19-23MAY11-2/4

Symptom	Problem	Solution
High seed population.	Using incorrect double eliminator setting.	Reduce double eliminator coverage of vacuum hole.
	High vacuum.	Adjust vacuum level.
	Faulty vacuum sensor.	Check air line to sensor. Clean if plugged. Replace if cut.
	Worn seed disks.	Replace seed disks.
	Seed size not compatible with seed disks.	Use correct seed disks.
	Planting too slow.	Plant at speed recommended in planting rate charts.
	Meter brush improperly installed.	Install brush properly.
	Seed disk hubs loose.	Adjust hubs.
Seed tubes plugging.	Using incorrect double eliminator setting.	Increase double eliminator coverage of vacuum hole.
	Machine rolling backward when lowering.	Lower machine while moving forward.
Inconsistent seed depth.	Turning tractor steering wheel when machine is down and stationary. (Four Wheel Drive tractors only.)	Avoid turning tractor when machine is down and stationary.
	Planting in rough seed bed.	Use down force attachment on planting units.
Too many skips.	Seed tubes partially plugged or improperly installed.	Inspect seed tubes. Ensure that seed tubes are hooked properly in unit shank.
	Planting too fast.	Reduce planting speed.
Premature blower motor seal failure.	Incorrect hydraulic connections.	Verify connections.
	High case drain pressure.	Check for 25 psi or less back pressure at motor.
	Shutting SCV off to neutral.	Shut off SCV to "float".
Low vacuum.	Incorrect hydraulic connections.	Verify connections.
	Planting unit vacuum hoses not connected to meter.	Connect vacuum hoses to meter.
	Control valve misadjusted.	Adjust control valve knob.
	Air manifold system clogged with dust.	Clean air manifold system.
	Manifold hoses kinked or pinched.	Reposition hoses.

Continued on next page

OUO6064,00004DA -19-23MAY11-3/4

Troubleshooting

Symptom	Problem	Solution
Erratic vacuum.	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 damaged.	Inspect seals. Reposition or replace.
	Air manifold system assembled without O-rings.	Add O-rings.
	Air manifold system clogged with dust.	Clean air manifold system.
	Control valve failed.	Replace control valve.
Vacuum sensor does not zero.	Tractor oil level low.	Add oil.
	Not adjusted.	Zero adjustment. See ZEROING VACUUM SENSOR in SeedStar™ Operator's manual.

OUO6064,00004DA -19-23MAY11-4/4

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 back-pressure.

Repair fan motor.

To avoid future failures, be sure to connect drain line 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. Ensure 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 control 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.

Check connections.

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.

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).

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AG,OUO6023,1197 -19-01MAY09-1/2

Symptom	Problem	Solution
Tank pressure too low.	CCS pressure gauge was not zeroed.	Zero CCS pressure gauge.
	CCS pressure gauge hose not connected or damaged.	Reconnect 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.	Check valve removed from return line. Check and correct hose connections to tractor.
	Excessive air leakage from tank.	Install lids.
Pressure gauge does not zero.	Pressure gauge broken.	Repair or replace gauge.
	Gauge not adjusted.	Zero gauge. See ZEROING CCS FAN PRESSURE GAUGE in Service section.
	Gauge damaged.	Replace gauge.
	Moisture in gauge.	Dry out gauge.
CCS fan turning on and off while going through the field.	Suction hose plugged.	Clean or replace hose as needed.
	Frame height too high causing the row unit switch to open and close.	Adjust frame height. See ADJUST FRAME HEIGHT in your Operator Manual.
	Row unit fan switch misadjusted.	Adjust switch. See SETTING CCS ROW UNIT FAN SWITCH in Service section.

AG,OUO6023,1197 -19-01MAY09-2/2

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 and latch lid.
	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. See BRIDGED AND BLOCKED CCS SYSTEM in Pro-Series XP Central Commodity System section.
	Hoses routed flat or uphill or have large droops.	Reroute hoses correctly.
	High humidity.	Use more talc and mix thoroughly or wait for drier conditions.
	CCS fan running while not planting for excessive period of time.	Turn fan off if 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.
		If required for seed used, make sure that grey discharge elbows are installed properly on 36 row and larger machines. See OPERATING CCS SYSTEM WHEN PLANTING STANDARD SEED SIZES in Pro-Series XP Central Commodity System.
	Air volume too low.	Increase CCS tank pressure. See SETTING CCS TANK PRESSURE in Central Commodity System section.

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OUC06064,00004DB -19-23MAY11-1/5

Symptom	Problem	Solution
No seed in meter.	Blockage in air hose.	Clear air hose. See BRIDGED AND BLOCKED CCS SYSTEM in Pro-Series XP Central Commodity System section.
	Blockage in nozzle.	See BRIDGED AND BLOCKED CCS SYSTEM in Pro-Series XP Central Commodity System section.
	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 or remove seed stuck in nozzle. Whenever planter is lowered and stationary for more than a few minutes with seed in CCS tank, shut off tractor and turn key off. Agitators run anytime planter is lowered and key is on and can cause seed to pack into nozzles.
	Nozzle inserts installed on nozzles for planting sorghum.	Remove nozzle inserts when not planting sorghum.
	Agitator not running.	Check fuse, power connector, and ground lead.
	Air volume too low.	Verify tank pressure is set to recommended pressure.
	Blockage in air hose.	Cleanout meter using tray. Reinstall seed disc and close vacuum dome. Start CCS 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.
	Nozzle blockage inside tank.	With parking brake engaged, transmission in park and tractor off, remove outlet air hose from tank. Check for obstruction and remove if found.

Continued on next page

OUC6064,00004DB -19-23MAY11-2/5

Symptom	Problem	Solution
	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 or remove seed stuck in nozzle. Whenever planter is lowered and stationary for more than a few minutes with seed in CCS tank, shut off tractor and turn key off. Agitators run anytime planter is lowered and key is on and can cause 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 mini hopper.	Clear plug and decrease CCS tank pressure.
		If required for seed used, make sure that grey discharge elbows are installed properly on 36 row and larger machines. See OPERATING CCS SYSTEM WHEN PLANTING STANDARD SEED SIZES in Pro-Series XP Central Commodity System section.
	Seed bridging in CCS tank.	Check if agitator is running. Check fuse, power connector, and ground lead. See BRIDGED AND BLOCKED CCS SYSTEM in Pro-Series XP Central Commodity System section.
		Increase CCS tank pressure.
		Add and thoroughly mix John Deere talc lubricant with seed.
	CCS tanks empty.	Fill CCS tanks.
	Nozzle inserts installed.	Remove nozzle inserts when planting other crops.
Seed damage.	Air volume too high.	Reduce CCS tank pressure.
		Add talc.
	Old, dry seeds.	Use fresh seeds.
Individual rows overpopulating.	CCS tanks running empty.	Fill or redistribute seed in CCS tanks.

Continued on next page

OUO6064,00004DB -19-23MAY11-3/5

Symptom	Problem	Solution
Uneven or Inaccurate metering or product delivery.	Meter vacuum level too high.	Decrease vacuum level.
	Vacuum hopper vent plugged.	Clean vent.
	Discharge elbow vent plugged.	Clean vent holes in elbow.
	Product level in seed meter too low for accurate delivery.	Increase CCS tank pressure.
	Foreign material blocking product passages.	Remove blockage. See BRIDGED AND BLOCKED CCS SYSTEM in Pro-Series XP Central Commodity System section.
	Hopper screen plugged.	Remove screen and tap until clear.
	Lumps in seed.	Use clean seed. Use screens when filling tanks.
	Seed bridging in tank.	See BRIDGED AND BLOCKED CCS SYSTEM in Pro-Series XP Central Commodity System section.
		Increase CCS tank pressure.
		Add and thoroughly mix John Deere talc lubricant with seed.
No seed flow.	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.
	Plugged seed delivery hose.	Do not raise and lower machine continuously without planting seed. See BRIDGED AND BLOCKED CCS SYSTEM in Pro-Series XP Central Commodity System section.
		Do not operate machine with nearly all meters out of seed as the seed hoses to rows with seed can plug. See BRIDGED AND BLOCKED CCS SYSTEM in Pro-Series XP Central Commodity System section.
CCS fan surges.		Adjust CCS fan pressure to recommended level.
	Cold hydraulic oil.	Run CCS fan 10 minutes before planting to warm oil. Set tank pressure.
	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.

Continued on next page

OUO6064,00004DB -19-23MAY11-4/5

Troubleshooting

Symptom	Problem	Solution
		Adjust row unit fan switch.
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.	See BRIDGED AND BLOCKED CCS SYSTEM in Pro-Series XP Central Commodity System section.
	Improper tank pressure.	Install lids. Readjust SCV flow setting. Increase CCS tank pressure by 2 in.
CCS tank low warning light not functioning.	Tank level sensor dirty.	Clean sensor LEDs with a brush.
	Tank low warning light burned out.	To test, unplug all tank level sensor harness connectors. If light does not come on, replace light inside frame control box.

OUO6064,00004DB -19-23MAY11-5/5

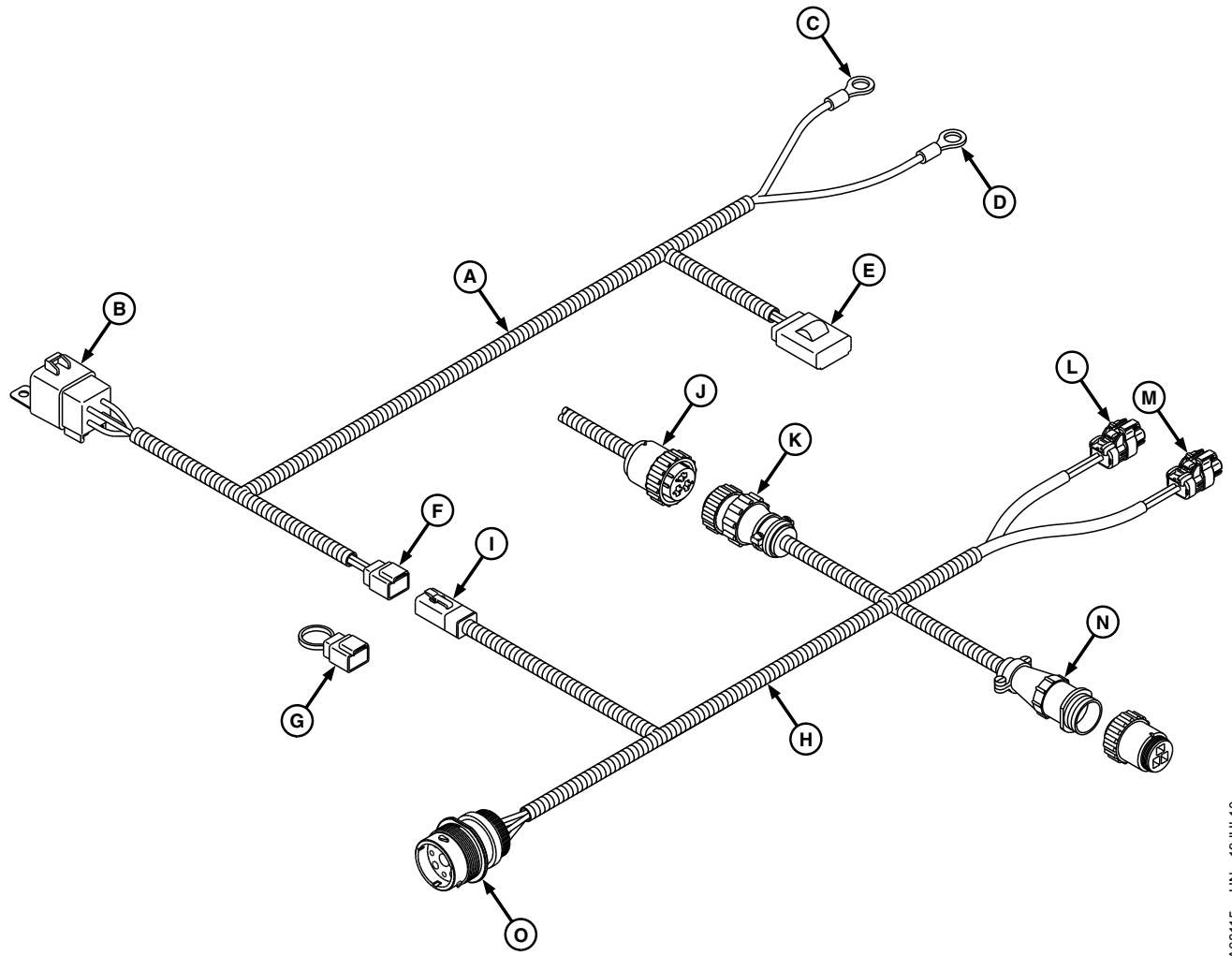
Service and Adjustments

Service Intervals

Service	Intervals						
	As Required	Beginning of Season	10 Hours or Daily	50 Hours	100 Hours	200 Hours	End of Season
Clean CCS Tank Level Sensors	•						
Zero CCS Fan Pressure Gauge	•						
Zero Vacuum Gauge	•						
Clean Pro-Series Row Unit Hopper Screen	•						
Install and Remove Flush Face Seed Tubes	•						
Clean Seed Tube Sensor	•						
Clean Vacuum Manifold System	•			•			
Install New Vacuum Seal	•						
Replace Seed Opener Blades and Seed Tube Guard	•						
Inspect and Adjust Seed Opener Blades	•						
Adjust Gauge Wheels	•						
Set CCS Row Unit Fan Switch	•						
Calibrate Insecticide or Herbicide Meter	•						
Bridged and Block CCS System	•						
Inspect Row Command™ Drive Chains and Sprockets					•		
Coulter Maintenance	•	•			•	•	
Inspect Vacuum Motor			•				
Clean Carrier Tank Strainer			•				
CCS Fan Gauge Filter							•
Tighten Pro-Series Meter Latch		•					•
Pro-Series XP Vacuum Meter Inspection and Service							•
Drain the Oil Reservoir on CCS Fan							•

OUO6064,000047D -19-19APR11-1/1

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 | |

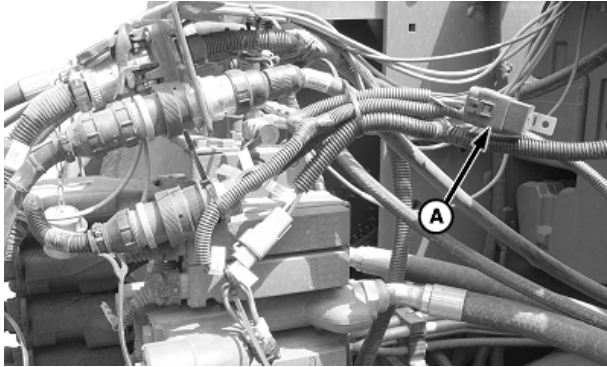
The AMS and Compressor Power Harness supplies power from the tractor to the pneumatic down force compressor and AMS functions (for example, GreenStar Rate Controller and iGuide).

The following pictures show fuse and relay locations.

