MASSEY FERGUSON

MF 2200

Series Large Square Baler - CE

Models: 2240 / 2250 / 2260 / 2270 / 2270XD / 2290

OPERATOR'S MANUAL

FROM MASSEY FERGUSON

1.2 Operation

1.2.1 General information

When parking, park the machine and the tractor on a solid level surface. put all controls in neutral and apply the tractor park brake. Stop the tractor engine and take the key with you.

Make sure the tractor and implement are in the proper operating condition according to the operator manuals. Make sure the tractor brakes and the machine brakes are adjusted correctly.

The tractor must have enough weight and braking capacity, especially when operating on roads and terrain that is not even. Use a tractor of recommended size and weight to tow the machine. See the machine specifications for the minimum tractor size and weight.

Tractor must be equipped with rollover protective structure (ROPS) and a seat belt. use seat belt during operation.

Do not dismount from moving machinery.

Always operate the machine with the terminal turned on.

Never start the tractor with the PTO engaged or terminal turned on.

Stay off slopes too steep for operation.

Where possible avoid operating the machine near ditches, embankments, and holes. Reduce ground speed when operating on rough, slippery, or muddy surfaces and when turning or crossing slopes.

Be aware of the size of the machine and have enough space available to allow for operation.

Make sure all persons are clear of the rear of the bale chute when raising and lowering the chute, ejecting or dumping a bale.

Do not stand between the tractor and the implement to install the hitch pin when the tractor engine is running.

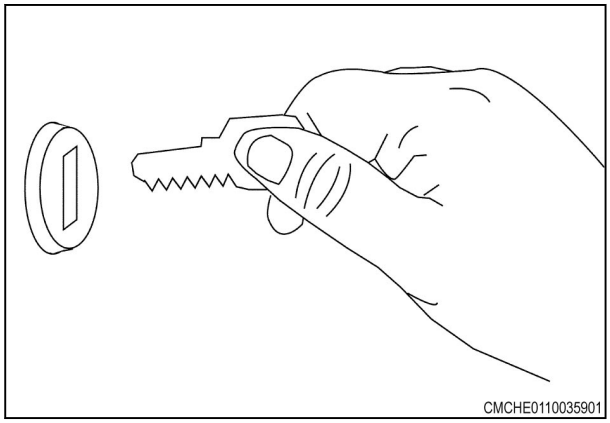


Fig. 5

1.4.3 High pressure leaks

Fluid leaking from the hydraulic system or the fuel injection system under high pressure can be very hard to see. The fluid can go into the skin causing serious injury.

Fluid injected into the skin must be surgically removed within a few hours. If not removed immediately, serious infection or reaction can develop. Go immediately to a doctor who knows about this type of injury.

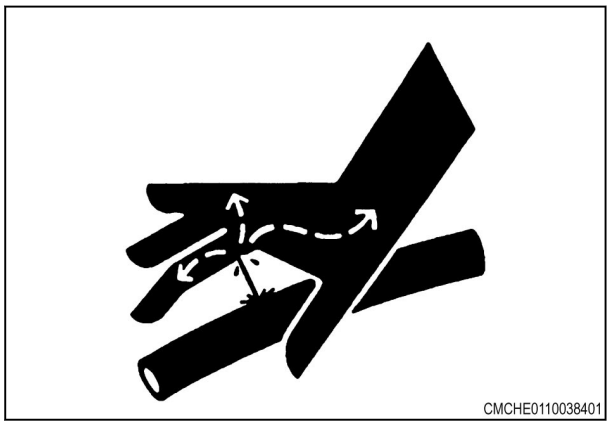


Fig. 23

Use a piece of cardboard or wood to search for possible leaks. Do not use your bare hand. Wear leather gloves for hand protection and safety goggles for eye protection.

Relieve all pressure before loosening any hydraulic lines. Relieve the pressure by lowering raised equipment, shutting off accumulator valve, if equipped, and shutting off the engine. Tighten all connections securely before applying pressure.

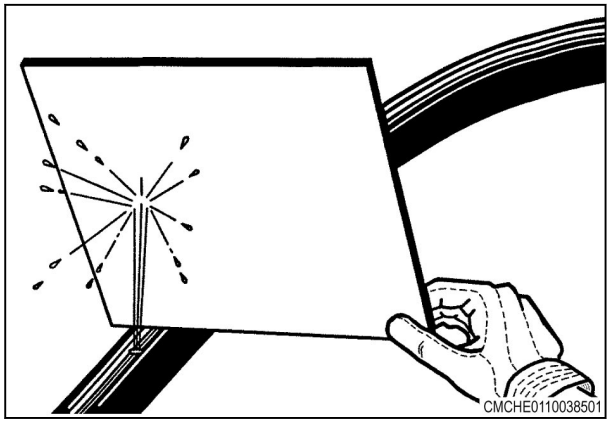


Fig. 24

1.4.4 Accumulator safety

DANGER:
Charging or replacing the accumulator must be performed by an authorized dealer only.

The accumulator (1) is charged with dry nitrogen gas. Use only dry nitrogen when charging the accumulator. Do not use air or oxygen or an explosion will occur.

Nitrogen gas when released can cause localized freezing. Always wear protective gloves and glasses when handling nitrogen.

Do not drop the accumulator. A charged accumulator contains nitrogen under pressure. If the shut off valve breaks away from the accumulator, the escaping nitrogen will propel the accumulator at a high rate of speed.

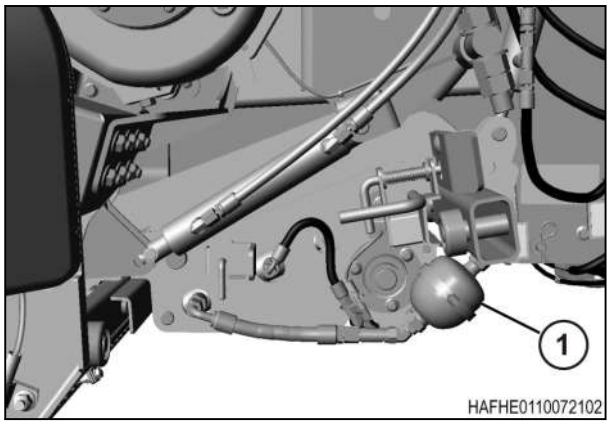


Fig. 25

Under the left-hand shield - early production

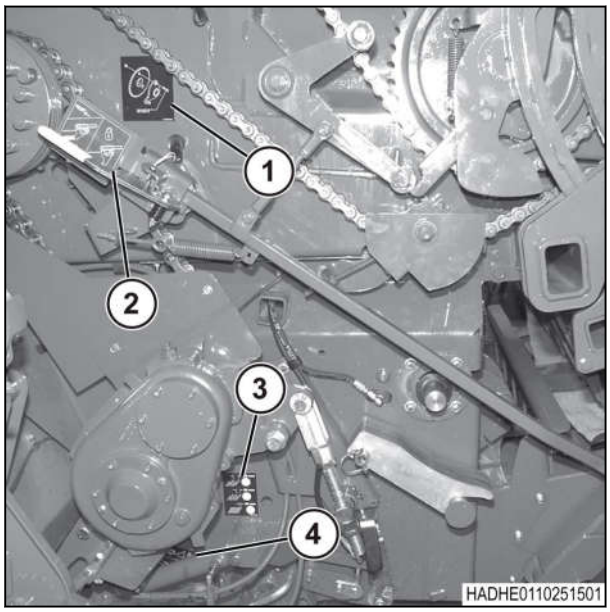


Fig. 55

Main drive sprocket shearbolt (1)

The cap screw must go through with the nut on the inside. Tighten the nut to 145 Nm (105 lbf ft).

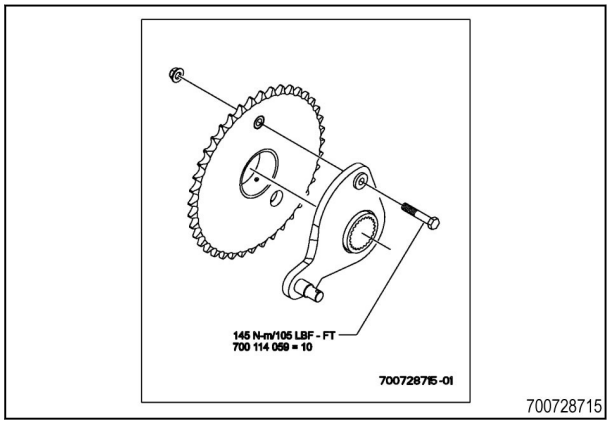


Fig. 56

Stuffer latch lock (2)

(A) Push in on the handle in to engage the latch.
(B) Pull out on the handle to permit operation.

Always have the stuffer latch lock in the locked location when you do maintenance on the baler.

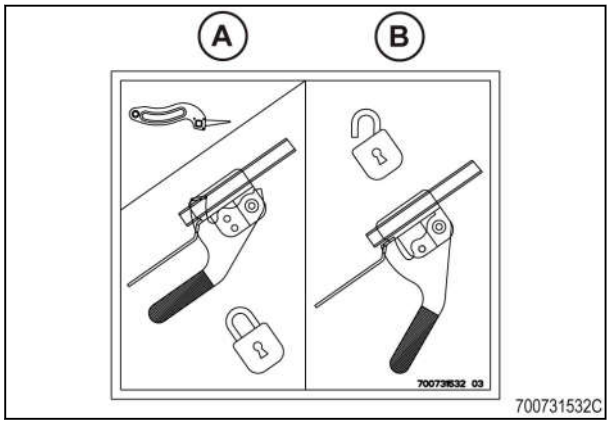


Fig. 57

The augers move the crop to the center.

If equipped with a cutter, the rotor or the packer fingers move the crop across the knives. Knife spacing determines the cut crop length.

The packer fingers move the crop into the stuffer chute to make a flake. When the stuffer chute has enough crop to make a flake, the stuffer sensor door engages the stuffer fingers. The stuffer fingers move the flake into the bale chamber.

The plunger compresses the flake into the bale in the bale chamber.

The compression force reduces the length of the plunger connecting rods a small amount. A sensor in each connecting rod measures the change in length. The square baler controller (SBC) compares the change in length of each connecting rod and does the following:

- adjusts the bale density doors to keep the correct force on the bale
- indicates to the operator which way to drive to keep the loads the same on both sides of the bale

When the bale is the correct length, the knotters and needles are actuated. This operation ties off the finished bale and starts the new bale.

3.4.5 Tractor setup dimensions with a 40 mm (1.6 in) high ring hitch

The distance (A) from the end of the PTO shaft to the center of the hitch pin hole must be 50 to 350 mm (2 to 13.8 in)

Make a record of the distance for use later in the procedure.

Measure the distance (B) from the center line of the power take off (PTO) shaft to the centerline of the hitch. The distance must be 220 mm (8.7 in) or more.

Measure the distance (C) from the top of the drawbar to the ground. The distance must be 825 to 1000 mm (32 to 39 in).

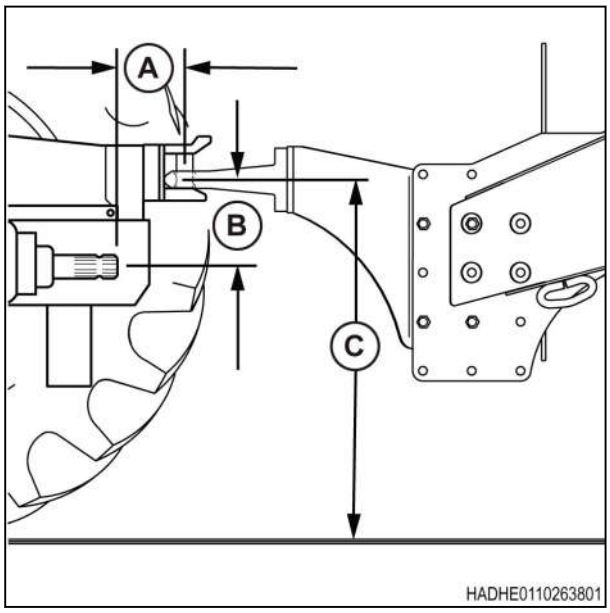


Fig. 12

3.4.6 Installing the machine hitch

Before starting the procedure

- See the specifications for the tractor and the machine.
- Make sure the tractor and the machine tires have the correct pressure.
- Set the tractor drawbar (if equipped) to specifications.
- Set the machine tongue height to specifications.
- Make sure the safety transport chain has a strength equal to, or more than, the towed load.
- Make sure the safety transport chain length will permit turning the machine and tractor.

