

John Deere 186W Fertilizer Unit



JOHN DEERE

OPERATORS MANUAL

John Deere 186W
Fertilizer Unit

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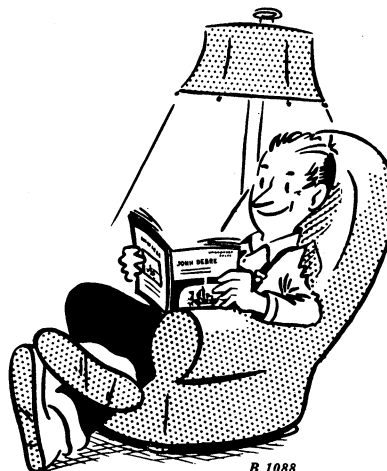
TO THE PURCHASER

Your new John Deere fertilizer unit is sturdy and dependable. It will give long and efficient service if given proper care and operation.

This operator's manual contains information on the proper operation, adjustment, maintenance, and lubrication.

When in need of parts, see your John Deere dealer. He will furnish genuine John Deere Parts and prompt and efficient service in the field or in the shop.

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



Study this manual carefully. Keep it handy, in a safe place, for future reference.

JOHN DEERE FERTILIZER UNIT

Check off the model of your fertilizer unit, special equipment obtained, and record date purchased.

Model:

186W Dry ☐
186W Liquid ☐

Seed Hoppers for Regular Seed ☐
Seed Hoppers for Segmented Seed. ☐
12-Inch Double-Disk Fertilizer Openers
(Anti-Friction bearings) ☐
16-Inch Double-Disk Fertilizer Openers . ☐
Covering Knives ☐
Fertilizer Spouts. ☐

Fertilizer Packer Wheels ☐
Chevron Press Wheel Tires ☐
Rib Type Press Wheel Tires ☐
Concave Press Wheel Tires ☐
Offset Markers ☐

Pre-Emergence Sprayer Attachment:
Pre-Emergence Sprayer ☐
Bronze Gear Pump ☐
Six-Roller Grey Iron Pump. ☐
Six-Roller Ni-Resist Pump. ☐
Eight-Roller Ni-Resist Pump ☐
Nozzle Check Valves ☐

Date Purchased

Price \$

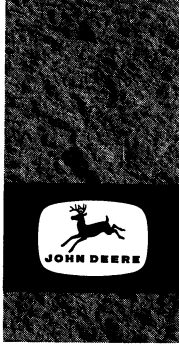


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SPECIFICATIONS

TYPES - 186W 6-Row Dry Fertilizer Unit. The 71 Flexi-Planters are mounted on the rear bar of the fertilizer unit. The fertilizer can be placed either to one side or under the seed.

TYPE OF LIFT - Remote hydraulic cylinder.

MARKERS - Disk Type - Automatically raised and lowered when the fertilizer unit is raised and lowered.

OPERATING SPEED - Determined by the planting speed of the 71 Flexi-Planters.

ROW WIDTHS - 4 Rows, 36, 38 or 40 inches.
6 Rows, 28 or 30 inches.

FERTILIZER OPENERS - 16-inch double disk fertilizer openers are regular. 12-inch double disk fertilizer openers are optional. Both double disk openers have anti-friction bearings.

DRY FERTILIZER - Auger fed, 2 hoppers; capacity of each hopper approximately 700 pounds. Regular, high, and extra high rate augers are available.

DRY FERTILIZER DRIVE - Independent cast iron ground drive wheel.

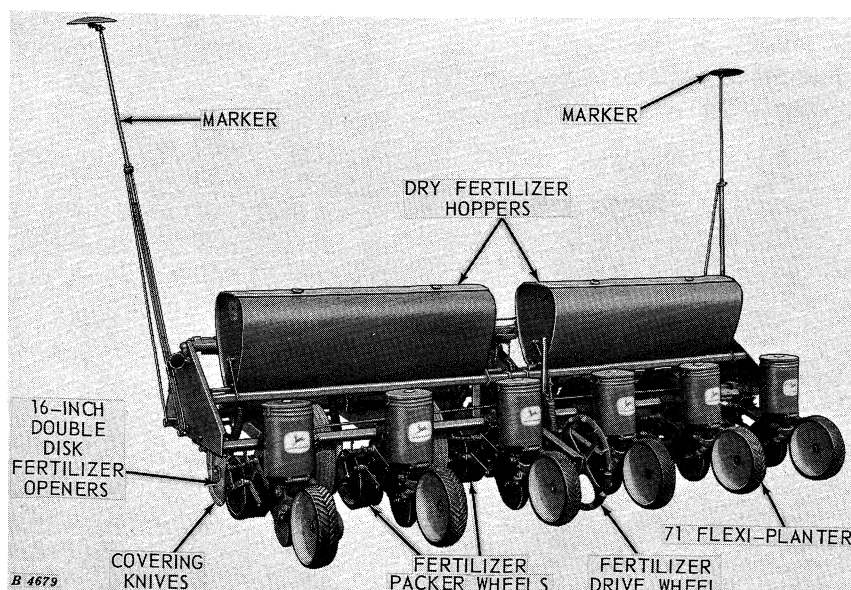
PRE-EMERGENCE ATTACHMENT - Will apply liquid herbicides over the row at the time of planting. The 22 or 25 Sprayer can also be used as a pre-emergence attachment.

KNIFE COVERERS - (For 16-inch double disk fertilizer openers only) Blade type with adjustable down pressure.

FERTILIZER PACKER WHEELS - Optional - Assures separation of the fertilizer and seed when the fertilizer is placed directly under the seed.

LIQUID FERTILIZER - Gravity fed, 2 tanks; capacity of each tank approximately 500 pounds (50 U.S. gallons).

(Specifications and design subject to change without notice.)



186W Dry Fertilizer Unit with 16-Inch Double-Disk Openers, Fertilizer Packer Wheels, and Six 71 Flexi-Planters



OPERATION

PREPARING THE TRACTOR

The tractor must be equipped with an 8-inch stroke hydraulic cylinder that conforms to ASAE-SAE standards.

On tractors with adjustable drawbar, place the drawbar approximately 15 inches from the ground and bolt it to the center of the tractor drawbar support.

Set the tractor wheel tread as nearly as possible twice the distance of the row width. Example: for 28-inch row widths, set the tractor wheel tread at 56 inches.

PREPARING THE FERTILIZER UNIT

LUBRICATION

Regular and systematic lubrication is the best assurance against breakdowns and delays. Lubricate your fertilizer unit according to instructions on page 31.

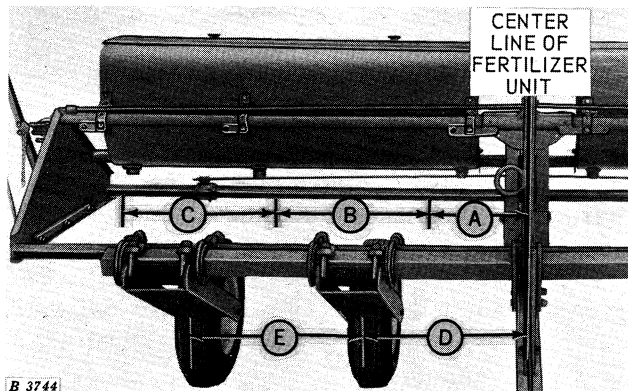
TIRE INFLATION

Inflate the tires to 30 pounds air pressure.

ADJUSTING ROW WIDTHS

When planting six rows, the 71 Flexi-Planters may be positioned for 28- or 30-inch row widths.

When planting four rows, the 71 Flexi-Planters may be positioned for 36-, 38-, or 40-inch row widths.



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Location of 71 Flexi-Planters and Fertilizer Unit Wheels For Various Row Widths

Row Spacing	Dimension "A"	Dimension "B"	Dimension "C"	Dimension "D"	Dimension "E"
6-Row Units					
28"	14"	28"	28"	28"	28"
30"	15"	30"	30"	30"	30"
4-Row Units					
36"	18"	36"	-	*	*
38"	19"	38"	-	*	*
40"	20"	40"	-	*	*

**Place the wheels together and center them between the planting units.*

The desired row width will determine the position that each 71 Flexi-Planter unit must be placed on the fertilizer unit rear frame bar and also, the position of the fertilizer unit wheels.

The following example illustrates how to measure for a 6-row unit having a row width of 30 inches. Measure for other row widths in the same manner.

Start at center line of fertilizer unit rear frame bar and measure to the right 15 inches (dimension "A"). Mark the frame bar, as this is the location for the inside unit on the right-hand side.

From the mark made for the inside unit, measure to the right 30 inches (dimension "B"). Mark this location for the center unit on the right-hand side.

From the mark made for the center unit, measure to the right 30 inches (dimension "C"). Mark this location for the outside unit on the right-hand side.

Start at center line of fertilizer unit and measure to the right 30 inches (dimension "D"). Mark this location as it will be the center of the tread for the inside right-hand wheel.

From the mark made for the inside wheel measure to the right 30 inches (dimension "E"). Mark this location as it will be the center of the tread for the outside right-hand wheel.

4 Operation

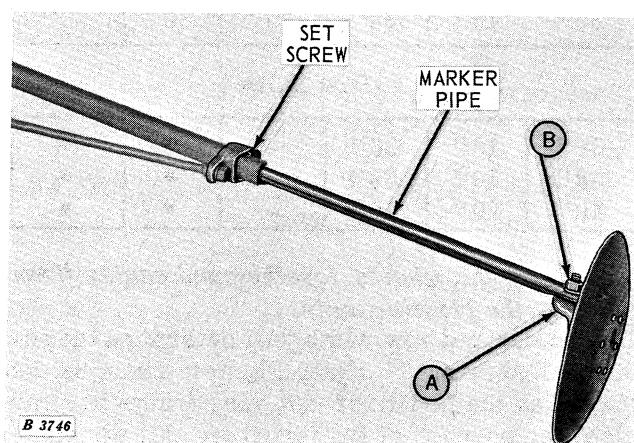
ADJUSTING ROW WIDTHS—Continued

Repeat this procedure to locate position for planting units and wheels on left-hand side of fertilizer unit.

After all positions have been located and marked, install a Flexi-Planter unit on rear frame bar at each marked position with the clamp centered on the mark. Tighten the U-bolts securely.

Position the wheels and tighten the bolts securely.

ADJUSTING MARKERS

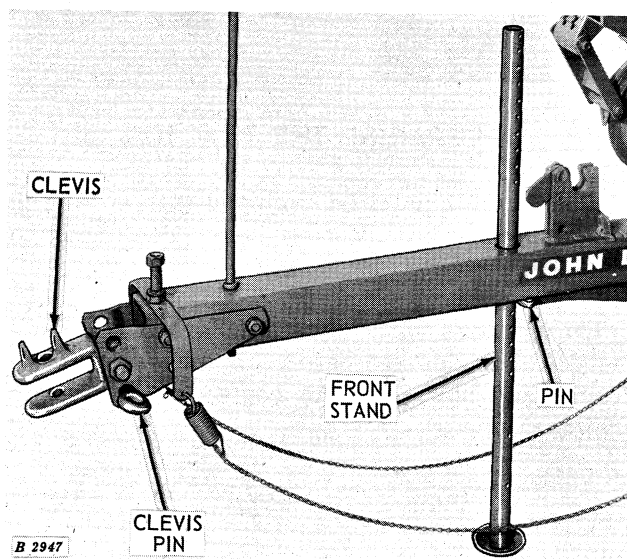


Adjust the markers for the correct row spacing.

The distance from the center of the fertilizer unit to the marker disk should equal the number of rows being planted multiplied by the row spacing. For example: If planting six 30-inch rows, the distance from the center of the fertilizer unit to the marker disk should be 6 times 30, or 180 inches.

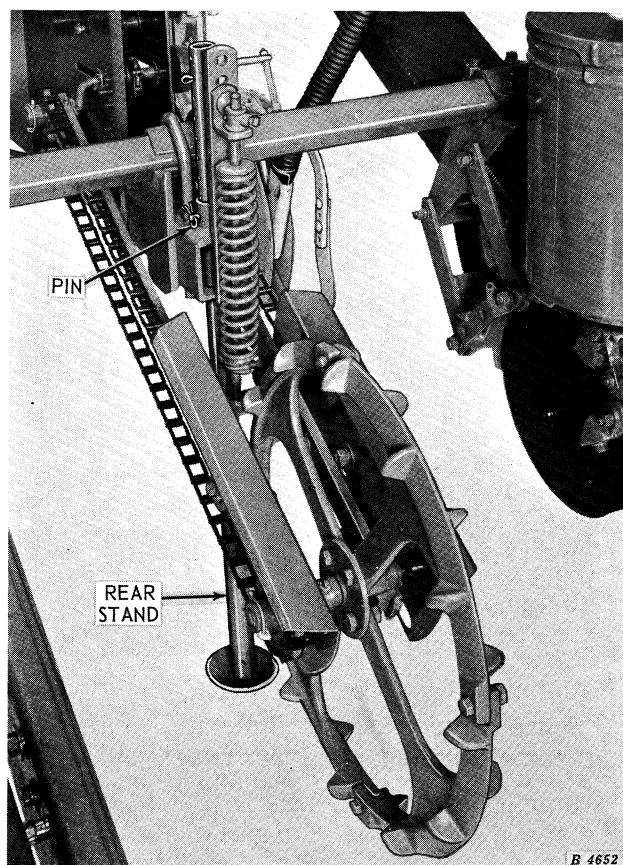
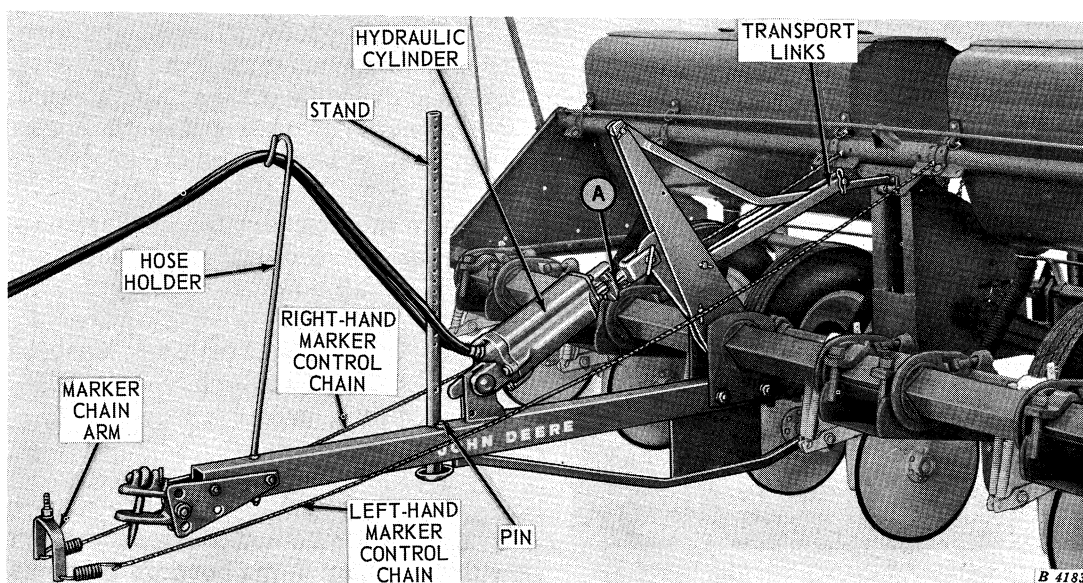
To adjust the marker arm, loosen the set screws so marker pipes will slide. Position marker for desired row width. Turn each marker pipe so bracket 'A' is in position illustrated. Tighten the set screws securely to hold markers in position. The angle of each marker disk may be adjusted for various soil conditions by loosening bolt 'B' and turning the disk. After adjustment is made, tighten bolt 'B' securely.

HITCHING TO TRACTOR



With the fertilizer unit resting on the front stand, back the tractor to the fertilizer unit so the hitch is straight in line with the tractor drawbar.

Remove the clevis pin from the clevis and place it in the hitch holes to hold the clevis straight out. If the clevis is installed in the upper hole, place the clevis pin in the middle hole to hold the clevis straight out.



Retract the hydraulic cylinder until the fertilizer unit hitch is the same height as the tractor drawbar. Attach the clevis to the tractor drawbar with the clevis pin and secure it in place with the retaining pin and spring locking pin.

Extend the hydraulic cylinder and place the stand in the raised position securing it with the spring locking pin.

Attach the chain arm at right angles to the tractor drawbar. Tighten the bolt securely as the marker arm must be held rigidly to the tractor drawbar.

To unhitch the fertilizer unit from the tractor reverse the above procedure.

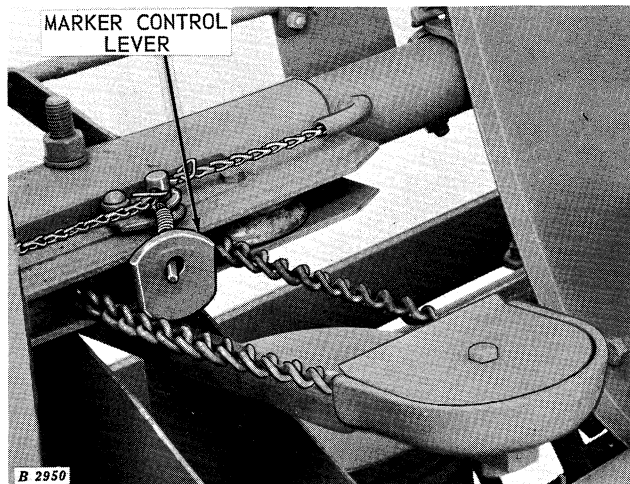


CAUTION: Place fertilizer unit in the transport position. Position the rear stand approximately four inches above the ground before unhooking the fertilizer unit from the tractor. Place stand in raised position after hitching fertilizer unit to tractor.

Install the remote hydraulic cylinder and set the stop "A" so the cylinder will retract all the way. This will permit the Flexi-Planter press wheels to gauge the planting depth at all times. Install the hydraulic hose in the hose holder. Extend the cylinder and disconnect the transport links from the transport lug.

