Operator's Manual

Large Square Baler

CE

2290
2270XD
2270
2260
2250
2240

North America
4205 River Green Parkway, Duluth GA 30096 USA

Original Operator's Manual

May 2017
700746229E
EAME
English

1.2.6 Exhaust warning

Never operate the engine in a closed building unless the exhaust is vented outside.

Do not tamper with or modify the exhaust system with unapproved extensions.

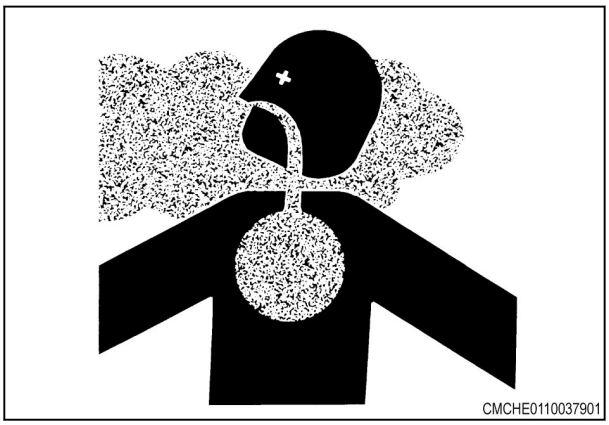


Fig. 11

1.2.7 Flying debris

WARNING:
Be careful when operating along the side of a road or building. Rocks or other debris can be thrown from the machine during operation possibly resulting in injury.

Never stand near the machine during operation. Debris can be thrown from the machine during operation possibly resulting in injury.

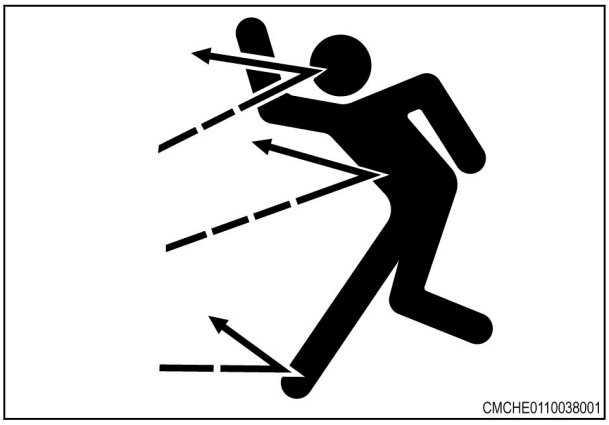


Fig. 12

1.2.8 Handrails

Face the ladder and use the handrails when getting on or off the machine.

Fig. 13

1.2.9 Agricultural chemicals

Agricultural chemicals can be very hazardous. Improper use of fertilizer, fungicides, herbicides, insecticides and pesticides can injure people, plants, animals, soil and other people's property.

Always read and follow all manufacturers' instructions before opening any chemical container.

Safety sign (1)

Hazard (A) - Entanglement hazard. Rotating shaft/ PTO driveline.

Avoidance (B) - Do not reach into areas of moving parts.

Hazard (A) - General safety alert

Avoidance (B) - Read the Operator Manual for safety information and operating instructions before operating the machine.

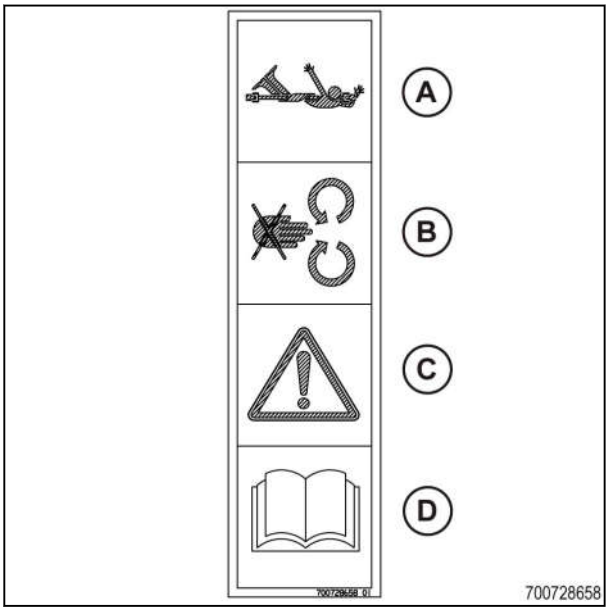


Fig. 30

Amber reflector (2)

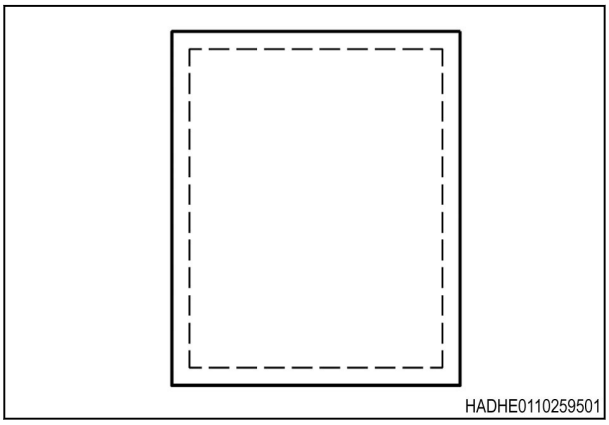


Fig. 31

Safety sign (3)

Hazard (A) - Crushing hazard - risk of personal injury to feet.

Avoidance (B) - Keep a safe distance.

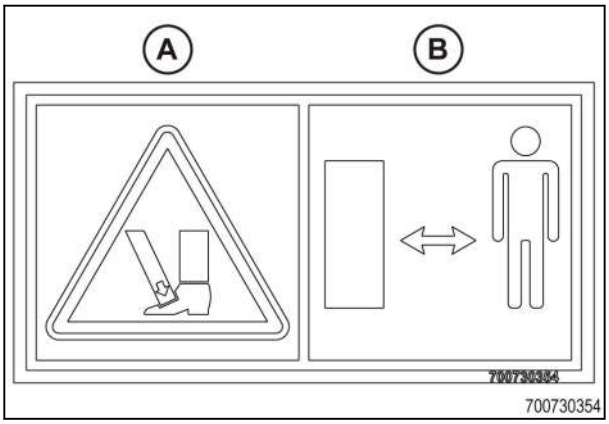


Fig. 32

Danger - safety sign (5)

Stuffer arm can move without putting hay in the baler. Shut off PTO and tractor engine.

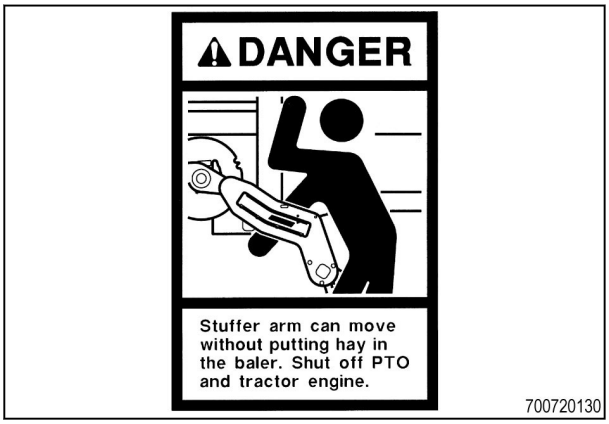


Fig. 65

Rear

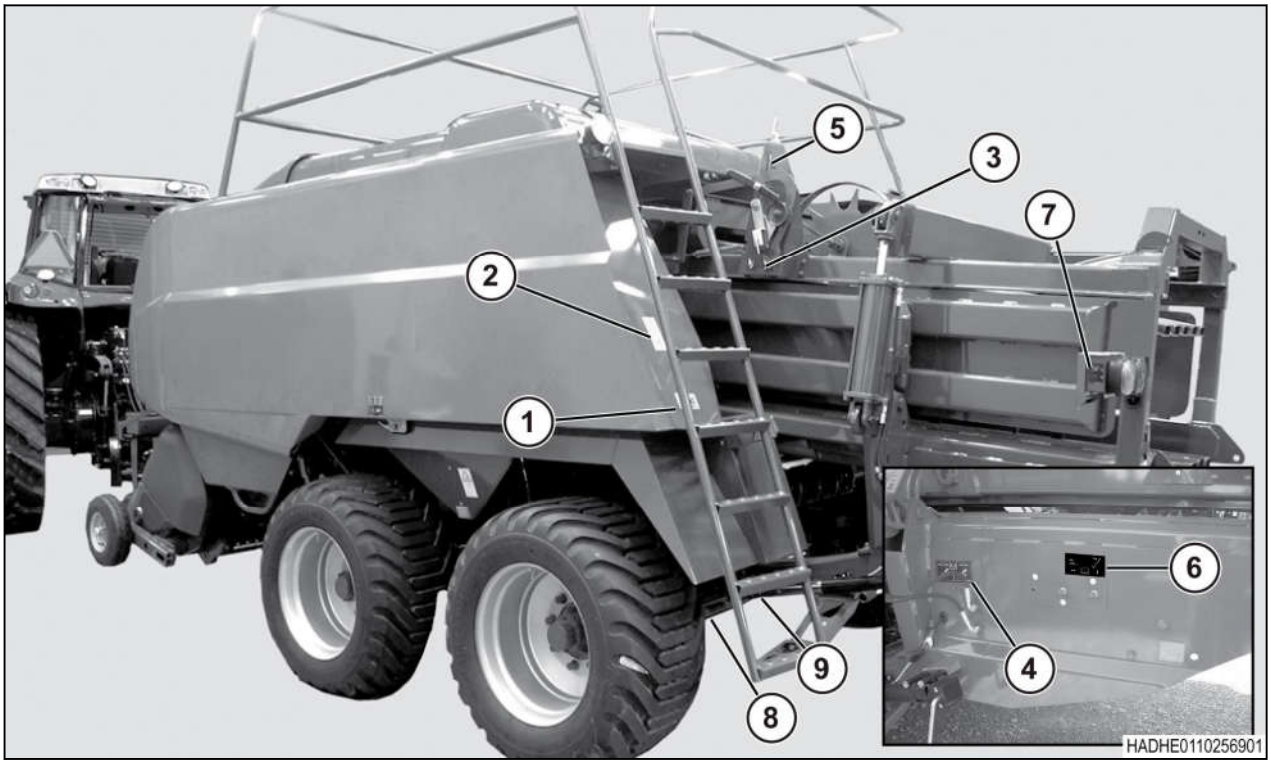


Fig. 66

Safety sign (1)

Hazard (A) - Falling hazard.

Avoidance (B) - No riders - Do not allow anyone to ride on any part of the machine or attached equipment.

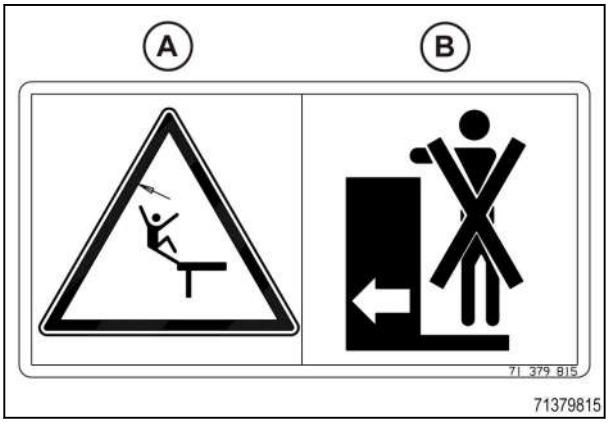


Fig. 67

2.1 Introduction

The operating and maintenance instructions in this manual are assembled from field testing and other data. The information is written for general conditions. Make adjustments as necessary for specific conditions.

2.1.1 Units of measurement

Measurements are given in metric units followed by the equivalent in US units. Hardware sizes are given in millimeters for metric hardware and inches for US hardware.

2.1.2 Replacement parts

To receive prompt efficient service, remember to have the following information:

Correct part description and part number
Model number of the machine
Serial number of the machine

2.1.3 Intended use

This machine is designed solely for use in customary agricultural operations.

Do not use this machine for any application or purpose other than those described in this manual. The manufacturer accepts no liability for damage or injury resulting from misuse of this machine.

Compliance with the conditions of operation, service and repair as specified by the manufacturer constitute essential elements for the intended use of this machine.

