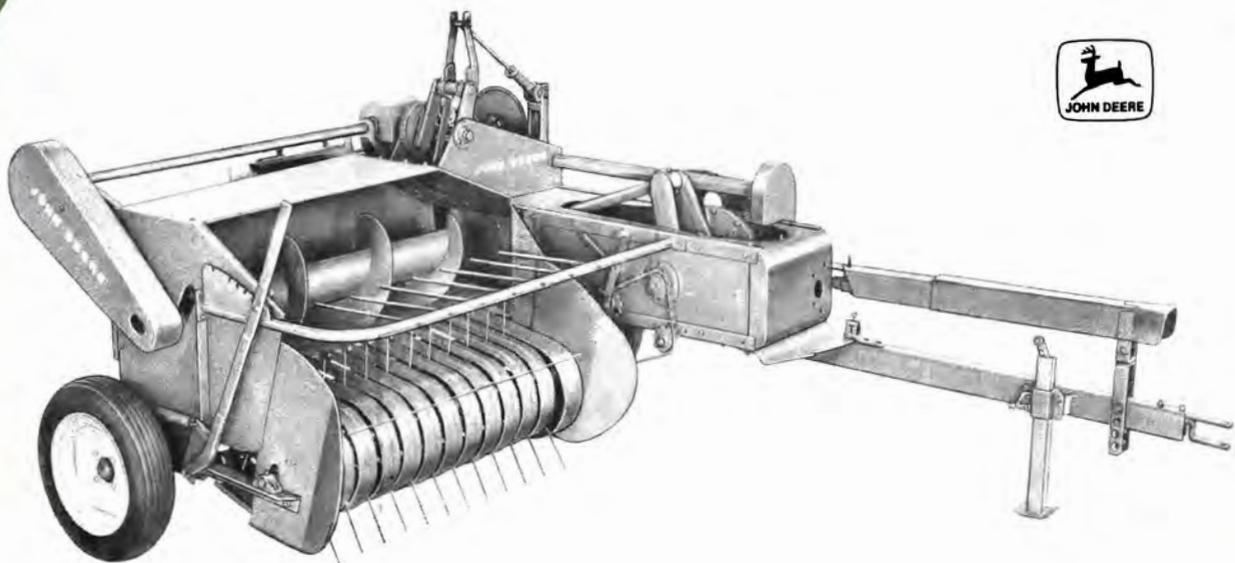


OPERATOR'S MANUAL
OM-E16470E

JOHN DEERE

14T AUTOMATIC

PICKUP BALER



Introduction

Your new John Deere Automatic Baler is a dependable machine. With proper care and operation, you can expect to receive the service and long life designed and built into it. Like any precision machine your baler will require some attention at regular intervals. When any questions arise regarding lubrication and adjustments, etc., use your manual as a guide to service your machine the RIGHT WAY.

If you find yourself in need of additional information or special servicing not covered in this manual, see your John Deere dealer. He is in a position to answer your questions for you.

When in need of parts, either to replace worn parts or to make emergency repairs, see your local John Deere dealer.

When ordering parts, give your dealer the model and serial number of your baler. This information will help him give you prompt and efficient service.

The serial number of your baler is located on the left-hand side of the bale case below the needle lift disk. (Record it in the space below.)



E 1700

Contents

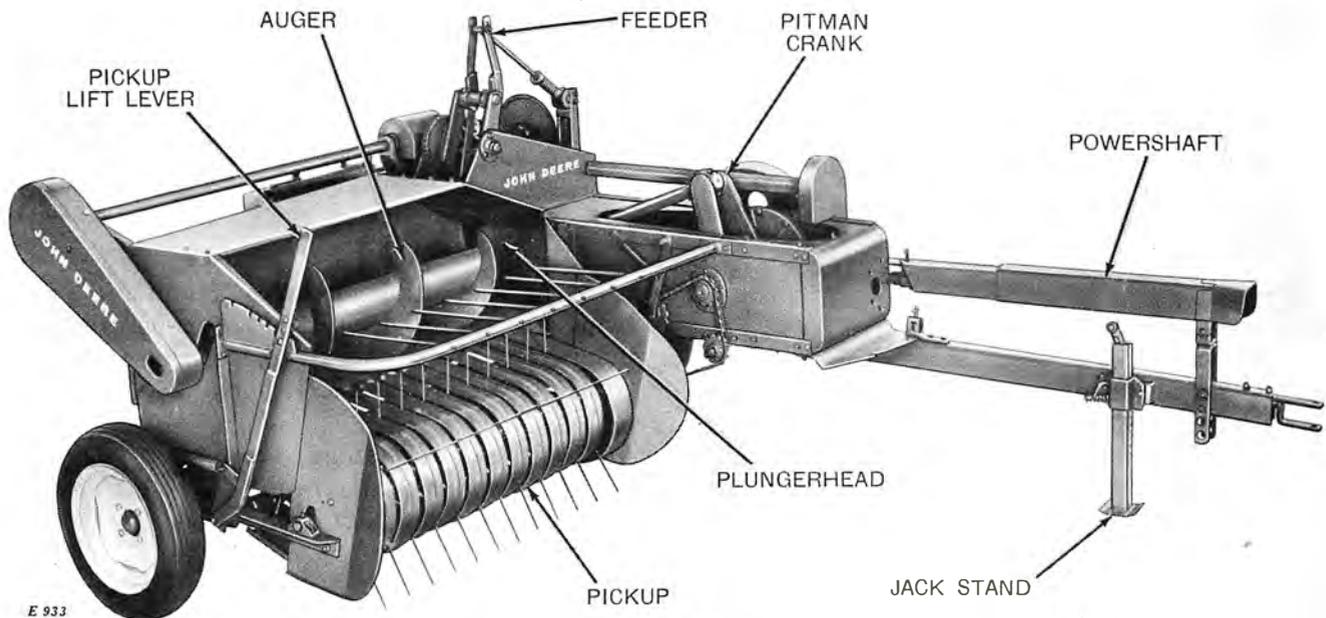
Specifications	1
Operation	2-12
How the knot is tied	2-3
Before operation	3-5
Field operation	6
Safety precautions	6-7
Operating adjustments	7-10
Machine protective devices	10-12
Storage	12
Lubrication	13-15
Service	16-32
Trouble shooting	16-21
Service checking procedure	22-32
Attachments	33-38
Assembly	39-48

Specifications

Auger: Diameter	16 In.
Length	50 In.
Bale: Cross-Section	14 In. x 18 In.
Length	Adjustable 12 In. to 50 In.
Compression Chamber Length	30 In.
Engine, Wisconsin Model THD	17 Horsepower
Feeder Opening Dimensions	12 In. x 22 In.
Flywheel Diameter	27 In.
Height (Maximum)	66 In.
Length: With Engine	17 Ft. 3-1/2 In.
With PTO	16 Ft. 5-1/2 In.
Pickup Cylinder Diameter	12 In.
Pickup Height Adjusting Range	5 In.
Pickup Width: Inside	53 In.
On Flare	62 In.
Plungerhead: Stroke	28 In.
Speed	Normal (under load) 65 strokes per minute Maximum (no load) 72 strokes per minute
Size of Tractor Recommended	2-plow tractor or larger
Power Take-Off Shaft Speed	ASAE-SAE Standard—540 or 1000 rpm
Tires: R.H. (24 Lbs. Pressure)	15 x 5.00—4-Ply
L.H. (40 Lbs. Pressure)	15 x 6.70—6-Ply
Transmission: Gears	Steel Cut Enclosed
Capacity	2-3/4 Qts. SAE 140
Weight (Approximate): With PTO	2550 Lbs.
With Engine	2800 Lbs.
Width	8 Ft. 10 In.

NOTE: Right- and left-hand sides referred to in this manual are determined from a position at the rear of the machine facing in the direction of travel.

(Specifications and design subject to change without notice)



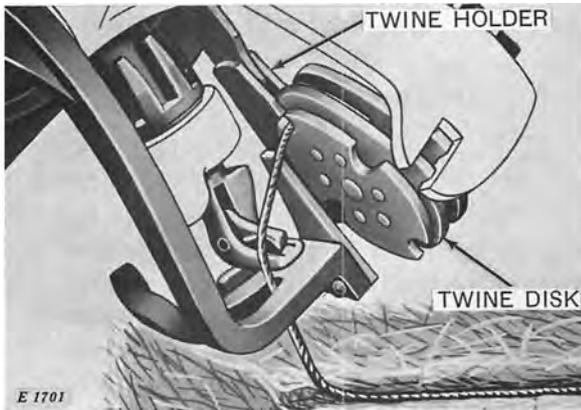
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Front view of John Deere 14T power take-off baler

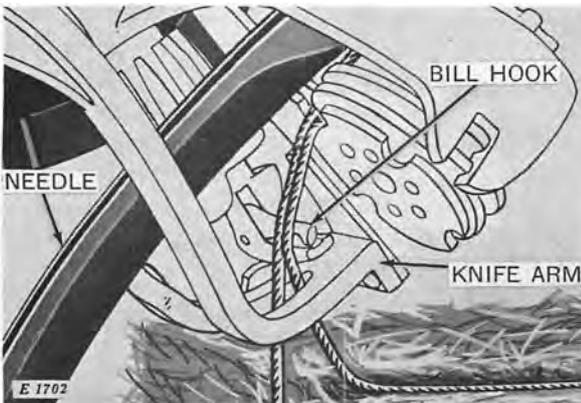
Operation

How the knot is tied

To get a better understanding of the operation of your baler and the importance of the various adjustments dealt with in this manual, an understanding of the tying cycle of the baler is important. This illustrates and describes the knotter action at various stages of one complete knot formation.



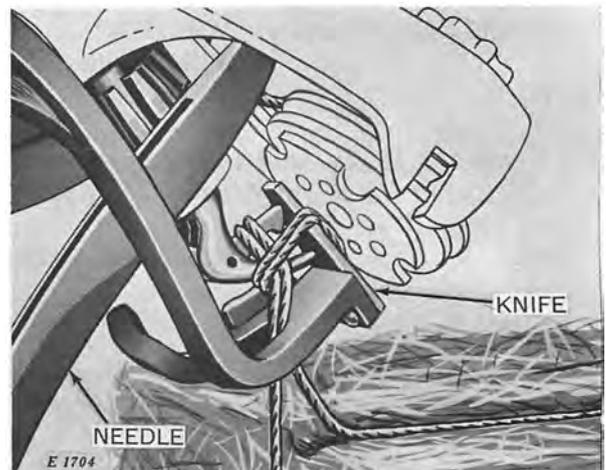
1. After the needle has been threaded, the end of the twine is held in the twine disk by the twine holder (see threading needles, page 9). As the bale is formed, the twine is pulled from the twine box around the bale.



2. When the bale reaches its proper length, the measuring wheel trips the tying mechanism and the needle (with the help of the tucker finger) brings the second strand of twine through the guide on the knife arm—across the bill hook and into the twine disk.

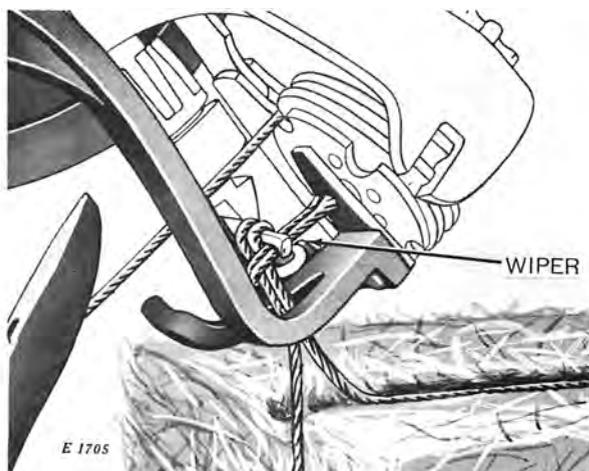


3. When the gear teeth on the intermittent knotter gear have operated the disk driving pinion and turned the disk sufficiently to permit the twine holder to secure both strands of twine in the disk, the bill hook starts its revolution.

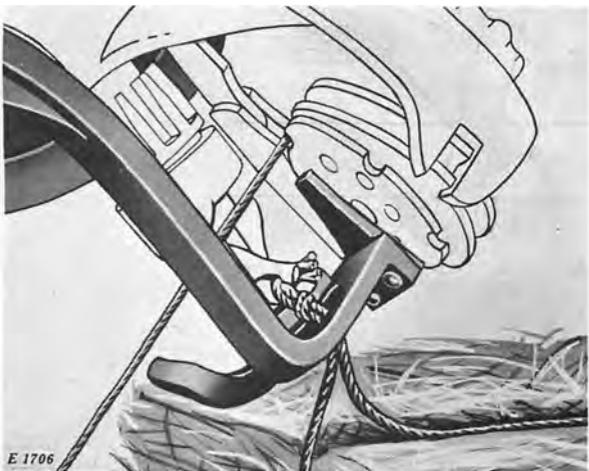


4. As the bill hook turns, forming a loop of twine around the hook, the jaw opens to receive the twine. The knife, advances ready to cut the twine between the bill hook and the disk.

NOTE: At this stage, the needle begins to recede—leaving twine in the disk which will be held there for the next knot.



5. The bill hook jaw has closed and now holds the ends of the twine tightly. The twine has been cut and the wiper on the knife arm advances to wipe the looped twine from the outside of the bill hook—as the jaws hold the two cut ends of twine preparatory to completing the knot.



6. The knot is tied and drops from the bill hook, which completes the tie around the bale.

The needles then return to the "home" position leaving the strand of twine in the disk and extending through the bale chamber ready to receive material for the next bale, at the end of which another tying cycle will be performed.

Before operation

The operator

The degree of satisfaction given by your baler is directly dependent upon the care given by the operator. Once the baler has been adjusted to meet the crop condition, the rest is up to the operator.

Lubrication

Check to see that your baler has been lubricated according to lubricating instructions.

Breaking in the new baler

After the baler has been completely assembled and connected to the tractor, inspect to be sure all bolts are tight. A loose bolt may cause wear and make premature replacement of parts necessary.

Inspect all chains for proper tension. Tighten chains only enough to prevent links from climbing sprocket teeth.

On engine-driven balers, check the drive belt (see page 32) to be sure tension is adjusted just tight enough to eliminate slippage. See the engine operator's manual for engine operation and break-in instructions.

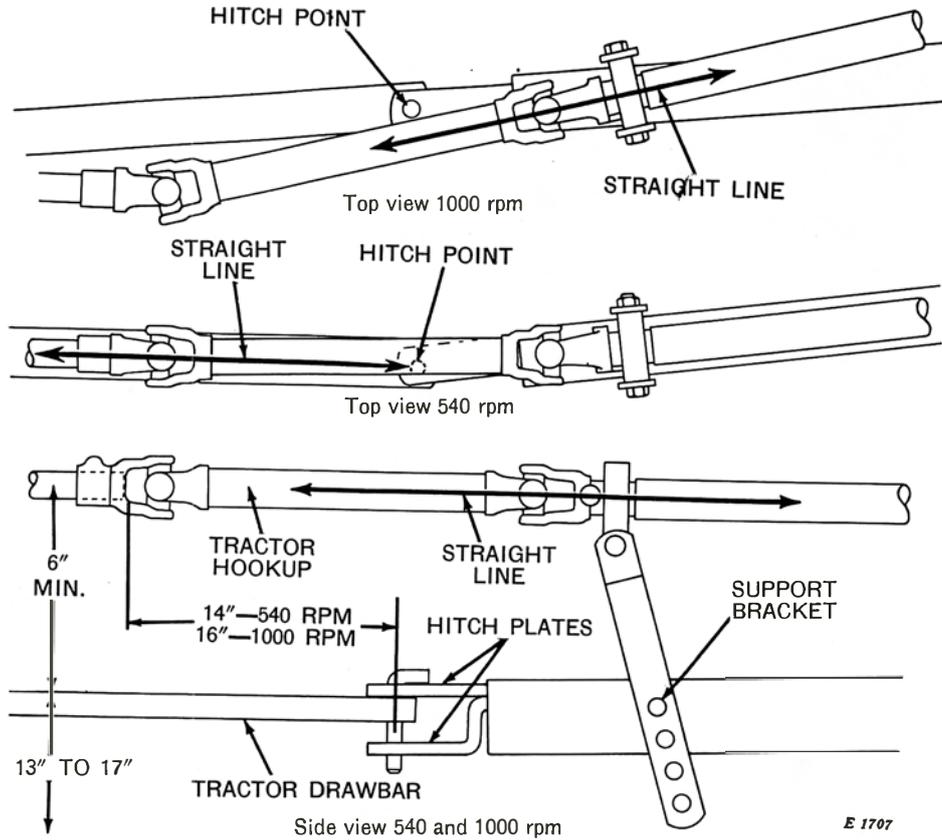
NOTE: Grease has been applied at the factory to the bill hooks and twine disks to prevent paint and rust from collecting on these parts. Remove the grease and the paint before operating baler. Some misses in tying may occur in the first few bales due to this grease. Do not attempt to make adjustments until all knotter parts have had time to become thoroughly polished by the twine through operation.

The new machine should be given an empty running "breaking-in" period of at least one hour to allow the parts to work in gradually. After a short run at slow idling speed, stop machine and inspect completely, making a check for loose bolts, heated bearings, binding parts, chain tension, etc. Run the baler at slow idling speed for the first thirty minutes and increase to full speed for the rest of the period. Inspect baler frequently during "breaking-in" period.

Adjust plungerhead after baling the first 1,000 bales (see page 29) and thereafter as necessary, depending upon operating conditions.

4 operation

Hookup instructions



E 1707

Drawbar

For 1000 rpm operation, set hitch point of tractor drawbar 16 inches from the end of the tractor powershaft. Attach the baler hitch to the tractor drawbar and locate the drawbar to the right as necessary so the tractor hookup shaft and the baler powershaft are as straight as possible as seen from the top.

For 540 rpm operation, set hitch point of tractor drawbar 14 inches from the end of the tractor powershaft and locate the drawbar so the hitch point and the tractor powershaft are in a straight line as seen from the top. Attach the baler hitch to the tractor drawbar.

Tongue

Adjust the hitch plates so the baler is approximately level. (The front end of the baler tongue should be 13 to 17 inches from the ground.)

Universal joints

Attach the rear end of the baler universal joint to the powershaft and secure with set screw and lock nut. Attach the front end of the universal joint to the tractor powershaft and secure with the spring locking pin.

NOTE: Never use a steel hammer when attaching or removing universal joints. Keep the universal joint splines clean.

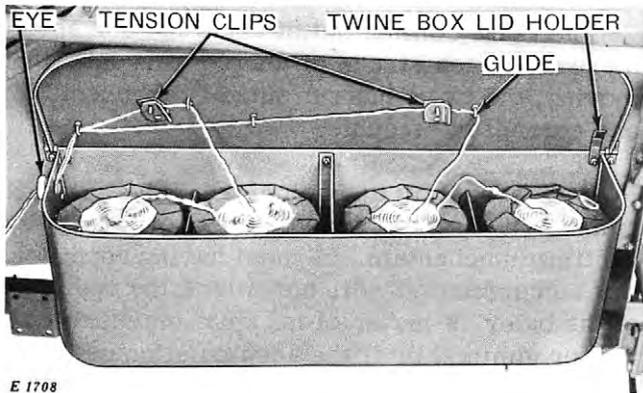
Adjust the support bracket so the power take-off shaft and universal joint are as straight as possible.

Jack stand

After the baler has been properly hooked up, secure the jack stand in the raised position with the latch. (See page 7.)

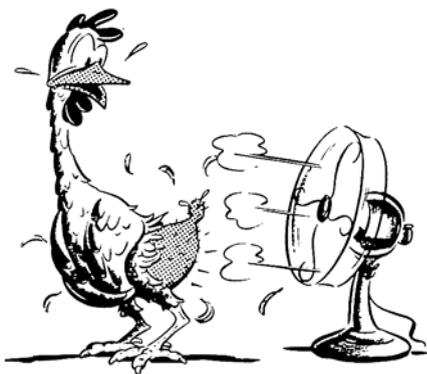
Loading twine box

Use the holder (located inside the twine box) to hold the lid out of the way to facilitate loading or unloading.



Two balls of good quality twine should be placed in each compartment of the twine box.

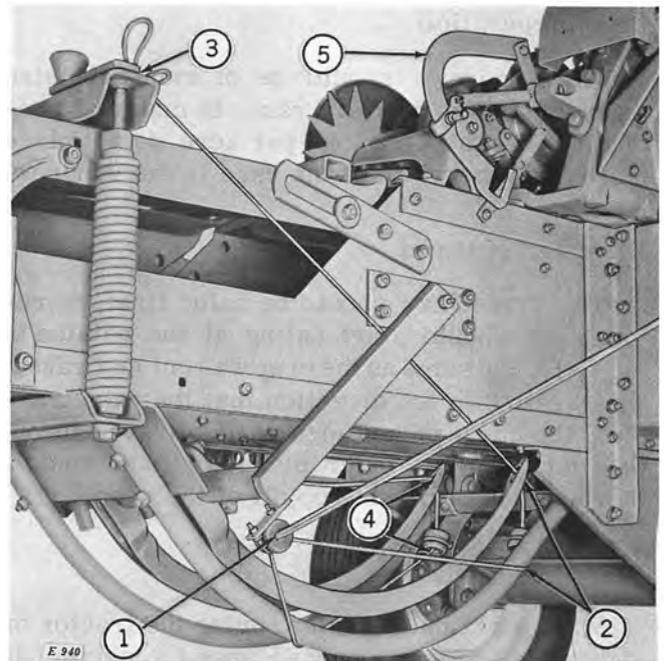
NOTE: Be sure twine is pulled from the end of the ball marked top. The two balls in each section should be joined by tying the inside end of one ball to the outside end of the other ball. In joining the twine, use a secure square knot. The loose ends of the twine should be trimmed as close to the knot as possible. Thread the inside ends of the inner balls through their respective guides in the box lid. Then thread both ends of twine through the eye on the side of the twine box.



Be Extra Cautious
around Moving Machinery!

R 2330

Threading needles



1. Thread both ends of twine through eye on needle frame.

2. With the needles in "home" position, run end of one strand of twine below needle guard, through eye at end of needle guard and through needle.

NOTE: Twine must be threaded OVER guide on end of needle.

3. Run twine between needle frame and bale case and fasten around bale case adjusting crank.

4. Repeat Steps 2 and 3 with the other strand of twine. Thread through other needle and eye.

5. When both strands of twine have been properly threaded, trip the knotter mechanism and turn flywheel counter-clockwise by hand. Continue turning flywheel until needles are all the way up, twine is held in twine disk, and needles returned to the "home" position.

