

Fertilizer Attachment for 7 Inch Model "LL" and 10 x 14 Model "LZ" Grain Drills



JOHN DEERE

OPERATORS MANUAL

Fertilizer Attachment for 7 Inch Model "LL" and 10 x
14 Model "LZ" Grain Drills

OMM11955 (01SEP55) English

OMM11955 (01SEP55)

LITHO IN U.S.A.
ENGLISH



TO THE PURCHASER

The successful operation of your Fertilizer Attachment for the Model "LL" or "LZ" Grain Drill, which is designed to give you many years of satisfactory service, depends upon the care given it and how it is operated.

The operation and service sections of this manual have been prepared to assist you in servicing and adjusting the fertilizer attachment to meet varying field conditions.

If you find you need information not covered by 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 the correct part number, a complete description of the part, the model and size of the drill, and the year purchased. This information should be recorded at the bottom of this page as soon as you receive your fertilizer attachment.

Location Reference:

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

IDENTIFICATION

**JOHN DEERE-VAN BRUNT
FERTILIZER ATTACHMENT**

Date Purchased....., 19....

For Model..... Grain Drill Drill Size.....x....

(To be filled in by Purchaser)

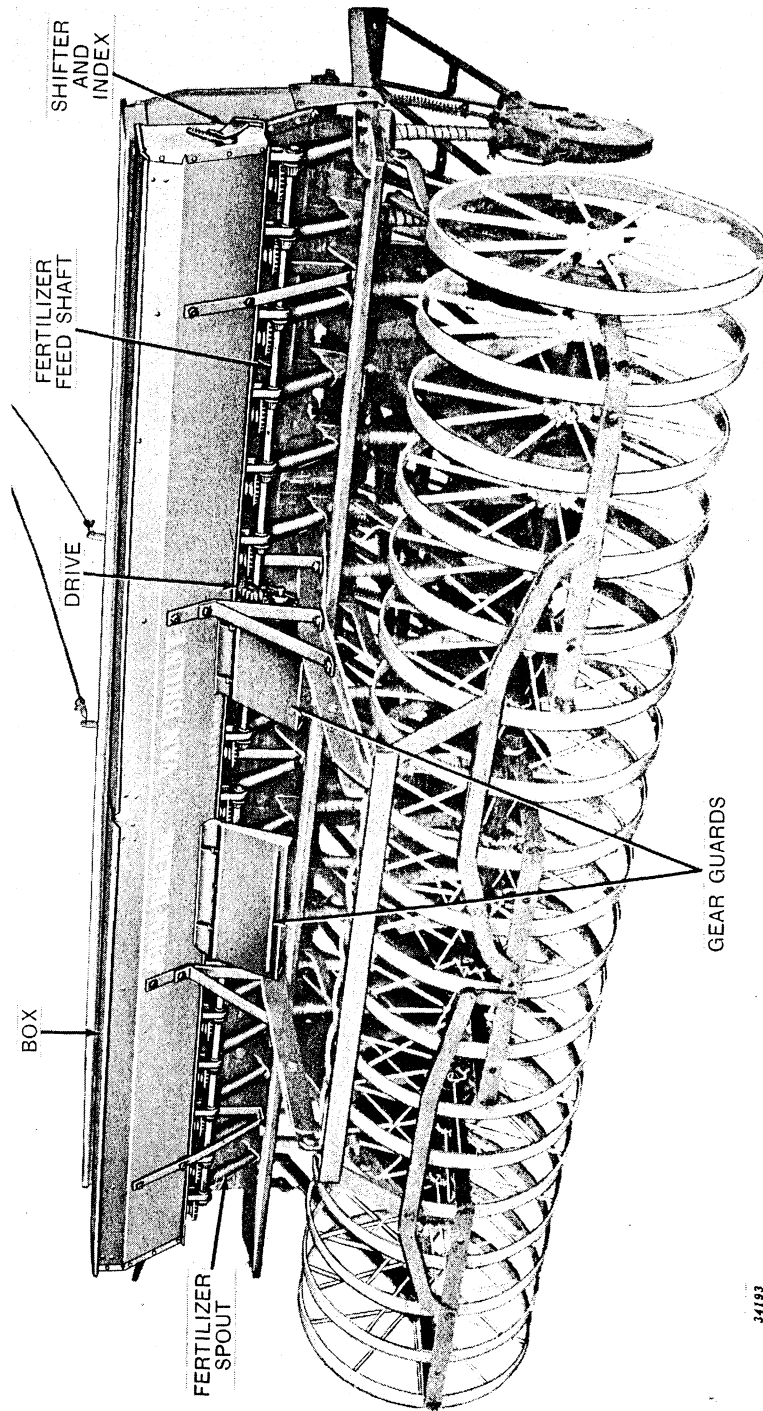
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*John Deere-Van Brunt Fertilizer Attachment for 18x7 Model "LL"
Grain Drill*

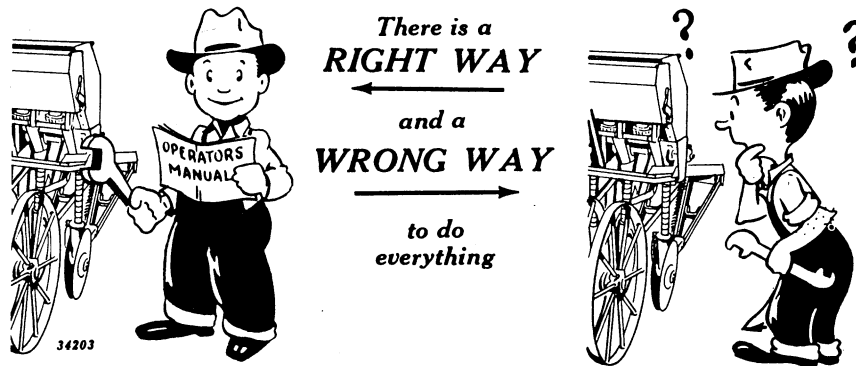
SPECIFICATIONS FOR FERTILIZER ATTACHMENT BOX

Size	Approximate Bushels	Capacity Pounds	Approximate Weight in Pounds of Fertilizer Attachment—Empty
16x7	3.00	218	295
18x7	3.50	262	315
20x7	3.75	281	401
24x7	4.50	337	474

NOTE: Approximate capacity pounds of fertilizer are based on standard brands weighing about 70 pounds per bushel.

NUMBER OF REVOLUTIONS OF GROUND WHEEL PER ACRE

Size	Type of Wheel	Revolutions
16x7	26" Press Wheel	686
18x7	26" Press Wheel	609
20x7	26" Press Wheel	546
24x7	26" Press Wheel	458



OPERATION

NOTE: The attachment leaves factory set for slow drive. Run the drive for a few acres before changing to fast drive. Oil clutch shaft thoroughly.

FERTILIZER FEED AND DRIVE

Care in selecting a fertilizer which will flow freely under most weather conditions will avoid trouble in the field. Use an agitator with finely-pulverized fertilizer as it has a tendency to bridge and does not flow as freely as coarser ground fertilizer. Do not store fertilizer in a moist place. **Keep fertilizer dry.**

It is better to use the fast speed fertilizer drive gears where possible and close down the quantity gates to obtain the quantities desired. This setting gives better agitation to the fertilizer and prevents large lumps of fertilizer from dropping into the spouts which might cause the spouts and tubes to plug up with fertilizer.

Loose fertilizer can easily be removed by using a whisk broom.