Continued on next page

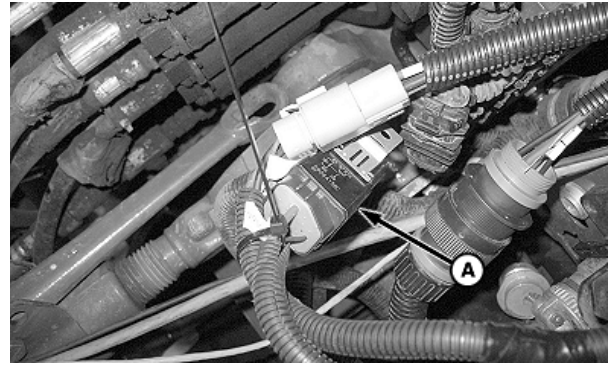
OUO6064,00004DC -19-23MAY11-1/2

A68115—UN—19JUL10



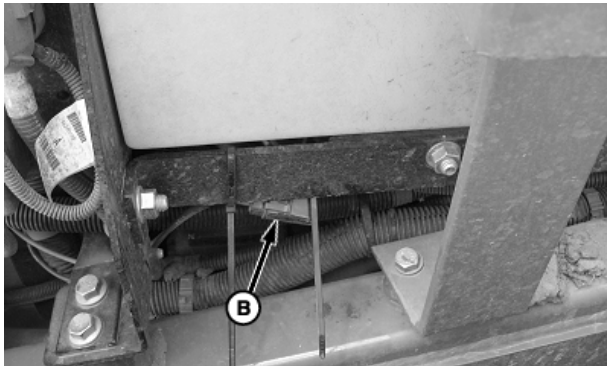
A68180—UN—15JUL10

Relay, Four Wheel Drive Tractor



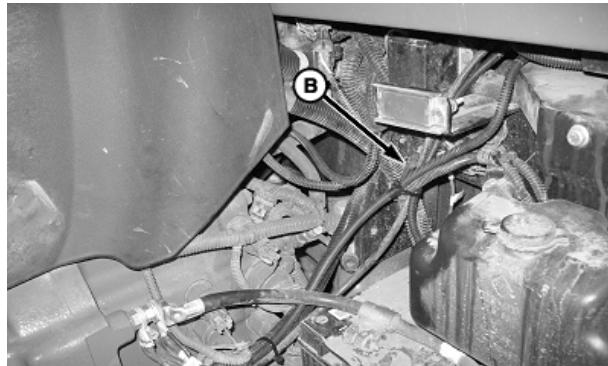
A68181—UN—15JUL10

Relay, Row Crop Tractor



A68182—UN—15JUL10

Fuse, Four Wheel Drive Tractor



A68183—UN—15JUL10

Fuse, Row Crop Tractor

A—Relay

B—Fuse

OUC6064,00004DC -19-23MAY11-2/2

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,OUC6074,1362 -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.

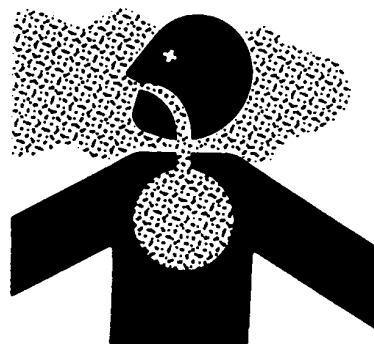
Always follow all label directions for effective, safe, and legal use of agricultural chemicals.

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.



TS272 —UN—23AUG88



TS220 —UN—23AUG88

- 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

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.



TS953 —UN—15MAY90

6. After welding, reverse Steps 1—5.

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.

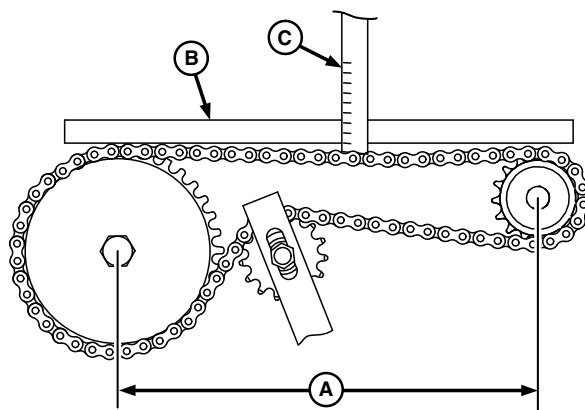
4. Adjust shaft centers or chain tighteners to specification.

Specification

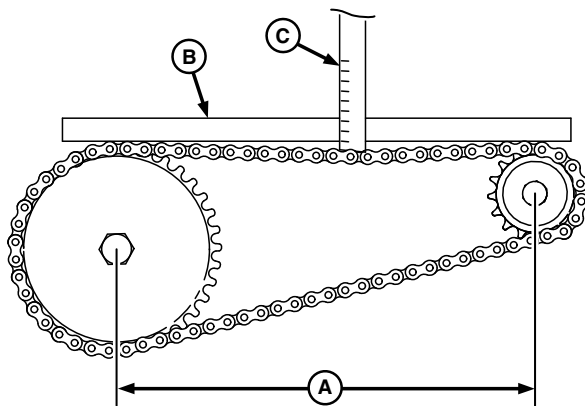
Chain—Deflection.....6.4 mm (1/4 in.) of chain deflection per 31 cm (12 in.)

A—Shaft Distance
B—Straight Edge

C—Ruler



Drive Chain With Tension Idler



Drive Chain Without Tension Idler

OUO6064,0000377 -19-31JAN11-1/1

Service Tires Safely

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

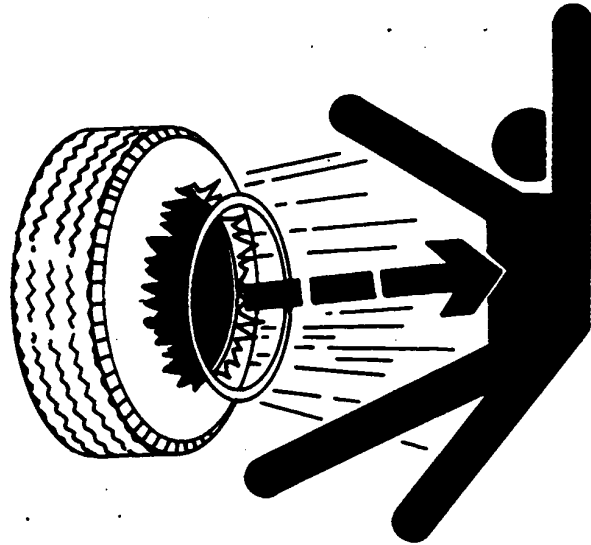
Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure.

Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.



TS211 —UN—23AUG88

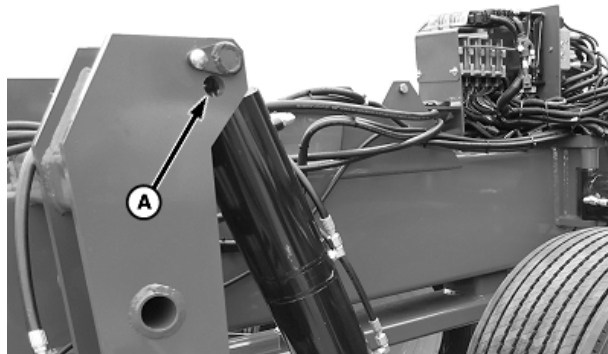
DX,RIM1 -19-27OCT08-1/1

Adjust Main Frame Height

NOTE: Soil conditions affect frame height. Wing wheels can be adjusted differently than the center frame wheels due to varying attachments and frame configurations.

To increase main frame height in conditions where main frame is lower than wings move top transport cylinder pin to hole (A).

A—Hole



A71633 —UN—23MAY11

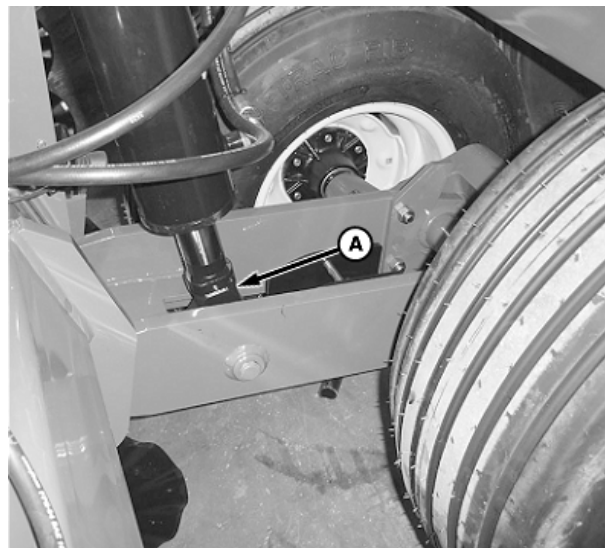
OUO6064.00004DD -19-23MAY11-1/1

Adjust Wing Frame Height

NOTE: Soil conditions affect frame height. Wing wheels can be adjusted differently than the center frame wheels due to varying attachments and frame configurations.

Adjust threaded clevis (A) on rod end of wing wheel cylinder for additional wing frame height.

A—Clevis



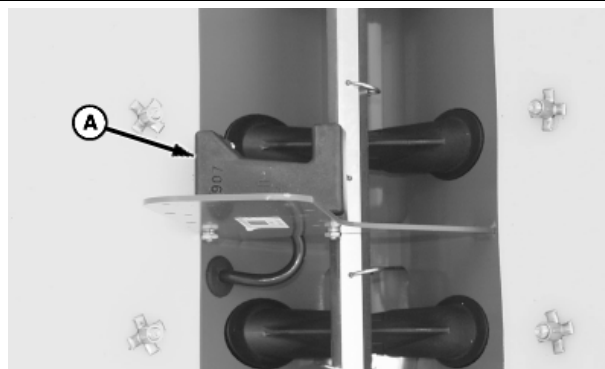
A68164 —UN—13JUL10

OUC6064,000047E -19-19APR11-1/1

Cleaning CCS Tank Level Sensors

Clean tank level sensors (A) prior to filling CCS tanks. Use stiff bristled 1372 mm (4.5 ft) handle 203 mm (8 in.) wide broom to clean sensors.

A—Tank Level Sensor



A49868 —UN—12AUG02

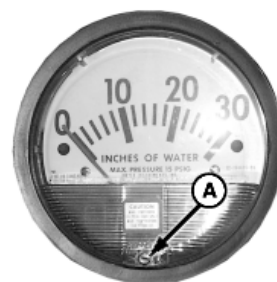
OUC6074,0000BCD -19-26MAR04-1/1

Zeroing CCS Fan Pressure Gauge

NOTE: To zero monitor vacuum gauge, see *SeedStar™ Operator's manual*.

1. Shut off CCS fan.
2. With vacuum gauge in a vertical position, disconnect CCS fan monitor line to equalize the gauge with atmospheric pressure.
3. Use the zero adjusting screw (A) to set the gauge pointer exactly on zero mark.
4. Connect monitor line.

A—Zero Adjusting Screw

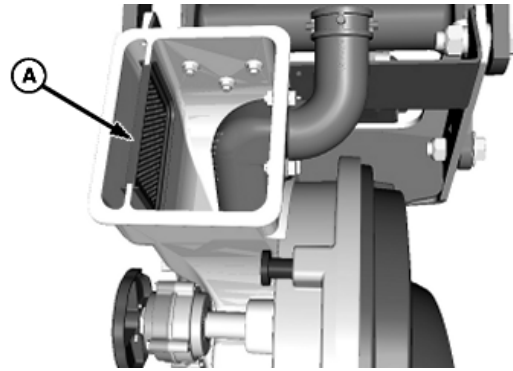


A51170 —UN—18NOV02

OUC6064,00004DE -19-23MAY11-1/1

Cleaning Pro-Series™ XP Row Unit Hopper Screen

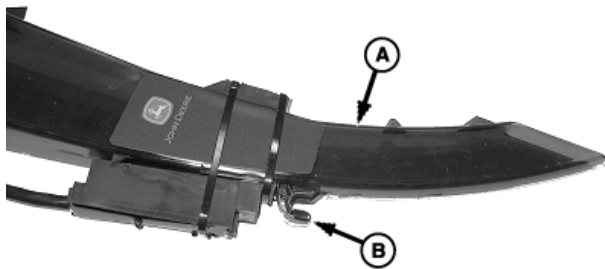
Remove hopper screen (A), tap until clear and replace.



A52516—UN—18MAR04

OUC6074,0000BCC -19-26MAR04-1/1

Install and Remove Standard Flush Face Seed Tubes



A59900—UN—02APR07

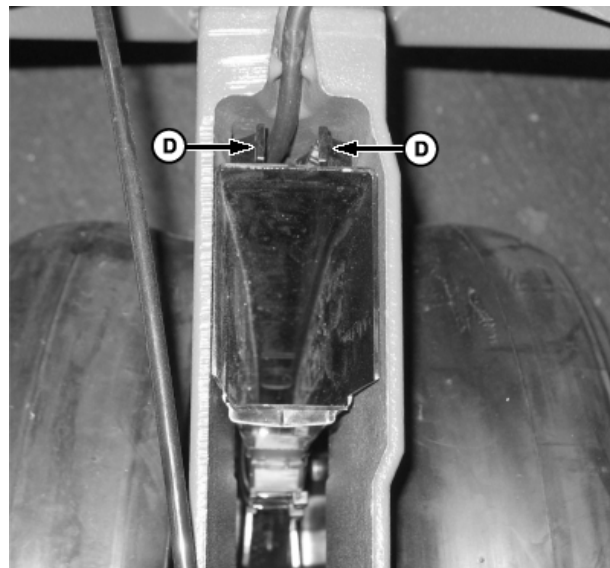


A53288—UN—03NOV03

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 the 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 upward.

A—Seed Tube
B—Hook

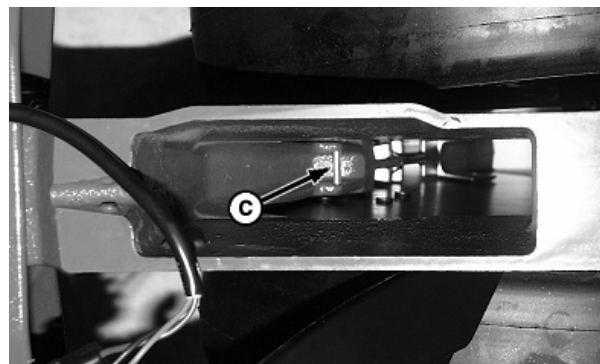
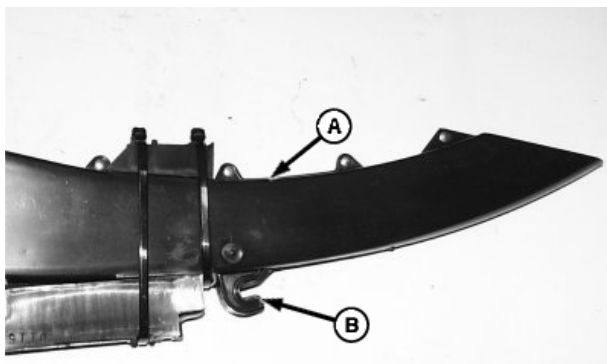
C—Pin
D—Tabs



A59901—UN—02APR07

OUC6074,0000FE4 -19-13NOV07-1/1

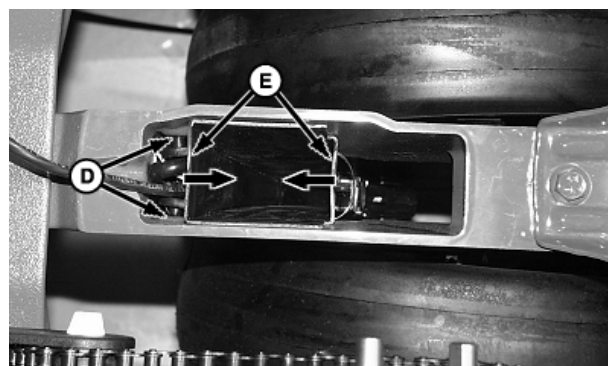
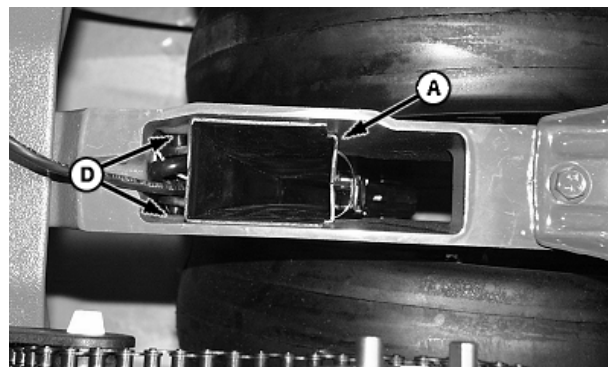
Install and Remove Optional Seed Tubes



1. Connect monitor harness to sensor harness.
2. Insert seed tube (A) into planting unit so the hook (B) locks on alignment pin (C).
3. Position seed tube so tabs (D) lock into holes.
4. To remove seed tube, squeeze front and rear (E) of tube with fingers until tabs (D) release from casting and pull upward.