6. Remove the twine which was temporarily secured to the bale case adjusting crank. The twine is now ready for the baling operation.

Field operation

Crop preparation

The windrows should be of moderate size made by a side-delivery rake. In material running from 1 to 1-1/2 tons per acre, do not place more than the width of the rake in the windrow.

Direction of travel

The driest hay should be baled first, therefore, you should start baling at the outside of the field, the same as the crop was cut and raked. By traveling in the direction that the rake traveled, the hay is picked up in a head-first position, thus enabling the baler pickup cylinder to do a thorough job of picking up all of the crop.

Starting and driving

When starting the baler, bring the tractor or engine up to recommended speed to obtain 540 or 1000 rpm on the baler powershaft (plunger-head should be up to normal 65 strokes per minute under load). Drive in low gear until you are sure baler is functioning properly and a few bales have been discharged. If hay does not fill opening in the bale chamber, gradually increase ground speed up to about 3-1/2 miles per hour, or increase the size of the windrow, until good sized charges are fed into the compression chamber without straining the feeding and baling mechanisms. If the shear pin shears off in the auger driven sprocket (page 11), the baler is being crowded beyond its capacity, and serious damage may result.

When the baler is taking from 12 to 18 charges per bale, it is operating efficiently.

Rough ground conditions may require judgment on the part of the operator to adjust the size of the windrow and the ground speed of the machine to obtain the best performance.

Always operate the baler with tractor or engine at recommended speed to obtain 540 or 1000 rpm on the baler powershaft.

CAUTION: Disengage the tractor PTO shaft when making sharp turns at ends of the field to avoid excessive vibration.

When starting with an empty bale case, the first few bales will be light and their length will be irregular until the compression of the material has been built up sufficiently to turn the bale measuring wheel positively.

The twine coming out of the twine box should move with each stroke of the plunger. If it stops moving, the twine has run out or has broken. Stop and correct the trouble.

It is essential to periodically clean out accumulated chaff and trash from around the twine knotting mechanism. In most haying conditions this accumulation will not affect the operation of the baler. If material is high in moisture content or gummy, or if the accumulation gets wet, it may cause the tucker fingers to function inaccurately, resulting in broken parts or untied bales.

Safety precautions

This machine has been carefully shielded for your protection—nevertheless, ordinary caution must be exercised in operation. Always keep all safety shields in place when operating baler. Avoid serious accidents by keeping hands and clothing away from chains and other moving parts. Never attempt to clean, lubricate, or adjust machine without first disengaging power take-off and shutting off tractor engine on power take-off machines; and on engine machines, disengage the clutch and shut off the engine.

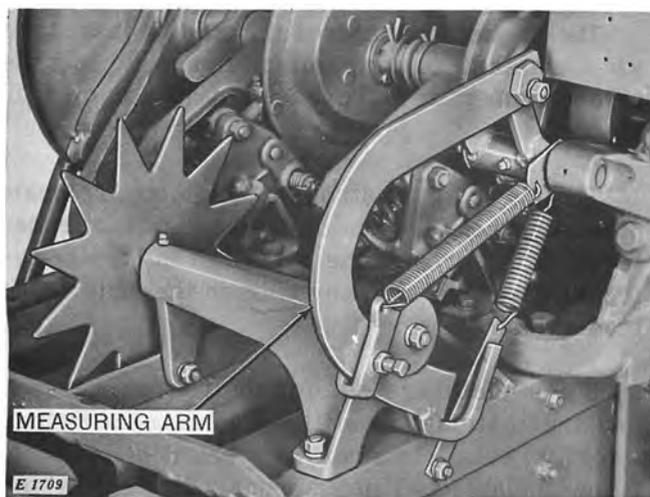
Stand clear of machine at all times when machine is operating.

Do not attempt to pull hay from pickup when machine is running.

Be sure flywheel is not moved when working on knives.

Do not try to remove or pull twine from bale case or knottor mechanism if machine is operating.

When transporting the baler on a public road at night, or during other periods of low visibility, use a warning lamp on the extreme left-hand side of the tractor.

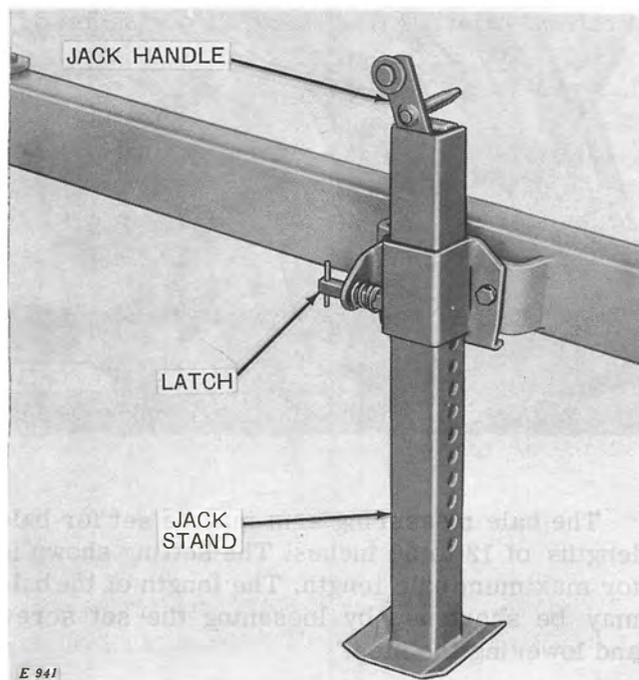


The baler may be tripped by hand by grasping the measuring arm and pulling back as necessary to allow the arm to be raised to tripped position.

When tripping mechanism by hand with the baler running, do not touch the knotting mechanism or the needle frame.

Operating adjustments

Jack stand



During operating or transporting, the jack stand (located on the side of the tongue) is held firmly out of the way by a spring-loaded latch.

NOTE: Seat the latch in one of the four bottom holes to lock the stand in raised position. Operate the jack stand as follows:

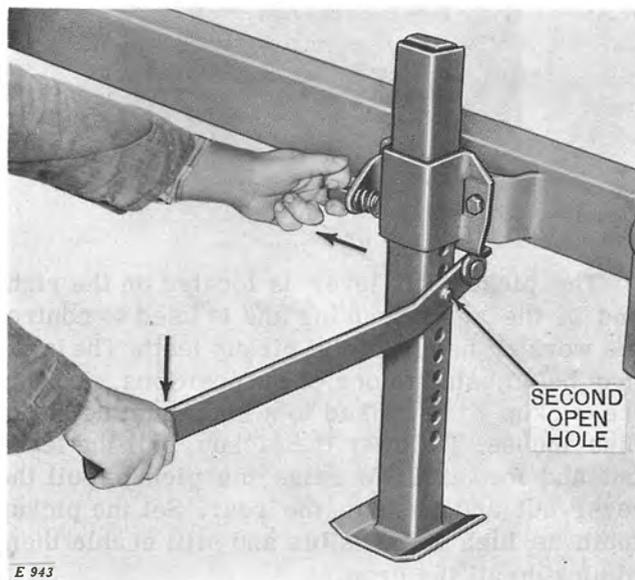
Raising tongue

1. Place the pin on the jack handle completely through the first open hole in the front of the jack stand which is immediately under the jack stand mounting bracket.

2. Push down on the jack handle to raise the tongue.

3. Repeat Steps 1 and 2 to raise the tongue higher.

Lowering tongue



1. Place the pin on the jack handle completely through the second open hole below the jack mounting bracket in the front of the jack.

2. Push down on the jack handle, then pull out the latch in the rear of the jack stand; relax the pressure on the jack handle and release the latch.

3. Repeat Steps 1 and 2 to drop the tongue lower.

Replace the jack handle in the top of the jack stand.

NOTE: It is not necessary to use the jack handle after weight of baler is removed from the jack. The jack may be raised by pulling the latch and lifting the jack by hand. The jack will lower itself to the ground by pulling the pin.

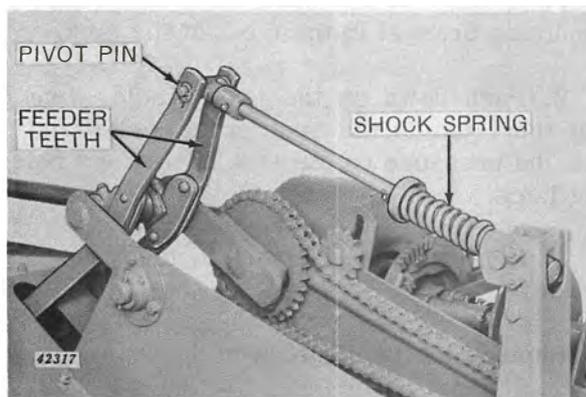
8 operation

Pickup lift lever



The pickup lift lever is located on the right end of the auger housing and is used to control the working height of the pickup teeth. The lever may be adjusted to one of six positions, allowing the pickup to be raised to a maximum height of nine inches. To lower the pickup, pull the lever out and forward. To raise the pickup, pull the lever out and push to the rear. Set the pickup teeth as high as possible and still enable them to pick up all the crop.

Adjustment of feeder teeth



Two feeder teeth feed hay from the auger into the bale chamber. The teeth are adjustable to produce bales of uniform density when operating in hay of varied conditions. The teeth may be adjusted to increase or decrease their stroke, which alters the distance they move into the bale chamber.

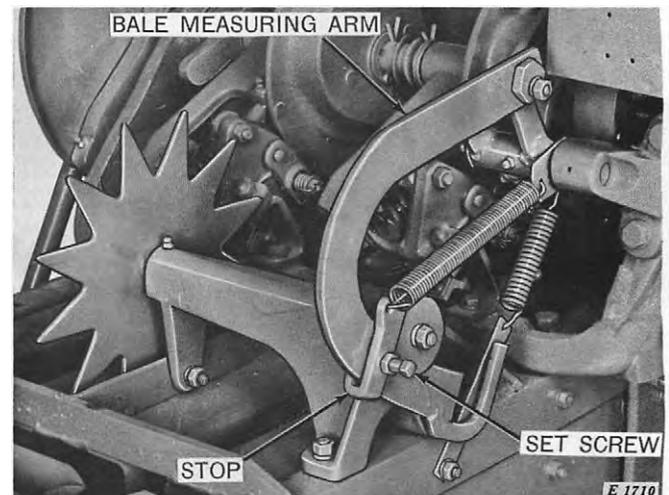
The feeder teeth stroke should be increased when material is not coming far enough into the bale chamber and decreased if it is coming in too far.

To increase the stroke of the teeth, relocate pivot pin to lower hole on the ends of the feeder teeth. To decrease the stroke of the teeth, relocate pivot pin to upper hole on the ends of the feeder teeth.

If the teeth are set for their longest stroke and the material is still not coming far enough into the bale chamber, the baler is probably being underfed. This happens when baling too slow or when picking up windrows which are too light.

A shock spring protects the teeth from damage as a result of oversize charges of hay or striking solid objects.

Bale measuring wheel



The bale measuring arm may be set for bale lengths of 12 to 50 inches. The setting shown is for maximum bale length. The length of the bale may be shortened by loosening the set screw and lowering the stop.

If bales are irregular in length, the measuring wheel is not being turned uniformly by the movement of the material in the bale case. This is due to lack of density of the material, either because the material is too light or because the baler is being driven too slowly to fill the baling chamber satisfactorily.

Uneven bale length may be remedied by increasing the ground speed of baler, increasing the size of windrow, or tightening the tension cranks.

CAUTION: If you make the bales too tight or too heavy, the excessive strain on your baler could cause breakage and undue wear of parts. Also, there will be a tendency to break the twine.

Tension cranks



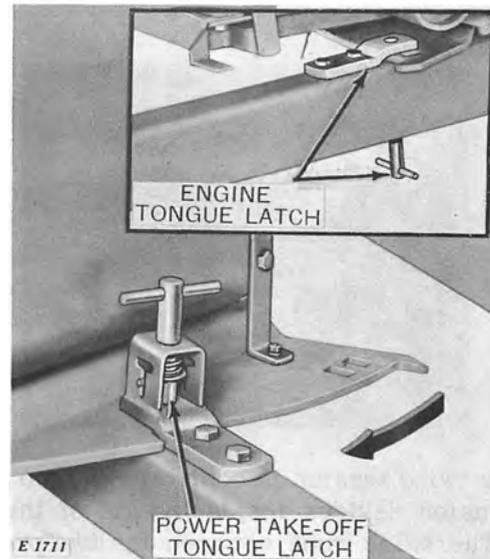
Bale weights are regulated by applying tension to the bale chamber. Tension is applied with the adjustments of the two tension cranks on the rear of the bale chamber.

Bale weights are affected by the size of windrows, moisture content, and the quality of the hay; therefore, bale weights should be checked regularly during operation.

Bale case tension may be increased when operating in unusually light windrows by relocating the hinge arms in extra holes provided in extension cover, "A." The hinge arms should not be left in this position when operating under normal conditions.

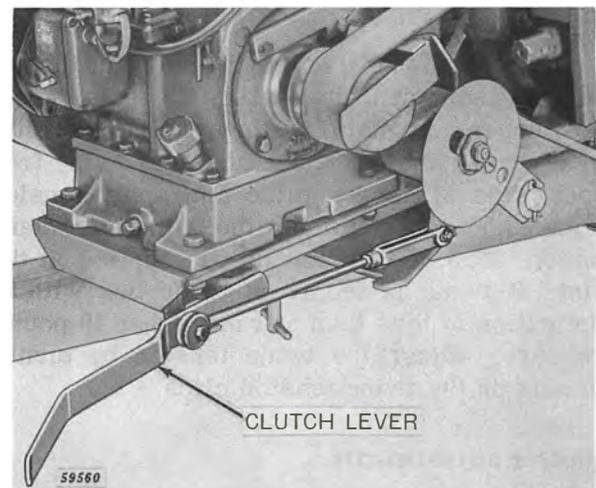
Tongue latch (transport)

The baler can be easily changed from operating to transport position by blocking the right-hand wheel, pulling the latch pin, and forcing the tongue to the left with the tractor. Relocate the latch pin in the hole provided.



Whenever transporting the baler on a public road, keep as far to the right as possible. Hang a red flag prominently on the rear of the baler when transporting during the day. At night, or during other periods of poor visibility, be sure the tractor lights are operating properly and use a warning lamp at the extreme left-hand side of the tractor.

Engine clutch lever



The lever located on the left-hand side of the engine, controls the transmission of power from the engine to the flywheel by means of a belt idler. Release tension on belt when starting the engine.

Engine controls

The controls and operation of the engine are described in the engine operator's manual.

10 operation

Twine tension



The twine tension is controlled by two identical tension devices inside the lid of the twine box. The twine runs between the two pressure plates, the lower plate being spring-loaded. Tension is released or applied by adjusting the nuts on the tops of the tension devices.



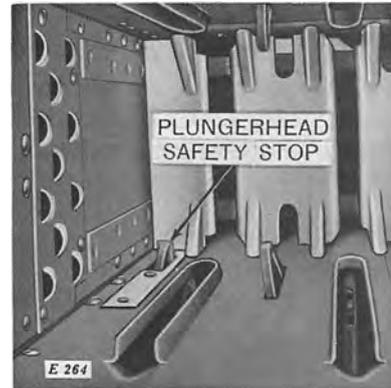
To test the twine tension, thread twine through needles, then turn flywheel until needles are at their uppermost point as they protrude through top of bale case. Connect scale to twine from upper side of needle guide and apply tension. Twine should be fed from the twine box when a tension of 5 to 15 pounds is applied at this point. If twine is fed from twine box with the application of less than 5 or more than 15 pounds pressure, adjust the twine tension by turning the nuts on the twine tension clips.

Knotter adjustments

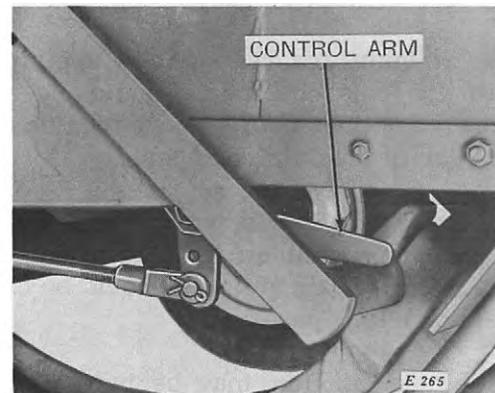
The knotter is carefully adjusted and tested at the factory and should give satisfactory performance with little or no adjustment. Make no adjustments until paint is worn off and all parts work smoothly. If trouble is then experienced, determine where it exists before making any adjustments. To correct the trouble, refer to the "Trouble Shooting" section of this manual or call your John Deere dealer. He is equipped to give you prompt "know-how" service in the field or in his shop.

Machine protective devices

Plungerhead safety stop

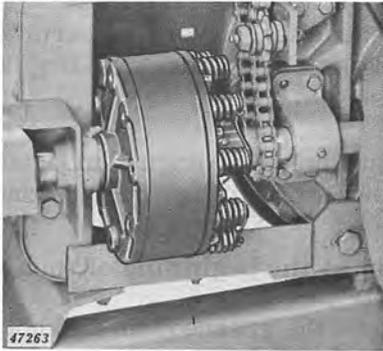


The plungerhead safety stop helps provide protection of the needles from damage by the plungerhead if the needles enter the bale chamber too soon or remain there too long. The safety stop enters the bottom of the bale chamber at the same time as the needles. When the needles are withdrawn, a control arm on the stop assembly pulls a rod connected to the stop, thus, withdrawing it also from the bale chamber.



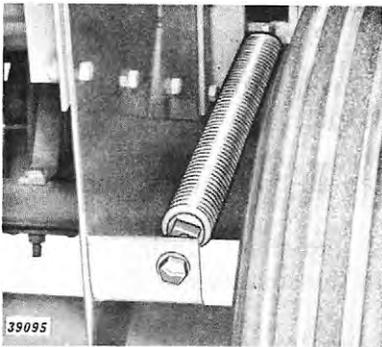
If the plungerhead strikes the stop in the bale chamber, it will cause the shear bolt in the flywheel to shear, thus, helping to prevent overloads which would cause damage to the baler and time-consuming breakdown. (See page 28 for adjustment.)

Slip clutch



The slip clutch was built into the main drive to help protect the baler from undue stress resulting from: high starting torques, material too heavy, obstacles lodging between knives, etc. (see page 29 for testing).

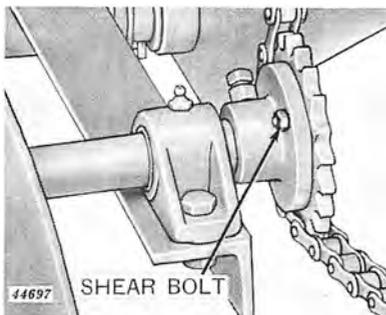
Pickup balancing spring



The pickup balancing spring helps protect the pickup from damage which could result from striking objects in the field.

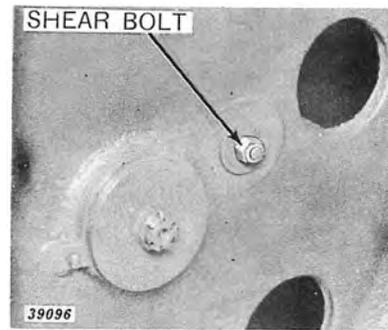
The spring is attached to the right-hand side of the pickup and allows the pickup to raise and lower itself easily when coming in contact with immovable objects.

Pickup shear bolt



The special shear bolt in the pickup driven sprocket helps protect pickup parts from overloads or jams. (See page 21 for service.)

Flywheel shear bolt



The special shear bolt in the flywheel will shear if the plungerhead becomes blocked during operation. (See page 21 for service.) When the cause of shearing has been located and corrected, replace with new shear bolt.

If needles are in bale case when bolt shears, return the needles to home position by hand before starting the baler.

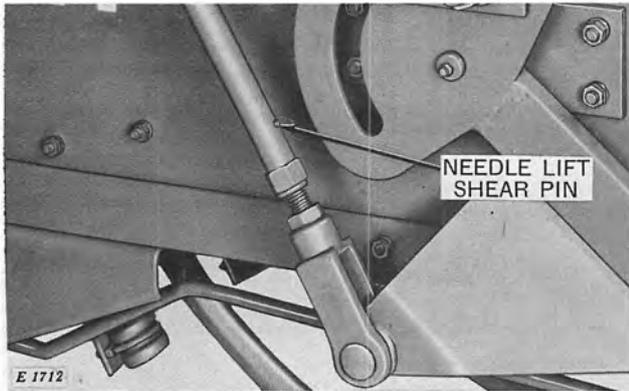
Auger shear pin



If the auger becomes lodged or obstructed, a shear pin in the auger driven sprocket will shear, thus helping to prevent damage to the feeding mechanism and other intricate parts of the baler. Correct the trouble and replace the shear pin.

12 operation

Needle lift shear pin



The needle lift shear pin helps protect the needle assembly from damage if the needles are prevented from completing their cycle. When the pin shears, it allows the needle lift arm to complete the cycle without the needles. In completing the cycle, the lift assembly will contact the needles and push them from the bale case. The trouble can then be corrected and shear pin replaced.

Storage

Your baler should be taken to an authorized John Deere dealer for an overhaul at the end of each season to assure the best of performance at the beginning of the next season.

Storage at the end of each season

1. Shelter the baler in a dry place.
2. Clean the baler thoroughly inside and out. Trash and dirt will draw moisture and cause rust.
3. Clean out the knotter mechanism and apply a coating of grease.
4. Thoroughly grease the machine according to the lubrication charts on pages 17 through 19.
5. Paint all parts from which the paint has been worn, except the inside of the bale case, bill hooks, and twine disk. These latter parts should be brushed with grease.
6. Clean all chains by washing them in a solvent. Dry well and coat with a heavy oil.
7. Block up baler under axle, taking load off tires, **DO NOT DEFLATE TIRES**. If exposed, cover tires to protect them from light, grease, and oil.

8. List the replacement parts that will be needed and order them early. The dealer at this time can expedite delivery of parts and install them during slack periods—avoiding delays next baling season.

9. If your baler is engine-mounted, see the Engine Manual for storage instructions.

Preparation at the beginning of each season

1. Remove the grease from the knotter mechanism.
2. Remove the heavy oil and grease from the bale case and chains.
3. Lubricate complete machine; this will force any collected moisture out of the bearings.
4. Check air pressure in tires.
5. Drain and flush the gear case and refill to check-plug level with SAE 140 Regular-Type Gear Lubricant.
6. Tighten all bolts, nuts, and set screws.
7. Adjust and check timing of entire baler as described in this manual.
8. If any major moving parts have been replaced, these should be run in.
9. If your baler is engine-mounted, see Engine Manual for instructions.