Hard and caked fertilizer can easily be removed by saturating parts with kerosene and chipping with a tool. **Wipe kerosene from parts before refilling box.**

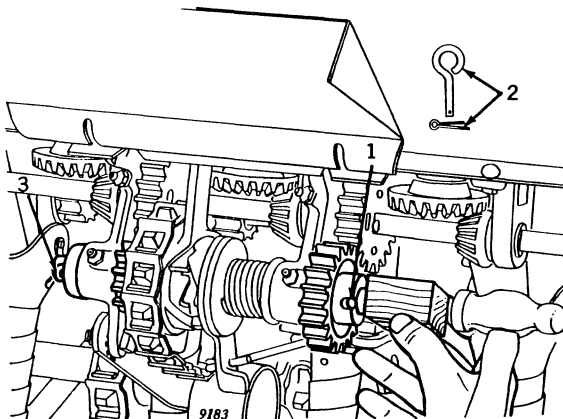
CHANGING FROM SLOW TO FAST DRIVE

1. Remove pin and cotter from 12-cog gear and move fertilizer jack-shaft toward the left.

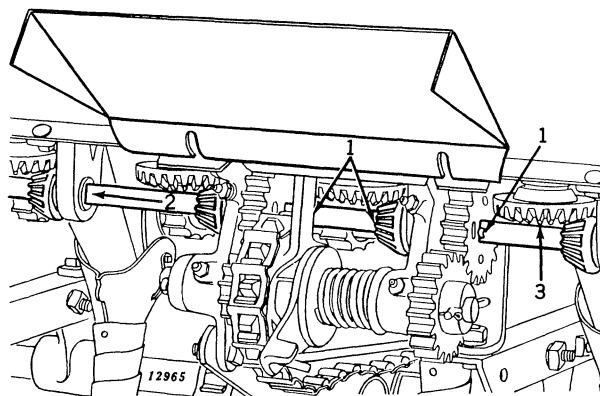
2. Put pin in notch of 19-cog gear. Insert and spread cotter.

3. Place thrust collar over left end of shaft against 12-cog gear with washer between collar and hanger. Insert pin and cotter. Spread cotter.

NOTE: To put into slow drive from fast drive reverse the above procedure.



TIMING FEED WHEELS FOR DRIVING FERTILIZER AGITATORS



1. Remove pins from center of shaft.
2. Slide feed shaft toward outside of drill until first bevel pinion is free.
3. Revolve large bevel gear until feed wheel post times with feed wheel post at other end of agitator.
4. Hold large gear firmly until pinion gear can be installed on feed shaft.

Always keep feed wheels being timed turned as far clockwise as possible.

NOTE: When the feed wheels are properly timed the rib on the bevel gear will align with the rib on bottom plate or be directly opposite.

SETTING FERTILIZER FEEDS

To set feeds, refer to chart for quantity to be drilled and move shifter lever to index notch indicated.

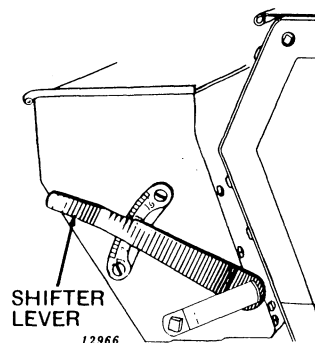


CHART FOR DRILLING COMMERCIAL FERTILIZER

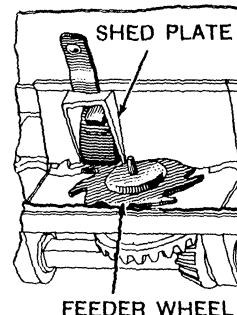
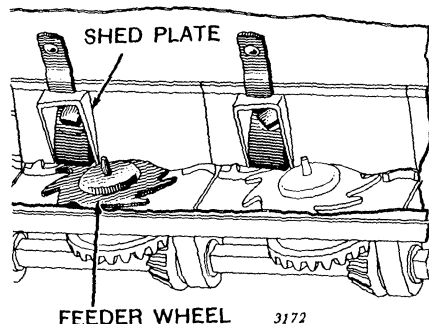
Quantities Shown Are in Pounds per Acre

NOTE: These charts are based on standard brands of dry fertilizers weighing about 80 lbs. per bushel. For damp and sticky fertilizer it is necessary that agitator equipment be used.

NOTE: For 14-inch spaced drills divide the amount shown on the chart below by two.

7-INCH SPACED DRILLS (AMMONIUM PHOSPHATE)												
Notch on Index	1	2	4	6	8	10	12	14	16			
SLOW DRIVE 12 Cog Speed Gear												
T282M Feed Wheel	26	32	44	62	81	100	119	135	152			
FAST DRIVE 19 Cog Speed Gear	56	70	96	135	176	217	258	294	330			
TRIPLE SUPER-PHOSPHATE												
SLOW DRIVE 12 Cog Speed Gear	27	34	46	66	85	105	125	144	164			
FAST DRIVE 19 Cog Speed Gear	58	73	101	143	186	229	272	314	357			
7-INCH SPACED DRILLS (AMMONIUM PHOSPHATE)												
Notch on Index	1	2	4	6	8	10	12	14	16			
SLOW DRIVE 12 Cog Speed Gear												
T229M Feed Wheel	7	9	12	17	22	27	32	36	41			
FAST DRIVE 19 Cog Speed Gear	15	19	26	36	48	59	70	79	89			
TRIPLE SUPER-PHOSPHATE												
SLOW DRIVE 12 Cog Speed Gear	7	9	12	18	23	28	34	39	44			
FAST DRIVE 19 Cog Speed Gear	16	20	27	39	50	62	73	85	96			

FERTILIZER AGITATOR



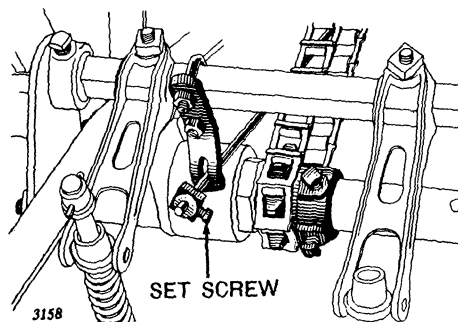
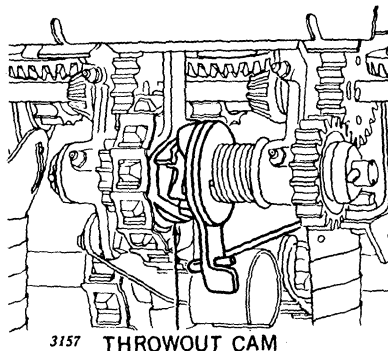
The feed wheels to which the agitators are attached must be properly timed (posts on both feed wheels must be in same position) or posts on feed wheels will break.

To check timing of feed wheels, remove agitator and turn both feed wheels, to which the agitator is attached, clockwise as far as they will go.

If feed wheels are still out of time, which sometimes happens when replacing feed wheels after cleaning, remove shed plate and turn one wheel 180° or half a turn and replace. Turn both feed wheels to which the agitator is attached clockwise as far as they will go and recheck.

If feed wheels to which agitator attaches are still out of time, see instructions on page 5.

DISENGAGING FERTILIZER FEEDS



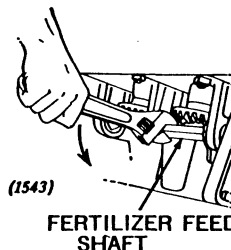
When it is desired to drill grain without fertilizer, disengage fertilizer drive. Push handle of cam ahead until notches on cams mesh. Tighten set screw to prevent loss.

AT THE BEGINNING OF THE SEASON

1. Before using the fertilizer attachment after being stored, revolve the fertilizer feed shaft several revolutions with a wrench, because if any of these feeds are stuck, feeds or drive parts may be broken if the machine is moved.

If any of the feeds are tight or do not turn freely, saturate moving parts on the feeds with kerosene.

Be sure feeds are free before throwing mechanism into gear.



2. Some of the oil and grease which was put on parts and in bearings to prevent rusting when the fertilizer attachment was stored, will have run off or will have accumulated dirt. Go over fertilizer attachment, wipe off old dirt and grease and thoroughly grease and oil fertilizer attachment.

Remove grease or oil from inside of fertilizer box. Remove and clean all fertilizer tubes and spouts.

3. Check fertilizer attachment and make adjustments necessary to meet the requirements of the crop to be drilled. Check and tighten nuts and spread cotters.

AT THE END OF SEASON

At the end of each season the fertilizer attachment should be cleaned and greased and an inspection made for worn or broken parts. Order needed replacement parts or make necessary adjustments at once. This will avoid needless delays when the next drilling season arrives and will assure you that your fertilizer attachment is ready to go and is in good repair. Proper care will add years to the life of your attachment.



OPERATION CHART

This Fertilizer Attachment has been thoroughly tested, inspected for accuracy and tried by factory experts. If properly set up, adjusted and operated in accordance with this Setting-Up and Operating Instruction and Operation Chart, it will do a first class drilling job under all reasonable field conditions.

Nearly all difficulties experienced in the field, classified and listed below, are caused by the operator failing to make necessary adjustments and not operating fertilizer attachment in accordance with instructions as outlined in this Operation Chart. The *cause and remedy* can be found by reading across on the chart.

