P.T.O. DRIVESHAFT

The BB940 baler is equipped with a BONDIOLI p.t.o. drive shaft. The BB950 and BB960 balers are equipped with a WALERSCHEID p.t.o. drive shaft. Both p.t.o. drive shafts consist of an 80° CV–joint at the front of the shaft, a center support bearing and standard U–joints.

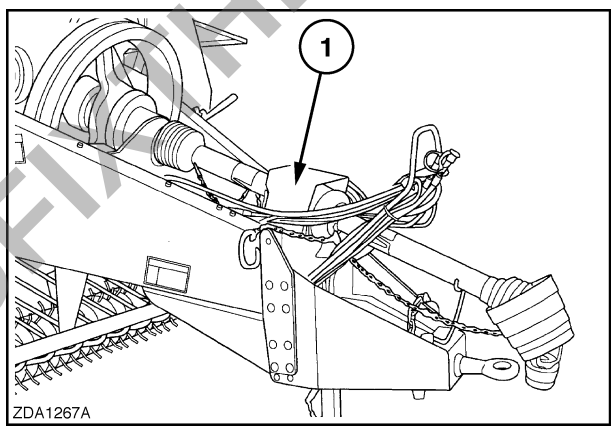
Depending on the hitch version, the type of p.t.o. drive shaft is a 3 joint p.t.o. drive line or a 4 joint p.t.o. drive line (refer to the BB940, BB950, BB960 Operator's Manual Section 2 paragraph headed "Attaching the baler to the tractor").

BONDIOLI P.T.O. DRIVESHAFT

Removal

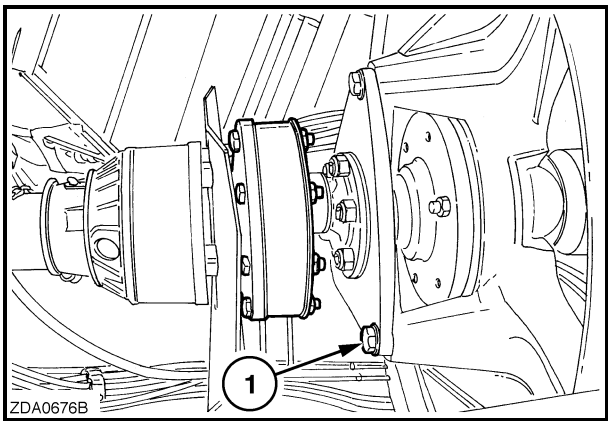
To remove the p.t.o. drive shaft, proceed as follows:

1. Remove shield 1 covering the center support bearing.
2. Remove the four bolts of the center support.



1

3. Remove three bolts 1.
4. Remove the protective anti–rotation chains attached to the baler.
5. Remove the p.t.o. driveshaft and torque limiter and place it on a workbench.



2

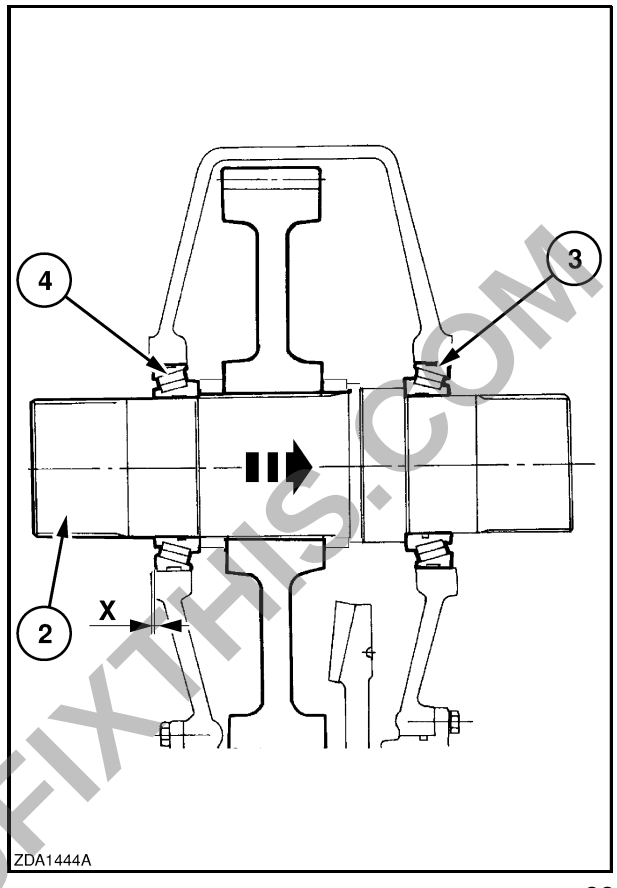
Installation

1. Install the p.t.o. driveshaft and torque limiter at the flywheel with tree bolts 1.
2. Install the center support with four bolts as described in the Operator's Manual section 2, paragraph headed "Attaching the baler to the tractor".
3. Install the protective anti–rotation chains.

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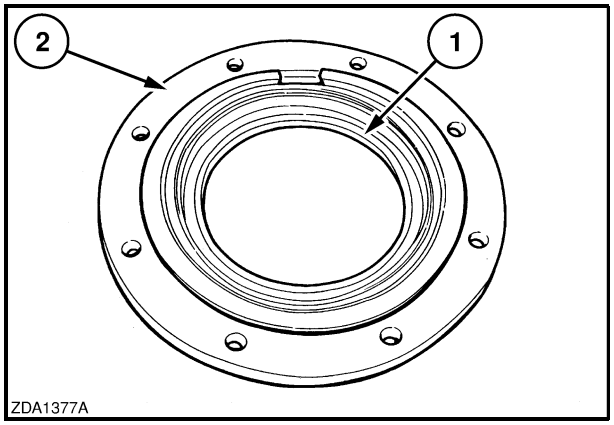
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9. Heat bearing 4 to 80°C (176°F) and install it on plunger crank drive shaft 2.
10. Install outer ring of bearing 4 and drive it until distance X = 10 mm (3/8”) is obtained.
11. Install outer ring of bearing 3.



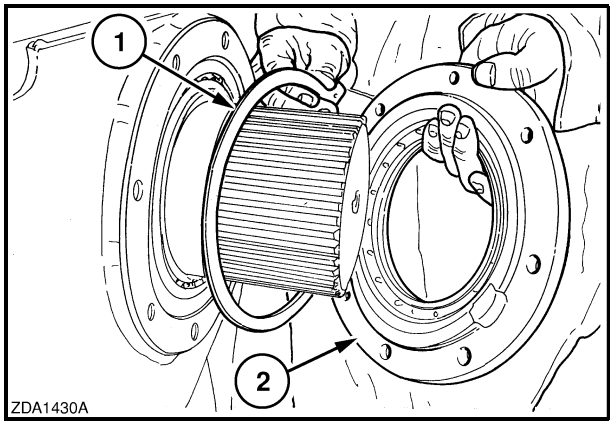
96

12. Install seal 1 and gasket 2 in both covers.



97

13. Install adjustment shims 1 with thickness 0.5 mm (0.01969”).
14. Install cover 2 with gasket.



98

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SECTION 35 - HYDRAULIC SYSTEMS

Chapter 1 - BALE DENSITY

Section	Description	Page
35 000	Technical data	1
	Component sketch and location	2
	Description and operation	3
	Troubleshooting	5
35 540 42	Hydraulic cylinder - R./I.	6
35 540 83	Set of cylinder gaskets - Rep.	6
35 540 46	Proportional solenoid valve - R./I.	8
35 540 75	Hydraulic pump - R./I.	9

35 000 - TECHNICAL DATA

DENSITY CIRCUIT	
Hydraulic pump capacity	3.8 cc/rev.
Rpm	743
Intake filter	25 micron with by-pass
Tank capacity when levelled	l 4 (1 US gal)
Circuit capacity	l 10.5 (2.8 US gal)
Oil type	AMBRA HYDROSTAT 46H
Density control valve	Proportional
Cylinders	2

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MINIMUM HARDWARE TIGHTENING TORQUES

