FERGUSON REAR MOUNTED MOWER

MODEL F-EO-20

NARROW AND WIDE TREAD

OPERATING and ASSEMBLY INSTRUCTIONS

Ferguson DIVISION
MASSEY-HARRIS-FERGUSON INC.
RACINE, WISCONSIN
FORM No. 199 035 M92
REPLACES 199 035 M91 AND Z-194-C

the FERGUSON TRACTOR and FERGUSON SYSTEM IMPLEMENTS

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FERGUSON DIVISION

MASSEY-HARRIS-FERGUSON INC.

RACINE, WISCONSON

All specifications are subject to change without notice.

Owner's Name_____

Your Ferguson Dealer_____

Dealer Address_____ Phone_____

Mower Serial Number_____

INTRODUCTION

The Ferguson F-EO Rear Mounted Agricultural Mower was designed to speed up and simplify the one phase of the haying operation where mechanization has lagged far behind. Great strides have been made in improving the efficiency of rakes, balers, harvesters, elevators and other essential haying machinery but the mowing machine has remained basically the same since the horse-drawn days.

The elimination of the old troublesome pitman with its constant vibration and need for adjustment is the most obvious and most important improvement which has been made in the F-EO Mower. The efficient, precision-built drive unit with its specially designed, sealed bearings, converts rotary motion of the drive belt into oscillating or "back-and-forth" motion of the knife.

The drive unit is carried by a simple, rigid, frame made up of strong tubular sections and heavy malleable castings. The frame is attached to the tractor so that the mower and the tractor become one unit, easy and efficient to operate. The mower can easily be attached to the tractor in a few minutes giving the operator the maximum time in the fields.

Each F-EO Mower sold by an authorized Ferguson Dealer should be assembled, adjusted and checked by a qualified member of the Dealership. At the time of delivery the Dealer will thoroughly discuss all sections of this manual except the assembly instructions. He will answer any questions you have concerning your F-EO Mower and demonstrate and explain all the adjustments. Your Dealer will do these things to insure long and satisfactory service from your mower.

Included in this manual is information concerning lubrication, optional equipment, attaching and detaching, field operation, adjustments, maintenance, assembly instructions and numerous illustrations of the Ferguson F-EO Mower.

Read, study and follow these instructions to get longer life, maximum performance and the utmost satisfaction from your new implement.

Only GENUINE FERGUSON REPAIR PARTS should be used on your FERGUSON F-EO MOWER. These parts are designed and built to fit correctly and give maximum service. They may be purchased only from your AUTHORIZED FERGUSON DEALER.

All FERGUSON equipment is identified by a FERGUSON name plate or decal. If this identification is not attached, it is not FERGUSON equipment. Check for It before purchasing the equipment.

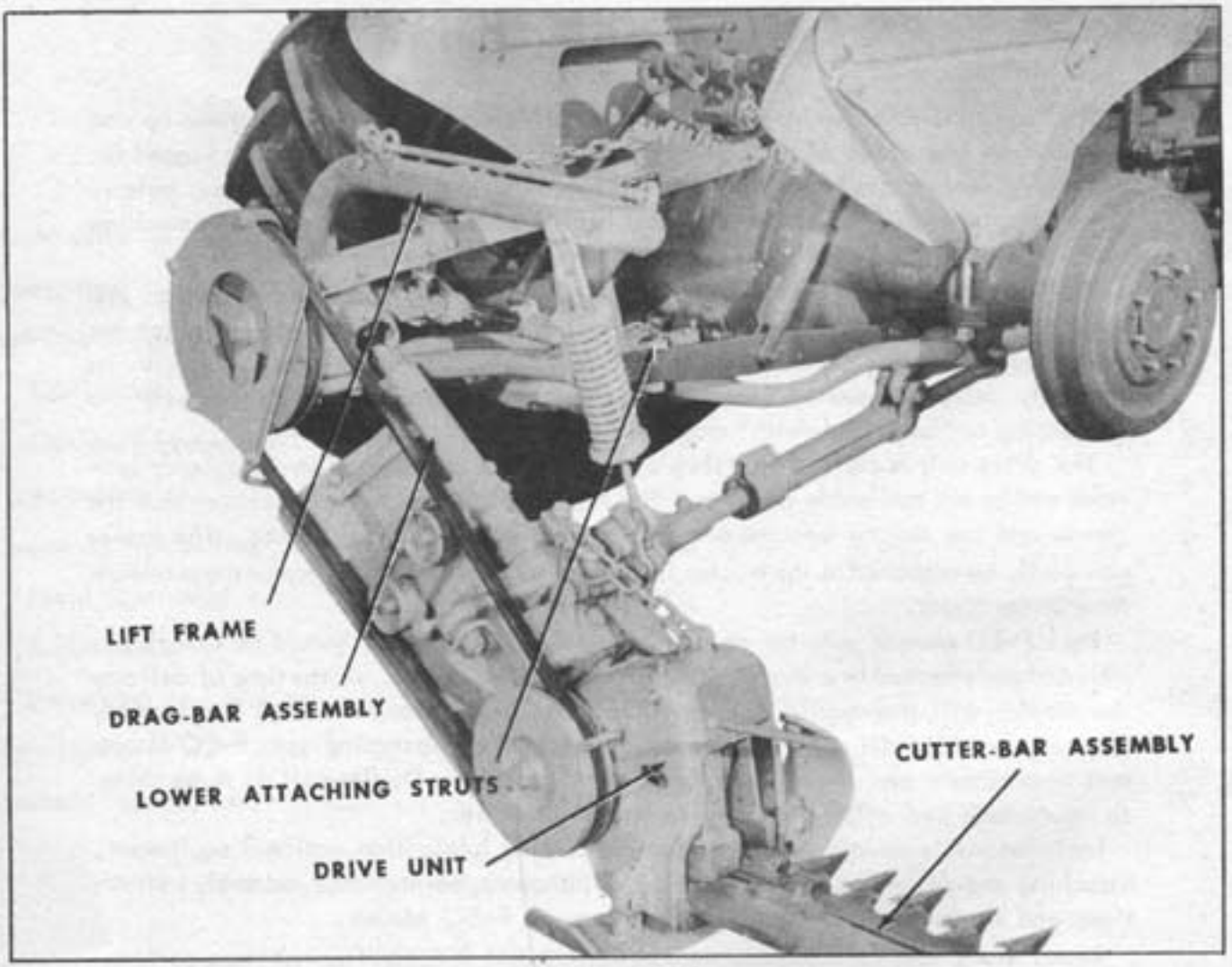

Fig. 1 The F-EO Mower

DESCRIPTION

The new Ferguson rear mounted agricultural mower is supported and located in position on the Ferguson 35 tractor at seven locations. Two of these are on the tubular member referred to as the frame, see Figs. 1 and 3. The frame clevis pins are located in the ball sockets of the tractor lower links. Two more points of attachment are at the stabilizer bracket located under the rear axle directly below the tractor fenders wtih two struts extending from the mower to the stabilizer bracket pins and secured with cone nuts. The fifth point is on the right hand strut of the mower. A pull bar extends from the center of the mower drag bar and is attached to a bracket on the right strut by a pin secured with two cotter pins. The sixth support is a float spring hooked between the drag bar yoke and the end of the lift frame, see Fig. 1. The seventh and last support is the top strut assembly located between the drive pulley bearing housing on the mower and the rocker pin on the tractor rear housing.

The method of support rigidly integrates the mower with the tractor while allowing lowering and raising of the mower by the hydraulically controlled tractor lower links. The

