638, 648, 658, 678, AND 688 ROUND BALER REPAIR MANUAL COMPLETE CONTENTS

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The following pages are the collation of the contents pages from each section and chapter of the 638, 648, 658, 678, and 688 Repair manual.

The sections used through out all New Holland product Repair manuals may not be used for each product. Each Repair manual will be made up of one or several books. Each book will be labeled as to which sections are in the overall Repair manual and which sections are in each book.

The sections listed above are the sections utilized for the 638, 648, 658, 678, and 688 Round Balers.

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MINIMUM HARDWARE TIGHTENING TORQUES

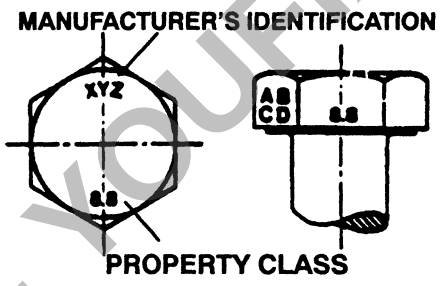
IN NEWTON-METERS (FOOT POUNDS) FOR NORMAL ASSEMBLY APPLICATIONS

METRIC HARDWARE AND LOCKNUTS

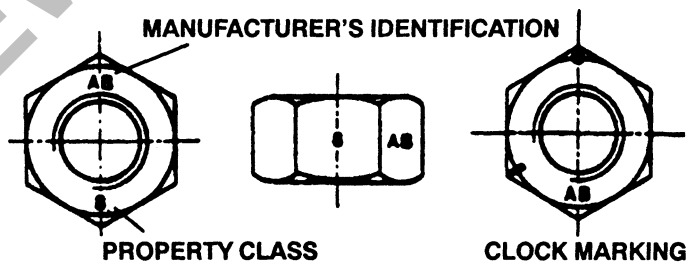
	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCKNUT
NOMINAL SIZE	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	CL.8 w/CL8.8 BOLT
M4	1.7 (15*)	2.2 (19*)	2.6 (23*)	3.4 (30*)	3.7 (33*)	4.8 (42*)	1.8 (16*)
M6	5.8 (51*)	7.6 (67*)	8.9 (79*)	12 (102*)	13 (115*)	17 (150*)	6.3 (56*)
M8	14 (124*)	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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LUBRICATION

Adequate lubrication and maintenance on a regular schedule is vital to maintaining your equipment. To ensure long service and efficient operation, follow the lubrication and maintenance schedules outlined in this manual. The use of proper fuels, oils, grease and filters, as well as keeping the systems clean, will also extend machine and component life.

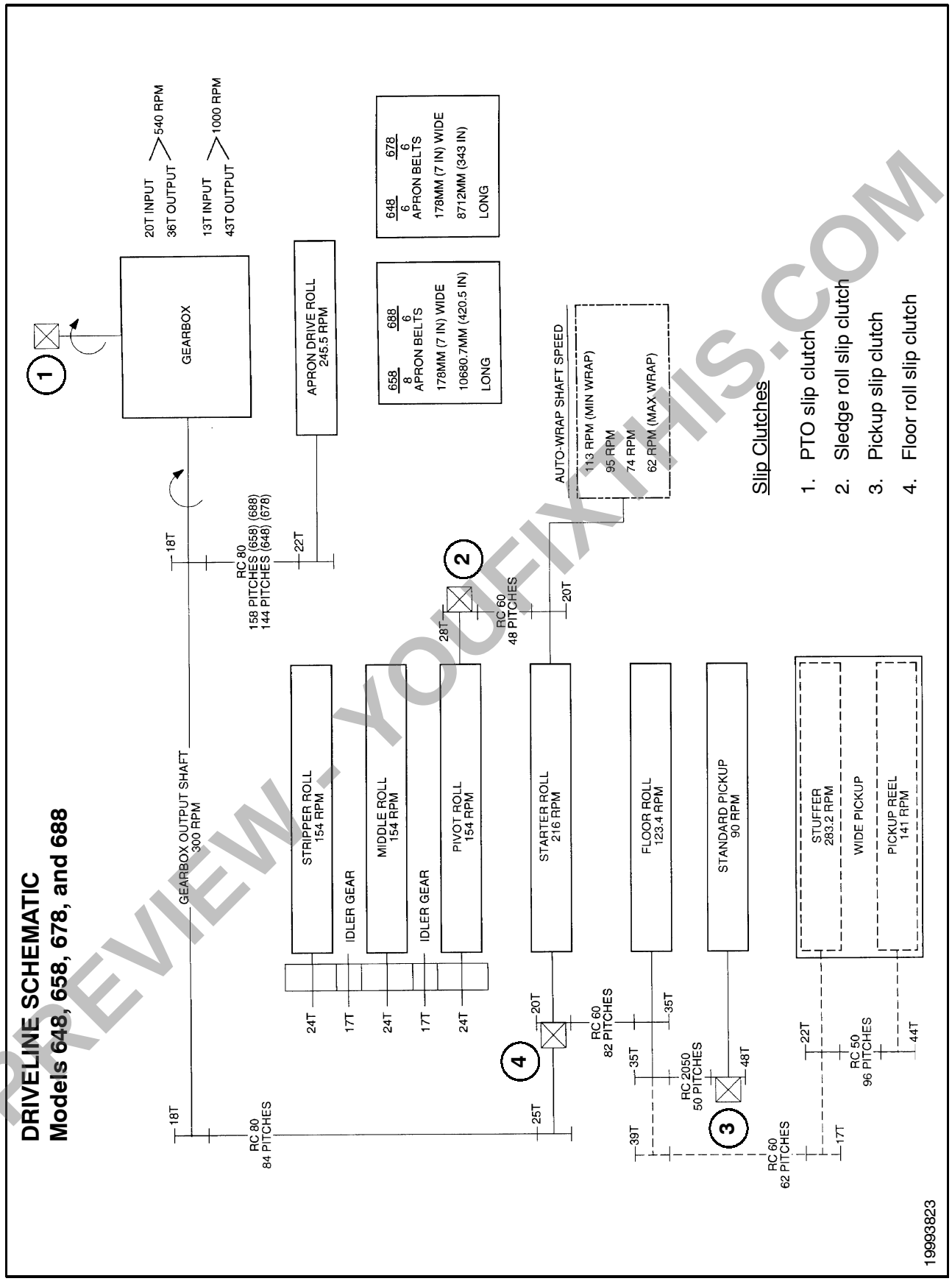
IMPORTANT: *Always use genuine* ***New Holland*** *replacement parts, oils and filters to ensure proper operation, filtration of engine and hydraulic systems. See your* ***New Holland*** *dealer for additional oil quantities.*

