F640A, F640AH, F640AH SPECIAL, F650A, F650AH, F650AH SPECIAL

DRAWN MOLDBOARD PLOWS

JOHN DEERE

OPERATORS MANUAL

F640A, F640AH, F640AH SPECIAL, F650A, F650AH, F650AH SPECIAL DRAWN MOLDBOARD PLOWS

OMA15889 F7 English

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ENGLISH

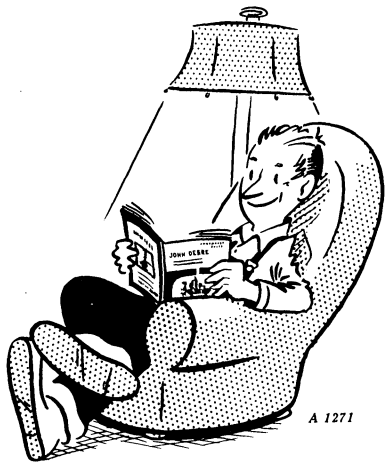
YOUR NEW PLOW

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 good 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 ☐ F640A ☐ F640AH ☐ F640AH SPECIAL
☐ F650A ☐ F650AH ☐ F650AH SPECIAL

Date Purchased . . . . . 19. . .

(To be filled in by Purchaser)

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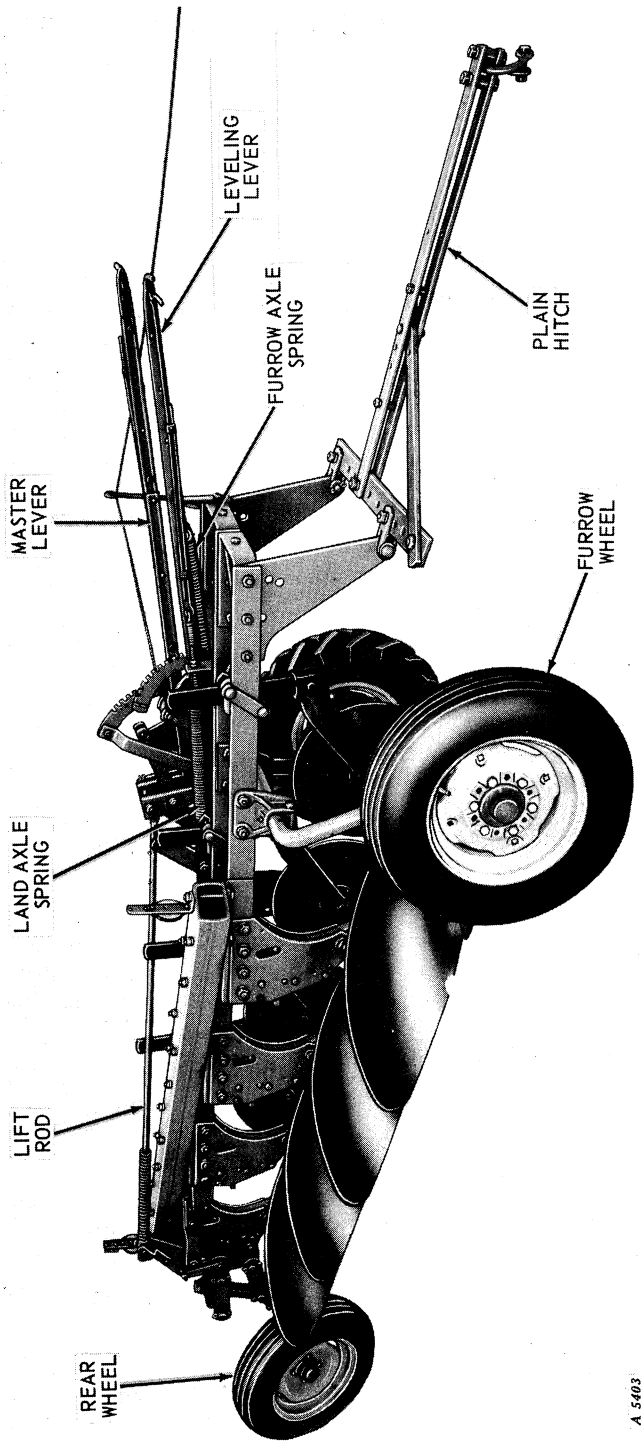
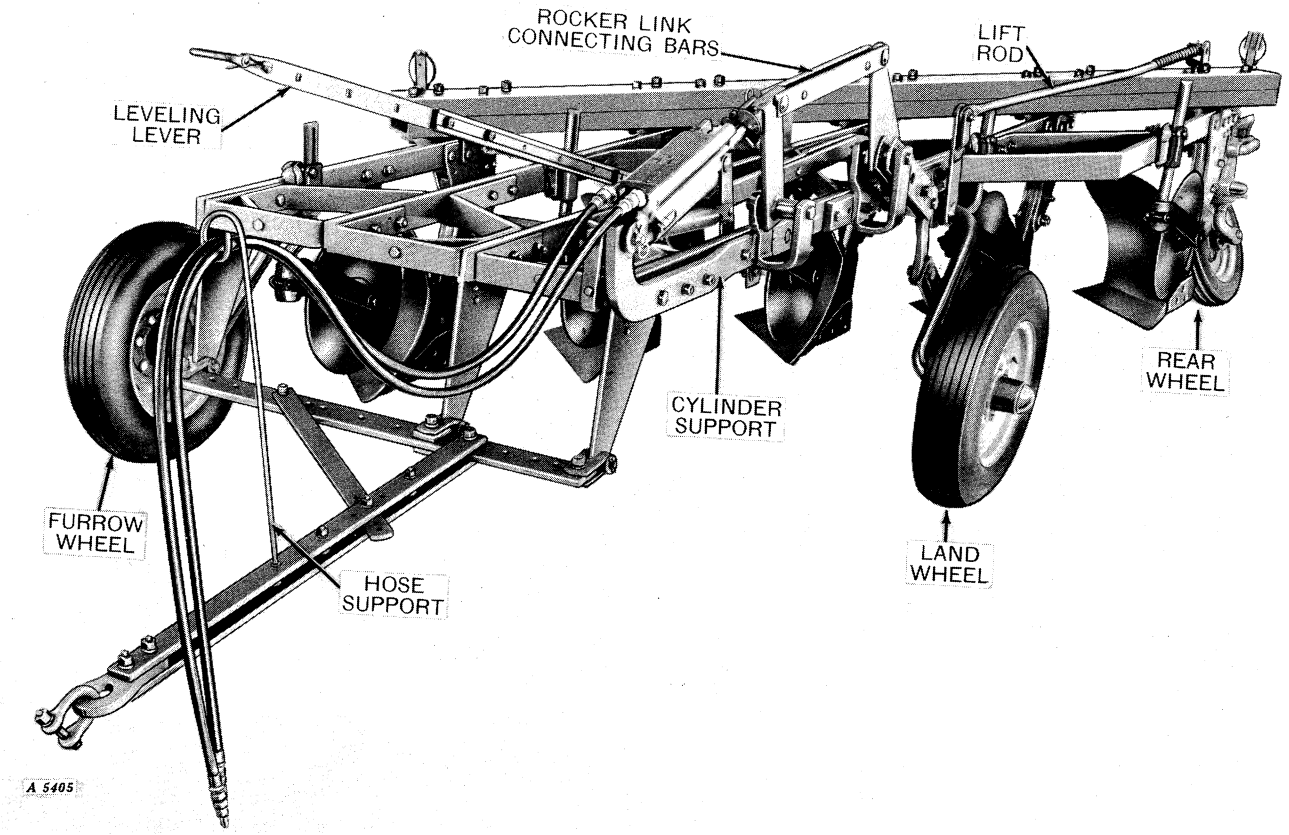
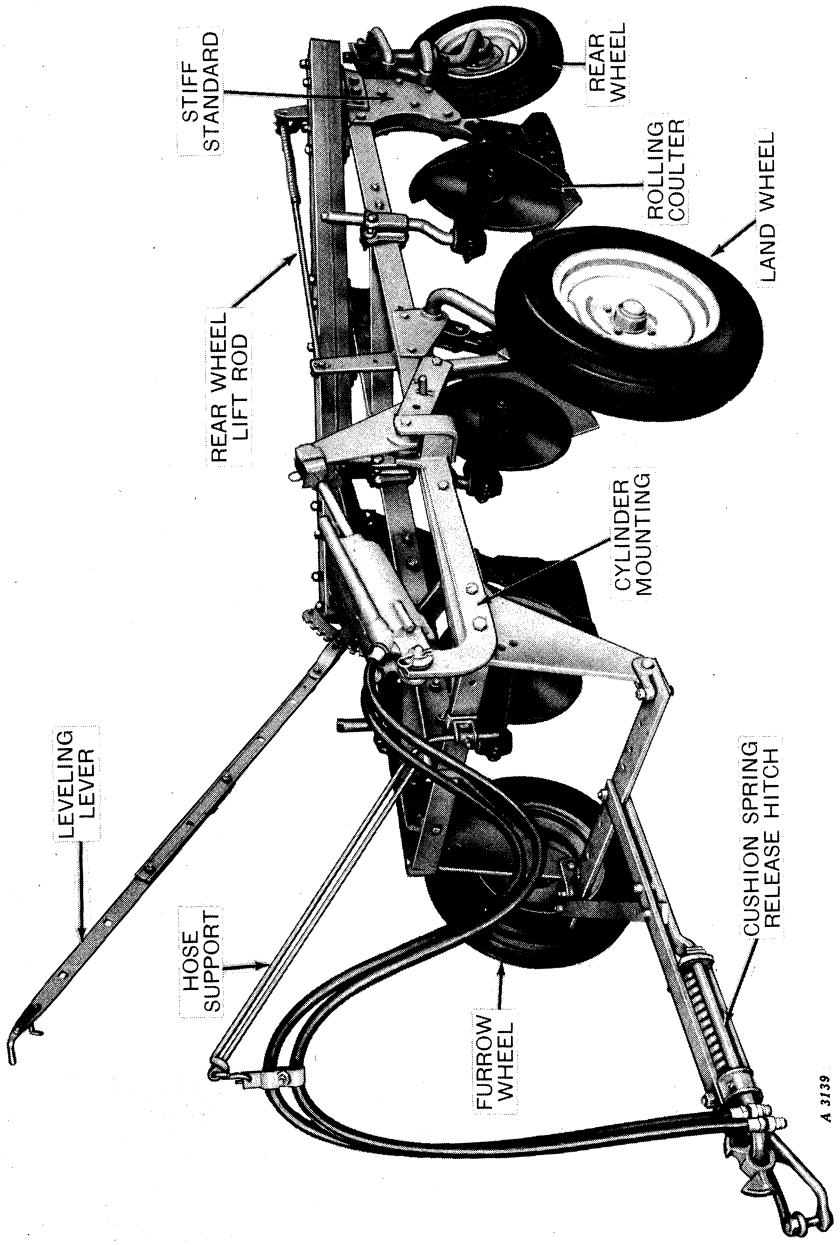


John Deere F650A 4-Bottom 16-Inch Drawn Moldboard Plow



John Deere F650AH 5-Bottom 16-Inch Drawn Moldboard Plow
(Round Shank Coulters, Special Equipment)



John Deere F640AH Special 3-Bottom Drawn Moldboard Plow

SPECIFICATIONS

TYPES	The F640A Clutch-Lift and F640AH Hydraulic-Lift 14- and 16-Inch Frames with Stiff Standards are furnished in the following sizes: 3-, 4-, and 5-bottom. The 5-bottom plow is reducible to 4 bottoms. The 4-bottom plow is reducible to 3 bottoms. The F650A Clutch-Lift and F650AH Hydraulic-Lift 14- and 16-Inch Frames with Safety-Trip Standards are furnished in the following sizes: 3-, 4-, and 5-bottom. The 5-bottom plow is reducible to 4 bottoms. The 4-bottom plow is reducible to 3 bottoms. F640AH Special Hydraulic-Lift 3-Bottom Stiff Standard, 14- and 16-Inch Frames. F650AH Special Hydraulic-Lift 3-Bottom Safety-Trip Standard, 14- and 16-Inch Frames.
DEPTH RANGE.	Up to 12 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-type bottoms and No. 9 for high-speed bottoms except rear bottom which requires a No. 10 landside.
WHEELS:	
FURROW:	
F640A, F640AH, F650A, F650AH.	Equipped with anti-friction bearing. Regular less tire. Special with 6.70-15 tire. 14-inch wheel less tire, special. Steel wheel, special.
F640AH and F650AH Special	Equipped with Anti-Friction bearing. Regular less tire. Steel wheel with wheel lugs, special. wheel less tire, special.
LAND:	
F640A and F650A . . .	Equipped with anti-friction bearing. Regular less tire. Special with 7.60-15 tire. Steel wheel with wheel lugs, special.
F640AH and F650AH .	Equipped with anti-friction bearing. Regular less tire. Special with 6.70-15 tire. 14-inch wheel less tire, special. Steel wheel, special.

LAND—Continued	
F640AH and F650AH Special	Equipped with anti-friction bearing. Regular less tire. Special with 5.90-15 tire. 14-inch wheel less tire, special.
REAR:	
F640A, F640AH, F650A, and F650AH . .	Equipped with anti-friction bearing. For but less 5.90-15 tire, regular; with tire, special. 14-inch wheel less tire, special. Cast wheel, special.
F640AH and F650AH Special	Equipped with anti-friction bearing. For but less 5.90-15 tire, regular; with tire, special. 14-inch wheel less tire, special.
HITCH:	
F640A and F640AH	Cushion spring release, regular.
F640AH Special	Cushion spring release, regular.
F650A and F650AH	Plain hitch for wheel-type tractors. regular. Plain hitch for crawler tractors, special. Connecting loop and clevis for plain hitches or wheel-type tractors, special. Clevis with bushing and bolts for wheel tractor with straight drawbar, regular.
F650AH Special	Plain hitch, regular. Clevis with bushing and bolts for wheel tractors with straight drawbar, regular.
LIFT.	Reduction gear lift clutch for the F640A and F650A Plows. Remote hydraulic cylinder for the F640AH and F650AH and special plows.
LEVERS	Adjustable for length.
COULTERS	17-inch plain, regular. 17-inch rippled edge, optional. 17-inch cushion coulter, plain or rippled edge, chilled-cone bearing, for round shank; optional. 18-inch plain, optional. Round Shank, regular for F640AH and F650AH Special Plows, optional for F640A, F640AH, F650A, and F650AH Plows.

COULTERS—Continued	Flat Shank, regular for F640A, F640AH, F650A, and F650AH Plows. Optional for F640AH and F650AH Special Plows. Chilled-Cone Bearing, regular. Anti-Friction Bearing, optional.
JOINTERS	Independent cast or steel available as special equipment.
LANDING LEVER	Special equipment.
MOLDBOARD EXTENSION	Special equipment. Two types—for conventional bottoms or HS400 Series High-Speed Bottoms.
MOLDBOARD PAD.	Special equipment for HS400 Series High-Speed Bottoms only.
ROOT CUTTER.	Special equipment.
WEED HOOKS.	Special equipment.
TRASH BOARDS	Special equipment for high-speed bottoms, high-speed slat bottoms, and SDT546 FC Semi-Deep Tillage Bottoms.
SHARE-FROG BRACE . . .	Special equipment. To attach 16-inch high-speed shares to 14-inch high-speed bottoms.
GAUGE WHEEL	Special equipment, for the 4- and 5-bottom F640A, F640AH, F650A, and F650AH Plows. Available less tire or with 5.90-15 tire. 14-inch wheel available less tire.

(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 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 put in storage for a considerable length of time, see pages 32 through 34.

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 all cotter pins spread to keep them from falling out. Check the bolts that hold the plow bottoms to see that they are drawn up very tight.

TIRE INFLATION

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

Recommended New Implement Tires	Inflation Pressure
4.00—12—4-Ply	36 psi.
5.90—15—4-Ply	28 psi.
6.70—15—4-Ply	26 psi.
7.60—15—4-Ply	24 psi.

LUBRICATION

Be sure plow has been properly lubricated. See Lubrication Chart on pages 36 and 37.

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.

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 to first read "Hitching Plow to Tractor" on the following pages. Then adjust the wheels as explained on page 11.

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 3-, 4-, or 5-bottom.)

Example: Finding center line of draft of a 5-bottom 14-inch plow:

Total cut of plow = 70 inches.

Center of cut or one-half of 70 inches = 35 inches.

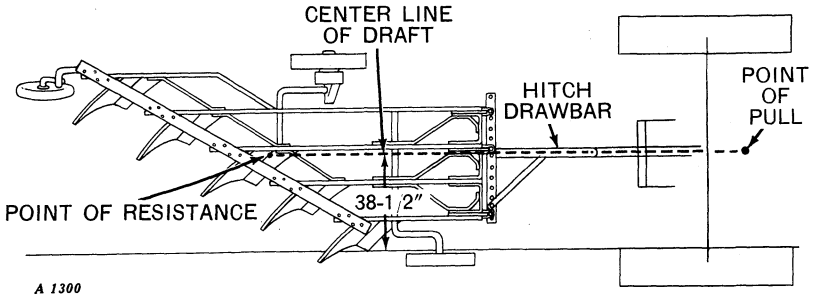
One-fourth the cutting width of one bottom = 3-1/2 inches.

3-1/2 inches added to center of cut, which is 35 inches = 38-1/2 inches.

Therefore, the center line of draft of a 5-bottom 14-inch plow is 38-1/2 inches measured to the left and at right angles from the furrow wall. See illustration below.

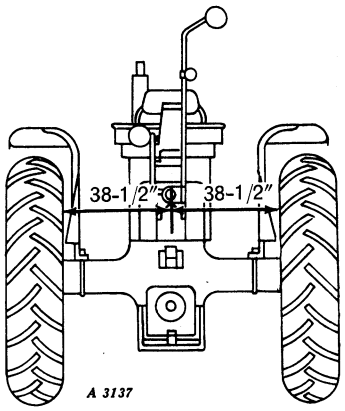
CENTER POINT OF RESISTANCE

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.



