

**FORD**

OWNER'S MANUAL

# HAY CONDITIONER SERIES 510

SERIES 510-1 HAY CONDITIONER  
PULL TYPE HITCH

SERIES 510-2 HAY CONDITIONER  
SEMI-MOUNTED HITCH

SERIES 510-3 HAY CONDITIONER  
SEMI-MOUNTED HITCH  
ROW CROP BRACKETS

TRACTOR AND IMPLEMENT DIVISION

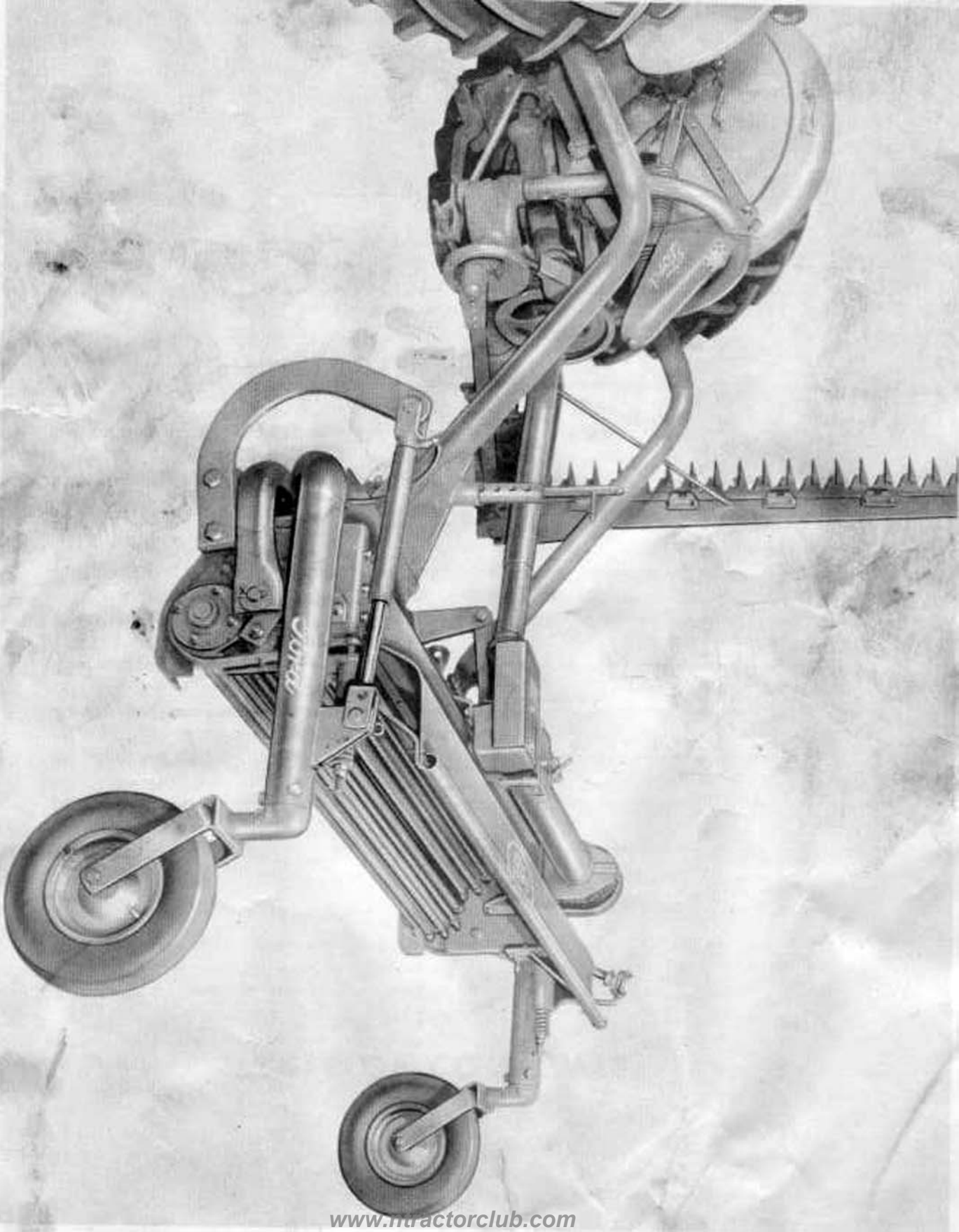
*Ford Motor Company*

WARREN, MICHIGAN

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Figure 1 - Series 510 Hay Conditioner Attached in Conjunction with a Series 501 Mower.



# OPERATION

The Series 510 Ford Hay Conditioner is a P.T.O. driven implement designed to crimp the stems of newly mown hay to cause faster, more uniform drying and improve the texture of the cured hay. The hay stems are crimped at  $1\frac{1}{2}$ " - 2" intervals allowing the stems to cure in approximately the same length of time as is required by the leaves. This results in less leaf loss, because the leaves, which are not crushed, do not become excessively dry while the stems are curing. The overall reduction in the time required for curing also minimizes the possibility of crop loss due to rain or other weather hazards and reduces the loss of nutrients caused by bleaching in the sun.

The Series 510 Ford Hay Conditioners are available under three series options as described in the following chart:

| SERIES OPTION | DESCRIPTION   |
|---------------|---|
| 510-1         | Hay Conditioner with Pull Type Hitch.   |
| 510-2         | Hay Conditioner with Semi-Mounted Hitch and General Purpose Tractor Attaching Brackets. |
| 510-3         | Hay Conditioner with Semi-Mounted Hitch and Row Crop Tractor Attaching Brackets.        |

## OPERATION

The basic Ford Hay Conditioner, (Component No. 14-204) is available with either a pull type hitch, (Component 14-206) or with a semi-mounted hitch (14-205). The semi-mounted hitch arrangement facilitates the use of the Series 501 Rear Mounted Mower. Figure 1 shows a Series 510 Hay Conditioner attached to a Ford Tractor in conjunction with a Series 501 Rear Mounted Mower. Figure 1 also shows the optional hydraulic lift attachment (Component No. 14-211). A description of this attachment is given on page 11 of this manual.

### Jack

All Series 510 Hay Conditioners are equipped with a

hand operated jack to facilitate attaching and storage of the unit. This jack is shown in transport position in Figure 2. To use the jack, take the jack lever, Figure 2, out of the jack stand and remove the lock pin. Let the jack stand drop to the ground. Insert the jack lever pin through the hole in the jack stand nearest the jack stand guide as shown in Figure 3. Take a firm grip on the jack lever and push down to raise the conditioner. Hold the lever down and insert the lock pin through one of the holes in the jack stand guide. When the lock pin is in place, the jack lever can be removed. If it is necessary to raise the conditioner higher, move the lever up to the next hole in the jack stand and repeat the above procedure.

