335, 375, 385, 435 and 535 Round Balers

JOHN DEERE

TECHNICAL MANUAL

335, 375, 385, 435
and 535 Round Balers

TM1472 (06NOV95) English

John Deere Ottumwa Works
TM1472 (06NOV95)

LITHO IN U.S.A.
ENGLISH

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TM1472 06NOV95

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.

Technical manuals are divided in two parts: repair and operation and tests. Repair sections tell how to repair the components. Operation and tests sections help you identify the majority of routine failures quickly.

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.

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

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes.

DX,TMIFC -19-22MAY92

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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.

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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

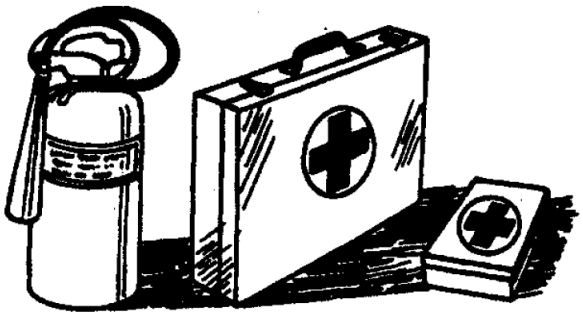
DX,FLAME -19-04JUN90

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

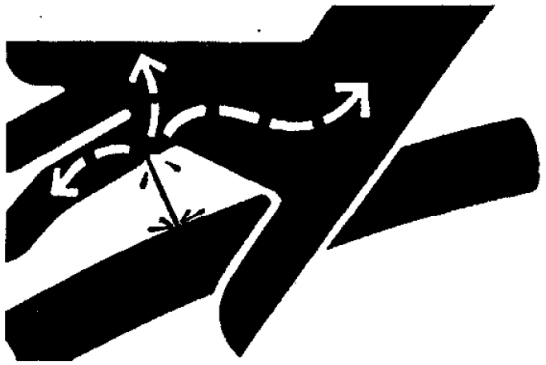
AVOID HIGH-PRESSURE FLUIDS

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.



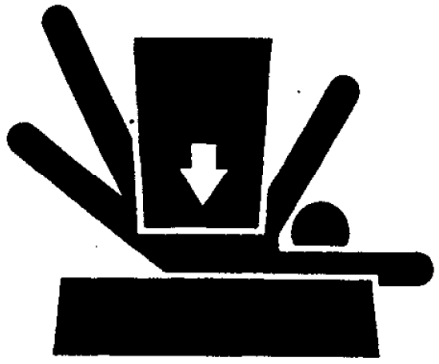
X9811 -UN-23AUG88

DX,FLUID -19-03MAR93

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

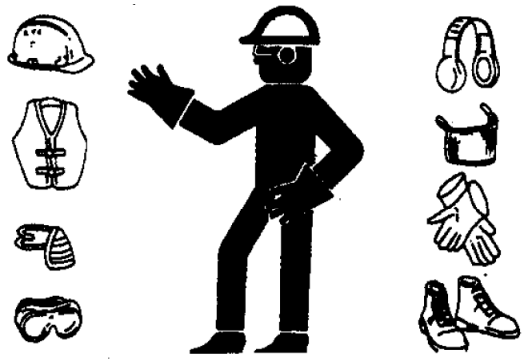
WEAR PROTECTIVE CLOTHING

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.



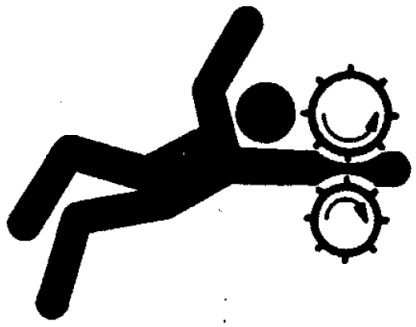
TS206 -UN-23AUG88

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.



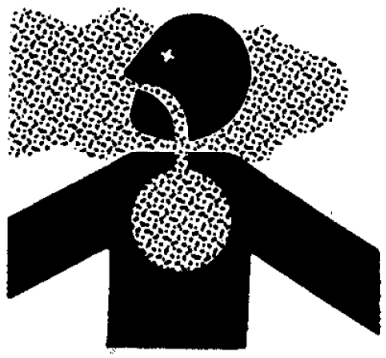
TS228 -UN-23AUG88

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

ILLUMINATE WORK AREA SAFELY

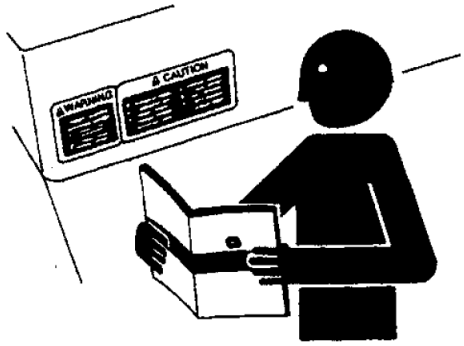
Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

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.



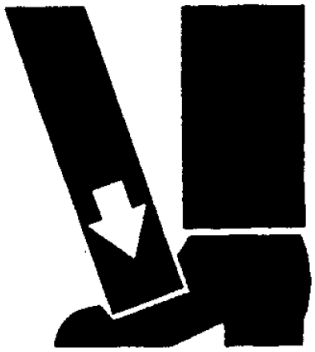
TS201 -UN-23AUG88

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

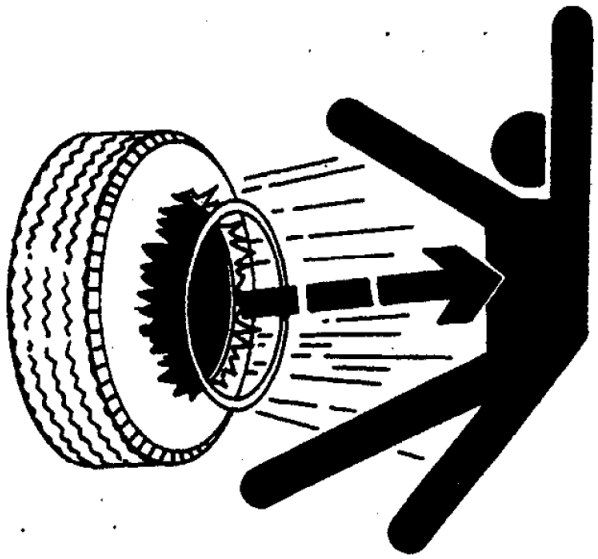
Explosive separation of a tire and rim parts can cause serious injury or death.

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.



TS211 -UN-23AUG88

DX,RIM -19-24AUG90

REMOVE PAINT BEFORE WELDING OR HEATING

Avoid potentially toxic fumes and dust.

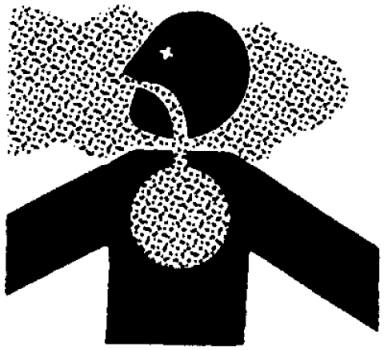
Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

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.

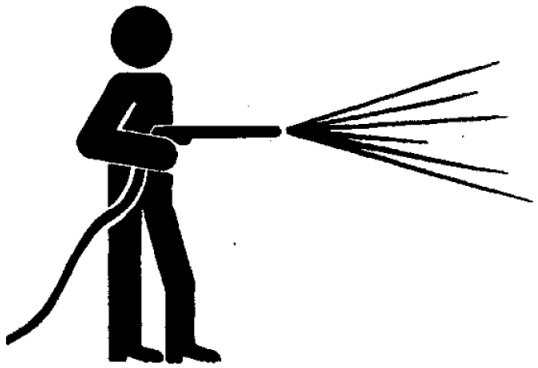


TS220 -UN-23AUG88

DX,PAINT -19-03MAR93

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

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-06NOV89

DX,REPAIR -19-04JUN90

LIVE WITH SAFETY

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

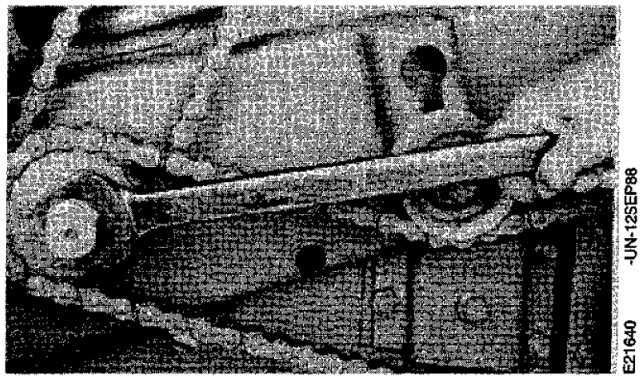
TS231 -19-07OCT88

DX,LIVE -19-25SEP92

SERVICE BALER SAFELY

Use an open-end wrench to turn the hex gear case output shaft to aid in servicing. Never use any type of tool or wrench on shaft while tractor engine is running. Always remove tool from the shaft whenever you are finished using it.

Check driveline shield to ensure it is free to turn. Make necessary repairs if the shield will not turn.



EX,1472,1005,A -19-21JUL89

OPERATE BALER SAFELY

Keep all shields in place when operating baler.

Do not attempt to pull hay or twine from pickup when baler is running.

Never hand-feed twine or hay into baler.

All machinery should be operated by responsible persons who have been properly instructed and delegated to do so.

Stand clear of baler at all times when machine is operating.

Become familiar with all controls affecting machine functions.

Before servicing, adjusting, or removing material from the baler, always disengage all power and shut off engine.

EX,1472,1005,B -19-21JUL89

PUSH BAR PRECAUTIONS

Bale push bar is activated when gate is opened. Be sure bystanders are clear and there is sufficient clearance behind baler when opening gate.

EX,1472,1005,C -19-21JUL89

SURFACE WRAP

Be careful when working around the knife. It is sharp.

EX,1472,1005,D -19-24FEB92

DO NOT MODIFY MACHINE

Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

EX,1472,1005,E -19-21JUL89

335, 375 AND 385 ROUND BALERS

	335 ROUND BALER	375 ROUND BALER	385 ROUND BALER
Bale:			
Diameter	From 35 to 51-in. (900 to 1295 mm)	From 35 to 51-in. (900 to 1295 mm)	From 35 to 60 in. (889 to 1524 mm)
Width	46.1 in. (1171 mm)	61.6 in. (1565 mm)	46.1 in. (1171 mm)
Weight*	750 lb (340 kg)	1000 lb (454 kg)	1050 lb (477 kg)
* (Depending on crop and moisture content)			
Baler:			
Weight	3210 lb (1445 kg)	3681 lb (1634 kg)	3400 lb (1543 Kg)
Length, Gate Closed	135 in. (3429 mm)	135 in. (3429 mm)	143.4 in. (3643 mm)
Length, Gate Open	174 in. (4420 mm)	174 in. (4420 mm)	178 in. (4523 mm)
Height, Gate Closed	91 in. (2311 mm)	91 in. (2311 mm)	102.2 in. (2597 mm)
Height, Gate Open	112 in. (2845 mm)	112 in. (2845 mm)	127 in. (3229 mm)
Width	89 in. (2261 mm)	112 in. (2845 mm)	89 in. (2261 mm)
Pickup:			
Width (Inside)	46.6 in. (1184 mm)	61.4 in. (1560 mm)	46.6 in. (1184 mm)
Width (On Flare)	55.5 in. (1410 mm)	71 in. (1803 mm)	55.5 in. (1410 mm)
Width (Between Outer Teeth)	44 in. (1118 mm)	60 in. (1524 mm)	44 in. (1118 mm)
Bars	4	4	4
Number of Teeth	72	96	72
Tooth Spacing	2.5 in. (64 mm)	2.5 in. (64 mm)	2.5 in. (64 mm)
Stripper Diameter	10 in. (254 mm)	10 in. (254 mm)	10 in. (254 mm)
Forming Belts:			
Number	6	8	6
Width	7 in. (178 mm)	7 in. (178 mm)	7 in. (178 mm)
Type	3-Ply Combination Nylon Polyester, Diamond Tread, Friction Surface, with Rectangular Hi-Strength splices		
Length	(2) 402.75 in. (10230 mm) (4) 410.24 in. (10420 mm)	(4) 402.75 in. (10230 mm) (4) 410.24 in. (10420 mm)	(2) 461 in. (11709 mm) (4) 466.5 in. (11849 mm)
Twine Wrap:			
Control	Manual	Manual	Manual
Type	Hydraulic	Hydraulic	Hydraulic
Spacing	Operator Controlled w/Visual Indicators	Operator Controlled w/Visual Indicators	Operator Controlled w/Visual Indicators
Bale Forming Indicators (Mechanical - On the Baler):			
Near-Full Bale Indicator	Audible - Adjustable to Bale Size Desired	Audible - Adjustable to Bale Size Desired	Audible - Adjustable to Bale Size Desired
Twine Wrap	Twine Arm Position Indicator Visual Warning	Twine Arm Position Indicator Visual Warning	Twine Arm Position Indicator Visual Warning
Oversize Bale Protection	Audible	Audible	Audible, also visual warning

EX,1472,1010,A1-19-11MAR93

	335 ROUND BALER	375 ROUND BALER	385 ROUND BALER
Tires:			
Size	9.5L-14, 6 Ply Rating	9.5L-14, 6 Ply Rating	9.5L-14, 6 Ply Rating
PTO:			
Shaft Speed	540 rpm	540 rpm	540 rpm
Drive Protection	Shear Bolt	Shear Bolt	Shear Bolt
Tractor Power Requirement	45 hp (33.6 Kw) or larger	45 hp (33.6 Kw) or larger	45 hp (33.6 Kw) or larger
Hydraulics Recommended	Two Double Acting Selective Control Valves	Two Double Acting Selective Control Valves	Two Double Acting Selective Control Valves

EX,1472,1010,B1-19-11MAR93

435 AND 535 ROUND BALERS

	435 ROUND BALER	535 ROUND BALER
Bale:		
Diameter	1000 to 1892 mm (39 to 72-in.)	1000 to 1892 mm (39 to 72-in.)
Width	1171 mm (46.1 in.)	1565mm (61.6 in.)
Weight*	680 kg (1500 lb)	907 kg (2000 lb)
* (Depending on crop and moisture content)		
Baler:		
Weight (With Standard Pickup)	1874 kg (4165 lb)	2129kg (4730 lb)
Weight (With Wide Pickup)	2071 kg (4565 lb)	—
Length, Gate Closed	3708 mm (146 in.)	3708 mm (146 in.)
Length, Gate Open	4750 mm (187 in.)	4750 mm (187 in.)
Height, Gate Closed	2794 mm (110 in.)	2794 mm (110 in.)
Height, Gate Open	3683 mm (145 in.)	3683 mm (145 in.)
Width	2438 mm (96 in.)	2845 mm (112 in.)
Standard Pickup:		
Width (Inside)	1184 mm (46.6 in.)	1560 mm (61.4 in.)
Width (On Flare)	1410 mm (55.5 in.)	1803 mm (71 in.)
Width (Between Outer Teeth)	1118 mm (44 in.)	1524 mm (60 in.)
Bars	4	4
Number of Teeth	72	96
Tooth Spacing	64 mm (2.5 in.)	64 mm (2.5 in.)
Stripper Diameter	254 mm (10 in.)	254 mm (10 in.)
Wide Pickup:		
Width (Inside)	1570 mm (61.8 in.)	—
Width (On Flare)	1803 mm (71 in.)	—
Width (Between Outer Teeth)	1518 mm (59.8 in.)	—
Bars	4	—
Number of Teeth	96	—
Tooth Spacing	64 mm (2.5 in.)	—
Stripper Diameter	254 mm (10 in.)	—
Forming Belts:		
Number	6	8
Width	178 mm (7 in.)	178 mm (7 in.)
Type	3-Ply Combination Nylon Polyester, Diamond Tread, Friction Surface, with Rectangular Hi-Strength splices	
Length	(2) 13335 mm (525 in.) (4) 13475 mm (530.5 in.)	(4) 13335 mm (525 in.) (4) 13475 mm (530.5 in.)
Twine Wrap:		
Control	Self-Activating, Automatic to Preset Bale Size	
Type	Hydraulic, Self-Contained	
Spacing	Adjustable, Infinitely Variable	

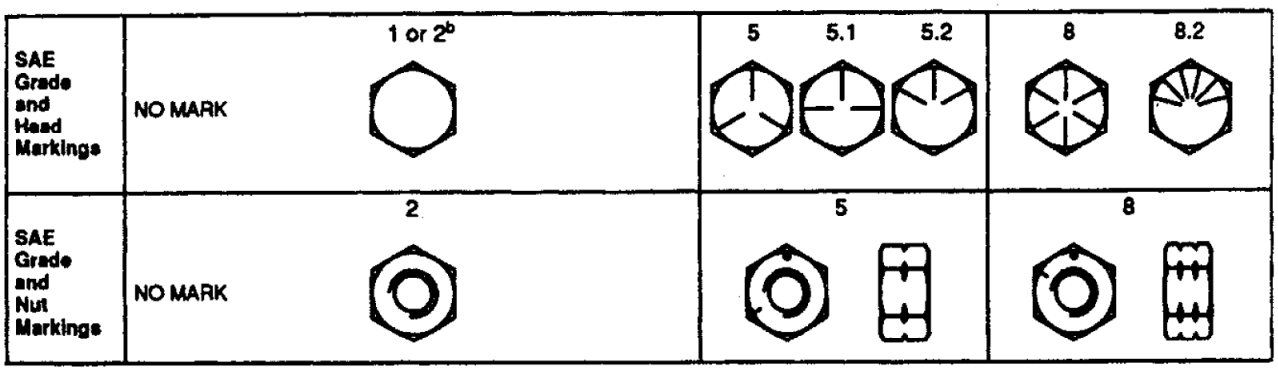
Continued on next page

EX,1472,1010,C -19-06NOV95

	435 ROUND BALER	535 ROUND BALER
BALE TRAK® Monitor:		
Bale Forming	Dial Indicators	
Near-Full Bale Indicator	Flashing Yellow Light	
Auto-Wrap Indicator	Solid Yellow Light; Audible Start and Finish	
Oversize Bale Protection	Red Light with Audible Warning	
Gate Closed	Green Light	
Nighttime Operation	Dimmer Switch	
Tires:		
Size	11L x 14, 8 Ply Rating	Hi-Flotation
PTO:		
Shaft Speed	540 / 1000 rpm	540 / 1000 rpm
Drive Protection	Slip Clutch	Slip Clutch
Tractor Power Requirement	41kW (55 hp) or larger	56 kW (75 hp) or larger
Hydraulics Recommended	Two Double Acting Selective Control Valves	Two Double Acting Selective Control Valves

EX,1472,1010,D -19-06NOV95

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.

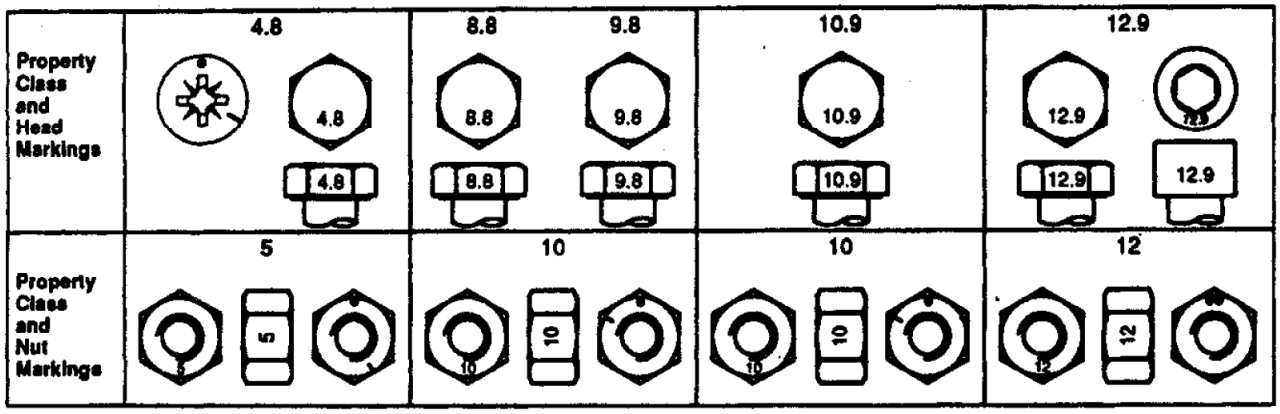
Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

[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.*

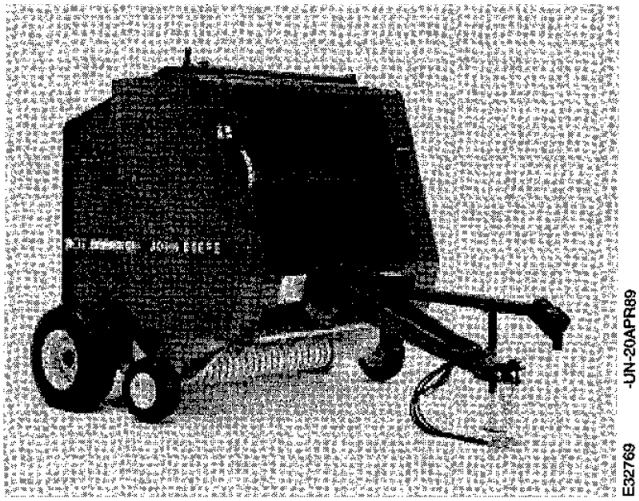
DX,TORQ2 -19-20JUL94

335, 375 AND 385 BALER DESCRIPTION

The 335, 375 and 385 Round Balers consist of a main frame and wheels, pickup, belts, gate, and bale wrapping system.