R 2231

Lubrication

The economical and efficient operation of any machine is dependent upon regular and proper lubrication of all moving parts with a quality lubricant. Greasing is just as vital to the service life of farm machinery as is the use of proper lubricating oil in the crankcase of an automobile or tractor. Neglect leads to reduced efficiency, heavy draft, wear, breakdown, and needless replacement of parts.

CAUTION: Do not clean, lubricate, or adjust your machine while it is in motion.

IMPORTANT: Before operating machine, check oil in gear box. (See Note No. 3).

Fittings

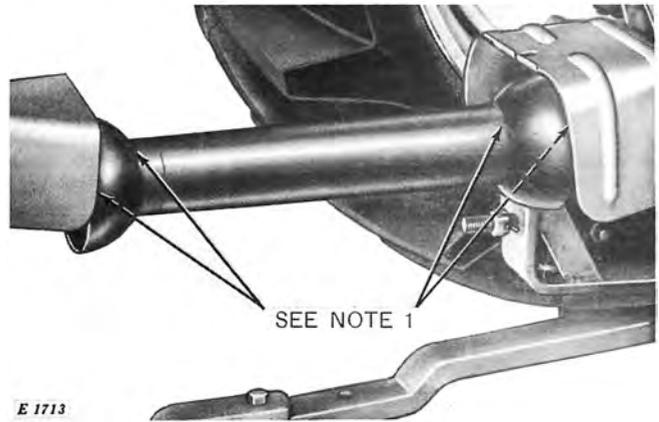
Clean grease fittings before using grease gun. Replace any lost fittings immediately.

Chains

At varying intervals, depending on weather and field conditions, chains will become stiff or gummy. As necessary, remove chain and wash it in solvent. Then dip the chain in oil, allow it to drain and replace on the machine.

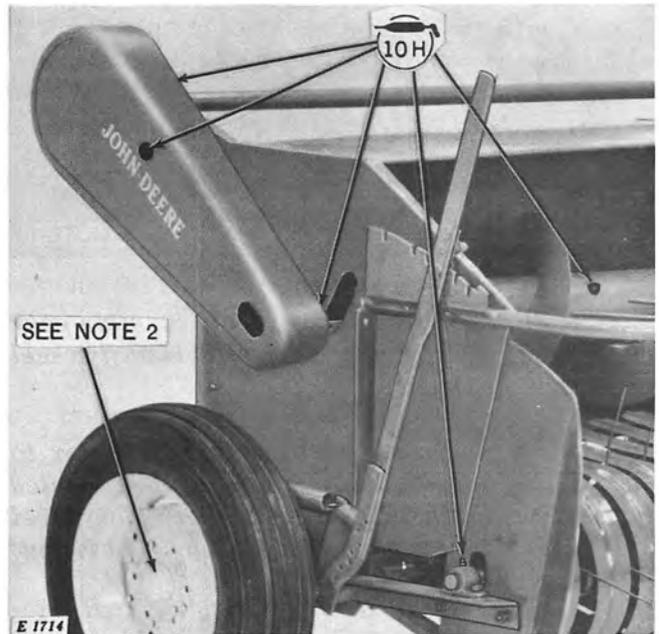
SYMBOLS	
	Grease every 10 hours of operation with SAE multipurpose-type grease.
	Grease every 5 hours of operation with SAE multipurpose-type grease.

Hookup



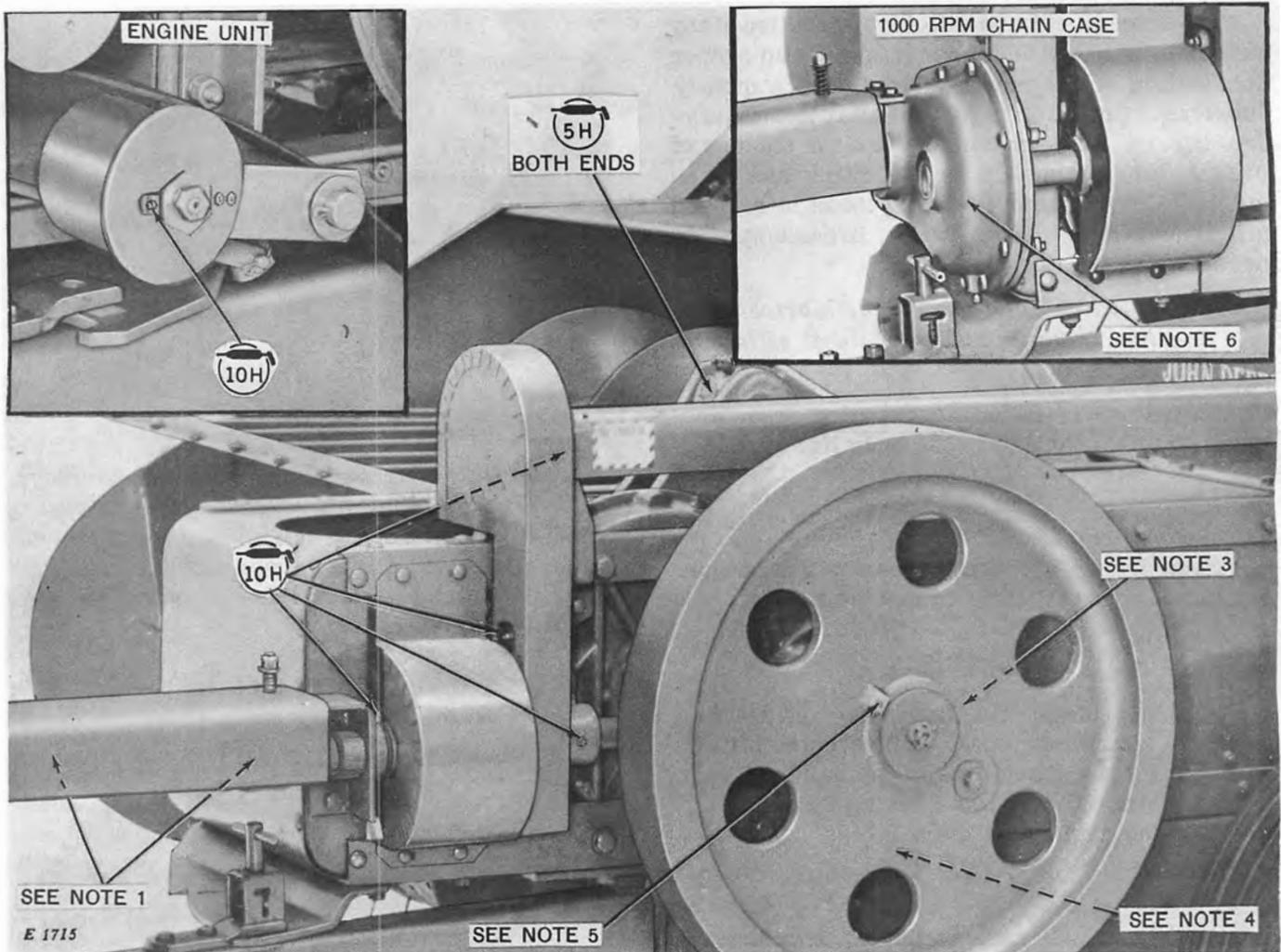
Note No. 1. Oil the nylon retainer bearings in the tractor hookup every 50 hours of operation. Grease tractor hookups, U-joints, and powershaft that are equipped with grease fittings with SAE multipurpose-type grease every 100 hours of operation.

Auger and pickup



Note No. 2. Pack wheel bearings with SAE multipurpose-type or wheel bearing grease once a year.

Gear case and drive



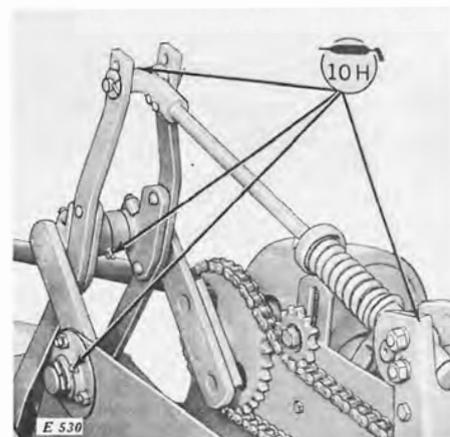
Note No. 3. Check level of oil in main gear case daily. (Check plug is just behind flywheel on rear of gear case.)

Note No. 4. Drain, flush, and refill prior to each baling season. Two drain plugs are located just below check plug. Fill to check plug level with SAE 140 Regular-Type Gear Lubricant. (Capacity 2-3/4 quarts.)

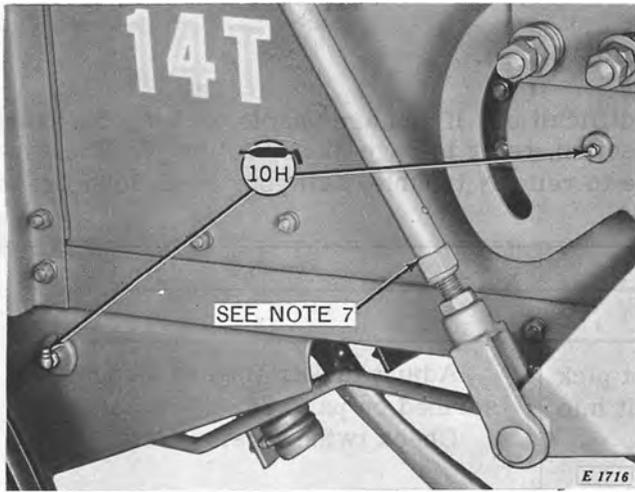
Note No. 5. Grease flywheel bearing when replacing flywheel shear bolt.

Note No. 6. Fill chain case to check plug level with SAE 30 Service ML (Non-Detergent) engine oil. (Capacity 1/4 pint.)

Feeder

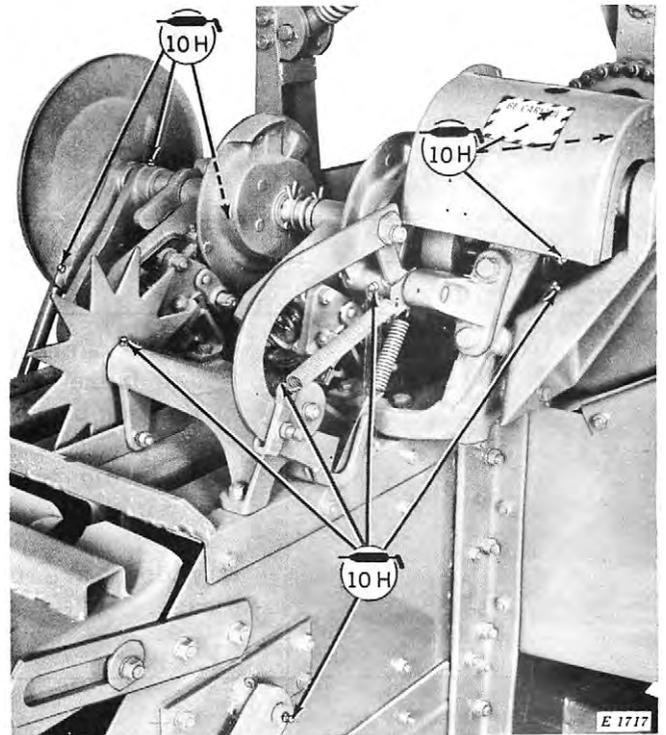


Plunger stop and left-hand needle pivot

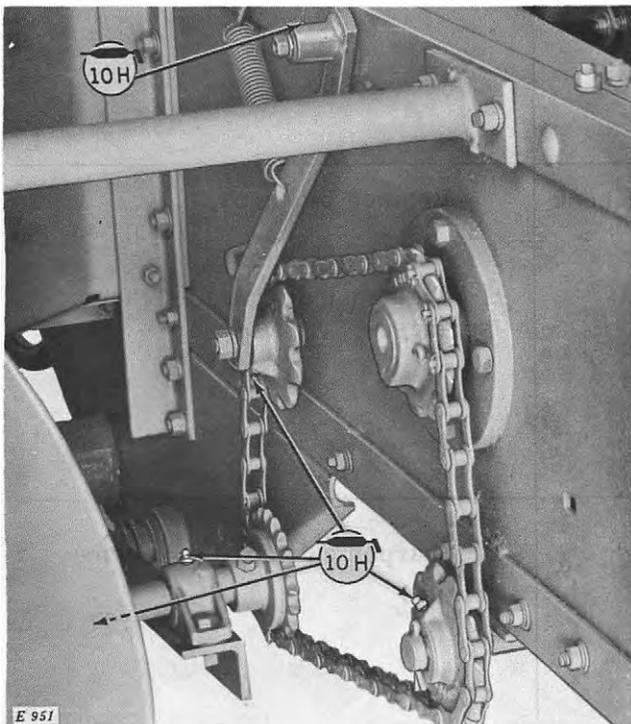


NOTE NO. 7. Grease telescoping link once every season to prevent rust accumulation.

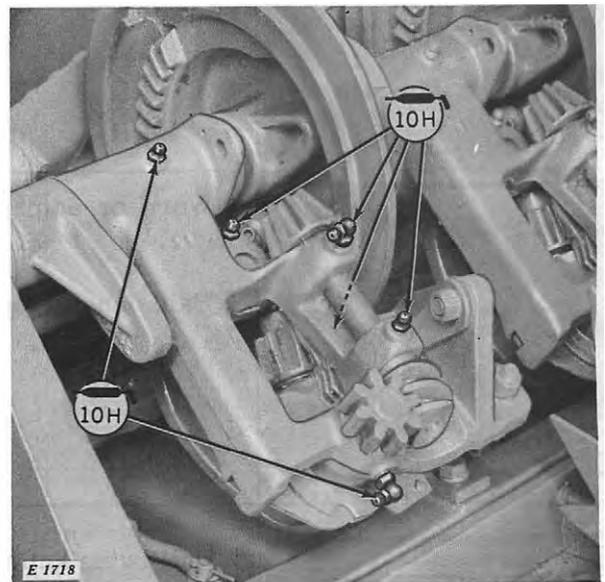
Knotter frame and right-hand needle pivot



Pickup drive



Knotter mechanism

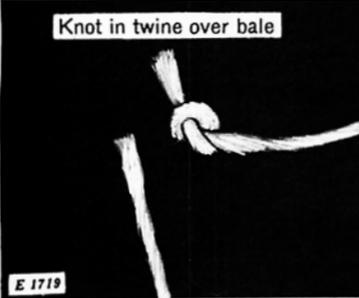
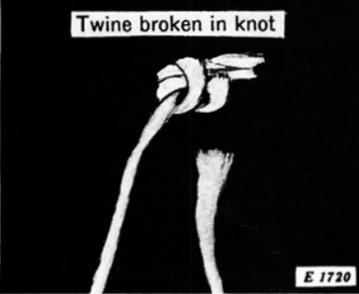
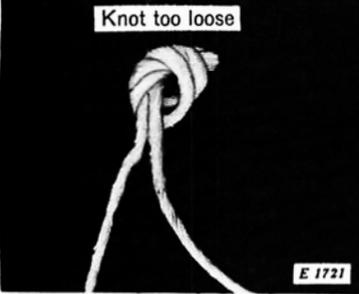


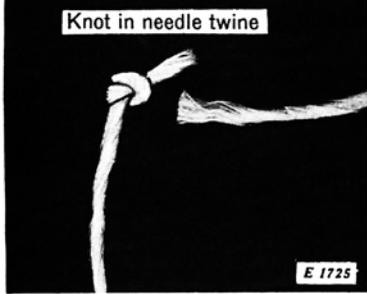
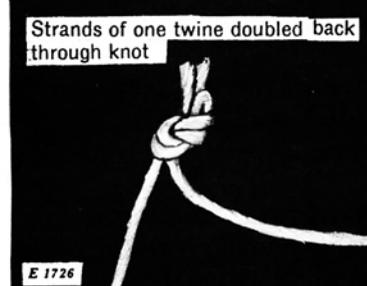
CAUTION: Excess grease in the "knotter" area causes accumulation of chaff and dirt, which tends to cause undue wear and breakage.

Service

Trouble shooting

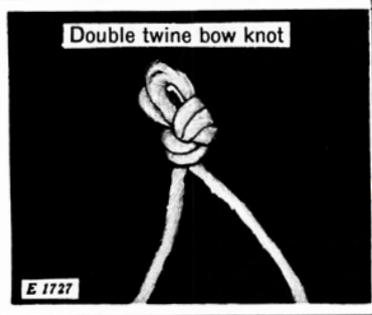
Improper adjustments account for most baling difficulties. If you are unable to solve difficulty after checking the following "Trouble Shooting" section, refer to page 22 and follow the "Service Checking Procedure" as outlined. If you are unable to remedy trouble, call your local John Deere dealer.

Trouble	Possible causes	Remedy
<p>Knotter difficulties</p> 	<p>Tucker fingers did not pick up needle twine or move it into tying position properly.</p> <p>Needles did not place twine properly in disk.</p> <p>Hay dogs are not entering bale case.</p>	<p>Adjust tucker fingers as described on page 28. Check twine tension.</p> <p>Adjust needles and/or twine disk.</p> <p>Clean out around hay dogs and examine for broken or unhooked springs.</p>
	<p>Extreme tension on twine around bill hook during tying cycle causes twine to shear or pull apart.</p>	<p>Loosen twine disk holder spring. Smooth off all rough surfaces and edges on bill hook.</p>
	<p>Worn or damaged bill hook tongue.</p> <p>Bale density too low.</p>	<p>Replace bill hook.</p> <p>Tighten bale case extension springs.</p>
	<p>Dull twine knife.</p>	<p>Sharpen cutting edge on twine knife.</p>

Trouble	Possible causes	Remedy
 <p>Twine ends uneven</p> <p>E 1723</p>	<p>Insufficient tension on twine disk holder.</p> <p>Dull or chipped knife.</p>	<p>Tighten twine disk holder spring.</p> <p>Sharpen cutting edge on twine knife.</p>
 <p>No knot in either twine</p> <p>E 1724</p>	<p>Twine sheared in twine disks.</p> <p>Bill hook not revolving.</p> <p>Bill hook tongue fails to open.</p>	<p>Loosen twine holder and/ or remove all sharp edges and burs on twine holder and disks.</p> <p>Check for lost or sheared pin in bill hook pinion.</p> <p>Check for lost bill hook tongue roller, excessive wear on roller and cam face, or damaged bill hook tongue.</p>
 <p>Knot in needle twine</p> <p>E 1725</p>	<p>Twine over bale pulled out of twine disk. (Can be detected by square cut end which has been flattened in disks. This twine will usually be shorter than mating twine tied on opposite side of bale.)</p> <p>Twine over bale sheared out of twine disks. (Distinguished from above in that twine end will be frayed and torn—not cut squarely by knife.)</p>	<p>Increase tension on twine holder disk spring and/ or decrease tension on bale case extension springs.</p> <p>Decrease tension on twine holder disk spring. Decrease tension on bale case extension springs.</p>
 <p>Strands of one twine doubled back through knot</p> <p>E 1726</p>	<p>Bill hook tongue is closing on top of twine.</p>	<p>Bend upper (or roller) end of knife arm so that groove in knife arm will hold twine over bill hook tongue farther to the right.</p> <p>Adjust timing of twine disks as described on page 25.</p>

Trouble	Possible causes	Remedy
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Knotter difficulties—continued

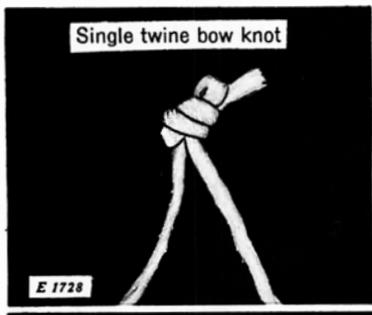


Insufficient travel of knife arm past bill hook.

Bill hook pressure arm spring too loose.

Bend upper (or roller) end of knife arm to obtain more travel past bill hook.

Tighten adjusting nut on bill hook pressure arm spring.

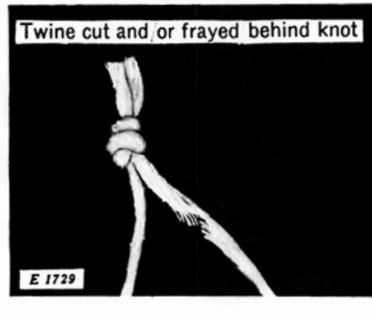


Insufficient travel of knife arm past bill hook.

Bill hook pressure arm spring too loose.

Bend upper (or roller) end of knife arm to obtain more travel past bill hook.

Tighten adjusting nut on bill hook pressure arm spring.



As bill hook turns, twine is pinched between bill hook and knife arm and twine is damaged 1/2- to 1-inch from knot.

Rough knife arm, cuts twine 3/4 to 1-1/4 inches from knot.

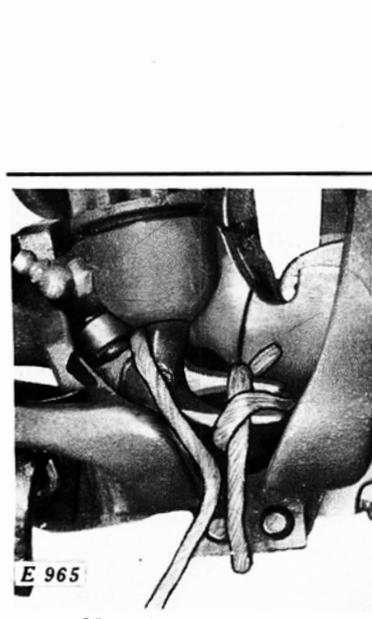
Sharp edge or burs on rear lower crossmember of tying mechanism support.

Extremely high top twine tension.

Bend knife arm so bill hook turns freely. Make certain that wiper ledge on knife arm contacts backface of bill hook.

Smooth off rough edge in twine notch of knife arm.

Smooth rough edges in this area.



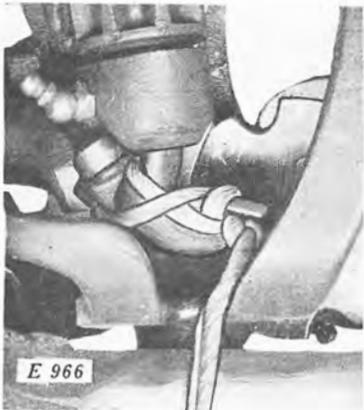
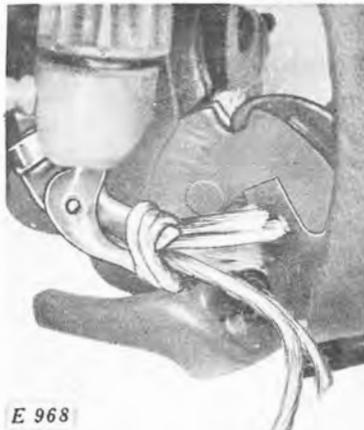
Needle twine did not enter twine disk.

Adjust needles as shown on page 27 and/or adjust twine disk timing as shown on page 25.

Check for sheared or lost pin in twine disk pinion or in disk worm gear.

Make certain twine coming from box is going under twine tension devices on twine box.

Needle twine over bill hook tongue roller

Trouble	Possible causes	Remedy
<p>Knotter difficulties—continued</p>  <p>Needle twine over bill hook tongue roller and second knot tied on bill hook</p>	<p>Same as preceding picture, however, operator will usually find this condition rather than the condition described therein.</p>	<p>Make corrections as noted before and examine complete knotter for broken or damaged parts.</p>
 <p>Needle twine goes under bill hook tongue during first quarter of bill hook travel</p>	<p>Tucker finger not carrying twine back to tying position.</p>	<p>Adjust tucker fingers as shown on page 28.</p>
 <p>Knot did not strip off bill hook</p>	<p>Excessive bill hook tongue tension.</p> <p>Knife arm wiper is not contacting back face of bill hook.</p> <p>Knife arm lift (or rise) is not sufficient.</p> <p>Rough bill hook.</p> <p>Worn or bent bill hook.</p> <p>Bale density too low.</p>	<p>Loosen bill hook pressure arm spring adjusting nut.</p> <p>Bend knife arm so that wiper contacts back face of bill hook.</p> <p>Bend upper (or roller) end of knife arm to increase movement past end of bill hook.</p> <p>Smooth off all rough edges on bill hook with emery cloth.</p> <p>Replace bill hook.</p> <p>Tighten bale case extension springs.</p>

Trouble	Possible causes	Remedy
Bale not of proper weight		
Bale too light in weight.	Tension cranks too loose.	Tighten tension cranks.
Bale too heavy in weight.	Tension cranks too tight.	Loosen tension cranks.
Bale too heavy with cranks screwed out.	Hay too wet or too green.	Let hay dry or cure before baling.
Bale too long.	Not enough material in top of bale and/or measuring wheel not contacting crop properly.	Tighten tension cranks.
Bale too short.	Measuring arm not dropping home.	Adjust arm.
Bale not uniform		
Back of bale is loose.	Feeder teeth out of adjustment.	Adjust feeder teeth.
Front of bale is loose.	Feeder teeth out of adjustment.	Adjust feeder teeth.
Not enough material in top of bale.	Ground speed of baler too slow and/or windrow too small.	Increase ground speed and/or make larger windrows.
Ragged bale.	Dull knives. Plungerhead out of adjustment.	Sharpen knives. Adjust plungerhead.
Pickup difficulties		
Not picking up hay clean.	Pickup stays up. Pickup teeth set too high. Ground speed too fast. Hay not all raked. Pickup teeth bent or broken. Windrows too light.	Loosen lift spring. Lower pickup lift lever. Slow down to 3-1/2 mph. Turn all hay onto clean stubble. Repair or replace teeth. Rake heavier windrows.
Pickup teeth digging in ground.	Lift lever set too low.	Raise lift lever.
Pickup teeth do not revolve.	Sheared pickup shear bolt.	Replace shear bolt.
Feeding difficulties		
Plungerhead hitting feeder teeth at top of case.	Out of time.	Retime baler.
Baler stalls when plungerhead is even with rear side of feed opening.	Dull knives and/or plungerhead out of adjustment.	Sharpen knives and/or adjust plungerhead.
Baler stalls on compression.	Baling too heavy. Plungerhead obstructed.	Loosen tension cranks. Remove obstruction.

Trouble	Possible causes	Remedy
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Feeding difficulties—continued

Baler is stalled on compression stroke.	Same as preceding.	Turn flywheel in clockwise direction for two or three revolutions; then engage clutch on tractor or engine. CAUTION: Be sure that needles are in down position before turning flywheel by hand.
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Power drive difficulties

Engine belt slips.	Clutch lever out of adjustment.	Adjust clutch lever.
Engine belt wearing more on one side than the other.	Pulleys not in alignment.	Align pulleys.
Slip clutch slips.	Shear bolt sheared in flywheel. Slip clutch bolts loose.	Replace shear bolt. Tighten clutch bolts.

Shear bolt difficulties

Sheared flywheel shear bolt.	Dull knives. Too much knife clearance. Baling too heavy. Obstruction in bale chamber. Plungerhead safety stop improperly adjusted. Worn knotter clutch ring. Trip dog too tight. Needles in bale case.	Sharpen knives. Adjust plungerhead. Loosen tension cranks. Remove all obstructions. Adjust safety stop. Replace clutch ring. Loosen trip dog. Place needles in home position.
Sheared auger drive shear pin.	Baling heavy windrows at excessive speed. Hay too wet.	Decrease speed. Allow hay to cure.
Sheared needle lift pin.	Needle brake too tight. Needles out of time. Needles hitting obstruction. Obstruction in knotter. Needles out of adjustment.	Loosen needle brake. Retime needles. Remove all obstructions. Remove all obstructions. Adjust needles.
Sheared pickup shear bolt.	Pickup overloaded or jammed. Pickup set too low.	Remove all obstructions. Set pickup higher.

Needles not raising

Trip dog not functioning.	Broken release arm spring or trip dog spring lost. Trip dog too tight.	Replace broken or lost spring. Loosen trip dog.
Sheared needle lift pin.	(See "Shear bolt difficulties.")	(See "Shear bolt difficulties.")

Service checking procedure

The following outline of related major service checks should all be followed in the order listed to remedy most tying troubles not solved in the "Trouble Shooting" section pages 16-21, and as a service guide to pre-season use.

1. Timing baler (pages 22-23).
2. Bill hook (page 24).
3. Knife (wiper) arm (pages 24-25).
4. Twine disk (page 25).
5. Twine holder (pages 25-26).
6. Needle travel (pages 26-27).
7. Needle brake (page 27).
8. Needle adjustment (page 27).
9. Tucker fingers (page 28).
10. Plungerhead safety stop (page 28).

Service information pertaining to parts or adjustments not listed above are covered on pages 29 through 32.

Check timing

Timing is controlled by the main drive chain, feeder drive chain, and the knotter drive chain. If any of these chains are uncoupled or parts are removed for servicing, all timing operations will have to be checked before operating baler. Each of the following checks should be made as the baler is run, by hand, through one complete tying cycle. If any of the following adjustments or tolerances are out of time, refer to "Timing the Baler."

1. Place feeder pivot pin in bottom hole of feeder teeth.
2. Turn flywheel by hand in a counterclockwise direction until the face of plungerhead is centered in the front feeder slot. The left edge of the feeder tooth should measure 16-3/4 to 18-1/4 inches from the left edge of the feeder support. Trip the bale measuring arm. The lug

on the clutch ring should nearly contact the trip dog roller.

3. Continue turning flywheel counterclockwise until the tip of the highest needle is flush with the top edge of the bale groover. The face of the plungerhead should measure from 1 to 2-1/4 inches from the tip of the needle.

4. Turn flywheel counterclockwise to raise needles. The needles should rise far enough to seat twine firmly in the bottom of the twine disk groove and continue to rise for at least 1/2-inch after seating.

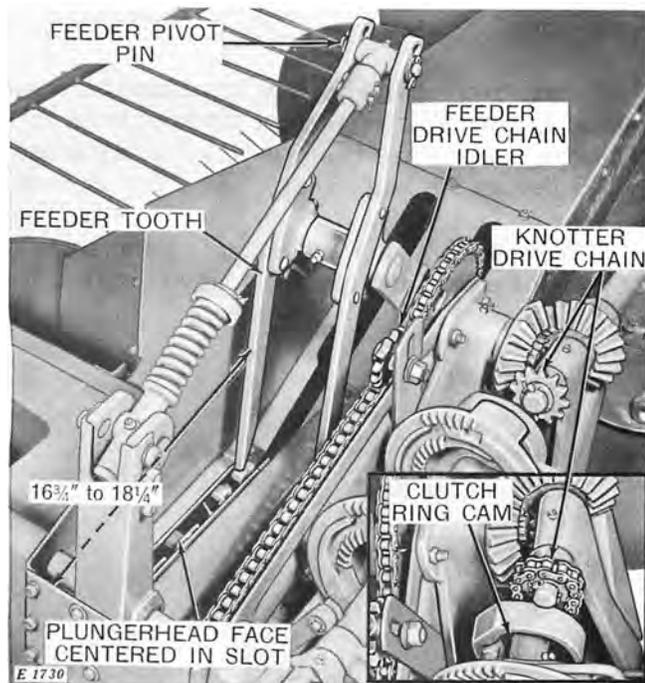
5. Turn flywheel to return needles to home position. Needle mounting bolts must have adequate clearance from bottom of bale case.

Timing the baler



The plungerhead, feeder and needles operate in direct relationship to each other and all should be timed in the following order.

1. Remove shield and main drive chain.
2. Place the feeder pivot pin in the bottom hole of the feeder teeth.
3. Remove shield and knotter drive chain.
4. Adjust the feeder drive chain idler snugly against the chain with thumb pressure, and tighten the idler mounting bolt.
5. Turn the flywheel counterclockwise to move the plungerhead on the compression stroke to a point where the face of the plungerhead is in the center of the front feeder slot in the bale case top.



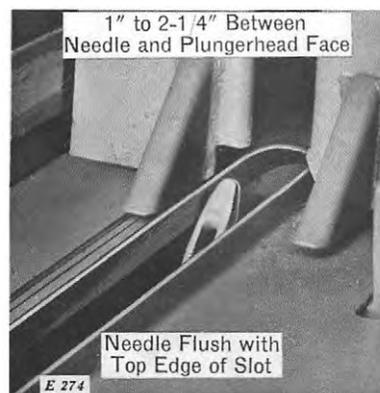
6. Locate the left-hand edge of the feeder tooth 17-5/8 inches, measured horizontally, from the extreme left-hand top of the feeder support. A block may be used as a gauge to hold the teeth in this position. It should be placed between the teeth and the feeder support bracket, and should be held in this position until the timing has been completed.

7. Connect the main drive chain. Turn the flywheel clockwise as necessary to install chain with the drive side tight. Tighten the idler against the chain with thumb pressure.

8. With the needles in their home position, trip the trip dog roller with the bale measuring arm and rotate the clutch ring counterclockwise (facing the L.H. side of the baler) until the lug on the inside of the clutch ring contacts the trip dog roller.

9. Install the knotter drive chain. If necessary, back the clutch ring away from the roller to connect chain. Replace knotter drive chain shield.

10. Check the needle timing by continuing the plungerhead on its compression stroke. When the tip of the highest needle has risen flush with the top edge of the bale case bottom groove flanges, there should be from 1 to 2-1/4 inches between the face of the plungerhead and the center of the rounded portion at the tip of the needle.



11. If plungerhead and needles are not timed properly, make final adjustment by again removing main drive chain and moving plungerhead away from needles if they are less than 1 inch apart or toward needles if they are more than 2-1/4 inches apart.

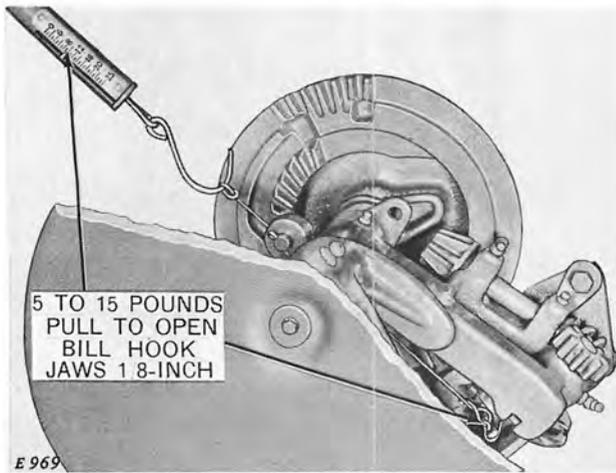
It is preferable to adjust plungerhead closer to the 2-1/4-inch rather than the 1-inch clearance. Replace main drive chain and shield.

NOTE: This will change the 17-5/8-inch feeder tooth dimension when plungerhead is centered in slot. The feeder tooth and plungerhead will still be in time if the dimension is between 16-3/4 and 18-1/4 inches.

12. After the correct needle timing has been obtained, move the plungerhead through one complete cycle to make certain that the feeder teeth and the plungerhead clear each other and that the needles enter the bale case properly when checked with feeder pivot pin in both top and bottom holes.

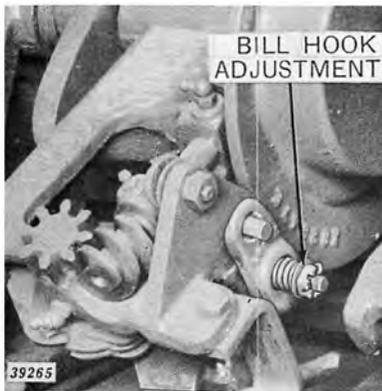
13. If proper timing cannot be obtained, it may be necessary to vary the length of the needle lift link. (See "Needle Travel," page 26.) Lengthening of the link will cause the needles to rise at a later time, and come closer to the face of the plungerhead when the tip of the highest needle is flush with the top of the bottom bale case groove flange. If needle lift link is changed, recheck timing to make sure all adjustments are within the correct tolerances.

Bill hook



The adjustment of the bill hook tongue pressure is extremely important as it is here that the knot is formed. Make all adjustments when the bill hook tongue is free of twine.

The bill hook is in proper adjustment when an outward pull of from 5 to 15 pounds on the bill hook tongue will separate the jaws 1/8-inch. The tongue should be tight when it is closed.



To increase the pressure on the bill hook tongue, tighten nut on bill hook adjusting stud. Loosen nut to reduce pressure.

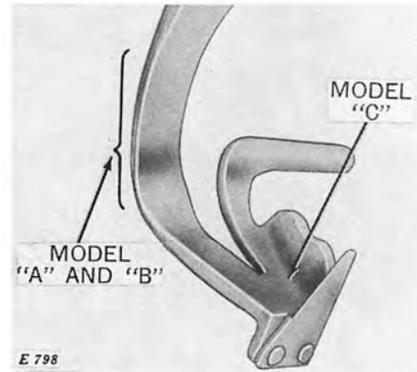
Excessive tension on the bill hook tongue may cause knots to remain on bill hook, thus breaking the twine.

Incomplete knots may be the result of insufficient pressure on the bill hook tongue.

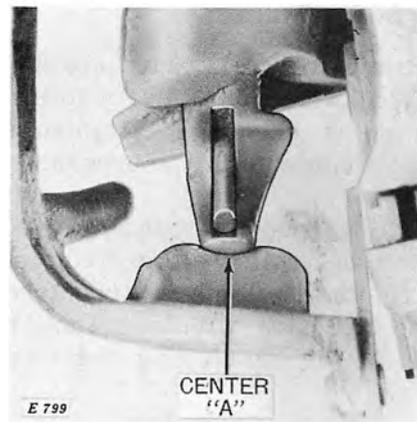
Knife arm

Proper knife (wiper) arm adjustment is essential in that the stripping of the knot from the bill hook, once it has been tied, is accomplished by a wiper on the knife arm.

Remove knife arms and sharpen knives when they become dull and make a ragged cut.

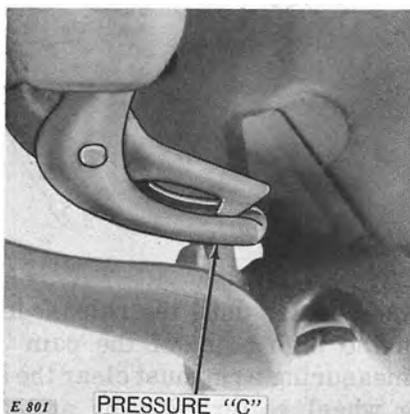


The wiper arm is adjusted to the bill hook by modeling or bending the arm in the areas shown. It is seldom necessary to remove the wiper arm to model the arm. Three modeling operations may be necessary to properly align the wiper arm with the bill hook:

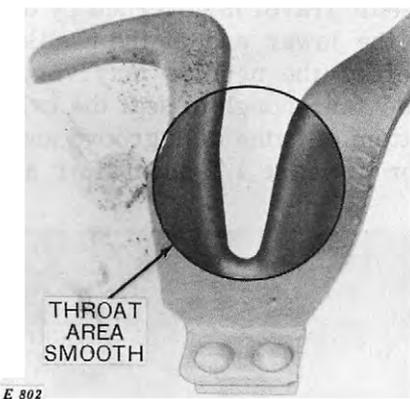


A. The wiper arm ledge must be centered with the bill hook heel.

B. The bill hook tongue must just clear the wiping ledge on the wiper arm by a maximum of not more than 3/32-inch, as the bill hook tongue passes the wiper arm. Rotate the bill hook 180 degrees and move the tongue by hand, up and down, to check clearance at the closest point between the tongue and ledge.



C. Between 5 and 10 pounds of pressure is required to pull the wiper arm ledge across the heel of the bill hook.



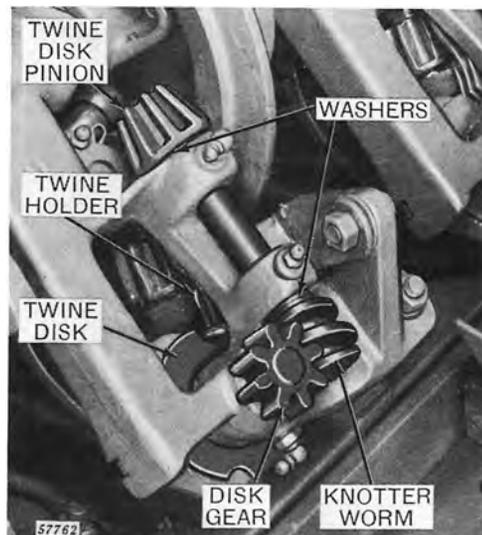
The wiper arm must have well rounded and smooth surfaces at all portions that contact the twine or knots (particularly in the throat area) to prevent twine fracture.

Twine disk

The twine disk adjustment is determined by the position of the twine disk notch in relation to the twine holder. The right-hand corner of the notch in the center plate of the twine disk

should be flush to 1/16 inch to the right of the left-hand edge of the twine holder when twine is located in twine disk.

NOTE: Make this adjustment after tying a minimum of two bales and with twine remaining in the twine disk.



If the twine disk is advanced too far (twine disk notch is located past twine holder), remove knotter disk pinion and knotter worm and relocate washers from the bottom position to the top position on the worm shaft.

If the twine disk is not advanced far enough (twine disk notch is located ahead of twine holder), remove knotter disk pinion and knotter worm and relocate washers from the top position to the bottom position on the worm shaft.

Do not allow the right-hand edge of the notch to protrude to the left of the twine holder. There must not be more than .015-inch end play in the worm shaft.

Twine holder

The twine holder holds the twine in the twine disk (while the bale is being formed and the knot is being tied) by the application of pressure on the twine holder. The pressure is regulated by a pressure spring with adjusting screw.

In most baling conditions, it should require an upward pressure of from 70 to 100 pounds—pulling parallel with twine disk, to pull the remaining twine out of the holder after a knot has been tied. If the twine pulls free at less than 70

Twine holder—continued

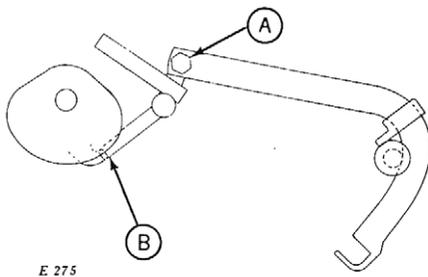
pounds pressure, loosen the lock nut and tighten the adjusting screw. If the twine pulls free with more than a 100 pound application of pressure, loosen the lock nut and loosen the adjusting screw. Retighten the lock nut.



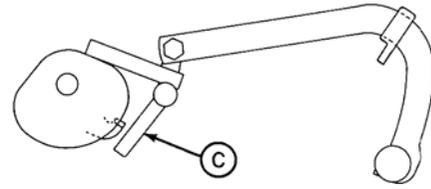
NOTE: Adjust the twine holder only as tight as necessary to prevent the twine from pulling out of the twine disk—resulting in a missed tie. The greater the twine tension the more likely twine fracture will occur.

Various hay conditions and moisture content may require greater or lesser twine holder tension—as conditions change.

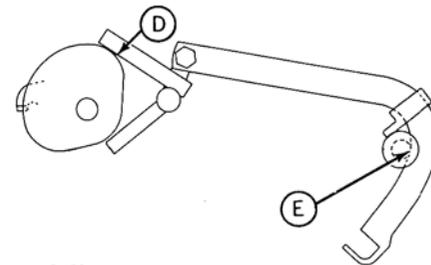
Bale length control



Locate the needles in the home position, then adjust the measuring arm eccentric "A" so the face of the trip dog "B" does not project more than 1/16 inch above or below the end of the release lever as the measuring arm is raised or lowered before tripping.



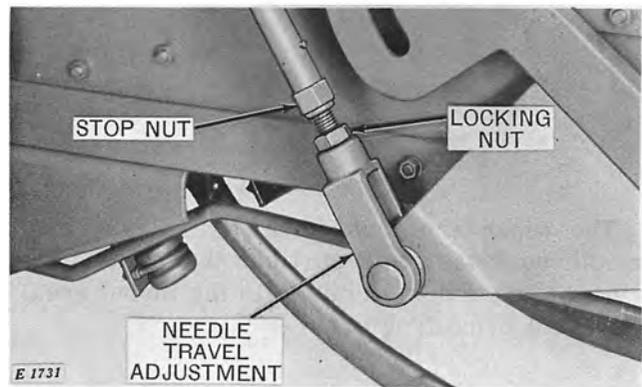
With the needles in home position, trip the measuring arm. The trip release lever "C" must not interfere with the rotation of the trip dog.



Raise the needles until the release lever cam arm is on the high point of the cam "D," the serrated measuring arm must clear the serrated measuring wheel roller "E" by at least 1/16 inch.

Needle travel

The needle travel is governed by turning the clevis on the lower end of the needle lift link. The travel of the needles may vary but they should rise far enough to seat the twine firmly in the bottom of twine disk groove and continue to rise for at least 1/2 inch after seating the

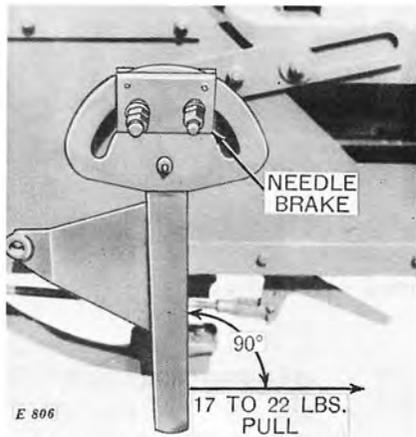


twine. After adjusting the length of the needle lift link, tighten the locking nut against the clevis, and tighten the stop nut just snug against the upper lift link.

The plungerhead and needle timing, and the plungerhead stop, must be checked after making any adjustments with the needle lift link.

CAUTION: When needles are in "home" position their tips should be below the top of the bottom bale case groove flanges—also needle clamp bolts must have adequate clearance from bale case bottom.

Needle brake



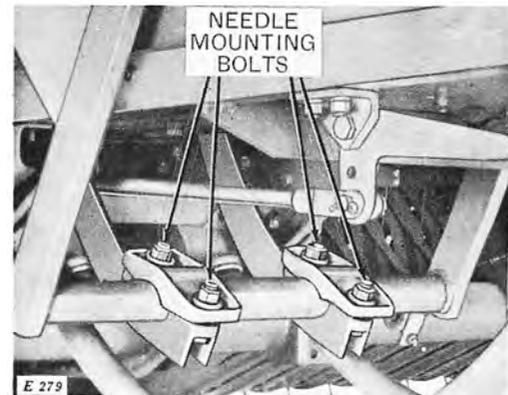
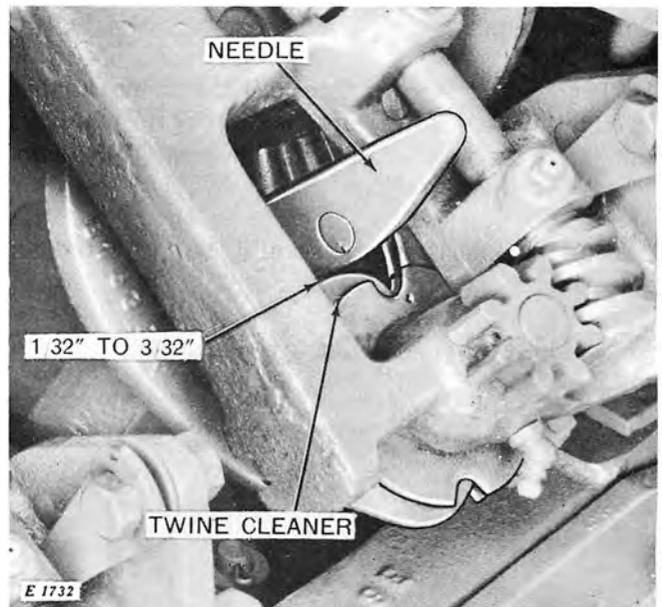
The needle brake maintains a constant drag on the needle frame, thus eliminating any trouble which might arise due to loose erratic action.

To adjust the brake, disconnect the lower end of the needle lift link and move the needle frame manually to a vertical position. Tighten the needle brake springs until a rearward horizontal force of 17 to 22 pounds at the needle frame tube centerline is needed to move needle frame from this position.

Needle adjustment

As the needles pass through the knotting mechanism, they should clear the closest point to the twine cleaner or the twine disk 1/32- to 3/32-inch.

NOTE: The twine cleaner should move freely through the twine disk and must be in its extreme left position when measuring needle clearance.



To adjust the position of the needles in relation to the twine cleaner; loosen the four needle mounting bolts slightly, release trip dog roller with trip lever, rotate needle lift arm counter-clockwise and raise needle frame to bring the needles through the bale chamber. Then move the needles sideways until their right-hand sides exert a pressure of from 5 to 15 pounds against the knotter frame. Adjust the four needle mounting bolts until the desired clearance is obtained. Tighten needle mounting bolts to 50 to 80 foot-pounds of pressure.

To increase the distance between the needles and the twine cleaners, loosen the front needle mounting bolts slightly and tighten the rear bolts. Reverse this procedure to reduce the distance.

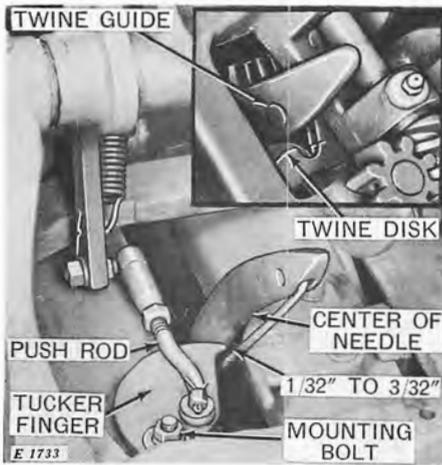
When the needles are properly adjusted, tighten all bolts and again check needles through their cycle.

Tucker fingers

The tucker fingers "catch" the twine, as it is brought to the knotter mechanism by the needles, and hold the twine in position for the bill hooks to properly engage it.

The tucker fingers should be adjusted as follows:

1. Make sure needles are in proper adjustment.



2. Trip the hand trip lever and turn the fly-wheel counterclockwise (by hand) until the center of the twine guide is in line with the twine disk. (See inset.)

3. Remove pull rods from tucker fingers and loosen the tucker fingers' mounting bolts.

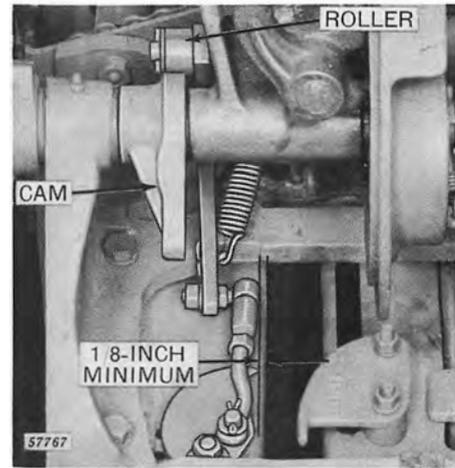
4. Move the tucker fingers forward or rearward in their mounting slots until the tucker fingers clear the needles 1/32 to 3/32 inch. Retighten tucker fingers' mounting bolts, and set the extreme points of the tucker fingers within 1/16-inch of the center of the needles, then adjust pull rods to fit tucker fingers' pins. Secure each with washer and cotter pin. Tighten the pull rod locking nuts.

The tucker finger action should be checked after adjusting to make sure the fingers "catch" the twine.

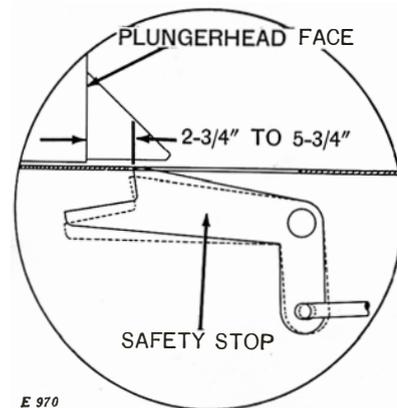
The tips of the tucker fingers, when in the resting state, should be 1/8 inch minimum away from the needle slots in the bale chamber.

CAUTION: Improper adjustment of the tucker fingers may cause excessive binding of the

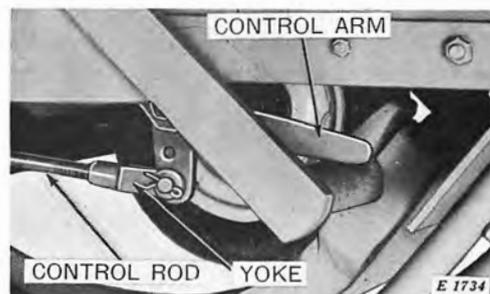
tucker finger cam follower roller against tucker finger cam. The roller must have a minimum of 1/32-inch more travel than is required to allow the cam to complete its cycle.



Plungerhead safety stop



Trip the needles (by hand) and turn the fly-wheel until the needles retract toward the home position and the plungerhead safety stop is flush with the bottom of the bale case. Then the plungerhead, on compression stroke, should be within 2-3/4 to 5-3/4 inches from the safety stop. If this clearance is not correct, disconnect the control rod from the control arm and adjust to proper clearance by turning the yoke.



Plungerhead and knife adjustment

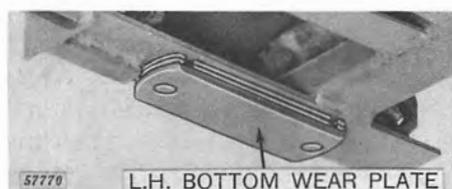


The plungerhead and knives are in proper adjustment when the plungerhead fits snug, yet moves freely and there is a clearance of 1/32- to 1/16-inch between the plungerhead knife and the stationary knife, with 1/16-inch clearance or less between the top wear plate and the top of the bale case. Failure to keep knives sharpened and to maintain correct clearance will result in excessive shearing of shear bolts in the flywheel.

To adjust plungerhead:

1. Turn flywheel by hand to move plungerhead into front end of bale case.

2. Add or remove slotted shims from under left-hand bottom wear plate on plungerhead to give proper knife clearance.



3. Remove clips from the four plug adjusting screws.

4. Adjust all four plug adjusting screws until plungerhead fits snug, yet moves freely through its complete stroke. *CAUTION: There must not be any bind between the four adjusting plugs and the plungerhead guides. Excess wear will result from plug binding which may cause the knives to lock together causing major damage to the baler.*

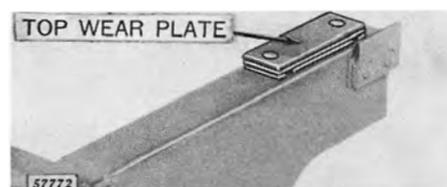
To adjust knives

1. Turn flywheel by hand until knives are in register.

2. Adjust knives to 1/32- to 1/16-inch clearance by adding or removing shims behind the stationary knife.

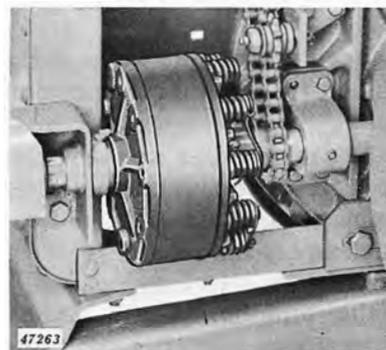
CAUTION: Do not shim knife out beyond the plungerhead guides as damage to the knives will result if they contact each other.

To adjust wear plates



After knife register is in proper adjustment, add or remove shims under wear plates on the top of the plungerhead. The top wear plate must not be more than 1/16-inch from the top of the bale case when the plungerhead is located where there is the least amount of clearance.

Safety slip clutch



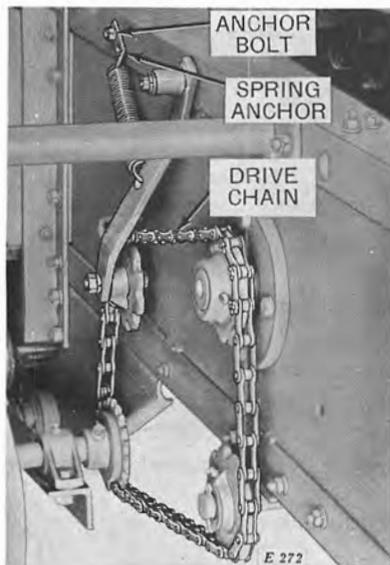
An adjustable, safety slip clutch is built into the main drive and is set at the factory to help protect the baling parts from overloads resulting from: excessively large charges, obstacles lodging between the knives, high starting torques, and similar overloads.

Safety slip clutch—continued

The slip clutch should be tested prior to each baling season for a static slip torque of from 375 foot-pounds to 500 foot-pounds. If the clutch slip torque does not fall within this range, adjust clutch by removing wires and loosening or tightening spring bolts.

The clutch may be tested by blocking movement of plungerhead and gently applying a load of from 37 to 50 pounds on the end of a 10-foot lever, attached to clutch shaft. A testing scale should be attached to the end of the 10-foot lever and pressure applied at right angle with the lever. If the clutch does not slip within this range, adjust clutch by loosening or tightening spring bolts. Adjust all bolts equally.

Chain adjustments



All drive chains should be kept tight to prevent the chains from jumping sprockets.

Adjust the pickup idler spring by remounting the anchor bolt in the extra hole in the spring anchor. Remove a chain link, if necessary, to take up slack in chain.

Adjust the tension on all other chains by loosening the idler mounting bolt and pressing the idler against the chain with thumb pressure. Tighten the idler mounting bolt.

Timing marks

The baler is completely timed when it leaves the factory. However, there are several timing

operations which should be performed when parts are removed and replaced in servicing. The location of the timing marks are as follows:

Bevel gears



An arrow on the tooth of one gear will align with the arrow between the teeth on the other gear when properly assembled.

Bevel gear and feeder crank



The arrow on the splined gear should align with the arrow on the end of the splined feeder crankshaft.

Feeder crank and drive sprocket

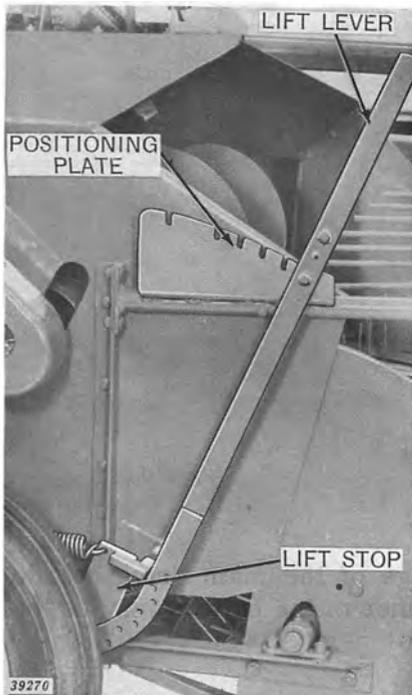


Align the arrow on the sprocket attaching strap with the arrow on the crank arm.

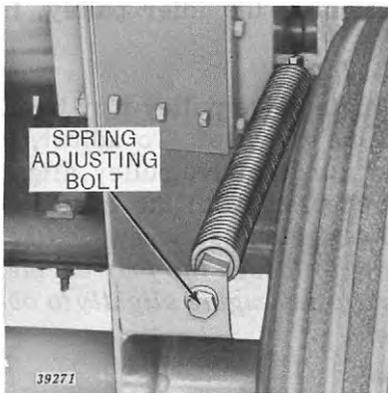
Feeder bearings

As the feeder teeth bearing halves are machined together it should be noted that the lugs on the outside of the bearings should be mated when assembling the feeder.

Pickup lift spring

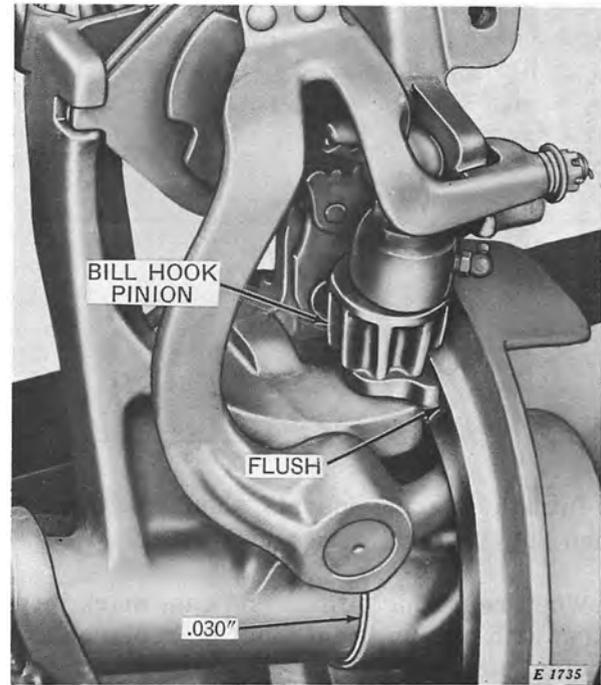


With the pickup lift lever seated in the lowest notch in the positioning plate, the pickup should be adjusted to permit the lift stop on the pickup frame to rest lightly against the lift lever.

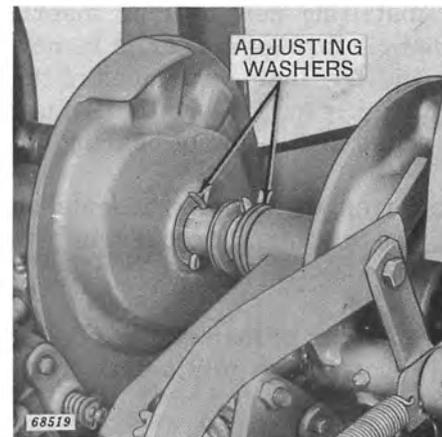


To adjust the pickup for the setting described, tighten or loosen the spring adjusting bolt at the rear of the pickup lift spring.

Knotter gears



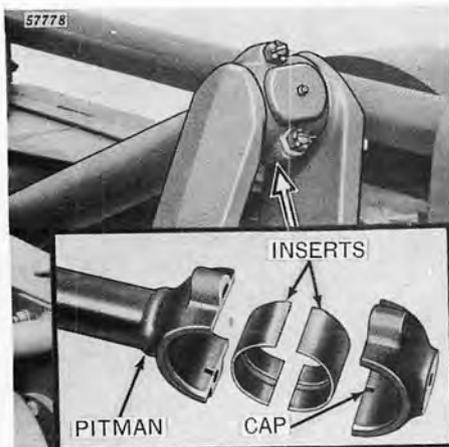
To eliminate tooth breakage and to insure proper meshing, the flat side of the bill hook pinion should ride flush with the smooth face of the intermittent knotter gear.



The intermittent knotter gears should be adjusted flush against bill hook pinion by removing cotter pins and shifting washers on the knotter shaft between the intermittent knotter gears until proper distribution of washers has been made. Then replace cotter pins.

NOTE: Add or remove washers as necessary to maintain a clearance of .030\"/>

Pitman



Pitman bearing inserts should be replaced when they become loose and worn.

When removing pitman end cap, mark its position with pitman, as it must be replaced in its original position.

NOTE: Install replacement bearing inserts in pairs. Never use a new insert with an old one. When fitting these inserts, do not file the pitman or the cap to obtain desired bearing clearance.

When installing new bearing inserts, make certain that all foreign matter is removed from bearings and the inside surfaces of the pitman and the pitman cap. Failure to do this may result in a false indication of bearing clearance.

The ears on the bearing inserts should be seated in the machined notches in pitman and pitman cap.

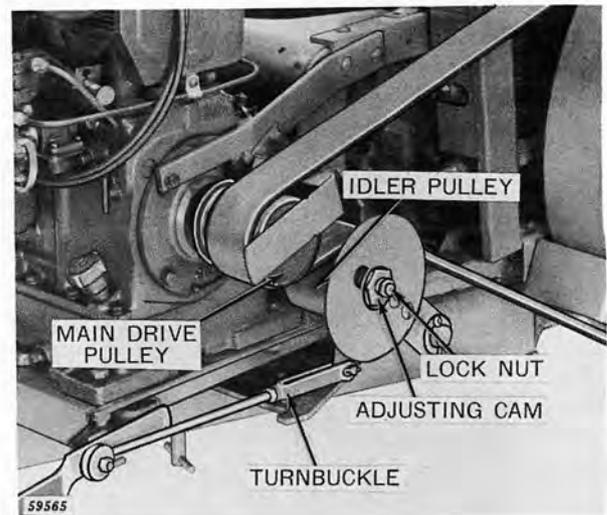
After replacing pitman cap and bolts, tighten bolts to 65 foot-pounds minimum.

Gear case

The gear case should require no servicing or adjustments if kept lubricated as per instructions. (See "Lubrication," page 14.)

If the gear case requires servicing, consult your local John Deere dealer.

Engine pulley alignment



Slippage of the main drive belt to one side or the other of the pulleys may be the result of two conditions:

1. The idler pulley is not adjusted properly. To correct this condition, the idler shaft may be adjusted by loosening the idler lock nut and rotating idler adjusting cam or rotating idler shaft and the idler cam.

After aligning the idler pulley, tighten the lock nut.

2. The main drive pulley may be out of alignment with the flywheel. To adjust, loosen the set screws in main drive pulley, align the center of the drive pulley with the center of the flywheel, and retighten set screws. *NOTE: It may be necessary to loosen the four engine mounting bolts and shift the engine slightly to obtain proper alignment.*

Belt tension

If the engine drive belt is slipping, it may be the result of inadequate tension on the belt. Adjust the turnbuckle for desired belt tension. If more adjustment is needed, raise the rod to the second hole in the clutch lever.

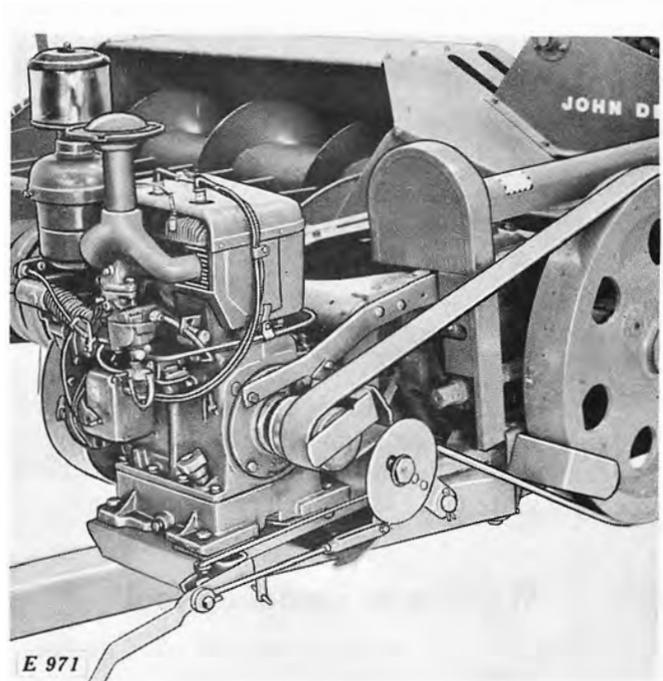
Attachments

Wisconsin engine and mounting

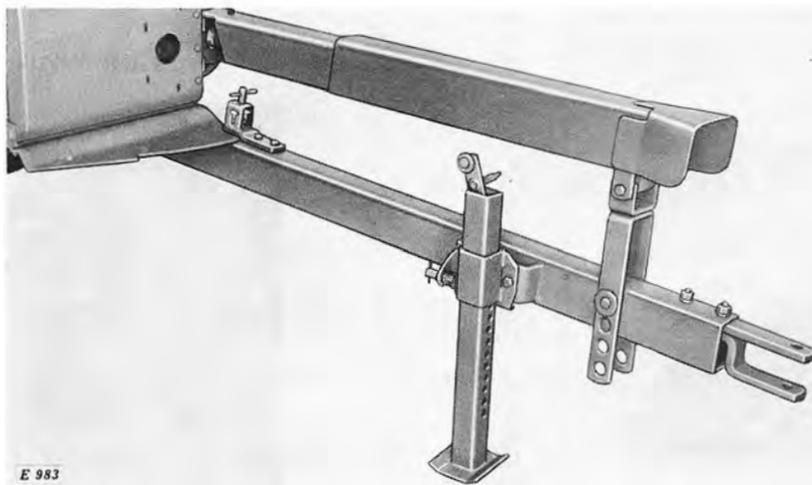
If your tractor is too small to operate the 14T as a power take-off machine, if you pull a trailer, or if you operate the baler in hilly conditions, a 17 h.p. Wisconsin "THD" Engine is available. The engine may be purchased either as a handcrank or an electric starting model.

To increase operating efficiency in altitudes above 4,000 feet, Wisconsin Engine with high altitude head should be purchased. When ordering, specify "High Altitude Head." **CAUTION:** Engines with high altitude heads are not to be used under altitudes of 4,000 feet or serious damage to the engine will result.

NOTE: Special cables will have to be ordered with electric starting engines which are to be started from John Deere 1010, 2010, 3010, and 4010 Tractors. (See Bundle list.)



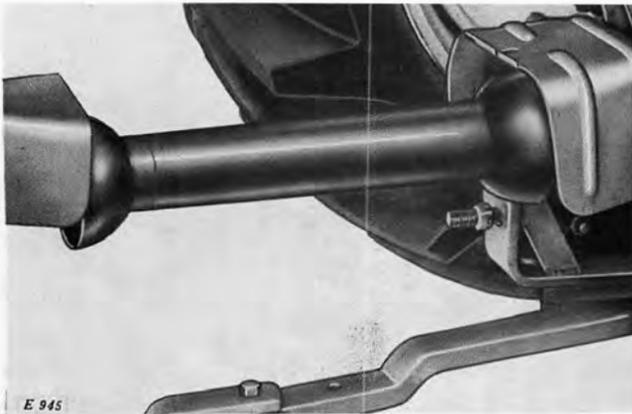
Power take-off



This attachment is available for converting an engine-mounted baler to power take-off. It may be purchased as either a 540 rpm or a 1000

rpm unit. A tractor hookup attachment (illustrated on the following page) is also necessary when using power take-off.

Tractor hookup



This bundle is available for use when the baler is used as a power take-off machine. It may be purchased as either a 540 or 1000 rpm unit. Both accommodate the 1-3/8-inch tractor spline.

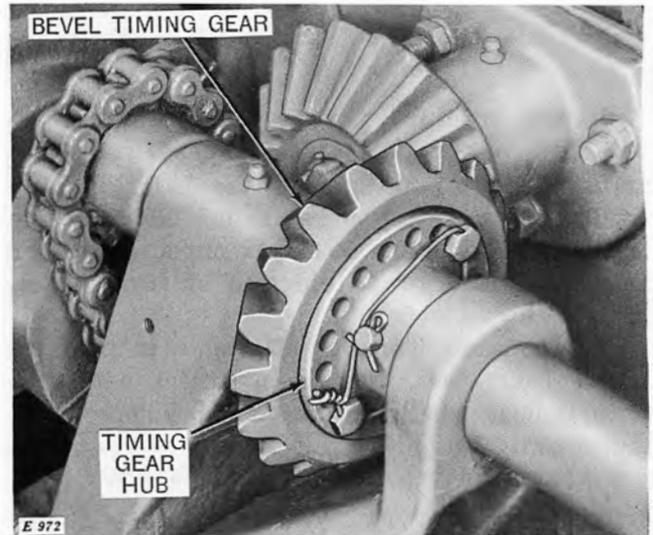
Wiper arm modeling tool



The wiper arm modeling tool will make it easier and faster to obtain proper adjustment of the twine knotter wiper arm.

The wiper arm modeling tool allows ample leverage and at the same time complete control of the modeling operation.

Bevel timing gear and hub



The installation of the bevel timing gear and hub will offer a quick, positive method of timing the needles. Precise timing can be made without removing the knotter drive chain, as the gear and hub are separate parts bolted together. By removing two bolts, positioning the needles, and turning the hub slightly—to align the hub to the gear, and replacing the bolts—your entire needle timing will be completed!

Bale counter

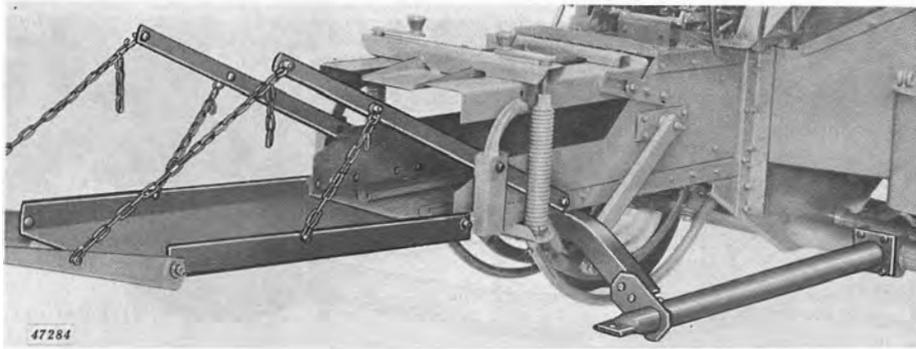


The bale counter keeps an exact record of the number of bales baled.

Mount the counter on the bevel gear shield. Attach the counter level to the trip arm, then attach the spring to the counter arm and to the lever.

The bale counter may be purchased as either a reset or a non-reset type.

Side wagon hitch and bale chute

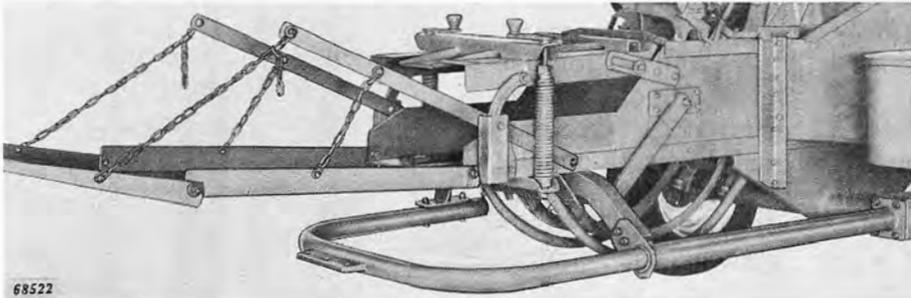


This attachment provides a means of hitching a wagon or trailer in conjunction with the baler, making it possible to load bales directly from the bale chute onto the front end of the wagon or trailer.

the regular chute and is supported by four chains. The hitch is bolted to the frame and bale case and is adjustable for wagons or trailers having tongues of variable length. A bale case support which bolts under the front of the bale case is also provided to offer rigidity to the bale case when pulling a wagon.

This chute attaches in the same manner as

Center wagon hitch and bale chute



The center wagon hitch allows the wagon to be pulled directly behind the bale chute. The center hitch is composed of a wagon hitch axle

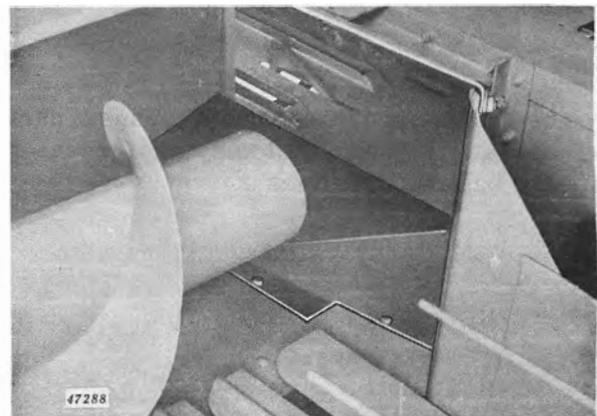
connection, a center wagon hitch extension, and a bale chute extension.

Hay ramp

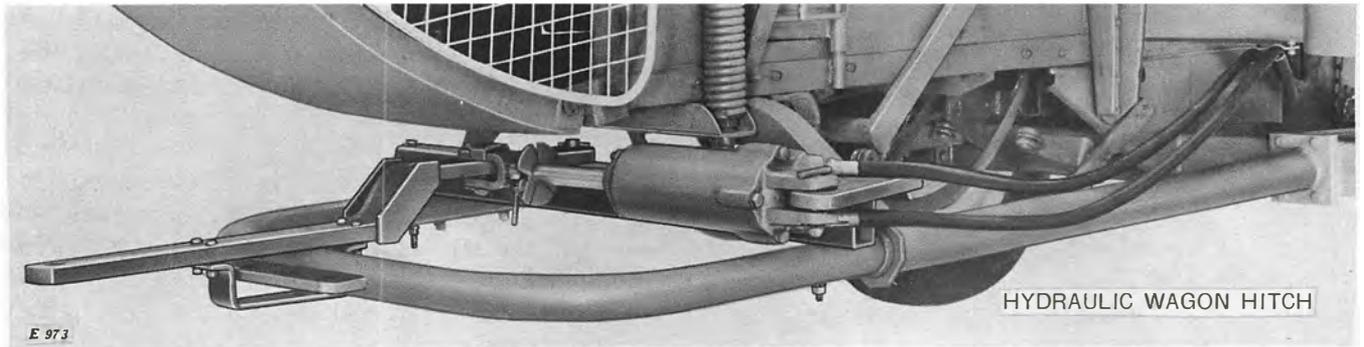
The hay ramp helps to make a more uniform bale when operating in light haying conditions by elevating the light material as it is fed to the plungerhead, thus allowing the plungerhead to perform a more even distribution.

The hay ramp is located at the feeder entrance to the bale case and is secured to the auger housing with three bolts.

The hay ramp should be removed when operating in normal or heavy baling conditions.



Hydraulic wagon hitch



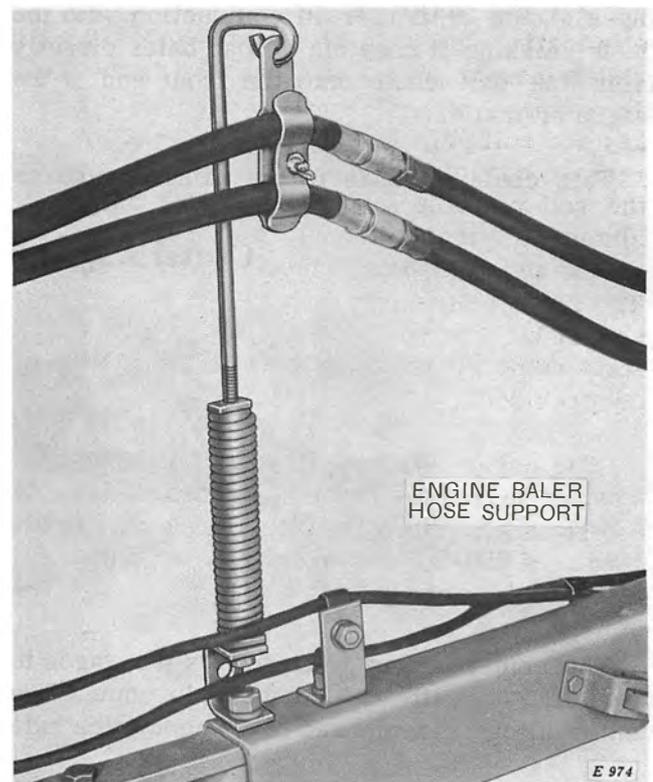
The hydraulic wagon hitch attaches to the center wagon hitch. This hitch permits the operator to position the wagon with the tractor hydraulic remote cylinder.

The hydraulic wagon hitch has a greater range of adjustment, making possible a narrower transport width.

The hydraulic wagon hitch does not include the hydraulic cylinder or the hose extensions. Two hose extensions will be required for use with the hydraulic hitch. The length of each extension should be: 140 inches for 14T PTO balers, and 150 inches for 14T engine balers. (Example: John Deere hydraulic remote cylinders are equipped with standard 88-inch hoses: $88 + 140 = 228$ inches—total length of each hose required for 14T PTO balers.)

Engine balers will require a hose support, to be mounted on the front of the tongue.

Refer to tractor operator's manual for instructions on proper oil line hookup and the use of remote cylinder operated equipment.

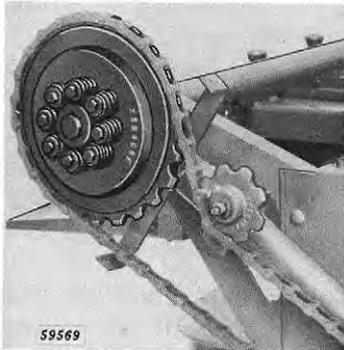


Tool box

The tool box provides a handy means of carrying operator's manual, tools, and grease gun with the baler at all times.



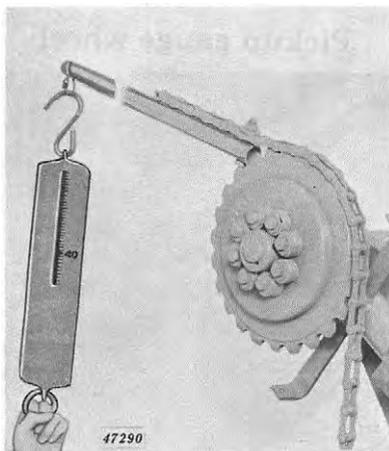
Auger slip clutch



The auger slip clutch is designed to help protect the auger in case of overloads, thus eliminating the need of a shear pin. The slip clutch mounts in the same position as the auger drive sprocket and is attached with a Woodruff key and roll pin. Before attaching the slip clutch, remove one of the two clutch springs covering the roll pin hole in the clutch. After attaching clutch and inserting roll pin, replace clutch spring and tighten until flush with other springs. The two set screws in the auger-driven sprocket should be loosened, and the shear pin and inserts removed and replaced with a single heavy pin provided.

The auger slip clutch is correctly adjusted when it leaves the factory, but should be tested before each baling season for a static slip torque of 250-300 foot-pounds of pressure. Test slip clutch as shown below.

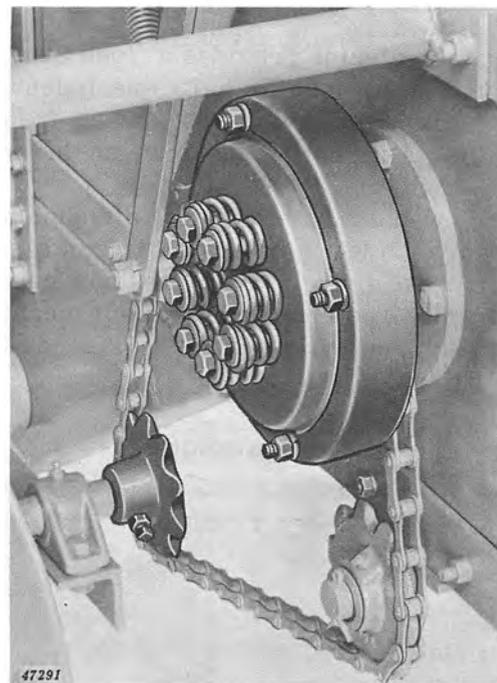
Testing slip clutches



The pickup and auger slip clutches may both be tested in the same manner. To test slip clutches, it is necessary to first construct a torque lever. The torque lever can be made from

a piece of 3/4-inch pipe 48 inches in length, and having a 3/8-inch hole drilled in each end of the pipe, 3/4 of an inch in from each end. The lever is then bolted to disassembled chain, using a washer on top of chain as shown. Block plungerhead movement, then connect scales to other hole in lever and GENTLY apply pressure, with scale at right angle to lever, until clutch slips. The auger slip clutch is correctly adjusted when it slips at from 62 to 75 pounds of pressure, and the pickup slip clutch should slip at from 37 to 46 pounds of pressure. Loosen or tighten spring bolts accordingly. Always loosen or tighten spring bolts equally.

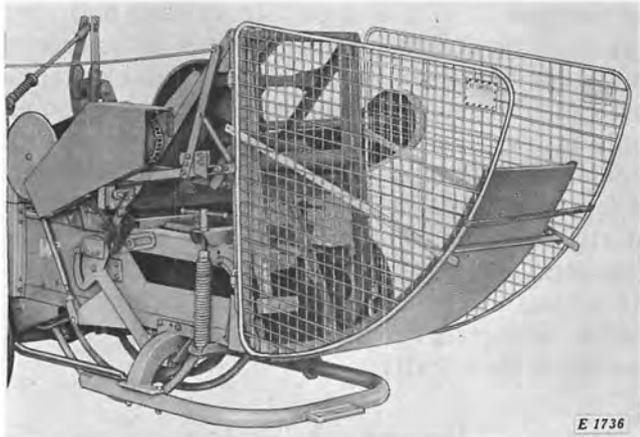
Pickup slip clutch



The slip clutch for the pickup drive is designed to help protect the pickup from damage due to overloads, thus eliminating the necessity of the shear bolt and saves valuable time lost in the field when replacing shear bolts. A one-piece driven sprocket is also provided to take the place of the present two-piece driven sprocket with shear bolt. The pickup slip clutch attaches to the crank spindle with a Woodruff key and groove pin.

The pickup slip clutch is correctly adjusted when it leaves the factory. The clutch should be tested prior to each baling season for a static slip torque of 150-180 foot-pounds of pressure. See "Testing Slip Clutches" for the proper procedure to test the pickup slip clutch.

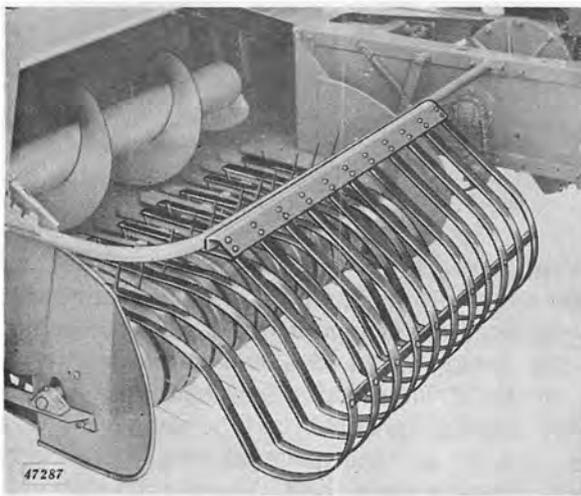
Bale ejector



The bale ejector provides a "one man way" of automatically loading half-size bales into a wagon with high sideboards direct from the baler—thus eliminating the man on the wagon.

The low-cost bale ejector attachment for John Deere twine-tie balers is extremely simple and attaches directly onto the bale case and baler frame. The ejector is entirely mechanical in operation and works with both PTO and engine-driven balers.

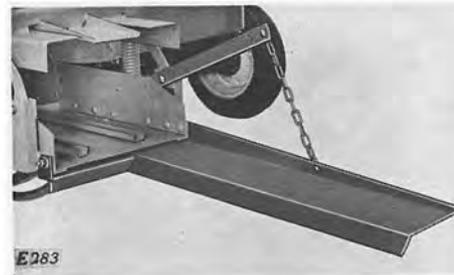
Compressors



The compressors help to pick up light, short, or stemmy material and also offers a more positive feed into the auger.

When assembling compressors, completely assemble as shown before tightening any of the bolts, then align compressors in center of pickup strippers and tighten all bolts.

Side-drop bale chute



The side-drop bale chute drops bales to the left of the baler, thus allowing adequate clearance of the tractor's left wheel on succeeding rounds of the field—when operating in closely spaced windrows.

Dual wheel (less tire)



The dual wheel is intended for use on the left side of the baler for added flotation when operating in soft or sandy soil. The dual wheel may be mounted on the right-hand side of your baler with addition of dual wheel adapting parts. The dual tire should never be of larger size than inside tire and preferably smaller.

Pickup gauge wheel



The pickup gauge wheel will allow the pickup to follow ground contour more evenly when operating in irrigated fields or in rough or irregular conditions.

Assembly

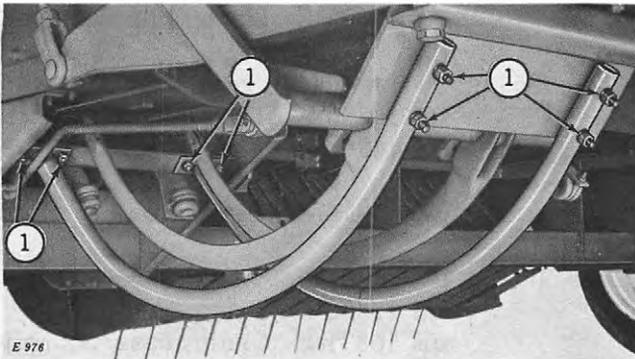
Shipping bundles

Bundle No.	Description	Bundle No.	Description
Code 1000	14T Automatic Pickup Baler— basic unit consisting of: AM 2811 E Bale chute BE 10381 E Needle guards BE 10382 E Baler	Code 1010	Adapting parts for Bale Ejector BE 10400 E Gear case BE 10401 E Adapting parts
Code 1050	14T Automatic Pickup Baler with dual wheels (less tires)—basic unit consisting of: AM 2811 E Bale chute BE 10296 E Baler with dual wheel hubs and spindles BE 10381 E Needle guards JD 679 E Dual wheel (2 used)	Code 1021	Center wagon hitch and brace BE 10123 E Center wagon hitch BE 10393 E Wagon hitch brace
	Attachments	Code 1057	PTO unit (540 rpm) BE 10368 E Tongue and jack BE 10369 E Powershaft and shield BE 10370 E Slip clutch
Code 1002	Engine unit (electric start) AM 3527 E Engine or AM 3528 E Engine with high-al- titude head BE 10383 E Tongue and jack BE 10385 E Engine mounting BE 10386 E Cables and brackets	Code 1058	PTO unit (1000 rpm) BE 10368 E Tongue and jack BE 10371 E Chain case and slip clutch BE 10372 E Powershaft and shields
Code 1003	Engine unit (hand-crank) AM 3525 E Engine or AM 3526 E Engine with high-al- titude head BE 10383 E Tongue and jack BE 10385 E Engine mounting	2984 E	Side drop bale chute
Code 1006	Center wagon hitch and bale chute BE 10123 E Center wagon hitch BE 10391 E Wagon hitch axle connection BE 10392 E Bale chute extension BE 10393 E Wagon hitch brace	2985 E	Hay ramp
Code 1007	Side wagon hitch and bale chute BE 10391 E Wagon hitch axle connection BE 10392 E Bale chute extension BE 10394 E Hitch extension	2986 E	Pickup slip clutch
Code 1008	Bale Ejector—complete BE 10395 E Bale Ejector BE 10396 E Throwing arm shields	2987 E	Auger slip clutch
		2988 E	Compressors
		6001 E	Tool box
		AE 12578 E	Bevel timing gear and hub
		AE 13260 E	Wiper arm modeling tool
		AM 2980 E	Bale counter, reset type
		AM 3190 E	Bale counter, non-reset type
		AM 3371 E	12-tooth drive sprocket for Bale Ejector
		BE 10103 E	Pickup gauge wheel
		BE 10169 E	Hose support for hydraulic wagon hitch
		BE 10227 E	Dual wheel
		BE 10231 E	Adapting parts for dual wheel for R.H. side
		BE 10249 E	Tractor hookup (1000 rpm)
		BE 10253 E	L.H. axle extension for Bale Ejector
		BE 10256 E	Tractor hookup (540 rpm)
		BE 10316 E	Hydraulic wagon hitch
		BE 10357 E	Electric starting cables for John Deere 1010, 2010, 3010, and 4010 Tractors

The 14T automatic pickup baler is assembled as illustrated in the following pages. The illustrations show clearly the parts to be assembled and attached in their proper order.

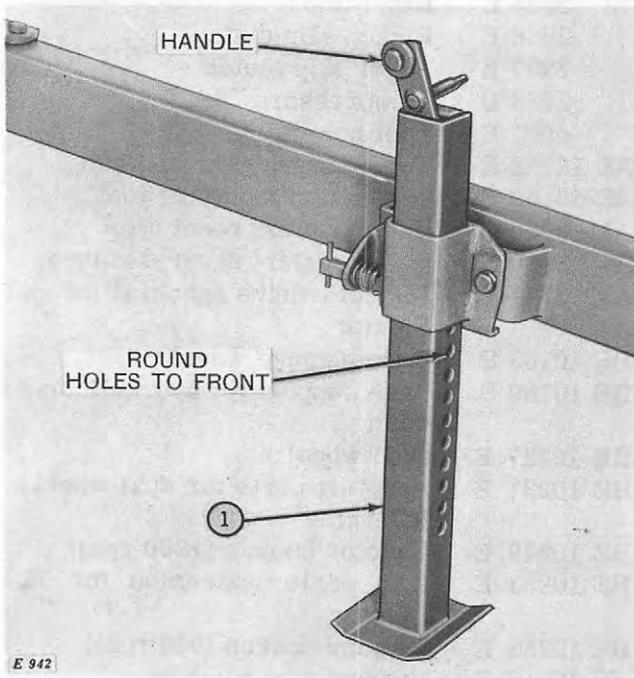
After unpacking and placing all parts where they will be handy, follow all the instructions carefully. Practically all trouble with new machines is due to improper assembly and lack of lubrication.

Needle guards



1. Bolt needle guards under needles with eight bolts, as shown.

Jack stand

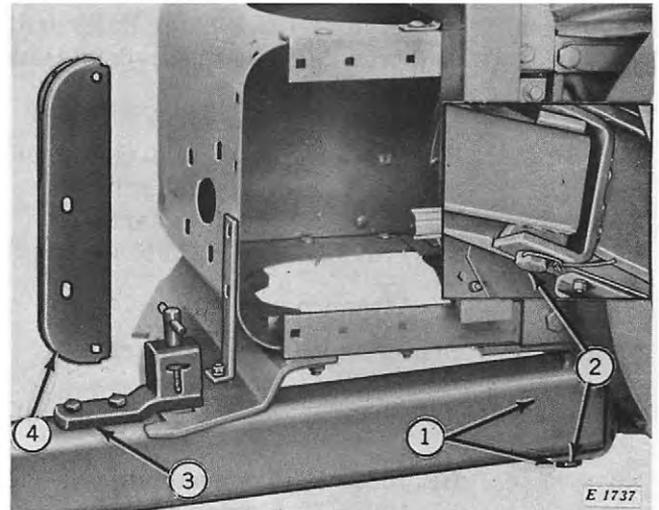


1. Insert the jack stand in the jack holder on the tongue. (See page 7 for operating the jack stand.) Place the jack handle in the top of the jack stand when not in use.

NOTE: The round holes in the jack stand must be to the front.

Power take-off unit

Tongue



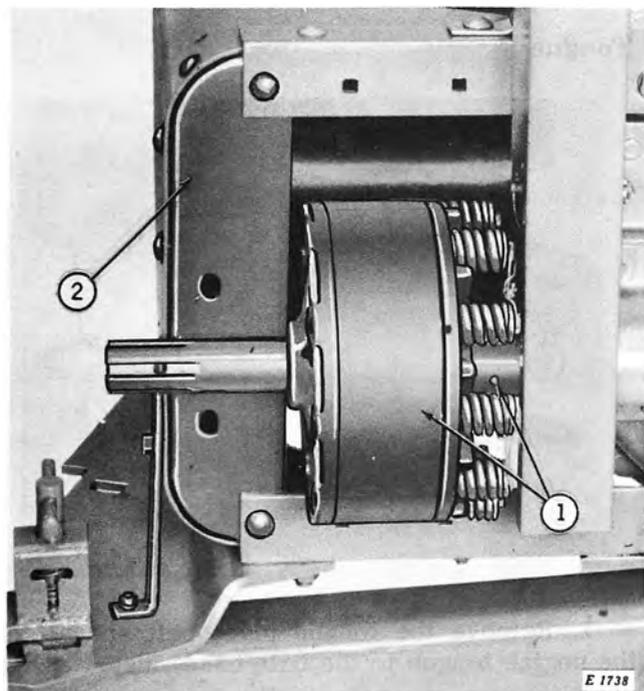
1. Remove the tongue pivot bolt, then attach the power take-off tongue to the bale case.

2. Insert baling wire through the hole in the tongue pivot bolt and secure the wire through the frame.

3. Attach the tongue latch to the tongue. Make sure the pin aligns with the holes in the tongue plate.

4. Remove the left-hand bale case side cap.

Slip clutch (540 rpm)



1. Assemble the overrunning and slip clutch to the drive shaft with a groove pin.

2. Replace the left-hand bale case side cap.

2. Place the slip clutch and chain case assembly on the main drive shaft and slide the entire assembly back as far as possible.

3. Attach the left-hand bale case side cap to the bale case end cap.

NOTE: Leave out three front bolts to provide room for the chain case.

4. Attach the chain case to the bale case end cap with four bolts. Use washers on each bolt, if necessary, to take up the gap between the chain case and the end cap and to eliminate bind in the shafts.

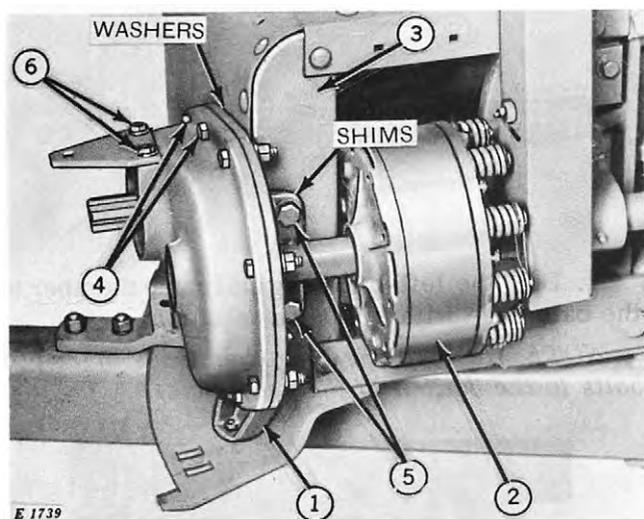
NOTE: Shafts must turn freely after bolts are tightened.

5. Attach the chain case to the side cap with two bolts. Use shims to take up the gap and to eliminate bind in the shafts.

NOTE: Shafts must turn freely after the bolts are tightened.

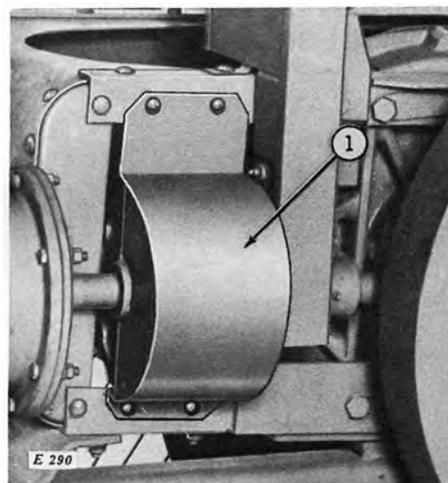
6. Assemble the powershaft shield bracket as shown.

Slip clutch and chain case (1000 rpm)



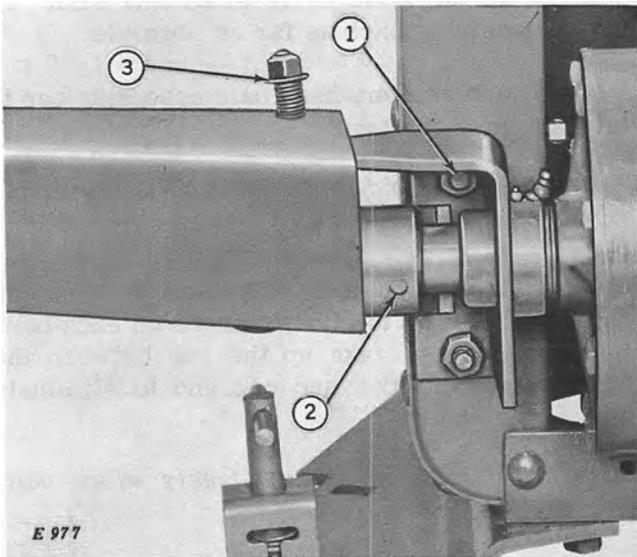
1. Remove the positioning plate stiffener bracket and bolt the 1000 rpm cast bracket to the positioning plate and to the bale case end cap with three bolts.

Slip clutch shield



1. Attach the slip clutch shield with four bolts.

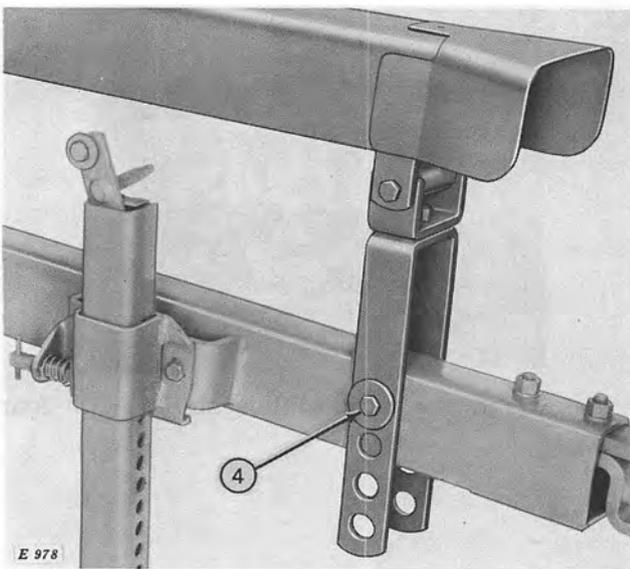
Powershaft



1. On 540 rpm balers, place washers and the floating bearing on the clutch shaft, and attach the bearing support to the bale case. Use enough washers on the shaft to take out any play in the floating bearing without binding. Use shims under the bracket to align the bearing so the shaft turns freely.

2. Attach the rear universal joint to clutch shaft or to the chain case drive shaft with a groove pin.

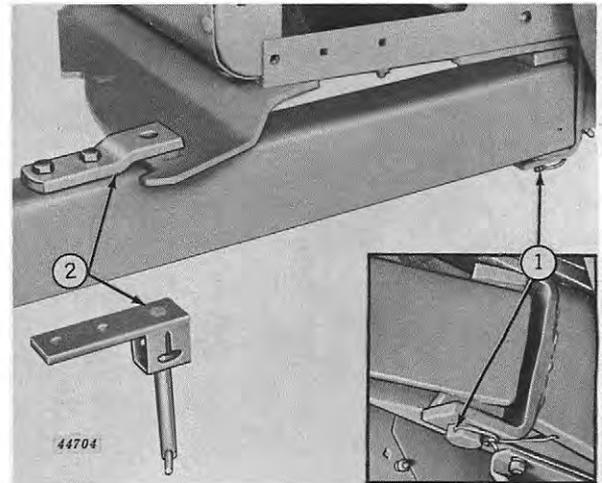
3. Attach the rear shield to the rear support bracket with a bolt, spring, washer, and a stop nut.



4. Assemble the front end of the powershaft and shield assembly to the tongue at the desired height with a bolt, spacer, washers, and a nut on each side.

Engine unit

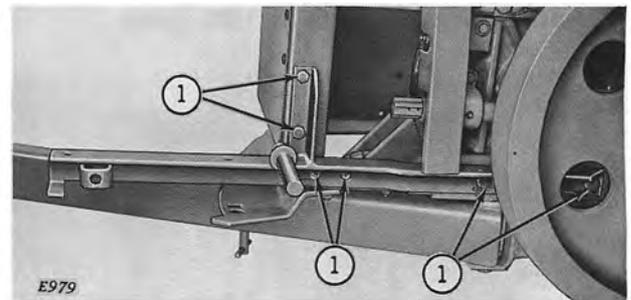
Tongue



1. Remove the tongue pivot bolt and attach the engine tongue to the bale case. Insert baling wire through the hole in the tongue pivot bolt and secure the wire through the frame.

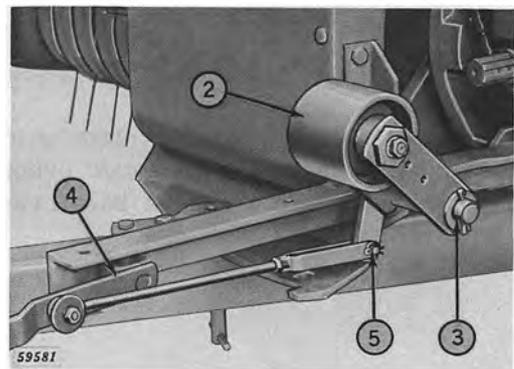
2. Attach the tongue latch to the tongue. Make sure the pin aligns with the holes in the tongue plate.

Frame



1. Bolt the left-hand engine frame member to the bale case with six bolts as shown.

NOTE: Replace wire through heads of the two bolts in the bottom of the gear case.

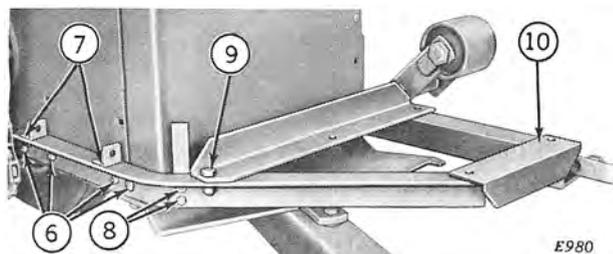


2. Attach the belt idler to the idler support with the grease fitting to the outside.

3. Attach the idler and support assembly to the shaft on the left-hand frame member and secure it with a washer and cotter pin.

4. Attach the clutch lever to the left-hand frame member with washers and a cotter pin.

5. Attach the clutch lever turnbuckle to the idler support arm with a drilled pin and cotter pins.



6. Bolt the right-hand frame member to the bale case with four bolts.

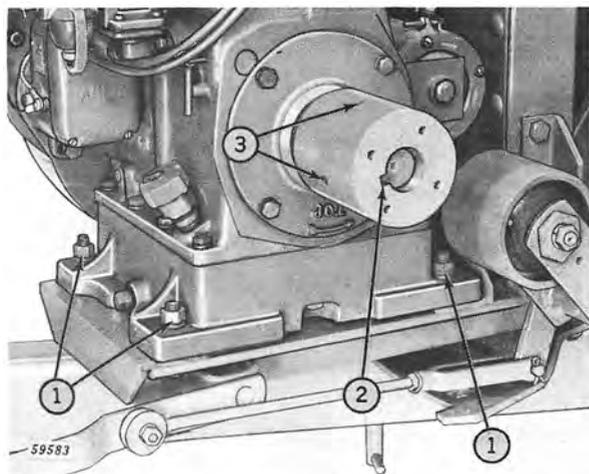
7. Bolt the two large angle clips to the right-hand frame member in the position shown.

8. Bolt the crank-holder strap to the right-hand frame member with two bolts.

9. Locate the frame rear cross-member as shown and bolt the right-hand end to the right-hand frame member. Do not bolt the left-hand end of this cross-member at this time.

10. Locate the frame front cross-member in the position shown.

Engine

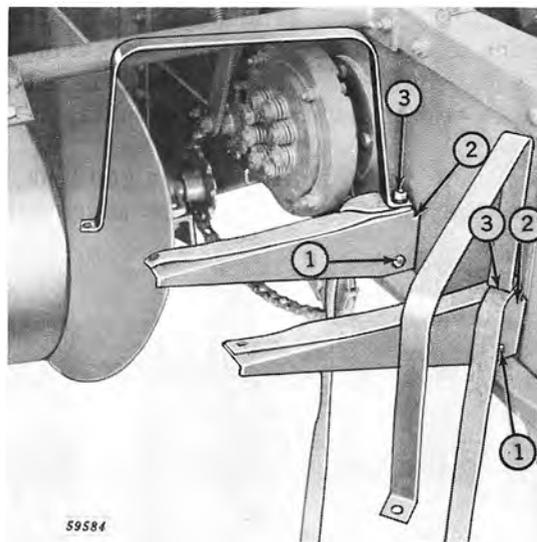


1. Place the engine on the engine frame and secure with four bolts.

2. Locate the square key in the keyway of engine drive shaft.

3. Place the drive pulley on the drive shaft and align the centers of the pulley and the flywheel, then insert the two set screws in the pulley and tighten.

Gas tank

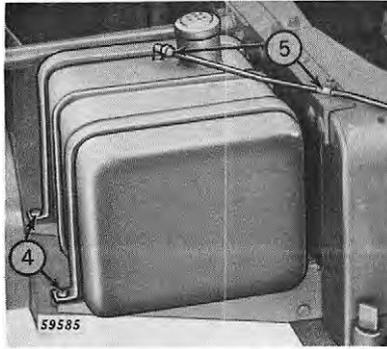


1. Attach the gas tank supports to the angle clips.

2. Locate the two small support clips inside the upper corner of the gas tank supports and attach with carriage bolts through the bale case side.

3. Insert a hex. bolt up through the support clip and gas tank support. Then locate a short felt pad, a long felt pad, and a gas tank strap on the bolt and secure them with a lock washer and a hex. nut. Repeat this procedure with the remaining felt pads and strap on the other support.

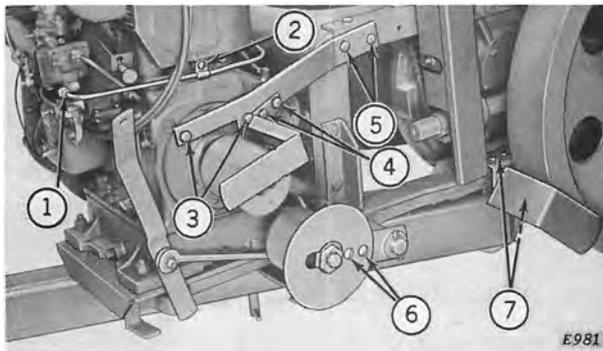
Gas tank—continued



4. Place the gas tank on the supports and align the felt pads and gas tank strap around the tank and secure the straps with a hex. bolt in the outer end of each gas tank support.

5. Attach the fuel line to the gas tank, then secure the fuel line to the bale case with the clamp.

Fuel line, support, and shields



1. Attach the fuel line to the fuel pump.

2. Secure the fuel line to the engine with a clamp as shown.

3. Remove the two top cap screws from the engine end cap, then bolt the engine support strap to the end cap.

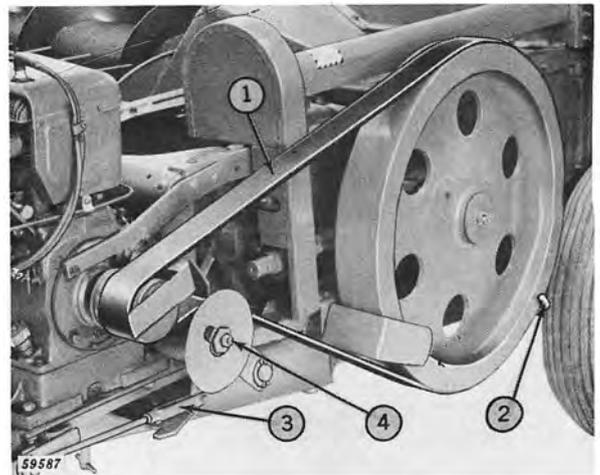
4. Bolt the drive pulley shield to the engine support strap with two hex. bolts.

5. Bolt the engine support strap to the bale case with two carriage bolts.

6. Attach the idler pulley shield to the idler support with two machine screws.

7. Bolt the flywheel shield to the bracket, then bolt the bracket and shield assembly to the engine left-hand frame member with two hex. bolts.

Drive belt



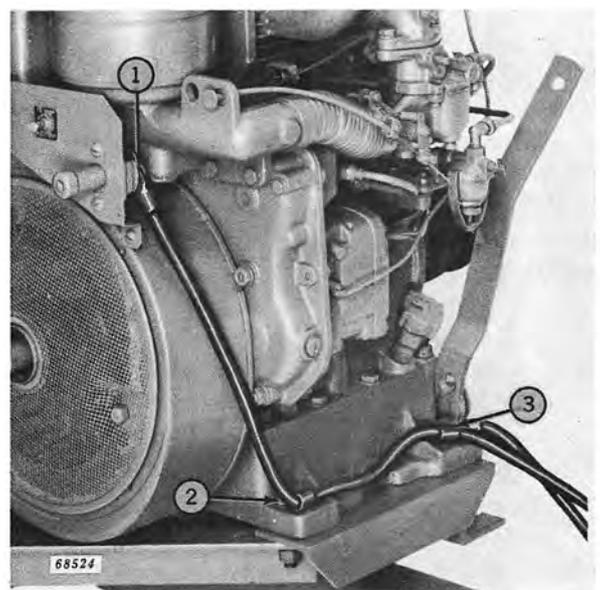
1. Place the drive belt around the drive pulley and flywheel.

