



BD11 Series - End Wheel Grain Drill



JOHN DEERE



OPERATOR'S MANUAL

BD11 Series - End Wheel Grain Drill

OM7015410 ISSUE C0 (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 Des Moines Works

North American Edition
PRINTED IN U.S.A.



Introduction

Foreword

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

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

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

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

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

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

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

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

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

DX,IFC2-19-03APR09

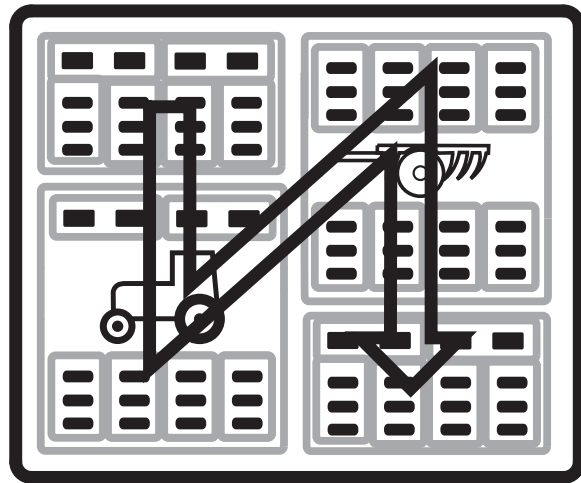
A Message to Our Customers

We appreciate the confidence placed in us by the purchase of this machine. To ensure that the machine performs at the highest level, countless hours were

spent designing and testing, before this machine was produced. To achieve the maximum performance, it is imperative that this machine is operated in accordance with the procedures outlined in this manual.

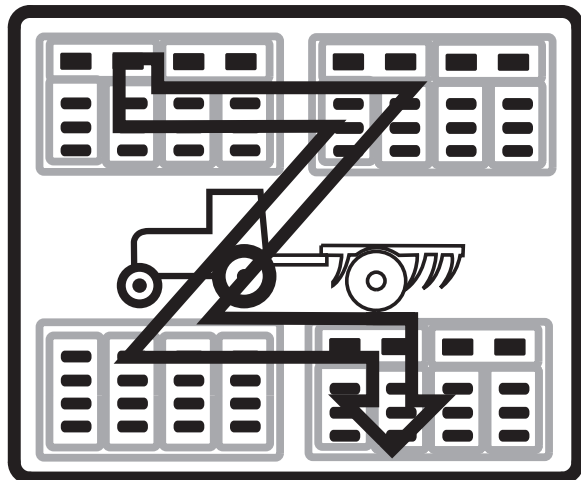
Information in this manual is divided into sections. The section names are identified in the table of contents and at the top of each page. Each section has a unique number and page count. Specific information within each section is organized into topics identified with bold headings.

The topic headings are listed in the table of contents with the section number and page number where the topic begins. Topics and information related to each topic are also referenced in the index along with the section and page number.



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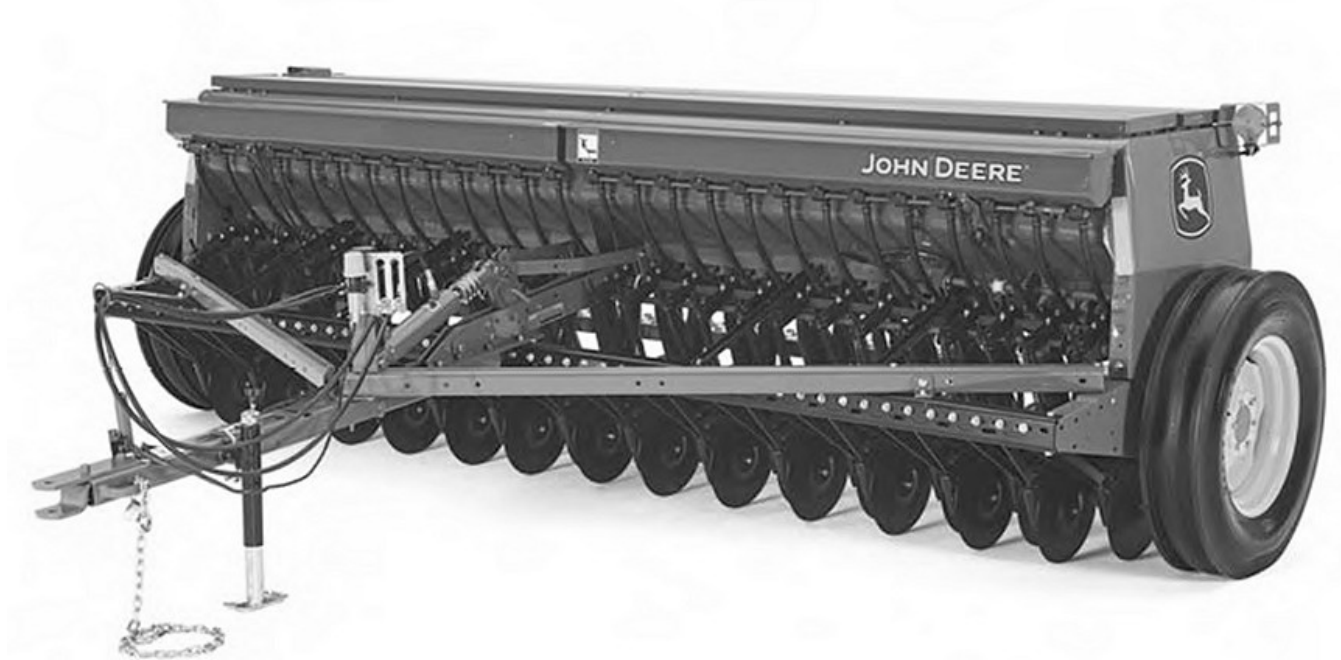
The flow can divide both before and after the images and tables that span the width of a page.

Review this manual often to learn where to look for information.

Thanks again for purchasing this machine.

OUO6074,000106B-19-07JUN18

Machine Identification



N101280—UN—10DEC12
OUO6074,0000C7A-19-10DEC12

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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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Safety

Recognize Safety Information



T81389—UN—28JUN13

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

Follow recommended precautions and safe operating practices.

DX,ALERT-19-29SEP98

Understand Signal Words



▲ WARNING

▲ CAUTION

TS187—19—30SEP88

DANGER; The signal word DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING; The signal word WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION; The signal word CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. CAUTION may also be used to alert against unsafe practices associated with events which could lead to personal injury.

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.

DX,SIGNAL-19-05OCT16

Follow Safety Instructions



TS201—UN—15APR13

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

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

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

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

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

DX,READ-19-16JUN09

Replace Safety Signs



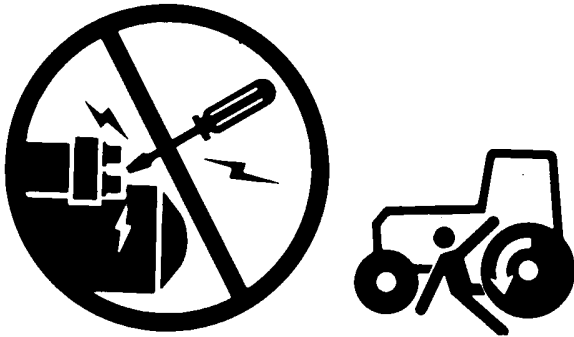
TS201—UN—15APR13

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

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

DX,SIGNS-19-18AUG09

Prevent Machine Runaway



TS177—UN—11JAN89

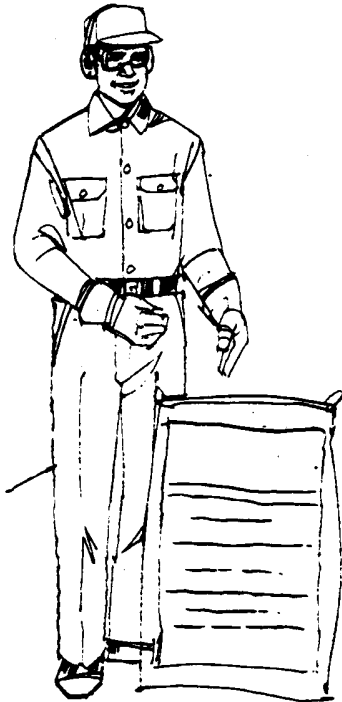
Avoid possible injury or death from machinery runaway.

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

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

DX,BYPAS1-19-29SEP98

Operate Safely



N36593—UN—27SEP88

DO NOT operate drill with more than one person on the tractor.

DO NOT allow anyone to ride on the drill.

DO NOT operate close to a ditch or creek.

Drive slowly over rough ground.

Shift the tractor into a lower gear when operating on steep slopes.

If your tractor is equipped with a ROLL-GARD™ Safety Canopy and seat belt be sure to keep your seat belt fastened when operating or transporting the drill.

Handle and apply chemically treated seeds according to manufacturers recommendations. Properly dispose of unused treated seeds and their containers.

Always shut off tractor engine and shift to park when leaving tractor. Remove key when leaving tractor unattended.

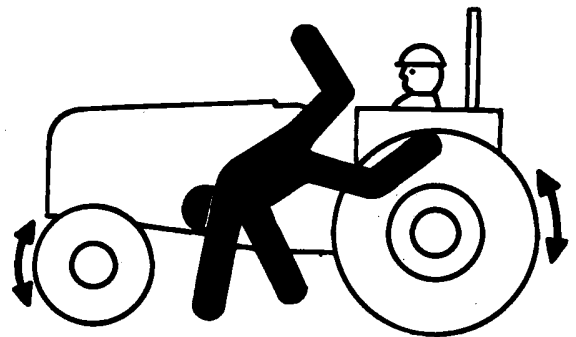
NX,450F,C1-19-15JUN91

Operator Ability

- Machine owners must make sure that operators are responsible, trained, have read the operating instructions and warnings, and know how to operate the machine properly and safely.
- Age, physical ability, and mental capacity can be factors in machine-related injuries. Operators must be mentally and physically capable of accessing the operator station and/or controls, and operating the machine properly and safely.
- Never allow a child or an untrained person to operate the machine. Instruct all operators not to give children a ride on the machine or an attachment.
- Never operate machine when distracted, fatigued, or impaired. Proper machine operation requires the operator's full attention and awareness.

DX,ABILITY-19-07DEC18

Keep Riders Off Machine



TS290—UN—23AUG88

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

ROLL-GARD is a trademark of Deere & Company.

resulting in the machine being operated in an unsafe manner.

DX,RIDER-19-03MAR93

Avoid Tip-overs



N39084—UN—30MAR89

Use a seat belt when present in the machine.

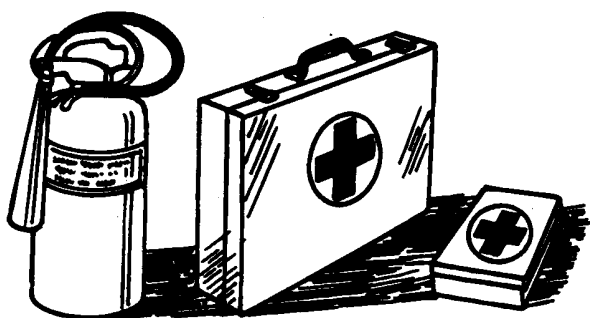
Avoid holes, ditches, and obstructions when operating the machine which cause it to tip, especially on hillsides.

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

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

OM63945A,05B-19-16APR18

Prepare for Emergencies



TS291—UN—15APR13

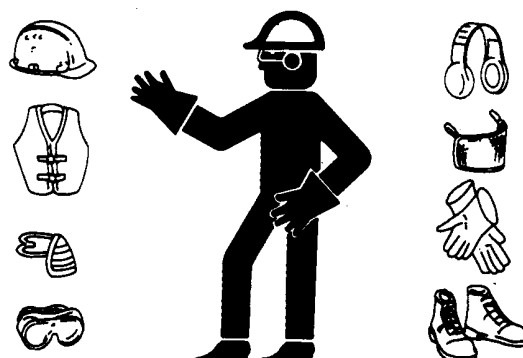
Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

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

DX,FIRE2-19-03MAR93

Wear Protective Clothing



TS206—UN—15APR13

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

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

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

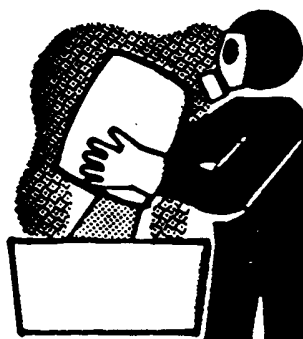
Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.

DX,WEAR-19-10SEP90

Handle Agricultural Chemicals Safely



TS220—UN—15APR13



A34471

A34471—UN—11OCT88

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.

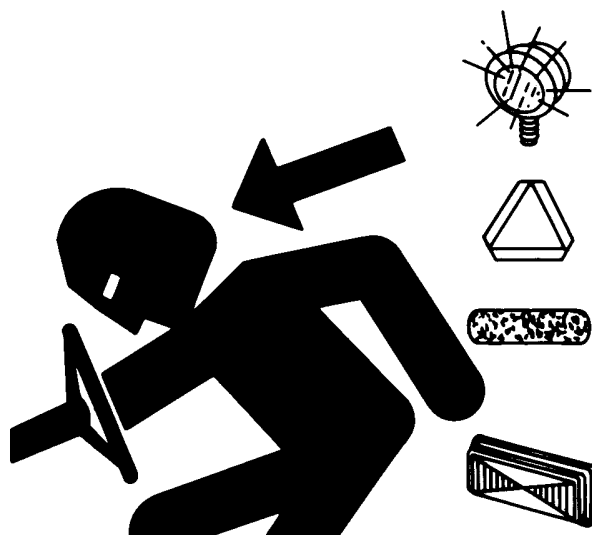
Always follow all label directions for effective, safe, and legal use of agricultural chemicals.

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

DX,WW,CHEM01-19-24AUG10

Use Safety Lights and Devices



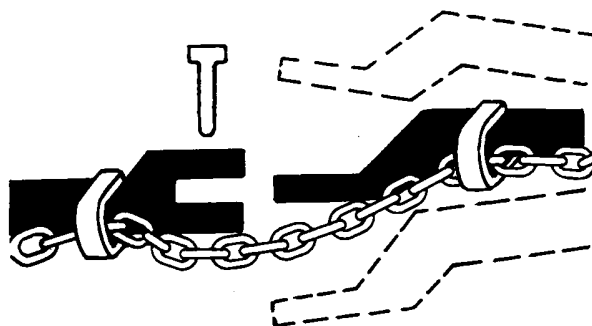
TS951—UN—12APR90

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

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

DX,FLASH-19-07JUL99

Use a Safety Chain



TS217—UN—23AUG88

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

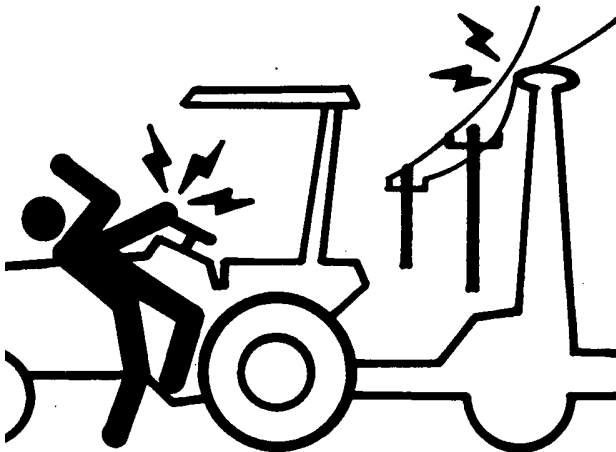
rating equal to or greater than the gross weight of the towed machine. Do not use safety chain for towing.

DX,CHAIN-19-03MAR93

Transport Safely

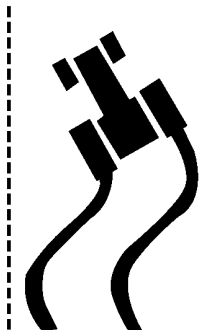


N101283—UN—10DEC12



A34331

A34331—UN—13OCT88



A41981—UN—02SEP97

A—Locking Pin

Always raise openers and secure the lift mechanism. Install locking pin (A) in the transport position.

Always raise parking stand before transporting.

Tractor brakes must be latched together.

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

Always travel at a reasonable and safe speed. Never exceed 32 km/h (20 mph).

Always use flashing warning lights, day and night when transporting on a public roadway. Keep reflective material and SMV emblem clean and visible.

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

Everyone must be clear of machine.

Properly ballast the tractor for stability and operator safety.

If tractor has Roll-Gard™ Safety Canopy, keep seatbelt fastened when transporting.

Know transport height and width of machine.

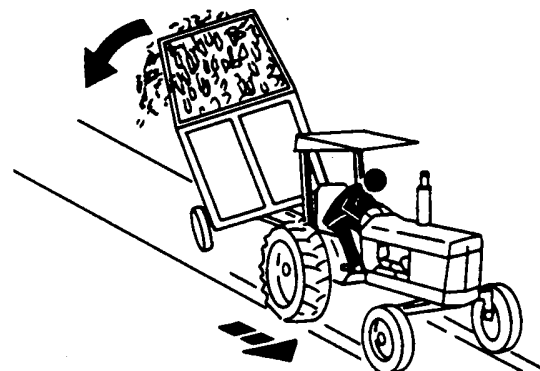
Keep marker arms away from overhead power lines. Serious injury or death can result. Proceed cautiously under overhead power lines and around utility poles. Know the transport height of machine.

Never tow this implement with a 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 roadway transport. The customer is responsible for understanding and complying with all local, regional, and national requirements regarding roadway transport.

AG,OUO6074,1424-19-10DEC12

Tow Loads Safely



TS216—UN—23AUG88

Stopping distance increases with speed and weight of towed loads, and on slopes. Towed loads with or without

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brakes that are too heavy for the tractor or are towed too fast can cause loss of control. Consider the total weight of the equipment and its load.

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

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

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

DX,TOW-19-02OCT95

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

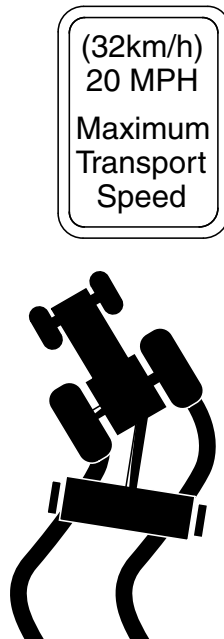
Use additional caution and reduce speed when towing under adverse surface conditions, when turning, and when on inclines.

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

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

DX,TOW2-19-11APR07

Observe Maximum Transport Speed



A46805—19—16JUL10

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

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

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



TS218—UN—23AUG88

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 away 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.

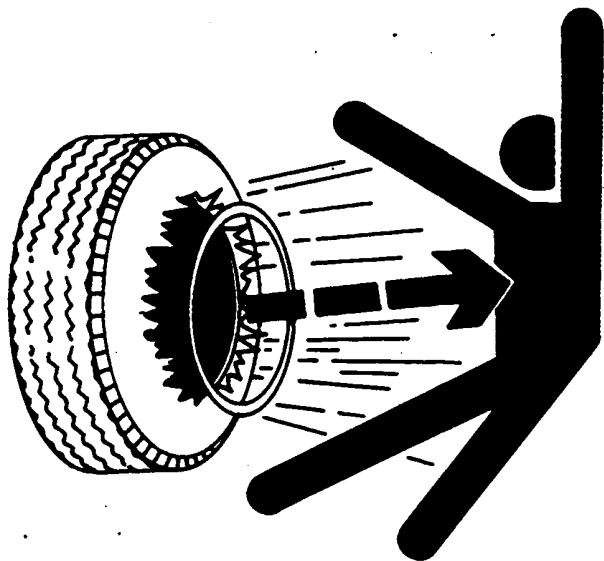
On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

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

Falling while cleaning or working at height can cause serious injury. Use a ladder or platform to easily reach each location. Use sturdy and secure footholds and handholds.

DX,SERV-19-28FEB17

Service Tires Safely



TS211—UN—15APR13

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.

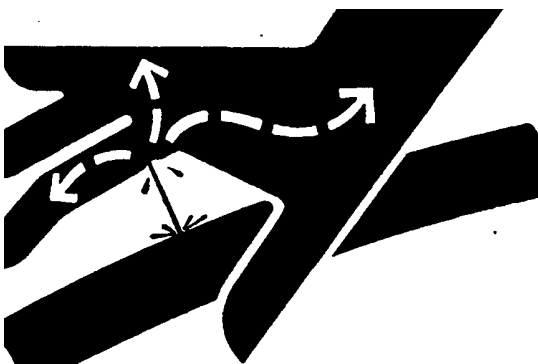
Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

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.

DX,RIM1-19-27OCT08

Avoid High-Pressure Fluids



X9811—UN—23AUG88

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

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

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

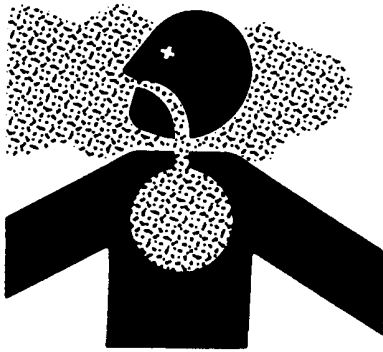
Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

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

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

DX,FLUID-19-12OCT11

Remove Paint Before Welding or Heating



TS220—UN—15APR13

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

Avoid Heating Near Pressurized Fluid Lines



TS953—UN—15MAY90

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

Practice Safe Maintenance



TS218—UN—23AUG88

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 away 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.

Falling while cleaning or working at height can cause serious injury. Use a ladder or platform to easily reach each location. Use sturdy and secure footholds and handholds.

DX,SERV-19-28FEB17

Store Attachments Safely



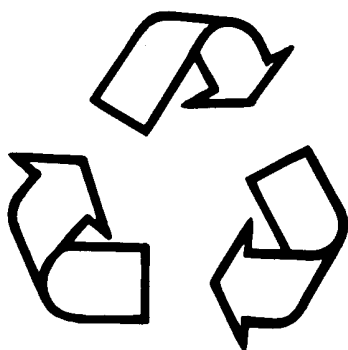
TS219—UN—23AUG88

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

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

DX,STORE-19-03MAR93

Decommissioning — Proper Recycling and Disposal of Fluids and Components



TS1133—UN—15APR13

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

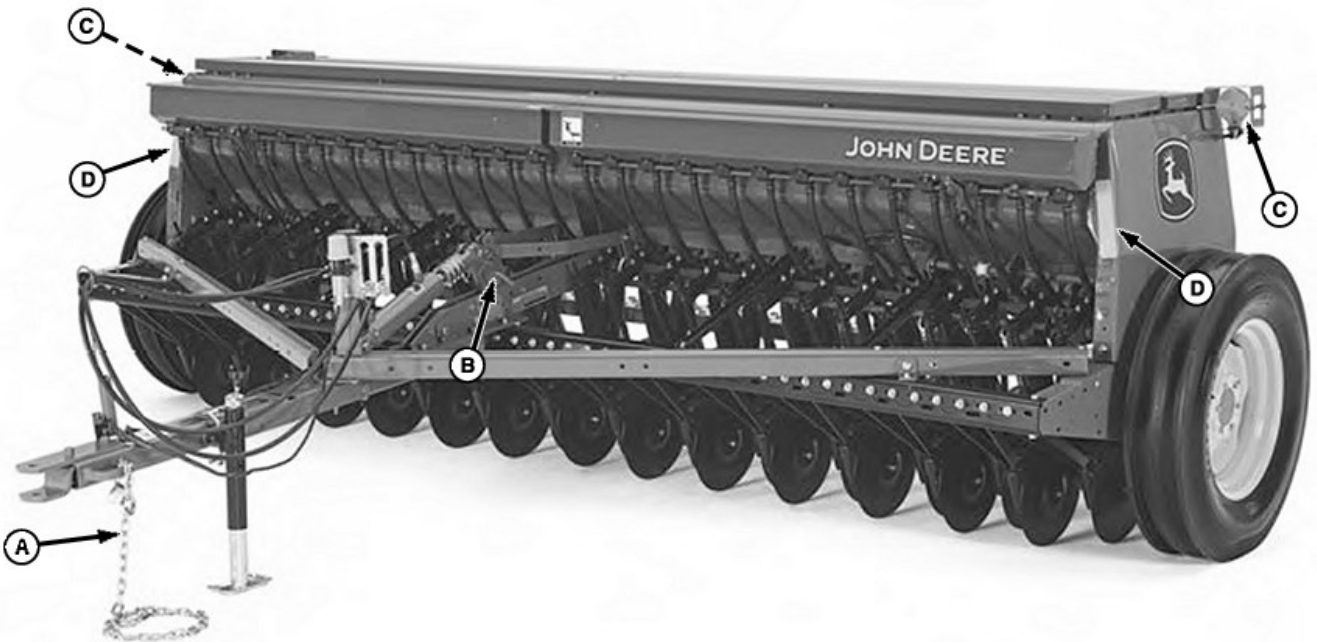
- Use appropriate tools and personal protective equipment such as clothing, gloves, face shields or glasses, during the removal or handling of objects and materials.
- Follow instructions for specialized components.
- Release stored energy by lowering suspended machine elements, relaxing springs, disconnecting

the battery or other electrical power, and releasing pressure in hydraulic components, accumulators, and other similar systems.

- Minimize exposure to components which may have residue from agricultural chemicals, such as fertilizers and pesticides. Handle and dispose of these components appropriately.
- Carefully drain engines, fuel tanks, radiators, hydraulic cylinders, reservoirs, and lines before recycling components. Use leak-proof containers when draining fluids. Do not use food or beverage containers.
- Do not pour waste fluids onto the ground, down a drain, or into any water source.
- Observe all national, state, and local laws, regulations, or ordinances governing the handling or disposal of waste fluids (example: oil, fuel, coolant, brake fluid); filters; batteries; and, other substances or parts. Burning of flammable fluids or components in other than specially designed incinerators may be prohibited by law and could result in exposure to harmful fumes or ashes.
- Service and dispose of air conditioning systems appropriately. Government regulations may require a certified service center to recover and recycle air conditioning refrigerants which could damage the atmosphere if allowed to escape.
- Evaluate recycling options for tires, metal, plastic, glass, rubber, and electronic components which may be recyclable, in part or completely.
- Contact your local environmental or recycling center, or your John Deere dealer for information on the proper way to recycle or dispose of waste.

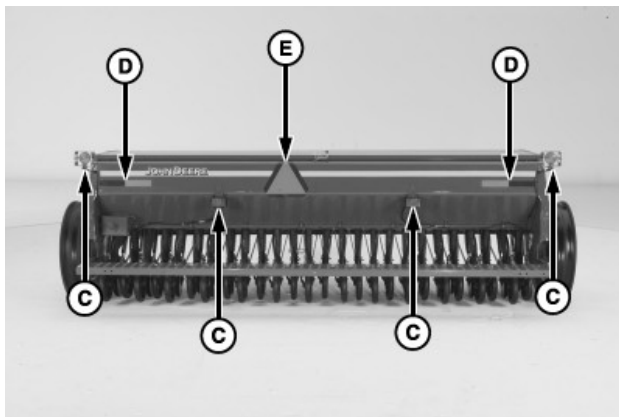
DX,DRAIN-19-01JUN15

Safety Features



Front View

N101281—UN—10DEC12



Rear View

A106547—UN—26FEB20

- A—Safety Chain
- B—Transport Lock
- C—Warning Lights
- D—Reflectors
- E—Slow Moving Vehicle (SMV) Emblem

In addition to the safety features shown here, safety messages and instructions in the Operator's Manual contribute to the safe operation of this implement when combined with the care and concern of a capable operator.

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

OUC6074,0000C7B-19-04MAR20

Safety Signs

Falling Frame

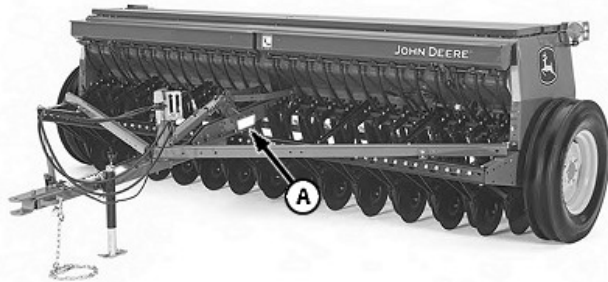


WARNING

Avoid serious injury from crushing or pinning. Install cylinder lockups before transporting, servicing, or storing machine.

(A)—Warning

N101284—19—19AUG14



A102723—UN—06NOV18

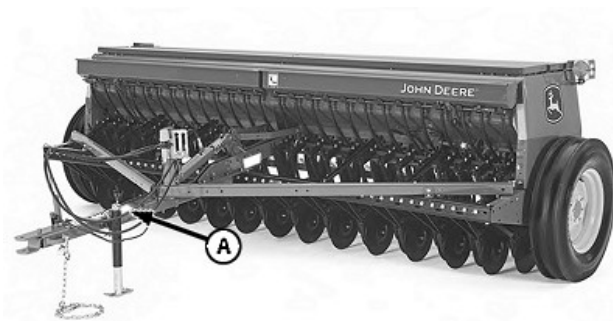
CR53390.0000084-19-26FEB20

Hydraulic Injection



(A)—Warning

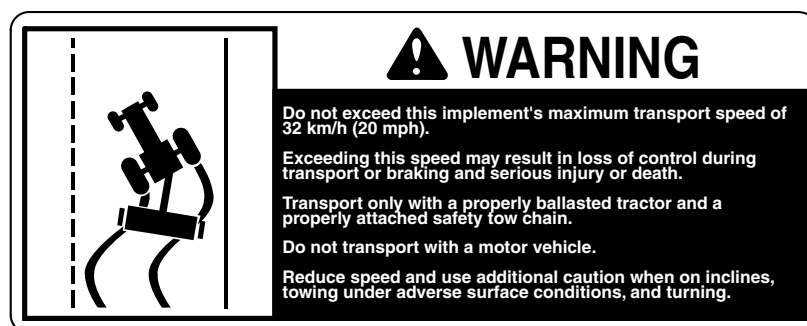
SSA80683—19—08MAR05



A102724—UN—06NOV18

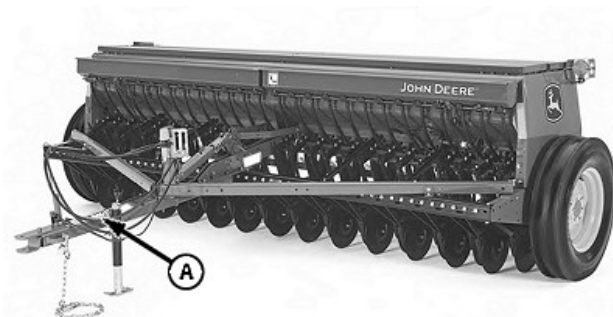
CR53390.0000085-19-26FEB20

Transport Guidelines



(A)—Warning

SSH177618—19—18MAR05



A102725—UN—06NOV18

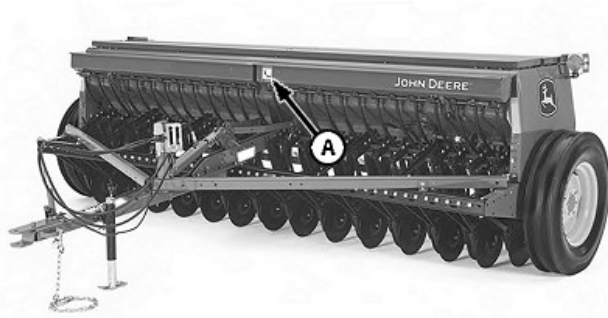
CR53390.0000080-19-26FEB20

Falling from Height

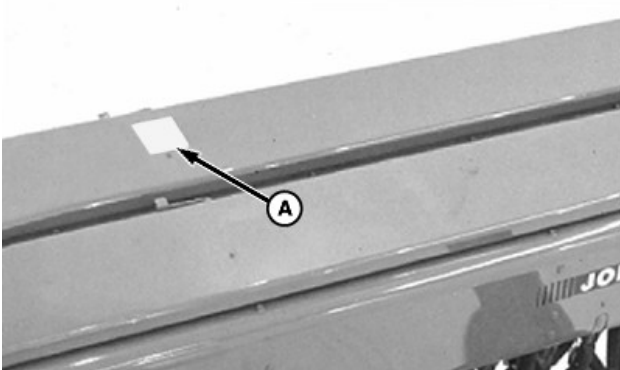


SSA91843—19—25MAR11

(A)—Warning



A102726—UN—06NOV18



N71620—UN—27MAR06

Top of Lid

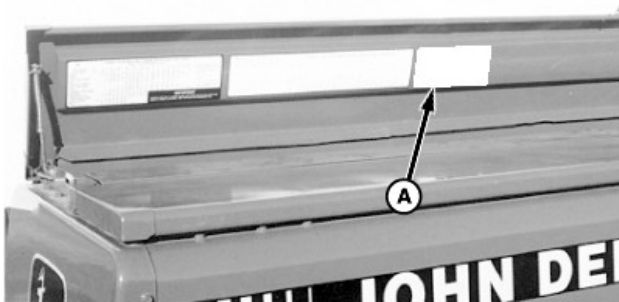
CR53390,0000081-19-10MAR20

Chemical Inhalation



SSN280995—19—20APR06

(A)—Warning



N71627—UN—28MAR06

Under Lid

CR53390,0000083-19-10MAR20

Preparing the Tractor

Use Your Tractor Operator's Manual



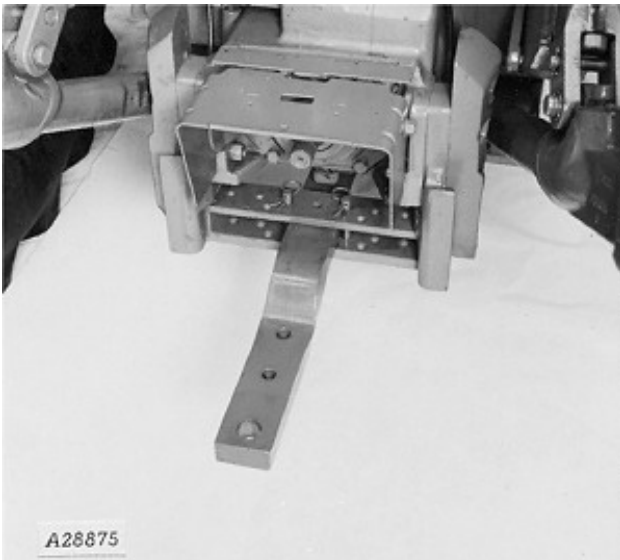
TS190—UN—17JAN89

Always refer to the tractor operator's manual for specific tractor information.

