Drawn Moldboard Plows

F640, F640H, F640H Special
F650, F650H, F650H Special
F660, F660H, F660H Special

JOHN DEERE

OPERATORS MANUAL

Drawn Moldboard Plows F640, F640H, F640H Special F650, F650H, F650H Special F660, F660H, F660H Special

OMA12323 K1 English

OMA12323 K1

LITHO IN U.S.A.
ENGLISH

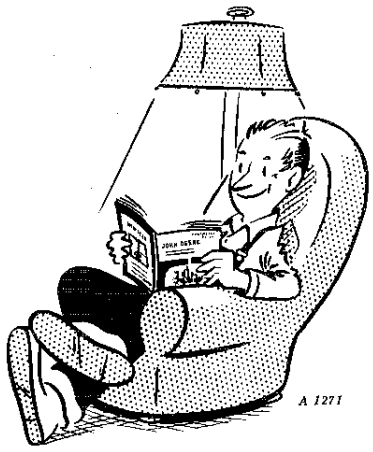
Your new plow

Behind your new plow is an organization that has specialized in designing and building plows for over one hundred and twenty 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 ten to forty-five years, thus assuring 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.

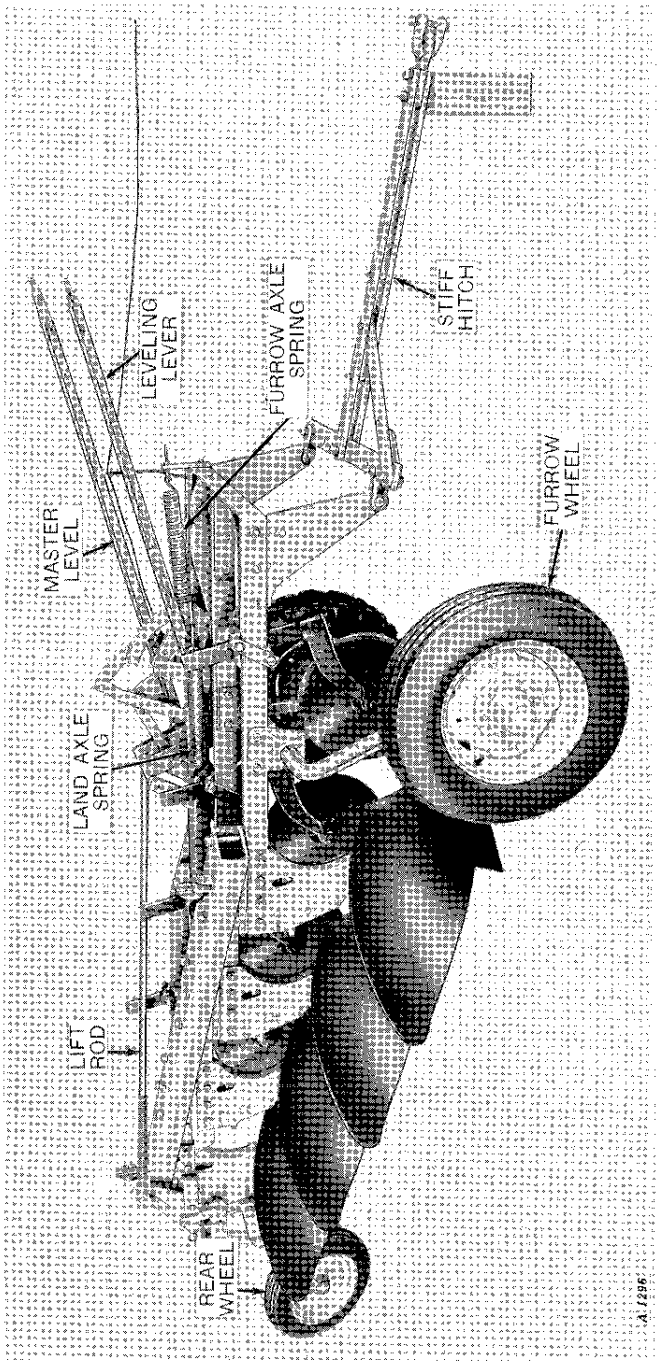
If you will furnish your dealer with the information which should be recorded at the bottom of this page, when the plow is delivered, he can give you prompt and efficient service.