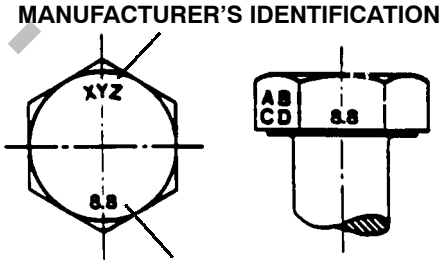
IN NEWTON-METRES – Nm (FOOT POUNDS – LBF. FT)
FOR NORMAL ASSEMBLY APPLICATIONS

METRIC HARDWARE AND LOCKNUTS

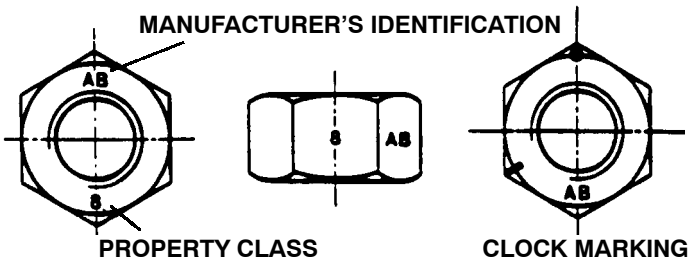
NOMINAL SIZE	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCKNUT CL.8 W/CL8.8 BOLT
	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	
M4	1.7 (15*)	2.2 (19*)	2.6 (23*)	3.4 (30*)	3.7 (33*)	4.8 (42*)	1.8 (16*)
M6	5.8 (51*)	7.6 (67*)	8.9 (79*)	12 (102*)	13 (115*)	17 (150*)	6.3 (56*)
M8	14 (124*)	18 (159*)	22 (195*)	28 (248*)	31 (274*)	40 (354*)	15 (133*)
M10	28 (21)	36 (27)	43 (32)	56 (41)	61 (45)	79 (58)	30 (22)
M12	49 (36)	63 (46)	75 (55)	97 (72)	107 (79)	138 (102)	53 (39)
M16	121 (89)	158 (117)	186 (137)	240 (177)	266 (196)	344 (254)	131 (97)
M20	237 (175)	307 (226)	375 (277)	485 (358)	519 (383)	671 (495)	265 (195)
M24	411 (303)	531 (392)	648 (478)	839 (619)	897 (662)	1160 (855)	458 (338)

NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION
HEX CAP SCREW AND CARRIAGE BOLTS
CLASSES 5.6 AND UP



HEX NUTS AND LOCKNUTS
CLASSES 05 AND UP



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FAULT DIAGNOSIS

In this paragraph all errors that can appear on the InfoView™ monitor are handled.
Following list gives a summary of all arrors that can appear and discussed further in this paragraph.

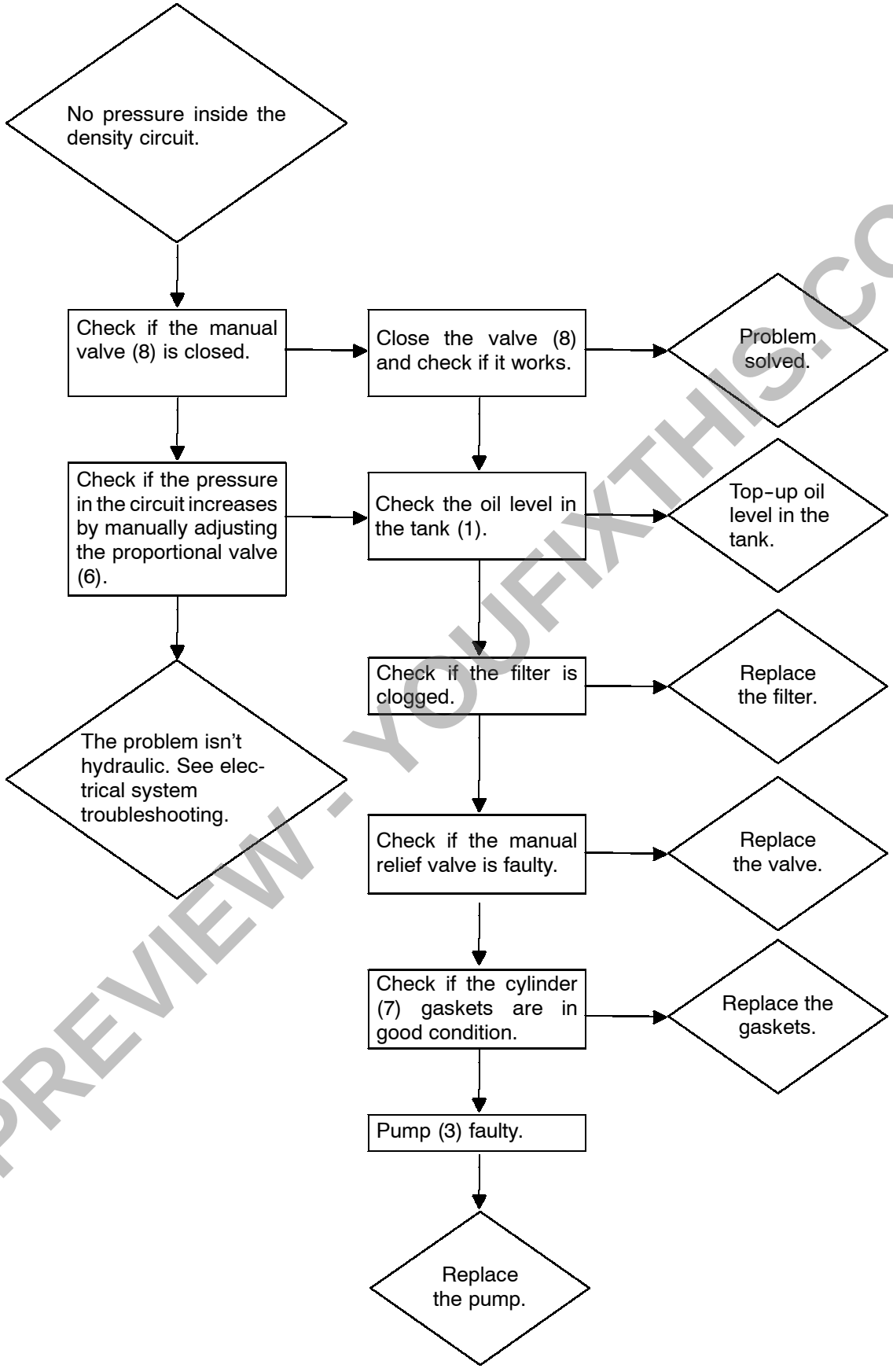
ERROR CODE OVERVIEW

ERROR CODE	DESCRIPTION	PAGE
171	Battery Voltage - Low	16
172	Battery Voltage - High	16
173	10V reference - Low	17
174	10V reference - High	18
175	8V reference - Low	19
176	8V reference - High	19
177	5V reference - Low	20
178	5V reference - High	21
200	Greasing switch 1 (upto Serial >4236)	22
201	Greasing switch 2 (upto Serial >4236)	22
216	Mistie sensor 2 - Line Open	25
217	Mistie sensor 2 - Line Shorted	26
218	Mistie sensor 2 - 12V	27
219	Mistie sensor 3 - Line Open	28
220	Mistie sensor 3 - Line Shorted	29
221	Mistie sensor 3 - 12V	30
222	Mistie sensor 4 - Line Open	31
223	Mistie sensor 4 - Line Shorted	32
224	Mistie sensor 4 - 12V	33
225	Mistie sensor 5 - Line Open	34
226	Mistie sensor 5 - Line Shorted	35
227	Mistie sensor 5 - 12V	36
228	Pick-up speed sensor - Line Open	37
229	Pick-up speed sensor - Line Shorted	38
230	Pick-up speed sensor - 12V	39
231	Feeder shearbolt sensor - Line Open	40
232	Feeder shearbolt sensor - Line Shorted	41
233	Feeder shearbolt sensor - 12V	42
237	Bale drop sensor - Line Open	43
238	Bale drop sensor - Line Shorted	44
239	Bale drop sensor - 12V	45
240	Mistie sensor 1 - Line Open	46
241	Mistie sensor 1 - Line Shorted	47

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DENSITY CIRCUIT TROUBLESHOOTING



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OVERALL MEASUREMENTS (MM)

	BB940 Standard	BB940 Packer Cutter	BB940 Rotor Cutter	BB950 Standard	BB950 Rotor Cutter	BB960 Standard	BB960 Rotor Cutter
A: Length with bale chute closed	7230 (284 5/8")	7230 (284 5/8")	7600 (299 3/16")	7230 (284 5/8")	7600 (299 3/16")	7230 (284 5/8")	7600 (299 3/16")
B: Length with bale chute half-folded	7940 (312 5/8")	7940 (312 5/8")	8310 (327 3/16")	7940 (312 5/8")	8310 (327 3/16")	7940 (312 5/8")	8310 (327 3/16")
B: Length with bale chute extended	8510 (335 1/16")	8510 (335 1/16")	8880 (349 5/8")	8510 (335 1/16")	8880 (349 5/8")	8510 (335 1/16")	8880 (349 5/8")
C: Width (22.5LX16.1-14PR tires)	2620 (103 1/8")	2620 (103 1/8")	2620 (103 1/8")	3000 (118 1/8")	3000 (118 1/8")	3000 (118 1/8")	3000 (118 1/8")
C: Width (600/55-22.5-12PR tires)	2580 (101 3/4")	2580 (101 3/4")	2580 (101 3/4")	2960 (116 3/4")	2960 (116 3/4")	2960 (116 3/4")	2960 (116 3/4")
C: Width (700/45-22.5-12PR tires)	2820 (111")	2820 (111")	2820 (111")	3200 (126")	3200 (126")	3200 (126")	3200 (126")
C: Width (500/50-17-140D tires)	2520 (99 1/4")	2520 (99 1/4")	2520 (99 1/4")	2900 (114 1/4")	2900 (114 1/4")	2900 (114 1/4")	2900 (114 1/4")
C: Width (38X20.00X16.1-8PR tires)	2560 (100 13/16")	2560 (100 13/16")	2560 (100 13/16")	2940 (115 3/4")	2940 (115 3/4")	2940 (115 3/4")	2940 (115 3/4")
D: Height single axle	3100 (122 1/4")	3100 (122 1/4")	3200 (126")	3000 (118")	3100 (122")	3100 (122 1/4")	3200 (126")
D: Height tandem axle	3050 (120 1/16")	3050 (120 1/16")	3150 (124")	2950 (116")	3050 (120")	3050 (120 1/16")	3150 (124")

