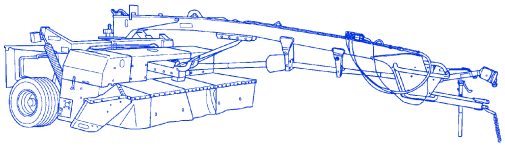


NEW HOLLAND

1431
1432

REPAIR MANUAL

NEW HOLLAND

SERVICE

1431, 1432 REPAIR MANUAL CONTENTS

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.

The sections listed above are the sections utilized for the 1431, 1432 Disc Mower-Conditioners.

SECTION 00 - GENERAL INFORMATION

Chapter 1 - General Information

CONTENTS

SPECIAL TOOLS

Tool Number	Description/Use
Section 31	
NHO1386	Pivot tongue gearbox neck cap screws
610R	Snap ring remover
Local Manufacture	Neck lock nut removal
Local Manufacture	Holding tool for neck housing
Local Manufacture	Neck rolling torque measurement
Section 58	
FNH23ET95	Top cap bearing cover
FNH01221-2	Cutter bar tie bolt holding tool
FNH01221-3	Cutter bar wrench

SPECIFICATIONS

MODEL 1431

	Standard Tongue	Swivel Hitch Tongue
Overall Width		
Transport position	4000 mm (13′3″)	4000 mm (13′3″)
Field position	5791 mm (19′0″)	6274 mm (20′7″)
Overall Length		
Transport position	7925 mm (26′0″)	8484 mm (27′10″)
Field position	6375 mm (20′11″)	6934 mm (22′9″)
Height		
Transport position	2032 mm (6′8″)	2032 mm (6′8″)
Field position	1676 mm (5′6″)	1676 mm (5′6″)
Ground Clearance	457 mm (18″)	457 mm (18″)
Wheel Tread Width	3772 mm (148.5″)	3772 mm (148.5″)
Weight	2557 kg (5600 lbs.)	2694 kg (5900 lbs.)

Driveline	
Tractor Requirement	67 KW (90 HP) or greater with standard category 2 or 3 ASAE hitch and PTO locations. Two remote hydraulic circuits capable of 104 bar (1500 PSI).
Input Speed	1000 RPM only
Drive	1000 RPM PTO with slip clutch/overrunning clutch, enclosed gears and (3) HB banded belts with spring loaded idlers.
Header	
Cutting Width	3906 mm (13′0″)
Flotation	Vertical & radial
Windrow Width	914 mm to 2438 mm (3′ to 8′)
Header Lift	Hydraulic (master-slave system)
Cutter Bar	
Type	Modular
No. of Discs	8 counter-rotating, 2 co-rotating
Knives per Disc	2
Disc Cutting Diameter	500 mm (19.7″)
Disc Drive	Bevel gears in sealed modules
Disc Speed	3000 RPM
Cutting Height, Approximate	32 mm to 83 mm (1.25″ to 3.25″)
Conditioner	
Type	Intermeshing rolls
Drive	4HB V-belt, enclosed gears with u-joint drives to upper & lower rolls.
Rolls	
Type	Molded rubber with intermeshing chevron design.
Length	2591 mm (102″)
Diameter	264 mm (10.38″)
Speed	640 RPM
Operating Speed	0 to 14 KPH (0 to 9 MPH)
Transport Speed	40 KPH (25 MPH) maximum
Capacity	3.06 H/hr (7.56 A/hr) @ 10 KPH (6 MPH) & 80% field efficiency.
Tire	31.5 x 13.5L x 15, 6 ply tubeless agricultural rib implement tire
Tire Pressure	207 kPa or 2.07 bar (30 PSI).
Jack	2000 lb. capacity side-wind
Tongue Shift	Hydraulic

MODEL 1432

	Standard Tongue	Swivel Hitch Tongue
Overall Width		
Transport position	4000 mm (13′3″)	4000 mm (13′3″)
Field position	5791 mm (19′0″)	6274 mm (20′7″)
Overall Length		
Transport position	8052 mm (26′5″)	8611 mm (28′″)
Field position	6502 mm (21′′4″)	7061 mm (23′2″)
Height		
Transport position	2184 mm (7′2″)	2184 mm (7′2″)
Field position	1829 mm (6′0″)	1803 mm (5′11″)
Ground Clearance	406 mm (16″)	406 mm (16″)
Wheel Tread Width	3772 mm (148.5″)	3772 mm (148.5″)
Weight	2582 kg (5655 lbs.)	2719 kg (5955 lbs.)
Driveline		
Tractor Requirement	67 KW (90 HP) or greater with standard category 2 or 3 ASAE hitch and PTO locations. Two remote hydraulic circuits capable of 104 bar (1500 PSI).	
Input Speed	1000 RPM only	
Drive	1000 RPM PTO with slip clutch/overrunning clutch, enclosed gears and (3) HB banded belts with spring loaded idlers.	
Header		
Cutting Width	3906 mm (13′0″)	
Flotation	Vertical & radial	
Windrow Width	914 mm to 2438 mm (3′ to 8′)	
Header Lift	Hydraulic (master-slave system)	
Cutter Bar		
Type	Modular	
No. of Discs	8 counter-rotating, 2 co-rotating	
Knives per Disc	2	
Disc Cutting Diameter	500 mm (19.7″)	
Disc Drive	Bevel gears in sealed modules	
Disc Speed	3000 RPM	
Cutting Height, Approximate	32 mm to 83 mm (1.25″ to 3.25″)	
Conditioner		
Type	Flail	
Drive	4HB V-belt, enclosed gears with u-joint drives to rotor.	
Rotor		
Length	2591 mm (102″)	
Diameter	560 mm (22″)	
Speed	1011 RPM (726 RPM optional)	

Operating Speed	0 to 14 KPH (0 to 9 MPH)
Transport Speed	40 KPH (25 MPH) maximum
Capacity	3.06 H/hr (7.56 A/hr) @ 10 KPH (6 MPH) & 80% field efficiency.
Tire	31.5 x 13.5L x 15, 6 ply tubeless agricultural rib implement tire
Tire Pressure	207 kPa or 2.07 bar (30 PSI).
Jack	2000 lb. capacity side-wind
Tongue Shift	Hydraulic

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.*

MINIMUM HARDWARE TIGHTENING TORQUES

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

INCH HARDWARE AND LOCKNUTS

NOMINAL SIZE	SAE GRADE 2		SAE GRADE 5		SAE GRADE 8		LOCKNUTS		NOMINAL SIZE
	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	GR.B w/GR5 BOLT	GR.C w/GR8 BOLT	
1/4	55* (6.2)	72* (8.1)	86* (9.7)	112* (13)	121* (14)	157* (18)	61* (6.9)	86* (9.8)	1/4
5/16	115* (13)	149* (17)	178* (20)	229* (26)	250* (28)	324* (37)	125* (14)	176* (20)	5/16
3/8	17 (23)	22 (30)	26 (35)	34 (46)	37 (50)	48 (65)	19 (26)	26 (35)	3/8
7/16	27 (37)	35 (47)	42 (57)	54 (73)	59 (80)	77 (104)	30 (41)	42 (57)	7/16
1/2	42 (57)	54 (73)	64 (87)	83 (113)	91 (123)	117 (159)	45 (61)	64 (88)	1/2
9/16	60 (81)	77 (104)	92 (125)	120 (163)	130 (176)	169 (229)	65 (88)	92 (125)	9/16
5/8	83 (112)	107 (145)	128 (174)	165 (224)	180 (244)	233 (316)	90 (122)	127 (172)	5/8
3/4	146 (198)	189 (256)	226 (306)	293 (397)	319 (432)	413 (560)	160 (217)	226 (306)	3/4
7/8	142 (193)	183 (248)	365 (495)	473 (641)	515 (698)	667 (904)	258 (350)	364 (494)	7/8
1	213 (289)	275 (373)	547 (742)	708 (960)	773 (1048)	1000 (1356)	386 (523)	545 (739)	1

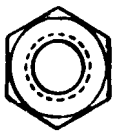
NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION
CAP SCREWS AND CARRIAGE BOLTS