RECOMMENDED LUBRICANTS AND COOLANTS

Lubricant	Location Used	Type and Description	Part Number	Quart or Liter	Gallon or Tube
Oil	Engine and Pivot Points without Grease Fittings, Chains	SAE 30 API CF-2SJ	9613286	1Qt.	
		SAE 30 API CF-2SJ	9613289		2.5 Gal.
		SAE 30 API CF-2SJ	9613366*	4 L	
		5W-30 API SG/CD	9673589DS	1 Qt.	
		5W-30 API SG/CD	9624590*	4 L	
		10W-30 API SG/CD	9613313	1 Qt.	
		10W-30 API SG/CD	9613314		2.5 Gal.
		10W-30 API SG/CD	9673508DS		5 Gal.
		10W-30 API SG/CD	9613358*	1 L	
		10W-30 API SG/CD	9613359*	4 L	
		15W-40 API CF-4	9613290	1 Qt.	
		15W-40 API CF-4	9673730DS		1 Gal.
		15W-40 API CF-4	9613303		2.5 Gal.
		15W-40 API CF-4	9613292		5 Gal.
		15W-40 API CF-4	9613350*	1 L	
		15W-40 API CF-4	9613351*	4 L	
Coolant	Engine	ESE-M97B18-D, Ethylene Glycol New Holland Spec. Coolant Concentrate	FGCC2701DS		1 Gal.
		Propylene Glycol Concentrate	FGCC2711DS		1 Gal.
Hydraulic Oil	Hydraulic System, Hydrostatic System Front Axle Oil	134D – ESN-M2C134-D New Holland Spec. Hydraulic oil	9624450		2.5 Gal.
		134D – ESN-M2C134-D	9624451		5 Gal.
		134D – ESN-M2C134-D	9613367*	4 L	
		134D – ESN-M2C134-D	9624785*	10 L	
Hydraulic Oil	Optional, Multi-Seasonal Use, Recommended for Low Temperatures	F200	86523625DS	1 Qt.	
		F200	86523626DS		5 Gal.
		F200	86509446*	20 L	
Gear Oil	Gearboxes	80W90 EP Gear Oil API GL5	9613295	1 Qt.	
		80W90 EP Gear Oil API GL5	9613294		2.5 Gal.
		80W90 EP Gear Oil API GL5	9613375*	5 L	
		85W140 EP Gear Oil API GL5	9613297	1 Qt.	
		85W140 EP Gear Oil API GL5	9613296		2.5 Gal.
		85W140 EP Gear Oil API GL5	9613376*	4 L	
Grease	All Grease Fittings	Lithium base EP high temperature	9861804DS		Tube
		Lithium base EP high temperature	9861804CDS*		Tube
Brake Fluid		Mineral Based Oil	1QM6C34A or 86541699DS	1 Qt.	

**** NOTE:*** *Canada Part Numbers ONLY.*

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SPECIFICATIONS

	638
WEIGHT	
Base unit	1284 kg (2830 lbs.)
Standard tires (2)	32 kg (70 lbs.)
Flotation tires (2)	41 kg (90 lbs.)
Pickup gauge wheel (1)	20 kg (44 lbs.)
Bale ejector bundle	9 kg (20 lbs.)
OVERALL DIMENSIONS	
Width (standard tires)	213 cm (84″)
Width (flotation tires)	216 cm (85″)
Length (tailgate closed)	334 cm (131.5″)
Length (tailgate open)	404 cm (159″)
Height (tailgate closed)	215 cm (84.5″)
Height (tailgate open)	290 cm (144.3″)
TRACTOR REQUIREMENTS	
Power	26 kw (35 hp) minimum
Hydraulics	one double-acting outlet required 11,032 kPa (1800 PSI) minimum 21,375 kPa (3100 PSI) maximum
PTO	540 RPM
BALES	
Width	1182 mm (46.5″)
Diameter	762 - 1219 mm (30 - 48″)
Weight	295 kg (650 lbs.)
CAPACITY	5 - 9 m tons/hr (6 - 10 T/hr)
TIRES	
Standard	27x9.50-15 - 4PR - 207 kPa (30 PSI)
High Moisture	11L-14 - 6 Ply - 193 kPa (28 PSI)
DRIVELINE	
PTO	540 RPM constant velocity joint at tractor connection
Gearbox	90° bevel gears in oil
Final drive	Roller chains
Protection	Shear Bolt ahead of gearbox
Pickup slip clutch	316 N·m (2800 in. lbs)

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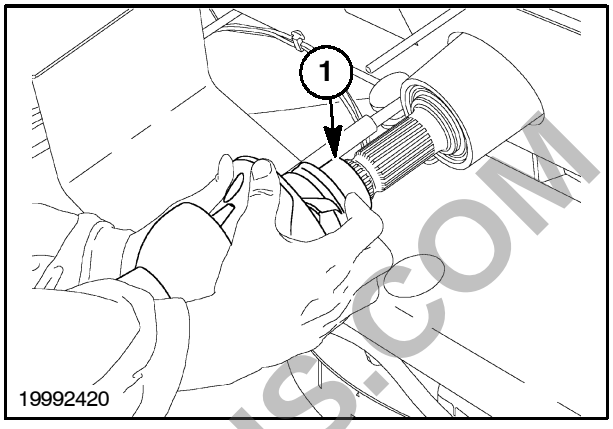
PTO

MODEL 638

PTO Removal

This model baler uses a PTO driveline that combines the universal joint in a constant velocity-type driveline. At the rear of the assembly is the shear bolt protection system.

