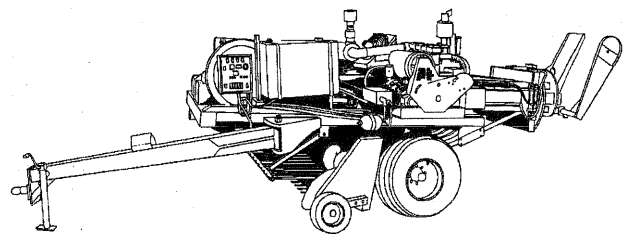
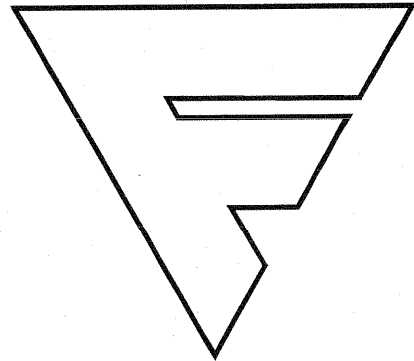


FREEMAN



**MODEL 1390
AUTOMATIC HAY BALER**

**OPERATOR'S
MANUAL**

PB 1390OPS

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SAFETY

J.A. Freeman & Son is greatly concerned with safety. The Freeman 1390 Baler is furnished with safety features. Even with these safety features, personal injury can still occur if the operator is careless, negligent or thoughtless when maintaining, lubricating, operating, unclogging, or servicing the baler.

Your Freeman 1390 Baler has safety shields to help prevent personal injury. Do not operate the machine unless all shields are in place. There are also **"CAUTION," "DANGER,"** and **"WARNING"** decals on the baler. Read and pay attention to the decals.

Following is a list of precautions that should be taken to help prevent personal injury:

1. **SHUT OFF ENGINE BEFORE ADJUSTING, LUBRICATING, CLEANING OR SERVICING THE BALER.**
2. **KEEP HANDS, FEET AND CLOTHING AWAY FROM POWER DRIVEN PARTS.**
3. **USE APPROPRIATE SIGNS OR WARNING LIGHTS WHEN OPERATING ON PUBLIC ROADWAYS.**
4. **MAKE CERTAIN EVERYONE IS CLEAR OF AND OFF THE BALER BEFORE OPERATING ANY PART OF THE MACHINE.**
5. **ALWAYS USE LIGHTS FOR NIGHT WORK.**
6. **DO NOT LEAVE THE OPERATOR'S SEAT WHILE THE EQUIPMENT IS IN OPERATION OR WHILE ANY OF THE MOVING PARTS REMAIN IN MOTION.**
7. **KEEP ALL SHIELDS IN PLACE AND IN SERVICEABLE CONDITION.**
8. **DO NOT GO NEAR ANY EQUIPMENT UNTIL ALL MOVING PARTS ARE STOPPED.**
9. **DO NOT GO UNDER ANY RAISED COMPONENTS UNTIL THEY ARE SAFELY BLOCKED.**
10. **AT ALL TIMES CARRY AN "A" "B" "C" FIRE EXTINGUISHER ON THE MACHINE.**
11. **REMEMBER "SAFETY" IS ONLY A WORD UNTIL IT IS PUT INTO PRACTICE.**

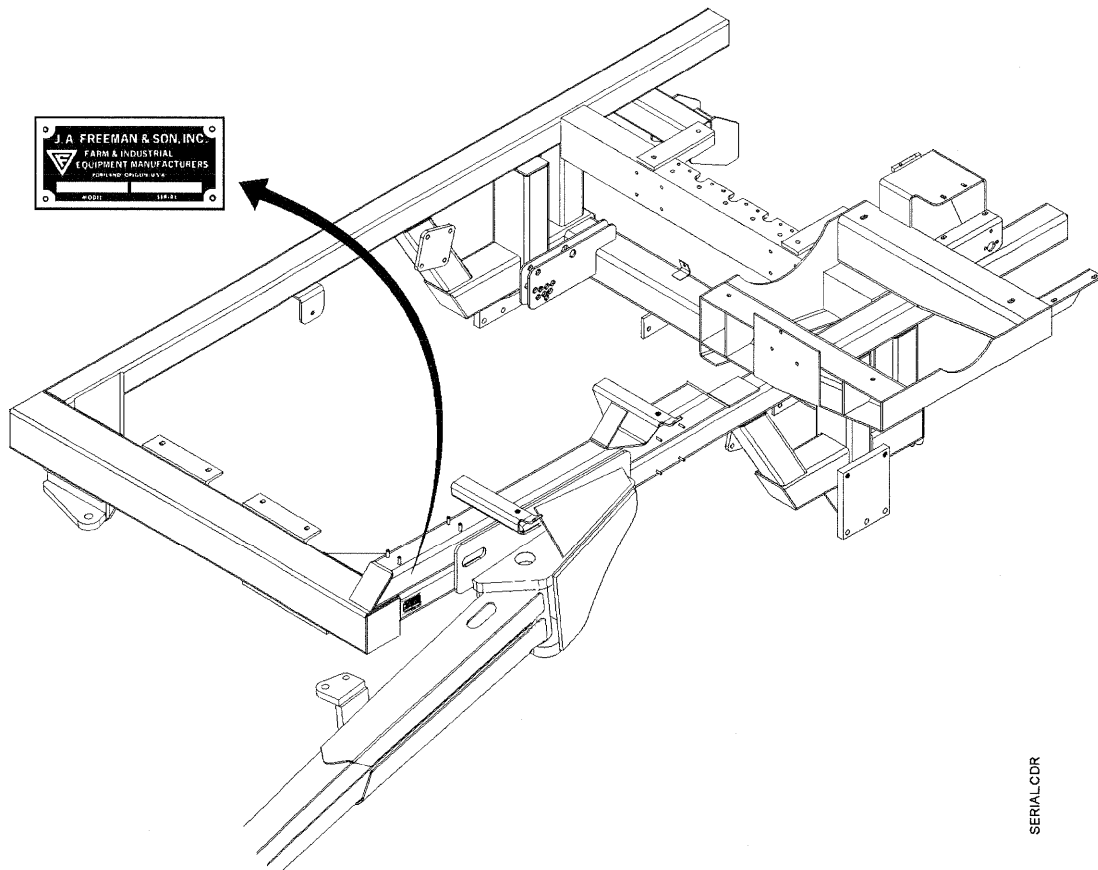
 **WARNING:** SOME ILLUSTRATIONS IN THIS PARTS LIST SHOW THE BALER WITHOUT SHIELDS TO ALLOW FOR A BETTER VIEW OF THE AREA BEING ADDRESSED. THE BALER SHOULD NEVER BE OPERATED WITH ANY OF THE SAFETY SHIELDS REMOVED.

INTENTIONALLY BLANK

SERIAL NUMBER LOCATION AND IDENTIFICATION

SERIAL NUMBER LOCATION

The serial number is an important piece of information about the machine and it may be necessary to know it before obtaining the correct replacement part. The serial number is located on the left front frame rail as shown.



WARNING: SOME ILLUSTRATIONS IN THIS PARTS LIST SHOW THE 1390 BALER WITHOUT SHIELDS TO ALLOW FOR A BETTER VIEW OF THE AREA BEING ADDRESSED. THE MACHINE SHOULD NEVER BE OPERATED WITH ANY OF THE SAFETY SHIELDS REMOVED.

NOTE: ILLUSTRATIONS ARE FOR "ORDERING" INFORMATION ONLY, AND ARE NOT INTENDED FOR USE AS AN ASSEMBLY GUIDE.

SPECIFICATIONS:

DIMENSIONS / WEIGHT:

Length with bale chute..... 310"
Height..... 77"
Width..... 102"
Weight..... 11100 Lb.
Tongue Weight..... 1280 Lb.

ENGINE TYPE:

Deutz 4 Cyl. In line..... 3.77L, (230 CID)
Horsepower..... 67 H P
Fuel..... Diesel
Fuel Tank Capacity..... 30 Gal.

TIRE SIZE:

Baler..... 14 Ply Rated, 14 x 17.5"
Pickup..... 4" x 8"
Tire size subject to change without notice.

LIGHTS:

Working..... 6 Halogen Lamps
Road..... 2 Red and 2 Amber Lamps

MONITOR / CONTROLLER SYSTEM:

REMOTE CONTROLLER / MONITOR AND BALER MOUNTED CONTROLS:

- Fuel Gauge
- Engine Start / Stop
- Bale Density
- Engine Speed
- Pickup Lift
- Clutch Engage
- Drawbar Swing
- Work Lights

TRACTOR MOUNTED REMOTE CONTROL ONLY:

- Baler Strokes per Minute Indicator
- Strokes per Bale Indicator
- Resettable Bale Counter

BALER MOUNTED CONTROLS ONLY:

- Local / Remote Switch
- Alternator, Oil Pressure and Temperature Warning Lights
- Engine Hour Meter
- Non Resettable Bale Counter

FEED SYSTEM:

Charge System..... 6 Tine, Dual Stage
Drive..... RC100 Roller Chain
Drive Protection..... Shear Bolt

BALE CHAMBER:

Bale Size..... 15 x 22"..... 16 x 22"
Width..... 22"..... 22"
Height..... 14-1/2"..... 15"

DENSITY CONTROL:

Hydraulic Remote Control..... Top, Bottom & Side Rails

PLUNGER:

Speed..... 95 Strokes per Min
Length of Stroke..... 24
Mounting..... 4 Sealed Roller Bearings

TYING MECHANISM:

Knotter..... 3 Heavy Duty Knotters
Tie Type..... Bale Twine
Twine Storage Capacity..... 12 Balls of Twine
Knotter Blower..... Fan Blade Type

KNOTTER LUBRICATION:

Lubrication System..... (Automatic) 18 Points

MAIN DRIVE SYSTEM:

Gearbox..... Enclosed Spur Gears
Flywheel Diameter..... 28" Dia
Flywheel Weight..... 440 Lb.
Flywheel Protection..... Shear Bolt

BALE CHUTE:

Type..... Combination Flat Drop / Quarter Turn on Edge

BALER HITCH:

Ball or Clevis Type

PICKUP:

Width (Outside)..... 99-1/4"
Width (Inside)..... 92"
Width (Tine to Tine)..... 81-3/8"
Number of Tine Bars..... 4
Number of Tines..... 128
Tine Spacing..... 2-5/8"
Tine Bar Bearings..... Sealed Ball
Augers..... 12"
Drive..... RC60 Roller Chain
Protection..... Slip and Overrunning Clutch
Gauge Wheels..... 2 Fixed Gauge w / Adjustable Height
Pickup Lift..... Hydraulic Cylinder
Drive Cam..... Computer Generated Profile

(THE BALER IS NORMALLY CONTROLLED REMOTELY BUT THE BALER MOUNTED CONTROLS PROVIDE FULL BACKUP).