SAE GRADE 2

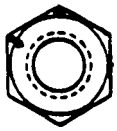
SAE GRADE 5

SAE GRADE 8



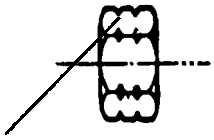
REGULAR NUTS

SAE GRADE 5 HEX NUTS



SAE GRADE 8 HEX NUTS

LOCKNUTS



GRADE IDENTIFICATION

GRADE A NO NOTCHES

GRADE B ONE CIRCUMFERENTIAL NOTCH

GRADE C TWO CIRCUMFERENTIAL NOTCHES

GRADE IDENTIFICATION

GRADE A NO MARKS

GRADE B THREE MARKS

GRADE C SIX MARKS

MARKS NEED NOT BE LOCATED AT CORNERS

GRADE A NO MARK
GRADE B LETTER B
GRADE C LETTER C

GRADE IDENTIFICATION

MINIMUM HARDWARE TIGHTENING TORQUES

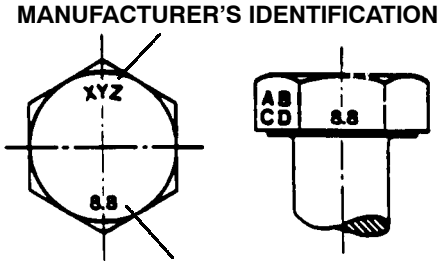
IN FOOT POUNDS (NEWTON-METERS) FOR NORMAL ASSEMBLY APPLICATIONS

METRIC HARDWARE AND LOCKNUTS

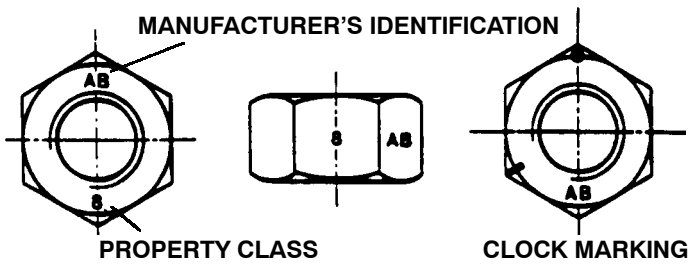
NOMINAL SIZE	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCKNUT CL.8 W/CL8.8 BOLT
	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	
M4	15* (1.7)	19* (2.2)	23* (2.6)	30* (3.4)	33* (3.7)	42* (4.8)	16* (1.8)
M6	51* (5.8)	67* (7.6)	79* (8.9)	102* (12)	115* (13)	150* (17)	56* (6.3)
M8	124* (14)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

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

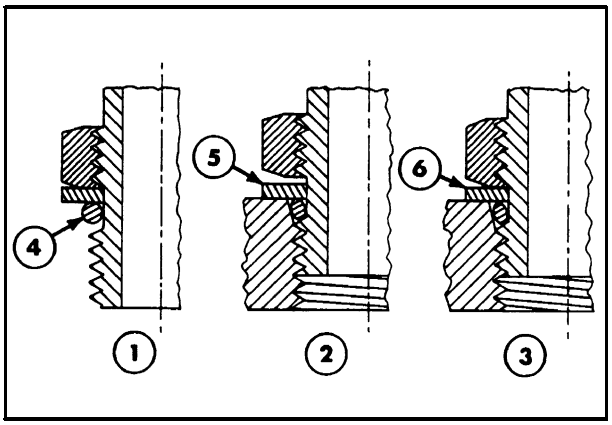


INSTALLATION OF ADJUSTABLE FITTINGS IN STRAIGHT THREAD O RING BOSSES

1. Lubricate the O ring by coating it with a light oil or petroleum. Install the O ring in the groove adjacent to the metal backup washer which is assembled at the extreme end of the groove, 4.
2. Install the fitting into the SAE straight thread boss until the metal backup washer contacts the face of the boss, 5.

NOTE: *Do not over tighten and distort the metal backup washer.*

3. Position the fitting by turning out (counterclockwise) up to a maximum of one turn. Holding the pad of the fitting with a wrench, tighten the locknut and washer against the face of the boss, 6.



1

STANDARD TORQUE DATA FOR HYDRAULIC TUBES AND FITTINGS

TUBE NUTS FOR 37° FLARED FITTINGS								O RING BOSS PLUGS ADJUSTABLE FITTING LOCKNUTS, SWIVEL JIC - 37° SEATS			
				TORQUE				TORQUE			
SIZE	TUBING OD		THREAD SIZE	FOOT POUNDS		NEWTON METERS		FOOT POUNDS		NEWTON METERS	
	In.	mm		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
4	1/4	6.4	7/16-20	9	12	12	16	6	10	8	14
5	5/16	7.9	1/2-20	12	15	16	20	10	15	14	20
6	3/8	9.5	9/16-18	21	24	29	33	15	20	20	27
8	1/2	12.7	3/4-18	35	40	47	54	25	30	34	41
10	5/8	15.9	7/8-14	53	53	72	79	35	40	47	54
12	3/4	19.1	1-1/16-12	77	82	104	111	60	70	81	95
14	7/8	22.2	1-3/16-12	90	100	122	136	70	80	95	109
16	1	25.4	1-5/16-12	110	120	149	163	80	90	108	122
20	1-1/4	31.8	1-5/8-12	140	150	190	204	95	115	129	158
24	1-1/2	38.1	1-7/8-12	160	175	217	237	120	140	163	190
32	2	50.8	2-1/2-12	225	240	305	325	250	300	339	407

These torques are not recommended for tubes of 1/2″ (12.7 mm) OD and larger with wall thickness of 0.035″ (0.889 mm) or less. The torque is specified for 0.035″ (0.889 mm) wall tubes on each application individually.

Before installing and torquing 37° flared fittings, clean the face of the flare and threads with a clean solvent or Loctite cleaner and apply hydraulic sealant Loctite no. 569 to the 37° flare and the threads.

Install fitting and torque to specified torque, loosen fitting and retorque to specifications.

PIPE THREAD FITTING TORQUE

Before installing and tightening pipe fittings, clean the threads with a clean solvent or Loctite cleaner and apply sealant Loctite no. 567 for all fittings including stainless steel or no. 565 for most metal fittings. For high filtration/zero contamination systems use no. 545.

Thread Size	Torque (Maximum)
1/8″ – 27	13 N·m (10 ft. lbs.)
1/4″ – 18	16 N·m (12 ft. lbs.)
3/8″ – 14	22 N·m (16 ft. lbs.)
1/2″ – 14	41 N·m (30 ft. lbs.)
3/4″ – 14	54 N·m (40 ft. lbs.)

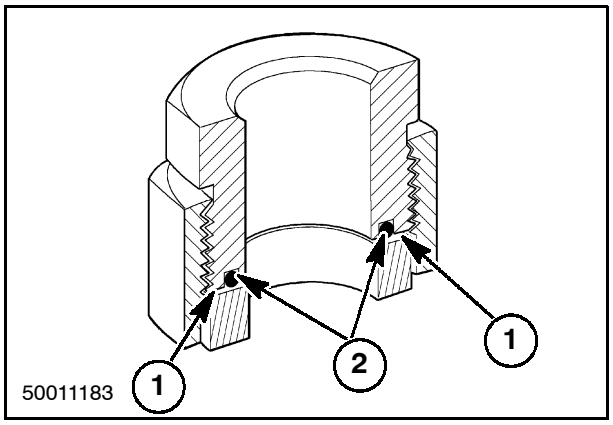
INSTALLATION OF ORFS (O-RING FLAT FACED) FITTINGS

When installing ORFS fittings thoroughly clean both flat surfaces of the fittings, 1, and lubricate the O-ring, 2, with light oil. Make sure both surfaces are aligned properly. Torque the fitting to specified torque listed throughout the repair manual.

IMPORTANT: *If the fitting surfaces are not properly cleaned, the O-ring will not seal properly. If the fitting surfaces are not properly aligned, the fittings may be damaged and will not seal properly.*

IMPORTANT: *Always use genuine New Holland replacement oils and filters to ensure proper lubrication and filtration of engine and hydraulic system oils.*

The use of proper oils, grease, and keeping the hydraulic system clean will extend machine and component life.



2

LABOR GUIDE

The following labor amounts are listed as a guide only. Working conditions and experience will vary the time it actually takes to complete each job.