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LUBRICATION SCHEDULE

Item	Servicing interval	Amount/unit (litres)	NEW HOLLAND Brand name	NEW HOLLAND Specification	Lubricant grade	International specificaton
Centralised greasing system						
Plunger grease bank	Daily		AMBRA GR9	NH710A NH Super Premium MP Lithium NLGI 2	NLGI 2	-
Left-hand general grease bank						
Right hand general grease bank						
Left-hand knotter grease bank						
Right-hand knotter grease bank						
Automatic greasing system	Daily	4 litres (1 US gal)				
Remaining conventional grease points	8h 50h 200h					

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SECTION 33 – BRAKES AND CONTROLS

Chapter 1 – Brakes and Controls

BOOK 1 - 87028441

CONTENTS

Section	Description	Page
33.202	Brake shoe – Removal	2
	Brake control shaft – Rep.	3
	Brake shoe – Installation	4
33.300	Air brake valve	6
	Description of operation	6
	Technical data	8
	Disassembly – assembly	8

SECTION 35 – HYDRAULIC SYSTEMS

Chapter 1 – BALE DENSITY

BOOK 2 - 87028442

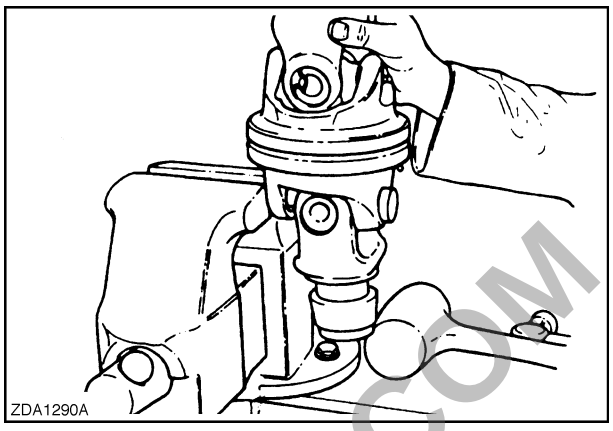
CONTENTS

Section	Description	Page
35 000	Technical data	1
	Component sketch and location	2
	Description and operation	3
	Troubleshooting	5
35 540 42	Hydraulic cylinder – R./I.	6
35 540 83	Set of cylinder gaskets – Rep.	6
35 540 46	Proportional solenoid valve – R./I.	8
35 540 75	Hydraulic pump – R./I.	9

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4. Grip the loosened bearing in vise, and drive the yoke off the bearing by striking yoke ear with a soft-faced hammer or mallet
5. This same procedure should be followed to remove the bearing directly opposite the one just removed, after which the yoke itself may be removed.
6. Remove the remaining two bearing cups from the yoke using the same process described in steps 3 and 4.

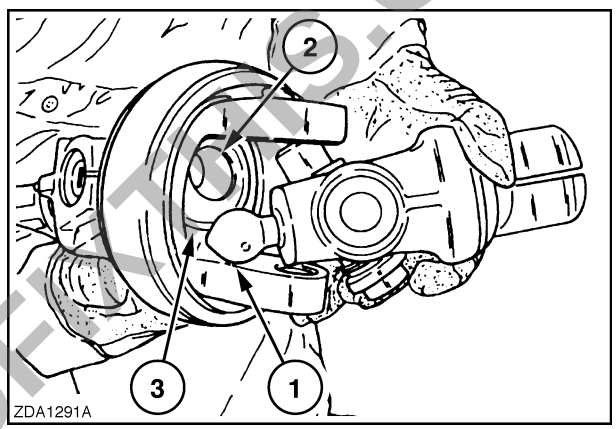


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Inspection

NOTE: *The U-joint cross and bearings must be replaced anytime the U-joint is disassembled, even if the cross and bearings were not the source of failure.*

1. Inspect the yoke ears for wear in the bearing area; replace the yoke if there is any evidence of wear, or if the bearing area is distorted. The bearing cups must be a tight fit in the yoke ear.



40

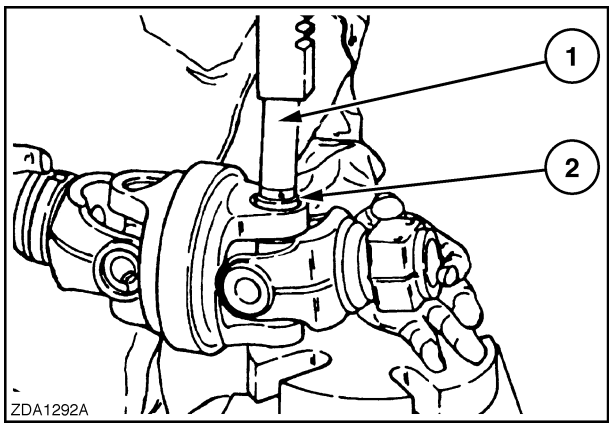
2. On the CV U-joints, it is necessary to inspect the intermediate connection between the yokes. Inspect ball 1 and socket 2 connection between the yokes for excessive wear or galling. Inspect the intermediate plate 3 for wear or damage and excessive wear between the plate and housing. Replace any components as necessary.

Assembly

1. To reassemble the U-joint position the center cross through the yoke and insert one bearing cup into the yoke ear.

NOTE: *When assembling a CV U-joint, install the cross into the outer yoke first, and then assemble the yoke and cross assembly into the intermediate housing.*

Position the yoke in a vise or press, and use a bushing driver 1 to press the bearing cup into yoke 2 until the circlips may be installed. Remove the yoke from the vise, and insert the second bearing cup into the opposite yoke ear. Reposition the assembly in the vise or press, and press the second bearing cup in until it seats. Install the retaining ring to retain it.



41

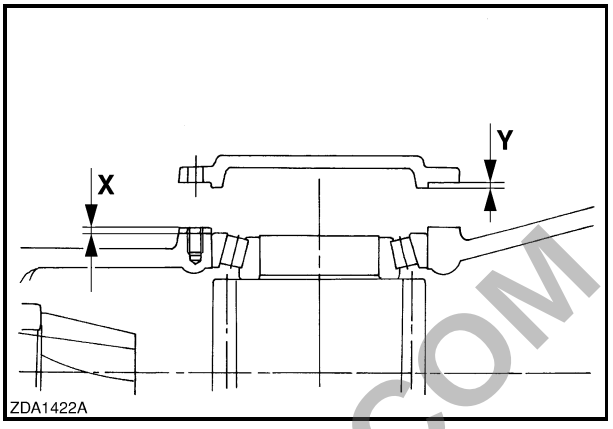
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13. Measure the dimensions X and Y. Make three measurements at 120° and calculate the arithmetic mean.
14. Determine the pack of shims with formula:

