

MASSEY FERGUSON

MF 2200

Series Large Square Baler - CE

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



OPERATOR'S MANUAL

FROM MASSEY FERGUSON

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Avoid contact with electrical power lines. Contact with electrical power lines can cause electrical shock, resulting in very serious injury or death.

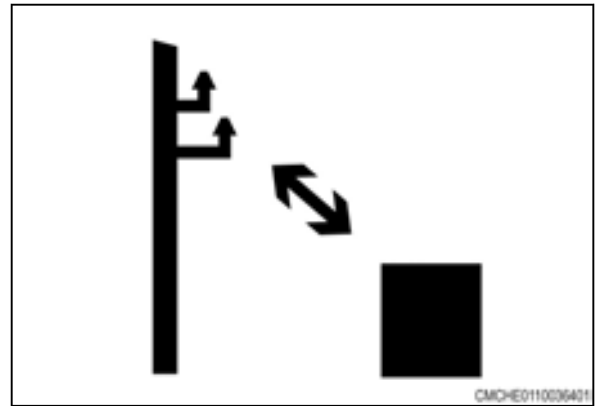


Fig. 6

1.2.2 Prepare for operation

Read and understand all operating instructions and precautions in this manual before operating or servicing the machine.

Make sure you know and understand the positions and operations of all controls. Make certain all controls are in neutral and the park brake is applied before starting the machine.

Make certain all people are well away from your area of work before starting and operating the machine. Check and learn all controls in an area clear of people and obstacles before starting your work. Be aware of the machine size and have enough space available to allow for operation. Never operate the machine at high speeds in crowded places.

Emphasize the importance of using correct procedures when working around and operating the machine. Do not let children or unqualified persons operate the machine. Keep others, especially children, away from your area of work. Do not permit others to ride on the machine.

Make sure the machine is in the proper operating condition as stated in the Operator Manual. Make sure the machine has the correct equipment required by local regulations.

1.2.3 Personal protective equipment

Wear all personal protective equipment (PPE) and protective clothing issued to you or called for by job conditions and country/local regulations. PPE includes, but is not limited to, equipment to protect eyes, lungs, ears, head, hands and feet when operating, servicing, or repairing equipment.

Always keep hands, feet, hair, and clothing away from moving parts. Do not wear loose clothing, jewelry, watches, or other items that could entangle in moving parts. Tie up long hair that can also entangle in moving parts.



Fig. 7

1.4.5 Tire safety

Check tires for cuts, bulges, and correct pressure. Replace worn or damaged tires. When tire service is needed, have a qualified tire mechanic service the tire. Tire changing can be very hazardous and must be done by qualified tire mechanic using proper tools and equipment. See the Specifications Section for the correct tire size.

Tire explosion and/or serious injury can result from over inflation. Do not exceed the tire inflation pressures. See the Specifications Section for the correct tire pressure.

Do not inflate a tire that is seriously under inflated or has been run flat. Have the tire checked by qualified tire mechanic.

Do not weld on the rim when a tire is installed. Welding will make an air/gas mixture that can cause an explosion and burn with high temperatures. This danger applies to all tires, inflated or deflated. Removing air or breaking the bead is not enough. The tire must be completely removed from the rim prior to welding.

When preparing a calcium chloride solution for fluid ballast the tractor tires, never pour water onto the calcium chloride. A chlorine gas can be generated which is poisonous and explosive. This can be avoided by slowly adding calcium chloride flakes to water and stirring until they are dissolved.

When seating tire beads onto rims, never exceed 2.4 bar (35 psi) or the maximum inflation pressure specified on the tire. Inflation beyond this maximum pressure may break the bead, or even the rim, with explosive force.



Fig. 26

1.4.6 Replacement parts

Where replacement parts are necessary for periodic maintenance and servicing, genuine replacement parts must be used to restore your equipment to original specifications.

The manufacturer will not accept responsibility for installation of unapproved parts and/or accessories and damages as a result of their usage.

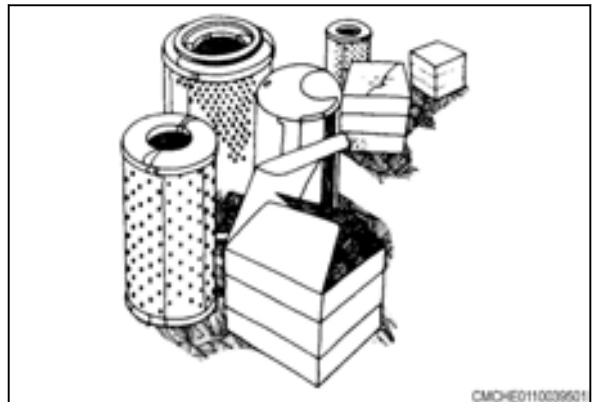


Fig. 27

Knife Spacing (3)

- (A) Use two spacers for 192 mm (7.6 in) between knives.
- (B) Use one spacer for 96 mm (3.8 in) between knives.
- (C) Use no spacers for 48 mm (1.9 in) between knives.

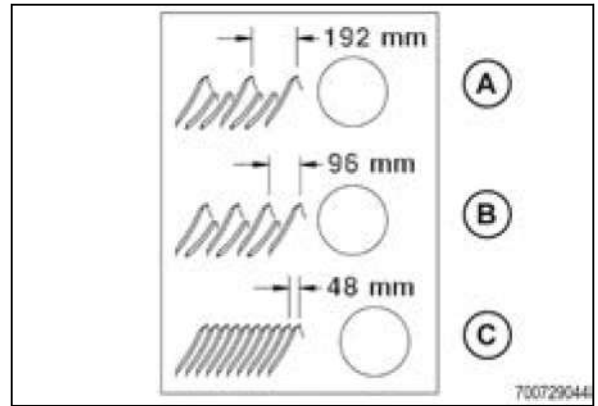


Fig. 58

Knife lock (4)

- (A) Lift the handle to lock the knives in location.
- (B) Lower the handle to release the knives.

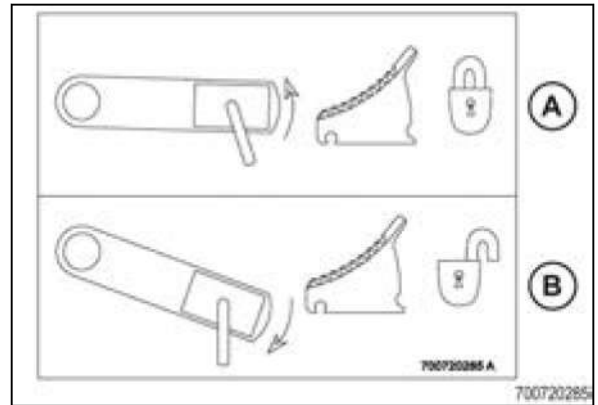


Fig. 59

Under the left-hand shield - late production

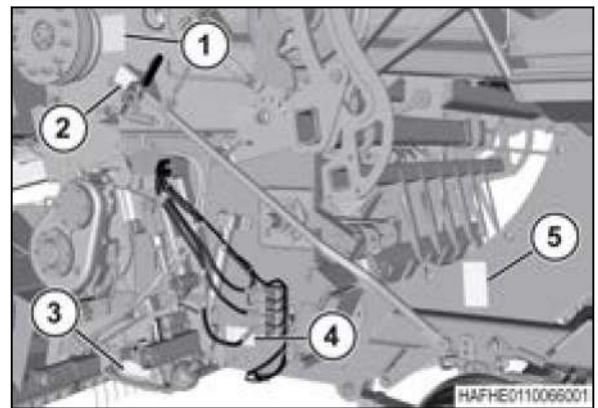


Fig. 60

2. Introduction

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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.

3.1 Checklists

3.1.1 Daily checklist

- Determine the condition of the crop. See the operating procedures for different types of crop conditions.
- Make sure all shields and guards are in position. Replace any shields and guards that are missing or damaged and safety signs which cannot be read.
- Inspect the nuts, bolts, and other fasteners to make sure all are tight. Carefully check the wheel nuts.
- Check for damage and excessive wear of parts.
- See the maintenance charts in this manual and service as indicated.
- Visually inspect all lubrication points to make sure lubrication is being received.
- Check the knotter lubrication system for damaged or missing lubrication lines.
- Check the lubricant level in the knotter lubrication pump.
- Check the hydraulic reservoir oil level in the sight glass.
- Check the gearbox oil level in the sight glass.
- Check tractor connections for correct hitch, implement driveline, hydraulic and electrical connections.
- Check the tractor hitch bolt for the correct torque. Always install a lynch pin in the hitch bolt to prevent losing the hitch bolt.
- Check the hitch ball. Lubricate the hitch ball connection. Make sure lubrication gets into the connection area.
- Make sure all controls work correctly.
- Check all hydraulic connections for leaks.
- Check that all road lamps, work and service lamps work correctly.
- Adjust chains that are too loose or too tight.
- Check the tire pressure.
- Check the flywheel brake adjustments.
- Check the supply of shearbolts.
- Check the quantity of twine in the twine compartments.
- Check twine for correct routing, threading, and condition.
- Check twine tension.
- Check the needle protection linkage adjustment.
- If equipped, make sure the ejector is in the front home position.
- If equipped with a roller bale chute, make sure the roller bale chute is in the correct operating position.
- Remove all crop deposits.