Power is provided from a 540 rpm tractor PTO.

Two hydraulic cylinders operate from the tractor hydraulic system. The cylinders raise and lower the gate and also provide bale tension.



EX,1472,1015,A -19-11MAR93

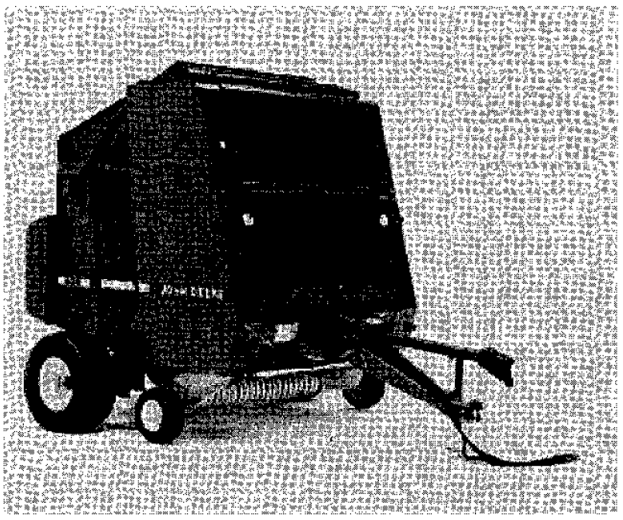
435 AND 535 BALER DESCRIPTION

The 435 and 535 Round Balers consist of a main frame and wheels, pickup, belts, gate, and bale wrapping system.

Power is provided from a 540 rpm tractor PTO. Both balers can be converted from 540 to 1000 rpm.

The tractor PTO drives a hydraulic pump on the baler which provides the hydraulic pressure to operate the twine cylinder.

Two sets of hydraulic cylinders operate from the tractor hydraulic system. One set raises and lowers the gate. The other set raises and lowers the tension arm and works in conjunction with springs to provide bale tension.



EX,1472,1015,B -19-11MAR93

EX,1472,1015,A -19-11MAR93

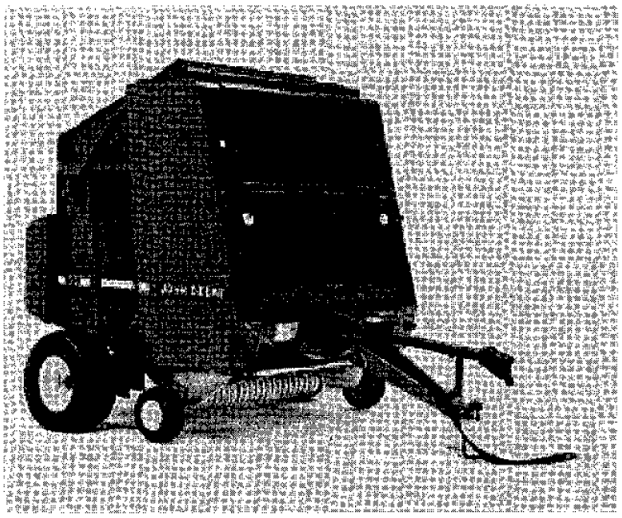
435 AND 535 BALER DESCRIPTION

The 435 and 535 Round Balers consist of a main frame and wheels, pickup, belts, gate, and bale wrapping system.

Power is provided from a 540 rpm tractor PTO. Both balers can be converted from 540 to 1000 rpm.

The tractor PTO drives a hydraulic pump on the baler which provides the hydraulic pressure to operate the twine cylinder.

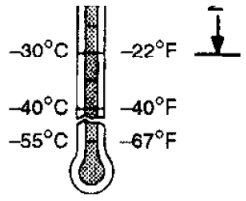
Two sets of hydraulic cylinders operate from the tractor hydraulic system. One set raises and lowers the gate. The other set raises and lowers the tension arm and works in conjunction with springs to provide bale tension.



EX,1472,1015,B -19-11MAR93

- SAE Multipurpose EP Grease

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



DX,GREA1 -19-02NOV94

10
20
2

GEAR OIL

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

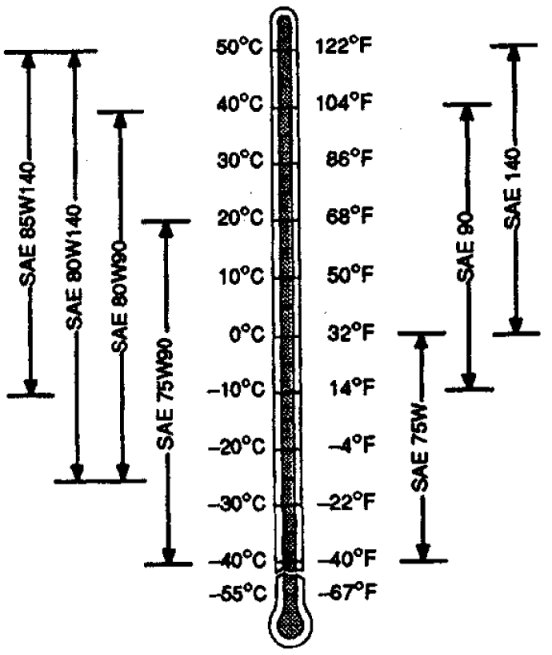
The following oils are preferred:

- 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

TWINE WRAP SYSTEM

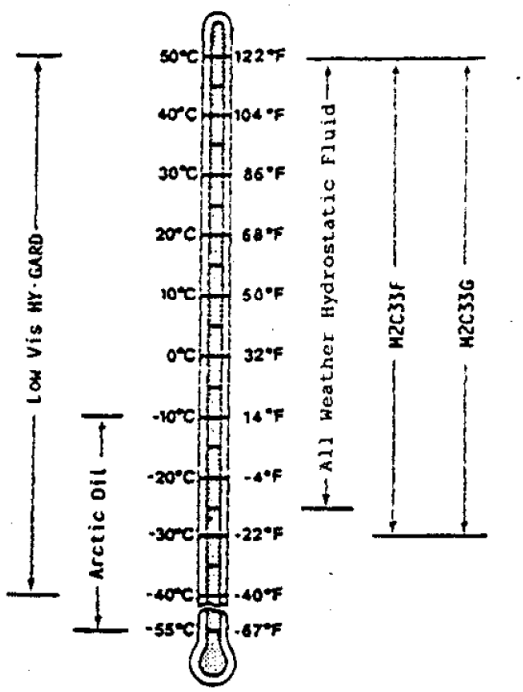
Use oil viscosity based on the expected air temperature range during the period between oil changes.

John Deere All-Weather Hydrostatic Fluid is recommended.

Automatic transmission fluids of Type M2C33F or M2C33G may also may used.

Oils meeting Military Specification MIL-L-46167A may be used as arctic oils.

For operation in extremely low temperatures, John Deere Low-Viscosity HY-GARD® Transmission/Hydraulic Oil may be used.



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

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

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Drive Train

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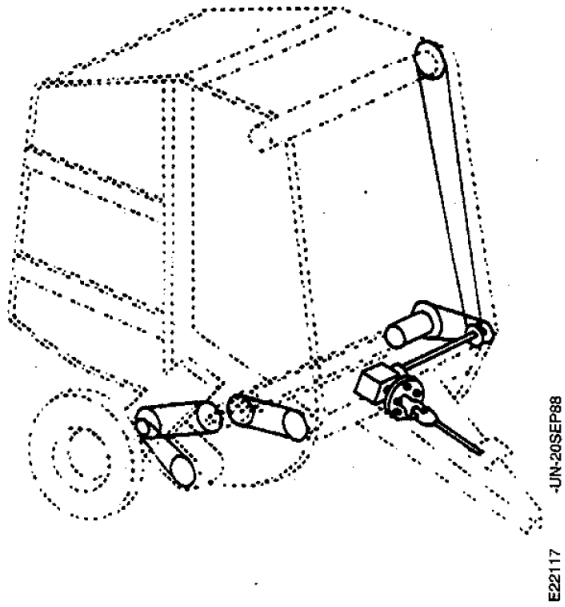
DRIVE TRAIN OPERATION

The baler is driven from the tractor PTO shaft through front constant velocity universal joints to the gear case.

The drives on the 435 and 535 are protected by a slip clutch attached to the input shaft. Drive protection on the 335, 375 and 385 is by use of a shear bolt.

From the gear case, power is transmitted to the left side of the baler to drive the upper and lower drive rolls and the starter roll. The starter roll drives the pickup. The twine-wrap hydraulic pump is driven off the lower drive roll. (435 and 535 only)



EX,1472,2005,A -19-06NOV95

OPERATING RPM

All balers are shipped from the factory equipped for 540 rpm operation only. Models 435 and 535 Balers can be field converted to 1000 rpm.

EX,1472,2005,B -19-11MAR93

POWER DRIVE DIFFICULTIES

Symptom	Problem	Solution
Driveline Will Not Telescope Correctly	Shield bent or rusted.	Replace shield.
	Lack of lubrication.	Clean and lubricate.
	Tractor drawbar not installed correctly.	Check dimensions. Install drawbar correctly.
	Driveline bent or twisted.	Straighten or replace.
	Telescoping splines galled or worn.	Check slip clutch settings.
Driveline Vibrates Excessively	Driveline bent or twisted.	Straighten or replace.
	Driveline cross bearings worn.	Replace bearings.
	Constant velocity joint worn or damaged.	Replace worn or damaged parts.
Driveline Will Not Stay Engaged	Splines on yoke worn.	Replace yoke.

EX,1472,2010,A -19-11MAR93

GEAR CASE DIFFICULTIES

Symptom	Problem	Solution
Gear Case Noisy	Lack of lubricant.	Check and add fluid.
	Loose bearings.	Replace bearings.
	Gears not meshing correctly.	Check tooth contact and rolling torque.
Gear Case Excessively Hot (Over 220° F)	Oil level too high.	Operate with oil level at mark on dipstick.
	Lack of lubricant.	Check and add fluid.
	Defective bearings.	Replace bearings.
	Bearings not installed correctly.	Check gear case assembly.
Leaking Oil	Worn oil seals.	Replace seals.
	Missing or defective vent.	Replace vent.
	Too much lubricant in gear case.	Drain to correct level.
Gears Noisy Or Wear Prematurely	Lack of lubrication.	Add oil to correct level or replace worn gears.

EX,1472,2010,B -19-11MAR93

SHEAR BOLT DIFFICULTIES

Symptom	Problem	Solution
Excessive Shear Bolt Breakage (335, 375 and 385)	Engaging tractor PTO too fast.	Engage PTO slowly.
	Wrong size or grade shear bolt.	Use a 1/4 x 2-in. grade 8 cap screw.
	Hay wrapped on starter roll.	Remove hay.
	Obstruction in pickup area.	Check and clean debris.
	Shear bolt too short.	Replace with a grade 8 cap screw.
	Shear bolt not tightened correctly.	Torque to 18 N·m (13 lb-ft).

EX,1472,2010,C -19-11MAR93

SLIP CLUTCH DIFFICULTIES

Symptom	Problem	Solution
Excessive Slipping of Slip Clutch	Improper spring setting.	Check spring settings.
	Worn facings.	Replace facings.
	Warped pressure plate and/or center disk.	Replace pressure plate and/or center disk.
	Pressure springs weak from overheating.	Replace springs.
Premature Failed Drive Chains	Lack of lubrication.	Lubricate more often.
	Operating too tight or too loose.	Adjust chain tension.
	Seized or rusted.	Check slip clutch spring tension.

EX,1472,2010,D -19-11MAR93

SPECIFICATIONS

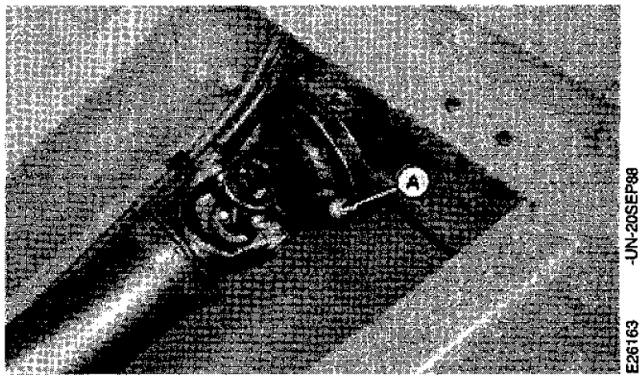
Item	Measurement	Specification
Shear Bolt (335-375-385) 1/4 x 2 in. Grade 8	Torque	18 N·m (13 lb-ft)
Drive Slip Clutch (435-535):		
540 RPM	Spring Length	35 mm (1-3/8 in.) from end coil-to-end coil
1000 RPM	Spring Length	41 mm (1-5/8 in.) from end coil-to-end coil

EX,1472,2015,A -19-11MAR93

SHEAR BOLT REPLACEMENT (335—375—385)

When replacing shear bolt, use only a 1/4 x 2-in., grade 8 cap screw and lock nut (A).

IMPORTANT: Tighten lock nut (A) to 18 N·m (13 lb-ft).

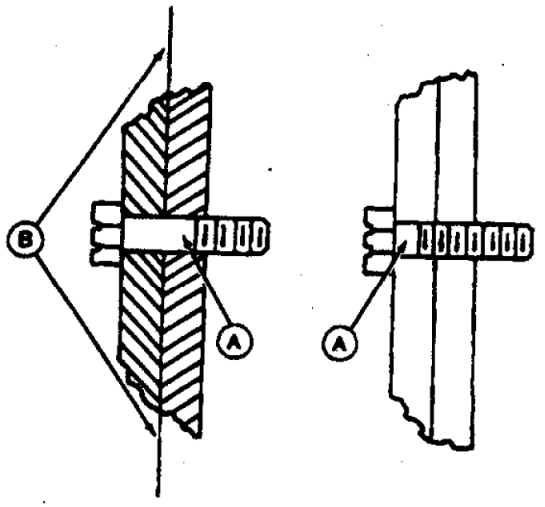


EX,1472,2015,B -19-11MAR93

USE CORRECT SHEAR BOLT (335—375—385)

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

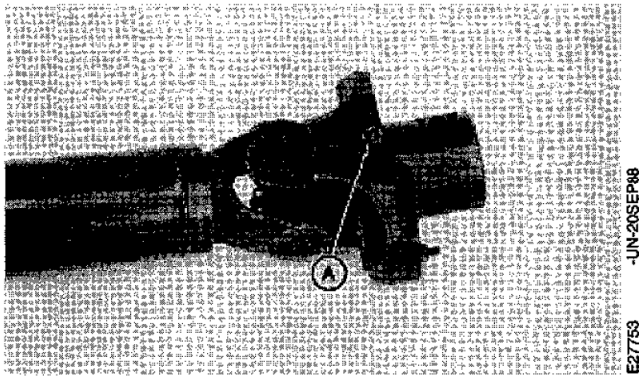
NOTE: Use of shorter bolts than those specified will place threads in shear plane resulting in bolts being sheared at lower values, and more often.



EX,1472,2015,C -19-11MAR93

DISASSEMBLE DRIVELINE SHEAR BOLT HUB (335—375—385)

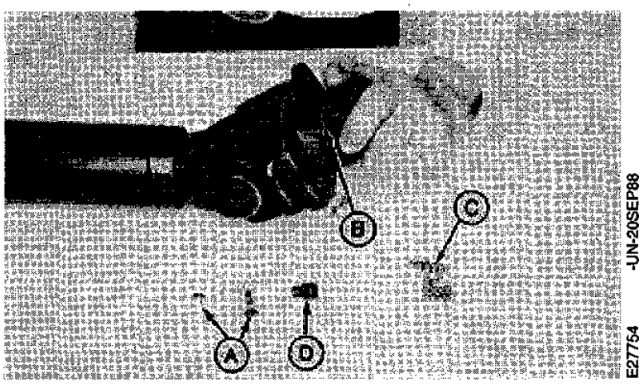
1. Remove plug (A).
2. Fill opening with solvent.



EX,1472,2015,D -19-11MAR93

3. Remove shear bolt (A).
4. Turn driveline over and rotate hub (B).
5. Thirty-one ball bearings (C) should come out.
6. Remove hub (B).

A—Shear Bolt
B—Hub
C—Ball Bearings
D—Plug



EX,1472,2015,E -19-21JUL89

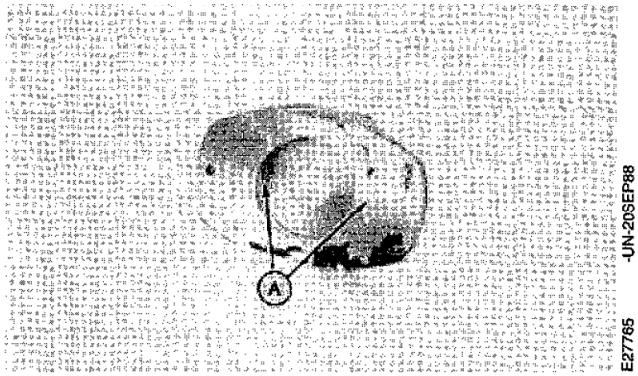
INSPECT DRIVELINE

Check hub (A) for galling and excessive wear.

Check bearings and guides for breakage.

Check bearing and cross assemblies for looseness and wear.

Clean all parts before assembling.



EX,1472,2015,F -19-11MAR93

ADJUST DRIVE SLIP CLUTCH (435—535)

Check slip clutch spring length if excessive slipping occurs during operation or if it has been disassembled.

For 540 rpm, the clutch is properly adjusted when dimension (A) is 35 mm (1-3/8 in.) from end coil to end coil.

For 1000 rpm, the clutch is properly adjusted when dimension (A) is 41 mm (1-5/8 in.) from end coil to end coil.

IMPORTANT: The slip clutch has been designed to furnish protection to the drive train; overtightening will decrease this protection.

To adjust slip clutch:

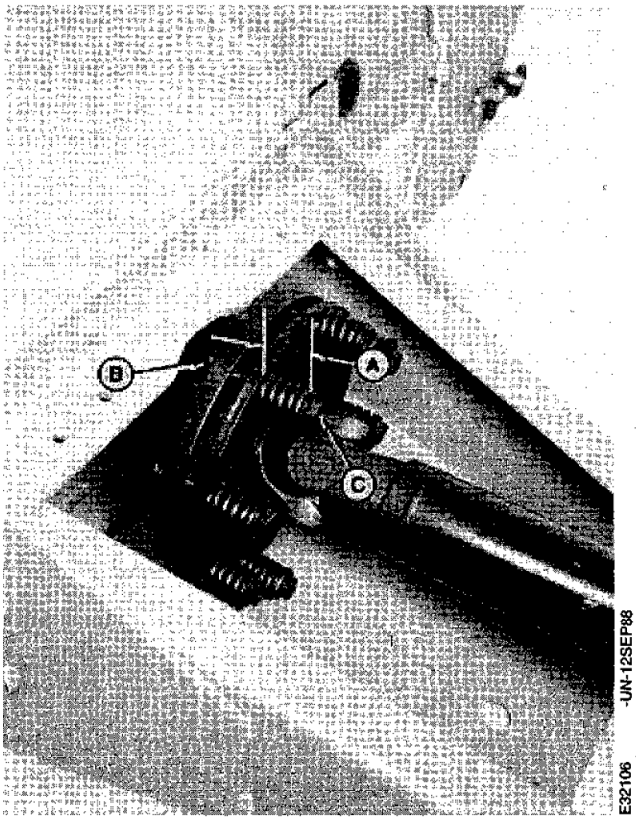
1. Shut off tractor engine.

2. Loosen jam nut (B).

3. Turn spring adjusting bolt (C) until proper spring dimension (A) is attained.

4. Tighten jam nut (B).

NOTE: For proper operation pressure plate warpage cannot exceed 1.5 mm (1/16 in.).