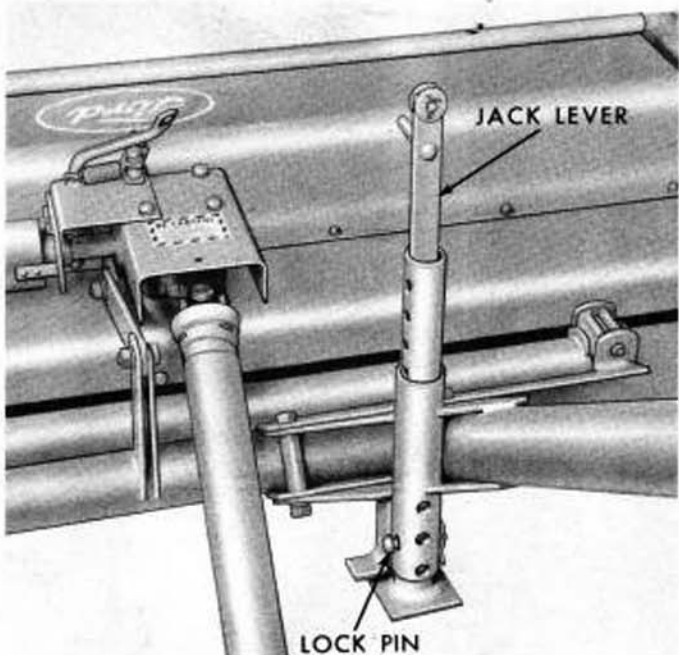


Figure 2 - Jack in Transport Position

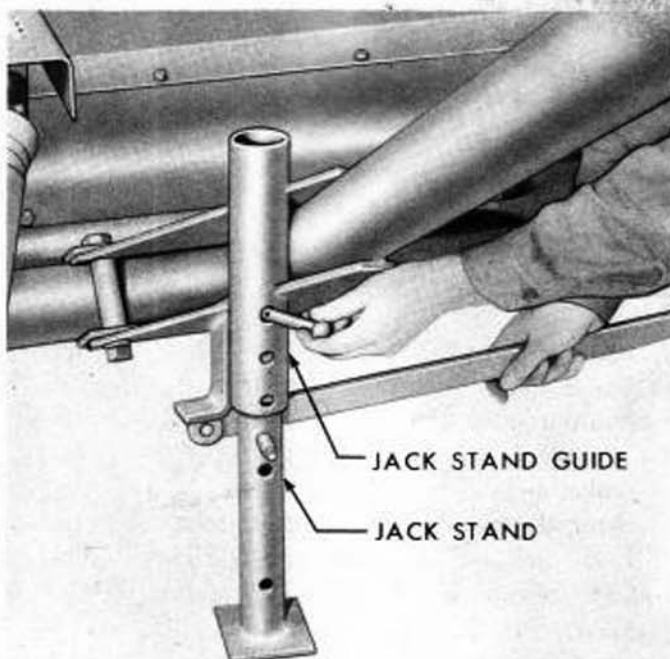
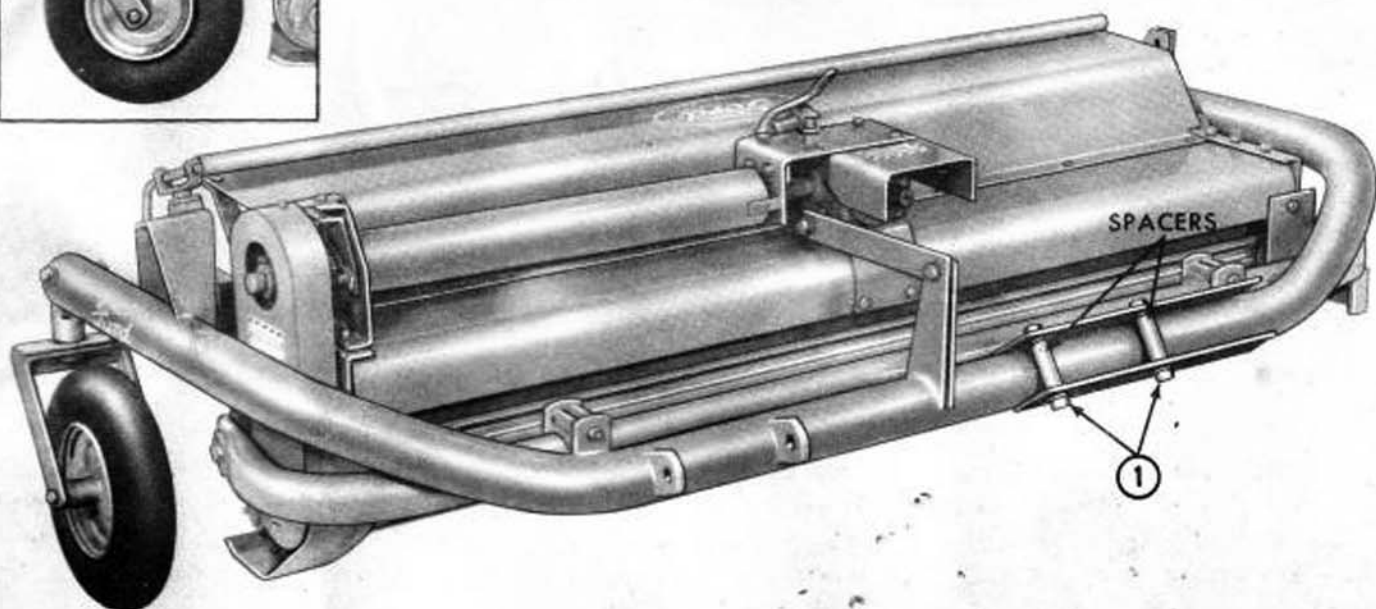


Figure 3 - Operating the Jack



**Figure 4 – 14-204 Hay Conditioner As Shipped**

**Operating Speed:** The ideal conditioner operating speed (forward travel) is approximately 6 mph. Operating below this speed causes the rollers to “pull” hay. Conversely, operating at too high a speed forces more hay against the rollers than they can handle. It is important therefore, that the operating speed be held close to 6 mph.