3.1.2 Inspection after the first hour of operation

- Check the adjustment of the main drive slip clutch.
- Check the stuffer brake for excessive heat.
- Check the stuffer clutch and linkage for correct operation.
- Check the packer chain tension.
- Check the wheel nut torque.

Procedure

1. Put the hitch bracket in the low position (1) for low hitch tractors and in the high position (2) for high hitch tractors.
2. Measure the distance from the end of the PTO shaft to the center of the hitch pin hole.
- See tractor setup dimensions.
3. If the distance is 140 to 350 mm (5.5 to 13.7 in) install the hitch (3) on the hitch bracket. Use the hardware supplied with the machine.
4. Tighten the hardware to 230 Nm (170 lbf ft)
5. If the distance is 50 to 140 mm (2 to 5.5 in), install a hitch and a 120 mm (4.7 in) spacer (4) on the hitch bracket. Use the hardware supplied with the spacer.
6. Tighten the hardware to 230 Nm (170 lbf ft).

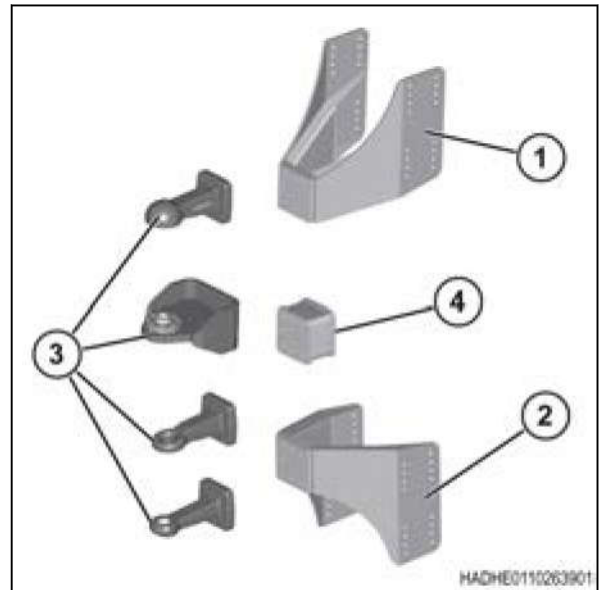


Fig. 13

7. Park the tractor in front of the machine.
8. Put the tractor transmission in park, and / or apply the tractor park brake.
9. Stop the tractor engine.
10. Take the key with you.
11. Measure the distance (A) from the end of the PTO shaft (1) to the mounting plate (2).
The mounting plate supports the intermediate bearing support (3).
The distance must be approximately 1100 mm (43.3 in).

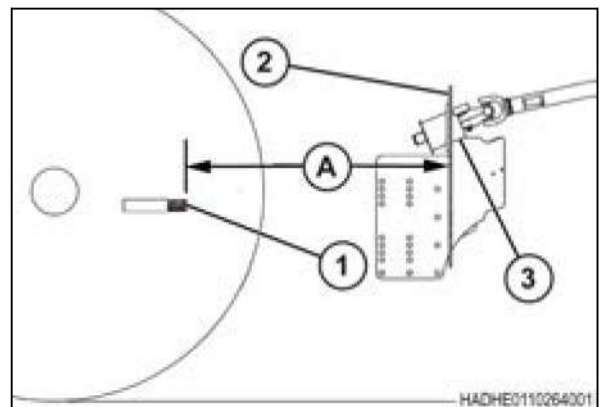


Fig. 14

12. Connect lifting equipment with the correct capacity to the hitch bracket (1).
13. Put the hitch bracket in the tongue (2).
14. Align the hitch with the connection point on the tractor drawbar.

NOTE: Align the hitch with the hitch pin for high hitch tractors.

15. Make sure the hitch bracket is level.
16. Align the holes in the hitch bracket and the tongue.
Mount the hitch bracket to the front or rear as required. The holes permit four vertical locations.

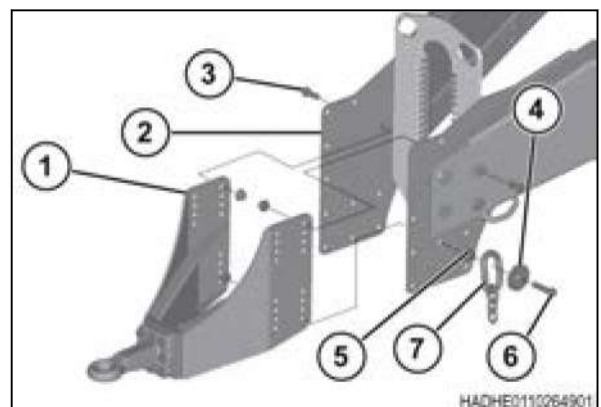


Fig. 15

9. Move the cone shield (1) all the way forward and lock in location.
10. Connect the chain (2) from the cone shield to the rear of the tractor.
11. Install the chain at right angles to the implement driveline (IDL). A chain at other angles puts an excessive load on the cone shield bearings.
12. Wrap the chain around the cone shield 180 degrees. The extra length gives slack to prevent damage to the chain and cone shield.
13. Adjust or remove the tractor three point hitch arms to prevent interference with the machine tongue or the IDL.
If the arms contact the machine tongue or the IDL, severe damage will occur.

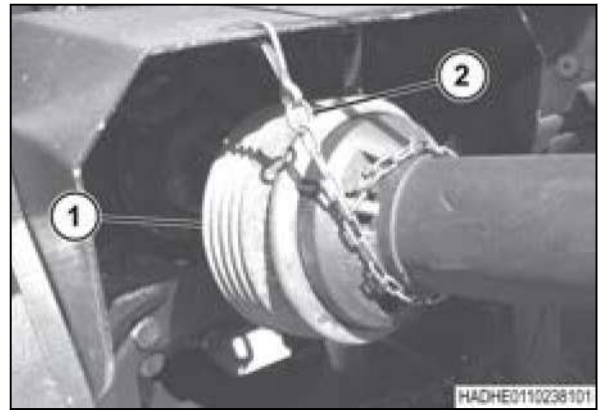


Fig. 31

Related Links

[Removing and installing the implement driveline shields](#) page 245


3.4.14.2 Adjusting the angles of an equal angle implement driveline

Before starting the procedure

- Have the implement driveline (IDL) correctly connected to the tractor power take-off (PTO).
- Have the IDL correctly connected to the intermediate bearing support.

Procedure

1. Check the angles of the front and the rear U-joints.
The angles must be 169 degrees. If the angles do not equal 169 degrees do the following steps.

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).

The lifting equipment must support the weight of the intermediate bearing support and the shafts on both sides.

Remove the PTO sensor and the sensor wiring on the bottom side of the intermediate bearing support. If necessary, loosen a clamp on the wiring harness.

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.
5. Check the angles of the front and the rear U-joints.
The angles must be 169 degrees.
6. Install and tighten the fastening hardware.