The tractor information in this manual uses John Deere tractors to illustrate the procedures. Use the tractor operator's manual for detailed information, since features vary by tractor model.

OUC1074,00014B5-19-20FEB19

Prepare Tractor Drawbar



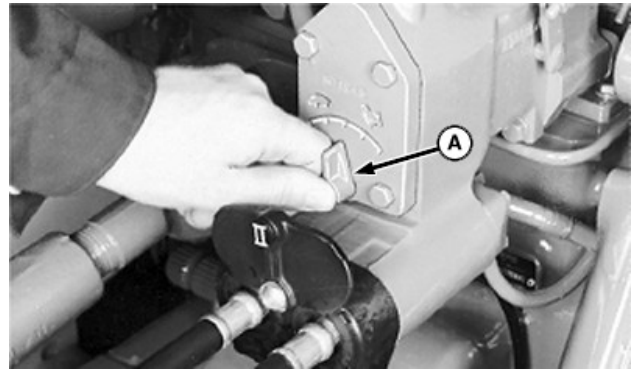
A28875—UN—14OCT88

Position the tractor drawbar approximately 48 cm (19 in) from the ground.

Isolate the drawbar in the center position.

AG,OUC6074,899-19-28NOV18

Adjust Hydraulics—Tractors With Mechanical SCV (Selective Control Valve)



RW5885—UN—17DEC01

With Mechanical SCV Controls

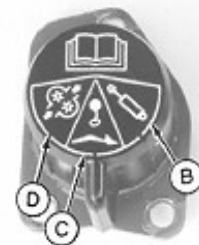


RW21395—UN—18JUN92

With Mechanical SCV Controls



RW21754—UN—21AUG92



RW21758—UN—21AUG92

SCV Detent Selectors

- A—Metering Valves
- B—Lock Position
- C—No Detent Position
- D—Continuous Detent Position

Turn metering valves (A) to fast position.

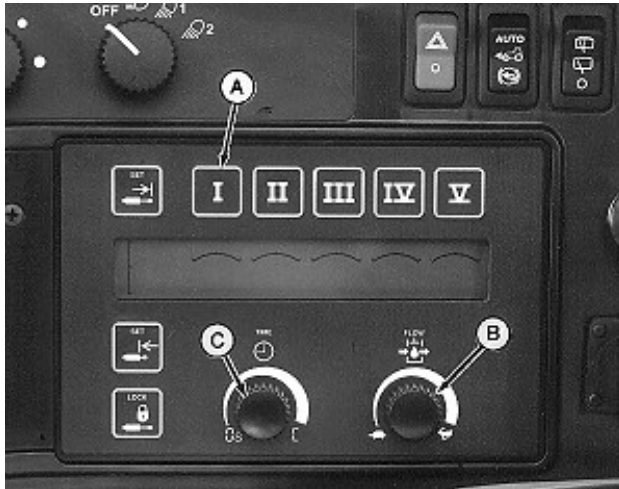
If equipped with detent selectors, turn SCV I and SCV II to no detent position (C). Lock position (B) and continuous detent position (D) are not used with this machine.

OUC6074,000048B-19-04JAN13

Adjust Hydraulics—Tractors With Electro/Hydraulic SCV Controls

intermediate chain support ahead of the hitch pin. If tractor is not so equipped, see your John Deere dealer.

AG,OUO6074,902-19-09MAY00



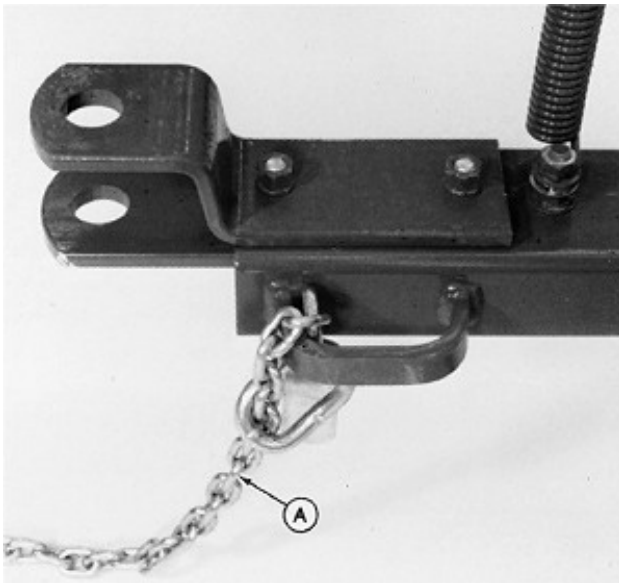
N48104—UN—01JUN94

A—SCV I Selector Button
B—Flow Control Knob
C—Time Detent Knob

1. Press SCV I selector button (A) and turn flow control knob (B) to rabbit position.
2. Turn time detent knob (C) to 5. The time can be increased or decreased for actual time required to lift and lower machine.

OUO6074,000048C-19-04JAN13

Safety Chain



N89151T—UN—07SEP89

A—Safety Chain

A safety chain (A) is recommended to secure hitch to tractor. All tractors must be equipped with an

Preparing the Grain Drill

Prepare the Grain Drill

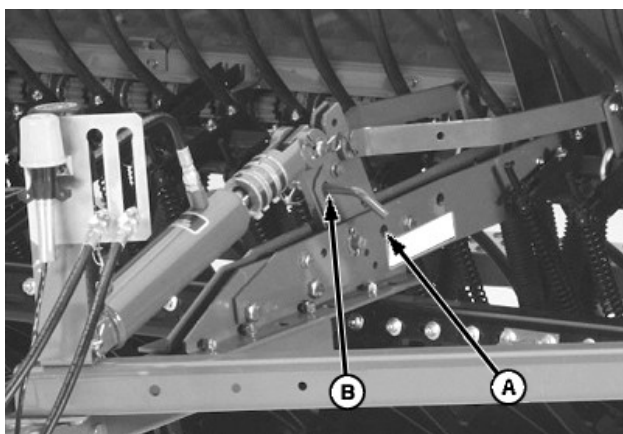
IMPORTANT: Do not install the lock pin in both transport and field position holes at the same time.

NOTE: When the lock pin is in transport position (A), the hydraulic cylinder can be removed for other uses and the grain drill can be transported.

Specification

Tire—Pressure. 194 kPa
(1.9 bar)
(28 psi)

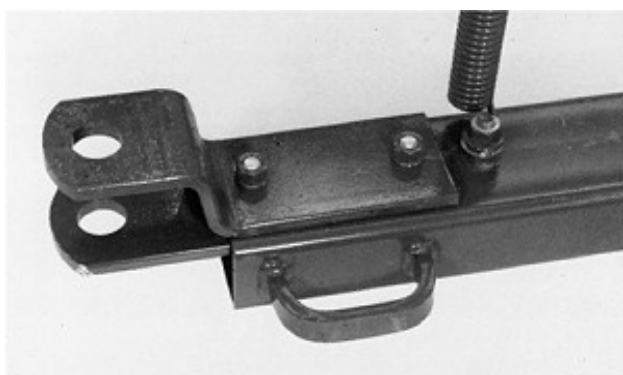
AG,OUO6074,903-19-03MAR20



N101287—UN—10DEC12

A—Transport Position
B—Field Position

1. Install the hydraulic cylinder as shown. Position the lock pin in either transport position (A) or field position (B).
2. Route the hydraulic hoses through the spring support on the hitch.



N89151N—UN—07SEP89

Drill Hitch

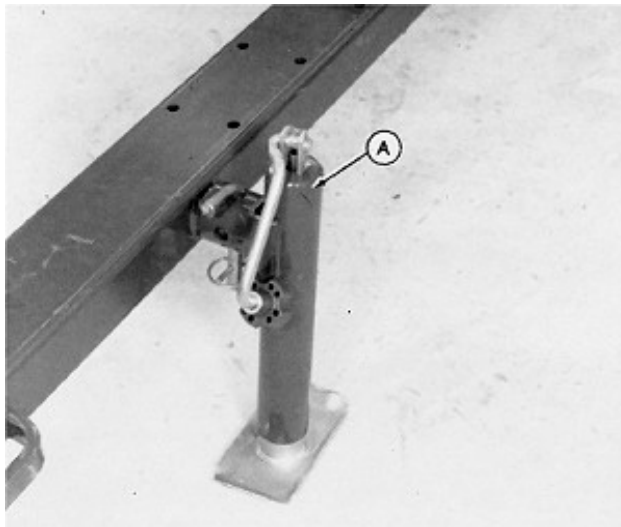
3. Change the position of the hitch clevis straps on the grain drill and tractor drawbar so the hitch is level.

NOTE: Tire air pressure affects seeding rates.

4. Adjust the tire air pressure to specification.

Attaching and Detaching

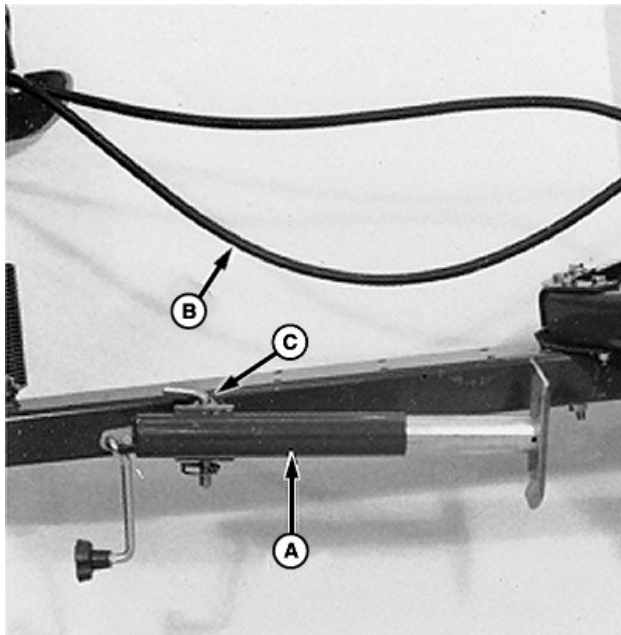
Attach Grain Drill to Tractor



N89151L—UN—07SEP89

A—Hitch Jack

1. Adjust the hitch jack (A) until the grain drill hitch is level with the tractor drawbar.
2. Slowly back up the tractor and attach the grain drill hitch to the tractor drawbar with a hitch pin.

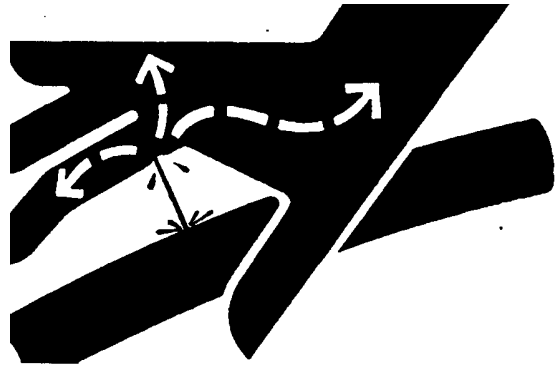


A102836—UN—15NOV18

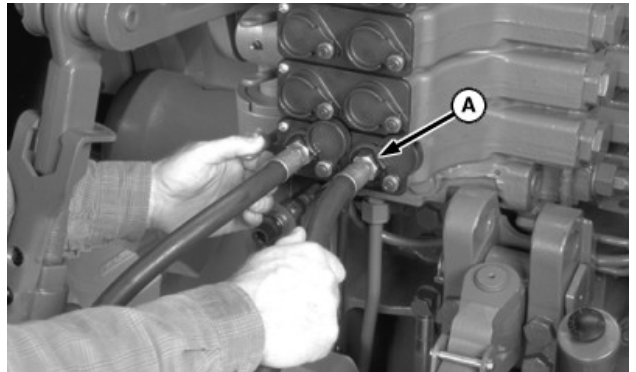
Storage Position

- A—Hitch Jack
B—Hydraulic Hose
C—Hitch Jack Pin

3. Remove the hitch jack pin (C). Rotate the hitch jack (A) 90° into storage position. Replace the hitch jack pin.
4. Route the hydraulic hoses (B) to the tractor.



X9811—UN—23AUG88



RW55304—UN—18DEC01

A—SCV I

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

Relieve the pressure before disconnecting hydraulic or other lines to avoid this hazard. Tighten all the connections before applying pressure (see Avoid High-Pressure Fluids in the Safety section).

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

5. Connect the lift hoses to selective control valve (SCV) I (A).



RW20845—UN—07MAY92

7-Pin Electrical Outlet

6. Connect the warning light harness to the 7-pin electrical outlet.

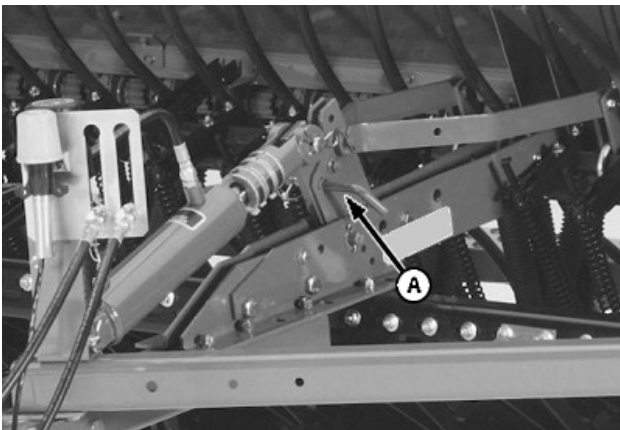
CAUTION: Avoid injury or death caused by a runaway machine during transport. Attach the safety chain to the tractor drawbar support or other specified anchor location using the appropriate adaptor parts. Provide enough slack in the safety chain for unobstructed turning.



N84201C1—UN—28SEP88

A—Drawbar Support
B—Hitch

7. Attach the safety chain to the tractor drawbar support (A) from hitch (B).



A103207—UN—19DEC18

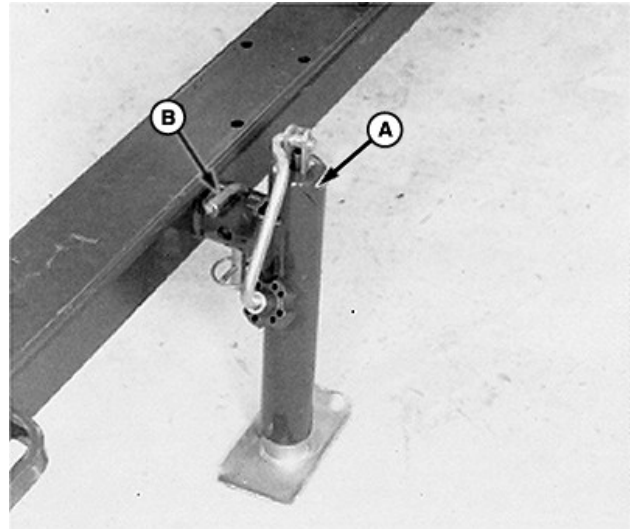
A—Pin

8. After entering the field, move pin (A) to the field position.

NOTE: To relieve pressure from pin (A), adjust the opener position.

AG,OUO6074,904-19-03MAR20

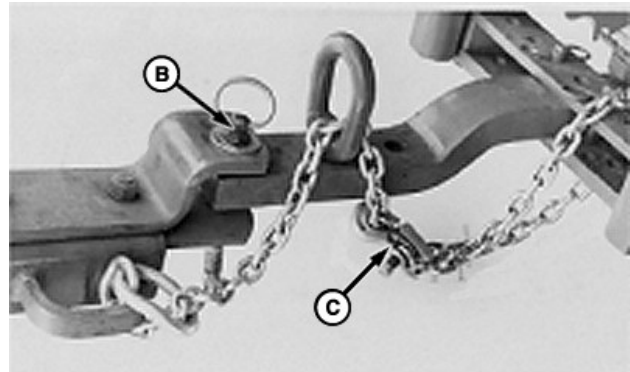
Detach Grain Drill from Tractor



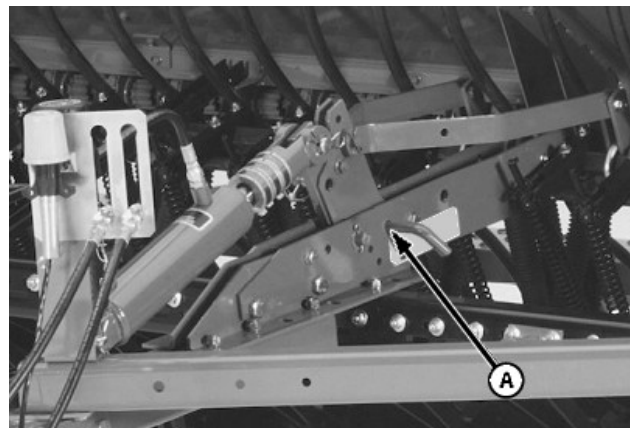
A102837—UN—15NOV18

A—Hitch Jack
B—Hitch Jack Pin

1. Move the grain drill into the storage area.
2. Remove the hitch jack pin (B). Turn the hitch jack (A) 90°. Replace the hitch jack pin.



A103055—UN—10DEC18



N101288—UN—10DEC12

A—Pin
B—Hitch Pin
C—Safety Chain

3. Relieve hitch weight from the drawbar using the hitch jack.
4. Remove the hitch pin (B).
5. Raise the openers and install pin (A) in the transport position.



CAUTION: Avoid injury from escaping fluid under pressure. Relieve pressure in the system before disconnecting or connecting hydraulics.

6. Disconnect the hydraulic hoses. Close the tractor hydraulic outlet covers and install dust caps over the hose ends.
7. Disconnect the warning light harness.
8. Detach the safety chain (C) and store with the grain drill.
9. Pull the tractor forward.

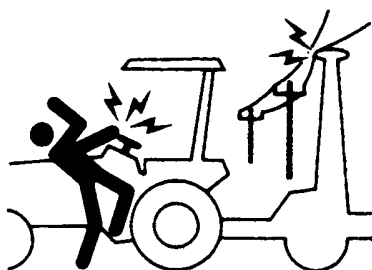
AG,OUO6074,906-19-26FEB20

Transporting

Transporting Safely



N39084—UN—30MAR89

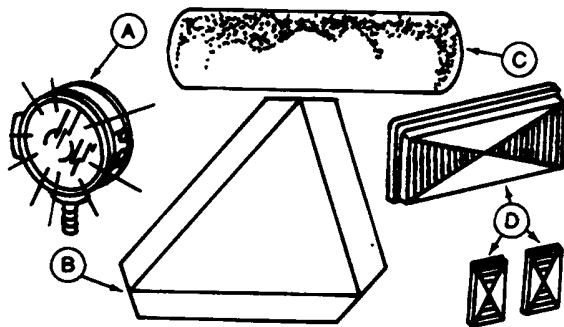


N39394—UN—06OCT88

CAUTION: Travel at a reasonable and safe speed. Do not exceed weight and speed guidelines shown in the Safety section. Reduce speed considerably when traveling over rough ground.

Reduce speed when turning. Do not uncouple tractor brake pedals and apply the tractor brakes individually in an attempt to make a shorter turn.

Serious injury or death can result from contact with electric lines. Use care when moving or operating this machine near electrical lines to avoid contact. Know the transport height of your machine.



N36564—UN—10FEB89

A—Lights
B—SMV Emblem
C—Reflective Tape

D—Reflectors

CAUTION: When transporting your machine on a road or highway at night or during the day, use accessory lights (A), SMV emblems (B), reflector tape (C), or reflectors (D), for adequate warning to operators of other vehicles. In this regard, check local governmental regulations. These various safety lights and devices are available from your John Deere dealer.

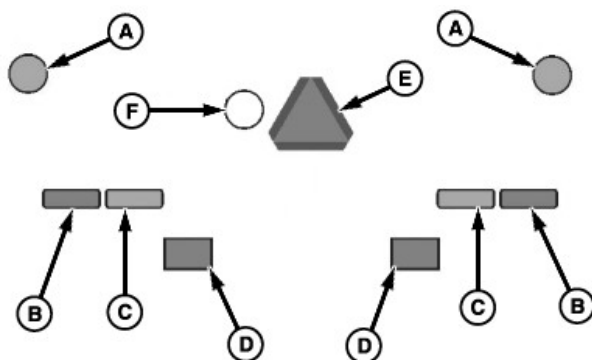
Reduce speed when transporting over rough ground.

KNOW transport height and width of your machine, especially if transporting with multiple hitches and/or row-markers. See Specifications section.

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

AG,OUO6074,907-19-20MAR06

Lighting and Marking

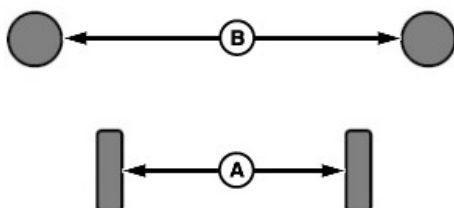


A106550—UN—26FEB20

- A—Amber Clearance Light
B—Red Reflector
C—Orange Reflector
D—Red Tail Light
E—SMV Emblem
F—Speed Identification Sign

Viewed from the rear of the machine, the lights and reflectors are oriented as shown:

- Amber clearance light (A)
- Red reflector (B)
- Orange reflector (C)
- Red tail light (D)
- Slow moving vehicle (SMV) emblem (E)
- Speed identification sign (F)



A106549—UN—26FEB20

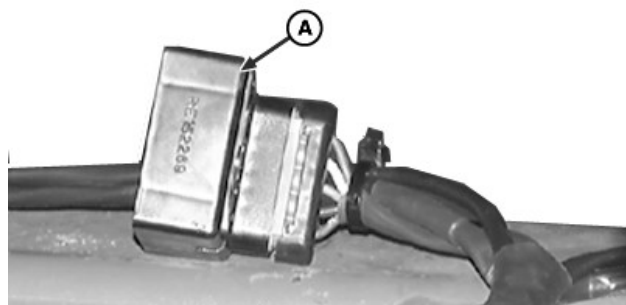
- A—Yellow Reflector
B—Amber Clearance Light

Viewed from the front of the machine, the lights and reflectors are oriented as shown:

- Yellow reflector (A)
- Amber clearance light (B)

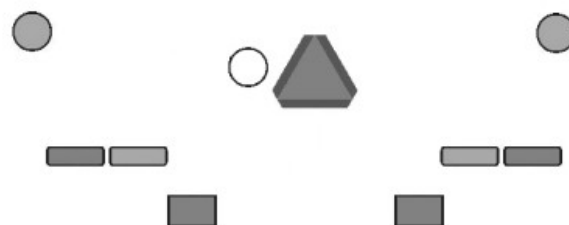
BB83525,0000814-19-26FEB20

Light Enhancement Module



A76019—UN—12SEP12

Light Enhancement Module



A106548—UN—26FEB20

Lighting and Marking (configuration A)

A—Light Enhancement Module

CAUTION: Use safety lights and devices when transporting on roadways. (See Use Safety Lights and Devices in the Safety section.)

IMPORTANT: The construction of this drill 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 drill to be approved for such roadway transport. The customer is responsible for understanding and complying with all local, regional, and national requirements regarding roadway transport.

NOTE: Keep lighting and marking visible, clean, and in good working order.

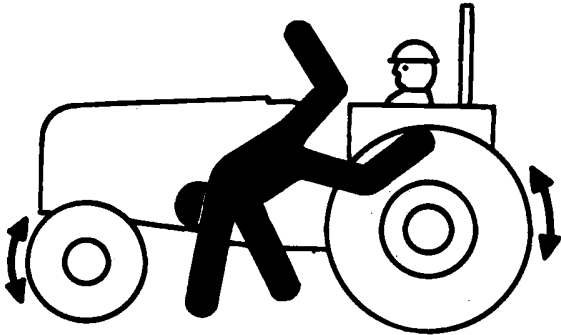
Drills are equipped with the light configuration typically used in the destination country. The customer is responsible for checking local government regulations. See your John Deere dealer or qualified service provider for devices that meet local roadway compliance.

The light configuration includes a light enhancement module (A) to control certain light functions.

For operation in Australia, remove the light enhancement module. The specific functions of the enhancement module are not used in Australia.

BB83525,0000815-19-04MAR20

Keep Riders Off Machine



TS290—UN—23AUG88

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.

DX,RIDER-19-03MAR93

Transport the Grain Drill



N101288—UN—10DEC12

A—Transport Position

IMPORTANT: When the grain drill is transported with seed and fertilizer in the boxes, product can settle and pack in the hoppers and the drive assembly can be damaged. Turn the meter shaft backwards with a wrench after transport to loosen the material.

1. Raise the openers. Install the lock pin in transport position (A).

2. If the tractor has a Roll-Gard™ safety canopy, keep seat belt fastened during transport.
3. Keep the tractor slow moving vehicle (SMV) emblem in place and clean. If the tractor SMV is missing or obscured, obtain an SMV from your John Deere dealer or qualified service provider and install on the rear of the grain drill.
4. Attach the warning light connector to the tractor 7-pin electrical outlet and verify that the lights are working properly.
5. Verify that the safety reflectors are clean and in place, according to local regulations.

NOTE: Do not transport the grain drill faster than 32 km/h (20 mph).

CAUTION: A safety chain helps control drawn equipment if accidental separation occurs during transport. A runaway machine can cause injury or death to you or others. Use the appropriate adapter parts to attach the chain to the tractor drawbar support or other specified anchor location. Provide only enough slack in the chain to allow turning.



N84201C1—UN—28SEP88

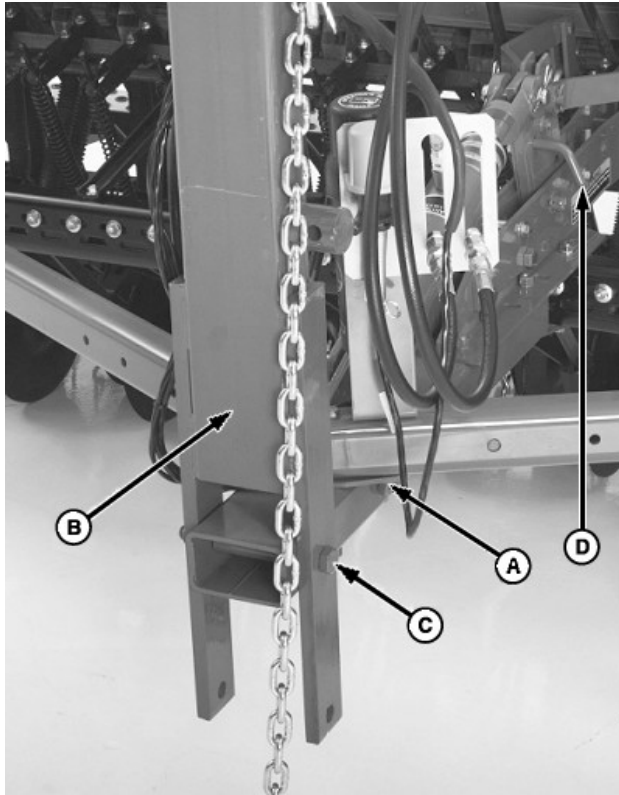
A—Drawbar Support
B—Drill Hitch

6. Attach the safety chain from the grain drill hitch (B) to the tractor drawbar support (A).

AG,OOU6074,909-19-26FEB20

Roll-Gard is a trademark of Deere & Company

Transport the Grain Drill on Trailer



N109115—UN—11DEC13

A—Cap Screw
B—Tongue
C—Pivot Cap Screw
D—Lock Pin

adjust the straps on the lifting load bar . Always raise and lower the drill slowly.

2. Place the jackstand on the front frame and pin in place.
3. Remove the rear cap screw (A) on tongue (B) and fold. Replace cap screw in the tongue.
4. To hold the tongue in the transport position, tighten the front cap screw (C) on tongue (B).
5. After setting the grain drill down, verify that the front end of the grain drill is supported. Place blocks in front and behind the tires, and attach blocks to the trailer. Chain or strap the grain drill securely to the trailer.

AG,OUO6074,910-19-03MAR20

IMPORTANT: When the grain drill is transported with seed and fertilizer in the boxes, product can settle and pack in hoppers and the drive assembly can be damaged. Turn the meter shaft backwards with a wrench after transport to loosen material.

1. If pulling or hoisting the grain drill onto a trailer, refer to the applicable step (a or b):
 - a. **Pulling the grain drill:** Install lock pin (D) in the transport position and pull onto the trailer.

IMPORTANT: Avoid damage to the seed cups when lifting the grain drill. Verify that the lifting straps are only positioned around the tanks.

- b. **Lifting the grain drill:** Verify that the lock pin (D) is installed in the transport position. Attach lifting straps at two points around the grain tank that are equal distance from the center of the grain drill. If the grain drill is equipped with a grass seed box, route the lifting strap between the grain tank and the grass seed box. To ensure that the straps are pulling straight up,

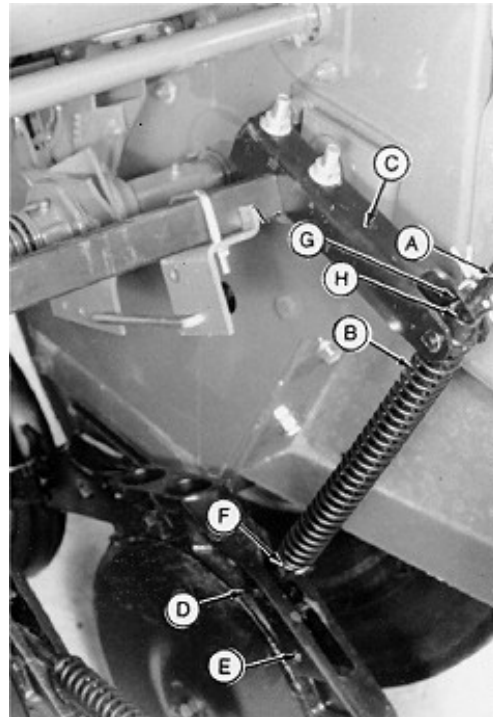
Operating the Grain Drill

Guidelines for Use

1. Use recommended size tractor. See Specifications section.
2. Operate at a ground speed of 6-10 km/h (4-6 mph).
3. Raise machine out of ground when making sharp turns.
4. Raise machine out of ground before backing up.
5. Level machine before seeding.
6. Adjust openers individually to equalize seeding depth.
7. Turn feed shaft before adding seed if machine has been standing for a long period of time. If treated seed is used, turn shaft whenever machine has been standing for an hour or longer.
8. Handle and apply chemically treated seeds according to manufacturer's recommendations.
9. Check tire pressure before seeding.
10. Check seed rates.
11. Adjust press wheel depth to provide adequate seed bed firming.