**NOTE:** For best results, always operate the conditioner in the same direction as the hay was mown.

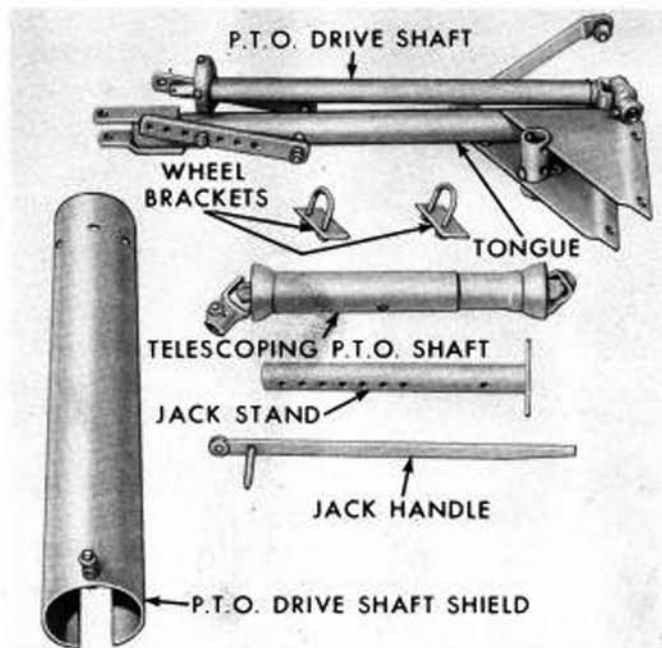
### P.T.O. Speeds

The Series 510 Hay Conditioners are designed to operate at approximately 540 rpm P.T.O. speed.

### Attaching – Pull Type Unit

Figure 4 shows the 14-204 Hay Conditioner as it is shipped. To prepare this unit for pull type operation the hitch and P.T.O. drive shafts shown in Figure 5 are required. Begin attaching the unit to the tractor by placing a suitable block under the frame and removing the bolts and spacers shown at 1, Figure 4. Attach the tongue to the conditioner at the three points shown at 3, Figure 6. Be sure that both spacers are in place and tighten all three bolts securely. At this point it's a good idea to lower the jack stand to the floor and lock it in place with the

lock pin. When the jack is in place the wooden block can be removed. Attach the P.T.O. final drive shaft to the splined shaft on the conditioner and secure it with the bolt, lock washer, and nut shown at 5, Figure 6. The shaft support bolts 1, Figure 6, are tightened by means of double nuts which lock against each other. The clearance between the nuts and the



**Figure 5 – 14-206 Pull Type Hitch As Shipped**

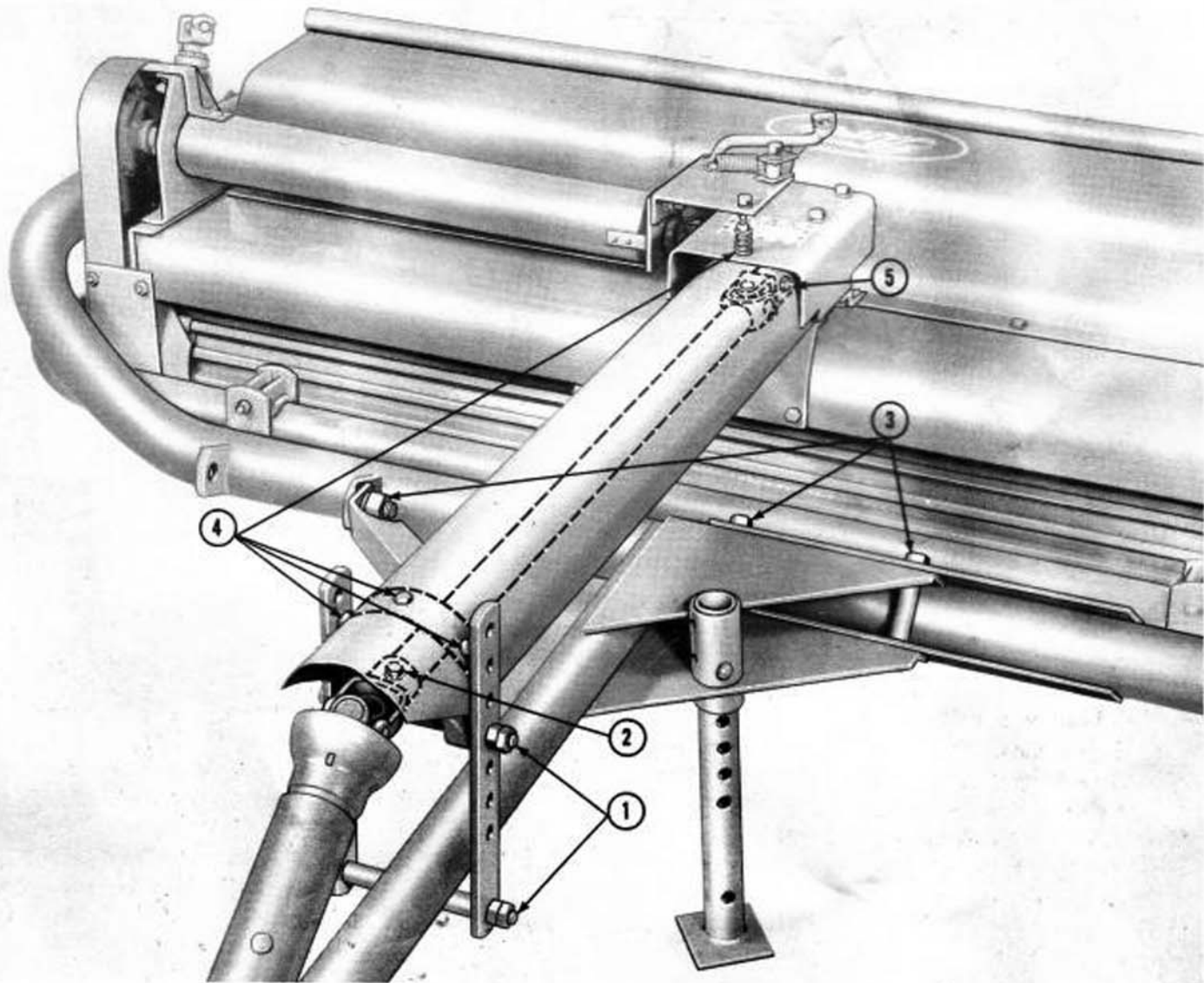


Figure-6 - 14-206 Hitch Attached to the Conditioner

supports should be adjusted to a minimum and still permit the supports to swing. Slide the telescoping member of the P.T.O. drive over the forward end of the final drive shaft and secure these two shafts together with the bolt, lock washer and nut shown at 2. Attach the final drive shield at the four points shown at 4.