A—Seed Tube
B—Hook
C—Pin

D—Tabs
E—Front and Rear



OUO6074,0000FE3 -19-13NOV07-1/1

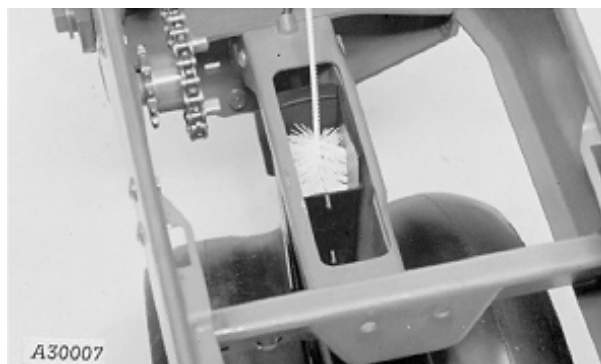
Clean Seed Tube Sensor

It is possible for extremely dusty conditions or heavily treated seed to cause an excessive buildup of dust and seed treatment inside the seed tubes that blocks the seed sensor light. When the sensor light becomes blocked, false low population counts or false low limit warnings appear.

Periodically clean the seed sensor area inside seed tube with dry brush provided.

IMPORTANT: Do not plant again until all interior seed tube surfaces are dry.

If moisture enters the seed tube during a rain or when machine is washed, dust in the seed tubes turns to mud. If moisture is present or dry residue is difficult to remove



A30007—UN—06OCT88

with a dry brush, use mild detergent and water with brush. Allow interior seed tube surfaces to dry.

AG,OUO1074,849 -19-13NOV07-1/1

Cleaning Vacuum Manifold System

Dirt or seed inoculant/treatment may build up in vacuum manifold system and cause low vacuum at planting units. This could result in loss of seed metering accuracy.

CAUTION: Follow chemical manufacturer's precautions 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:

1. Turn on vacuum blower(s) and set hydraulic flow to 75 percent.
2. One at a time, remove vacuum hoses from meters. Inspect and clean all straw and/or foreign material from both attaching hose ends. Shake hose for a few seconds and replace it on meter.
3. Remove end caps from manifold tubes one at a time, then reinstall.

OUO6435,0001AEC -19-04MAR04-1/1

Inspect Row Command™ Drive Chains and Sprockets

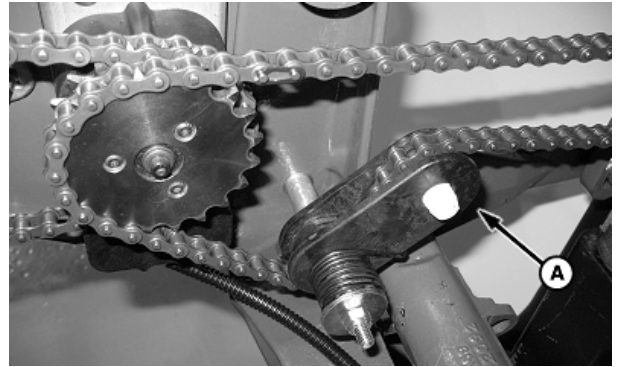
1. For quick reference, when new chains are installed, tensioner block (A) is in position shown.

When chains have been in service for a season, tensioner block (B) can be more vertical as shown.

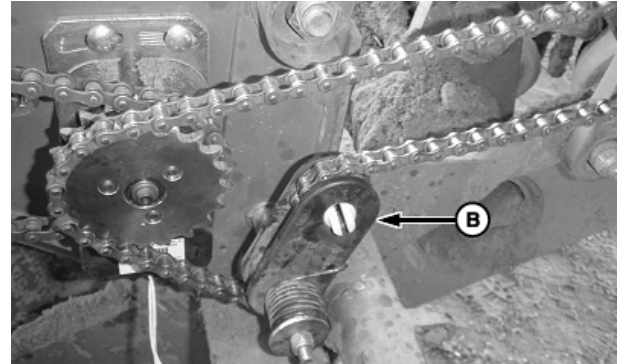
A vertical tensioner is an indication to remove links or replace chain.

A—Tensioner Block

B—Tensioner Block



A66016—UN—09DEC09



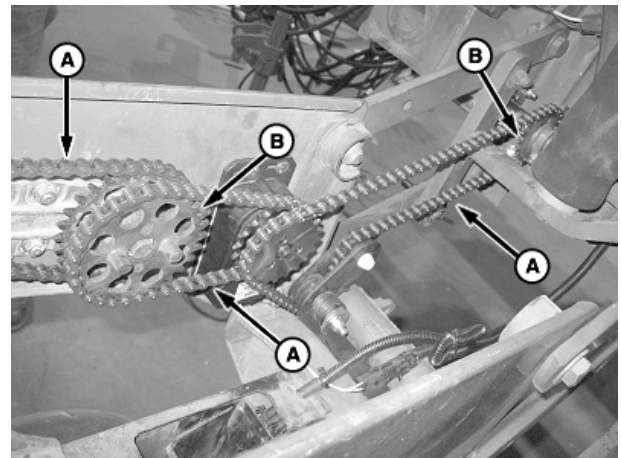
A66017—UN—09DEC09

OUO6045,00001EC -19-02JUN10-1/2

2. Inspect all chains (A) and sprockets (B) for wear and damage. Replace as needed.

A—Chains

B—Sprockets



A66015—UN—09DEC09

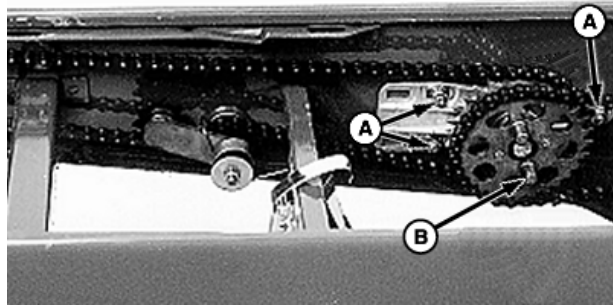
OUO6045,00001EC -19-02JUN10-2/2

Adjusting MaxEmerge™ XP Seed Chain Drive Mechanism

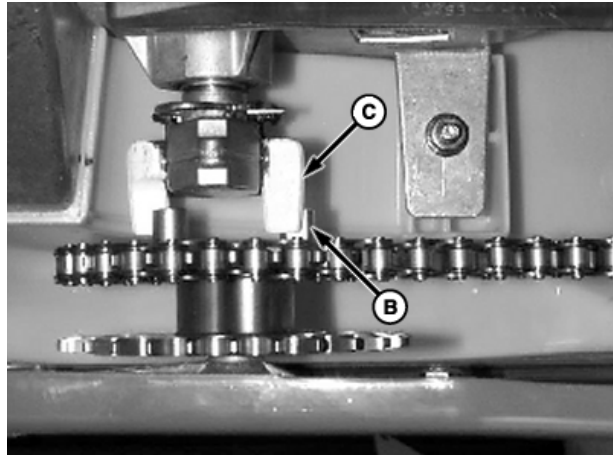
1. It may be necessary to align sprockets with drive mechanism on meter.
2. Loosen nuts (A) and adjust sprocket assembly so drive lugs (B) align with meter tabs (C).
3. Install hoppers and use a small mirror to check alignment of drives.
4. When meter drive is misaligned, drive lugs (B) can be seen outside meter tabs (C) as shown.
5. When meter drive is properly aligned, drive lugs (B) and meter tabs (C) are in line as shown.

A—Nuts
B—Drive Lugs

C—Meter Tabs

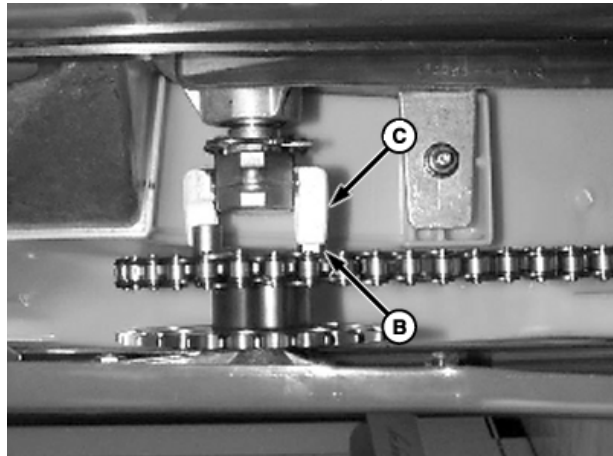


A54235—UN—07APR04



A54236—UN—07APR04

Drives Out Of Alignment



A54237—UN—07APR04

Drives In Alignment

OQ06074,0000C16 -19-07APR04-1/1

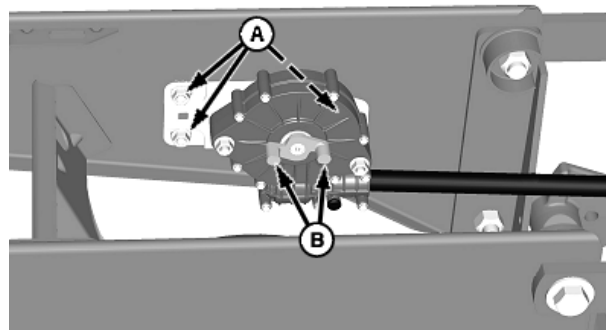
Adjusting MaxEmerge™ XP Seed Cable Drive Mechanism

1. It may be necessary to align sprockets with drive mechanism on meter.
2. Loosen nuts (A) and adjust sprocket assembly so drive lugs (B) align with meter tabs (C).
3. Install hoppers and use a small mirror to check alignment of drives.
4. When meter drive is misaligned, drive lugs (B) can be seen outside meter tabs (C) as shown.
5. When meter drive is properly aligned, drive lugs (B) and meter tabs (C) are in line as shown.

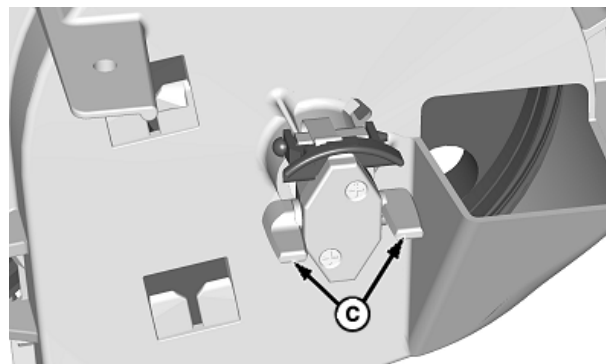
A—Nuts

B—Drive Lugs

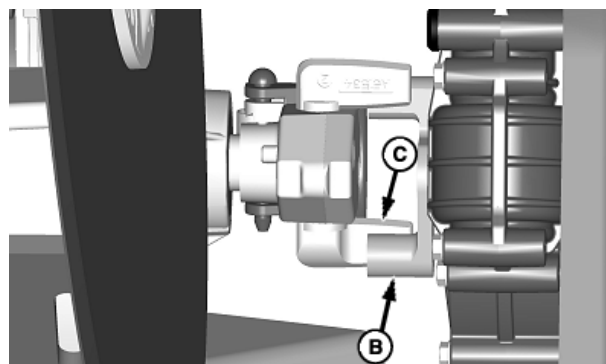
C—Meter Tabs



A54202 —UN—07APR04

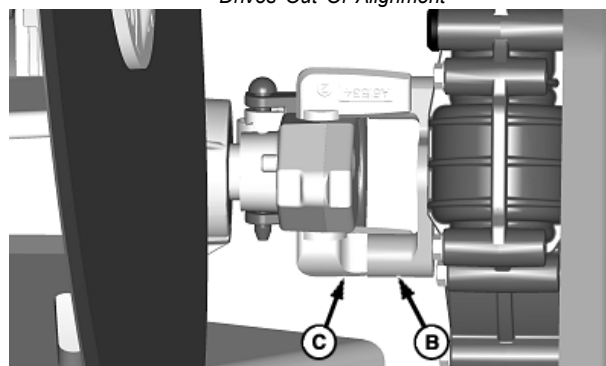


A54203 —UN—07APR04



A54204 —UN—07APR04

Drives Out Of Alignment



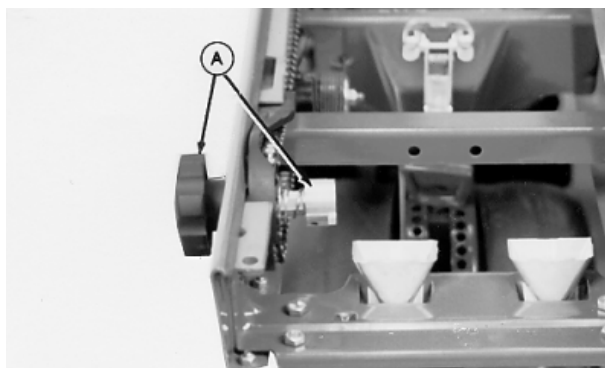
A54234 —UN—07APR04

Drives In Alignment

OOU6074,0000C17 -19-07APR04-1/1

Aligning MaxEmerge™ XP Chemical Meter Drive

1. Check and adjust alignment of drive assembly (A) and side panel hole. Assembly should be aligned with center of hole and tightened down. Loosening meter from bottom of hopper and aligning meter and meter drive sprocket side-to-side and fore-to-aft may also be necessary. Mounting holes are large enough to allow for slight side-to-side and fore-to-aft adjustment.
2. On machines with dual granular-chemical meters, inspect alignment of shafts. Drive should operate freely and smoothly when rotating coupler with hopper removed. To check and align a dual-meter system, chemical hoppers should be removed from row unit. Hopper should be turned upside down and meters should be checked for parallel side-to-side and fore-to-aft alignment on bottom of hopper using a straight edge.



A—Drive Assembly

A45394—UN—07APR99

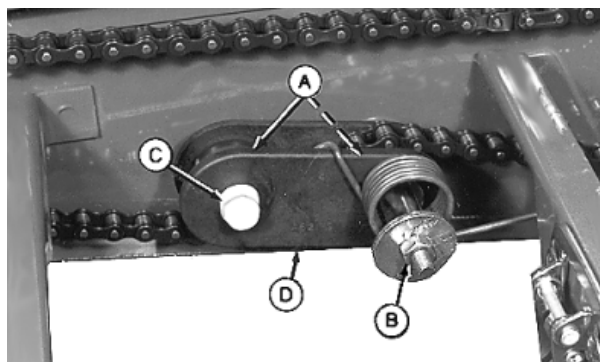
OUC6074,0000BCF -19-26MAR04-1/1

MaxEmerge™ XP High-Residue Chain Idler

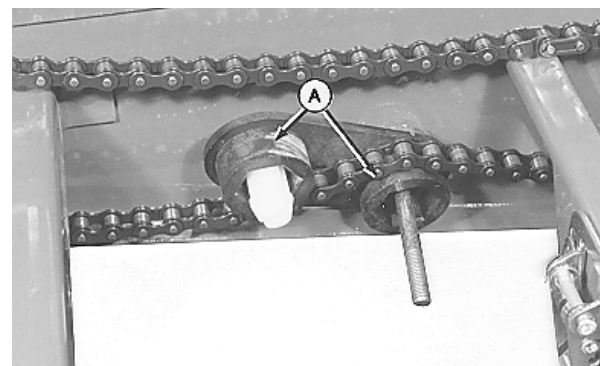
1. Check where chain rides on inserts (A) for wear. Measure center of inserts, if worn down 3 mm (1/8 in.), remove nut (B), washers and spring.
2. Squeeze retaining pin (C) and remove outer plate (D).
3. Remove inserts, rotate one third turn and install on inner plate. Install outer plate, washers, spring and nut. If inserts have been previously turned two times, install new inserts available through service parts. See your John Deere dealer.