(ALL ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE DUE TO DESIGN)

LUBRICATION / SERVICE SCHEDULE

Only through timely service, maintenance and making the proper adjustments can you realize the optimum performance and long life from this equipment. Follow these recommended service checks at their suggested intervals to maximize the baler's performance and service life.



MAIN SYSTEM HYDRAULIC OIL:

Cheveron AW-46 or equivalent

GREASE FITTINGS:

Multi-purpose grease

AUTOMATIC KNOTTER AUTO LUBER:

SAE 30 SE, SF or CD motor oil

ENGINE LUBRICATION:

See engine manufacturer's owner's manual

GEARBOX DRIVE UNIT

SAE 90-140 gear oil



CHECK / SERVICE EVERY 80 HOURS:

- Check drive / engine belts tension and condition
- Check tire inflation
- Check wheel fasteners for proper torque



CHECK / SERVICE EVERY 250 HOURS:

- Change main hydraulic filter
- Check gear box oil level



CHECK / SERVICE EVERY 500 HOURS:

- Check knotter brake adjustment
- Check / clean battery terminals



CHECK / SERVICE ANNUALLY:

- Lube feeder crank journal (1)
(Lube until grease is visible at breather)
- Change system hydraulic oil
- Change oil tank filters (or as indicated by condition)
- Repack wheel bearings



CHECK / SERVICE EVERY 4 HOURS:

- Lubricate knot sensor pivots (6)
- Check hydraulic tank level
- Check engine oil level
- Check engine air cleaner



CHECK / SERVICE DAILY:

- Check oil level in knotter luber tank
- Blow clean with compressed air
(Do not steam clean)
- Lube ball hitch
- Check needle timing
- Check system hydraulic oil level



CHECK / SERVICE - END OF SEASON:

- Check drive / engine belts tension and condition
- Check hydraulic accumulator (150 psi nitrogen charge)
- Prepare equipment for off season storage

FIELD START-UP PROCEDURES

All new Freeman Balers are adjusted and tested before leaving the factory, although certain adjustments must be completed during the field start-up procedure. Special attention must be given to the following areas:

Pivoting Drawbar:

A. The baler's adjustable pivoting drawbar has two positions. Transport position (as shown) *Fig. 1*, and the adjustable baling position. When transporting the baler on public roads, highways or areas of narrow access the drawbar should be in the transport position, with the drawbar latch pin "A" *Fig. 1*, installed in the transport position "B" *Fig. 1*. Once the baler is in the hay field, the drawbar latch pin should be removed and installed in the storage position "C" *Fig. 1*. The drawbar is then adjustable using the DRAWBAR switch "A" *Fig. 2*, located on either the remote or baler mounted control boxes. See **Baler Controls**.

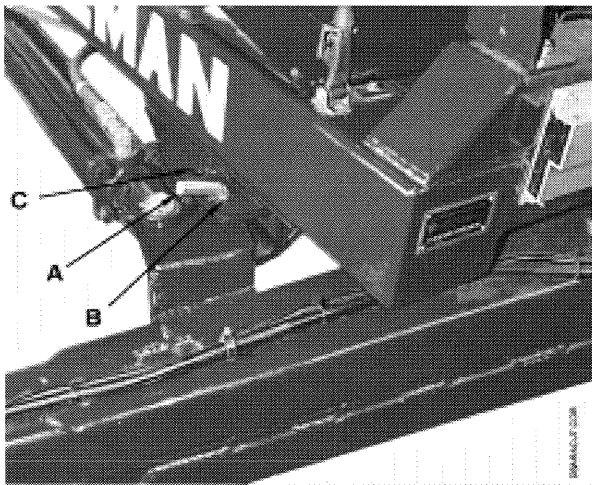


Fig. 1

Pickup Adjustment:

The pickup should be in the fully raised position when transporting the baler. Push and hold the PICKUP "UP" switch "B" *Fig. 2*, located on either the remote or baler mounted control boxes to raise the pickup. Once the baler is in the hay field the pickup may be lowered to any desired height to within 1" of the ground. Do not rotate the ground with the pickup tines. See **Baler Controls**.

REMOTE CONTROL BOX

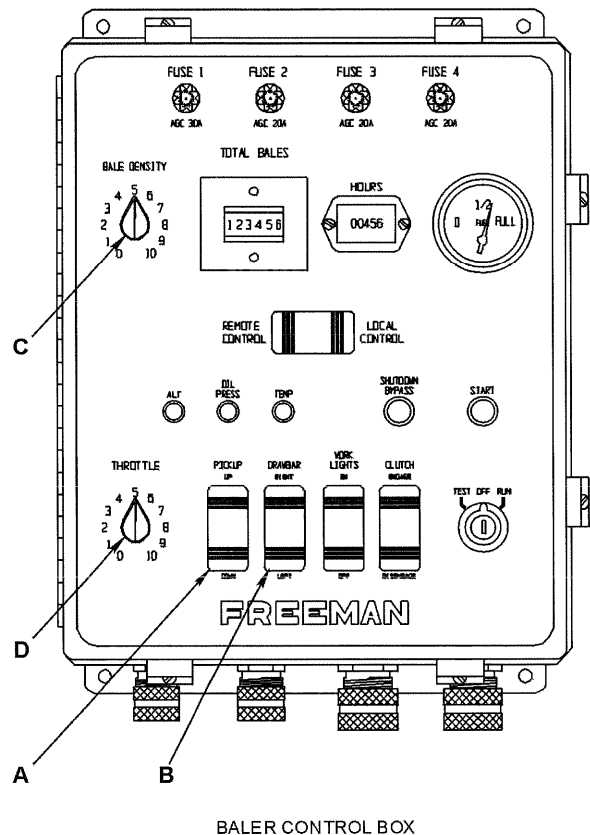
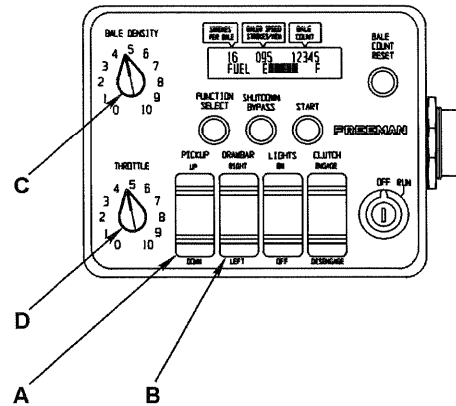


Fig. 2

Bale Density:

Bale density is proportional to bale weight, and is regulated by applying pressure to the top, bottom and sides of the forming bale. Three hydraulic cylinders exert force on the tension rails. These hydraulic cylinders are pressurized by a engine mounted pump on the left side of the baler. This pump maintains a constant but adjustable pressure to the cylinders as the bale is being formed. An increase or decrease in the bale density is accomplished by regulating the pressure through a valve electronically operated by the bale density circuitry. An adjustable control knob "C" *Fig.2*, on the baler control box and/or the tractor remote control box allows the operator to make convenient changes in the bale density. It is recommended to start baling with the bale density control set at a lower setting and then adjust higher as needed. See **Bale Density Adjustment**.

The ground travel speed should be regulated according to the volume and condition of the hay. To check this, count the number of plunger strokes in each bale. There should be approximately 16 to 18 plunger strokes in each bale under normal conditions. The plunger strokes are counted between each time the knotter ties a bale. The baler should not be run at high speeds when it is empty.

Consistent bale length is of great importance when using any automatic stacking system and will occur as a result of following the above instructions. For easy, efficient stacking and hauling set and maintain the bale length between 44 and 46 inches.

Baler Operating Speed:

The Deutz engine has the governor set according to their manufacturers' specification when you receive the baler. For further information on the operating speeds of the Deutz engine, see the individual manufacturer's manual.

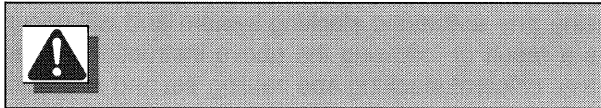
The baler is designed for operation at or near maximum capacity. This requires the feed chamber to be full at all times. To arrive at this, advance ground speed and reduce baler speed when the hay volume is low. Reduce ground speed and advance baler speed when hay volume is high.