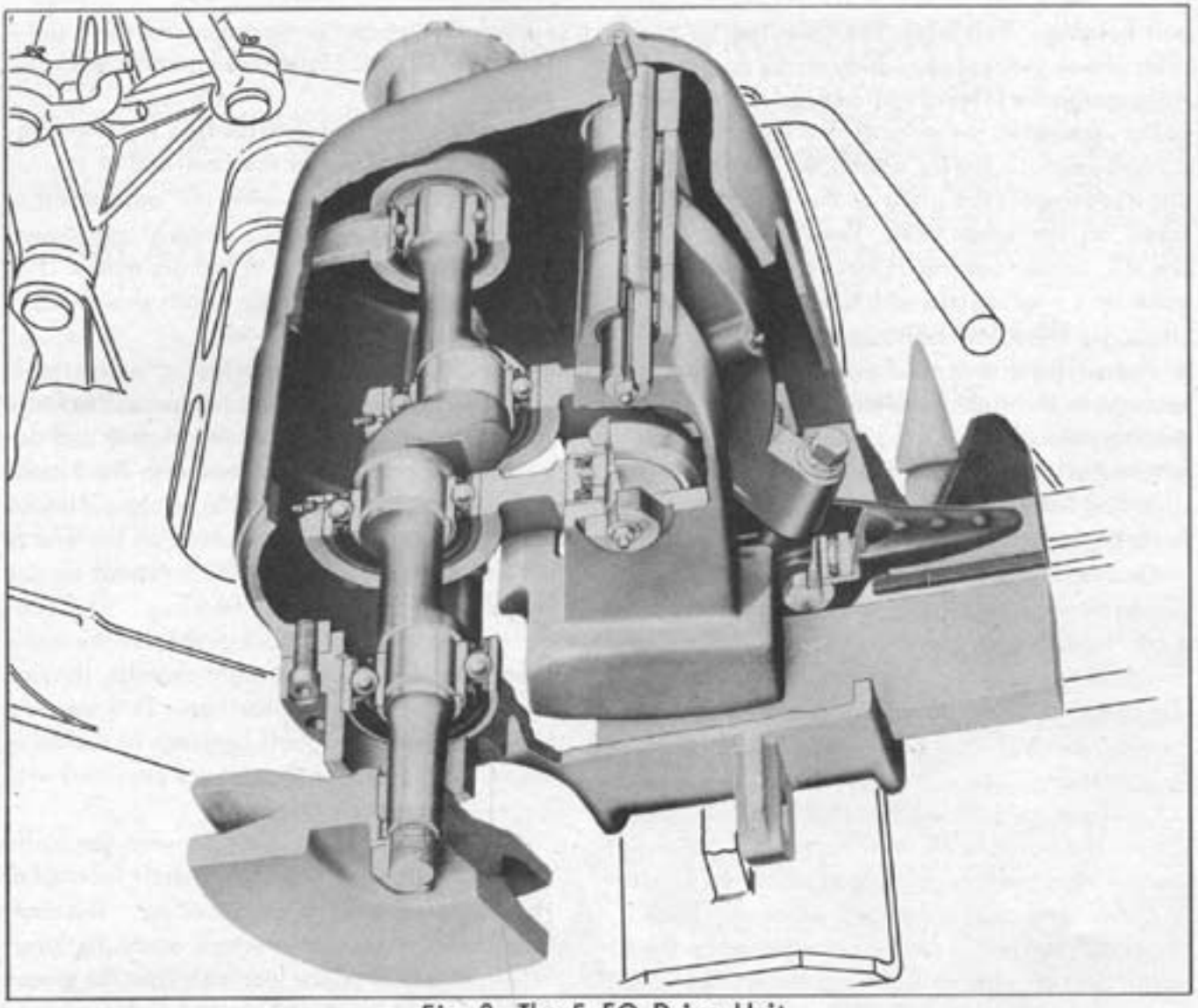

Fig. 2 The F-EO Drive Unit

tubular struts from the drive pulley bearing housing and the top strut which connects the bearing housing to the tractor rocker pin are the only stationary supports on the mower, as it is desirable to maintain a fixed drive shaft position at all times.

There are two options of the F-EO Mower. They are basically the same except for the length of the drag-bar. The drag-bar of each model is designed so that the inner shoe runs in the cleared path directly behind the tractor wheel. The F-EO-20 Narrow Tread Mower is intended to be used when the tractor wheels are set at the 52 in. tread. The F-EO-20 Wide Tread Mower has a longer drag-bar and is designed to operate with the wheels set at 72 in. This Wide Tread Mower is a better choice where the tractor is to be used extensively for row-crop operation as it can be interchanged with the other implements without changing the tractor wheel settings.

The drive shaft assembly consists of two shafts connecting the PTO shaft to the drive pulley through two bearing and two universal joints. A ball socket in the side of the drive pulley bearing housing holds the ball of the inner end of the drag bar. The outer (right) end of the drag bar holds the pivoting drive unit in a heavy yoke. A "V" belt connects the drive pulley with the driven pulley on the drive

unit housing. Belt whip is controlled by two idler wheels bracketed midway on the drag bar. Adjacent to the idler wheel assembly is the tilt collar, a casting in the form of a segment with a small segment lug for a lock nut on one side and a housing for the pivot of the tilt adjusting screw on the other side. The forward end of the tilt collar casting is held in the pull-bar yoke by a bearing pin which is located in position by a nut and bolt. At the forward end of the pull-bar a special housing with lugs is secured to the right hand mower strut by a pin passing through the lugs. Thus the pull-bar is pivoted at the rear end and at the forward end allowing for safety break-back and lifting or lowering actions respectively.

On the shorter drag-bar for the narrow tread mower the tilt collar lug is bolted directly to a corresponding lug on the drag-bar yoke. On the wide tread mower with longer drag-bar the tilt collar lug is bolted to a bracket on a spacer casting which is located on the drag-bar yoke by a bolt and nut.

Provision for safety break-back is incorporated in the pull-bar by means of four, clamped leaf springs, the forward ends of which are held in a circular groove on the pull-bar support assembly. When pull is suddenly increased by the cutter-bar fouling with an obstacle, the leaf springs are pulled out of the groove and the cutter-bar, drive unit and drag-bar assemblies swing back, thus unseating the drive belt and interrupting the action of the knife. This essential double safety action is almost instantaneous.

A lever assembly with two offset attaching points, giving a bellcrank effect, is located on top of the drag-bar yoke. The front arm is connected to the float spring which is suspended from the frame tube and the rear arm is connected by chain to a lug on top of the drive unit housing. When the rear links of the tractor are raised the drag-bar lifts, pivoting about its ball jointed inner end and increasing its angle in relation to the drive unit until the connecting chain is tensioned. At this point the drive unit and cutter-bar assembly will also raise.

A chain and catch with five notches connects the lift frame to the front end of the top strut. This combined with the adjustment of the float spring provides a range of adjustment of the inner shoe float. When the mower is in the transport position, the chain should be in the forward notch.

The drive unit is of particular interest as it represents a completely new approach to knife actuation and eliminates the clatter and destructive vibration associated with the Pitman drive which it replaces. The driven pulley on the drive unit housing is located on the end of a two journal crankshaft which rotates on two sealed anti-friction ball bearings. The connecting rods on ball bearings actuate the knife lever and the counter weight assembly through two more sealed ball bearings. This makes a total of six sealed ball bearings in the drive unit. All of these bearings are provided with accessible grease fittings.

The counter weight assembly and the knife lever are pivoted on a cross shaft located at the top of the drive unit housing. The shaft is drilled along and at intervals across its longitudinal axis to allow lubricant from the grease fitting at its rear end to reach the grouped needle bearings in which the knife lever and counterweight assembly oscillate. The inertia of the knife lever at all speeds is balanced out by the counterweights and no unbalanced centrifugal forces can develop as with Pitman drive, which for many decades has been the conventional form of power transfer on mowers. Consequently high operating speed can be maintained with a minimum of stress on the Ferguson mower and tractor and with much less operator fatigue.

The cutter-bar while of conventional design with knife guards, ledger plates, knife clips and knife sections is specially adapted to the FEO mower.

PRE-OPERATING INSTRUCTIONS

To insure reliable and satisfactory operation of the F-EO-20 Mower, it is necessary to follow closely the instructions outlined below:

LUBRICATION

There are fifteen lubrication fittings on the mower. They are shown in Figs. 3 and 4, along with the recommended hours of operation between each servicing. It is very important that this machine, particularly the drive unit, be carefully and properly lubricated if it is to give its best service. Use a good quality pressure gun or chassis lubricant. Keep the grease in a covered container where it will always be clean. All lubrication fittings and surrounding area should be wiped clean with a rag before using. Pump some grease out of the gun and wipe off the nozzle of the gun to eliminate dangerous dirt at this point.

POWER TRAIN AND LINKAGE

All grease fittings on the power train and drag-bar should be lubricated with a pressure grease gun as indicated in Fig. 3. Pump grease into these fittings until fresh grease is forced out around the part. This procedure flushes out the old grease which may be loaded with wear producing dirt.

