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Minneapolis Moline

Operator's Manual

Moldboard Plows

Models AF 2-3 Bottom,

DF 3-4 Bottom, and

FF 5 Bottom

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MM-O-MOLDBOARD

Operator's Manual

LUBRICATION

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This section of the manual contains information necessary to properly lubricate your plow. Familiarize yourself with all lubrication points and follow the instructions carefully.

Careful and regular attention to the lubrication of your plow will keep it operating at peak efficiency and prevent the premature wear of parts. Instructions regarding the lubrication of your plow are outlined below:

Service all grease fittings with a high quality chassis lubricant at the specified interval of lubrication.

MECHANICAL-LIFT CLUTCH

Once each year remove the land wheel and flush the mechanical lift clutch with kerosene to remove any accumulations of dirt.

Lubricate the roller and roller arm pivots with engine oil. Use only a few drops of oil as excessive lubricant will tend to collect foreign material.

Clean the roller seating notches in the wheel hub, and lightly grease the axle shaft. Carefully replace the wheel on the axle using a twisting, sliding motion to prevent injury to the grease seal.

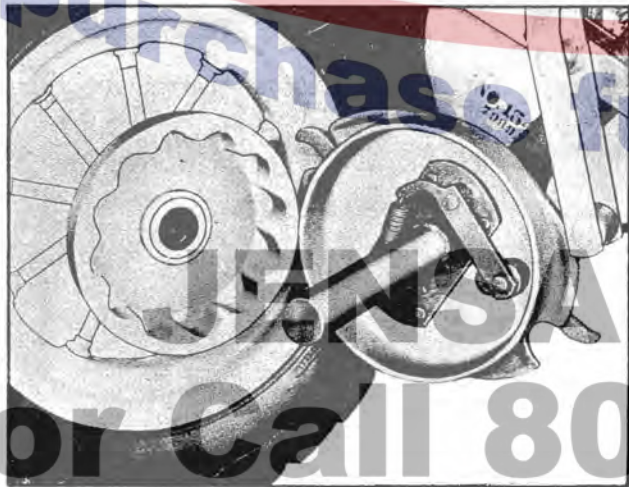


Fig. 1

LAND WHEEL (MECHANICAL-LIFT PLOWS)

Lubricate the land wheel hub before the start of each plowing season. To prevent damage to the grease seal, make certain that the pressure relief hole in the hub is not clogged with foreign material before using a grease gun on the fitting.

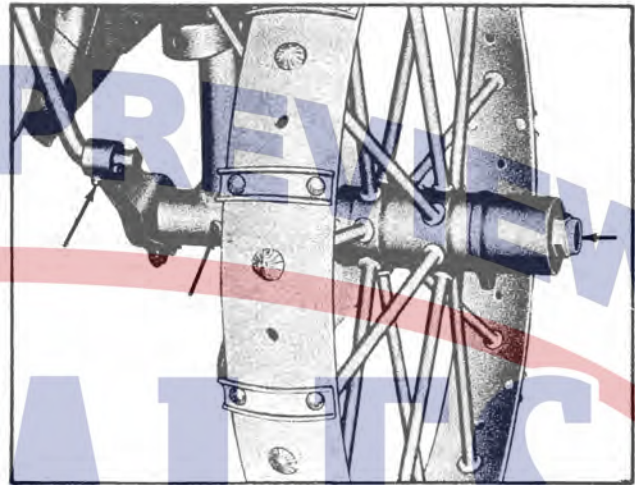


Fig. 2

Lubricate the land wheel axle bracket and lift arm daily.

LAND WHEEL (HYDRAULIC-LIFT PLOWS)

Lubricate the land wheel hub every 4 hours of operation.



Fig. 3

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Fig. 4

FURROW WHEEL

Lubricate the furrow wheel hub every 4 hours of operation.

REAR WHEEL

Lubricate the rear wheel hub and the rear wheel axle bracket every 4 hours of operation.



Fig. 5

ROCKSHAFT AND AXLES

Lubricate the rockshaft and axle pivot points every 4 hours of operation.