- The hitch kit has the required hardware.
- Tractors have a Type 2 or a Type 3 power take off (PTO).
- The hitch and the tongue have columns of holes to set the correct location of the hitch.

2. **WARNING:**
WARNING: The intermediate bearing, shaft and support are heavy. Connect lifting equipment before removing the fastening hardware to avoid injury.

   Connect lifting equipment to the intermediate bearing support (1).

3. Remove the fastening hardware (2) from the intermediate bearing support.

4. Adjust the position of the intermediate bearing support to make the angles equal.

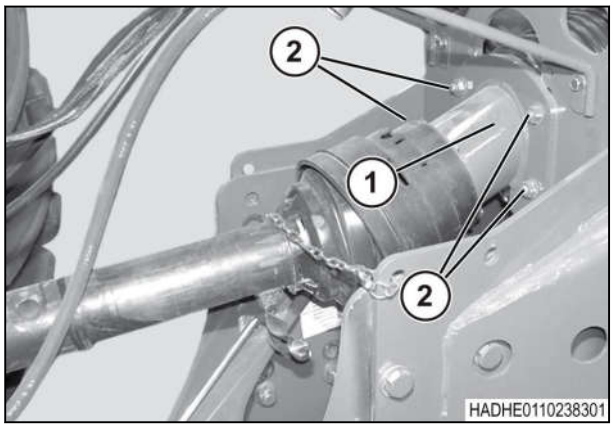


Fig. 32

5. Check the angles of the front and the rear U-joints.

6. Install and tighten the fastening hardware.

7. Install the PTO sensor and the sensor wiring .

Service screen tree

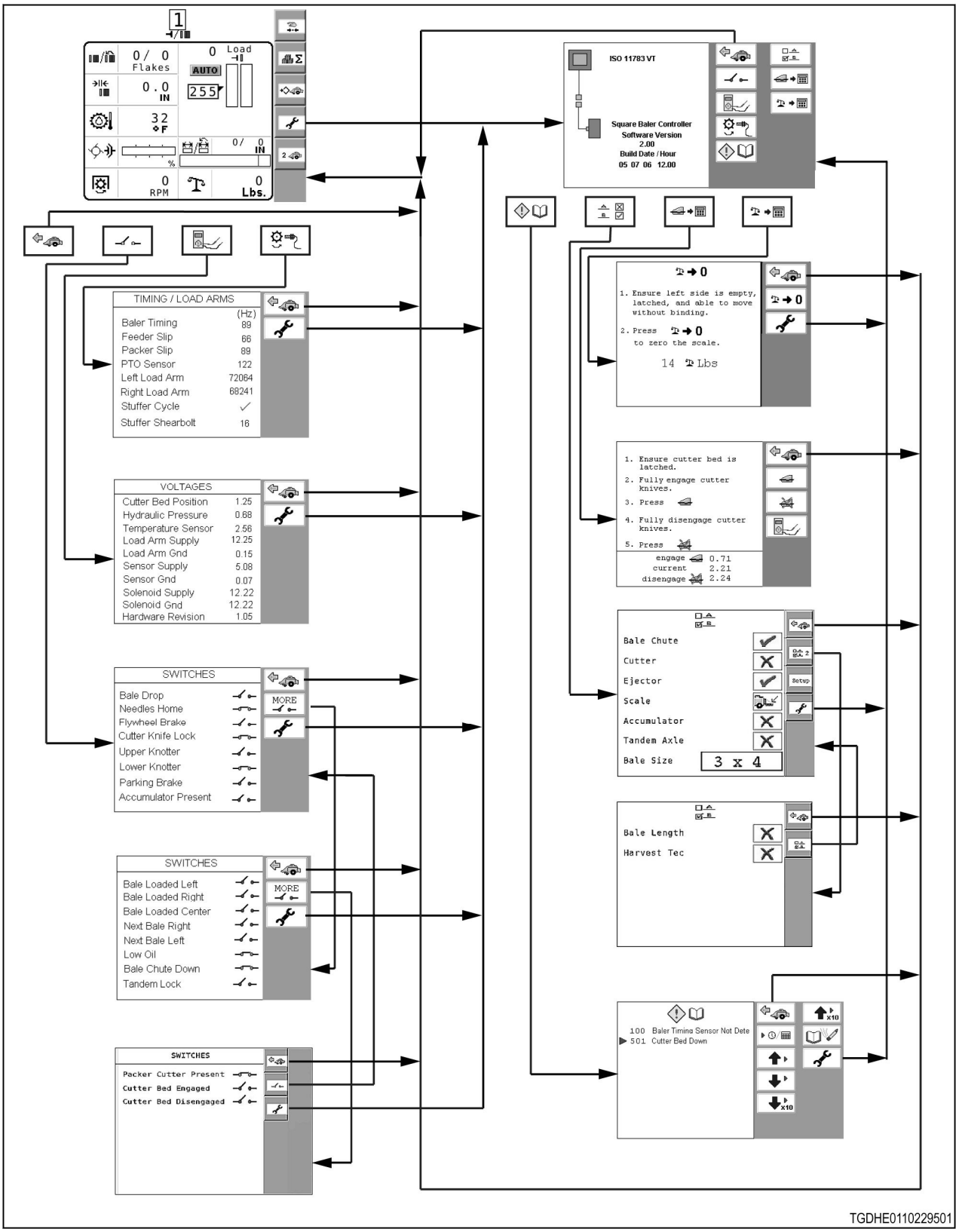


Fig. 42 Service screen tree

3.7.6.1 Changing the main work screen boxes

1. Select a box to change.

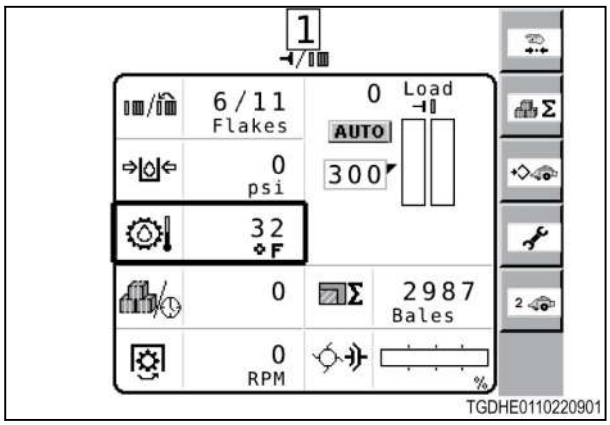
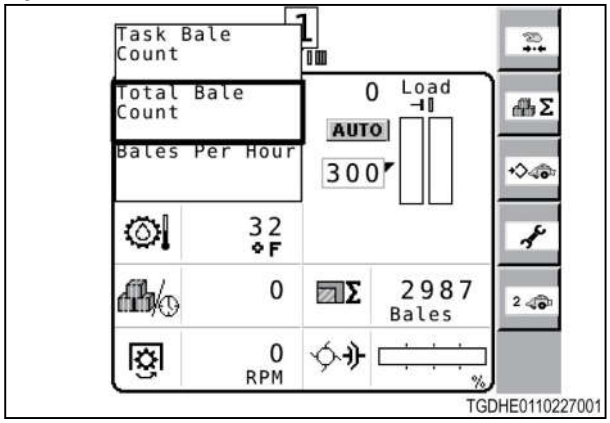


Fig. 46

2. Select the desired box from the drop down list.



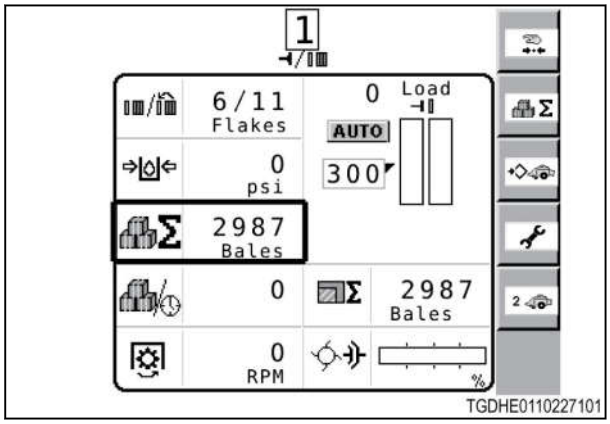


Fig. 47

3.7.6.2 Main work screen boxes

Information on the main work screen is displayed in boxes. The boxes, except for the plunger load box, can be moved to any box location.

3.7.6.9 Setting the plunger load

Procedure

1. Select the plunger load setting box (1).

NOTE: *See the terminal operator manual for instructions on selecting the plunger load setting box.*

2. Use the following table as a starting point to select plunger load setting.

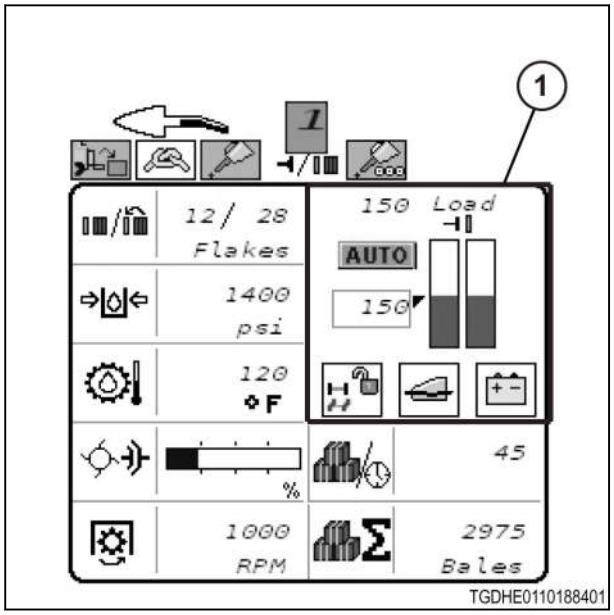


Fig. 57

Model	Dry hay crops (alfalfa and grass hay)	Damp, wet, or silage crop	Maximum load setting
80 x 70	**130 to 160**	**120 to 140**	**210**
80 x 90	**130 to 160**	**120 to 140**	**210**
120 x 70	**225 to 270**	**180 to 210**	**330**
120 x 90	**225 to 270**	**180 to 210**	**330**
120 x 90 XD	**225 to 315**	**210 to 255**	**465**
120 x 130	**280 to 360**	**260 to 300**	**440**

3. Enter the value in the plunger load setting box.

After finishing the procedure

Adjust the plunger load setting within the range of values to make the highest quality bales.

After finishing the procedure

Before baling, select AUTO to go to automatic pressure control mode.

3.7.12 Machine settings screen

3.7.12.1 Machine settings screen information

Select to open the machine settings screen.

Select to open the main work screen.

The machine settings screen displays the following information.

(1) Machine power take-off (PTO) speed
(2) Gearbox temperature

NOTE: *The gearbox temperature will not display temperatures below 40°C (104°F).*

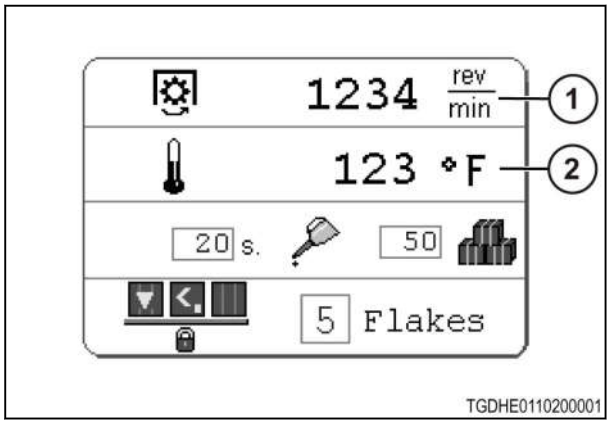


Fig. 70

3.7.12.2 Chain lubrication

Operating the chain oiler - machine software 3.30 and below

The chain lubrication pump has a default interval setting of 15 seconds. The pump will turn on for 12 seconds (1) and will turn off for 3 seconds.