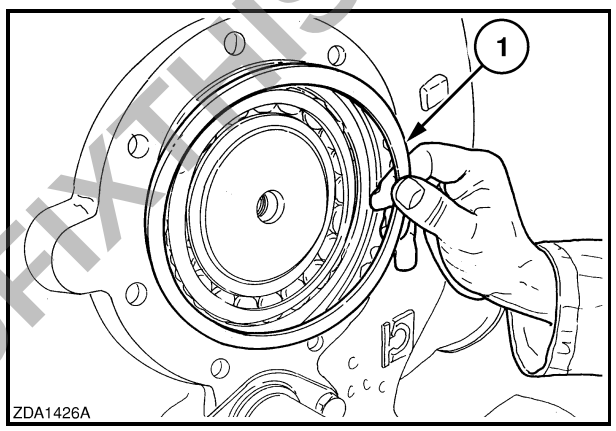
    S (mm) = X – Y + 0.10 or

    S (in) = X – Y + 0.00394



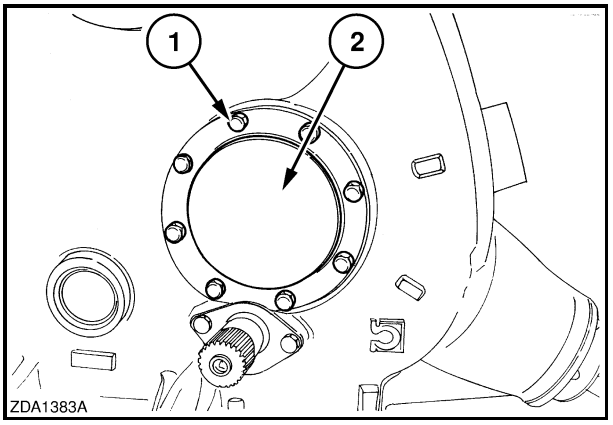
88

15. Position adjustment shims 1 in the housing.



89

16. Install cover 2 with gasket and tighten bolts 1 to 78 – 88 Nm (58 – 65 ft.lbs).

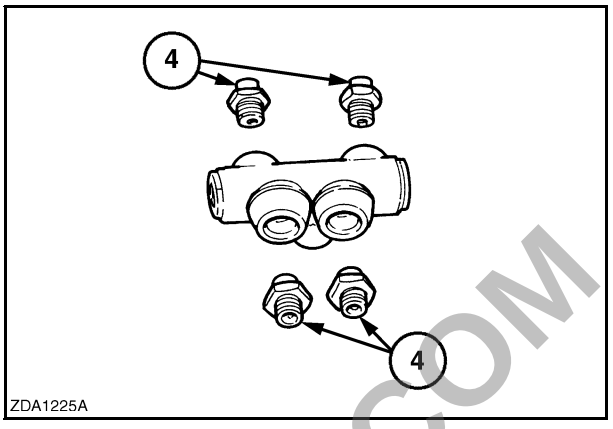


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3. Remove the four fittings (4).



22

Installation

1. Screw in the four fittings (4) on the lock valve (2) and tighten them fully.
2. Connect the lock valve (2) to the pipes (1 and 3) and check that, when the blades are engaged or released, there are no oil leaks.

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Chart 1: Customer kit

Ref.	Qty	Description	Where used (typical):
1	6	sleeve nut, I.D. 4,2 mm, outside thread 5/16”-24 UNF-2A	with olive on O.D. 4 mm flexible hoses and tubes (e.g. in the outlet ports of the grease distribution blocks; in the lube point elbows).
2	20	olive, I.D. 4 mm	with sleeve nut on O.D. 4 mm hoses (oil, grease) and tubes
3	1	flexible hose (oil), O.D. 4 mm, length 5 m	the oiler circuit (this hose is more flexible than the grease hose)
4	1	flexible hose (grease), O.D. 4 mm, length 5 m	the greaser circuit (this hose is more rigid than the oiler hose)
5	2	olive, I.D. 1/4”	with sleeve nut on O.D. 6,4 mm tubes (automatic greasing system tubing)
6	2	joiner fitting 1/8 bsp (2x outside thread-equal length)	connecting the O.D. 6,4 mm tubes (automatic greasing system tubing)
7	1	joiner fitting 1/8 bsp (2x outside thread; one end with cone extension)	connector fitting in the outlet ports of the master block (automatic greasing system)
8	1	cap sleeve nut 1/8 bsp	with olive on the O.D. 6,4 mm tubes (automatic greasing system tubing)
9	1	non return valve (with M6 45° lube fitting)	right after the remote lube fittings feeding the grease blocks
10	2	connector fitting, straight, I.D. 1 mm, male ISO 228 G1/8”B, female 5/16”-24 UNF-2A	connecting flexible hoses to machine components (e.g. packer fingers, knotters, entry fitting into T-piece adaptors on distribution blocks,...)
11	2	connector fitting, 90° elbow, I.D. 1 mm, male ISO 228 G1/8”B, female 5/16”-24 UNF-2A	connecting flexible hoses to machine components (eg.knotters, shafts,...)
12	1	oil brush	oiler system

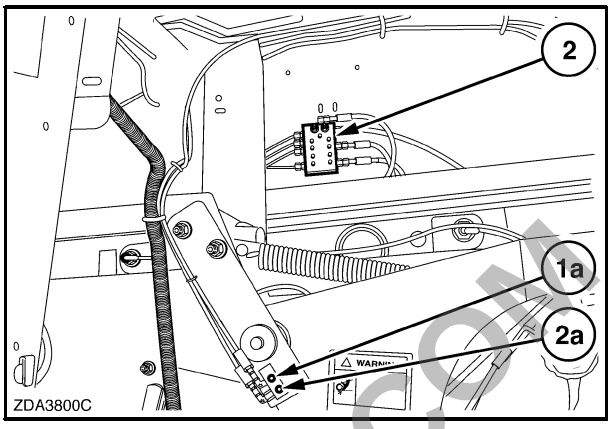
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2. Right-hand divider

The Right-hand divider 2 is installed on the right-hand side of the baler behind the right-hand safety guard.

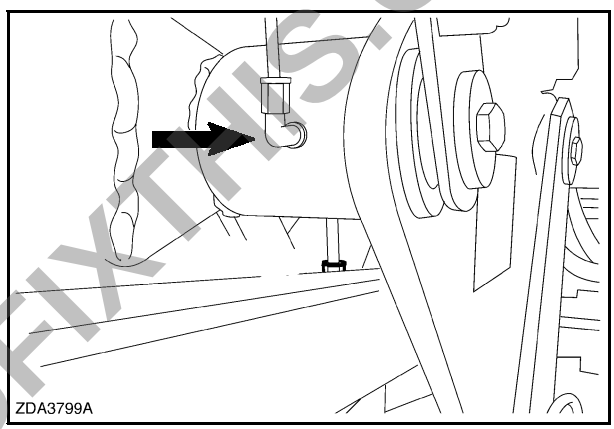
Grease the right-hand divider 2 daily, from grease bank 2a which is easily accessible behind the right-hand safety guard.



15

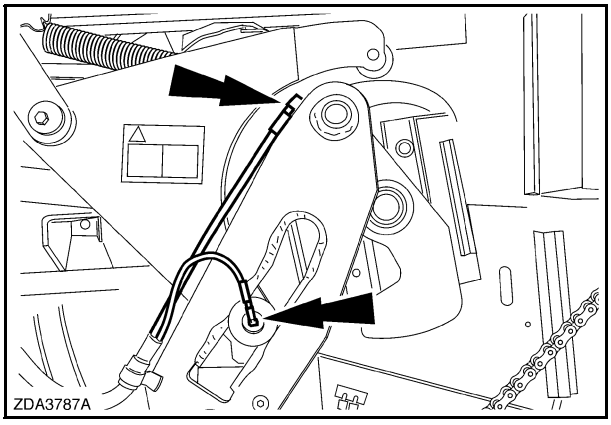
Grease will be supplied to
7 grease points: Standard units,
8 grease points: Packer Cutter units
10 grease points: Rotor Cutter units

- Shuttle feeder pivot point



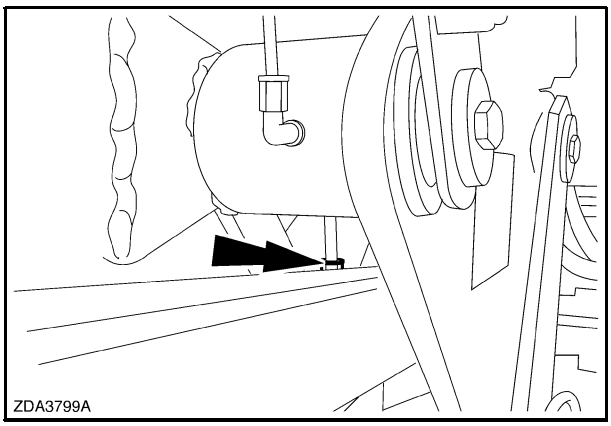
16

- Shuttle feeder roller
- Shuttle feeder top crank



17

- Holding fingers control pivot



18

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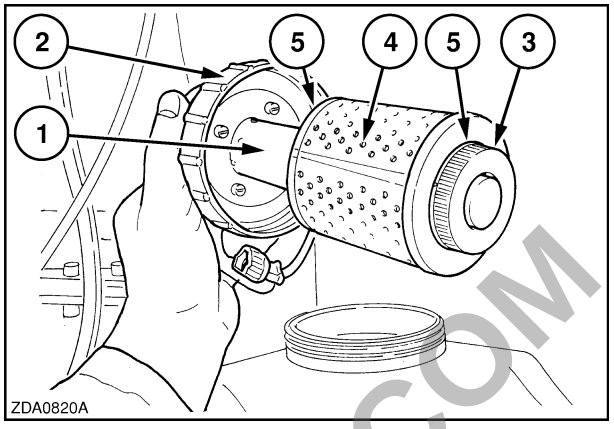
Op. 35 597 53

OIL FILTER REPLACEMENT

To replace the oil filter element, proceed as follows:

1. Remove complete pump assembly, 1, from the reservoir by unscrewing cap, 2.
2. Remove plastic nut, 3, and slide filter element, 4, from the pump assembly together with both seals, 5.
3. Install new filter element, 4, and assure that seals, 5, are fitted on both sides of the filter element.
4. Tighten nut, 3, firmly but do not use tools.
5. Reinstall complete pump assembly, 1.