MH69740,00005B4-19-03DEC13

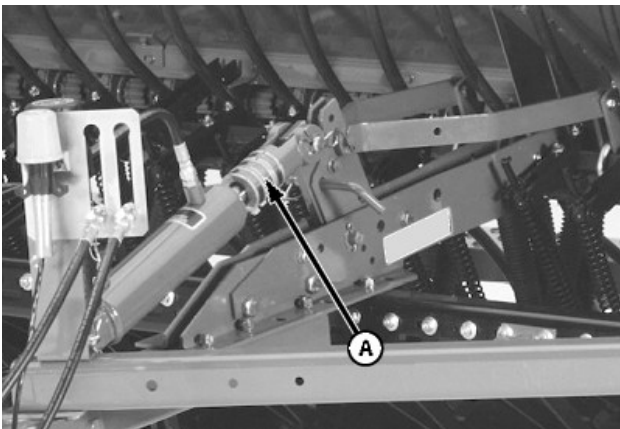
Adjust Individual Opener Downforce



N89157Z—UN—07SEP89

- A—Pressure Rod
- B—Spring
- C—Arm
- D—Rear
- E—Front
- F—Washer
- G—Collar
- H—Swivel

Adjust Seed Depth or Opener Penetration



N101291—UN—10DEC12

A—Cylinder Stop

Add or remove cylinder stops (A) on hydraulic cylinder to adjust opener depth.

AG,OUO6074,912-19-04JAN13

Double Disk Opener		
Drawbar Length	Short 527 mm (20-3/4 in)	Long 667 mm (26-1/4 in)
Opener Component	Initial Downforce Adjustment	
Arm (C) Length	Long 238 mm (9-3/8 in)	Short 213 mm (8-3/8 in)
Rod (A) Length	451 mm (17-3/4 in)	521 mm (20-1/2 in)
Hole	Rear (D)	Front (E)
Spring (B) Length	335 mm (13-3/16 in)	378 mm (14-7/8 in)
Spring Coil Diameter	5 mm (3/16 in)	5.5 mm (7/32 in)

1. Assemble the pressure rod (A), spring (B), arm (C), washer (F), and collar (G). To establish initial spring length, adjust the washer and pressure rod position (rear [D] or front [E] hole) according to the previous chart.

NOTE: Avoid insufficient drive wheel contact with the ground causing wheel slippage and under-application. Do not use more force than necessary for opener penetration. If the maximum downforce is needed in extreme soil conditions, add extra weight to the drive wheels with internal calcium chloride or external weights.

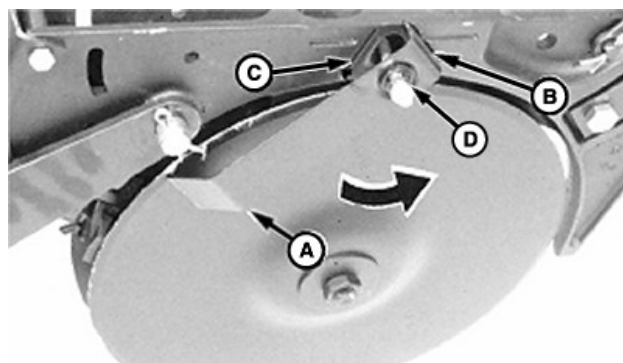
- To increase downforce, compress the spring and move washer (F) to a higher position. Generally, more force is required behind tractor tires. The lowest two washer positions provide a satisfactory downforce in most soil conditions. Rocky, cloddy, or rough ground requires more force.

IMPORTANT: Transport clearance is reduced when collar (G) is in the top hole. Once the downforce is set, make more adjustments with hydraulic cylinder stops.

NOTE: Move collar (G) to upper positions for more uniform planting depth in uneven soil conditions or when openers align with a tractor wheel.

- Adjust the collar (G). The correct position allows the opener to penetrate to target depth without the collar contacting swivel (H).

AG,OUO6074,913-19-19FEB19



A103208—UN—20DEC18

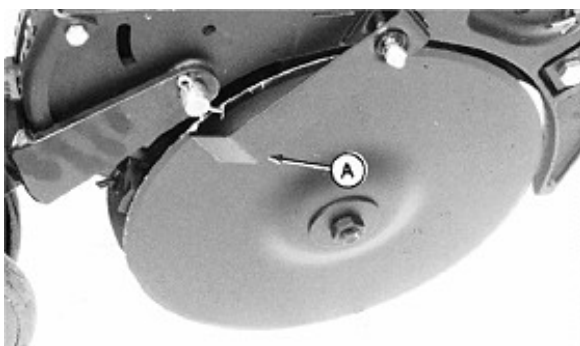
A—Outer Scraper
B—Field Slot
C—Storage Slot
D—Nut

- When the outer scrapers (A) are not used, loosen the nut (D) and turn each scraper from the field slot (B) to the storage slot (C). Tighten the nut.

AG,OUO6074,918-19-20DEC18

Adjust Double-Disk Outer Scraper

Double-disk openers require a well-prepared loose seed bed. Attachments are available for improved depth control in varying soil conditions (see your John Deere dealer or qualified service provider).



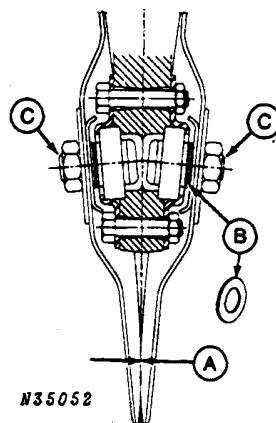
N42123GG—UN—06JAN92

A—Outer Scraper

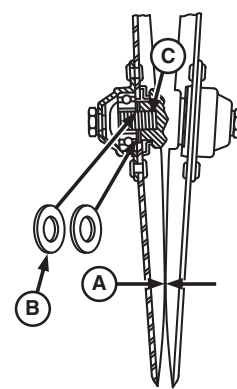
NOTE: Leave the outer scraper (A) in the storage position unless soil is sticking to the disk.

- Adjust the outer scraper against the disk with enough tension to clean the disk. Do not use excessive tension.

Check for Double-Disk Wear



N35052—UN—05OCT88
Aluminum Boot



N58998—UN—11DEC01
Cast Iron Boot

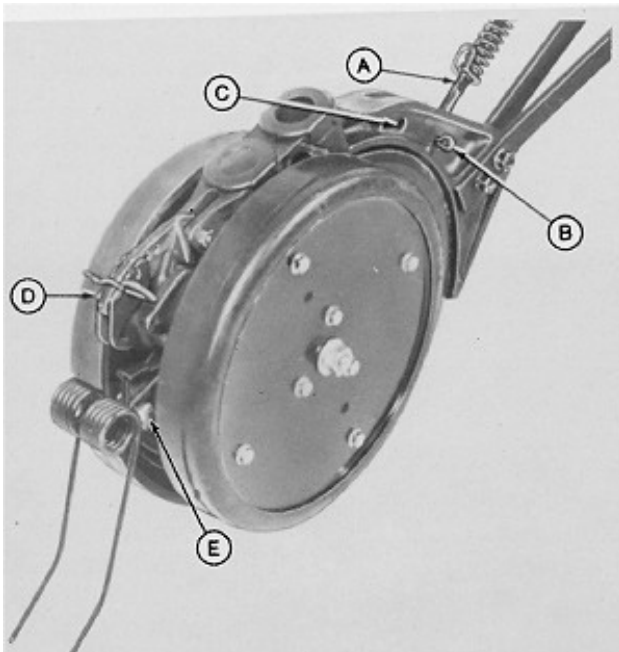
A—Contact Point
B—Shims
C—Hub Bolt

Disengage the inside scrapers. Hold one stationary and rotate the other disk. Disks slightly touch at contact point (A) and turn freely. Make adjustments as required (see Replace and Adjust Double-Disk Openers in Servicing).

Most new disks need two or three shims (B) on each hub bolt (C) while worn disks require less.

AG,OUO6074,919-19-16JAN19

Adjust Depth on Tru-Vee Opener Attachment



N79088A5—UN—06OCT88

- A—Downforce Rod
- B—Front Hole
- C—Rear Hole
- D—Depth Adjustment Arm
- E—Cap Screw

Tru-Vee™ offers the most precise depth control in loose, well-prepared seedbeds.

IMPORTANT: Avoid damage to the openers. Verify that the downforce rod (A) is in the front hole (B) when equipped with long drawbars and in the rear hole (C) with short drawbars.

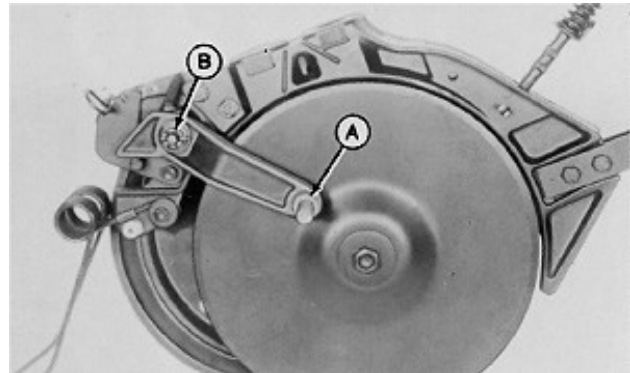
NOTE: Some soil conditions prevent openers from achieving the target depth.

Each position of the depth adjustment arm (D) changes the seed depth by approximately 8 mm (5/16 in). Maximum depth is 76 mm (3 in).

1. To decrease the drilling depth, move depth adjustment arm (D) forward and pin into position.
To increase the drilling depth, move depth adjustment arm rearward and pin into position.
2. After changing the depth, loosen cap screw (E) and adjust the spring tines. Tighten the nut.

AG,OUO6074,920-19-01FEB19

Adjust Tru-Vee Opener Depth Gauge Wheels



N79108E6—UN—28SEP88

- A—Shims
- B—Pivot Bolt Nut

Verify that the depth gauge wheel touches disk at the desired contact point when wheel is rotated. Pivot the depth gauge wheel up and release. Verify that the depth gauge wheel does not lower. If depth gauge wheel falls, continue with the following steps.

1. Raise the opener and verify the torque on pivot bolt nut (B).

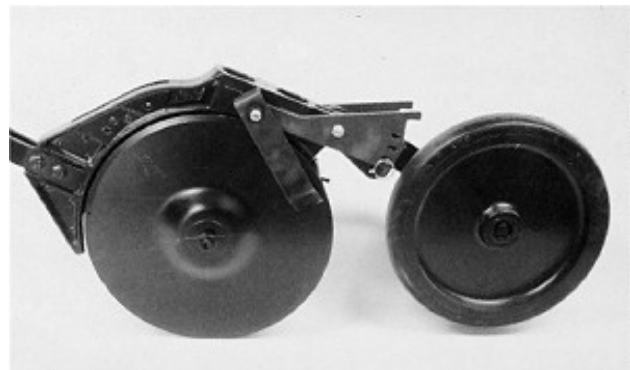
Specification

Nut (B)—Torque (dry). 8 N·m
(70 lb·in)

2. Rotate the depth gauge wheel.
3. Move the shims (A) from one side of depth gauge wheel to the other, as required.

AG,OUO6074,921-19-07DEC18

Adjust Depth Gauge Press-Wheel



N88182G1—UN—28SEP88

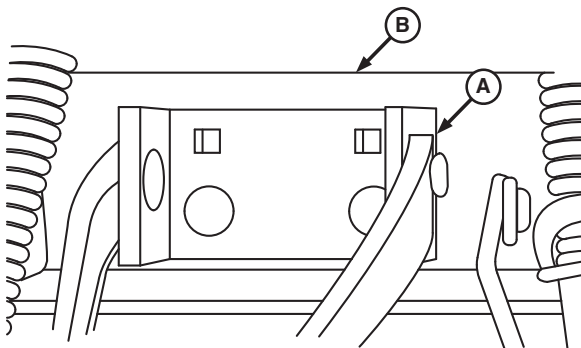


N88182H1—UN—28SEP88

Set the press wheels lower in dry soil and higher in moist soil. The wheels press the seed into soil and set furrow depth. The furrow depth range is 2—80 cm (3/4 in—3 in). Each adjustment position changes the depth 1 cm (3/8 in).

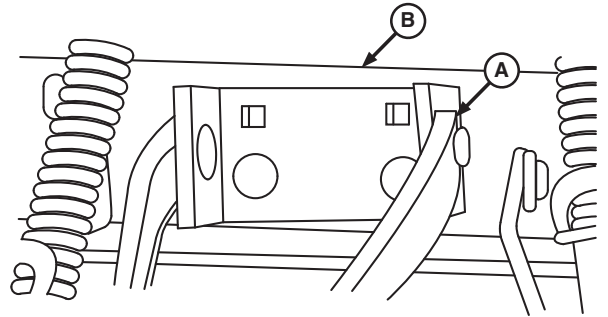
AG,OUO6074,923-19-18JAN19

Align Opener Drawbar



N58999—UN—11DEC01

Parallel with Frame



N59000—UN—11DEC01

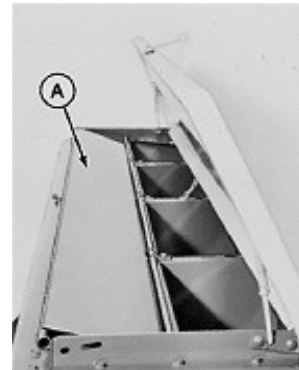
Not Parallel with Frame

A—Yoke
B—Frame

For proper furrow opener alignment, the drawbar yoke (A) must be parallel with the frame (B). Reposition the drawbar yoke as needed.

AG,OUO6074,924-19-03DEC18

Set Spill Shields



N37800—UN—05OCT88

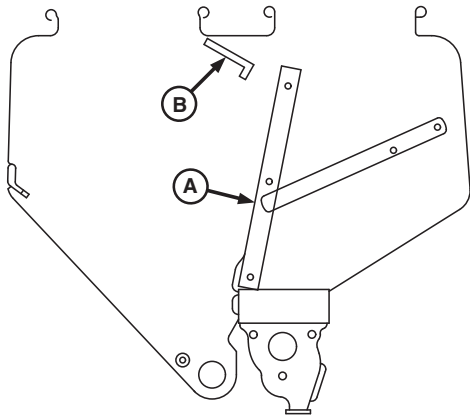
A—Shield

To fill the fertilizer box, position the shield (A) over box not being filled or over the space between the two openings.

NOTE: To prevent packing, fill only in the field.

AG,OUO6074,925-19-19DEC18

Change Partition Position

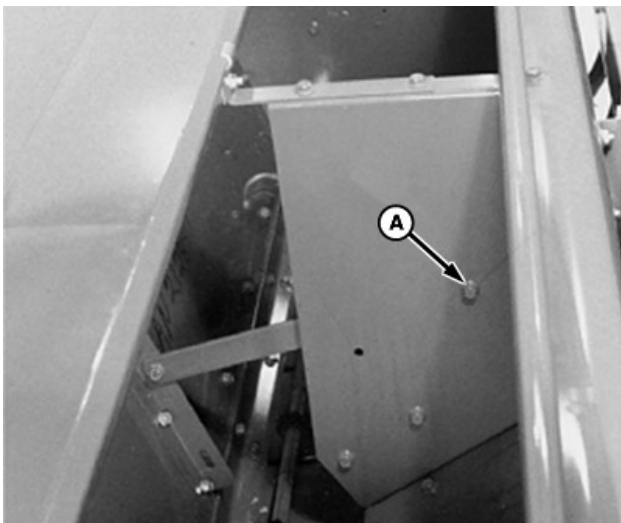


N142154—UN—09JAN19

40% Grain and 60% Fertilizer Configuration

A—Partition
B—Deflector

The partition (A) has three positions. The deflector (B) has two positions.



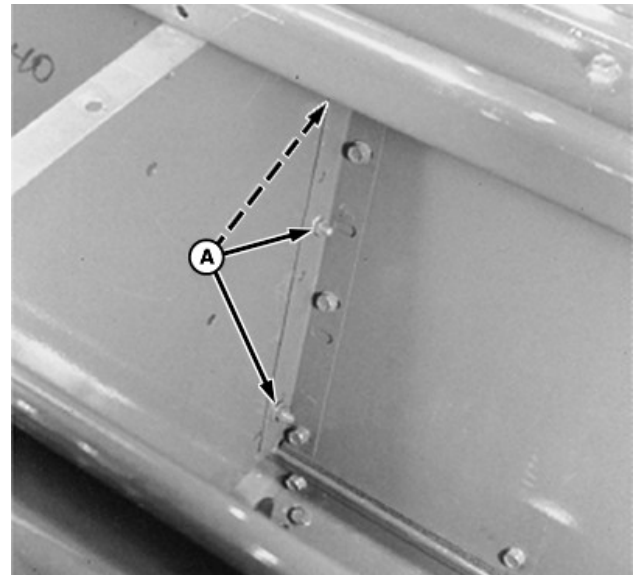
N142155—UN—08JAN19

Support Strap

A—Cap Screw

NOTE: Lids have been removed for clarity only.

1. Remove the cap screw (A) and nut from support strap and bulkhead (two places).

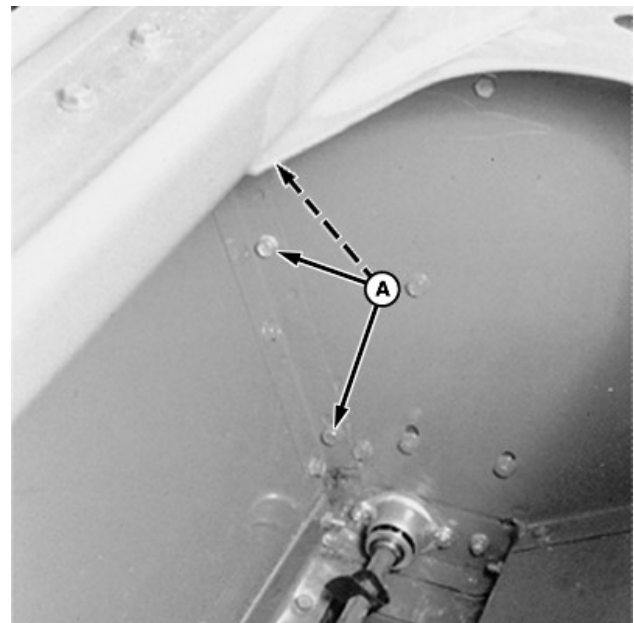


N142156—UN—08JAN19

Center Bulkhead Bracket

A—Cap Screw (3 used)

2. Remove the cap screws (A) and nuts from the center bulkhead bracket.

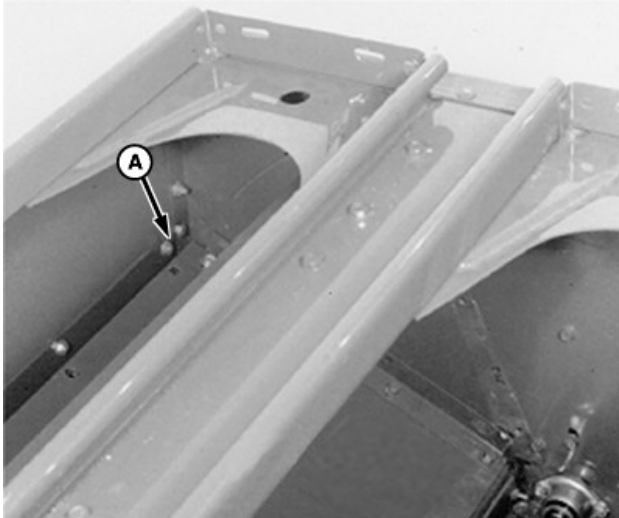


N142157—UN—08JAN19

Shown in 60% Grain Position

A—Cap Screw (3 used)

3. Remove cap screws (A) from the brackets on each end of partition.

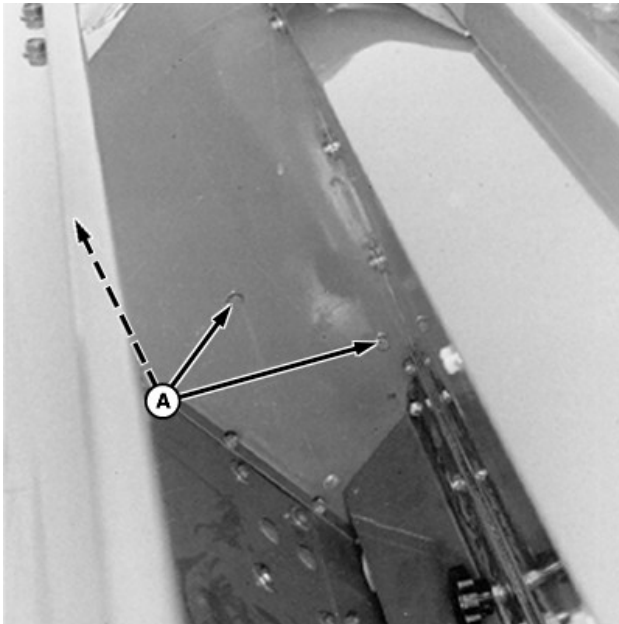


N142158—UN—08JAN19

Partition in Grain Only Position

A—Rear Support

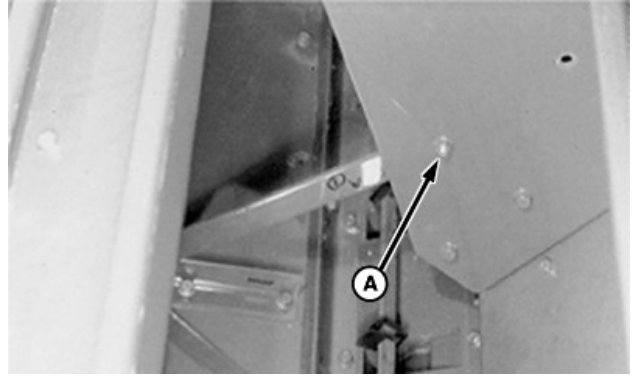
4. Remove cap screws from the top deflector panel or rear support (A).



N142159—UN—08JAN19

A—Cap Screw (3 used)

5. Remove cap screws (A) from the end panel for the new partition position (both sides).



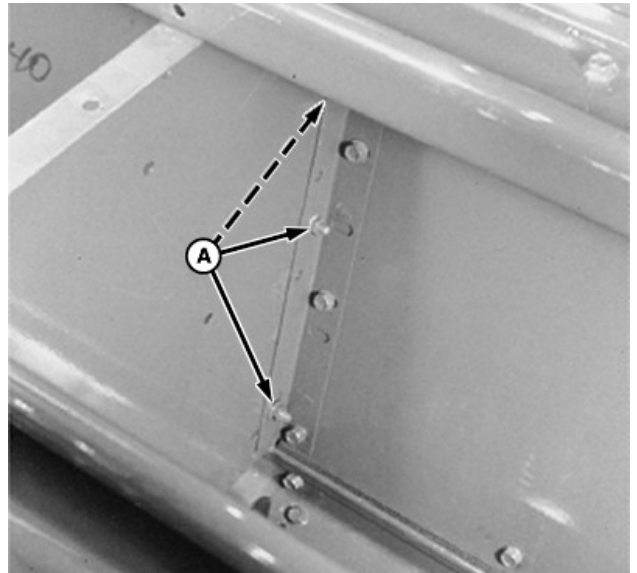
N142160—UN—08JAN19

A—Cap Screw

6. Attach the support strap to bulkhead with a cap screw (A) and nut (two places).

Support Strap Positions	
Rear Hole	Grain Only
Middle Hole	40% Fertilizer 60% Grain
Front Hole	60% Fertilizer 40% Grain

7. Attach all hardware to the end panels and central bulkheads.
8. Attach hardware to the deflector or support bracket.



N142156—UN—08JAN19

A—Cap Screws

9. If the panels bow, loosen cap screws (A) in central bulkheads. Tighten the cap screws after tension is released.
10. Tighten all the hardware.

AG,OUO1018,40-19-04FEB19

Check Quantities Drilled

The following variables cause variations between the meter setting and actual seeding rate:

- **Quality of Seed**—Two bags of seed that weigh the same, but have different quantities of seed because of moisture content, residue, unfilled kernels, or seed size.
- **Wheel Slippage**—Slippage varies depending on tire size, ground speed, seed bed condition, soil type, and product in the tank.
- **Tires**—Size, type, and air pressure affect the rate. Use the recommended tire size and air pressure shown in the chart.
- **Operator Judgment**—Field contains more or less area than assumed. Driving a path that overlaps or leaves spaces compared to the previous path. Turning at row ends without lifting furrow openers.
- **Acre Meter**—Worn counter or damaged teeth. Worm gear loose on shaft (see Check Acre Meter in Servicing).

Machine Width	3 m (10 ft)	4 m (13 ft)	2.5 m (8 ft)	3 m (10 ft)	4 m (13 ft)	4 m (13 ft)
Number of Feeds	21	26	13	17	21	16
Spacing of Feeds	15 cm (6 in)	15 cm (6 in)	19 cm (7.5 in)	19 cm (7.5 in)	19 cm (7.5 in)	25 cm (10 in)
Tire Size	Number of Wheel Revolutions for 1 Hectare (Acre) ^a					
7.5 x 20 in 4 ply Rib	1075 (435)	860 (348)	1389 (562)	1075 (435)	860 (348)	860 (348)
7.5 x 20 in 4 ply Double Rib	1043 (422)	835 (338)	1303 (527)	1043 (422)	835 (338)	835 (338)

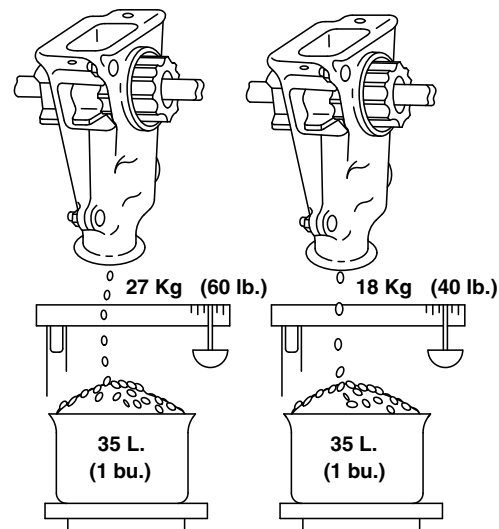
^aRevolutions shown are for tires inflated to recommended pressure.

AG,OUO1074,469-19-03DEC18

Recommended Tire Size and Type (in/mm)	kPa	(bar)	(psi)
7.50 x 20 in 4 PR (191 x 508 mm) Rib-Implement	194	(1.9)	(28)
7.50 x 20 in 4 PR (191 x 508 mm) Double-Rib	194	(1.9)	(28)

AG,OUO6074,968-19-16JAN19

Rate Check—Method Two



N92121—UN—01JUN11

Rate Check—Method One

1. Refer to the correct rate chart and verify adjustments.
2. Fill the product tank level-full in the field. To settle the product, drive a short distance. Refill the tank exactly level-full.
3. Determine the number of wheel revolutions that equal 1 hectare (acre) of application from the following chart.
4. Mark the drive wheel and apply product while counting the number of wheel revolutions.
5. Carefully weigh the product required to refill the tank level-full.
6. Compare weight required to fill tank to the target application rate.
7. To compensate for the difference, adjust the seed meter or fertilizer gear case.

1. Refer to the correct rate chart and verify adjustments.
2. Fill the tanks with product and attach a container under each product feed.
3. Determine the number of wheel revolutions that equal 1 hectare (acre) of application from the following chart.
4. Mark the drive wheel and apply product while counting the number of wheel revolutions.
5. Carefully weigh the product from all containers and compare it to the target application rate.
6. To compensate for the difference, adjust the seed meter or fertilizer gear case. Repeat the process as needed.

Machine Width	3 m (10 ft)	4 m (13 ft)	2.5 m (8 ft)	3 m (10 ft)	4 m (13 ft)	4 m (13 ft)
Number of Feeds	21	26	13	17	21	16
Spacing of Feeds	15 cm (6 in)	15 cm (6 in)	19 cm (7.5 in)	19 cm (7.5 in)	19 cm (7.5 in)	25 cm (10 in)
Tire Size	Number of Wheel Revolutions for 1 Hectare (Acre) ^a					
7.5 x 20 in 4 ply Rib	1075 (435)	860 (348)	1389 (562)	1075 (435)	860 (348)	860 (348)
7.5 x 20 in 4 ply Double Rib	1043 (422)	835 (338)	1303 (527)	1043 (422)	835 (338)	835 (338)

^aRevolutions shown are for tires inflated to recommended pressure.

OUO6074,0000162-19-03DEC18

Drill Row Crops

Soybeans, common beans, corn, sugar beets, and many other row-crops are compatible with this machine. Configure the machine as follows:

NOTE: It is not required to remove inactive furrow openers.

1. To prevent unnecessary wear, tie up inactive openers. To work the soil, leave inactive openers lowered.

IMPORTANT: Avoid component wear. Remove all fertilizer from the area around unused feed wheels.

2. Remove the fertilizer feed wheels from inactive rows.
3. Cover all inactive grain and fertilizer feed openings with feed stops.
4. Verify that the fertilizer feed wheels are correctly assembled on shaft (see Replace Fertilizer Feed Wheels in Servicing).
5. Keep the grain and fertilizer delivery tubes as straight as possible. Align downforce rods as vertical as possible.
6. To convert a broadcast rate into a row-crop rate for use with the seed rate charts, multiply kg/ha (lb/acre) with the appropriate conversion factor in the following table. To determine the grain shifter setting, use the result with the row-spacing rate charts.

Conversion Chart					
Feed Cup Spacing	Row Crop Spacing				
15 cm (6 in)	31 cm (12 in)	46 cm (18 in)	61 cm (24 in)	76 cm (30 in)	91 cm (36 in)
19 cm (7.5 in)	38 cm (15 in)	57 cm (22.5 in)	76 cm (30 in)	95 cm	114 cm (45 in)

Conversion Chart					
Feed Cup Spacing	Row Crop Spacing				
				(37.5 in)	
25 cm (10 in)	51 cm (20 in)	76 cm (30 in)	102 cm (40 in)	Not applicable	Not applicable
Conversion Factor					
	2	3	4	5	6

Example: To plant soybeans at a rate of 56 kg/ha (50 lb/acre) on 76 cm (30 in) rows with 15 cm (6 in) feed cup spacing, multiply 56 (50) x conversion factor 5 = 280 kg/ha (250 lb/acre).

NOTE: The calculated index setting is an initial value. To verify the setting, perform rate checks in the field (see Check Quantities Drilled).

Find the closest grain shifter index for 280 kg/ha (250 lb/acre) in the 15 cm (6 in) row-spacing rate chart. In this example, the correct index setting on the grain shifter is 33.

For a row spacing not shown in the conversion chart, use the formula to determine conversion factor.

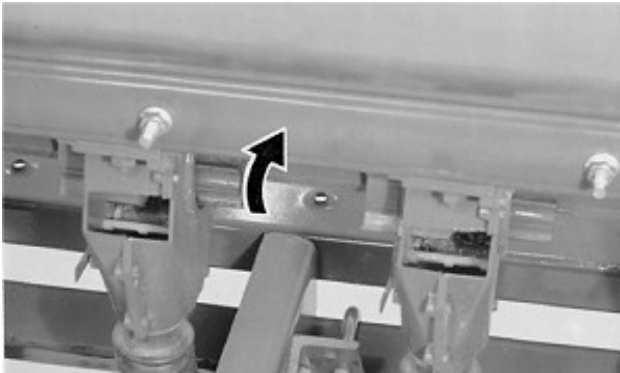
Row Crop Spacing ÷ Feed Cup Spacing = Conversion Factor

Example: To plant 106 cm (42 in) rows with a machine that has 15 cm (6 in) spaced feed cups, divide 106 cm (42 in) by 15 cm (6 in) to obtain the conversion factor of 7.

AG,OUO6074,971-19-01FEB19

Operating the Fluted-Feed Meter

Inspect Grain Feeds



N81188E1—UN—05OCT88

IMPORTANT: Avoid deterioration of the rubber delivery hoses. Do not allow the lubricant to contact the hoses.

