SERVICE MANUAL

Roll-Belt™ 450 Utility

Round Baler

FIXTHIS.COM

Part number 47546428
English
June 2015
Replaces part number 84415446

NEW HOLLAND AGRICULTURE

Contents

INTRODUCTION

Main gearbox and drive 14

[14.100] Main gearbox and drive 14.1

Rear axle system 27

[27.550] Non-powered rear axle 27.1

Hydraulic systems 35

[35.540] Bale density circuit 35.1

[35.550] Tailgate circuit 35.2

[35.560] Pickup lift circuit 35.3

Wheels 44

[44.520] Rear wheels 44.1

Electrical systems 55

[55.100] Harnesses and connectors 55.1

[55.629] Pressing/Bale formation electrical control 55.2

[55.640] Electronic modules 55.3

[55.DTC] FAULT CODES 55.4

Product feeding 60

[60.220] Pickup 60.1

Pressing - Bale formation 62

[62.140] Bale formation 62.1

[62.150] Starter roll 62.2

[62.153] Stationary roll 62.3

[62.155] Stripper roll 62.4

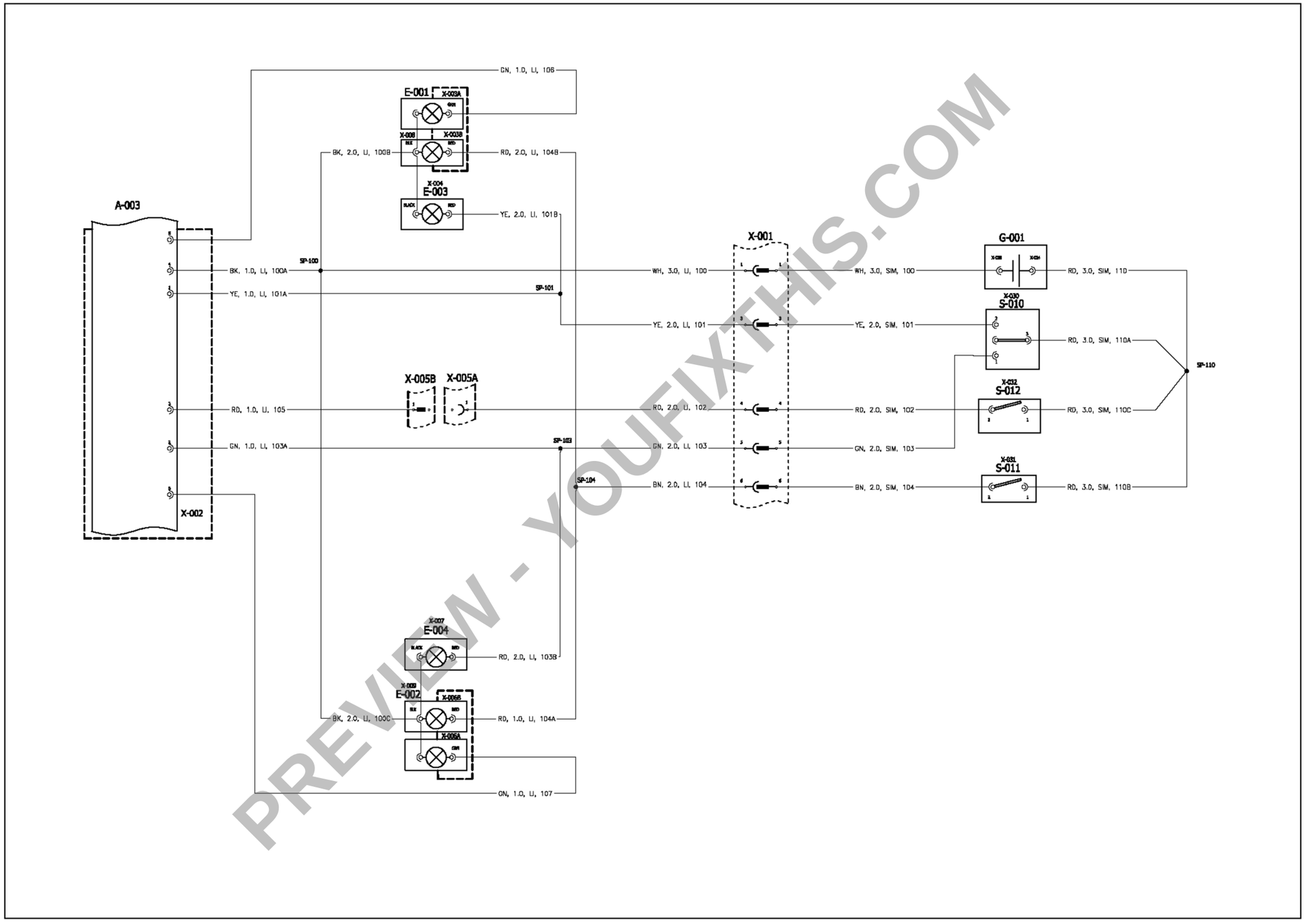
[62.160] Floor roll 62.5

[62.170] Sledge 62.6

Tying/Wrapping/Twisting 68

Download full manual at youfixthis.com

PREVIEW - YOUFIXTHIS.COM

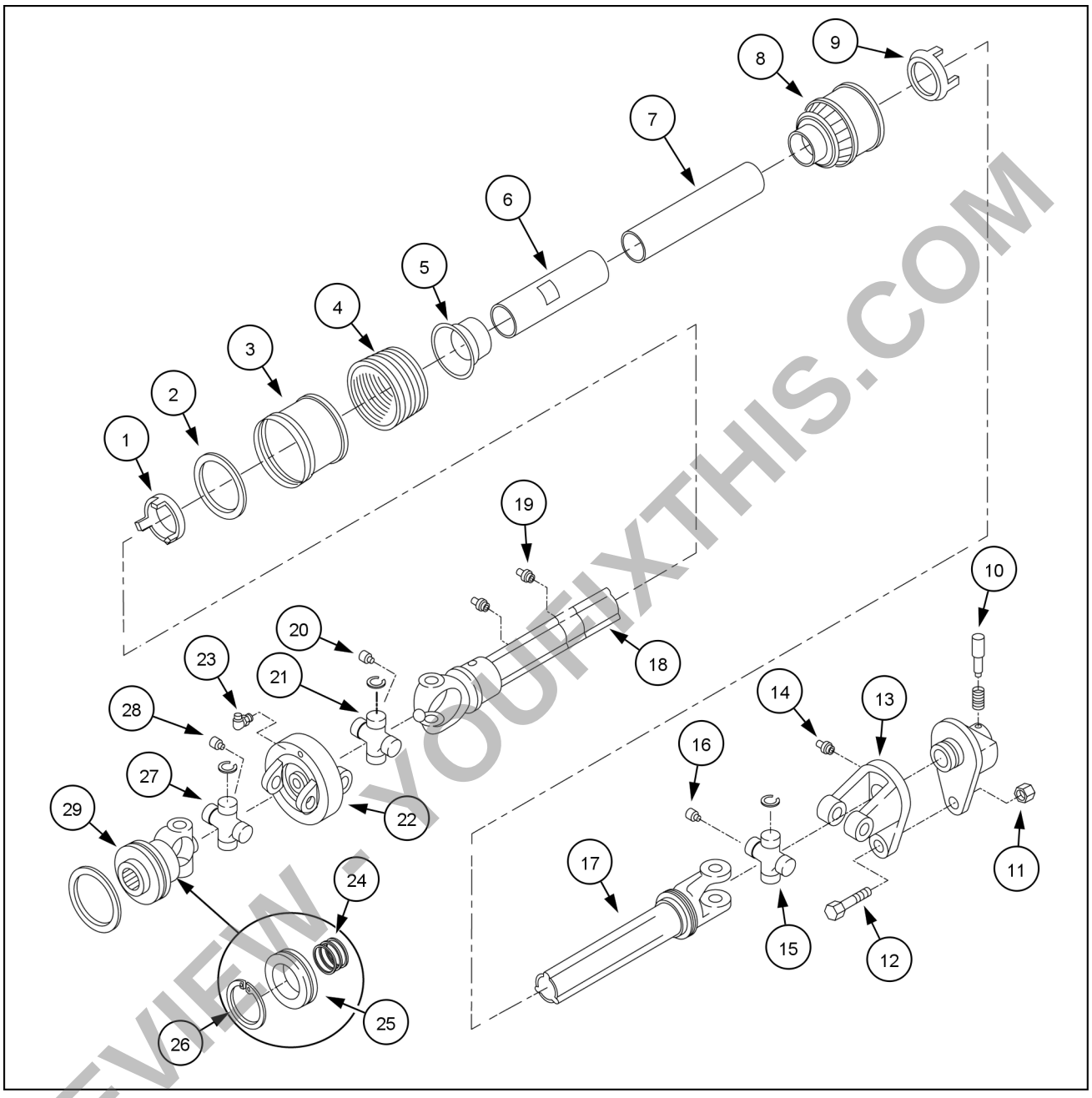


PREVIEW - YOUFIXTHIS.COM

84228463_1 1

Download full manual at youfixthis.com

Power Take-Off (PTO) shaft - Exploded view



NHIL13RB00155AA 1

Power Take-Off (PTO) shaft – Exploded view

(1) - Nylon retainer
(2) - Ring
(3) - Cover band
(4) - Cover
(5) - Front shield
(6) - Outer tube
(7) - Inner tube
(8) - Rear shield
(9) - Retaining ring
(10) - Quick-release pin
(11) - Shear bolt nut, M12, CL (Class) 8
(12) - Shear bolt, M12 x 45, CL8.8
(13) - Shear bolt hub half
(16) - Lubrication fitting, rear universal joint
(17) - Rear PTO shaft
(18) - Front PTO shaft
(19) - Lubrication fitting, front PTO shaft
(20) - Lubrication fitting, front universal joint
(21) - Front universal joint
(22) - Front Constant Velocity (CV) socket
(23) - Lubrication fitting, elbow, front CV socket
(24) - Spring, collar
(25) - Collar
(26) - Retaining clip
(27) - Front universal joint
(28) - Lubrication fitting, front universal joint