This machine should be operated, serviced and repaired only by qualified persons familiar with its characteristics and familiar with the relevant safety rules and procedures.

All generally recognized safety regulations and road traffic regulations must be obeyed at all times.

Any unauthorized modifications performed on this machine will relieve the manufacturer of all liability for any resulting damage or injury.

2.1.4 Proper disposal of waste

Improper disposal of waste can pollute the environment and ecology. A few examples of potentially harmful equipment waste can include, but not limited to, items such as oil, fuel, coolant, brake fluid, filters, battery chemicals, tires, etc.

Use leak proof containers when draining fluids. Do not use food or beverage containers to collect waste fluids, as food or beverage container(s) may mislead someone into drinking from them.

Do not pour or spill waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire with local environmental or recycling center on the proper way to recycle or dispose waste.

The billhook closes to hold the twines and the twine knife moves forward, cutting both twines. The billhook holds the cut ends of the twines (1) as the loop is removed from the billhook by the stripper arm (2) forming the knot. This finishes the first knot of the tying cycle which ties off the bale. The needle continues to move down to the home position while the knotter starts the second knot.

The twine finger moves forward, away from the twine. When the needle retracts past the tucker arm (3), the tucker arm moves down to put the top twine in the route of the twine finger.

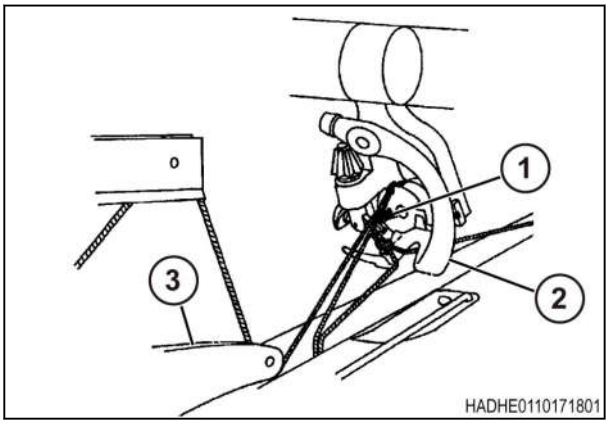


Fig. 14

The twine finger (1) moves in for the second time, picking up the two twines being held by the twine disc (2). The twine finger moves the two twines into the route of the billhook (3) for the next billhook rotation.

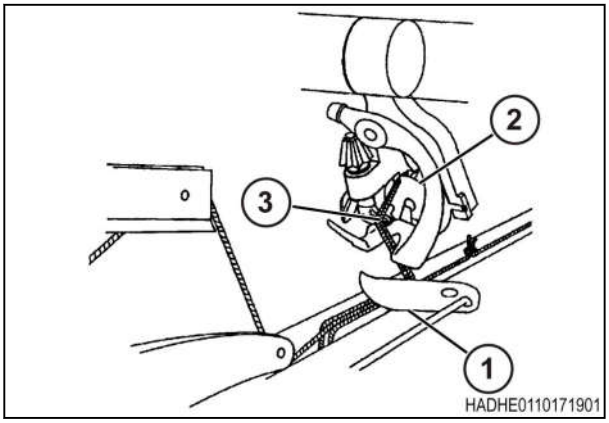


Fig. 15

The twine disc, (1) which is holding the loose ends of both twines, starts to rotate down. The billhook (2) starts turning for the second rotation, picking up the two twines.

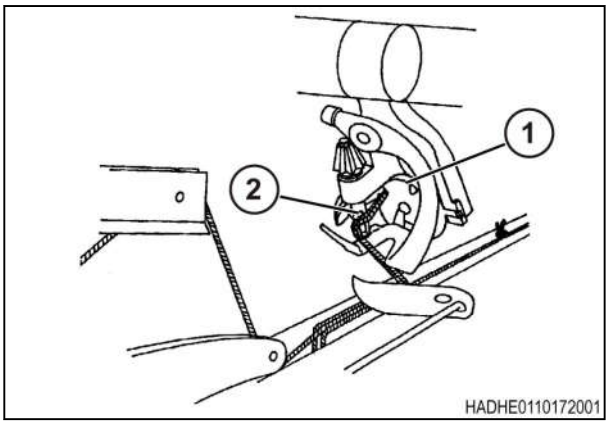


Fig. 16

The peeling bark test is one of the best methods to determine alfalfa stem moisture. Take a stem from the bottom of the swath or windrow and peel off the stem bark. If any bark can be peeled from the alfalfa stem, even if the stem breaks, there is some moisture present.

NOTE: *The moisture content of crop with dew moisture is difficult to determine. A moisture probe will not always give accurate stem moisture readings for crop that is wet with dew.*

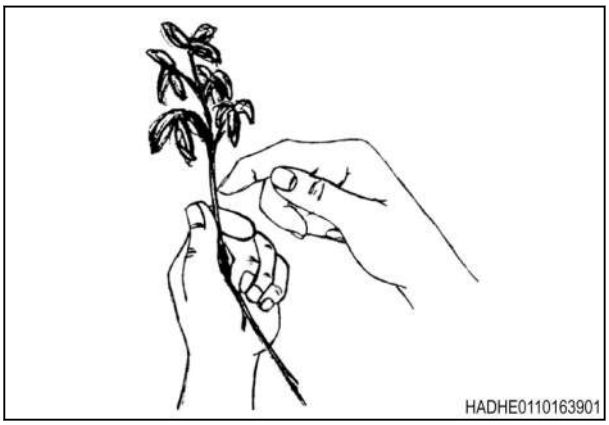


Fig. 1

3.2.3 High quality hay baling

The leaves contain most of the protein and carotene. The stems contain most of the fiber. Leaf damage must be kept to a minimum during harvesting and baling.

Baling high quality hay requires knowing the moisture content in the bale. Pressure readings shown on the terminal can help determine the moisture content of the bale.

- As moisture content increases, the pressure readings will decrease.
- As moisture content decreases, the pressure readings will increase.

Over several plunger strokes the pressure readings can vary several hundred points. These changes indicate crop moisture content.

Bale density cylinder hydraulic pressure is the force acting on the bale chamber tension cylinders. The correct bale chamber tension will be held automatically once the plunger load has been set. The plunger load must stay constant to make high quality bales all the time.

The pressure applied to the bale chamber tension cylinders is automatically changed as the friction changes between the bale chamber tension doors and the bale. That pressure keeps the plunger load constant. The type of crop, type of moisture (dew or stem), and the total moisture content of the crop determine the friction between the bale chamber tension doors and the bale.

To determine the minimum moisture content check both ends of the bale when the pressure readings get near to the maximum desired reading. Leaf damage on the back end of the bale indicates a crop that is too dry to make high quality hay. Baling must stop until dew forms on the crop. Some leaf damage on the plunger end of the bale is normally permitted in high quality hay.

3.2.4 Dry hay bale storage

High quality hay will keep best when the bales are stored inside. Put the bales in stacks at a well prepared and drained storage area.

When bales cannot be stored inside and the local area receives only small to medium amounts of rain, high density large bales can be stored outside. The stacks can be four to five bales high. Use a plastic cover around each bale.

If the crop was baled too wet, locate each column or row of bales 152 mm (6.0 in) or more away from the next column or row.

3.2.5 High moisture silage bales

With careful crop preparation from cutting to bale storage, high moisture hay can make high quality silage. Silage can be made from most common hay crops such as grasses, alfalfa, and clovers. Baling these hay crops with high moisture content permits natural fermentation to make a more digestible forage.

Procedure

1. Move the tractor as required to align the tractor draw bar (1) with the machine hitch.
2. Put the tractor in park.
3. Apply the tractor park brake.
4. Stop the tractor engine.
5. Take the key with you.
6. Put the hitch pin (2) through the ring hitch (3).
7. Raise the jack all the way up.
8. Put the jack handle in the holder.
9. Adjust the intermediate bearing support for the hitch position.

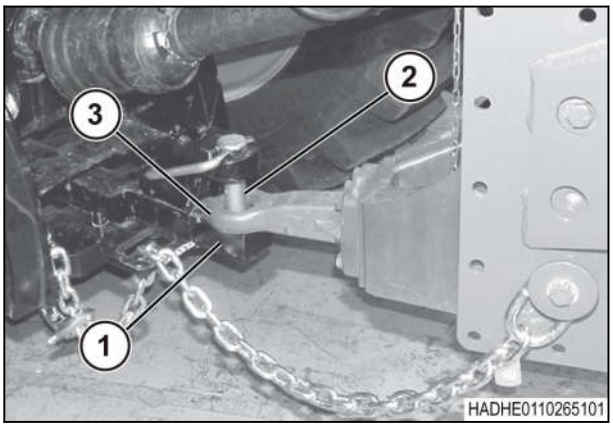


Fig. 17

3.4.9 Connecting an 80 mm (3.15 in) ball hitch to the tractor

Before starting the procedure

See the specifications for the tractor and the machine.

Procedure

1. Move the tractor as required to align the tractor ball mount with the machine ball socket hitch (1).
2. Put the tractor in park.
3. Apply the tractor park brake.
4. Stop the tractor engine.
5. Take the key with you.
6. Install the ball socket hitch on the 80 mm (3.15 in) ball mount.
7. Raise the jack all the way up.
8. Put the jack handle in the holder.
9. Adjust the intermediate bearing support for the hitch position.

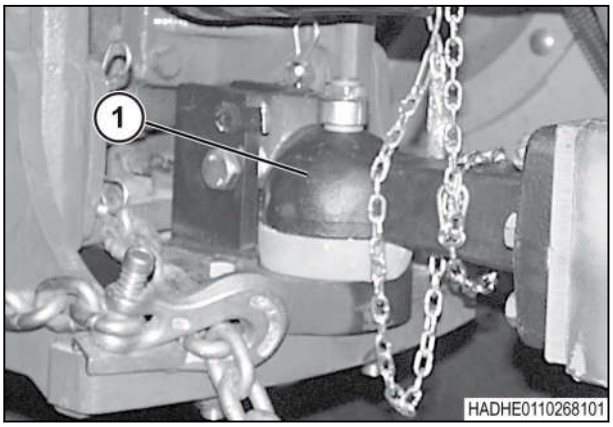


Fig. 18

3.4.10 Connecting a 40 mm (1.6 in) high ring hitch to the tractor

Before starting the procedure

See the specifications for the tractor and the machine.

3.5.5 Connecting the machine hydraulic brake hoses to the tractor

Procedure

1. Remove the brake line (1) from the storage position.
2. Connect the brake line to the trailer brake coupler at the rear of the tractor.

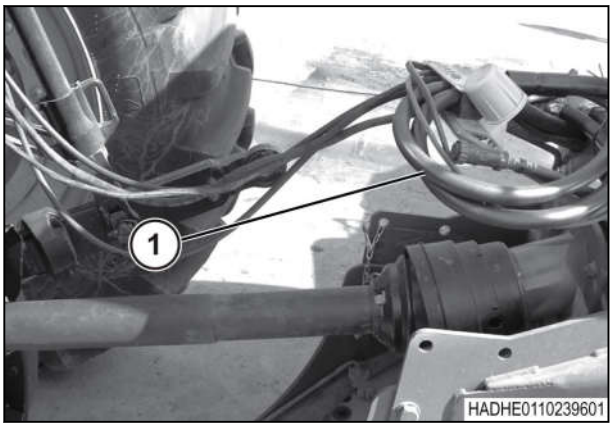


Fig. 38

3.5.6 Connecting the machine air brake hoses to the tractor

Procedure

1. Remove the two brake hoses from the storage brackets.
2. Connect the supply hose (1) with the red dust shield to the red trailer brake coupler.
3. Connect the signal hose (2) with the yellow dust shield to the yellow trailer brake coupler.
4. Make sure the tractor air brake system has operating pressure before moving the machine.