The two-wheel brackets shown in Figure 5 can now be attached to prevent the conditioner wheels from casting. The insert in Figure 4 shows the correct method of attaching these clamps.

The Hay Conditioner is now ready to be attached to the tractor drawbar and P.T.O. shaft. Set the tractor to A.S.A.E. standards and pin the drawbar in the center. Use caution when backing the tractor drawbar into the conditioner tongue. If the tongue is too high

or too low, use the jack to correct the height. **Do not try to hold the tongue at the correct height while someone else backs the tractor into it.** Tighten the telescoping drive shaft to the tractor P.T.O. shaft securely.

### Attaching - Semi-Mounted Unit

To prepare the 14-204 unit for semi-mounted operation in conjunction with the Series 501 Mower, the hitch and P.T.O. drive shaft shown in Figure 7, and attaching brackets are required.

Begin attaching the unit to the tractor by placing a suitable block under the frame and removing the bolts and spacers shown at (1), Figure 4. Attach the two draw arms to the conditioner at the three points shown at (1), Figure 8 for use with the 56" mower frame. When the 76" mower is used, the conditioner

# OPERATION

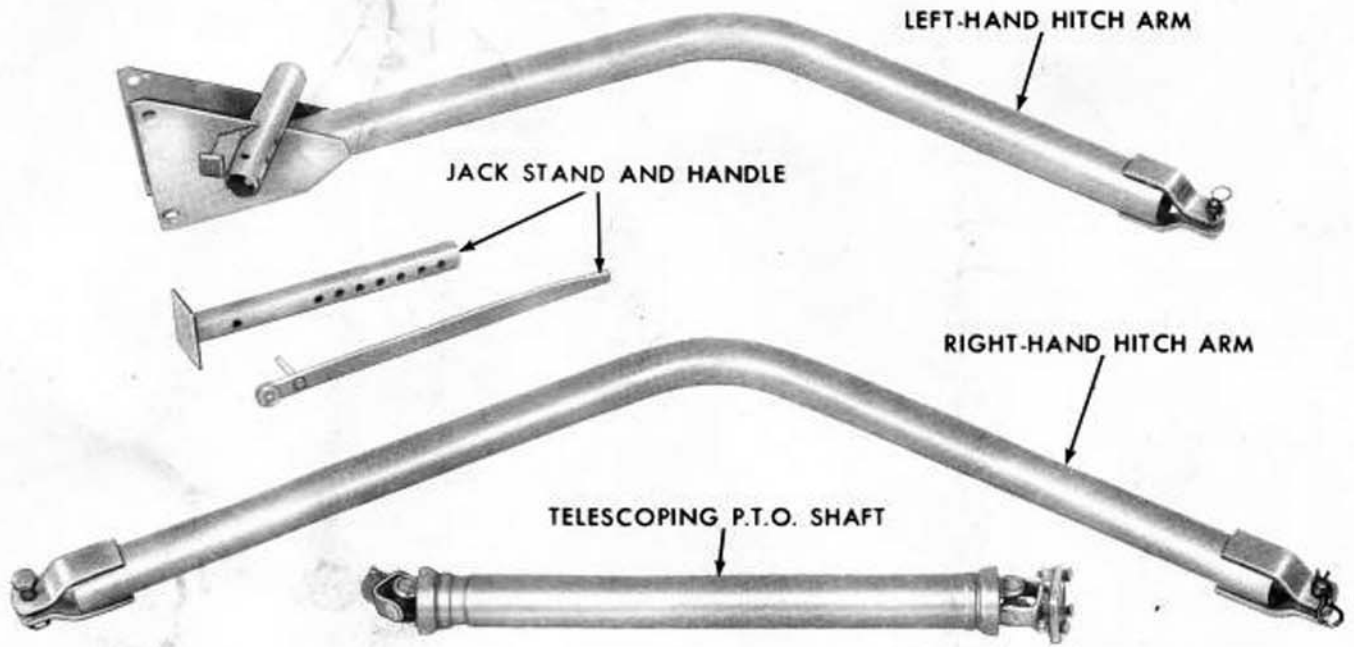


Figure 7 - 14-205 Semi-Mounted Hitch As Shipped

pull arms are attached at the points shown at (2). Be sure that both spacers are in place and tighten the two left-hand bolts securely. The right bolt is secured with 2 jam nuts. These nuts should be tightened against each other so as to allow the hitch to swing. **At this point it's a good idea to lower the jack stand to the floor and lock it in place with the lock pin.** When the jack is in place the wooden block can be removed. Attach the telescoping P.T.O. drive shaft to the splined shaft on the conditioner and secure it with the bolt, lock washer and nut. Attach the two mounting brackets shown in

Figure 9, to the tractor rear axle. When the brackets and mower are in place back the tractor into position and bolt the two conditioner pull arms into place. The sheave retainer collar, (Part No. 142137) included in the hitch bundle is a stepped washer and should replace the washer on the mower drive. This washer should be installed at this time to center the mower sheave correctly for attaching the conditioner drive shaft. Consult the Series 501 Mower Operator's Manual for information on bearing adjustment when performing this operation. Attach the P.T.O. drive shaft to the mower sheave using the three carriage bolts supplied with the shaft.

Series 501 Mowers with the one inch diameter drive shaft and square splines require one of the following drive shaft, drive sheave and belt kits:

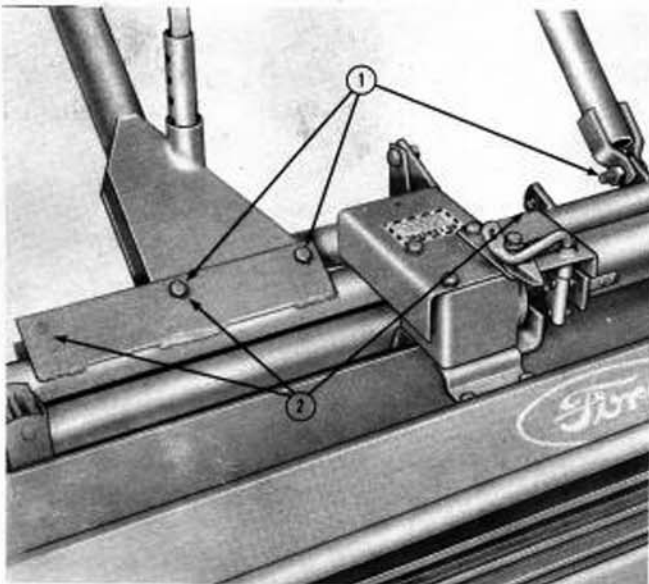


Figure 8 - Semi-Mounted Hitch Attached to Conditioner

|        |  |
|--------|--|
| 14-219 | 9" Drive Sheave & Belt & H. D. Drive Shaft   |
| 14-220 | 10½" Drive Sheave & Belt & H. D. Drive Shaft |
| 14-221 | 12" Drive Sheave & Belt & H. D. Drive Shaft  |
| 14-222 | 14½" Drive Sheave & Belt & H. D. Drive Shaft |

# OPERATION

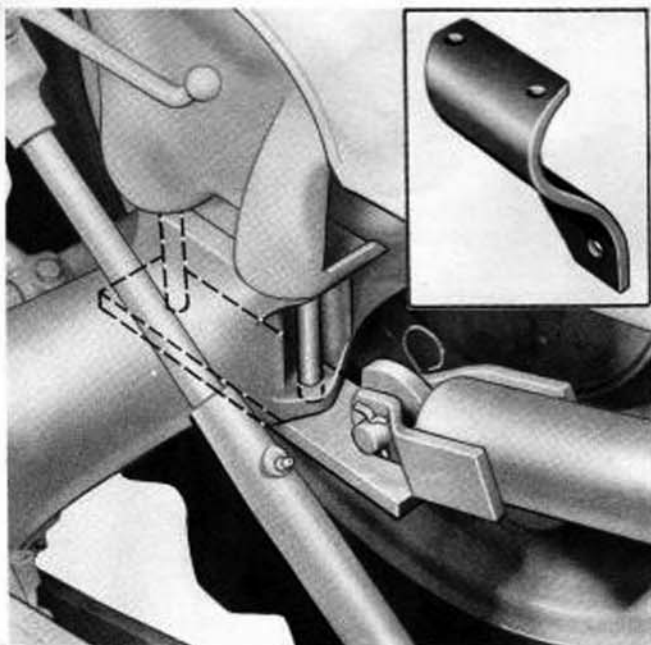
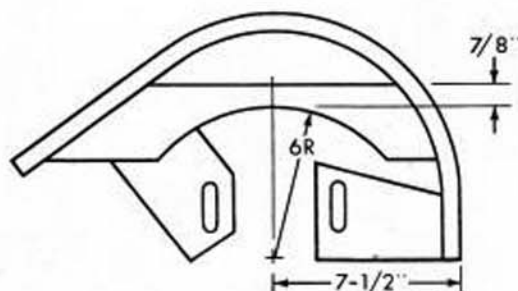


Figure 9 - 14-217 Bracket Attached to Rear Axle  
(14-218 Bracket Shown in Insert)

On Series 501 Mowers built prior to those listed below, the sheave and belt guard must be either modified to accommodate the conditioner drive shaft, or be replaced by the belt guard (Part No. 142495).

| Component No. | Serial No. |
|---------------|------------|
| 14-92         | 46925      |
| 14-93         | 9530       |

The more recent of the previously used guards can be modified to accommodate the conditioner drive shaft as shown below.



CUT NOTCH AS SHOWN IN CROSS BRACE OF MOWER BELT GUARD TO CLEAR HAY CONDITIONER DRIVE

Figure 10 - Shield Modification

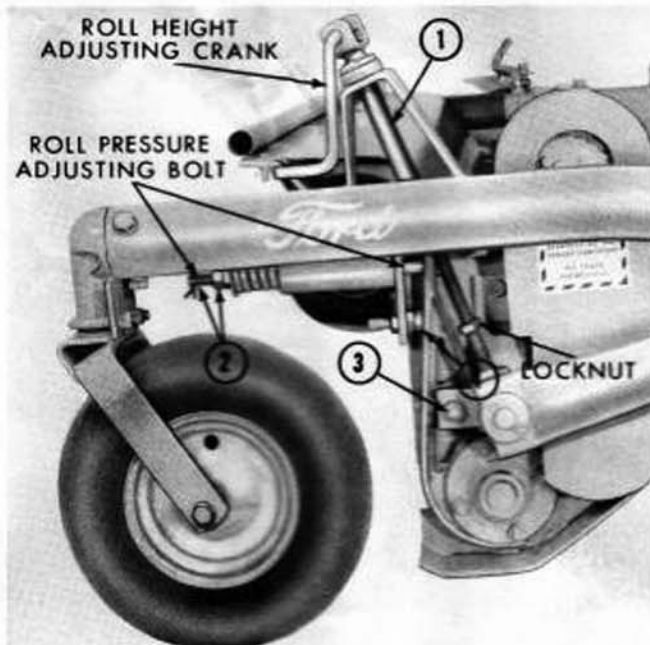


Figure 11 - End View of the Hay Conditioner

## ADJUSTMENT

**Roll Pressure Adjustment:** Roll pressure is controlled by means of the adjusting bolts and nuts on both sides of the conditioner. Figure 11 shows the right-hand adjusting bolt and nuts. Turning the nuts clockwise increases spring compression. This increased force causes the roll pressure arm to pivot around the bolt (3), thereby forcing the lower roll into the upper roll. The following drawing illustrates this adjustment.