NOTE: *The default setting will lubricate the chains too much and will cause excessive oil consumption.*

Raising the value decreases the amount of lubrication. Lowering the value increases the amount of lubrication.

2. Select → 0 to zero the scale.

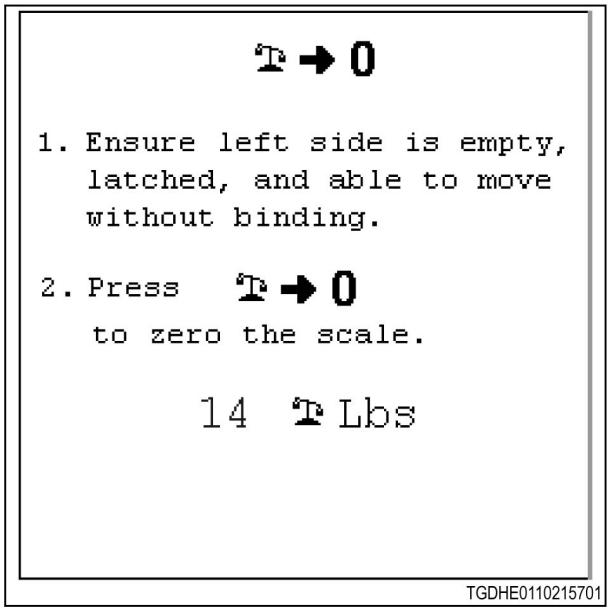


Fig. 87

3. Select → to start the calibration procedure.

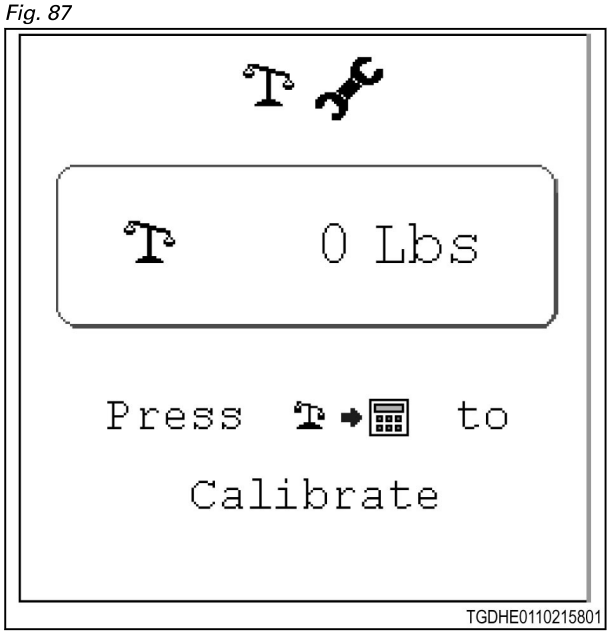


Fig. 88

3.7.21.2 Changing the current job

1. Select the job name (1).
2. Scroll through the job names and select the desired job name from the list.

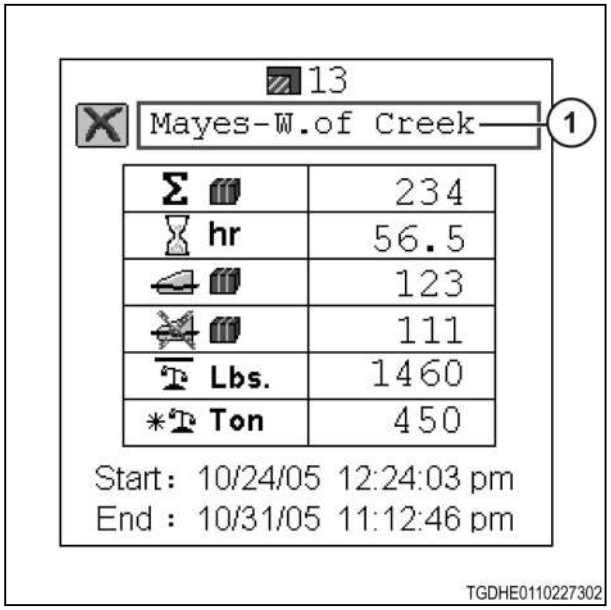


Fig. 109

3.7.21.3 Customer record screen

To go to the customer record screen, select the icons in the following order: 

The operator can store up to 20 customer records.

The customer record screen shows the following information.

(1) Customer number
(2) Current record condition:

Record condition	Description
✔	Record is operating
✘	Record is not operating

(3) Customer name
(4) Total bales in this record
(5) Total hours in this record
(6) Number of cut bales in this record

NOTE: *If the machine is not equipped with a cutter, a 0 will display.*

(7) Number of uncut bales in this record

NOTE: *If the machine is not equipped with a cutter, a 0 will display.*

(8) Average bale weight for this record

NOTE: *If the machine is not equipped with a scale, a 0 will display.*

(9) Total bale weight for this record

NOTE: *If the machine is not equipped with a scale, a 0 will display.*

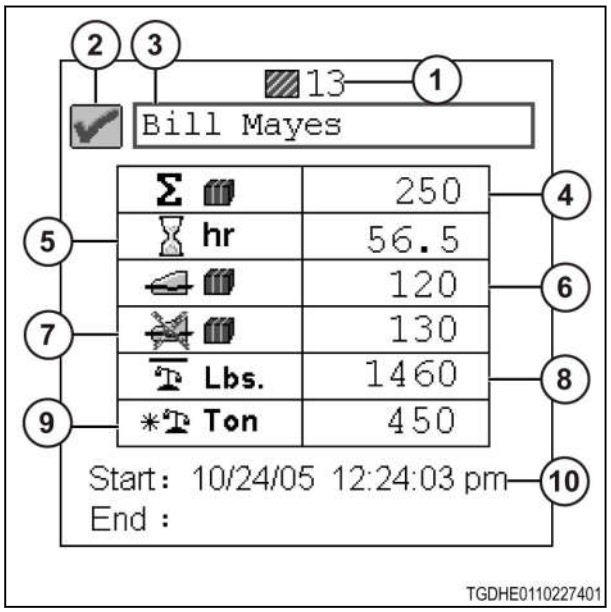


Fig. 110

Alarm number	Display	Description	Priority	Audible alarm
160	Baler configuration reset!	The automatic machine size configuration changed the installation of the machine options.		None
161	Bale counters reset!	The work records or the life time records have not been read correctly.		None
170	ECU_PWR < 11.5V (ECU Low Voltage Fault)	The square baler electronic control unit (ECU) voltage is below 11.5 volts for 5 seconds. The ECU voltage is checked every second.	None	None
171	ECU_PWR > 16V (ECU High Voltage Fault)	The square baler electronic control unit (ECU) voltage is above 16 volts for 5 seconds. The ECU voltage is checked every second.	None	None
172	PWR < 11.5V (Solenoid Low Voltage Fault)	The solenoid power voltage for the electronic control unit (ECU) is below 11.5 volts for 5 seconds. The solenoid voltage is checked every second.	None	None
173	PWR > 16V (Solenoid High Voltage Fault)	The solenoid power voltage for the electronic control unit (ECU) is above 16 volts for 5 seconds. The solenoid voltage is checked every second.	None	None
174	Module configuration mismatch	The current information about an expansion module is not the same as previous information. An example of an expansion module is the square baler module (SBM) for the bale weight and/or length kit.		Low
175	New module on line	A new expansion module has been added to the CAN bus system and is ready to configure. See your dealer.		Low
176	Intermittent module on line	A module on the CAN bus system has intermittent communication with the other parts of the network. See your dealer.		Low
177	Module communication failure	A module on the CAN bus system has no communication with the other parts of the network. See your dealer.		Low

3.8.5 Windguard height

The windguard (1) must be as close to the pickup as is possible without getting in the way of crop flow.

Adjust the chain (2) length on both sides to get the correct windguard height.

Adjust the upper spacer (3) so the rear of the windguard clears the pickup tines.

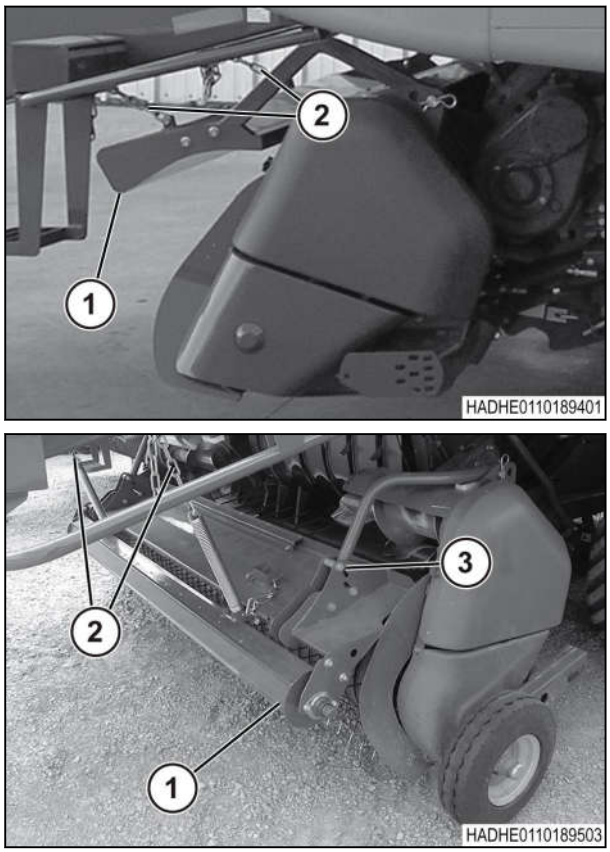


Fig. 121

2. Select  .

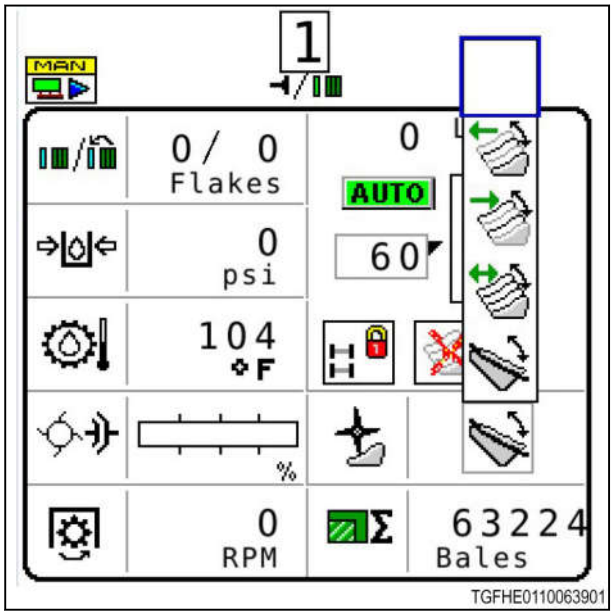


Fig. 136

3. Use the tractor hydraulics to lower the cutterbed.

NOTE:  *will display in the plunger load box until the cutterbed is completely raised.*

 *will display in the plunger load box when the cutterbed is completely raised.*

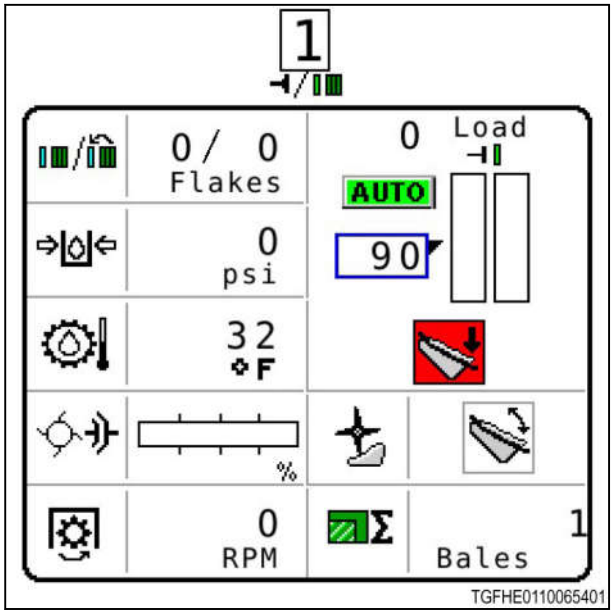


Fig. 137

3.12.3 Raising the cutterbed

Procedure

1. Disengage the power take-off (PTO).

Always raise the bale chute before storing the machine.