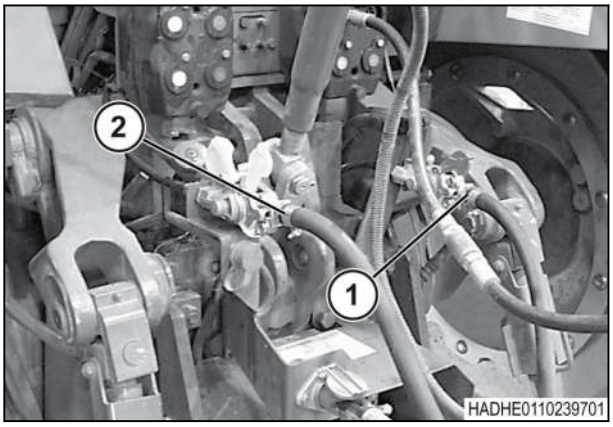
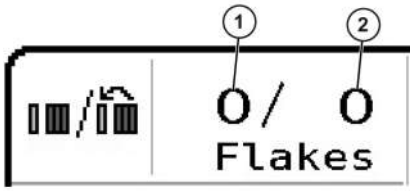


Fig. 39

Icon	Function
	Opens the service screen
	Increases the pressure in the bale density circuit
	Decreases the pressure in the bale density circuit
	Releases the hydraulic pressure in the bale density circuit and opens the chamber doors. This icon only displays in manual pressure release mode.
	Starts a knotter cycle
	Stops releasing pressure in the bale density circuit
	Permits manual control of the accumulator
	Permits automatic control of the accumulator

Information box	Description
 TGDHE0110157501	Flake thickness box. This box indicates the thickness of the current flake. This box will only work on machines that have a length kit.
 TGDHE0110157601	Average flake thickness. This box will only work on machines that have a length kit. This box indicates a continuous average for the thickness of the flakes that the machine is making.
 TGDHE0110157702	Current flakes per bale and previous bale flakes per bale. This box indicates a running total of the flakes in the current bale (1) and the total number of flakes in the previous bale (2).
 TGDHE0110157801	Approximate number of flakes per bale. This box will only work on machines that have a length kit. This box displays a continuous estimate of the total number of flakes that will be in a bale.

Chain lubrication icon

 will illuminate when the chain lubrication pump is operating.

Tandem lock icons, if equipped

 indicates that the tandem axle is locked.

 indicates that the tandem axle is unlocked.

IMPORTANT: *The tandem axles must be locked when roading the machine and when moving the machine rearward.*

Early model cutter icons, if equipped

The following icons indicate the condition of the cutter.

 indicates that the cutterbed is up and the knives are engaged.

 indicates that the cutterbed is up and the knives are not engaged.

 indicates that the cutter knives are between the engaged and disengaged position. Stop the machine and make sure that the cutterbed is latched.

 indicates that the cutterbed is down and not latched. Do not move or operate the machine in this condition or damage can occur to the machine.

Late model cutter icons, if equipped

The following icons indicate the condition of the cutter.

 indicates that the left bank is up and the knife pressure is set.

 indicates that the right bank is up and the knife pressure is set.

 indicates that the both banks are up and the knife pressure is set.

 indicates that the cutter knives are not up. This will also indicate that the cutterbed is completely up.

 indicates that the cutterbed is not completely up.

Voltage alarm icon

 will illuminate and there will be an audible alarm if the machine power is below 11 volts or more than 16 volts.

For more information see the indicator icons section.

Ejector icon

 will illuminate when the ejector solenoid is enabled. The ejector solenoid must be enabled to operate the ejector or to raise and lower the bale chute.

 will illuminate in the location of the bale drop icon.

3. Enter the desired value.

4. Select to return to the main work screen.

   NOTE: *See the terminal operator manual for specific instructions.*

3.7.12.6 Manual knotter lubrication start

Select

to start a lubrication cycle.

The number on the icon indicates the number of seconds that the knotter pump will be on.

3.7.12.7 Manual knotter lubrication stop

Select

to stop the lubrication cycle.

3.7.12.8 Setting the moisture alarm, if equipped

If equipped with the moisture system, set the moisture alarm on the terminal. If the moisture of the hay is above this value, the terminal will tell the operator.

Procedure

1. Select to go to the machine settings screen.
2. Select the moisture alarm setting (1).
3. Enter the desired value.
4. Select to return to the main work screen.

Fig. 75

3.7.12.9 Changing the bale length

If equipped with electronic knotter trip, the bale length is set on the terminal.

Make sure the crop type is correct. See the information for changing the crop type.

7. Enter the total number of tied bales in the bale chamber in the box (1).

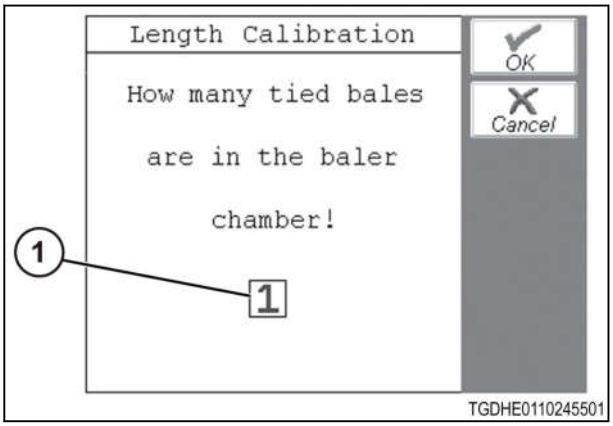


Fig. 94

8. Measure the length of the last bale that dropped off.
9. Enter the bale length in the box (1).

   ” will display on the right-hand side of the box (2) if the terminal is set up for U.S. units.

   CM will display on the right-hand side of the box if the terminal is set up for metric units.

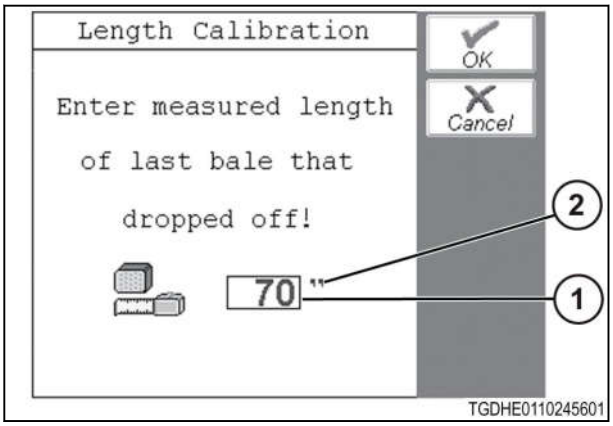


Fig. 95

10. Select OK when the value is correct.
11. Select .
12. Select to return to the main work screen.

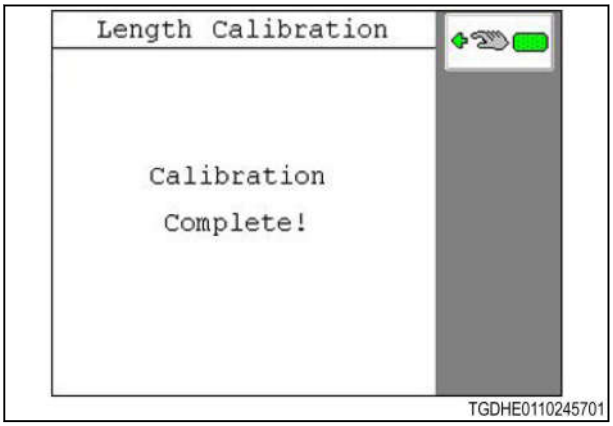


Fig. 96

3.7.18 Calibrating the roller bale chute scale with an object of a known weight

The following procedure calibrates an on board scale by using an object of a known weight.

The procedure is not as accurate as using a test bale to calibrate the scale.

This procedure will calibrate the scale more quickly than using a test bale.

For a more accurate weight, calibrate the scale using a test bale.

Procedure

1. Select the icons in the following order:

Icon	Function
+	Adds one bale to the bale count on all records that are operating. If the machine has a cutter, the cutter condition determines if bales are removed from cut bales or uncut bales.
−	Removes one bale to the bale count on all records that are operating. If the machine has a cutter, the cutter condition determines if bales are removed from cut bales or uncut bales.
Σ	Returns to the work records screen

3.7.21.6 Changing the current year

1. Select the year name box (1).
2. Scroll through the year names and select the desired year name.

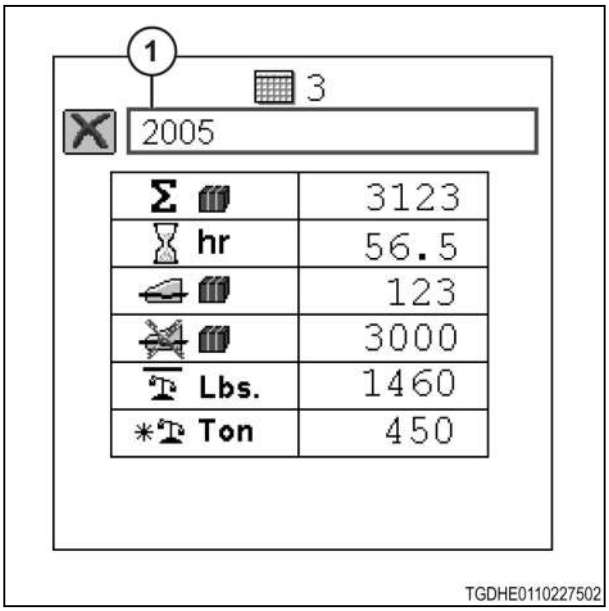


Fig. 113

3.7.21.7 Clearing a record

Procedure

1. Select Σ.
2. Select one of the following:
   - to go to the job records screen.
   - to go to the customer records screen.
   - to go to the year records screen.
3. Select the record to clear.

Alarm number	Display	Description	Priority	Audible alarm
302	Needles position unknown	The needle home switch is open at turn on. See your dealer.		Moderate
303	Lower knotter fault 1	The knotter slacker lower alarm switch is closed when the needle home switch changes from closed to open. If the knotter slacker lower alarm switch is closed at the start of the knotter cycle, this alarm will be shown. Twine wound around the billhooks from some previous miss ties normally causes this alarm. **IMPORTANT:** *If the twine wraps around the billhook, stop the machine and remove the twine from the knotter parts. Damage to the knotter parts can occur if the twine wraps around the billhook for multiple knotter cycles.*		Moderate
304	Lower knotter fault 2	There is too much time from when the needle home switch opens to when the knotter slacker lower alarm switch closes. The needle missing the top twine on the up stroke and/or the twine winding around the billhook normally causes a lower knotter alarm. The twine will be wound around two bales if the top twine is missing to the left of the needle. The knotter will normally tie correctly during the next knotter cycle. If the twine is missing to the right of the needle, the twine will normally wind around the billhook. **IMPORTANT:** *If the twine wraps around the billhook, stop the machine and remove the twine from the knotter parts. Damage to the knotter parts can occur if the twine wraps around the billhook for multiple knotter cycles.*		Moderate

3.10 Changing the bale length

NOTE: *If equipped with electronic knotter trip, the bale length is set on the terminal. See the information for the baler settings screen.*

1. Loosen the adjustment handle (1).

2. Turn the bale length crank (2).
- ° Clockwise to make the bale shorter
- ° Counterclockwise to make the bale longer

Use the decal (3) near the slot as a reference for the bale length setting.

3. Tighten the adjustment handle.

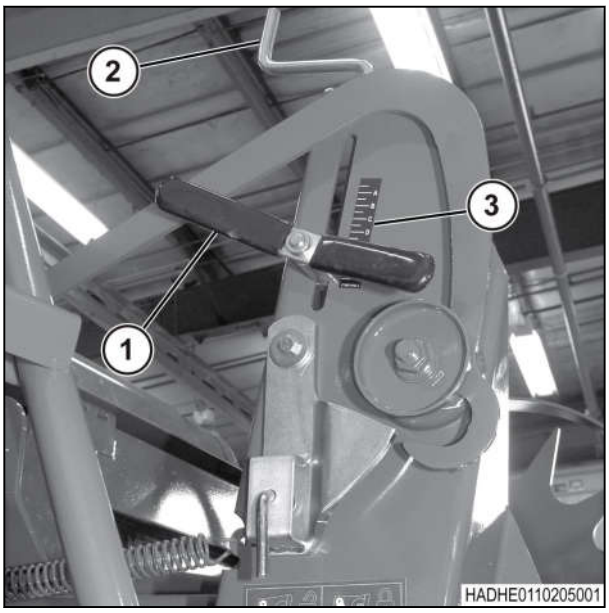
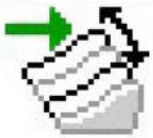


Fig. 124

2. Select the desired cutter knife setting from the drop-down menu.

Icon	Description
	Left knife bank. The knife farthest left and every other knife will rise.
	Right knife bank. The knife farthest right and every other knife will rise.
	Both knife banks. All the knives will rise.

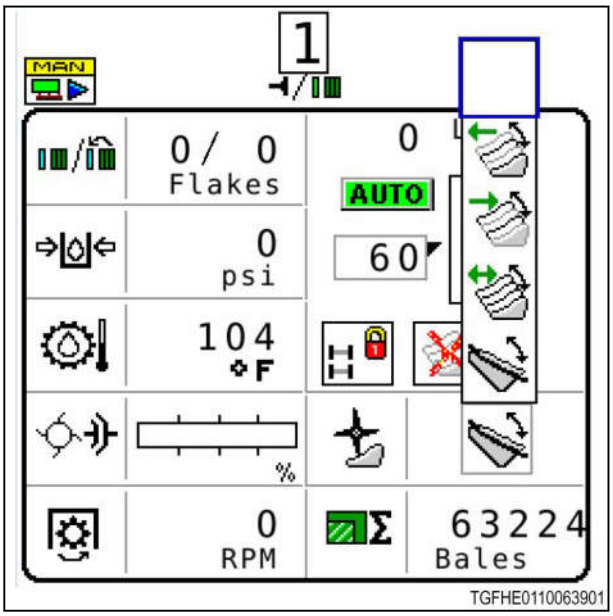


Fig. 143

3. Select and hold . The icon will turn red. Use the tractor hydraulics to raise the knives.

Result

When the knives are completely up, the selected cutter knife setting will display in the plunger load box.

4. Release . The icon will remain red until the knives are completely down.

IMPORTANT: *Do not operate the machine while the icon is red. Operating the machine while the icon is red can result in damage to the machine.*

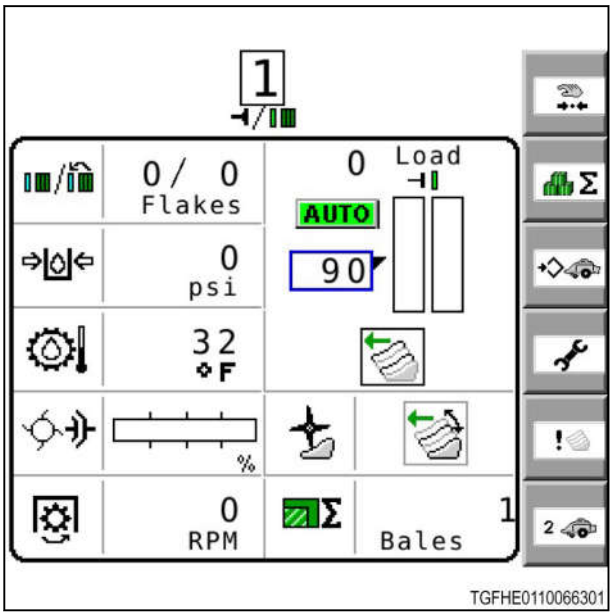


Fig. 144

3.17 Preparing to road the machine or to move the machine on a trailer

WARNING:
To prevent personal injury the safety transport chain must be securely connected to the baler and tractor at all times. Use the lighting system supplied when transporting the baler. Follow all local road regulations when transporting the baler.

WARNING:
Always raise the bale chute before:

- **Taking the machine across a road.**
- **Roading the machine.**
- **Moving the machine on a trailer.**

Procedure

1. Raise the bale chute.
2. Check the connection of the tractor to the machine before roading the machine.
3. Check for correct safety transport chain (1) installation.
4. Use the tractor remote circuit to raise the pickup completely.
5. Stop the tractor engine. Apply the park brake. Take the key with you.

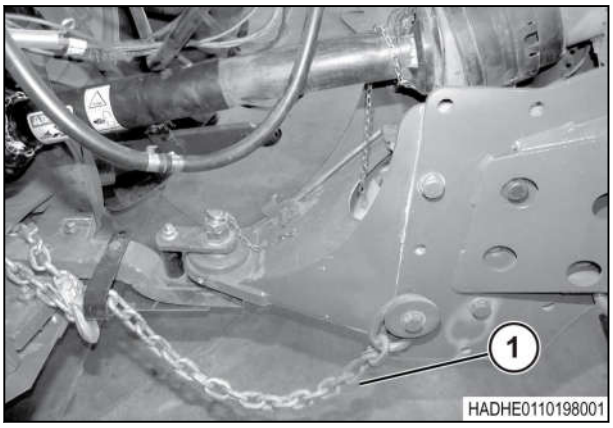


Fig. 160

6. Remove the clevis pin (1) from the collar (2).
7. Move the collar to the rear. Make sure a hole in the collar aligns with the rear hole in the height adjustment rod (3).
8. Install and lock the clevis pin through the collar and the height adjustment rod.

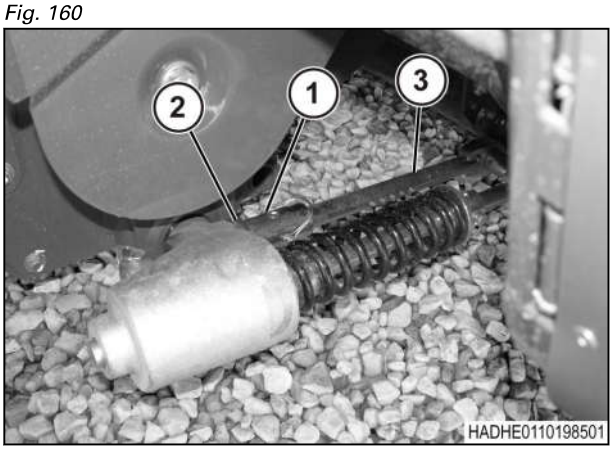


Fig. 161

3.19.4.1 Needle twine tensioners

The large arrow (A) points to the front of the machine.

Twine guides (1) must be in the right-hand hole for needles on the left-hand side of the machine.

Twine guides must be in the left-hand hole for needles on the right-hand side of the machine.

Twine guides keep the twine in the center of the twine tensioner rollers (2).

This illustration shows a guide in the right-hand hole of the tensioner (3) used with needles on the left-hand side.

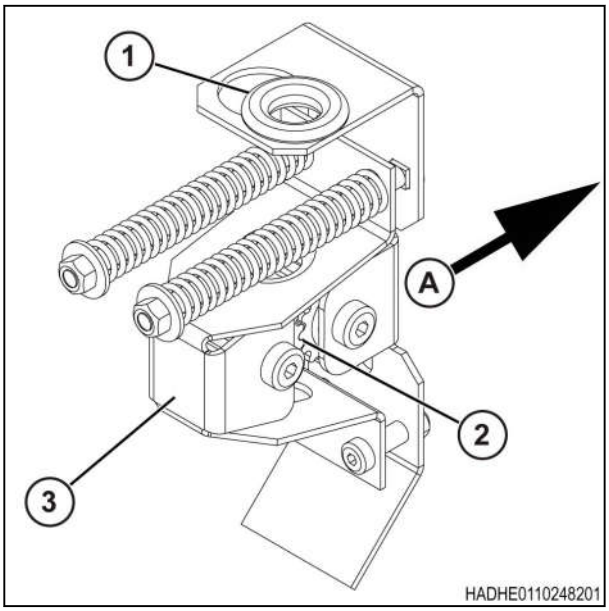


Fig. 177

3.19.5 Threading the needle twines into the needle twine area

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.

This illustration shows the needle twine guides on the right-hand support strut.

Procedure

1. Pull twine number three through the top guide (1) and toward needle three.
2. Pull twine number four through the middle guide (2) and toward needle four.
3. Pull the twines for the needles on the left-hand side in a similar way.

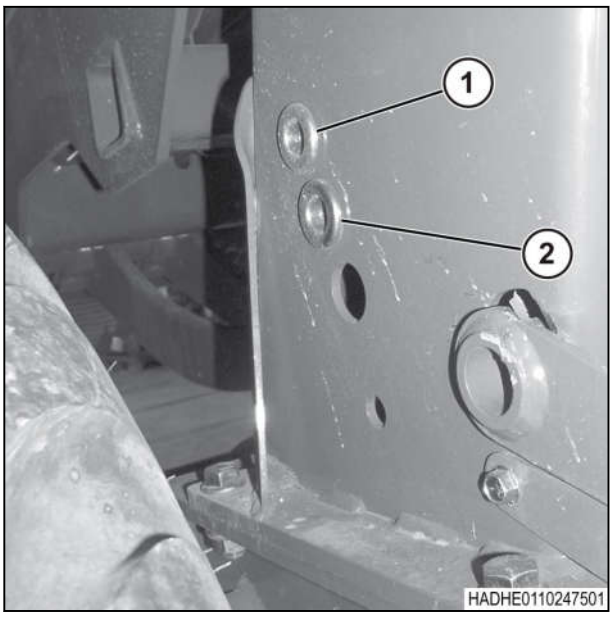


Fig. 178

Procedure

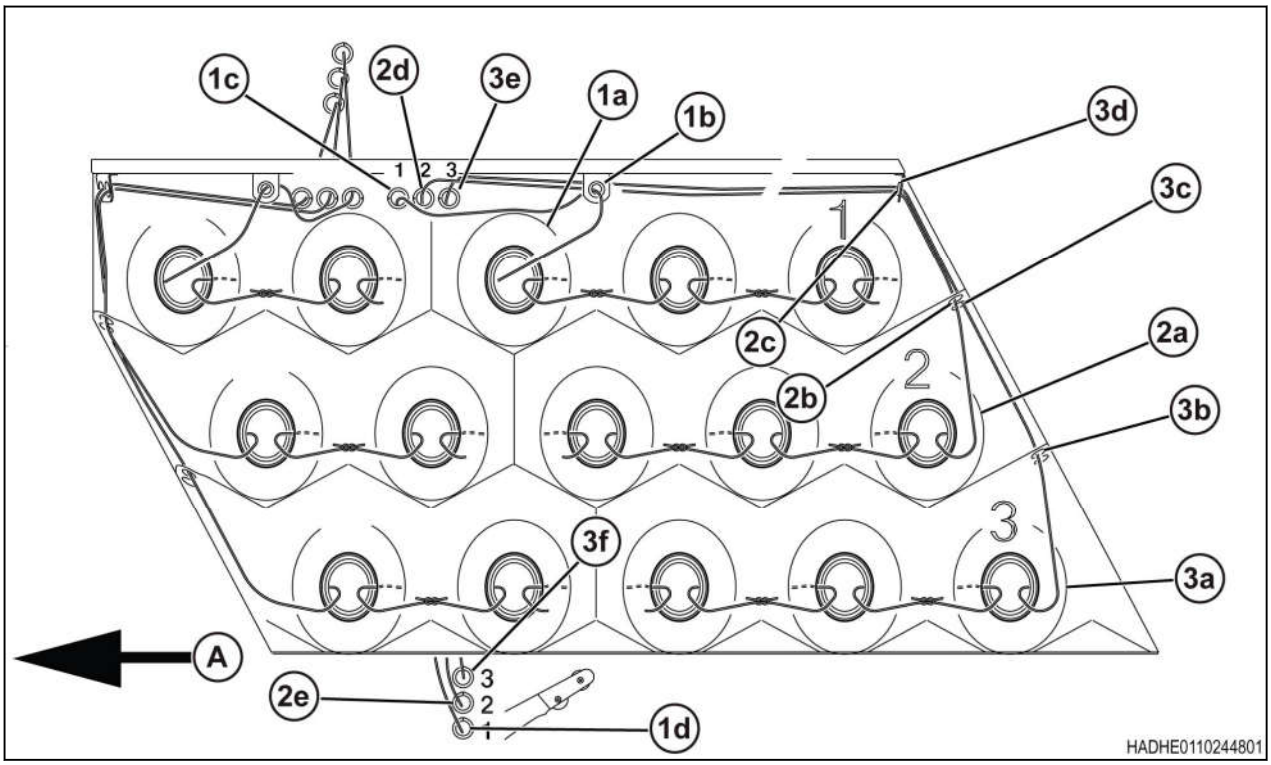


Fig. 193

1. Pull the twine from the top front 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 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 down behind the left-hand twine box.
6. Put twine number one through the guide (1d) below the left-hand twine box.
7. Pull the twine from the middle rear twine ball (2a) for needle 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 down behind the left-hand twine box.
13. Put twine number two through the guide (2e) below the left-hand twine box.
14. Pull the twine from the bottom rear twine ball (3a) for needle 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 rear 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 down behind the left-hand twine box.
21. Put twine number three through the guide (3f) below the left-hand twine box.