A—Inserts
B—Nut

C—Retaining Pin
D—Plate



A44872—UN—27APR98



A44873—UN—29APR98

OUC6074,0000BD0 -19-26MAR04-1/1

Install New Vacuum Seal

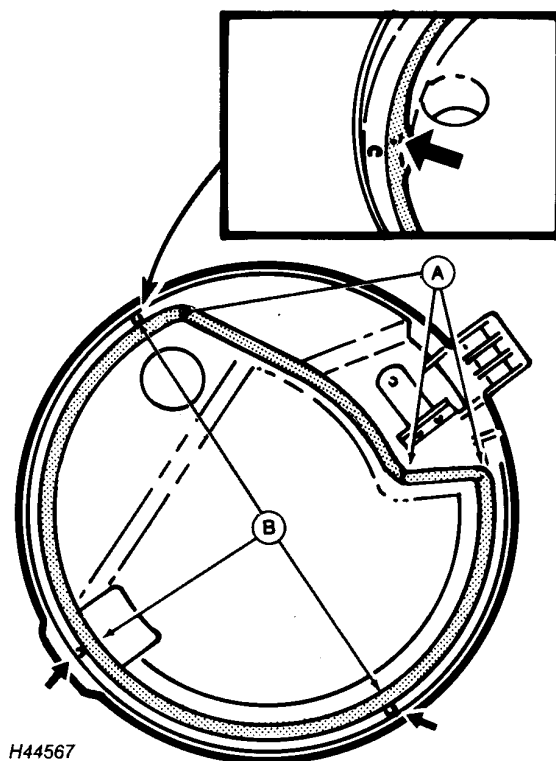
1. Remove seed hopper from planting unit and place it on its side. It is not required to empty seed out of hopper.
2. Unlatch handle and swing open vacuum chamber.
3. Remove and discard old vacuum seal.

NOTE: This procedure prevents excessive slack in seal.

4. Install new seal. Insert corners of seal (A) then insert seal at three locations (B) with dimples on seal aligned with dimples on housing. Finally, insert remaining portions of seal.
5. If seed disk has been used, apply Spray on Graphite Lubricant TY25797 on vacuum seal side.
6. Close vacuum chamber and latch handle. Install seed hopper on planting unit.

A—Corners

B—Dimple Location



H44567 —UN—27MAY92

AG,OUO6074,1367 -19-06MAY09-1/1

Replace Seed Opener Blades and Seed Tube Guard

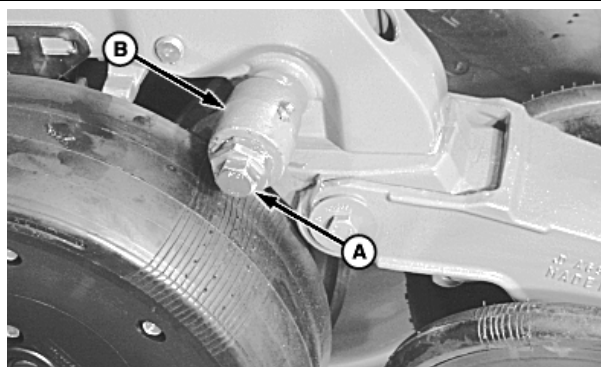
IMPORTANT: Avoid premature wear. Do not use a new blade with a used blade. Install new blades in pairs.

NOTE: If replacing seed tube guard only, the right-hand blade does not need to be removed.

1. Remove cap screw (A), pivot shaft (B,) and gauge wheel from row unit.

A—Cap Screw

B—Pivot Shaft



A53246 —UN—29OCT03

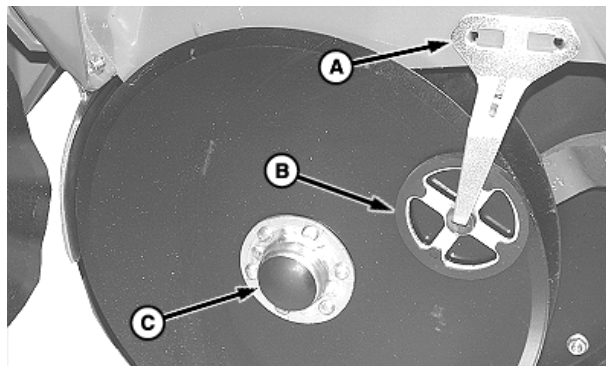
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OUO6435,0001A4E -19-26MAY09-1/4

2. Planting unit equipped with rotary or rigid scraper, pull front engagement pin (A) outward, disengage scraper assembly (B) from shank panels.
3. Remove hub cap (C).

A—Engagement Pin
B—Scraper

C—Hub Cap



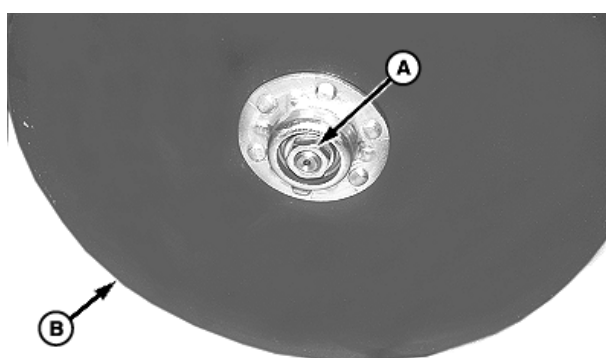
A51073—UN—11NOV02

OOU6435.0001A4E -19-26MAY09-2/4

CAUTION: Disk blades are sharp. Wear protective gloves and handle disks carefully to avoid being injured.

NOTE: Do not discard spacer shims.

4. Remove nut and flat washer (A).
5. Remove blade (B).
6. Remove hardened shims.
7. If replacing blades, remove blade on opposite side of row unit. If replacing seed tube guard only, right-hand blade does not need to be removed.



A—Nut and Washer

B—Disk

A51112—UN—20NOV02

OOU6435.0001A4E -19-26MAY09-3/4

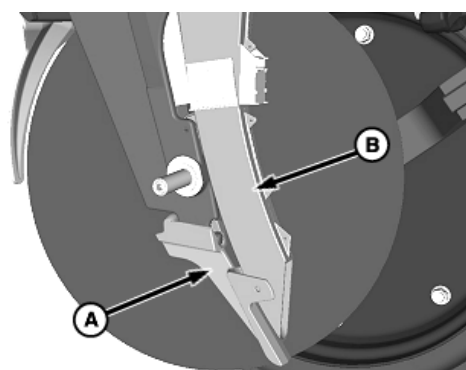
NOTE: Replace seed tube guard, if excessively worn.

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

OOU6435.0001A4E -19-26MAY09-4/4

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

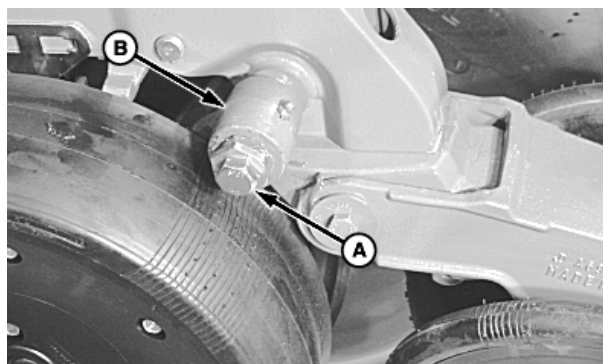
Blade Edge	
Contact—Blade Edge	
Contact Length.....	38—63.5 mm (1.5—2.5 in.)

- 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.

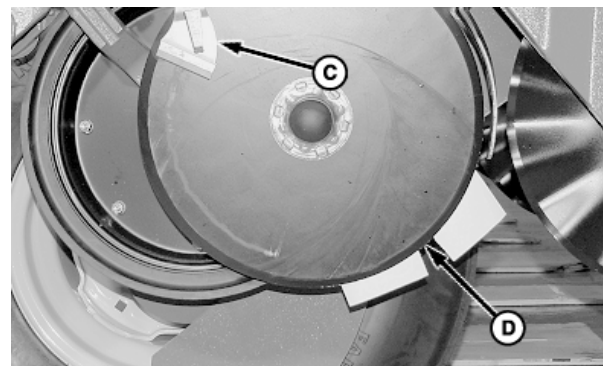
Measure blade diameter and compare to specification. Replace blades, if diameter is below specification, if beveled edge is worn off or if significant damage is apparent. See REPLACE SEED OPENER BLADES AND SEED TUBE GUARDS in this section.

Specification

Opener Blades—Mini-	
imum Diameter.....	356 mm (14 in.)



A53246 —UN—29OCT03



A53250 —UN—29OCT03

A—Cap Screw
B—Pivot Shaft

C—Scraper
D—Contact Point

Continued on next page

OUO6074,0000E6A -19-26MAY09-1/2

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.

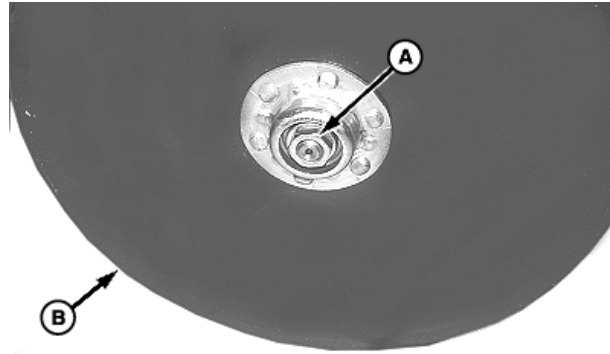
5. Only one blade has to be removed to adjust contact point, as long as opener blades are centered on the row unit shank. If one opener blade contacts row unit shank, move shims side to side so that blades are centered.
6. Remove hub cap, nut, flat washer (A) and hardened shims.
7. Remove blade (B).

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.



A51112—JUN—20NOV02

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.)

OUO6074,0000E6A -19-26MAY09-2/2

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.

Gauge wheels should just touch blades or 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.)

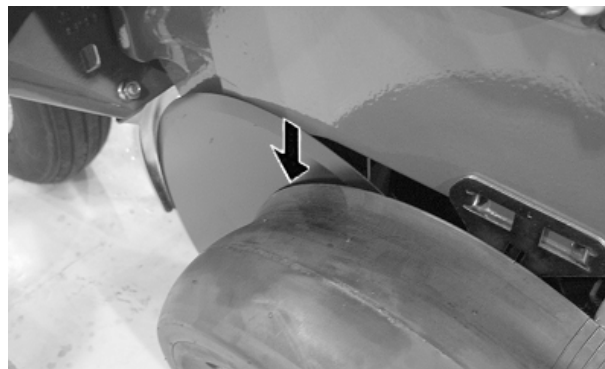
Loosen and hold cap screw with one wrench while turning adjustment nut with another wrench (A). To move wheel closer to blade, turn nut counterclockwise. To move wheel away from blade, turn nut clockwise.

Tighten wheel arm cap screw to specification.

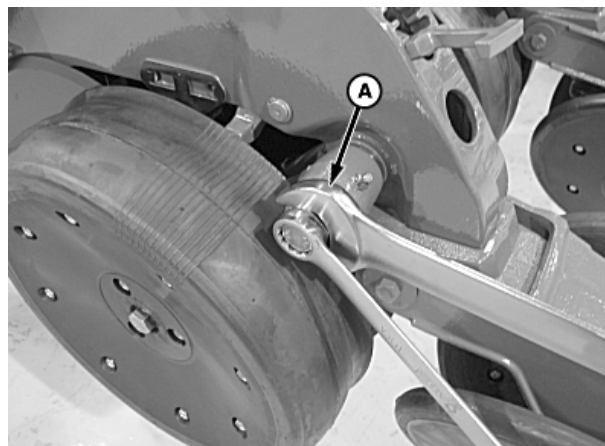
Specification

Wheel Arm Cap	
Screw—Torque.....	271 N·m (200 lb.-ft.)

A—Adjusting Wrench



A68170 —UN—14JUL10



A68178 —UN—14JUL10

AG,OUO6074,1369 -19-14JUL10-1/1

Setting CCS Row Unit Fan Switch

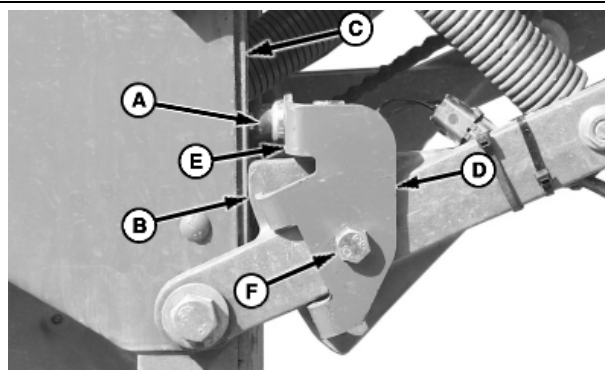
The CCS row unit switch (A) turns the CCS fan and agitator on and off as machine is raised and lowered.

1. Completely raise machine. Lower parallel arm stop (B) should be touching planting unit frame (C).
2. Rotate sensor bracket (D) until flat surface (E) is 20 mm (3/4 in.) from planting unit frame.
3. Tighten cap screw (F).

IMPORTANT: Avoid machine damage. Agitator will continue to run as long as tractor power is provided, if switch is not adjusted to deactivate when frame is raised.

NOTE: Tractor electrical power must be supplied when adjusting.

4. Observe agitator on CCS tank and adjust switch so agitator will shut off when frame obtains this fully raised position. This adjustment also ensures the CCS



A—Row Unit Switch
B—Stop
C—Frame

D—Bracket
E—Flat Surface
F—Cap Screw

fan and agitator will engage the moment this row unit contacts the ground when lowered.

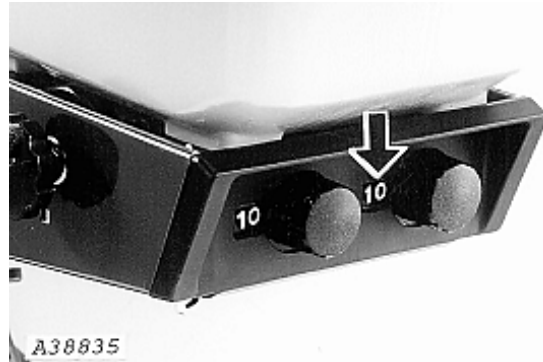
A71634 —UN—23MAY11

OUO6064,00004DF -19-23MAY11-1/1

Calibrating Insecticide/Herbicide Meter

If it should ever become necessary to recalibrate the granular meter on insecticide/herbicide hopper, proceed as follows:

1. Turn knob on rear of hopper to a setting of "10".
2. Remove hopper and turn it upside down on a flat surface.



A38835—UN—19DEC95

AG,OUO6074,1305 -19-29JUN05-1/5

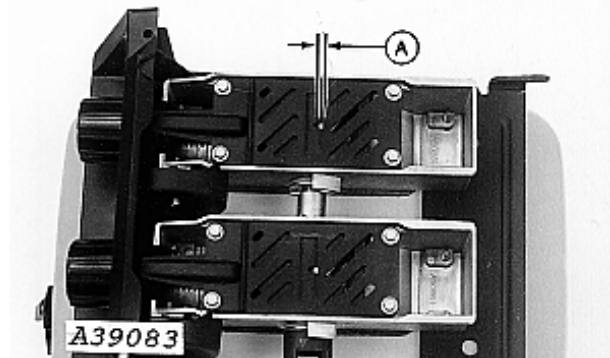
3. Measure the V-notch opening (A) on the meter gate. The opening should be set to a specified width.

Specification

V-Notch Opening—Width..... 4 mm
(0.160 in.)

If measurement is to specification, the meter is calibrated correctly. If measurement is not to specification, the meter must be recalibrated.

