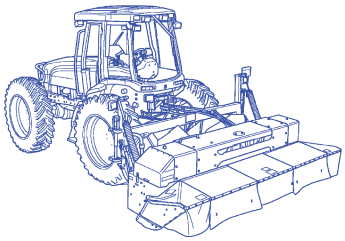


NEW HOLLAND

REPAIR MANUAL

2331
2332

NEW HOLLAND

SERVICE

2331, 2332 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 2331, 2332 Disc Headers.

SECTION 00 - GENERAL INFORMATION

Chapter 1 - General Information

CONTENTS

SPECIAL TOOLS

FNH23ET95 ..... Top Cap Bearing Cover

FNH01221-2 ..... Cutter bar tie bolt holding tool

FNH01221-3 ..... Cutter bar wrench

SPECIFICATIONS

MODEL 2331

Overall Width ..... 4000 mm (13′3″)

Header Drive ..... 100 RPM PTO with overrunning clutch, enclosed gears and (3) HB banded belts with spring loaded idlers.

HEADER

Flotation ..... Vertical and Radial

Cutting Width ..... 3960 mm (13′ 0″)

Weight ..... 1418 kg (3120 lbs.)

CUTTER BAR

Type ..... Modular

Number of Discs ..... 8 Counter-rotating, 2 Co-rotating (10 total)

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 ..... Roll

Drive ..... 4HB V-Belt, enclosed gears with u-joint drives to rolls

Roll Type ..... Intermeshing rolls

Roll Diameter ..... 264 mm (10-3/8″)

Roll Length ..... 2591 mm (102″)

Roll Speed ..... 740 RPM

Roll Pressure ..... Torsion bar, single crank Adjustment

Crop Discharge ..... Adjustable from 0.9 m to 1.8 m (3′ to 6′)

FILED INSTALLED OPTIONS

High Stubble Kit ..... Available

Header Marker Kit ..... Available

MODEL 2332

Overall Width	4000 mm (13′ 3″)
Header Drive	100 RPM PTO with overrunning clutch, enclosed gears and (3) HB banded belts with spring loaded idlers.

HEADER

Flotation	Vertical and Radial
Cutting Width	3960 mm (13′ 0″)
Weight	1418 kg (3120 lbs.)

CUTTER BAR

Type	Modular
Number of Discs	8 Counter-rotating, 2 Co-rotating (10 total)
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, with u-joint drives to rotor
Roll Type	Flail, 120 tapered free swinging flails
Roll Diameter	560 mm (22″)
Roll Length	2591 mm (102″)
Roll Speed	1011 RPM (726 RPM optional)
Hood-to-Flail Clearance	Adjustable, 3/8″ - 2-1/8″
Crop Discharge	Adjustable from 0.9 m to 1.8 m (3′ to 6′)

FILED INSTALLED OPTIONS

High Stubble Kit	Available
Header Marker Kit	Available
Low Speed Rotor	Available
Dimpled Hood Liner	Available

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

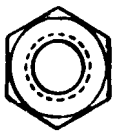
NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION
CAP SCREWS AND CARRIAGE BOLTS

SAE GRADE 2

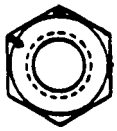
SAE GRADE 5

SAE GRADE 8



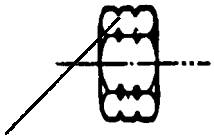
REGULAR NUTS

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

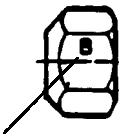
GRADE IDENTIFICATION

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

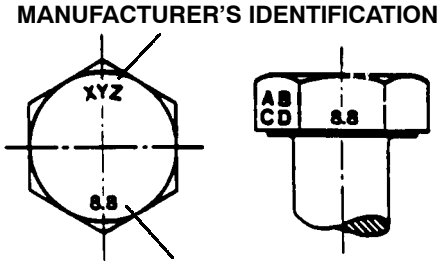
METRIC HARDWARE AND LOCKNUTS

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)

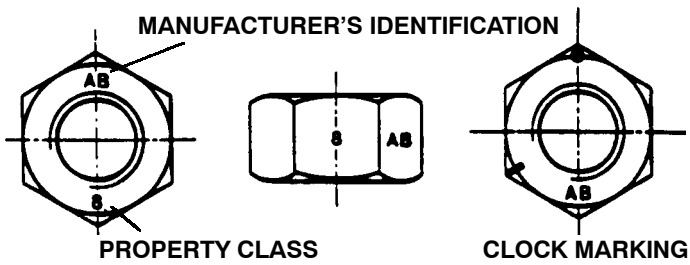
NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION

HEX CAP SCREW AND CARRIAGE BOLTS
CLASSES 5.6 AND UP



HEX NUTS AND LOCKNUTS
CLASSES 05 AND UP

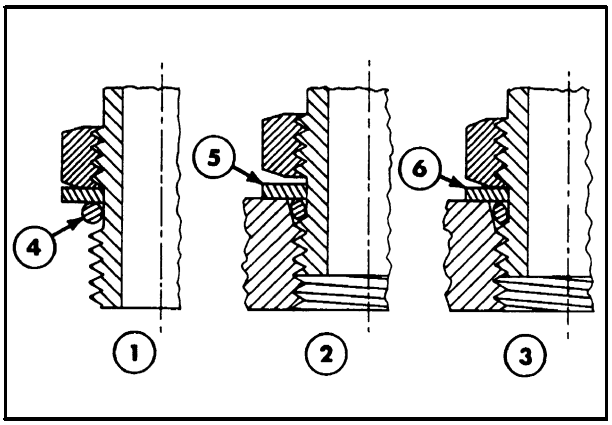


INSTALLATION OF ADJUSTABLE FITTINGS IN STRAIGHT THREAD O RING BOSSES

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.)

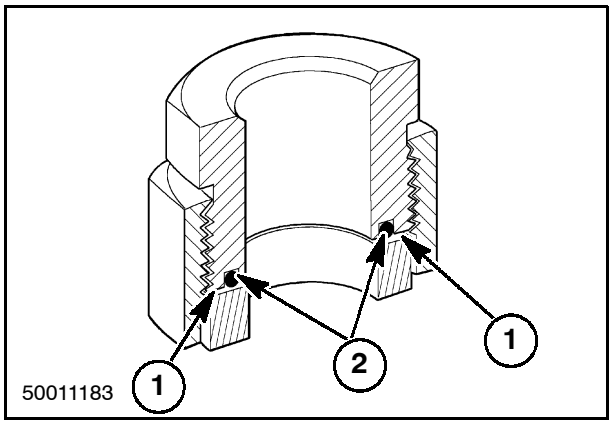
INSTALLATION OF ORFS (O-RING FLAT FACED) FITTINGS

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

SECTION 31 - IMPLEMENT POWER TAKE OFF (PTO)

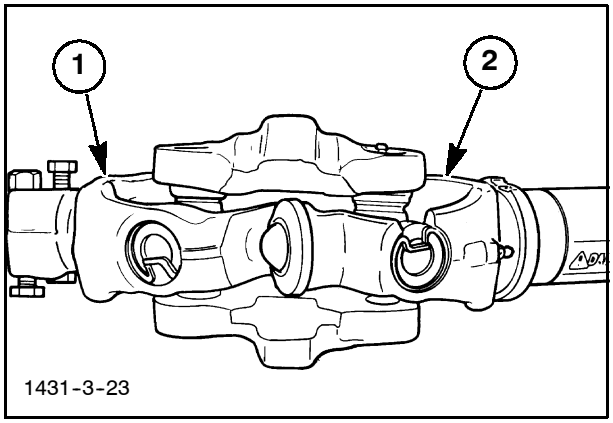
Chapter 1 - Drive Lines (Standard Tongue)

CONTENTS

INTRODUCTION

The Models 2331 and 2332 Discbine® Disc headers are designed to attach to the 2330BF adapting frame for Use on the TV140 Biderectional tractor. The 2331 and 2332 Mower-Conditioners utilize constant velocity 50° U-joints on each end of the driveshaft for smooth operation, and provide the ability to lift and lower the head during PTO operation. The driveshaft attaches to the tractor PTO and the header center gearbox.