SECTION 31 - Implement Power Take-off (PTO)

Job Description	Hours
Auto-Lok Slide Lock, Rbld	0.25
U-joints, replace cross;	
Standard	0.3
50° CV	0.7
80° CV	0.75
Guards, R & R	0.25
Burnishing Clutch	0.33
Slip Clutch, R & R	0.50
Slip Clutch, Rbld	0.75
Center Pivoting Gearbox	
Gearbox, R & R	1.50
Gearbox, Rbld	2.25
Guidance Link, R & R and Shim	0.50
Right Hand Gearbox	
Gearbox, R & R (Includes removing and replacing conditioner drive belt)	1.75
Gearbox Rebuild	3.00
Conditioner Drive belt, R & R	0.50
Conditioner Drive Gearbox	
Gearbox, R & R (Includes removing and replacing the conditioner roll drive shafts)	2.00
Gearbox, Rbld	2.00

SECTION 35 - Hydraulic System

Job Description		Hours
Swing Cylinder,	R & R	0.50
	Rbld	0.75
Master Cylinder,	R & R	0.
	Rbld	0.50
Slave Cylinder,	R & R	0.
	Rbld	0.50
Tilt Cylinder,	R & R	0.3
	Rbld	0.50

SECTION 39 - Frames/Tongue and Hitches

Job Description		Hours
Hood Liner (both sides)	R & R	1.0
Hood	R & R	1.5

SECTION 58 - Cutter Bar

Job Description	Hours
Failure Diagnosis	0.50
Top Cap, R & R	0.50
Cutter Bar Drive Shaft, R & R	0.33
Cutter Bar Drive Shaft, Rbld 1 U-joint	0.33
Cutter Bar Assembly, R & R	1.25
Disc Module, R & R	0.75
Disc Module, Rbld	1.00
Lower conditioner roll, R&R	2.00
Lower drive shaft R&R (includes retiming rolls)	0.50
Replace 1 universal joint	0.25
Upper drive shaft R&R	0.30
Replace 1 universal joint	0.25
Upper conditioner roll (lower roll R&R not included)	2.50
Conditioner belt R&R	0.30
Left side torsion bar R&R	0.75
Left side tension arm R&R (includes left torsion bar R&R)	1.25
Right side torsion bar R&R (includes left torsion bar R&R)	2.00
Right side tension arm R&R (includes right torsion bar R&R)	2.50
Conditioner Belt R & R (with adjustment)	0.50
Flai l R & R (each group of six, w/shaft)	0.50
Rotor R & R (without repairs to rotor)	2.0

SECTION 31 - IMPLEMENT POWER TAKE OFF (PTO)

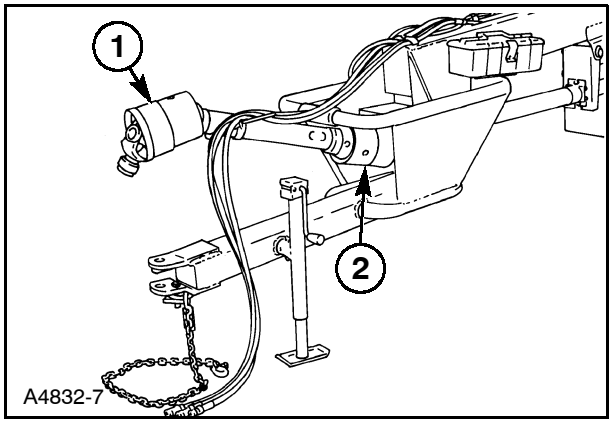
Chapter 1 - Drive Lines (Standard Tongue)

CONTENTS

1431/1432 STANDARD TONGUE

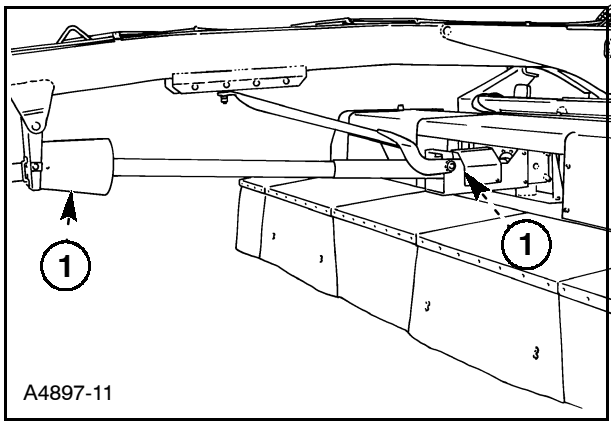
INTRODUCTION

The 1431/1432 disc mower-conditioners utilize constant velocity U-joint drivelines for smooth operation, and to provide the ability to swing the tongue during PTO operation. The primary PTO shaft is equipped with an 80° CV U-joint, 1, at the tractor end, and a 50° CV U-joint, 2, at the mower end of the shaft. The primary PTO shaft attaches to the front of the tongue jackshaft; the tongue jackshaft then transfers power back to a point midway along the tongue.



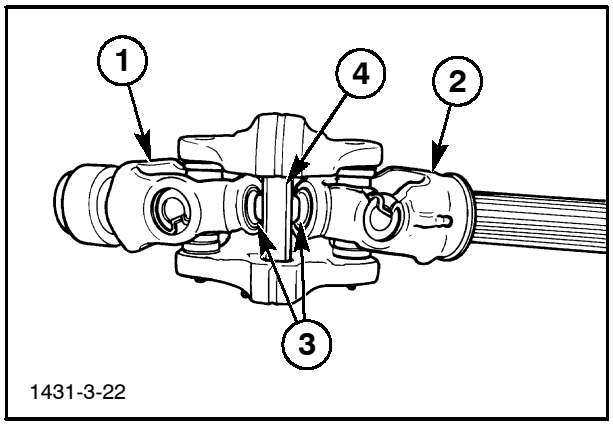
1

The secondary PTO shaft attaches to the rear of the tongue jackshaft and uses conventional U-joints, 1, at both ends of the shaft. The 1431 and 1432 are available as a 1000 RPM PTO units only.



2

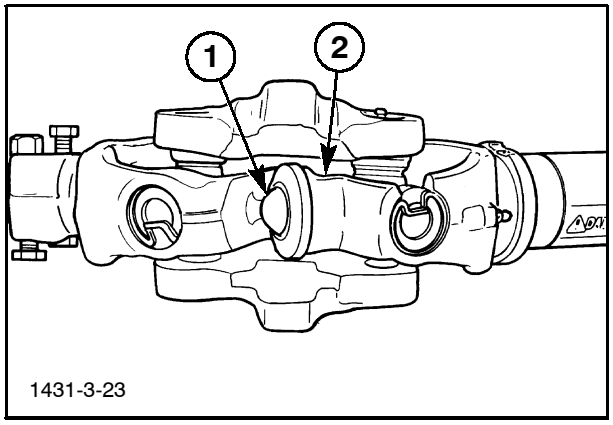
A CV joint consists of a double U-joint assembly, with both the front, 1, and rear, 2, yokes connected together with a mechanical connection; this ensures that both the front U-joint and the rear U-joint in the assembly are operating at the same angles. By operating at equal angles, the CV joint provides a constant velocity output (hence the name, CV joint) at all operating angles, and eliminates the vibration that can result when turning sharp in the field.



3

The CV joint degree rating indicates the maximum allowable operating angle of the CV U-joint; operation at angles exceeding that value will result in CV joint failure. The 80° CV joint consists of a front and rear joint, which have a spherical ball joint, 3, in the strap of the yokes. The center housing of the joint assembly contains a floating intermediate plate, 4, with a pin protruding from the center of each side. With the CV joint assembled, the spherical ball joint, 3, on the yokes fit over the pin on the intermediate plate, 4. As one yoke moves, it shifts the intermediate plate, and the opposite yoke as well, to maintain the same operating angles of both U-joints. The maximum operating angle occurs when the intermediate plate pin contacts the edge of the center housing opening.

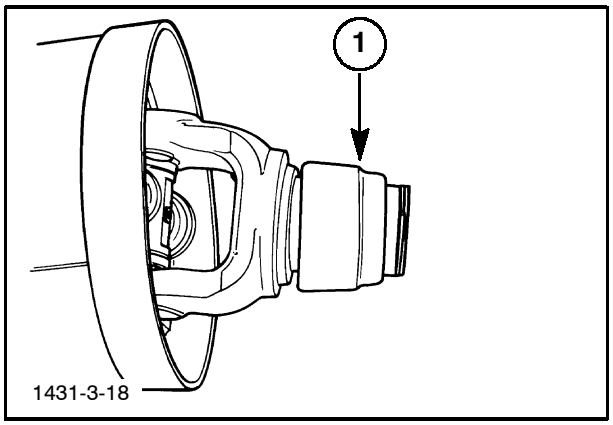
The 50° CV joint differs in that there is no intermediate plate; the one yoke has a ball, 1, on the strap of the yoke, while the opposing yoke has a socket, 2; when the joint is assembled, the ball on the one yoke is engaged in the socket of the other; in this way, the two joints are connected, and one yoke moves the other to maintain equal angles. While the 50° CV joint has fewer parts to wear, the maximum operating angle is less, as the yokes will contact the center housing sooner.