6 Operation

MARKER CONTROL CHAINS



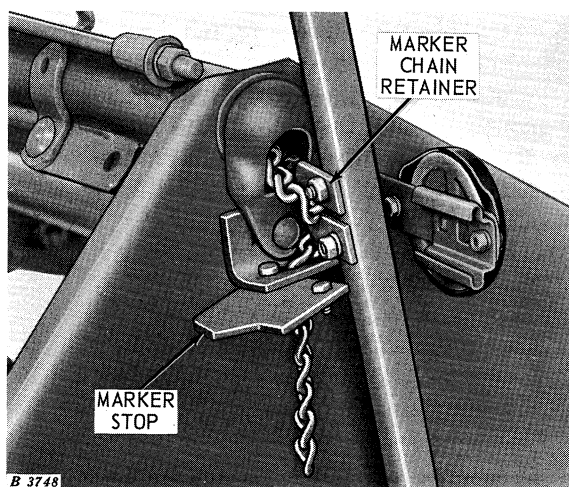
Pull the right-hand marker control chain until marker control lever points to left-hand side of fertilizer unit, as illustrated.

Attach the spring to chain arm, and hook the left-hand marker control chain to spring at the shortest link possible, without stretching the spring.

Now pull the left-hand marker control chain until the marker control lever points to right-hand side of fertilizer unit.

Attach the spring to chain arm, and hook the right-hand marker control chain to spring at the shortest link possible, without stretching the spring.

MARKER LIFT CHAINS



With the remote hydraulic cylinder extended to maximum length, pull marker lift chains tight at each end of fertilizer unit and adjust each lift chain in the marker chain retainer so marker arm is snug against the marker stop.

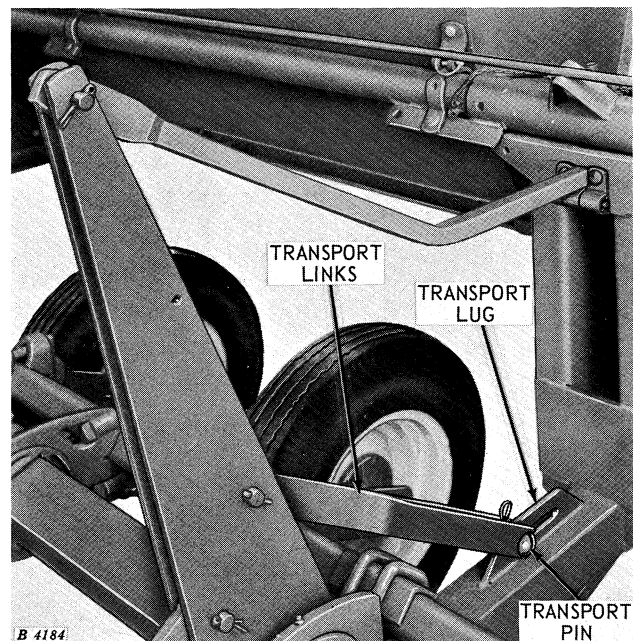
Turn the marker stop as shown and place the loose end of each marker chain in the marker stop. This also reduces the over-all width.



CAUTION: Keep the loose end of each marker chain in the marker stop at all times, except when planting.

TRANSPORTING

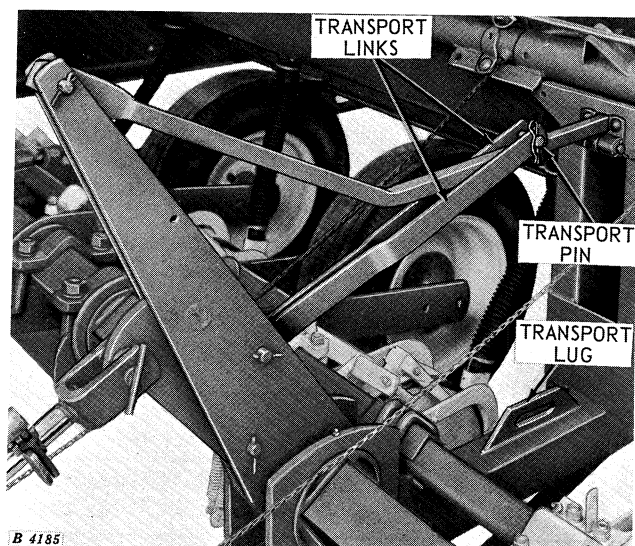
CAUTION: Do not transport the fertilizer unit with fertilizer in the hoppers or tanks.



Connect the transport links to the transport lug before transporting fertilizer unit. Place spring locking pin in the inner hole of transport pin.



When transporting the fertilizer unit on a road or highway at night or during the day, use accessory lights and devices for adequate warning to operators of other vehicles. In this regard, check local government regulations. Various safety lights and devices are available from your John Deere dealer.



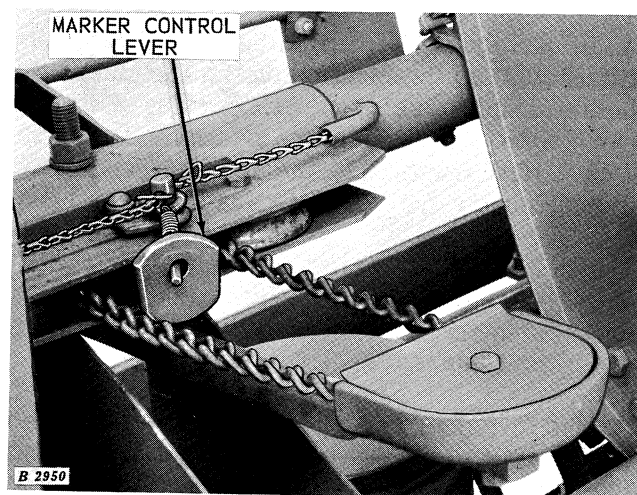
After reaching the field, remove the transport links from the transport lug and place the transport links in position illustrated. Place spring locking pin in the outer hole of transport pin.

MARKERS

Remove the end of each marker chain from the marker stops before lowering the fertilizer unit in the field.

NOTE: For planting the last rows next to a fence the markers can be held up by inserting the marker chains in the marker stops.

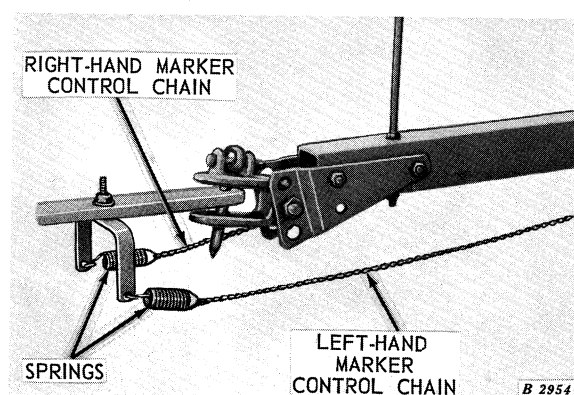
The position of the marker control lever will determine which marker will drop when the fertilizer unit is lowered.



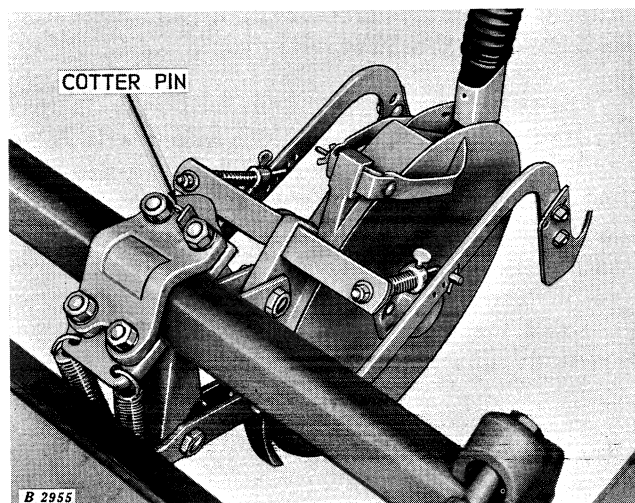
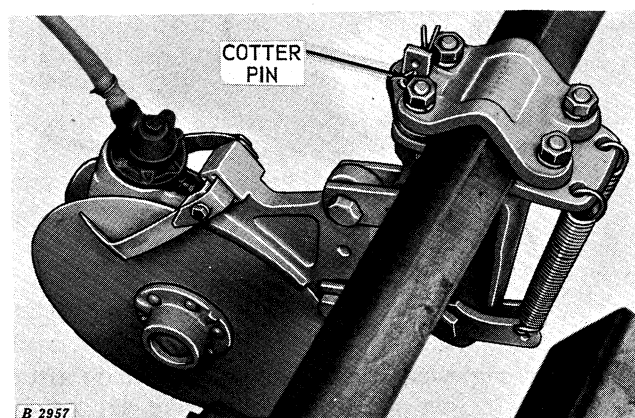
When the marker control arm points to the left-hand side of the fertilizer unit, as illustrated, the right-hand marker will drop.

The marker control arm will stay in this position, and the right-hand marker will raise and drop when fertilizer unit is raised and lowered until the tractor is turned sharply to the right. Then the left-hand marker control chain will tighten and point the marker control arm toward the right-hand side of the fertilizer unit and the left-hand marker will drop when fertilizer unit is lowered.

The marker that is down will automatically raise when the planter is raised.



If the right-hand marker will not drop after a sharp left turn, shorten the right-hand marker control chain at spring, one link at a time, until right-hand marker will drop after a sharp left turn. Shorten the left-hand marker control chain if left-hand marker fails to drop after a sharp right turn.

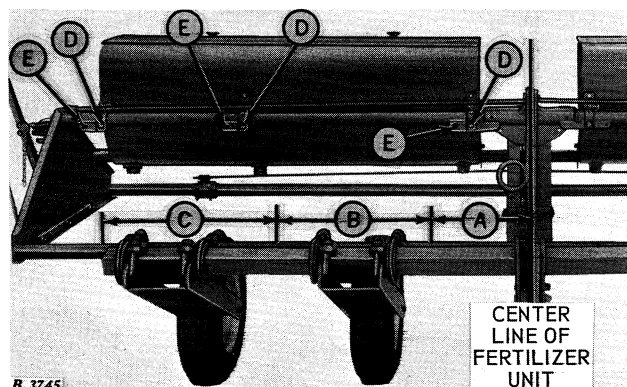
FERTILIZER OPENERS**16-Inch Double-Disk Openers****12-Inch Double-Disk Openers**

Either the liquid or dry fertilizer can be placed in the row below the seed, or to one side of the seed, with double-disk openers.

When it is desired to place the fertilizer in the row below the seed, the 16-inch double-disk openers are recommended. They are mounted on the front bar of the fertilizer unit in a direct line with the seed opener of the Flexi-Planter.

When it is desired to place the fertilizer to one side of the seed, either 12- or 16-inch double-disk openers can be used.

The cotter pin in each depth adjusting strap determines how deep the fertilizer is placed in the soil. To place the fertilizer deeper, locate the cotter pin in a higher hole in the adjusting strap. To place the fertilizer shallower, locate the cotter pin in a lower hole in the strap.

**Location of Fertilizer Openers for Various Row Widths**

Row Spacing	Dimension "A"	Dimension "B"	Dimension "C"
6-Rows			
28"	11"	34"	28"
30"	12"	36"	30"
4-Rows			
36"	15"	36"	--
38"	16"	38"	--
40"	17"	40"	--

The above illustration shows the proper location for the double-disk openers to place the fertilizer approximately 3 inches to one side of the seed for the various row widths.

Dimension "A" is from the center of the fertilizer unit to the location on the bar where the inside double-disk openers are to be centered. Dimension "B" is from the location of the inside double-disk openers to the location where the middle double-disk openers are to be centered.

Dimension "C" is the dimension from the location of the middle double-disk openers to the location where the outside double-disk openers are to be centered.

The fertilizer hopper tank should be installed in holes "D" for 28- and 30-inch row spacing. Use holes "E" for 36 to 40-inch row spacing.

DRY FERTILIZER

RATE OF APPLICATION

The rate of application is determined by the type of augers installed in the hoppers and the drive and driven sprocket combinations.

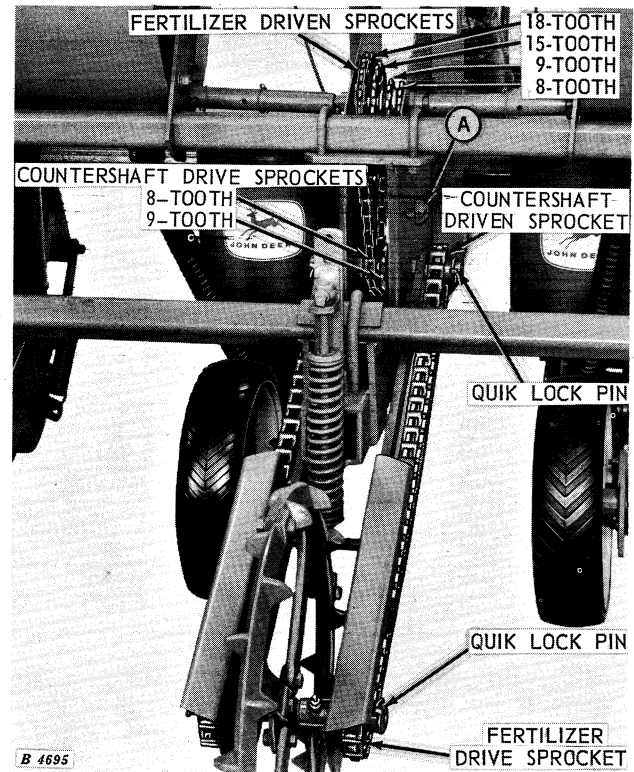
The 186W Fertilizer Unit can be equipped with regular, high or extra high rate augers.

NOTE: When planting 4 rows, replace the outside fertilizer augers with short fertilizer augers (BB11671B) to prevent fertilizer from flowing out of the outer auger housing.

The fertilizer-drive, fertilizer-driven, countershaft-drive and countershaft-driven sprockets can be interchanged for different rates of application.

To change the fertilizer-driven and countershaft-drive sprocket combinations loosen knob "A," place the chain on the desired sprockets, position the chain idler so there is 3/8-inch slack in the chain and tighten knob "A."

To change the countershaft-driven and fertilizer-drive sprocket combination remove Quik-Lock pins, change sprockets and replace Quik-Lock pins.



The following delivery rates are approximate and will vary with changes in temperature, humidity, and the particular fertilizer being used.

Dry Fertilizer Approximate Delivery Rates in Pounds Per Acre						
*CALCULATED FOR 40-INCH ROW SPACING AND 10-10-10 FERTILIZER						
Fertilizer Drive Sprocket	Countershaft Driven Sprocket	Countershaft Drive Sprocket	Fertilizer Driven Sprocket	Regular Rate Auger	High Rate Auger	Extra High Rate Auger
8-tooth	10-tooth	8-tooth	18-tooth	90	120	295
8-tooth	10-tooth	8-tooth	15-tooth	100	140	355
8-tooth	10-tooth	9-tooth	15-tooth	110	165	400
10-tooth	8-tooth	8-tooth	18-tooth	132	198	460
10-tooth	8-tooth	8-tooth	15-tooth	150	225	560
8-tooth	10-tooth	8-tooth	9-tooth	170	260	590
10-tooth	8-tooth	9-tooth	15-tooth	198	297	625
8-tooth	10-tooth	9-tooth	9-tooth	210	315	670
8-tooth	10-tooth	9-tooth	8-tooth	220	330	745
10-tooth	8-tooth	8-tooth	9-tooth	298	447	930
10-tooth	8-tooth	9-tooth	9-tooth	330	495	1005
10-tooth	8-tooth	9-tooth	8-tooth	372	558	1115

*For:

38-inch rows multiply above amounts by 1.05
36-inch rows multiply above amounts by 1.11

30-inch rows multiply above amounts by 1.33
28-inch rows multiply above amounts by 1.43

DRY FERTILIZER—Continued

Dry Fertilizer Approximate Delivery Rates in Pounds Per Acre						
*CALCULATED FOR 28-INCH ROW SPACING AND 6-40-0 FERTILIZER						
Fertilizer Drive Sprocket	Countershaft Driven Sprocket	Countershaft Drive Sprocket	Fertilizer Driven Sprocket	Regular Rate Auger	High Rate Auger	Extra High Rate Auger
8-tooth	10-tooth	8-tooth	18-tooth	89	125	242
8-tooth	10-tooth	8-tooth	15-tooth	103	147	270
8-tooth	10-tooth	9-tooth	15-tooth	112	175	286
10-tooth	8-tooth	8-tooth	18-tooth	121	188	303
10-tooth	8-tooth	8-tooth	15-tooth	148	228	380
8-tooth	10-tooth	8-tooth	9-tooth	160	232	410
10-tooth	8-tooth	9-tooth	15-tooth	170	246	440
8-tooth	10-tooth	9-tooth	9-tooth	179	260	482
8-tooth	10-tooth	9-tooth	8-tooth	201	304	560
10-tooth	8-tooth	8-tooth	9-tooth	241	384	632
10-tooth	8-tooth	9-tooth	9-tooth	260	401	700
10-tooth	8-tooth	9-tooth	8-tooth	290	445	800

***For:**

40-inch rows multiply above amounts by 0.70
 38-inch rows multiply above amounts by 0.74
 36-inch rows multiply above amounts by 0.78
 30-inch rows multiply above amounts by 0.93

Because the dry fertilizer attachment meters volume and not weight, the weight metered out of certain types of fertilizer can vary a great amount.

To check the exact number of pounds of fertilizer that will actually be delivered for 40-inch row spacing, proceed as follows:

Remove one spout from either fertilizer hopper and attach a sack, or other suitable container, under the opening in the hopper. Engage the fertilizer unit and drive forward for 130 feet. Weigh the amount of fertilizer caught in the container and multiply that amount by 100. The result will be pounds of fertilizer delivered per acre when planting in 40-inch rows.