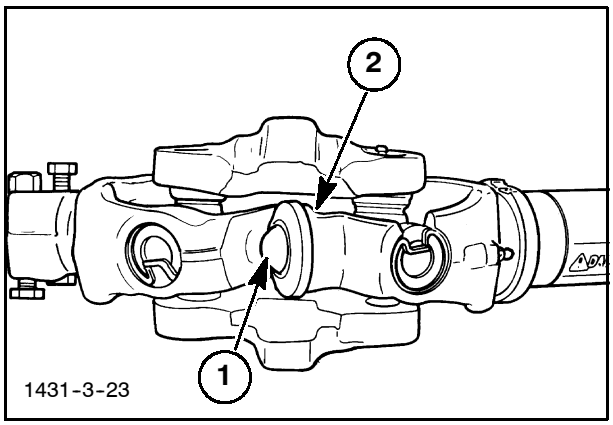
A CV joint consists of a double U-joint assembly, with the front, 1, and rear, 2, yokes connected together with a mechanical connection. This ensures that both the front U-joint and rear U-joint in the assembly is operating at the same angles. By operating at equal angles, the CV joint provides a constant velocity output at all operating angles, and eliminates the vibration that can result from operating the U-joint at sharp angles.



1

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.

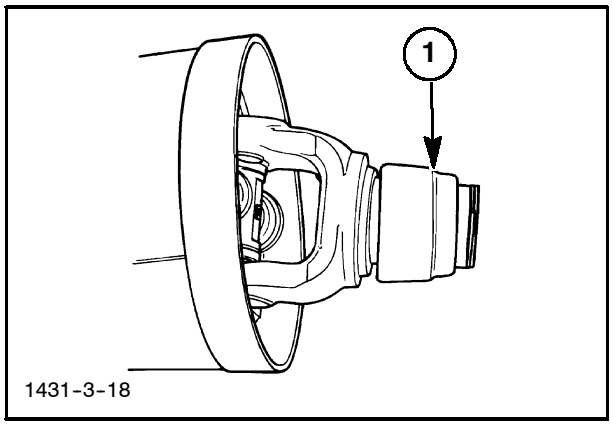
The 50° CV joint is constructed with no intermediate plate. One yoke has a ball, 1, on the rear strap of the yoke, while the opposing yoke has a socket, When the joint is assembled, the ball of one yoke is engaged in the socket of the other. The two joints are connected, and one yoke moves the other to maintain equal angles.



2

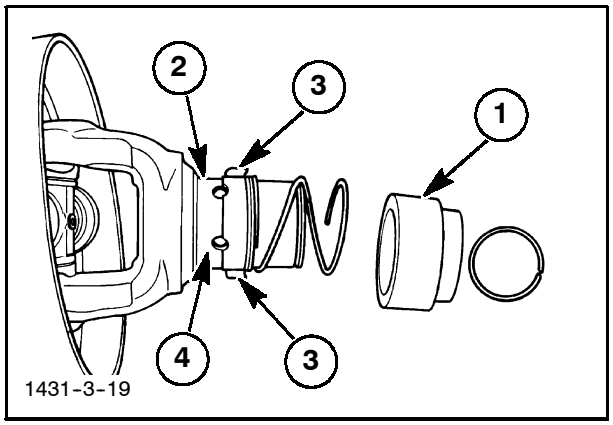
An overrunning clutch is installed on the gearbox side of the drive shaft. The clutch allows the rotating equipment of the header coast to a stop when the operator disengages the PTO. The proper operation of the overrunning clutch will minimize wear to the header and tractor PTO.

The 2331 and 2332 driveshaft is equipped with an Auto-Lok slide lock, 1, which automatically latches in the rearward position when pulled back. The shaft may then be held with both hands to guide it onto the tractor shaft. As the yoke slides onto the shaft, the slide lock collar springs forward to latch the PTO shaft to the tractor.



3

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 in the yoke, 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.

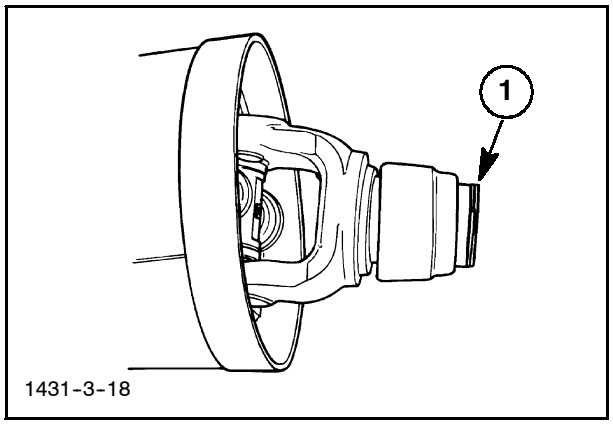


4

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.

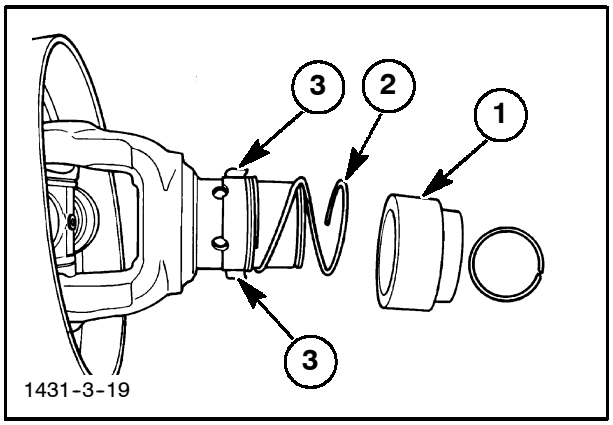


5

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

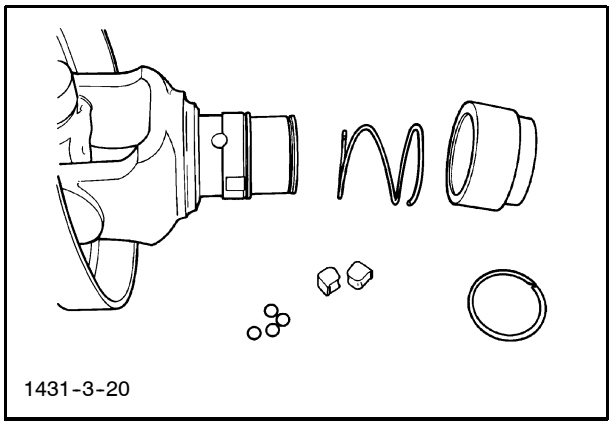
NOTE: *The spring is interference fit, and will have to be worked off the yoke barrel.*

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.



6

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

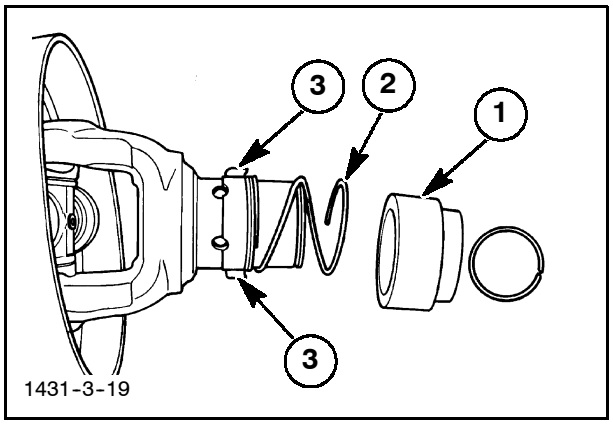


7

Assembly

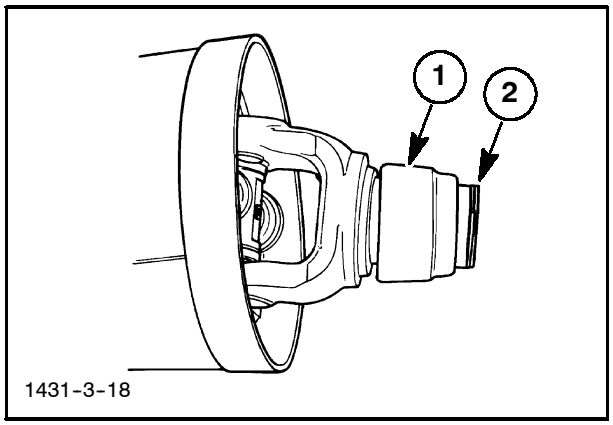
1. Coat the outer surface of the yoke barrel, 1, with grease. Push grease into the centering ball bores and the pawl holes in the yoke.
2. Apply grease to the four centering balls, 2, and insert them into their bores. The grease will hold them in place.
3. Apply grease to the sides of the pawls, 3, and 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.
4. 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.*



8

5. Fill the inside of the collar cavity with grease.
6. Slide the collar, 1, over the yoke barrel, ensuring the large diameter end of the spring stays inside the collar against the front lip.
7. Pull the collar rearward past the retaining ring groove until it latches in place.
8. Install the retaining ring, 2, in the groove.
9. 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.

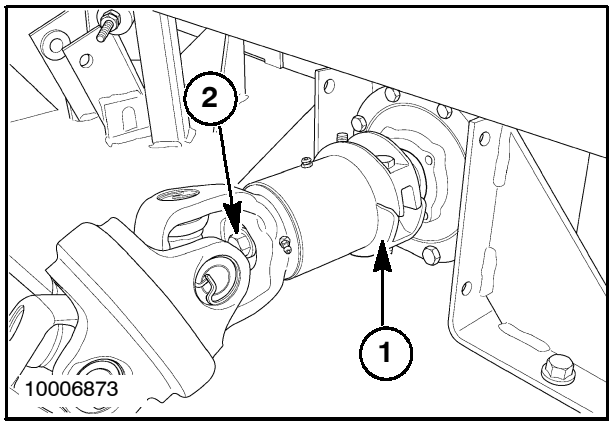


9

DRIVESHAFT

Removal

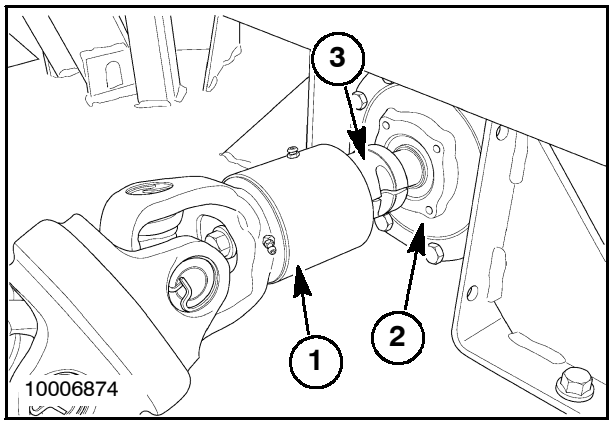
1. Remove the drive shaft clamp, Turn out the center cap screw, 2, about 3/8″.



10

2. Pull the driveshaft, 1, from the center gearbox,

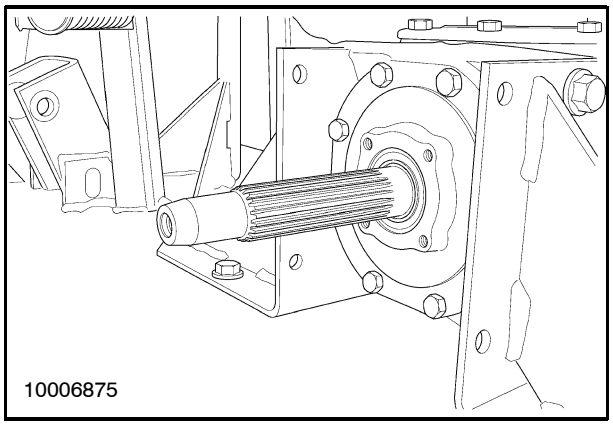
NOTE: *It may be necessary to heat the overrunning clutch hub, 3, to break the shaft loose from the gearbox.*



11

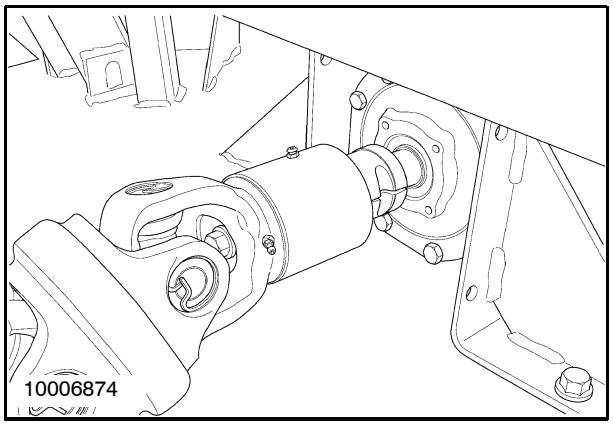
Installation

1. Clean the center gearbox spline shaft of rust and dirt. Lubricate the shaft with corrosion inhibiting compound.



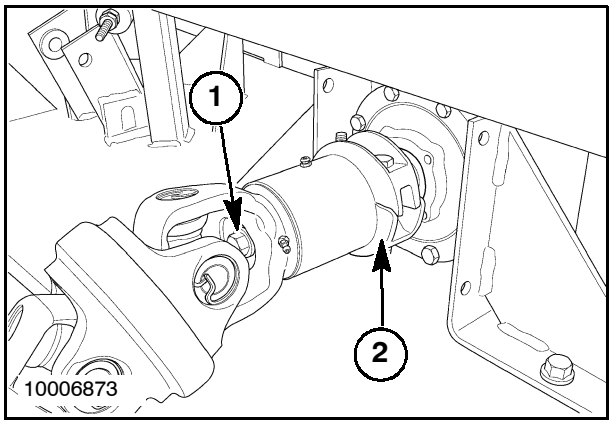
12

2. Slide the overrunning clutch end of the drive shaft onto the center gearbox spline shaft.
3. Use a soft faced hammer or mallet and strike the tractor end of the shaft and seat the shaft completely on the gearbox spline.



13

4. Turn in the center cap screw, 1, and tighten as much as possible to pull the clutch securely onto the tapered end of the gearbox shaft.
5. Install the shaft clamp, Tighten the two cap screws to 87 N·m (64 ft.-lbs.).

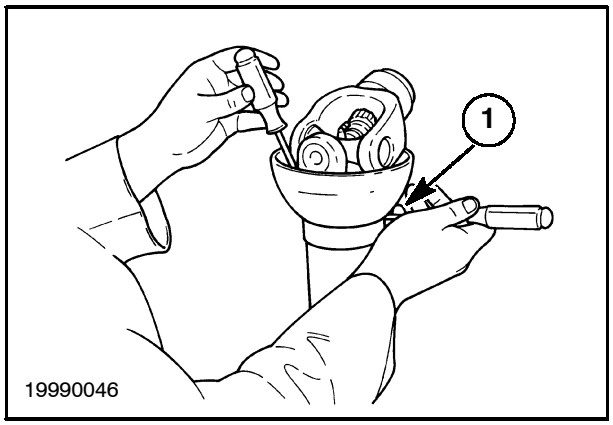


14

DRIVESHAFT GUARD

Removal

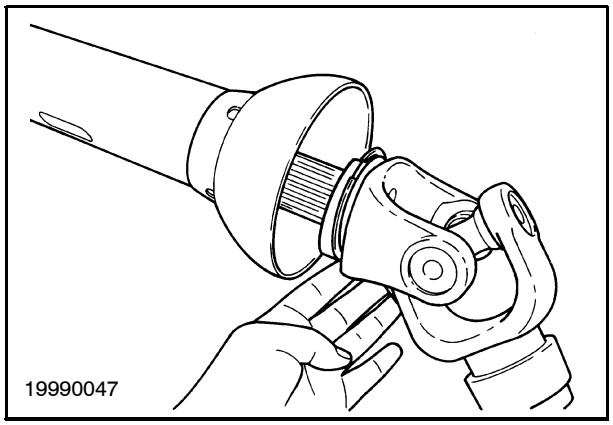
1. Insert a screwdriver in the slot, 1, on the drive shaft bell, and push down then forward to snap the retaining ring out of its groove. Repeat this procedure at each slot. Reach into the end of this shielding with a screwdriver to finish popping the retaining ring out of its groove.



15

2. Slide the shielding off the driveshaft. If necessary, tap the guard lightly with a soft mallet to unseat the guard bushing from the shaft.

IMPORTANT: *Remove the grease fittings as needed to allow the guard to slide off the shaft. If the grease fittings are not removed, the internal bushings may be pulled out during disassembly.*



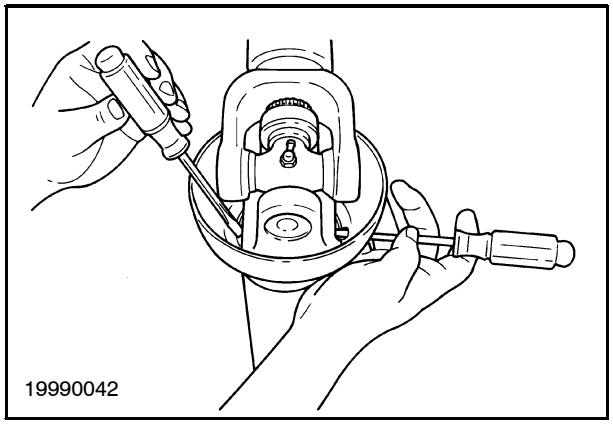
16

Inspection

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

Installation

1. Slide the guard onto the shaft. Using two screwdrivers, work around the bell opening pressing the retaining clip in its slot. Press the clip into place with one screwdriver while holding the already seated portion in place with the other.
2. Install the grease fittings as needed. Lubricate the U-joint and shaft before operating the disc mower.

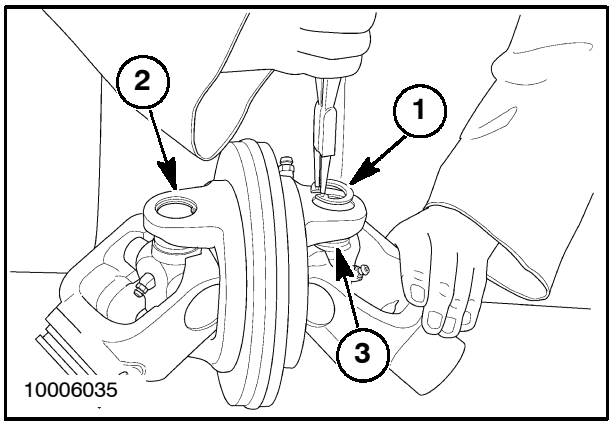


17

U-JOINTS

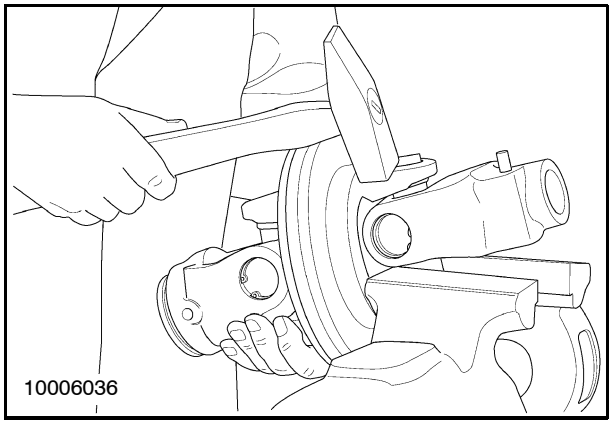
Disassembly

1. Remove the PTO shaft from the unit, and remove the shielding as described previously.
2. Remove the internal retaining rings, 1, from the flange yoke, 2.
3. Remove the external snap rings, 3, by using two flat blade screwdrivers. Use one screwdriver to hold one end of the snap ring, while prying the other end out of the groove with the other screwdriver.