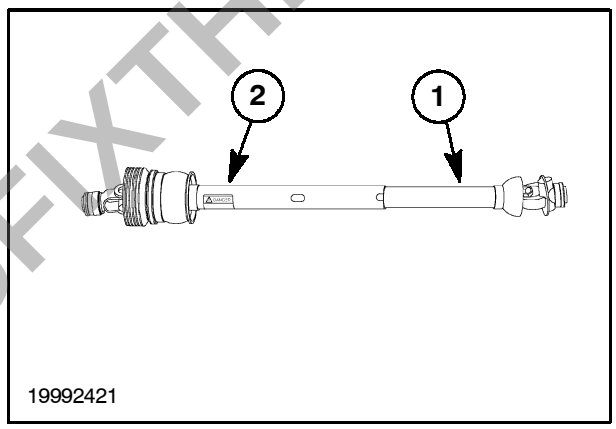
The Model 638 requires only that the rear slide collar, 1, be released to remove the PTO assembly from the baler.



1

NOTE: *The PTO shaft can be disassembled and assembled in a similar manner to most universal joints. This section will cover the complete disassembly of the shaft. Disassemble only the amount of the shaft that is needed to make the repair.*

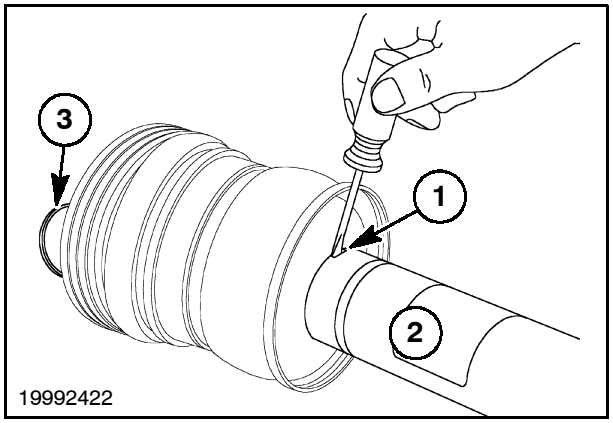
Figure 2 shows the complete PTO assembly:
1 is the front PTO assembly.
2 is the rear PTO assembly.



2

Front PTO Shaft Disassembly

Use a screwdriver to disengage snap ring, 1, from the groove in shield, 2. Slide the PTO shaft, 3, out of shield, 2.

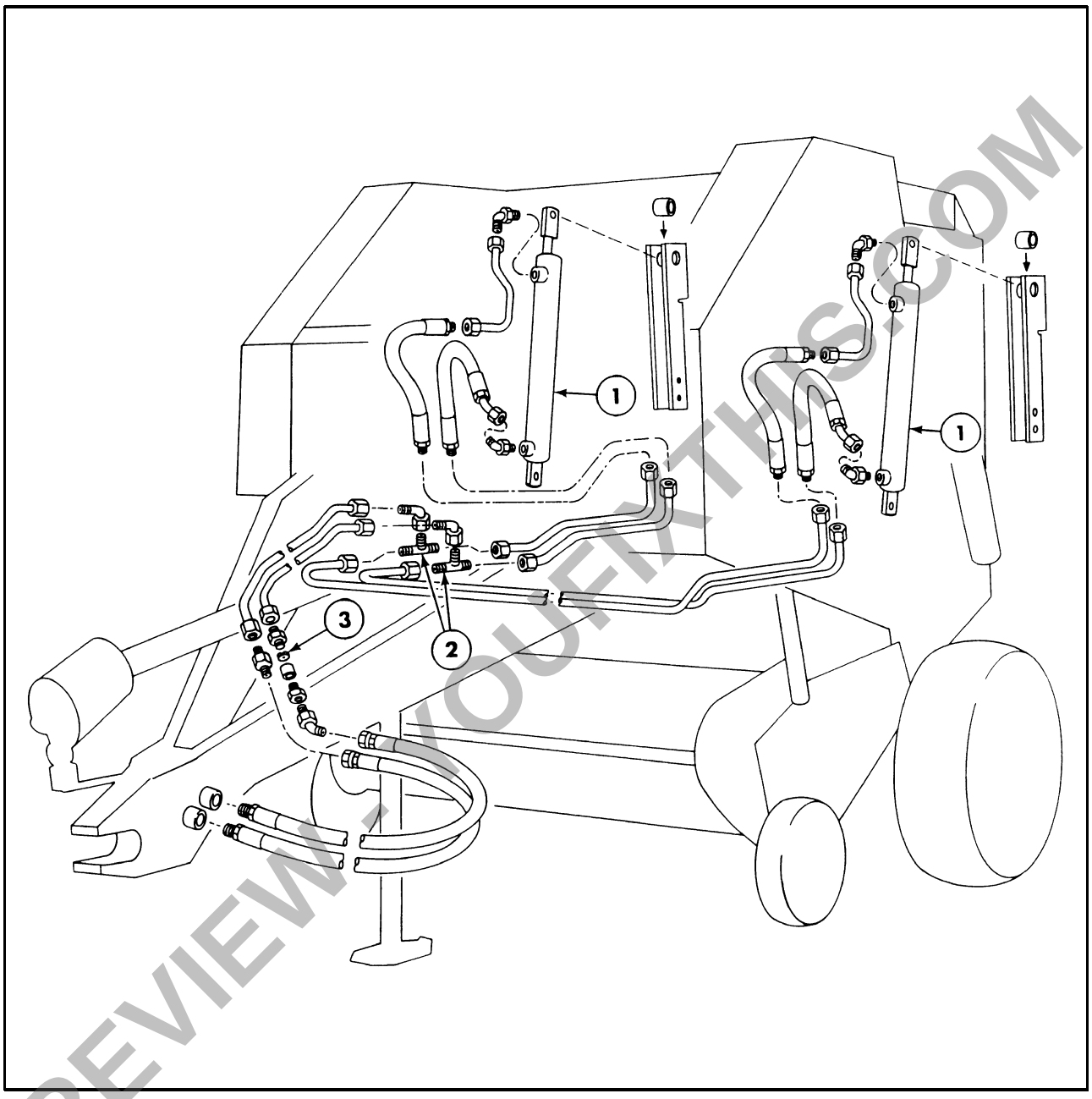


3

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TAILGATE LIFT SYSTEM



1

MODEL 638

The tailgate lift system consists of two cylinders, 1, and the steel lines and hoses required to connect them to the tractor. The lines to the cylinders are connected to a tee, 2, so that the cylinders operate together to raise or lower the tailgate. There is a 2.08 mm (0.082″) orifice, 3, in the lift part of the circuit to regulate the speed of the tailgate. The slot in the orifice should be facing away from the tractor.