The baler should be operated so that the plunger speed is 95 strokes per minute. Adjust baler engine speed, using the adjustable control knob "D" *Fig.2*, on the remote control and/or the baler mounted control boxes so that you are operating at the recommended plunger strokes.

BALER CONTROLS

Although the baler is normally controlled by the tractor remote control box, the baler mounted control box provides full backup and is the central location for housing relays, switches, resistors and other electrical components that control the various functions of the baler.

Note: Left and right of the machine are understood to mean from a position facing in the direction of travel.



Engine Start-up:

A. Proper starting procedure of the baler engine requires the REMOTE CONTROL/LOCAL CONTROL switch “**A**” *Fig.3*, located on the baler mounted control box only, to be set for either remote control or local control as required.

B. Set the THROTTLE control “**B**” to the lowest setting (idle). Turn the key switch “**C**” OR “**L**” to the “**RUN**” position, press and hold both the START and SHUTDOWN BYPASS buttons “**D**” until the engine starts.

Control Boxes:

A. The REMOTE CONTROL/LOCAL CONTROL switch “**A**,” is a rocker switch which allows the baler to be controlled from either the tractor remote or baler mounted control boxes, and needs to be set for the desired control box before start-up of the baler. To switch control from one control box to the other while the baler is running, the key switch on the desired control box must be switched to “**RUN**,” and the REMOTE CONTROL/LOCAL CONTROL switch “**A**” switched to that control box, at which time all control of the baler is switched to that box. If the key switch is not in the run position at the desired control box during a control box switch, the engine will shut down.

B. Baler running information such as strokes per bale, baler speed-strokes/min, bale count and fuel level are displayed automatically in the display window “**E**.” To reset the bale count on the remote control box only, press and hold both the FUNCTION SELECT and BALE COUNT RESET buttons “**F**.”

C. The CLUTCH engage/disengage switch “**G**” is a momentary press and release rocker switch. Pressing the top “**ENGAGE**” side of the switch, tightens the flywheel drive belt starting baler operation. Pressing the bottom “**DISENGAGE**” side of the switch, disengages the flywheel belt and stops baler operation.

D. The PICKUP switch “**H**,” is a press and momentary hold rocker switch. Press and hold the top “**UP**” side of the switch to raise the pickup to any desired height or to its full up position. Press and hold the bottom “**DOWN**” side of the switch to lower to any desired position.

E. The DRAWBAR switch “**I**,” is a press and momentary hold rocker switch. To move the baler to the right, press and hold the top “**RIGHT**” side of the switch until the correct baler position is attained. To move the baler to the left, press and hold the bottom “**LEFT**” side of the switch.

F. The WORK LIGHTS switch “**J**,” is a on or off rocker switch which controls all working lights on the baler.

G. The BALE DENSITY control knob “**K**” is an adjustable control knob on the remote control box and the baler control box which allows the operator to make convenient changes in the bale density. See **Bale Density** and **Bale Density Adjustment**.

H. The key switch “**L**,” is different from the key switch on the remote control box, only in that it has a “**TEST**” position, which is used to test the alternator, oil pressure and temperature indicator lights “**M**,” located only on the baler mounted control box.

I. Fuse 1 “**N**,” is a AGC 30 amp fuse to all work lights.

J. Fuse 2 “**O**,” is a AGC 20 amp fuse to the engine starter solenoid, engine hour meter, broken fan belt switch and the fuel shutoff solenoid.

K. Fuse 3 “**P**,” is a AGC 20 amp fuse to the main hydraulic valve solenoids, fuel gauge, knotter fan and throttle control.

J. Fuse 4 “**Q**,” is a AGC 20 amp fuse to the remote control / local control switch and baler mounted key switch.

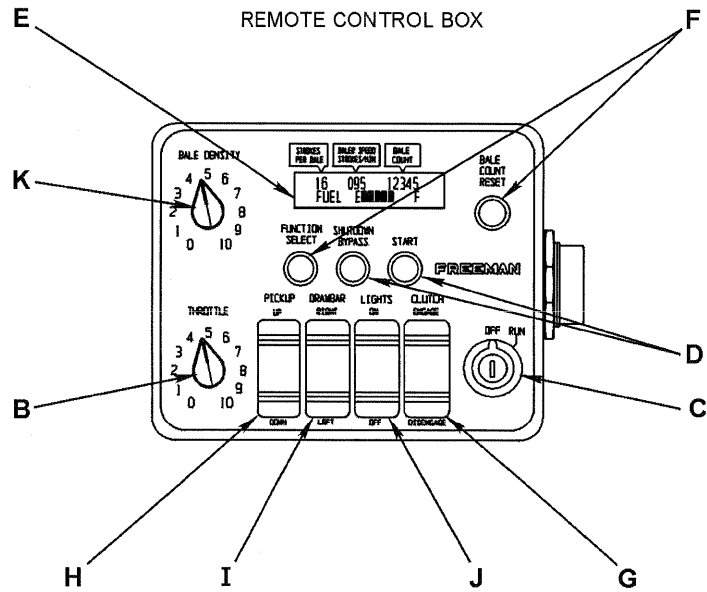
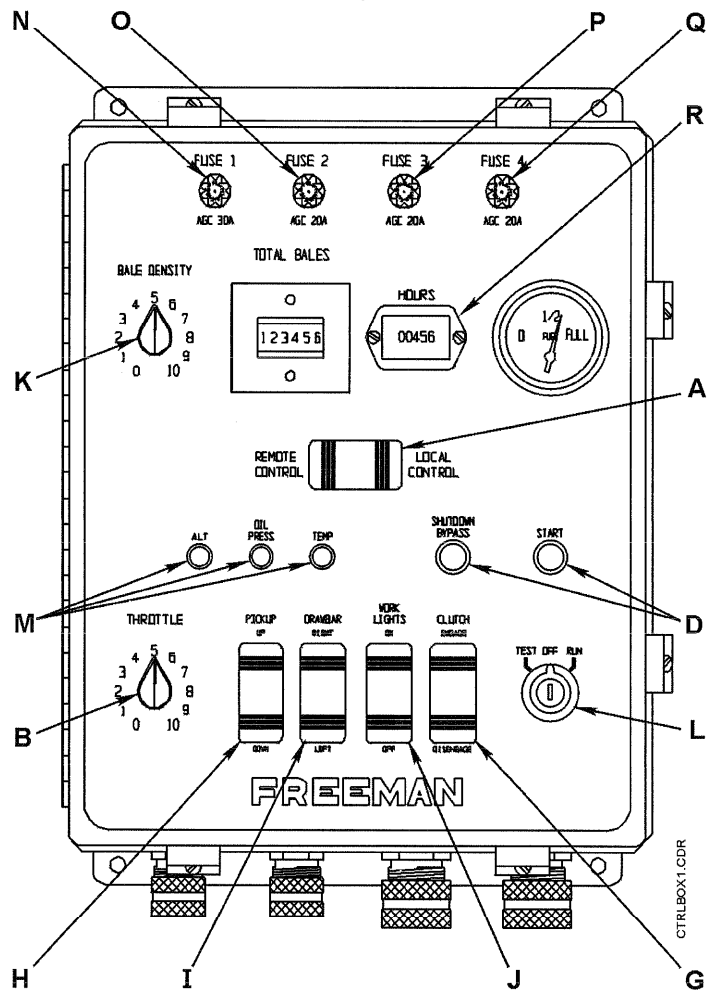


Fig.3

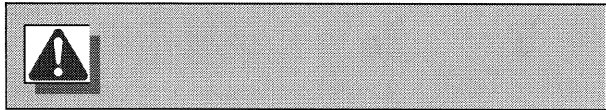


BALER CONTROL BOX

FEEDER TIMING

The following procedures in the sequence they are presented will provide for the systematic set up of the Freeman baler. For best results read the instructions completely before beginning.

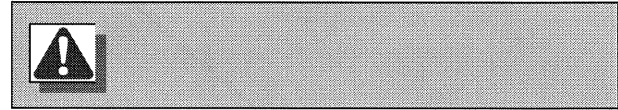
Note: Left and right of the machine are understood to mean from a position facing in the direction of travel. References to turning the Flywheel are understood to mean from a position facing the Flywheel, from the left side of the machine.



Feeder Timing:

A. Turn the flywheel clockwise until the center of the gear box R.H. crank pin "A," lines up with the arrow

decal "B" located on the R.H. crank shield "B", *Fig.4*. This will position the center of the crank pin 12" from the front of the R.H. chamber side assembly "C." The feeder drive sprocket's timing mark should be at the 3 o'clock position "D," and the sprocket hub key will be at 6 o'clock.



B. If the timing mark "D" is not at the 3 o'clock position, turn the flywheel clockwise until the mark is at 3 o'clock. Remove the feeder drive chain "E" and rotate the flywheel clockwise until the center of the gear box R.H. crank pin "A," lines up with the arrow decal "B." Replace the feeder drive chain on the sprocket and connect it.