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Torque - Minimum tightening torques for normal assembly

METRIC NON-FLANGED HARDWARE

NOM. SIZE	CLASS 8.8 BOLT and CLASS 8 NUT		CLASS 10.9 BOLT and CLASS 10 NUT		LOCKNUT CL.8 W/CL8.8 BOLT	LOCKNUT CL.10 W/CL10.9 BOLT
	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr		
M4	2.2 N·m (19 lb in)	2.9 N·m (26 lb in)	3.2 N·m (28 lb in)	4.2 N·m (37 lb in)	2 N·m (18 lb in)	2.9 N·m (26 lb in)
M5	4.5 N·m (40 lb in)	5.9 N·m (52 lb in)	6.4 N·m (57 lb in)	8.5 N·m (75 lb in)	4 N·m (36 lb in)	5.8 N·m (51 lb in)
M6	7.5 N·m (66 lb in)	10 N·m (89 lb in)	11 N·m (96 lb in)	15 N·m (128 lb in)	6.8 N·m (60 lb in)	10 N·m (89 lb in)
M8	18 N·m (163 lb in)	25 N·m (217 lb in)	26 N·m (234 lb in)	35 N·m (311 lb in)	17 N·m (151 lb in)	24 N·m (212 lb in)
M10	37 N·m (27 lb ft)	49 N·m (36 lb ft)	52 N·m (38 lb ft)	70 N·m (51 lb ft)	33 N·m (25 lb ft)	48 N·m (35 lb ft)
M12	64 N·m (47 lb ft)	85 N·m (63 lb ft)	91 N·m (67 lb ft)	121 N·m (90 lb ft)	58 N·m (43 lb ft)	83 N·m (61 lb ft)
M16	158 N·m (116 lb ft)	210 N·m (155 lb ft)	225 N·m (166 lb ft)	301 N·m (222 lb ft)	143 N·m (106 lb ft)	205 N·m (151 lb ft)
M20	319 N·m (235 lb ft)	425 N·m (313 lb ft)	440 N·m (325 lb ft)	587 N·m (433 lb ft)	290 N·m (214 lb ft)	400 N·m (295 lb ft)
M24	551 N·m (410 lb ft)	735 N·m (500 lb ft)	762 N·m (560 lb ft)	1016 N·m (750 lb ft)	501 N·m (370 lb ft)	693 N·m (510 lb ft)

NOTE: *M4 through M8 hardware torque specifications are shown in pound-inches. M10 through M24 hardware torque specifications are shown in pound-feet.*

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Electronic module - View Fault History

The fault history screen displays recent faults from table (xx), with the bale count value at the most recent time that the fault occurred. Press the CANCEL / RESET key to return to the previous menu. When a fault occurs, refer to the "Setup/Diagnostic Mode" section of Bale Command™ II for Roll-Belt ™ 450 Utility Round Baler Operator's Manual.