1. Jack up the implement until drive wheel loses contact with ground.
2. Turn the drive wheel (in the direction of travel) by hand. If the drives are difficult to turn, apply a spray lubricant to moving parts. Check rolling torque of the feed shaft (see Check Feed Shaft Rolling Torque in the Servicing section).
3. Turn the drives before the seed is added the first time each day. If treated seed is used, turn the drives whenever implement has been idle for more than an hour.

MH69740,0000575-19-30JAN19

NOTE: The seed rate charts are only approximate kilograms per hectare (pounds per acre). Set the shifter lever higher or lower as desired (see Use Density Meter and Seed Charts).

1. Select the target population and corresponding seed index setting from seed rate charts.
2. Move the shifter lever (A) so indicator lip (C) is five notches below the determined seed index setting (B).
3. Slowly move the shifter lever one notch above the determined seed index setting.
4. Place the shifter lever in the determined seed index setting.

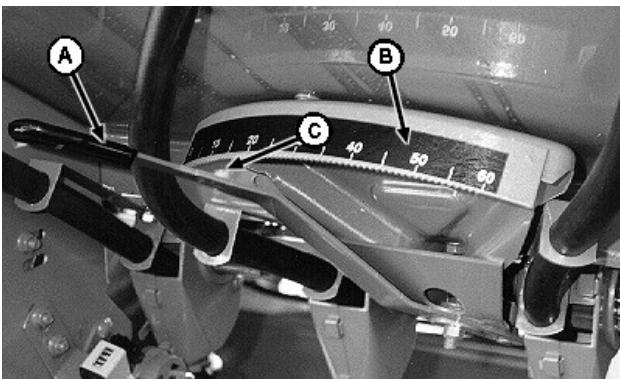
AG,OUO6074,927-19-16JAN19

Use Seed Mixtures with Fluted-Feed Drill

NOTE: If seed is not shown on the charts, select a seed of comparable weight and size and determine shifter setting.

1. To mix seed, select a shifter setting from the proper row spacing chart that gives the desired quantity for each kind of seed.
2. Add settings together and set the shifter in the notch that represents the total of all the settings. See the example.
3. Set the shifter higher or lower after checking the quantities drilled. (See Rate Check—Method One and Rate Check—Method Two in the Operating the Grain Drill section.)

Set Grain Shifter



N49801—UN—14APR98

A—Shifter Lever
B—Seed Index Setting
C—Indicator Lip

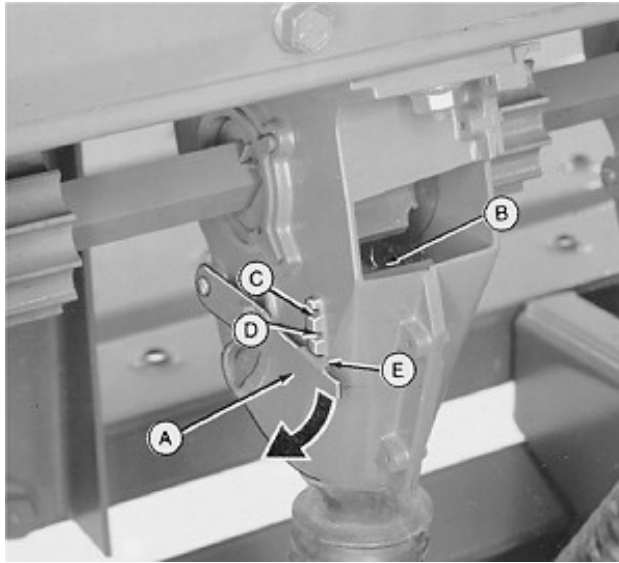
IMPORTANT: Prevent moving parts from seizing. Proper lubrication before and after planting season is essential for smooth and accurate response from the rate adjuster (see Lubrication and Maintenance).

Seed	Quantity Per Hectare (acre)	Notch
Barley	36 (33)	12
Vetch	16.5 (15)	04
Millet	60 (55)	16
Approximate Notch Set		32

Example: 19 cm (7.5 in) Row Spacing

OUO6074,0000798-19-27FEB20

Clean and Set Feed Cups



N8118711—UN—05OCT88

- A—Feed Gate Latch
B—Feed Gate
C—Position
D—Position
E—Position

1. Open the feed gate by rotating feed gate latch (A) downward off retaining teeth. Remove all seed or debris from the feed cups.

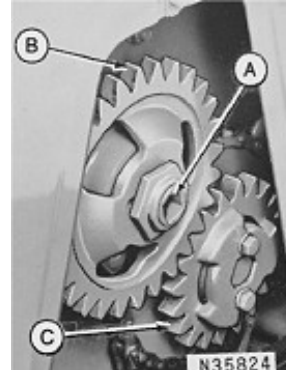
NOTE: Avoid poor dispersal of seed. Failure to set all the feed cups identically results in uneven drilling, wrong quantities being drilled, and crushing of seed.

2. Refer to the latch position table to set feed gate latch (A) in correct position for crop being planted.

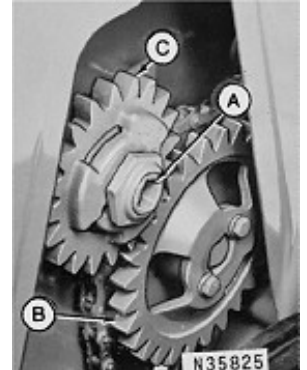
Latch Position	
Crop	Position
Wheat, Oats, Barley, Rye, Flax, and Rice	Position (C)
Small Peas, Common Beans, Corn, and Soybeans (above 5500 seeds per kg [above 2500 seeds per pound])	Position (D)
Large Peas, Lima Beans, Kidney Beans, and Soybeans (below 5500 seeds per kg [below 2500 seeds per pound])	Position (E)

AG,OUO6074,929-19-19FEB19

Set Feed Shaft Speed



N35824—UN—04OCT88
Standard Speed



N35825—UN—04OCT88
Double Speed

- A—Feed Shaft
B—28-Tooth Gear
C—20-Tooth Gear

1. Seeding rates shown in seed charts can be doubled by reversing the 20-tooth (C) and 28-tooth (B) gears in the end of the seed box.
2. Gears are factory set in the standard speed position.
3. Use standard-speed drive whenever possible for maximum efficiency and to minimize wear. Use double-speed drive for drilling larger quantities.
4. Tighten the feed shaft nut (A) to specification.

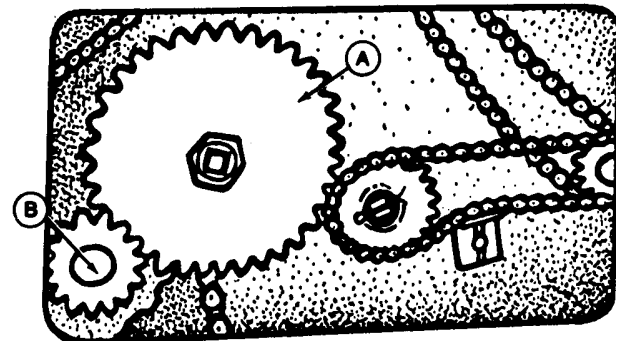
Specification

Feed Shaft Nut—Torque (dry). 140—170 N·m
(100—125 lb·ft)

AG,OUO6074,930-19-03MAR20

Using Half-Speed Drive Attachment

IMPORTANT: The 35-tooth gear **MUST BE** installed on the feed shaft as shown.



N89374E—UN—19SEP89

- A—35-Tooth
B—13-Tooth

A 35-tooth gear and 13-tooth gear is available to replace 28 and 20-tooth gears in the end panel. The 35-tooth (A)

and 13-tooth (B) gears will produce feed rates one-half the values on the fluted feed charts in this section.

AG,OUO6074,931-19-09MAY00

in size. With a given kilogram (pound) per hectare (acre) rate, the number of seeds planted per hectare (acre) varies according to size of seed.

AG,OUO6074,932-19-03MAR20

Understand Rate Charts

Use the rates shown on the rate charts as a reference only. Seed quality and size affect rates. All rate charts are based on typical drive wheel slippage. Crop residue, unit downforce, tire pressure, and soil conditions affect drive wheel slippage. (See Rate Check—Method One and Rate Check—Method Two in the Operating the Grain Drill section.)

Charts are based on machines with standard-speed drive. Double-speed drive machine sows at double the rates shown. Half-speed drive machines sow at one-half the rates shown.

Charts are based on machines with 190 x 50 cm (7.50 x 20 in) double-rib tires.

If the machine is equipped with 190 x 50 cm (7.50 x 20 in) rib-implement tires, multiply chart rate by 1.03.

Feed stops are used to change the row spacing. (See Grain Feed Stop—Fluted Feeds in the Attachments section.)

Some seeds, such as soybeans and peas, vary widely

Using Kilograms of Seed Per Hectare Chart

NOTE: If a specific population of seed is desired, use the Kilograms of Seed Per Hectare Chart and Rate Chart to determine the approximate seed shifter setting. Fluted meters are VOLUME meters not population meters. The number of seeds per hectare will vary according to the size of seed.

1. Determine from seed bag how many seeds equal one kilogram. Locate value on left-hand column of chart.
2. Locate under “desired population” the number of seeds desired per hectare in thousands.
3. Where the value in side column and the value in upper column meet is number of kilograms of seed to apply for each hectare.

EXAMPLE: If there are 4510 seeds per kilogram, and desired population is 469,000 seeds per hectare apply 104 kilograms of seed per hectare.

	DESIRED POPULATION (seeds per hectare in thousands)																
	395	408	420	432	445	457	469	482	494	506	519	531	543	556	568	605	618
Seeds Per Kg	Kilograms Of Seed Per Hectare																
3960	100	103	106	109	112	115	118	122	125	128	131	134	137	140	143	153	156
4070	97	100	103	106	109	112	115	118	121	124	128	130	133	137	140	149	152
4180	94	98	100	103	106	109	112	115	118	121	124	127	130	133	136	145	148
4290	92	95	98	101	104	107	109	112	115	118	121	124	127	130	132	141	144
4400	90	93	95	98	101	104	107	110	112	115	118	121	123	126	129	138	140
4510	88	90	93	96	99	101	104	107	110	112	115	118	120	123	126	134	137
4620	85	88	91	94	96	99	102	104	107	110	112	115	118	120	123	131	134
4730	84	86	89	91	94	97	99	102	104	107	110	112	115	118	120	128	131
4840	82	84	87	89	92	94	97	100	102	105	107	110	112	115	117	125	128
4950	80	82	85	87	90	92	95	97	100	102	105	107	110	112	115	122	125
5060	78	81	83	85	88	90	93	95	98	100	103	105	107	110	112	120	122
5170	76	79	81	84	86	88	91	93	96	98	100	103	105	108	110	117	120
5280	75	77	80	82	84	87	89	91	94	96	98	101	103	105	108	115	117
5390	73	76	78	80	83	85	87	89	92	94	96	99	101	103	105	112	115
5500	72	74	76	79	81	83	85	88	90	92	94	97	99	101	103	110	112
5610	70	73	75	77	79	81	84	86	88	90	93	95	97	99	101	108	110
5720	69	71	73	76	78	80	82	84	86	88	91	93	95	97	99	106	108
5830	68	70	72	74	76	78	80	83	85	87	89	91	93	95	97	104	106
5940	66	69	71	73	75	77	79	81	83	85	87	89	91	94	96	102	104
6050	65	67	69	71	74	76	78	80	82	84	86	88	90	92	94	100	102
6160	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	98	100
6270	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	96	99
6380	62	64	66	68	70	72	74	76	77	79	81	83	85	87	89	95	97
6490	61	63	65	67	69	70	72	74	76	78	80	82	84	86	88	93	95

Operating the Fluted-Feed Meter

	DESIRED POPULATION (seeds per hectare in thousands)																
	395	408	420	432	445	457	469	482	494	506	519	531	543	556	568	605	618
Seeds Per Kg	Kilograms Of Seed Per Hectare																
6600	60	62	64	65	67	69	71	73	75	77	79	80	82	84	86	92	94
6820	58	60	62	63	65	67	69	71	72	74	76	78	80	82	83	89	91
7040	56	58	60	61	63	65	67	68	70	72	74	75	77	79	81	86	88
7260	54	56	58	60	61	63	65	66	68	70	71	73	75	77	78	83	85
7480	53	55	56	58	59	61	63	64	66	68	69	71	73	74	76	81	83
7700	51	53	55	56	58	59	61	63	64	66	67	69	71	72	74	79	80
7920	50	52	53	55	56	58	59	61	62	64	66	67	69	70	72	76	78
8140	49	50	52	53	55	56	58	59	61	62	64	65	67	68	70	74	76
8360	47	49	50	52	53	55	56	58	59	61	62	64	65	67	68	72	74

OUO6074,0000478-19-01NOV01

Using Pounds of Seed Per Acre Chart

NOTE: If a specific population of seed is desired, use the Pounds of Seed Per Acre Chart and Rate Chart to determine the approximate seed shifter setting. Fluted meters are VOLUME meters not population meters. The number of seeds per acre will vary according to the size of seed.

1. Determine from seed bag how many seeds equal one pound. Locate value on left-hand column of chart.

2. Locate under "desired population" the number of seeds desired per acre in thousands.

3. Where the value in side column and the value in upper column meet is number of pounds of seed to apply for each acre.

EXAMPLE: If there are 2050 seeds per pound, and desired population is 190,000 seeds per acre apply 93 pounds of seed per acre.

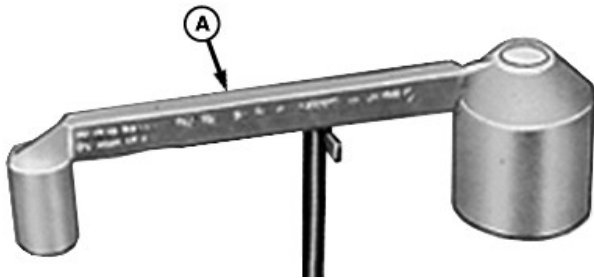
	DESIRED POPULATION (seeds per acre in thousands)																		
	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250
SEEDS PER LB	POUNDS OF SEED PER ACRE																		
1800	89	92	95	97	100	103	106	108	111	114	117	120	122	125	128	131	133	136	139
1850	86	89	92	95	97	100	103	105	108	111	114	116	120	122	124	127	130	132	135
1900	84	87	89	92	95	97	100	103	105	108	111	113	116	118	121	124	126	129	132
1950	82	85	87	90	92	95	97	100	103	105	108	110	113	115	118	121	123	126	128
2000	80	83	85	88	90	93	95	98	100	103	105	108	110	113	115	118	120	123	125
2050	78	80	83	85	88	90	93	95	98	100	103	105	107	110	112	115	117	120	122
2100	76	79	81	83	86	88	90	93	95	98	100	102	105	104	106	112	114	117	119
2150	74	77	79	81	84	86	89	91	93	95	98	100	102	105	107	109	112	114	116
2200	73	75	77	80	82	84	86	89	91	93	95	98	100	102	105	107	109	112	114
2250	71	73	76	78	80	82	84	87	89	91	93	95	98	100	102	105	107	109	111
2300	70	72	74	76	78	80	83	85	87	89	91	93	96	98	101	102	104	107	109
2350	68	70	72	74	77	79	81	83	85	87	89	91	94	96	98	100	102	104	106
2400	67	69	71	73	75	77	79	81	83	85	88	90	92	94	96	98	100	102	104
2450	65	67	69	71	73	76	78	80	82	84	86	88	90	92	94	96	98	100	102
2500	64	66	68	70	72	71	76	78	80	82	84	86	88	90	92	94	96	98	100
2550	62	65	67	69	71	73	75	76	78	80	82	84	86	88	90	92	94	96	98
2600	62	63	65	67	69	71	73	75	77	79	81	83	85	87	88	90	92	94	96
2650	60	62	64	66	68	70	72	74	75	77	79	81	83	85	87	89	91	92	94
2700	59	61	63	65	67	69	70	72	74	76	78	80	81	83	85	87	89	91	93
2750	58	60	62	64	65	67	69	71	73	75	76	78	80	82	84	85	87	89	91
2800	57	59	61	63	64	66	68	70	71	73	75	77	79	80	82	84	86	88	89

	DESIRED POPULATION (seeds per acre in thousands)																		
	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250
SEEDS PER LB	POUNDS OF SEED PER ACRE																		
2850	56	58	60	61	63	65	67	68	70	72	74	75	77	79	81	82	84	86	88
2900	55	57	59	60	62	64	66	67	69	71	72	74	76	78	79	81	83	84	86
2950	54	56	58	59	61	63	64	66	68	69	71	73	75	76	78	80	81	83	85
3000	53	55	57	58	60	62	63	65	67	68	70	72	73	75	77	78	80	82	83
3100	52	53	55	56	58	60	61	63	65	66	67	69	71	73	74	76	77	79	80
3200	50	51	53	55	56	58	59	61	63	64	66	67	69	70	72	73	75	77	78
3300	48	50	52	53	54	56	58	59	62	62	65	65	68	68	71	72	74	75	77
3400	47	49	50	51	52	54	56	57	59	60	62	63	65	66	68	69	71	72	74
3500	46	47	49	50	51	53	54	56	57	59	60	61	63	64	66	67	69	70	71
3600	44	46	47	49	50	51	53	54	56	57	58	60	61	63	64	65	67	68	69
3700	43	45	46	47	49	50	51	53	54	55	57	58	59	61	62	64	65	66	68
3800	42	43	45	46	47	49	50	51	53	54	55	57	58	59	61	62	63	64	66

OUC6074,000015D-19-05DEC00

Use Density Meter and Seed Charts

NOTE: To improve the rate accuracy, use the density meter in conjunction with the rate charts.



N142196—UN—10JAN19

A—Density Meter

1. Rates on the seed charts are based on a standard density of seed being used. Use the density meter (A) to find actual seed density so seeding rate can be more accurately chosen from rate charts.
2. Fill the meter bucket with product. Tap the bucket lightly and level product across top. Balance the meter bucket and take reading.
3. If the actual density differs from standard density found on the standard density chart, use the following formula to calculate a conversion factor that is applied to desired seeding rate.

Standard Density (from the standard density chart) ÷ Actual Density (from the density meter) = Conversion Factor

4. Multiply the desired seeding rate by conversion factor, find new value on the rate chart, and adjust seed index to match this new rate.

Standard Density Chart			
Seed	kg/bu (lb/bu)	kg/m ³	(lb/ft ³)
Wheat	27 (60)	774	(48.2)
Barley	22 (48)	619	(38.6)
Oats	15 (32)	413	(25.7)
Rye	25 (56)	722	(45.0)
Peas	27 (60)	774	(48.2)
Soybeans and Navy Beans	27 (60)	774	(48.2)
Buckwheat	24 (52)	671	(41.6)
Sorghum	23 (50)	645	(40.0)
Crested Wheat Grass	10 (21)	271	(16.8)
Alfalfa	27 (60)	774	(48.2)
Millet	23 (50)	645	(40.0)
Flax	25 (56)	722	(44.8)
Sudangrass	23 (50)	645	(40.0)

Example: Using 15 cm (6 in) Rate Chart:

- Seed—Wheat
- Desired seeding rate—90 kg/hectare (81 lb/acre)
- Standard density for wheat from chart—774 kg/m³ (48.2 lb/ft³)
- Actual density from density meter—721 kg/m³ (45 lb/ft³)

Calculate conversion factor using formula:

$$774 \text{ kg/m}^3 \div 721 \text{ kg/m}^3 = 1.07$$

$$(48.2 \text{ lb/ft}^3) \div (45 \text{ lb/ft}^3) = 1.07$$

Multiply desired seeding rate by conversion factor:

$$90 \text{ kg/hectare} \times 1.07 = 96.3 \text{ kg/hectare}$$

$(81 \text{ lb/acre}) \times 1.07 = (87 \text{ lb/acre})$

Locate closest value to 90 kg/hectare (87 lb/acre) on 15 cm (6 in) rate chart. This indicates a meter setting of 16.

For further accuracy, see Rate Check—Method One and Rate Check—Method Two in Operating the Grain Drill section.

OUO6074,0000497-19-10MAR20

Grain Seed Rate Chart—15 cm Rows

Feed Meter Index		4		8		12		16		20		24	28	32	36	40	44	48	52	56	60
Seed	Kilograms of Seed Per Hectare on 15 cm Row Spacing																				
Wheat		25	36	47	59	72	85	99	113	128	143	159	192	224	258	293	327	361	396		
Barley			25	34	43	52	61	71	80	90	100	110	130	150	171	193	215	238	261	285	
Oats or Safflower				27	34	41	48	56	63	71	77	85	101	117	132	149	166	183	200	216	233
Rye			33	43	54	65	75	86	98	110	121	127	156	179	203	226	251	276	302		
Rice-Short Kernal								59	71	81	90	98	112	128	147	168	193	220			
Rice-Long Kernal								52	61	68	75	83	98	112	128	147	167	191			
Peas						78	98	118	138	158	179	201	245	291	340	390	442	495	551	609	
Soybeans or Navy Beans				37	52	68	85	103	122	142	163	183	225	270	315	360	404	447	489	528	565
Buckwheat				34	41	50	61	71	82	93	104	117	140	164	188	216					
Sorghum or Vetch		21	31	41	53	64	76	89	101	114	128	141	170								
Crested Wheat Grass				12	15	18	21	25	28	31	35	38	46								
Alfalfa or Rape	11	19	27	36	45	54	63	73													
Millet	12	21	30	38	47	56	66	77													
Flax or Sudan Grass		17	26	35	44	53	62	71	80	90											

OUC6074.0000799-19-05DEC18

Grain Seed Rate Chart—6 inch Rows

Feed Meter Index		4		8		12		16		20		24	28	32	36	40	44	48	52	56	60
Seed	Pounds of Seed Per Acre on 6 inch Row Spacing																				
Wheat		22	32	42	53	64	76	88	101	114	128	142	171	200	230	261	292	322	353		
Barley			22	30	38	46	54	63	71	80	89	98	116	134	153	172	192	212	233	254	
Oats or Safflower				24	30	37	43	50	56	63	69	76	90	104	118	133	148	163	178	193	208
Rye			29	38	48	58	67	77	87	98	108	118	139	160	181	202	224	246	269		
Rice-Short Kernal								53	63	72	80	87	100	114	131	150	172	196			
Rice-Long Kernal								46	54	61	67	74	87	100	114	131	149	170			
Peas						70	87	105	123	141	160	179	219	260	303	348	394	442	492	543	
Soybeans or Navy Beans				33	46	61	76	92	109	127	145	163	201	241	281	321	360	399	436	471	504
Buckwheat				30	37	45	54	63	73	83	93	104	125	146	168	193					
Sorghum or Vetch		19	28	37	47	57	68	79	90	102	114	126	152								
Crested Wheat Grass				11	13	16	19	22	25	28	31	34	41								
Alfalfa or Rape	10	17	24	32	40	48	56	65													
Millet	11	19	27	34	42	50	59	69													

Operating the Fluted-Feed Meter

Feed Meter Index		4		8		12		16		20		24	28	32	36	40	44	48	52	56	60
Seed	Pounds of Seed Per Acre on 6 inch Row Spacing																				
Flax or Sudan Grass		15	23	31	39	47	55	63	71	80											

OUO6074,000079A-19-05DEC18

Grain Seed Rate Chart—19 cm Rows

Feed Meter Index		4		8		12		16		20		24	28	32	36	40	44	48	52	56	60
Seed	Kilograms of Seed Per Hectare on 19 cm Row Spacing																				
Wheat		20	29	38	47	58	68	80	91	103	115	128	154	180	207	235	263	290	318		
Barley			19	27	34	41	48	57	64	72	80	89	104	121	138	156	174	192	211	230	
Oats or Safflower				21	27	33	38	45	50	56	63	68	82	94	108	120	133	147	161	175	188
Rye			26	34	43	52	61	69	78	87	96	105	124	143	163	182	201	221	241		
Rice-Short Kernel								47	56	65	72	78	90	102	118	135	155	176			
Rice-Long Kernel								41	48	55	61	66	78	90	102	118	133	152			
Peas						63	78	94	110	127	143	160	196	233	271	312	353	397	442	486	
Soybeans or Navy Beans				25	41	55	68	83	98	113	130	147	182	215	252	288	323	358	391	423	452
Buckwheat				27	34	40	48	57	66	74	83	93	112	131	150	173					
Sorghum or Vetch		17	25	34	43	52	61	71	81	92	102	113	137								
Crested Wheat Grass				10	11	15	17	20	22	25	28	30	37								
Alfalfa or Rape	9	16	21	29	36	43	50	58													
Millet	10	17	24	30	38	45	53	62													
Flax or Sudan Grass		13	20	28	35	43	49	56	64	72											

OUO6074,000079B-19-19FEB19

Grain Seed Rate Chart—7.5 inch Rows

Feed Meter Index		4		8		12		16		20		24	28	32	36	40	44	48	52	56	60
Seed	Pounds of Seed Per Acre on 7.5 inch Row Spacing																				
Wheat		18	26	34	42	52	61	71	81	92	103	114	137	161	185	210	235	259	284		
Barley			17	24	30	37	43	51	57	64	71	79	93	108	123	139	155	171	188	205	
Oats or Safflower				19	24	29	34	40	45	50	56	61	73	84	96	107	119	131	144	156	168
Rye			23	30	38	46	54	62	70	78	86	94	111	128	145	162	179	197	215		
Rice-Short Kernel								42	50	58	64	70	80	91	105	120	138	157			
Rice-Long Kernel								37	43	49	54	59	70	80	91	105	119	136			
Peas						56	70	84	98	113	128	143	175	208	242	278	315	354	394	434	
Soybeans or Navy Beans				22	37	49	61	74	87	101	116	131	162	192	225	257	288	319	349	377	403
Buckwheat				24	30	36	43	51	59	66	74	83	100	117	134	154					
Sorghum or Vetch		15	22	30	38	46	54	63	72	82	91	101	122								
Crested Wheat Grass				9	10	13	15	18	20	22	25	27	33								
Alfalfa or Rape	8	14	19	26	32	38	45	52													
Millet	9	15	21	27	34	40	47	55													
Flax or Sudan Grass		12	18	25	31	38	44	50	57	64											

Grain Seed Rate Chart—25 cm Rows

Feed Meter Index		4		8		12		16		20		24	28	32	36	40	44	48	52	56	60
Seed	Kilograms of Seed Per Hectare on 25 cm Row Spacing																				
Wheat		15	21	28	35	43	50	59	67	76	85	92	114	135	155	175	196	218	238		
Barley			15	20	26	31	37	43	48	54	59	65	77	90	103	117	129	142	157	172	
Oats or Safflower				16	22	25	29	34	38	43	47	52	61	70	80	90	100	110	120	130	140
Rye			19	26	33	39	45	52	58	65	72	78	93	108	121	136	150	166	180	196	
Rice-Short Kernel								38	43	48	53	57	67	77	88	101	114	130			
Rice-Long Kernel								31	36	40	48	49	58	67	77	87	101	114			
Peas						47	58	71	83	95	108	120	147	175	204	233	265	297	331	367	
Soybeans or Navy Beans				22	31	41	52	62	73	85	98	110	136	161	188	215	242	268	294	317	340
Buckwheat				20	25	30	36	43	49	56	63	71	85	97	113	130					
Sorghum or Vetch		13	19	25	31	38	45	53	61	68	76	85	102								
Crested Wheat Grass				7	9	11	12	15	17	19	21	24	28								
Alfalfa or Rape	7	11	15	21	27	33	38	44													
Millet	8	12	18	22	28	34	39	46													
Flax or Sudan Grass		10	16	20	26	31	37	43	48	54											

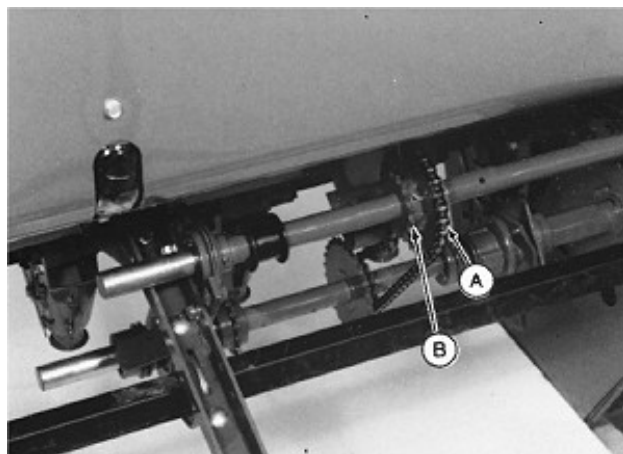
Grain Seed Rate Chart—10 inch Rows

Feed Meter Index		4		8		12		16		20		24	28	32	36	40	44	48	52	56	60
Seed	Pounds of Seed Per Acre on 10 inch Row Spacing																				
Wheat		13	19	25	31	38	45	53	60	68	76	85	102	120	138	156	175	194	212		
Barley			13	18	23	28	33	38	43	48	53	58	69	80	92	104	115	127	140	153	
Oats or Safflower				14	18	22	26	30	34	38	42	46	54	62	71	80	89	98	107	116	125
Rye			17	23	29	35	40	46	52	58	64	70	83	96	108	121	134	148	161	175	
Rice-Short Kernel								34	38	43	47	51	60	69	79	90	102	116			
Rice-Long Kernel								28	32	36	40	44	52	60	69	79	90	102			
Peas						42	52	63	74	85	96	107	131	156	182	208	236	265	295	327	
Soybeans or Navy Beans				20	28	37	46	55	65	76	87	98	121	144	168	192	216	239	262	283	304
Buckwheat				18	22	27	32	38	44	50	56	63	76	88	101	116					
Sorghum or Vetch		12	17	22	28	34	40	47	54	61	68	76	91								
Crested Wheat Grass				6	8	10	11	13	15	17	19	21	25								
Alfalfa or Rape	6	10	14	19	24	29	34	39													
Millet	7	11	16	20	25	30	35	41													
Flax or Sudan Grass		9	14	18	23	28	33	38	43	48											

Operating the Fertilizer Meter

Set Feed Shaft Speed

NOTE: Verify that the drives on both sides of machine are set the same.



N42124VT—UN—31AUG92

Drive 1—Fluted-Feed Shown

A—27-Tooth
B—15-Tooth

Standard-Speed (Drive 1 on the fertilizer charts) and Double-Speed (Drive 2 on the fertilizer charts) are determined by the 15 (B) and 27-tooth (A) sprocket assemblies. Place chain on the large-upper and small-lower sprockets for drive 1. Place chain on the small-upper and large-lower sprockets for drive 2.

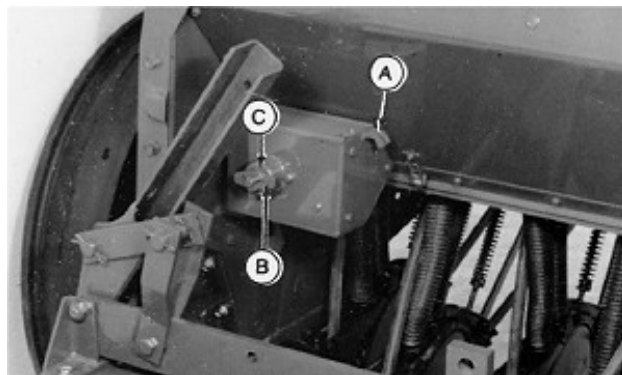
Determine the feed shaft speed using drive sprocket combinations and the gear case. Two different speeds are available with the sprockets. 21 speeds are available with gear cases (see Set Feed Shaft Gear Case).

Use the standard-speed drive whenever possible for maximum efficiency and to minimize wear. To drill larger quantities use the double-speed drive.

AG,OUO6074,955-19-16JAN19

Set Feed Shaft Gear Case

NOTE: Disengage the gears when not distributing fertilizer.



N89159E—UN—07SEP89

A—Speed Selector
B—Lock
C—Knob

1. A graduated increase in speed (from slow to fast) is made with the speed selector (A).
2. Disengage the gears by turning the lock (B) vertical, then pulling out knob (C).

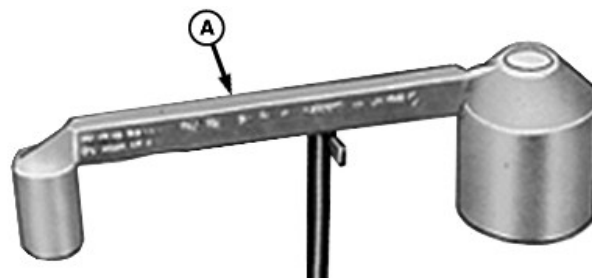
NOTE: Set speed selectors so that desired digit is aligned with the edge of cover.