Fig. 6

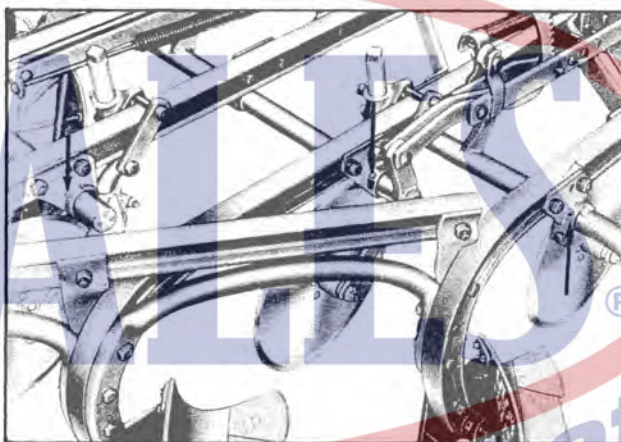


Fig. 7

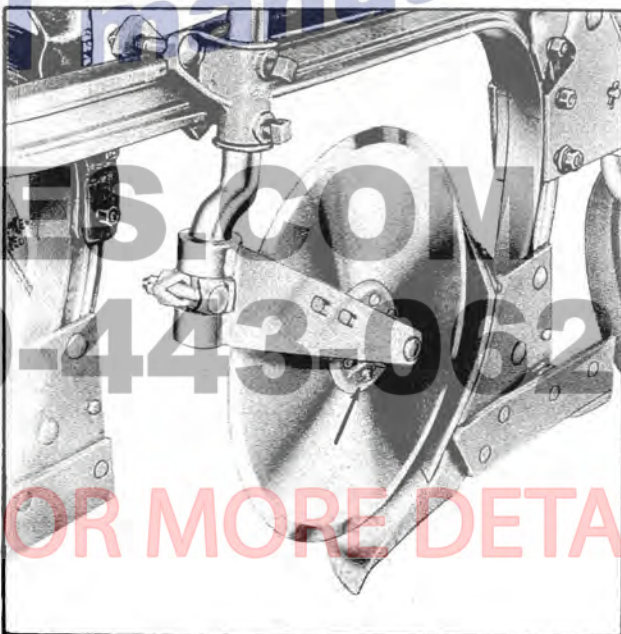


Fig. 8

from the tractor, the sections of the break-away coupling will part, thus, preventing damaged hoses and the resultant loss of hydraulic oil.

Make certain the connecting ends of the break-away coupling are clean before they are joined. Any small particles of dirt or grit can cause serious damage to the precision machined hydraulic unit if they are allowed to enter the system.

A spring mounted hydraulic hose mast is available to keep the hoses and break-away coupling off the ground when the coupling is disconnected. When the plow is not in use, always connect the hydraulic hoses together as shown to prevent the entry of foreign material into the hydraulic system.

SIDE HILL HITCH ATTACHMENT

To eliminate the tendency to take either too wide or too narrow a cut while plowing rolling and hilly land, a side hill hitch attachment is available. A convenient lever allows the operator to adjust the width of cut while the plow is in motion. Pull the lever forward to reduce the cutting width and push it back to increase the cutting width.

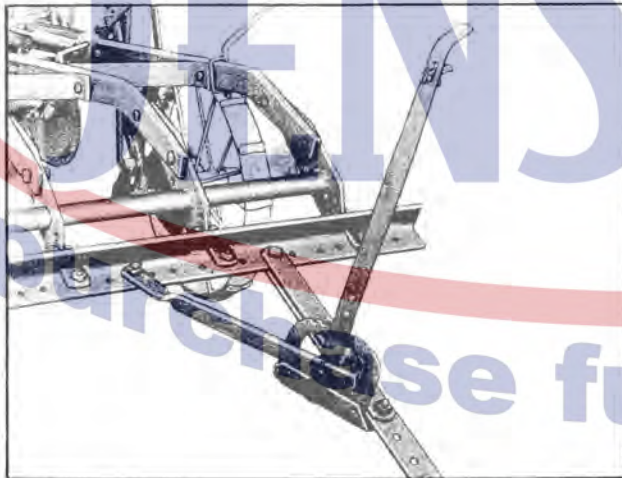


Fig. 11

HITCHING THE PLOW TO THE TRACTOR

It is absolutely essential that a plow be correctly hitched to the tractor to obtain satisfactory plow operation. Before a plow can be hitched properly, the plow operator must become familiar with the principles of correct hitching. Correct hitching involves setting the plow hitch—both horizontally and vertically—and spacing the rear wheels of the tractor.

A plow hitched correctly will run level, penetrate the soil well, and run with heel and point pressing the furrow face without undue wheel pressure. Improper hitching, in addition to reducing the service

life of the plow, will cause steering difficulties, excessive fuel consumption, and poor over-all performance.