A—V-Notch Opening



A39083—UN—17JAN96

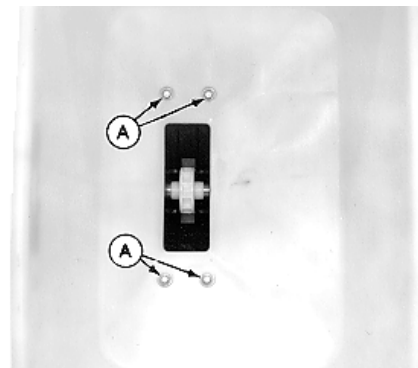
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AG,OUO6074,1305 -19-29JUN05-2/5

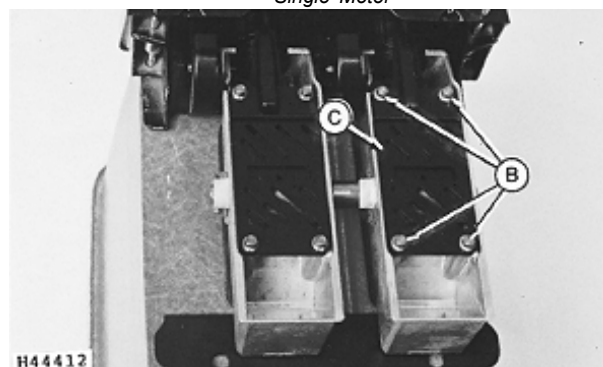
4. Remove four M6 x 20 cap screws (A) securing meter to hopper. Remove meter from bottom of hopper.
5. Remove four M6 x 16 cap screws (B). Remove gate cover (C).

A—Cap Screws, M6 x 20
B—Cap Screws, M6 x 16

C—Cover



Single Meter



Continued on next page

AG,OUO6074,1305 -19-29JUN05-3/5

A41132 —UN—21APR97

H44412 —UN—20MAY92

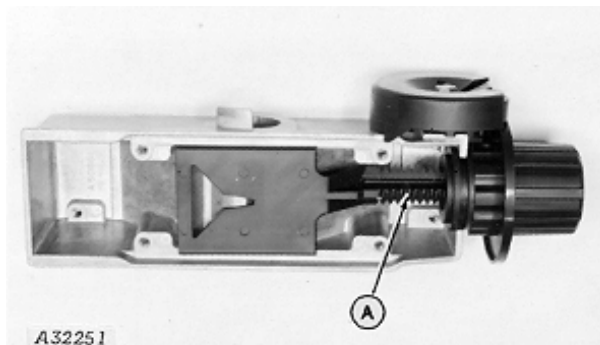
6. Remove entire plastic gate assembly (A) from aluminum housing.
7. Work knob (B) back and forth while pulling apart to remove knob from splined nut (C).
8. Turn nut (C) until V-notch opening is to specification.

Specification

V-Notch Opening—Width..... 4 mm
(0.160 in.)

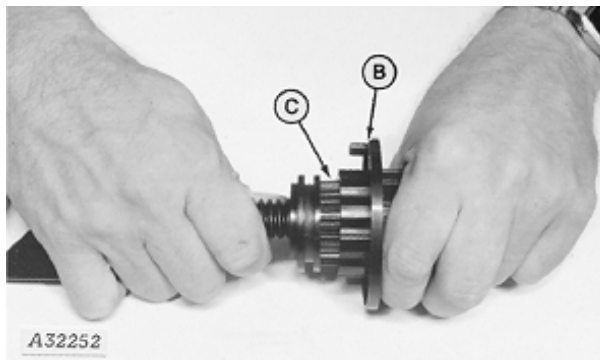
A—Plastic Gate Assembly
B—Knob

C—Nut



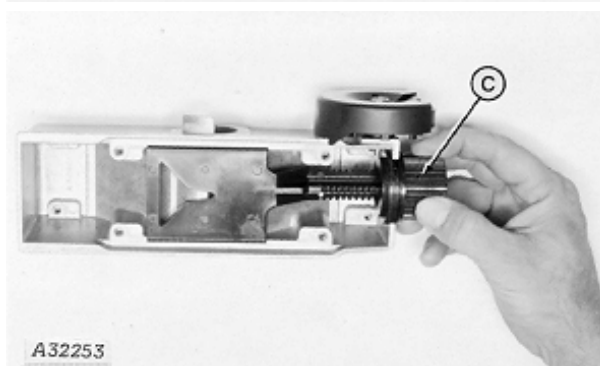
A32251

A32251 —UN—12OCT88



A32252

A32252 —UN—12OCT88



A32253

A32253 —UN—12OCT88

AG,OUO6074,1305 -19-29JUN05-4/5

9. Replace the knob on nut so the number "0" lines up with the number "1" on cam follower. The meter should have a setting of "10".
10. Seat knob to flange on nut.
11. Install gate cover with cap screws previously removed.
12. Install meter on bottom of hopper and attach with cap screws previously removed.



A32254

A32254 —UN—12OCT88

AG,OUO6074,1305 -19-29JUN05-5/5

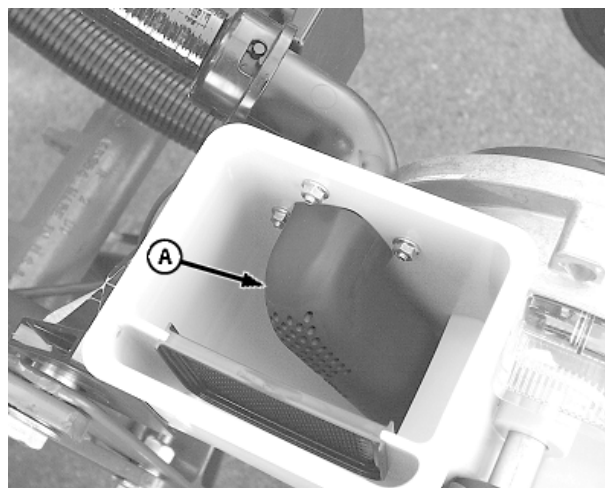
Bridged and Blocked CCS System

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.

OUC6045,0000001 -19-27MAY09-1/2

A54895—UN—22SEP04

Product Has Bridged in CCS Tank Manifold

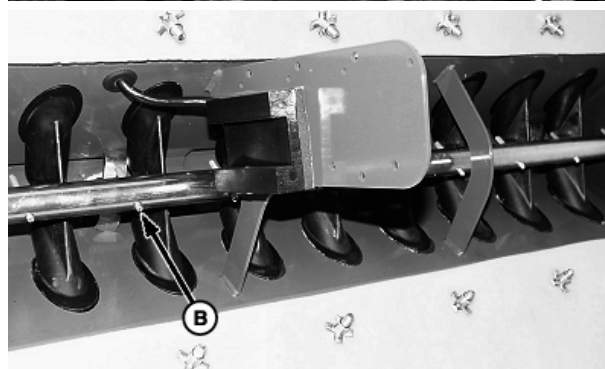
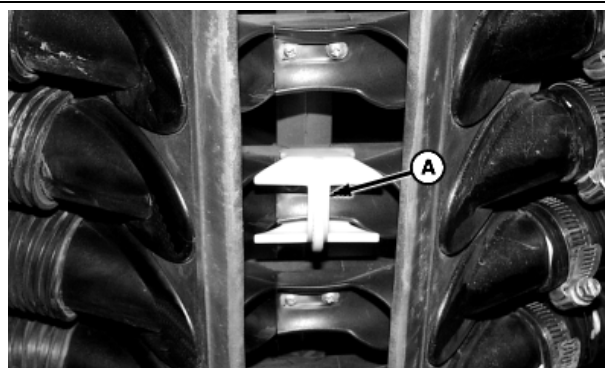
1. The following items must be checked to ensure proper operation of CCS system:
 - CCS tank pressure set to recommended setting for crop being planted.
 - Tank agitator turning when CCS fan is on.
2. Nozzle inserts (A) installed or removed for specific crop being planted.
3. Agitator pins (B) centered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



OUC6045,0000001 -19-27MAY09-2/2

A50710—UN—17OCT02

A62189—UN—06MAR08

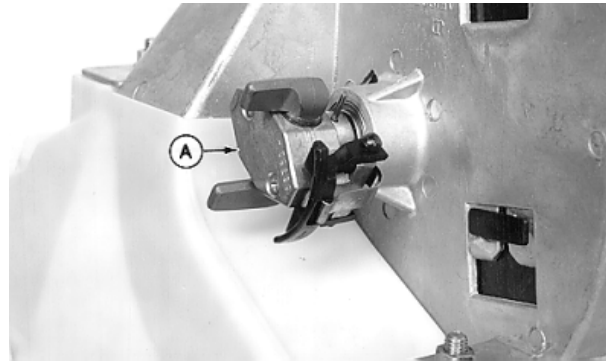
Cleaning MaxEmerge™ XP Meter Drive

Drive (A) can stick in dusty conditions. Lubricate with John Deere Multipurpose Spray Lube TY6350.

Prior to season, disassemble drive, clean and repack with TY6333 grease.

Apply PM37477 LOCTITE™ to screw threads and assemble drive (A).

A—Drive



A44734 —UN—24MAR98

Vacuum Meter Drive Shown

LOCTITE is a trademark of Loctite Corp.

OUC6074,0000BD2 -19-26MAR04-1/1

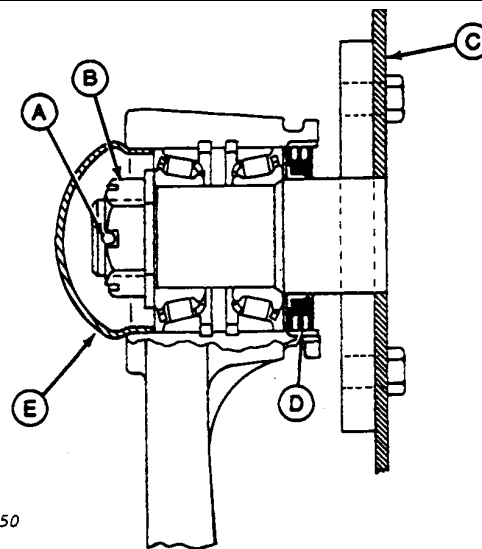
Coulter Maintenance

The bearing has a face-type seal (D). Contact of seal against a machined surface retains grease and excludes dirt. If there is any play in bearing, do the following:

- Clamp coulter blade (C) in vise.
- Disassemble and clean.
- Repack with John Deere TY6341 SD Polyurea grease or equivalent SAE multipurpose-type grease.
- Tighten nut (B) until there is drag on bearing.

NOTE: Apply 1.3 N·m to 2.8 N·m (10 lb.-in. to 25 lb.-in.) of drag on bearing. This drag assures positive sealing. Replace cotter pin (A) into slotted nut to lock in position.

The bearings are packed with grease at the factory. Every 100 hours, inspect bearing and adjust if necessary. Every 200 hours, or before each planting season, disassemble bearing, clean, and repack as previously outlined. Do not use chassis lubricant in bearings.



A22350

A22350 —UN—13OCT88

A—Cotter Pin
B—Slotted Nut
C—Coulter Blade

D—Face Seal
E—Hub Cap

AG,OUC6074,1381 -19-23JUN09-1/1

MaxEmerge™ XP Chemical Meter Maintenance

The chemical meter fluted roller wears during operation. To maintain meter accuracy, the fluted roller should

be replaced every 250 hours of use or beginning of planting season. To replace the roller, see CLEANING INSECTICIDE AND/OR HERBICIDE HOPPERS in this section.

OUC6074,0000BD3 -19-01MAY09-1/1

Cleaning MaxEmerge™ XP Insecticide and/or Herbicide Hoppers

See End Of Season for detailed information.

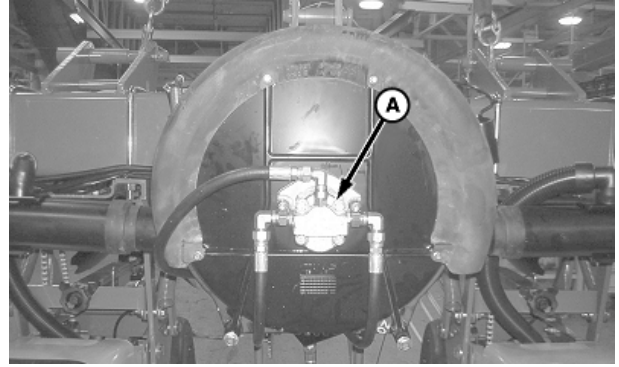
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Inspect Vacuum Motor

Check vacuum motor (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



A57645 —UN—13MAR06

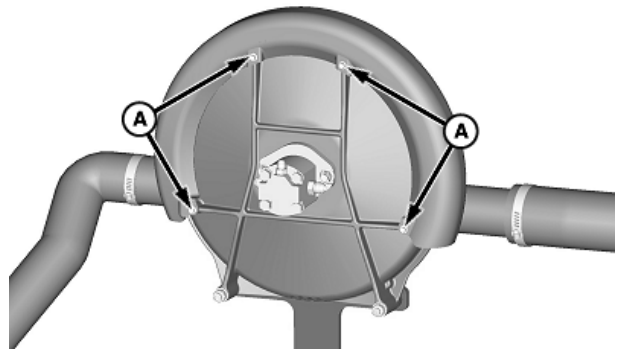
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Inspect and Clean Vacuum Impeller and Housing

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



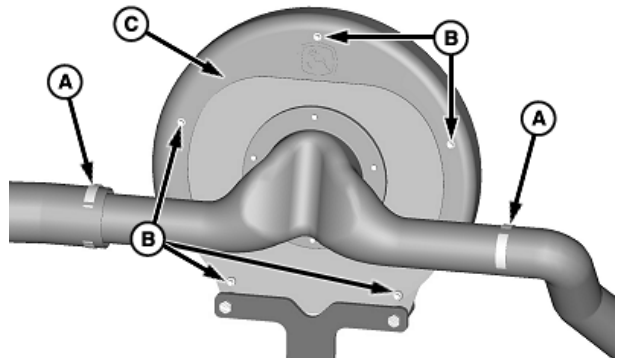
A59230 —UN—15FEB07

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

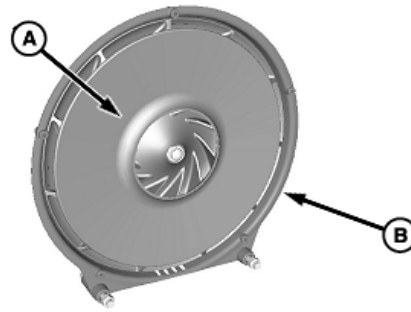
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OUC6064,00003AE -19-25MAY11-2/5

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



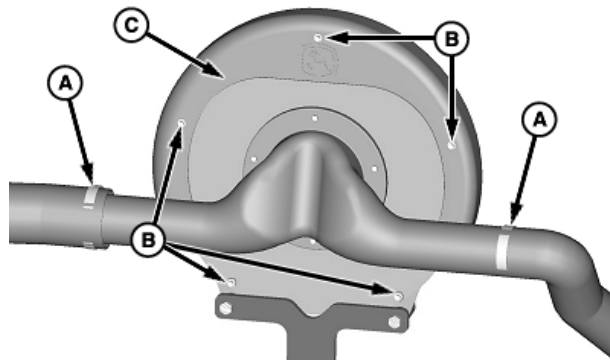
A70792—UN—23FEB11

OUO6064,00003AE -19-25MAY11-3/5

7. Install cover (C), cap screws (B), and hose clamps (A).

A—Hose Clamps
B—Cap Screws

C—Cover

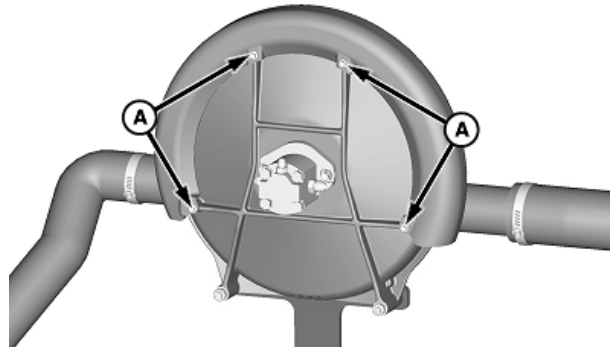


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OUO6064,00003AE -19-25MAY11-4/5

8. Install cap screws (A).

A—Cap Screws

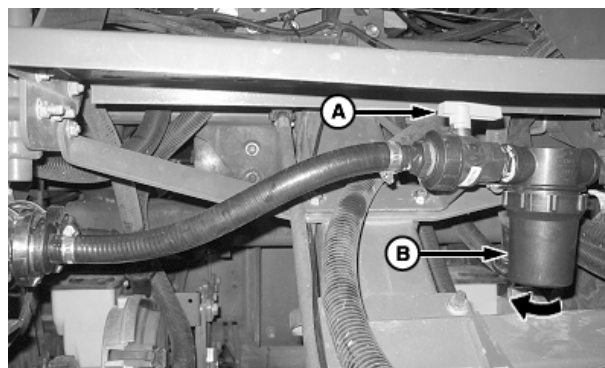


A59230—UN—15FEB07

OUO6064,00003AE -19-25MAY11-5/5

Clean Carrier Tank Strainer

1. Rotate valve handle (A) horizontally to shut off water supply to carrier pump.
2. Remove strainer cap (B).
3. Remove strainer and clean it in fresh clean water.
4. Reinstall strainer and strainer cap (B).
5. Rotate valve handle (A) to open water supply to carrier pump.
6. Prime carrier pump. See Central Insecticide System Operator's Manual for PRIME CARRIER PUMP procedure.