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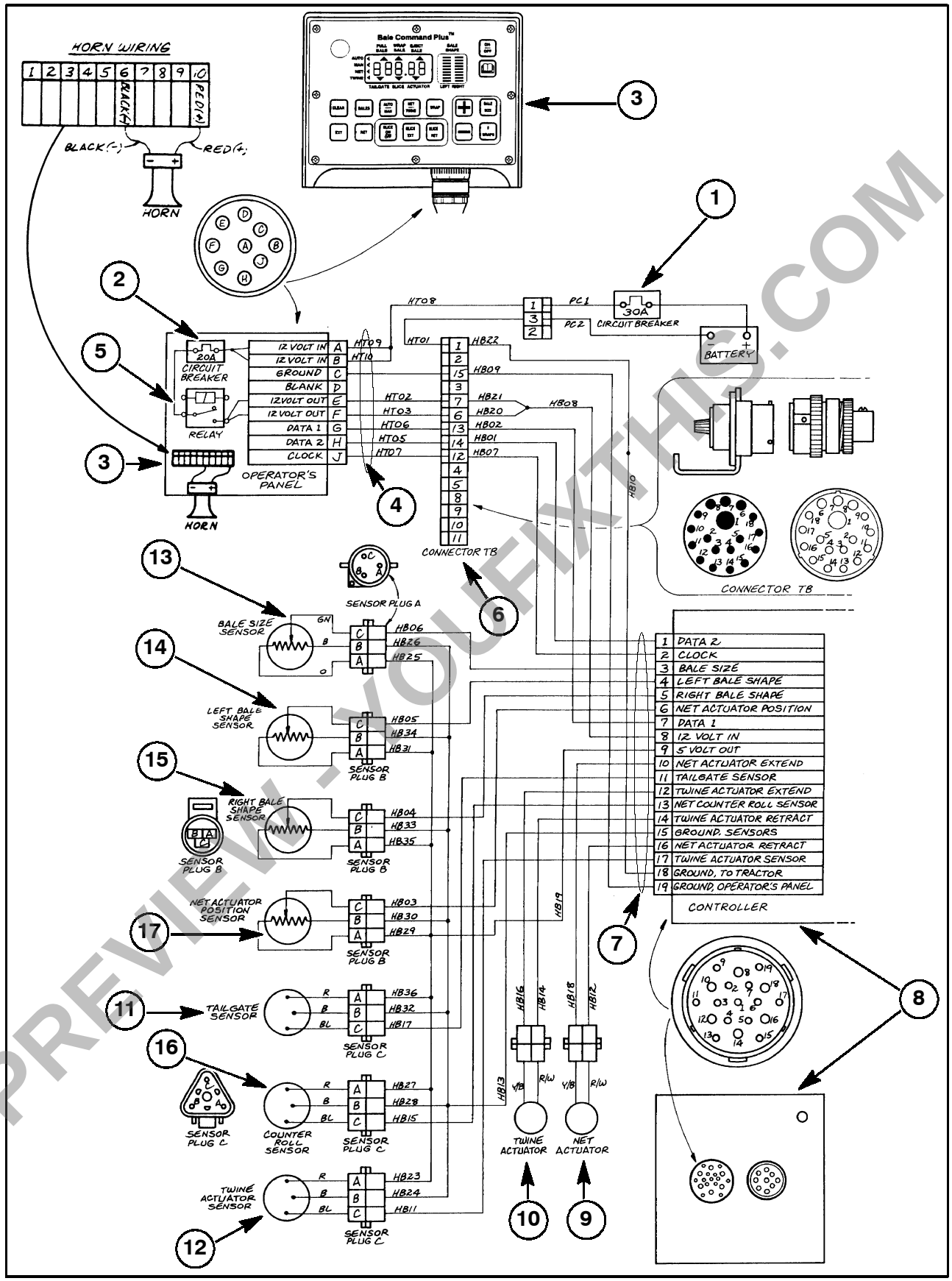
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TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSES	CORRECTION
Internal leakage.	Worn or damaged seals.	Replace.
	Piston nut not tight.	Torque to specification.
External leakage.	Worn or damaged seals.	Replace.
	Internal leakage in a single- acting cylinder.	See internal leakage.
Tailgate opens slowly.	Restriction in line.	Remove restriction.
	Lockout valve incorrectly adjusted.	Readjust so spool has full travel.
	Orifice installed wrong.	Install with slot facing away from tractor.
	Incorrect orifice.	Install 0.104″ orifice.
	Low flow or pressure.	Repair tractor hydraulic system.
Tailgate closes fast.	No orifice in line.	Install orifice.
	Orifice installed wrong.	Install with slot facing away from tractor.
Tailgate drifts open.	Internal leak in cylinder.	See internal leakage.
	Tractor remote not sealing.	Repair tractor.
	Tailgate not latched.	Check latch is locked before baling.
Density pressure drop (some drop is normal when not adding crop).	Internal leakage.	See internal leakage.
	Air in the system.	Bleed the system.
	Dirt in the relief valve.	Clean valve.
Pressure not at 0 when ready to start baling.	Change in temperature.	Cycle the tailgate open arm closed several times.
Pressure does not return to 0 when bale is ejected.	System over filled.	Bleed system.
	Interference between take-up arm and side.	Remove interference.
	Defective gauge.	Replace gauge.
Cannot get maximum pressure.	Knob not adjusted on valve stem - single cylinder.	Adjust valve stem and knob.
	Internal leakage.	See internal leakage.
	Dirt in relief valve.	Clean valve.
Pickup rises too fast.	Orifice missing or reversed.	Install with slot facing away from cylinder.

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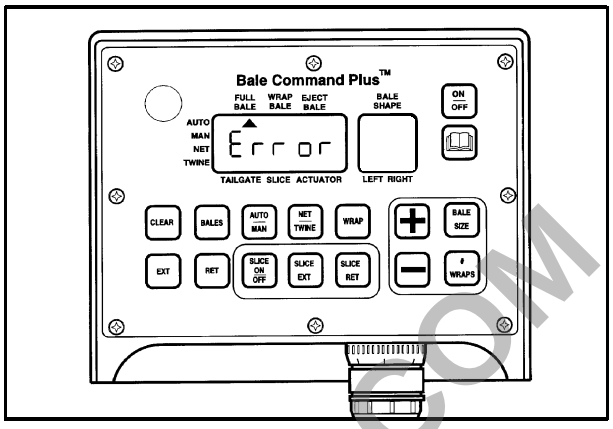
ERROR MESSAGES AT START-UP

The Bale Command Plus™ system goes through a self test when it is turned on. If a problem is found, the operator is alerted by the audible alarm and an Error message and/or flashing pointer on the display on the operator's panel.