4. Pull twine number one through the top twine tensioner (1).
5. Pull twine number two through the middle twine tensioner (2).
6. Pull twine number three through the bottom twine tensioner(3).

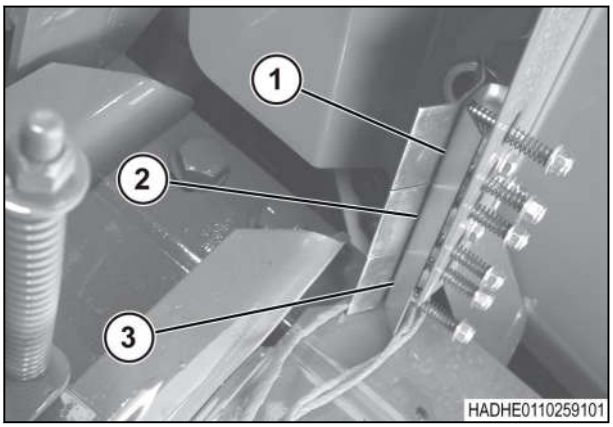


Fig. 206

7. Pull twine number four through the bottom guide (1) on the right-hand side.
8. Pull twine number five through the middle guide (2).
9. Pull twine number six through the top guide (3).

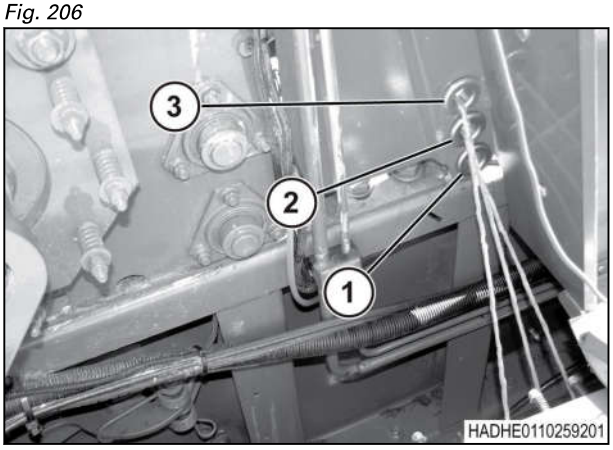


Fig. 207

10. Pull twine number four through the bottom twine tensioner (1).
11. Pull twine number five through the middle twine tensioner(2).
12. Pull twine number six through the top twine tensioner(3).

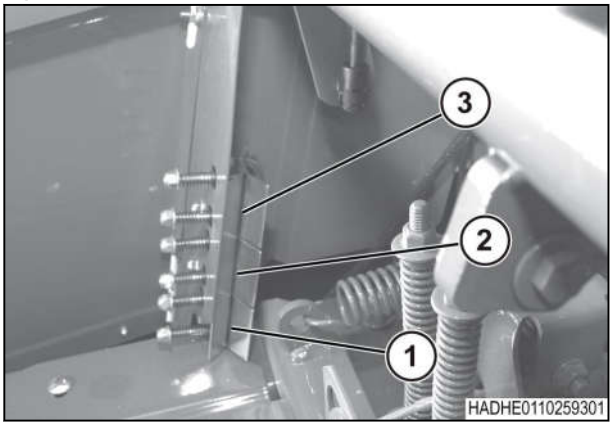


Fig. 208

3.20.12 Threading the twines through the knotters

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.
- Put the upper twine tensioner twine guides in the right-hand hole for knotters one, two, and three.
- Put the upper twine tensioner twine guides in the left-hand hole for knotters four, five, and six.

The large arrow (A) points to the front.

4. Maintenance

4.2.8 Hydraulic system general information

Keep the hydraulic system clean. Contamination can cause the control valve assembly to malfunction.

4.2.9 Jack points

Jack point decals (1) show where to put a jack.

Use a jack with enough capacity for the weight of the machine.

Apply the park brakes and block the other wheels before using a jack.

Fig. 5

4.3.17 Lubricating the knotter/needle clutch

Procedure

Lubricate the knotter/needle clutch arm (1) on the left-hand side every 100 hours or 2000 bales.

Failure to lubricate the knotter/needle clutch arm can cause the knotter/needle clutch drive to disengage before the tying cycle is complete. This can cause damage to the needles, needle carriage, needle protection linkage, and other knotter parts.

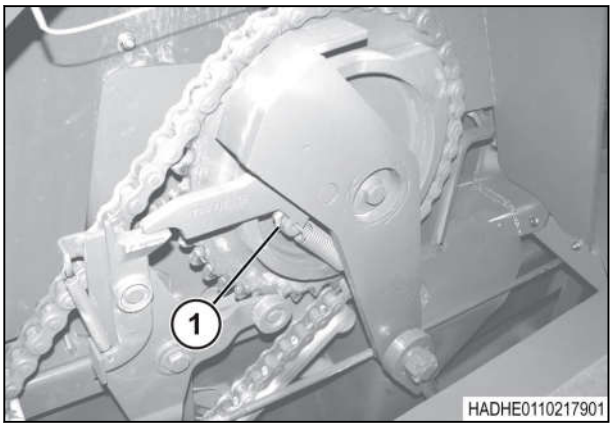
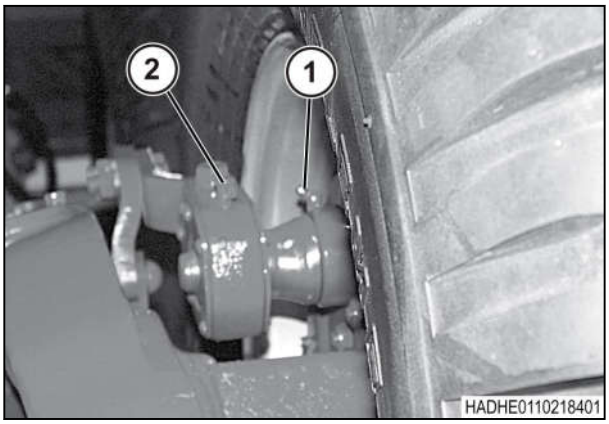


Fig. 27

4.3.18 Lubricating the brake linkage

1. Lubricate the cam shaft support (1) on each wheel every four weeks.
2. Lubricate the brake lever (2) on each wheel every ten weeks.



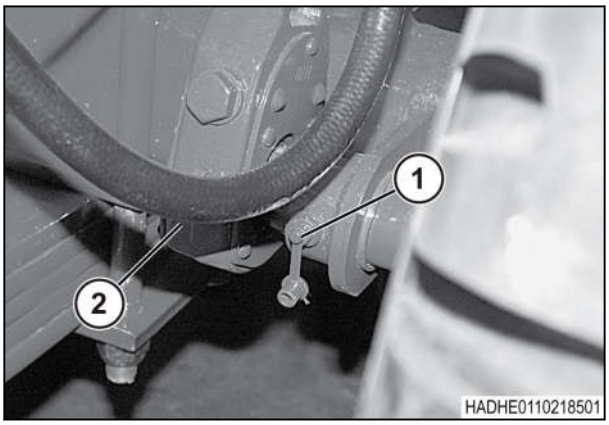


Fig. 28

4.7 Shearbolts

4.7.1 Replacing the flywheel shearbolt

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).

The flywheel shearbolt protects the gearbox, plunger, and other parts from damage caused by overloads.

When the flywheel shearbolt breaks, the implement driveline continues to run but the flywheel stops.

Replacement flywheel shearbolts are in the tool box on the baler.

Do not use standard shearbolts. Get the correct flywheel shearbolts from your dealer. Using a higher strength bolt than specified can result in damage to the machine.

See the machine specifications for shearbolt sizes and torques.

Procedure

1. Park the machine on a solid level surface.
2. Disengage the tractor power take-off (PTO). Shift the transmission into park. Apply the tractor park brake. Stop the engine, apply the park brake, and take the key with you.
3. Apply the flywheel brake.
4. Apply the baler park brake, if equipped.
5. Determine what caused the flywheel shearbolt to break. Make repairs.
6. Open the flywheel shield.
7. Align the shearbolt bushing in the flywheel (1) with the hole in the shear hub (2).
8. Install a new flywheel shearbolt (3) so the nut is on the front of the flywheel.

   If necessary, use the new flywheel shearbolt to push out a broken flywheel shearbolt.

   NOTE: *The flywheel shearbolt can be difficult to install through the hub, because of the spring loaded ball assembly (4) in the hub.*

   IMPORTANT:
   The end of the shear hub has a spring loaded ball and set screw.
   Do not turn the factory adjusted set screw to remove a broken flywheel shearbolt.
   The spring loaded ball and set screw keep a broken flywheel shearbolt from coming loose and damaging the flywheel shield.

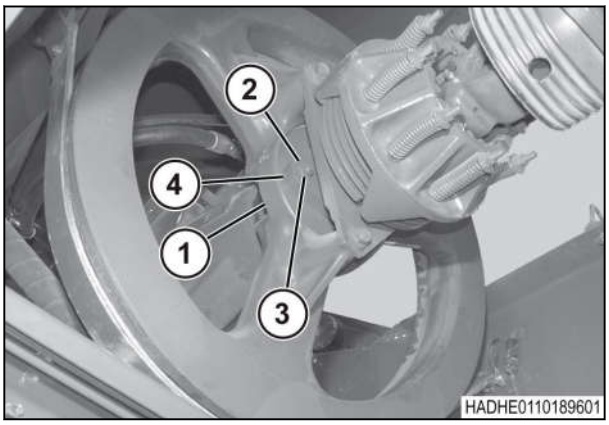


Fig. 48

9. Tighten the flywheel shearbolt. See the machine specifications for the correct torque specifications. Do not tighten too much.
10. Close and latch the flywheel shield.

Related Links

Shearbolt specifications page 371

4. Loosen the six bolts (1) that fasten the compression plate (2) to the clutch housing (3).
5. On one bolt, hold the washers (4) with a magnet and remove the bolt.
6. Move one washer.
   - To decrease the gap, move one washer from the gap to under the head of the bolt.
   - To increase the gap, move one washer from under the head of the bolt to the gap.
7. Install the bolt the with the washers in the new order.
8. Repeat the procedure for the remaining five bolts.
9. Tighten the bolts alternately and evenly.
10. Check the gap again.
11. Close the cover over the pickup slip clutch.

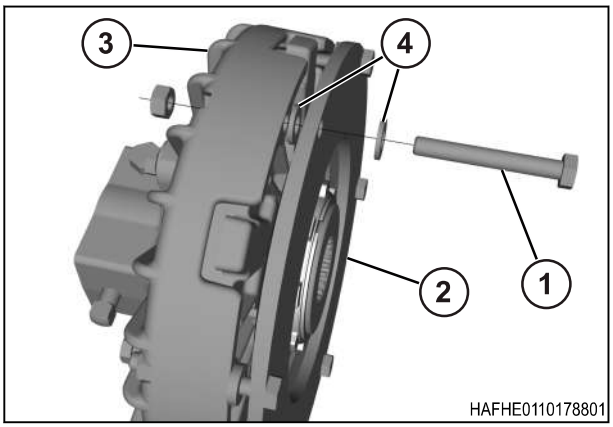


Fig. 61

4.11.6 Rotor cutter slip clutch adjustment, if equipped

Set the spring length (A) on all springs (1). Do not completely compress the springs.