NOTE: *Fault History is limited to the 8 most recent events.*

Fault list

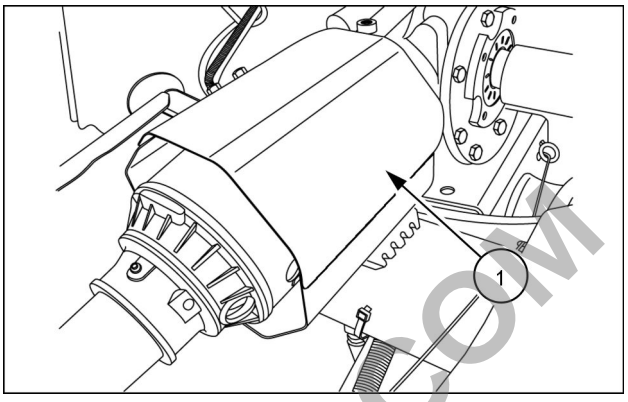
Fault Code	Component	Fault Description	Fault Code Resolution (FCR)
100.03	Twine Pot	Twine arm position sensor voltage too high	**100.03- Twine arm position potentiometer - shorted to Supply (55.433)**
100.04	Twine Pot	Twine arm position sensor voltage too low or shorted to ground	**100.04-Twine arm position potentiometer - shorted to ground (55.433)**
101.03	Net Pot	Net arm position sensor voltage too high	**101.03- Net arm position sensor - shorted to Supply (55.433)**
101.04	Net Pot	Net arm position sensor voltage too low or shorted to ground	**101.04- Net arm position sensor - shorted to ground (55.433)**
102.07	Twine Pot Range	Twine arm movement stalled below max calibration range	**102.07- Twine potentiometer range - out of range below max error (55.433)**
103.07	Twine Pot Range	Twine arm movement stalled above min calibration range	**103.07- Twine potentiometer range - out of range above min error (55.433)**
104.07	Net Pot Range	Net arm movement stalled below max calibration range	**104.07- Net arm position potentiometer range - out of range below max error (55.433)**
105.07	Net Pot Range	Net arm movement stalled above min calibration range	**105.07- Net arm position potentiometer range - out of range above min error (55.433)**
106.03	Bale Size Pot	Potentiometer shorted to ground	**106.03- Bale size potentiometer - shorted to Supply (55.629)**
106.04	Bale Size Pot	Potentiometer shorted to ground	**106.04- Bale size potentiometer - shorted to ground (55.629)**
107.03	LH Shape Pot	Potentiometer shorted to supply	**107.03- Left bale shape potentiometer - shorted to Supply (55.422)**
107.04	LH Shape Pot	Potentiometer shorted to ground	**107.04- LH shape potentiometer - shorted to ground (55.422)**
108.03	RH Shape Pot	Potentiometer shorted to supply	**108.03-Right bale shape potentiometer - shorted to supply (55.422)**
108.04	RH Shape Pot	Potentiometer shorted to supply	**108.04- Right bale shape potentiometer - shorted to ground (55.422)**
109.07	Twine Arm	Twine arms stopped moving during wrap cycle	**109.07- Twine Arm Stalled (55.433)**
110.07	Net Arm	Net arm has stopped moving without returning to home position	**110.07- Net Arm Stalled (55.433)**
120.03	Battery Voltage	Supply voltage too high	**120.03- Battery voltage - shorted to supply (55.640)**
120.04	Battery Voltage	Supply voltage too low	**120.04- Battery voltage - shorted to ground (55.640)**
121.03	**8 V** reference	**8 V** supply voltage too high	**121.04- 8V reference - shorted to ground (55.640)**
121.04	**8 V** reference	**8 V** supply voltage too low	**121.03- 8V reference - shorted to supply (55.640)**

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

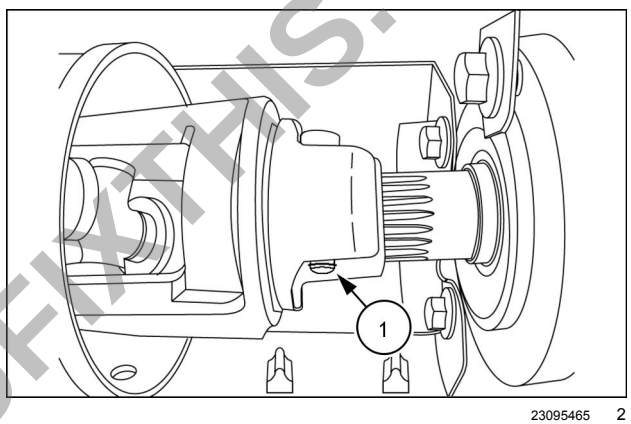
Power Take-Off (PTO) shaft - Remove

1. Access the rear PTO yoke as follows:
   - For a baler equipped with a net or net/twine wrapping system, open the front shield.
   - For a baler equipped with a twine wrapping system only, open the gearbox input shield **(1)**.



93095467-REV 1

2. Depress the quick release pin **(1)** on the rear yoke of the Power Take-Off (PTO) shaft.
3. Slide the PTO shaft forward off of the gearbox input shaft.