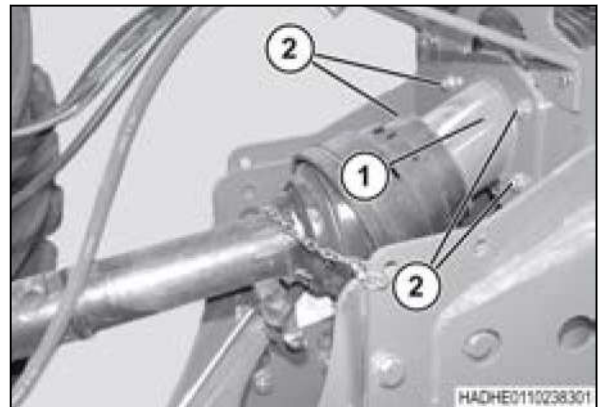
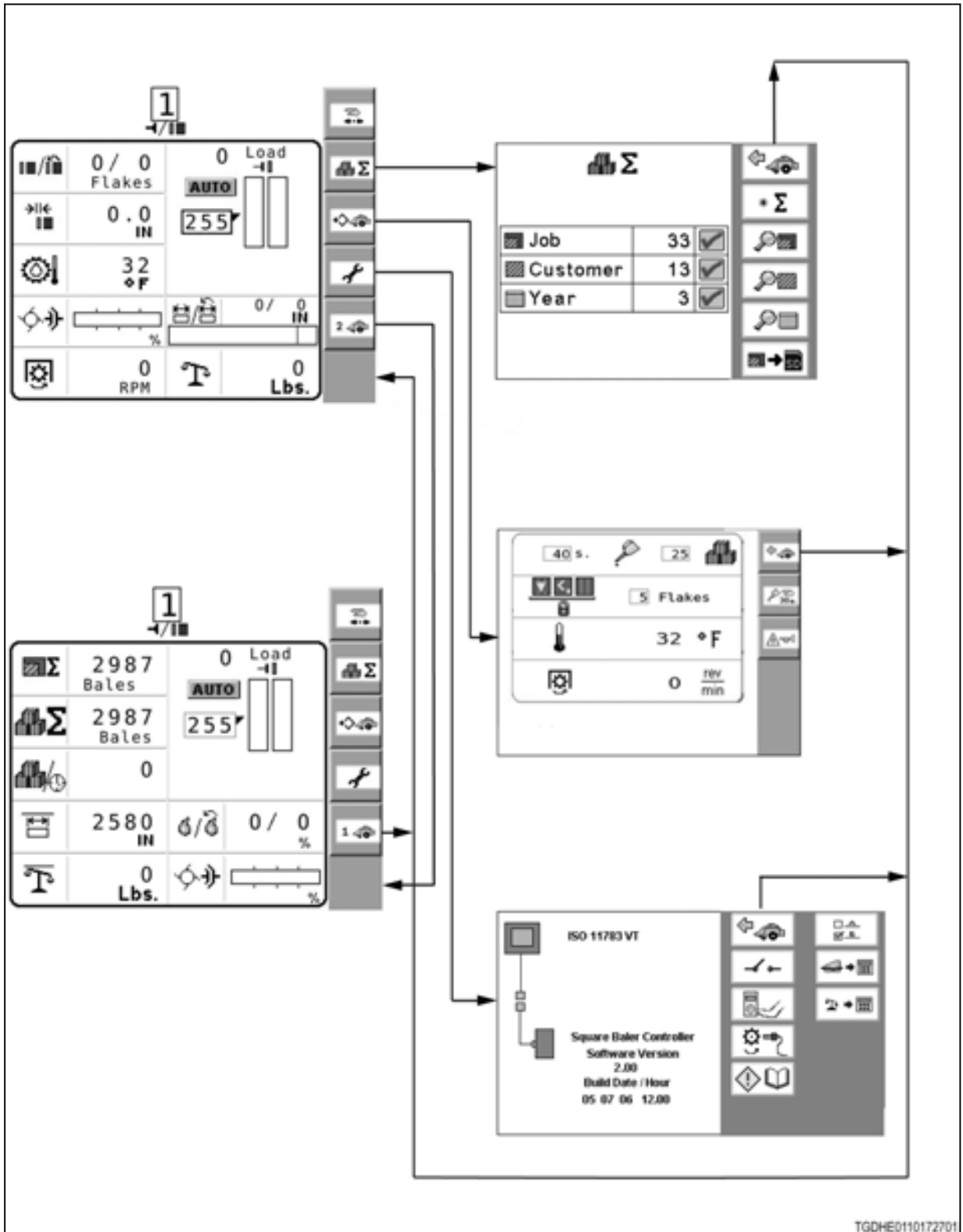


Fig. 32

Main work screen tree



TGDHE0110172701

Fig. 41 Main work screen tree

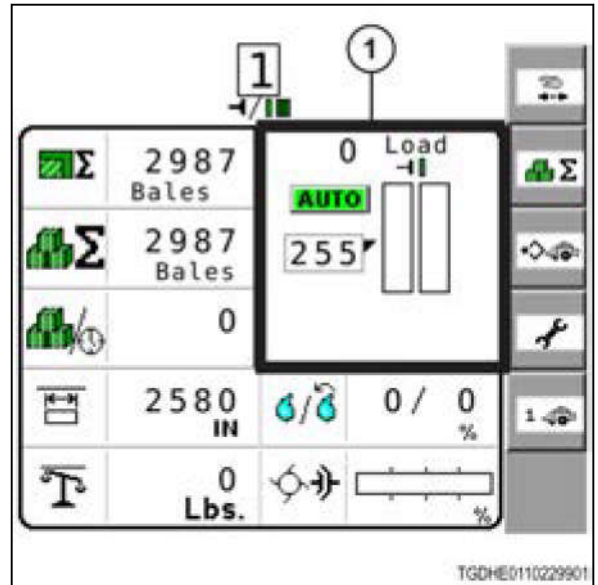


Fig. 45

3.7.6.1 Changing the main work screen boxes

1. Select a box to change.

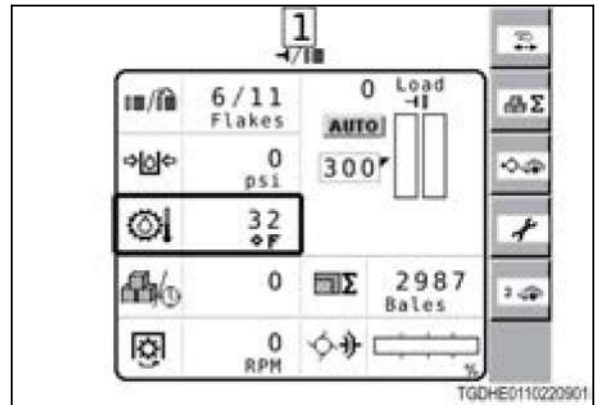


Fig. 46

Plunger overload

If the load on the plunger connecting rods is higher than the maximum value, the bar graph will change to yellow (1).

If the load on the plunger overload continues, the bar graph will change to red (2) and show an error icon (3). The system will decrease the bale density cylinder pressure to reduce the load.

If the overload continues for more than two stuffer cycles, slow the ground speed of the machine. If the overload continues, stop and find the cause of the overload.

NOTE: Check for high moisture in the crop, paint or rust in the bale chamber, or for a hydraulic problem.

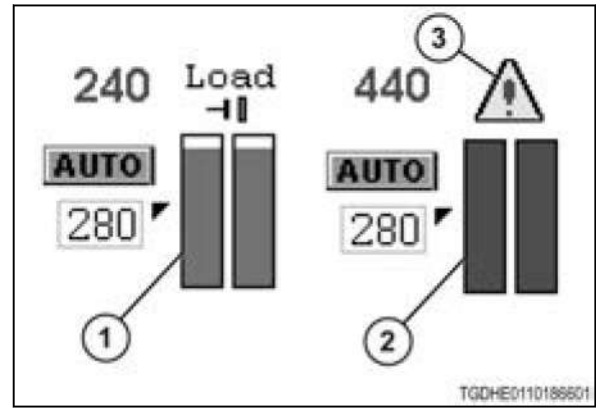


Fig. 56

See the information for indicator icons.

3.7.6.8 Plunger load setting information

Check the crop conditions. Flexible crop such as straw and grass, can require lowering the plunger load setting, especially if low quality twine is used.

If the plunger load setting is 0, the automatic load control will not control the machine.

IMPORTANT: The machine can be over loaded if the automatic load control is not working correctly. An overload will result in damage to the machine.

When turning, the load can be lower than normal ranges.


If part of the windrow is heavy and wet, the load can be higher than normal ranges.

If the plunger load is less than the load setting, the pressure in the bale density cylinders will increase.

If the plunger load is more than the load setting, the pressure in the bale density cylinders will decrease.

An overload alarm will show if the plunger load is more than the factory set maximum load value. If the overload continues for more than two stuffer cycles, slow the ground speed of the machine. If the overload continues, stop the machine and find the cause. Check the moisture of the crop.

An alarm will show if the load is more than the second higher factory load setting value for more than two stuffer cycles. Disengage the power take-off (PTO). Stop the tractor. Apply the park brake. Take the key with you. Apply the flywheel brake. Apply the baler park brake, if equipped. Correct the problem before continuing. Damage to the machine will occur by continuing to operate the machine before the problem is corrected.

3. Select  to release the chamber pressure. The remaining time will show on the screen (1).

NOTE:

Do not select any icon until the release complete screen displays. If an icon is selected before the pressure release is complete, the release procedure will have to be done again. To stop the chamber pressure release, select



Fig. 68

4. The release complete screen will show after the chamber pressure release is complete. Turn off the PTO.



Fig. 69

Result of the procedure

When the PTO stops turning, the screen will automatically return to the main work screen.

3.7.11 Releasing the bale chamber pressure

Do the following to release the bale chamber pressure if the machine has stopped because the machine is plugged or has a broken shearbolt.

Procedure

1. Select .
2. Select and hold  to release the bale chamber pressure.

NOTE: *The pressure displaying on the terminal will not update while holding .*

3.7.15 Machine configuration screen

To go to the machine configuration screen, select

the following icons in order:

Select again to see the second page.

The machine configuration screen shows the current settings. Change the settings from this screen.

Do not change the settings unless the equipment on the machine changes.

To change a setting, select a setting to change (1).

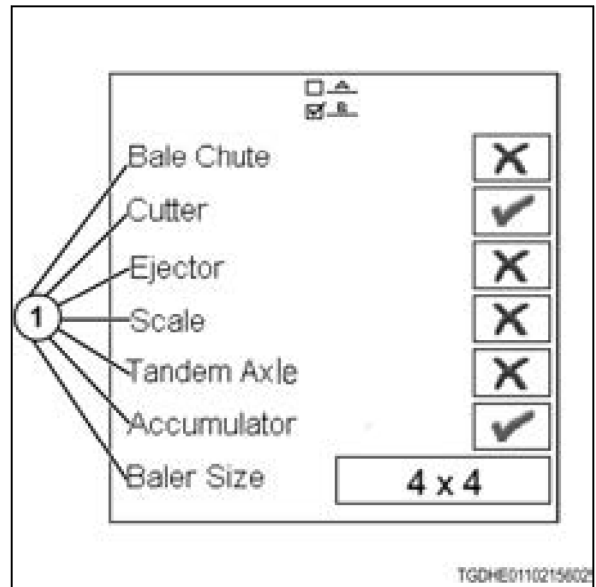


Fig. 86

Enter the desired setting:

| Setting | Description |
|--|--|
| ✓ | Indicates the equipment is installed on the machine |
| X | Indicates the equipment is not installed on the machine |
| 3 x 3, or 70 x 80, 3 x 4, or 70 x 120, and 4x4 | The machine size (height x width) is set automatically by the machine. NOTE: On a 70x80 machine, 3x3 will be displayed. The operator can change this setting to 70x80. On a 70x120 machine, 3x4 will be displayed. The operator can change this setting to 70x120. |

3.7.16 Calibrating the accumulator scale

Make sure the left-hand side of the accumulator is latched, empty, and can move vertical freely.