NOTE: Multiply the weight of the fertilizer caught in the container by:

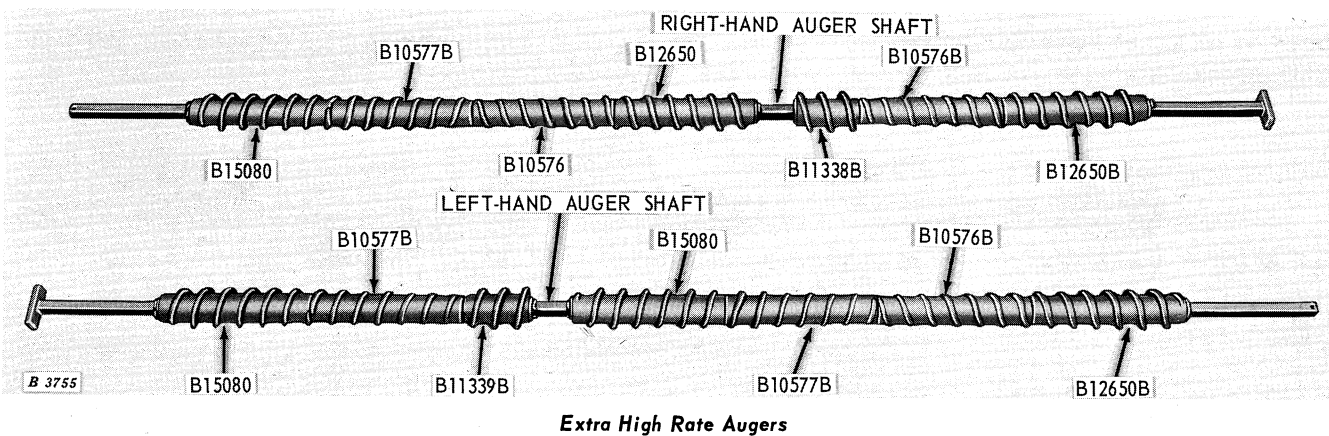
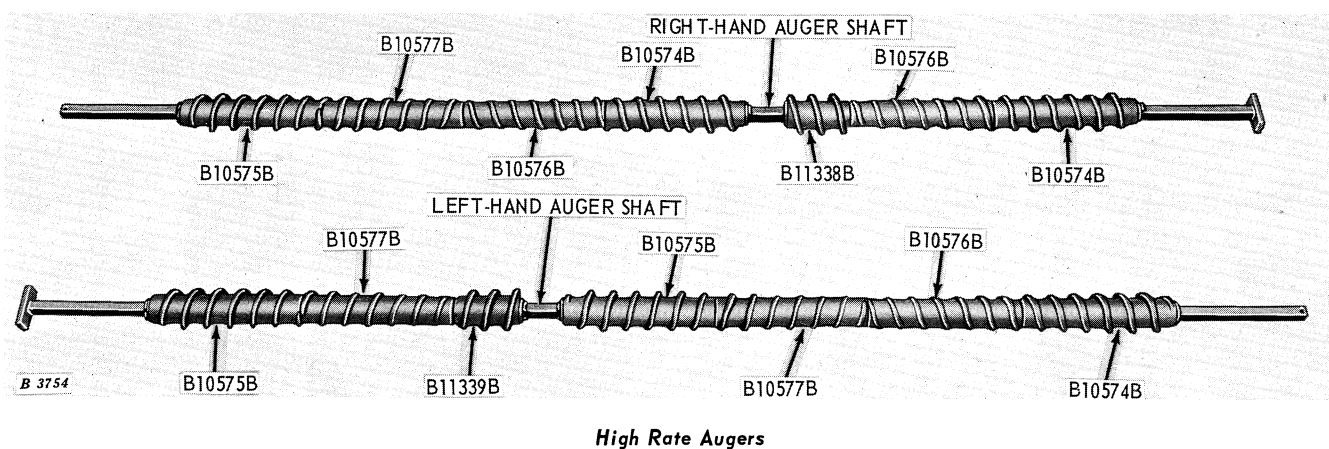
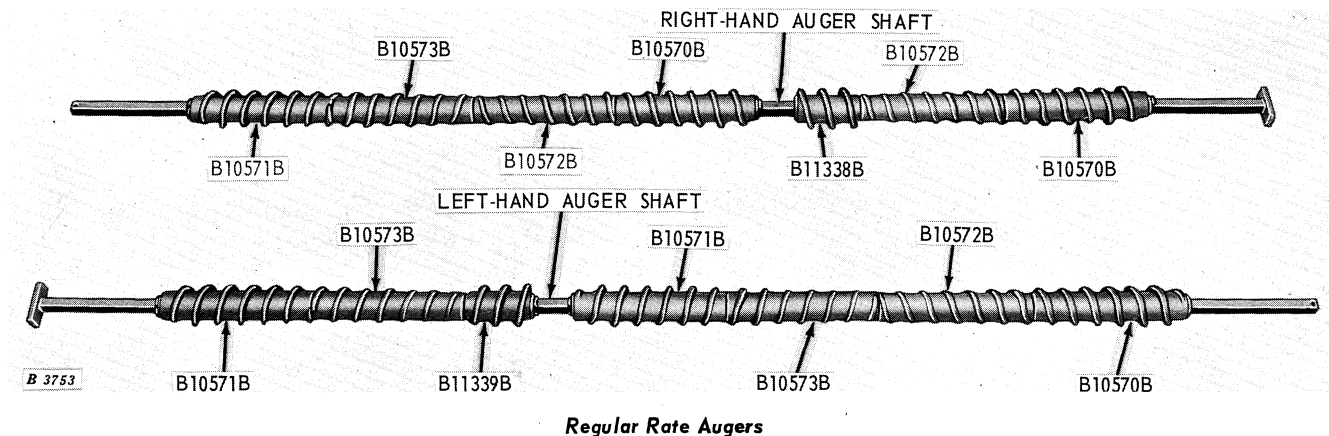
*105 for 38-Inch Rows
 111 for 36-Inch Rows
 133 for 30-Inch Rows
 143 for 28-Inch Rows*

NOTE: When planting four rows, replace the outside fertilizer augers with the short fertilizer augers (BB11671B) to prevent fertilizer from flowing out the outer auger housing.

NOTE: Six-tooth fertilizer drive sprocket B11173B can be used in place of the eight-tooth fertilizer drive sprocket to distribute 25 percent less fertilizer than shown in chart.

REGULAR, HIGH AND EXTRA HIGH RATE AUGERS FOR 6-ROWS

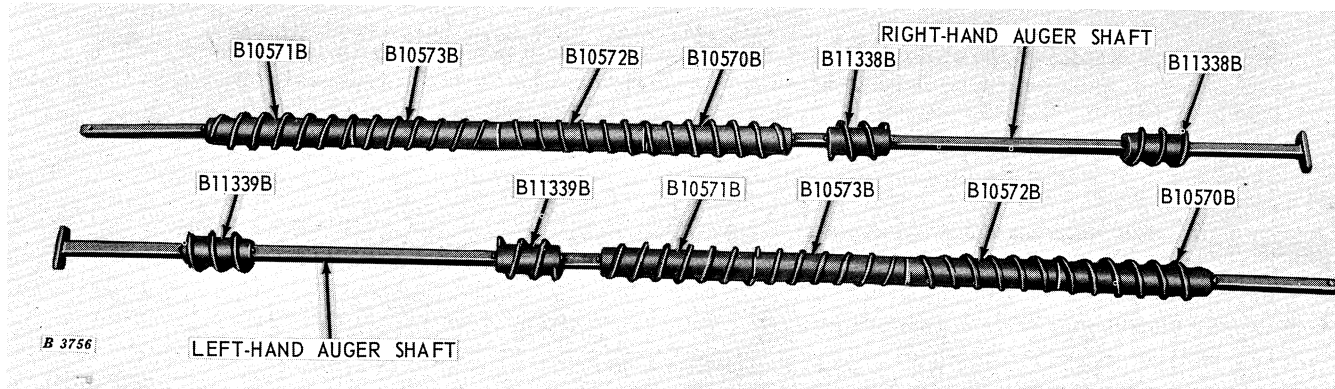
The following illustrations show the regular, high and extra high rate augers assembled for proper operation.



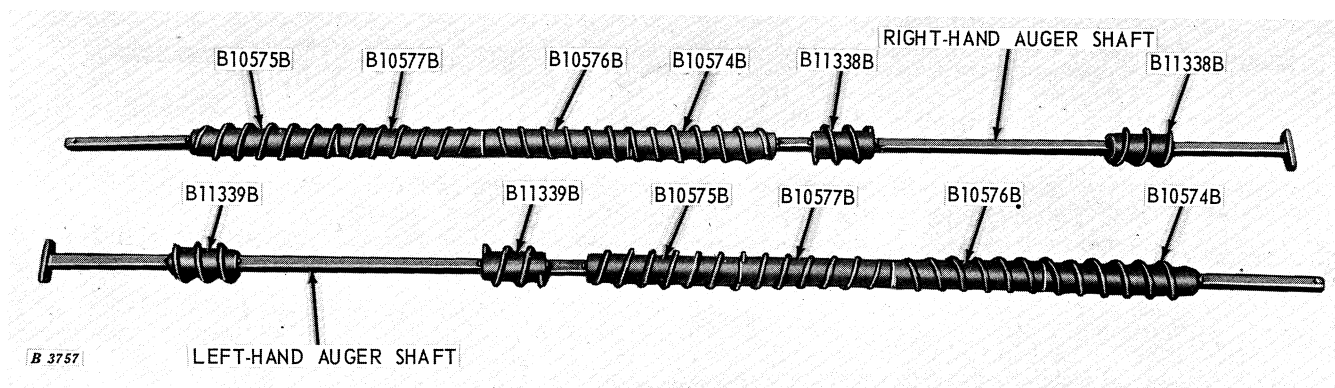
DRY FERTILIZER—Continued

REGULAR, HIGH AND EXTRA HIGH RATE AUGERS - 4-ROWS ONLY

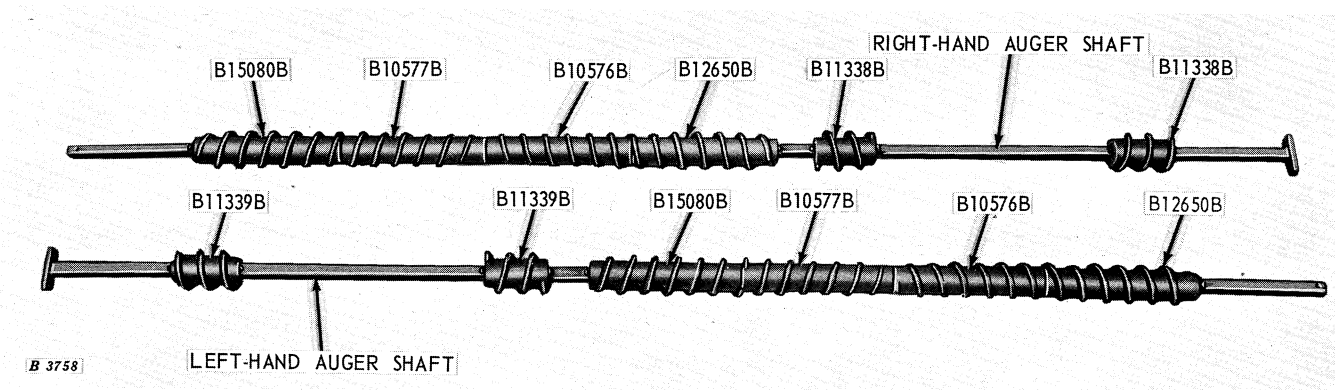
The following illustrations show the regular, high and extra high rate augers assembled for proper operation.



Regular Rate Augers

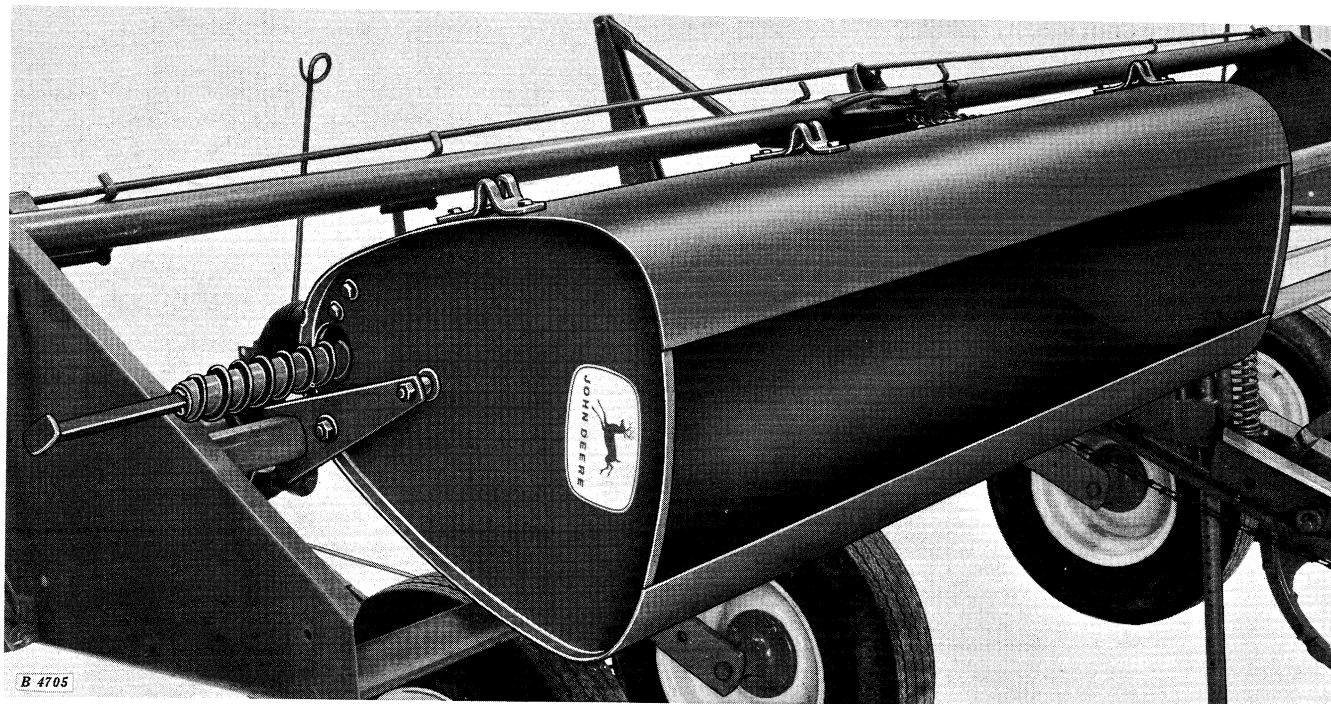


High Rate Augers

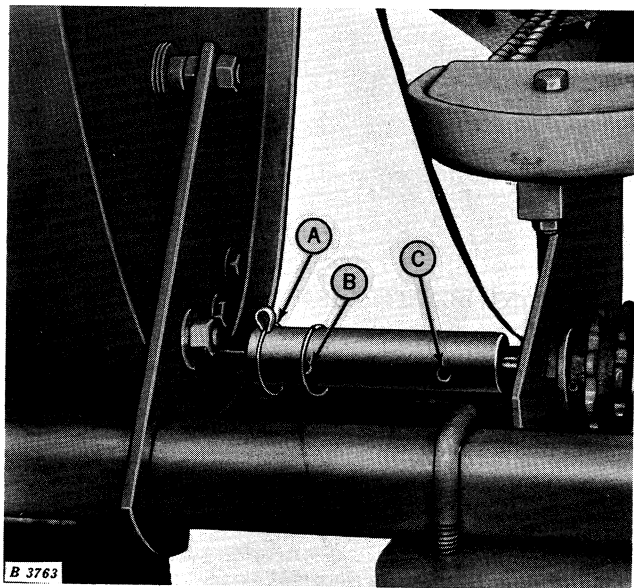


Extra High Rate Augers

CLEANING HOPPERS



B 4705



B 3763

At the end of each day's use, or more often if necessary, the fertilizer hoppers and delivery tubes, and openers should be thoroughly cleaned.

Remove the hopper lids and delivery tubes. Pull the cotter pin out of each fertilizer drive shaft.

NOTE: Use holes "A" and "B" for 28- and 30-inch row spacing.

Use holes "A" and "C" for 36-through 40-inch row spacing.

Remove the Quik-Lock pins and tilt the hoppers rearward. Remove the auger assemblies.

Flush all loose fertilizer from hoppers and tubes with water. If fertilizer has hardened and "caked" on any of the parts, saturate with kerosene until it can be removed. Check inside of each auger bearing, and if necessary, clean with a wire brush.

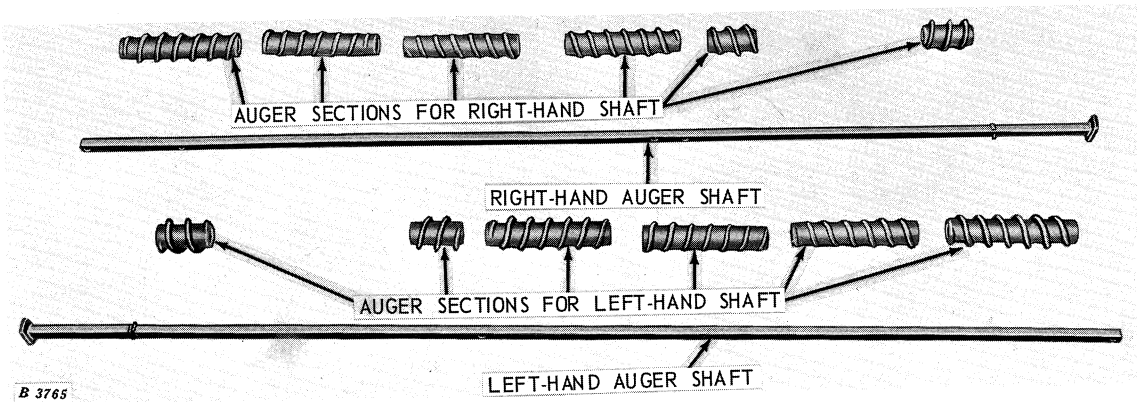
If the fertilizer attachment is not to be used for some time, coat all unpainted parts with grease.

The hoppers and augers should be repainted at the end of each planting season.