23095465 2

Next operation:
Power Take-Off (PTO) shaft - Disassemble (14.100)

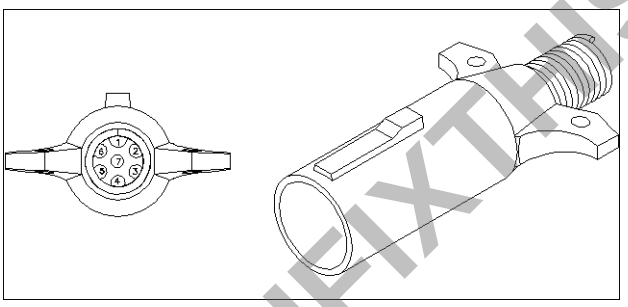
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

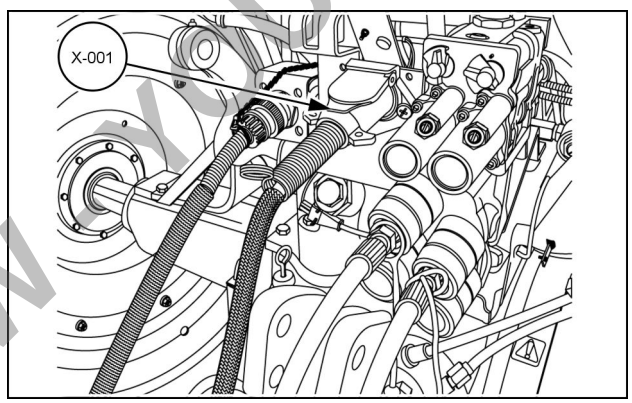
Wire connectors - Component diagram 00 Lighting harness; connectors X-001 to X-009

CONNECTOR X-001

CONNECTOR X-001 - CONNECTOR,LIGHTS			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
1	215 (WH)	X-001CONNECTOR,LIGHTS SP-100	**SHEET 01**
2	-	-	
3	208 (YE)	X-001CONNECTOR,LIGHTS SP-101	**SHEET 01**
4	202 (RD)	X-001CONNECTOR,LIGHTS X-005ABRAKE LIGHTS OVER RIDE	
5	210 (GN)	X-001CONNECTOR,LIGHTS SP-103	
6	205 (BN)	X-001CONNECTOR,LIGHTS SP-104	
7	-	-	



84137504 1



93102078 2

PREVIEW BY YOUFIXTHIS.COM

Download full manual at youfixthis.com

Controller Area Network (CAN) data bus - Problem solving

Roll-Belt™ 450 Utility	Standard twine

Make sure that the baler is connected to the tractor properly. Make sure the baler has a constant **12.0 V** power supply source.

OPERATION

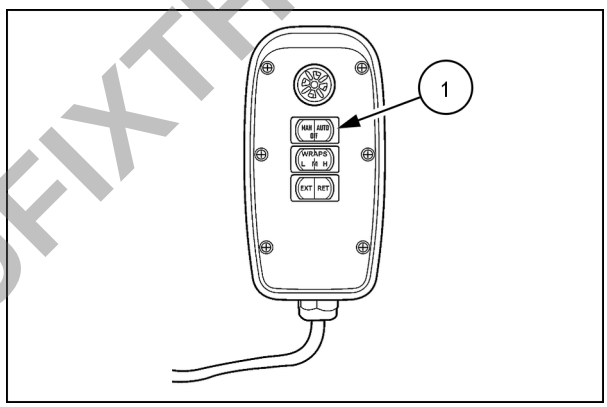
See **Electrical system - Dynamic description (55.000)** for an overview on the CAN system.

The Controller Area Network (CAN) is a multiplex system which follows the guidelines established in **SAE J1939**. Through the CAN data bus, only one wire pair is needed. The information is then accessed through the network by other systems that need it. On today's high-tech machinery, the complexity of wiring can be greatly reduced through the use of the CAN data bus network. The twisted pair of wires are identified as CAN HI (yellow) and CAN LO (green).

When a Controller Area Network (CAN) failure is present and the control panel will not operate, perform the following checks and circuit testing.

TROUBLESHOOTING

1. Turn OFF the power and auto / manual switch **(1)** to interrupt any possible electrical current flow to the wrapper components.



231003237 1

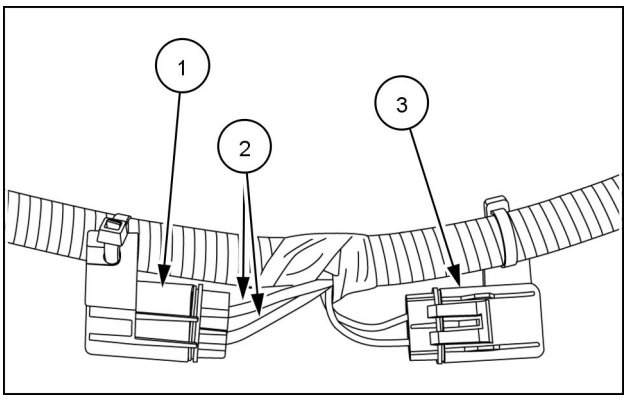
2. Inspect the controller fuse F-001 **5.0 A (3)** and system fuse F-002 **25.0 A (1)** circuit. The fuses are located on the baler to tractor harness.

Remove fuse F-001 from connector **X-017**. Remove fuse F-002 from connector **X-016**.

A. Check for disconnected, loose, or broken connectors and/or connections in the wiring harness
B. Check for broken, chaffed, pierced, or loose wires in the wiring harness.
C. Make sure that the connector pins are secured into the connector cavity.
D. Check for bent, dirty, corroded, or loose connector pins.

Repair any damage that may be present in the connectors, the connections, or the wiring harness.

If damage is not found, check the CAN circuit.