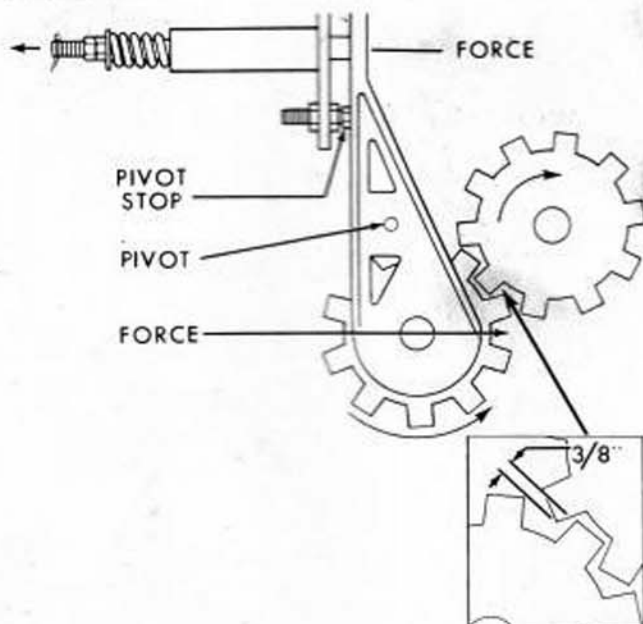


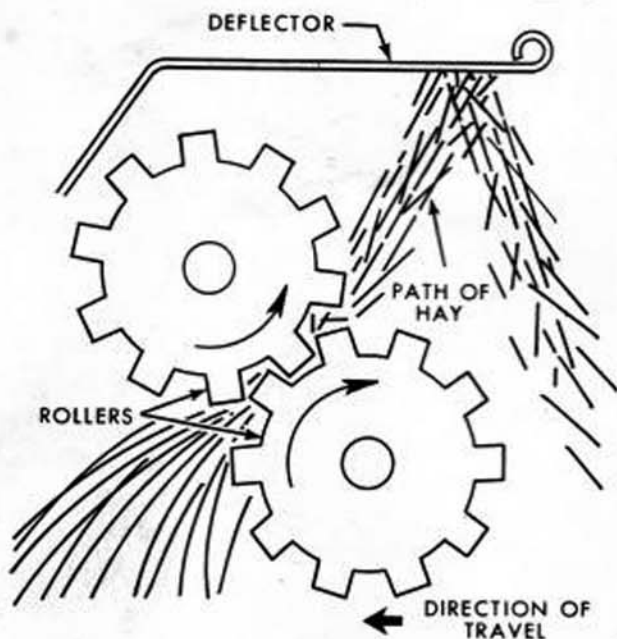
Figure 12 - Roll Pressure Adjustment



**Roll Height Adjustment:** As a general rule, the conditioner rolls should be set as high as possible and still pick up hay. This setting reduces the possibility of roll damage caused by rocks or irregular terrain. The height of the rolls is adjusted by means of the crank shown in Figure 11. Turn this crank clockwise to raise the rolls and counterclockwise to lower them.

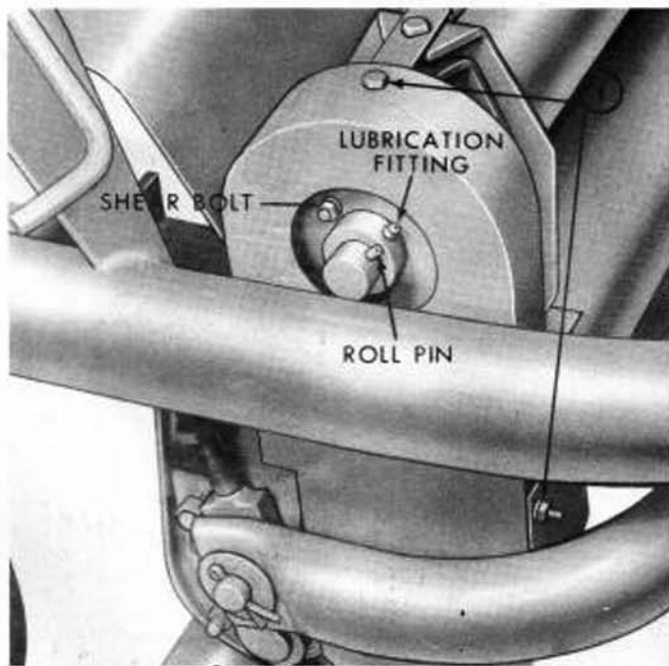
**Roll Backlash:** The set-screw stop (4), Figure 11, is used to adjust the roll backlash. The rolls should be adjusted so that there is a noticeable amount of backlash when the rolls are free of hay. This slight clearance will reduce the amount of wear on the ends of the roll drive teeth.

**Adjusting for Correct Hay Discharge:** Hay which has passed through the two rollers is discharged at relatively high speed. When the conditioner is operating correctly this discharged hay will pass directly up from the rolls and hit the deflector. The deflector serves to invert the conditioned hay as it leaves the rollers, causing it to fall to the ground in the best position for uniform drying. The following diagram illustrates the correct hay discharge path.



**Figure 13 – Hay Discharge Pattern**

The path of discharged hay is primarily determined by the roll speed. When the conditioner is operating at the recommended P.T.O. speed of 540 rpm the discharged hay will generally strike the deflector as shown above. If the discharged hay fails to strike the deflector, first check the P.T.O. speed. If the speed is approximately correct, the faulty condition may be due to the hay "wrapping" around the conditioner



**Figure 14 – End View of Sprocket Showing Shear Bolt**

rolls. This condition can usually be corrected by the installation of the 25 tooth drive sprocket. See **ATTACHMENTS**.

**NOTE:** The hay discharge path can sometimes be varied by increasing or decreasing the roll pressure. The effectiveness of this method is dependent upon the moisture content of the hay being conditioned.

**Control Rope:** A suitable piece of rope can be attached to the conditioner shift lever to enable the operator to start and stop the conditioner rolls from the tractor seat.

One pull of the rope disengages the clutch. The clutch remains disengaged until a second pull of the rope engages it again. Engage the clutch only when the P.T.O. drive is stopped.

**Shear Bolt:** Figure 14 shows the heat treated shear bolt, (Part No. 354212) in place in the drive sprocket. This bolt is available from your Ford Tractor and Implement Dealer. When replacing, be sure to order by the correct Part Number.



**PLAY IT SAFE! NEVER ADJUST,  
LUBRICATE, OR SERVICE A MACHINE  
WHILE IT IS RUNNING.**

# ATTACHMENTS

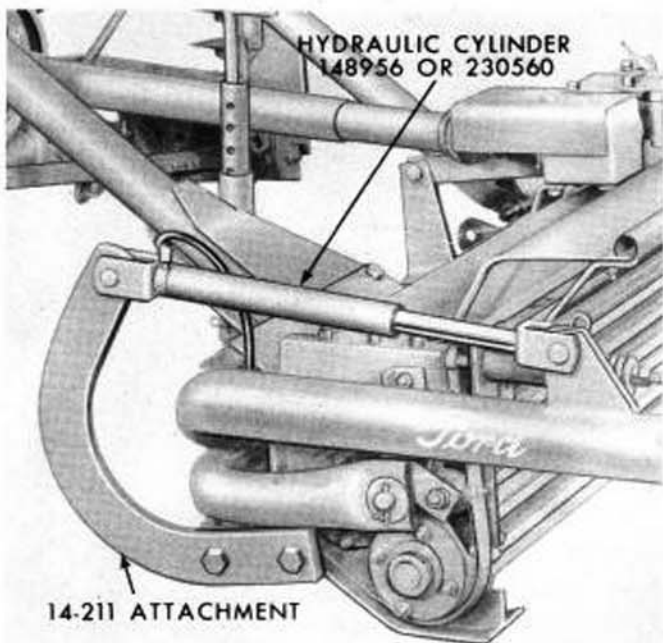


Figure 15 - 14-211 Hydraulic Lift Assembly

The following attachments for the Ford Hay Conditioner are sold separately by your Ford Tractor and Implement Dealer.

