

F610A, F610AH, F620A AND F620AH DRAWN MOLDBOARD PLOWS



JOHN DEERE

OPERATORS MANUAL F610A, F610AH, F620A AND F620AH DRAWN MOLDBOARD PLOWS

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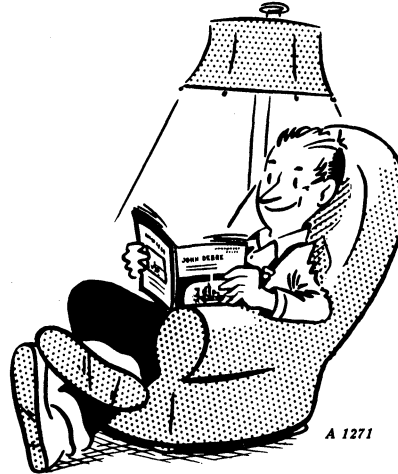
YOUR NEW PLOW

Behind your new plow is an organization that has specialized in designing and building plows for over 125 years. This plow was built in the world's largest plow factory by experienced men, many who have worked in this large plant for from 10 to 45 years. Their experience assures the utmost in design, high-grade workmanship, and thorough inspection, so essential to the production of good plows.

High quality materials, precision production methods, and accurately controlled heat-treating assure maximum strength and long life for every part.

This manual has been carefully prepared and illustrated, so that you may make the necessary adjustments for adapting your plow to work properly in practically all types of soil and field conditions. These adjustments, such as proper hitching and adjusting for width and depth of cut, are fully covered in this manual.

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



Occasionally your plow may need new parts, or require service not covered in this manual. If so, we suggest that you take advantage of the facilities offered by your John Deere dealer, which assure you of genuine JOHN DEERE Parts and prompt "know-how" service in the field or shop.

If you will furnish your dealer with the information which should be recorded at the bottom of this page, when the plow is delivered, he can give you prompt and efficient service.

JOHN DEERE ☐ F610A ☐ F610AH
☐ F620A ☐ F620AH

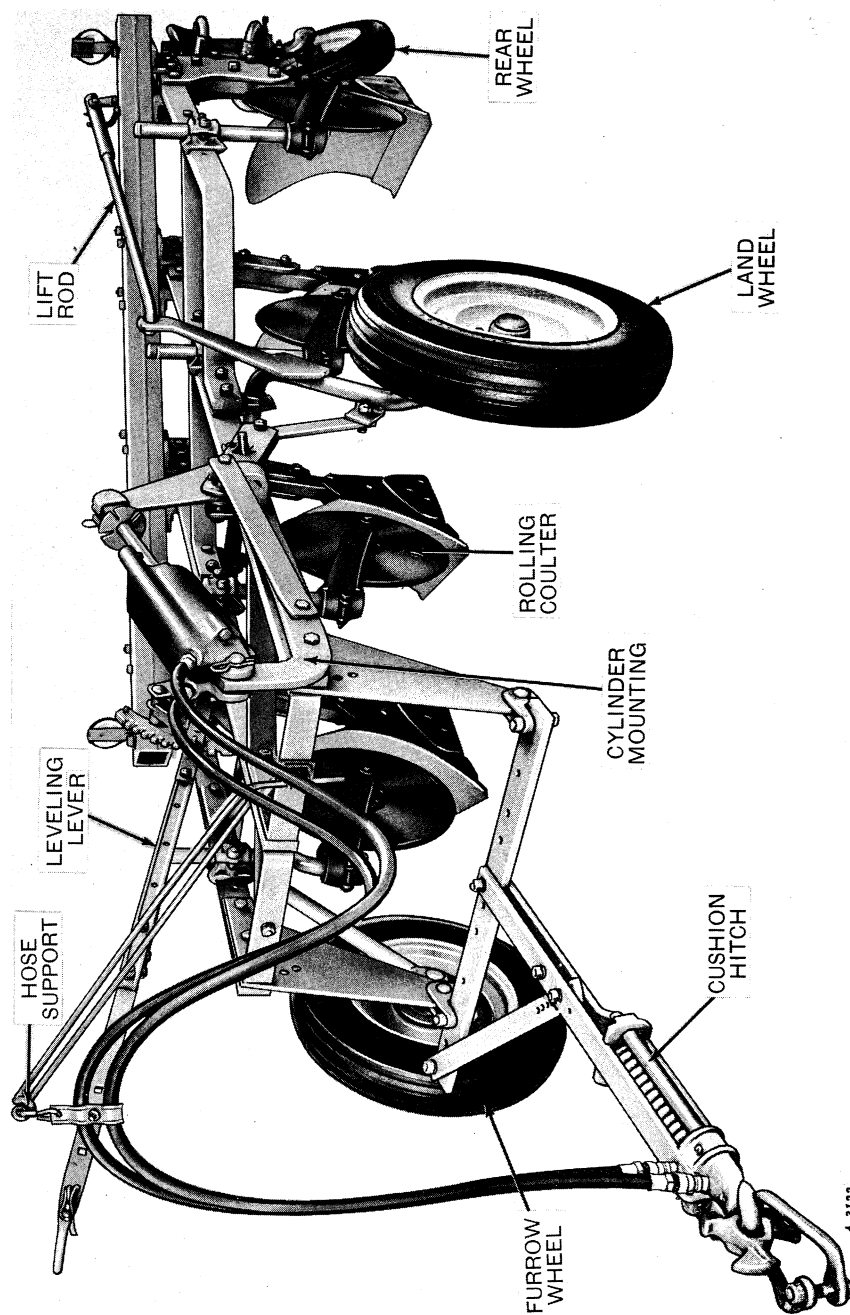
THREE- AND FOUR-BOTTOM MOLDBOARD PLOWS

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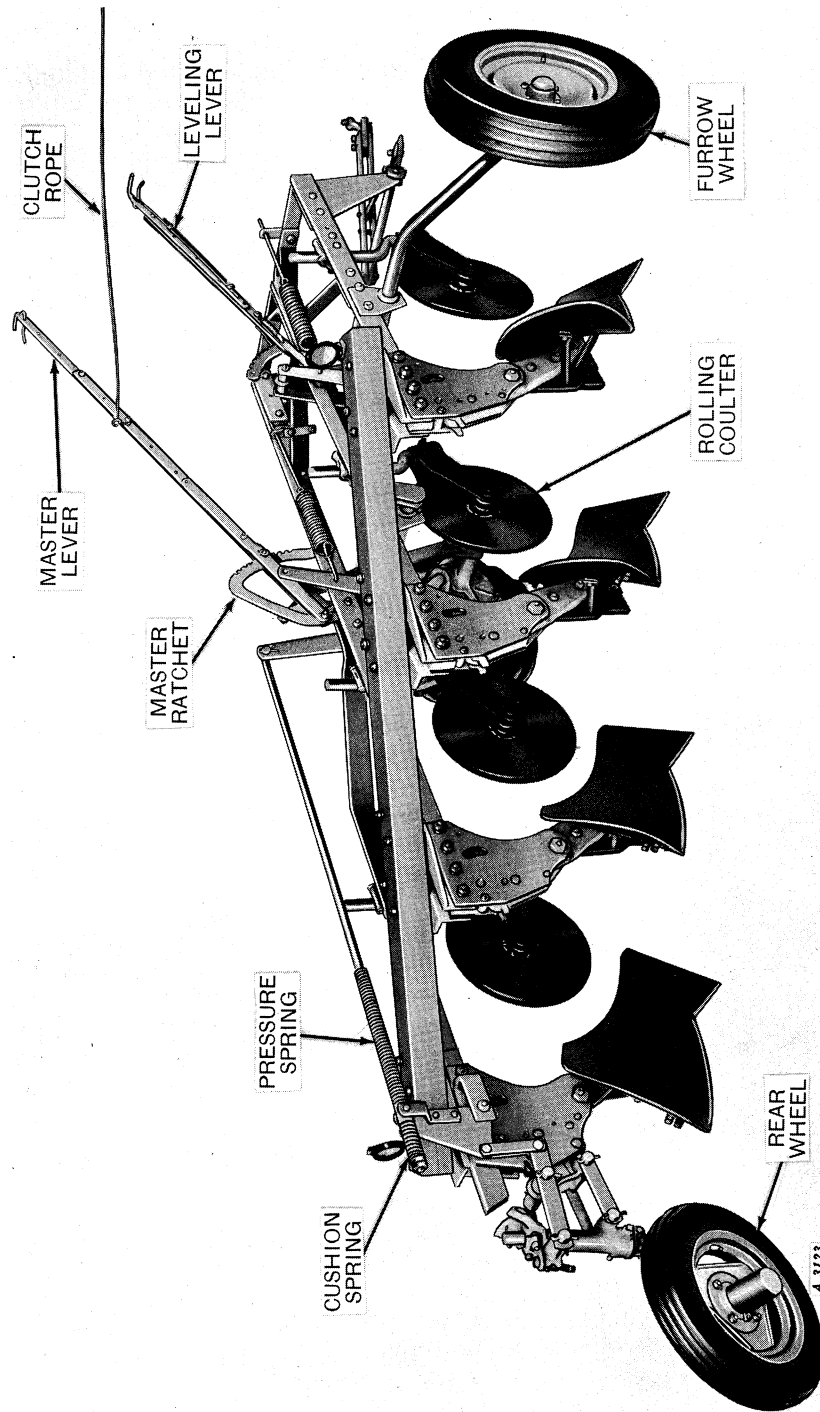
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A 3122

John Deere F610AH Four-Bottom Drawn Moldboard Plow



John Deere F620A Four-Bottom Drawn Moldboard Plow with Twelve-Inch Rear Wheel (Special Equipment)

SPECIFICATIONS

TYPES	F610A Clutch-Lift and F610AH Hydraulic-Lift, Stiff Standard, Three- and Four-Bottom, 14- and 16-Inch Frames. F620A Clutch-Lift and F620AH Hydraulic-Lift, Safety-Trip Standard, Three- and Four-Bottom, 14- and 16-Inch Frames.
DEPTH RANGE.....	Up to 10 inches, depending on type and size of bottoms and ground conditions.
BOTTOMS	Various types available as ordered.
LANDSIDES	Bottoms with short landsides (No. 4 for conventional bottoms and No. 9 for high-speed bottoms).
WHEELS:	
Furrow.....	Equipped with anti-friction bearing. Regular less tire. Special with 5.90-15 tire. Special wheel less tire, 14-inch.
Land, F610A and F620A..	Equipped with chilled-sleeve bearing. Regular less tire.
F610AH and F620AH..	Equipped with anti-friction bearing. Regular less tire. Special with 5.90-15 tire. Special wheel less tire, 14-inch.
Rear	Equipped with anti-friction bearing, for but less 5.90-15 tire, regular; with tire, special. 14-inch wheel less tire, special. Equipped with chilled-sleeve bearing, with or less 4.00-12 tire or steel wheel, special.
HITCHES:	
F610A and F610AH.....	Cushion Spring Release.
F620A and F620AH.....	Plain.
LIFT.....	Enclosed-type clutch for the F610A and F620A Plows. Remote hydraulic cylinder for the F610AH and F620AH Plows.
LEVERS	Adjustable for length.

COULTERS	17-inch plain, regular. 17-inch rippled-edge, optional. 17-inch cushion coulters, plain or rippled-edge, chilled-cone bearing, for round shank; optional. 18-inch plain, optional. Round shank, regular. Flat shank, optional. Chilled-cone bearing, regular. Anti-friction bearing, optional.
JOINTERS	Independent cast or steel available as special equipment.
LANDING LEVER	Special Equipment.
WEED HOOKS.	Special Equipment.
ROOT CUTTERS.	Special Equipment.
MOLDBOARD EXTENSIONS	Two types - For conventional bottoms or HS400 Series high-speed bottoms.
MOLDBOARD PAD	Special Equipment for HS400 Series high-speed bottoms only.
TRASH BOARDS.	Special Equipment for high-speed bottoms, high-speed slat bottoms, and SDT546FC semi-deep-tillage bottoms.
SHARE-FROG BRACE.	To attach 16-inch high-speed shares to 14-inch high-speed bottoms.

(Specifications and design subject to change without notice.)

NOTE: When the term "right" or "left" is used, it means from a position behind the plow and facing the front.

OPERATION

IMPORTANCE OF PROPER ADJUSTMENT

Your new plow is fully adjustable and, when properly adjusted to operate in the type of soil and field conditions on your farm, it will do a good job of plowing at a minimum of expense. A well-adjusted plow pulls lighter; its furrow slices are uniform in width and depth; it covers trash; it leaves the soil in proper condition to be worked down into the best type seedbed.

Improper adjustment results in rapid wear and possible breakage of parts, and inefficient operation.

PREPARING THE PLOW

PLOW BOTTOMS

The polished surfaces of the plow bottoms have been painted with protective black paint.

In most cases it is not necessary to remove the black paint because it will wear off quickly upon contact with the soil. In those soils where the black paint will not wear off, remove it with gasoline, kerosene, or diesel fuel.



Be careful when using any of these fuels so they do not ignite. Plow should be in a well-ventilated area and away from any sparks or flames.

If the plow is not to be used immediately, protect the polished surfaces by applying a coat of cup or gun grease. If plow is to be stored for a considerable length of time, see pages 28 through 30.

BOLTS AND SET SCREWS

Before starting to work with a new plow or one which has been stored, check to see that all bolts and set screws are tight and that all cotter pins are spread to keep them from falling out. Check the bolts that hold the plow bottoms to see that they are drawn up tight.

TIRE INFLATION

Check plow tires to be sure they are inflated properly, as shown below:

Recommended Implement Tires	Inflation Pressure
4.00-12-4 ply	36 psi.
5.90-15-4 ply	28 psi.
7.60-15-4 ply	24 psi.

LUBRICATION

Be sure plow has been properly lubricated. See Lubrication Chart on page 31.

PREPARING AND ADJUSTING TRACTOR

For complete tractor operating instructions, refer to your tractor operator's manual.

TIRE INFLATION

Inflate the tractor tires as recommended in the tractor operator's manual. For plowing, best results are generally obtained by taking one weight from the furrow wheel and adding it to the land wheel. Tilting of the tractor places more weight than normal on the furrow wheel. Addition of weight to the land wheel provides more uniform weight distribution over the rear wheels.

ROCKSHAFT SELECTOR LEVER

On John Deere Tractors equipped with a 3-point hitch and Load-and-Depth Control, set the selector lever in the "D" position. Keep the selector lever in this position while operating.

TRACTOR DRAWBAR

On wheel-type tractors set the tractor drawbar in the **short high position** and, except where off-hitching is required, bolt it exactly in the center of the tractor, midway between rear wheels.

Attach the clevis direct to the drawbar and not to the hammer-strap.

On crawler tractors that work with both tracks on the land, the tractor drawbar should ordinarily be free to swing.

REAR WHEEL SETTING

Tractor rear wheel settings are determined by the location of the center line of draft in the plow. Therefore, it is necessary first to read "Hitching Plow to Tractor" on

the following pages. Then adjust the wheels as explained on page 9.

FRONT WHEEL SETTING

On wide-front-end tractors set front wheels to conform to rear wheel setting, center-to-center of tread.

REAR WHEEL WEIGHTING

Rear wheel weights may be necessary to eliminate excessive wheel slippage or for stability in rough or hillside fields. However, weights should not be added to the point where all slippage is eliminated. To do so would hinder maximum performance of the tractor.

The ideal amount of added weight can be determined by observing the tracks of the rear wheels. When the tractor is pulling its rated load, the soil between the tire lugs should be broken or shifted. If too much weight has been added, the tread marks will be clear and distinct. If too little weight has been added, the tread marks will be entirely obliterated.

Liquid Weights

Water and calcium chloride solution is an economical means of adding weight to rear wheels. Calcium chloride is recommended rather than water as it will not freeze. See your tractor operator's manual or your John Deere dealer.

Cast-Iron Weights

Where weight in addition to or in place of liquid weight is required, cast-iron weights can be bolted to the rear wheels. This type of weight can be secured from your John Deere dealer.

For maximum ballast, refer to your tractor operator's manual.

HITCHING PLOW TO TRACTOR

The ideal hitch is a straight line from the center point of pull on the tractor to the center point of resistance on the plow, both horizontally and vertically.

The center point of pull on the tractor is located approximately 3 inches ahead of the rear axle housing and midway between the rear wheels.

To find the center point of resistance on the plow, first find the center line of draft as explained below.

CENTER LINE OF DRAFT

The center line of draft is simply an imaginary line drawn from the point of pull on the tractor to the point of resistance on the plow.

The center line of draft of the plow can be located by using the following rule:

Rule: The center line of draft of a moldboard plow is located at a point one-fourth of the cutting width of one bottom measured to the left of the center of total cut of the plow. (This rule applies to all plows whether one-, two-, three-, four-, or five-bottom.)

Example: Finding center line of draft of a three-bottom 14-inch plow: Total cut of plow=42 inches.

Center of cut or one-half of 42 inches=21 inches.