IMPORTANT: *Always clean the pump assembly port and the surrounding area before removing the pump assembly.*



5

Op. 00 400 75

MAIN DRIVE GEARBOX

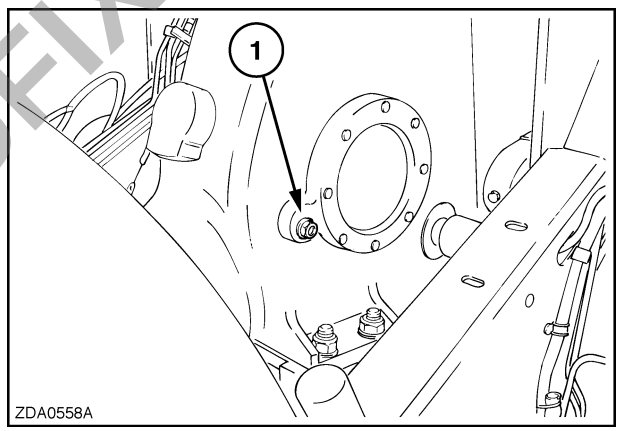
Oil Level

Keep the gearbox filled at all times. The oil level is correct when it just reaches the middle of check level indicator, 1, (make sure the baler is on a level surface).

Level indicator, 1, is accessible after opening the flywheel safety guard.

When necessary, add oil through filler port, 2, (Figure 7).

IMPORTANT: *Always clean the filler port and the surrounding area before removing the filler plug to top up or replace the oil.*



6

Oil Change

For a new machine after 50 operating hours and thereafter annually or every 10000 bales.

Drain the oil through plug, 3.

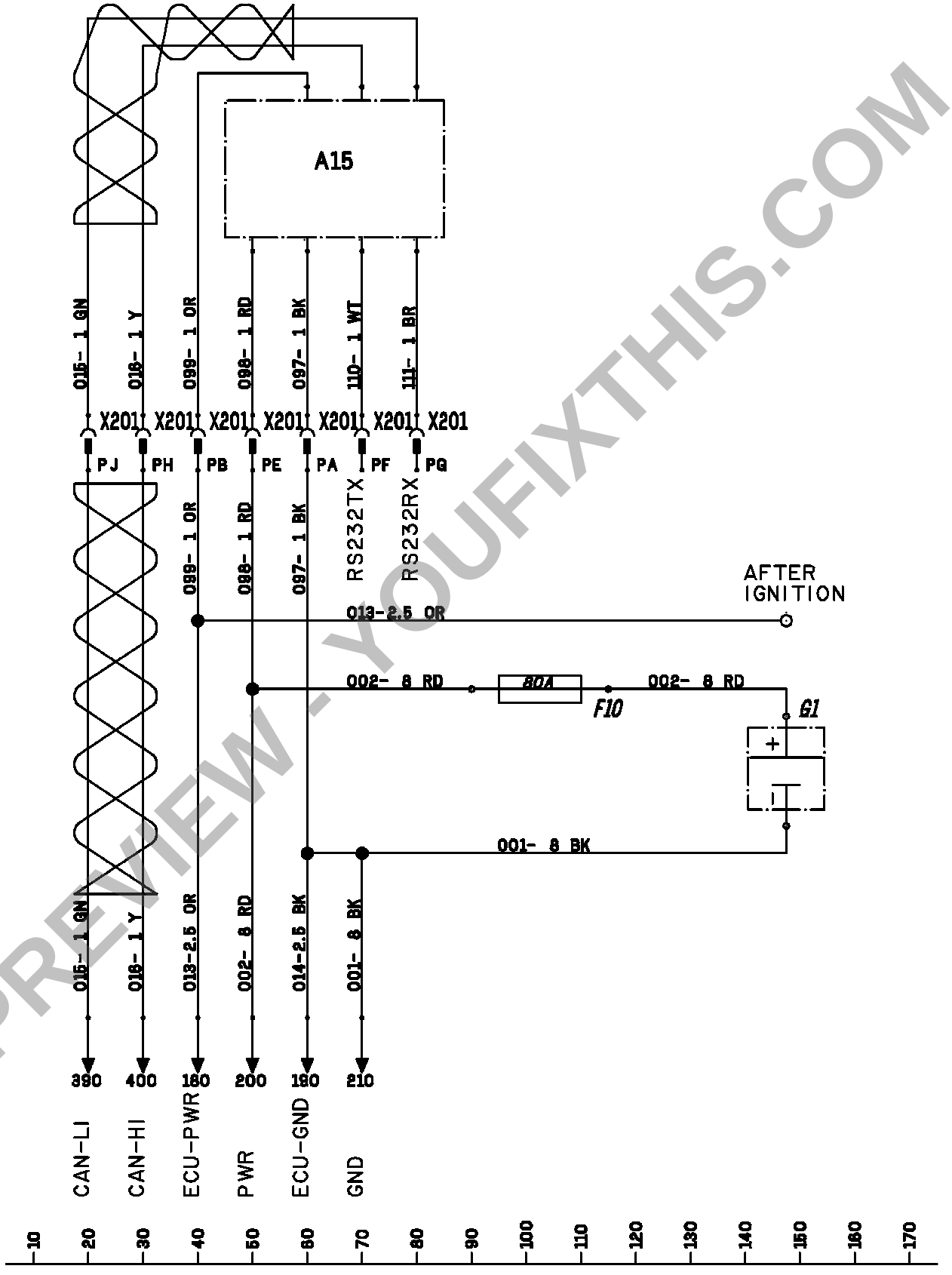
NOTE: *Avoid spillage when draining off used oil.*

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ELECTRONICS MONITOR(TRACTOR)

BB940S	4185	>	4233	BB940P	4199	>	4220	BB940R	4190	>	4220
BB960S	4180	>	4236	BB960R	4195	>	4217				



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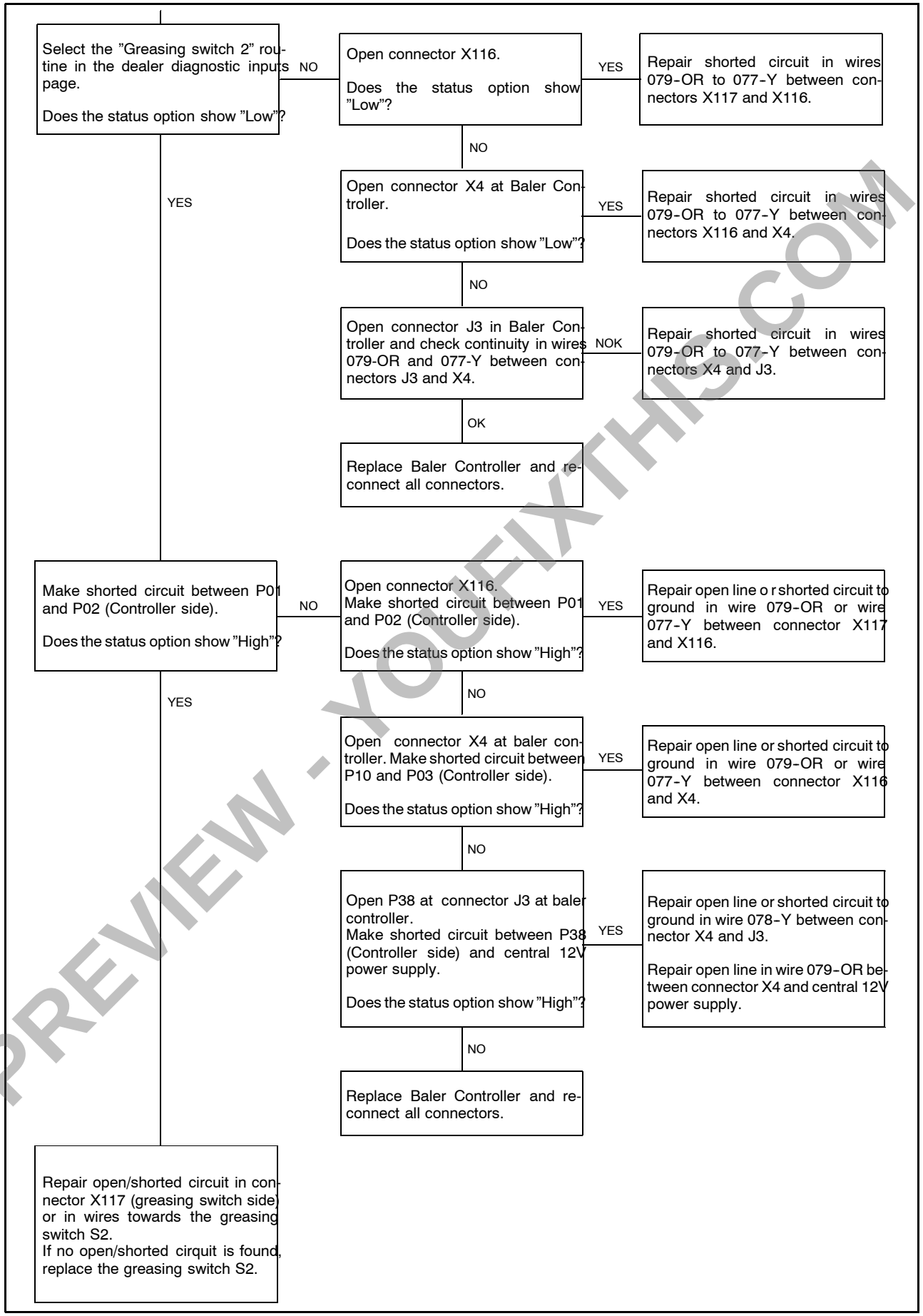
12A OPERATING LIGHTS
BB940S 4125 > 4233 BB940P 4161 > 4220 BB940R 4125 > 4220
BB960S 4129 > 4236 BB960R 4152 > 42127

