HOWERTON

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SERVICE SHOP
COPY

# John Deere
# B-B
# Grain Drill

## Operator's Manual
## OM-N159291
## Issue D2

# TO THE PURCHASER

M 1201

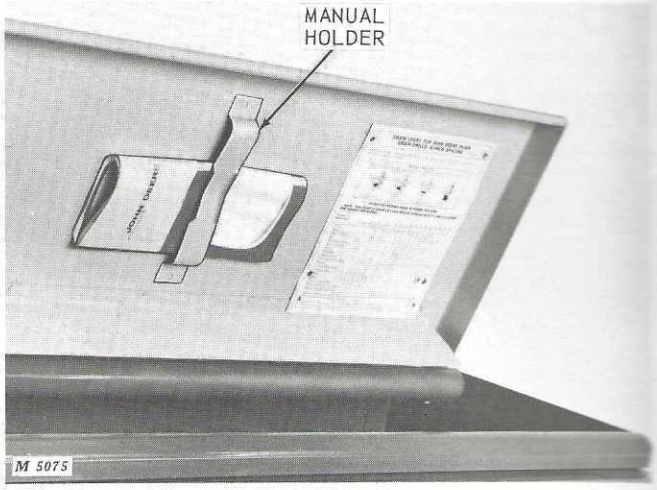
Your new Grain Drill is designed to give you many years of satisfactory service. Its successful operation depends upon the care given it and how it is operated.

The Operation and Service sections of this manual have been prepared to assist the operator in servicing and adjusting the drill to meet varying field conditions.

If you find that you need information not covered in this manual, see your John Deere dealer. He can give you prompt "know-how" service in the field or in his shop.

When in need of parts, go to your John Deere dealer. Be sure to give him a complete description of the part, the model of the drill, and the year purchased. The model and date purchased should be recorded at the bottom of this page as soon as you have received your drill.

Right-hand and left-hand reference is determined by standing at the rear of the drill and facing the direction of travel.




Study this manual carefully. After you are thoroughly familiar with its contents, return it to the holder inside the grain box cover for ready reference.

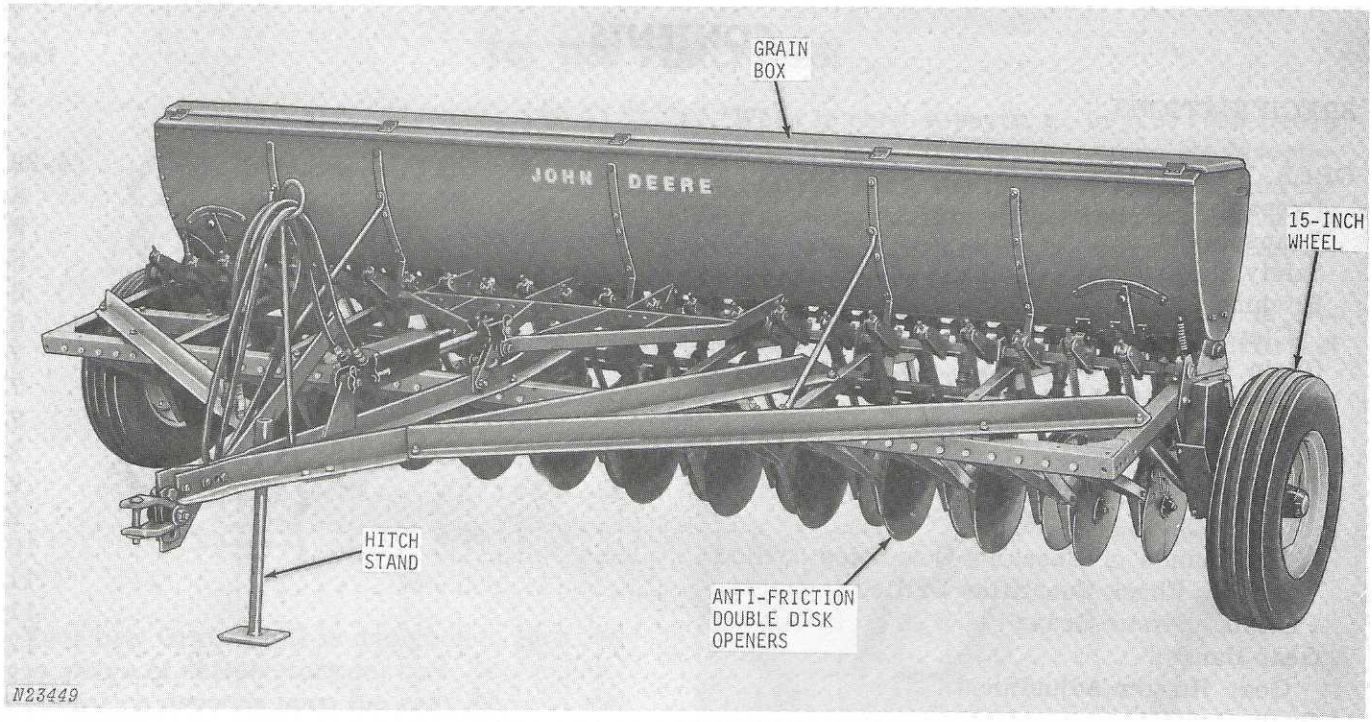
The warranty on this grain drill appears on your copy of the purchase order which you should have received from your dealer when you purchased the grain drill.

⚠ This safety alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

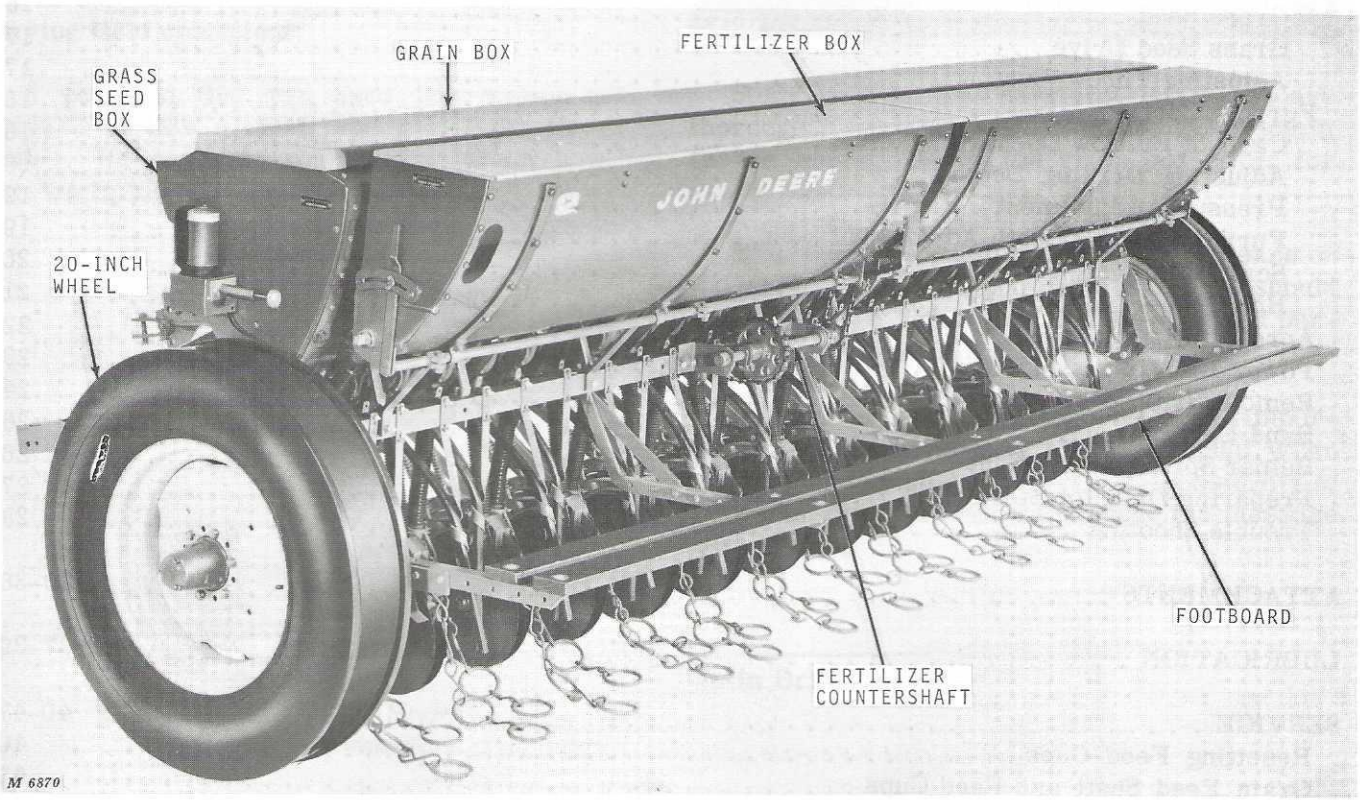
This is a . . . . . Grain Drill
(Model)
Date Purchased . . . . . 19. . . .

Series Number . . . . . .

# CONTENTS

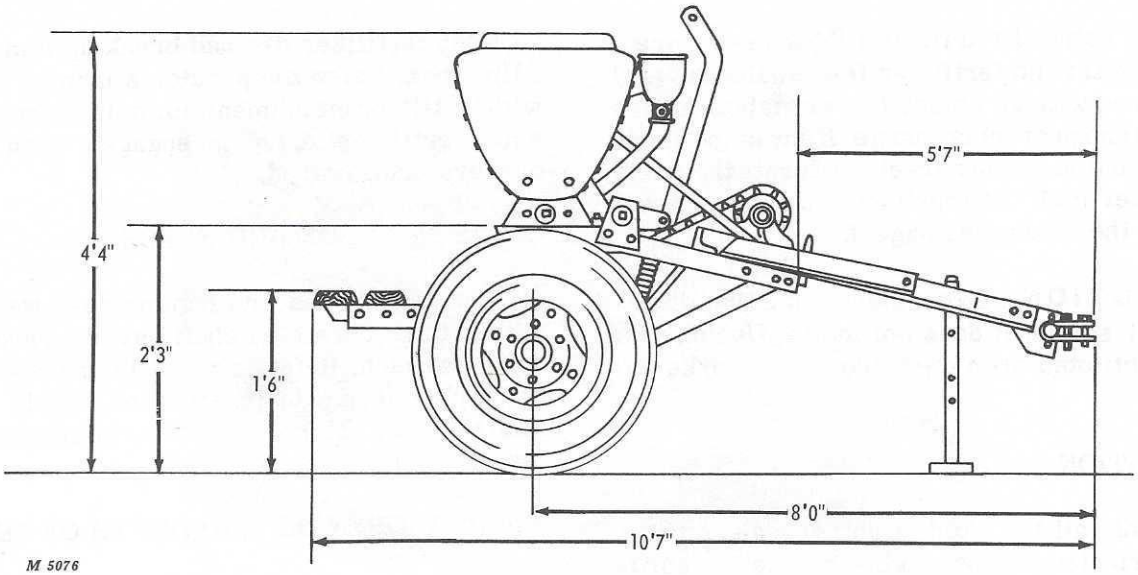



*Front View of John Deere B246B Grain Drill with 15-Inch Wheels*




*Rear View of John Deere B246B Grain Drill with 20-Inch Wheels*

# SPECIFICATIONS




| | B 206 B | B 246 B |
|---|---|---|
| Drilling Width | 10 ft. | 12 ft. |
| Over-All Width | 12 ft. 2 in. | 14 ft. 2 in. |
| Approximate Weight Empty* | 1804 lbs. | 1998 lbs. |
| Spacing of Feeds | 6 in. | 6 in. |
| Number of Disk or Hoe Openers | 20 | 24 |
| Tire Size (15-inch wheels) | 7.60 x 15 | 7.60 x 15 |
| (20-inch wheels) | 7.50 x 20 | 7.50 x 20 |
| Grain Box Capacity (60 lbs. per bu.) | 1054 lbs. | 1249 lbs. |
| Grain Box Capacity | 17.5 bu. | 20.8 bu. |
| Fertilizer Box Capacity (64 lbs. per cu. ft. of fertilizer) (80 lbs. per bu.) | 647 lbs. | 773 lbs. |
| Grass Seed Capacity (60 lbs. per bu.) | 70 lbs. | 83 lbs. |
| Grass Seed Capacity | 37 quarts | 42 quarts |
| Wheel Revolutions per Acre** (15-inch wheels) | 613 | 511 |
| (20-inch wheels with ribbed implement tires) | 460 | 384 |
| (20-inch wheels with double ribbed concave tread or automotive tires) | 441 | 367 |

*The approximate weight given is for a drill equipped with power lifts, tractor hitch, footboards, 15-inch wheels, cover chains and double disk furrow openers.

**The wheel revolutions per acre shown above are for pneumatic tires inflated as recommended on page 13.

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

*(Specifications and design subject to change without notice.)*

# OPERATION

## PREPARING DRILL FOR USE

Before using the drill after it has been stored, turn the grain and fertilizer feed shafts several revolutions with an adjustable wrench to loosen the parts and prevent breakage. If any of the feeds are tight and do not turn freely, saturate the parts with diesel fuel. For further information about checking the feeds, see page 7.

**⚠ CAUTION: Be careful when using diesel fuel so that it does not ignite. Use only in a well ventilated area away from any sparks and flames.**

### LUBRICATION

Wipe off all the old dirt and grease on parts to be lubricated and thoroughly lubricate according to instructions on pages 37 through 39. Replace any grease fittings which are missing. Remove the protective coating of diesel fuel from inside the fertilizer box. Wipe off all the grain, fertilizer and grass seed tubes.

### TIRES

Check the tire inflation to save unnecessary wear on tires and to improve the field performance of your drill. See page 13 for correct tire inflation information.

### GRAIN BOX AND FEEDS

Before filling grain box, make sure that foreign objects such as bolts or stones are not lodged in the feeds. Turn feed shaft several revolutions with a wrench, see page 7. Make sure drive gears are fully engaged when furrow openers are lowered, see page 12.

Refer to chart inside grain box cover or on page 9, and instructions on pages 7 and 8 and set grain feeds and gates. *NOTE: Some adjustment of the setting may be necessary once you start drilling, see pages 10 and 11.*

### FERTILIZER BOX AND FEEDS

Keep fertilizer dry and break up lumps when filling box. Refer to operator's manual included with fertilizer attachment, for adjustments. Make sure fertilizer drive is engaged when furrow openers are lowered.

### GRASS SEED BOX AND FEEDS

Mix grass seed and legume seed well, when filling box. Turn feed shaft several revolutions with a wrench. Refer to chart in grass seed box or on page 16, and instructions on page 15 and set shifter lever. Make sure drive is engaged when furrow openers are lowered.

### FURROW OPENERS AND DEPTH OF SEEDING

Check location of pressure rod collar and adjusting washer, see page 19. Inspect and disconnect scrapers if they are not required, see pages 20 and 21. Set power lift hand wheel and connecting link (page 23), remote hydraulic cylinder stop (page 24) or hand lever (page 26), to secure desired depth of seeding.

### GRAIN, FERTILIZER, AND GRASS SEED TUBES

Inspect all tubes to make sure they are all in place, clean, and are free of obstructions. Replace worn or damaged tubes.

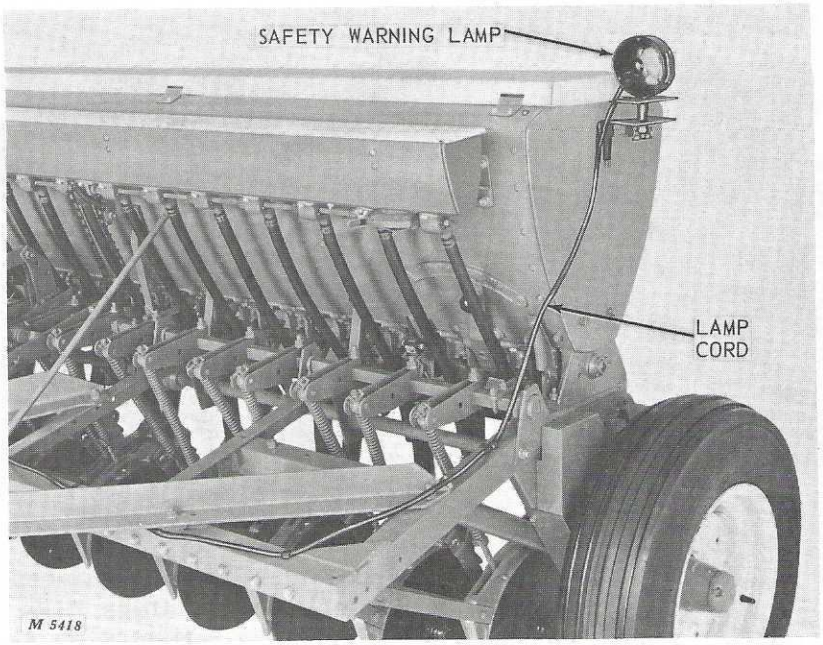
### DISENGAGING DRIVES

Seed and fertilizer combinations being drilled may require the use of only one or two of the three boxes. To eliminate unnecessary wear, the grass seed, grain, and fertilizer drives should be locked out of gear when they are not being used. Make sure drives being used engage when furrow openers are lowered and disengage when furrow openers are raised. See drive information on page 12.

### OPERATING SAFETY

Read safety suggestions on page 5 before starting drill.

## TRANSPORTING




When transporting grain drill on a road or highway at night or during the day, use accessory lights and devices for adequate warning to the operators of other vehicles. In this regard, check local governmental regulations. Various safety lights and devices such as the one illustrated on this page are available from your John Deere dealer.

**CAUTION: Never transport drill at road speeds in excess of 10 miles per hour.**

## SAFETY SUGGESTIONS

Be careful when operating your grain drill. The following rules, if followed, will help prevent injury to the operator and his assistants.

Do not oil, grease, or adjust a farm machine that is in motion.

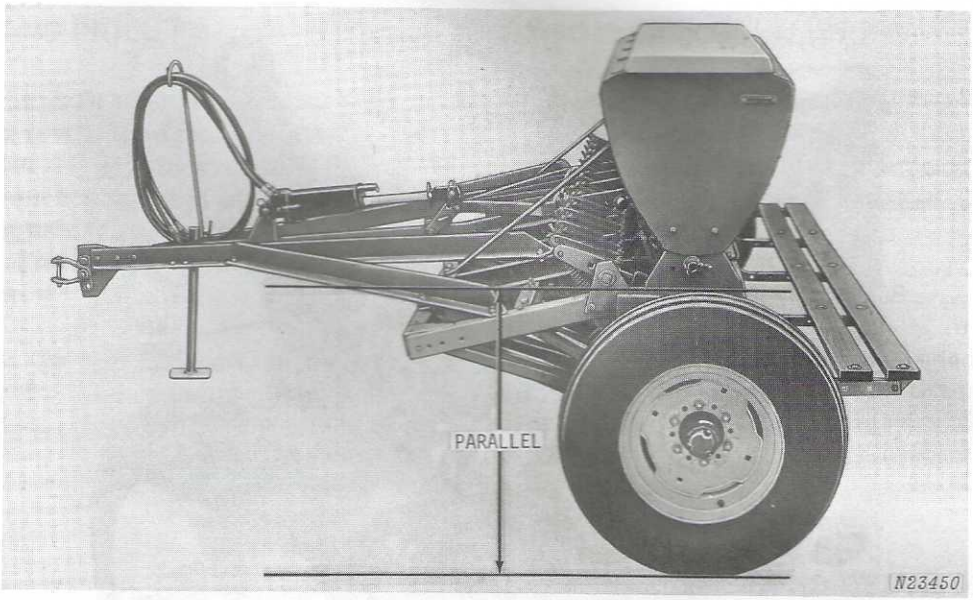
Only one person—the operator—should be permitted on the tractor when tractor and drill are in operation.

Never ride, or permit others to ride, on the drawbar of the tractor or drill, or on the front of the drill.

*NOTE: There are several references in this manual to the use of diesel fuel as a cleaning agent. Be careful when cleaning with this fuel so that it does not ignite. Use only in a well ventilated area and away from any sparks or flames.*

Warning—Before filling grain or fertilizer boxes, properly hitch drill to tractor to prevent possibility of drill tipping over backward.

## HITCHING DRILL




It is important to hitch the drill properly. The proper hitch height is determined by standing at one end of the drill after it is hitched to the tractor and observing that the drill grain box is level or parallel with the ground.

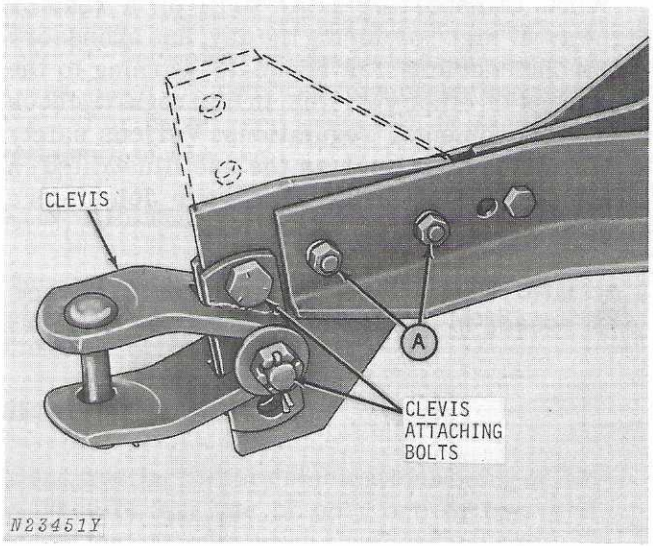
When planting in hard or trashy seedbeds, hitch drill so box is tilted slightly forward to obtain greater penetration and trash clearance. THIS IS IMPORTANT!

Hitching drill so box is tilted too far forward causes furrow openers to swing back and up resulting in the seed openings in boots being above the ground line. The disks must then cut deep in order for seed to be placed in furrow trench.

Hitching drill so box is tilted back causes furrow openers to swing forward and under resulting in seed openings becoming clogged, openers wearing excessively, and seed and fertilizer being improperly placed.