JOHN DEERE ☐ F640, ☐ F640H, ☐ F640H Special, ☐ F650, ☐ F650H, ☐ F650H Special, ☐ F660, ☐ F660H, and ☐ F660H Special

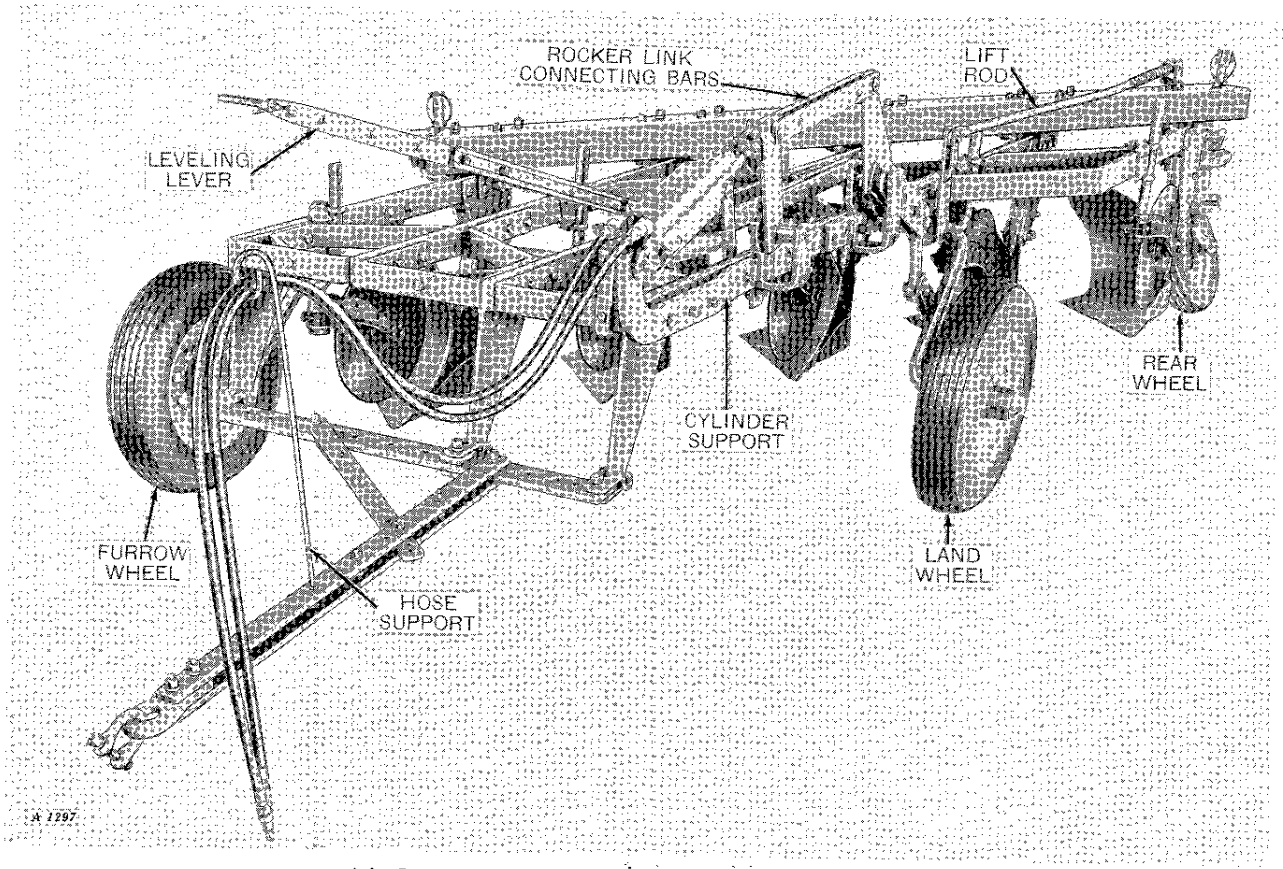
Date Purchased.....19.....