3. Move speed selectors to the gear case setting desired for your kg/ha (lb/acre)(see the Fertilizer Chart).
4. Push the knob in and turn lock horizontal.

AG,OUO6074,956-19-04FEB19

Use Density Meter and Fertilizer Charts

NOTE: The rate charts are offered as a guide. Check the actual applied rate in the field. (See Rate Check—Method One and Rate Check—Method Two in Operating the Grain Drill section.)



N142196—UN—10JAN19

A—Density Meter

Rates are based on the fertilizer having a density of 1.04 kilograms per cubic decimeter (65 pounds per cubic foot).

NOTE: Density meters are available at your John Deere dealer or qualified service provider.

Determine fertilizer density using the density meter (A)

Operating the Fertilizer Meter

or by contacting your fertilizer dealer. Nitrogen fertilizers generally weigh less than high potash or phosphorus fertilizers. Fill the meter bucket with product. Tap the bucket lightly and level product across top. Balance the meter bucket and take reading.

Use the conversion chart for other densities.

Example: To apply 112 kg/ha (100 lb/acre) with a density of 0.72 kg/dm³ (45 lb/ft³), multiply 112 (100) by conversion factor of 1.45.

Equation: 112 x 1.45 = 162 kg/ha (100 x 1.45 = 145 lb/acre).

Locate the closest value to 162 kg/hectare (145 lb/acre) in fertilizer charts for chosen row spacing and set speed selectors. For this example, with 15 cm (6 in) row spacing, set the gear case selectors in A1 and the feed shaft speed in drive 2.

AG,OUO6074,957-19-03MAR20

Density kg/dm ³ (lb/ft ³)	Conversion Factor
0.72 (45)	1.45
0.80 (50)	1.30
0.88 (55)	1.20
0.96 (60)	1.10
1.04 (65)	1.00
1.12 (70)	0.93
1.20 (75)	0.87
1.28 (80)	0.81

Fertilizer Charts

Gear Case Setting	A1	B1	A2	C1	B2	A3	D1	C2	B3	A4	C3*	B5	C4	D3	E2	C5	D4	E3	D5	E4	E5
Row Spacing	Kilograms Per Hectare with Feed Shaft in Drive One																				
15 cm	49	56	62	65	71	74	78	82	84	86	99	112	114	118	122	131	138	147	157	171	196
19 cm	39	45	49	53	56	59	63	66	67	69	73	90	92	94	99	105	110	119	127	138	158
25 cm	29	34	37	39	43	45	47	49	50	52	59	67	68	71	74	78	83	89	94	103	118
	C3* setting is identical to A5, B4, D2 and E1 (not shown in chart)																				

Gear Case Setting	A1	B1	A2	C1	B2	A3	D1	C2	B3	A4	C3*	B5	C4	D3	E2	C5	D4	E3	D5	E4	E5
Row Spacing	Kilograms Per Hectare with Feed Shaft in Drive Two																				
15 cm	159	182	198	212	228	239	254	265	272	278	317	363	371	381	398	424	445	477	509	557	637
19 cm	128	146	159	170	183	192	204	213	218	223	255	291	298	306	319	341	357	383	409	447	511
25 cm	95	109	119	128	136	143	152	159	164	167	191	219	223	229	239	254	267	286	305	334	381
	C3* setting is identical to A5, B4, D2 and E1 (not shown in chart)																				

Gear Case Setting	A1	B1	A2	C1	B2	A3	D1	C2	B3	A4	C3*	B5	C4	D3	E2	C5	D4	E3	D5	E4	E5
Row Spacing	Pounds Per Acre with Feed Shaft in Drive One																				
6 inch	44	50	55	58	63	66	70	73	75	77	88	100	102	105	109	117	123	131	140	153	175
7.5 inch	35	40	44	47	50	53	56	59	60	62	65	80	82	84	88	94	98	106	113	123	141
10 inch	26	30	33	35	38	40	42	44	45	46	53	60	61	63	66	70	74	79	84	92	105
	C3* setting is identical to A5, B4, D2 and E1 (not shown in chart)																				

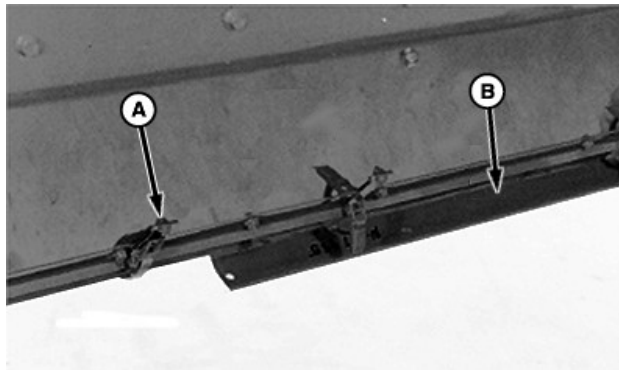
Gear Case Setting	A1	B1	A2	C1	B2	A3	D1	C2	B3	A4	C3*	B5	C4	D3	E2	C5	D4	E3	D5	E4	E5
Row Spacing	Pounds Per Acre with Feed Shaft in Drive Two																				
6 inch	142	162	177	189	203	213	227	236	243	248	283	324	331	340	355	378	397	426	454	497	568
7.5 inch	114	130	142	152	163	171	182	190	195	199	228	260	266	273	285	304	319	342	365	399	456

Gear Case Setting	A1	B1	A2	C1	B2	A3	D1	C2	B3	A4	C3*	B5	C4	D3	E2	C5	D4	E3	D5	E4	E5
Row Spacing	Pounds Per Acre with Feed Shaft in Drive Two																				
10 inch	85	97	106	114	121	128	136	142	146	149	17-0	195	199	204	21-3	227	238	255	272	298	340
C3* setting is identical to A5, B4, D2 and E1 (not shown in chart)																					

OUC6074,00007A7-19-26AUG03

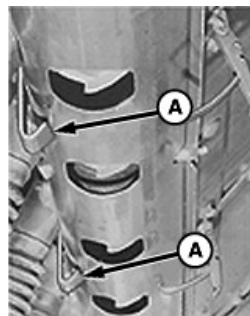
Clean the Fertilizer Box

IMPORTANT: Prevent corrosion. Empty and clean the fertilizer box each day. If the fertilizer system is not used within 24 hours, coat the metal parts with a spray lubricant. Do not allow the lubricant to contact the rubber components.



A—Spring Clips
B—Bottom Covers

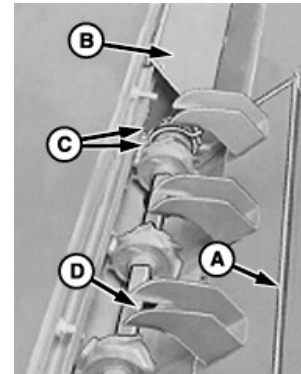
1. Release spring clips (A) and open the bottom covers (B).



A—Hooks

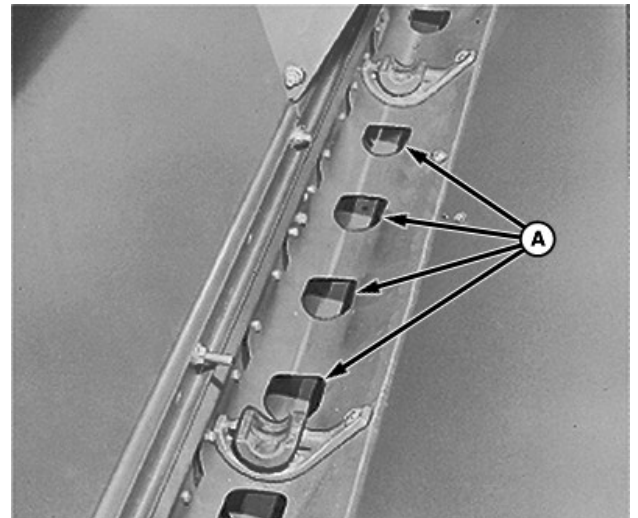
2. Rotate covers off the hooks (A) and remove.

NOTE: Edge of left-hand baffle (A) covers the edge of right-hand baffle (B).



A—Left-Hand Baffle
B—Right-Hand Baffle
C—Clamps
D—Feed Shaft

3. Remove knobs that hold down the baffles. Remove the baffles by tipping them rearward before lifting.
4. Remove the bearing clamps (C), bearing caps, and feed shaft (D).



A—Clean Out Holes

5. Remove the remaining fertilizer through cleanout holes (A).

NOTE: Avoid erratic product delivery. Verify that the baffle tabs are not bent.

6. Install the feed shafts, bearing caps, and bearing clamps.
7. Align baffle tabs with the feed wheels. Place rear of the baffle into position, and pivot baffle forward.
8. Attach the baffle knobs.

NOTE: Avoid product leakage. The outer edge of bottom covers must not contact the side panel hardware.

9. Attach the bottom covers and lock them into place with spring clips.

MH69740,0000576-19-04FEB19

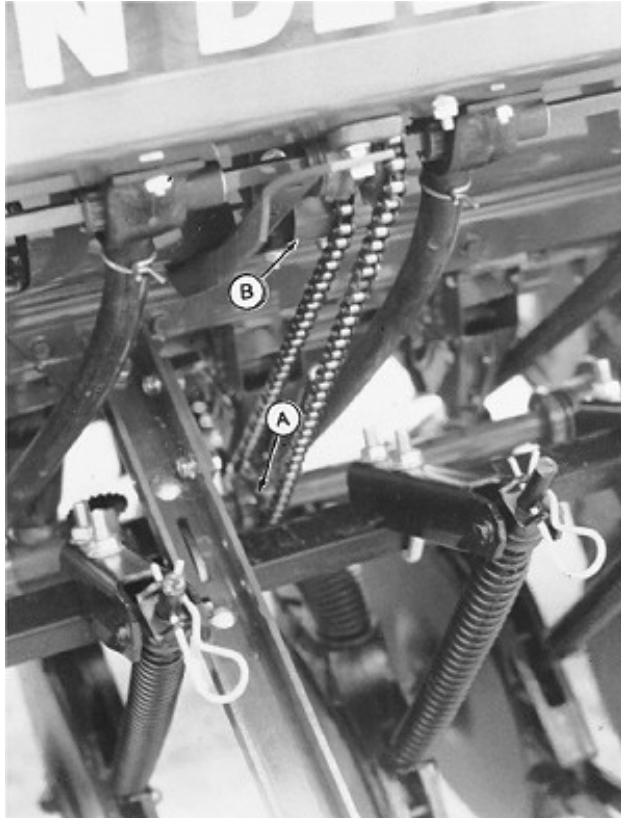
Operating the Grass Seed Meter

Checking Feeds

1. If machine has been standing for a long period of time, (before adding seed) turn feed shaft(s) with a wrench in the direction it normally turns.

IMPORTANT: Do not allow spray lube to contact rubber convoluted tubes as it causes deterioration.

2. If feed shaft turns hard, loosen moving parts with spray lube.



Fluted-Feed

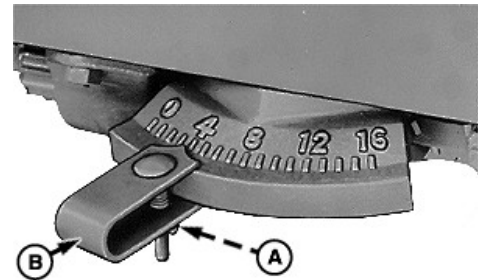
N89159O—UN—07SEP89

A—Drive Sprocket
B—Chain Tightener

3. If unable to rotate shaft freely, remove spring pin in drive sprocket (A) OR loosen chain tightener (B) and remove drive chain.
4. Rotate shaft daily during season. When using treated seed, turn whenever machine has been stationary for an hour or more.

AG,OUO6074,960-19-14OCT13

Set Feed Shifter



N142195—UN—10JAN19

A—Wing Nut
B—Shifter Lever

NOTE: If the box is full and the shifter is on zero, turn the feed shaft with a wrench while positioning the lever.

1. Loosen the wing nut (A) and move the shifter lever (B) one notch above the intended setting.
2. Move the lever to the intended setting.
3. Tighten the wing nut (A).

NOTE: The seed charts indicate the approximate rates. (See Rate Check—Method One and Rate Check—Method Two in Operating the Grain Drill section.)

AG,OUO6074,961-19-27FEB20

Use Grass Seed Mixtures

1. If mixing seeds, select the feed shifter setting from the proper row spacing chart that gives the desired quantity for each kind of seed.
2. Add the feed shifter settings together and set the shifter in the notch that represents the total of all the settings. See the chart.
3. Set the feed shifter higher or lower. (See Rate Check—Method One and Rate Check—Method Two in Operating the Grain Drill section.)

NOTE: When a particular seed is not shown on the charts, select a seed of comparable weight and size in determining the feed shifter setting.

Seed	Quantity Per Hectare (acre)	Notch
Alfalfa	6.7 (6.0)	3
Alsike Clover	4.5 (4.0)	2
Timothy	3.4 (3.0)	2
Birdsfoot Trefoil	7.8 (7.0)	3
	Approximate Notch Set	10

Example: 19 cm (7.5 in) Row Spacing

AG,OUO6074,962-19-27FEB20

Use Grass Seed Charts

NOTE: Rates shown on charts are for reference only. The size and quality of seed affects rates. All rate charts are based on typical drive wheel slippage. Crop residue, unit downforce, tire pressure, and soil conditions affect drive wheel slippage. (See Rate Check—Method One and Rate Check—Method Two in Operating the Grain Drill section.)

Charts are based on machines with 190 x 50 cm (7.50 x 20 in) double-rib tires.

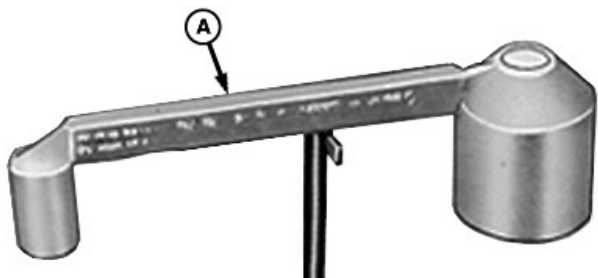
- If the machine is equipped with 190 x 50 cm (7.50 x 20 in) rib-implement tires, multiply chart rate by 1.03.
- Drill row spacing can be changed by using feed stop attachment. (See Grass Seed Feed Stop in the Attachments section.)

AG,OUO6074,963-19-27FEB20

Standard Density Chart			
Seed	kg/bu (lb/bu)	kg/m ³	(lb/ft ³)
Alfalfa: Red Alsike and Ladino Clovers	27 (60)	773	(48.2)
Serecia and Lespedeza Hulled; Crimson Clover; Birdsfoot Trefoil	10 (22)	284	(17.6)
Lespedeza Unhulled	11 (25)	323	(20.0)
Timothy; Red Top; Sand and Love Grass	20 (45)	581	(36.0)
Kentucky Blue Grass; Reed Canary Grass	6 (14)	181	(11.2)
Millet	23 (50)	645	(40.2)
Broom Corn; Hog Millet	25 (56)	722	(45.0)
Bermuda; Canary Grass	23 (50)	645	(40.0)
Sudangrass	23 (50)	645	(40.0)
Orchard Grass	6 (14)	181	(11.2)
Rye Grass; Alta Fescue	25 (56)	722	(45.0)
Crested Wheat Grass	10 (21)	271	(16.8)

Use Density Meter and Grass Seed Charts

NOTE: Approximate rates are determined by adjusting the seed index to the settings shown on the rate charts in this section.



A—Density Meter

N142196—UN—10JAN19

1. Rates on the grass seed charts are based on a standard density of grass seed. Use the density meter (A) to find the actual seed density and select a more accurate setting from the rate chart.
2. Fill the density meter cup with seed and tap the cup lightly. Level the seed across the top of the cup, balance the density meter on a sharp edge, and note the reading.
3. Use the following formula to calculate a conversion factor applied to the intended seeding rate if the actual density differs from the value shown in the Standard Density Chart.

Standard Density (from the density chart) ÷ Actual Density (from the density meter) = Conversion Factor

4. Multiply the desired seeding rate by the conversion factor, find the new value on the rate chart, and adjust the feed shifter to match this new rate.

Example: Using 15 cm (6 in) Rate Chart:

- Seed—Alfalfa
- Desired seeding rate—23.5 kg/hectare (21 lb/acre)
- Standard density for the alfalfa from chart—773 kg/m³ (48.2 lb/ft³)
- Actual density from density meter—721 kg/m³ (45 lb/ft³)

Calculate conversion factor using formula:

$$773 \text{ kg/m}^3 \div 721 \text{ kg/m}^3 = 1.07$$

$$(48.2 \text{ lb/ft}^3) \div (45 \text{ lb/ft}^3) = 1.07$$

Multiply desired seeding rate by conversion factor:

$$23.5 \text{ kg/hectare} \times 1.07 = 24.6 \text{ kg/hectare}$$

$$(21 \text{ lb/acre}) \times 1.07 = (22 \text{ lb/acre})$$

Locate closest value to 24.6 kg/hectare (22 lb/acre) on 15 cm (6 in) rate chart. This indicates a meter setting of 8.

For further accuracy, see Rate Check—Method One and Rate Check—Method Two in Operating the Grain Drill section.

BB83525,0000816-19-10MAR20

Grass Seed Rate Chart—15 cm Rows

Feed Meter Index	1	2	3	4	6	8	10	12	14	16
Seed	Kilograms of Seed Per Hectare on 15 cm Row Spacing									
Alfalfa; Red Alsike and Ladino Clovers	2.2	5.0	8.4	12.3	19.1	27	33	38	45	53
Serecia and Lespedeza Hulled, Crimson Clover; Birdsfoot Trefoil	2.2	5.6	9	13.5	22.4	31	43	54	66	78
Lespedeza Unhulled	0.6	1.1	2.2	4.5	7.8	11.2	14.6	19.1	24	29
Timothy; Red Top; Sand and Love Grass	2.2	4.5	6.7	9	14.6	20.2	26	31	38	45
Kentucky Blue Grass; Reed Canary Grass	1.1	1.7	3.4	5.0	6.7	9.5	12.3	16.8	21.3	27
Millet	1.7	4.5	7.8	12.3	21.3	30	43	56	69	84
Broom Corn; Hog Millet	1.1	4.5	7.8	12.3	21.3	30	43	56	71	85
Bermuda; Canary Grass	1.1	2.8	4.5	6.7	10.6	14.6	20.2	26	31	38
Sudan Grass			3.4	7.8	14.6	21.3	29	43	56	71
Crested Wheat; Orchard Grass				2.8	4.5	6.7	9.5	12.9	16.8	21.3
Rye Grass; Alta Fescue			0.6	1.1	3.9	6.7	8.4	10.6	12.3	15.7

OUC6074,00007A8-19-19FEB19

Grass Seed Rate Chart—6 inch Rows

Feed Meter Index	1	2	3	4	6	8	10	12	14	16
Seed	Pounds of Seed Per Acre on 6 inch Row Spacing									
Alfalfa; Red Alsike and Ladino Clovers	2	4.5	7.5	11	17	24	29	34	40	47
Serecia and Lespedeza Hulled, Crimson Clover; Birdsfoot Trefoil	2	5	8	12	20	28	38	48	59	70
Lespedeza Unhulled	0.5	1	2	4	7	10	13	17	21	26
Timothy; Red Top; Sand and Love Grass	2	4	6	8	13	18	23	28	34	40
Kentucky Blue Grass; Reed Canary Grass	1	1.5	3	4.5	6	8.5	11	15	19	24
Millet	1.5	4	7	11	19	27	38	50	62	75
Broom Corn; Hog Millet	1	4	7	11	19	27	38	50	63	76
Bermuda; Canary Grass	1	2.5	4	6	9.5	13	18	23	28	34
Sudan Grass			3	7	13	19	26	38	50	63
Crested Wheat; Orchard Grass				2.5	4	6	8.5	11.5	15	19
Rye Grass; Alta Fescue			0.5	1	3.5	6	7.5	9	11	14

OUC6074,00007A9-19-19FEB19

Grass Seed Rate Chart—19 cm Rows

Feed Meter Index	1	2	3	4	6	8	10	12	14	16
Seed	Kilograms of Seed Per Hectare on 19 cm Row Spacing									
Alfalfa; Red Alsike and Ladino Clovers	2.2	3.9	6.7	9.5	14.6	20.7	25.8	31.4	38.1	44.8
Serecia and Lespedeza Hulled, Crimson Clover; Birdsfoot Trefoil	1.7	4.5	7.3	10.6	17.4	24.6	32.5	40.9	49.9	59.4

Operating the Grass Seed Meter

Feed Meter Index	1	2	3	4	6	8	10	12	14	16
Seed	Kilograms of Seed Per Hectare on 19 cm Row Spacing									
Lespedeza Unhulled	0.6	1.1	2.2	3.4	6.2	9	11.8	14.6	17.9	21.8
Timothy; Red Top; Sand and Love Grass	1.7	3.4	5.6	7.3	11.8	15.6	20.2	25.2	30.8	37
Kentucky Blue Grass; Reed Canary Grass	0.6	1.7	2.8	4.5	6.2	8.4	9.5	12.9	16.2	20.2
Millet	1.7	3.9	6.2	9	14	20.7	26.9	34.2	41.4	49.8
Broom Corn; Hog Millet	1.1	3.4	6.2	9.5	16.8	23.5	33	43.1	54.3	65.5
Bermuda; Canary Grass	1.1	2.8	3.9	5.6	8.4	11.2	14.6	17.9	22.4	26.9
Sudan Grass			2.8	6.2	11.8	17.4	23.5	32.5	42	52.6
Crested Wheat; Orchard Grass				2.2	3.9	6.2	7.8	9	10.6	12.9
Rye Grass; Alta Fescue			0.6	1.7	3.4	5	6.7	8.4	10.1	12.3

OUO6074,00007AA-19-19FEB19

Grass Seed Rate Chart—7.5 inch Rows

Feed Meter Index	1	2	3	4	6	8	10	12	14	16
Seed	Pounds of Seed Per Acre on 7.5 inch Row Spacing									
Alfalfa; Red Alsike and Ladino Clovers	2	3.5	6	8.5	13	18.5	23	28	34	40
Serecia and Lespedeza Hulled, Crimson Clover; Birdsfoot Trefoil	1.5	4	6.5	9.5	15.5	22	29	36.5	44.5	53
Lespedeza Unhulled	0.5	1	2	3	5.5	8	10.5	13	16	19.5
Timothy; Red Top; Sand and Love Grass	1.5	3	5	6.5	10.5	14	18	22.5	27.5	33
Kentucky Blue Grass; Reed Canary Grass	0.5	1.5	2.5	4	5.5	7.5	8.5	11.5	14.5	18
Millet	1.5	3.5	5.5	8	12.5	18.5	24	30.5	37	44.5
Broom Corn; Hog Millet	1	3	5.5	8.5	15	21	29.5	38.5	48.5	58.5
Bermuda; Canary Grass	1	2.5	3.5	5	7.5	10	13	16	20	24
Sudan Grass			2.5	5.5	10.5	15.5	21	29	37.5	47
Crested Wheat; Orchard Grass				2	3.5	5.5	7	8	9.5	11.5
Rye Grass; Alta Fescue			0.5	1.5	3	4.5	6	7.5	9	11

OUO6074,00007AB-19-19FEB19

Grass Seed Rate Chart—25 cm Rows

Feed Meter Index	1	2	3	4	6	8	10	12	14	16
Seed	Kilograms of Seed Per Hectare on 25 cm Row Spacing									
Alfalfa; Red Alsike and Ladino Clovers	1.7	2.8	4.5	7.3	11.2	14.6	19.1	24	28	34
Serecia and Lespedeza Hulled, Crimson Clover; Birdsfoot Trefoil	1.1	2.8	5	7.8	12.3	17.9	25	31	39	47
Lespedeza Unhulled	0.6	1.1	1.7	2.5	4.5	6.7	9	11.2	13.5	15.7
Timothy; Red Top; Sand and Love Grass	1.1	2.2	3.9	5.6	8.4	11.2	14.6	17.9	22.4	27
Kentucky Blue Grass; Reed Canary Grass	0.6	1.1	2.2	3.4	4.5	5.6	7.3	9.5	12.3	15.7
Millet	1.1	2.8	4.5	6.7	11.2	15.7	20.2	26	31	36

Operating the Grass Seed Meter

Feed Meter Index	1	2	3	4	6	8	10	12	14	16
Seed	Kilograms of Seed Per Hectare on 25 cm Row Spacing									
Broom Corn; Hog Millet	1.1	2.2	4.5	7.3	12.3	17.9	25	33	40	49
Bermuda; Canary Grass	1.1	1.7	2.8	3.9	5.7	9	12.3	15.7	20.2	25
Sudan Grass			1.7	4.5	8.4	12.3	16.8	25	33	41
Crested Wheat; Orchard Grass				1.7	2.8	4.5	6.2	7.8	10.1	12.3
Rye Grass; Alta Fescue			0.6	1.1	2.2	3.4	4.5	6.2	7.8	10.1

OUO6074,00007AC-19-19FEB19

Grass Seed Rate Chart—10 inch Rows

Feed Meter Index	1	2	3	4	6	8	10	12	14	16
Seed	Pounds of Seed Per Acre on 10 inch Row Spacing									
Alfalfa; Red Alsike and Ladino Clovers	1.5	2.5	4	6.5	10	13	17	21	25	30
Serecia and Lespedeza Hulled, Crimson Clover; Birdsfoot Trefoil	1	2.5	4.5	7	11	16	22	28	35	42
Lespedeza Unhulled	0.5	1	1.5	2.25	4	6	8	10	12	14
Timothy; Red Top; Sand and Love Grass	1	2	3.5	5	7.5	10	13	16	20	24
Kentucky Blue Grass; Reed Canary Grass	0.5	1	2	3	4	5	6.5	8.5	11	14
Millet	1	2.5	4	6	10	14	18	23	28	32
Broom Corn; Hog Millet	1	2	4	6.5	11	16	22	29	36	44
Bermuda; Canary Grass	1	1.5	2.5	3.5	5.13	8	11	14	18	22
Sudan Grass			1.5	4	7.5	11	15	22	29	37
Crested Wheat; Orchard Grass				1.5	2.5	4	5.5	7	9	11
Rye Grass; Alta Fescue			0.5	1	2	3	4	5.5	7	9

OUO6074,00007AD-19-19FEB19

Attachments

Optional Grass Seed Attachment



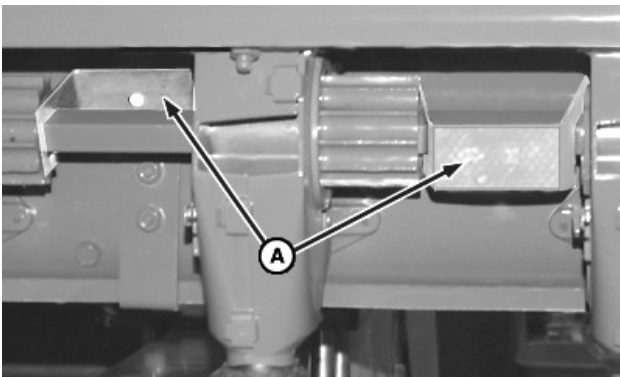
N101292—UN—11DEC12

A—Grass Seed Attachment

The optional grass seed attachment (A) is equipped with an accurate and dependable fluted force-feed and meters the smallest seed accurately (see Operating Grass Seed Meter).

AG,OUO6074,978-19-14JAN19

Drillshaft Turn Indicator



N50105A—UN—06DEC00

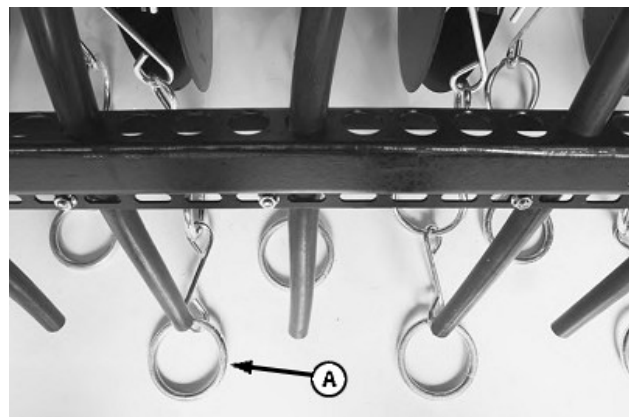
A—Drillshaft Turn Indicator

The drillshaft turn indicator (A) can be installed to help confirm rotation of drillshaft.

See your John Deere dealer or qualified service provider to order.

OUO6074,000016C-19-11FEB19

Cover Chains



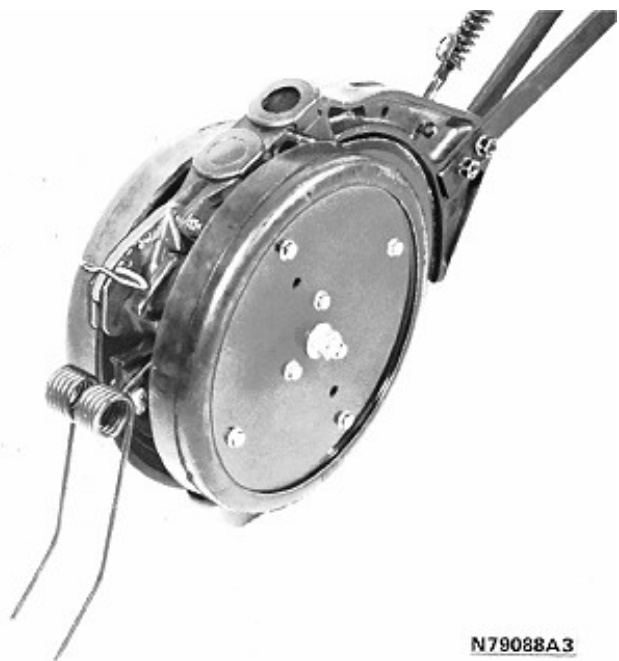
N101294—UN—11DEC12

A—Cover Chains

Cover chains (A) are used to ensure adequate seed coverage. Chains can be used with or without fertilizer tubes.

AG,OUO6074,981-19-11DEC12

Tru-Vee Opener Attachment



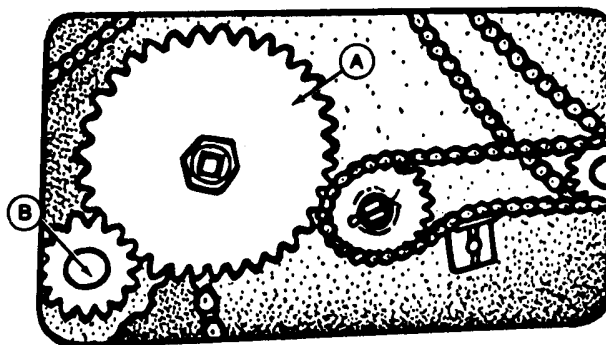
N79088A3

N79088A3—UN—28SEP88

Tru-Vee opener attachment is available for aluminum boot double-disk openers where the most precise drilling depth is desired in prepared seedbeds. Installation instructions are included in dealer pre-delivery instructions.

AG,OUO6074,982-19-13NOV18

Half-Speed Drive For Fluted-Feed



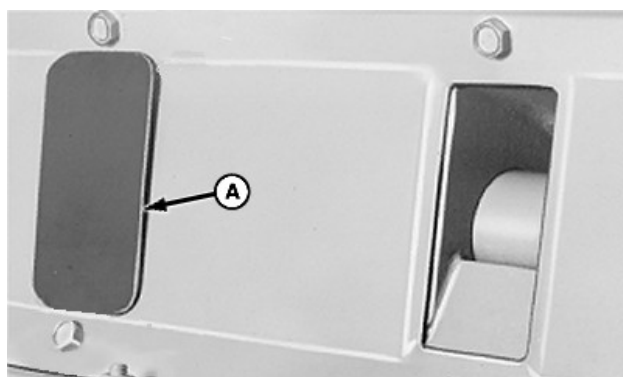
N89374E—UN—19SEP89

A—Drive Gear
B—Drive Gear

The attachment will reduce the current slow speed arrangement by one-half and will allow the machine to obtain the low seed rates required for crops such as rape, sunflowers and sorghum. It will also permit higher seed index settings for large seeds such as soybeans. Installation instructions for drive gears (A and B) included with bundle.