Procedure

1. Remove any bale on the roller bale chute.
2. Stop the tractor power take-off (PTO). Make sure all movement has stopped.
3. Apply the park brake.
4. Engage and lock the tractor remote valve for the pickup in the raised position.
5. Push up on the control (1) for the roller bale chute until the roller bale chute raises completely.

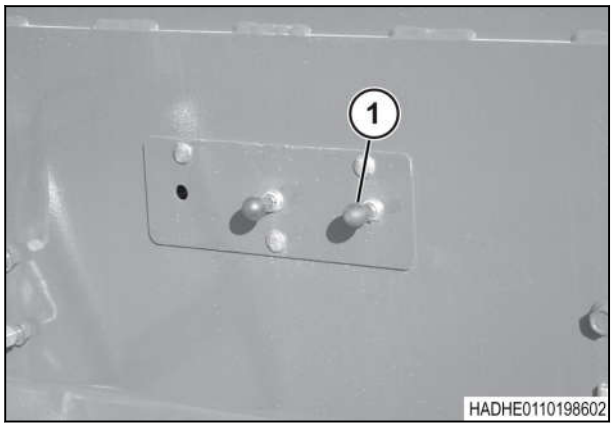


Fig. 153

6. Latch the left-hand chain (1) in the chain catches (2).
7. Put the chains in the storage holders (3) on each side of the roller bale chute.

   IMPORTANT:
   Loose chains can damage the rear lamps and the rear supports.
8. Fasten the left-hand chain to the chain catch with a nut and a bolt (4).

   IMPORTANT:
   Failure to fasten the chain can damage the roller bale chute cylinder, the roller bale chute, and the machine.

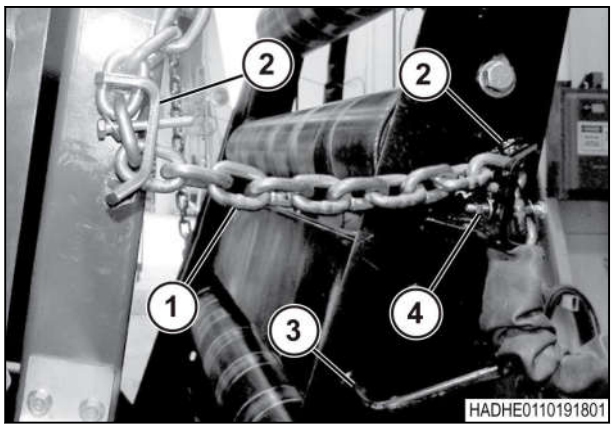


Fig. 154

Procedure

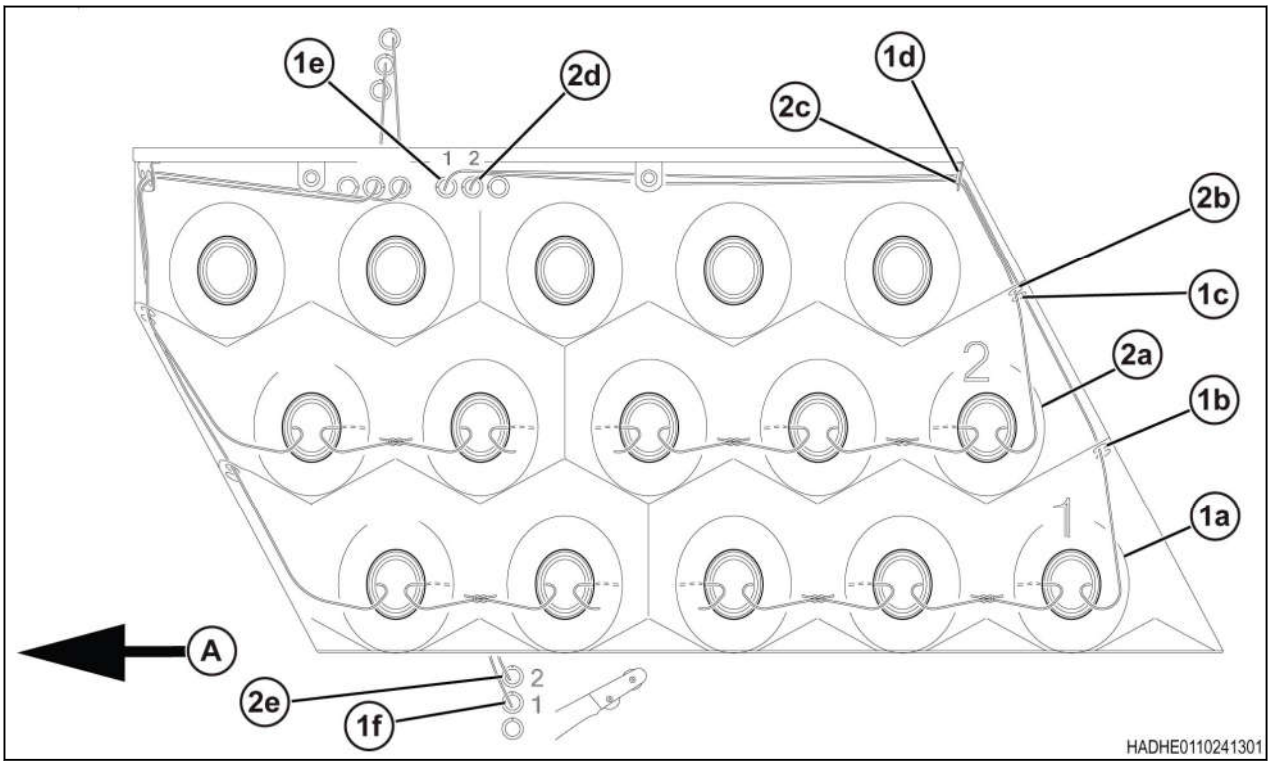


Fig. 173

1. Pull the twine from the bottom rear twine ball (1a) for needle one.
2. Make a mark on the first twine, as twine number one.
3. Pull twine number one through the outside guide (1b) above the rear twine ball.
4. Pull twine number one through the inside guide (1c) located on the bottom of the top row.
5. Pull twine number one through the inside guide (1d) in the corner.
6. Put twine number one through the guide (1e) at the top of the left-hand twine box.
7. Pull twine number one down behind the left-hand twine box.
8. Put twine number one through the guide (1f) below the left-hand twine box.
9. Pull the twine from the middle rear twine ball (2a) for needle two.
10. Make a mark on the second twine, as twine number two.
11. Pull twine number two through the outside guide (2b) above the twine ball.
12. Pull twine number two through the outside guide (2c) in the corner.
13. Put twine number two through the guide (2d) at the top of left-hand twine box.
14. Pull twine number two down behind the left-hand twine box.
15. Put twine number two through the guide (2e) below the left-hand twine box.

3.19.3 Threading the right-hand needle twine box

Before starting the procedure

- Disengage the tractor power take-off (PTO).
- Turn off the tractor engine.
- Remove the key.
- Take the key with you.
- Apply the flywheel brake.

The large arrow (A) points to the front.

Procedure

1. Pull twine number three through the middle twine tensioner (1).
2. Put twine number three into upper twine tensioner three (2)
3. Pull twine number four through the top twine tensioner (3).
4. Put twine number four into upper twine tensioner four (4).
5. Thread upper twine tensioners one (5) and two (6) as shown in the illustration.

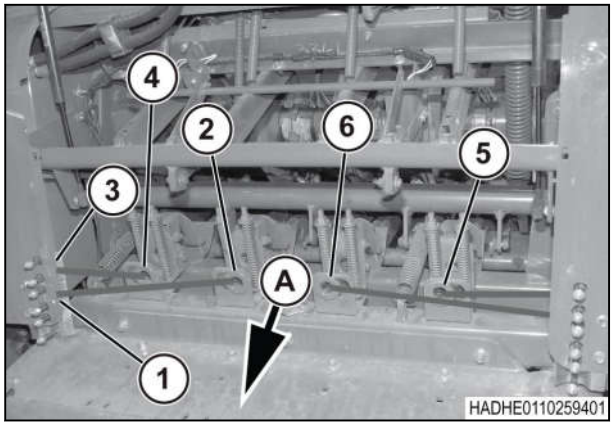


Fig. 189

6. Thread the twines up and behind the finger shaft (1).
7. Pull each twine up and over the roller (2) in each upper slacker arm (3).
8. Pull each twine down to and through the tucker arms (not shown).
9. Put each twine around the rollers (not shown) in the end of the tucker arms.
10. Pull the twines from the knotter area into the bale chamber.

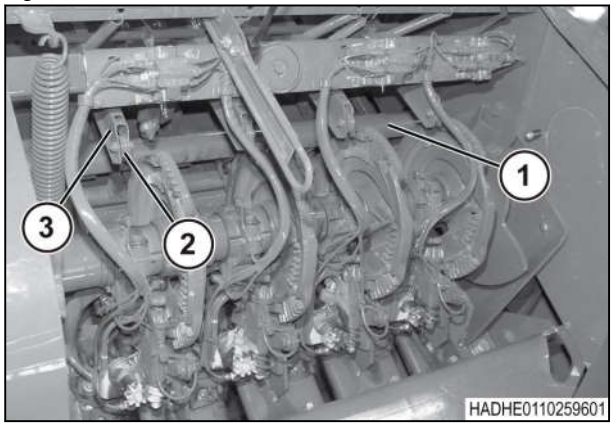


Fig. 190

3.19.13 Threading and tying the needle and the knotter twines

Before starting the procedure

- Disengage the tractor power take-off (PTO).
- Turn off the tractor engine.
- Remove the key.
- Take the key with you.
- Apply the flywheel brake.
- Engage the knotter/needle lockout before threading the machine.