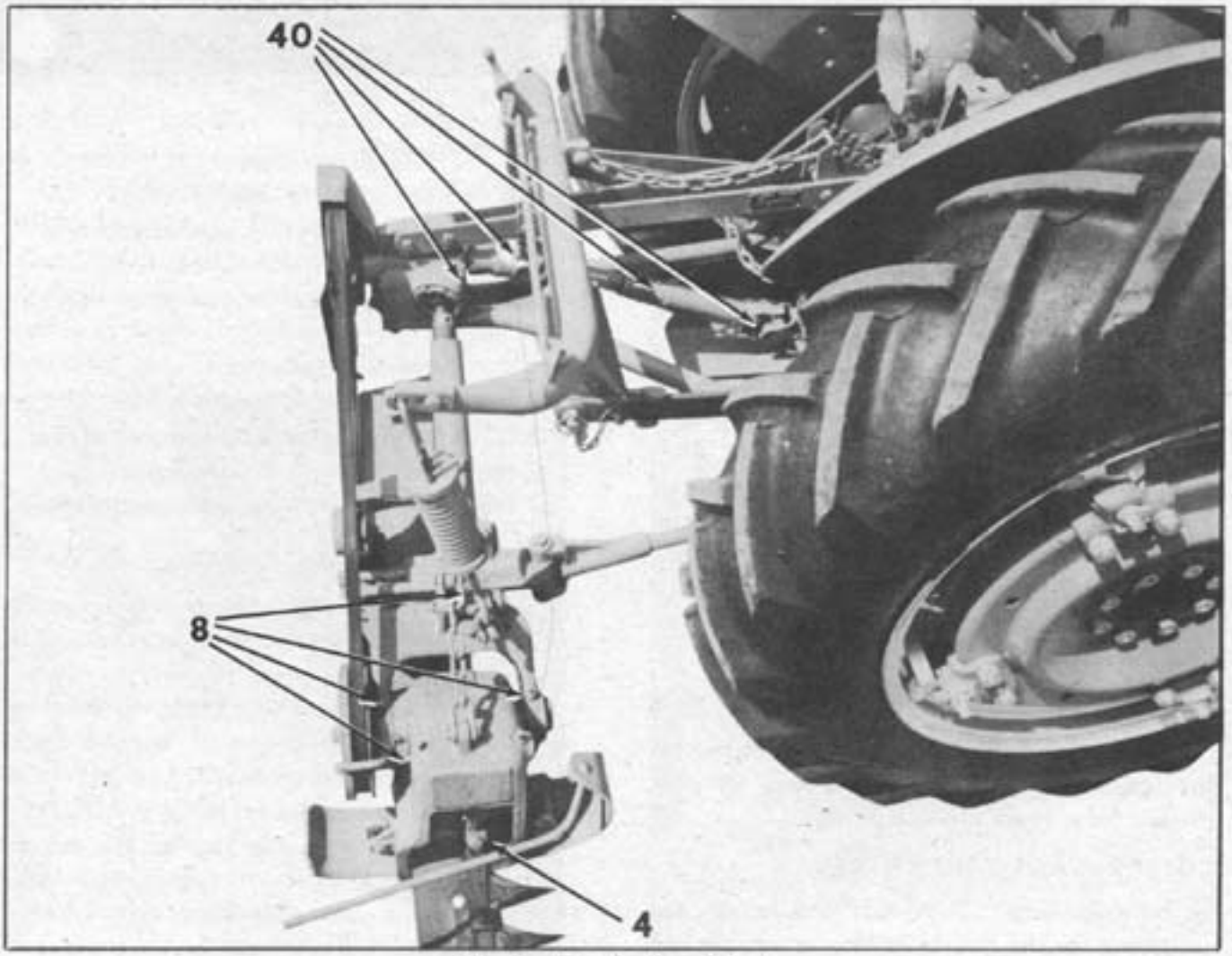

Fig. 3 Lubrication Chart

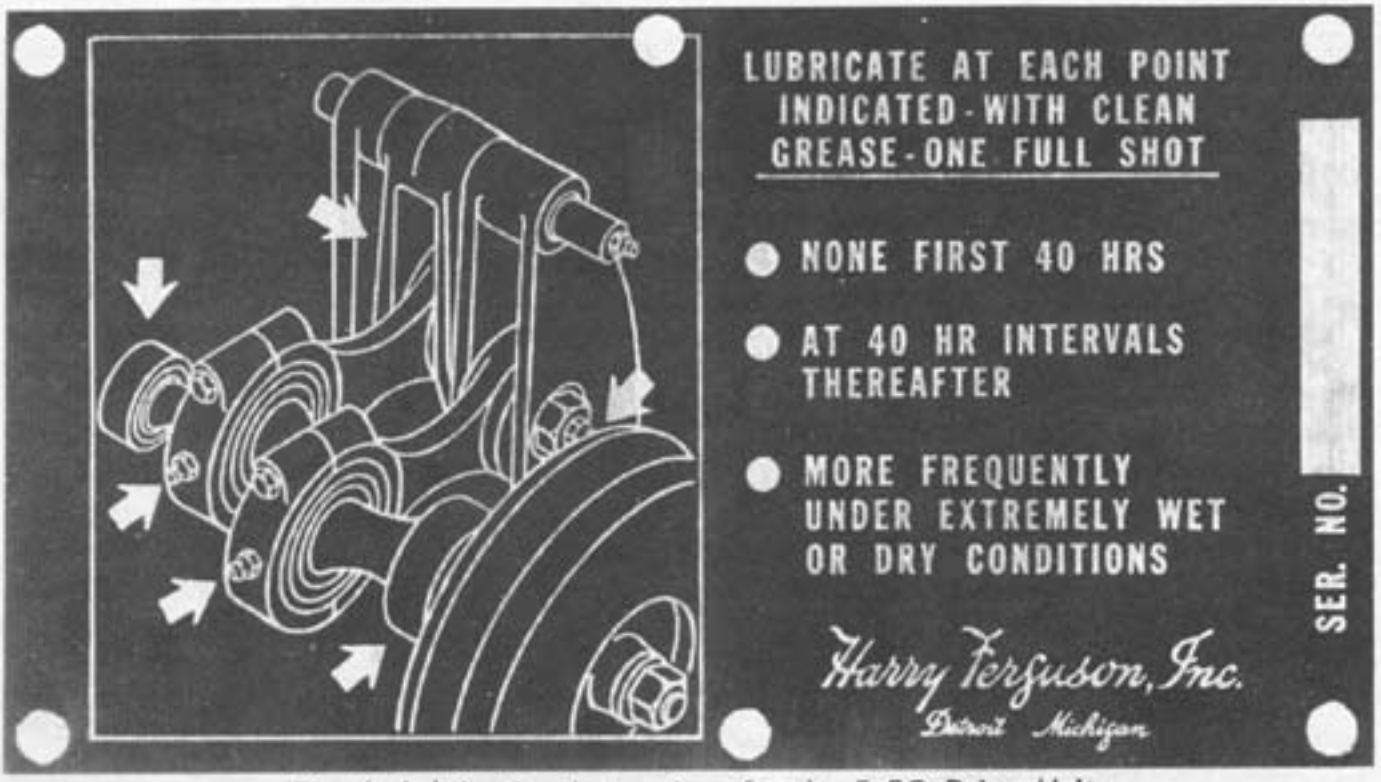

Fig. 4 Lubrication Instructions for the F-EO Drive Unit

DRIVE UNIT

An instruction plate, see Fig. 4, with directions for lubricating the drive unit, is attached to the top of the unit. These directions should be followed carefully. Under no condition should too much grease be pumped into the fittings of the drive unit. This will cause the bearings to overheat, breaking down the grease and ruining the grease seals. The pivot shaft of the drive unit, unlike the rest of the drive unit is mounted on needle rollar bearings and should be lubricated at eight hour intervals. The fitting is shown on Fig. 3.

OPTIONAL EQUIPMENT

The equipment described below is obtainable for specialized conditions and may be purchased from your Ferguson dealer.

CUTTER-BARS AND KNIVES

The following cutter-bars and knives are available for the F-EO-20 Mower as optional equipment:

Standard Guards
- 6 ft. cutter-bar with smooth knives
- 6 ft. cutter-bar with underserrated knives
- 7 ft. cutter-bar with smooth knives
- 7 ft. cutter-bar with underserrated knives

Rock Guards
- 6 ft. cutter-bar with smooth knives
- 6 ft. cutter-bar with underserrated knives
- 7 ft. cutter-bar with smooth knives
- 7 ft. cutter-bar with underserrated knives

CASTER WHEEL ASSEMBLY

When mowing in areas where strip irrigation is practiced, the mower inner shoe may fall in the small ditches on some rounds. When this occurs, the cutter-bar will shear the shoulder of the ditch and will eventually become clogged. To overcome this condition, a tail wheel assembly is made available as a kit. The assembly attaches to the rear of the mower with the caster wheel located 15 in. to the left and behind the inner shoe thus providing positive support for the mower at all times, see Fig. 5 .

Fig. 5 Caster Wheel Assembly

ATTACHING

Described below is the recommended method of attaching the mower to the tractor.

1. Attach the right-hand and left-hand stabilizer brackets at the proper position on the lower end of the fender mounting bolts. Replace the stabilizer link pins with the special stabilizer bolts provided. The longer bolt should be installed in the left-hand bracket.

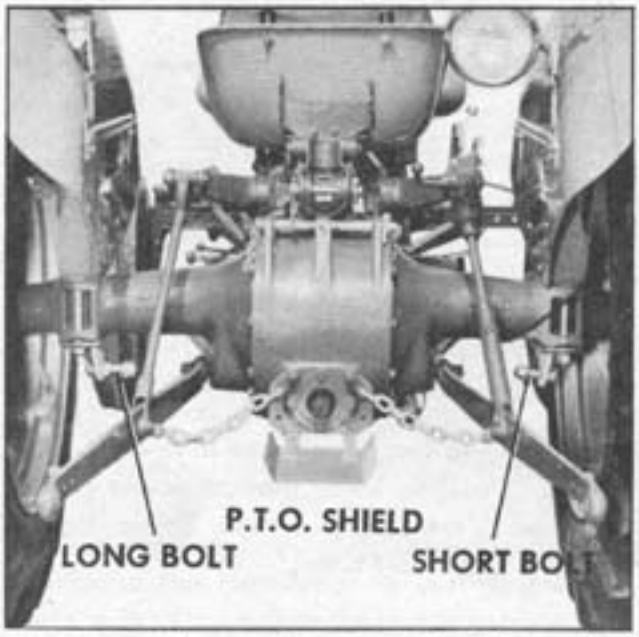

Fig. 6 Brackets and P.T.O. Shield Installed

2. Remove the tractor PTO cap and attach the PTO shield to the tractor shown in Fig. 6.

3. Remove the two bolts securing the top strut to the mower and remove the strut from the mower.

4. Start and back the tractor so that its rear wheels straddle the left and right lower struts. Lower the tractor links with the hydralever. See Fig. 7.

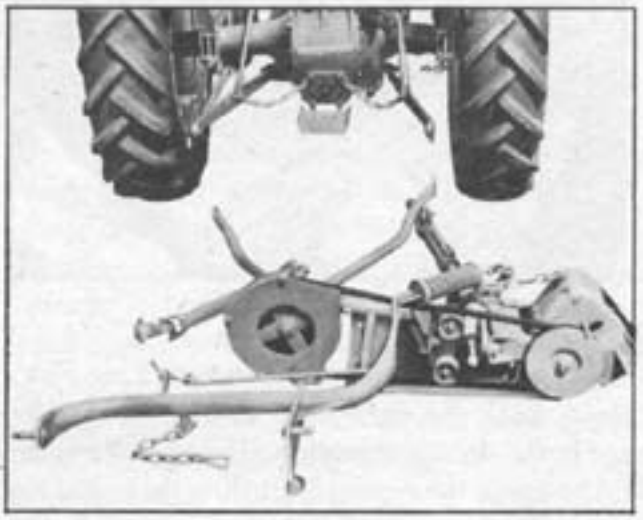

Fig. 7 Back Up to Mower

5. Mount the lift frame to the tractor lower links in the normal manner, installing a stabilizer stay link on the left-hand link pin and special stabilizer bracket bolt. See Fig. 8.