AG,OUO6074,985-19-09MAY00

Grain Feed Stop—Fluted Feeds



N58047—UN—06AUG01

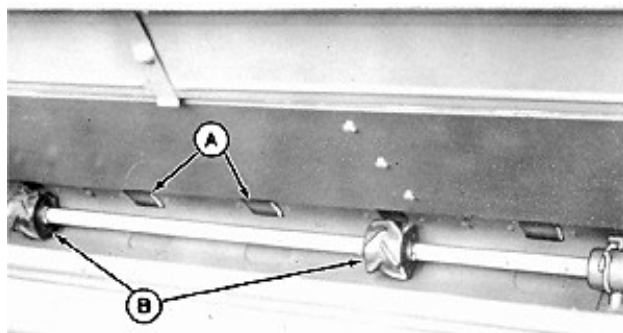
A—Feed Stop

Position feed stop (A) in place with tabs under floor of box with feed stop flat against floor.

OUO6074,00003E6-19-07AUG01

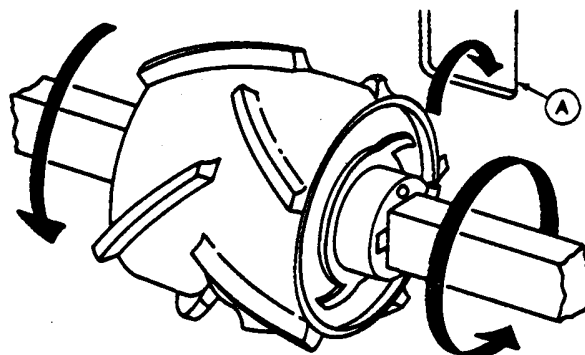
Fertilizer Feed Stop

IMPORTANT: Verify that the feed wheels are correctly repositioned on feed shaft.



N42124TS—UN—31AUG92

Remove the feed wheels (B) and install feed stops (A).



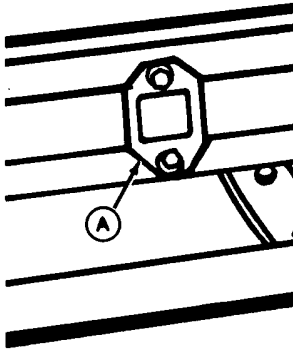
N37908—UN—05OCT88

A—Discharge Hole

Align the wheels with discharge hole (A) and install on shaft.

AG,OUO6074,988-19-29NOV18

Grass Seed Feed Stop



A—Feed Stop

Cover feeds not being used with feed stop (A).

N41919—UN—17JUL90

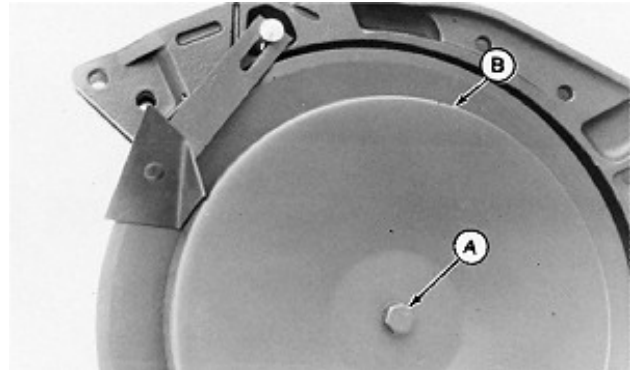
AG,OUO6074,989-19-09MAY00

(3/4 in) to 76 mm (3 in) in 9.5 mm (3/8 in) increments. Set the depth gauging press wheel lower for dry soil and higher for moist soil.

The illustrations show the outside scraper attachment installed on press wheel assembly.

AG,OUO6074,990-19-21JAN19

Depth Bands for Cast Iron Boots



N42124TT—UN—31AUG92

A—Cap Screw, Internal-Tooth Lock Washer, and Flat Washer
B—Depth Band

CAUTION: Avoid a cutting injury. The disks are sharp. Wear gloves and use locking pliers to hold disks when tightening or loosening.

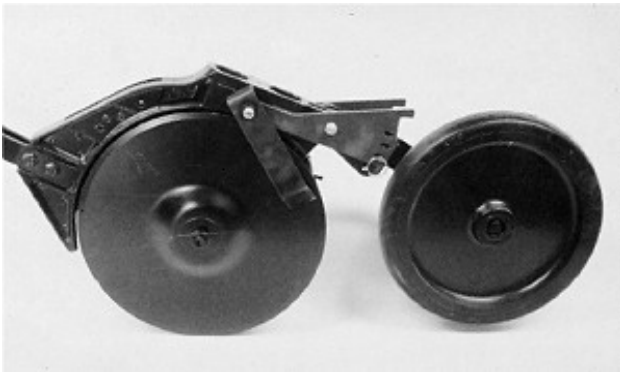
Remove the plug and plain washer from disk.

IMPORTANT: Avoid damage. Place washers between the depth band and cap screw head.

1. Position depth band (B) over the bearing. Secure with a cap screw, internal-tooth lock washer, and flat washer (A). If only one depth band is used, install it on the right-hand disk.
2. Attach scraper to double-disk boot with a carriage bolt, washer, and nut.

AG,OUO6074,992-19-21JAN19

Adjust Depth Gauging Press Wheel



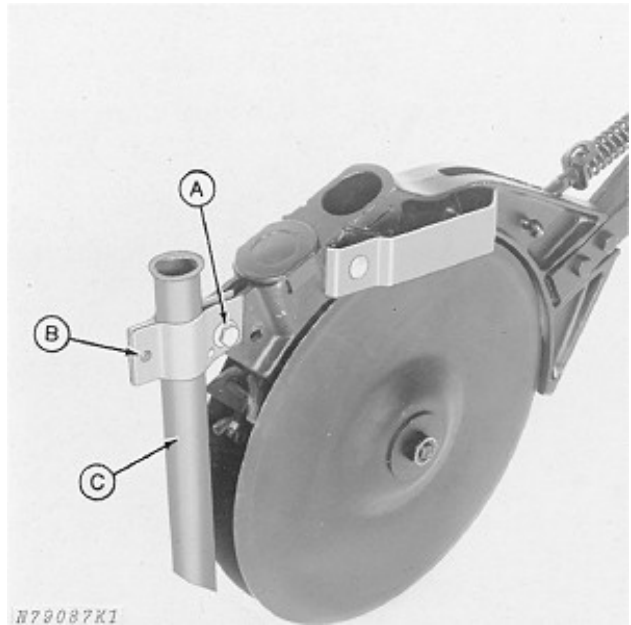
N88182G1—UN—28SEP88



N88182H1—UN—28SEP88

The wheels can be adjusted for a furrow depth of 19 mm

Fertilizer Spouts



N79087K1—UN—06OCT88

A—Hardware
B—Bracket
C—Spout

Fertilizer spouts are available for double-disk openers to direct fertilizer away from seed in the furrow. Purchase the spouts and attaching brackets from your John Deere dealer. Install on boot with provided hardware (A).

Adjust the spout as follows:

1. Loosen the hardware (A).
2. Move the spout (C) in bracket (B) and increase or decrease ground clearance.
3. Bend the bracket (B) and position spout for desired placement of fertilizer.

AG,OUO6074,993-19-14JAN19

Lubrication and Maintenance

Lubricate and Maintain the Machine Safely



N40000—UN—28SEP88

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

AG,OUO6074,1354-19-29MAR18

Perform Lubrication and Maintenance Procedures

CAUTION: Do not clean, lubricate, or adjust the machine while it is in motion.

IMPORTANT: The recommended service intervals are based on normal conditions; severe or unusual conditions require more lubrication.

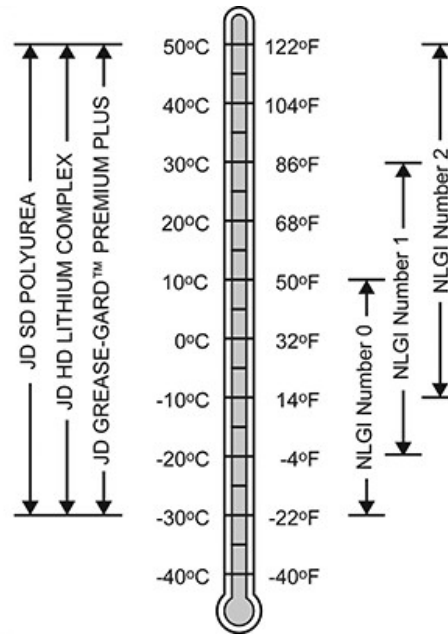
Perform each lubrication and service procedure illustrated in this section at the beginning and end of each season.

Clean the grease fittings before applying grease. Replace any lost or broken fittings immediately. If a new fitting fails to accept grease, remove it and check it for failure of the adjoining parts.

AG,OUO6074,1355-19-29MAR18

Multipurpose Extreme Pressure (EP) Grease

IMPORTANT: For automated lubrication systems different ambient air temperatures need to be considered.



RG30199—UN—08MAR18

Greases for Air Temperature Ranges

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 Grease-Gard™ Premium Plus

Other greases may be used if they meet the following:

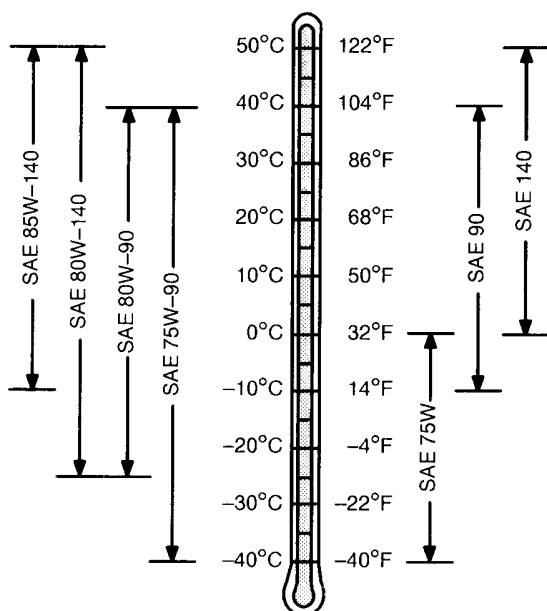
- NLGI Performance Classification GC-LB
- ISO-L-X-BDHB 2 or DIN KP 2 N-10 Lithium Complex, Non-Synthetic Base Oil (100 to 220 mm²/s @ 40°C)

IMPORTANT: Some types of thickeners, base oils, and additives used in greases are not compatible with others. Mixing greases should be avoided. Consult your grease supplier before mixing different types of grease.

DX,GREA1-19-13JAN18

Grease-Gard is a trademark of Deere & Company

Gear Oil



TS1653—UN—14MAR96
Oil Viscosities for Air Temperature Ranges

Use oil viscosity based on the expected air temperature range during the period between oil changes.

The following oils are preferred:

- John Deere GL-5 Gear Lubricant
- John Deere EXTREME-GARD™

Other oils may be used if they meet the following:

- API Service Category GL-5

DX,GEOIL-19-14APR11

Alternative and Synthetic Lubricants

Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual.

Some John Deere brand coolants and lubricants may not be available in your location.

Consult your John Deere dealer to obtain information and recommendations.

Synthetic lubricants may be used if they meet the performance requirements as shown in this manual.

The temperature limits and service intervals shown in this manual apply to John Deere branded fluids or fluids that have been tested and/or approved for use in John Deere equipment.

Re-refined base stock products may be used if the finished lubricant meets the performance requirements.

DX,ALTER-19-13JAN18

Lubrication Symbols



A54361—UN—24MAY04

Lubricate with TY6350 John Deere Multi-Purpose Spray Lubricant as required.



Lubricate with John Deere grease at an hourly interval indicated on symbol. If other greases are used, grease should contain 3—5% molybdenum disulfide.



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



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

OUC6074,0000CB6-19-04DEC19

Lubricant Storage

Your equipment can operate at top efficiency only when clean lubricants are used.

Use clean containers to handle all lubricants.

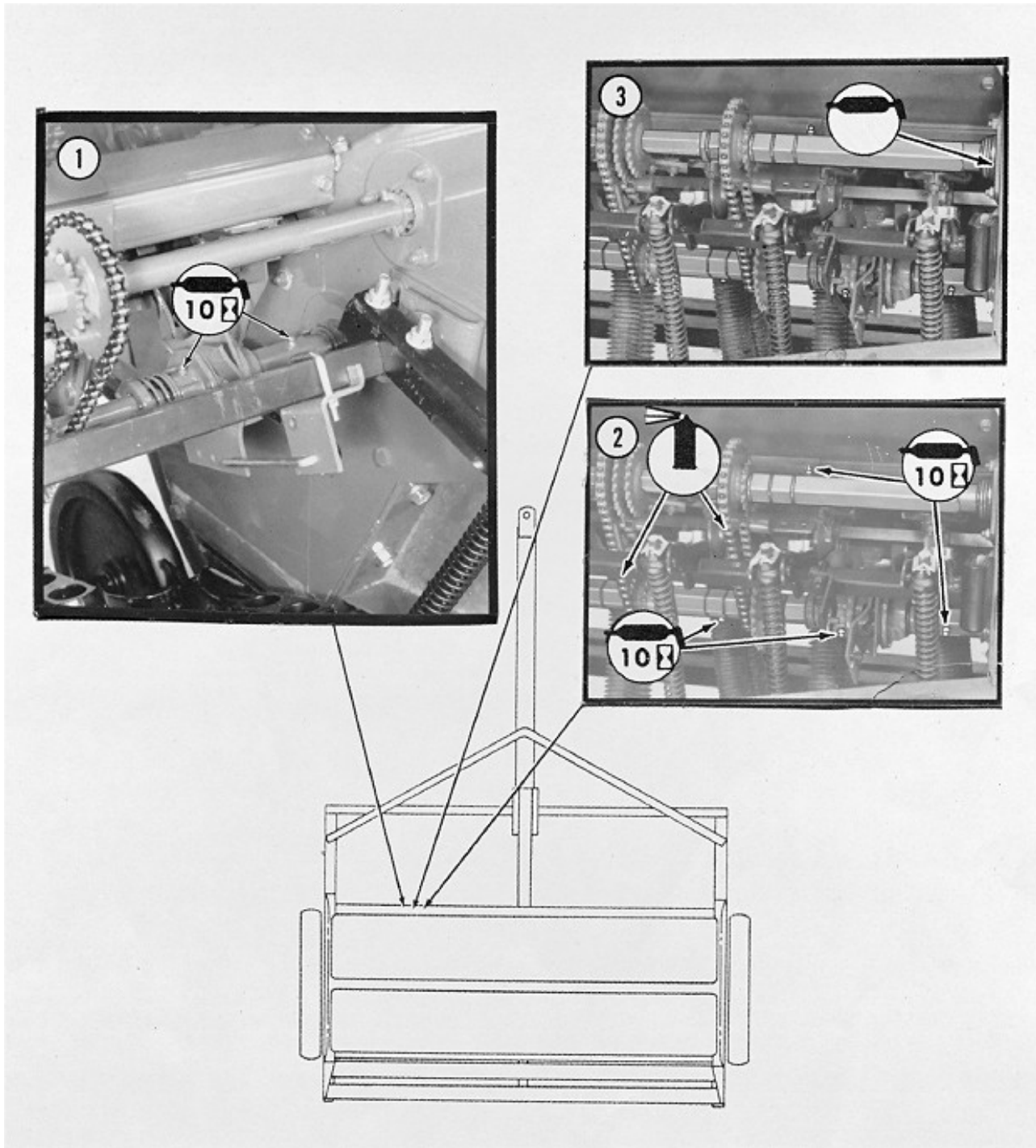
Store lubricants and containers in an area protected from dust, moisture, and other contamination. Store containers on their side to avoid water and dirt accumulation.

Make certain that all containers are properly marked to identify their contents.

Properly dispose of all old containers and any residual lubricant they may contain.

DX,LUBST-19-11APR11

Lubrication Points

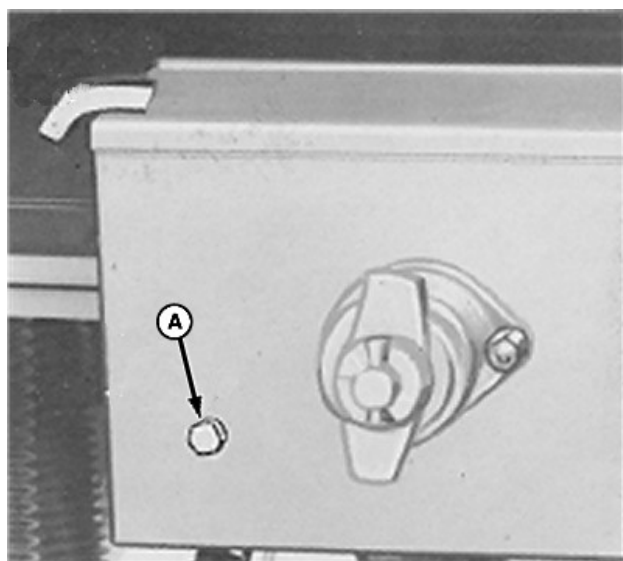


- 1—Throw-Out Clutch
2—Drive Tubes and Chains

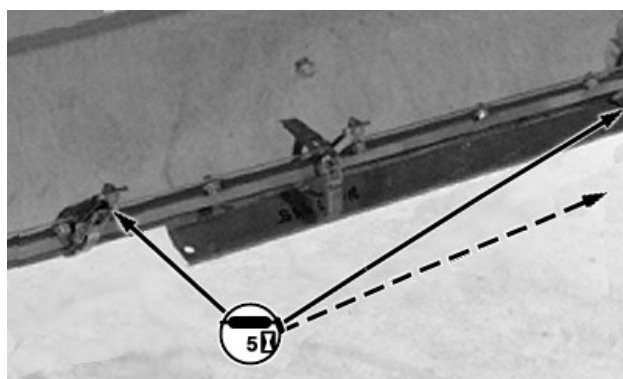
- 3—Drive Shaft Bearings (Every 50 hrs or before storage)

N89375B—UN—18SEP89

Lubricate the chains with John Deere TY6350 Multipurpose Spray Lubricant as required.



N59431—UN—07FEB02



N59432—UN—07FEB02

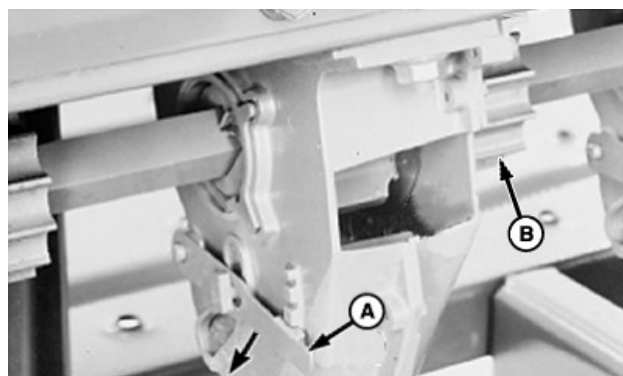
Fertilizer Feed Shaft Bearings

A—Plug

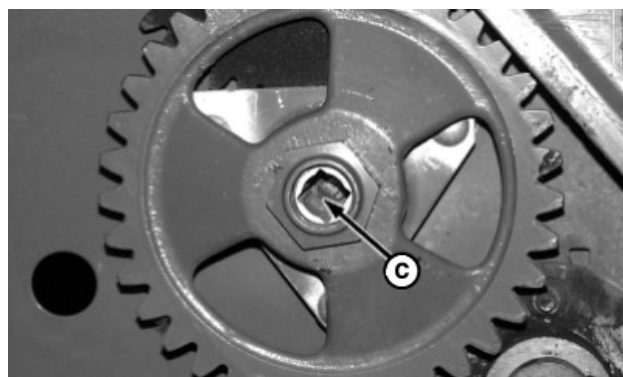
Check the oil level annually. Remove the plug (A) from gear case. If no oil runs out, add oil through the hole or by removing the top cover. If water or dirt contaminates the oil, remove plug from bottom of gear case and change oil.

IMPORTANT: Do not attempt to repair the gear case box. Doing so voids warranty. To return for replacement, contact your local John Deere dealer.

OUO6074,0000C99-19-14JAN19



N101295—UN—11DEC12



N101296—UN—11DEC12

A—Feed Gate Latch
B—Meter Rolls
C—Meter Shaft

1. Move the feed gate latch (A) on each feed cup downward off retaining teeth. Open the feed gate and empty feed cup.
2. Clean and lubricate the fluted meter rolls (B) with a spray lubricant. Lubricate the meter shaft (C) with a spray lubricant where shaft passes through drive gear, behind the access door.
3. Cycle the rate adjuster to distribute lubricant.

OUO6074,0000C7F-19-14JAN19

Meter Components

IMPORTANT: Clean and lubricate meter components at the end of planting season.

Troubleshooting

Troubleshooting

Symptom	Problem	Solution
Disks not revolving.	Drill is hitched too high in front so pressure is on boot instead of disk.	Adjust the hitch until level with field surface.
	Scrapers adjusted too tight.	Loosen the scrapers so they have enough pressure to clean disks. Disengage the scrapers when not needed.
	Opener pressure not adjusted properly allowing furrow opener to float over high and low spots in field.	Adjust the pressure on furrow openers so collar on pressure rod is approximately 38 mm (1-1/2 in) above pressure arm swivel.
	Openers spaced too close together.	Adjust the opener spacing.
Clogging of seed tubes and furrow openers.	Insufficient spacer washers on disk hubs.	Add the washers to hubs.
	Machine improperly hitched.	Hitch the machine properly.
	Using high residue seed or lumpy fertilizer.	Use clean seed and dry free-flowing fertilizer.
	Stopping machine in field and letting machine roll backward, filling the bottom of boot with dirt.	If stopping machine is necessary, raise the furrow openers and set the park brake.
Fluted-feed shifter lever difficult to shift.	Ribbed seed tube collapsed inside opener boot.	Install the seed tube correctly.
	Dirt on exposed flute.	Remove the dirt.
	Pressure on feed shaft.	With a wrench, turn the feed shaft back slightly.
Varying quantities drilled by individual feeds.	Seed bridging in box due to unclean seed, inoculation, treatment, or dampness.	Use the agitators.
	Feed gates not all set the same.	Adjust the feed gates according to instructions.
	Feed cup out of adjustment with the fluted-feed roll.	Adjust the feed.
	Section of grain box emptying unevenly.	There are more feed cups operating in one section than the other. Adjust the feed cups or feed stops.
Quantities drilled not agreeing with seed chart.	Feed gates improperly adjusted.	Adjust the feed gates according to instructions.

Troubleshooting

Symptom	Problem	Solution
	Heavier or lighter than average weight seed.	Check the quantity drilled. Check seed density.
	Improper tire inflation, tire size, or tread.	Inflate and inspect the tires.
	Feed cups not properly set.	Check the cup adjustment.
	Excessive field speed.	Reduce the ground speed.
	Excessive spring force on press wheels.	Reduce the spring force.
	Drive wheel not contacting ground.	Add weight to the machine using calcium chloride in tires or wheel weights (see your John Deere dealer or qualified service provider for correct wheel weight). Stroke on opener can be limited, if necessary.
Bunching and skipping.	Improper adjustment of furrow openers resulting in openers not penetrating low spots or bouncing over rough ground.	Prepare the seedbed, adjust furrow openers, and reduce operating speed.
	Improper procedure when setting shift lever.	Use the correct procedure.
	Double-disk opener not turning smoothly.	Loosen the scrapers, adjust disks.
	Seed caught in tubes.	Verify that the tubes are properly installed.
	Loose drawbar on tractor.	Lock the tractor drawbar.
	Stopping machine in middle of field.	Stop at ends of the field only, whenever possible.
Lack of penetration.	Insufficient downforce.	Increase the downforce.
	Insufficient seed-bed preparation.	See individual opener for seedbed requirements.
	Excessive field speed for field conditions.	Reduce the ground speed.
Irregular grass seed distribution.	Seed tubes clogged with foreign objects.	Remove the seed tubes and clean.
Varying quantities between individual feeds.	Distributing light chaffy seeds.	Mix seed with heavier seed or other material such as cracked corn to give it weight.

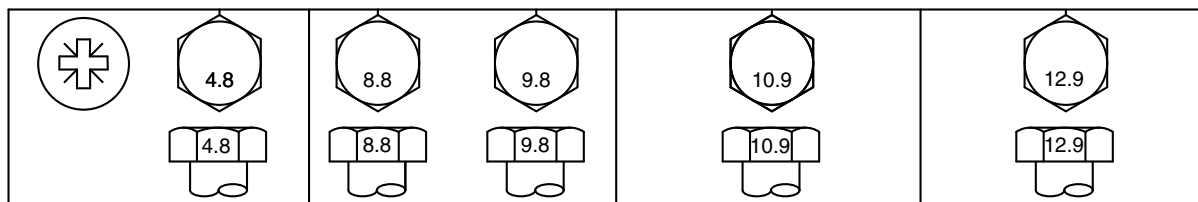
Troubleshooting

Symptom	Problem	Solution
Quantities do not agree with seed chart.	Heavier or lighter than average weight seed.	Check the quantities drilled. Check the seed density.
Irregular drilling with fertilizer.	Drill improperly hitched.	Hitch the machine properly.
	Loose drawbar on tractor.	Lock the tractor drawbar.
Clogging of tubes.	Boots clogged with dirt or fertilizer.	Do not stop or allow dirt to back up with the furrow openers down.
		Keep the fertilizer dry.
Quantities drilled not agreeing with fertilizer chart.	Using wrong fertilizer drive.	Check the drive for proper sprocket assembly. Use the proper gear case setting.
	Quantity drilled has not been checked.	Check the quantity drilled.
	Improper tire inflation, tire size, or tread.	Inflate and inspect the tires.
	Fertilizer density other than 1041 kg/m ³ (5 lb./ft. ³).	Set fertilizer rate for correct density.
	Feed wheels installed improperly.	Properly install the feed wheels.
	Broken shear pin.	Install a new shear pin.
Flow of fertilizer stops.	Baffles installed incorrectly.	Correctly install the baffles.
Fertilizer spills out of feeds.	Improper tire inflation, tire size, or tread.	Inflate the tires.
	Double tracking, or leaving too wide of a space between rows on each trip across field.	Drive carefully; leave same space between seeded strip as the furrow opener spacer on the machine.
	Plot of land contains more or less land than assumed.	Remeasure the land.
	Incorrect drive gear.	Check the gear size.
	Excessive spring force on the press wheel.	Reduce the spring force.

AG,OUO6074,1004-19-19FEB19

Servicing

Metric Bolt and Screw Torque Values



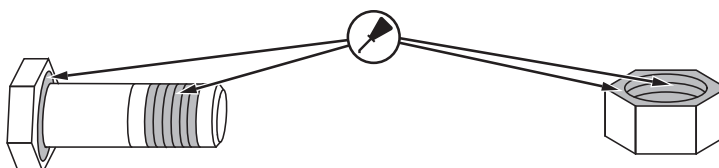
TS1742—UN—31MAY18

Bolt or Screw Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Hex Head ^a		Flange Head ^b		Hex Head ^a		Flange Head ^b		Hex Head ^a		Flange Head ^b		Hex Head ^a		Flange Head ^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	3.6	31.9	3.9	34.5	6.7	59.3	7.3	64.6	9.8	86.7	10.8	95.6	11.5	102	12.6	112
									N·m	lb·ft	N·m	lb·ft	N·m	lb·ft	N·m	lb·ft
M8	8.6	76.1	9.4	83.2	16.2	143	17.6	156	23.8	17.6	25.9	19.1	27.8	20.5	30.3	22.3
			N·m	lb·ft	N·m	lb·ft	N·m	lb·ft								
M10	16.9	150	18.4	13.6	31.9	23.5	34.7	25.6	46.8	34.5	51	37.6	55	40.6	60	44.3
	N·m	lb·ft														
M12	—	—	—	—	55	40.6	61	45	81	59.7	89	65.6	95	70.1	105	77.4
M14	—	—	—	—	87	64.2	96	70.8	128	94.4	141	104	150	111	165	122
M16	—	—	—	—	135	99.6	149	110	198	146	219	162	232	171	257	190
M18	—	—	—	—	193	142	214	158	275	203	304	224	322	245	356	263
M20	—	—	—	—	272	201	301	222	387	285	428	316	453	334	501	370
M22	—	—	—	—	365	263	405	299	520	384	576	425	608	448	674	497
M24	—	—	—	—	468	345	518	382	666	491	738	544	780	575	864	637
M27	—	—	—	—	683	504	758	559	973	718	1080	797	1139	840	1263	932
M30	—	—	—	—	932	687	1029	759	1327	979	1466	1081	1553	1145	1715	1265
M33	—	—	—	—	1258	928	1398	1031	1788	1319	1986	1465	2092	1543	2324	1714
M36	—	—	—	—	1617	1193	1789	1319	2303	1699	2548	1879	2695	1988	2982	2199

The nominal torque values listed are for general use only with the assumed wrenching accuracy of 20%, such as a manual torque wrench. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application.

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 that fastener threads are clean.
- Apply a thin coat of Hy-Gard™ or equivalent oil under the head and on the threads of the fastener, as shown in the following image.
- Be conservative with the amount of oil to reduce the potential for hydraulic lockup in blind holes due to excessive oil.
- Properly start thread engagement.



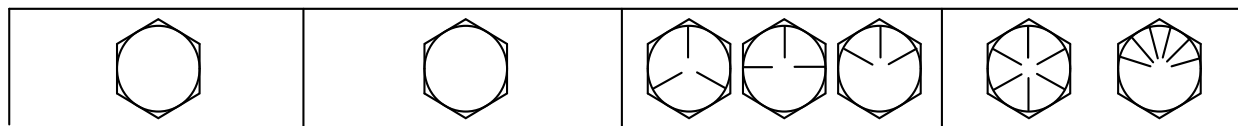
TS1741—UN—22MAY18

^aHex head column values are valid for ISO 4014 and ISO 4017 hex head, ISO 4162 hex socket head, and ISO 4032 hex nuts.

^bHex flange column values are valid for ASME B18.2.3.9M, ISO 4161, or EN 1665 hex flange products.

DX,TORQ2-19-30MAY18

Unified Inch Bolt and Screw Torque Values



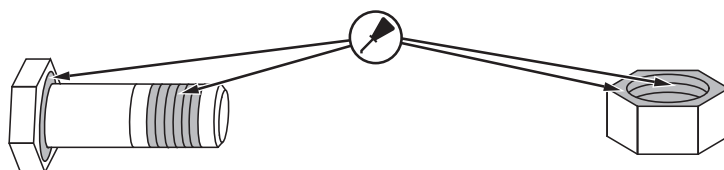
TS1671—UN—01MAY03

Bolt or Screw Size	SAE Grade 1 ^a				SAE Grade 2 ^b				SAE Grade 5, 5.1 or 5.2				SAE Grade 8 or 8.2			
	Hex Head ^c		Flange Head ^d		Hex Head ^c		Flange Head ^d		Hex Head ^c		Flange Head ^d		Hex Head ^c		Flange Head ^d	
	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	3.1	27.3	3.2	28.4	5.1	45.5	5.3	47.3	7.9	70.2	8.3	73.1	11.2	99.2	11.6	103
													N·m	lb·ft	N·m	lb·ft
5/16	6.1	54.1	6.5	57.7	10.2	90.2	10.9	96.2	15.7	139	16.8	149	22.2	16.4	23.7	17.5
									N·m	lb·ft	N·m	lb·ft				
3/8	10.5	93.6	11.5	102	17.6	156	19.2	170	27.3	20.1	29.7	21.9	38.5	28.4	41.9	30.9
					N·m	lb·ft	N·m	lb·ft								
7/16	16.7	148	18.4	163	27.8	20.5	30.6	22.6	43	31.7	47.3	34.9	60.6	44.7	66.8	49.3
	N·m	lb·ft	N·m	lb·ft												
1/2	25.9	19.1	28.2	20.8	43.1	31.8	47	34.7	66.6	49.1	72.8	53.7	94	69.3	103	75.8
9/16	36.7	27.1	40.5	29.9	61.1	45.1	67.5	49.8	94.6	69.8	104	77	134	98.5	148	109
5/8	51	37.6	55.9	41.2	85	62.7	93.1	68.7	131	96.9	144	106	186	137	203	150
3/4	89.5	66	98	72.3	149	110	164	121	230	170	252	186	325	240	357	263
7/8	144	106	157	116	144	106	157	116	370	273	405	299	522	385	572	422
1	216	159	236	174	216	159	236	174	556	410	609	449	785	579	860	634
1-1/8	305	225	335	247	305	225	335	247	685	505	751	554	1110	819	1218	898
1-1/4	427	315	469	346	427	315	469	346	957	706	1051	775	1552	1145	1703	1256
1-3/8	564	416	618	456	564	416	618	456	1264	932	1386	1022	2050	1512	2248	1658
1-1/2	743	548	815	601	743	548	815	601	1665	1228	1826	1347	2699	1991	2962	2185

The nominal torque values listed are for general use only with the assumed wrenching accuracy of 20%, such as a manual torque wrench. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application.