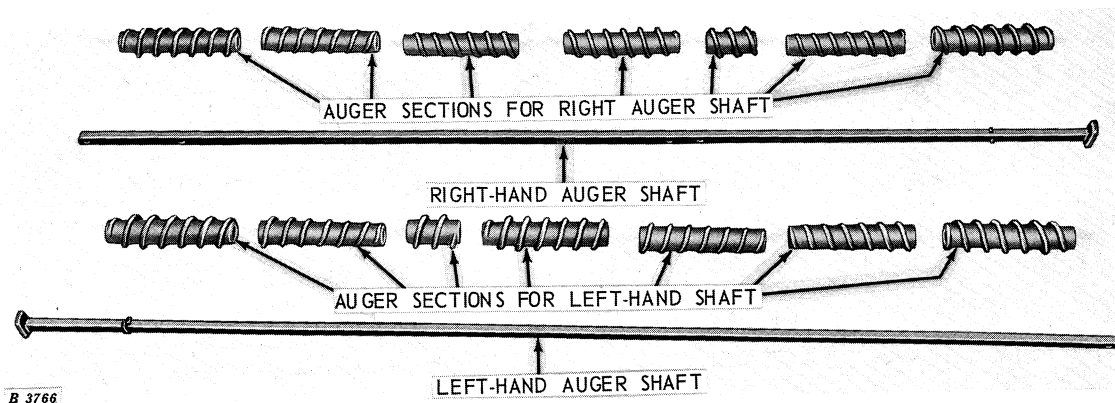
After hoppers are clean and dry, replace the right-hand auger assembly in the right-hand hopper and the left-hand auger assembly in the left-hand hopper, and swing hoppers back into position, securing them in place with the Quik-Lock pins. Connect the drive shafts and delivery tubes.

DRY FERTILIZER—Continued

REPLACING AUGER SECTIONS



Fertilizer Augers - 4 Row



Fertilizer Augers - 6 Row

If auger sections need to be replaced or if different delivery rate auger sections are to be installed, remove the auger assemblies from the hoppers.

The auger assemblies are right- and left-hand.

Remove cotter pins holding oil auger sections on shafts and slide old auger sections off the shafts.

Install new auger sections on shafts in proper order and insert cotter pins.

HANDLING FERTILIZER

Keep fertilizer dry. Do not store it in a damp place.

Most fertilizers readily accumulate moisture and cause metal to corrode. This corrosion not only shortens metal life but leads to unnecessary expense for parts broken because of binding or "freezing." Deposits of fertilizer will build up in the hopper and interfere with working parts. Therefore, the hoppers should be cleaned every day of use.

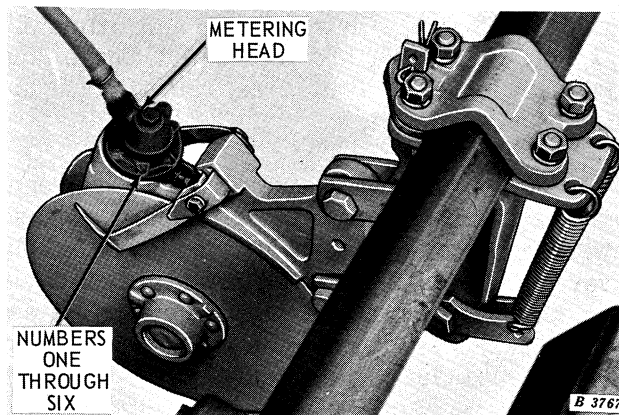
When filling the hoppers, release lid fastener and slide lid forward until it hangs on edge of hopper.

LIQUID FERTILIZER

RATE OF APPLICATION

The rate of application is determined by the orifice disk setting in the metering head and the rate of travel of the planter.

There are three orifice disks, low range (No. 1), high range (No. 2), and extra high range (No. 3), furnished with each metering head. The number is embossed on the tongue and the orifice disk must always be installed with the number up. Each orifice disk has six graduated holes which give six delivery rates. The tongue projects out over one of the six numbers on the metering head.



To change the delivery rate, loosen bolt in top of metering head. Turn orifice disk so tongue is over the number which will give the desired delivery rate and tighten bolt.



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

The delivery rates in the following tables are approximate and will vary with changes in temperature and the particular fertilizer being used:

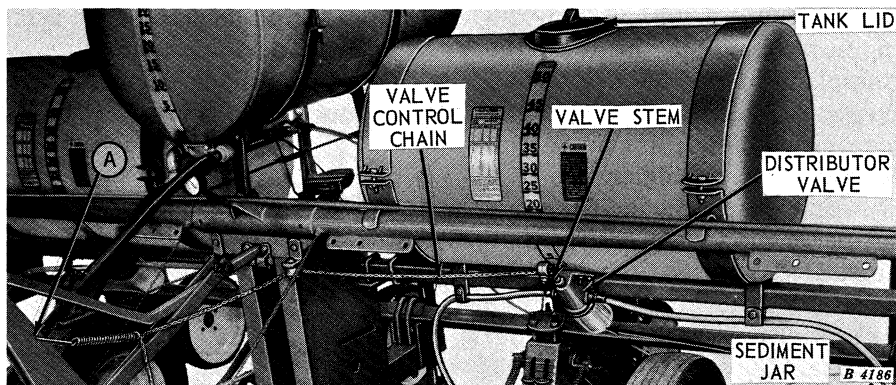
Liquid Fertilizer Approximate Delivery Rates In Pounds Per Acre For 40-Inch Row Widths*				
Orifice Number	Speed			
	2 mph	3 mph	4 mph	5 mph
Low Range Orifice Disk No. 1				
1	64	42	32	25
2	100	67	50	40
3	150	100	75	60
4	224	150	112	90
5	274	183	137	110
6	300	200	150	120
High Range Orifice Disk No. 2				
1	362	242	181	145
2	242	283	212	170
3	488	325	244	195
4	598	392	294	235
5	630	420	315	252
6	724	483	362	290
Extra High Range Orifice Disk No. 3				
1	776	517	388	310
2	862	575	431	345
3	1004	670	502	402
4	1056	703	528	422
5	1162	775	581	465
6	1276	850	638	510

*For:

- 38-inch rows multiply above amounts by 1.05
- 36-inch rows multiply above amounts by 1.11
- 30-inch rows multiply above amounts by 1.33
- 28-inch rows multiply above amounts by 1.43

LIQUID FERTILIZER—Continued

TANKS AND DISTRIBUTOR VALVES



After filling the tanks, secure the lids tightly to assure uniform delivery of fertilizer in the field. Refill the tanks when the level of the liquid is approximately one-fifth full.

The distributor valves are automatically opened when the fertilizer unit is lowered and closed when the unit is raised. If valves do not close, tighten lower pipe in distributor valve. The valves can be closed when unit is lowered by disconnecting the valve control chains at "A."

Lubricate the valve stem in the distributor valve with SAE 10W oil each day of operation.

Clean the sediment screen, just above the sediment jar in the distributor valve, once each day of operation, or more often, if necessary.

MAINTENANCE

Do not leave liquid fertilizer in the tanks if the temperature is expected to drop below 40° F. Some types of liquid fertilizer will begin to crystallize at this temperature.

If the fertilizer unit is to stand idle for some time, remove the sediment jar, hold the valve

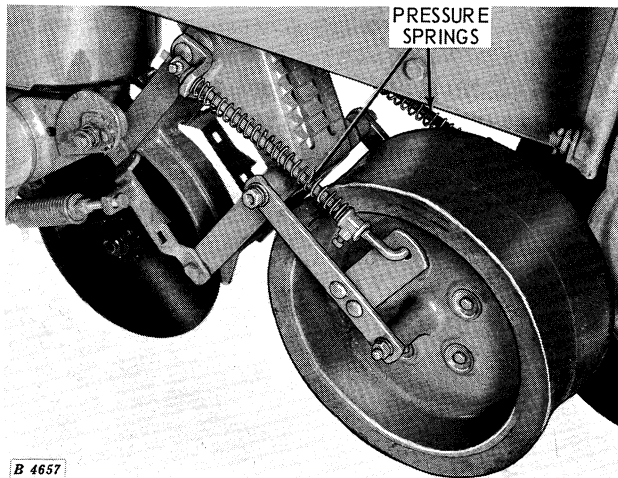
open, and flush out the entire system with clean water. Refill tank with water, add approximately 1/2 pint of 10W oil, and replace lid. Shake tank and drain, leaving lid in place. This will coat inside of tank with oil.

If soil insecticides are used, the solvents used as carriers for the insecticides may cause swelling of the seals, gaskets, and hose. To help overcome this difficulty, at the end of each day's use, hold valve open and flush the entire system with clean water. Remove lid seals from lids and orifice disks from metering heads, wash with clean water and allow to dry overnight. Leave tank open and remove sediment jar.

NOTE: If difficulty is still encountered it may be necessary to have an extra set of lid seals and orifice disks to alternate during the day's use.

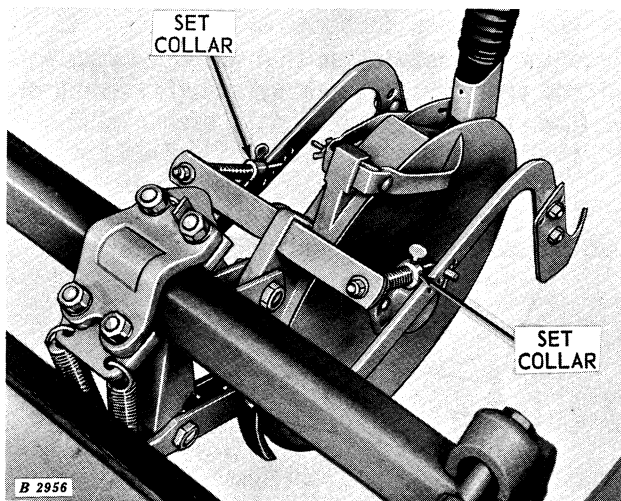
At the end of the season, disassemble the distributor valves and metering heads. Thoroughly clean the tanks and all parts with clean water and a mild detergent. Reassemble the distributor valves and metering heads. Do not replace lids until tanks are completely dry. Oil all parts.

FERTILIZER PACKER WHEEL



The fertilizer packer wheel is recommended when the fertilizer is placed directly below the seed. It assures separation of the fertilizer and seed and is controlled by spring pressure. The packer wheel is also desirable in many soil conditions when fertilizer is applied to one side of the seed.

COVERING KNIVES



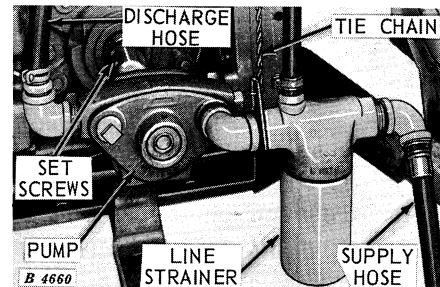
The covering knives are used in conjunction with the 16-inch double-disk fertilizer openers.

To increase the pressure on the knives move the set collars upward on the spring pressure rods. To decrease pressure, move the collar down.

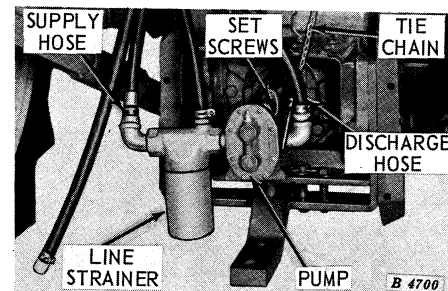
PRE-EMERGENCE SPRAYER ATTACHMENT

ATTACHING TO THE TRACTOR

Install the remote hydraulic cylinder, attach the fertilizer unit to the tractor drawbar, and set the transport link for field operation.



Roller Pump



Gear Pump

Place the pump over the tractor PTO shaft with the two set screws between the splines in the shaft and then tighten the set screws securely.

Attach the tie chain to some fixed position on the tractor above the pump so the pump will be held approximately in a horizontal position.

NOTE: The pump can be run at either 540 or 1000 rpm but the slower rpm is recommended for longer pump life.

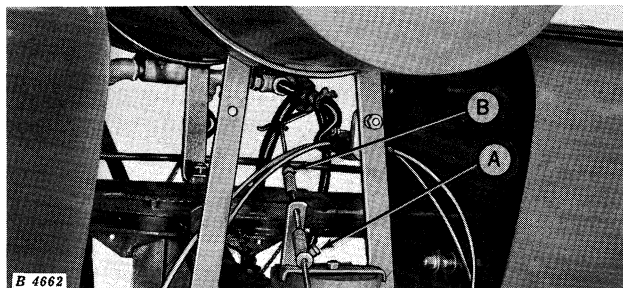


CAUTION: Keep the tractor power take-off shield in place at all times.

SHUT-OFF ROD ADJUSTMENT

The sprayer tank is equipped with a shut-off valve and a valve shut-off rod. The valve shut-off rod can be adjusted so the flow of herbicide starts or stops when the fertilizer unit is lowered or raised and the tractor PTO shaft is running.

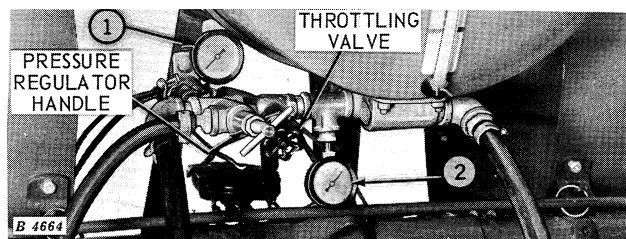
PRE-EMERGENCE SPRAYER ATTACHMENT—Continued



To adjust the shut-off rod proceed as follows:
Raise the fertilizer unit. Adjust collar "A" so there is pressure on the spring when the handle on the shut-off valve is in the rear position.

Lower the fertilizer unit. Adjust collar "B" so there is pressure on the spring when the handle on the shut-off valve is in the forward position.

PRESSURE CONTROL



Before starting to plant, consult charts on pages 20, 21, and 22 to determine the gauge pressure that will be required.

Start the tractor engine and adjust it to operating speed.

Open all line valves and lower the fertilizer unit to planting position.

Gauge No. 1 shows the operating pressure. Gauge No. 2 shows the agitation pressure.

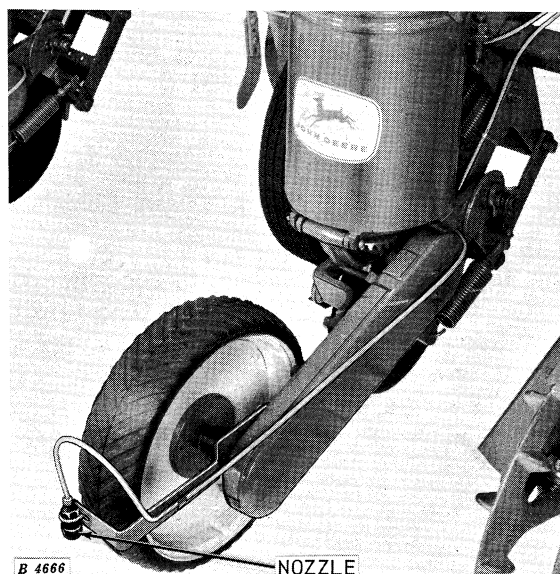
Regulate the operating pressure (gauge No. 1) by turning the pressure regulator handle clockwise to increase the operating pressure and counter-clockwise to decrease the operating pressure.

Regulate the agitation pressure (gauge No. 2) by turning the throttling valve handle counter-clockwise to increase the agitation pressure and clockwise to decrease the agitation pressure.

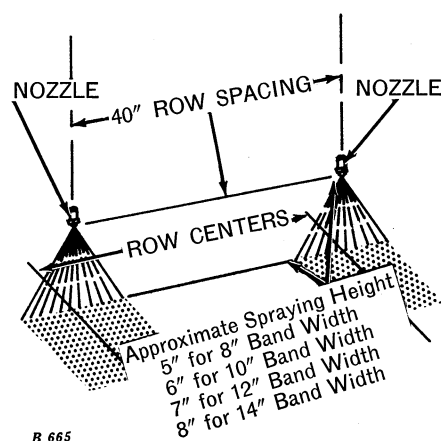
The agitation pressure (gauge No. 2) should read approximately 10 psi less than the operating pressure (gauge No. 1).

NOTE: The agitation pressure should never be less than 30 psi.

CAUTION: Never regulate the pressure unless the sprayer is in operation. Do not operate the sprayer at pressures so high that the maximum pressure gauge capacity will be exceeded when the flow to the nozzles is shut off.



Adjust the nozzles so that the slot in the bottom of each nozzle is at right angles to the direction of travel.



The height of the nozzle frame from the ground determines the width of the band of spray on the soil.

Raise the nozzle frames to increase the width of the bands. Lower the nozzle frames to decrease the width of the bands.

NOTE: Avoid having sharp kinks in the delivery hoses.

DETERMINING RATE OF APPLICATION

Most manufacturers of chemicals used for pre-emergence spraying recommend a particular rate of application of the full strength chemical per acre. However, the chemical must be diluted with water for proper usage and easy handling.

Follow the chemical manufacturers' instructions for mixing the spray for the rate of application.

Application rates recommended by most chemical manufacturers are calculated on the basis of complete coverage. When applying the spray in bands, as with this attachment, less than the rate for complete coverage will be applied. For example, if you are planting 40-inch rows and applying spray at a concentration of 10 gallons per acre in 10-inch bands, the actual amount of spray applied will be 2-1/2 gallons per acre.

Several factors affect the rate of application. They are the speed of planting, width of bands being sprayed, pressure in the system, and size of the nozzle tips. The charts on pages 20, 21, and 22 show what the pressure must be to obtain a particular rate of application for different speeds, row spacings, band widths, and nozzle tips. The charts also give the actual amount of spray applied per acre so you can check the rate of application.

The tank capacity is approximately 50 gallons.

Nozzle Tips for Pre-Emergence Spraying			
John Deere Tip Number	Number Stamped on Tip	Capacity in Gal. per Min. at 40 psi	Recommended Mesh of Screen
B11652B **B16010B	8001E 8001EHSS	.10	100
B11653B **B16011B	80015E 80015EHSS	.15	100
B11654B **B16012B	8002E 8002EHSS	.20	50
B11655B* **B16013B	8003E 8003EHSS	.30	50
B11656B **B16014B	8004E 8004EHSS	.40	50
B13194B **B16015B	8005E 8005EHSS	.50	50
B13195B **B16016B	8006E 8006EHSS	.60	50

*Regular Equipment

**Stainless Steel Nozzle Tips

NOTE: Other nozzle tip sizes than those specified may be used if pressure is adjusted accordingly; however, the nozzle tip size listed will hold the required pressure within the recommended limits for best operation.

When using nozzle tips B11652B, B11653B, B16010B, or B16011B, it will be necessary to obtain 100 mesh screens for the nozzles instead of the 50 mesh screens that are provided.

