

John Deere Model 214W Automatic Pickup Baler



JOHN DEERE

OPERATORS MANUAL

**John Deere Model 214W
Automatic Pickup Baler**

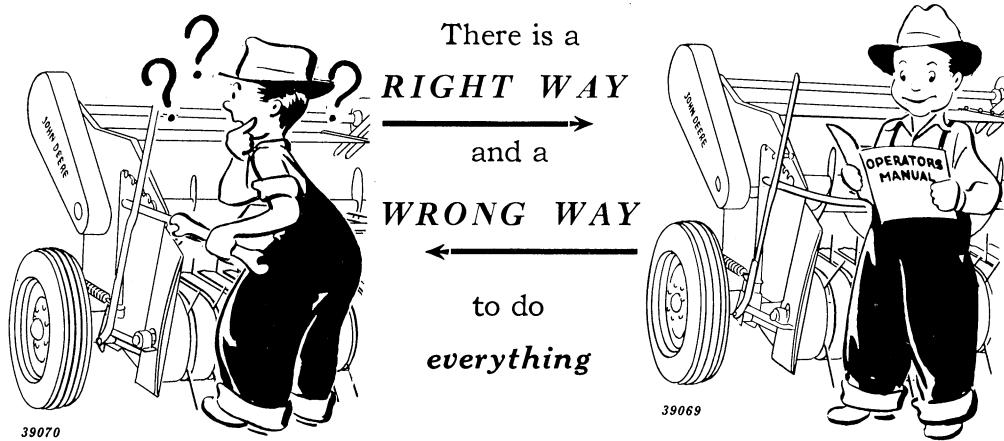
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INTRODUCTION



Your new John Deere Automatic Baler is a dependable machine, but only by proper care and operation can you 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 numbers of your baler. This information will help him give you prompt and efficient service.

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

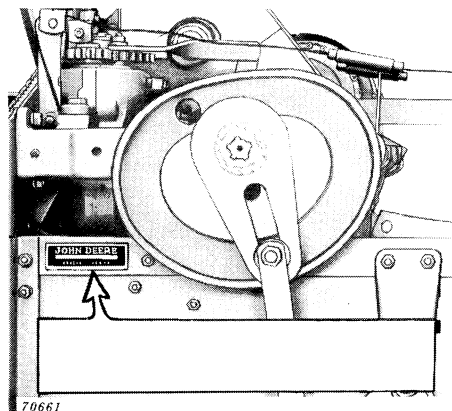
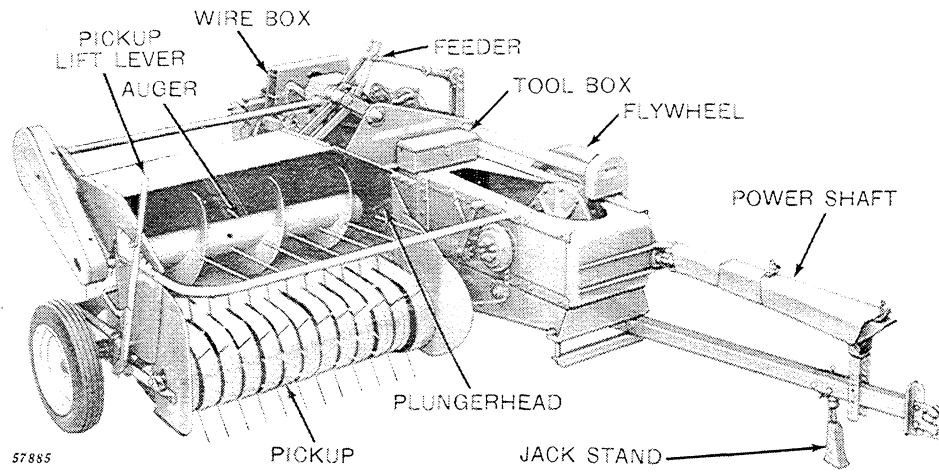
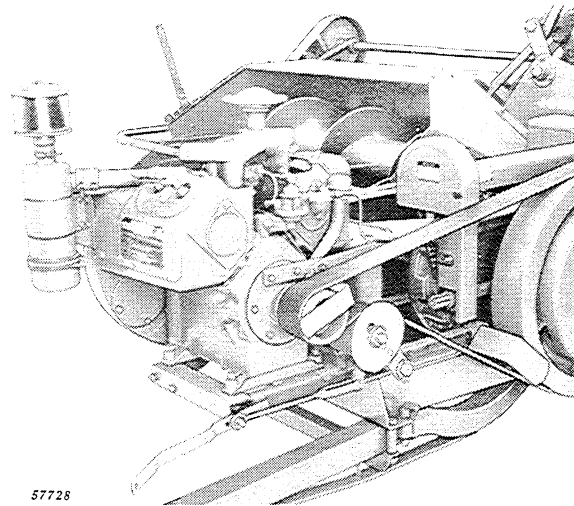


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Right Front View—John Deere 214W Power Take-Off Baler



Left Front View—John Deere 214W Engine Baler

SPECIFICATIONS

Auger: Diameter	16 In.
Length	50 In.
Bale: Cross-Section	14 In. x 18 In.
Length	Adjustable 8 to 50 In.
Compression Chamber Length	40 In.
Engine, Wisconsin Model VH4D	26.5 Horsepower
Feeder Opening Dimensions	12 In. x 22 In.
Flywheel Diameter	27 In.
Height (Maximum)	67 In.
Length: With Engine	18 Ft. 3 In.
With PTO	17 Ft.
Pickup Cylinder Diameter	12 In.
Pickup Height Adjusting Range	5 In.
Pickup Width: Inside	53 In.
On Flare	62 In.
Plungerhead: Speed (Under Load)	At Least 65 Strokes per Minute
Stroke	28 In.
Power Required	John Deere "520" Series Tractor or Equivalent
Power Take-Off Shaft Speed	ASAE-SAE Standard—536 rpm
Tires: R.H. (27 Lbs. Pressure)	5.00 x 15—4-Ply
L.H. (35 Lbs. Pressure)	7.50 x 16—6-Ply
Transmission: Gears	Steel Cut, Enclosed
Capacity	2-1/2 Qts.
Viscosity Number of Oil	SAE 140
Weight (Approximate): With PTO	3025 Lbs.
With Engine	3325 Lbs.
Width	8 Ft. 11-1/2 In.
Wire	14-1/2 Gauge. Annealed Oiled
Wire Coils	ASAE Standard. 3150 Feet of Wire Each Coil
	40-45 Lbs. Each, 9-7/8 In. O.D., 3-3/4 In. Wide

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.)

OPERATION

HOW THE BALER WORKS

The John Deere 214W is a fully automatic wire tying baler. Only one man, the tractor operator, is required to operate the machine. The only baler control necessary is the lifting lever, which raises and lowers the pickup. Because of the floating action of the pickup, this lever adjustment is seldom changed.

As the baler follows the windrow, the fingers on the pickup cylinder "A" lift the crop into the auger housing "B." The material is moved by the auger "C" to where the feeder "D" contacts and feeds it directly into the baling chamber "E." The feeder arms, timed with the plungerhead, strip out of the way through slots in the top of the bale chamber.

As the feeder teeth clear the bale chamber, the plungerhead "F"

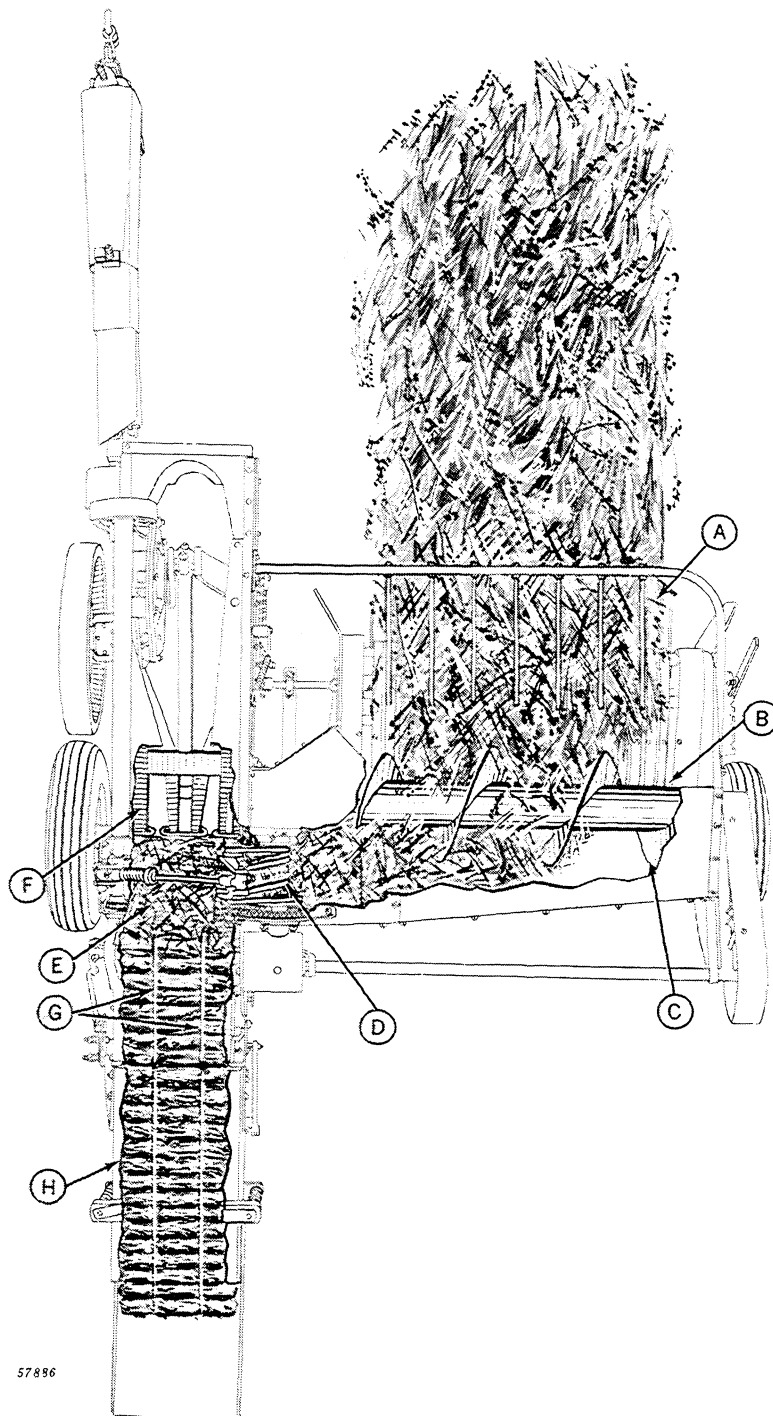
moves into the baling chamber, compresses and slices off the charge and moves it through the bale chamber. Hay dogs, or retainers, in top and bottom of the bale chamber, hold the sliced charges in position against the bale being formed while the plungerhead returns for the next charge.

As the material moves through the bale chamber it draws wire "G" out of the wire boxes. When the bale reaches the proper length, as determined by the bale measuring wheel, the bale is tied. (Operation of the tying mechanism is described on page 6.)

As more material is fed into the bale chamber, the completed bale "H" is forced out the end of the bale case onto a wagon or dropped on the ground.

Be Careful

THE LIFE YOU SAVE MAY BE YOUR OWN...

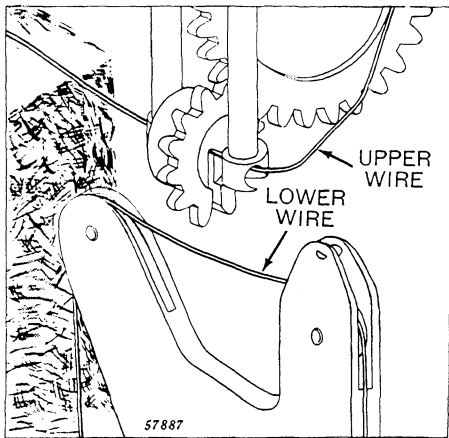


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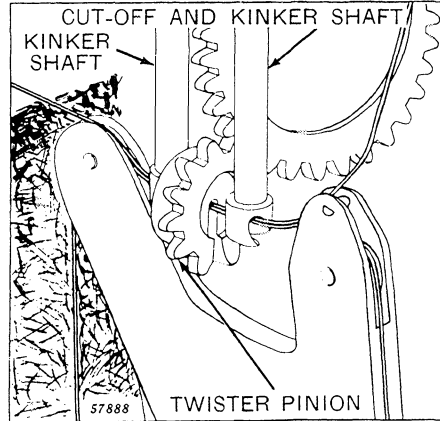
HOW THE WIRE IS JOINED

To give a better understanding of the timing procedure and the importance of the various adjustments dealt with later on, an understanding of the tying cycle of the baler is necessary.

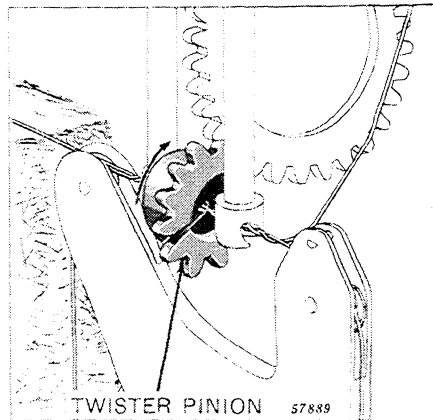
The twist produced by this baler has a double kink in it. This twist is as strong as the wire itself and will not pull apart if properly formed.



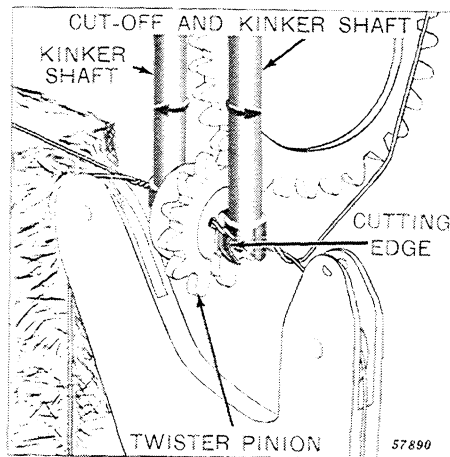
Four coils of wire are used simultaneously; two on top of the baler and two underneath. The upper wires are threaded through the twisting, kinking and cutting mechanism and the lower wires are threaded around the needles. The needles are used to carry the lower wires up into the tying mechanism next to the upper wires. The needles come up through the plungerhead slots so they do not contact the hay.



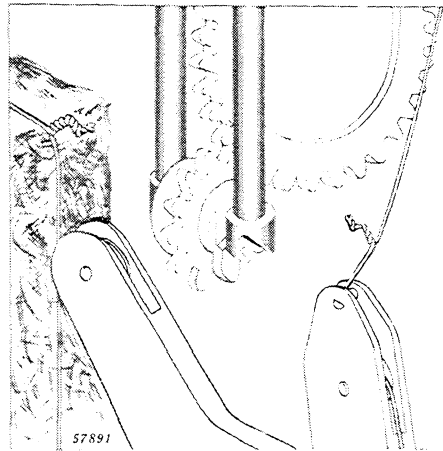
When the upper and lower wires are together in the twister pinion, they also pass through the slot in the cut-off-and-kinker shaft and the kinker shaft.



The twister pinions are now made to revolve four times which twists the upper and lower wires together. This twist is about 3 inches long.



