456 and 466
Standard Square Balers

OPERATOR'S MANUAL
456 and 466 Standard Square Balers

OMCC17714 Issue C8 (ENGLISH)

John Deere Arc-lès-Gray
European Version
Printed in U.S.A.

DCY

OMCC17714

To the Purchaser

Your new baler was carefully designed and manufactured to give years of dependable service. To keep it running efficiently, read the instructions in this operator's manual. Each section is clearly identified so you can easily find the information you need — whether it is operation, lubrication, or service. Read the Table of Contents to learn where each section is located. Use the alphabetical index for fast reference.

In addition to the equipment furnished with your baler, attachments are available to help you do a better job in special crop conditions. These are described in the attachments section of this manual and can be purchased from your John Deere dealer.

This safety alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

IMPORTANT: Your operator's manual contains the new SI metric measurements which have been standardized internationally.

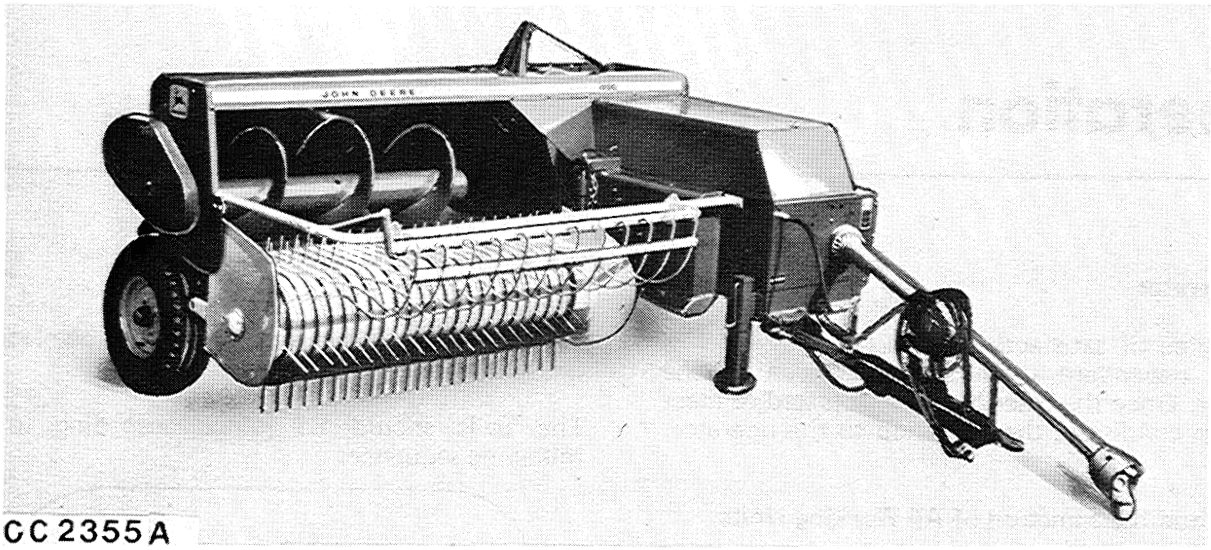
Example:

New	Old
10 N (Newton)	1 kg
10 Nm (Newton-Meter)	1 mkg
1 bar	1 kg/cm^2
1 kW = 1.36 PS (1.34 HP)	

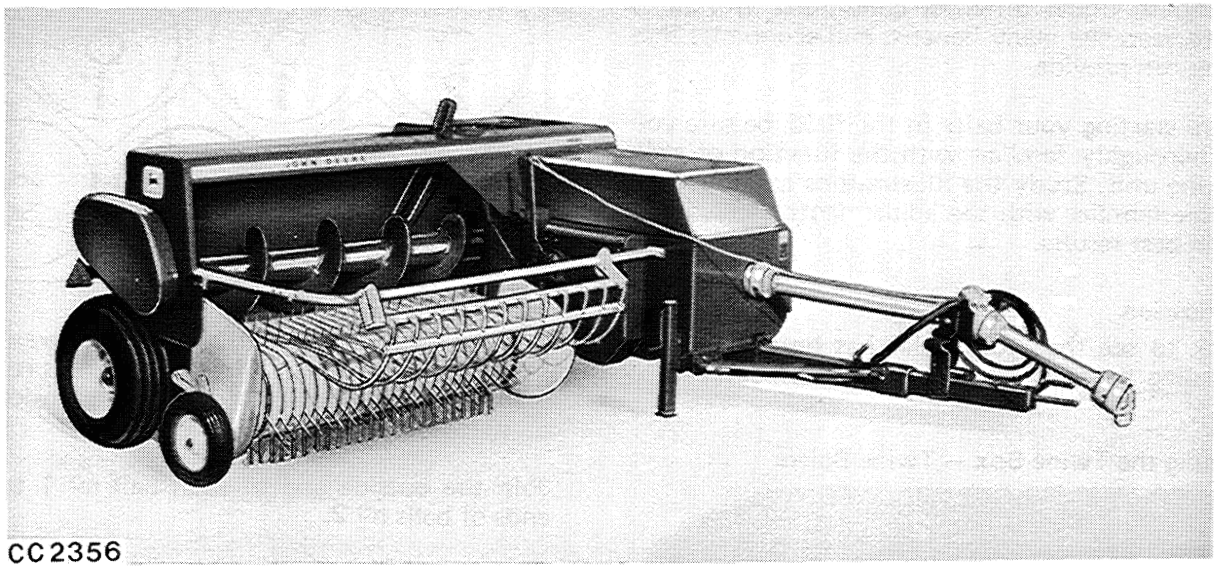
"Right-hand" and "left-hand" sides are determined by facing in the direction the baler will travel when in use.

Record your baler serial number in the space provided on page 62. Your dealer needs this information to give you prompt, efficient service when you order parts. If your baler requires replacement parts, go to your John Deere dealer where you can obtain genuine John Deere parts — accept no substitutes.

Contents



456 Baler



466 Baler

Operation

PREPARING THE BALER

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

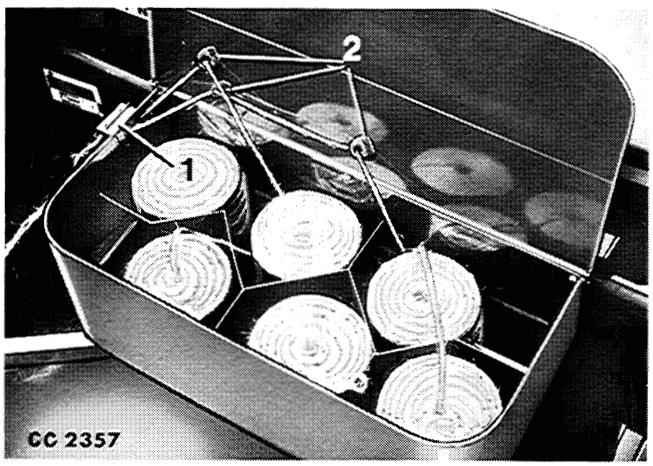
This baler is built to handle a wide range of conditions. Field conditions vary from year to year, from day to day, and even from hour to hour. Different varieties of crops present widely different baling problems. A careful study of the adjustments on your baler, and what they accomplish under different 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 carefully and become familiar with the adjustments necessary to obtain best results.

Lubrication

Check to see that your baler has been lubricated according to lubricating instructions, pages 18 to 21.

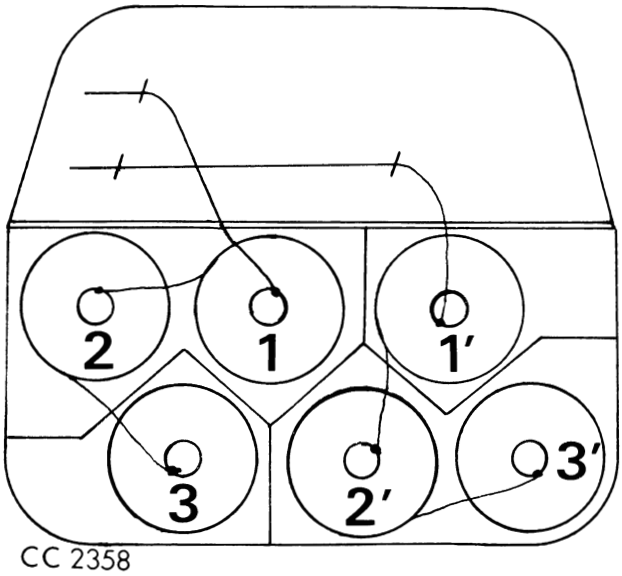
Loading the Twine Box – Twine Balers



1 Tension plates 2 Guides

Six balls of good quality twine should be placed in the twine box.

The balls should be joined according to the following sequence:



Pull inside end of each ball nº 1. Thread twine from center of each ball nº 1 through its respective guide(s) in the box lid, then through tension plates on twine box side.

Join the outside end of each ball nº 1 to center ends of balls nº 2.

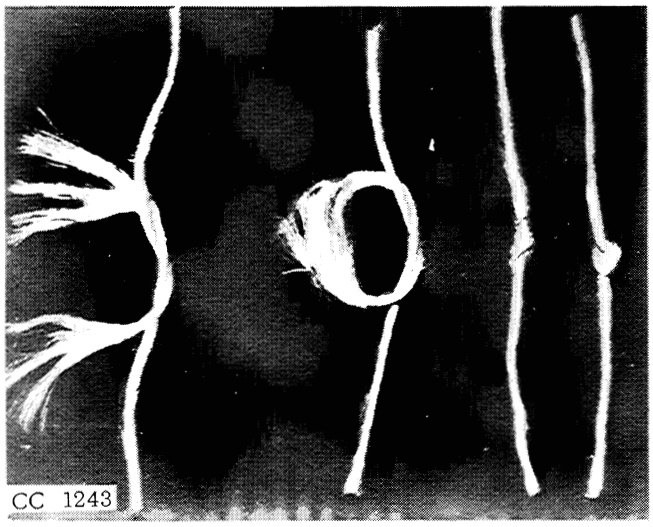
Then join the outside end of each ball nº 2 to center ends of balls nº 3.

IMPORTANT: The following method should be observed to tie twine balls together.

In joining twine ends, use a square knot or a modified square knot. The loose ends of the twine should be trimmed as close to the knot as possible.

PREPARING THE BALER - Continued

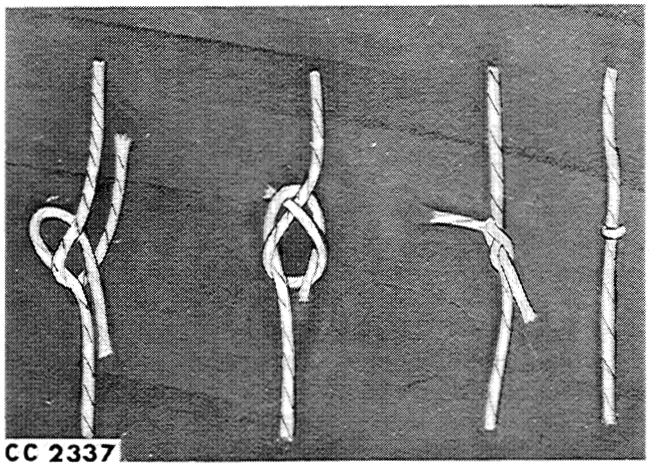
Tying Modified Square Knot – Sisal Twine



Tie sisal twine balls together with a square or modified square knot. The knot is made by first crossing two twine ends over each other, then unraveling both ends of the twine about 40 mm (1-1/2 in.). Insert the frayed ends into each other and roll the ends between the fingertips. Then, tighten the knot securely. Push knots into the center of the twine balls to prevent interference to the twine when the new ball is started.

IMPORTANT: The knot must be small enough to pass through the guides and the needle eyes.

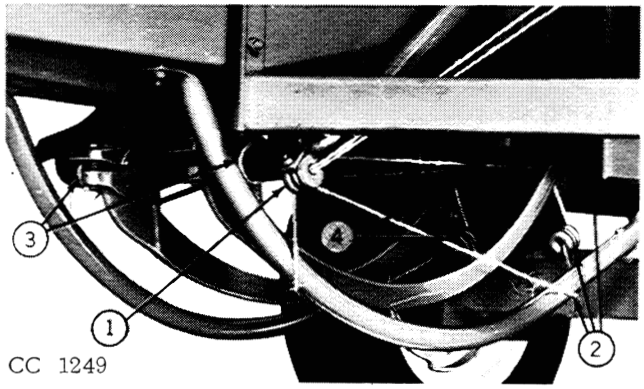
Tying the Bolen Knot – Plastic Twine



The plastic twine balls are tied together by using a Bolen knot. Begin the knot by making a loop in one end of the plastic twine. Make a loop in the remaining end and pass the first loop through the center of the second loop. Take the remaining end with the right hand and cross over the top of the twine and pass through the "eye" of the first loop. Then, tighten the knot securely. Cut off loose ends.

IMPORTANT: The knot must be small enough to pass through the guides and the needle eyes.

Threading Needles – Twine Balers



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

IMPORTANT: Be sure twine strands are not crossed when threading them through eye on needle frame.

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

NOTE: Thread twine OVER guide on end of needle.

3. Run twine back to needle frame, and fasten as shown in illustration above.

4. Repeat steps 2. and 3. with the other strand of twine to thread left-hand needle.

When both strands of twine have been properly threaded, release the knotting mechanism by means of the measuring wheel and turn flywheel counterclockwise by hand. Continue turning the flywheel until needles are all the way up, twine is held in twine disk, and needles have returned to the "home" position.

Remove the twine which was temporarily secured to needle frame. The twine is now ready for the baling operation. See page 4 to adjust twine tension.

⚠ **Be careful when threading needles.**

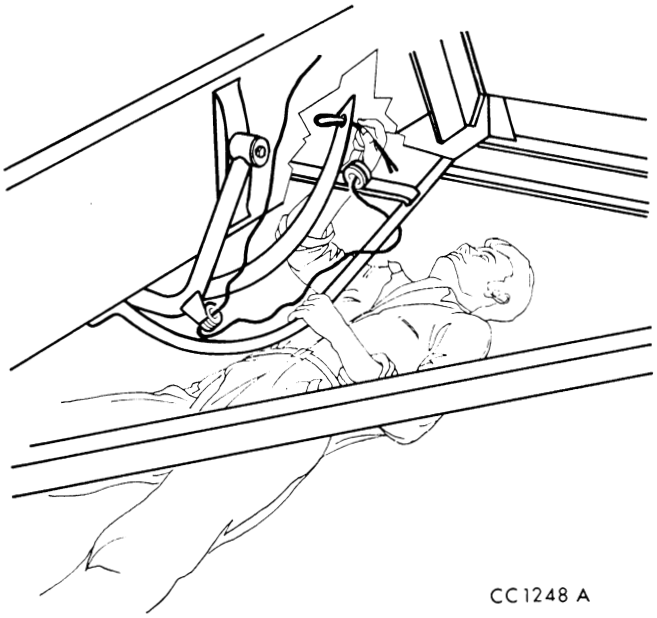
1. Disengage power: Depressing the clutch pedal only is not giving full safety. The control lever of the power take-off drive, too, must be moved to neutral position.

2. Wait until baler flywheel has stopped rotating.

3. Be sure power take-off control lever is securely locked in neutral position as shown in the decalcomania on machine.

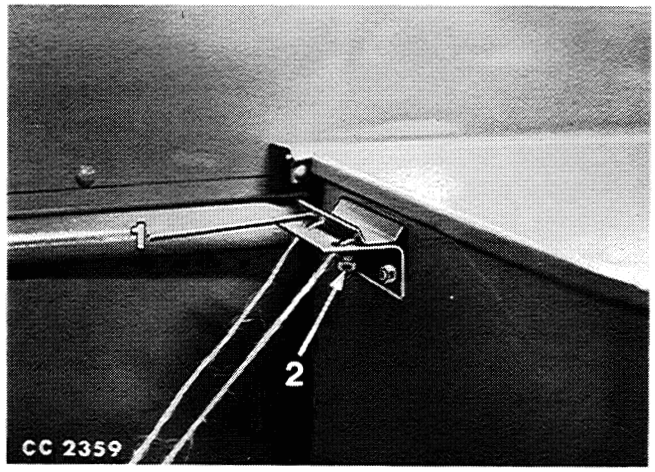
4. Pull twine or wire from box and thread it through twine guides or wire guides and pulleys.

5. Lying on your back below the baler with your head in the direction the baler will travel, the needles may be threaded without any risk.

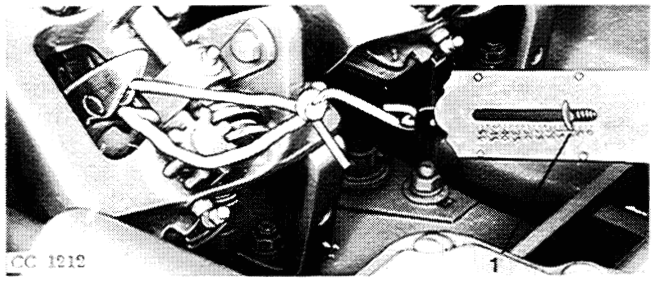


Twine Tension — Twine Balers

Twine tension is controlled by a spring-loaded pressure plate located on the outside of the twine box lid. For twine tension adjustment use the adjusting nut beneath the spring.



1 Tension plate 2 Adjusting nut



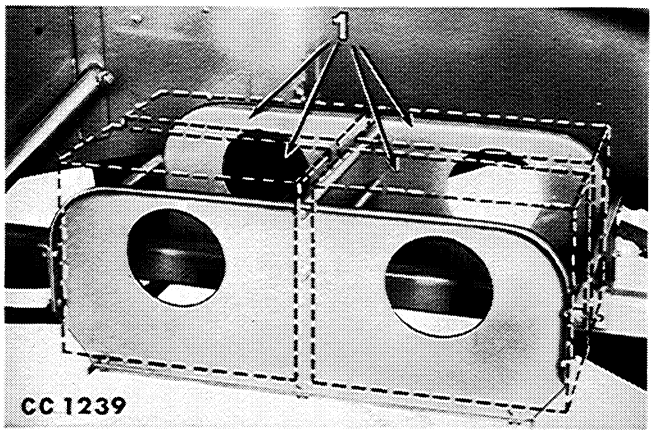
1 23 to 45 N (5 to 10 lb)

To test twine tension, raise needles until center of needle twine guide is even with the top of the twine disk. Then attach a spring scale to twine as shown on preceding illustration. Twine should pull from the twine box at 23 to 45 N (5 to 10 lb). If twine pulls out at less than 23 N (5 lb), tighten the twine tension adjusting bolt. If more than 45 N (10 lb) of pull is required, loosen the twine tension adjusting bolt.

Knotter Adjustment — Twine Balers

The knotter has been carefully adjusted and tested at the factory. It should give satisfactory perfomance with little or no adjustment. Do not make adjustments until paint is worn off and all parts work smoothly. If trouble is then experienced, determine where it exists before making any adjustments. For correcting the trouble, refer to the "Trouble Shooting" section in 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.

Loading Wire Box — Wire Balers



1 4 cartons of wire

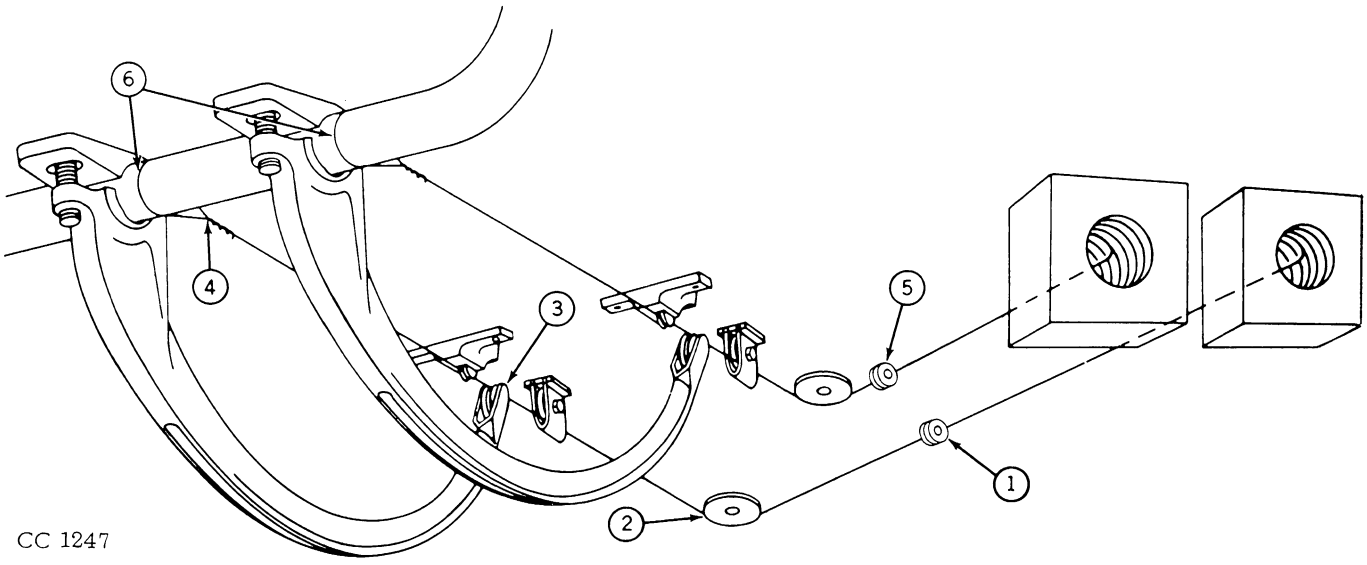
Place four cartons of wire in the wire box.

NOTE: Splice the center wire of each rear coil to the outside wire of its respective front coil of wire. Make a small tight splice so the wire will pull through the wire guides and needles without snagging.

When the front coils of wire have run out, place the rear coils forward and locate two new cartons of wire in the wire box and splice wires as previously explained.

Thread the baler with the center wire from each front coil of wire as shown on page 5.

Threading Needles — Wire Baler



CC 1247

1. Thread the wire from the right-hand coil through the guide; then through the front hole in the main frame.

2. Continue threading the wire around front left-hand wire pulley inside of guides.

3. With the needles in home position, thread the wire under the left-hand center wire pulley and over the left-hand needle pulley.

4. Pull wire back and loop around the needle frame and secure with a twist.

5. Thread the left-hand wire through guide and rear hole in the main frame; then repeat steps 2, 3 and 4 through the right-hand pulleys and needle.

When both strands of wire have been properly threaded, trip the measuring arm and turn the flywheel counterclockwise by hand. Continue turning the flywheel until the needles are all the way up — the wire is held by the grippers, and the needles returned to the "home" position.

6. Remove the loose wire from the needle frame.

NOTE: Check wire pulleys frequently to make sure they turn freely.

PREPARING THE TRACTOR

It is imperative to comply with the following instructions when hitching the baler.

IMPORTANT: When attaching the baler, use only the drawbar of the tractor. It is recommended to use a drawbar that conforms to ASAE standards (355 mm = 14 in.). The hitch straps of the baler tongue must be installed so that the baler is parallel to the ground. Then, by means of the fixing holes, make the necessary adjustments of the powershaft support to obtain a maximum of vertical and lateral straightness of the powerline from tractor to slip clutch.

CAUTION: Never operate a 540 rpm baler with a 1000 rpm tractor

A) Hitching at 355 mm (14 in.)

Shorten the tubes and plastic shields of the telescoping hook-up joining the tractor as shown on drawing A. The powershaft support must be fixed in the front holes of the tongue, while the pillow-block clevis is fixed in the rear hole of the powershaft support.

B) Hitching at 396 mm (15.59 in.)

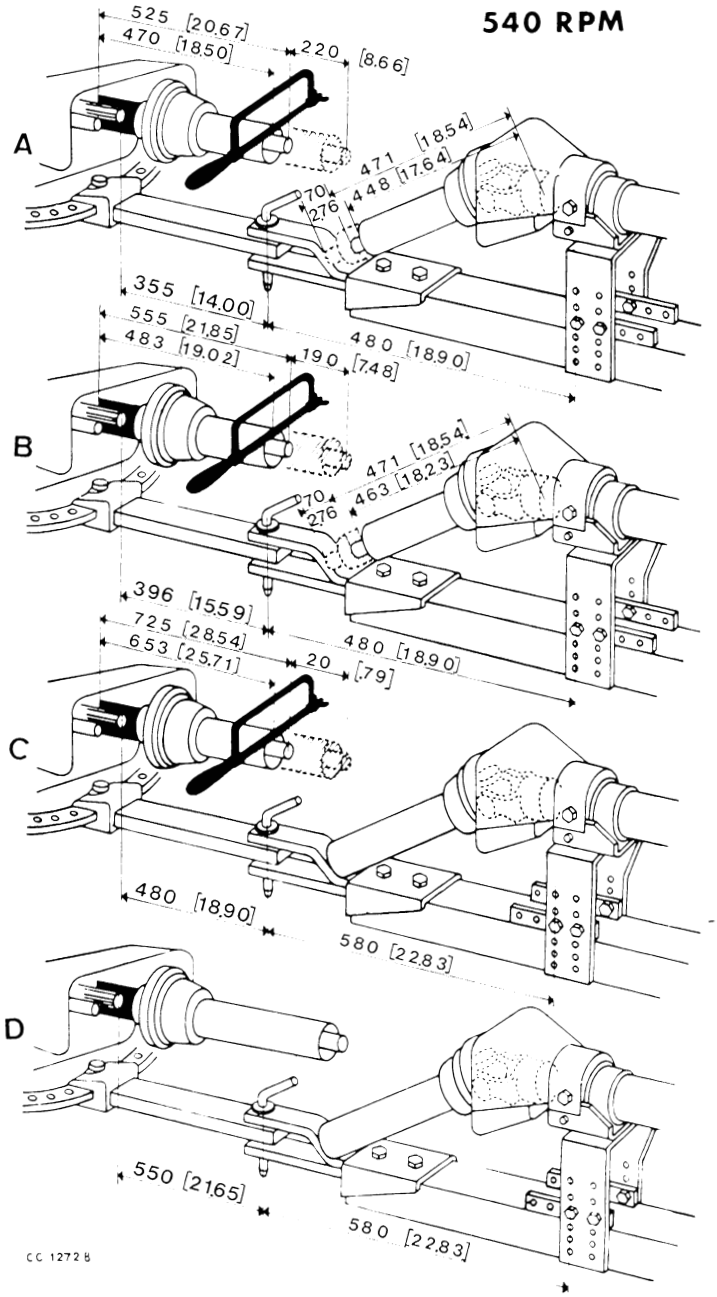
Shorten the tubes and plastic shields of the telescoping hook-up joining the tractor as shown on drawing B. The powershaft support and pillow-block clevis remain in same position as on drawing A.