PRE-EMERGENCE SPRAYER ATTACHMENT—Continued

Recommended Gauge Pressure, Nozzle Tips, and Approximate Rate of Application									
FOR 10 GALLON PER ACRE CONCENTRATION*									
Speed in Miles Per Hour	Band Width in Inches	Approximate Rate of Application (Gallons Per Acre)					Necessary Pressure in psi on Gauge	John Deere Tip Number**	Number Stamped on Tip
		Row Widths							
		40"	38"	36"	30"	28"			
3	10	2-1/2	2-5/8	2-7/8	3-1/4	3-3/8	12.5	B11652B	8001E or ES3
	12	3	3-1/8	3-3/8	4	4-1/4	17.5	B11652B	8001E or ES3
	14	3-1/2	3-5/8	3-7/8	4-1/2	5	23.0	B11652B	8001E or ES3
3-1/2	10	2-1/2	2-5/8	2-7/8	3-1/4	3-3/8	16.5	B11652B	8001E or ES3
	12	3	3-1/8	3-3/8	4	4-1/4	23.0	B11652B	8001E or ES3
	14	3-1/2	3-5/8	3-7/8	4-1/2	5	30.0	B11652B	8001E or ES3
4	10	2-1/2	2-5/8	2-7/8	3-1/4	3-3/8	21.0	B11652B	8001E or ES3
	12	3	3-1/8	3-3/8	4	4-1/4	29.0	B11652B	8001E or ES3
	14	3-1/2	3-5/8	3-7/8	4-1/2	5	19.0	B11653B	80015E or ES4
4-1/2	10	2-1/2	2-5/8	2-7/8	3-1/4	3-3/8	25.0	B11652B	8001E or ES3
	12	3	3-1/8	3-3/8	4	4-1/4	18.5	B11653B	80015E or ES4
	14	3-1/2	3-5/8	3-7/8	4-1/2	5	24.0	B11653B	80015E or ES4
5	10	2-1/2	2-5/8	2-7/8	3-1/4	3-3/8	16.0	B11653B	80015E or ES4
	12	3	3-1/8	3-3/8	4	4-1/4	22.0	B11653B	80015E or ES4
	14	3-1/2	3-5/8	3-7/8	4-1/2	5	28.5	B11653B	80015E or ES4

*Concentration refers to the amount of material which would have to be applied for complete ground coverage. Refer to page 19 for determining the rate of application.

**Part numbers listed are for brass tips. Stainless steel tips are also available and the numbers may be found in the chart on page 19. The stainless steel tips deliver the same amount as their corresponding brass tips.

Recommended Gauge Pressure, Nozzle Tips, and Approximate Rate of Application									
FOR 20 GALLON PER ACRE CONCENTRATION*									
Speed in Miles Per Hour	Band Width in Inches	Approximate Rate of Application (Gallons Per Acre)					Necessary Pressure in psi on Gauge	John Deere Tip Number**	Number Stamped on Tip
		Row Widths							
		40''	38''	36''	30''	28''			
3	10	5	5-1/4	5-1/2	6-5/8	7-1/4	22.0	B11653B	80015E or ES4
	12	6	6-1/4	6-5/8	7-7/8	8-1/2	17.0	B11654B	8002E or ES5
	14	7	7-1/4	7-3/4	9-1/4	10	22.0	B11654B	8002E or ES5
3-1/2	10	5	5-1/4	5-1/2	6-5/8	7-1/4	17.5	B11654B	8002E or ES5
	12	6	6-1/4	6-5/8	7-7/8	8-1/2	22.0	B11654B	8002E or ES5
	14	7	7-1/4	7-3/4	9-1/4	10	29.0	B11654B	8002E or ES5
4	10	5	5-1/4	5-1/2	6-5/8	7-1/4	20.0	B11654B	8002E or ES5
	12	6	6-1/4	6-5/8	7-7/8	8-1/2	28.0	B11654B	8002E or ES5
	14	7	7-1/4	7-3/4	9-1/4	10	39.0	B11654B	8002E or ES5
4-1/2	10	5	5-1/4	5-1/2	6-5/8	7-1/4	25.0	B11654B	8002E or ES5
	12	6	6-1/4	6-5/8	7-7/8	8-1/2	36.0	B11654B	8002E or ES5
	14	7	7-1/4	7-3/4	9-1/4	10	21.0	B11655B	8003E
5	10	5	5-1/4	5-1/2	6-5/8	7-1/4	30.0	B11654B	8002E or ES5
	12	6	6-1/4	6-5/8	7-7/8	8-1/2	19.0	B11655B	8003E
	14	7	7-1/4	7-3/4	9-1/4	10	26.5	B11655B	8003E

*Concentration refers to the amount of material which would have to be applied for complete ground coverage. Refer to page 19 for determining the rate of application.

**Part numbers are for brass tips. Stainless steel tips are also available and the numbers may be found in the chart on page 19. The stainless steel tips deliver the same amount as their corresponding brass tips.

PRE-EMERGENCE SPRAYER ATTACHMENT—Continued

Recommended Gauge Pressure, Nozzle Tips, and Approximate Rate of Application									
		FOR 30 GALLON PER ACRE CONCENTRATION*							
Speed in Miles Per Hour	Band Width in Inches	Approximate Rate of Application (Gallons Per Acre)					Necessary Pressure in psi on Gauge	John Deere Tip Number**	Number Stamped on Tip
		Row Widths							
		40''	38''	36''	30''	28''			
3	10	7-1/2	7-7/8	8-1/4	10	10-3/4	25.0	B11654B	8002E or ES5
	12	9	9-1/2	10	12	12-7/8	36.0	B11654B	8002E or ES5
	14	10-1/2	11	11-5/8	14	15	21.0	B11655B	8003E
3-1/2	10	7-1/2	7-7/8	8-1/4	10	10-3/4	34.0	B11654B	8002E or ES5
	12	9	9-1/2	10	12	12-7/8	21.0	B11655B	8003E
	14	10-1/2	11	11-5/8	14	15	29.5	B11655B	8003E
4	10	7-1/2	7-7/8	8-1/4	10	10-3/4	19.0	B11655B	8003E
	12	9	9-1/2	10	12	12-7/8	28.5	B11655B	8003E
	14	10-1/2	11	11-5/8	14	15	39.5	B11655B	8003E
4-1/2	10	7-1/2	7-7/8	8-1/4	10	10-3/4	24.5	B11655B	8003E
	12	9	9-1/2	10	12	12-7/8	36.5	B11655B	8003E
	14	10-1/2	11	11-5/8	14	15	27.0	B11656B	8004E or ES8
5	10	7-1/2	7-7/8	8-1/4	10	10-3/4	31.0	B11655B	8003E
	12	9	9-1/2	10	12	12-7/8	25.0	B11656B	8004E or ES8
	14	10-1/2	11	11-5/8	14	15	32.0	B11656B	8004E or ES8

*Concentration refers to the amount of material which would have to be applied for complete ground coverage. Refer to page 19 for determining the rate of application.

**Part numbers listed are for brass tips. Stainless steel tips are also available and the numbers may be found in the chart on page 19. The stainless steel tips deliver the same amount as their corresponding brass tips.

PRE-EMERGENCE SPRAYER PTO PUMP

Arrows on the pump ports indicate proper rotation.

Never run the pump dry. Excessive heat will damage the rollers and seals. With a clear suction line and open discharge line. The pump should displace liquid within 15 seconds. Applying oil to the suction side of the pump will accelerate the priming action.

WARNING: Do not tighten packing nut on bronze gear pump too tight. There should be some seepage to lubricate the shaft.

Do not pump clear water for an extended period of time as this will damage the rollers. Use lubricating additive if pumping clear water for extended period.

Do not pump whitewash, paints or other abrasive liquids with the roller or bronze gear pumps.

Do not use sandy water.

Do not pump solutions containing formic acid, phenol, metacresol or nylenol with the roller pumps, as they will damage the nylon rollers.

It is recommended that the pump be purchased with the sprayer; however, if you provide your own pump, check its operation in the following manner to assure optimum performance:

Run the tractor PTO at full speed. With sprayer controls in operating position, maintain a range of 40 to 50 psi on gauge No. 1 and a range of 30 to 40 psi on gauge No. 2.

If the gauge pressures cannot be adjusted to the pressure range desired, the pump has insufficient capacity and should be replaced.

PUMP CAPACITY

6-Roller Pump					
Gallons per minute					
psi	400 rpm	500 rpm	540 rpm	600 rpm	800 rpm
0	7.0	8.7	9.5	10.5	14.0
50	5.6	7.5	8.1	9.2	12.3
100	4.6	6.5	7.0	8.2	11.4

8-Roller Pump					
Gallons per minute					
psi	400 rpm	500 rpm	540 rpm	600 rpm	800 rpm
0	10.5	13.0	14.0	15.5	21.0
50	7.8	10.5	11.5	13.0	18.0
100	6.5	9.0	9.9	11.5	16.3

Bronze Gear Pump			
Gallons per minute			
psi	400 rpm	600 rpm	800 rpm
2	4.00	6.30	8.58
20	3.45	5.78	8.18
40	2.90	5.26	7.78
60	2.35	4.74	7.38
80	1.83	4.22	6.98
100	1.30	3.70	6.57

PRE-EMERGENCE SPRAYER ATTACHMENT - CONTINUED**MAINTENANCE***Cleaning After Spraying*

After using the sprayer, thoroughly flush the pump, tank and nozzles with clear water or a solution of approximately one quart of ammonia to twenty-five gallons of water.

Squirt a little light oil in the pump and rotate slowly to cover the inner surfaces and parts with a light film.

Cleaning For Seasonal Storage

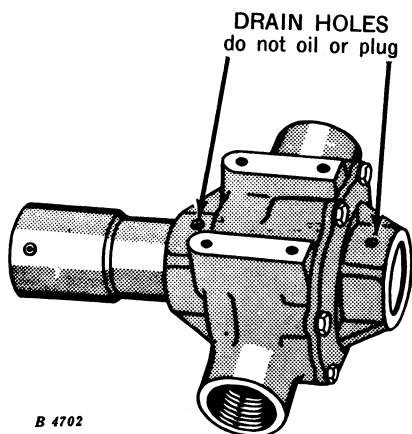
When cleaning sprayer at end of season, follow the above cleaning procedure; then flush the pump and tank with a water solution containing an automotive radiator rust inhibitor or light oil.

Drain the pump and plug both ports with corks for storage.

NOTE: Do not store pump with diesel fuel or old crankcase oil in it.

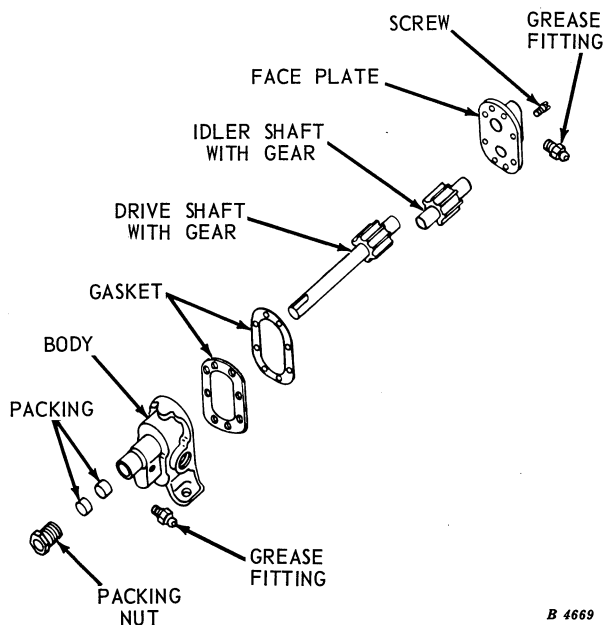
The pump contains permanently lubricated bearings. Do not remove the two small plugs on either side of the "IN" port for the purpose of oiling or greasing. They are permanently installed plugs that complete the seal relief bypass within the pump.

Make sure all liquid is drained from the system before storing. If any liquid remains in the sprayer, it may freeze, causing damage.

Pump Drain Holes

B 4702

The two drain holes under the pump bearing housing serve to relieve pressure behind seals and to prevent any liquid which might get past the seals from being forced into the bearings. **DO NOT PLUG THESE HOLES AND DO NOT SQUIRT OIL INTO THEM.** Excessive dripping at these holes indicates seal leakage which may be caused by (1) seal failure, or (2) shaft wear under seal. Either requires replacement of worn parts.



B 4669

Remove the packing nut, packing and face plate and pull the drive and idler shafts out of the body.

Clean all parts thoroughly and replace all worn or damaged parts.

When assembling the gear pump be sure to assemble all parts as shown in the exploded view above.

Servicing Roller Pump

If the pump rotor appears to be locked, the cause may be due to rust (corrosion), scale, sticky residue, or solid objects.

To determine if this is the cause, loosen the endplate bolts one full turn each, and try to rotate pump by hand. If pump can be turned by hand, pump water or spray material for a few minutes.

While pump is running retighten endplate bolts.

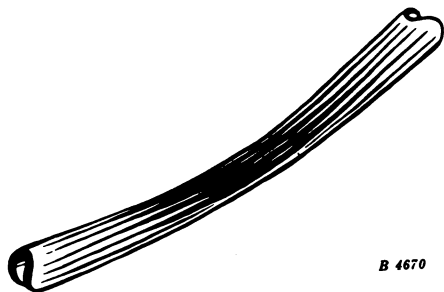
If the pump cannot be turned when endplate cap screws are loosened, the cause is probably due to a solid object lodged in the pump. A metal chip, nut, washer, tank scale, wire, stone, etc. could cause a locked rotor.

To correct, disassemble the pump.

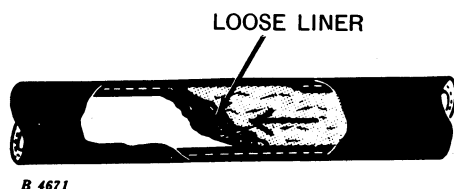
If there is a loss of pump pressure, check for the following before disassembling:

1. Pump too high above liquid source (more than 20 feet).

2. Clogged suction strainer. To check strainer, remove strainer and dip supply hose in a tank of clear water and start pump. Noticeable improvement in pump output indicates strainer needs cleaning.

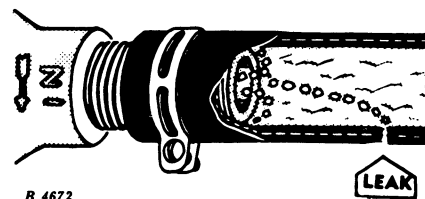


3. Kinked or collapsed supply hose.



4. Obstruction in supply hose or delivery line.

Rotten lining in old hose may pull loose and clog passage. (This is not always noticeable on the outside of the hose.)



5. Leaks in supply line or supply line fittings. (These leaks are difficult to locate because air leaks INWARD.)

6. Pump running too slow.

7. Faulty pressure gauge.

8. Pump rollers sticking in slots.

9. Pump seals leaking air.

10. Nozzles or nozzle screens plugged.

11. Nozzle orifices worn, increasing flow and reducing pressure.

If the pump will not prime, check for the following before disassembling:

1. Leaks in supply line or connections.

2. Obstruction in supply line.

3. Shut-off valve on delivery line may be closed, trapping air in pump and line above pump.

4. Pump speed too slow.

5. Pump worn.

6. Pump rollers stuck in slots.

7. Pump seals leaking.

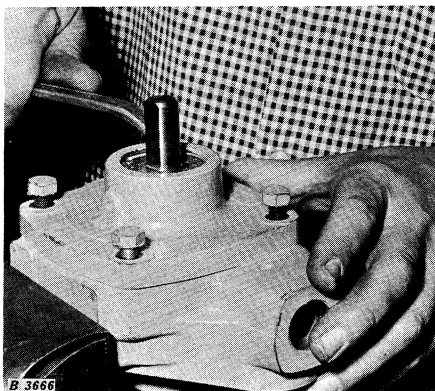
PRE-EMERGENCE SPRAYER ATTACHMENT - Continued

To help prime pump, do the following:

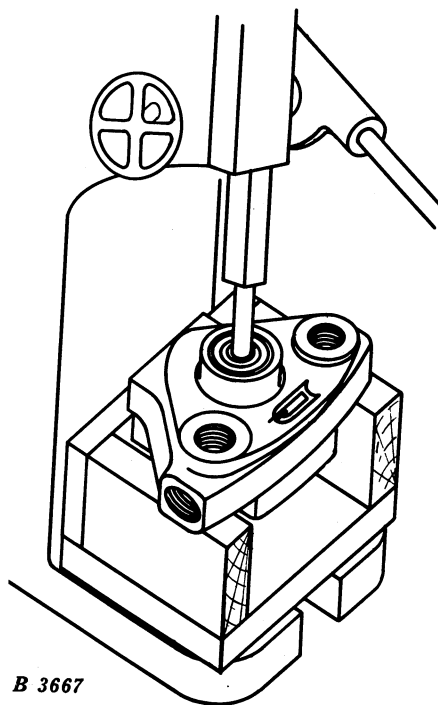
1. Keep supply hose as short as possible with a minimum of bends and dips.
2. Be sure shut-off valve in delivery line is open.
3. Wet inside of pump with water or liquid to be pumped by removing supply strainer, raising supply hose above pump, and pouring in liquid. When hose is full, attach strainer, kink hose (anywhere along line) to hold water in. Submerge end of hose in liquid, start pump and release kink as pump begins to suck liquid.
4. Often a few squirts of SAE 20 oil in pump will seal pump clearance and help running.

Disassembly Instructions

1. Remove PTO adapter from pump shaft.
2. Remove snap ring and name plate.

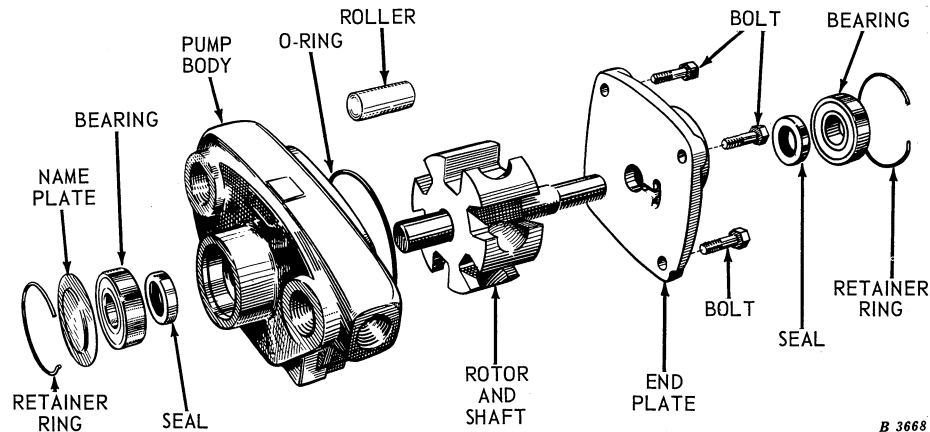


3. Place pump in a vise as shown above. Remove the four bolts.
4. With cover plate down, cradle the pump on "IN" and "OUT" ports and pump base as shown.
5. Use an arbor press to press the shaft down through the pump body, bearing, and seal.