Procedure

1. Select the icons in the following order:










NOTE: will not be available if the accumulator does not have a scale.

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

(10) The record start time and record stop time

The following icons are available on the job record screen.

| Icon | Function |
|---|--|
|  | Starts the current record. If another record is operating, that record will be stopped. |
|  | Stops the current record |
|  | Opens the page to change the record name |
|  | Clears the current customer details |
|  | 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. |
|  | Returns to the work records screen |

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.

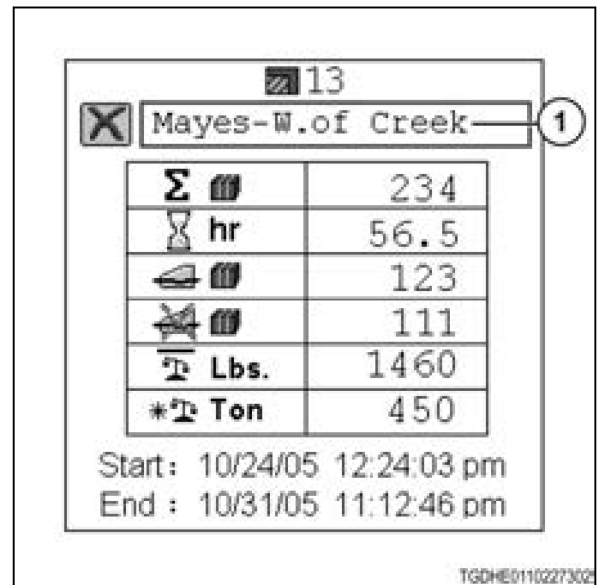














Fig. 109

| Alarm number | Display | Description | Priority | Audible alarm |
|--------------|---|--|---|---------------|
| | | Determine the cause and repair before continuing to bale. | | |
| 125 | Work record checksum error | The work record did not save correctly. The file is damaged. |  | Moderate |
| 126 | NVM error | The data in the non-volatile memory did not write correctly. |  | Moderate |
| 129 | Baler timing sensor fault | Not enough machine timing sensor signals between continuous stuffer cycles. Check the machine timing sensor gap and the stuffer brake for adjustment. |  | None |
| 150 | ECU ground open circuit | The square baler controller (SBC) or electronic control unit (ECU) ground is more than 0.5 volts. See your dealer. |  | Moderate |
| 151 | PWR GND open circuit | There is an open circuit in the hydraulic valve and the lubrication pump ground. See your dealer. |  | Moderate |
| 153 | PWR over voltage | The power to the hydraulic valves and the lubrication pump is more than 18 volts. See your dealer. |  | Moderate |
| 154 | Sensor ground 1 over voltage | Voltage found on sensor ground circuit 1. See your dealer. |  | Moderate |
| 155 | Sensor ground 2 over voltage | Voltage found on sensor ground circuit 2. See your dealer. |  | Moderate |
| 156 | Switch ground 1 over voltage | Voltage found on switch ground circuit 1. See your dealer. |  | High |
| 157 | Switch ground 2 over voltage | Voltage found on switch ground circuit 2. See your dealer. |  | High |
| 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 | None | None |

NOTE: The pickup wheels must not support all the weight of the pickup. The pickup wheels must work with the flotation spring to keep the pickup from running into the ground.

3.8.3 Adjusting the pickup height

1. Raise the pickup with the hydraulic lift cylinder.
2. Remove the clevis pin (1) from the collar (2).
3. Lower the pickup so the pickup wheels are approximately 25 mm (1 in) above the ground.
4. Move the collar back as far as possible.
5. Line up the hole in the collar with the nearest hole in the height adjustment rod (3).
6. Insert and lock the clevis pin.
7. Lower the hydraulic lift cylinder.
8. Check the height of the pickup wheels. The pickup wheels must be 25 to 38 mm (1 to 1-1/2 in) above the ground.

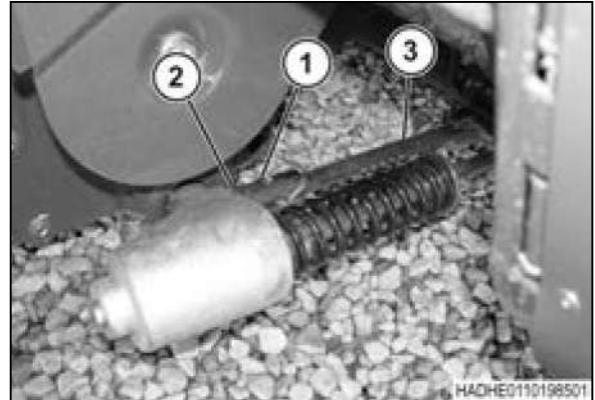


Fig. 118

NOTE: The pickup wheels must not support all the weight of the pickup. The pickup wheels must work with the flotation spring to keep the pickup from running into the ground.

3.8.4 Adjusting the pickup flotation

The pickup flotation is correct when the force required to lift the pickup is 54 kg (120 lb). Use a spring scale (1) to check the pickup flotation.



Fig. 119

Procedure

1. Use the hydraulic lift cylinder to raise the pickup.

- Use the tractor hydraulics to raise the knives.

Result

When the knives are up and the knife pressure is set, an alarm will sound and the selected cutter knife setting will display in the plunger load box.

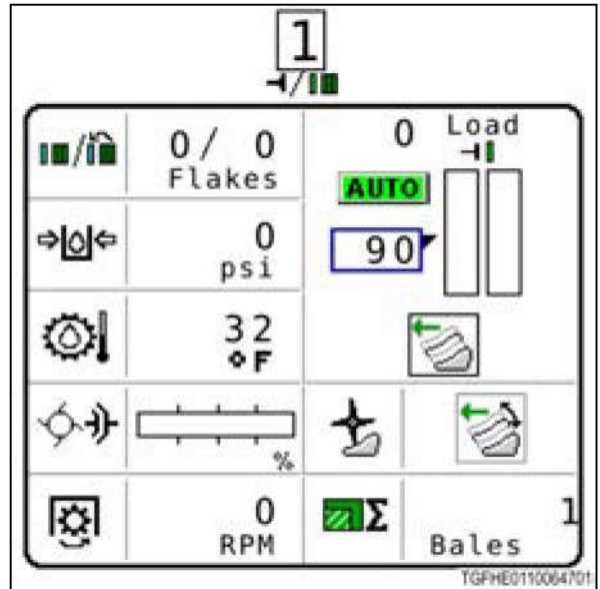


Fig. 134

- Select to control the pickup.

NOTE: Thirty seconds after the PTO engages, the terminal will automatically change the cutter setting to . If the PTO is engaged thirty seconds after the cutter knife setting is selected, and the knives are completely up, the terminal will automatically change the cutter setting to .

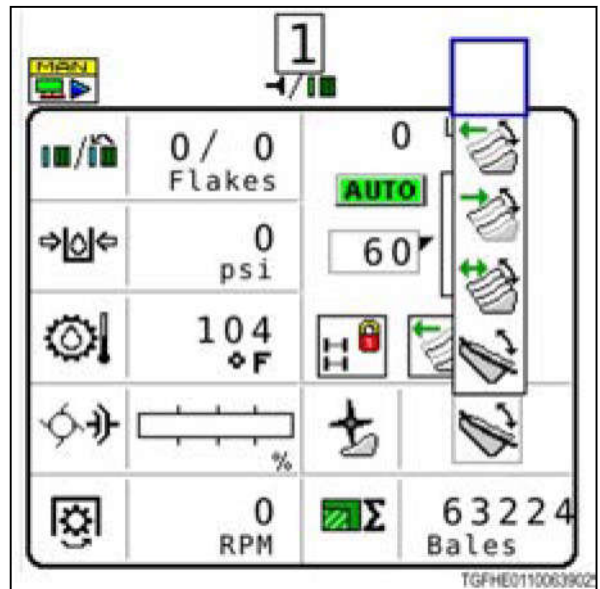


Fig. 135

3.12.2 Lowering the cutterbed

Procedure

- Disengage the power take-off (PTO).

3.14 Roller bale chute, if equipped

3.14.1 Lowering the roller bale chute

**WARNING:**

Make sure all persons are clear of the baler, roller bale chute, and the area where the roller bale chute will be moving.