23110593 2

NOTE: *Make sure that you install the fuses back into the correct connector cavity with the correct amperage rating. The controller fuse F-001* ***(3) 5.0 A*** *uses a smaller gauge wire size. The system fuse F-002* ***(1) 25.0 A*** *uses a thicker gauge wire size* ***(2)****.*

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

General specification

Length	
Twine and Net/Twine Wrapper Units From baler hitch to closed tailgate:	**4134 mm** (**163 in**)
Net/Twine Wrapper Unit with Spare Net Box From baler hitch to spare net box installed on tailgate:	**4470 mm** (**176 in**)

Baler width	
Unit equipped with 11L - 14 tires:	**2337 mm** (**92 in**)
Unit equipped with 31 X 13.5 - 15 tires:	**2413 mm** (**95 in**)

Height	
Unit equipped with 11L - 14 tires:	**2510 mm** (**98.8 in**)
Unit equipped with 31 X 13.5 - 15 tires:	**2530 mm** (**99.6 in**)

Weight	
Basic unit: (no kit options installed)	**1569 kg** (**3460 lb**)

Tire size	
Standard: 11L - 14	Air Pressure: **207 kPa** (**30 psi**)
Optional: 31 X 13.5 - 15 (6 PLY)	Air Pressure: **207 kPa** (**30 psi**)

Pickup	
Feeder type:	Standard
Pickup drive:	Chain
Pickup drive protection:	Breakaway Chain
Width (overall):	**1554 mm** (**61 in**)
Width (inside side sheets):	**1337 mm** (**52.6 in**)
Width (between outside tines):	**1134 mm** (**45 in**)
Tine spacing:	**67 mm** (**2.6 in**)
Tine bars (quantity):	4
Pickup tines (quantity):	72
Reel speed:	**113 RPM**
Tine tip speed:	**3.09 m/s** (**10.14 ft/s**)
Reel guard diameter inside guards:	**315 mm** (**12.4 in**)
Cams (quantity):	1
Windguard type:	Adjustable cam / Pivoting / Floating
Windguard fingers (quantity):	9

Pickup gauge wheel tire size - (if equipped)	
Standard: 4.10/3.50-6	Air Pressure: **413 kPa** (**60 psi**)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Index

Main gearbox and drive - 14

Main gearbox and drive - 100

Main gearbox - Adjust 36
Main gearbox - Assemble 31
Main gearbox - Disassemble 23
Main gearbox - Drain fluid 18
Main gearbox - Exploded view 7
Main gearbox - Filling 19
Main gearbox - General specification 4
Main gearbox - Inspect 30
Main gearbox - Install 39
Main gearbox - Remove 20
Power Take-Off (PTO) shaft - Assemble 14
Power Take-Off (PTO) shaft - Disassemble 9
Power Take-Off (PTO) shaft - Exploded view 5
Power Take-Off (PTO) shaft - General specification 3
Power Take-Off (PTO) shaft - Inspect 13
Power Take-Off (PTO) shaft - Install 17
Power Take-Off (PTO) shaft - Remove 8

PREVIEW - YOUFIXTHIS.COM

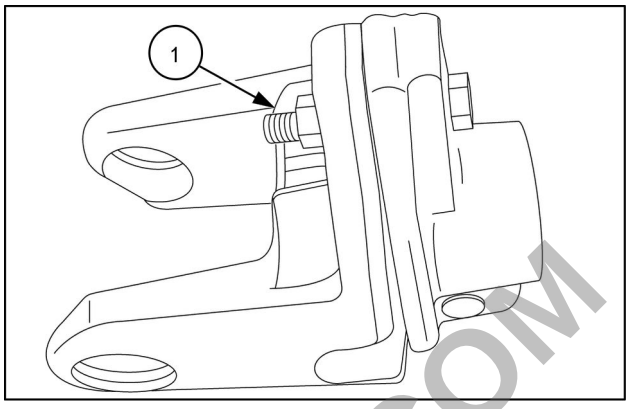
Download full manual at youfixthis.com

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

15. Remove and discard the shear bolt **(1)** from the shear bolt hub.

NOTE: *The shear bolt Replacement Kit, 87520106, replaces the shear bolt assembly with one M8 x 45 Class (CL) 8.8 hex bolt and M8 CL8 nut.*



NHIL13RB00166AA 11

Next operation:
Power Take-Off (PTO) shaft - Inspect (14.100)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Hydraulic systems - 35

Bale density circuit - 540

Roll-Belt™ 450 Utility

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Contents

Wheels - 44

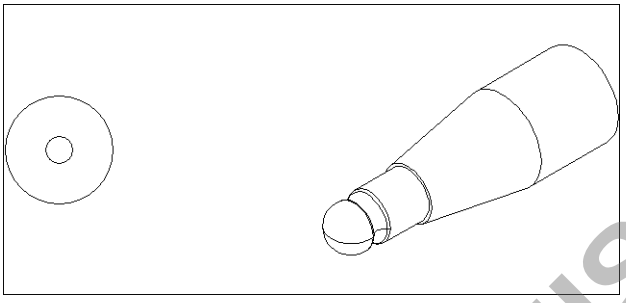
[44.520] Rear wheels 44.1

PREVIEW - YOUFIXTHIS.COM

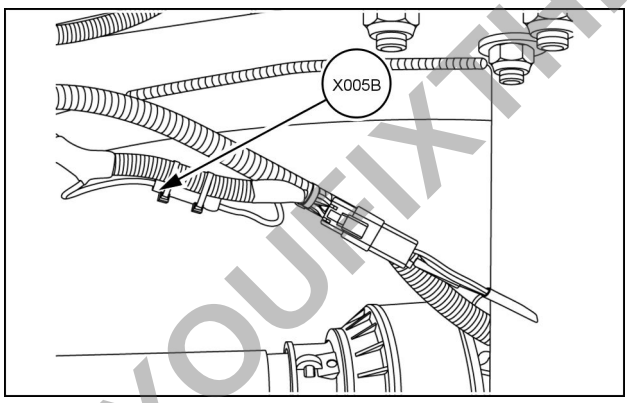
Download full manual at youfixthis.com

CONNECTOR X-005B

CONNECTOR X-005B - BRAKE LIGHTS OVER RIDE			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
1	203 (RD)	X-005BBRAKE LIGHTS OVER RIDE X-002A-003 MODULE, LIGHTING CONTROL	**SHEET 01**