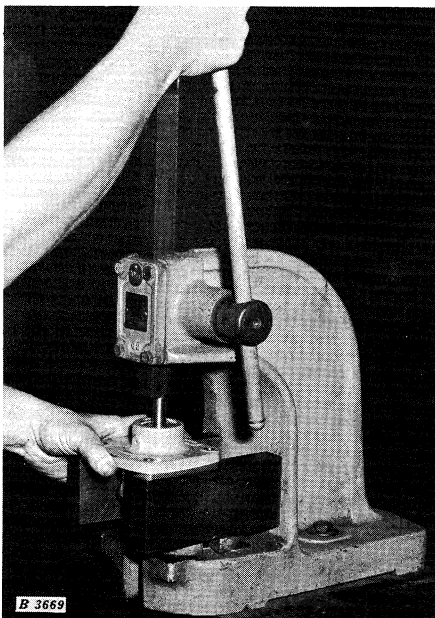


6. Check the body for wear. File off any burrs that appear on rotor.
7. Make sure rollers move freely in rotor slots. Replace rollers if out-of-round, swollen or badly worn.
8. To inspect the cover plate, press out the shaft with an arbor press while supporting plate as shown.
9. To remove bearing, use a small piece of brass rod and gently tap with hammer on the inner edges of the bearing. Drive the seal out with a screwdriver and hammer. Discard seal.

Assembly Instructions



B 3668



1. Position a new seal in seal housing with folded edge down. Press seal down until it "bottoms."

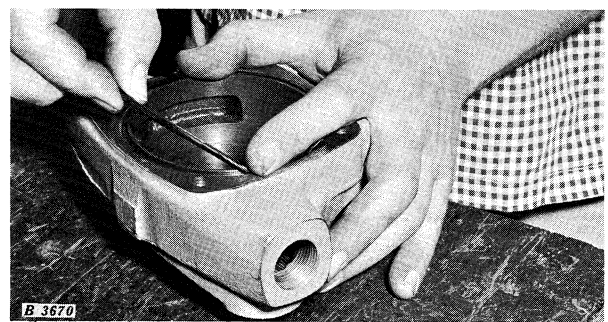
2. Position bearing in bearing housing and press downward until it "bottoms."

3. File off any burr on the rotor faces and roller slots that may have been caused by disassembly and handling.

4. Apply a light oil to shaft, coverplate surface, and inside pump case.

5. Press rotor and shaft into body. Ease the rotor shaft through the seal then press with an arbor press, while supporting bearing inner face.

6. Insert rollers, one in each roller slot.



7. Make sure O-ring is correctly seated in groove. To install O-ring, insert it by placing half the O-ring in the groove, hold it with thumb and forefinger of left hand, and then twist O-ring slightly and push it into groove.

8. Position coverplate for pressing down on body, easing the shaft carefully through the seal. Carefully line up matching holes of housing and coverplate.

9. Press pump together in an arbor press, making sure the pressing force is applied to the inner race of the ball bearing. A sleeve with at least an 11/16-inch bore (that does not exceed 1-1/4-inch outside diameter) should be used.

10. Secure coverplate with four bolts.

11. After tightening coverplate bolts, turn the shaft by hand to make sure the rotor is not binding in pump case.

12. Tap shaft lightly with a ballpeen hammer. If this fails to center rotor tap the other end of the shaft LIGHTLY. The rotor should turn freely.

13. Replace nameplate and snap ring.

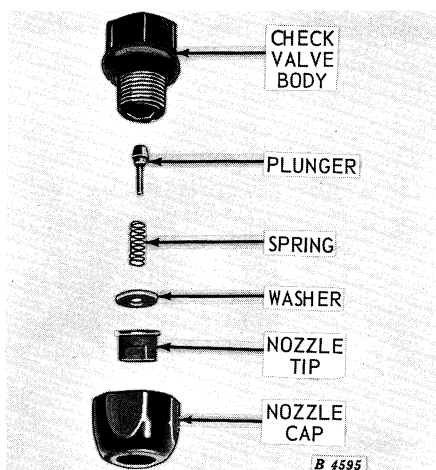
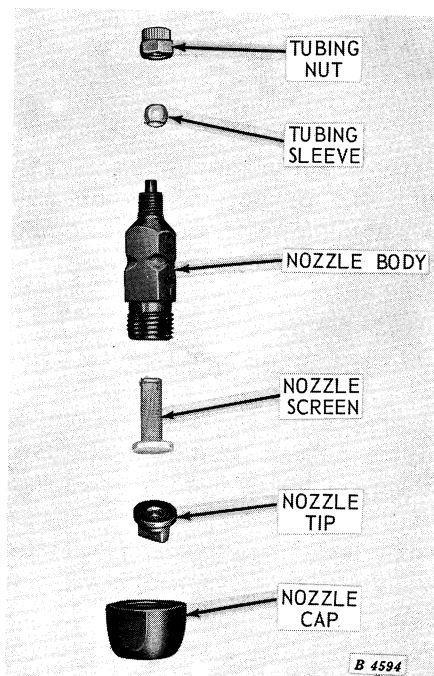
PRE-EMERGENCE SPRAYER ATTACHMENT—Continued*Sprayer Pump Trouble Shooting*

problem, cause and the recommended solution.

The majority of sprayer operating problems can be traced to improper adjustment. The service chart which follows is designed to help you when such a problem develops, by suggesting a

These suggested remedies should be applied with caution. Make a sincere effort to understand your sprayer and know why you are making an adjustment.

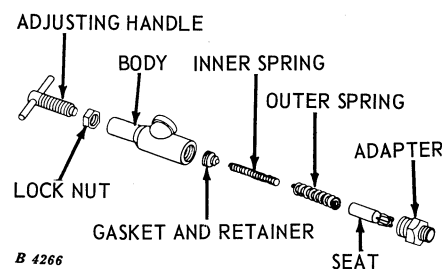
Problem	Probable Cause	Possible Remedy
PUMP LOSES SUCTION	Suction strainer clogged. Supply of liquid exhausted. Air leak in supply hose. Supply hose collapsed. Pump air locked.	Clean strainer. Fill tank. Replace supply hose. Replace supply hose. Remove discharge hose and pump liquid through pump. Replace discharge hose.
NOISY PUMP	Pump worn and clearance too great. Excessive pump speed. Air leak in supply hose. Partially clogged strainer.	Overhaul or replace pump. Slow the pump. Replace supply hose. Clean strainer.
PUMP SHOWS DECREASED CAPACITY	Supply strainer clogged. Air leak in supply hose. Moving parts worn.	Clean strainer. Replace supply hose. Replace worn parts.

Nozzles**Nozzle Check Valve Assembly**

The nozzle screens should be cleaned periodically during use.

Do not use metal probes of any kind for cleaning the nozzle tips. It is recommended that a toothbrush or tooth pick be used for this purpose. The screens may be cleaned in water and brushed lightly if necessary.

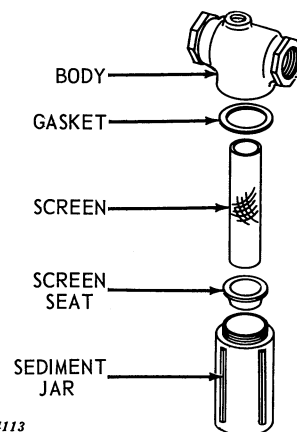
Assemble the nozzles with the slot approximately parallel to the boom so spray fans from one nozzle will not interfere with the spray fan from the adjoining nozzles.

Pressure Regulator

Remove adapter, seat, springs and gasket and retainer from body.

Clean all parts thoroughly and replace any damaged parts.

Assemble all parts as shown in the exploded view above.

Strainer

Remove the sediment jar and gasket from the strainer. Pull the strainer screen out.

Clean all parts thoroughly and replace any damaged parts.

Assemble all parts as shown in the exploded view above.



SAFETY SUGGESTIONS



Be careful when operating the fertilizer unit to avoid injury to yourself and those working with you.

The fertilizer unit should always be resting on the front stand when not in use. Whenever possible, service work and adjustments should be performed with the fertilizer unit lowered to working position.

Position rear stand approximately four inches from the ground before unhitching from tractor.

If the fertilizer unit must be in a raised position while working on or near it, it should be securely supported by blocks.

Only one person—the operator—should be permitted on the tractor platform while tractor and fertilizer unit are in operation.

Keep the loose end of each marker chain in the marker stop at all times, except when planting.

Never clean, lubricate, or adjust a machine that is in motion.

Refuel the tractor only when the engine has been shut off. Do not smoke or use an oil lantern when working around inflammable fuel, especially when refueling the tractor.

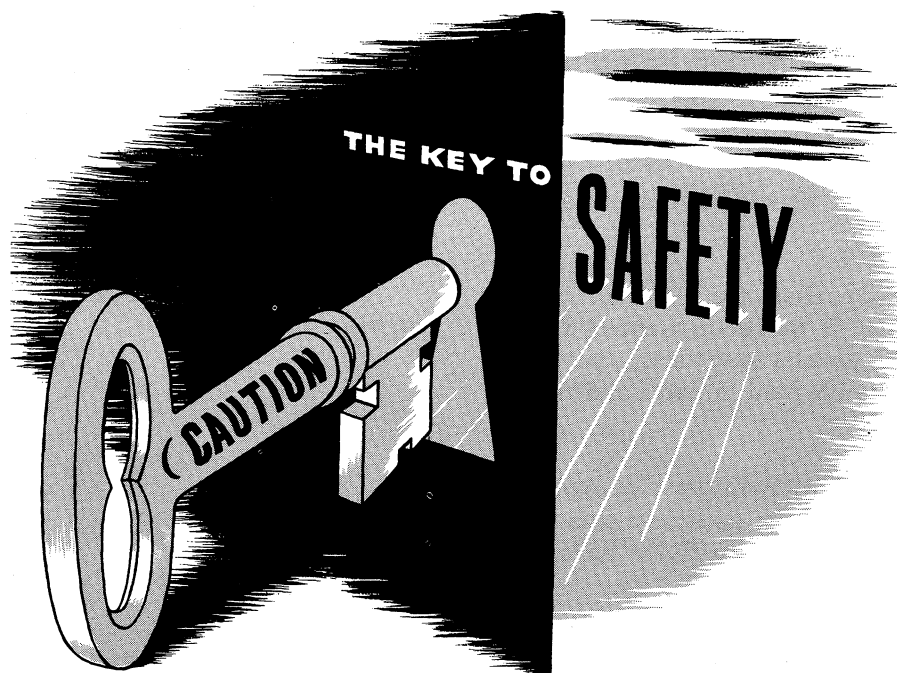
Never ride or permit others to ride, on the drawbar of the tractor or on the fertilizer unit.

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

Be careful when operating on hillsides because the tractor may tip sideways if it strikes a hole, ditch, or other irregularity.

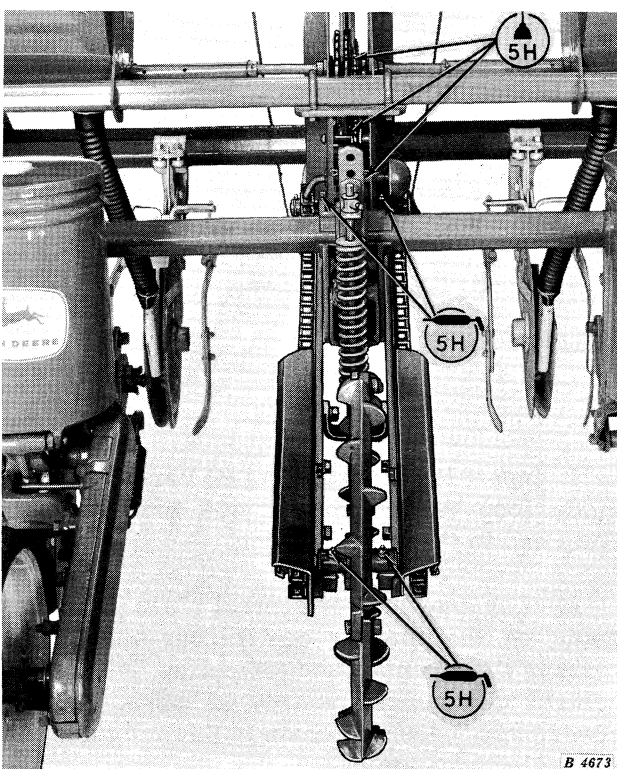
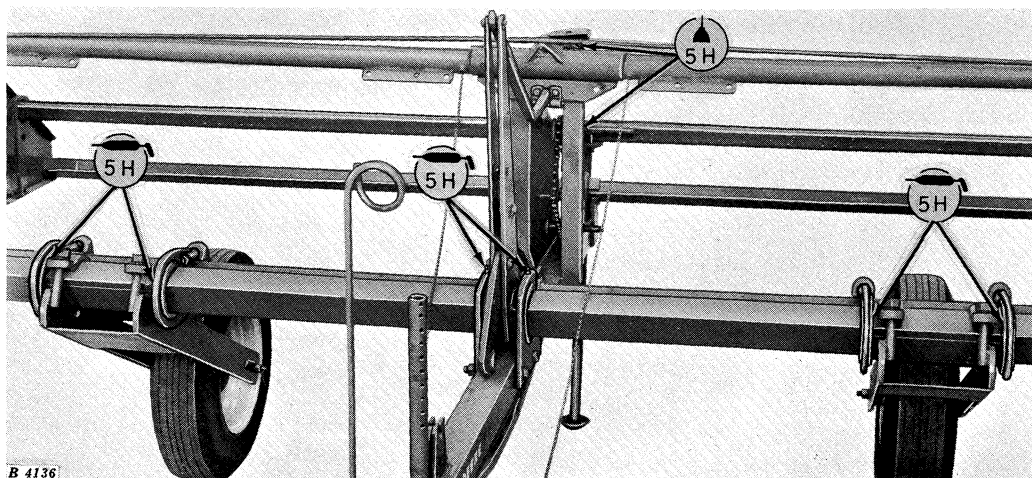
Agricultural chemicals can be dangerous. Improper selection or use can injure persons, animals, plants, soils, or other property. BE SAFE: Handle and apply it with care. Follow instructions of the chemical manufacturer.

Finally, remember this: An accident is usually caused by someone's carelessness, neglect, or oversight.

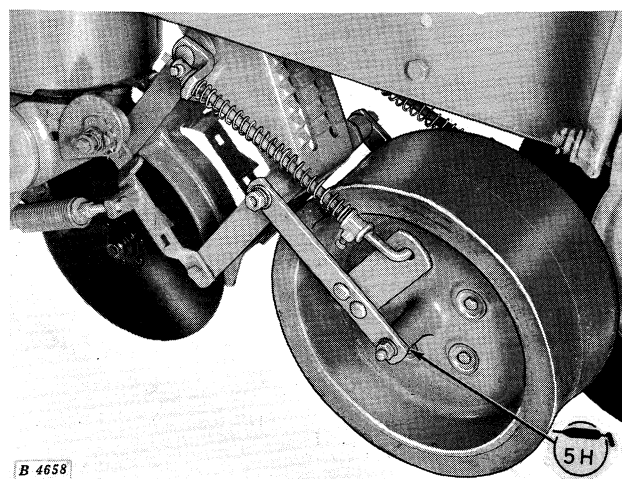




LUBRICATION



Fertilizer Drive



Fertilizer Packer Wheel

Symbols



Grease every 5 hours of operation with SAE Multipurpose grease.



Oil every 5 hours of operation.

Clean grease fittings before using grease gun.
Replace any lost or broken fittings immediately.



CAUTION: Do not oil or grease a machine while it is in motion.

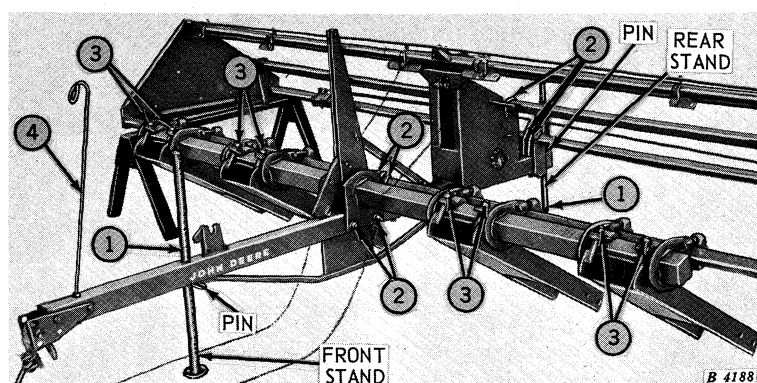


ASSEMBLY

Assemble the Fertilizer Unit as illustrated in the following pages. The illustrations show clearly the parts to be assembled and attached in their proper order.

After unpacking and placing all parts where they will be handy, follow all the instructions carefully. Practically all trouble with new machines is due to improper assembly and lack of lubrication.

HITCH AND CARRIER WHEEL FRAMES



Place blocks under the main frame as shown.

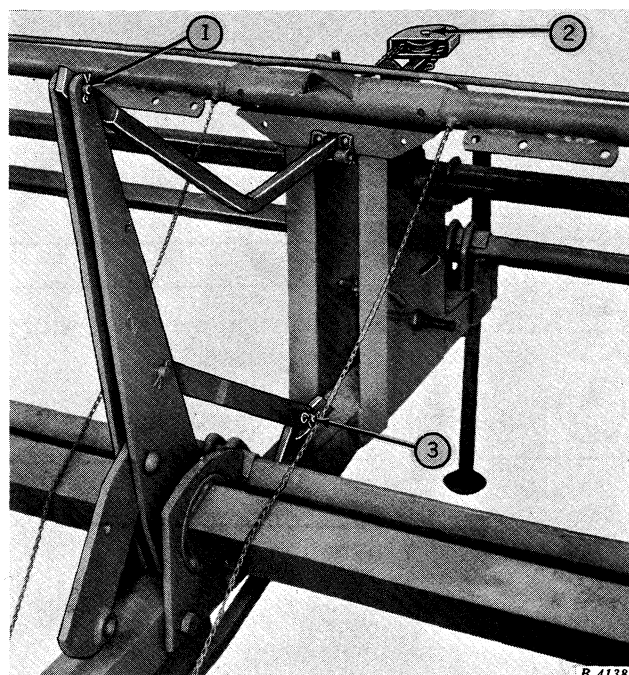
1. Install the stands in the front and rear of the hitch. Secure the stands in the position shown with the pins.