Valve Shown in Open Position

A—Handle

B—Strainer Cap

A58826 —UN—21SEP06

OUO6435,0000433 -19-28JUL10-1/1

MaxEmerge™ XP 106 L (3.0 Bu) Hopper Latch

Every 100 hours, check latches on 106 L (3.0 bu) hoppers to make sure they latch tight. If latches are loose, loosen latch cap screws (A) and adjust latch.

A—Cap Screws



106 L (3.0 bu) Hopper Latch

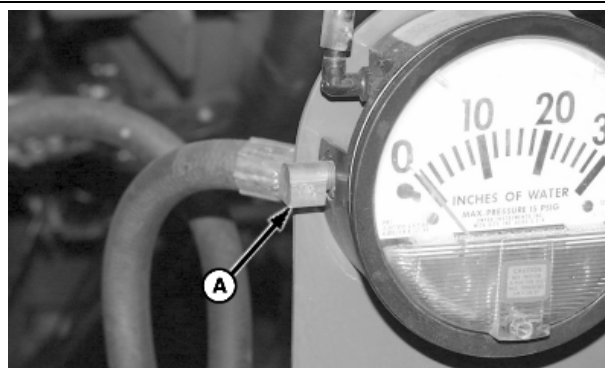
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OUO6074,0000C52 -19-30APR04-1/1

CCS Fan Gauge Filter

CCS fan gauge filter (A) may become clogged with dust. Annually inspect CCS fan gauge filter and replace if needed.

A—Filter

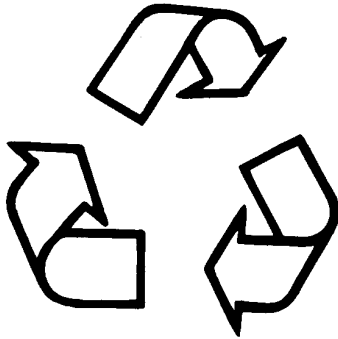


CCS Fan Filter

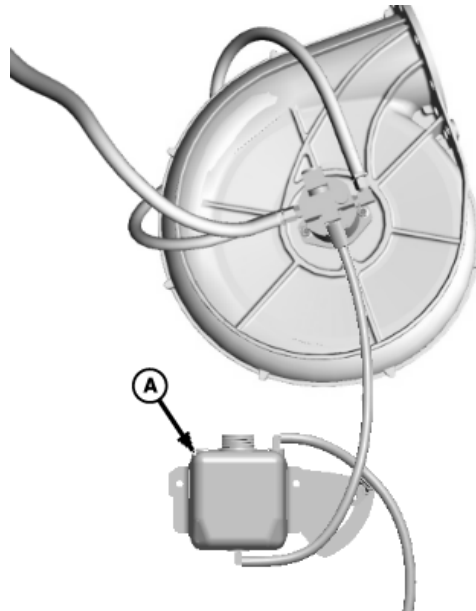
A51173 —UN—19NOV02

OUO6074,0000BD7 -19-26MAR04-1/1

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.

OOU6074,0000A4E -19-16AUG10-1/1

MaxEmerge™ XP Vacuum Meter Inspection and Service

Annually inspect seed meter for wear and chemical/seed treatment build-up.

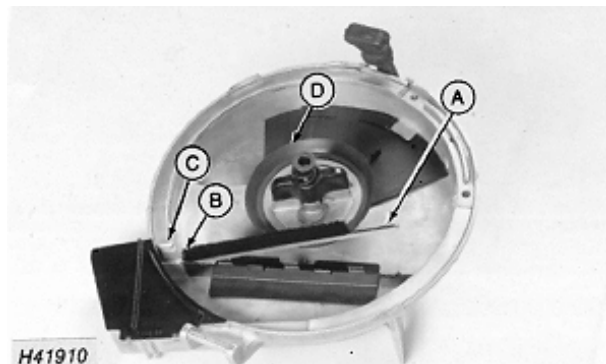
1. Check brush (A) for gaps. If gaps are big enough to allow seed to pass through, replace brush.

NOTE: When replacing brush:

Insert narrow end (B) into slot first.

Snap brush into slot until it contacts side of meter housing (C).

2. Replace hub seal (D) if cracked or weathered.



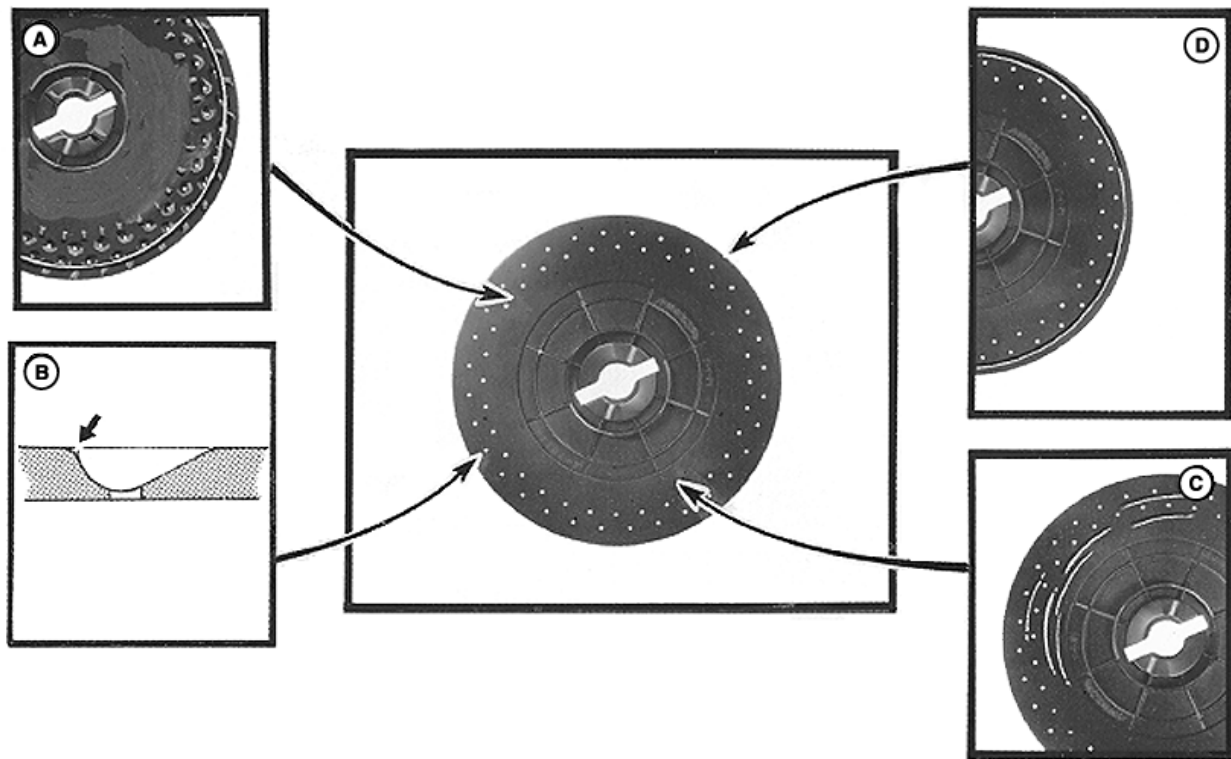
H41910 —UN—08MAY90

A—Brush
B—Narrow End

C—Housing
D—Seal

Continued on next page

OOU6435,0001FE1 -19-07JUL06-1/5



A—Wear Example

B—Worn Edge (Seed Cell Side View)

C—Wear Example

D—Wear Example

NOTE: Before replacing seed disks, perform a field check to determine if disk is metering seeds accurately. See *Checking Seed Population* section.

It is not necessary to replace seed disk if its metering performance is satisfactory.

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 wear occurs, check to see if seed can leak through gap between disk and housing.

Seed leakage may be eliminated by adjusting meter hub. See **ADJUSTING METER HUB** in *Preparing Vacuum Meter* section.

Inspect individual seed cells. Abrasion of seed may cause wear of sharp corners which creates worn edges (B), which increases cell size. (This could result in overpopulation when planting small seed or under-population when planting large seed). Replace seed disk if size of cell is significantly 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.).

Continued on next page

OUO6435,0001FE1 -19-07JUL06-2/5

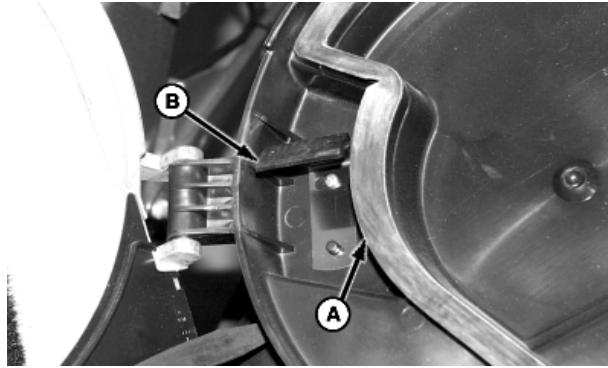
A55426 —UN—22NOV04

NOTE: If vacuum seals are replaced, apply *Spray on Graphite Lubricant TY25797* on vacuum side of used seed disks. See *Lubrication—As Required* 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



A51188 —UN—19NOV02

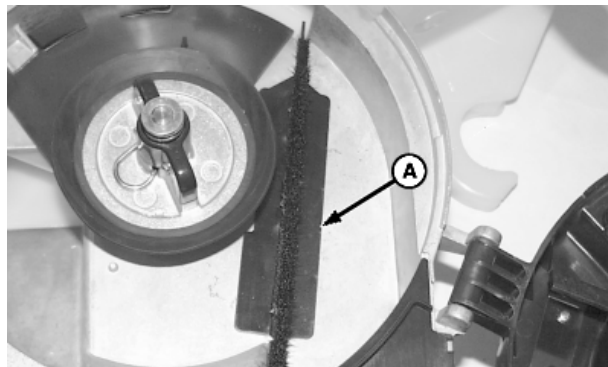
OUO6435,0001FE1 -19-07JUL06-3/5

CAUTION: Follow chemical manufacturer's 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



A51321 —UN—02DEC02

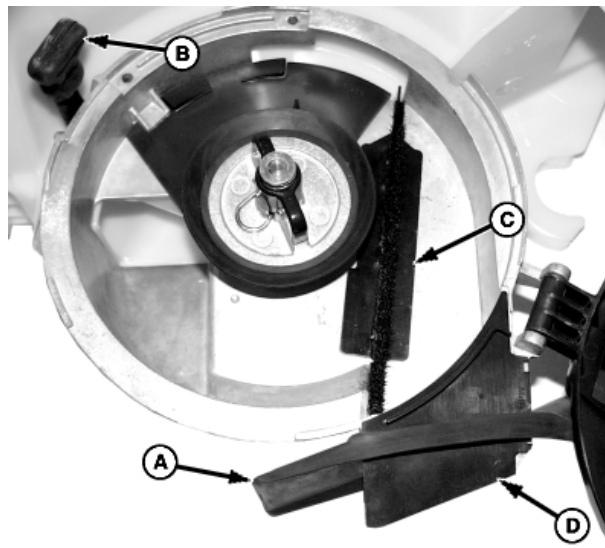
Continued on next page

OUO6435,0001FE1 -19-07JUL06-4/5

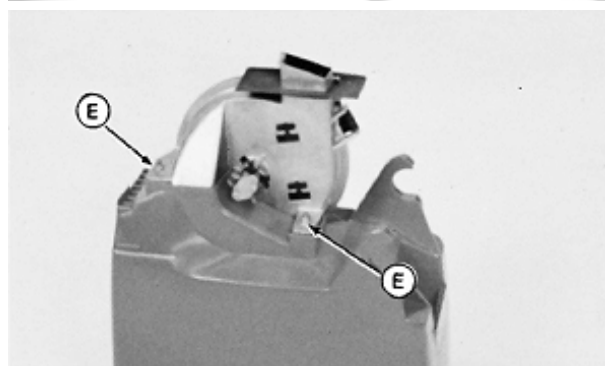
7. Replace vacuum meter dust cover (A) if it does not fit properly, is cracked or weathered.
8. Inspect rubber handle (B) and replace if cracked or broken.
9. Inspect plastic insert (C) and chute cover (D). Replace if worn.
10. Inspect flex-drive assembly to verify drive coupler pivots freely. Disassemble, clean and lubricate with molybdenum disulfide grease if flex drive does not pivot freely.
11. Place vacuum meter assembly on hopper and attach with nuts (E).

A—Dust Cover
B—Handle
C—Plastic Insert

D—Chute Cover
E—Nuts



A51322 —UN—05DEC02



H44347 —UN—14APR92

OOU6435,0001FE1 -19-07JUL06-5/5

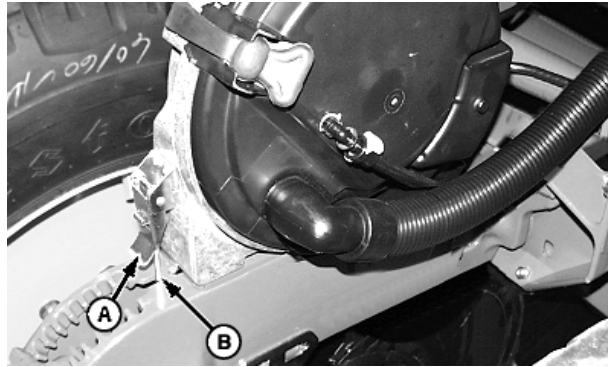
Tightening Pro-Series™ XP Meter Latch

Meter latch (A) should close firmly into locked position when latch hook (B) is seated through notch and hole in row unit. Meter should fit securely on row unit. If latch or meter is out of adjustment, proceed as follows;

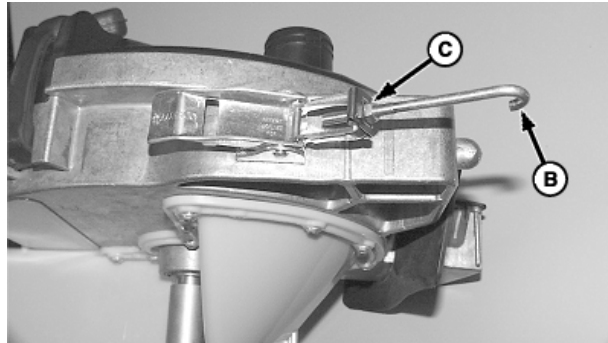
1. Release latch and hook.
2. Loosen nut (C).
3. Rotate hook one full revolution and tighten nut. Hook should face meter alignment pin when tight.
4. Install meter and check for proper adjustment. Repeat as necessary.