A—35 mm (1-3/8 in.) 540 rpm
41 mm (1-5/8 in.) 1000 rpm
B—Jam Nut
C—Adjusting Bolt

EX,1472,2015,G -19-06NOV95

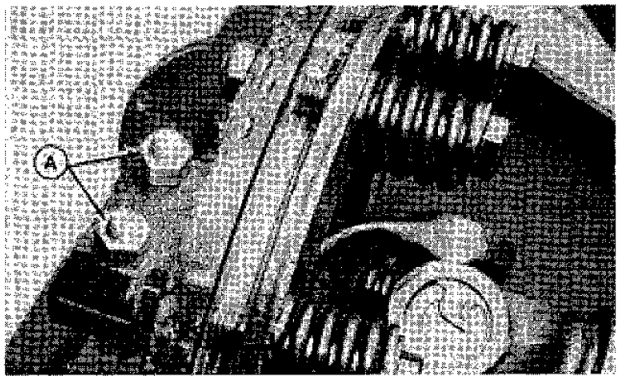
SPECIFICATIONS

Item	Measurement	Specification
Shear Bolt	Torque	18 N·m (13 lb-ft)

EX,1472,2020,U -19-11MAR93

REMOVE CONSTANT VELOCITY DRIVELINE (435—535)

1. Remove two lock nuts and cap screws (A).

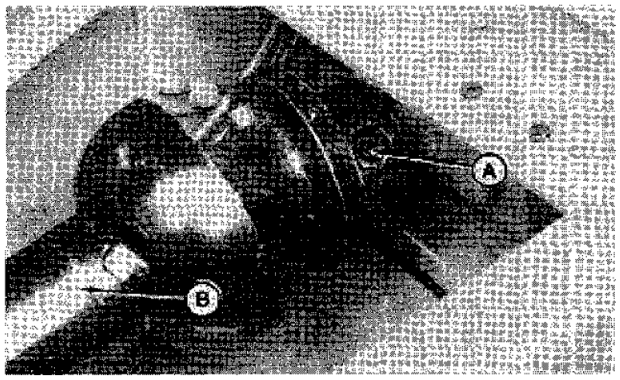


EX,1472,2020,A -19-11MAR93

REMOVE CONSTANT VELOCITY DRIVELINE (335—375—385)

1. Remove lock nut, cap screw (A) and driveline (B).

2. Separate the two halves for ease in handling.

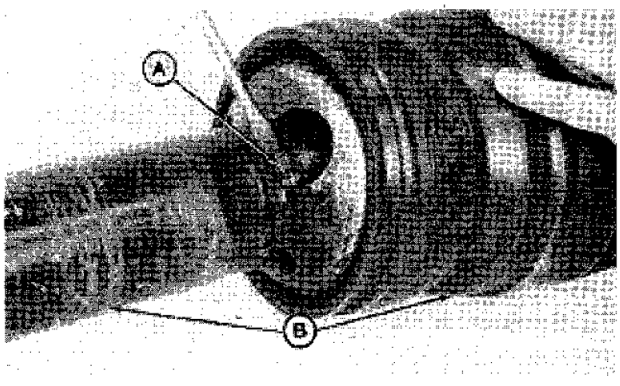


EX,1472,2020,B -19-11MAR93

DISASSEMBLE CONSTANT VELOCITY DRIVELINE

1. Remove front half of PTO from rear half.

2. Using a screwdriver, push inward to remove snap ring (A). Remove shield assembly (B). Wipe grease from assembly.

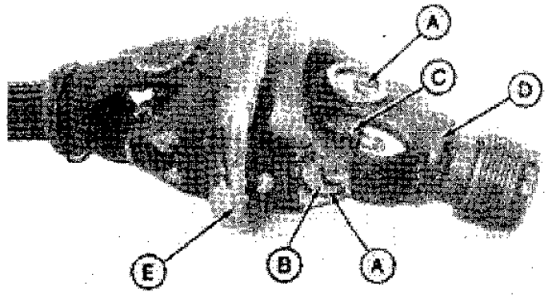


EX,1472,2020,C -19-11MAR93

3. Remove four snap rings (A).

4. Remove cups (B) from center housing (E). Separate and yoke with cross from center housing.

A—Snap Ring
B—Cups
C—Cross
D—Yoke
E—Center Housing



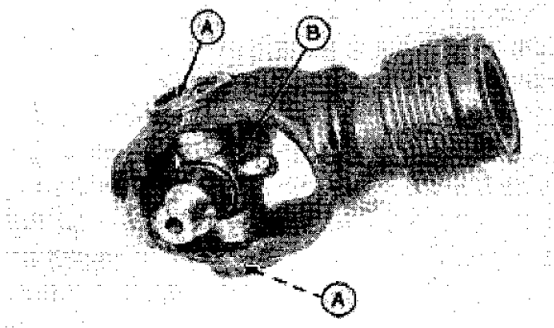
E33522 -UN-21AUG89

EX,1472,2020,D -19-11AUG89

5. Remove cups (A) and cross (B) from end yoke. Clean center housing and end yoke.

6. Inspect parts (pin and center plate in center housing, cross, and yoke bores) for wear and galling.

7. Check for free operation of slide-lock collar and pawls. Collar and pawls must be free to move.



E33523 -UN-21AUG89

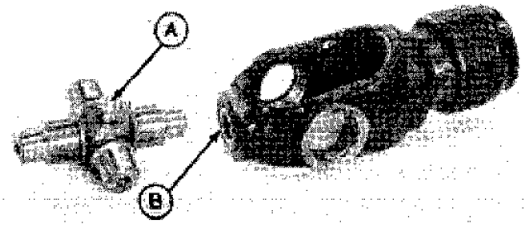
EX,1472,2020,E -19-11AUG89

8. Install lubrication fitting (A) in new cross and align with long leg of cross.

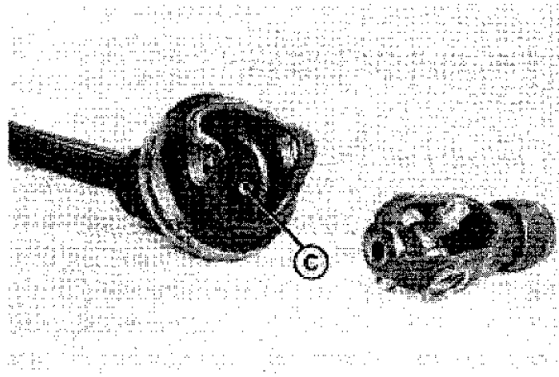
9. Install short legs of cross cups and snap ring in end yoke with fitting pointing away from centering ball (B).

NOTE: When installing end yoke in center housing, flat side of ball MUST be toward center disk.

10. Pin (C) must be inserted in end yoke ball and flat side of ball (B) must be toward the center disk when installing end yoke in center housing.



E33524 -UN-21AUG89



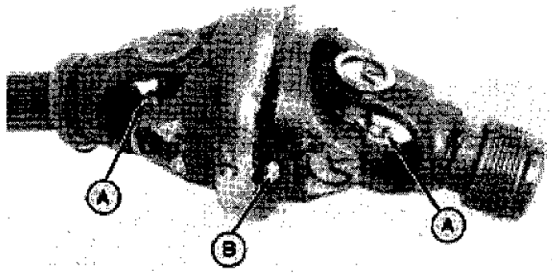
E33525 -UN-21AUG89

EX,1472,2020,F -19-06NOV95

11. Align fittings (A) in the front and rear crosses with fitting (B) in the front face of center housing. Turn fitting (A) in the cross if necessary for alignment.

NOTE: This alignment will provide easier greasing of the joint assembly (not requiring joint rotation to locate fittings with the shielding in place).

If both constant velocity crosses are removed and replaced, or if the center housing is replaced, be sure to orient the center housing with the fitting (B) toward the front of the hookup when reinstalling parts.



E33526 -UN-21AUG89

EX,1472,2020,G -19-11AUG89

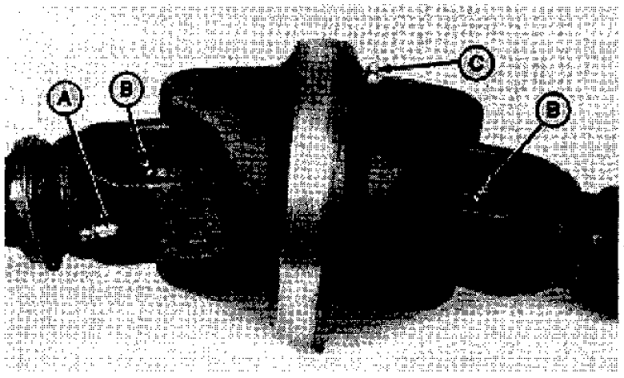
12. Install cross, cups, and snap rings in center housing.

NOTE: To insure correct seating, and eliminate any possible tightness, strike forged surfaces of yoke ears a sharp blow with a mallet. This will ensure a free flexing joint.

EX,1472,2020,H -19-11AUG89

13. Lubricate four fittings (A), (B), and (C).

14. Grease splined shaft.

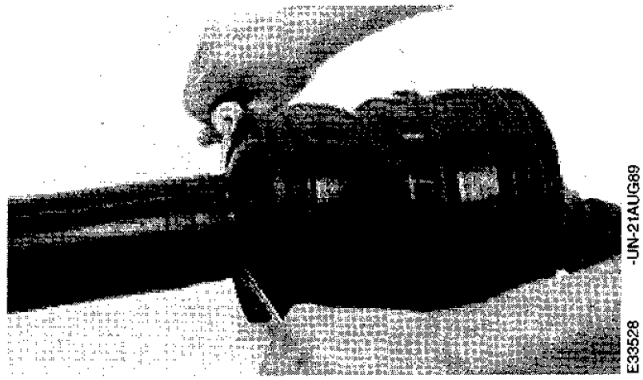


E33527 -UN-21AUG89

EX,1472,2020,I -19-11AUG89

15. Slide shield in place over constant velocity unit.

16. Using two screwdrivers, pop snap ring in groove in shield. Be sure snap ring is seated all the way around. Check for free rotation of shield relative to the shaft and joint assembly.



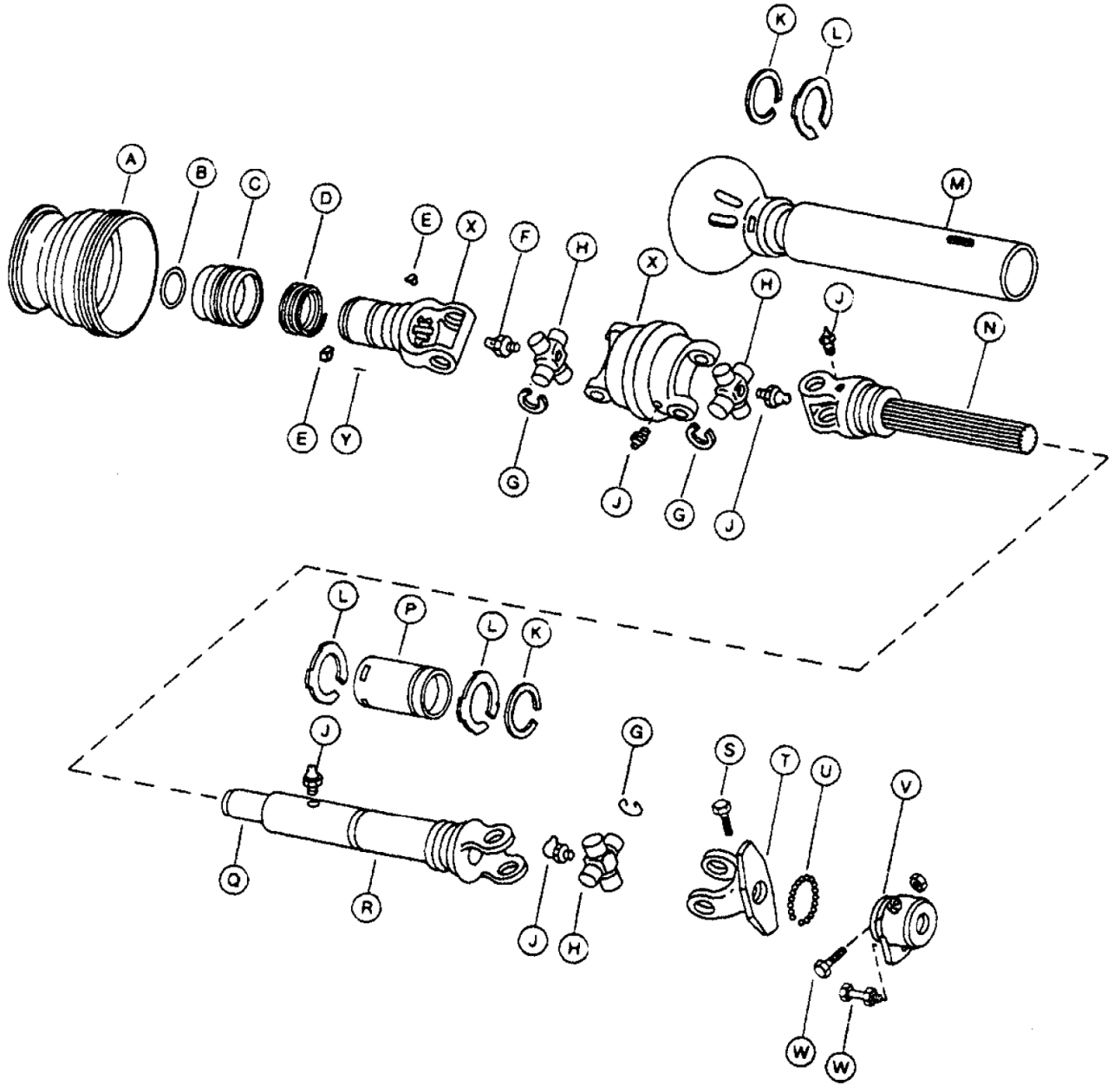
EX,1472,2020,J -19-11AUG89

17. Locate timing mark on shaft and align groove inside splined tube. Slide shaft in splined tube.

18. Lubricate telescoping members.

EX,1472,2020,K -19-11AUG89

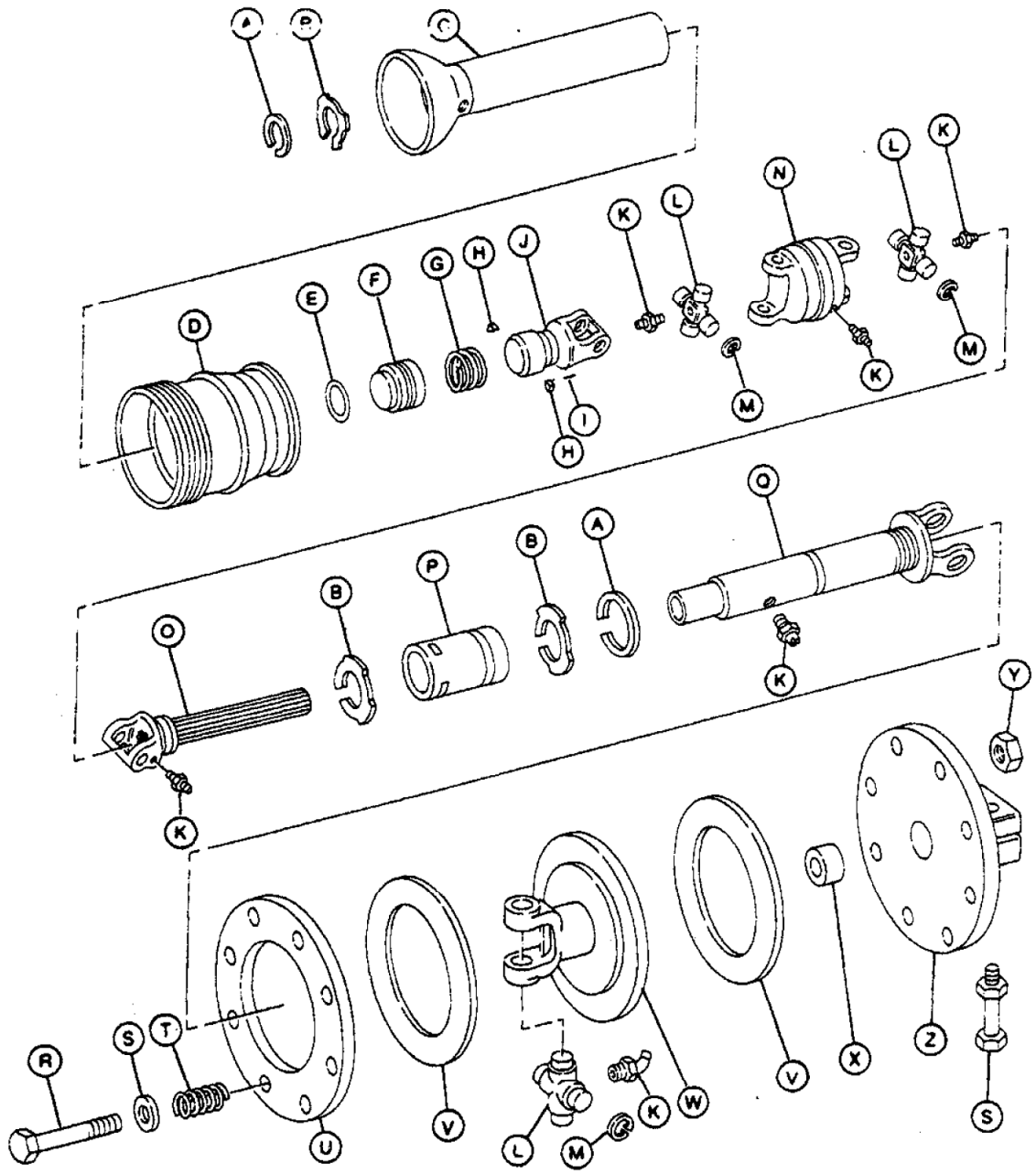
PTO UNIT WITH SHEAR BOLT



A—PTO Shield
B—Snap Ring
C—Sleeve
D—Springs
E—Pawls
F—Lubrication Fitting
G—Snap Ring
H—Cross and Bearing Assembly
J—Lubrication Fitting
K—Guide
L—PTO Shield Retainer
M—PTO Shaft Shield
N—Yoke with Shaft
P—Inner Shield
R—Yoke with Powershaft
S—Cap Screw
T—Hub
U—Bearings
V—Universal Joint Yoke
W—Cap Screw
X—Universal Joint
Y—Spring Pin

EX,1472,2020,L -19-11MAR93

PTO UNIT WITH SLIP CLUTCH



E32802 -UN-12MAY89

A—Guide
B—PTO Shield Retainer
C—Powershaft Shield
D—PTO POWR-GARD® Shield
E—Snap Ring
F—Sleeve
G—Spring
H—Pawls
I—Spring Pin
J—Universal Joint
K—Lubrication Fitting
L—Cross Bearing
M—Snap Ring
N—Universal Joint
O—Yoke With Shaft
P—Inner Shield
Q—Yoke with Powershaft
R—Cap Screw
S—Washer
T—Spring
U—Pressure Plate
V—Lining
W—Slip Clutch Plate
X—Spacer
Y—Nut
Z—Hub

EX,1472,2020,M -19-11MAR93

SPECIFICATIONS

Item	Measurement	Specification
3/8-in. Socket Head Screws (Superior)	Torque	20 to 27 N·m (15 to 20 lb-ft)
Gear Case (Aluminum Case)	Capacity	0.650 L (1.4 pt)
Gear Case (Cast Iron Case)	Capacity	1.3 L (2-3/4 pt)
Input Shaft (Cast Iron Case Without Seals)	Rolling Torque	0.19 to 0.59 N·m (1.7 to 5.2 lb-in.)
Gear Case Mounting Cap Screws	Torque	84 N·m (62 lb-ft)

EX,1472,2025,A -19-06NOV95

ESSENTIAL TOOLS

NOTE: Order tools from the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

Number	Name	Use
D-05112ST	Adjustable Hook Spanner Wrench	Remove and install Comer output shaft nut.
JDST27 or JTO001	N·m (lb-in) Torque Wrench with Indicator Readout	To set rolling torque.

EX,1472,2025,B -19-11MAR93

OTHER MATERIAL

Number	Name	Use
TY6305	John Deere Cleaner-Primer	To prepare surface for gasket eliminator.
TY6304	John Deere Gasket Eliminator	Used in place of a gasket in either gear case.
PT569	John Deere NEVER-SEEZ®	Coat gear case coupler bore.