4

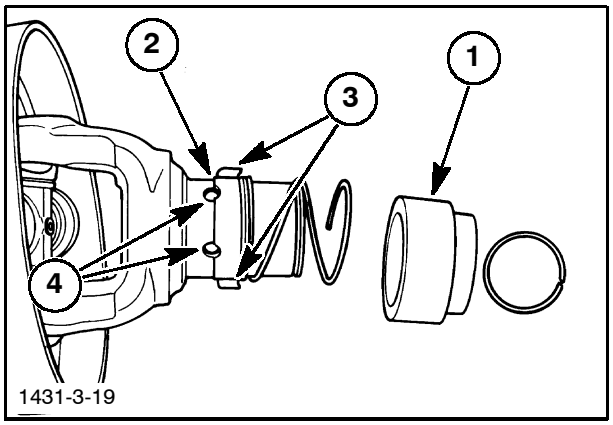
AUTO-LOK SLIDE LOCK

The 1431 and 1432 are equipped with an Auto-Lok slide lock, 1, which automatically latches in the rearward position when pulled back. The primary PTO shaft may then be held with both hands to guide it onto the tractor shaft; as the yoke slides onto the tractor shaft, the slide lock collar springs forward to latch the PTO shaft to the tractor shaft.



5

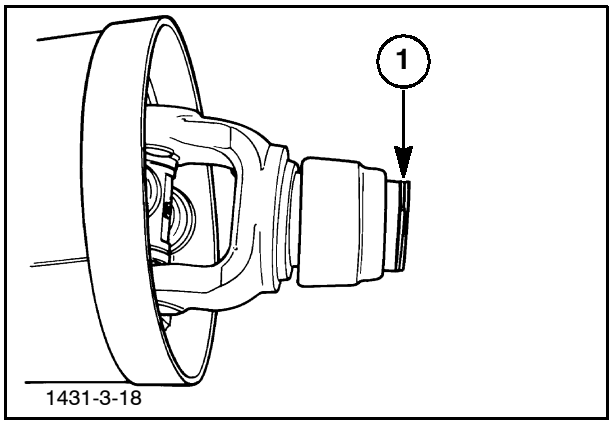
The Auto-Lok slide lock works as follows; as the collar is slid rearward, it tends to twist or cock slightly sideways, allowing a shoulder in the collar, 1, to catch on a ridge on the yoke, 2. As the yoke is slid onto the tractor shaft, and the pawls, 3, line up with the groove on the tractor shaft, four balls, 4, in the yoke are pushed outward by the end of the shaft. These four balls center the collar, causing the shoulder to disengage from the ridge, and the collar springs forward to lock the pawls in the tractor PTO shaft groove.



6

AUTO-LOK SLIDE LOCK - DISASSEMBLY

1. Pull the slide lock collar rearward until it latches in place. Use a screwdriver or spring pick to remove the retaining ring, 1, from the end of the yoke.

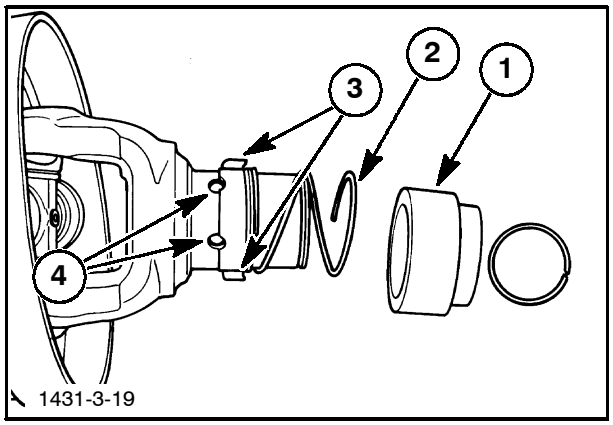


7

2. Slide the collar, 1, off the yoke, and remove the spring, 2, from the yoke barrel.

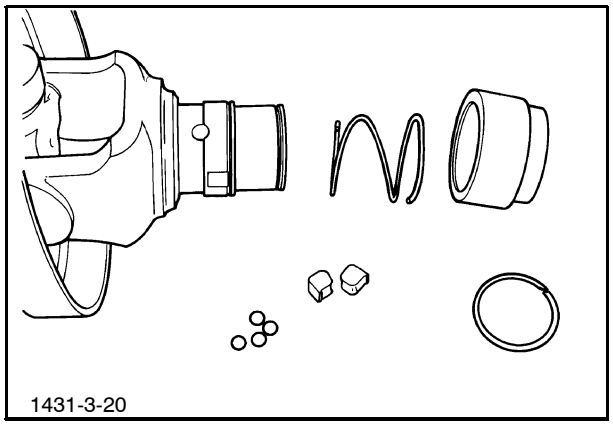
NOTE: *The spring is an interference fit, and will have to be worked off the yoke barrel.*

3. Remove the pawls, 3, by reaching into the yoke bore and pushing the pawls outwards, so that they can be grabbed and removed. Remove the four centering balls, 4, from the yoke using the same process.



8

4. Thoroughly clean all slide lock components. Clean the yoke bore and pawl holes. Replace the yoke if damage or excessive wear is found.



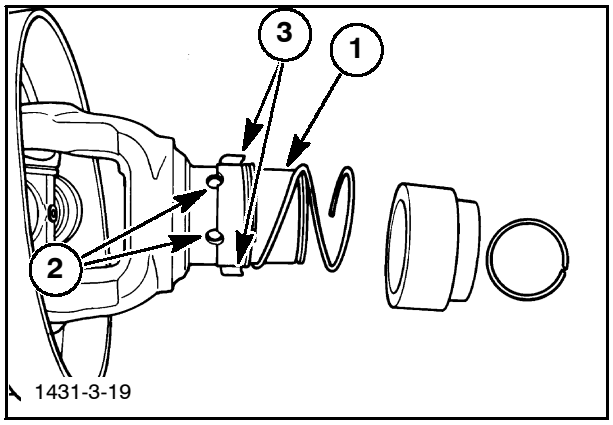
9

AUTO-LOK Slide Lock - Assembly

1. Coat the outer surface of the yoke barrel, 1, with grease; push grease into the centering ball bores and the pawl holes in the yoke. Apply grease to the four centering balls, 2, and insert them into their bores; the grease will hold them in place.

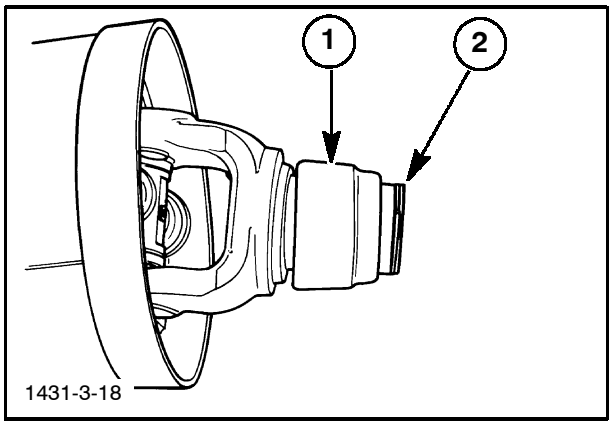
   Apply grease to the sides of the pawls, 3, and insert them into the square holes, positioning them so that the lip of the pawl faces into the groove in the yoke barrel. The pawls must slide freely up and down, and must be flush with the top of the yoke barrel.
2. Push a new spring over the yoke barrel up to the shoulder.

NOTE: *One end of the spring has a smaller diameter than the other. Be sure the small diameter of spring is up against the shoulder on the yoke barrel.*



10

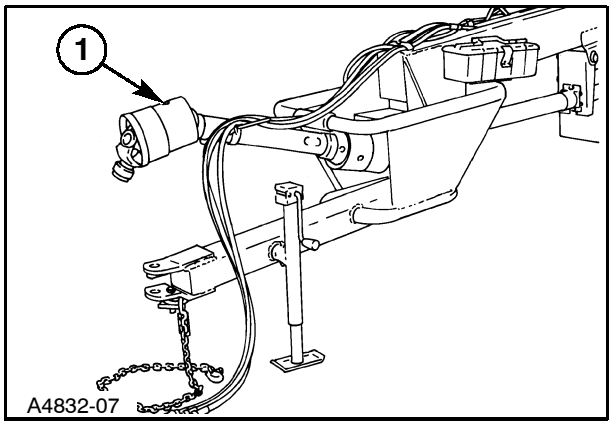
3. Fill the inside of the collar cavity with grease. Slide the collar, 1, over the yoke barrel, ensuring the large diameter end of the spring stays inside the collar against the front lip. Pull the collar rearward past the retaining ring groove until it latches in place. Install the retaining ring, 2, in the groove. Grab the collar and manually center it on the yoke so that it springs forward; the collar must slide freely and the pawls must move up and down after assembly.