Horizontal Hitch Adjustments on 5-Bottom, 14-Inch Plow

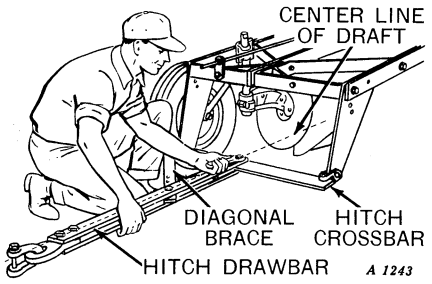
ADJUSTING TRACTOR WHEEL TREAD



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 10, the point of resistance is 38-1/2 inches from the furrow wall, set the tractor wheels so the center of the drawbar is 38-1/2 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



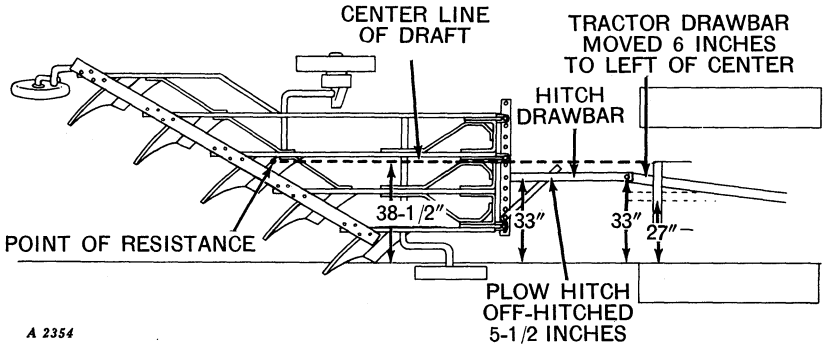
Adjust the plow hitch so it will be on the exact line of draft from the center point of pull on the tractor to the center point of resistance on the plow. A series of holes in the hitch crossbar allow the hitch to be bolted on the center line of draft. See illustration above and on page 10.

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



Horizontal Off-Hitching Adjustments on Plow and Fixed-Tread Tractor

Off-Hitching—Continued

plow hitch to be parallel to the furrow wall.

For example, when using a 5-bottom 14-inch plow with a standard tractor with a wheel spacing of 54 inches inside to inside of tires, the plow must be off-hitched 11-1/2 inches. The center line of draft of the plow is 38-1/2 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 11-1/2 inches difference should be taken about one-half on the plow and one-half on the tractor. Therefore, move the plow hitch drawbar 5-1/2 inches to the right of the line of draft and the tractor drawbar 6 inches to the left of the center of the tractor. Both the tractor drawbar and the plow hitch will then be 33 inches from the furrow wall. The plow hitch will now run straight and be parallel to the furrow wall.

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.

Hitching Chart

On the next page are examples of correct measurements for hitching a plow and tractor combination. We suggest that you work out the measurements listed for any plow and tractor combination, using the instructions on pages 10-12, and then apply these same instructions to your plow and tractor combination.

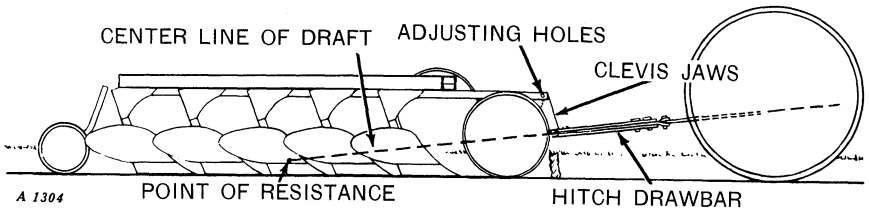
Plow Hitching Chart

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''
5	14''	*77''	38-1/2''	Center	38-1/2''
5	16''	*88''	44''	Center	44''

**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 on tricycle-type tractors, off-hitching on the tractor SHOULD be kept to a minimum, taking most on the plow.

VERTICAL HITCH ADJUSTMENTS



Vertical Hitch Adjustments

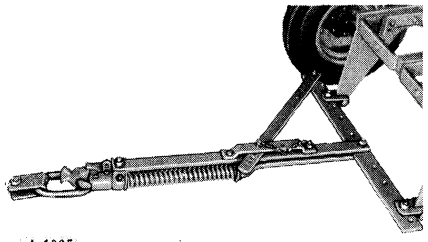
Adjust the clevis jaws on the plow so the plow hitch will fall on a straight line from the tractor drawbar to center point of resistance on the plow. Four holes are provided in each clevis jaw for this adjustment.

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.

TYPES OF HITCHES

CUSHION SPRING RELEASE HITCH



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The cushion spring release hitch on the F640A, F640AH, and F640AH Special 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 compressed 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.

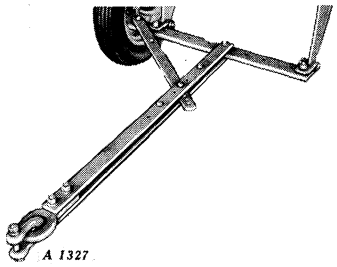
Rehitching is accomplished by raising the hitch, backing the tractor into position, and engaging the revolving hook with the hitch link.

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 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



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The F650A, F650AH, and F650AH Special Plows are furnished with plain hitches only because safety-trip standards eliminate the need for release-type hitches.

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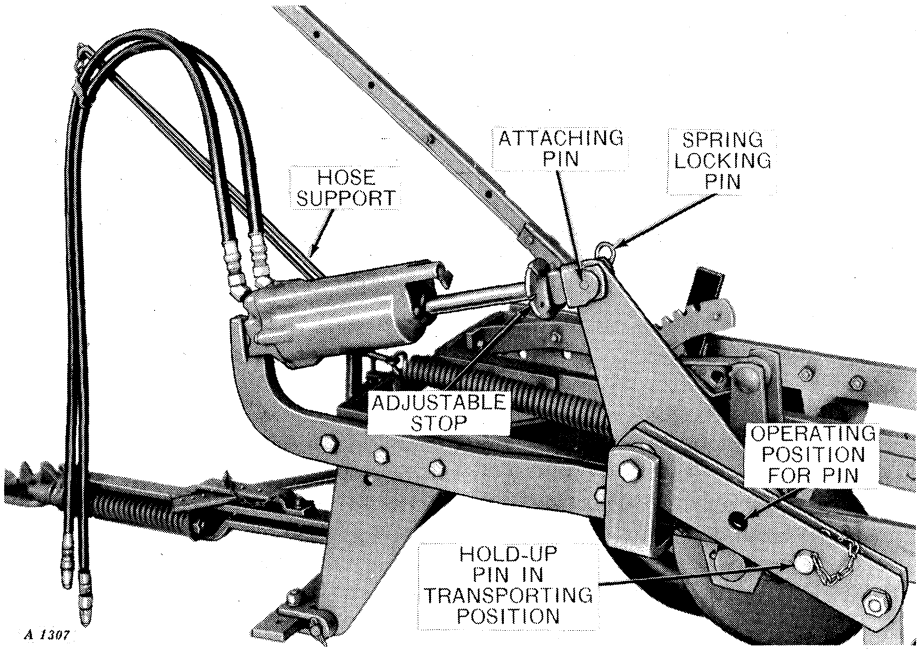
HYDRAULIC CONTROL



On the F640AH, F640AH Special, F650AH, and F650AH Special 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. *For complete operating and adjusting instructions for remote hydraulic 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 above.

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.*

HYDRAULIC CONTROL—Continued

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.

Attach hose to hose support, using S-hook and clamps, provided on the F640AH and F640AH Special Plows. On the F650AH and F650AH Special Plows, simply slip hoses through hose support.

Adjust the set screw collar on the hose support on the F640AH and F640AH Special Plows so the rod will not interfere with either the plow or tractor when turning.

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.

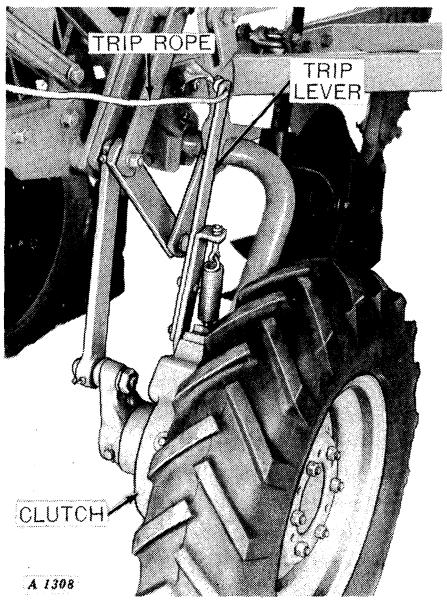
MECHANICAL CONTROL

The F640A and F650A Plows are raised and lowered by the reduction gear lift clutch. A rope attached to the clutch trip lever controls the clutch.

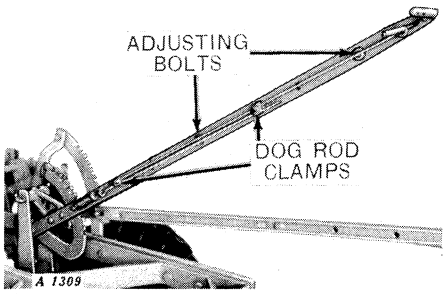
To lift the plow bottoms out of the ground for turning at the end of a row or for transporting, simply give the trip rope a quick positive pull. To lower the plow, pull the rope in the same manner. *NOTE: Do not use a slow steady pull since it will cause the clutch to continue tripping.*

CAUTION: Do not use an extension on clutch trip lever. Use of an extension may cause clutch to repeat or miss due to whiplash action of long lever.

The reduction gear lift clutch on these plows provides constant lift so plow will raise completely to give full transport and trash clearance regardless of depth setting. Cushioned drop protects the plow bottom parts as the plow is lowered to its work.



LEVELING



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.

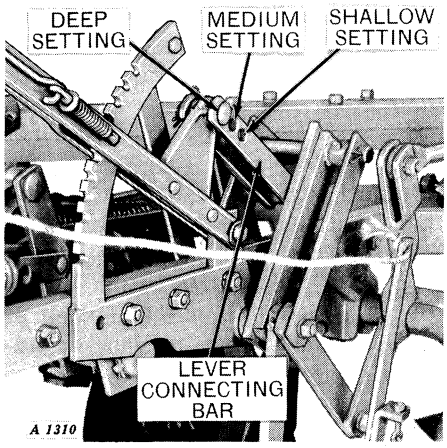
A series of holes in the leveling lever sections allow the length of the lever to be adjusted to within easy reach of the operator. To adjust, remove bolts and slide upper end of lever to desired length. Reinstall bolts and tighten securely. Also, adjust dog rod by loosening clamps and sliding to desired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

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

DEPTH OF PLOWING

Depth can be set from approximately 3 to 12 inches. There will be some variation in these figures, depending on type and size of bottoms and ground conditions.

CLUTCH-LIFT PLOWS



Master Lever Connecting Bar

On the clutch-lift plows the master lever and the lever connecting bar setting control the working depth of the bottoms.

Three holes in the lever connecting bar provide adjustment for shallow, medium, and deep plowing. For deep plowing, attach as shown in above illustration. For medium and shallow plowing, attach lever connecting bar to lever with pin through second or third hole as indicated. After the connecting bar has been set, the master lever controls the depth of plowing within the range of the shallow, medium, or deep setting.

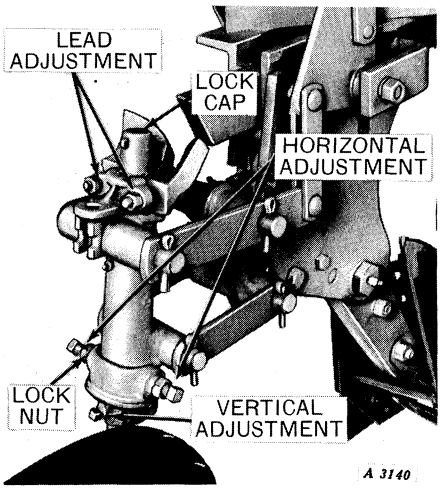
HYDRAULIC-LIFT PLOWS

On the Hydraulic-Lift Plows the remote hydraulic cylinder controls the depth of plowing within the range of the cylinder. See your tractor operator's manual for operation of the remote hydraulic cylinder.

REAR AXLE AND WHEEL

These plows are regularly equipped with a rear axle with an anti-friction bearing and a 15-inch wheel less tire. A wheel with a 15-inch rubber tire is available as special equipment. A 14-inch wheel less tire also is available as special equipment.

A wrap-around axle with anti-friction bearing is available as special equipment for all but the Special Plows. This axle requires a cast iron wheel. See illustration on following page. This axle and wheel is recommended when plowing in adverse conditions.



The adjustments of the rear axle and wheel are the same for the various axles and wheels available.

Set the rear wheel so the rear landside lightly contacts the furrow wall and furrow bottom at all times. **Be sure the rear wheel is carrying part of the weight of the rear of the plow.**

To move rear wheel up or down, loosen set screws and 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.

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.

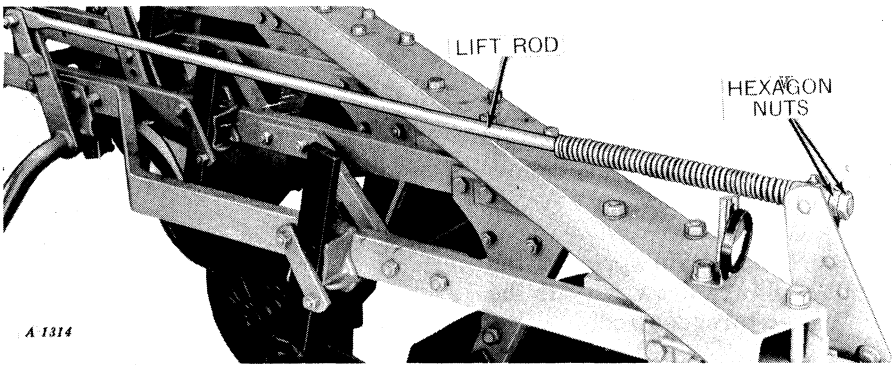
The rear wheel should have a slight lead toward the plowed ground to assist in absorbing the furrow slice pressure and to keep the plow running straight. To adjust the lead of the rear wheel toward the furrow wall, loosen the left-hand nut in lock cap, and tighten right-hand nut. To adjust lead of rear wheel away from the furrow wall, loosen right-hand nut, and tighten left-hand nut.

The rear wheel should **never** lead toward the unplowed ground.

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 to working position.**

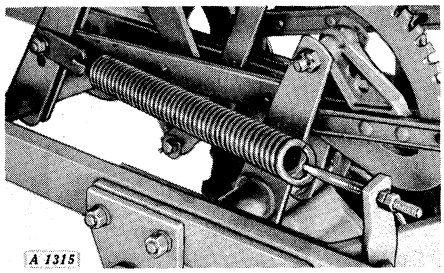
NOTE: Keep the rear tire inflated to recommended air pressure shown on page 8.

REAR WHEEL LIFT ROD



The rear wheel lift rod raises and lowers the rear axle and wheel. To get more transport clearance at the rear of the plow, draw up the two hexagon nuts on the rear of the lift rod.

LIFTING SPRINGS

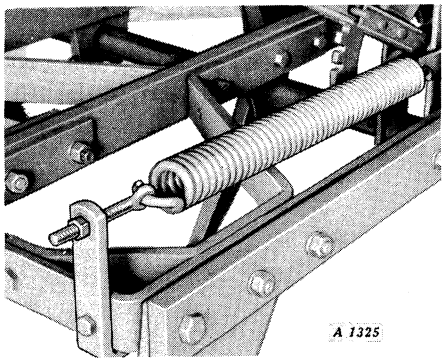


Land Axle Spring

On the clutch-lift plows the lifting springs assist the clutch in lifting the plow. These springs must be adjusted carefully.

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

On the furrow axle spring of the clutch-lift plows, draw nut all the way up on the threaded rod.

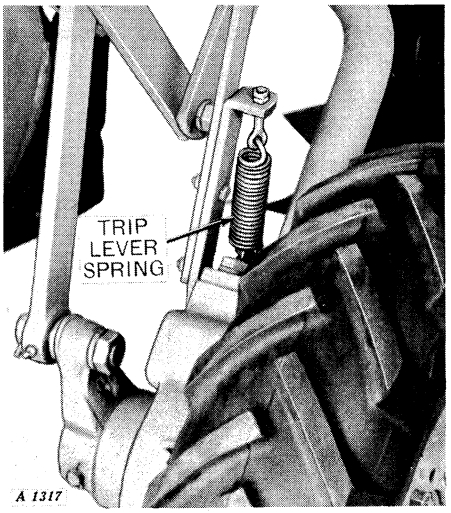


Furrow Axle Spring

On the hydraulic-lift plows the lift spring assists the remote hydraulic cylinder in lifting the plow. This spring must be adjusted carefully.

Draw up the nuts on the threaded rod about halfway. Too much tension on the spring will prevent the plow from penetrating properly. Not enough tension will cause the entire lift of the plow to be on the hydraulic system and it will be more difficult to adjust the leveling lever.

TRIP LEVER ADJUSTING SPRING

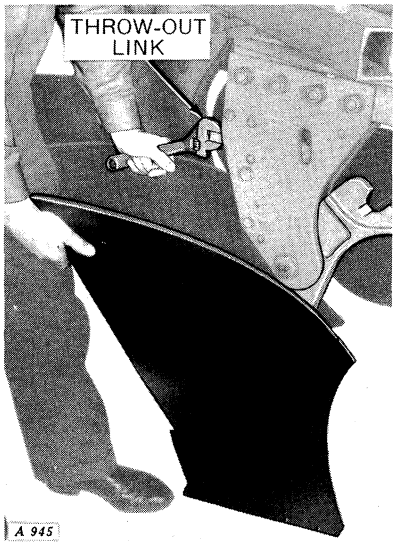


On the clutch-lift plows the clutch trip lever spring aids the lever in returning to its original position, preparing the clutch for its next operation.

Tighten the nut on the spring adjusting eyebolt if greater tension is desired.