After learning the principles of correct hitching, the plow operator can quickly and easily determine the correct hitch position for any moldboard plow by referring to the chart which gives the center line of draft and the tractor wheel spacing. With the plow hitched on the center line of draft and the tractor wheels spaced according to the information given in the chart, excessive side draft will be eliminated.

Number of Bottoms	Size of Bottoms	Distance From Furrow Wall to Center Line of Draft	Distance From Center Line of Tractor to Inner Sidewall of Rear Tires With R. H. Tire 1 Inch From Furrow Wall
2	12"	15"	16"
2	14"	17½"	18½"
2	16"	20"	21"
3	12"	21"	22"
3	14"	24½"	25½"
3	16"	28"	29"
4	12"	27"	28"
4	14"	31½"	32½"
4	16"	36"	37"
5	12"	33"	34"
5	14"	38½"	39½"
5	16"	44"	45"

HORIZONTAL POSITION OF HITCH

As stated previously, the correct horizontal position of a plow hitch is on the center line of draft. To locate the draft center line, regardless of the number of plow bottoms, apply the following rule:

THE DRAFT CENTER LINE OF A MOLDBOARD PLOW IS PARALLEL TO THE FURROW WALL. THE DISTANCE FROM THE FURROW WALL TO THE DRAFT CENTER LINE IS EQUAL TO ONE-HALF THE TOTAL CUTTING WIDTH OF THE PLOW PLUS ONE-FOURTH THE CUTTING WIDTH OF A SINGLE BOTTOM.

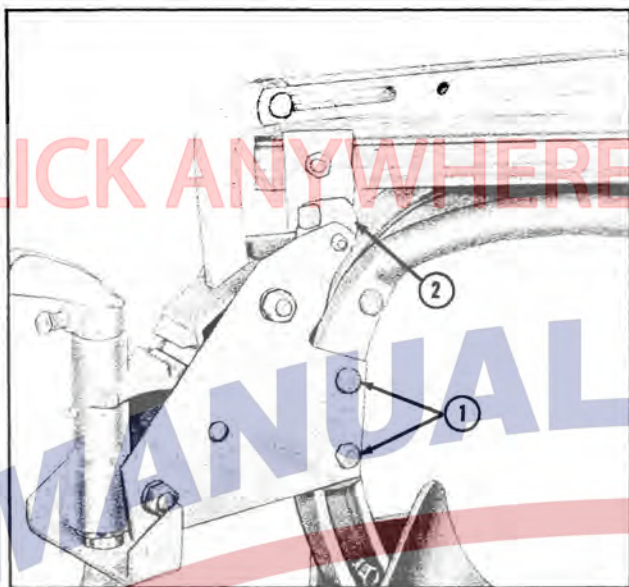


Fig. 22

1. Axle plate bolts
2. Adjustment cam

ROLLING COULTERS

Correctly adjusted coulters decrease draft, aid in securing clean-cut furrow walls, and cut surface trash that may drag on the shins or beams.

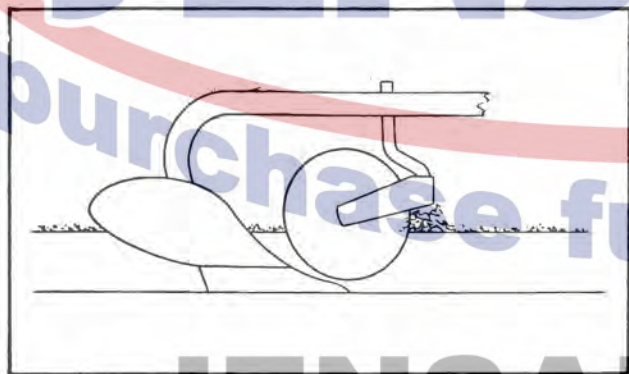


Fig. 23

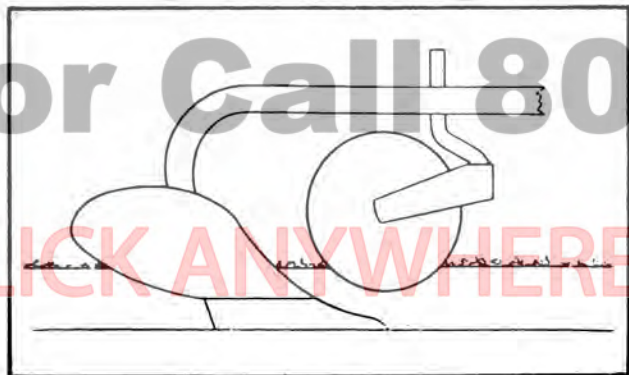


Fig. 24

Set the coulters only deep enough to cut the trash. If they are set too deep the plow bottoms will not penetrate well, and the coulters will clog. A coulter cutting depth of approximately $3\frac{1}{2}$ inches should be sufficient. Fig. 23 shows a coulter that is set too deep, and Fig. 24 shows the correct coulter setting.