**⚠ CAUTION: Before filling grain or fertilizer boxes, properly hitch drill to tractor to prevent possibility of drill tipping over backward.**

## CLEVIS ADJUSTMENT



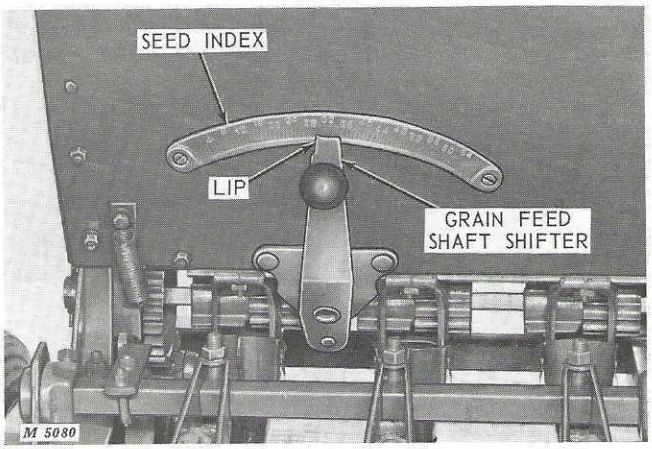

If adjustment is necessary after proper hitch height is determined, remove the clevis attaching bolts and move clevis to upper or lower hole in clevis plate. Replace bolts. When possible, invert the tractor drawbar to obtain proper hitch height.

Additional adjustment may be obtained by removing bolts "A" and reversing the hitch plate (dotted lines).

*NOTE: When hitching drill to tractor with one inch hitch pin, drill larger hole in drill clevis.*

## GRAIN BOX AND FEEDS

### SETTING GRAIN FEEDS



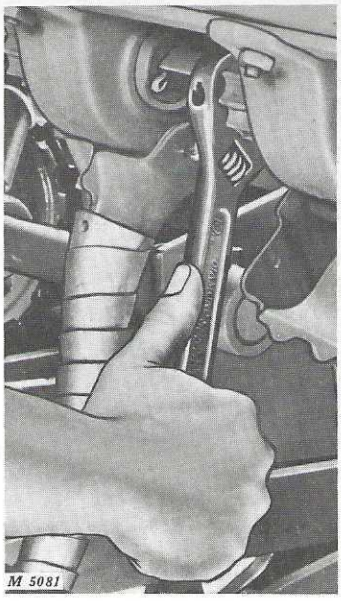

The amount of seed drilled per acre is controlled by the feed shaft shifter on outside of box. Moving the feed shaft shifter adjusts the feeds for small or large quantities. Use the drilling chart fastened to box cover or on page 9 as your guide.

Because the quantity drilled will vary according to the size and variety of grain being drilled, it may be necessary to set the grain feed shaft shifter at a larger or smaller quantity setting than shown on the chart. See page 10.

The lip of the feed shaft shifter is the indicator. Pull feed shaft shifter past the desired notch on seed index, then bring shifter back slowly and set lip into desired notch.

*NOTE: When seed being drilled is not shown on the grain chart, select a seed on the chart of comparable weight and size and use the setting recommended for it.*

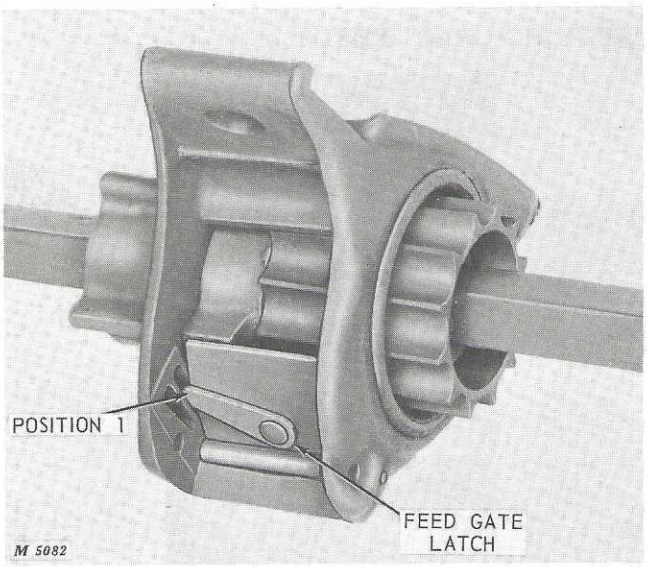
### CHECKING GRAIN FEEDS




*Turning Feed Shaft*

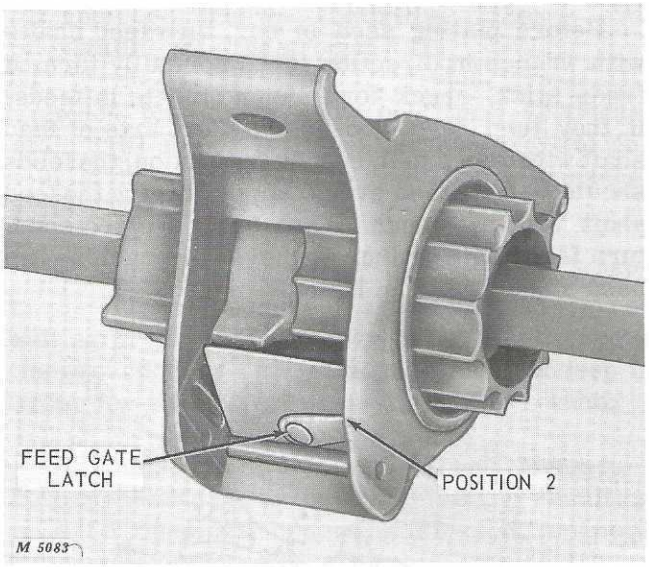
Before putting seed in box, turn feed shafts with wrench in direction feeds normally turn. If feeds stick, check for foreign objects in feeds. If they turn hard, loosen moving parts of feed shaft with diesel fuel. During the season, the feeds should be loosened every day by turning the feed shaft with a wrench. When using treated seed, turn feeds with wrench whenever the machine has been standing for an hour or more.

## SETTING FEED GATES



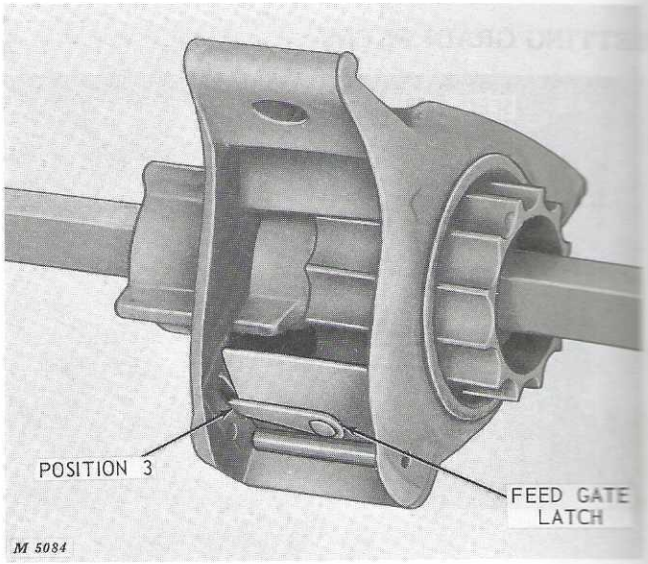

*Position 1*

Set feed gate latch in Position 1 when drilling wheat, oats, barley, rye, flax, rice and similar seeds.




*Position 2*

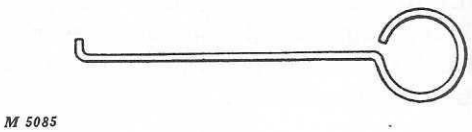
Set feed gate latch in Position 2 when drilling small size peas, common beans, soybeans, corn, and extra large quantities of trashy oats.




*Position 3*

Set feed gate latch in Position 3 when drilling large size peas, soybeans, kidney beans, and lima beans.

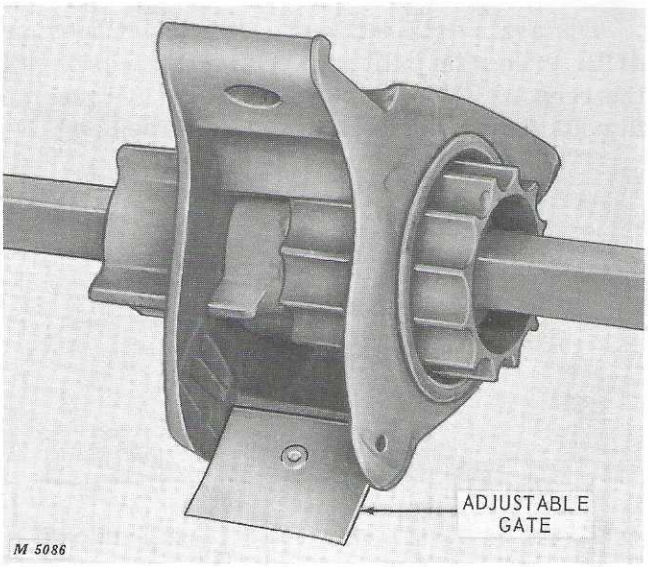
It is very important that the feed gates be set alike and that the proper setting be used for the particular seed being drilled. Improper setting of the gates will result in uneven drilling, wrong quantities being drilled, and crushing of the seed.




The above tool is available for changing the settings of the feed gate latches.

## CLEANING GRAIN FEEDS

Occasionally the bottom of the feed cups should be cleaned. Remove the grain tubes, drop adjustable gates, and clean out the cups.




## CHART FOR SEEDING GRAIN IN POUNDS PER ACRE

**NOTE: THIS CHART IS BASED ON CLEAN SEED OF AVERAGE QUALITY AND U. S. STANDARD WEIGHT PER BUSHEL.**

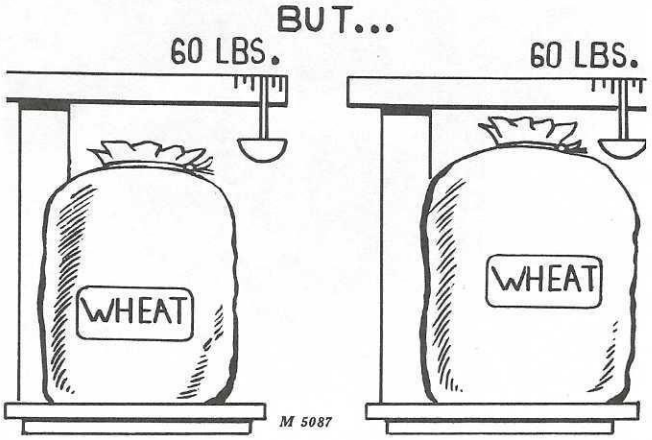
| Notches on Seed Index | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat | 34 | 57 | 87 | 117 | 146 | 174 | 206 | 238 | 269 | 298 | 327 | 356 | | | |
| Barley | 22 | 45 | 68 | 93 | 117 | 145 | 172 | 200 | 228 | 250 | 280 | 310 | | | |
| *Oats or Safflower | | 28 | 50 | 69 | 86 | 105 | 129 | 145 | 166 | 183 | 200 | 216 | 233 | 245 | 260 |
| Rye | | 57 | 85 | 110 | 144 | 174 | 202 | 230 | 262 | 292 | | | | | |
| Rice—Short Kernel | | | 62 | 85 | 112 | 140 | 163 | 189 | 217 | 239 | 270 | 293 | | | |
| Rice—Long Kernel | | | 50 | 71 | 93 | 118 | 141 | 168 | 189 | 212 | 234 | 257 | | | |
| Peas | | 51 | 91 | 138 | 180 | 236 | 288 | 336 | 390 | 445 | | | | | |
| Buckwheat | | 37 | 68 | 85 | 111 | 142 | 164 | 203 | 230 | 254 | | | | | |
| Maize or Vetch | 27 | 54 | 80 | 105 | 139 | 169 | 196 | | | | | | | | |
| Soybeans or Navy Beans | | 43 | 78 | 128 | 168 | 222 | 262 | 306 | 360 | 404 | 443 | 500 | 568 | 598 | 666 |
| * Brome see page 11 | | | 5 | 9 | 13 | 18 | 28 | | | | | | | | |
| Crested Wheat Grass | | 14 | 22 | 29 | 41 | 47 | 56 | | | | | | | | |
| Alfalfa or Rape | 14 23 33 | 43 54 | 64 | 76 | | | | | | | | | | | |
| Millet | 15 24 | 47 57 | 68 80 | 93 | | | | | | | | | | | |
| Hemp | 10 18 30 | 38 47 | 56 68 | | | | | | | | | | | | |
| Flax or Sudan Grass | 19 30 | 38 | 63 | 84 | | | | | | | | | | | |

*Oats are Based on 37 lb. Variety

When drilling seed not listed in the grain chart or when drilling heavier or lighter than standard weight seed, check quantities drilled as explained on page 11.

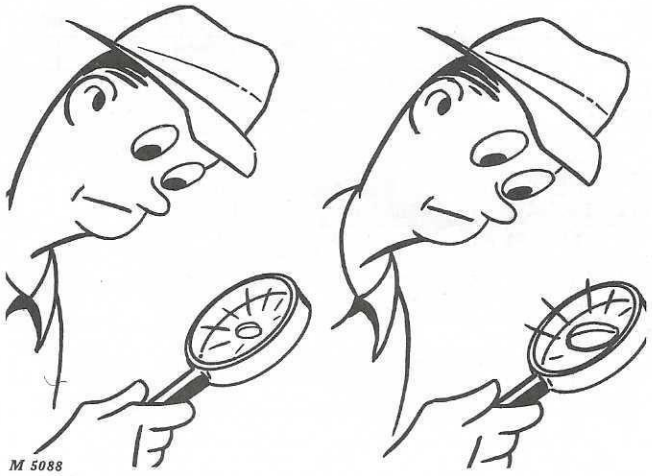
## IMPORTANCE OF CHECKING QUANTITIES DRILLED

The grain drill feeds are "the heart" of your drill. Precision built into each feed cup is one of the reasons John Deere grain drills have become famous for accurate and dependable seeding.




When you buy a bushel of seed, wheat for instance, you may receive either the large or small bag... both weigh 60 pounds.

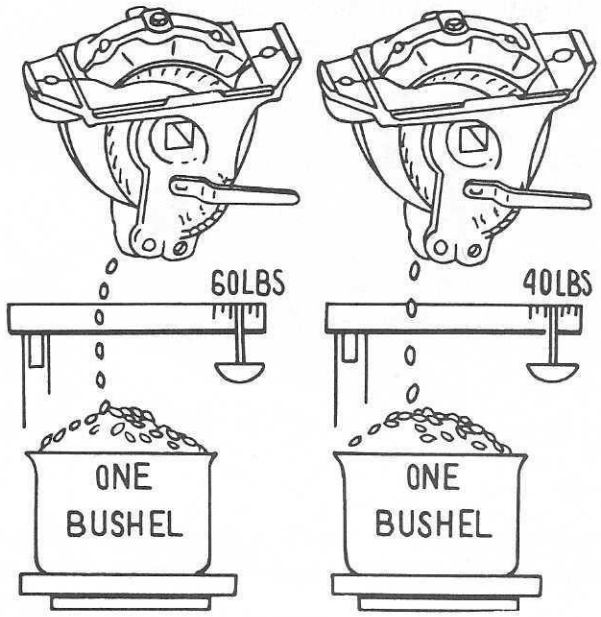
Let's look at the seed to see why—




The seed from the small bag is compact and heavy.

The seed from the large bag may not only be larger but lighter in weight than the seed from the small bag. It may have a lower moisture content or have unfilled kernels or it could contain more trash than the seed in the small bag.

This is what happens when the seed is put into your drill—




When each feed is turned the same number of revolutions, the feeds meter exactly the same volume of both the small and large wheat seeds. They both fill the bushel.

But, notice the scale. The bushel of seed from the small bag weighs 60 pounds. The bushel of seed from the large bag weighs only 40 pounds.

This is the weight (pounds per acre) you are drilling.

The difference in the pounds per acre drilled is due to the difference in the seed; that is, weight, size, type, variety, moisture content, and kind of seed.

The seed chart in the drill isn't wrong—it's based on a standard weight per bushel which varies by states.

*ALWAYS REMEMBER: Your grain drill feeds meter volume and not weight. In this case, one bushel. Therefore, always check the quantity drilled as explained on page 11 before beginning to drill your crops.*

## HOW TO CHECK QUANTITIES DRILLED

The general method for checking quantities drilled is as follows:

1. Make all feed adjustments as shown on the grain drill seed chart.

2. Fill the box level-full in the field and pull the drill a short distance to settle the seed. Refill the box so that it is exactly level-full.

3. Drill a calculated one acre.

4. Carefully weigh the seed required to refill the box level-full.

5. Compare the weight of seed required to fill the box with that shown on the seed chart.

6. Adjust the feed cup setting accordingly to compensate for any variation between the chart and the amount actually drilled.

If a more accurate check is required, the drill should be jacked up off the ground and checked in the following manner:

1. Place seed in drill box and a container under each feed.

2. Make feed cup settings on drill for desired quantity per acre as shown on seed chart.

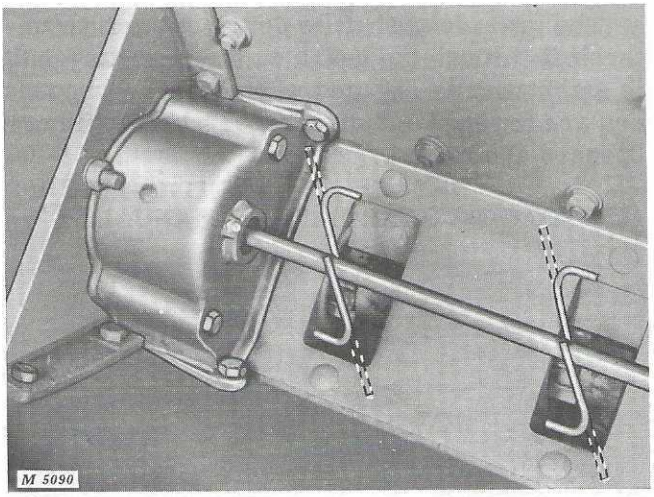
3. Revolve drill wheels the required number of revolutions for one acre, or fraction thereof, as shown on page 3.

4. Carefully weigh the seed in all the containers and compare that to the weight shown on the seed chart.

5. Adjust the feed cup setting to compensate for any variation and repeat the test until the desired quantity is obtained.

*NOTE: These tests may be used for fertilizer as well as grain and grass seeds.*

## PLANTING BROME GRASS




Brome grass is frequently used as part of a grain, grass, and legume mixture.

Brome mixed with cover crops or in the absence of a cover crop mixed with cracked corn or sawdust, can be planted through the grain feeds of the drill. The drill should be equipped with a grain agitator to prevent separation of the brome grass and cover crop, cracked corn, or sawdust.

In rice producing territories, a mixture of brome grass seed and rice hulls, seeded through the grain feeds, has proven satisfactory.

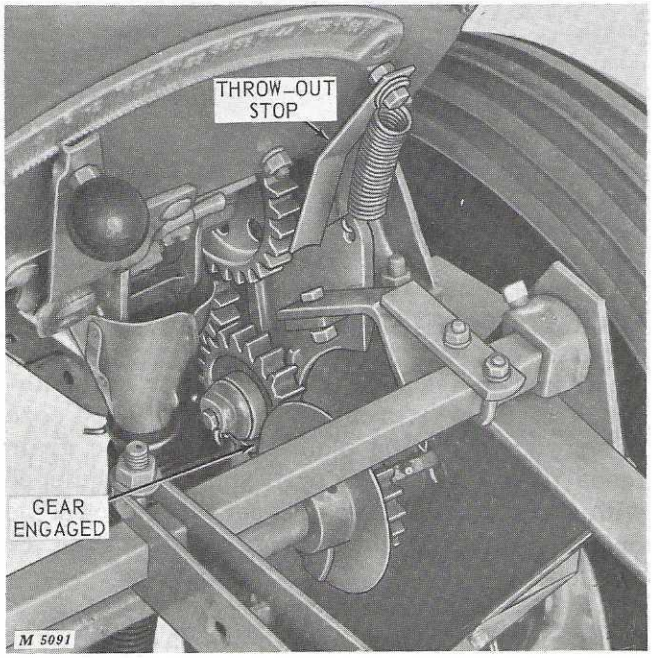
When planting brome grass through the grain feeds, the bent fingers on the grain agitator should be straightened so they dip down into the feed openings to assure a constant flow of seed to the feed roll.

Determine quantity index setting by checking quantities drilled as outlined at left.

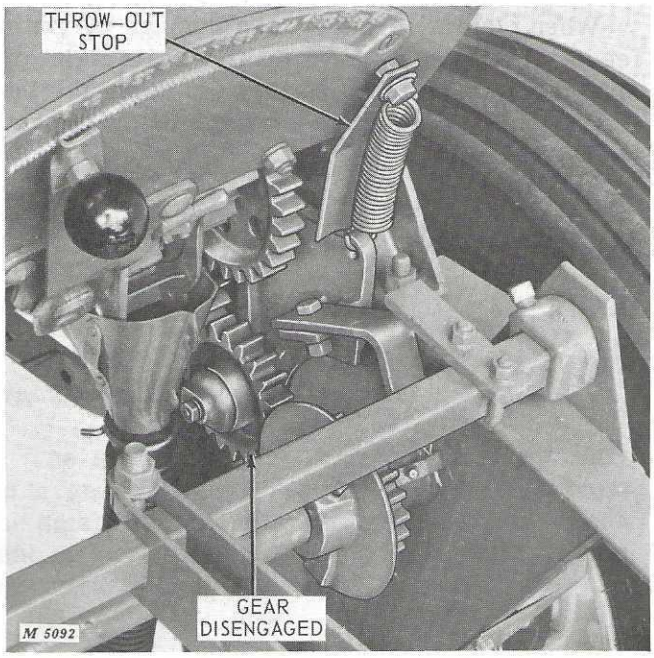
## GEAR HANGER

The grain feed shaft is driven from the countershaft through the gears on the gear hanger. It is automatically engaged when the furrow openers are lowered and disengaged when the furrow openers are raised.