84120008 11



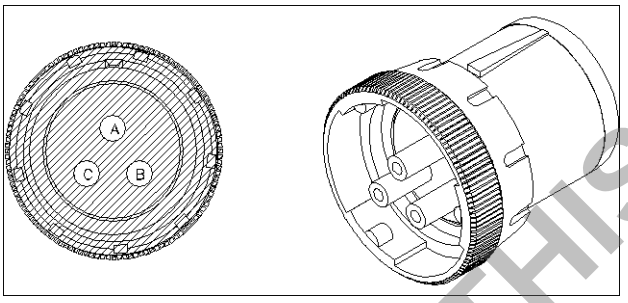
93111508 12

PREVIEW - YOUFIXTHIS.COM

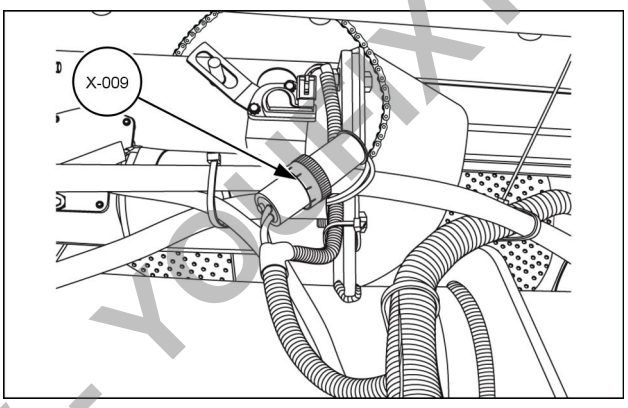
Download full manual at youfixthis.com

CONNECTOR X-009

CONNECTOR X-009 - M-001 TWINE WRAP MOTOR			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
A	-	-	
B	035B (WH)	X-009M-001 TWINE WRAP MOTOR SP-035	**SHEET 01**
C	036 (GY)	X-009M-001 TWINE WRAP MOTOR X-019K-003 NET/TWINE MOTOR SELECT RELAY	



87706509 7



93111512 8

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

CONNECTOR X-015

CONNECTOR X-015 - A-001 INTERMEDIATE CONTROL MODULE			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
1	011 (BL)	X-015A-001 INTERMEDIATE CONTROL MODULE SP-011	**SHEET 02**
2	-	-	
3	002B (OR)	X-015A-001 INTERMEDIATE CONTROL MODULE SP-002	**SHEET 01**
4	002C (OR)	X-015A-001 INTERMEDIATE CONTROL MODULE SP-002	
5	-	-	
6	-	-	
7	-	-	
8	082 (YE)	X-015A-001 INTERMEDIATE CONTROL MODULE X-030R-007 BALE SIZE SENSOR	**SHEET 02**
9	-	-	
10	-	-	
11	012 (PK)	X-015A-001 INTERMEDIATE CONTROL MODULE SP-012	**SHEET 02**
12	017 (YE)	CAN HI	**SHEET 03**
13	018 (GN)	CAN LO	
14	-	-	
15	-	-	
16	-	-	
17	-	-	
18	-	-	
19	-	-	
20	-	-	
21	080 (YE)	X-028R-005 LEFT BALE SHAPE SENSOR X-015A-001 INTERMEDIATE CONTROL MODULE	**SHEET 01**
22	009 (YE)	X-015A-001 INTERMEDIATE CONTROL MODULE X-006S-006 TAIL GATE SWITCH	**SHEET 02**
23	-	-	
24	010 (YE)	X-010R-001 TWINE WRAP POSITION SENSOR X-015A-001 INTERMEDIATE CONTROL MODULE	**SHEET 02**
25	-	-	
26	-	-	
27	014 (YE)	X-015A-001 INTERMEDIATE CONTROL MODULE SP-014	**SHEET 01**
28	013 (YE)	X-015A-001 INTERMEDIATE CONTROL MODULE SP-013	
29	019D (BK)	X-015A-001 INTERMEDIATE CONTROL MODULE SP-019A	**SHEET 02**
30	-	-	
31	081 (YE)	X-029R-006 RIGHT BALE SHAPE SENSOR X-015A-001 INTERMEDIATE CONTROL MODULE	**SHEET 02**
32	-	-	
33	-	-	
34	-	-	

PREVIEW YOUFIXTHIS.COM

Download full manual at youfixthis.com

Controller Area Network (CAN) data bus - Problem solving

Roll-Belt™ 450 Utility	Deluxe twine

Make sure that the baler is connected to the tractor properly. Make sure the baler has a constant **12.0 V** power supply source.

OPERATION

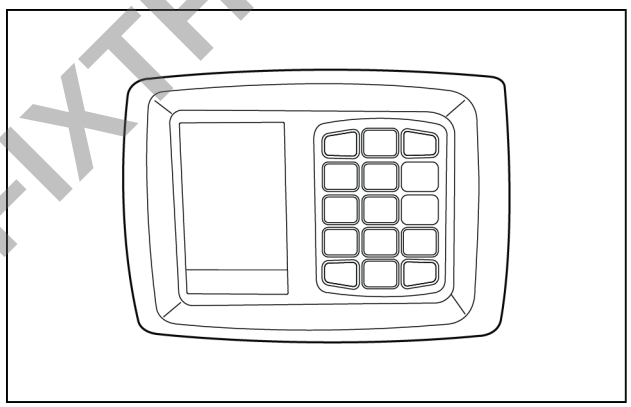
See **Electrical system - Dynamic description (55.000)** for an overview on the CAN system.

The Controller Area Network (CAN) is a multiplex system which follows the guidelines established in **SAE J1939**. Through the CAN data bus, only one wire pair is needed. The information is then accessed through the network by other systems that need it. On today's high-tech machinery, the complexity of wiring can be greatly reduced through the use of the CAN data bus network. The twisted pair of wires are identified as CAN HI (yellow) and CAN LO (green).

When a Controller Area Network (CAN) failure is present and the control panel will not operate, perform the following checks and circuit testing.

TROUBLESHOOTING

1. Power OFF the operator's panel.



NHIL14RB00769AA 1

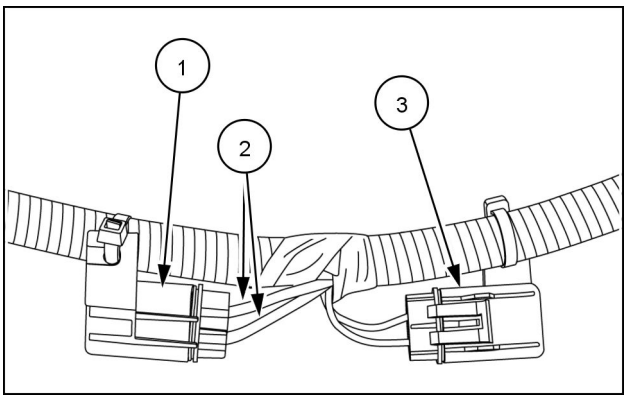
2. Inspect the controller fuse F-001 **5.0 A (3)** and system fuse F-002 **25.0 A (1)** circuit. The fuses are located on the tractor to baler harness.