(To be filled in by Purchaser)

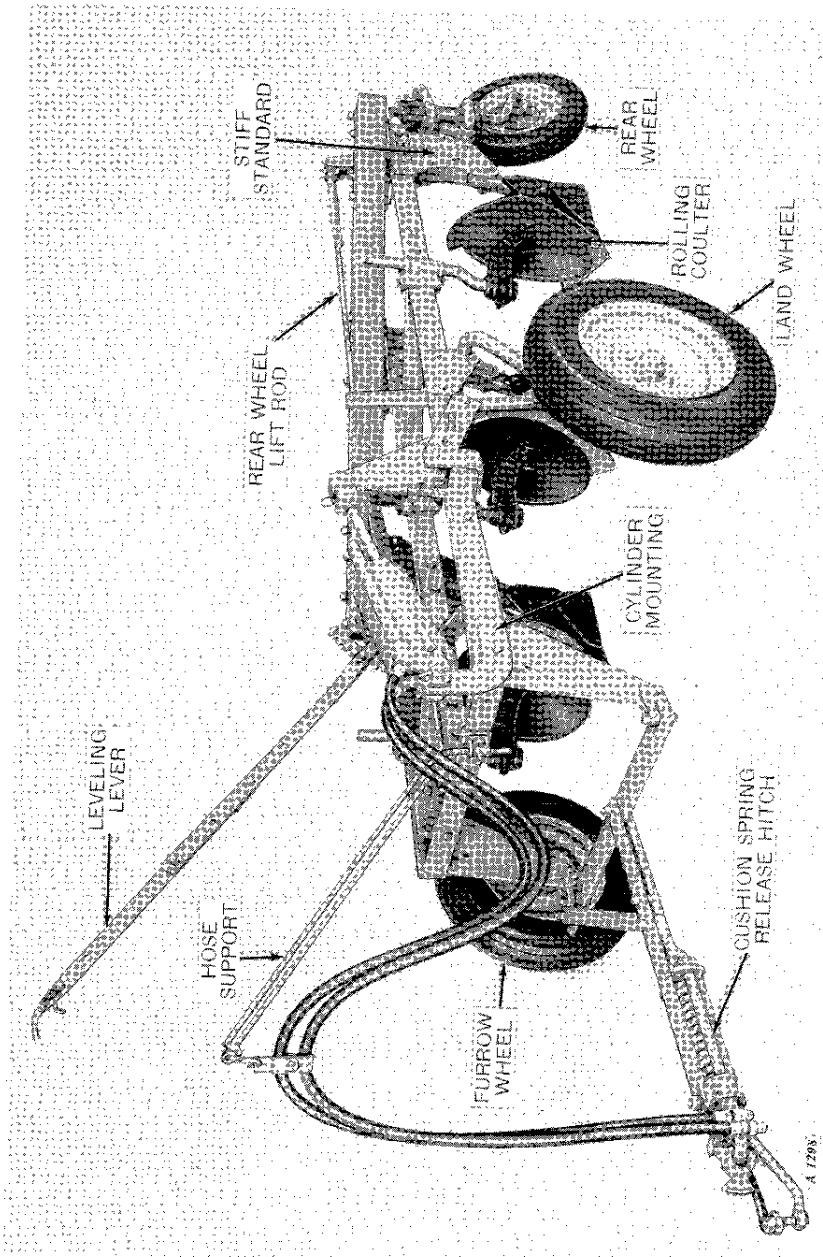
Contents



John Deere F650 Four-Bottom 16-Inch Drawn Moldboard Plow



John Deere F660H Five-Bottom 16-Inch Drawn Moldboard Plow
(Round Shank Coulters, Special Equipment)