The world's greatest safety device is a careful operator.

SAFETY-TRIP STANDARDS



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.

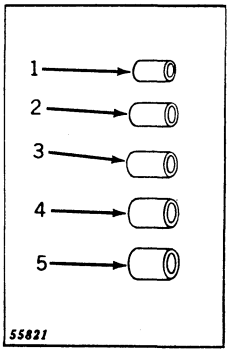
The release mechanism may be tripped to facilitate changing shares. To trip, first raise the plow and then hold down the throw-out link with an ordinary wrench, as shown in the illustration above, for standards other than the rear. On the rear standard there is not enough room to release standard with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



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-inch thick. They are:

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

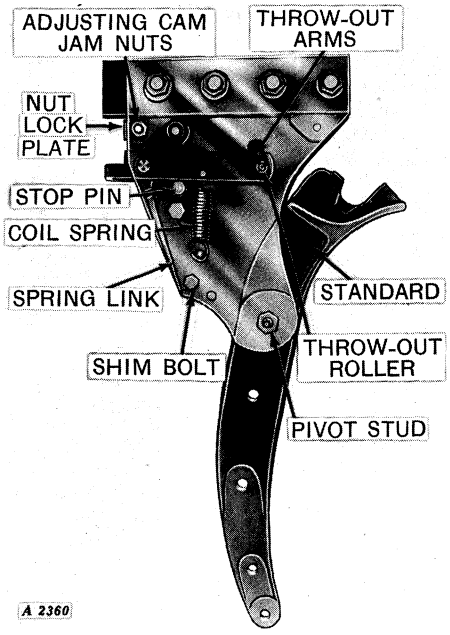
3. Rotate adjusting cam counterclockwise with a screwdriver (when facing left side of plow) so spring link is free to pivot.

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.

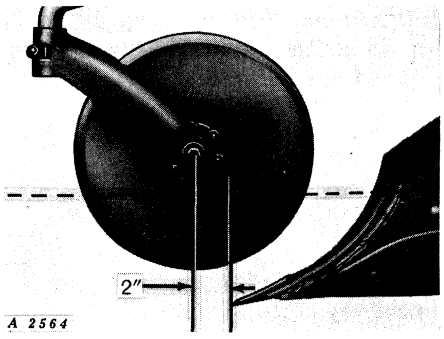
NOTE: If it becomes necessary to replace the standard in the safety-trip standard assembly, remove all shims and add only as needed to attain proper tripping load.



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 on page 36.

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.

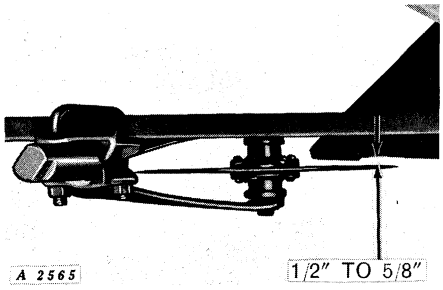
For lighter soils, especially where there is heavy or tough trash, move the coulter toward the front. Set the coulter just deep enough to cut the trash. If set too deep, the coulter pushes the trash instead of cutting it.

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 coulters, loosen U-bolts and slide the shank and clamp either forward or backward or up and down.

HORIZONTAL ADJUSTMENT



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.

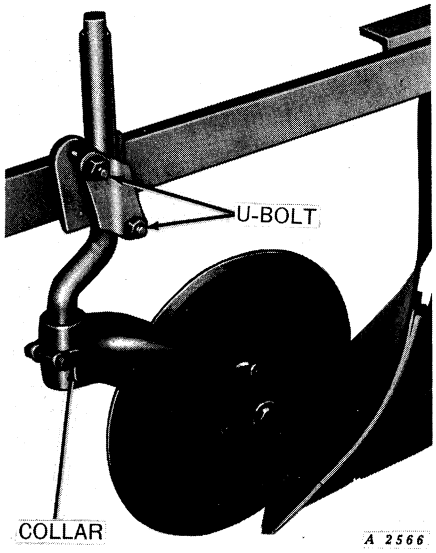
After the rear coulter is adjusted correctly, set the front coulters exactly the same. Measure the distance between coulters so you get exactly the correct cut on each bottom. The distance between the coulters should be the same as plow

HORIZONTAL ADJUSTMENT—Continued

frame size. If coulter 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

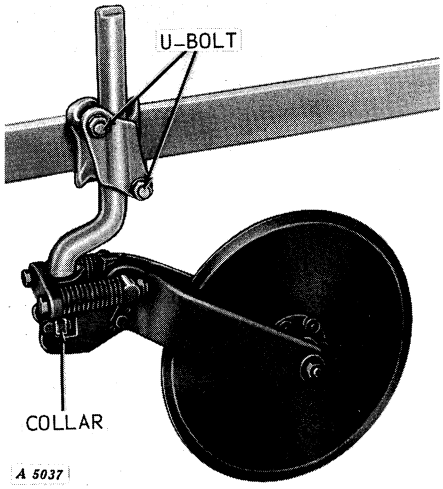


To adjust the coulter, loosen the clamp U-bolt nuts and rotate the coulter shank until coulter blade is at proper position.

When a major adjustment of a 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.**

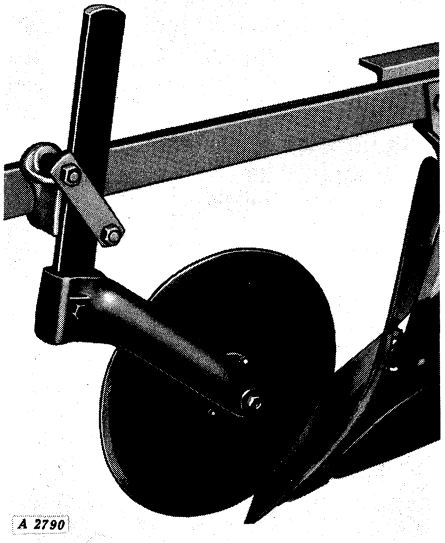
Cushion Coulter (Round Shank)



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.

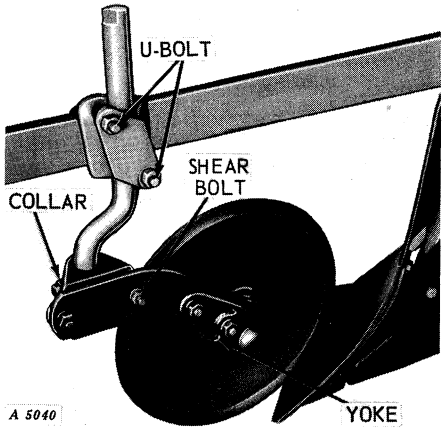
Flat Shank



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

ANTI-FRICTION BEARING COULTERS

Round Shank



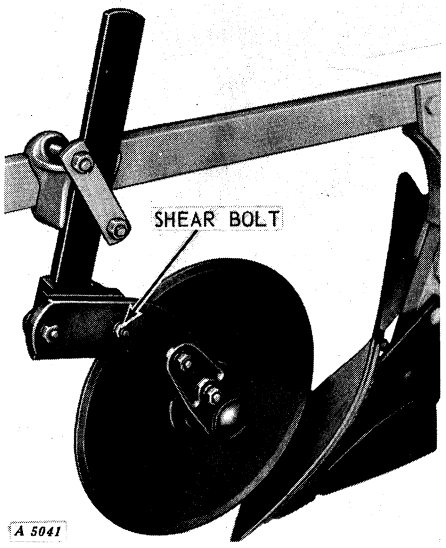
The adjustments for the anti-friction bearing coulter are the same as the chilled-cone bearing coulter except for the collar and coulter shank bracket.

To adjust collar so coulter 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.

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

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

Flat Shank



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

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

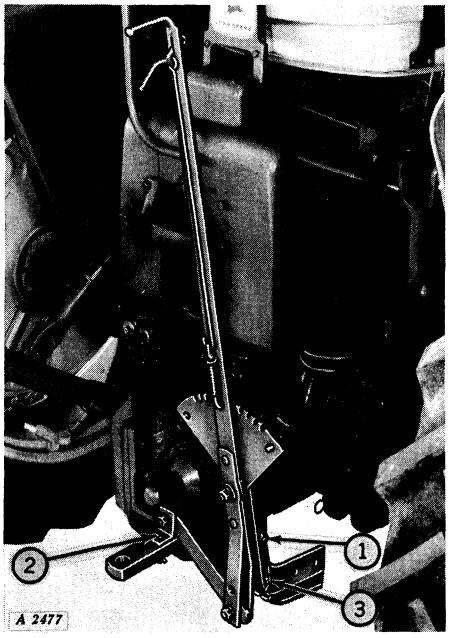
SPECIAL EQUIPMENT

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 so the remote cylinder hoses may be connected to the left-hand breakaway couplers. This will prevent possible interference with the landing lever when using a hydraulic-lift plow.



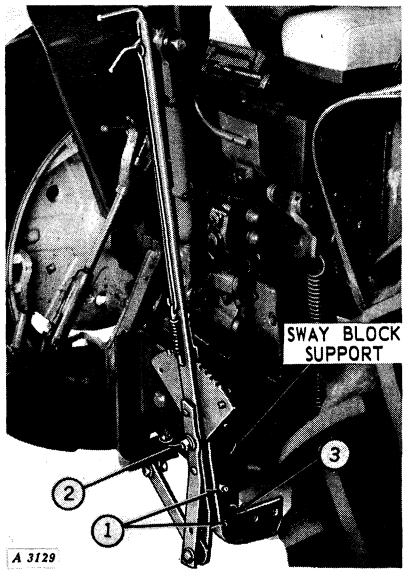
NOTE: Before attaching landing lever to tractor, the center link and right-hand draft link, lift link, and sway block must be removed from tractors equipped with a 3-point hitch.

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 when using a hydraulic-lift plow.

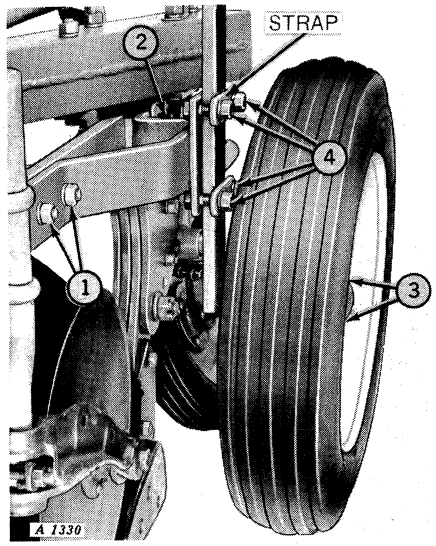
NOTE: Before attaching landing lever to tractor, the right-hand sway block must be removed from tractors equipped with a 3-point hitch. If the tractor is not equipped with a 3-point hitch the right-hand sway block support is required to attach the landing lever to the tractor.

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.

GAUGE WHEEL



A gauge wheel, available for the 4- and 5-bottom plows, assists the plow in maintaining a constant depth while operating in sandy or loose soils.

The working depth of the gauge wheel may be adjusted by loosening the bolts in the bracket and straps and pushing the wheel up or down to the desired depth.

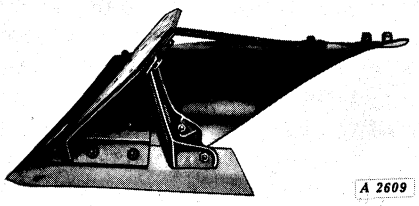
1. Attach bracket assembly to frame bar and brace.

2. Attach bracket assembly to rear standard and frame bar.

3. Attach wheel to hub.

4. Position wheel and axle assembly and secure in place by attaching straps.

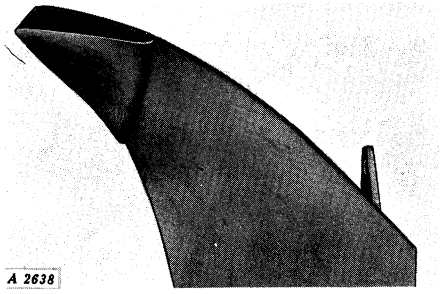
SHARE-FROG BRACE



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.

MOLDBOARD PAD



A moldboard pad, available as special equipment for HS400 Series 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.

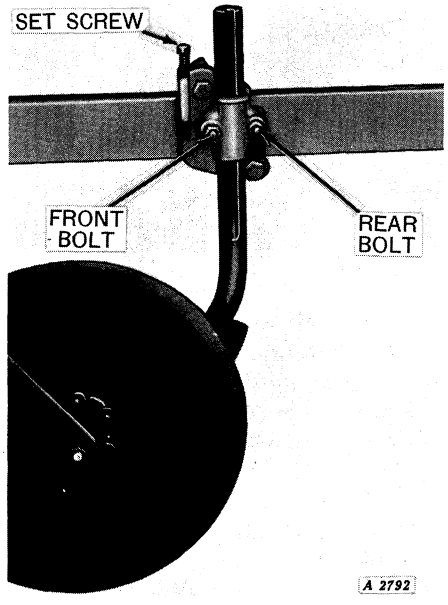
INDEPENDENT JOINTERS

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 have a tendency to clog.

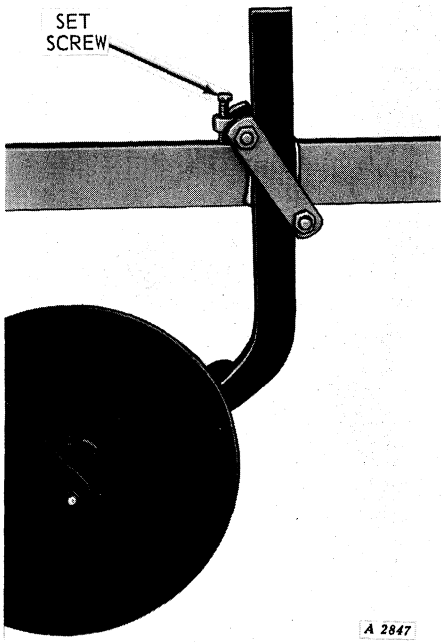
Round Shank



The independent 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.

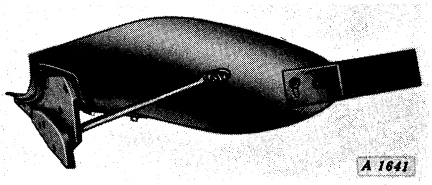
Flat Shank



The independent 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.

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.

TRASH BOARD

Trash boards, for high-speed bottoms, high-speed slat bottoms, or the SDT546FC Semi-Deep Tillage Bottoms, improve coverage of heavy straw, stubble, and stalks.

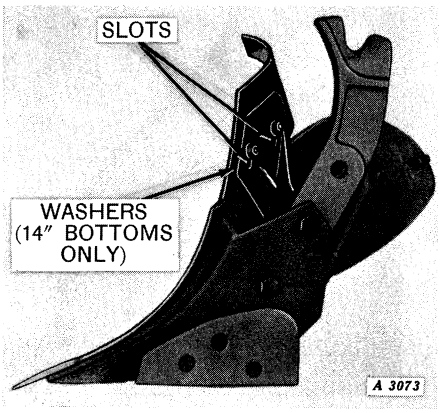
The trash board catches the trash being carried on the top of the furrow slice and turns it down into the furrow bottom to be covered completely by the furrow slice.

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.

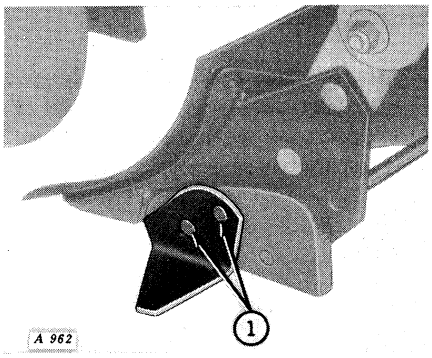
In this position, the trash board will turn trash quicker and will give lighter draft.

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 above illustration.

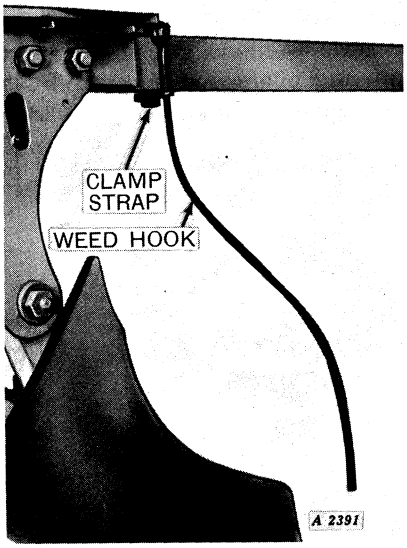
ROOT CUTTER



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 or No. 10 cast landside, it will be necessary to use 1/2-inch longer bolts.

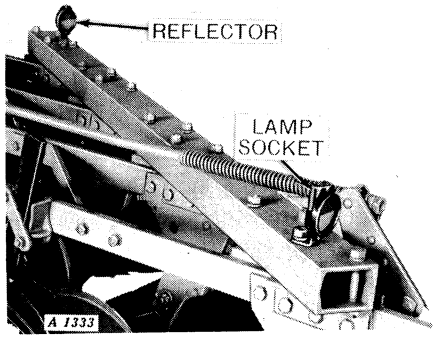
WEED HOOK



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 shown in above illustration.

TRANSPORTING



To transport, raise the plow and lock in transport position by inserting hold-up pin through lower hole in bell crank. See page 15. Then lock the rear wheel in transport position as explained on page 19. *Be sure to remove both pins before plowing.*

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 for proper use. 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 11 and 13.

Check tires for proper air pressure and weighting as outlined on pages 8 and 9.

Set tractor drawbar in proper position as outlined on page 9.

Set rockshaft selector lever in "D" position.

Set plow hitch correctly as outlined on pages 10-13.

Set clevis jaws in lowest setting (top hole in clevis jaws). See page 13.

Set rolling coulters as outlined on pages 23-25.

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 pages 18 and 19.

11. If jointers or trash boards are used, set according to instructions on pages 28 and 29, 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.