As the twist is being completed, the cut-off and kinker shafts revolve 180 degrees, the cutting edge of the cut-off shafts cuts the twist in two against the face of the twister pinion and simultaneously double-kinks the front half of the twist. The kinker shaft is at the same time double kinking the rear half of the twist.



When the twist is cut and kinked, the wire that had been carried up along the end of the bale is joined with the upper wire to complete the tying of the bale.

The wire on the other side of the needle is also joined with the upper wire and, when the twist is cut, it then forms a continuous strand with the upper wire. Immediately after the wires are twisted and cut off, the needles are driven down out of the bale case.

As the plungerhead compresses the hay into the bale case, the joined wires are carried with the hay. Additional wire is pulled from the wire boxes to encircle the bale as it is formed. When the bale reaches its proper length, the measuring wheel trips the tying mechanism. The needles are lifted into bale case through slots in plungerhead, bringing the lower wire up into the twisting, kinking, and cutting mechanism and completely encircling the bale with wire.

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.

UNDERSTAND THE FUNCTION OF ALL WORKING UNITS

This baler is built to handle a wide range of conditions. Field conditions vary from year to year, from day to day, and even from hour to hour. Different varieties of crops present widely different baling problems. A careful study of the adjustments on your baler, and what they accomplish under different conditions, will allow you to reap the many benefits and economies that a baler can provide.

Before starting your baler in the field, be sure you are thoroughly familiar with the function of each working unit. Study the illustrations showing these units carefully and become familiar with the adjustments necessary to obtain best results.

LUBRICATION

Check to see that your machine has been lubricated according to lubricating instructions, pages 20 to 22.

BREAKING IN THE NEW BALER

After the baler has been completely assembled and connected to the tractor, inspect the entire machine 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.

Adjust plungerhead after baling the first 1,000 bales. (See page 39.) Thereafter, adjust as often as necessary depending on conditions.

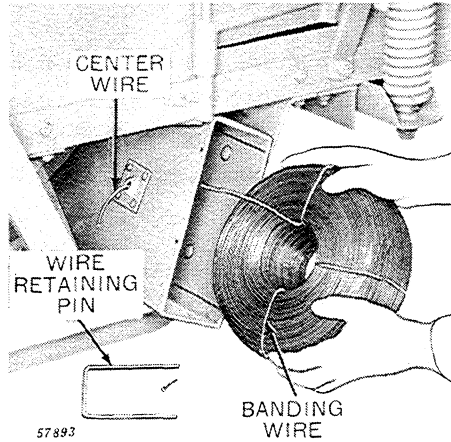
If your baler is equipped with an engine, see the Operator's Manual that accompanies the engine for engine operation and break-in instructions. Check the drive belt (see page 43) to be sure tension is adjusted just tight enough to eliminate slippage.

Lubricate all bearings as specified in lubrication charts.

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 30 minutes and increase to full speed for the rest of the period. Inspect baler frequently during the "break-in" period.

Remember, the breaking-in period is just as important with a new baler as it is with a new automobile.

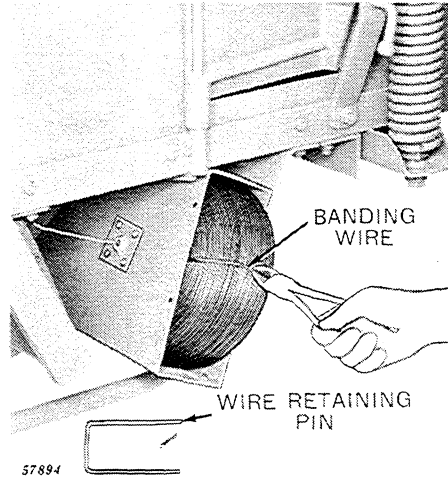
LOADING WIRE BOXES



All four rolls of wire are located in the wire boxes in the same way.

Remove the wire retaining pin from the wire box. Cut one banding wire. Pull about one foot of wire from the center of the coil and thread it through the hole in the wire box.

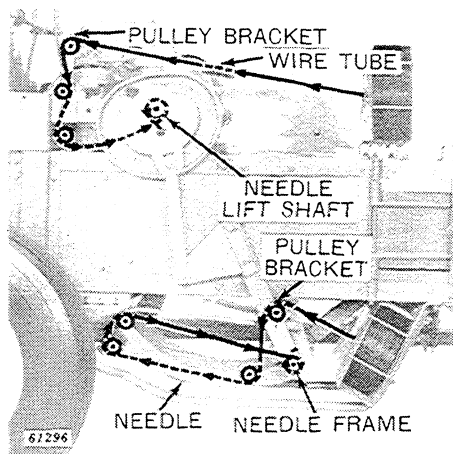
Place the coil of wire in the wire box, cutting top and bottom banding wire as coil is inserted in box.



Cut last banding wire after coil is in the box.

Replace retaining pin in wire box, use the same procedure to load the other three boxes with coils of wire.

THREADING NEEDLES AND TYING MECHANISM



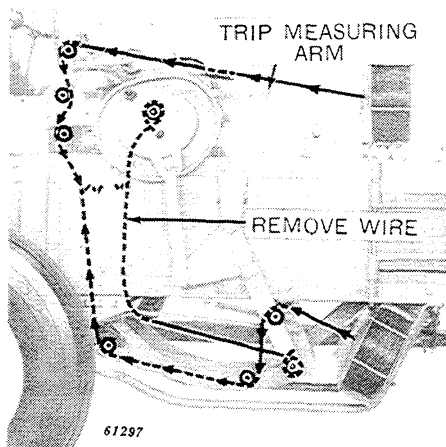
Thread top wire through the wire tube and between the pulley and the top of the pulley bracket, then down behind the center pulley and in front of the bottom pulley, then through the twister pinion and pull enough wire so it can be hooked around the needle lift shaft.

Thread bottom wire around pulley in pulley bracket on bottom of bale case, then around large pulley near lower end of needle, then around small pulley in lower fork of needle and over top needle pulley, and pull enough wire so it can be looped around needle frame.

When the two top wires and the two bottom wires have been threaded, trip the tying mechanism and turn flywheel counter-clockwise by hand. Continue turning flywheel until needles are all the way up, wire is

joined and needles returned to their home position.

Always remove the wires, which were temporarily hooked around the needle lift shaft and the needle frame. The wires are now ready for the baling operation.



WIRE RUN OUT OR BROKEN

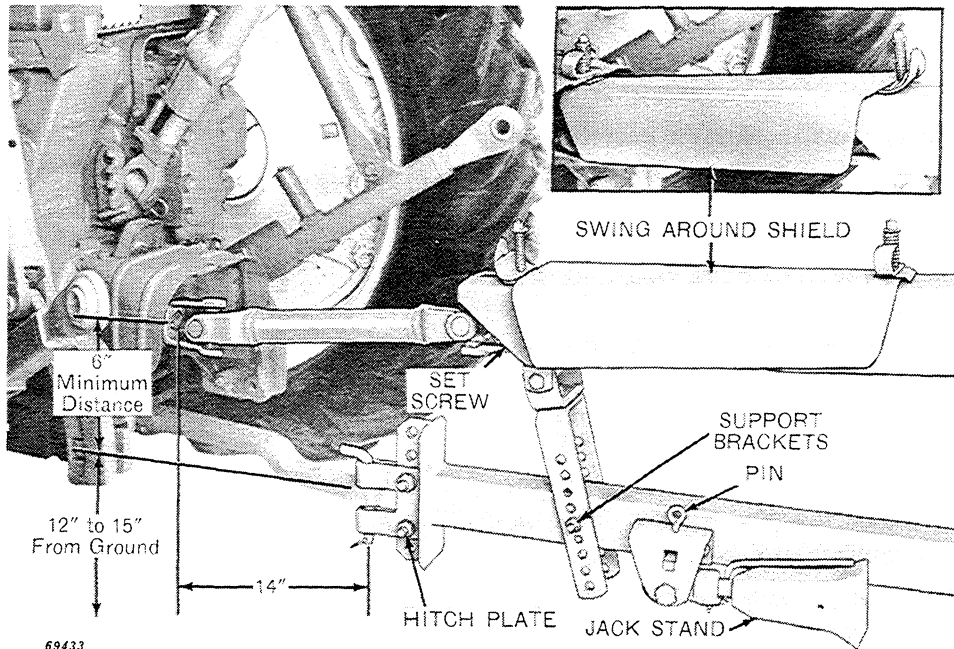
If the wire has broken or run out in any of the boxes, both top and bottom wires must be rethreaded on the side where wire has broken or run out.

If the wire runs out or is broken just after a bale has been tied, put in about three charges of hay before tripping tying mechanism.

SPLICING WIRE

A spliced wire will not go through the twister box or the needle, therefore, if a splice is to be made it must be made to the wire around the bale after the new wire has been threaded through the wire twister and needle.

HOOKUP INSTRUCTIONS



When attaching your power take-off baler to any of the older tractors, the tractor must first be converted to comply with ASAE-SAE standards as shown. This can be done by purchasing the proper conversion bundle from the dealer who handles your make of tractor.

Check the speed of the tractor powershaft to be sure it is running according to the manufacturer's recommendations.

The tractor tire inflation pressures specified in the tractor Operator's Manual will apply.

Tongue. Hitch baler to tractor drawbar. Adjust the hitch plate so the baler is approximately level. (The front end of the baler tongue should be 12 to 15 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 brackets so the power take-off shaft is as straight as possible.

Shield. Locate the swing-around shield over hookup as shown in inset above.

NOTE: When transporting the power take-off baler, remove front end of swing-around shield and locate it on top of powershaft shield to prevent damaging shield when turning sharp corners.

CAUTION: Replace shield over hookup before operating the power take-off baler.

Jack Stand. After the baler has been properly hooked up, raise and lock the pin from the jack stand, then drive the tractor forward to remove the weight from the stand. Secure the stand in a raised position with the pin.

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.

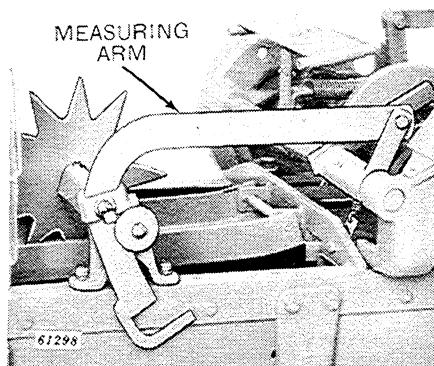
Never attempt to clean, lubricate, or adjust machine without first disengaging power take-off and shutting off tractor engine on power take-off machines; and on engine machines, disengage the clutch and shut off the engine.

Stand clear of baler at all times when 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 wire from bale case or tying mechanism if machine is operating.



Always shut off the engine before refueling.

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

When tripping the baler by hand with the baler running, do not touch any of the tying mechanism and stand clear of the needle frame.

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.

Do not smoke or use an oil lantern when refueling any engine.

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 the crop.

STARTING AND DRIVING

Start the baler with tractor or engine at full throttle. (Plungerhead should be operating at 65 strokes per minute under load.) Operate the tractor in low gear at full throttle 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 size charges are fed into the compression chamber without straining the feeding and baling mechanisms.

The capacity of the baler depends upon such factors as material characteristics, ground conditions, condition of tractor, and the judgment of

the operator. Do not crowd your baler. You are primarily interested in tons per day, not bales per minute.

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.

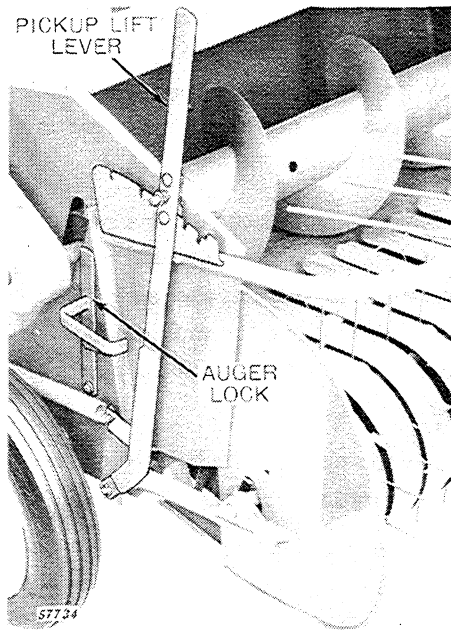
Always operate the baler with tractor or engine at full throttle.

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 wire coming out of the wire box should move with each stroke of the plunger. If it stops moving, the wire 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 tying mechanism. In most haying conditions this trash will not affect the operation of the machine. However, if material is high in moisture content or gummy, or if the trash gets wet, it may cause the tying mechanism to function inaccurately, resulting in broken parts or untied bales.

PICKUP LIFT LEVER

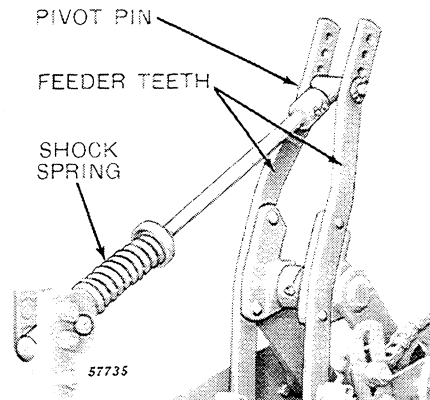


The pickup lift lever is located on the right end of the auger housing and is used to control the working height of the pickup teeth. The lever may be adjusted to one of six positions, allowing the pickup to be raised to a maximum height of 9 inches. Set the pickup teeth as high as possible and still pick up all the crop. To lower the pickup, pull the lever out and forward. To raise the pickup, pull the lever out and push to the rear. When the pickup lift lever is in transport position, the auger lock holds the auger to prevent bouncing when transporting.

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 regardless of the condition of the hay. The teeth may be adjusted to increase or decrease their stroke, which alters the distance they move into the bale chamber.



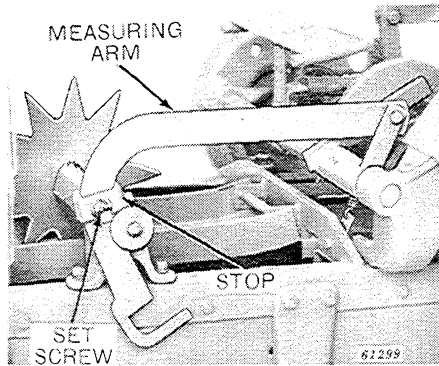
The stroke of the feeder teeth should be increased when material is not coming far enough into the bale chamber and decreased if it is coming in too far.

To increase the stroke of the teeth, move pivot pin to a lower hole on the ends of the feeder teeth; to decrease the stroke of the teeth, relocate pivot pin in a higher 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 LENGTH CONTROL

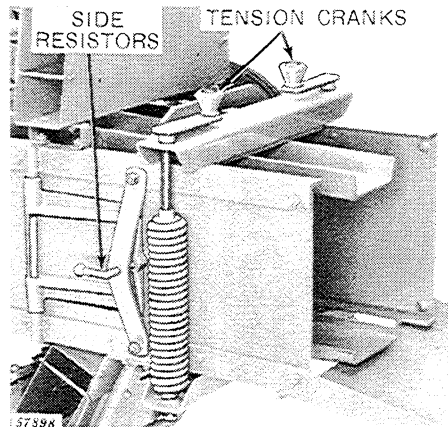


The bale measuring arm may be set for bale lengths of 8 to 50 inches. The setting shown is for maximum bale length. The length of the bale may be shortened by loosening the set screw and lowering the stop.

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 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 wire.

TENSION CRANKS AND SIDE RESISTORS

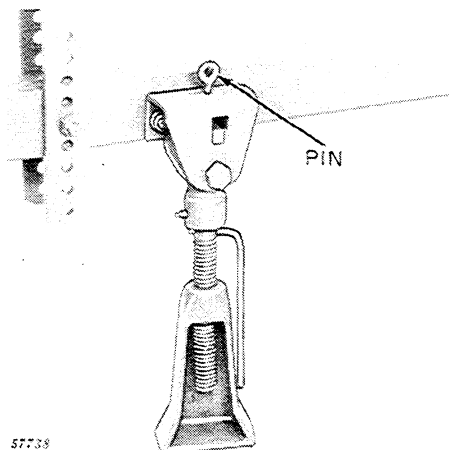


Bale weight is regulated by changing the tension on the bale chamber. Tension is changed by means of the adjustments of the two tension cranks on the rear of the bale chamber.

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

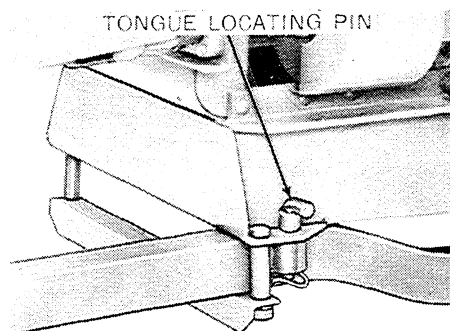
Bale case tension may be further increased when operating in unusually light windrows by tightening the side resistors.

JACK STAND

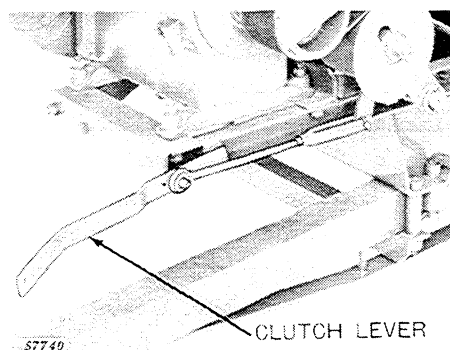


The jack stand is held completely out of the way during operation by a spring-loaded pin. When unhitching the tractor from the baler pull the pin, allowing the jack stand to swing downward, and crank the stand down until it reaches the ground. Another turn or two will remove the baler weight from the tractor drawbar, allowing you to pull the hitch pin and free the tractor. Your baler remains supported at drawbar height and may be quickly hitched when you wish to use the machine again.

TONGUE LOCATING PIN



The baler can be easily changed from operating to transport position by removing the locating pin, pulling the baler to the left, and relocating pin in the hole provided. Reverse this procedure to place tongue in operating position.



ENGINE CLUTCH LEVER

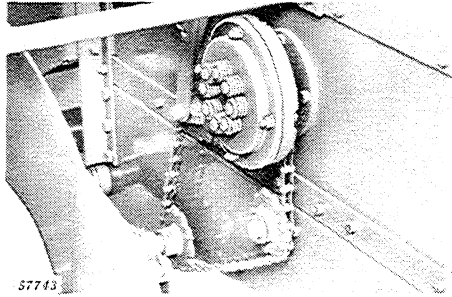
The lever located on the left-hand side of the engine, controls the transmission of power from the engine to the flywheel by means of a belt idler. Release tension on belt when starting the engine.

ENGINE CONTROLS

The controls and operation of the engine are described in the engine Operator's Manual.

MACHINE PROTECTIVE DEVICES

PICKUP SLIP CLUTCH



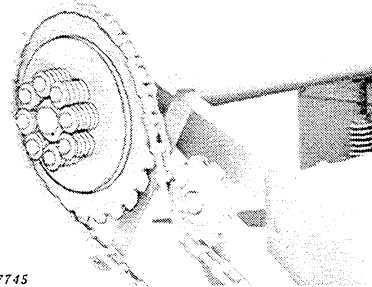
The slip clutch on the pickup drive sprocket protects pickup parts from overloads or field obstructions. (See page 41 for service.)

caused by overloading or crowding the baler.

The special shear bolt in the flywheel will shear if the plungerhead becomes blocked during operation. When the cause of shearing has been located and corrected, install a new shear bolt.

NOTE: If needles are in bale case when baler stops, return the needles to home position by hand before starting the baler.

AUGER SLIP CLUTCH



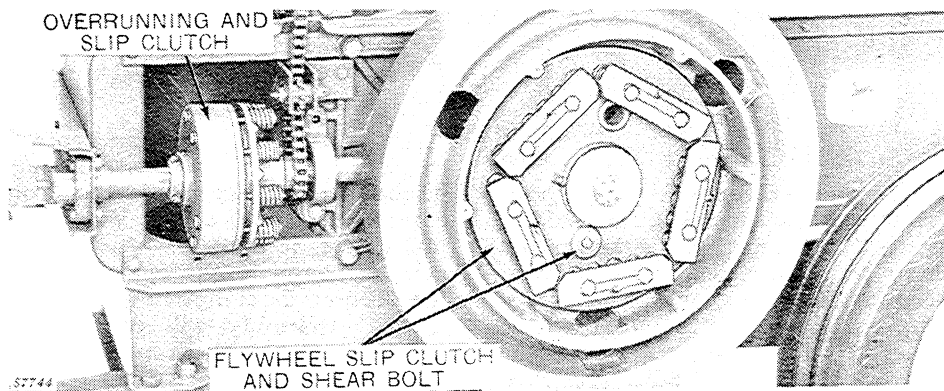
If the auger becomes overloaded or obstructed, a slip clutch in the auger drive will slip, thus preventing damage to the feeding mechanism and other intricate parts of the baler.

OVERRUNNING AND SLIP CLUTCH

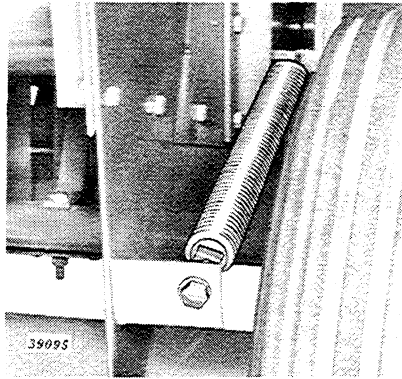
This slip clutch was built into the main drive to protect the baler and tractor from undue stress resulting from: high starting torques, material too heavy, obstacles lodging between knives, etc. (See page 40 for testing.)

FLYWHEEL SLIP CLUTCH AND SPECIAL SHEAR BOLT

The slip clutch in the flywheel will help protect the baling mechanism from damage, or excessive strain,

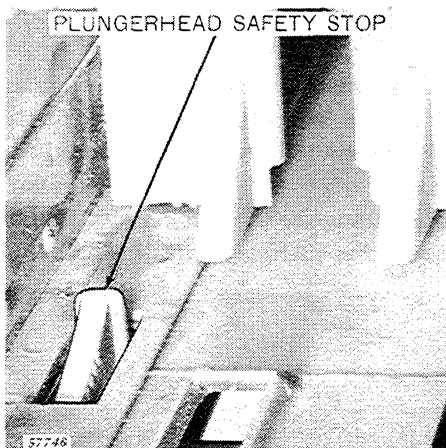


PICKUP BALANCING SPRING



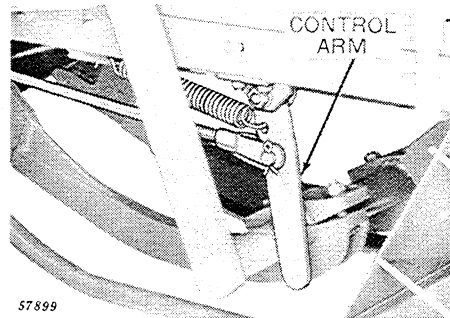
The pickup is protected from damage, which could result from striking objects in the field, by having a safety spring attached to the right-hand side of the pickup. This spring allows the pickup to raise and lower itself easily when coming in contact with immovable objects.

PLUNGERHEAD SAFETY STOP



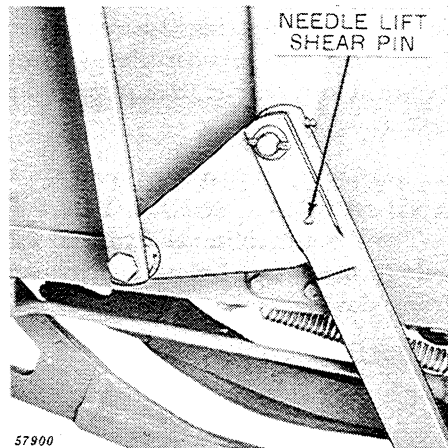
The plungerhead safety stop positively protects the needles from damage by the plungerhead if the needles enter the bale chamber too soon or remain there too long. The safety stop enters the bottom of the bale chamber at the same time as the needles. When the needles are withdrawn, a control arm on the stop as-

sembly 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, help prevent damage to the baler and time-consuming break-downs. (See page 38 for adjustment.)

NEEDLE LIFT SHEAR PIN



The needle lift shear pin protects 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 twister mechanism and apply a coating of grease.
4. Thoroughly grease the machine according to the lubrication charts.
5. Paint all parts from which the paint has been worn, except the inside of the bale case. This should be brushed with grease.
6. Clean all chains by washing them with 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 twister 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 oil.
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, they should be run in.
9. If your baler is engine-mounted, see Engine Manual for instructions.

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. 6.)

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 chains and wash in solvent. Then dip the chains in oil, allow to drain and replace on the machine.

SYMBOL	
	Grease every 8 hours of operation.

Note No. 1. Grease powershaft, Tractor hookups, and U-joints that are equipped with grease fittings every 100 hours.

Note No. 2. Pack wheel bearings with wheel bearing grease once a year.

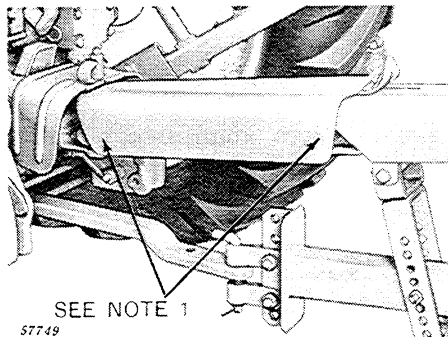
Note No. 3. **CAUTION: Lightly grease tying mechanism daily.** Excess grease in this area causes accumulation of chaff and dirt, which tends to cause undue wear and breakage.

Note No. 4. Grease flywheel bearing when replacing flywheel shear bolt.

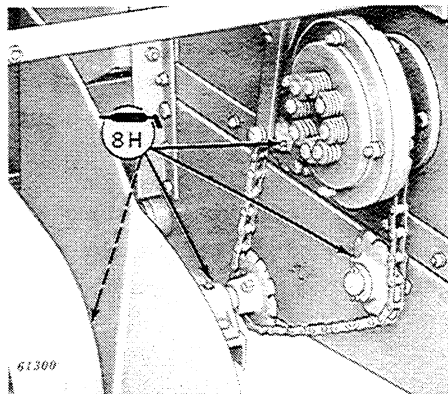
Note No. 5. Fill the main gear case to check-plug level with SAE 140 oil. (Capacity 2-1/2 quarts.) Drain, flush, and refill prior to each baling season. Two drain plugs are located just below check-plug.

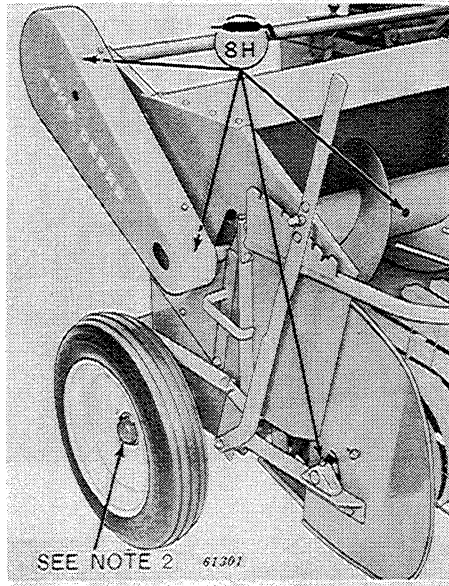
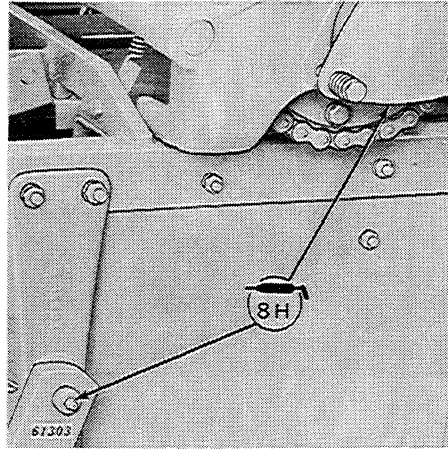
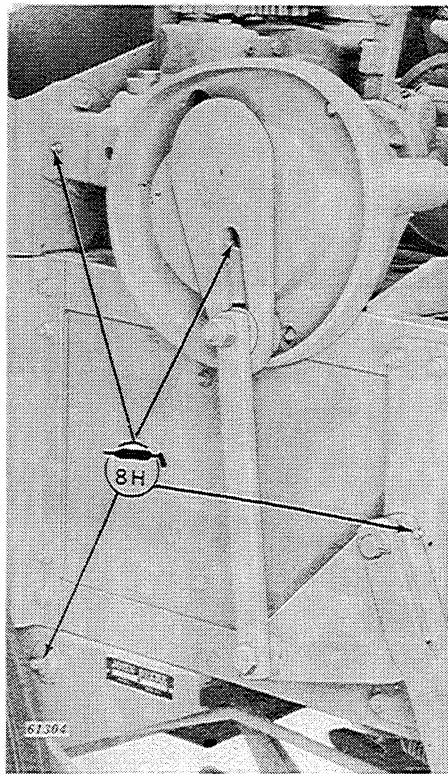
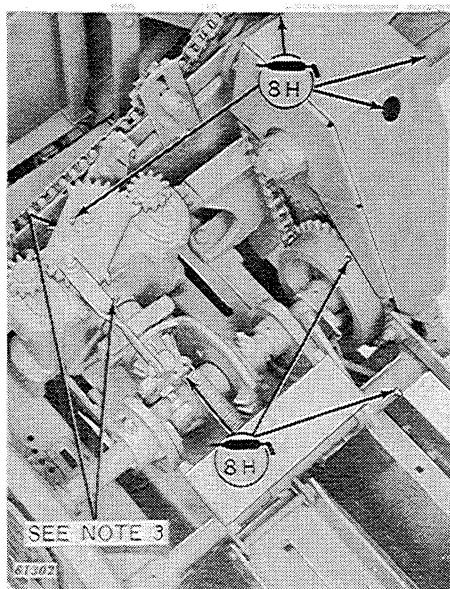
Note No. 6. Check level of oil in main gear case daily. (Check-plug is just behind flywheel on rear of gear case.)