Remove fuse F-001 from connector **X-017**. Remove fuse F-002 from connector **X-016**.

A. Check for disconnected, loose, or broken connectors and/or connections in the wiring harness
B. Check for broken, chaffed, pierced, or loose wires in the wiring harness.
C. Make sure that the connector pins are secured into the connector cavity.
D. Check for bent, dirty, corroded, or loose connector pins.

Repair any damage that may be present in the connectors, the connections, or the wiring harness.

If damage is not found, check the CAN circuit.



23110593 2

NOTE: *Make sure that you install the fuses back into the correct connector cavity with the correct amperage rating. The controller fuse F-001* ***(3) 5.0 A*** *uses a smaller gauge wire size. The system fuse F-002* ***(1) 25.0 A*** *uses a thicker gauge wire size* ***(2)****.*

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Contents

Product feeding - 60

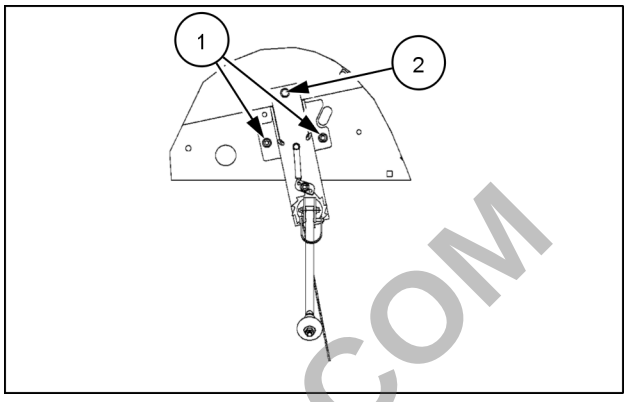
[60.220] Pickup 60.1

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

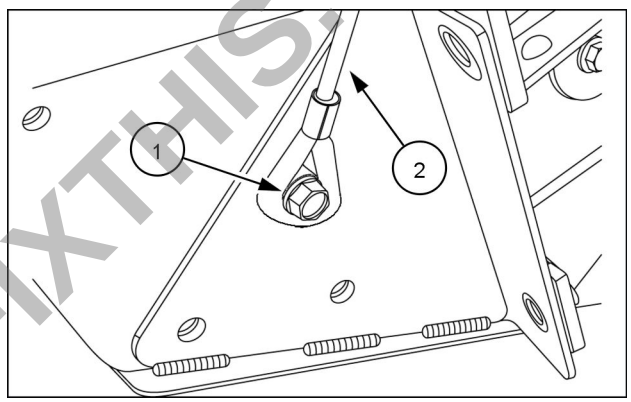
Mechanical hand crank pickup lift - Install

1. Install one M8 x 20 flange bolt, inserted outward, into the hole at **(2)** and secure it with one M8 flange nut.
2. Install the two M8 x 25 carriage bolts and M8 flange nuts **(1)**.



23111907 1

3. Install one M10 x 35 flange bolt and spacer **(1)** through the loop on the end of the lift cable **(2)** and into the hole on the right-hand side of the pickup.



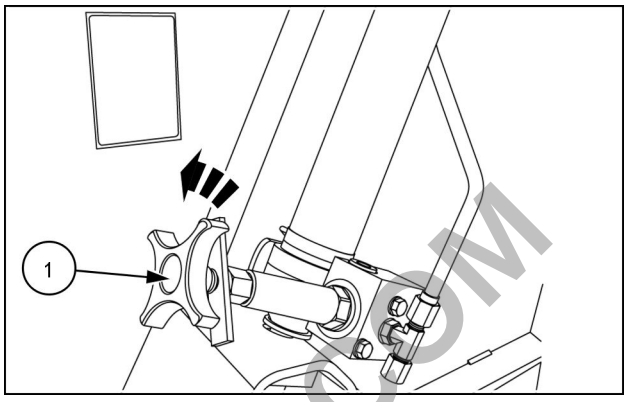
231002142 2

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

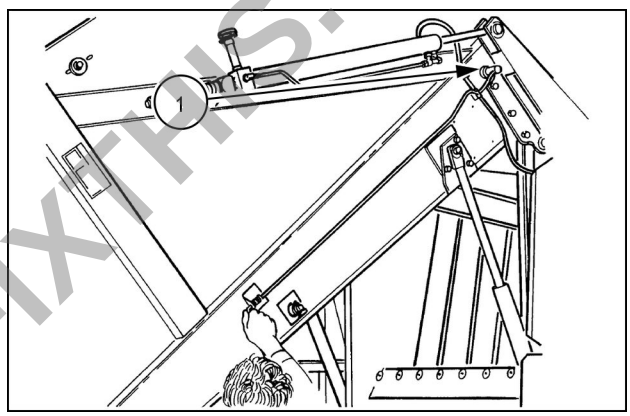
Bale forming rolls Tailgate top front idler roll - Remove

1. Turn the relief valve knob **(1)** of the density cylinder system counter-clockwise to its lowest setting.



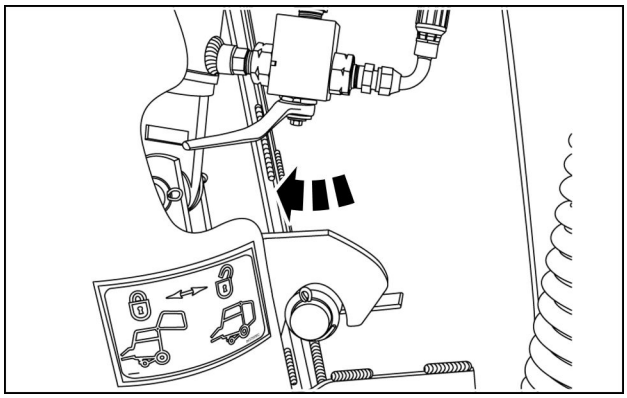
93095541 1

2. Open the tailgate and engage the serpentine lockout pin **(1)**.
3. Close the tailgate until the serpentine arm is resting on the extended serpentine lockout pin.