**WARNING:**

Stay clear of the roller bale chute area when the roller bale chute is up and the left-hand chain is not in the chain catch.

Before baling, always lower the roller bale chute to the operating (field) position.

IMPORTANT: Failure to lower the roller bale chute before baling will result in damage to the roller bale chute and the machine.

Procedure

1. Stop the tractor power take-off (PTO). Make sure all movement has stopped.
2. Apply the park brake.
3. Engage and lock the tractor remote valve for the pickup in the raised position. The pickup will move to the up position.
4. Push up on the control (1) for the roller bale chute. Make sure the roller bale chute raises completely. Release the control.
5. Remove the left-hand chain from the chain catches.

IMPORTANT: Failing to remove the left-hand chain from the chain catch before lowering the roller bale chute will damage the roller bale chute and the lift system.

6. Remove both chains from the chain storage holders.
7. Push down and hold the control for the roller bale chute.
8. When the roller bale chute is completely down, release the control.
9. Make sure the roller bale chute support chains are tight.

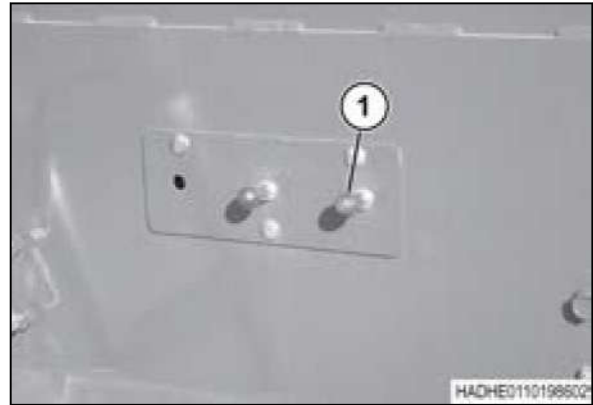


Fig. 152

3.14.2 Raising the roller bale chute

**WARNING:**

Make sure all persons are clear of the machine, roller bale chute, and the area where the roller bale chute will be moving.

**WARNING:**

Stay clear of the roller bale chute area when the roller bale chute is up and the left-hand chain is not in the chain catch.

**WARNING:**

Always raise the bale chute before:

- Taking the machine across a road.
- Rooding the machine.
- Moving the machine on a trailer.

3.19 Threading a four twine baler

3.19.1 Installing twine balls

New twine balls come in plastic packages. Do not remove the twine balls from the package.

Procedure

1. Put the twine balls in the twine storage box so the feed end faces out.

NOTE: Supplying twine from a reversed twine ball, or from the rear of the twine ball causes twisted twine. Twisted twine causes knotter problems.

2. Pull the feed end of the twine up from the center of each twine ball.
3. Pull up the feed end of the twine from each backup ball.
4. Pull the tail end of the twine from the outside of the feed ball.
5. Tie the twines in a square knot. Pull the twines as shown. Make the knot as small and tight as possible.
6. Cut the loose ends of the twines. Make the loose ends from 50 to 100 mm (2 to 4 in) long.

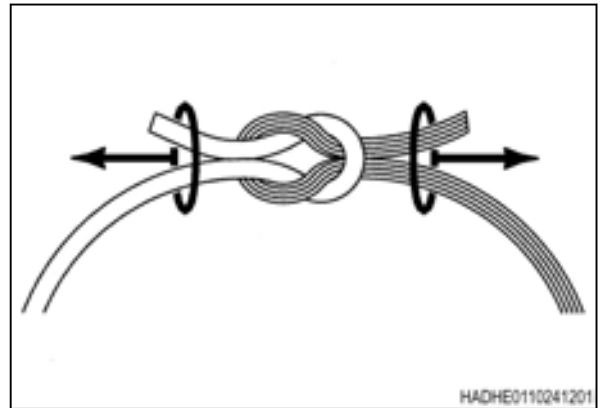


Fig. 172

Related Links

[Twine specifications](#) page 368

3.19.2 Threading the left-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.
- Engage the knotter/needle lockout before threading the machine.

The large arrow (A) points to the front.

Needle twine balls go in the rear part of the left-hand twine box.

Twine balls for needle one go in the bottom row.

Twine balls for needle two go in the middle row.

Six twine balers use the top row for needle twine.

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3.19.11 Threading the twines into the knotter 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.
- Make sure no twine wraps around other twines.

Procedure

1. Pull twine number one through the top guide (1) on the left-hand side.
2. Pull twine number two through the middle guide (2).
3. Pull twine number one through the top twine tensioner (1).
4. Pull twine number two through the middle twine tensioner (2).
5. Pull twine number three through the middle guide (1) on the right-hand side.

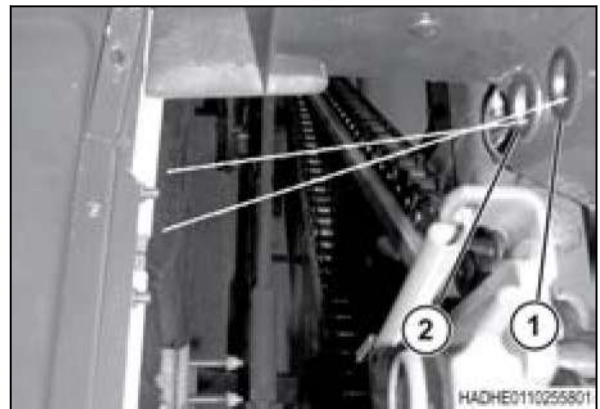


Fig. 185

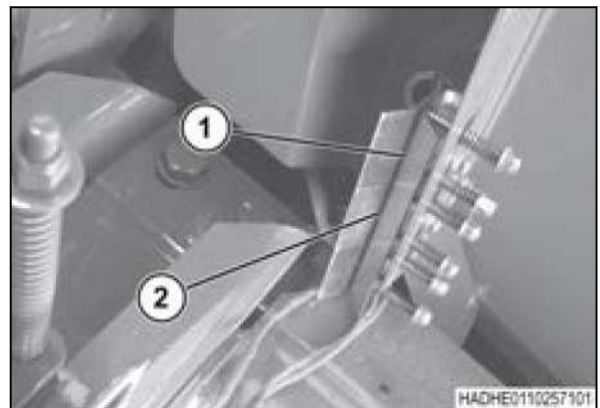


Fig. 186

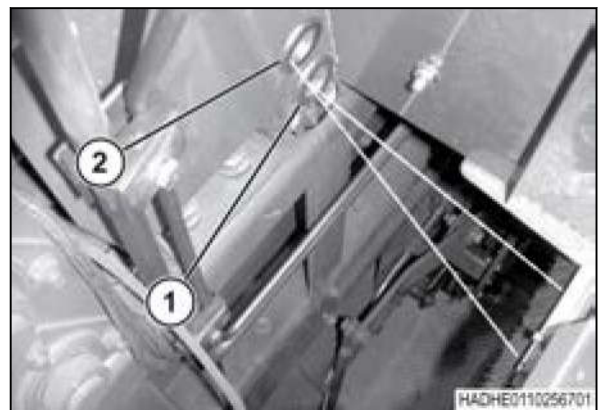


Fig. 187

3.20.8 Threading the twine hooks for needles

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

Tie each needle twine to the correct twine hook (1).

The twine hooks hold the twine until the needles (2) take each needle twine to the knotters for tying.

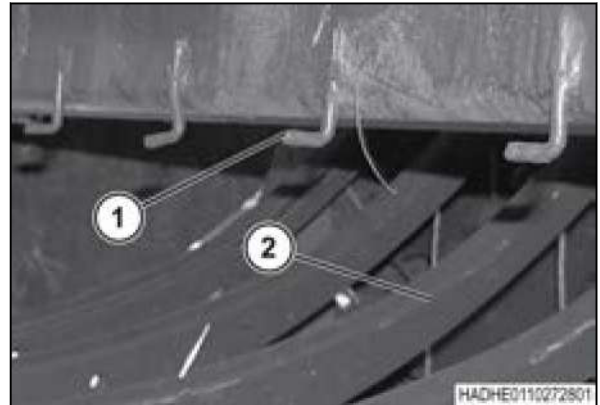


Fig. 202

3.20.9 Threading the left-hand knotter 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.
- Engage the knotter/needle lockout before threading the machine.

The large arrow (A) points to the front.

Knotter twine balls go in the front part of the left-hand twine box.

Twine balls for knotter one go in the top row.

Twine balls for knotter two go in the middle row.

Twine balls for knotter three go in the bottom row.

3.22 Air brake pressure release

When disconnected from the tractor, the relay emergency valve applies and holds the brakes with air from the air tank.

Release the brakes to move the baler. The air brakes can be released using a tractor with air brake connectors. The air brakes can also be released by using the release valve.

Press the push valve (1) on the relay emergency valve to release the brakes.

IMPORTANT: Use caution if the baler is moved without connecting the air brakes. Always obey all road and traffic regulations when transporting or moving the baler.