C) Hitching at 480 mm (18.90 in.)

Shorten front tube and front plastic shield (tractor side only) of the telescoping hookup joining the tractor as shown on drawing C. The powershaft support must be fixed in rear holes of the tongue, while the pillow-block clevis is fixed in the front hole of the powershaft support.

D) Hitching at 550 mm (21.65 in.)

The telescoping hook-up must not be shortened and the powershaft support remains fixed in the rear holes of the tongue as shown on drawing C. However, the pillow-block clevis is fixed in the rear hole of the powershaft support.



Measurements in inches are given in brackets.

Adjusting the Powershaft Support

It is necessary to adjust the powershaft support to obtain maximum straightness of the powerline from tractor to slip clutch.

Lower or raise the powershaft support into one of six possible positions in height and locate the pillow-block clevis in A, B or C, as necessary, for maximum vertical and lateral straightness of the powerline.

With the baler attached to tractor, make a right-hand turn until telescoping shaft ends come in slight contact.

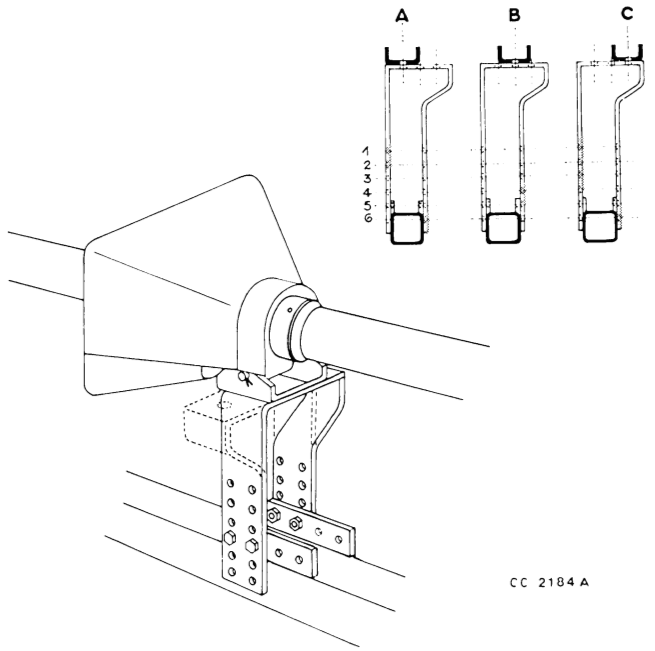
Then engage the P.T.O. drive gently. If an abnormal noise is heard at the slip clutch, lower or raise the support under the powershaft until the noise is eliminated.

NOTES: Never use a steel hammer when connecting or removing U-joints of telescoping shaft.

Keep splines on U-joint and P.T.O shaft clean.

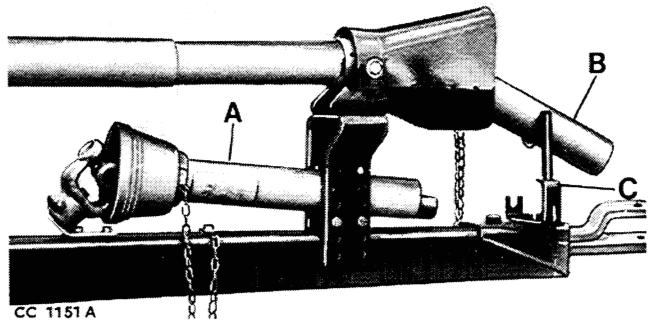
With the telescoping tubes and shields shortened, it is necessary to clean, trim and lubricate the ends of both tubes and shields.

It is imperative to comply with the instructions for hitching: this will increase the life of powerline parts and eliminate strains and jerks on the P.T.O. and on the powershaft pillow-block.



Transport

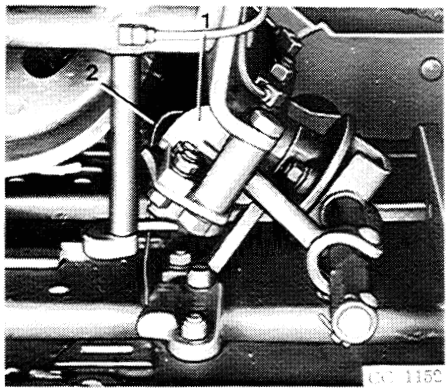
Before transporting the baler, separate the telescoping shaft "A" from P.T.O. shaft on tractor. Store front half of telescoping shaft on baler tongue as shown in illustration opposite. The rear half "B" of the telescoping shaft is held in place by the support "C" during transport.



BALER OPERATION

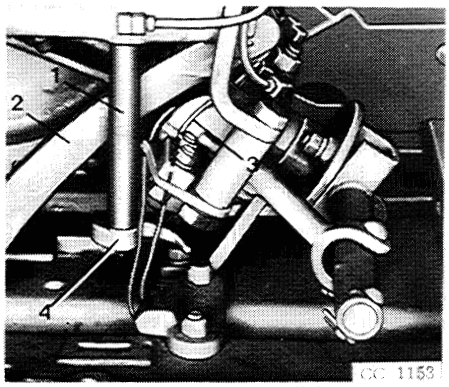
How the Wire is Joined – Wire Balers

To get a better understanding of the operation and the importance of the various adjustments on your baler, an understanding of the tying cycle is important. The following steps illustrate and describe the action of various stages of one complete twist formation.



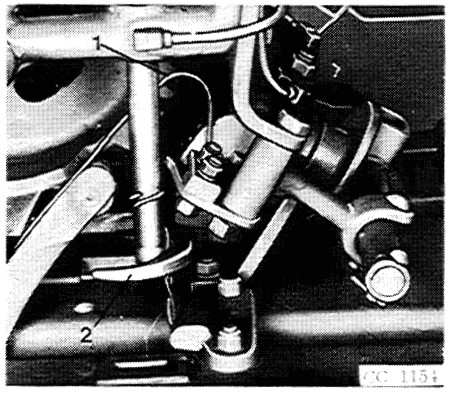
1 Wire gripper
2 Anchored wire

1. After the needle has been threaded, the end of the wire is anchored by the wire gripper. As the bale is formed, the needle wire is pulled from the wire box around the bale.



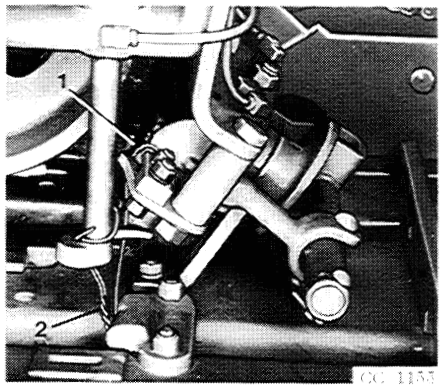
1 Twister shaft
2 Needle
3 Needle wire
4 Twister hook

2. When the bale reaches its proper length, the measuring wheel trips the twisting mechanism. As the needle starts up, it catches the wire around the bottom of the bale and carries it up the front of the bale. The intermittent drive gear on the needle lift shaft engages the pinion on the gear drive shaft which turns the pinion on the twister shafts. The needle continues to rise and locates the wire in the notch in the shear plate on the opposite side of the anchored wire, while the twister hook on the twister shaft is rotating in a clockwise direction. The twister hook completes one revolution and grasps both strands of wire.



1 Needle wire anchored
2 Twister hook

3. At this stage, the wire gripper drive pinion is engaged by the intermittent drive gear. This pinion drives the gripper shaft which actuates the arm of the gripper to release the anchored wire, also shearing and anchoring the needle wire as the gripper moves to the other side. At this time, the needle returns home, the twister hook makes five complete revolutions twisting the wire ends together.

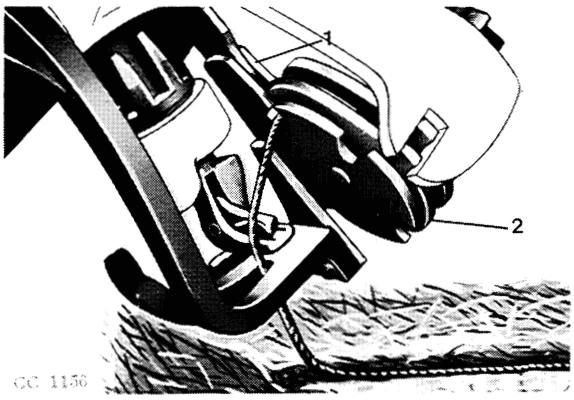


1 Anchored wire
2 Twisted knot

4. The completed bale coming out of the bale case pulls the twisted knot off the twister hook. The next bale pulls the anchored wire into position for the next twisting cycle.

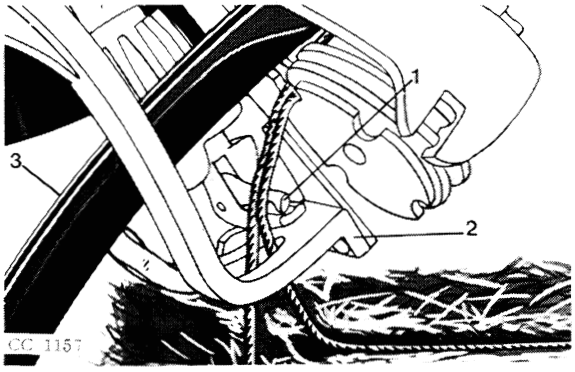
How the Knot is Tied - Twine balers

To get a better understanding of the operation of your baler and the importance of the various adjustments 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.



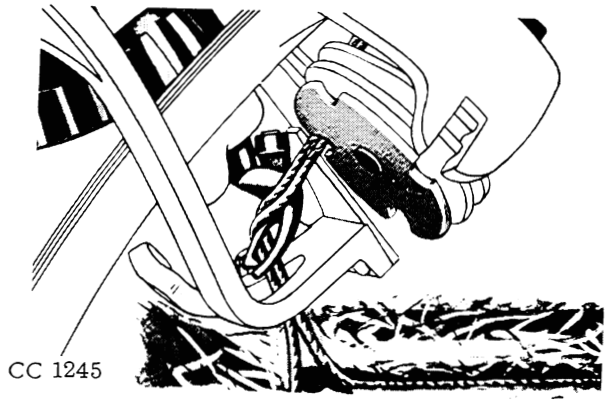
1 Twine holder 2 Twine disk

1. After the needle has been threaded, the end of the twine is held in the twine disk by the twine holder. As the bale is formed, it pulls twine from the twine box.



1 Bill hook 2 Knife arm 3 Needle

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 billhook and into the twine disk.



3. The billhook starts its revolution 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.

1 Knife 2 Needle

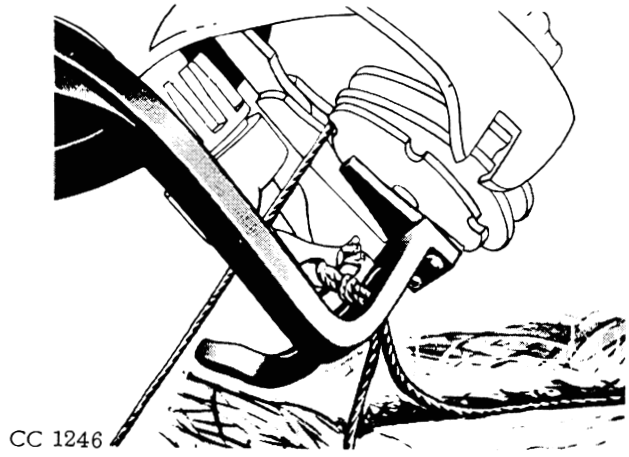
4. As the billhook turns, it forms a loop of twine around the hook and the jaw opens to receive the twine. The knife advances ready to cut the twine between the billhook and disk.

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

BALER OPERATION - Continued

1 Wiper

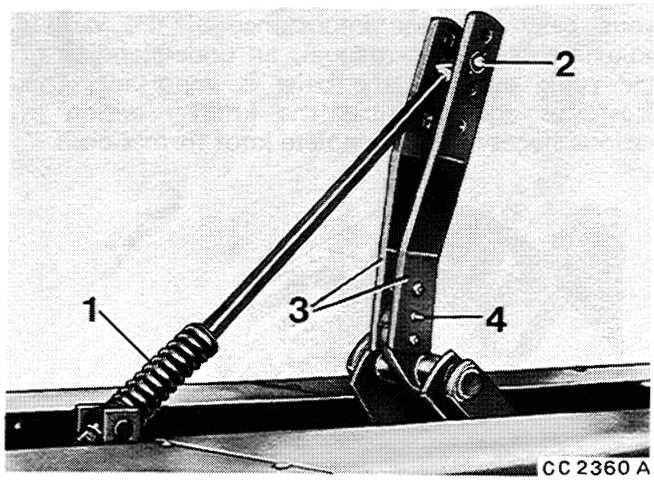
5. The billhook jaw has closed and now holds the ends of the twine tightly. The twine has been cut and the wiper on the knife arm advances to wipe the looped twine from the outside of the billhook — as the jaws hold the two cut ends of twine preparatory to completing the knot.



6. The knot is tied and drops from the billhook, 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.

Adjusting Feeder Teeth



1 Shock spring
2 Pivōt pin
3 Feeder teeth
4 Shear bolt

The feeder teeth (3) feed hay from the auger into the bale chamber. The teeth are adjustable so that bales of uniform density can be produced 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.

Increase the length of the feeder teeth stroke by placing the pivot pin (2) in the lower holes of the feeder teeth if material is not coming far enough into the bale chamber; decrease the stroke by placing the pivot pin in the upper holes of the feeder teeth if material is coming in too far.

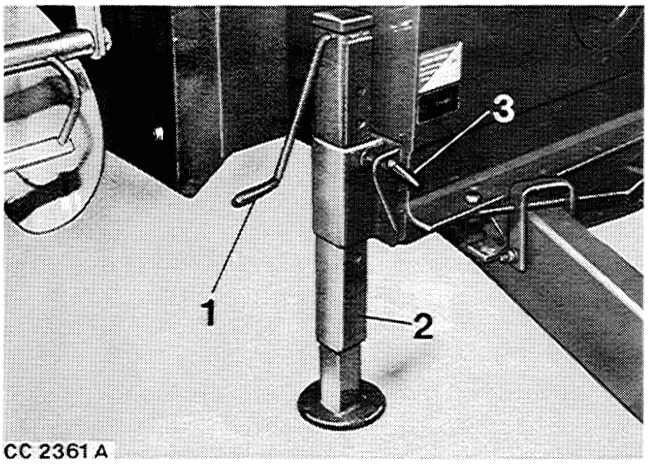
If the teeth are set for their longest stroke and the material is still not coming far enough into the bale chamber, the baler is probably being underfed. This happens when baling at too slow a speed or when picking up windrows which are too light.

A shock spring (1) helps protect the teeth from damage as a result of oversize charges of hay or from striking a solid object.

NOTE: On the 466 Baler, a special feeder teeth shear bolt helps protect against damage if too much hay is forced into the chamber, foreign object enters baler, or if plungerhead is in the way. Correct the trouble and replace the special shear bolt (4).

IMPORTANT: If breakage occurs, see your John Deere dealer for correct replacement. Do not use a substitute bolt.

Operating the Jackstand



1 Crank
2 Jackstand
3 Latch

During operation or transport, the jackstand must be held in fully raised position.

LOWERING JACKSTAND

With baler hitched to the tractor, pull out latch and jackstand will drop. Release latch to secure jackstand in one of the upper holes. Then continue to lower jackstand with crank until jackstand heel contacts ground, relieving tractor of baler weight.

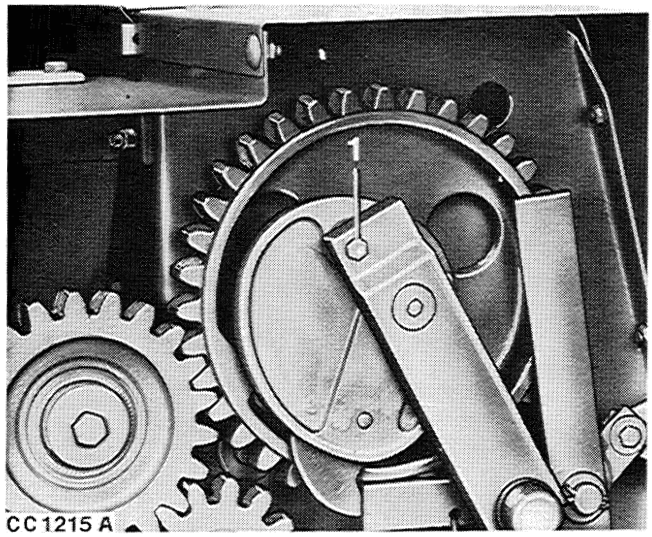
RAISING JACKSTAND

With baler hitched to the tractor, pull out latch and lift jackstand by hand until latch can be released in bottom hole. Then finish to raise jackstand with the crank.

⚠ To avoid any risk of accidents resulting from a fall of the machine, always push the locking pin firmly into the corresponding hole on the jackstand.

If difficulties occur, when pushing the pin, remove it and then trim its end.

Replacing the Knotter and Needle Drive Shear Bolt



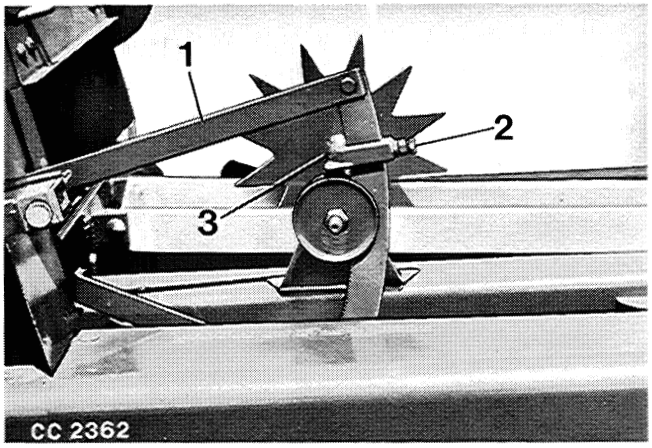
1 Shear bolt

The knotter and needle drive special shear bolt helps protect the knotter and needle drive from damage if the knotters become obstructed or if the needles are prevented from completing their cycle. Correct the trouble and replace the special shear bolt. Do not replace with a standard bolt.

IMPORTANT: If breakage occurs, see your John Deere dealer for correct replacement. Do not use a substitute bolt.

BALER OPERATION - Continued

Adjusting Bale Measuring Control



1 Bale measuring arm 2 Set screw 3 Stop

Adjust the stop on the measuring wheel control arm up or down for the desired bale length. Raise the stop for bales up to 1.30 m (50 in.) long or lower the stop for bales as short as 0.30 m (12 in.) long.

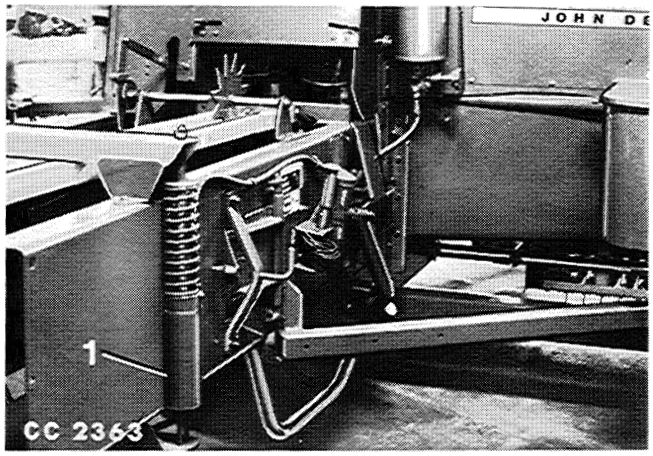
Irregular length bales are caused by lack of density of the material. This may be remedied by increasing the ground speed, increasing the size of the windrow, or by tightening the tension on the bale chamber.

Adjusting Bale Weight

Bale weight is regulated by changing the tension on the bale chamber.

Bale weight is also affected by the size of windrows, moisture content, and the quality of the hay. Since these factors may vary from hour to hour or from windrow to windrow, the bale weight should be checked regularly during operation.

Adjusting Bale Weight (Standard on 466 T/WS, Optional on 456 T/WS)

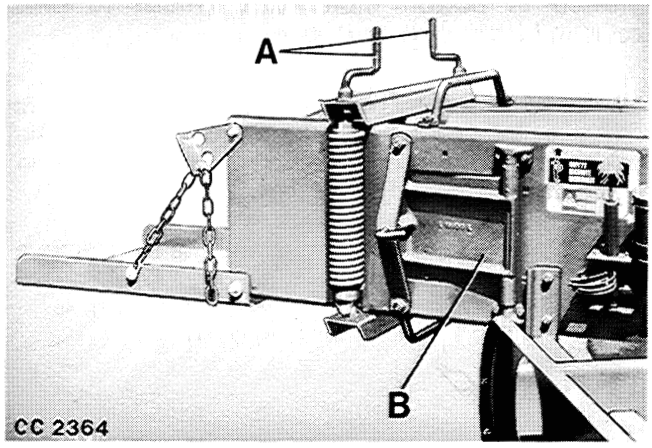


1 Hydraulic cylinder controlling bale tension

Bale weight is regulated by changing the tension on the bale chamber. One knob controls the tension applied to the bale. Once tension has been set to accommodate the type or condition of the crop, more uniform bales will be obtained without continual readjustment.

See pages 18, 41, 56 for service and adjustment.

Adjusting Bale Weight (456 T/WS, Standard)



Bale weight is regulated by changing the tension on the bale chamber. Tension is adjusted by means of cranks A located at the end of bale chamber.

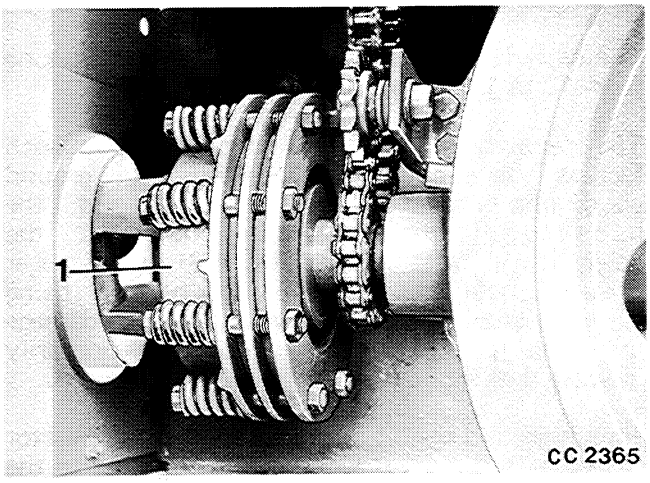
Side Press (456 / 466)

Regulation of bale weight is further improved on 456 and 466 balers by means of a side press B when material is not of sufficient density. (See illustration CC 2364).

IMPORTANT: At the end of each day's work release hydraulic (or manual) bale tension and side pressure. This will avoid excessive strain on baler when recommencing work.

Bales too tight or too heavy cause excessive strain on the baler, contributing to undue breakage and wear of parts and also cause breakage of twine and wire.

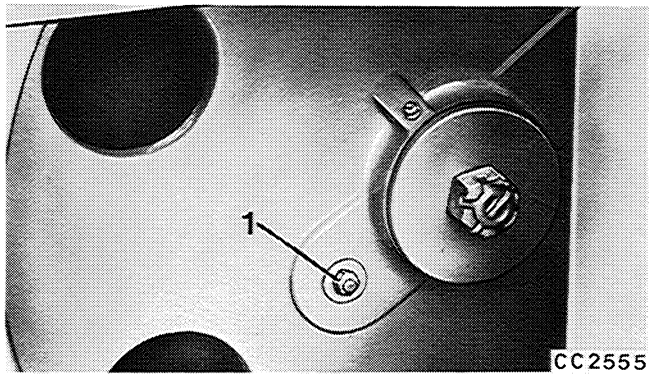
Slip Clutch



1 Slip clutch

The slip clutch in the main drive helps protect the baler from undue stress resulting from: high starting torques, material too heavy, obstacles lodging between knives, etc. (See page 36 for adjustment).

Replacing the Flywheel Shear Bolt



1 Flywheel shear bolt

The special shear bolt in the flywheel will shear if the plungerhead becomes blocked during operation. (See page 56 for service). When the cause of shearing has been located and corrected, replace with a new special shear bolt. Do not replace with a standard bolt.

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

IMPORTANT: After having replaced the shear bolt, move plungerhead forward (toward tractor) before returning needles to home position. This avoids damage to the safety stop rod.

CAUTION: To avoid injury, do not open door until flywheel stops completely.

Adjusting Height of Pickup Teeth

Set the pick-up teeth as high as possible, but low enough to pick-up all the crop. Replace immediately all damaged or missing teeth. Best results are obtained by setting the teeth as high as possible according to the crop.

Positioning Tongue

Balers 456 and 466 may be equipped with either a hydraulic or mechanical tongue adjuster, both being operated from the tractor seat. See page 58.

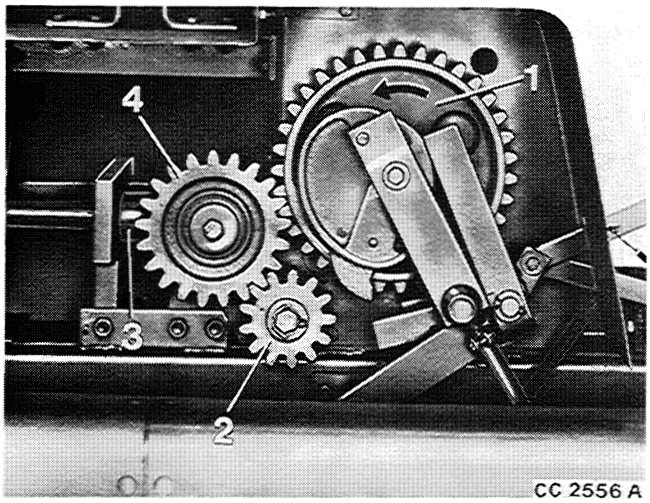
FIELD OPERATION

Breaking in the New Baler

After the baler has been completely assembled and connected to the tractor, inspect it 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 (See page 38).

NOTE: On twine balers, grease has been applied at the factory to the knotter area so as to avoid deposits of paint or rust. 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.



1 Clutch ring
2 Auger drive gear
3 Main drive gear
4 Cluster gear

The drive gears must be lubricated during the "breaking-in" period to ensure that any casting irregularities will become worn smooth. Apply a liberal coating of multi-purpose grease to each tooth on all the gears illustrated. This must be done before the one-hour empty running "break-in" procedure described below.

The new machine should be given an empty running "breaking-in" period of at least 1 hour to allow the parts to work in gradually. After a short run at slow idling speed, stop machine and inspect it 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 "breaking-in" period.

Crop Preparation

The windrows should be of moderate size made by a side-delivery rake or windrower.

Direction of Travel

Bale the driest hay first; therefore, start baling at the outside of the field. Travel in the direction that the rake or windrower traveled to pick up the hay in a head-first position.

IMPORTANT: Do not cross windrows during baling operation to avoid getting material around the pick-up and plungerhead drives.

Working Speed

When starting the baler, bring the tractor engine up to recommended speed to obtain 540 rpm on the baler powershaft (plungerhead should be up to normal 92 strokes per minute under load for 456 balers and 98 strokes per minute for 466 balers). Drive in low gear until baler is functioning properly and a few bales have been discharged.

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 built up sufficiently to turn the bale measuring wheel positively. If hay does not fill opening in the bale chamber, gradually increase ground speed up to about 5.5 kmh (3-1/2 mph), or increase the size of the windrow, until good-sized charges are fed into the compression chamber without straining the feeding and baling mechanisms.

The baler is operating efficiently, when it is taking from 12 to 18 charges for a 1 m (40 in.) bale.

The capacity of the baler depends upon such factors as material characteristics, ground conditions, condition of tractor, and the judgement of the operator. Do not crowd the baler. If the auger drive belt (456) or the auger drive slip clutch (466) slip, the baler is being crowded beyond its capacity, and serious damage may result. Remember: You are primarily interested in tons per day, not bales per minute.

Rough ground conditions may require the operator to adjust the ground speed of the machine to the size of the windrow for the best performance.

IMPORTANT: N° 30 bale ejector can be used with 456 baler but not with 466 baler. When using a 456 baler with n° 30 bale ejector, drive at a reasonable ground speed to avoid bale ejector overloading.

Always operate the baler with tractor recommended speed to obtain 540 rpm on the baler powershaft.

It is essential to periodically clean out accumulated chaff and trash from around the twine or wire tying mechanism and the plungerhead stop. 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 trip device to function inaccurately, resulting in broken parts, long bales, or untied bales.

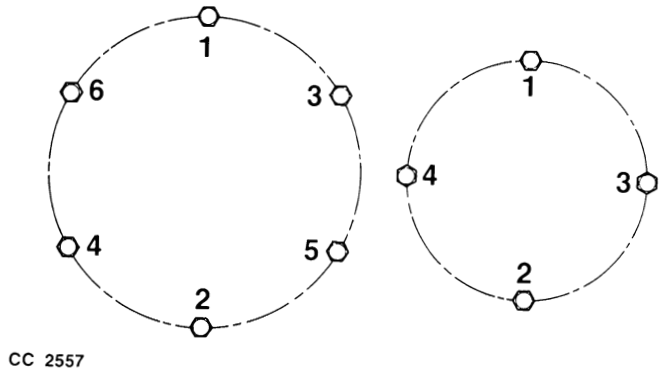
Adjust plungerhead after baling the first 1.000 bales (see pages 38 to 40) and thereafter as necessary, depending upon operating conditions.

Wheel Bolt Tightening Sequence

The wheel bolts must be tightened to a torque between 115 and 135 Nm (11.5 to 13.5 mkg; 85 to 100 ft-lb).

The following method must be used when reinstalling a wheel:

- With the wheel not contacting the ground, tighten the bolts to 30 to 40 Nm (3 to 4 mkg; 22 to 30 ft-lb) torque.
- With the wheel contacting the ground: tighten the bolts in the sequence shown to 115 to 135 Nm (11.5 to 13.5 mkg; 85 to 100 ft-lb).



CC 2557

L.H. wheel R.H. wheel

MEMORANDA

SAFETY SUGGESTIONS

The safety of the operator was one of the prime considerations in the minds of John Deere engineers when this baler was designed. Shielding, simple adjustments, and other safety features were built into the baler wherever possible.

You can make your farm a safer place to live and work if you observe the safety suggestions given. Study these suggestions carefully and insist that they be followed by those working with you and for you.

Before servicing or adjusting the baler, or removing bales or other material from it, or hitching wagon to baler, always:

a) disengage all power,

b) shut off engine, and then

c) wait until baler flywheel has stopped rotating.

All rotating shields on PTO drive must turn freely.

Stand clear of baler 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.

Extreme caution must be exercised when tripping knotters by hand with the baler running. Do not touch knotter. Stand clear of needle frame.

Do not try to remove or pull twine or wire from bale case or knotter when machine is running.

CAUTION: Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious bodily injury. DO NOT attempt to mount a tire unless you have the proper equipment and experience to perform the job safely. Have it done by your John Deere dealer or a qualified tire repair service.

STORAGE

Your baler should be taken to an authorized John Deere dealer for a complete service check at the end of each season to assure the best of performace 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 page 18.

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 diesel fuel. 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. Your John Deere dealer at this time can expedite delivery of parts and install them during slack periods — avoiding delays next baling season.

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 (page 18); this will force any collected moisture out of the bearings.

4. Check air pressure in tires. See pages 61 and 62.

5. Check and fill gear case to check plug level with John Deere SAE 85 - 140 API-GL 5 Gear Lubricant or an equivalent multi-purpose type SAE 90 gear oil.

6. Tighten all bolts, nuts, and set screws.

7. Adjust and check timing of entire baler as described on pages 22 to 26.

8. If any major moving parts have been replaced, they should be run in.

Lubrication

The economical and efficient operation of any machine is dependent upon regular and proper lubrication of all moving parts with a quality lubricant.

IMPORTANT: The period recommended is based on normal conditions; severe or unusual conditions may require more frequent lubrication or oil changes.

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

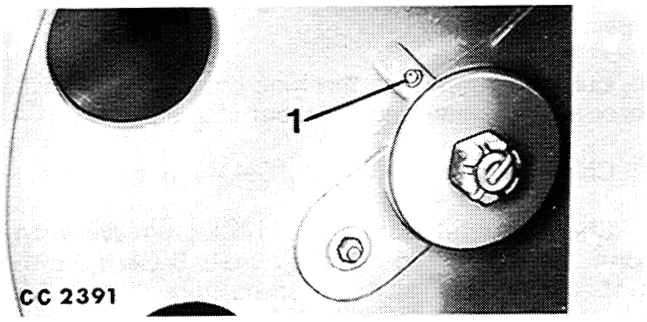
CAUTION: Do not clean, lubricate, or adjust your baler while it is in motion.

SYMBOLS

Lubricate with John Deere Multi-Purpose Lubricant or an equivalent SAE multi-purpose-type grease at hourly intervals indicated on the symbols.

LUBRICATE AS REQUIRED

Flywheel Bushing

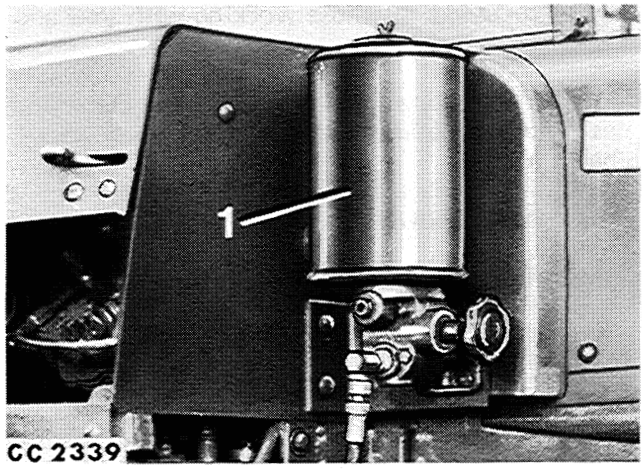


1 Fitting

Whenever flywheel shear bolt is replaced, lubricate the flywheel bushing at fitting with John Deere Multi-purpose Lubricant or an equivalent SAE multipurpose-type grease.

If the bushing is replaced, do not omit to drill the lubrication hole in the new bushing once it is installed. Liberally lubricate the hub before and after reinstalling the flywheel.

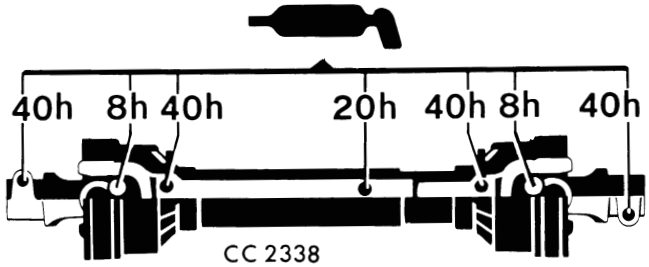
Hydraulic Reservoir (Standard on 466, optional on 456)



1 Reservoir level mark (see note below)

NOTE: Keep the oil reservoir filled to the level mark with John Deere HY-GARD Transmission and Hydraulic Oil (JDM J20A) or Type 303 Special Purpose Oil (JDM J14B) or an equivalent. Other types of oil will not give satisfactory service and may result in eventual damage. Clean cover and filter every 10 days or more often in extremely dusty conditions (see page 41).

Powerline



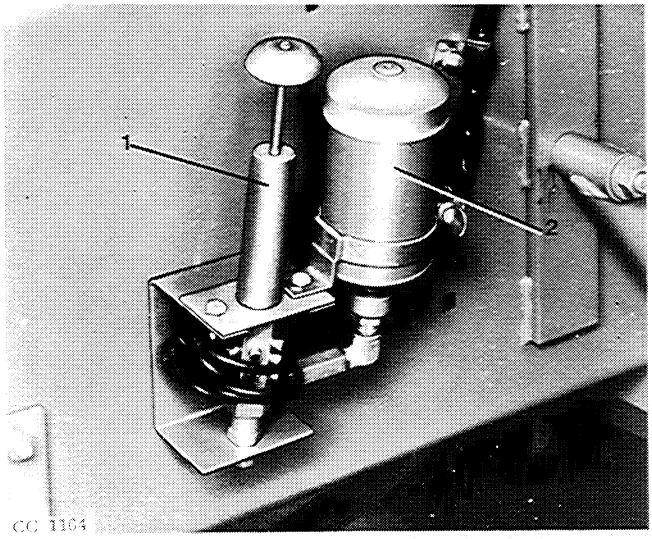
EVERY 10 HOURS

Chains

IMPORTANT: Liberally apply SAE 30 or heavier oil to chains every 10 hours of operation.

Depending on weather and field conditions, chains will become stiff and dirty. Brush chains using a solvent, dry and lightly apply oil to chains without removing them. Check chains tension and adjust if necessary (see pages 38 and 43).

Multi-Luber System



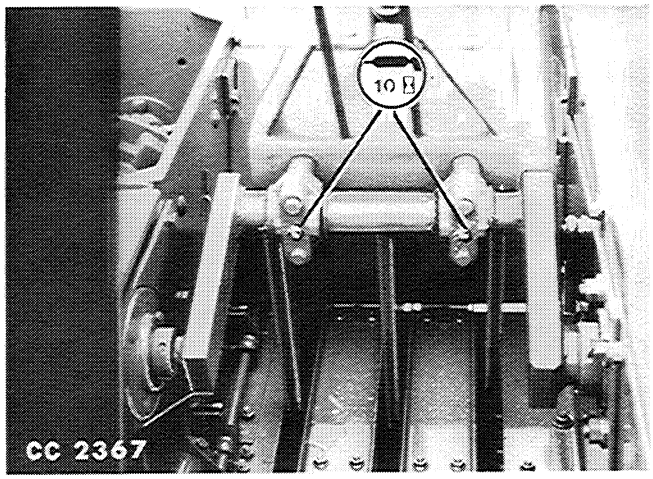
1 Pump 2 Reservoir

Pump Multi-Luber four times every ten hours of operation. Depress the pump handle manually through its full stroke to discharge lubricant from all outlet ports. The measuring chamber in the pump is filled as the plunger and handle returns to normal position. Refer to page 41 for the method used to detect and repair clogged or broken oil lines.

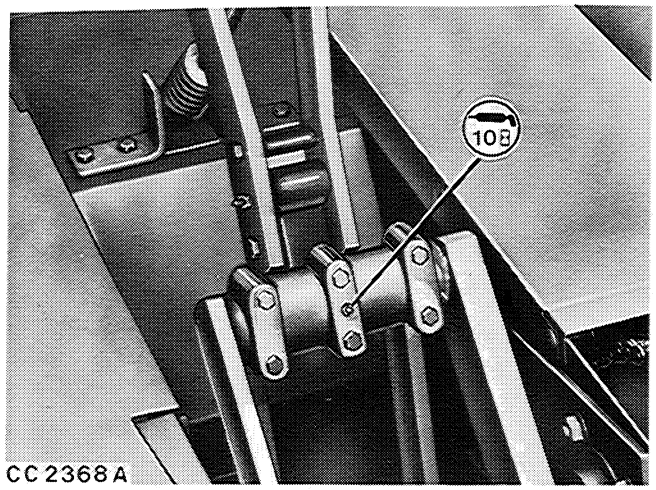
IMPORTANT: Excess grease in the tying area causes accumulation of chaff and dirt, which tends to cause undue wear and breakage.

Use genuine John Deere Quick-Lube Lubricant in the Multi-Luber system. This lubricant is available from your John Deere dealer as part number AN 11100. Check reservoirs periodically to be sure lubricant is always available to system. A dip stick in the top of the reservoir is provided for this purpose.

Feeder Fork

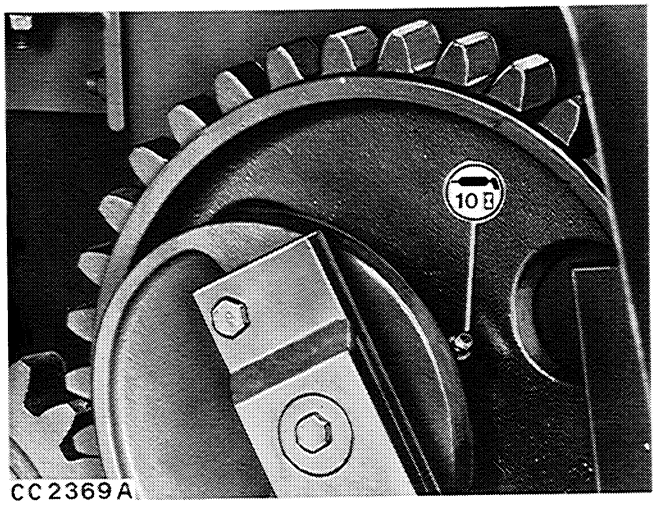


Baler 456



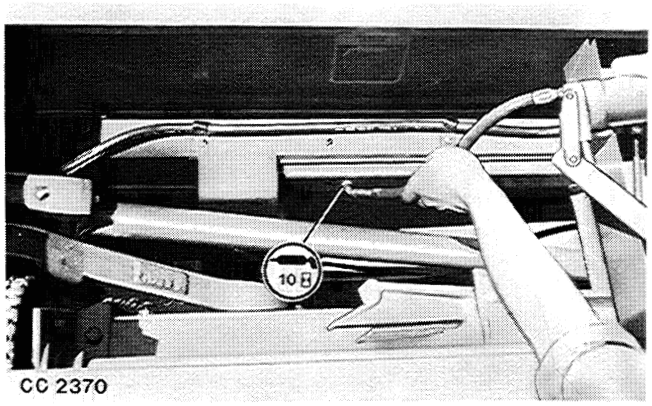
Baler 466

Clutch Ring



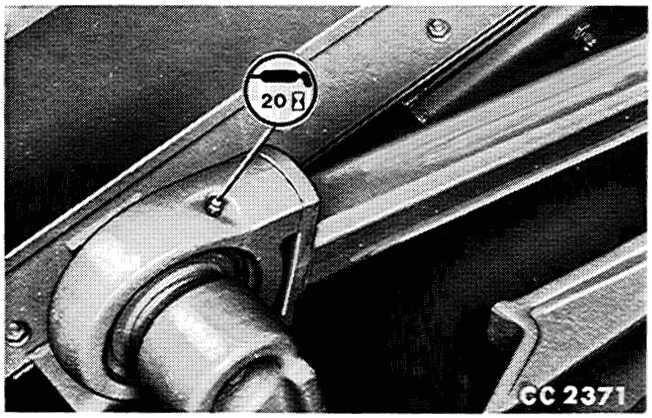
EVERY 10 HOURS (CONT'D)

Plungerhead Pin



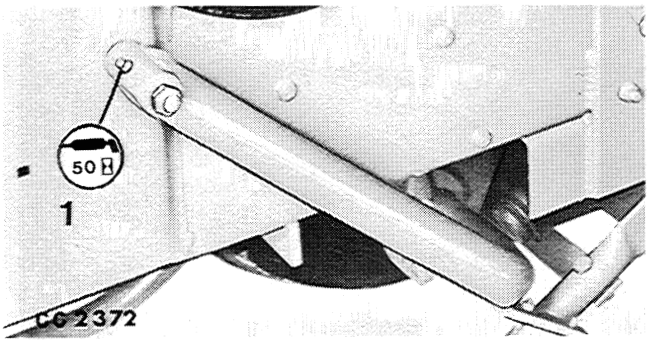
EVERY 20 HOURS

Pitman Bearing



EVERY 50 HOURS

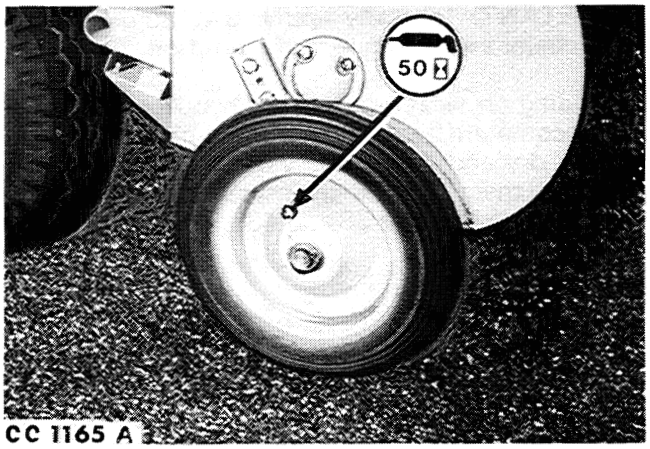
Needle Frame



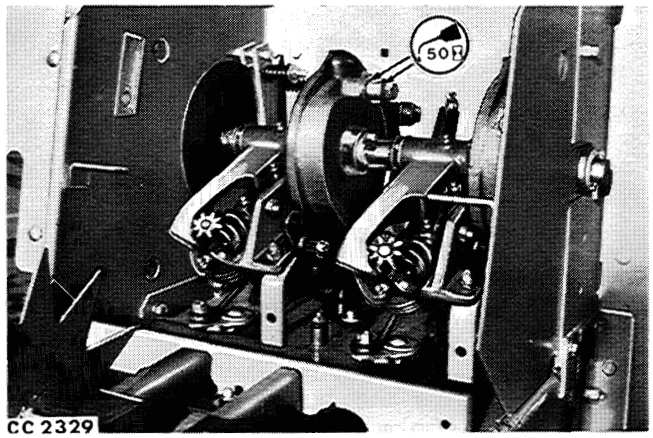
1 Lubricate both sides

EVERY 50 HOURS (CONT'D)

Pickup Gauge Wheel



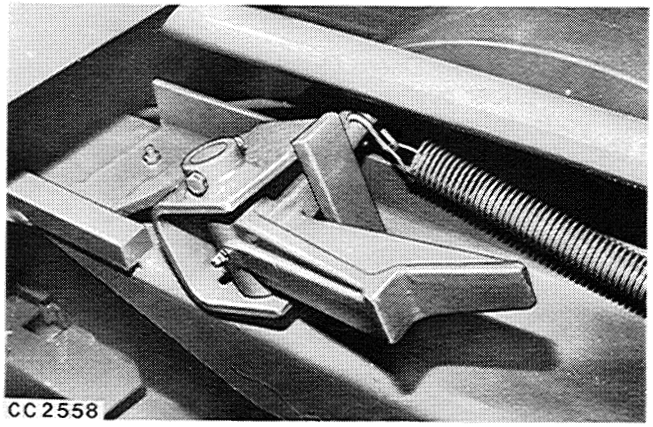
Tucker Finger Drive Rollers



Oil both tucker finger drive rollers every 50 hours.

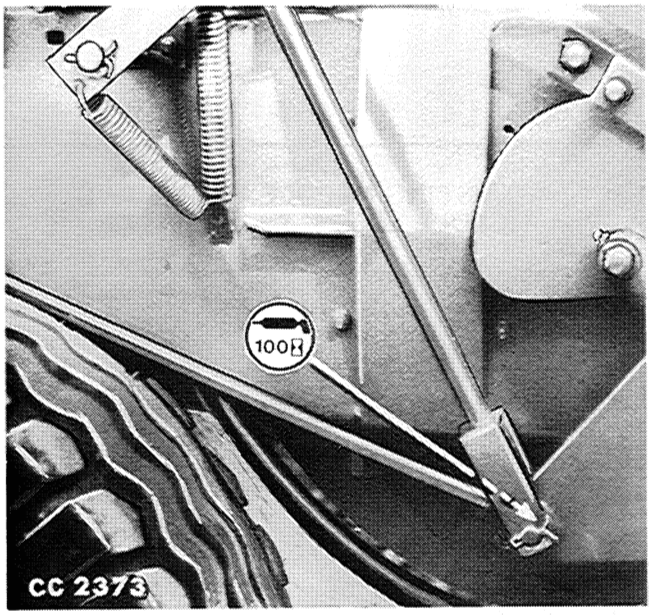
IMPORTANT: Every day, make sure that both rollers turn freely.

Crank Safety Stop

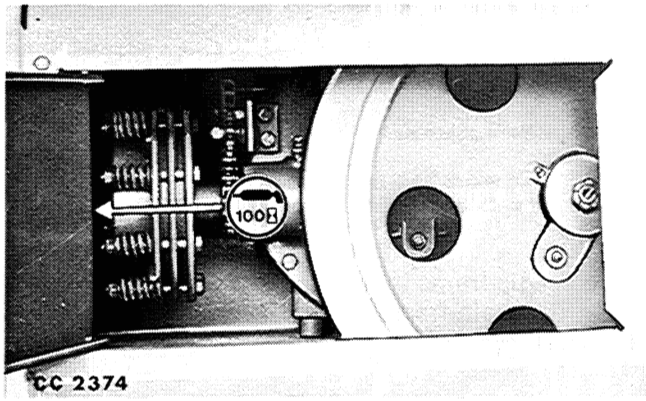


EVERY 100 HOURS

Needle Frame Pin

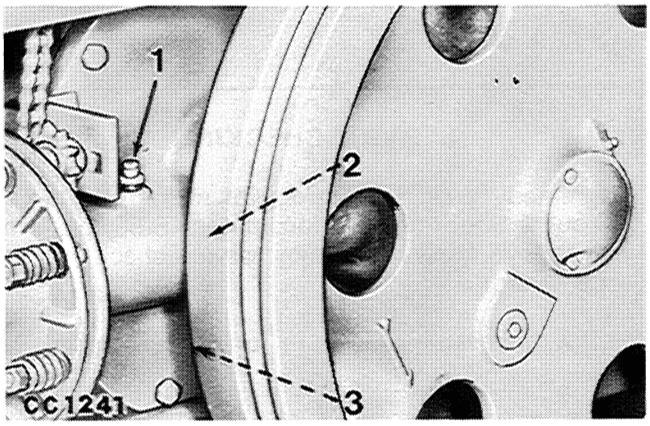


Slip Clutch



ONCE EACH SEASON

Gear Case



1 Refill plug
2 Check plug
3 Drain plug

Check and fill gear case to check plug level with John Deere SAE 85-140 API-GL 5 Gear Lubricant or an equivalent multi-purpose type SAE 90 gear oil.

Service

SERVICE CHECKING

To remedy most tying troubles not solved in the "Trouble Shooting" section, pages 46-56, perform the following related major service checks in the order listed:

Follow this same procedure for pre-season service.

Twine Baler

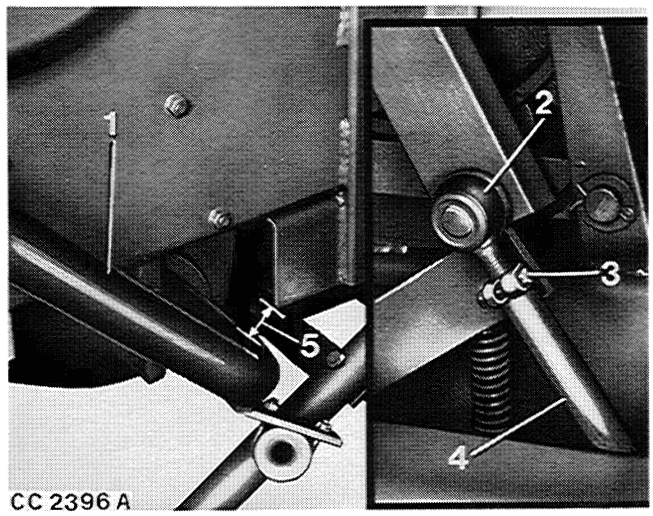
1. Adjusting needle link (page 22).
2. Timing the baler (page 23,24).
3. Adjusting billhook (page 26).
4. Adjusting twine disk (page 27).
5. Adjusting knive (wiper) arm (page 28).
6. Adjusting twine holder (page 29).
7. Adjusting and timing needle (page 29,30).
8. Adjusting tucker fingers (page 30).
9. Adjusting knotter drive brake (page 35).
10. Adjusting crank safety stop (page 35).

Wire Baler

1. Adjusting needle link (page 33).
2. Timing the baler (page 23,24).
3. Adjusting bevel gear and pinion (page 31).
4. Adjusting intermittent drive gear (page 32).
5. Adjusting grippers (page 32).
6. Adjusting twister hooks (page 32).
7. Adjusting needles (page 33).
8. Adjusting wire guides (page 34).
9. Adjusting knotter drive brake (page 35).
10. Adjusting crank safety stop (page 35).

Information pertaining to service or adjustments not listed above is covered on pages 36 to 45.

ADJUSTING NEEDLE FRAME AND NEEDLE LINK – TWINE BALER



1 Needle frame
2 Ball joint
3 Needle frame adjustment
4 Lift link
5 28 ± 3 mm (1-1/8 ± 1/8 in.) clearance for a 456
70 ± 3 mm (2-3/4 ± 1/8 in.) clearance for a 466

The needle frame is adjusted properly when it will clear the main frame on the right-hand side of the bale case by:

28 ± 3 mm (1-1/8 ± 1/8 in.) for a 456
70 ± 3 mm (2-3/4 ± 1/8 in.) for a 466

with needles fully raised.

Adjust for correct needle frame clearance by disconnecting the lift link from the needle frame and turning the link after loosening lock nut.

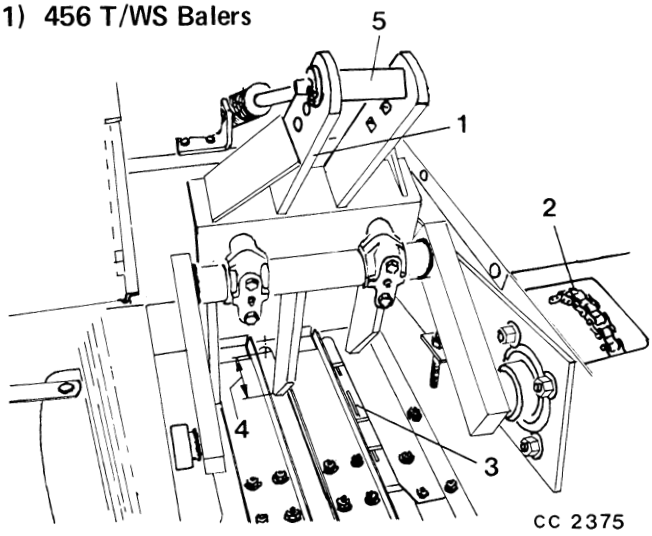
NOTE: Ball joint should be held parallel to link bar while tightening lock nut after adjusting the length of the lift link.

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

TIMING THE BALER

Timing is controlled by the main drive chain, feeder drive chain, and the knotter drive gears. If any of these parts are removed for servicing, check all timing operations before operating baler. Each of the following checks or adjustments should be made as the baler is run, by hand, through one complete tying cycle.

1) 456 T/WS Balers



1 Feeder teeth
2 Drive chain
3 Plungerhead
4 240 ± 10 mm (9-7/16 ± 25/64 in.)
5 Pivot pin

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

2. Turn flywheel by hand in a counterclockwise direction until the face of the plungerhead (on a compression stroke) is centered in the front feeder slot.

The left-hand corner of the center feeder tooth should measure 230 to 250 mm (9-1/16 – 9-27/32 in.) from the extreme left-hand end of the center tooth slot. If the feeder tooth does not fall within this range, disconnect the feeder drive chain and set the tooth 240 mm (9-7/16 in.) (measured horizontally) from the extreme left-hand edge of the feeder slot. A block may be used to hold the fingers in this position.

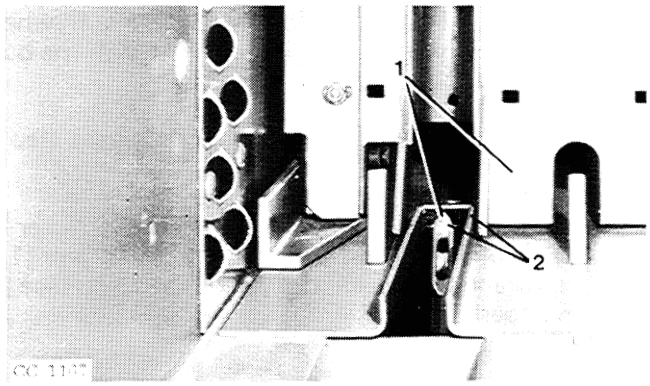
3. Connect the feeder drive chain. Turn the flywheel clockwise as necessary to install chain with drive side tight. Tighten the idler against the chain with thumb pressure.

NOTE: After connecting chain, relocate plungerhead face in center of slot. If feeder dimension does not measure between 230 to 250 mm (9-1/16 – 9-27/32 in.), retime feeder. For better adjustment use the main drive chain instead of the feeder drive chain.

IMPORTANT: Using the main drive chain for timing will also affect the timing of the plungerhead to the needles. The needles may have to be retimed as described in step 5.

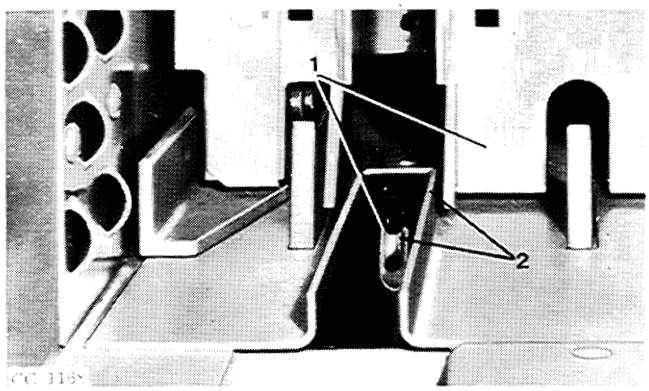
4. After the correct feeder teeth timing has been obtained, move the plungerhead through one complete cycle to make certain that the feeder teeth and the plungerhead clear each other when checked with feeder pivot pin in any of the three holes.

Twine Needles (456 T)



1 13 to 57 mm (1/2 in. to 2-1/4 in.) between needle and plungerhead face
2 Needle flush with top edge of slot

Wire Needles (456 WS)



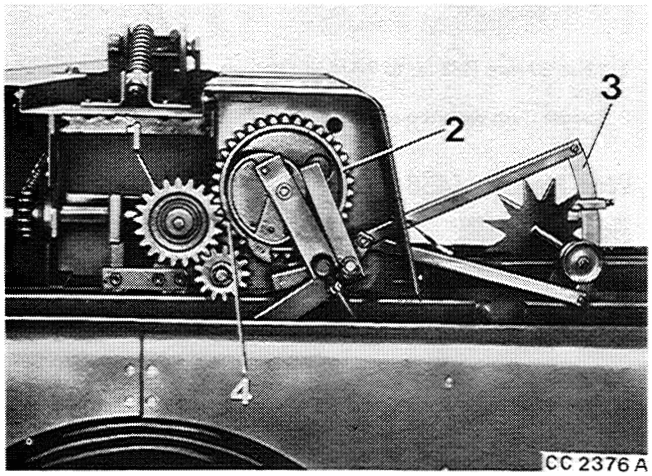
1 13 to 57 mm (1/2 in. to 2-1/4 in.) between front of needle groove and plungerhead face
2 Needle flush with top edge of slot

5. With the needles in "home" position, trip the bale measuring arm. Continue turning flywheel counterclockwise until the tip of the highest needle is flush with the top edge of the bale case bottom groove flanges. The face of the plungerhead should be 13 to 57 mm (1/2 to 2-1/4 in.) from the tip of the needles, if timing a twine baler. If timing a wire baler, measure 13 to 57 mm 1/2 to 2-1/4 in.) from front of the groove of the needle pulley to the face of the plungerhead. If needles do not measure this distance, then remove cluster gear. Trip the measuring arm and raise the needles (by hand) until the tip of the highest needle is flush with the top edge of the bale case bottom groove flanges. Move plungerhead face to 41 mm (1-5/8 in.) from tip of needles. Rotate clutch ring (counterclockwise) as shown until clutch ring contacts the trip dog roller. Place cluster gear back on shaft. Be sure to find a position of cluster gear where all teeth match mating gears.

To check timing, back plungerhead up and pull needles out of bale case (by hand). Move flywheel forward slowly until needles are even with the bale case. Check the distance again.

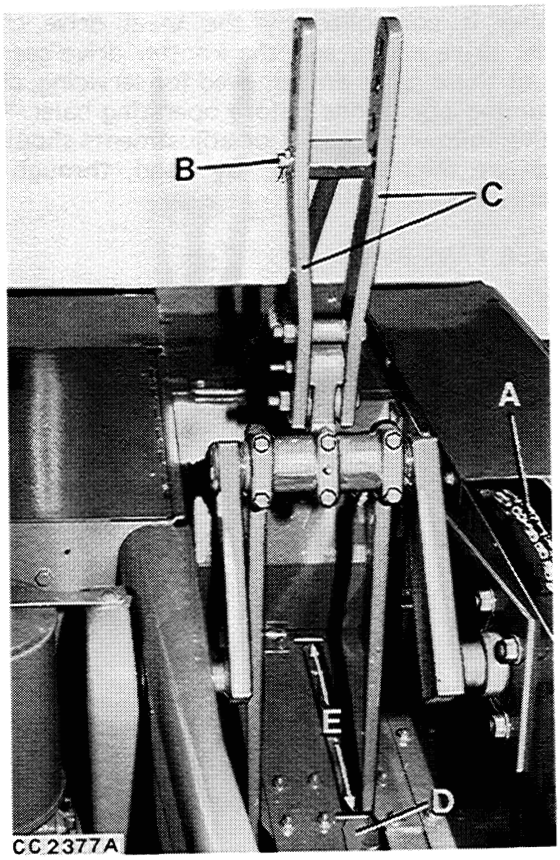
If needles are still out of time, then repeat step 5 again.

It is preferable to adjust the plungerhead closer to the 57 mm (2-1/4 in.) rather than the 13 mm (1/2 in.) clearance between the needle and the face of the plungerhead.



1 Cluster gear
2 Clutch ring
3 Measuring arm
4 Trip dog roller

2) 466T/WS Balers



A Drive chain
B Pivot pin
C Feeder teeth
D Plungerhead
E 38.7 to 43.8 cm (15-1/4 to 17-1/4 in.)

1. Place feeder pivot pin (B) in the bottom hole of the feeder teeth (C).

2. Turn flywheel by hand in a counterclockwise direction until the face of the plungerhead (D) (on a compression stroke) is centered in the front feeder slot.

The left-hand corner of the front feeder tooth should measure 38.7 to 43.8 cm (15-1/4 to 17-1/4 in.) (E) from the extreme left-hand end of the front tooth slot. If the feeder tooth does not fall within this range, disconnect the feeder drive chain (A) and set the tooth 41.3 cm (16-1/4 in.) (measured horizontally) from the extreme left-hand edge of the feeder slot. A block may be used to hold the fingers in this position.

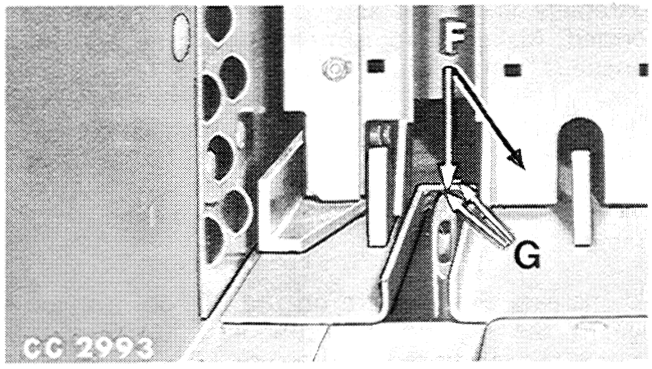
3. Connect the feeder drive chain (A). Turn the flywheel clockwise as necessary to install chain with drive side tight. Tighten the idler against the chain with thumb pressure.

NOTE: After connecting chain, relocate plunger-head face in center of slot. If feeder dimension does not measure between 38.7 and 43.8 cm (15-1/4 and 17-1/4 in.) (E), retime feeder using the main drive chain instead of the feeder drive chain — for a finer adjustment.

IMPORTANT: Using the main drive chain for timing will also affect the timing of the plungerhead to the needles. The needles may have to be retimed as described in step No. 5.

4. After the correct feeder teeth timing has been obtained, move the plungerhead (D) through one complete cycle to make certain that the feeder teeth (C) and the plungerhead (D) clear each other when checked with feeder pivot pin (B) in any of the four holes.

5. With the needles in "home" position, trip the bale measuring arm. Continue turning flywheel counterclockwise until the tip of the highest needle is flush with the top edge of the bale case bottom groove flanges.

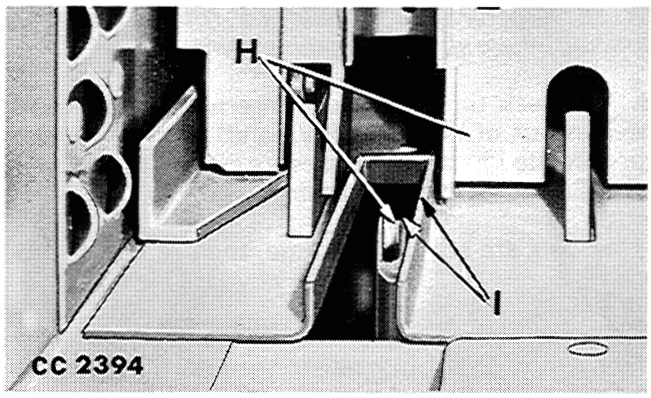


Twine Needles

F 13 to 57 mm (1/2 to 2-1/4 in.) between needle and plungerhead face

G Needle flush with top edge of slot

The face of the plungerhead should be 13 to 57 mm (1/2 to 2-1/4 in.) (F) from the tip of the needles, if timing a twine baler.

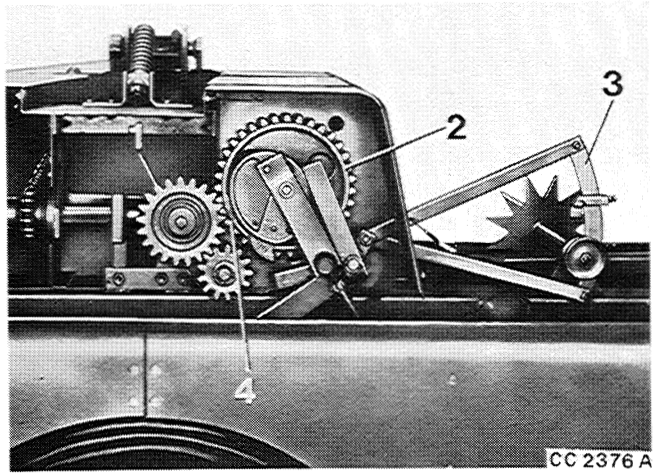


Wire Needles

H 13 to 57 mm (1/2 to 2-1/4 in.) between groove and plungerhead face

I Needle flush with top edge of slot

If timing a wire baler, measure 13 to 57 mm (1/2 to 2-1/4 in.) (H) from front of the groove of the needle pulley to the face of the plungerhead.



1 Cluster gear
2 Clutch ring
3 Measuring arm
4 Trip dog roller

If needles do not measure this distance, then remove cluster gear (1). Trip the measuring arm (3) and raise the needles (by hand) until the tip of the highest needle is flush with the top edge of the bale case bottom groove flanges. Move plungerhead face to 41 mm (1-5/8 in.) from tip of needles. Rotate clutch ring (counterclockwise) (2) as shown until clutch ring contacts the trip dog roller (4). Place cluster gear (1) back on shaft.

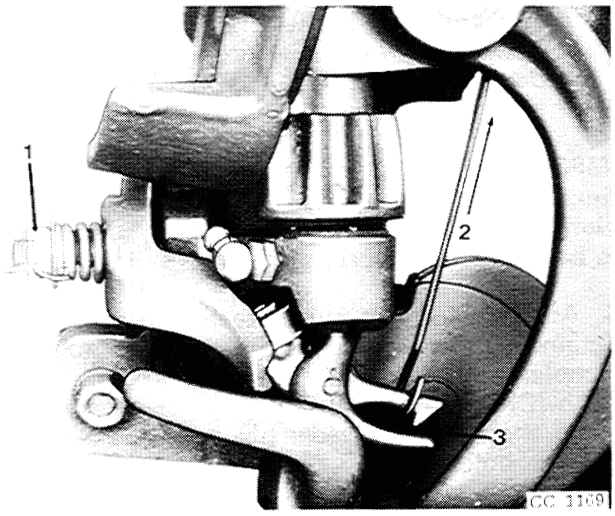
NOTE: Cluster gear should be rotated to find position where all teeth match mating gears.

6. To check timing, back plungerhead up and pull needles out of bale case (by hand). Move flywheel forward slowly until needles are even with the bale case. Check the distance again.

If needles are still out of time, then repeat step 5 again.

It is preferable to adjust the plungerhead closer to the 57 mm (2-1/4 in.) rather than the 13 mm (1/2 in.) clearance between the needle and the face of the plungerhead.

ADJUSTING BILLHOOK – TWINE BALER



1 Adjustment of billhook tongue pressure at 3.2 mm (1/8 in.) opening of tongue "3"
2 Pull of 23 to 68 N (5 to 15 pounds)

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

The billhook is in proper adjustment when an outward pull of from 23 to 68 N (5 to 15 lb) on the billhook tongue will separate the jaws 3.2 mm (1/8 in.). The tongue should be tight when it is closed.

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

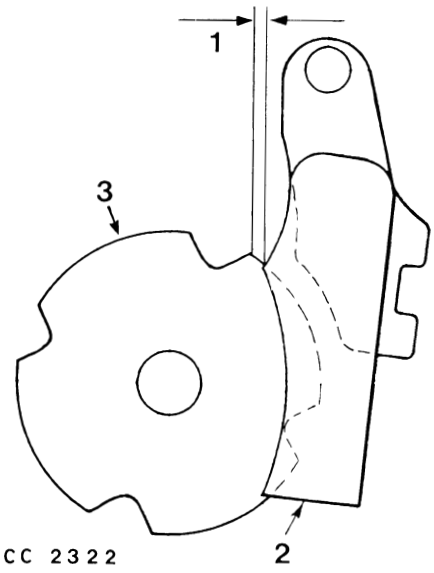
Excessive tension on the billhook tongue may cause knots to remain on the billhook, thus breaking the twine. Incomplete knots may be the result of insufficient pressure on the billhook tongue.

IMPORTANT: When using large caliper sisal twine (150 m/kg = 74.5 yd/lb), the correct adjustment of the billhook tongue pressure is 23 N (5 lb), otherwise excessive stress on knotter parts will result during the wiping operation.

ADJUSTING TWINE DISK – TWINE BALER

NOTE: Make this adjustment after tying a minimum of two bales and with twine remaining in the 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 0.8 to 2.3 mm (1/32 to 3/32 in.) to the left of the left-hand edge of the twine holder when twine is located in twine disk.

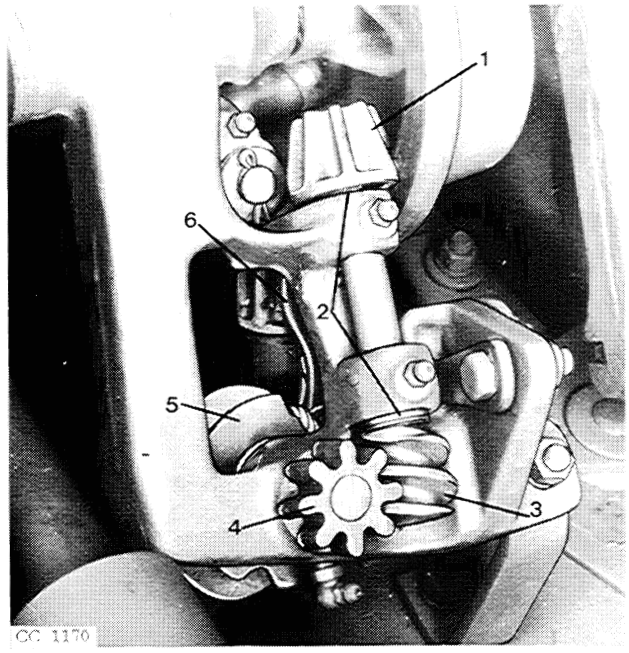


1 0.8 to 2.3 mm (1/32 in. to - 3/32 in.)
2 Twine holder
3 Center twine disk

If the twine disk is advanced too far (twine disk notch is located past twine holder) remove the knotter disk pinion and the knotter worm, and relocate washers from the bottom 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) at a distance of more than 2.4 mm (3/32 in.), remove the knotter disk pinion and the knotter worm. Relocate washers from the top position to the bottom position on the worm shaft.

There must not be more than 0.38 mm (0.015 in) end play in the worm shaft.



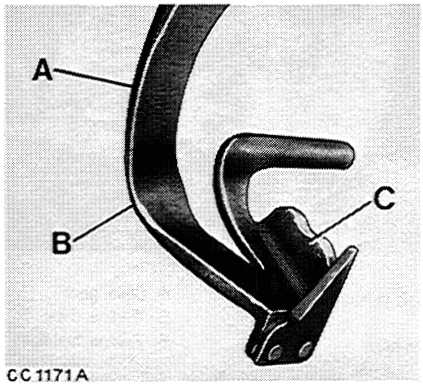
1 Twine disk pinion
2 Washers
3 Knotter worm
4 Disk gear
5 Twine disk
6 Twine holder

ADJUSTING KNIFE ARM – TWINE BALER

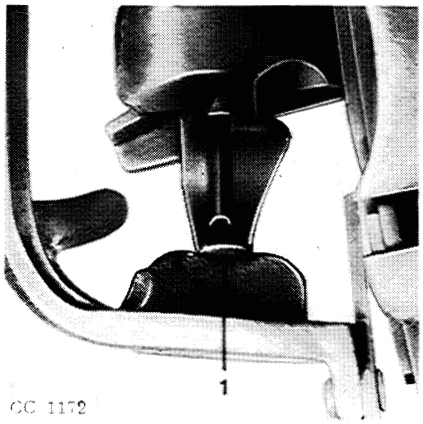
Proper knife (wiper) arm adjustment is essential because the stripping of the knot from the billhook, once it has been tied, is accomplished by a wiper on the knife arm.

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

When using large diameter plastic twine, sharpen knives frequently.

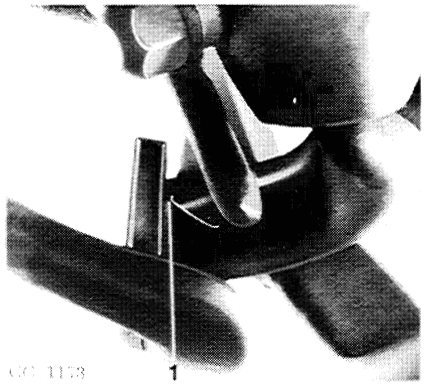


The wiper arm is adjusted to the billhook by modeling or bending the arm in the areas "A", "B" and "C". It is seldom necessary to remove the wiper arm to model the arm. Three modeling operations may be necessary to align the wiper arm properly with the billhook:



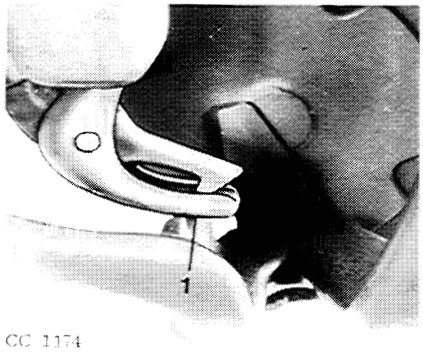
1 Center "A"

1. The wiper arm ledge must be centered with the billhook heel.



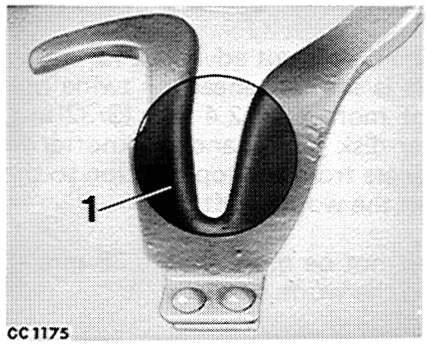
1 Clearance "B"

2. The billhook tongue must just clear the wiping ledge on the wiper arm by a maximum of not more than 2.3 mm (3/32 in.), as the billhook tongue passes the wiper arm. Rotate the billhook 180 degrees and move the tongue by hand, up and down, to check clearance at the closest point between the tongue and ledge.



1 Pressure "C"

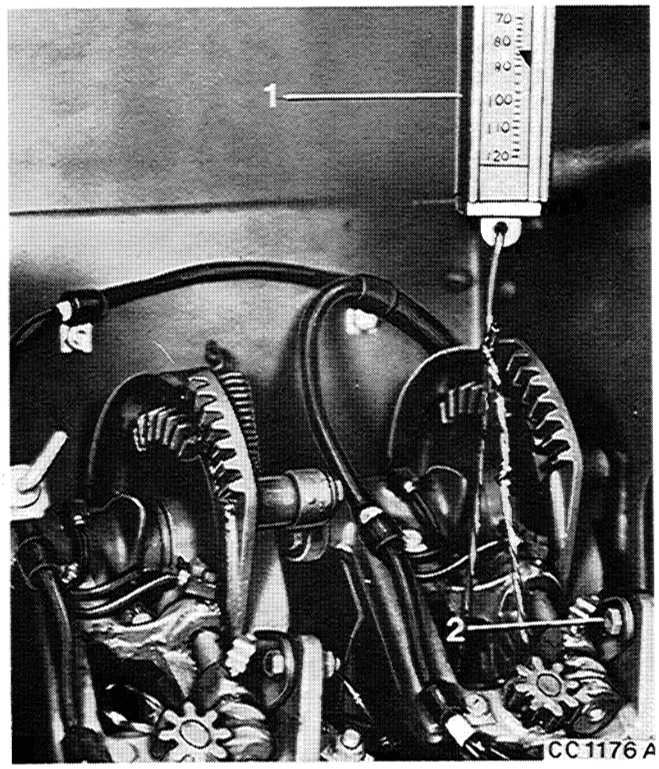
3. Between 23 and 45 N (5 and 10 lb) of pressure is required to pull the wiper arm ledge across the heel of the billhook.



1 Throat area smooth

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 rupture.

ADJUSTING TWINE HOLDER – TWINE BALER



1 320 to 450 N (70 to 100 lb)
2 Twine holder adjustment

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.

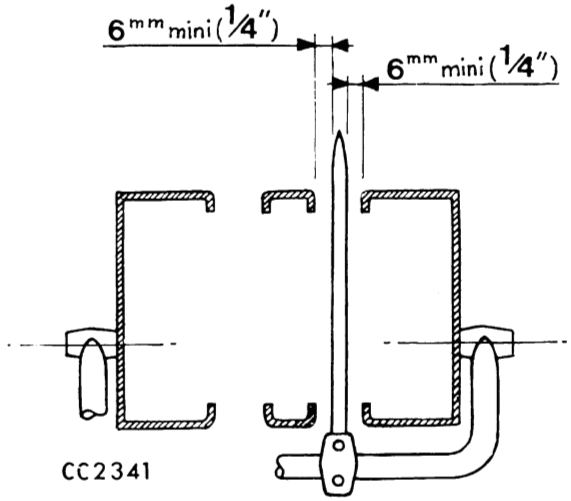
In most baling conditions, an upward pressure from 320 to 450 N (70 to 100 lb) – pulling parallel with twine disk – is required to pull the remaining twine out of the holder after a knot has been tied. If the twine pulls free at less than 320 N (70 lb) pressure, loosen the lock nut and tighten the adjusting screw. If the twine pulls free with more than a 450 N (100 lb) 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. Excessive tension will increase chance of twine fracture and wear on knotter drive parts.

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

ADJUSTING NEEDLE – TWINE BALER

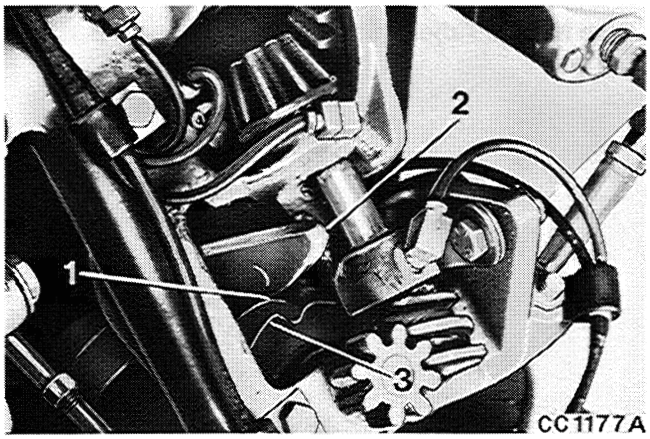
Side Needle Adjustment



During their entire stroke, each needle should clear the right-hand and left-hand edges of the lower and upper bale case slots by more than 6 mm (1/4 in.)

- Trip the knotting mechanism by hand to raise the needles.
- Loosen the four needle mounting bolts.
- Move the needle sideways to obtain the requested clearance.
- Check the minimum clearance 6 mm (1/4 in.) during the entire stroke.
- Tighten slightly the four needle mounting bolts.

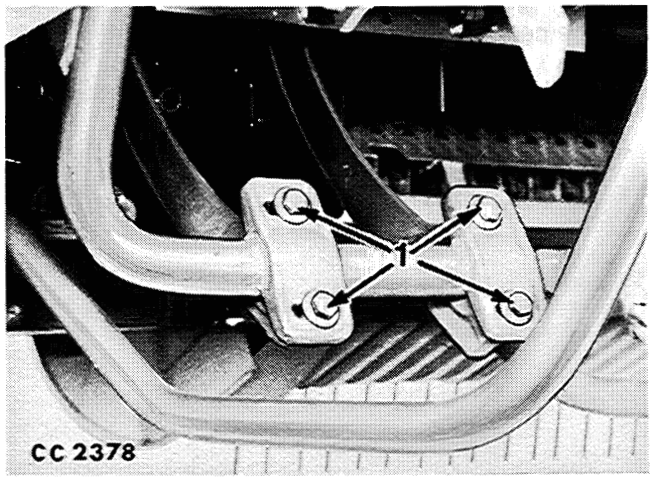
ADJUSTING NEEDLES TO TWINE CLEANER



1 0.8 to 2.4 mm (1/32 to 1/32 in.)
2 Needle
3 Twine cleaner

As the needles pass through the knotting mechanism, they should clear the closest point to the twine cleaner or the twine disk 0.8 to 2.4 mm (1/32 to 3/32 in.).

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



1 Needle mounting bolts

To adjust needles in relation to the twine clearance, loosen or tighten the four needle mounting bolts to obtain the requested clearance: 0.8 to 2.4 mm (1/32 to 3/32 in.).

Tighten the four needle mounting bolts to 70 to 110 Nm (7 to 11 mkg = 50 to 80 ft-lb) torque.

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.

NEEDLE SIDE PRESSURE AGAINST KNOTTER FRAME

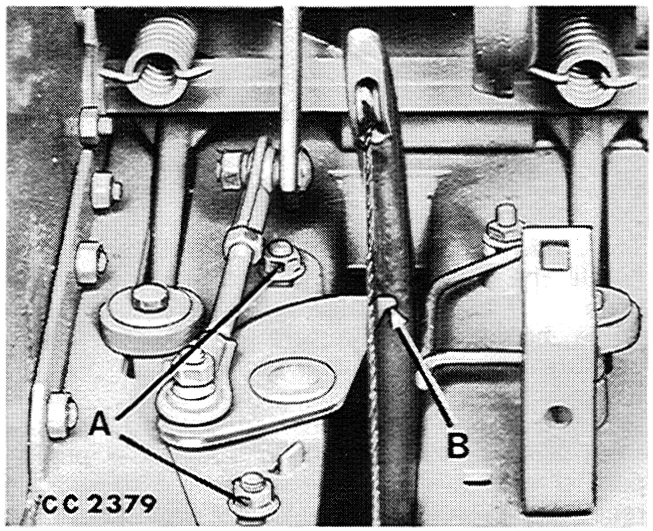
A 14 to 27 N (3 to 6 lb) side pressure of the needle against the knotter frame should be obtained by side pulling.

NOTE: It is advisable to adjust this pressure towards 14 N (3 lb) rather than towards 27 N (6 lb).

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

ADJUSTING TUCKER FINGERS - TWINE BALER

The tucker fingers "catch" the twine, as it is brought to the knotter mechanism by the needles, and hold the twine in position for engagement by the billhooks.



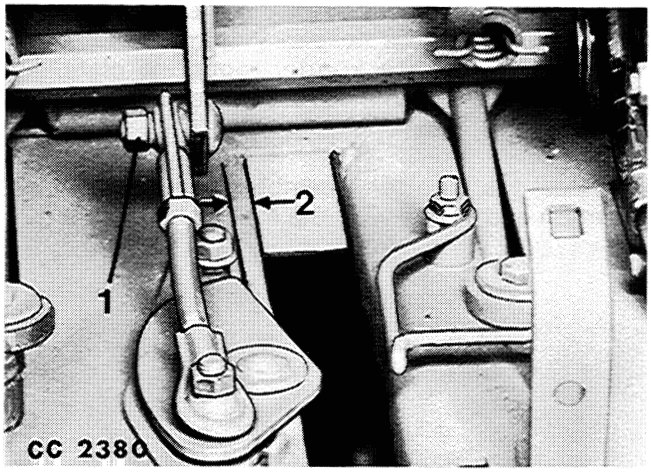
A Tucker finger mounting bolts
B 0.8 to 2.4 mm (1/32 to 3/32 in.)

Adjust the tucker fingers as follows:

1. Make sure needles are in proper adjustment.

2. Trip the bale measuring arm and turn the flywheel counterclockwise (by hand) until the needles have risen and the tucker fingers are closest to the needles.

3. Loosen the tucker finger mounting bolts (A) and move the tucker fingers forward or rearward in their mounting slots until the tucker fingers clear the needles 0.8 to 2.4 mm (1/32 to 3/32 in.) (B).



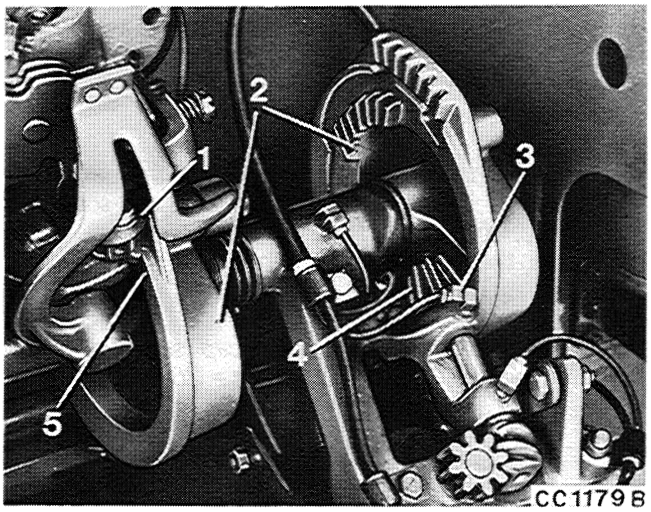
1 Tucker finger adjustment
2 3 to 13 mm (1/8 to 1/2 in.)

NOTE: The end of each tucker finger must be held upward and to the left with hand pressure while setting clearance.

Retighten tucker finger mounting bolts to 50 Nm (5 mkg = 35 ft-lb) torque.

4. Continue turning flywheel until the tucker fingers have returned to their resting position. The tucker finger tips must be from 3.2 to 12.7 mm (1/8 to 1/2 in.) to the left of the needle slot while the tip of each finger is held toward the left. Adjust the pull rods to secure the proper resting position of the tucker fingers.

ADJUSTING KNOTTER GEARS – TWINE BALER



1 Billhook pinion
2 Intermittent knotter gears
3 0.38 mm (0.015 in.) max.
4 Twine disk pinion
5 Flush

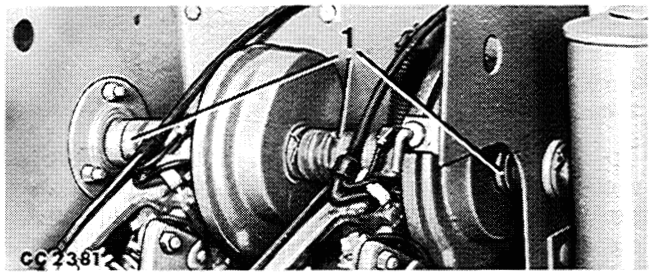
The flat side of the billhook pinion must ride flush with the smooth face of the intermittent knotter gear for longer wear life and proper alignment of billhook.

The flat side of the twine disk pinion must be 0 to 0.38 mm (0.000 to 0.015 in.) from the intermittent knotter gear.

If the twine disk pinion is more than 0.38 mm (0.015 in.), file the flat surface of billhook pinion. Do the same to the twine disk pinion if the billhook pinion is not flush with the intermittent knotter gear.

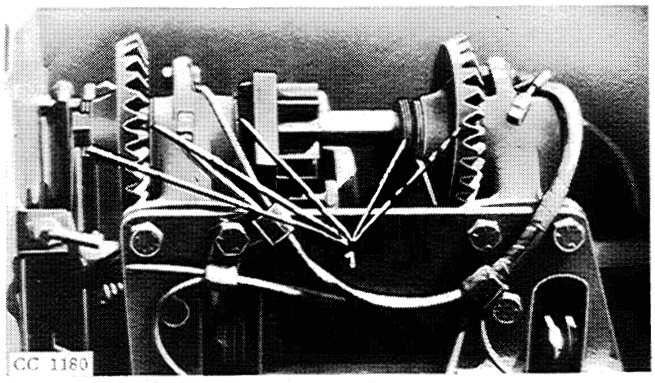
Adjust the intermittent knotter gear flush against billhook pinion by shifting washers on the needle lift shaft. Remove knotter and shaft assembly and add washers, as shown, to gain additional adjustment.

With the flat side of the billhook pinion riding flush with the smooth face of the intermittent knotter gear, washers should be added to obtain a maximum play of 0.8 mm (1/32 in.) between the intermittent knotter gear and the knotter frame.



1 Adjusting washers

ADJUSTING BEVEL GEAR AND PINION – WIRE BALER



1 Washers

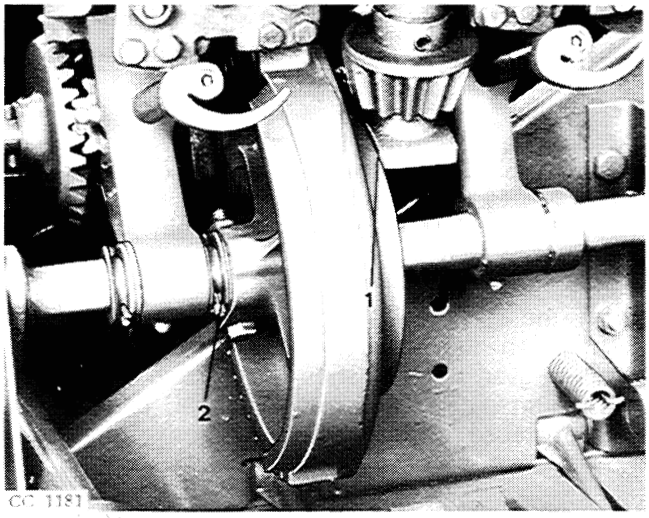
The bevel gears must be adjusted to mesh properly and have even heel alignment with the pinion on the twister shafts.

Adjust the bevel gears to the right or left by adding or removing washers on the gear shaft in the locations shown above.

IMPORTANT: Check twister hook adjustment after replacing bevel gears.

The twister pinions may be adjusted higher by adding washers between the pinions and the twister frames.

ADJUSTING INTERMITTENT DRIVE GEAR – WIRE BALER

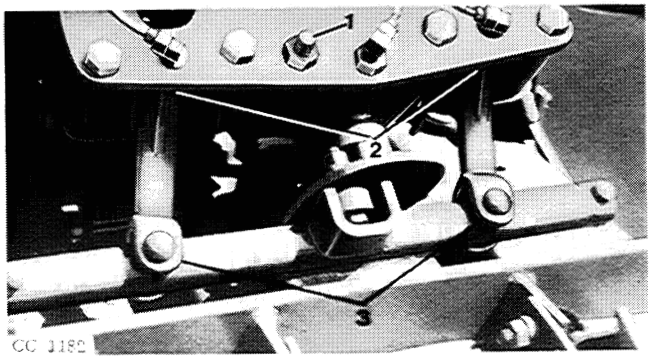


1 0 25 mm (0.010 in.) maximum clearance
2 Washers

To eliminate tooth breakage and insure proper mesh, the flat side of the gripper drive pinion must be flush to 0.25 mm (0.010 in.) maximum clearance from the smooth surface of the intermittent drive gear.

Adjust gears by removing pin in needle lift shaft and locating washers on shaft as necessary to get proper mesh. Replace the pin in the shaft.

ADJUSTING GRIPPERS – WIRE BALER

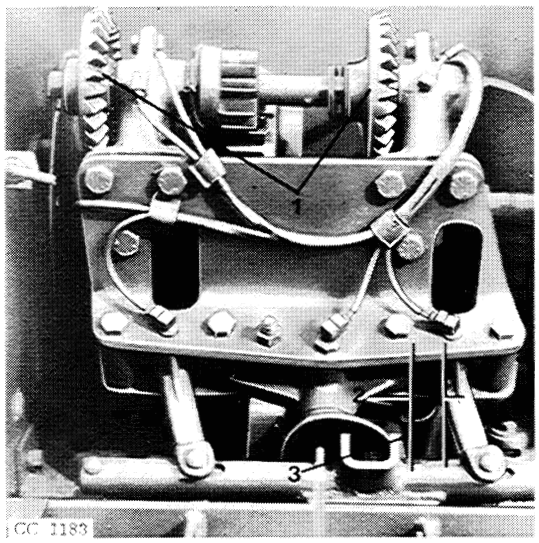


1 Lock bolt 2 Shims 3 Gripper arms

To provide a positive shearing action on the wire, adjust the grippers with shims. To shim a gripper, pivot the twister assemblies upward by loosening the lock bolt and removing the lock nut from the bottom of the gripper pivot pin. Remove the pivot pin, then insert the necessary shims between the gripper arm and the knotter mounting plate, and replace the pivot pin. Tighten the pivot pin and secure with the lock nut.

Replace the knotter assemblies to their original position and secure with the lock bolt.

ADJUSTING TWISTER HOOKS – WIRE BALER



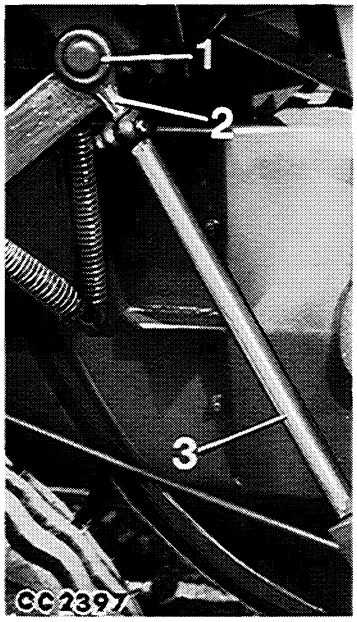
1 Bevel gears
2 9.5 mm (3/8 in.) max.
3 Twister hook either side of center

With the needles in home position, the twister hook is properly adjusted when the inside of the point of the hook (pointing rearward) is within 9.5 mm (3/8 in.) either side of the center of the gripper pivot pin, when finger pressure is applied to retard the twister hook.

Adjust each twister hook by moving the bevel gear to the left and rotating the twister shaft, as necessary, for correct alignment of the hook. Relocate the bevel gear on the shaft and secure it with the spring pin.

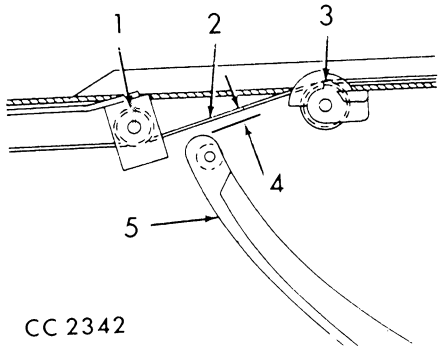
NOTE: Tighten socket head cap screw through twister hook to 35 Nm (3.5 mkg = 25 ft-lb) torque.

ADJUSTING NEEDLE LINK – WIRE BALER



1 Ball joint
2 Needle frame adjustment
3 Lift link

The needle lift link controls the height of the needles in relation to the wire and the wire pulleys.



1 Center pulley
2 Wire
3 Rear pulley
4 6.4 mm (1/4 in.) minimum, 15.8 mm (5/8 in.) maximum
5 Needle

With the needles in home position, each needle roller must be at a distance from 6.4 to 15.8 mm (1/4 to 5/8 in.) below the wire, as shown in the above sketch. Adjust the distance through the needle lift link.

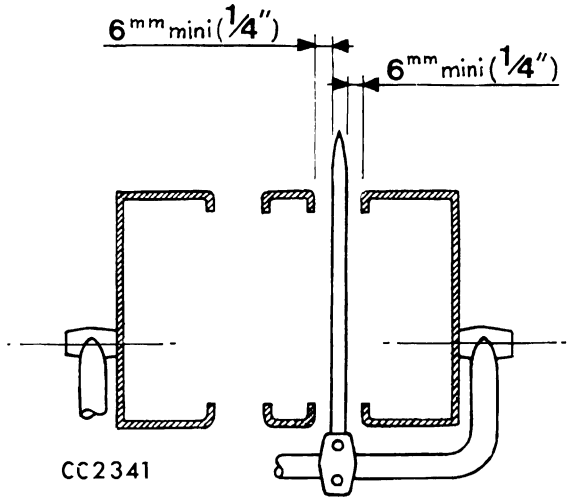
Adjust for correct needle frame clearance by disconnecting the lift link from the needle frame and turning the link after loosening lock nut.

NOTE: Ball joint should be held parallel to link bar while tightening lock nut after adjusting the length of the lift link.

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

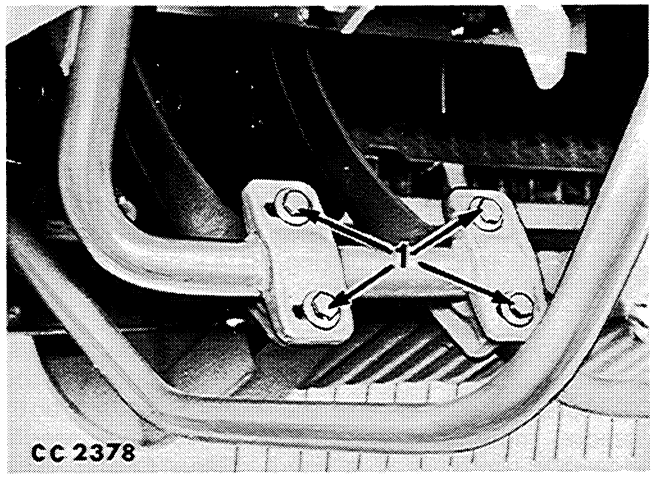
ADJUSTING NEEDLES – WIRE BALER

Side Needle Adjustment



During their entire stroke, each needle should clear by more than 6 mm (1/4 in.) the right-hand and left-hand edges of the lower and upper bale case slots.

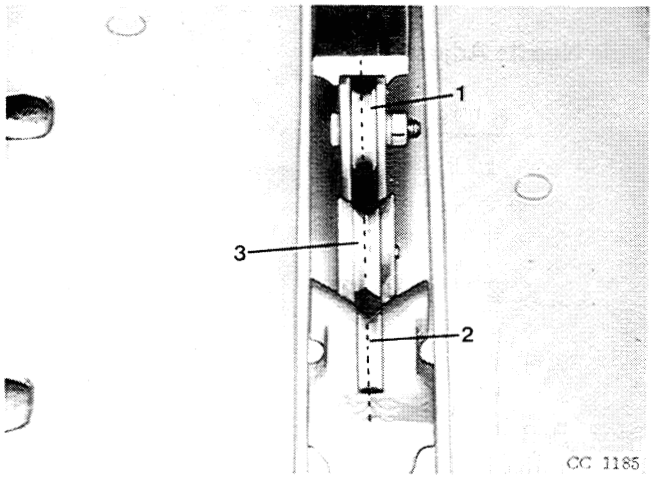
- Trip the knotting mechanism by hand to raise the needles.
- Loosen the four needle mounting bolts.
- Move the needle sideways to obtain the requested clearance.
- Check the minimum clearance 6 mm (1/4 in.) during the entire stroke.
- Slightly tighten the four needle mounting bolts.



1 Needle mounting bolts

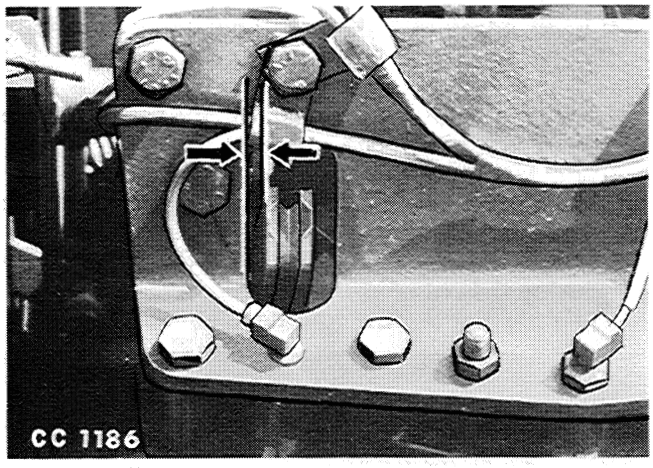
The needle mounting bolts control the position of the needles in relation to the center and rear wire guides, the slots in the twister mounting plate, and the wire grippers.

Each needle may be adjusted forward or rearward by loosening one of the needle mounting bolts and tightening the other, or it may be shifted sideways by loosening both bolts.



1 Center pulley 2 Rear pulley 3 Needle pulley

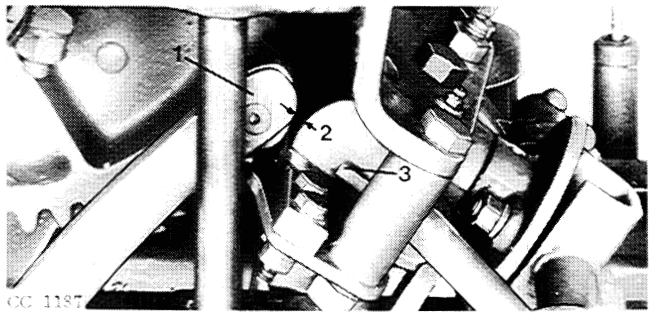
Adjust the center pulley to the side, as necessary, to allow the needle to pick up the wire as the needles rise.



1 3.2 to 8 mm (1/8" to 5/16 in.)

Each needle must be within 3.2 to 8 mm (1/8 to 5/16 in.) from the left-hand side of its respective slot in the twister mounting plate when the needle is in its highest position.

To align each needle with the wire guide pulleys, and the slot in the twister mounting plate, trip the measuring arm and raise the needles. Loosen both needle mounting bolts and move the needle sideways until it is aligned. (See "Center Wire Guides" page 35).



1 Needle
2 1.6 to 4 mm (1/16 to 5/32 in.)
3 Wire gripper

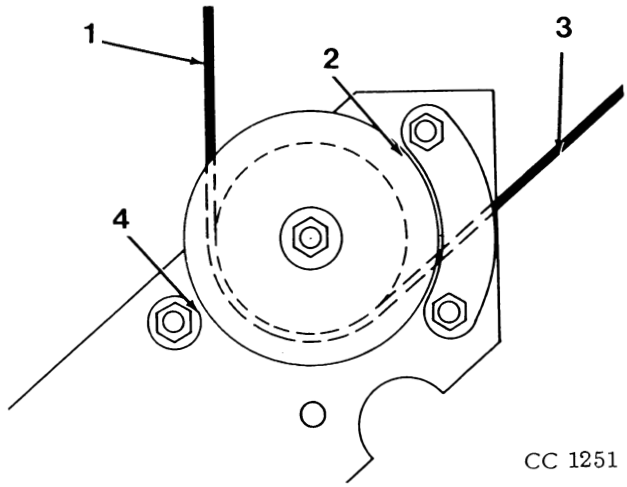
As the needles pass through the twisting mechanism, the closest point of each needle should clear the front of each wire gripper by 1.6 to 4 mm (1/16 to 5/32 in.) (when checked without wire in the grippers).

To increase the distance between the needles and the grippers, 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 to 70 to 110 Nm (7 to 11 mkg = 50 to 80 ft-lb) torque and again check needles through their cycle.

ADJUSTING WIRE GUIDES — WIRE BALER

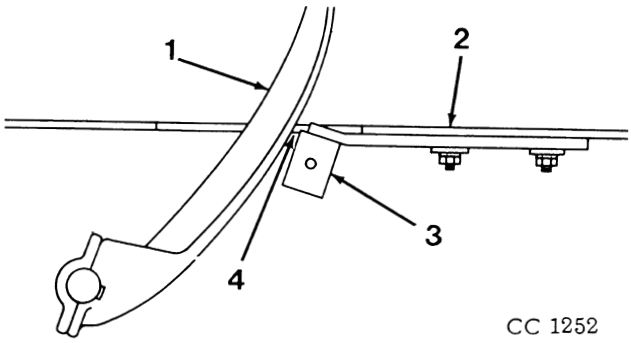
Front Wire Guides



1 Outgoing wire
2 2.3 mm (0.090 in.) maximum
3 Incoming wire
4 0.76 mm (0.030 in.) maximum

Adjust the front pulleys and cast wire guides to clear each other by a maximum of 2.3 mm (0.090 in.) Adjust the front sleeve guides to clear the pulleys by a maximum of 0.76 mm (0.030 in.). Each pulley must turn freely.