6. With the hydralever raise the tractor lower links so that the balance spring lifts the

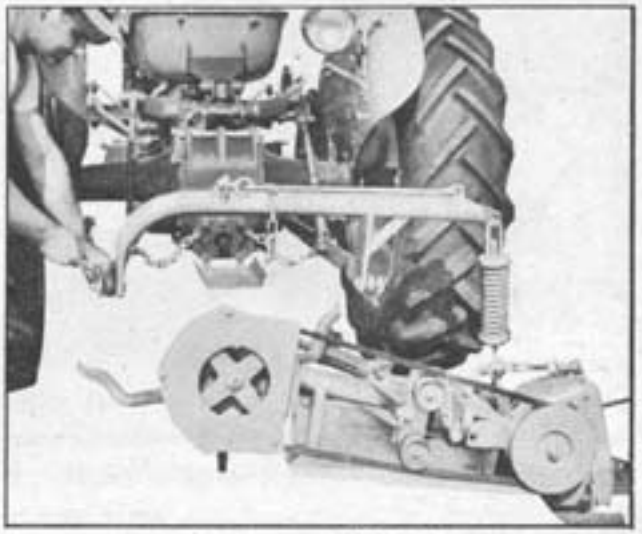

Fig. 8 Attach Lift Frame

inner cutter-bar shoe just clear of the ground.

7. Since the weight of the mower is now hanging on the spring, it's a simple matter to

Fig. 9 Attach Left Strut

hook the left-hand strut onto its stabilizer bolt. Now, hook the right-hand strut to its stabilizer bolt. In this operation, it may prove helpful to move the mower by pulling the end of the cutter-bar forward or back as necessary. Tighten the cone nuts on the stabilizer bolts, just tight enough to keep the struts from detaching.

8. Lower the hydralever and attach the top strut to the mower. Leave its attaching bolts loose.

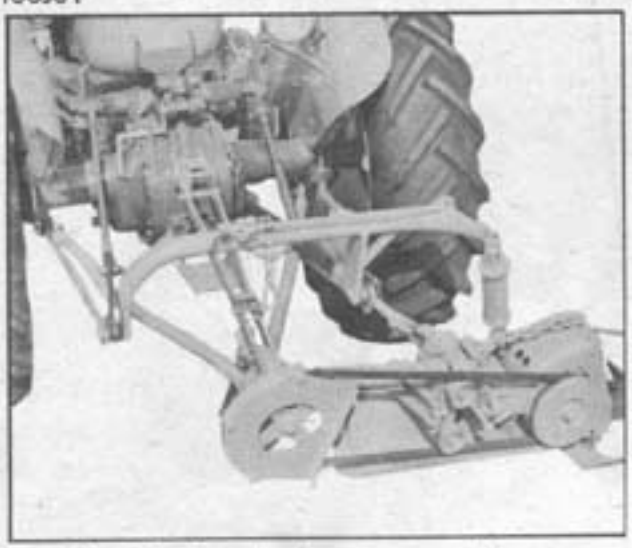

Fig. 10 Attach Top Strut to Mower

9. Raise the hydralever and guide the top strut into position so that the hinged tractor rocker pin may be inserted.

Fig. 11 Insert Top Strut Pin

10. Tighten the two bolts which attach the top strut to the mower and tighten the rocker pin locking screw.

11. Place the position control chain in the transport position, or forward notch, of the chain catch.

12. Tighten securely, the cone nuts which secure the left-hand and right-hand struts to the stabilizer brackets.

13. Raise the cutter-bar and lock in position with the transport rod.

14. Disengage the tractor power take-off and attach the universal joint of the mower drive shaft to the power take-off shaft of the tractor.

The mower is now completely attached to the tractor and ready to be lubricated, inspected, and if necessary, adjusted as previously described. Although it involves several steps, if the procedure described above is carefully followed, it will be found that the mower can be attached to the tractor without any difficulty and in a very short time.

OPERATING INSTRUCTIONS

To operate the F-EO Mower correctly, the procedures outlined below should be followed:

FIELD OPERATION

There are several points that should be checked before the mower is taken to the field. First, of course, the wheels of the tractor should be set according to the width of the mower being used. For the F-EO-20 Narrow Tread, set the rear wheels at 72 in. Second, operate the mower by pulling the belt by hand to see that all moving parts work freely. Third, check all nuts and bolts for tightness. Fourth, it is a good plan to inspect the knife and cutter-bar each day before going to the field. Fifth, lubricate any parts necessary according to the charts shown on pages 5 and 6. Sixth, start the tractor, set the throttle to idle position, engage the PTO and slowly engage the clutch. Gradually increase the speed of the tractor engine to full throttle while watching the mower to ascertain that no excessive vibration develops. Excessive vibration indicates, of course, that some part is broken or improperly adjusted. Locate and correct the trouble before proceeding.

The F-EO-20 mower should be operated in the field much the same as any other tractor mounted mower. It is possible, however, to operate the mower faster than the conventional machine. This advantage results from the smooth, vibration free action designed and built into this mower. If the knife and cutter-bar parts are in good condition, as described previously, the mower may be operated with the Ferguson 35 tractor in fourth gear and with the throttle three-fourths open in most crop conditions.

When entering hay, start the knife running and lower the cutter-bar to cutting position while it is still clear of the standing crop; this will prevent clogging.

Form the habit of looking out over the right front tractor wheel and watching for obstructions such as rocks or stumps which are in the path of the cutter-bar. When an obstruction is seen, depress the clutch pedal immediately and close the throttle. Approach the obstruction slowly, raising the cutter-bar with the hydralever so that it will pass over without damage. When a solid object is struck by the cutter-bar, the safety break-back, if it is functioning properly, helps to protect the mower against damage. As the cutter-bar swings rearward, the tension on the drive belt is relieved and the knife stops its motion. Damage to the mower may result, of course, if the operator does not immediately stop the forward motion of the tractor when an obstruction is hit. The action of the break-back gives the operator time to act but does not eliminate the necessity for him to be constantly alert to avoid striking objects with the cutter-bar.

When the cutter-bar does break-back, disengage the PTO to prevent damage to the belt, back the tractor with the cutter-bar resting on the ground and the pull-bar will slide forward, automatically re-setting the mower break-back springs. It is a good idea to raise the cutter-bar, stop the tractor engine, inspect the knife and cutter-bar for any possible damage and make sure the drive belt is properly seated before proceeding.

When opening a field, that is, making the first cut or round, it is usually the best procedure to drive so that the tractor is next to the fence, or field border, with the cutter-bar extending in toward the center of the field. Steer the tractor so as to leave a strip of un-cut crop the width of the cutter-bar. On this round, watch the ground in front of the tractor for stones or other trash which is often present around field margins. After a complete pass around the field as described above, reverse

Fig. 12 Using Front Wheel as Guide

direction and cut the unmowed strip from which the dangerous obstructions were cleared the the first time around.

The tractor should be driven so that the inner shoe is just as close as possible to the un-mowed crop without leaving an un-cut strip. If the inner end of the cutter-bar is run through hay which has been previously cut, it may clog up. Many operators find it helps them guide the tractor if they set the right front wheel out so that its outer edge is in line with the outer edge of the rear wheel as shown in Fig. 12. This would mean setting the right front wheel to the 56 inch position when the rear wheels are in the 52 inch position. When using the F-EO-20 Wide Tread with the tractor rear wheels set at 72 inches, both front wheels should be set to the 76 inch position.

With a little practice, perfectly square corners may be turned without stopping, backing or circling. When approaching the corner, slow down and drive straight out until

Fig. 13 Turning Square Corners

the edge of the standing crop is even with the forward edge of the rear wheel. At this moment, step on the right wheel brake and turn the front wheels to the right, see Fig. 13. The tractor will pivot on the right rear wheel, the end of the cutter-bar will swing back and be in position to start straight down the second side of the field.

The best procedure to follow when transporting the mower over the road or from one field to another is outlined here.

1. Raise the mower completely with the hydralever.
2. Hook the position control chain in the forward notch of the chain catch and lower the hydralever until the weight of the mower is supported by the chain. This takes the load off the hydraulic system.
3. Disengage the power take-off.
4. Dismount from the tractor, raise the cutter-bar to a vertical position and lock in place with the cutter-bar support rod.

WARNING: Do not hold the cutter-bar at the knife guards when raising or lowering manually. The drive unit pulley may rotate moving the knife and serious injury to the fingers may result. Always lift or lower the cutter-bar by holding the rear edge of the bar.

ADJUSTMENTS

For efficient operation of the F-EO mower the adjustments outlined below should be closely followed.