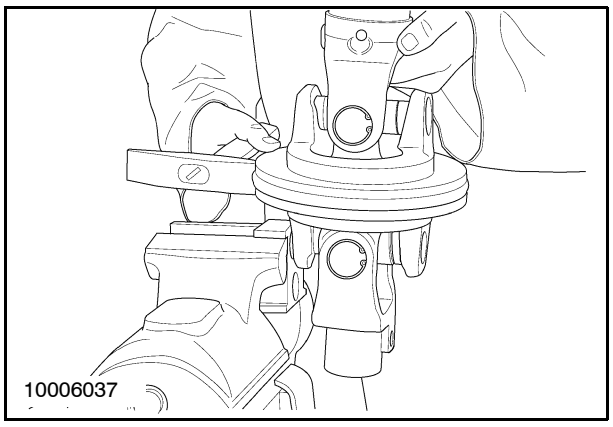
18

4. Place the joint in a vise and Use light hammer blows to drive up the bearing. Do not tighten the joint in the vise.



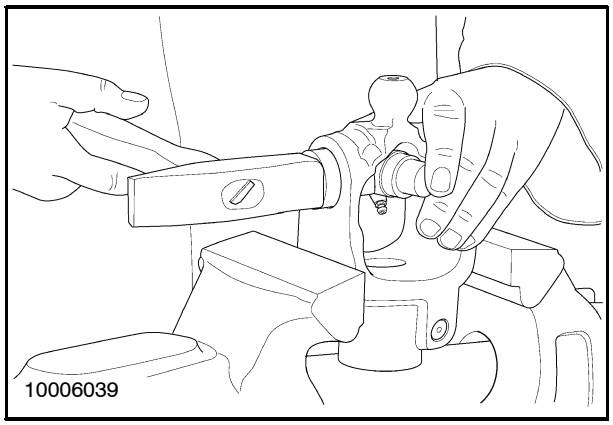
19

5. Hold the bearing in a vise. Remove the bearing from the yoke by light hammer blows onto the flange or by rotating it.
6. Turn the joint over and place it in a vise. Use light hammer blows to drive up the bearing. Do not tighten the joint in the vise.
7. Hold the bearing in a vise. Remove the bearing from the yoke by light hammer blows onto the flange or by rotating it.
8. Rotate the flange yoke until it is free from the cross.



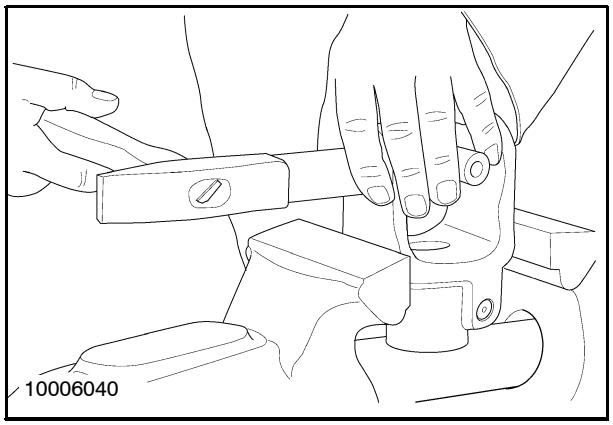
20

9. Position the yoke in a press or vise. With a socket or bushing driver, Use light hammer blows to drive out the bearing until the cross has bottomed out.
10. Grip the loosened bearing in the vise, and drive the yoke off the bearing by light hammer blows onto the arms.



21

11. Turn the yoke over and position it in a press or vise. With a socket or bushing driver, Use light hammer blows to drive out the bearing until the cross has bottomed out.
12. Grip the loosened bearing in the vise, and drive the yoke off the bearing by light hammer blows onto the arms.
13. Rotate the cross until it is free of the yoke.



22

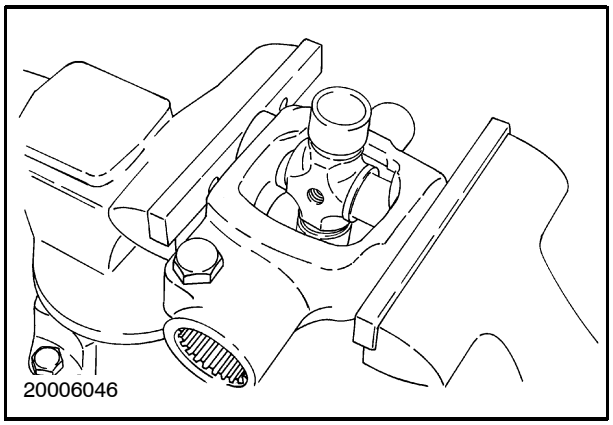
Inspection

NOTE: *The U-joint cross and bearings must be replaced anytime the U-joint is disassembled, even if the cross and bearings were no 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.
2. Inspect the ball and socket connection between the yokes for excessive wear or galling.

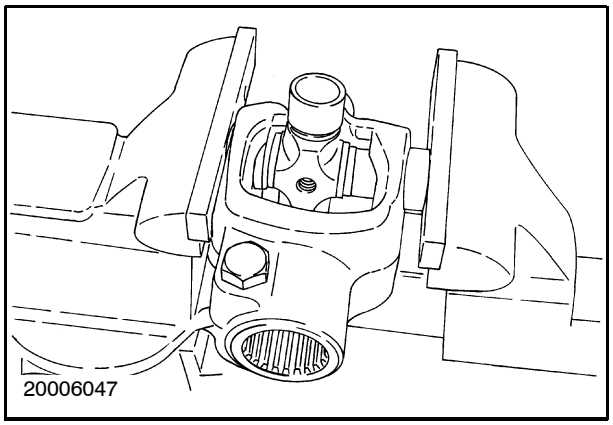
Assembly

1. Insert the cross into the yoke with the hole for the grease fitting toward the shaft end. Position the yoke in a vise with the bearing cap on one side. Use the cross journal to guide the bearing while pressing in place. Clamp down until the cap will no longer move.



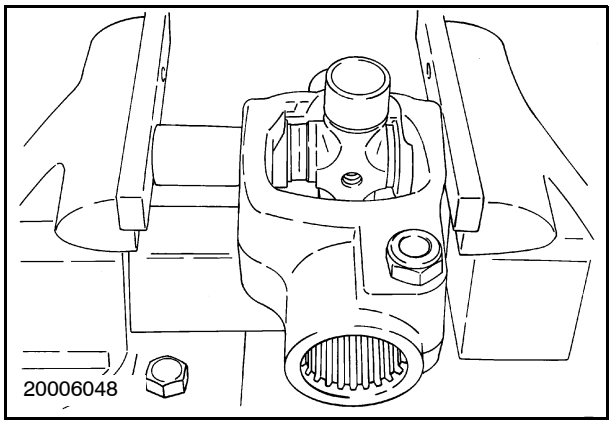
23

2. Insert the bearing cap on the opposite side of the yoke. Use the cross journal to guide the bearing while pressing in place. Clamp down until the cap will no longer move.