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 that fastener threads are clean.
- Apply a thin coat of Hy-Gard™ or equivalent oil under the head and on the threads of the fastener, as shown in the following image.
- Be conservative with the amount of oil to reduce the potential for hydraulic lockup in blind holes due to excessive oil.
- Properly start thread engagement.



TS1741—UN—22MAY18

^aGrade 1 applies for hex cap screws over 6 in (152 mm) long, and for all other types of bolts and screws of any length.

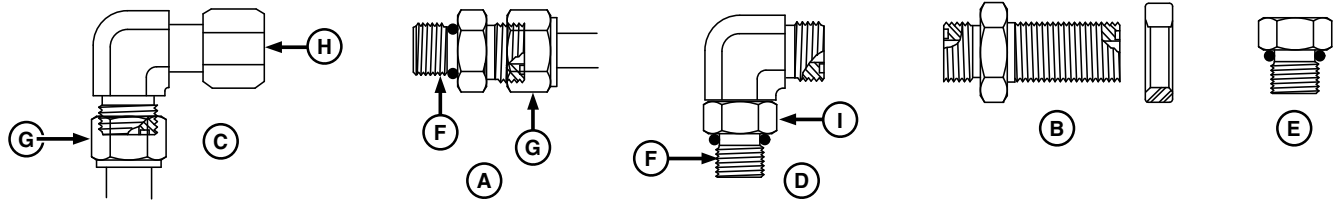
^bGrade 2 applies for hex cap screws (not hex bolts) up to 6 in (152 mm) long.

^cHex head column values are valid for ISO 4014 and ISO 4017 hex head, ISO 4162 hex socket head, and ISO 4032 hex nuts.

^dHex flange column values are valid for ASME B18.2.3.9M, ISO 4161, or EN 1665 hex flange products.

DX,TORQ1-19-30MAY18

Metric Face Seal and O-Ring Stud End Fitting Torque Chart—Standard Applications



A—Stud Straight and Tube Nut
 B—Bulkhead Union and Bulkhead Lock Nut
 C—90° Swivel Elbow and Tube Nut
 D—90° Adjustable Stud Elbow
 E—Port Plug

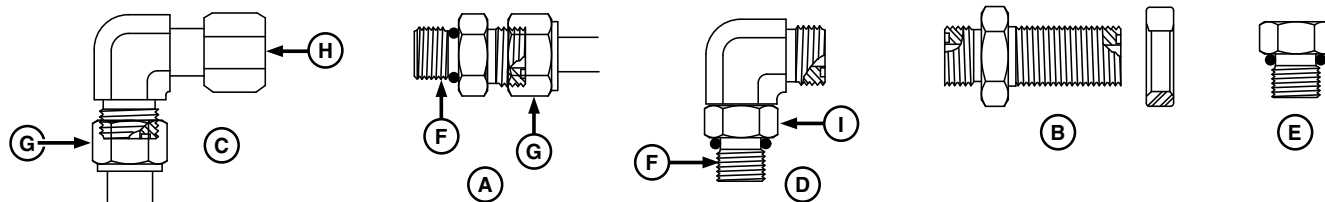
F—Stud End
 G—Tube Nut
 H—Swivel Nut
 I—Lock Nut

N79757—UN—13FEB08

Metric Face Seal and O-Ring Stud End Fitting Torque Chart—Standard Pressure-Below 27.6 MPa (4000 psi)																	
Nominal Tube OD Hose ID				O-Ring Face Seal/ Tube Swivel Nut				Bulkhead Jam Nut Torque ^A			O-Ring Straight, Adjustable, and External Port Plug Stud Ends ^A						
Metric Tube OD	Inch Tube OD			Thread Size	Swivel Nut Hex Size	Tube Nut and Swivel Nut Torque		Jam Nut Hex Size	Jam Nut Torque		Thread Size	Straight Hex Size ^B	Adj Lock Nut Hex Size	Steel or Gray Iron Torque		Aluminum or Brass Torque ^C	
	mm	Da- sh Siz- e	in			mm	in		mm	N·m				lb·ft	mm	N·m	lb·ft
4	-2	Note: Use the heavy-duty torque chart on these sizes.															
5	-3																
6	-4																
8	-5																
10	-6																
12	-8																
16	-10																
20	-12	0.7- 50	19.0- 5	1-3/16- 12	36	102	75	41	175	129	M27 x 2	32	32	100	74	67	49
22	-14	0.8- 75	22.2- 3	1-3/16- 12	36	102	75	41	175	129	M30 x 2	36	36	130	96	87	64
25	-16	1.0- 00	25.4- 0	1-7/16- 12	41	142	105	46	247	182	M33 x 2	41	41	160	118	107	79
28	—	—	—	—	—	—	—	—	—	—	M38 x 2	46	46	176	130	117	87
32	-20	1.2- 50	31.7- 5	1-11/16- 12	50	190	140	50	328	242	M42 x 2	50	50	210	155	140	103
38	-24	1.5- 00	38.1- 0	2-12	60	217	160	60	374	276	M48 x 2	55	55	260	192	173	128
50	-32	2.0- 00	50.8- 0	—	—	—	—	—	—	—	M60 x 2	65	65	315	232	210	155
^A Tolerance is plus 15%, minus 20% of mean tightening torque unless otherwise specified.																	
^B The straight hex key wrench sizes listed apply to connectors only and may not be the same as the corresponding plug of the same thread size.																	
^C These torques were established using steel-plated connectors in aluminum and brass.																	

BB83525,00007ED-19-06DEC19

Metric Face Seal and O-Ring Stud End Fitting Torque Chart—Heavy-Duty Applications



N79757—UN—13FEB08

A—Stud Straight and Tube Nut
 B—Bulkhead Union and Bulkhead Lock Nut
 C—90° Swivel Elbow and Tube Nut
 D—90° Adjustable Stud Elbow
 E—Port Plug

F—Stud End
 G—Tube Nut
 H—Swivel Nut
 I—Lock Nut

Metric Face Seal and O-Ring Stud End Fitting Torque Chart

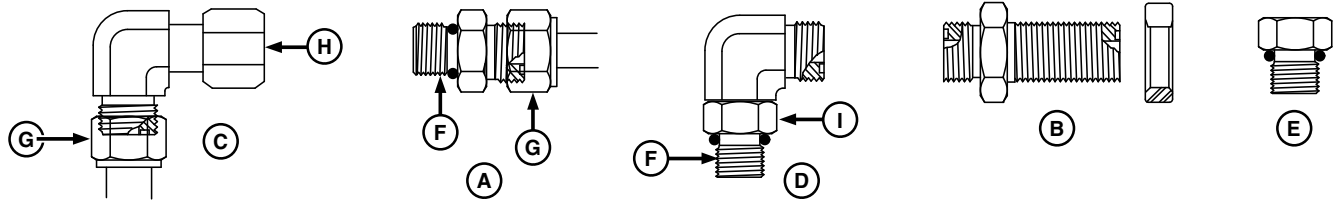
Nominal Tube OD Hose ID				O-Ring Face Seal/ Tube Swivel Nut				Bulkhead Jam Nut Torque ^A			O-Ring Straight, Adjustable, and External Port Plug Stud Ends ^A				
Metric Tube OD	Inch Tube OD			Thread Size	Swivel Nut Hex Size	Tube Nut/ Swivel Nut Torque		Jam Nut Hex Size	Jam Nut Torque		Thread Size	Straight Hex Size ^B	Adj Lock Nut Hex Size	Steel or Gray Iron Torque	
mm	Dash Size	in	mm	in	mm	N·m	lb·ft	mm	N·m	lb·ft	mm	mm	mm	N·m	lb·ft
4	-2	0.125	3.18	—	—	—	—	—	—	—	M8 x 1	12	12	8	6
5	-3	0.188	4.76	—	—	—	—	—	—	—	M10 x 1	14	14	15	11
6	-4	0.250	6.35	9/16-18	17	24	18	22	32	24	M12 x 1.5	17	17	35	26
8	-5	0.312	7.92	—	—	—	—	—	—	—	M14 x 1.5	19	19	45	33
10	-6	0.375	9.53	11/16-16	22	37	27	27	42	31	M16 x 1.5	22	22	55	41
12	-8	0.500	12.70	13/16-16	24	63	46	30	93	69	M18 x 1.5	24	24	70	52
16	-10	0.625	15.88	1-14	30	103	76	36	118	87	M22 x 1.5	27	27	100	74
20	-12	0.750	19.05	1-3/16-12	36	152	112	41	175	129	M27 x 2	32	32	170	125
22	-14	0.875	22.23	1-3/16-12	36	152	112	41	175	129	M30 x 2	36	36	215	159
25	-16	1.000	25.40	1-7/16-12	41	214	158	46	247	182	M33 x 2	41	41	260	192
28	—	—	—	—	—	—	—	—	—	—	M38 x 2	46	46	320	236
32	-20	1.250	31.75	1-11/16-12	—	286	211	50	328	242	M42 x 2	50	50	360	266
38	-24	1.500	38.10	2-12	—	326	240	60	374	276	M48 x 2	55	55	420	310

^A Tolerance is plus 15%, minus 20% of mean tightening torque unless otherwise specified.

^B The straight hex key wrench sizes listed apply to connectors only and may not be the same as the corresponding plug of the same thread size.

BB83525,00007EF-19-03DEC19

SAE Face Seal and O-Ring Stud End Fitting Torque Chart—Standard Applications



N79757—UN—13FEB08

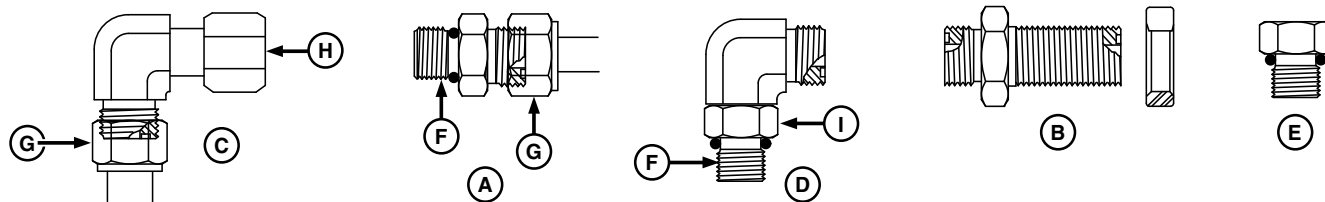
A—Stud Straight and Tube Nut
 B—Bulkhead Union and Bulkhead Lock Nut
 C—90° Swivel Elbow and Tube Nut
 D—90° Adjustable Stud Elbow
 E—Port Plug

F—Stud End
 G—Tube Nut
 H—Swivel Nut
 I—Lock Nut

SAE Face Seal and O-Ring Stud End Fitting Torque Chart—Standard Pressure-Below 27.6 MPa (4000 psi)																	
Nominal Tube OD Hose ID				O-Ring Face Seal/ Tube Swivel Nut				Bulkhead Jam Nut Torque ^A			O-Ring Straight, Adjustable, and External Port Plug Stud Ends ^A						
Metric Tube OD	Inch Tube OD			Thread Size	Swivel Nut Hex Size	Tube Nut and Swivel Nut Torque		Jam Nut Hex Size	Jam Nut Torque		Thread Size	Straight Hex Size ^B	Adj Lock Nut Hex Size	Steel or Gray Iron Torque		Aluminum or Brass Torque ^C	
mm	Das- h Size	in	mm	in	in	N·m	lb·ft		N·m	lb·ft	in	in	in	N·m	lb·ft	N·m	lb·ft
5	-3	Note: Use the heavy-duty torque chart on these sizes.															
6	-4																
8	-5																
10	-6																
12	-8																
16	-10																
20	-12	0.750	19.05	1-3/16-12	1-3/8	10-2	75	1-1/2	17-5	1-29	1-1/16-12	1-1/4	1-3/8	102	75	68	50
22	-14	0.875	22.23	1-3/16-12	—	10-2	75	—	17-5	1-29	1-3/16-12	1-3/8	1-1/2	122	90	81	60
25	-16	1.000	25.40	1-7/16-12	1-5/8	14-2	10-5	1-3/4	24-7	1-82	1-5/16-12	1-1/2	1-5/8	142	105	95	70
32	-20	1.25	31.75	1-11/16-12	1-7/8	19-0	14-0	2	32-8	2-42	1-5/8-12	1-3/4	1-7/8	190	140	127	93
38	-24	1.50	38.10	2-12	2-1/4	21-7	16-0	2-3/8	37-4	2-76	1-7/8-12	2-1/8	2-1/8	217	160	145	107
50.8	-32	2.000	50.80	—	—	—	—	—	—	—	2-1/2-12	2-3/4	2-3/4	311	229	207	153
^A Tolerance is plus 15%, minus 20% of mean tightening torque unless otherwise specified.																	
^B The straight hex key wrench sizes listed apply to connectors only and may not be the same as the corresponding plug of the same thread size.																	
^C These torques were established using steel-plated connectors in aluminum and brass.																	

BB83525,00007EE-19-03DEC19

SAE Face Seal and O-Ring Stud End Fitting Torque Chart—Heavy-Duty Applications



N79757—UN—13FEB08

A—Stud Straight and Tube Nut
 B—Bulkhead Union and Bulkhead Lock Nut
 C—90° Swivel Elbow and Tube Nut
 D—90° Adjustable Stud Elbow
 E—Port Plug

F—Stud End
 G—Tube Nut
 H—Swivel Nut
 I—Lock Nut

SAE Face Seal and O-Ring Stud End Fitting Torque Chart

Nominal Tube OD Hose ID				O-Ring Face Seal/ Tube Swivel Nut				Bulkhead Jam Nut Torque ^A			O-Ring Straight, Adjustable, and External Port Plug Stud Ends ^A				
Metric Tube OD	Inch Tube OD			Thread Size	Swivel Nut Hex Size	Tube Nut/ Swivel Nut Torque		Jam Nut Hex Size	Jam Nut Torque		Thread Size	Straight Hex Size ^B	Adj Lock Nut Hex Size	Steel or Gray Iron Torque	
	mm	Da- sh Siz- e	in	mm	in	N·m	lb·ft		N·m	lb·ft	in	in	in	N·m	lb·ft
5	-3	0.18-8	4.78	—	—	—	—	—	—	—	3/8-24	5/8	9/16	18	13
6	-4	0.25-0	6.35	9/16-18	11/16	24	18	13/16	32	24	7/16-20	5/8	5/8	24	18
8	-5	0.31-2	7.92	—	—	—	—	—	—	—	1/2-20	3/4	11/16	30	22
10	-6	0.37-5	9.53	11/16-16	13/16	37	27	1	42	31	9/16-18	3/4	3/4	37	27
12	-8	0.50-0	12.70	13/16-16	15/16	63	46	1-1/8	93	69	3/4-16	7/8	15/16	75	55
16	-10	0.62-5	15.88	1-14	1-1/8	103	76	1-5/16	118	87	7/8-14	1-1/16	1-1/16	103	76
20	-12	0.75-0	19.05	1-3/16-12	1-3/8	152	112	1-1/2	175	129	1-1/16-12	1-1/4	1-3/8	177	131
22	-14	0.87-5	22.23	1-3/16-12	—	152	112	—	175	129	1-3/16-12	1-3/8	1-1/2	231	170
25	-16	1.00-0	25.40	1-7/16-12	1-5/8	214	158	1-3/4	247	182	1-5/16-12	1-1/2	1-5/8	270	199
32	-20	1.25	31.75	1-11/16-12	1-7/8	286	211	2	328	242	1-5/8-12	1-3/4	1-7/8	286	211
38	-24	1.50	38.10	2-12	2-1/4	326	240	2-3/8	374	276	1-7/8-12	2-1/8	2-1/8	326	240

^A Tolerance is plus 15%, minus 20% of mean tightening torque unless otherwise specified.

^B The straight hex key wrench sizes listed apply to connectors only and may not be the same as the corresponding plug of the same thread size.

BB83525,00007F0-19-03DEC19

Face-Seal-Fitting Assembly and Installation —All Pressure Applications

Face-Seal O-Ring to Stud End Installation

1. Inspect the fitting surfaces. They must be free of dirt and/or defects.
2. Inspect the O-ring. It must be free of damage and/or defects.
3. Lubricate O-rings using system oil, and install into groove.
4. Push O-ring into groove so O-ring is not displaced during assembly.
5. Index angle fittings and tighten by hand pressing joint together to insure O-ring remains in place.
6. Tighten fitting or nut to torque value shown on the chart per dash size stamped on the fitting. DO NOT allow hoses to twist when tightening fittings.

Face-Seal Adjustable Stud End O-Ring Installation

1. Back off the lock nut and washer to full exposed turned down section of the fitting.
2. Install a thimble over the fitting threads to protect the O-ring from nicks.
3. Slide the O-ring over the thimble into the turned down section of the fitting.
4. Remove thimble.

Face-Seal Straight Stud End O-Ring Installation

1. Install a thimble over the fitting threads to protect the O-ring from nicks.
2. Slide the O-ring over the thimble into the turned down section of the fitting.
3. Remove thimble.

Fitting Installation

1. Install fitting by hand until snug.
2. Position adjustable fittings by unscrewing the fitting no more than one turn.
3. Apply assembly torque per table.

Assembly Torque

1. Use one wrench to hold the connector body and one wrench to tighten nut.
2. For a hydraulic hose, it may be necessary to use three wrenches to prevent twist; one on the connector body, one on the nut, and one on the body of the hose fitting.

Use Safe Service Procedures



N40000—UN—28SEP88

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

AG,OUO6074,1362-19-29MAR18

BB83525,00007F6-19-04DEC19

Practice Safe Maintenance



TS218—UN—23AUG88

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 away 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.

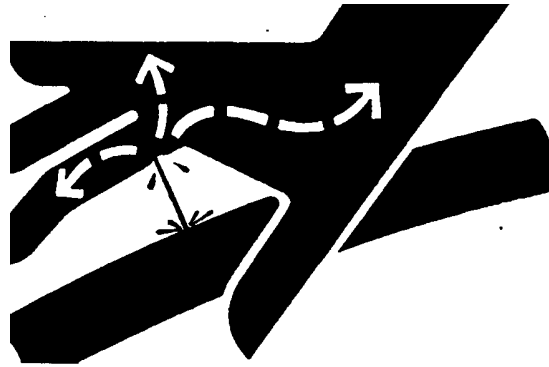
On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

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

Falling while cleaning or working at height can cause serious injury. Use a ladder or platform to easily reach each location. Use sturdy and secure footholds and handholds.

DX,SERV-19-28FEB17

Avoid High-Pressure Fluids



X9811—UN—23AUG88

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

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

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

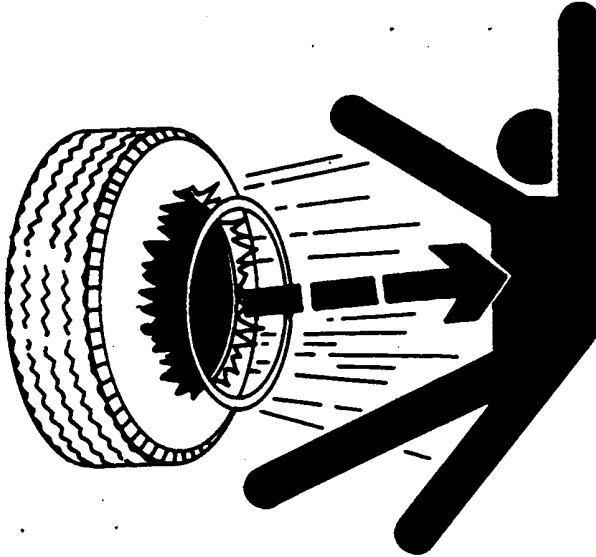
Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

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

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

DX,FLUID-19-12OCT11

Service Tires Safely



TS211—UN—15APR13

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.

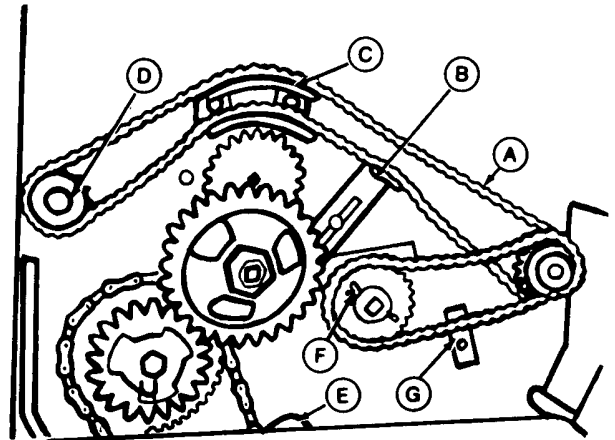
Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

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.

DX,RIM1-19-27OCT08

Tighten Main Drive Chains



N89377A—UN—19SEP89

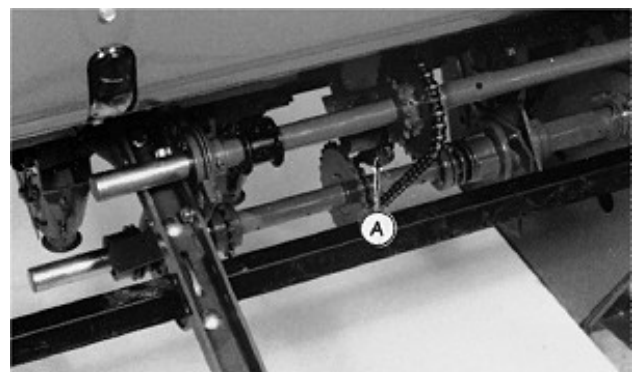
- A—Drive Chain, Fertilizer Gear Case
- B—Secondary Tightener
- C—Primary Tightener
- D—Countershaft Sprocket
- E—Main Drive Chain Tightener
- F—Fertilizer Shaft Shear Pin
- G—Fertilizer Feed Shaft Chain Tightener

For All Drills:

1. Remove end panel from drill.
2. Rotate main drive chain tightener (E) into chain.
3. Loosen cap screws inside box and move primary tightener (C) up.
4. If box is full, tighten chain with secondary tightener (B) by moving it into the chain. As soon as the primary tightener cap screws are accessible, loosen the secondary tightener, tighten the primary tightener to the end of its slot then adjust the secondary tightener.
5. Move fertilizer feed shaft chain tightener (G) up to tighten fertilizer feed shaft chain.

AG,OUO6074,1014-19-11DEC12

Tighten Fluted-Feed Drive Chains



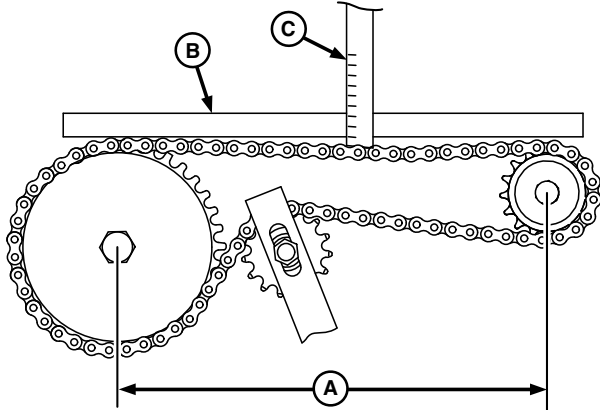
N89159AH—UN—07SEP89

A—Tightener

Loosen carriage bolt and move tightener (A) into chain.

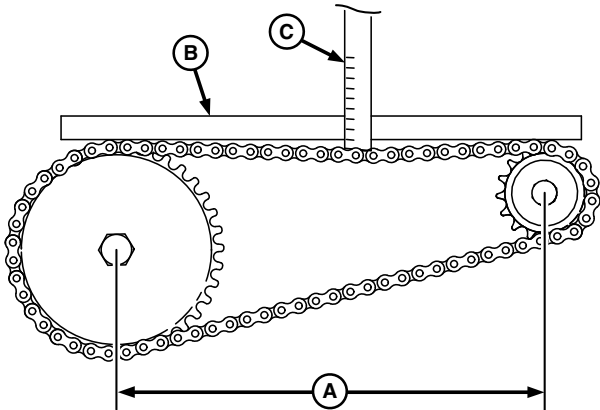
AG, OOU6074, 1015-19-09MAY00

Tighten the Drive Chains



A70496—UN—31JAN11

Drive Chain With Tension Idler



A70495—UN—31JAN11

Drive Chain Without Tension Idler

A—Shaft Distance
B—Straight Edge
C—Ruler

To determine the chain deflection, perform the following procedures:

1. Rotate the drive to tighten the chain.
2. Place a straight edge (B) over the slack span of the chain.

NOTE: Make sure that one side of the chain is taut during measurement.

3. At the center of the shaft distance (A), use a ruler (C) to measure the deflection from the top of the chain to the underside of the straight edge.

IMPORTANT: Do not over tighten the chains or rapid chain wear, shaft, and bearing damage can result.

4. Adjust the shaft centers or chain tighteners to specification.

Specification

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

OOU6064, 0000377-19-19JUL18

Preventing Contamination

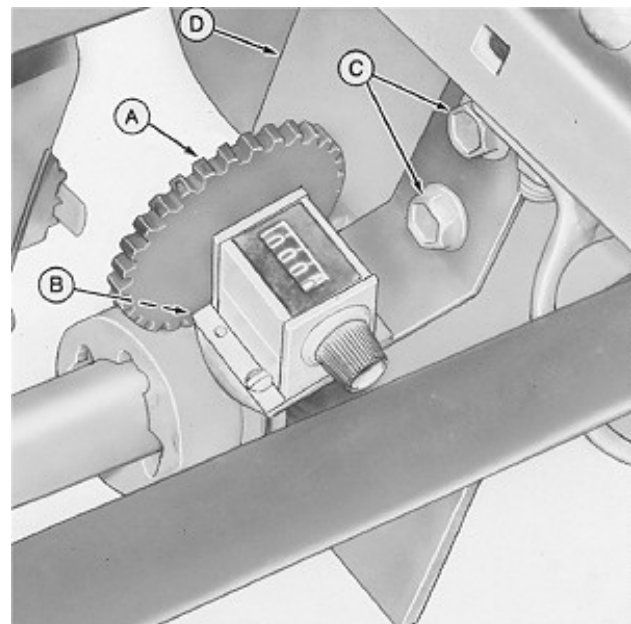
NOTE: In order to help keep hydraulic couplers clean, always place in storage position when not attached to tractor.

Cleanliness is very important when working on the hydraulic system. Prevent contamination by assembling the cylinders, hoses, couplers, and valves in a clean area of the shop.

Leave protective caps on the fluid openings until ready to make the connection. When charging the system, use a tractor or other source that contains clean oil, free of abrasive materials. Keep couplers clean. Abrasive particles, like sand or metal fragments can damage seals, barrels and pistons, causing internal leakage.

AG, OOU6074, 1007-19-09MAY00

Check Acremeter



N32248—UN—05OCT88

A—Drive Gear
B—Worm Gear
C—Attaching Bolts

D—Support Bracket

Drive gear teeth (A) should mesh with drive worm gear (B), but should not bottom out on drive worm gear. Holes in support bracket (D) are slotted. Loosen cap screws (C) and move acrometer, bracket, and cap screws on support bracket to make adjustment.

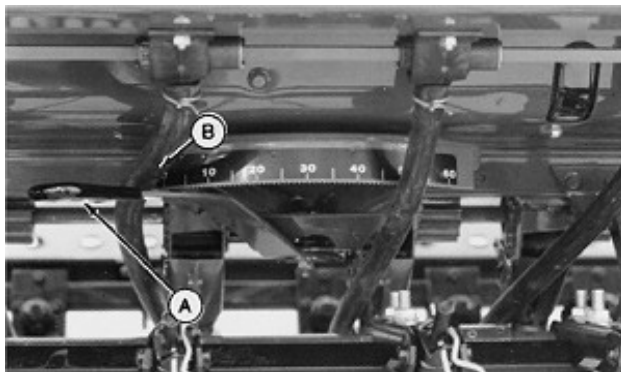
OOU6074,0000498-19-13DEC01

Reset Fluted-Feed Cups

Reset cups whenever:

- Cup has been removed from machine.
- Cup has been knocked out of position.
- Quantity of seed sown varies from cup to cup.
- Quantity of seed sown does not agree with chart.
- Feed shaft rolling torque is too high.

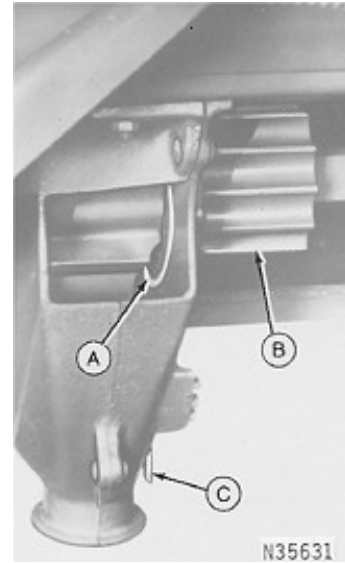
Reset as follows:



N89159N1—UN—18SEP89

A—Shifter Lever
B—Notch “0”

1. Set feed shaft shifter lever (A) on grain box to notch “0” (B) on index plate by first moving shifter lever past the first notch and returning it to notch “0” to equalize spring pressure.



N35631

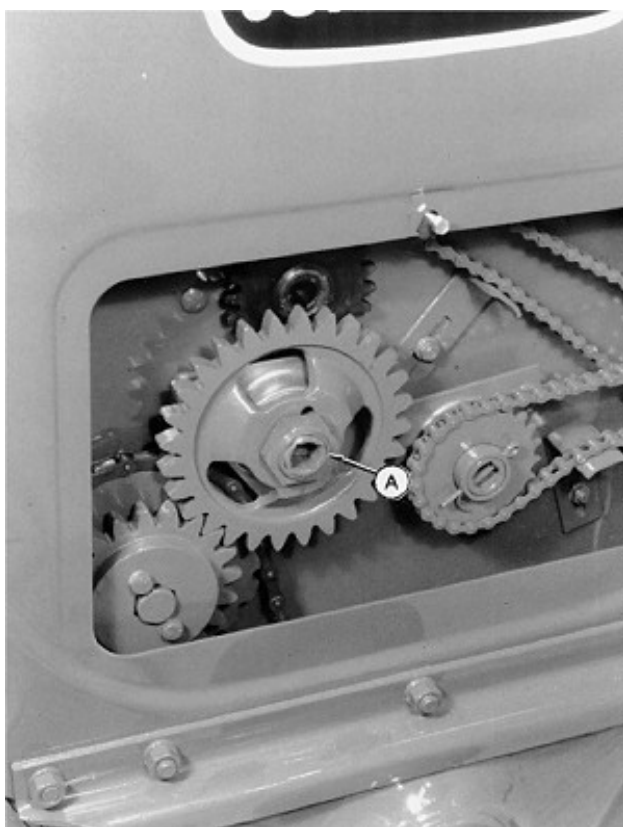
N35631—UN—04OCT88

A—Retainer Ring
B—Feed Roll
C—Seed Gates

2. Open seed gates (C) to clean-out position.
3. Start at master feed cup (first feed cup on each side of shifter lever) and loosen cap screws holding feed cup to box bottom.
4. Move feed cup until end of feed roll (B) is flush with inside surface of seed retainer ring (A) on lower radius of seed reservoir. Reset all feed cups in same manner, beginning with master feeds and working in both directions. Tighten cap screws on each feed cup as soon as setting is complete.
5. Check adjustment by moving feed shaft shifter through full index setting range; then move lever past notch “0” and return to “0”. Check to make sure all feed rolls are flush at lower radius of feed cup.
6. Close seed gates to desired setting, making sure all gates are in identical position.