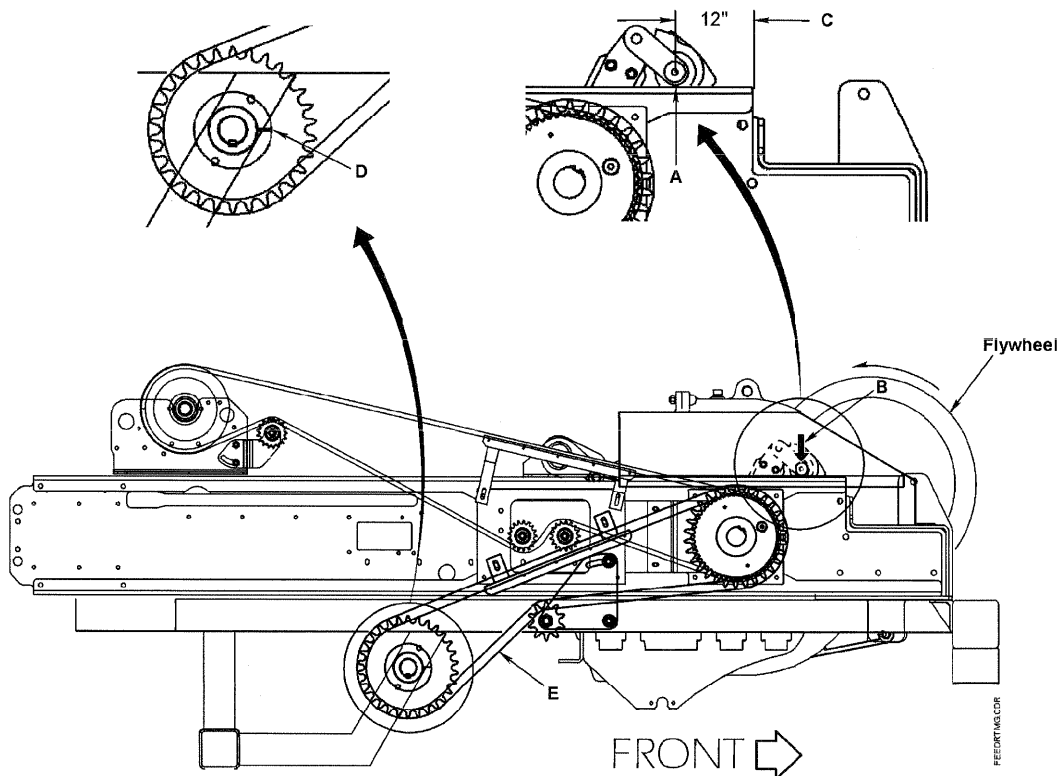
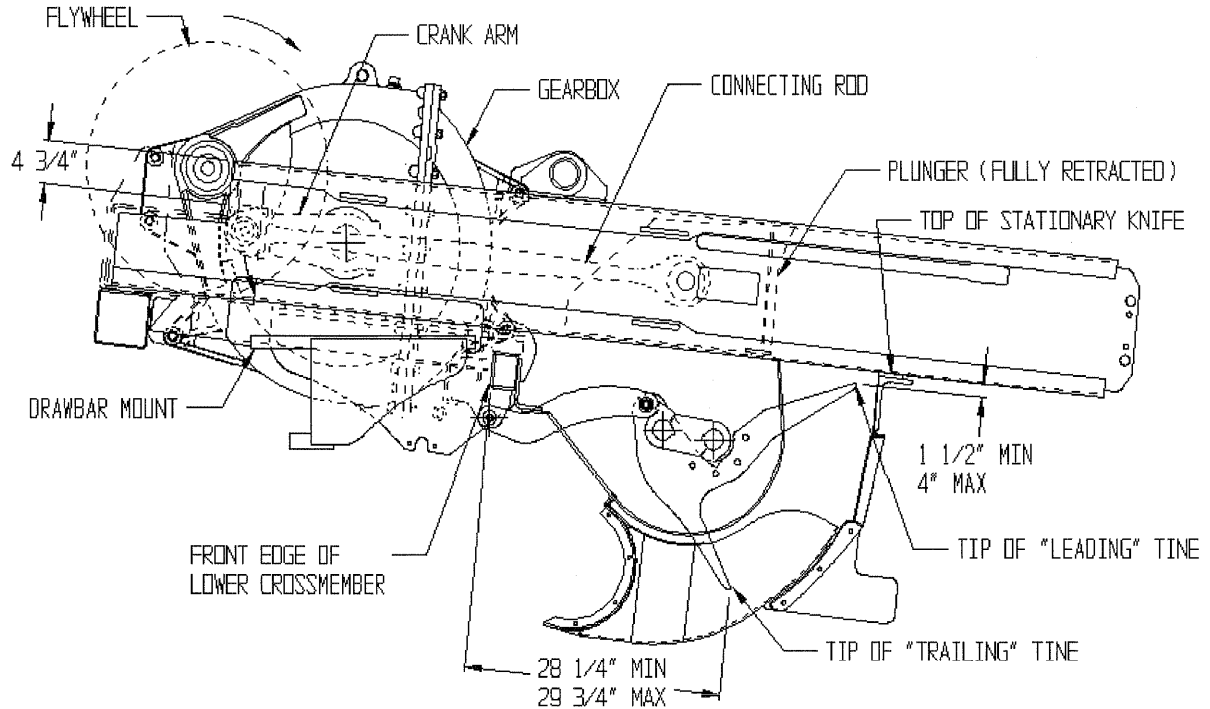


Fig.4

ALTERNATE FEEDER TIMING

THESE SETTINGS ARE THE SAME AS THE PRIMARY METHOD BUT ARE DONE WITH THE CRANK ARMS AT BOTTOM DEAD CENTER WITH PLUNGER AT FULL RETRACT



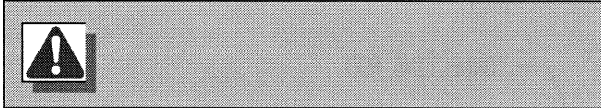
LEFT HAND SIDE VIEW

Alternate Timing Procedure

- A. Turn the flywheel clockwise until the plunger is fully retracted. Confirm this by measuring $4 \frac{3}{4}$ " from the top edge of the crank arm to the top surface of the baling chamber.
- B. Measure the vertical distance from the tip of the leading feeder tine to the top of the stationary plunger knife. The acceptable range is $1 \frac{1}{2}$ " to 4".
- C. If it is necessary to adjust the timing, turn the flywheel to position the feed tines as shown in the Primary timing adjustments on the preceding page.
- D. Loosen the feeder chain, move it one "tooth" in the appropriate direction on the drive sprocket and re-check the timing position.
- E. Adjust the chain tensioner after the timing has been corrected.

KNOTTER ADJUSTMENT

The following procedures in the sequence they are presented will provide for the systematic set up of the Freeman baler. For best results read the instructions completely before beginning.



Needle Adjustment:

A. Trip the knotter clutch and swing the needles up through the bale chamber by turning the flywheel clockwise by hand. The needles "A" should be adjusted left or right so that there is 0 to 1/32" clearance between the needle and the knotter hook pinion "B," Fig 5. Adjust by sliding the needle left or right on the needle yoke.

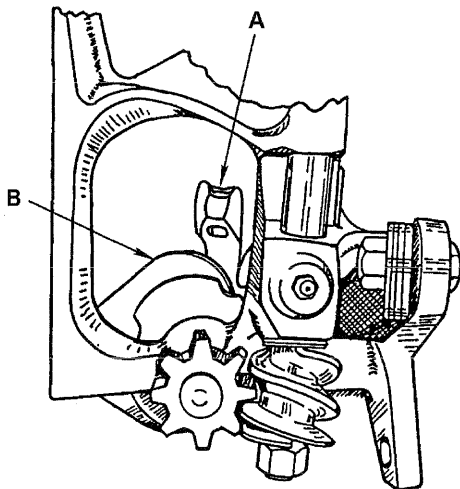


FIG.5

B. The needles should clear the twine disc cleaner by 1/8". To increase the distance between the needle and the twine disc cleaner, loosen the front and tighten the rear needle anchor bolts "A," Fig.6. To decrease the clearance reverse the procedure.

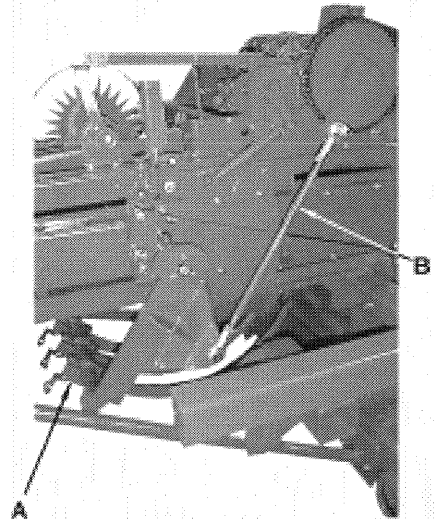


Fig.6

C. Trip the knotter and turn the flywheel clockwise by hand, until the needles are in the uppermost position. The distance from the bottom of the needle eye to the twine disc should be 4-1/2", Fig.7.

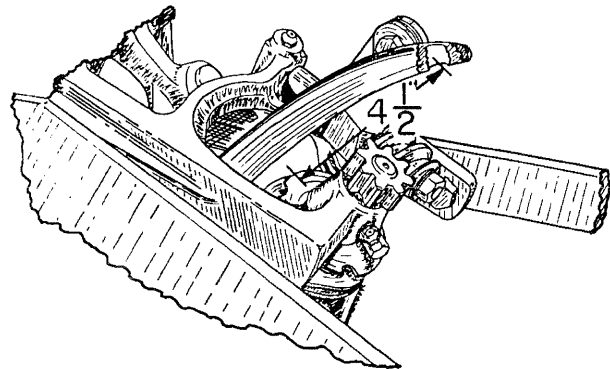


Fig.7

D. Adjust needle height by loosening the lock nuts on the needle yoke drive rods "B," Fig.6. Turn the rod to the right or left for desired setting. Be sure both needle yoke rods are adjusted for equal load at top dead center.

E. Always check the twine finger adjustment after adjusting the needles.

Twine Finger Adjustment:

A. Trip the knotter and turn the flywheel clockwise until the point of the twine finger "A" is just passing the inside edge of the needle "B". The point of the twine finger should clear the needle by $\frac{1}{8}$ ", *Fig.8*

This adjustment is made by loosening the twine finger anchor bolts "C," and sliding them to the front or back in the slotted holes in the Top Chamber Plate Assembly.

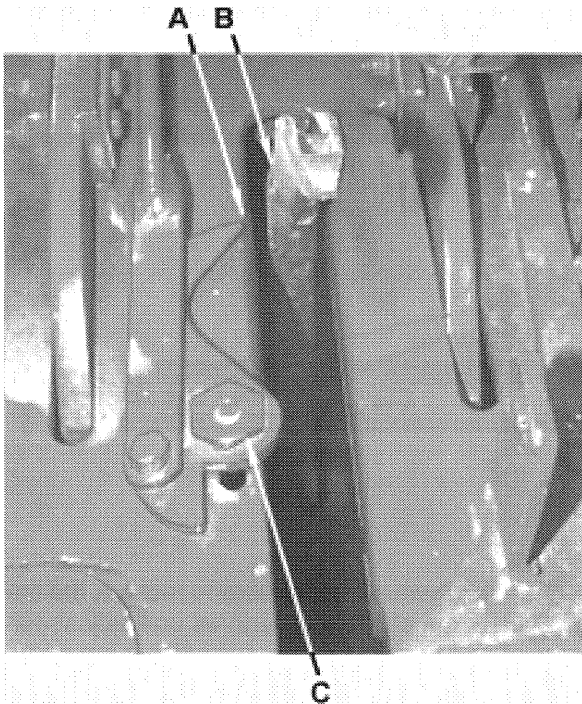


Fig.8

B. Continue to turn the flywheel clockwise until the twine fingers reach the far point of their travel. Measure the distance from the tip of the twine fingers back to the front of the knotter anchor "C." The measurement "A" should be $1\frac{3}{4}$ " for the F8335 Twine Finger or $2\frac{3}{4}$ " for the KNT0034845 Twine Finger. This adjustment is made by lengthening or shortening the twine finger drive rods "B," *Fig.9*.

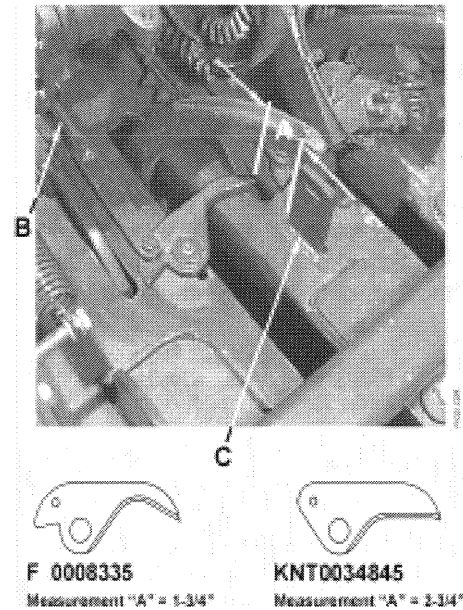


Fig.9

After adjusting the twine fingers, turn the flywheel clockwise until the twine fingers are in the returned position. Check to see that there is $\frac{1}{8}$ " from the tips of the twine fingers to the edge of the needle slots "A," *Fig.8*.

Adjust the position of the twine fingers at the needle slots with the stop bolt "A," *Fig.10*.

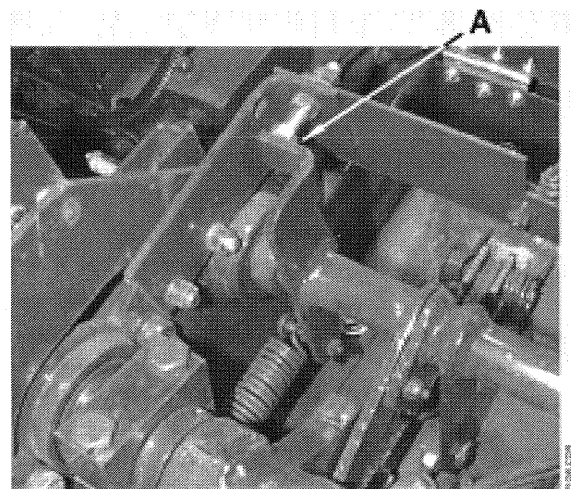


Fig.10

Needle Timing:

Note: Before timing the needles, be sure the needles are in adjustment. See **Needle Adjustment**.

To Check Needle Timing:

A. Trip the knotter clutch by raising the trip bar until the notch is positioned over the knurl, and turn the flywheel clockwise until the tips of the needles are even with the bottom of the bale chamber, *Fig. 11*.

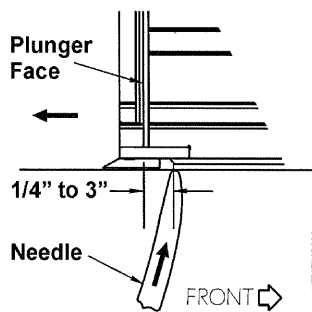


Fig. 11

B. The plunger face must be 1/4" to 3" past the tips of the needles *Fig. 11*, as they are entering the chamber area and the plunger is on the compression stroke, *Fig. 12*. The needles are late if the plunger face is more than 3" past the tips of the needles and the needles are early if they are less than 1/4" past the plunger face.

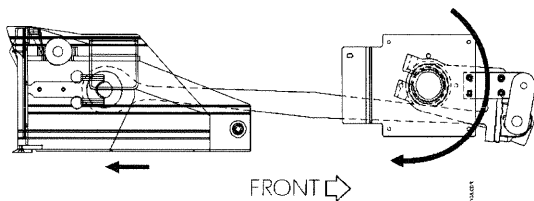


Fig. 12

Needle Timing Adjustment

C. If the needles are late, loosen the knotter drive chain and move the chain counterclockwise one link on the knotter sprocket. If the needles are early, move the chain clockwise one link on the knotter sprocket.

D. Trip the knotter clutch and ensure that the clutch pawl roller "A," is in contact with the clutch drive hub and in front of the knotter clutch stop cleat "B," *Fig. 13*.

Remove slack in the chain by rotating the knotter sprocket and tighten. Ensure that the chain is connected as shown in *Fig. 14*.

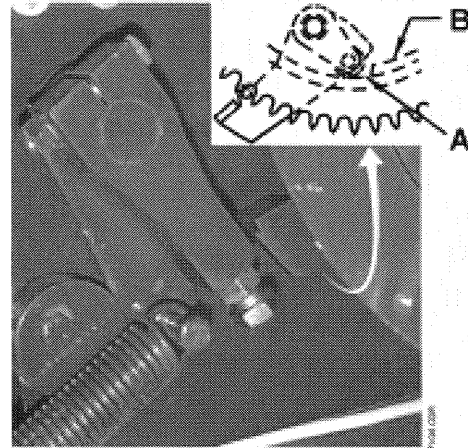


Fig. 13

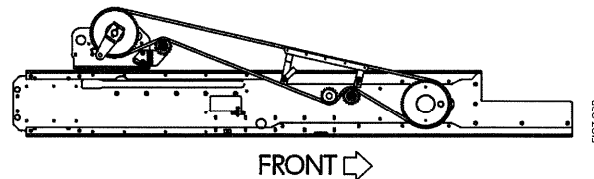


Fig. 14

E. Turn the flywheel clockwise and recheck the timing. Repeat the above procedures until adjustment is correct.

Meter Trip Bar Adjustment:

Trip the knotter clutch by raising the trip bar until the notch is positioned over the knurl, then turn the flywheel clockwise until the needles are near top dead center. The meter trip bar should have 1/8" clearance from the knurl, "A," *Fig. 15*, when it is in the resting position. Adjustment is made by loosening the bolts on the bearing support, "B" and moving fore or aft as needed. The trip bar should not bind on guide washers when in the tripped position.

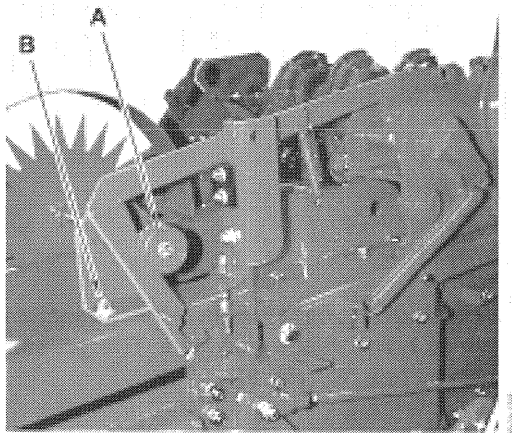


Fig. 15

Knotter Clutch Adjustment:

Note: Before adjusting the knotter clutch, be sure the needles are in adjustment. See **Twine Needle Adjustment**. Also be sure the meter trip bar is properly adjusted. See **Meter Trip Bar Adjustment**.

A. With needles in the home position, set the needle yoke drive bolt "A," Fig. 16, 1/4" to 1/2" past center between "B" and "C." To obtain this setting, adjust saddle roller "A," Fig. 17, on the opposite side of the knotter.