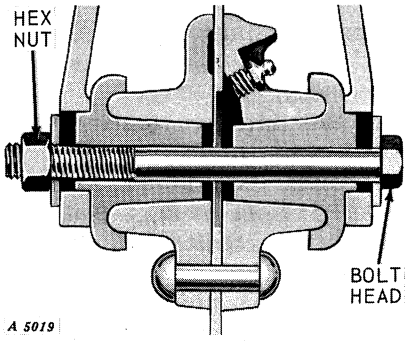
Shares for conventional plow bottoms can be resharpened and reshaped. See your local blacksmith.

ROLLING COULTERS

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

ADJUSTING END PLAY IN COULTER HUBS

Coulters with Chilled-Cone Bearings

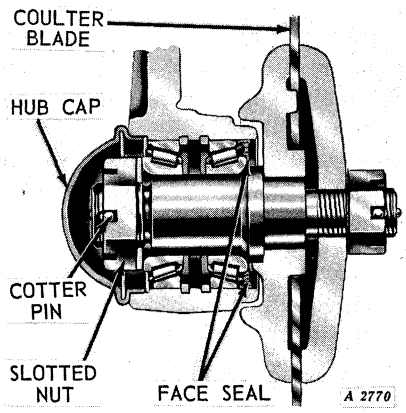


Cross-Section View of Coulter Bearing

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

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

Coulters with Anti-Friction Bearings



Cross-Section View of Anti-Friction Bearing Rolling Coulter

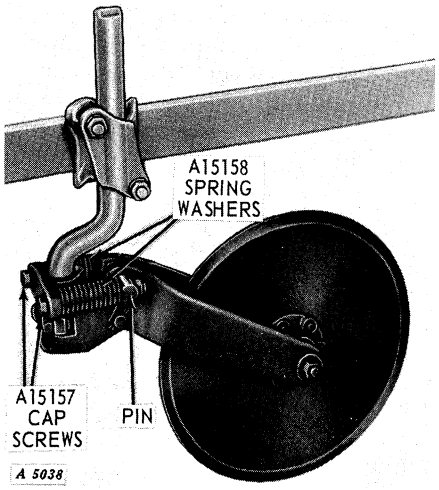
The anti-friction bearing has a face-type seal. The contact of the seal against a machined surface retains grease and excludes dirt. Unless the bearing is in proper adjustment, the seal is ineffective.

If there is any looseness in the bearing, disassemble, clean, and repack with SAE mutlipurpose-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.

CUSHION COULTER



If the cushion rolling coulter is disassembled for any reason, the coulter 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.

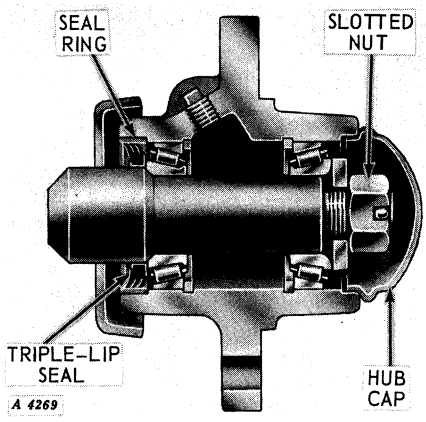
The A15157 cap screws are a special type and thread length, and only these cap screws should be used for replacement. Before assembly, these cap screws should be coated with SAE multipurpose-type grease. Thread these cap screws into the pin until the thread bottoms out and tighten to 70-90 ft-lbs of torque. Lock securely in place with the jam nut.

There is no pressure adjustment on the cushion rolling coulter.

WHEEL BEARINGS

ANTI-FRICTION BEARING

Rear Axle for 14- or 15-inch Wheels



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

The rear axle for 14- or 15-inch rear wheels, regularly furnished with these plows, is equipped with a triple-lip seal anti-friction bearing.

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.

Hydraulic Land Axle, Gauge Wheel Axle, Furrow Axle, and "Wrap-Around" Rear Axle (for Cast Wheel)

Inspect wheel bearings before the plowing season and repack with wheel bearing grease. Tighten the adjusting nut with a 12-inch wrench. At the same time turn wheel in both directions until there is a slight drag to be sure all bearing surfaces are in contact. Then back off the adjusting nut to first locking position.

CHILLED-SLEEVE BEARING

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

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 pages 36 and 37.

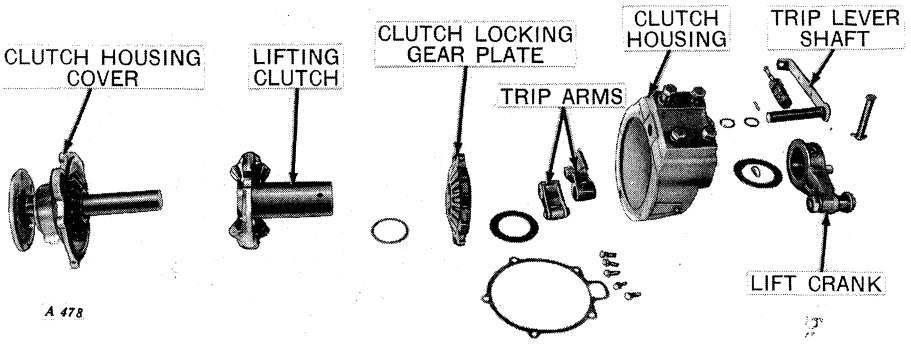
SERVICE AT THE END OF THE SEASON

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 "Rust Prevention" on page 32.

REDUCTION GEAR LIFT CLUTCH



The mechanism of the reduction gear lift clutch is completely enclosed and operates in a bath of SAE 90 oil.

CAUTION: This clutch does NOT contain oil when shipped from the factory. Before operating plow add one quart of SAE 90 oil. Drain and refill every 100 hours of operation or once a year.

To replace worn or damaged clutch parts, disassemble clutch as follows:

Remove drilled pin from lift crank.

Remove lift crank from shaft.

Unscrew five bolts from clutch housing and pull out the clutch housing cover, lifting clutch, clutch locking gear plate, and gaskets.

Remove trip lever shaft from clutch housing.

Remove trip arms and tension spring from inside of clutch housing.

Check for loose, worn, or broken parts and replace them if necessary.

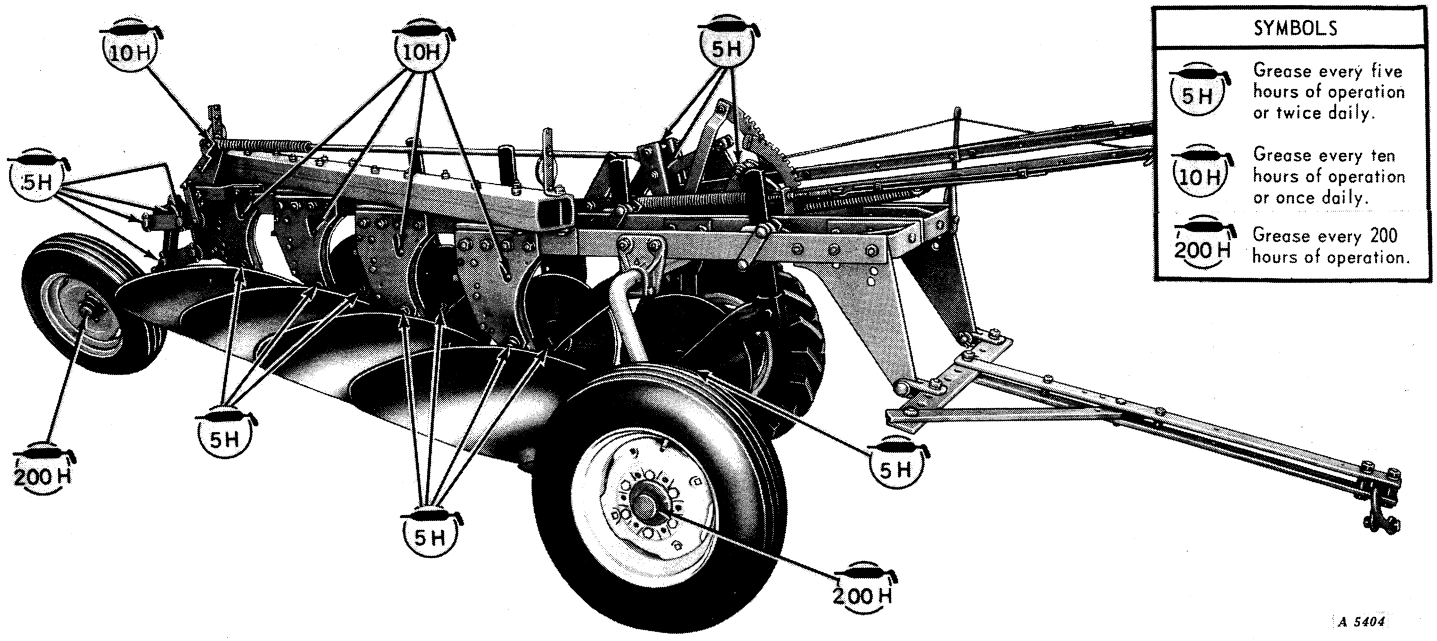
To reassemble clutch, simply reverse the above procedure.

Upon reassembling the clutch, be sure to fill it with one quart of SAE 90 oil.

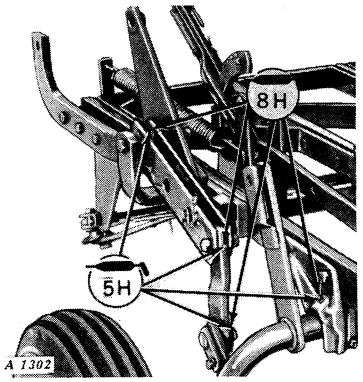
LUBRICATION

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 multipurpose-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. The period recommended is based on normal conditions; severe or unusual conditions may require more frequent lubrication.

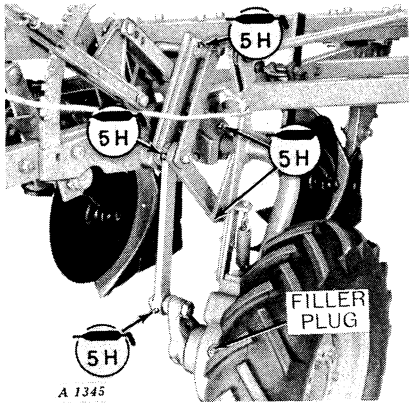
NOTE: Throw-out roller on safety-trip standards must be free and well lubricated at all times.



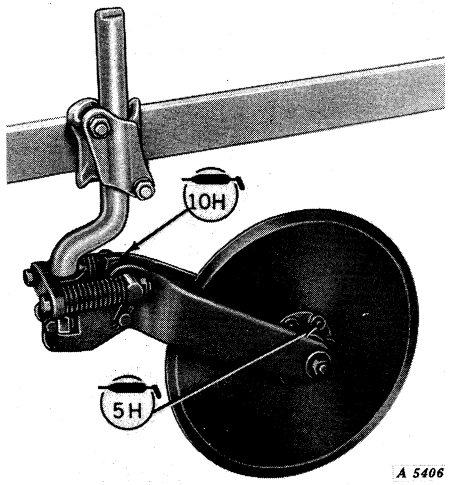
Lubrication Chart



Hydraulic-Lift Plow



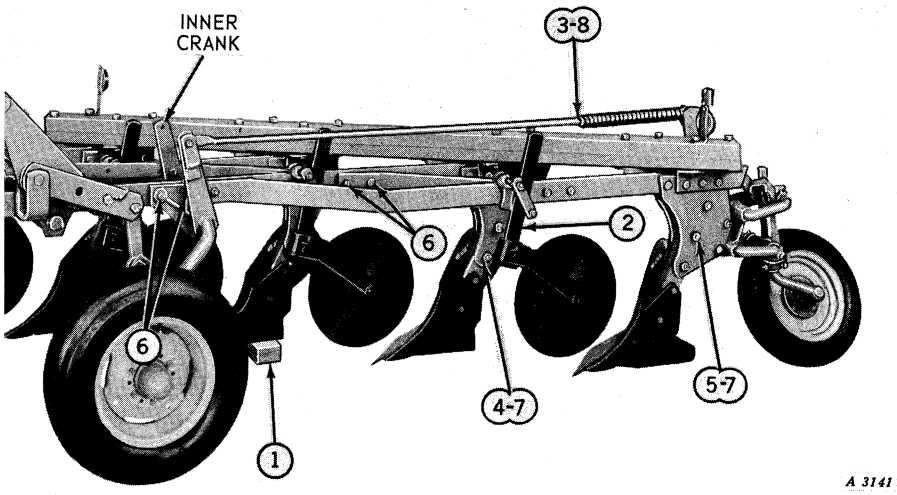
Clutch-Lift Plow



Cushion Coulter

NOTE: The reduction gear lift clutch on the Clutch-Lift Plows operate in a bath of SAE 90 oil. The clutch requires one quart of oil. Before operating plow, always be sure clutch contains oil. Drain and replace oil once a year or approximately once every 100 hours of operation.

REDUCING A 4-BOTTOM PLOW TO A 3-BOTTOM PLOW



4-Bottom F640AH Plow

1. Raise bottoms 2 or 3 inches off a level surface and place blocks under second bottom and left front clevis jaw. Lower plow onto blocks.

2. Remove rear coulter, shank, and clamp.

3. Remove rear lift rod.

4. Remove third standard and bottom.

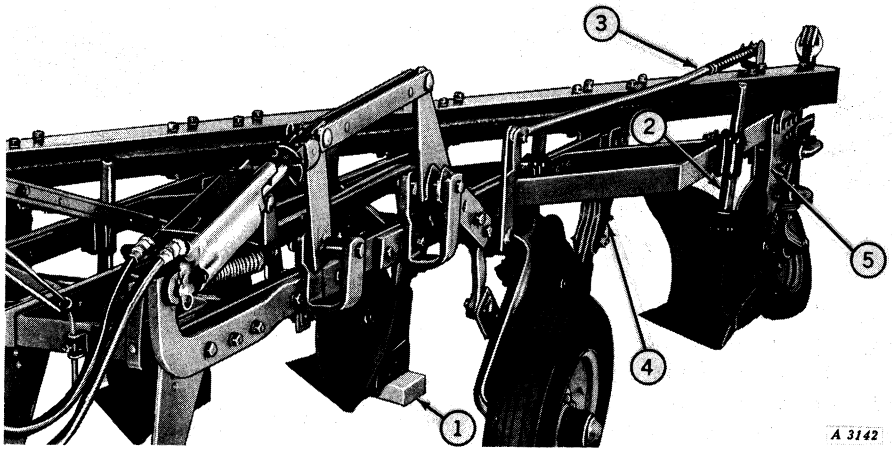
5. Remove fourth standard and bottom with rear wheel assembly.

6. Remove bolts and remove fourth frame bar and rear frame brace. Replace bolts in land axle bearing and third frame bar and brace.

7. Replace the third standard and bottom, removed in Step 4, with fourth standard, bottom, and rear wheel.

8. Attach new rear lift rod (BA10545A). *NOTE: Rear lift rod attaches to inner crank of land axle. Use only longer of the two springs which were with the original rear lift rod.*

REDUCING A 5-BOTTOM PLOW TO A 4-BOTTOM PLOW



5-Bottom F650AH Plow

1. Raise bottoms 2 or 3 inches off a level surface and place blocks under third bottom and left front clevis jaw. Lower plow onto blocks.

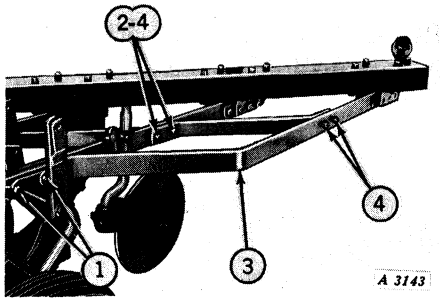
2. Remove rear coulter, clamp, and shank.

3. Remove rear lift rod.

4. Remove fourth standard and bottom.

5. Remove fifth standard and bottom.

REMOVING FIFTH FRAME BAR AND BRACE



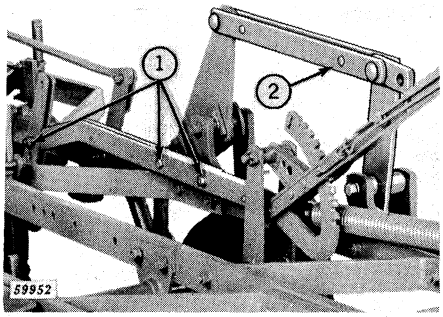
1. Remove bolts from axle bearing, fourth and fifth frame bars.

2. Remove bolts in frame braces and fourth frame bar. These bolts will be used later when attaching inside land axle bearings in new position.

3. Remove fifth frame bar and rear frame brace.

4. Remove bolts from fifth frame bar and rear frame brace and use them to attach frame brace (between third and fourth frame bars) to fourth frame bar. (These bolts replace bolts removed in Step 2 above.)

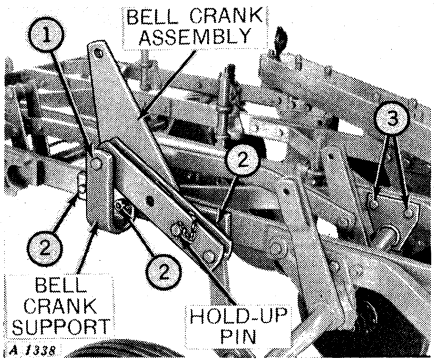
REMOVING RATCHET EXTENSION



1. Remove ratchet extension straps from land axle crank and from lever ratchet. *NOTE: On clutch-lift plows, lift spring connecting strap also must be removed.*

2. On the hydraulic-lift plows, remove rocker link connecting bars and rocker link assembly from bell crank assembly and cylinder support.