### DISENGAGING GEAR HANGER MANUALLY




*In Gear*

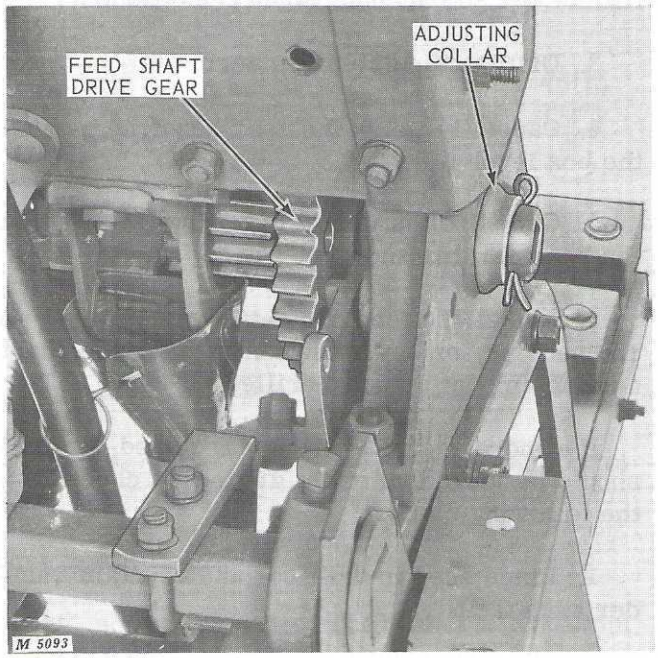



*Out of Gear*

To drill grass seed and fertilizer without drilling grain, position stop so that it holds gear hanger out of gear.

To engage gears, push stop to side, allowing gears to mesh.

### GEAR HANGER ADJUSTMENT



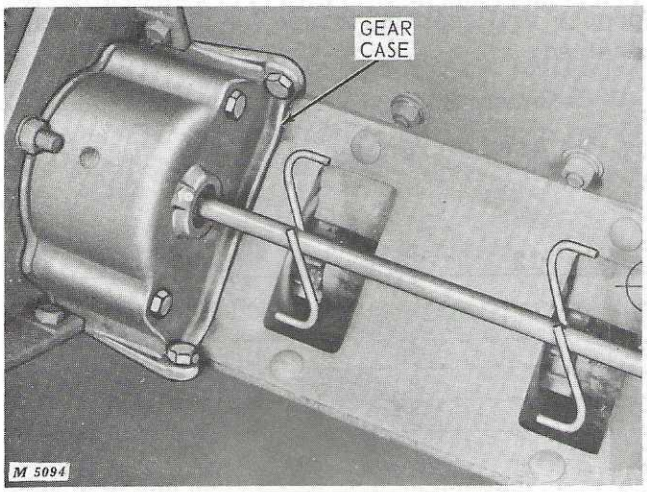

The gear hanger should have just enough play to permit it to swing freely. If permitted to lop over to one side, the gears will not run true and undue wear to the gears will result.

When required, remove the cotter pin that holds adjusting collar on feed shaft. Push feed shaft gear tight against the hanger and replace cotter pin through the set of notches in the collar which line up with the hole in the gear. Be sure gear hanger swings freely after making adjustment. See pages 42 and 43 for instructions on servicing gear hanger.

## GRAIN AGITATOR

Agitators are recommended when drilling trashy, inoculated or very light seeds. Keep agitators out of gear when not needed.

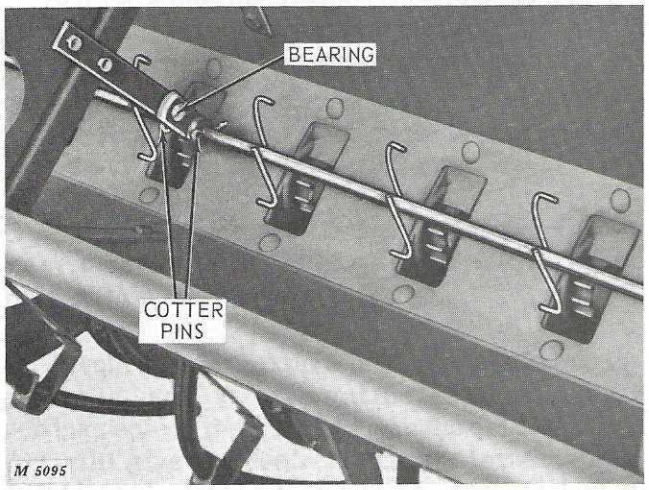
### ENGAGING AGITATOR DRIVE




*Agitator Drive Gear Case*

The agitator is driven through the gear case on each end of the drill. Engage each agitator by fitting the end of the agitator rod into the gear case. Insert and spread a cotter pin through agitator rod on each side of bearing to hold the agitator in gear.

### DISENGAGING AGITATOR DRIVE



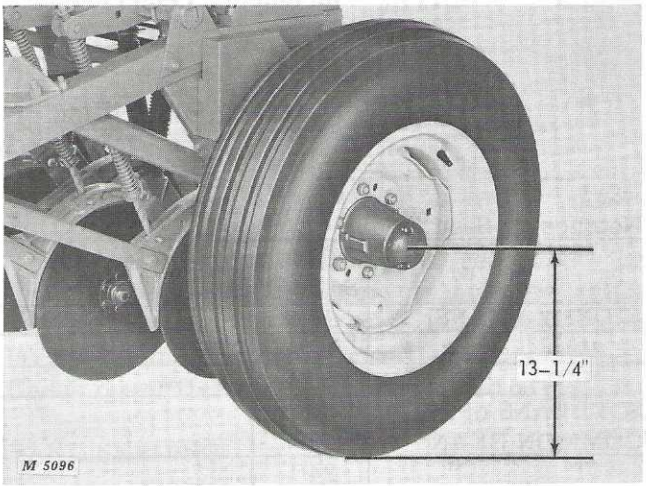

*Agitator Rod in Drive Position*

Remove cotter pin and pull square end of agitator rod out of gear case. Insert and spread cotter pin through rod on opposite side of bearing.

## RUBBER TIRES

Good used automotive tires may be used in place of implement tires. These tires should be of the same size as recommended on page 3. They may be either 4-ply or 6-ply.

### TIRE INFLATION




When drill is equipped with 15-inch wheels, inflate the tires so that the distance from the floor or ground to the center of the axle is exactly 13-1/4 inches. Grain, fertilizer and grass seed boxes should be half full for this measurement.

Drills equipped with fertilizer attachments must have 20-inch wheels and tires for maximum drill flotation.

Inflate 7.50 x 20 ribbed implement and double ribbed concave tread 4-ply tires to 24 psi. DO NOT OVERINFLATE. This pressure provides proper drill cushioning and maintains accuracy of seeding.

Check tire pressure each day before using drill. Road speeds should not exceed 10 miles per hour. When not in use, keep drill out of the sun, as bright sunlight causes tires to check and harden. Grease, oil, and chemicals shorten life of tires. If drill is stored outside, tires should be covered with canvas or other suitable material, or removed from drill and stored in a cool, dry, dark place.

## Chart for Drilling Grass Seed in Pounds Per Acre

| Notches on Grass Seed Index | 1 | 2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|
| Alfalfa; Red, Alsike and Ladino Clovers | 2 | 4½ | 7½ | 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 | ½ | 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 | 1½ | 3 | 4½ | 6 | 8½ | 11 | 15 | 19 | 24 |
| Millet | 1½ | 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 | 2½ | 4 | 6 | 9½ | 13 | 18 | 23 | 28 | 34 |
| Sudan Grass | | | 3 | 7 | 13 | 19 | 26 | 38 | 50 | 63 |
| Crested Wheat; Orchard Grass | | | | 2½ | 4 | 6 | 8½ | 11½ | 15 | 19 |
| Rye Grass; Alta Fescue | | | ½ | 1 | 3½ | 6 | 7½ | 9 | 11 | 14 |

*NOTE: The quantities shown in the above chart are based on seeds of average weight per bushel.*

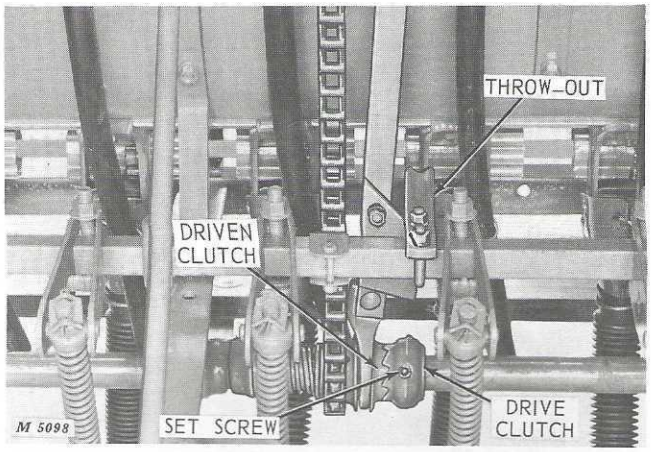
INCREASE the index setting for seeds lighter than average.

DECREASE the index setting for seeds heavier than average.

SEEDS NOT SHOWN ON CHART

When drilling seeds not shown on the chart, compare weight and size of seeds with those shown and use same setting.

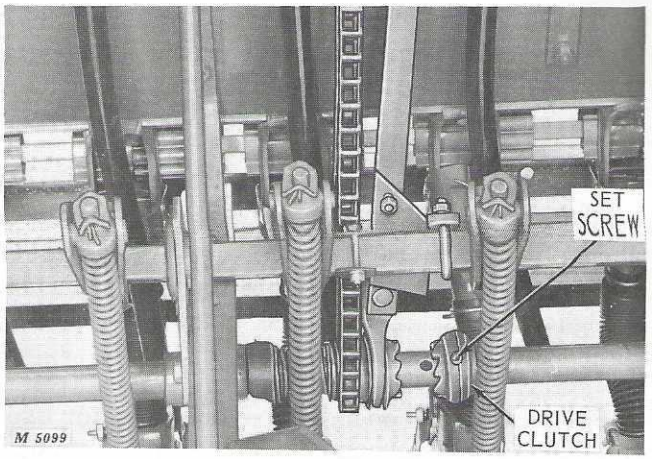
## GRASS SEED DRIVE




*Grass Seed Drive Engaged*

When the furrow openers are lowered, the driven clutch automatically engages with the drive clutch.

The drive for the grass seed feeds should be kept out of gear when the grass seed attachment is not being used, or the attachment can be removed from the drill.



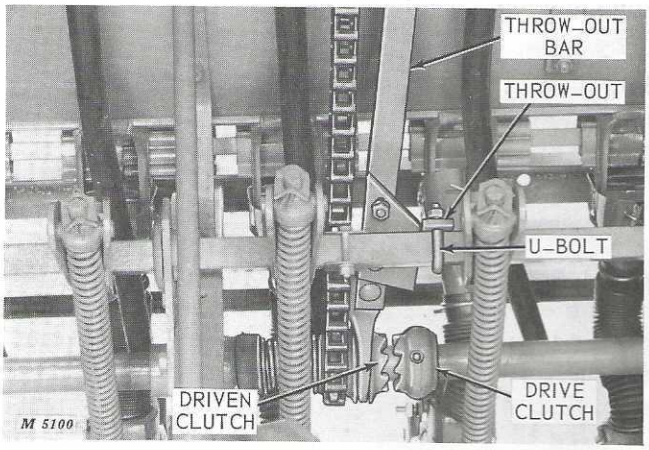

*Grass Seed Drive Disengaged (Not Being Used)*

To disengage drive, loosen set screw in driving clutch and move clutch to the side. Tighten set screw.

To re-engage the drive, loosen set screw in driving clutch and slide driving clutch against driven clutch with the furrow openers lowered. Tighten set screw.

## ADJUSTING THROW-OUT

When furrow openers are raised, the teeth on the driven and driving clutch should be 1/8 inch apart. Adjust throw-out as required and tighten nuts on U-bolt firmly. When properly adjusted, the throw-out automatically disengages the driven clutch when the furrow openers are raised.




*Grass Seed Drive Disengaged (Automatically)*

## FURROW OPENERS

Single disk furrow openers are generally preferred when drilling in hard or trashy soil conditions. The single disk opener has a 13-inch disk blade. They are available with anti-friction bearings.

The double disk anti-friction openers are used when planting in well-prepared seedbeds. Soil throw is minimized with double disk openers even at higher speeds. Double disk blades are 13-1/2 inches in diameter.

Spring trip hoe openers are designed for use in hard or stony soil conditions. Automatic spring trips allow the boot to trip when encountering unyielding objects, such as large stones, and then return to working position. Points are reversible.

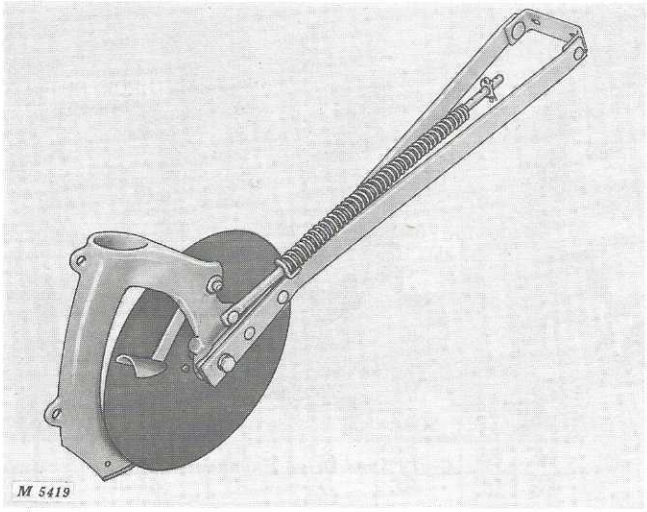
### CARE OF FURROW OPENERS

Never back the drill or allow the drill to roll back, after stopping on a hill, when the furrow openers are in the ground. To do so will cause dirt to clog the seed opening at the bottom of the boots and may cause double disk blades to unscrew and become loose.

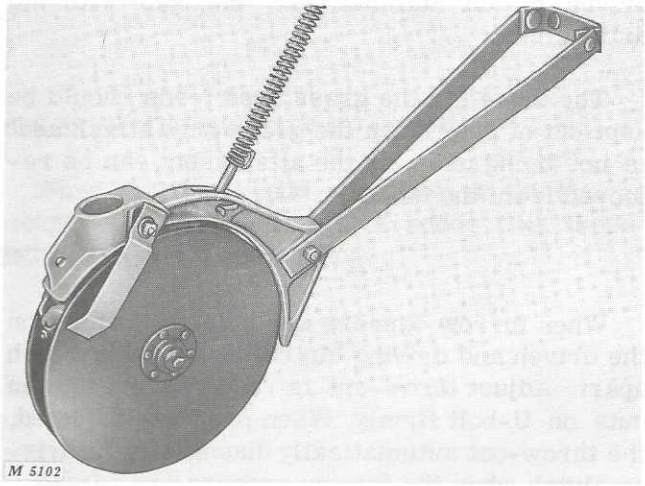
Service your furrow openers thoroughly at the end of the drilling season as explained on pages 45 and 46.

### ADJUSTING DRILLING DEPTH

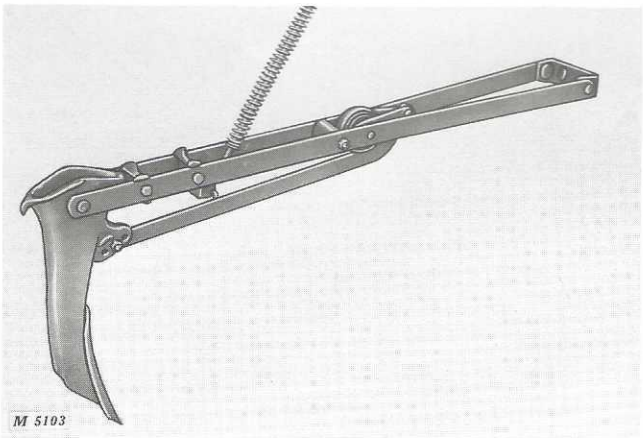
Drilling depth, or depth of furrow opener penetration, is regulated by the opener lifting equipment—power lift, remote hydraulic cylinder, or hand lift lever. Instructions for making the necessary adjustments are on pages 23, 24, and 26. See also furrow opener depth adjustment on page 19.




*Single Disk Furrow Opener*

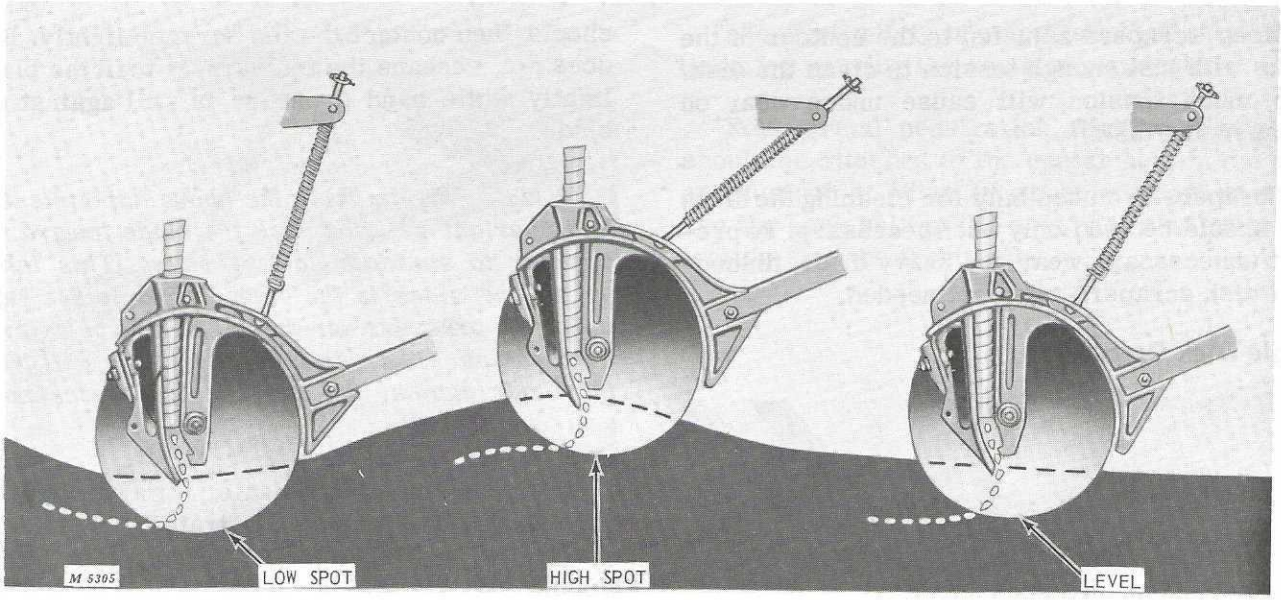



*Double Disk Furrow Opener*




*Hoe Opener*

## PRESSURE ADJUSTMENT



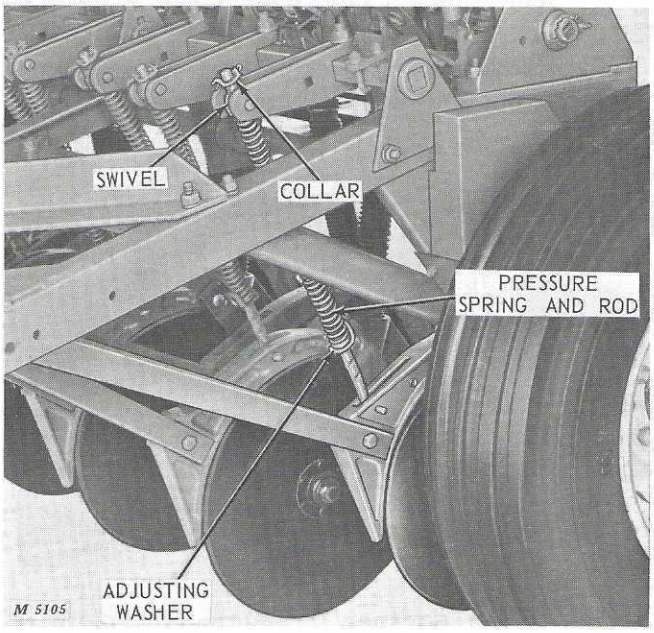

The spring pressure is adjusted by moving the adjusting washer at the bottom of the pressure rod. The pressure on the springs should be adjusted so the furrow opener will penetrate to the proper depth without the collar at the top of the rod striking the swivel on the pressure arm. This will insure even penetration by the furrow openers and will permit them to drop into low spots. In this way, the seed is put in at a more even depth. Use no more spring pressure than necessary, depending on ground conditions.

## FURROW OPENER DEPTH ADJUSTMENT

The top of the pressure rod has a varied number of holes depending on the type of furrow opener for adjusting the depth of the openers in relation to each other. To allow each opener to penetrate to the same depth, position collar and cotter pin in most suitable holes. Check and readjust while in the field.

For furrow openers which are to run in the tractor tracks, place the cotter pin through the collar and rod one hole higher on the pressure rod. This will permit the furrow openers to go deeper, to penetrate the wheel tracks and give better coverage of the seed in the row. Adjust spring pressure after depth adjustment has been made.

Use top holes in pressure rod only for extremely deep penetration.