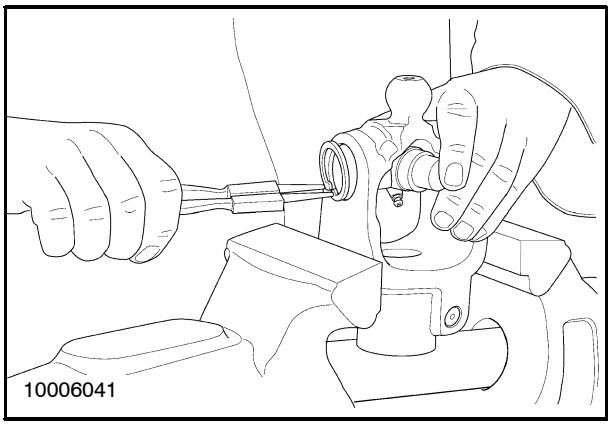
24

3. With a socket or bushing driver, position the yoke in a vise. Clamp down until the cap is below the snap ring groove. Remove the yoke from the vise.
4. Place the socket or bushing driver on the opposite bearing cap, and position the yoke in a vise. Clamp down until the cap is below the snap ring groove. Remove the yoke from the vise.



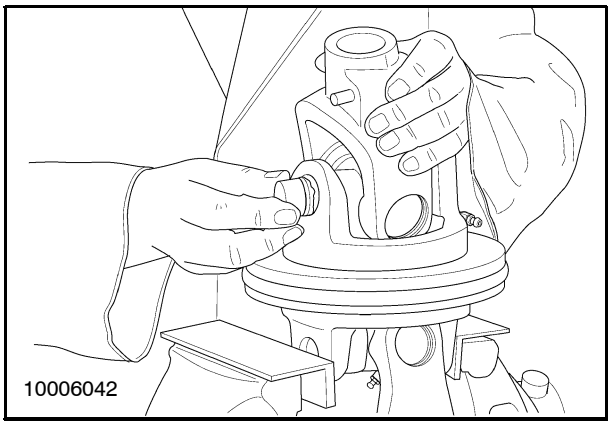
25

5. Install the snap rings into both ends of the yoke to hold the cross in place. Lubricate the ball and ball socket of the guide hub.



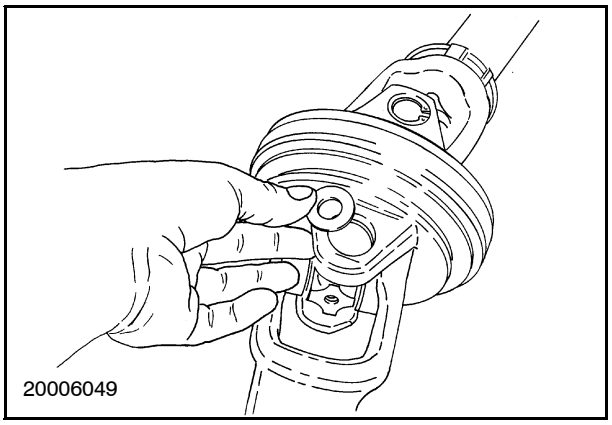
26

6. Position the yoke in a vise with the bearing cap on one side. Use the cross journal to guide the bearing while pressing in place. Drive the bearing cap in with light hammer blows using the proper size bushing driver until the groove is visible.



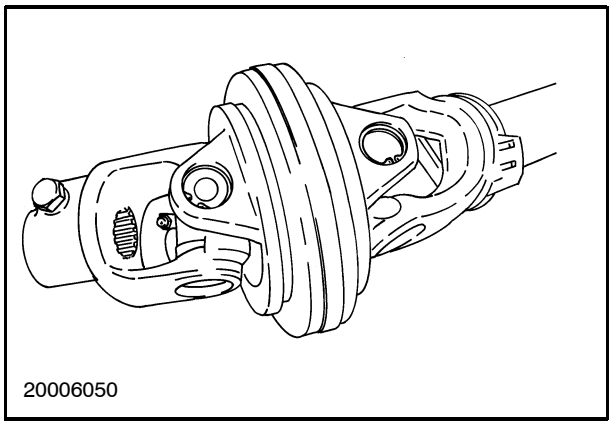
27

7. Insert a washer on top of the bearing cap, and install the snap ring.
8. Rotate the yoke in a vise with the bearing cap on the other side. Use the cross journal to guide the bearing while pressing in place. Drive the bearing cap in with light hammer blows using the proper size bushing driver until the groove is visible.



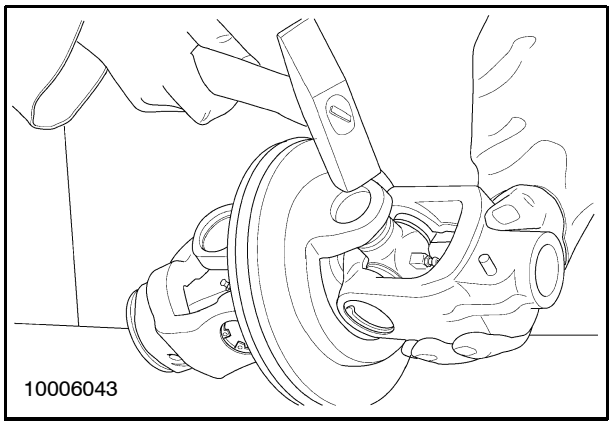
28

9. Insert a washer on top of the bearing cap, and install the snap ring.



29

10. Relieve joint stress by applying hammer blows to the yoke ears.

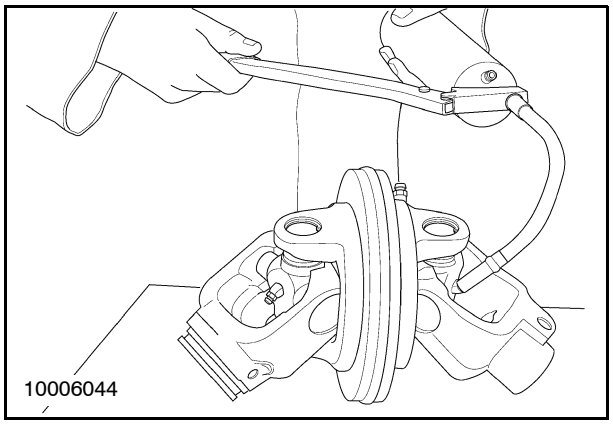


30

11. Grease the joint. Fill the center cavity with 20 - 30 pumps of grease.
12. Rotate the yokes in a circular motion to insure distribution of lubrication in the assembly.

CAUTION

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.