REMOVING CYLINDER SUPPORT AND BELL CRANK

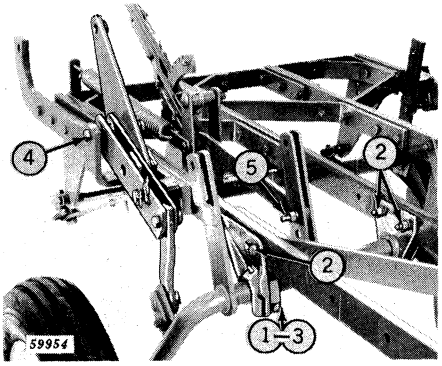


1. Remove bolt, bushing, and hold-up pin and allow bell crank assembly to drop out of position.

2. Remove bell crank support.

3. Remove bolts attaching inside land axle bearing to frame bar and braces. Bolts which bolted fourth frame bar and rear braces are used to replace these bolts.

ATTACHING LAND AXLE BEARING AND BELL CRANK



1. Loosen land axle bearing cap bolt and allow bearing to be moved.

2. Attach land axle bearings to frame bars approximately 24 inches forward from original position. For outside bearing, use bolts that attached bearings in their original position.

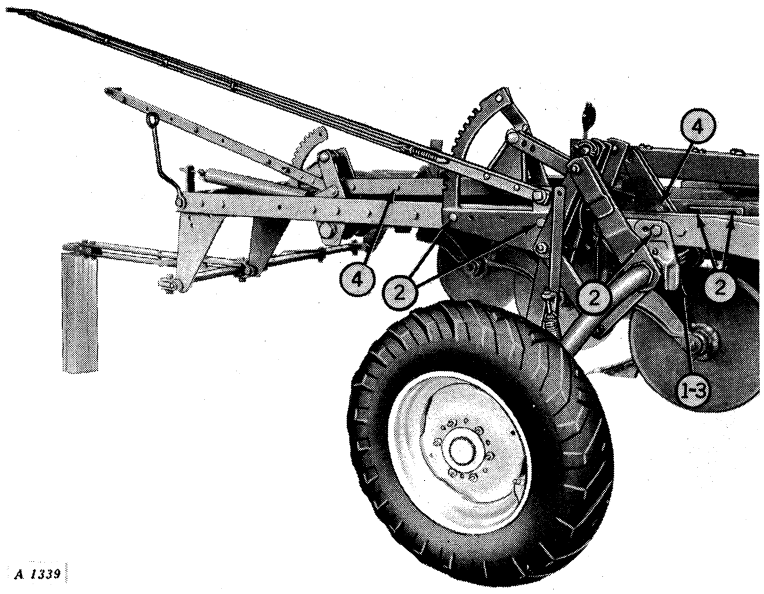
For inside bearings use bolts which previously bolted fourth frame bar and rear brace together.

3. Tighten land axle bearing cap bolt after land axle outside bearing has been attached to frame bar.

4. Attach bell crank assembly to cylinder support with bolt and bushing removed from bell crank support.

5. Attach lever ratchet to land axle crank with same bolt as was used in crank when using lever ratchet extension. *NOTE: Bolt goes through last hole of lever ratchet.*

ATTACHING LAND AXLE BEARING AND RATCHET
(On F640A and F650A Plows)



1. Loosen land axle bearing cap bolt and allow bearing to be moved.

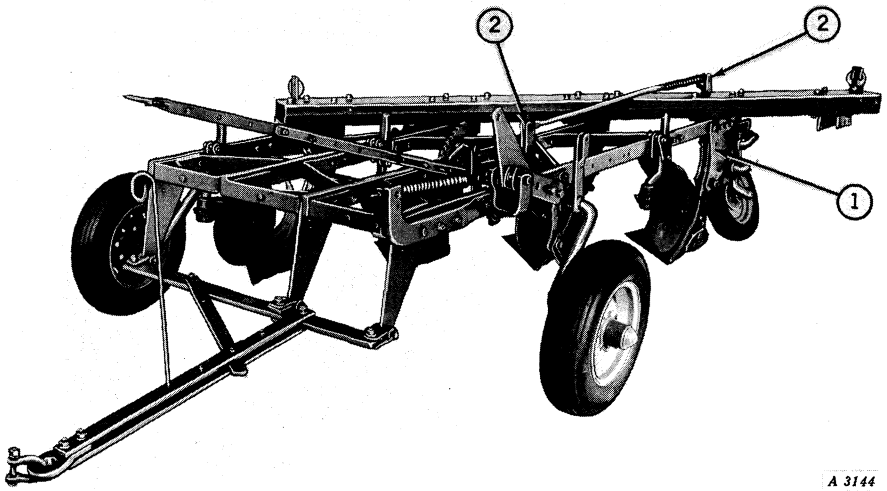
2. Remove bolts in bearings and ratchet support. Attach axle bearings and ratchet support to frame bars approximately 24 inches forward from original position. For outside bearing, use bolts that attached bearing in its original position.

For inside bearings use bolts which previously bolted fourth frame bar and rear brace together.

3. Tighten land axle bearing cap and bolt after land axle outside bearing has been attached to frame bar.

4. Attach lever ratchet and lift spring connecting strap to land axle crank with same bolt as was used in crank when using lever ratchet extension. *NOTE: Bolt goes through last hole of lever ratchet.*

ATTACHING REAR STANDARD, BOTTOM, AND WHEEL



1. Replace fourth standard and bottom with fifth standard, bottom, and rear wheel.

2. Attach rear lift rod.

NOTE: Rear lift rod attaches to the inner crank of the land axle.

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 landside 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.
Improper rear wheel adjustment.	Set wheel to have slight lead to plowed ground and so rear landside lightly contacts the side of the furrow wall.
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

Possible Cause	Possible Remedy
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 and keep 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 *"Plow Running Crooked,"* on page 43.
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.

BOTTOMS DON'T SCOUR

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 *"Plow Running Crooked,"* page 43.
Coulters not set properly.	Set coulters shallower and back.

RAGGED FURROW WALL

Possible Cause	Possible Remedy
Improper rear coulter adjustment.	Set coulters 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 allow landside to lightly contact furrow wall. Rear wheel should have slight lead toward plowed ground.

PLOW PULLS HEAVY

Excessive tractor wheel slippage.	Raise tractor drawbar.
Plow running on nose.	Lower clevis jaws.
Rear wheel not set properly.	Lower rear wheel until rear landside lightly contacts the furrow bottom and rear wheel carries part of the weight of the rear of the plow.
Bottoms not scouring.	Clean frequently until land polish is obtained.

CLUTCH NOT WORKING PROPERLY

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

Possible Cause	Possible Remedy
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.

F640A AND F640AH PLOWS

REGULAR SHIPPING BUNDLES

Bundle No.	Description	F640A 3-Btm.	F640A 4-Btm.	F640A 5-Btm.	F640AH 3-Btm.	F640AH Special	F640AH 4-Btm.	F640AH 5-Btm.
Frame and Standards								
BA 10867 A	(14-Inch)	1	..	..	1	1	..	..
BA 10868 A	(16-Inch)	1	..	..	1	1	..	..
BA 10869 A	(14-Inch)	..	1	..	..	..	1	..
BA 10870 A	(16-Inch)	..	1	..	..	..	1	..
BA 10871 A	(14-Inch)	..	..	1	..	..	..	1
BA 10872 A	(16-Inch)	..	..	1	..	..	..	1
Hitches (For Wheel-Type Tractors)								
SD 2241 A	Cushion Spring Release	1	1	..	1	..	1	..
BA 10695 A	Cushion Spring Release	..	..	1	..	..	..	1
BA 10560 A	Cushion Spring Release	..	..	..	..	1	..	..
Axles								
BA 10873 A	Furrow (14-Inch)	1	1	..	1	..	1	..
BA 10874 A	Furrow (16-Inch)	1	1	..	1	..	1	..
BA 10875 A	Furrow (14-Inch)	..	..	1	..	..	..	1
BA 10876 A	Furrow (16-Inch)	..	..	1	..	..	..	1
BA 10877 A	Land (14-Inch)	1	1	1	..	..	..	..
BA 10878 A	Land (16-Inch)	1	1	1	..	..	..	..
BA 10880 A	Land (14-Inch)	..	..	..	1	..	1	1
BA 10881 A	Land (16-Inch)	..	..	..	1	..	1	1
SD 2757 A	Cylinder Lift (14-Inch)	..	..	..	..	1	..	..
SD 2758 A	Cylinder Lift (16-Inch)	..	..	..	..	1	..	..
Rear Axle, Bails, Anti-Friction Bearing and Wheel								
BA 14042	Rear Axle, Bails, and Bearing	1	1	1	1	1	1	1
JD 1384	Rear Wheel, 15-Inch, less Tire	1	1	1	1	1	1	1
Round Coulter Shank, Clamps and Rolling Coulter								
BA 10713 A	Shank and Clamp	..	..	..	..	3	..	..
BA 10902 A	17-Inch with Chilled-Cone Bearing	..	..	..	..	3	..	..

REGULAR SHIPPING BUNDLES—Continued

Bundle No.	Description	F640A 3-Btm.	F640A 4-Btm.	F640A 5-Btm.	F640AH 3-Btm.	F640AH Special	F640AH 4-Btm.	F640AH 5-Btm.
Flat Coulter Shank, Clamps, and Rolling Coulters								
BA 10991 A	Coulter Clamp	3	4	5	3	..	4	5
BA 10907 A	17-Inch with Chilled-Cone Bearing	3	4	5	3	..	4	5
Land and Furrow Wheels								
BA 10229 A	Wheel less Tire	2	2	2	2	..	2	2
JD 1384	Wheel less Tire	..	..	..	..	2	..	..
Miscellaneous Regular Bundles								
BA 10866 A	Reduction Gear Lift Clutch	1	1	1	..	..	..	..
BA 10778 A	Clutch Rope and Grease Fittings	1	1	1	..	..	..	..
SD 165 A	Grease Fittings	..	..	..	1	1	1	1
BA 10704 A	Cylinder Mounting	..	..	..	1	..	1	1
BA 10700 A	Cylinder Mounting	..	..	..	..	1	..	..
BA 10037 A	Lever and Ratchet	1	1	..	..	..	..	..
BA 10038 A	Lever and Ratchet	..	..	1	..	..	..	..
SD 1510 A	Leveling Lever	..	..	..	1	..	1	..
SD 1511 A	Leveling Lever	..	..	..	..	..	..	1
BA 10580 A	Leveling Lever, Ratchet and Rear Lift Rod	..	..	..	..	1	..	..
BA 10543 A	Rear Wheel Lift Rod	1	..	..	1	..	..	..
BA 10544 A	Rear Wheel Lift Rod	..	1	1	..	..	1	1
SD 1509 A	Rocker Link and Connecting Bar	..	..	..	..	..	..	1
SD 2331 A	Reflectors (2)	..	1	1	..	..	1	1
SD 2333 A	Reflector Brackets	..	1	1	..	..	1	1
SD 2422 A	Hose Support	..	..	..	1	1	1	1

SPECIAL SHIPPING BUNDLES

Rear Axle, Bails, Anti-Friction Bearing and Wheel								
SD 2747 A	Rear Axle, Bails, and Bearing	1	1	1	1	..	1	1
SD 2449 A	Wheel (Cast)	1	1	1	1	..	1	1

SPECIAL SHIPPING BUNDLES—Continued

Bundle No.	Description	F640A 3-Btm.	F640A 4-Btm.	F640A 5-Btm.	F640AH 3-Btm.	F640AH Special	F640AH 4-Btm.	F640AH 5-Btm.
Rear Wheel (In lieu of JD1384)								
SD 2410 A	Wheel, 15-Inch, with Tire	1	1	1	1	1	1	1
JD 1754	Wheel, 14-Inch, less Tire	1	1	1	1	1	1	1
Land and Furrow Wheels								
BA 10371 A	Furrow with Tire	1	1	1	2	..	2	2
BA 10879 A	Land with Tire	1	1	1	..	..	..	..
SD 2410 A	Land and Furrow with Tire	..	..	..	..	2	..	..
AA 14898	Land and Furrow (Steel)	2	2	2	2	..	2	2
SD 1292 A	Lugs (For BA10221A)	1	1	1	..	..	..	..
JD 3011	Wheel, 14-Inch, less Tire	1	1	1	2	..	2	2
JD 1754	Wheel, 14-Inch, less Tire	..	..	..	..	2	..	..
Gauge Wheel and Axle								
BA 10041 A	Axle and Hubs	..	1	1	..	..	1	1
JD 1384	Wheel, less Tire	..	1	1	..	..	1	1
SD 2410 A	Wheel, with Tire	..	1	1	..	..	1	1
JD 1754	Wheel, 14-Inch, less Tire	..	1	1	..	..	1	1
Independent Jointer and Clamp								
DK 76 FA	Independent Cast Jointer (Round Shank)	3	4	5	3	3	4	5
JC 24 A	Jointer Clamp (For DK76FA)	3	4	5	3	3	4	5
SD 467 A	Independent Steel Jointer (Flat Shank)	3	4	5	3	3	4	5
JC 21 A	Jointer Clamp (For SD467A)	3	4	5	3	3	4	5
Round Coulter Shank, Clamps and Rolling Coulters								
BA 10902 A	17-Inch with Chilled-Cone Bearing	3	4	5	3	..	4	5
BA 10904 A	18-Inch with Chilled-Cone Bearing	3	4	5	3	3	4	5
BA 14324	17-Inch with Anti-Friction Bearing	3	4	5	3	3	4	5
BA 10971 A	17-Inch Rippled Edge with Chilled-Cone Bearing	3	4	5	3	3	4	5
BA 14325	17-Inch Rippled Edge with Anti-Friction Bearing	3	4	5	3	3	4	5
BA 10713 A	Shank and Clamp	3	4	5	3	..	4	5
Cushion Rolling Coulters for Round Shank and Clamp								
BA 14245	17-Inch with Chilled-Cone Bearing	3	4	5	3	3	4	5
BA 14246	17-Inch Rippled-Edge with Chilled-Cone Bearing	3	4	5	3	3	4	5

SPECIAL SHIPPING BUNDLES—Continued

Bundle No.	Description	F640A 3-Btm.	F640A 4-Btm.	F640A 5-Btm.	F640AH 3-Btm.	F640AH Special	F640AH 4-Btm.	F640AH 5-Btm.
Flat Coulter Shank, Clamps, and Rolling Coulters								
BA 10907 A	17-Inch with Chilled-Cone Bearing	..	..	..	..	3	..	..
BA 10909 A	18-Inch with Chilled-Cone Bearing	3	4	5	3	3	4	5
BA 14328	17-Inch with Anti-Friction Bearing	3	4	5	3	3	4	5
BA 10972 A	17-Inch Rippled Edge with Chilled-Cone Bearing	3	4	5	3	3	4	5
BA 14329	17-Inch Rippled Edge with Anti-Friction Bearing	3	4	5	3	3	4	5
BA 10991 A	Clamp	..	..	..	..	3	..	..
Hitch								
SD 2444 A	Cushion Spring Release	1	1	1	1	..	1	1
Plow Bottom Attachments								
7750 A	Moldboard Extensions (For conventional Bottoms)	3	4	5	3	3	4	5
A 11736 A	Moldboard Extensions (For HS400 Series High-Speed Bottoms)	3	4	5	3	3	4	5
BA 11128 A	Trash Board (For HS Bottom)	3	4	5	3	3	4	5
BA 11130 A	Trash Board (For Slat Bottom)	3	4	5	3	3	4	5
BA 14039	Trash Board (For SDT546FC Semi-Deep Tillage Bottom)	3	4	5	3	3	4	5
BA 10162 A	Moldboard Pad (14-Inch) (For HS400 Series Only)	3	4	5	3	3	4	5
BA 10164 A	Moldboard Pad (16-Inch) (For HS400 Series Only)	3	4	5	3	3	4	5
CT 186 A	Root Cutter	3	4	5	3	3	4	5
AA 14903	Share-Frog Brace (To attach 16-Inch high-speed shares to 14-Inch high-speed bottoms)	3	4	5	3	3	4	5
Miscellaneous Special Bundles								
SD 2642 A	Landing Lever	1	1	1	1	1	1	1
BA 10545 A	Rear Lift Rod to Reduce 4-Bottom to 3-Bottom	..	1	..	..	..	1	..
31164 A	Land Axle Lift Spring Connecting Strap to Reduce 5-Bottom to 4-Bottom	..	..	1	..	..	..	1
BA 10113 A	Weed Hook	3	4	5	3	3	4	5

F650A AND F650AH PLOWS

REGULAR SHIPPING BUNDLES

Bundle No.	Description	F650A 3-Btm.	F650A 4-Btm.	F650A 5-Btm.	F650AH 3-Btm.	F650AH Special	F650AH 4-Btm.	F650AH 5-Btm.
Frame and Standards								
BA 10882 A	(14-Inch)	1	..	..	1	1	..	..
BA 10883 A	(16-Inch)	1	..	..	1	1	..	..
BA 10884 A	(14-Inch)	..	1	..	..	..	1	..
BA 10885 A	(16-Inch)	..	1	..	..	..	1	..
BA 10886 A	(14-Inch)	..	..	1	..	..	..	1
BA 10887 A	(16-Inch)	..	..	1	..	..	..	1
Hitches								
BA 10539 A	Plain	1	1	..	1	..	1	..
BA 10574 A	Plain	..	..	..	..	1	..	..
BA 10540 A	Plain	..	..	1	..	..	..	1
Axles								
BA 10873 A	Furrow (14-Inch)	1	1	..	1	..	1	..
BA 10874 A	Furrow (16-Inch)	1	1	..	1	..	1	..
BA 10875 A	Furrow (14-Inch)	..	..	1	..	..	..	1
BA 10876 A	Furrow (16-Inch)	..	..	1	..	..	..	1
BA 10877 A	Land (14-Inch)	1	1	1	..	..	..	..
BA 10878 A	Land (16-Inch)	1	1	1	..	..	..	..
BA 10880 A	Land (14-Inch)	..	..	..	1	..	1	1
BA 10881 A	Land (16-Inch)	..	..	..	1	..	1	1
SD 2757 A	Cylinder Lift (14-Inch)	..	..	..	..	1	..	..
SD 2758 A	Cylinder Lift (16-Inch)	..	..	..	..	1	..	..
Rear Axle, Bails, Anti-Friction Bearing and Wheel								
BA 14042	Rear Axle, Bails, and Bearing	1	1	1	1	1	1	1
JD 1384	Rear Wheel, 15-Inch, less Tire	1	1	1	1	1	1	1
Round Coulter Shank, Clamps and Rolling Coulter								
BA 10713 A	Shank and Clamp	..	..	..	..	3	..	..
BA 10902 A	17-Inch with Chilled-Cone Bearing	..	..	..	..	3	..	..
Flat Coulter Shank, Clamps, and Rolling Coulter								
BA 10991 A	Clamp	3	4	5	3	..	4	5
BA 10907 A	17-Inch with Chilled-Cone Bearing	3	4	5	3	..	4	5
Land and Furrow Wheels								
BA 10229 A	Wheel less Tire	2	2	2	2	..	2	2
JD 1384	Wheel less Tire	..	..	..	..	2	..	..