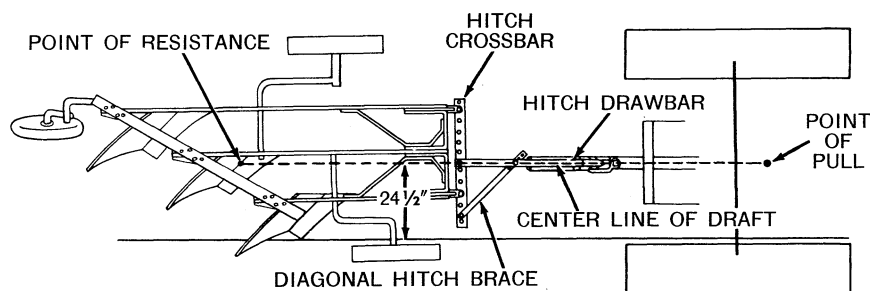
One-fourth the cutting width of one-bottom=3-1/2 inches

3-1/2 inches added to center of cut, which is 21 inches=24-1/2 inches.

Therefore, the center line of draft of a three-bottom 14-inch plow is 24-1/2 inches measured to the left and at right angles from the furrow wall. See illustration below.

CENTER POINT OF RESISTANCE

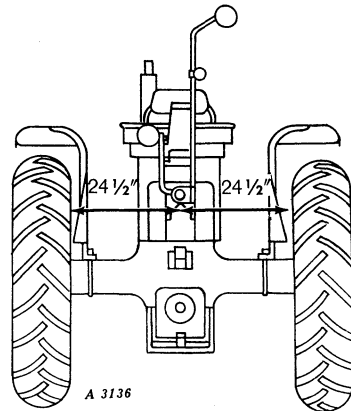
The center point of resistance on a plow is located on the bottom intersected by the line of draft, at a point approximately one-half of the plowing depth from the bottom of the furrow. When plowing 6 inches deep, the point of resistance will be 3 inches up from the furrow bottom, or approximately at the junction of the share and moldboard. If plowing deeper than 6 inches, this point will be located farther up on the moldboard. If plowing shallower than 6 inches, the point of resistance will be farther down on the share.



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Horizontal Hitch Adjustments on Three-Bottom, 14-Inch Plows

ADJUSTING TRACTOR WHEEL TREAD



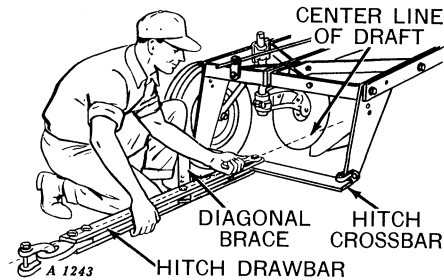
After the center line of draft and point of resistance of the plow have been located, set the tractor wheels (on adjustable tread tractors) to the proper position so the pulling force will be on a straight line from the point of pull on the tractor back through to the point of resistance on the plow. Since, in the example on page 8, the point of resistance is 24-1/2 inches from the furrow wall, set the tractor wheels so the center of the drawbar is 24-1/2 inches from the inside of each tire.

When plowing on steep hillsides, it is sometimes necessary, with adjustable tread tractors, to use a wider wheel spacing than recommended for stability reasons. Where a wider wheel spacing is necessary, always set the left rear tractor wheel at the recommended position and **move the right rear wheel out**. This will result in more nearly equalizing the weight on the two rear wheels of the tractor when plowing. Then center the tractor drawbar between the rear wheels.

HORIZONTAL HITCH ADJUSTMENTS

Adjust the plow hitch so it will be on the exact line of draft from the

center point of pull on the tractor to the center point of resistance on the plow. A series of holes in the hitch crossbar allow the hitch to be bolted on the center line of draft. See illustration below and on page 8.



Adjust the diagonal brace on the hitch so the plow hitch is parallel to the furrow wall. After the plow is in the field, further adjustment of the diagonal brace may be necessary to get the correct cut on the front bottom.

After the tractor wheels and plow hitch have been set correctly, attach the plow hitch to the tractor drawbar.

Off-Hitching

In some cases, such as with fixed-tread tractors, it is impossible to set the tractor wheels so the drawbar will fall on the center line of draft. In such cases, it is necessary to off-hitch the plow and to move the drawbar of the tractor away from the center point of pull to permit the plow hitch to be parallel to the furrow wall.

For example, when using a four-bottom 16-inch plow with a standard tractor with a wheel spacing of 54 inches inside-to-inside of tires, the plow must be off-hitched 9 inches. The center line of draft of the plow is 36 inches from the furrow wall while the distance from the inside of the tire to the center of the tractor drawbar is only 27 inches. The 9 inches difference should be taken

10 Operation

about one-half on the plow and one-half on the tractor. Therefore, move the plow hitch drawbar 5 inches to the right of the line of draft and the tractor drawbar 4 inches to the left of the center of the tractor. Both the tractor drawbar and the plow hitch will then be 31 inches from the furrow wall. The plow hitch will now run straight and be parallel to the furrow wall.

Hitching Chart

Following are examples of correct measurements for hitching a plow and tractor combination. We suggest that you work out the measurements listed below for any plow and tractor combination, using the instructions on pages 8 and 9, and then apply these same instructions

to your plow and tractor combination.

HITCHING CRAWLER TRACTORS

When using a crawler tractor with these plows, run both tracks on the land and allow the tractor drawbar to swing free.

The plow hitch must be adjusted to conform to the position of the center of the tractor drawbar. To find this position, measure the distance from the outside of the right-hand track to the center of the tractor and add 3 or 4 inches to permit driving far enough from the furrow wall to prevent breaking it down. Then set the plow hitch on the hitch crossbar the same distance in from the furrow wall.

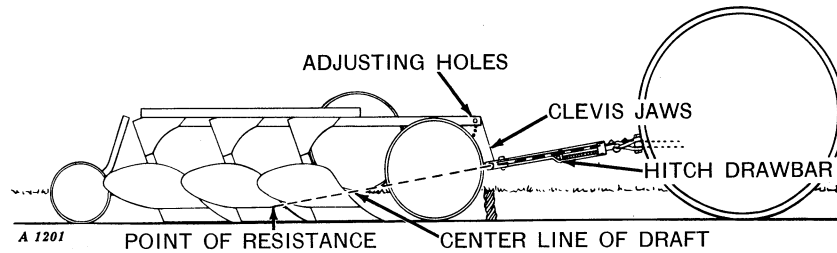
PLOW HITCHING CHART

Number of Bottoms	Size of Bottoms	Tractor Wheel Setting Inside-to-Inside of Tires	Line of Draft from Furrow Wall	Tractor Drawbar Position	Plow Hitch to Furrow Wall
3	14"	49"	24-1/2"	Center	24-1/2"
3	16"	56"	28"	Center	28"
4	14"	63"	31-1/2"	Center	31-1/2"
4	16"	*72"	36"	Center	36"

**Some tractor models do not have sufficient wheel tread adjustment to permit perfect line-of-draft hitching, especially standard tread tractors. See section on "Off-hitching." Dividing the off-hitching between the tractor and the plow obtains the best performance of each.*

To prevent side draft of tricycle-type tractors, off-hitching on the tractor should be kept to a minimum, taking most on the plow.

VERTICAL HITCH ADJUSTMENTS



Adjust the clevis jaws on the plow so the plow hitch will fall on a straight line from the tractor drawbar to center point of resistance on the plow. Four holes are provided in each clevis jaw for this adjustment.

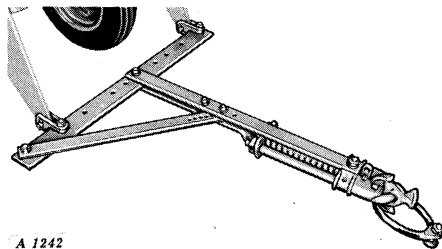
If the clevis jaws are adjusted too high for the depth of plowing, the tractor will pull down on the front end of the plow. The bottoms will bounce along on the points of the share, resulting in heavy draft, uneven penetration, excessive wear on shares and wheel boxes in land and furrow wheels, and a poor job of

plowing. If the rear wheel attempts to run up the furrow wall, it is a good indication the clevis jaws are set too high and you are pulling down on the front end of the plow.

If the clevis jaws are adjusted too low for the depth of plowing, the tractor will pull up on the front end of the plow. The bottoms will penetrate very slowly, resulting in excessive weight on rear wheel of the plow and a wavy furrow bottom. On a clutch lift plow, the land wheel may slide before the plow can be lifted out of the ground.

TYPES OF HITCHES

CUSHION SPRING RELEASE HITCH



The cushion spring release hitch on the F610A and F610AH Plows permits the plow to be pulled on a cushion at all times. This is accomplished by pulling through the U-bolt which compresses the springs. When an obstruction is encountered, the springs are com-

pressed to a greater degree, permitting the revolving hook to make a one-third turn, releasing the plow from the tractor. As the load is released the revolving hook snaps back to position, ready for rehitching.

Rehitching is accomplished by raising the hitch, backing the tractor into position, and engaging the revolving hook with the hitch link.

Adjust the cushion spring release hitch with proper tension on the springs to meet with draft requirements of the soil condition in which the plow is being operated.

To adjust the hitch, first loosen the two nuts on end of springs until the hitch will release as the result of the draft of the soil. Then tighten the two nuts equally one-half turn

12 Operation

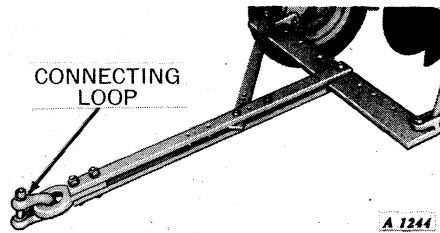
CUSHION SPRING RELEASE HITCH—Continued

each until the hitch will not release as the result of the draft of the soil. When the hitch is adjusted in this manner, it will always be free to trip when an obstruction is encountered.

CAUTION: Never draw up the nuts on the springs to the point where too much tension is created as this will prevent the release mechanism from operating.

The hitch requires no service other than occasional lubrication of the revolving hook and hitch trigger.

PLAIN HITCH



Plain Hitch with Connecting Loop

The F620A and F620AH Plows are furnished with plain hitches only, because safety-trip standards eliminate the need for release-type hitches.

The hitch shown above may be used without the connecting loop on tractors with a forked drawbar or with the connecting loop on tractors with a straight drawbar.

MECHANICAL CONTROL

The F610A and F620A Plows are raised and lowered by the enclosed clutch which is controlled by a trip rope.

Pull the trip rope to raise or lower the plow.

To lift the plow bottoms out of the ground for turning at the end of a furrow or for transporting, simply give the trip rope a quick positive pull. To lower the plow, pull the rope in the same manner. *NOTE: Do not use a slow steady pull since it will cause the clutch to continue tripping.*

See page 30 for enclosed clutch maintenance instructions.

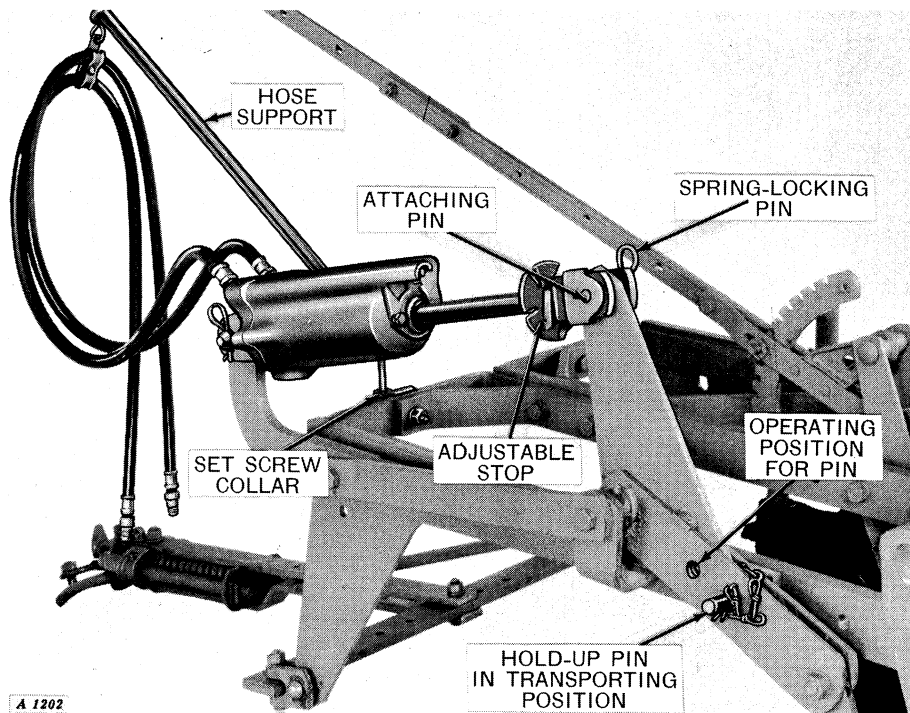
HYDRAULIC CONTROL

On the F610AH and F620AH Plows, the remote hydraulic cylinder raises and lowers the plow and controls the depth of plowing.

These plows can be equipped for hydraulic operation with the John Deere hydraulic system or the hydraulic system of any tractor having sufficient capacity and utilizing a remote cylinder that conforms to ASAE-SAE standards.

Your John Deere remote hydraulic cylinder is equipped with an adjustable piston stop, so the working stroke may be adjusted to control the working depth of the plow. The stroke may be varied from 8-inch maximum to 0-inch minimum. *NOTE: For complete operating and adjusting instructions for remote cylinder, refer to your tractor operator's manual.*

When transporting, raise the plow bottoms to highest position by use of the remote cylinder and insert hold-up pin in transport position as shown on next page.



A 1202

Remote Hydraulic Cylinder

CONNECTING HOSES AND INSTALLING CYLINDER

Before connecting hoses to tractor, relieve pressure in the tractor hydraulic system. To relieve pressure, stop tractor engine and move remote cylinder operating lever back and forth several times.

Wipe hose ends to remove any dirt before inserting them in breakaway couplers.

If the cylinder has not been used before, it may be necessary to bleed the cylinder as explained in the tractor operator's manual.

The hoses may be attached to either side of the coupler to suit the operator. *Be sure to relock coupler.*

With all trapped air removed from cylinder and with hold-up pin in transport position, install cylinder on plow. Then move pin to operating position.

On the F610AH Plow attach hose to hose support, using S-hook and clamps provided.

Adjust the set screw collar on the hose support so the rod will not interfere with either the plow or tractor when turning.

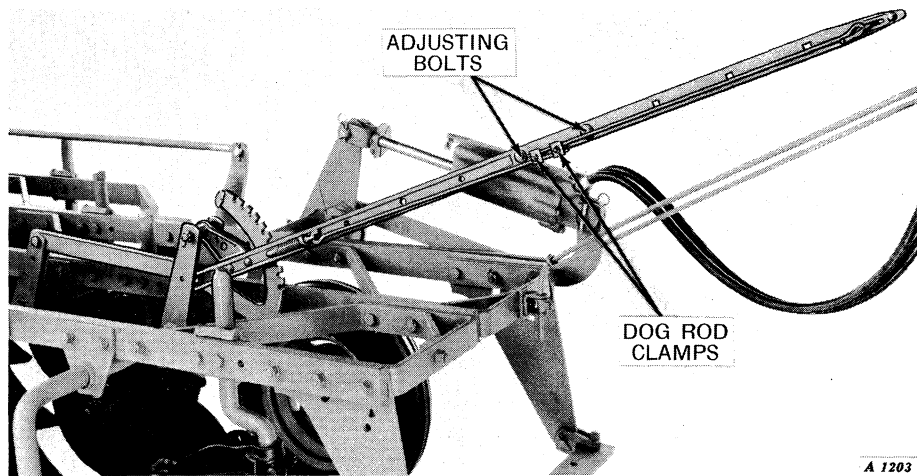
On the F620AH Plow, simply insert hoses through hose support.

REMOVING CYLINDER

Place the plow in the lifted or transport position. Remove hold-up pin from operating position and place in transport position. Release load on the cylinder and remove spring locking pins. The plow will be held in the lifted position and can be transported without replacing the cylinder.

NOTE: It is not necessary to remove cylinder when transporting. However, always place hold-up pin in transporting position to take the load off the hydraulic system.

LEVELING



A 1203

Leveling Lever

The leveling lever on these plows is used for leveling the plow bottoms when in working position. The lever regulates the depth of the front bottom in relation to the rear.

Once the plow is leveled, plowing depth may be changed without affecting leveling except in cases where extreme changes in the depth of plowing are made. Then a slight adjustment in leveling may be necessary.

A series of holes in the leveling lever sections allow the length of the

lever to be adjusted to within easy reach of the operator. To adjust, remove bolts and slide upper end of lever to desired length. Reinstall bolts and tighten securely. Also, adjust dog rod by loosening clamps and sliding to desired length. Tighten clamps securely.