NEVER-SEEZ is a trademark of the Emhart Chemical Group

EX,1472,2025,C -19-26FEB92

REMOVE GEAR CASE

1. Remove two cap screws and lock nuts and remove slip clutch and driveshaft.

2. Remove two cap screws (A) from tension valve.

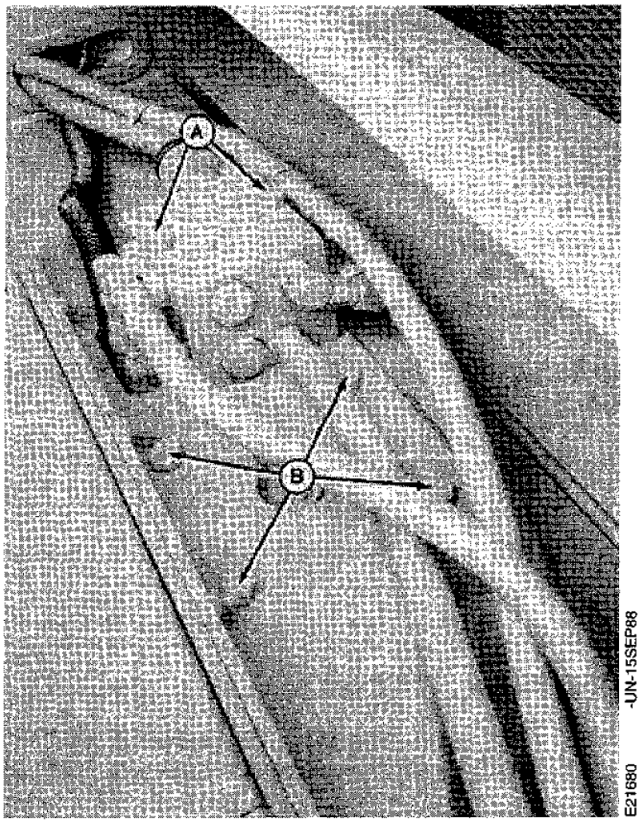
3. Rotate tension valve and remove four cap screws (B) securing gear case.

4. Slide gear case to the right and remove.

5. Identify the type of gear case removed:

Superior - Two piece housing, cast aluminum
Comer - One piece housing, cast iron

6. If the coupler does not slide off roll drive shaft with the gear case, remove it.

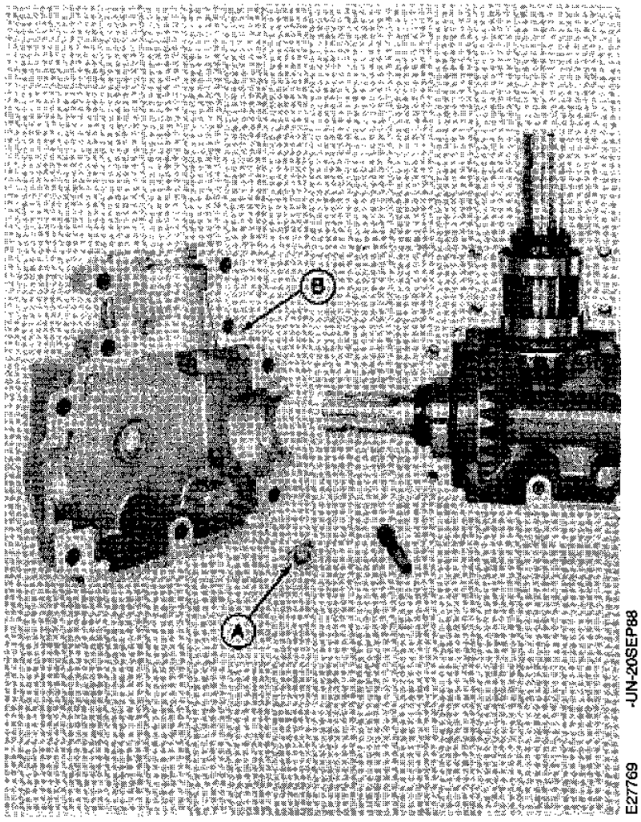


EX,1472,2025,D -19-11MAR93

DISASSEMBLE SUPERIOR GEAR CASE (ALUMINUM CASE)

1. Remove drain plug (A) from gear case and drain oil.

2. Remove nine 3/8 in. socket-head bolts. Tap with plastic or wood hammer to break seal. Remove top half of gear case (B).

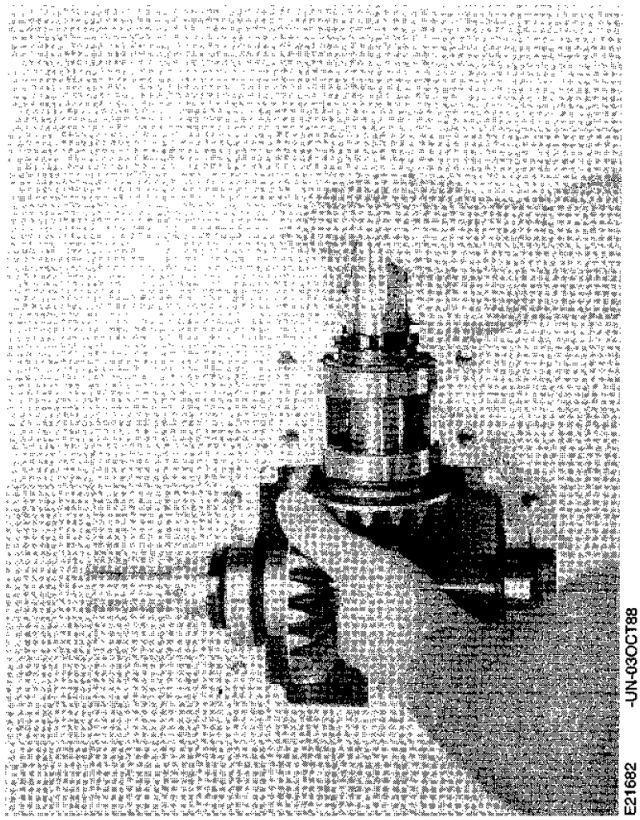


EX,1472,2025,E -19-06NOV95

3. Lift both shafts out of gear case.

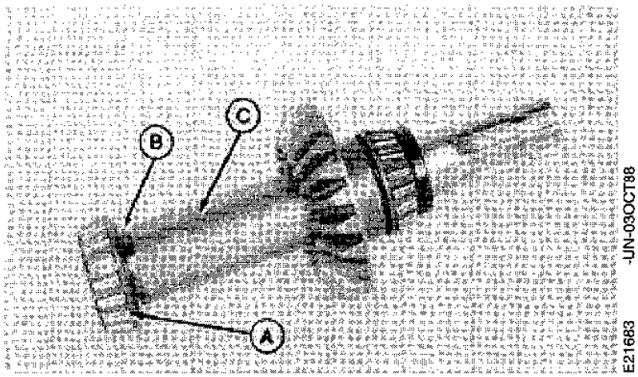
4. Clean both halves of gear case.

5. Remove ALL hardened gasket material.



EX,1472,2025,F -19-03APR89

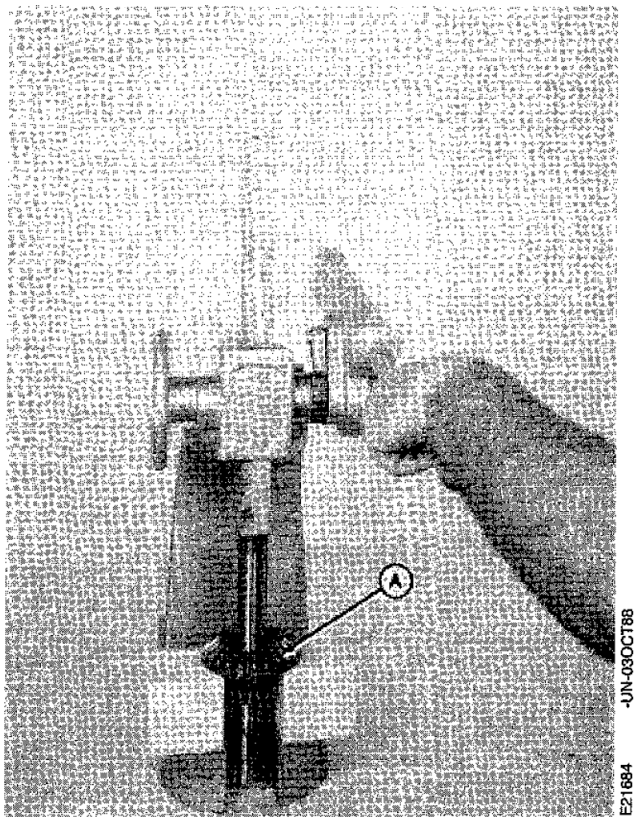
6. Press bearing (A) off input shaft, remove snap ring (B) and sleeve (C).



EX,1472,2025,G -19-03APR89

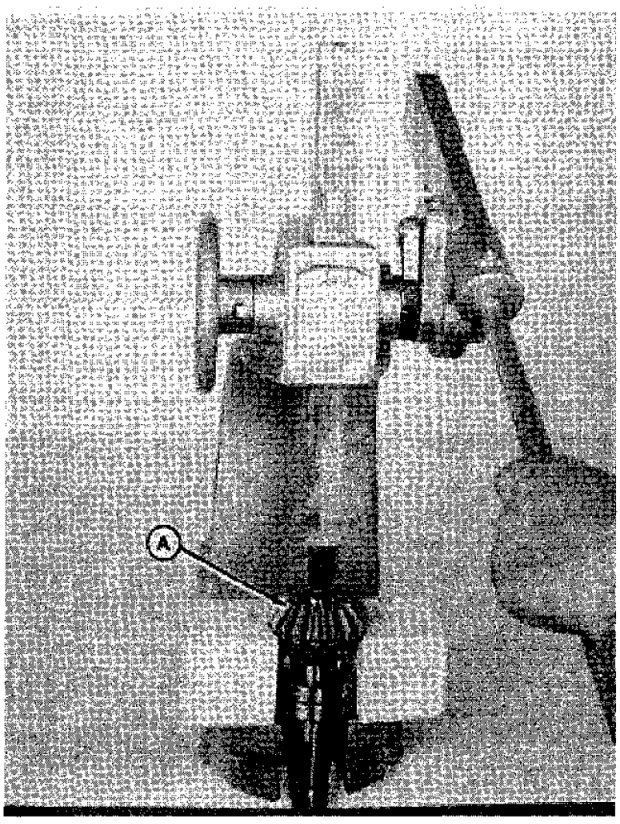
IMPORTANT: Do not press gear over splined area as it may scratch the shaft and reduce seal life.

7. Press 23-tooth gear (A) from input shaft.



EX,1472,2025,H -19-03APR89

8. Press 17-tooth gear (A) from output shaft.



EX,1472,2025,I -19-03APR89

INSPECT GEAR CASE PARTS

1. Inspect gears for chipped or broken teeth.

2. Inspect bearings for roughness. Make sure they rotate freely.

3. Inspect shafts for wear.

4. Replace seals.

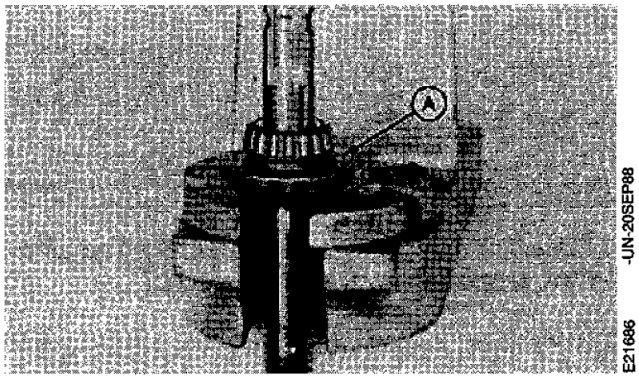
5. Replace parts if needed.

EX,1472,2025,J -19-11MAR93

ASSEMBLE SUPERIOR GEAR CASE

1. Place 23-tooth gear (A) on input shaft and align keyway in gear with key in shaft.

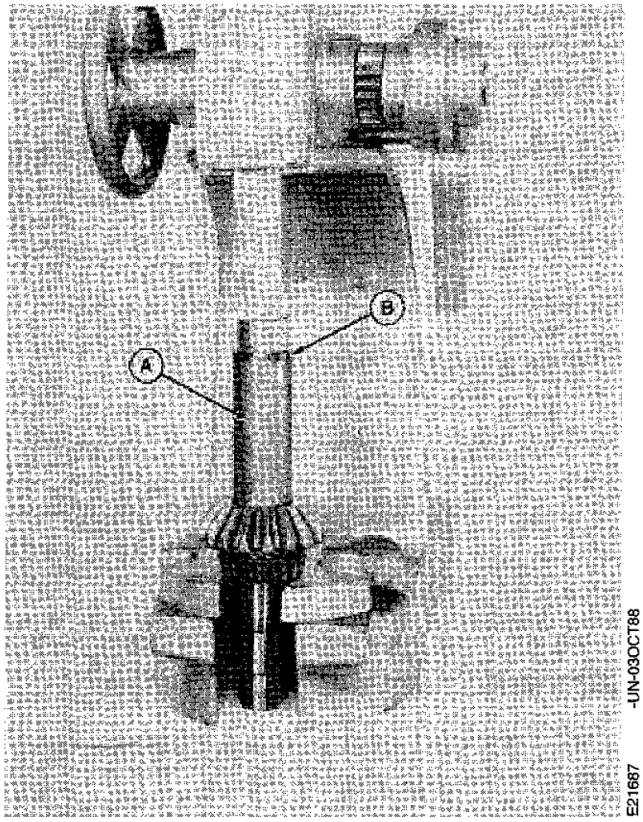
2. Press gear in place.



EX,1472,2025,K -19-11MAR93

IMPORTANT: To prevent bearing damage, support inner race of bearing while pressing.

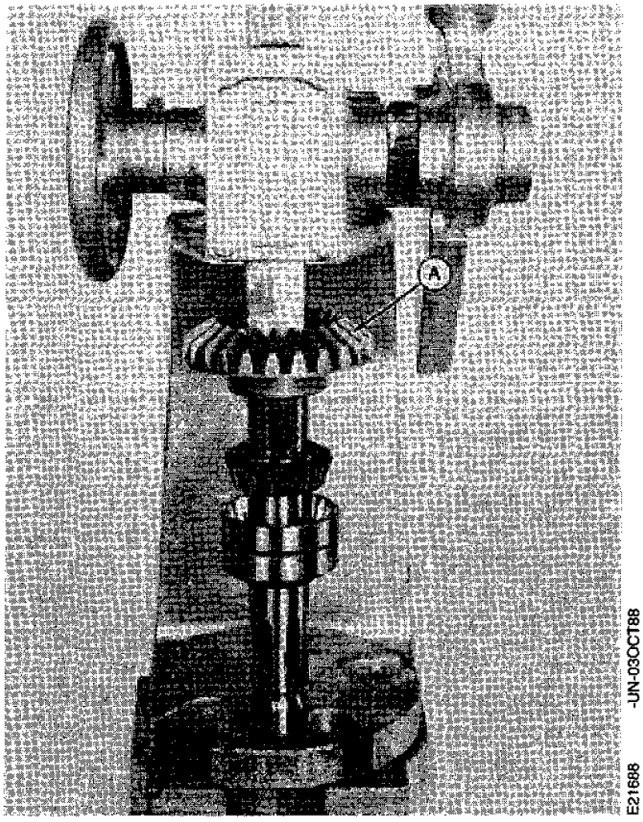
3. Install sleeve (A) and snap ring (B). Press to insure tightness of sleeve between shaft and gear.



EX,1472,2025,L -19-03APR89

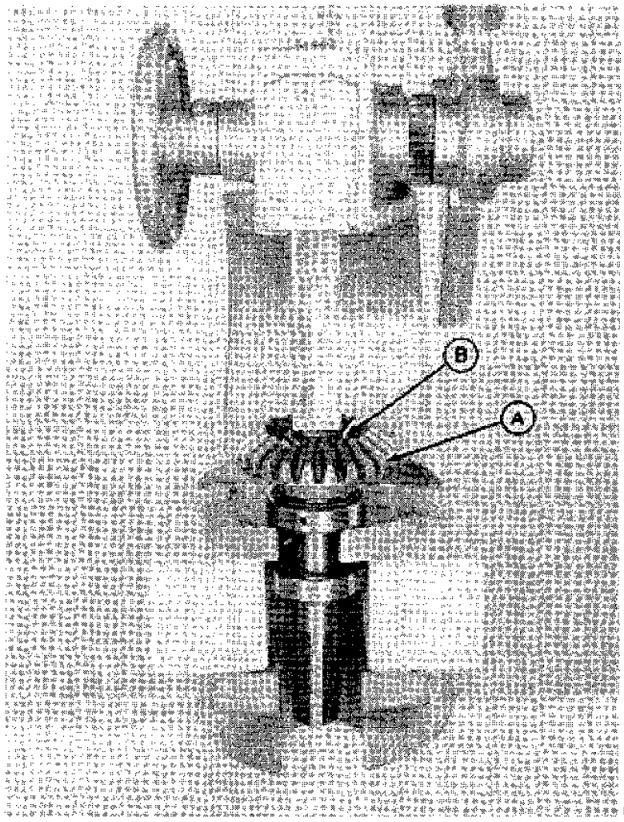
4. Place 17-tooth gear (A) on output shaft and align keyway in gear with key in shaft.

5. Press gear on shaft and install snap ring in groove.



EX,1472,2025,M -19-03APR89

6. Block as shown. Press shaft (with snap ring installed) tight against 17-tooth gear (A). Gear must be tight against snap ring (B) for installation in gear case.



EX,1472,2025,N -19-03APR89

7. Spray both mating surfaces of gear case with John Deere Cleaner-Primer and wipe dry.

8. Spray top half of case with John Deere Cleaner-Primer and let air dry approximately 1 minute.

9. Install shafts in lower case half.

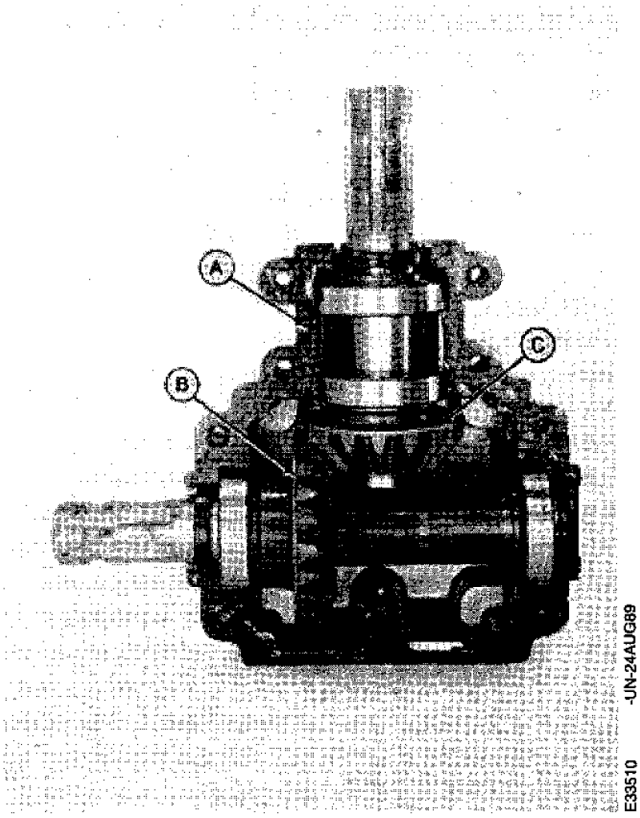
10. Lay 2 mm (1/16 in.) bead (A) of John Deere Gasket Eliminator around lower case casting as shown.