Code	Description	Line
A9.	Operating lights (controller)	1900
E2.	Operating light (twinebox left)	1940
E3.	Operating light (pick-up)	1960
E6.	Operating light (varia position)	1990
F5.	25A Operating lights	1910
K5.	Operating lights	1910
X201.	Monitor	2000
X203.	Operating light (rear left)	2000
X204.	Operating light (twinebox left)	1920
X205.	Operating light (twinebox right)	2020

Lines: 1880 - 2040

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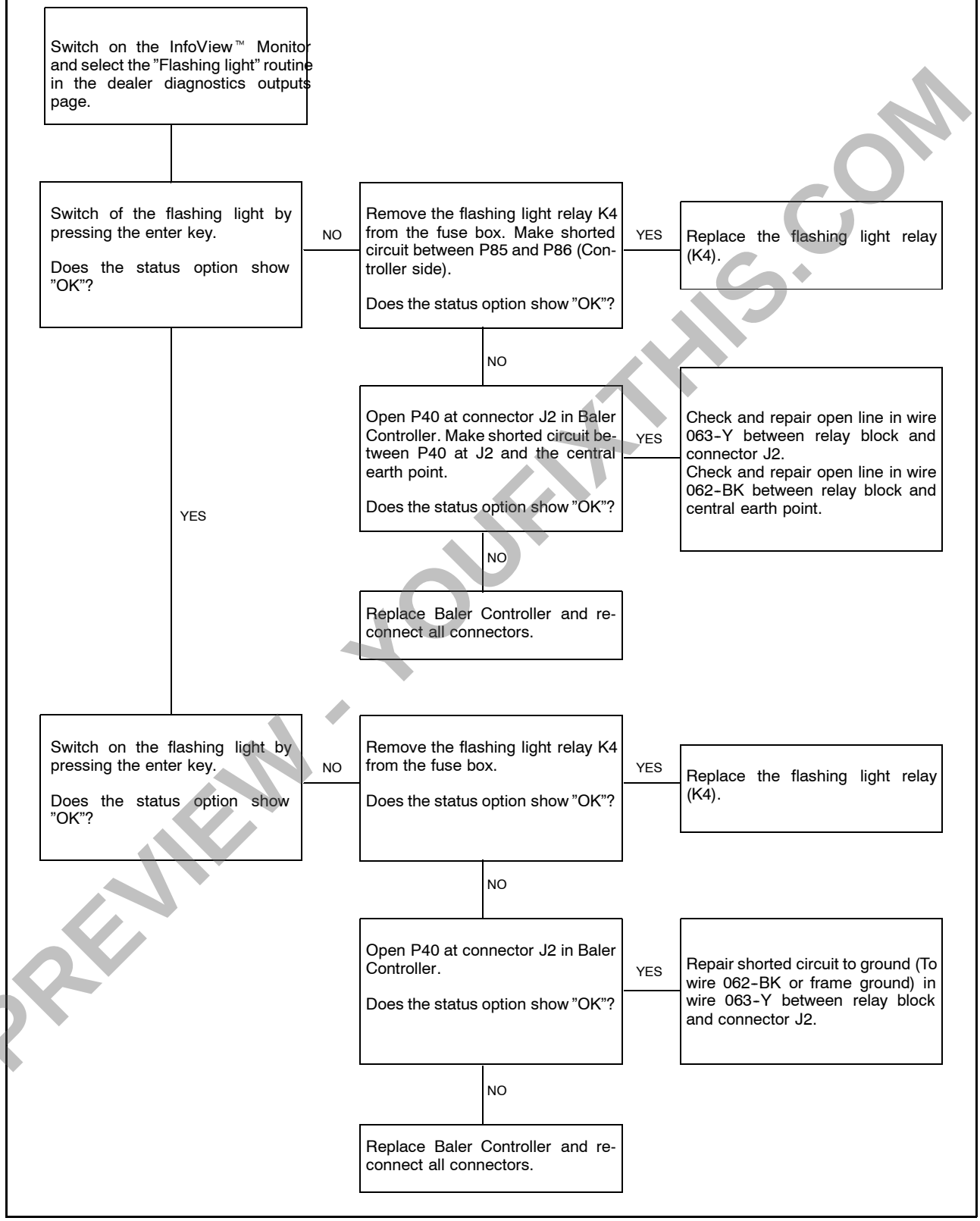
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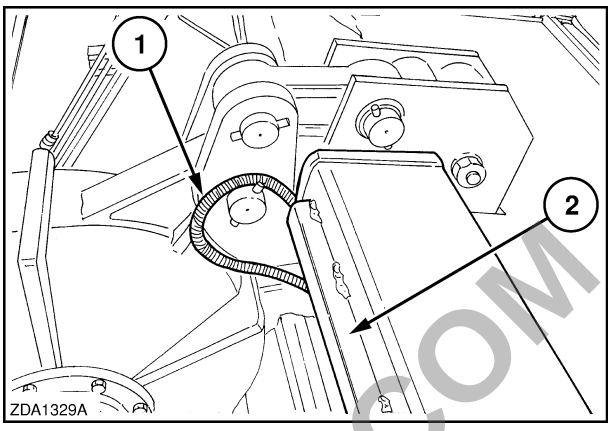
Flow Chart:



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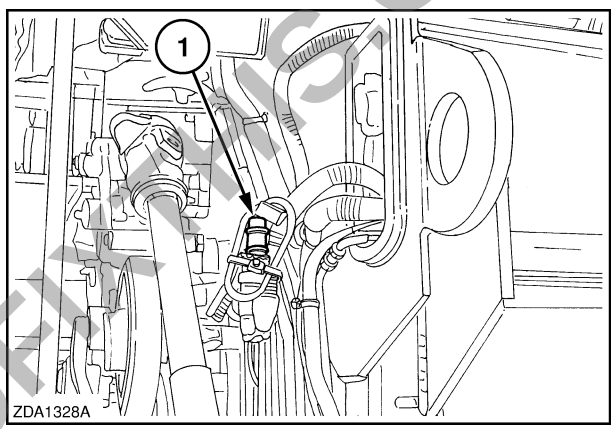
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2. Push wiring loom 1 of the plunger load sensor through shielding 2.



16

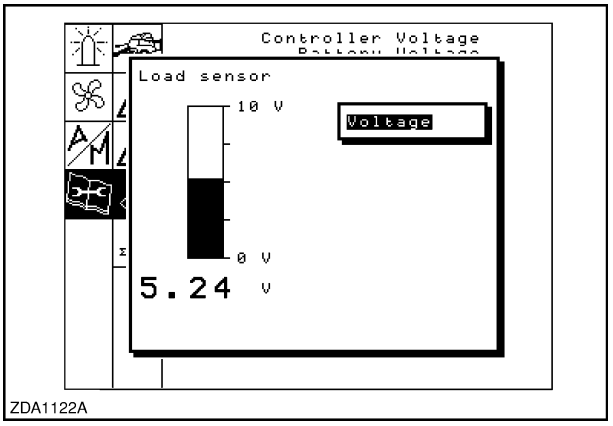
3. Install connector 1.



17

4. On the InfoView™ select in the dealer diagnostics input routines the plunger load sensor routine window.

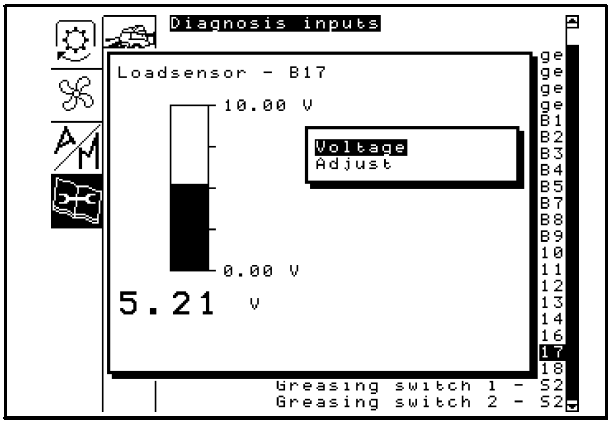
Load sensor: Software version V1.00>1.01



18

Load sensor: Software version V1.03>

To adjust the load sensor, select the ”Service Mode”, sub-menu ”Diagnosis inputs”, then the item ”Load sensor-B17”.
The load sensor diagnosis window will appear.
A sub-window allows to choose either ’Voltage’ or ’Adjust’.
Prior software only had ’Voltage’.