11

DRIVE SHAFT REMOVAL AND INSTALLATION

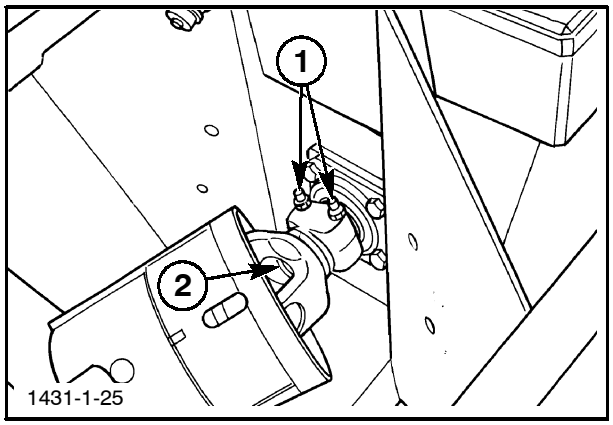
The front half of the primary PTO shaft, 1, may be serviced by sliding it off of the rear half of the primary PTO shaft; use caution to prevent the rear half of the primary PTO shaft from dropping onto the tongue, as damage to the shielding may result. To reinstall the front half of the primary PTO shaft, align the blank female spline on the front half-shaft with the two crimped male splines on the rear half-shaft, and slide the two shafts together. Ensure that the shields fit together properly, and the two half-shafts telescope freely.



12

The rear half of the primary PTO shaft, and the secondary drive shaft must be removed from the machine in order to repair the U-joints or guards. The drive shafts are retained using one clamp bolt (front of the secondary shaft) or two clamp bolts and a center retaining bolt (rear of primary shaft and secondary shaft/slip clutch).

A. To remove the rear half of the primary PTO shaft, remove the shield by removing the four cap screws and flange nuts. Remove the two cap screws, 1, and locknuts from the rear of the yoke, cap screw, 2, and the hardened flat washer from the end of the tongue jackshaft. Slide the primary PTO shaft off of the tongue jackshaft.



13

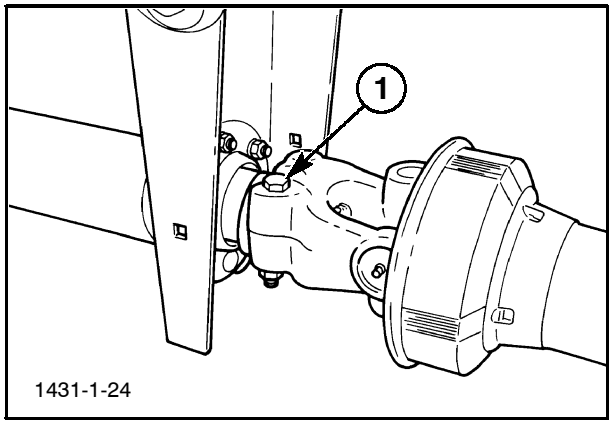
IMPORTANT: *The PTO shafts are very heavy and awkward; use caution not to drop the shaft assemblies as personal injury or damage to the components may result.*

To reinstall the rear half of the primary PTO shaft, slide it over the tongue jackshaft as far as possible. Install the cap screw, 2, and hardened flat washer inside the rear yoke and into the end of the tongue jackshaft; tighten the cap screw securely to seat the PTO shaft rear yoke against tongue jackshaft front bearing. Install the two clamp bolts, 1, and locknuts in the rear yoke; torque to 87 N·m (64 ft.-lbs.).

NOTE: *Do not overtorque; the locknut is Class C, and is limited to 87 N·m (64 ft. lbs.).*

Reinstall the front shield over the PTO shaft using the four previously removed bolts and nuts.

B. To remove the front half of the secondary drive shaft, remove the protective shielding by squeezing the top and bottom of the shield together until the sides pop off the retaining pins. Slide the shield rearward on the shaft to gain access to the clamp bolt. Remove the clamp bolt, 1, and slide the drive shaft off the tongue jackshaft.



14

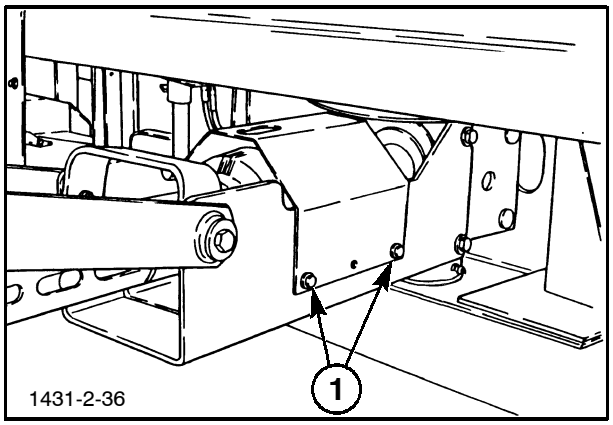
IMPORTANT: *The PTO shafts are very heavy and awkward; use caution not to drop the shaft assemblies as personal injury or damage to the components may result.*

To reinstall the drive shaft, ensure the shield is positioned over the shaft with the small end facing the end of the shaft. Slide the drive shaft onto the tongue jackshaft until the clamp bolt hole aligns with the groove in the jackshaft. Reinstall the clamp bolt, 1, and locknut; torque to 87 N·m (64 ft.-lbs.).

NOTE: *Do not overtorque; the locknut is Class C, and is limited to 87 N·m (64 ft. lbs.).*

Reinstall the shield by squeezing the top and bottom together and aligning the mounting holes with the retaining pins. Release the shield, ensuring it fits over the retaining pins.

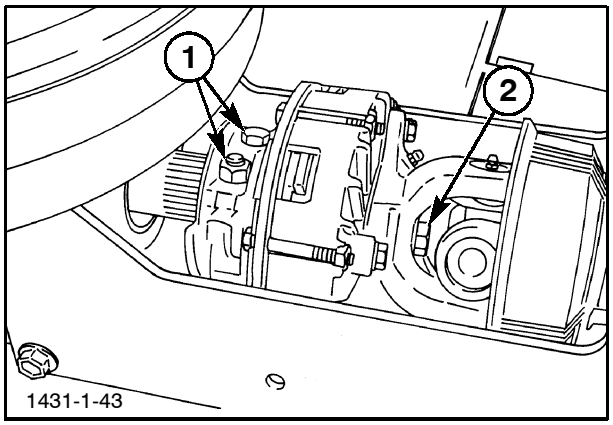
C. To remove the slip clutch end of the secondary drive shaft, remove the shield over the clutch by removing the four retaining bolts, 1.



15

Loosen the two cap screws, 1, and locknuts at the rear of the clutch assembly. Loosen the cap screw, 2, inside the slip clutch yoke, but do not remove it. Tap the rear of the slip clutch housing with a soft faced hammer to remove it from the taper on the gearbox input shaft; the center retaining bolt will prevent the clutch from falling off the shaft.

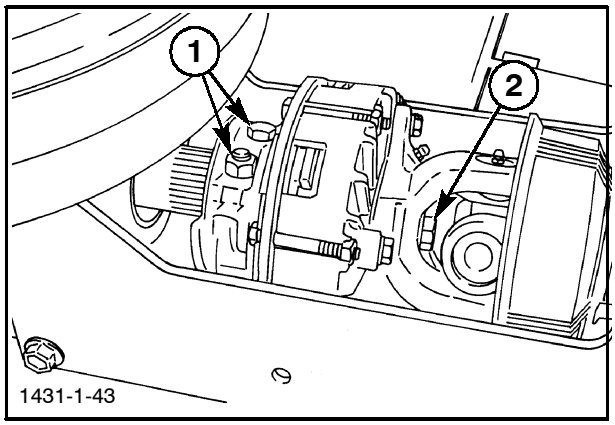
Remove the center retaining bolt, 2, and hardened flat washer. Slide the clutch assembly off of the gearbox input shaft. With both sections of the secondary drive shaft supported, slip the drive shaft apart to remove the slip clutch and rear section of the drive shaft.



16

IMPORTANT: *The PTO shafts are very heavy and awkward; use caution not to drop the shaft assemblies as personal injury or damage to the components may result.*

To reinstall the slip clutch end of the secondary shaft, slide it onto the center pivoting gearbox input shaft as far as possible. Install the cap screw, 2, and hardened flat washer into the slip clutch yoke, and thread it into the end of the shaft. Tighten the cap screw as much as possible to pull the slip clutch hub securely onto the tapered end of the gearbox shaft. Reinstall the two cap screws, 1, and lock nuts at the rear of the slip clutch assembly; torque to 87 N·m (64 ft.-lbs.).