Procedure

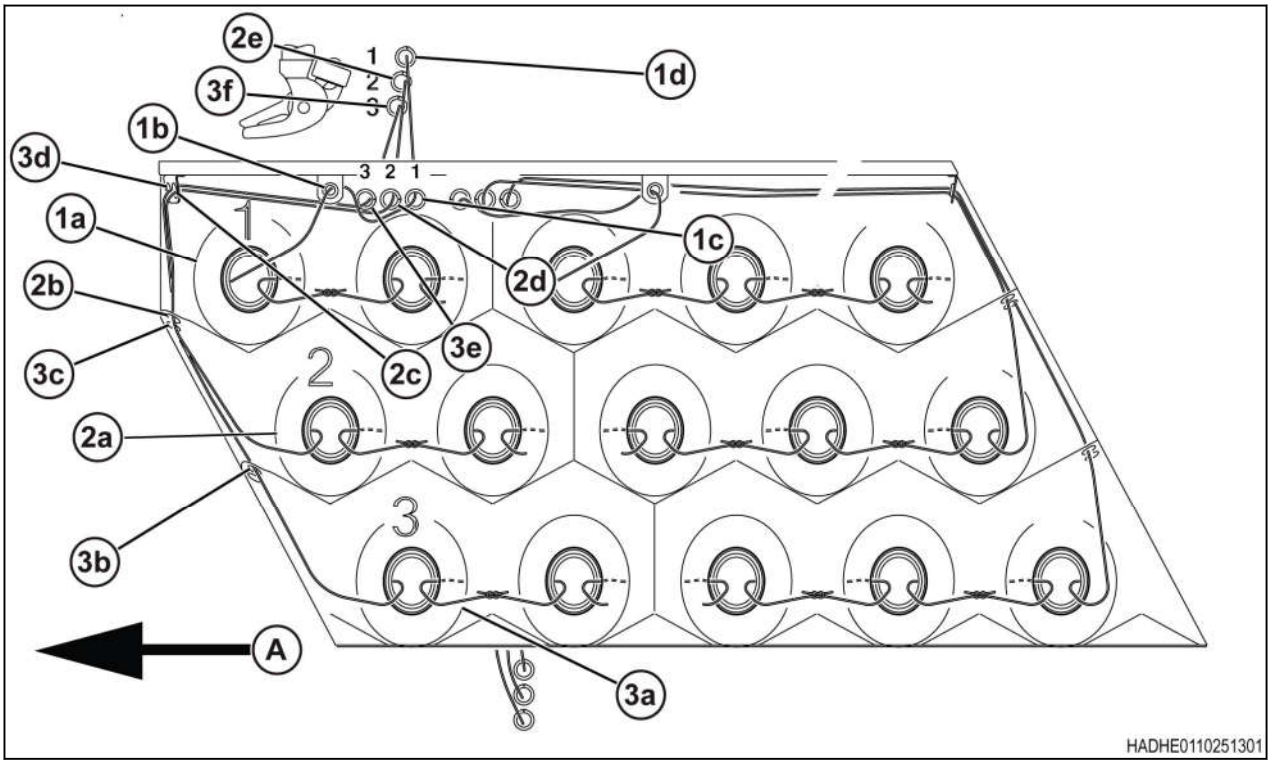


Fig. 203

1. Pull the twine from the top front twine ball (1a) for knotter one.
2. Make a mark on the first twine, as twine number one.
3. Pull twine number one through the guide (1b) above and behind the twine ball.
4. Put twine number one through the guide (1c) at the top of the left-hand twine box.
5. Pull twine number one up behind the left-hand twine box.
6. Put twine number one through the guide (1d) above the left-hand twine box.
7. Pull the twine from the middle front twine ball (2a) for knotter two.
8. Make a mark on the second twine, as twine number two.
9. Pull twine number two through the outside guide (2b) above the twine ball.
10. Pull twine number two through the outside guide (2c) in the corner.
11. Put twine number two through the guide (2d) at the top of the left-hand twine box.
12. Pull twine number two up behind the left-hand twine box.
13. Put twine number two through the guide (2e) above the left-hand twine box.
14. Pull the twine from the bottom front twine ball (3a) for knotter three.
15. Make a mark on the third twine, as twine number three.
16. Pull twine number three through the outside guide (3b) above the front twine ball.
17. Pull twine number three through the inside guide (3c) located on the bottom of the top row.
18. Pull twine number three through the inside guide (3d) in the corner.
19. Put twine number three through the guide (3e) at the top of the left-hand twine box.
20. Pull twine number three up behind the left-hand twine box.
21. Put twine number three through the guide (3f) above the left-hand twine box.

3.23 Disconnecting the tractor

WARNING:
Disengage the tractor PTO. Shift the transmission into park. Apply the tractor park brake. Stop the tractor engine. Take the key with you before you get off the tractor. Apply the flywheel brake. Apply the baler park brake (if equipped). Block the baler tires. The jack will support vertical loads only

Procedure

1. Park the machine on a solid level surface.
2. Raise the pickup.
3. If the baler has tandem axles, lock the steering axle in the locked forward position.
4. If equipped, correctly remove the pressure from the hydraulic disconnect brake system.

   IMPORTANT: *If the tractor is not disconnected in the correct sequence, the disconnect solenoid valve will apply and hold the baler brakes. This pressure will prevent connecting the brake hose to the tractor brake system if that hose has been disconnected. The baler must be connected to a tractor to correctly remove the pressure from the disconnect brake system.*

   a) Make sure there is electrical power in the cab to the disconnect brake switch (1). Do not start the tractor.
   b) Make sure the baler brake hose is connected to the tractor.
   c) Pull down on the locking tab (2) on the disconnect brake switch.
   d) Press and release the disconnect switch four times. Wait for one second each time.

      This procedure will release the pressure in the baler brake system. Cold weather can slow the procedure.
   e) Push the locking tab on the brake disconnect switch up to the locked position.

   Do not apply the tractor brake until the hydraulic brake hose has been disconnected from the tractor. If the tractor brake is applied before the hydraulic brake hose has has been disconnected, repeat the discharge procedure.

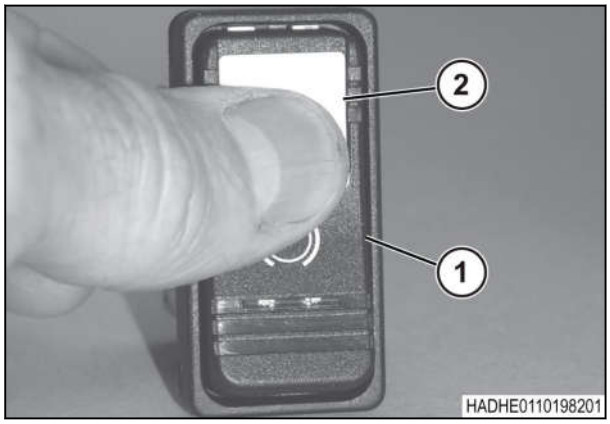


Fig. 218

5. Stop the engine, apply the park brake, and take the key with you.
6. Shut down the terminal.

   IMPORTANT: *Data can be lost if the terminal to baler connection is disconnected before the terminal is shut down.*
7. Apply the flywheel brake.
8. If equipped, apply the baler park brake.
9. Block the baler tires.
10. If equipped, disconnect the brake hose(s). Put the brake hose(s) in the storage location.

8 hours	50	100	250	Other	Hours
	1000	2000	5000		Bales
			X		Check the torque of the hardware on the crank arm bearings.
			X		Inspect the main gearbox mounting hardware. Replace if necessary.
			X		Lubricate the packer clutch bushing with grease.
			X		Lubricate the bale density cylinder linkage on both sides with grease.
			X		Lubricate the main drive slip clutch with grease.
			X		Lubricate the overrunning clutch with grease.
				10 000 bales or 500 hours	Check torque on hardware and tighten if necessary.
					Lubricate the main drive sprocket with grease.
					Lubricate the plunger side roller bearings with grease.
				20 000 to 25 000 bales	Check the brake hardware. Tighten if necessary.
					Check brake linings for wear.
					Check and lubricate the wheel bearings.
				Once a season	Lubricate the main flywheel bearing with grease.
				After the first season	Change the main gearbox oil.
				Every 10 weeks	Lubricate the brake levers with grease.
				Once a year	Change the hydraulic oil and filter.
				Every three seasons	Change the oil in the packer/cutter crank bearings.

4.3.11 Lubricating the cutter rotor clutch, if equipped

Lubricate the cutter rotor clutch (1) every 2500 bales.

Do not apply too much lubricant. The bushing on the cutter rotor clutch is used only when the rotor clutch slips. Too much lubricant can cause excessive slippage in the cutter rotor clutch.

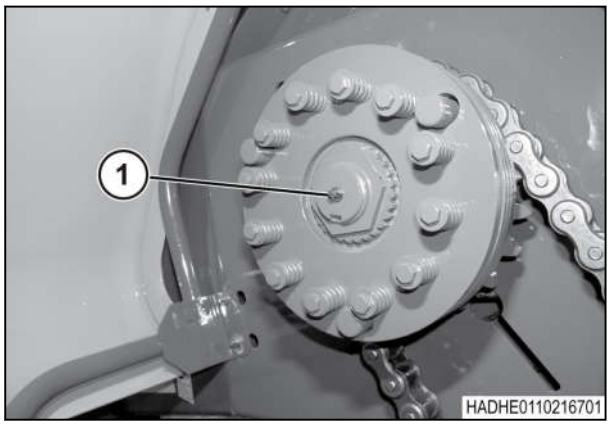


Fig. 20

4.3.12 Lubricating the anchor for the rotor cutter chain tensioner

Procedure

Lubricate the anchor (1) for the rotor cutter chain tensioner every 50 hours or 1000 bales.

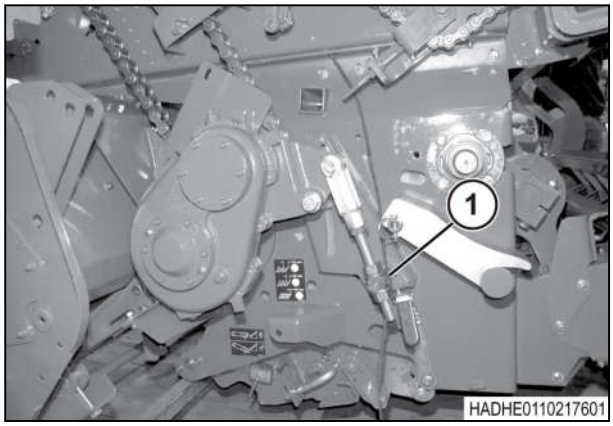


Fig. 21

4.5 Rotor cutter gearbox, if equipped

4.5.1 Checking the rotor cutter gearbox oil

1. Make sure the tongue is at the correct tractor drawbar height.
2. Remove the full level check plug (1).
3. Check the oil level.

   The oil level must be even with the bottom of the hole for the full level check plug.

   To add oil:

   a) Remove the fill plug (2).
   b) Fill the gearbox with oil to the bottom of the hole for the full level check plug.

      See the machine specifications for the correct type and quantity of lubricant.
   c) Apply thread sealant to the fill plug and install the fill plug.

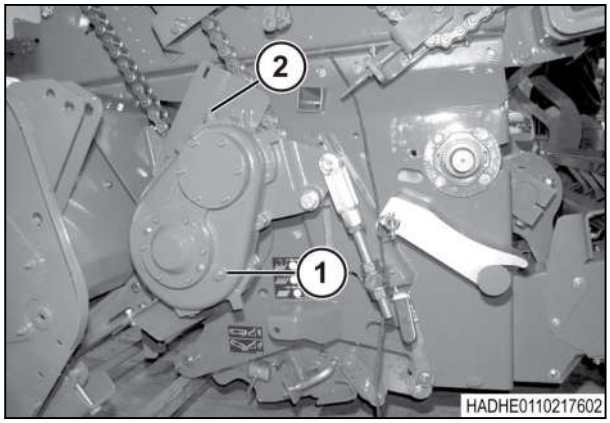


Fig. 43

4. Install the full level check plug.

Related Links

Lubricants and capacities page 379

4.5.2 Changing the rotor cutter gearbox oil

Before starting the procedure

Contain all fluids during the performance of inspection, maintenance, testing, adjusting, and repair of the machine. Prepare to contain fluids with correct containers before opening any compartment or disassembling any component containing fluids. Discard all fluids according to local regulations and laws.

1. Put a container under the drain plug (1).
2. Remove the drain plug.
3. Clean the drain plug and the gearbox threads.
4. Inspect the O-ring and replace if necessary.
5. After the oil is drained, install the drain plug in the gearbox.
6. Remove the full level check plug (2).
7. Remove the fill plug (3).
8. Fill the gearbox with oil to the bottom of the hole for the full level check plug.

   See the machine specifications for the correct type and quantity of lubricant.

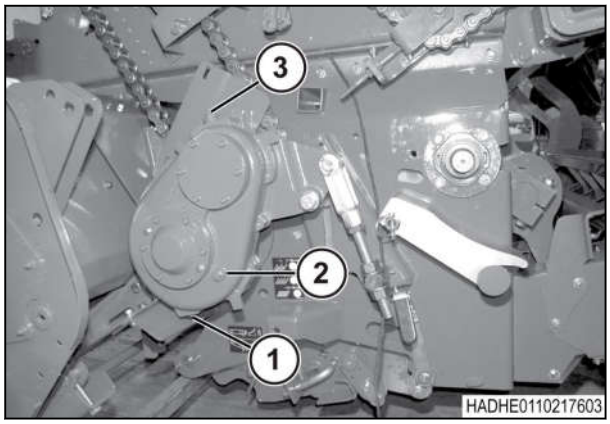


Fig. 44

9. Install the full level check plug.
10. Apply thread sealant to the fill plug and install the fill plug.

Related Links

Lubricants and capacities page 379

4. Loosen the inner lock nut on the eyebolt (1) at the handle (2).
5. Tighten the outer lock nut to get the correct adjustment.
6. Then tighten the inner lock nut.