	Cutter width	Spring length
Early production cutter	All	30 mm (1.181 in)
Late production cutter	90 cm (3 ft)	32 mm (1.260 in)
	120 cm (4 ft)	31 mm (1.220 in)

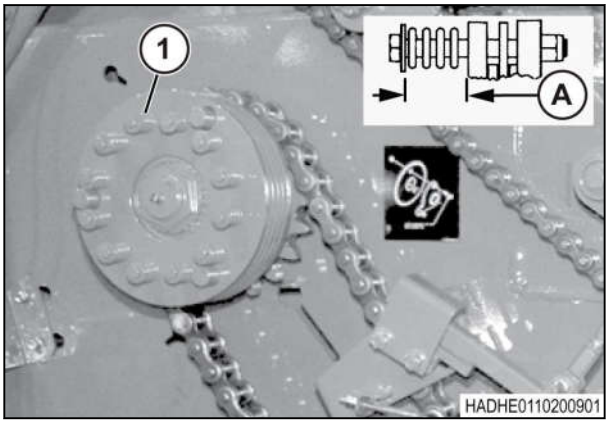


Fig. 62

9. Install the new knife (1). Make sure that the mounting hole (2) of each knife is over the knife mounting rod.

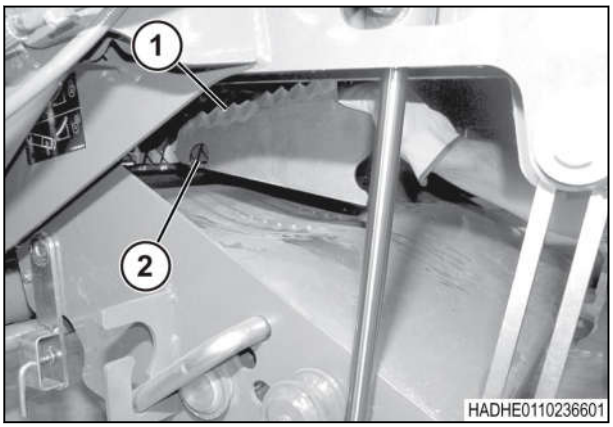


Fig. 84

10. Pull out on the pin (1) on the handle (2) of the knife latch rod (3) and rotate the knife latch rod up to the locked position.

IMPORTANT: *Failure to rotate the knife latch rod back to the locked position will result in damage to the cutter, to the knives and to the baler.*

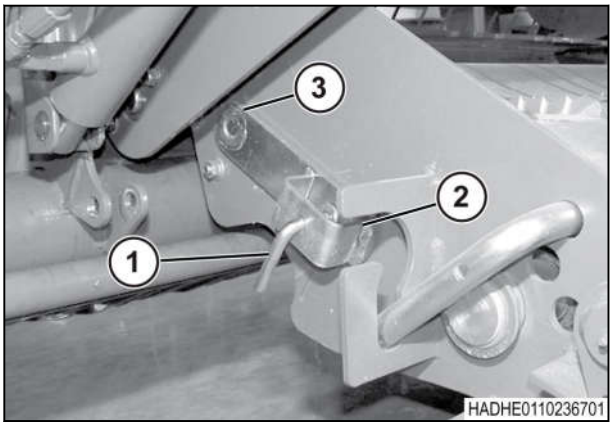


Fig. 85

11. Start the tractor and retract the hydraulic cylinders completely.

12. Turn off the tractor engine and take the key with you.

13. Lock the cutterbed latch. (1).

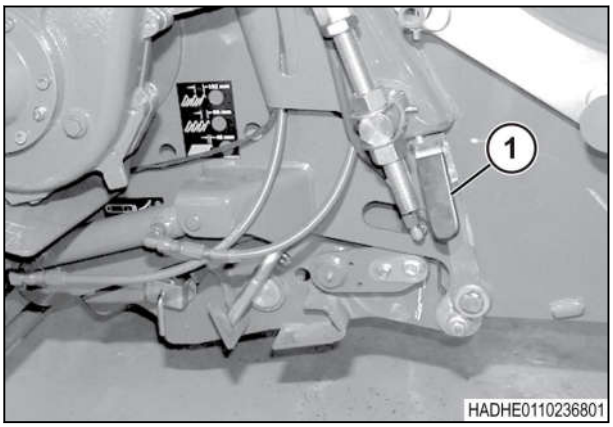


Fig. 86

4.14.2 Sharpening the knives

WARNING:

Sharp objects can be a hazard. Contact with the knives can cause personal injury. Wear personal protective equipment when working with sharp objects.

2. Make sure there is no grease on the stuffer brake discs (1).
3. Make sure the stuffer fingers are in the home position.
4. Apply the flywheel brake.
5. Measure the length (A) of each brake spring (2) between the brake disc plate and the inside of the two washers.
6. Adjust the length of each brake spring to 36 mm (1.41 in).

   Do not tighten the springs to less than 28 mm (1.1 in).

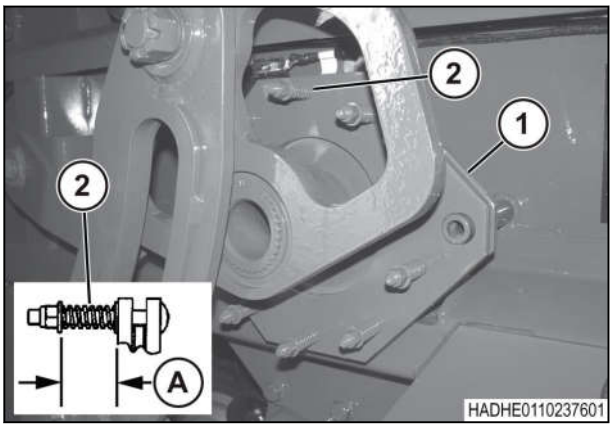


Fig. 108

7. Release the flywheel brake.
8. Start the tractor and engage the PTO. Operate at full PTO speed.
9. Have another person trip the stuffer linkage to complete three to five stuffer cycles.
10. Stop the PTO. Make sure all moving parts have stopped. Stop the engine, apply the park brake, and take the key with you.
11. Manually rotate the flywheel clockwise (as seen from the front) until the clutch roller (1) is on the cam lobe (2) in the stuffer drive sprocket
12. Apply the flywheel brake.

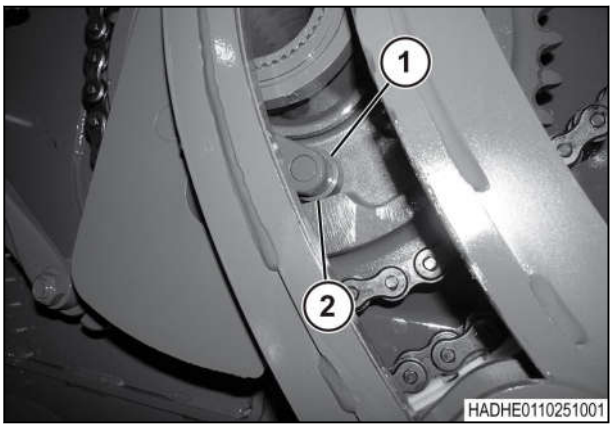


Fig. 109

13. If the roller (1) is against the drive arm (2), do the following.
    a) Measure the distance (A) between the drive arm and the stop (3). The distance must be a minimum of 2.5 cm (3/32 in).
    b) If the distance is less than the minimum, tighten the springs on the stuffer brake.

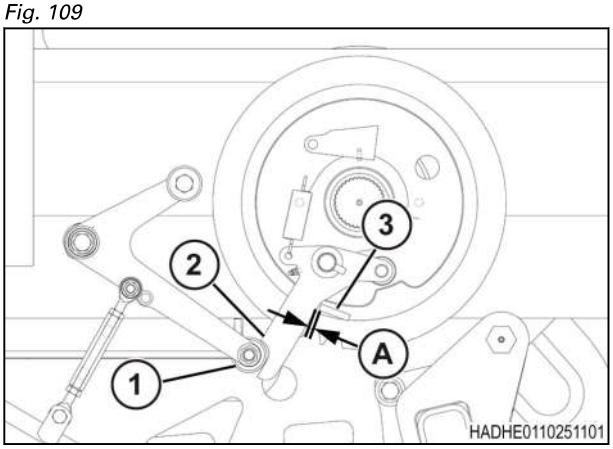


Fig. 110

4. Check the force required for the stripper arm to rub across the billhook.

Adjust the stripper arm so 36 to 54 N (8 to 12 lb) is required.

If only a small adjustment is necessary, bend the stripper arm with a hammer, crowbar, or adjustable wrench without removing any parts of the knotter.

When more adjustment is required, completely remove the stripper arm (1) from the knotter. Bend the stripper arm with a wide jaw vise.

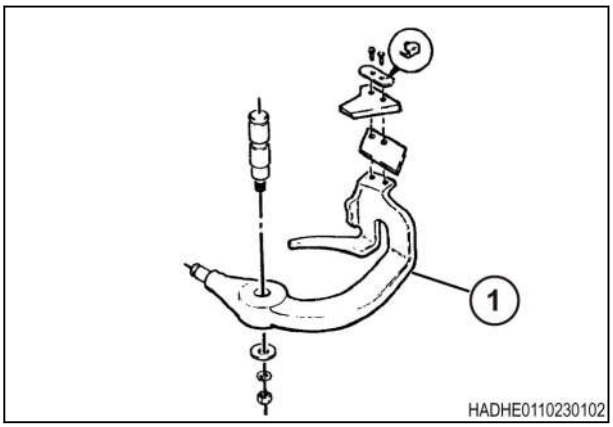


Fig. 130

5. Check the travel of the stripper arm during a tying cycle.

The flange of the stripper arm (1) must move a minimum of 16 mm (5/8 in) (A) beyond the end of the billhook (2). The travel will normally be 18 to 22 mm (23/32 to 7/8 in).

If there is not enough movement, check for a worn or damaged roller on the stripper arm. Also check for a bent stripper arm. Check both lobes on the cam gear for wear and damage. Replace or repair the cam gear as necessary. The lobes can be repaired by filling the low areas with weld.

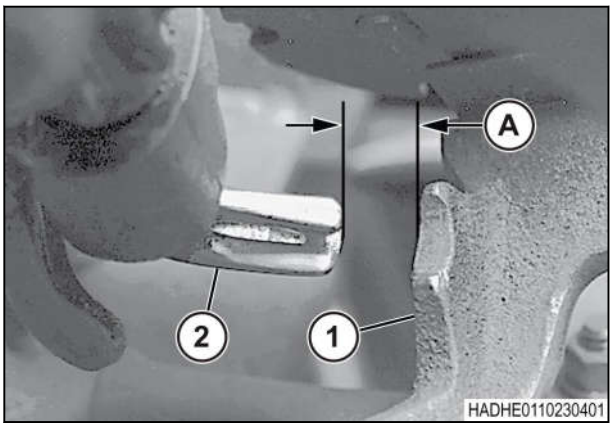


Fig. 131

NOTE: *If weld is added to the cam gear, make sure the roller has clearance in the groove of the cam gear. Maximum travel for the stripper arm is approximately 22 mm (7/8 in) beyond the end of the billhook. Make sure there is clearance between the stripper arm and the other parts.*

6. Lower the knotter assembly.

7. Install the cotter pins and clevis pins.

4.18.8 Twine disc operation

The needle puts the twines in the notch of the twine discs (1) on the up stroke for the first knot. The twine disc rotates 1/4 turn. This rotation pulls the twines between the twine holder (2) and the twine disc to hold the twines while the knots are tied. The twine holder holds the twines only while the knots are being tied.

The position of the notch in the twine disc compared to the disc cleaner (3) determines the twine disc setting.

To receive the two twines from the needle, the notch in the twine disc must be open. This permits the twines to go between the disc cleaner and the twine holder.

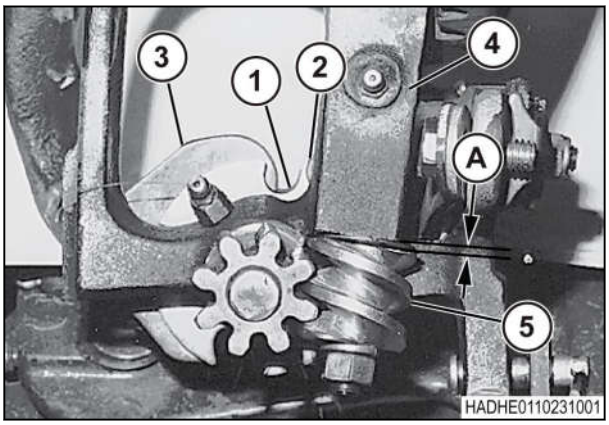


Fig. 132

Make sure the disc cleaner is pushed toward the cam gear when checking the adjustment.

Procedure

1. Turn the brake adjusting nuts (1) to get a spring length (A) of 36 mm.
2. Try to rotate each of the springs (2) manually.
3. Cycle the knotter at full speed for two to three knots
4. Stop the baler. Make sure the flywheel has come to a complete stop.