2. Attach the hitch to the main frame.

3. Position the carrier wheel frames for desired row spacing. (See page 3.)

4. Install the hose holder.

MARKER CONTROL AND TRANSPORT LINKS

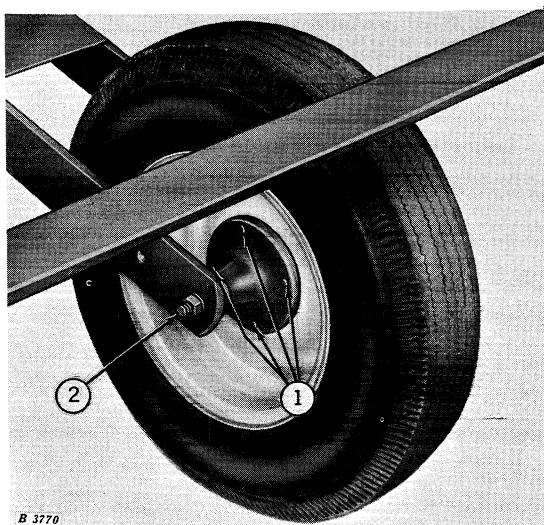


1. Insert the marker control bar through the guide loop on the main frame and attach the front end to the front lift pipe.

2. Lay the marker control chain pulley and guide on the marker control bar and lay the marker lift chain around the pulley. The marker control chain must be free of kinks. Bolt the cover over the chain, chain pulley and guide with the rolled edge up.

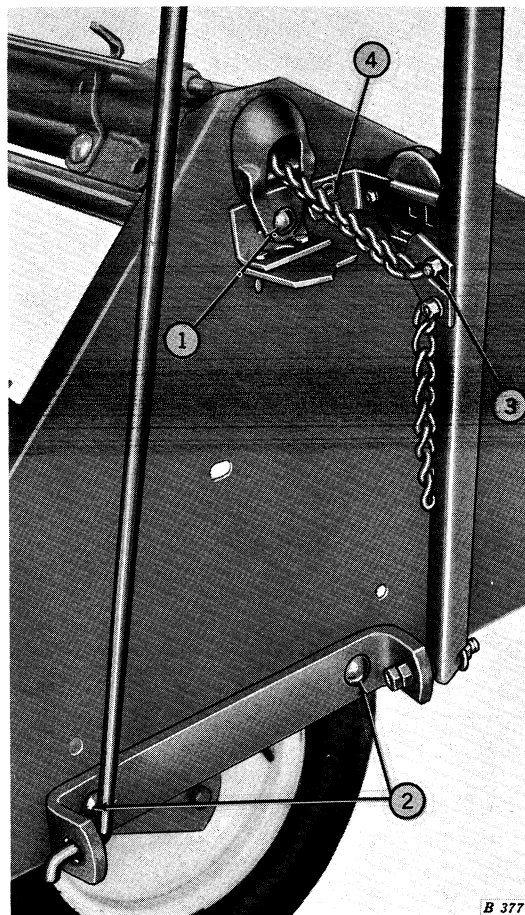
3. Connect the transport links to the transport lug.

WHEELS



1. Install the tires and wheels on the wheel hubs.
2. Install the wheel assembly and axle in the wheel frame.

MARKERS



1. Bolt each marker lock to the main frame under the chain guide.
2. Attach each marker to the main frame.

NOTE: Markers are right- and left-hand.

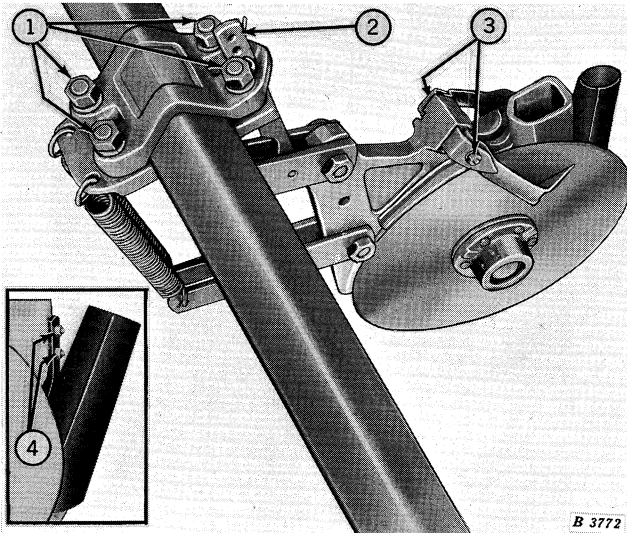
3. Remove the top bolt from each marker chain retainer and insert a link of the chain in the slot so that the marker will hang free at least two inches away from the marker stop. Replace the bolt in each marker chain retainer.

NOTE: Make the final marker chain adjustment when the remote hydraulic cylinder is installed. See page 6.

FERTILIZER OPENERS

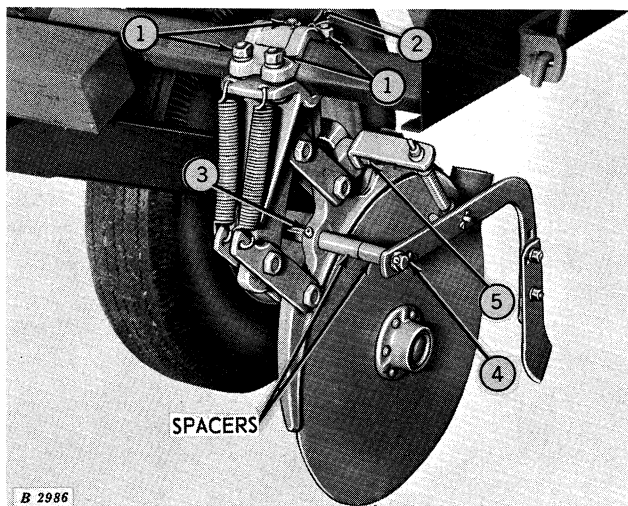
For proper location of the double-disk fertilizer openers for the various row spacings see page 8.

12-INCH DOUBLE-DISK OPENERS



1. Attach each opener frame to the front bar with four carriage bolts.
2. Place the depth adjusting straps through the slot in top plates and hold in place with the cotter pin.
3. Install the scrapers.
4. Bolt spout to openers.

16-INCH DOUBLE-DISK OPENERS



1. Attach each opener frame to the front bar with four carriage bolts.

2. Place the depth adjusting straps through the slot in top plates and hold in place with the cotter pins.

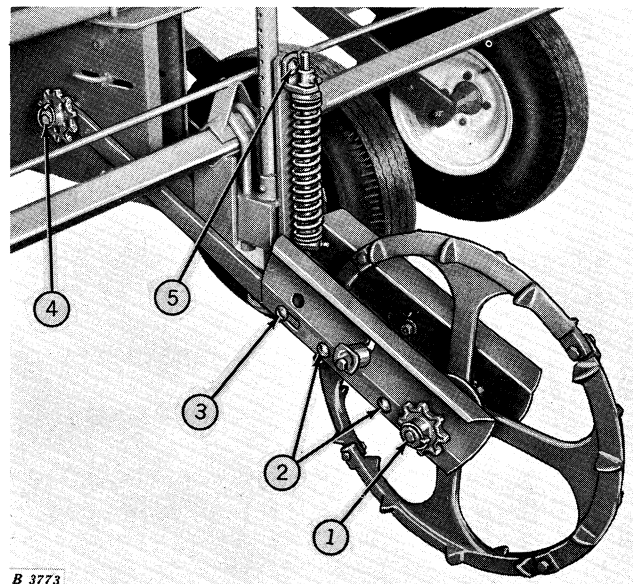
3. Install the covering knife pipe and spacers.

4. Install the covering knives on the pipe securing in place with the cotter pins.

5. Install the spring pressure rod brackets.

DRY FERTILIZER

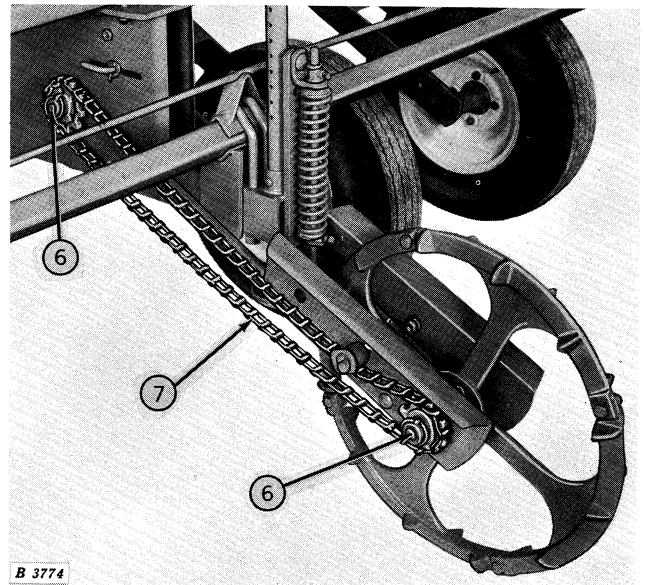
FERTILIZER DRIVE



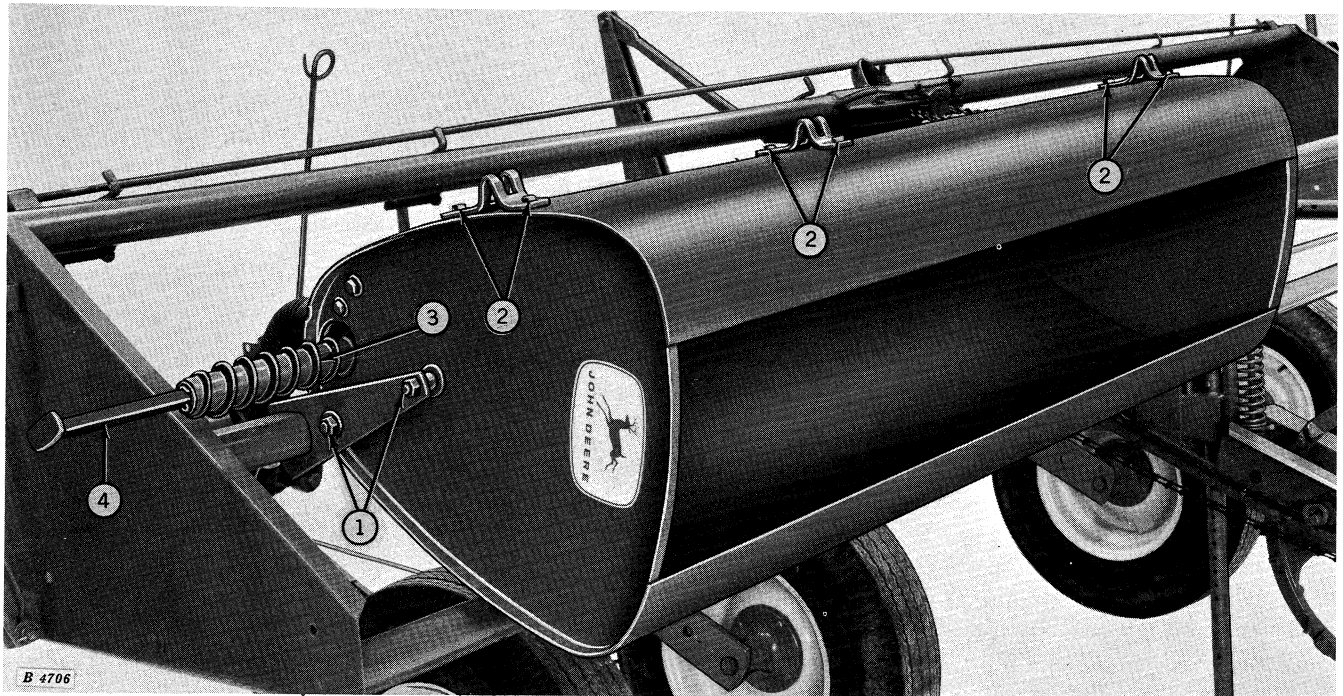
1. Attach the drive wheel to the wheel frame.
2. Install the drive chain shields.
3. Bolt the spring pressure rod in the wheel frame.
4. Install the wheel frame on the countershaft with the spacers.
5. Install the spring pressure rod bracket.

6. Install the drive and driven sprockets. Secure with Quik-Lock pins.

7. Install the drive chains with the open end of the chain links running in the direction of travel.



DRY FERTILIZER HOPPERS



1. Attach the hoppers to the support brackets.
2. Install the front brackets on the hoppers.
3. Install the augers on the shafts. See pages 11 and 12 for locations of augers on shafts. Note

that augers must be assembled so the auger assemblies are right- and left-hand.

4. Install the right-hand assembly in the right-hand hopper and the left-hand assembly in the left-hand hopper.

DRY FERTILIZER HOPPERS—Continued



5. Attach the delivery tubes to the hoppers.

6. Locate each hopper on the pipes so fertilizer delivery tubes are as nearly equally spaced above the fertilizer opener assemblies, or the Flexi-Planters, as possible. Install each fertilizer hopper support holder either at "A" for 28- or 30-inch row spacing or "B" for 36- through 40-inch row spacing.

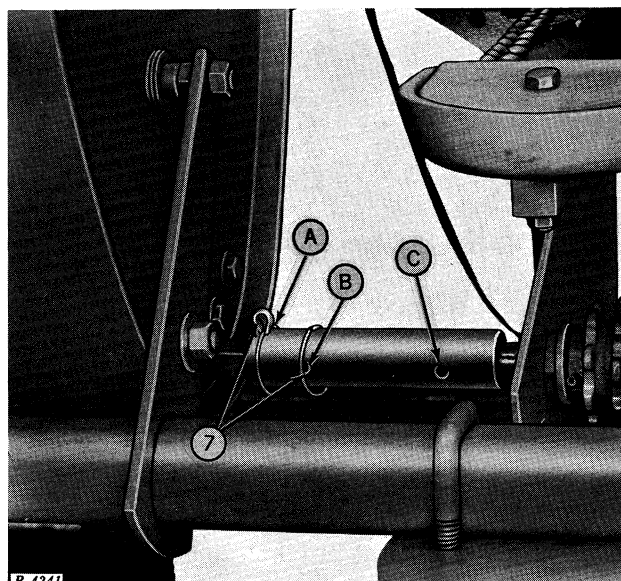
7. Center fertilizer auger as nearly as possible in each hopper. Install cotter pins in:

Holes "A" and "B" for 28- and 30-inch row spacing.

Holes "A" and "C" for 36- through 40-inch row spacing.

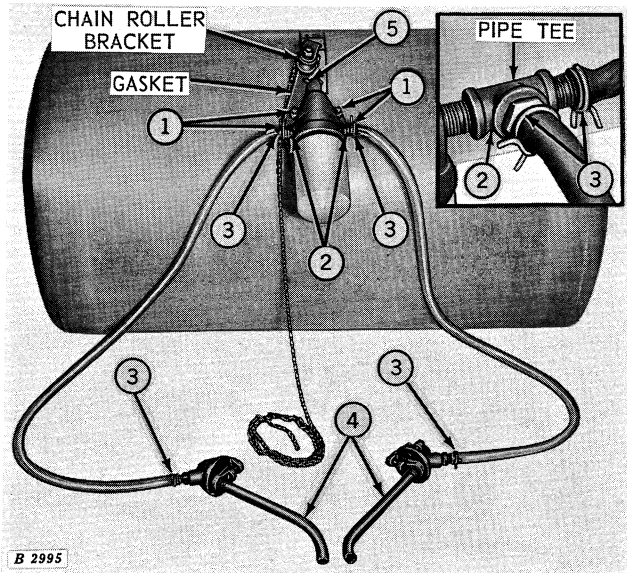
Attach the holding springs to cotter pins. It is not necessary to spread cotter pins.

8. Install the delivery tubes on the fertilizer openers or spouts.



LIQUID FERTILIZER

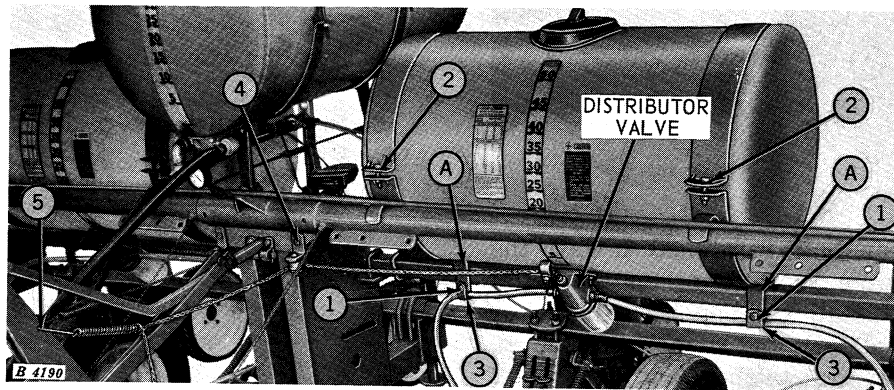
DISTRIBUTOR VALVE AND HOSES



NOTE: Installation of the left-hand tank is illustrated. Installation of the right-hand tank is identical except where noted.

Lay the tank on its side and remove the lid.

TANK, THROW-OUT CHAIN AND METERING HEADS



1. Install the tank cradles and hold-down straps on the bar, but do not tighten bolts.

2. Install the tank in the cradles and rotate tank until the 20 gallon mark on the decal is even with main frame pipe when the fertilizer unit is in the planting position. Tighten bolts. Locate tank and cradles so distributor is to the inside of fertilizer unit carrying wheels, as illustrated, and tighten bolts "A."

1. Install a distributor valve on each tank as follows: Insert the four bolts, from the inside, through the holes in the tank. Install the valve gasket and attach the distributor valve over the four bolts. Place the chain roller bracket over the two bolts as shown, for the left-hand tank. For the right-hand tank, place the chain roller bracket on the opposite two bolts. Secure in place with the four nuts.

2. Screw hose nipples into both sides of each distributor valve. Attach a pipe tee to the outer nipple and insert nipples into the two exposed openings.