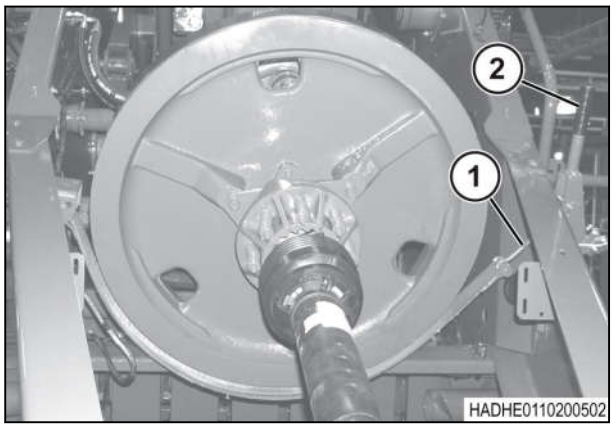


Fig. 56

4.13 Timing the baler

The operation of the needles, knotters, and stuffer drive are timed to the operation of the plunger.

Time the baler if the stuffer/knotter/needle chain breaks or is replaced.

1. Remove the stuffer/knotter/needle chain (1).
2. Align the timing marks on the main drive sprocket (2), stuffer drive sprocket (3), and the knotter/needle drive sprocket (4). Use a straight edge to check the alignment.

Stuffer drive sprocket variations		
Ref	**Baler size (cm)**	**Baler size (ft)**
5	80x70, 120x70	2x3, 2x4
6	80x90, 230x90	3x3, 3x4
7	120x130	4x4

3. Install the stuffer/knotter/needle chain.
4. Adjust the tension. See the instructions to adjust the stuffer/knotter/needle chain.
5. Make sure all timing marks are still aligned.
6. Manually trip the stuffer and knotter clutches.

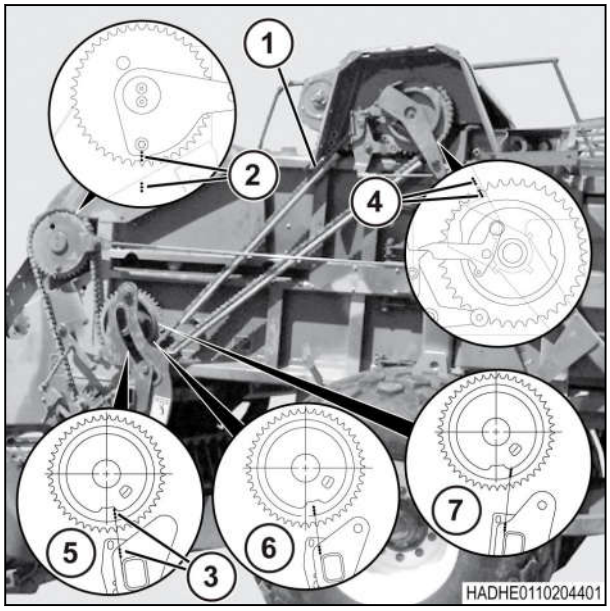


Fig. 76

7. Rotate the flywheel manually and check the following conditions:
   a) Make sure the stuffer fingers have entered the stuffer chute. The stuffer fingers must start moving a little up and rearward before the plunger has completely opened the top of the stuffer chute. The charge holding fingers must be completely out and away from the chamber.
   b) The stuffer fingers must have finished all movement up when the plunger starts to close the top opening of the stuffer chute.

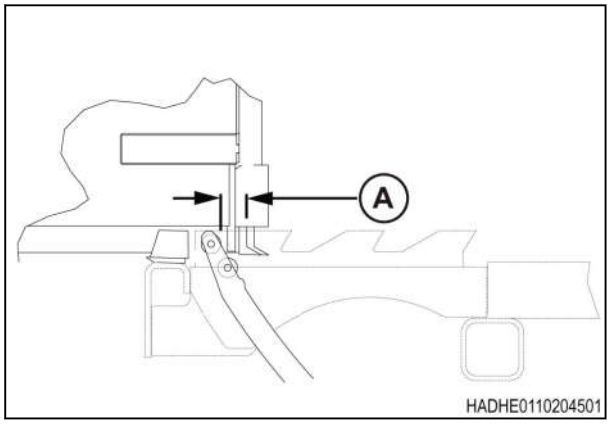


Fig. 77

   c) When the needles start to enter the bale chamber and the tip of the needle rollers are flush with the top of the hay dogs, the outside plunger knives must be 15 to 75 mm (0.591 to 2.953 in) (A) past the needle roller.
   d) When the needles are at the top of the stroke, make sure the needles go into the knotter the correct distance. See the instructions for needle installation and adjustment.

4.16 Stuffer

If the stuffer clutch does not engage, the stuffer chute will become plugged and difficult to clean out. If the stuffer clutch is engaged before the stuffer chute is full, the bales will be light on the top side.

Always check the stuffer adjustments in the following sequence:

1. Stuffer sensor door
2. Stuffer clutch
3. Stuffer brake

4.16.1 Adjusting the stuffer sensor door

1. Check the distance (A) the stuffer sensor door (1) is into the chamber.

The stuffer sensor door must come up into the chamber 25.4 mm (1 in).

If necessary, adjust the stop bolt (2) on the left-hand side.

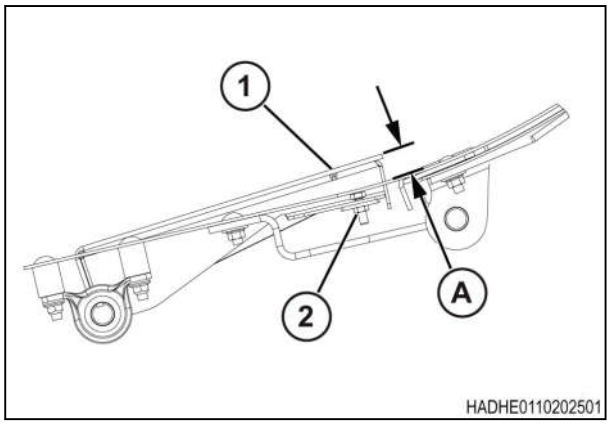


Fig. 100

2. Make sure the stuffer sensor door (1) moves freely.

3. Put the stuffer sensor door in the up position. Make sure clearance (A) between the front of the sensor door and the packer pan (2) is 3 to 5 mm (0.118 to 0.197 in).

If the clearance is not correct, loosen the bearing hardware and move the bearing hardware.

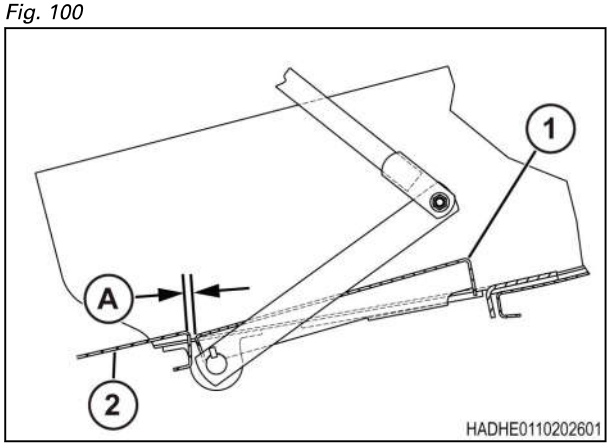


Fig. 101

4. Push the stuffer sensor door (1) down. Make sure the left-hand and right-hand side clearances are equal.

If the side clearances are not equal, loosen the set screws in the bearing inner race collar and center the door.

5. With the stuffer sensor door down, check the clearance (A) between the door and the charge chute adjustment angle (2).

The clearance must be from 4 to 8 mm (0.157 to 0.315 in).

If the clearance is not correct, loosen the hardware on the charge chute adjustment angle and move forward or back to get the correct gap.

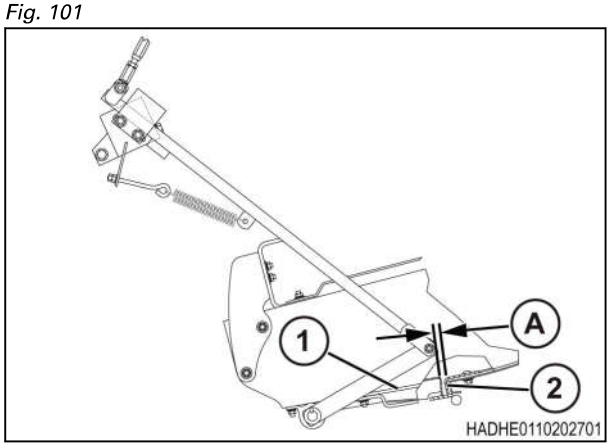


Fig. 102

4.18.4 Adjusting the billhook and billhook cam

1. Rotate the knotter head so the roller on the billhook is under the billhook cam.
2. Tie a string to the billhook tongue (1) and connect a spring scale to the string.

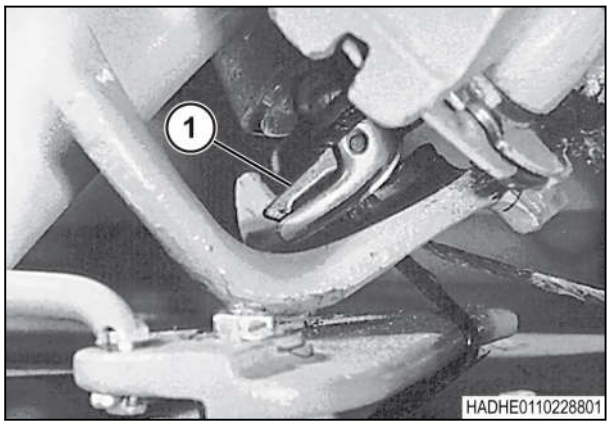


Fig. 124

3. Tighten the adjusting nut (1) on the billhook cam spring (2) until the adjustment is correct.

   The adjustment is correct when 44 to 90 N (10 to 20 lb) pull opens the billhook (3) 3 mm (1/8 in).

   NOTE: *If a spring scale is not available, tighten the lock nut until the upper end billhook cam spring can be moved with only a little pressure, approximately 0.45 to 1.4 kg (1 to 3 lb).*

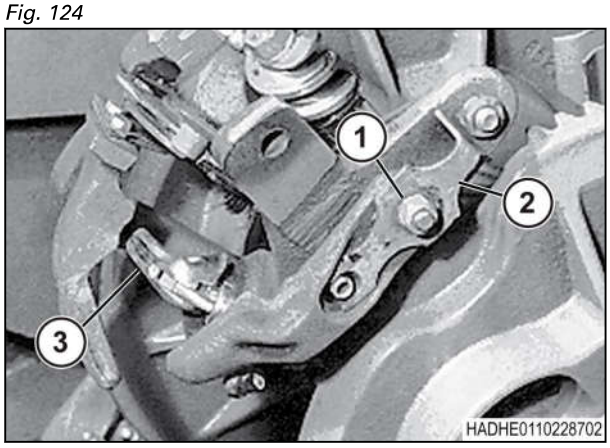


Fig. 125

After finishing the procedure

If the knot comes loose or opens easily, tighten the adjusting nut 1/6 of a turn. Continue to turn the adjusting nut 1/6 of a turn until the knot is correct.

If the knot sticks on the billhook, loosen the adjusting nut 1/6 turn at a time. Continue to loosen the adjusting nut 1/6 of a turn at a time until the knot just slips off the billhook.