If Error is displayed, there will also be an indicator triangle on the display to indicate what circuit of the system is causing the problem.

Pressing the CLEAR key will cancel the alarm.

The following are errors that may appear:



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Error and the FULL BALE pointer is flashing - Bale size circuit

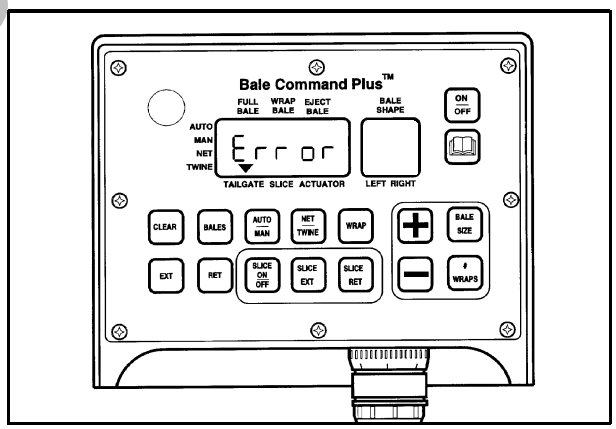
The bale size should indicate 30 (75 if metric display is selected) when the system is turned ON with an empty bale chamber.

Check to be sure the sensor is adjusted correctly and that the take-up arm is in the home position before checking the wiring or testing the sensor.

Error and TAILGATE pointer is flashing - Tailgate sensor circuit

The sensor must indicate that the tailgate is closed and latched before starting to make a bale.

Check to be sure the sensor is adjusted correctly and that the tailgate is closed and latched before checking the wiring.

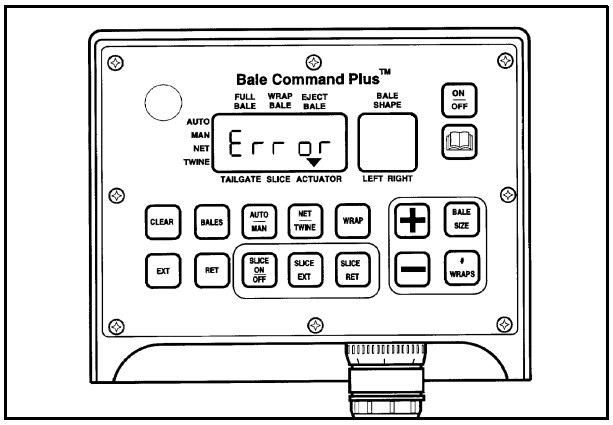


51

Error and ACTUATOR pointer is flashing - Net actuator circuit.

The sensor must indicate that the actuator is in the home position before starting to make a bale.

Check to be sure the sensor is adjusted correctly and that the actuator is in the home position before checking the wiring or testing the sensor.



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SECTION 31 – IMPLEMENT DRIVELINE

BOOK 1 - 87012149

Chapter 3 – Slip Clutches

CONTENTS

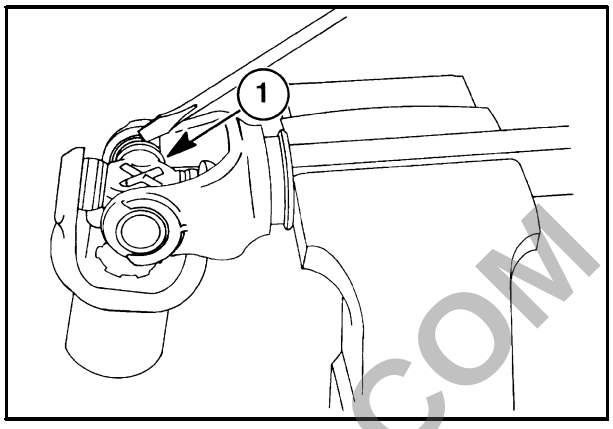
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	Inspection	4
	Assembly	5
	Installation	6
	Burnishing the Main Drive Slip Clutch	7
	Checking Main Drive Slip Clutch Setting	8
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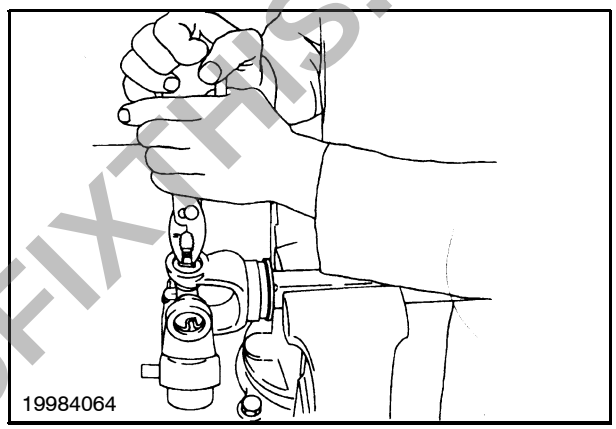
PTO Disassembly

1. PTO Shields - Depending on models, remove the shield retainer, as shown in Figure 24 or 25. Then slide off the shield.
2. PTO U-joints - Remove the retainer snap rings, 1, for the bearing caps. There may be internal type snap rings that can be removed with a screwdriver, as shown.



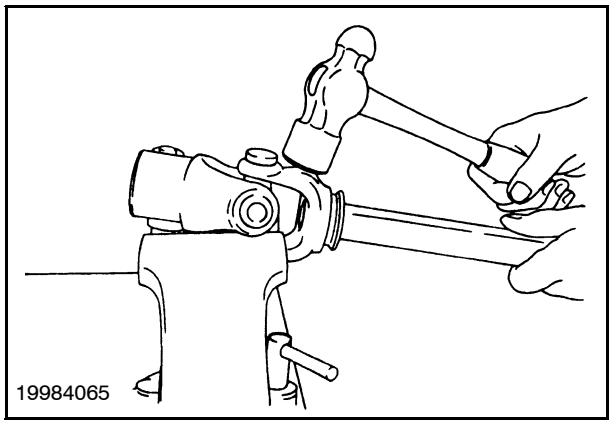
27

On an external type snap ring, remove with a pair of pliers as shown.