## 14-211 Hydraulic Lift Assembly Kit (one required)

This kit makes possible the use of a hydraulic ram cylinder (148956 or 230560), to enable lifting and lowering the crushing rolls from the tractor seat. Figure 15 shows this attachment as it is installed on the conditioner unit.

**Attaching:** The 14-211 lift arm is fastened to the conditioner arm bracket using the two 7/8" x 2 1/4" bolts supplied with the lift arm. When this attachment is used on a semi-mounted conditioner the hydraulic line can be routed through the left hand pull arm as shown in Figure 15. When used with a pull type conditioner the hydraulic line can be routed through the tongue. The hydraulic line can be attached directly into the tractor hydraulic manifold, however, best results are obtained through the use of a remote control valve attachment.

## 14-219 Mower Drive Assembly with 9" Sheave and Drive Belt

This attachment has a heavier shaft and replaces the standard Series 501 Mower P.T.O. drive to meet the added torque requirements of the Hay Conditioner.

**Attaching:** The 14-219 mower drive unit is attached by removing the standard drive unit from the mower and replacing it with the 14-219 unit.

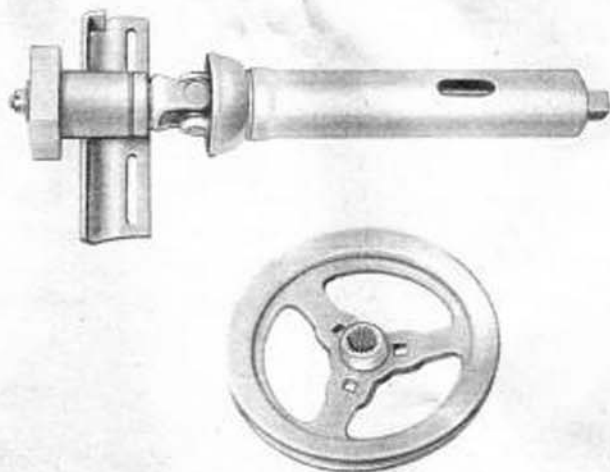


Figure 16 - 14-221 Drive Assembly (belt not shown)

## 14-220 Mower Drive Assembly with 10 1/2" Sheave and Drive Belt.

This attachment is exactly like the 14-219 unit described above except that a 10 1/2" sheave is used.

## 14-221 Mower Drive Assembly with 12" Sheave and Drive Belt

Same as above except for 12" sheave.

## 14-222 Mower Drive Assembly with 14 1/2" Sheave and Drive Belt

Same as above except for 14 1/2" sheave.

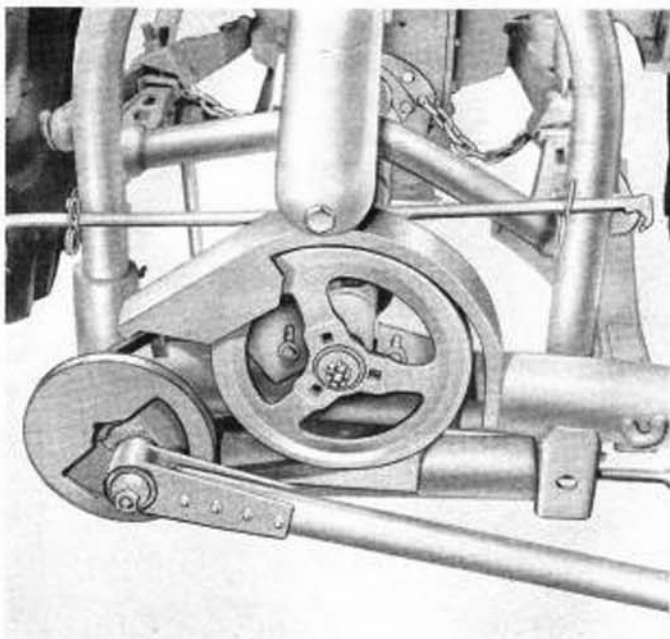


Figure 17 - 14-221 Unit Attached

# LUBRICATION

## 25 Tooth Drive Sprocket – Part No. 150000

This attachment increases the conditioner roll speed and is very effective for eliminating hay “wrapping” problems. This larger drive sprocket is available from your Ford Tractor and Implement Dealer.

**NOTE:** *The 25 tooth drive sprocket is designed for the special use described above. It is not intended that this sprocket be used permanently in place of the standard 20 tooth sprocket. Prolonged use of the 25 tooth sprocket could shorten the operating life of the conditioner.*

**Attaching:** Remove the bolts (1), Figure 14 and lift the sprocket shield off the conditioner. Disconnect the drive chain at the master link and remove the chain. Next, remove the shear bolt and drive out the roll pin. Slide the standard sprocket off the drive shaft and replace it with the 25 tooth sprocket. Replace the shear bolt and roll pin, connect the drive chain and replace the sprocket shield.

**Tire Pressure:** For best results, the conditioner tires should be inflated to approximately 24 p.s.i.

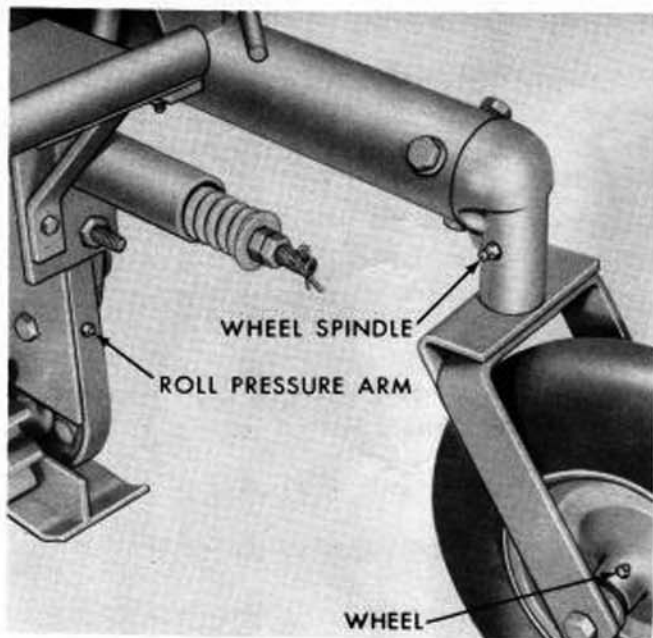
## LUBRICATION

The following chart identifies the lubrication fittings on the basic 14–204 Hay Conditioner unit, the 14–205 Semi-Mounted Hitch, and the 14–206 Pull Type Hitch. These fittings should be lubricated with a good