REGULAR SHIPPING BUNDLES—Continued

Bundle No.	Description	F650A 3-Btm.	F650A 4-Btm.	F650A 5-Btm.	F650AH 3-Btm.	F650AH Special	F650AH 4-Btm.	F650AH 5-Btm.
Miscellaneous Regular Bundles								
BA 10866 A	Reduction Gear Lift Clutch	1	1	1	..	..	..	..
BA 10778 A	Clutch Rope and Grease Fittings	1	1	1	..	..	..	..
SD 165 A	Grease Fittings	..	..	..	1	1	1	1
BA 10704 A	Cylinder Mounting	..	..	..	1	..	1	1
BA 10700 A	Cylinder Mounting	..	..	..	..	1	..	..
SD 2746 A	Clevis with Bushing and Bolts for Wheel Tractor with Straight Drawbar	1	1	1	1	1	1	1
BA 10037 A	Lever and Ratchet	1	1	..	..	..	..	..
BA 10038 A	Lever and Ratchet	..	..	1	..	..	..	..
SD 1510 A	Leveling Lever	..	..	..	1	..	1	..
SD 1511 A	Leveling Lever	..	..	..	..	..	..	1
BA 10580 A	Leveling Lever, Ratchet and Rear Wheel Lift Rod	..	..	..	..	1	..	..
BA 10543 A	Rear Wheel Lift Rod	1	..	..	1	..	..	..
BA 10544 A	Rear Wheel Lift Rod	..	1	1	..	..	1	1
SD 1509 A	Rocker Link and Connecting Bar	..	..	..	..	..	..	1
SD 2331 A	Reflectors (2)	..	1	1	..	..	1	1
SD 2333 A	Reflector Brackets	..	1	1	..	..	1	1
BA 10699 A	Hose Support	..	..	..	1	1	1	1
Rear Axle, Bails, Anti-Friction Bearing and Wheel								
SD 2747 A	Rear Axle, Bails, and Bearing	1	1	1	1	..	1	1
SD 2449 A	Wheel (Cast)	1	1	1	1	..	1	1
Rear Wheel (In lieu of JD1384)								
SD 2410 A	Wheel, 15-Inch, with Tire	1	1	1	1	1	1	1
JD 1754 W	Wheel, 14-Inch, less Tire	1	1	1	1	1	1	1

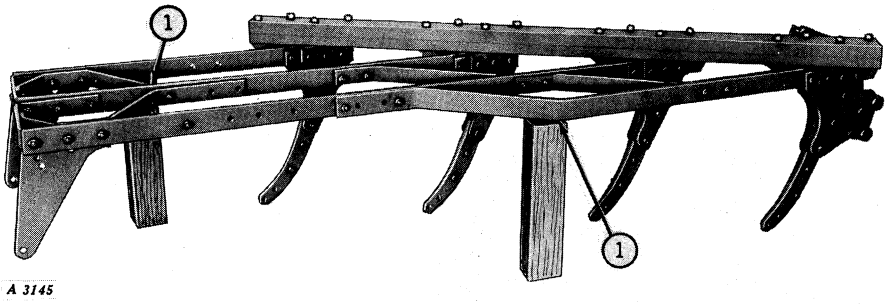
SPECIAL SHIPPING BUNDLES—Continued

Bundle No.	Description	F650A 3-Btm.	F650A 4-Btm.	F650A 5-Btm.	F650AH 3-Btm.	F650AH Special	F650AH 4-Btm.	F650AH 5-Btm.
Land and Furrow Wheel								
BA 10371 A	Furrow with Tire	1	1	1	2	..	2	2
BA 10879 A	Land with Tire	1	1	1	..	..	..	..
SD 2410 A	Land and Furrow with Tire	..	..	..	..	2	..	..
AA 14898	Land and Furrow (Steel)	2	2	2	2	..	2	2
SD 1292 A	Lugs (For BA10221A)	1	1	1	..	..	..	..
JD 3011	Wheel, 14-Inch less Tire	1	1	1	2	..	2	2
JD 1754	Wheel, 14-Inch less Tire	..	..	..	..	2	..	..
Gauge Wheel and Axle								
BA 10041 A	Axle and Hub	..	1	1	..	..	1	1
JD 1384	Wheel less Tire	..	1	1	..	..	1	1
SD 2410 A	Wheel with Tire	..	1	1	..	..	1	1
JD 1754	Wheel, 14-Inch less Tire	..	1	1	..	..	1	1
Independent Jointer and Clamp								
DK 76 FA	Independent Cast Jointer (Round Shank)	3	4	5	3	3	4	5
JC 24 A	Jointer Clamp (For DK76FA)	3	4	5	3	3	4	5
SD 467 A	Independent Steel Jointer (Flat Shank)	3	4	5	3	3	4	5
JC 21 A	Jointer Clamp (For SD467A)	3	4	5	3	3	4	5
Round Coulter Shank, Clamp and Rolling Coulters								
BA 10902 A	17-Inch with Chilled-Cone Bearing	3	4	5	3	..	4	5
BA 10904 A	18-Inch with Chilled-Cone Bearing	3	4	5	3	3	4	5
BA 14324	17-Inch with Anti-Friction Bearing	3	4	5	3	3	4	5
BA 10971 A	17-Inch Rippled Edge with Chilled-Cone Bearing	3	4	5	3	3	4	5
BA 14325	17-Inch Rippled Edge with Anti-Friction Bearing	3	4	5	3	3	4	5
BA 10713 A	Shank and Clamp	3	4	5	3	..	4	5
Cushion Rolling Coulters for Round Shank and Clamp								
BA 14245	17-Inch with Chilled-Cone Bearing	3	4	5	3	3	4	5
BA 14246	17-Inch Rippled-Edge with Chilled-Cone Bearing	3	4	5	3	3	4	5

SPECIAL SHIPPING BUNDLES—Continued

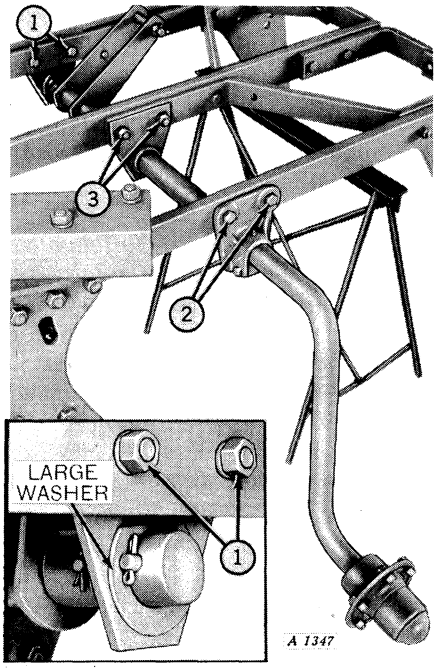
Bundle No.	Description	F650A 3-Btm.	F650A 4-Btm.	F650A 5-Btm.	F650AH 3-Btm.	F650AH Special	F650AH 4-Btm.	F650AH 5-Btm.
Flat Coulter Shank, Clamp and Rolling Coulters								
BA 10907 A	17-Inch with Chilled-Cone Bearing	..	..	..	..	3	..	..
BA 10909 A	18-Inch with Chilled-Cone Bearing	3	4	5	3	3	4	5
BA 14328	17-Inch with Anti-Friction Bearing	3	4	5	3	3	4	5
BA 10972 A	17-Inch Rippled Edge with Chilled-Cone Bearing	3	4	5	3	3	4	5
BA 14329	17-Inch Rippled Edge with Anti-Friction Bearing	3	4	5	3	3	4	5
BA 10991 A	Clamp	..	..	..	..	3	..	..
Plow Bottom Attachments								
7750 A	Moldboard Extensions (For Conventional Bottoms)	3	4	5	3	3	4	5
A 11736 A	Moldboard Extensions (For HS400 Series High-Speed Bottoms)	3	4	5	3	3	4	5
BA 11128 A	Trash Board (For HS Bottom)	3	4	5	3	3	4	5
BA 11130 A	Trash Board (For Slat Bottom)	3	4	5	3	3	4	5
BA 14039	Trash Board (For SDT546FC Semi-Deep Tillage Bottom)	3	4	5	3	3	4	5
BA 10162 A	Moldboard Pad (14-Inch) (For HS400 Series Only)	3	4	5	3	3	4	5
BA 10164 A	Moldboard Pad (16-Inch) (For HS400 Series Only)	3	4	5	3	3	4	5
CT 186 A	Root Cutter	3	4	5	3	3	4	5
AA 14903	Share-Frog Brace (To attach 16-Inch high-speed shares to 14-Inch high-speed bottoms)	3	4	5	3	3	4	5
Miscellaneous Special Bundles								
SD 2642 A	Landing Lever	1	1	1	1	1	1	1
BA 10545 A	Rear Lift Rod to Reduce 4-Bottom to 3-Bottom	..	1	..	..	..	1	..
31164 A	Land Axle Lift Spring Connecting Strap to Reduce 5-Bottom to 4-Bottom	..	..	1	..	..	..	1
BA 10113 A	Weed Hook	3	4	5	3	3	4	5
BA 10703 A	Plain Hitch for Track-Type Tractors	1	1	1	1	..	1	1
BA 10516 A	Connecting Loop and Clevis	1	1	1	1	..	1	1

FRAME AND STANDARDS



1. Place frame and standards on blocks or stands approximately 24 inches high. Be sure to work on level surface.

FURROW AXLE
(All Plows Except the Special Plows)



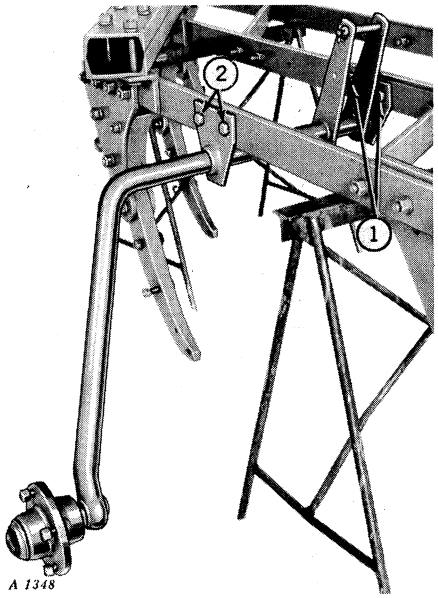
1. Bolt outside axle bearing between frame bar and front frame bracket with washers, drilled pins, and cotter pins in position shown at left. Be sure large washer is on outside of bearing. See inset.

2. Attach furrow axle bearing to first frame bar with two 5/8 x 2-1/4-inch machine bolts supplied with axle.

3. Bolt bearing to second frame bar with 5/8 x 3-1/2-inch machine bolts supplied with axle.

NOTE: On 5-bottom plow, attach the last bearing to the third frame bar with two 5/8 x 2-3/4-inch bolts supplied with axle.

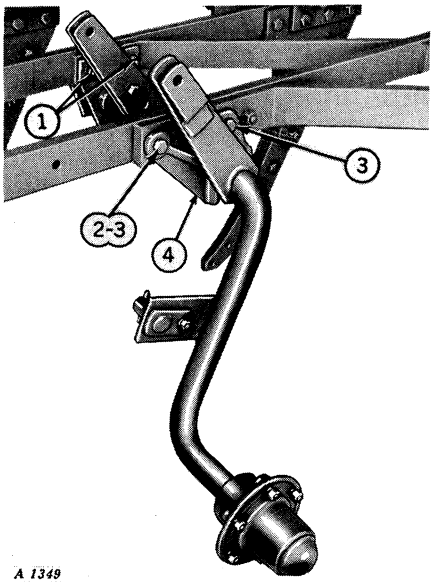
FURROW AXLE
(Special Plows)



1. Attach furrow axle bearing to frame bar.

2. Bolt outside axle bearing to frame with bolts supplied in axle.

LAND AXLE
(F640AH and F650AH Plows)



1. Attach the two inside land axle bearings to frame bar and brace with bolts supplied in frame.

NOTE: On 3- and 4-bottom plows, the right-hand bearing must be attached with the drifted flange of the bearing toward the right. (See Inset.) On the 5-bottom plow, the flange must be toward the left so it will clear the drilled pin hole.

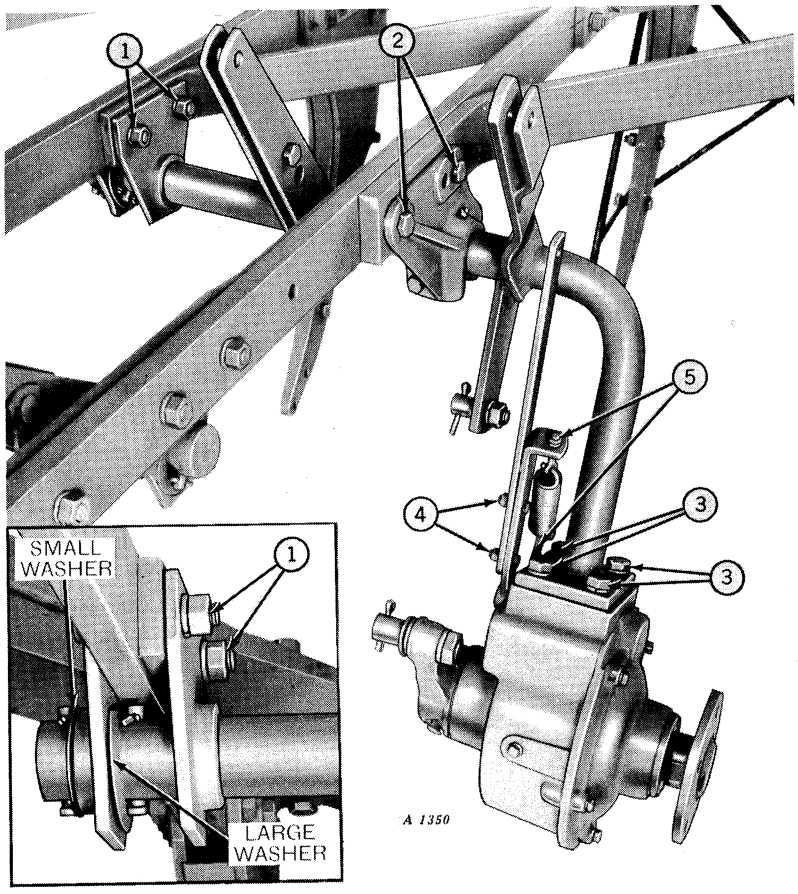
Place the larger of the two washers to the inside on a 3- or 4-bottom plow. On the 5-bottom plow, the larger washer goes to the outside.

2. Remove bolt supplied in frame.

3. Attach outside land axle bearing to frame.

4. After axle has been positioned, draw up nut on bolt through bearing cap.

LAND AXLE
(F640A and F650A Plows)



1. Attach the two inside land axle bearings to frame bar and brace with bolts supplied in frame.

NOTE: On 3- and 4-bottom plows the right-hand bearing must be attached with the drifted flange of the bearing toward the right (See inset.) On the 5-bottom plow, the flange must be toward the left so it will clear the drilled pin hole.

Place the larger of the two washers to the inside on a 3- or 4-bottom plow. On the 5-bottom plow, the larger washer goes to the outside.

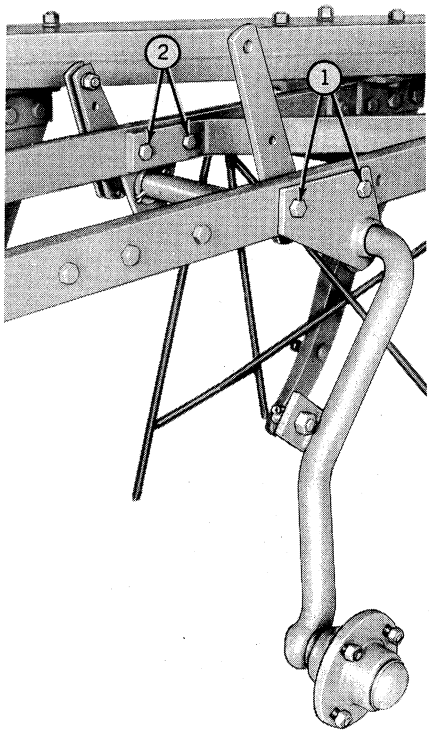
2. Attach outside land axle bearing to frame with bolts supplied in axle.