For average conditions set the coulter approximately $\frac{3}{4}$ inch to the left of the landside. In loose ground it may be advantageous to move the coulter further to the left of the landside. Correctly adjusted coulters will cut a clean furrow wall with sufficient clearance to prevent the soil from spilling into the furrow wall behind the plow bottom. Fig. 25 shows the result of a correct coulter setting. Notice that the plow bottom and coulter leave a clean, distinct furrow impression behind the plow bottom.



Fig. 25

Position the coulter bracket on the plow beam so that the coulter hub is directly over or slightly ahead of the share point. To obtain better penetration in rocky or hard ground, decrease the cutting depth of the coulters. In extremely hard ground the plow bottoms may not penetrate unless the coulters are removed.

SETTING A COULTER

Before setting the coulters, make sure that the plow is hitched correctly and has been operated for a sufficient length of time to acquire a good land polish on the bottoms. Always adjust the rear coulter first and then adjust each succeeding coulter, progressing to the front of the plow.

To set a coulter, loosen the coulter bracket set-screws, and turn the coulter shank to position the blade approximately $\frac{3}{4}$ inch to the left of the landside. The correct distance from the landside to the coulter is dependent upon the type of soil being plowed. In light soils plowing performance may be

improved by moving the couler further to the left of the landside, while heavy, dense soils may require a closer couler setting. Fig. 26 shows a board, which is $\frac{3}{4}$ of an inch thick, being used to position the couler blade $\frac{3}{4}$ inch from the landside.



Fig. 26

1. $\frac{3}{4}$ inch board

It is important to set the coulers accurately so that the distance between the couler blades is exactly the same as the cutting width of the bottoms. A 14-inch bottom should cut a furrow 14 inches wide; consequently, if there is a 15-inch distance between adjacent couler blades the wider 15-inch soil slice will cause the plow to ridge, resulting in poor plowing performance and excessive landside wear.

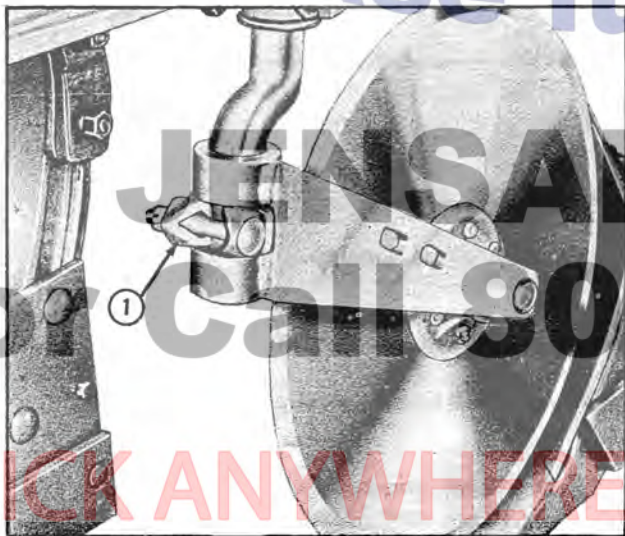


FIG. 27

1. Couler shank clamp

The couler should be free to swing an equal distance on either side of center. To adjust the couler swing, loosen the couler shank clamp bolt, and reposition the clamp until the correct swing is obtained.

Notched coulers are also available and are attached and adjusted in the same manner as the plain coulers. Notched coulers are used to advantage when cutting heavy trash.



FIG. 28

COULER BEARING ADJUSTMENT

Adjustment of the couler bearings is accomplished by turning the castellated nut on the couler hub spindle bolt. Tighten the nut sufficiently to eliminate excessive end play, but exercise caution to prevent binding the couler bearings.

JOINTERS

By cutting and turning a small portion of the furrow slice, jointers assist the plow bottoms in covering surface trash and green sod. The use of jointers will help to prevent stalks and weeds from appearing between the furrows.

Two types of jointers are available—the combination couler-jointer and the independent jointer. The independent jointer is advantageous in stony ground, since it can be used without a couler.

NOTE: Before attempting to set jointers, make certain that the coulers are correctly adjusted. If the jointer blade rubs against the couler blade, the couler will drag and fail to function properly.