2. Locate the belt guide around the flywheel and belt, then bolt it to the bale case with two hex. bolts.

3. Tighten the belt with the turnbuckle. (See "Belt Tension," page 32.)

4. Align the belt by turning the idler shaft and adjusting cam, or shifting the engine as necessary. (See "Pulley Alignment," page 32.)

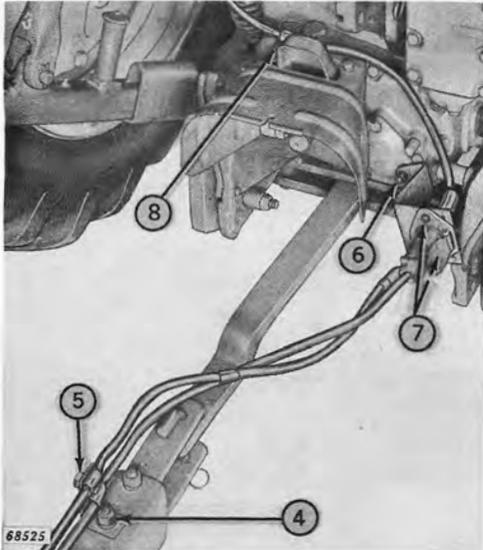
Electric starting equipment



1. Attach the connector cable to the starter button.

2. Secure the cable with a clamp to the front right-hand corner of the engine.

3. Secure the connector cable, clamp, and ground cable to the front left-hand corner of the engine.



4. Bolt the cable holding bracket to the top of the tongue.

5. Secure the two cables to the bracket, using two cable clamps and a hex. bolt as shown.

CAUTION: To prevent damage to the electric starting cable when the baler is in transport position, the cable must be disconnected from the tractor receptacle and secured to the bracket on the tongue.

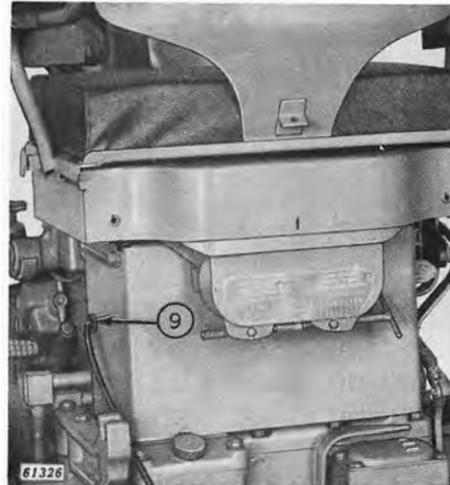
(On John Deere 530, 630, 730, 520, 620, 720, 50, 60, and 70 Tractors assemble the receptacle and bracket according to steps 6, 7, 8, 9, and 10.)

6. Remove the bolt and replace it with a stud, nut, and lock washer. Attach the bracket to the stud with a flat washer, lock washer, and a nut.

7. Bolt the receptacle to the bracket with two hex. bolts and washers.

8. Attach the cable with a clamp to the top of the PTO shield as shown.

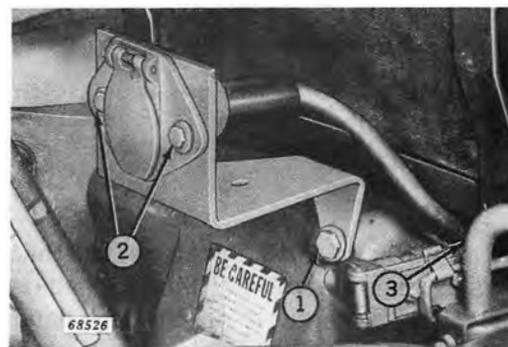
9. Drill a 7/8-inch hole in the left-hand side of the battery box. Place a rubber grommet over the end of the cable and thread the cable through the hole. Set the grommet.



10. Connect the cable to the battery terminal as shown.

NOTE: On tractors having 12-volt systems, connect the cable to the terminal of the battery opposite the ground strap.

(On John Deere 430, 420, and 40 Tractors, connect the receptacle, bracket, and clips as follows:)

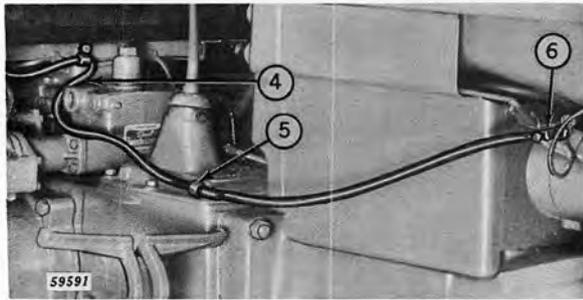


1. Bolt the receptacle bracket to the rear of the tractor.

2. Bolt the receptacle to the bracket with two bolts.

3. Thread the cable under the tractor seat.

Electric starting equipment—continued

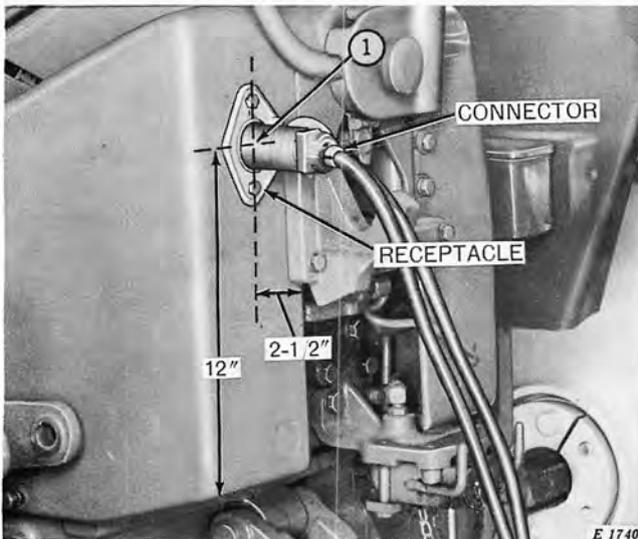


4. Secure the cable to the seat frame with a clamp as shown.

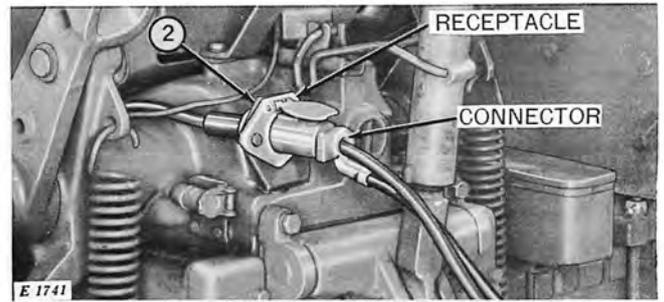
5. Use a clamp and secure the cable to the top of the gear case.

6. Attach the cable to the starter.

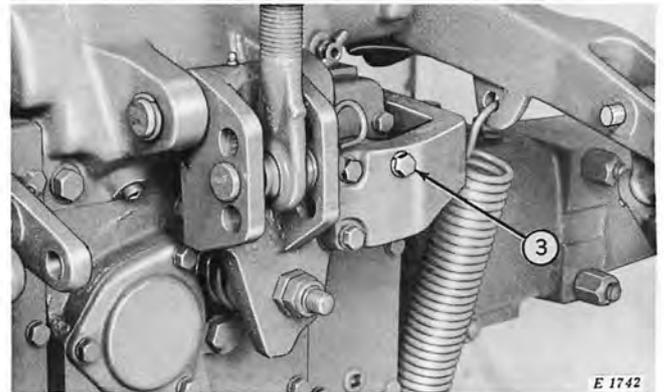
(On John Deere 1010, 2010, 3010, and 4010 Tractors, connect the receptacle and cable as follows:)



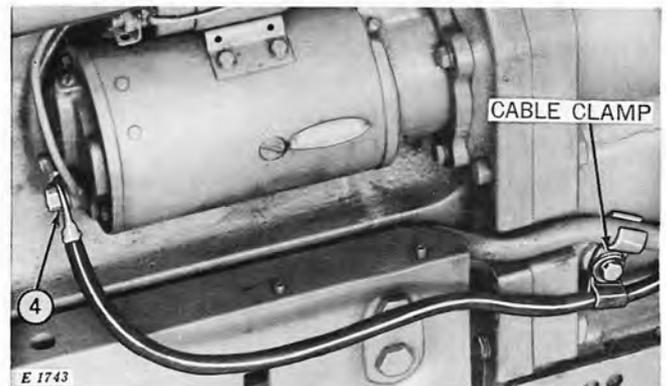
1. On 3010 and 4010 Tractors, use the receptacle as a template and drill the necessary holes to mount the receptacle in the left-hand rockshaft housing cover as shown. Attach the receptacle to the housing cover.



2. On 2010 Tractors, attach the receptacle bracket to the left-hand side of the rockshaft housing as shown. Attach the receptacle to the bracket.



3. On 1010 Row-Crop Tractors, attach a mounting bracket to the upper, right-hand mounting hole in the load and depth control arm. On 1010 Utility Tractors attach mounting bracket to the lower, right-hand mounting hole in the load and depth control spring housing. On all 1010 Tractors attach the receptacle bracket to the mounting bracket; then attach the receptacle.



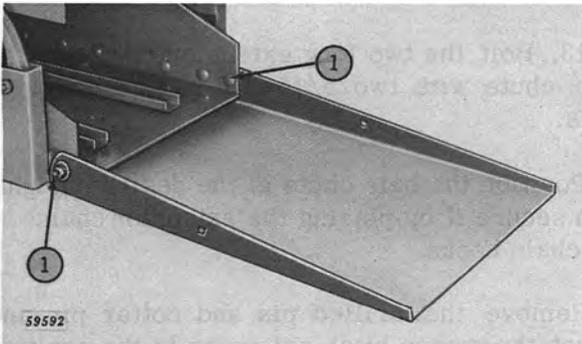
4. On all tractors, run the cable along the left-hand side of the tractor—using cable clamps where necessary, and attach the cable to the battery cable terminal on the starter.

CAUTION: Do not allow the cable to interfere with any moving parts on the tractor. All excess cable must be secured in a safe area on the tractor.

NOTE: On 3010 and 4010 Tractors, the cable must run between the battery case and the transmission housing. On 2010 Tractors, run the cable under the foot platform and inside the cowl.

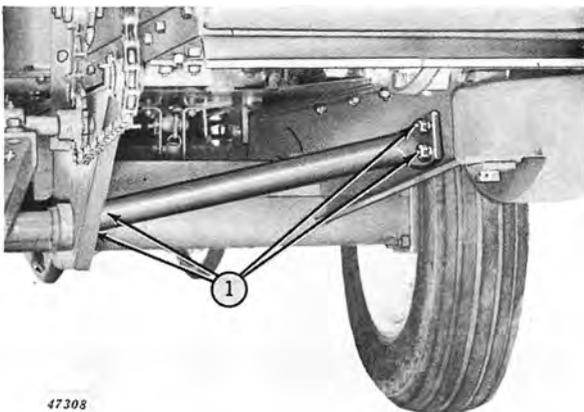
CAUTION: Damage to baler engine 6-volt starter, may result if engine starter is used continuously and engine does not start in a normal length of time.

Bale chute

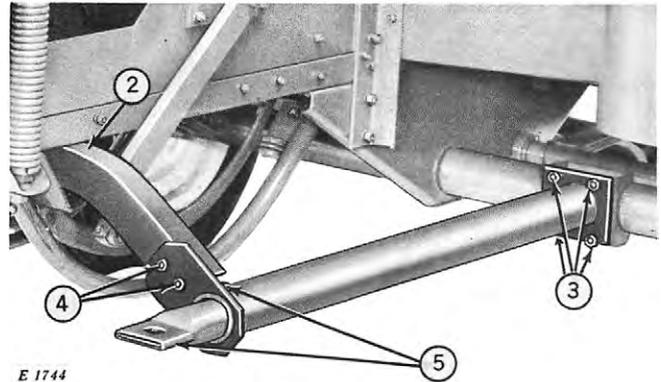


1. Bolt each side of the bale chute to the bale case bottom with a 7/16 x 1-1/2-inch plow bolt, spacer, flat washer, lock washer, and a nut.

Wagon hitch and bale chute



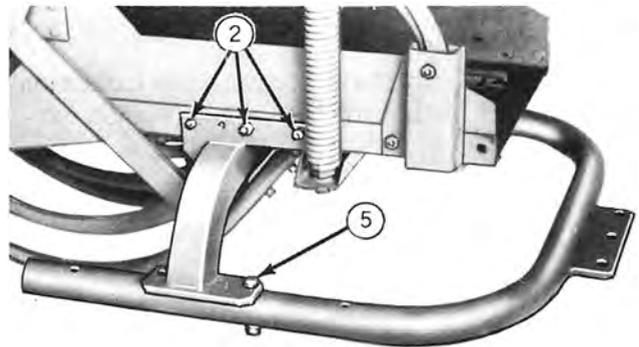
1. Bolt the reinforcing brace to the main frame on the front underside of the baler with four 1/2 x 1-1/4-inch hex. bolts.



2. Bolt the hitch support to the bale case bottom with three 7/16 x 1-1/4-inch plow bolts. (Center wagon hitch—bolt the hitch support to the left-hand side of the bale case with two 5/16 x 1-inch and one 3/8 x 1-1/4-inch plow bolts.)

3. Bolt the hitch to the axle with four 1/2 x 1-1/4-inch hex. bolts.

4. Bolt the hitch to the hitch support with two 1/2 x 1-1/4-inch hex bolts.



E 1745

CENTER HITCH

5. Insert the wagon hitch extension into the hitch and secure with drilled pin and cotter pin. (Center wagon hitch—attach the right-hand end the same as the regular hitch. Bolt the left-hand end to the rear hole in the hitch support with a 1/2 x 3-1/2-inch hex. bolt.)



NOTE: Attach the center wagon hitch brace to the bale case support and axle, and to the hitch support and center hitch, as shown.

6. Bolt an extension chute support to the right-hand side of the bale case bottom with one 7/16 x 1-1/2-inch plow bolt.

7. Remove the old bolt through the hinge bracket, arm, and spacer, then replace with a new 7/16 x 2-1/2-inch carriage bolt.

8. Bolt the two chain hooks to the extension chute support with two 7/16 x 1-1/4-inch carriage bolts.

9. Repeat step Nos. 6 through 8 to attach the remaining extension chute support to the left-hand side of the bale case.

10. Remove the bale chute from the bale case and attach the chute extension to the bale case bottom with the same two 7/16 x 1-1/2-inch plow bolts, two spacers, and two flat washers.

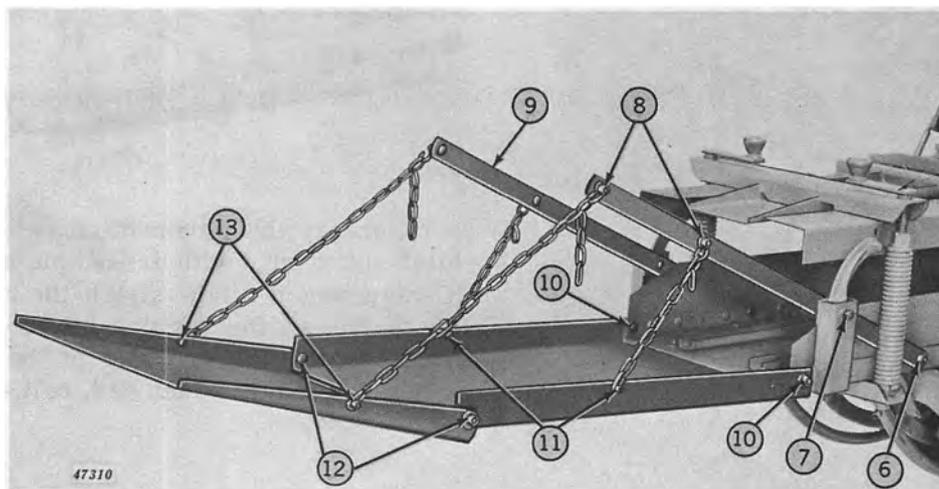
11. Bolt the two short extension chains to the extension chute with two 5/16 x 3/4-inch carriage bolts.

12. Bolt the original bale chute to the extension bale chute with two 7/16 x 1-1/4-inch carriage bolts, square washers (between the chute and the extension), spacers, and flat washers.

13. Bolt the two long extension chains to the bale chute with two 5/16 x 3/4-inch carriage bolts.

Position the bale chute at the desired height, then secure it by placing the extension chains on the chain hooks.

Remove the drilled pin and cotter pin and adjust the wagon hitch extension to the position desired. Replace drilled pin and cotter pin.



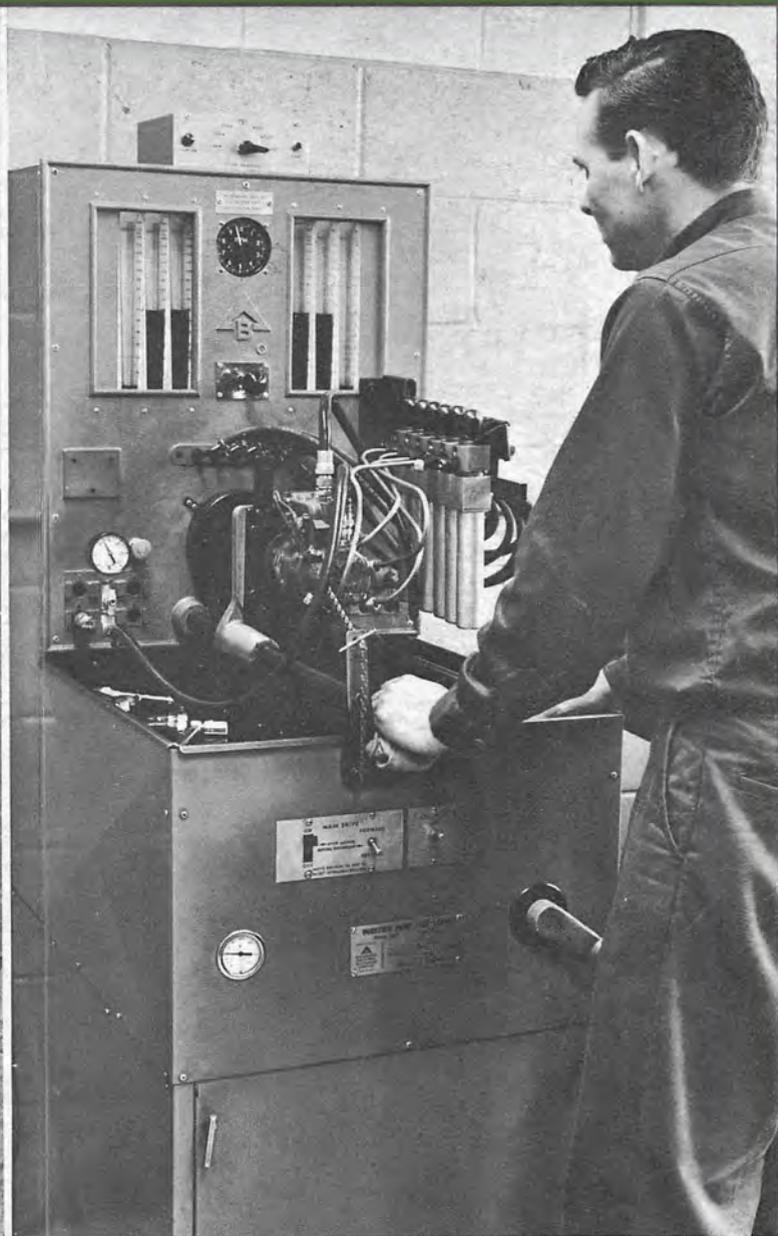
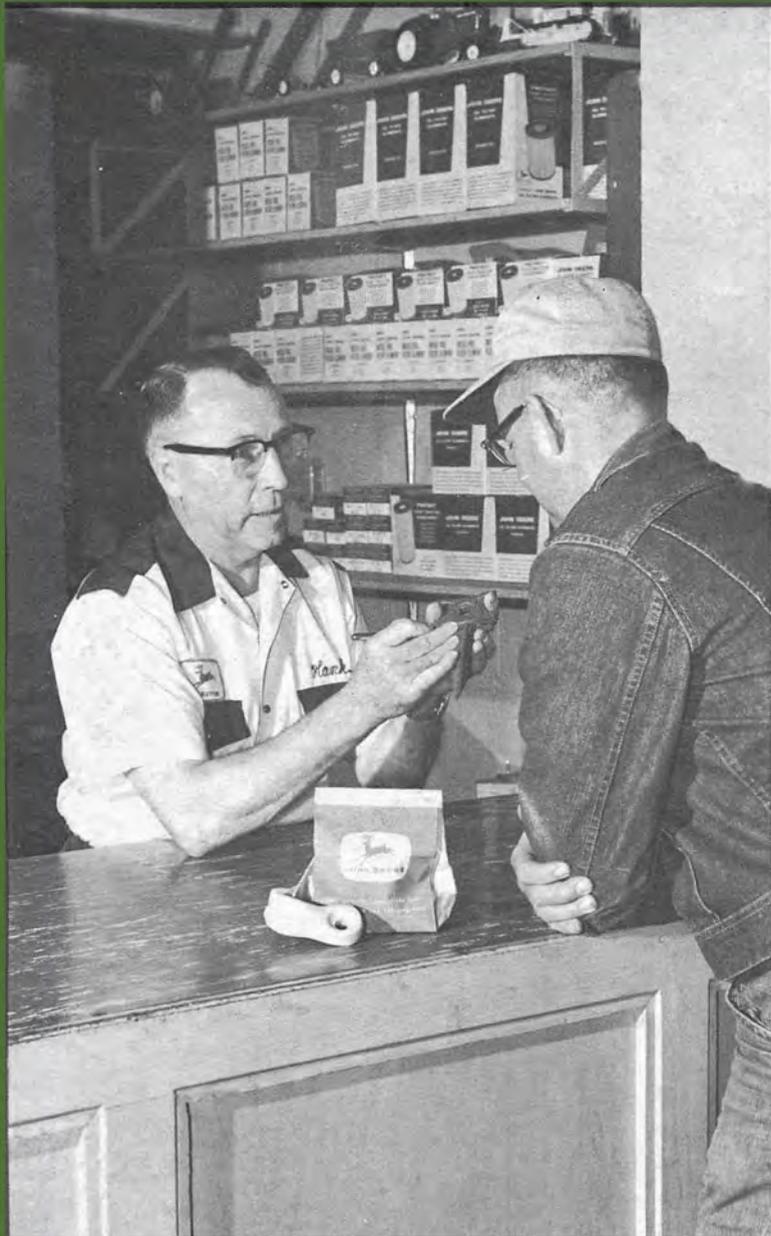


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