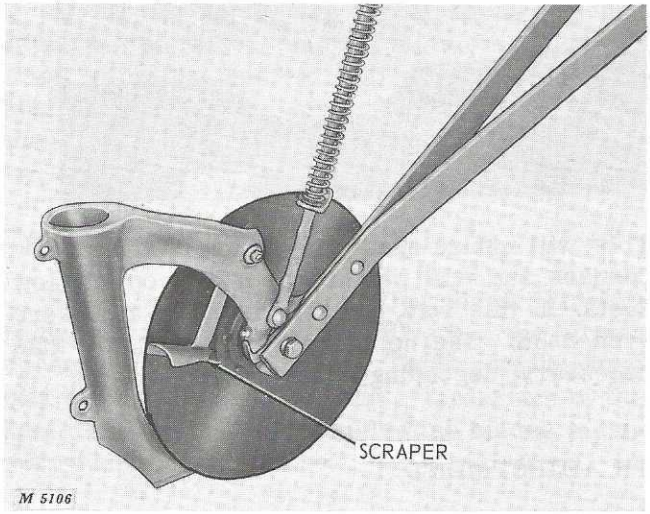


## SCRAPER ADJUSTMENT

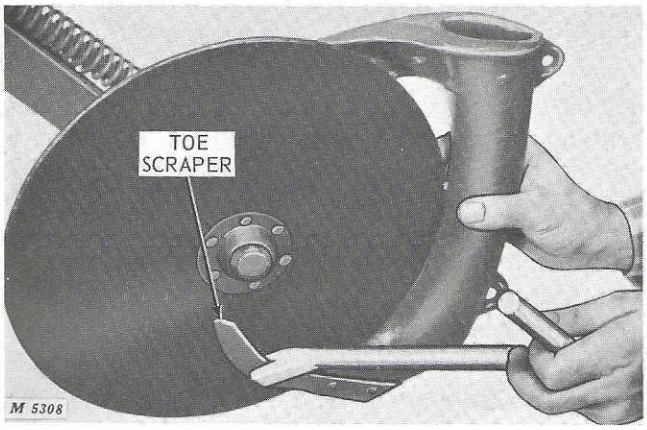
Keep scrapers adjusted to the contour of the disks with just enough tension to clean the disk. Too much tension will cause undue wear on scraper and disk.

Scrapers are used only for cleaning the disks and should be used only when necessary. To prevent unnecessary wear and heavy draft, disconnect disk scrapers when not needed.

### Single Disk Openers




To disconnect single disk scrapers, loosen adjusting nut and turn scrapers back.

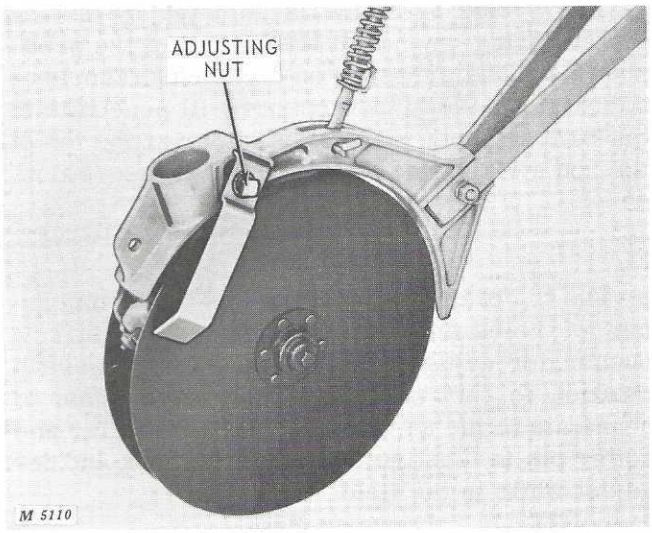



Adjust the scraper by placing the palm of your hand against the inside of the blade just opposite the toe scraper. Push the blade toward the scraper to simulate soil pressure. The blade should then contact the toe scraper lightly. If it does not, reshape the toe scraper to fit the blade lightly while hand pressure is still against the blade.

*NOTE: When making the above adjustment it is important that you push the blade toward the scraper to simulate soil pressure. This takes up all the slack in the bearing and makes sure that soil pressure on the blade will be against the bearing. Otherwise, soil pressure will push the blade against the scraper and unnecessary wear will result.*

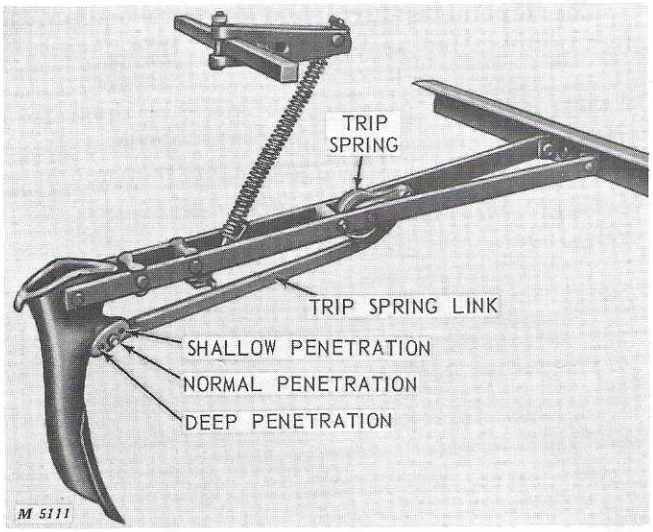
See your John Deere dealer for a scraper adjusting tool like the one illustrated.

### Double Disk Opener



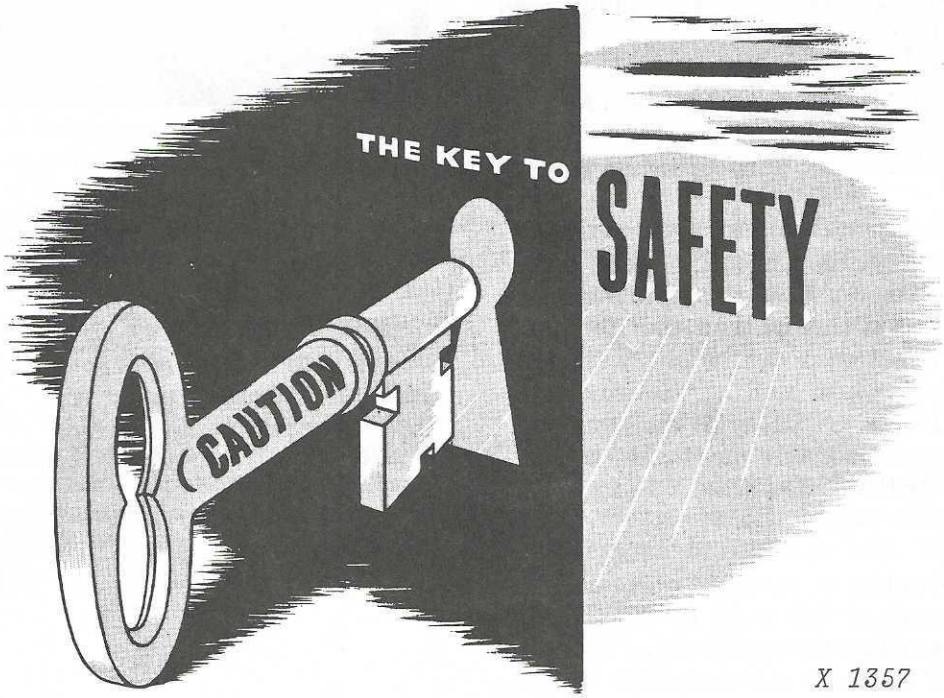

Loosen adjusting nut on double disk scrapers and turn scrapers back to slot provided. Retighten nut.

## HOE OPENER ADJUSTMENT




The spring trip hoe openers have three settings for varying the depth of penetration.

For normal penetration, the trip spring link should be attached to the center hole in the boot as illustrated. When deep penetration is desired, use the back hole in the boot. For shallow penetration, use the front hole.



## ACREMETER

To determine if the correct amount of seed is being drilled, an accurate check of acreage covered must be kept. The acremeter automatically records the acres covered and makes it possible to check the amount of seed being drilled at any time.

Keep acremeter screw and acremeter worm wheel free from dust and dirt.

The acremeter may measure differently than the assumed acreage in a field because of the following reasons:

1. Improper tire inflation.

2. Plot of land contains more or less acres than assumed.

3. Overlapping when drilling or leaving too wide a space between rows on each trip across the field.

4. Loss of tillable acreage because of fences.

5. Turning at the ends without lifting furrow openers.

6. The acremeter is driven from one end of the machine; therefore, it will register more or less acres when drilling around the field and turning in one direction than it will when turning in both directions when drilling back and forth across the field.

HOW TO MEASURE LAND (Without Using the Acremeter)

To find the number of acres in a plot of land, multiply the length of the field by the width of the field in rods and divide by 160. When opposite sides or ends of the field are unequal in length, add them, and take half the sum for the mean length or width.

One rod equals 16-1/2 feet.

An acre contains 160 sq. rods, 4,840 sq. yards, or 43,560 sq. feet. A square acre measures 208.71 feet on each side.

The acremeter furnished as extra equipment may be installed as illustrated on this page.

The proper drive gear, depending upon drill size, was included with the drill to be used if and when an acremeter is purchased. If it has been lost or misplaced, get the proper drive gear from your John Deere dealer.


ADJUSTMENT

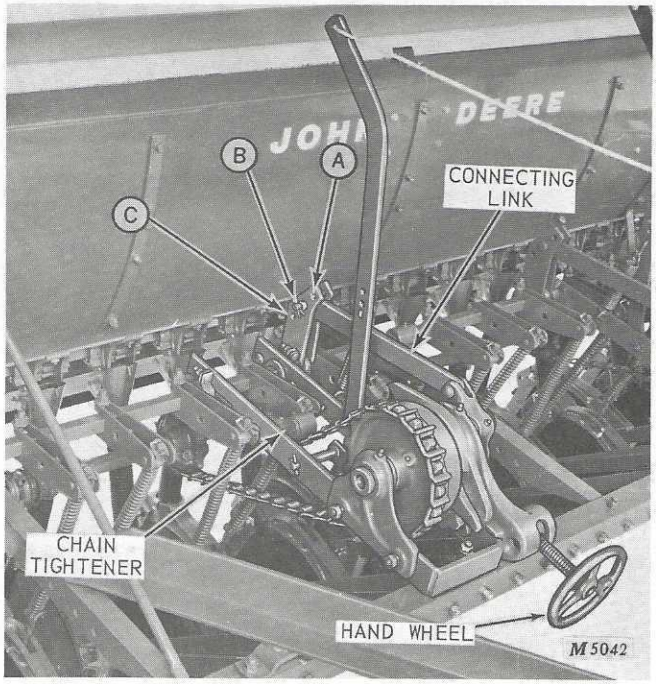
Turn adjusting screw to relieve tension between gears.

*IMPORTANT: Gear teeth should mesh with worm gear but should not "bottom" on worm gear. Tighten lock nut.*

Be sure acremeter is timed as shown on page 43.

## POWER LIFT

### DEPTH ADJUSTMENT

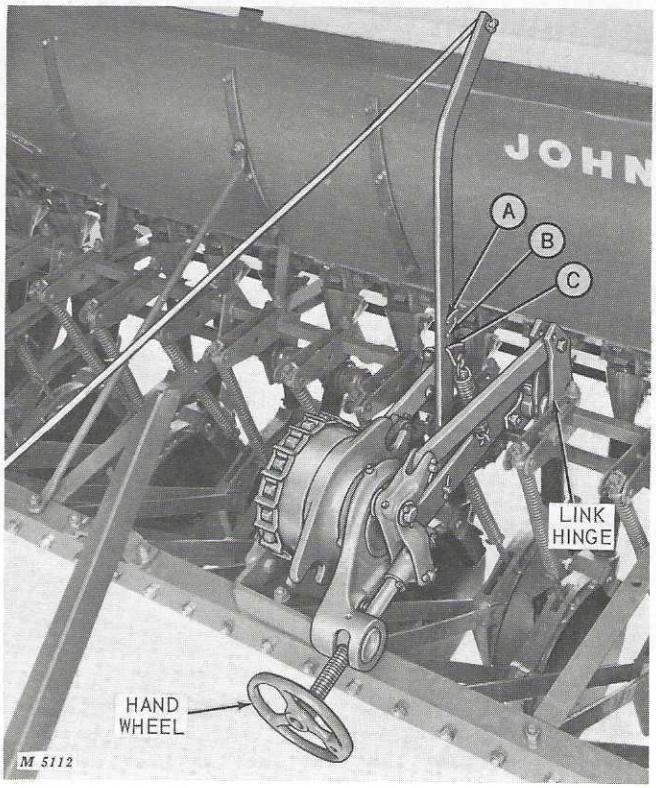



The power lift has two adjustments for regulating the depth of furrow opener penetration:

Connecting Link—For extra shallow penetration, position connecting link in hole "A" in link hinge, hole "B" for normal operation, and hole "C" for extra deep penetration.

Hand Wheel—For finer adjustment between holes "A," "B," and "C," turn hand wheel counter-clockwise to raise furrow openers or clockwise to lower until exact working depth of the furrow openers is obtained.

### TRIP LEVER ADJUSTMENT



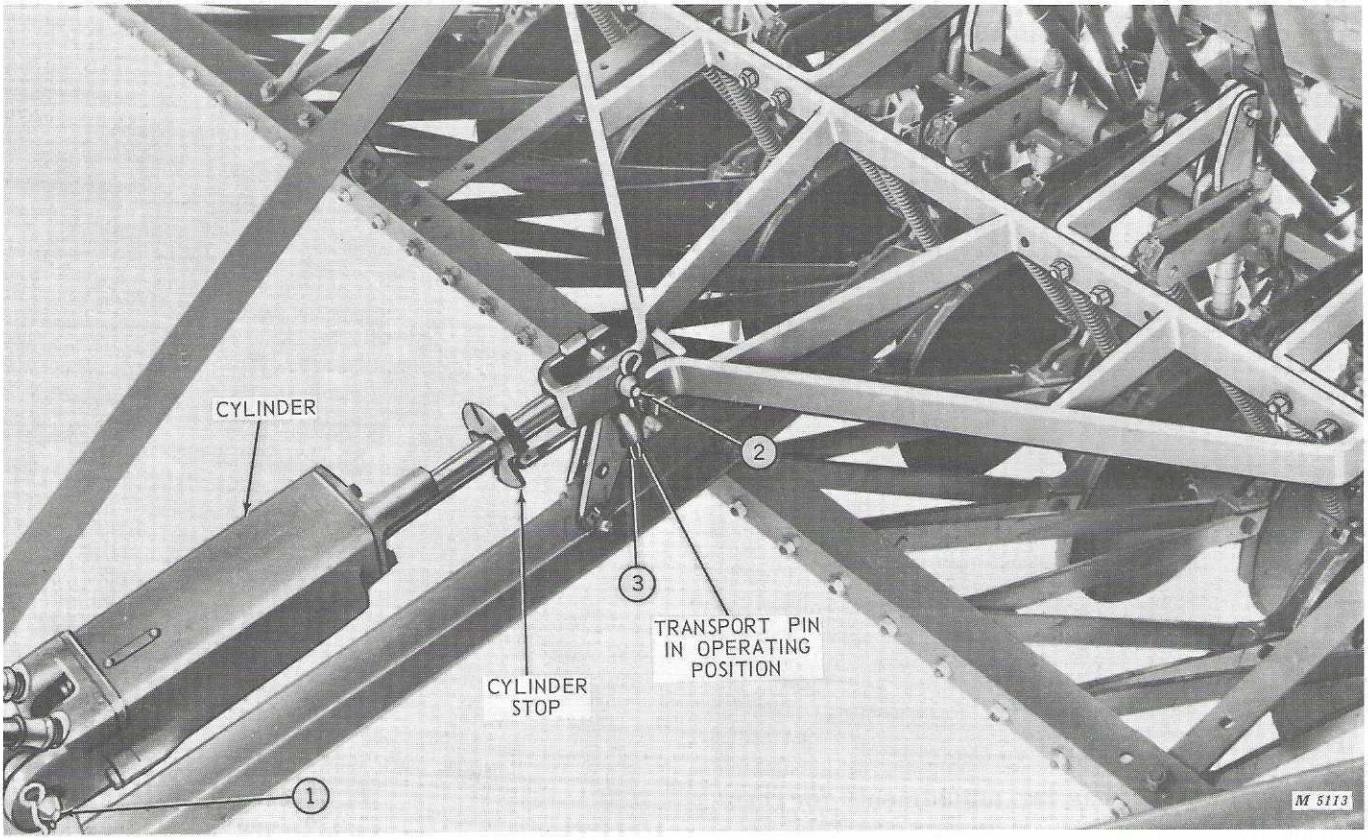

Adjust hook on tension spring in holes "A," "B," or "C" as required to hold trip lever roller firmly seated in power lift.

### DRIVE CHAIN

Be sure drive chain on power lift aligns with sprocket on drill countershaft. Move drive sprocket on countershaft as required for alignment. Adjust chain tightener either up or down by loosening chain tightener bolt. Tighten bolt firmly after adjusting.

*NOTE: Lubricate power lift regularly as indicated on page 38.*

## REMOTE HYDRAULIC CYLINDER




### INSTALLING REMOTE HYDRAULIC CYLINDER

1. After drill has been hitched to tractor, attach hose end of cylinder to front support plate.

2. Extend cylinder until front connecting pin can be inserted through pivot arm.

3. Extend cylinder as required to release transport pin. Locate pin in operating position shown. Check operation by raising and lowering furrow openers several times.

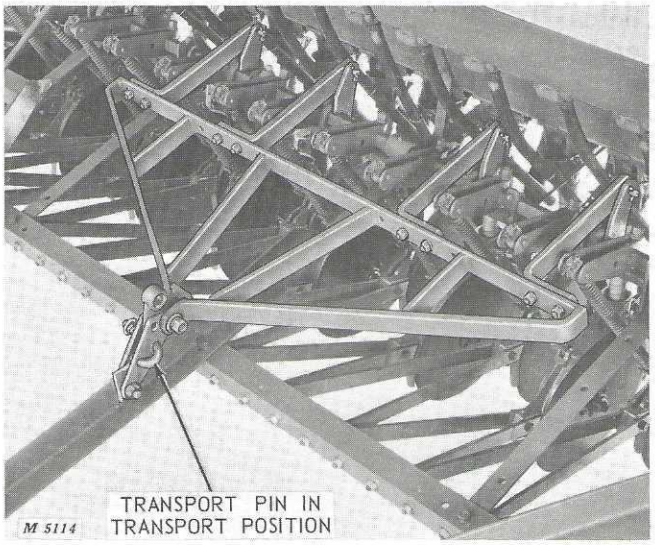
*CAUTION: Be sure pin is removed from behind stop on hitch angle (3) when cylinder is attached. Use it in operating position as shown.*

Insert hoses through loop on hose support. Attach remote cylinder oil lines to tractor as instructed in tractor operator's manual.

### DRILLING DEPTH

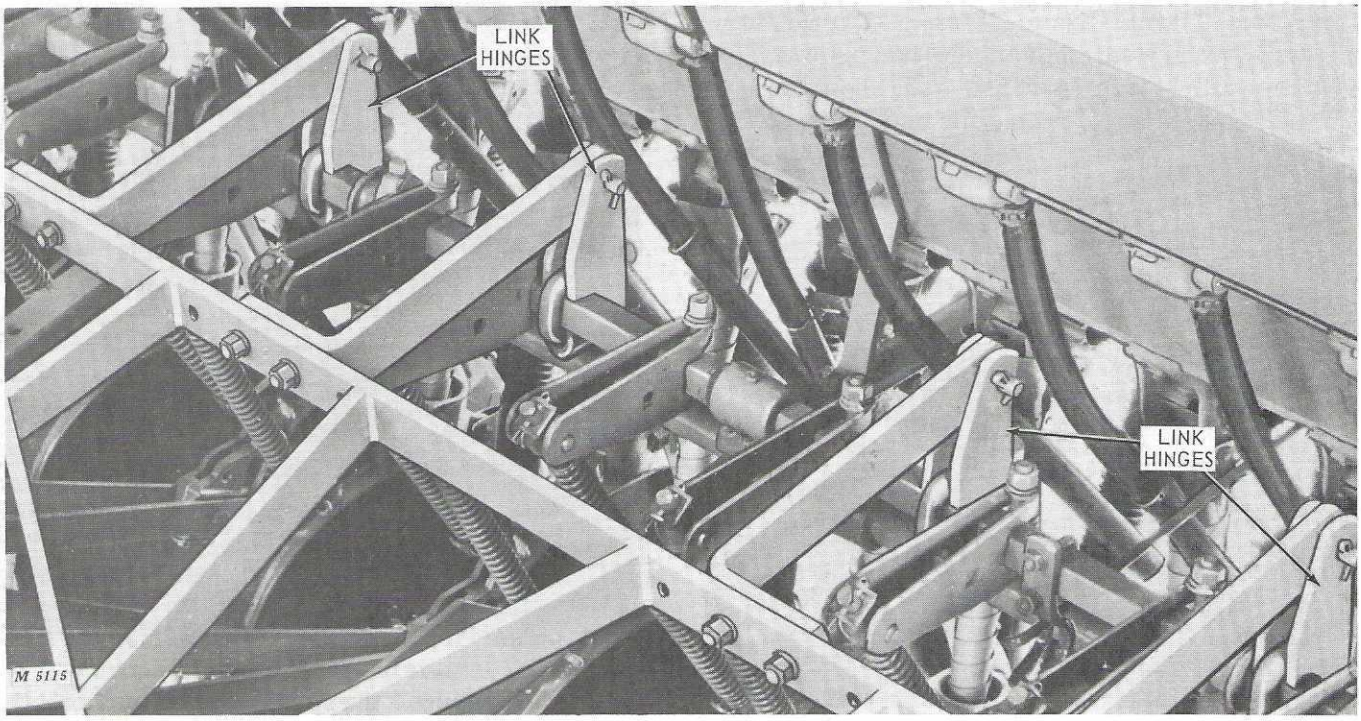
The depth of drilling is controlled by the adjustable stop on the remote hydraulic cylinder. Adjust the stop to limit the depth of furrow opener penetration as desired. See your tractor operator's manual for instructions.

### REMOVING REMOTE HYDRAULIC CYLINDER




When transporting without hydraulic cylinder or before removing cylinder, locate locking pin in transport position shown and remove cylinder.