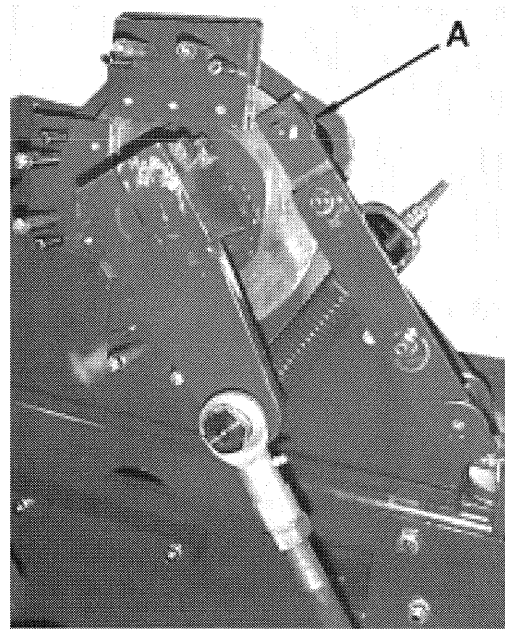


Fig. 17

B. Loosen clamp bolt "A," to position stop bolt "B," square to the face of clutch pawl "C," Fig. 18.

C. The clutch pawl should have approximately 1/2" clearance at "D," when depressed. The clutch pawl roller and the knotter clutch stop cleat should have 1/8" clearance at "E." Adjust with bolt "B" Fig. 18.

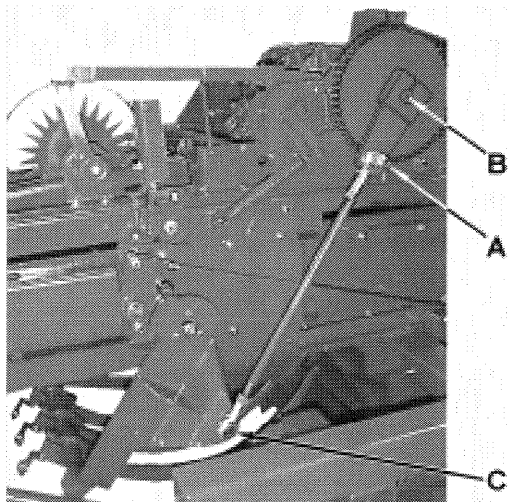


Fig. 16

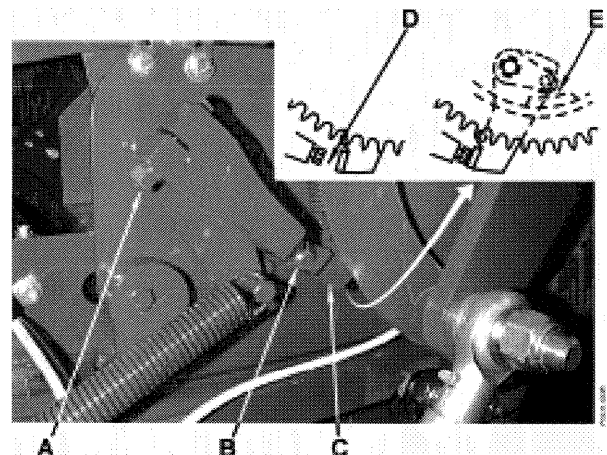


Fig. 18

D. Trip the knotter clutch and rotate the clutch. The clutch pawl must have $\frac{1}{8}$ " clearance from the stop lever at "A," Fig. 19. Adjust by loosening the Cam Stop mounting bolt and rotating the Cam Stop "B."

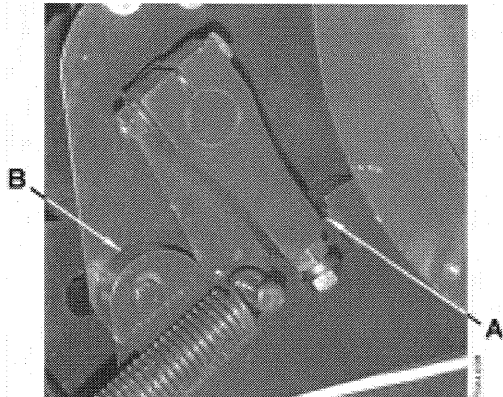


Fig.19

Knotter Brake Adjustment:

A. Adjust the brake shoe tension springs so that the springs are fully depressed, "A," Fig.20.

B. The saddle spring is adjusted properly when roller "B" Fig.20, is in the notch and there is $\frac{1}{2}$ " of adjusted tension on the saddle lever spring.

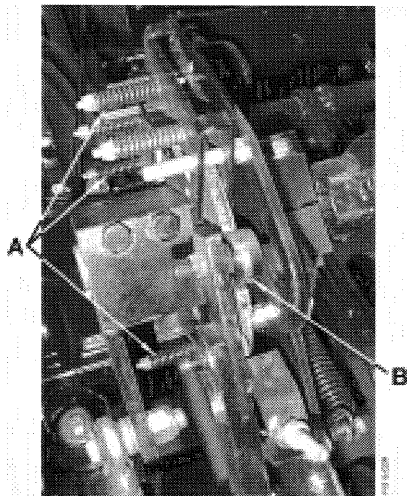
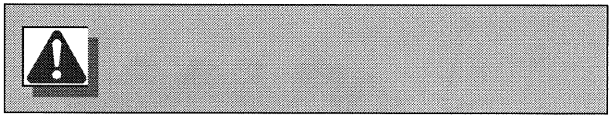


Fig.20



Knotter Adjustment:

A. Twine Holder:

The twine holder holds the twine in the twine disc while the bale is being made and tied. The pressure is regulated by bolt "C," Fig.21.

Adjust the twine holder only as tight as necessary to prevent the twine from pulling from the disc and/or producing bow knots. Make adjustments on bolt "C" in $\frac{1}{6}$ of one turn increments. Proper adjustment is achieved when the knotter is producing a clean and smooth knot.

B. Twine Disc:

Be certain the twine disc cleaner is free. Adjust the twine disc notch so the left-hand side of the notch is even with the cleaner "D," Fig.21. Do this by loosening nut "A" several turns. Tap the nut end of the shaft to loosen the worm. After the disc is set turn the worm against the spacer washers "B," Fig.21, and tighten the nut. After the knotter has completed one cycle check the notch setting again.

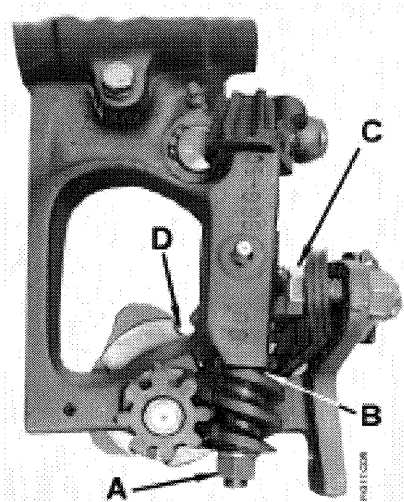


Fig.21

C. Knife Arm:

The knife arm cuts the twine and strips it off of the bill hook during the tying process of the knotter. The stripper flange "A" on the knife arm should just touch the bill hook "B" without pressure as the stripper flange advances the knot past the end of the bill hook, *Fig.22*.

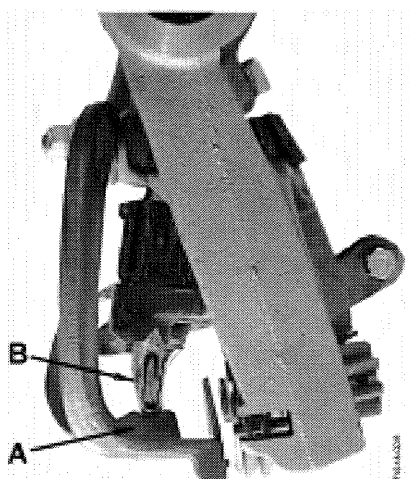


Fig.22

The knife arm "A" should be 1/4" to 3/8" "B" past the end of the bill hook "C" when the knife arm is in the most extreme position, *Fig.23*. Correct the adjustment of the knife arm by replacing it.

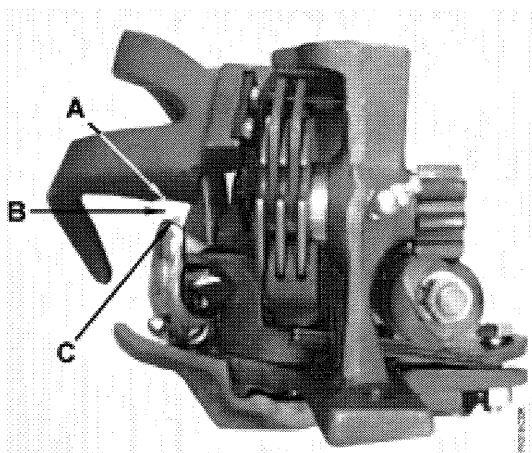


Fig.23

D. Cam Gear Adjustment:

Both flat surfaces of the knotter hook and worm gear pinions must be held flat with 0 to .005 interference "A" on the smooth face of the cam gears, *Fig.24*.

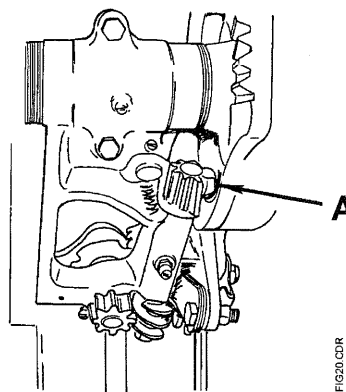


Fig.24

This adjustment is made with shims between the cam gears and knotter frames. Shimming must be done between the cam gears and the knotter frames any time a knotter is assembled. Excess space between the cam gears and the knotter frames, is taken out by adjusting the (2) square head set screws on the left hand Knotter Shaft Clamp "A," against the Twine Finger Cam "B," *Fig.25*.