John Deere F640H Special Three-Bottom Drawn Moldboard Plow

Specifications

TYPES	**The F640 Clutch-Lift and F640H Hydraulic-Lift** 14- and 16-Inch Frames with Stiff Standards are furnished in the following sizes: Three-, four-, and five-bottom. **The F650 Clutch-Lift and F650H Hydraulic-Lift** 14- and 16-Inch Frames with Safety-Trip Standards are furnished in the following sizes: Three-, four-, and five-bottom. **The F660 Clutch-Lift and F660H Hydraulic-Lift** 14- and 16-Inch Frames with Heavy-Duty Safety-Trip Standards are furnished in the following sizes: Three-, four-, and five-bottom. **F640H Special Hydraulic-Lift** Three-Bottom Stiff Standard, 14- and 16-Inch Frames. **F650H Special Hydraulic-Lift** Three-Bottom Safety-Trip Standard, 14- and 16-Inch Frames. **F660H Special Hydraulic-Lift** Three-Bottom Heavy-Duty Safety-Trip Standard, 14- and 16-Inch Frames.
DEPTH RANGE	3 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).
WHEELS:	
FURROW:	
F640, F640H, F650, F650H, F660, F660H	Equipped with anti-friction bearings. Regular less tire and tube. Special with 6.70-15 tire and tube. 14-inch wheel less tire and tube, Special. Steel wheel, Special
F640H, F650H, and F660H Special	Equipped with anti-friction bearings. Regular less tire and tube. Special with 5.90-15 tire and tube. 14-inch wheel less tire and tube, Special.

LAND:	
F640, F650, and F660	Equipped with anti-friction bearings. Regular less tire and tube. Special with 7.60-15 tire and tube. Steel wheel with wheel lugs, Special.
F640H, F650H, and F660H	Equipped with anti-friction bearings. Regular less tire and tube. Special with 6.70-15 tire and tube. 14-inch wheel less tire and tube, Special. Steel wheel, Special.
F640H, F650H, and F660H Special	Equipped with anti-friction bearings. Regular less tire and tube. Special with 5.90-15 tire and tube. 14-inch wheel less tire and tube, Special.
REAR:	
F640, F640H, F650, F650H, F660 and F660H	**For axles with anti-friction bearings:** With 4.00-12 tire and tube, Regular. Less tire and tube, Special. Cast, Special. **For axles with chilled-sleeve bearings:** With 4.00-12 tire and tube, Regular. Less tire and tube, Special.
F640H, F650H, and F660H Special	**For axles with chilled-sleeve bearings:** With 4-00:12 tire and tube, Regular. Less tire and tube, Special. Steel, Special. **For axles with anti-friction bearings:** With 4.00-12 tire and tube, Regular. Less tire and tube, Special. Steel, Special.
HITCH:	
F640 and F640H	Cushion spring release, Regular for plows used with wheel-type tractors, special for plows used with crawler tractors.
F640H Special	Cushion spring release, Regular, Cushion spring release for crawler tractors, Special.
F650 and F650H	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.
F650H Special	Plain hitch, Regular. Clevis with bushing and bolts for wheel tractors with straight drawbar, Regular.
F660 and F660H	Plain hitch for wheel-type tractors, Regular. Plain hitch for crawler tractors, Special. Connecting loop and clevis for plain hitches on wheel tractor, Regular.
F660H Special	Plain hitch for wheel-type tractors, Regular. Connecting loop and clevis for plain hitches on wheel-type tractors, Regular.

LIFT	Reduction gear lift clutch for the F640, F650, and F660 Plows. Remote hydraulic cylinder for the F640H, F650H, F660H and Special Plows.
LEVERS	Adjustable for length.
COULTERS	17-inch plain, chilled-sleeve bearing, round shank, Regular for F640H, F650H, and F660H Special Plows, Special for F640, F640H, F650, F650H, F660, and F660H. 17-inch plain, chilled-sleeve bearing flat shank, Regular with F640, F640H, F650, F650H, F660, and F660H. Special for F640H, F650H, and F660H Special Plows. 15-inch plain, chilled-sleeve bearing, round shank, Special. 17-inch notched, chilled-sleeve bearing, round shank, Special. 17-inch notched or plain, anti-friction bearing, round shank, Special. 18-inch plain, chilled-sleeve bearing, round shank, Special. 17-inch notched, chilled-sleeve bearing, flat shank, Special. 18-inch plain, chilled-sleeve bearing flat shank, Special. 17-inch notched or plain anti-friction bearing, flat shank, Special.
JOINTERS	Independent cast or steel available as Special equipment. Combination cast or steel available as special equipment to be used with round shank coulters.
MOLDBOARD EXTENSION	Special equipment.
MOLDBOARD PAD	Special equipment.
ROOT CUTTER	Special equipment.
WEED HOOKS	Special equipment.
TRASH BOARDS	Special equipment.
GAUGE WHEEL	Special equipment for the Four- and Five-Bottom F640, F640H, F650, F650H, F660, and F660H Plows. Available less tire and tube or with 5.90-15 tire and tube. Available less tire and tube, 14-inch.