A—Latch
B—Latch Hook

C—Nut



A57639—UN—10MAR06



A57640—UN—10MAR06

OUC6074,0000EB5 -19-10MAR06-1/1

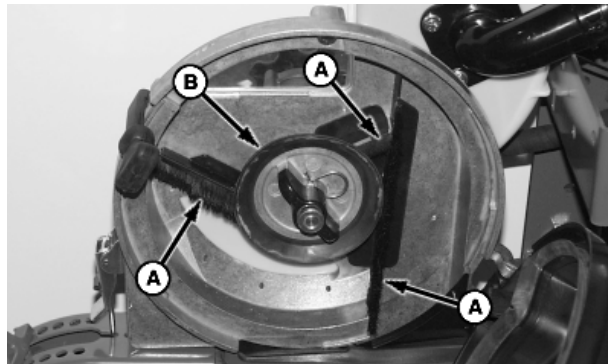
Pro-Series™ XP Vacuum Meter Inspection and Service

Annually inspect seed meter for wear and chemical or seed 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

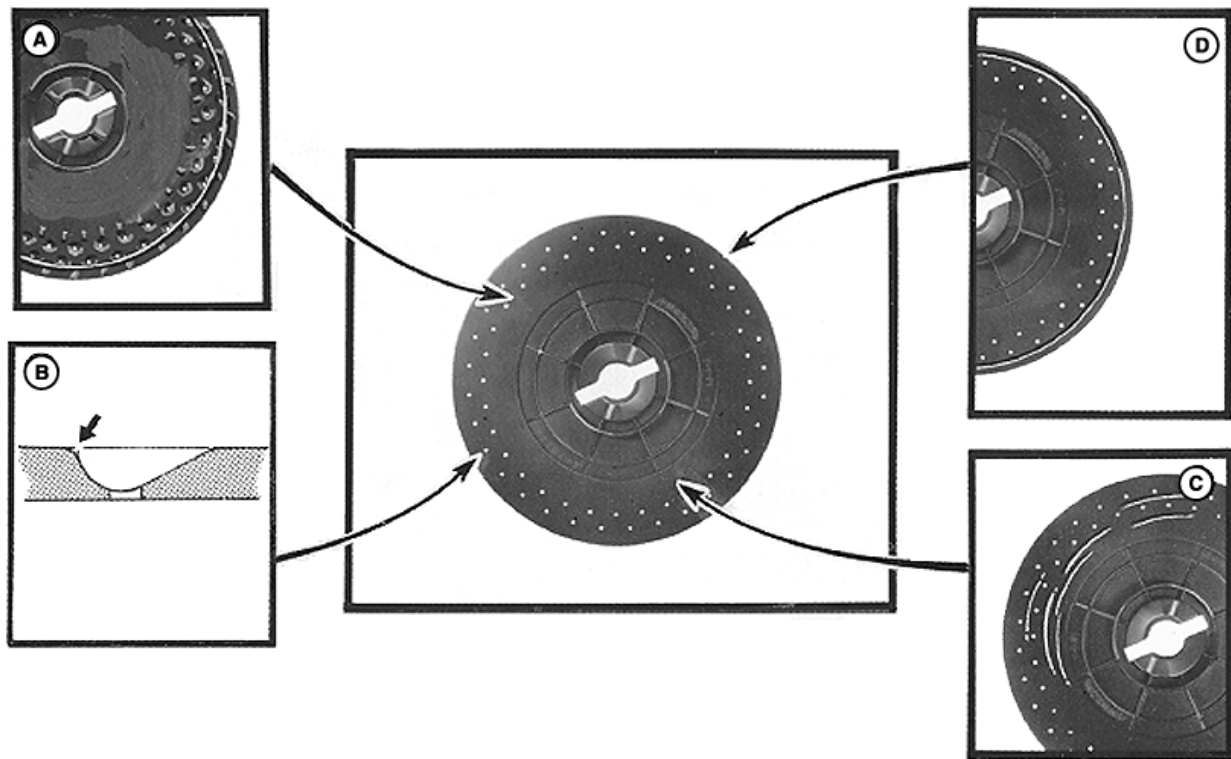


A49938—UN—20AUG02

Vacuum Meter Shown

Continued on next page

OUC6435,0001FE0 -19-27AUG09-1/5



A—Wear Example

B—Worn Edge (Side View of Seed Cell)

C—Wear Example

D—Wear Example

NOTE: Before replacing seed disks, perform a field check to determine if disk is metering seeds accurately. See *Checking Seed Population* section.

If meter performance is satisfactory, it is not necessary to replace seed disk.

3. Check seed disks for wear in following areas and replace disk as needed.

A small amount of wear around perimeter of disk (A) is acceptable. If wear occurs, verify that no seed loss occurs through gap between disk and housing.

Adjust meter hub to avoid seed loss. See **ADJUST METER HUB** in Vacuum Meter Setup section.

Inspect individual seed cells. Seed abrasion can cause sharp corners on cells to wear. Worn edges (B) increases the cell size. Worn seed cells can result in overpopulation when planting small seed or under-population when planting large seed. Replace seed disk if cell size are 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.).

Continued on next page

OUC6435,0001FE0 -19-27AUG09-2/5

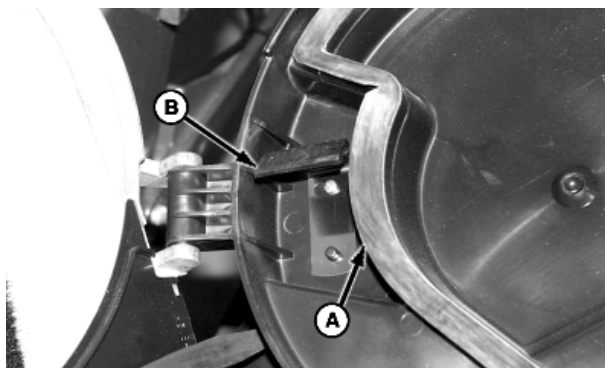
A55426 —UN—22NOV04

NOTE: If vacuum seals are replaced, apply *Spray on Graphite Lubricant TY25797* on vacuum side of used seed disks. 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



A51188—UN—19NOV02

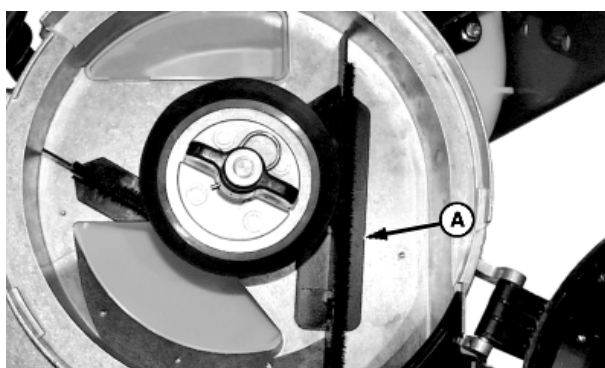
OOU6435,0001FE0 -19-27AUG09-3/5

CAUTION: Follow chemical manufacturer's 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



A51323—UN—03DEC02

OOU6435,0001FE0 -19-27AUG09-4/5

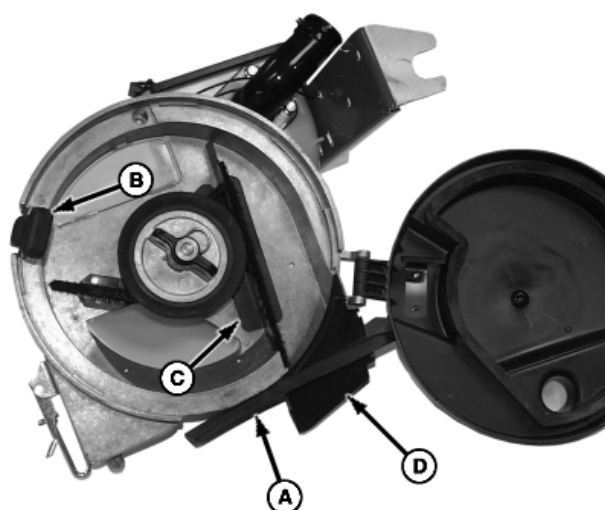
7. Replace vacuum meter dust cover (A) if it does not fit properly, is cracked, or is weathered.
8. Inspect rubber handle (B) and replace if cracked or broken.
9. Inspect plastic insert (C) and chute cover (D). Replace if worn.

A—Dust Cover

B—Rubber Handle

C—Plastic Insert

D—Chute Cover



Vacuum Meter Shown

A49940—UN—20AUG02

OOU6435,0001FE0 -19-27AUG09-5/5

Storage

Removing From Storage

IMPORTANT: Do not use chain lube or any other heavy petroleum base lubricant that may cause a buildup of dust or dirt in the sprocket or gear teeth.

Before using machine after it has been stored, inspect seed hoppers for cleanliness to be certain seed will flow from hoppers freely.

Thoroughly inspect machine for loose parts and adjust as necessary.

IMPORTANT: High pressure washers can damage electrical components, bearings, hoses and/or hoppers if direct contact is applied. Use caution, if power washing machine.

Clean any dirt or grease that may have accumulated on moving parts, gears and chains before operating machine. This will prevent abrasive action that could cause excessive wear.

When roller chains remain unused for several days, moisture in the air will accumulate on chain, causing chain to rust. This can and will become serious enough in time to cause the chain joints to become stiff, restricting their



A54030 —UN—08MAR04

normal free movement. While very difficult to detect, this stiffness can cause the chains to operate abnormally and disturb the smooth rotation of important meter components causing deterioration in performance.

If machine is not used for several days or if oil has been removed from chains while cleaning the machine, thoroughly lubricate chains with John Deere Multipurpose Spray Lube TY6350.

OUC6074,0000AD0 -19-24MAR04-1/3

The pesticide drive chain (A), seed meter drive chain (B), pesticide drive sprocket (C) and gears must have adequate lubrication.

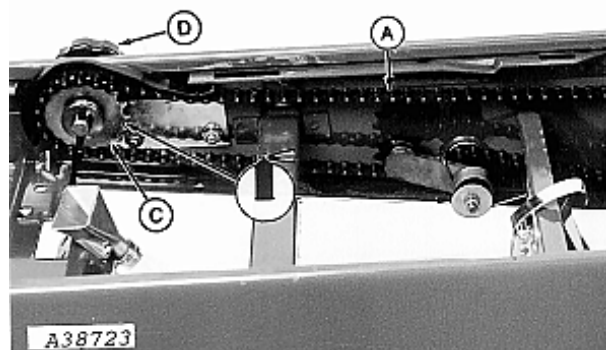
When lubricating pesticide drive gears, move drive disconnect knob (D) back and forth while spraying to help loosen any paint or dirt buildup and allow gears to turn freely.

The meter drive shaft and seed meter should turn freely by hand. Rotate drive shaft forward only, as assemblies are not designed to rotate in reverse.

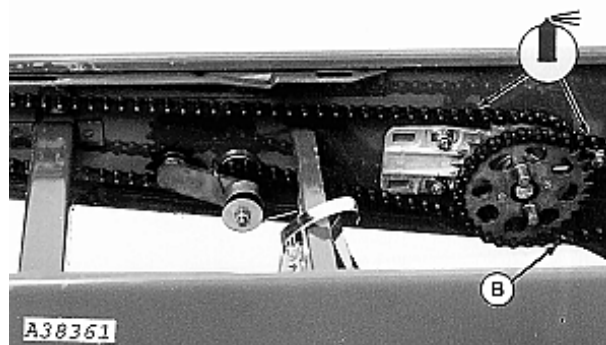
Adjust machine for planting conditions to be encountered.

A—Pesticide Drive Chain
B—Seed Meter Drive Chain

C—Pesticide Drive Sprocket
D—Drive Disconnect Knob



A38723 —UN—27NOV95

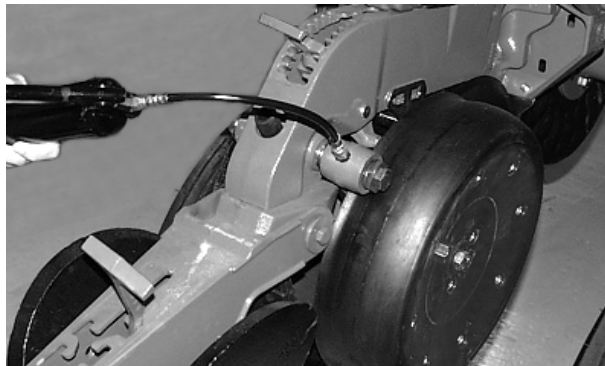


A38361 —UN—27NOV95

Continued on next page

OUC6074,0000AD0 -19-24MAR04-2/3

Lubricate planting units as outlined in the Lubrication section.



A53141—UN—04NOV03

OUO6074,0000AD0 -19-24MAR04-3/3

Storing Machine

When planting is completed for one season, store machine under a cover with all parts in operating condition.

Store machine in a RAISED position with service locks installed.

Paint all parts which are chipped or worn as required.

IMPORTANT: High-pressure washers can damage electrical components, bearings, hoses, or hoppers when direct contact is applied. Use caution, if power washing machine.

Clean machine thoroughly to remove dirt and residue which would 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 the idle period.

Empty and clean seed hoppers.

Clean insecticide or herbicide hopper thoroughly as various chemicals can deteriorate system components.

Clean liquid and dry fertilizer components thoroughly as various fertilizers can deteriorate system components (if equipped).

Inspect machine for worn or broken parts. See your John Deere dealer during the off season so that parts or service can be acquired when the machine is not needed in the field.

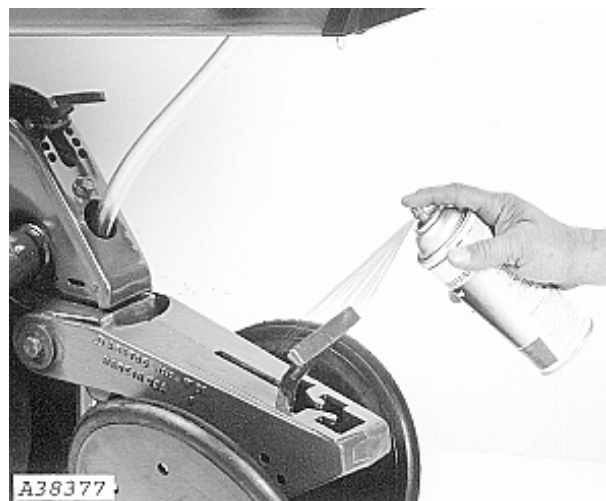
Store machine in a clean, dry place with planting unit gauge wheels and firming wheels out of the sun.

Place handle for closing wheel down force in long slot to relieve tension on closing wheels.

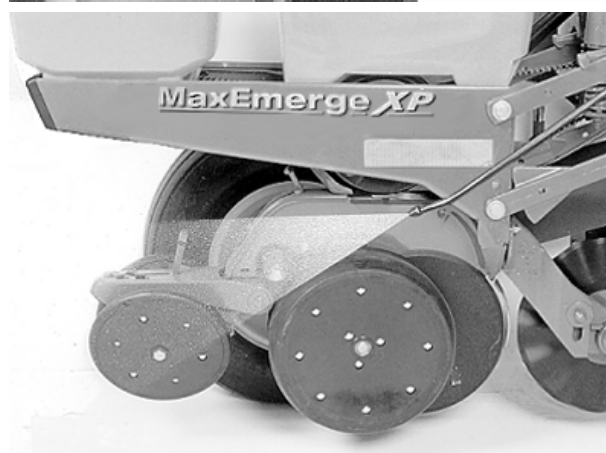
Thoroughly flush liquid herbicide system with clean water as instructed by the chemical manufacturer's label.

Remove seed disks from meter. See VACUUM METER INSPECTION AND SERVICE in Service—End Of Season section.

CAUTION: Follow chemical manufacturer's precautions when handling parts coated



A38377 —UN—08DEC95



A54030 —UN—08MAR04

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 the off season. Do not store under heavy parts.

Continued on next page

OUC6074,0000A5C -19-08MAY08-1/2

Store disks (A) in shipping box or hang on wall.

Clean vacuum manifold system. (See **CLEANING VACUUM MANIFOLD SYSTEM** in **Service—Every 50 Hours** section.)

Check and replace necessary vacuum meter seals.

Check for hydraulic leaks.