31

SECTION 31 - IMPLEMENT POWER TAKE OFF (PTO)

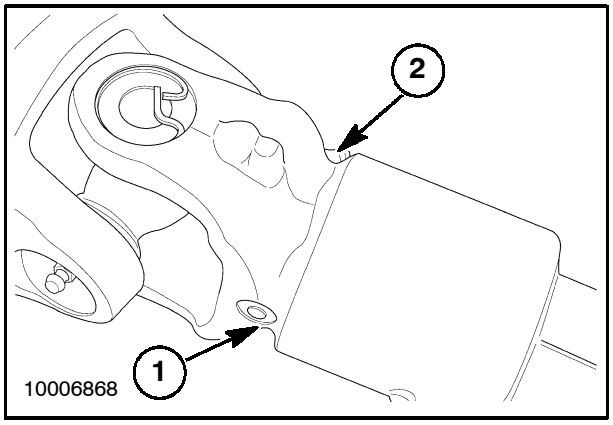
Chapter 2 - Overrunning Clutch

CONTENTS

OVERRUNNING CLUTCH

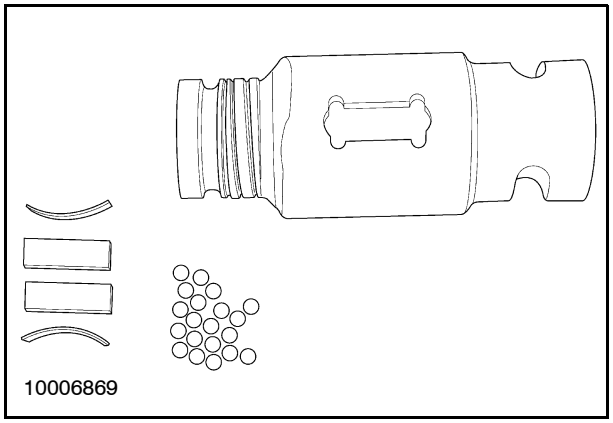
Removal

1. Remove the driveshaft from the mower-conditioner, refer to the Drive Shaft Removal instructions of this section.
2. Turn out the allen head plug, 1, from the overrunning clutch.
3. Rotate the overrunning hub and allow the twenty ball bearings to drop from the cavity. It may be necessary to also remove the grease fitting, 2, and apply penetrating fluid into the cavity.



1

4. Carefully withdraw the clutch hub from the housing, and capture the two pawls and leaf springs.



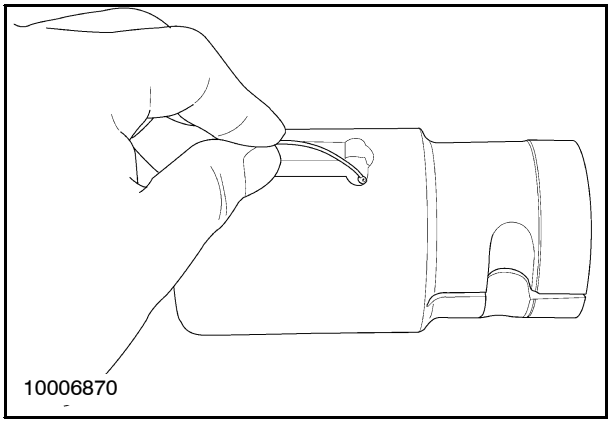
2

Inspection

1. Inspect the overrunning pawls and ramps on the inner diameter of the outer overrunning clutch hub for wear or damage. Replace the components as required.
2. Inspect the overrunning hub and yoke bearing grooves and mating surfaces for galling or other damage. Replace as necessary. Discard the overrunning bearing balls and replace with new parts.

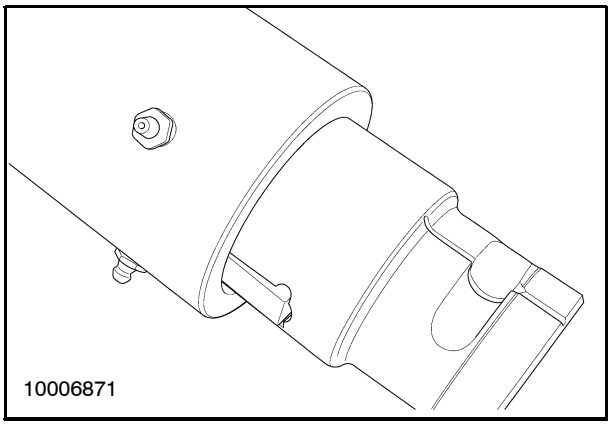
Installation

1. Lubricate the pawls recess in both sides of the clutch hub. Insert the leaf springs with the concave side toward the hub.



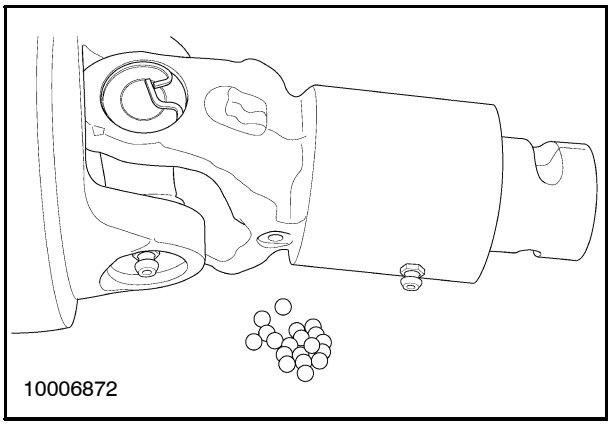
3

2. Lubricate the inside of the clutch housing. Set the pawls into place and insert the clutch hub into the housing.



4

3. Push the hub in until the inner race of the hub lines up with the bearing access hole in the housing.
4. Install the clutch bearings grease fitting.
5. Lubricate the bearing balls and install them into the access hole while turning the hub.
6. Install all twenty balls into the bearing cavity. Turn the allen head plug.



5

SECTION 31 - IMPLEMENT POWER TAKE OFF (PTO)

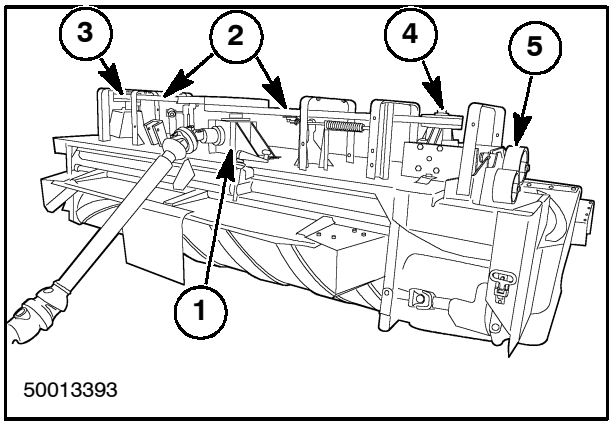
Chapter 3 - Gearboxes

CONTENTS

INTRODUCTION

Three gearboxes and a pedestal shaft assembly are used to power the cutter bar and the conditioning rolls. The driveline is connected to the center gearbox, 1, on the header. The center gearbox drives two HB banded, kevlar cord V-belts, 2, to power the header. The left side belt drives a pedestal shaft, 3, which is connected to the #2 disc on the cutter bar with a U-joint drive shaft.

The right side belt drive powers a gearbox, 4, which drives the #9 cutter bar disc module through a U-joint drive shaft, and also drives the conditioner rolls. The dual cutter bar drive reduces the loading experienced by the #2 and #9 disc modules; the cutter bar is completely connected with intermodule shafts for power transmittal and disc timing. The right side bevel gearbox also drives a 4HB banded, kevlar cord V-belt, 5, to the conditioner drive gearbox, which powers the rolls using two multispline telescoping U-joint drive shafts.