17

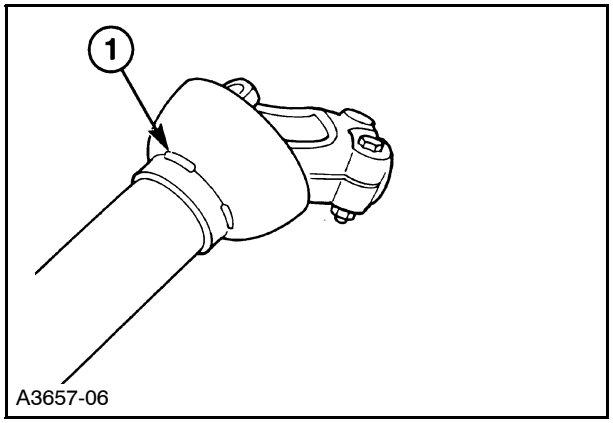
NOTE: *Do not overtorque; the locknut is Class C, and is limited to 87 N·m (64 ft. lbs.).*

IMPORTANT: *The PTO shafts are very heavy and awkward; use caution not to drop the shaft assemblies as personal injury or damage to the components may result.*

Reinstall the shielding over the slip clutch, and secure using the four previously removed bolts. Position the shield so that the access hole is forward.

Standard Driveline Guards - Disassembly

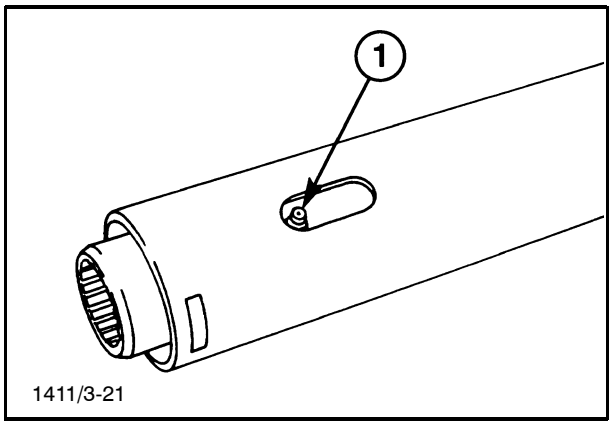
1. Insert a screwdriver into the slot, 1, in the driveline bell, and push down and forward to snap the retaining ring out of its groove. Reach in the end of the bell to finish popping the retaining ring out of its groove.
2. Slide the driveline guard off of the drive shaft. It may be necessary to tap the guard lightly with a rubber mallet to unseat the guard bushings from the shaft.



18

3. Remove the overlap section grease zerk, 1, on the female secondary PTO shaft prior to removing the driveline guard.

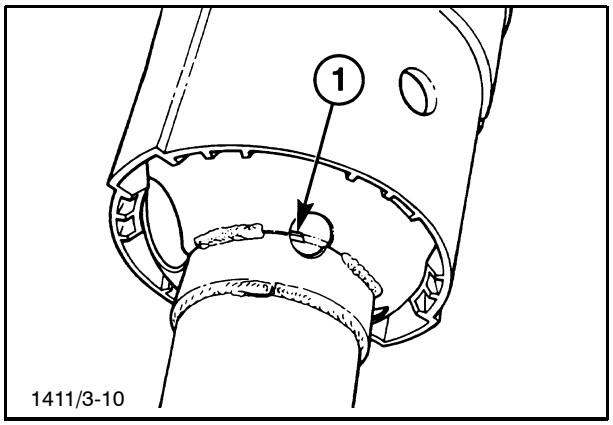
IMPORTANT: *The internal bushings in the driveline guard will be pulled out of the tube if the grease zerk is not removed.*



19

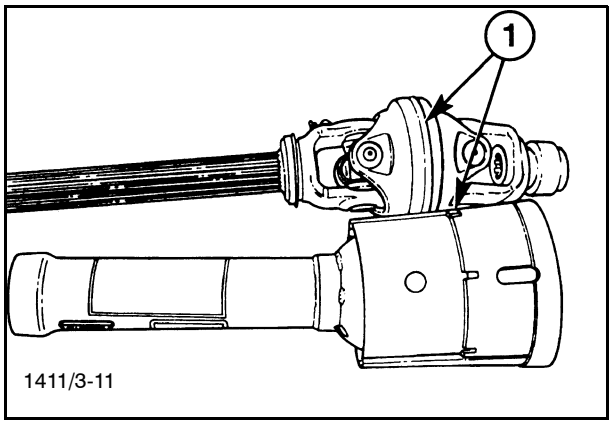
Primary Driveline Guards - Disassembly

1. Insert screwdriver into slot, 1, in the driveline bell, and push down and forward to snap retaining ring out of groove. It may be easier to try different slots until the end of the retaining ring is found. Push down and forward to snap the retaining ring out of its groove, and then continue the process at each slot to fully remove the retaining ring.



20

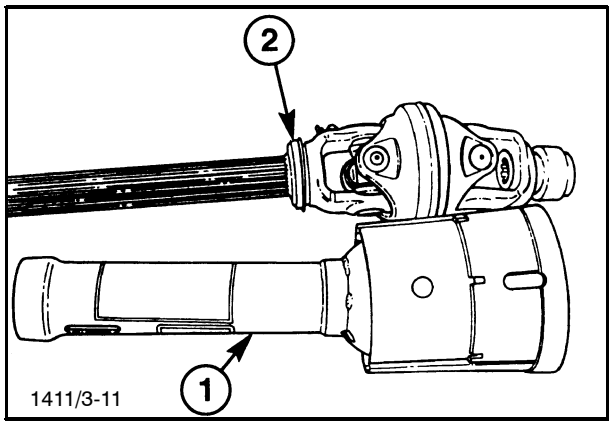
2. Slide the driveline guard off of the drive shaft. It may be necessary to tap the guard lightly with a rubber mallet to unseat the guard bushings from the shaft, or from the center housing, 1, on the CV joint shielding.



21

Driveline Guards - Inspection

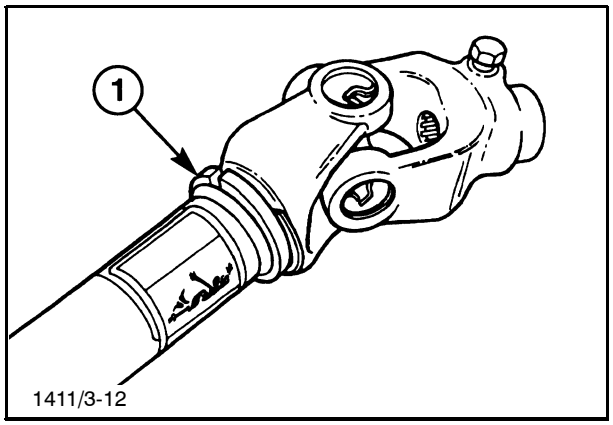
The driveline guards, 1, should be inspected for any signs of physical damage such as dents or bends; if any damage is found, the guards should be replaced. Inspect the driveline guards bushings, 2. Replace the bushings if they are worn enough to allow guard movement when mounted on the shaft.



22

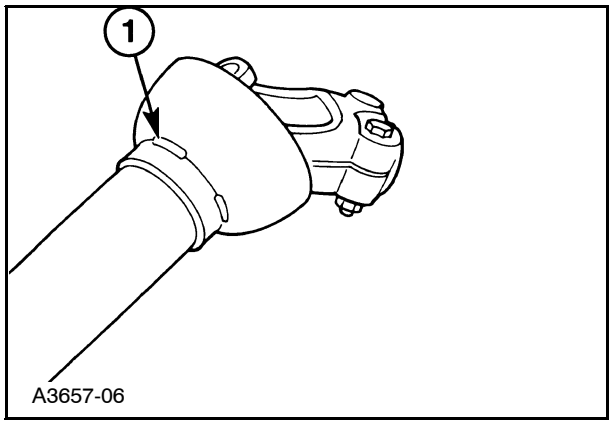
Secondary Driveline Guards - Assembly

1. Install the nylon bushing, 1, in yoke groove, and position the retaining ring in between yoke and nylon bushing.



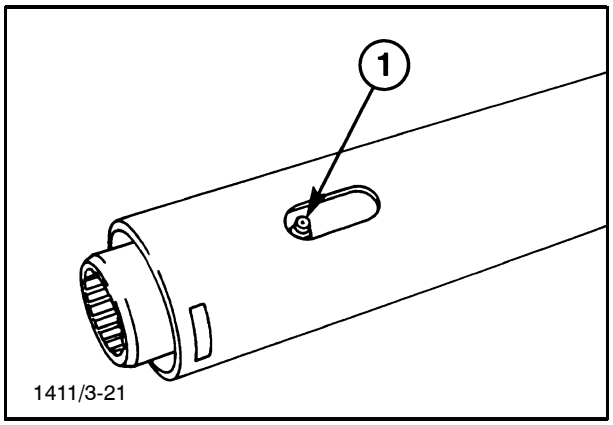
23

2. Slide the guard onto the shaft, making sure the bushing on the end of the guard slips over the end of the shaft, and turn the guard to seat the nylon bushing properly in the guard.
3. Rotate the guard so that the opening of the retaining ring is positioned close to the slot, 1,in the guard. Insert a screwdriver into the slot and use it to hold the end of the retaining ring securely against the guard.
4. Reach in through the front of the guard with a second screwdriver, and pry the opposite end of the retaining ring into the groove in the guard. Continue to hold the ring with the first screwdriver, and use the second screwdriver to work around the guard until the retaining ring is fully seated in the groove in the guard.
5. Check that the retaining ring and nylon bushing have seated properly in the guard, and that the guard rotates freely.