CUTTER-BAR FLOAT

A combination of two adjustments determines the weight of the inner and outer cutter-bar shoe on the ground surface. The position of the chain clevis in the catch on the upper strut of the machine determines how much of the cutter-bar weight will be supported by

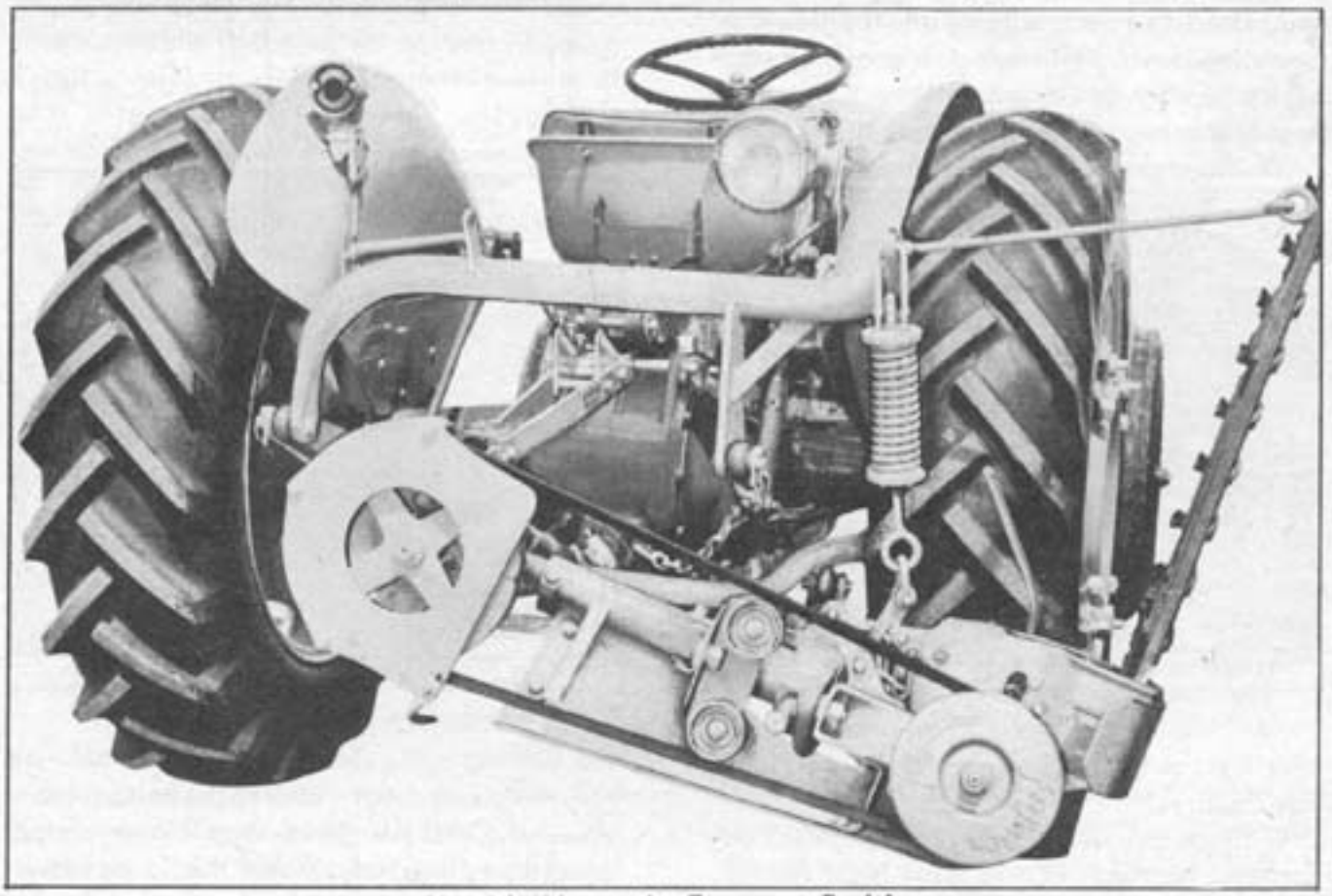

Fig. 14 Mower in Transport Position

the balance spring. Under normal operating conditions, the clevis should be set in the rearward notch, see Fig. 15. This is a coarse adjustment. The fine adjustment is made with

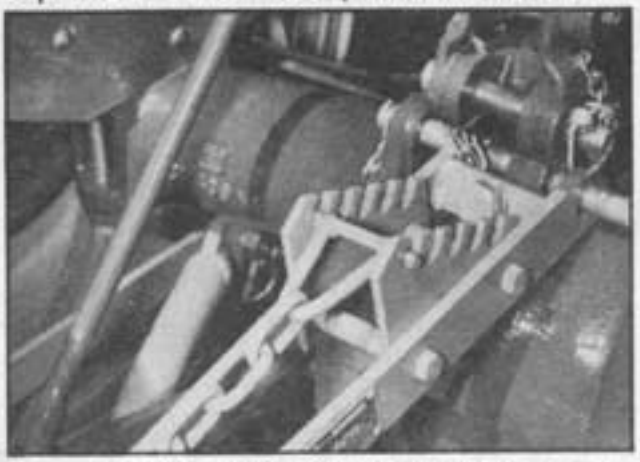

Fig. 15 Position Control Chain

the leveling crank on the right lift rod of the tractor. Observe the action of the inner shoe in the field. It should tend to follow the ground contour, not digging into the ground or bouncing over it. It may occasionally be necessary to vary this adjustment by turning the leveling crank while in operation. The length of the balance spring which supports the drive

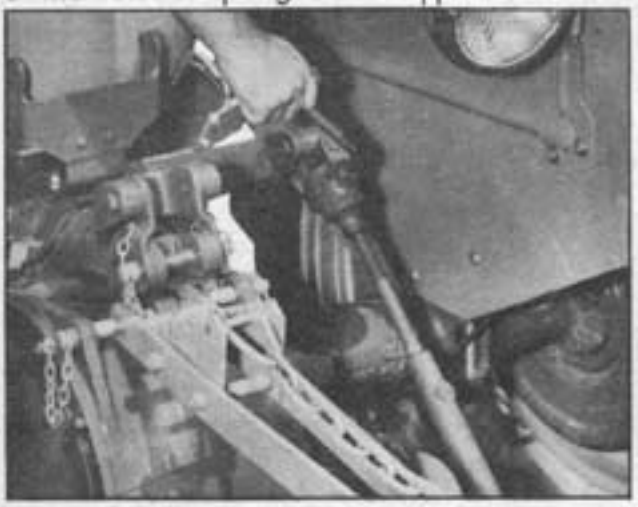

Fig. 16 Accurate Position Adjustment

unit is set at 17-3/4 in. when the mowers leave the factory.

It should be noted that this is the correct adjustment for the F-EO-20 Wide Tread Mower. However, the F-EO-20 Narrow Tread Mower must be adjusted to 15-3/4 in. Adjustment is made by measuring on the balance spring from the inside of the upper loop to the inside of the lower eye. This is a free-length measurement;

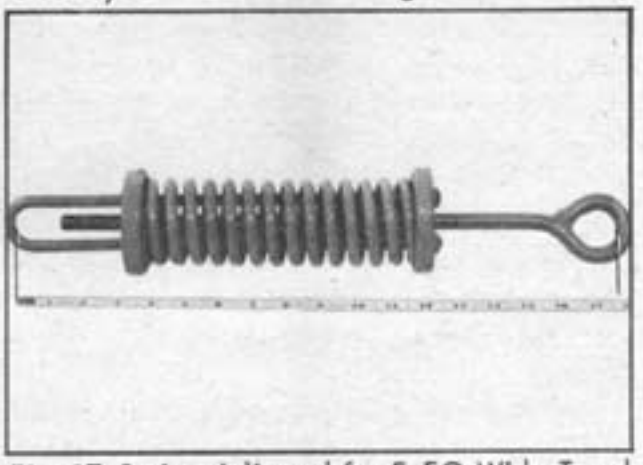

Fig. 17 Spring Adjusted for F-EO Wide Tread

that is, the measurement should be taken while no weight is hanging on the spring.

CUTTER-BAR TILT

The tilt, or pitch, of the cutter-bar is adjusted by turning the long bolt which extends to the rear between the two belt idler pulleys, see Fig. 18. To make this adjustment, it is first necessary to loosen the clamp block and

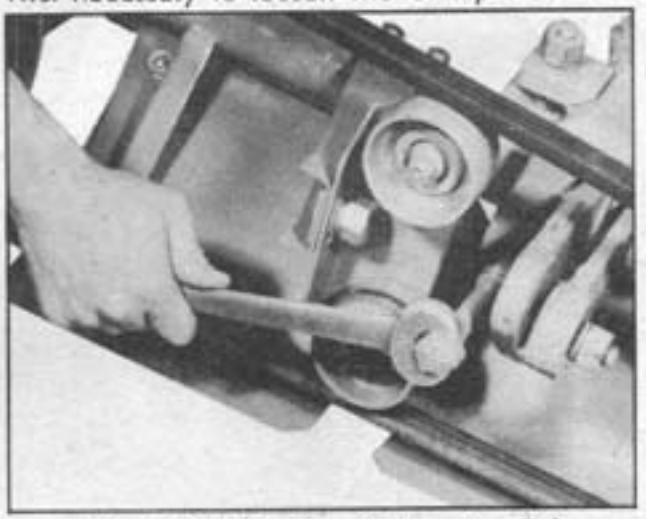

Fig. 18 Adjusting Cutter-Bar Tilt

the locking bolt. Turning the bolt clockwise tilts the guards down. Turning the bolt counterclockwise tilts the guards up. Under normal conditions, this adjustment should be set so that the cutter-bar rides level; that is, its

guards should point straight ahead, neither up nor down. When mowing in fields of closely matted hay or weeds, a cleaner job may often be obtained by tilting the points of the guards downward. Where rocks, stones, or clods are encountered, it is usually advisable to tilt the points upward to avoid excessive knife wear and breakage. Be sure to tighten the clamp block and locking bolt after making this adjustment. If the cutter-bar is tilted very much, either up or down, it may be necessary to tilt the belt idler pulleys a corresponding amount. To do this, loosen the bolts which clamp the idler pulley bracket to the drag-bar. Tilt the bracket so that the belt runs flat on the center of the pulleys and re-tighten the clamping bolts. It should also be noted that changing the tilt of the cutter-bar changes the tension of the drive belt. When the cutter-bar is tilted up, the belt becomes tighter; when tilted down, the belt gets loose. Whenever the tilt is changed, check the tension of the belt and re-adjust if necessary, as instructed on page 14.