Fig. 217

| 8 hours | 50 | 100 | 250 | Other | Hours |
|---------|------|------|------|----------------------------|--|
| | 1000 | 2000 | 5000 | | Bales |
| | | X | | | Lubricate the knotter clutch and knotter clutch arm with grease. |
| | | X | | | Lubricate the hitch ball with grease. |
| | | X | | | Check the main gearbox oil level. Add oil if necessary. |
| | | X | | | Lubricate the auger chain(s) with oil. |
| | | X | | | Lubricate the reel chain with oil. |
| | | X | | | Lubricate the knotter/needle clutch arm with grease. |
| | | X | | | Lubricate the pickup linkage roller with grease. |
| | | X | | | Lubricate the tucker arm and twine arm cam rollers with grease. |
| | | X | | | Lubricate the packer clutch with grease. |
| | | X | | | Lubricate the pickup overrunning clutch with grease. |
| | | X | | | Lubricate the center grease fitting on the six twine knotter with grease. |
| | | | | Every 4 weeks | Check brake operation and adjustment. Adjust if necessary. |
| | | | | | Lubricate the brake cam shaft supports with grease. |
| | | | | After the first 2500 bales | Check and tighten hardware, including clamping bolts on main gearbox crank arms. |
| | | | | Every 2500 bales | Lubricate the cutter rotor clutch with grease, if equipped. |
| | | | X | | Inspect the main drive clutch for wear. |
| | | | X | | Lubricate the cam lobe on the knotter/needle drive sprocket with grease. |
| | | | X | | Lubricate both ends of the connecting rods with grease. |
| | | | X | | Check the torque on the connecting rod hardware. |
| | | | X | | Lubricate the flotation spring shaft with grease. |
| | | | X | | Lubricate the implement driveline splines with grease. |
| | | | X | | Check the torque of the clamping bolts on main gearbox crank arms. |
| | | | X | | Check the torque of the hardware on the crank arm bearings. |

4.3.8 Inspecting the packer crank bearings

When lubricating, check the packer crank assembly (1) for excessive end play.

If the packer crank assembly has excessive end play, adjust the packer crank bearings. See your dealer.

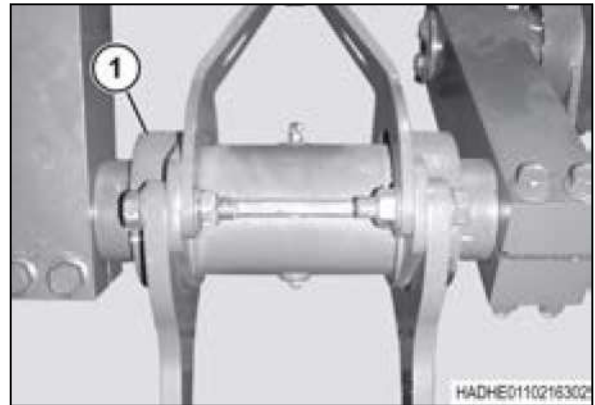


Fig. 17

4.3.9 Lubricating the packer/cutter crank bearings

Check the oil every 50 hours or 1000 bales.

Change the oil every three seasons.

Procedure

1. Make sure the bearing boxes (1) are level.
2. Check the oil level in the sight glass (2).
3. If the oil is below the sight glass, add oil until the oil comes up to at least the bottom of the sight glass.

Do not fill above the top of the sight glass.

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

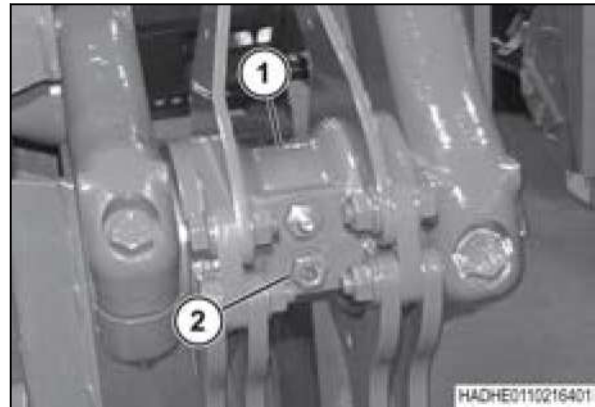


Fig. 18

4.3.10 Inspecting the packer/cutter crank bearings

When lubricating, check the packer/cutter crank assembly (1) for excessive end play.

If the packer/cutter crank assembly has excessive end play, adjust the packer/cutter crank bearings. See your dealer.

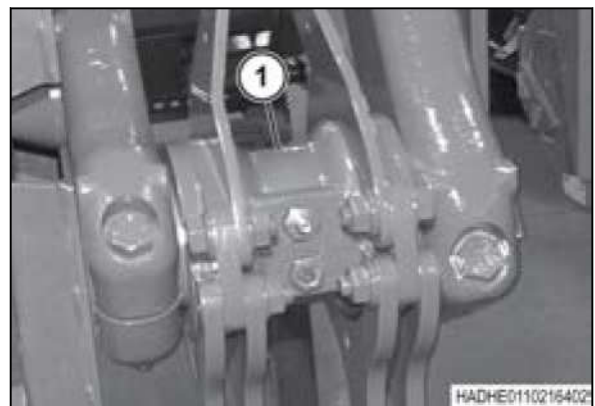


Fig. 19

Do not add too much oil. Too much oil can cause excessive gearbox heat.

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

7. Install the fill plug or breather and tighten.

Related Links

[Lubricants and capacities](#) page 371

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.

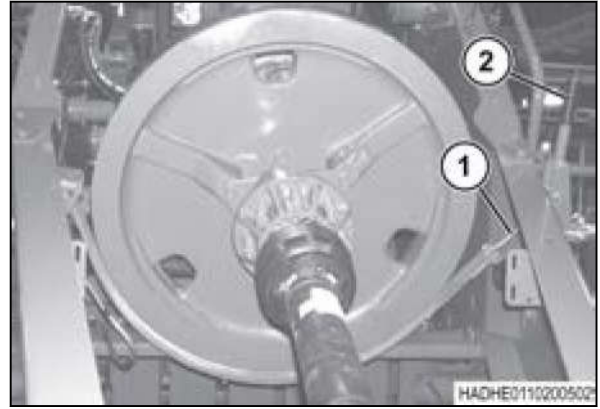


Fig. 56

4.14 Rotor cutter - early production cutter

On late production rotor cutters, the cutterbed lowers for service work.



Fig. 76

4.14.1 Replacing 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.

The procedure for installing filler plates (1) or knives is the same. Install filler plates to increase cut length or to not cut the crop.

The filler plate holder is on the cutterbed.

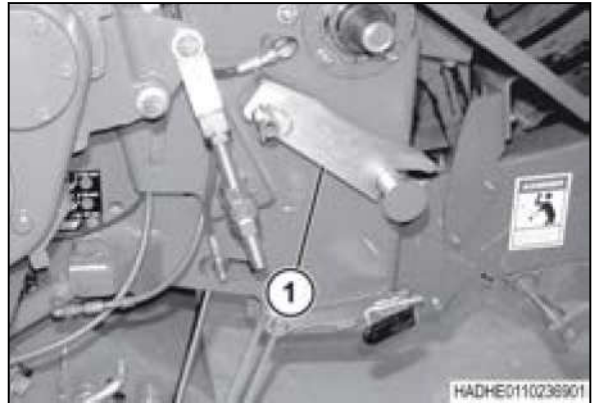


Fig. 77

Procedure

1. Retract the hydraulic cylinders all the way.
2. Park the machine on a solid level surface. Disengage the power take-off (PTO). Stop the engine, apply the park brake, and take the key with you. Apply the flywheel brake.
3. If the machine has been used in the field, clean off oil, dirt and crop material from the area where the work is to be done.

6. Push down and hold the stuffer sensor door (1) against the bottom door stop (2). Apply the force to the stuffer sensor door at the location (3). Do not apply force to the trip arm lever (4).
7. Check the clearance (A) between the adjustable stop (5) and the trip arm block (6).
The clearance must be a minimum of 5 mm (0.197 in).
If the clearance is not correct loosen the hardware on the adjustable stop. Adjust the clearance. Tighten the hardware.
8. Release the stuffer sensor door so the trip arm block (1) contacts the adjustable stop (2).
9. Adjust the hardware (3) to get the correct spring length (A).

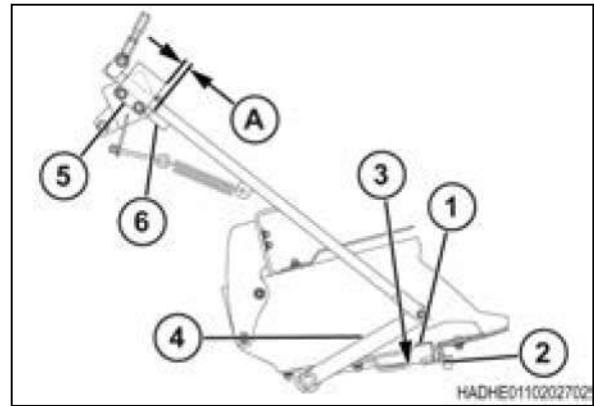


Fig. 101

| Baler size | | Spring length |
|-------------------------------|---------------------|-------------------|
| cm | ft | |
| 80 x 70, 80 x 90 | 2 x 3, 3 x 3 | 180 mm (7.087 in) |
| 120 x 70, 120 x 90, 120 x 130 | 2 x 4, 3 x 4, 4 x 4 | 170 mm (6.693 in) |

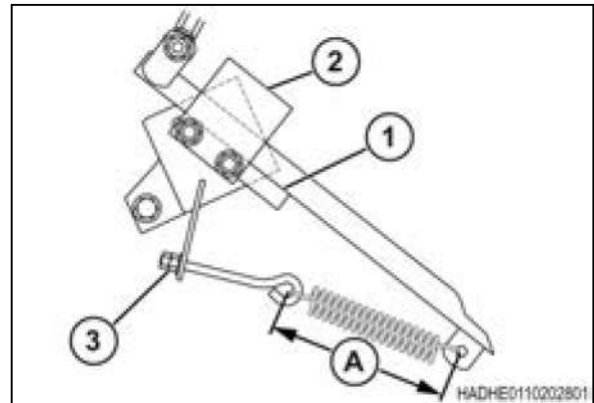


Fig. 102

The spring tension determines the minimum size of a flake in a bale. Extending the spring to give more length will make thicker flakes. A shorter spring length will make thinner flakes.