## ADJUSTING LINK HINGES



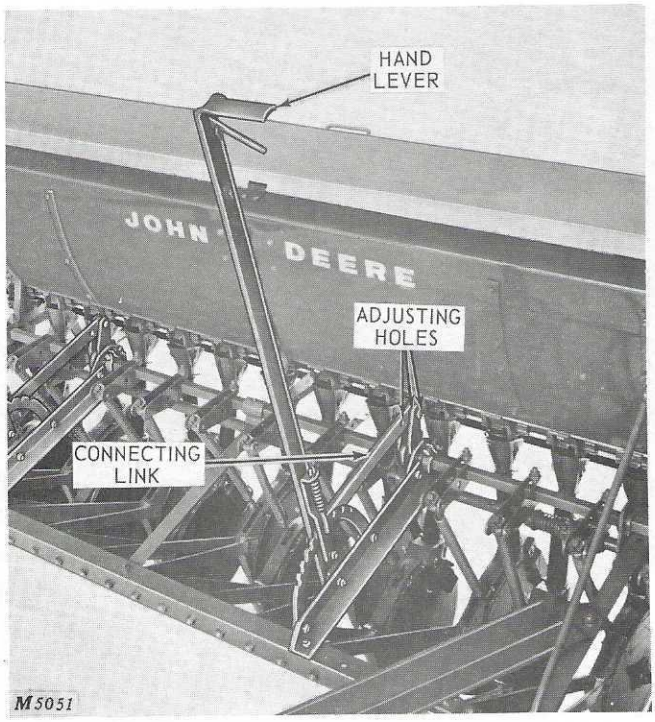

The link hinges can be moved to the right or left to equalize the lifting action and penetration of the openers. If the link hinges are moved toward the center of the drill, it will raise the furrow openers on that side of the drill higher, while moving the link hinges away from the center line will make the furrow openers penetrate deeper. Only a slight movement of the link hinges is necessary to make the correct adjustment.

*Be sure pin is removed from transport position when cylinder is installed, and placed in operating position.*

## OPERATING REMOTE HYDRAULIC CYLINDER

After attaching the cylinder to the drill, retract and extend the cylinder piston slowly through its full stroke to check furrow opener clearance in the raised position. Also make certain that the link hinges will not strike the feed cups on the drill.

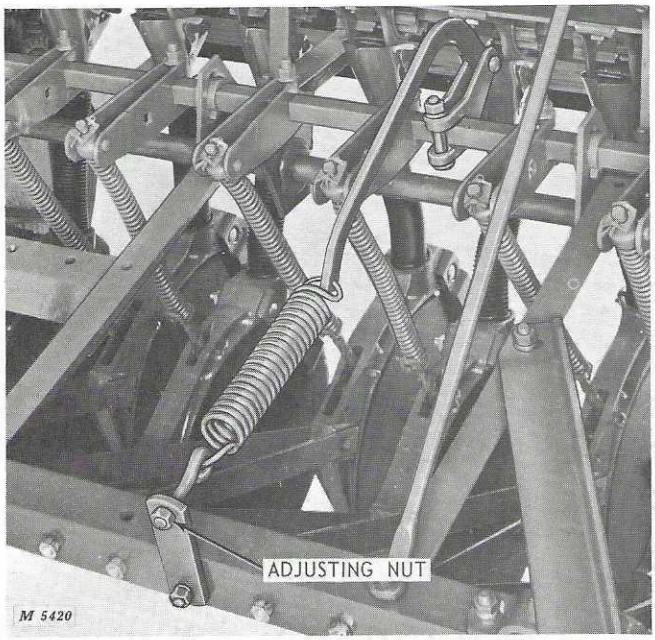
## HAND LEVERS




Raise or lower the hand lever into the desired notch for proper depth of furrow opener penetration. NOTE: The third hole from end of connecting link is not for use with B-B drills.

For extra shallow penetration, use end hole in connecting link; for deep penetration, use second hole from end of connecting link.

## HELPER SPRING ADJUSTMENT




Turn the nut on the spring eyebolt sufficiently to assist the openers to penetrate hard ground conditions. Excessive spring pressure resists the normal action of the opener pressure springs.

## PREPARING DRILL FOR STORAGE

Clean the drill thoroughly and inspect all parts for wear or breakage. Order replacement parts required at this time. By ordering parts at the end of the season, they will be available before the next drilling season and thus avoid needless delays.

*Grain Box.* After grain tubes have been detached, remove any remaining seed from grain box by brushing it into the feeds where it can be cleaned out by rotating the feeds. See page 7.

*Fertilizer Box.* Because of the corrosive action of fertilizer, it is recommended that time and care be taken to completely clean the fertilizer box and its related parts. To do this job quickly and thoroughly, follow the instructions in fertilizer attachment operator's manual.

*Acremeter.* Remove and clean acremeter. Apply a few drops of oil to the counter arm linkage. Be sure acremeter is properly timed as instructed on page 43.

*Power Lift.* Clean lift, and grease it thoroughly.

*Grass Seed Attachment.* Clean out all seed from box and feeds; saturate the moving feed parts with diesel fuel.

*Furrow Openers with Anti-Friction Bearing.* Remove disk and clean parts thoroughly. Replace rubber seal. See pages 45 and 46. Reassemble disks and coat with oil or grease. Lower the disks on a board for storage.

*Tubes.* Remove and clean the grain, fertilizer, and grass seed tubes. Soak in diesel fuel and store inside the grain box until the next drilling season. Clean and paint rusted tubes and tube tops. If drill is equipped with rubber tubes, they should be removed, cleaned, and stored in grain box.

*Tires.* If tires are to be left on the drill, jack up the drill so that tires do not touch the ground. If it is necessary to store the drill outside, cover the tires with canvas to protect them from the elements.

*Gears and Gear Hangers.* Clean all dirt from gears. Check for wear. Gear hanger must swing freely. Oil gears. Clean and replace worn or damaged sprockets or gears.

*Chains.* Remove chains and clean with diesel fuel. Oil thoroughly before storing.

*Lubrication.* Replace all missing or damaged grease fittings. Lubricate all grease fittings, bearings, and other moving parts as recommended on pages 37 through 39. Repack wheel bearings. Replace if necessary.

## TROUBLE SHOOTING
### (Important Information for operator)

Nearly all difficulties experienced in the field are caused by failure to make necessary adjustments and by not operating the drill according to instructions in this manual. The possible cause and remedy for most drilling difficulties can be found in the chart.

### FURROW OPENER AND GRAIN TUBE

#### Disks Not Revolving

| *Possible Cause* | *Remedy* |
|---|---|
| Drill is hitched too high in front so pressure is on boot instead of disk. | Hitch drill properly. See page 6. |
| Scrapers adjusted too tight. | Loosen scrapers so they have just sufficient pressure to clean disks. Disengage scrapers when not needed. See pages 20 and 21. |
| Pressure not adjusted properly so furrow opener can float over high and low spots in field. | Adjust pressure on furrow openers so the collar on pressure rod is about 1-1/2 inches above pressure arm swivel. See page 19. |

#### Clogging of Grain Tubes and Furrow Openers

| | |
|---|---|
| Drill improperly hitched. | Hitch drill properly. See page 6. |
| Using trashy seed or lumpy fertilizer. | Use clean seed and dry, free-flowing fertilizer. |
| Stopping drill in field and letting drill roll backward, filling the bottom of boot with dirt. | Raise furrow openers before stopping drill. Do not permit drill to roll backwards if it is necessary to stop without raising furrow openers. |

### DRILLING GRAIN

#### Irregular Drilling

| | |
|---|---|
| Jerky driving or jolting over poorly prepared seedbed. | Drive steadily. Prepare good seedbed. |
| Not driving straight–overlapping or leaving too wide a space between seeded strips across fields. | Use care in driving to have space between seeded strips the same width as the furrow opener spacing on the drill. Use markers. |

#### Bunching and Skipping

| | |
|---|---|
| Drill improperly hitched. | Hitch drill properly. See page 6. |
| Loose or swinging drawbar on tractor. | Lock tractor drawbar to prevent swinging. |
| Improper adjustment of furrow openers resulting in openers not penetrating low spots or bouncing over rough ground. | Adjust furrow openers as shown on pages 18 and 19. |
| Stopping drill in field. | Stop only at ends of field whenever possible. |
| Dragging seed out of ground by harrowing after drilling. | Use covering chains, press wheels, or packer. |

### Varying Quantities Drilled by Individual Feeds

| *Possible Cause* | *Remedy* |
|---|---|
| Seed bridging in box due to unclean seed, inoculation, treatment, or dampness. | Use agitators. |
| Feed gates not all set the same. | Adjust gates according to instructions on page 8. |
| Feed cup out of adjustment with the fluted feed roll. | Adjust feed as shown on page 40. |

### Quantities Drilled Not Agreeing with Seed Chart

| | |
|---|---|
| Feed gates improperly adjusted. | Adjust gates according to instructions on page 8. |
| Heavier or lighter than average weight seed. | Check quantity drilled as explained on page 10. |
| Improper tire inflation. | Inflate tires as instructed on page 13. |

## DISTRIBUTING GRASS SEED

### Irregular Distribution

| | |
|---|---|
| Seed tubes clogged with foreign objects. | Remove tubes and clean. |

### Varying Quantities Between Individual Feeds

| | |
|---|---|
| Distributing light chaffy seed. | Mix seed with heavier seed or other material such as cracked corn to give it weight. |

### Quantities Do Not Agree with Seed Chart

| | |
|---|---|
| Heavier or lighter than average weight seed. | Check quantities drilled as explained on page 10. |

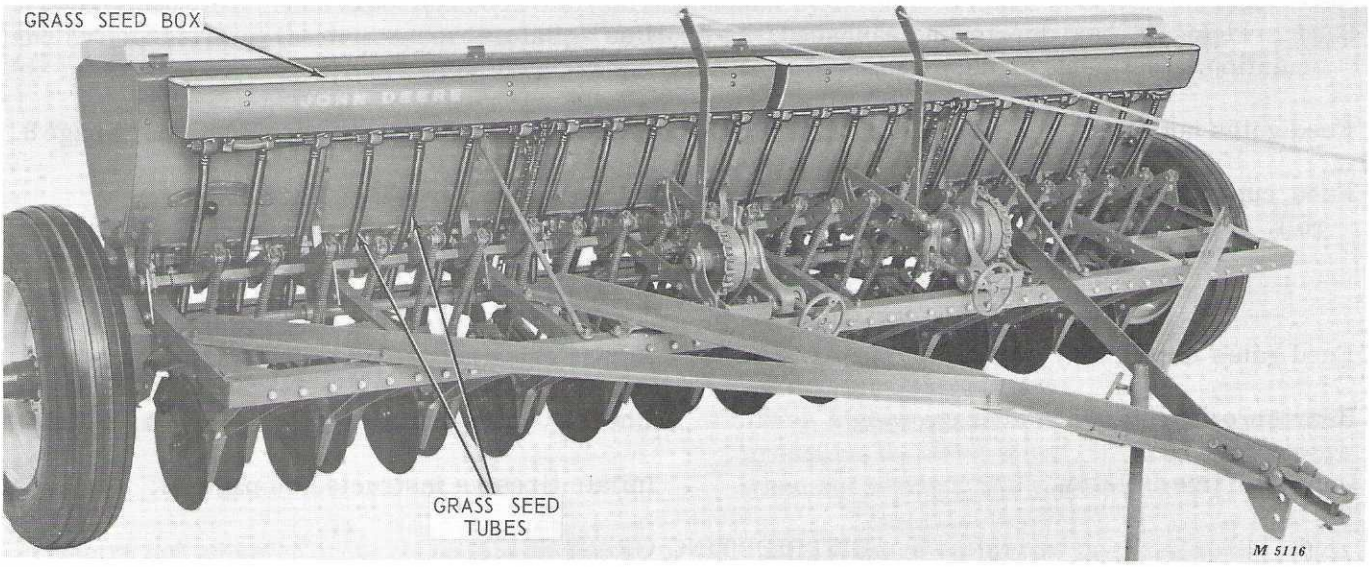
## ACREMETER

### Acremeter Tallying Incorrectly

| | |
|---|---|
| Improper tire inflation. | Inflate tires as instructed on page 13. |
| Turning at the end of the field without raising furrow openers or drilling around the field. | Raise furrow openers before turning at end of field. |
| Double tracking, or leaving too wide a space between rows on each trip across field. | Drive carefully; leave same space between seeded strip as the furrow opener spacing on the drill. |
| Plot of land contains more or less land than assumed. Land lost because of fence lines. | Remeasure land. |

# ATTACHMENTS

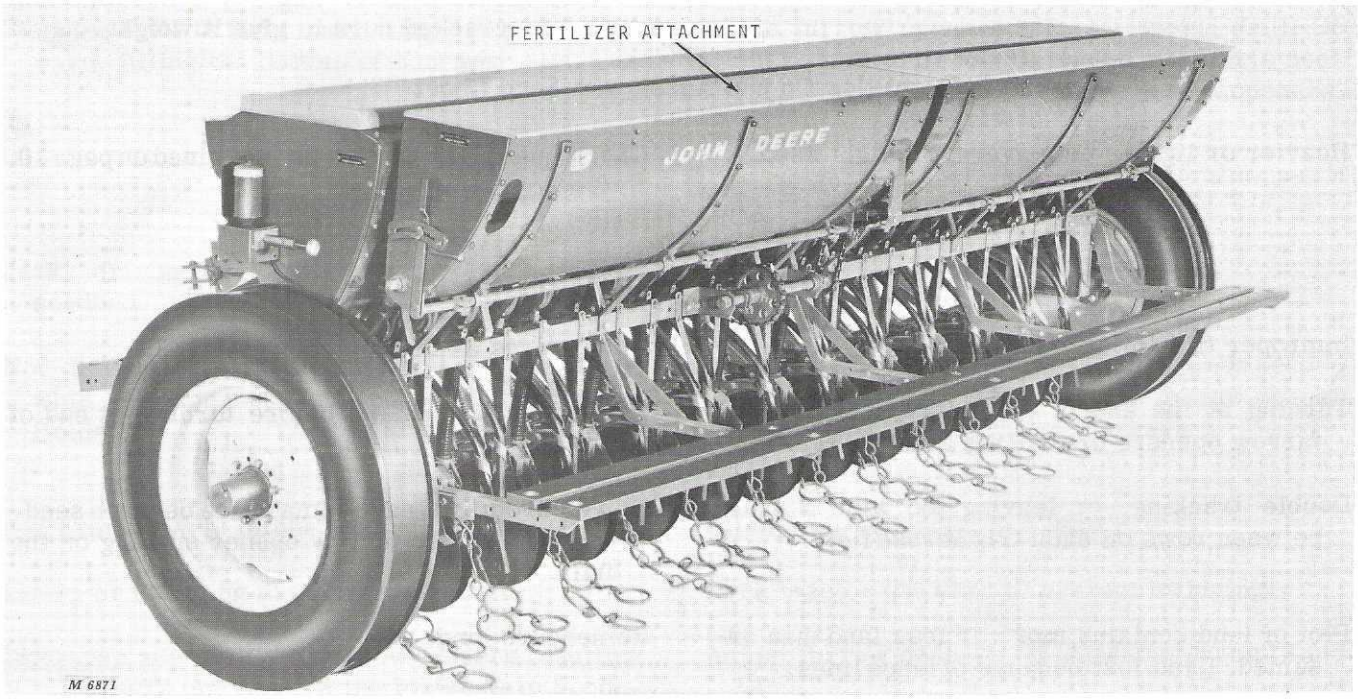
## GRASS SEED ATTACHMENT




Grass seed attachments with accurate and dependable fluted force-feeds are capable of handling the smallest seed with outstanding accuracy. Feeds are made for precision seeding.

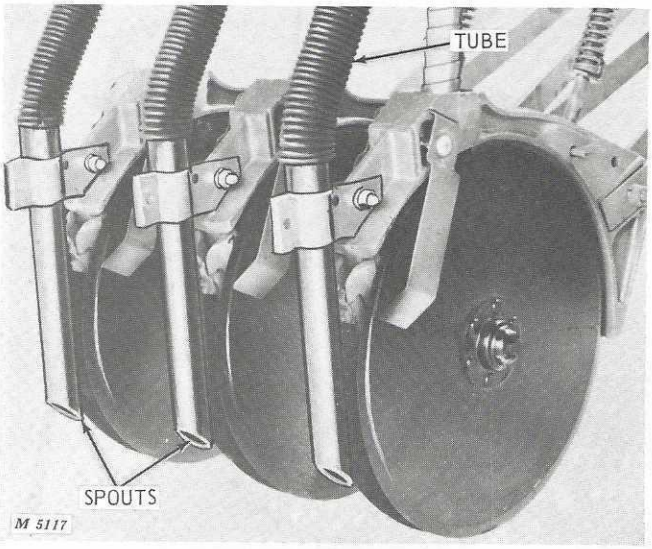
Attachments can be thrown out of gear when not used. See pages 15 through 17 for grass seed operation.

## FERTILIZER ATTACHMENT



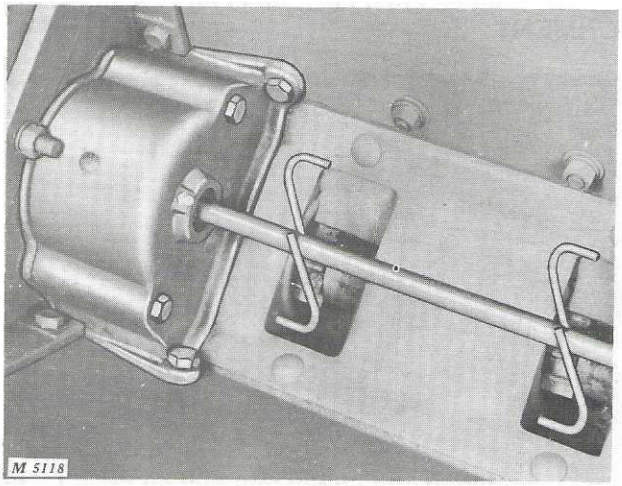

Accuracy, ease of cleaning, and trouble-free operation are features of this Impel-R-Fertilizer Attachment which makes it most desirable. This attachment is available for both size B-B drills. Operation, service and assembly instructions are included with each attachment.

## REAR DISTRIBUTOR TUBES AND SPOUTS




Rear distributor spouts attach to the rear of the furrow openers, as shown above, for rear distribution of fertilizer above the seed with a layer of soil between. Rear distributor spouts can be used with single disk, or double disk openers.

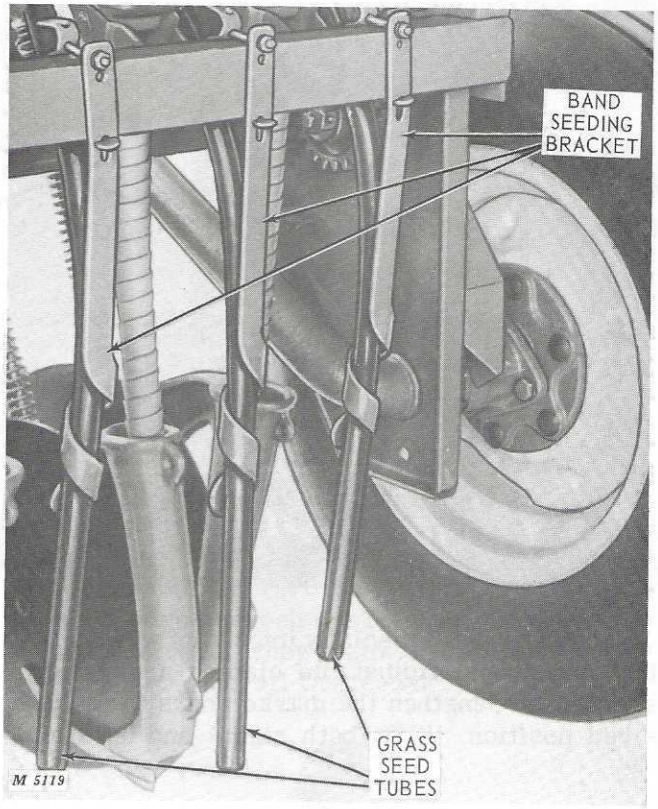
## GRAIN AGITATOR




Grain agitators are recommended when drilling trashy, inoculated, or very light seeds.

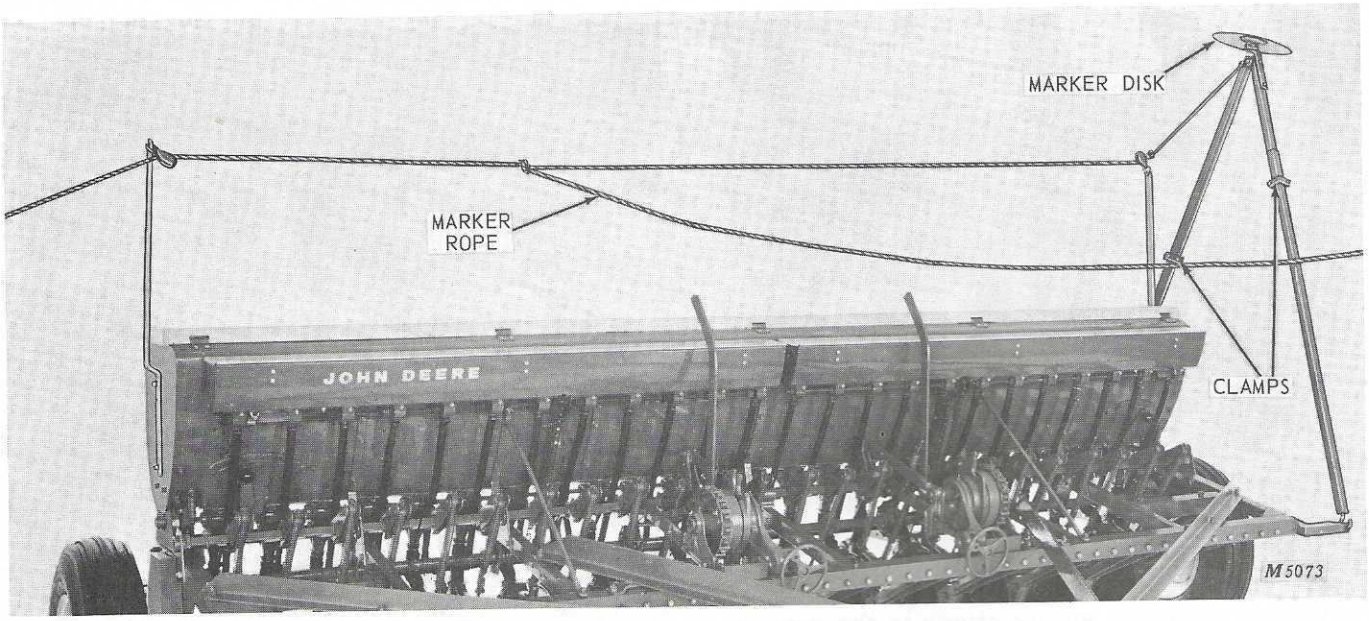
The agitator is easily shifted out of gear when not required (see page 13).