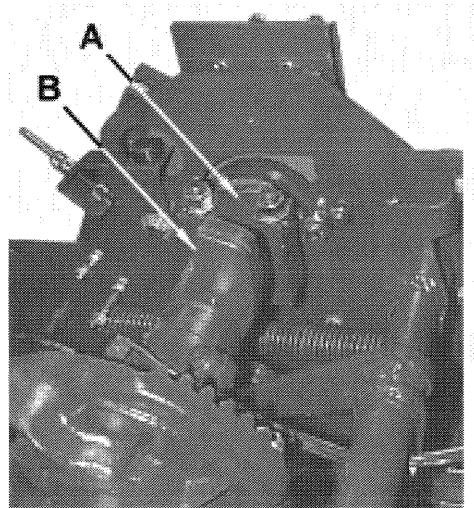


Fig.25

TWINE BOX

Threading The Twine:

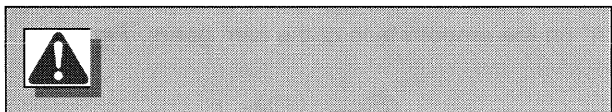


Fig.26 shows the correct routing of the twine from the twine box to the needles, with no crossing or tangling after the twine box lid is shut.

A. Put twine in the twine box. Route the twine through the twine guides and twine tension assemblies on the inside of the lid "A" Fig.26, then through the twine guides on the rear of the twine box.

B. Thread the twine from the rear of the twine box through the twine guides mounted on the inside of the right hand step assembly "B."

C. Thread the twine through the rear twine guides mounted on the lower right chamber extension angle "C."

D. Thread the twine over the right rear chamber brace and through the twine guides in the rear twine guide bracket assembly "D."

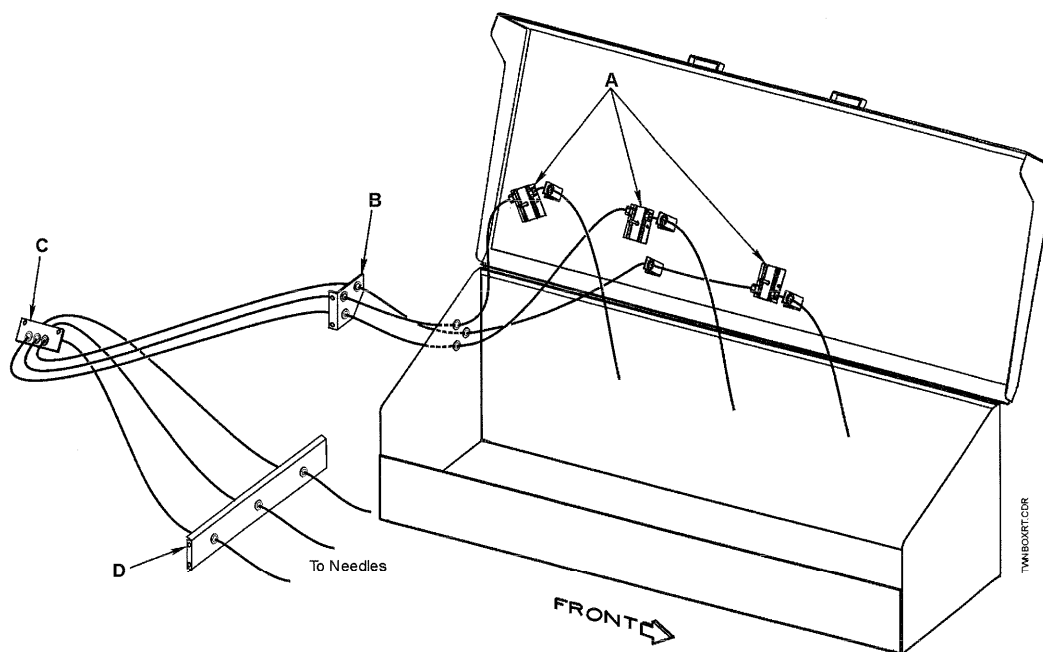
E. Thread the twine through the twine guides on the rear anchor bolts of the needles

F. Route the twine on the underside of the needle and thread through the two dahls and then through the needle eye.

G. Fasten the twine to the left and right rear chamber braces on the bottom side of the bale chamber behind the needles.

It is important that the three twine tension assemblies "A," are adjusted so that there is a slight amount of drag on the twine.

If the twine is too loose it may lash out or the twine fingers may not be able to grasp the twine or both. If the twine is too tight it may break or come out of the knotter's twine disc or both. Keep the twine guides in good condition for easy travel of the twine.



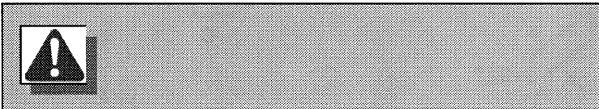
PLUNGER STOP ADJUSTMENT

Plunger Stop Mechanism:

Note: Left and right of the machine are understood to mean from a position facing in the direction of travel. References to turning the Flywheel are understood to mean from a position facing the Flywheel, from the left side of the machine.

The plunger stop mechanism "A" *Fig.27*, helps protect the needles against breakage, caused by improper needle timing. If for any reason the needles lose proper timing while baling, the plunger stop dogs will stop the plunger and the flywheel shear bolt "B" will break.

Before replacing the flywheel shear bolt, always move the stop dogs out of contact with the plunger cranks "B," *Fig.28*. Do this by turning the knotter shaft until the needle yoke "C" *Fig.27*, returns to the home position, (position the needles are normally in when the knotter is at rest).



Plunger Stop Adjustment:

Note: Always check the needle timing with the plunger before adjusting the plunger stop. See **Needle Adjustment**.

A. Trip the knotter clutch and swing the needles up

into the bale chamber by turning the knotter shaft. With the stop dogs resting against the stop bumpers "E," turn the flywheel counterclockwise until the plunger cranks "B" make contact with the tips of the stop dogs "A," with a minimum interference of $\frac{3}{4}$ " "C," *Fig.28*, which is adjusted by the plunger stop dog adjusting springs "D," which is adjusted by the plunger latch springs "F," ensure the plunger latch spring is stretched at least 10".

B. With the stop dogs resting against the stop bumpers "E," ensure there is a $\frac{1}{8}$ " maximum clearance between the roller on the plunger stop cam lever "H" and the plunger stop cam "J," *Fig.28*. Adjustments to the plunger stop rod length should be made equally between the spring end and the cam end clevises. Do not adjust either end clevis to less than $\frac{3}{4}$ " thread engagement. The spring "K" inside the spring housing assembly should be compressed $\frac{3}{4}$ " to a length of approximately 7- $\frac{1}{4}$ " by removing the snap ring retainer, removing the spring and rod assembly, loosening the jam nut and turning the adjusting nut, then retightening the jam nut. Never adjust or attempt to replace the spring while still installed in the spring housing assembly.

C. Turn the flywheel clockwise far enough for the crank to disengage the stop dogs and reset, by turning the knotter shaft until the needles are in the home position.

Plunger Stop Adjustment:

A. *Fig.29* shows the correct operating clearance of approximately $\frac{1}{2}$ ", between the plunger cranks and the stop dogs, after the needles are returned to the home position.