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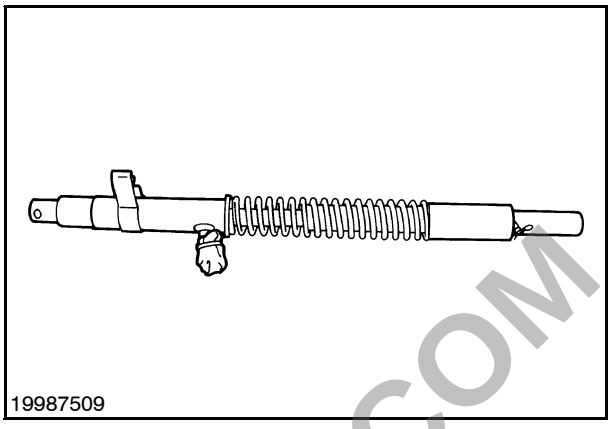
Op. 35 560 27

CYLINDER REPAIR

Disassembly

If not previously done, lower the pickup until the gage wheels contact the ground. Allow all hydraulic Pressure to bleed off before proceeding with the cylinder removal.

1. With the pickup properly supported, remove the mounting bolts from both ends of the cylinder and lower the cylinder to the ground.



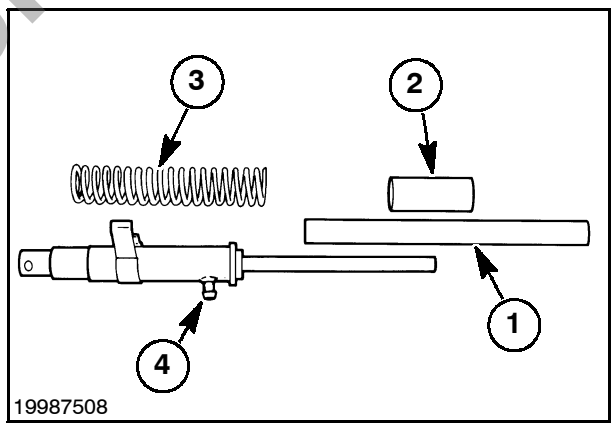
151

⚠ WARNING ⚠

Hydraulic fluid under pressure can cause serious injury. Make sure there is no pressure in the hydraulic system. If necessary carefully break one connection to relieve the pressure. If fluid punctures the skin, obtain immediate medical help.

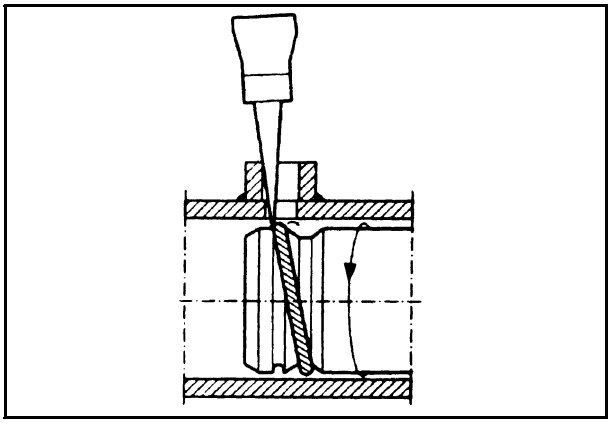
2. Remove the hydraulic hose from the cylinder.

3. Place the cylinder on a bench and disassembly the unit into four main sections. Remove the strut, 1, pipe, 2, and spring, 3 from the cylinder.
4. Remove the hydraulic fitting, 4, from the cylinder and allow the cylinder to drain.
5. Position the hydraulic piston to the rear of the cylinder so the retaining ring is visible through the opening.



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6. Use a flat head screwdriver and insert the screwdriver into the opening at the hydraulic fitting. Use the screwdriver to place the retaining ring, 1, in the deep groove.
7. Pull the piston from the cylinder and inspect the condition of the piston.

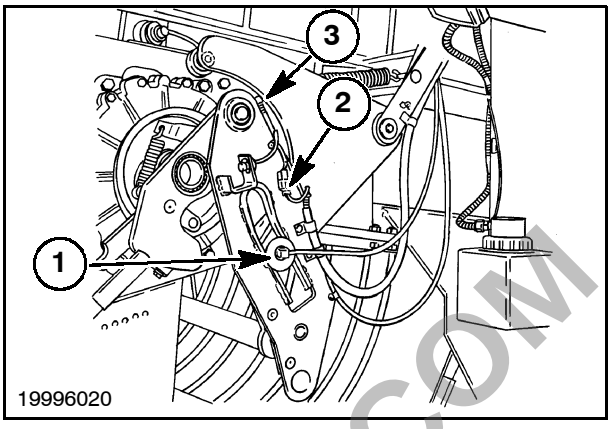


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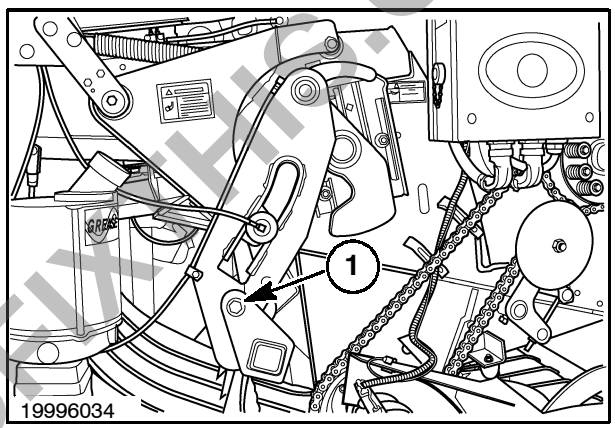
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20. Resecure the nut on the back of the stuffer arm bearing, 1.
21. Reconnect oil lines, 3, and the sensor wire, 2.



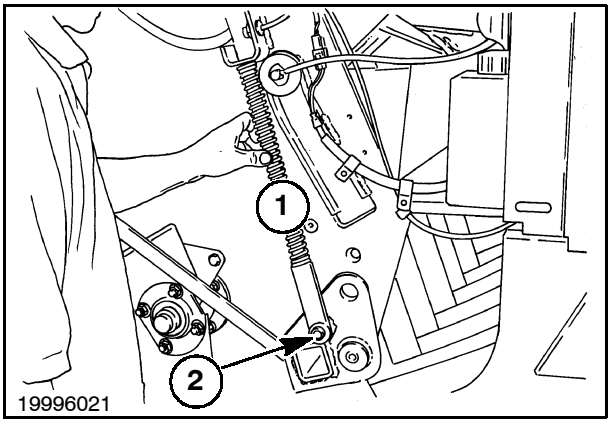
71

22. ON THE RIGHT SIDE FIRST, secure the stuffer fingers with the bushing, washer, bolt and nut combination, 1.



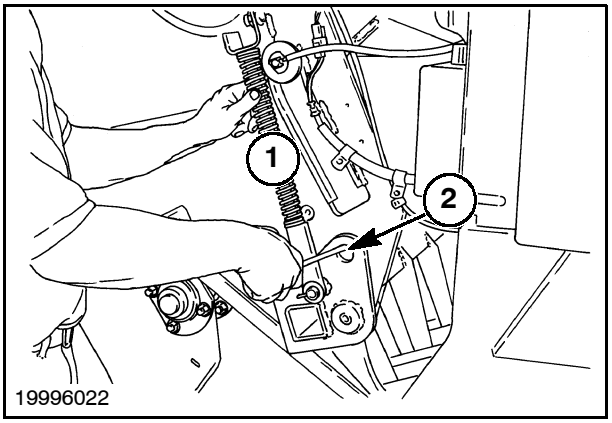
72

23. Reconnect the sensor rod and spring, 1, with washer and cotter pin, 2. Hold in place as shown.



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24. While holding the sensor rod and spring, 1, in place, lift under the stuffer fingers until you can get a screwdriver into the hole, 2, as shown.