A—Disks

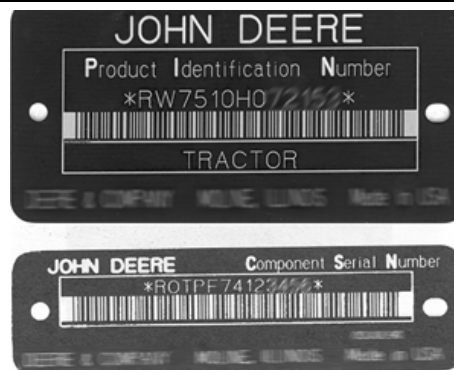


A44241—UN—19NOV97

OUO6074.0000A5C -19-08MAY08-2/2

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

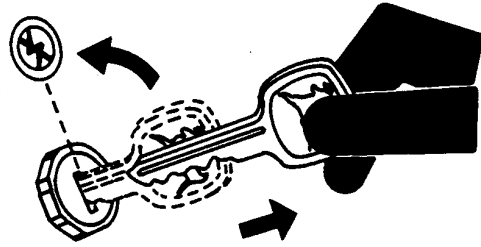


TS1680—UN—09DEC03

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.



TSS230 —UN—24MAY89

DX,SECURE2 -19-18NOV03-1/1

Record Serial Number

Serial number location (A) is on the front main frame.
Record in the spaces provided.

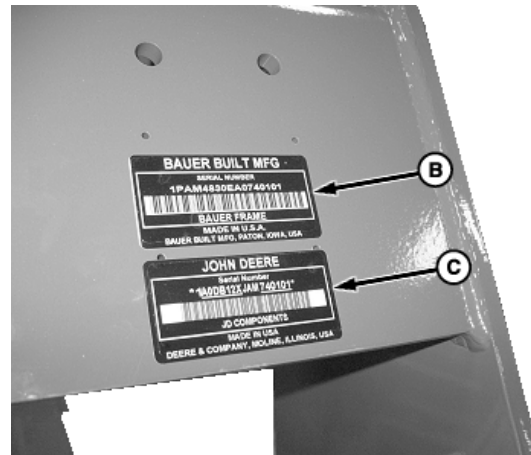
Machine	
(B) Bauer Built Serial Number	
(C) John Deere Serial Number	

A—Serial Number Location
B—Bauer Serial Number

C—John Deere Serial Number



A71164 —UN—06APR11



A71354 —UN—27APR11

OUO6064,0000490 -19-23MAY11-1/1

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: Deere/Bauer Series
fulfills all relevant provisions and essential requirements of the following directives:

DIRECTIVE	NUMBER	Certification Method
Machinery Directive	2006/42/EC	Self certified, per Annex V 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 community authorized to compile the technical construction file:

Henning Oppermann
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



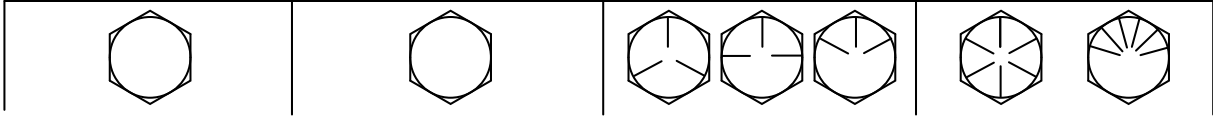
N84331—UN—15APR09

OUO6064,00000B2 -19-28APR10-1/1

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.

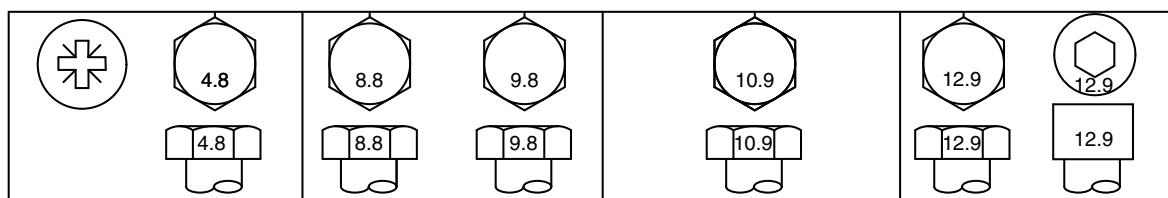
^b"Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

^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

Index

	Page		Page
A		CCS fan gauge, zeroing	85-8
Adjust		CCS Fan Hydraulic requirements	35-1
Coulter bearing	85-25	CCS pressure level gauge	
Gauge wheels	85-20	Zeroing	85-8
Seed opener blades	85-18	CCS product delivery	
Adjust markers		Troubleshooting	80-13
DB60 24/47 row	20-8	CCS row unit fan switch	
AMS and compressor power harness		Setting	85-20
Connect harness	35-3	CCS seed delivery hose	
Attach		Blockage	40-10, 85-24
Warning light harness	35-2	CCS system	
B		Bridged and blocked	40-10, 85-24
Baffle		CCS system, operating	
Vacuum meter		Heavily treated seed or very large seed corn	40-5
MaxEmerge		Planting seed plots	40-8
Adjust	30-5	Small popcorn	40-6
Ballast attachment		Sorghum	40-6
24 Row	65-9	Standard seed sizes	40-7
Before use	20-1	CCS tank	
Blockage		Initial use of talc	20-1
CCS seed delivery hose	40-10, 85-24	Setting pressure	
Bolt and screw torque values		All machines, except DB120	40-4
Metric	95-2	DB120	40-5
Unified inch	95-1	CCS tank fill lights	40-1
Bridged		CCS tank pressure	
CCS system	40-10, 85-24	Setting	
CCS tank manifold	40-10, 85-24	All machines, except DB120	40-4
Bridged and blocked		DB120	40-5
CCS system	40-10, 85-24	CCS tanks	
Bridging of CCS system		Cleaning out	40-9
Explanation and solution	40-1	Filling	40-3
Brush		Leveling seed	40-3
Vacuum meter		Partially cleaning out	40-8
MaxEmerge		Change from 38 cm (15 in.) to 76 cm (30	
Changing	30-4	in.) rows	
Selection	30-4	DB60 24/47 row	20-3
Pro series		Change from 76 cm (30 in.) to 38 cm (15	
Change	25-4	in.) rows	
C		DB60 24/47 row	20-5
Calibrating insecticide/herbicide		Change row spacing	
meter	70-21, 85-21	38 cm (15 in.) to 76 cm (30 in.)	
Case drain		DB60 24/47 row	20-3
Low pressure connection	15-3	76 cm (30 in.) to 38 cm (15 in.)	
Case drain hose		DB60 24/47 row	20-5
Requirements	35-1	Chemical hoppers	
CCS fan		Cleaning	85-25
Oil reservoir	40-11	Chemical meter drive, aligning	85-15
Empty annually	85-29	Chemical meter maintenance	85-25
CCS fan assembly		Clean vacuum housing	85-26
Troubleshooting	80-11	Clean vacuum impeller	85-26
CCS fan gauge filter		Cleaners	
Replacing	85-28	Unit mounted coulter	65-8
		Unit mounted row	65-7
		Cleanout and inspection of seed hoppers	
		and metering units	45-19
		Clevis category	
		Implement	20-2

Continued on next page

Continued on next page

	Page		Page
Closing wheels		Engage	
Adjust spacing.....	45-7	Meter drive	
Alignment.....	45-6	Pro-series row units.....	45-22
Down force adjustment.....	45-6		
Heavy duty.....	65-5	F	
Stagger adjustment.....	45-7		
Compatibility		Fan	
Tractor Drawbar		Case drain connection (low pressure)	15-3
Implement Clevis.....	20-2	CCS motor oil reservoir.....	40-11
Connecting harness		Empty annually.....	85-29
AMS and compressor power harness.....	35-3	Filling CCS tank	
Coulter		Initial use of talc.....	20-1
Bearing		Filling CCS tanks.....	40-3
Adjust.....	85-25	Flow control valve, setting	
Maintenance.....	85-25	8000 and 9000 series tractors	15-2
Unit mounted.....	65-5	Fold and unfold	
D		Fold assist equipped machines.....	45-3
Depth of planting	45-5	Non-fold assist machines.....	45-2
Disengage		Frame control	
Meter drive		Connect harness.....	35-3
Pro-series row units.....	45-21	G	
Disk selection, corn			
For optimum performance.....	25-9, 30-16	Gauge wheels	
Double eliminator		Adjust.....	85-20
Adjust to 50 percent		General attachments	65-1
MaxEmerge vacuum meter	30-12	Granular chemical attachment.....	70-1
Install with ProMax40, small sweet corn,		Determining application rate and initial	
or edible bean disk.....	30-11	meter setting.....	70-4
Vacuum meters		Insecticide spreader.....	70-24
Pro series		Granular insecticide attachment.....	70-1
Operation.....	25-5	Grease.....	75-1
Double eliminator plate		H	
Edible bean disk			
Install.....	25-7	Hardware torque values	
ProMax 40 disk		Metric.....	95-2
Install.....	25-7	Unified inch	95-1
Small sweet corn disk		Harness	
Install.....	25-7	Frame control.....	35-3
Doubles		SeedStar.....	35-2
Select optimum seed disk for corn.....	25-9, 30-16	Herbicide application rates	
Down force		Clay granules	
Integrated pneumatic.....	65-1	56 cm.....	70-16
Drain connection, low pressure	15-3	76 cm to 97 cm.....	70-18
Drawbar category		Clay granules - 70 cm.....	70-20
Tractor.....	20-2	Herbicide, calibrating	70-21, 85-21
Drawbar static load.....	15-2	High residue chain idler.....	85-15
E		Hitch category	
Edible bean disk		Tractor and implement	20-2
Double eliminator plate		Hitch load	
Install.....	25-7	Maximum weight.....	15-2
Edible bean flat type seed disks		Hitch tube	
Adjust double eliminator to 50 percent		Level machine.....	35-6
MaxEmerge vacuum meter	30-12	Hopper assembly	
Install double eliminator		Installing.....	45-9
MaxEmerge vacuum meter	30-11	Removing.....	45-8
		Hopper extensions.....	65-2

Continued on next page

	Page		Page
Vacuum meter		Level sensor, tank.....	40-2
Pro series		Leveling seed	
Install	25-18	CCS tanks.....	40-3
Hopper screen, row unit		Low pressure drain connection.....	15-3
Cleaning.....	85-9	Lubricant	
Hopper, 106 L (3.0 bu).....	65-3	Talc	
Hoppers, cleanout	45-19	Use	50-1, 75-5
Hydraulic		Lubricant, talc	55-1
Case drain hose		Lubrication	75-1
Requirements	35-1	Alternative by geographic area	75-2
Hydraulic connections		Frame.....	75-6
Tractor		Intervals	75-2
Recommendations	35-5	Pesticide sprocket and roller chain	75-6
Hydraulic hook-up		Symbols	75-2
8000 and 9000 series tractors		Lubrication procedures	75-1
Flow control valve.....	15-2		
Return coupler			
VacuMeter motor	35-1	M	
Hydraulic system		Maintenance	75-1
Check.....	35-2	Lubrication	75-2
Hydraulic system, tractor		Scheduled	85-1
Check.....	15-1	Maintenance procedures	75-1
Hydraulics		Markers	
VacuMeter system		Adjust	
Operate	45-1	DB60 24/47 row.....	20-8
		MaxEmerge	
I		Meter inlet screen installation	30-14
Idle options	70-24	MaxEmerge meters	
Insecticide application rates		Seed idsk recommendations.....	30-18
Clay granules		Meter	
56 cm.....	70-6	Inlet screen, MaxEmerge hopper.....	30-14
76 cm to 97 cm.....	70-13	Meter drive	
Clay granules - 70 cm.....	70-8	Disengage	
Sand granules		Pro-series row units.....	45-21
56 cm.....	70-10	Engage	
76 cm to 97 cm.....	70-15	Pro-series row units.....	45-22
Sand granules - 70 cm.....	70-11	Meter hub	
Insecticide band spreader, front mount	70-24	MaxEmerge	
Insecticide hoppers, cleaning	85-25	Adjust	30-9
Insecticide, calibrating	70-21, 85-21	Pro series	
Inspect		Adjust	25-13
Vacuum motor	85-26	Meter latch, Pro-Series	
Inspect vacuum housing.....	85-26	Tightening	85-33
Inspect vacuum impeller.....	85-26	Meter settings	
Integrated pneumatic down force	65-1	Vacuum meter	
Intervals of lubrication.....	75-2	MaxEmerge	30-2
		Pro series	25-2
K		Metering units	
Knockout wheel		Cleanout.....	45-10
Install, vacuum meter.....	25-17, 30-7	Inspecting.....	45-16
Operation	25-16, 30-6	Vacuum meter	45-16
		Metric bolt and screw torque values	95-2
L		Monitor harness	
Level machine		Connect SeedStar.....	35-2
Hitch tube.....	35-6	Motor, CCS fan	
		Empty oil reservoir annually.....	85-29
		Oil reservoir.....	40-11

Continued on next page

	Page		Page
O		76 cm (30 in.) to 38 cm (15 in.)	
Oil leak		DB 60 24/47 row	20-5
Vacuum motor	85-26	Row unit hopper screen	
Opener blades		Cleaning	85-9
Adjust	85-18	Row unit hoppers	
Operating characteristics		Filling	40-3
Vacuum meter		S	
Pro series	25-1	Scheduled	
Vacuum meter		Lubrication	75-2
MaxEmerge	30-1	Service	85-1
Operating machine	45-1	Scraper	
Operator's manual, tractor, use	35-1	Heavy-duty	65-4
Operator's manual, tractor, using	15-1	Rigid	65-4
P		Screen	
Planting seed plots		MaxEmerge meter inlet	30-14
CCS system, operation	40-8	Seed depth adjustment	45-5
Planting units		Seed disk	
Depth	45-5	Cell checking	
Plugging of CCS system		Vacuum meter	
Explanation and solution	40-1	Pro series	25-12
Population, checking	60-1	Remove	25-3
Pressure setting		Vacuum meter	
CCS tank		Pro series	
All machines, except DB120	40-4	Install	25-13, 30-8
CCS tanks		Seed disk cell	
DB120	40-5	Checking	
Pro-series meters		Vacuum meter	
Seed disk recommendations	25-11	MaxEmerge	30-8
ProMax 40 disk		Seed disk recommendations	
Double eliminator plate		MaxEmerge meters	
Install	25-7	For crops other than field corn	30-18
ProMax40		Pro-series meters	
Adjust double eliminator to 50 percent		For crops other than field corn	25-11
MaxEmerge vacuum meter	30-12	Seed disk, corn	
Install double eliminator		Select for optimum performance	25-9, 30-16
MaxEmerge vacuum meter	30-11	Seed drive adjustment	85-13, 85-14
R		Seed furrow insecticide placement bracket	70-24
Reservoir		Seed hoppers	
CCS fan oil	40-11	Cleanout	45-10
Empty annually	85-29	Cleanout and inspection	45-19
Return coupler		Emptying	45-19
Hydraulic motor and variable rate drive	35-1	Filling	45-17
Rigid Scraper	65-4	Seed opener	
Row cleaner		Inspect	85-18
Unit mounted coulter	65-8	Seed opener blades	
Row cleaners		Replace	85-16
Unit mounted	65-7	Seed tube	
Row spacing		Sensor	
Change		Clean	85-11
38 cm (15 in.) to 76 cm (30 in.)		Seed tube guard	
DB60 24/47 row	20-3	Replace	85-16
		Seed tubes	65-4
		Install flush face	85-9
		Install optional	85-10
		Remove flush face	85-9
		Remove optional	85-10

Continued on next page

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Continued on next page

	Page
ProMax 40	
Adjust double eliminator to 50 percent	30-12
Install double eliminator	30-11
Seed disk	
Cell checking	30-8
Small sweet corn	
Adjust double eliminator to 50 percent	30-12
Install double eliminator	30-11
Pro series	
Accessing	25-2
Adjust meter hub	25-13
Brush	
Change	25-4
Double eliminator	
Operation	25-5
Hopper extensions	25-18
Knockout wheel	
Operation	25-16, 30-6
Meter settings	25-2
Operating characteristics	25-1
Seed disk	
Checking cell	25-12
Install	25-13, 30-8
Set vacuum level	55-1
Talc	55-1
Vacuum meter drive, cleaning	85-25
Vacuum meter unit	
Seal servicing	85-16
Vacuum motor	
Inspect	85-26
Vacuum seal	
Install	85-16
Variable rate drive	
Return coupler	35-1

W

Walking gauge wheels	65-3
Warning light harness	
Attach	35-2

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