## BAND SEEDING BRACKETS




Rubber grass seed tubes place grass and legume seed on or near the surface of the ground. Broadcast application is obtained by allowing the tubes to hang free. More desirable is the use of band seeding brackets. These brackets, available as extra equipment, hold the grass seed tubes directly behind the furrow openers to place the seed on top of the seed trench and near the fertilizer.

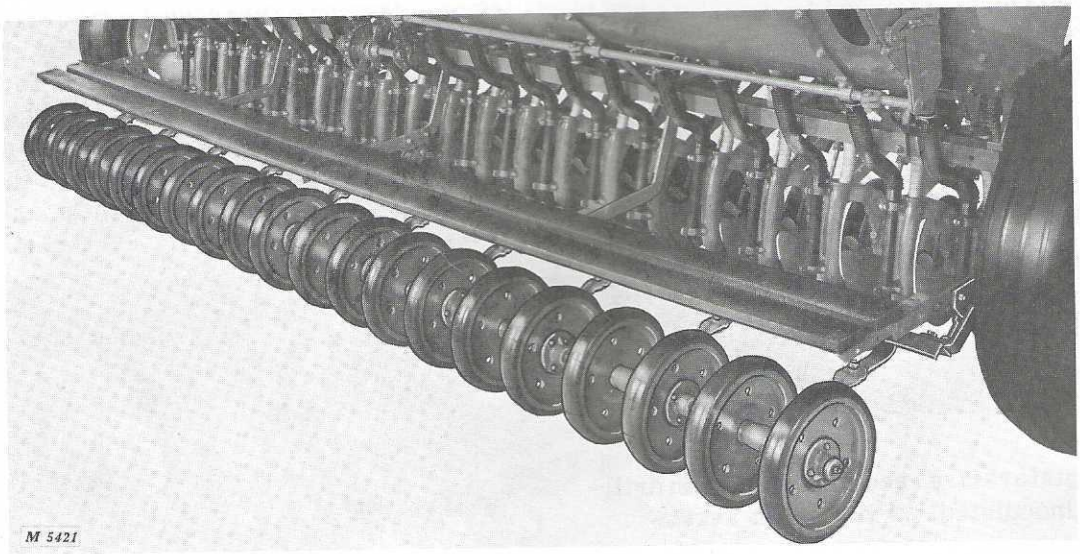
## MARKERS




Markers are especially important when drilling row crops. Adjustable clamps are used to shorten or lengthen the marker bars to the desired position. When both right- and left-hand markers are used as illustrated, one marker automatically drops when the other is raised.

Adjust rear marker bars straight out from rear frame angle and angle the forward bar. Tighten clamps firmly.

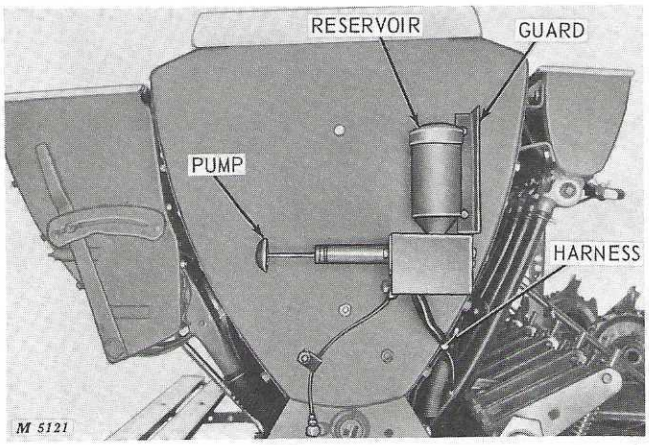
## GANG PRESS ATTACHMENT




The gang press wheel attachment is designed for use where the soil is loose and light. The press wheels follow the furrow openers and pack the soil firmly over the seed. This reduces blowing, drifting, and winter-killing, and conserves moisture.

The gang press attachment is available with semi-pneumatic rubber tire press wheels. The entire attachment can be removed from the drill by removing three pins.

## MULTI-LUBER

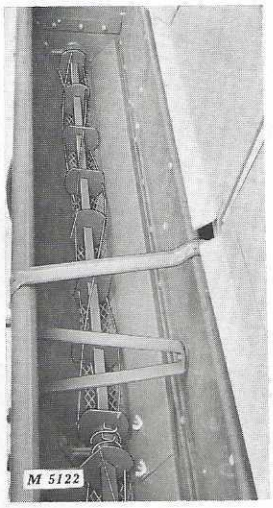



*Bearings and Drives*

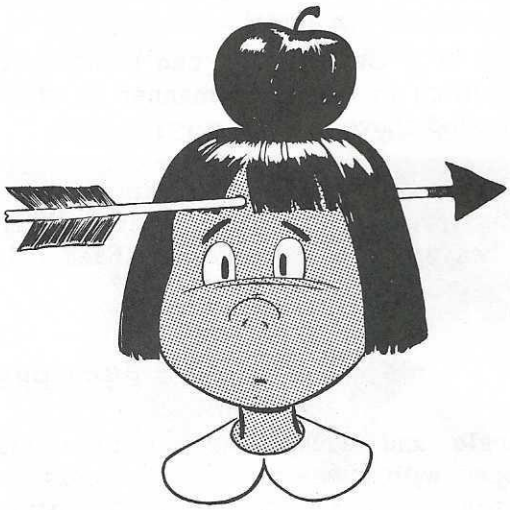
A Multi-Luber system on both ends of the drill for bearings and drives will cut lubrication time to a minimum.

Nylon feed line delivers lubricant to each fitting in a precise metered quantity with each stroke of the pump handle.

## FERTILIZER AGITATOR



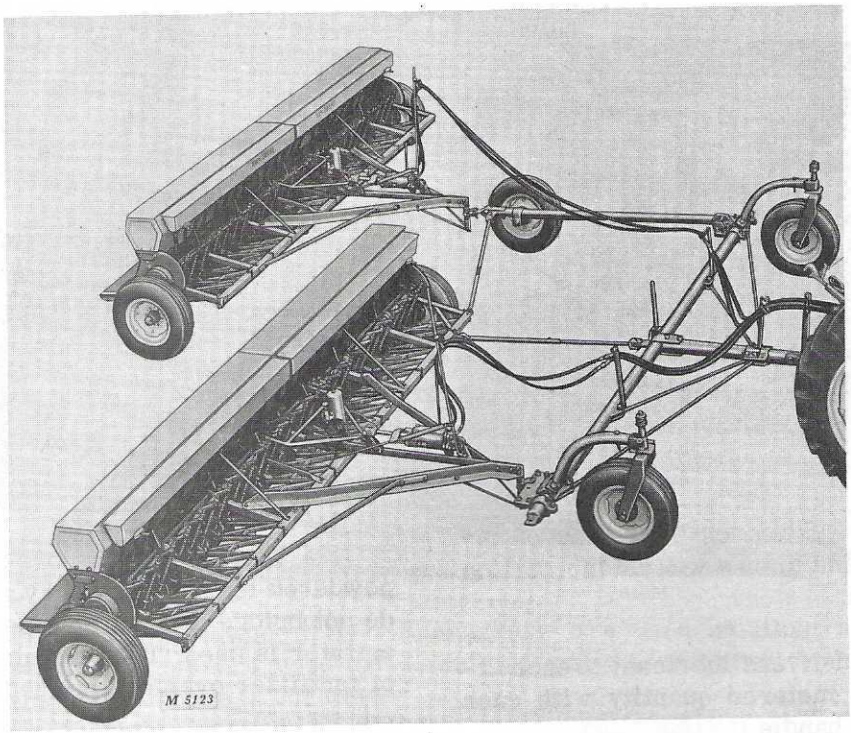

Use fertilizer agitators when drilling fine powdered fertilizers. Sticky and damp fertilizers do not bridge between the feed openings when an agitator is used. They maintain a uniform supply of fertilizer over all the feeds.



***Accidents don't just happen***
***They are CAUSED!***

*R 2380*

## MULTI-HITCH



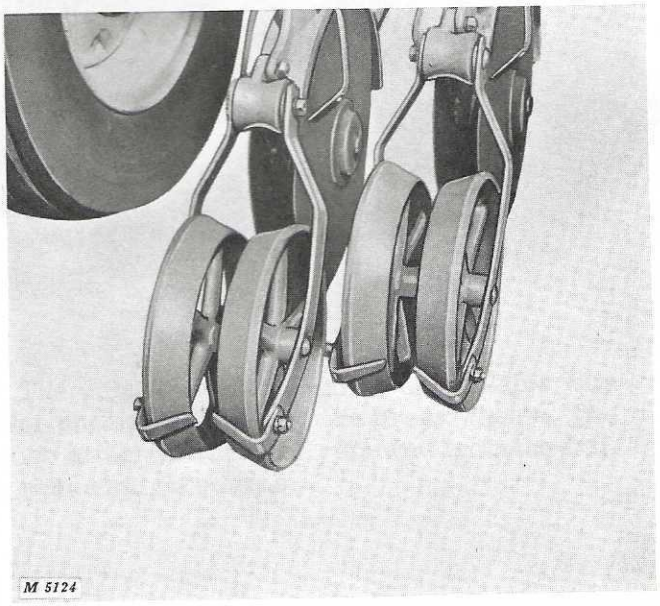

Two B-B Grain Drills can be used with the Multi-Hitch in the same manner as the drills illustrated above.

The Multi-Hitch with two grain drills permits drilling large acreages in a minimum of time. It is of heavy tubular construction, 16 feet in length, and can be used for gang hitching many other implements besides grain drills.

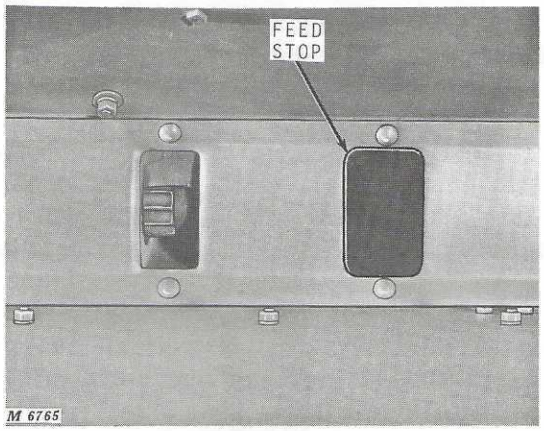
The transport width of the hitch can be reduced to 8 feet by relocating one caster wheel assembly so that both caster wheels are on one end of the hitch and the other end can be used as a tractor hitch. The drills can then be trailed behind the hitch.

## BEET PRESS AND GAUGE WHEEL

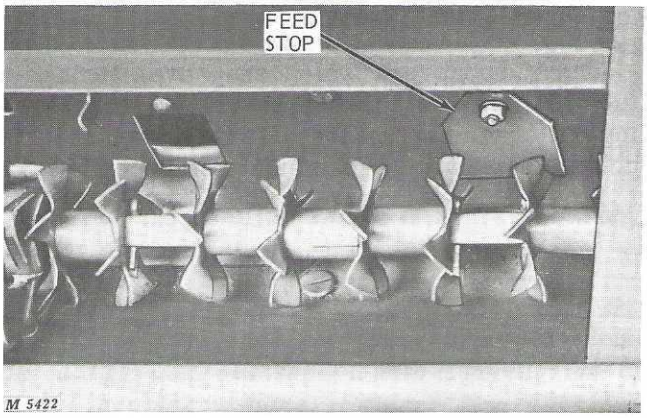
Single and double disk openers may be equipped with press and gauge wheels to compact the soil around the seed. This conserves available moisture providing more uniform and faster germination. This attachment is especially suited for use when drilling beets, spinach, and other garden crops. The wheels also act as a gauge wheel, limiting the depth of furrow opener penetration.



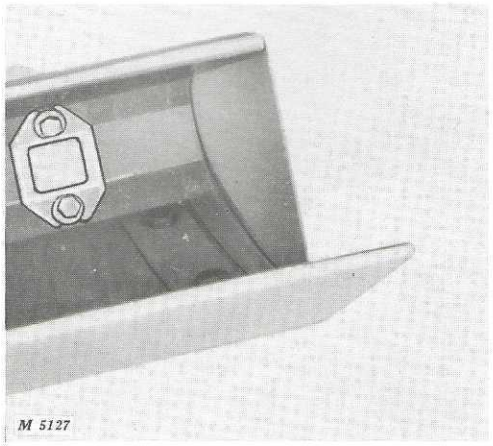
## FEED STOPS




*Grain Feed Stop*




*Fertilizer Feed Stop*

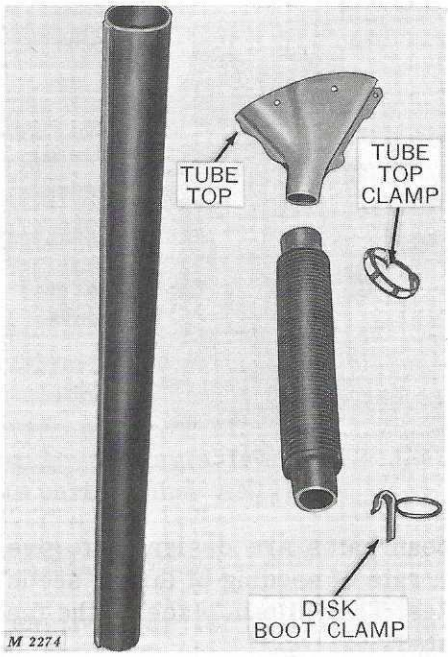



*Grass Seed Feed Stop*

When drilling row crops, cover the grain, grass seed and fertilizer feeds not being used with grain, grass seed and fertilizer feed stops. They are easily inserted and removed. See row crop seeding, page 14.

*IMPORTANT: When installing grass seed feed stops, loosen one bolt at a time to prevent feed cup from shifting.*

## RUBBER GRAIN TUBES



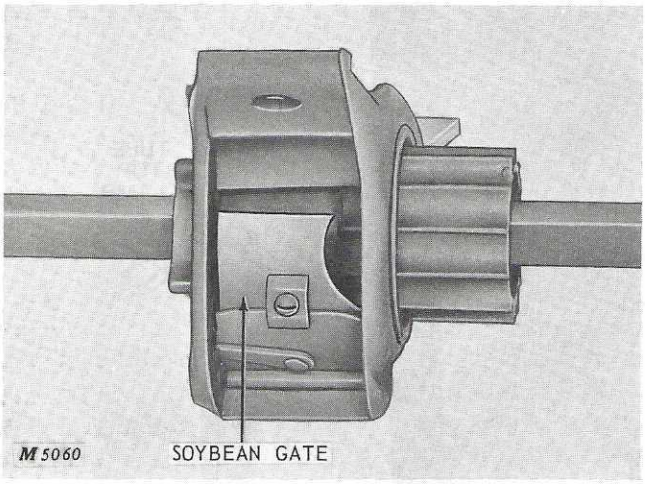

Either convolute or straight rubber grain tubes can be used to replace steel ribbon tubes if drill is so equipped. Clamps are used to attach the convolute tube to the grain tube top and the disk boot.

## WINDSHIELD AND PEA GATE


Windshields for feed cups are available to prevent the wind from blowing light seed, such as flax or alfalfa, out of the front of feed cup. Windshields are easily installed or removed.

The pea gates are designed to keep peas from popping out of the tube top.

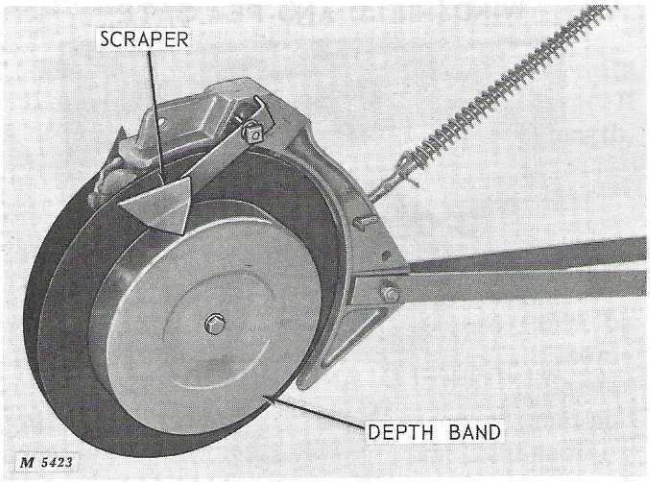
## SOYBEAN GATE




Soybean gates are designed to give a more uniform rate of seeding of larger seeds at lower quantities. They clip in place on the feed cup as illustrated.

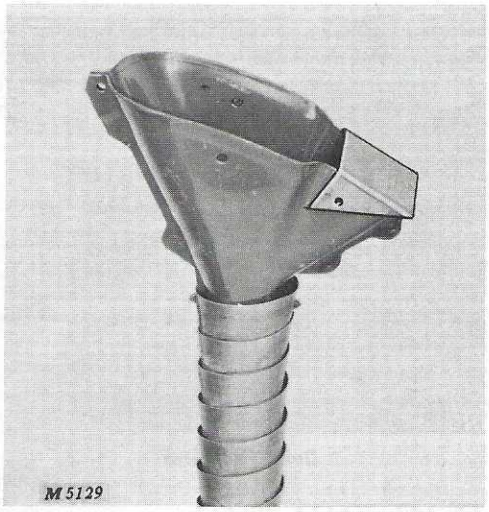
They are recommended only when seeding quantities on grain index notch 12 or below.

## DEPTH BANDS




Depth bands are available for anti-friction double disk openers. These bands gauge planting to a predetermined depth for more uniform germination. Scrapers clean the depth bands, preventing build-up of soil.

## TUBE TOP COVERS




Tube top covers which snap over the grain tube top, are available to prevent seed from blowing out of the rear of the tube tops when drill is not equipped with fertilizer attachment.

# LUBRICATION

The economical and efficient operation of any machine depends on regular and proper lubrication of all parts with quality lubricants.

Wipe dirt from fitting before greasing. If a grease fitting is lost, replace it immediately. Lubricate all parts thoroughly, but avoid excessive lubrication. Excessive lubrication gathers dust.

Before starting the drill after it has set overnight or after standing for an hour or more, loosen the grain feed shafts by turning them a few revolutions with a wrench. If feed shafts turn hard, use diesel fuel and revolve shafts with a wrench until they turn freely. This precaution will prevent breakage of drive parts and delays in the field.

**⚠ CAUTION: Be careful when cleaning with diesel fuel so that it does not ignite. Use only in a well ventilated area and away from any sparks or flame.**

*NOTE: Before storing drill at the end of the season, remove wheels and axle sprockets, clean out old grease, and repack with a good grade of wheel bearing grease. Replace bearings and wheels.*

## MULTI-LUBER SYSTEM

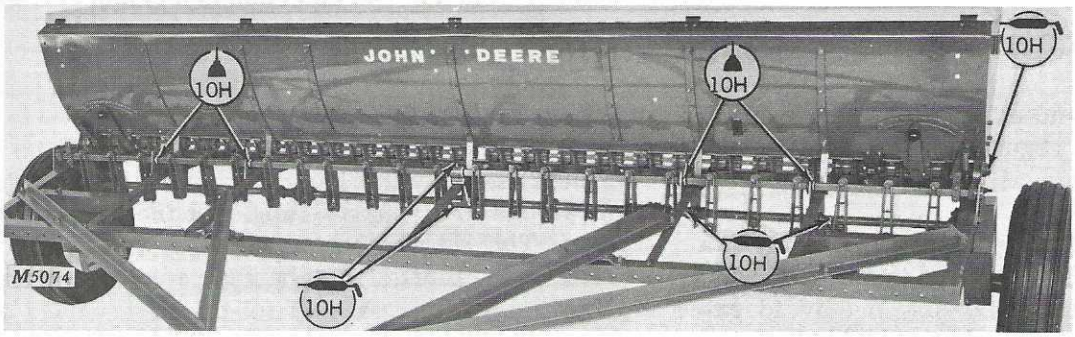
Depress the pump handle manually through its full stroke to discharge lubricant from all outlet ports. The measuring chamber in the pump is filled as the plunger and handle return to normal position. Refer to page 47 for the method used to detect and repair clogged or broken oil lines.

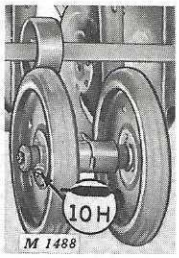
Use genuine John Deere Multi-Luber lubricant in the system. It handles like an oil but, when in service, unique thickening properties cause it to congeal into a soft, grease-like lubricant. This lubricant is available from your John Deere dealer as part number AN11100N.