3. Install a delivery hose on each nipple and install a metering head on the other end of each delivery hose.

4. Install the delivery tube extensions in the metering heads.

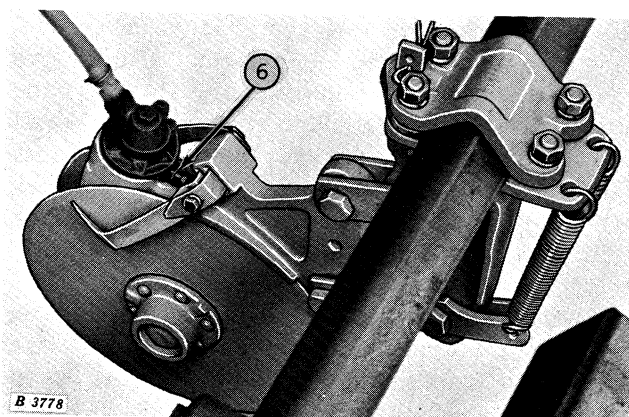
5. Attach the throw-out chain to the distributor valve.

3. Place hoses in hose supports.

4. Install each throw-out chain pulley and bracket.

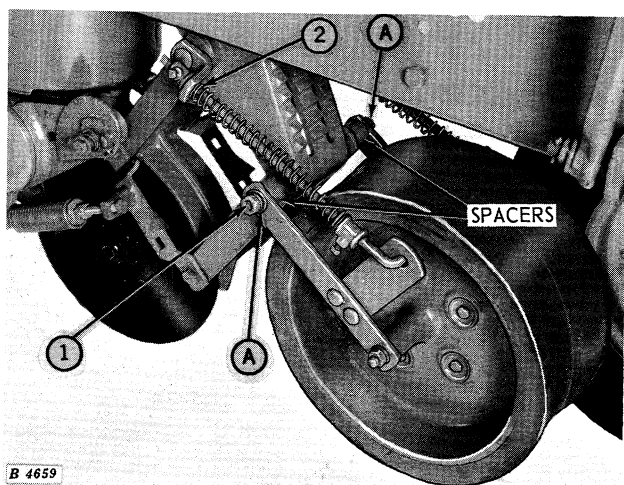
5. Install the throw-out chain over the pulley and attach the hook to transfer arm. The chains must be hooked up just tight enough so the valves are fully opened when planter is in lowered position.

TANK, THROW-OUT CHAIN AND METERING HEADS—Continued



6. Install the metering heads and hold them in place with the set screws.

FERTILIZER PACKER WHEEL

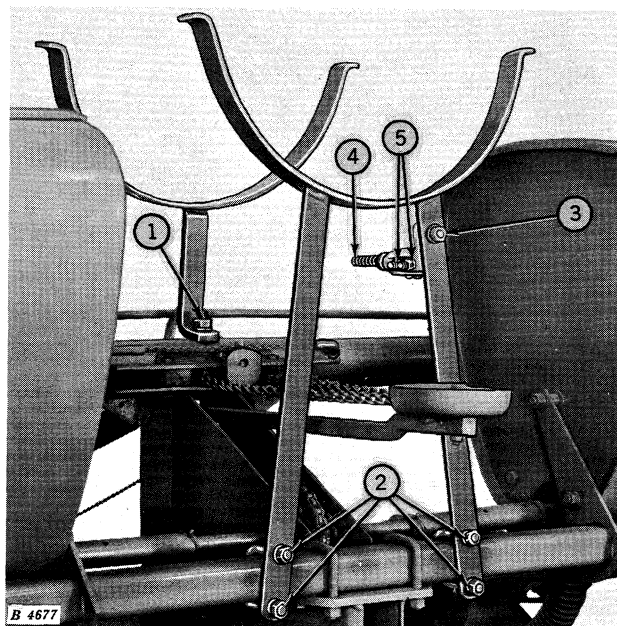


1. Using longer bolt furnished install the packer wheel frame as follows: Install a flat washer on bolt. Install bushing "A" in packer wheel frame. Install bolt and spacers as shown. Install flat washer, lock washer, and nut on bolt and tighten nut.

2. Install spring pressure rod brackets.

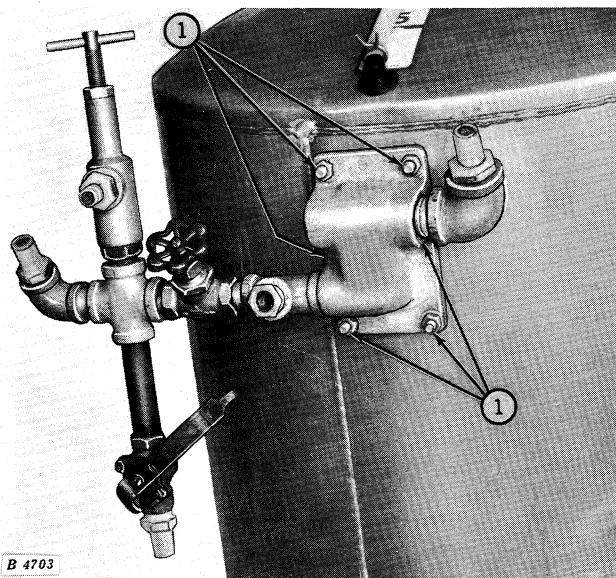
PRE-EMERGENCE SPRAYER ATTACHMENT

TANK CRADLES AND MANIFOLD

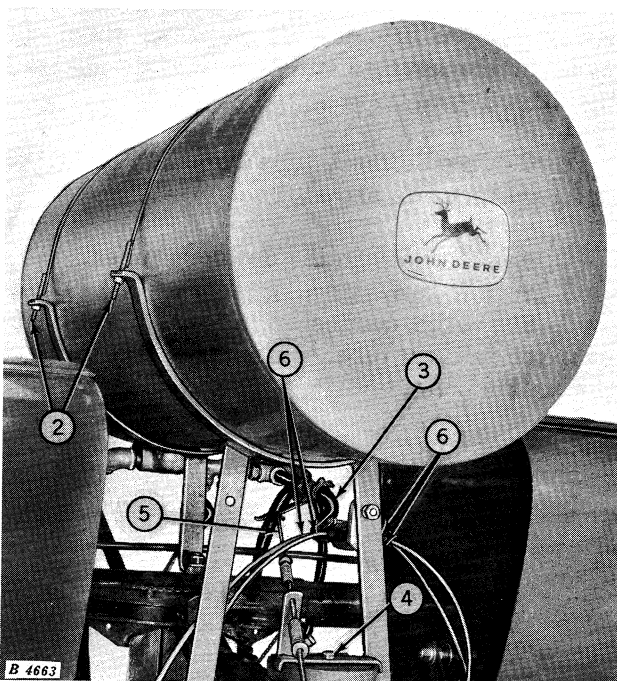


1. Install the front tank cradle.
2. Install the rear tank cradle with the U-bolts.
3. Install the manifold on the rear tank cradle.
4. Install a hose nipple in the manifold.
5. Install the delivery hose nipples in each side of the manifold.

TANK AND WITHDRAWAL ASSEMBLY



1. Attach the pressure regulator assembly and pressure regulator hold-down to the tank. Be sure the gasket is between the tank and the pressure regulator assembly.



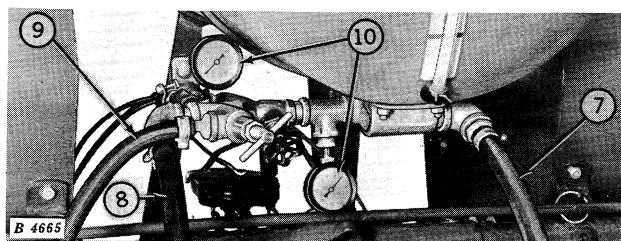
2. Set the tank in the cradles. Secure in place with the hold-down straps.

3. Install the manifold hose.

4. Install the shut-off bracket on the marker control rod with the carriage bolt as shown.

5. Attach shut-off rod to shut-off handle and shut-off bracket as illustrated. Final adjustment on the shut-off rod should be made in the field.

6. Attach delivery tubes to the manifold.



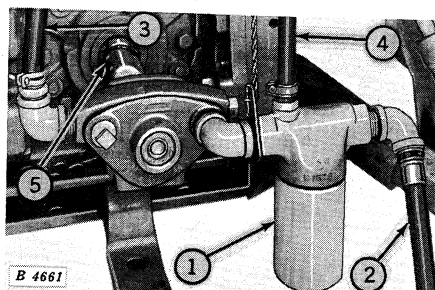
7. Install the pump supply hose to the withdrawal port.

8. Install the pump delivery hose.

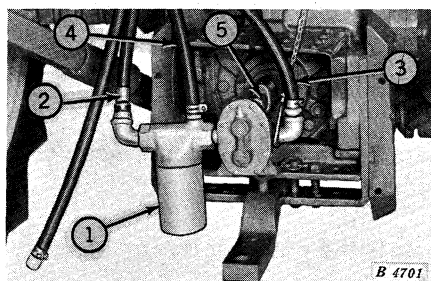
9. Install the bypass hose to the pressure regulator.

10. Install the pressure gauges.

PUMPS AND HOSES



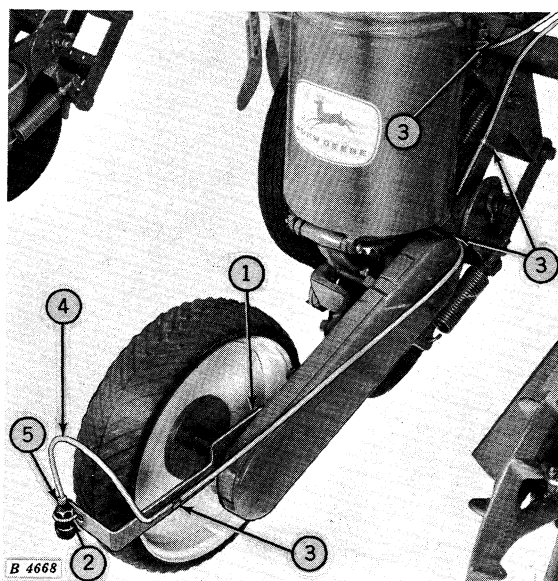
Roller Pump



Gear Pump

1. Install the line strainer.
2. Install the pump supply hose.
3. Install the pump delivery hose.
4. Install the bypass hose in the top of the line strainer as shown.
5. Install the PTO coupling and tighten the set screws against the flat side of the pump shaft.

NOZZLES, NOZZLE FRAMES AND DELIVERY TUBES



1. Install a nozzle frame on each Flexi-Planter.

2. Bolt a nozzle body assembly to the nozzle frame with the U-bolt. Adjust nozzle body so that spray pattern is centered on press wheel. The slots in the nozzles must be at right angles to the direction of travel.

3. Use the delivery tube clips and install the delivery tubes as shown.

4. Leave a loop in the delivery tubes.

5. Slide the connector nut and plastic ring over the delivery tube. Attach the connector nut to the nozzle body.



nobody can fill them like you can!

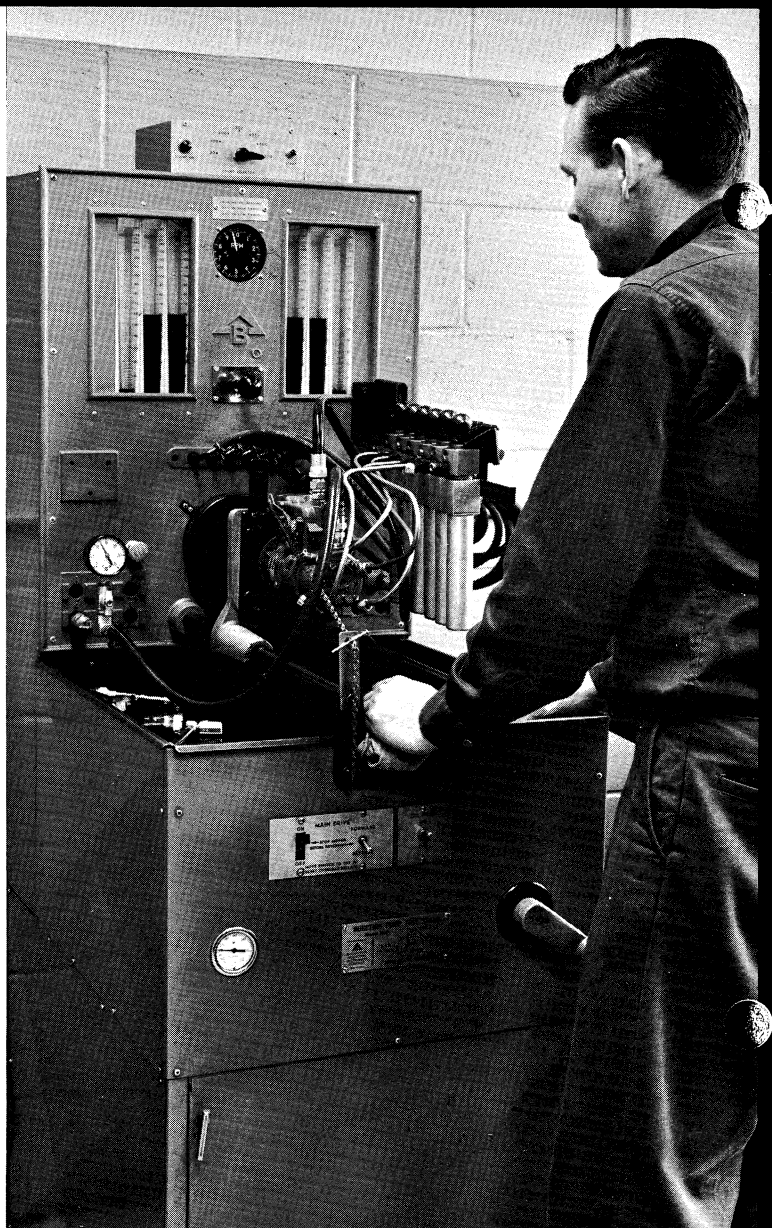
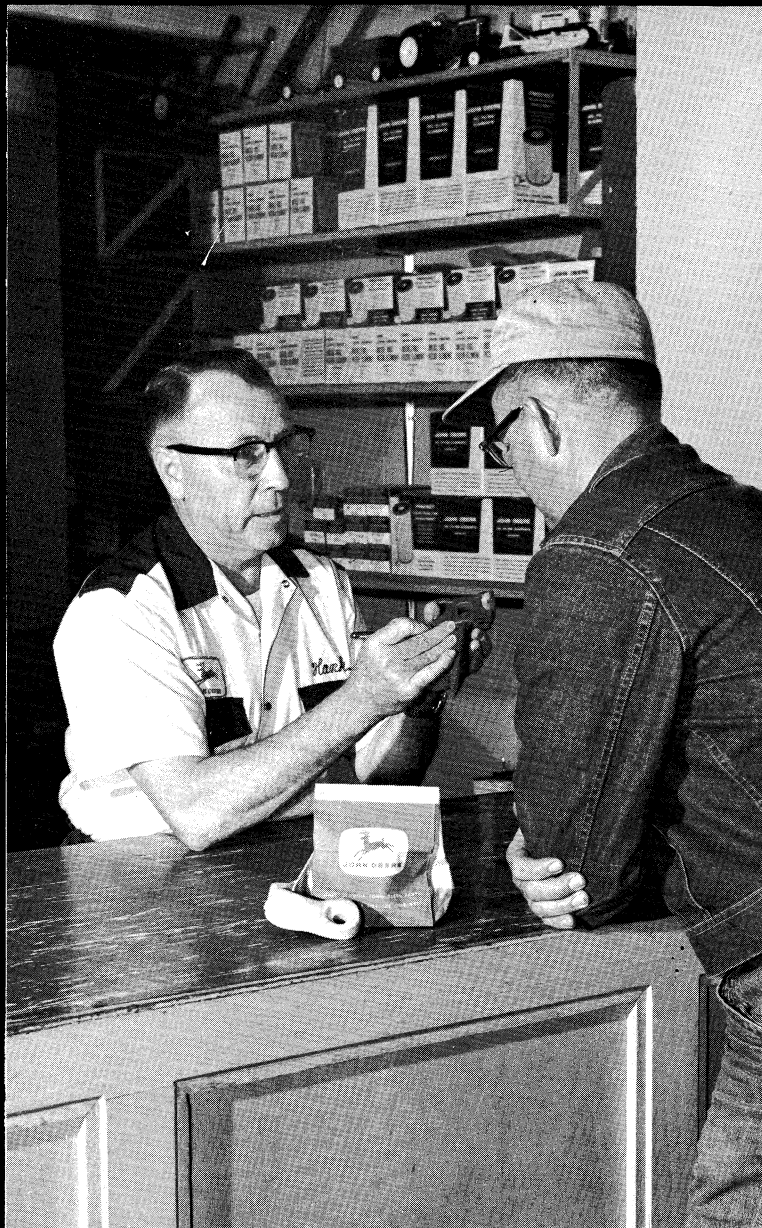
That's what the owner of this pair of work shoes is finding out—the hard way. Through a careless action, he has become the victim of an accident. It's a mighty tough way to find out that nobody else can wear your shoes or practice safety for you. And a needless, costly lesson to learn that safety is an everyday need.

Put safety into each of your workdays; read the operator's manual thoroughly; know how to operate each machine properly and safely; take the safety precautions specified; think before you act.

Make sure you wear your "shoes" everyday. Outfit yourself with a safety program now.

As a member of the National Safety Council, we are privileged to use the Green Cross for Safety to designate not only our interest in Safety, but to emphasize and call attention to the safety precautions in this manual.





Dependable John Deere Parts and Service

A Bedrock Backing of Your Decision to Go with The Long Green Line

Behind every product in *John Deere's Long Green Line* stands a reliable John Deere dealer ready to serve you in time of need with dependable parts and service.

The seasons run early in his Parts Department — his well-stocked shelves of seasonal (*and Genuine*) John Deere Parts will help hold your downtime to a minimum. Service is another phase of his business that is vital to you. Working with modern equipment and guided by factory-prepared service manuals, his service

specialists can pinpoint trouble with little delay; eliminate it efficiently and without costly waste effort.

You can move through your entire year's operations comfortably assured that your John Deere dealer has anticipated your needs and stands ready to help solve your problems. Your competent dealer is one more assurance of the greater satisfaction and value you'll enjoy when you invest in *The Long Green Line of John Deere Equipment*.