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Set the U-joint across the open jaws of a vise and drive the bearing cap out of the yoke. It may not move completely apart.



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Testing The Lockout Valve

The lockout valve should hold the tailgate open when pressure is removed from the line to open the tailgate. A small amount of creep is normal for the valve. If the creep is excessive, the valve should be repaired or replaced.

Check to be sure the handle and valve are adjusted correctly. The snap rings on the spool should contact the housing in both the “locked” and “unlocked” positions.

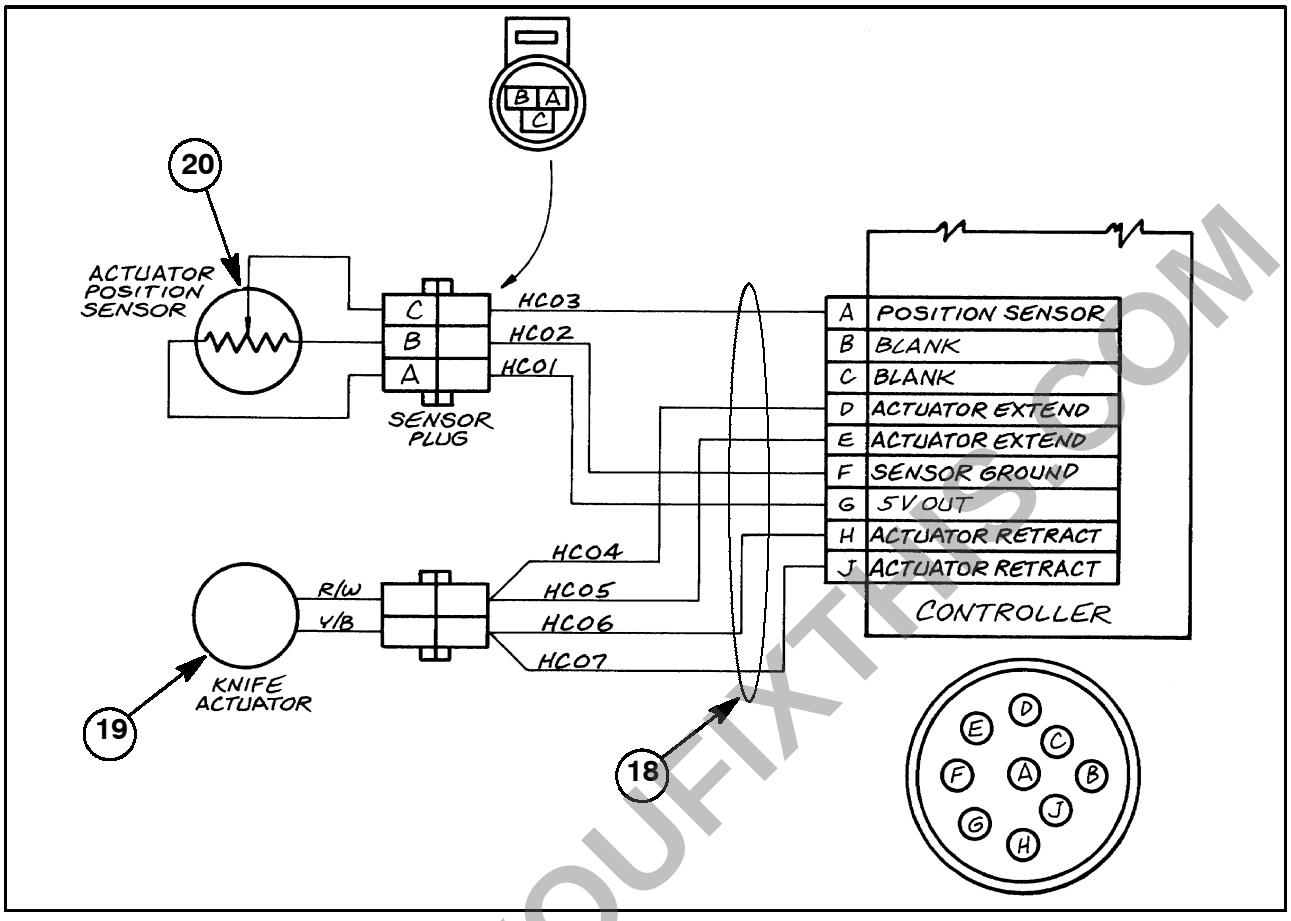
Open and close the tailgate several times to be sure the lines are charged.

Open the tailgate halfway and place the valve in the locked position.

1. Try to move the tailgate using the tractor hydraulics. The tailgate should stay in the locked position.
2. Remove pressure from the valve input line. Do this by stopping the tractor and moving the remote control lever to the raise and lower positions several times and then placing it in the float position. Measure the height of the tailgate. Wait 15 minutes and measure the height again. The tailgate is allowed to drop 254 mm (10″) in the 15 minutes.

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Figure 48 is the electrical diagram for the Bale Command Plus™ system without the Bale Slice™ option. The controller on machines with the Bale Slice have an additional connector for the Bale Slice harness.

Figure 49 is the electrical diagram for the additional components used with the Bale Slice system.

A 30-amp circuit breaker, 1, protects the entire system. 12 volts from the tractor battery (or starter) goes to a 20-amp breaker, 2, in the operator's panel, 3, through the main tractor harness, 4. When the system is turned ON, power is sent from a relay, 5, to the baler through the baler harness connector, 6. The baler harness, 7, is connected to the controller, 8; the net actuator, 9, the twine actuator, 10, plus the tailgate, 11, twine actuator position, 12, bale size, 13, bale shape sensors, 14 and 15, net counter roll sensor, 16, and net actuator position sensor, 17.