11. Place top half of case over lower half and press down with hand. Take care not to disturb seals.

12. Install nine 3/8 in. socket-head screws and tighten to 20-27 N·m (15-20 lb-ft).

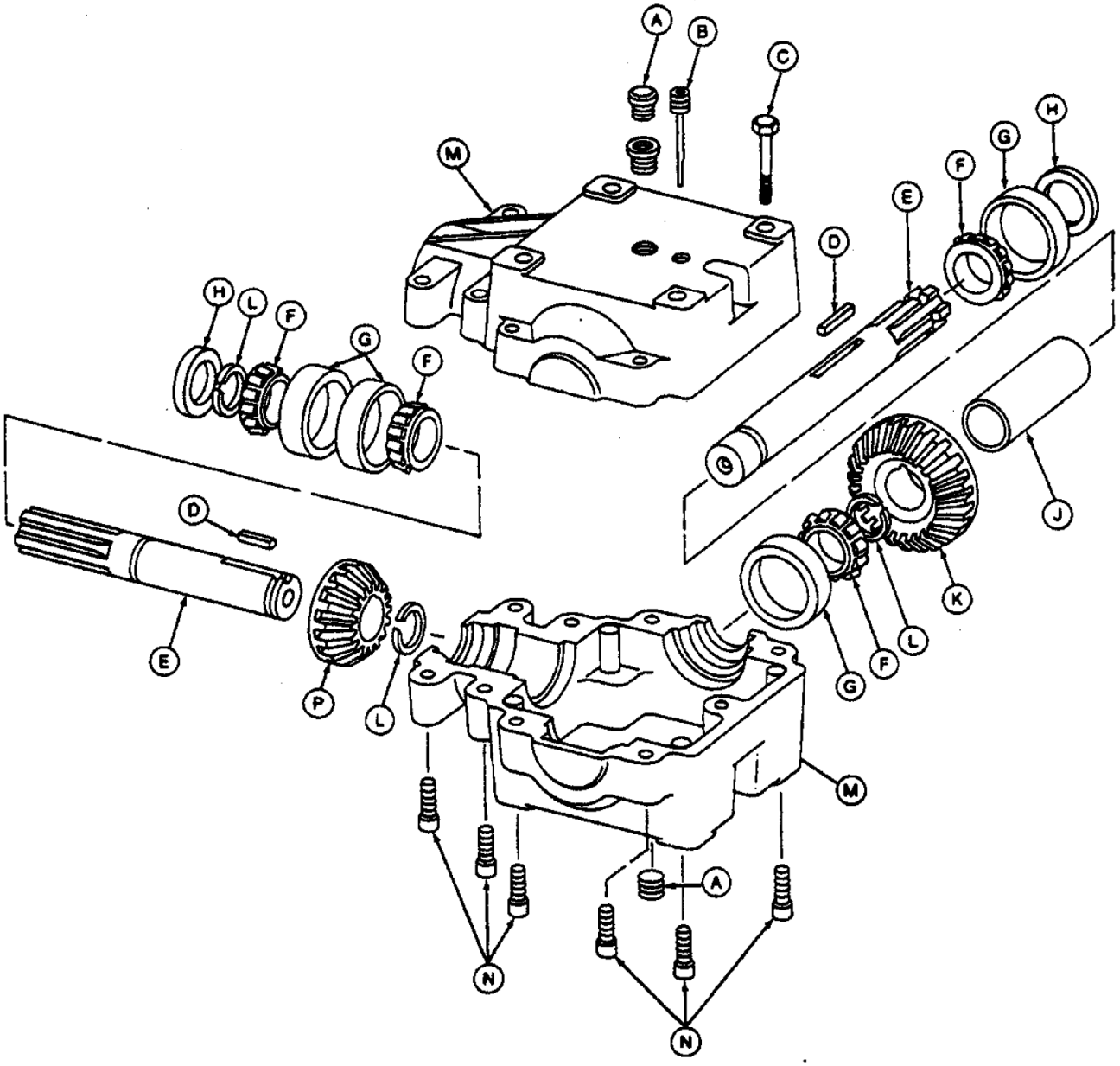
13. Fill gear case with 0.650 L (1.4 pt) SAE 85-140 GL-5 gear lubricant.

A—2 mm (1/16 in. Bead)
B—23 Tooth Gear
C—17 Tooth Gear



EX,1472,2025,O -19-06NOV95

SUPERIOR GEAR CASE (ALUMINUM CASE)



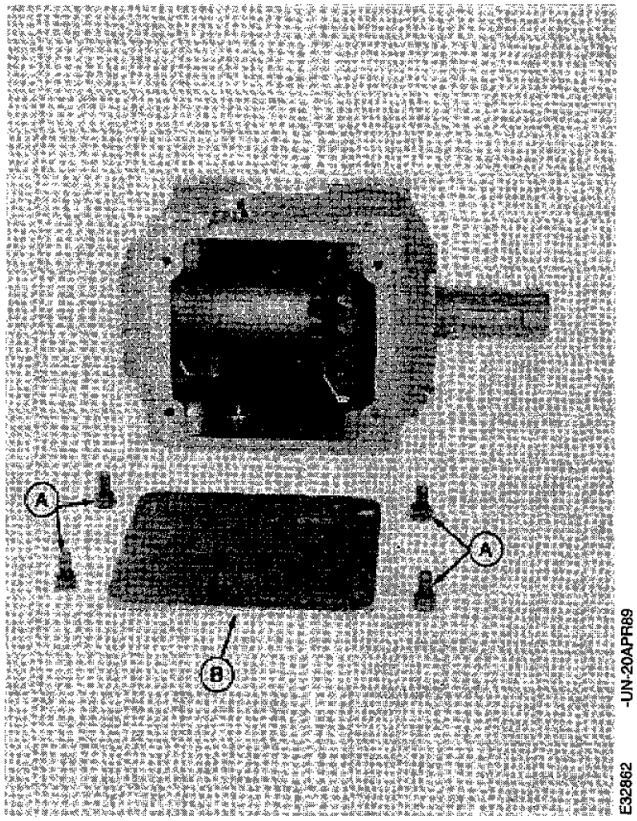
A—Drain Plug
B—Dipstick
C—Cap Screw
D—Key
E—Shaft
F—Bearing
G—Bearing Race
H—Oil Seal
J—Sleeve
K—23-Tooth Gear
L—Snap Ring
M—Gear Case Housing
N—Socket-Head Nuts
O—17-Tooth Gear

EX,1472,2025,P -19-11MAR93

DISASSEMBLE COMER OR GETAFE GEAR CASE (CAST IRON CASE)

1. Drain oil.

2. Remove four cap screws (A), and cover (B).



EX,1472,2025,Q -19-06NOV95

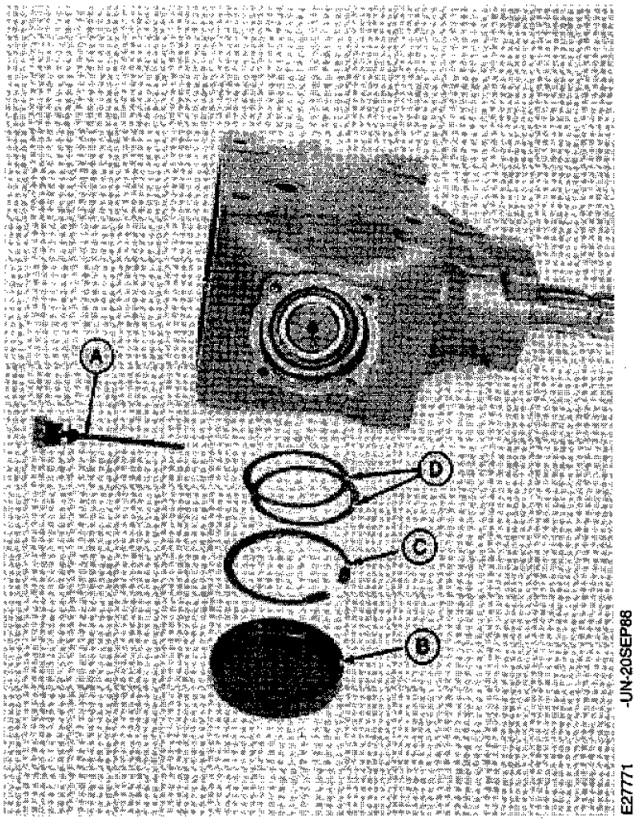
3. Remove dipstick (A).

IMPORTANT: Record location of each shim for ease in assembling.

4. Carefully remove cover (B), snap ring (C), and shims (D).

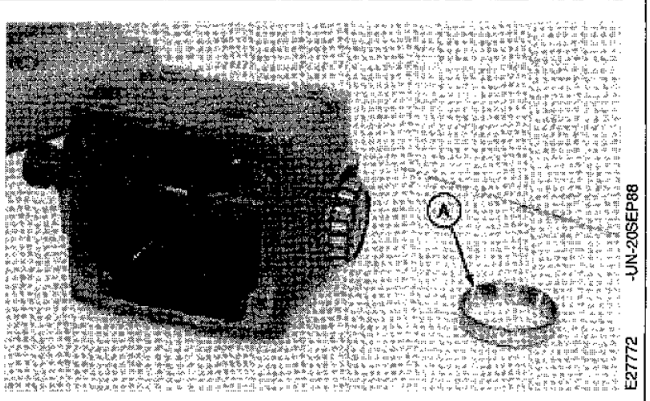
NOTE: Visually inspect gear case for wear and breakage prior to disassembly.

A—Dipstick
B—Cover
C—Snap Ring
D—Shims



EX,1472,2025,R -19-03APR89

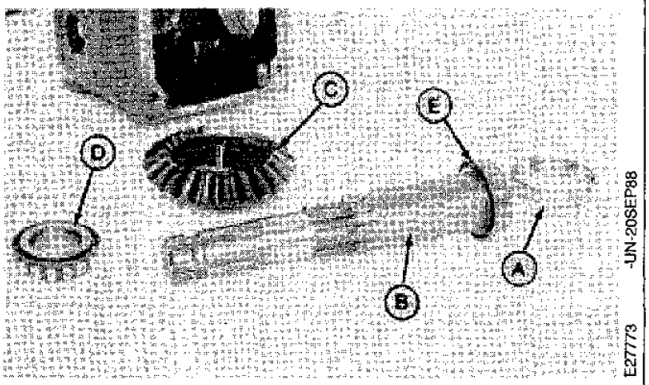
5. Tap shaft with a rubber mallet and remove bearing cup (A).



EX,1472,2025,S -19-03APR89

6. Use press to remove bearing cup (A), shaft (B), gear (C), and bearing (D). Do not remove bearing (E) at this time.

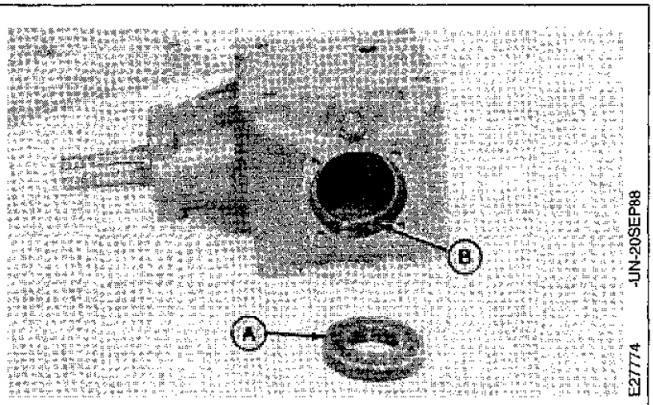
A—Bearing Cup
B—Shaft
C—Gear
C—Bearing
D—Bearing



EX,1472,2025,T -19-03APR89

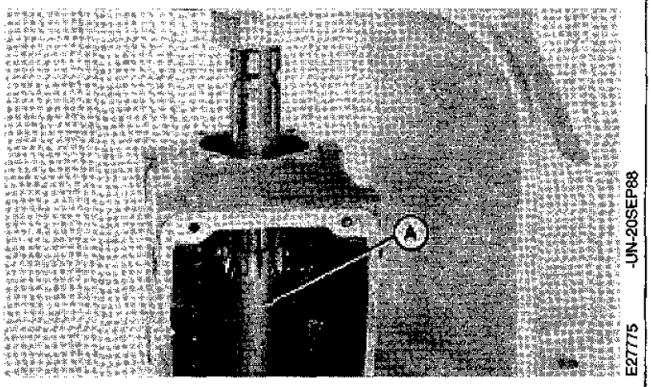
7. Remove seal (A).

8. Remove snap ring (B) and shims.



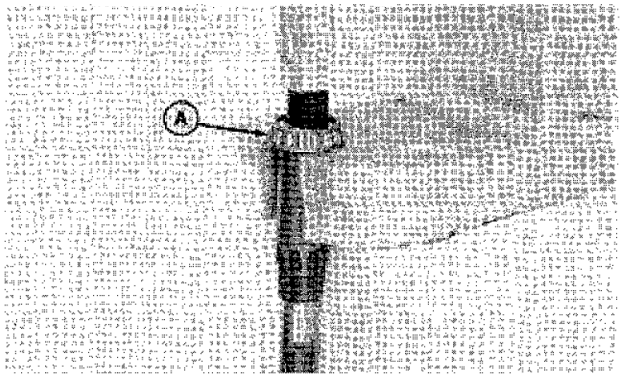
EX,1472,2025,U -19-03APR89

9. Invert shaft (A) and press bearing cup from case.



EX,1472,2025,V -19-03APR89

10. Remove bearing (A).

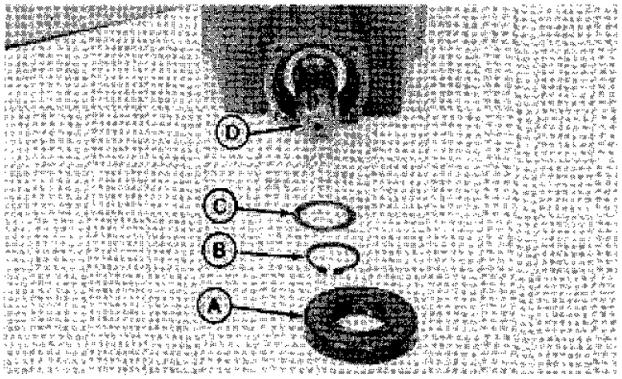


EX,1472,2025,W -19-03APR89

11. Remove seal (A), snap ring (B), and shim (C).

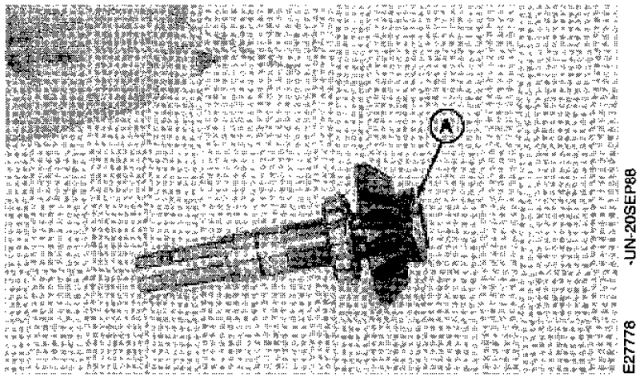
12. Place gear case in press and remove shaft assembly (D).

A—Seal
B—Snap Ring
C—Shim
D—Shaft Assembly



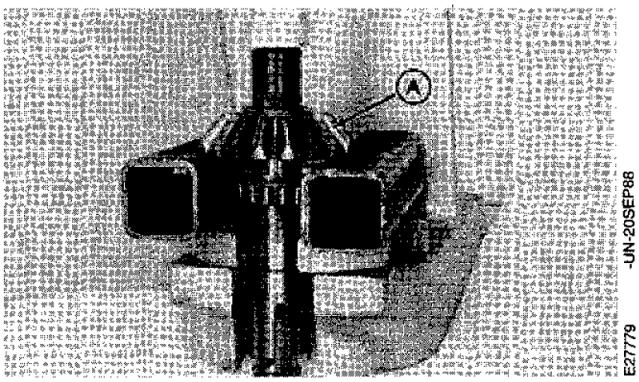
EX,1472,2025,X -19-03APR89

13. Use a spanner wrench to remove nut (A) and spring washer.



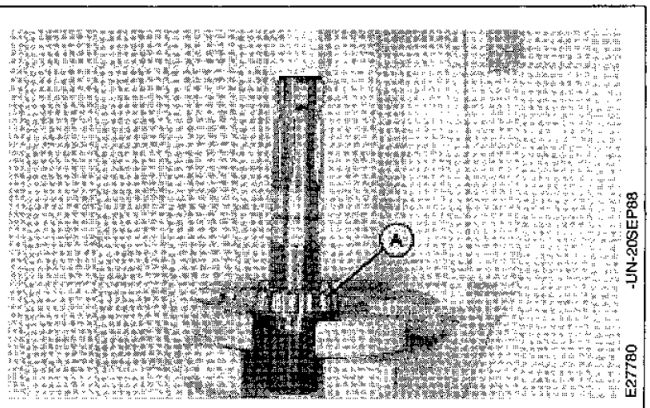
EX,1472,2025,Y -19-03APR89

14. Using press, remove gear (A) and shims.



EX,1472,2025,Z -19-03APR89

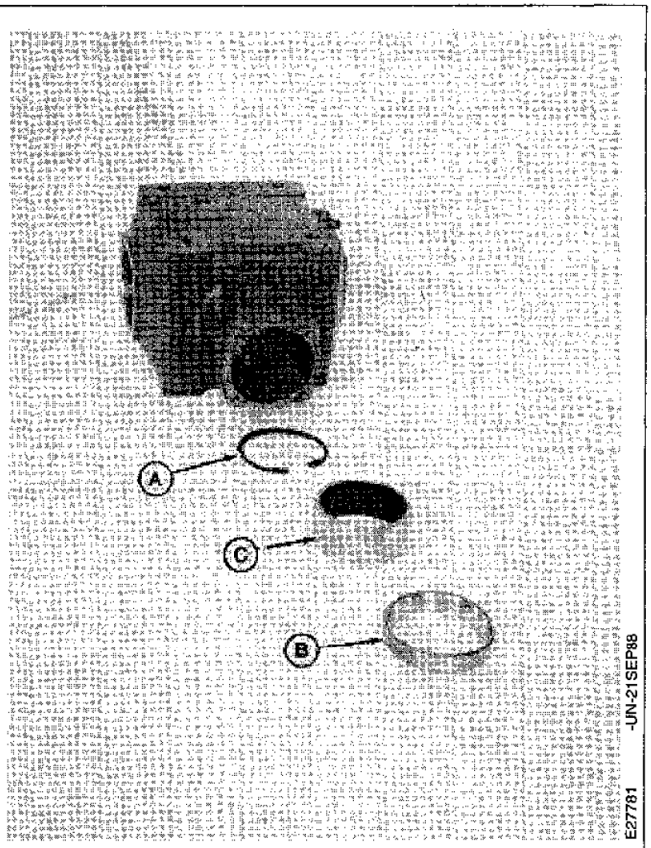
15. Invert shaft assembly and remove bearing (A).



EX,1472,2025,AA-19-03APR89

16. Remove snap ring (A).

17. Remove bearing cup (B) and spacer (C).



EX,1472,2025,AB-19-03APR89

INSPECT GEAR CASE PARTS

Wash all parts in clean solvent and dry thoroughly.

Inspect all parts for wear or damage. Replace if necessary.

Check gear case for cracks or breaks.

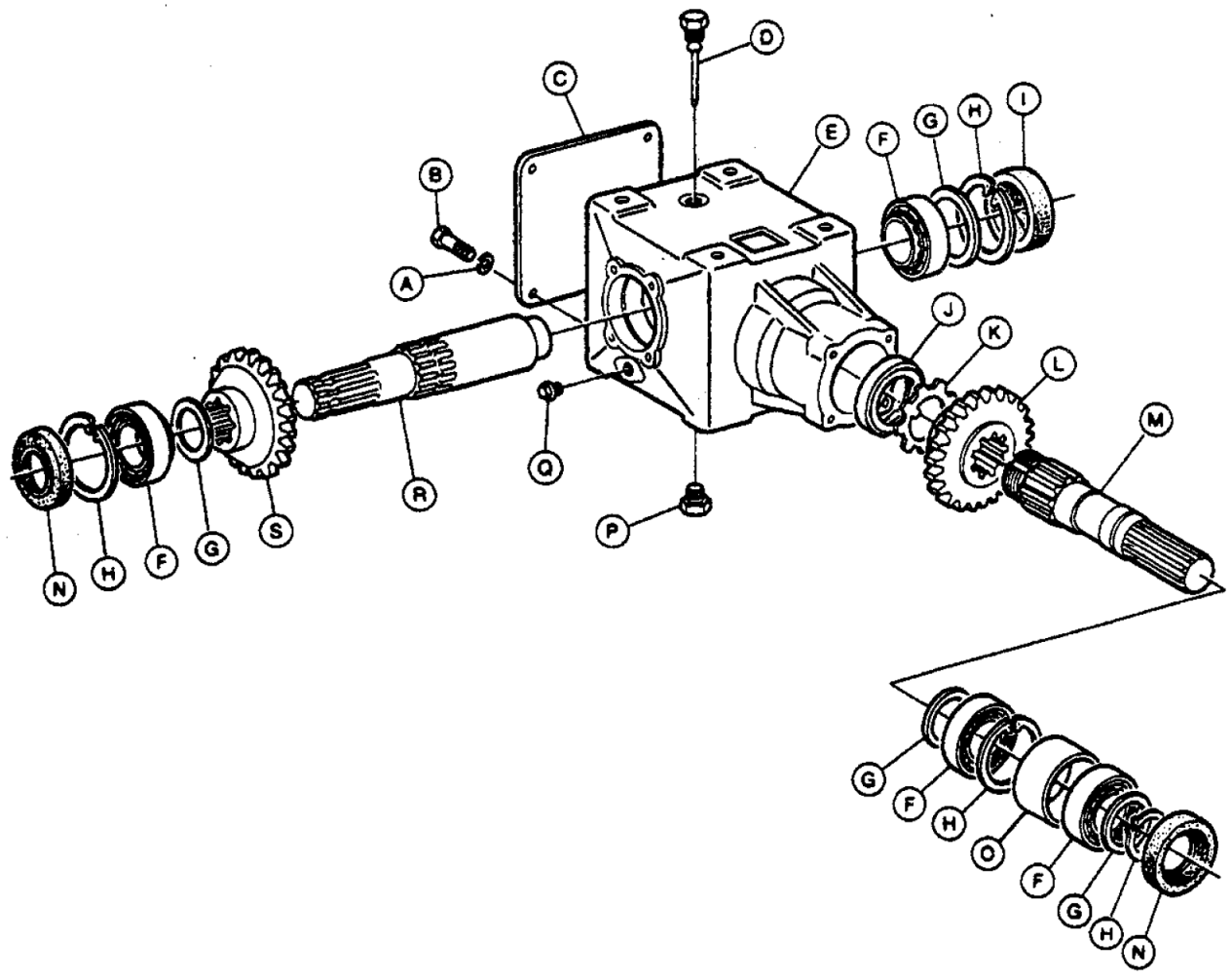
Check threads and splines for excessive wear or nicks.