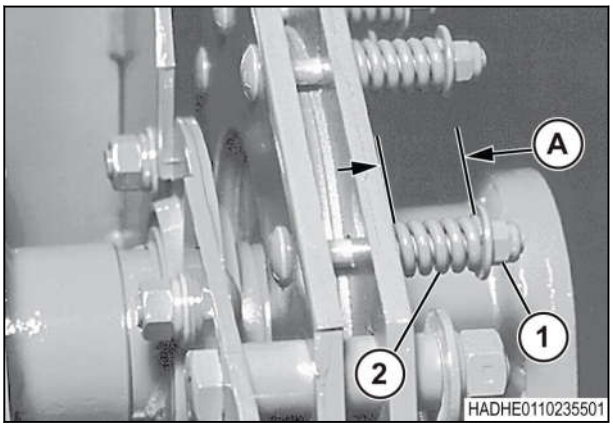


Fig. 150

5. Rotate the flywheel by hand until the clutch roller (1) is on the knotter/needle sprocket lobe (2).
6. Measure the clearance between the outer end of the clutch arm (3) and the anvil head (4).

   If the knotter/needle brake setting is correct, the clearance (A) must not be more than 3 mm.

   ° If there is too much clearance, the knotter/needle brake too tight. Loosen each brake adjusting nut 1/4 turn to loosen the knotter/needle brake. Repeat the above steps.

   Too much clearance will cause the knotter/needle sprocket lobe to hit the clutch roller, causing damage to the knotter/needle sprocket lobe and clutch roller. Too much clearance also can cause a malfunction in the knotter/needle clutch, causing damage (distortion) to the needles, needle protection linkage, needle carriage and other knotter parts.

   ° If there is not enough clearance, the knotter/needle brake is too loose. Tighten each brake adjusting nut 1/4 turn to tighten the knotter/needle brake. If the knotter/needle brake is too loose, the needles will not stay in the home position. A loose knotter/needle brake will apply a very high load to the clutch arm and can cause damaged parts. Repeat the above steps.

   If the clutch arm does not move freely, the knotter/needle clutch drive can disengage before the tying cycle is complete. Damage (distortion) to the needles, needle carriage and needle protection linkage will result.

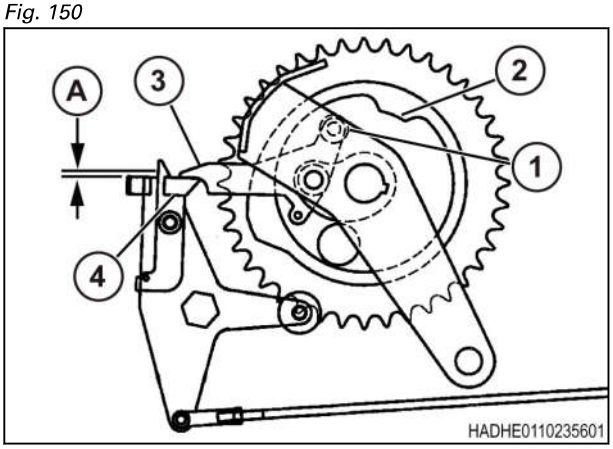


Fig. 151

3. Inspect the rollers and the inner race of the bearing cone for flat areas, pitting, cracks, and other damage.
4. If there is damage, replace the bearing cone and the bearing cup.
5. Inspect the bearing cups for flat areas, pitting, cracks, or other damage.
6. If there is damage, replace the bearing cup and the bearing cone.

4.22.7 Installing the wheel bearings - single axle without brakes

Procedure

1. If using the existing bearings, completely clean and dry all bearing components before packing the bearing cones with grease.
2. Lubricate the rollers in the bearings by machine or by hand. Force grease between the rollers, the cone, and the cage. Make sure the space between the cone and the cage are completely full of grease. See the machine specifications for the correct lubricant.
3. Install the bearing cups into the hub.
4. Fill the space between the bearing cups in the hub with grease to the inside diameter of the cups. Do not fill the housing completely. Apply enough grease to form an obstruction that prevents hot (thin) lubricant from running out of the bearings. In this way, the bottom of the rollers will always operate in lubricant.

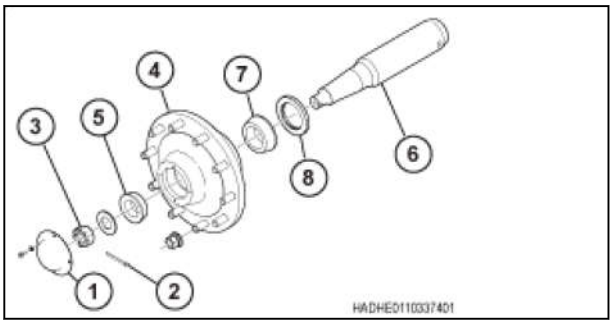


Fig. 163 Single axle without brakes

5. Install the inner bearing (7) into position in the hub (4).
6. Press a new grease seal (8) into the hub with the lip toward the bearing.
7. Install the hub on the spindle (6). Be careful not to damage the lip of the seal.
8. Install the outer bearing cone (5), the washer, and the slotted nut (3).
9. Tighten the slotted nut to 27 to 41 Nm (20 to 30 lbf ft) while rotating the hub. Loosen the nut two complete turns. Tighten the nut finger tight while rotating the drum in the same direction. Tighten the slotted nut to the next slot and insert the new cotter pin (2).

   IMPORTANT: *Do not tighten the bearings too much.*
10. Fill the hub cap 1/4 full of wheel bearing grease. Install the hub cap (1).
11. Install the wheel. See the information for installing a wheel.

4.22.8 Install the wheel bearings - single axle with brakes and all tandem axles

Procedure

1. Lubricate the rollers by machine or by hand. Force grease between the rollers, the cone, and the cage. Make sure the space between the cone and cage are completely full of grease. See the machine specifications for the correct lubricant.

   NOTE: *If you use the current bearings, clean and dry all bearing components. Next, pack the bearing cones with grease.*
2. Use this procedure for single axle machines with brakes or tandem axle machines without brakes made before serial number AGCxxxxxxJHBxx101.

4.24 Preparing for storage

Procedure

- Remove the bale from the bale chamber.
- Remove all crop, dirt, and trash from the machine. Use pressurized water, if available.
- Retract the bale density cylinders.
- Replace the gearbox breather.
- Connect the lighting system wiring harness to the storage plug next to the hose support.
- Install the main wiring harness in the storage position on the hose support.
- Cover open harness ends with caps and plugs. Replace broken or missing sealing caps and plugs.
- Check for any worn or damaged parts. Order replacement parts from your dealer.
- Apply a layer of heavy oil or rust preventive on the inside of the bale chamber and the stuffer chute.
- Apply a layer of grease or rust preventive compound to all working parts of the knotter.

  NOTE: *Remove the layer of grease or rust preventive compound before operating.*
- Paint any areas where paint has been worn through.
- Completely lubricate the machine.
- Clean and oil all roller chains.
- Store in a dry building if possible.
- Block up so the weight is off the tires.
- Disconnect the terminal and store in a dry location.

  IMPORTANT: *Data can be lost if the terminal is not off before disconnecting.*
- Move magnetic actuators away from switches to extend the life of the switches.
- Clean the hydraulic system. Contamination can cause the control valve assembly to malfunction.
- Put the implement driveline on the support. Protect drivelines and U-joints from the weather.

Pickup tines are breaking excessively	
Cause(s)	**Solution(s)**
Flotation adjustment problem	Adjust the pickup flotation.
Pickup is adjusted too close to the ground	Adjust the height control linkage.
Pickup wheels are rolling on the ground too much	Raise the pickup and carry the pickup on the height control linkage.
Bent pickup wrapper or tines	Straighten or replace the wrapper or tines. Tines must not rub on the wrappers.

Feeder clutch slip alarm is displayed	
Cause(s)	**Solution(s)**
Feeder system is plugged	Remove the crop.
Feeding crop too fast	Reduce the ground speed.
Not feeding the same amount of crop to both sides of the bale chamber	Correct the driving pattern to feed the crop correctly.
Broken chain or drive part	Replace the broken parts.
Pickup hitting the ground too much	Raise the pickup and adjust the pickup height control.
Open circuit caused by a faulty connection or broken wire	See your dealer.
Faulty feeder clutch slip sensor	See your dealer.
Feeder clutch slip sensor is not adjusted correctly	Adjust the feeder clutch slip sensor.
Heavy dirt on the end of the sensor	Clean the feeder clutch slip sensor.
Drive pins are stuck in the overrunning clutch	Disassemble and repair the overrunning clutch.

Excessive display of the operating directional arrows	
Cause(s)	**Solution(s)**
Problem in the electrical system	See your dealer.
Windrows are not even from side to side	Make windrows more even. Windrows are too narrow. Make large windrows by raking crop together.
Driving to the wrong side of windrow	Drive the tractor in the direction the arrow points.
Over compensating when the operating directional arrows are displayed	Normally a little correction over three to five stuffer cycles is required.
Wiring to connecting rod load arms is reversed	See your dealer.
Faulty wiring to the connecting rod	See your dealer.

Failure to apply enough tension on the twine with the twine tensioner	
Cause(s)	**Solution(s)**
Adjustment bolt threads are worn	Replace the adjustment bolt.
Groove worn in the tension gears	Replace the tensioner or remove the tensioner assembly and install from the opposite side of the baler.
No travel left in the springs	Replace the bad parts. Straighten the gear mounting bracket or shorten the rear spacers.

5.14 Alarm troubleshooting

Low voltage alarm is displayed	
Cause(s)	**Solution(s)**
Faulty wiring or connection	See your dealer.
Faulty tractor electrical system	See your dealer.

Sensor alarms are being displayed	
IMPORTANT: ***Disengage the tractor PTO. Stop the tractor immediately. Find and correct the problem before operating.***	
Cause(s)	**Solution(s)**
Sensor is not adjusted correctly	See your dealer.
Open circuit caused by a faulty connection or a broken wire for a sensor	See your dealer.
Fault in the wiring	See your dealer.
Faulty sensor	See your dealer.

No alarm is displayed when the top slacker arm stays up	
Cause(s)	**Solution(s)**
Five stuffer cycles have not occurred since the last tie	Normal condition; wait for nine stuffer cycles to be finished.
Open circuit to the upper knotter switch alarm caused by a faulty connection or broken wire	See your dealer.
Knotter slacker upper alarm switch is not adjusted correctly	See your dealer.
Knotter slacker upper alarm switch or magnetic actuator are faulty	See your dealer.

No alarm is displayed when the knotter wraps the billhook	
Cause(s)	**Solution(s)**
Knotter slacker lower alarm switch is not adjusted correctly	See your dealer. **IMPORTANT:** *The knotter slacker lower alarm switch must be adjusted correctly to prevent breaking knotter parts.*

	2240	2240 packer/ cutter	2250	2250 packer/ cutter	2260	2270	2270XD	2290
Width	110 mm (4.3 in)				130 mm (5.1 in)		250 mm (9.8 in)	130 mm (5.1 in)
Weight	163 kg (359 lb)				287 kg (632 lb)		499 kg (1100 lb)	287 kg (632 lb)
Flywheel brake	Manual lever, direct acting							
Clutches	Overrunning and slip							
Protection	Shearbolt on flywheel							
Main gearbox								
Type	Enclosed double reduction							
Gears	Spiral bevel gear (1st set), spur gear (2nd set)							
Bearings	Tapered roller and ball bearings							
Lubrication	Oil bath							
Temperature sensor alarm setting	100 degrees C (212 degrees F)							

6.1.3 Shearbolt specifications

	2240	2240 packer/ cutter	2250	2250 packer/ cutter	2260	2270	2270XD	2290
Main Drive System at Flywheel								
Shearbolt and nut	3/8-16 x 2-1/2 in grade 5 shearbolt, 3/8-16 grade G hex flange top lock nut				7/16-14 x 2-1/8 inch special shearbolt, 7/16-14 grade G hex flange top lock nut		1/2-13 x 2-3/4 inch grade 5 shearbolt, 1/2-13 grade G hex flange top lock nut	7/16-14 x 2-1/8 inch special shearbolt, 7/16-14 grade G hex flange top lock nut
Shearbolt torque	42 Nm (31 lbf ft)				61 Nm (45 lbf ft)			
Stuffer/Knotter/Needles at Main Sprocket								
Shearbolt and nut	1/2-13 x 2-3/4 in grade 8 shearbolt, 1/2-13 grade G hex flange top lock nut							
Shearbolt torque	145 Nm (105 lbf ft)							

	2240	2240 packer/ cutter	2250	2250 packer/ cutter	2260	2270	2270XD	2290
Lug nut torque (lightly lubricated lugs, SAE 30)	350 Nm (260 lbf ft)				450 to 500 Nm (330 to 370 lbf ft)			
Tandem axle								
Tire size	500/50 x 17, 16 ply				500/45 x 22.5, 16 ply			
Tire pressure	2.1 bar (30 psi)				3.2 bar (46 psi)			
Lug nut size	M18 x 1.5							
Lug nut torque (lightly lubricated lugs, SAE 30)	350 Nm (260 lbf ft)							
Tandem axle - radial tire								
Tire size	620/40R-22.5							
Tire pressure	3.2 bar (46 psi)							
Lug nut size	M18 x 1.5							
Lug nut torque (lightly lubricated lugs, SAE 30)	350 Nm (260 lbf ft)							
Pickup tires								
Tire size	4.8 x 8.0, 8 ply pneumatic with inner tube							
Tire pressure	2.76 bar (40 psi)							

6.1.22 Brake specifications, if equipped

Before serial number AGCxxxxxxJHBxx101	2240	2240 packer/ cutter	2250	2250 packer/ cutter	2260	2270	2270XD	2290
Park brake system	Manual control, mechanical actuation							
Service brake system	Actuated with tractor brakes							
Single axle drum size	400 mm x 80 mm (15.7 in x 3.1 in)							
Tandem axle drum size	300 mm x 100 mm (11.8 in x 3.94 in)							
Disconnect brake system, hydraulic	Automatic electronic control, hydraulic actuation							

7.1.15 Accumulator mounting kit

The accumulator mounting kit must be installed on the machine before connecting an accumulator.