4.18.5 Replacing a billhook

Before starting the procedure

WARNING:
Warning: Be careful to stay clear of moving parts or personal injury can occur. After parts are in the correct location for removal and/or installation, apply the flywheel brake. Release the flywheel brake only after the removal and/or installation is complete.

- No hay in the bale chamber
  1. Manually rotate the flywheel until the tip of the needle is just below the top of the bale chamber.
  2. Bend the needle so the needle will be in the center of the needle slot in the top of the bale chamber.
  3. Manually rotate the flywheel until the needle is all the way down. Then continue to rotate the flywheel until the tip of the needle is even with the knotter frame again.
  4. Check the adjustment.
- Hay in the bale chamber
  1. Remove the cotter pin and clevis pin that fasten the knotter head to the knotter frame.
  2. Pull up on the mounting tab to raise the knotter head all the way.
  3. Manually rotate the flywheel until the needles are at the top of the stroke.
  4. Bend the needle to make the adjustment.
  5. Look at one of the other needles. Have the other person manually rotate the flywheel until the lower roller on the needle is even with the knotter frame.
  6. Close the knotter head and check the adjustment.
  7. Install the cotter pins and clevis pins.

4.19.9 Adjusting the twine fingers

The twine fingers move the twine from the needles into the line of travel of the billhook. The twine fingers must operate freely and be adjusted correctly. A large amount of tying failures are caused by the twine fingers not being correctly adjusted.

Before starting the procedure

Make sure the needle adjustment and needle roller height is correct before adjusting the twine finger.

Procedure

1. Manually rotate the flywheel until the needles are on the return stroke. The lower roller on the needle must be even with the disc cleaner.
2. Disconnect the clevis at the front of the twine finger rod. (1).
3. Rotate the twine finger (2) to check the gap (A) between the twine finger and the needle (3).

   This gap must be 0.5 to 2.5 mm (0.019 to 0.098 in).
4. To adjust the gap:
   a) Loosen the attachment bolts (4).
   b) Move the mounting bracket.
   c) Tighten the mounting bolts.
   d) Connect the clevis.
   e) Repeat the procedure for each of the twine fingers.

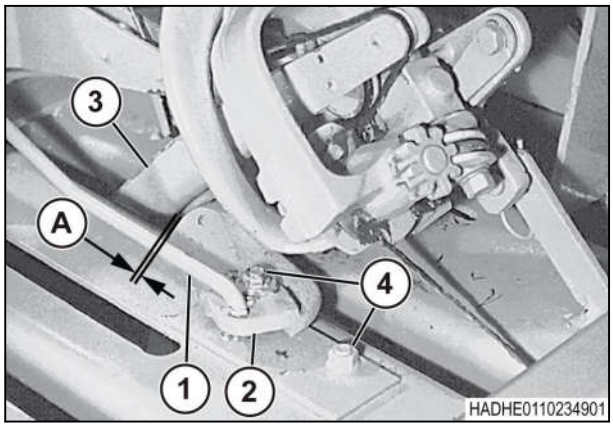


Fig. 145

4.22 Tires, wheels, and axles

4.22.1 Tire pressure

During the baling season, check the tire pressure in the baler tires and pickup wheel tires at least once a week. Always check the tire pressure during the coolest part of the day. Keeping the tire pressure at the specified amount is very important because of the size and weight of the machine.

See the machine specifications for correct tire pressures.

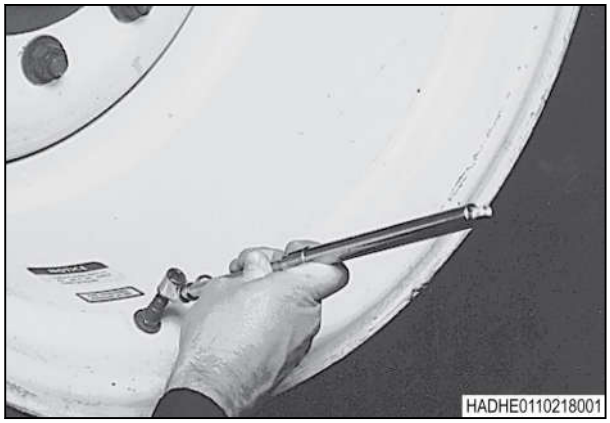


Fig. 157

4.22.2 Wheel hardware

Tighten the wheel nuts:

- After 1 hour of operation on a new machine or after wheel replacement.
- Every 10 hours for the next 50 hours.
- Every 50 hours from then on.

Before installing a wheel, inspect the wheel for any damage. Clean the lug bolt threads with a steel brush. Apply oil very lightly to the threads to retard corrosion.

See the machine specifications for the correct torque.

Use the alternating torque sequence shown when tightening the wheel hardware.

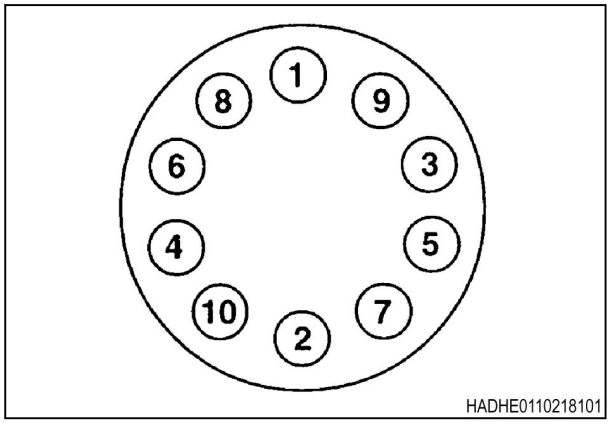


Fig. 158

4.22.3 Inspect the wheel bearings for too much movement

Procedure

1. Park the machine on a solid level surface. Stop the engine, apply the park brake, and take the key with you.
2. Block the wheels on the opposite side of the machine.
3. Install lift equipment with more capacity than the weight of the machine.
4. Find the correct jack points. See the information for jack points.
5. Lift the machine until the tire goes off the ground.
6. Install support stands with more capacity than the weight of the machine at the correct jack points. Lower the machine onto the support stands.
7. If the machine has a park brake, release the park brake.
8. Put the end of a long, heavy crowbar on a solid surface below and to the rear of the tire. Lift up and forward on the tire. If the crowbar bends too much, use two crowbars. Look for movement of the wheel and hub that shows loose bearings or too much wear in the bearings.

4.23.4 Adjust the brakes

This information does not apply to machines with automatic adjusting brakes. If the brake lining for automatic adjusting brakes is equal to or more than the minimum thickness, and the actuator is not in specifications, replace the actuator.

Procedure

1. Make sure the machine is connected to the tractor.
2. Park the machine on a solid level surface. Stop the engine, apply the park brake, and take the key with you.
3. Remove the wheels. See the information for how to remove a wheel.
4. Check the thickness of the brake lining and replace if necessary. See the information for how to inspect the brake lining. Do not adjust the brakes if the lining is less thick than the minimum specification. Replace the actuator if the movement distance cannot be adjusted correctly and the thickness of the brake lining is equal to or more than the minimum thickness.
5. Turn the adjustment bolt (1) counterclockwise until the drum will not turn.
6. Turn the drum and at the same time, turn the adjustment bolt clockwise until the brakes do not touch the drum.
7. Do the procedure again for the other brakes on the machine.

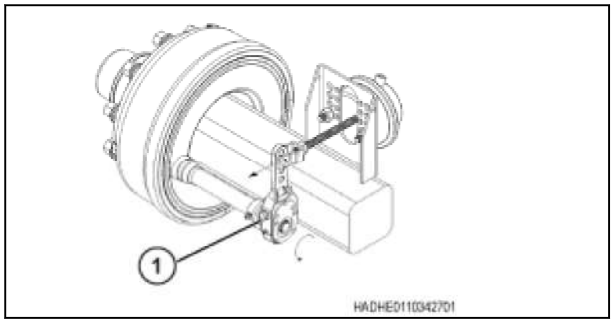


Fig. 175

4.23.5 Rubber brake wiper

The rubber brake wiper (1) rotates with the brake drum to keep the inside of the wheel free of crop material and debris.

The rubber brake wiper is held in position with a hose clamp (2).

If the rubber brake wiper is damaged or missing, install a new rubber brake wiper.

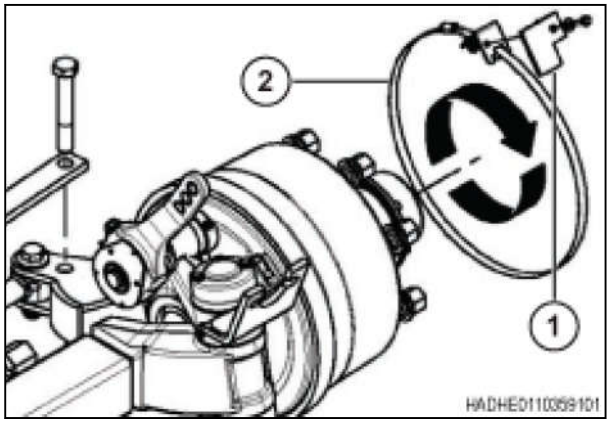


Fig. 176

4.23.6 Inspecting the park brake system

Procedure

Inspect the park brake system daily for the following:

- Look for bent, broken, or damaged park brake cable wire strands.
- The park brake cable clamps must not slip. Tighten loose park brake cable clamps.
- Check for free movement of the park brake cable pulley. Lubricate if necessary.

5.2 Main drive train troubleshooting

Excessive slippage of the flywheel clutch	
Cause(s)	**Solution(s)**
Machine is being operated below correct PTO speed	Normally operate the machine at 1000 rpm PTO speed. Never operate over 1000 rpm. Too much speed can damage the machine.
Clutch adjustment is not correct	Adjust the main drive slip clutch.
Excessive load setting and/or feed rate for crop condition	Reduce the plunger load setting and/or the ground speed.
Foreign object is in the hay	Remove the foreign object.
Excessive gap between the plunger knives and the ledger knives	Adjust the plunger knives, side face angles and top adjustable plates.

Excessive noise in the IDL (Implement Driveline)	
Cause(s)	**Solution(s)**
Tractor drawbar is not correctly located for the PTO type	Correct the tractor drawbar. See to the tractor drawbar information.
Intermediate bearing in the driveline is not adjusted to the correct height	Put the intermediate bearing into the correct location.
Baler hitch is not correctly located for the PTO type	Set the baler hitch according to the dimensions for the PTO type.
IDL slip tube is dry	Lubricate the IDL slip tube.
Bent shields	Straighten or replace the bent unit.
Universal joints are worn	Replace the universal joints.
Damaged splines on the shaft or the universal joint	Replace the worn parts.
Loose intermediate bearing or bearing support	Check and tighten or replace loose, worn or broken parts.

Fig. 1

Double twine bow knot

Cause(s)	Solution(s)
Twine holder spring is set too loose	Tighten the twine holder spring adjustment bolt to shorten the tail on the knot.
Not enough travel of the stripper arm past the billhook	Adjust the stripper arm to get more travel past the billhook. Check the knotter cam gear for wear and repair or replace as necessary. Check for worn or damaged roller on the stripper arm.
Twine tension is not correct because of a broken spring on the top or the bottom slacker arm	Replace the broken spring.
Twine tension is not correct because of a bottom slacker arm not rotating freely on the shaft	Clean the bottom slacker arm and shaft. Check for obstructions.
Dull or damaged twine knife	Sharpen or replace twine knife.

Fig. 2

Twine ends are frayed

Cause(s)	Solution(s)
Dull or damaged twine knife	Sharpen or replace the twine knife.
Twine knife base is holding twines	Check the twine disc adjustment or position of the twine knife base.

5.13 Hydraulic troubleshooting

Solenoid valve is not working	
Cause(s)	**Solution(s)**
Solenoid valve cartridge is damaged or too tight	See your dealer.
Solenoid nut is too tight causing a malfunction in the cartridge	See your dealer.
Solenoid is not being energized	See your dealer.
Dirt or contamination is in the solenoid valve cartridge	See your dealer.
Broken line or hose for the solenoid valve.	See your dealer.