Check shaft for scratches, nicks, and seal rubbing.

Replace seals.

EX,1472,2025,AC-19-11MAR93

ASSEMBLE COMER OR GETAFE GEAR CASE



A—Lock Washer	F—Bearing	K—Spring Washer	P—Drain Plug (Magnetic)
B—Cap Screw (4 Used)	G—Shim*	L—17-Tooth Bevel Gear	Q—Vent
C—Cover	H—Snap Ring	M—Input Shaft	R—Output Shaft
D—Dipstick	I—Cap	N—Oil Seal	S—23-Tooth Bevel Gear
E—Gear Case	J—Nut	O—Bearing Cup	

* 0.3 and 0.4 mm (0.01181 and 0.01575 in.) shims are used

EX,1472,2025,AD-19-06NOV95

1. Install snap ring, spacer, and bearing cup.

2. Position bearing cone in cup.

3. Press bearing cup against snap ring.

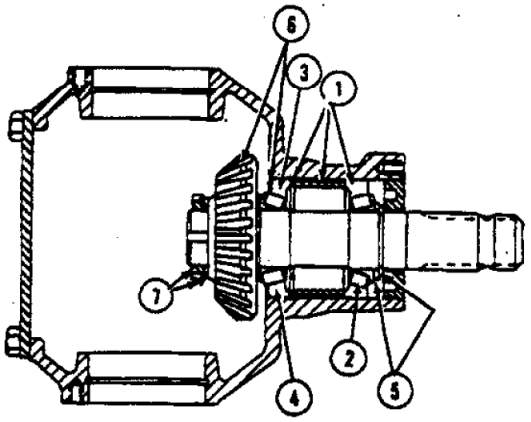
4. Press bearing cone on shaft.

5. Press shaft assembly until shim and snap ring can be installed.

NOTE: Approximately 1.3 mm (0.051 in.) shims thickness is normally used.

6. Place approximately 0.65 mm (0.0256 in.) shims and 17-tooth gear on shaft.

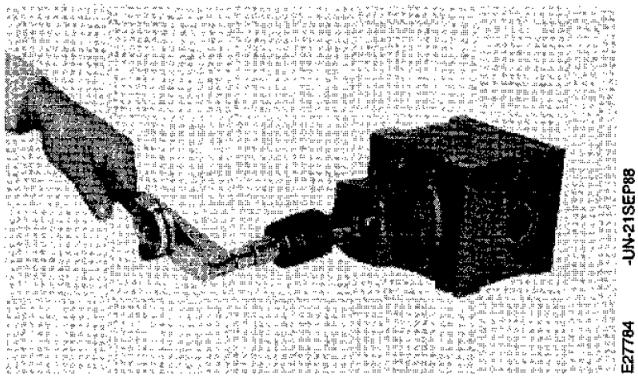
7. Install spring washer and nut.



E27783 -UN-21SEP88

EX,1472,2025,AE-19-06NOV95

8. Tighten to 0.19 to 0.59 N·m (1.7 to 5.2 lb-in.) rolling torque without seal in place. Secure nut with spring washer.



E27784 -UN-21SEP88

EX,1472,2025,AF-19-06NOV95

9. Press bearing cup past snap ring groove.

10. Place bearing in cup.

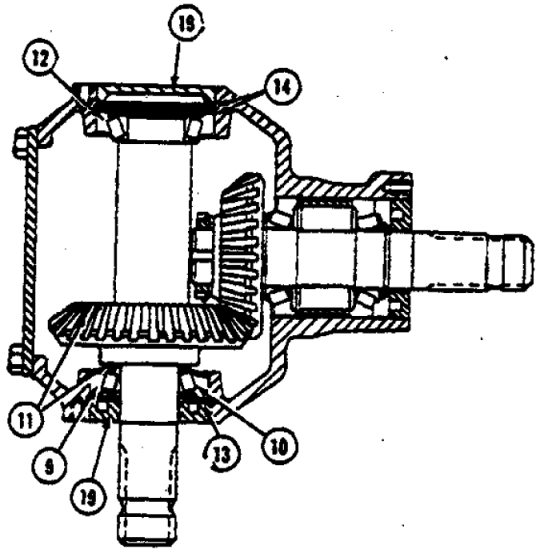
11. Install 23-tooth gear and shims on shaft. Press into place.

NOTE: Approximately 0.55 mm (0.215 in.) shims are needed.

12. Press bearing cup past snap ring groove.

13. Install snap ring.

14. Install approximately 0.75 mm (0.0295 in.) shims and secure with snap ring.



E27785 -UN-21SEP88

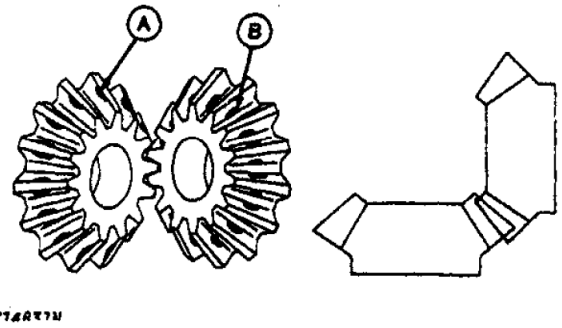
EX,1472,2025,AG-19-06NOV95

15. Apply a commercially available marking compound to the gear teeth and rotate to allow visual determination of tooth contact.

16. Illustration shows incorrect tooth contact (A and B). Correct by adding or removing shims (step 11 or step 14) on input and output shafts.

Correct backlash is 0.25 to 0.53 mm (0.010 to 0.021 in.).

A—Contact Near Top of Tooth
B—Contact At Root of Tooth



E14831 -UN-03OCT88

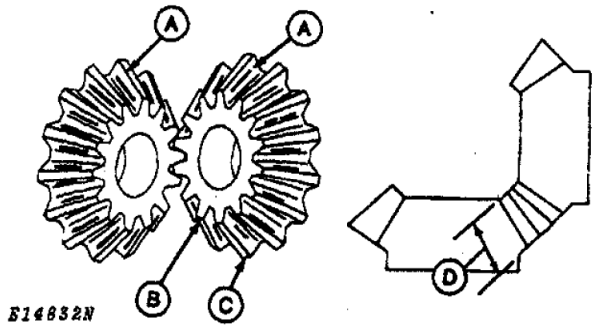
Incorrect Tooth Contact

EX,1472,2025,AH-19-22FEB92

17. If bevel gears show correct tooth contact pattern, proceed to step 18.

NOTE: The recommended tooth contact pattern when rotating the output shaft and holding the input shaft should have a length that extends approximately one-half of the face width (D) and should be slightly nearer the toe (B) of the tooth than the heel (C).

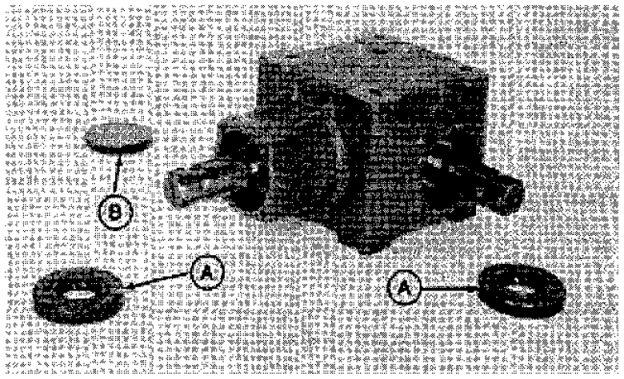
A—Gear
B—Toe
C—Heel
D—Face Width



Correct Contact Pattern

EX,1472,2025,AI-19-03APR89

18. Install both seals (A) and cover (B).



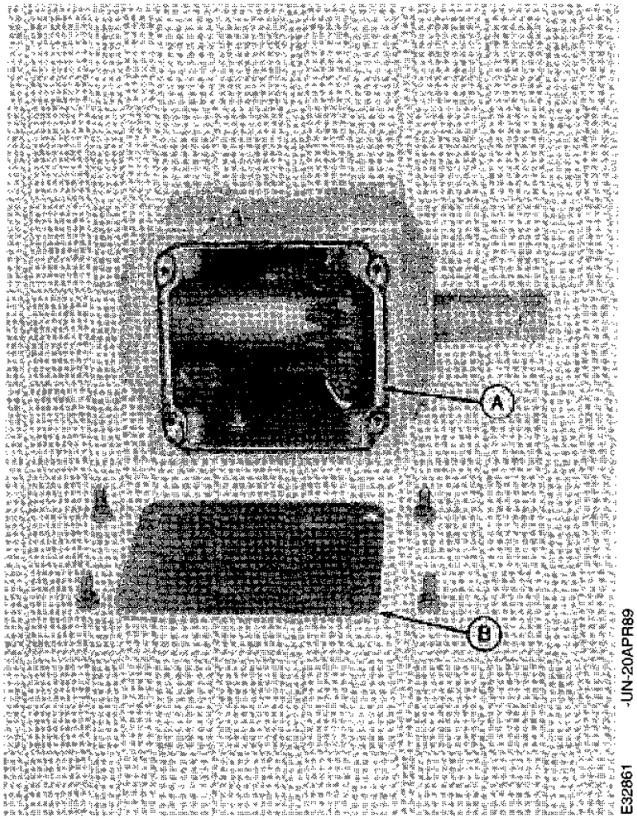
EX,1472,2025,AJ-19-06NOV95

19. Lay a 2 mm (1/16 in.) bead (A) of John Deere Gasket Eliminator around gear case housing as shown.

20. Press plate (B) into place and attach cap screws.

21. Install drain plug and dipstick.

22. Fill gear case with 1.2 L (2.5 pt) SAE 85-140 GL5 Gear Lubricant.



EX,1472,2025,AK-19-06NOV95

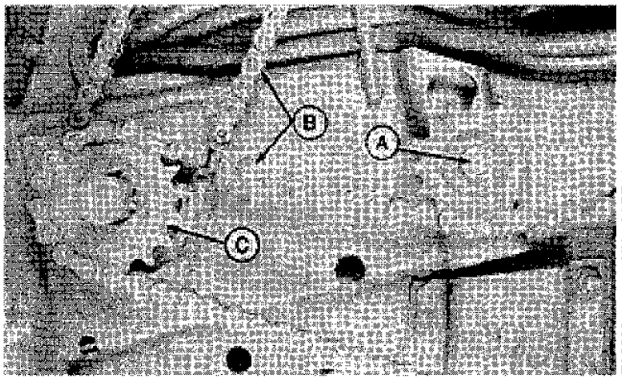
INSTALL GEAR CASE

IMPORTANT: Gear case alignment is critical. Failure to align shaft will result in rapid coupler and shaft wear.

1. Loosen idler (A).

2. Remove master links from both drive chains (B).

3. Remove cotter pin, washers, and sprocket (C). Make sure to note position of washers and sprocket for correct reassembly.

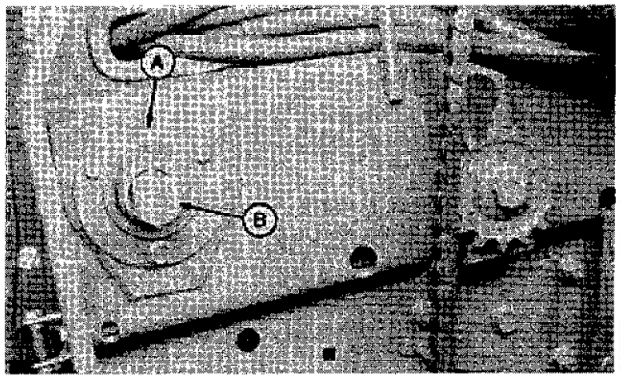


EX,1472,2025,AL-19-11MAR93

4. Remove three cap screws, flangette (A), and bearing.

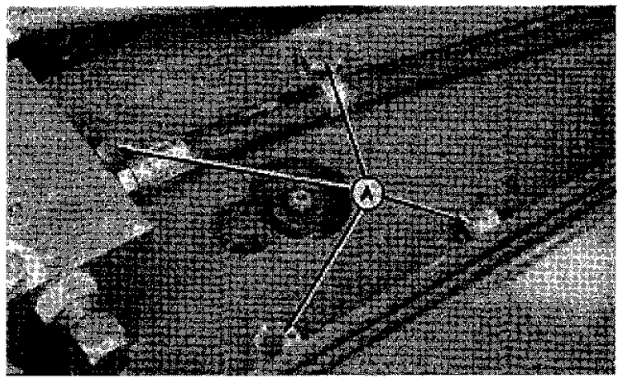
5. Remove output shaft (B).

6. Remove coupler from input shaft. Coat both coupler and bore with John Deere NEVER-SEEZ and place coupler on shaft. Inspect coupler for wear.



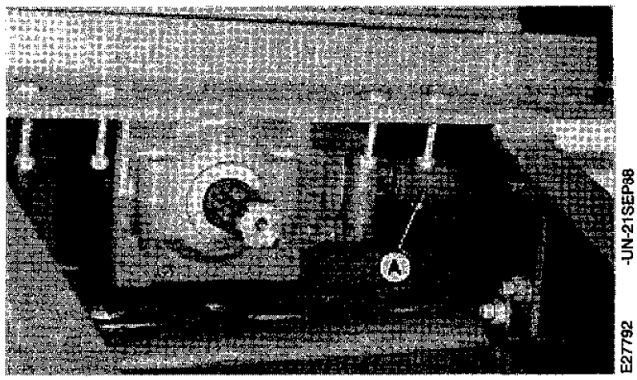
EX,1472,2025,AM-19-06NOV95

7. Install gear case using four cap screws (A). Do not tighten.



EX,1472,2025,AN-19-03APR89

8. Install output shaft with coupler (A) aligned to gear case. and positioning gear case.



EX,1472,2025,AO-19-03APR89

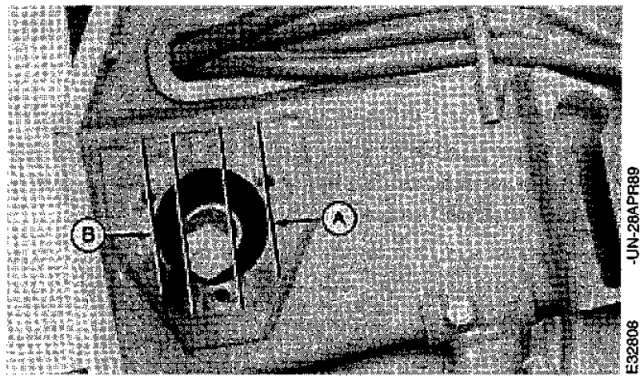
9. Check hex shaft alignment by pushing fore and aft and measuring clearance (A) and (B) between shaft and hole in frame. Clearance (A) and (B) should be equal. If not, loosen gear case mounting cap screws and shift gear case position slightly to obtain equal clearance.

10. Tighten gear case cap screws to 95 N·m (70 lb-ft) and recheck shaft clearance to be sure gear case has not moved.

11. Repeat step 9. Adjust gear case, if necessary, to maintain clearance.

12. Install bearing and flangette. Secure using three cap screws.

13. Check end play on shaft. Shaft should have end play of approximately 1 mm (0.04 in.).



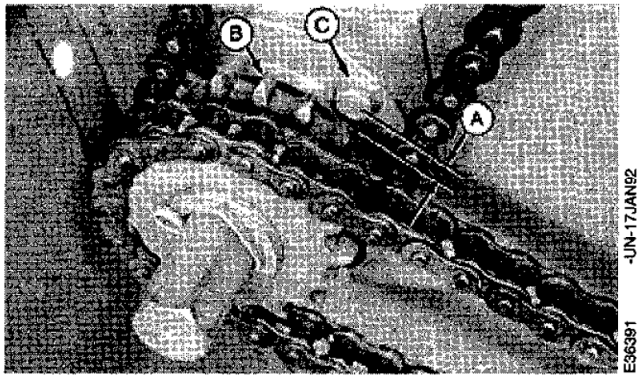
EX,1472,2025AO1-19-06NOV95

14. Install washers and sprocket. Install enough washers to maintain 12 ± 1.5 mm (1/2 ± 1/16 in.) clearance (A) between inner surface of sprocket (B) and head of cap screw (C).

15. Adjust drive chains. (See procedures in Section 20, Group 30.)

16. Install driveline.

17. Run baler for 10 minutes. Shut off tractor. Check for leakage. Gear case should not be hot to touch, check oil level if hot. If coupler is hot to touch, check alignment.



EX,1472,2025,AP-19-21JAN92

CONVERT BALER TO 1000 RPM (435, 535)

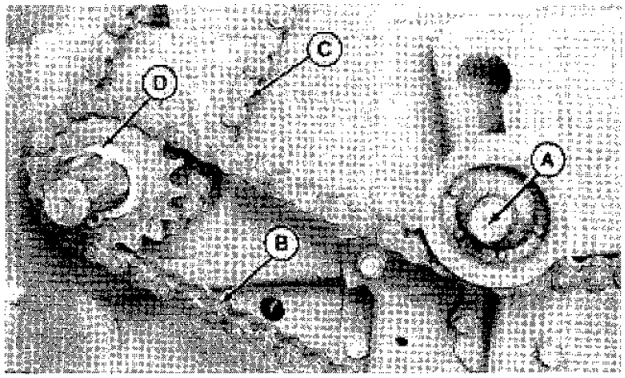
NOTE: The following steps must be performed to convert any 435 or 535 baler; even if baler was ordered from the factory as a 1000 rpm baler.

1. Loosen bolt (A) in idler.

2. Remove connector links from chains (B) and (C).

3. Remove cotter pin (D), washers and sprocket. Note washer locations and sprocket position for reinstallation.

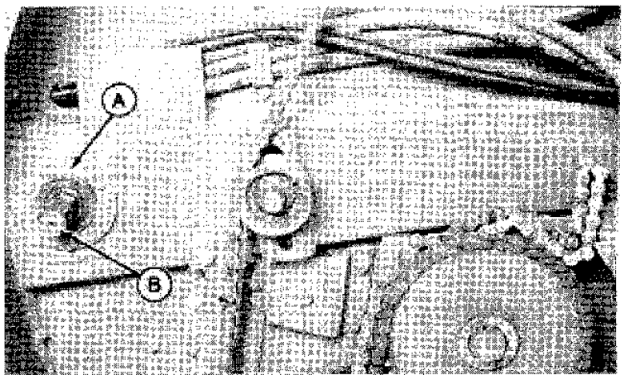
A—Bolt
B—Chain
C—Chain
D—Cotter Pin



EX,1472,2025,AQ-19-11MAR93

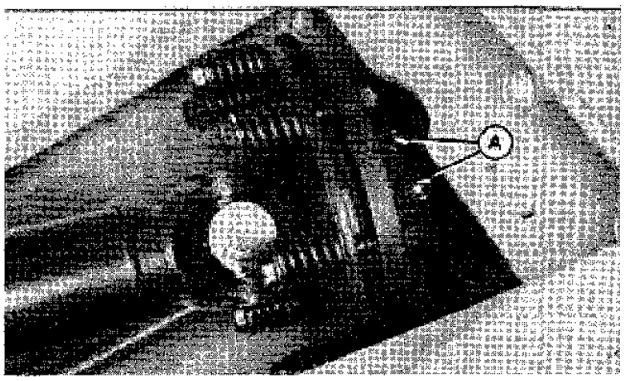
4. Remove three cap screws from flangette (A) and remove shaft (B).