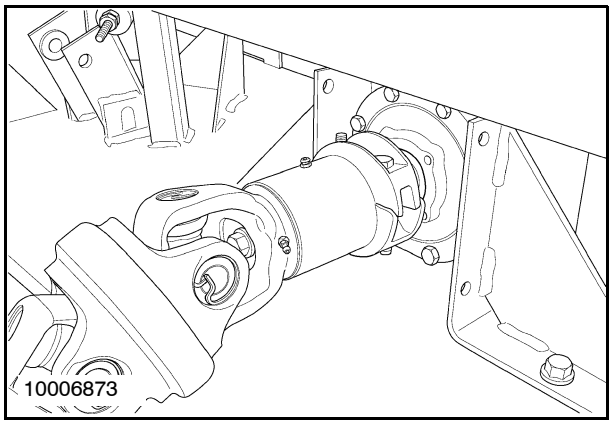


1

CENTER GEARBOX

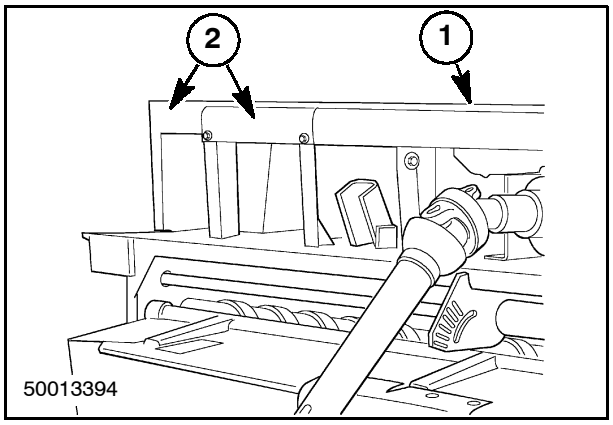
Removal

1. Remove the drive shaft from the center gearbox, refer to the Driveshaft Removal in this Section of the manual.



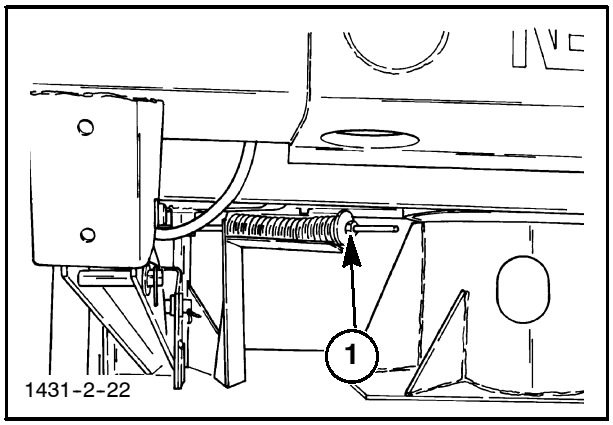
2

2. Remove the 3/8″-16 flange screws and M10 washers retaining the center, 1, and two left-hand side shields, 2.
3. Remove the shields from the unit.



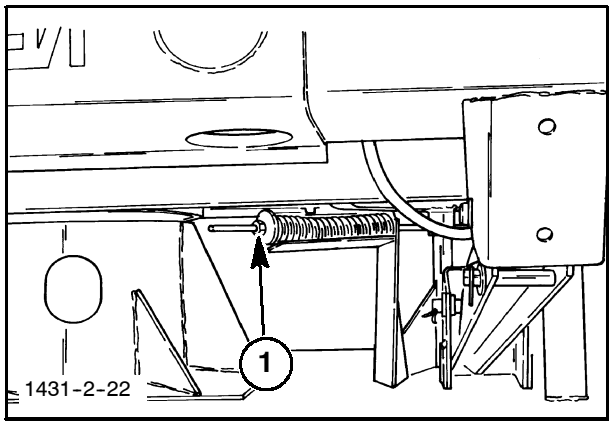
3

4. Loosen the jam nut and adjustment nut, 1, on the spring tension rod until the belt can be removed from the center sheave.



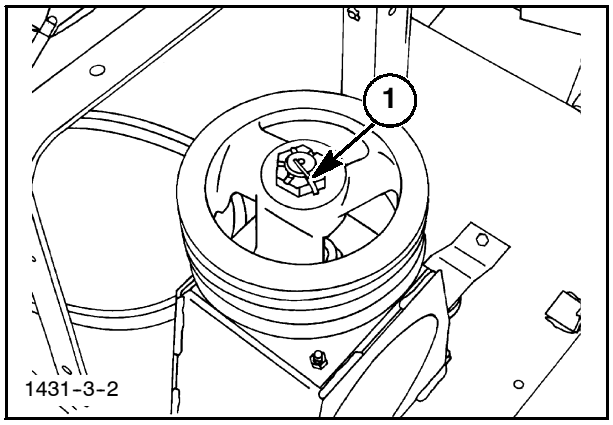
4

5. Loosen the jam nut and adjustment nut, 1, on the right side spring tension rod until the belt can be removed from the center sheave.



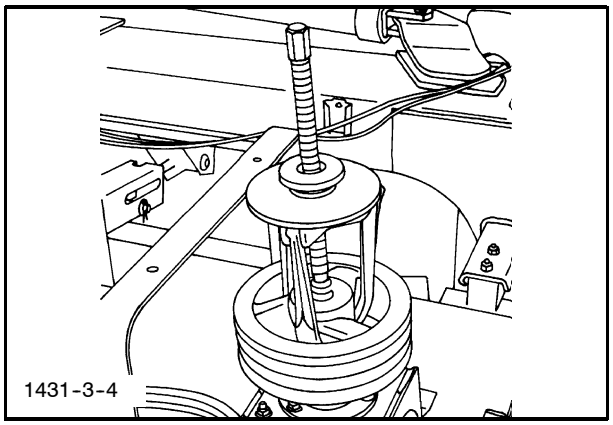
5

6. Remove the cotter pin from the slotted nut on the shaft. Block the cutter bar by inserting a bar through the cutter bar end tower and rotating the cutter bar until the bar contacts the side sheet. Remove the slotted nut from the shaft.



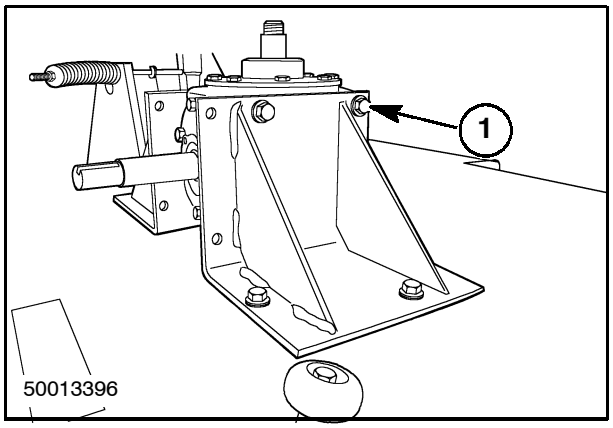
6

7. The sheave is keyed to the gearbox shaft using a woodruff key, and is seated on a straight taper of the shaft. Install a three jaw puller so the legs of the puller are engaged on the center hub of the sheave. Tighten the puller, and hit the underside of the sheave with a hammer to remove it from the sheave.
8. Remove the woodruff key from the output shaft of the gearbox.



7

9. Remove the eight 1/2″ x 1″ screws, 1, from the left-hand and right-hand mounting brackets.
10. Remove the center gearbox from the unit.



8