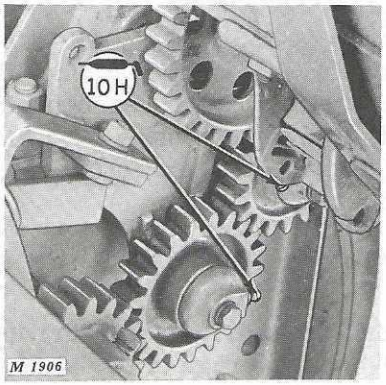
### FREQUENCY OF OPERATION

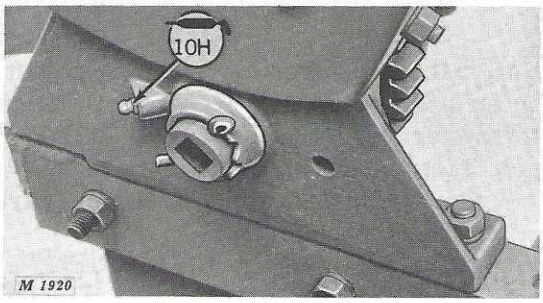
The Multi-Luber for bearings and drives should be actuated on an average of one stroke every hour of operation. This can be done at any interval up to four hours (four strokes every four hours).

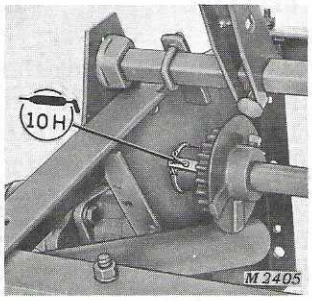
*IMPORTANT: Lubricate all points not serviced by the Multi-Luber system as shown on the following pages.*

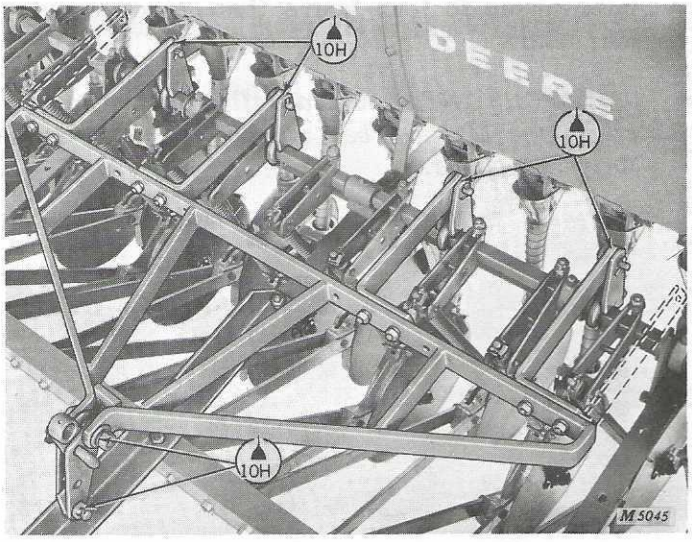

JOHN DEERE
10H
10H
10H
10H
M5074

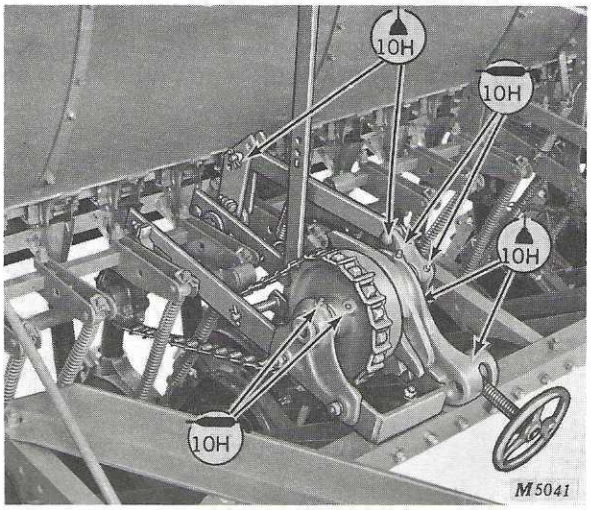

10H
M 1488

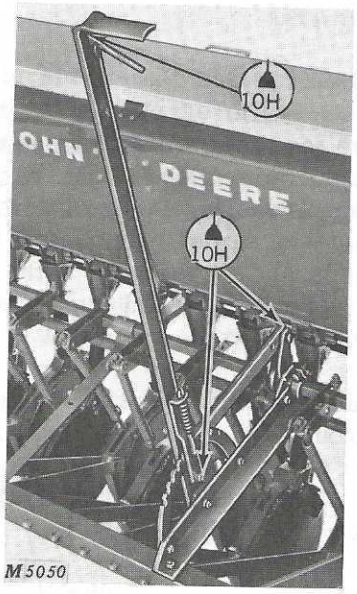

10H
M 1906

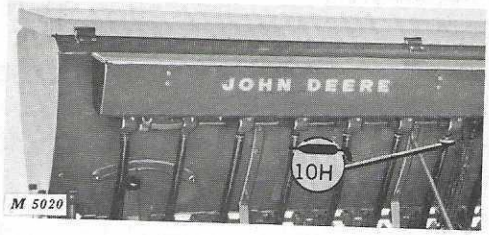

10H
M 1920


10H
M 2405


DEERE
10H
10H
10H
M 5045


10H
10H
10H
10H
M5041




| SYMBOLS | |
|---|---|
| 10H | Lubricate with John Deere Multi-Purpose Lubricant or an equivalent SAE multi-purpose-type grease at hourly intervals indicated on the symbols. |
| 10H | Lubricate with SAE 10 oil at hourly intervals indicated on the symbols. |

# SERVICE

## RESETTING FEED CUPS

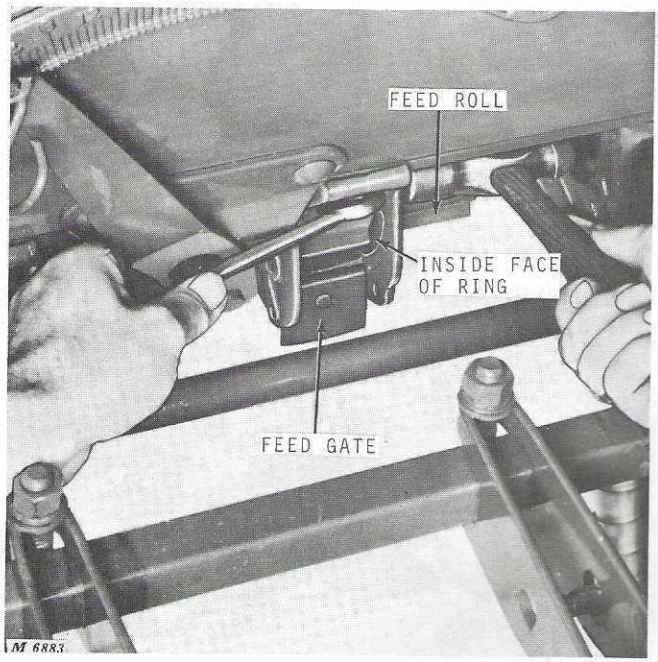
Feed cups should be reset whenever any one of the following conditions develop:

(a) Feed cup has been removed from drill.

(b) Feed cup has been knocked out of position.

(c) Quantities of seed sown vary with each feed cup.

(d) Quantities of seed sown do not agree with seed chart.




Reset all feed cups as follows:

(1) Set feed shaft shifter on grain box to notch 1 on index plate by first moving shifter lever past the first notch and return it to notch 1 to equalize spring pressure. THIS IS IMPORTANT.

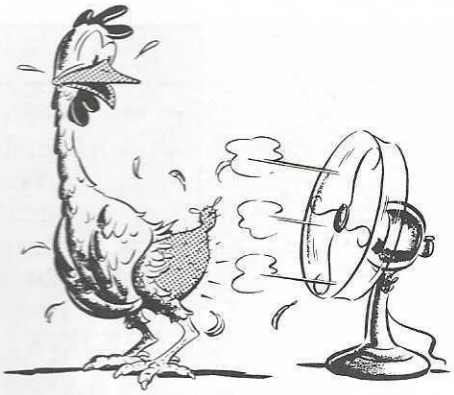
(2) Drop feed gates of all feed cups.

(3) Start at master feed cup (first feed cup on right side of shifter lever) and loosen bolts holding feed cup to box bottom.

(4) Move feed cup until end of feed roll is flush with inside surface of seed retainer ring on lower radius of seed reservoir. See illustration. Reset all feed cups in same manner, beginning with master feeds and working in both directions. Tighten bolts on each feed cup as soon as resetting is complete.

(5) Recheck adjustment by moving feed shaft shifter through full index setting range. Then move lever past notch 1 and return. Recheck to make sure all feed rolls are flush at lower radius of feed cup.

(6) Close feed gates to desired setting, making sure all gates are in identical position.



**Be Extra Cautious around Moving Machinery!**

R 2330

## GRAIN FEED SHAFT AND FEED CUPS

Carefully check feed shaft parts for cracks, wear, or breakage. Use the following instructions when replacing parts.

1. Pull cotter pin and remove adjusting collar.

2. Turn feed shaft with wrench until head of cotter pin lines up with notch in shut-offs.

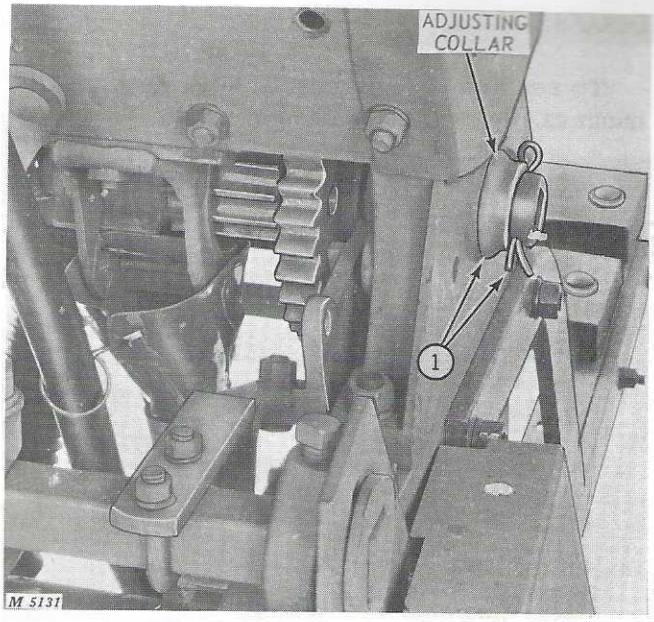
3. Remove cotter pins on right-hand side of each feed cup.

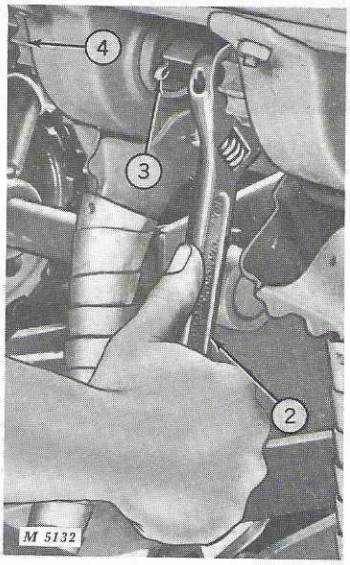
4. Move shaft several inches toward left-hand end of drill and remove pins from left side of feed cups.

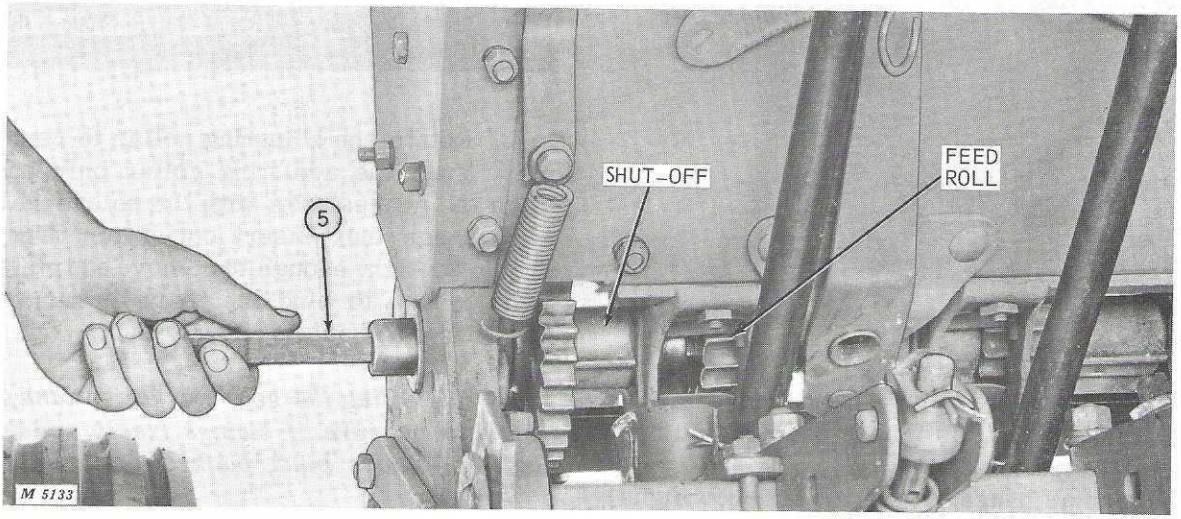
5. Pull shaft slowly out of feed cups, catching feed parts as they slip off the shaft. Lay the feed parts on a clean surface in the order they are removed. A broken feed cup can be replaced by removing the two bolts holding the cup to the box.

Reassemble feed shaft and all parts in the order removed. Apply quality light grade of grease to end of shut-off that revolves inside of feed roll. Install straight pins and cotter pins through feed shaft on each side of feed cup.

Reset feed cups as instructed on page 40.



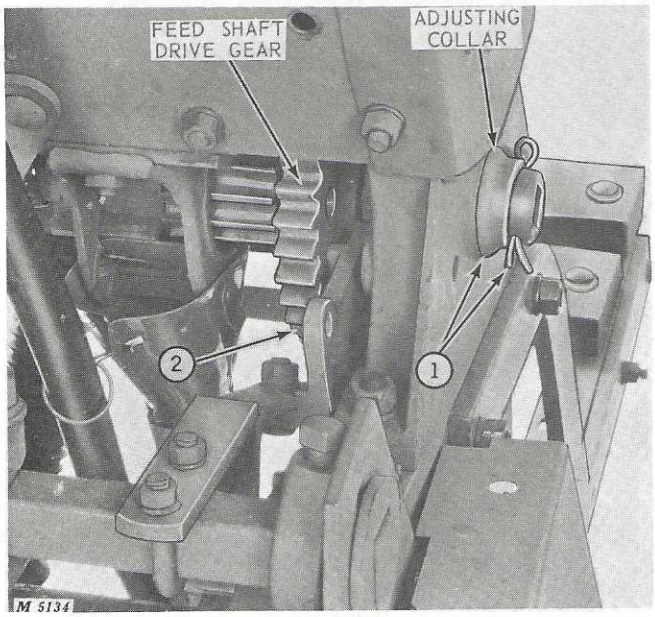



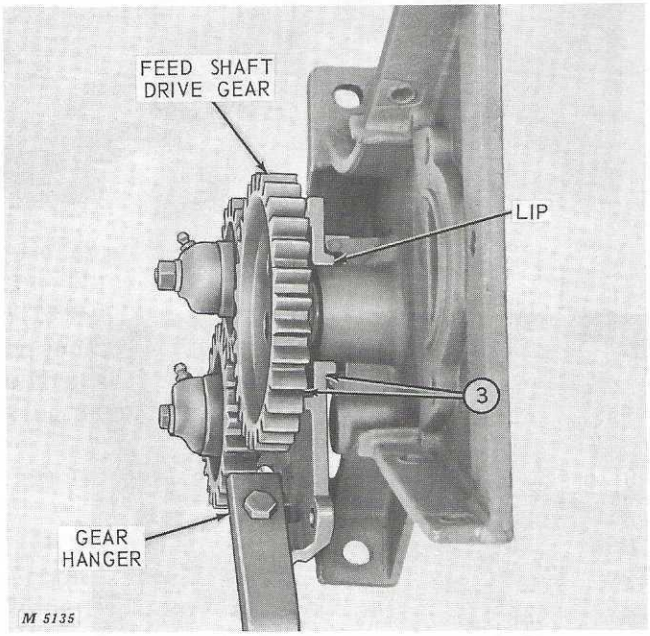
## GEAR HANGER

### DISASSEMBLY

To repair broken or badly worn gear teeth or hangers, proceed as follows.




1. Pull cotter pin and remove adjusting collar.
2. Slide feed shaft drive gear toward center of drill.

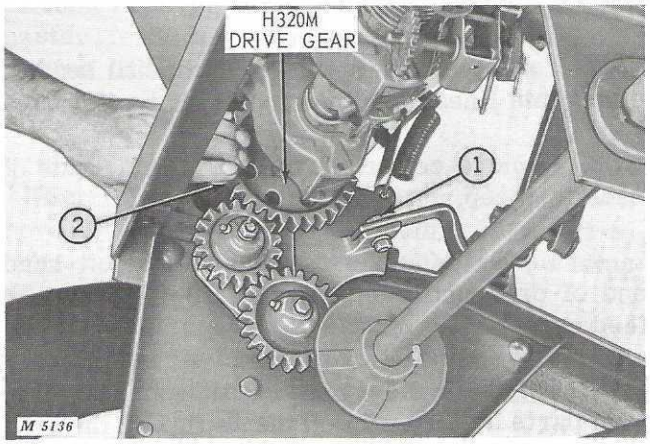



3. (Not illustrated) Move gear hanger away from box end until lip is free of box end and remove gear hanger.

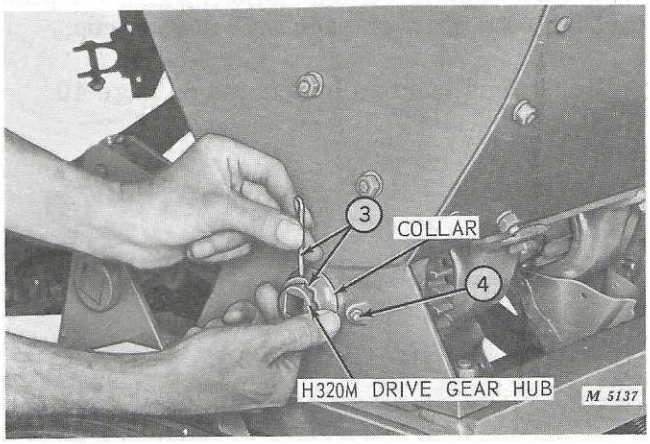
Replace gear hanger parts if they show signs of wear.

### ASSEMBLY

*IMPORTANT: During assembly, the following adjustments must be made to avoid costly malfunction of the drive.*




1. Coat both sides of the sliding surfaces of the gear hanger with grease.
2. With the gear hanger in place, press the H320M drive gear through the box end as far as possible.




3. Rotate the adjusting collar to remove end play. Turn the adjusting collar only enough to align the nearest slot with the hole in the H320M drive gear hub. Insert cotter pin. The collar should be tight enough to remove end play but not tight enough to bind the gears or hangers. The gear hanger should swing freely.

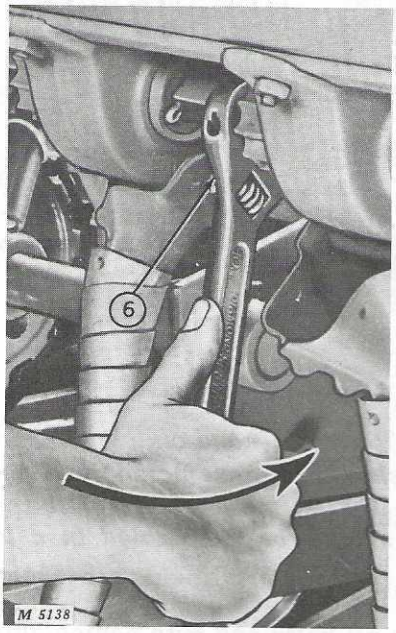
*NOTE: Swing the gear hanger by hand several times to be sure it swings freely and does not bind. If it does bind, back the adjusting collar off one slot.*

4. Lubricate the drive shaft bearing until grease shows around the collar.

**IMPORTANT: Lack of lubrication at this bearing will cause collar failure and gear breakage.**

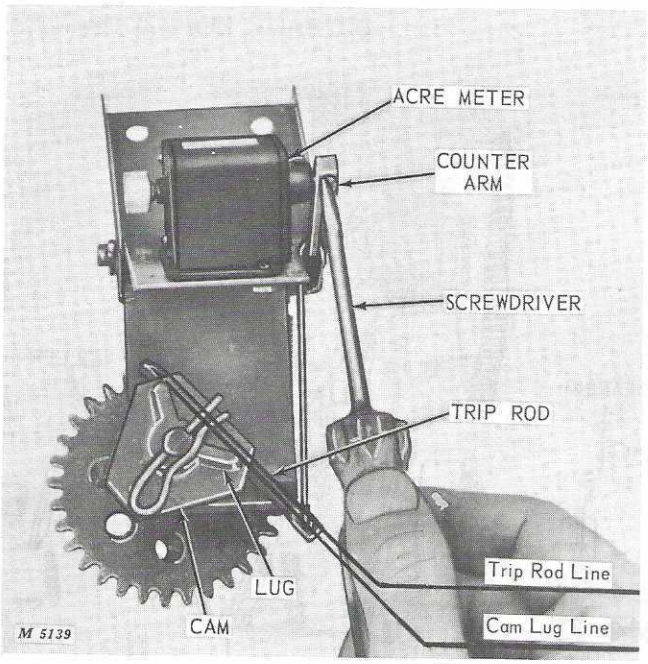
Be sure gear hanger spring has sufficient tension to hold gear hanger firmly in gear when furrow openers are lowered.

5. (Not illustrated) Apply engine oil to teeth of all drive gears for initial break-in period.




6. Turn feed shafts with a wrench in the direction feed shaft normally turns. Turn the shaft at least one complete revolution. Feed shaft torque should not exceed 240-inch pounds.