10. Check and adjust the stuffer clutch.

4.16.2 Adjusting the stuffer clutch

Procedure

1. Make sure the stuffer sensor door is adjusted correctly. See the instructions for adjusting the stuffer door.
2. Check the position of the clutch disengaging roller (1).

The clutch disengaging roller must be centered on the stuffer clutch arm (2). The stuffer clutch arm must not rub on the clutch roller arm during operation.

If necessary, install machinery (3) bushings between the clutch roller arm (4) and the mounting shaft (5).

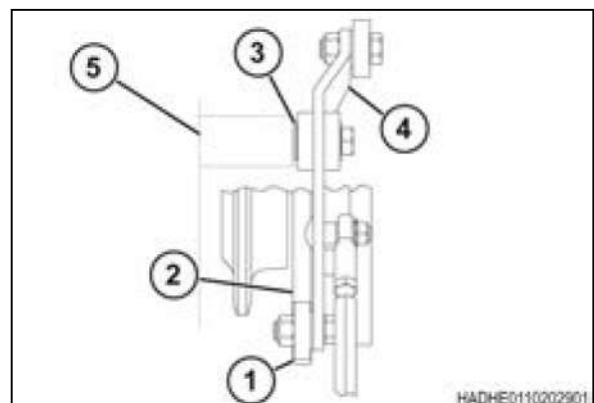


Fig. 103

1. Remove the cotter pin and clevis pin that fastens the knotter assembly to the knotter frame.
2. Raise the knotter assembly.
3. Raise or lower the knotter assembly to rotate the pinion gear (1) for access to the groove pin (2).
4. Drive the groove pin from the pinion gear.
5. Rotate the billhook (3) so the roller (4) is not under the billhook cam (5).
6. Remove the billhook and pinion gear.
7. Put the pinion gear in position in the knotter head frame (6).

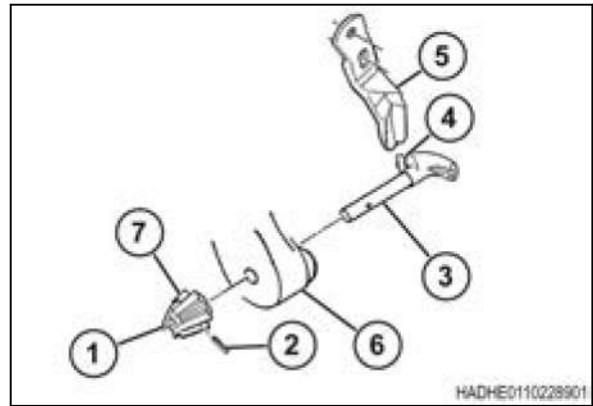


Fig. 124

The flat area (7) on the pinion gear must be toward the knotter cam gear.

8. Install the billhook in the knotter head frame and the pinion gear.
9. Rotate the billhook so the roller is under the billhook cam.
10. Align the holes in the pinion gear and billhook.
11. Drive the groove pin into the pinion gear until the groove pin is even with the edge of the hole.
12. Lower the knotter assembly.
13. Install the cotter pins and clevis pins.

4.18.6 Replacing the twine knife

Before starting the procedure



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.

A dull or damaged twine knife can cause knotter problems. The twine knives must be sharp for use on plastic twine.

Frequently check the twine knife for chips and dull or rolled edges.

Replace or sharpen a twine knife that is no longer sharp. Remove the twine knife from the stripper arm to sharpen. Sharpen the knife with a stone.

- 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.
Always check the twine finger and needle gap on the needle return stroke and with loose twine around the needle rollers.
 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.

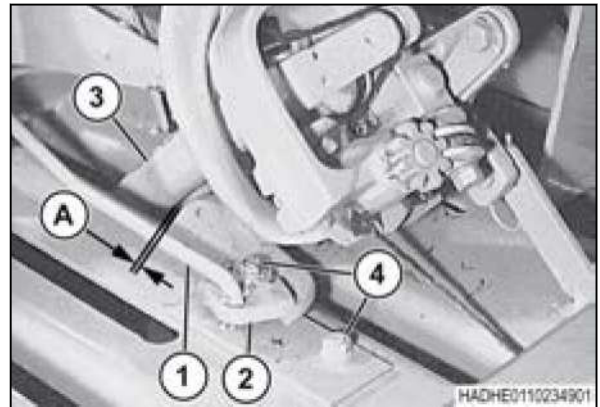


Fig. 143

Tighten the steering kingpin (1), if equipped, every 50 hours.



Fig. 158

| Stuffer shearbolt alarm is displayed | |
|---|-------------------|
| Cause(s) | Solution(s) |
| Thick dirt on the end of the stuffer shearbolt sensor | Clean the sensor. |
| Faulty stuffer shearbolt sensor | See your dealer. |
| Broken auxiliary drive arm bolt or other drive parts | See your dealer. |

| Twine wraps around the top of the billhook on the first knot | |
|---|--|
| Cause(s) | Solution(s) |
| Twine disc is rotated too far counterclockwise | Rotate the twine disc clockwise. |
| Needle and tucker arm are out of alignment causing the needle to miss the top twine. Twine is to the right-hand side of the needle. | Bend the tucker arm and/or needle until both parts are in the correct alignment. |

| No knot in either twine, on one or all of the knotters | |
|---|---|
| Cause(s) | Solution(s) |
| Twine finger is not working correctly | Inspect the twine finger linkage and twine finger adjustment. |
| Twine finger roller is not coming in contact with the cam | Replace or connect the twine finger spring. Clean or repair as necessary. Adjust the twine fingers. Check for any obstructions that can prevent the twine finger from rotating freely. |
| Damaged billhook tongue | Replace the billhook tongue. |
| Not enough tension on the billhook cam | Increase the tension on the billhook cam |
| Twines to the needle and knotter are not routed correctly | Check and correct the twine routing. |
| Twine holder spring is too tight and does not permit enough twine to slip through the twine disc to form a knot | Loosen the twine holder spring adjusting screw. Clean dust and chaff from under the twine holder spring. Adjust the twine holder. |
| Billhook is not rotating | Replace the roll pin in the billhook pinion. |
| Twine is being cut in the twine discs | Loosen the twine holder and/or remove all sharp edges on the twine holder and twine discs. |

5.12 Knotter lubrication system troubleshooting

| Knotter lubrication pump does not run or runs all the time | |
|--|-------------------------------------|
| Cause(s) | Solution(s) |
| Broken electrical wires | See your dealer. |
| Intervals are too long between lubrication times | Increase the lubrication frequency. |
| Blocked bearing | See your dealer. |
| Blocked or crimped line | Repair and replace the line. |

| Lubrication point is not receiving oil | |
|--|--|
| Cause(s) | Solution(s) |
| Reservoir is empty | Fill the reservoir with correct lubricant. |
| Broken line | Repair or replace the line. |
| Intervals are too long between lubrication times | Increase the lubrication frequency. |
| Blocked bearing | See your dealer. |
| Blocked or crimped line | Repair or replace the line. |

| Knotter divider indicator does not cycle | |
|--|---|
| Cause(s) | Solution(s) |
| Not enough oil is sent at each lubrication time | Press the pumps 10 to 12 times at each lubrication period or until oil is sent. |
| Intervals are too long between lubrication times | Increase the lubrication frequency. |
| Blocked bearing | See your dealer. |
| Blocked or crimped line | Repair or replace the line. |
| Pump failure | See your dealer. |

6. Specification

| | |
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6.1.13 Knotter and needle specifications

| | 2240 | 2240 packer/cutter | 2250 | 2250 packer/cutter | 2260 | 2270 | 2270XD | 2290 |
|---------------------------|------------------------------------|--------------------|------|--------------------|------|------|--------|------|
| Knotter quantity | 4 | | | | 6 | | | |
| Knotter type | Double knot | | | | | | | |
| Knotter spacing | 176 mm (6.9 in) | | | | | | | |
| Needle quantity | 4 | | | | 6 | | | |
| Protection | Shearbolt on main drive sprocket | | | | | | | |
| Knotter/needle lockout | Manual lever, direct acting | | | | | | | |
| Needle protection linkage | Automatic, link to needle carriage | | | | | | | |