3. Attach clutch to land axle.

4. Bolt clutch trip lever to trip lever shaft.

5. Attach tension spring to trip lever shaft and land axle.

LAND AXLE
(Special Plows)

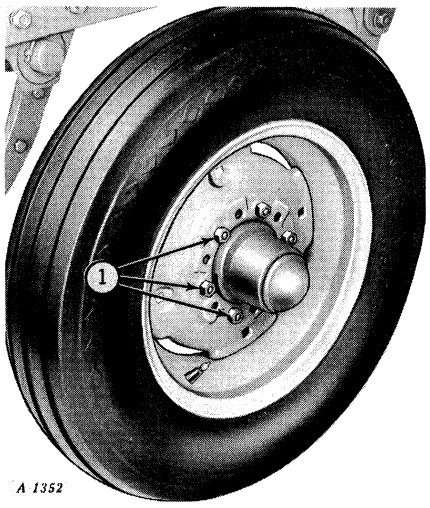


A 1351

1. Bolt axle bearings to frame.

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

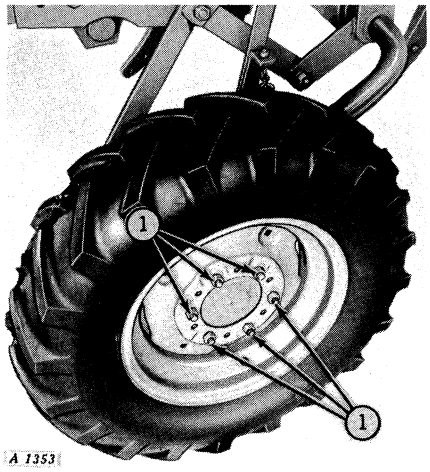
FURROW WHEEL AND LAND WHEEL
(F640AH and F650AH Plows)



A 1352

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

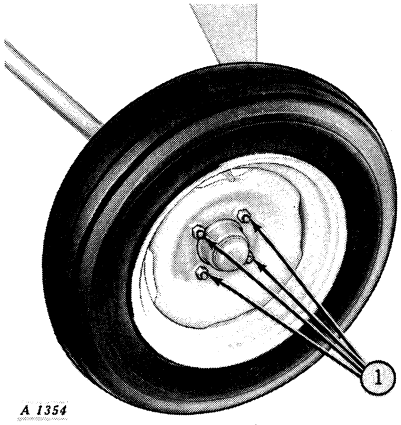
LAND WHEEL (F640A and F650A Plows)



A 1353

1. Attach wheel to stub axle assembly with six bolts supplied.

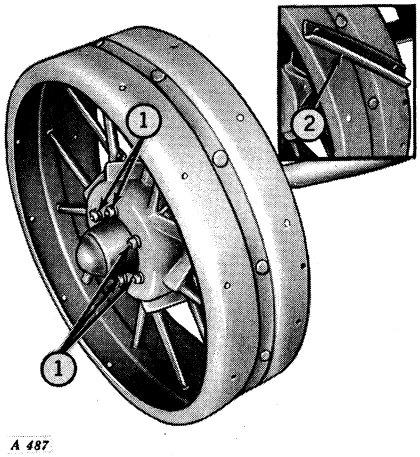
FURROW WHEEL AND LAND WHEEL (Special Plows)



A 1354

1. Slide wheel on axle and bolt to hub with the four bolts supplied.

STEEL LAND AND FURROW WHEELS



A 487

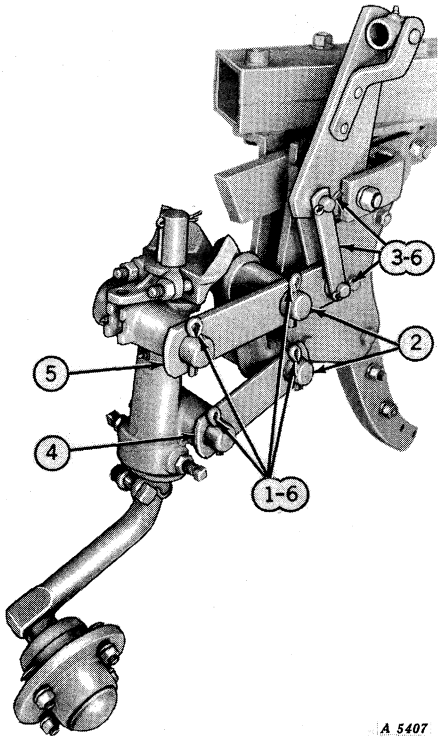
A steel wheel is available as special equipment on all but the special plows.

1. Slide wheel on axle and bolt to hub.

2. On F640A and F650A Plows attach twelve lugs to rim of land wheel.

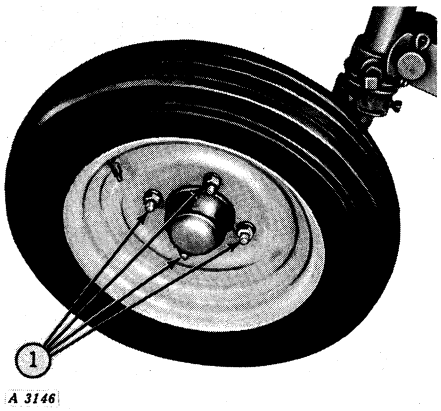
REAR AXLE AND WHEEL

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.

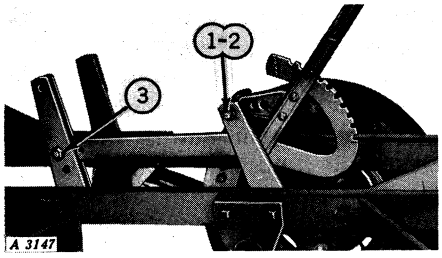
WHEEL



1. Attach wheel to hub.

LEVELING LEVER

HYDRAULIC-LIFT PLOWS



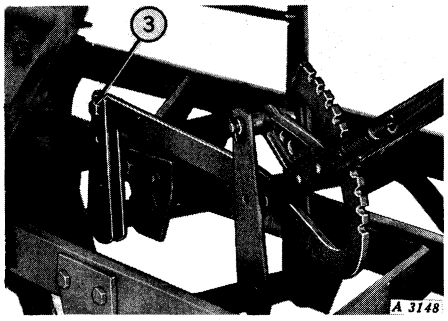
Leveling Lever on 3- and 4-Bottom Plows

1. Remove drilled bolt, cotter pin, and hex. slotted nut from furrow axle cranks.

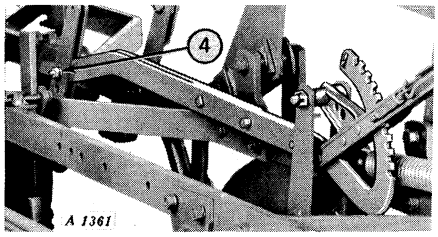
2. Attach lever to crank with drilled bolt, cotter pin, and slotted nut supplied.

3. Attach leveling lever ratchet and bushing to **second** hole from top in land axle crank.

On the 3-bottom Special Plow, attach the leveling lever ratchet and bushing to **top** hole in land axle crank. See illustration below.



Leveling Lever on 3-Bottom Special Plow

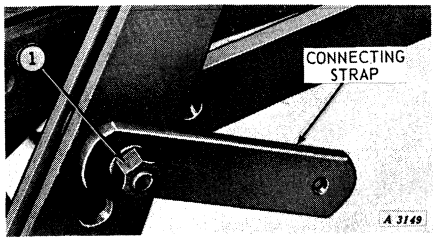


Leveling Lever on 5-Bottom Plows

4. On 5-bottom plows, attach leveling lever ratchet extension straps and bushing to **second** hole from top in land axle crank.

CLUTCH-LIFT PLOWS

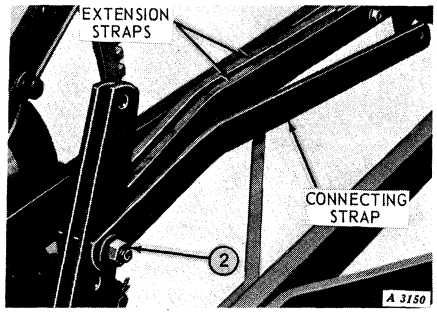
Attach leveling lever to furrow axle crank as shown in Steps 1 and 2 in the illustration at upper left.



Leveling Lever Ratchet and Connecting Strap (3- and 4-Bottom Plows)

1. On 3- and 4-bottom plows, attach leveling lever ratchet and land axle lift spring connecting strap to second hole from top in land axle crank.

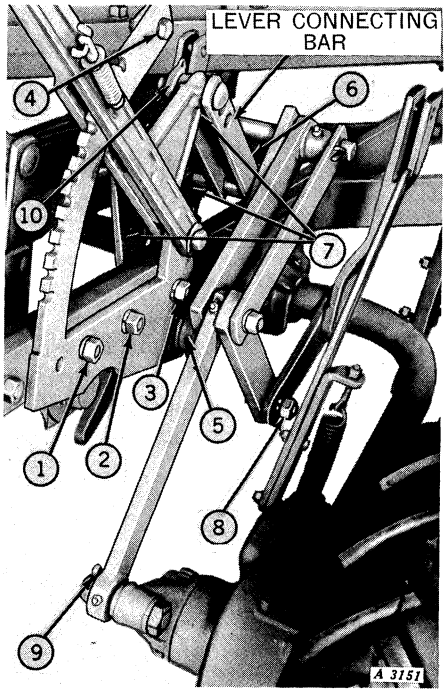
CLUTCH-LIFT PLOWS—Continued



Leveling Lever Ratchet and Connecting Strap (5-Bottom Plow)

2. On 5-bottom plows, attach leveling lever ratchet extension straps and land axle lift spring connecting strap to **second** hole from top in land axle crank.

MASTER LEVER (Clutch-Lift Plows Only)



1. Attach ratchet and bearing assembly to frame with 5/8 x 3-1/4-inch machine bolt.

2. Bolt ratchet to frame brace and bar with 5/8 x 3-1/4-inch machine bolt.

3. Attach ratchet and ratchet brace to frame with 5/8 x 3-1/2-inch machine bolt supplied.

4. Attach ratchet brace to ratchet with 1/2 x 1-1/2-inch machine bolt.

5. Slide pivot pin of pivot plate assembly into barrel of ratchet and bearing assembly.

6. Slide lever connecting bar onto pivot plate assembly.

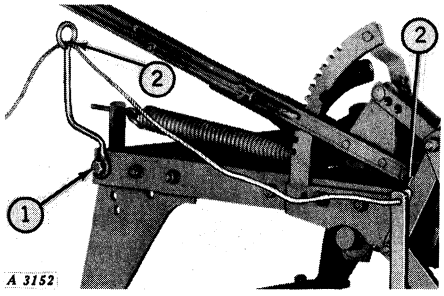
7. Place pivot plate in position and secure to pivot plate assembly with 3/4-inch nut on upper pin, 5/8-inch nut on center pin, and 2-inch cotter pin on lower pin.

8. Attach land axle connecting bar to land axle with stud, nut, and cotter pin.

9. Attach clutch lift bar to stub axle of clutch.

10. Attach lever to lever connecting bar assembly with drilled pin and cotter pin.

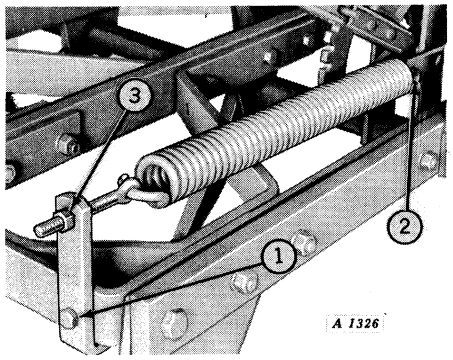
ROPE GUIDE AND ROPE (Clutch-Lift Plows Only)



1. Attach rope guide to plow with bolt supplied in frame.

2. Attach rope to trip lever. Insert rope through rope guide.

FURROW AXLE LIFT SPRING

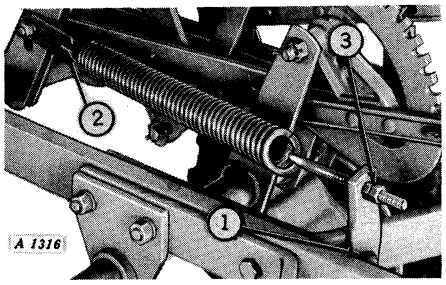


1. Attach lift spring post to frame.

2. Attach spring to spring strap on axle crank.

3. Insert eyebolt into spring post and draw up nut. See page 20 for adjustment of springs.

LAND AXLE LIFT SPRING (Clutch-Lift Plows Only)



1. Attach lift spring post to frame.

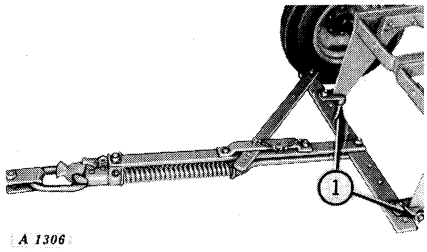
2. Hook spring into lift spring connecting strap.

3. Insert eyebolt into spring post and draw up nuts. See page 20 for adjustment of springs.

HITCHES

CUSHION HITCH

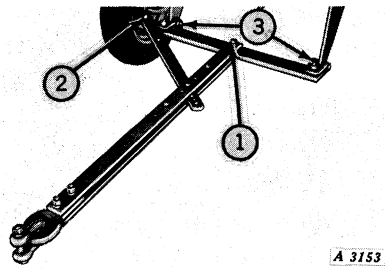
(For Plows with Stiff Standards)



1. Attach hitch to clevis jaws with drilled pins, washers, and cotter pins. See page 14 for adjusting hitch.

PLAIN HITCH

(For Plows with Safety-Trip Standards)



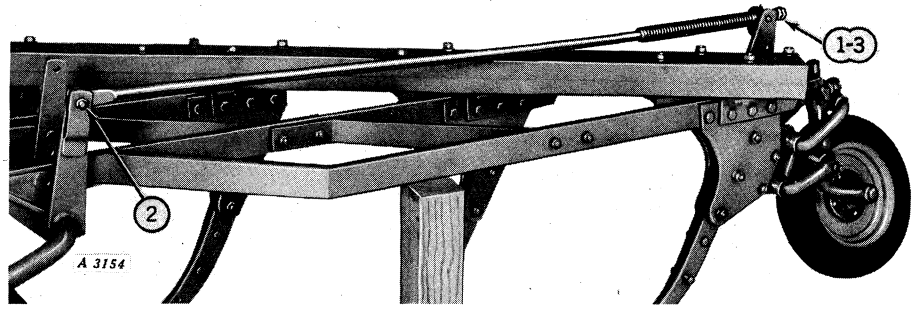
1. Bolt hitch crossbar to hitch drawbar.

2. Bolt adjusting brace to hitch crossbar.

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

REAR LIFT ROD

ALL PLOWS EXCEPT THE SPECIAL PLOWS

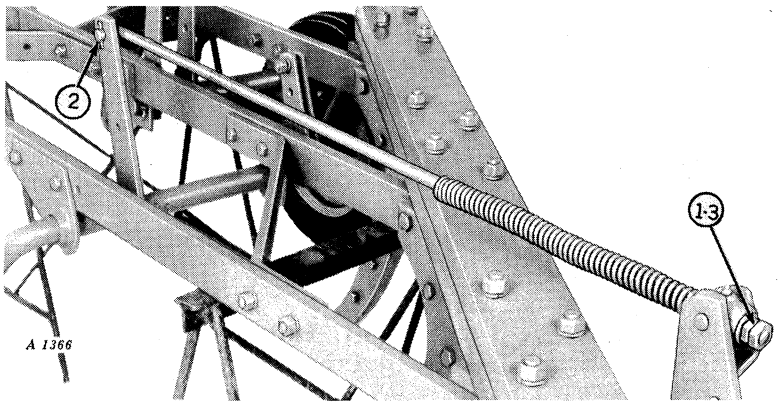


1. Remove the two hexagon nuts and place lift rod through pivot.

2. Attach front end of lift crank and bushing to outer land axle crank with 5/8 x 2-1/4-inch machine bolt on the 4- and 5-bottom plows. On the 3-bottom plow the lift rod is attached to the inner cranks with a 5/8 x 2-inch machine bolt.

3. Raise plow sufficiently to place two hexagon nuts on lift rod.

SPECIAL PLOWS



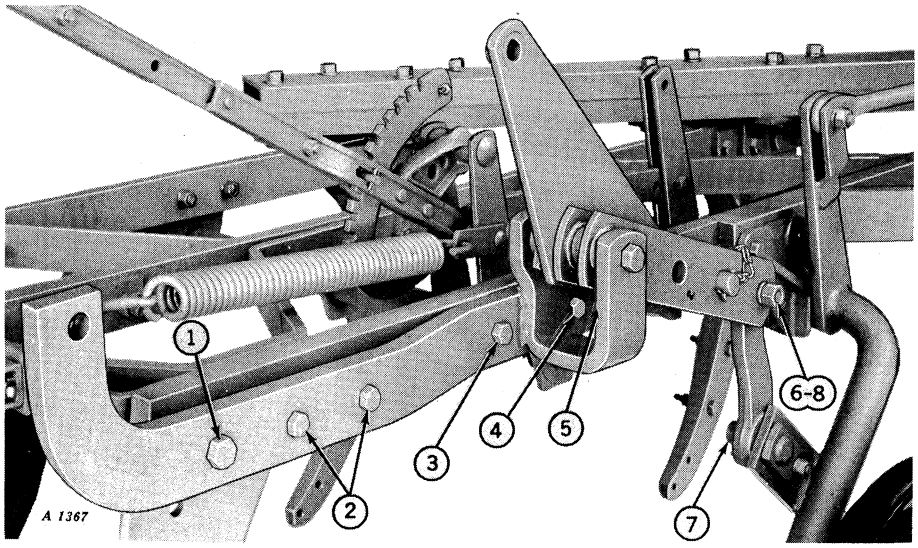
1. Remove the two hexagon nuts and one flat washer and place lift rod through pivot.

2. Attach front end of lift crank to land axle crank with cotter pin.

3. Raise plow sufficiently to place flat washer and two hexagon nuts on lift rod.

CYLINDER MOUNTING
(F640AH and F650AH Plows)

3- AND 4-BOTTOM PLOWS



1. Remove first bolt in frame and attach cylinder mounting to frame with 3/4 x 5-1/2-inch machine bolt supplied in cylinder mounting bundle.

2. Remove second and third frame bolts and attach cylinder mounting to frame with 5/8 x 6-inch bolts supplied in cylinder mounting bundle.