<i>Possible Cause</i>	<i>Remedy</i>
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IRREGULAR DRILLING OF FERTILIZER

Quantity gates not properly adjusted.	Adjust quantity gates properly.
Using wrong gear ratio from fertilizer jackshaft to fertilizer drive shaft.	Correct gears for "Fast" or "Slow" drive.
Improper adjustment of throw-out for drive so drive engages only part of the time.	Adjust small block at top of throw-out rod.

STOPPAGE OF FLOW

Safety shear pin on feed wheel sheared.	Remove feed wheel, drive out old pin, and replace with a new safety shear pin.
Fertilizer not flowing properly because of dampness.	Use dry fertilizer, or regulate shifter and change to fast gear ratio on fertilizer jackshaft.
Tubes clogged with fertilizer.	Use dry fertilizer free of lumps.

VARYING QUANTITIES DRILLED BY DIFFERENT FEEDS

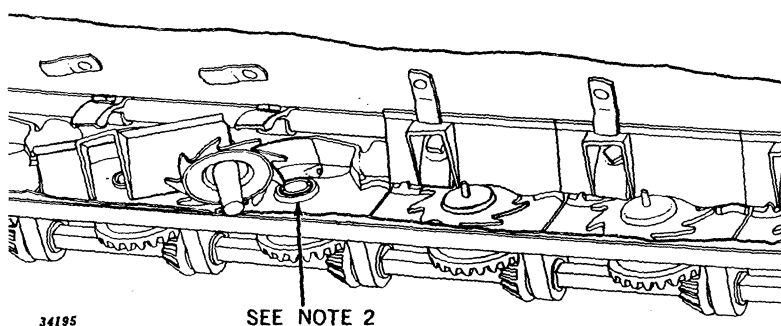
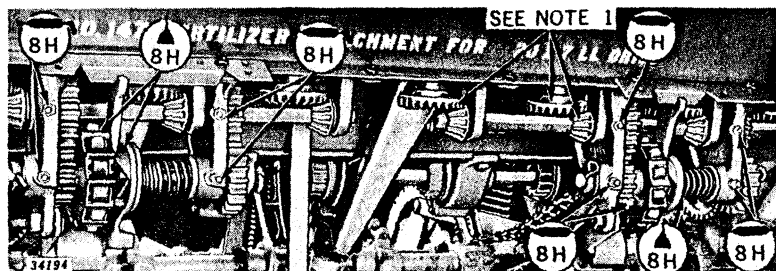
Fertilizer bridging in box.	Use agitators.
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QUANTITIES DRILLED NOT AGREEING WITH CHART

Using wrong gear ratio from fertilizer jackshaft to fertilizer drive shaft.	Correct gears for "Fast" or "Slow" drive.
Fertilizer flowing faster than average because of free flowing dry fertilizer being used.	Regulate shifter and change to slow gear ratio on fertilizer jackshaft.

LUBRICATION

Oil clutch shaft and parts frequently and thoroughly. Do not use oil or grease on fertilizer feeds or on bottom plates while attachment is being used. Use kerosene for removing hard and caked fertilizer. Wipe parts clean before refilling fertilizer box.



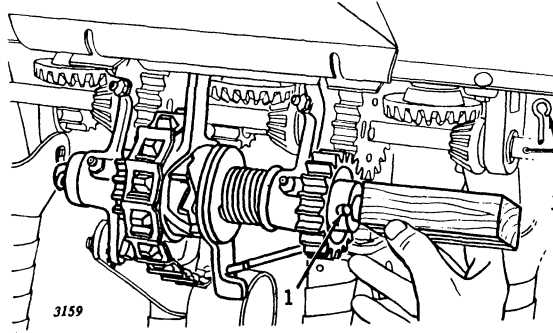
SYMBOLS	
	GREASE EVERY 8 HOURS OF OPERATION
	OIL EVERY 8 HOURS OF OPERATION

NOTE No. 1. Use light grade of grease or heavy oil and lubricate bevel and pinion gears once every 8 hours of operation.

NOTE No. 2. Oil T18M fertilizer feed shaft bushings and hub of bevel gear at regular intervals.

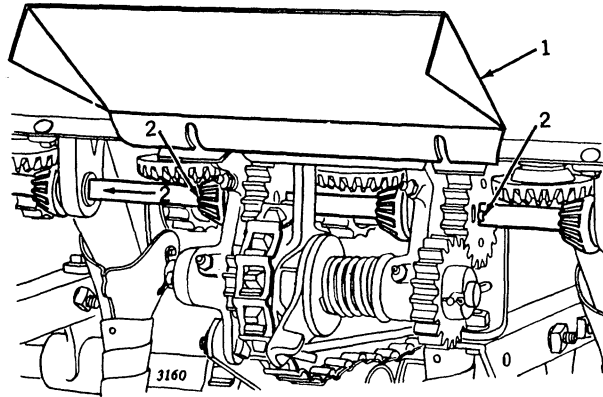
SERVICE

REPLACING FERTILIZER JACKSHAFT



1. Remove the eye pin from end of fertilizer jackshaft and slide shaft out. Be sure to keep gears, cam, spring, and spring washers in order. To install jackshaft, reverse the above procedure.

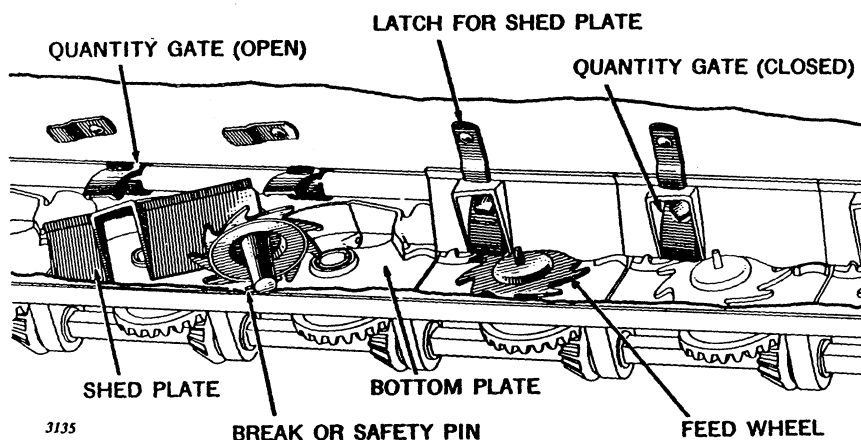
REPLACING FERTILIZER FEED SHAFT



1. Raise fertilizer drive guard.
2. Remove two pins from feed shaft and slide shaft toward outside of machine, being sure no gears, etc. fall to ground.

To install, reverse above procedure. *NOTE: The feed wheels will have to be retimed. See "Timing Feed Wheels", page 5.*