## TIMING ACREMETER



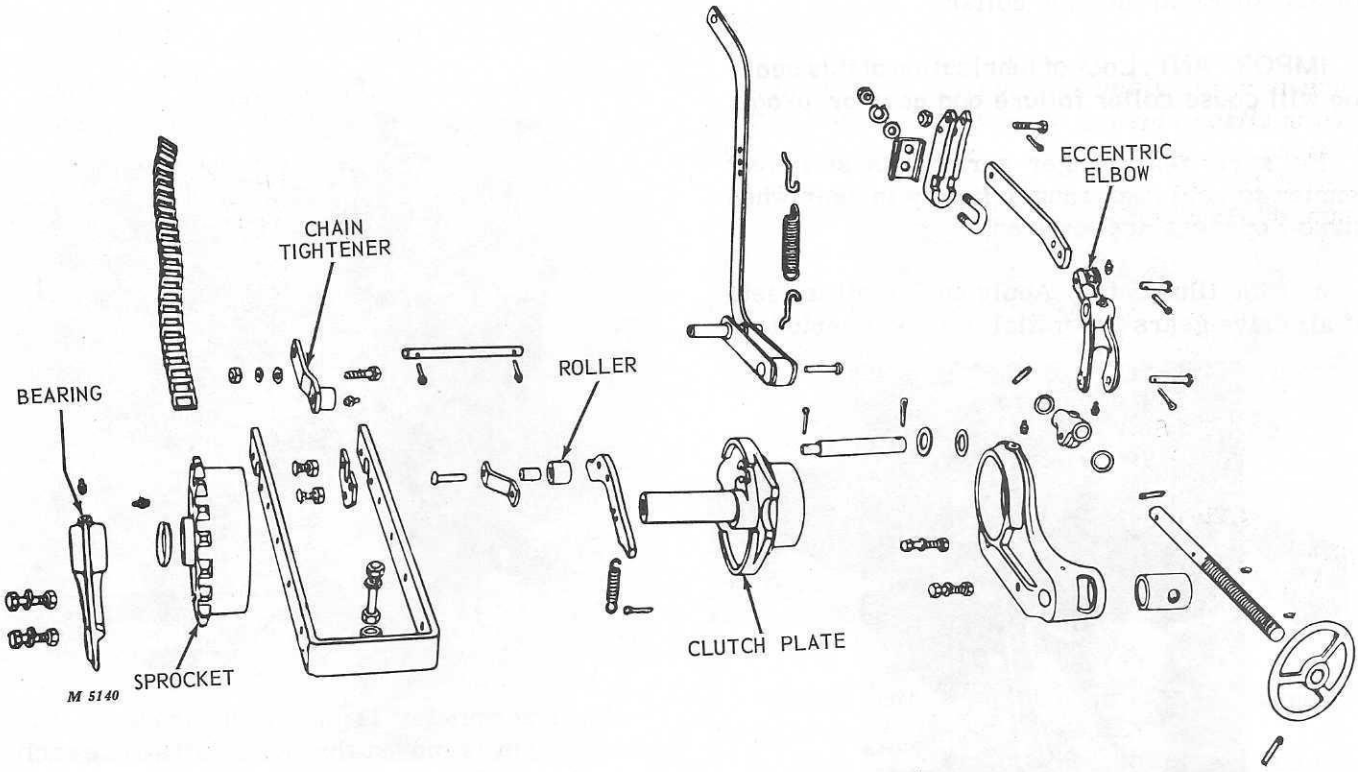

When acremeter is operating properly, the counter arm is moved through a full stroke each time it is activated.

However, if the acremeter is out of adjustment, the counter arm will be incorrectly positioned on the countershaft.

Check the timing occasionally by making a visual check to see if the "trip rod line" and the "cam lug line" are parallel. See above.

If adjustment is required, loosen set screw in counter arm and make the "trip rod line" and the "cam lug lines" parallel. Tighten set screw firmly to prevent slippage but not too tight to lose the "safety slip" protection feature.

## POWER LIFT




At the end of the season, disassemble power lift and check all parts for wear.

Remove clutch bearing from power lift frame. Remove drive chain and slide off clutch sprocket. Inspect roller on the trip dog to be sure it turns freely and has no flat spots. Grease or oil pivot points and replace trip spring. Clutch jaws should show little or no wear on the ridges. Replace clutch plate having excessively worn or damaged jaws.

Check and replace all other worn, damaged, or broken parts. Reassemble and lubricate power lift. See page 38.

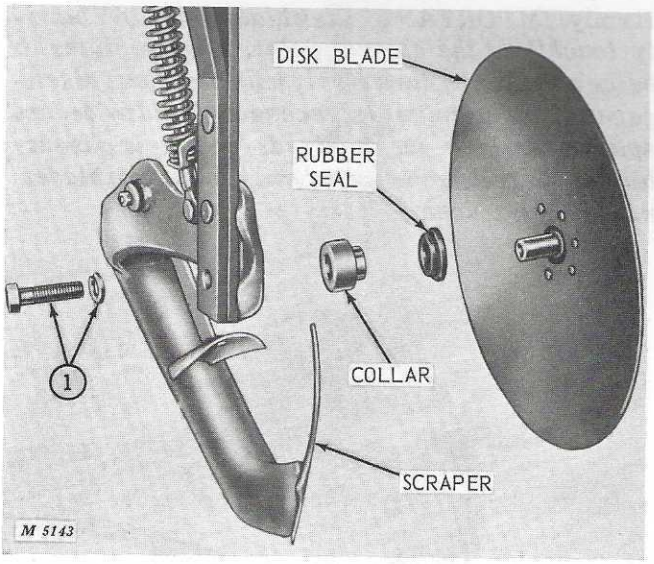
*NOTE: The right-hand clutch plate is marked "R" and should be assembled in a right-hand power lift. The left-hand clutch plate is marked "L" and should be assembled in a left-hand power lift.*

Tighten all bolts and nuts periodically.

## FURROW OPENERS

### SINGLE DISK OPENER WITH ANTI-FRICTION BEARING

It is very important to keep the furrow openers in good condition. Periodic inspection of the bearing seals and a thorough service job at the end of the season will assure continued maximum drilling performance.




1. Remove cap screw and lock washer.

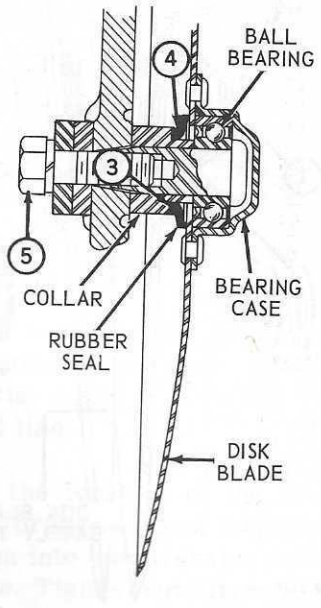
2. Remove disk blade, rubber seal, and collar.

Carefully clean and inspect parts for wear or damage and replace with new parts when necessary. It is recommended that the rubber seal be replaced with a new one at the end of each seeding season.

**IMPORTANT: Do not remove ball bearing from bearing case. Replacement parts are supplied with ball bearing, bearing case, and bolt assembled in place.**

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

3. Proper reassembly is important. Slip rubber seal over collar so that flared open end of seal faces disk blade. BE SURE TO PRESS RUBBER SEAL DOWN FIRMLY TO THE SHOULDER ON THE COLLAR.



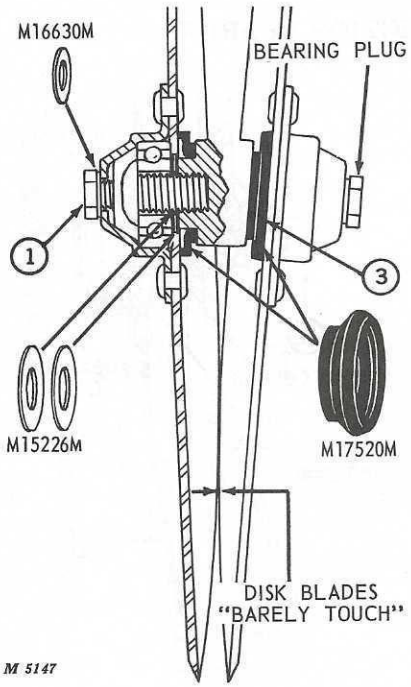

4. Fill cupped portion of rubber seal with rubber seal lubricant AM12000M.

5. Reassemble all parts in the sequence illustrated making sure rubber seal fits firmly against disk blade. Tighten cap screw firmly.

Adjust scraper so it has just enough tension to clean the disk and does not prevent disk from turning. See page 20. If drill is to be stored, see instructions on page 27.

Adjust toe scraper as instructed on page 20.

## DOUBLE DISK WITH ANTI-FRICTION BEARING




### Removal and Installation

1. Remove bearing plug from bearing case.

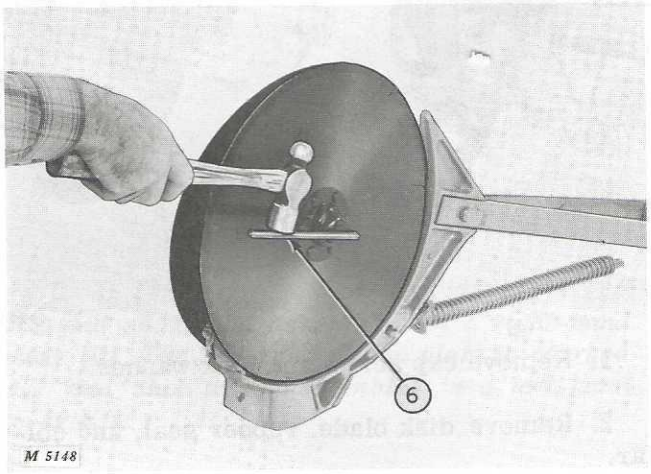
2. Insert 5/16-inch hexagon wrench through hole in bearing case and turn off disk blade. Carefully inspect parts for wear or damage and replace with new parts when necessary. **IMPORTANT: Do not remove ball bearing from bearing case.** Replacement parts are supplied with ball bearing, bearing case, and bolt assembled in place. However, it is recommended that rubber seals be replaced with new ones at the end of each seeding season and lubricated as described in number 4 at right.

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

3. Proper reassembly is important. Slip rubber seal over boot hub so that flared open end of seal faces mating disk blade as illustrated. Be sure to press rubber seal down firmly to the shoulder on the hub.

4. Fill cupped portion of rubber seal with rubber seal lubricant AM12000M.

5. Install two M15226M spacer washers on each hub and assemble disk blades to hub. Tighten firmly. *IMPORTANT: Disk blades should "barely touch" at the closest point. Revolve disks to be certain disks turn freely with scrapers disengaged. If adjustment is necessary, add or deduct spacer washers as required. Most new assemblies will require two washers while worn blades may require none.*



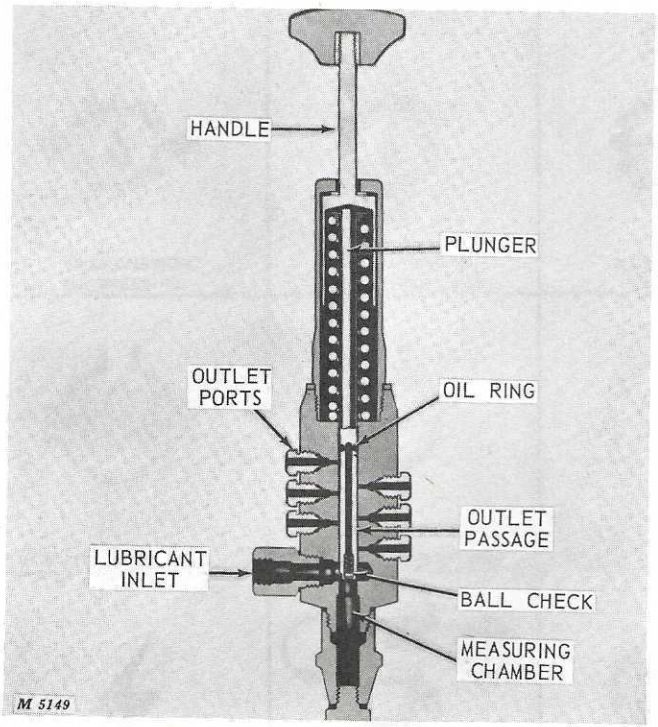

6. Disk blade and bearing assemblies must be tightened to the boot casting by impact. Tighten socket screw firmly and then strike the end of the wrench three times with a 1-1/2 pound hammer.

7. Replace and tighten the bearing plug firmly. Be sure M16630M washer is under head of bearing plug.

Adjust scrapers so they have just enough tension to clean the disks and do not prevent them from turning. (See pages 20 and 21.)

## MULTI-LUBER SYSTEM

### CLOGGED OIL LINES AND BEARINGS




When operating properly, the plunger will move through its full stroke without difficulty. If a feed line or bearing becomes clogged, the normal stroke of the plunger will be interrupted when it reaches the outlet port of the clogged line. Clear the obstruction in the following way:

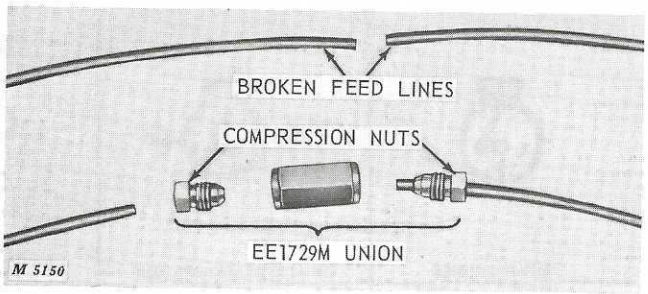
1. Determine which line is clogged by estimating how far the plunger has moved. Check to make sure by disconnecting the suspected feed line and moving the plunger.

2. After disconnecting the clogged line, move the plunger to determine if the clogging is in the bearing or in the feed line.

3. Clean bearing if clogged and refill with grease before attaching Multi-Luber feed line. If feed line is clogged, operate the pump until lubricant is forced through the line.

**IMPORTANT: Do not force lubricant through oil line with a pressure grease gun. Burst pressure of the oil line is 3000 psi.**

### BROKEN FEED LINES




Whenever a feed line has been damaged and broken, the action of the plunger will speed up as it passes the outlet port having a broken or punctured feed line.

Determine the location of the break in the feed line. Cut broken ends of feed lines square and insert them into compression nuts and union as shown above. Tighten nuts firmly.

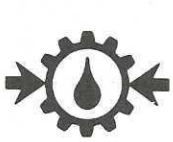
*NOTE: Compression nuts can be used only once.*


See your John Deere dealer for a handy assortment of packaged Multi-luber parts.

# MEMORANDA

## WORLDWIDE SYMBOLS FOR OPERATOR CONTROLS

Symbols instead of words; that's what John Deere is using to promote worldwide identification of operator controls. Once standardized, they give a quick, positive message anywhere in the world — without translation. Study the symbols below and learn to recognize them at a glance.



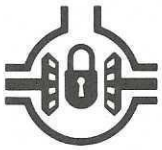
TRANSMISSION OIL PRESSURE

TRANSMISSION OIL TEMPERATURE

TRANSMISSION OIL FILTER

ENGINE OIL PRESSURE

ENGINE R P M



DIFFERENTIAL LOCK

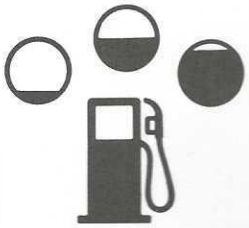
WATER TEMPERATURE


PRESSURIZED—OPEN SLOWLY

AIR FILTER

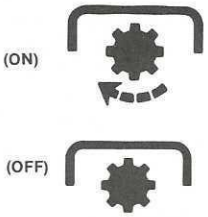
CHOKE

AMMETER OR GENERATOR LIGHT

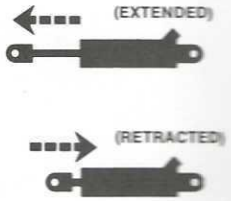


FUEL

FUEL SHUTOFF

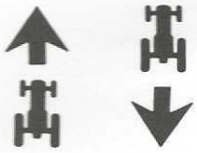



POWER TAKE-OFF




REMOTE CYLINDER


SPEED RANGE



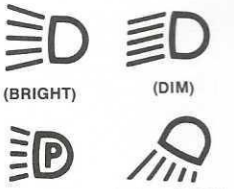
VEHICLE FORWARD

VEHICLE REVERSE


NEUTRAL


PARK

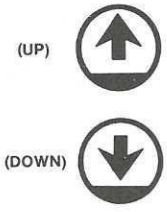

ROCKSHAFT




LIGHTS

WINDSHIELD WIPER

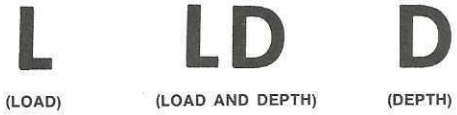
WINDSHIELD DEFROSTER




IMPLEMENT MOVEMENT

CIGAR LIGHTER

HORN




ROCKSHAFT LOAD AND DEPTH CONTROL


GREASE FREQUENCY


OIL TYPE AND FREQUENCY

X-2175

We're here today, here tomorrow.
Only a few minutes away from you.
With a ready supply of parts, skilled service
know-how, and just-right finance plans.
You can count on us...anytime.


With John Deere Dealers
service is a profession...not a sideline.

Litho in U.S.A.

## DRILLING ROW CROPS

Soybeans, common beans, corn, sugar beets, and many other row crops can be planted with your John Deere drill.

Furrow openers not used do not have to be *removed but may be left on the drill to work the* soil or tied up to prevent unnecessary wear.

Cover all of the grain and fertilizer feed openings not being used with grain and fertilizer feed stops shown on page 35. Markers, page 32, are recommended for row crop work.

*Refer to the row crop* chart, below, for the proper drill setting to use for the row spacing desired.

### Chart for Drilling in Pounds Per Acre (in rows)
### 6-Inch Spaced Drills

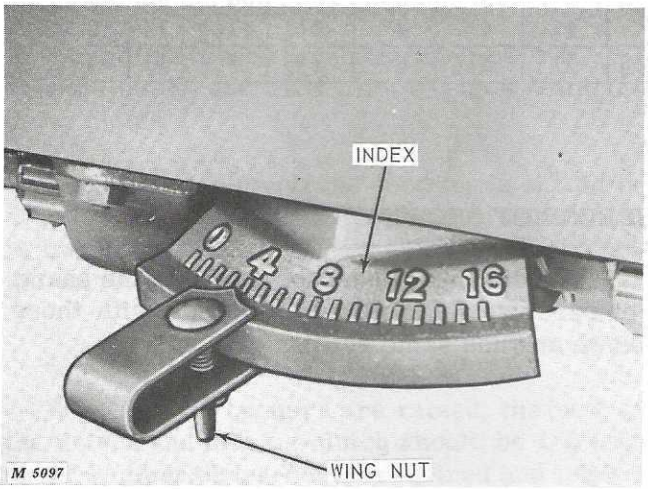
| Notches on Seed Index | | 4 | | | 8 | 12 | 16 | 20 | 24 | 28 | 32 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Row Spacing | | | | | | | | | | |
| KIDNEY BEANS | 18" | | | | | | 39 | 47 | 58 | 67 | |
| " " | 24" | | | | | | 29 | 35 | 43 | 51 | |
| " " | 30" | | | | | | 23 | 28 | 34 | 40 | |
| SOYBEANS or COMMON BEANS | 18" | | | | 17 | 26 | 39 | 51 | 64 | | |
| " " | 24" | | | | 13 | 20 | 29 | 39 | 48 | | |
| " " | 30" | | | | 10 | 16 | 23 | 31 | 39 | | |
| CORN | 24" | | | | | 12 | 17 | 25 | 31 | 38 | 46 |
| " | 30" | | | | | 9 | 14 | 20 | 25 | 31 | 37 |
| " | 36" | | | | | 8 | 12 | 17 | 21 | 26 | 31 |
| KAFIR CORN | 24" | | 3 | | 8 | 12 | 16 | | | | |
| " " | 30" | | 2 | | 5 | 9 | 13 | | | | |
| " " | 36" | | 1 | | 4 | 6 | 8 | | | | |
| BEETS | 12" | | | | | | 12 | 17 | 21 | 26 | 32 |
| " | 18" | | | | | | 8 | 11 | 14 | 18 | 23 |
| " | 24" | | | | | | 6 | 8 | 10 | 13 | 17 |
| TURNIP or RADISH | 24" | 3 | 4-1/2 | 5-1/2 | 7-1/4 | 12 | | | | | |
| " " | 30" | 2-1/2 | 4 | 5 | 6-3/4 | 10-1/2 | | | | | |

## GRASS SEED FEEDS AND DRIVE

The grass seeder on your drill has precision built feeds for accurate seeding. Protect it from the drifting or blowing of fertilizer dust and excessive weathering by removing it from the drill when not in use. Store it inside, out of the weather.

*IMPORTANT—Before starting the drill each day and especially at the beginning of each drilling season, it is important to turn the grass seed feed shaft with a wrench and loosen the feeds with diesel fuel.*

### SETTING GRASS SEED FEEDS




Before adjusting feeds, refer to seed chart in the grass seed box or on page 16. Select the proper setting for distributing or drilling the quantity desired. Loosen wing nut on shifter lever. Shift lever so pointer lines up with selected setting and tighten wing nut.

*NOTE: If grass seed box is filled and shifter lever moved to zero or closed position, turn feed shaft with wrench while doing so.*

Frequently, a mixture of grass seeds and legumes is used. To arrive at the feed shaft shifter setting, select the setting from the drilling chart that will give the desired quantity for each kind of seed and add them together. If a particular seed is not listed, use the setting for a seed having similar size and weight.

Example:

| Seed | Quantity per Acre | Notch |
|---|---|---|
| Alfalfa. . . . . | 7 Lbs. | 2 |
| Alsike Clover. . . . . | 3-1/4 Lbs. | 1/2 |
| Timothy. . . . . | 3-1/2 Lbs. | 1 |
| Birdsfoot Trefoil. . . . | 5 Lbs. | 1 |
| TOTAL | | 4-1/2 |

Set the shifter in the notch that represents the total of all the settings. In the example, the shifter lever would be set on 4-1/2. However, a larger or smaller quantity setting might be used. Check quantities drilled as explained on page 11.

### BAND SEEDING

Band seeding brackets are available, page 31, for distributing grass and legume seed on or near the surface of the ground and directly above the band of fertilizer being drilled.