INNER AND OUTER SHOES

The cutter-bar shoes are adjusted by inserting their attaching bolts in the desired hole. Under severe trashy conditions, both

Fig. 19 Inner Shoe Adjustment

the inner and outer cutter-bar shoes should be set down as low as possible, thus raising the cutter-bar up out of the trash. The shoes may be raised, thereby lowering the cutter-bar,

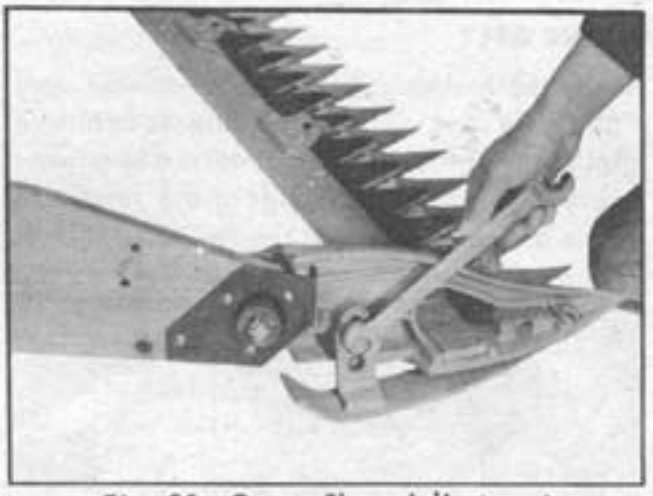

Fig. 20 Outer Shoe Adjustment

under ideal conditions. Always set both shoes at the same height.

FINISHING A FIELD

The cutter-bar can be raised by the hydralever so that it rides at any set distance above the ground. This feature is particularly useful when finishing a field and the last swath to be cut is narrower than the full width of the cutter-bar. If an attempt is made to cut this narrow strip with the cutter-bar riding on the ground as it normally does, the adjoining swath which has been previously cut will usually plug up

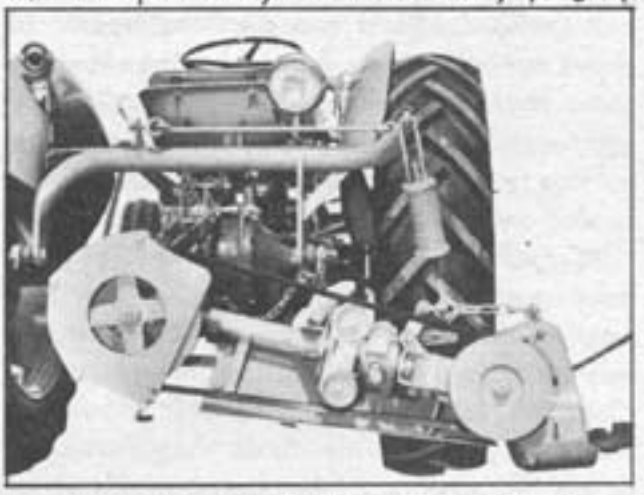

Fig. 21 Raised Operating Position

the knife. With the hydralever, raise the cutter-bar to the desired height. Drive cautiously when the mower is in this position, to avoid excessive whipping of the knife.

DRIVE BELT

The belt should always be adjusted very tightly, so that vibration or whip is held to a minimum. Belt tension is maintained by adjusting the ball and socket joint at the inner end of the drag-bar. Loosen the two idler pulleys and move them inward so that they do not

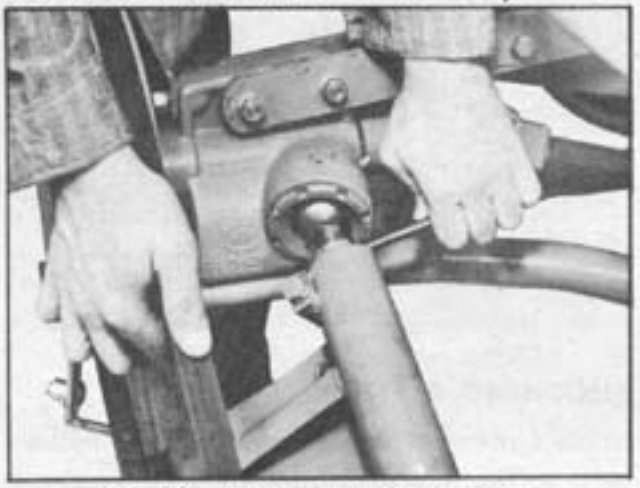

Fig. 22 Adjusting Belt Tension

touch the belt. Now loosen the clamping bolt which clamps the drag-bar tube around the ball. Using the tractor spark plug wrench handle, or other rod, screw the ball out as necessary to tighten the belt. Then feel the belt tension by hand and start the tractor to check for belt whip. Re-tighten the clamping bolt. Move the idler pulleys outward until they just touch the belt. The purpose of these idler pulleys is not to tighten the belt; they are intended only to reduce belt vibration or slap.

The belt guard is mounted to the drive shaft housing with three cap screws. The attaching holes of the guard are slotted so that the guard may be adjusted to a position where it best clears the drive belt. If the belt is rubbing the guard, loosen the three cap screws and rotate the guard until the interference is eliminated, then retighten the screws. Check the setting with the mower in the raised position and in operating position.

SAFETY BREAK-BACK

The mower is normally operated with the leaf spring clamp positioned so that its rear edge is flush with the rear ends of the leaf springs. To check the function of the safety break-back drive the tractor to a post, or some chosen obstruction and then ease the tractor forward until the break-back springs jump out of the groove in the pull-bar support housing allowing the cutter-bar to swing back. This simple test only indicates whether or not the break-back will function.

Practical experience in the field will indicate the need for any adjustment. For instance, if premature break-back action takes place when mowing a heavy crop this would indicate that the clamped leaf springs required more tension to keep them seated in the groove. To increase tension for these conditions loosen the rear clamp and move it forward a little along the springs and tighten.

If too much impact is required to cause safety break-back relieve the leaf springs' tension by moving the spring clamp to the rear. Do not let any oil get on the pull-bar or the safety break-back mechanism.

PULL-BAR

The F-EO mower has no pitman bar which must line up with the knife; therefore, it is not important to maintain any specified amount of cutter-bar lead. The correct lead is built into the mower and normally need not be adjusted. If it should become necessary, however, because of breakage or wear, to adjust the length of the pull-bar, merely loosen the

Fig. 23 Normal Position of Pull-Bar Clamp

bolt which clamps the yoke to the pull-bar and screw the bar in or out until the cutter-bar runs at right angles to the center line of the tractor when the mower is cutting. The distance between the center of the clevis pin and the center of the yoke pivot bolt is set at 28 1/2 inches when the mower leaves the factory. The bar has flat spots so that it may be turned with a Ferguson wrench.

SWATH-BOARD

The effective height of the swath-board stock, or grass-stick, may be adjusted by bolting its forward end to any of three holes in the swath-board. This adjustment should be set depending on the height of the crop being cut so that the crop is most effectively pushed aside, leaving a clean path for the inner shoe on the next round.

Fig. 24 Swath-Board Adjustments

The tension of the swath-board mounting spring should be set so that the board will deflect easily when an obstruction is hit. It should be tight enough, however, so that the board will not flop around when the mower is being transported.

DETACHING AND STORING

Follow the instructions outlined below to detach and store the mower:

DETACHING

The recommended procedure for detaching the mower from the tractor is as follows:

1. Raise the mower with the hydralever disengage the PTO and shut off the tractor engine.
2. Disconnect the PTO shaft of the mower from the tractor.
3. Loosen the two cone nuts which secure the lower struts of the mower to the tractor stabilizer bolts.
4. Disconnect the position control chain from its catch on the top strut. Loosen the locking bolt which tightens the top strut of the mower to the hinged tractor rocker pin. Lower the mower with the hydralever at the same time pulling the hinged pin from the top strut.
5. Unhook each lower strut from its stabilizer bolt.
6. Fully depress the hydralever until the cutter-bar rests on the ground. Remove the lift frame from the tractor links.
7. The tractor is now free of the mower and may be rolled forward. Remove the stabilizer link from the stabilizer bracket and re-install the nut on the stabilizer bolt.
8. The special stabilizer bolts may be removed from the stabilizer brackets as desired.

STORING

Check and lubricate the mower if needed, as outlined in the lubrication charts on pages 5 and 6. Run the mower for fifteen minutes to allow the lubricant to work into all the bearings. Completely loosen the drive belt. Remove the knife from the cutter-bar. Thoroughly cover the knife and all the polished cutter-bar parts with a good rust inhibitor. Carefully inspect the complete mower for worn or broken parts and replace them or have your Ferguson Dealer recondition the mower. Clean the mower thoroughly and paint any rusted or bare spots. The self-spraying cans of Ferguson Gray Enamel which your Ferguson Dealer has in stock are ideal for this purpose. Store the knife in a safe place out of reach of children or live stock. Remove the mower from the tractor, setting it on planks to keep it up off the ground, in a dry place where it will not be exposed to the weather.