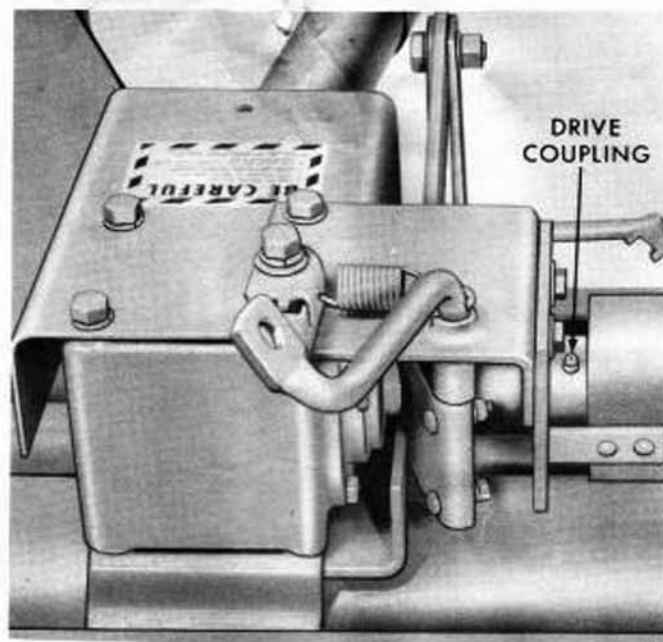
grade of pressure gun grease as indicated in the right hand column of the chart. All fittings should be cleaned carefully before using to prevent dirt from being forced into the bearings.

| <u>Location of Fittings</u>        | <u>No. of Fittings</u> | <u>Frequency of Lubrication</u> |
|------------------------------------|------------------------|---------------------------------|
| <u>14–204 – Basic Unit</u>         |                        |                                 |
| Wheels                             | 2 (See Figure 18)      | Every 8 hrs.                    |
| • Wheel Spindles                   | 2 (See Figure 18)      | Every 8 hrs.                    |
| Drive Sprocket                     | 1 (See Figure 14)      | Every 8 hrs.                    |
| Drive Coupling                     | 1 (See Figure 19)      | Every 8 hrs.                    |
| Roll Pressure Arms                 | 2 (See Figure 18)      | Every 8 hrs.                    |
| <u>14–205 – Semi-Mounted Hitch</u> |                        |                                 |
| U – Joints                         | 2                      | Every 24 hrs.                   |
| Telescoping P.T.O. Shaft           | 1                      | Every 24 hrs.                   |
| <u>14–204 – Pull Type Hitch</u>    |                        |                                 |
| U – Joints                         | 3                      | Every 24 hrs.                   |
| Telescoping P.T.O. Shaft           | 1                      | Every 24 hrs.                   |

• Wheel Spindles do not require lubrication when 14–206 Hitch is used.



**Figure 18 - Lubrication Fittings**



**Figure 19 - Lubrication Fitting on Drive Shaft**

### Additional Lubrication

1. Oil drive chain with engine oil every 8 hours.
2. Oil shifter arm and latch with engine oil every 8 hours.
3. Oil hand lift screw when necessary for ease of adjustment.

4. Hand pack grease in hand lift ball bearing seasonally or oftener if necessary for ease of adjustment.
5. Gear box should be checked seasonally or every 500 hours, whichever is less. It should be about one half full and the grease should appear reasonably clean. Use grease M-1C27 or a multi-purpose grease which is similar.

## SHIPPING INFORMATION

The following list is provided to facilitate identification of the various components of the Series 510 Hay Conditioner when they are received from the factory.

### **Basic Conditioner Unit - Component No. 14-204**

The basic conditioner unit is shipped completely assembled in Bundle Number 14-204.

### **Semi-Mounted Hitch - Component No. 14-205**

The semi-mounted hitch is shipped in two bundles. Bundle Number 142178 contains the right hitch member assembly and P.T.O. drive shaft. Bundle Number 142179 contains the left hitch member and the jack assembly.

### **Pull Type Hitch - Component No. 14-206**

The pull type hitch is shipped in two bundles. Bundle Number 142180 contains the tongue, P.T.O. shafts, and jack assembly. Bundle Number 142181 contains the P.T.O. drive shield.

### **Hydraulic Lift Attachment (optional) - Component No. 14-211**

The lift attachment is shipped in Bundle Number 14-211.

### **Mounting Bracket Kit for General Purpose Tractors - Component No. 14-217**

Both of the mounting brackets required for attaching the semi-mounted conditioner to Ford General Purpose Tractors, (600-800) and Dexta Tractors are shipped in Bundle Number 14-217.

## Mounting Bracket Kit for Row Crop Tractors - Component No. 14-218

Both of the mounting brackets required for attaching the semi-mounted conditioner to Ford Row Crop Tractors, (700-900) are shipped in Bundle Number 14-218.

## Mower Drive Adaptor Kit with 9" Sheave and Belt - Component No. 14-219

The above kit is shipped in Bundle Numbers 14-207 and 143592.

## Mower Drive Adapter Kit with 10½" Sheave and Belt - Component No. 14-220

The above kit is shipped in Bundle Numbers 14-208 and 143592.

## Mower Drive Adapter Kit with 12" Sheave and Belt - Component No. 14-221

The above kit is shipped in Bundle Numbers 14-209 and 143592.

## Mower Drive Adapter Kit with 14½" Sheave and Belt - Component No. 14-222

The above kit is shipped in Bundle Numbers 14-210 and 143592.



## READ THESE SAFETY RULES BEFORE GOING INTO THE FIELD

1. Do not make adjustments or lubricate the implement when the tractor or implement is in motion.
2. Do not allow anyone to ride on the implement.
3. Do not permit anyone but the operator to ride on the tractor at any time.
4. The operator should never leave the tractor seat when the tractor is in motion.
5. Always shut off the engine when leaving the tractor.
6. Keep all nuts, bolts, screws and connections tight.
7. Avoid exceeding recommended implement operating speeds.
8. Keep the tractor engine clean to avoid the possibility of fire.
9. Keep the tractor keys where they are not available to children.