Center Wire Guides

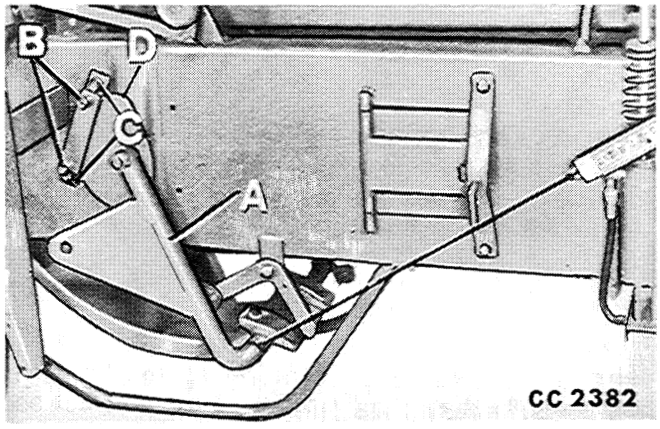


1 Needle
2 Bale case bottom
3 Center wire guide
4 6.4 mm (1/4 in.)

The center wire guides must be 6.4 mm (1/4 in.) forward of the closest point of the needles when the needles are in their highest position, and the wire guides are aligned with the needle pulley.

Adjust the guides by loosening the two mounting bolts in each guide. Shift the guides to the left or right for alignment. Shift them forward or to the rear for the desired clearance. After setting the guides, tighten the mounting bolts.

ADJUSTING NEEDLE FRAME BRAKE



Side Sheet Removed for Illustration Purposes only

A Needle frame
B Brake adjusting bolts
C Retaining bolts
D Brake pressure plate

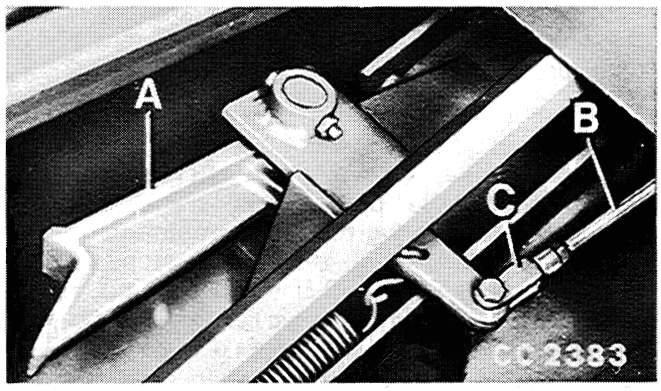
The needle frame brake eliminates loose, erratic action of the knotter mechanism. To adjust the brake, place the needles in "home" position and trip the measuring arm. Disconnect the lower end of the lift link from the needle frame. Attach twine to needle frame (A) and pull at a 30-degree rearward angle.

Loosen or tighten the nuts on the brake adjusting bolts (B) until 245 N (55 lb) pull will move the needle frame.

NOTE: Brake retaining bolts (C) must not contact the brake pressure plate (D).

IMPORTANT: The paint on needle frame brake disk must be completely worn out before adjusting needle frame brake. Do not remove paint with sand paper.

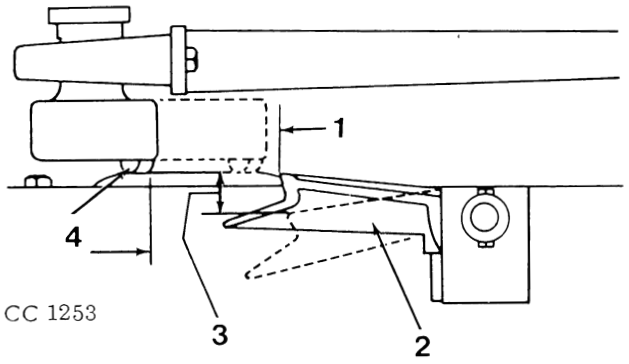
ADJUSTING CRANK SAFETY STOP



A Safety stop
B Control rod
C Yoke

The safety stop helps protect the needles from damage by the plungerhead if the needles enter the bale chamber too soon, or if they remain there too long.

NOTE: The needle to plungerhead timing must be correct before adjusting the crank safety stop (see pages 23, 24).

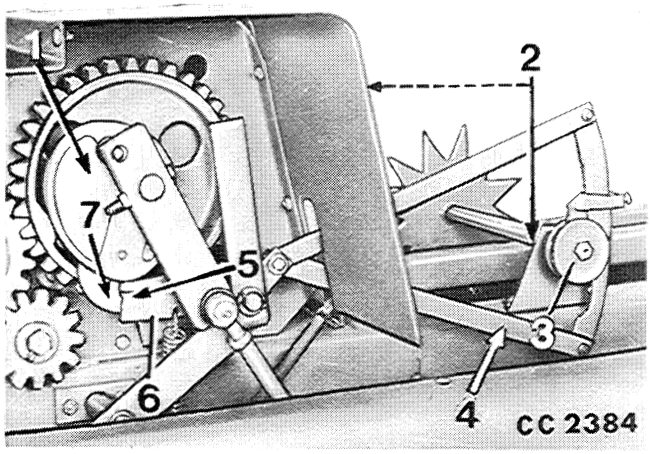


1 70 mm (2-3/4 in.) minimum
2 Safety stop
3 28.6 to 34.9 mm (1-1/8 to 1-3/8 in.)
4 Lug

With the needles in "home" position, adjust the control rod yoke so that the clearance between the right-hand point of the safety stop and the lug on the plungerhead crank is 28.6 to 34.9 mm (1-1/8 to 1-3/8 in.).

Trip the needles and turn the flywheel counter-clockwise until the needles have raised and are on the down stroke. When the safety stop is flush with the path of the plungerhead crank lug, the plungerhead crank lug must be a minimum of 69.8 mm (2-3/4 in.) from the safety stop. If this dimension is less than 69.8 mm (2-3/4 in.), adjust by means of control rod yoke. Be sure to stay within the 28.6 to 34.9 mm (1-1/8 to 1-3/8 in.) range of lug-to-crank clearance when needles are in "home" position.

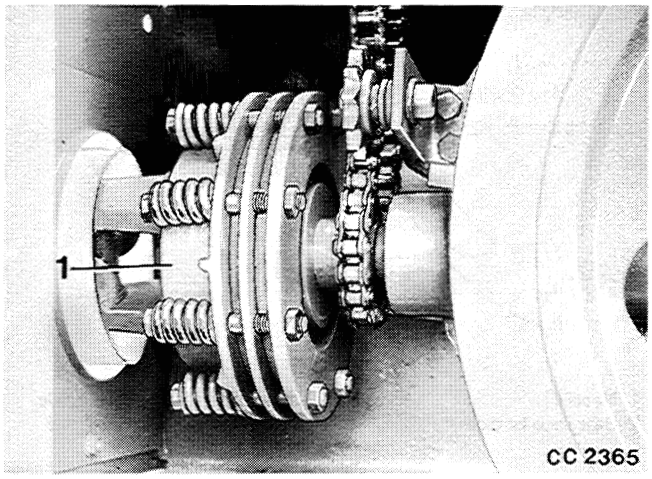
ADJUSTING BALE MEASURING CONTROL



1 Cam
2 Trip dog and arm adjustment
3 Sheave
4 Measuring arm
5 1.6 mm (1/16 in.)
6 Trip arm
7 Trip dog

Locate the needles in the "home" position; then adjust the measuring wheel mounting forward or rearward so the top corner of the trip dog does not project more than 1.6 mm (1/16 in.) above or below the top corner of release lever as the measuring arm stop rests on the measuring wheel shaft sheave.

ADJUSTING SAFETY SLIP CLUTCH



1 Slip clutch

Test the slip clutch prior to each baling season for a static slip torque of 949 to 1085 Nm (95 to 109 mkg = 700 to 800 ft-lb).

The clutch may be tested by blocking movement of plungerhead and GENTLY applying a load from 315 to 360 N (70 to 80 lb) on the end of a 3 m (10 ft) lever and pressure applied at a 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.

NOTE: When the clutch is properly adjusted, the length of the springs is about 44 mm (1-23/32 in).

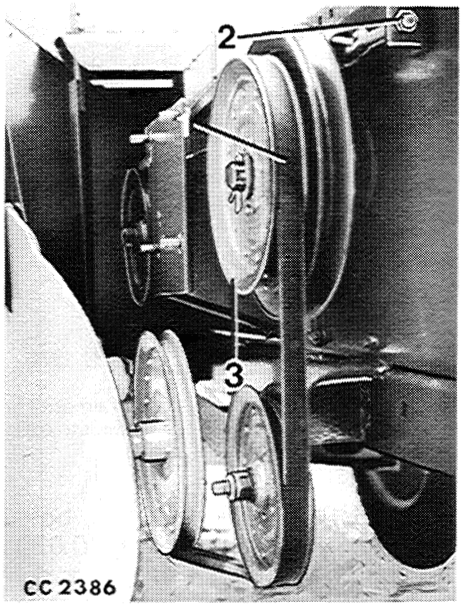
IMPORTANT: Excessive slippage will damage the slip clutch. Overtightening the slip clutch will completely destroy the protection it was designed to furnish the drive train.

GEAR CASE

The gear case should require no servicing or adjustments if kept lubricated as per instructions (see "Lubrication", page 21).

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

ADJUSTING PICKUP V-BELT TENSION



1 V-belt
2 Adjusting nut
3 Double sheave

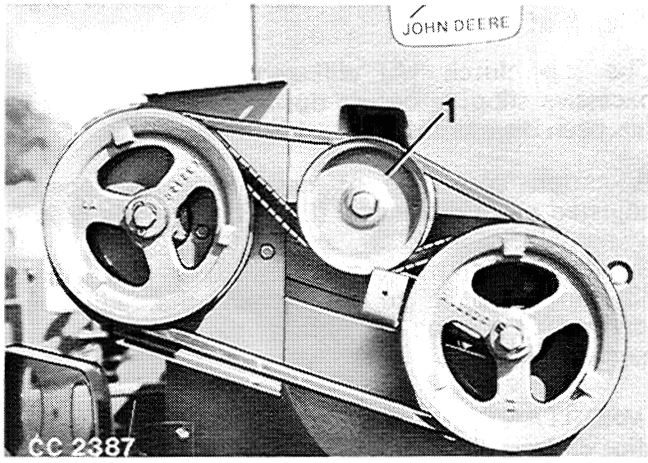
The pickup drive sheave is a double sheave permitting a high or slow pickup speed by reversing the sheave. High speed must be used in heavy and long stem crops. Use the slow speed for light or broken straw and short hay.

With pickup in normal operating position, adjust V-belt tight enough to eliminate slippage when operating under normal conditions.

Adjust the tension on the belt by tightening or loosening the nut on the tension spring.

High speed is 84 rpm
Slow speed is 68 rpm

ADJUSTING AUGER DRIVE BELT (456T/WS)

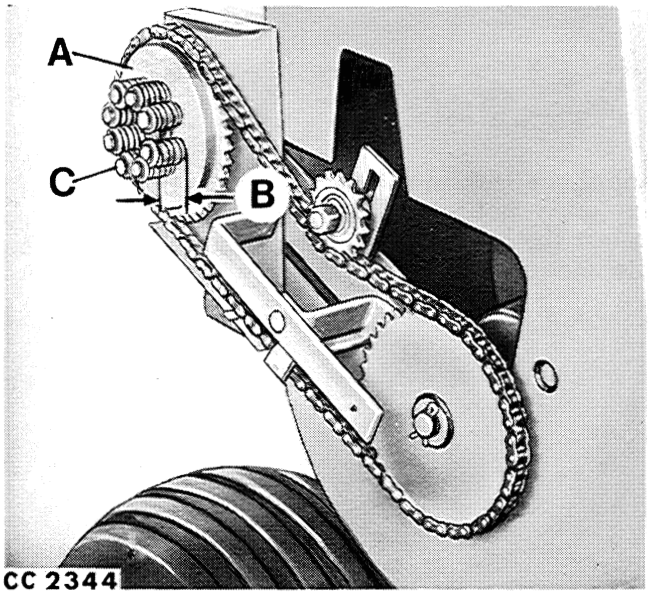


1 Idler

To adjust the V-belt, loosen the idler and adjust until the belt deflects 20 mm (7/8 in.) when 90 N (20 lb) of pressure is applied at the center of the belt opposite from the idler. Tighten the idler.

To obtain the required tension, the V-belt can be placed over or under the idler pulley. This second position should be used when V-belt has stretched and when it is no longer possible to obtain the proper tension with the V-belt over the idler pulley.

ADJUSTING AUGER DRIVE SLIP CLUTCH (466 T/WS)



A Slip clutch
B 33 mm (1-9/32 in.)
C Adjusting screw

The auger drive slip clutch helps protect the baler from overloading of the auger drive due to large "slugs" of hay.

The slip clutch (A) will require adjustment if excessive slipping occurs during operation or if it has been disassembled.

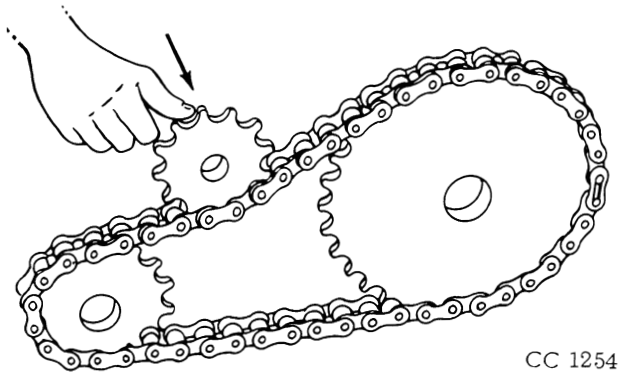
A clutch consisting of new parts is properly adjusted when dimension (B) is 33 mm (1-9/32 in.)

If, after wear, the dimension (B) is more than 33 mm (1-9/32 in.) retighten the adjusting screws (C) to again obtain the specified dimension (B).

IMPORTANT: Excessive slippage will damage the slip clutch. Overtightening the slip clutch will completely destroy the protection it was designed to furnish the drive train.

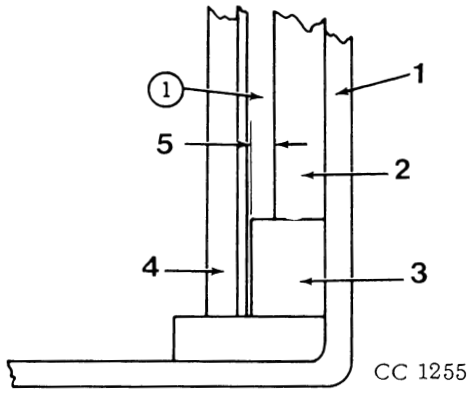
To adjust the slip clutch (A), turn the spring adjusting screws (C) until the proper spring dimension is attained.

CHAIN ADJUSTMENTS



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

ADJUSTING PLUNGERHEAD AND KNIVES

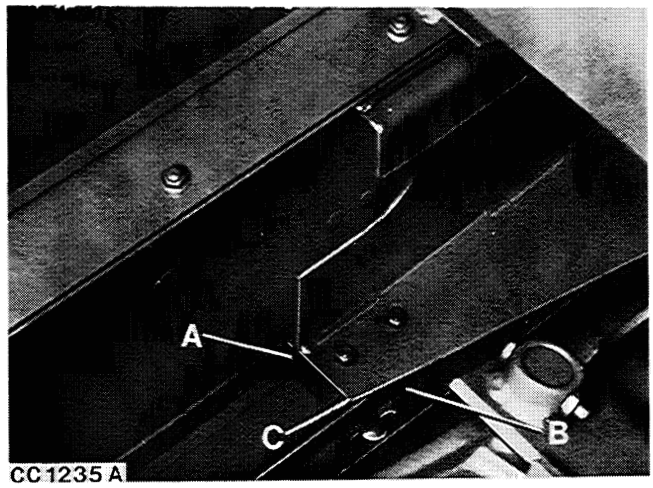


1 Bale case
2 Stationary knife
3 Lower R.H. bale case guide
4 Plungerhead knife
5 0.5 mm (0.020 in.)

1. Before adjusting the plungerhead, be sure the stationary knife is adjusted 0.5 mm (0.020 in.) to the right of the inside face of the lower right-hand bale case guide by adding or removing shims behind the stationary knive.

IMPORTANT: Bolts through stationary knife must be seated by repeated blows of a hammer while bolts are being tightened to 102 ± 27 Nm (10 mkg ± 3) (75 ± 20 ft-lb).

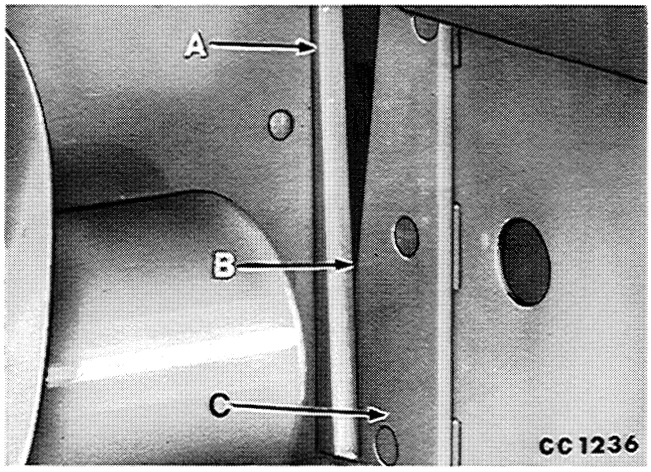
CAUTION: The stationary knive must be set 0.5 mm (0.020 in.) to the right or behind the plungerhead guides to prevent locking of knives.



A Front lower pad
B Lower right-hand angle
C Clearance

2. With the plungerhead in the bale case, check the clearance between the lower right-hand angle guide and front lower pad. If necessary, loosen bolts on the angle guide and adjust so the plungerhead is free for the entire stroke within 1.3 mm (0.050 in.) maximum.

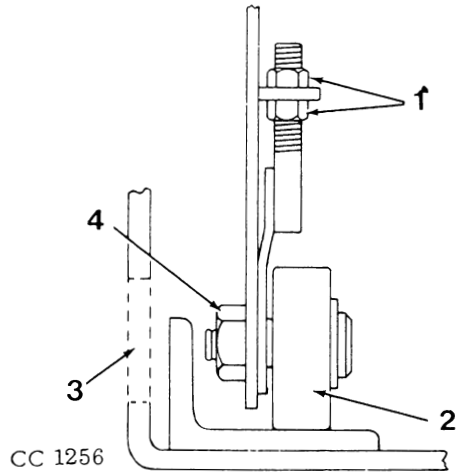
ADJUSTING PLUNGERHEAD AND KNIVES – Continued



A Stationary knive
B 0.75 to 1.75 mm (0.030 to 0.070 in.) clearance
C Plungerhead knife

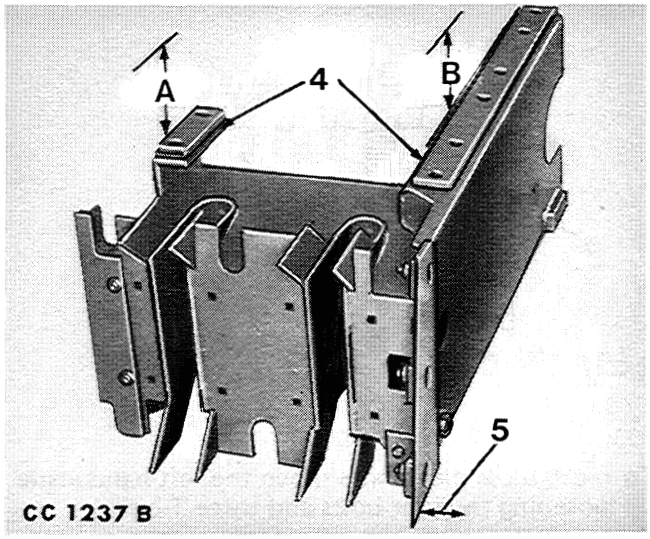
3. With the lower end of the plungerhead knife and the plungerhead bottom wear pads contacting their respective bale case guides, the clearance between the plungerhead knife and the stationary knife must be between 0.75 and 1.75 mm (0.030 and 0.070 in.). Clearance between the knives at the top must be greater than at the bottom. To adjust the knife register, move the plungerhead up or down.

NOTE: Be sure to loosen each scraper before adjusting knives, to assure no binding of plungerhead. Tighten down as shown in step 6 after adjusting knives.



1 Adjusting nuts
2 Roller
3 Hole in bale case
4 Lock nut

Adjust by loosening lock nut through hole in the left-hand side of the bale case. Adjust plungerhead by turning adjusting nuts until clearance is met. Tighten lock nut. Make sure the plungerhead is to the right so plungerhead knife is against the lower right-hand guide.

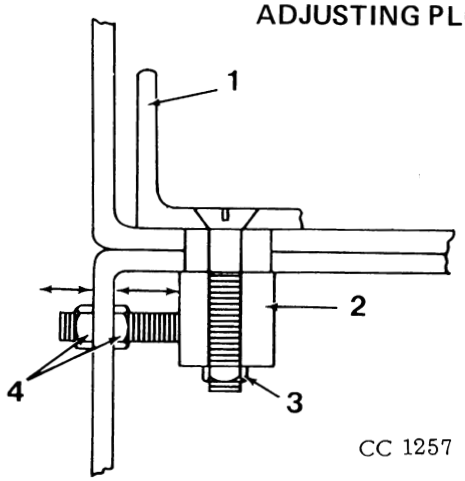


A 0.75 mm (0.030 in.)
B 1.27 mm (0.050 in.)

4. With plungerhead opposite stationary knife, the clearance between left-hand plungerhead top wear pad and top guide should be free to 0.75 mm (0.030 in.) at the closest point through entire stroke of plungerhead. Add or remove shims as necessary. Clearance between right-hand top plungerhead wear pad and bale case top should be free to 1.27 mm (0.050 in.) at the closest point through entire stroke of plungerhead. Add or remove shims as necessary.

5. With the plungerhead in its rear position and moved to the left against its guides, the clearance between the plungerhead knife and lower right-hand bale case guide must not exceed 0.4 mm (0.015 in.). With the plungerhead in its forward position and moved to the left against its guides, the clearance between the plungerhead knife and lower right-hand bale case guide must not exceed 1.5 mm (0.060 in.)

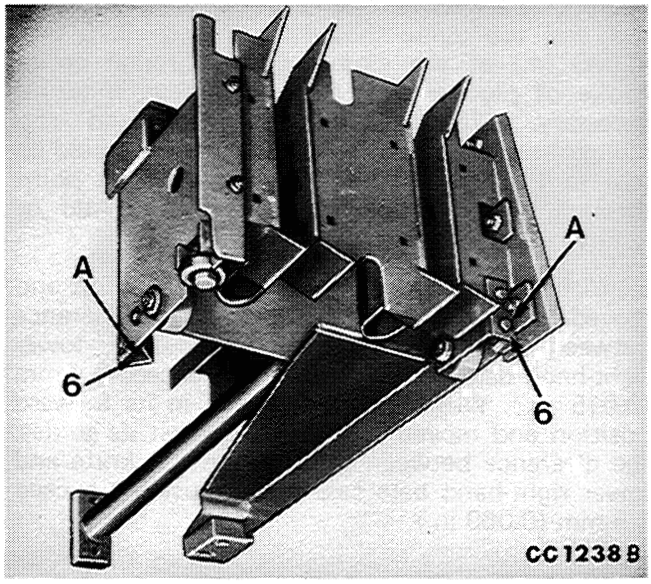
ADJUSTING PLUNGERHEAD AND KNIVES - Continued



1 Lower left-hand angle
2 T-Bolt
3 Lock nut
4 Lock nuts

To meet these clearances move the left-hand angle by loosening the four bolts and three T-bolts.

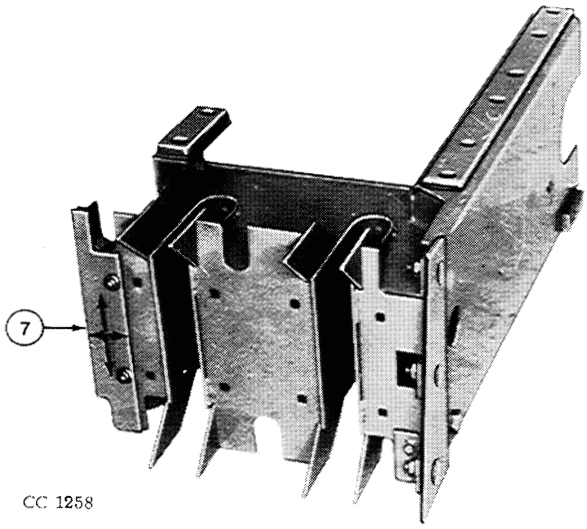
NOTE: Do not use T-bolts to make the adjustment. Use only to hold the clearance after the adjustment has been made.



A Scraper

6. Run the scrapers down to meet the plungerhead guides with a maximum clearance of 0.25 mm (.010 in.)

NOTE: The scrapers must not hold rollers off the guides.



7. Move the adjustable plungerhead face to clear the inside of the left-hand bale case side 1.5 to 4.5 mm (0.060 to 0.180 in.) throughout the entire stroke of the plungerhead. Adjust face down to the guide with maximum clearance of 0.25 mm (0.010 in.).

NOTE: The plungerhead must move freely by hand through a complete cycle after these plungerhead adjustments are completed.

Bolting the Plungerhead Crank

The plungerhead crank is bolted by means of a cap screw, a nut and a lock nut.

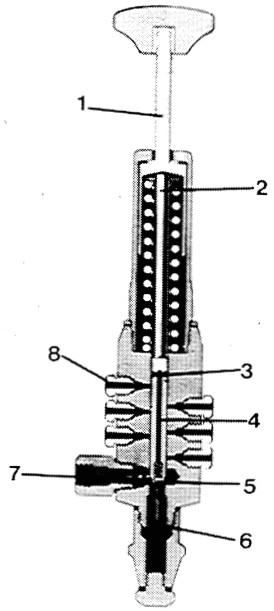
Tighten to a torque of 400 Nm (40 mkg; 300 ft-lb). The lock nut holds the nut in place.

NOTE: The tightening must be made by the head of the cap screw.

MULTI-LUBER SYSTEM

Plugged Oil Lines and Bearings

When operating properly, the plunger will move through its full stroke without difficulty. If an oil line or bearing becomes clogged, the normal stroke of the plunger will be interrupted when it reaches the outlet port of the clogged line. Clear the obstruction in the following way:



CC 1189

1 Handle
2 Plunger
3 Oil ring
4 Outlet passage
5 Check ball
6 Measuring chamber
7 Lubricant inlet
8 Outlet ports

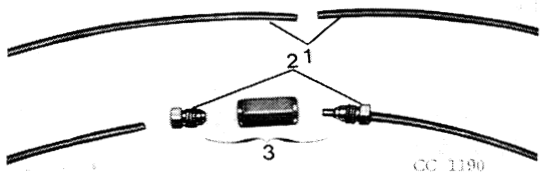
1. Determine which line is clogged by estimating how far the plunger has moved. Check to make sure by disconnecting the suspected oil line at the bearing and moving the plunger.