HOOKUP

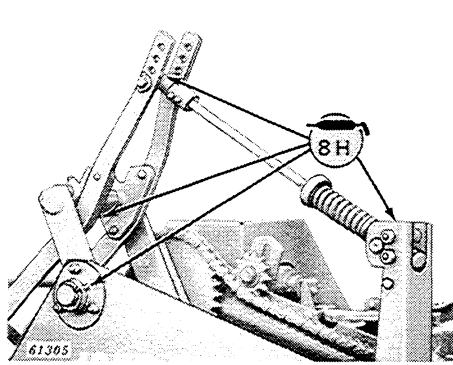


PICKUP DRIVE

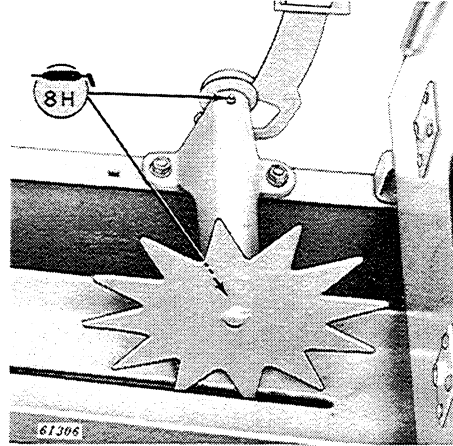


AUGER DRIVE**NEEDLE PIVOT, R.H.****NEEDLE PIVOT, L.H.****TYING MECHANISM**

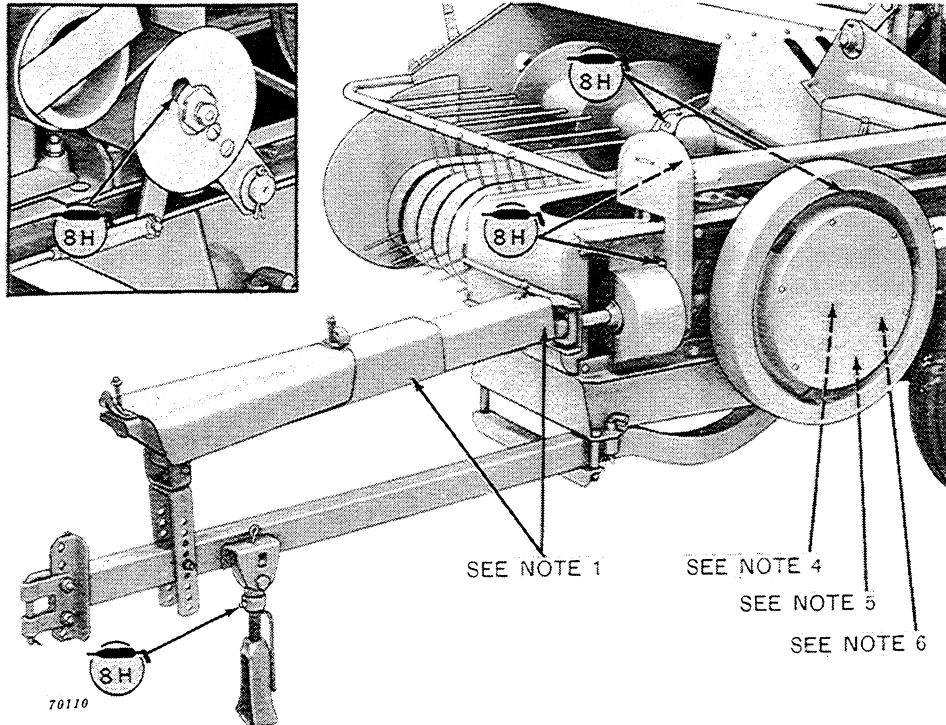
FEEDER PIVOT



MEASURING WHEEL



GEAR CASE AND DRIVE



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 back to page 31 and follow the "Service Checking Procedure" as outlined. If you are still unable to remedy trouble, call your local John Deere dealer.

TWISTER MECHANISM DIFFICULTIES

<i>TROUBLE</i>	<i>POSSIBLE CAUSE</i>	<i>REMEDY</i>
Top wire is cut and bottom is not cut.	Wire is missed by needle because needle and guide in bottom of bale case are out of line.	Adjust needle (page 34).
	Needle is not raising wire high enough in twister pinion.	Adjust needle (page 34).
	Needle lift shear pin is sheared.	Replace shear pin.
	Foreign material prevents entry of wire into box.	Clean out under twister box and slots, cut-off and kinker shafts, and twister pinions.
Wires are twisted together and are not cut.	Pin in cut-off and kinker sheared.	Disassemble box and replace shear pins.
	Push rod and lever does not actuate cut-off and kinkers.	Replace shear bolts in cut-off and kinker driving cam.
	Cut-off and kinkers out of time.	Retime (page 33).

TWISTER MECHANISM DIFFICULTIES—Continued

<i>TROUBLE</i>	<i>POSSIBLE CAUSE</i>	<i>REMEDY</i>
Top wire is broken and twisted, caught on pulley bracket side of twister pinions.	Twist is not being pulled down into the bale case far enough. Needle pulleys and pins in end of needle fork worn. Top wire not feeding properly.	Make sure that all pulleys and pulley brackets are free to rotate. Replace pin and all pulleys. Free top wire.
Wire is kinked and cut-off on end of bale that comes out first, but wire is not kinked on end of bale that comes out of bale case last.	Shear pin in kinker shaft is sheared.	Disassemble twister box and replace pin.
Poor twist and kink on either end of bale.	Needles not centered. Needles too high. Foreign material in twister slots, kinker slots or kinker and cut-off slots. Hay dogs not functioning. Needles out of time. Needles out of line.	Adjust needles (page 34). Adjust needles (page 34). Remove foreign material in slots. Check hay dog springs and free hay dogs. Retime needles (page 34). Adjust needles (page 34).

TWISTER MECHANISM DIFFICULTIES—Continued

<i>TROUBLE</i>	<i>POSSIBLE CAUSE</i>	<i>REMEDY</i>
Ends of wire not cut clean.	Either the cut-off shaft or the twister pinion may be chipped or dull. Cut-off and kinker shaft out of time 180°	Install new parts. Retime (page 33).
Wire is broken at base of twist.	Cut-off and kinkers out of time. Twister pinion slot out of line. Excessive bale case tension.	Retime (page 33). Adjust twister pinions (page 33). Loosen tension cranks and/or side resistors.
Wires not kinked and/or cut-off but not twisted.	Shear bolts in intermittent bevel gear sheared. Twister pinions out of adjustment. Foreign material in twister pinion slot.	Replace shear bolts (page 32). Adjust twister pinions (page 33). Clean out slot.
Wire broken at any point other than the knot.	Tangle or kinks in wire. Wire catching on baler.	Straighten wire for free travel. Free wire or remove obstructions.

TWISTER MECHANISM DIFFICULTIES—Continued

<i>TROUBLE</i>	<i>POSSIBLE CAUSE</i>	<i>REMEDY</i>
Needles hit wire twister box.	Needle out of adjustment. Hay dogs not working properly.	Adjust needles (page 34). Check springs and see that hay dogs work freely.
Needles push material up into twister box.	Needles timed too fast. Chaff under twister mechanism.	Adjust needles (page 34). Clean out twister mechanism.
Double tripping.	Not enough clearance between measuring arm and serrated roller to allow arm to drop to home position.	Adjust measuring arm eccentric (page 38).

BALE NOT OF PROPER WEIGHT

Bale too light in weight.	Tension cranks too loose. Side resistors too loose.	Tighten tension cranks until desired weight is obtained. Tighten side resistors.
Bale too heavy in weight.	Tension cranks too tight. Side resistors too tight.	Loosen tension cranks until desired weight is obtained. Loosen side resistors.
Bale too heavy with cranks screwed out.	Hay too wet or too green.	Let hay dry or cure before baling.
Bale too long.	Broken release arm spring.	Replace spring.
Bale too short.	Measuring arm not dropping home.	Adjust (page 38).

BALE NOT UNIFORM

<i>TROUBLE</i>	<i>POSSIBLE CAUSE</i>	<i>REMEDY</i>
Back of bale is loose.	Feeder teeth out of adjustment.	Adjust (page 14).
Front of bale is loose.	Feeder teeth out of adjustment.	Adjust (page 14).
Not enough material in top of bale.	Ground speed of baler too slow and/or windrow too small. Baling extremely light hay.	Increase ground speed and/or make larger windrows. Install hay ramp (page 46).
Ragged bale.	Dull knives. Plunger-head out of adjustment.	Sharpen knives. Adjust (page 39).

PICKUP DIFFICULTIES

Pickup teeth digging in ground.	Lift lever set too low.	Raise lift lever.
Not picking up hay clean.	Pickup stays up in floating position. Pickup teeth set too high. Ground speed too fast. Hay not all raked. Pickup teeth bent or broken. Windrows too light.	Loosen lift spring (see page 40). 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 DIFFICULTIES—Continued

<i>TROUBLE</i>	<i>POSSIBLE CAUSE</i>	<i>REMEDY</i>
Pickup teeth do not revolve.	Slip clutch out of adjustment.	Adjust (page 41).
	Pickup drive chain off or broken.	Replace chain.

FEEDING DIFFICULTIES

Plungerhead hitting feeder teeth at top of case.	Out of time.	Retime baler (see page 36.)
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 (see page 39.)
Baler stalls on compression stroke.	Baling too heavy.	Loosen tension cranks (see page 15.)
	Plungerhead obstructed.	Remove obstruction.
Baler fails to start after being stalled on compression stroke.	Plungerhead obstructed.	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.

POWER DRIVE DIFFICULTIES

<i>TROUBLE</i>	<i>POSSIBLE CAUSE</i>	<i>REMEDY</i>
Engine belt slips to the extent that it does not drive flywheel at proper speed.	Clutch lever out of adjustment.	Adjust clutch lever and belt tension (page 43).
Engine belt wearing more on one side than the other.	Pulleys not in alignment.	Align (page 43).
PTO slip clutch slips during normal operation.	Shear bolt sheared in flywheel.	Replace shear bolt.
	Slip clutch spring adjusting bolts loose.	Tighten spring bolts (see page 40).

SLIP CLUTCH DIFFICULTIES

Slipping flywheel slip clutch.	Dull knives.	Sharpen knives.
	Too much clearance between knives.	Adjust plungerhead. (See page 39.)
	Baling too heavy.	Loosen tension cranks.
	Slip clutch adjusting bolts too loose.	Adjust (page 42).

SLIP CLUTCH DIFFICULTIES—Continued

<i>TROUBLE</i>	<i>POSSIBLE CAUSE</i>	<i>REMEDY</i>
Slipping auger slip clutch.	Baling heavy windrows at excessive speed. Hay too wet. Slip clutch adjusting bolts too loose.	Decrease speed. Allow hay to cure. Adjust (page 41).
Slipping pickup slip clutch.	Pickup overloaded or restricted. Pickup set too low. Slip clutch adjusting bolts too loose.	Remove all obstructions. Set pickup higher. Adjust (page 41).

SHEAR BOLT DIFFICULTIES

Sheared flywheel special shear bolt.	Obstruction in bale chamber. Plungerhead safety stop improperly adjusted. Worn clutch ring. Needles in bale case.	Remove all obstructions. Adjust (page 38). Replace. Place needles in home position.
Sheared needle lift pin.	Needles out of time. Needles hitting obstruction. Obstruction in tying mechanism. Needles out of adjustment.	Retime needles (see page 36). Remove all obstructions. Remove all obstructions. Adjust needles (see page 34).

SERVICE CHECKING PROCEDURE

The following related major service checks should all be performed in the order listed to remedy most tying troubles not solved in the "Trouble Shooting" section, pages 23-30, and as a service guide to pre-season use.

1. Intermittent Bevel Gear Adjustment (page 32).
2. Timing Twister Drive Gear and Pinions (page 33).
3. Twister Pinion Slot Adjustment (page 32).
4. Timing Cut-Off and Kinker with Twister Pinions (page 33).
5. Centering the Needles (page 34).
6. Height of Needles (page 35).
7. Needle Lift Shaft Brake (page 35).
8. Timing the Baler (pages 36-37).
9. Plungerhead Safety Stop (page 38).
10. Bale Length Control (page 38).

Service information pertaining to parts or adjustments not listed above is covered on pages 39 through 43.

CHECK TIMING

Timing is controlled by the main drive chain, feeder drive chain, and tying mechanism 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 wrong, refer to page 36 for complete instructions on "Timing the Baler."

1. Place feeder pivot pin in bottom hole of feeder teeth.

2. Turn flywheel by hand in a counter-clockwise direction until the face of plungerhead is centered in the front feeder slot. The left edge of the feeder tooth should measure 16-9/16 to 18-1/16 inches from the left side of the feeder support. Trip the measuring arm. The lug on the clutch ring should nearly contact the trip dog roller.

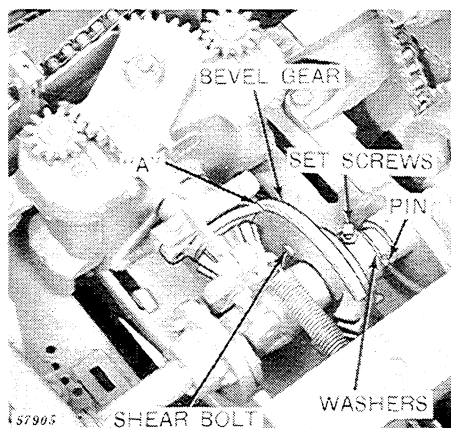
3. Continue turning flywheel counter-clockwise until the top of the rear fork prong is flush with the top edge of the bale groover. The face of the plungerhead should measure from 4 to 6 inches from the rear of the bale case pulley casting.

4. Turn flywheel counter-clockwise to raise needles. The needles should rise until a straight piece of wire inserted over both needle pulleys and through the twister pinion, has a slight bow to a maximum bow of 1/16-inch.

5. Turn flywheel to return needles to near home position. Needle pulleys must line up, within 1/16-inch, with front bale case pulley.

INTERMITTENT BEVEL GEAR ADJUSTMENT

The intermittent bevel gear and pinion gear are in correct adjustment when the flat surfaces are making full face contact at "A" below. This is necessary so the twister pinion slots will remain in the correct position so the wire may enter.

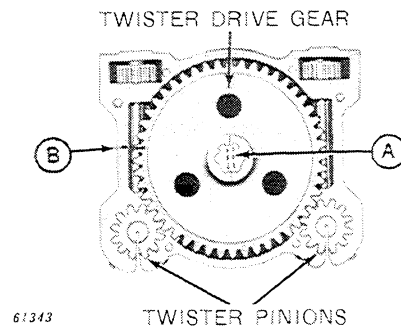


Adjust gears by loosening set screws in the intermittent bevel gear hub and slide gear over against pinion gear. Remove pin in needle lift shaft and relocate washers between pin hole and gear hub. Replace pin in needle lift shaft. Tighten set screws.

The intermittent bevel gear is attached to its hub by three shear bolts. An overload on the gears will cause these bolts to shear. When three new bolts are installed, the bevel gear will always be in its correct position on the shaft because the bolt holes in the gear and the hub are unevenly spaced so they line up in their correct relation only.

TIMING TWISTER DRIVE GEAR AND PINIONS

NOTE: If the gear case is ever disassembled, the twister drive gear must be installed on the splined shaft as follows:



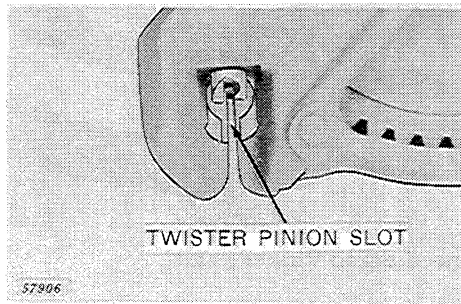
The marks on gear hub should line up with drilled hole in splined shaft, "A."

Line up timing arrow on twister drive gear with timing mark on left of twister box, "B."

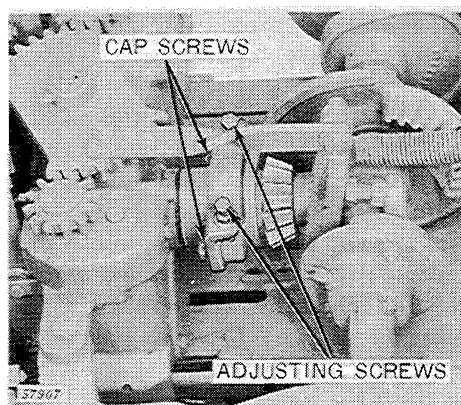
Place twister pinions in position as shown with slot in the pinions in vertical position.

NOTE: When assembling the two halves of the twister box be sure the arrows on the end of the kinker shafts and cut-off and kinker shafts are pointing towards each other.

TWISTER PINION SLOT ADJUSTMENT



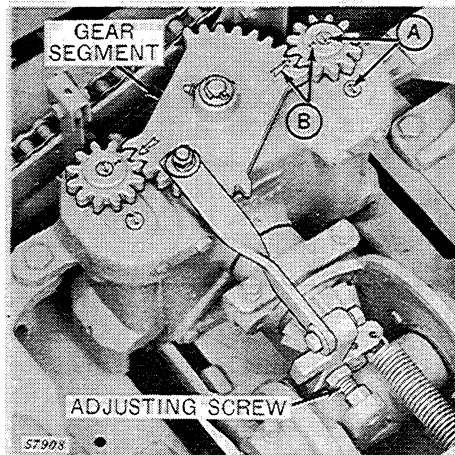
The slot in twister pinions must be in a vertical position at the start of the tying cycle.



If slots are not in a vertical position, loosen the cap screws in the side of twister gear adjusting plate and loosen lock nuts on adjusting screws. Turn down one or the other adjusting screws (loosen opposite screw) on top of twister gear adjusting plate. This adjustment rotates the twister gear slightly and turns the twister pinions to right or left.

When twister pinion slots are vertical, tighten the lock nut on both adjusting screws on top of adjusting plate and tighten cap screws in side of adjusting plate.

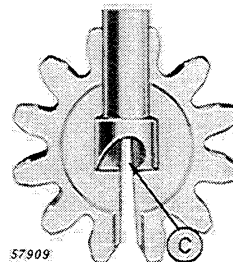
TIMING CUT-OFF AND KINKER WITH TWISTER PINIONS



Remove gear segment.

Turn both the kinker shafts and cut-off and kinker shafts so the arrows on ends of shafts point at each other, "A."

Replace gear segment so timing arrows on gear segment and cut-off shaft pinions point at each other, "B."

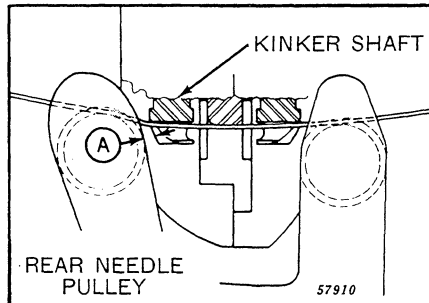


The slots in cut-off and kinker shafts must line up with slot in twister pinions so wire may enter, "C."

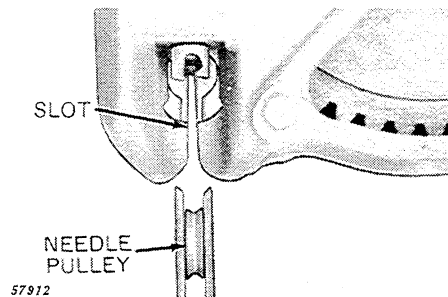
Check the sharp points on the ends of the cut-off and kinker shafts and make sure the shafts are rotated back far enough so wire will not nick causing a break behind the knot.

To change position of points, loosen lock nut and turn adjusting screw in or out. This will force the gear segment to turn the cut-off shaft pinions which will retard or advance the cut-off and kinker shafts.

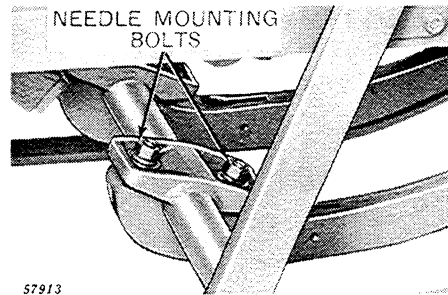
CENTERING THE NEEDLES



The rear needle pulley on top of both needles must be set at a distance of $5/32$ to $7/32$ of an inch from the lowest edge of the kinker shaft as shown at "A" above. The wire pulleys on the end of the needles must also be in line with the slot in the twister box as shown below.



To adjust the needles in relation to the wire slots, raise the needles to their highest position. Alternately loosen and tighten the front and rear mounting bolts to obtain $5/32$ to $7/32$ -inch clearance between the



needle and kinker shaft.

To increase the clearance between the needles and the kinker shafts loosen the rear needle mounting bolts slightly and tighten the front bolts. Reverse this procedure to reduce the clearance.

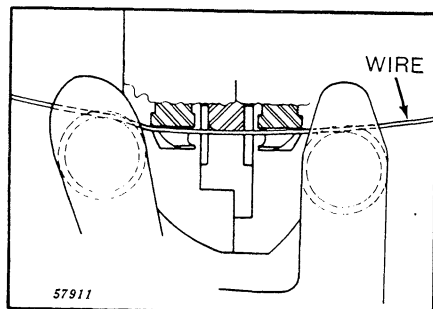
At the same time the needle can be shifted to the right or left slightly to align the needle pulley with the slots in the cut-off shafts, kinker shafts, and the twister pinions. The needle rollers must also align within $1/16$ -inch of the wire rollers in the bottom of the bale case when the needles are lowered.

Tighten needle mounting bolts to 50-65 foot-pounds of pressure.

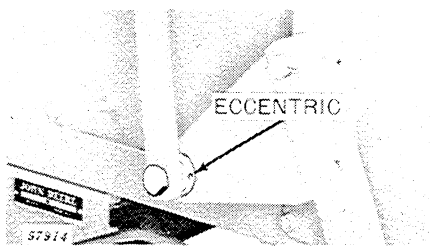
HEIGHT OF NEEDLES

The height to which the needles are raised is limited by the location of the twister box. As the location of the twister box is fixed in one position it is necessary to adjust the lift link to raise the needles to the proper height.

1. Turn flywheel by hand and raise needles to their highest position.

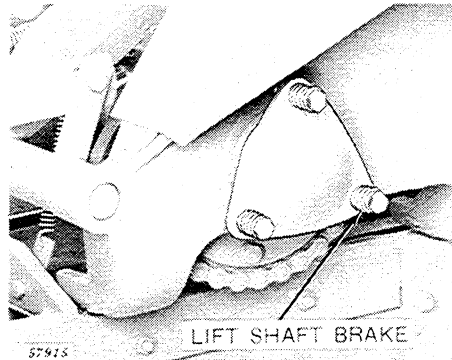


2. Needles are at the correct height when a straight piece of wire becomes slightly bowed to a maximum bow of 1/16-inch when inserted over the top of pulleys and through kinker and cut-off shafts and twister gear.



3. Adjust height by loosening bolt and turning eccentric collar to raise or lower needles to correct height. Tighten bolt to 67 to 105 foot-pounds.

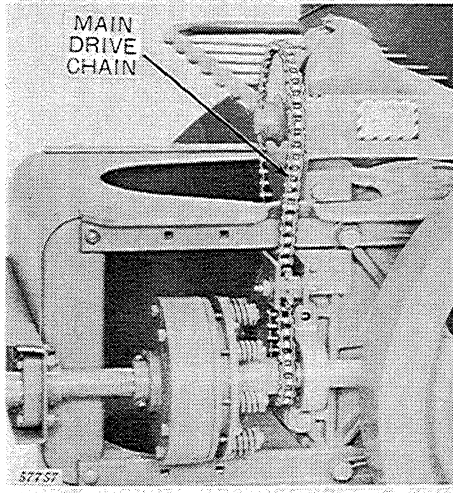
NEEDLE LIFT SHAFT BRAKE



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

To adjust the brake, move the needle lift arm to a vertical position. Tighten the needle brake springs until a force of 55 to 65 pounds on the outer end of the needle lift arm slot is needed to move needle lift shaft.

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.

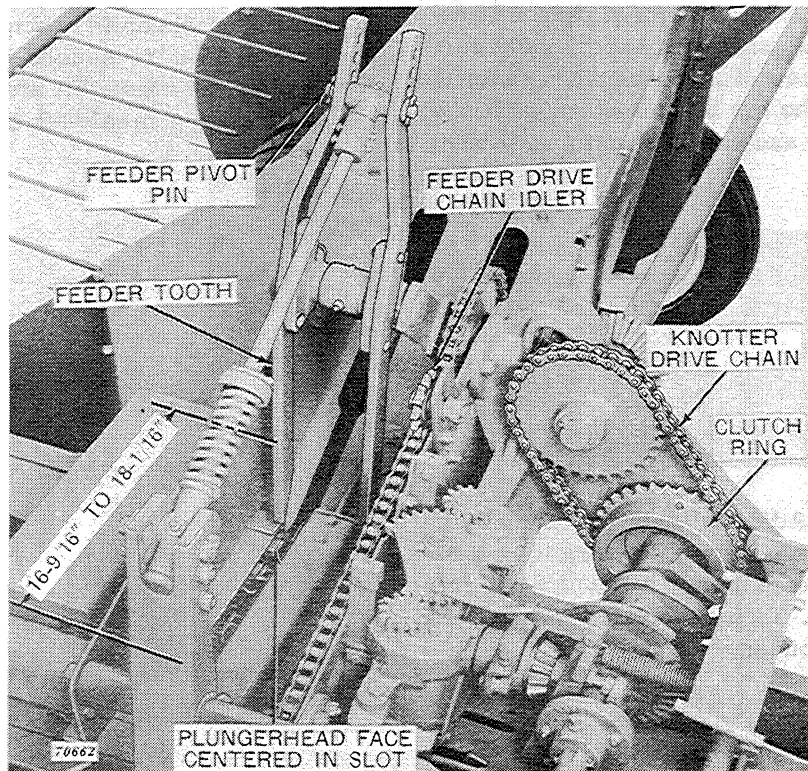
2. Place the feeder pivot pin in the bottom hole of the feeder teeth.

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 counter-clockwise 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.

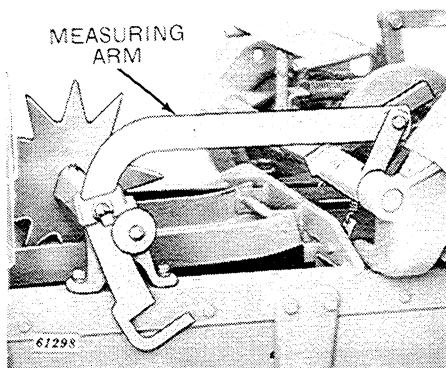
6. Locate the left-hand edge of the feeder tooth 17-7/16 inches, measured horizontally, from the extreme left-hand side of the feeder support. A block may be used as a gauge to hold the teeth in this position. It should be placed between the teeth, and the feeder support bracket, and should be held in this position until the timing has been completed.



7. Connect the main drive chain turning the flywheel clockwise as necessary to install chain with the drive side tight.

NOTE: This will change the 17-7/16-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 16-9/16 and 18-1/16 inches.

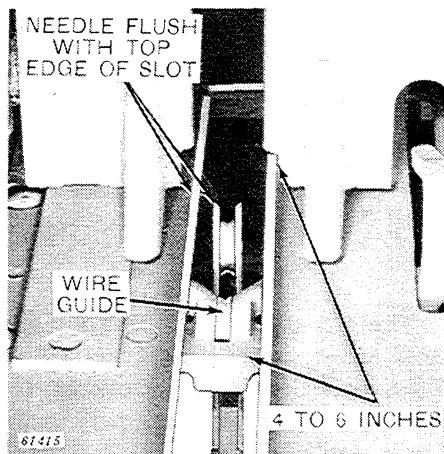
Tighten the idler against the chain with thumb pressure.



8. Trip the trip dog with the measuring arm and position the needles so the top of the rear fork prong is flush with the top of the bottom bale case grooves. Rotate the clutch ring counter-clockwise (facing the L.H. side of the baler) until the lug on the inside of the clutch ring contacts the trip dog roller.

9. Continue to move the plungerhead on its compression stroke until the face of the plungerhead is 6 inches from the rear of the bale case wire guide.

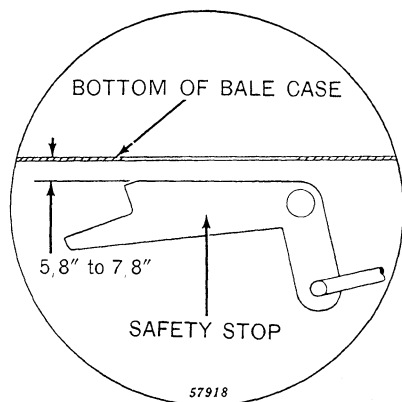
10. Install the tying mechanism drive chain. If necessary, back the clutch ring away from the roller to connect chain. Replace tying mechanism drive chain shield.



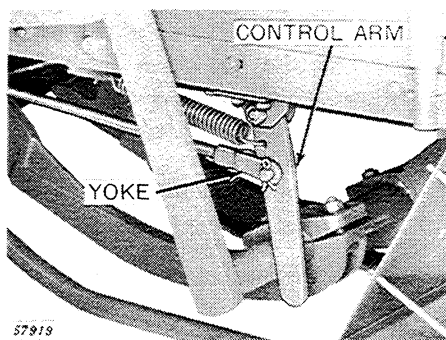
11. Check the needle timing by moving the plungerhead through its complete cycle. When the top of the highest needle has risen flush with the top edge of the bale case bottom groove flanges, there should be between 4 and 6 inches, between the face of the plungerhead and the rear of the bale case wire guide.

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 of the feeder teeth.

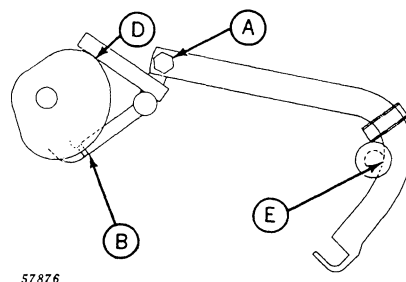
PLUNGERHEAD SAFETY STOP BALE LENGTH CONTROL



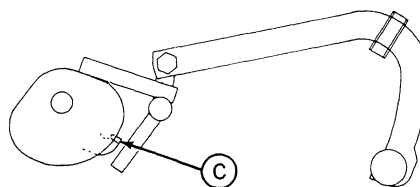
The upper point of the plungerhead safety stop should be 5/8 to 7/8-inch below the bottom of the bale case when the needles are in the home position.



If the plungerhead safety stop dimension is not correct, disconnect the yoke from the control arm and turn yoke to adjust the stop.



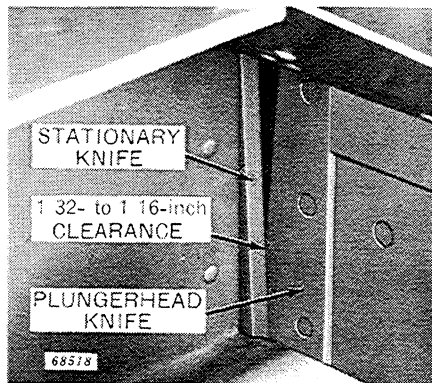
Adjust the measuring arm eccentric "A" so the face of the trip dog "B" does not project more than 1/16-inch above or below the end of the release lever. When the measuring arm is tripped, the trip release lever "C" (below) must not interfere with the rotation of the trip dog.



When 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.

PLUNGERHEAD AND KNIFE ADJUSTMENT

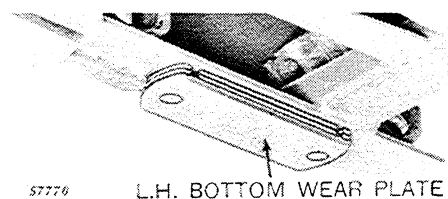
The plungerhead and knives are in proper adjustment when the plungerhead fits snug, yet moves freely. There must be a clearance of $1/32$ to $1/16$ -inch between the plungerhead knife and the stationary knife. The clearance between the top wear plate and the top of the bale case must be $1/16$ -inch or less at the closest point.



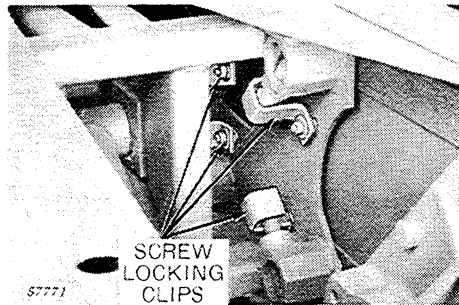
NOTE: Failure to keep knives sharpened and to maintain correct clearance will result in excessive slipping of flywheel clutch.

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 L.H. bottom wear plate on plungerhead to give knife clearance from top to bottom.



3. Remove locking 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.

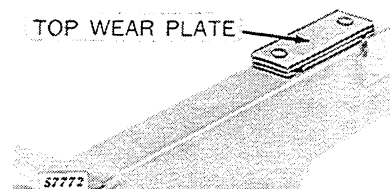
5. Replace locking clips on adjusting screws.

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.

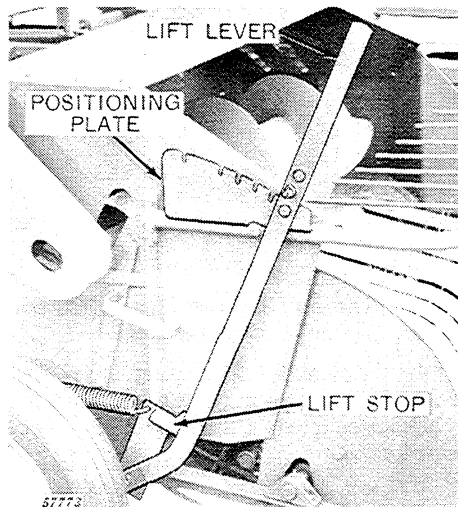
CAUTION: Do not shim stationary knife out beyond the plungerhead guides in the bale case as damage to the knives will result if they contact each other.

To Adjust Wear Plate.

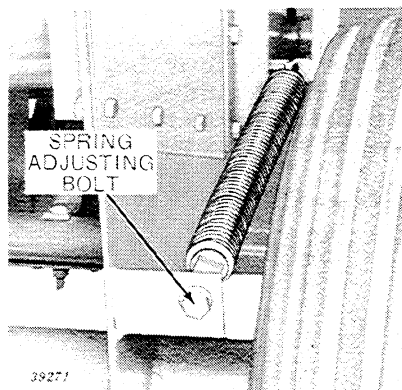


After knife register is in proper adjustment, add or remove slotted shims under the wear plate on the top of the plungerhead. The top wear plate must not be more than $1/16$ -inch from the top of the bale case when the plungerhead is located where there is the least amount of clearance.

PICKUP LIFT SPRING



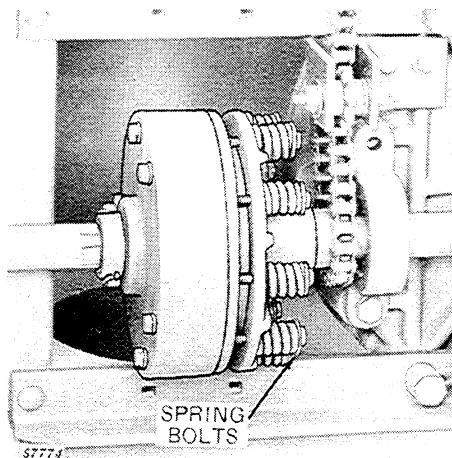
With the pickup lift lever seated in the lowest notch in the positioning plate, the pickup should be adjusted to permit the lift stop on the pickup frame to rest lightly against the lift lever.



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

SAFETY SLIP CLUTCH

The slip clutch should be tested prior to each baling season or, if excessive slippage is noted during normal operation, for a static slip torque of from 375 foot-pounds to 500 foot-pounds.



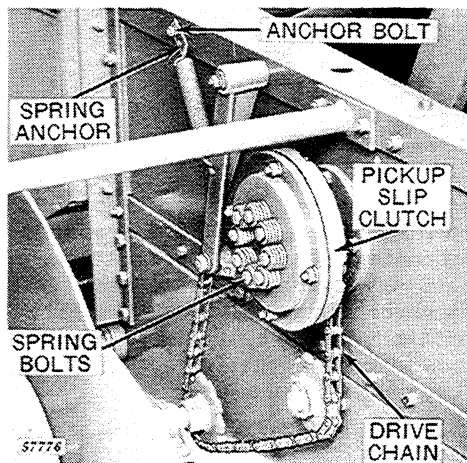
The clutch may be tested by blocking movement of plungerhead and applying a load of from 74 to 100 pounds on a lever, attached to clutch shaft, 5 feet from center of clutch. If the clutch does not slip within this range, adjust clutch by loosening or tightening spring bolts. Loosen or tighten all bolts equally.

PICKUP SLIP CLUTCH AND IDLER

The slip clutch should be tested prior to each baling season or, if excessive slippage is noted, during normal operation for a static slip torque of 150 to 180 foot-pounds.

The clutch may be tested by blocking movement of plungerhead and applying a load of from 30 to 36 pounds on a lever, attached to clutch sprocket, 5 feet from center of clutch. If the clutch does not slip within this range, adjust clutch by loosening or tightening spring bolts. Adjust all bolts equally.

The pickup drive chain should be kept tight to prevent the drive chain from jumping sprockets.



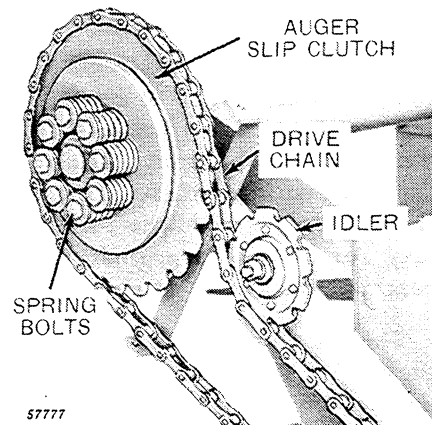
Tension is applied by the idler spring which may be adjusted for greater tension by re-mounting anchor bolt in extra hole in the spring anchor. Remove chain link if necessary to take up slack in chain.

AUGER SLIP CLUTCH AND IDLER

The slip clutch should be tested prior to each baling season or, if excessive slippage is noted, during normal operation for a static slip torque of 250 to 300 foot-pounds.

The clutch may be tested by blocking movement of plungerhead and applying a load of from 50 to 60 pounds on a lever, attached to clutch sprocket, 5 feet from center of clutch. If the clutch does not slip within this range, adjust clutch by loosening or tightening spring bolts. Adjust all bolts equally.

The auger drive chain should be checked periodically for looseness.

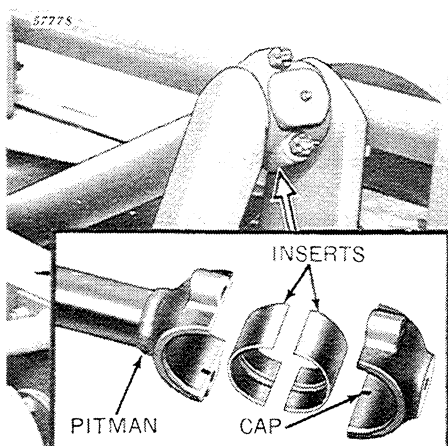


If the chain is loose or jumps the sprockets, adjust chain idler to tighten chain. As chain and sprockets become worn it may become necessary to remove chain links to take up looseness.

PITMAN

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

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.

When replacing pitman cap and bolts be sure round lug matches with round lug. Tighten bolts to 65 foot-pounds minimum.

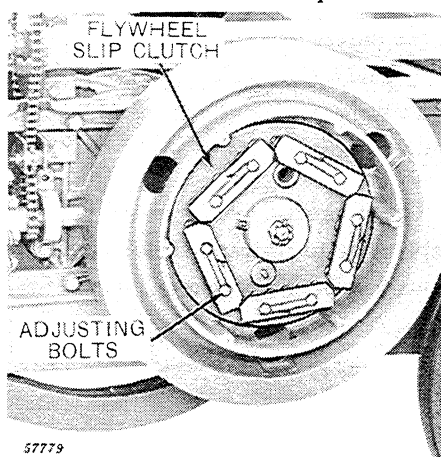
GEAR CASE

The gear case should require no servicing or adjustments if kept lubricated as per instructions. (See "Lubrication," page 22.)

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

FLYWHEEL SLIP CLUTCH

The flywheel slip clutch should be tested prior to each baling season or, if excessive slippage is noted during normal operation. PTO balers should be tested for a static slip torque of 1400 to 1750 foot-pounds and engine balers 2100 to 2400 foot-pounds.



The clutch may be tested by blocking movement of plungerhead and applying a load (140 to 175 pounds on PTO balers and 210 to 240 pounds on engine balers) on a lever attached to flywheel, 10 feet from center of flywheel. If the clutch does not slip within this range, adjust clutch by loosening or tightening spring bolts. Adjust all bolts equally.

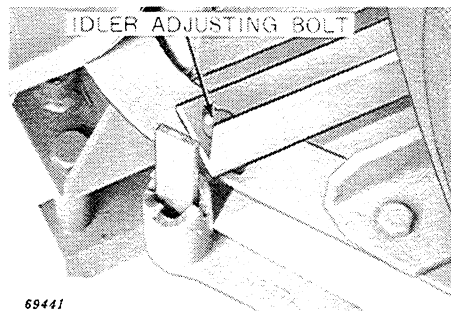
FEEDER BEARINGS

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.

ENGINE AND BELT ALIGNMENT

Slippage of the main drive belt or movement to one side or the other on the pulleys may be remedied by one or more of the following adjustments:

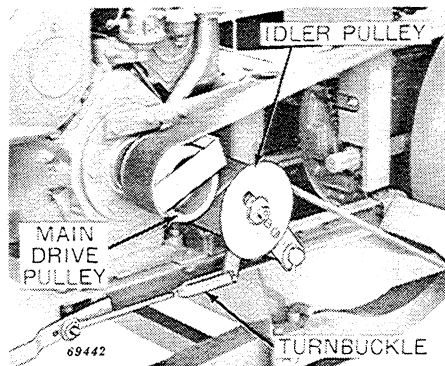
ENGINE ALIGNMENT



The engine must be aligned on the mounting frame with the flywheel. This is done by loosening the engine mounting bolts and shifting the engine until the engine drive pulley shaft is parallel with the flywheel shaft. Tighten mounting bolts.

DRIVE PULLEY ALIGNMENT

The center of the drive pulley must be aligned with the center of the flywheel. To adjust, loosen the set screws, in drive pulley, place pulley in alignment with flywheel and retighten set screws.



IDLER PULLEY ALIGNMENT

The idler pulley may be adjusted to increase or decrease the tension on either side of the belt. The pulley should be adjusted until the belt runs centered on the drive pulley and the flywheel.

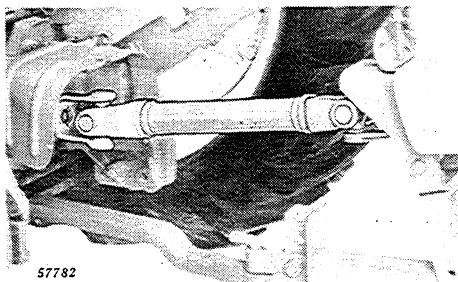
Adjust the idler by loosening the idler adjusting bolt on the right-hand end of the idler mounting, and shifting the mounting forward or to the rear. Tighten the idler mounting bolt.

BELT TENSION

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

ATTACHMENTS

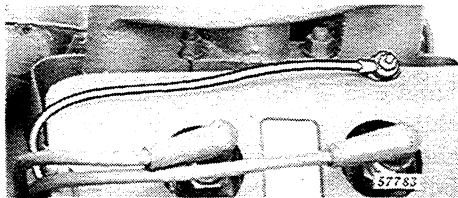
TRACTOR HOOKUP No. 6000E



This bundle is available for baler used as a power take-off machine. It accommodates the standard 1-3/8-inch tractor spline.

CAUTION: Do not operate this machine without proper shielding over power line and universal joint.

HIGH TEMPERATURE SAFETY SWITCH No. AM3522E

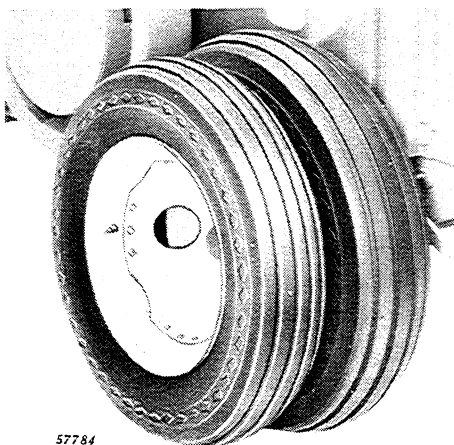


The Wisconsin engine safety switch insures against engine damage caused by overheating. The safety switch mounts on the head of the engine and automatically shuts off the engine when cylinder temperatures become too high. After cause of overheating is corrected and engine cools to normal temperature, engine can be restarted.

L.H. DUAL WHEEL (LESS TIRE) No. 3642E

R.H. DUAL WHEEL (LESS TIRE) No. 2996E

R.H. DUAL ADAPTER No. 6005E

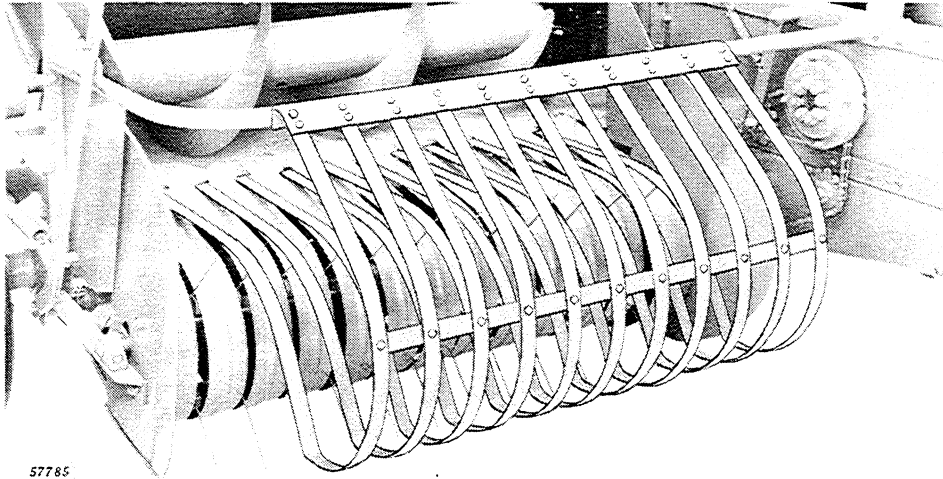


The dual wheel is intended for added flotation when operating in soft or sandy soil.

The dual tire should never be of larger size than inside tire, and preferably smaller.

COMPRESSORS

No. 2988E

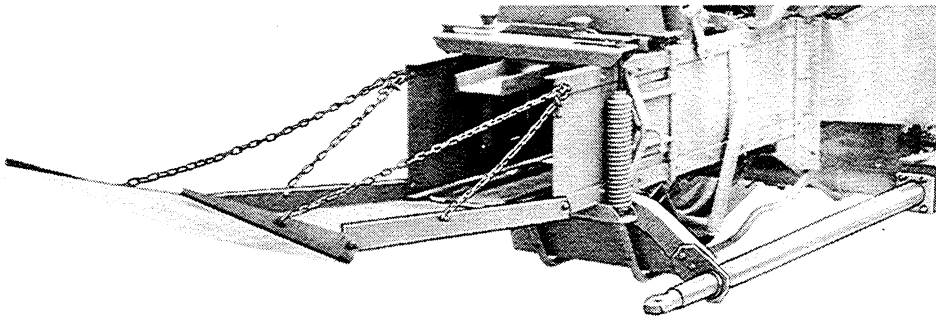


The compressors help to pick up light, short, or stemmy material and also offer a more positive feed into the auger.

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.

WAGON HITCH AND BALE CHUTE

No. 2997E

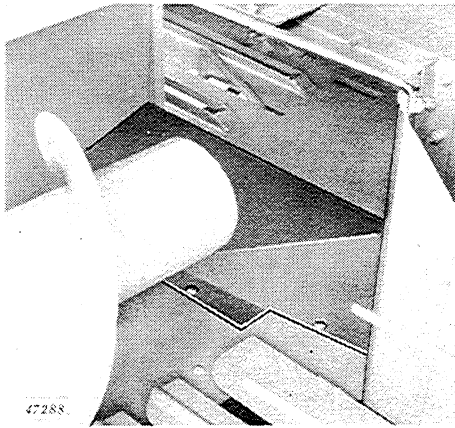


This attachment consists of a BE10031E wagon hitch, and AE10580E hitch extension and supports, and an AE10578E bale chute extension. The use of the wagon hitch makes it possible to hitch a wagon or trailer to the baler, and load bales directly from the bale chute onto the front end of the

wagon or trailer.

This chute attaches in the same manner as 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 varying lengths.

HAY RAMP No. 2998E

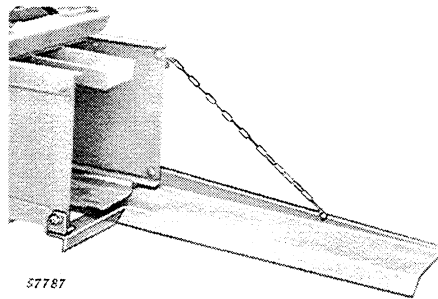


The hay ramp helps to make a more uniform bale when operating in light haying conditions by elevating the light material as it is fed to the plungerhead, thus allowing the plungerhead to make a more even distribution.

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

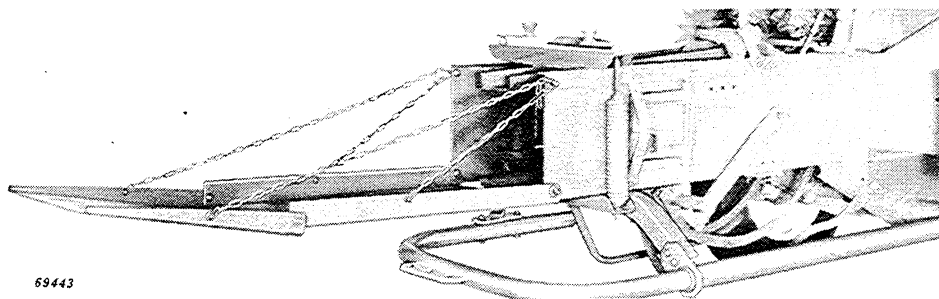
The hay ramp should be removed when operating in normal or heavy baling conditions.

SIDE-DROP BALE CHUTE No. 6015E



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

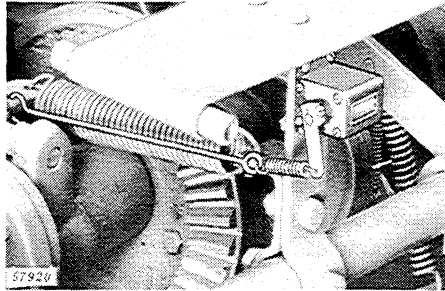
CENTER WAGON HITCH No. BE10070E



The center wagon hitch consists of a 6016E Center Hitch, a BE10031E Wagon Hitch, and an AE10578E Bale Chute Extension.

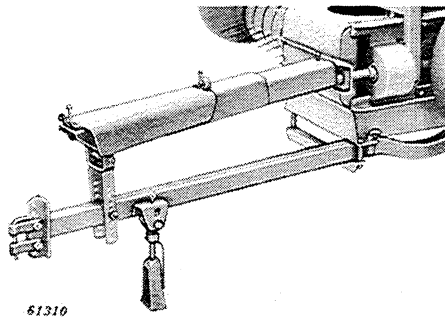
The center hitch allows the wagon to be pulled directly behind the bale chute.

BALE COUNTER
No. AM2980E
BALE COUNTER PULL ROD
No. AM3334E



The bale counter keeps an exact record of the number of bales baled. It can be reset when desired.

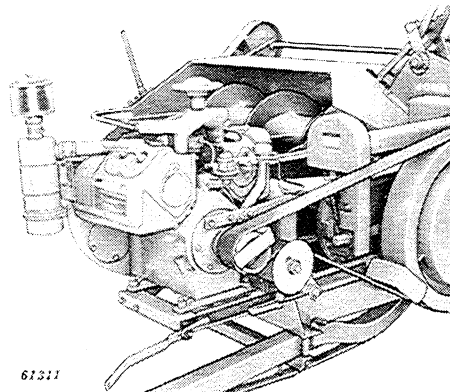
POWER TAKE-OFF UNIT
No. BE10011E



This attachment is available for converting an engine-mounted baler to power take-off. A tractor hookup attachment is also necessary when using power take-off.

WISCONSIN ENGINE AND MOUNTING

Electric Starting No. BE10012E
Electric Starting—High Altitude Head No. BE10013E



If your tractor is too small to operate the 214W as a power take-off machine, if you pull a trailer, or operate the baler in hilly conditions, a self-starting 26.5 h.p. Wisconsin "VH4D" Engine is available.

To increase operating efficiency in altitudes above 4,000 feet, a Wisconsin Engine with high altitude head should be purchased. **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.

ASSEMBLY

SHIPPING BUNDLES

<u>Bundle No.</u>	<u>Description</u>
BE 10010 E	214 W Baler—Basic Unit

Power Take-Off and Tractor Hookup

BE 10011 E	Power Take-Off Unit
6000 E	Tractor Hookup

Self-Starter Engine

BE 10012 E	Engine Unit
BE 10013 E	Engine Unit (High Altitude Head)

ATTACHMENTS

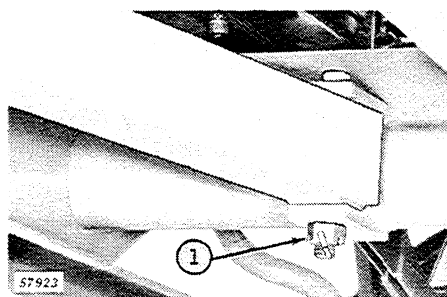
2988 E	Compressors
2996 E	R.H. Dual Wheel
2997 E	Wagon Hitch and Bale Chute
2998 E	Hay Ramp
3642 E	L.H. Dual Wheel
6005 E	R.H. Dual Wheel Adapter
6015 E	Side-Drop Bale Chute
6016 E	Center Wagon Hitch
AM 2980 E	Bale Counter
AM 3522 E	High Temperature Safety Switch
AM 3334 E	Bale Counter Pull Rod
BE 10070 E	Center Wagon Hitch and Bale Chute

The 214W Baler is assembled as illustrated in the following pages. The illustrations show clearly the parts to be assembled and attached in their proper order. Where there are two different methods of setting up the machine, we have shown both methods, and you should use only the sections pertaining to the way

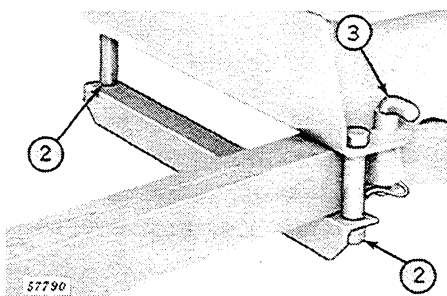
you will use the machine. That is, if you are assembling a power take-off machine, disregard any instructions pertaining to the engine-mounted machine.

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.

POWER TAKE-OFF UNIT

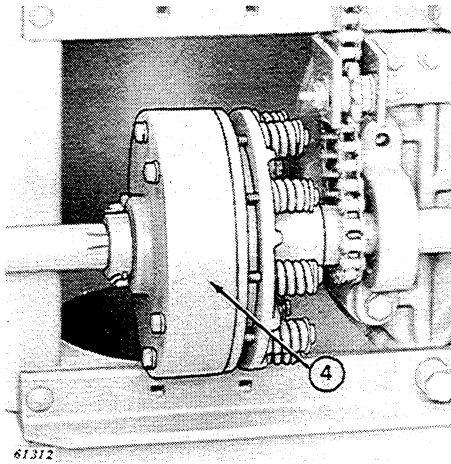


1. Attach rear end of tongue to frame brackets with bolt, slotted nut, and cotter pin.

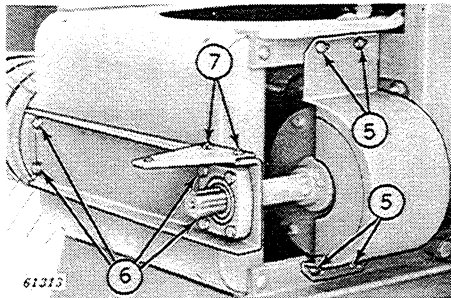


2. Assemble tongue support under tongue with two bolts and spacers.

3. Install tongue locating pin in frame and tongue and secure with spring-locking pin.



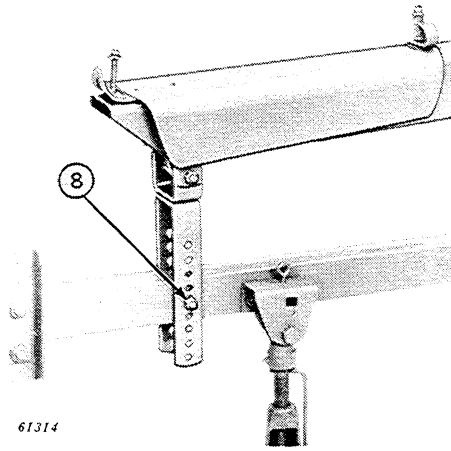
4. Locate the overrun and slip clutch on the main drive shaft.



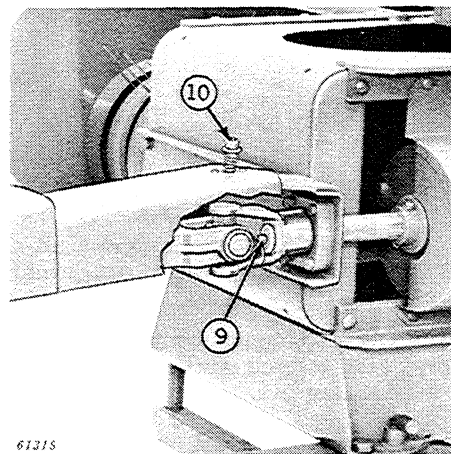
5. Bolt the slip clutch shield to the bale case side with four bolts.

6. Bolt the rear shaft support to the front of the bale case with four bolts.

7. Bolt the rear shield support bracket to the rear shaft support with two bolts.



8. Assemble front end of powershaft and shield assembly to tongue with bolt. Leave bolt loose enough for assembly to pivot.

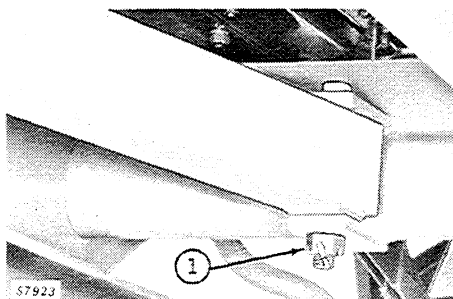


9. Attach powershaft universal joint to clutch shaft with cap screw and washer. Secure with wire through screw head and around universal joint yoke.

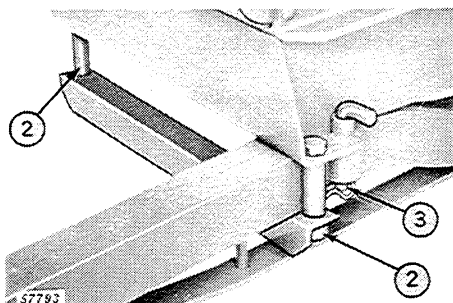
10. Attach rear shield to bearing bracket with bolt, spring, washer, and nut.

ENGINE UNIT

TONGUE



1. Attach rear end of tongue to frame brackets with bolt, slotted nut, and cotter pin.

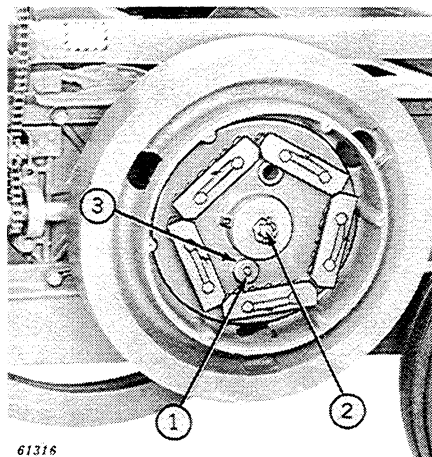


2. Assemble tongue support under tongue with two bolts and spacers.
3. Install tongue locating pin in frame and tongue and secure with spring-locking pin.