CLEANING FEEDS

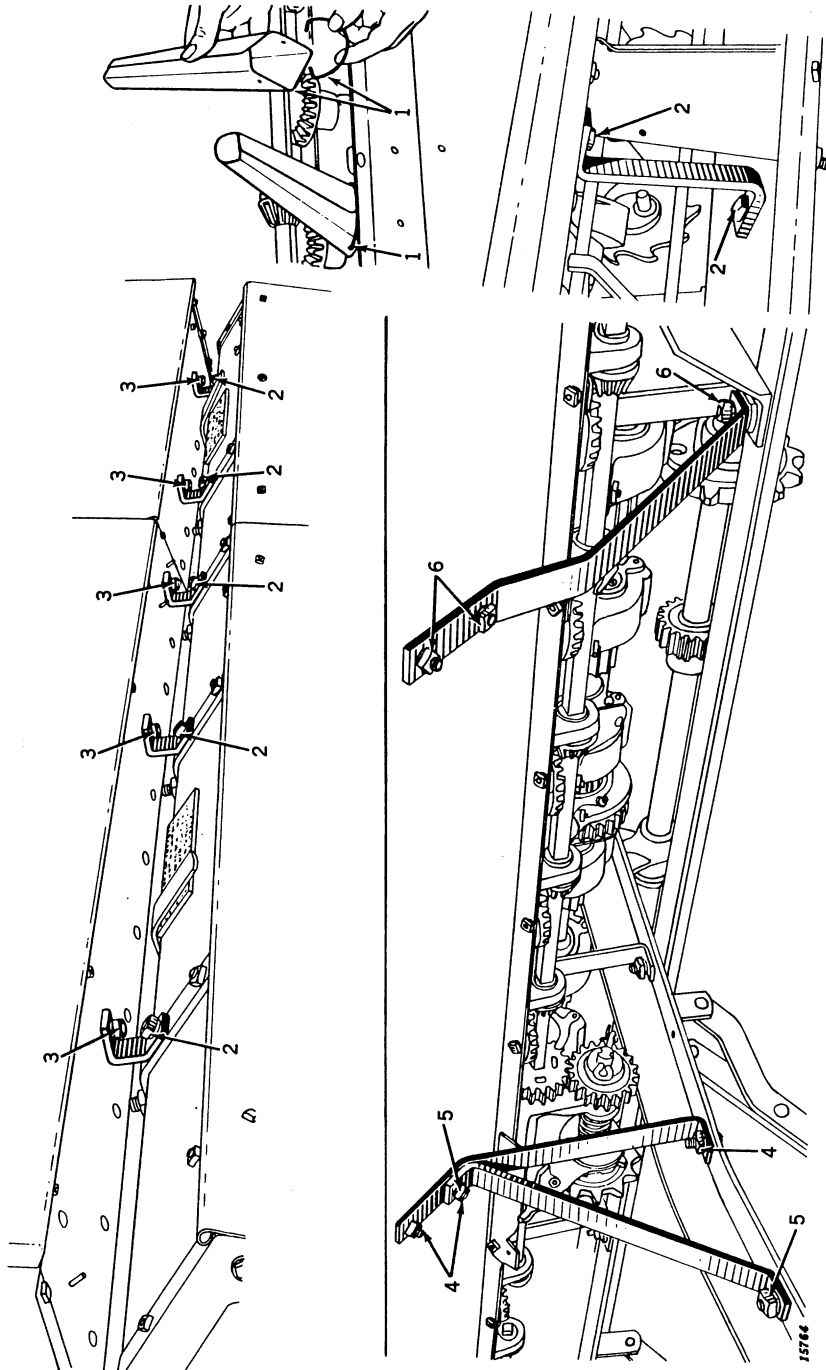


Put quantity gate lever down as far as possible, turn latches for shed plates. Remove shed plates. Put quantity gate lever up as far as possible. Turn feed wheel break pin to slot in bevel gear and lift out the feed wheel. This will permit cleaning the fertilizer feeds.

Important: The soft wire pin in feed wheel is a break or safety pin. If a stone or hard substance in fertilizer should block the feed wheel, the pin will shear off avoiding breakage of the feed mechanism. There are extra break pins in the cloth bag. Simply drive the broken pieces out and replace with new one. **Do not substitute a nail or hard wire.**

MEMORANDA

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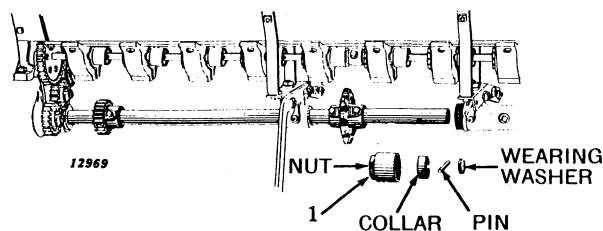
ASSEMBLY

1. Attach spouts to bottom plates with snap pins.
2. Remove second bolts from top on rear grain box straps. Bolt spacer brackets loosely to fertilizer box with 90° bend toward fertilizer box. When attaching brackets to partitions, also attach inside box saddles, with hook end down and to rear.
3. Assemble fertilizer box to drill, using longer bolts furnished in cloth bag.
4. Bolt box supports to rear of fertilizer box and to support angles.
 - a. Use 3/8" x 1" machine bolt in top hole of supports.
 - b. Use 3/8" x 1-1/2" machine bolt in second hole of support and hole in box brace. Also thread the bolt through the inside box saddle.
 - c. Use 3/8" x 2" carriage bolt in support, support angle, and footboard.
5. Bolt box braces to fertilizer box and to support angle. Use same 1/2" x 1-1/4" machine bolt as was used for the regular box brace.

For 20-24x7 Sizes:

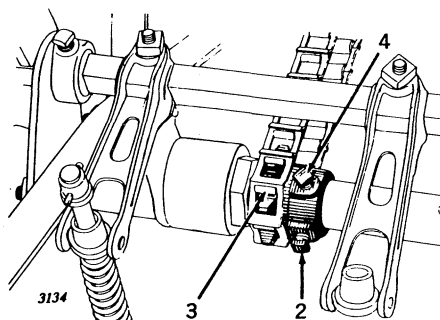
6. Attach box braces to outside box straps on box and above the regular box straps on rear frame angle.

DRIVE SPROCKETS AND CHAIN



1. Remove nut from bearing holding axles and loosen all parts fastened to them. Pull end axles through hub of wheel far enough to permit removing nut and other parts necessary on axles.

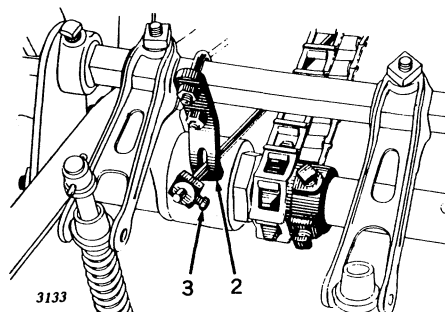
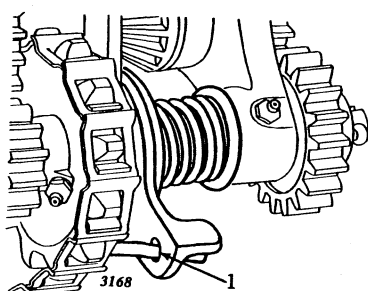
2. Slide drive sprockets on axle, being sure that set screw end of sprocket faces toward left end of machine. Replace axles and parts as originally assembled and align axle sprocket with fertilizer drive sprocket.



3. Put drive chain over fertilizer drive sprocket and axle sprocket with hook end of chain up and in direction of travel.

4. Tighten set screw in axle collar.

CLUTCH THROW-OUT



1. Hook throw-out rod into eye of cam. Close eye of throw-out rod.

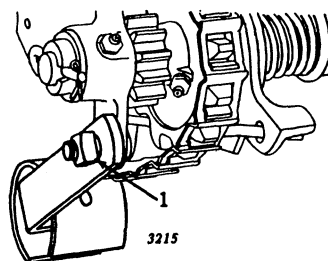
2. Thread rod through slot of throw-out bracket and attach bracket to pressure shaft.

3. Slide adjusting collar on throw-out rod. Adjust collar on rod so that cam disengages fertilizer clutch when furrow openers are raised and engages when furrow openers are in the ground. Tighten set screw.

CHAIN TIGHTENER

1. Thread bolt through L. H. fertilizer drive gear hanger and attach chain tightener with everlock washer between hanger and tightener.

Tighten nut.

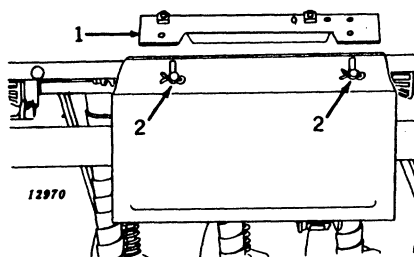


FERTILIZER DRIVE COVER

1. Remove nuts and lock washers from drive gear hanger and from fertilizer box flange. Attach reinforcement flange to fertilizer box offset. Reassemble washers and nuts to bolts.

Tighten nuts.

2. With cotters removed from pins attach gear covers to bracket with head of pin up. **Be sure one washer is between spring and cover.** Insert and spread cotters.



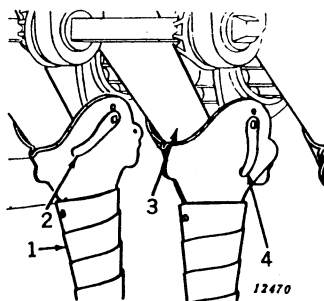
TUBE TOPS

It is not necessary to change the tube tops furnished with drills stencilled "5411," because these tops will accommodate the fertilizer spouts. In these cases, the instructions under "Changing SA991M Tube Tops" will not apply. Insert ends of fertilizer spouts in tube tops to feeds with cotter pins. Spread cotter pins.

ATTACHING SA991M TUBE TOPS

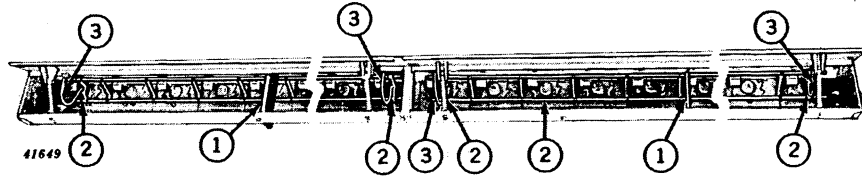
1. Remove tube top from grain tubes and assemble to tube tops provided with attachment.

NOTE: For grain drills with drilled feed cups that use cotter pins it will be necessary to remove the lock lever and drill out the rivet. It is recommended that a small plain washer be slid on cotter pin near to the head to prevent the cotter pin pulling through. Spread cotter pin.



2. Move lock lever to rear on tube tops.
3. Insert ends of fertilizer spouts in tube tops and attach tube tops to feed cups.
4. Return lock lever to locked position.

AGITATORS



1. On certain sizes it may be necessary to remove the lower bolts in the box partitions, and turn the partitions up in order to place the agitators in the box. Replace the bolts.

2. Be sure feed wheels which drive the agitators are timed. See page 5, and place the agitators on the feed wheel drive studs.

NOTE: Turn feed wheels as far counter-clockwise as possible before placing the agitators on the drive studs.

3. Insert one end of hold-down spring into hole in front box sheet and place opposite end into end pivot castings of agitators.

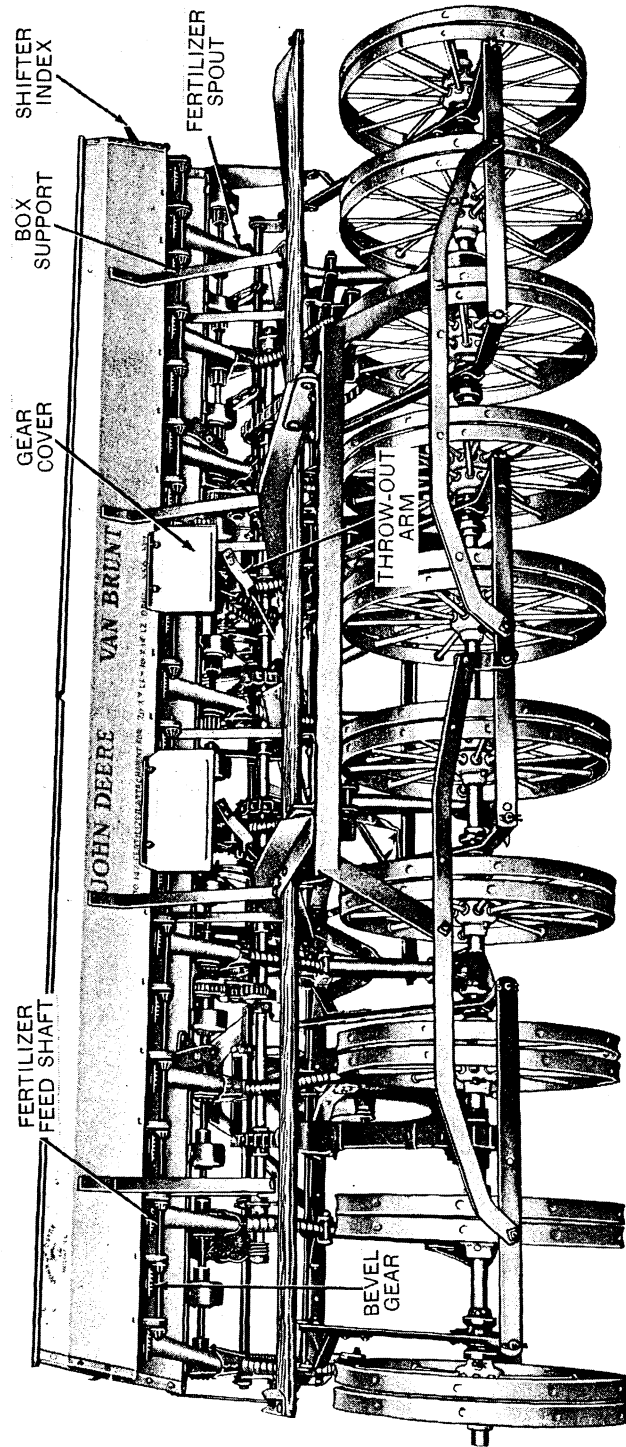
FINAL CHECK

After attachment has been completely installed, make the following inspections:

1. Check all nuts to see if they are tight.
2. Adjust feeds for setting desired.
3. Check all cotters to see if they are spread.
4. Check spouts, tubes, clamps, and conveyors for correct installation.
5. Check shed plate latches, shed plates, feed gates and feed wheels to see that they are in proper place or setting.
6. Lubricate attachment.

MEMORANDA

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John Deere-Van Brunt 10x14 Model "LZ" Drill with Fertilizer Attachment

34197

OPERATION

NOTE: The attachment leaves factory set for slow drive. Run the drive for a few acres before changing to fast drive. Oil clutch shaft thoroughly.

FERTILIZER FEED AND DRIVE

Care in selecting a fertilizer which will flow freely under most weather conditions will avoid trouble in the field. Use an agitator with finely-pulverized fertilizer as it has a tendency to bridge and does not flow as freely as coarser ground fertilizer. Do not store fertilizer in a moist place. **Keep fertilizer dry.**

It is better to use the fast speed fertilizer drive gears where possible and close down the quantity gates to obtain the quantities desired. This setting gives better agitation to the fertilizer and prevents large lumps of fertilizer from dropping into the spouts which might cause the spouts and tubes to plug up with fertilizer.

Loose fertilizer can easily be removed by using a whisk broom.

Hard and caked fertilizer can easily be removed by saturating parts with kerosene and chipping with a tool. **Wipe kerosene from parts before refilling box.**

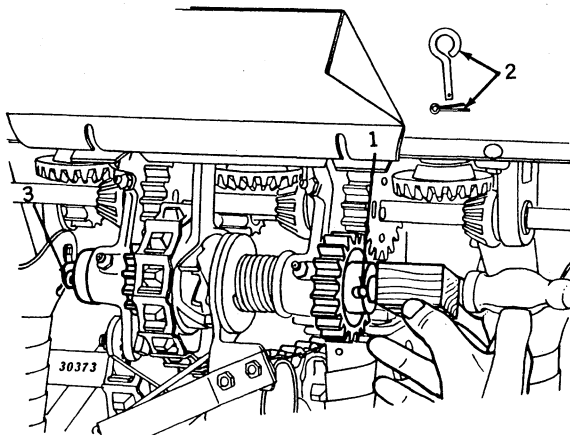
CHANGING FROM SLOW TO FAST DRIVE

1. Remove pin and cotter from 12-cog gear and move fertilizer jack-shaft toward the left.

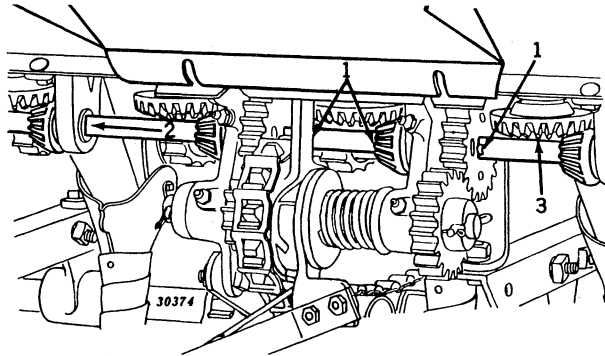
2. Put pin in notch of 19-cog gear. Insert and spread cotter.

3. Place thrust collar over left end of shaft against 12-cog gear with washer between collar and hanger. Insert pin and cotter. Spread cotter.

NOTE: To put into slow drive from fast drive reverse the above procedure.



TIMING FEED WHEELS FOR DRIVING FERTILIZER AGITATORS



1. Remove pins from center of shaft.
2. Slide feed shaft toward outside of drill until first bevel pinion is free.
3. Revolve large bevel gear until feed wheel post times with feed wheel post at other end of agitator.
4. Hold large gear firmly until pinion gear can be installed on feed shaft.
Always keep feed wheels being timed turned as far clockwise as possible.

SETTING FERTILIZER FEEDS

To set feeds, refer to chart for quantity to be drilled and move shifter lever to index notch indicated.

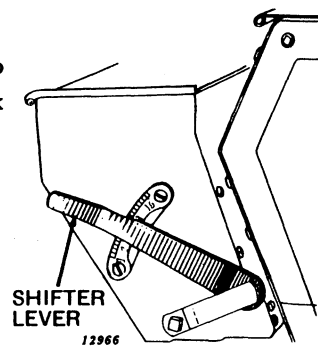


CHART FOR DRILLING COMMERCIAL FERTILIZER

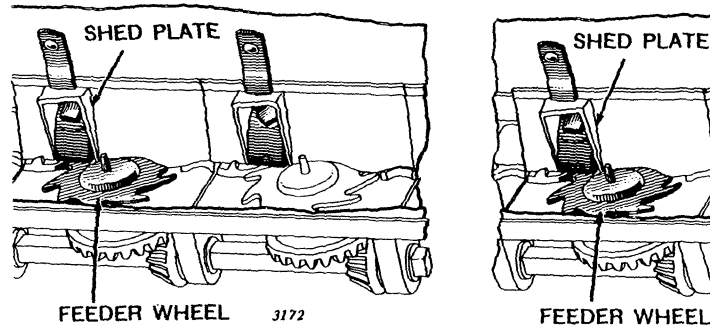
Quantities Shown Are in Pounds per Acre

NOTE: These charts are based on standard brands of dry fertilizers weighing about 80 lbs. per bushel. For damp and sticky fertilizer it is necessary that agitator equipment be used.

NOTE: For 7-inch spaced drills double the amount shown on the chart below.

14-INCH SPACED DRILLS (AMMONIUM PHOSPHATE)													
Notch on Index		1	2	4	6	8	10	12	14	16			
SLOW DRIVE													
12 Cog Speed Gear		4	4	6	8	11	14	16	18	21			
FAST DRIVE													
19 Cog Speed Gear		8	9	13	18	24	29	35	40	45			
TRIPLE SUPER-PHOSPHATE													
SLOW DRIVE													
12 Cog Speed Gear		4	5	6	9	12	14	17	19	22			
FAST DRIVE													
19 Cog Speed Gear		8	10	14	19	25	30	37	42	48			
14-INCH SPACED DRILLS (AMMONIUM PHOSPHATE)													
Notch on Index		1	2	4	6	8	10	12	14	16			
SLOW DRIVE													
12 Cog Speed Gear		13	16	22	31	40	50	60	67	76			
FAST DRIVE													
19 Cog Speed Gear		28	35	48	67	88	109	129	147	165			
TRIPLE SUPER-PHOSPHATE													
SLOW DRIVE													
12 Cog Speed Gear		13	17	23	33	42	102	62	72	82			
FAST DRIVE													
19 Cog Speed Gear		29	36	50	71	93	114	136	157	178			

FERTILIZER AGITATOR



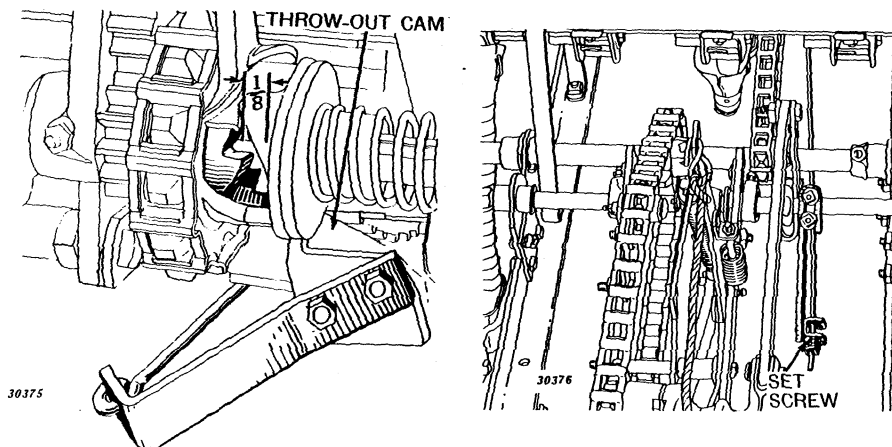
The feed wheels to which the agitators are attached must be properly timed (posts on both feed wheels must be in same position) or posts on feed wheels will break.

To check timing of feed wheels, remove agitator and turn both feed wheels, to which the agitator is attached, clockwise as far as they will go.

If feed wheels are still out of time, which sometimes happens when replacing feed wheels after cleaning, remove shed plate and turn one wheel 180° or half a turn and replace. Turn both feed wheels to which the agitator is attached clockwise as far as they will go and recheck.

If feed wheels to which agitator attaches are still out of time, see instructions on page 23.

DISENGAGING FERTILIZER FEEDS



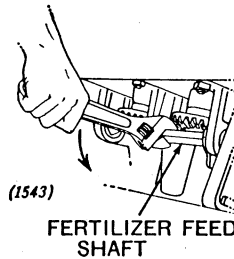
When it is desired to drill grain without fertilizer, disengage fertilizer drive. Push handle of cam ahead until outside notches on cams mesh. Tighten set screw to prevent loss.

AT THE BEGINNING OF THE SEASON

1. Before using the fertilizer attachment after being stored, revolve the fertilizer feed shaft several revolutions with a wrench, because if any of these feeds are stuck, feeds or drive parts may be broken if the machine is moved.

If any of the feeds are tight or do not turn freely, saturate moving parts on the feeds with kerosene.

Be sure feeds are free before throwing mechanism into gear.



2. Some of the oil and grease which was put on parts and in bearings to prevent rusting when the fertilizer attachment was stored, will have run off or will have accumulated dirt. Go over fertilizer attachment, wipe off old dirt and grease and thoroughly grease and oil fertilizer attachment.

Remove grease or oil from inside of fertilizer box. Remove and clean all fertilizer tubes and spouts.

3. Check fertilizer attachment and make adjustments necessary to meet the requirements of the crop to be drilled. Check and tighten nuts and spread cotters.

AT THE END OF SEASON

At the end of each season the fertilizer attachment should be cleaned and greased and an inspection made for worn or broken parts. Order needed replacement parts or make necessary adjustments at once. This will avoid needless delays when the next drilling season arrives and will assure you that your fertilizer attachment is ready to go and is in good repair. Proper care will add years to the life of your attachment.



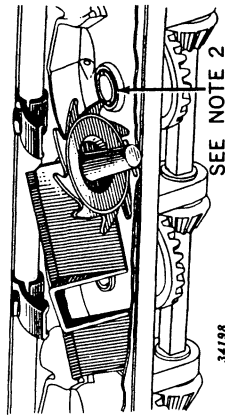
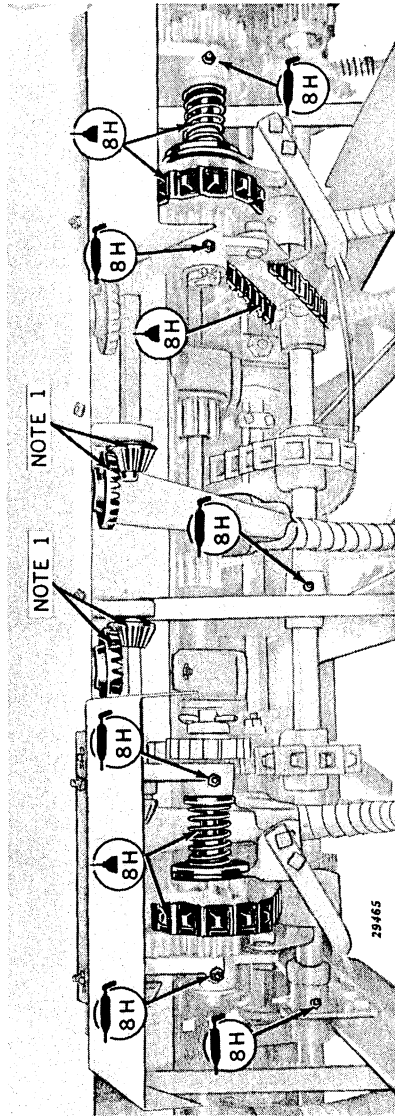
OPERATION CHART

This Fertilizer Attachment has been thoroughly tested, inspected for accuracy and tried by factory experts. If properly set up, adjusted and operated in accordance with this Setting-Up and Operating Instruction and Operation Chart, it will do a first class drilling job under all reasonable field conditions.

Nearly all difficulties experienced in the field, classified and listed below, are caused by the operator failing to make necessary adjustments and not operating fertilizer attachment in accordance with instructions as outlined in this Operation Chart. The *cause and remedy* can be found by reading across on the chart.

<i>Possible Cause</i>	<i>Remedy</i>
IRREGULAR DRILLING OF FERTILIZER	
Quantity gates not properly adjusted.	Adjust quantity gates properly.
Using wrong gear ratio from fertilizer jackshaft to fertilizer drive shaft.	Correct gears for "Fast" or "Slow" drive.
Improper adjustment of throw-out for drive so drive engages only part of the time.	Adjust small block at top of throw-out rod.
STOPPAGE OF FLOW	
Safety shear pin on feed wheel sheared.	Remove feed wheel, drive out old pin, and replace with a new safety shear pin .
Fertilizer not flowing properly because of dampness.	Use dry fertilizer, or regulate shifter and change to fast gear ratio on fertilizer jackshaft.
Tubes clogged with fertilizer.	Use dry fertilizer free of lumps.
VARYING QUANTITIES DRILLED BY DIFFERENT FEEDS	
Fertilizer bridging in box.	Use agitators.
QUANTITIES DRILLED NOT AGREEING WITH CHART	
Using wrong gear ratio from fertilizer jackshaft to fertilizer drive shaft.	Correct gears for "Fast" or "Slow" drive.
Fertilizer flowing faster than average because of free flowing dry fertilizer being used.	Regulate shifter and change to slow gear ratio on fertilizer jackshaft.

LUBRICATION



Oil clutch shaft and parts frequently and thoroughly. Do not use oil or grease on fertilizer feeds or on bottom plates while attachment is being used. Use kerosene for removing hard and caked fertilizer. Wipe parts clean before refilling fertilizer box.

SYMBOLS



Grease every eight hours of operation with a good grade of pressure gun grease.



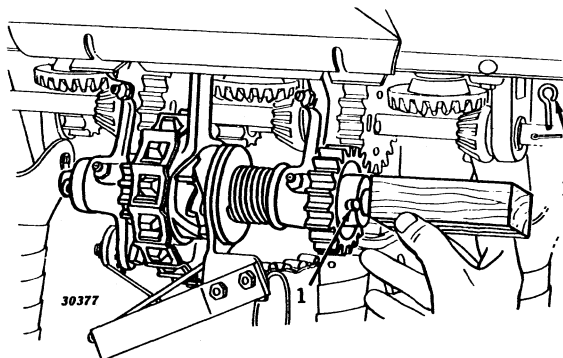
Oil every eight hours of operation with light oil.

Note 1: Lubricate pinion and bevel gears with a heavy oil or light grease every 8 hours of field operation.

Note 2: Lubricate hub of bevel gear with heavy oil or light grease at regular intervals.

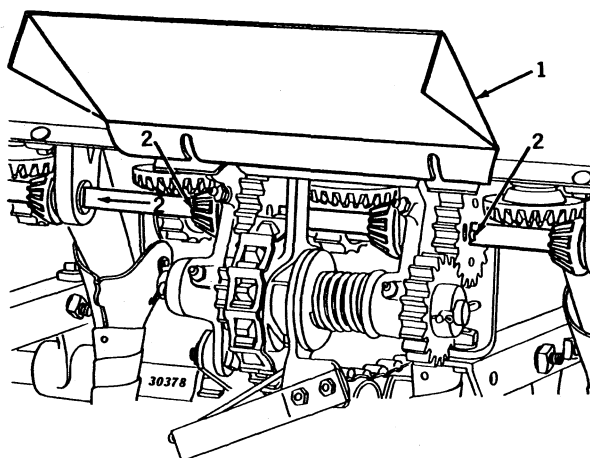
SERVICE

REPLACING FERTILIZER JACKSHAFT



1. Remove the eye pin from end of fertilizer jackshaft and slide shaft out. Be sure to keep gears, cam, spring, and spring washers in order. To install jackshaft, reverse the above procedure.

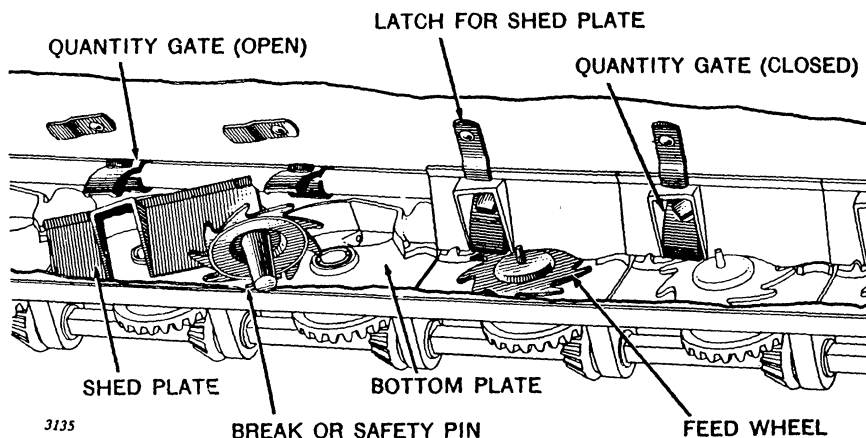
REPLACING FERTILIZER FEED SHAFT



1. Raise fertilizer drive guard.
2. Remove two pins from feed shaft and slide shaft toward outside of machine, being sure no gears, etc. fall to ground.

To install, reverse above procedure. *NOTE: The feed wheels will have to be retimed. See “Timing Feed Wheels”, page 23.*

CLEANING FEEDS



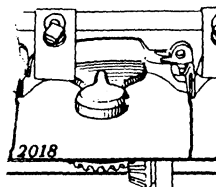
Put quantity gate lever down as far as possible, turn latches for shed plates. Remove shed plates. Put quantity gate lever up as far as possible. Turn feed wheel break pin to slot in bevel gear and lift out the feed wheel. This will permit cleaning the fertilizer feeds.

Important: The soft wire pin in feed wheel is a break or safety pin. If a stone or hard substance in fertilizer should block the feed wheel, the pin will shear off avoiding breakage of the feed mechanism. There are extra break pins in the cloth bag. Simply drive the broken pieces out and replace with new one. **Do not substitute a nail or hard wire.**

INSTALLING FERTILIZER FEED STOPS

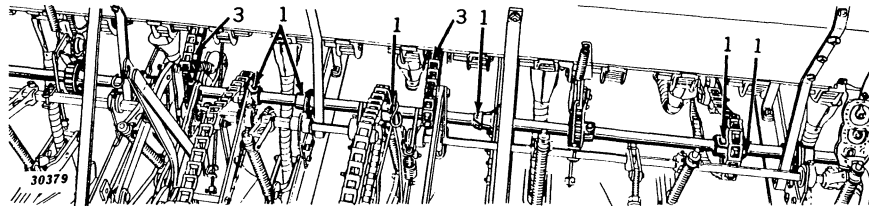
Raise the quantity gates and start with second feed wheel from left-hand end, remove every other feed.

Install fertilizer feed stops and lower quantity gates.

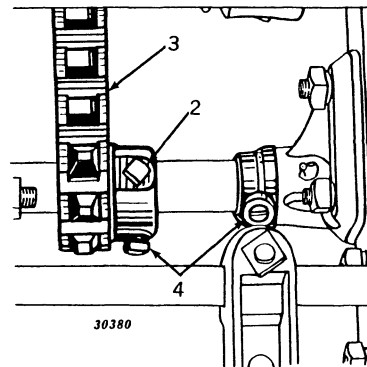


ASSEMBLY

DRIVE SPROCKETS AND CHAINS



1. Loosen set screws in collars and drive sprockets on jackshafts and slide jackshafts toward outside ends of drill. On both shafts it will be necessary to slide the power lift sprockets, if so equipped, off the shaft completely in order to allow positioning of the Fertilizer drive sprockets.

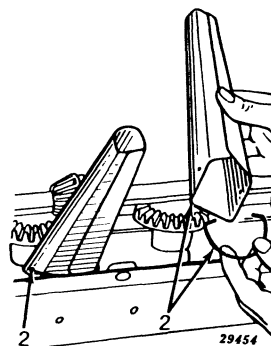
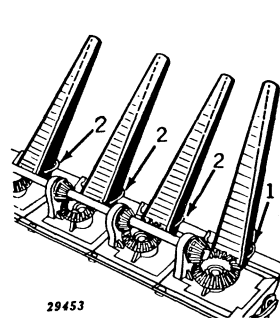


2. Slide fertilizer drive sprockets on jackshaft, being sure that set screw end of sprocket faces toward left end of machine. Replace power lift sprockets, jackshafts and parts originally assembled. Align fertilizer drive sprocket with driven sprocket on fertilizer attachment jackshaft.

3. Put drive chains over fertilizer drive sprockets and fertilizer driven sprockets with hook ends up and in the direction of travel.

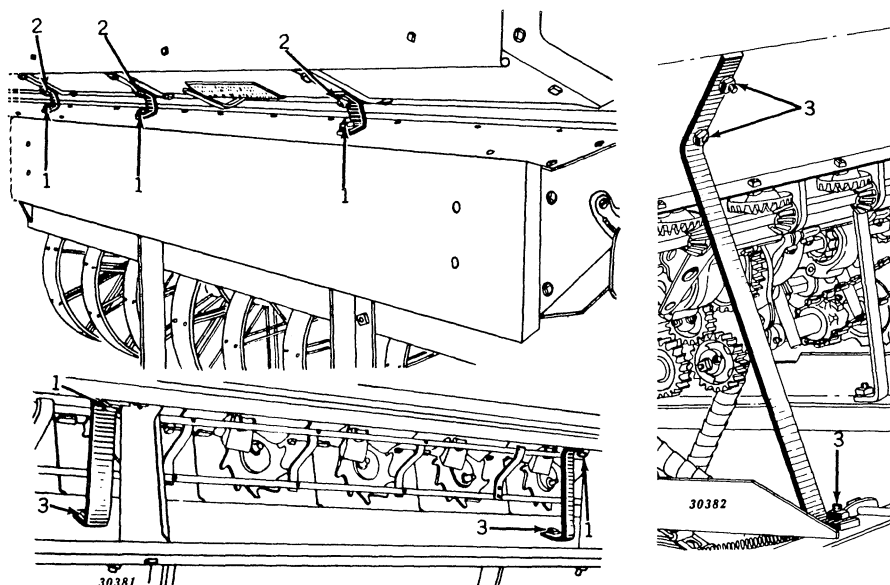
4. Tighten set screws in sprockets and collars.

FERTILIZER SPOUTS



1. Attach spouts to right-hand and left-hand end bottom plates using holes necessary to angle them toward center.

2. Attach spouts to remainder of bottom plates.

FERTILIZER BOX

1. Bolt spacer brackets loosely to fertilizer box with 90-degree bend toward fertilizer box. When attaching brackets to partitions, also attach inside box saddles with hook end down and to rear.

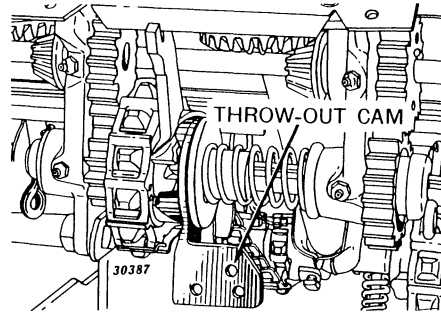
2. Remove second bolt from top on rear grain box straps. Assemble fertilizer box to drill using longer bolts furnished in cloth bag.

3. Bolt four box supports to rear of fertilizer box and to support angles. Use $3/8$ x 1-inch machine bolts in top hole of supports, and $3/8$ x 1-1/2-inch machine bolts in second hole of supports and hole in box brace. Thread bolt through inside box saddle. Use $3/8$ x 2-inch carriage bolt in support, support angle, and footboard.

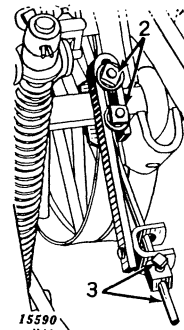
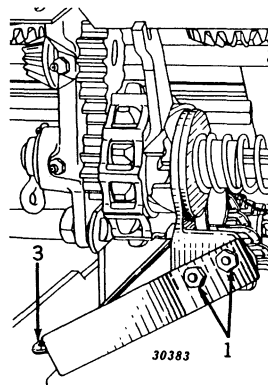
REPLACING THROW-OUT CAM

Note: It is necessary to replace the throw-out cam, assembled on the fertilizer box, with the cam furnished in the bundle of parts.

1. Remove pin on end of drive jackshaft. Pull jackshaft out far enough to slide off parts up to and including the throw-out cam and replace parts removed from jackshaft. Slide jackshaft into position. Thread hook pin into jackshaft. Insert and spread cotter pin.



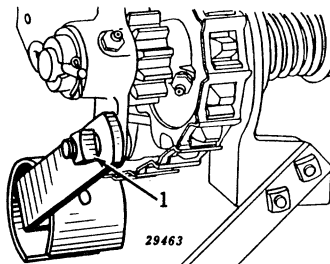
CLUTCH THROW-OUT



1. Bolt strap to throw-out cam using the top optional hole.
2. Attach throw-out arm to pressure shaft in line with fertilizer drive.
3. Remove adjusting block; thread rod through swivel bracket and hook into throw-out strap. Slide adjusting block on rod and adjust so there is 1/8-inch between inner teeth when openers are in raised position. Tighten set screw.

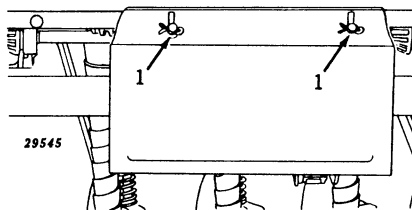
CHAIN TIGHTENER

1. Attach chain tightener to fertilizer drive hanger with tightener below chain. **Be sure shakeproof washer is between tightener and hanger.**



FERTILIZER DRIVE COVER

1. Attach fertilizer drive gear shields to fertilizer box. *Note: The smaller shield attaches above the right-hand drive and the larger shield above the left-hand drive.* With cotter pins removed from drilled pins, attach covers to bracket with head of pin down. **Be sure one washer is between spring and cover.** Insert and spread cotter pins.



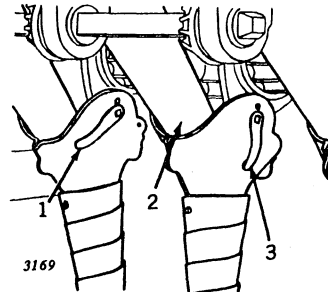
TUBES

It is not necessary to change the tube tops furnished with drills stencilled “5411,” because these tops will accommodate the fertilizer spouts. In these cases, the instructions under “Attaching SA991M Tube Tops” will not apply. Insert ends of fertilizer spouts in tube tops and attach tube tops to feeds with cotter pins. Spread cotter pins.

ATTACHING SA991M TUBE TOPS:

1. Move lock lever to rear on tube tops.

NOTE: For grain drills with drilled feed cups that use cotter pins it will be necessary to remove the lock lever and drill out the rivet. It is recommended that a small plain washer be slid on cotter pin near to the head to prevent the cotter pin pulling through. Spread cotter pin.



2. Insert ends of fertilizer spouts in tube tops and attach tube tops to feed cups.
3. Return lock lever to locked position.

FINAL CHECK

After attachment has been completely installed, make the following inspections:

1. Check all nuts to see if they are tight.
2. Adjust feeds for setting desired.
3. Check all cotters to see if they are spread.
4. Check spouts, tubes, clamps, and conveyors for correct installation.
5. Check shed plate latches, shed plates, feed gates and feed wheels to see that they are in proper place or setting.
6. Lubricate attachment.

MEMORANDA

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



Farm Accidents Can Be Prevented *with Your Help*

NO accident prevention program can be successful without the whole-hearted cooperation of the person who is directly responsible for the operation of equipment.

To read accident reports from all over the Country is to be convinced that a large number of accidents can be prevented only by the operator anticipating the result before the accident is caused and doing something about it. No power-driven equipment, whether it be transportation or processing, whether it be on the highway, in the harvest field, or in the industrial plant, can be safer than the man who is at the controls. If farm accidents are to be prevented—and they can be prevented—it will be done by the operators who accept a full measure of their responsibility.

It is true that the designer, the manufacturer, the safety engineer can help; and they will help, but their combined efforts can be wiped out by a single careless act of the operator.

It is said that "*the best kind of a safety device is a careful operator.*" We ask you to be that kind of an operator.

NATIONAL SAFETY COUNCIL