24

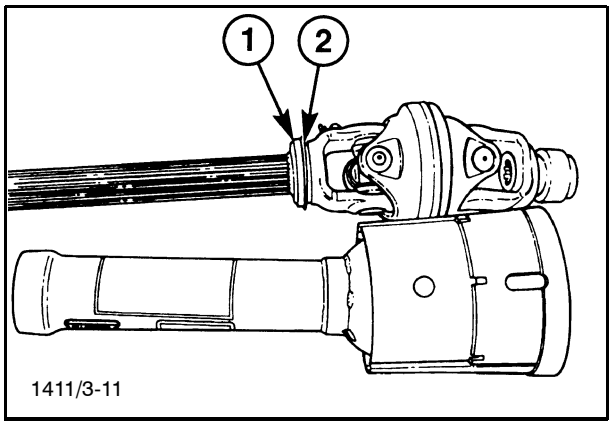
6. Reinstall the grease zerk, 1, on the end of the female secondary PTO shaft, as shown.



25

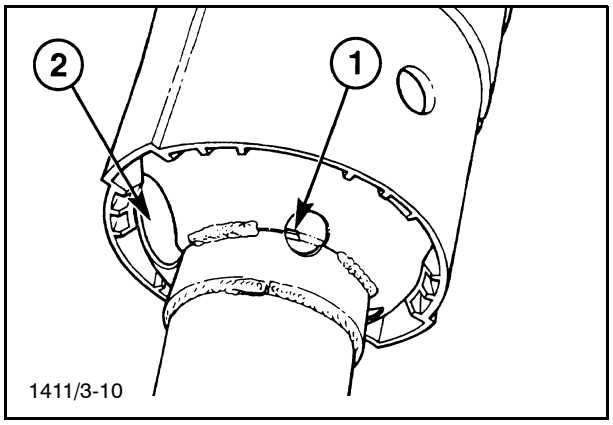
80° CV Front Guard Assembly

1. Install the nylon bushing, 1, in yoke groove. The retaining ring, 2, should be positioned between the CV joint and nylon bushing.
2. Slip guard over the shaft and onto the nylon bushing; it will be necessary to align the front portion of the guard with the CV joint center housing, and firmly push the guard on to seat the nylon sleeve in the guard over the center housing of the CV joint.
3. Rotate the guard to ensure the nylon bushing is seated properly, and rotates with the guard.



26

4. Position the opening of retaining ring between two slots in the guard. Insert a screwdriver into a slot, 1, in guard near the end of the retaining ring, and use it to hold the retaining ring securely. Insert a second screwdriver into the adjacent slot, 2, away from the open end of the retaining ring, and push down and rearward to seat the retaining ring into the groove in the guard.
5. Keep the #2 screwdriver in place to hold the ring and move #1 screwdriver to the remaining slots to finish prying the retaining ring into groove.
6. Check that the retaining ring and nylon bushing have seated properly in the guard, and that the guard rotates freely.



27

CV/U-JOINTS - Disassembly

1. Remove the PTO shaft from the unit, and remove the shielding as previously described.

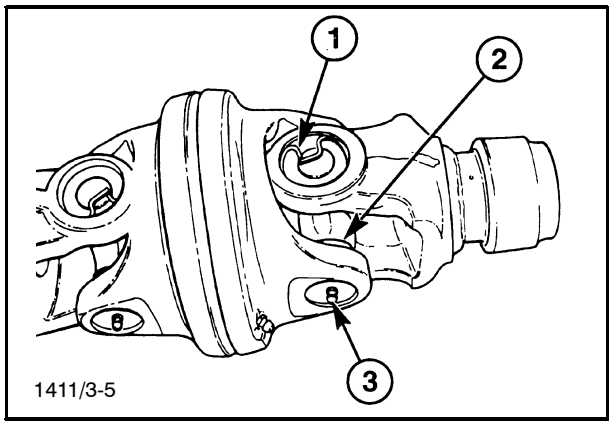
2. To disassemble a Weasler universal joint, remove the snap rings. Use pliers or a spring pick to remove internal snap rings, 1. External snap rings, 2, may be removed by using two flat blade screwdrivers. Use a screwdriver to hold one end of the snap ring, while prying the other end out of the groove with the other screwdriver.

   50° CV U-joints, rear of Primary shaft
   - snap rings are internal

   80° CV U-joints, front of Primary shaft, shown in Figure 1-28
   - outer yokes use internal snap rings
   - CV yokes use external snap rings

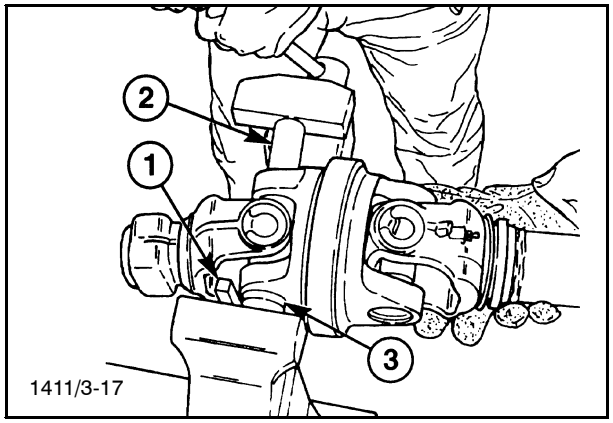
   Standard U-joints, secondary shaft
   - snap rings are external

   Remove the grease zerk, 3, from the bearing cup on the U-joint to be disassembled.



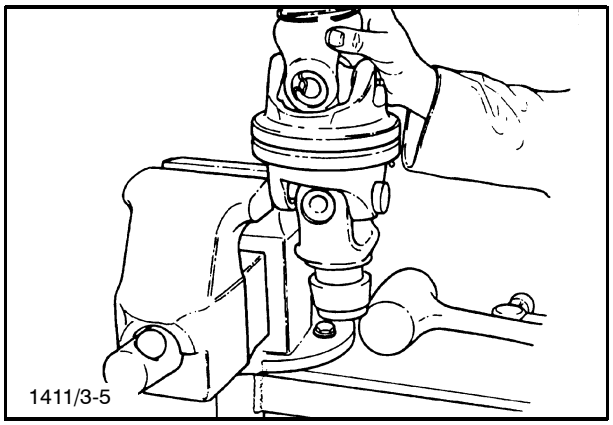
28

3. A press, or a large bench vise should be used to remove the bearing cups from the Weasler yokes. The bearing cups are a very tight fit in the yokes, and are not easily disassembled by conventional methods using a hammer. Position the joint in a press, or vise as shown, using a piece of keystock, 1, to support one yoke ear. With a socket or bushing driver, 2, positioned against the opposite bearing, press the bearing cup, 3, out of the yoke. The bearing may be pushed out approximately 10 mm (3/8″) before the cross will bottom out on the yoke.



29

4. Grip the loosened bearing in vise, and drive the yoke off the bearing by striking the yoke 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 above.