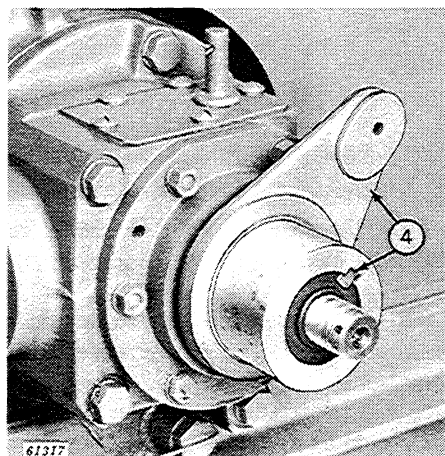
SLIP CLUTCH AND SHEAR BOLT

1. Remove the cover from the flywheel, then remove the 1/4-inch special flywheel shear bolt.

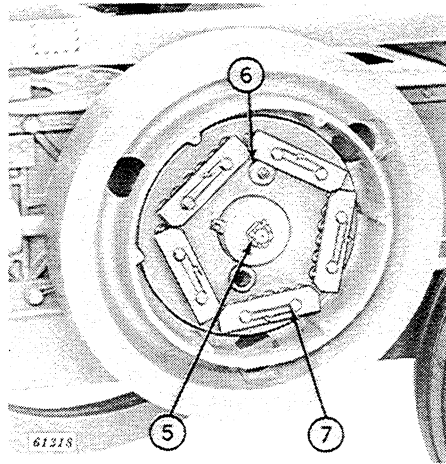
2. Remove the cotter pin, nut, and pinion cover from the crank pinion. Then remove the flywheel (with the aid of a hoist).



3. Remove the PTO shear bolt sleeve from the flywheel.



4. Remove the PTO shear arm from the crank pinion and replace with the engine shear arm. Make sure the drive key has been inserted in the keyway.

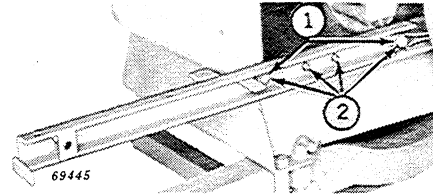


5. Replace the flywheel on the crank pinion, and secure with the pinion cover, nut, and cotter pin.

6. Locate engine shear sleeve in other hole in flywheel, then align the hole in the flywheel shear sleeve with the hole in the shear arm. Locate the 5/16-inch special engine shear bolt through the arm and the sleeve.

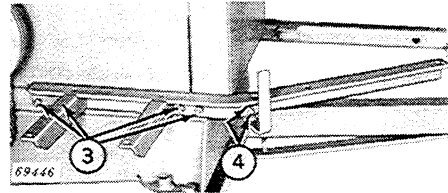
7. Remove the wires securing the bolts in the slip clutch and reset clutch to slip at 2100 to 2400 foot-pounds of pressure (see Flywheel Slip Clutch, page 42). Replace flywheel cover.

ENGINE FRAME



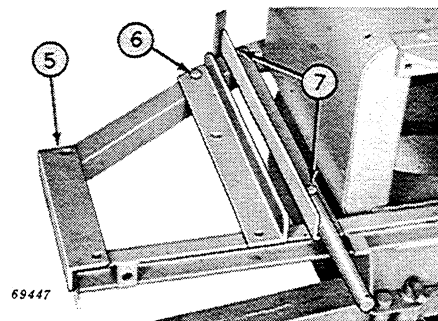
1. Remove the two bolts from the bale case bottom as shown.

2. Bolt left-hand engine frame to bale case. *NOTE: Remove spacer from gear case bolt and replace locking wire.*



3. Bolt right-hand engine frame to bale case with four bolts.

4. Bolt crank-holder strap to the inside of the right-hand engine frame with two bolts.

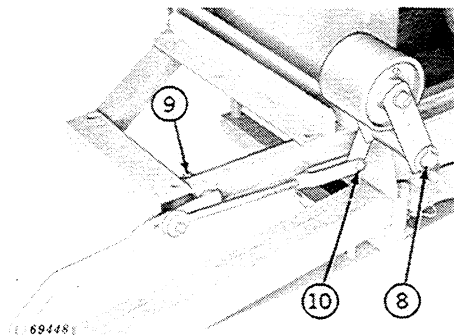


5. Locate the front cross frame on the engine frames.

6. Bolt the rear cross frame to the right-hand engine frame.

7. Attach the idler mounting to the engine frames. Use a carriage bolt on the right-hand end.

ENGINE FRAME—Continued

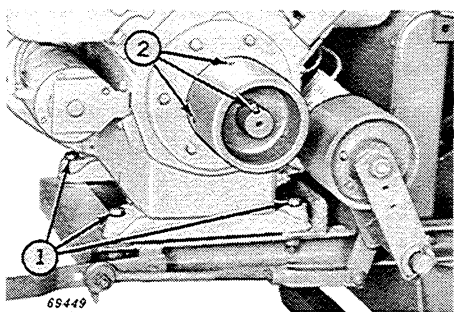


8. Attach belt idler and support to idler shaft. Secure with washers and cotter pin.

9. Attach clutch lever to engine frame with washers and cotter pin.

10. Attach clutch lever turnbuckle to idler arm with pin and cotter pin.

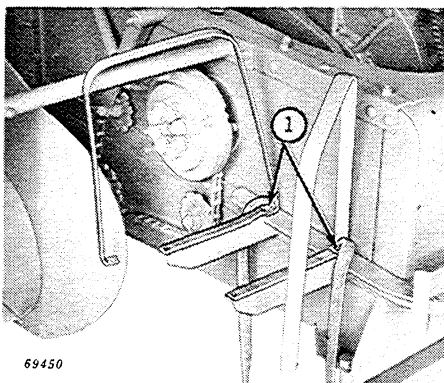
ENGINE



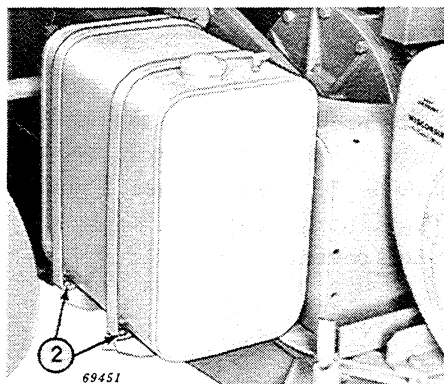
1. Locate engine on engine frame and cross members and attach with four bolts. Do not tighten bolts.

2. Locate square key in keyway of engine drive shaft. Place drive pulley on drive shaft and align the center of the drive pulley with the center of the flywheel. Insert and tighten the pulley set screws. Tighten the engine mounting bolts.

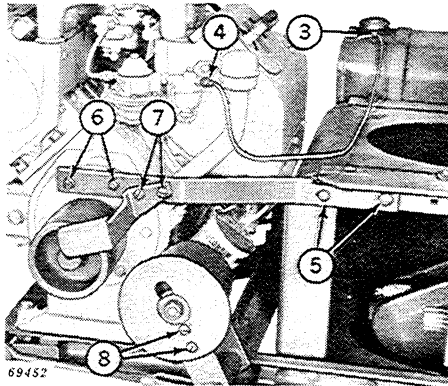
GAS TANK, SUPPORT, AND SHIELDS



1. Locate short felt pad, gas tank strap and long felt pad on gas tank support end, then secure with carriage bolt. Repeat procedure with remaining pads and strap on the other support end.



2. Place gas tank on supports and align felt pads and gas tank straps around the tank, then bolt to the outer ends of the support with two carriage bolts. Tighten all bolts.



3. Attach fuel line to gas tank.

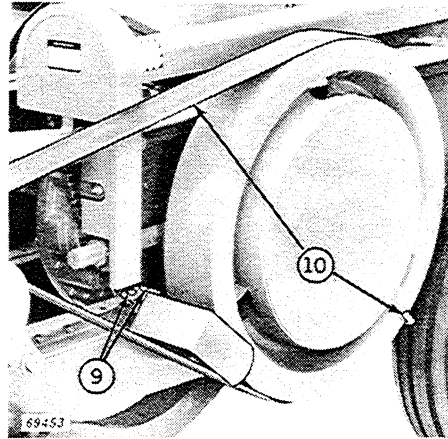
4. Attach fuel line to engine fuel pump.

5. Remove carriage bolt from bale case and end cap, then attach the left-hand engine support to the bale case with two carriage bolts.

6. Remove the two cap screws from the engine end cap, then attach the front of the engine support to the engine with two longer cap screws. Tighten all bolts.

7. Bolt drive pulley shield to support strap with two machine screws.

8. Attach idler pulley shield to idler support with two machine screws.

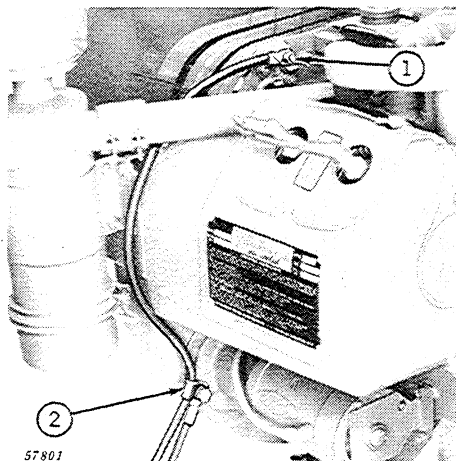


9. Bolt flywheel shield to the bracket, and bolt bracket to frame channel.

10. Loosen the belt guide. Place the belt around the drive pulley and the flywheel. Tighten the belt guide.

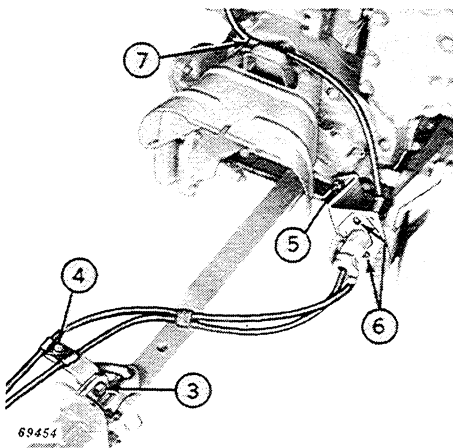
NOTE: For final belt and pulley adjustment, refer to "Engine and Belt Alignment," page 43.

ELECTRIC STARTING EQUIPMENT



1. Attach connector cable to starter button.

2. Secure connector cable, clamp, and ground cable to starter mounting bolt.



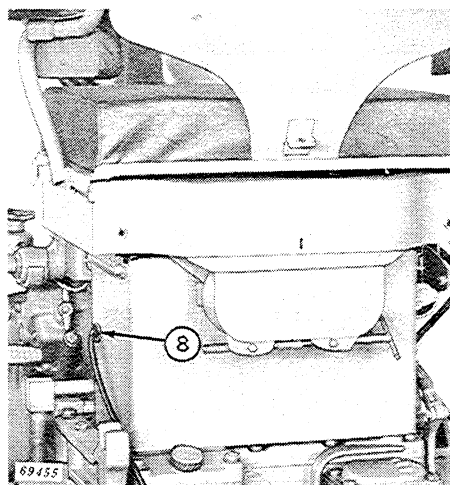
3. Bolt bracket to tongue.

4. Secure cables to bracket with clamps.

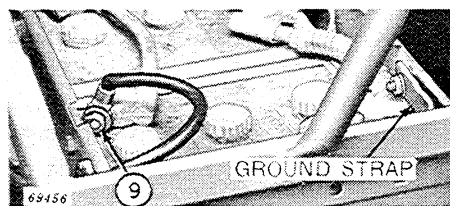
5. Remove bolt and replace with stud, nut, and lock washer. Attach bracket to stud with flat washer, lock washer, and nut.

6. Bolt receptacle to bracket with three bolts.

7. Attach cable with clamp to shield.



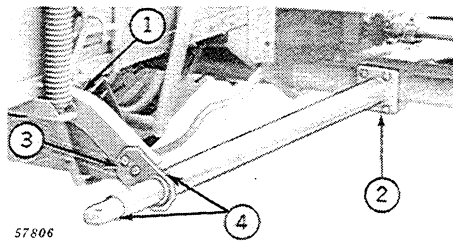
8. Drill a 7/8-inch hole in battery box. Insert cable into battery box. Set grommet.



9. Connect cable to battery terminal as shown.

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

WAGON HITCH AND BALE CHUTE

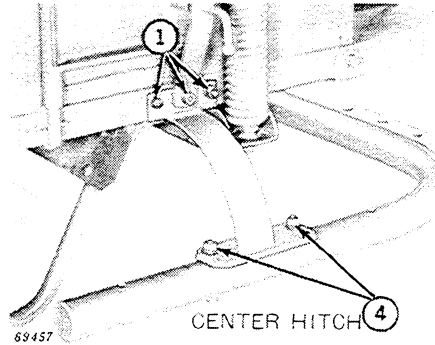


1. Bolt hitch support to bale case bottom with three plow bolts.

Center Wagon Hitch Only. Bolt hitch support to left-hand side of bale case with three additional bolts.

2. Bolt hitch to axle.

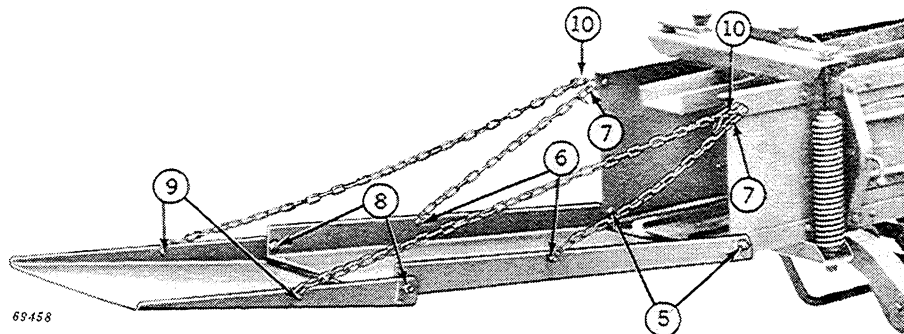
3. Bolt hitch to hitch support.



Center Wagon Hitch

4. Insert wagon hitch extension into the hitch and secure with drilled pin and cotter pin.

Center Wagon Hitch Only. Attach right-hand end the same as regular hitch. Bolt left-hand end to hitch support with two bolts.



5. Remove bale chute from bale case and attach chute extension to bale case bottom with two carriage bolts, two spacers, and two flat washers.

6. Bolt the two short extension chains from the original chute to the extension chute.

7. Hold the extension chute at desired height, then attach the two short chains to the lower chain hooks.

8. Bolt original bale chute to extension bale chute with same bolts,

square washers, and spacers removed with chute.

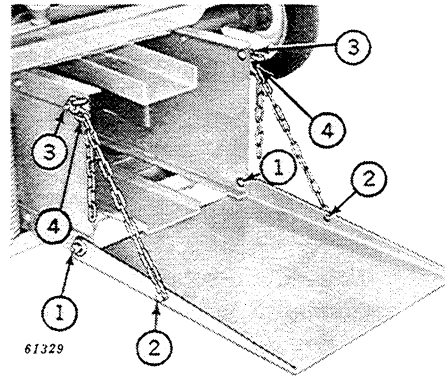
9. Bolt the two long extension chains to the bale chute.

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

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

BALE CHUTE

1. Bolt each side of bale chute to bale case bottom with carriage bolt, spacer, washer, lock washer, and nut.
2. Bolt the chains to the bale chute with two carriage bolts.
3. Bolt the two chain hooks to the bale case top with two carriage bolts.
4. Set the bale chute at the desired height, then secure by attaching chains to the chain hooks.





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That's what the owner of this pair of work shoes is finding out—the hard way. Through a careless action, he has become the victim of an accident. It's a mighty tough way to find out that nobody else can wear your shoes or practice safety for you. And a needless, costly lesson to learn that safety is an everyday need.

Put safety into each of your workdays; read the operator's manual thoroughly; know how to operate each machine properly and safely; take the safety precautions specified; think before you act.

Make sure you wear your "shoes" everyday. Outfit yourself with a safety program now.