(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

Bottoms and Coulters

The polished surfaces of the plow bottoms and coulters 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 page 31.

Tire Inflation

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

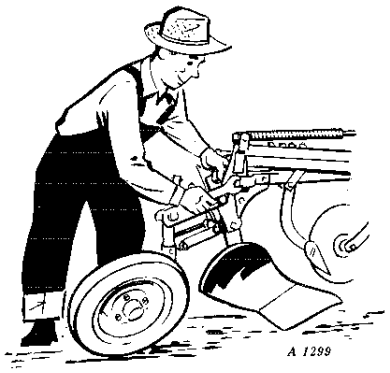
Wheel	Recommended New Implement or New or Used Auto Tires	Inflation Pressure
Furrow	6.70—15—4-Ply	26 Lbs.
Land	7.60—15—4-Ply	24 Lbs.
Rear	4.00—12—4-Ply	36 Lbs.
Gauge	5.90—15—4-Ply	28 Lbs.

Lubrication

Be sure plow has been properly lubricated. See Lubrication Chart on page 35.

Nuts, Bolts, Set Screws, and Cotter Pins

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.



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.

Proper air pressure is the most important factor in satisfactory performance and maintenance of tractor and implement tires. Underinflation will damage the cord body of the tire and cause a series of radial breaks in the sidewall fabric. If the tire buckles or wrinkles, the air pressure should be increased to where the sidewalls remain smooth while operating.

If additional traction is required, add weight to the wheels. Lowering the recommended air pressure will make little difference in the traction and may ruin the tires.

Check air pressures every two or three weeks. Use a special low pressure gauge having one-pound graduations.

Rear Wheel Weighting

In those conditions where it becomes necessary to add weight to the rear wheels, see your tractor operator's manual for weighting instructions.

Power can be lost and tire life cut drastically by wheel slippage. Adding weight also serves to stabilize the tractor when working in rough or hillside fields.

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 Weight

Water and calcium chloride solution is an economical means of adding weight to tractor rear wheels. Calcium chloride solution is recommended rather than plain water as it will not freeze.

Cast-Iron Weights

Where weight in addition to or in place of liquid weight is required, cast-iron weights can be bolted to the tractor rear wheels. See your tractor operator's manual for maximum permissible weight. This type of weight can be secured from your John Deere dealer.

Tractor Drawbar

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

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

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

Rear Wheel Setting

Tractor rear wheel settings are determined by the location of the center line of draft in the plow. Therefore, it is necessary to first read "Hitching Plow to Tractor" on the following pages. Then adjust the wheels as explained on page 11.

Front Wheel Settings

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

Hitching Plow to Tractor

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

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

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

Center Line of Draft

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

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

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

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

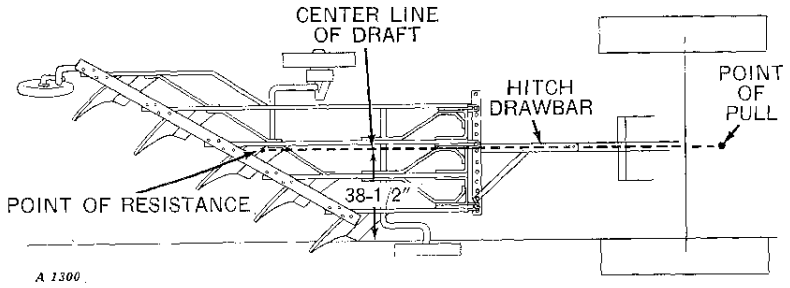
Total cut of plow = 70 inches.

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 five-bottom 14-inch plow is 38-1/2 inches measured to the left and at right angles from the furrow wall. See illustration below.

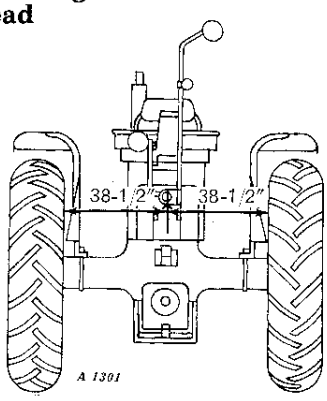


Horizontal Hitch Adjustments on Five-Bottom, 14-Inch Plow

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.

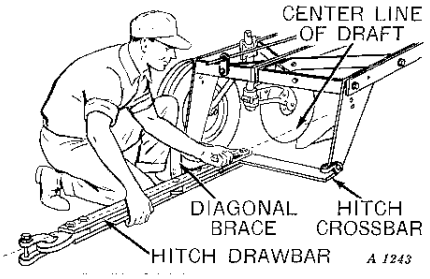
Adjusting Tractor Wheel Tread



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



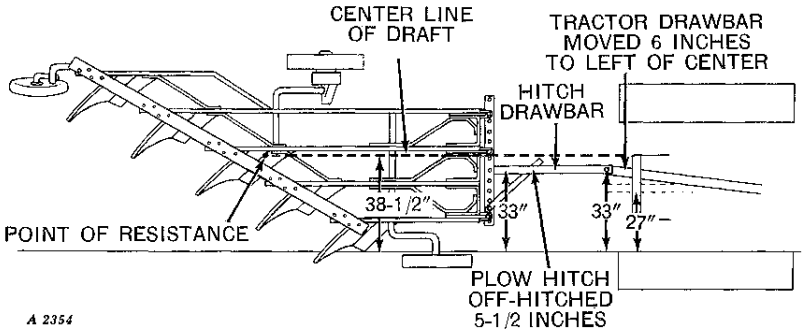
Adjust the plow hitch so it will be on the exact line of draft from the center point of pull on the tractor to the center point of resistance on the plow. A series of holes in the hitch crossbar allow the hitch to be bolted on the center line of draft. See illustration above and on page 10.

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 five-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

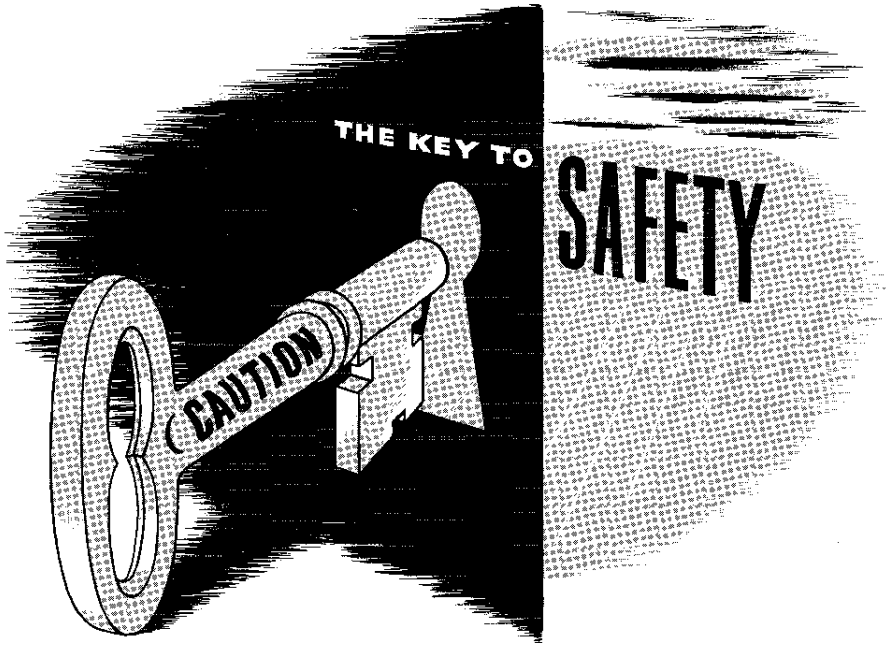
On the next page are examples of correct measurements for hitching a plow and tractor combination. We suggest that you work out the measurements listed for any plow and tractor combination, using the instructions on pages 10-12, and then apply these same instructions to your plow and tractor combination.

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.



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