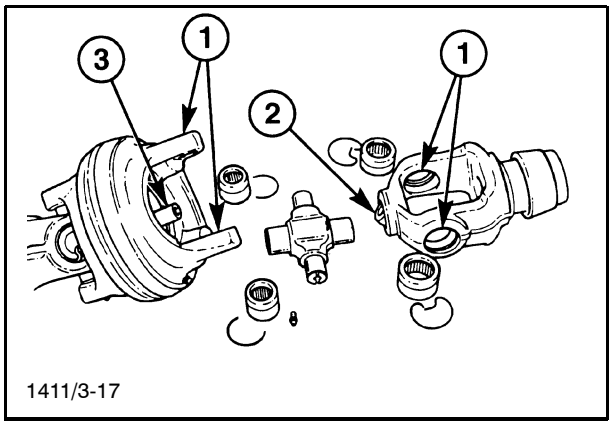


30

CV/U-JOINTS - Inspection

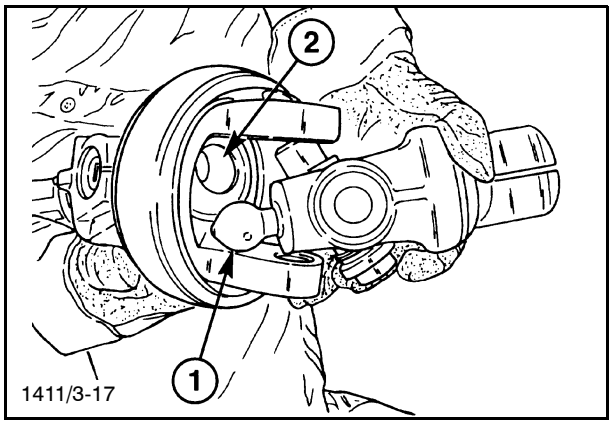
NOTE: *The U-joint cross and bearings must be replaced anytime the U-joint is disassembled, even if the cross and bearings were not the source of failure.*

1. Inspect the yoke ears, 1, 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.



31

2. On the CV U-joints, it is necessary to inspect the intermediate connection between the yokes. On the 50° CV U-joints, inspect the ball, 1, and socket, 2, connection between the yokes for excessive wear or galling. On the 80° CV U-joint, inspect the conical bushings, 2, Figure 1-31, in the yokes for wear or excessive play. Inspect the intermediate plate, 3, Figure 1-31, for wear or damage on the attaching pins, and excessive wear between the plate and housing. Replace components as necessary.



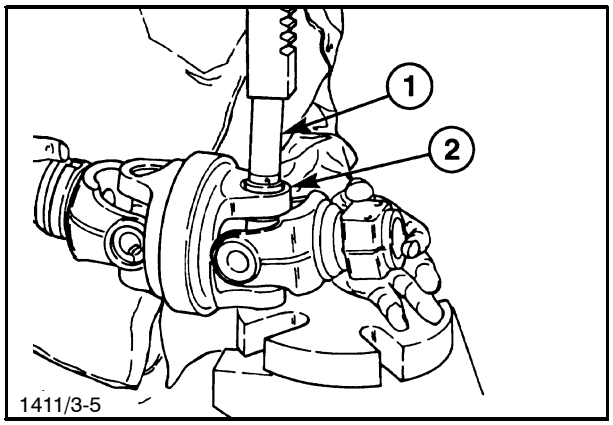
32

CV/U-JOINTS - Assembly

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

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 or socket, 1, to press the bearing cup into the yoke, 2, until the snap ring may be installed. Remove the yoke from the vise, and start 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 snap ring to retain it.



33

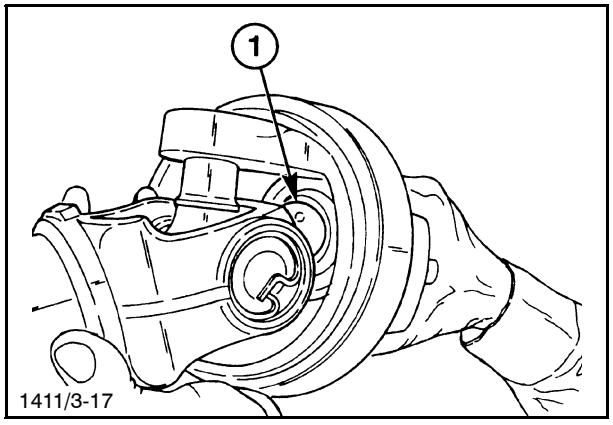
NOTE: *It may be difficult to rotate the cross after seating the second bearing. This condition will be corrected after complete assembly of the U-joint.*

2. Position the yoke and cross assembly into the shaft and yoke. On the CV joints, it is also necessary to connect the yoke to the opposing yoke or intermediate plate.

   On the 80° CV joint, slide the conical bushing in the end yoke over the pin on the intermediate plate to establish the proper connection.

   On the 50° CV joint, slide the ball end, 1, of the end yoke into the socket end on the opposing yoke (or vice versa), as shown, to establish the proper connection.

   Install the remaining bearing cups using the same process described in step 1.



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3. After complete assembly of the U-joint, strike the forged surfaces of all yoke ears with a sharp blow from a hammer. This will ensure proper seating of the bearing cups, and eliminate any tightness to ensure a free flexing joint.

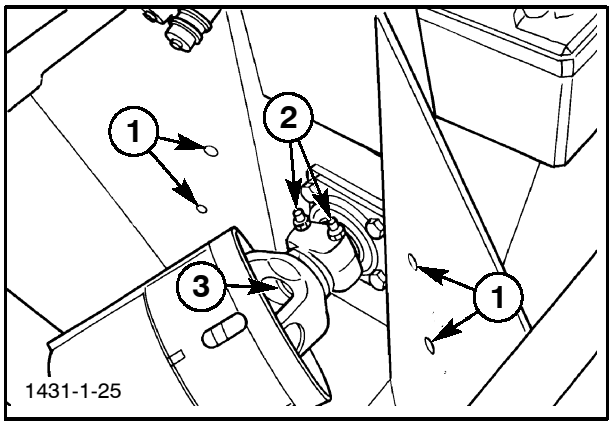
IMPORTANT: *Use caution not to strike the bearing bore area of the yoke, as this will damage the bore and may cause premature cross bearing failure.*

4. Reinstall the shielding as previously described.

TONGUE JACKSHAFT - DISASSEMBLY

1. Remove the shield over the rear primary PTO shaft by removing the four cap screws and flange nuts at 1. Remove the rear half of the primary PTO shaft by loosening the two cap screws, 2, and locknuts at the rear of the yoke, and remove the cap screw, 3, and hardened flat washer from the end of the tongue jackshaft. Slide the primary PTO shaft off of the tongue jackshaft.

IMPORTANT: *The PTO shaft is very heavy and awkward; use caution not to drop the shaft assembly as personal injury or damage to the components may result.*



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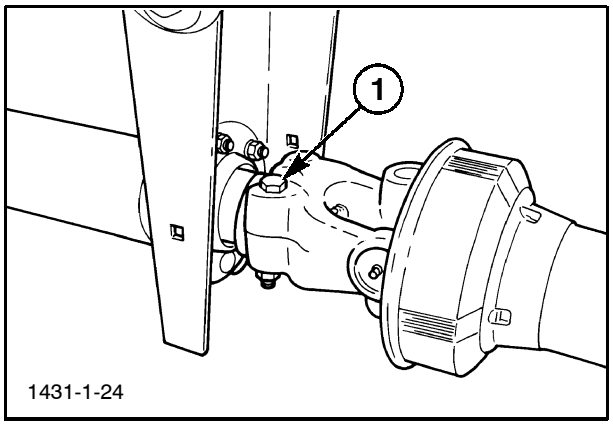
2. Remove the protective shielding over the secondary PTO shaft U-joint at the rear of the tongue jackshaft by squeezing the top and bottom of the shield together until the sides pop off the retaining pins. Slide the shield rearward on the shaft to gain access to the retaining bolt. Remove the clamp bolt, 1, and slide the drive shaft off the tongue jackshaft.

IMPORTANT: *The PTO shaft is very heavy and awkward; use caution not to drop the shaft assembly as personal injury or damage to the components may result.*



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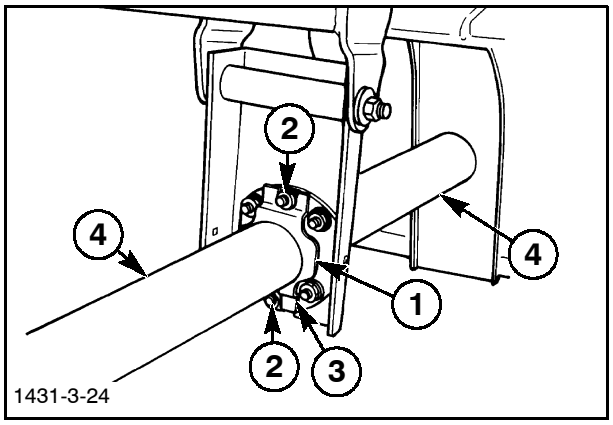
3. Remove the plastic shields, 4, over the jackshaft by spreading them apart along the split seam until they can be slid off the shield brackets. Remove the shield brackets, 1, by removing the two carriage bolts, 2, and flange nuts, and slide them out of the way along the shaft.

NOTE: *There are two 1/2″ flat washers installed between the shield bracket and the flangette at the slot in the support, 3, as spacers.*



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