5. Remove bearing from shaft (B).



EX,1472,2025,AR-19-03APR89

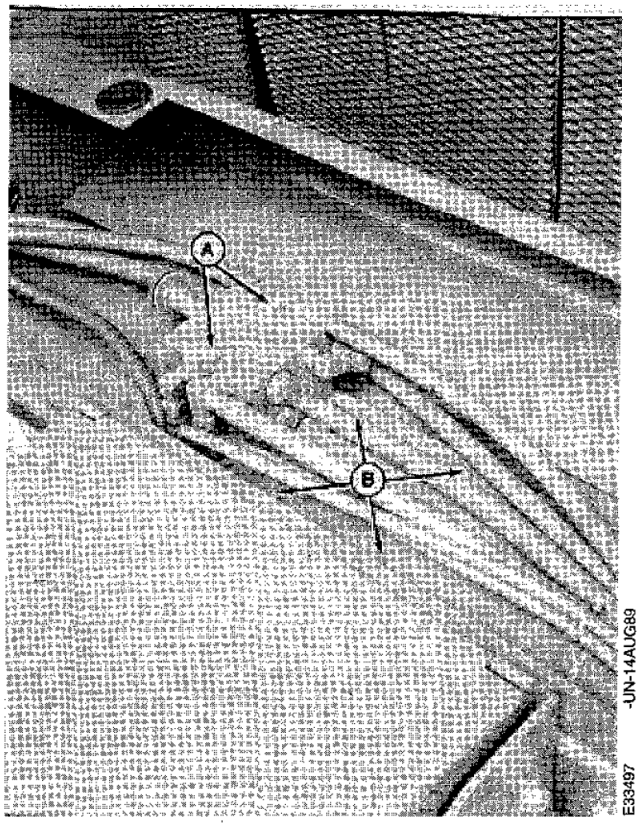
6. Remove two cap screws and lock nuts (A) and remove powerline.



EX,1472,2025,AS-19-03APR89

7. Remove two cap screws (A) from tension valve.

8. Rotate tension valve and remove four cap screws (B) securing gear case. Remove gear case.

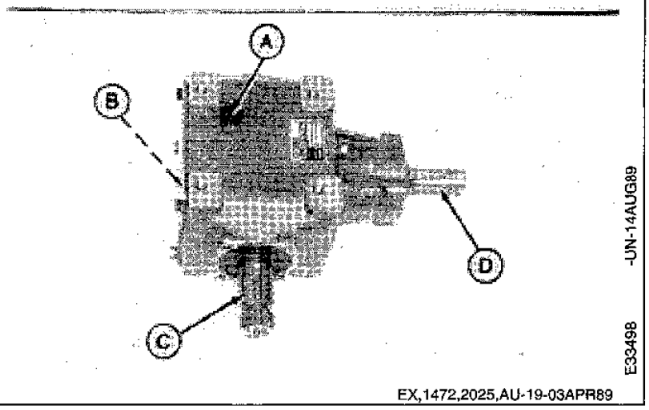


EX,1472,2025,AT-19-03APR89

9. Remove dipstick (A) and drain plug (B).

NOTE: Gear case shown in 540 rpm position.

A—Dipstick
B—Drain Plug
C—Input Shaft
D—Output Shaft

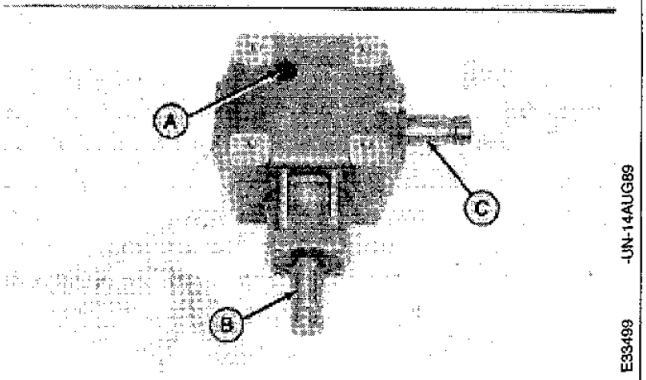


EX,1472,2025,AU-19-03APR89

10. Invert gear case and insert dipstick (A) into drain plug location and insert drain plug into dipstick location.

NOTE: Gear case shown in 1000 rpm position.

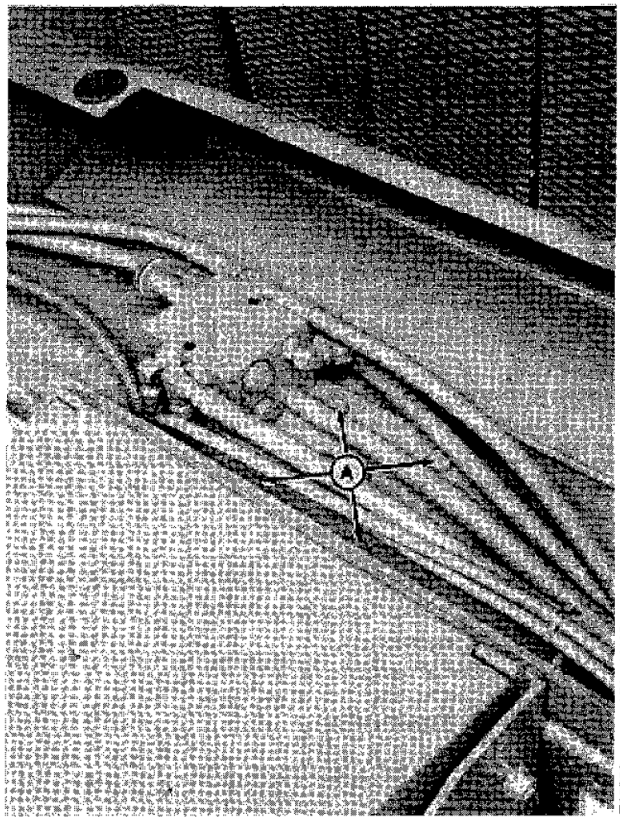
A—Dipstick
B—Input Shaft
C—Output Shaft



EX,1472,2025,AV-19-03APR89

11. Install gear case and secure with four cap screws (A). Tighten to 95 N·m (70 lb-ft).

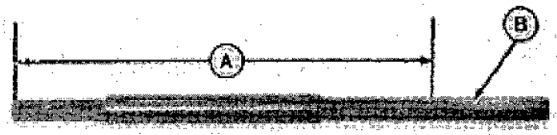
12. Check oil level in gear case. Fill as necessary using SAE 85-140 API GL-5 gear lubricant.



EX,1472,2025,AW-19-03APR89

IMPORTANT: New output shaft does NOT have to be shortened for the 535 Round Baler. Proceed to step 14.

13. (435 Only) Measure and mark new output shaft to 571 mm (22-1/2 in.) (A). Remove excess shaft (B).



EX,1472,2025,AX-19-03APR89

14. Coat coupler bores with NEVER-SEEZ® and install onto new output shaft (A).

15. Install output shaft (A) and coupler to gear case.

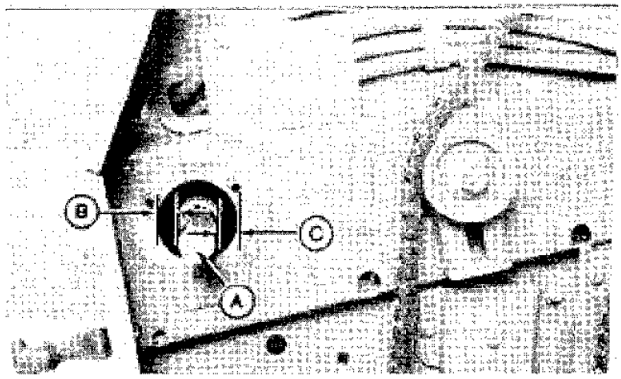
IMPORTANT: Output shaft (A) must be centered in hole of frame.

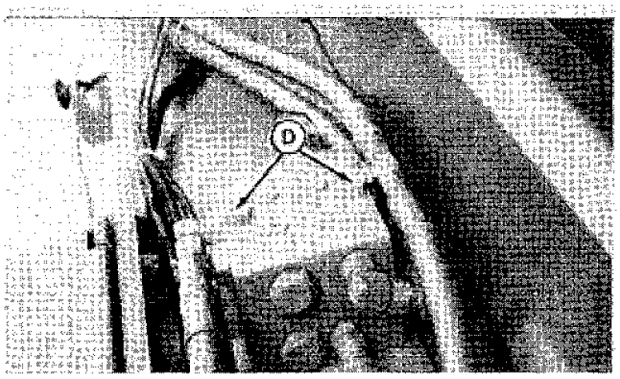
16. Check shaft (A) alignment by pushing fore and aft and measuring clearance (B) and (C) between shaft and hole in frame. Clearance (B) and (C) should be equal. If not, loosen gear case mounting cap screws and shift gear case position slightly to obtain equal clearance.

17. Tighten gear case cap screws to 95 N·m (70 lb-ft) and recheck shaft clearance to be sure gear case has not moved.

18. Secure tension valve with two cap screws (D).

A—Output Shaft
B—Clearance
C—Clearance
D—Cap Screws



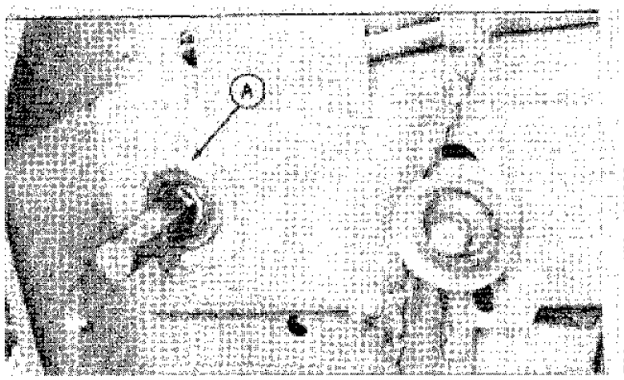


EX,1472,2025,AY-19-03APR89

19. Install flangettes (A) and bearing. Secure with three cap screws.

There must be a little end play in the shaft before installing sprocket.

If necessary, remove the shaft and grind the inboard end slightly to provide end play.



EX,1472,2025,AZ-19-03APR89

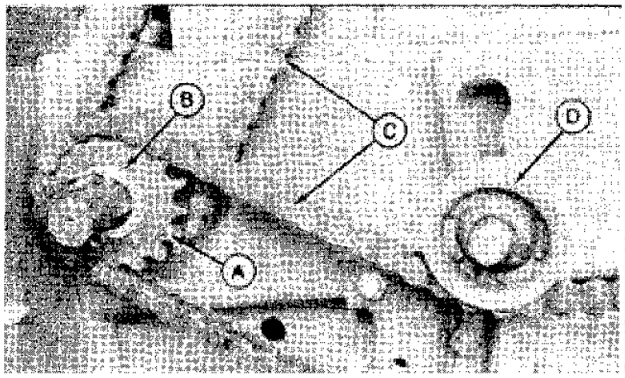
20. Reinstall washers, sprocket (A), and washers (B). Secure with cotter pin.

21. Reconnect chains (C).

22. Press idler (D) against chain with 2.3 to 4.5 kg (5 to 20 lb) pressure.

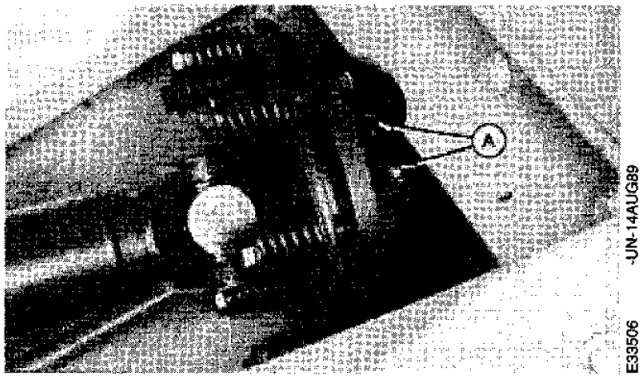
23. Tighten idler mounting cap screw to 163 N·m (120 lb-ft).

A—Sprocket
B—Washers
C—Chains
D—Idler



EX,1472,2025,BA-19-03APR89

24. Install new 1000 rpm powerline and secure with two cap screws and nuts (A). Tighten to 75 N·m (55 lb-ft).



EX,1472,2025,BB-19-03APR89

25. To adjust slip clutch for 1000 rpm conversion, loosen nut (B).

26. Turn adjusting bolt (C) until spring dimension (A) is 41 mm (1-5/8 in.) from end coil to end coil.

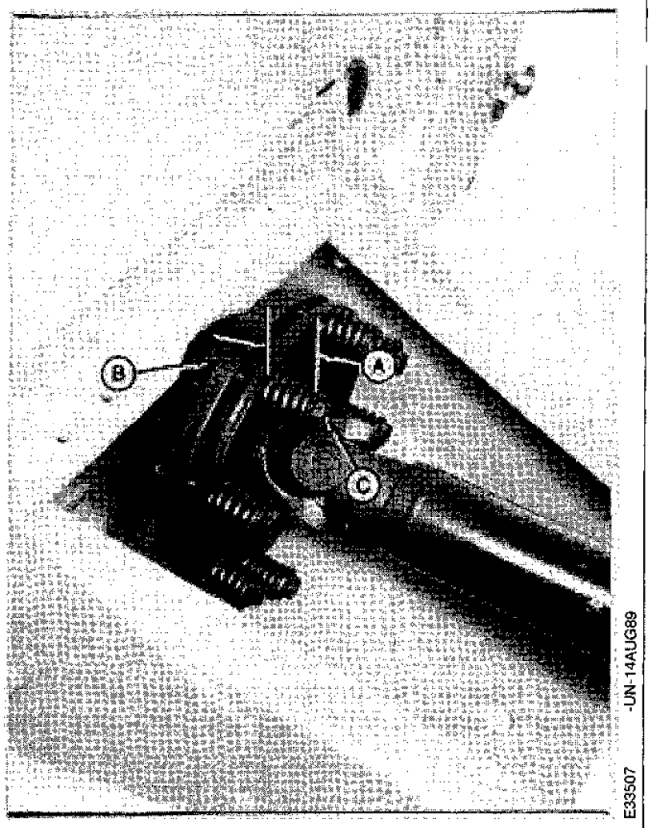
27. Repeat steps 26 and 27 for remaining springs.

20
25
26

IMPORTANT: Do not overtighten slip clutch. The slip clutch provides protection to the drive train. Overtightening will decrease this protection.

28. Install 1000 rpm warning decal on clutch shield over existing 540 rpm warning decal.

29. Check for proper tractor drawbar setting according to decal on clutch shield.



EX,1472,2025,BC-19-03APR89

SPECIFICATIONS

Item	Measurement	Specification
Chain	Adjustment	13 mm (1/2 in.) Deflection at midspan with 22 to 44 N (5 to 10 lb) of force applied
Chain Idler	Torque	163 N·m (120 lb-ft)
Roll Cap Screws	Torque	122 N·m (90 lb-ft)
Roll Scraper	Clearance	1 to 2 mm (0.039 to 0.0787 in.)
Rubber Strip on Roll to Side Sheet	Clearance	44 ± 3 mm (1-3/4 ± 1/8 in.)
Upper Belt Drive Roll	End Play	2 mm (5/64 in.)
Roll to Side Sheet	Clearance	Centered in hole within 1.5 mm (0.060 in.), centered between side sheets within 6 mm (0.25 in.)

EX,1472,2030,A -19-06NOV95

ESSENTIAL TOOLS

NOTE: Order tools from the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

Number	Name	Use
JDG235	Bearing Cone and Seal Installer	Used to install bearings in rolls

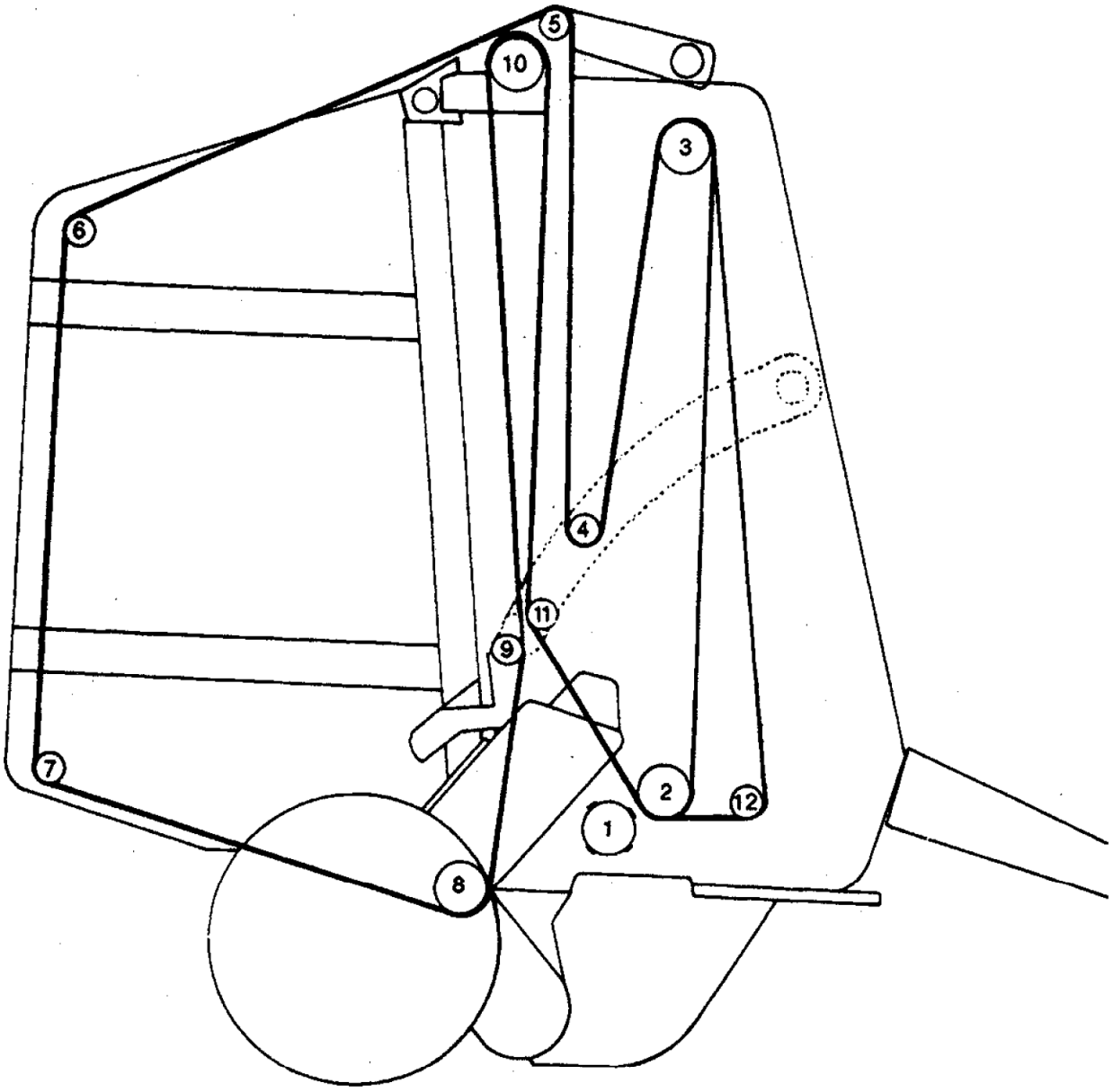
EX,1472,2030,B -19-11MAR93

GENERAL INFORMATION

The roll drive components consist of a drive shaft, six sprockets, three chains, chain idlers, and pickup sheaves. A belt from the starter roll powers a sprocket that drives the pickup with a chain.