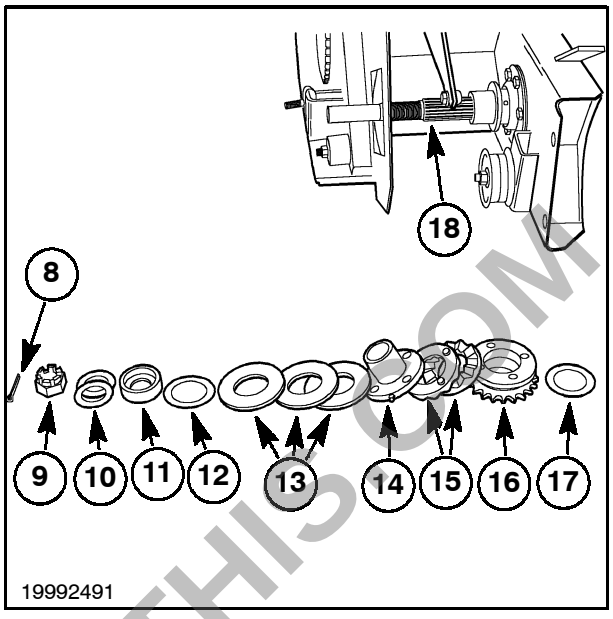
If the Bale Slice™ is installed, another harness, 18, connects the controller to the knife actuator, 19, and position sensor, 20.

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Remove the cotter pin and slotted nut. The complete clutch assembly can now be removed from the shaft. The clutch assembly consists of the following components:

8 Cotter pin
9 Slotted nut
10 Washers
11 Backing ring
12 Washer
13 Spring washer
14 Hub
15 Clutch jaws
16 Sprocket & hub weld assembly
17 Washer
18 Shaft



18

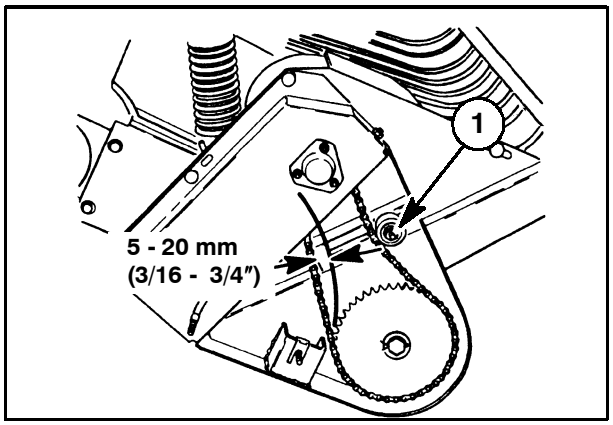
Inspection
Inspect the shaft support bearing, clutch jaws, and sprocket hub weld assembly. Replace any parts that appear damaged.

Installation
Apply a light coat of grease to the shaft assembly and between the clutch jaws. Reassemble the clutch in the reverse of the disassembly procedure. Tighten the slotted nut until the spring washers cannot be rotated by hand.

NOTE: *This setting will produce the 565 N·m (5,000 in. lbs) required for proper clutch operation. If the clutch slips under light load, increase the setting by two flats on the slotted nut.*

Install the cotter pin. Adjust the reel and auger drive chain to 5 - 20 mm (3/16 - 3/4″) using the eccentric idler, 1. Reinstall the support weld assembly.

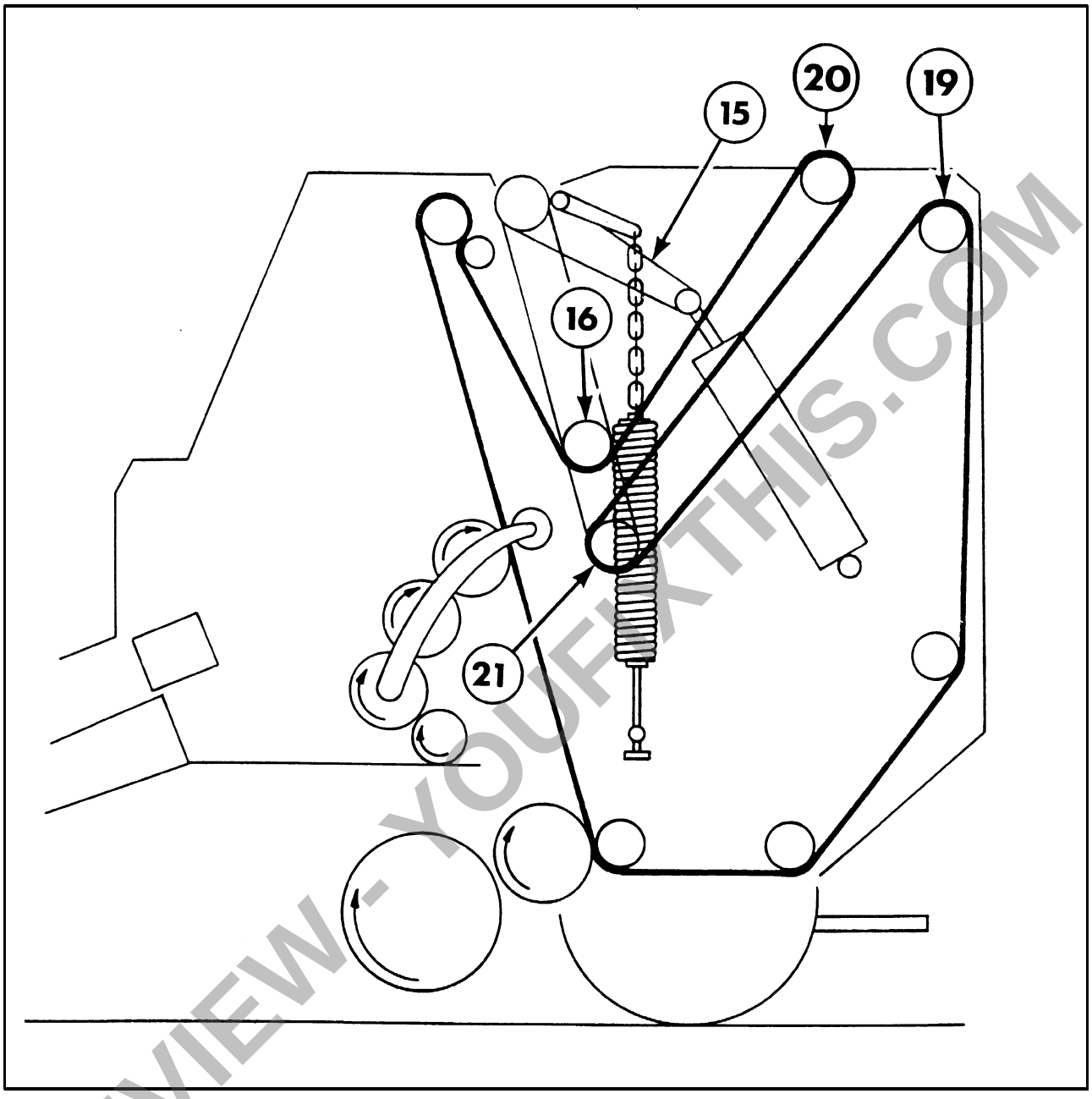
If the pickup was removed from the baler, reinstall the shield over the reel/auger drive and pickup wheel. Reposition the pickup on the baler and torque the M12 x 30 cap screws to 97 N·m (72 ft lbs). Replace the pickup drive chain and adjust to 5 - 20 mm (3/16 - 3/4″) deflection, as shown in Figure 19. Reinstall the lift link and flotation springs. Adjust the pickup flotation spring bolts until 45 kg (100 lbs) is required to lift the pickup at the pickup wheel.