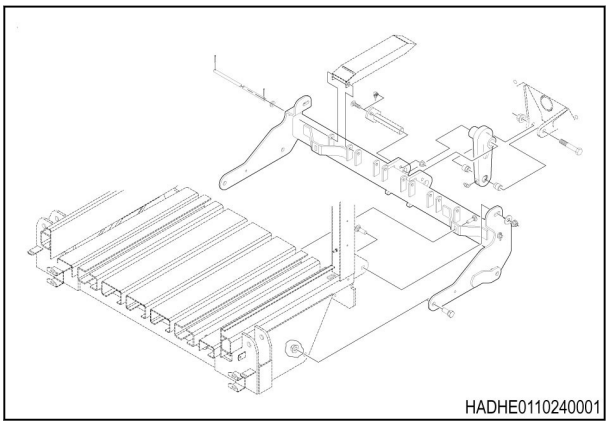


Fig. 12

7.1.16 Bale accumulator

An optional bale accumulator connects to the back of the machine. The accumulator permits the machine operator to group bales at the end of the field or in another location. The bale accumulator includes the following standard equipment: electrical in-cab bale unload control, in-cab monitoring using the terminal, automatic bale shift bar control, and a central lubrication system.

Fig. 13

7.1.17 Bale weight kit for an accumulator

The fully automatic bale weight kit for the left-hand bale accumulator side cart can aid in making high quality hay. The bale weight kit supplies the operator with bale weights which makes the machine efficiency better, while meeting shipping needs. The automatic bale weight average characteristic can also be used to make crop and farming procedure improvements.

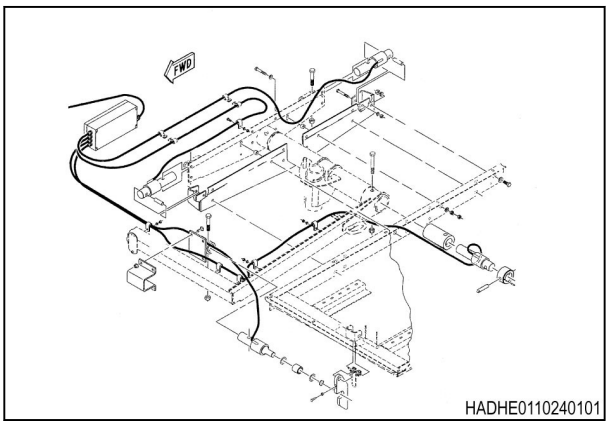


Fig. 14

7.1.18 Power adapter plug

An adapter plug is available to connect the terminal 3-blade power plug into the power outlet on European designed tractors.

14. Install a lock pin (1) on the right-hand side.

15. Make sure the clip (2) is over the end (3) of the lock pin.

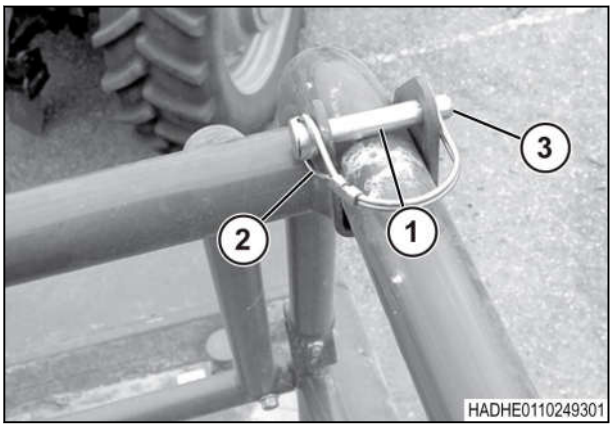


Fig. 12

16. Install the lock pin (1) on the left-hand side.

17. Make sure the clip (2) is over the end (3) of the lock pin.

18. Make sure all clips are in the correct location and secure.

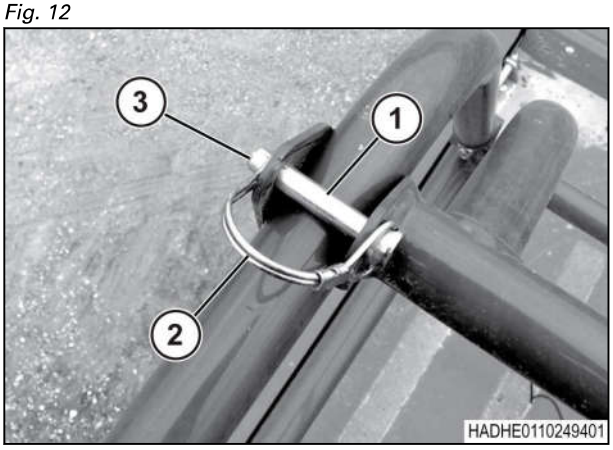


Fig. 13

8.1.2.3 Installing the monitoring flags

Procedure

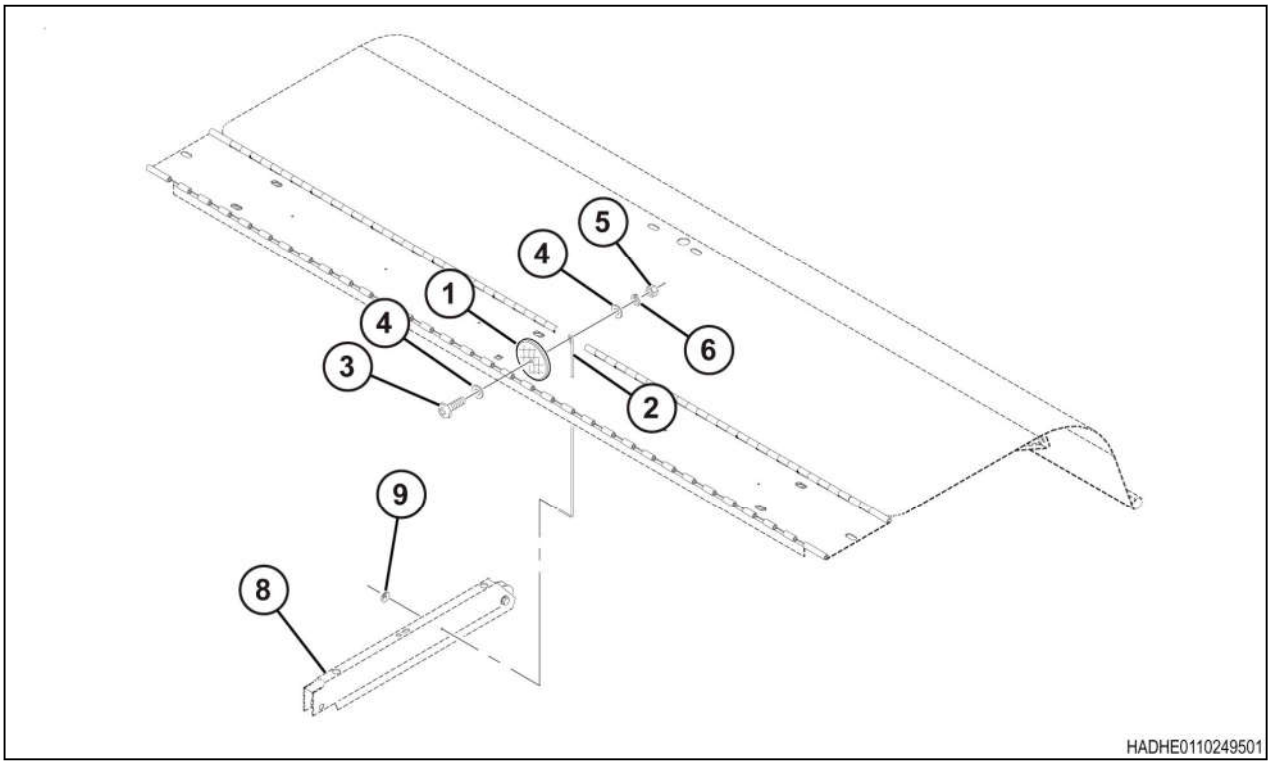


Fig. 14

33. Connect the CV driveline chain (1) on the CV driveline guard to the front of the machine.

34. Make sure the CV driveline chain is at a 90 degree angle to the CV driveline.

35. Make sure the CV driveline chain wraps around the CV driveline shield 180 degrees.

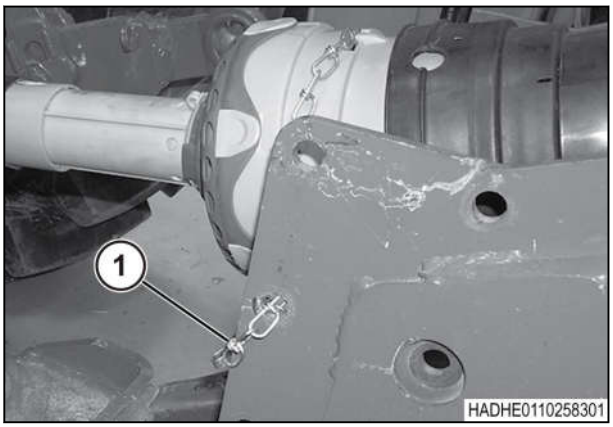


Fig. 42

8.1.3 Assembling the tandem axle, if equipped

Procedure

1. Remove the strap (1) from the right-hand side of the rear axle.

2. Keep the strap for future use.

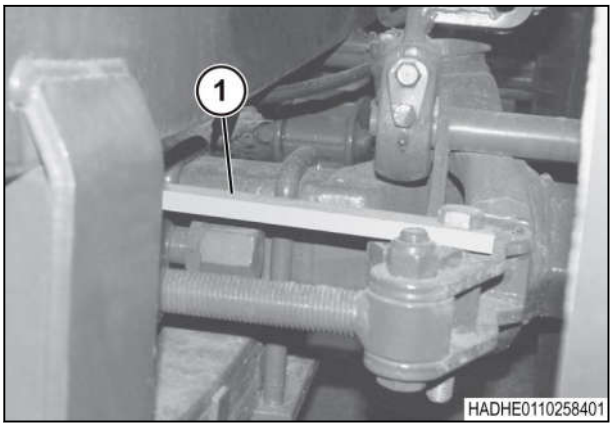


Fig. 43

8.1.4 Connecting the tractor

If possible, use the customers tractor to set up the machine. The type of hitch and power take-off (PTO) on the tractor will determine how the machine is set up. Using the customers tractor will prevent having to change the machine set up when the machine is delivered.

If the customers tractor is not available, use a tractor that has the same type of hitch and PTO as the customers tractor.

Procedure

1. Park the tractor and the machine on a hard, level surface.

2. See the information on connecting the tractor.