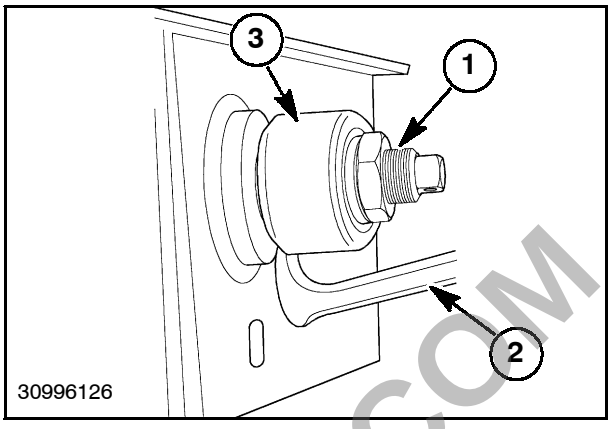


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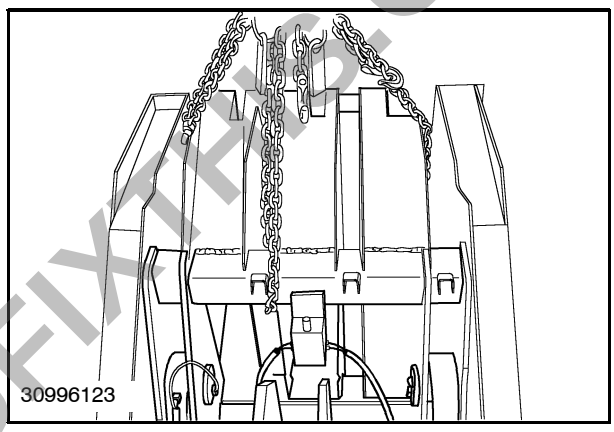
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21. The vertical bearing shafts, 1, must be pulled out. Use a pry bar, 2, between the bearing, 3, and the plunger frame.



11

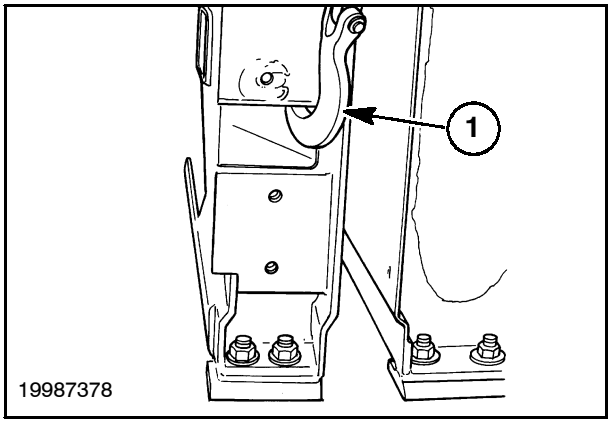
22. Move the plunger until it is in location to be lifted up out of the bale chamber. The plunger has to be lifted out of the bale chamber, square to the baler frame. This requires the front and back of the plunger to be independently adjustable. Lift at a minimum of three places.



12

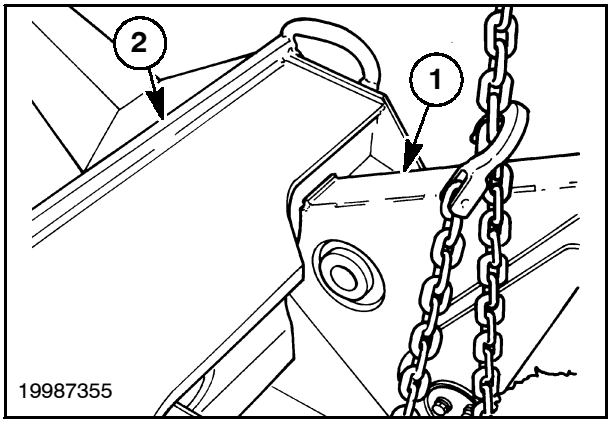
23. The chain hook, 1, can be attached to the plunger face as shown.

24. Disconnect the connecting rods from the plunger. Rotate the flywheel to move the connecting rods to the maximum forward position. Let the connecting rods rest on the shield over the stuffer shaft.



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25. Lift the plunger up out of the bale chamber. The front of the plunger, 1, will only clear the frame, 2, if the plunger face is kept perpendicular to the frame. The frame is not parallel to the ground.

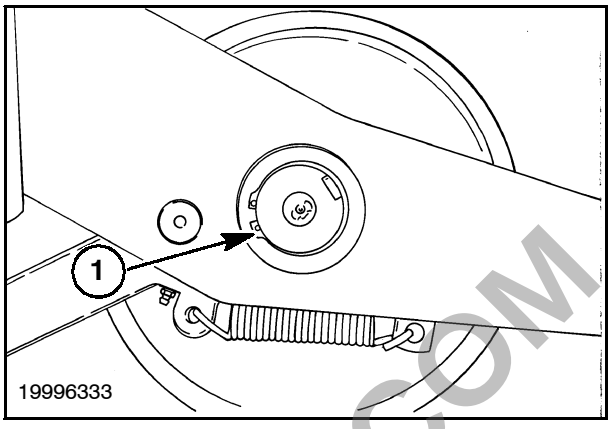


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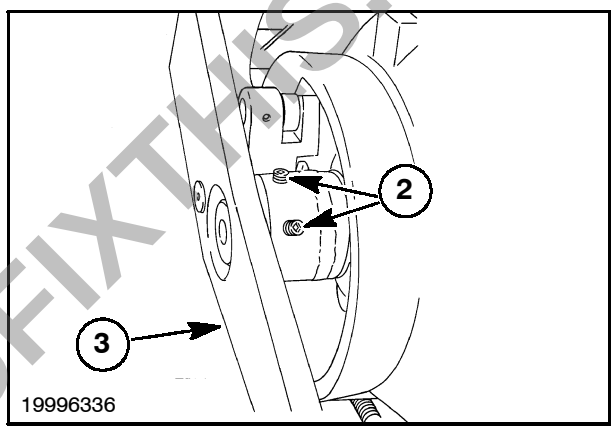
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13. Remove the external retaining ring, 1, from the end of the knotter shaft.



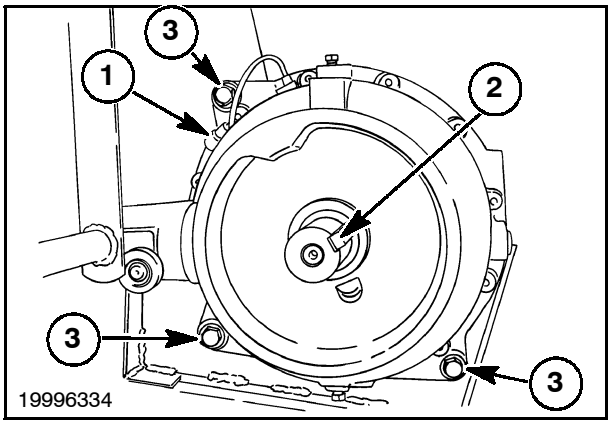
23

14. Loosen the two set screws, 2, in the hub of the needle arm, 3.
15. Slide the needle arm assembly off the knotter shaft. If a puller is required, remove the grease fitting in the end of the shaft. Insert some washers into the end of the shaft to protect the threads.



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16. There is an electrical connector, 1, to be separated near the gearbox sensor.
17. Pry the square key, 2, out of the shaft.
18. Use blocks of wood to support the left end of the knotter shaft, especially on a BB940 baler.
19. Remove the three bolts, 3, around the periphery of the gearbox.

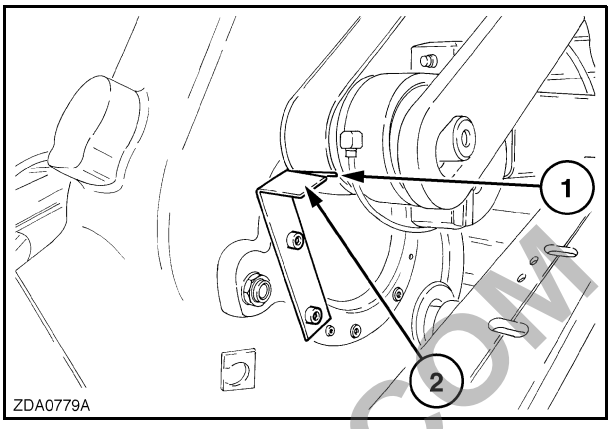


25

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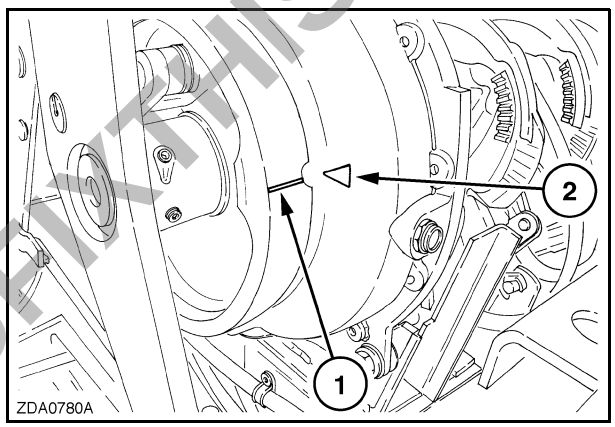
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26. Check the needles to plunger timing. Rotate the flywheel manually until the tying cycle is complete, continue to rotate until the notch, 1, in the plunger crank arm is in line with the plate, 2. Apply the flywheel brake.



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27. The notch, 1, in the knotter clutch must align with the timing mark, 2, on the gearbox.



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28. Check the maximum needle penetration. Rotate the flywheel by hand till the needles are at maximum penetration. Lock the flywheel.

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