CAUTION: Do not adjust the lever so it is too long. If lever is too long, it may interfere with the operator or damage the tractor when crossing deep furrows or ditches.

Be Careful



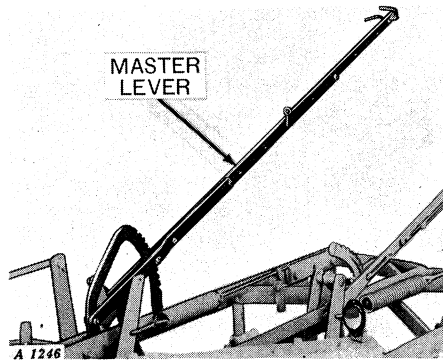
THE LIFE YOU SAVE MAY BE YOUR OWN...

NATIONAL SAFETY COUNCIL

DEPTH OF PLOWING

Depth can be set from approximately 3 to 10 inches. There will be some variation in these figures, depending on type and size of bottoms and ground conditions.

CLUTCH-LIFT PLOWS

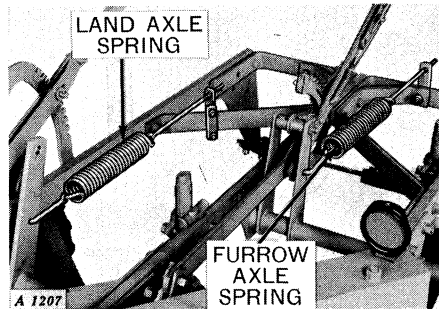


On the clutch-lift plows, the master lever controls the working depth of the bottoms.

HYDRAULIC-LIFT PLOWS

On the hydraulic-lift plows, the depth of plowing is controlled by the remote hydraulic cylinder. See your tractor operator's manual for operation of the remote hydraulic cylinder.

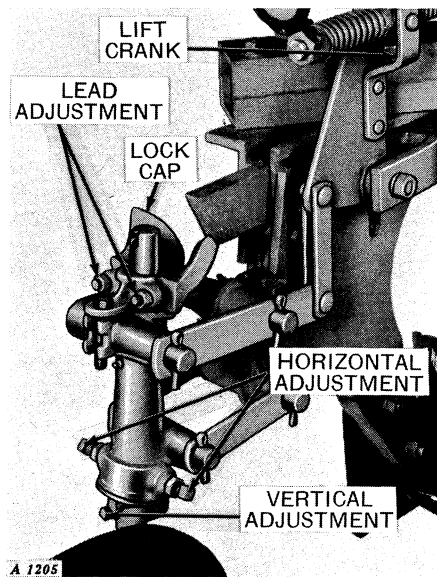
LIFTING SPRINGS



The lifting springs on the clutch-lift plows must be adjusted carefully.

On the land axle spring, draw up nut about halfway on the threaded rod. Too much tension of the spring will prevent plow from penetrating quickly when the clutch is tripped. Not enough tension on the spring may cause the land wheel to slide before the clutch lifts the plow.

On the furrow axle spring, draw nut all the way up on threaded rod.

REAR AXLE, WHEEL, AND LIFT ROD

Set the rear wheel so there is approximately 1/4-inch clearance between the heel of the landside and bottom of the furrow and also 1/4-inch clearance between landside and furrow wall. The weight of the rear of the plow should be carried by the rear wheel.

To move rear wheel up or down, loosen set screws, lock nuts, and bolts in rear axle lock cap. Then loosen clamp collar and adjust to desired setting. Tighten lock nuts, bolts, and set screws after adjustment is made.

If the landside is forced against the furrow wall excessive wear on the landside and additional draft on the plow will result.

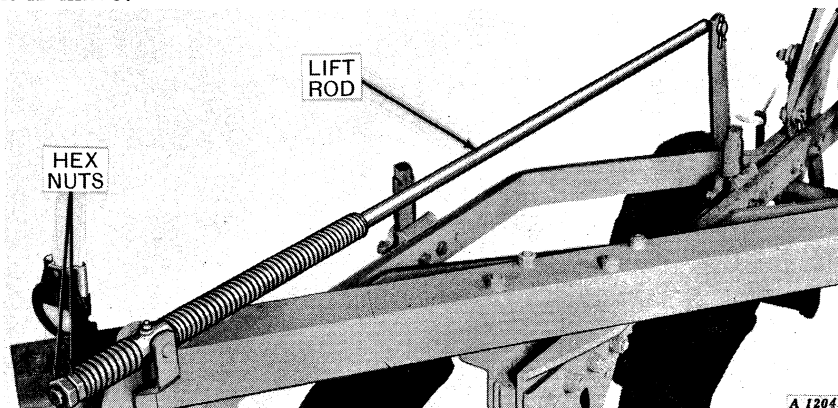
To adjust wheel away from the furrow wall, loosen lock nuts and right-hand set screw and tighten left-hand set screw. Then tighten lock nuts. To adjust the rear wheel toward the furrow wall, loosen nuts and left-hand set screw and tighten right-hand set screw. Then tighten lock nuts.

The lead in the rear wheel should be slightly to the right or away from the furrow wall. To adjust the lead of the rear wheel toward the furrow wall, loosen the left-hand nut in lock cap, and tighten right-hand nut. To adjust lead of rear wheel away from the furrow wall, loosen right-hand nut, and tighten left-hand nut.

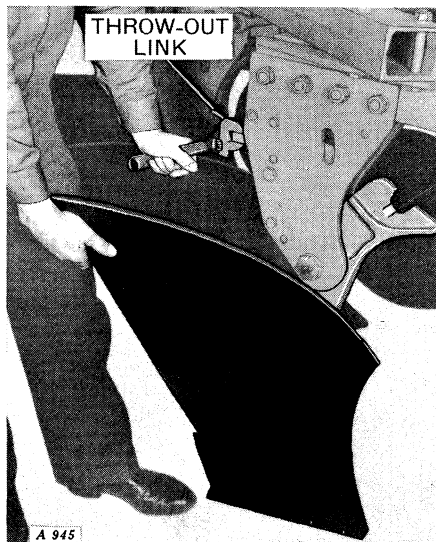
The rear wheel may be locked with a bolt or pin in lock cap so it will not pivot when transporting or backing the plow.

CAUTION: The pin must be removed before dropping the plow into working position.

To adjust the rear wheel in order to get more transport clearance draw up the two hexagon nuts on the rear of the lift rod.



SAFETY-TRIP STANDARDS



Tripping Throw-Out Link

The safety-trip standard prevents damage if the plow bottom strikes a solid obstruction.

The release mechanism of the safety-trip standard is factory set for proper tension.

To reset the safety-trip standard after a bottom has tripped, back the tractor without raising the plow until the standard snaps into locked position.

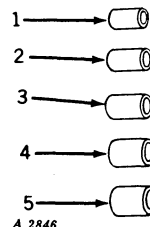
The release mechanism may be tripped to facilitate changing shares. To trip, first raise the plow and then hold down the throw-out link with an ordinary wrench, as shown in the illustration above, for standards other than the rear. On the rear standard there is not enough room to release standard with a wrench so a screw driver must be used.

ADJUSTING TRIPPING RESISTANCE

The safety-trip standard trips when pressure or a shock load on the plow bottom causes enough deflection of the spring link to allow the throw-out arms to strike the stop pin which forces the throw-out roller out of the slot at the top of the standard.

The resistance to tripping is preset at the factory for uniform tripping pressure and normally will not require change. However, if greater resistance to tripping is desired when plowing in unusually hard ground or in other adverse conditions, this may be accomplished by adding one or more tubular shims, one at a time, around the bolt at the bottom of the spring link. Each shim added will increase the tripping load by 600 pounds.

If you wish to reduce the tripping load, shims may be removed. Each shim removed will reduce the tripping load by 600 pounds.



Tubular Shims

NOTE: To work properly, the larger shims must be assembled over the smaller shims in the order shown in the illustration above.

SAFETY-TRIP STANDARDS—Continued

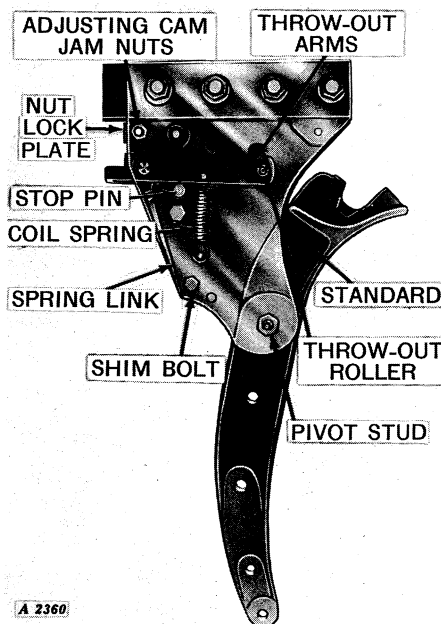
There are five different telescoping tubular shims available, each .060" thick. They are:

Key	Part No.	Specifications
1	31785 A	.505" x .060" x 1-7/16"
2	31786 A	.660" x .060" x 1-7/16"
3	31787 A	.820" x .060" x 1-7/16"
4	31788 A	1.005" x .060" x 1-7/16"
5	31789 A	1.190" x .060" x 1-7/16"

One or more of these shims may be installed or removed easily by following these steps:

1. Trip standard by hand.
2. Loosen adjusting cam jam nuts.
3. Rotate adjusting cam counter-clockwise with a screwdriver (when facing left side of plow) so spring link is free to pivot.
4. Remove shim bolt at lower end of spring link.
5. Add or remove shim or shims as required and replace bolt.
6. Reset adjusting cam by rotating it clockwise until it rests firmly against the top of the spring and tighten the jam nuts. Turn corners of lock plate up on flat of the nut after jam nuts are tightened.

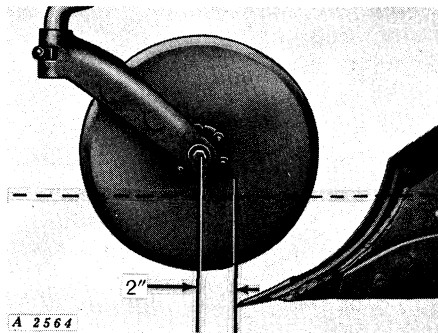
NOTE: If it becomes necessary to replace the standard in the safety-trip standard assembly, remove all shims and add only as needed to attain proper tripping load.



The coil spring has no effect on the tripping action of the standard. The adjusting cam serves only to hold the spring link firmly against shim bolt and to prevent backlash during tripping. The coil spring is used to insure proper seating of the throw-out roller in the slot on the top of the standard.

After any adjustment on a trip standard, be sure it is properly lubricated. See lubrication instructions, page 31.

ROLLING COULTERS



Rolling Coulter—Correct Setting for High-Speed Bottoms

The rolling coulter outlines the cut of the plow bottoms. It cuts through surface trash, aids in securing a clean furrow wall, and reduces the draft of the cutting edge of the plow bottom.

Always adjust the rear coulter first. Then set the other coulters exactly the same. Final adjustments must be made in the field to meet soil conditions and depth of plowing.

FORE-AND-AFT AND DEPTH ADJUSTMENTS

For average conditions, adjust coulter with center of the coulter hub approximately over the point of the share on conventional bottoms and approximately 2 inches ahead of point of share on high-speed bottoms, as shown in illustration above.

Adjust the coulter only deep enough to cut the trash, about 3 inches in ordinary conditions. See illustration above. Do not run the coulter too deep.

For hard ground conditions, move the coulter toward the rear of the plow to reduce its tendency to ride the plow out of the ground. It may be necessary to raise the coulter.

For lighter soils, especially where there is heavy or tough trash,

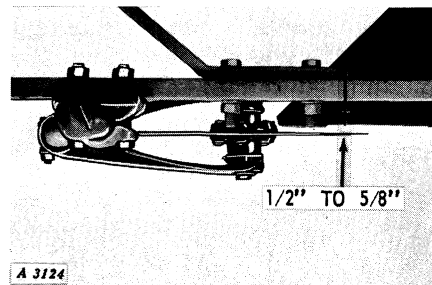
move the coulter toward the front. Set the coulter just deep enough to cut the trash. If set too deep, the coulter pushes the trash instead of cutting it.

For tough scouring conditions, move the coulter toward the rear of the plow and raise the coulter.

When plowing sod, set the coulter deep enough to cut the roots below the surface, usually about 1 inch shallower than the share is cutting.

To adjust round shank coulters, remove clamp bolts from frame, move the shank and clamp either forward or backward and insert bolts in extra holes in frame. To adjust flat shank coulters loosen the clamp bolts and slide the clamp and coulter forward or backward.

HORIZONTAL ADJUSTMENT

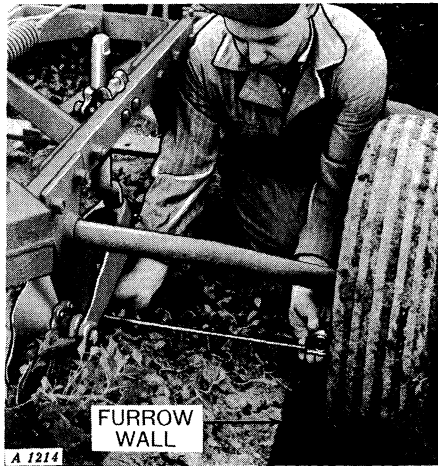


Overhead View of Rolling Coulter with High-Speed Bottom

The rolling coulter must be set only far enough to the left of the landside to leave a good straight furrow wall. For average conditions, set the coulter $1/2$ to $5/8$ inch to the left of the landside, as shown in illustration above.

Loose ground conditions will sometimes require the coulter to be set wider than $5/8$ inch.

After the rear coulter is adjusted correctly, set the front coulters exactly the same. Measure the dis-

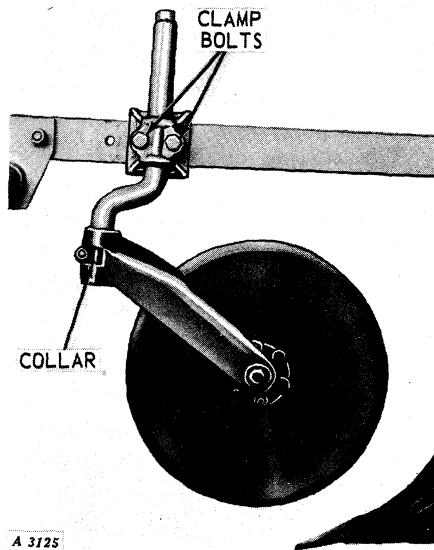


Measuring Cut of Bottom

tance between coulter so you get exactly the correct cut on each bottom. The distance between the coulters should be the same as plow frame size. If coulters setting is wider than plow frame size, a wider slice will be squeezed through, causing the plow to ridge and resulting in excessive wear on the plow bottom landside.

CHILLED-CONE BEARING COULTERS

Round Shank



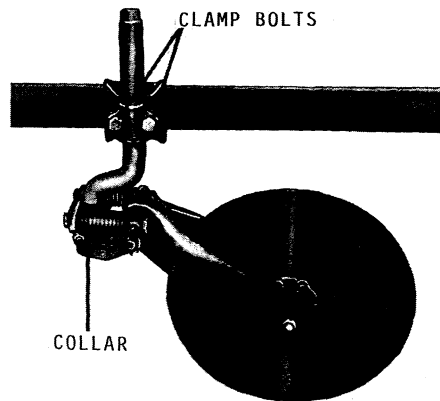
To adjust the coulter, loosen the clamp bolts and rotate the coulter shank until coulter blade is at proper position.

When a major adjustment of round shank coulter is made, it may be necessary to adjust the coulter shank collar so coulter is free to swing in the coulter yoke an equal distance on either side of the "straight ahead" position.

To adjust, loosen bolt in collar and rotate collar until open end of collar faces front of plow.

Be careful so coulter yoke and blade do not slip off shank.

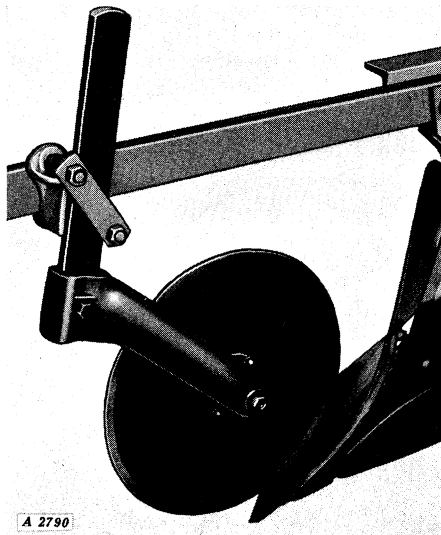
Cushion Coulter (Round Shank)



The cushion coulter protects the yoke, blade, and shank by means of two rows of cupped washers. There are 26 washers (13 sets) on each side. Each set of washers is mounted with their concave sides facing each other. The cupped washers hold the coulter in working position until striking an obstruction. Striking an obstruction deflects the washers, allowing the coulter blade to raise up approximately 4 inches to pass over the obstruction.

There is no pressure adjustment required.

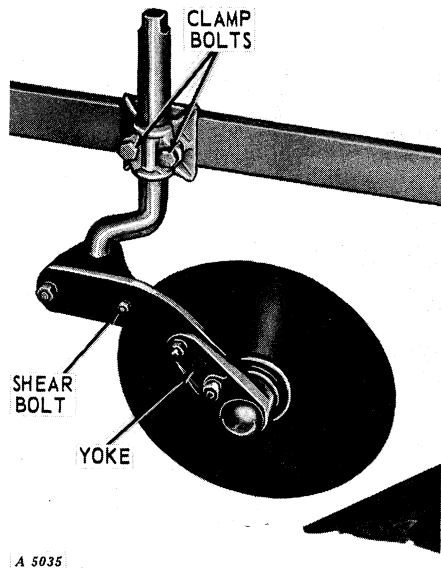
Flat Shank



To adjust flat shank coultter toward the furrow wall, loosen lower nut and tighten upper nut. To move coultter toward the plow bottom, loosen upper nut and tighten lower nut.

ANTI-FRICTION BEARING COULTERS

Round Shank



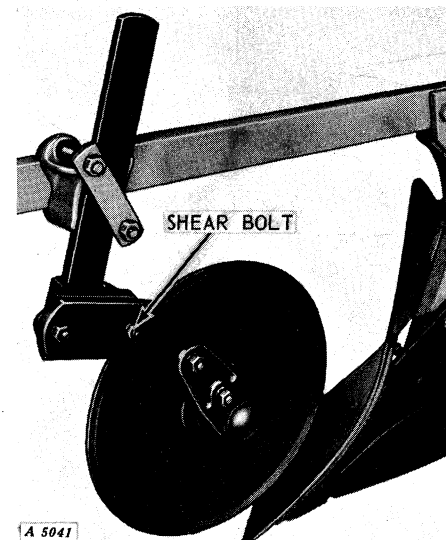
The adjustments for the anti-friction bearing coultter are the same as the chilled-cone bearing coultter except for the collar.

To adjust collar so coultter is free to swing an equal distance between the straight ahead position, loosen bolt in collar and rotate collar until open end of collar faces the right.

CAUTION: Be careful so coultter blade and yoke do not slip off shank.

The anti-friction bearing rolling coultter is equipped with a shear bolt to prevent possible serious damage to the coultter shank. For replacement of the shear bolt, use a 19H1899 cap screw.

Flat Shank



The adjustment for the anti-friction bearing coultter is the same as for the chilled-cone bearing coultter.

The anti-friction bearing rolling coultter is equipped with a shear bolt to prevent possible serious damage to the coultter shank. For replacement of the shear bolt, use a 19H1899 cap screw.

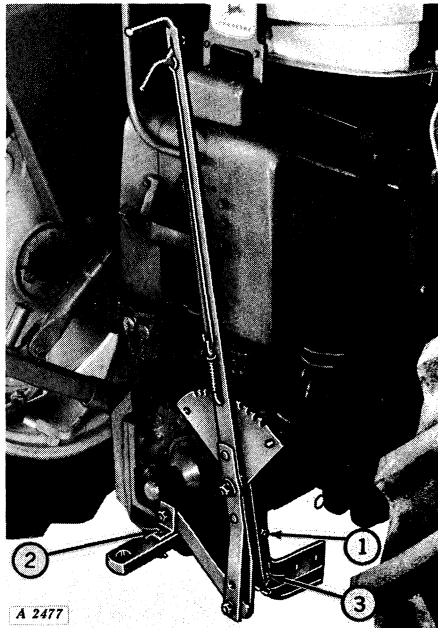
SPECIAL EQUIPMENT

LANDING LEVER

The landing lever attachment controls the width of cut of the front bottom when working on the contour or hillsides.

2510, 3010, 3020, 4010, and 4020 Tractors

These tractors must be equipped with dual remote cylinder outlets or used with a clutch-lift plow.



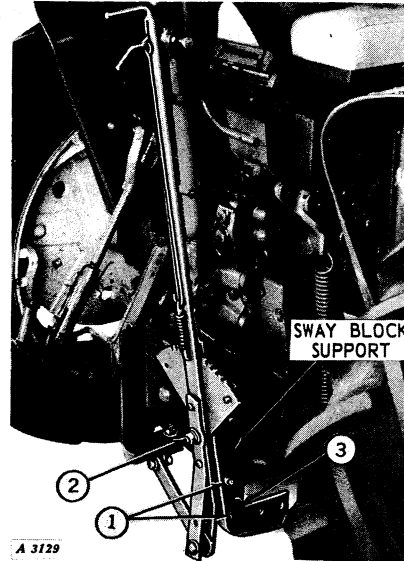
NOTE: Before attaching landing lever to tractor, the center link and right-hand draft link, lift link, and sway block must be removed from tractors equipped with a 3-point hitch.

1. Attach ratchet support angle to sway block support using the 1/2- x 1-3/4-inch cap screw in the bottom hole.

2. Attach drawbar clip to the top side of the drawbar with the vertical leg of the clip to the front. The drawbar must be in the short high position.

3. The lower end of the ratchet support angle can be trimmed off flush with the lower edge of the sway block support to overcome the possibility of collecting trash.

2010 and 2020 Tractors



Right-Hand Draft Link and Lift Link Removed to Show Detail

The 2020 Tractor must be equipped with dual remote cylinder outlets so the remote cylinder hoses may be connected to the left-hand breakaway couplers. This will prevent possible interference with the landing lever.

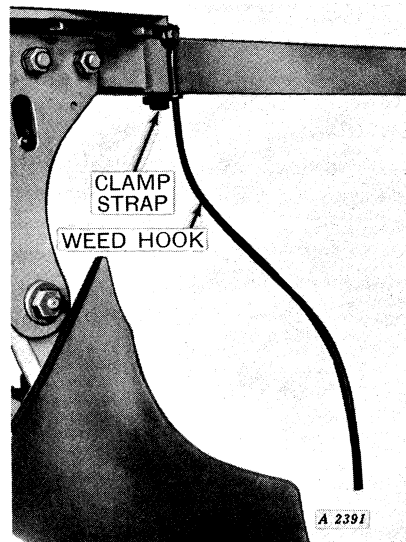
NOTE: Before attaching landing lever to tractor, the right-hand sway block must be removed from tractors equipped with a 3-point hitch. If the tractor is not equipped with a 3-point hitch the right-hand sway block support is required to attach the landing lever to the tractor.

1. Attach ratchet support angle to sway block support with two 1/2- x 1-3/4-inch cap screws supplied.

2. Attach drawbar clip to the underside of the drawbar with the vertical leg of the clip to the rear. The drawbar must be in the short high position.

3. The lower end of the ratchet support angle can be trimmed off flush with the lower edge of the sway block support to overcome the possibility of collecting trash.

WEED HOOK



When plowing in tall weeds and trash, better coverage may be obtained by using weed hooks. The weed hook holds the weeds and trash against the furrow slice as it is turned under.

Attach the weed hook to the plow frame immediately ahead of the plow bottoms with a strap and eyebolt as show in illustration above.

TRASH BOARD

Trashboards, for high-speed bottoms, high-speed slat bottoms, or the SDT546FC semi-deep-tillage bottoms, improve coverage of heavy straw, stubble, and stalks.

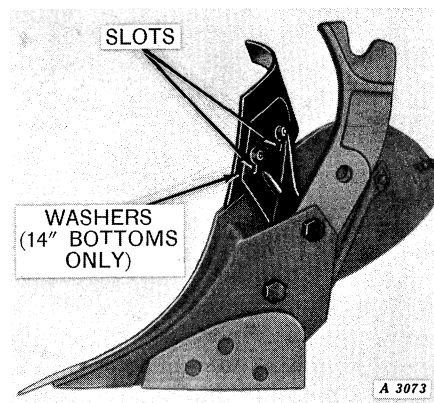
The trash board catches the trash being carried on the top of the furrow slice and turns it down into the furrow bottom to be covered completely by the furrow slice.

Slots in the trash board support bracket provide ample adjustment. For average conditions, set the trash board so it is flush with the top of the moldboard. The trash board will scour best in this position. For deep plowing, move the rear of the trash board up, making sure front point remains flush with moldboard.

Be sure point of trash board is down tight against the moldboard shin.

In this position, the trash board will turn trash quicker and will give lighter draft.

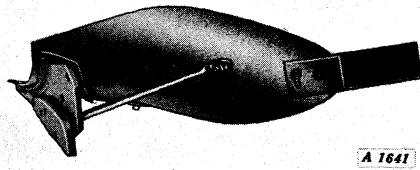
Flat washers are provided on front bolt for proper fit of trash board when used on 14-inch bottoms. Use the washers as needed on front bolt and place **between** trash board and trash board support bracket.



Attach the trash board as shown in the illustration above.

24 Operation

MOLDBOARD EXTENSION



Moldboard extensions for both high-speed (HS400 Series) and conventional-type bottoms are available.

The moldboard extension applies pressure to the furrow slice and prevents the furrow slice from rolling back into the furrow when plowing on hillsides.

The slot in the moldboard extension provides ample adjustment. For more pressure on the furrow slice, move the extension down. For less pressure on the furrow slice, move the extension up.

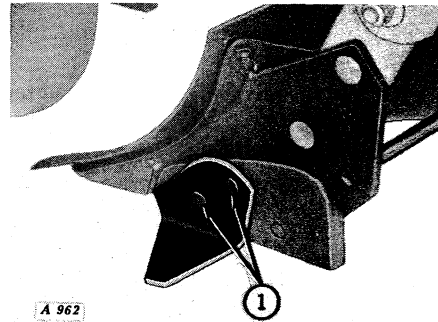
MOLDBOARD PAD



A moldboard pad, available as special equipment for high-speed plow bottoms, turns the furrow slice more abruptly when plowing on hillsides or at reduced speeds.

The pad should be used only where the soil scours easily. It is **not** recommended in difficult scouring conditions.

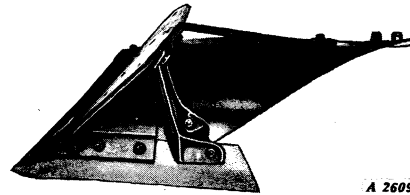
ROOT CUTTER



This cutter is available for attaching to the bottom for cutting alfalfa or similar roots.

1. Attach root cutter to bottom with same bolts that attach landside and frog to plow bottom standard. If root cutter is used with No. 9 cast landside, it will be necessary to use 1/2-inch longer bolts.

SHARE-FROG BRACE



In some tough scouring conditions, the use of 14-inch high-speed bottoms on 16-inch plow frames improves scouring due to the reduced moldboard area. The share-frog brace shown above permits the use of 16-inch shares on 14-inch high-speed bottoms.

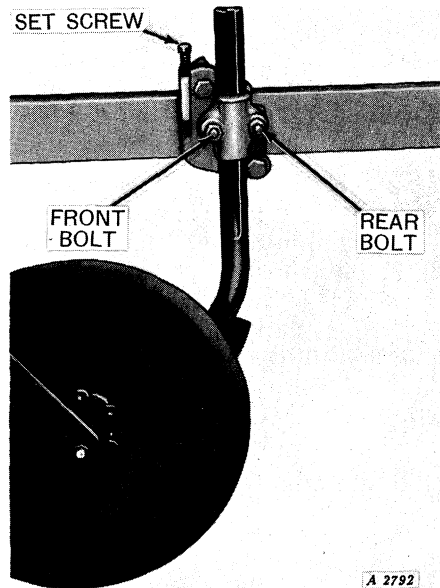
Attach the share-frog brace as shown in the illustration above.

INDEPENDENT JOINTERS

Jointers assist the plow bottom in turning under and covering trash. By cutting and turning a small corner of the furrow slice next to the coulter and depositing it in the bottom of the furrow, the jointer eliminates any trash or stalk ends from the furrows.

In average conditions, a jointer set to work about 2-1/2 inches deep will effectively turn the corner of the furrow slice enough to insure good coverage and eliminate excessive clogging. A jointer adjusted too shallow will clog easily.

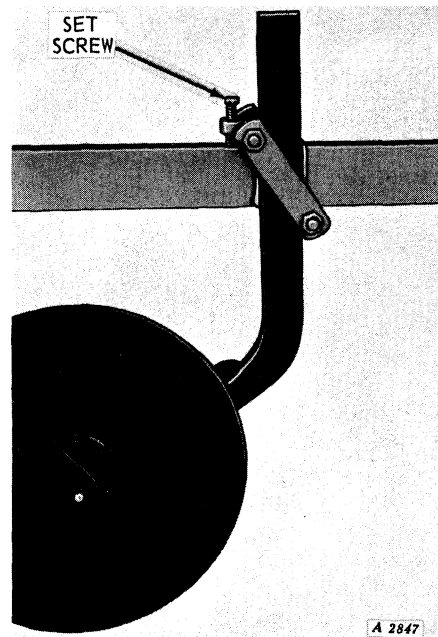
A properly adjusted jointer blade will just clear the coulter blade. If the jointer blade is adjusted too close to the coulter blade, it will cause undue wear on the coulter blade and will have a tendency to clog.

Round Shank

The jointer may be adjusted up

or down by loosening clamp and raising or lowering to desired depth.

To move jointer forward, turn set screw down in the jointer clamp; reverse operation to move it to the rear. To move the jointer toward the coulter, loosen front clamp bolt and tighten rear clamp bolt. To move the jointer blade away from the coulter blade, reverse the process.

Flat Shank

The jointer may be adjusted up or down by loosening clamp and raising or lowering to desired depth.

To move the jointer forward, turn set screw down in the jointer clamp; reverse operation to move it to the rear. To move the jointer toward the coulter, loosen bottom clamp bolt and tighten top clamp bolt. To move the jointer away from the coulter blade, reverse the process.

TRANSPORTING

To transport, raise the plow and lock in transport position by inserting hold-up pin through lower hole in bell crank. See page 13. Then lock the rear wheel in transport position as explained on page 16. *Be sure to remove both pins before plowing.*



CAUTION: When transporting the plow 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 from your John Deere dealer.

SAFETY RULES



To avoid injury, always be careful while operating a tractor and plow.

Do not grease, oil, or adjust the plow while it is in motion.

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

When transporting the plow on a public road, follow safety instructions outlined under "Transporting."

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

PROCEDURE FOR FIELD ADJUSTING PLOW

Before entering the field check the following points on the tractor and plow, making sure that both have been properly prepared according to instructions in this manual.

Set wheel tread as outlined on pages 9 and 10.

Check tires for proper air pressure and weighting as outlined on pages 6 and 7.

Set tractor drawbar in proper position as outlined on page 7.

Set rockshaft selector lever in "D" position.

Set plow hitch correctly as outlined on pages 8-11.

Set clevis jaws in lowest setting (top hole in clevis jaws). See page 11.

Set rolling coulters as outlined on pages 19-21.

Measure or step off field so opening and finishing furrows will be in proper order.

After plow has entered the field, follow these steps to set the plow correctly.

1. Drop plow in ground, drive forward several feet, and stop.

2. Set the master lever or adjustable depth stop on remote hydraulic cylinder for desired plowing depth.

3. Set leveling lever so front bottom cuts the desired depth. Front bottom should be shallower than rear bottom to prevent having too high a ridge on opening round.

4. If necessary, adjust rear coulter to get a furrow wall.

5. After first round has been completed, start second round. Level plow laterally with leveling lever and, if necessary, adjust master lever or depth stop on hydraulic cylinder for desired plowing depth.

6. Set rear coulter for clean furrow and proper depth. In some conditions rear coulter may be set slightly deeper to obtain clean furrow.

7. Check width of cut on rear bottom by measuring between coulters.

8. After rear coulter is set properly, set other coulters. Make sure distance between the coulters is exactly the same as size of plow frame.

9. Set diagonal hitch brace to get proper width of cut on front bottom.

Shorten brace setting to increase width of cut of front bottom or lengthen to decrease cut.

10. Check rear wheel setting for proper height, lead, and lateral setting. See page 16.

11. If jointers or trash boards are used, set according to instructions on pages 23 and 25, after plow has been set.

12. On third round plow should be in adjustment. As a final check, observe plow and make sure all of the foregoing adjustments are correct.

MAINTENANCE

PLOW BOTTOMS

Protect the face of the moldboard and share from rust whenever the plow is not in use (even overnight) by applying a light coating of oil or grease. When storing the plow for the season, apply a good rust preventive such as John Deere Plow Bottom Black Paint or a heavy coating of cup or gun grease. The paint is available from your John Deere dealer in brush-type (PT64) or a 12-ounce spray can (PT65).

SHARES

It is important to keep the plow shares in good cutting condition at all times. Sharp, correctly set shares add to the efficiency and good work of the plow bottoms. Dull shares cause poor penetration and may greatly increase the draft of the plow.

Soil-Flow Shares for High-Speed Bottoms are the "throwaway" type. When they become worn, it is most economical to discard and replace them with new low-cost Genuine John Deere Soil-Flow Shares.

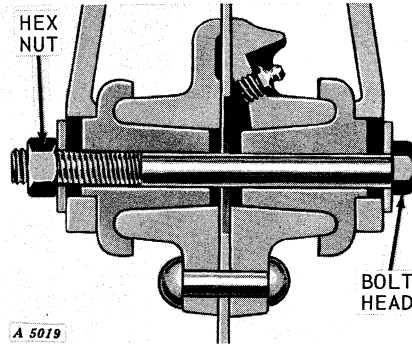
Shares for conventional plow bottoms can be resharpened and reshaped.

ROLLING COULTERS

It is important to keep the rolling coulters sharp and properly lubricated at all times.

ADJUSTING END PLAY IN COULTER HUBS

Coulter with Chilled-Cone Bearings



Cross-Section View of Coulters Bearing

The rolling coulter have adjustable bearings which provide means for taking up wear.

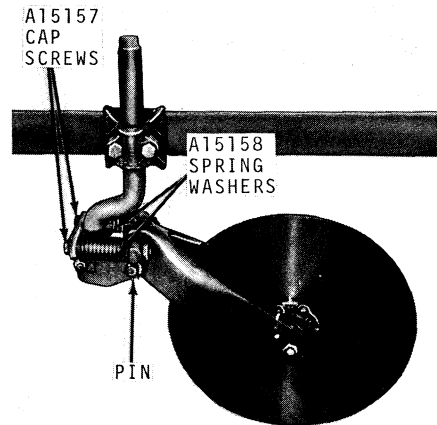
To remove excessive end play in rolling coulters hubs, loosen nut and turn bolt head to right until end play is removed. Adjust so coulters blade will turn freely. Then tighten nut.

Cushion Coulters

If the cushion rolling coulters is disassembled for any reason, the coulters must be reassembled correctly.

The A15158 spring washers (26 washers on each cap screw) are cupped and should be assembled in pairs so the cups face each other.

The A15157 cap screws are a special type and thread length, and only these cap screws should be used for replacement. Before assembly, these cap screws should be coated with SAE multipurpose-type grease.

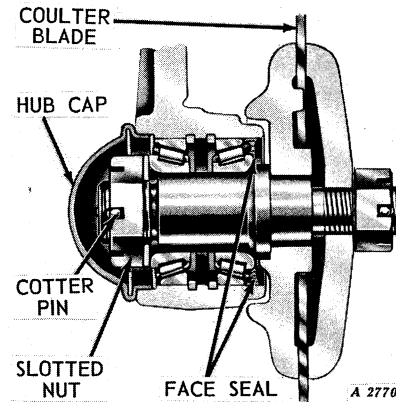


A 5277

Thread these cap screws into the pin until the thread bottoms out and tighten to 70-90 ft-lbs of torque. Lock securely in place with the jam nut.

There is no pressure adjustment on the cushion rolling coulters.

Coulter with Anti-Friction Bearings



Cross-Section View of Anti-Friction Bearing Rolling Coulters

The anti-friction bearing has a face-type seal. The contact of the seal against a machined surface retains grease and excludes dirt. Unless the bearing is in proper adjustment, the seal is ineffective.

If there is any looseness in the bearing, disassemble, clean, and repack with SAE multipurpose-type grease. Tighten nut until there is drag on the bearing. **Do not back off nut after drag is encountered on the bearing.** This drag assures positive sealing. Be sure to replace the cotter pin in the slotted nut to lock the nut in position.

The anti-friction bearing rolling coulters are packed with grease at the factory. Every 100 hours, inspect the bearing and adjust it if necessary. Every 200 hours, or before each plowing season, whichever comes first, disassemble the bearing, clean, and repack it as outlined above. **Do not use chassis lubricant in anti-friction bearings.**

NOTE: The nut on the blade side should be checked for looseness and should be kept tight at all times.

WHEEL BEARINGS

CHILLED-SLEEVE

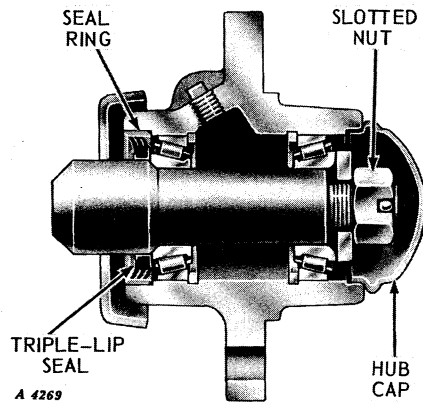
In each wheel box of the chilled-sleeve bearing, there is one washer on each side of the collar. These washers take the endthrust. At least once each season, disassemble the wheel bearing and check the washers. If necessary install new washers.

ANTI-FRICTION

Hydraulic Land Axle and Furrow Axle

This anti-friction bearing has a face-type seal. This same type of seal is used in the anti-friction rolling coulters. Adjust the bearing as outlined under "Coulters with Anti-Friction Bearings."

Rear Axle



Cross-Section View of Rear Wheel Anti-Friction Bearing with Triple-Lip Seal

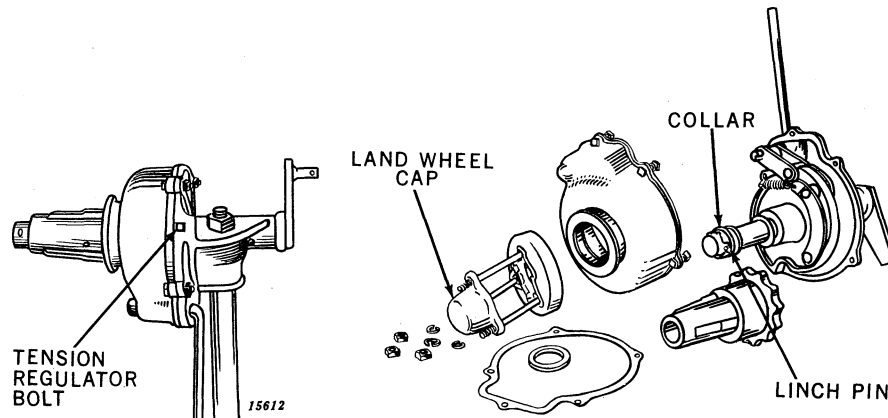
Inspect wheel bearings before each plowing season and repack with wheel bearing grease. Clean lips of the seal thoroughly and fill with grease.

Assemble the bearing seal so the wide metal ring faces toward the bearing and rests tightly against the cone face. Press the cone and the seal on the spindle at the same time to assure proper location of the seal.

Install the plastic seal ring with the chamfered edge toward the bearing. This ring must be in the hub before the hub is positioned over the bearing and seal.

Tighten the spindle nut until the wheel turns firmly but freely with from 5 to 15 inch-pounds drag. While tightening the spindle nut, rotate the wheel so the rollers can assume their working position in the cups. Most of the drag will be generated by the seal. No grinding effect should be evident when properly tightened. Lock the nut with a cotter pin at the next nearest matching hole.

Fill the hub cap approximately one-fourth full with clean wheel bearing grease and attach cap to hub.

ENCLOSED CLUTCH

The mechanism of the lifting clutch is completely enclosed and operates in a bath of light grease. Dirt cannot get in—grease cannot get out. When the clutch leaves the factory, it is properly lubricated. However, grease is to be added daily, through the grease fitting in the land wheel hub and in the clutch axle journal. No periodic filling of the housing with grease is required.

The adjustable collar at the outer end of the stub axle provides a simple take-up adjustment should end play become apparent after a period

of time. This adjustment can be made by simply removing the land wheel cap and tightening the collar. It is not necessary to take the clutch apart.

CAUTION: The tension regulator bolt at the front of the clutch housing regulates the tension on the spring controlling the throw-out lever. Tension is properly adjusted when clutch is assembled at the factory, but should greater tension become necessary, tighten the bolt by turning the bolt head one or two turns clockwise. Never loosen this bolt or the spring inside the clutch housing may become disconnected.

SERVICE AT THE BEGINNING OF THE SEASON

Clean off any dirt or grease that may have accumulated on moving parts. This will prevent abrasive action that could cause excessive wear.

Thoroughly inspect the plow for loose parts and adjust as necessary.

Lubricate as shown on page 31.

SERVICE AT THE END OF THE SEASON

The plow's chief enemies, rust and corrosion, are busy the year-around. A little time and effort spent protecting the plow from destructive moisture will repay you in longer service, easier operation, and higher resale value.

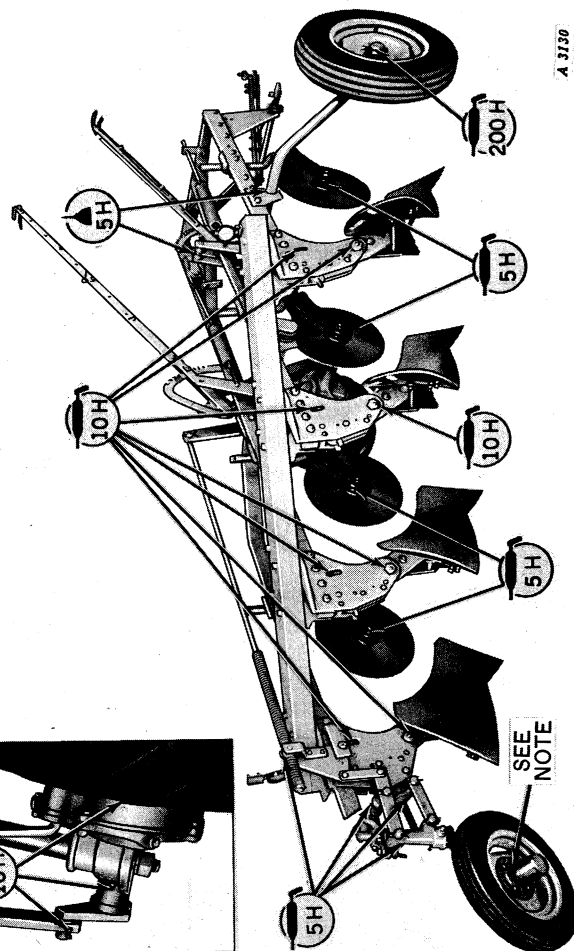
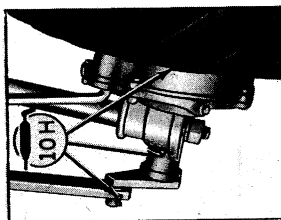
Clean plow thoroughly to remove dirt and trash which would hold moisture and cause rusting.

Apply a good rust preventive to all land polished surfaces such as the plow bottoms and coulters. See "Plow Bottoms" on page 27.

LUBRICATION

Grease fittings are provided at all points indicated in the lubrication chart. All parts provided with grease fittings should be lubricated as indicated with SAE multi-purpose-type grease. If any grease fittings are missing, replace them immediately. Clean the fittings thoroughly before using grease gun.

All other moving parts on the plow should be oiled twice daily with SAE 30 lubricating oil.



Lubrication Chart

A 3130

SYMBOLS	
	Grease Every 5 Hours of Operation.
	Oil Every 5 Hours of Operation.
	Grease Every 10 Hours of Operation.
	Grease Every 200 Hours of Operation.

NOTE: Grease 12-inch rear wheels with chilled-sleeve bearing every 5 hours of operation.

Grease 14- and 15-inch rear wheels with anti-friction bearing every 200 hours of operation.

PLOWING DIFFICULTIES AND REMEDIES

Improper adjustments account for most plowing difficulties. If, after following the operating and adjusting instructions in this manual and checking the plow for proper assembly, difficulties still persist, use the following chart. If you are unable to remedy the trouble, have your John Deere dealer check for worn or damaged parts.

SLOW GROUND ENTRY

Possible Cause	Possible Remedy
Worn shares.	Sharpen or replace.
Improper coulter adjustment.	Coulters should run only about 3 or 3-1/2 inches deep.
Dull coulters.	Sharpen or replace.
Improper rear wheel adjustment.	Set rear wheel to hold rear of land-side about 1/4-inch off furrow bottom.
Insufficient plow bottom suck.	Loosen bottom attaching bolts and force share points down—retighten bolts.
Tractor hitch too high.	Set tractor drawbar 15 to 17 inches above ground when tractor is on level ground.
Clevis jaws too low.	Raise clevis jaws slightly. Clevis jaws set too high will cause plow to run on nose, resulting in unfavorable performance.
Lift springs too tight.	Slack off spring tension.

PLOW RUNNING CROOKED

Improper tractor wheel tread.	Check operator's manual.
Improper hitch adjustment.	Check operator's manual.
Improper leveling.	Set front bottom to cut proper depth.

PLOW RUNNING CROOKED—Continued

Possible Cause	Possible Remedy
Improper rear wheel adjustment.	Set wheel to hold landside about 1/4-inch from furrow wall and have slight lead to plowed land.
Improper coulter adjustment.	Be sure coulters are free to swing and run straight.
Improper jointer adjustment.	Set jointers to run only about 2 inches deep and be sure they do not prevent coulters from running straight.

RIDGING

Front bottom too deep.	Level plow.
Front bottom too shallow.	Level plow.
Front bottom cutting wrong width.	Check tractor wheel tread and plow hitching.
Improper coulter adjustment.	Distance between coulter blades must measure same as plow frame size.
Improper jointer adjustment.	Set all jointers the same depth.

POOR TRASH COVERAGE

Bottoms not scouring.	Clean bottoms frequently until land polish is obtained.
Improper coulter adjustment.	Set coulters deep enough to cut trash. Keep coulters sharp.
Improper jointer adjustment	Set jointers to run about 2 inches deep and close to but not rubbing against the coulter blade.
Plow running crooked.	See " <i>Plow Running Crooked</i> ," on pages 32 and 33.
Weed hooks may be necessary.	Add weed hooks.
Trash boards may be necessary.	Add trash boards.
Trash boards not set properly.	When plowing deeper than 7 inches, raise rear of trash board slightly. Be sure point of trash board is down tight against the moldboard shin.

34 *Plowing Difficulties*

BOTTOMS DON'T SCOUR

Possible Cause	Possible Remedy
New bottoms.	Clean surface with gasoline, kerosene, or diesel fuel.
Plow running on nose.	Lower clevis jaws or raise tractor drawbar.
Plow running crooked.	See " <i>Plow Running Crooked</i> ," pages 32 and 33.
Coulter not set properly.	Set coulter shallower and back.

RAGGED FURROW WALL

Improper rear coulter adjustment.	Set coulter to run about 3 or 3-1/2 inches deep and far enough to the left of landside to leave clean furrow wall.
Wrong rear coulter angle.	Be sure coulter collar does not keep coulter from running straight.
Jointer interference.	Be sure jointer is not keeping coulter from running straight.
Rear wheel not set properly.	Set rear wheel to the left far enough to hold landside about 1/4-inch from furrow wall. Rear wheel should have slight lead toward plowed land.

PLOW PULLS HEAVY

Excessive tractor wheel slippage.	Raise tractor drawbar.
Plow running on nose.	Lower clevis jaws.
Improper rear wheel adjustment.	Raise rear wheel until rear landside is about 1/4-inch off furrow bottom.
Excessive landside pressure.	Set rear wheel to left until landside runs about 1/4-inch from furrow wall. Rear wheel should have slight lead toward plowed land.
Bottoms not scouring.	Clean frequently until land polish is obtained.

CLUTCH NOT WORKING PROPERLY

Possible Cause	Possible Remedy
Land wheel slides when lifting.	Tighten lift springs. Check tire pressure.
Land wheel slides or chatters when dropping plow.	Loosen lift springs. Sharpen or replace shares.
Clutch will not operate up or down.	Disassemble, wash out old grease, check for worn or broken parts, reassemble, and lubricate.
Land wheel slips when lifting.	Hitch clevis jaws may be too low—raise one hole.

SAFETY-TRIP STANDARDS

Standard Trips Too Easily

Tripping load not great enough.	Add tubular shim.
Slot in standard rounded.	Replace with new standard.
Throw-out roller damaged.	Replace with new throw-out assembly.
Excessive wear on pivot stud.	Replace pivot stud.
Coil spring broken.	Replace coil spring.
Dirt packed under throw-out roller.	Clean.
Plow running on nose.	Level plow fore and aft.

Standard Trips Too Hard

Tripping load too great.	Remove enough tubular shims to obtain desired tripping load.
Not properly lubricated.	Lubricate all moving parts.
Standard binding at pivot stud.	Loosen lock nut slightly. Grease pivot stud.
Standard seldom tripped.	Trip standard periodically by hand.

Excessive Vertical Play at Share Point

Adjusting cam not tight.	Rotate cam clockwise until cam is tight against spring link.
Pivot stud worn or broken.	Replace and grease pivot stud.
Throw-out roller damaged.	Replace with new throw-out assembly and oil.

Excessive Lateral Looseness of Standard

Standard pivot stud loose.	Tighten nut until standard is free to move without binding.
Pivot stud worn or broken.	Replace and grease pivot stud.

ASSEMBLY

1. Read all assembly instructions and carefully observe illustrations.
2. Cut all bundling wires and conveniently arrange parts.
3. Lubricate all bearings and moving parts as you proceed so they move freely.

F610A AND F610AH PLOWS

REGULAR SHIPPING BUNDLES

		F610A		F610AH	
Bundle No.	Description	3-Btm	4-Btm	3-Btm	4-Btm
Frame and Standards					
BA 10858 A	(14-Inch)	1	..	1	..
BA 10859 A	(16-Inch)	1	..	1	..
BA 10860 A	(14-Inch)	..	1	..	1
BA 10861 A	(16-Inch)	..	1	..	1
Axles					
BA 10581 A	Furrow and Land (14-Inch)	1	..	..	..
BA 10582 A	Furrow and Land (16-Inch)	1	..	..	..
BA 10583 A	Furrow and Land (14-Inch)	..	1	..	..
BA 10584 A	Furrow and Land (16-Inch)	..	1	..	..
BA 10588 A	Cylinder Lift (14-Inch)	..	..	1	..
BA 10589 A	Cylinder Lift (16-Inch)	..	..	1	..
BA 10590 A	Cylinder Lift (14-Inch)	..	..	..	1
BA 10591 A	Cylinder Lift (16-Inch)	..	..	..	1
Rear Axle, Bails, Anti-Friction Bearing and Wheel					
BA 14041	Rear Axle, Bails, and Bearing	1	1	1	1
JD 1384	Rear Wheel less Tire	1	1	1	1
Land and Furrow Wheels					
JD 1384	Wheel less Tire	1	1	2	2
SD 2423 A	Land less Tire	1	1	..	..
BA 10578 A	Leveling Lever and Ratchet and Rear Lift Rod	..	..	1	..
BA 10576 A	Lever Ratchet and Rear Wheel Lift Rod	1	..	..	..
BA 10577 A	Lever Ratchet and Rear Wheel Lift Rod	..	1	..	..
BA 10560 A	Cushion Spring Release Hitch	1	1	1	1
BA 10575 A	Shank and Clamp for Round Shank Coulter	3	4	3	4
BA 10579 A	Leveling Lever and Ratchet and Rear Lift Rod	..	..	..	1
BA 10587 A	Cylinder Mounting	..	..	1	1
SD 2422 A	Hose Support	..	..	1	1

REGULAR SHIPPING BUNDLES—Continued

Bundle No.	Description	F610A		F610AH	
		3-Btm	4-Btm	3-Btm	4-Btm
BA 10902 A	Rolling Coulter, 17-Inch with Chilled-Cone Bearing	3	4	3	4
SD 165 A	Grease Fittings.	..	..	1	1
SD 181 A	Clutch Rope and Grease Fittings	1	1	..	..
SD 2331 A	Reflectors (2).	..	1	..	1
SD 2333 A	Light and Reflector Bracket	..	1	..	1

SPECIAL SHIPPING BUNDLES

Rear Wheels for BA14041 Axle with Anti-Friction Bearing

SD 2410 A	Wheel with Tire	1	1	1	1
JD 1754	Wheel, 14-Inch, less Tire	1	1	1	1

Rear Axle, Bails, Chilled-Sleeve Bearing and Wheels

BA 10573 A	Rear Axle, Bails, and Bearing. . . .	1	1	1	1
21558 A	Rear Wheel	1	1	1	1
DA 1924 A	Wheel less Tire	1	1	1	1
DA 1925 A	Wheel with Tire	1	1	1	1

Land and Furrow Wheels

SD 2410 A	Wheel with Tire	1	1	2	2
JD 1754	Wheel, 14-Inch, less Tire	1	1	2	2

Independent Jointer and Clamp

DK 76 FA	Jointer - Cast (Round Shank)	3	4	3	4
JC 24 A	Clamp (For DK76FA).	3	4	3	4
SD 467 A	Jointer - Steel (Flat Shank)	3	4	3	4
JC 21 A	Clamp (For SD467A)	3	4	3	4

Rolling Coulters for Round Shank and Clamp

BA 10971 A	17-Inch Rippled-Edge with Chilled-Cone Bearing	3	4	3	4
BA 10904 A	18-Inch with Chilled-Cone Bearing	3	4	3	4
BA 14324	17-Inch with Anti-Friction Bearing	3	4	3	4
BA 14325	17-Inch Rippled-Edge with Anti-Friction Bearing	3	4	3	4

Cushion Rolling Coulters for Round Shank and Clamp

BA 14245	17-Inch with Chilled-Cone Bearing .	3	4	3	4
BA 14246	17-Inch Rippled-Edge with Chilled-Cone Bearing	3	4	3	4

SPECIAL SHIPPING BUNDLES—Continued

		F610A		F610AH	
Bundle No.	Description	3- Btm	4- Btm	3- Btm	4- Btm
Flat Coulter Shank, Clamp, and Rolling Coulters					
BA 10907 A	17-Inch with Chilled-Cone Bearing.	3	4	3	4
BA 10972 A	17-Inch Rippled-Edge with Chilled- Cone Bearing	3	4	3	4
BA 10909 A	18-Inch with Chilled-Cone Bearing.	3	4	3	4
BA 14328	17-Inch with Anti-Friction Bearing.	3	4	3	4
BA 14329	17-Inch Rippled-Edge with Anti- Friction Bearing	3	4	3	4
CC 39 A	Clamp.	3	4	3	4
Plow Bottom Attachments					
7750 A	Moldboard Extension (For Conven- tional Bottoms)	3	4	3	4
A 11736 A	Moldboard Extension (For HS400 Series High-Speed Bottoms)	3	4	3	4
BA 11128 A	Trash Board (For HS Bottoms) . . .	3	4	3	4
BA 11130 A	Trash Board (For Slat Bottoms) . .	3	4	3	4
BA 14039	Trash Board (For SDT546FC Semi- Deep-Tillage Bottoms)	3	4	3	4
BA 10162 A	Moldboard Pad (14-Inch) (For HS400 Series Only)	3	4	3	4
BA 10164 A	Moldboard Pad (16-Inch) (For HS400 Series Only)	3	4	3	4
CT 186 A	Root Cutter	3	4	3	4
AA 14903	Share-Frog Brace (To attach 16- inch high-speed share to 14-inch high-speed bottom)	3	4	3	4
BA 10113 A	Weed Hook	3	4	3	4
SD 2642 A	Landing Lever	1	1	1	1

F620A AND F620AH PLOWS

REGULAR SHIPPING BUNDLES

Bundle No.		Description	F620A		F620AH	
			3-Btm	4-Btm	3-Btm	4-Btm
Frame and Standards						
BA 10862 A	(14-Inch)	.....	1	..	1	..
BA 10863 A	(16-Inch)	.....	1	..	1	..
BA 10864 A	(14-Inch)	.....	..	1	..	1
BA 10865 A	(16-Inch)	.....	..	1	..	1
Axles						
BA 10581 A	Furrow and Land (14-Inch)	.....	1	..	..	..
BA 10582 A	Furrow and Land (16-Inch)	.....	1	..	..	..
BA 10583 A	Furrow and Land (14-Inch)	.....	..	1	..	..
BA 10584 A	Furrow and Land (16-Inch)	.....	..	1	..	..
BA 10588 A	Cylinder Lift (14-Inch)	.....	..	..	1	..
BA 10589 A	Cylinder Lift (16-Inch)	.....	..	..	1	..
BA 10590 A	Cylinder Lift (14-Inch)	.....	..	..	..	1
BA 10591 A	Cylinder Lift (16-Inch)	.....	..	..	..	1
Rear Axle, Bails, Anti-Friction Bearing and Wheel						
BA 14041	Rear Axle, Bails, and Bearing	....	1	1	1	1
JD 1384	Rear Wheel less Tire	.....	1	1	1	1
Land and Furrow Wheels						
JD 1384	Wheel less Tire	.....	1	1	2	2
SD 2423 A	Land less Tire	.....	1	1	..	..
BA 10578 A	Leveling Lever and Ratchet and Rear Lift Rod	.....	..	..	1	..
BA 10579 A	Leveling Lever and Ratchet and Rear Lift Rod	.....	..	..	..	1
BA 10576 A	Lever Ratchet and Rear Wheel Lift Rod		1	..	..	..
BA 10577 A	Lever Ratchet and Rear Wheel Lift Rod		..	1	..	..
BA 10574 A	Plain Hitch	.....	1	1	1	1
SD 2746 A	Clevis with Bushing and Bolt	.....	1	1	1	1
BA 10575 A	Shank and Clamp for Round Shank	...	3	4	3	4
BA 10902 A	Rolling Coulter, 17-Inch with Chilled-Cone Bearing	.....	3	4	3	4
SD 165 A	Grease Fittings	.....	..	..	1	1
SD 181 A	Clutch Rope and Grease Fittings	....	1	1	..	..
SD 2331 A	Reflectors (2)	.....	..	1	..	1
SD 2333 A	Light and Reflector Bracket	.....	..	1	..	1
BA 10587 A	Cylinder Mounting	.....	..	..	1	1
BA 10699 A	Hose Support	.....	..	..	1	1

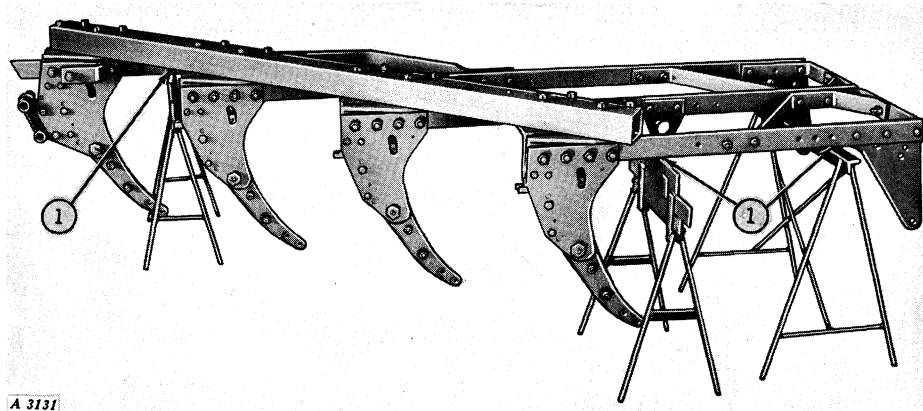
SPECIAL SHIPPING BUNDLES

Bundle No.	Description	F620A		F620AH	
		3- Btm	4- Btm	3- Btm	4- Btm
Rear Wheels for BA14041 Axle with Anti-Friction Bearing					
SD 2410 A	Wheel with Tire	1	1	1	1
JD 1754	Wheel, 14-inch, less Tire.	1	1	1	1
Rear Axle, Bails, Chilled Sleeve Bearing and Wheels					
BA 10573 A	Rear Axle, Bails, and Bearing. . . .	1	1	1	1
21558 A	Rear Wheel	1	1	1	1
DA 1924 A	Wheel less Tire	1	1	1	1
DA 1925 A	Wheel with Tire	1	1	1	1
Land and Furrow Wheels					
SD 2410 A	Wheel with Tire	1	1	2	2
JD 1754	Wheel, 14-inch, less Tire.	1	1	2	2
Independent Jointer and Clamp					
DK 76 FA	Jointer - Cast (Round Shank).	3	4	3	4
JC 24 A	Clamp (For DK76FA).	3	4	3	4
SD 467 A	Jointer - Steel (Flat Shank).	3	4	3	4
JC 21 A	Clamp (For SD467A).	3	4	3	4
Rolling Coulters for Round Shank and Clamp					
BA 10971 A	17-Inch Rippled-Edge with Chilled- Cone Bearing.	3	4	3	4
BA 10904 A	18-Inch with Chilled-Cone Bearing. . . .	3	4	3	4
BA 14324	17-Inch with Anti-Friction Bearing	3	4	3	4
BA 14325	17-Inch Rippled-Edge with Anti- Friction Bearing.	3	4	3	4
Cushion Rolling Coulters for Round Shank and Clamp					
BA 14245	17-Inch with Chilled-Cone Bearing. . . .	3	4	3	4
BA 14246	17-Inch Rippled-Edge with Chilled- Cone Bearing.	3	4	3	4
Flat Coulter Shank, Clamp, and Rolling Coulters					
BA 10907 A	17-Inch with Chilled-Cone Bearing. . . .	3	4	3	4
BA 10972 A	17-Inch Rippled-Edge with Chilled- Cone Bearing	3	4	3	4

SPECIAL SHIPPING BUNDLES—Continued

Bundle No.		Description	F620A		F620AH	
			3-Btm	4-Btm	3-Btm	4-Btm
Flat Coulter Shank, Clamp, and Rolling Coulters—Continued						
BA 10909 A	18-Inch with Chilled-Cone Bearing.	3	4	3	4	
BA 14328	17-Inch with Anti-Friction Bearing.	3	4	3	4	
BA 14329	17-Inch Rippled-Edge with Anti-Friction Bearing.....	3	4	3	4	
CC 39 A	Clamp.	3	4	3	4	
Plow Bottom Attachments						
7750 A	Moldboard Extension (For Conventional Bottoms).....	3	4	3	4	
A 11736 A	Moldboard Extension (For HS400 Series High-Speed Bottoms)	3	4	3	4	
BA 11128 A	Trash Board (For HS Bottoms) ...	3	4	3	4	
BA 11130 A	Trash Board (For Slat Bottoms) ..	3	4	3	4	
BA 14039	Trash Board (For SDT546FC Semi-Deep-Tillage Bottoms).....	3	4	3	4	
BA 10162 A	Moldboard Pad (14-Inch) (For HS400 Series Only).....	3	4	3	4	
BA 10164 A	Moldboard Pad (16-Inch) (For HS400 Series Only).....	3	4	3	4	
CT 186 A	Root Cutter.....	3	4	3	4	
AA 14903	Share-Frog Brace (To attach 16-inch high-speed share to 14-inch high-speed bottom)	3	4	3	4	
BA 10113 A	Weed Hook.....	3	4	3	4	
SD 2642 A	Landing Lever	1	1	1	1	

FRAME AND STANDARDS



1. Place frame and standards on blocks or stands approximately 30 inches high. Be sure to work on a level surface.

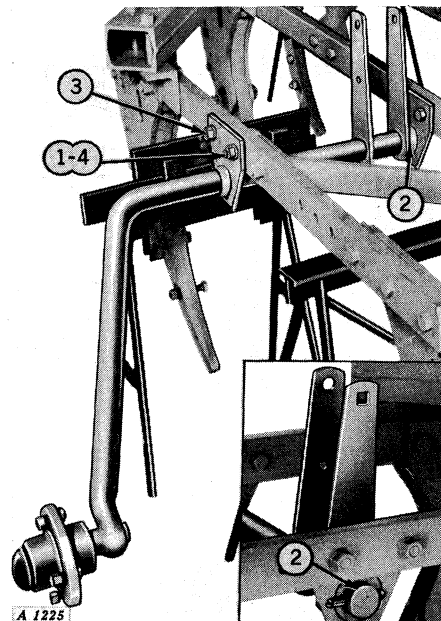
FURROW AXLE

1. Remove nut and lock washer from bolt.

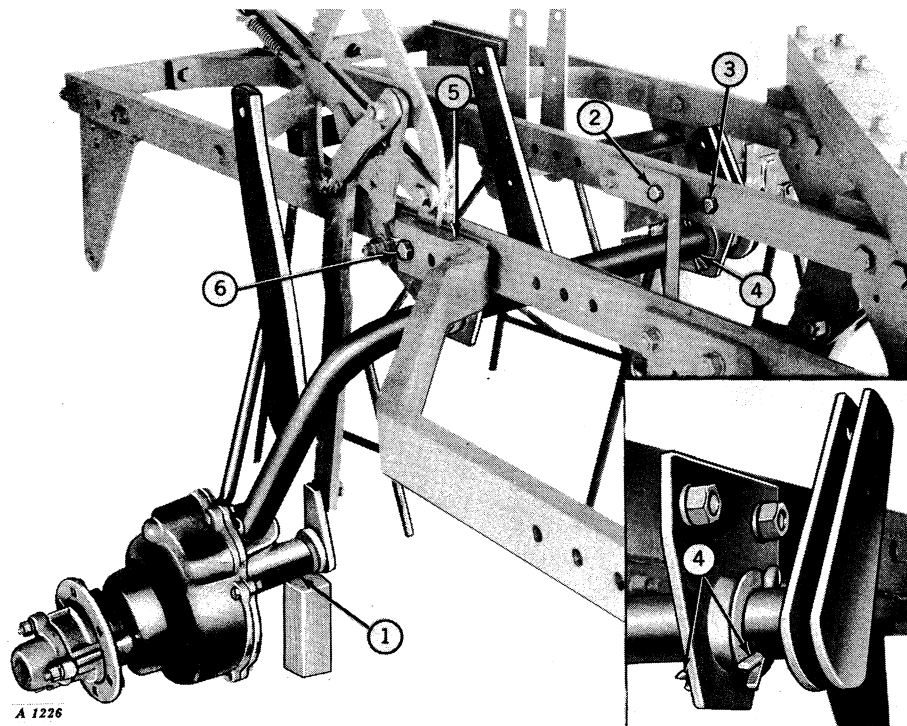
2. Slide furrow axle into axle bearing on second frame bar and secure with cotter pin.

3. Position furrow axle bearing and bolt in place with bolt supplied in axle bundle.

4. Replace nut and lock washer on bolt.



LAND AXLE (F610A and F620A Plows)



1. Support hub end of land axle with small block.

2. Bolt axle bearing to frame bar and frame brace.

3. Attach axle bearing to frame.

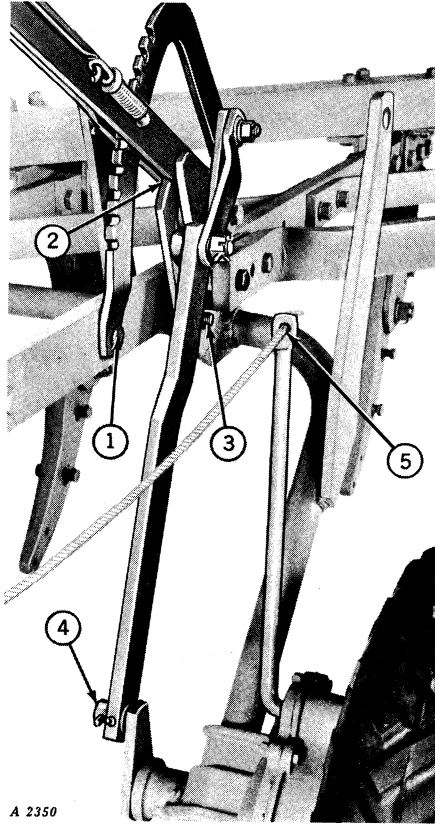
4. Position axle with cotter pins and washers on each side of inside bearing.

5. On three-bottom plow attach bearing to third frame bar. On four-bottom plow attach bearing and spacer to third and fourth frame bars.

6. On three-bottom plow attach lever ratchet and bearing to third frame bar with 5/8 x 2-1/2-inch bolt supplied in lever bundle. On four-bottom plow attach lever ratchet and bearing to third and fourth frame bars with 5/8 x 3-1/2-inch bolts supplied in frame.

NOTE: The two-hole filler straps supplied with the four-bottom clutch-lift plows, must be replaced with a single hole strap on the rear bolt (key 5). This strap is supplied in the lever bundle.

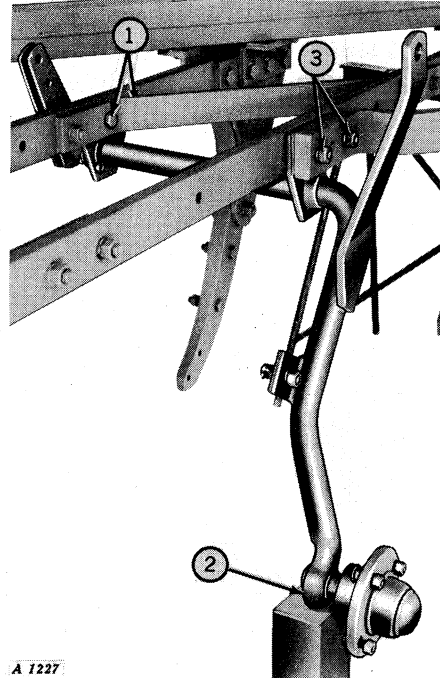
MASTER LEVER (F610A and F620A Plows)



A 2350

1. Bolt ratchet to frame.
2. Raise lever to highest position and insert clutch lift bar pivot link assembly into lever as shown above.
3. Bolt pivot link assembly to land axle bearing.
4. Remove cotter pin and bushing from stub axle and attach clutch lift bar. Replace bushing and cotter pin.
5. Attach rope to clutch trip lever and insert through guide on master lever.

LAND AXLE (F610AH and F620AH Plows)

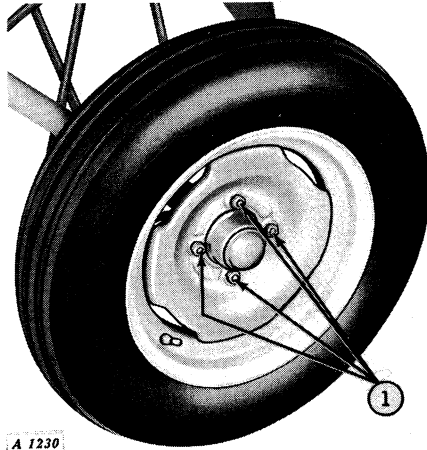


A 1227

1. Bolt inside bearing to frame.
2. Support hub with small block.
3. Attach outside bearing to frame.

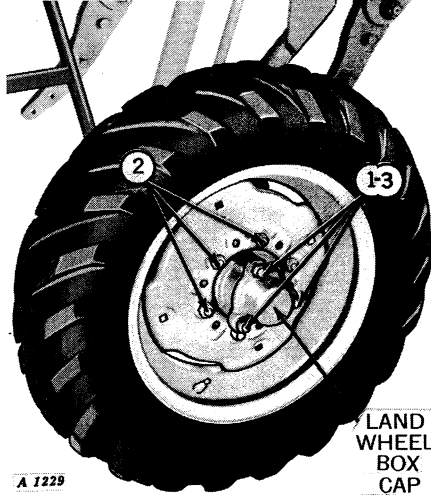
NOTE: On four-bottom plow, the filler strap shipped in frame must remain between third and fourth frame bars along with the axle bearings.

**FURROW WHEEL
AND LAND WHEEL
(F610AH and F620AH Plows)**



1. Slide wheel on axle and bolt to hub with four bolts supplied in axle bundle. Draw up nuts tightly.

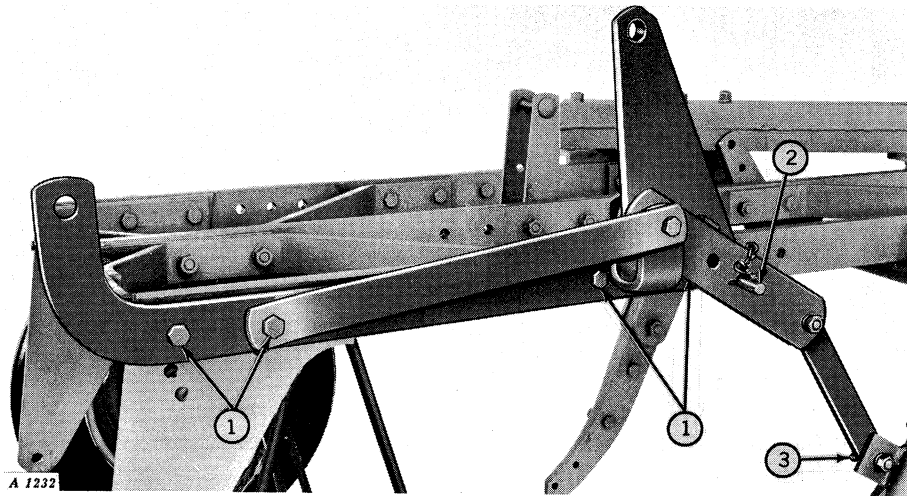
**LAND WHEEL
(F610A and F620A Plows)**



NOTE: Automotive tires with snow tread (7.60 x 15, or equivalent) are recommended for use on the land wheel.

1. Remove nuts from bolts allowing land wheel box cap to be removed.
2. Slide wheel on hub and attach with six $1/2 \times 1-1/2$ -inch carriage bolts.
3. Replace land wheel box cap.

CYLINDER SUPPORT AND CONNECTING BAR

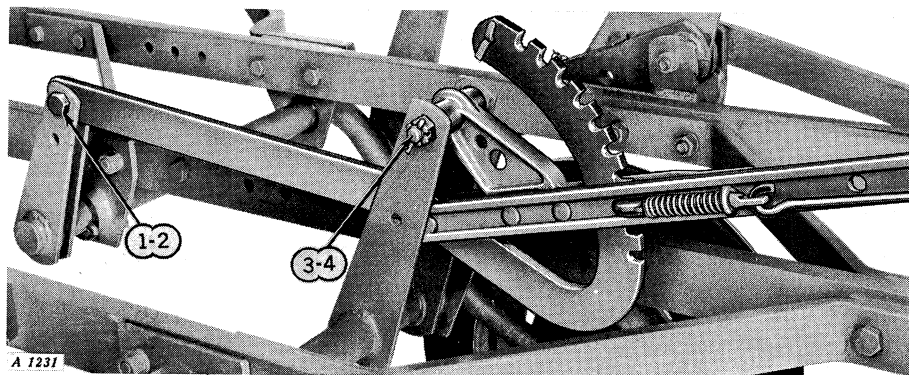


1. Remove the first, second, fourth, and fifth bolts from frame and attach cylinder mounting to frame with bolts supplied.

2. Remove holdup pin from support.

3. Remove cotter pin and washer from land axle and attach connecting bar to stud of land axle. Replace washer and cotter pin.

LEVELING LEVER



1. Remove bolt and spacer from between land axle cranks.

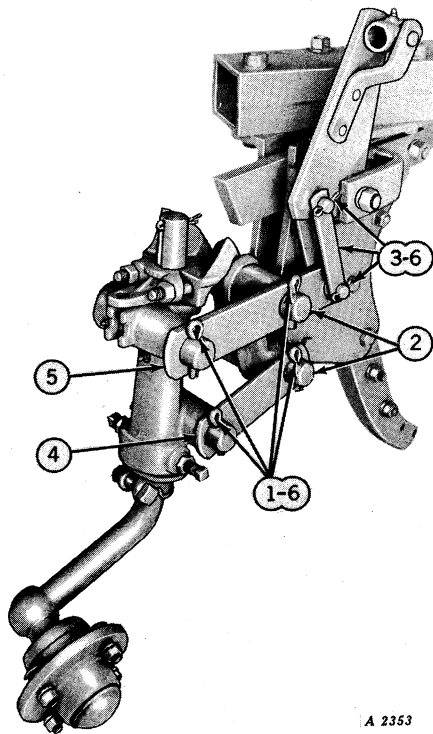
2. Place spacer in hole in end of ratchet and bolt to cranks on land axle.

3. Remove cotter pin, slotted nut, and bolt from cranks on furrow axle.

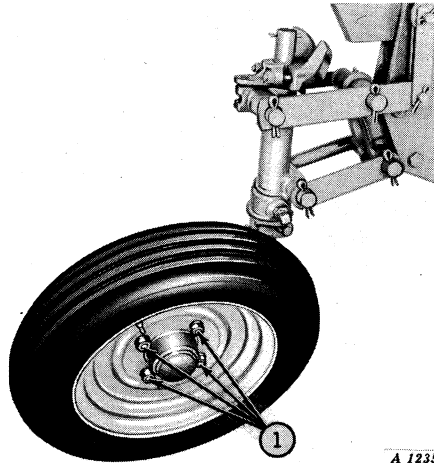
4. Raise front of plow and attach lever to cranks. Replace bolt, nut, and pin.

REAR AXLE AND WHEEL (With Anti-Friction Bearing)

AXLE



WHEEL



1. Attach wheel to hub.

1. Remove four cotter pins and lift bail straps from rear axle assembly.

2. Insert upper and lower lift bails into rear bail bearing.

3. Remove cotter pins and lift crank link from lift crank link assembly.

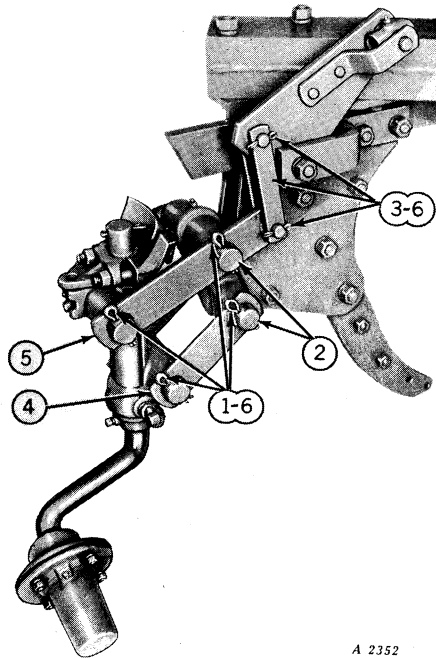
4. Replace lower lift bail strap.

5. Replace upper lift bail strap on upper bail and lift crank assembly.

6. Replace lift crank link and all cotter pins removed in Steps 1 and 3.

REAR AXLE AND WHEEL (With Chilled-Sleeve Bearing)

AXLE



1. Remove four cotter pins and lift bail straps from rear axle assembly.

2. Insert upper and lower lift bails into rear bail bearing.

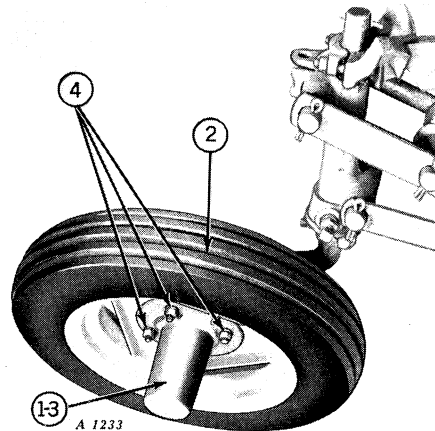
3. Remove cotter pins and lift crank link from lift crank link assembly.

4. Replace lower lift bail strap.

5. Replace upper lift bail strap on upper bail and lift crank assembly.

6. Replace lift crank link and all cotter pins removed in Steps 1 and 3.

WHEEL



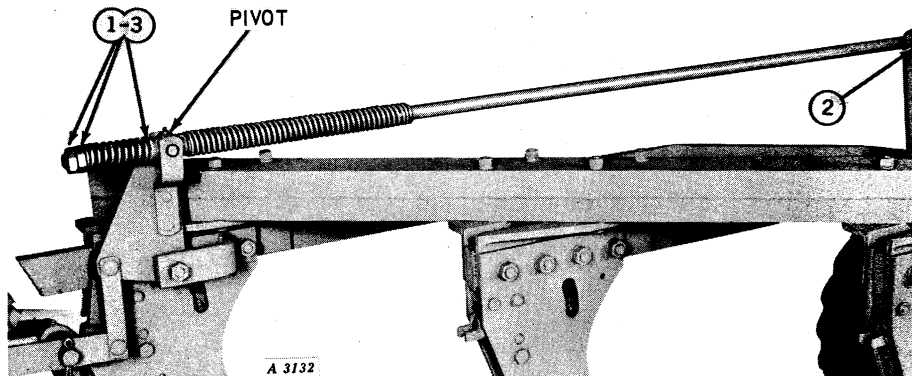
1. Remove the outside wheel box only along with one washer from the rear axle assembly.

2. Slide rear wheel over wheel bearing sleeve.

3. Replace washer and outside wheel box.

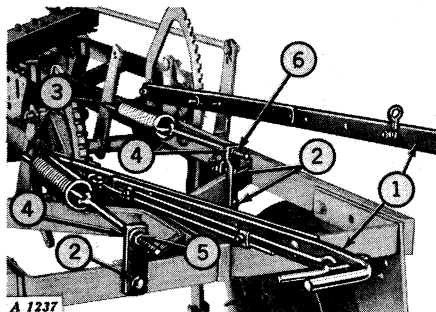
4. Replace nuts and lock washers. Draw nuts up evenly and securely.

REAR LIFT ROD



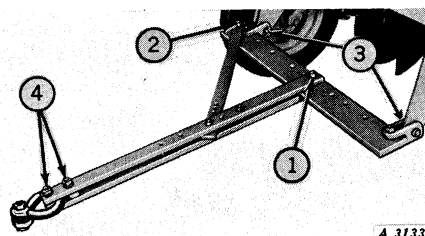
1. Remove the two hexagon nuts and short spring and insert lift rod through pivot.
2. Place front end of lift rod through crank on land axle and fasten with cotter pin.
3. Raise rear of plow sufficiently to place short spring and two hexagon nuts on lift rod.

LIFT SPRINGS (F610A and F620A Plows)



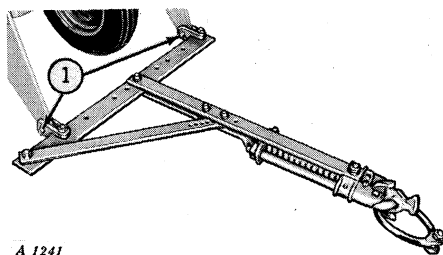
1. Pull master lever and leveling levers all the way down to the lowest position.
2. Attach spring posts to frame.
3. Remove cotter pins and attach crank links to axle cranks. Replace cotter pins.
4. Attach springs and eyebolts to spring posts.
5. Draw the threaded eyebolt all the way up on furrow axle spring.
6. Draw the threaded eyebolt approximately halfway up on land axle spring.

PLAIN HITCH (F620A AND F620AH PLOWS)



1. Bolt hitch crossbar to hitch drawbar.
2. Bolt adjusting brace to hitch crossbar.
3. Attach hitch to clevis jaws with drilled pins and cotter pins.
4. Insert bushings on bolts between the drawbar. Position hitch clevis between the bolts and bushings.

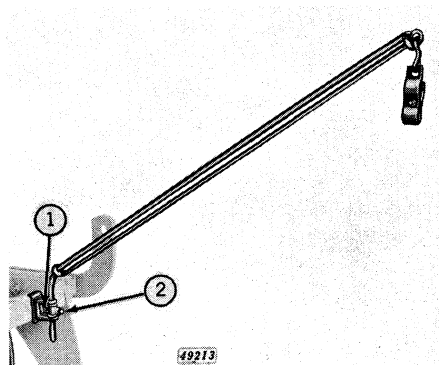
CUSHION SPRING RELEASE HITCH (F610A AND F610AH PLOWS)



1. Attach hitch to clevis jaws with drilled pins and cotter pins.

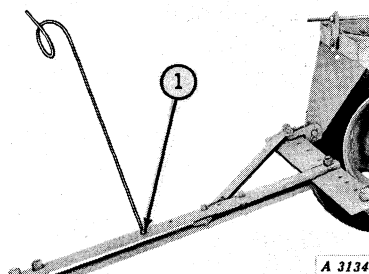
NOTE: See "Hitching Plow to Tractor," in the Operation Section for proper adjustment of the hitch.

HOSE SUPPORT F610AH PLOW



1. Bolt hose support to frame.
2. Adjust set screw collar to restrict swing of hose support.

F620AH PLOW

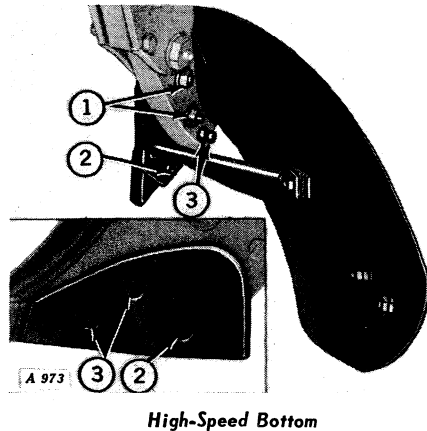


1. Insert hose support into hitch and fasten with nut supplied with hose support.

PLOW BOTTOMS

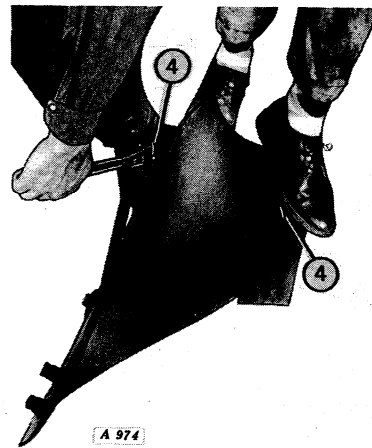
These plows require No. 4 landsides when using conventional bottoms, and No. 9 landsides when using high-speed bottoms.

ATTACHING BOTTOMS



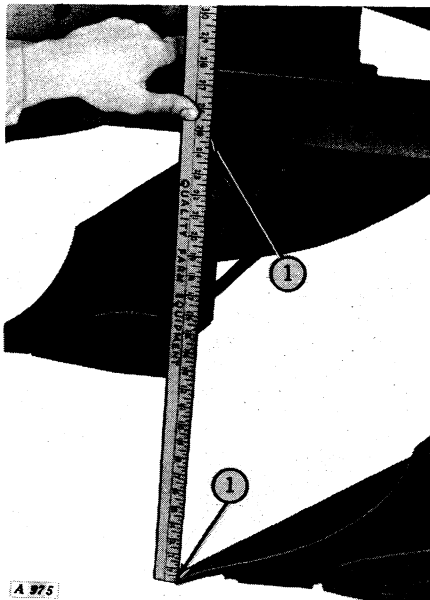
High-Speed Bottom

1. Remove the two machine bolts from each standard. Insert the two machine bolts through frog and standard.
2. Remove the two front plow bolts from the landside and bolt the landside to the plow bottom frog with the one rear bolt.
3. Insert the two front plow bolts through the landside, frog, and standard. Leave nuts loose.
4. Push down on the points of the shares to make sure all slack is taken out of the bolts. Then tighten nuts securely.



Tightening Nuts

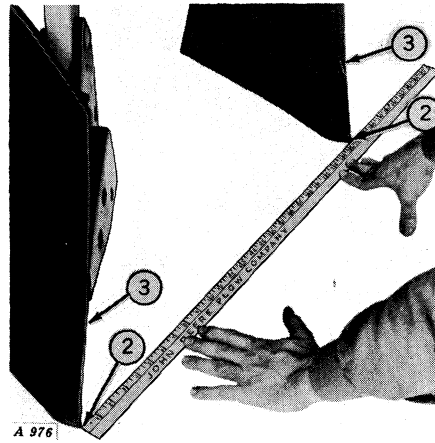
LINING UP BOTTOMS



Under Frame Measurement

1. Check distance from underside of each frame bar to point of each share. The distance should be reasonably the same for each bottom if the bottoms are attached correctly. If not, loosen frame bolts and adjust.

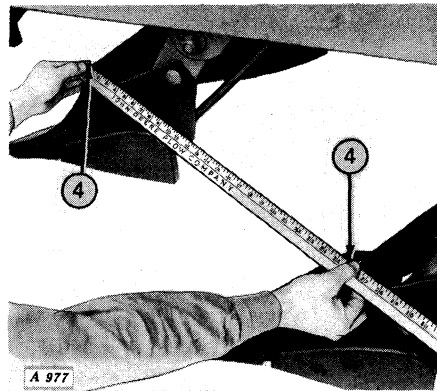
LINING UP BOTTOMS—Continued



Share-to-Share Measurement

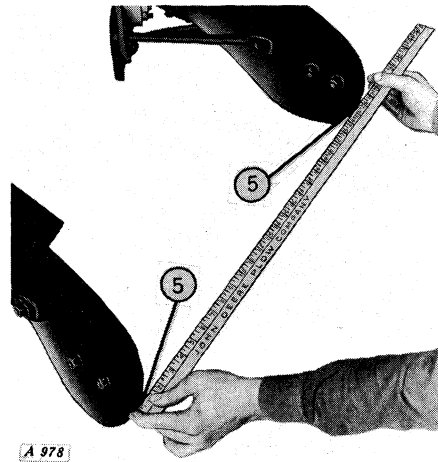
2. Measure distance between bottoms from point of rear share to point of next share forward.

3. Measure distance between bottoms at juncture of share and moldboard on front edge of bottoms.



Moldboard-to-Moldboard Measurement

4. Measure distance between bottoms from upper front corner of rear moldboard to upper front corner of next moldboard forward.
NOTE: Measurements for Steps 2, 3, and 4 should be reasonably the same.



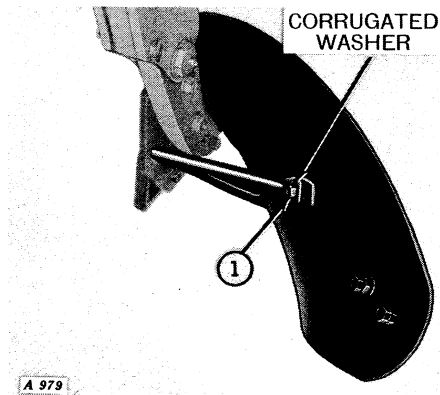
Moldboard-to-Moldboard Measurement

5. Measure distance from back edge of rear moldboard to back edge of next moldboard.

NOTE: If the distance between the back edges varies greatly from the other measurements, adjust either the rear moldboard brace or the next moldboard brace to push one of the moldboards forward.

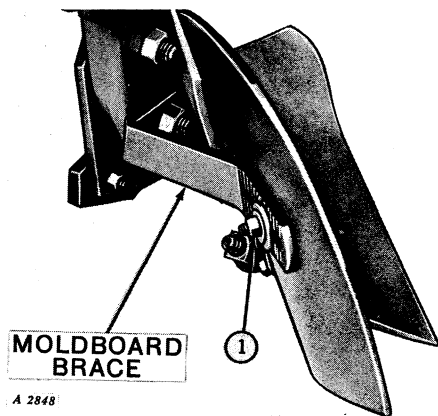
Repeat these measurements Steps 2, 3, 4, and 5 between all bottoms as you work forward.

ADJUSTING MOLDBOARD BRACE



Moldboard Brace on High-Speed Bottom

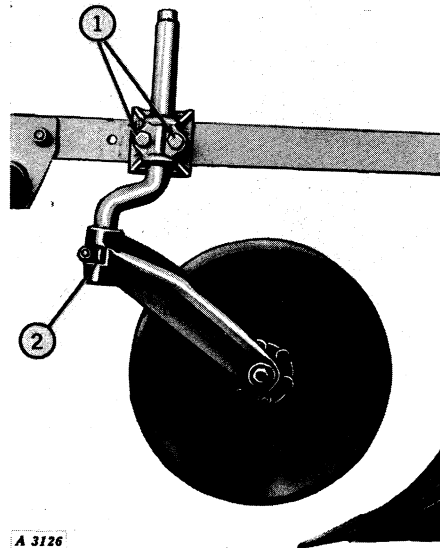
1. To adjust moldboard brace, loosen nut on moldboard bolt and adjust corrugations in washer and brace. **CAUTION: Never adjust a moldboard brace to pull the moldboard back.**



Moldboard Brace on Conventional Bottom

ROLLING COULTERS

CHILLED-CONE BEARING *Round Shank*

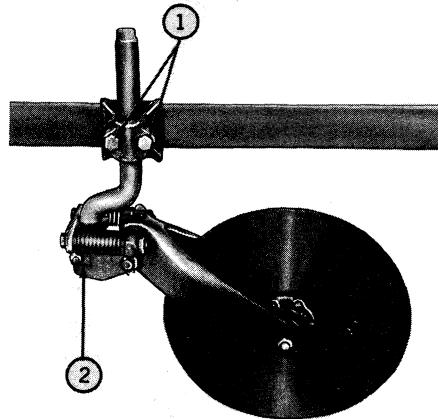


1. Bolt shank and clamp to frame.

2. Attach coulter yoke to shank with collar. See pages 19 through 21 for adjustment of rolling coulters.

ROLLING COULTERS—Continued

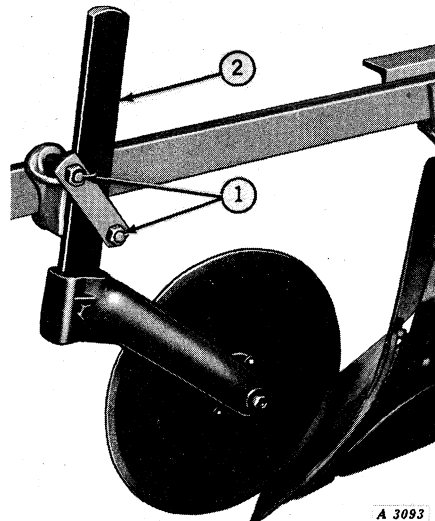
CHILLED-CONE BEARING—
Continued
Cushion Coulter (Round Shank)



A 5278

1. Bolt shank and clamp to frame.
2. Attach coulter yoke to shank with collar. See pages 19 through 21 for adjustment of rolling coulters.

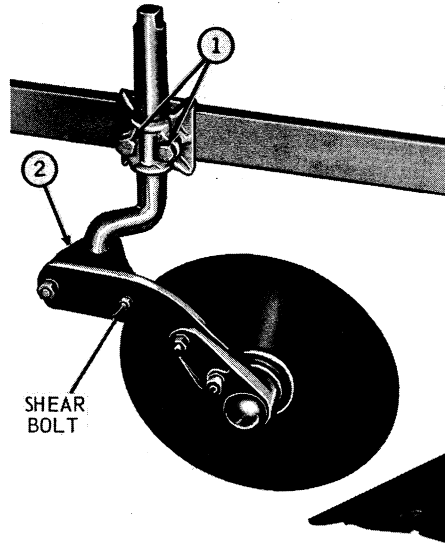
*Flat Shank
(Special Equipment)*



A 3093

1. Attach clamp to frame bar.
2. Insert coulter shank into clamp and tighten nuts. See pages 19 through 21 for adjustment of rolling coulters.

**ANTI-FRICTION BEARING
(Special Equipment)
Round Shank**



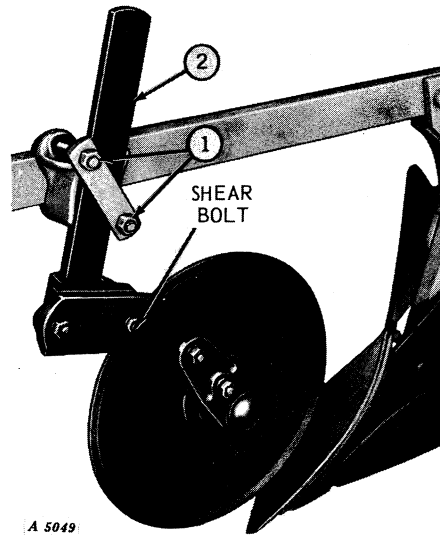
A 5036

1. Bolt shank and clamp to frame.

2. Attach couler yoke to shank with collar. See pages 19 through 21 for adjustment of rolling coulers.

The anti-friction bearing rolling couler is equipped with a shear bolt to prevent possible serious damage to the couler shank. For replacement of the shear bolt, use a 19H1899 cap screw.

Flat Shank



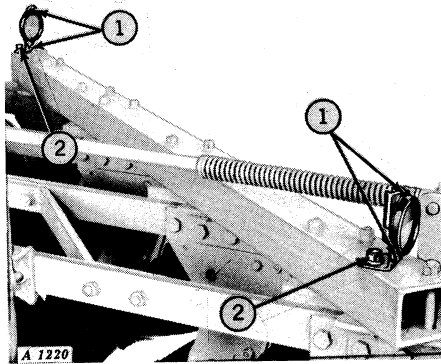
A 5049

1. Attach clamp to frame bar.

2. Insert couler shank into clamp and tighten nuts. See pages 19 through 21 for adjustment of rolling coulers.

The anti-friction bearing rolling couler is equipped with a shear bolt to prevent possible serious damage to the couler shank. For replacement of the shear bolt, use a 19H1899 cap screw.

WARNING LAMP AND REFLECTOR BRACKETS



The warning lamp and reflector brackets are furnished as regular equipment on the four-bottom plow only.

1. Bolt reflectors to brackets.
2. Attach brackets to truss box as shown above. Be sure to place the bracket with lamp socket on the left-hand side of plow.

GREASE FITTINGS

Insert grease fittings in all locations shown in the Lubrication Chart on page 31. Lubricate all points as indicated in the chart.

Be Careful

THE LIFE YOU SAVE MAY BE YOUR OWN...

NATIONAL SAFETY COUNCIL

A circular logo with a thick black border. Inside the circle is a white cross on a black background. The words "GREEN CROSS" are written in a semi-circle at the top, and "FOR SAFETY" is written in a semi-circle at the bottom.

INFORMATION ABOUT UNITED STATES AND CANADIAN WARRANTY

The warranty on this machine or equipment comes from your John Deere dealer and is contained in the purchase agreement you sign. If you are purchasing the machine or equipment new, the dealer's warranty ordinarily contains the following provisions.

He agrees to replace parts which prove defective with normal and proper use within:

TWELVE MONTHS from date of delivery to you unless the machine or equipment is sold for industrial, construction or logging use.

SIX MONTHS from the first day of the month following the date on which you first use the machine or equipment if the machine is sold for industrial, construction or logging use.

He agrees to give a special warranty for sweeps, shovels, and extra-heavy-duty high-speed shares, based on wear instead of time of use.

He has no obligation to replace parts whose failure is related to modification or alteration of this machine or equipment in ways not recommended by the manufacturer. It is your obligation to bring the machine or equipment to his service shop or, if this is not possible, to reimburse him for his travel expense in fulfilling the warranty.

The dealer's warranty in the purchase agreement ordinarily does not cover batteries, rubber tires, radios, engines not of John Deere manufacture or used machines or equipment, and there is no warranty or other obligation on such items unless your dealer has delivered to you a certificate or other written statement which is separate from the purchase agreement and is designated "Warranty."

Certain other limitations on the obligation of the dealer and of others may be contained in the warranty in your purchase agreement.

Be sure to read the "Warranty and Agreement" in your purchase agreement, or your separate "Warranty," as there is no other warranty obligation, express or implied, including the implied warranties of merchantability and fitness, on this machine or equipment.

Note: The above summary of the provisions ordinarily found in the dealer's warranty was correct on the date of printing of this manual. The warranty you actually receive governs in case of any inconsistency with the summary.