MAINTENANCE

Maintenance of the knife and other cutter-bar parts is the same as that of any conventional mower. The knife sections and the ledger plates, or guard plates as they are sometimes called, form a series of shears which cut the grass. Just as with scissors or hand shears, the opposing edges (the knife sections and ledger plates) must be sharp and contact each other if a smooth clean cutting job is to result. The knife should fit into the cutter-bar as shown in Fig. 25. After a certain amount of use, normal wear will result in conditions shown in the lower illustration. The number of hours operation which will result in enough wear to require attention depends almost entirely upon operating conditions. Under adverse conditions, the knife and cutter-bar will wear very rapidly and even a slightly dull knife will do a satisfactory job. The best time to stop and sharpen a knife or adjust a cutter-bar must necessarily be learned from experience. Keep in mind, however, that a dull knife in a worn cutter-bar will result in the following: 1. ragged, uneven cutting, 2. lost time due to clogging and slower operating speeds, 3. greater draft, 4. poor fuel economy and 5. more wear on mower and tractor.

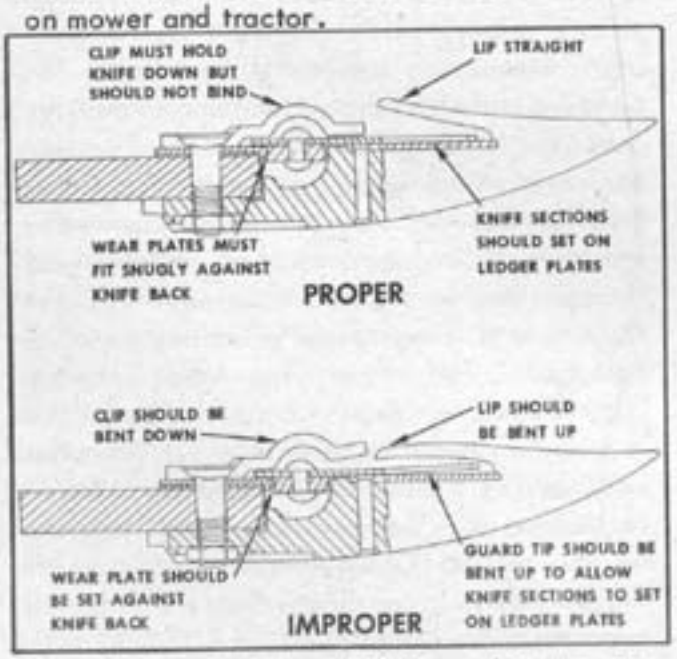

Fig. 25 Cross-Section of Knife and Cutter-Bar

The proper condition and adjustment of the knife and cutter-bar are so important to the successful operation of your mower, that the parts of both will be listed below with instructions for keeping them in good operating condition.

KNIFE

Removing and replacing the knife is a simple operation. Merely loosen the one bolt which attaches the knife to the center lever of the drive unit, tap the bolt with a hammer to unseat the tapered plug, rotate the pulley until the center lever is at its innermost position, and pull the knife toward the center of the tractor, see Fig. 26. The knife is installed by reversing the above procedure. Before installing a new knife or replacing an old knife, make sure the knife and the cutter-bar are in good condition.

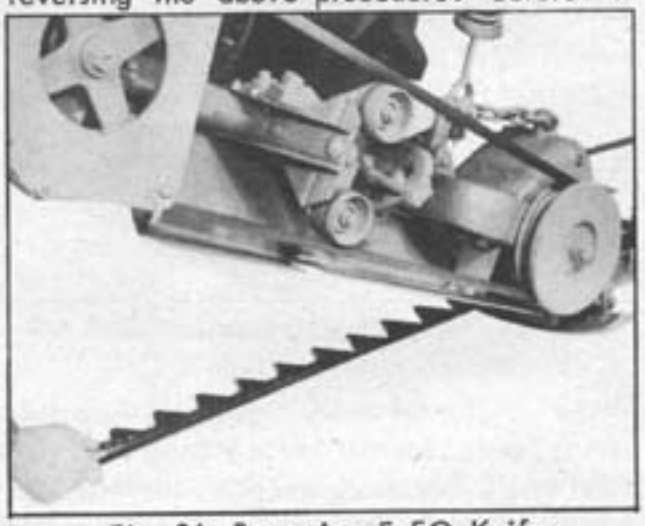

Fig. 26 Removing F-EO Knife

The knife should be straight. Sight along its rear edge, and if necessary, bend it slightly to remove any kinks or bowing. If the knife is to be sharpened, first inspect each section to be sure it is tightly riveted to the knife back and decide whether it can be sharpened or should be replaced. Knife sections are removed by shearing the rivets, as shown in Fig. 27, and driving them out with a punch.

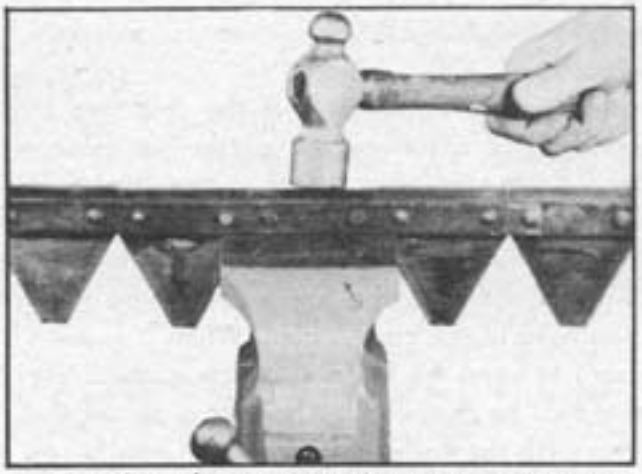

Fig. 27 Shearing Knife-Section Rivets

New knife sections must be securely riveted to the knife back. Head the rivets over, preferably with a rivet set, but do not hammer them too flat. Three special sections are used at the inner end of the knife so that countersunk special rivets can be installed under the leaf spring. A special half section is used at the very inner end of the knife. Check the leaf spring which is attached to the knife-head connector to be sure that it is not cracked or

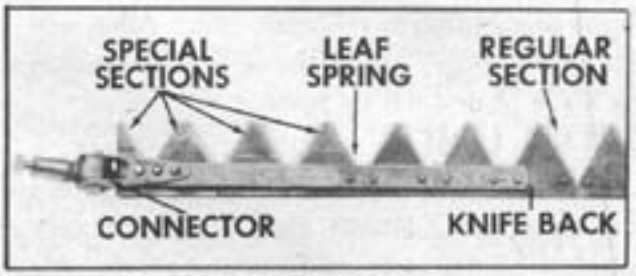

Fig. 28 F-EO Knife Parts

bent. Check the rivets which secure the spring to the knife back. If they are loose or missing replace them. Also, check the needle bearings in the knife-head connector by wiggling the end of the connector. If too much play is apparent, the complete connector assembly or its component parts must be replaced. When replacing the bearing or the axle bolt, tighten the nut securely (30-35 ft. lbs. torque) and stake in two places, as was the original assembly. Be sure to install new dust seals with the lips outward whenever this assembly is serviced. Your Ferguson Dealer has had special training and is equipped with tools designed to do this job.

Once the knife is in good condition, it may be sharpened, preferably on a regular knife

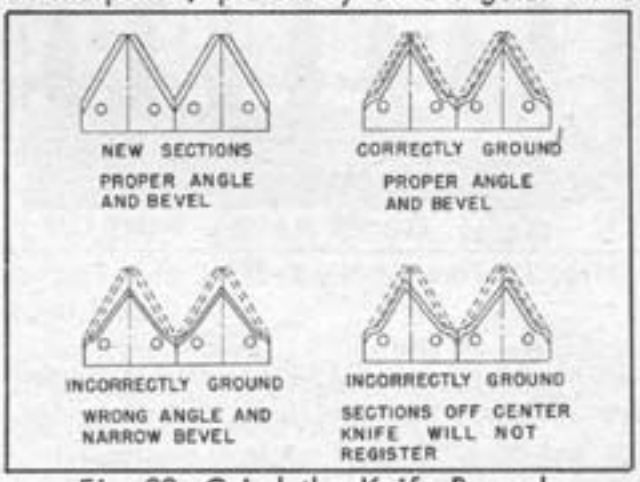

Fig. 29 Grind the Knife Properly

grinder. When sharpening a knife, be sure to maintain the original bevel as is shown in Fig. 29.

CUTTER-BAR

Inspect the ledger plates (or guard plates) to be sure that they are not excessively worn or nicked. Ledger plates should be replaced as soon as the serrated edges are worn smooth. Dull ledger plates cause ragged cutting and excessive draft. The ledger plates may be replaced while the guards are on the cutter-

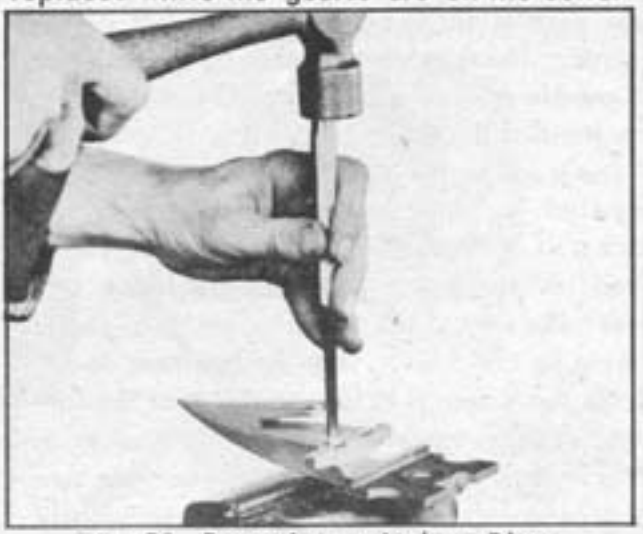

Fig. 30 Removing a Ledger Plate

bar, or the guards may be removed if desired. To remove the ledger plate, use a punch with

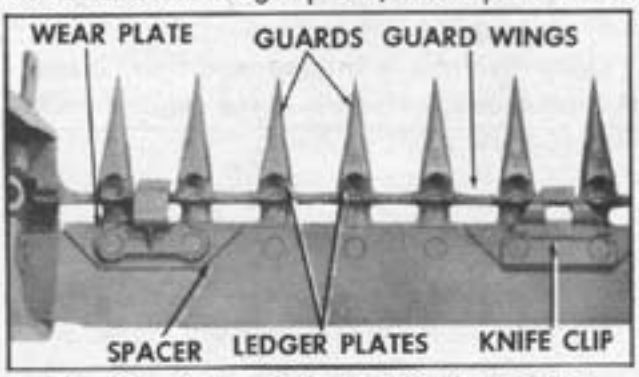

Fig. 31 Parts of the F-EO Cutter-Bar

a point which is smaller in diameter than the rivet. Support the guard firmly from the under side and drive the rivet out from the top.