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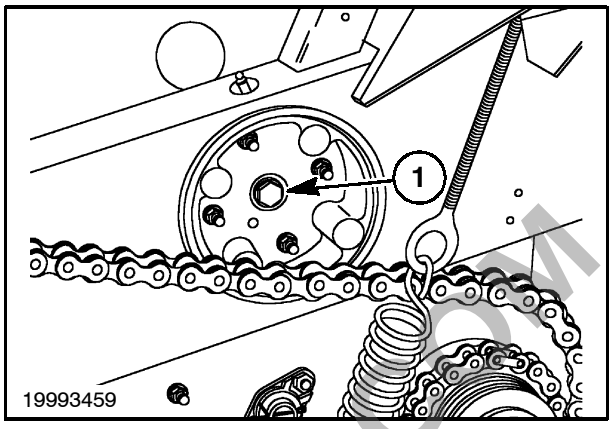
TAKE-UP ARM ASSEMBLY

The take-up arms with rolls 16 and 21 are used to maintain the tension on the belts. After the core is established, the resistance of the assembly to rotate up and rearward is what creates tightly-packed bales. The take-up arm assembly has been designed for the life of the baler. However, if the baler is damaged, replacement would be required.

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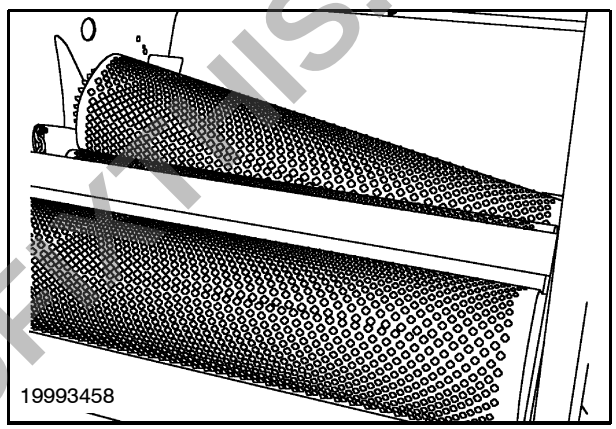
8. On the left side of the baler, remove the cap screw, 1.



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9. Working over the pickup with the wind guard removed, disengage the left-hand end of the roll from the idler gear by moving the roll upward. After the shaft is free from the frame on the right-hand side, remove the roll from the baler.

NOTE: *Removal of the pickup is not mandatory, however, access and handling are greatly improved. The pivot roll for Model 688 weighs 32 kg (70 lbs).*

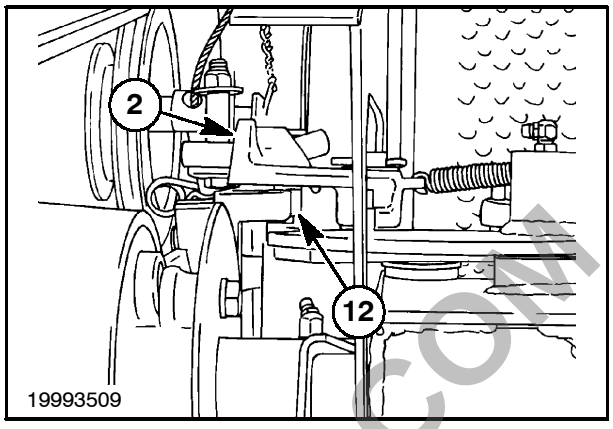


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3. Attach the bracket to the mounting plate and side sheet using two M10 x 50 capes, washers and lock washers plus 6.3 mm (1/4″) thick spacers, 11, between the bracket and plate. If there were washers between the mounting plate and frame they should be reinstalled also. Check the overlap between the roller, 12, on the bottom of the trip and the tab on the knife slide. The end of the tab should extend past the center of the roller by 1.5 mm (1/16″). The end of the tab should be 3/16″ to 1/4″ from the left edge of the roller. If the tab is too far to the right, either add washers between the mount plate anode sheet or grind the tab. There should be 1.5 - 3 mm (1/16 - 1/8″) clearance between the trip, 2, arid the top of the knife operating slide. Loosen the three cap screws through the mounting plate and tilt the plate to obtain the clearance.
4. Place the spring bracket, 8, Figure 61, on the hub of the pivoting bracket, 10, and install a 1/4″-28 grease fitting in the hub.
5. Attach the spring, 9, Figure 60, to the bracket.
6. Use 1.5 mm (0.060″) thick washers, 13, Figure 61 bracket shaft to obtain less than 1.5 mm (0.060″) end play of the pivoting bracket after the idler, 6, is installed.
7. Use washers, 14, between the end of the shaft and the idler, 6, to align the edge of the idler with the edge of the driven sheave. Attach the idler to the end of the shaft using a 1/2″ x 2-1/4″ cap screw and lock washer.
8. Use a 13 mm (1/2″) long spacer, 15, and washers to align the pivoting idler, 5, with the stationary idler and attach the idler to the bracket using a 1/2″ x 2-3/4″ cap screw, lock washer and nut.
9. Install the drive belt, 4, Figure 59.
10. Place the spring bracket over the pin on the pivoting idler bracket and install a hairpin cotter, 7. Use the hole in the spring bracket that will apply tension to the belt. Adjust the eyebolt to obtain 50 mm (2″) deflection at mid-span of the belt 4.5 kg (10 lbs) force is applied.



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