2. After disconnecting the clogged line, move the plunger to determine if the clogging is in the bearing or in the oil line.

3. Clean bearing and refill with grease before attaching Multi-Luber feed line. If oil line is clogged, operate the pump until lubricant is forced through line.

⚠ CAUTION: Do not force oil through oil line with a pressure grease gun. Burst pressure of the oil line is 210 bar (3000 psi).

Broken Oil Lines



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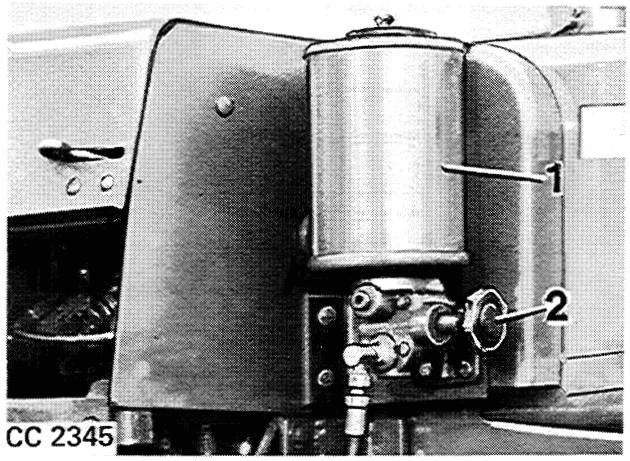
1 Broken feed lines
2 Compression nuts
3 EE 1729 M union

Whenever an oil line has been damaged or broken, the action of the plunger will speed up as it passes the outlet port having a defective oil line.

Determine the location of the break in the oil line. Cut broken ends of oil lines square and insert them into compression nuts and union as shown above. Tighten nuts firmly.

NOTE: Compression nuts can be used only once.

HYDRAULIC BALE TENSION



1 Reservoir
2 Compression knob

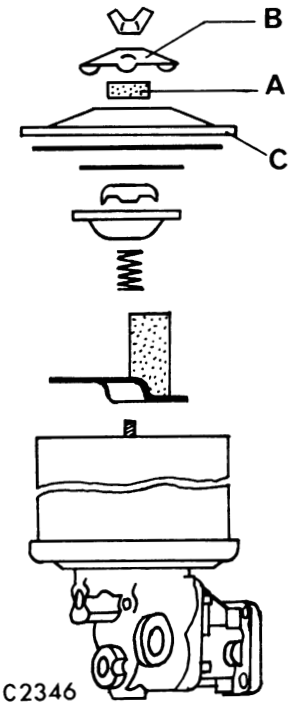
Bale weight is controlled by adjusting the knob on the pump. Turning the knob clockwise increases bale compression, turning the knob counterclockwise lessens bale compression. Once the knob has been set to accommodate the type or condition of the crop, bales of more uniform weight will be obtained without continual readjustment.

Periodically check the oil level in the hydraulic reservoir. For maximum compression control, the oil must be at the level mark on the reservoir when the hydraulic cylinder is completely depressed.

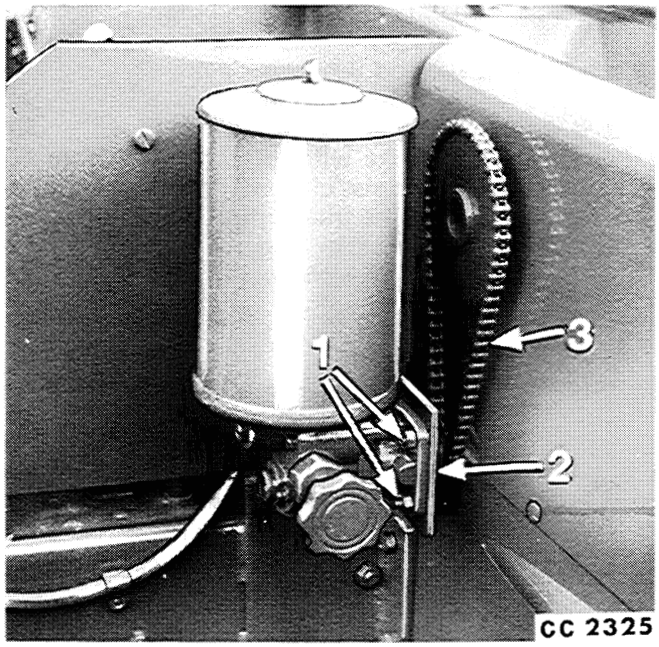
If necessary, add John Deere HY-GARD Transmission and Hydraulic Oil or Type 303 Special Purpose Oil or an equivalent oil. Other types of oil will not give satisfactory service and may result in eventual damage.

IMPORTANT: Keep oil clean, free of dust, water, and sealing compound.

Every 10 days of operation, remove the covers B and C and filter A. Wipe dust off covers and dip filter in gasoline to remove dirt and foreign particles. Clean covers and filter more often in extremely dusty working conditions. Reassemble as shown in the following sketch.



Whenever necessary, bleed air from the hydraulic system by loosening the hose at the hydraulic cylinder. Start the tractor and engage the clutch. The tractor engine must be idling while air is being forced out of the hose. When all air has been forced out of the hose, tighten the hose at the hydraulic cylinder.



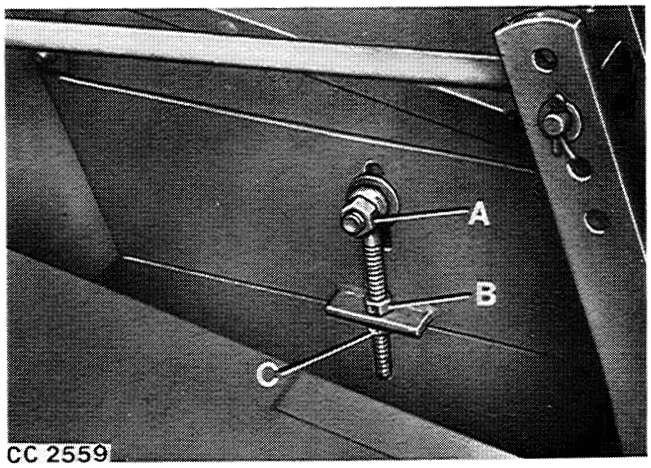
1 Pump mounting bolts
2 Pump sprocket
3 Drive chain

To adjust pump drive chain, loosen pump mounting bolts. Loosen set screw in pump sprocket and align pump chain in straight line between two sprockets. Tighten set screw in pump sprocket. Adjust drive chain until there is a slight deflection in chain. Tighten pump mounting bolts.

⚠ CAUTION: Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

ADJUSTING FEEDER FINGER CHAIN



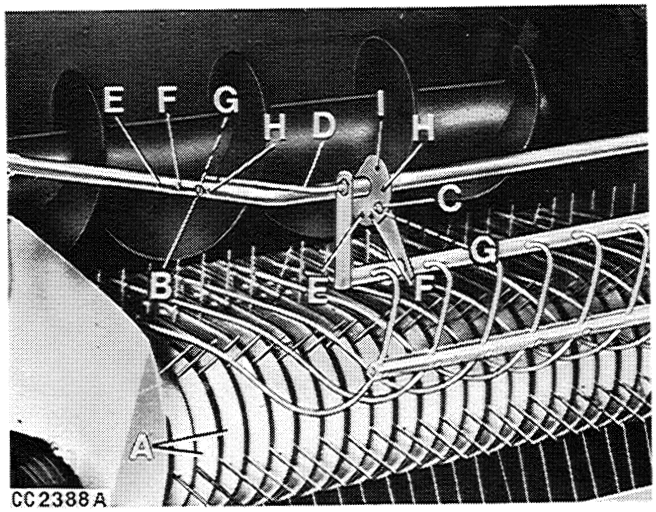
A Nut — B Upper adjusting nut — C Lower adjusting nut

The feeder finger drive chain transfers power to the overhead feeder teeth. This in turn operates the hydraulic pump, driven from the opposite side of the overhead feeder teeth. If any of these parts are removed for servicing, check all timing operations before operating baler.

To adjust, loosen nut (A) located on eyebolt. Loosen upper adjusting nut (B) and tighten lower adjusting nut (C) in order to tighten chain. Tighten or loosen adjusting nuts until 13 mm (1/2-inch) deflection is obtained by applying thumb pressure to center of chain.

Tighten adjusting nuts (B and C) and nut (A), securely. Re-check adjustment.

Pickup Compressors



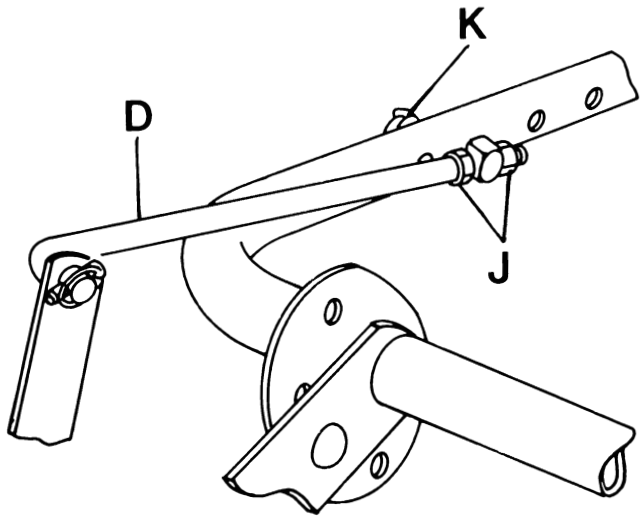
A Strippers
B Quick-lock pin
C Carriage bolt
D Locating rod
E 1st locating hole
F 2nd locating hole
G 3rd locating hole
H 4th locating hole
I 5th locating hole

When operating in light, fluffy windrows, make adjustments to stay in the lower range of holes (E or F) with the tips of the compressors just resting on the strippers (A).

When operating in dense, heavy windrows make adjustments to stay in the upper range of holes (G, H or I) with the tips of the compressors just resting on the strippers (A).

NOTE: Always keep both carriage bolts (C) and locating rod (D) in the corresponding holes to each other.

To adjust, remove Quick-lock pin (B) and carriage bolt (C) and move locating rod (D) to desired adjusting holes. Example: If placing in first locating hole (E), then carriage bolt (C) must be in the first adjusting hole (E). If locating rod is in the fourth locating hole (H), the carriage bolt can be in the fourth or fifth locating holes (H or I).



CC 2560

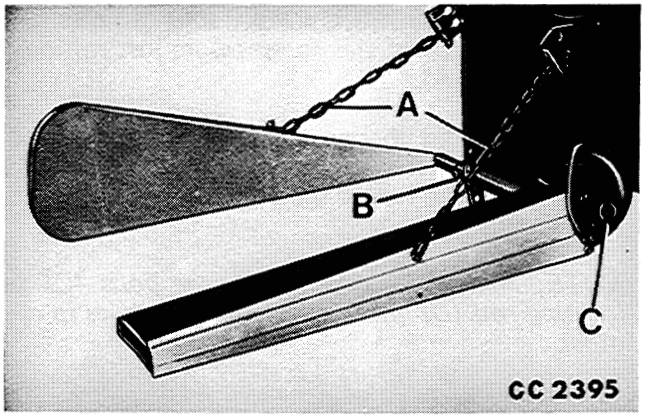
D Locating rod — J Adjusting nuts — K Quik-lock pin

Once the initial adjustment has been made and locating rod (D) is positioned, compressors can be adjusted further in relation to strippers (A).

To adjust compressors, loosen or tighten adjusting nuts (J) until tips of compressors are just resting on the strippers (A).

NOTE: For easier access to baler, remove Quick-lock pin (K) and locating rod (D). Rotate compressors up out of way.

Side-Drop Bale Chute



A Chains B Set screw C Adjusting bolt

The side drop bale chute will drop bales on their narrow sides. The chute is reversible to drop bales to the right or to the left of the baler.

The up and down adjustment can be obtained by lengthening or shortening the chains (A).

The adjusting bolt (C) should be tightened to the point where the chute can be moved by hand with effort.

The in and out adjustment can be made by loosening the set screw (B) and setting the chute so the bale will be placed to fit your individual needs. Tighten securely when adjustment is made.

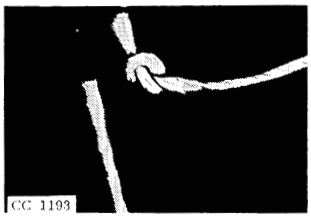
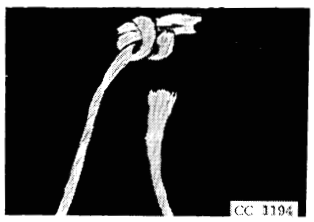
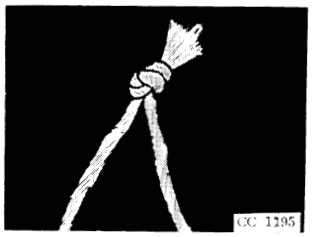
MEMORANDA

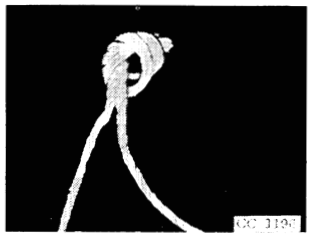
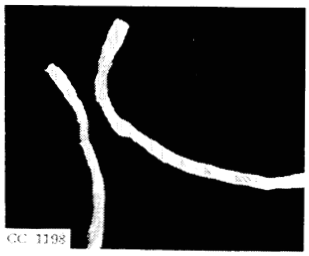
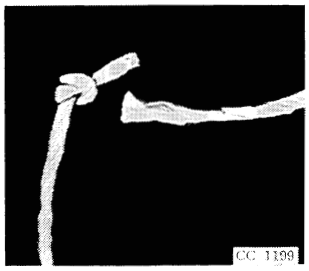
Trouble Shooting

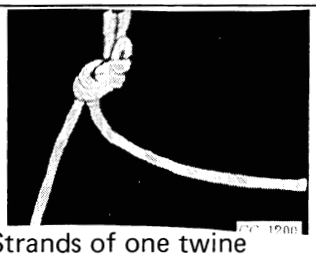
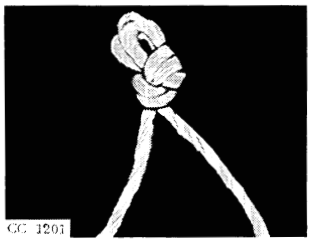
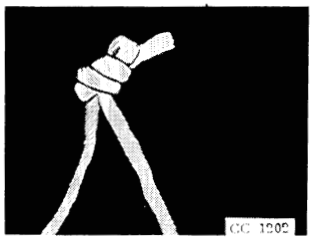
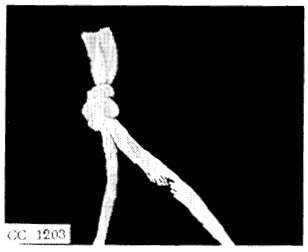
The majority of operating problems that occur with the baler can be traced to improper adjustments or delayed service. The following chart is designed to help you when a problem develops, by suggesting a probable cause and the recommended solution.

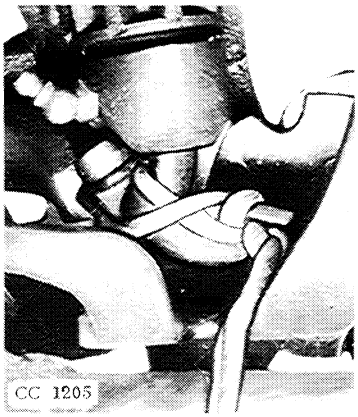
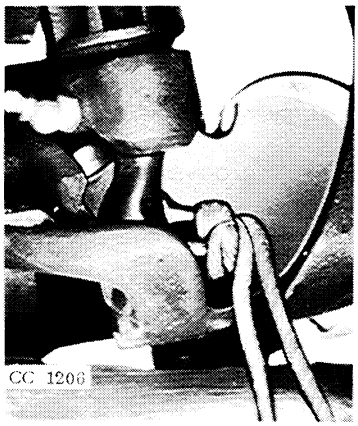
NOTE: Faulty or poor quality twine can be a major cause of knotter difficulties.

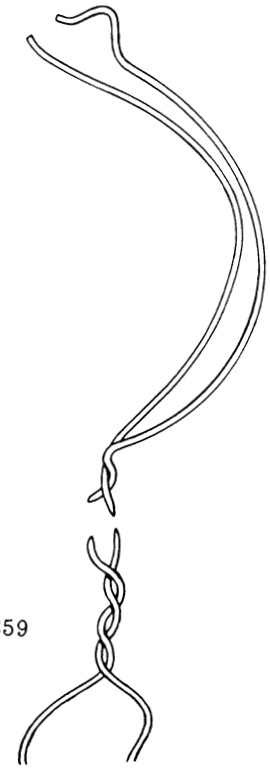
These suggested remedies should be applied with caution. Make certain that the source of the problem is not located someplace other than where the problem exists. A thorough understanding of the baler is a must if operating problems are to be corrected satisfactorily.

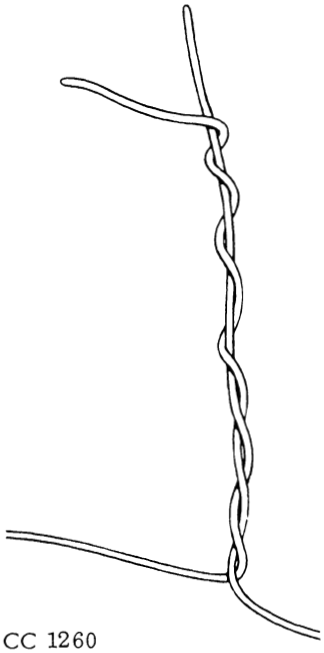
Problem	Cause	Remedy
KNOTTER DIFFICULTIES - TWINE BALER		
 CC 1193 Knot in twine over bale	Tucker fingers did not pick up needle twine or move it into tying position properly. Hay dogs not holding end of bale.	Adjust tucker fingers. Adjust needles and/or twine disk. Check twine disk and twine box tension. Install plungerhead extensions. Clean out hay dog area. Check for defective or unhooked springs.
 CC 1194 Twine broken in knot	Extreme tension on twine around billhook during tying cycle causes twine to shear or pull apart.	Loosen twine disk holder spring. Smooth off all rough surfaces and edges on billhook.
 CC 1195 Twine ends frayed	Dull twine knife.	Sharpen cutting edge on twine knife.

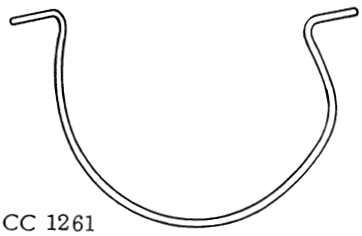
Problem	Cause	Remedy
 Knot too loose	Worn or damaged billhook tongue. Bale density too low. Excessive twine holder pressure. Normal wear of knotter. Improper adjustment of twine disk.	Replace billhook. Tighten bale tension regulators Decrease twine holder pressure Adjust knife arm Adjust twine disk.
 Twine ends uneven	Insufficient tension on twine disk holder. Dull or chipped knife	Tighten twine disk holder spring. Sharpen cutting edge on twine knife.
 No knot in either twine	Twine sheared in twine disks. Billhook not revolving. Billhook tongue fails to open	Loosen twine holder and/or remove all sharp edges and burrs on twine holder and disks. Check for lost or sheared pin in billhook pinion. Check for lost billhook tongue roller, excessive wear on roller and cam face, or damaged billhook tongue.
 Knot in needle twine	Twine over bale pulled out of twine disk. (Can be detected by square cut end which has been flattened in disk). This twine will usually be shorter than mating twine tied on opposite side of bale). 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).	Increase tension on twine holder disk spring and/or decrease bale tension. Decrease tension on twine holder disk spring. Decrease bale tension.

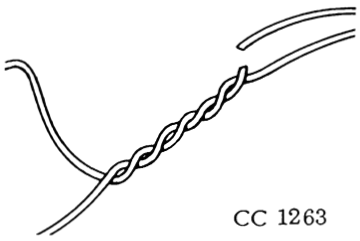
Problem	Cause	Remedy
 Strands of one twine doubled back through knot	Billhook tongue is closing on top of twine.	Model knife arm so that groove in knife arm will hold twine over billhook tongue farther to the right. Adjust timing of twine disks as explained.
 Double twine bow knot	Insufficient travel of knife arm past billhook. Billhook pressure arm spring too loose.	Model knife arm to obtain more travel past billhook. Tighten adjusting nut on billhook pressure arm spring.
 Single twine bow knot	Insufficient travel of knife arm past billhook. Billhook pressure arm spring too loose.	Model knife arm to obtain more travel past billhook. Tighten adjusting nut on billhook pressure arm spring.
 Twine cut and/or frayed behind knot	As billhook turns, twine is pinched between billhook and knife arm and twine is damaged 12 to 25 mm (1/2 to 1 in.) from knot. Rough knife arm cuts twine 18 to 30 mm (3/4 to 1-1/4 in.) from knot. Extremely high top twine tension.	Bend knife arm so billhook turns freely. Make certain that wiper ledge on knife arm contacts back face of billhook. Smooth off rough edge in twine notch of knife arm. Reduce bale weight by loosening bale tension and/or check twine tension.

Problem	Cause	Remedy
 CC 1204 Needle twine over billhook tongue roller.	Needle twine does not enter twine disk. Improper twine tension. Improper twine threading.	Adjust needles as shown on page 29 and/or adjust twine disk timing. 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. Adjust twine tension. See threading needles.
 CC 1205 Needle twine over bill-hook tongue roller and second knot tied on billhook.	Same as preceding picture; however, operator will usually find this condition rather than the condition described therein.	Make corrections as noted before and examine complete knotter for broken or damaged parts.
 CC 1206 Needle twine goes under billhook tongue during first quarter of billhook travel.	Tucker finger not carrying twine back to tying position.	Adjust tucker fingers.

Problem	Cause	Remedy
 CC 1207 Knot did not strip off billhook.	Excessive billhook tongue tension.	Loosen billhook pressure arm spring adjusting nut.
	Knife arm wiper is not contacting back face of billhook.	Model knife arm so that wiper contacts back face of billhook.
	Knife arm lift (or rise) is not sufficient.	Model knife arm to increase movement past end of billhook.
	Rough billhook.	Smooth off all rough edges on billhook with emery cloth.
	Worn or bent billhook.	Replace billhook.
TWISTER MECHANISM DIFFICULTIES - WIRE BALER (456 WS/ 466 WS)		
"Tails", One end cut and the other end twisted off.  CC 1259	Radius on top of twister hook too sharp.	Polish throat of twister hook.
		Install new twister hook.
		Retard twister hook to specified range.
	Excessive wire tension between bale and wire coil during first stage of the tying cycle.	Check all wire pulleys. Check for proper wire passage through needle.
		Check for proper wire threading.
		Make sure wire runs correctly.
		Check for any indication where wire has been catching.
		Check front side of needle for groove or build-up of foreign material that would retard wire flow.
		Check for rough or uneven wire.
		Check top wire guide for grooves deep enough to allow wire to wedge.
	Wire cannot feed down twister hook slot because of rough twister shaft.	Polish or replace shaft.

Problem	Cause	Remedy
Knot consists of one wire twisted around the other.  CC 1260	Excessive wire tension between bale and wire coil.	Check all wire pulleys. Check for proper wire threading. Make sure wire runs correctly. Check for any indication where wire has been catching. Check front side of needle for groove or buildup of foreign material that would retard wire flow. Check for rough or uneven wire. Check top wire guide for grooves deep enough to allow wire to wedge.
	Gripper does not apply equal pressure on each side.	Check for loose bolts in entire twister assembly. Clean out gripping parts including gripper drive tube. With gripper to the tight side, loosen bolts that hold the shear plates to the twister assembly and realign the plates. DON'T add washers or coins to the spring in the gripper drive tube! DON'T grind material from the cutting edges of the shear blade or plate.
	Twister hook catches needle wire on second revolution instead of first.	Adjust needle closer to gripper. Check timing. Replace bent needle.
	Hay dogs not holding end of bale.	Free frozen hay dogs. Reduce feeding rate. Replace broken hay dog springs.

Problem	Cause	Remedy
"Horse Shoes" Short pieces of wire with both ends cut because wire is caught over nose of the gripper.  CC 1261	Needle adjusted too far sideways.	Adjust the needle. Replace needle if it has become damaged.
	Grooves or extreme roughness on nose of gripper.	Grind nose of gripper. Replace gripper.
Tension break on top of bale. CC 1262	Force required to feed wire around bale exceeds the strength of the wire.	Reduce bale density (may be necessary to remove side hay resistors). Oil wire coils (light oil or diesel fuel). Adjust feeder teeth to put less hay on side where wire is breaking. Use proper size wire (1.9 mm dia. 14-1/2 gauge). Change wire coils.
	Too much force required to pull wire from wire cartons.	Check all wire pulleys. Check for proper wire threading. Make sure wire runs correctly. Check for any indication where wire has been catching. Check front side of needle for groove or buildup of foreign material that would retard wire flow. Check for rough or uneven wire. Check top wire guide for grooves deep enough to allow wire to wedge.

Problem	Cause	Remedy
Tension break on front end of bale.	Wire catches in wire pulleys	Check wire pulleys and any other place where wire could catch.
Wire breaks at base of knot  CC 1263	Repeated bending of wire after tying cycle because no hay is entering baler.	Stop baler when no hay is fed into baler. Plan windrows to avoid traveling in areas without hay. Rake heavier windrows. Increase ground speed.
	Tension breaks.	See trouble: "Tension break on top of bale".
Two successive bales not tied. One long piece of wire with each end twisted but not twisted together.	Bottom strand of wire was missed by the needle.	Remove excessive side movement of needle frame with washers. Check for properly shaped needle tip. Replace if necessary. Adjust needle. Adjust lower center wire guide.
	Wire not placed in gripper.	Adjust needle.
Wire not cutting clean.	Worn or broken parts.	Replace worn or broken parts.
	Gripper and shear blade assembly not adjusted properly.	Place shims between top of gripper arm and mounting plate.
Wires not twisted together.	Foreign material in twister assembly.	Clean out twister assembly.
	Needles not adjusted properly.	Adjust needles.
	Spring frozen in gripper drive tube assembly.	Clean out gripper drive tube.
Excessive wear on indexing surfaces of intermittent gear and pinion.	Twister hooks retarded beyond maximum limits.	Advance hooks.