3. Attach cylinder mounting to frame, with 5/8 x 3-3/4-inch machine bolt.

4. Remove fourth bolt in frame bar and replace with 5/8 x 3-3/4-inch machine bolt.

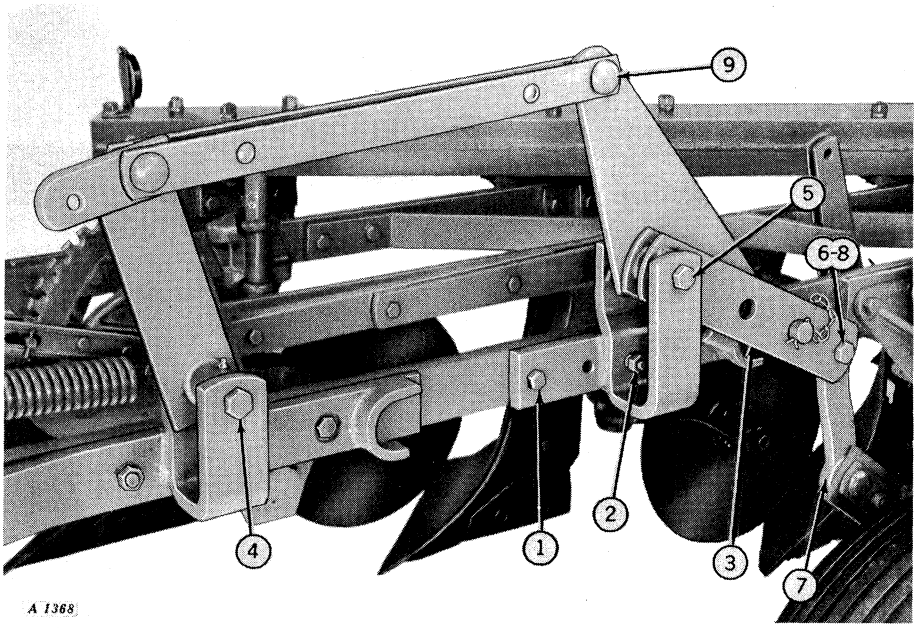
5. Remove fifth bolt in frame bar and replace with 5/8 x 3-1/2-inch machine bolt in countersunk hole in cylinder mounting.

6. Remove connecting bar from bell crank assembly.

7. Attach connecting bar to land axle with connecting bar pin assembly and cotter pin.

8. Attach connecting bar to bell crank assembly with 3/4 x 2-1/2-inch machine bolt supplied.

5-BOTTOM PLOWS



When attaching cylinder mounting to the 5-bottom plow the first five steps are the same as for attaching cylinder mounting to the 3- and 4-bottom plows. See page 65. Then follow these instructions:

1. Replace seventh bolt from front of frame with 5/8 x 4-inch machine bolt, bolting bell crank support to frame.

2. Attach support to frame by replacing eighth bolt in frame with 5/8 x 4-3/4-inch machine bolt.

3. Attach bell crank support to plow frame by replacing next bolt in frame with 5/8 x 2-3/4-inch machine bolt.

4. Remove bell crank and bell crank bushing from cylinder support and attach rocker link to cylinder support with 3/4 x 6-1/4-inch machine bolt supplied in rocker link bundle.

5. Attach bell crank and bell crank bushing to bell crank support with 3/4 x 6-1/4-inch bolt supplied in cylinder support bundle.

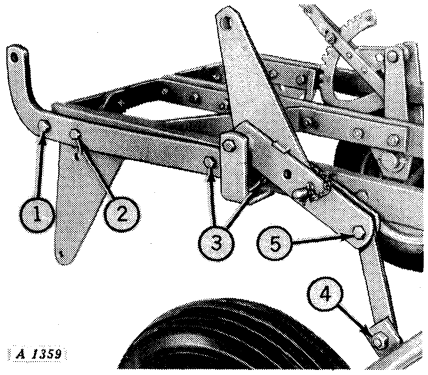
6. Remove connecting bar from bell crank assembly.

7. Attach connecting bar to land axle with connecting bar pin assembly and cotter pin.

8. Attach connecting bar to bell crank assembly with 3/4 x 2-1/2-inch machine bolt supplied in cylinder mounting bundle.

9. Attach rocker link connecting bars to bell crank with drilled pin and cotter pin.

CYLINDER MOUNTING AND LAND AXLE CONNECTING BAR (Special Plows)



Remove the first and second bolts from left-hand frame bar, counting from the front of the bar.

1. Attach cylinder mounting to frame with 3/4 x 5-inch machine bolt supplied in mounting bundle.

2. Attach cylinder mounting and frame braces to frame with 5/8 x 5-1/2-inch machine bolt supplied in mounting bundle.

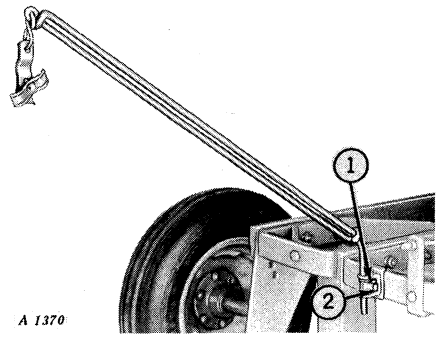
3. Attach cylinder mounting to frame bar with two 5/8 x 3-1/2-inch machine bolts. *NOTE: Place filler washers on these bolts between the brace and frame bar to prevent the brace from bending.*

4. Attach connecting bar to land axle lug.

5. Attach land axle connecting bar to bell crank with 5/8 x 2-inch machine bolt.

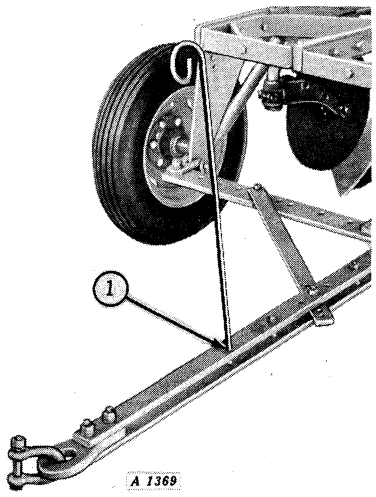
HOSE SUPPORT

F640AH AND F640AH SPECIAL PLOWS



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

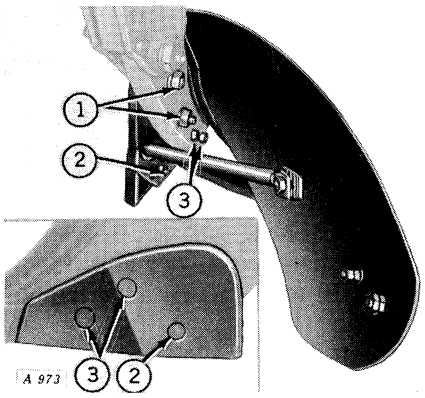
F650AH AND F650AH SPECIAL PLOWS



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

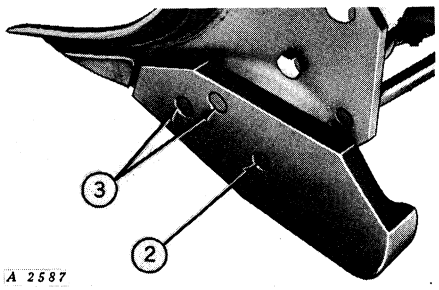
PLOW BOTTOMS

These plows require No. 4 Landsides when using conventional bottoms. When using high-speed bottoms, No. 9 Landsides are required on all bottoms except the rear bottom, which requires a No. 10 Landside. See illustrations below.

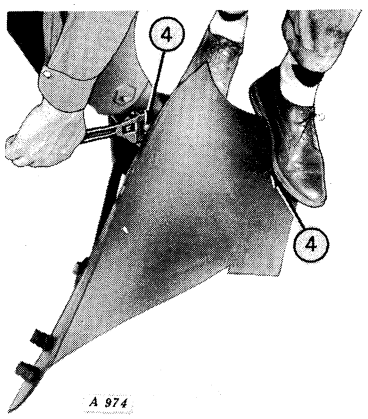


Attaching No. 9 Landside

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.*

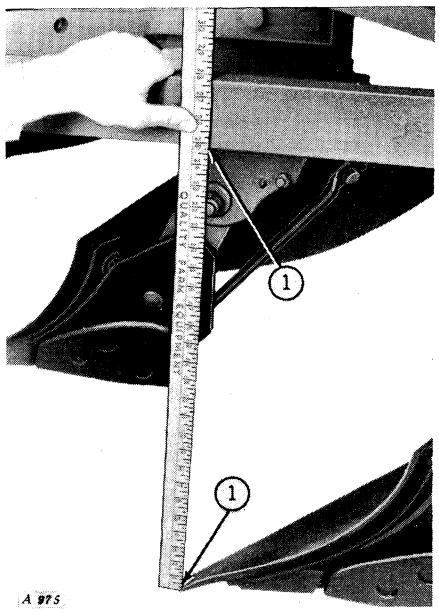


Attaching No. 10 Landside to Rear Bottom

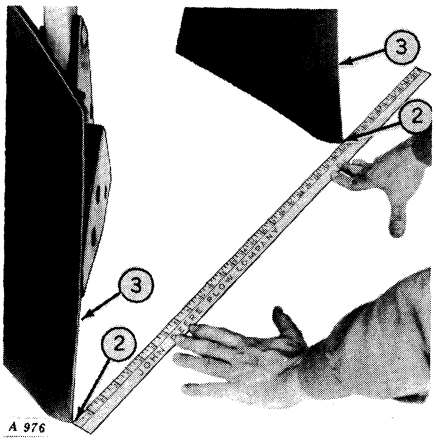


4. Push down on the points of the shares to make sure all slack is taken out of the bolts. Then tighten nuts securely.

LINING UP PLOW BOTTOMS



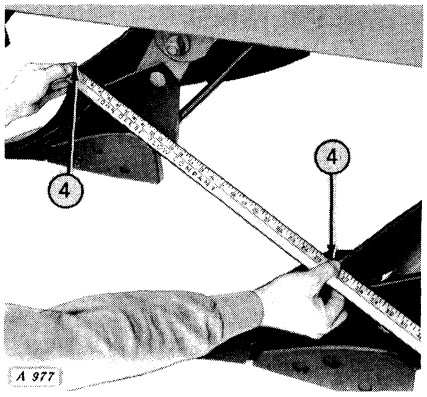
1. Check distance from underside of each frame bar to point of each share. The distance should be reasonably the same for each bottom if the bottoms are attached correctly. If not, loosen frame bolts and adjust.



Share-to-Share Measurement

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

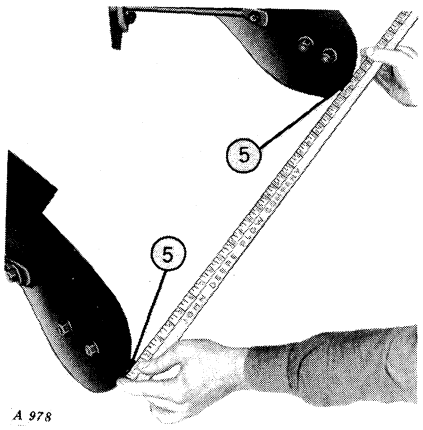
3. Measure distance between bottoms at juncture of share and moldboard on front edge of bottom.



Moldboard-to-Moldboard Measurement

4. Measure distance between bottoms from upper front corners of rear moldboard to upper front corner of next moldboard forward.

NOTE: Measurements for Steps 2, 3, and 4 should be reasonably the same.



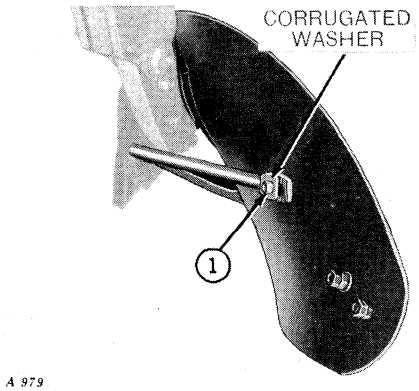
Moldboard-to-Moldboard Measurement

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

NOTE: This measurement should be reasonably uniform across all bottoms as near measurements in Steps 2, 3, and 4 as possible, if the bottoms are attached correctly. If the distance between the back edges of the moldboards varies greatly from the other measurements, adjust either the rear moldboard brace or the next moldboard brace to push one of the moldboards forward until measurements are identical.

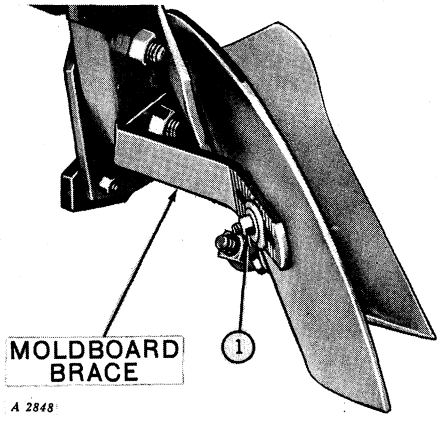
NOTE: Repeat these measurements, Steps 2, 3, 4, and 5 between all bottoms as you work forward.

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.**

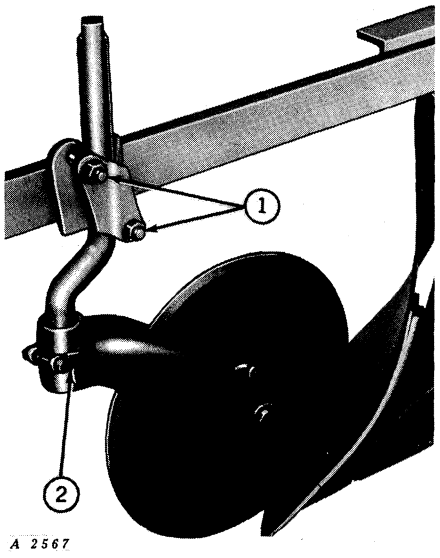


Moldboard Brace on Conventional Bottom

ROLLING COULTERS

CHILLED-CONE BEARING

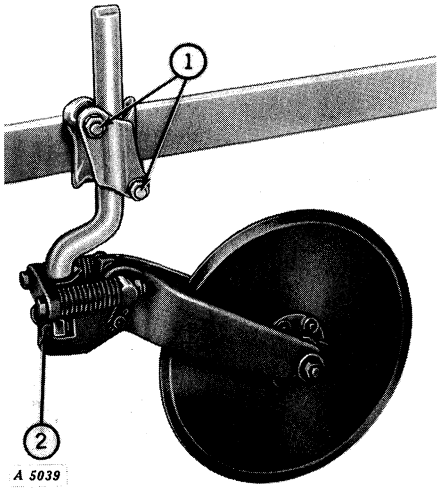
Round Shank



1. Attach shank and clamp to frame.

2. Attach coulter yoke to shank with collar. See pages 23 through 25 for adjustment of rolling coulters.

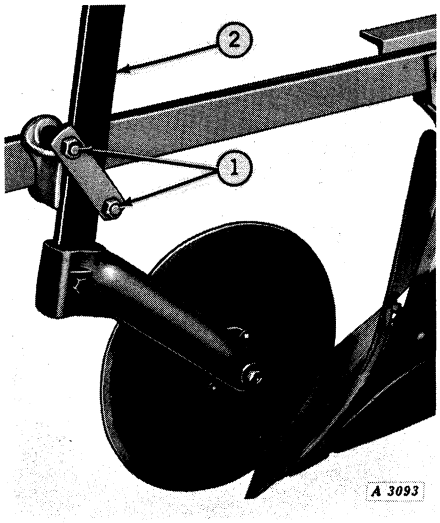
Cushion Coulter (Round Shank)



1. Attach shank clamp to frame.

2. Attach coulter yoke to shank with collar. See pages 23 through 25 for adjustment of rolling coulters.

Flat Shank



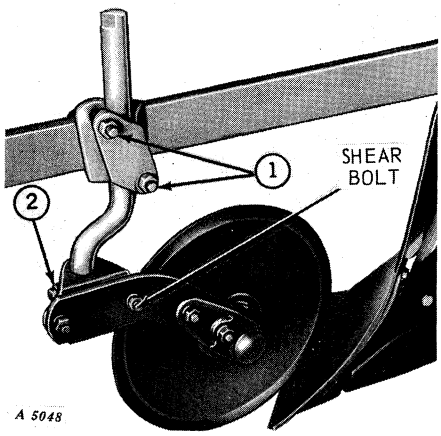
1. Attach clamp to frame.

2. Insert coulter shank into clamp and tighten nuts. See pages 23 through 25 for adjustment of rolling coulters.

ROLLING COULTERS—Continued

ANTI-FRICTION BEARING
(Special Equipment)

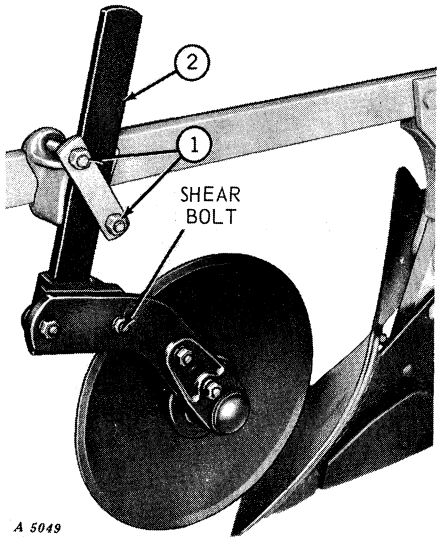
Round Shank



1. Attach shank and clamp to frame.
2. Attach coulter yoke to shank with collar. See pages 23 through 25 for adjustment of rolling coulters.

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

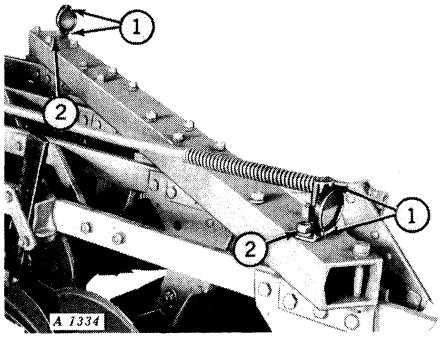
Flat Shank



1. Attach clamp to frame.
2. Insert coulter shank into clamp and tighten nuts. See pages 23 through 25 for adjustment of rolling coulters.

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

WARNING LAMP AND REFLECTOR BRACKETS



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

GREASE FITTINGS

Insert grease fittings in all locations shown in the Lubrication Chart on pages 36 and 37. Apply grease and oil to all points as indicated on the chart.

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 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.