New plates are riveted in place by inserting the rivet from the top and heading over the bottom end. The head of the rivet must set down flush with the surface of the guard plate.

The ideal relationship between the knife and the cutter-bar results when each knife section lies flat, with its entire length resting on the ledger plate of the guard through which it passes, see Fig. 25. Check this condition by tightening all the bolts which secure the guards to the bar and inserting a new straight knife in the cutter-bar. Where necessary, bend each guard up or down by striking on the thick part of the guard with a hammer. Be very careful not to bend down the lips of the guards. The wings of the guards should also be aligned to provide a straight smooth surface for the front of the knife-back to work against.

The wear plates and their spacers should be adjusted to prevent looseness of the knife-back. If it is necessary, set the wear plates ahead or re-new them. The clearance between the tips of the sections and the guards should be checked so that the sections do not strike the guards. It is essential that the forward edge of the wear plates be in line so as to give the knife-back a straight bearing surface along its entire length. As previously stated, register of the knife is built into this mower; therefore, no adjustment is necessary or possible.

Setting the knife clips is the last step in servicing or adjusting the cutter-bar assembly. Knife clips must be set so that they hold the knife sections down on the ledger plates. Be very careful, however, to see that the clips do not bind the knife and cause it to slide hard in the cutter-bar. When it is necessary to bend the knife clips down, the knife must first be removed. Attempting to set the clips with the knife in place will usually result in broken knife sections. Ideally, the clips should be set so that there is .010 of an inch clearance between the knife clip and the knife section. Start with the clip next to the outer shoe. Check its setting with the knife in position, pull the knife out from under the clip, and if necessary, tap it lightly with a hammer. Slide the knife under the clip and check the adjustment. If the knife tends to bind, pry the clip up with a large screwdriver or strike it from underneath. The heel, or back edge of the knife, may be held down by the small tab at the rear of the clip. Set each clip properly before proceeding to the next clip. After adjusting the clips, check the setting by moving the knife in and out by hand.

DRIVE UNIT

With the exception of the knife and cutter-bar, your F-EO mower should require very little maintenance in addition to careful attention to lubrication. The drive unit should be checked at the end of the season for leaking seals and cracked or broken parts. When, through the normal process of wear, the drive unit of your mower requires service, take it to your Ferguson Dealer. He has received a special course of instruction on how to service this precision-made unit. He will also have a set of tools which have been specially designed for working on the F-EO mower. The fits and tolerances found in the precision machine parts of this unit make it quite beyond the ability of the average owner to service without special training and tools.

ASSEMBLY INSTRUCTIONS

These instructions are written primarily for the Ferguson Dealer. They are included in this manual, however, because they may be of interest and possible use to the owner.

This mower should be assembled on a tractor, adjusted and "run-in", or operated, for a period of thirty minutes before it is delivered to the new owner. It will be helpful to refer to the F-EO Mower Parts Book while following these instructions. For assembling purposes, it is not necessary to adjust the tractor wheel setting to correspond to the mower width.

1. Remove the link stay anchor pins from a set of stabilizer brackets and replace them with the strut connecting pins. (The long pin goes in the left-hand bracket.) Attach the brackets to the fender mounting bolts in the usual manner. Loosen the two lower check chain anchor bolts and attach the PTO shield, see Fig. 6.

2. Remove the belt from the drive unit pulley. Attach the left and right struts to the underside of the mower drive shaft housing. Leave the four bolts loose. See Fig. 32.

3. Turn the pull-bar into the yoke until the distance between the center of the clevis pin and the center of the yoke pivot is 28-1/2 in. Then attach the pull-bar support assembly to the right strut using the straight pin provided. Install a 5/32 x 1 1/2 in. cotter pin in each end. The flange on the leaf spring clamp should point upward for easy adjustment, see Fig. 23.

4. Place a stabilizer link on the left-hand connecting pin and hook both struts to the bolts. Install a strut cone nut and 1/8 x 1 in. cotter pin on each bolt. Tighten the nuts enough so that the struts will not jump off the bolts.

5. Attach the top strut assembly to the mower drive shaft housing, leaving the two bolts loose.

6. Attach the lift frame and the stabilizer link to the tractor lower links, securing with the tractor linch pins as usual.

7. Hook the balance spring on the lift frame and lock with clip, see Fig. 11. The length of the balance spring should be 17-3/4 in. on the Wide Tread Mower and 15-3/4 in. on the Narrow Tread Mower. Refer to page 12.

8. Start the tractor engine and raise the mower with the hydralever guiding the top strut into position from the tractor seat. If it is necessary, in order to install the tractor rocker pin, lift up on the drive pulley guard until the pin may be inserted through the top strut. Lock in place with the tightening stud, see Fig 11.

9. Tighten all bolts which were previously installed and left loose.

10. Insert the cutter-bar shim in its position

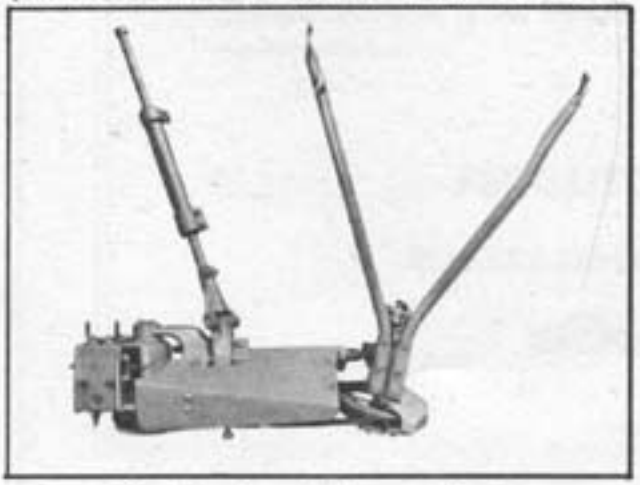

Fig. 32 Attach Lower Struts

Fig. 33 Hook Struts on Stabilizer Pins

in the drive unit and use one of the cutter-bar retaining cap screws as a guide. With a helper, raise the cutter-bar and insert the inner end over the shim. Insert the remaining cap screws and tighten all three.

11. Attach the inner and outer shoes, the swath-board and swath-board stock to the cutter-bar.

12. Push the knife into the cutter-bar from the inner end. Have the knife head connector pointing toward the cutter-bar so that it will enter the hole in the knife lever. Install the bolt securing the connector to the knife lever.

13. Attach the drive shaft universal to the tractor power take-off shaft. Place the belt on the pulley. This is easily done by loosening the belt pulley guard and pulling back on the end of the cutter-bar, causing it to break-back. The bolt holding the belt guide must be loosened and the belt guide raised enough so that the belt will slip onto the pulley. Install the belt, return the cutter-bar to its normal position and adjust the belt as described on pages 12 and 13.

14. Make each adjustment as outlined previously to be sure that the mower is operating properly for the conditions prevailing. Check each lubrication fitting and grease as necessary. Do not lubricate the drive unit.

15. Start the tractor and run the mower slowly until you are sure it is operating properly. Gradually increase engine speed to full throttle, watching the mower for any signs of trouble. If everything appears satisfactory, let the mower run for thirty minutes at a fast idle. Stop the engine several times during the "run-in" period and feel the bearings with the bear hand. They should feel warm but not excessively hot to the touch.

WARNING: Do not lubricate the Drive Unit of a new FEO Mower. See page 6, lubrication section.

IMPLEMENT WARRANTY

For a period of ninety (90) days from the date of delivery of a new Ferguson Implement to the original purchaser thereof from a Ferguson Dealer, Massey-Harris-Ferguson Inc. warrants all such parts thereof (except tires) which, under normal use and service, shall appear to Massey-Harris-Ferguson Inc. to have been defective in workmanship or material.

This warranty is limited to shipment to the purchaser, without charge except for transportation costs, of the part or parts intended to replace those acknowledged by Massey-Harris-Ferguson Inc. to be defective.

If the purchaser uses or allows to be used on a Ferguson Implement parts not made or supplied by Massey-Harris-Ferguson Inc. or if any Ferguson Implement has been altered outside of its own factories or sources of supply, or if attachments have been used which were unsuited and harmful to the Ferguson Implement, then this warranty shall immediately become void. Massey-Harris-Ferguson Inc. does not undertake responsibility to any purchaser of a Ferguson Implement for any undertaking, representation, or warranty beyond those herein expressed.

Massey-Harris-Ferguson Inc. reserves the right to make changes in design or changes or improvements upon Ferguson Implements without any obligation upon it to install the same upon Implements theretofore manufactured.

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