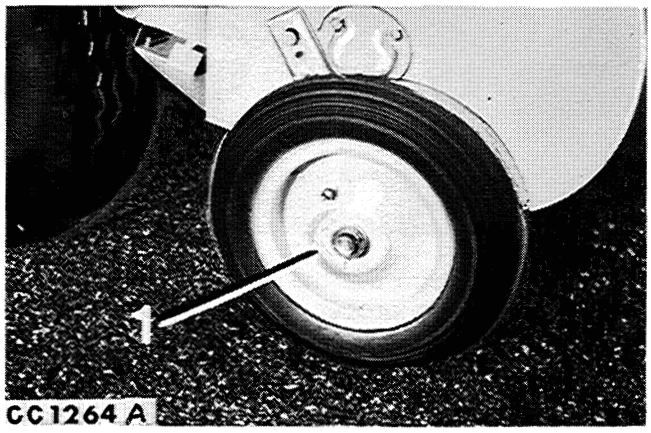
Problem	Cause	Remedy
BALE NOT OF PROPER WEIGHT		
Bale too light.	Bale tension too loose.	Tighten bale tension.
Bale too heavy.	Bale tension too tight.	Loosen bale tension.
Bale too heavy with tension loosened.	Hay too wet or too green.	Let hay dry or cure before baling. Remove bale case straw resistors.
Bale too long.	Not enough material in top of bale and/or measuring wheel not contacting crop properly.	Increase bale tension.
Bale too short.	Measuring arm not dropping home.	Adjust bale measuring control.
BALE NOT UNIFORM		
Material not distributed evenly in bale.	Feeder teeth out of adjustment.	Adjust feeder teeth.
	Ground speed of baler too slow and/or windrow too small.	Increase ground speed and/or make larger windrows.
	Bale tension too loose.	Increase bale tension.
	Baling extremely light hay.	Place feeder teeth in bottom hole and/or make larger windrows.
Ragged bale.	Dull knives. Plungerhead out of adjustment.	Sharpen knives. Adjust plungerhead.
Irregular bale length.	Measuring arm bounces.	Add one 1.5 x 10.3 x 25.4 mm (0.060 x 13/32 x 1 in.) washer between measuring wheel pulleys.

Problem	Cause	Remedy
PICKUP DIFFICULTIES		
Pickup teeth digging in ground.	Pickup set too low.	Raise pickup.
Not picking up hay clean.	Pickup stays up.	Loosen lift spring.
	Pickup teeth set too high.	Lower pickup.
	Ground speed too fast.	Reduce ground speed.
	Hay not all raked.	Turn all hay onto clean stubble.
	Pickup teeth bent or broken.	Straighten or replace teeth.
	Windrows too light.	Rake heavier windrows.
Pickup teeth do not revolve.	Belt slipping.	Replace or tighten belt.
FEEDING DIFFICULTIES		
Plungerhead hitting feeder teeth at top of case.	Out of time	Retime plunger and feeder.
Baler stalls when plunger-head is even with rear side of feed opening.	Dull knives and/or plunger-head out of adjustment.	Sharpen knives and/or adjust plungerhead.
Baler stalls when plunger-head is even with stationary knife	Baling too heavy.	Loosen bale tension.
	Plungerhead obstructed.	Remove obstruction.
Baler fails to start after being stalled on com-pression stroke	Plungerhead obstructed.	Turn flywheel in clockwise direction for two or three revolutions; then engage clutch on tractor. **⚠ CAUTION: Be sure that needles are in "home" position before turning flywheel by hand.**
Hay not feeding under auger.	Auger drive V-belt slipping.	Adjust V-belt.
NEEDLES NOT RISING		
Trip dog not functioning.	Broken release arm spring or trip dog spring lost.	Replace broken or lost spring.
Sheared knotter drive pin.		(See "Shear bolt difficulties".)

Problem	Cause	Remedy
	POWER DRIVE DIFFICULTIES	
PTO slip clutch slips during normal operation.	Slip clutch bolts loose.	Tighten clutch bolts.
	Shear bolt sheared in flywheel.	Replace shear bolt.
	SHEAR BOLT DIFFICULTIES	
Flywheel shear bolt sheared.	Dull knives.	Sharpen knives.
	Obstruction in bale chamber.	Remove all obstructions.
	Too much clearance between knives.	Adjust plungerhead.
	Safety stop improperly adjusted.	Adjust safety stop.
	Worn clutch ring.	Replace.
	Bales too heavy for condition.	Loosen bale tension.
	Needles in bale case.	Place needles in home position.
Sheared knotter and needle drive bolt.	Needle frame brake too tight.	Loosen needle frame brake.
	Needles out of time.	Retime needles.
	Needles hitting obstruction.	Remove all obstructions.
	Obstructions in knotter.	Remove all obstructions.
	HYDRAULIC PUMP DIFFICULTIES	
Pump not delivering oil.	Clogged filter.	Remove, flush, clean filter thoroughly.
	Not enough oil in tank.	Add oil as necessary.
Pump not developing sufficient pressure.	Valving surfaces scored by abrasive matter.	Replace all scored or worn parts.
	Leak in hydraulic system connections and cylinders.	Eliminate all leaks.
	Oil not of correct weight.	Use correct weight oil.
External leakage.	Shaft oil seal defective.	Replace shaft oil seal.

Attachments

PICKUP GAUGE WHEEL

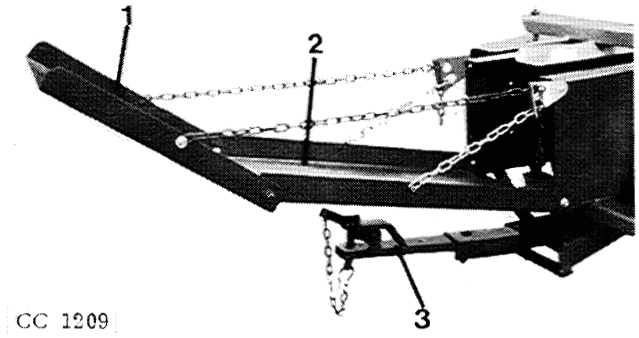


1 Pickup gauge wheel

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

WAGON HITCH (456 - 466)
BALE CHUTE AND EXTENSION (456 - 466)

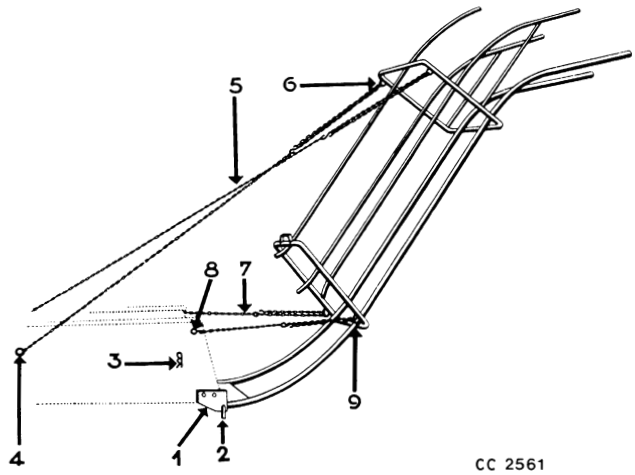
These attachments permit loading bales directly from the baler to a wagon, thus eliminating the job of picking up bales.



1 Bale chute
2 Bale chute extension
3 Adjustable wagon hitch

The bale chute extension attaches in the same manner as the regular chute does by chains. The support of the adjustable wagon hitch bolts directly onto the bale case. The telescoping wagon hitch is adjustable for wagons or trailers having tongues of variable length.

LOADING FRAME (456)



A loading frame is available for use on 456 balers. This loading frame must be attached as follows:

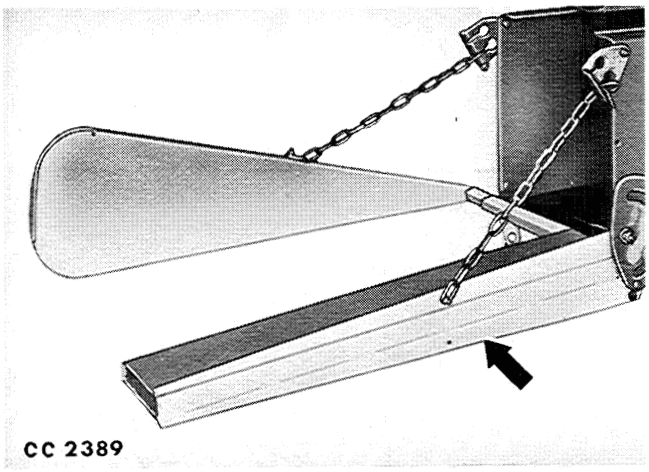
1. Bolt the mounting plates (1) on the lower end of the bale case. Install the loading frame onto the mounting plates by means of the pivot rod (2) and the spring lock pin (3).

2. Attach the upper chains (5) to (4) by means of the supplied hardware, CROSS THE CHAINS and pass them through the loops (6). Once the loading frame in positioned at the desired height, hook the "S" shaped hook into the appropriate link.

3. Attach the lower chains (7) to (8) by means of the supplied hardware. Pass the chains through the loops (9) and hook the "S" shaped hook into the appropriate link.

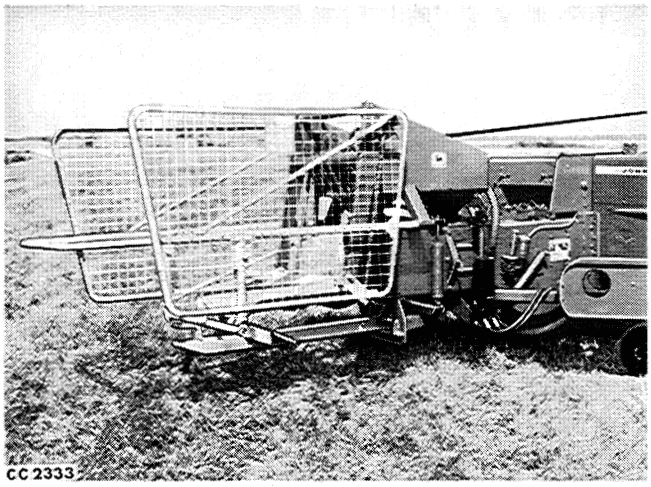
NOTE: The "S" shaped hooks are supplied closed, it is necessary to open them before use.

SIDE-DROP BALE CHUTE


CC 2389

The side-drop bale chute will drop bales on their narrow sides. The chute is reversible to drop bales to the right or to the left. See page 45 for adjustment.

BALE EJECTOR 30 (456 ONLY)

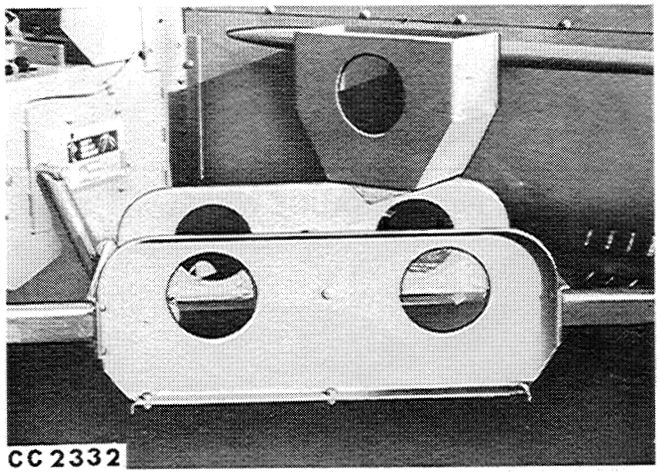

CC 2333

The bale ejector 30 provides a "one man way" of automatically loading bales into a wagon with high sideboards directly from the baler — thus eliminating the man on the wagon.

The low-cost bale ejector for John Deere balers is extremely simple and attaches onto the bale case. The ejector is entirely hydraulically operated.

IMPORTANT: No 30 bale ejector can be used with the 456 baler but not with the 466 baler. When using a 456 baler with no 30 bale ejector, drive at a reasonable ground speed to avoid bale ejector overloading.

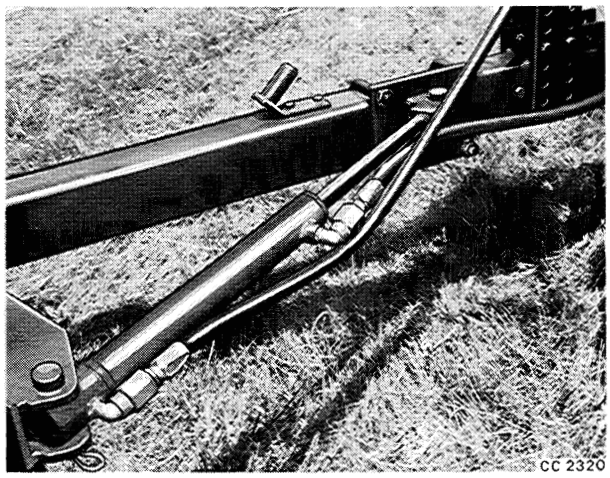
WIRE CONTAINERS (456 WS - 466 WS)

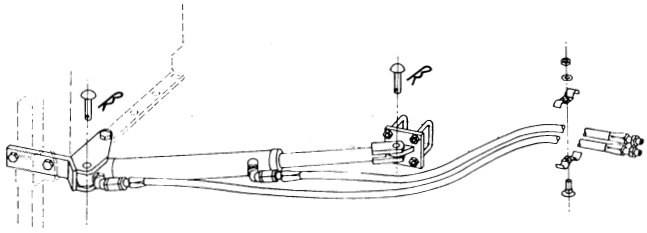

CC 2332

For unpacked wire use the special wire coil containers to obtain proper unwinding of the wire coils.

HYDRAULIC TONGUE POSITIONING DEVICE

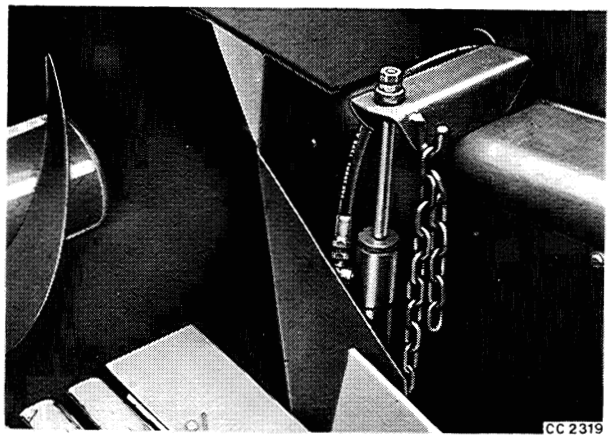
As optional equipment, a hydraulic tongue positioning device may be supplied with the 456 or 466 balers.

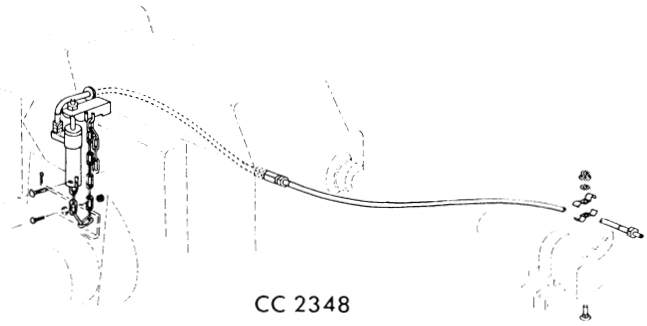

CC 2320


CC 2347

HYDRAULIC PICK-UP LIFT DEVICE

As optional equipment, a hydraulic pickup lift device may be supplied with the 456 or 466 balers.

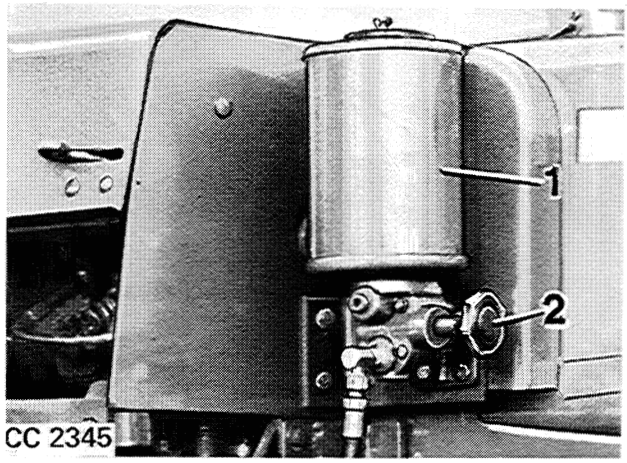

CC 2319


CC 2348

The hydraulic pick-up lift device used on the 456 baler is equipped with a single acting cylinder.

Two types of hydraulic pick-up lift device are available for 466 balers: one with a double acting cylinder and the other with a single-acting cylinder.

HYDRAULIC BALE TENSION (456)



CC 2345

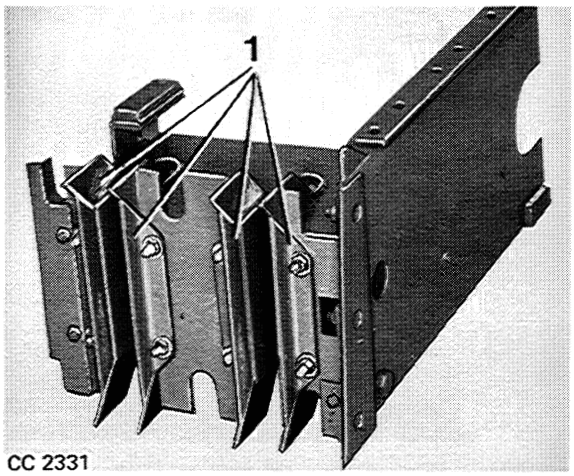
As optional equipment a hydraulic bale tension device may be supplied with the 456 baler. See page 12, 18 and 41.

SERVICE BOX (456 T - 466 T)


CC 2334

This service box contains first emergency parts such as pickup teeth, shear bolts, coupler link, pick-up V-belt, grease fittings permitting to repair the baler in the field.

PLUNGERHEAD EXTENSIONS

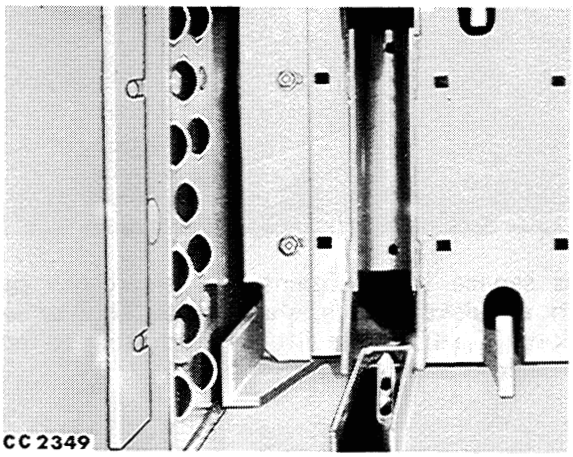


1 Plungerhead extensions

The plungerhead extensions will provide additional compression needed to produce bales of desired weight when baling unusually dry or fluffy material.

The plungerhead extensions are supplied as standard equipment on 466 balers, but are supplied as optional attachment on 456 balers.

SIDE STRAW RESISTORS

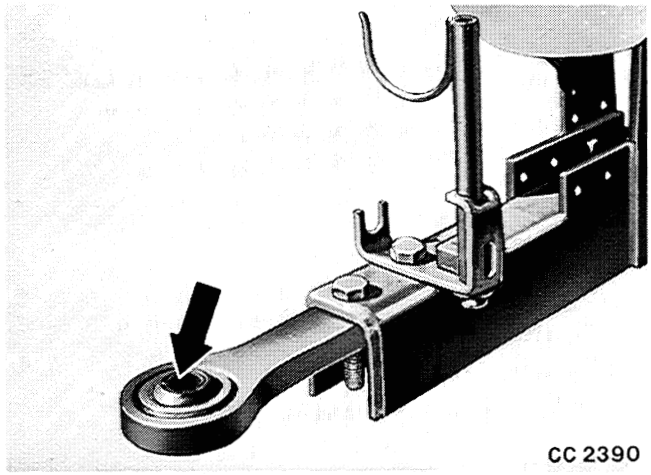


Side straw resistors which will be mounted on each side of the bale case offer increased bale density, which is especially desirable when baling light, dry material.

IMPORTANT: Before mounting the resistors, make sure that the paint inside the bale case is sufficiently worn off : that is the reason why the straw resistors are not bolted inside the bale case at the factory. Up to two sets of straw resistors may be used depending on the amount of density required. When one set of resistors is used, it should be bolted in the front holes. When the baling conditions become normal, remove the resistors set by set, starting at the rear of the bale case.

One set of side straw resistors is supplied as standard equipment with the 466 T/WS balers. Should a second set be needed, it must be ordered separately as optional attachment.

BALL JOINT HITCH (456/466)



To avoid problems such as strains, excessive wear, or even breakage of hitch plates or hitch pin when baling on very uneven ground, a ball joint hitch can be installed instead of the conventional hitch plates.

The ball joint hitch permits the use of two different sized hitch pins. To change from 26.5 mm (1-3/64 in.) to 33 mm (1-19/64 in.) simply remove bushing or vice-versa.

NOTE: This ball joint hitch must be attached to the swinging drawbar of the tractor.

Specifications

BALER 456

Bale: Cross-section	0.36 x 0.46 mm (14 x 18 in.)
Length	adjustable from 0.30 to 1.27 m (12 to 50 in.)
Pickup width: Inside	1.68 m (66 in.)
On flare	1.80 m (71 in.)
Pickup cylinder diameter	0.35 m (14 in.)
Pickup working speed	68 or 84 rpm
Adjusted height of pickup cylinder	0.13 m (5 in.)
Auger: Diameter	0.40 m (16 in.)
Length	1.30 m (51 in.)
Feeder opening dimensions	0.33 x 0.58 m (13 x 23 in.)
Plungerhead: Stroke	0.76 m (30 in.)
Rated speed	92 strokes per minute
Height (maximum)	1.78 m (70 in.)
Height (minimum)	1.45 m (57 in.)
Length: With bale chute and PTO	5.56 m (18 ft. 3 in.)
Less tongue and bale chute	3.38 m (11 ft.)
Width	2.85 m (9 ft. 4 in.)
Weight (approx.): 456 T	1500 kg (3303 lb)
456 WS	1520 kg (3348 lb)
Flywheel diameter	0.69 m (27 in.)
PTO shaft speed	540 rpm
Minimum size of tractor	44 kW (60 HP)
Transmission: Gears	Steel cut, enclosed
Capacity JD SAE 85-140, API-GL 5 Gear Lubricant	3.8 l (1 US gal)

Tires: R.H.	7.00 x 12, 4 PR. Inflation pressure: 1 bar (14 psi) (Standard)
L.H.	10.00 x 15, 6 PR. Inflation pressure: 2 bar (28 psi) (Standard)
L.H.	10.00 x 15, 10 PR. Inflation pressure: 2 bar (28 psi) (Optional)
R.H.	8.50 x 12, 6 PR. Inflation pressure: 1 bar (14 psi) (Optional)
L.H.	11.50 x 15, 6 PR. Inflation pressure: 1.3 bar (18 psi) (Optional)

Wire	Ø 1.90 mm (14 - 1/2 gauge), annealed, oiled
Wire coils	approx. 2000 m (6500 ft.) of wire
Wire carton size	0.34 x 0.34 x 0.16 m (13 - 1/2 x 13 - 1/2 x 6 - 1/2 in.)

BALER 466

Bale: Cross-section	0.40 x 0.46 m (16 in. x 18 in.)
Length	adjustable from 0.30 to 1.27 m (12 in. to 50 in.)
Pickup width: Inside	1.67 m (66 in.)
On flare	1.80 m (71 in.)
Pickup cylinder diameter	0.35 m (14 in.)
Pickup working speed	72 or 89 r.p.m.
Auger: Diameter	0.40 m (16 in.)
Length	1.55 m (61 in.)
Feeder opening dimensions	0.38 x 0.58 m (15 in. x 23 in.)
Plungerhead: Stroke	0.76 m (30 in.)
Rated speed	98 strokes per minute
Height (with feeder fork in low position)	1450 mm (57 in.)
Height (maximum)	1655 mm
Length: With bale chute and PTO	5.90 m (19 ft. 4 in.)
Less tongue and bale chute	3.76 m (12 ft. 4 in.)
Width	2.90 m (9 ft. 6 in.)
Weight (approx.) 466 T	1590 kg (3502 lb)
466 WS	1610 kg (3546 lb)
Flywheel diameter	0.69 m (27 in.)
PTO shaft speed	540 rpm
Minimum size of tractor	44 kW (60 HP)
Transmission: Gears	Steel cut, enclosed
Capacity . . JD SAE 85-140, API-GL 5 Gear Lubricant	3,8 l (1 US gal)

Tires:	
R.H., inflation pressure 1 bar (14 psi)	8.50 x 12, 6 PR
L.H., inflation pressure 1.3 bar (18 psi)	11.50 x 15, 6 PR
Wire (466 Wire)	Ø 1.90 mm (14-1/2 gauge), annealed, oiled
Wire coils (466 Wire)	approx. 2000 m (6.500 ft.) of wire
Wire carton size	0.34 x 0.34 x 0.16 m (13-1/2 x 13-1/2 x 6-1/2 in.)

(Specifications and design are subject to change without notice).

SERIAL NUMBER

When ordering parts, always quote the model and serial number as given on the serial number plate. By doing so, you will assist your John Deere dealer in giving you prompt, efficient service. For your convenience, a space is provided at right for recording this number.

The baler serial number is located on the lower right-hand corner of the bale case front end cap.

Baler Serial No. . . . . .

Date of Purchase . . . . . 19 . . . .

(To be filled in by purchaser).

Index

Service to keep you on the job

We, at your John Deere dealer's, pride ourselves in having what it takes to help keep you on the job . . . where the profits are

John Deere Parts.
We help minimize downtime by putting the right parts in your hands in a hurry. That's why we maintain a large and varied inventory—to stay a jump ahead of your needs.

The right tools.
Precision tools and testing equipment enable our Service Department to locate and correct troubles quickly . . . to save you time and money.

Well-trained mechanics.
School is never out for John Deere servicemen. Training schools are held regularly to be sure our personnel know your equipment and how to maintain it. Result? Experience you can count on!

Prompt service.
Our goal is to provide prompt, efficient care when you want it and where you want it. We can make repairs at your place or at ours, depending on the circumstances. See us. Depend on us.

John Deere Service Superiority: We'll be around when you need us