Load control is not working	
IMPORTANT: ***Disengage the tractor PTO. Stop the tractor immediately. Find and correct the problem before operating.***	
Cause(s)	**Solution(s)**
Strokes per flake counter is not flashing	Trip the stuffer manually to check the operation. Adjust the stuffer door if not working. See your dealer.
Bale density valve is not being energized correctly	See your dealer.
Solenoid wires are not connected correctly	See your dealer.
Solenoid valve coil nut is too tight causing a malfunction in cartridge	See your dealer.
Faulty solenoid valve	See your dealer.

Hydraulic oil is too hot	
Cause(s)	**Solution(s)**
Restriction in an oil line	See your dealer.
Relief valve pressure too low	See your dealer.

6.1.16 Roller bale chute specifications, if equipped

	2240	2240 packer/ cutter	2250	2250 packer/ cutter	2260	2270	2270XD	2290
Extended maximum length	1990 mm (78.3 in)							
Extended minimum length	1640 mm (64.6 in)							
Normal maximum operating length	1850 mm (72.8 in)							
Normal minimum operating length	1500 mm (59.1 in)							
Number of rollers	6							
Roller diameter	152 mm (6 in)							
Lift mechanism	Hydraulic power lift							
Bounce control	75 mm (3 in) brass friction disc							

6.1.17 Lamp specification

	2240	2240 packer/ cutter	2250	2250 packer/ cutter	2260	2270	2270XD	2290
Work lamps	3 number 862 halogen bulbs							
Service lamps	1 number 1156 halogen bulb, 1 number 1141 bulb, and 3 number 862 halogen bulbs							
Rear lamps	2 amber flashing and turn signal lamps, 2 red tail lamps							

6.1.18 Knotter lubrication pump specifications

	2240	2240 packer/ cutter	2250	2250 packer/ cutter	2260	2270	2270XD	2290
Power System	SBC (Square Baler Controller) system							
Enclosure rating	IP 6K9K - protected from water sprayed in all directions							
Maximum operating pressure	20 bars (290 psi)							
Knotter pump pressure relief valve	100 bars (1450 psi)							

7.1.4 AGCOMMAND™ telemetry kit

The telemetry kit can be installed on any machine with a C1000 terminal or ISO 11783 compatible controller.

The telemetry kit gives real time remote access to the information being generated by the machine. The telemetry unit also gives the physical location of the machine as long as the machine is in a GSM network compatible with the AGCOMMAND® system.

Fig. 3

7.1.5 Bale ejector

The bale ejector uses a hydraulic cylinder and teeth in the bale chamber to move a bale out of the bale chamber.

This accessory makes removing bales easy.

Fig. 4

7.1.6 Bale chute

The bale chute connects to the back of the machine to drop bales one at a time.

Fig. 5

8.1.2.2 Raising the handrails

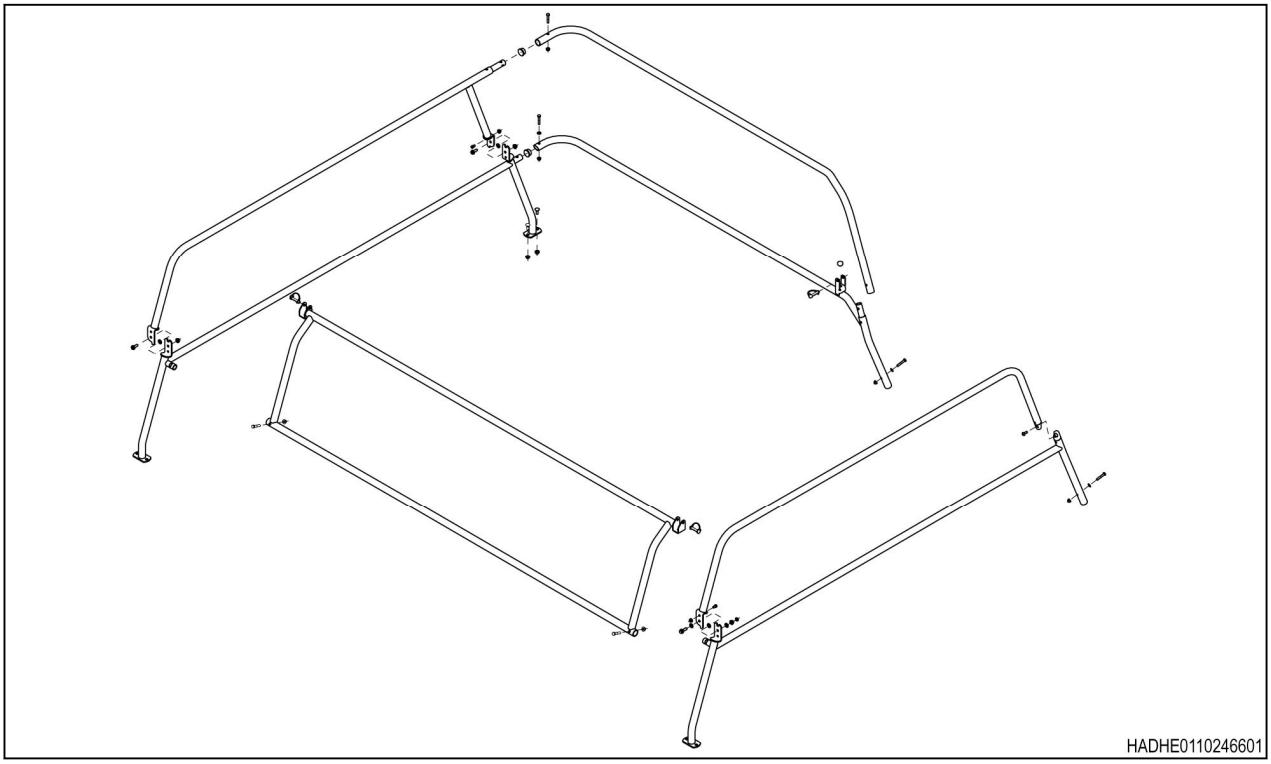


Fig. 2

The following instructions show how to install, or raise the handrails. Removing or lowering the handrails is the reverse of the installation or raising procedure. The illustration shows the locations of all of the parts of the handrails.

WARNING:
Be sure to have good footing and balance when loosening or tightening hardware on top of the machine.

WARNING:
While installing the handrails, be careful not to fall off of the top of the machine. Never work on the machine without first installing the handrails.

Procedure

1. Remove the lock pin (1) from the lock pin latch (2) at the left-hand rear of the machine.
2. Use the lock pin to secure the bottom end of the rear handrail.

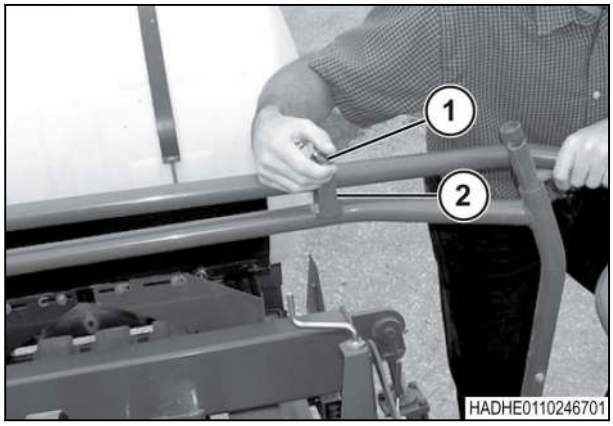
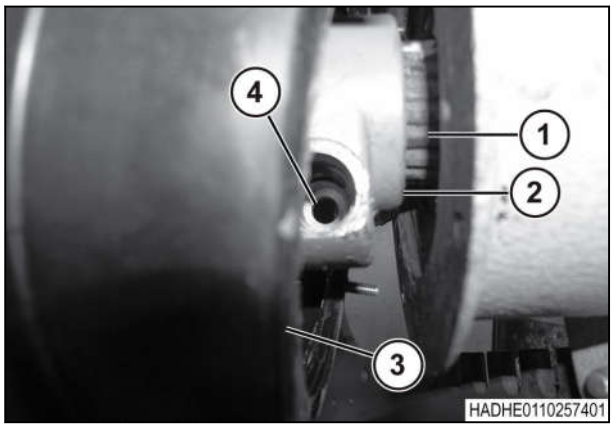


Fig. 3

7. Clean and lubricate the front end (1) of the intermediate shaft.
8. Do not over lubricate.
9. Do not lubricate the internal splines of the yoke (2).
10. Insert the yoke of the new driveline into the outer shield (3).
11. Align the hole (4) for the locking pin (5) with the half-round slot in the spline end of the intermediate shaft.



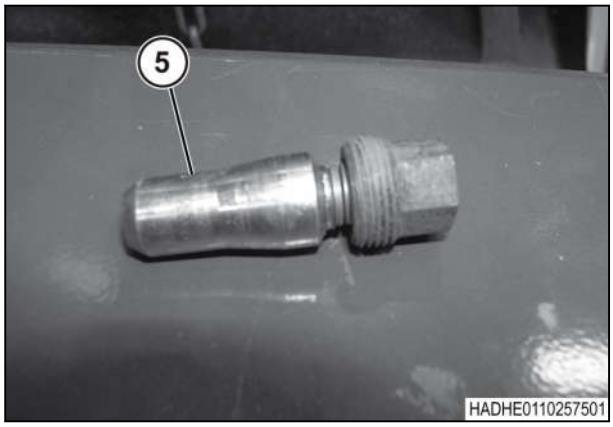


Fig. 34

12. Tighten the locking pin to 100 Nm (75 lbf ft).
13. Install the outer shield and fasten the latches.
14. Check the yoke after the first eight to ten hours of operation. Tighten if necessary.
15. Do not over lubricate.
16. Tighten the locking pin correctly each time after lubricating the splines.

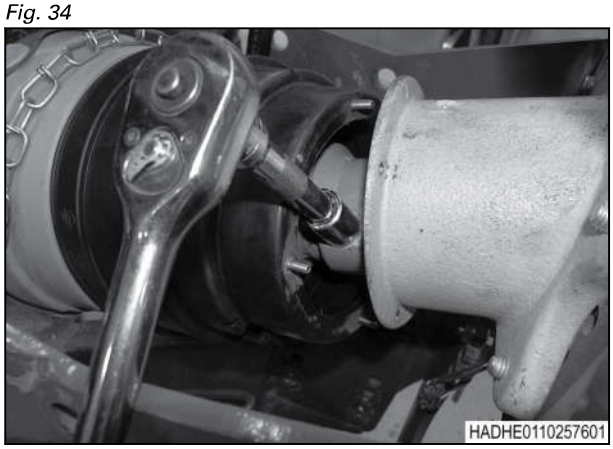


Fig. 35

17. Lubricate the splines (1) of the power take-off (PTO) shaft on the tractor with oil or grease. This will help prevent the wear of the splines.
18. Lubricate the splines every 250 hours, each time after removing and installing the CV driveline, and every 5000 bales.

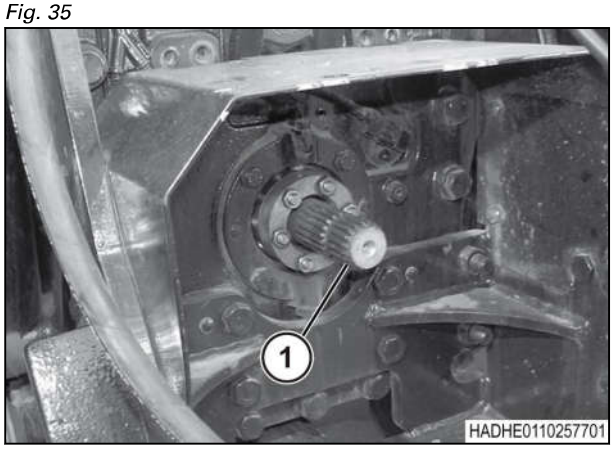


Fig. 36

C

D

E