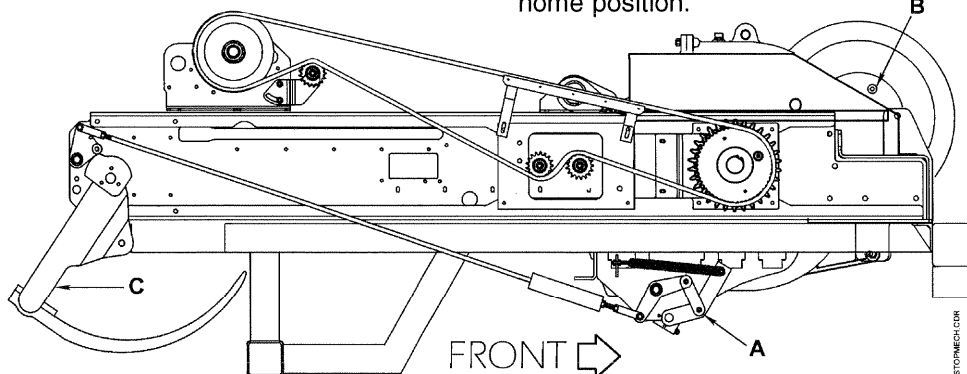


Fig.27

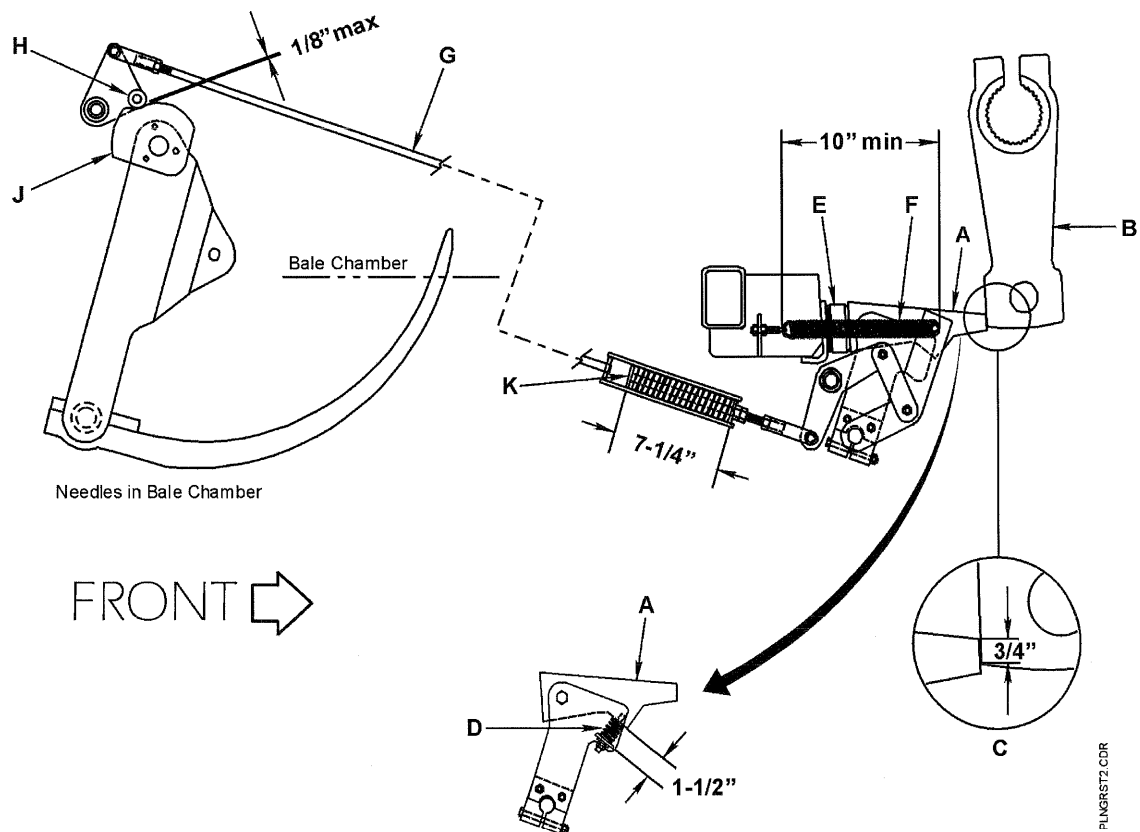


Fig.28

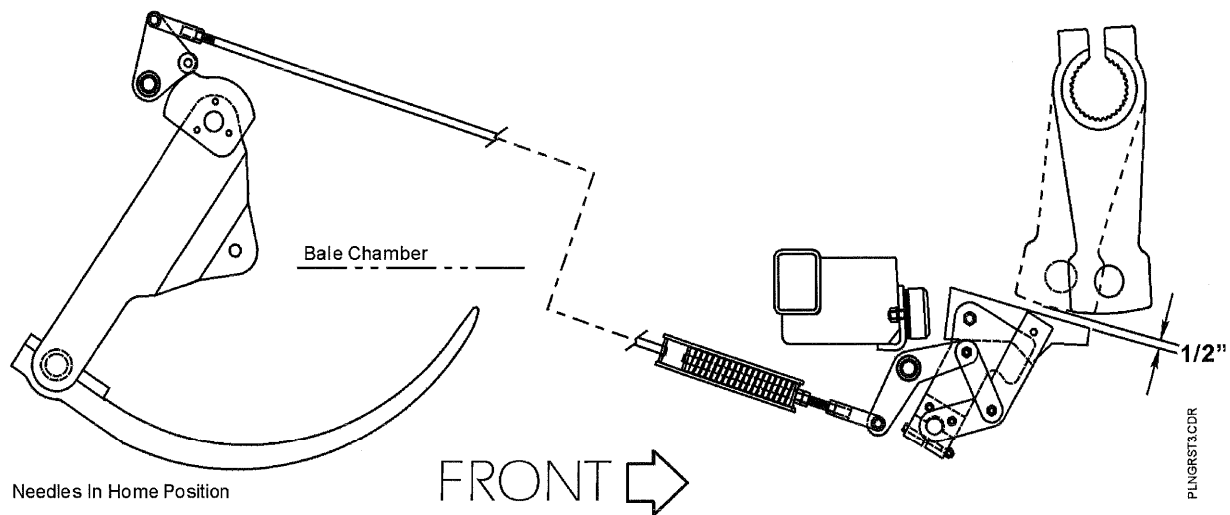
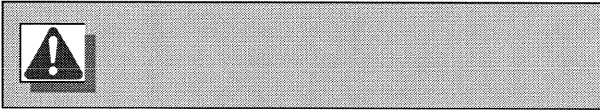


Fig.29

BALE DENSITY AND TENSION RAIL ADJUSTMENT

Bale Length Adjustment:



The operating speed of the baler has a direct effect on the bale length, see **Baler Operating Speed**.

Bale length is controlled by the meter trip bar assembly "A," *Fig.30* and is adjusted by the meter trip/stop bar, which is raised or lowered by loosening the two mounting bolts and adjusting the trip/stop adjusting bolt "B." Raising the bar decreases bale length and lowering increases bale length.

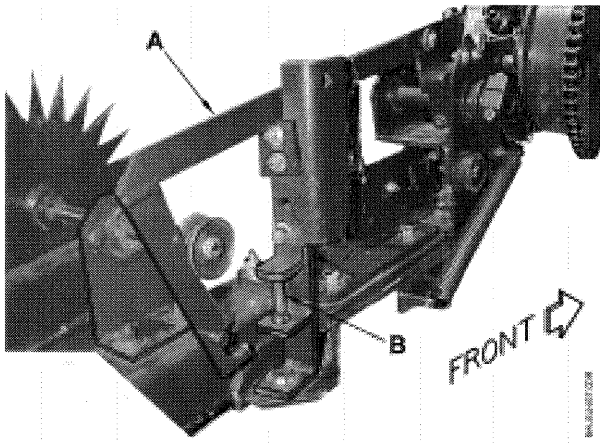


Fig.30

Bale Density Adjustment:

The bale density control knob "A" *Fig.31*, is numbered for reference from 0 to 10. Turning the knob to a higher number increases bale density. It is recommended to start baling with the bale density control set at a lower setting and then adjust higher as needed. The main pressure gauge "A" *Fig.32* located on the right front of the baler, indicates pressure to the restriction rails' hydraulic cylinders and will rise or fall relative to the adjustment of the bale density.

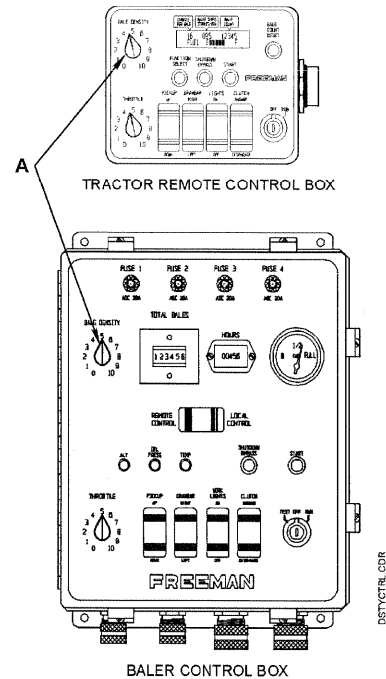


Fig.31

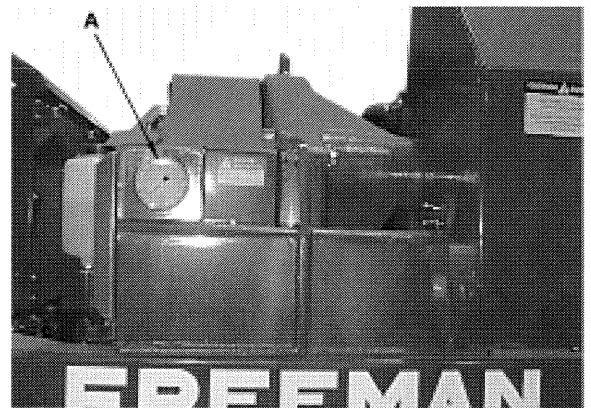


Fig.32

Tension Rail Selector:

The tension rail hydraulic system includes a selector valve mounted on the left rear side of the baler chamber, which allows the tension rails to be opened for the removal of bales during cleaning or maintenance. The valve operating handle "A" *Fig.33* is pushed forward for normal baling operation. With the engine at an idle, the valve handle may be pulled to the rear to reverse the pressure on the tension rail cylinders causing the tension rails to open.

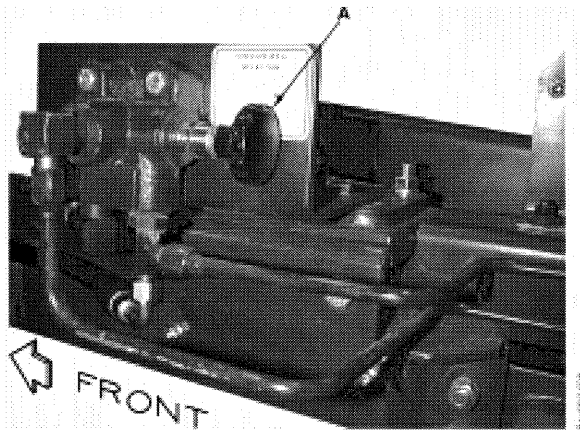


Fig.33

STORING THE BALER

At the end of the season, remove all material from the bale chamber and clean with compressed air. Pressure washing or steam cleaning is not advised. Moisture can create problems with electrical components by promoting corrosion. Any hay, chaff or dust on the baler will collect moisture during the winter and cause unnecessary rusting.

Check the baler for any worn or damaged parts. Replace and order parts from the dealer as needed.

Coat the bale chamber lightly with grease to prevent rusting.

Fill the fuel tank to the top.

Provide adequate protection from the weather.

To increase tire life during storage, place the baler on blocks to remove the load from the wheels.

Disconnect the battery.

It is good practice to have the baler inspected at the end of the season and the entire machine placed in top condition.

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