2361-11 2

4. Engage the tailgate lockout valve.

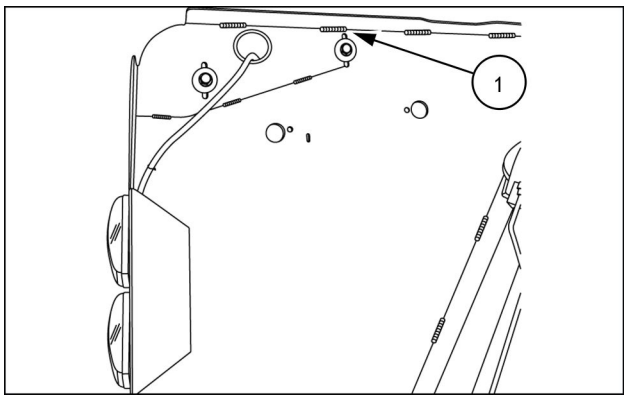


23108976 3

5. Support the upper front tailgate idler roll with a hoist and straps.
6. On both sides of the baler, remove the M12 x 35 bolts and washers **(1)**.

NOTE: *Use a punch to prevent the bearing support from spinning.*

7. Remove the idler roll from the baler.



931002209 4

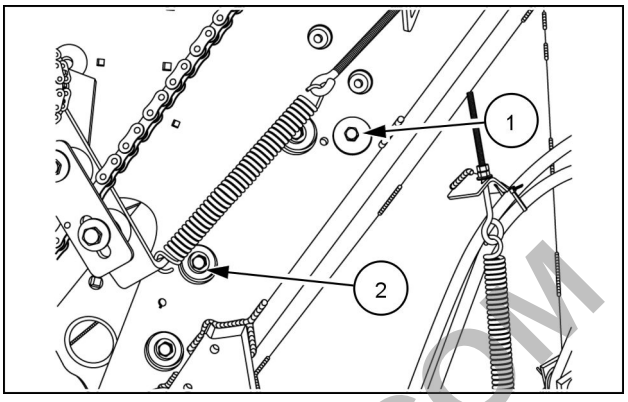
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

7. Install the stop chain bolt and large washer through the side sheet and sledge frame at location **(1)**.
8. Secure the bolt with the other large washer and nut, and then tighten the hardware at **(1)** enough to hold the sledge frame in place.

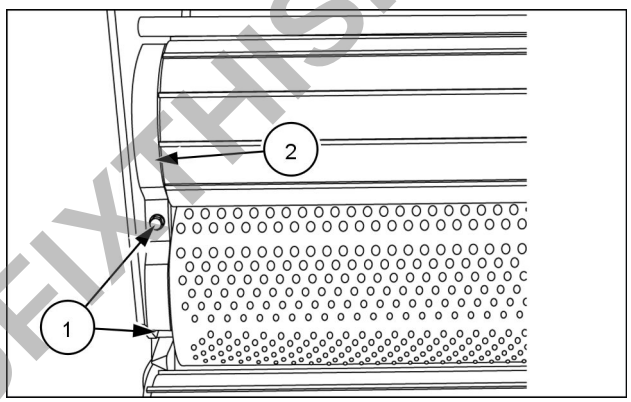
NOTE: *This will align the roll hardware with the access holes* ***(2)*** *in the baler frame.*

9. Remove the hoist.



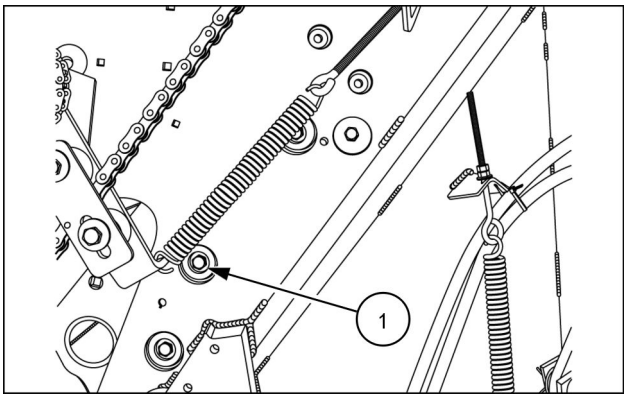
931002616 5

10. Use twine or straps to secure the stripper roll to the sledge frame.
11. Remove the gear shield retaining bolts **(1)**.
12. Remove the gear shield **(2)**.



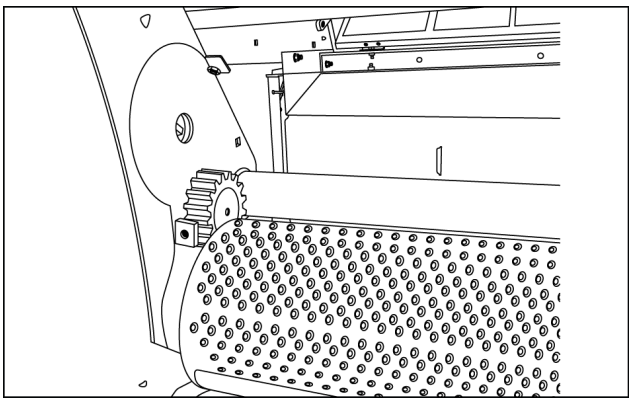
931002232 6

13. On both sides of the baler, remove the retaining bolt **(1)** and bushing cap from the stripper roll.



931002616 7

14. With assistance, remove the twine or straps from the stripper roll, and then remove the stripper roll through the rear of the baler.



931002231 8

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Remove 47
Disassemble 49
Assemble 51
Install 52
Connect - linkage and spring 54

Net holding

Remove - Spreader rolls 57
Disassemble - Spreader roll 58
Assemble - Spreader rolls 59
Install - Spreader rolls 61
End play check - Spreader rolls 62

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Net cutting blade control - Assemble (68.170)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 25 of 662 pages

The full manual includes:

- All 662 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

New Holland Roll-Belt™ 450 Utility Service Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual