327, 328
336, 337, 338
346, 347, 348
466, 467, 468
Square Balers

John Deere Ottumwa Works
TM1243 (25APR01)
LITHO IN U.S.A.
ENGLISH

Introduction

FOREWORD

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.

This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

The technical manual contains two types of information: diagnostics and repair. Diagnostic groups help you identify the majority of routine failures quickly. Repair groups tell how to repair the components.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Binders, binder labels, and tab sets can be ordered by John Deere dealers direct from the John Deere Distribution Service Center.

This manual is part of a total product support program.

FOS MANUALS—REFERENCE

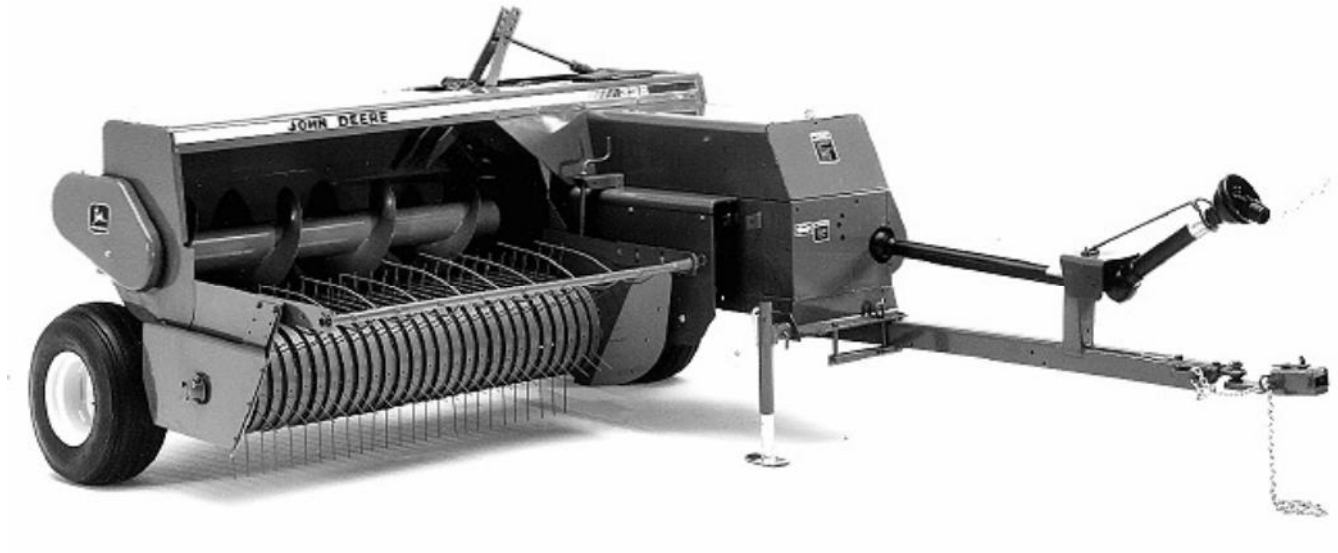
TECHNICAL MANUALS—MACHINE SERVICE

COMPONENT MANUALS—COMPONENT SERVICE

Fundamentals of Service (FOS) Manuals cover basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.

Technical Manuals are concise guides for specific machines. Technical manuals are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Component Technical Manuals are concise service guides for specific components. Component technical manuals are written as stand-alone manuals covering multiple machine applications.



Model 338 Square Baler

EX,TM1243,IFC -19-13APR95

Dealer Presentation Sheet

JOHN DEERE DEALERS

IMPORTANT: Please remove this page and route through your service department.

This is a revision of Section 40 for TM1243, Square Balers.

Listed below is a brief explanation of what was changed.

1. The information on the adjustment of the stationary knife.

2. The information on the adjustment of the plungerhead.

EX,TM1243,DLR -19-13APR95

Contents

All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

TM1243-19-25APR01

Section 10
GENERAL

Contents

HANDLE FLUIDS SAFELY—AVOID FIRES

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.

TS227 -UN-23AUG88

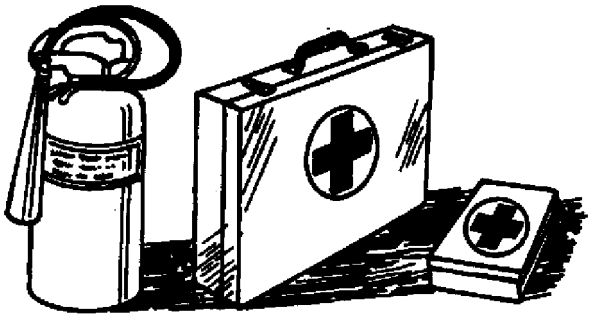
DX,FLAME -19-04JUN90

PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



TS291 -UN-23AUG88

DX,FIRE2 -19-03MAR93

10
05
2

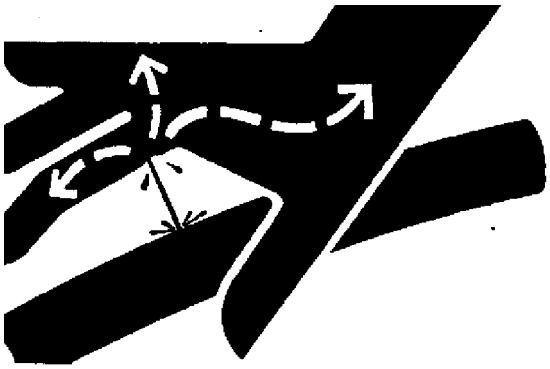
AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



X9811 -UN-23AUG88

DX,FLUID -19-03MAR93

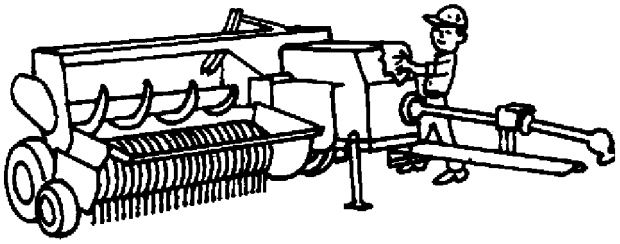
PARK MACHINE SAFELY

Before servicing, cleaning, adjusting, removing material, or hitching wagon to baler, always:

1. Disengage all power.

2. Shut off engine.

3. THEN WAIT until all moving parts have stopped moving.



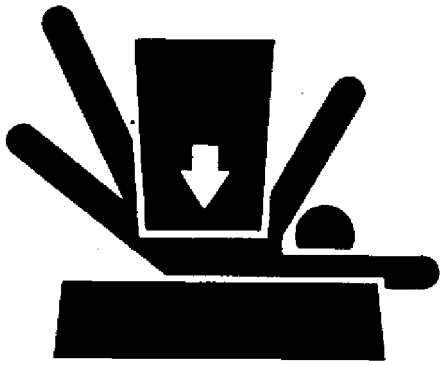
E18763 -UN-13APR89

EX,1243,1005,A -19-23JUN92

SUPPORT MACHINE PROPERLY

Always lower the attachment or implement to the ground before you work on the machine. If you must work on a lifted machine or attachment, securely support the machine or attachment.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.



TS229 -UN-23AUG88

DX,LOWER -19-04JUN90

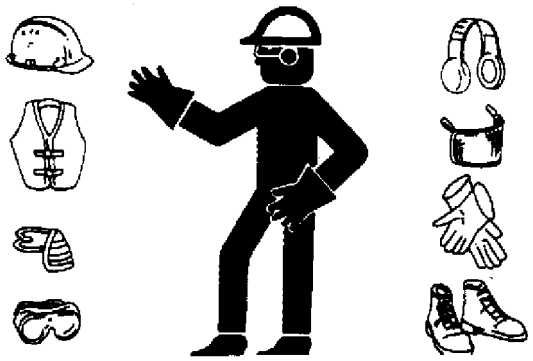
WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



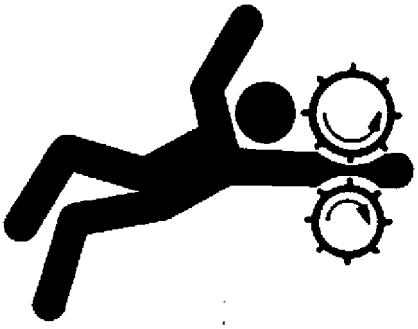
TS206 -UN-23AUG88

DX,WEAR -19-10SEP90

SERVICE MACHINES SAFELY

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



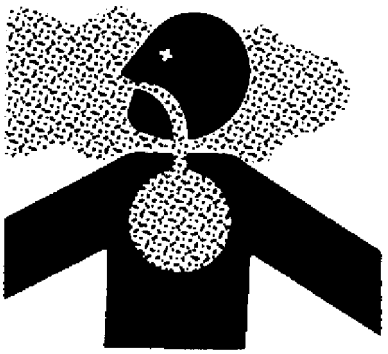
TS228 -UN-23AUG88

DX,LOOSE -19-04JUN90

WORK IN VENTILATED AREA

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

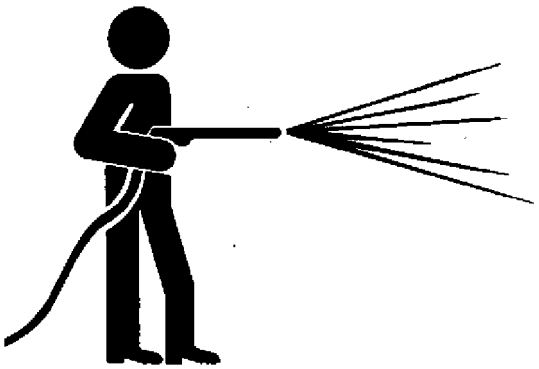


TS220 -UN-23AUG88

DX,AIR -19-04JUN90

WORK IN CLEAN AREA

Before starting a job:
- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.



T6642EJ -UN-18OCT88

DX,CLEAN -19-04JUN90

REMOVE PAINT BEFORE WELDING OR HEATING

Avoid potentially toxic fumes and dust.

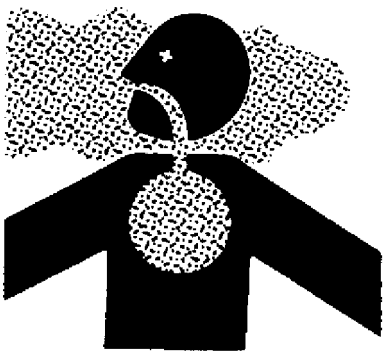
Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

Remove paint before welding or heating:

- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.

- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.



TS220 -UN-23AUG88

DX,PAINT -19-03MAR93

AVOID HEATING NEAR PRESSURIZED FLUID LINES

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.

TS953 -UN-15MAY90

DX,TORCH -19-03MAR93

ILLUMINATE WORK AREA SAFELY

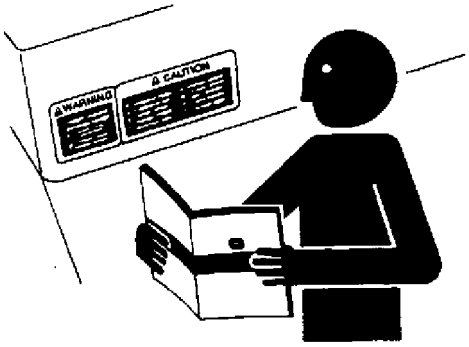
Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

TS223 -UN-23AUG88

DX,LIGHT -19-04JUN90

REPLACE SAFETY SIGNS

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.



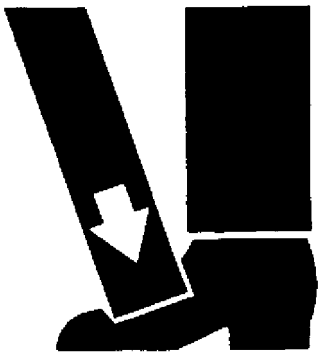
TS201 -UN-23AUG88

DX,SIGNS1 -19-04JUN90

USE PROPER LIFTING EQUIPMENT

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.



TS226 -UN-23AUG88

DX,LIFT -19-04JUN90

SERVICE TIRES SAFELY

TS952 -UN-12APR90

Explosive separation of a tire and rim parts can cause serious injury or death.

Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.

DX,TIRECP -19-24AUG90

PRACTICE SAFE MAINTENANCE

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet , and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

Disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

TS218 -UN-23AUG88

DX,SERV -19-03MAR93

USE PROPER TOOLS

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting John Deere specifications.

TS779 -UN-08NOV89

DX,REPAIR -19-04JUN90

DISPOSE OF WASTE PROPERLY

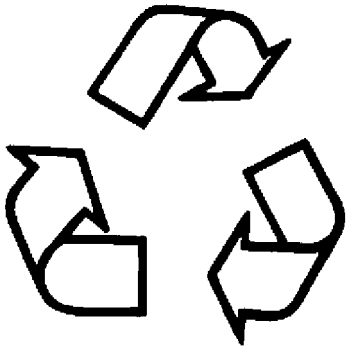
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.



TS1133 -UN-26NOV90

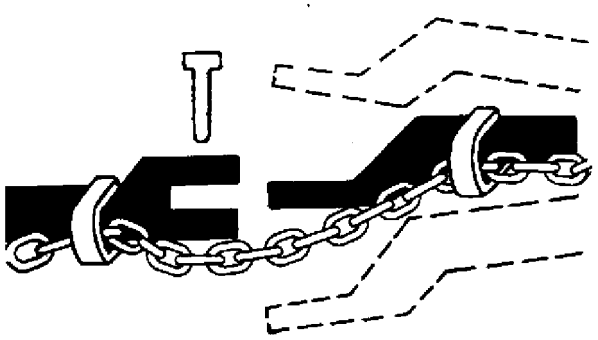
DX,DRAIN -19-03MAR93

USE A SAFETY CHAIN

A safety chain will help control drawn equipment should it accidentally separate from the drawbar.

Using the appropriate adapter parts, attach the chain to the tractor drawbar support or other specified anchor location. Provide only enough slack in the chain to permit turning.

See your John Deere dealer for a chain with a strength rating equal to or greater than the gross weight of the towed machine. Do not use safety chain for towing.



TS217 -UN-23AUG88

DX,CHAIN -19-03MAR93

LIVE WITH SAFETY

Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.

TS231 -19-07OCT88

DX,LIVE -19-25SEP92

SPECIFICATIONS

Item	Measurement	Specification
Bale	Cross Section	
	327, 328, 336, 337, 338, 346, 347, 348	360 x 460 mm (14 x 18 in.)
	466, 467, 468	400 x 460 mm (16 x 18 in.)
	Length Adjustment (All)	310—1270 mm (12—50 in.)
	Type	
	Twine (All)	ASAE Standard, various types and sizes, sisal and plastic.
	Wire	
	336, 337, 338, 346, 347, 348, 466, 467	14-1/2 gauge, ASAE Standard
Pickup	Inside Width	
	327	1372 mm (54 in.)
	336	1422 mm (56 in.)
	328, 337, 338, 347, 348, 467, 468 346, 466	1627 mm (64 in.)
	Width On Flare	
	336	1549 mm (61 in.)
	346,466	1803 mm (71 in.)
	327	1627 mm (64 in.)
	328, 337, 338, 347, 348, 467, 468	1880 mm (74 in.)
	Width Between Outer Teeth	
	336	1160 mm (45-5/8 in.)
	327	1283 mm (50-1/2 in.)
	346, 466	1404 mm (55-1/4 in.)
	328, 337, 338, 347, 348, 467, 468	1524 mm (60 in.)

Continued on next page

Item	Measurement	Specification
	Cylinder Diameter (All)	345 mm (13.5 in.)
	Number of Teeth	
	336	40
	327	88
	328	104
	337, 338, 347, 348, 467, 468	156
	346, 466	72
	Number of Tooth Bars	
	327, 328, 336	4
	337, 338, 346, 347 348, 466, 467, 468	6
	Space Between Teeth (All)	60 mm (2-3/8 in.)
	Height Adjustment Range (All)	Crank, 127 mm (5 in.)
Auger	Diameter (All)	407 mm (16 in.)
	Length	
	327, 328, 336	1300 mm (51 in.)
	337, 338, 346, 347, 348, 466, 467, 468	1550 mm (61 in.)
	Feed Opening Size	
	327, 328, 337, 338, 347, 348	1864.5 cm^2 (289 in^2.)
	466, 467, 468	2129 cm^2 (330 in^2.)
Plungerhead	Stroke Length (All)	762 mm (30 in.)
	Normal Speed (under load)	
	327, 328, 336, 337, 338, 346	80 strokes per minute
	347, 348 468 - (S.N. —844080)	93 Strokes per minute
	466, 467 468 - (S.N. 844081—)	100 Strokes per minute

Continued on next page

Item	Measurement	Specification
Flywheel	Diameter (All)	686 mm (27 in.)
	Weight 327, 328, 336, 337, 338	103 kg (227 lb)
	346, 347, 348, 466, 467, 468	134 kg (295 lb)
Compression Chamber	Length 336	1118 mm (44 in.)
	327, 328, 337, 338, 346, 347, 348	1168 mm (46 in.)
	466, 467, 468	1473 mm (58 in.)
PTO Shaft	Speed (All)	ASAE-SAE Standard 540 rpm
	Size 327, 328, 336	Category 3
	337, 338, 346	Category 4
	347, 348	Category 4 or optional Category 5
	466, 467, 468	Category 5
Gear Case	Gears (All)	Steel cut, enclosed and/or precision forged
	Capacity (All)	3.8 L (qt) SAE 85—140 API-GL5 Gear Lubricant
Tractor Requirement (Use a larger tractor if wagon is pulled.)	Recommended Size 327, 328, 336, 337, 338, 346, 347, 348	30 kW (40 hp) minimum
	466, 467, 468	45 kW (60 hp) minimum

Continued on next page

Item	Measurement	Specification
Tires	Standard	
	327, 336, 346, Right	5.00-15 4PR 207 kPa (2.1 bar) (30 psi)
	328 Right	5.90-15 4PR 207 kPa (2.1 bar) (30 psi)
	337, 338, 347, 348, 466, 467, 468 Right	26 x 12.00-12 4PR 138 kPa (1.4 bar) (20 psi)
	327, 328, 336 Left	6.40-15 6PR 276 kPa (2.4 bar) (40 psi)
	346 Left	7.60-15 6PR 207 kPa (2.1 bar) (30 psi)
	337, 338, 347, 348 Left	11 L-14 6PR 207 kPa (2.1 bar) (30 psi)
	466, 467, 468 Left	31 x 13.50-15 6PR 207 kPa (2.1 bar) (30 psi)
	Floatation	
	327, 328, 336, 346, Right	26 x 12.00-12 4PR 138 kPa (1.4 bar) (20 psi)
	327, 328, 336, 346 Left	11L-14 6PR 207 kPa (2.1 bar) (30 psi)
	Pickup Gauge Wheel	
	Optional 336, 346	3.00-12 Semi-Pneumatic
	Optional 327, 328 337, 338, 347, 348	16 x 6.50-8 2PR 138 kPa (1.4 bar) (20 psi)
	Standard 466	4.00-8 4PR 138 kPa (1.4 bar) (20 psi)
	Standard 467, 468	16 x 6.50-8 2PR 138 kPa (1.4 bar) (20 psi)
Overall Dimensions	Maximum Height	
	327, 328, 336, 337, 338, 346, 347, 348	1702 mm (67 in.)
	466, 467, 468	1880 mm (74 in.)

Continued on next page

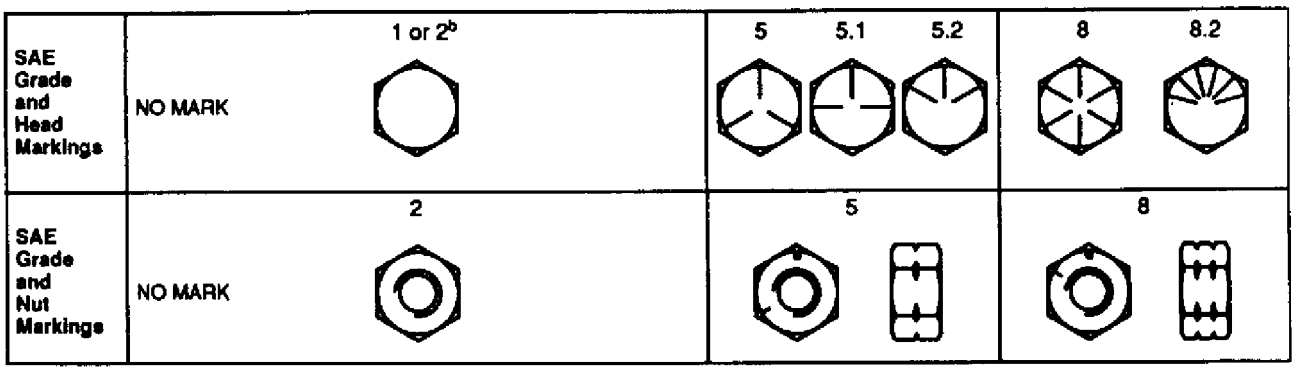
Item	Measurement	Specification
	Width	
	336	2438 mm (96 in.)
	327 (Std. tires)	2490 mm (98 in.)
	327 (Float. tires)	2540 mm (100 in.)
	328 (Std. tires)	2692 mm (106 in.)
	328 (Float. tires), 337 338, 346, 347, 348 (Std. tires)	2743 mm (108 in.)
	466	3023 mm (119 in.)
	467, 468 (Std. tires)	3073 mm (121 in.)
	Length	
	327, 328 With bale chute and 2-joint hitch	5029 mm (198 in.)
	336, 346 with bale chute and tongue	5740 mm (226 in.)
	337, 338, 347, 348 With bale chute and 3-joint hitch	5766 mm (227 in.)
	466, 467, 468 With bale chute and 3-joint hitch	6096 mm (240 in.)
	336, 346 less tongue and bale chute	3378 mm (133 in.)
	327, 328, 337, 338, 347, 348 Less tongue and bale chute	3404 mm (134 in.)
	466, 467, 468 Less tongue and bale chute	3759 mm (148 in.)
Weight	Twine Units	
	327, 328 Minimum	1108 kg (2441 lb)
	327, 328 Maximum	1239 kg (2728 lb)
	336 Maximum	1120 kg (2470 lb)
	337, 338 Minimum	1273 kg (2805 lb)
	337, 338 Maximum	1349 kg (2972 lb)
	346 Maximum	1325 kg (2920 lb)
	347, 348 Minimum	1412 kg (3110 lb)
	347, 348 Maximum	1507 kg (3320 lb)
	466 Maximum	1497 kg (3300 lb)
	467, 468 Minimum	1680 kg (3700 lb)
	467, 468 Maximum	1719 kg (3786 lb)

Continued on next page

Item	Measurement	Specification
	Wire Units	
	336 Maximum	1134 kg (2500 lb)
	337, 338 Minimum	1290 kg (2845 lb)
	337, 338 Maximum	1445 kg (3185 lb)
	346 Maximum	1339 kg (2952 lb)
	347, 348 Minimum	1430 kg (3153 lb)
	347, 348 Maximum	1507 kg (3323 lb)
	466 Maximum	1510 kg (3330 lb)
	467 Minimum	1693 kg (3733 lb)
	467 Maximum	1732 kg (3819 lb)

EX,1243,1010,A -19-23JUN92

UNIFIED INCH BOLT AND CAP SCREW TORQUE VALUES



TS1162 -19-04MAR91

Size	Grade 1				Grade 2[b]				Grade 5, 5.1, or 5.2				Grade 8 or 8.2			
	Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]	
	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft
1/4	3.7	2.8	4.7	3.5	6	4.5	7.5	5.5	9.5	7	12	9	13.5	10	17	12.5
5/16	7.7	5.5	10	7	12	9	15	11	20	15	25	18	28	21	35	26
3/8	14	10	17	13	22	16	27	20	35	26	44	33	50	36	63	46
7/16	22	16	28	20	35	26	44	32	55	41	70	52	80	58	100	75
1/2	33	25	42	31	53	39	67	50	85	63	110	80	120	90	150	115
9/16	48	36	60	45	75	56	95	70	125	90	155	115	175	130	225	160
5/8	67	50	85	62	105	78	135	100	170	125	215	160	240	175	300	225
3/4	120	87	150	110	190	140	240	175	300	225	375	280	425	310	550	400
7/8	190	140	240	175	190	140	240	175	490	360	625	450	700	500	875	650
1	290	210	360	270	290	210	360	270	725	540	925	675	1050	750	1300	975
1-1/8	400	300	510	375	400	300	510	375	900	675	1150	850	1450	1075	1850	1350
1-1/4	570	425	725	530	570	425	725	530	1300	950	1650	1200	2050	1500	2600	1950
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2150	1550	2700	2000	3400	2550
1-1/2	1000	725	1250	925	990	725	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

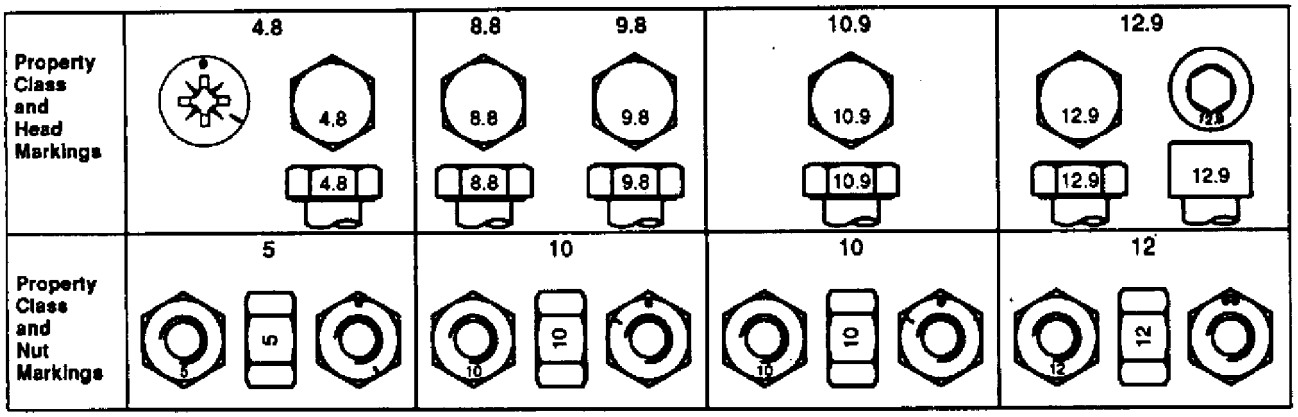
Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

[a] "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

[b] Grade 2 applies for hex cap screws (not hex bolts) up to 152 mm (6-in.) long. Grade 1 applies for hex cap screws over 152 mm (6-in.) long, and for all other types of bolts and screws of any length.

DX,TORQ1 -19-20JUL94

METRIC BOLT AND CAP SCREW TORQUE VALUES



TS1163 -19-04MAR91

Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]	
	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	190
M16	100	73	125	92	190	140	240	175	275	200	350	255	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class.

Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to the strength of the original.

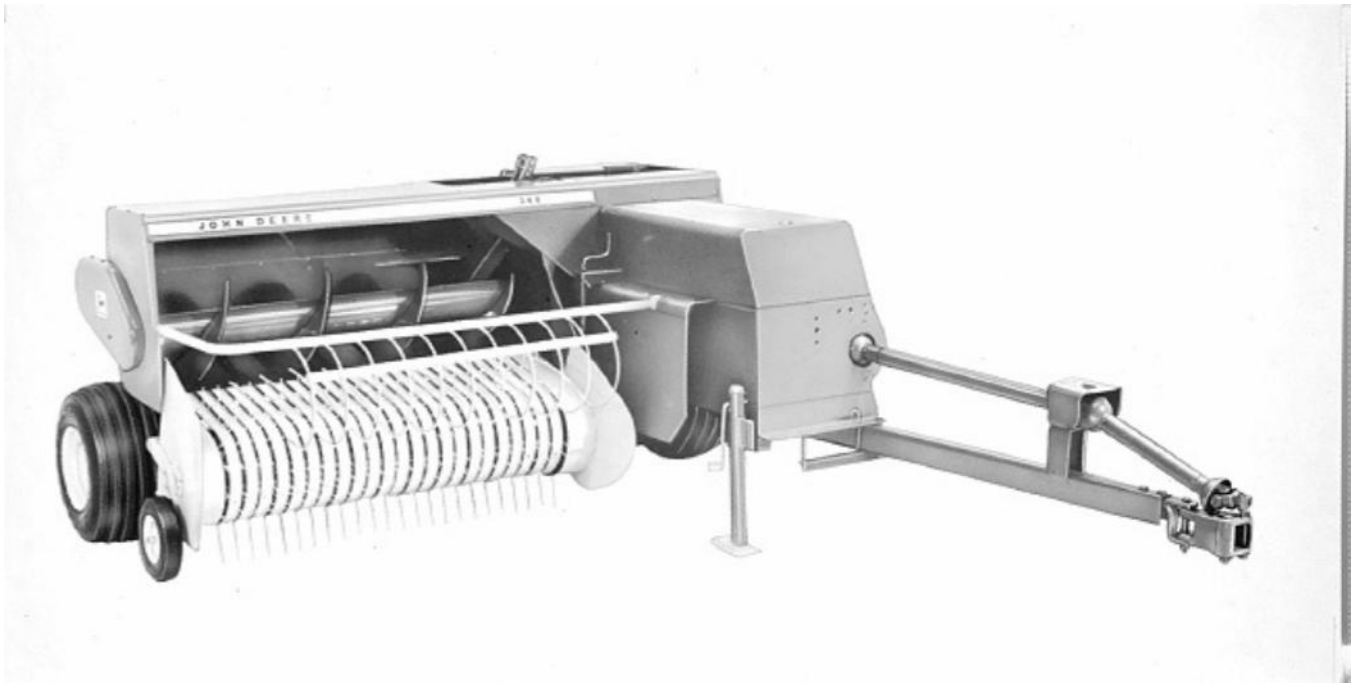
Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

[a] *"Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.*

DX,TORQ2 -19-20JUL94

336, 346 AND 466 BALER DESCRIPTION



The 6-Series Balers were manufactured from 1971—1980. The basic components of the balers consisted of a pickup, auger, feeder fingers, plungerhead, knotters, and bale extension and chute.

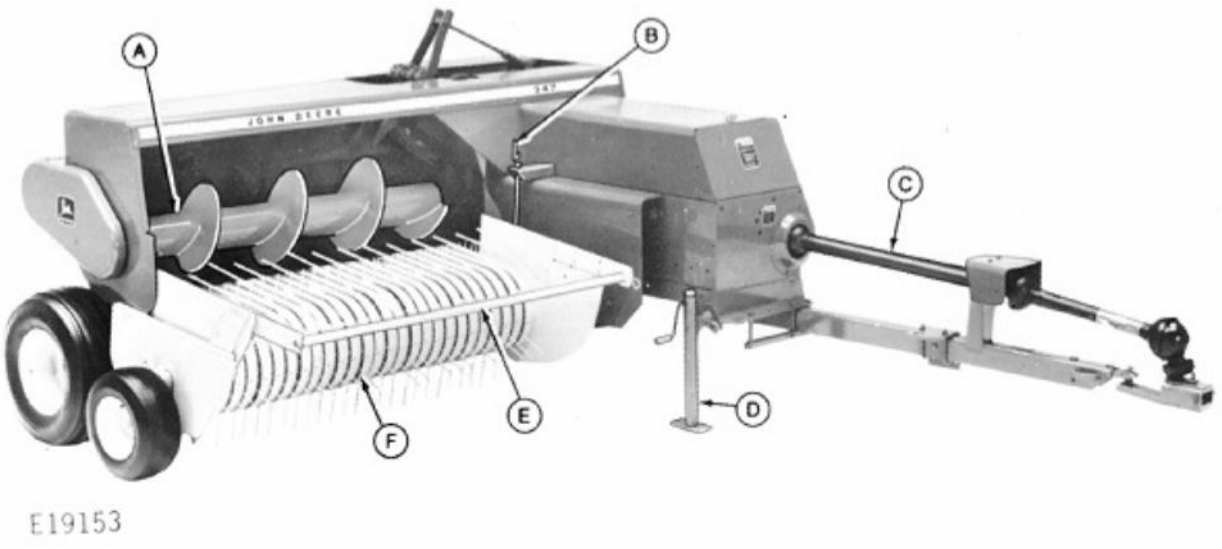
Power is provided to baler from a 540 rpm tractor PTO. An optional engine could be mounted on baler to provide the power for 336 and 346 Models only.

Hydraulic bale tension was available for the 346 and 466 Models. This hydraulic system did not require any external tractor hydraulics. The tractor PTO turns a hydraulic pump which supplies the hydraulic pressure for the bale tension cylinders.

Wire twisters were available on all models.

EX,1243,1015,A -19-23JUN92

327, 337, 347 AND 467 BALER DESCRIPTION



A—Auger
B—Pickup Adjuster
C—Powershaft
D—Jackstand
E—Crop Compressor
F—Pickup

The 7-Series Balers were manufactured from 1981—1986. The same basic components made up the 7-Series Balers as were in the 6-Series.

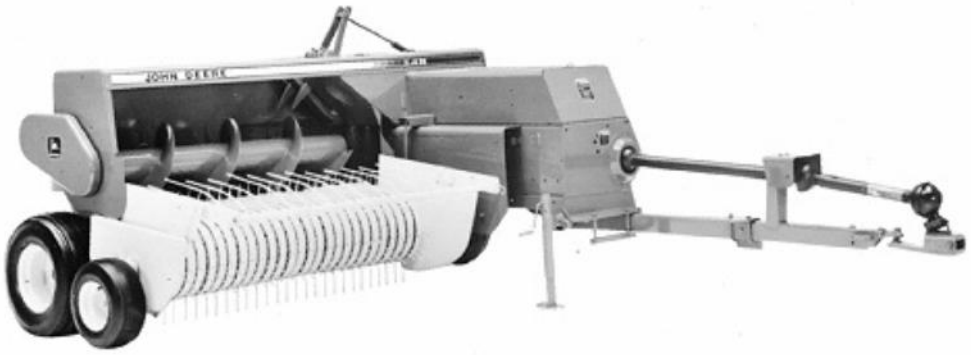
Power for the 7-Series Balers is provided to the baler from a 540 rpm tractor PTO.

Hydraulic options offered on the balers were bale tension, pickup lift, and tongue positioner. The pickup lift and tongue positioner required hydraulic pressure from the tractor.

Wire twisters were available only on the 337, 347 and 467 balers.

EX,1243,1015,B -19-17AUG95

328, 338, 348 AND 468 BALER DESCRIPTION



EP3609

E28965 -UN-08DEC89

The 8-Series Balers are current production models since 1987. The balers consist of the same basic components as in the 6- and 7- Series, with improvements for fine-tuning baling operation and ease repair and adjustments.

The same hydraulic options for the 7-Series also apply to the 8-Series balers.

Wire twisters are available only on 338 and 348 balers.

EX,1243,1015,C -19-23JUN92

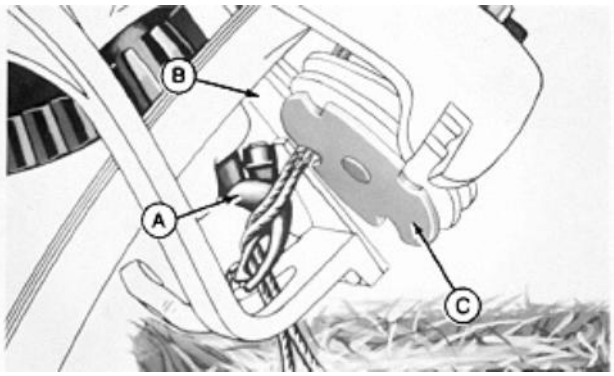
PREVENT KNOTTER DAMAGE

IMPORTANT: Never trip an unthreaded baler operating at normal speed. Knotter damage will occur.

When the knotter is tripped, twine in the twine disk (C) and twine holder (B) hold the billhook (A) tongue closed.

When the knotter is tripped without twine in the twine disk and twine holder, the billhook tongue will remain open. As the billhook rotates, the tongue will hit the billhook pressure arm causing possible damage to the billhook.

Baler can be tripped when the flywheel is turned by hand. Billhook tongue will push against pressure arm but arm will be pushed out of the way, not causing damage to billhook.



E19508 -UN-20SEP88

EX,1243,1015,C1-19-23JUN92

BEFORE LUBRICATION

CAUTION: Do not clean, lubricate, or adjust baler while it is in motion.

IMPORTANT: The lubrication period recommended is based on normal conditions. Severe or unusual conditions may require more frequent lubrication or oil changes.

See operator's manual for detailed instructions.

Clean grease fittings before using grease gun. Replace any lost or broken fittings immediately. If a new fitting fails to take grease, remove it and check for failure of adjoining parts.

EX,1472,1020,A -19-31MAR89

GREASE

Use grease based on the expected air temperature range during the service interval.

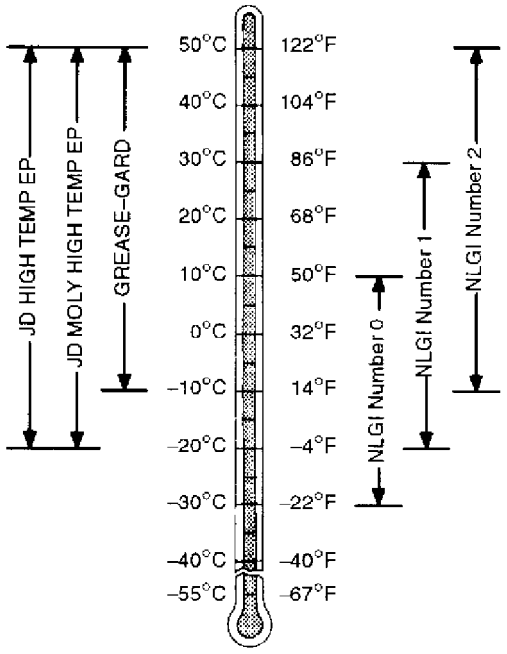
The following greases are preferred:

- John Deere MOLY HIGH TEMPERATURE EP GREASE
- John Deere HIGH TEMPERATURE EP GREASE
- John Deere GREASE-GARD™

Other greases may be used if they meet one of the following:

- SAE Multipurpose EP Grease with a maximum of 5% molybdenum disulfide
- SAE Multipurpose EP Grease

Greases meeting Military Specification MIL-G-10924F may be used as arctic grease.



DX,GREA1 -19-02NOV94

GEAR OIL

Use oil viscosity based on the expected air temperature range during the period between oil changes.

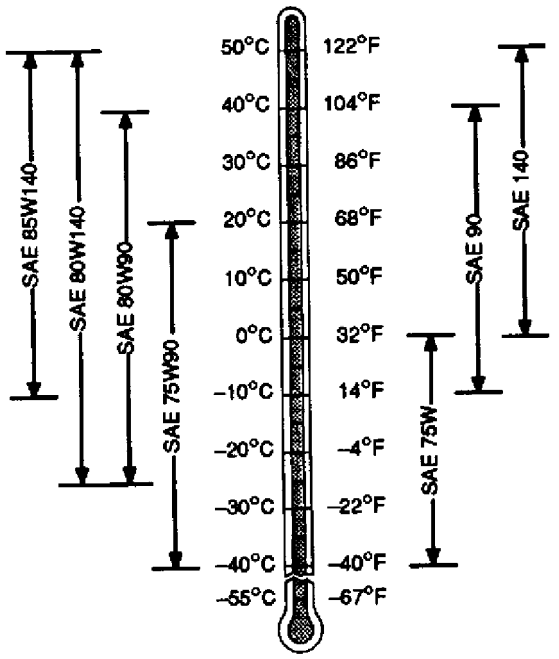
The following oils are preferred:

- John Deere EXTREME-GARD™
- John Deere GL-5 GEAR LUBRICANT

Other oils may be used if they meet the following:

- API Service Classification GL-5

Arctic oils (such as Military Specification MIL-L-10324A) may be used at temperatures below -30˚C (-22˚F).



DX,GEOIL -19-01FEB94

MULTILUBER GREASE

John Deere MULTILUBER GREASE is recommended.

You may also use SAE Multipurpose Grease meeting NLGI Consistency Number 000.

DX,GREA2 -19-01FEB94

GEAR CASE AND BALE TENSION PUMP OIL

TRANSMISSION, HYDRAULIC,AND GEAR CASE OIL

Use oil viscosity based on the expected air temperature range during the period between oil changes.

The following oils are preferred:

- John Deere HY-GARD®
- John Deere Low Viscosity HY-GARD®

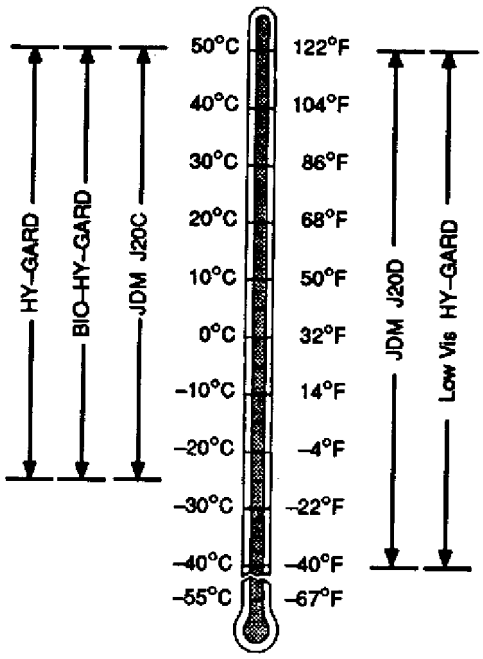
The following oil is also recommended:

- John Deere BIO-HY-GARD™[1]

Other oils may be used if they meet one of the following:

- John Deere Standard JDM J20C
- John Deere Standard JDM J20D

Arctic oils (such as Military Specification MIL-L-46167B) may be used at temperatures below -30˚C (-22˚F).



TS1614 -UN-31JAN94

[1]BIO-HY-GARD meets or exceeds the minimum biodegradability of 80% within 21 days according to CEC-L-33-T-82 test method. BIO-HY-GARD should not be mixed with mineral oils because this reduces the biodegradability and makes proper oil recycling impossible.

EX,1243,1020,A -19-17AUG95

ALTERNATIVE AND SYNTHETIC LUBRICANTS

Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual. Some John Deere lubricants may not be available in your location. Consult your John Deere dealer to obtain information and recommendations.

Synthetic lubricants may be used if they meet the performance requirements listed in this manual.

DX,ALTER -19-01FEB94

Section 20
POWER TRAIN

Contents

Continued on next page

Page

POWER DRIVE DIFFICULTIES

Symptom	Problem	Solution	Section/Group
PTO Hookup Will Not Telescope Correctly	Tractor drawbar not correctly installed.	Install drawbar correctly.	20-10
	Hookup tube or shaft bent or twisted.	Straighten or replace.	20-20
PTO Hookup Vibrates Excessively	Hookup tube or shaft bent or twisted.	Straighten or replace.	20-20
	Tractor operating at an excessive angle to baler.	Check hookup dimensions. Decrease angle.	20-10
	Hookup cross bearings worn.	Replace bearings.	20-25
PTO Hookup Will Not Stay Connected	Splines on tractor yoke worn.	Replace yoke.	20-15
Powershaft Will Not Telescope Correctly	Powershaft bent or twisted.	Straighten or replace.	20-30
Powershaft Vibrates Excessively	Powershaft bent or twisted.	Straighten or replace.	20-30
	Baler operating at tongue transport position.	Check tongue position.	—
	Powershaft cross bearings worn.	Replace bearings.	20-30
Main Drive Slip Clutch Slips Excessively During Operation	Shear bolt sheared in flywheel.	Replace shear bolt.	20-50
	Baling at too high of rate.	Reduce rate.	—
	Slip clutch bolts loose.	Adjust slip clutch bolts.	20-35
	Grease or oil on clutch facings. Clutch facings glazed.	Clean or replace facings.	20-35

EX,1243,2005,A -19-23JUN92

GEAR CASE DIFFICULTIES

Symptom	Problem	Solution	Section/Group
Gear Case Noisy	Lack of lubricant.	Add lubricant.	20-40
	Loose bearings.	Replace bearings.	20-40
	Gears not meshing correctly.	Align gears.	20-40
	Excessive backlash.	Adjust backlash.	20-40
Gear Case Excessively Hot	Lack of lubricant.	Add lubricant.	20-40
	Failed bearings.	Replace bearings.	20-40
	Improperly installed bearings caps.	Reinstall bearing caps.	20-40
Leaking Oil	Worn oil seals.	Replace oil seals.	20-40
	Missing or failed breather.	Replace breather.	—
	Too much lubricant in gear case.	Drain to correct level.	20-40
	Leaking around 76 mm (3 in.) expansion plug.	Change plug.	—
	Hardware not properly torqued.	Torque hardware.	10-10
Gears Noisy or Wear Prematurely	Lack of lubrication.	Add lubricant.	20-40

E01,2005,K -19-23JUN92

SHEAR BOLT DIFFICULTIES

Symptom	Problem	Solution	Section/Group
Flywheel Shear Bolt Sheared	Dull knives.	Sharpen knives.	—
	Obstruction in bale chamber.	Remove all obstructions.	—
	Too much clearance between knives.	Adjust plungerhead.	40-30
	Crank stop incorrectly adjusted.	Adjust crank stop.	40-25
	Worn clutch ring.	Replace.	20-35
	Bales too heavy for condition.	Loosen bale tension.	—
	Needles in bale case.	Place needles in home position.	50-10, 50-15
Flywheel shear bolt shears too often.	Shear bolt sleeve is loose in flywheel.	Replace sleeve.	20-45
	Flywheel bushing worn.	Replace bushing.	20-45
	Chipped or worn sleeve in flywheel; or chipped or worn shear bolt arm.	Check and replace if needed.	20-45, 20-50
	Shear plane separated.	Shear bolt must be against flywheel sleeve. Replace defective part.	20-50
	Bales too heavy for conditions.	Reduce bale tension.	—
	Engaging tractor PTO too fast.	Engage PTO slowly.	—
	Wrong size or grade shear bolt.	Use correct shear bolt.	20-50
	Obstruction in pickup area.	Check and remove debris.	—
	Shear bolt too short.	Replace with correct grade shear bolt.	20-50
	Shear bolt not tightened correctly.	Shear bolts require a specific torque.	20-50

Continued on next page

Symptom	Problem	Solution	Section/Group
	Shear plane separated.	Shear bolt arm must be against flywheel sleeve. Replace defective part.	20-50
Sheared Knotter and Needle Drive Bolt	Knotter drive brake too tight.	Loosen knotter drive brake.	—
	Needles out of time.	Adjust needles.	50-10, 50-15
	Needles hitting obstruction.	Remove obstruction.	—
	Obstruction in knotter.	Remove obstruction.	—
	Needles out of adjustment.	Adjust needles.	50-10 50-15
	Shear bolt too short threads are in shear plane.	Replace with correct shear bolt.	20-50

EX,1243,2005,B -19-23JUN92

TRACTOR PTO REQUIREMENTS

CAUTION: Never operate a 540 rpm baler with 1000 rpm tractor.

Balers can be attached to any tractor having a drawbar and power take-off that conforms to ASAE-SAE standards and having a 540 rpm power take-off shaft speed to match powershaft speed of baler.

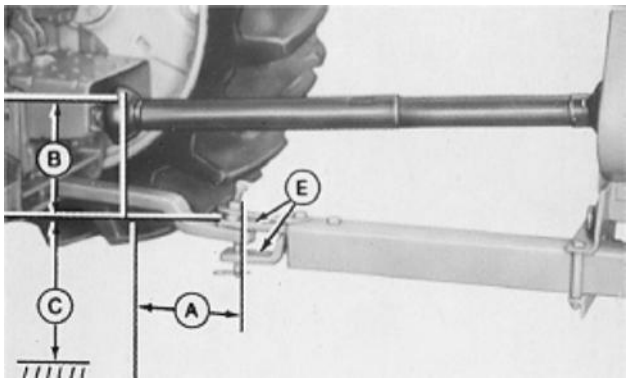
EX,1243,2010,A -19-23JUN92

ADJUST DRAWBAR (2-JOINT)

Adjust tractor drawbar to 356 mm (14 in.) from the end of power takeoff shaft to hitch pin hole in drawbar (A). Install any shields removed.

Vertically align drawbar hitch pin hole with centerline of tractor takeoff shaft using following dimensions.

A—356 mm (14 in.)
B—152-305 mm (6-12 in.)
C—330-432 mm (13-17 in.)
D—Hitch Straps



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E19278

EX,1243,2010,B -19-23JUN92

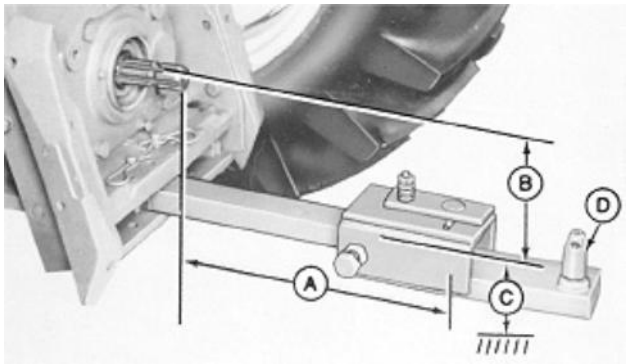
ADJUST DRAWBAR (3-JOINT)

NOTE: Shield removed for illustration.

1. Adjust tractor drawbar to measure 356 mm (14 in.) (A) from end of PTO shaft to center of hole in drawbar.

2. Adjust drawbar to 152—305 mm (6—12 in.) clearance (B) and 330—508 mm (13—20 in.) (C) clearance to ground.

3. Position drawbar to align hitch pin hole with centerline of tractor power takeoff shaft.



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E19279

A—356 mm (14 in.)
B—152—305 mm (6—12 in.)
C—330—508 mm (13—20 in.)
D—Equal Angle Hitch

EX,1243,2010,C -19-23JUN92

PTO POWR-GARD® HOOKUP

The 327-328-336 Balers use a Category 3 hookup, 337-338-346 Balers use a Category 4 hookup, and 347-348 Balers use a Category 4 (standard) and 5 (optional) hookup.

The 466-467-468 Balers use a Category 5 hookup.

EX,1243,2010,D -19-23JUN92

IDENTIFICATION

Categories can be identified by outside diameter of bearing cup and location of snap ring which retains bearing.

U-Joint Category	Bearing O.D.	Snap Ring Location
3	1-1/8 in.	Outside
4	1-1/4 in.	Outside
5	1-5/16 in.	Inside

E01,2010,W -19-06MAY87

GENERAL INFORMATION

The 327, 328 and 336 balers use a Category 3 hookup.

The 337, 338 and 346 balers use a Category 4 hookup.

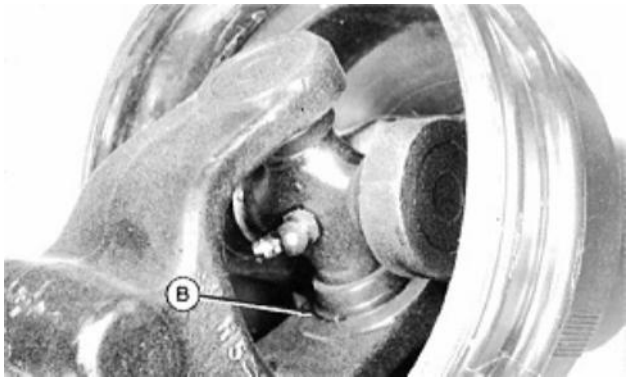
347 and 348 balers use a Category 4 hookup with an optional Category 5 available.

The 466, 467 and 468 balers use a Category 5 hookup.

Categories can be identified by outside diameter of U-joint bearing cup and location of snap ring which retains the bearing cup.

U-Joint Category	Bearing O.D.	Snap Ring Location
3	28.6 mm (1-1/8 in.)	Outside (A)
4	31.8 mm (1-1/4 in.)	Outside (A)
5	33.3 mm (1-5/16 in.)	Inside (B)

-UN-29APR92
E36456



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E36457

EX,1243,2015,A -19-23JUN92

REMOVE AND INSTALL PTO HOOKUP

1. Remove cap screw (A) and nut.

2. Remove PTO hookup from baler.

3. Install PTO hookup on powershaft. Be sure groove (B) in powershaft aligns with cap screw of PTO hookup.

4. Install and tighten cap screw and nut.

5. Lubricate telescoping components.

-UN-27OCT89
E33772

-UN-29APR92
E36447

EX,1243,2015,B -19-23JUN92

REPAIR PIN-TYPE YOKE CONNECTOR—LONG PIN STYLE

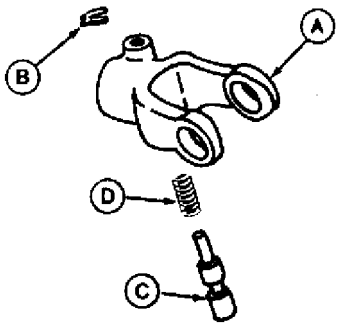
NOTE: Yoke (A) does not have to be removed from PTO hookup to repair pin (C).

1. Push pin (C) into yoke (A) to remove retaining clip (B).

2. Slowly release pin from yoke. Remove pin and spring (D) from yoke.

3. Apply a small amount of grease to new pin. Install new spring and pin in yoke.

4. Push pin into yoke until retaining clip can be installed.



E36460 -UN-28APR92

A—Yoke
B—Retaining Clip
C—Pin
D—Spring

EX,1243,2015,C -19-23JUN92

REPAIR PIN-TYPE YOKE CONNECTOR—SHORT PIN STYLE

1. Use a punch through hole (A) to push pin (B) from yoke (C).

Remove spring (D) from yoke.

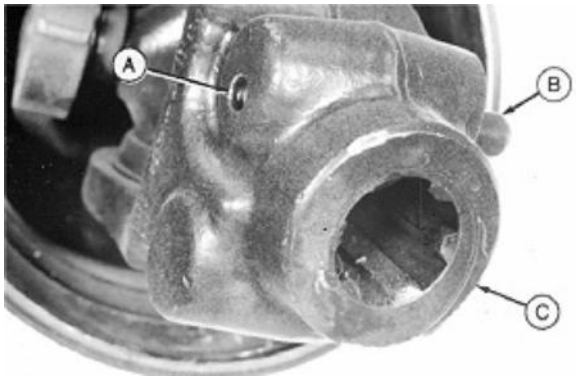
2. Install new spring in yoke.

3. Apply a small amount of grease to new pin. Install pin in yoke.

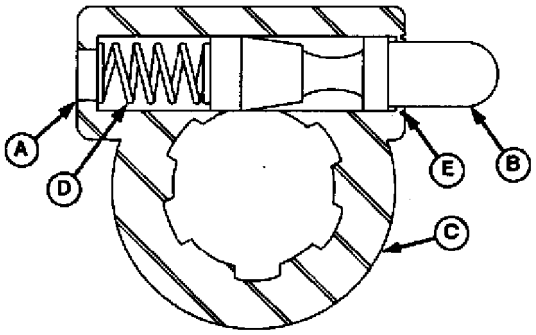
4. Push and hold shoulder of pin below surface of yoke.

5. Use a center punch to stake yoke around pin in two or three places. Staking the yoke will hold pin in bore.

A—Hole
B—Pin
C—Yoke
D—Spring
E—Staked Area



E36458 -UN-29APR92



E36459AE -UN-29APR92

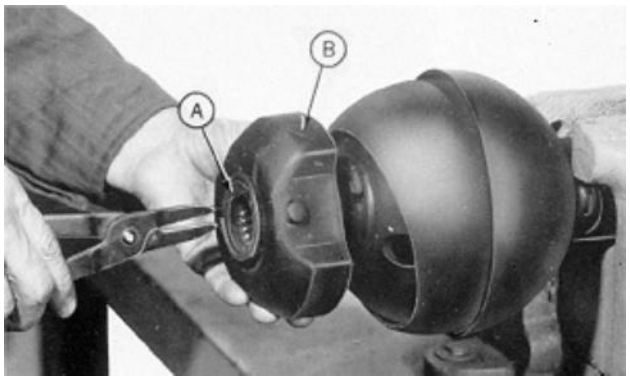
EX,1243,2015,D -19-23JUN92

REPAIR POWR-GARD® YOKE CONNECTOR

NOTE: New style Powr-Gard PTO uses a collar and washer instead of triangular collar and latch assembly (B). Disassembly of new and old styles is the same. Old style is shown.

1. Support push collar assembly (B) and remove snap ring (A).

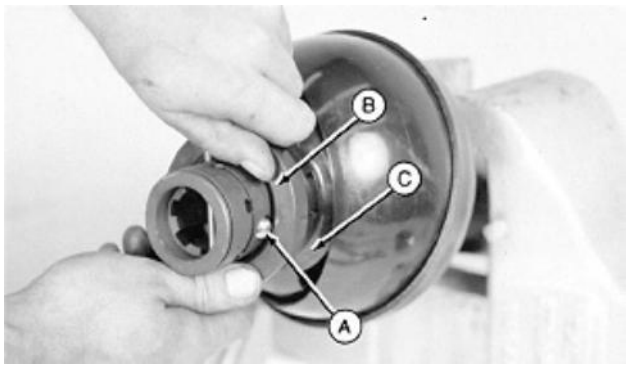
2. Remove push collar and push button latch. For new style, remove push collar and washer.



-UN-07JUN89
E12122

EX,1243,2015,E -19-23JUN92

3. Push back on retainer collar to remove three steel balls (A) from yoke. Remove retainer collar (B) and spring (C).



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E18306

EX,1243,2015,F -19-23JUN92

4. Lift locking bearings (A) up and out of assembly. Remove closure shield from yoke.

5. To remove and install yoke, refer to Section 20, Group 25, Replace PTO Hookup U-Joints.

-UN-07JUN89
E18307

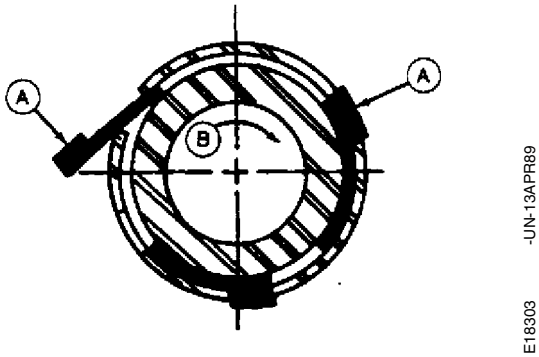
EX,1243,2015,G -19-23JUN92

6. Install closure shield assembly (A) and shield bearings. Be sure closure shield fits inside bell (B) of shaft shield.

EX,1243,2015,H -19-23JUN92

7. Apply grease to bearing grooves. Install bearings (A) into groove of yoke to retain shield assembly as shown.

A—Locking Bearings
B—Direction of Shaft Rotation



EX,1243,2015,I -19-23JUN92

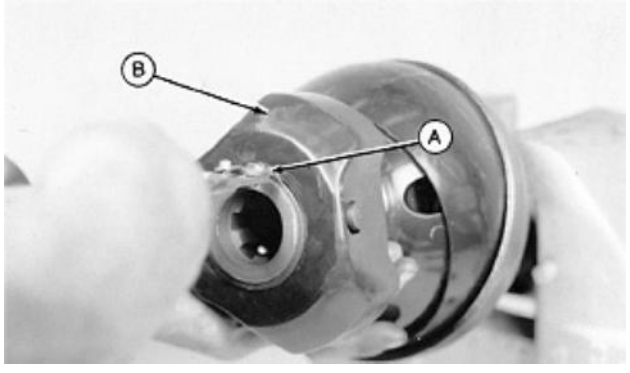
NOTE: Spring (B) is a conical spring. Be sure small end of spring is toward yoke shoulder and against flange.

8. Install spring (A), retainer collar (B), and steel balls (C) on yoke.

EX,1243,2015,J -19-23JUN92

9. Slide push button collar assembly (B) on yoke and secure with snap ring (A).

For new style PTO Powr-Gard, slide washer and collar on yoke and secure with snap ring.



EX,1243,2015,K -19-23JUN92

REPAIR WEASLER SLIDING COLLAR YOKE CONNECTOR

NOTE: PTO shaft shield does not have to be removed to repair sliding collar.

1. Push collar (B) towards the yoke (E).

2. Remove retaining ring (A), then slide collar and spring (C) off the yoke.

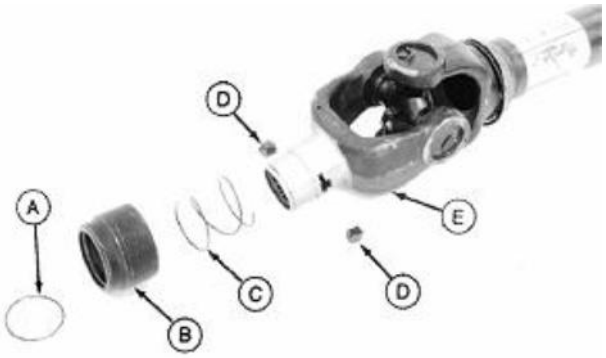
3. Remove locking pawls (D).

4. To remove and install yoke, refer to Section 20, Group 25, Replace PTO Hookup U-Joints.

5. Apply multipurpose grease to locking pawls (D). Install locking pawls in yoke (E).

NOTE: Spring (C) is a conical spring. Be sure small end of the spring is toward yoke shoulder and against flange.

6. Install spring (C), collar (B), and retaining ring (A).



-UN-29APR92

E36449

A—Retaining Ring
B—Collar
C—Spring
D—Pawls
E—Yoke

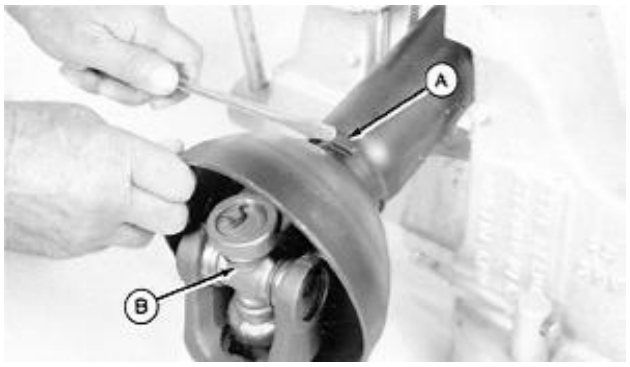
EX,1243,2015,L -19-23JUN92

INSPECT AND REPAIR STANDARD PTO SHAFT AND TUBE

1. Pull front end rear sections of PTO hookup apart.

2. Remove locking bearing type hookup shields:

   - Put hookup section in a vise. Be careful not to damage the instruction decals and tubular shields.
   - Lift locking bearing (A) up and remove from PTO shaft groove. Repeat for other locking bearing(s).
   - Remove yoke and shaft assembly (B) from shield.
   - Repeat step for other hookup section.



E18308 -UN-07JUN89

EX,1243,2020,A -19-23JUN92

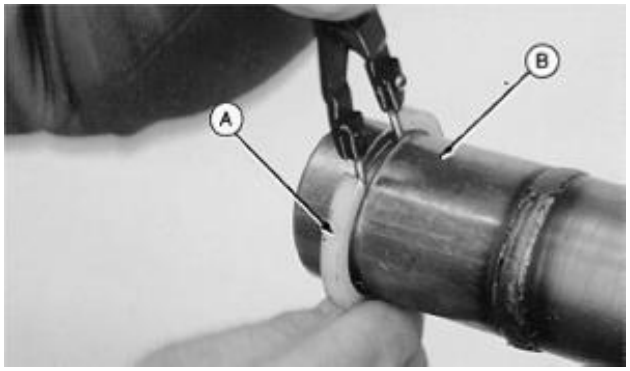
3. Remove snap ring type hookup shields:

   - Put hookup section in a vise. Be careful not to damage the instruction decals and tubular shields.
   - Insert a screwdriver through the access hole in shield (B) and push inward to remove snap ring (A).
   - Remove yoke and shaft assembly from shield.
   - Repeat step for other hookup section.

E36119 -UN-05NOV91

EX,1243,2020,B -19-23JUN92

4. Remove nylon bearing (A) from yoke and tube assembly (B).



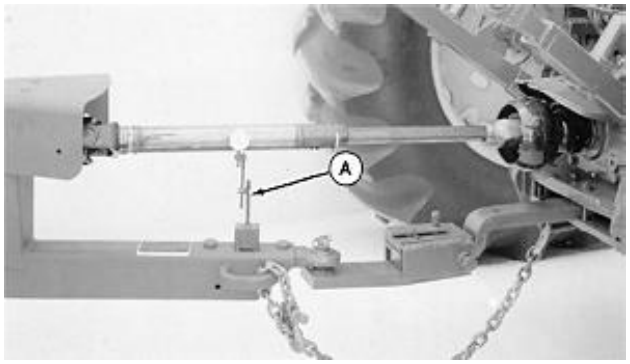
EX,1243,2020,C -19-23JUN92

5. Clean rust, dirt and paint from center arm of PTO hookup. Slide PTO hookup sections together.

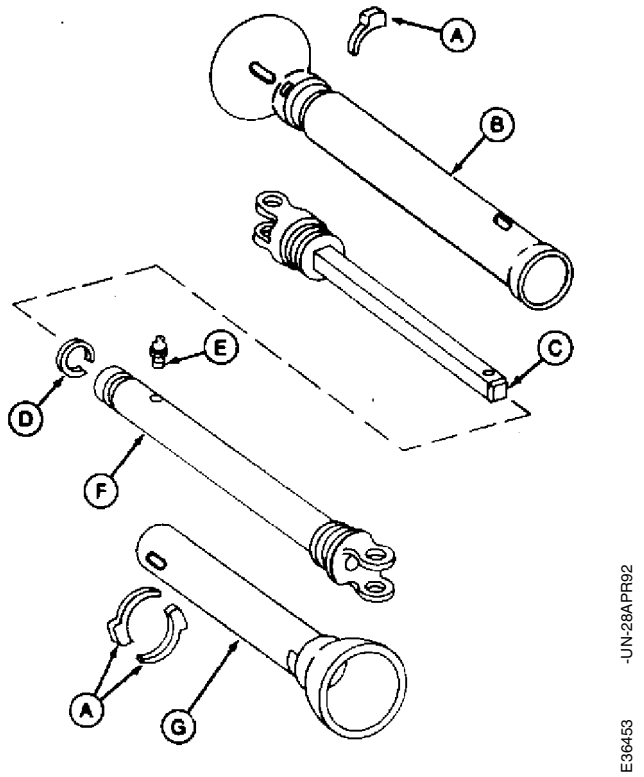
6. Replace cross and bearing assembly, if worn. (See Section 20, Group 25.)

CAUTION: Do not start tractor while inspecting shaft for straightness.

7. Check tube and shaft for straightness using dial indicator (A). TIR (Total Indicator Readout) should be 0.90 mm (0.35 in.) maximum in middle of hookup. If hookup is not within specification, straighten or replace.

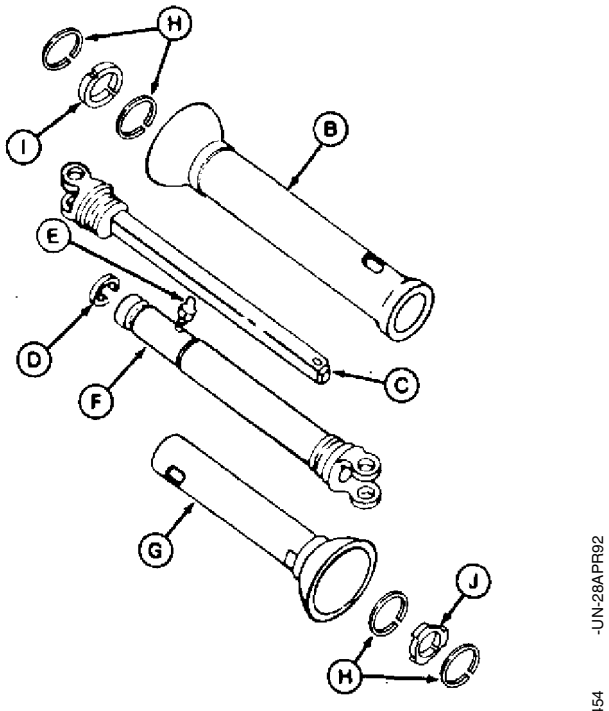


EX,1243,2020,D -19-23JUN92



E36453 -UN-28APR92

Locking Bearing Hookup Shield



E36454 -UN-28APR92

Snap Ring Hookup Shield

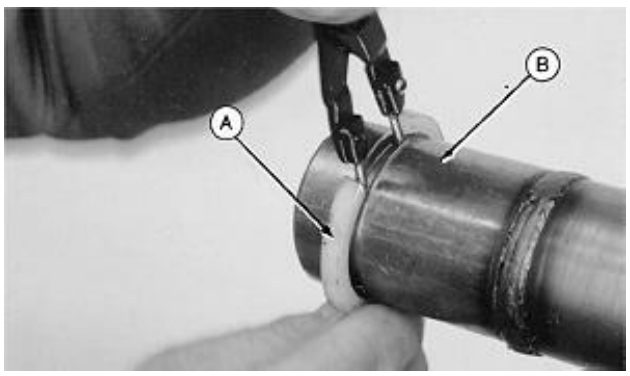
8. Inspect PTO hookup tube (F) and shaft (C):

- Clean all parts thoroughly.
- Inspect yoke tube and yoke shaft for straightness, roughness, nicks or pitting. Replace if necessary.
- Replace nylon bearings (A, D, I and J) if worn.

A—Nylon Locking Bearings
B—Front Hookup Shield
C—Front Shaft and Yoke
D—Nylon Bearing
E—Lubrication Fitting
F—Rear Tube and Yoke
G—Rear Hookup Shield
H—Snap Rings
I—Front Nylon Bearing
J—Rear Nylon Bearing

EX,1243,2020,E -19-23JUN92

9. Apply grease to groove of yoke and tube assembly (B). Install nylon bearing (A).



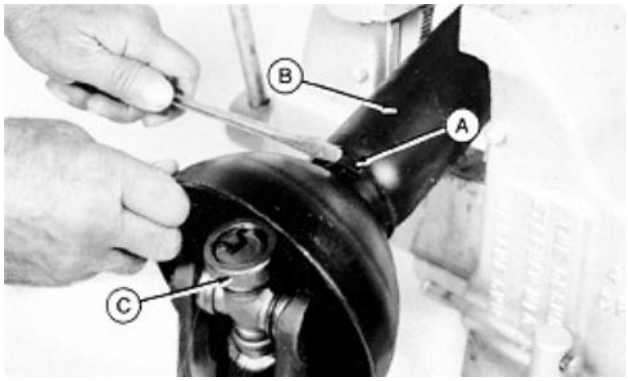
E18297 -UN-07JUN89

EX,1243,2020,F -19-23JUN92

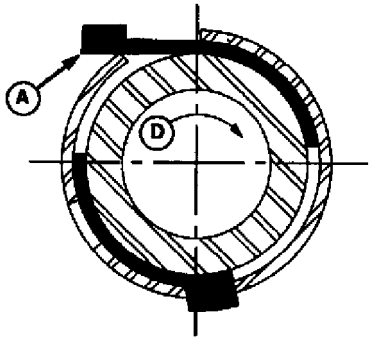
10. Install locking bearing type hookup shields:

- Apply grease to nylon bearing grooves of yoke and square shaft.
- Install yoke and shaft assembly (C) in shield (B).
- Install nylon bearings (A) in the same direction as PTO hookup shaft rotation (D).
- Repeat step for other section of PTO hookup.

A—Nylon Locking Bearing
B—Hookup Shield
C—Yoke and Shaft Assembly
D—Direction of Shaft Rotation



E18755 -UN-12JUN89



E36451AE -UN-28APR92

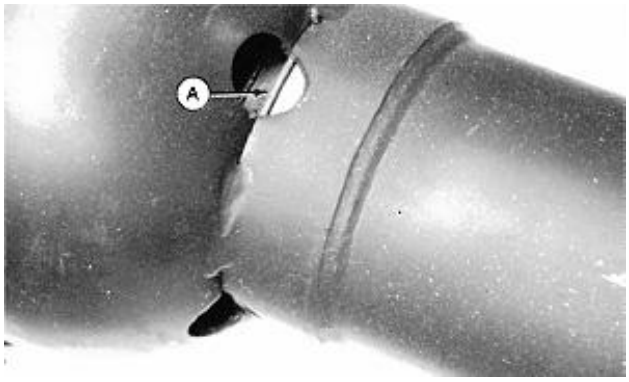
EX,1243,2020,G -19-23JUN92

11. Install snap ring type hookup shields:

- Apply a small amount of grease in groove for nylon bearing.
- Install snap ring (A) and nylon bearing on yoke if removed.
- Apply a small amount of grease on square shaft of yoke and shaft assembly.
- Install shield (B). Use a screwdriver to put snap ring (A) into groove of shield. Use holes on the outside of the shield to access snap ring.
- Repeat step for other hookup section.

12. Slide PTO hookup sections together and apply grease to lubrication fitting on tube.

E36119 -UN-05NOV91



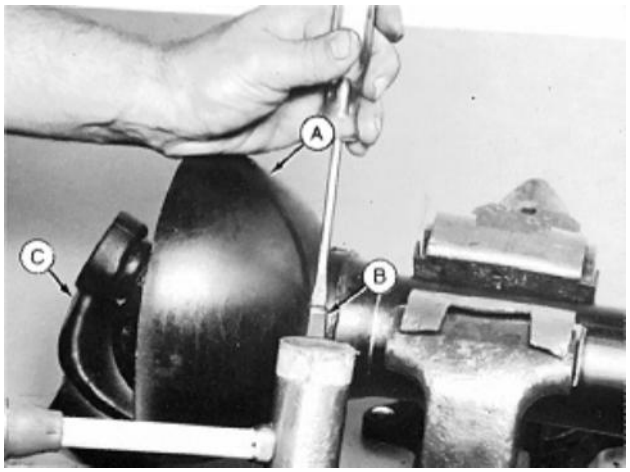
E36388 -UN-17JAN92

EX,1243,2020,H -19-23JUN92

INSPECT AND REPAIR RECIRCULATING BALL SLIP PTO SHAFT AND TUBE

NOTE: Recirculating ball slip type PTO hookups, Cat. 5, are used on 347, 466, 467 and 468 (S.N. —915000) balers.

Before removing front section of hookup, slide section backward and forward. If excessive drag is noticed, recirculating ball slip must be disassembled and checked for wear.



E16713 -UN-14NOV91

1. Pull front and rear sections of PTO hookup apart.

2. Lift locking bearing (B) up and remove from PTO shaft groove. Repeat for other locking bearing.

3. Remove yoke and shaft from PTO shield.

4. Repeat steps 2 and 3 for other section of PTO hookup.

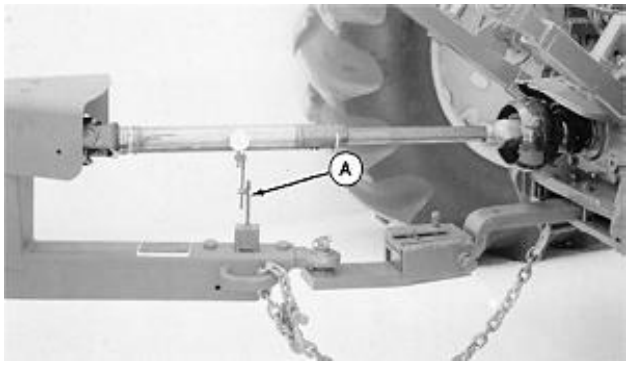
EX,1243,2020,I -19-23JUN92

5. Clean rust, dirt and paint from center of PTO hookup. Slide PTO hookup sections together by aligning tabs and grooves.

6. Replace cross and bearing assembly if worn. (See Section 20, Group 25.)

CAUTION: DO NOT start tractor while inspecting shaft for straightness.

7. Check tube and shaft for straightness using dial indicator (A). TIR (Total Indicator Readout) should be within 0.90 mm (0.035 in.) at middle of hookup. If hookup is not within specification, straighten or replace.



E18298 -UN-07JUN89

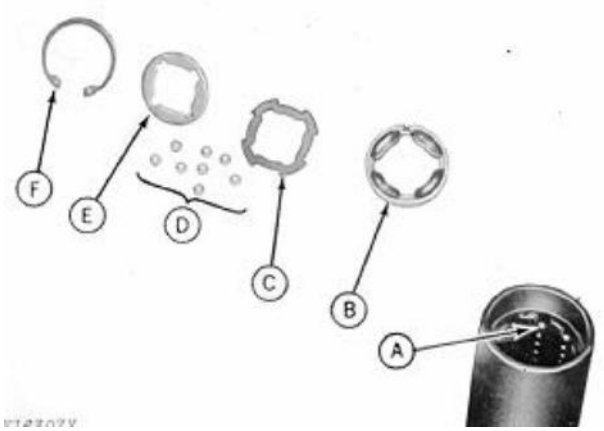
EX,1243,2020,J -19-23JUN92

8. Pull hookup sections apart. Remove snap ring (F) in rear section of hookup.

9. Remove the washer (E), seal (C), return cap (B) and 160 ball bearings (D).

NOTE: A washer, seal and return cap are located on opposite end of sleeve, but are not serviceable.

A—Ball Bearings
B—Return Cap
C—Rubber Seal
D—Ball Bearings
E—Steel Washer
F—Snap Ring



E16307Y -UN-14NOV91

EX,1243,2020,K -19-23JUN92

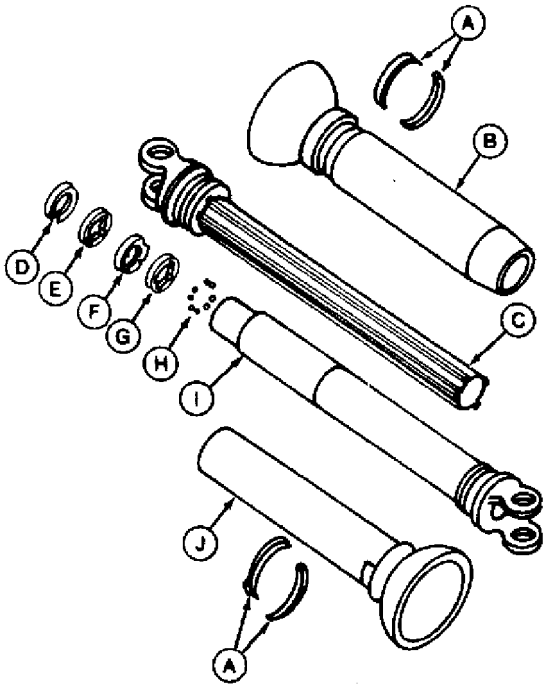
10. Inspect PTO hookup tube and shaft:

- Clean all parts thoroughly.
- Check the yoke tube (I) and yoke shaft (C) for straightness. Replace if necessary.
- Check the nylon locking bearings (A) for wear. Replace if necessary.
- Inspect the ball bearing grooves in the rear tube and yoke (I) for:

  Excessive wear
  Small indentations

- Check ball retainers (E—G) for excessive wear or damage.

A—Nylon Locking Bearing (4 used)
B—Front Hookup Shield
C—Front Shaft and Yoke
D—Snap Ring
E—Steel Washer
F—Rubber Seal
G—Return Cap
H—Ball Bearings (160 used)
I—Rear Tube and Yoke
J—Rear Hookup Shield

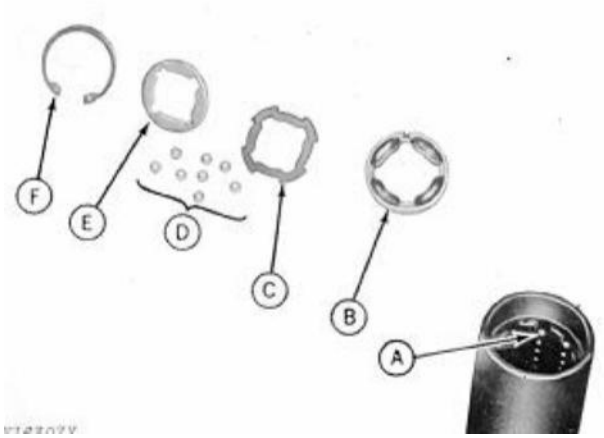


E36450 -UN-28APR92

EX,1243,2020,L -19-23JUN92

11. Assemble rear tube and yoke:

- Holding rear section in a vertical position, place 152 ball bearings (A) in grooves, 38 balls in each groove.
- Place a liberal amount of grease around top of grooves and place remaining 8 ball bearings (D) in top grooves.
- Install return cap (B) being very careful to align the notch in the return cap with the small pin in the tube.
- Install rubber seal (C).
- Install washer (E) and align tabs at 22° alignment (arrowed) with yoke ears. Sharp tabs should now grip lug on the return cap (B).

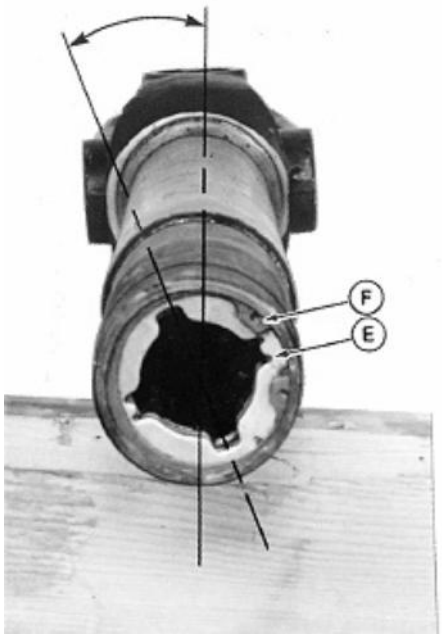


E16307Y -UN-14NOV91

IMPORTANT: Make sure grooves are phased properly to insure smooth hookup rotation.

- Secure with snap ring (F).
- Lubricate telescoping components. Pack ball bearings and shaft grooves with grease.

A—Ball Bearings (152 used)
B—Return Cap
C—Rubber Seal
D—Ball Bearings (8 used)
E—Steel Washer
F—Snap Ring



E16714 -UN-14NOV91

EX,1243,2020,M -19-23JUN92

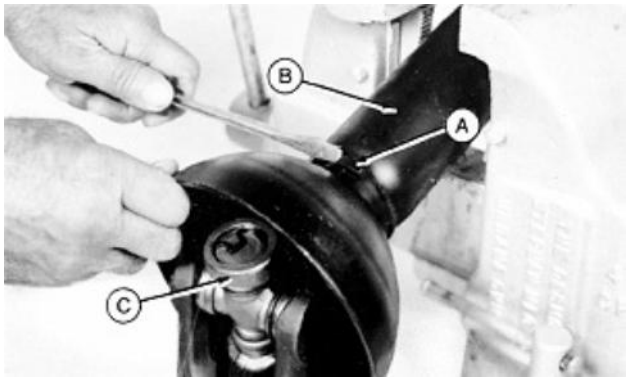
12. Apply grease to nylon bearing grooves of yoke.

13. Install yoke and shaft assembly (C) in shield (B).

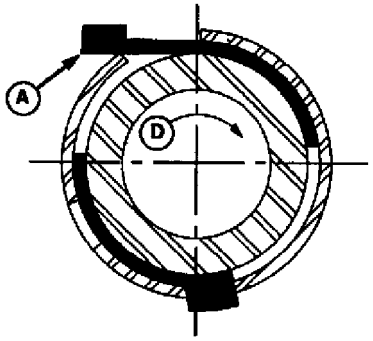
14. Install nylon bearings (A) in the same direction as PTO hookup shaft rotation (D).

Repeat steps 12—14 for other section of PTO hookup.

A—Nylon Locking Bearing
B—Hookup Shield
C—Yoke and Shaft Assembly
D—Direction of Shaft Rotation



E18755 -UN-12JUN89



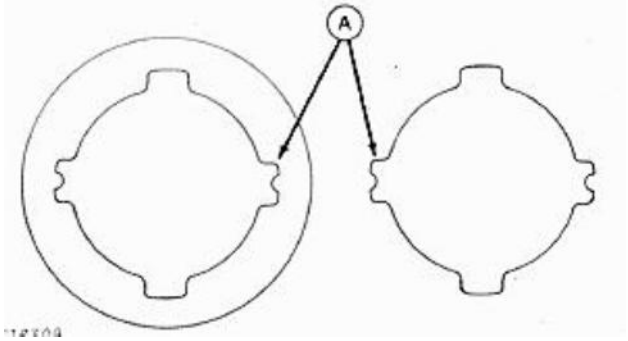
E36451AE -UN-28APR92

EX,1243,2020,N -19-23JUN92

15. Align tabs (A) of tube with grooves in shaft and assemble PTO hookup halves.

IMPORTANT: Tabs (A) must align with mating half and join without force. Inner yoke of hookup shaft MUST be in line with each other.

If the yokes are not in alignment, separate PTO shaft to remove the snap ring and rotate washer until alignment is correct.



E16309 -UN-14NOV91

EX,1243,2020,O -19-23JUN92

INSPECT AND REPAIR GROBE SPLINE PTO SHAFT AND TUBE

NOTE: Grobe spline type PTO hookups, cat. 5, are used on 348 and 468 (S.N. 915001—) balers.

1. Pull front and rear sections of PTO hookup apart.

2. Put hookup section in a vise. Be careful not to damage the instruction decals and tubular shields.

3. Insert a screwdriver through the access hole of shield (B) and push inward to remove retaining ring (A) from groove of shield.

4. Remove yoke and shaft from PTO shield.

5. Repeat steps 2—4 for other section of PTO hookup.

E36119 -UN-05NOV91

EX,1243,2020,P -19-23JUN92

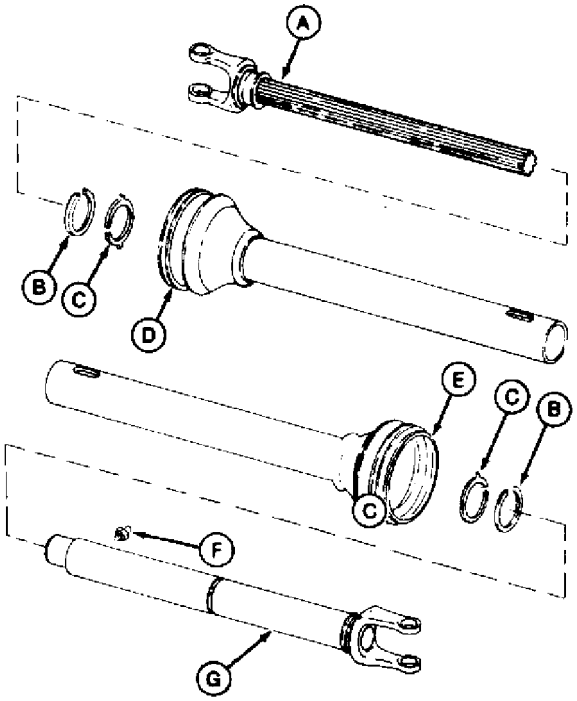
6. Inspect PTO hookup tube and shaft:

- Clean all parts thoroughly.
- Check the yoke tube (G) and yoke shaft (A) for straightness. Replace if necessary.
- Check the nylon bearings (C) for wear. Check for broken or rusted retaining rings (B). Replace if necessary.
- Inspect the bearing grooves in the yoke for:

  Excessive wear
  Small indentations

- Inspect shields (D and E) for dents, worn spots, snags, cracks or missing parts. Replace if necessary.

A—Front Shaft and Yoke
B—Retaining Ring
C—Nylon Bearing
D—Front Hookup Shield
E—Rear Hookup Shield
F—Lubrication Fitting
G—Rear Tube and Yoke



E36455 -UN-28APR92

EX,1243,2020,Q -19-23JUN92

7. Apply grease to nylon bearing grooves of yoke and to splined shaft.

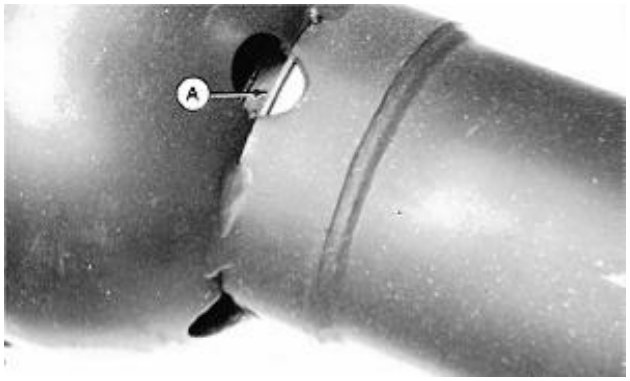
8. Install retaining ring (A) and nylon bearing on yoke and shaft assembly. Be sure retaining ring is towards yoke, then the bearing in the groove.

9. Install yoke and shaft assembly in shield (B).

10. Use a screwdriver to put retaining ring (A) into groove of shield. Use holes in the bell of the shield to access the retaining ring.

Repeat steps 7—10 for other section of PTO hookup.

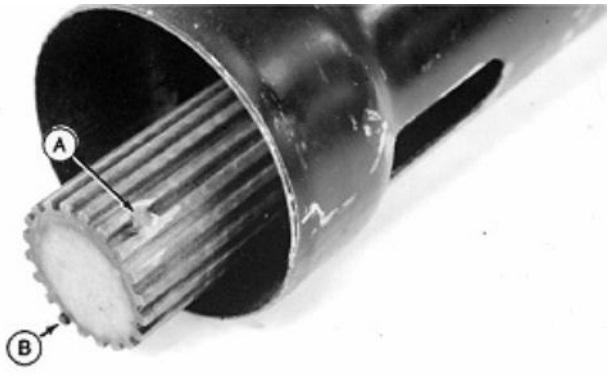
-UN-05NOV91
E36119



-UN-17JAN92
E36388

EX,1243,2020,R -19-23JUN92

-UN-05NOV91
E36123



-UN-05NOV91
E36124

IMPORTANT: Shaft and tube must be put together so ears of yokes are aligned to provide smooth hookup operation.

A—Weld
B—Splined Shaft
C—Missing Spline
D—Tube

11. Align weld (A) on splined shaft (B) with missing spline (C) in tube (D). Slide the hookup sections together.

12. Sections must telescope easily. Shields must rotate freely when hookup shaft is held.

EX,1243,2020,S -19-23JUN92

REPLACE PTO HOOKUP U-JOINTS

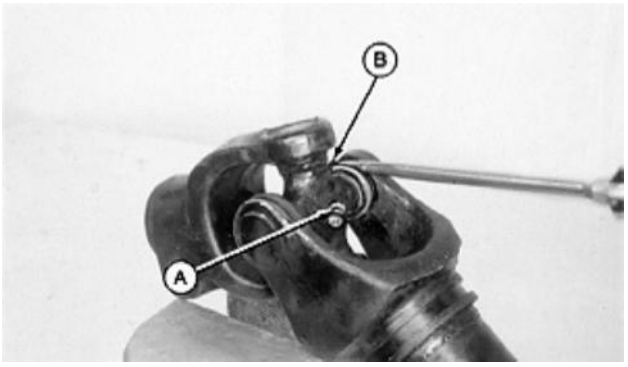
1. Remove PTO hookup shields. (See procedure in Section 20, Group 20.)

NOTE: Cat. 5 hookup is shown.

If snap rings stick, loosen by tapping lightly on ends of bearing caps with brass rod or soft-faced hammer.

2. Remove four snap rings (B).

3. Remove lubrication fitting (A) if replacement is necessary.



EX,1243,2025,A -19-23JUN92

4. Position joint in an open vise with each ear of one yoke supported by a vise jaw.

5. Hit the top ear of the unsupported yoke. This will push the top bearing cap partially out.

EX,1243,2025,B -19-23JUN92

6. Put loosened bearing cap in vise and hit yoke to remove cap.

7. Repeat steps 4—6 to remove bearing cap directly opposite the cap just removed. Yoke may now be removed.

EX,1243,2025,C -19-23JUN92

8. To remove remaining two bearing caps, support cross as shown making certain that vise jaws are covered with brass protectors. By striking yoke ear the remaining caps can be removed by repeating steps 5—7.

E19271 -UN-15JUN89

EX,1243,2025,D -19-23JUN92

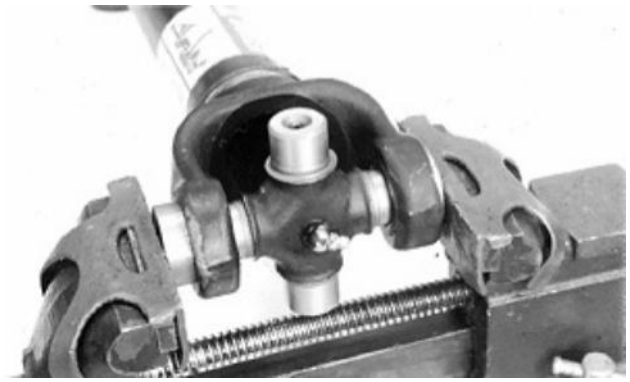
9. To assemble U-joint, put one bearing cap in yoke and make sure cap is started squarely in bore of yoke.

10. Put cross in yoke and bearing cap.

11. Start another bearing cap in opposite side of yoke.

12. Put yoke and cross assembly in a vise and push caps into yoke until caps are flush with yoke. Make sure cross fits properly into caps.

13. Use a brass drift or socket with a diameter slightly smaller than bearing cap to push cap into yoke until snap ring groove is fully exposed.



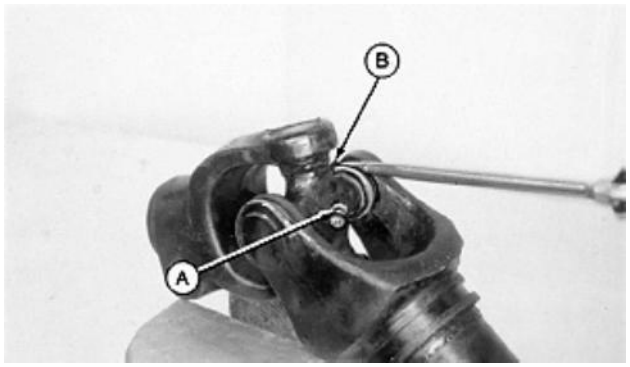
E36138 -UN-05NOV91

EX,1243,2025,E -19-23JUN92

14. Install snap rings (B).

15. Repeat steps 9—14 for the other half of the U-joint cross.

16. Install lubrication fitting (A) if removed. Position fitting so it is accessible for a grease gun.



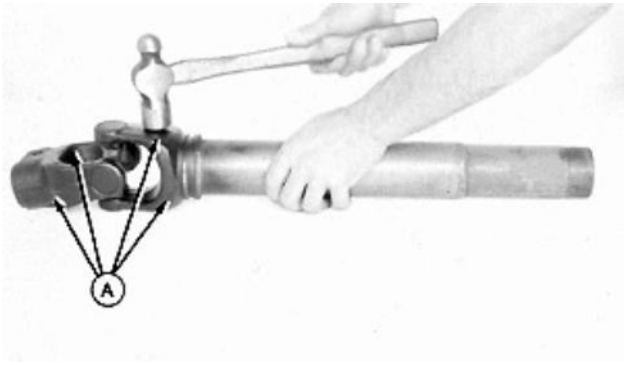
E19268 -UN-15JUN89

EX,1243,2025,F -19-23JUN92

17. If U-joint is stiff and does not move freely after assembling, strike each ear of yoke on radius (A) to relieve binding.

18. Install PTO hookup shields. (See procedure in Section 20, Group 20.)

19. Apply grease to lubrication fitting.



E18749 -UN-12JUN89

EX,1243,2025,G -19-23JUN92

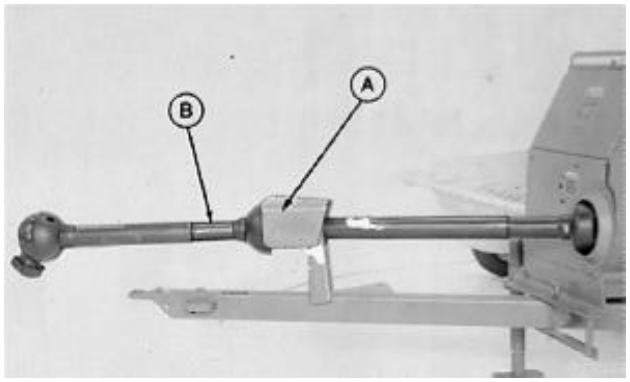
REMOVE POWERSHAFT

NOTE: Before removing, check cross and bearing assembly.

1. Turn powershaft back and forth. Replace bearing assembly if any free play can be felt or seen.

2. Move tongue to transport position.

3. Remove drive shield (A) and PTO hookup (B).



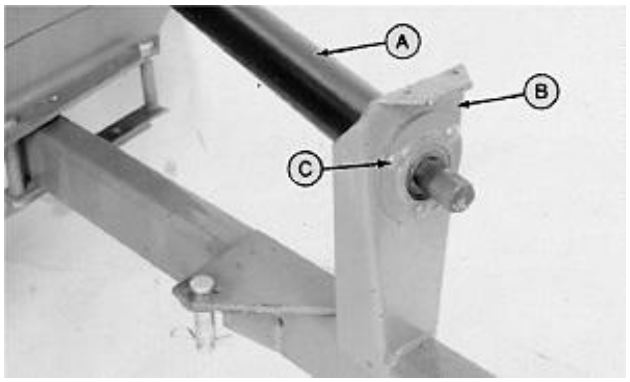
E01,2025,BO -19-23JUN92

4. Slide powershaft (A) out of support pedestal (B).

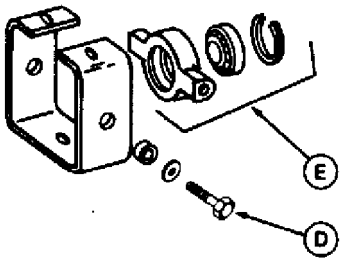
5. For 7- and 8-series balers, remove three nuts and carriage bolts (C), flangettes with spacer, and bearing from bearing support pedestal (B).

For 6-series balers, remove two cap screws (D), washers and spacers to remove housing-ball bearing-snap ring assembly (E).

A—Powershaft
B—Support Pedestal
C—Carriage Bolt (3 used)
D—Cap Screw (2 used)
E—Housing-Ball Bearing-Snap Ring Assembly



7- and 8-Series Balers



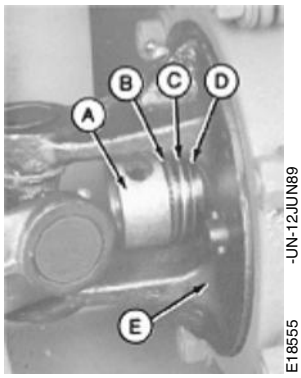
6-Series Balers

EX,1243,2030,A -19-23JUN92

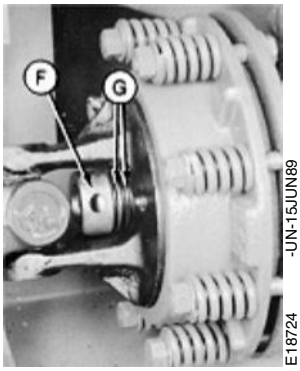
6. 337-347-348-466-467-468: Remove 1/2 x 1-3/4 in. spring pin, collar (A), thrust washer (B), thrust bearing (C), thrust washers (D), and powershaft with yoke (E).

327-328-336-338-346: Remove 3/8 x 1-5/8 in. spring pin, collar (F), washer (G), and powershaft with yoke.

A—Collar
B—Thrust Washer
C—Thrust Bearing
D—Thrust Washer
E—Powershaft with Yoke
F—Collar
G—Washers (As Required)



E18555 -UN-12JUN89



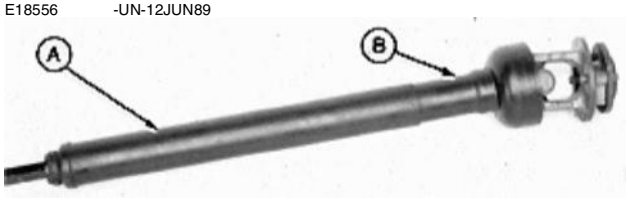
E18724 -UN-15JUN89

EX,1243,2030,B -19-23JUN92

DISASSEMBLE POWERSHAFT

1. Slide front section (A) out of rear section (B).

E18556 -UN-12JUN89



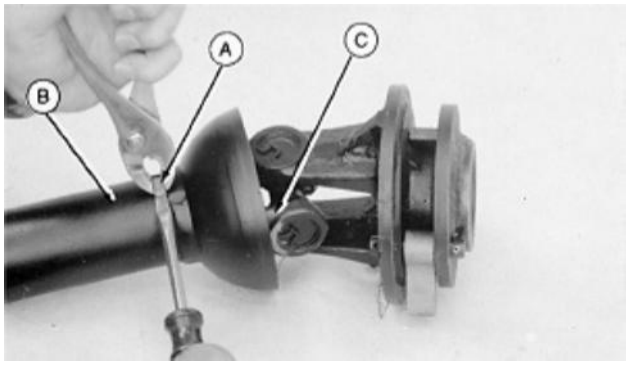
E01,2025,D -19-24JUN81

2. Remove nylon bearings (A) and slide shield (B) off shaft.

E18313 -UN-12JUN89

E01,2025,E -19-24JUN81

3. Remove nylon bearing (A) from shield (B) and remove shield from yoke-shaft assembly (C).



E18314 -UN-12JUN89

E01,2025,F -19-24JUN81

4. Remove nylon bearing (A) from yoke shaft.

E18315 -UN-12JUN89

E01,2025,G -19-24JUN81

NOTE: Record location of grease fitting before removing.

5. Remove snap rings (A) from spider and bearing assembly.

On Category V powerlines, remove snap rings from inside.

E18316 -UN-12JUN89

E01,2025,H -19-24JUN81

6. Press bearing cap partially out of yoke. Grip protruding bearing cap in vise and press yoke off.

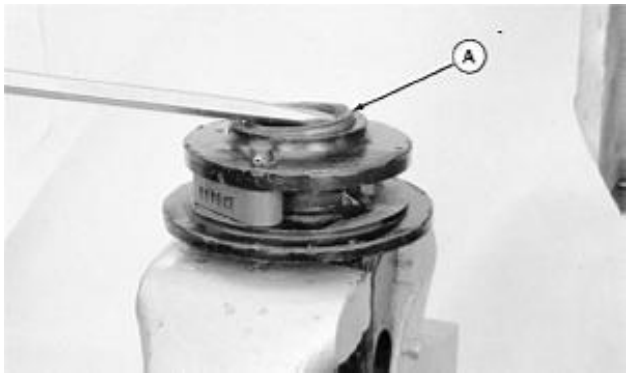
7. Use same procedure to remove bearing caps on opposite side.

8. To remove remaining bearings, support cross and follow same procedure as above.

E18557 -UN-12JUN89

EX,1243,2030,C -19-23JUN92

9. Remove seal (A) from yoke assembly.



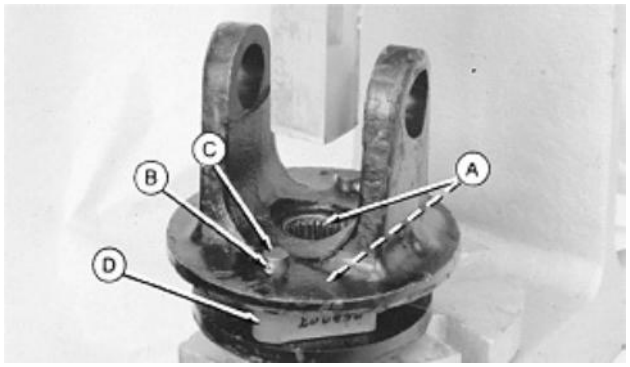
E01,2025,J -19-24JUN81

10. 337-347-348-466-467-468: Press out two sets of needle bearings (A).

327-328-336-338-346: Press out bushing.

11. Remove spring pin (B), drilled pin (C), and clutch pawl (D) on each side.

A—Needle Bearings
B—Spring Pin
C—Drilled Pin
D—Clutch Pawl

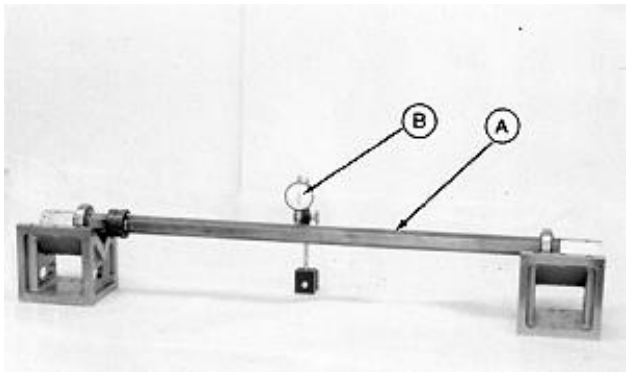


EX,1243,2030,D -19-23JUN92

INSPECT POWERSHAFT

1. Check powershaft (A) for straightness.

2. Position dial indicator (B) toward center of shaft. Total indicator reading must not exceed 1.52 mm (0.060-in.).



E01,2025,CC -19-09APR87

3. Position dial indicator at end of shaft to which PTO hookup is attached. TIR must not exceed (0.38 mm) 0.015 inch.

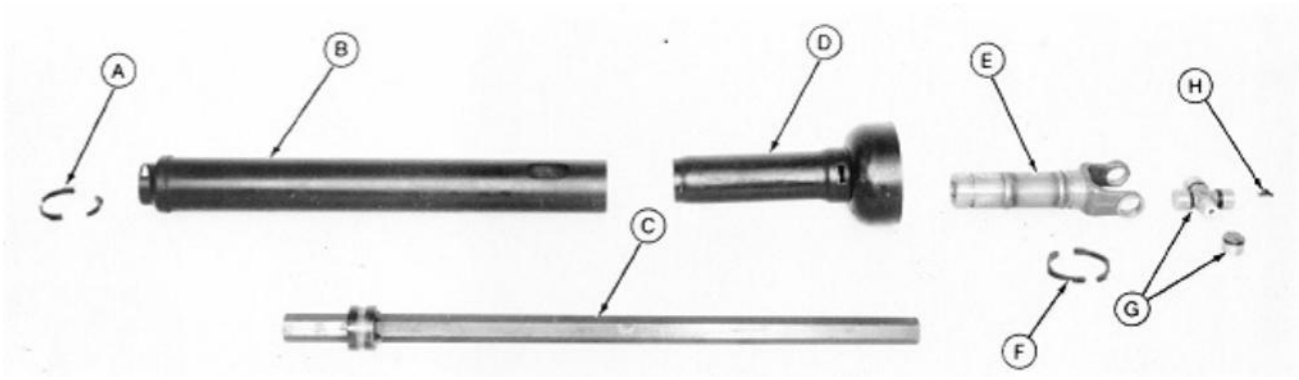
4. If TIR exceeds recommended tolerance, straighten or replace shaft.

5. Replace nylon bearings if worn or cracked.

6. Replace thrust bearing if worn.

E01,2025,M -19-24JUN81

ASSEMBLE POWERSHAFT



A—Bearings
B—Front Shield
C—Powershaft
D—Rear Shield
E—Yoke and Tube
F—Bearings (Half)
G—Cross and Bearing Assembly
H—Grease Fitting

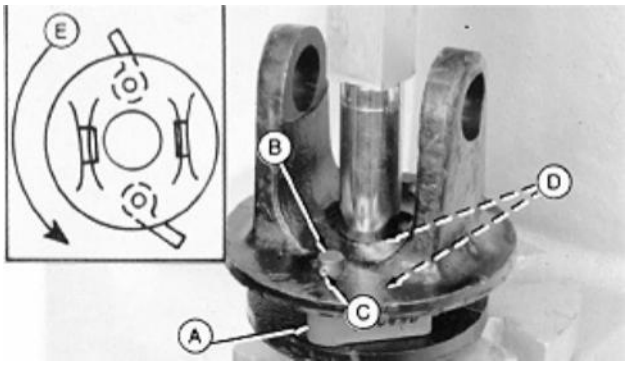
E01,2025,BS -19-11MAR87

NOTE: Install clutch pawls in position as shown.

1. Install clutch pawls (A) using drilled pin (B) and secure with spring pins (C).

2. 337-347-348-466-467-468: Press needle bearings (D) until flush with each end.

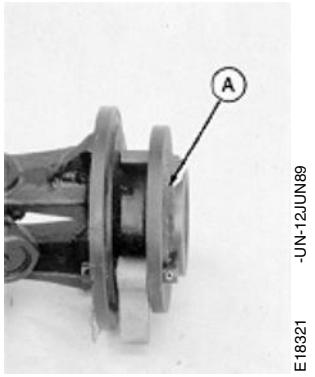
327-328-336-338-346: Lubricate bushing and press flush.



A—Clutch Pawls
B—Drilled Pin
C—Spring Pin
D—Needle Bearings
E—Rotation of Powershaft When Operating Baler

EX,1243,2030,E -19-23JUN92

3. Install seal (A) with lip inward until flush.

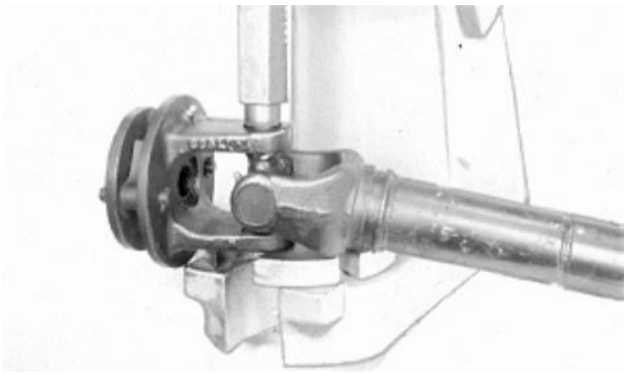


E01,2025,P -19-24JUN81

4. Be sure lubrication fitting is in correct location.

IMPORTANT: Cross should be able to slide in and out of bearing cap while being installed.

5. Place cross without bearings in joint. Position bearing on opposite side of cross and press bearing into position.



E18559 -UN-12JUN89

E01,2025,BU -19-09APR87

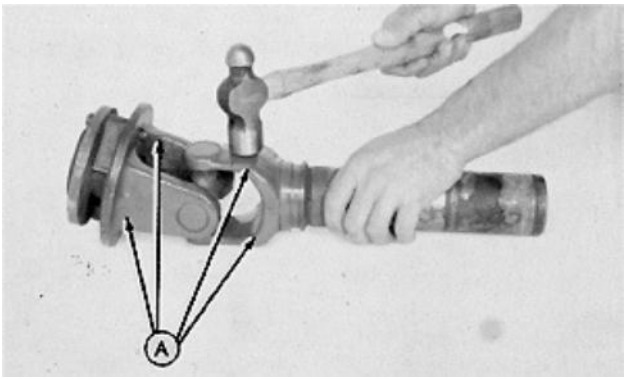
6. Install snap ring (A).

7. Install remaining bearings and snap rings and lubricate.

E18316 -UN-12JUN89

E01,2025,CD -19-09APR87

8. If joint is stiff and does not flex freely after assembling, strike each ear of yoke on radius (A) to relieve yoke pressure.



E29188 -UN-07DEC89

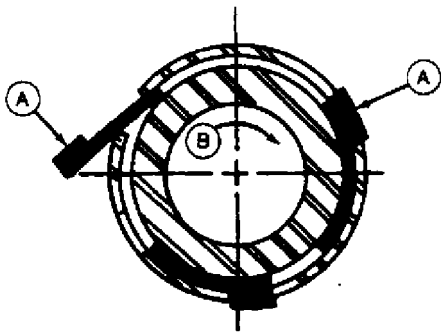
E01,2025,CE -19-09APR87

9. Install nylon bearing (A) in groove on yoke shaft.

E18315 -UN-12JUN89

E01,2025,T -19-29JUN81

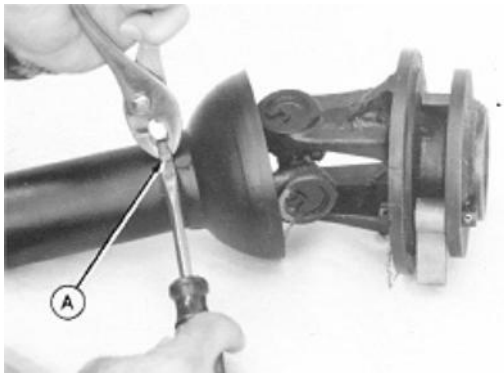
10. Install shield. Install locking bearings (A) in direction of shaft rotation (B).



E18303 -UN-13APR89

E01,2025,CF -19-09APR87

11. Position shield on yoke shaft assembly; secure with locking bearings (A).



E18760 -UN-12JUN89

E01,2025,V -19-29JUN81

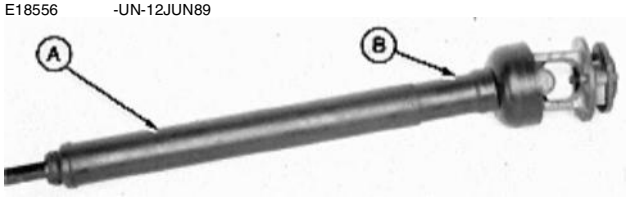
12. Position shield on powershaft; secure with three locking bearings (A).

E18759 -UN-12JUN89

E01,2025,W -19-29JUN81

13. Slide front of powershaft (A) together with rear of powershaft (B).

E18556 -UN-12JUN89

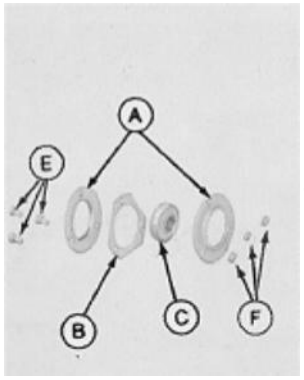


E01,2025,X -19-29JUN81

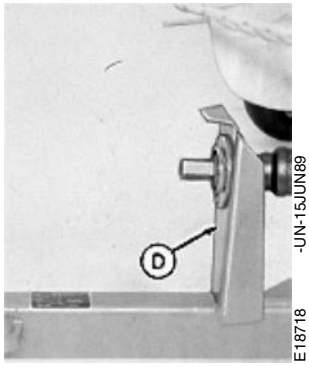
INSTALL POWERSHAFT

1. For 7- and 8-series balers, install flangettes (A), spacer (B), and bearing (C) on support pedestal (D) using three carriage bolts (E) and nuts (F). Do not tighten.

For 6-series balers, install housing-ball bearing-snap ring assembly (G), spacers, washers and cap screws (H). Install as many spacers and washers as necessary. Do not tighten cap screws.



E29045 -UN-07DEC89



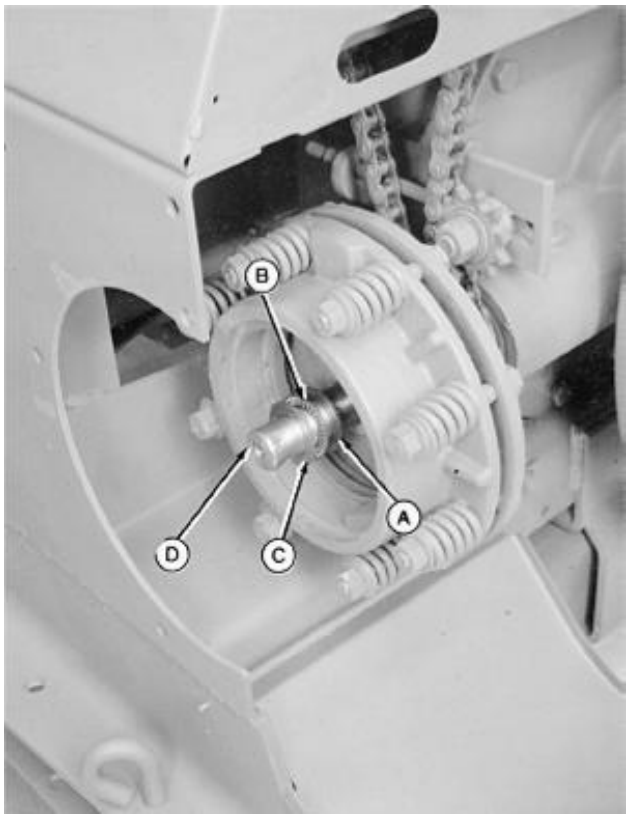
E18718 -UN-15JUN89

A—Flangettes
B—Spacer (327-337-347-467)
C—Bearing
D—Support Pedestal
E—Carriage Bolts
F—Nuts
G—Housing-Ball Bearing-Snap Ring Assembly
H—Cap Screw (2 used)

EX,1243,2030,F -19-23JUN92

2. 337-347-348-466-467-468: Position thrust washer (A), needle bearing (B), and thrust washer (C) on gear case input shaft (D).

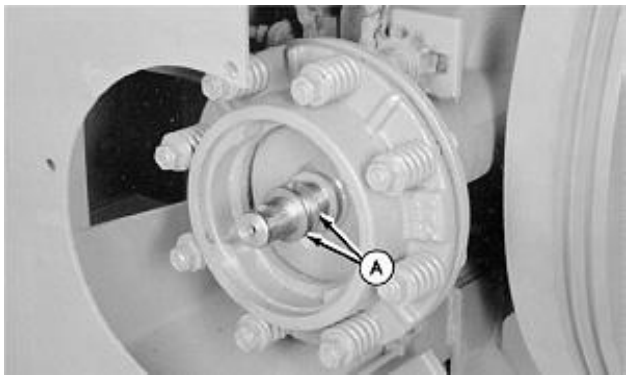
A—Thrust Washer
B—Needle Bearing
C—Thrust Washer
D—Input Shaft



E18323 -UN-12JUN89

EX,1243,2030,G -19-23JUN92

327-328-336-338-346: Position thrust washers (A) on gear case input shaft.



E18324 -UN-12JUN89

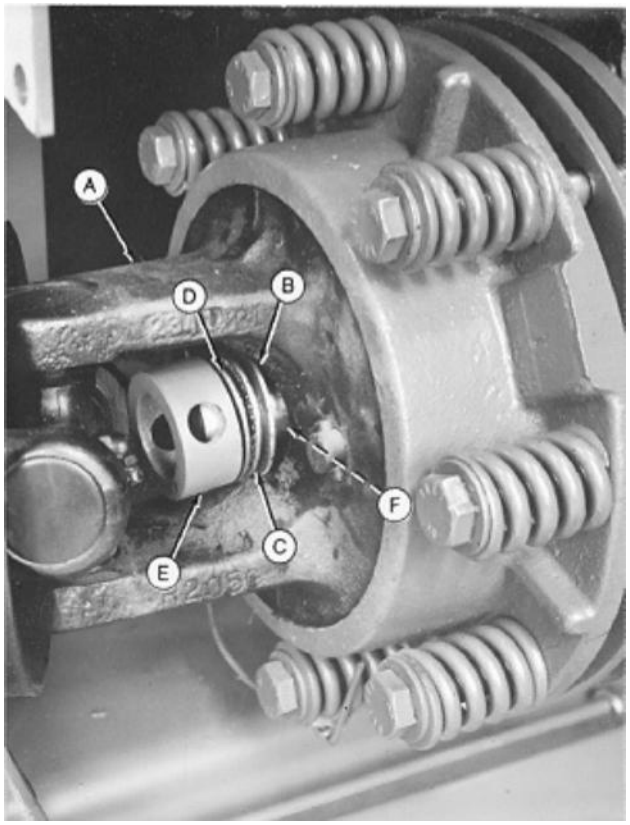
EX,1243,2025,H -19-23JUN92

NOTE: When installing yoke in slip clutch, it may be necessary to loosen springs so slip clutch hub may be shifted to obtain alignment for insertion of yoke.

3. 337-347-348-466-467-468: Position yoke (A), washers (F), thrust washer (B), thrust bearing (C), thrust washer (D), and retaining collar (E) on gear case input shaft.

Put a punch in hole of retaining collar and input shaft. Check slip clutch end play. (See procedure in Section 20, Group 35.)

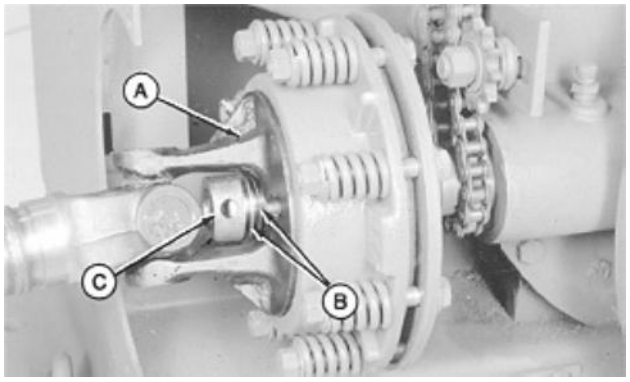
A—Yoke
B—Thrust Washer
C—Thrust Bearing
D—Thrust Washer
E—Retaining Collar
F—Washers (as required)



EX,1243,2030,I -19-23JUN92

327-328-336-338-346: Position yoke (A), thrust washer (as required) (B) and retaining collar (C) on gear case input shaft.

Put a punch in hole of retaining collar and input shaft. Check slip clutch end play. (See procedure in Section 20, Group 35.)



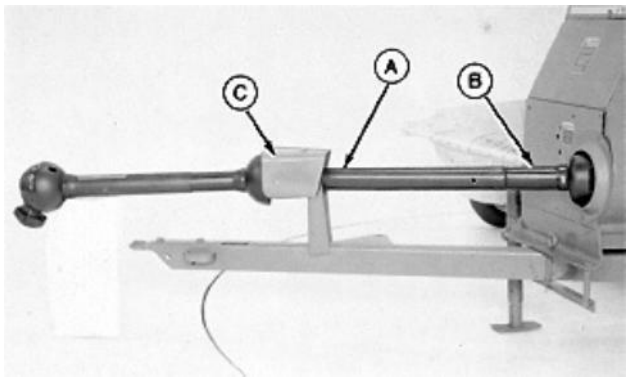
EX,1243,2030,J -19-23JUN92

4. Move tongue to transport position.

5. Slide front of powershaft (A) on rear of powershaft (B), and position powershaft through bearing (C).

6. Tighten flangette nuts or ball bearing housing cap screws.

7. Lubricate fittings.



EX,1243,2030,K -19-23JUN92

SERVICE EQUIPMENT AND TOOLS

NOTE: Order tools from your SERVICE-GARD™ Catalog. Some tools may be available from a local supplier.

Name	Use
Spring Gauge 0—45 N (0—100 lb)	Check slip torque of slip clutch.

EX,1243,2035,A -19-23JUN92

FABRICATED TOOLS

Item	Use
3.048 m (10 ft) Pipe (Diameter large enough to fit over socket wrench.	Lever to check clutch slippage.

EX,1243,2035,B -19-23JUN92

SPECIFICATIONS

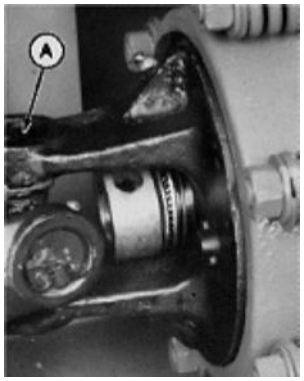
Item	Measurement	Specification
Lining Wear	Thickness	2.03 mm (0.08 in.) minimum
Clutch	End Play	0.635 mm (0.025 in.)
Clutch Spring:		
327-328-336 Cat. 3	Initial Adjusted Length	41.4 ± 0.8 mm (1-21/32 ± 1/32 in.)
337-338-346-347-348 Cat. 4	Initial Adjusted Length	39.9 ± 0.8 mm (1-9/16 ± 1/32 in.)
347-348-466-467-468 Cat. 5	Initial Adjusted Length	43.7 ± 0.8 mm (1-23/32 ± 1/32 in.)
Clutch Slippage:		
327-328-366	Torque	543—678 N·m (400—500 lb-ft)
337-338-346-347-348 Cat. 4	Torque	678—814 N·m (500—600 lb-ft)
347-348-466-467-468 Cat. 5	Torque	949—1085 N·m (700—800 lb-ft)

EX,1243,2035,C -19-23JUN92

REMOVE SLIP CLUTCH

1. Remove powershaft (A). (See Section 20 Group 25.)

2. Remove washers, needle bearings, and slip clutch (B) from gear case input shaft.



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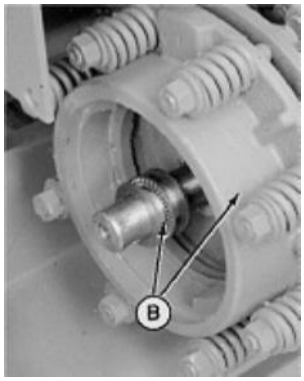
E29046



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E29047

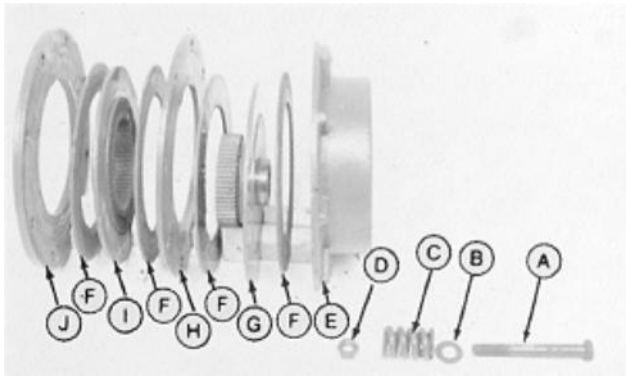
E01,2030,U -19-12MAR87

DISASSEMBLE SLIP CLUTCH

NOTE: 347, 348, 466, 467, and 468 Category 5 Powerline Shown.

Refer to exploded view to disassemble clutch and identify category used.

A—Cap Screw (8 used)
B—Washer (8 used)
C—Spring (8 used)
D—Nut (8 used)
E—Clutch
F—Lining (4 used)
G—Hub
H—Plate
I—Hub
J—Plate

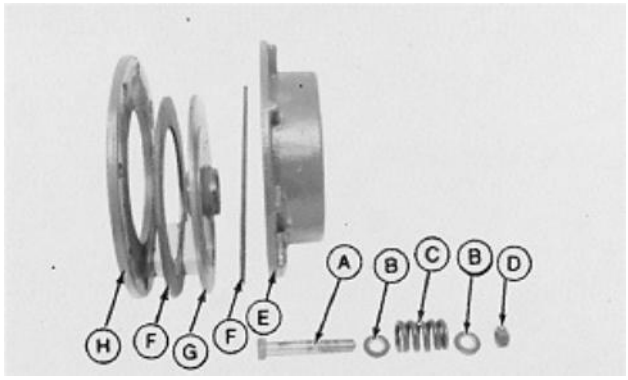


-UN-07DEC89
E29048

EX,1243,2035,D -19-23JUN92

NOTE: 327, 328, 336, 337, 338, 346, 347, and 348 Category 3 and 4 Powerline Shown.

A—Cap Screw (8 used)
B—Washer (8 used)
C—Spring (8 used)
D—Nut (8 used)
E—Clutch
F—Lining (4 used)
G—Hub
H—Plate



-UN-07DEC89
E29049

EX,1243,2035,E -19-23JUN92

INSPECT SLIP CLUTCH

1. Replace parts if cracked or heat checking is apparent. Replace lining if warped, glazed, or worn down to 2.03 mm (0.08 in.) or less.

2. Check linings for shiny or glazed areas.

3. Check inside of clutch housing for wear.

4. Clean grease from linings.

EX,1243,2035,F -19-23JUN92

ASSEMBLE SLIP CLUTCH

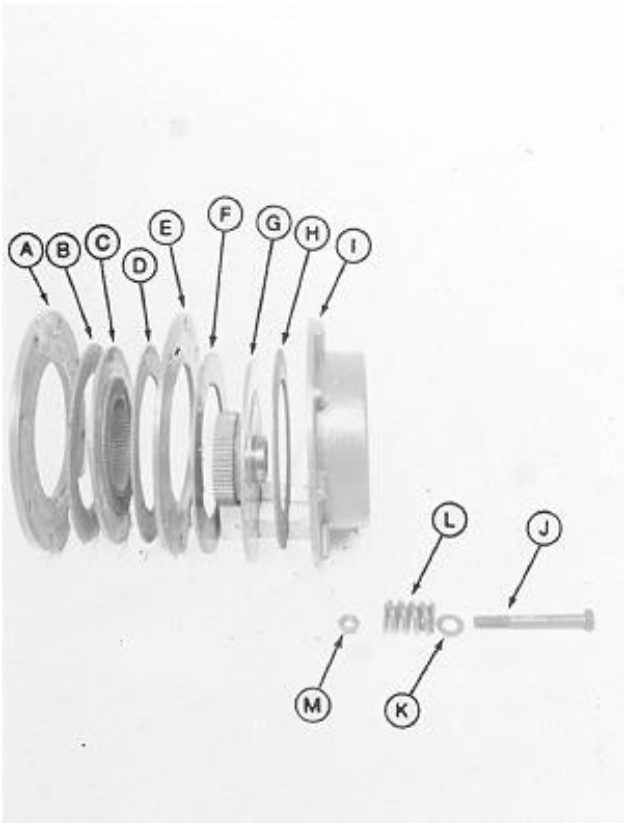
On 347, 348, 466, 467 and 468 Balers with Category 5 powerline:

IMPORTANT: For proper clutch operation, install outer hub (C) with the long hub side towards rear pressure plate (A).

1. Assemble pressure plate (A), clutch lining (B), outer hub (C), clutch lining (D), pressure plate (E), clutch lining (F), inner hub (G), clutch lining (H) and overrunning clutch hub (I).

2. Install eight cap screws (J), washers (K), springs (L), and nuts.

A—Pressure Plate
B—Clutch Lining
C—Outer Hub
D—Clutch Lining
E—Pressure Plate
F—Clutch Lining
G—Inner Hub
H—Clutch Lining
I—Overrunning Clutch Hub
J—Cap Screws
K—Washers
L—Springs
M—Nuts



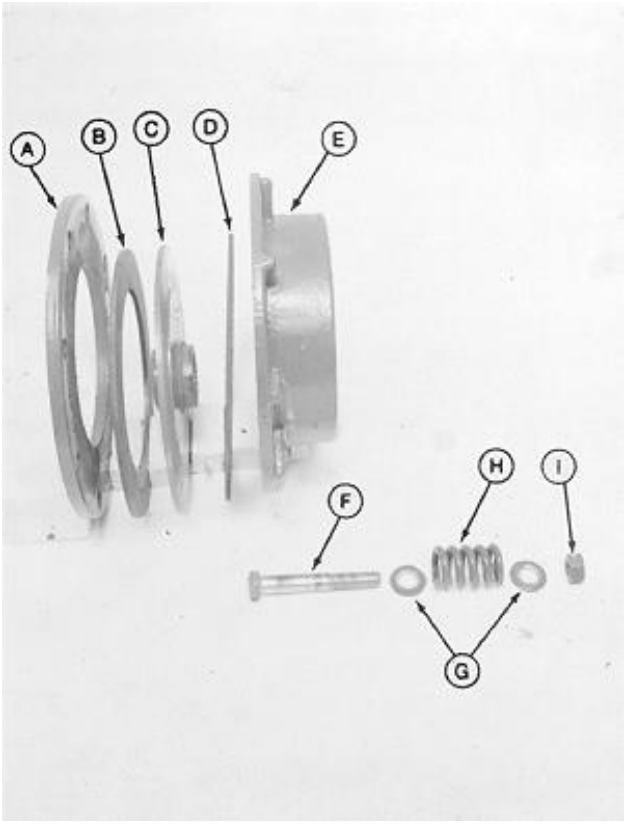
EX,1243,2035,G -19-23JUN92

On 327, 328, 336, 337, 338, 346, 347, and 348 Balers:

1. Assemble pressure plate (A), clutch lining (B), clutch hub (C), clutch lining (D), and overrunning clutch hub (E).

2. Install eight cap screws (F), washers (G), springs (H), and nuts.

A—Pressure Plate
B—Clutch Lining
C—Clutch Hub
D—Clutch Lining
E—Overrunning Clutch Hub
F—Cap Screws
G—Washers
H—Springs
I—Nuts



EX,1243,2035,H -19-23JUN92

INSTALL SLIP CLUTCH—347, 348, 466, 467 AND 468 BALERS WITH CATEGORY 5 POWERLINE

IMPORTANT: When properly installed, slip clutch should have 0.635 mm (0.025 in.) end play. Check clearance between collar and thrust washer.

1. Slide slip clutch (A) on gear case input shaft.

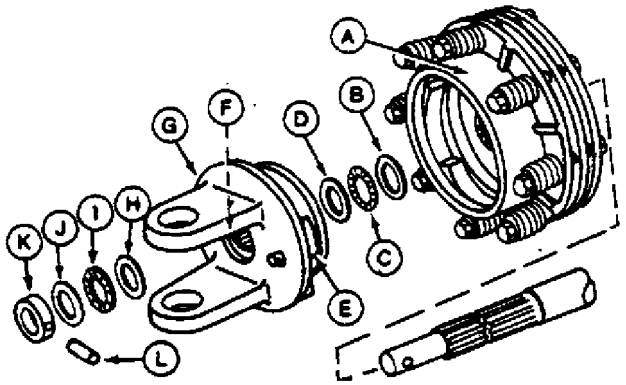
2. Place one 2.30 mm (0.090 in.) thrust washer (B), thrust bearing (C), another thrust washer (D) on shaft.

IMPORTANT: Slip clutch pawl (E) must be pointed up and pawl (F) must point down. If not, install pawls properly.

3. Slide powershaft yoke (G) onto shaft.

4. Place thrust washer (H), thrust bearing (I), and thrust washer (J) on shaft.

5. Place collar (K) on shaft and secure with spring pin (L).



E18838 —UN—10APR89

A—Slip Clutch
B—Thrust Washer
C—Thrust Bearing
D—Thrust Washer
E—Clutch Pawl
F—Clutch Pawl
G—Yoke
H—Thrust Washer
I—Thrust Bearing
J—Thrust Washer
K—Collar
L—Spring Pin

EX,1243,2035,I -19-23JUN92

ADJUST SLIP CLUTCH END PLAY—347, 348, 466, 467 AND 468 BALERS WITH CATEGORY 5 POWERLINE

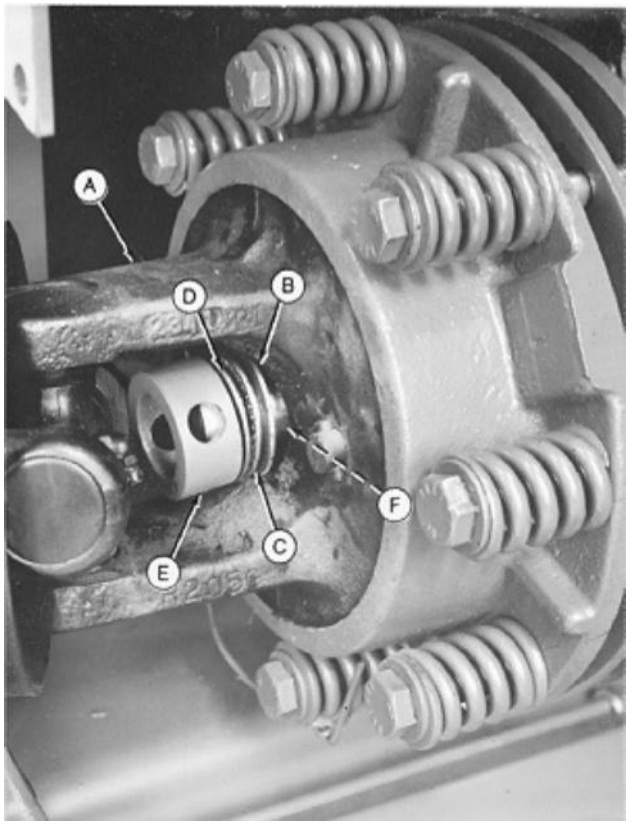
IMPORTANT: When properly adjusted, slip clutch should have 0.635 mm (0.025 in.) end play.

1. Pull slip clutch towards yoke to check for 0.635 mm (0.025 in.) clearance between collar (E) and thrust washer (D).

2. Remove collar, and add thrust washer (F) (as needed) to input shaft.

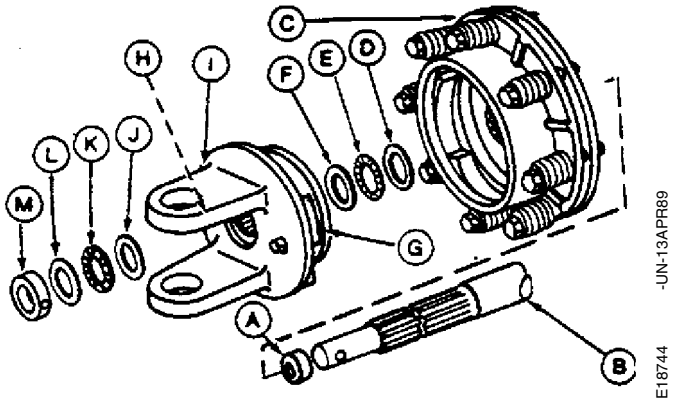
3. Install collar. Secure with spring pin.

A—Yoke
B—Thrust Washer
C—Thrust Bearing
D—Thrust Washer
E—Retaining Collar
F—Thrust Washer (as needed)



EX,1243,2035,J -19-23JUN92

INSTALL SLIP CLUTCH—337, 347 AND 348 BALERS WITH CATEGORY 4 POWERLINE



A—Spacer
B—Input Shaft
C—Slip Clutch
D—Thrust Washer
E—Thrust Bearing
F—Thrust Washer
G—Clutch Pawl
H—Clutch Pawl
I—Yoke
J—Thrust Washer
K—Thrust Bearing
L—Thrust Washer
M—Collar

IMPORTANT: When correctly installed, slip clutch should have 0.635 mm (0.025 in.) end play. Check clearance between spacer and slip clutch.

1. Assemble spacer (A) on input shaft (B) with counterbore over snap ring.

2. Install slip clutch (C) on shaft.

3. Add thrust washer (D), thrust bearing (E), and thrust washer (F) on shaft.

IMPORTANT: Slip clutch pawl (G) must be pointed up and pawl (H) must point down. If not, install pawls properly.

4. Assemble yoke (I), thrust washer (J), thrust bearing (K), thrust washer (L), and collar (M) on shaft. Put a punch in hole of collar to locate yoke. Pull slip clutch against yoke. Check for 0.635 mm (0.025 in.) clearance between slip clutch and spacer.

5. Remove collar and add washers as necessary. Install collar and spring pin.

EX,1243,2035,K -19-23JUN92

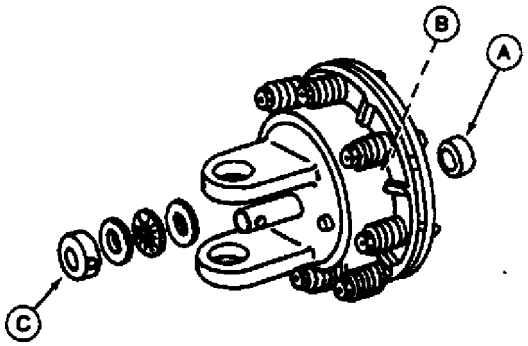
ADJUST SLIP CLUTCH END PLAY—337, 347 AND 348 BALERS, CATEGORY 4 POWERLINE

IMPORTANT: When correctly adjusted, slip clutch should have 0.635 mm (0.025 in.) end play.

1. Pull slip clutch towards yoke to check for 0.635 mm (0.025 in.) clearance between spacer (A) and slip clutch hub (B).

2. Remove retainer collar (C), add washers (as necessary) to input shaft.

3. Install retainer collar and secure with spring pin.



E19254 -UN-13APR89

EX,1243,2035,L -19-23JUN92

INSTALL SLIP CLUTCH—327, 328, 336, 338 AND 346 BALERS

IMPORTANT: When correctly installed, slip clutch should have 0.635 mm (0.025 in.) end play. Check clearance between spacer and slip clutch.

1. Slide spacer (A) on shaft with counterbore over snap ring on shaft.

2. Slide slip clutch (B) on gear case input shaft. Install thrust washers (C) on shaft.

IMPORTANT: Slip clutch pawl (D) must be pointed up and pawl (E) must point down. If not, install pawls properly.

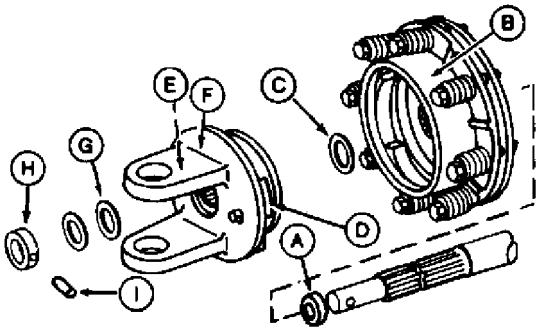
3. Slide yoke (F) and washers (G) onto shaft.

4. Install collar (H) on shaft and put a punch in hole of retaining collar and input shaft.

5. Pull slip clutch against yoke and check for 0.635 mm (0.025 in.) clearance between slip clutch and spacer.

6. Remove collar, washers, and yoke to add or remove thrust washers as necessary to obtain clearance.

7. Install yoke, washers, collar and spring pin.



E36424 -UN-29APR92

A—Spacer
B—Slip Clutch
C—Thrust Washers (as required)
D—Clutch Pawl
E—Clutch Pawl
F—Yoke
G—Washer (2 used)
H—Collar
I—Spring Pin

EX,1243,2035,M -19-23JUN92

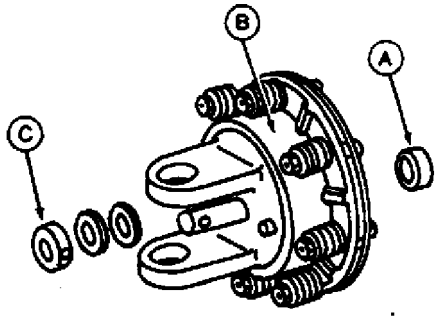
ADJUST SLIP CLUTCH END PLAY—327, 328, 336, 338 AND 346 BALERS

IMPORTANT: When correctly adjusted, slip clutch should have 0.635 mm (0.025 in.) end play.

1. Pull slip clutch towards yoke to check for 0.635 mm (0.025 in.) clearance between spacer (A) and slip clutch hub (B).

2. Remove collar (C), add washers (as necessary).

3. Replace collar and secure with spring pin.



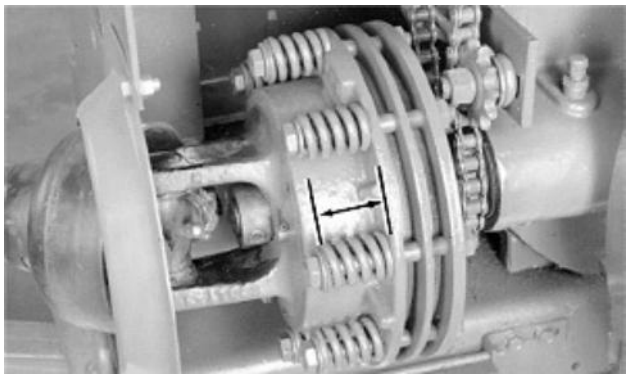
E18561 -UN-21NOV89

EX,1243,2035,N -19-23JUN92

ADJUST SLIP CLUTCH

SPRING INITIAL LENGTH

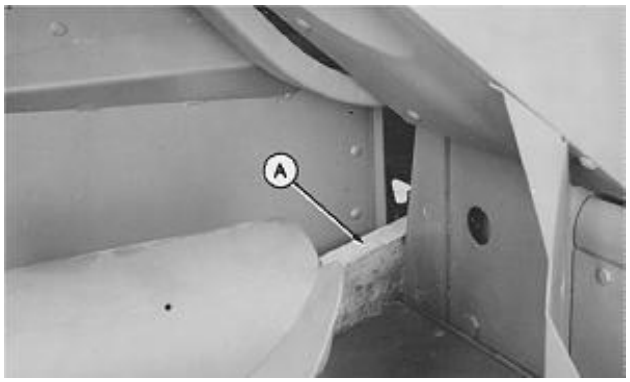
Balers	mm	(in.)
327-328-336	41.4 ± 0.8	1-21/32 ± 1/32
337-338-346-347-348 With Cat. 4 hookup	39.9 ± 0.8	1-9/16 ± 1/32
347-348-466-467-468 With Cat. 5 hookup	43.7 ± 0.8	1-23/32 ± 1/32



E18720 -UN-15JUN89

EX,1243,2035,O -19-23JUN92

1. Check clutch by blocking movement of plungerhead with block of wood (A) between knives.



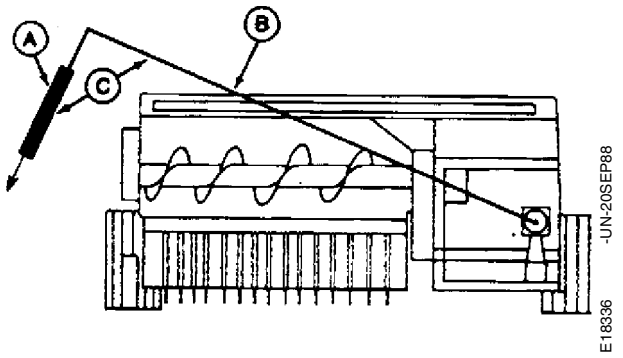
E18335 -UN-12JUN89

E01,2030,N -19-24FEB83

IMPORTANT: Check slip clutch to be certain linings are not bonded to metal plates.

NOTE: When checking slippage on baler with 3-joint powerline, it may be easier to use a socket wrench on hex powershaft. To check, remove PTO hookup and place socket wrench on front of hex powershaft and position lever (B) on socket wrench.

2. Check clutch slippage with spring gauge (A) and 3.048 m (10 ft) lever (B) attached to powershaft. Apply force at 90 ˚ angle (C) to long lever.



EX,1243,2035,P -19-23JUN92

3. See chart for force on lever to measure correct clutch slippage.

NOTE: Torque is calculated by multiplying force by length. For this procedure, the length is always 3.048 m (10 ft) and force is measured by spring gauge.

EXAMPLE: Spring gauge reading is 187 N (42 lb). 187 N (42 lb). 187 N x 3.048 m = 570 N·m (42 lb x 10 ft = 420 lb·ft).

FORCE REQUIRED FOR CLUTCH SLIPPAGE

Baler	Spring Gauge Reading Newton	(lb)	Torque N·m	(lb-ft)
327-328-336	178-222	40-50	543-678	400-500
337-338-346-347-348	222-267	50-60	678-814	500-600
347-348-466-467-468 with Cat. 5 Hookup	311-356	70-80	949-1085	700-800

Tighten or loosen all clutch spring bolts equal amounts until clutch slips in the proper range.

IMPORTANT: After correct clutch slippage is obtained, remove block of wood from between knives.

EX,1243,2035,Q -19-23JUN92

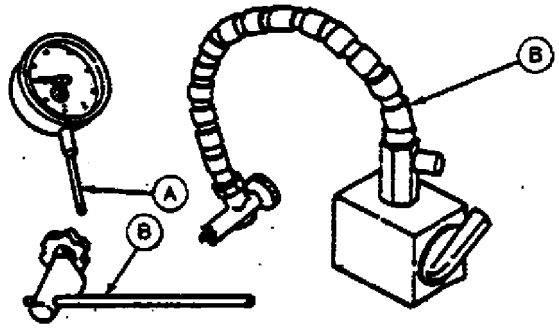
SPECIAL OR ESSENTIAL TOOLS

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or in the European Microfiche Tool Catalog (MTC).

DX,TOOLS -19-20JUL95

A—Dial Indicator D-17526CI
B—Magnetic Base D-17517CI
C—Adjustable Arm D-17525CI

Check crank arm backlash.

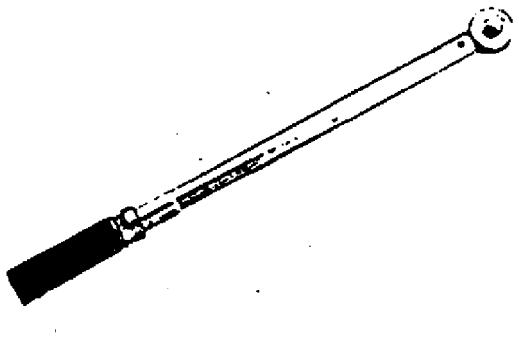


E29052 -UN-05MAY89

EX,1243,2040,A -19-23JUN92

N·m (lb-in) Torque Wrench JT05648

Check rolling torque.



E29128 -UN-05MAY89

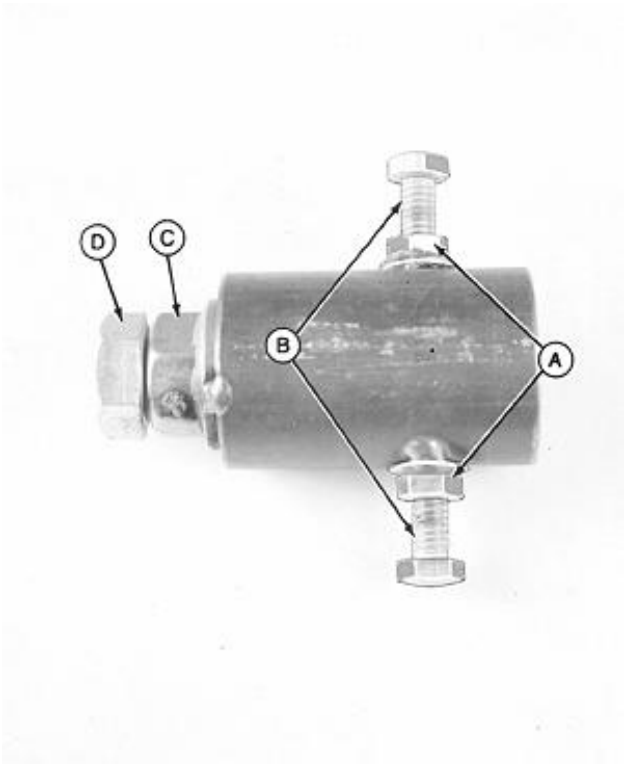
E01,2035,AK -19-12MAR87

FABRICATED TOOL

To check rolling torque, fabricate tool from steel pipe to following specifications:

Pipe Length—63.5 mm (2-1/2 in.)
Pipe Diameter—41.28 mm (1-5/8 in.)
Pipe Hole Diameter—28.58 mm (1-1/8 in.)

Drill Two—13 mm (1/2-in.) holes
A—Weld Two—1/4 in. spin-lock nuts
B—Two Cap Screws—1/4 x 1 in.
C—Weld One—5/8-in. spin-lock nut
D—One Cap Screws—5/8 x 1 in.



E18356 -UN-12JUN89

E01,2035,AL -19-23JUN92

OTHER MATERIAL

Number	Name	Use
TY15130	Form-In-Place Gasket	Seal gear case halves and cap screws.

E01,2035,AM -19-23JUN92

SPECIFICATIONS

Item	Measurement	Specification
Input Shaft	Rolling Torque	0.56—1.69 N·m (5—15 lb-in.)
Crankshaft (less flywheel shaft end cap)	Rolling Torque	0.56—1.69 N·m (5—15 lb-in.)
Bevel Gears	Backlash	0.127—0.381 mm (0.005—0.015 in.)
Flywheel Wobble	Total Indicator Runout (TIR)	1.8 mm (0.070 in.)
Gear Case	Capacity	3.79 L (1 gal)
Cap Screws-between case halves	Torque	109 N·m (80 lb-ft)
End Cap-to-Case Cap Screws	Torque	109 N·m (80 lb-ft)
Flywheel Nut	Torque	136 N·m (100 lb-ft) then next castellation
Base Case-to-Gear Case Cap Screws	Torque	217—244 N·m (160—180 lb-ft)
Plungerhead Crank to Crankshaft	Torque	362—400 N·m (274—295 lb-ft)
Flywheel Shaft	Rolling Torque	Increase crankshaft rolling torque by 2.8—8.5 N·m (25—75 lb-in.)
Input Shaft	Rolling Torque Range*	0.56—1.69 N·m (5—15 lb-in.)
Crankshaft	Rolling Torque Range*	15.1—26.2 N·m (134—232 lb-in.)
Input Shaft Bevel Gear	No. of Teeth	
	327-328-336-337-338-346	16
	347-348	18
	466-467	20
	468 (S.N. —844080)	18
	468 (S.N. 844081—)	20
Flywheel Shaft Bevel Gear	No. of Teeth	
	327-328-336-337-338-346	22
	347-348	21
	466-467	22
	468 (S.N. —844080)	21
	468 (S.N. 844081—)	22

** Input shaft and crankshaft rolling torque are directly related to each other. Refer to assembly procedure of gear case for proper rolling torque.*

EX,1243,2040,B -19-23JUN92

REMOVE GEAR CASE

1. Remove powershaft, see Section 20, Group 30.

2. Remove slip clutch, see Section 20, Group 35.

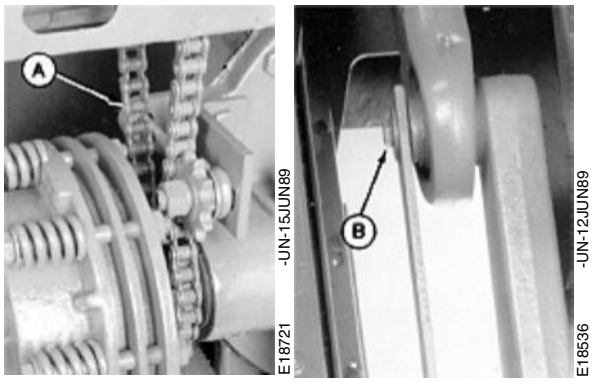
3. Remove flywheel, see Section 20, Group 45.

E01,2035,A -19-23JUN92

4. Remove feeder drive chain (A) from gear case input shaft.

5. Remove 1/2 x 4-1/2 in. cap screw (B) from crank and pickup drive arm.

IMPORTANT: Chain (A) on 466, 467 and 468 Balers is a special high-strength chain. Do not use any other chain for replacement.

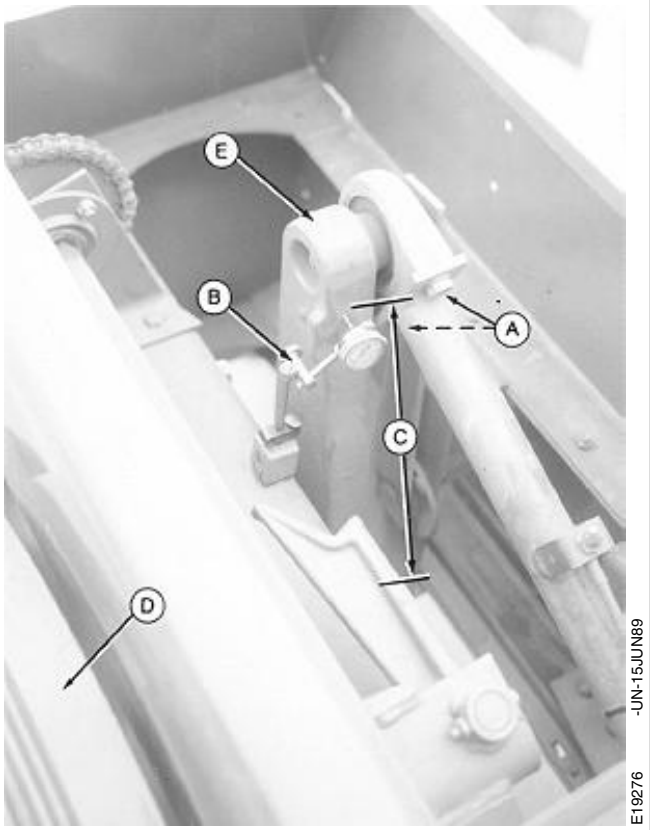


EX,1243,2040,C -19-23JUN92

6. Remove cap screws (A) from pitman arm. Attach dial indicator (B) as shown, approximately 381 mm (15 in.) (C) from center of crankshaft.

7. Hold flywheel (D) steady. Move crank arm (E) to get backlash reading. Maximum backlash is 1.83 mm (0.070 in.) If backlash is out of tolerance, check flywheel shaft, crankshaft and large spider gear for wear after disassembly.

A—Cap Screws
B—Dial Indicator
C—381 mm (15 in.)
D—Flywheel
E—Crank Arm



EX,1243,2040,D -19-23JUN92

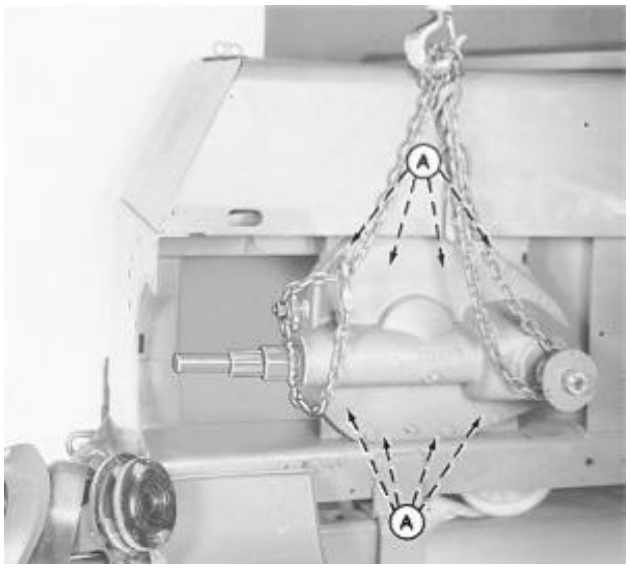
8. Support gear case with hoist.

9. Drain oil.

NOTE: Record size and location of cap screws and washers when removed.

10. 466-467-468: Remove four 5/8 x 1-3/4 in. and four 5/8 x 2-3/4 in. cap s crews (A). Remove gear case.

All other balers: Remove eight 5/8 x 1-3/4 in. cap screws (A) and remove gear case.



E18522 -UN-12JUN89

EX,1243,2040,E -19-23JUN92

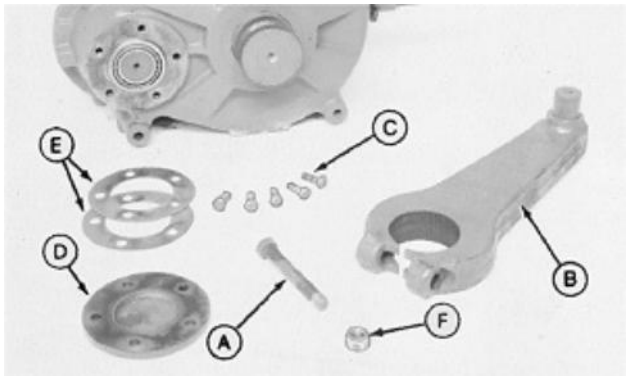
DISASSEMBLE GEAR CASE

Scribe mark on flywheel shaft and crank arm (B) before removal.

1. Remove nut, 3/4 x 5-1/4 in. cap screw (A), and crank arm (B).

2. Remove cap screws (C) and end cap (D) from gear case. Keep shims (E) for adjusting rolling torque at flywheel shaft.

A—Cap Screw
B—Crank Arm
C—Cap Screws
D—End Cap
E—Shims
F—Nut



E29053 -UN-07DEC89

E01,2035,AQ -19-12MAR87

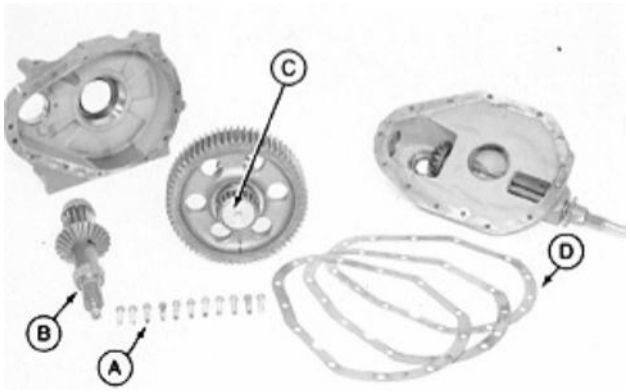
IMPORTANT: Do not let shafts fall when separating gear case halves.

3. Remove 1/2 x 1-3/4 in. cap screws (A) and separate gear case halves.

4. Remove flywheel shaft assembly (B) and crankshaft assembly (C) from gear case housing.

5. Keep shims (D) for use when adjusting crankshaft rolling torque.

A—Cap Screws (11 used)
B—Flywheel Shaft Assembly
C—Crankshaft Assembly
D—Shims



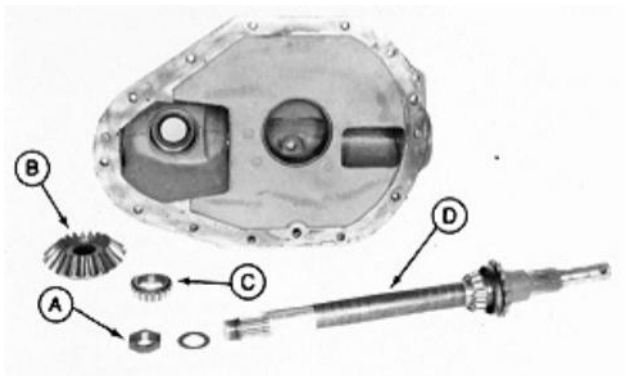
-UN-15JUN89
E18722

EX,1243,2040,F -19-23JUN92

6. On 327, 328, 336, 338 and 346 Balers only (not illustrated), remove cotter pin and slotted nut.

On 337, 347, 348, 466, 467 and 468 Balers, pry staked part of nut out of keyway and remove stake nut (A). Slide gear (B) and bearing (C) off rear of shaft. Pull input shaft (D) from front of gear case half.

A—Stake Nut
B—Gear
C—Bearing
D—Input Shaft

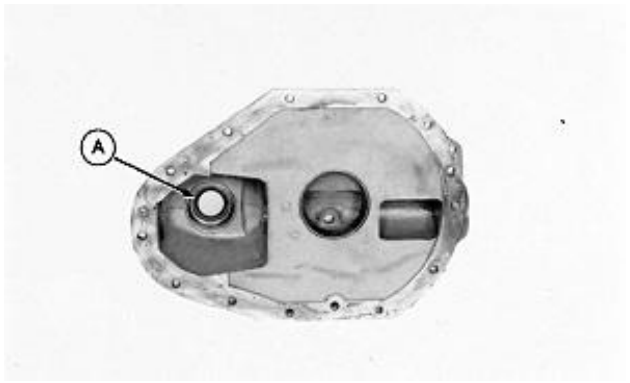


-UN-12JUN89
E18338

EX,1243,2040,G -19-23JUN92

7. With shafts out of case, check bearing cups for wear or damage. If worn or damaged, remove by pressing cups out.

8. Remove flywheel shaft oil seal (A).



-UN-12JUN89
E18339

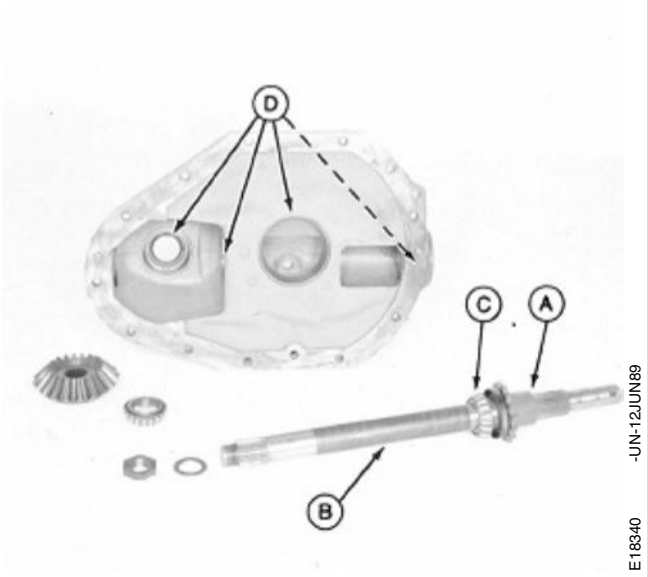
E01,2035,AS -19-23JUN92

9. Remove snap ring (A) from front of input shaft (B) and slide sprocket, spacer and oil seal from shaft.

10. Press bearing cone (C) off input shaft.

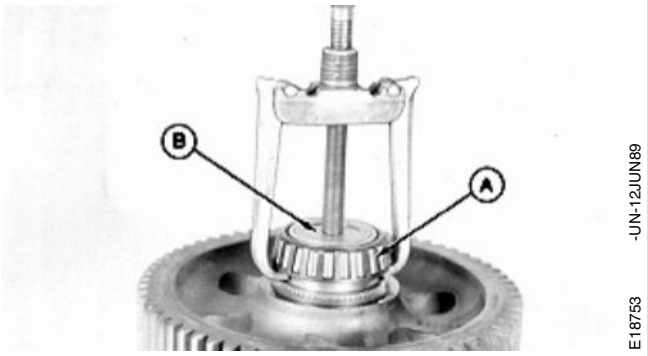
11. Check bearing cups (D) for damage. If damaged, press out.

A—Snap Ring
B—Input Shaft
C—Bearing Cone
D—Bearing Cups



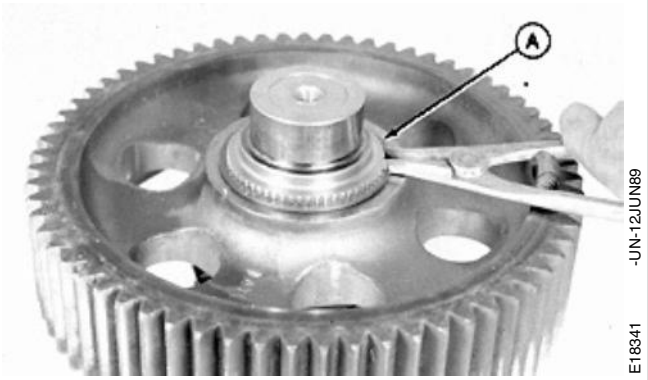
EX,1243,2040,H -19-23JUN92

12. Remove bearing (A) from crankshaft (B).



E01,2035,J -19-29JUN81

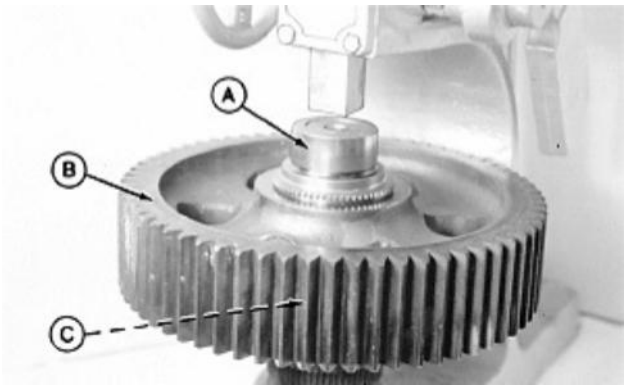
13. Remove snap ring (A).



E01,2035,K -19-29JUN81

Scribe mark on gear and shaft before removing gear from shaft.

14. Press shaft (A) from gear (B) and remove bearing (C).



-UN-12JUN89
E18342

E01,2035,L -19-28FEB83

INSPECT BEVEL GEAR COMPONENTS

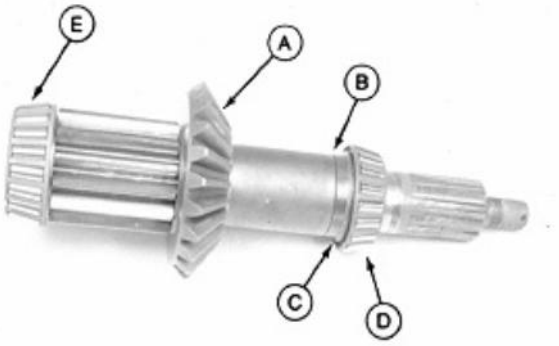
1. Inspect bevel gear for pitting or cracks. If not damaged, do not remove.

2. Inspect bearing (D) for wear while assembled to shaft. If not worn, do not remove.

NOTE: If gears mesh properly, install same shim pack that was removed.

3. Press damaged bevel gear (A) with spacer (B), shims (C), and bearing (D) (if damaged) off flywheel shaft.

4. Check bearing (E) for roughness while assembled to shaft. Be certain bearings rotate easily and all rollers are in place. If not damaged, do not remove. Removing bearings from shaft will damage bearing.



-UN-12JUN89
E18343

A—Bevel Gear
B—Spacer
C—Shims
D—Bearing Cone
E—Bearing Cone

EX,1243,2040,I -19-23JUN92

ASSEMBLE GEAR CASE

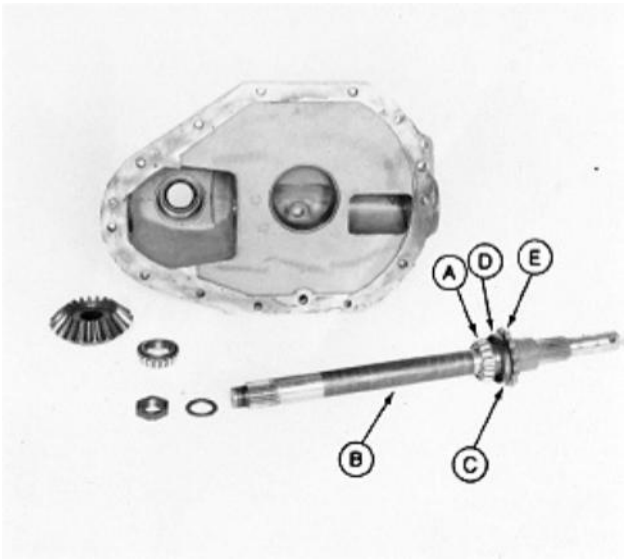
NOTE: If using existing bearings, tighten nut to lower torque value.

1. Press bearing (A) on front of input shaft (B).

2. Place new oil seal (C), spacer (D), and chain sprocket (E) on input shaft and secure using snap ring.

To ensure correct pre-load on bearing, press bearing, spacer, and sprocket tight against snap ring.

A—Bearing
B—Input Shaft
C—Oil Seal
D—Spacer
E—Sprocket



E18344 -UN-12JUN89

E01,2035,O -19-23JUN92

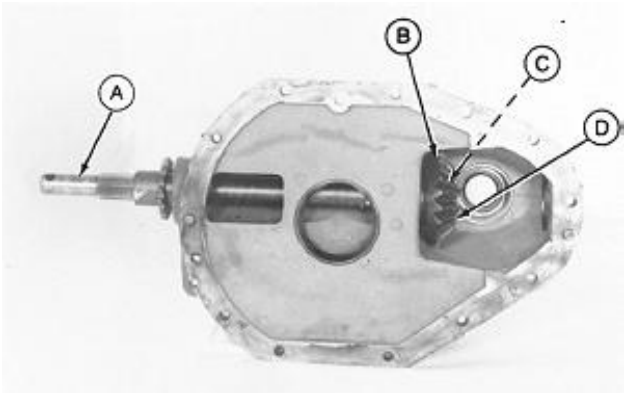
3. Slide input shaft (A) into left half of gear case.

IMPORTANT: Do not press seal into gear case at this time.

4. On 327, 328, 336, 338 and 346 Balers, place bevel gear, special washer and slotted nut on rear of shaft.

On 337, 347, 348, 466, 467, and 468 Balers, place bevel gear (B) special washer (C) and stake nut (D) on rear of shaft.

A—Input Shaft
B—Bevel Gear
C—Special Washer
D—Stake Nut



E18345 -UN-12JUN89

EX,1243,2040,J -19-23JUN92

IMPORTANT: Be sure snap ring is seated in groove before checking rolling torque.

5. Construct a special tool (A) to fit over input shaft to check rolling torque. See Fabricated Tool, in this group.

6. Check rolling torque at front of shaft. Correct torque is 0.6 to 1.7 N·m (5 to 15 lb-in.). Tighten or loosen nut until rolling torque is within specification range.

7. Record input shaft rolling torque reading, it will be used in determining crankshaft rolling torque.

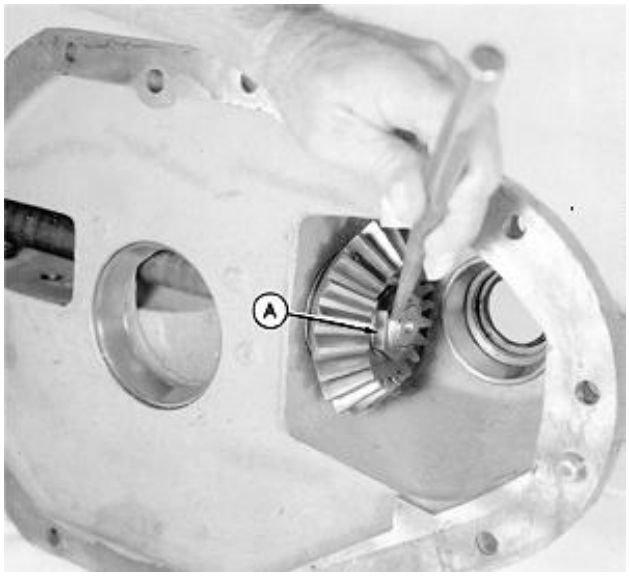
-UN-15JUN89
E18725

EX,1243,2040,K -19-23JUN92

8. 327-328-336-338-346: Align slotted nut to hole in shaft. Secure nut with cotter pin.

IMPORTANT: Do not use a sharp punch or damage to nut will occur.

337-347-348-466-467-468: Stake the stake nut (A) into groove of keyway.



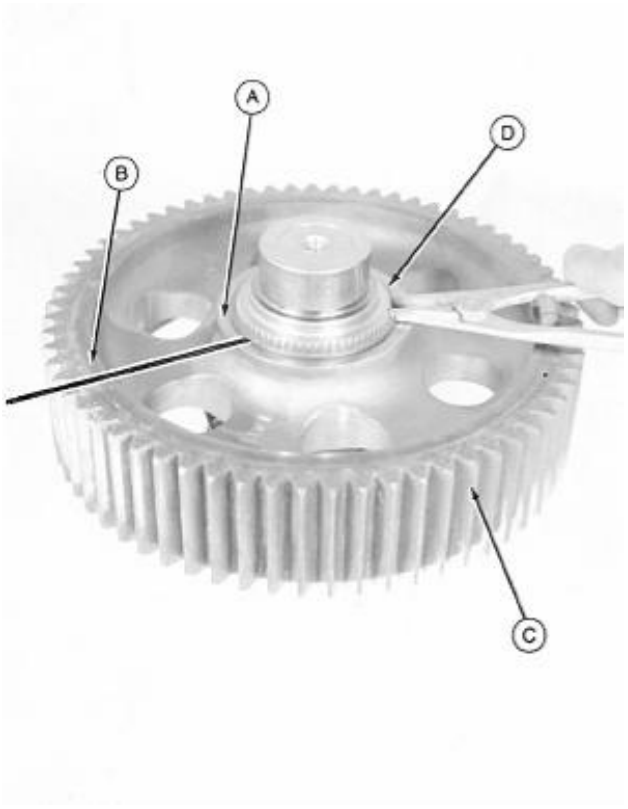
-UN-12JUN89
E18346

EX,1243,2040,L -19-23JUN92

IMPORTANT: The side of gear that has hub (A) flush with tooth ring (B) must be installed toward snap ring.

9. Align scribe marks made before removal. Install gear (A) on crankshaft and secure with snap ring (D).

A—Hub
B—Tooth Ring
C—Gear
D—Snap Ring

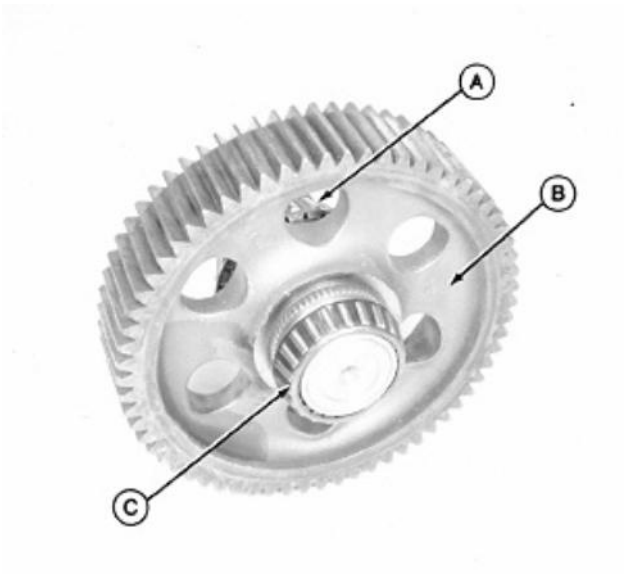


E18348 -UN-12JUN89

E01,2035,AX -19-12MAR87

10. Press outer bearing (A) on crankshaft until firm against gear (B).

11. Press inner bearing (C) until solid against shaft shoulder.



E18349 -UN-12JUN89

E01,2035,T -19-04JUN92

12. Press new bearing (A) onto shaft.

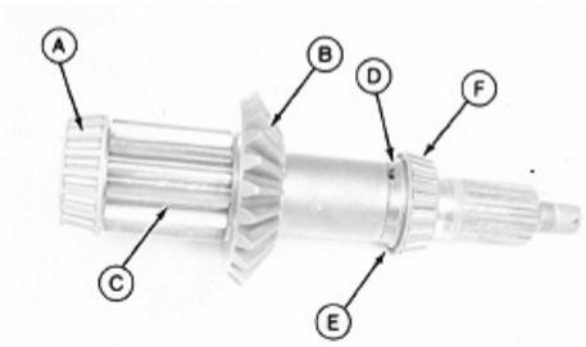
13. Press gear (B) with key in slot, onto shaft with rear of gear pressed against spur of flywheel shaft (C).

14. Install spacer (D) with chamfer toward shoulder of shaft.

15. Install shims (E) to obtain 0.13 to 0.38 mm (0.005 to 0.015 in.) backlash between bevel gears.

16. Press bearing (F) onto flywheel shaft.

17. Place flywheel shaft into gear case. Check backlash and adjust thickness of shims if necessary.

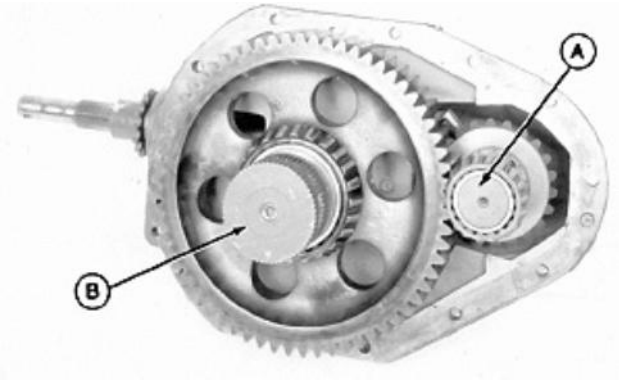


E18347 -UN-12JUN89

A—New Bearing
B—Gear
C—Flywheel Shaft
D—Spacer
E—Shims
F—Bearing

EX,1243,2040,M -19-23JUN92

18. Place crankshaft (B) into gear case, match gears on crankshaft with gears on flywheel shaft (A).



E18350 -UN-12JUN89

EX,1243,2040,N -19-23JUN92

19. Apply silicon rubber sealer to gear case edge.

IMPORTANT: Use only three cap screws equally spaced to hold gear case halves together while determining shim pack thickness to obtain correct rolling torque.

20. Bring gear case halves together using original shims between halves. (More or less shims may have to be used to obtain proper crankshaft bearing rolling torque.)

21. Proper crankshaft rolling torque depends on input shaft rolling torque which should be between (0.6 to 1.7 N·m) 5 to 15 in-lbs.

E01,2035,W -19-29JUN81

22. Read across chart below to find corresponding range of crankshaft rolling torque, using input shaft rolling torque measured previously.

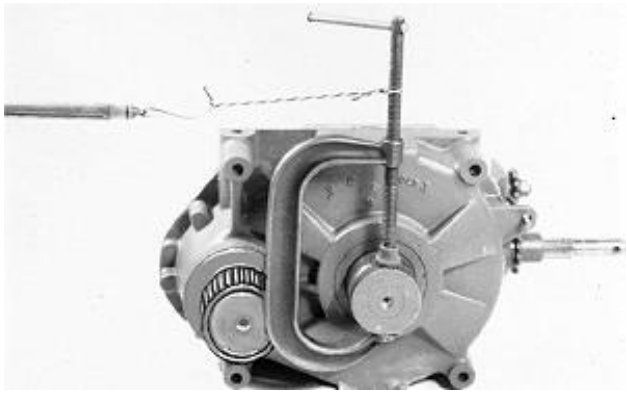
NOTE: Torque is calculated by multiplying force by length. For this procedure, the length is always 254 mm (10 in.) and force is measured by spring scale.

23. Measure crankshaft rolling torque by attaching a scale to a "C" clamp on crankshaft. Attach a spring scale 254 mm (10 in.) from center of crankshaft.

IMPORTANT: When installing shims be certain flywheel shaft has end play, since any preload on flywheel bearings would affect crankshaft rolling torque reading.

24. Add or remove shims to obtain correct range of crankshaft rolling torque.

25. After selecting proper shim pack, apply silicon rubber on outside shim before bolting case together. Bolt gear case halves together using twelve cap screws and torque to 109 N·m (80 lb-ft).



ROLLING TORQUE

Input Shaft	Crankshaft
0.58 N·m (5 lb-in)	15.1 to 18.5 N·m (134 to 164 lb-in)
0.68 N·m (6 lb-in)	15.9 to 19.3 N·m (141 to 171 lb-in)
0.79 N·m (7 lb-in)	16.6 to 20.0 N·m (147 to 177 lb-in)
0.90 N·m (8 lb-in)	17.4 to 20.9 N·m (154 to 184 lb-in)
1.02 N·m (9 lb-in)	18.2 to 21.6 N·m (161 to 191 lb-in)
1.13 N·m (10 lb-in)	19.1 to 22.5 N·m (169 to 199 lb-in)
1.24 N·m (11 lb-in)	19.8 to 23.2 N·m (175 to 205 lb-in)
1.36 N·m (12 lb-in)	20.6 to 23.9 N·m (182 to 212 lb-in)
1.47 N·m (13 lb-in)	21.3 to 24.7 N·m (189 to 219 lb-in)
1.58 N·m (14 lb-in)	22.1 to 25.5 N·m (196 to 226 lb-in)
1.69 N·m (15 lb-in)	22.8 to 26.2 N·m (202 to 232 lb-in)

EX,1243,2040,O -19-23JUN92

IMPORTANT: Torque reading must be taken at crankshaft.

NOTE: If installing existing bearing, torque to the lesser torque value.

Use three bolts to hold end cap in place until proper torque is obtained.

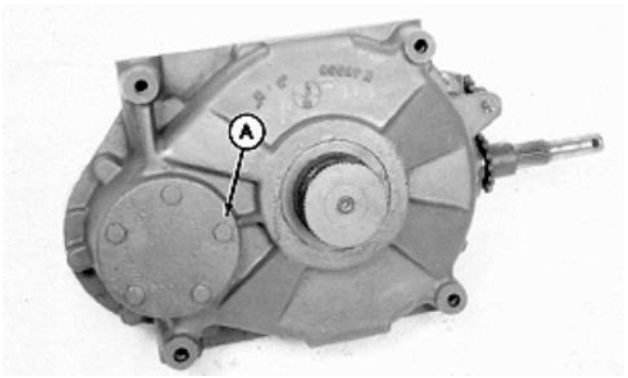
26. Shim between end cap and gear case to obtain a torque increase from 28.2 to 84.7 N·m (25 to 75 lb-in.) in addition to measured torque in step 24.

EX,1243,2040,P -19-23JUN92

27. Bolt end cap to gear case using five cap screws.

28. Use silicon rubber on bolt (A).

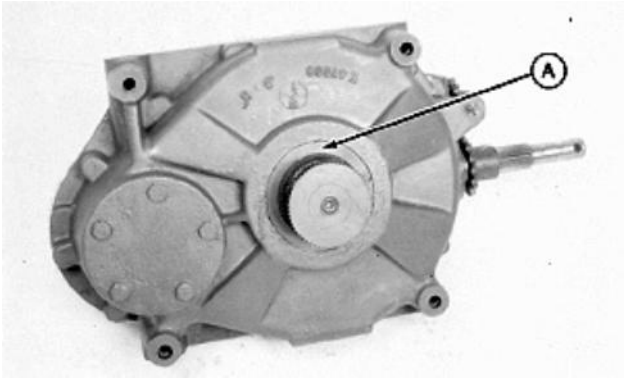
29. Torque cap screws to 109 N·m (80 lb-ft).



EX,1243,2040,Q -19-23JUN92

30. Lubricate seal lip.

31. Press crankshaft oil seal (A) into gear case with lip facing in. Use seal sleeve to protect seal from sharp edges of shaft splines.

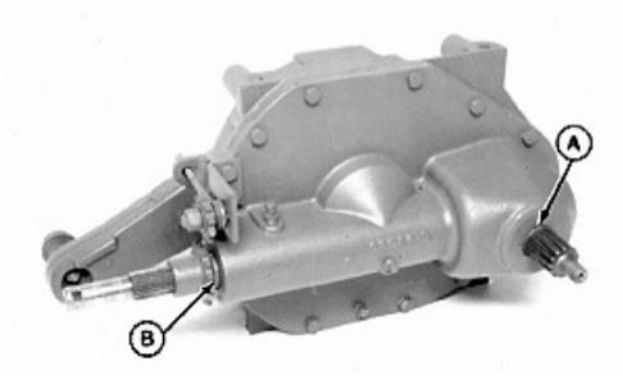


E01,2035,AC -19-23JUN92

32. Lubricate seal lip.

33. Press flywheel shaft oil seal (A) and input shaft oil seal (B) into gear case with lip facing in. Use seal sleeve to protect seal from sharp edges of shaft splines.

34. Fill gear case with 85-140 or 90 API-GL5 Gear Lubricant. Capacity is 3.79 L (1 gal).



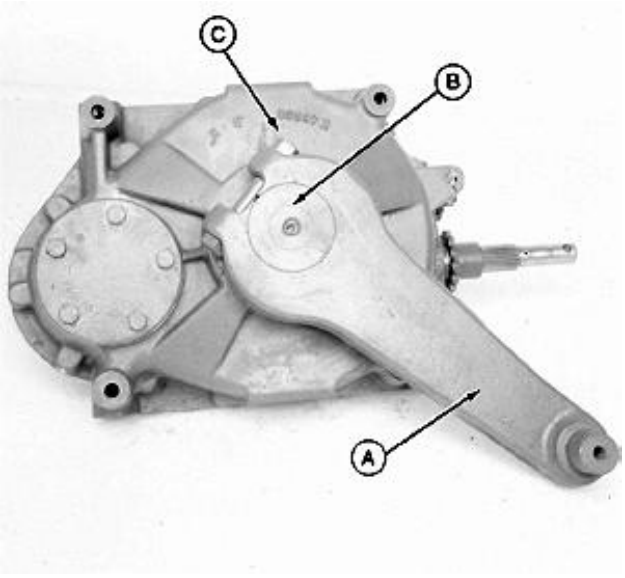
E18354 -UN-12JUN89

E01,2035,BA -19-13MAR87

NOTE: Install crank on shaft at least 30 ° from original location (refer to scribe marks made at disassembly).

35. Place plungerhead crank (A) on crankshaft (B).

Secure with cap screw and nut (C). Torque to 362—400 N·m (274—295 lb-ft).



E18355 -UN-12JUN89

EX,1243,2040,R -19-23JUN92

INSTALL GEAR CASE

1. Reverse “REMOVE GEAR CASE” procedure. Install cap screw and washers in their original locations. Torque cap screws through bale case and gear case to 217—244 N·m (160—180 lb-ft).

2. Install flywheel, see Section 20 Group 45.

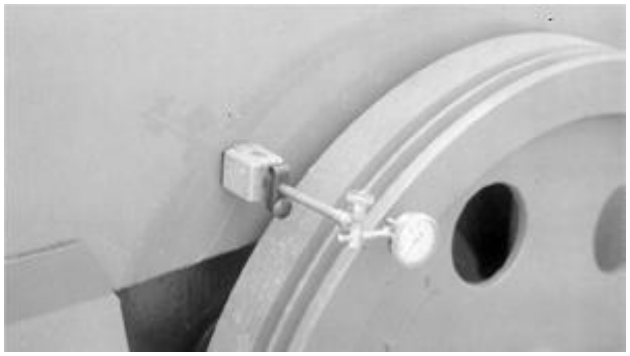
3. Install slip clutch, see Section 20 Group 35.

4. Install powershaft, see Section 20 Group 30.

E01,2035,AG -19-23JUN92

REMOVE FLYWHEEL

1. Attach dial indicator near outer edge of flywheel as shown. If TIR (total indicator readout) is 1.8 mm (0.070 in.), bushing or shaft may need to be replaced during assembly.



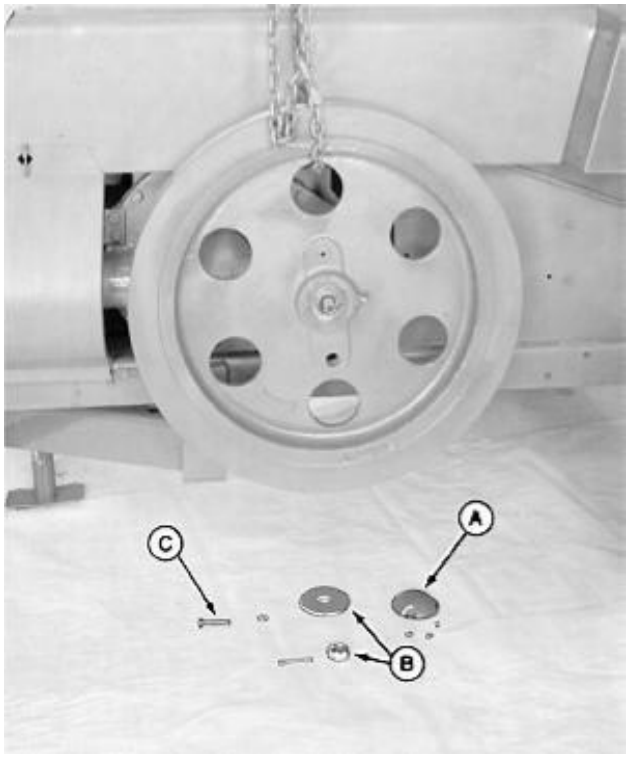
EX,1243,2045,A -19-23JUN92

NOTE: If baler is equipped with an ejector, pump shield and V-belts must be removed.

A spring gauge may be attached to flywheel and hoist so the weight of flywheel is all that is lifted, reducing bind on gear case shaft. Flywheel weight is 103 kg (227 lb) on 327, 328, 336, 337 and 338 Balers and 134 kg (295 lb) on 346, 347, 348, 466, 467 and 468 Balers

2. Attach hoist or other lifting device to flywheel as shown.

3. Remove flywheel nut shield (A), slotted nut and washer (B), shear bolt and nut (C) to remove flywheel.

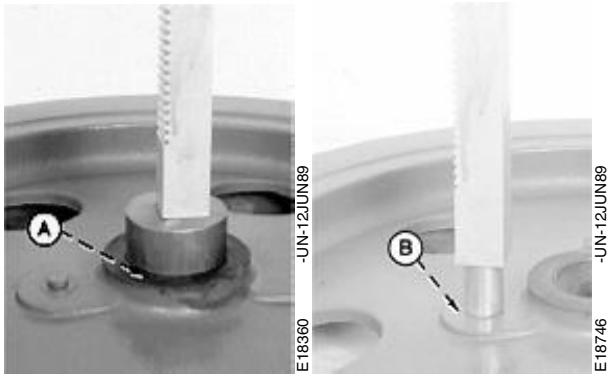


EX,1243,2045,B -19-23JUN92

DISASSEMBLE FLYWHEEL

1. Press out flywheel bushing (A).

2. Press out shear bolt bushing (B) if damaged.



E01,2040,C -19-25FEB83

INSPECT FLYWHEEL

Replace bushings and shear bolt arm if worn.

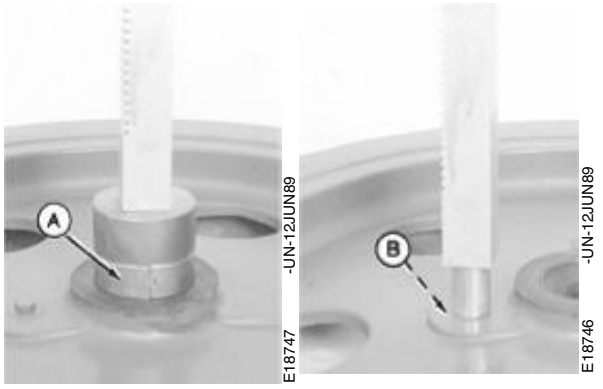
E01,2040,D -19-03FEB83

INSTALL FLYWHEEL BUSHINGS

1. Press in flywheel bushing (A) until flush.

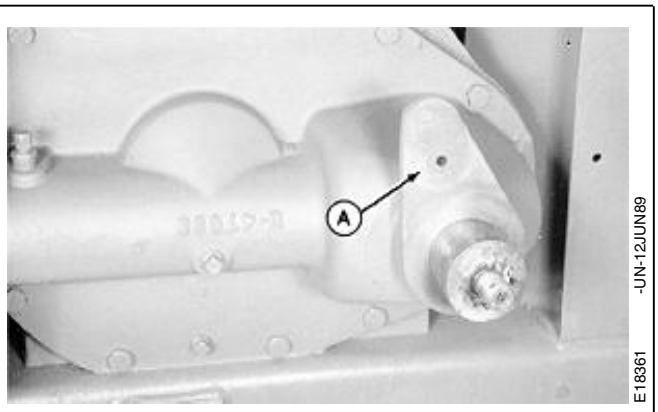
2. Remove grease fitting and use 3/16 in. drill to drill lube hole in bushing (A). Install grease fitting.

3. Press in shear bolt bushing (B) until flush with shear plane side of flywheel.



EX,1243,2045,C -19-23JUN92

4. If removed, install shear bolt arm (A) on gear case.



EX,1243,2045,D -19-23JUN92

INSTALL FLYWHEEL

IMPORTANT: 327, 328, 336, 337 and 338 Balers shear bolts are 9/32 x 2-1/4 in. “F” quality. 346, 347, 348, 466, 467, and 468 Balers shear bolts are 11/32 x 2-1/4 in. “F” quality.

1. Install flywheel (F) on shear bolt arm.

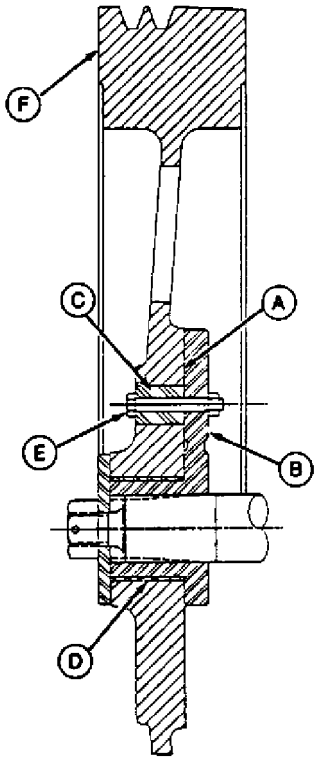
2. Secure flywheel on shaft using washer and nut.

IMPORTANT: Before installing shear bolt, make sure shear bolt hub is seated on tapered spline.

Remove gap from shear plane (A) by moving flywheel (F) tight against shear bolt hub (B) before installing shear bolt. Removing gap by tightening shear bolt will tip flywheel causing premature shear bolt failure.

3. Align holes and install shear bolt (E). Do not overtighten. Refer to Section 20, Group 50.

A—Shear Plane
B—Shear Bolt Hub
C—Shear Bolt Sleeve
D—Bushing
E—Shear Bolt
F—Flywheel



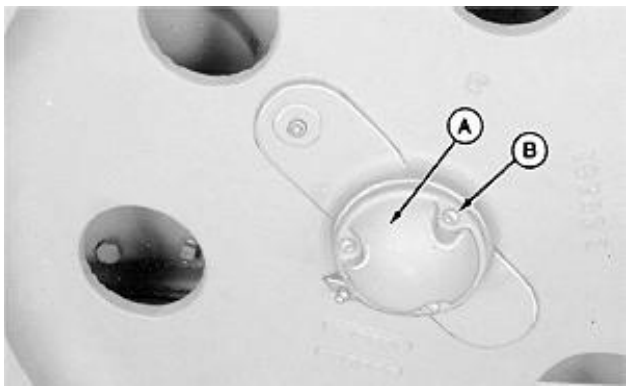
E33744 -UN-25OCT89

EX,1243,2045,E -19-23JUN92

NOTE: Shield (A) and screws (B) are not used on 466 and 467 Balers.

4. Install flywheel nut shield (A) using three machine screws (B).

IMPORTANT: Lubricate at fitting when replacing shear bolt to eliminate excessive wear on bushing.



E18362 -UN-12JUN89

EX,1243,2045,F -19-23JUN92

FLYWHEEL SHEAR BOLT SPECIFICATIONS

IMPORTANT: Shear bolt (A) does not require a specific torque. Tighten shear bolt only until snug or shear bolt may fail prematurely.

327-328-336-337-
338 Balers . . . . . 9/32 x 2-1/4 in. SAE-8

346-347-348-466-
467-468 Balers . . . . . 11/32 x 2-1/4 in. SAE-8

-UN-12JUN89
E18363

EX,1243,2050,A -19-23JUN92

NEEDLE LIFT ARM (TWINE) SHEAR BOLT SPECIFICATIONS

IMPORTANT: Shear bolt (A) does not require a specific torque. Tighten shear bolt only until snug or shear bolt may fail prematurely.

327-328-336-337-
338 Balers . . . . . 5/16 x 2 in. SAE-2

346-347-348-466-
467-468 Balers . . . . . 5/16 x 1-3/4 in. SAE-5

-UN-12JUN89
E18364

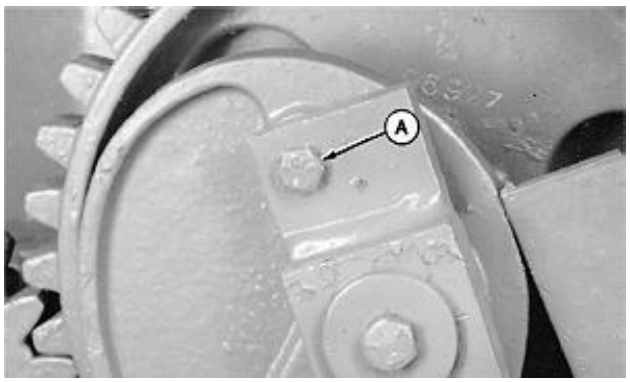
EX,1243,2050,B -19-23JUN92

NEEDLE LIFT ARM (WIRE) SHEAR BOLT SPECIFICATIONS

IMPORTANT: Shear bolt (A) does not require a specific torque. Tighten shear bolt only until snug or shear bolt may fail prematurely.

336-337-338 Balers . . . . . 5/16 x 2 in. SAE-5

346-347-348-466-
467-468 Balers . . . . . 5/16 x 1-3/4 in. SAE-5



-UN-12JUN89
E18562

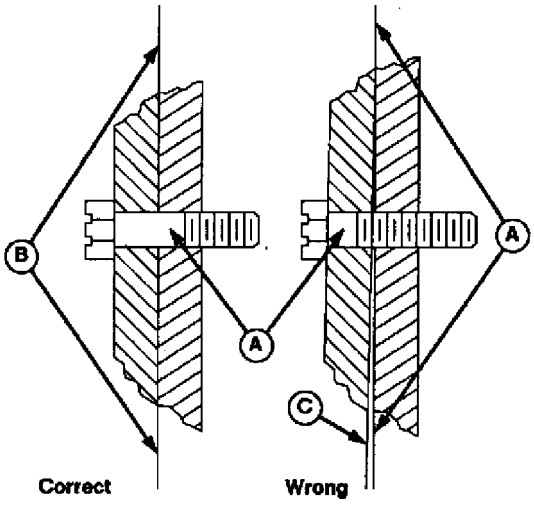
EX,1243,2050,C -19-23JUN92

USE CORRECT SHEAR BOLT

IMPORTANT: Use of shorter bolts than those specified will place threads in shear plane resulting in bolts being sheared at lower values, and more often.

Shear plane (B) must be perpendicular to shear bolt shank and no gaps (C) present to prevent fatigue failures of shear bolt.

Use shear bolts specified. Shank (A) of shear bolt must extend through shear plane (B).



E36425AE -UN-29APR92

EX,1243,2050,D -19-23JUN92

REPLACE FLYWHEEL SHEAR BOLT

IMPORTANT: If shear bolt breakage occurs, do not use a substitute bolt of higher strength or machine damage can occur.

1. Determine cause of shearing and correct:

- Shear plane (A) may be separated.
- Shear bolt hub (B) and/or shear bolt sleeve (C) may be damaged around shear bolt hole (hole edges must be sharp).
- Bushing (D) may be worn.
- Obstruction in bale chamber.
- Needles in bale chamber.
- Needles and/or plungerhead out of time.

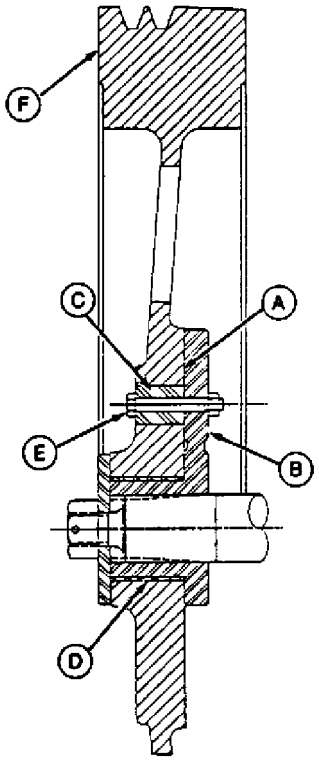
IMPORTANT: Remove gap from shear plane by moving flywheel (F) tight against shear bolt hub (B) before installing shear bolt. Removing gap by tightening shear bolt will tip flywheel causing premature shear bolt failure.

2. Replace with a new shear bolt (E). Do not replace with standard bolt.

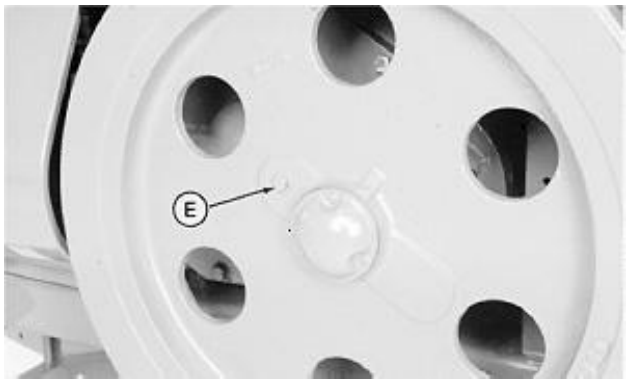
IMPORTANT: Needles must be in "home" position before starting baler to prevent damage.

3. If needles are in bale case when bolt shears, return needles to "home" position by hand before starting baler. (See procedure in Section 50, Group 10 or 15.)

IMPORTANT: Lubricate flywheel at fitting when replacing shear bolt to eliminate excessive wear on bushing (D).



E33744 -UN-25OCT89



E33785 -UN-19NOV89

A—Shear Plane
B—Shear Bolt Hub
C—Shear Bolt Sleeve
D—Bushing
E—Shear Bolt
F—Flywheel

EX,1243,2050,E -19-23JUN92

REPLACE NEEDLE LIFT ARM SHEAR BOLT

IMPORTANT: If shear bolt breakage occurs, do not use a substitute bolt of higher strength or machine damage can occur.

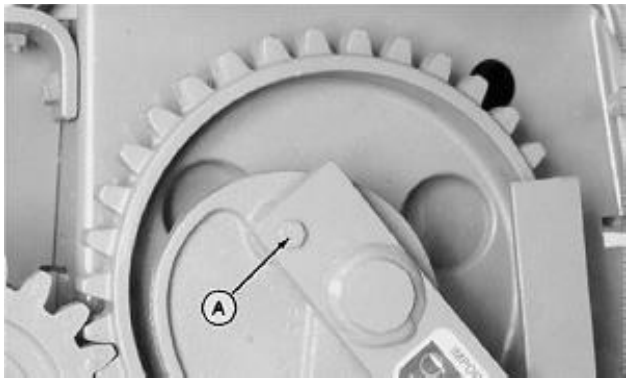
1. Determine cause of shearing and correct:

- Shear plane may be separated.
- Trip dog hub and/or pivot bracket may be damaged in shear plane area. (Refer to Use Correct Shear Bolt, in this Group.)
- Obstruction in bale chamber.
- Needles and/or feeder fingers out of time.

IMPORTANT: Remove gap from shear plane by moving pivot bracket (F) to the right before installing shear bolt. Removing gap by tightening shear bolt will tip bracket causing premature shear bolt failure.

2. Replace with a new shear bolt (A). Do not replace with standard bolt.

3. If needles are in bale case when bolt shears, return needles to “home” position by hand before starting baler. (See procedure in Section 50, Group 10 or 15.)



EX,1243,2050,F -19-23JUN92

Section 30
HYDRAULIC SYSTEM

Contents

Page

HYDRAULIC PUMP DIFFICULTIES

Symptom	Problem	Solution	Section/Group
Pump Not Delivering Oil	Clogged filter.	Remove, flush, clean filter thoroughly.	--
	Not enough oil in tank.	Add oil as necessary.	30-15
Pump Not Developing Sufficient Pressure	Valving surfaces scored by abrasive material.	Replace all scored or worn parts.	30-15
	Valve spring too weak.	Add shims.	30-15
	Leak in hydraulic system.	Visually check for leaks. Replace line or tighten connections as necessary.	--
	Oil not of correct weight.	Use correct weight oil.	30-15
	Relief valve pressure too low.	Shim valve opening.	30-15
External Leakage	Shaft oil seal.	Replace shaft oil seal.	30-15

E01,3005,Q -19-13APR87

SERVICE PARTS KIT

The following kit is available through your parts catalog:

Seal Kit

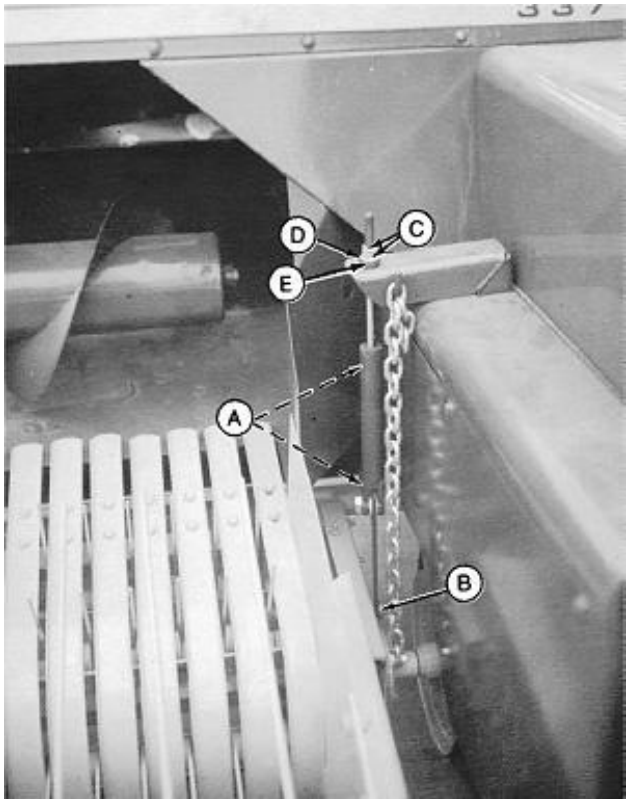
E01,3010,BE -19-13MAR87

REMOVE CYLINDER

1. Wash area around cylinder.

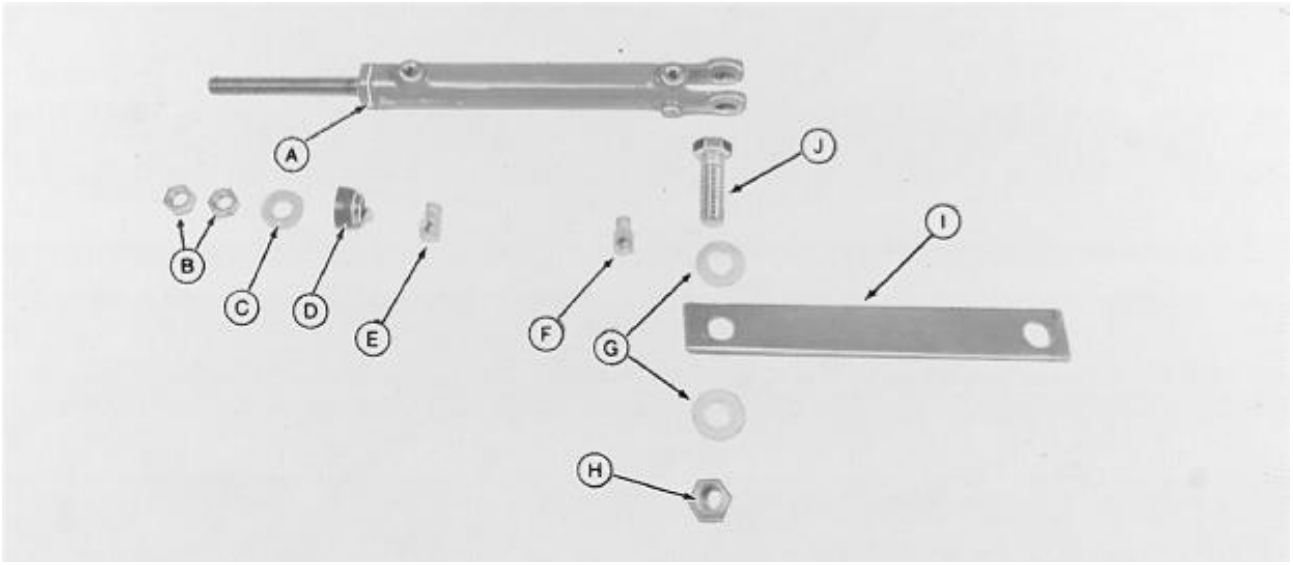
2. Remove hoses (A), cotter pin (B), nuts (C), washer (D) and spherical washer (E).

A—Hoses
B—Cotter Pin
C—Nuts
D—Washer
E—Spherical Washer



E01,3010,BF -19-30APR87

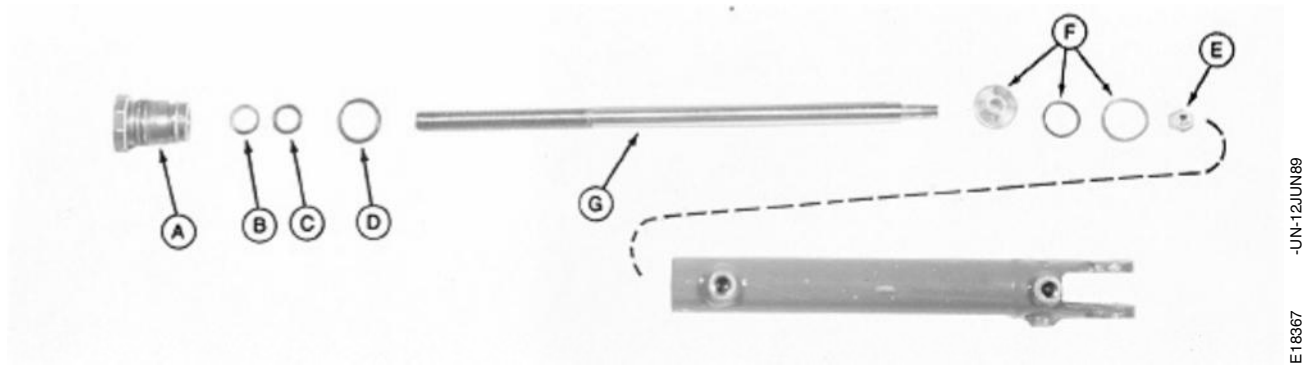
DISASSEMBLE CYLINDER



A—Pickup Lift Cylinder
B—Nuts
C—Washer
D—Spherical Washer
E—90° Elbow with snubber
F—45° Elbow with snubber
G—Washers
H—Nut
I—Strap
J—Cap Screw

3. Remove 45° elbow (F), 90° elbow (E), 5/8 x 2-in. cap screw and lock nut (C), washers (D) and strap (I).

E01,3010,BG -19-13MAR87



A—Bearing
B—Backup Washer
C—O-Ring
D—O-Ring
E—5/16-in. Lock Nut
F—Piston Assembly
G—Rod

4. Remove bearing (A), washer (B), O-ring (C), and O-ring (D).

5. Remove piston and rod assembly from cylinder.

6. Remove 5/16-in. lock nut (E), piston assembly (F), and rod (G).

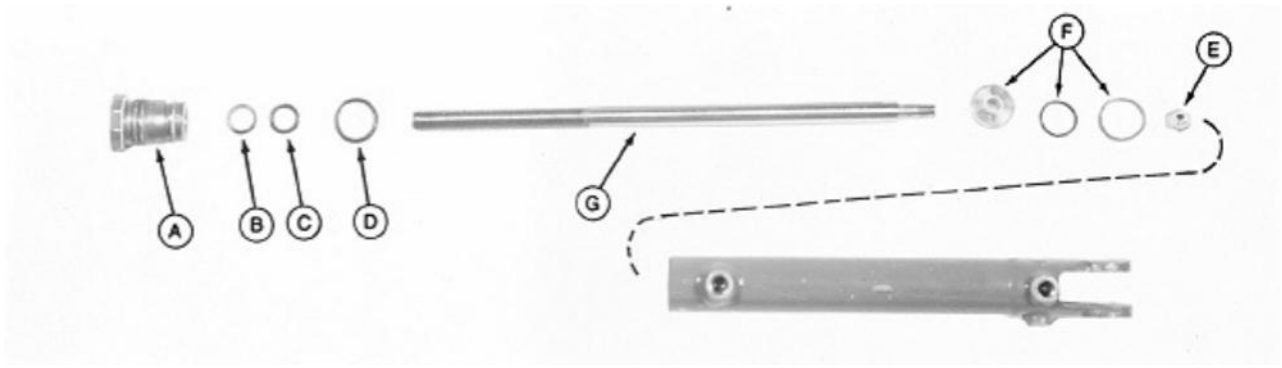
E01,3010,BH -19-13MAR87

INSPECT CYLINDER

1. Replace O-rings.
2. Replace piston and rod if burred.
3. Repair or replace cylinder bore if scored.
4. Clean parts thoroughly.

E01,3010,BI -19-13MAR87

ASSEMBLE CYLINDER



-UN-12JUN89
E18367

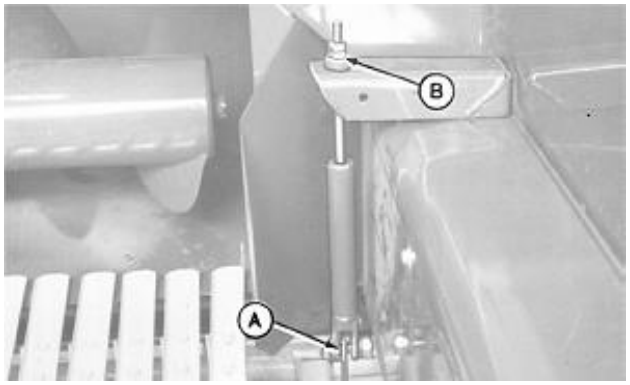
A—Bearing
B—Backup Washer
C—O-Ring
D—O-Ring
E—5/16 in. Lock Nut
F—Piston Assembly
G—Rod

1. Lubricate O-rings and backup washer before assembling.
2. To assemble, reverse Disassemble Cylinder pressure.
3. Tighten lock nut (E) to 9.5—12.2 N·m (84—108 lb-in.).
4. Tighten bearing (A) to 68—95 N·m (50—70 lb-ft).

EX,1243,3010,A -19-23JUN92

INSTALL HYDRAULIC PICKUP LIFT

1. Attach pickup lift strap to cylinder using 5/8 x 1-7/8 in. cap screw, 11/16 x 1-1/4 x 0.105-in. washers, and lock nut (A).
2. Attach cylinder to upper bracket using spherical washer, 17/32 x 1-1/8 x 0.105-in. washer, and two 1/2-in. jam nuts (B).

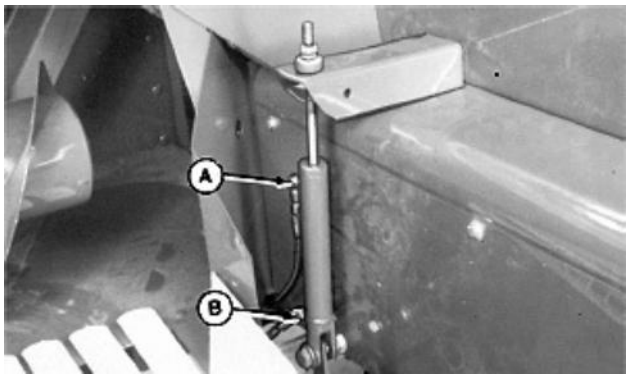


-UN-21SEP88
E19505

E01,3010,BK -19-13MAR87

3. Attach 90 degree elbow to upper port. Attach snubber and hose to 90 degree elbow (A).

4. Attach 45 degree elbow (B) to lower port. Attach snubber and hose to 45 degree elbow.



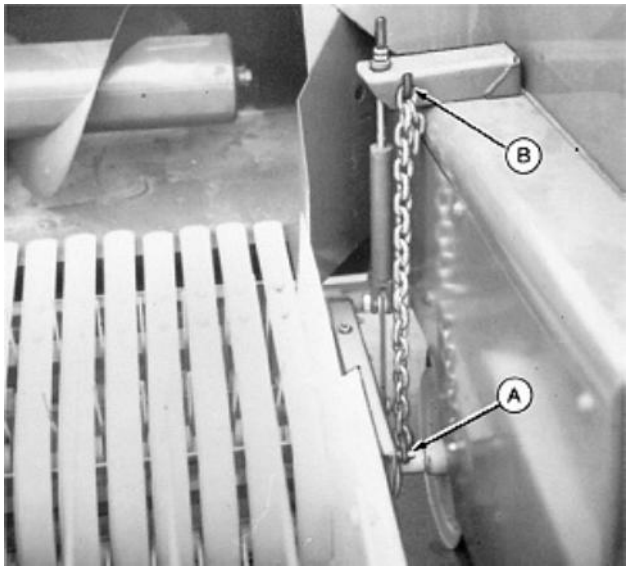
E01,3010,BL -19-13MAR87

5. Install metric bolt, nut, chain, washer, and lock nut (A).

6. Attach chain to hook (B).

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



7. Start machine and visually check for leaks.

8. Set pickup teeth as high as possible, but low enough to pick up all the crop.

E01,3010,BM -19-23JUN92

SERVICE PARTS KIT

The following kit is available through your parts catalog:

Seal Kit

E01,3015,BB -19-13MAR87

SPECIFICATIONS

Item	Measurement	Specification
Pump	Rotation	Left-hand (Viewed from shaft end)
	Displacement	4.1 cm^3 (0.25 $in.^3$) per revolution
	Max. Operating Speed	650 rpm
	Max. Continuous Pressure	6895 kPa (69 bar) (1000 psi)
	Max. Surge Pressure	9653 kPa (99 bar) (1400 psi)
	Max. Inlet Temperature	107˚C (225˚F)
	Max. Relief Valve Adjustment	5171—4827 kPa (51.75—48.3 bar) (750—700 psi) @ 290 rpm
327-328-336-337 338-346 Baler	Maximum Pressure	3275—3620 kPa (317—350 bar) (475—525 psi) @ 305 rpm
347-348 Baler	Maximum Pressure	4827—5171 kPa (467-500 bar) (700-750 psi) @ 355 rpm
466-467-468 Baler	Maximum Pressure	4827-5171 kPa (467-500 bar) (700-750 psi) @ 374 rpm
Reservoir	Capacity	2.65 L (2.8 qt)
System	Capacity	3.8 L (4 qt)
Pipe Plugs	Torque	41 N·m (30 lb-ft)
Plate-To-Housing Cap Screws	Torque	37—41 N·m (27—30 lb-ft)
Reservoir-To-Pump Cap Screws	Torque	14—21 N·m (10—15 lb-ft)

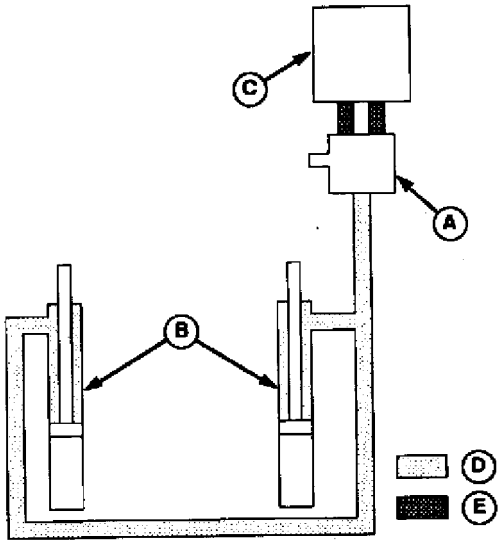
EX,1243,3015,A -19-23JUN92

FLOW DIAGRAM FOR BALE TENSION

Power is transmitted from feeder finger crank to pump (A). Fluid is then pumped to tension cylinders (B) and maintained at selected pressure. For more pressure, increase with pressure control valve on pump. The pump produces low pressure oil that is variable, 0—5171 kPa (0—52 bar) (0—750 psi).

There is a continuous flow between reservoir (C) and pump at all times. The amount of flow is dependent on selected bale tension.

A—Pump
B—Tension Cylinders
C—Reservoir
D—Low Pressure Oil
E—Pressure Free Oil



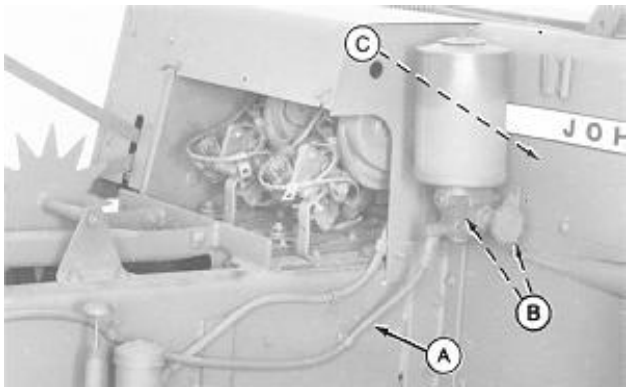
-UN-04MAY92
E36463

E01,3015,BK -19-23JUN92

REMOVE PUMP

1. Remove hose (A) from pump.

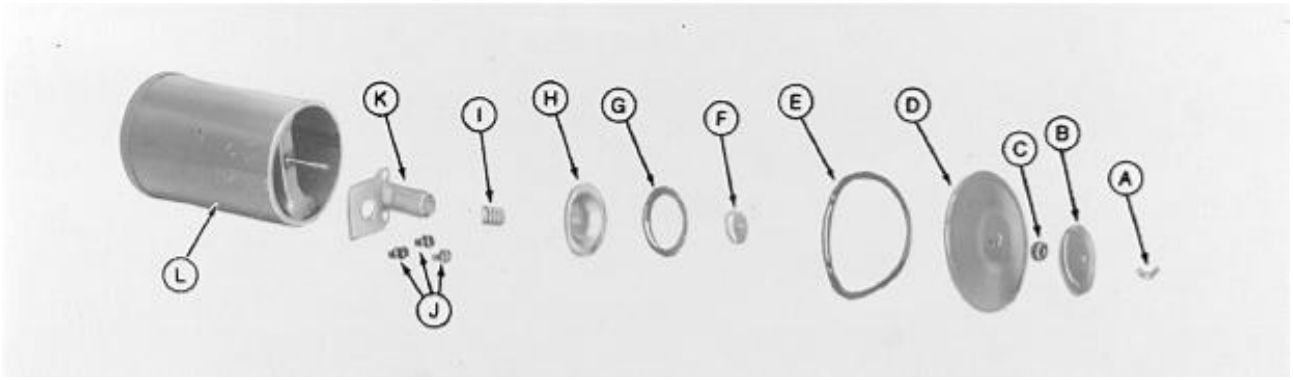
2. Remove four 5/16 x 1-in. cap screws (B), and 5/16 x 1-3/4-in. spring pin from 42-tooth drive sprocket (C).



-UN-12JUN89
E18369

E01,3015,BD -19-13MAR87

DISASSEMBLE RESERVOIR



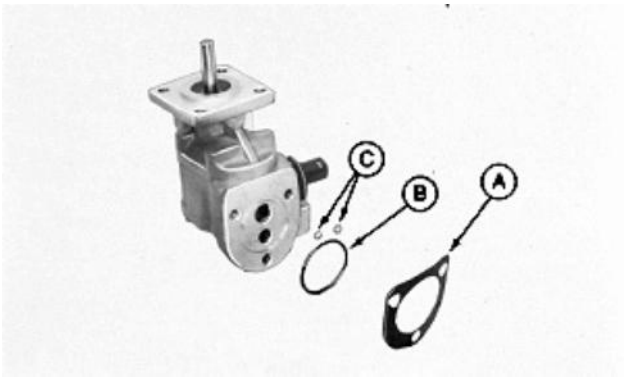
-UN-07DEC89
E29055

A—1/4-in. Wing Nut
B—Cap
C—Washer
D—Lid
E—Gasket
F—Cover
G—Gasket
H—Washer
I—Spring
J—5/16 x 5/8-in. Cap Screws and Washers
K—Filter
L—Reservoir

1. Remove 1/4 in. wing nut (A), cap (B), washer (C), lid (D), gasket (E), cover (F), gasket (G), washer (H), spring (I), 5/16 x 5/8-in. cap screws and washers (J), and filter (K).

E01,3015,BE -19-23JUN92

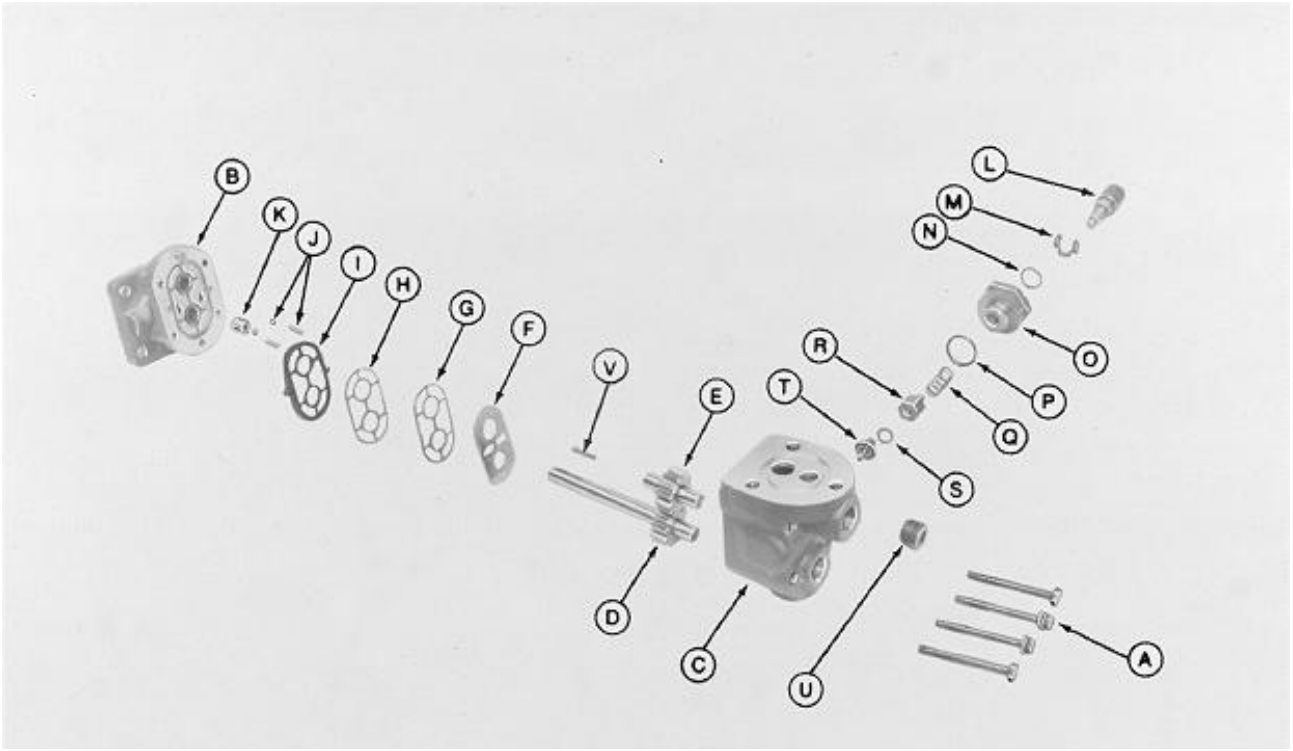
2. Remove reservoir gasket (A), O-ring (B), and O-rings (C).



-UN-12JUN89
E18371

E01,3015,C -19-17JUN81

DISASSEMBLE PUMP



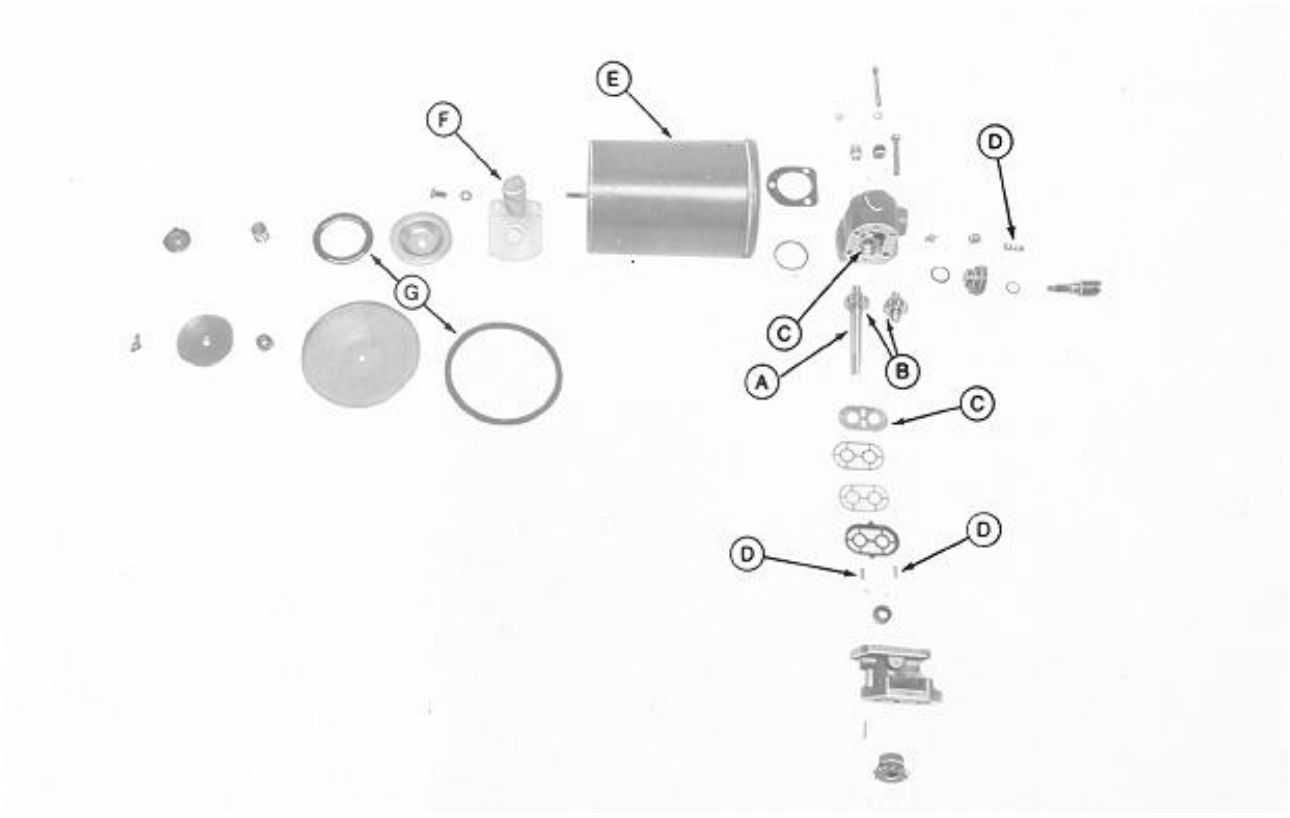
A—Four 1/4 x 2-1/4-In. Cap Screws and Washers
B—Front Plate
C—Assembly Housing
D—Drive Gear
E—Idler Gear
F—Diaphragm
G—Backup Gasket
H—Protector Gasket
I—Diaphragm Seal
J—Spring and Ball
K—Shaft Seal
L—Adjusting Screw
M—Special Snap Ring
N—O-Ring
O—Hex Plug
P—O-Ring
Q—Spring
R—Spring Guide
S—0.25 mm (0.010-In.) Shim
T—Poppet Assembly
U—3/8-In. Pipe Plugs
V—Key

1. Remove four 1/4 x 2-1/4-in. cap screws and washers (A). Separate front plate (B) from assembly housing (C).

2. Remove drive gear (D), idler gear (E), diaphragm (F), backup gasket (G), protector gasket (H), diaphragm seal (I), spring and ball (J), shaft seal (K), adjusting screw (L), special snap ring (M) used with 327, 328, 337 and 338 Balers only, O-ring (N), hex plug (O), O-ring (P), spring (Q), spring guide (R), 0.25 mm (0.010-in.) shim (S), poppet assembly (T), and 3/8-in. pipe plugs (U).

E01,3015,BF -19-13MAR87

INSPECT PUMP AND RESERVOIR



A—Drive Shaft
B—Gears
C—Gear Case and Diaphragm
D—Springs
E—Reservoir
F—Filter
G—Gasket

1. Inspect drive shaft (A) for wear or damage. Replace if necessary.

2. Gears (B) must not rotate on shaft. If key has sheared, replace gear and shaft assembly.

3. Make certain spiral lock rings that secure gears on shaft are in place.

4. Inspect gear housing and diaphragm (C) for scoring and excessive wear.

5. Inspect both drive gear and idler gear shafts at bearing points. Check seal areas for rough surfaces.

6. Inspect springs (D) for wear.

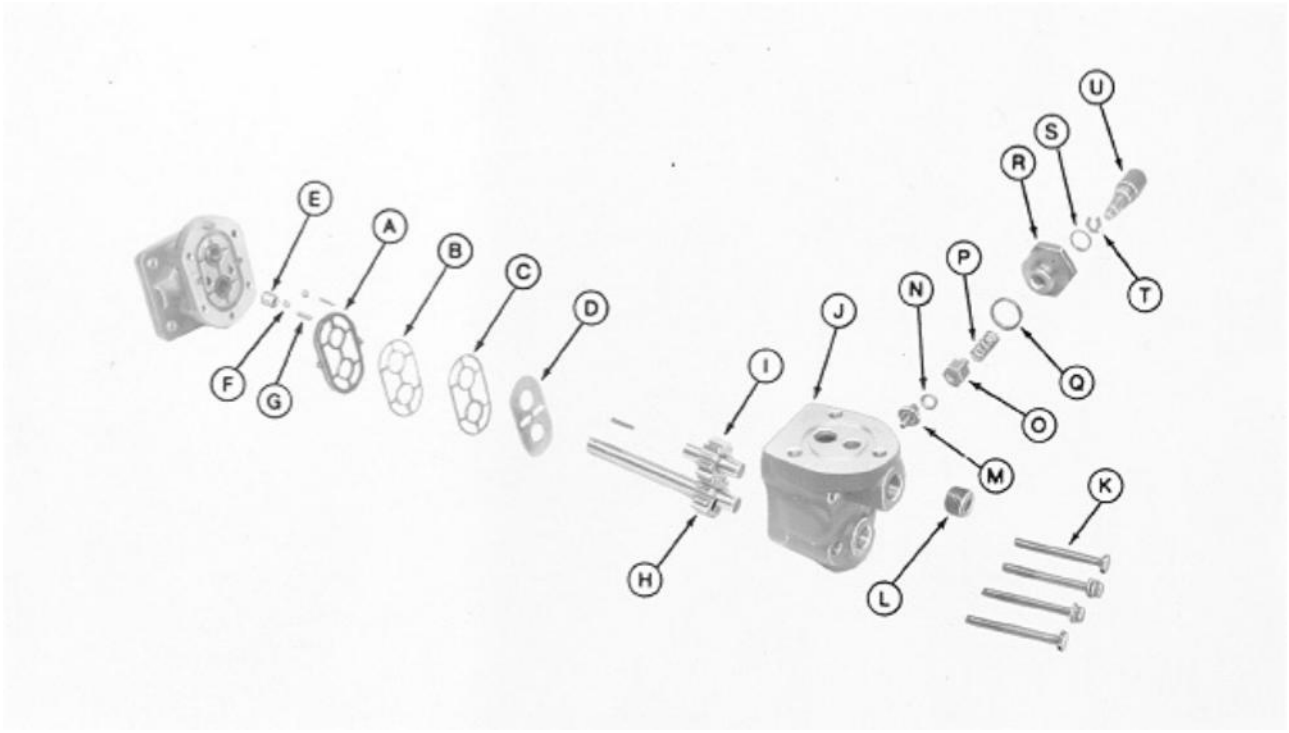
7. Inspect reservoir (E) for leaks.

8. Inspect filter (F) for clogs and holes.

9. Inspect gasket (G) for rough surfaces.

E01,3015,BG -19-30APR87

ASSEMBLE PUMP



A—Diaphragm Seal
B—Gasket
C—Backup Gasket
D—Diaphragm
E—Shaft Seal
F—3/16-In. Diameter Steel Ball
G—Springs
H—Drive Gear
I—Idler Gear Assembly
J—Housing
K—Cap Screws and Washers
L—Pipe Plug
M—Poppet Assembly
N—0.25 mm (0.010-In.) Shim
O—Spring Guide
P—Spring
Q—O-Ring
R—Hex Plug
S—O-Ring
T—Special Snap Ring
U—Adjusting Screw

1. Lubricate all parts before assembling. Diaphragm seal (A), gasket (B), backup gasket (C), diaphragm (D), shaft seal (E), and all O-rings are included in seal kit.

2. Install shaft seal (E).

3. Tuck diaphragm seal (A) into grooves in front plate with open part of “V” section down. (Use a blunt tool.).

4. Press gasket (B) and backup gasket (C) into diaphragm seal.

5. Place 3/16-in. diameter steel balls (F) into seals and place springs (G) on balls.

6. Place diaphragm (D) on top of backup gasket (bronze face up).

7. Entire diaphragm must fit inside raised rim of diaphragm seal.

8. Install drive gear (H) and idler gear assembly (I).

9. Attach housing (J) to plate and secure using four 1/4 x 2-1/4-in. cap screws (K). Torque to 10 to 14 N·m (7 to 10 lb-ft).

10. Install 3/8-in. pipe plug (L). Torque to 41 N·m (30 lb-ft).

11. Install poppet assembly (M), 0.25 mm (0.010-in.) shim (N), spring guide (O), spring (P), O-ring (Q), hex plug (R), O-ring (S). On 327, 328, 337, and 338 Balers only, install special snap ring (T) and adjusting screw (U).

E01,3015,BH -19-13MAR87

ASSEMBLE BALE TENSION RESERVOIR

To assemble reservoir, reverse Disassemble Bale Tension Reservoir procedure.

Cap screws securing reservoir to pump must be torqued to 13.6—20.4 N·m (10—15 lb-ft).

E01,3015,G -19-23JUN92

INSTALL BALE TENSION PUMP AND RESERVOIR

To install pump and reservoir, reverse Remove Pump And Reservoir procedure.

Add John Deere All-Weather Hydrostatic Fluid or equivalent. Capacity of reservoir is 2.6 L (5-1/2 pt).

Start machine and visually check for leaks.

E01,3015,BI -19-13APR87

TEST BALE TENSION PUMP

Attach gauge to pump pressure port (A). Control knob should be set for highest bale tension.

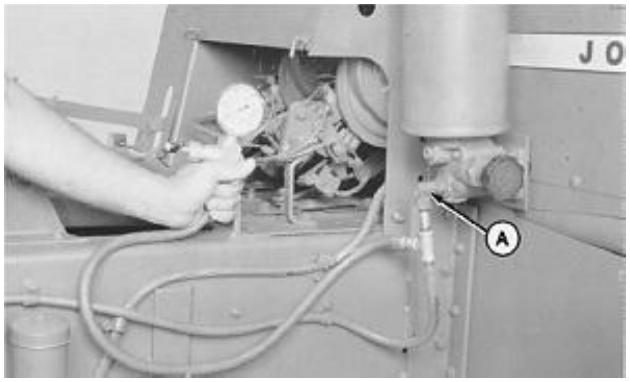
CAUTION: Always use two people—with the operator at the controls, able to see the person doing the checking. Also keep the transmission in neutral and set the brake. Keep hands away from moving parts.

At 540 PTO rpm, 327, 328, 336, 337, 338 and 346 Balers must have a maximum pressure of 3275 to 3620 kPa (33 to 36 bar) (475 to 525 psi).

At 540 PTO rpm, 347, 348, 466, 467 and 468 Balers must have a maximum pressure of 4827 to 5171 kPa (48 to 52 bar) (700 to 750 psi).

If maximum pressures are not obtained, add or subtract shims (key N of Assemble Pump procedure). Adding shims will increase pressure, subtracting shims will decrease pressure.

Do not add more than two shims to increase pressure. Inspect pump for worn gears, broken spring, or other problems if pressure reading is still low.



EX,1243,3015,B -19-23JUN92

ADJUST HYDRAULIC BALE TENSION PUMP CHAIN

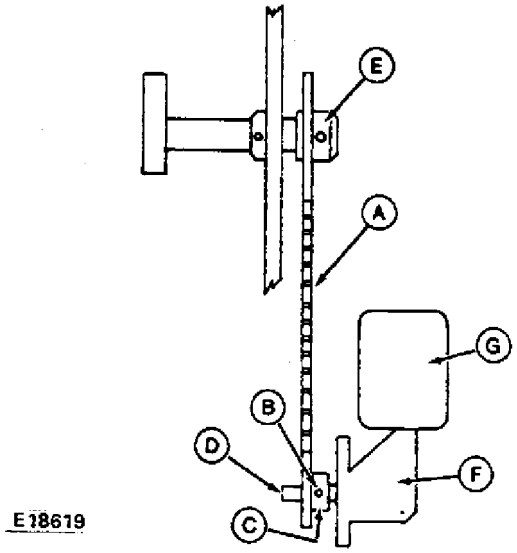
1. To adjust roller chain (A), loosen set screw (B), slide sprocket (C) on drive gear shaft (D) until it is vertically in line with sprocket drive (E).

2. If installing chain, position chain clip (H) on master link (I) so the split end of the clip trails in the direction of travel (arrowed).

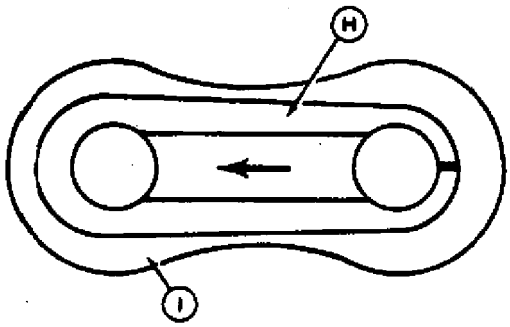
3. Adjust chain by loosening mounting bolts and moving pump until chain is tight but can still be deflected by thumb pressure. Tighten pump mounting bolts.

Check chain tension by turning flywheel until feeder crank moves approximately 90 degrees. Check pump chain tension. If chain is tight at this position, loosen pump (F) and adjust chain until it is tight but can be deflected by thumb pressure. Turn flywheel until feeder crank moves another 90 degrees and check chain tension. Adjust chain tension if needed.

A—Roller Chain
B—Set Screw
C—Sprocket
D—Drive Gear Shaft
E—Drive Sprocket
F—Pump
G—Reservoir
H—Chain Clip
I—Master Link



E18619 -UN-20SEP88



E22702 -UN-14SEP88

E01,347P,BX -19-23JUN92

SERVICE PARTS KIT

The following kit is available through your parts catalog:

Seal Kit (John Deere cylinder)

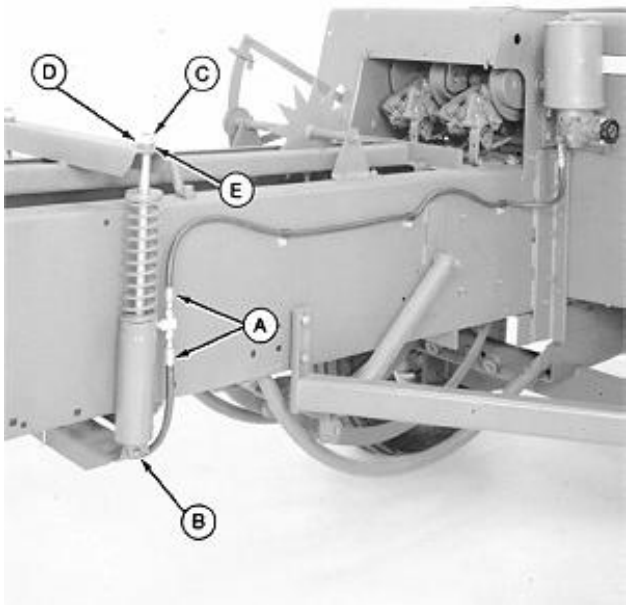
E01,3020,AH -19-23JUN92

REMOVE CYLINDER

1. Remove hose (A) from cylinder to be repaired.

2. Remove drilled rivet and cotter pin (B), elastic stop nut (C), cup washer (D), and washer (E).

A—Hoses
B—Drilled Rivet and Cotter Pin
C—Elastic Stop Nut
D—Cup Washer
E—Washer

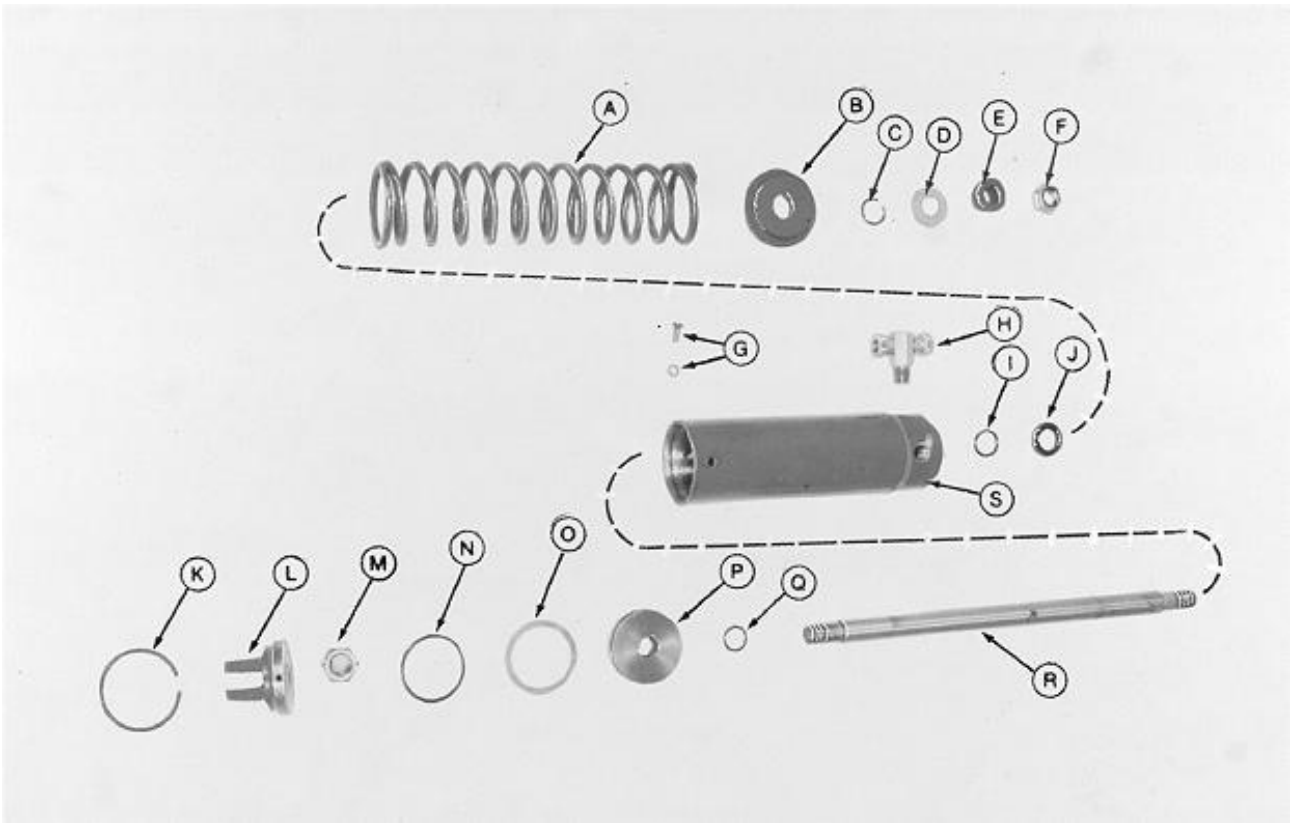


E18375 -UN-12JUN89

E01,3020,AI -19-13MAR87

DISASSEMBLE JOHN DEERE CYLINDER

NOTE: A John Deere or Cessna cylinder could be used on Baler. The John Deere piston rod (R) is silver and cylinder can be repaired. The Cessna piston rod is black and cannot be repaired.



A—Spring
B—Spring Collar
C—Snap Ring
D—Washer
E—Washer
F—Lock Nut
G—Machine Screw with Lock Washer
H—Adapter
I—O-Ring
J—Wiper Seal
K—Snap Ring
L—Filter and Yoke
M—Lock Nut
N—Seal Ring
O—O-Ring
P—Piston
Q—O-Ring
R—Piston Rod
S—Barrel

John Deere Cylinder

Remove spring collar (B), spring (A), wiper seal (J), O-ring (I), adapter (H), machine screw with lock washer (G), snap ring (K), filter and yoke (L), piston rod (R), lock nut (M), O-ring (O), seal ring (N), piston (P), and O-ring (Q).

E01,3020,AJ -19-23JUN92

INSPECT JOHN DEERE CYLINDER

Replace O-rings if cut or distorted.

Replace piston and rod if nicked.

Repair cylinder bore if scored.

Replace contaminated parts.

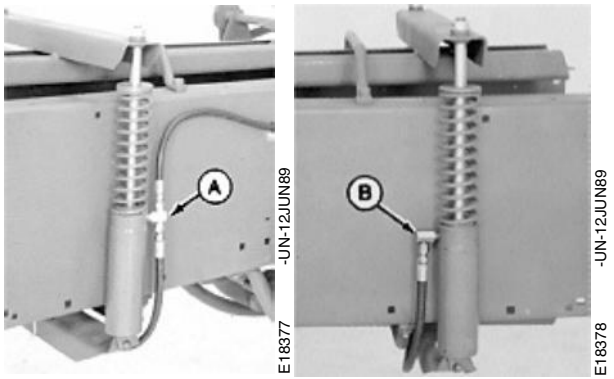
Replace piston rod if not straight.

E01,3020,AK -19-13MAR87

ASSEMBLE JOHN DEERE CYLINDER

To assemble, reverse Disassemble John Deere Cylinder procedure.

NOTE: Install "T" adapter (A) to right cylinder, and 90 degree adapter (B) to left cylinder.

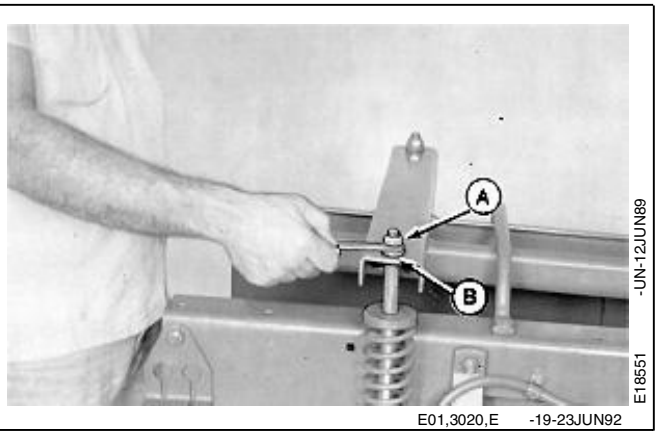


E01,3020,AL -19-23JUN92

INSTALL BALE TENSION CYLINDER

To install, reverse Remove Cylinder procedure.

NOTE: Clearance between elastic stop nut (A) and cup washer (B) must be 0.79—2.3 mm (0.030—0.090 in.).



E01,3020,E -19-23JUN92

ESSENTIAL TOOLS

NOTE: Order tools from your SERVICE-GARD™ Catalog. Some tools may be available from a local supplier.

Number	Name	Use
JDH-6	O-Ring Seal Hook	For removing and installing O-ring seals.
JDG-347	Spanner Wrench	For removing Cessna piston from cylinder.
JDG-348	9/16-18 UNF x 3/8 NPTF	For removing Cessna guide from barrel.

E01,3025,AH -19-13MAR87

SERVICE PARTS KIT

The following kits are available through your parts catalog:

Seal Kit (Tie-Bolt Cylinder).
Seal Kit (Cessna Cylinder).

E01,3025,AI -19-13MAR87

SPECIFICATIONS

Item	Measurement	Specification
Piston Nut (Tie-Rod)	Torque	41—48 N·m (30—35 lb-ft)
Piston Nut (Cessna)	Torque	136 N·m (100 lb-ft)

E01,3025,AJ -19-13MAR87

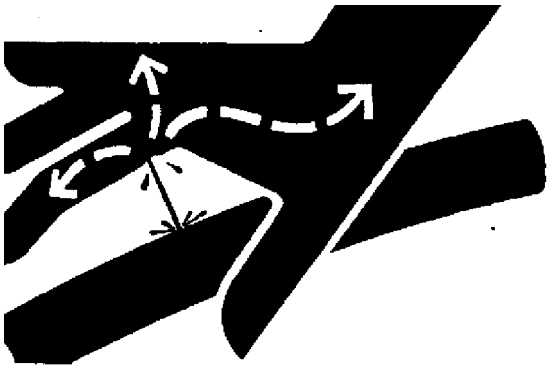
REMOVE TONGUE POSITIONING CYLINDER

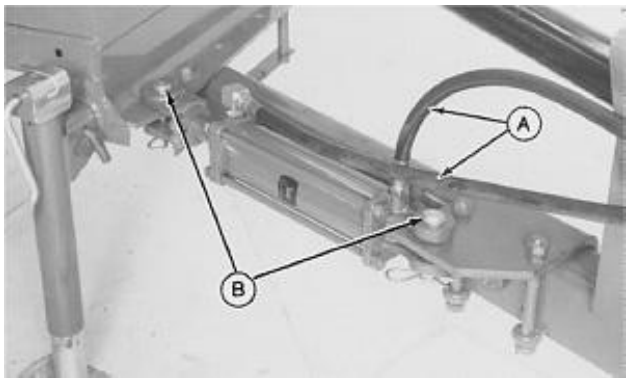
NOTE: Hydraulic tongue positioning is not an available option for 336 and 346 Balers.

1. Wash area around cylinder.

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.


X9811 -UN-23AUG88



E29058 -UN-07DEC89

2. Disconnect hoses (A) from cylinder. Mark each hose to ensure correct installation when cylinder is installed.

3. Remove drilled pins (B) and spring lock pins at each end of cylinder.

4. Remove cylinder.

5. Two types of cylinders are used, tie-bolt and Cessna. Determine type used. Tie-bolt style is shown here.

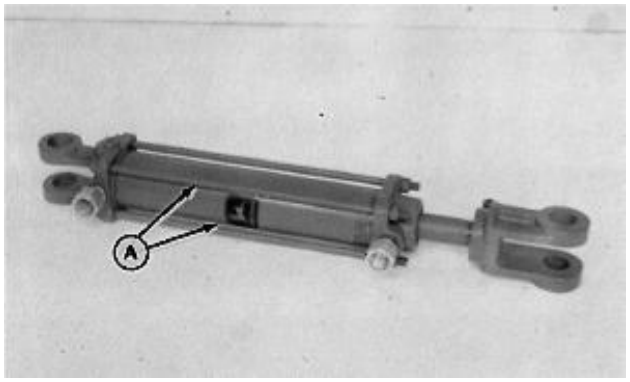
EX,1243,3025,A -19-23JUN92

DISASSEMBLE TIE-BOLT CYLINDER

1. Remove nuts and four tie rods (A).

IMPORTANT: Do not clamp barrel in a vise.

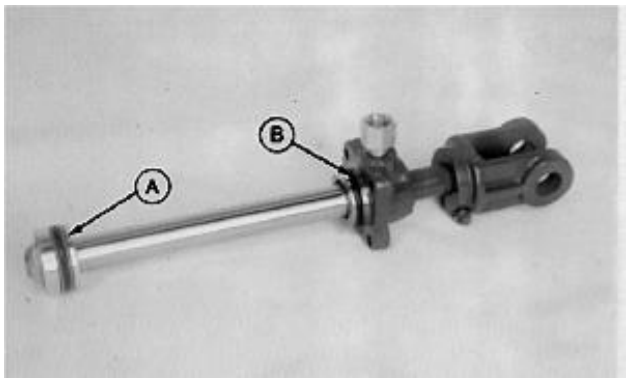
2. Separate cylinder.



E01,3025,AL -19-13MAR87

3. Remove nylon O-ring, rubber O-ring, and nylon O-ring from piston (A).

4. Remove rubber O-ring (B) from rod guide.

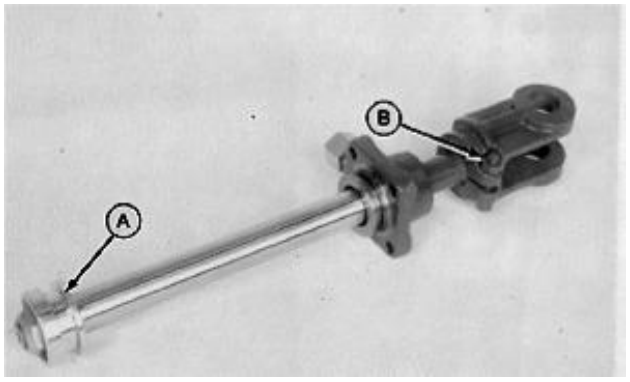


E01,3025,AM -19-13MAR87

5. If necessary to remove piston (A), pad jaws of vise and clamp cylinder securely.

6. Remove lock nut and piston (A).

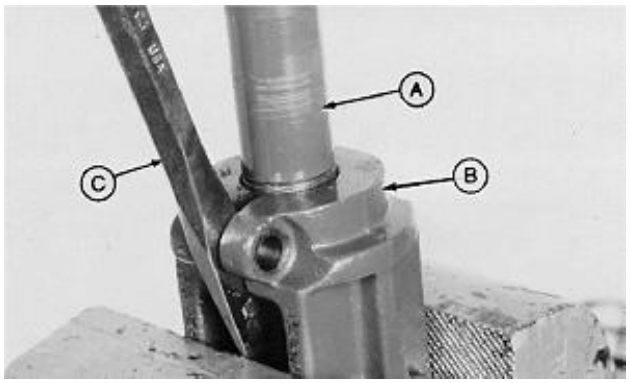
7. Remove cap screw and nut (B).



E01,3025,AN -19-13MAR87

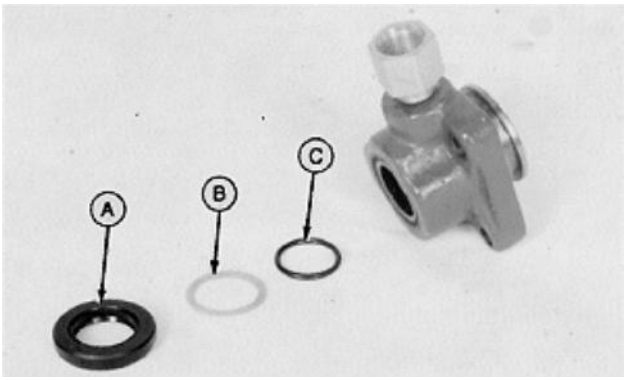
8. Unthread rod (A) from clevis (B).

NOTE: Removal is easier if the clevis can be opened slightly using a chisel (C).



E01,3025,AO -19-30APR87

9. Remove seal (A), nylon O-ring (B), and rubber O-ring (C) from rod guide.



E01,3025,AP -19-13MAR87

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25
4

INSPECT CYLINDER

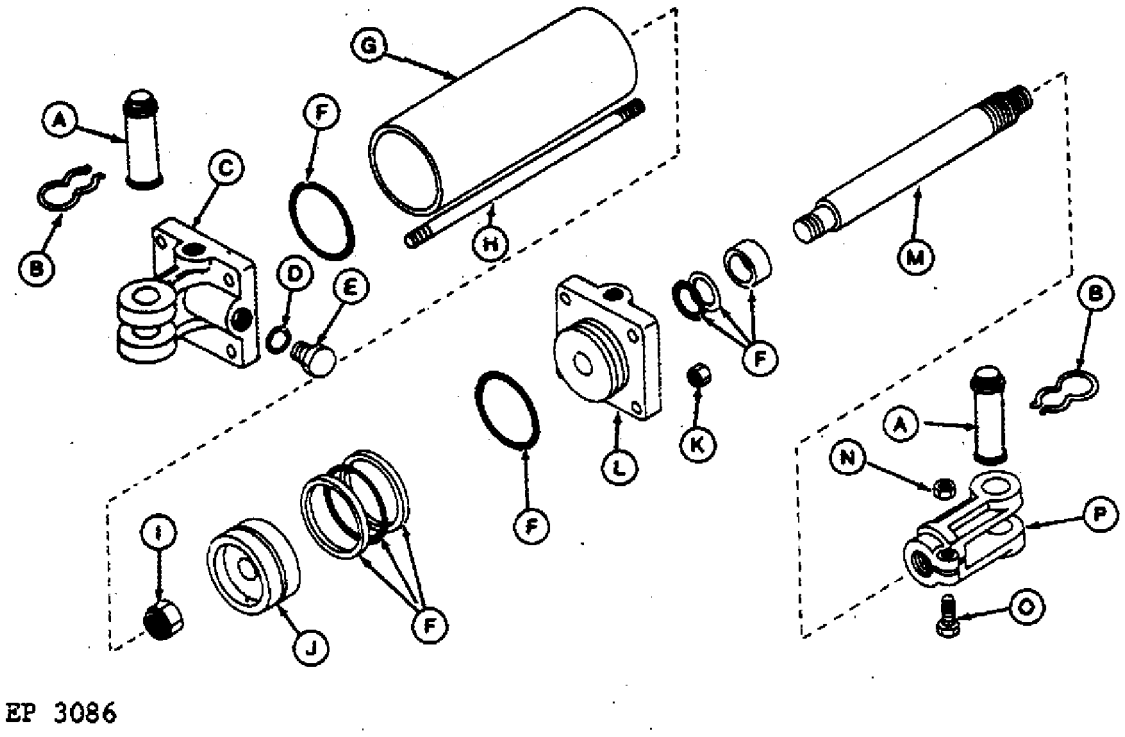
Replace O-rings and seals. These are available in a kit.

Repair or replace piston and rod if burred.

Repair cylinder bore if scored.

E01,3055,H -19-25JUN84

ASSEMBLE TIE-BOLT CYLINDER



A—Pin (2 Used)
B—Spring Locking Pin (2 Used)
C—Clevis
D—O-Ring
E—Fitting
F—Cylinder Kit
G—Barrel
H—Tie Rod (4 used)
I—Nut
J—Piston
K—Nut (8 Used)
L—Rod Guide
M—Rod
N—Nut
O—Cap Screw
P—Clevis

Tie-Bolt Hydraulic Cylinder

1. Refer to exploded view and reverse the disassembly steps.

2. Tighten lock nut (I) to 41 to 48 N·m (30 to 35 lb-ft).

3. After installing, start the baler and visually check for leaks. Operate the cylinder several times to be certain cylinder is operating correctly.

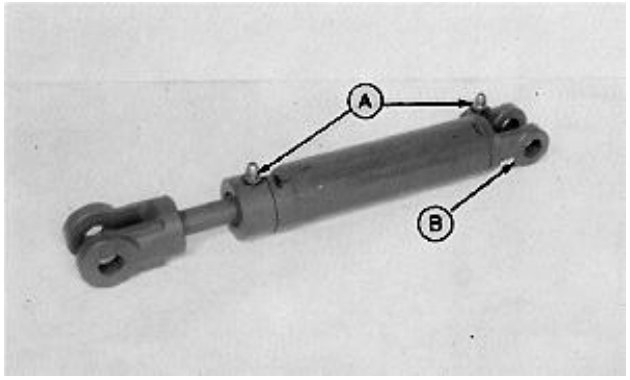
EX,1243,3025,AQ-19-18AUG95

DISASSEMBLE CESSNA CYLINDER

1. Remove both fittings (A).

2. Scribe a line on each end of cylinder. This is for alignment during assembly.

3. Place cylinder in vise at cylinder head (B).

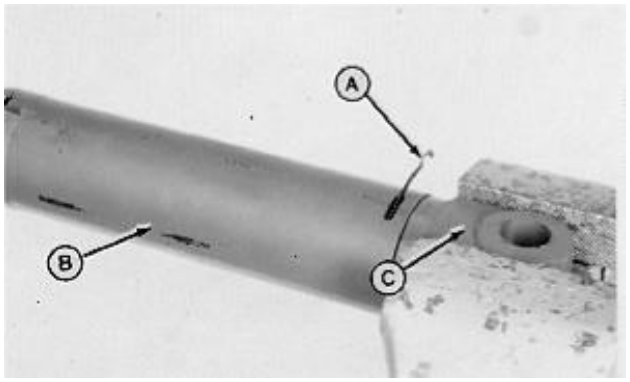


E01,3025,AR -19-30APR87

4. Lift lock ring (A) out of slot with screwdriver.

5. Rotate barrel (B) to remove lock ring and head (C).

NOTE: If barrel is difficult to remove, use a port wrench (JDG-348). See Essential Tools.

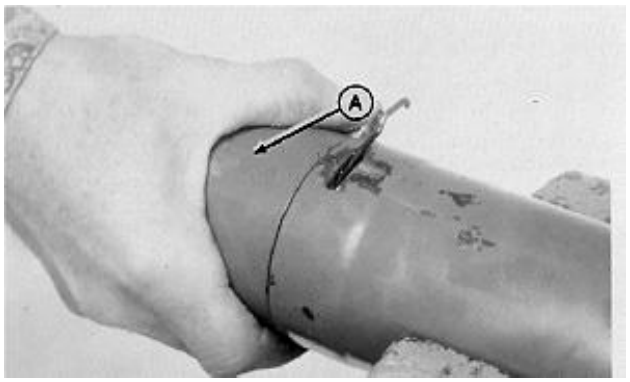


E24508 -UN-22AUG89

E01,3025,AS -19-13MAR87

6. Repeat procedure on opposite end, rotate guide (A) to remove lock ring.

7. Remove rod from barrel.



E24509 -UN-22AUG89

E01,3025,AT -19-13MAR87

NOTE: Clevis can be removed to gain access to bearing. If necessary to remove nut and piston, use steps 8 through 12.

8. Insert a steel rod (A) through clevis and secure in vise.

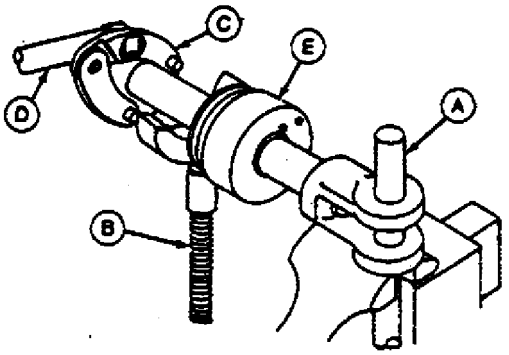
9. Rest piston on a support (B).

10. Remove nut using a spanner wrench (C) and 3/4-in. socket (D).

NOTE: If rod loosens from clevis first, torque the piston until it turns on the rod. This will tighten the rod and clevis enough to allow piston to be removed.

11. Remove piston from rod.

12. Remove and discard all seals, O-rings, slipper ring and backup washers. These are included in a seal kit.



E24510 -UN-05MAY89

A—Steel Rod
B—Support
C—Spanner Wrench
D—3/4-in. Drive Socket
E—Bearing

E01,3025,AU -19-13MAR87

INSPECT CYLINDER

Remove all nicks and burrs.

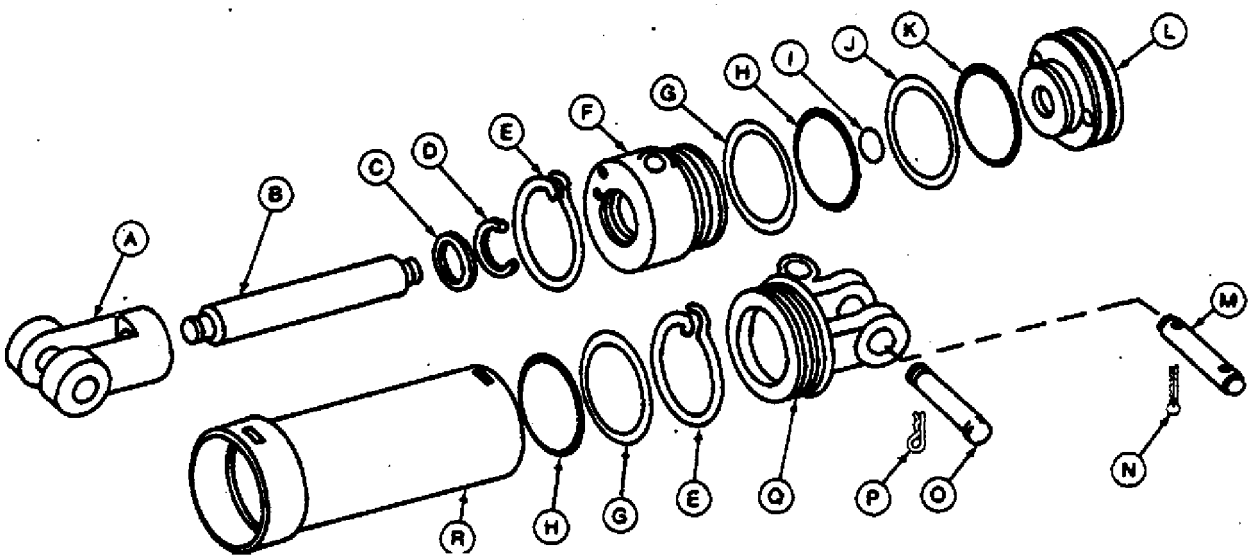
Inspect and repair I.D. of barrel for scoring and wear.

Inspect rod for dents, scratches, scoring or pitting. Repair or replace as necessary.

Inspect O.D. of piston for scoring. Replace if badly scored.

E01,3025,AV -19-13MAR87

ASSEMBLE CESSNA CYLINDER



A—Clevis
B—Rod
C—Wiper Seal*
D—U-Cup Seal*
E—Lock Ring (2 Used)*
F—Bearing
G—Backup Washer (2 Used)*
H—O-Ring (2 Used)
I—O-Ring
J—Slipper Ring*
K—O-Ring*
L—Piston
M—Pin (2 Used)
N—Cotter Pin (4 Used)
O—Pin (2 Used)
P—Spring Locking Pin (2 Used)
Q—Cylinder Head
R—Cylinder Barrel

Cessna Hydraulic Cylinder

1. Clean and dry all parts thoroughly. Oil parts lightly. Refer to exploded view to assemble cylinder.

** Included in seal repair kit*

E01,3025,AW -19-23JUN92

2. Install U-cup seal (A) in bearing (B). U-groove to inside of cylinder.

3. Install wiper seal (C) in bearing, lip out.

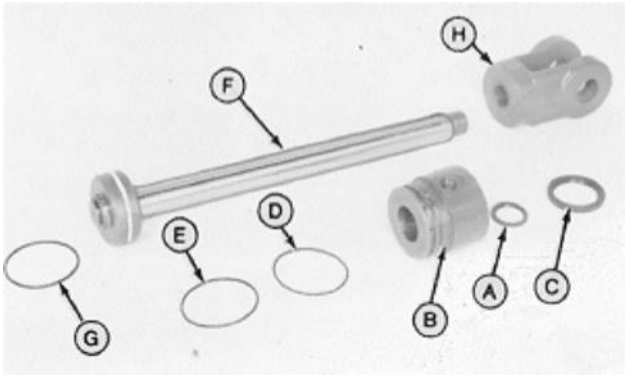
4. Install backup washer (D) and O-ring (E).

5. Oil rod (F) and carefully slide bearing (B) over rod with a straightforward motion.

NOTE: If it was necessary to remove nut and piston, reverse steps 8 through 12. Tighten nut to 136 N·m (100 lb-ft).

6. Install O-ring (G) (with red dot) on piston. Work slipper ring over piston and into groove.

NOTE: Slipper ring will stretch and must be compressed to original size. A ring compressor or smooth hose clamp can be used.



E24512 -UN-22AUG89

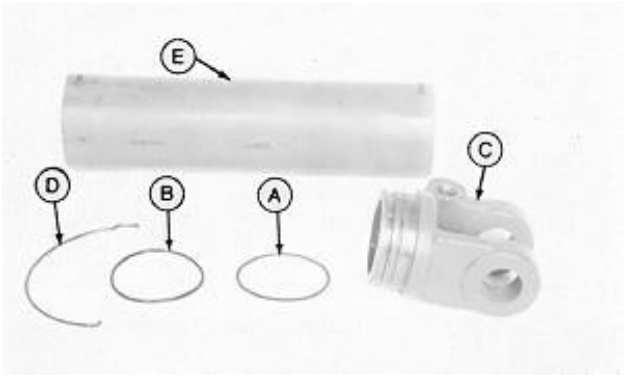
A—U-Cup Seal
B—Bearing
C—Wiper Seal
D—Backup Washer
E—O-Ring
F—Rod
G—O-Ring
H—Clevis

E01,3025,AX -19-13MAR87

7. Install backup washer (A) in cylinder head (C).

8. Install O-ring (B).

A—Washer
B—O-Ring
C—Cylinder Head
D—Lock Ring
E—Barrel



E24513 -UN-22AUG89

E01,3050,K -19-25JUN84

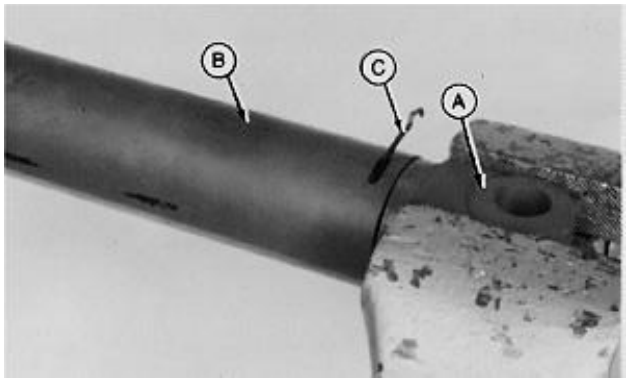
9. Clamp cylinder head (A) in vise and carefully slide barrel (B) over seals.

NOTE: It may be necessary to use a blunt tool (JDH-6) to depress seals as they pass under slot in barrel.

10. Line up lock ring hole in head with lock ring groove in barrel.

11. Insert lock ring (C) in hold in head and rotate until lock ring enters slot in barrel.

12. Guide end of wire into slot then lightly tap end down into slot with hammer.



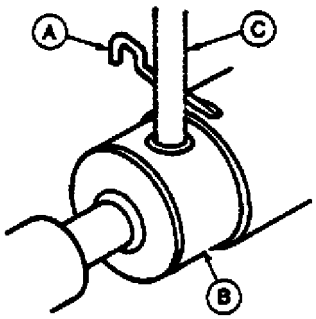
E24514 -UN-22AUG89

E01,3025,AY -19-13MAR87

13. Install remaining lock ring (A) and bearing (B). Use JDG-348 tool (C) if necessary to rotate bearing.

14. Reverse removal steps to install cylinder.

15. After installing cylinder, start the baler and visually check for leaks. Operate the cylinder several times to be certain cylinder is operating correctly.



E24515 -UN-05MAY89

E01,3050,M -19-25JUN84

Section 40
BALE FORMING COMPONENTS

Contents

PICKUP DIFFICULTIES

Symptom	Problem	Solution
Pickup Teeth Digging In Ground	Pickup set too low.	Raise pickup.
Not Picking Up Hay	Pickup stays up.	Check pivots.
		Loosen float spring.
		Loosen pickup drive idler spring.
	Pickup teeth set too high.	Lower pickup.
	Ground speed too fast.	Reduce ground speed.
	Hay not all raked.	Turn all hay onto clean stubble.
	Pickup teeth bent or broken.	Straighten or replace teeth.
	Windrows too light.	Rake heavier windrows.
Pickup Teeth Do Not Revolve	Belt slipping.	Replace or tighten belt and raise compressor.
	Foreign material inside and/or broken teeth.	Remove foreign material and/or replace teeth.
Pickup Tooth Breakage	Pickup set too low.	Raise pickup.
	Foreign material inside and/or broken teeth.	Remove foreign material and/or replace teeth.

EX,1243,4005,A -19-09AUG95

FEEDING DIFFICULTIES

Symptom	Problem	Solution
Plungerhead Hitting Feeder Teeth At Top of Case	Out of time.	Retime plunger and feeder fingers.
Baler Stalls When Plungerhead Is Even With Rear Side Of Feed Opening	Dull knives	Sharpen knives
	Plungerhead out of adjustment.	Adjust plungerhead.
	Slip clutch too loose.	Adjust clutch.
Baler Stalls On Compression Stroke	Baling too heavy.	Loosen bale tension.
	Slip clutch too loose.	Adjust clutch.
	Plungerhead obstructed.	Remove obstruction.
Baler Fails To Start After Being Stalled On Compressor Stroke	Plungerhead obstructed.	IMPORTANT: Be sure needles are in “home” position before turning flywheel by hand. Turn flywheel in clockwise direction for two or three revolutions; then engage PTO.
Hay Not Feeding Under Auger	Auger drive V-belt slipping	Adjust or replace belt.
	Slip clutch slipping.	Adjust slip clutch.
	Rear of compressor rods set too high.	Adjust rear of compressor rods.
	Material too dry.	Bale when moisture content rises.

EX,1243,4005,B -19-09AUG95

NEEDLES NOT RAISING

Symptom	Problem	Solution
Trip Dog Not Functioning	Broken release arm spring	Replace spring.
	Trip dog spring missing.	Install spring.
Sheared Knotter Drive Bolt		See Shear Bolt Difficulties in Diagnosing Malfunctions.

EX,1243,4005,C -19-09AUG95

BALE NOT OF PROPER WEIGHT

Symptom	Problem	Solution
Bale Too Light	Bale tension too loose.	Increase bale tension.
Bale Too Heavy	Bale tension too tight.	Decrease bale tension.
Bale Too Heavy With Loose Tension. (Crank Screw Out)	Hay too wet	Allow hay to dry before baling
	Hay too green.	Allow hay to cure before baling.
Bale Too Long	Not enough material in top of bale.	Increase bale tension.
	Measuring wheel not contacting crop properly.	Adjust bale measuring control.
		Increase bale tension.
Bale Too Short	Measuring arm not dropping home.	Adjust bale measuring control.

EX,1243,4005,D -19-09AUG95

BALE NOT UNIFORM

Symptom	Problem	Solution
Material Not Distributed Evenly In Bale	Feeder teeth out of adjustment.	Adjust feeder teeth.
Banana Shaped Bale	Ground speed of baler too slow	Increase ground speed.
		Reduce baler rpm
	Windrow too small.	Make larger windrows.
	Bale tension too loose.	Increase bale tension.
	Baling extremely light hay.	Place feeder teeth in bottom hole.
		Make larger windrows.
Ragged Bale	Dull knives.	Sharpen knives
	Plungerhead out of adjustment.	Adjust plungerhead.
Irregular Bale Length	Measuring arm bounces.	327 (S.N. 680001—),337,338,346 (S.N. 285001—),347,348,466,467,468 Balers add or remove shims between measuring wheel pulleys.
	Low bale density.	Increase ground speed.
		Increase windrow size.
		Increase bale tension.

EX,1243,4005,E -19-09AUG95

OTHER MATERIAL

Number	Name	Use
PT 569	John Deere NEVER-SEEZ Lubricant	Apply to cam follower shaft.

NEVER-SEEZ is a trademark of the Emhart Chemical Corporation.

EX,1243,4010,A -19-09AUG95

SPECIFICATIONS

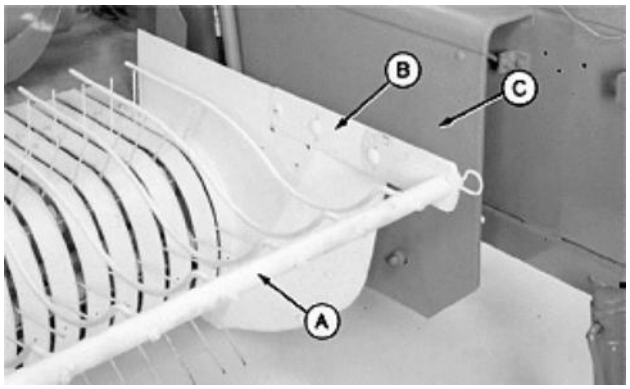
Item	Measurement	Specification
Cam Follower Cap Screw	Torque	34 ± 12 N·m (25 ± 9 lb-ft)

EX,1243,4010,B -19-09AUG95

REMOVE CAM AND FOLLOWERS—7- AND 8-SERIES BALERS

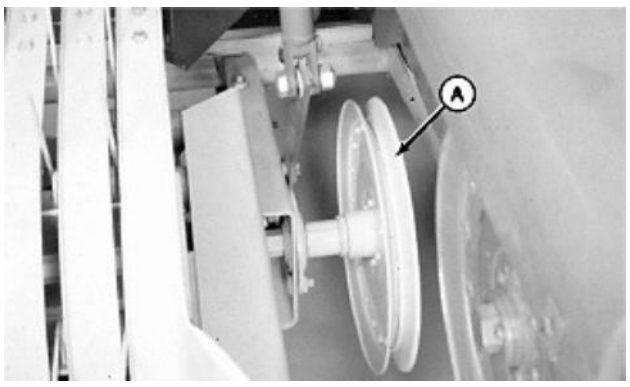
NOTE: For 6-series balers, pickup cylinder must be removed from pickup assembly to gain access to cam and followers. Refer to Section 40, Group 15.

1. Remove compressor rods (A), left compressor support (B), pickup drive shield (C) and pickup drive belt.



EX,1243,4010,C -19-09AUG95

2. Remove pickup driven sheave (A).

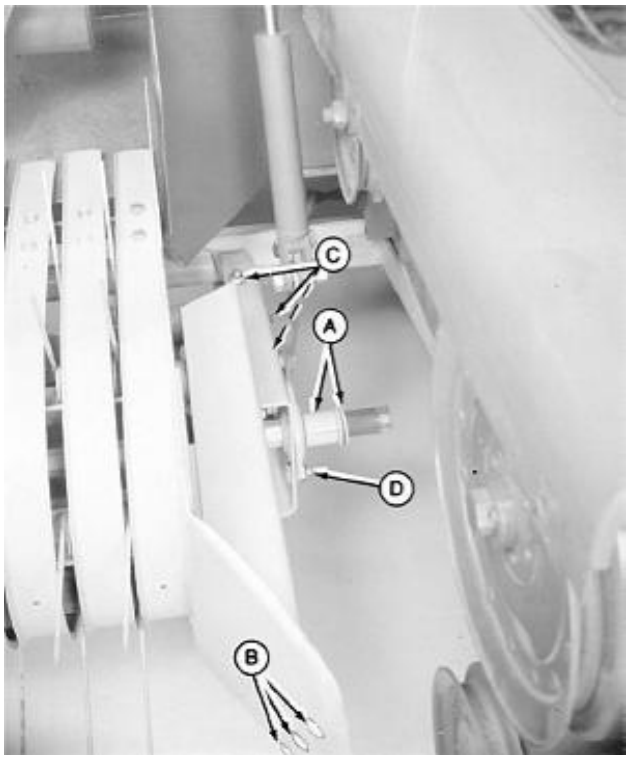


EX,1243,4010,D -19-09AUG95

3. Remove washers and spacer (A), three M8 x 16 carriage bolts (B), and three M10 x 25 carriage bolts (C).

4. Loosen bearing flange nuts (D).

A—Washers and Spacer
B—Carriage Bolts and Nuts
C—Carriage Bolts and Nuts
D—Bearing Flange Nuts

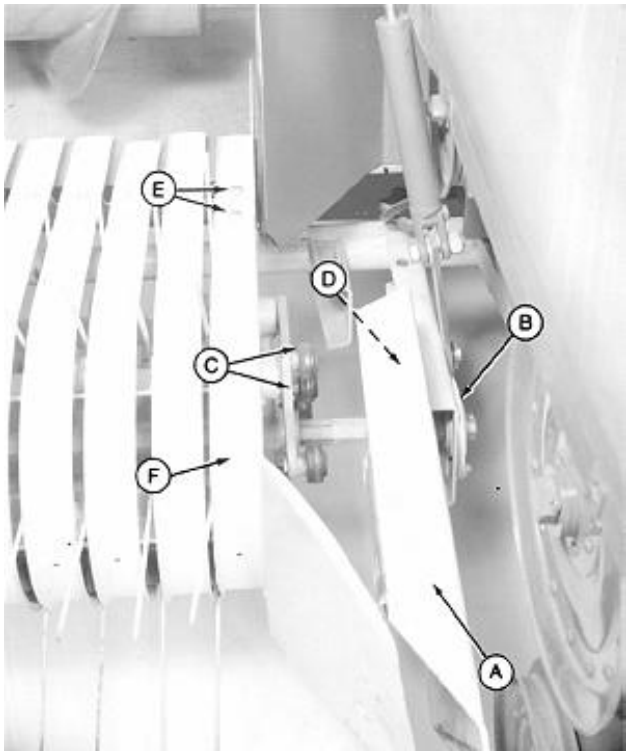


EX,1243,4010,E -19-09AUG95

5. Slide cam support bracket (A) and bearing (B) toward end of shaft until cam followers (C) are removed from cam (D).

6. For easier access to cam followers, remove four self-tapping screws (E) to remove left stripper/divider (F).

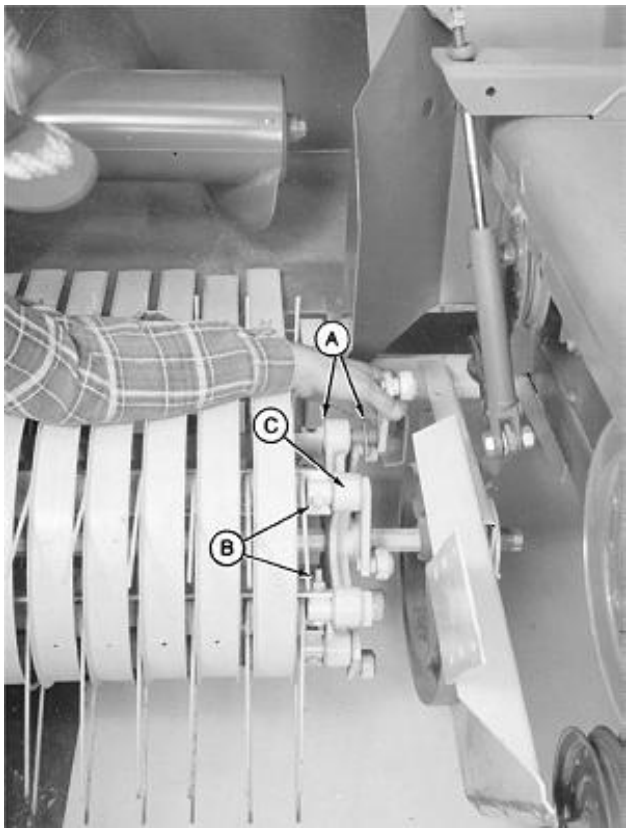
A—Cam Support Bracket
B—Bearing
C—Cam Followers
D—Cam
E—Self-Tapping Screws
F—Stripper/Divider



EX,1243,4010,F -19-09AUG95

IMPORTANT: Note location and amount of washers (A) on cam follower shafts for reassembly.

7. Remove 3/8 x 2-1/4-inch cap screws (B) and pull cam followers from spider (C).



EX,1243,4010,G -19-09AUG95

INSPECT CAM AND FOLLOWERS

1. Inspect cam for wear grooves and cracks. Replace if needed.

2. Inspect follower bearings for bad seals and looseness.

EX,1243,4010,H -19-09AUG95

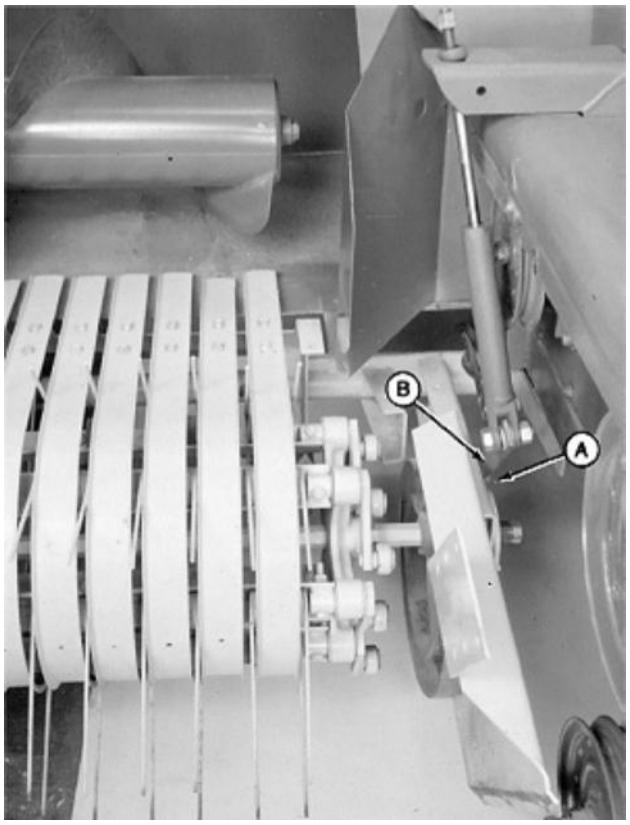
REPLACE CAM

1. Refer to cam and followers removal procedure and perform steps outlined.

2. Support left end of pickup using a jackstand or hoist.

3. Remove cotter pin (A) and disconnect pickup lift linkage from support (B).

4. Slide support with bearing and cam off shaft.



EX,1243,4010,I -19-09AUG95

IMPORTANT: Note location and amount of washer and shims.

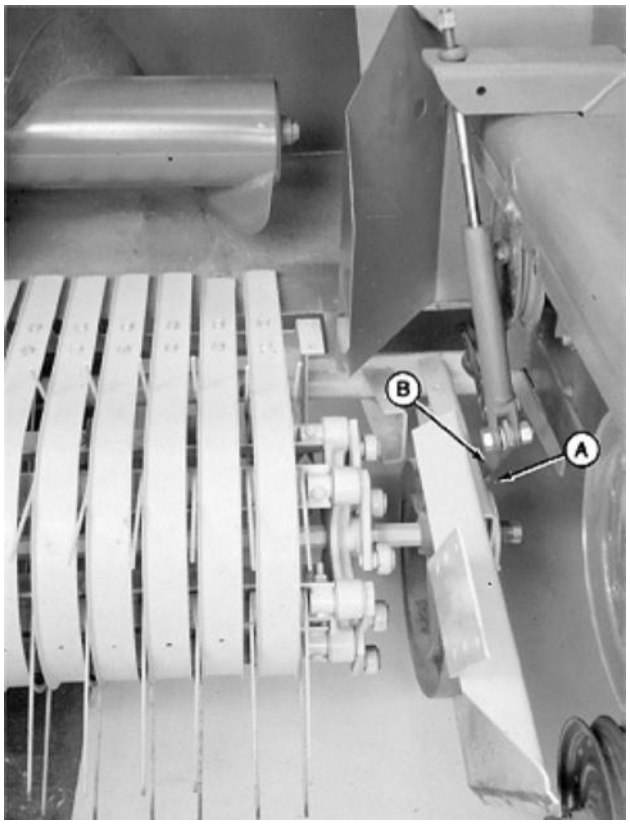
5. Remove two M10 x 25 carriage bolts and one M10 x 30 cap screw.

6. Install new cam to support using washers, shims and hardware removed.

EX,1243,4010,J -19-09AUG95

7. Install cam and support assembly on shaft and secure pickup lift linkage with cotter pin (A) to support (B).

8. Remove hoist or jackstand.



EX,1243,4010,K -19-09AUG95

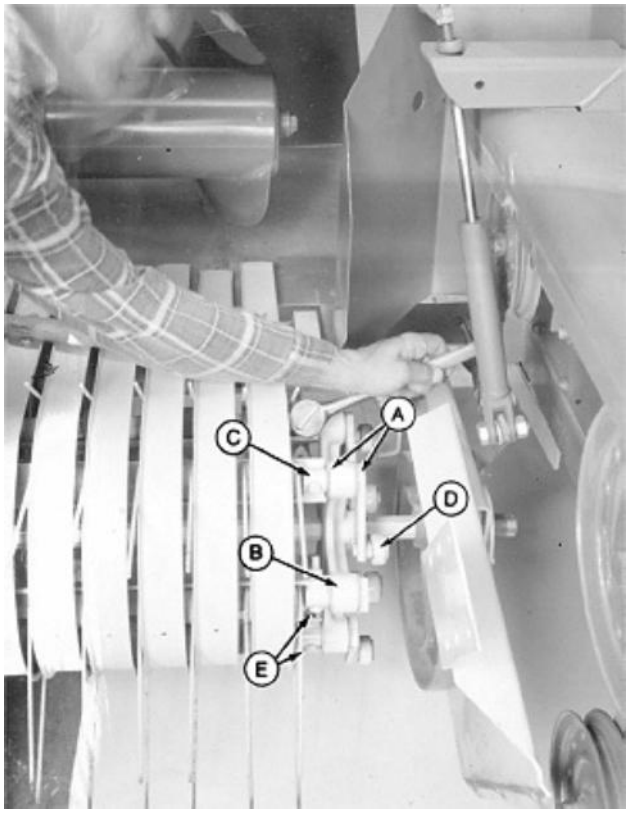
INSTALL CAM AND FOLLOWERS

1. Apply NEVER-SEEZ Lubricant to cam follower pivot shaft.

2. Install washers (A) and cam follower shaft through spider (B). Install tooth bar (C) with cam follower bearing (D) following tooth bar as shown.

3. Tighten 3/8 x 2-1/4 in. cap screw (E) to 34 ± 12 N·m (25 ± 9 lb-ft).

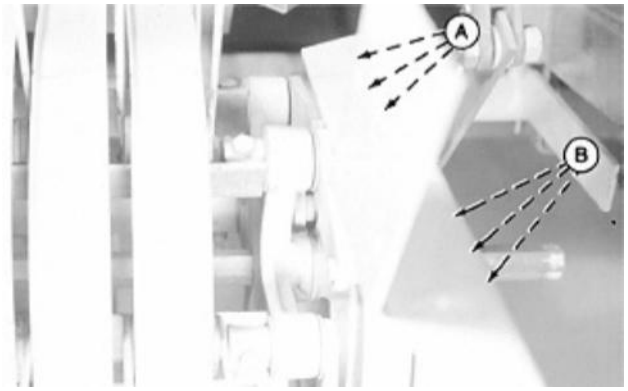
A—Washers
B—Spider
C—Tooth Bar
D—Cam Follower Bearing
E—Cap Screw



EX,1243,4010,L -19-09AUG95

4. Attach cam support bracket using three M10 x 25 carriage bolts (A). Be sure followers are in track of cam.

5. Tighten bearing flange nuts (B).



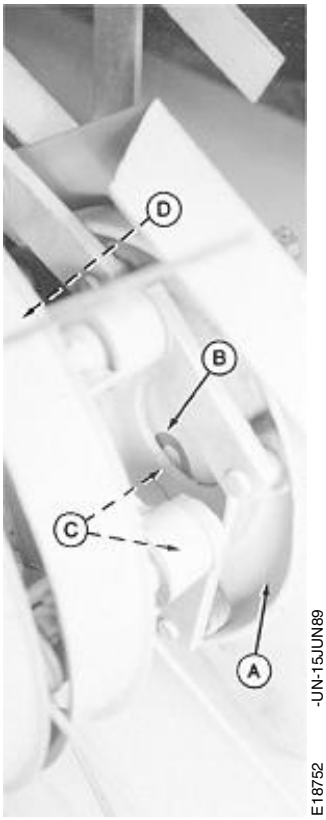
EX,1243,4010,M -19-09AUG95

6. Rotate pickup by hand, making sure followers are completely in cam track (A) and follower rivet head does not contact cam.

IMPORTANT: It may be necessary to remove washers between right spider and bearing when adding cam shims to prevent cylinder components from binding.

7. To reduce clearance between follower and cam, place shim (B) between cam and left support at front two cam mounting bolts (C). Place washers at rear cam mounting bolt (D).

A—Cam Track
B—Shim Location
C—Front Cam Mounting Bolts
D—Rear Cam Mounting Bolt



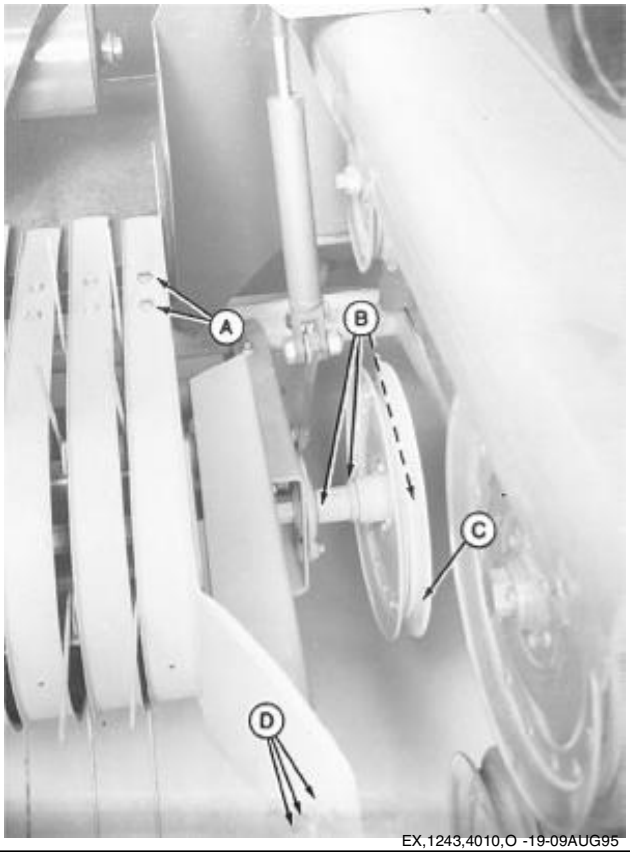
EX,1243,4010,N -19-09AUG95

8. Install left stripper/divider using four self-tapping screws (A).

9. Install spacer and washers (B), pickup driven sheave (C) and secure with cotter pin. Install washers as necessary on each side of sheave so sheave is aligned with the other pickup drive sheaves.

10. Install three M8 x 16 carriage bolts (D).

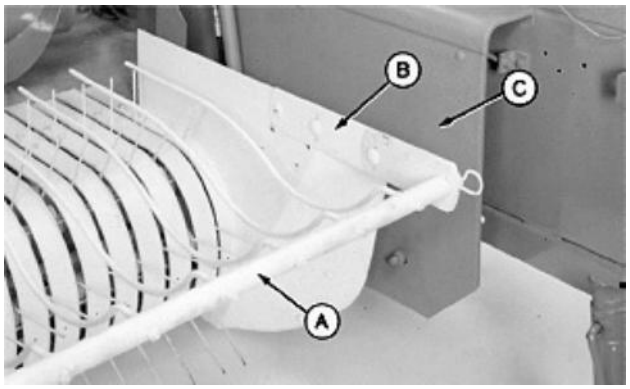
A—Self-Tapping Screws
B—Spacer and Washers
C—Pickup Driven Sheave
D—Carriage Bolts and Nuts



E18756 -UN-12JUN89

EX,1243,4010,O -19-09AUG95

11. Install pickup drive belt, pickup drive shield (C), left compressor support (B), and compressor rods (A).



E18736 -UN-12JUN89

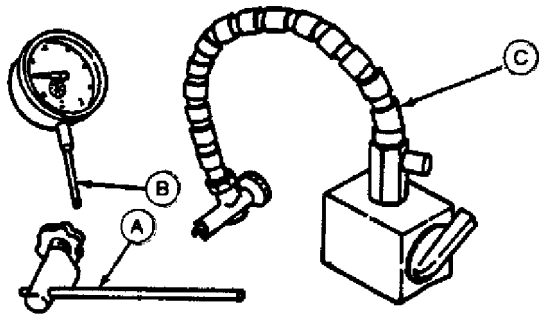
EX,1243,4010,P -19-09AUG95

SPECIAL OR ESSENTIAL TOOLS

Dial Indicator:

Use to check pickup drive shaft.

A—Adjustable Arm
B—Dial Indicator
C—Magnetic Base



E37994 -UN-13APR95

EX,1243,4015,A -19-09AUG95

SPECIFICATIONS

Item	Measurement	Specification
Tooth Bar	Straightness	6.35 mm (1/4 in.) maximum bow
Pickup Cylinder Shaft	Straightness	5 mm (0.188 in.) maximum bow
Pickup Tooth Cap Screw or Bolt	Torque	34 ± 12 N·m (25 ± 9 lb-ft)
Cam Follower Cap Screw	Torque	34 ± 12 N·m (25 ± 9 lb-ft)
Pickup Float Spring	Force	178 N (40 lb)

EX,1243,4015,B -19-09AUG95

OTHER MATERIAL

Number	Name	Use
PT 569	John Deere NEVER-SEEZ Lubricant	Apply to cam follower shaft.

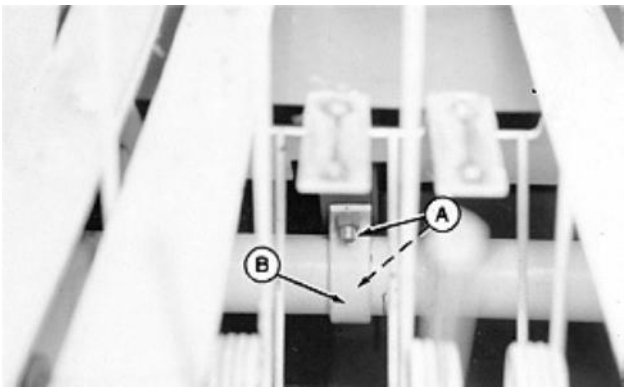
EX,1243,4015,C -19-09AUG95

REMOVE PICKUP

NOTE: Strippers removed for illustration only.

1. Place a small board between pickup and floor jack. Raise jack slightly to remove weight from mounting points.

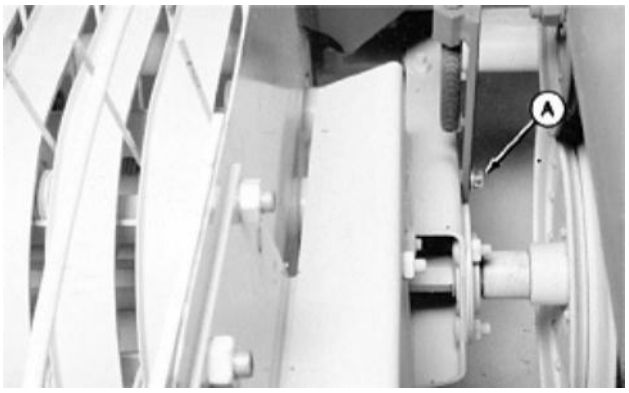
2. Remove two M10 x 25 cap screws and nuts (A), and remove bracket (B) from right side of pickup.



EX,1243,4015,D -19-09AUG95

3. Disconnect lift crank by removing cotter pin and washer (A).

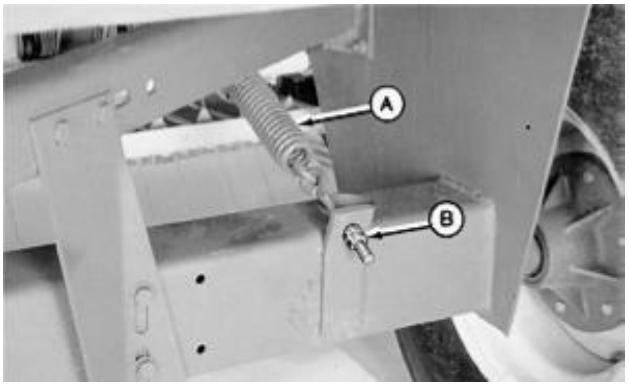
NOTE: If baler is equipped with chain downstop, disconnect at this time.



EX,1243,4015,E -19-09AUG95

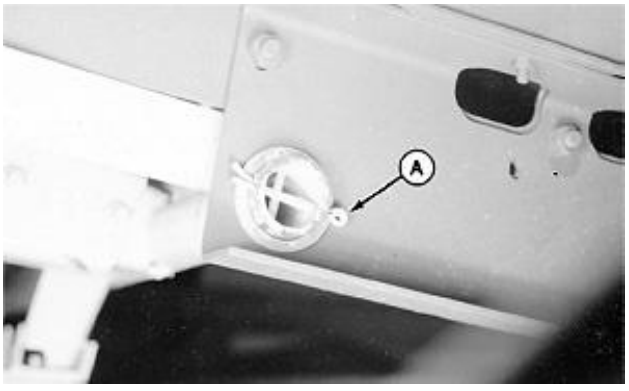
NOTE: Pickup float spring is not used on 6-series Balers.

4. Remove pickup float spring (A) by removing two nuts (B).



EX,1243,4015,F -19-09AUG95

5. Remove cotter pin (A) and washers from left side of baler. Remove V-belt from pickup sheave. Use floor jack to help move pickup away from baler.

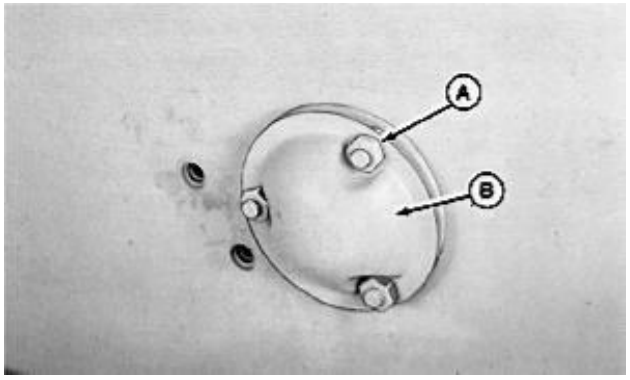


EX,1243,4015,G -19-09AUG95

DISASSEMBLE PICKUP

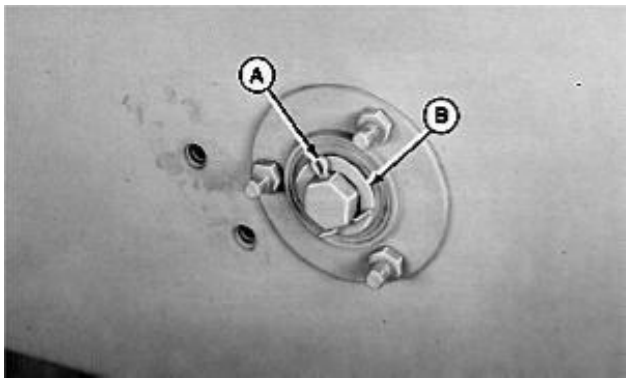
NOTE: Cap (B) is not used for 6-series balers.

1. With gauge wheel removed, remove three nuts (A) and cap (B).



EX,1243,4015,H -19-09AUG95

2. Remove cotter pin (A) and washers (B) to remove shaft from bearing.

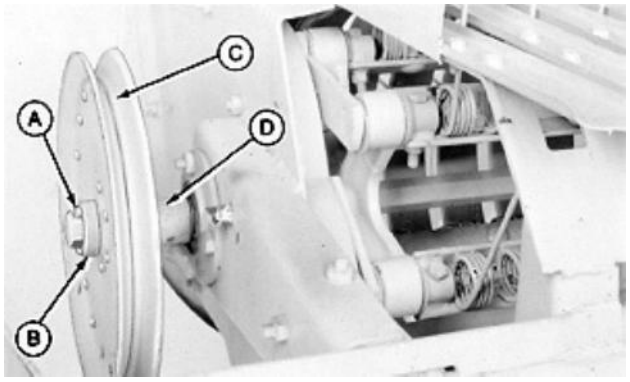


EX,1243,4015,I -19-09AUG95

NOTE: Record location of washers.

3. Remove cotter pin (A), washers (B), sheave (C), and spacer (D).

A—Cotter Pin
B—Washers
C—Driven Sheave
D—Spacer

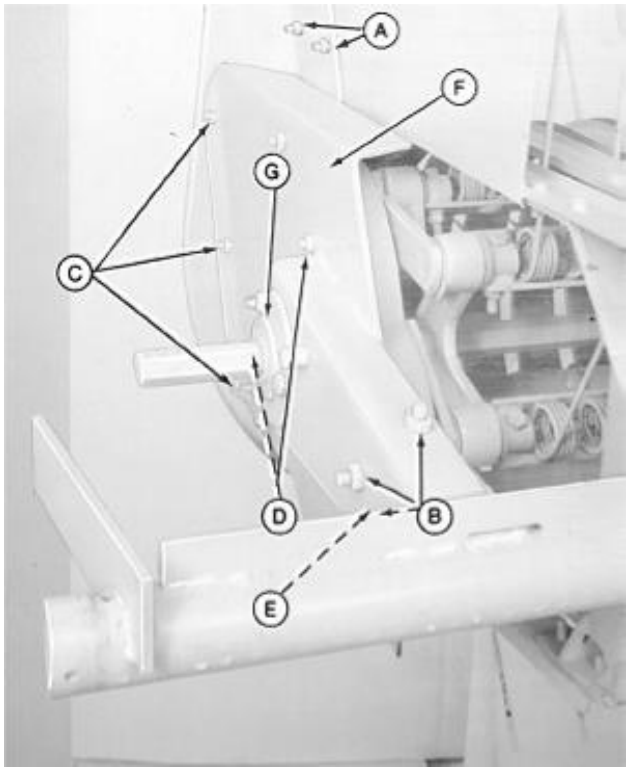


EX,1243,4015,J -19-09AUG95

NOTE: 7- and 8-series baler pickup is described here. 6-series pickup is similar with the exception that the bearing and cam supports are not removable; supports are part of the welded assembly. Remove bearing only. Pickup cylinder must be removed before cam can be accessed.

4. Remove two M12 x 25 carriage bolts (A), three M10 x 25 carriage bolts (B), three M8 x 16 carriage bolts (C), two M10 x 25 carriage bolts (D) and one M10 x 30 cap screw (E) to remove cam support (F) with bearing (G) from shaft.

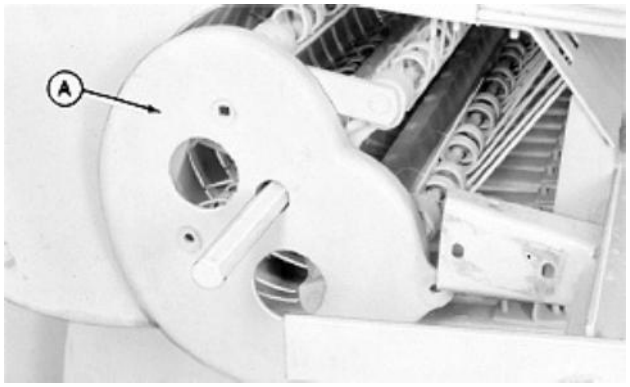
A—M12 x 25 Carriage Bolts
B—M10 x 25 Carriage Bolts
C—M8 x 16 Carriage Bolts
D—M10 x 25 Carriage Bolts
E—M10 x 30 Cap Screw
F—Cam Support
G—Bearing



E18386 -UN-12JUN89

EX,1243,4015,K -19-09AUG95

5. Remove cam (A) from shaft.



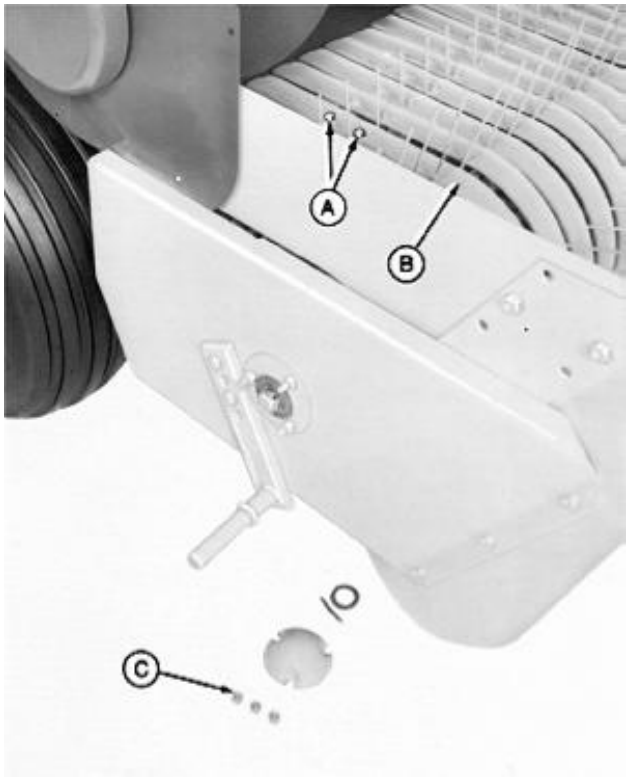
E18387 -UN-12JUN89

EX,1243,4015,L -19-09AUG95

NOTE: 7- and 8-series balers shown.

6. Remove 5/16 x 3/4 inch self-tapping screws (A) and all strippers (B).

7. Remove three M8 x 16 cap screws and nuts (C) from right support and bearing.



EX,1243,4015,M -19-09AUG95

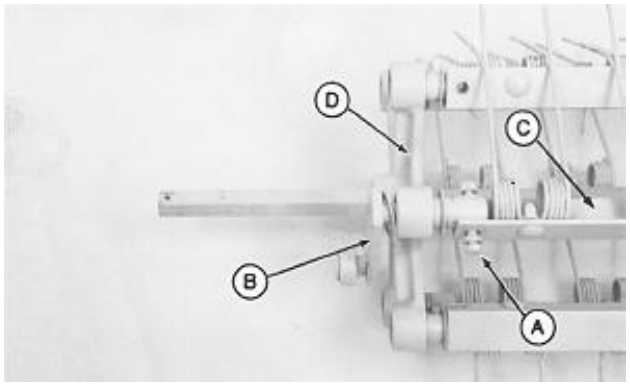
NOTE: For 6-series balers, move pickup cylinder hex shaft to the left to free right end from support. Then move cylinder assembly forward and to the right to remove pickup cylinder from pickup frame.

8. Remove tooth bar and spider assembly from pickup frame.

NOTE: 6-Series balers use spring pins instead of cap screws.

9. Remove 3/8 x 2-1/4 inch cap screws (A) from cam followers (B).

10. Remove tooth bar (C) and cam follower from spider (D).

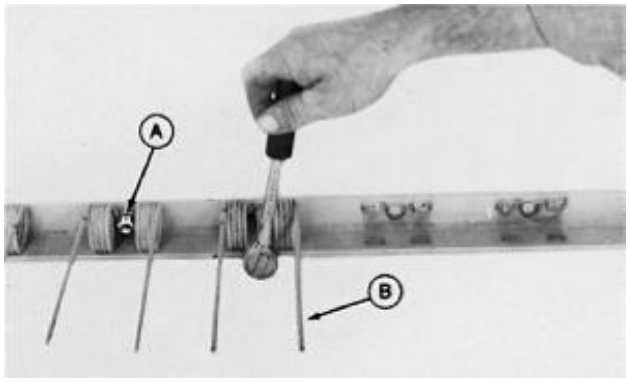


A—Cap Screw, Nut and Washer
B—Cam Follower
C—Tooth Bar
D—Spider

EX,1243,4015,N -19-09AUG95

DISASSEMBLE TOOTH BAR

1. Remove M10 x 25 screws (A), washers, lock nuts, and teeth (B).



EX,1243,4015,O -19-09AUG95

INSPECT PICKUP

1. Check left and right cylinder shaft bearings for wear or looseness.

2. Check cam follower bearings for bad seals and looseness.

3. Check cam for wear grooves or cracks. Check related parts for wear patterns.

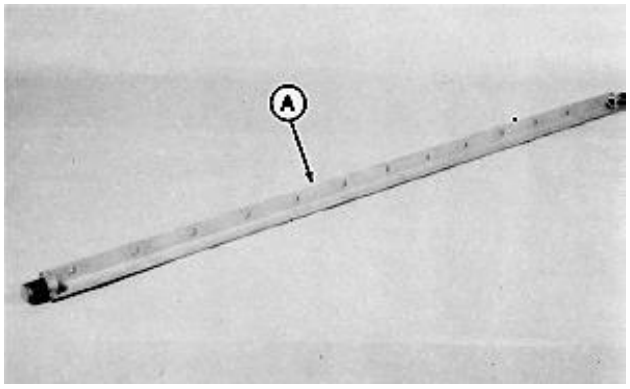
4. Check for bent or broken teeth.

5. Check for bent strippers.

EX,1243,4015,P -19-09AUG95

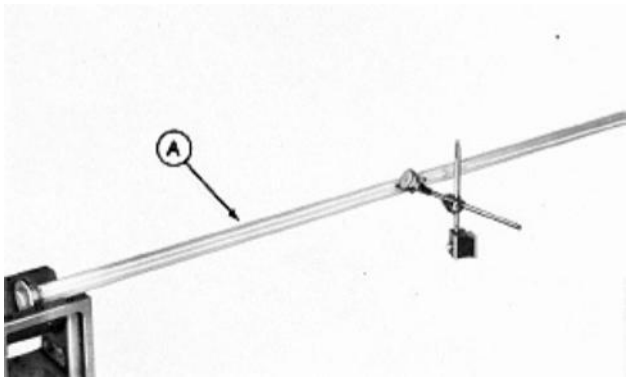
6. Check spiders for wear or cracks.

7. Place tooth bar (A) on flat surface to check for straightness. If tooth bar is bowed 6.35 mm (1/4 in.) or more, replace or straighten.



EX,1243,4015,Q -19-09AUG95

8. Using dial indicator, check pickup cylinder shaft (A) for straightness. If TIR is more than 5 mm (0.188 in.), straighten or replace shaft.



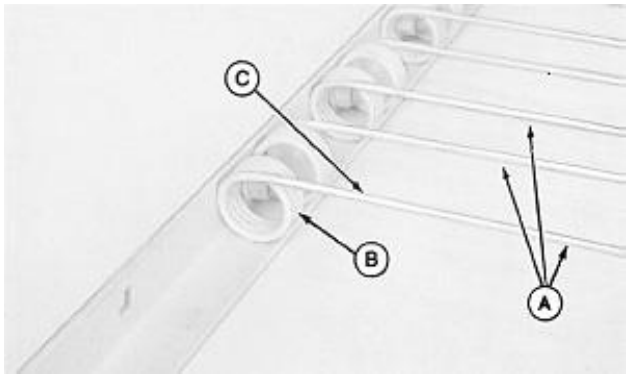
EX,1243,4015,R -19-09AUG95

ASSEMBLE TOOTH BAR

1. Install teeth (A) on bar with tooth coil (B) against bar and tooth (C) away from bar as shown.

2. Secure using M10 x 25 bolts, washers, and lock nuts.

3. Tighten to 34 ± 12 N·m (25 ± 9 lb-ft).



EX,1243,4015,S -19-09AUG95

INSTALL PICKUP CYLINDER IN PICKUP FRAME

1. Install spiders (A) to shaft (B) with hubs of spiders pointing away from each other. Install one washer (C) to right and left end of each tooth bar.

NOTE: Tubular end of tooth bars must be on cam end of pickup.

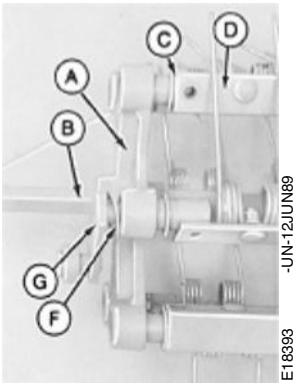
2. Install tooth bars (D), with teeth “leading”, to spiders. Ends of tooth bar with solid shaft (E) must be installed to the same spider.

3. Place one washer (F) on left end of each tooth angle.

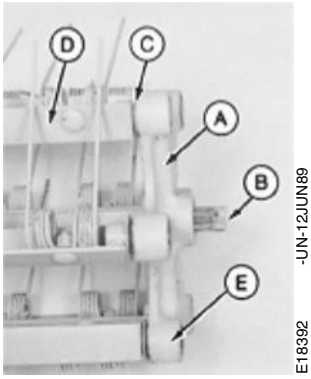
4. Coat each cam follower shaft (G) with NEVER-SEEZ Lubricant and install in tooth bars.

NOTE: 6-series balers use spring pins instead of cap screws.

5. Position follower so follower bearings trail each tooth bar during normal direction of rotation. Secure with 3/8 x 2-1/4 in. cap screws to 34 ± 12 N·m (25 ± 9 lb-ft). Bolt is extra long to ensure that body of bolt is in shear plane.



Left End



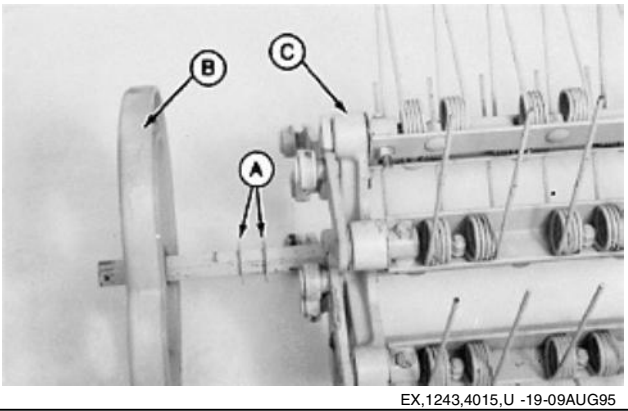
Right End

A—Spiders
B—Shaft
C—Washer
D—Tooth Bar
E—Solid Shaft
F—Washer
G—Cam Follower Shaft

EX,1243,4015,T -19-09AUG95

NOTE: For 6-series balers, cam must be installed on left pickup support, not on pickup cylinder shaft.

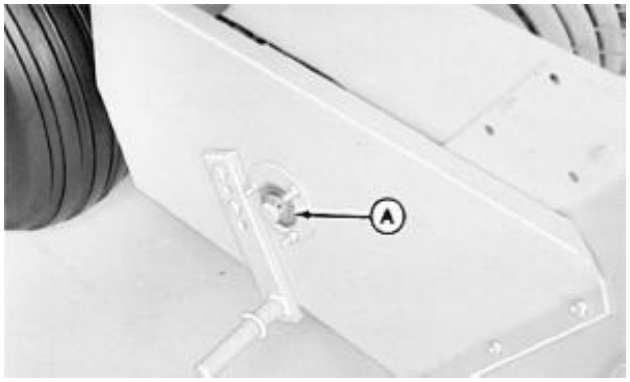
6. Install heat-treated washers (A) between cam (B) and left spider (C).



EX,1243,4015,U -19-09AUG95

7. Install pickup cylinder assembly in pickup frame.

Install bearing (A) in right support using three M10 x 25 carriage bolts, and position pickup shaft through bearing.



EX,1243,4015,V -19-09AUG95

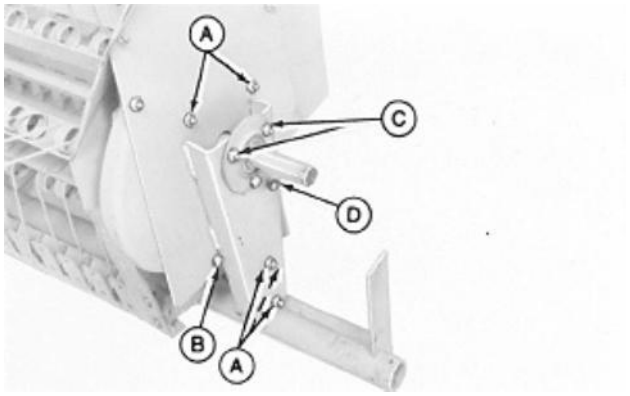
NOTE: For 6-series balers, left support is not removable.

8. Install left support using five M10 x 25 carriage bolts (A) and one M10 x 20 cap screw (B).

9. Install bearing using two M10 x 25 carriage bolts (C) and one M10 x 25 cap screw (D).

For 6-series, use three carriage bolts and nuts to install left bearing.

A—Carriage Bolts and Nuts
B—Cap Screw
C—Carriage Bolts and Nuts
D—Cap Screw



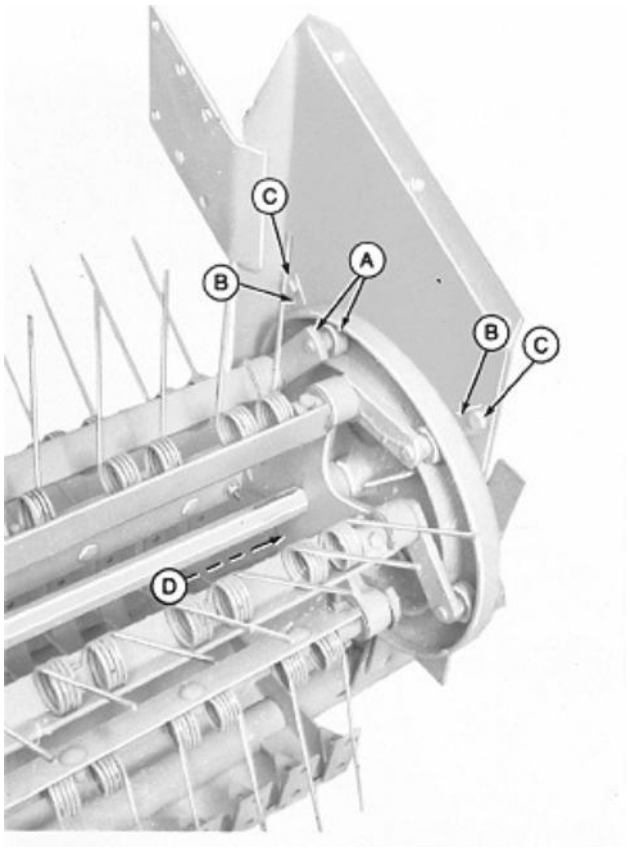
EX,1243,4015,W -19-09AUG95

10. Rotate pickup by hand making sure followers are completely in cam track (A) and rivet head does not come in contact with cam.

IMPORTANT: It may be necessary to remove washers between right spider and bearing when adding cam shims to prevent cylinder components from binding.

11. To reduce clearance between follower and cam, place shim (B) between cam and left support at front two cam mounting bolts (C). Place washers at rear cam mounting bolt (D).

A—Cam Track
B—Shim Location
C—Front Cam Mounting Bolts
D—Rear Cam Mounting Bolt



E18396 -UN-12JUN89

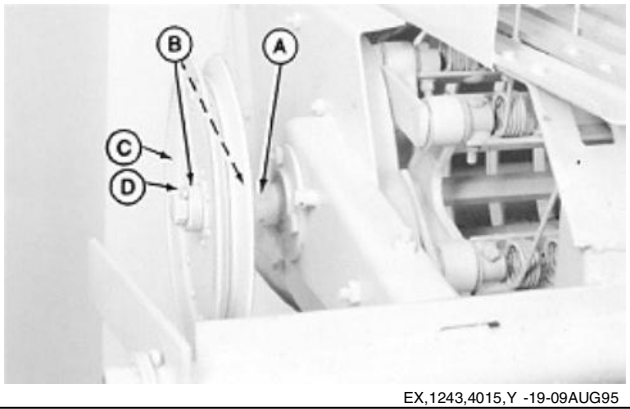
EX,1243,4015,X -19-09AUG95

IMPORTANT: Install sheave with long portion of sheave hub toward bearing.

12. Install spacer (A) and washers (B) on either side of sheave (C) as needed.

Install washers so sheave is aligned with the other pickup drive sheaves. Secure with cotter pin (D).

A—Spacer
B—Washers
C—Driven Sheave
D—Cotter Pin

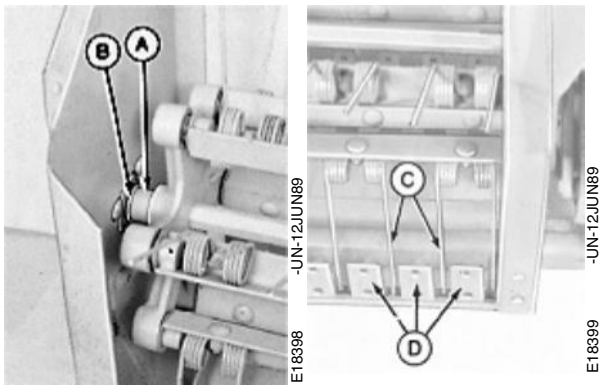


E18397 -UN-12JUN89

EX,1243,4015,Y -19-09AUG95

13. Install spacer (A) and washers (B) as needed to center teeth (C) between stripper mountings (D).

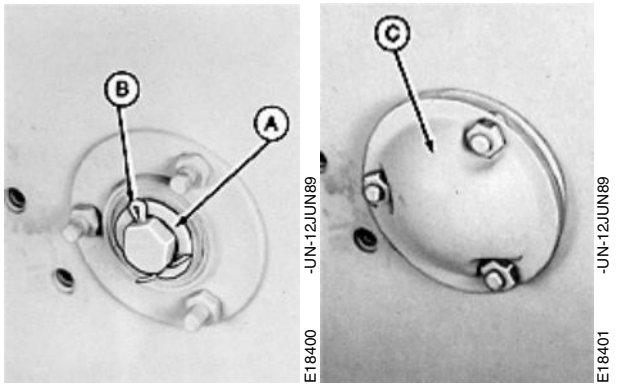
A—Right Spacer
B—Washers
C—Teeth
D—Stripper Mountings



EX,1243,4015,Z -19-09AUG95

14. Install washers (A) to fill gap between cotter pin and bearing. Secure with cotter pin (B).

For 7- and 8-series balers, install cap (C) using three M10 nuts.

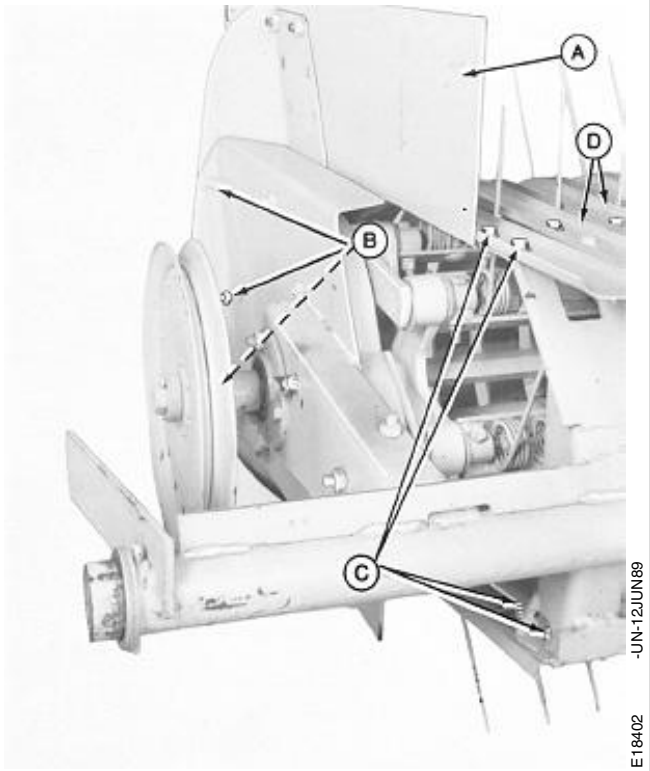


EX,1243,4015,AA-19-09AUG95

15. Attach left flare (A) to left support using three M8 x 16 cap screws (B). Attach to frame using four 5/16 x 3/4 in. self-tapping screws (C).

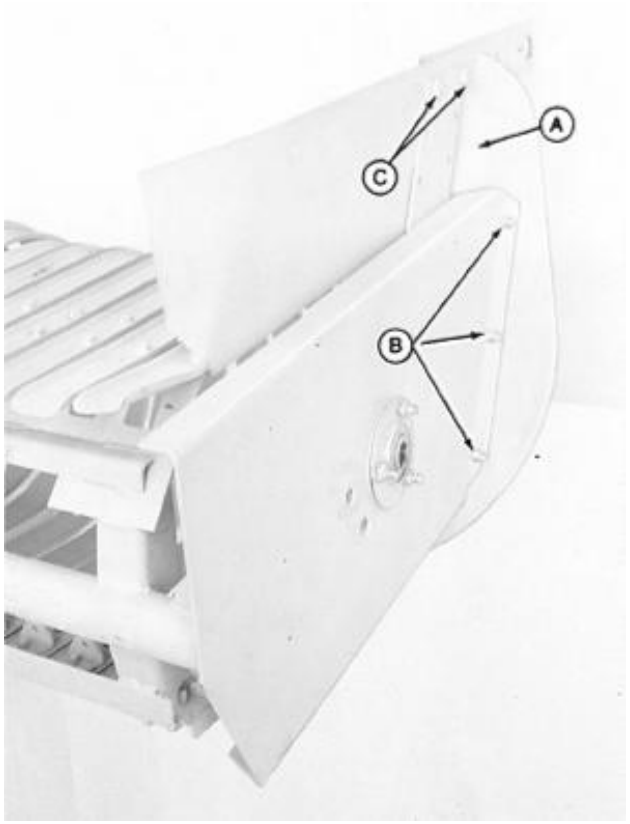
16. Attach strippers (D) using four 5/16 x 3/4 in. self-tapping screws per stripper.

A—Left Flare
B—Cap Screws
C—Self-Tapping Screws
D—Strippers



EX,1243,4015,AB-19-09AUG95

17. Attach right flare (A) to right support using three M8 x 16 carriage bolts (B). Attach compressor bar support in position needed to both left and right sides as shown using two M12 x 25 carriage bolts (C).

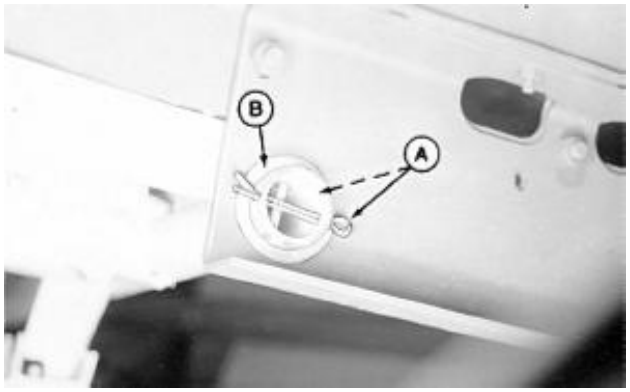


EX,1243,4015,AC-19-09AUG95

40
15
12

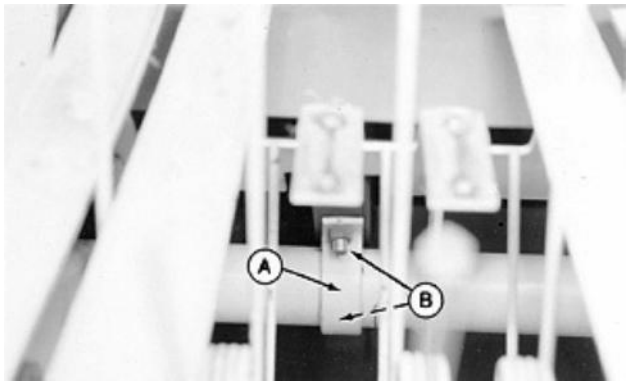
INSTALL PICKUP

1. Secure left side of pickup to baler using two cotter pins (A) and 1-15/16 x 2-1/2 x 0.060 in. washers (B) as needed to fill gap between cotter pin and frame.



EX,1243,4015,AD-19-09AUG95

2. Secure right end of pickup frame to baler using mounting bracket (A) and two M10 x 25 cap screws (B).



EX,1243,4015,AE-19-09AUG95

3. Attach lift crank (A), and secure using cotter pin and washers (B).

NOTE: If baler is equipped with chain downstop, install at this time.

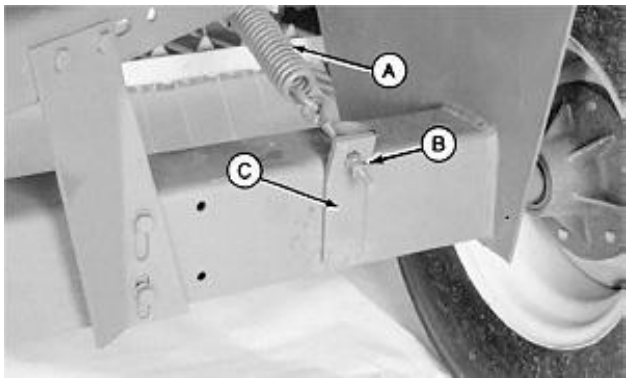
EX,1243,4015,AF-19-09AUG95

4. Attach pickup float spring (A).

5. On 327, 328, 337, and 338 balers, secure using two 3/8 in. nuts (B).

6. On 347, 348, 467, and 468 balers, secure using two 3/8 in. nuts in front of bracket (C) and two in back of bracket.

NOTE: If 7- and 8-series baler is equipped with gauge wheel, secure gauge wheel bracket with 10 mm x 40 mm ISO-4-8 class shear bolt.



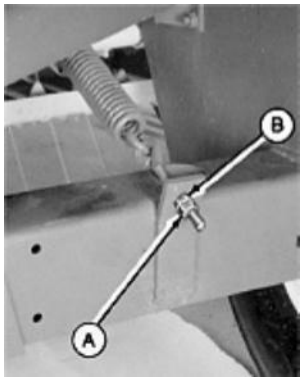
EX,1243,4015,AG-19-09AUG95

ADJUST PICKUP FLOAT—7- AND 8-SERIES BALERS

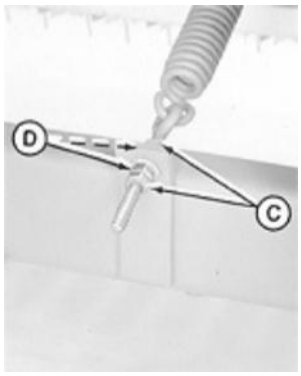
NOTE: This procedure applies to 7- and 8-series balers only.

Pickup belt must be installed before adjustment.

1. As a starting point on 327-328 balers, loosen nut (A). Tighten nut (B) until 25.4 mm (1 in.) thread is visible towards rear of baler. Tighten nut (A) securely against nut (B).



E18408 -UN-12JUN89



E18409 -UN-12JUN89

2. As a starting point on 337, 338, 347, 348, 467, and 468 balers, loosen nuts (C), tighten nuts (D) onto eyebolt as far as threads allow. Tighten nuts (C) securely against nuts (D).

40
15
14

3. Attach spring gauge to pickup as shown.


E19275 -UN-15JUN89

4. Adjust float spring until 178 N (40 lbs) of force is required to lift pickup. Tighten nuts (B or D) if lift is greater than 178 N (40 lb), loosen nuts (B or D) if lift is less than 178 N (40 lb).

NOTE: If hay pickup bounces over hay, reduce float spring tension slightly.

EX,1243,4015,AH-19-09AUG95

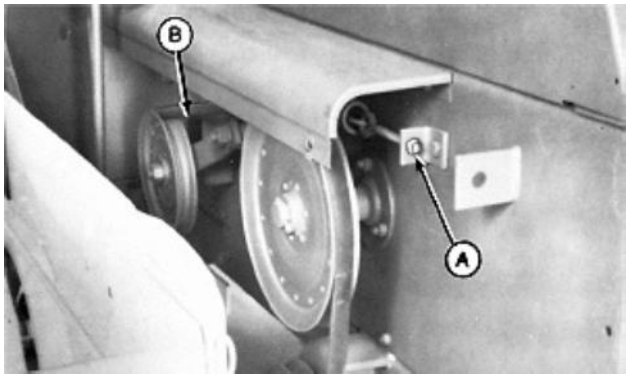
IMPORTANT: Pickup V-belt tension affects pickup flotation.

NOTE: If belt slippage occurs, adjust nuts (A).

Shield removed for illustration.

5. Move pickup to normal operating position.

6. Adjust tension of V-belt (B) by tightening or loosening adjusting nuts (A) on tension spring until slippage is eliminated when operating in normal conditions.



E19467 -UN-20SEP88

EX,1243,4015,AI-19-09AUG95

ADJUST PICKUP V-BELT TENSION

NOTE: Shield removed for illustration.

Put pickup in normal operating position.

Adjust tension of V-belt (A) by tightening or loosening adjusting nut (B) on tension spring until slippage is eliminated when operating in normal conditions.

NOTE: If hay pickup bounces over hay, reduce float spring tension slightly.

EX,1243,4015,AJ-19-09AUG95

REPLACE TEETH WITH PICKUP INSTALLED

1. Remove four self-tapping screws (A), and remove stripper over broken or bent teeth (B).

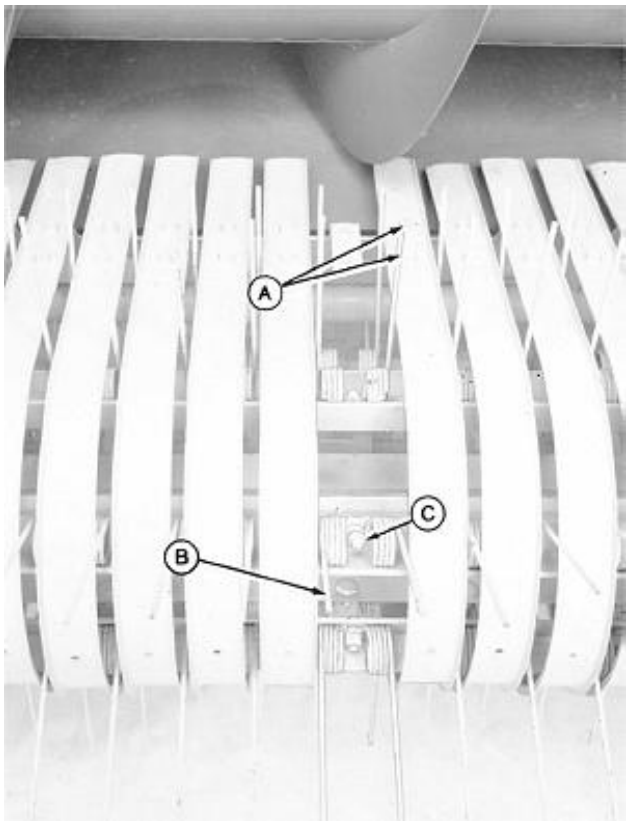
2. Remove bolt (C) to remove teeth.

3. Install teeth on bar with tooth coil against bar and teeth away from bar.

4. Secure tooth using bolt, washer and lock nut.

5. Tighten to 34 ± 12 N·m (25 ± 9 lb-ft).

6. Install stripper and four self-tapping screws.



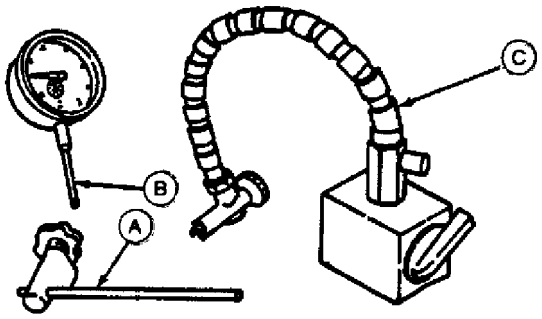
EX,1243,4015,AK-19-09AUG95

SPECIAL OR ESSENTIAL TOOLS

Dial Indicator:

Use to check auger shaft and auger drive shaft.

A—Adjustable Arm
B—Dial Indicator
C—Magnetic Base



E37994 -UN-13APR95

EX,1243,4020,A -19-09AUG95

SPECIFICATIONS

Item	Measurement	Specification
Auger Shaft	Straightness	1.6 mm (0.060 in.) maximum bow
Auger Drive Shaft	Straightness	2 mm (0.010 in.) maximum bow
Auger Drive Belt (327, 328, 336, 337, 338, 346, 347, 348)	Belt Deflection	22 mm (7/8 in.) with 89 N (20 lb) force
Auger Drive Chain (466, 467, 468)	Idler Force	22—44 N (5—10 lb)
Auger Slip Clutch Springs (466, 467, 468)	Installed Length	
	Initial	38 mm (1-1/2 in.)
	Minimum	33 mm (1-5/16 in.)

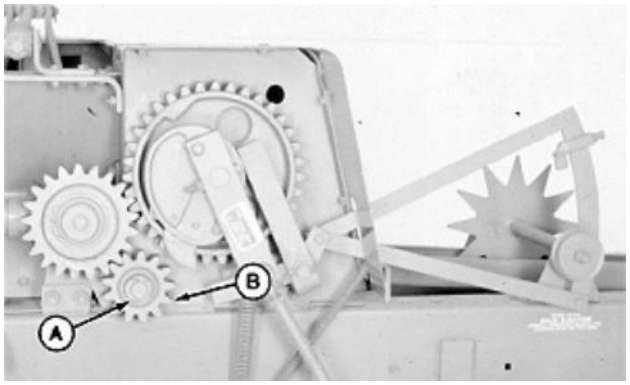
EX,1243,4020,B -19-09AUG95

REMOVE AUGER

1.327-328-336-337-338 Balers: Remove 1/8 x 3/4 in. cotter pin (A), drive gear (B), and 3/16 x 1 in. Woodruff key.

2. 346-347-348-466-467-468 Balers: Remove 3/16 x 1-1/2 in. cotter pin and drive gear.

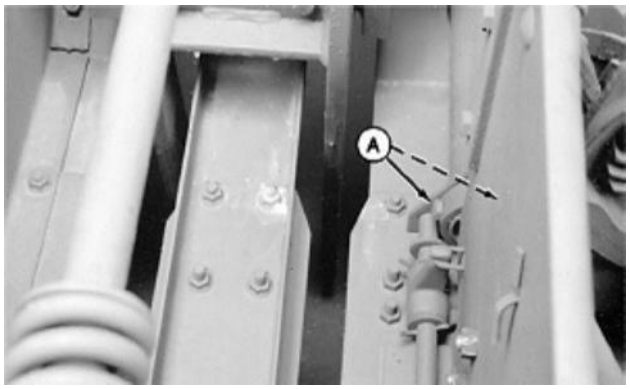
IMPORTANT: Record washer location on all balers for assembly.



E18412 -UN-12JUN89

EX,1243,4020,C -19-09AUG95

3. Remove two 5/16 x 3/4-inch cap screws (A) from retainer collar.

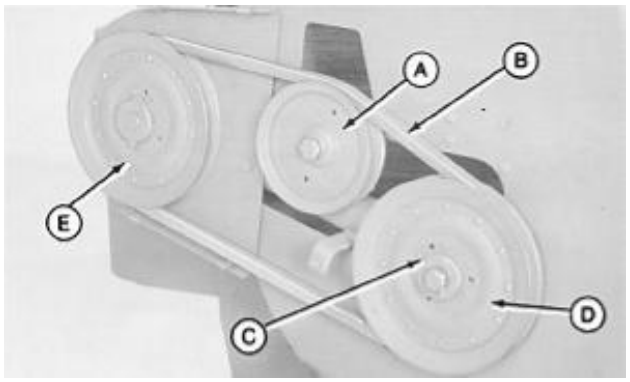


EX,1243,4020,D -19-09AUG95

IMPORTANT: Record washer location for assembly.

4. Remove four 5/16 x 1/2 in. self-tapping screws and one 5/16 x 3/4 in. self-tapping screw and remove drive shield.

On 327, 328, 336, 337, 338, 346, 347, 348 balers, remove idler (A), V-belt (B), 3/16 x 1-1/2 in. cotter pin (C), auger sheave (D), retaining pin and drive sheave (E).



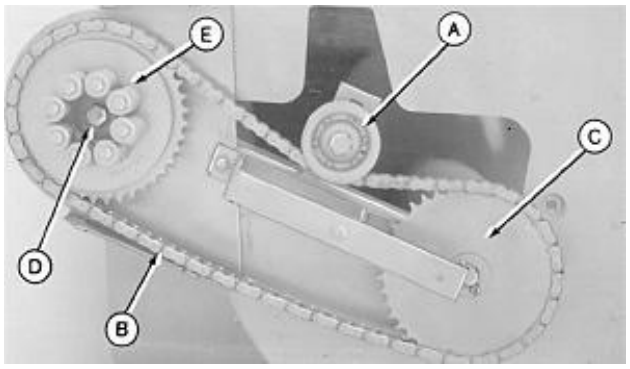
EX,1243,4020,E -19-09AUG95

IMPORTANT: Record washer location for assembly.

5. 466-467-468 Balers: Remove idler (A), chain (B) and 3/16 x 1-1/2 in. cotter pin to remove 40-tooth auger sprocket (C).

6. 466-467-468 Balers: Remove 3/16 x 1-1/2 in. cotter pin (D) by tapping left end of shaft until cotter pin clears clutch plate. Remove slip clutch (E).

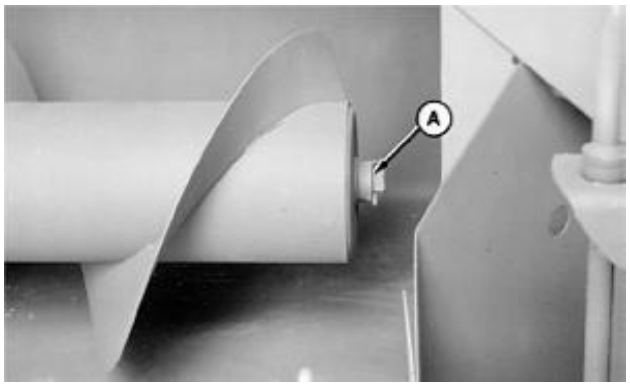
A—Idler
B—Chain
C—Auger Sprocket
D—Cotter Pin
E—Slip Clutch



EX,1243,4020,F -19-09AUG95

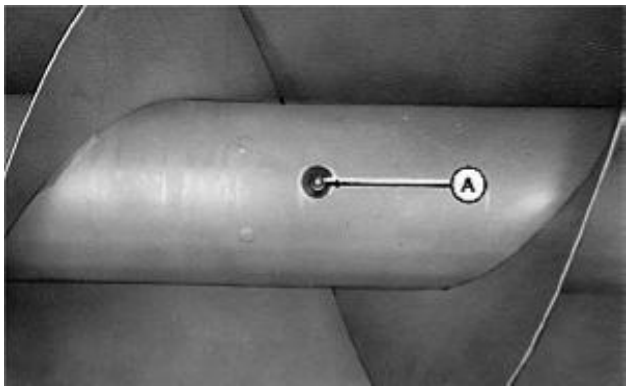
7. 337-338-346-347-348-466-467 and 468 Balers: Remove 3/16 x 1-1/2 in. cotter pin (A).

8. 327-328-336 Balers: Remove 5/16 x 2 in. cap screw.



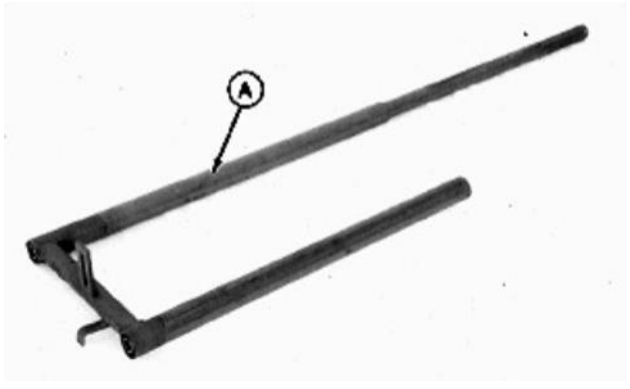
EX,1243,4020,G -19-09AUG95

9. On 327-336 Balers: Remove lubrication fitting (A) from inside auger.



EX,1243,4020,H -19-09AUG95

10. With someone to steady the auger, remove auger frame (A).



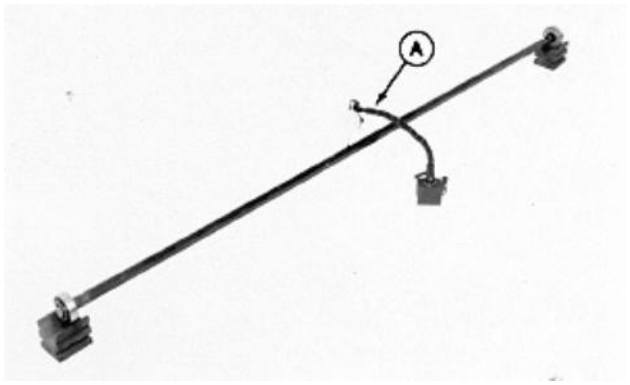
EX,1243,4020,I -19-09AUG95

INSPECT AUGER PARTS

1. Replace bearings and bushings if loose or scored.

2. Using dial indicator (A), check auger shaft for straightness. If TIR is more than 1.6 mm (0.060 in.), straighten or replace.

3. Using dial indicator check auger drive shaft for straightness. If TIR is more than 2 mm (0.10 in.), straighten or replace.

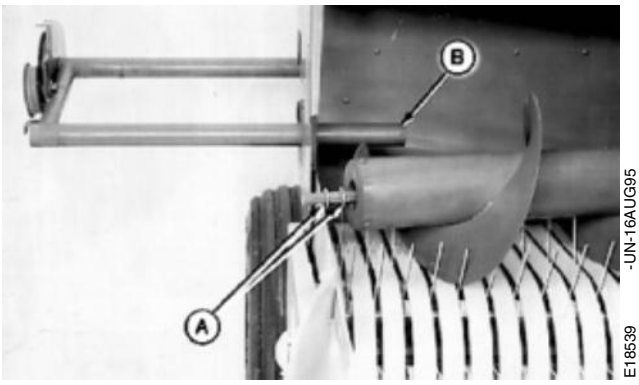


EX,1243,4020,J -19-09AUG95

INSTALL AUGER

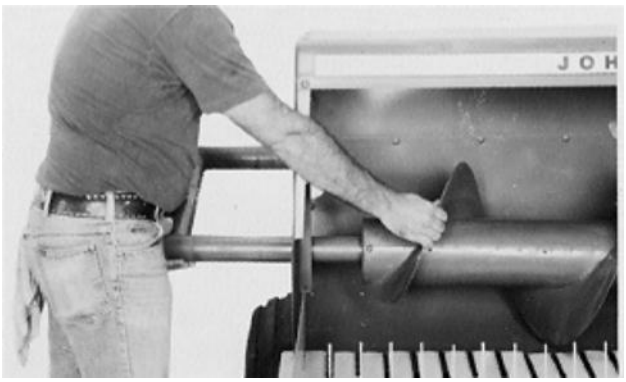
IMPORTANT: To prevent damage to the auger. Use washers (A) to get a 1.5 mm (0.06 in.) clearance from the end of the auger frame (B) and the inner stop in the auger.

1. Install 1-1/32 x 1-3/4 x 0.060-in. washers (A), as needed, on auger shaft before assembling in auger.



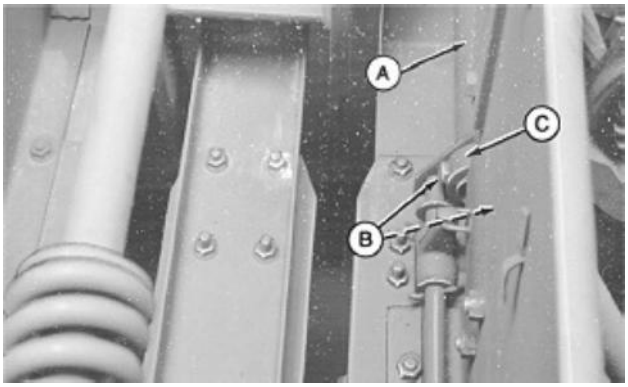
EX,1243,4020,K -19-16AUG95

2. With person to steady auger, start auger frame into baler. Assemble auger and auger frame.



EX,1243,4020,L -19-09AUG95

3. Secure auger frame (A) using two 5/16 x 3/4-inch cap screws (B) and retaining collar (C).

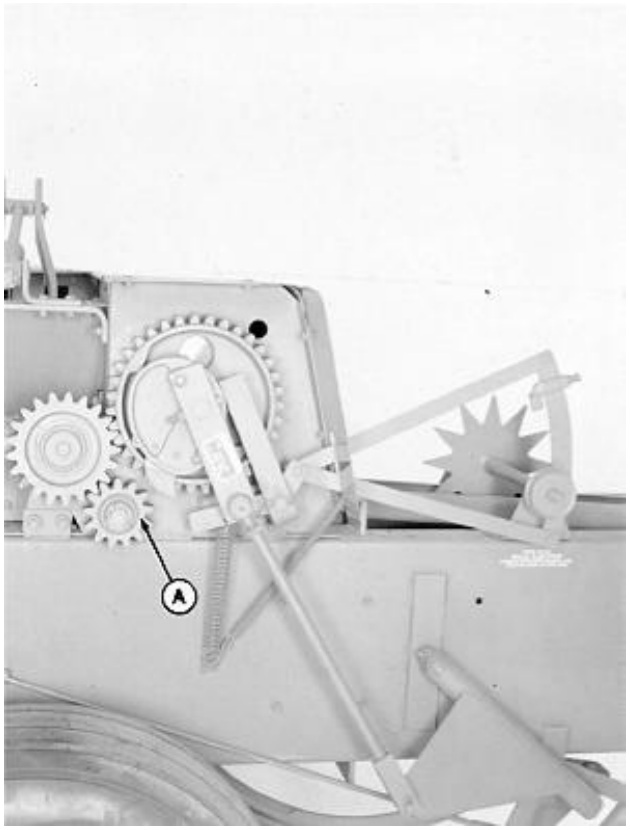


EX,1243,4020,M -19-09AUG95

NOTE: For 466-467-468 Balers, drive gear is installed later.

4. 346-347-348 Balers: Attach drive gear (A) and secure using 3/16 x 1-1/2 in. cotter pin.

5. 327-328-336-337-338 Balers: Position drive gear and Woodruff key on shaft and secure using 1/8 x 3/4 in. cotter pin.



E18420 -UN-12JUN89

EX,1243,4020,N -19-09AUG95

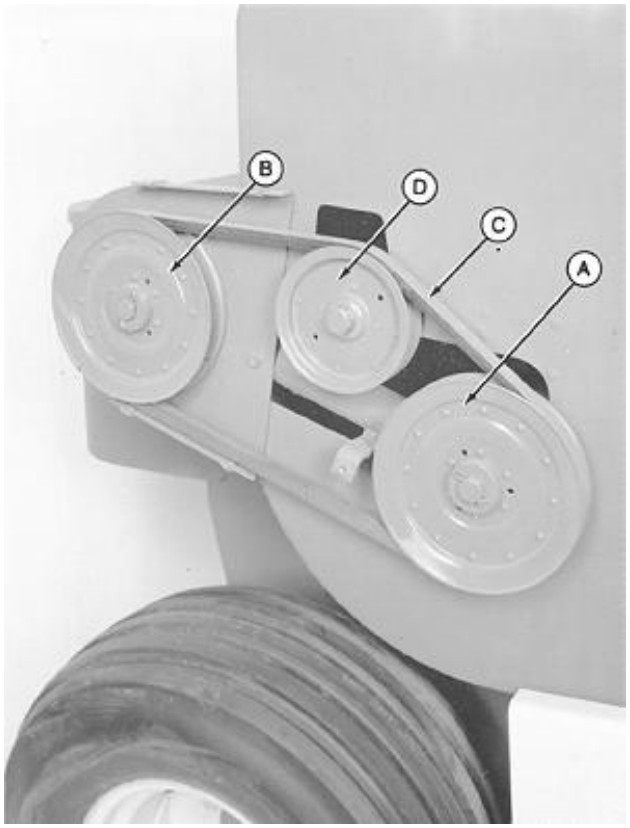
6. 327-328-336-337-338-346-347-348 Balers: Install auger sheave (A) and washers.

7. Install auger drive sheave (B); add washers.

8. Check sheave alignment and add or remove washers as necessary. Install retaining pin on sheave (B) and cotter pin on sheave (A).

9. Install V-belt (C) and idler (D).

A—Auger Sheave
B—Auger Drive Sheave
C—V-Belt
D—Idler



E18421 -UN-12JUN89

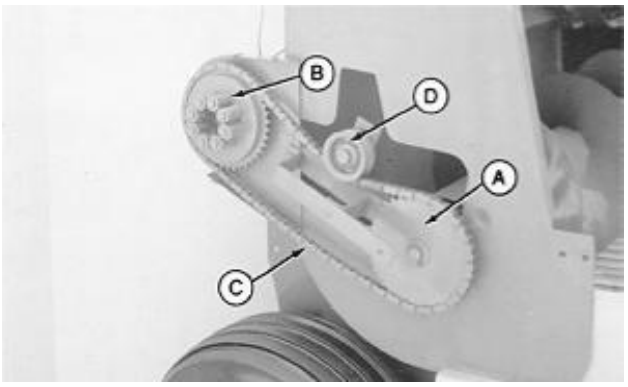
EX,1243,4020,O -19-09AUG95

10. 466-467-468 Balers: Install 40-tooth sprocket (A), slip clutch (B), and washers.

11. Check sprocket alignment and add or remove washers as necessary. Install cotter pins.

12. Install chain (C) and idler (D).

A—Auger Sprocket
B—Auger Slip Clutch
C—Chain
D—Idler



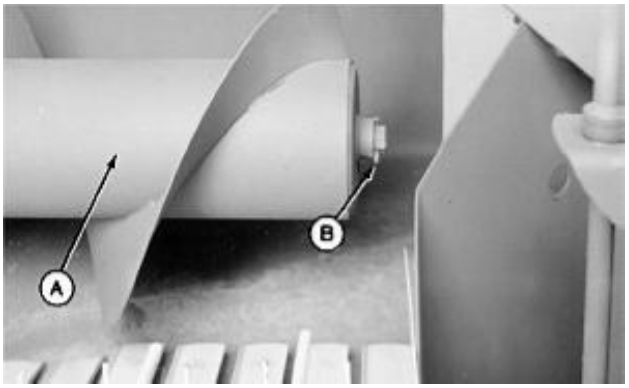
EX,1243,4020,P -19-09AUG95

13. 466-467-468 Balers: Attach drive gear (A) and secure using 3/16 x 1-1/2 in. cotter pin.

EX,1243,4020,Q -19-09AUG95

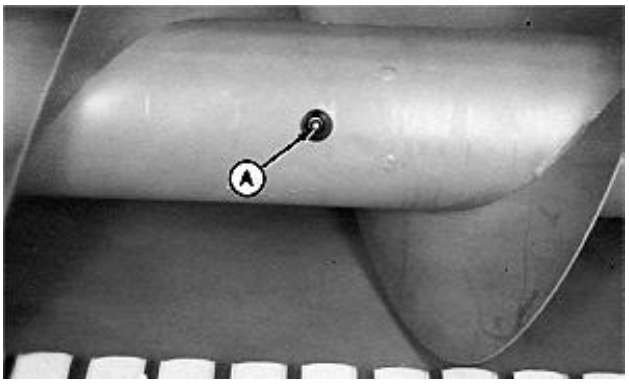
14. 328-337-338-346-347-348-466-467-468 Balers: Secure auger (A) to shaft using 3/16 x 1-1/2 in. cotter pin (B) and washers as needed.

15. 327-336 Balers: Secure auger to shaft using 5/16 x 2 in. cap screw and washers as needed.



EX,1243,4020,R -19-09AUG95

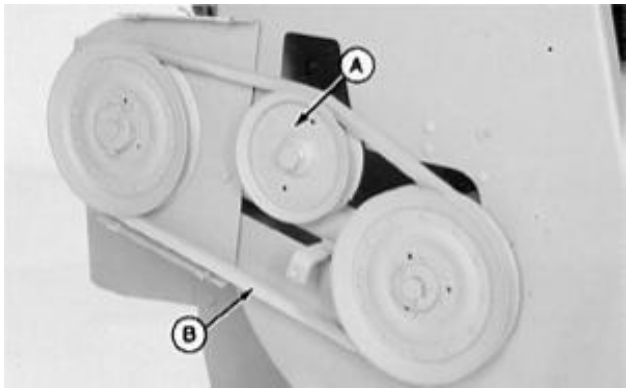
16. 327-336 Balers: Install lubrication fitting (A) to inside of auger.



EX,1243,4020,S -19-09AUG95

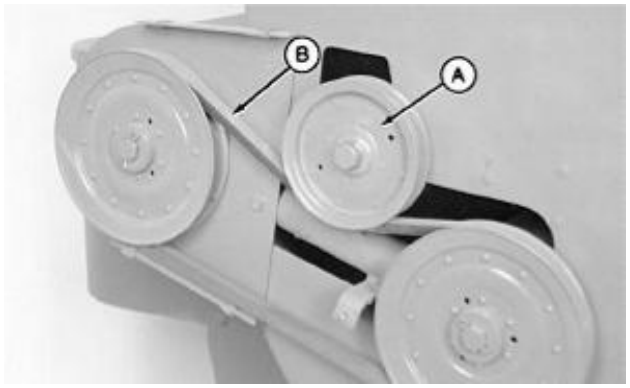
ADJUST AUGER DRIVE BELT

1. Loosen idler (A). Adjust idler until belt (B) deflects 22 mm (7/8 in.) when 89 N (20 lbs) of pressure is applied at center of belt opposite idler. Tighten idler and install shield.



EX,1243,4020,T -19-09AUG95

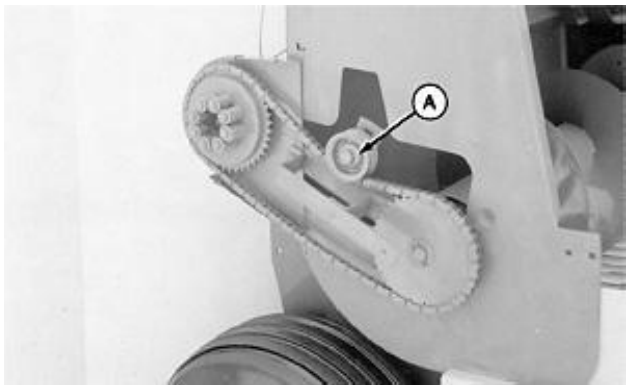
2. When full belt idler adjustment is used up, move belt under idler. Adjust belt to same specification.



EX,1243,4020,U -19-09AUG95

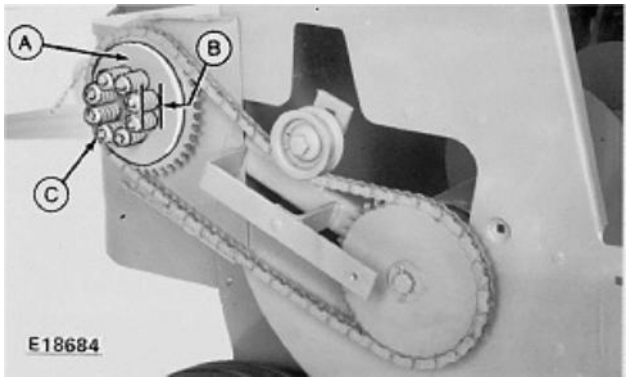
ADJUST AUGER DRIVE CHAIN—466-467-468 BALERS

Loosen idler (A) and adjust by pressing idler against chain with 22—44 N (5—10 lb force). Tighten idler bolt.



EX,1243,4020,V -19-09AUG95

ADJUSTING AUGER DRIVE SLIP CLUTCH—466-467-468 BALERS



E18684 -UN-20SEP88

Adjust slip clutch (A) if excessive slipping occurs during operation, or if it has been disassembled.

Turn spring adjusting nuts (C) until proper spring dimension (B) is attained.

Adjust nuts to obtain spring length (B) of 38 mm (1-1/2 in.) end-to-end.

IMPORTANT: The slip clutch has been designed to furnish protection to the drive components. Over-tightening will lessen this protection.

Adjust springs only to a minimum spring length of 33 mm (1-5/16 in.). This minimum length will prevent clutch from locking solid and still allow slipping.

40 20 8

EX,1243,4020,W -19-09AUG95

SPECIFICATIONS

Item	Measurement	Specification
Bearing Support Cap Screws	Torque	48 N·m (35 lb-ft)
Feeder Finger Cap		
327-328-336-337-338-346-347-348		
First Nut	Torque	7 N·m (5 lb-ft)
Lock Nut	Torque	48 N·m (35 lb-ft)
466-467-468 Cap Screws	Torque	48 N·m (35 lb-ft)
Drive Chain/Belt		
327-328-336-337-338-346-347-348	Deflection	13 mm (1/2 in.)
466-467-468 Cap Screws	Force Against Idler	22—44 N (5—10 lb force)
Baler Timing		
Twine Baler Plungerhead-to-Needle Distance	Clearance	13—57 mm (1/2—2-1/4 in.)
Wire Baler Plungerhead-to-Needle Pulley Distance	Clearance	13—57 mm (1/2—2-1/4 in.)

EX,1243,4025,X -19-09AUG95

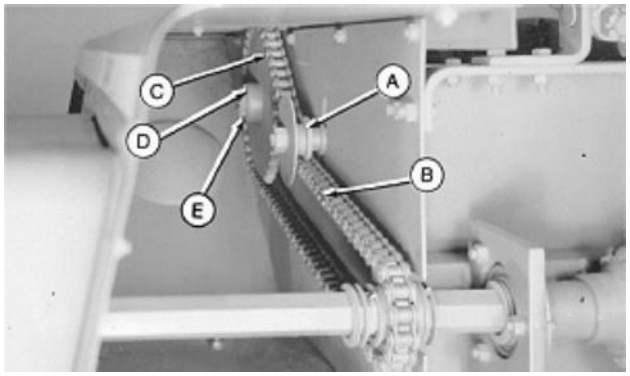
REMOVE FEEDER FINGERS

1. Rotate flywheel until feeder fingers are in their lowest position.

2. Remove left side shield.

3. Loosen idler (A), and remove chain (B).

4. Remove sprocket (C) by removing 3/16 x 2-1/2-inch cotter pin (D) and 1-13/16 x 2-3/8 x 0.060-inch washers (E).



E18429 -UN-12JUN89

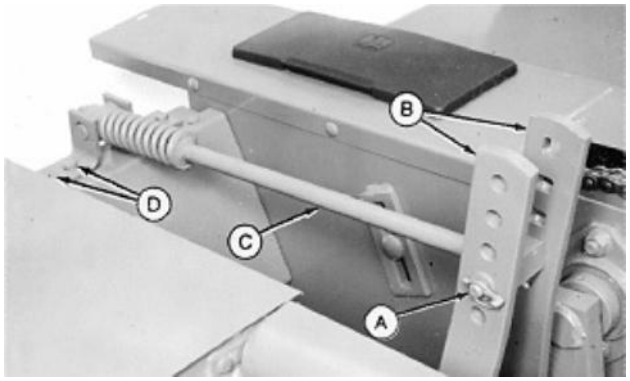
A—Idler
B—Retainer Clip
C—Sprocket
D—Cotter Pin
E—Washer

EX,1243,4025,Y -19-09AUG95

5. Remove cotter pin or locking pin and 1/2 x 3-3/4 in. drilled pin (A) from feeder fingers (B) and pivot rod (C).

6. Remove two 3/8 x 1-1/4 in. cap screws (D), to remove pivot rod from baler.

A—Drilled Pin
B—Feeder Fingers
C—Pivot Rod
D—Cap Screws



EX,1243,4025,Z -19-09AUG95

7. Remove four 1/2 x 1-1/4 in. carriage bolts and nuts (G) from front bearing flange.

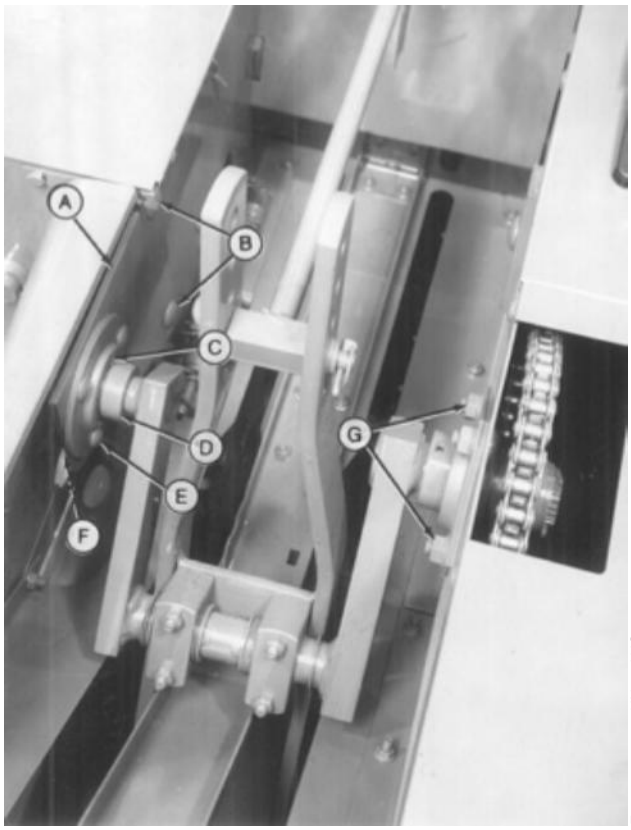
8. Remove three 3/8 x 1 in. carriage bolts (E) and nuts from rear bearing flange.

9. For balers equipped with hydraulic bale tensioner:

- Loosen set screw on lock collar (D). Turn lock collar counterclockwise (looking toward front of baler) to loosen collar.
- Remove spring pin from gear (F) and slide locking collar (D), bearing C), and sprocket toward feeder fingers.

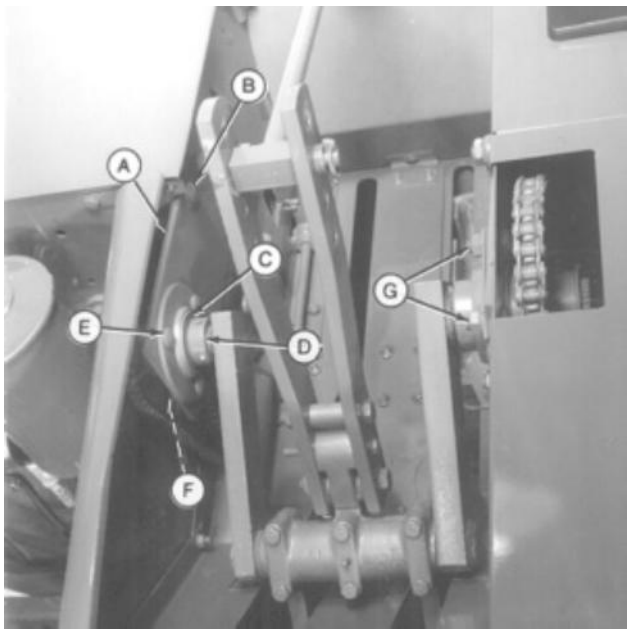
10. Remove two carriage bolts (B) from bearing support (A) to remove feeder finger assembly from baler.

A—Bearing Support
B—Carriage Bolts
C—Bearing
D—Locking Collar
E—Carriage Bolts
F—Gear
G—Carriage Bolts



E38767 -UN-08AUG95

300 Series

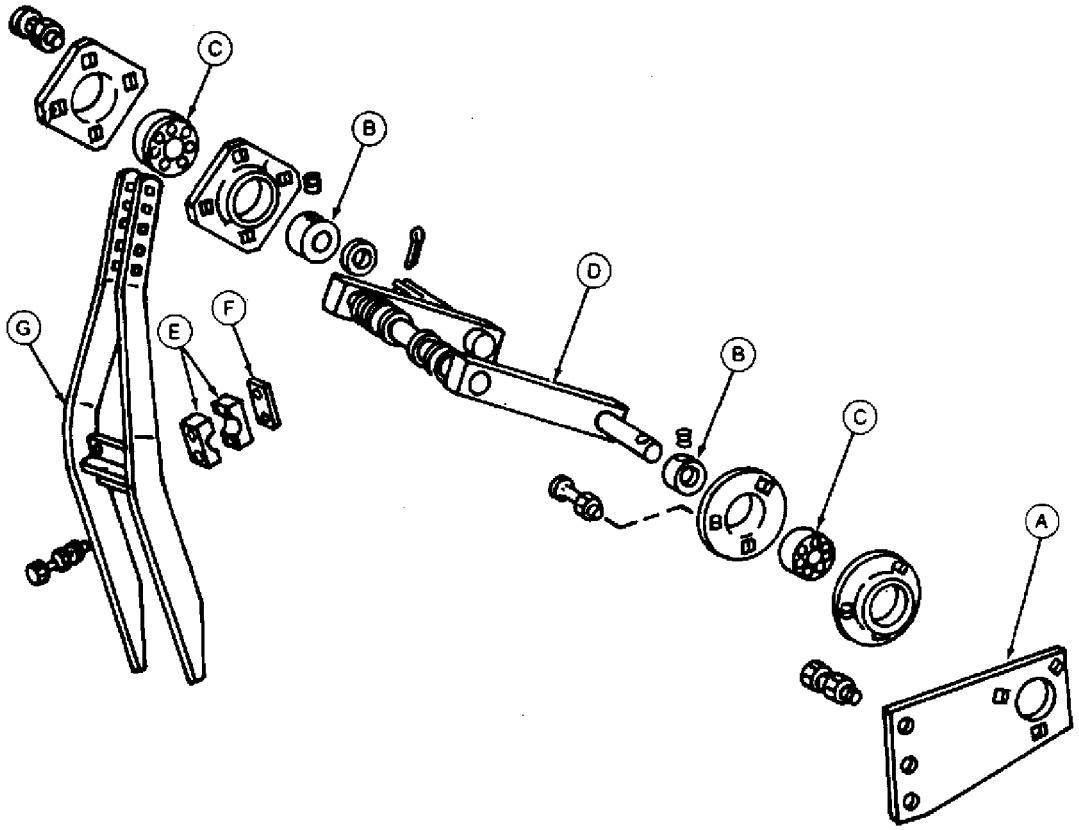


E38769 -UN-11AUG95

400 Series

EX,1243,4025,AA-19-17AUG95

DISASSEMBLE FEEDER FINGERS—327, 328, 336, 337, 338, 346, 347 AND 348 BALERS



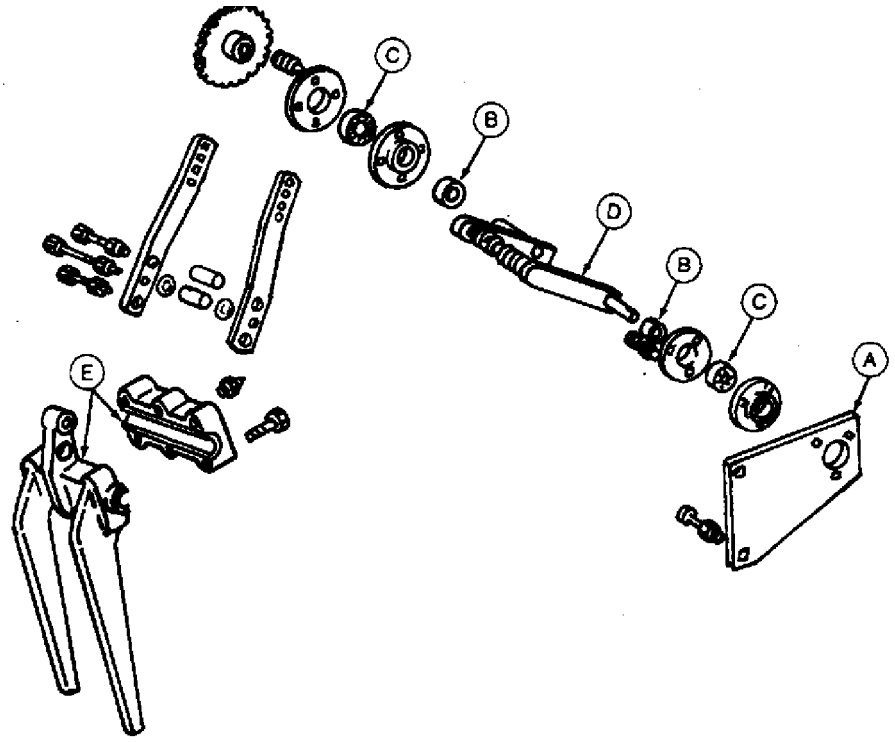
A—Bearing Support
B—Locking Collar
C—Bearing
D—Feeder Crank
E—Bearing (4 Used)
F—Bearing Plate—(-6) and (-7) Series Only (2 used)
G—Feeder Fingers

1. Remove bearing support (A) from bearing. Loosen locking collar by loosening set screw and use a punch to turn collar. Remove locking collars (B) and bearings (C) from feeder crank (D).

2. Remove feeder crank bearings (E) and bearing plates (F) from feeder fingers (G) by removing four 3/8 x 3 in. cap screws.

EX,1243,4025,AB-19-09AUG95

DISASSEMBLE FEEDER FINGERS—466, 467 AND 468 BALERS



E18540 -UN-13APR89

A—Bearing Support
B—Locking Collar
C—Bearing
D—Feeder Crank
E—Feeder Fingers With Cap

1. Remove bearing support (A) from bearing. Loosen locking collar by loosening set screw and use a punch to turn collar. Remove locking collars (B) and bearings (C) from feeder crank (D).

IMPORTANT: For correct assembly, mark end of cap (E).

2. Remove feeder fingers and cap (E) from feeder crank.

EX,1243,4025,AC-19-09AUG95

INSPECT FEEDER FINGERS

1. Check bearing for looseness and wear. Replace if necessary.

2. Place crank in V-block and check for straightness using a square.

3. Using a square, check sides of feeder fingers for straightness.

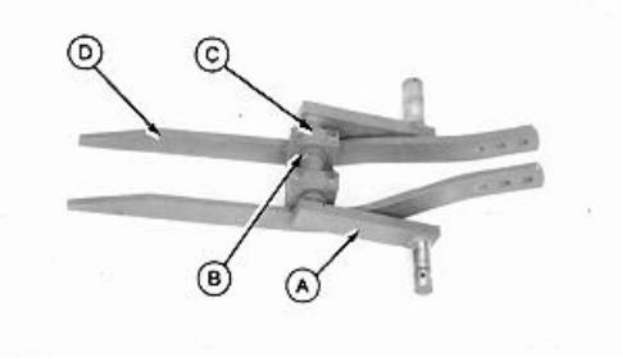
EX,1243,4025,AD-19-09AUG95

ASSEMBLE FEEDER FINGERS—327, 328, 336, 337, 338, 346, 347 AND 348 BALERS

1. Assemble feeder crank (A), bearing (B), and bearing caps (C) to feeder fingers (D) using nuts and 3/8 x 3-1/4 in. cap screws. DO NOT tighten bearing to crank at this time.

2. If baler is equipped with hydraulic bale tension, install sprocket on smooth shaft with hub toward bearing. Do not secure sprocket to shaft.

3. Complete assembly by installing locking collar, bearing plates, bearings, and bearing support.



E18433 -UN-12JUN89

A—Feeder Crank
B—Bearing
C—Bearing Caps
D—Feeder Fingers

EX,1243,4025,AE-19-09AUG95

ASSEMBLE FEEDER FINGERS—466, 467 AND 468 BALERS

1. Use alignment marks made in disassembly and assemble feeder finger cap and feeder fingers to crank. Do not tighten bolts.

2. Complete assembly by installing locking collars, bearings, and bearing supports.

EX,1243,4025,AF-19-09AUG95

INSTALL FEEDER FINGER ASSEMBLY

1. Attach front bearing using four 1/2 x 1 in. carriage bolts (C).

2. If baler is equipped with hydraulic bale tensioner, fasten pump drive sprocket (E) to shaft.

3. Attach rear bearing support (A) using two 1/2 x 1 in. carriage bolts (B). Tighten carraige bolts to 48 N·m (35 lb-ft).

4. Tighen locking collars (D). (See Tighten Locking Collars in this group.)

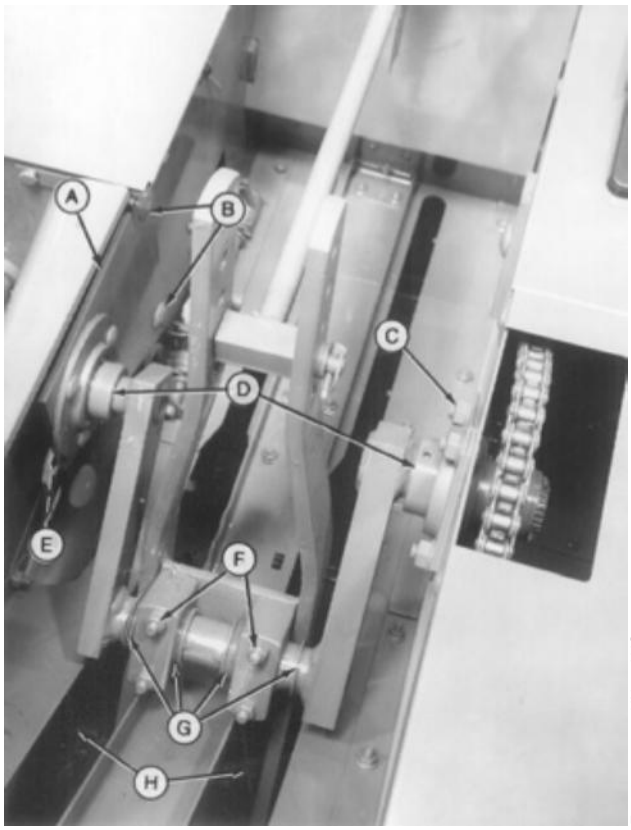
5. To center feeder teeth in bale case slots (H), position washers (G) to either side of bearing.

6. 327, 328, 336, 337, 338, 346, 347, and 348 Balers: Tighten locking nuts (F) to 7 N·m (5 lb-ft).

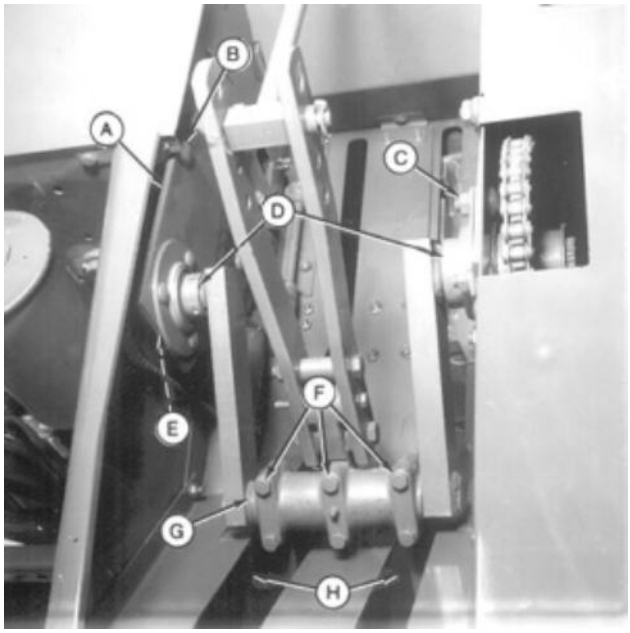
NOTE: For 466, 467, and 468 bales, make sure the index mark on the feeder finger bearing cap align with index mark on feeder finger bearing housing.

7. 466, 467 and 468 Balers: Fasten feeder finger bearing cap to feeder fingers using cap screws (F). Tighten cap screws to 48 N·m (35 lb-ft).

A—Bearing Support
B—Carriage Bolts
C—Carriage Bolts
D—Locking Collars
E—Sprocket
F—Lock Nuts—300 Series (4 used)
Cap Screw—400 Series (6 used)
G—Washers
H—Bale Case Slots



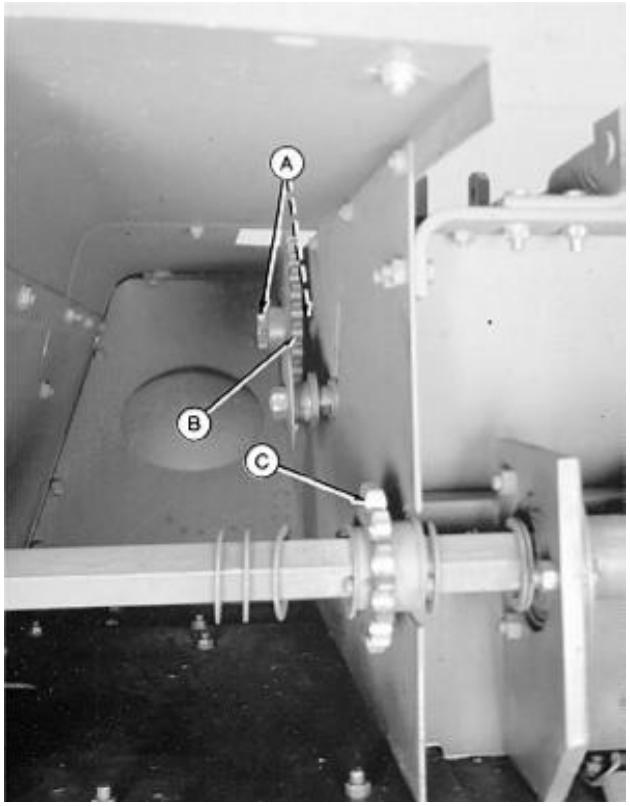
300 Series



400 Series

EX,1243,4025,AG-19-17AUG95

8. Install washers (A) as needed to align sprocket (B) with sprocket (C). Fasten with 3/16 x 2 in. cotter pin. Be sure sprocket is installed with hub toward front of baler.



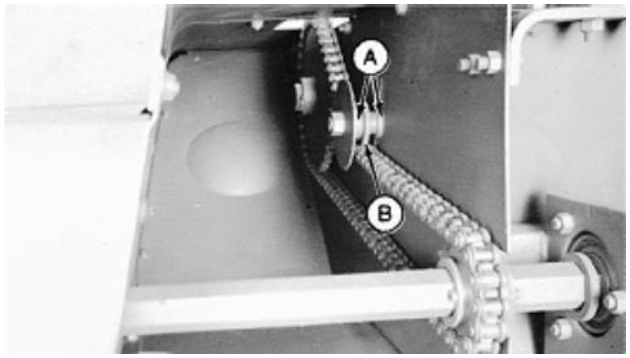
E18437 -UN-12JUN89

EX,1243,4025,AH-19-09AUG95

9. Install chain and adjust washers (A) until idler (B) is in center of chain.

IMPORTANT: After feeder fingers and drive chain are installed, baler must be timed. (See procedure in this group.)

10. 327, 328, 336, 337, 338, 346, 347, and 348 Balers: Time baler while securing idler. Adjust tension on roller chain by pressing idler against chain with 22—44 N·m (5—10 lb). Tighten idler mounting cap screw.



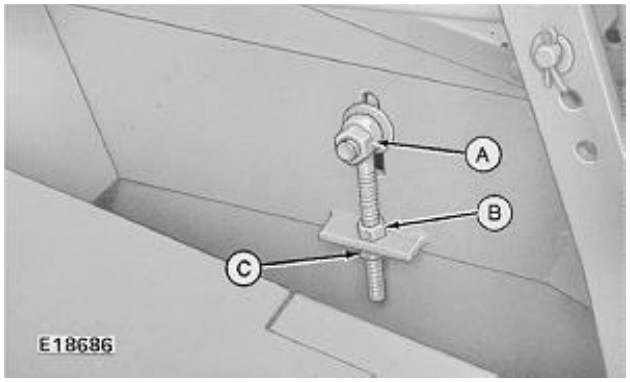
E22520 -UN-04AUG89

EX,1243,4025,AI-19-09AUG95

11. 466, 467 and 468 Balers: Time baler while adjusting tension of drive chain.

To adjust tension, loosen nut (A) located on eyebolt. Loosen upper adjusting nut (B) and tighten lower adjusting nut (C) in order to tighten chain. Tighten or loosen adjusting nuts until 13 mm (1/2 in.) deflection is obtained when thumb pressure is applied at center of chain.

Tighten adjusting nuts (B and C) and nut (A). Recheck adjustment.



-UN-03OCT88
E18686

EX,1243,4025,AJ-19-09AUG95

TIGHTEN LOCKING COLLARS

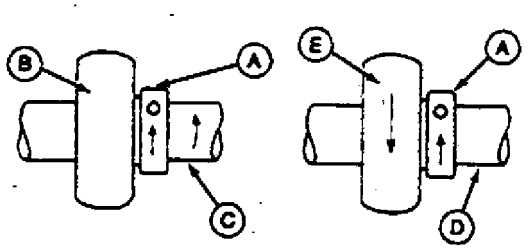
Locking collars (A) on bearings (B) must be kept tight.

Tighten all locking collars on running shafts (C) in the direction of normal operating shaft rotation.

Tighten all locking collars on stationary shafts (D) in the opposite direction from that of the bearing rotation.

Tighten set screw.

A—Locking Collar
B—Bearing
C—Running Shaft
D—Stationary Shaft
E—Running Bearing



-UN-08MAY89
E23749

EX,1243,4025,AK-19-09AUG95

ADJUST FEEDER FINGERS

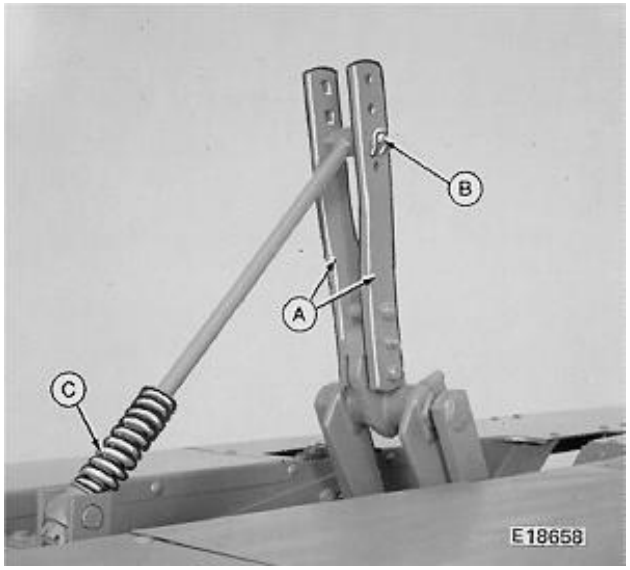
Feeder fingers (A) may be adjusted to increase or decrease their stroke, which alters the distance they move into the bale chamber.

1. To place more hay in right side of the bale chamber, place pivot pin (B) in the upper holes of feeder fingers.

2. If more hay is needed on the left side, move pivot pin to lower holes.

If pivot pin is in lowest holes and material is still not coming far enough into the bale chamber, the baler is being underfed. This happens when baling at too slow a speed or when windrows are too light.

A spring (C) helps protect the fingers from damage as a result of oversize charges of hay or from striking a solid object.



E18658 -UN-13SEP88

EX,1243,4025,AL-19-09AUG95

TIME BALER

Timing is controlled by the main drive chain, feeder drive chain (A), and knotter drive gears. If any of these parts are removed for repair, check all timed functions before operating baler. Make each of the following checks or adjustments as baler is operated by hand, through one complete tying cycle.

1. Put pivot pin (B) in bottom hole of feeder teeth (C).

2. Turn flywheel by hand in a counterclockwise direction until face of plungerhead (D), on a compression stroke, is centered in the front feeder finger slot. (see photo.)

For 300 series balers, left corner of front feeder finger should measure 241-292 mm (9-1/2—11-1/2 in.) (E) from extreme left end of front finger slot. If feeder fingers does not fit within this range, disconnect feeder drive chain and adjust finger position 267 mm (10-1/2 in.) (measured horizontally) from extreme left end of feeder finger slot. Use a wood block to hold fingers in this position.

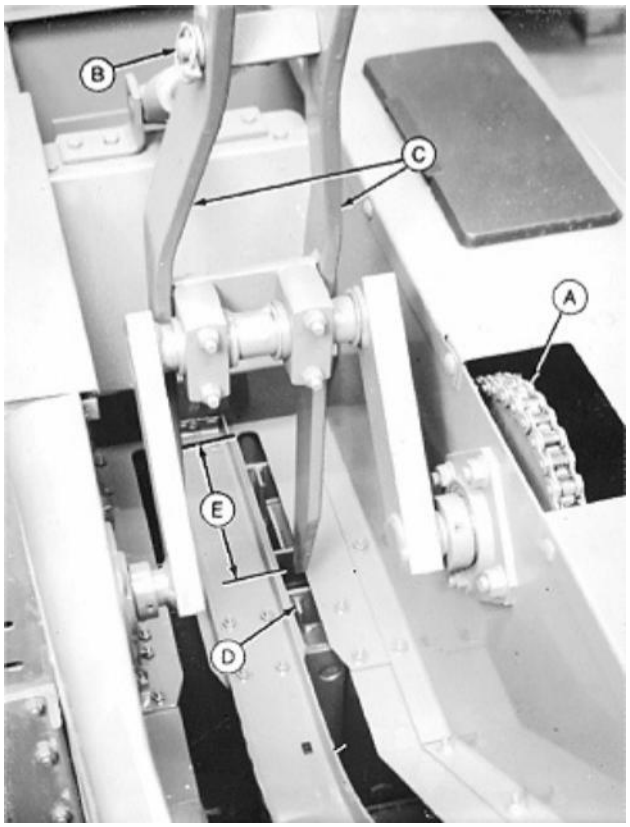
For 400 series balers, dimension (E) should be 388—438 mm (15-1/4—17-1/4 in.). If feeder fingers do not fit within this range, disconnect feeder drive chain and adjust finger position 413 mm (16-1/4 in.) from extreme left end of feeder finger slot.

3. Connect feeder drive chain. Turn flywheel clockwise as necessary to install chain with drive side of chain tight. Tighten idler against chain, to specification.

NOTE: After connecting chain, locate plungerhead face in center of slot and check dimension. If additional adjustment is necessary, time the feeder finger again using main drive chain instead of feeder drive chain for a finer adjustment.

IMPORTANT: Using main drive chain for timing will also affect timing of plungerhead to needles. Needles have to be timed again as described in step 5.

4. After correct feeder fingers timing has been obtained, move plungerhead through one complete cycle to make certain that feeder fingers and plungerhead clear each other.



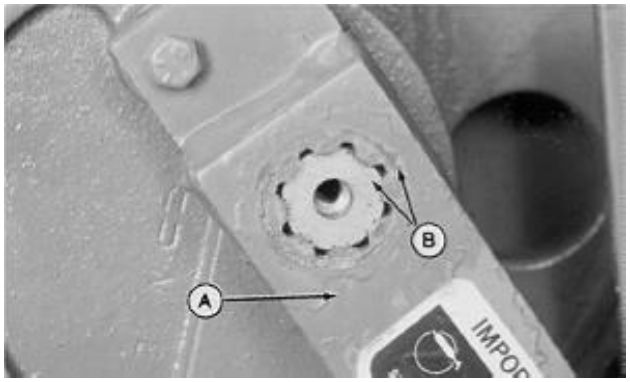
300 Series Baler Shown

A—Feeder Drive Chain
B—Feeder Pivot Pin
C—Feeder Teeth
D—Plungerhead
E—300 Series Balers:
241—291 mm (9-1/2—11-1/2 in.)
400 Series Balers:
387—438 mm (15-1/4—17-1/4 in.)

EX,1243,4025,A1-19-18AUG95

5. With the needles in “home” position, rotate the measuring wheel to trip the bale measuring arm. Turn flywheel counterclockwise until the tip of the highest needle is flush with the top edge of the lower bale groovers.

6. 347 and 467 Balers: Remove cap screw and washer from needle lift arm (A). Check that both marks (B) are in alignment. Install cap screw and washer.



E29041 -UN-07DEC89

EX,1243,4025,AN-19-09AUG95

NOTE: Slot (A) is only on 8-Series Balers. Use dimensions shown for 6- and 7-Series Balers.

It is Prefeable to adjust the plungerhead closer to the front of the slot tan to the rear of the slot

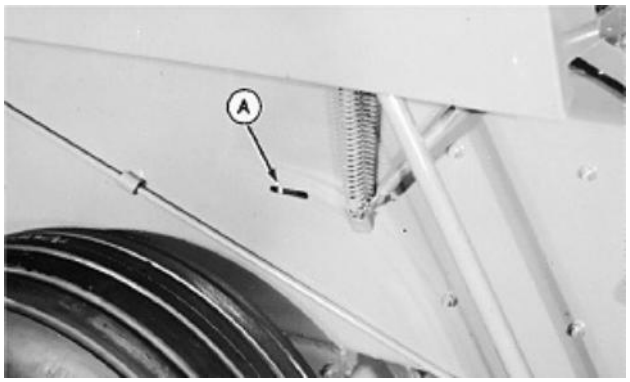
40
25
12

7. With the plungerhead on the compression stroke, plungerhead face (C) should be in slot (A) on side of bale case or at dimension (F) and the tip of needles (B) flush with top edge of bale groover.

Dimension (F) for twine balers is distance between plungerhead face and needles. For wire balers, dimension (F) is distance between plungerhead face and front of needle pulley.

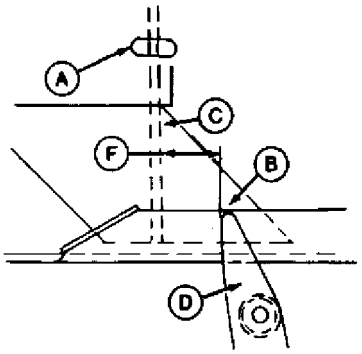
It is preferable to adjust the plungerhead closer to front of slot or larger dimension (F).

A—Bale Case Slot
B—Needle Flush With Top Edge of Lower Bale Groover
C—Face of Plungerhead
D—Needle
E—Wire Needle Pulley
F—13—57 mm (1/2—2-1/4 in.)



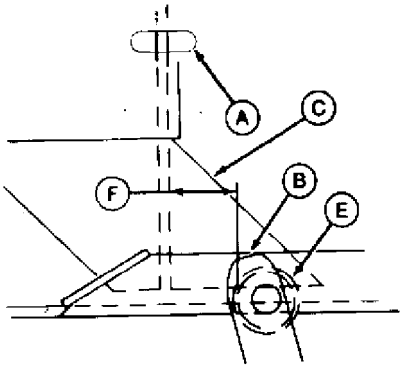
E36803 -UN-27MAR92

Series 8 Balers Only



E36430 -UN-29APR92

Twine Baler



E36431 -UN-29APR92

Wire Baler

EX,1243,4025,AO-19-16AUG95

8. If plungerhead does not appear in slot or at specified distance when needles are positioned as shown in step 7, remove cluster gear (A).

9. Trip measuring arm and position needles by hand so tip of highest needle flush with top edge of bale groover.

10. Turn flywheel to position plungerhead in slot, or at specified distance. (See Step 7.) Rotate needle drive gear (B) counterclockwise until needle drive gear contacts trip dog roller (C).

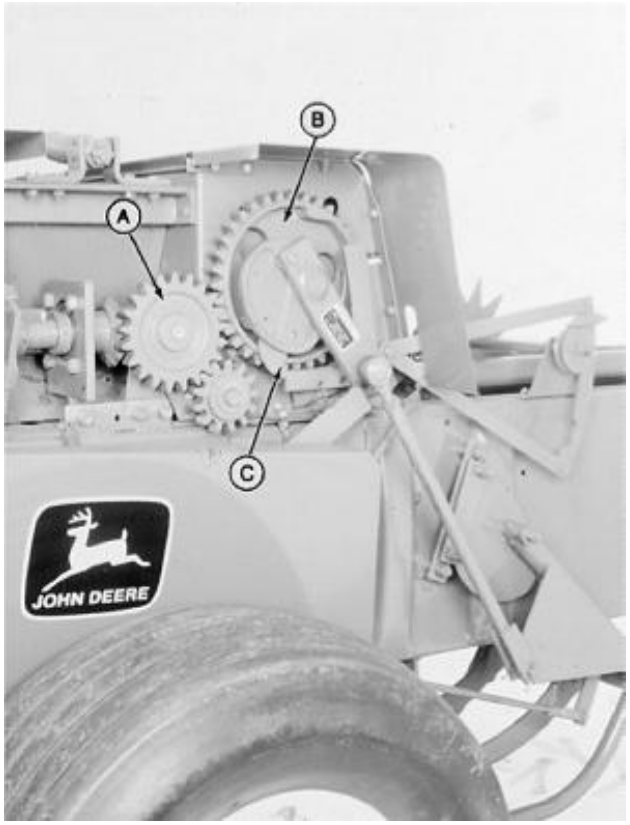
IMPORTANT: Cluster gear should be rotated to find the position where the bevel gear teeth and spur gear teeth match mating gears. If not, the baler will be out of time.

11. Install cluster gear on shaft.

12. To check timing, back plungerhead up and pull needles out of bale case by hand. Move flywheel forward slowly until tip of highest needle is flush with top of bale case groover. Check plungerhead position.

13. If needles are still out of time, repeat Steps 8—12.

14. Check adjustment of crank stop. (See procedure in this group.)



E28960 -UN-20SEP88

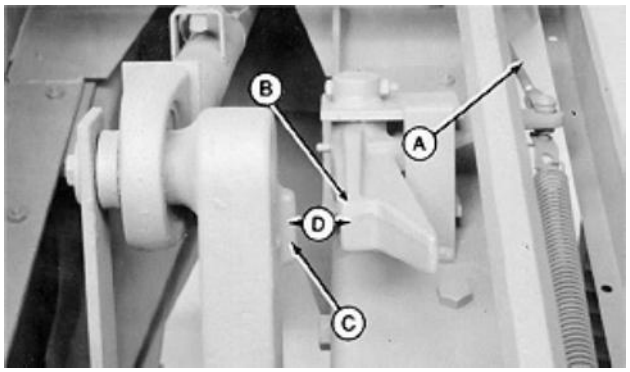
EX,1243,4025,AP-19-09AUG95

ADJUST CRANK STOP

IMPORTANT: Needle to plungerhead timing must be correct to properly adjust crank stop. (See Time Baler in this group.)

1. Put needles in “home” position. (See procedure in this group.)

2. Adjust control rod yoke (A) so that clearance between right point of safety stop (B) and lug (C) on plungerhead crank is 29 to 35 mm (1-1/8 to 1-3/8 in.) (D).



E18280 -UN-07JUN89

A—Control Rod Yoke
B—Safety Stop
C—Lug
D—29 to 35 mm (1-1/8 to 1-3/8 in.)

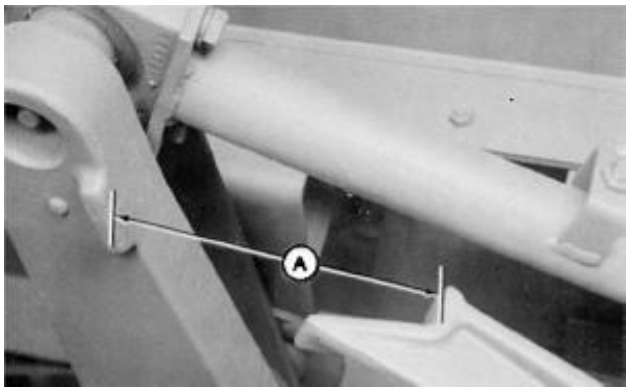
EX,1243,4025,AQ-19-09AUG95

3. Trip needles and turn flywheel counterclockwise until needles have raised and are on down stroke.

When stop just starts to make its return swing to left, clearance between plungerhead crank lug and stop must be a MINIMUM of 70 mm (2-3/4 in.) (A).

4. If dimension (A) is less than 70 mm (2-3/4 in.) and lug on crank clears crank stop by 29 to 35 mm (1-1/8 to 1-3/8 in.), check baler timing (See procedure in this group).

Repeat Step 3.



EX,1243,4025,AR-19-09AUG95

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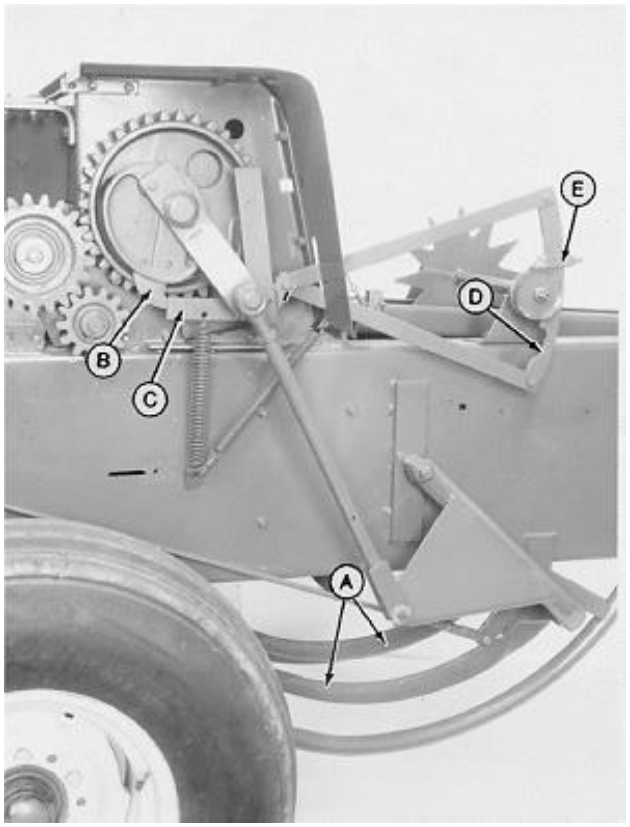
25
14

PUT NEEDLES IN HOME POSITION

Home position is when the following three conditions are met:

- the needles (A) are in the rearmost position.
- the trip dog (B) contacts trip arm (C).
- the measuring arm (D) is at the bale beginning position which is stop (E) is against measuring wheel.



EX,1243,4025,AS-19-09AUG95

REMOVE PLUNGERHEAD

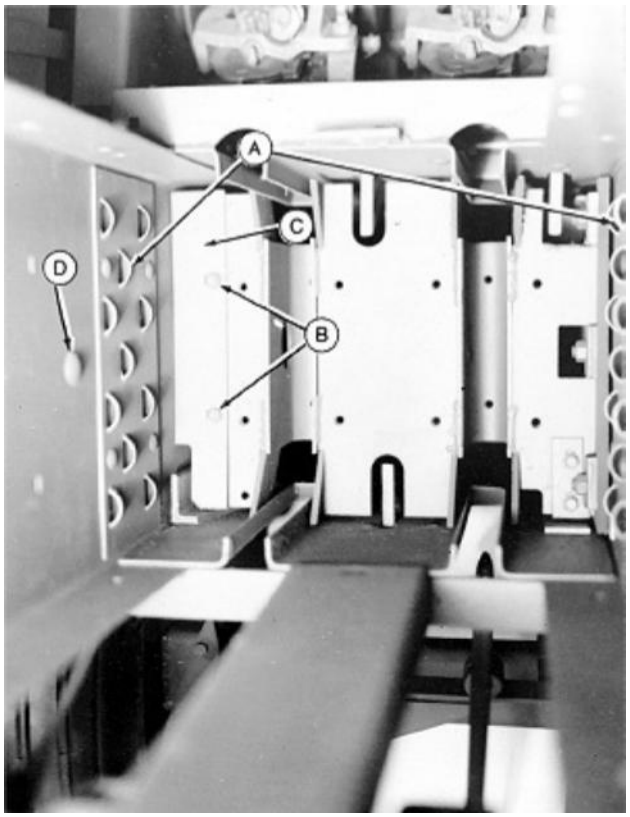
1. Remove all material from inside bale case.

2. Remove all side resisters (A). Note that right side resister has notch in lower corner.

3. Loosen cap screws (B) and move left rear scraper (C) to extreme right.

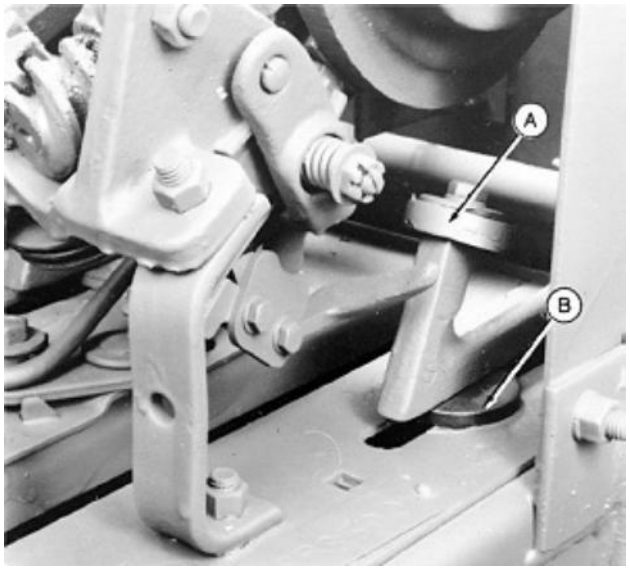
NOTE: If scraper (C) will not clear left needle frame pivot bolt (D), remove bolt. Note size and location of washers.

A—Right and Left Resisters
B—Cap Screws
C—Left Rear Scraper
D—Needle Frame Pivot Carriage Bolt



EX,1243,4030,BA-19-09AUG95

4. Lock both top and bottom hay dogs (A) out of bale case by positioning washer (B) between hay dog and bale case.



EX,1243,4030,BB-19-09AUG95

5. Move plungerhead arm to vertical position and loosen two cap screws (A).

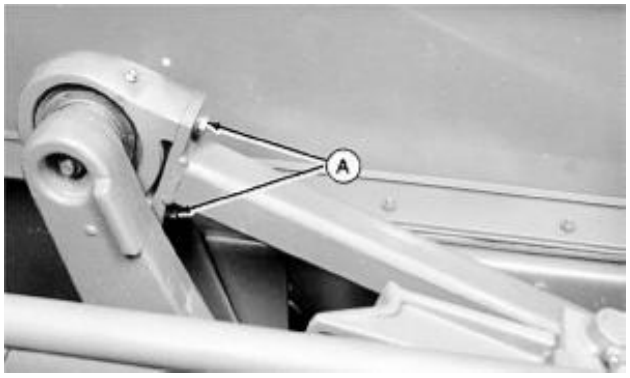
6. Rotate flywheel by hand to move plungerhead to rear of machine.

7. Remove two cap screws from bearing cap.

CAUTION: Knife is sharp. Use care when working around knife to prevent bodily injury.

NOTE: Keep front lower right wear pad of plungerhead against right side of bale case during removal of plungerhead. This will prevent plungerhead from becoming wedged as it's pushed out rear of bale case.

8. Push plungerhead out of bale case.



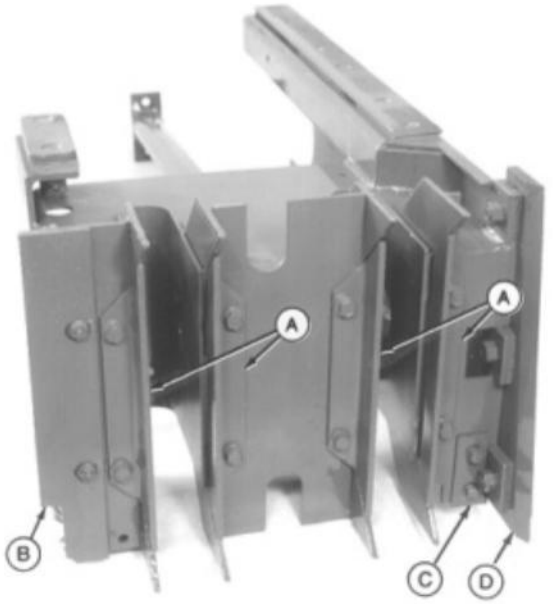
E18766 -UN-12JUN89

EX,1243,4030,BC-19-09AUG95

DISASSEMBLE PLUNGERHEAD

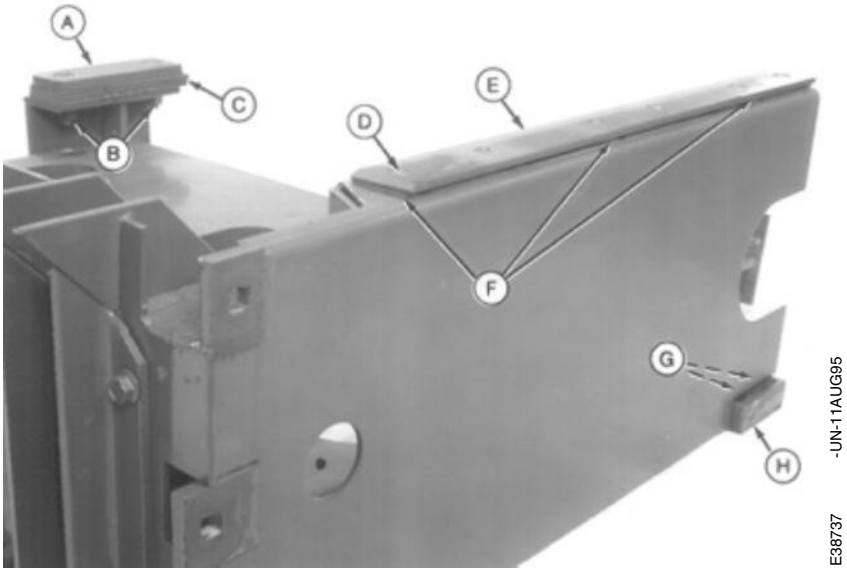
1. Remove extensions (A), left scraper (B), right scraper (C), and knife (D).

A—Extensions
B—Left Rear Scraper
C—Right Rear Scraper
D—Knife



E38736 -UN-10AUG95

EX,1243,4030,BD-19-09AUG95



A—Upper Left Wear Plate
B—Plow Bolts and Nuts (2 used)
C—Shims (as required)
D—Plow Bolts and Nuts (6 used)
E—Upper Right Wear Plate
F—Shims (as required)
G—Plow Bolts and Nuts (2 used)
H—Lower right Wear Pad

2. Remove two plow bolts and nuts (A) to remove upper left wear plate (C) and shims (B).

3. Remove six plow bolts and nuts (D) to remove upper right wear plate (E) and shims (F).

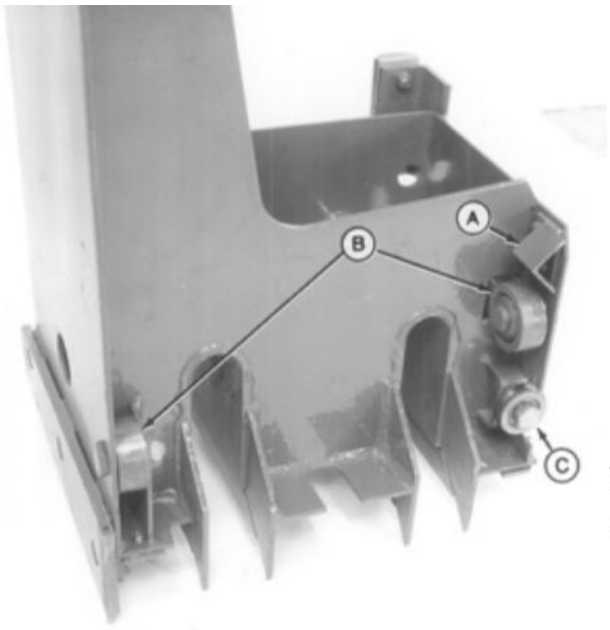
4. Remove two plow bolts and nuts (G) to remove lower right wear pad (H).

EX,1243,4030,BE-19-09AUG95

5. Remove front scraper (A).

6. Remove rollers (B and C) if necessary.

A—Front Scraper
B—Bottom Rollers (2 used)
C—Left Side Roller



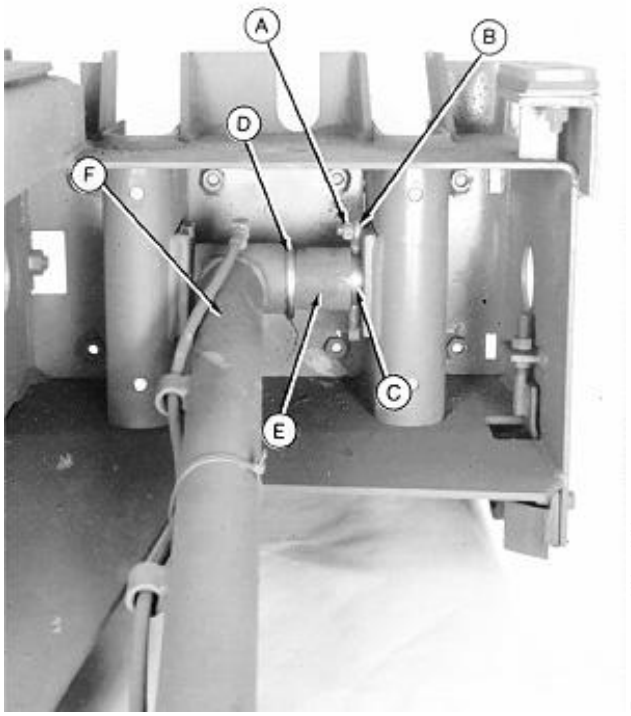
E38738 -UN-08AUG95

EX,1243,4030,BF-19-09AUG95

NOTE: For 328 and 338 balers, a hose is not used to lubricate pitman pin (C). A grease fitting is located directly on pitman arm instead.

7. 327-328-336-337-338: Remove carriage bolt and nut (A), cotter pin (B), pitman pin (C), washer (D), spacer (E), and pitman arm (F).

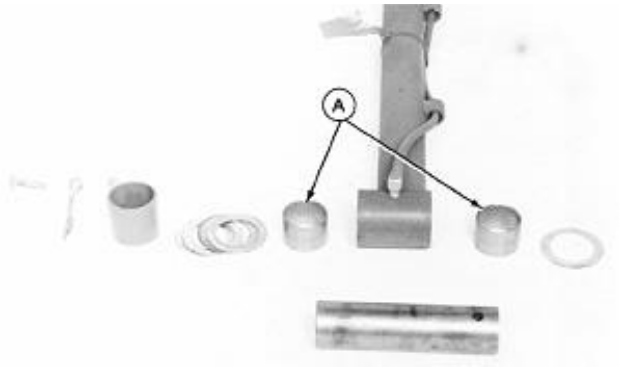
A—Carriage Bolt and Nut
B—Cotter Pin
C—Pitman Pin
D—Washers
E—Spacer
F—Pitman Arm



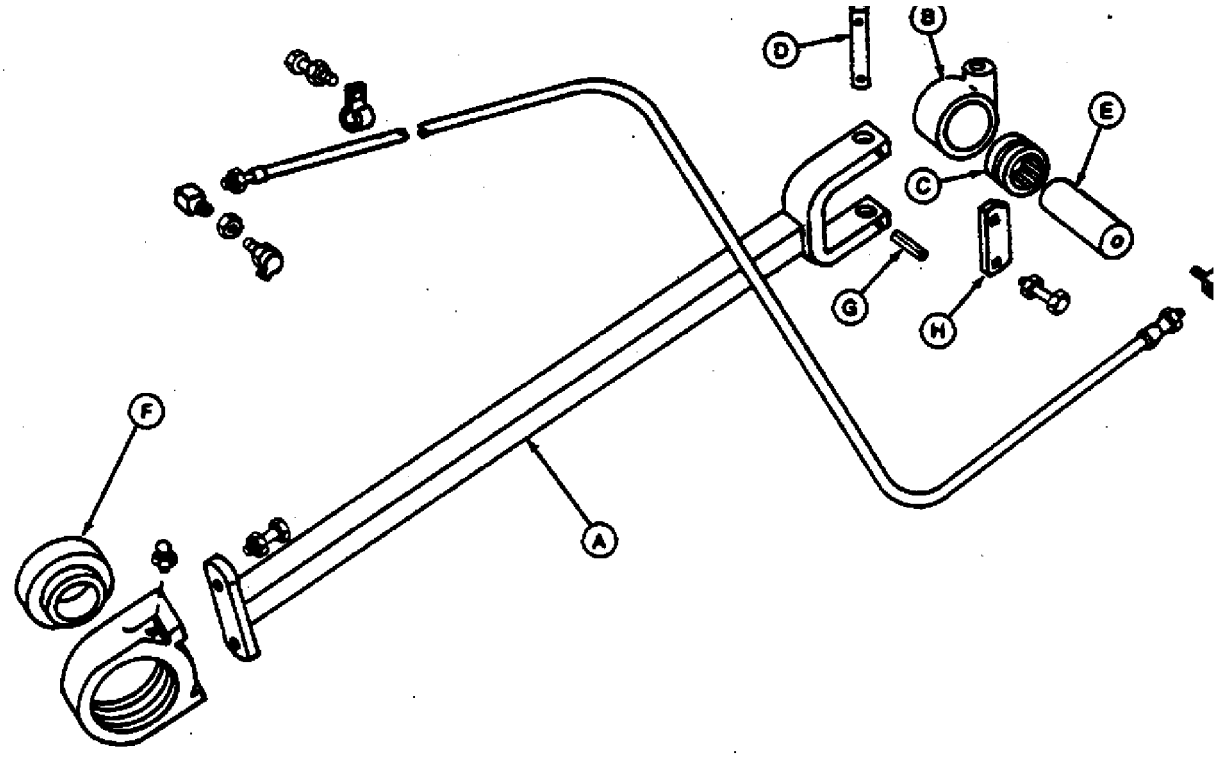
E18770 -UN-12JUN89

EX,1243,4030,BG-19-09AUG95

8. Press bearings (A) out of pitman arm.



EX,1243,4030,BH-19-09AUG95



A—Pitman
B—Housing
C—Bearing
D—Pivot Pin
E—Pitman Pin
F—Bearing
G—Spring Pin
H—Retaining Plate

9. 346-347-348-466-467-468 Balers: Refer to exploded view to disassemble plungerhead pitman.

EX,1243,4030,BI-19-09AUG95

INSPECT PLUNGERHEAD

1. Check plungerhead rollers (bearings) for:

- Flat spots on the roller surface
- Looseness
- Worn or damaged seals

Replace rollers (bearings) as necessary.

2. Check plungerhead pitman bushings (327, 328, 336, 337, 338) or needle bearings (346, 347, 348, 466, 467, 468) for wear or looseness. Replace as necessary.

3. For all models except 328 and 338, check that lubrication line is open to allow grease to flow to pitman pin.

For 328 and 338, make sure lubrication hole in cross tube is open.

4. Check pins for wear. Replace as necessary.

EX,1243,4030,BJ-19-09AUG95

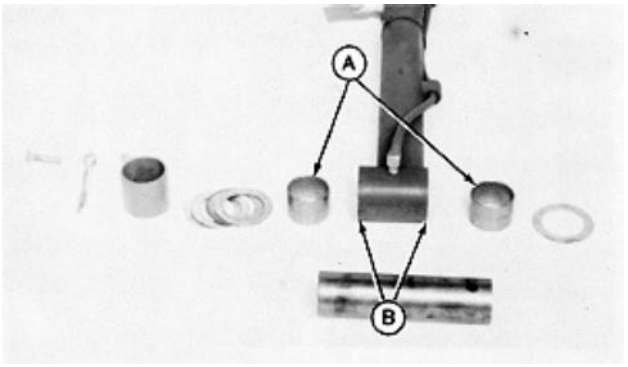
ASSEMBLE PLUNGERHEAD

For 327-328-336-337-338 machines, the following instructions apply:

1. Press bushings (A) into pitman arm until even with ends (B) of cross tube bore.

NOTE: New pitman arm assembly will require approximately 0.4 kg (14 oz) of multipurpose grease.

2. Using multipurpose grease, fill the space between the two bushings inside the cross tube until the cavity diameter is the same as the bushing ID. Apply a film of grease to the inside of both bushings.



327 Baler Illustrated

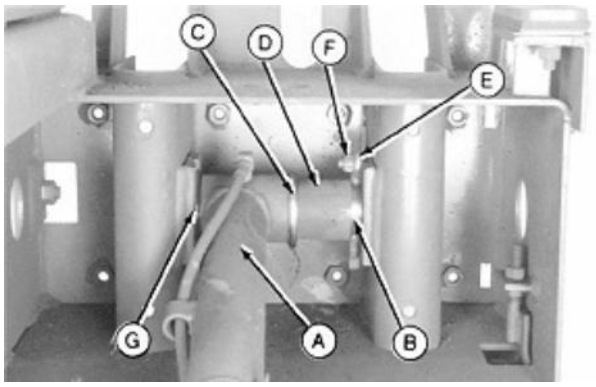
EX,1243,4030,BK-19-09AUG95

For 327-328-336-337-338 machines, the following instructions apply:

3. Align pitman arm (A) cross tube with access holes in plungerhead supports. Install pitman pin (B), washers (C), and spacer (D).

4. Insert cotter pin (E) into hole in pitman pin and fasten with carriage bolt and nut (F).

5. Check clearance (G) between pitman arm and plungerhead. Clearance should be 1.27 mm (0.050 in.) maximum.



E18773 -UN-12JUN89

A—Pitman Arm
B—Pitman Pin
C—Washers
D—Spacer
E—Cotter Pin
F—Carriage Bolt and Nut
G—1.27 mm (0.050 in.) Maximum Clearance

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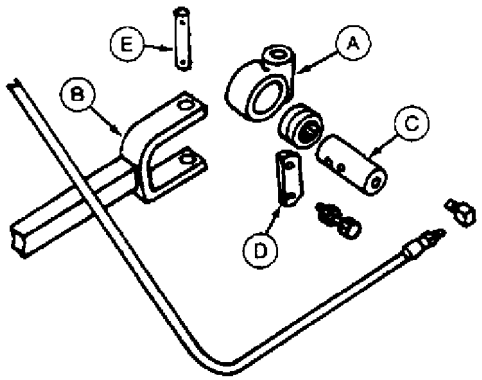
30
7

EX,1243,4030,BL-19-09AUG95

IMPORTANT: Bearing housing (A) must be installed in pitman arm yoke (B) with the hole for pivot pin (E) toward the plungerhead.

Retaining plate (D) must engage notch in pitman pin (C).

6. 346-347-348-466-467-468 Balers: Refer to exploded view to assemble.

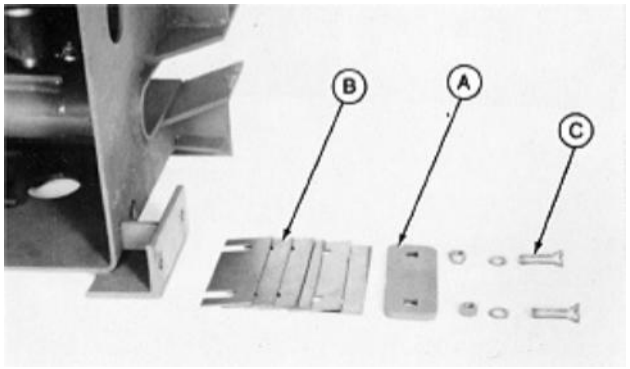


E18727 -UN-13APR89

A—Bearing Housing
B—Pitman
C—Pitman Pin
D—Retaining Plate
E—Pivot Pin

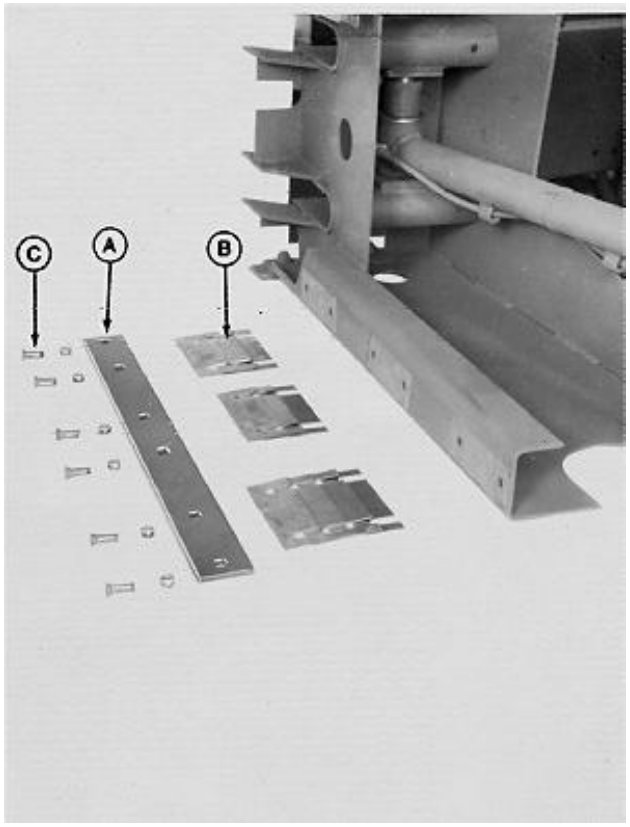
EX,1243,4030,BM-19-09AUG95

7. Attach upper left wear pad (A) to plungerhead frame using two 3/8 x 1-1/2 in. plow bolts (C). Do not install shims (B) or tighten plow bolts at this time.



EX,1243,4030,BN-19-09AUG95

8. Attach upper right wear pad (A) to plungerhead frame using six 5/16 x 1 in. plow bolts (C). Do not install shims (B) or tighten plow bolts at this time.

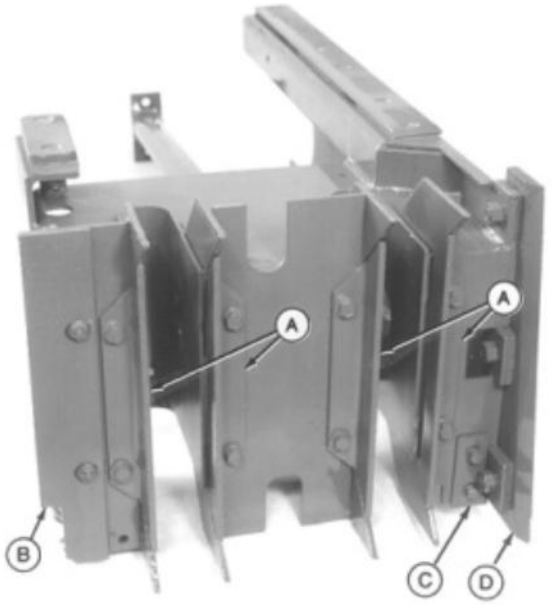


EX,1243,4030,BO-19-09AUG95

9. Install extensions (A), and knife (D).

10. Install left rear scraper (B) and right rear scraper (C). Do not tighten scrapers cap screws at this time.

A—Extensions
B—Left Rear Scraper
C—Right Rear Scraper
D—Knife



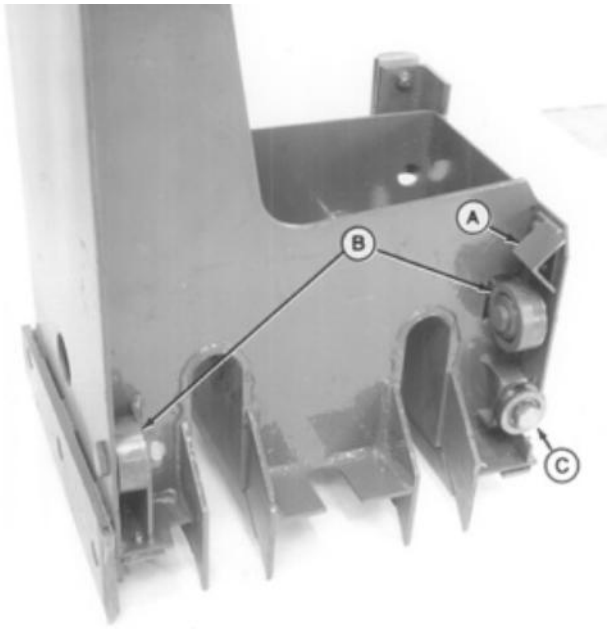
E38736 -UN-10AUG95

EX,1243,4030,BP-19-09AUG95

11. Install front scraper (A).

12. Install rollers (B and C) if removed.

A—Front Scraper
B—Bottom Rollers (2 used)
C—Left Side Roller



E38738 -UN-08AUG95

EX,1243,4030,BQ-19-09AUG95

INSTALL PLUNGERHEAD

IMPORTANT: Check bale case guides (A—C) and (E—H), and stationary knife (D) for wear before installing plungerhead. Replace any worn or damaged parts.

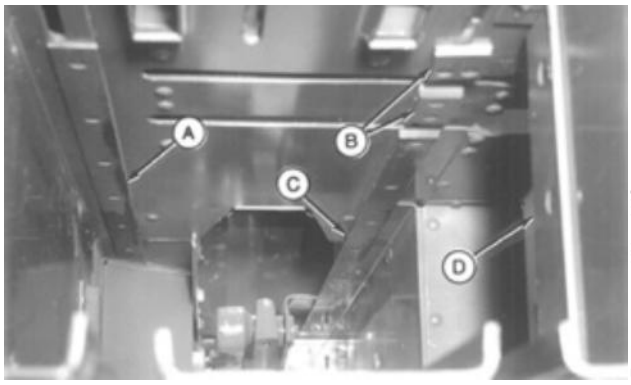
Make sure stationary knife (D) is adjusted properly and right side guide plate (E) is straight before installing plungerhead.

NOTE: Use a straight edge and shim right side guide plate (E) as necessary.

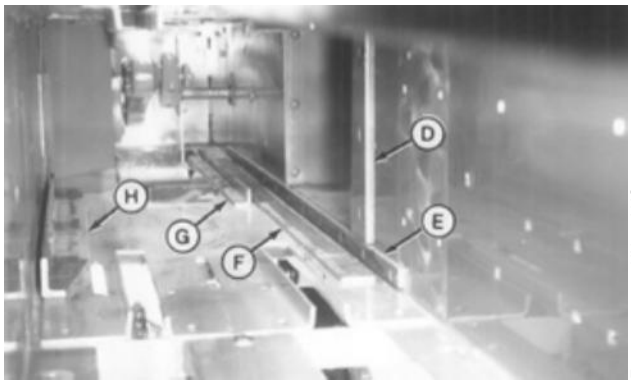
1. Check parts (A—H) for wear or damage. Replace as necessay.

2. Check lower right side guide plate (E) for straightness and stationary knife (D) clearance. (See Adjust Stationary Knife in this group.)

A—Upper Left Guide Plate
B—Upper Right Guide Plate Extensions and Shims
C—Upper Right Guide Plate
D—Stationary Knife
E—Right Side Guide Plate
F—Lower Right Guide Plate
G—Front Angle Guide
H—Left Angle Guide



E38739 -UN-10AUG95

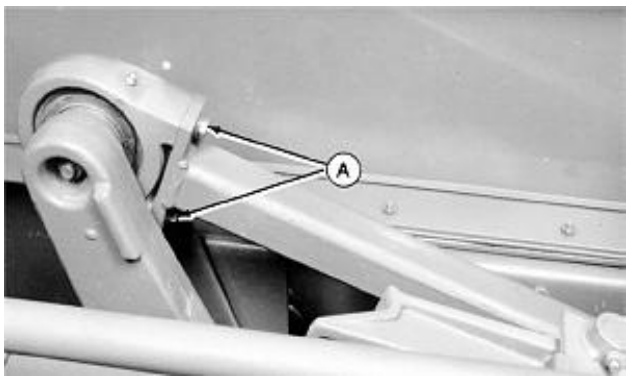


E38740 -UN-08AUG95

EX,1243,4030,BR-19-16AUG95

3. Install plungerhead in rear of bale case and push forward.

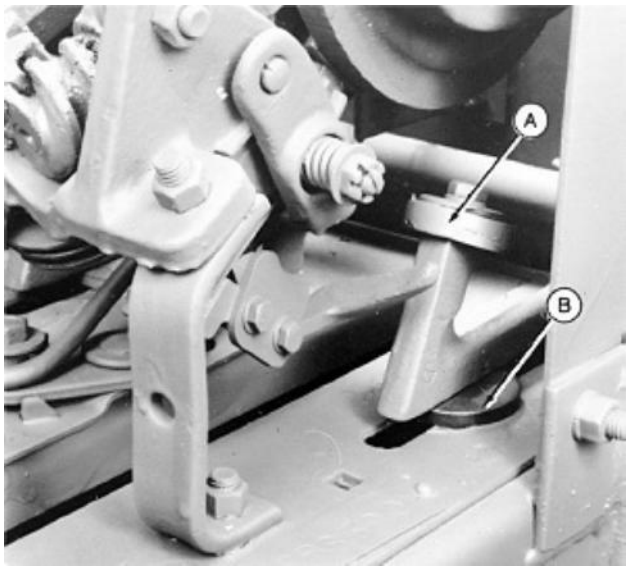
4. Attach plungerhead pitman to bearing cap using two cap screws (A).



E18766 -UN-12JUN89

EX,1243,4030,BS-19-09AUG95

5. Remove washers (B) used to lock hay dogs (A) out of bale case.



E18765 -UN-12JUN89

EX,1243,4030,BT-19-09AUG95

6. If needle frame pivot bolt was removed, install at this time:

- Install spacer (A) through needle frame pivot (B).

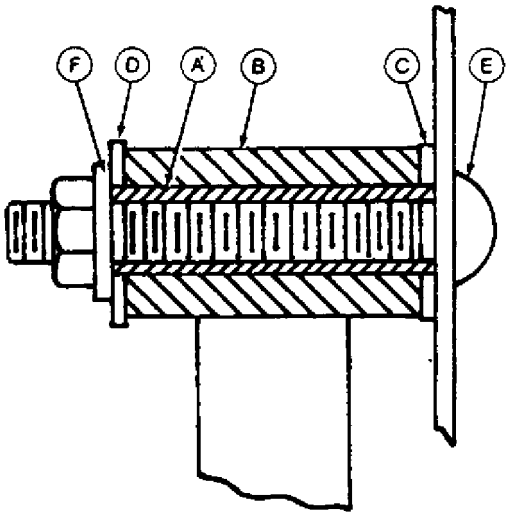
IMPORTANT: When installing washer(s) (C), do not force washer(s) between bale case and pivot frame.

If needle frame pivot-to-bale case clearance is large enough for 2 or more washers, divide evenly (if possible) the number of washers required and insert washers between bale case and pivot frame at each side of bale case. The difference in number of washers used at each side must not be more than one.

- Insert washer(s) (C) between bale case and pivot frame making sure washer(s) slips over spacer (A).
- Install outer washer (D) over spacer.
- Install carriage bolt (E) through bale case and spacer.
- Install washer (F) and fasten with nut.

IMPORTANT: Outer washer (D) must be free to rotate after tightening nut.

- Tighten nut to 121 N·m (90 ft-lb).



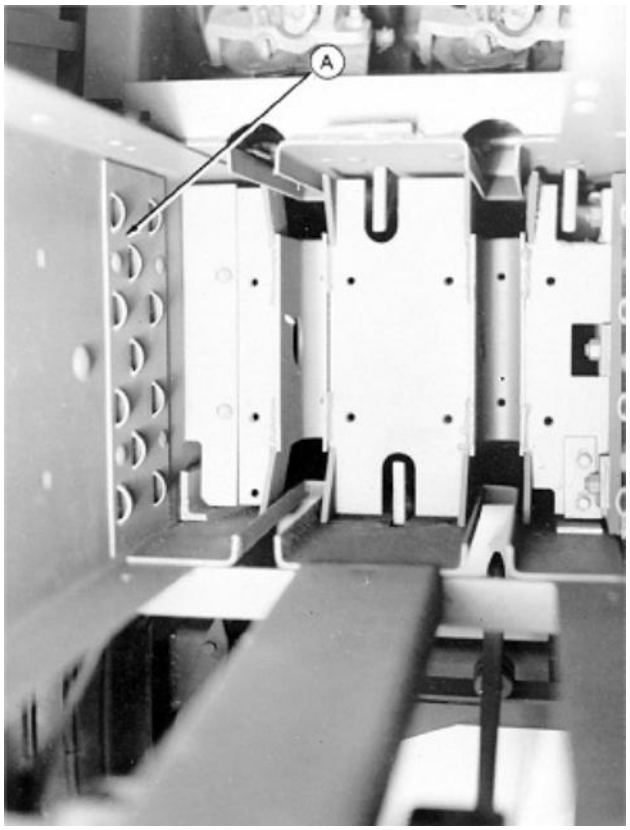
E19433 -UN-13APR89

A—Spacer
B—Needle Pivot Frame
C—Washer
D—Outer Washer
E—Carriage Bolt
F—Washer

EX,1243,4030,BU-19-09AUG95

7. Install all side resisters (A). Note that right side resister has notch in lower corner.

8. Adjust plungerhead. (See procedure in this group.)



E18800 -UN-12JUN89

EX,1243,4030,BV-19-09AUG95

ADJUST PLUNGERHEAD

IMPORTANT: Incorrect adjustment of plungerhead and/or stationary knife can cause knives to lock or shear bolts to break.

Before adjusting plungerhead, make sure stationary knife is adjusted to specification. (See Adjust Stationary Knife in this group.)

To prevent binding of plungerhead, make sure scrapers are loosened before adjusting plungerhead.

1. Loosen rear scrapers (B and D). Loosen cap screws (F) to loosen front scraper.

A—Clearance
B—Left Rear Scraper
C—Clearance
D—Right Rear Scraper
E—Clearance
F—Front Scraper Cap Screws (2 used)

E38742 -UN-10AUG95

E38741 -UN-10AUG95

EX,1243,4030,BX-19-09AUG95

2. Rotate flywheel until front edge (A) of plungerhead is aligned with front edge of carriage bolt head (B). Scissor point (E) of plungerhead knife (C) and stationary knife (D) will be at “bottom position” as illustrated.

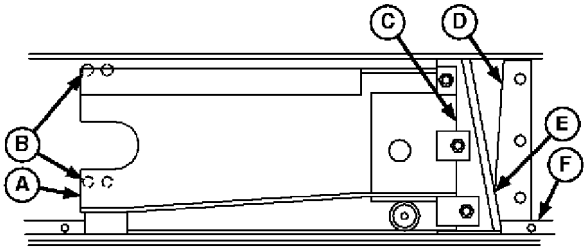
3. Push and hold plungerhead to right side of bale case against the lower right side bale case guide plate (F).

4. Check clearance (G) between plungerhead knife and stationary knife. Clearance must be within 0.75—1.5 mm (0.030—0.060 in.).

If clearance not within specification, check if stationary knife is adjusted to specification. (See Adjust Stationary Knife in this group.)

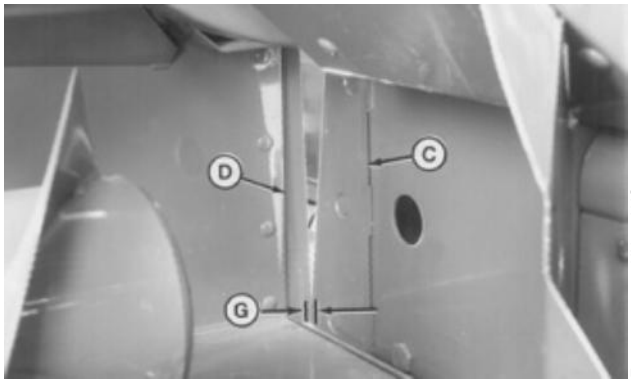
If stationary knife clearance is within specification, but clearance (G) is less than 0.75 mm (0.030 in.), plungerhead knife may be worn at point were knife contacts lower right side bale case guide plate. Repair or replace plungerhead knife as necessary.

A—Front Edge of Plungerhead
B—Front Carriage Bolt (Located at Front Right Side of Bale Case)
C—Plungerhead Knife
D—Stationary Knife
E—Scissor Point (Bottom Position)
F—Lower Right Side Guide Plate
G—0.75—1.5 mm (0.030—0.060 in.) Clearance



E38743 -UN-08AUG95

Bottom Scissor Position of Knives



E38751 -UN-08AUG95

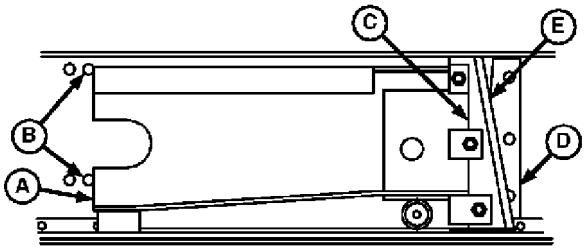
EX,1243,4030,B1-19-17AUG95

5. Rotate flywheel until front edge (A) of plungerhead is aligned with rear edge of carriage bolt head (B). Scissor point (E) of plungerhead knife (C) and stationary knife (D) will be at “top position” as shown in drawing.

NOTE: Scissor point of knives is shown lower in the photo for illustration purposes only.

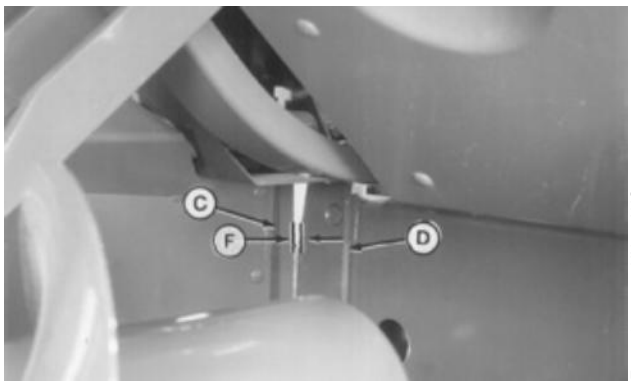
6. Check clearance (F) between plungerhead knife and stationary knife. Clearance must be within 1.0—3.28 mm (0.040—0.130 in.).

A—Front Edge of Plungerhead
B—Rear Carriage Bolt (Located at Front Right Side of Bale Case)
C—Plungerhead Knife
D—Stationary Knife
E—Scissor Point (Top Position)
F—1.0—3.28 mm (0.040—0.130 in.) Clearance



E38744 -UN-08AUG95

Top Scissor Position of Knives



E38752 -UN-10AUG95

40
30
15

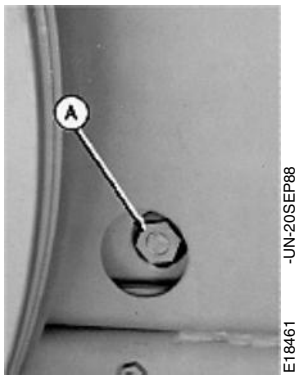
EX,1243,4030,BZ-19-17AUG95

7. If knife clearance at top scissor position is not within specification, rotate flywheel until left rear plungerhead roller aligns with access hole in left side of bale case.

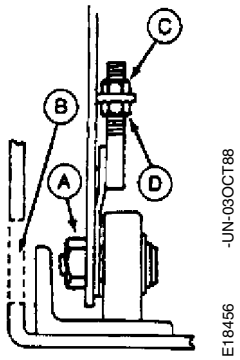
8. Loosen locking nut (A), then:

- To decrease knife clearance, loosen top nut (C) and tighten bottom nut (D).
- To increase knife clearance, loosen bottom nut (D) and tighten top nut (C).

9. Recheck knife clearance at top scissor position. If clearance is within specification, tighten all roller nuts.



E18461 -UN-20SEP88



E18456 -UN-03OCT88

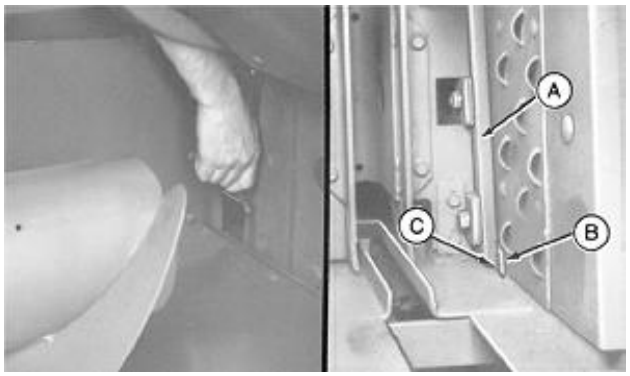
A—Roller Locking Nut
B—Access Hole in Bale Case
C—Upper Adjusting Nut
D—Lower Adjusting Nut

EX,1243,4030,CA-19-09AUG95

10. Rotate flywheel until plungerhead is at rearmost position.

11. Push and hold plungerhead to the left against the left bale case angle guide.

12. Check for clearance (C) between plungerhead knife (A) and lower right side guide plate (B). Clearance must be within 0.13—0.38 mm (0.005—0.015 in.). If not within specification, adjust left angle guide.



E19469 -UN-20SEP88

EX,1243,4030,CB-19-09AUG95

IMPORTANT: Incorrect adjustment can cause knives to lock or shear bolts to break.

Do not use anchor bolts and nuts (B) to move lower left angle guide (C). Anchor bolts and guide can bind and become distorted. Only use the anchor bolts and nuts to hold clearance after guide adjustment has been made.

NOTE: A total of six plow bolts are used to fasten the lower left angle guide (C). Three of the plow bolts and nuts (A) are used with anchor bolts. The other three plow bolts, washers, and nuts (A) fasten directly to the bale case and machine frame.

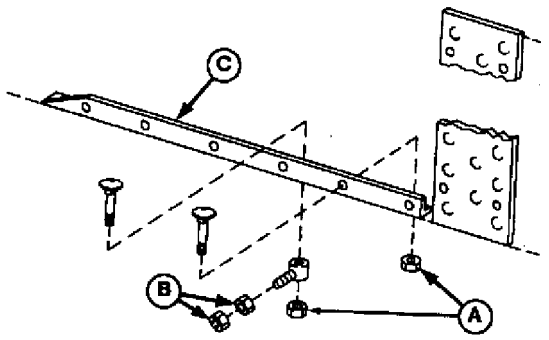
13. To adjust left angle guide, loosen six nuts (A) and six anchor nuts (B).

14. Pry plungerhead to extreme right side of bale case.

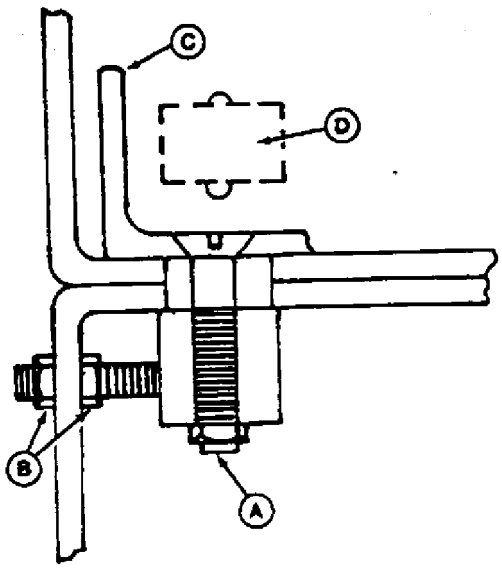
15. Move lower left angle guide (C) towards right until guide contacts plungerhead side roller (D).

16. Snug rearmost anchor nuts (B) and rearmost plow bolt nut (A). Do not tighten the other anchor nuts and plow bolts at this time.

A—Plow Bolts and Nuts (6 each used)
B—Anchor Bolt Nuts (6 used)
C—Bale Case Left Angle Guide
D—Plungerhead Side Roller



E36428AE -UN-29APR92



E24762 -UN-14SEP88

EX,1243,4030,CC-19-09AUG95

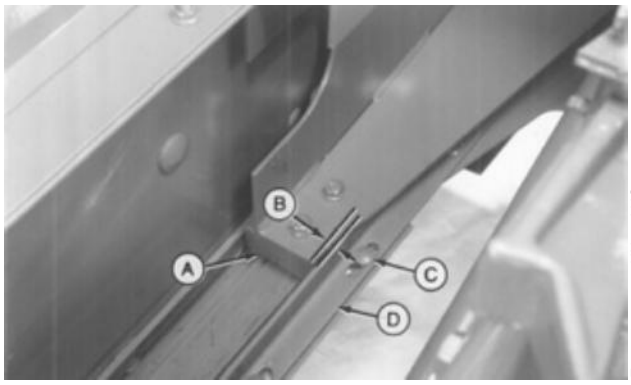
IMPORTANT: To prevent plungerhead knocking, this adjustment should be as tight as possible without binding.

17. With plungerhead in the rearmost position, check for clearance (B) between lower right plungerhead wear pad (A) and angle guide (D). Clearance must be 0—1.27 mm (0—0.050 in.) and plungerhead must not bind.

18. To adjust clearance, loosen five carriage bolts (C) and move angle guide until proper clearance is achieved.

19. Snug rearmost carriage bolt (C). Do not tighten the other angle guide carriage bolts at this time.

20. Move plungerhead to the frontmost position and check for clearance (B) again. Adjust front angle guide (D) as necessary, then tighten all carriage bolts (C). Plungerhead must move freely without binding for entire stroke.

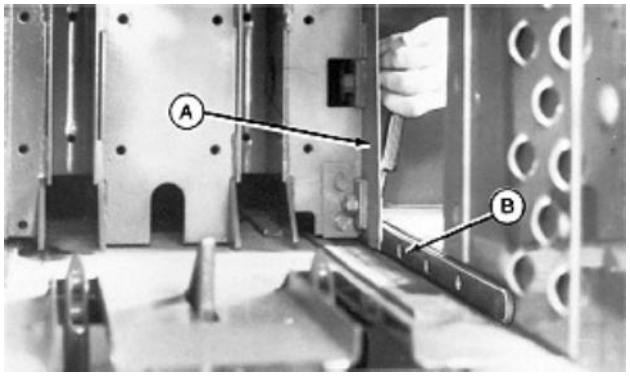


E38642 -UN-10AUG95

A—Lower Right Plungerhead Wear Pad
B—0—1.27 mm (0—0.050 in.) Clearance
C—Carriage Bolt (5 used)
D—Front Bale Case Angle Guide

EX,1243,4030,CD-19-09AUG95

21. With plungerhead in forward position of the stroke, push plungerhead to the left against left bale case angle guide. Clearance between plungerhead knife (A) and right side guide plate (B) must not exceed 1.52 mm (0.060 in.).

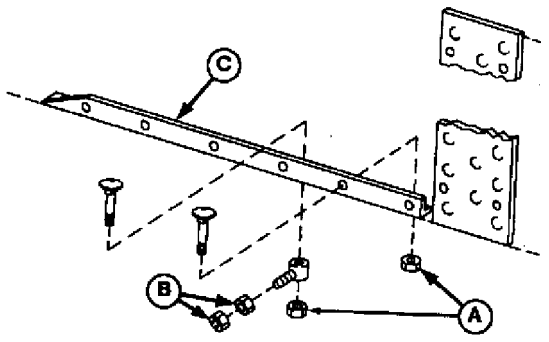


E19470 -UN-20SEP88

EX,1243,4030,CE-19-09AUG95

22. Push left angle guide (C) tight against plungerhead side roller. Tighten all anchor bolt nuts (B), then check clearance between plungerhead knife and right side guide plate again.

23. If clearance within specification and plungerhead does not bind, tighten all plow bolt nuts (A).



E36428AE -UN-29APR92

EX,1243,4030,CF-19-17AUG95

IMPORTANT: Make sure knife clearance and plungerhead side movement is within specification before adjusting the plungerhead wear plates and bale case guide extension plates.

24. Move plungerhead forward until front edge of plungerhead (E) aligns approximately with rear edge of bracket (F).

IMPORTANT: The upper right plungerhead wear plate clearance must not exceed 1.02 mm (0.040 in.) or plungerhead knock may occur.

Make sure plungerhead does not bind as plungerhead is moved through complete cycle. A plungerhead that binds may cause shear bolts to break.

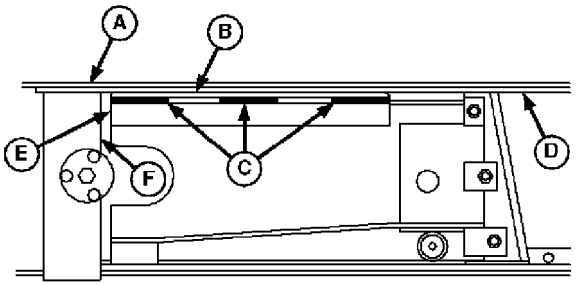
NOTE: It is recommended that the upper right plungerhead wear plate clearance be initially set at approximately 0.8 mm (0.030 in.). The clearance may be set tighter, but keep in mind that the tighter the clearance, the more chance the plungerhead may bind at some point in plungerhead stroke.

25. Check clearance between upper right plungerhead wear plate (B) and upper right bale case guide plate (D). Measurement should be taken in the location of each of the three shim packs (C). Clearance should be within 0—1.02 mm (0—0.040 in.) at each location.

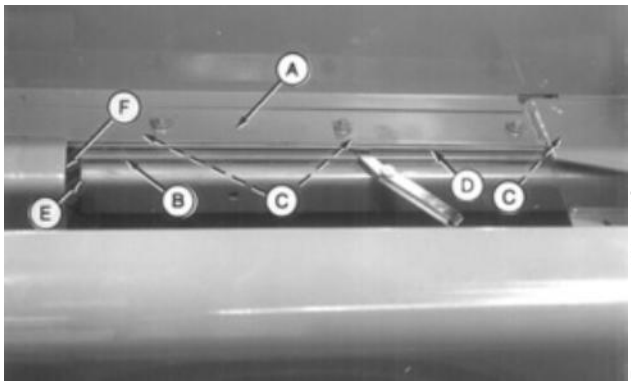
IMPORTANT: It is not necessary to have the same amount of shims in the three shim pack locations, but there MUST NOT be more shims in the center shim pack than at the end shim packs.

NOTE: Shim packs (C) insert between the plungerhead frame and plungerhead upper right wear plate (B).

26. If clearance not within specification, loosen plungerhead upper right wear plate (B) plow bolts. Add or remove shims as necessary at shim pack locations (C), then tighten plow bolts. Keep the same clearance throughout entire length of plungerhead upper right wear plate.



E38759 -UN-10AUG95



E38762 -UN-10AUG95

A—Bale Case
B—Upper Right Plungerhead Wear Plate
C—Shim Pack Locations
D—Upper Right Bale Case Guide Plate
E—Front Edge of Plungerhead
F—Pickup Drive Arm Bracket

EX,1243,4030,CG-19-17AUG95

IMPORTANT: Incorrect adjustment of plungerhead wear plates may cause plungerhead knock (too much clearance) or may cause plungerhead to bind in bale case (too little clearance) causing shear bolts to break.

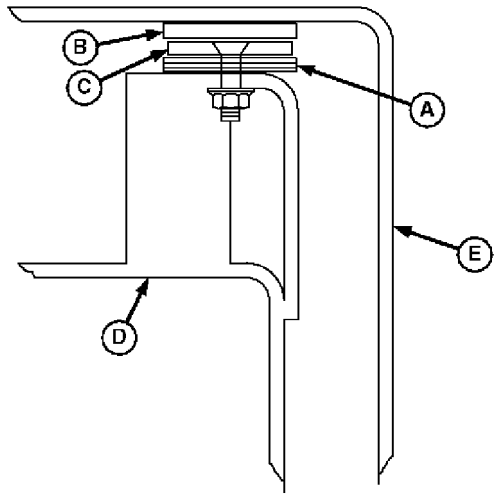
When plungerhead is in the forward position, clearance between plungerhead upper left wear plate and bale case upper left guide plate should not exceed 1.5 mm (0.060 in.) at the closest point between wear plate and guide plate.

NOTE: It is recommended that the plungerhead upper left wear plate clearance be initially set at approximately 0.8 mm (0.030 in.). The clearance may be set tighter, but keep in mind that the tighter the clearance, the more chance the plungerhead may bind at some point in plungerhead stroke.

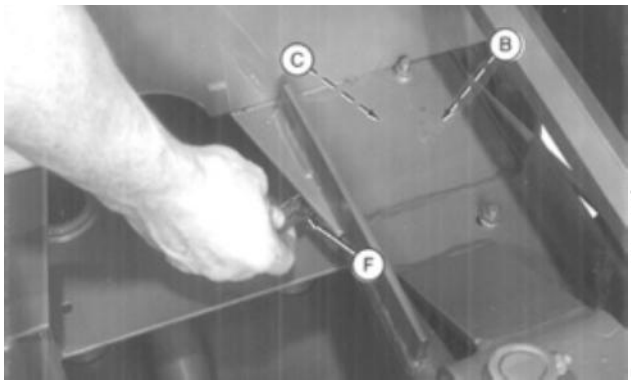
Measurement must be taken at the closest point between wear plate and guide plate.

27. With plungerhead at the forward position as described in step 24, check clearance between plungerhead upper left wear plate (C) and bale case upper left guide plate (B) using a feeler gauge (F). Clearance must be within 0—1.5 mm (0—0.060 in.) and plungerhead must not bind.

28. Loosen the two plungerhead wear plate nuts to add or remove slotted shims (A) as necessary.



E38755 -UN-08AUG95



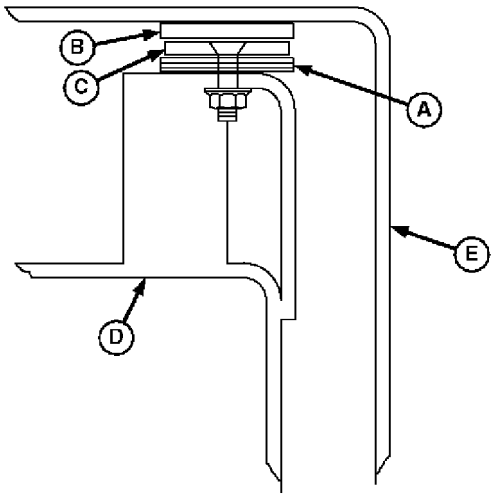
E38764 -UN-11AUG95

A—Slotted Shims
0.61 mm (0.024 in)
0.91 mm (0.036 in)
1.52 mm (0.060 in)
B—Bale Case Upper Left Guide Plate
C—Plungerhead Upper Left Wear Plate
D—Plungerhead Frame
E—Bale Case
F—Feeler Gauge

EX,1243,4030,CH-19-09AUG95

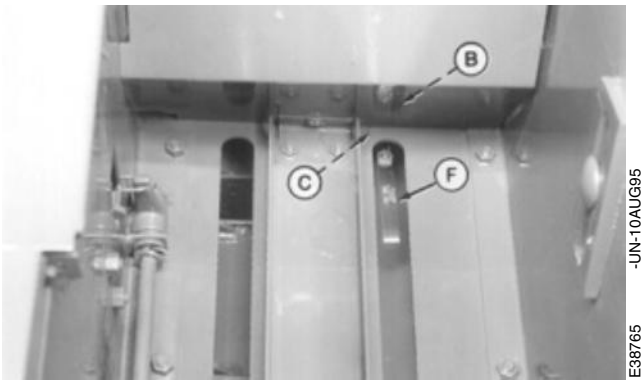
IMPORTANT: Incorrect adjustment of plungerhead wear plates may cause plungerhead knock (too much clearance) or may cause plungerhead to bind in bale case (too little clearance) causing shear bolts to break.

When plungerhead is at the "top scissor position", clearance between plungerhead upper left wear plate and bale case upper left guide plate should not exceed 1.5 mm (0.030 in.) at the closest point between wear plate and guide plate



E38755 -UN-08AUG95

29. Move plungerhead rearward until knives are at the "top scissor position" as described in step 5. Check clearance between plungerhead upper left wear plate (C) and bale case upper left guide plate (B) using a feeler gauge (F). Clearance must be within 0—0.8 mm (0—0.030 in.) and plungerhead must not bind.

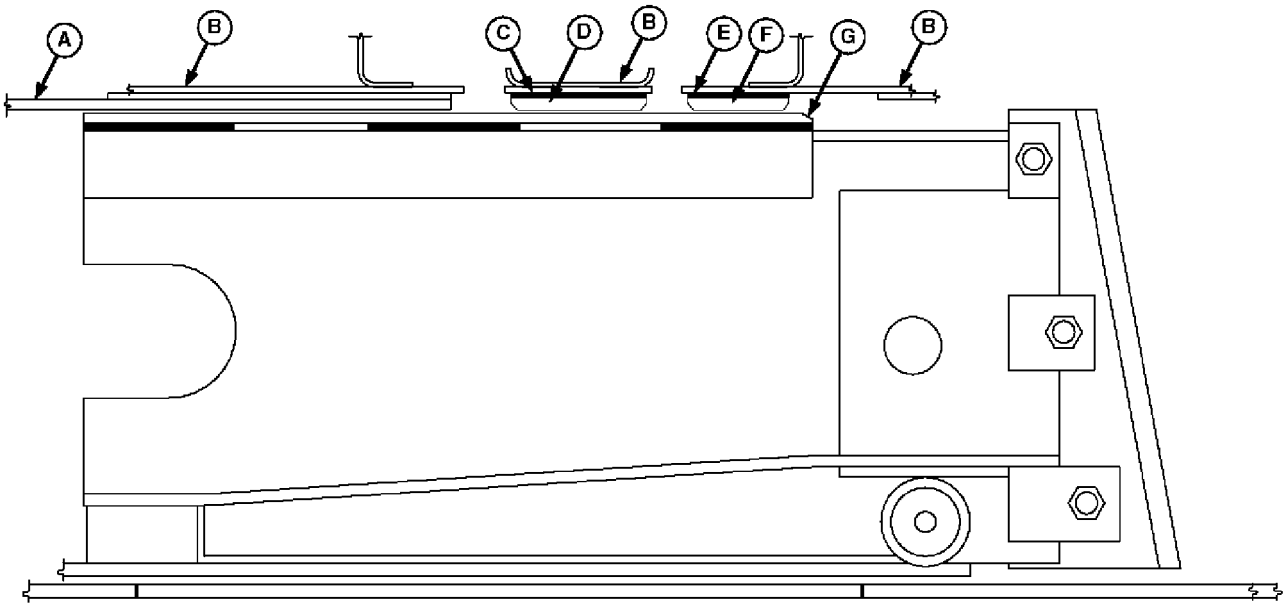


E38765 -UN-10AUG95

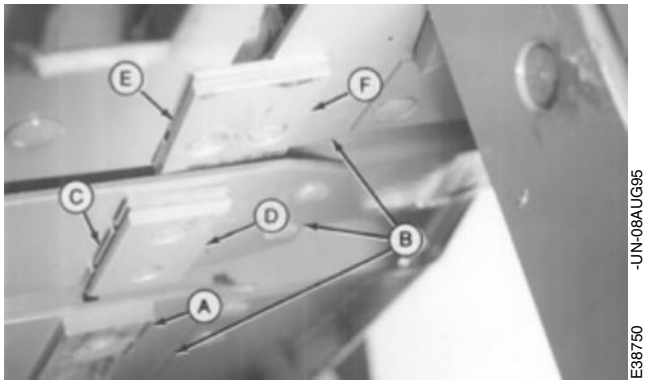
30. If clearance exceeds specification or plungerhead binds, repeat steps 27—29 until clearance for plungerhead upper left wear plate is within specification when plungerhead is at both the "top scissor position" and "forward position". Plungerhead must not bind at any time.

A—Slotted Shims
0.61 mm (0.024 in)
0.91 mm (0.036 in)
1.52 mm (0.060 in)
B—Bale Case Upper Left Guide Plate
C—Plungerhead Upper Left Wear Plate
D—Plungerhead Frame
E—Bale Case
F—Feeler Gauge

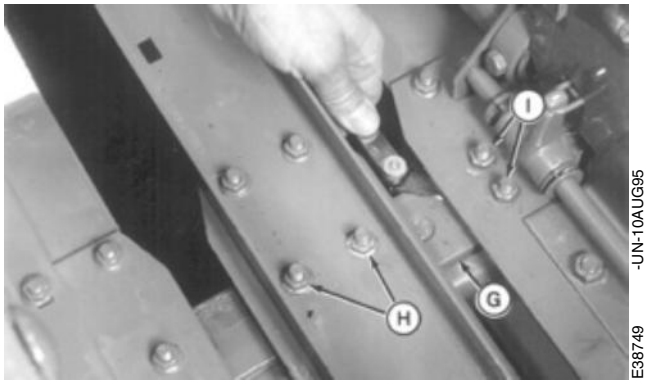
EX,1243,4030,CI-19-09AUG95



-UN-08AUG95
E38760



-UN-08AUG95
E38750



-UN-10AUG95
E38749

A—Upper Right Guide Plate
B—Bale Case
C—Slotted Shim (as required)
D—Upper Right Guide Extension Plate
E—Slotted Shim (as required)
F—Upper Right Guide Extension Plate
G—Plungerhead Upper Right Wear Plate
H—Nuts (2 used)
I—Nuts (2 used)

IMPORTANT: Incorrect adjustment of bale case upper right guide extension plates (D and F) may cause plungerhead knock (too much clearance) or may cause plungerhead to bind in bale case (too little clearance) causing shear bolts to break.

When plungerhead is at the "top scissor position", clearance between plungerhead upper right wear plate and bale case upper right guide extension plates should not exceed 1.5 mm (0.030 in.).

31. With plungerhead at the "top scissor position", check clearance between plungerhead upper right wear plate (G) and bale case upper right guide extension plates (D and F). Clearance must be within 0—0.8 mm (0—0.030 in.) at the closest point between wear plate and guide plates without plungerhead binding.

32. Loosen nuts (H) to add or remove slotted shims (C).

33. Loosen nuts (I) to add or remove slotted shims (E).

EX,1243,4030,CJ-19-10AUG95

IMPORTANT: Scrapers must not lift plungerhead rollers off bale case guide plates.

34. Adjust left rear scraper (B):

- Scraper-to-bale case lower left guide clearance (C) should be within 0—0.25 mm (0—0.040 in.).
- Scraper-to-left bale case clearance (A) should be within 1.52 to 4.57 mm (0.060 to 0.180 in.) throughout entire stroke of plungerhead. It is recommended the scraper be adjusted close to the 1.52 mm (0.060 in.) dimension.

35. Adjust right rear scraper (D). Scraper-to-bale case lower right guide plate clearance (E) should be within 0—0.25 mm (0—0.040 in.).

E38742 -UN-10AUG95

A—Left Rear Scraper-to-Left Bale Case Clearance
B—Left Rear Scraper
C—Left Rear Scraper-to-Bale Case Lower Left Guide Clearance
D—Right Rear Scraper
E—Right Rear Scraper-to-Bale Case Right Guide Plate Clearance

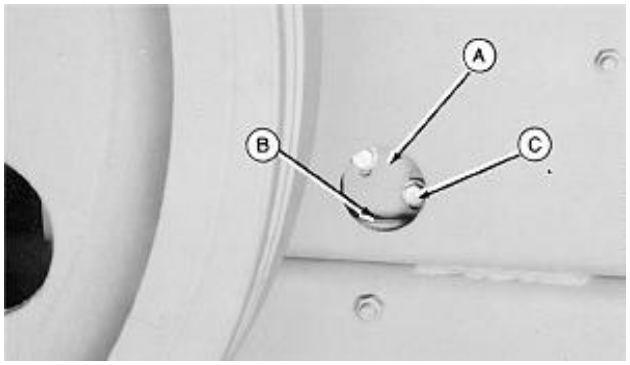
EX,1243,4030,CK-19-10AUG95

40
30
22

36. Move plungerhead until front scraper cap screws (C) are visible in left bale case access hole. Check scraper-to-bale case left angle guide clearance. Clearance should be within 0—0.25 mm (0.040 in.).

37. After plungerhead adjustments are complete, move plungerhead by hand through one complete cycle. Plungerhead must move easily without binding throughout the complete plungerhead cycle.

38. If plungerhead binds, identify the problem, then make the necessary adjustment(s). Keep in mind that adjusting one area may affect another.



E18466 -UN-20SEP88

A—Front Scraper
B—Bale Case Left Angle Guide
C—Cap Screws (2 used)

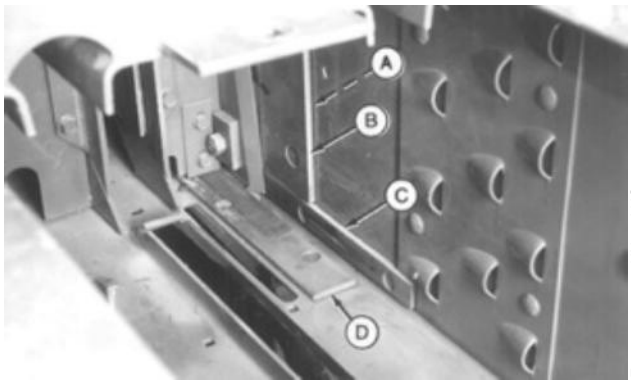
EX,1243,4030,CL-19-17AUG95

ADJUST STATIONARY KNIFE

IMPORTANT: Incorrect adjustment can cause knives to lock or shear bolts to break.

Make sure stationary knife (A) is adjusted properly and right side guide plate (C) is straight before installing and/or adjusting plungerhead.

Adjusting stationary knife and/or right side guide plate will affect plungerhead knife-to-stationary knife clearances and plungerhead side movement clearance.



E38766 -UN-10AUG95

1. Remove plungerhead. (See Remove Plungerhead in this group.)

2. Inspect right side guide plate (C) for wear. Replace if worn.

3. Check right side plate (C) for straightness. Surface of guide plate (C) must be straight to within 0.76 mm (0.030 in.) along entire length of guide. Add Shims as necessary.

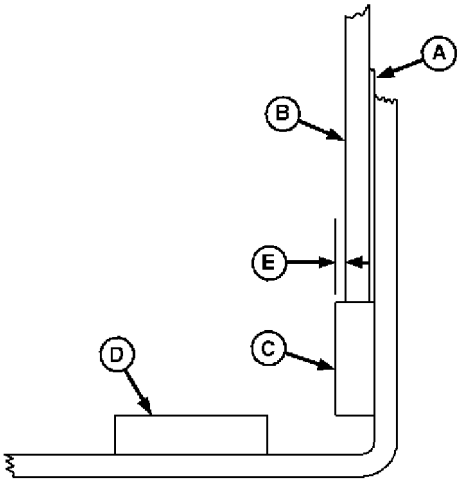
IMPORTANT: To prevent knives from locking, stationary knife (A) must be recessed 0.5 mm (0.020 in.) (E) below wear surface of right side guide plate (C).

4. Check stationary knife for clearance (E). Stationary knife must be recessed 0.5 mm (0.020 in.) below wear surface of right side guide plate (C). Add or remove stationary knife shims (A) as necessary.

IMPORTANT: Stationary knife bolts must be seated by the repeated blows of a hammer while nuts are being tightened.

5. Tighten stationary knife bolts by striking the stationary knife (bale case side) with a hammer while tightening the knife nuts to 55—108 N·m (50—80 lb-ft).

6. Install plungerhead. (See Install Plungerhead in this group.)



E38761 -UN-08AUG95

A—Stationary Knife Shims
B—Stationary Knife
C—Right Side Guide Plate
D—Lower Right Guide Plate
E—0.5 mm (0.020 in.) Clearance

EX,1243,4030,BW-19-09AUG95

Section 50
KNOTTERS AND TWISTERS

Contents

Continued on next page

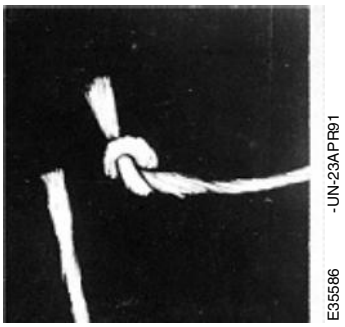
Page

TWINE KNOTTER DIFFICULTIES

When knotting problems occur, carefully observe condition and position of the knot. The knot will help to quickly identify the problem. Use photos in front of each table to help locate the problem.

NOTE: To observe knotter operation, remove hay from bale case, trip measuring arm, and turn flywheel by hand until tying cycle is completed.

EX,1243,5005,A -19-23JUN92

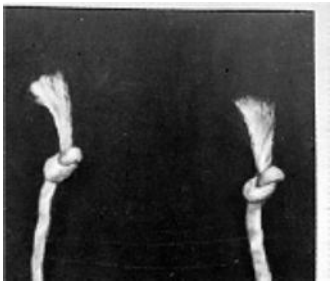


EX,1243,5005,A1-19-23JUN92

Symptom	Problem	Solution	Section/Group
Knot in twine over bale only.	Tucker fingers did not pick up needle twine or move into tying position correctly.	Adjust tucker fingers.	50-10
		Adjust twine disk and needles.	50-10
		Adjust twine disk and box tension.	50-10
		Ensure plungerhead extensions are in place.	—
	* Hay dogs not holding end of bale.	Loosen frozen hay dogs.	—
		Replace broken hay dog springs.	—
		Reduce feeding rate.	—
		Ensure plungerhead extensions are in place.	—

** Hay dogs must extend into bale case completely with stroke of plungerhead.*

EX,1243,5005,A2-19-23JUN92



EX,1243,5005,B -19-23JUN92

Symptom	Problem	Solution	Section/Group
Knot in each end of twine.	Tucker fingers did not pick up needle twine or move it into twine disk correctly.	Adjust tucker fingers.	50-10
		Adjust twine disk and needles.	50-10
	This twine will be longer than mating twine on opposite side of bale.	Check twine disk and twine box tension.	50-10
		Ensure plungerhead extensions are in place.	—
	* Hay dogs not holding end of bale.	Loosen frozen hay dogs.	—
		Replace broken hay dog springs.	—
		Reduce feeding rate.	—
		Ensure plungerhead extensions are in place.	—

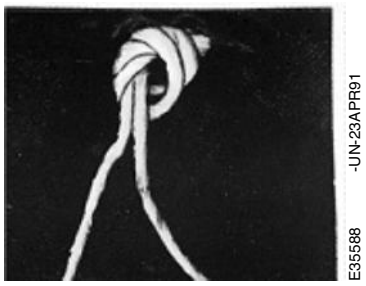
** Hay dogs must extend into bale case completely with stroke of plungerhead.*

EX,1243,5005,B1-19-23JUN92

EX,1243,5005,C -19-23JUN92

Symptom	Problem	Solution	Section/Group
Twine ends frayed.	Dull twine knife.	Replace knife.	50-10

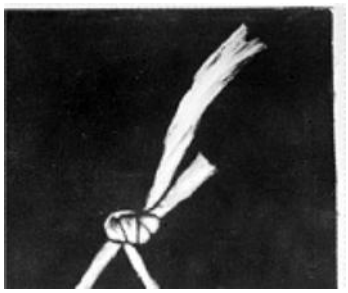
EX,1243,5005,C1-19-23JUN92



EX,1243,5005,D -19-23JUN92

Symptom	Problem	Solution	Section/Group
Knot too loose.	Worn or damaged billhook tongue.	Replace billhook.	50-10
	Bale density too low.	Increase bale case tension.	—
		Install side hay resisters.	—
	Normal wear of knotter.	Adjust knife/wiper arm plate.	50-10
	Low billhook tongue pressure.	Adjust billhook tongue.	50-10
	Twine disk out of adjustment.	Adjust twine disk.	50-10

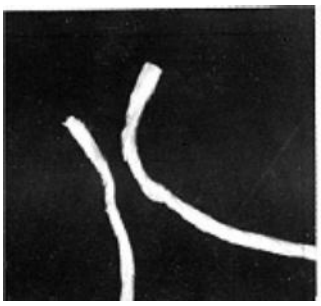
EX,1243,5005,D1-19-23JUN92



EX,1243,5005,E -19-23JUN92

Symptom	Problem	Solution	Section/Group
Twine ends uneven.	Insufficient tension on twine disk holder.	Tighten twine disk holder spring.	50-10
	Dull or nicked knife.	Replace knife.	50-10

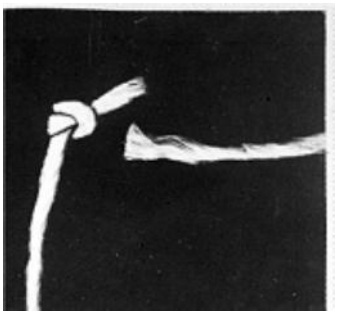
EX,1243,5005,E1-19-23JUN92



EX,1243,5005,F -19-23JUN92

Symptom	Problem	Solution	Section/Group
No knot in either twine.	Twine sheared in twine disks.	Loosen twine holder and remove all sharp edges and burrs on twine holder and disks.	50-10
	Billhook not revolving.	Check for lost or sheared pin in billhook pinion.	50-10
	Billhook tongue fails to open.	Check for lost billhook tongue roller, excessive wear on roller and cam face, or damaged billhook tongue.	50-10

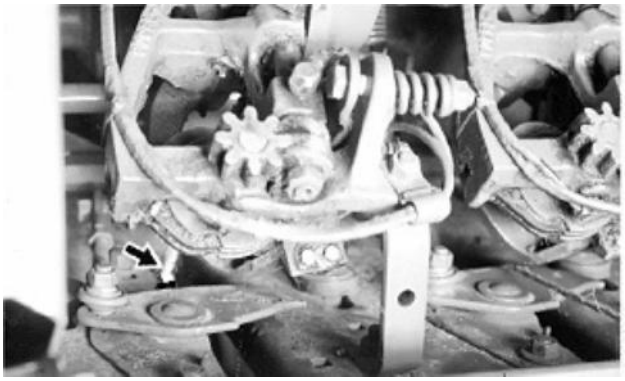
EX,1243,5005,F1-19-23JUN92



EX,1243,5005,G -19-23JUN92

Symptom	Problem	Solution	Section/Group
Knot in needle twine.	Twine over bale pulled out of twine disk. (Can be detected by square cut end which has been flattened in disks. This twine will usually be shorter than mating twine tied on opposite side of bale.)	Increase tension on twine holder disk spring and decrease bale tension.	50-10
		Adjust feeder fingers.	40-25
	Twine over bale sheared out of twine disks. (Different from the above, twine end will be frayed and torn, not cut squarely by knife.)	Decrease tension on twine holder disk. Decrease bale tension.	50-10
		Refer to “No knot in bale twine and approximately 6 in. (152 mm) of twine in twine disk. May be mistaken for a twine disk pull-out,” in this group.	—

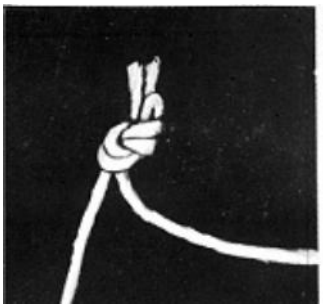
EX,1243,5005,G1-19-23JUN92



EX,1243,5005,H -19-23JUN92

Symptom	Problem	Solution	Section/Group
No knot in bale twine and approximately 152 mm (6 in.) of twine in twine disk. May be mistaken for a twine disk pull-out.	Twine has been cut on front side of tucker fingers.	Adjust tucker fingers.	50-10
		Make sure tucker fingers go through a complete cycle without binding.	50-10

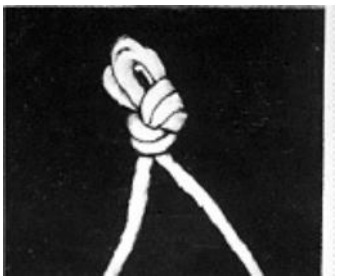
EX,1243,5005,H1-19-23JUN92



EX,1243,5005,I -19-23JUN92

Symptom	Problem	Solution	Section/Group
Strands of one twine doubled back through knot (does not affect knot strength).	Billhook tongue is closing on top of twine.	Adjust timing of twine disks.	50-10
	Twine hanging up on knife arm.	Polish knife/wiper arm at bend.	—
	Excessive clearance between billhook and knife/wiper arm.	Adjust clearance.	50-10
	Twine too large.	Use sisal billhook.	—

EX,1243,5005,I1-19-23JUN92



EX,1243,5005,J -19-23JUN92

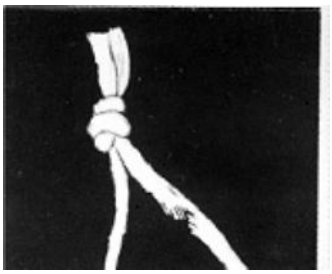
Symptom	Problem	Solution	Section/Group
Double twine bow knot.	Insufficient travel of knife/wiper arm past billhook.	Adjust knife/wiper arm to obtain more travel past billhook.	50-10
	Billhook pressure arm spring too loose.	Tighten adjusting nut on billhook pressure arm spring.	50-10
		Check knife/wiper arm cam in intermittent gear for excessive wear. Replace gear if cam is wore.	50-10

EX,1243,5005,J1-19-23JUN92

EX,1243,5005,K -19-23JUN92

Symptom	Problem	Solution	Section/Group
Single twine bow knot.	Insufficient travel of knife/wiper arm past billhook.	Adjust knife/wiper arm to obtain more travel past billhook.	50-10
	Billhook pressure arm spring too loose.	Tighten adjusting nut on billhook pressure arm spring.	50-10
		Check knife/wiper arm cam in intermittent gear for excessive wear. Replace gear if cam is worn.	50-10
	Twine is not sliding back on knife/wiper arm correctly.	Polish knife/wiper arm.	—

EX,1243,5005,K1-19-23JUN92



EX,1243,5005,L -19-23JUN92

Symptom	Problem	Solution	Section/Group
Twine cut and frayed behind knot.	As billhook turns, twine is pinched between billhook and knife arm; twine is damaged 13—25 mm (1/2—1 in.) from knot.	Replace knife/wiper arm. Wiper plate on knife/wiper arm must contact profile of billhook.	50-10
	Rough knife/wiper arm cuts twine 19—32 mm (3/4—1-1/4 in.) from knot.	Smooth off rough edge in twine notch of knife/wiper arm.	50-10
	Extremely high top twine tension.	Reduce bale weight by loosening bale tension. Check twine tension.	50-10
	Rough wiper hole edge.	Remove sharp edge.	50-10

EX,1243,5005,L1-19-23JUN92

EX,1243,5005,M -19-23JUN92

Symptom	Problem	Solution	Section/Group
Twine broken at base of knot.	Poor quality twine.	Use higher quality twine.	—
		Check twine knot strength.	—
	Twine strength too low. High twine tension due to high bale density.	Use stronger twine or reduce bale density.	—
	Knot did not strip off billhook correctly.	See “Knot did not strip off billhook” in this group.	—
	Feed finger crop charges too large.	Adjust feeder fingers to reduce charge size.	40-25

EX,1243,5005,M1-19-23JUN92

EX,1243,5005,N -19-23JUN92

Symptom	Problem	Solution	Section/Group
Twine broken or frayed in knot. One or both twines not completely cut.	Extreme tension on twine around billhook during tying cycle causes twine to shear or pull apart.	Loosen twine disk holder spring.	50-10
		Smooth off all rough surfaces and edges on billhook.	50-10
	Dull knife.	Replace knife.	50-10
	Twine disk out of adjustment.	Adjust twine disk.	50-10
	Knot pulled from billhook (not wiped).	Adjust wiper plate.	50-10
	Insufficient clearance between billhook and knife/wiper arm.	Adjust clearance.	50-10
	Poor quality twine.	Replace with better quality twine.	—

EX,1243,5005,N1-19-23JUN92

EX,1243,5005,O -19-23JUN92

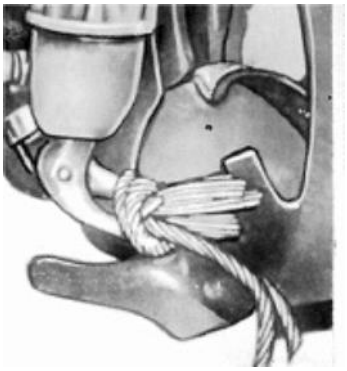
Symptom	Problem	Solution	Section/Group
Needle twine over billhook tongue roller.	Needle twine does not enter twine disk.	Check twine disk timing and adjust needles.	50-10
		Check for sheared or lost pin in twine disk pinion or in disk worm gear.	50-10
		Twine coming from box must go through twine tension plates on twine box.	50-10
	Incorrect twine tension.	Adjust twine tension.	50-10
	Incorrect twine threading.	Thread twine correctly.	50-10

EX,1243,5005,O1-19-23JUN92

EX,1243,5005,P -19-23JUN92

Symptom	Problem	Solution	Section/Group
Needle twine over billhook tongue roller and second knot tied on billhook.	Same as previous symptom, however, operator will find knot on billhook.	Make corrections as noted in previous malfunction and examine complete knotter for broken or damaged parts.	50-10

EX,1243,5005,P1-19-23JUN92



EX,1243,5005,Q -19-23JUN92

Symptom	Problem	Solution	Section/Group
Knot did not strip off billhook.	Excessive billhook tongue tension.	Loosen billhook pressure arm spring adjusting nut.	50-10
	Insufficient travel of wiper arm past billhook.	Adjust knife/wiper arm.	50-10
		Check for worn cam. Replace if necessary.	50-10
	Knife/wiper arm plate is not contacting back face of billhook.	Adjust wiper plate so plate contacts profile of billhook.	50-10
	Knife/wiper arm lift (or rise) is not sufficient.	Adjust knife/wiper arm to increase movement past end of billhook.	50-10
	Rough billhook.	Smooth off all rough edges on billhook with emery cloth.	50-10
	Worn or bent billhook.	Replace billhook.	50-10
	Bale density too low.	Increase bale case tension.	—
		Install side hay resisters.	—
	Twine tension too high.	Reduce tension.	50-10
	Twine disk out of adjustment.	Adjust timing of twine disk.	50-10

EX,1243,5005,Q1-19-23JUN92

EX,1243,5005,R -19-23JUN92

Symptom	Problem	Solution	Section/Group
Needle twine goes under billhook tongue during first quarter of billhook travel.	Tucker finger not carrying twine back to tying position.	Adjust tucker fingers.	50-10

EX,1243,5005,R1-19-23JUN92

Symptom	Problem	Solution	Section/Group
Needles not raising. No twine in twine disk and no knot in either twine.	Sheared needle-drive shear bolt.	See Shear Bolt Difficulties.	20-05
		Replace shear bolt.	20-45
Trip dog not functioning.	Broken release arm spring or trip dog spring lost.	Replace broken or lost spring.	50-10

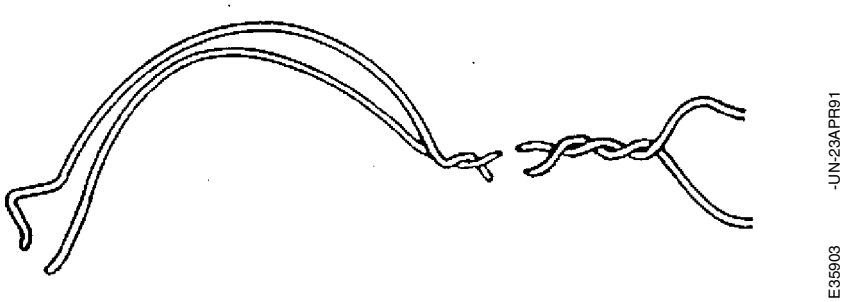
EX,1243,5005,S -19-23JUN92

WIRE TWISTER DIFFICULTIES

When twisting problems occur, carefully observe condition of the twist. The wire twist will help to quickly identify the problem. Use photos in front of each table to help locate the problem.

NOTE: To observe twister operation, remove hay from bale case, trip measuring arm, and turn flywheel by hand until twisting cycle is completed.

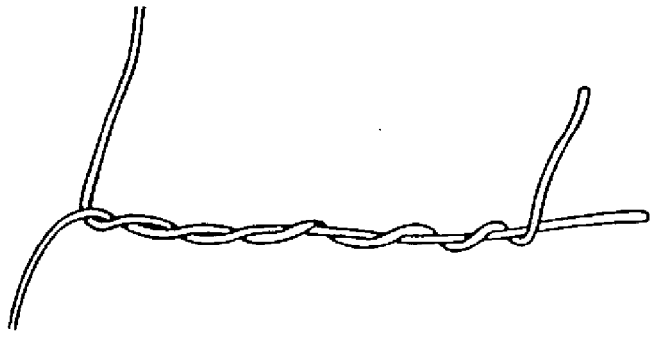
EX,1243,5005,S1-19-23JUN92



EX,1243,5005,T -19-23JUN92

Symptom	Problem	Solution	Section/Group
"Tails": One end cut and other end twisted off.	Radius on top of twister hook too sharp.	Polish throat of twister hook.	—
		Install new twister hook.	50-15
		Retard twister hook to specified range.	50-15
	Excessive wire tension between bale and wire coil during first stage of the tying cycle.	Check all wire pulleys. Pulleys must spin freely.	50-15
		Check wire threading.	50-15
		All of the knockout disk must be removed from the front of wire carton.	—
		Check for wire catching.	—
		Check front side of needle for groove or build-up of foreign material that would retard wire flow.	—
		Check for rough or uneven wire.	—
		Check top wire guide for grooves deep enough to allow wire to wedge.	—
	Wire cannot feed down twister hook slots because of rough twister shafts.	Polish or replace shaft.	50-15

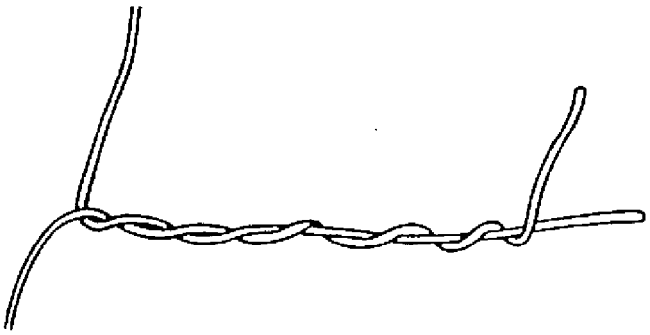
EX,1243,5005,T1-19-23JUN92



EX,1243,5005,U -19-23JUN92

Symptom	Problem	Solution	Section/Group
Knot consists of one wire twisted around the other.	Excessive wire tension between bale and wire coil.	Check all wire pulleys. Pulleys must spin freely.	50-15
		Check for correct wire threading.	50-15
		All of knockout disk must be removed from the front of wire carton.	—
		Check for wire catching.	—
		Check front side of needle for groove of buildup or foreign material that would retard wire flow.	—
		Check for rough and uneven wire.	—
		Check top wire guide for grooves deep enough to allow wire to wedge.	—
		Apply oil to wire coils using light oil.	—

EX,1243,5005,U1-19-23JUN92

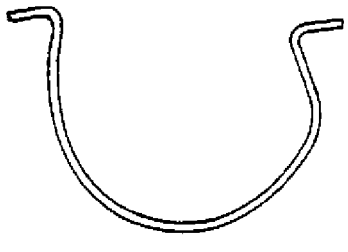


E35904 -UN-23APR91

EX,1243,5005,V -19-23JUN92

Symptom	Problem	Solution	Section/Group
Knot consists of one wire twisted around the other—continued.	Gripper does not apply equal pressure on each side.	Check for loose bolts in entire twister assembly.	—
		Clean out gripping parts including gripper drive tube.	—
		With gripper to the tight side, loosen bolts that hold the shear plates to the twister assembly and realign the plates.	50-15
		DO NOT add washers or coins to the spring in the gripper drive tube.	—
		DO NOT grind material from the cutting edges of the shear blade or plate.	—
	Twister hook catches needle wire on second revolution instead of first.	Adjust needle closer to gripper.	50-15
		Check timing.	40-25
		Replace bent needle.	—
		Make sure plungerhead extensions are in place.	—
	Hay dogs not holding end of bale.	Free frozen hay dogs.	—
		Reduce feeding rate.	—
		Replace broken trip dog springs.	50-15
		Make sure plungerhead extensions are in place.	—

EX,1243,5005,V1-19-23JUN92

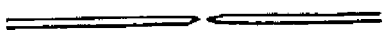


EX,1243,5005,W -19-23JUN92

Symptom	Problem	Solution	Section/Group
"Horse Shoes": short pieces of wire with both ends cut because wire is caught over nose of the gripper.	Needle adjusted too far sideways.	Adjust the needle.	50-15
		Replace needle if damaged.	—
	Grooves or extreme roughness on nose of gripper.	Grind nose of gripper.	—
		Replace gripper.	50-15

EX,1243,5005,W1-19-23JUN92

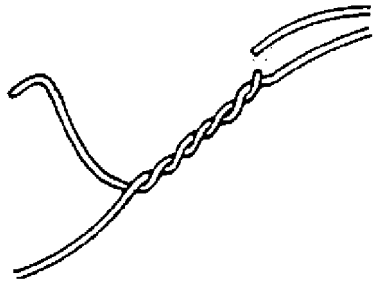
E35906 -UN-23APR91



EX,1243,5005,X -19-23JUN92

Symptom	Problem	Solution	Section/Group
Tension break on top of bale.	Force required to feed wire around bale exceeds the strength of the wire.	Reduce bale density (may be necessary to remove side hay resisters.).	—
		Apply light oil to wire coils.	—
		Adjust feeder fingers to put less hay on side where wire is breaking.	40-25
		Use 14-1/2 gauge wire.	—
		Change wire coils.	—
	Too much force required to pull wire from wire cartons.	Check all wire pulleys. Pulleys must spin freely.	50-15
		Check wire threading.	50-15
		All of knockout disk must be removed from the front of wire cartons.	—
		Check for any indication where wire has been catching.	—
		Check front side of needle for groove or buildup of foreign material that would retard wire flow.	—
		Check for rough or uneven wire.	—
		Check top wire guide for grooves deep enough to allow wire to wedge.	—
Tension break on front end of bale.	Wire catches in wire pulleys.	Check wire pulleys and any other place where wire could catch.	—

EX,1243,5005,X1-19-23JUN92



EX,1243,5005,Y -19-23JUN92

Symptom	Problem	Solution	Section/Group
Wire breaks at base of knot.	Repeated bending of wire after tying cycle because no hay is entering baler.	Stop baler when no hay is fed into baler.	—
		Plan windrows to avoid traveling in areas without hay.	—
		Rake heavier windrows.	—
		Increase ground speed.	—
	Tension breaks.	See “Tension break on top of bale,” this group.	—

EX,1243,5005,Y1-19-23JUN92

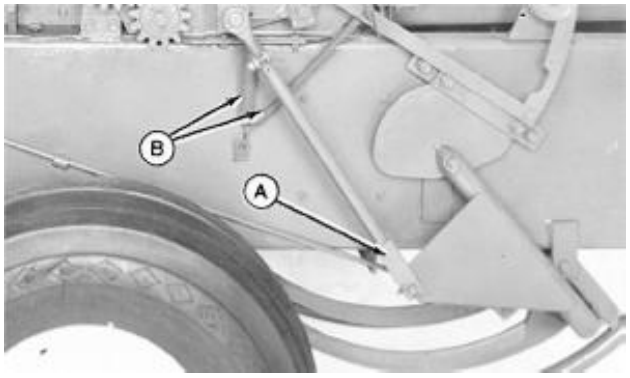
Symptom	Problem	Solution	Section/Group
Two successive bales not tied. One long piece of wire with each end twisted, but not twisted together.	Bottom strand of wire was missed by the needle.	Remove excessive side movement of needle frame.	50-15
		Check shape of needle tip. Replace if necessary.	50-15
		Adjust needle.	50-15
		Adjust lower center wire guide.	50-15
Wire not cutting clean.	Worn or broken parts.	Replace worn or broken parts.	50-15
	Gripper and shear blade assembly not adjusted correctly.	Place shims between top of gripper arm and mounting plate.	50-15
Wires not twisted together.	Foreign material in twister assembly.	Clean out twister assembly.	—
	Needles not adjusted correctly.	Adjust needles.	50-15
	Spring frozen in gripper drive tube assembly.	Clean out gripper drive tube.	—
Excessive wear on indexing surfaces of intermittent gear and pinion.	Twister hooks retarded beyond maximum limits.	Advance twister hooks.	50-15

EX,1243,5005,Z -19-23JUN92

REMOVE KNOTTERS (S.N. —740000)

1. Disconnect lower end of lift link (A) from needle frame.

2. Disconnect two springs (B).



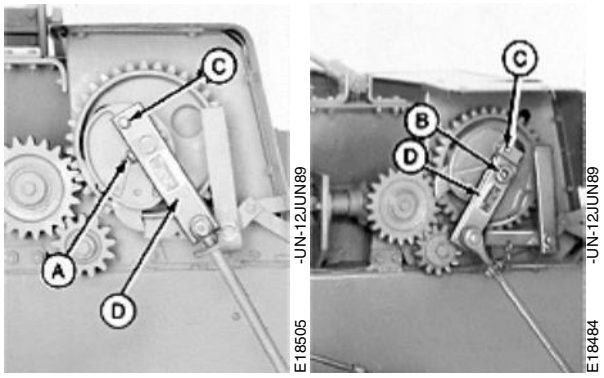
EX,1243,5010,B -19-23JUN92

3. On 327, 336, 337, 346 and 466 (S.N. —335000) Balers, remove 3/8 x 3 in. cap screw (A).

4. On 347, 466 (S.N. 335001—) and 467 Balers, remove 3/8 x 1-1/4 in. cap screw (B).

5. Remove shear bolt (C) and remove pivot bracket (D).

A—Cap Screw (3/8 x 3 in.)
B—Cap Screw (3/8 x 1-1/4 in.)
C—Shear Bolt
D—Pivot Bracket



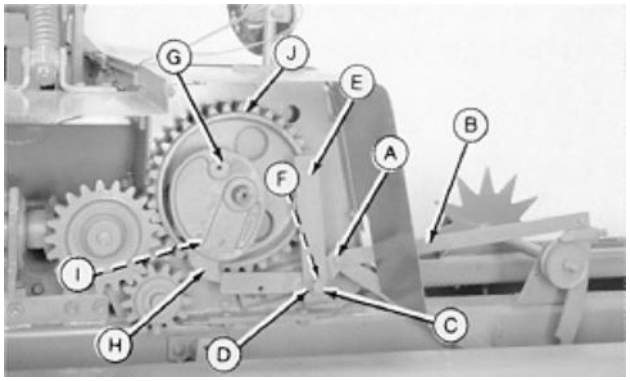
EX,1243,5010,C -19-23JUN92

6. Remove cap screw (A), measuring arm (B), cotter pin (C), spacer (D), trip arm (E), and spacer (F).

7. Remove trip dog hub (G) with trip dog (H) and trip dog spring (I).

8. Remove needle drive gear (J).

A—Cap Screw
B—Measuring Arm
C—Cotter Pin
D—Spacer
E—Trip Arm
F—Spacer
G—Trip Dog Hub
H—Trip Dog
I—Trip Dog Spring
J—Needle Drive Gear



E01,5010,C -19-23JUN81

NOTE: Go to step 11 if needle brake is located on needle frame.

9. Remove 3/8 x 2 in. cap screw (A), loosen 3/8 x 3-1/4 in. cap screws (B) and pivot brake away.

10. Loosen locking collar (C), remove spring pin (D) and slide knotter brake (E) to right.

11. Brake located on needle frame: Loosen locking collar.

12. Remove three 3/8 x 3/4 in. cap screws and nuts holding bearing (F).

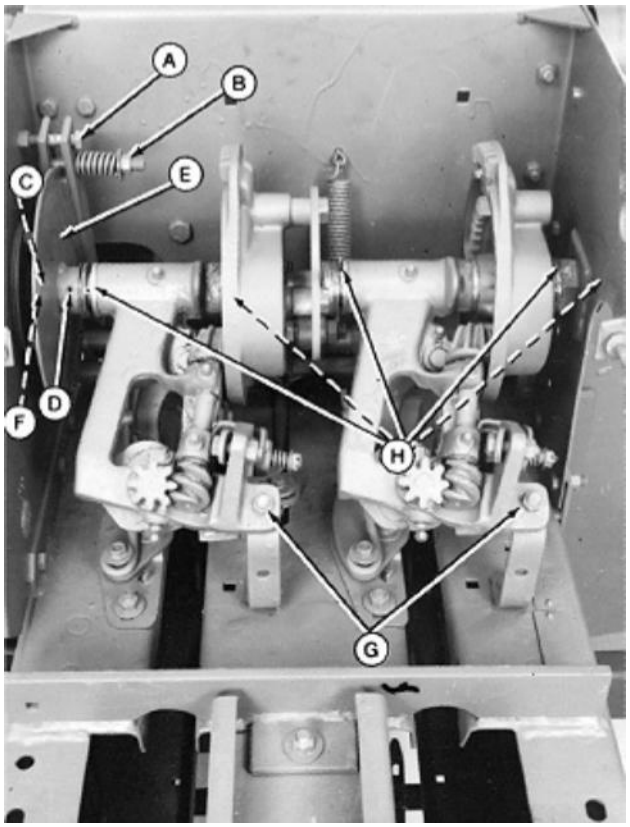
13. Remove two 3/8 x 1-1/4 in. carriage bolts (G).

14. Remove four spring pins (H). Remove paint and rust from shaft and drive intermittent gears to right and remove keys.

15. If baler is equipped with multi-luber, disconnect lines from knotter assembly.

16. Needle lift shaft, knotters, and intermittent gears are ready for removal. If shaft is being removed to replace a damaged part, do not remove any farther than necessary.

Note location of 1-5/32 x 1-3/4 x 0.024 in. washers. These are needed for assembly and adjustment.



-UN-12JUN89
E18468

A—3/8 x 2 in. Cap Screw
B—3/8 x 3-1/4 in. Cap Screw
C—Locking Collar
D—Spring Pin
E—Knotter Brake
F—Bearing
G—3/8 x 1-1/4 in. Cap Screw
H—5 x 45 mm Spring Pin

EX,1243,5010,E -19-23JUN92

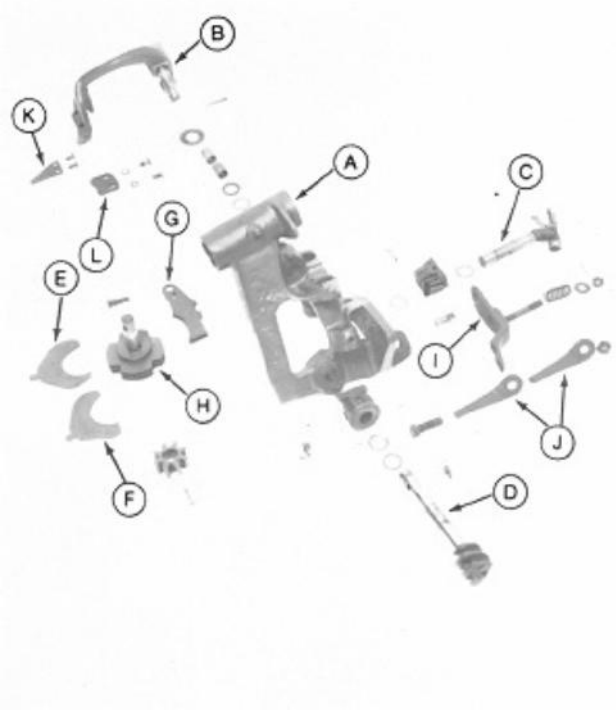
DISASSEMBLE KNOTTERS (S.N. —740000)

CAUTION: The twine knife can be very sharp. Use care when handling the knife/wiper arm assembly.

NOTE: Record number of shims and location for assembly and adjustment.

To disassemble knotters, refer to exploded view.

A—Knotter Frame
B—Knife/Wiper Arm
C—Billhook
D—Knotter Worm
E—Twine Disk Cleaner
F—Twine Disk Groover
G—Twine Holder
H—Twine Disk
I—Billhook Pressure Arm
J—Twine Holder Springs
K—Knife
L—Wiper Plate



E18469 -UN-12JUN89

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EX,1243,5010,F -19-23JUN92

INSPECT KNOTTERS AND NEEDLE LIFT (S.N. —740000)

1. Replace twine holder and disk if rough and worn. Clean all parts.

2. Replace needle lift shaft if grooves are worn into shaft. Replace two bearings in needle lift gear if worn.

3. Replace needle lift gear if missing teeth, and needle brake linings if worn thin.

4. Replace bearings if rough and if they do not rotate easily.

E01,5005,AP -19-23JUN92

ASSEMBLE KNOTTER ASSEMBLY (S.N. —740000)

1. Install 0.92 mm (0.036 in.) thick washers on shaft of worm gear as required.

2. Install worm gear (A) and twine disk (B) in knotter frame.

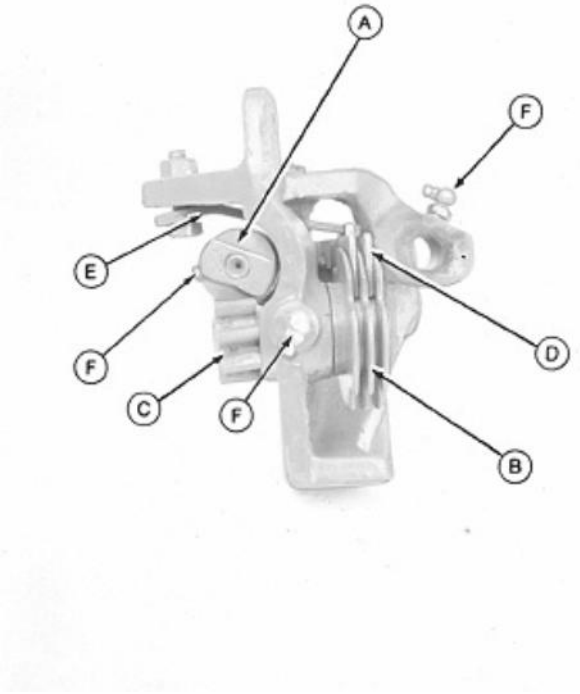
3. Secure knotter worm gear (C) to twine disk shaft with 3/16 x 7/8 in. spring pin.

4. Attach twine holder (D) and secure by staking rivet.

5. Install twine holder spring (E) with 3/8 x 1-1/4 in. cap screw and nut.

6. Install all lubrication fittings (F).

A—Worm Gear
B—Twine Disk
C—Knotter Worm Gear
D—Twine Holder
E—Twine Holder Spring
F—Lubrication Fitting



E18470 -UN-12JUN89

EX,1243,5010,H -19-23JUN92

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IMPORTANT: Twine disk cleaner and twine disk groover must be assembled as shown.

NOTE: If a new twine disk groover (B) is ordered, a twine disk cleaner will be substituted.

7. Install twine disk cleaner (A) and twine disk cleaner groover (B). Install (B) above (A) as illustrated.

8. Install threaded stud (C) and tighten.

9. Install spring pin (D) flush with bottom of casting.

10. Install billhook pressure arm (E).

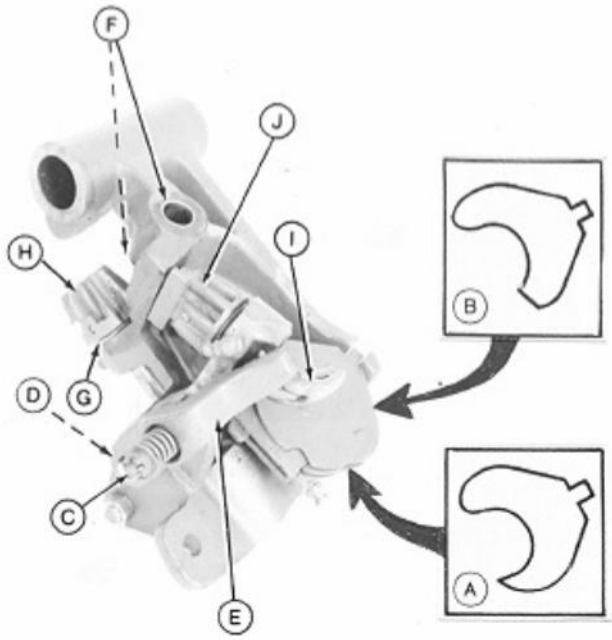
11. Install spring, retainer, washer and nut. Secure with cotter pin.

12. Using driver, press two bushings (F) flush with surface of knotter at each side of hub.

13. Install 0.92 mm (0.036 in.) thick washers (G) removed and the twine disk pinion (H). Secure with 3/16 x 7/8 in. spring pin.

14. Install billhook (I) in frame.

15. Install billhook pinion (J) to shaft with 3/16 x 7/8 in. spring pin. Flat surface must be opposite tongue of billhook as shown.



E18471 -UN-12JUN89

A—Twine Disk Cleaner
B—Twine Disk Cleaner Groover (S.N. —710000)
C—Stud
D—Spring Pin
E—Billhook Pressure Arm
F—Bushings
G—Washers
H—Twine Disk Pinion
I—Billhook
J—Billhook Pinion

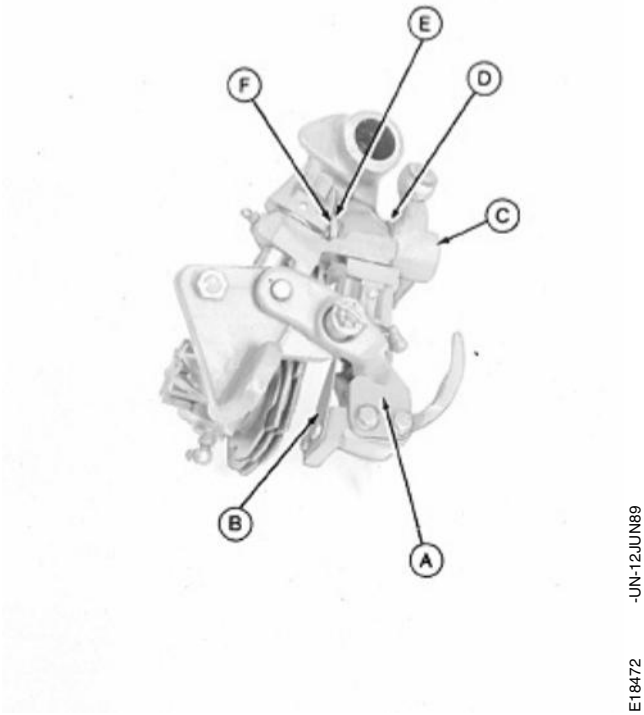
EX,1243,5010,I -19-23JUN92

CAUTION: Use only metric tools to replace knife or wiper plate. Other tools may slip and cause injury.

16. Attach wiper plate (A) and knife (B) to knife/wiper arm (C). Tighten knife cap screws to 6 ± 1 N·m (53 ± 12 lb-in.) and install in knotter frame.

17. Install 1-3/8 in. washers (D) as required, washer (E), and 21/32 x 15/16 x 0.036 in. washer (F). Secure using 1 in. cotter pin.

A—Wiper Plate
B—Knife
C—Knife Arm
D—Washers (As Required)
E—Washers
F—Washer



E18472 -UN-12JUN89

EX,1243,5010,J -19-23JUN92

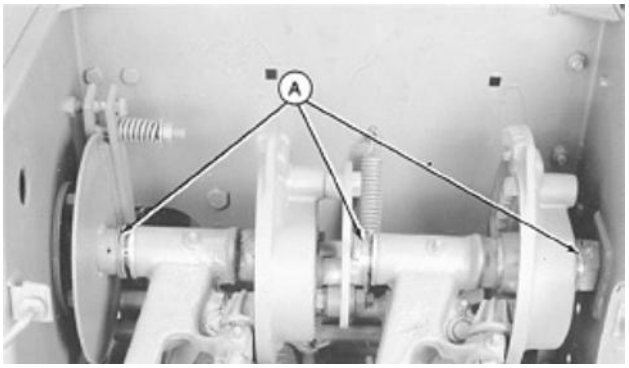
INSTALL KNOTTERS (S.N. —740000)

IMPORTANT: The 1-5/32 x 1-3/4 x 0.024 in. spacer washers must be absolutely clean or knotter damage may occur. Replace all bent or damaged washers.

NOTE: Install extra supplied 1-5/32 x 1-3/4 x 0.024 in. spacer washers (A) for adjustment.

Reverse procedure in Remove Knotters (—740000) this group. Adjust billhook and twine disk pinions to intermittent gears. (See procedure in this group.)

Check needle-to-twine disk adjustment. (See procedure in this group.)



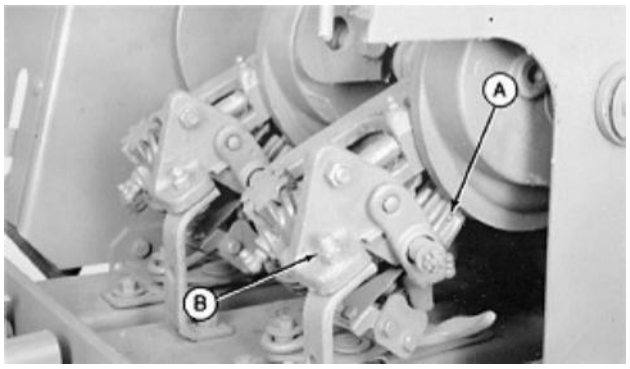
E18480 -UN-12JUN89

EX,1243,5010,K -19-23JUN92

REMOVE BILLHOOK (S.N. —740000)

1. Remove spring pin and slide intermittent gear to right.

2. Remove groove pin (A) and 3/8 x 1-1/4 in. carriage bolt (B). Rotate knotter assembly to vertical position.

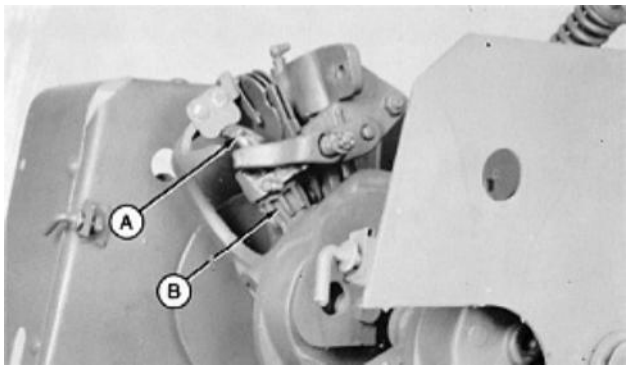


E18474 -UN-12JUN89

EX,1243,5010,L -19-23JUN92

NOTE: Record location and number of washers under pinion.

3. Remove billhook (A) and pinion gear (B).



E18476 -UN-12JUN89

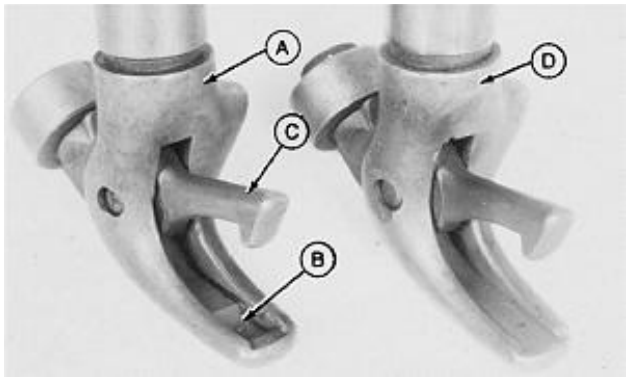
E01,5010,L -19-23JUN81

INSTALL BILLHOOK (S.N. —740000)

1. Install sisal billhook (D) for use with heavier grades of sisal twine, or multi-twine billhook (A) for use with lighter grades of sisal and plastic twine.

The multi-twine billhook (A) has a depression (B) in the groove of the billhook that allows the billhook tongue (C) to rest deeper in the groove than the sisal billhook (D).

A—Multi-Twine Billhook
B—Depression
C—Billhook Tongue
D—Sisal Billhook



E23901 -UN-14SEP88

EX,1243,5010,M -19-23JUN92

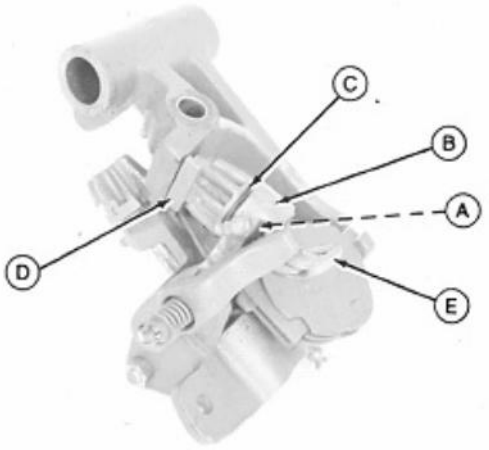
IMPORTANT: Billhook shoulder (A) must contact knotter frame (B).

2. Add washers (C) to remove slack from between billhook shoulder and knotter frame. Billhook must rotate freely.

3. Flat surface (D) of billhook pinion must be opposite billhook tongue (E) as shown.

4. To install billhook, reverse Remove Billhook procedure.

A—Billhook Shoulder
B—Knotter Frame
C—Washers
D—Dwell Surface
E—Billhook Tongue



E18473 -UN-12JUN89

Knotter Removed for Illustration

EX,1243,5010,N -19-23JUN92

REMOVE AND INSTALL KNOTTERS ASSEMBLY (S.N. 740001—)

NOTE: Disconnect multi-luber lines, if equipped.

1. Remove nut (A) and carriage bolt.

2. Remove spring pin (B).

3. For correct assembly, make a scribed line across knotter cap (C).

4. Loosen two cap screws (D).

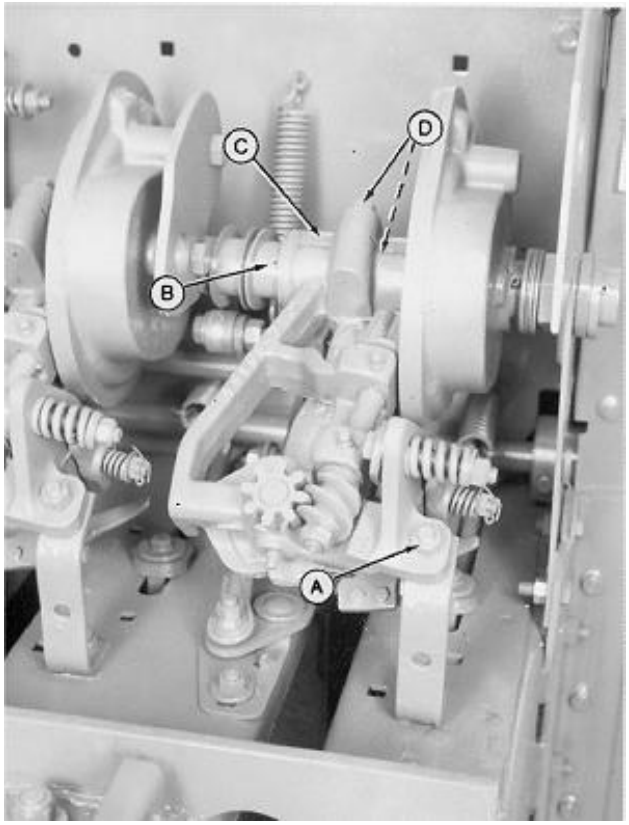
5. Carefully tap bearing cap until separated.

6. Remove two cap screws (D), bearing cap and knotter.

7. Reverse steps 1—6 to install knotter.

8. Check pinions-to-intermittent gear clearances. (See procedure in this group.)

A—Nut
B—Spring Pin
C—Knotter Cap
D—Cap Screws



E29064 -UN-07DEC89

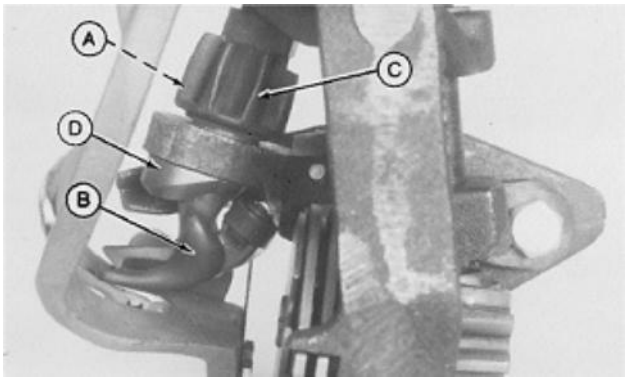
EX,1243,5010,P -19-23JUN92

REMOVE BILLHOOK AND CAM (S.N. 740001—)

1. Remove knotter assembly. (See procedure in this group.)

2. Remove groove pin (A).

3. Remove billhook (B), pinion (C), washers and cam (D).



E29065 -UN-07DEC89

A—Groove Pin
B—Billhook
C—Pinion
D—Cam

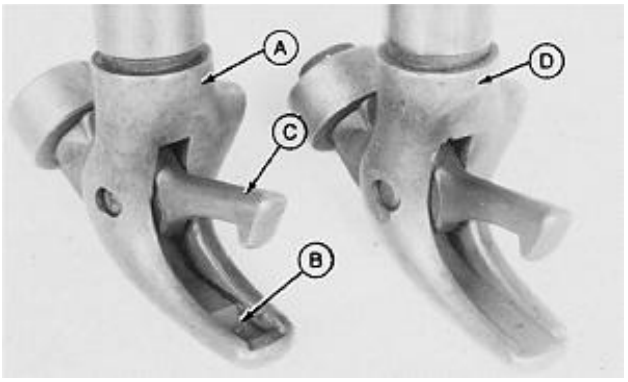
EX,1243,5010,Q -19-23JUN92

INSTALL BILLHOOK AND CAM (S.N. 740001—)

1. Install sisal billhook (D) for use with heavier grades of sisal twine, or multi-twine billhook (A) for use with lighter grades of sisal and plastic twine.

The multi-twine billhook (A) has a depression (B) in the groove of the billhook that allows the billhook tongue (C) to rest deeper in the groove than the sisal billhook (D).

A—Multi-Twine Billhook
B—Depression
C—Billhook Tongue
D—Sisal Billhook



E23901 -UN-14SEP88

EX,1243,5010,R -19-23JUN92

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2. Install cam (A) on billhook (B).

IMPORTANT: Hub of cam must not extend past upper surface of casting.

3. Start billhook into casting. Check the position of cam hub. If hub extends out of bore and above surface of casting, grind end of hub until end of hub is flush or just below casting surface.

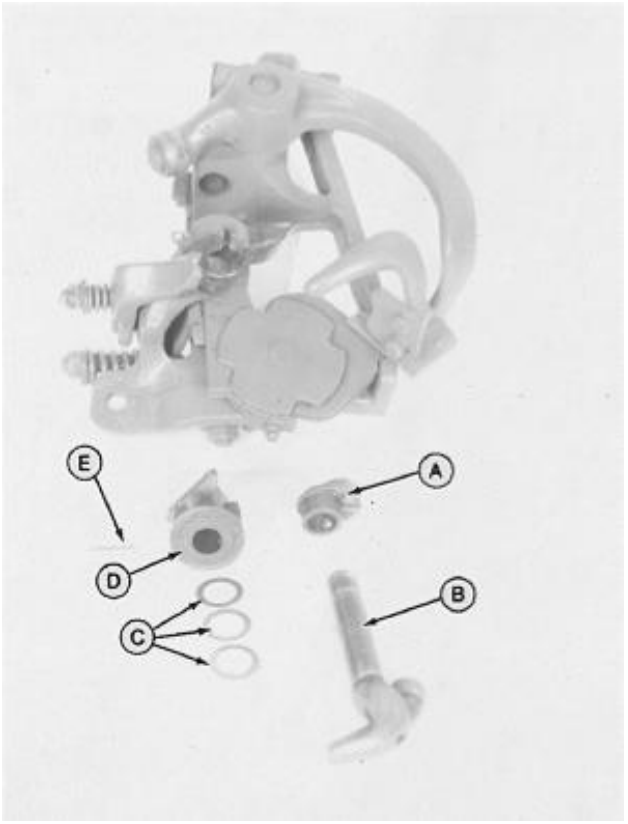
Install shim washers (C) and pinion (D) on billhook.

IMPORTANT: Flat side of pinion must be opposite billhook tongue.

NOTE: Groove pin (E) has a small non-grooved area (F) at one end. To install, insert the non-grooved end first.

4. Locate flat side of pinion so it faces opposite the billhook tongue. Start groove pin (E) into flat side of pinion and drive pin in until end of pin is flush with pinion surface.

A—Cam
B—Billhook
C—0.91 mm (0.036 in.) Washer 1.52 mm (0.060 in.) Washer
D—Pinion
E—Groove Pin
F—Non-Grooved End



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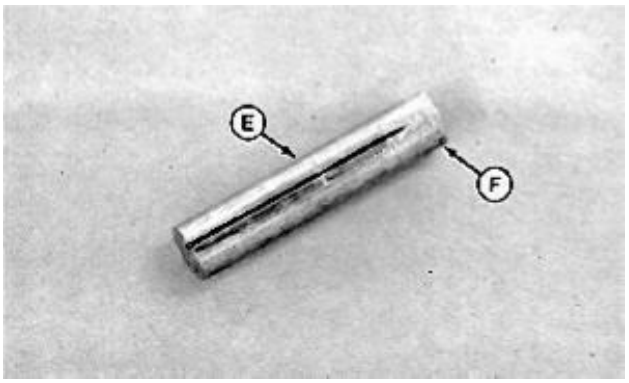
E29066



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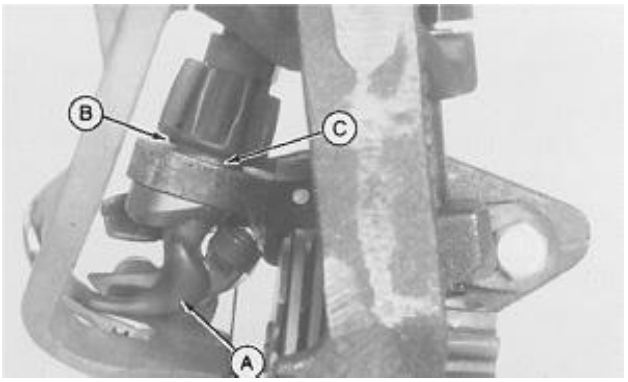
E36461

EX,1243,5010,S -19-23JUN92

5. Push up on billhook (A) and check for 0.000—0.038 mm (0.000—0.015 in.) clearance (B).

6. Remove groove pin and add or remove washers (C) until within tolerance.

7. Install knotter assembly. (See procedure in this group.)



-UN-07DEC89
E29067

EX,1243,5010,T -19-23JUN92

REMOVE KNIFE/WIPER ARM ASSEMBLY

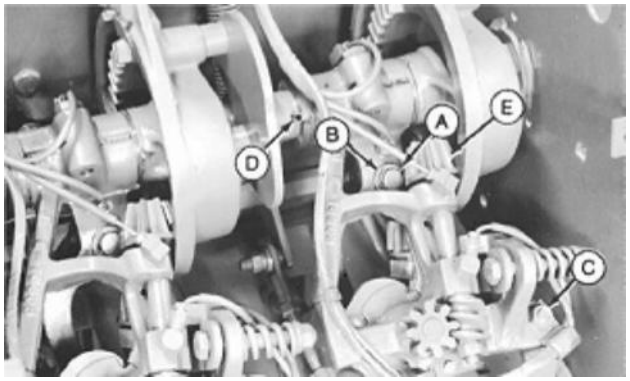
CAUTION: The twine knife can be very sharp. Use care when handling the knife/wiper arm.

NOTE: To remove and install cotter pin (A), removal of twine disk pinion (E) may be necessary. (Refer to Remove Worm Shaft Assembly in this group.)

1. Remove spring pin (D).

2. Remove cotter pin (A), shims and washer (B).

3. Remove carriage bolt (C) and rotate knotter assembly to vertical position.



A—Cotter Pin
B—Shims and Washer
C—Carriage Bolt
D—Spring Pin
E—Twine Disk Pinion

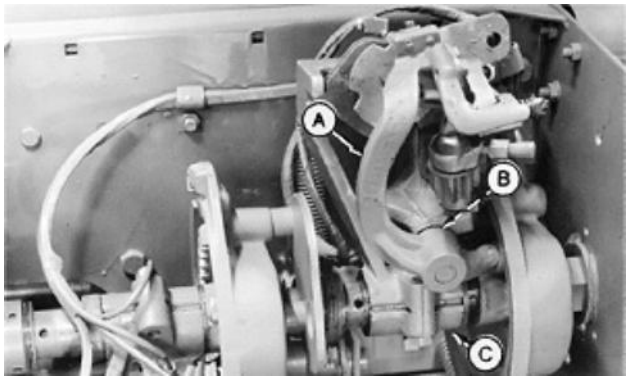
EX,1243,5010,U -19-23JUN92

4. Push knotter frame (C) away from the intermittent gear.

5. Remove knife/wiper arm (A) and washer(s) (B).

6. If necessary, remove bushings from knotter frame using bushing driver.

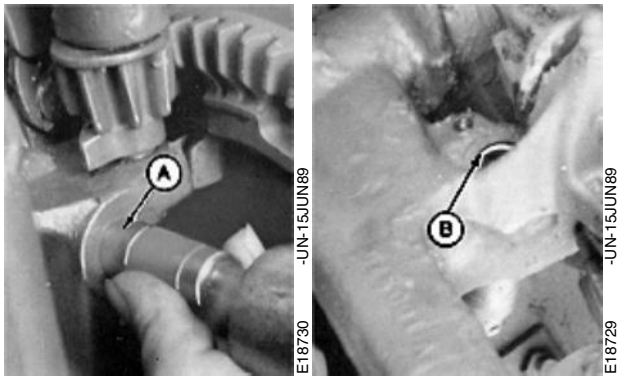
A—Knife/Wiper Arm
B—Washer(s)
C—Knotter Frame



EX,1243,5010,V -19-23JUN92

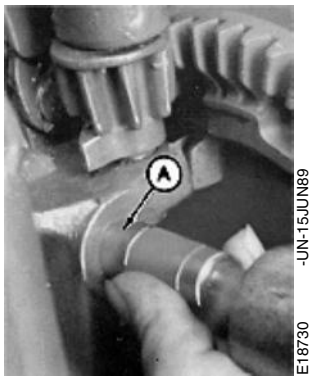
INSTALL KNIFE/WIPER ARM ASSEMBLY

1. Using bushing driver, install top bushing (A) through bottom of knotter frame until edge is flush with top of knotter frame (B).



EX,1243,5010,W -19-23JUN92

2. Using bushing driver, install bottom bushing (A) until edge is flush with bottom of knotter frame.

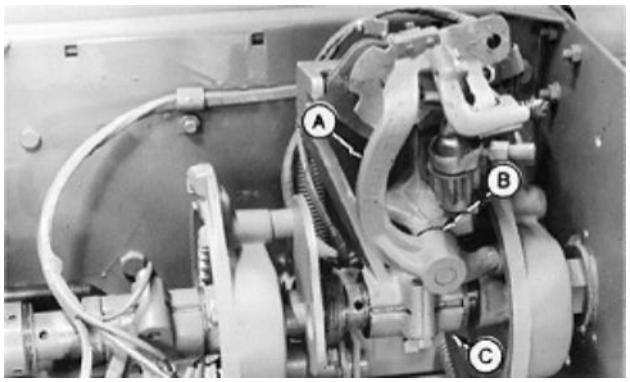


E01,5010,Q -19-23JUN81

3. Install 21/32 x 1-3/8 x 0.060 in. washer(s) (B) on shaft of knife/wiper arm (A).

4. Install knife/wiper arm in knotter frame.

A—Knife/Wiper Arm
B—Washer(s)
C—Knotter Frame



EX,1243,5010,X -19-23JUN92

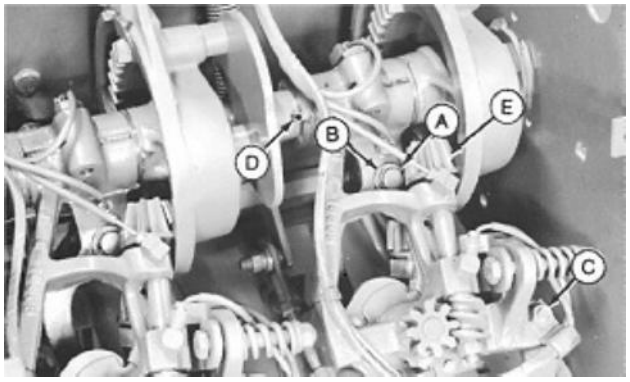
5. Lower knotter assembly. Install one 21/32 x 15/16 x 0.036 in. washer (B), and as many shims as necessary to remove end play on shaft of knife/wiper arm.

6. Install 1/8 x 1 in. cotter pin (A).

7. Push knotter assembly tight against intermittent gear. Install washers and shims as necessary to remove knotter frame end play.

8. Install spring pin (D) and carriage bolt (C).

A—Cotter Pin
B—Shims/Washer
C—Carriage Bolt
D—Spring Pin
E—Twine Disk Pinion



EX,1243,5010,Y -19-23JUN92

REPLACE KNIFE AND WIPER PLATE

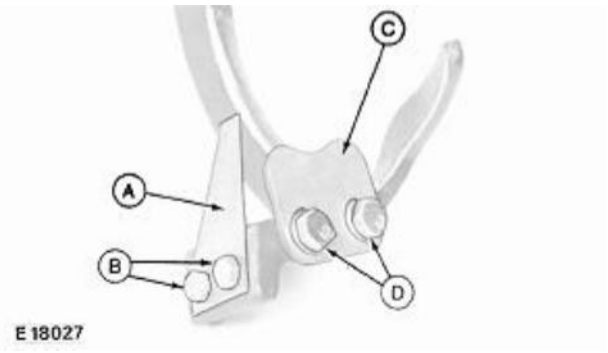
CAUTION: Use only metric tools to replace knife or wiper plate. Other tools many not fit properly. They may slip and cause injury.

1. Remove two 5 mm cap screws (B) to remove knife (A).

2. Install new knife. Tighten cap screws to 6 ± 1 N·m (53 ± 12 lb-in.).

3. Remove two 6 mm cap screws and washers (D) to remove slotted wiper plate (C).

4. Install new wiper plate. (See Adjust Knife/Wiper Arm in this group.)



A—Knife
B—Mounting Bolts
C—Wiper Plate
D—Mounting Bolts

EX,1243,5010,Z -19-23JUN92

REMOVE WORM SHAFT ASSEMBLY (S.N. 740001—)

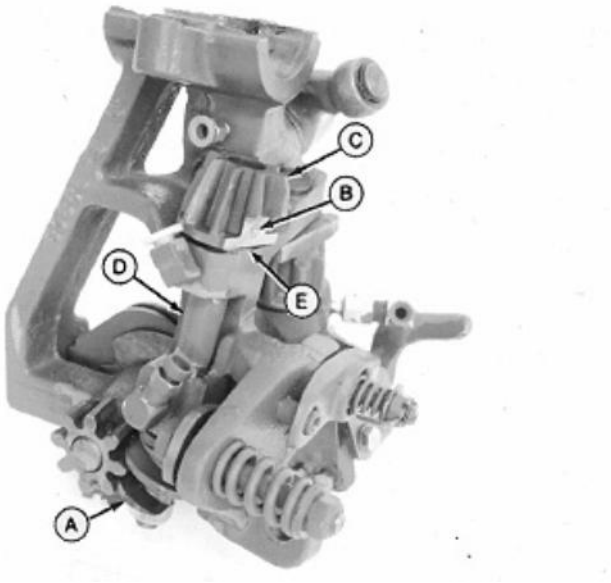
1. Remove knotter assembly. (See procedure in this group.)

2. Remove nut and worm gear (A). Record amount of washers.

3. Remove groove pin (B).

4. Remove shaft (D), pinion (C), and washers (E). Record amount of washers.

A—Worm Gear
B—Groove Pin
C—Pinion
D—Shaft
E—Washers



EX,1243,5010,D -19-23JUN92

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INSPECT WORM SHAFT ASSEMBLY COMPONENTS (S.N. 740001—)

Check gears and pinion for wear and cracks.

Check bores in casting for wear.

Clean all parts. Replace any that are damaged.

EX,1243,5010,AA-19-23JUN92

INSTALL WORM SHAFT ASSEMBLY (S.N. 740001—)

NOTE: Photo shows groove pin (I) and gear (H) removed. Removal of these parts are not necessary to remove or install worm shaft.

1. Slide shaft (A) into knotter frame.

2. Install washer (B) on shaft.

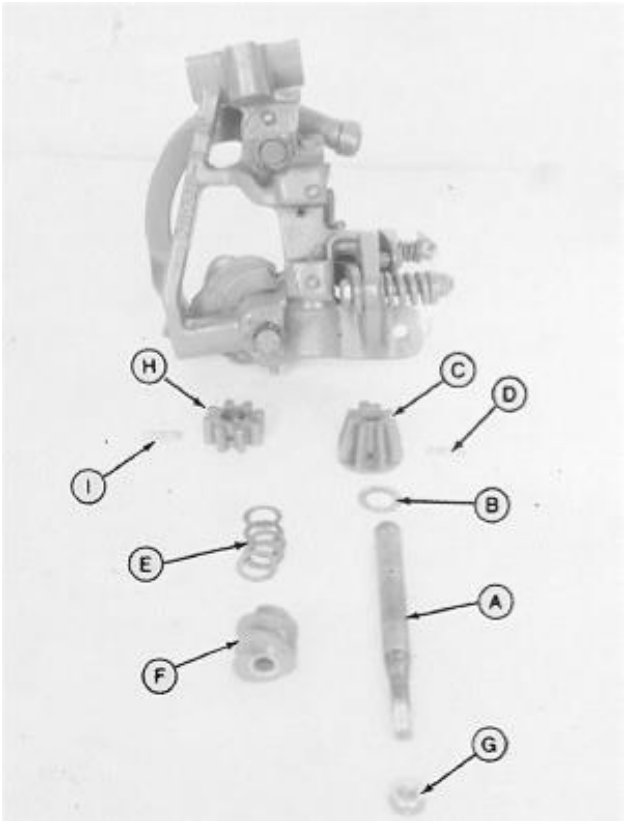
NOTE: Groove pin (D) had a small non-grooved area (J) at one end. To install pin, insert the non-grooved end first.

3. Install pinion (C) and secure with groove pin (D).

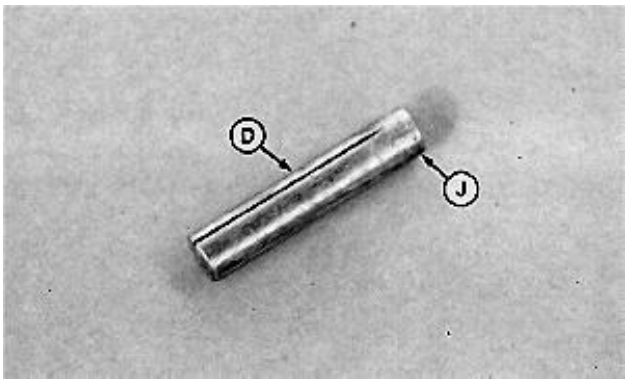
4. Install same amount washers (E) as removed in disassembly of shaft.

5. Install worm gear (F) and secure with nut (G).

A—Shaft
B—0.91 mm (0.036 in.) Washer
0.38 mm (0.015 in.) Washer
C—Pinion
D—Groove Pin
E—0.91 mm (0.036 in.) Washer
0.38 mm (0.015 in.) Washer
F—Worm Gear
G—Nut
H—Gear
I—Groove Pin
J—Non-Grooved End



E29061 -UN-07DEC89



E36462 -UN-29APR92

EX,1243,5010,AB-19-23JUN92

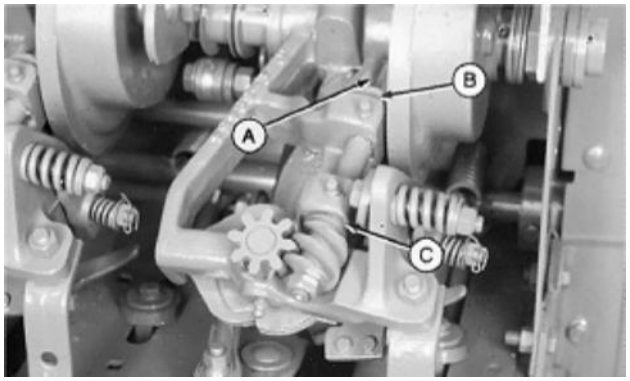
6. Hold pinion (A) and check for 0.13—0.38 mm (0.005—0.015 in.) clearance (B).

7. Add or remove washers (C) until correct clearance is obtained.

NOTE: If clearance is less than 0.13 mm (0.005 in.), knotter malfunctions will occur.

8. Install knotter assembly. (See procedure in this group.)

9. Lubricate knotter assembly.



EX,1243,5010,AC-19-23JUN92

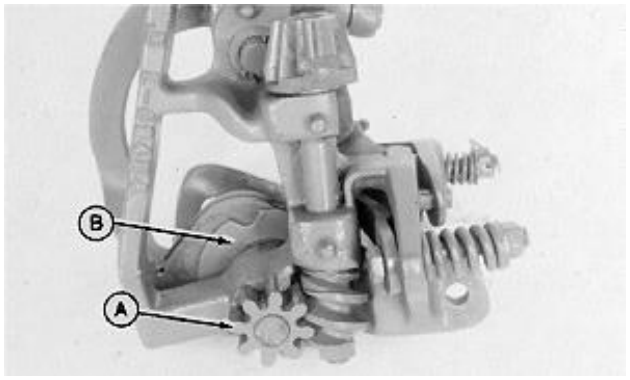
REMOVE TWINE DISK ASSEMBLY (S.N. 740001—)

1. Remove billhook. (See procedure in this group.)

2. Release twine holder spring tension.

3. Remove groove pin and gear (A).

4. Remove disk (B), retainer and strippers.



EX,1243,5010,AD-19-23JUN92

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INSPECT TWINE DISK ASSEMBLY (S.N. 740001—)

Check gear for wear and cracks.

Check opening in casting for wear or pitting.

Check disk and strippers for wear.

Clean all parts and knotter assembly.

EX,1243,5010,AE-19-23JUN92

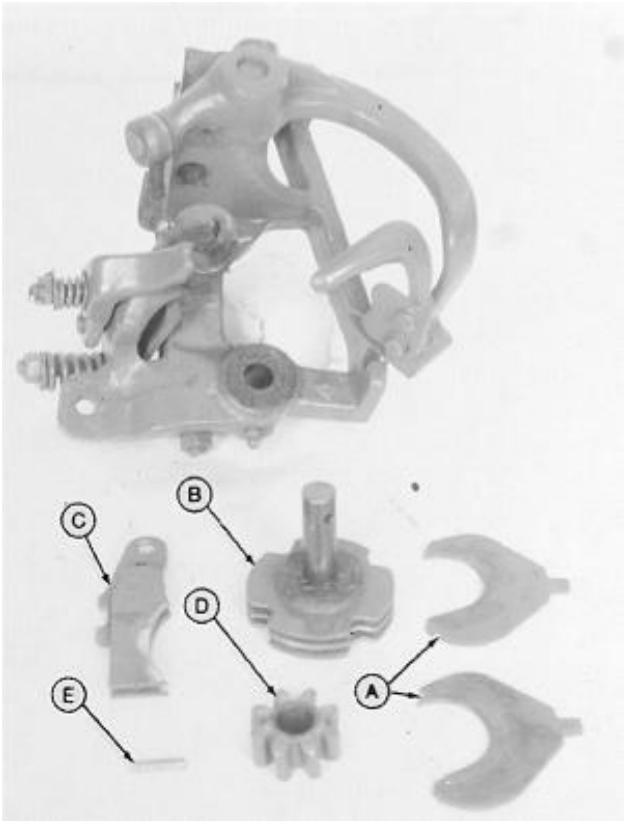
INSTALL TWINE DISK ASSEMBLY (S.N. 740001—)

1. Assemble both strippers (A) in disk (B).
2. Install retainer (C) in disk (B).
3. Install disk assembly in knotter frame.

NOTE: Groove pin (E) has a small non-grooved area (F) at one end. To install pin, insert the non-grooved end first.

4. Install gear (D) and secure with groove pin (E).
5. Install billhook. (See procedure in this group.)
6. Adjust twine disk. (See procedure in this group.)
7. Adjust twine holder. (See procedure in this group.)

A—Strippers
B—Disk
C—Retainer
D—Gear
E—Groove Pin
F—Non-Grooved End



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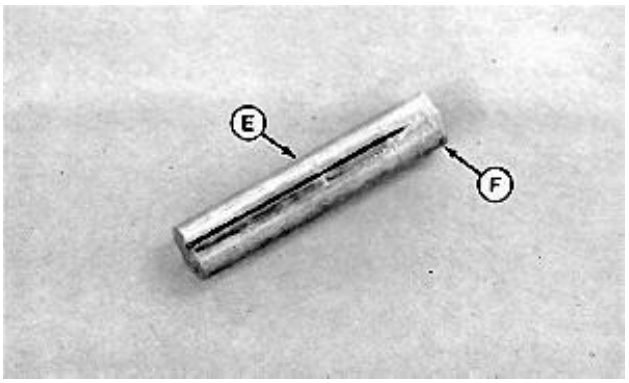
E29131



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E36461

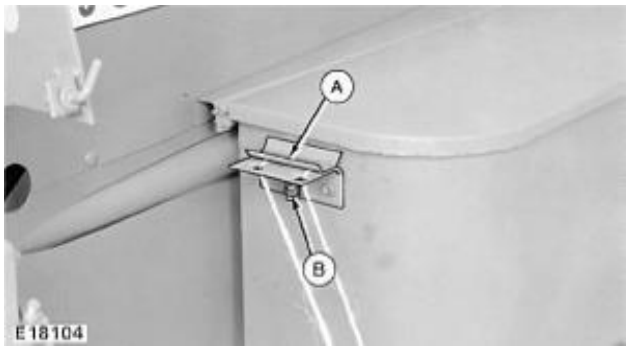
EX,1243,5010,AF-19-23JUN92

ADJUST TWINE TENSION

Tension is controlled by a spring-loaded tension plate (A). Adjust tension by turning twine tension adjusting nut (B).

NOTE: Sisal twine in springy hay may need slightly more than 45 N (10 lb) of pull.

Raise needles until twine guide rivet is even with top of twine disk. Attach a spring scale to twine as shown. Twine should pull from twine box at 22 to 45 N (5 to 10 lb) pull (A). If tension is less, tighten the adjusting nut. If more than 45 N (10 lb) pull is measured, loosen the nut.



E18104 -UN-20SEP88

E19514 -UN-20SEP88

EX,1243,5010,AG-19-23JUN92

ADJUST TWINE HOLDER

NOTE: Incorrect twine holder adjustments are one of the major causes of tying difficulties.

Various hay conditions and moisture content may require greater or lesser twine holder tension.

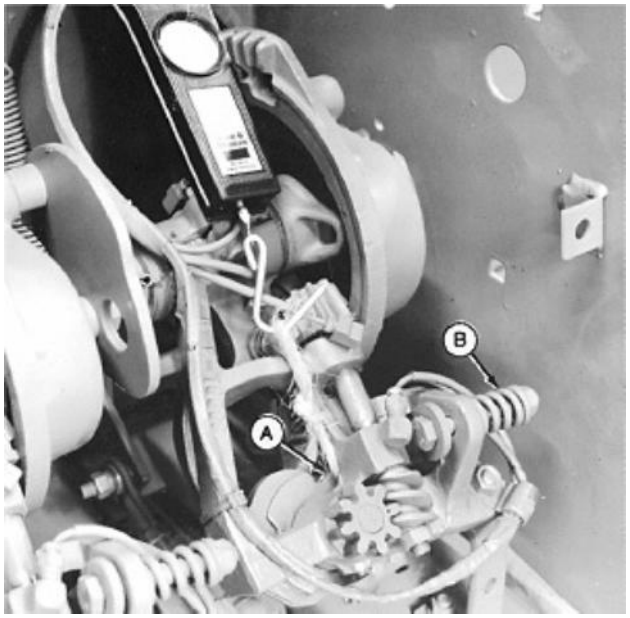
1. Attach a spring scale to twine secured in twine holder (A).

2. While observing spring scale, pull upward and parallel to twine disk until twine pulls free.

A pulling force of 311 to 445 N (70 to 100 lb) should be required to pull the twine out of the holder after a knot has been tied.

3. If the twine pulls free at less than 311 N (70 lb) pulling force, tighten spring (B).

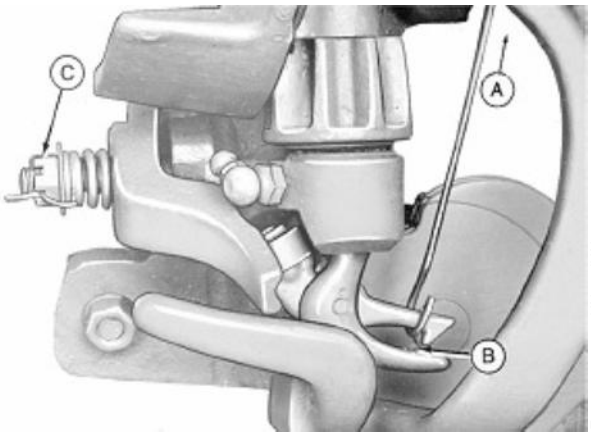
4. If the twine pulls free with more than 445 N (100 lb) pulling force, loosen spring (B).



E36435 -UN-29APR92

EX,1243,5010,AH-19-23JUN92

ADJUST BILLHOOK TONGUE



IMPORTANT: Make all adjustments when billhook tongue is free of twine.

NOTE: Excessive tension on the billhook tongue may cause knots to remain on billhook, thus breaking the twine. Incomplete knots may be the result of insufficient pressure on billhook tongue.

1. Check for billhook shaft end play. If present, add washers between pinion and knotter frame. See Assemble Knotter Assembly (S.N. —740000) or Install Billhook and Cam (S.N. 740001—) this group.

2. Attach a spring scale to billhook tongue as shown.

3. Billhook is in proper adjustment when pull of 22—67 N (5—15 lb) force (A) on billhook tongue will separate jaws 3.2 mm (1/8 in.) (B). Tongue should be tight when it is closed.

4. To increase pressure on billhook tongue, tighten nut on billhook adjusting stud (C). Loosen nut to reduce pressure.

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EX,1243,5010,AI-19-23JUN92

ADJUST TWINE DISK

NOTE: The following adjustments are to be made after tying two knots (this ensures having two twines in each disk). This adjustment is NOT for type of twine, but for type of billhook.

Twine disk adjustment is determined by position of notches in twine disk with relation to twine holder (B). All measurements should be made at center disk (A).

NOTE: Sisal twine billhook is primarily for use with heavier grades and qualities of sisal twine.

If knotter has a sisal twine billhook, right corner of notch in CENTER plate of twine disk should be 0—1.6 mm (0—1/16 in.) (C) to right of corner on twine holder.

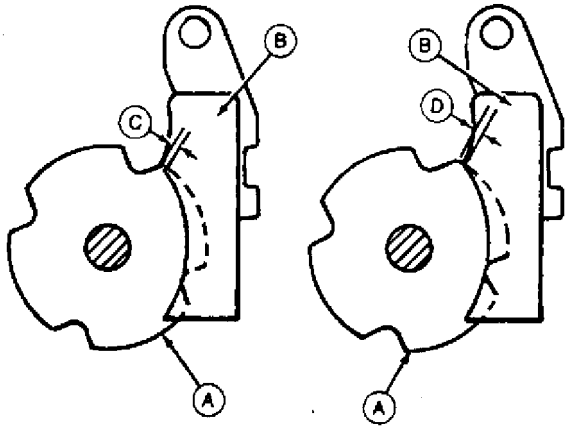
If knotter has a multi-twine billhook, right corner of notch in CENTER plate of twine disk should be 0.8—2.4 mm (1/32—3/32 in.) (D) to left of twine holder.

NOTE: The above dimensions are based on using normal sisal twine, 2745 m (9000 ft) per bale. Using heavier or lighter twine than normal will affect these dimensions.

In dimensioned drawing, rear disk is removed for clarity of illustration. Only the center disk is shown with proper dimension.

A—Center Twine Disk
B—Twine Holder
C—0—1.6 mm (0—1/16 in.)
D—0.8—2.4 mm (1/32—3/32 in.)

E36436 -UN-29APR92



Sisal *Multi-Twine*

E36444 -UN-29APR92

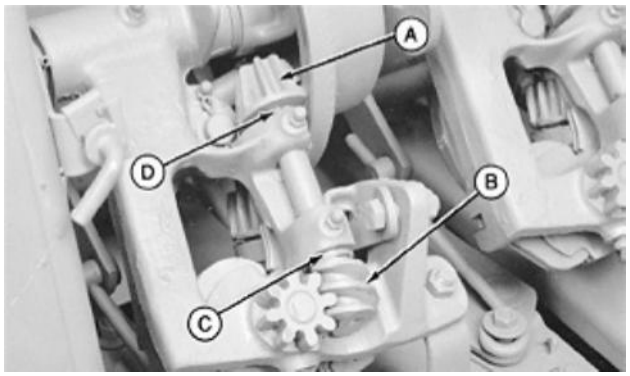
EX,1243,5010,AJ-19-23JUN92

For early balers (S.N. —740000):

1. If twine disk notch is advanced too far to right of twine holder, remove twine disk pinion (A) and knotter worm (B). Relocate washers (C) from bottom position to top position (D) on worm shaft.

2. If twine disk notch is not advanced far enough to right of twine holder, remove twine disk pinion and knotter worm. Relocate washers from top position to bottom position on worm shaft.

A—Twine Disk Pinion
B—Knotter Worm
C—Washers
D—Top Position



E18486 -UN-12JUN89

EX,1243,5010,AK-19-23JUN92

For late balers (S.N. 740001—):

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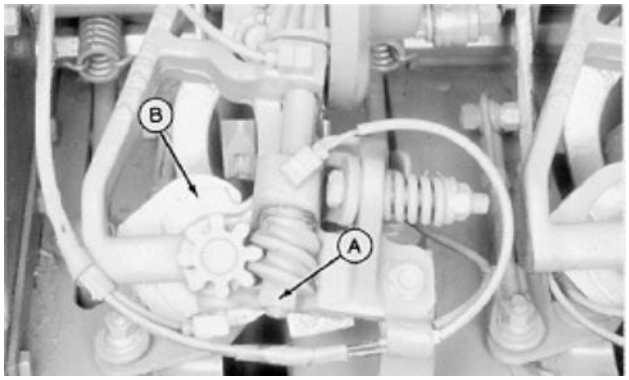
1. Loosen nut (A). Do not remove nut.

2. Tap end of shaft to loosen worm gear.

3. Move twine disk (B) to desired location.

4. Tighten nut.



E28847 -UN-13SEP88

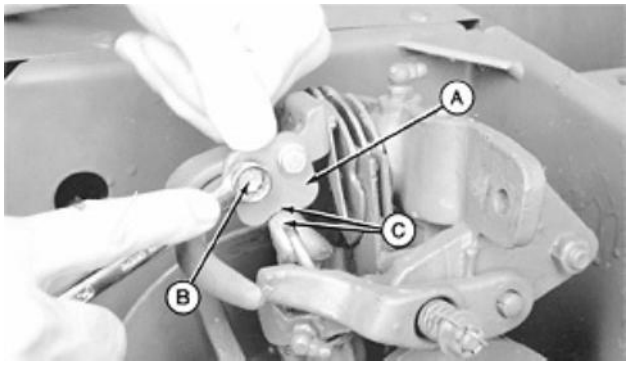
EX,1243,5010,AL-19-23JUN92

ADJUST KNIFE/WIPER ARM

1. Remove carriage bolt from knotter bracket and rotate knotter assembly to vertical position.

2. Wiper plate (A) must be centered with heel of billhook. Loosen cap screws (B) and move arm until wiper plate is approximately (8 mm) 5/16 in. (C) from billhook tongue groove.

Allow wiper plate to rest on billhook and tighten cap screws to hold wiper plate for next procedure.



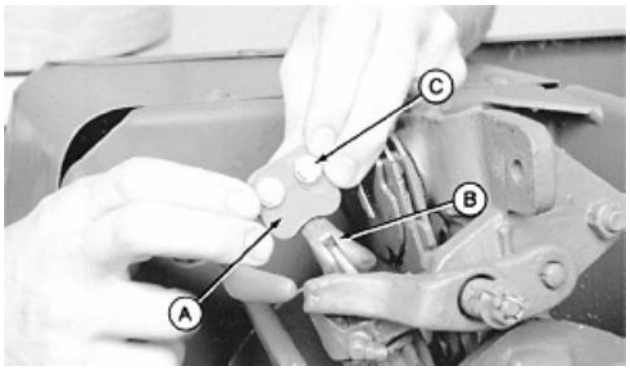
E18487 -UN-20SEP88

EX,1243,5010,AM-19-23JUN92

3. Rotate knotter assembly down slightly while pulling knife/wiper arm across billhook.

To move wiper plate (A) across jaw of billhook (B), 22—67 N (5—15 lb) pull is required. Adjust wiper plate as necessary.

Tighten cap screws (C) to 10 ± 2 N·m (90 ± 18 lb-in.).



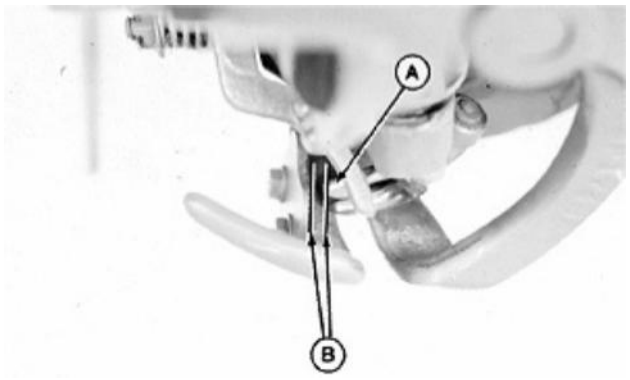
E18488 -UN-20SEP88

EX,1243,5010,AN-19-23JUN92

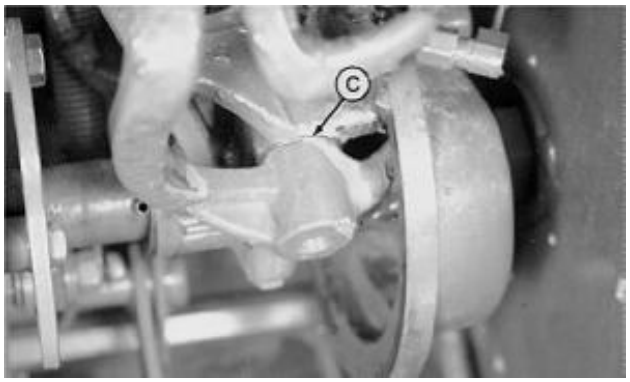
4. Billhook tongue (A) must clear wiper plate by a maximum of 2.4 mm (3/32 in.) (B) as billhook tongue passes knife/wiper arm. Rotate billhook 180 degrees and move tongue by hand, up and down, to check clearance at closest point between tongue and plate.

5. Adjust knife/wiper arm by adding washers (C) to increase clearance, or replace existing washer with a thinner washer to decrease clearance.

A—Billhook Tongue
B—2.4 mm (3/32 in.)
C—Washers



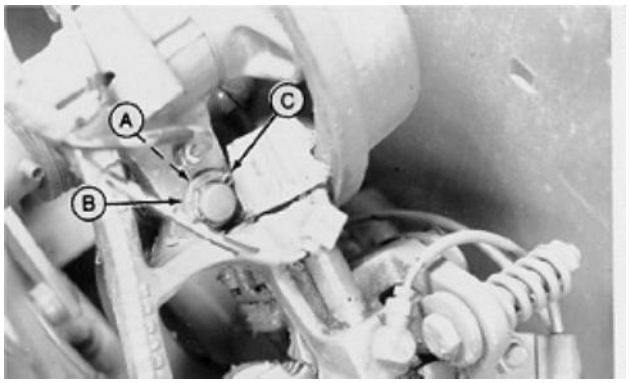
E35917 -UN-28MAY91



E35584 -UN-09APR91

EX,1243,5010,AP-19-23JUN92

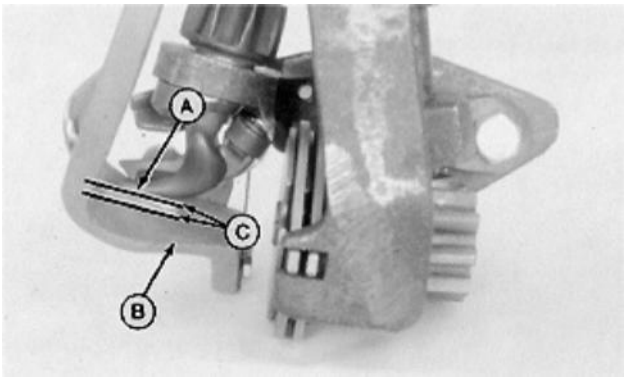
6. Install as many shims (A) as possible, and one 21/32 x 15/16 x 0.036 in. washer (B) on shaft of knife arm to remove end play. Fasten with 1/8 x 1 in. cotter pin (C).



E35585 -UN-09APR91

EX,1243,5010,AQ-19-23JUN92

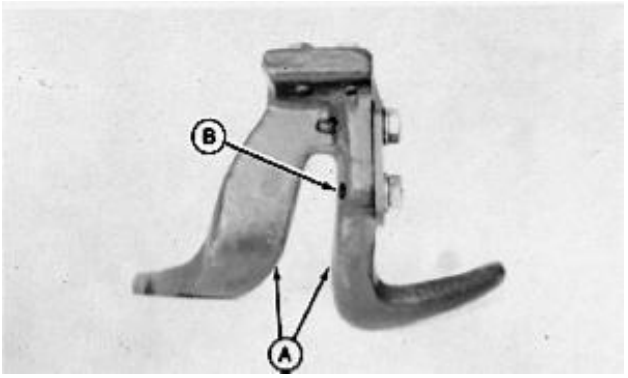
7. As billhook is revolved through its 360 degree cycle, lower surface of billhook (A) must clear knife/wiper arm (B) by a minimum of 1.5 mm (1/16 in.) (C). Repair or replace parts as necessary.



-UN-12SEP88
E28843

EX,1243,5010,AR-19-23JUN92

8. Check knife/wiper arm for well rounded and smooth surfaces at ALL portions that contact twine or knots (particularly in throat area (A) and hole (B) to prevent twine fracture). Remove all rough edges with emery cloth.



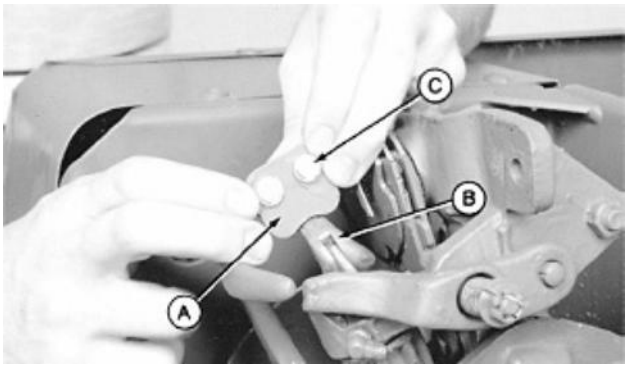
-UN-14SEP88
E22712

EX,1243,5010,AS-19-23JUN92

9. Check wiping force again by rotating knotter assembly down slightly and pulling knife/wiper arm across billhook. To move wiper plate (A) across jaw of billhook (B), 22—67 N (5—15 lb) pull is required.

10. Tighten cap screws (C) to 10 ± 2 N·m (90 ± 18 lb-in.).

11. Lower knotter assembly to operating position and secure with carriage bolt.



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E18488

EX,1243,5010,AT-19-23JUN92

ADJUST BILLHOOK PINION, TWINE DISK PINION AND INTERMITTENT GEAR

IMPORTANT: There are four points of contact/clearance involved in the billhook pinion, twine disk pinion and intermittent gear adjustments.

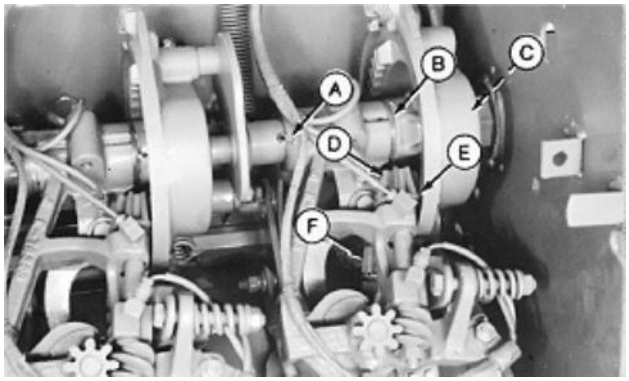
• Flat side of billhook pinion (F) MUST be tight against the intermittent gear.

• Clearance (E) between flat side of twine disk pinion (D) and intermittent gear.

• Clearance (B) between knotter frame and intermittent gear.

• There should be no end play at locations (A and C).

Improper adjustment of any of the contact/clearance points may cause knotter malfunction.



A—Shim Location
B—Clearance 0.76 mm (0.030 in.) Maximum
C—Shim Location
D—Twine Disk Pinion
E—Clearance 0.38 mm (0.015 in.) Maximum
F—Billhook Pinion

EX,1243,5010,AU-19-23JUN92

1. Remove carriage bolt securing knotter frame to bracket (G).

NOTE: Rotate knotter assembly to vertical position as necessary.

2. Check worm shaft and billhook shaft end play. (Refer to Install Worm Shaft Assembly and Install Billhook And Cam in this group.)

3. Push knotter assembly tight against intermittent gear to remove any end play present for all checks and adjustments in this procedure. Check if billhook pinion is tight against intermittent gear (See Step 4 or 5).

4. If full length of flat side of billhook pinion (F) is NOT tight against intermittent gear and twine disk pinion (E) is tight against intermittent gear, remove spring pin (A) to push knotter assembly away from intermittent gear.

File flat side of twine disk pinion until flat side of billhook pinion is against intermittent gear.

NOTE: (S.N. —740000) If shim removal is necessary, cut out shim(s) instead of removing needle lift shaft.

5. If billhook pinion is NOT tight against intermittent gear and there is clearance between twine disk pinion and intermittent gear, remove knotter assembly (See procedure in this group.) Remove shim(s) (C) as necessary between knotter frame and intermittent gear.

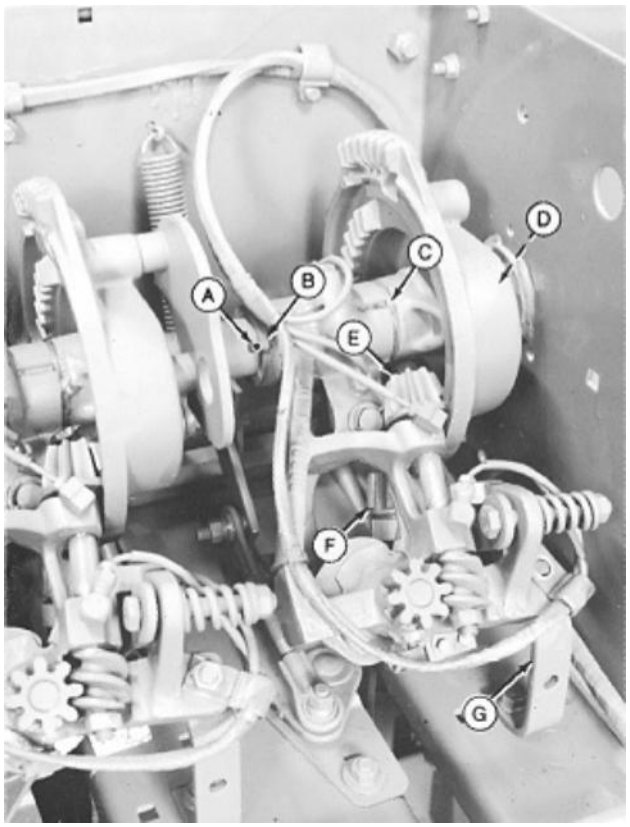
6. If billhook pinion is tight against intermittent gear and twine disk pinion to intermittent gear clearance exceeds 0.38 mm (0.015 in.), remove spring pin (A) and push knotter assembly away from intermittent gear.

File flat side of billhook pinion until clearance of twine disk pinion is less than 0.38 mm (0.015 in.).

7. If twine disk pinion to intermittent gear clearance exceeds 0.38 mm (0.015 in.) and the billhook pinion is NOT tight against intermittent gear, remove knotter assembly (See procedure in this group.) and remove shim(s) (C) as necessary.

8. If knotter frame to intermittent gear clearance exceeds 0.76 mm (0.030 in.), remove knotter assembly. (See procedure in this group.) Add shim(s) (C) as necessary, keeping billhook pinion tight against intermittent gear.

9. Remove any knotter frame/intermittent gear end play by adding shim(s) as necessary at locations (B or D).



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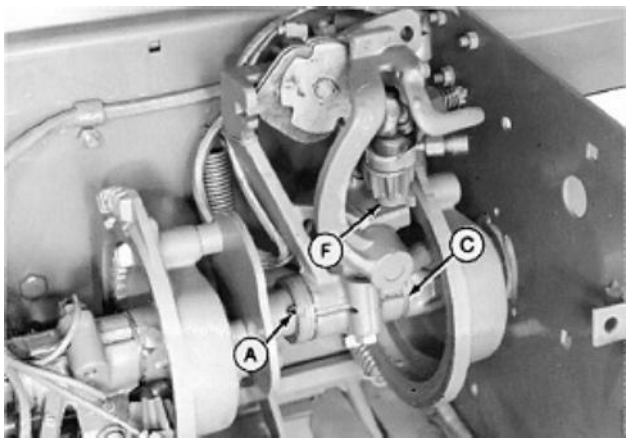
E36439



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E36438

A—Spring Pin
B—End Play Location
C—Shim(s)
D—End Play Location
E—Twine Disk Pinion
F—Billhook Pinion
G—Bracket

EX,1243,5010,AV-19-23JUN92

11. Refer to table for review of adjustment procedure Steps 3—9:

PROBLEM	POSSIBLE CAUSE	SOLUTION
Billhook NOT tight against intermittent gear.	Twine disk pinion tight against intermittent gear. Clearance exists between knotter frame and intermittent gear.	File flat side of twine disk pinion. (Refer to Step 4.)
	Knotter frame tight against intermittent gear. Clearance exists between twine disk pinion and intermittent gear.	Remove shim(s) as necessary. (Refer to Step 5.)
More than 0.38 mm (0.015 in.) clearance between twine disk pinion and intermittent gear.	Billhook pinion tight against intermittent gear. Clearance exists between knotter frame and intermittent gear.	File flat side of billhook pinion. (Refer to step 6.)
	Knotter frame tight against intermittent gear. Clearance exists between billhook pinion and intermittent gear.	Remove shim(s) (C) as necessary. (Refer to step 7.)
More than 0.76 mm (0.030 in.) clearance between knotter frame and intermittent gear.		Add shim(s) as necessary. (Refer to step 8.)
Knotter frame/intermittent gear end play.		Add shim(s) to left side of knotter frame or right side of intermittent gear as necessary. (Refer to Step 9.)

11. Check and adjust needle side pressure and need-to-twine stripper clearance. (Refer to Adjust Needles—Twine Baler in this group.)

EX,1243,5010,AW-19-23JUN92

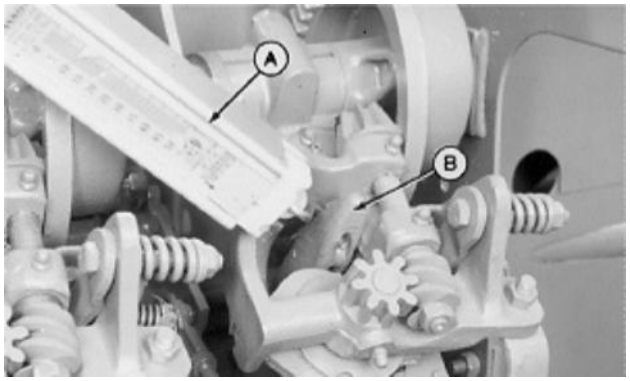
ADJUST NEEDLES—TWINE BALER

1. Trip bale measuring arm and turn flywheel by hand until twine guide in tip of needles is centered over top edge of twine strippers.

2. Attach spring scale (A) to needle (B).

3. Measure force needed to just pull needle away from knotter frame.

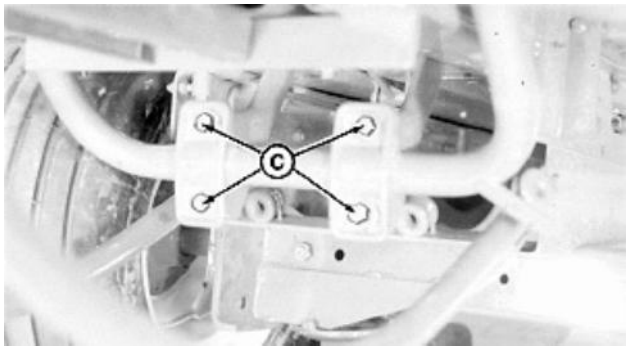
The needles should exert a side force of 22 to 67 N (5 to 15 lb) against knotter frame.



E29033 -UN-12SEP88

EX,1243,5010,AX-19-23JUN92

4. To adjust needle side force, loosen four cap screws (C) and tap needles sideways until proper pressure is obtained.



E19307 -UN-20SEP88

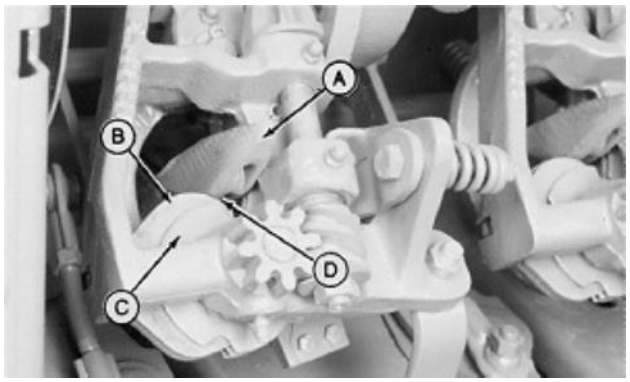
EX,1243,5010,AY-19-23JUN92

NOTE: The twine strippers should move freely between the twine disks and must be in the extreme left position when measuring needle clearance.

5. Needle (A) should clear twine strippers (B) by 0.8—2.4 mm (1/32—3/32 in.) (D).

6. Each needle may be adjusted forward or rearward by loosening one of the needle cap screws and tightening the other, or it may be shifted sideways by loosening both cap screws.

7. When needles are properly adjusted, tighten all cap screws to 68 to 108 N·m (50 to 80 lb-ft) and again check needles through their cycle.



E29034 -UN-12SEP88

A—Needle
B—Twine Strippers
C—Twine Disk
D—1/32 to 3/32 in. (0.8 to 2.4 mm)

EX,1243,5010,AZ-19-23JUN92

ADJUST TUCKER FINGERS

IMPORTANT: Tucker fingers must not bind. Run tucker fingers through cycle to check for free movement.

NOTE: Incorrect tucker finger adjustment is a major source of tying difficulties.

To observe knotter operation, remove hay from bale case, trip measuring arm, and turn flywheel by hand until tying cycle is completed.

1. To adjust tucker fingers (B), needles (A) must be in proper adjustment first. (See “Adjust Needles” in this group.)

2. Remove carriage bolts from knotter brackets and rotate knotter assemblies to vertical position.

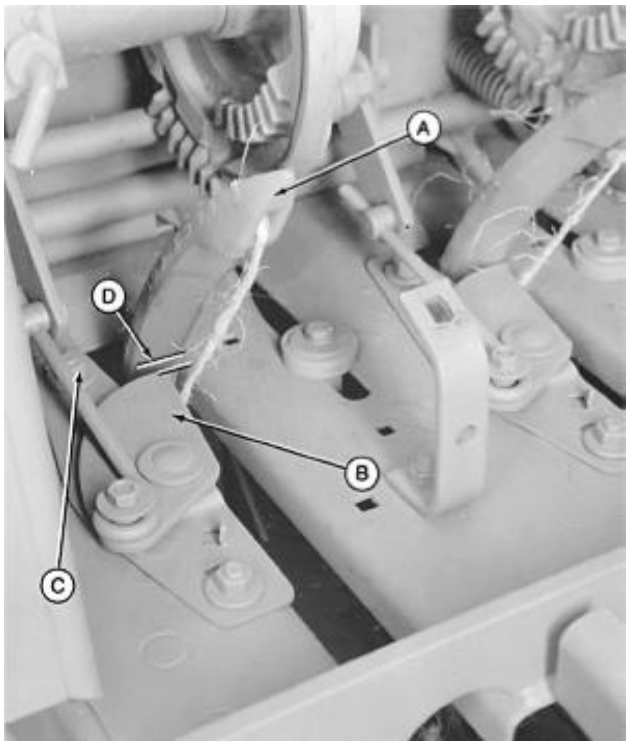
3. Trip bale measuring arm and turn flywheel by hand until tucker fingers are closest to needles as shown.

NOTE: End of each tucker finger must be held upward and to the left with finger pressure while adjusting clearance.

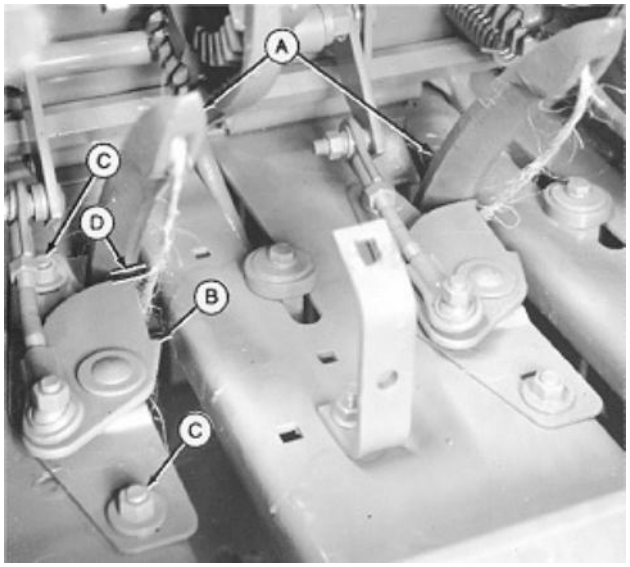
4. Loosen carriage bolts (C) and move tucker finger forward or rearward in their mounting slots until tucker fingers clear needles by 0.8 mm (1/32 in.) (D).

5. Tighten tucker finger carriage bolts to 47 N·m (35 lb-ft).

A—Needles
B—Tucker Fingers
C—Carriage Bolts
D—0.8 mm (1/32 in.)



S.N. —740000



S.N. 740001—

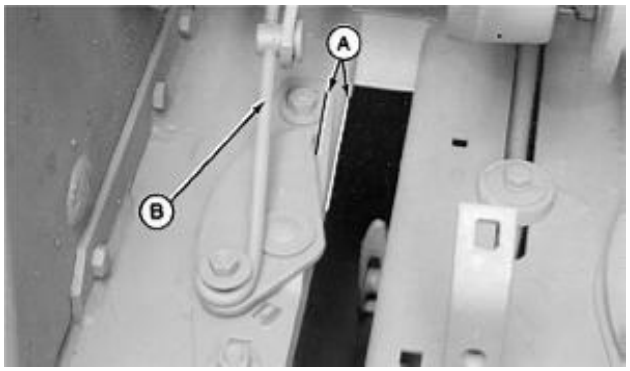
EX,1243,5010,BA-19-23JUN92

5. Continue turning flywheel until tucker fingers have returned to their resting position.

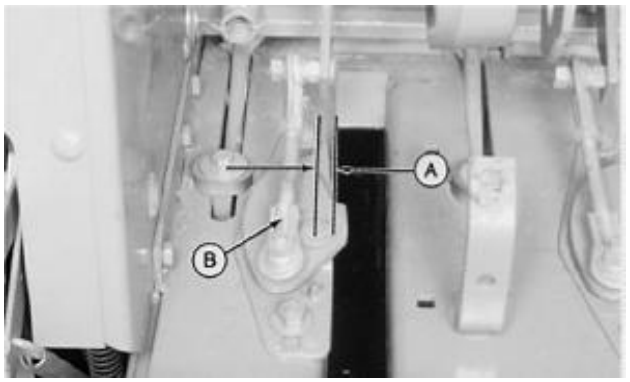
6. Tip of tucker fingers must be set within 3 mm (1/8 in.) (A) to the left of needle slot while tip of finger is pushed to the left.

7. Adjust pull rods (B) to obtain proper clearance.

8. Lower knotter assemblies to operating position and install carriage bolts.



S.N. —740000



S.N. 740001—

EX,1243,5010,BB-19-23JUN92

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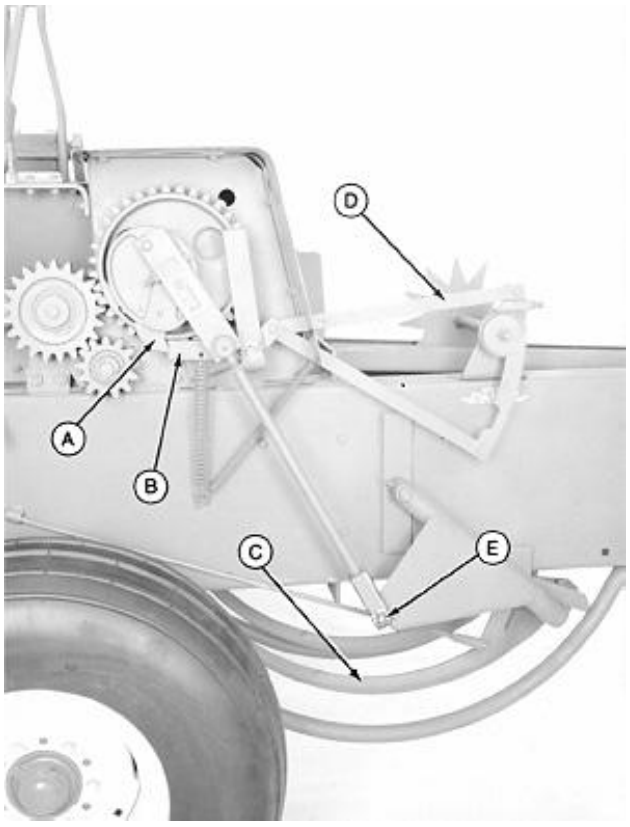
ADJUST NEEDLE BRAKE—327, 328, 336, 337, 338 AND 346 BALERS

1. Locate needles in “home” position. “Home” position is when a bale has been tied and trip dog (A) contacts trip arm (B), needles (C) are fully retracted from bale chute, and measuring arm (D) is against stop.

2. Disconnect lower end of lift link (E) from needle frame.

3. Rotate measuring wheel to trip measuring arm.

A—Trip Dog
B—Trip Arm
C—Needle
D—Measuring Arm
E—Lift Link



EX,1243,5010,BC-19-23JUN92

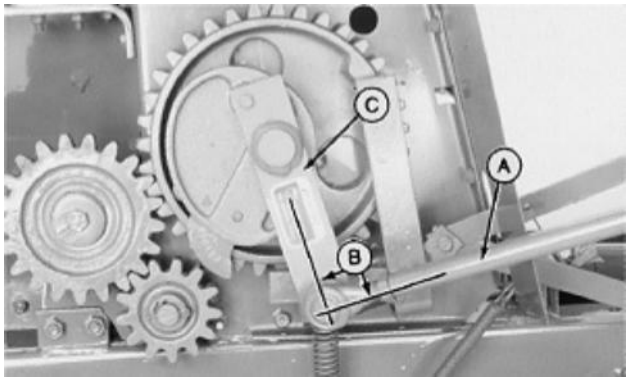
4. Attach a spring scale to the end of lift link (A).

5. Pull lift link rearward at a 90 degree angle (B) to lift arm (C).

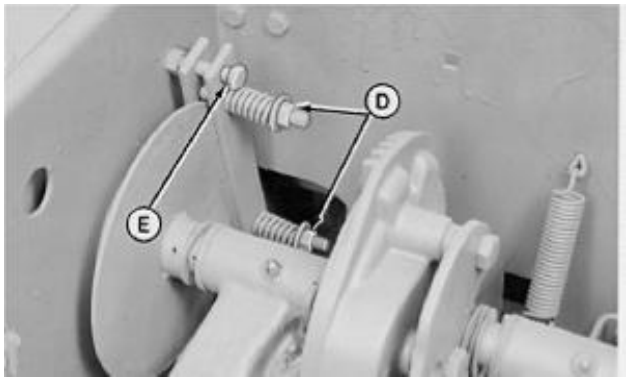
IMPORTANT: Brake retaining bolts (E) must not contact the brake pressure plate.

6. Loosen or tighten brake adjusting nuts (D) until 267 N (60 lb) pull will move the lift arm.

A—Lift Link
B—Angle
C—Lift Arm
D—Nuts
E—Bolts



E28957 -UN-12SEP88



E19304 -UN-13SEP88

EX,1243,5010,BD-19-23JUN92

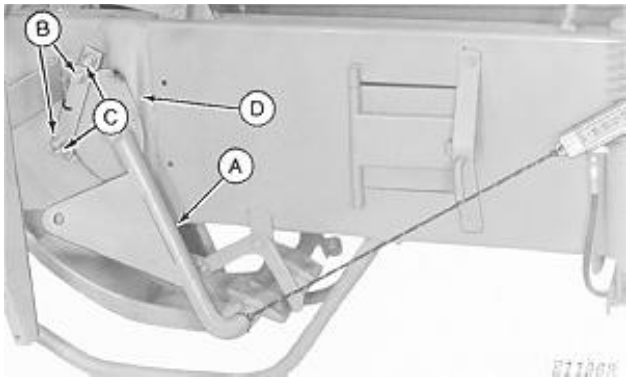
ADJUST NEEDLE BRAKE—347, 348, 466, 467 AND 468 BALERS

1. Disconnect lower end of lift link from needle frame (A).

2. Fasten twine and spring scale to needle frame. Pull rearward at a 90 degree angle to needle frame as shown.

IMPORTANT: Brake retaining bolts (C) must not contact brake pressure plate (D).

3. Loosen or tighten brake adjusting nuts (B) until 245 N (55 lb) pull will move needle lift arm.



E11962 -UN-20SEP88

A—Needle Frame
B—Brake Adjusting Nuts
C—Retaining Bolts
D—Brake Pressure Plate

EX,1243,5010,BE-19-23JUN92

ADJUST NEEDLE FRAME AND NEEDLE LINK—TWINE BALER

IMPORTANT: Needle timing and crank stop MUST be checked after making any adjustment with needle lift link.

1. Trip bale measuring arm and turn flywheel by hand until needles are in the fully raised position.

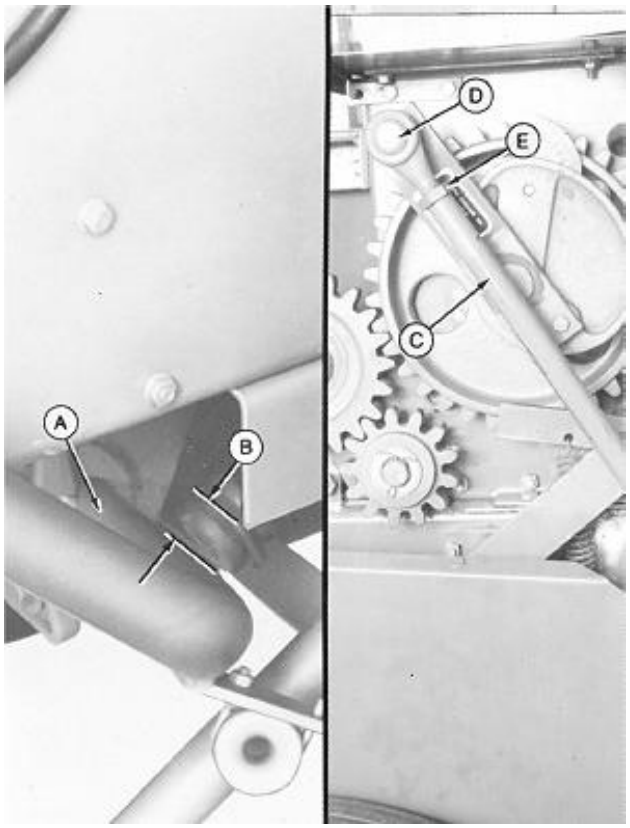
2. Measure clearance (B) between needle frame (A) and right side of bale case. Clearance should be within 25—32 mm (1—1-1/4 in.). For 467 and 468 balers only, clearance is 19—25 mm (3/4—1 in.).

NOTE: On 466 (S.N. 335001—), 467 and 468 Balers, a clamp is used in place of a lock nut.

3. To adjust, loosen nut (E) and disconnect lift link (C) from needle frame. Turn lift link until clearance (B) is within specification.

4. Secure lift link to needle frame and tighten lock nut (E). Lift link joint (D) should be held parallel to link bar while tightening lock nut.

5. Check needle timing and crank stop adjustment. (Refer to procedures in Section 40, Group 25.)



A—Needle Frame
B—25—32 mm (1—1-1/4 in.) Clearance
B—467-468 only 19-25 mm (3/4—1 in.) Clearance
C—Lift Link
D—Ball Joint
E—Lock Nut

EX,1243,5010,BF-19-23JUN92

ADJUST BALE MEASURING CONTROL

1. Locate needles in home position with measuring arm stop (A) resting on sheave (B).

2. Check position of trip arm (D) relative to trip dog (E). Top corner of trip arm must be flush with the top corner of trip dog as shown.

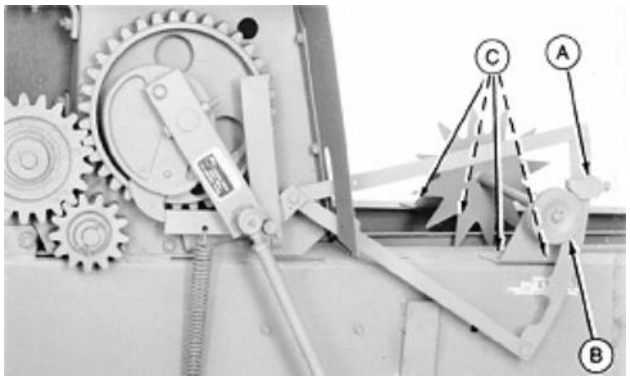
IMPORTANT: Same amount of adjustment must be made on BOTH sides of measuring wheel mounting to prevent binding.

3. To adjust, loosen four carriage bolts (C).

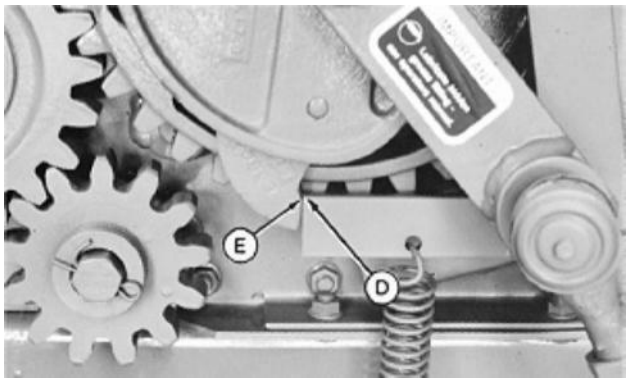
4. Move measuring wheel mounts forward or rearward until proper position of trip arm is achieved.

5. Tighten the four carriage bolts.

A—Measuring Arm Stop
B—Sheave
C—Carriage Bolts
D—Trip Arm
E—Trip Dog



E18278 -UN-07JUN89



E36441 -UN-29APR92

EX,1243,5010,BG-19-23JUN92

6. Rotate measuring wheel to trip bale measuring arm.

CAUTION: Trip arm is spring loaded, use extreme caution to avoid injury.

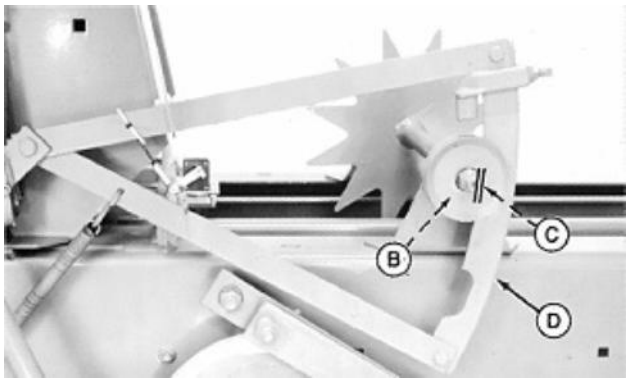
7. Turn flywheel by hand until the trip dog hub (cam) (A) moves the trip arm to its farthest point to the rear (high point on cam). Measuring arm should drop.

If measuring arm does not drop, pull trip arm (A) back until measuring arm drops.

8. Check clearance (C) between serrated roller (B) and serrated segment (D) of measuring arm. Clearance must be no less than 1.5 mm (0.06 in.). If clearance is less than specified, check trip dog hub (cam) and trip arm for wear. Replace as necessary.

A—Trip Dog Hub
B—Serrated Roller
C—Minimum 1.5 mm (0.06 in.)
D—Serrated Segment of Measuring Arm

E36442 -UN-29APR92



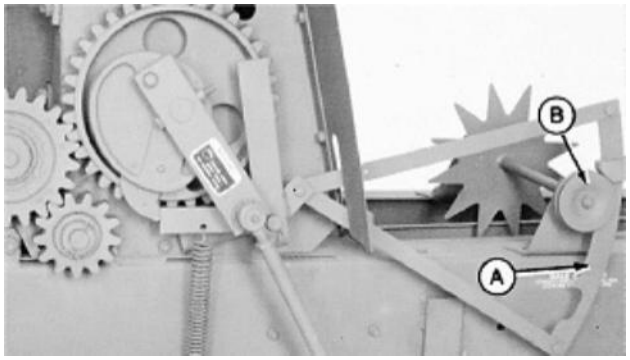
E36443 -UN-29APR92

EX,1243,5010,BH-19-23JUN92

9. Continue to turn flywheel to locate needles in home position.

10. 327 (S.N. —680000), 336 and 346 (S.N. —285000) Balers:

- Measuring arm stop should rest on measuring wheel sheave (B).
- Entire length of measuring arm (A) should contact sheave when measuring wheel is rotated.



EX,1243,5010,BI-19-23JUN92

NOTE: Steps 11—15 are for balers with serrated measuring arm and roller.

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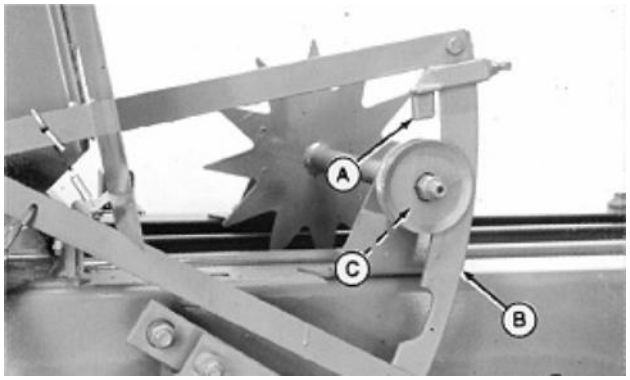
34

11. 327 (S.N. 680001—), 328, 337, 338, 346 (S.N. 285001—), 347, 348, 466, 467, 468 Balers:

- Measuring arm stop blade (A) should fall entirely between the sheave halves as shown in step 15.
- Entire length of measuring arm (B) should contact serrated roller (C) when measuring wheel is rotated.

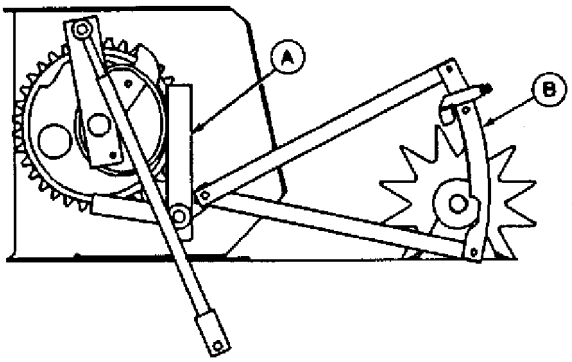


A—Stop Blade
B—Measuring Arm
C—Serrated Roller

EX,1243,5010,BJ-19-23JUN92

CAUTION: Trip arm is spring loaded, use extreme caution to avoid injury.

12. Rotate measuring wheel to trip bale measuring arm (B). Rotate flywheel until trip arm (A) is on high point of cam. Lift measuring arm and let arm drop.



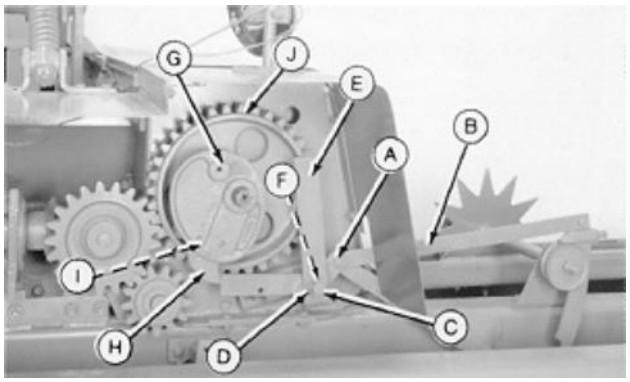
-UN-18JUN92
E36888

EX,1243,5010,BK-19-23JUN92

13. If stop (A) bounces while falling into place between sheave sides (B), the area is too WIDE. Remove shims (C) as required.

14. If stop doesn't fall entirely between sheaves, the area is too NARROW. Add shim(s) (D) as needed.

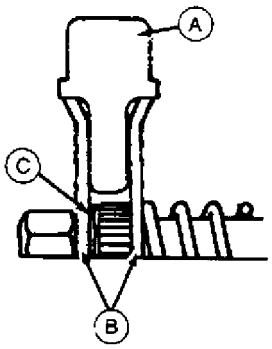
A—Stop
B—Sheave Sides
C—Shims
D—Shim



-UN-10OCT89
E18560

EX,1243,5010,BL-19-23JUN92

15. If blade of stop (A) drops between sheave sides (B) snugly without bouncing, the shims (C) are properly adjusted.



-UN-20SEP88
E18796

EX,1243,5010,BM-19-23JUN92

ADJUST BALE COUNTER

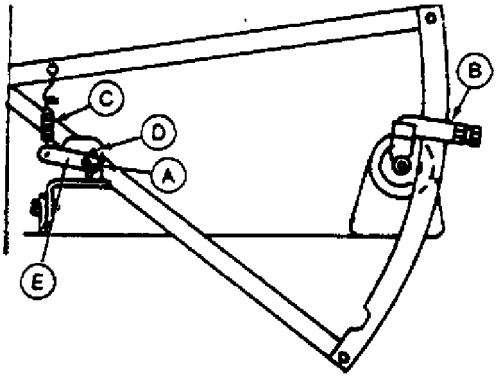
To adjust bale counter (A):

1. With the measuring arm stop (B) against the sheave, spring (C) must be loose (no tension).

With arm in trip position (fully raised), the bale counter spring should be extended to approximately 48 mm (1-7/8 in.) and bale counter should register next highest number.

2. If spring is not extended and bale counter does not register, loosen screw (D) on bale counter arm (E) and adjust arm downward.

Run baler through tying cycle. If counter does not register, repeat steps 1 and 2.



E26310 -UN-12SEP88

A—Bale Counter
B—Measuring Arm Stop
C—Spring
D—Screw
E—Bale Counter Arm

EX,1243,5010,BN-19-23JUN92

THREAD NEEDLES—TWINE BALER

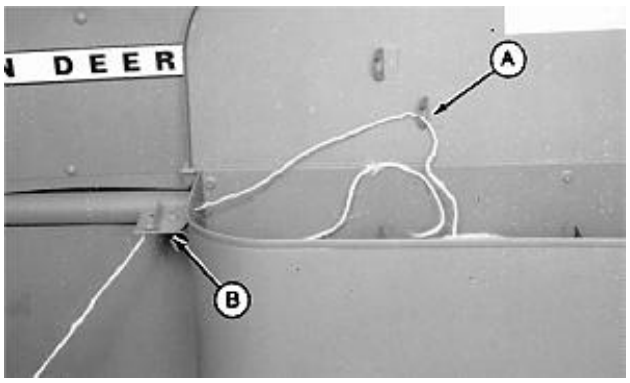
CAUTION: Disengage PTO and shut off tractor engine before threading needles.

IMPORTANT: Make sure twine does not become "crossed" during threading operation.

Improperly threaded twine will cause tying problems.

NOTE: A detailed threading diagram is located underneath twine box lid.

1. To thread right needle, locate needles in "home" position. Thread twine from inside ball through lower guide (A) and through FRONT of tension plate (B).

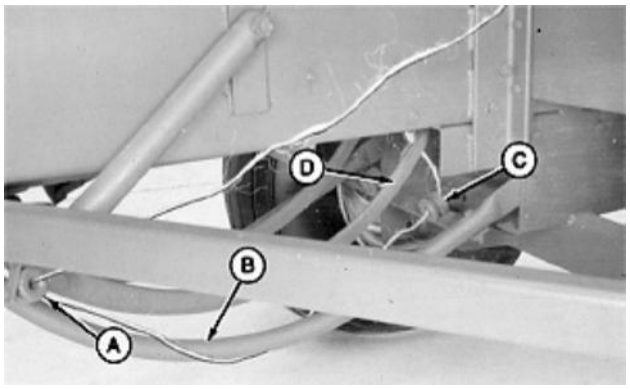


E18497 -UN-12JUN89

EX,1243,5010,BP-19-23JUN92

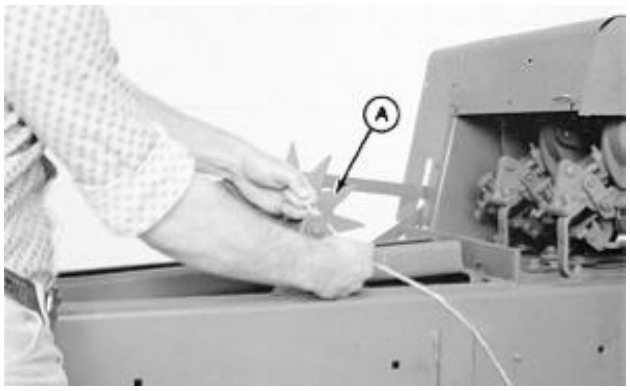
2. Thread through eye (A) on needle frame, UNDER needle guard (B), through eye (C) under right needle, and through guide on end of needle (D).

A—Eye
B—Needle Guard
C—Eye
D—Guide In (End of Needle)



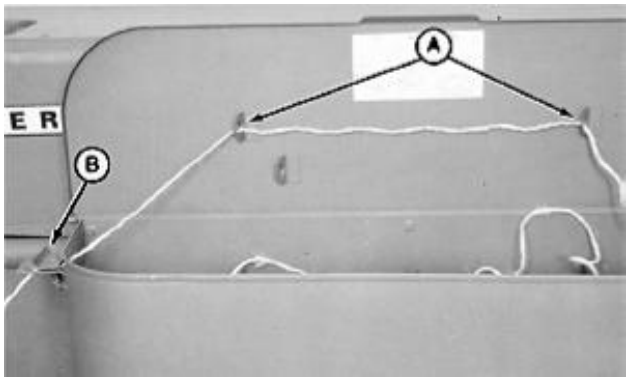
EX,1243,5010,BQ-19-23JUN92

3. Secure twine to shaft of measuring wheel (A) as shown.



E01,5010,AQ -19-23JUN81

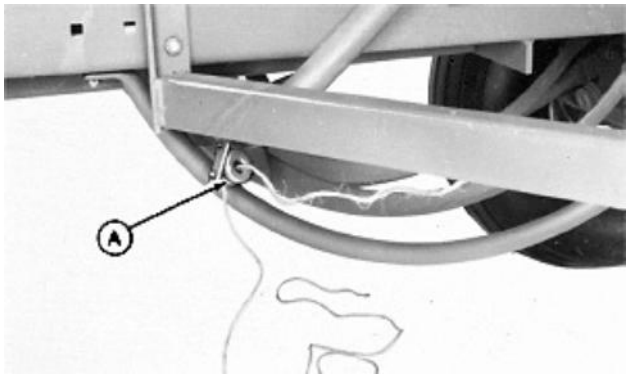
4. To thread left needle, thread twine from outside ball, through guides (A), and through REAR of tension plate (B).



E01,5010,AR -19-23JUN92

5. Thread through eye (A) on needle frame.

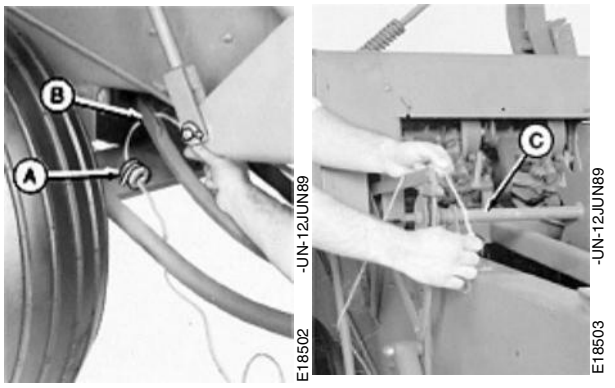
6. Throw twine under bale case as shown.



E01,5010,AS -19-23JUN81

7. Thread twine through eye (A) and over guide on end of needle (B).

8. Secure twine to shaft of measuring wheel (C) as shown.



E01,5010,AT -19-23JUN81

9. When both sides have been properly threaded, trip measuring wheel arm and turn flywheel counterclockwise by hand. Continue turning flywheel until needles are all the way up, twine is held in twine disk, and needles have returned to “home” position.

10. Remove twine temporarily secured to measuring wheel. Twine is now ready for baling operation.

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E01,5010,AU -19-23JUN81

SPECIFICATIONS

Item	Measurement	Specification
Shear Blade	Torque	17 N·m (125 lb-in.)
Stationary Gripper	Torque	14 N·m (11 lb-ft)
Twister Hook	Torque	34 N·m (25 lb-ft)
Needle Pulley 337, 338, 347, 348 Balers Distance Below Wire	Clearance	11 mm (7/16 in.)
Rear Needle Assembly 337, 338, 347, 348 Balers Distance to Bale Case Bottom	Clearance	13 mm (1/2 in.)
Needle Frame 466 467, 468 Balers Distance to Main Frame on Right Side of Bale Case	Clearance	19—25 mm (3/4—1 in.)
Needles Distance to Left Side of Slot	Clearance	3.2—8.0 mm (1/8—5/16 in.)
Needles to Front of Gripper	Clearance	1.6—4.0 mm (1/16—5/32 in.)
Needle Cap Screws	Torque	68—108 N·m (50—80 lb-ft)
Front Pulley to Wire Guide	Clearance	0.76—2.29 mm (0.030—0.090 in.)
Front Sleeve Guide to Pulley	Clearance	0.13—0.76 mm (0.005—0.030 in.)
Center Wire Guide at Closest Point With Needles Raised	Clearance	6.4 mm (1/4 in.)
Twister Hook Cap Screws	Torque	34 N·m (25 lb-ft)

EX,1243,5015,A -19-23JUN92

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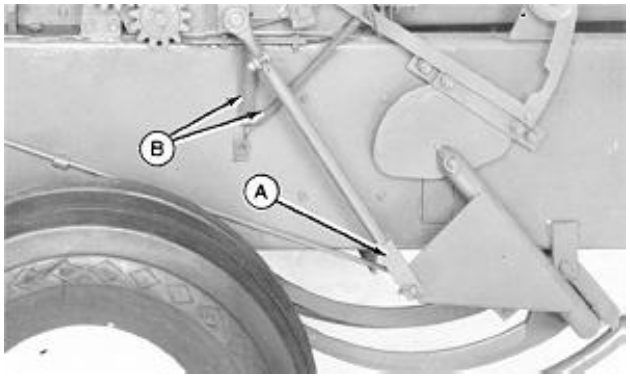
1

REMOVE TWISTER ASSEMBLY (—740000)

1. Disconnect lower end of lift link (A) from needle frame.

2. Disconnect two springs (B).



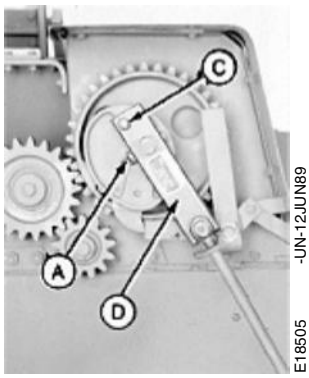
E01,5010,CD -19-23JUN92

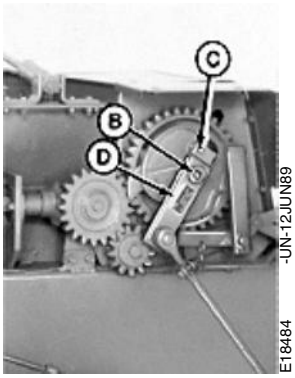
3. On 337 and 346 Balers, remove 3/8 x 2-1/2 in. cap screw (A).

4. On 347, 466 and 467 Balers, remove 3/8 x 1-1/4 in. cap screw (B).

5. Remove shear bolt (C) and pivot bracket (D).

A—Cap Screw (3/8 x 3 in.)
B—Cap Screw (3/8 x 1-1/4 in.)
C—Shear Bolt
D—Pivot Bracket





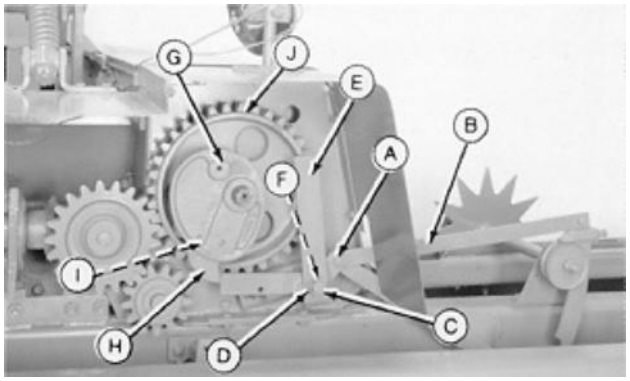
EX,1243,5015,B -19-23JUN92

6. Remove cap screw (A), measuring arm (B), cotter pin (C), spacer (D), trip arm (E) and spacer (F).

7. Remove trip dog hub (G) with trip dog (H) and trip dog spring (I).

8. Remove needle drive gear (J).

A—Cap Screw
B—Measuring Arm
C—Cotter Pin
D—Spacer
E—Trip Arm
F—Spacer
G—Trip Dog Hub
H—Trip Dog
I—Trip Dog Spring
J—Needle Drive Gear



E01,5015,C -19-23JUN81

NOTE: If brake is at needle frame, do not loosen brake hardware.

9. Remove 3/8 x 2 in. cap screw. Loosen 3/8 x 3-1/4 in. carriage bolt, and pivot brake away.

10. Loosen locking collar, remove spring pin, and slide brake disk to right.

11. Remove three 3/8 x 3/4 in. cap screws and nuts holding bearing (A).

12. Remove 1/2 x 3-1/4 in. carriage bolt (B).

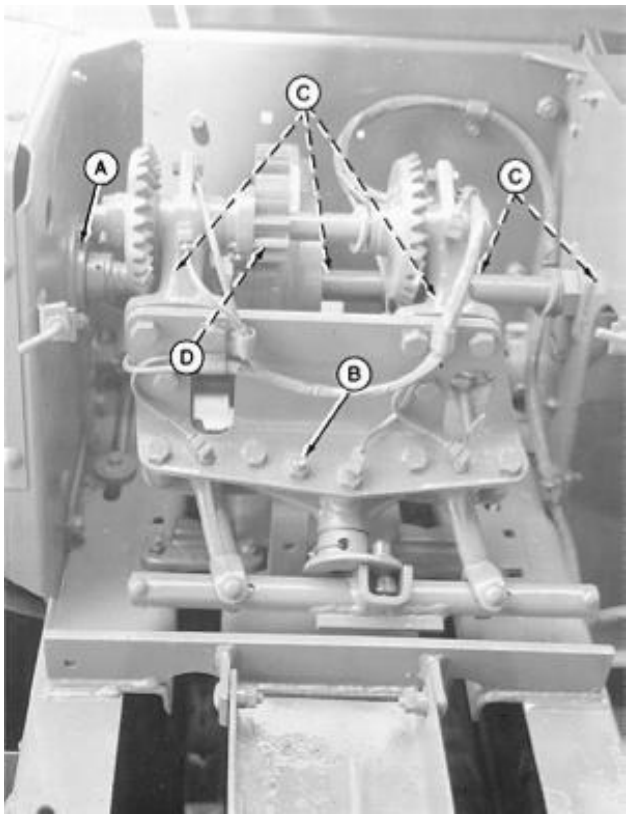
13. Remove five 3/16 x 2 in. cotter pins (C).

14. Loosen 7/16 x 2-3/ in. cap screw (D) on intermittent gear.

15. If baler is equipped with multi-luber, disconnect lines from twister assembly.

16. Note location of 1-5/32 x 1-3/4 x 0.024 in. spacer washers. These are needed for assembly and adjustment.

17. If necessary, remove lift shaft, twister frames, or intermittent gear.



E18537 -UN-12JUN89

A—Bearing
B—Carriage Bolt
C—Cotter Pin
D—Cap Screw

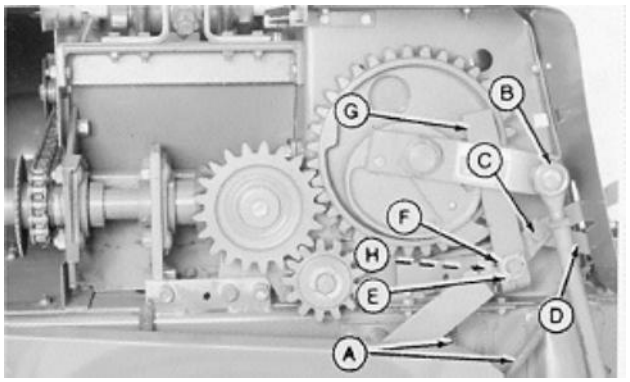
EX,1243,5015,C -19-23JUN92

REMOVE TWISTER ASSEMBLY (S.N. 740001—)

1. Disconnect two springs (A).

2. Remove cotter pin and nut. Disconnect lift link (B).

3. Remove cap screw (C), measuring arm (D), cotter pin (E), spacer (F), trip arm (G), and spacer (H).



E29132 -UN-07DEC89

A—Springs
B—Lift Link
C—Cap Screw
D—Measuring Arm
E—Cotter Pin
F—Spacer
G—Trip Arm
H—Spacer

E01,5010,CE -19-23JUN92

NOTE: If brake is at needle frame, do not loosen brake hardware.

4. Remove all spring pins (A) from shaft.

5. 336, 338 and 346: Remove spring pin from brake disk.

6. Loosen locking collar (B).

7. Loosen 7/16 x 2-3/4 in. cap screw (C) on intermittent gear.

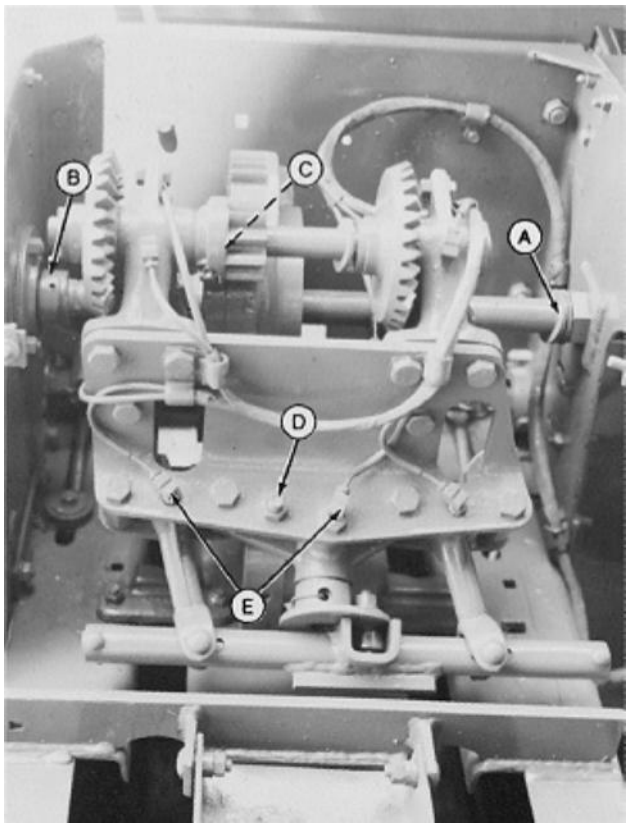
8. Note location of 1-5/32 x 1-3/4 x 0.024 in. spacer washers. These are needed for assembly and adjustments.

9. Remove shaft.

10. Remove 7/16 x 3-1/4 in. carriage bolt (D).

11. Disconnect multi-luber lines (E), if equipped.

A—Spring Pins
B—Locking Collar
C—Cap Screw
D—Carriage Bolt
E—Multi-Luber Lines



E29135 -UN-07DEC89

EX,1243,5015,D -19-23JUN92

INSPECT GRIPPER, SHEAR ASSEMBLY AND NEEDLE LIFT SHAFT

1. Check stationary grippers, wire guide, shear plate and shear blade for wear and grooves caused by wire. Replace if needed.

2. Replace bushings if burred and worn.

3. Replace needle lift shaft if excessively worn.

4. Replace bearing if rough and does not rotate freely.

5. Replace needle gear if missing teeth and needle brake linings are worn.

E01,5015,K -19-23JUN81

ASSEMBLE GRIPPER AND SHEAR ASSEMBLY

1. Press top bushing (A) flush with gripper arm (B).

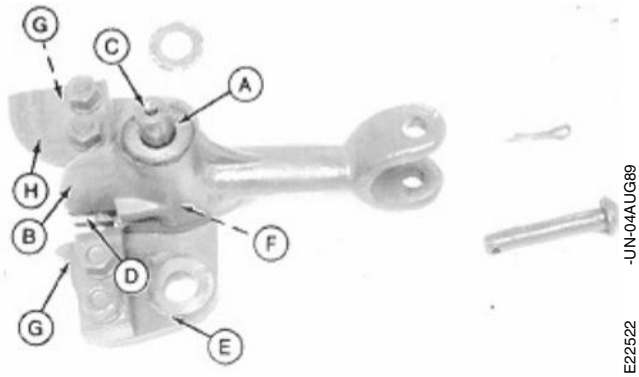
2. Loosely install shear blade (D).

3. Press lower bushing (F) in flush with shear blade.

4. Tighten shear blade screws to 17.3 N·m (125 lb-in.).

5. Insert pivot pin (C). If pin will not go through parts, hand ream bushings to .501—.505 in.

6. Attach stationary grippers (G) and wire guide (H) to shear plate using four 5/16 x 1 in. cap screws. Tighten to 14 N·m (11 lb-ft).

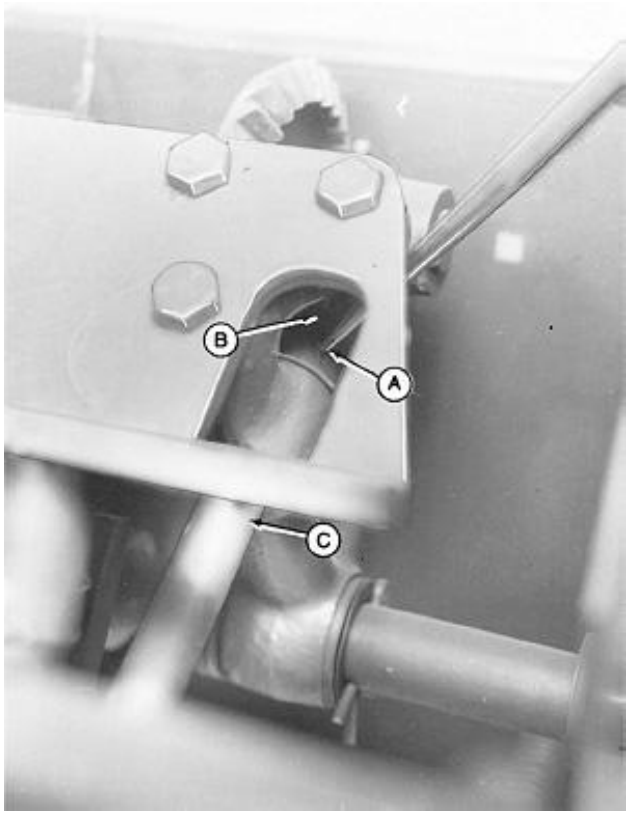


E22522 -UN-04AUG89

A—Top Bushing
B—Gripper Arm
C—Pivot Pin
D—Shear Blade
E—Shear Plate
F—Lower Bushing
G—Stationary Grippers
H—Wire Guide

EX,1243,5015,E -19-23JUN92

2. Remove 1/4 x 1-1/2-inch spring pin (A), twister pinion (B), and twister shaft (C).



E18511 -UN-12JUN89

E01,5015,P -19-24JUN81

INSPECT TWISTER

Replace bearings and pivot pin, if worn.

E01,5015,Q -19-24JUN81

ASSEMBLE TWISTER

To assemble, reverse Disassemble Twister procedure.

Attach twister hooks with socket head cap screw and tighten to 34 N·m (25 lb-ft).

EX,1243,5015,F -19-23JUN92

ADJUST NEEDLE LINK - WIRE BALER

Needle lift link (A) controls height of needles in relation to wire and wire pulleys, and bale case bottom.

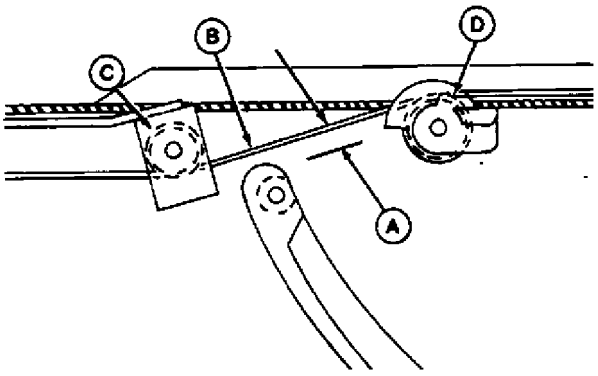
E01,5015,S -19-24JUN81

1. Place needles in home position.

2. 336, 337, 338, 346, 347 and 348 Balers: Adjust needles until each needle pulley is 11 mm (7/16 in.) (A) below wire (B) which passes under center wire pulley (C) and over rear wire pulley (D). Adjust by disconnecting lift link from needle frame and turning.

3. Adjust rear end of needle assembly so it clears the bale case bottom by at least 13 mm (1/2 in.).

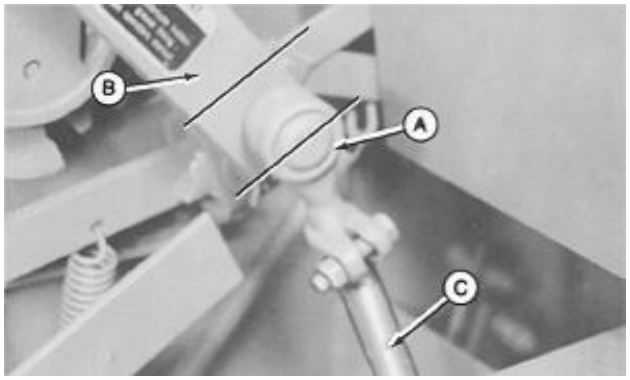
A—11 mm (7/16 in.)
B—Wire
C—Center Wire Pulley
D—Rear Wire Pulley



E18513 -UN-13APR89

EX,1243,5015,G -19-23JUN92

4. Hold ball joint (A) parallel to link bar (B) and tighten lock nut or clamp against lift link (C).



E19253 -UN-15JUN89

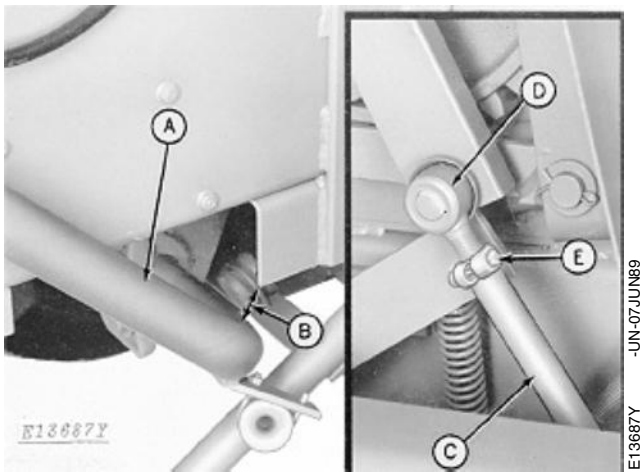
E01,5015,U -19-24JUN81

IMPORTANT: Crank stop, plungerhead, and needle timing must be checked after making any adjustments with needle lift link.

5. On 466 and 467 balers, adjust needle frame (A) so it clears main frame on right side of bale case by 19—25 mm (3/4—1 in.) (B) with needles fully raised. Adjust by disconnecting lift link (C) from needle frame (A) and turning.

6. Tighten clamp bolt (E) against lift link (C). Ball joint (D) should be held parallel to link bar while tightening clamp bolt.

A—Needle Frame
B—19—25 mm (3/4—1 in.)
C—Lift Link
D—Ball Joint
E—Clamp Bolt

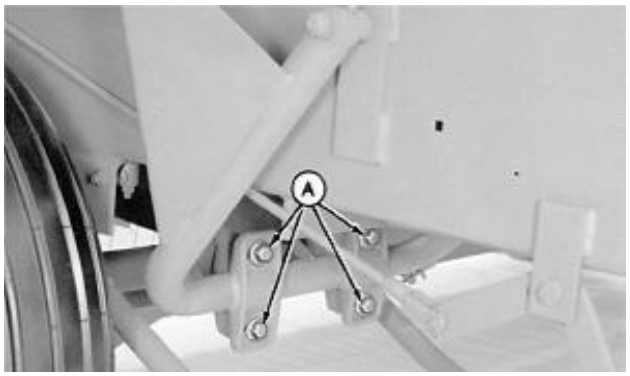


E13687Y -UN-07JUN89

EX,1243,5015,H -19-23JUN92

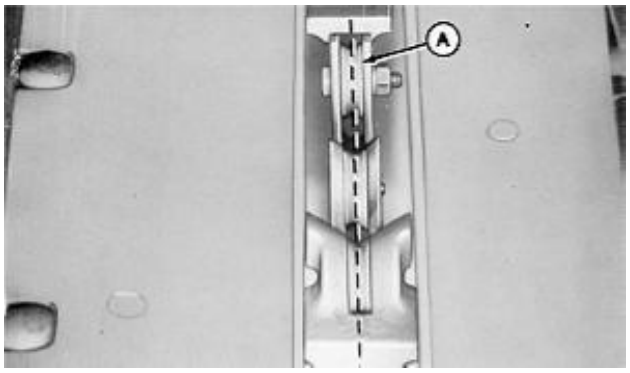
ADJUST NEEDLES - WIRE BALER

1. Adjust needle forward or rearward by loosening one of needle mounting bolts (A) and tightening the other. Adjust sideways by loosening both mounting bolts and shift toward either side.



E01,5015,W -19-24JUN81

2. Adjust center pulley (A) to side, as necessary, to allow needle to pick up wire as needles raise.



E01,5015,X -19-24JUN81

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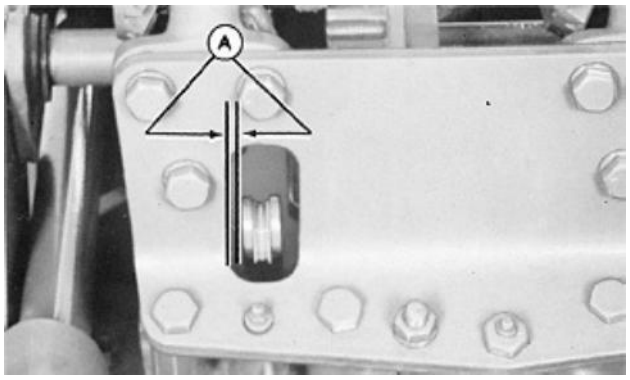
IMPORTANT: Each needle must be within 3.2—8.0 mm (1/8—5/16 in.) (A) from left side of its respective slot in twister mounting plate when needle is in its highest position.

3. Align each needle with wire guide pulleys and slot in twister mounting plate.

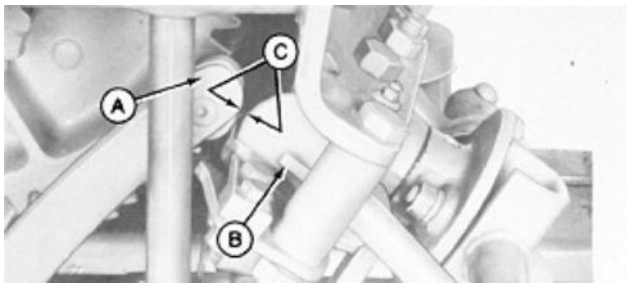
4. Trip measuring arm and raise needles.

5. Loosen both needle mounting bolts and move needle sideways until it is aligned. (See “Center Wire Guides”.)



EX,1243,5015,I -19-23JUN92

IMPORTANT: As needles pass through twisting mechanism, closest point of each needle (A) should clear front of each wire gripper (B) by 1.6 to 4.0 mm (1/16 x 5/32 in.) (C) (when checked without wire in grippers).



E18517 -UN-12JUN89

6. Increase distance between needles and grippers by loosening front needle mounting bolts slightly and tightening rear bolts. Reverse this procedure to reduce distance.

7. When needles are properly adjusted, torque all bolts to 68—108 N·m (50—80 lb-ft) and again check needles through their cycle.

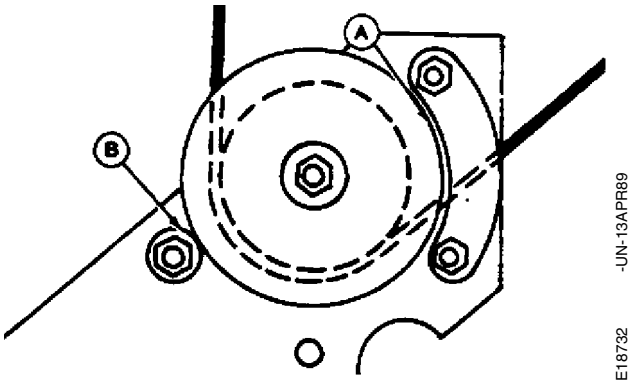
EX,1243,5015,J -19-23JUN92

ADJUST WIRE GUIDES

IMPORTANT: All rollers must spin freely to insure proper operation of wire twister.

1. Adjust front pulleys and cast wire guides to clear each other by 0.76—2.29 mm (0.030—0.090 in.) (A).

2. Adjust front sleeve guide to clear pulleys by 0.13—0.76 mm (0.005—0.030 in.) (B). Each pulley must turn freely.

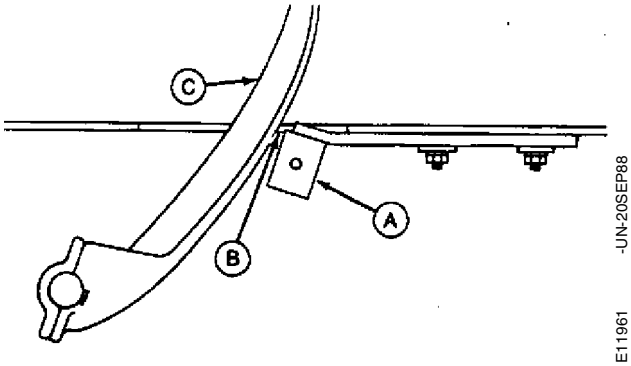


E18732 -UN-13APR89

EX,1243,5015,K -19-23JUN92

3. Center wire guides (A) must be 6.4 mm (1/4 in.) (B) forward of closest point of needles (C) when needles are in their highest position, and wire guides are aligned with needle pulley.

4. Adjust guides by loosening two mounting bolts in each guide. Shift guides to left or right for alignment. Shift them forward or rearward for desired clearance. Tighten mounting bolts.



E11961 -UN-20SEP88

EX,1243,5015,L -19-23JUN92

ADJUST GRIPPERS

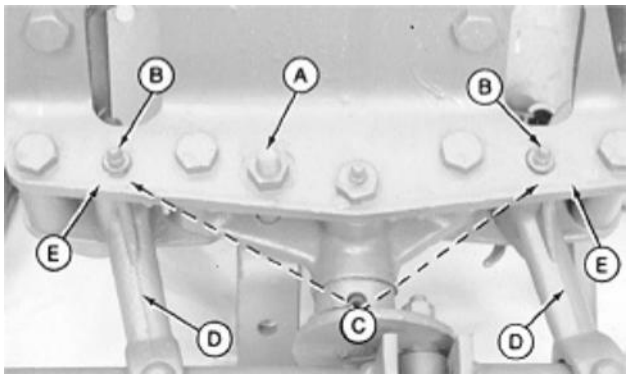
1. Pivot knotter assemblies upward by removing bolt (A).

2. Remove pivot pin (B), insert necessary shims (C) between gripper arm (D) and twister mounting plate (E), and replace pivot pin.

3. Tighten pivot pin and secure with nut.

4. Replace twister assemblies to their original position and secure with bolt.

A—Bolt
B—Pivot Pin
C—Shims
D—Gripper Arm
E—Twister Mounting Plate



E18519 -UN-12JUN89

E01,5015,AC -19-24JUN81

ADJUSTING TWISTER HOOKS

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10

NOTE: Tighten socket-head cap screws through twister hook to 34 N·m (25 lb-ft).

With needles in “home” position, twister hook is properly adjusted when the inside of the point of the hook (pointing rearward) is within 9.5 mm (3/8 in.) maximum clearance (A) either side of center of gripper pin (B), when finger pressure is applied to retard the twister hook.

1. Move bevel gear to the left and rotate the twister shaft as necessary.

2. Relocate bevel gear on the shaft and secure using spring pin.

E18622 -UN-20SEP88

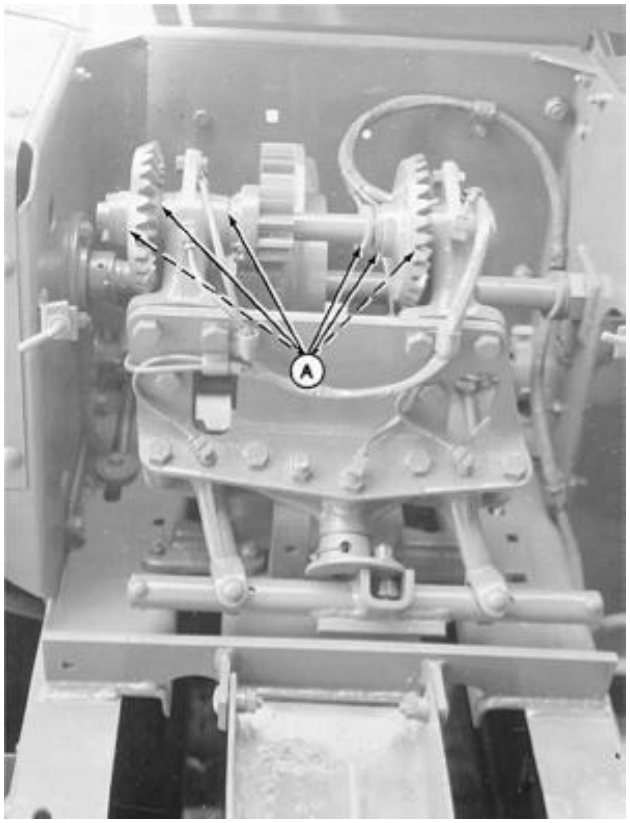
EX,1243,5015,M -19-23JUN92

ADJUST BEVEL GEAR AND PINION-WIRE BALER

1. Adjust bevel gears to right or left by adding or removing washers (A) on gear shaft in locations shown. Bevel gears must mesh properly and have even heel alignment with pinions on twister shafts.

IMPORTANT: Check twister hook adjustment after replacing bevel gears.

2. If necessary, adjust twister pinions higher by adding washers between pinions and twister frames.



E01,5015,AE -19-14MAR83

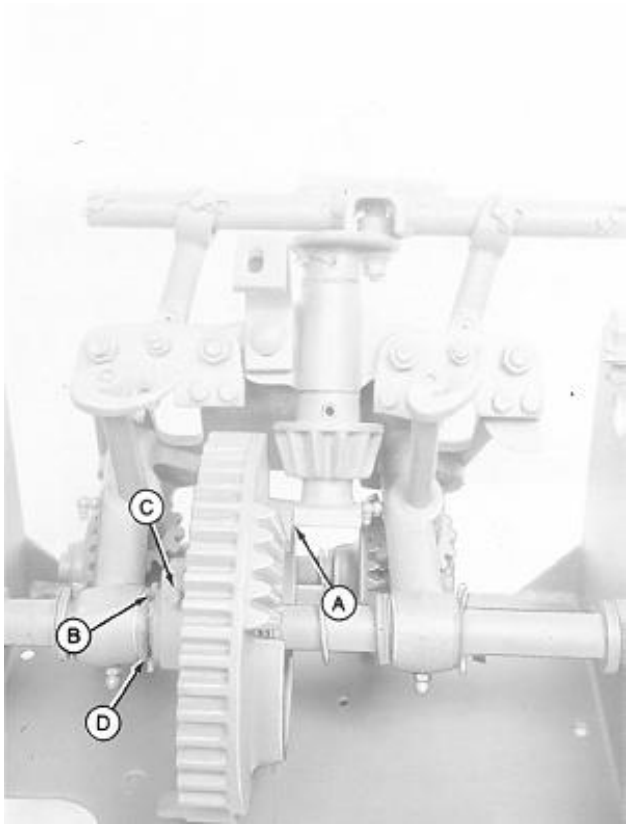
50 15 11

ADJUST INTERMITTENT DRIVE GEAR—WIRE BALER

1. To eliminate tooth breakage and insure proper mesh, adjust flat side (A) of gripper drive pinion tight against smooth surface of intermittent drive gear.

2. Adjust gears by removing pin (B), loosening bolt (C), and locating washers (D) on shaft as necessary to get proper mesh. Replace pin in shaft.

A—Flat Side
B—Pin
C—Bolt
D—Washers



EX,1243,5015,N -19-23JUN92

ADJUST BALE MEASURING CONTROL

1. Locate needles in home position with measuring arm stop (A) resting on sheave (B).

2. Check position of trip arm (D) relative to trip dog (E). Top corner of trip arm must be flush with the top corner of trip dog as shown.

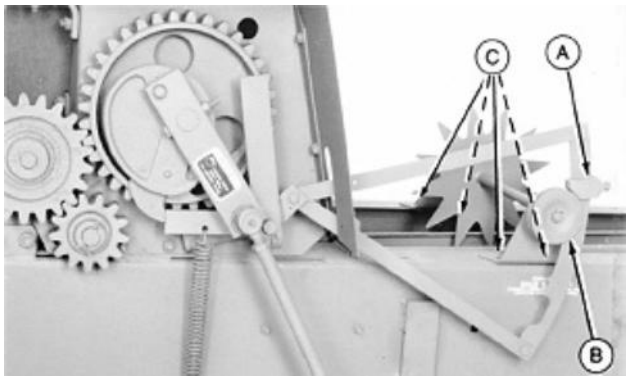
IMPORTANT: Same amount of adjustment must be made on BOTH sides of measuring wheel mounting to prevent binding.

3. To adjust, loosen four carriage bolts (C).

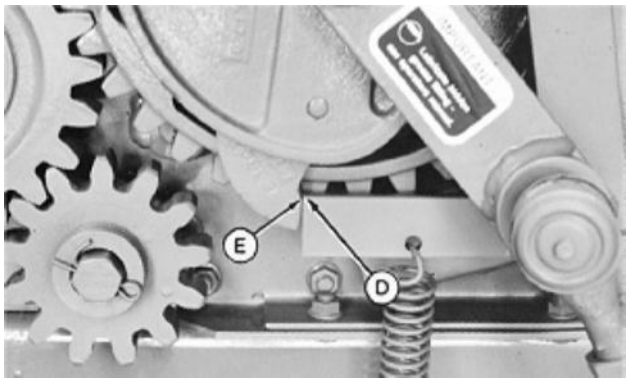
4. Move measuring wheel mounts forward or rearward until proper position of trip arm is achieved.

5. Tighten the four carriage bolts.

A—Measuring Arm Stop
B—Sheave
C—Carriage Bolts
D—Trip Arm
E—Trip Dog



E18278 -UN-07JUN89



E36441 -UN-29APR92

EX,1243,5010,BG-19-23JUN92

6. Rotate measuring wheel to trip bale measuring arm.

CAUTION: Trip arm is spring loaded, use extreme caution to avoid injury.

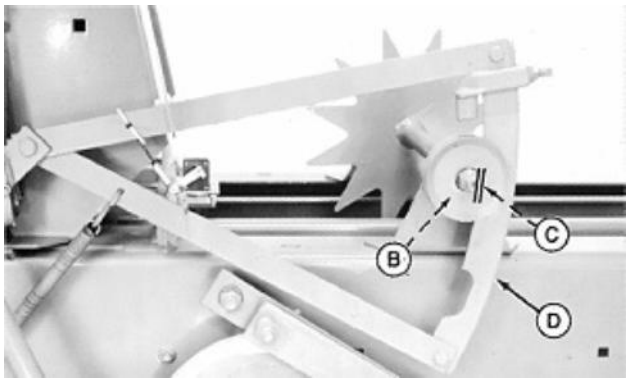
7. Turn flywheel by hand until the trip dog hub (cam) (A) moves the trip arm to its farthest point to the rear (high point on cam). Measuring arm should drop.

If measuring arm does not drop, pull trip arm (A) back until measuring arm drops.

8. Check clearance (C) between serrated roller (B) and serrated segment (D) of measuring arm. Clearance must be no less than 1.5 mm (0.06 in.). If clearance is less than specified, check trip dog hub (cam) and trip arm for wear. Replace as necessary.

A—Trip Dog Hub
B—Serrated Roller
C—Minimum 1.5 mm (0.06 in.)
D—Serrated Segment of Measuring Arm

E36442 -UN-29APR92



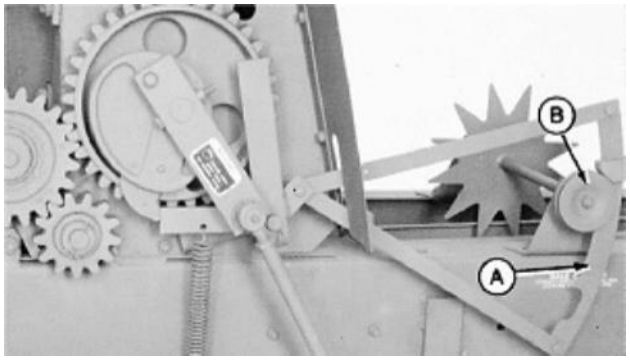
E36443 -UN-29APR92

EX,1243,5010,BH-19-23JUN92

9. Locate needles in home position.

10. 336 and 346 (S.N. —285000) Balers:

- Measuring arm stop should rest on measuring wheel sheave (B).
- Entire length of measuring arm (A) should contact sheave.



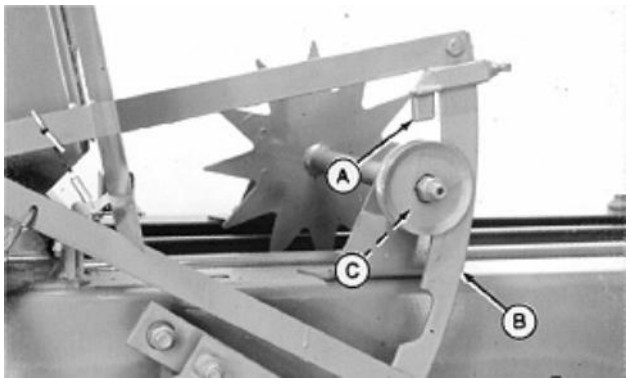
E22517 -UN-04AUG89

EX,1243,5015,Q -19-23JUN92

11. 337, 338, 346 (S.N. 285001—), 347, 348, 466, 467, Balers:

- Measuring arm stop blade (A) should fall entirely between the sheave halves as shown in step 15.
- Entire length of measuring arm (B) should contact serrated roller (C).

A—Stop Blade
B—Measuring Arm
C—Serrated Roller

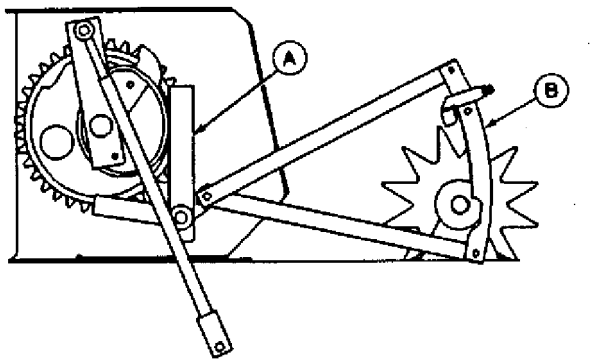


E36445 -UN-29APR92

EX,1243,5015,R -19-23JUN92

CAUTION: Trip arm is spring loaded, use extreme caution to avoid injury.

12. Rotate measuring wheel to trip bale measuring arm (B). Rotate flywheel until trip arm (A) is on high point of cam. Lift measuring arm and let arm drop.



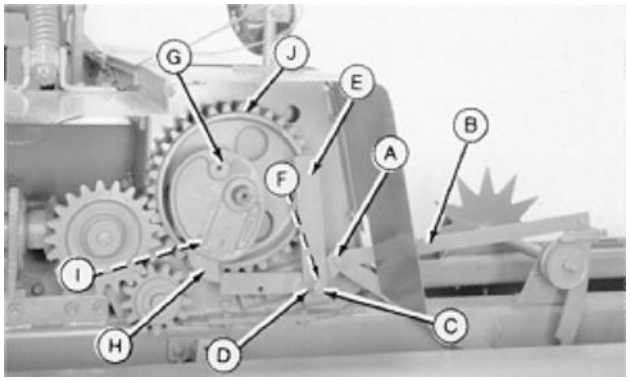
E36888 -UN-18JUN92

EX,1243,5010,BK-19-23JUN92

13. If stop (A) bounces while falling into place between sheave sides (B), the area is too WIDE. Remove shims (C) as required.

14. If stop doesn't fall entirely between sheaves, the area is too NARROW. Add shim(s) (D) as needed.

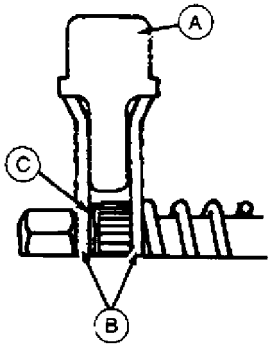
A—Stop
B—Sheave Sides
C—Shims
D—Shim



E18560 -UN-10OCT89

EX,1243,5010,BL-19-23JUN92

15. If blade of stop (A) drops between sheave sides (B) snugly without bouncing, the shims (C) are properly adjusted.



E18796 -UN-20SEP88

EX,1243,5010,BM-19-23JUN92

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15
14

ADJUST BALE COUNTER

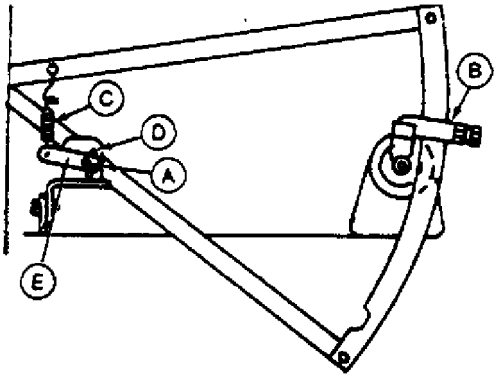
To adjust bale counter (A):

1. With the measuring arm stop (B) against the sheave, spring (C) must be loose (no tension).

With arm in trip position (fully raised), the bale counter spring should be extended to approximately 48 mm (1-7/8 in.) and bale counter should register next highest number.

2. If spring is not extended and bale counter does not register, loosen screw (D) on bale counter arm (E) and adjust arm downward.

Run baler through tying cycle. If counter does not register, repeat steps 1 and 2.



E26310 -UN-12SEP88

A—Bale Counter
B—Measuring Arm Stop
C—Spring
D—Screw
E—Bale Counter Arm

EX,1243,5010,BN-19-23JUN92

MULTI-LUBER DIFFICULTIES

Symptom	Problem	Solution	Section/Group
Pump not delivering lubricant, or handle will not depress to complete a full stroke.	Clogged bearings.	Remove and clean bearings thoroughly.	—
	Clogged line.	Disconnect line and force lubricant through line using multi-luber.	50-20
	Broken line.	See Broken Oil Lines.	50-20
	Lubricant too thick.	Use only a lubricant approved for the multi-luber.	—

EX,1243,5020,A -19-23JUN92

DETERMINE PLUGGED LINE OR BEARING

When operating properly, plunger will move through its full stroke without difficulty. If an oil line or bearing becomes clogged, normal stroke of plunger will be interrupted when it reaches outlet port of clogged line.

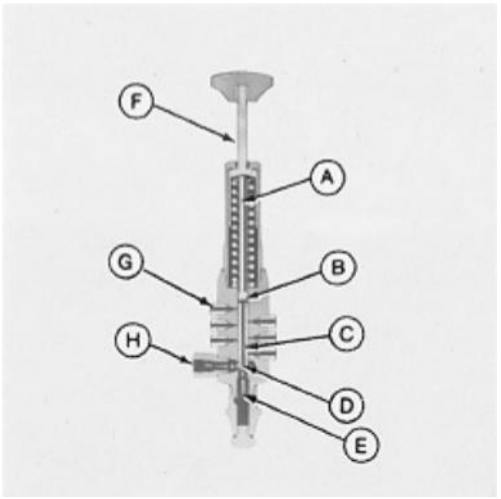
E01,1030,A -19-22JUN81

IMPORTANT: Do not force oil through oil line with a pressure grease gun. Burst pressure of oil line is (21000 kPa) (207 bar) 3000 psi.

1. Determine which line is clogged by estimating how far plunger (A) has moved. Make sure by disconnecting suspected oil line at bearing and moving plunger.

2. After disconnecting clogged line, move plunger to determine if clogging is in bearing or in oil line.

3. Clean bearing if clogged and refill with John Deere Quik-Lube lubricant or its equivalent before attaching multiluber feed line. If oil line is clogged, operate pump until lubricant is forced through line.



E11974 -UN-03OCT88

A—Plunger
B—Oil Ring
C—Outlet Passage
D—Ball Check
E—Measuring Chamber
F—Handle
G—Outlet Ports
H—Lubricant Inlet

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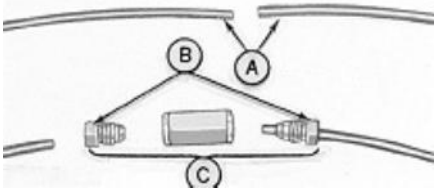
20
2

E01,1030,B -19-22JUN81

REPAIR OIL LINES

E11975Y -UN-07JUN89



Whenever an oil line has been punctured or broken, action of plunger will speed up as it passes outlet port having a broken or punctured oil line.

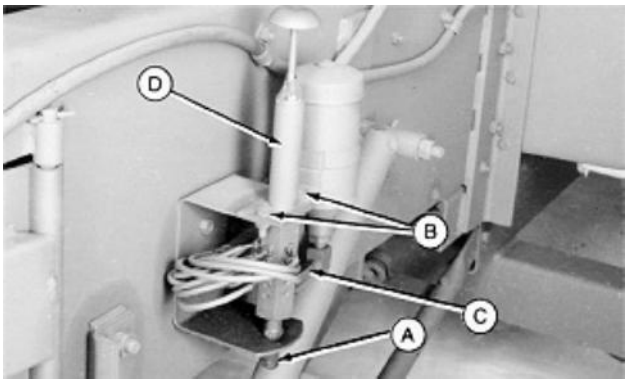
NOTE: Compression nuts (B) can be used only once.

Determine location of break in oil line (A). Cut broken ends of oil line square and insert into compression nuts (B) and union (C). Tighten nuts firmly.

EX,1243,5020,B -19-23JUN92

REMOVE MULTI-LUBER PUMP

1. Remove stop plug (A), plug gasket, two 1/4 x 3/4-inch cap screws, 9/32 x 5/8 x 0.060-inch washers and nuts (B). Disconnect adapter (C), multi-luber lines and pump (D).



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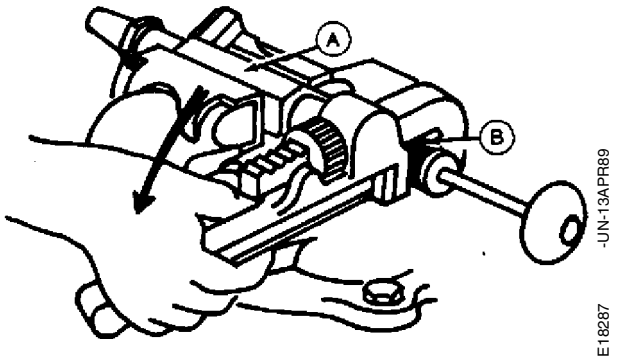
E01,1030,D -19-22JUN81

2. Place pump assembly (A) in a vise with vise jaws protected.

If push rod housing cannot be loosened by hand, wrap several layers of tape (B) around outward end of push rod housing at location of recessed groove. Use a pipe wrench and gently break loose connection with a counterclockwise motion.

While unscrewing housing, exert a slight pressure toward pump body to prevent snapping caused by spring against push rod as housing reaches end of thread.

3. Gently remove with a straight back motion to avoid pressing plunger and spring against side.



E01,1030,E -19-22JUN81

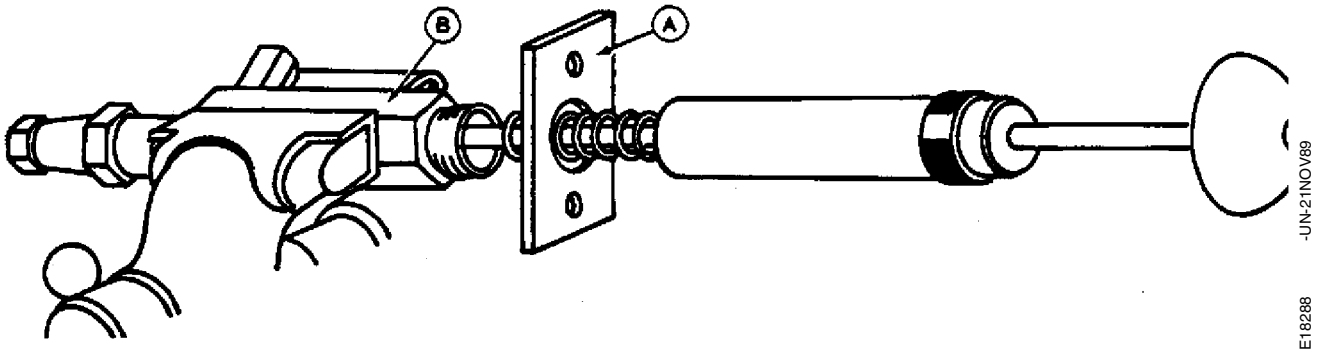
INSPECT PLUNGER

1. Replace spring guide, inner and outer spring if worn or damaged.

2. Replace remaining parts if nicked, scratched, worn or damaged.

E01,1030,F -19-22JUN81

ASSEMBLE MULTI-LUBER PUMP AND HARNESS



1. Guide mounting plate (A) over inner spring and plunger and onto pump body (B).

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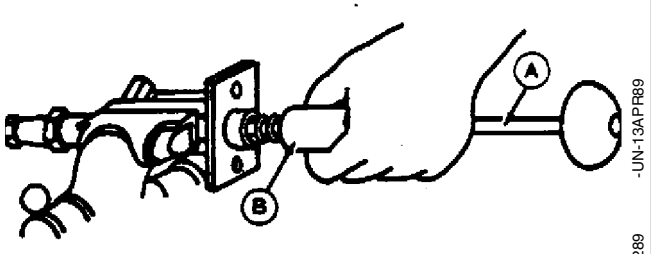
2. Guide spring and push rod assembly (A) until spring pressure is felt. Continue pushing in a straight motion, compressing springs until threads of housing (B) engage threads of body assembly.

3. Tighten securely.

4. Press plunger a few times until fresh grease appears at bearings.



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E18289

E01,1030,H -19-22JUN81

INSTALL MULTI-LUBER HARNESS

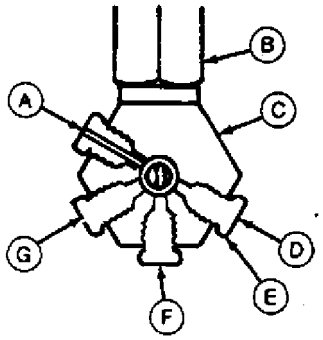
IMPORTANT: Make certain lines are secure, avoiding pinch points and allowing sufficient room when knotter assembly is raised.

1. In order to provide sufficient length and clearance for multi-luber harness, replace in order shown.

50 20 4

Numbers are stamped on plunger assembly and on both ends of lines for ease in installation.

A—Outlet Ports Nos. 1, 5, 9
B—Adapter
C—Body and Plunger Assembly
D—Outlet Ports Nos. 4, 8, 12
E—Compression Nut
F—Outlet Ports Nos. 3. 7, 11
G—Outlet Ports Nos. 2, 6, 10



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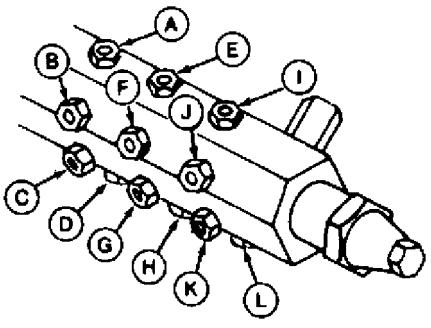
E18290

E01,1030,I -19-22JUN81

2. Match numbers on lines with numbers on plunger assembly.

A—Port No. 1
B—Port No. 2
C—Port No. 3
D—Port No. 4
E—Port No. 5
F—Port No. 6
G—Port No. 7
H—Port No. 8
I—Port No. 9
J—Port No. 10
K—Port No. 11
L—Port No. 12



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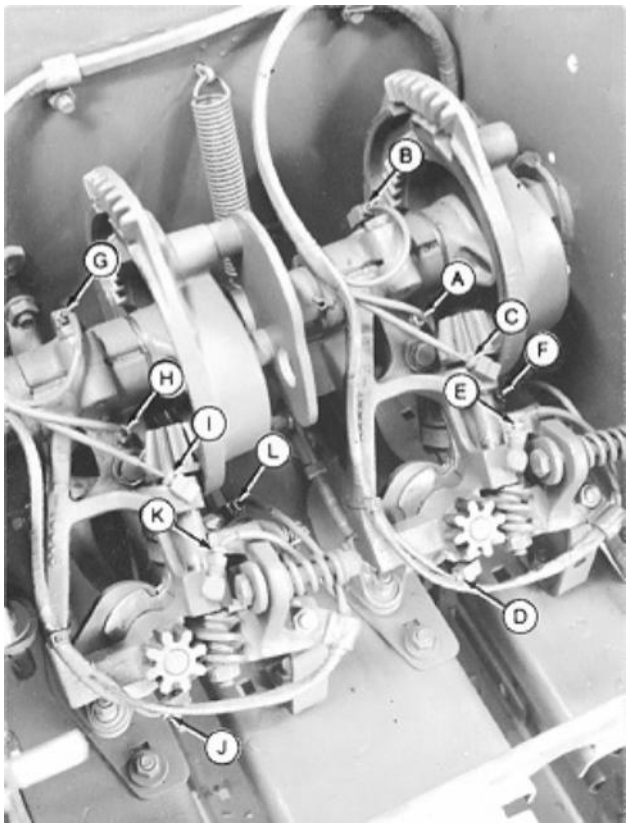
EX,1243,5020,C -19-23JUN92

3. Tighten compression nuts (A thru L) to 5.6 N·m (50 lb-in.).

A—Inlet Port No. 1
B—Inlet Port No. 2
C—Inlet Port No. 3
D—Inlet Port No. 4
E—Inlet Port No. 5
F—Inlet Port No. 6
G—Inlet Port No. 7
H—Inlet Port No. 8
I—Inlet Port No. 9
J—Inlet Port No. 10
K—Inlet Port No. 11
L—Inlet Port No. 12



Inlet Port Location on Twine Baler

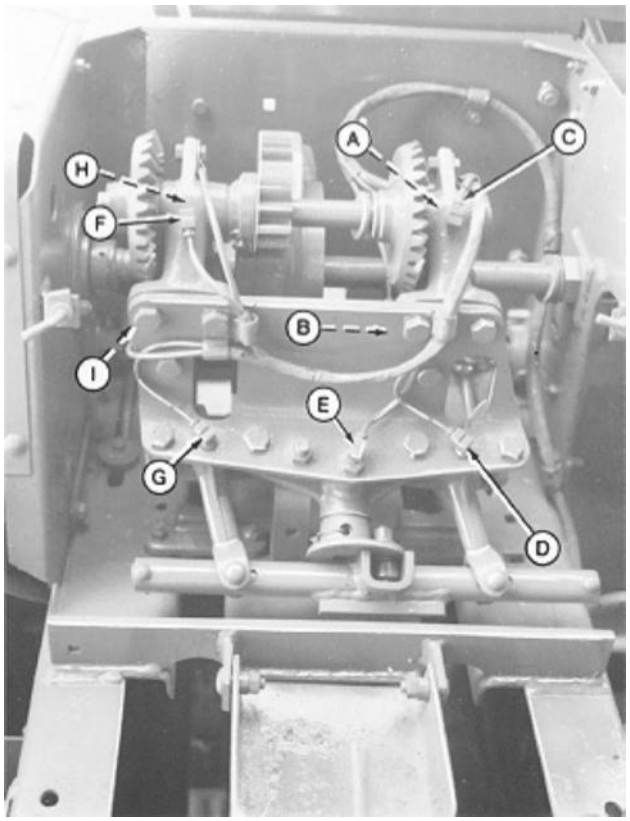
EX,1243,5020,D -19-23JUN92

NOTE: Inlet port numbers 10, 11, and 12 are plugged on plunger assembly of wire-tie balers.

4. Tighten compression nut to 5.6 N·m (50 lb-in.).

5. Visually check for leaks.

A—Inlet Port No. 1
B—Inlet Port No. 2
C—Inlet Port No. 3
D—Inlet Port No. 4
E—Inlet Port No. 5
F—Inlet Port No. 6
G—Inlet Port No. 7
H—Inlet Port No. 8
I—Inlet Port No. 9



Inlet Port Location on Wire Balers

EX,1243,5020,E -19-23JUN92

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INDX 1