6.1.14 Bale chamber tension specifications

| | 2240 | 2240 packer/cutter | 2250 | 2250 packer/cutter | 2260 | 2270 | 2270XD | 2290 |
|---------------|---------------------------------|--------------------|------|--------------------|------|------|--------|------|
| Control | Terminal operated hydraulics | | | | | | | |
| Actuation | Spool type solenoid valve | | | | | | | |
| System supply | Open center on board hydraulics | | | | | | | |

6.1.15 Ejector specifications

| | 2240 | 2240 packer/cutter | 2250 | 2250 packer/cutter | 2260 | 2270 | 2270XD | 2290 |
|-------------------------|------------------------------------|--------------------|------|--------------------|------|------|----------------------------------|------|
| Number of teeth | 8 | | | | | | 10 | |
| Number of teeth engaged | Operator selected 2, 4, 6, or 8 | | | | | | Operator selected 4, 6, 8, or 10 | |
| Slide type | Ball bearing rollers | | | | | | | |
| Power | Hydraulic cylinder | | | | | | | |
| Cylinder diameter | 64 mm (2.5 in) | | | | | | | |
| Stroke | 610 mm (24.0 in) | | | | | | | |
| Valve | Enable valve/control valve | | | | | | | |
| Operation | Switch and teeth selection at rear | | | | | | | |

7.1 Accessories

7.1.1 Implement driveline (IDL)

The machine can use a type 2 or a type 3 implement driveline (IDL).

Different implement drivelines are required for type 2 and type 3 drives. The implement drivelines have different size quick connect yokes. The type 2 IDL is shorter.

Use the IDL type that is correct size for the tractor power take-off (PTO).

The hitch length must be correct for the type of IDL used. See the hitch and drawbar dimension section for more information.

7.1.2 Hydraulic jack kit

The hydraulic jack kits can be installed on any of the machines in this operator manual.

The hydraulic jack enables operators to lift and lower the tongue of the machine from the cab of the tractor.

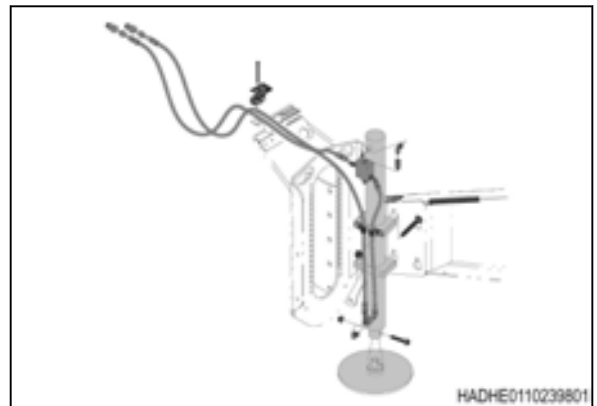


Fig. 1

7.1.3 C1000 Terminal kit

The C1000 terminal kit permits the machine to be operated using tractors that are not equipped with an ISO 11783 controller.

The C1000 terminal kit contains an ISO 11783 compliant 240 x 240 pixel display terminal, wiring harness, and necessary brackets for installation. The kit also contains a terminal operator manual and installation instructions.



Fig. 2

8.1 Assembly

8.1.1 Checking the machine before assembly

Procedure

1. Check for damage before unloading the machine.
2. If damage is found, contact the shipping company immediately.
3. Park the machine on a hard, level surface.
4. Make sure there is enough area on the same surface to park the tractor in front of the machine.
5. Remove all shipping wire and loose parts.
6. Open the left-hand twine box.
7. Remove the boxes and sacks of parts.

NOTE: Some of the parts are for assembling the machine and some of the parts are service parts.

NOTE: After all assembly is complete, put the service parts inside of the toolbox on the left-hand side of the tongue.

8.1.2 Machine assembly

8.1.2.1 Assembling the pickup

Procedure

1. Remove the bolts, flat washers, flange top lock nuts, and latch brackets (1) from both sides of the pickup.
2. Discard the flat washers.
3. Put the pickup wheel assemblies (2) in the position shown.
4. Install two 1/2-13 x 1-1/4 carriage bolts (3), two 1/2 inch plain washers (4), and two flange top lock nuts (5) from the sack of parts.
5. Raise the pickup wheels all the way and tighten the hardware.
6. Connect the tractor to the baler.
7. Adjust the pickup height.

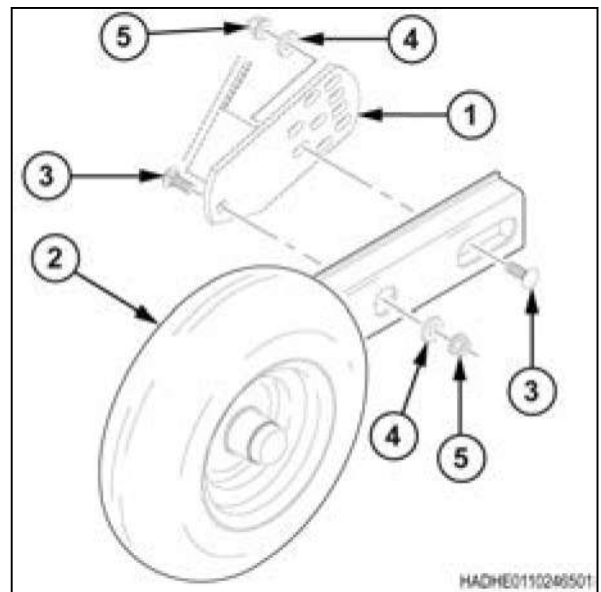


Fig. 1

18. Connect the rear IDL chain (1) to the machine at 90 degrees to the IDL. The chains must be able to wrap at least 180 degrees around the IDL cover.
19. Lubricate the cone shield bearings and all other lubrication locations on the IDL.

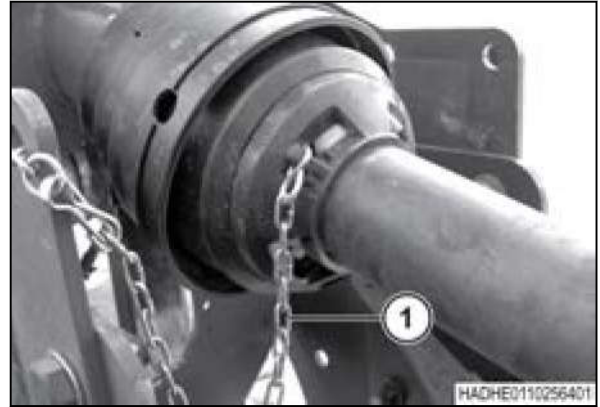


Fig. 31

20. Put the IDL support (1) in the support position.
21. Install the IDL (2) onto the IDL support.
22. Lubricate the cone shield bearings through the lubrication fittings (3). Make sure to lubricate all other lubrication locations on the IDL.

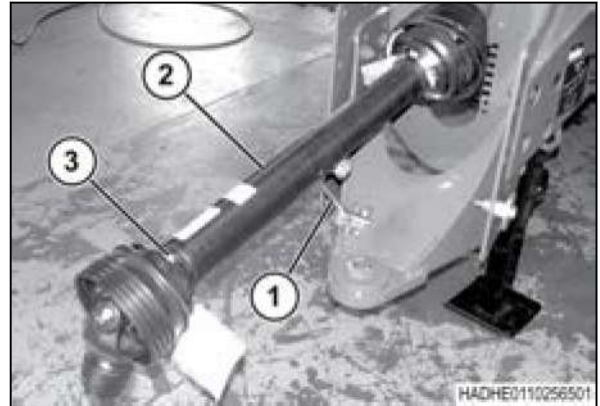


Fig. 32

8.1.2.8 Installing an optional constant velocity driveline

If the machine did not come with a constant velocity (CV) driveline, a CV driveline can be purchased from your dealer.

Procedure

1. Connect the tractor and the machine correctly at the draw bar.
2. Install the safety transport chain.
3. Release the latches (1) that hold the outer shield (2) to the intermediate bearing support.
4. Remove the outer shield.
5. Move the pedestal bearing housing (3) up or down to make the angles of the double CV driveline equal.

NOTE: Having the angles the same will increase the implement drivelines (IDL) life.

6. Make sure to adjust the CV IDL angle correctly.

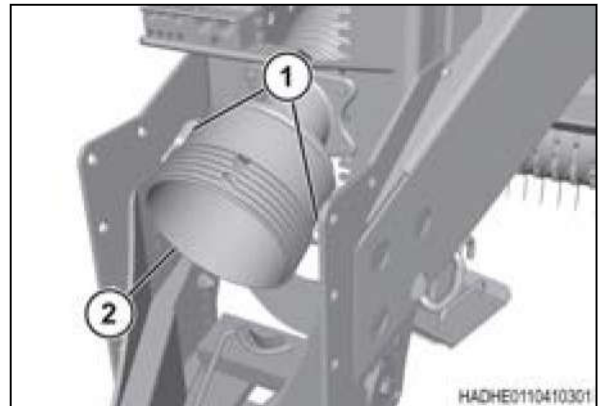


Fig. 33

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