AG,OOU6074,1010-19-09MAY00

Check Feed Shaft Rolling Torque



N89157H—UN—07SEP89

A—Feed Shaft

The rolling torque of the feed shaft (A), with or without the agitator, should be no more than the specified torque. Check after removing the countershaft gear.

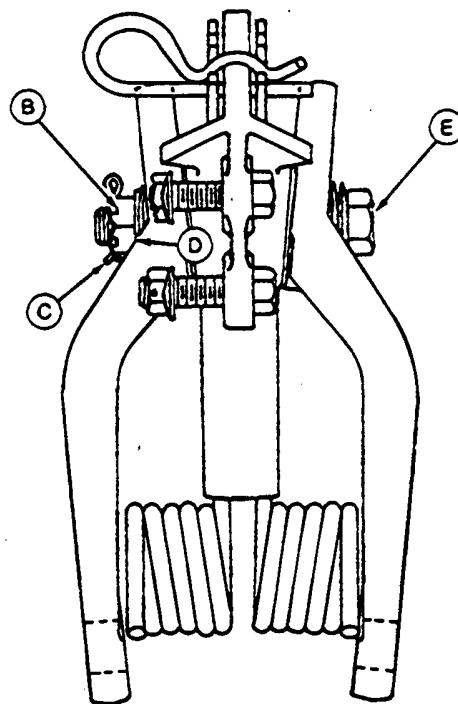
Specification

Feed Shaft—Torque (dry). 23 N·m
(17 lb·ft)

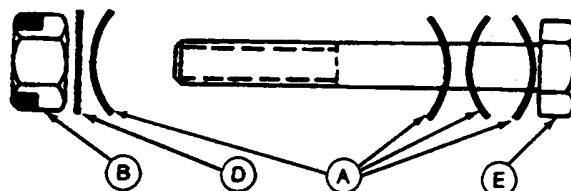
If necessary, check the alignment of the feed cups and drive hub.

AG,OUO6074,1011-19-10MAR20

Replace Depth Gauge Wheel Arm—Tru-Vee™ Attachment



N36134—UN—05OCT88



N36766—UN—05OCT88

- A—Spring Washer (4 used)
- B—Slotted Nut
- C—Cotter Pin
- D—Flat Washer
- E—Pivot Bolt

Assemble spring washers (A) as shown. Tighten the pivot bolt (E) to specification.

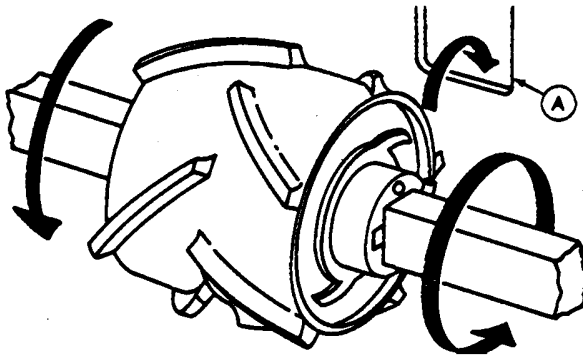
Specification

Pivot Bolt (E)—Torque. 7—9 N·m
(60—80 lb·in)

When properly adjusted, the depth gauge wheel arm pivots with enough drag that a raised wheel arm (with wheels attached) does not rotate downward until external force is applied. If the arm rotates down without applied force, tighten the pivot bolt slightly. If the slot in the nut does not align with the hole in the bolt, add one flat washer (D) under the slotted nut (B) and tighten. Install cotter pin (C).

OUO6074,00004F3-19-03MAR20

Replace Fertilizer Feed Wheels



N37908—UN—05OCT88

A—Discharge Hole

1. Remove the feed shaft from the machine; then slide wheel off shaft.
2. Install new feed wheel on shaft and reinstall shaft.

Make sure feed wheel is positioned in front of discharge hole (A).

AG,OUO6074,1017-19-09MAY00

Determine When to Replace Double-Disk Openers

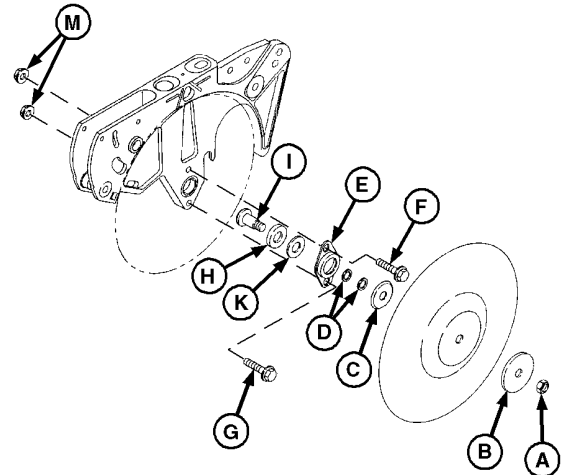
If the opener diameter is less than 292 mm (11-1/2 in), replace opener (see Replace and Adjust Double-Disk Openers).

AG,OUO6074,1021-19-16JAN19

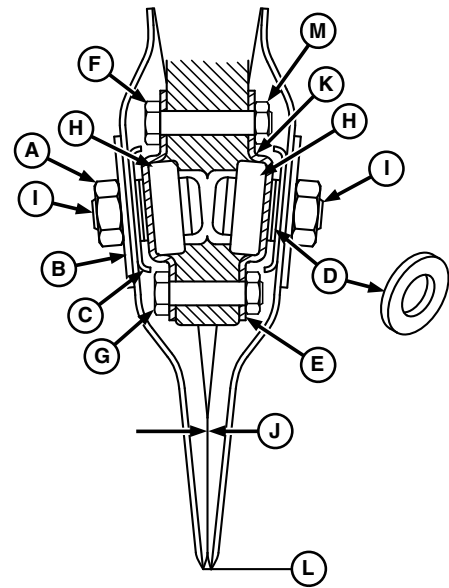
Replace and Adjust Double-Disk Openers on Aluminum Boots



TS286—UN—23AUG88



N58358—UN—26SEP01



N101319—UN—02JAN13

- A—Nut, 5/8 in
- B—Spring Washer
- C—Slinger
- D—Shims (as required)
- E—Flangette
- F—Cap Screw, 3/8 x 1-7/8 in
- G—Cap Screw, 3/8 x 1-1/2 in
- H—Bearing (2 used)
- I—Hub Bolt
- J—Pinch Point
- K—Seal
- L—No Offset
- M—Lock Nut, 3/8 in

CAUTION: Avoid injury. Disks are sharp. Wear protective gloves and handle disks carefully.

NOTE: Left-hand disk is attached with a left-hand threaded nut.

1. Remove the nut (A).
2. Remove the spring washer (B) and disk.

3. Remove the slinger (C) and shims (D).
4. Remove the cap screws (F and G). Remove flangettes (E).
5. Remove the bearings (H) and hub bolts (I). Check the seal (K) around the bearing for damage and replace if necessary. Discard the bearings.
6. Coat the seed boot bearing recesses and flangette recess with lithium-based grease.

IMPORTANT: Bearing flangettes must be oriented with the flat trimmed end facing pinch point (J).

7. Place the new bearings (H) on hub bolts (I). Place the seals on bearings and place flangettes (E) over seals.
8. Insert a cap screw (F) in the top hole, through flangettes (E), and seed boot. Install a lock nut (M) and tighten.
9. Insert a cap screw (G) in the bottom hole, through flangettes (E), and seed boot. Install a lock nut (M) and tighten.

NOTE: New disks can require two or three shims while worn disks can require fewer.

10. Position the shims (D) on each hub bolt (I) as required. Position the slinger (C) with the flange facing seed boot and install disks.
11. Position a spring washer (B) on the hub bolt (I) with cup facing disk.

NOTE: Left-hand disk is attached with a left-hand threaded nut.

12. Install nut (A). Tighten to specification.

Specification

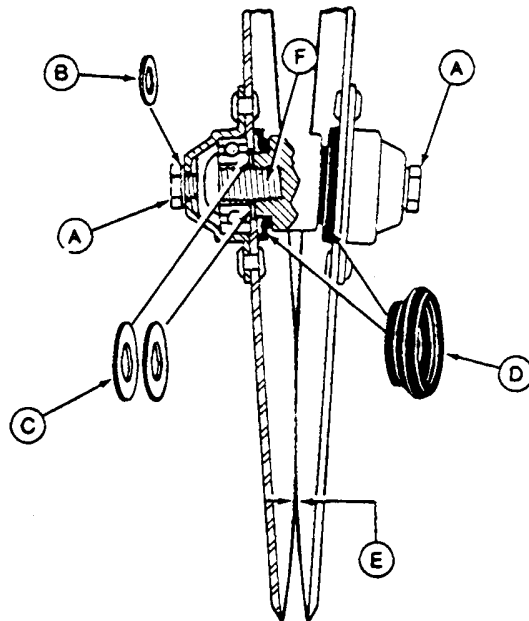
Nut (A)—Torque (dry) 100 N·m
(75 lb·ft)

IMPORTANT: The disks must turn freely and be properly adjusted.

13. Add or remove shims (D) as necessary to achieve the proper pinch point (J).
 - With the inside scrapers disengaged, the disks slightly touch at pinch point (J).
 - Pinch point contact is approximately 44.5 mm (1-3/4 in) above a flat level surface.
 - With the disks rotating, pinch point (J) has a maximum gap of 3 mm (1/8 in).

Replace and Adjust Double-Disk Openers on Cast-Iron Boots

⚠ CAUTION: Avoid injury. Disk openers are sharp. Wear protective gloves and handle disk openers carefully.



N32728—UN—04OCT88

A—Bearing Plug
B—Washer
C—Spacer Washers
D—Seal
E—Pinch Point
F—Bearing Screw

1. Remove the bearing plug (A) from bearing case.

NOTE: The left-hand disk has left-hand threads.

2. Insert a 5/16 in hexagon wrench through the hole in bearing case and remove disk opener. Inspect parts for wear or damage and replace with new parts when necessary.

It is recommended that the rubber seals (D) be replaced at the end of each seeding season and lubricated as described in step 4.

NOTE: The sealed bearing on this opener does not require lubrication.

3. Proper assembly is important. Slip rubber seal (D) over the boot hub so that flared open end of seal faces mating disk opener. Be sure to press rubber seal down firmly to the shoulder on hub.

4. Fill cupped portion of the rubber seal with a rubber seal lubricant.

OUO6074,0000C80-19-10MAR20

NOTE: Disk openers barely touch at the pinch point (E). Revolve disks openers to be certain that they turn freely with scrapers disengaged. If adjustment is necessary, add or deduct spacer washers (C) as required. Most new assemblies require two washers on each bearing screw, while worn disks require none.

5. Install two spacer washers (C) on each bearing screw (F) and assemble disk openers to the hub. Tighten firmly.
6. Disk opener and bearing assemblies must be tightened to the boot casting by impact. Tighten socket screw firmly and then strike the end of the wrench three times with a 0.68 km (1-1/2 lb) hammer.
7. Clamp locking pliers at the rear of opener and hold the disk. Install the bearing plug and washer (B). Tighten firmly.

AG,OUO6074,1023-19-07JAN19

IMPORTANT: Use scrapers (A) to prevent dirt buildup in wet or sticky soil conditions. Remove the scrapers in dry soil conditions. When installing the scrapers, do not bend leaf spring (B) together.

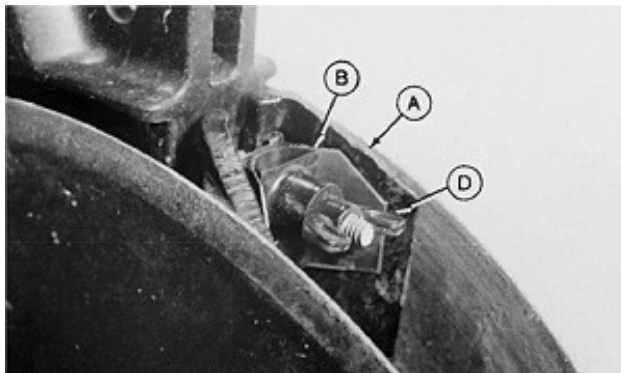
1. Replace the scrapers by inserting T-bolt (C) in boot and turning 90°. Tighten the wing nut (D) so spacers (E and G) are tight against spring. If additional force is needed, add additional springs (B). Install the spring, spacer, and wing nut.
2. To remove the scrapers, loosen wing nut (D) and turn T-bolt (C) 90° and remove.

AG,OUO6074,1024-19-04JAN19

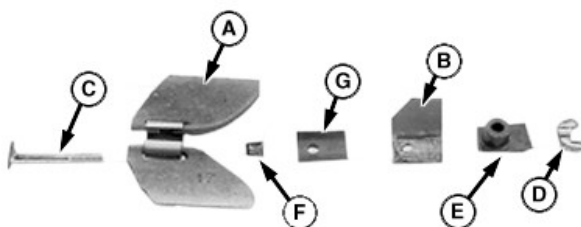
Replace Seed Tubes-Double-Disk Opener

IMPORTANT: Avoid deterioration. Do not allow any spray lubricant to come in contact with the seed tubes.

Replace Inside Scrapers

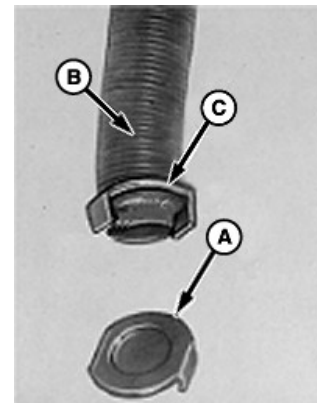


N86111K1—UN—28SEP88

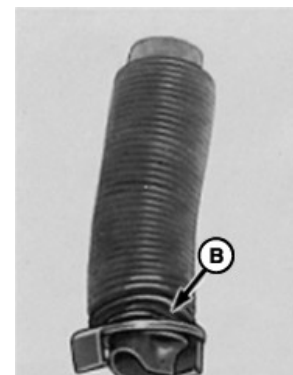


N86140K1—UN—18DEC01

- A—Scraper
B—Leaf Spring
C—T-Bolt
D—Wing Nut
E—Spacer (Scraper)
F—Spacer (Short)
G—Spacer (Block)



A103337—UN—15JAN19



Incorrect

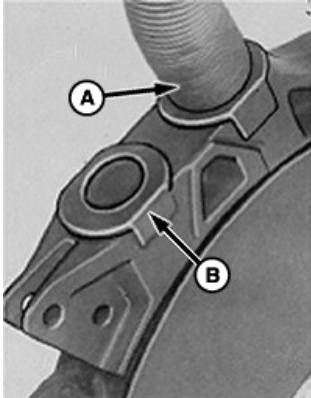
A103236—UN—16JAN19

- A—Cap
B—Seed Tube
C—Mounting Location

1. If necessary, cut out the center depression in the cap (A).

NOTE: Verify that the seed tube (B) is not collapsed or damaged.

2. Locate the mounting location (C) on the seed tube (B), approximately 25 mm (1 in) from the end of the seed tube, between the first two ribs.
3. Insert the seed tube through cap (A). Verify that the cap is positioned between ribs at mounting location.



A103316—UN—15JAN19

A—Seed Tube and Cap
B—Solid Cap

4. Connect the seed tube and cap (A) to opener. Install a solid cap (B) in opening when it is not in use.

AG,OUO6074,1025-19-19FEB19

3. Remove the cotter pin (A) and slotted nut (B) holding the main drive sprocket (C).
4. Pull out the axle hub and replace shear pin (D).
5. Before assembling, check the bearings for wear and grease. Tighten the slotted nut to specification.

Specification

Slotted Nut (B)—Torque (dry). 81 N·m
(60 lb·ft)

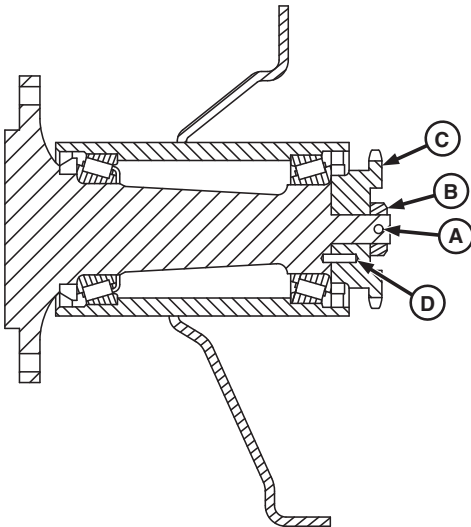
6. If unable to remove the shear pin, drill a 7 mm (17/64 in) hole through the drive sprocket. Drill a hole in the axle using the old drive sprocket as a guide.
7. Reinstall the wheel and wheel bolts. Tighten the wheel bolts to specification.

Specification

Wheel Bolts—Torque (dry). 176 N·m
(130 lb·ft)

AG,OUO6074,1027-19-27FEB20

Main Drive Shear Pin



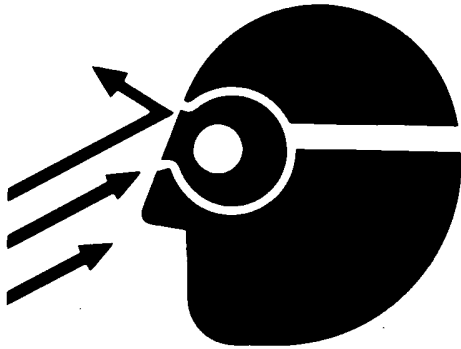
A103210—UN—09JAN19

A—Cotter Pin
B—Slotted Nut
C—Main Drive Sprocket
D—Shear Pin

1. Using a suitable lifting device, raise the grain drill up until the wheel is off the ground.
2. Remove the wheel bolts and wheel from the hub.

Storing

Prepare for Storage



TS266—UN—23AUG88

CAUTION: Reduce compressed air to less than 210 kPa (2 bar) (30 psi) when using for cleaning purposes. Clear area of bystanders, guard against flying debris, and wear personal protection equipment, including eye protection.

IMPORTANT: Compressed air (dry) cleaning method is recommended to prevent gum-like deposits (left by water wash) from forming on the seed box components and/or blocking product passages.

1. Empty the drill boxes and clean caked deposits from boxes (see Clean Grain Box and Clean the Fertilizer Box).

Compressed Air (Dry) Cleaning:

CAUTION: Do not allow residue from the box washing to contaminate well or ground water.

IMPORTANT: If compressed air is not available for cleaning, water wash method is used. Thoroughly dry seed boxes after cleaning. Drying takes time since moisture trapped in bearing areas is slow to drain or evaporate.

Thoroughly clean the inside of boxes using compressed air. A good dry cleaning is preferable to poor washing and drying.

Water Wash (Wet) Cleaning:

Wash the machine thoroughly, inside and out. Wipe surfaces and components dry.

2. Remove chain from the drive system. Clean the chain with spray lubricant, coat with oil, and hang in a dry place.
3. Paint all bare metal and rust spots.
4. Replace any missing or damaged parts including hoses, hardware, and decals. Tighten all hardware.
5. Apply grease to exposed area of hydraulic cylinder rods.

6. Place the hose ends and warning light plug in storage positions on hitch.
7. Lubricate the entire machine (see Lubrication and Maintenance).

AG,OUO1074,572-19-16JAN19

Remove from Storage

1. Check tire inflation (see Service).
2. Clean the machine thoroughly.
3. Make sure that the seed tubes and openers are free of obstruction.
4. Perform required lubrication (see Lubrication And Maintenance).
5. Check all hardware and torque as needed.
6. Review Operator's Manual, giving special attention to safety precautions.

AG,OUO1074,573-19-16JAN19

Clean Grain Box



N53015—UN—29MAR00

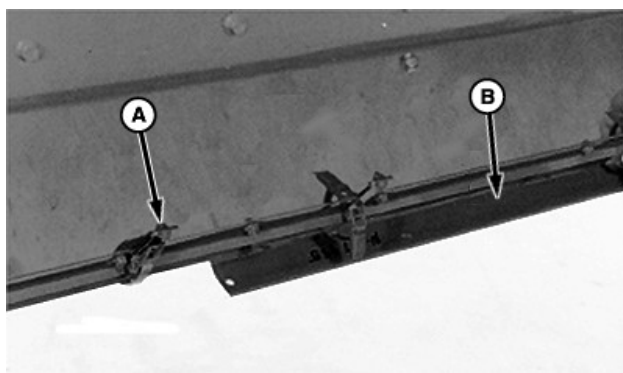
A—Latch
B—Feed Gate

1. Move latch (A) downward off retaining teeth to open feed gate (B).
2. Empty product from box and thoroughly clean inside of box. (See Prepare for Storage in this section.)
3. Lightly coat inside of the box with spray lube.

AG,OUO1074,574-19-06MAR17

Clean the Fertilizer Box

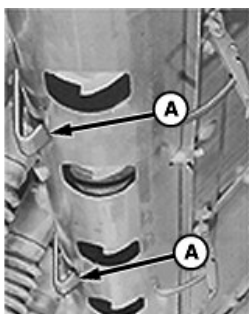
IMPORTANT: Prevent corrosion. Empty and clean the fertilizer box each day. If the fertilizer system is not used within 24 hours, coat the metal parts with a spray lubricant. Do not allow the lubricant to contact the rubber components.



N142191—UN—09JAN19

A—Spring Clips
B—Bottom Covers

1. Release spring clips (A) and open the bottom covers (B).

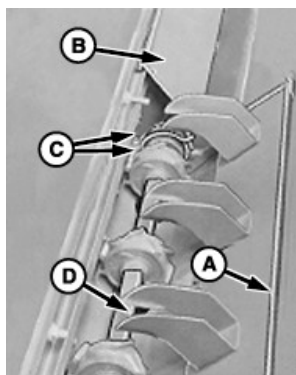


N142192—UN—09JAN19

A—Hooks

2. Rotate covers off the hooks (A) and remove.

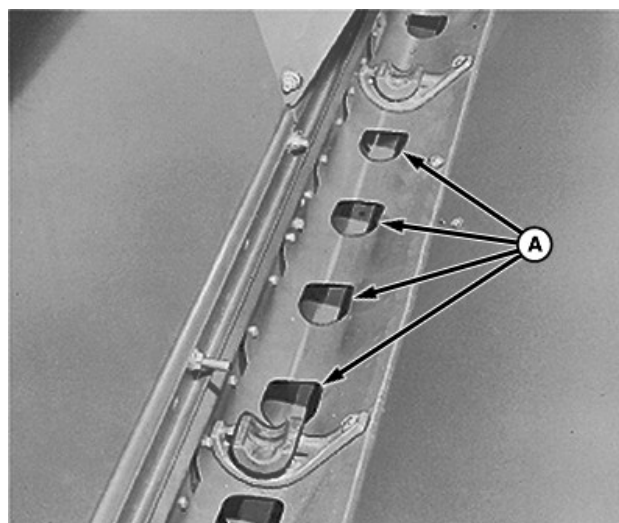
NOTE: Edge of left-hand baffle (A) covers the edge of right-hand baffle (B).



N52322—UN—23FEB00

A—Left-Hand Baffle
B—Right-Hand Baffle
C—Clamps
D—Feed Shaft

3. Remove knobs that hold down the baffles. Remove the baffles by tipping them rearward before lifting.
4. Remove the bearing clamps (C), bearing caps, and feed shaft (D).



N142193—UN—09JAN19

A—Clean Out Holes

5. Remove the remaining fertilizer through cleanout holes (A).

NOTE: Avoid erratic product delivery. Verify that the baffle tabs are not bent.

6. Install the feed shafts, bearing caps, and bearing clamps.
7. Align baffle tabs with the feed wheels. Place rear of the baffle into position, and pivot baffle forward.
8. Attach the baffle knobs.

NOTE: Avoid product leakage. The outer edge of bottom covers must not contact the side panel hardware.

9. Attach the bottom covers and lock them into place with spring clips.

MH69740,0000576-19-04FEB19

Specifications

Tractor Requirements

Refer to your tractor operator's manual for details on tractor wheel ballasting, tire inflation, and use of the hydraulic system.

tractor. All tractors must be equipped with an intermediate chain support ahead of the hitch pin. If tractor is not so equipped, see your John Deere dealer.

AG.OUO6074,1030-19-09MAY00

Safety chains are recommended to secure hitch to

Machine Specifications

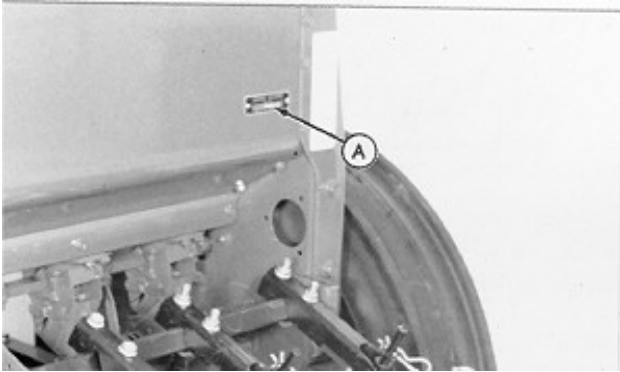
Maximum Static Vertical Load on Tractor Drawbar	
NOTE: Weights are with 19 cm (7.5 in) row spacing and typical optional equipment. Weights with the other row spacings and optional equipment vary. The maximum static vertical load for this implement is achieved with the tanks full of product.	
BD1108	295 kg (650 lb)
BD1110	352 kg (775 lb)
BD1113	453 kg (1000 lb)

Specifications					
	BD1108	BD1110		BD1113	
Number of Openers	13	21	17	26	21
Available Row Spacing	19 cm (7.5 in)	15 cm (6 in)	19 cm (7.5 in)	15 cm (6 in)	19 cm (7.5 in)
Working Width	2.5 m (8 ft 1 in)	3.2 m (10 ft 6 in)	3.2 m (10 ft 7 in)	3.96 m (13 ft)	3.98 m (13 ft 1 in)
Transport Width	3.1 m (10 ft)	3.8 m (12 ft 6 in)		4.6 m (15 ft 1 in)	
Opener Type	33 cm (13 in) Double-Disk in Staggered Pattern				
	Optional Tru-Vee™ Opener for Aluminum Seed Boots				
Seed Boot Types	Cast Aluminum or Cast Iron				
Opener Downforce	56 kg (124 lb) Maximum				
Hydraulic System Working Pressure	20 684 kPa (206.8 bar) (3000 psi)				
Hydraulic System Burst Pressure	82 737 kPa (827.4 bar) (12 000 psi)				
Seed Delivery	14 cm (5-1/2 in)	14 cm (5-1/2 in)			14 cm (5-1/2 in)
Weight with Plain Box on 19 cm (7.5 in) Spacing	1213 kg (2674 lb)	1488 kg (3280 lb)			2000 kg (4409 lb)
Weight with Combination Box on 19 cm (7.5 in) Spacing	1373 kg (3027 lb)	1696 kg (3738 lb)			2252 kg (4965 lb)
Tires	7.5-20, 4PR Rib Implement				
	7.5-20, 4PR Double-Rib Implement				
Box Capacity (plain box)	9.2 bu./m (2.8 bu/ft) 22.4 bu Total	9.2 bu/m (2.8 bu/ft) 28 bu Total			9.2 bu/m (2.8 bu/ft) 36.4 bu Total
Box Capacity (combination box)		11.2 bu/m (3.4 bu/ft)			
40% Grain	10.8 bu	13.5 bu			17.5 bu
60% Grain	14.6 bu	18.2 bu			23.6 bu
100% Grain	22.1 bu	27.6 bu			35.9 bu
Grass Seed Box Capacity (optional)	1.5 bu	1.5 bu			1.7 bu
Acre Meter	Standard				
Depth Gauging Press Wheels	Optional. (See Attachment section.) 25 x 305 mm (1 x 12 in) 51 x 330 mm (2 x 13 in) 102 x 305 mm (4 x 12 in) Double Rib				
Depth Bands for Cast Iron Boots	Optional. (See Attachment section.) 241 mm (9-1/2 in) and 267 mm (10-1/2 in) Diameter				

Tru-Vee is a trademark of Deere & Company

OUO6074,0000C83-19-03MAR20

Locate and Record Product Identification Number



N89152AD—UN—07SEP89

A—Identification Plate

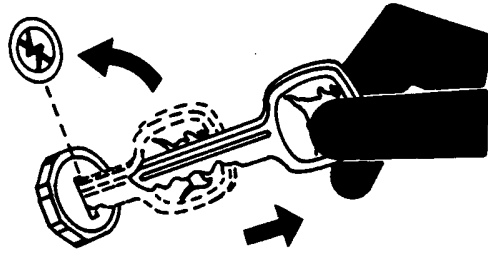
Identification plate (A) is located on the front left-hand end of the grain box as shown. Record it below.

Model	
Serial Number	
Date Purchased	

(Specifications and designs are subject to change without notice.)

AG,OU06074,1032-19-09MAY00

Keep Machines Secure



TS230—UN—24MAY89

1. Install vandal-proof devices.
2. When machine is in storage:
 - Lower equipment to the ground
 - Set wheels to widest position to make loading more difficult
 - Remove any keys and batteries
3. When parking indoors, put large equipment in front of exits and lock your storage buildings.
4. When parking outdoors, store in a well-lighted and fenced area.
5. Make note of suspicious activity and report any thefts immediately to law enforcement agencies.
6. Notify your John Deere dealer of any losses.

DX,SECURE2-19-18NOV03

Keep Proof of Ownership



TS1680—UN—09DEC03

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

DX,SECURE1-19-18NOV03

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John Deere Service Literature

Technical Information

Technical information can be purchased from John Deere. Publications are available in print or CD-ROM format.

Orders can be made using one of the following:

- John Deere Technical Information Store: **www.JohnDeere.com/TechInfoStore**
- Call 1-800-522-7448
- Contact your John Deere dealer

Available information includes:



TS189—UN—17JAN89

PARTS CATALOGS list service parts available for your machine with exploded view illustrations to help you identify the correct parts. It is also useful in assembling and disassembling.



TS191—UN—02DEC88

OPERATOR'S MANUALS providing safety, operating, maintenance, and service information.



TS224—UN—17JAN89

TECHNICAL MANUALS outlining service information for your machine. Included are specifications, illustrated assembly and disassembly procedures, hydraulic oil flow diagrams, and wiring diagrams. Some products have separate manuals for repair and diagnostic information. Some components, such as engines, are available in a separate component technical manual.



TS1663—UN—10OCT97

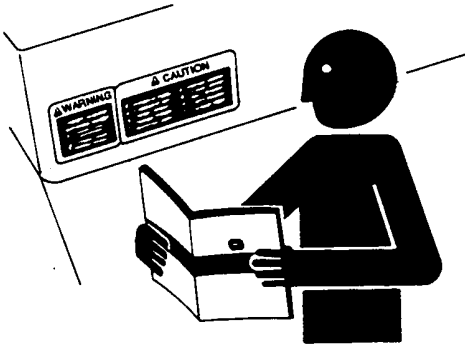
EDUCATIONAL CURRICULUM including five comprehensive series of books detailing basic information regardless of manufacturer:

- Agricultural Primer series covers technology in farming and ranching.
- Farm Business Management series examines “real-world” problems and offers practical solutions in the areas of marketing, financing, equipment selection, and compliance.
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- Fundamentals of Compact Equipment manuals provide instruction in servicing and maintaining equipment up to 40 PTO horsepower.

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John Deere Service Keeps You on the Job

John Deere Is At Your Service



TS201—UN—15APR13

CUSTOMER SATISFACTION is important to John Deere.

Our dealers strive to provide you with prompt, efficient parts and service:

- Maintenance and service parts to support your equipment.
- Trained service technicians and the necessary diagnostic and repair tools to service your equipment.

CUSTOMER SATISFACTION PROBLEM RESOLUTION PROCESS

Your John Deere dealer is dedicated to supporting your equipment and resolving any problem you may experience.

1. When contacting your dealer, be prepared with the following information:

- Machine model and product identification number
- Date of purchase
- Nature of problem

2. Discuss problem with dealer service manager.

3. If unable to resolve, explain problem to dealership manager and request assistance.

4. If you have a persistent problem your dealership is unable to resolve, ask your dealer to contact John Deere for assistance. Or contact the Ag Customer Assistance Center at 1-866-99DEERE (866-993-3373) or e-mail us at www.deere.com/en_US/ag/contactus/.

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