EX,1472,2030,C -19-11MAR93

DIAGRAM OF ROLLS AND BELT ROUTING (335—375)



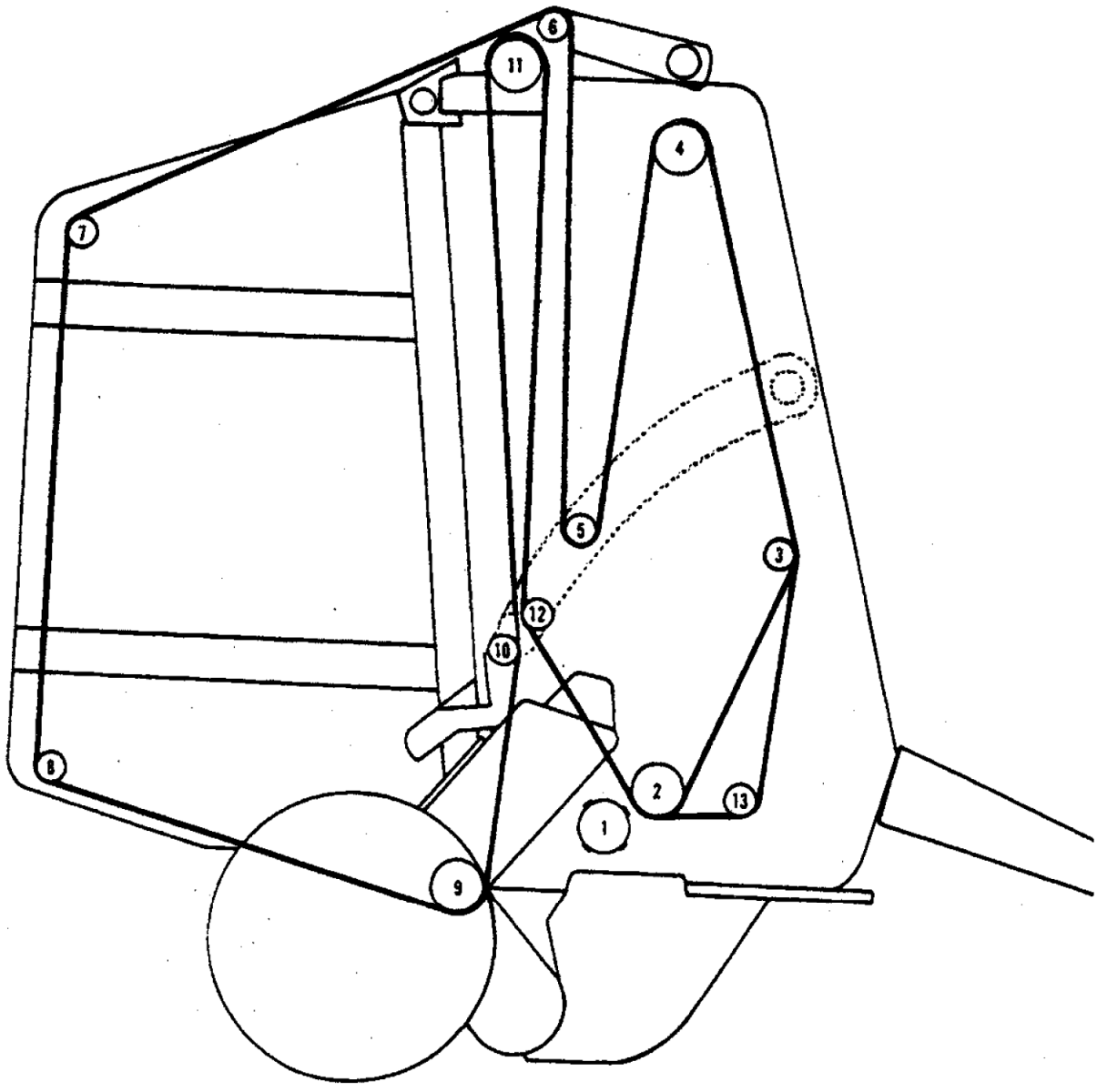
1—Starter Roll
2—Lower Belt Drive Roll
3—Upper Belt Drive Roll
4—Front Tension Arm Idler Roll
5—Top Arm Roll
6— Upper Rear Gate Roll
7—Lower Rear Gate Roll
8—Lower Gate Roll
9—Rear Tension Arm Idler Roll
10—Top Idler Roll
11—Center Tension Arm Idler Roll
12—Belt Staggering Roll

The roll drive components consist of a drive shaft, six sprockets, three chains, chain idlers, and pickup sheaves.

A belt from the starter roll powers a sprocket that drives the pickup with a chain.

EX,1472,2030,D -19-11MAR93

DIAGRAM OF ROLLS AND BELT ROUTING (385—435—535)



1—Starter Roll
2—Lower Belt Drive Roll
3—Front Idler Roll
4—Upper Belt Drive Roll
5—Front Tension Arm Idler Roll
6—Top Arm Roll
7—Upper Rear Gate Roll
8—Lower Rear Gate Roll
9—Lower Gate Roll
10—Rear Tension Arm Idler Roll
11—Top Idler Roll
12—Center Tension Arm Idler Roll
13—Belt Staggering Roll

EX,1472,2030,E -19-11MAR93

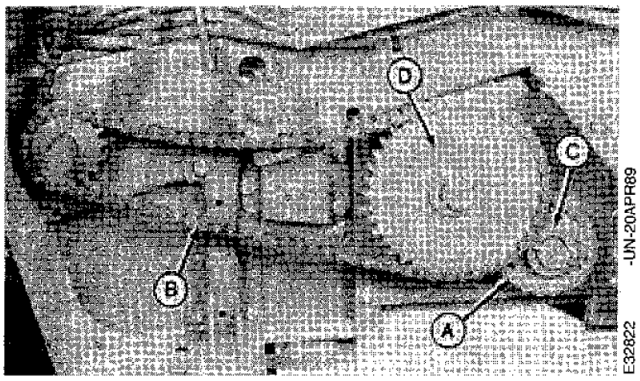
REMOVE STARTER ROLL

1. On left side of baler, remove chain (A) and chain (B).

2. Remove spring pin and washers from sprockets (C) and (D).

3. Remove sprockets (C) and (D).

A—Chain
B—Chain
C—Sprocket
D—Sprocket

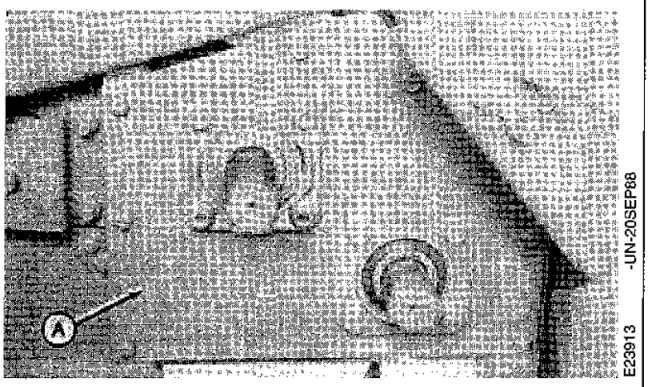


EX,1472,2030,F -19-06NOV95

4. Remove washers on roll shaft. Note the number of washers on each shaft to aid in centering roll and aligning sprockets.

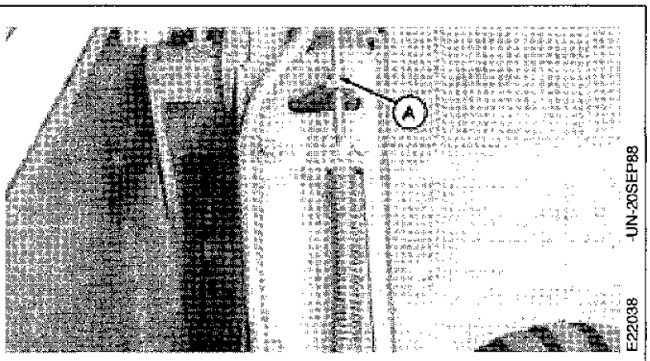
5. Remove cover plate (A).

6. Count washers on roll. Remove washers and tapered spacer.



EX,1472,2030,G -19-04APR89

7. Loosen pickup belt idler (A).



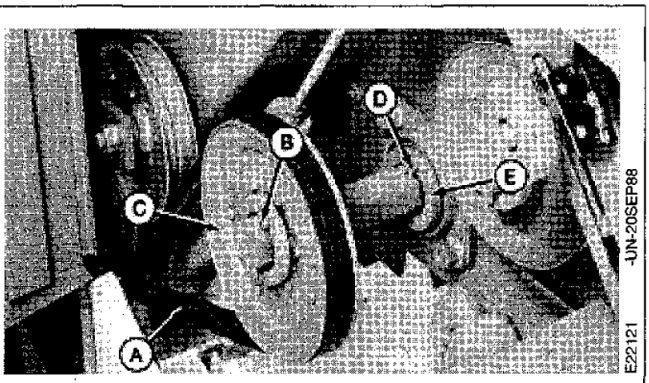
EX,1472,2030,H -19-04APR89

8. Remove pickup belt (A) from starter roll.

9. Remove cotter pin (B) and sheave (C).

10. Remove spring pin (D) and washers (E). Note number of washers (E) to aid in centering roll.

A—Pickup Belt
B—Cotter Pin
C—Sheave
D—Spring Pin
E—Washers



EX,1472,2030,I -19-04APR89

11. Remove roll (A) from left-hand side of machine.

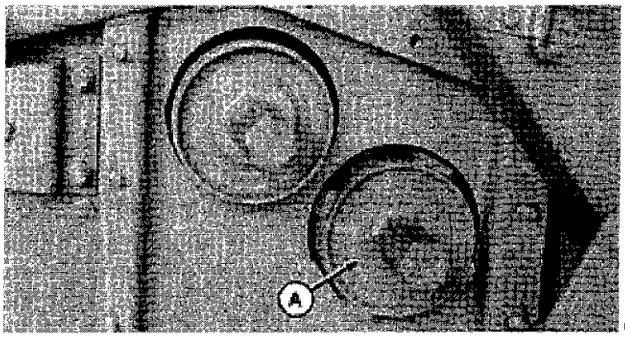
12. For early balers with starter roll using flat bar stock, the corner edges of the bar stock may be worn enough to affect starting bales. The leading edge of the bar stock may be built up with a weld bead for the length of the bar stock. Grinding is not required to make square corners. Later balers use round stock on starter roll.

IMPORTANT: Balers equipped with surface wrap should not have starter roll bar stock built up with weld. Weld will cause surface wrap to wrap around starter roll. Starter roll should be replaced.

13. To assemble roll in baler, reverse removal procedure.

14. Check that roll is centered in hole in side sheet.

15. See Adjust Chains in this section.



Early Baler Shown

EX,1472,2030,J -19-06NOV95

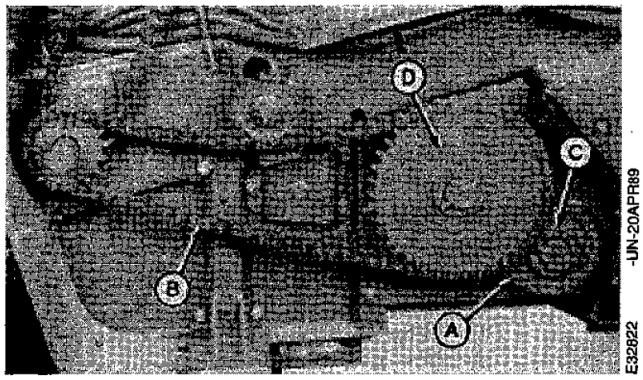
REMOVE LOWER BELT DRIVE ROLL

1. On left-hand side of baler, remove chain (A) and chain (B).

2. Remove spring pin and washers from sprockets (C) and (D).

3. Remove sprockets (C) and (D).

A—Chain
B—Chain
C—Sprocket
D—Sprocket

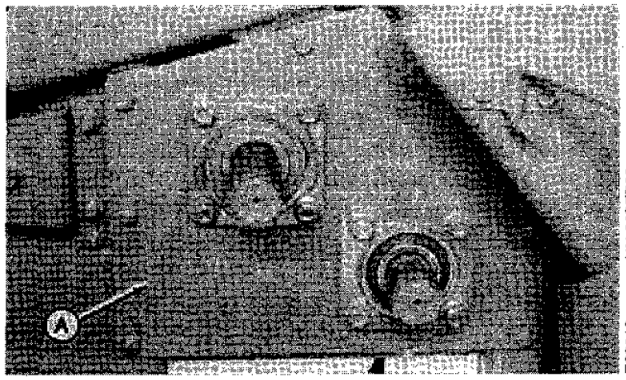


EX,1472,2030,K -19-11MAR93

4. Remove washers on roll shaft. Note and record the number of washers on each shaft to aid in centering roll and in sprocket alignment.

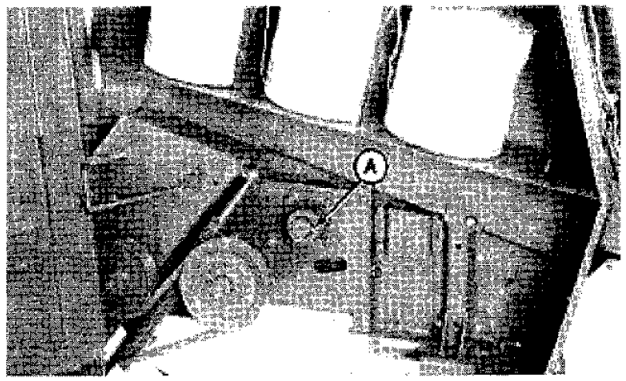
5. Remove cover plate (A).

6. Count washers on roll. Remove washers and tapered spacer.



EX,1472,2030,L -19-04APR89

7. (335, 375 and 385 Only) On right side of baler, remove spring pin (A) and washers. Note and record the number of washers on shaft to aid in centering roll at assembly.



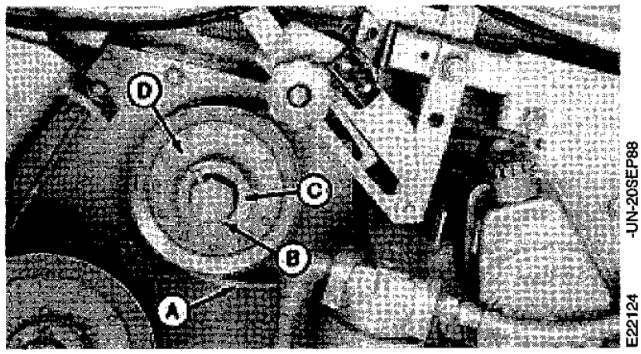
EX,1472,2030,A1-19-06NOV95

NOTE: Steps 8 through 14 are for 435 and 535 Balers only.

8. On right side of baler, remove pump drive belt (A), spring pin (B), washers (C), and sheave (D).

9. Remove washers behind sheave. Note number of washers.

A—Belt
B—Spring Pin
C—Washers
D—Sheave



EX,1472,2030,N -19-06NOV95

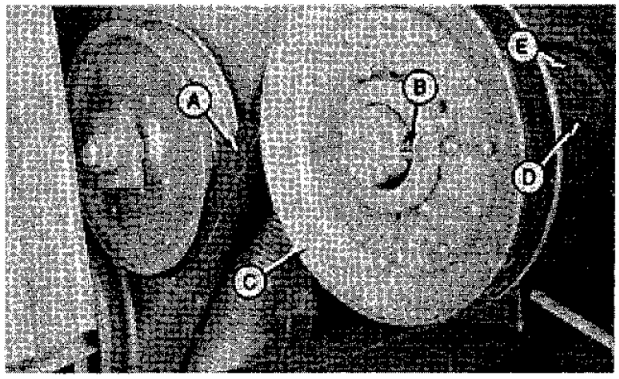
10. Remove pickup belt (A) from starter roll.

11. Remove cotter pin (B) and sheave (C).

12. Remove spring pin (D) and washers (E). Note number of washers (E) to aid in centering roll.

13. Remove cover plate.

14. Count washers on roll. Remove washers and tapered spacer.



A—Pickup Belt
B—Cotter Pin
C—Sheave
D—Spring Pin
E—Washers

EX,1472,2030,O -19-04APR89

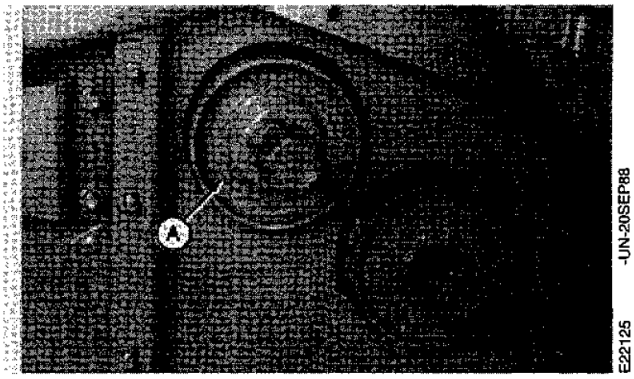
15. Remove roll (A) from left side of machine.

NOTE: If installing new roll, measure O.D. of rubber strips on new roll and compare to lower drive roll. If more than 0.5 mm (0.02 in.) difference, replace both drive rolls.

16. To assemble roll in baler, reverse removal procedure. Install tapered spacer with taper toward roll. Install same number of washers on each end of roll as before.

17. Check roller clearance at hole through side sheet. Loosen bolts and reposition as needed.

18. See Adjust Chains in this section.



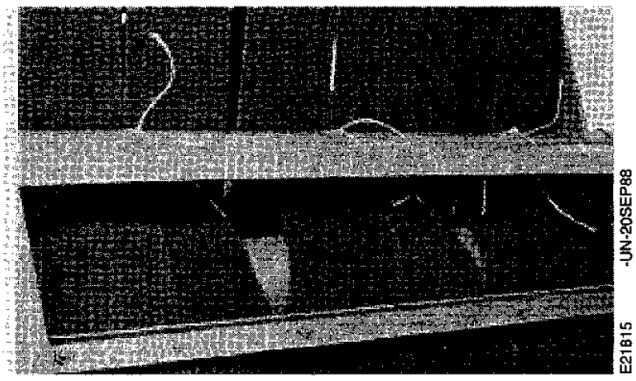
Early Baler Shown

EX,1472,2030,P -19-06NOV95

REMOVE UPPER BELT DRIVE ROLL (335, 375, 435 AND 535)

1. Raise gate and lock in upper position.

2. Tie belts up or place a long rod under belts to keep belt tension off roll.



EX,1472,2030,Q -19-11MAR93

NOTE: Early 335 (S.N. —885115) and 375 (S.N. —885558) balers are sliding idler design. Later 335 (S.N. 885116—) and 375 (S.N. 885559—) balers use a spring and pivoting arm for chain tension.

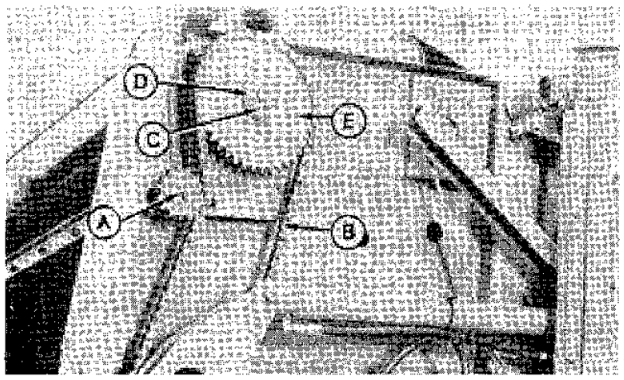
3. (335 and 375, early balers) Loosen idler (A) to release chain tension.

(335 and 375, later balers; 435 and 535) Loosen nuts (F) to release spring tension on chain.

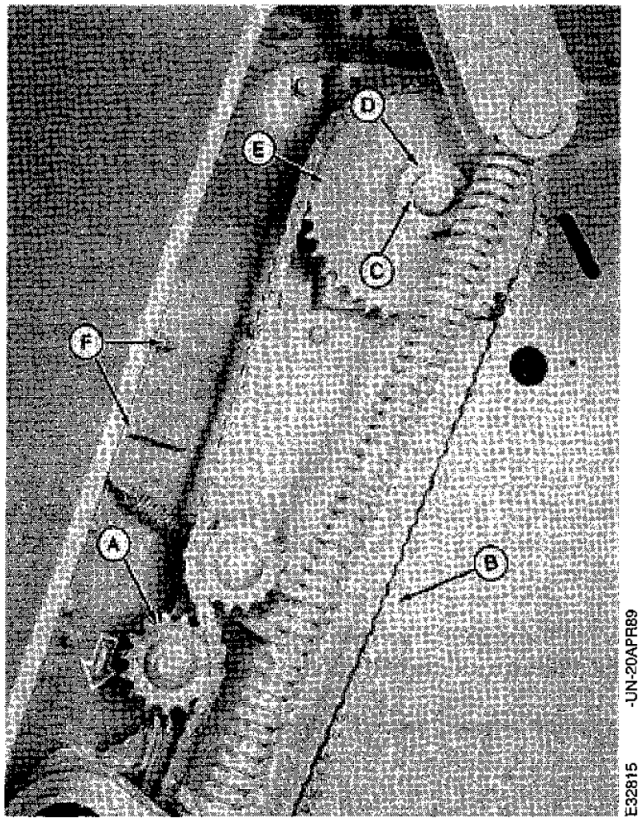
4. Remove chain (B).

5. Remove spring pin (C), washers (D), sprocket (E), and washers under sprocket.

A—Idler
B—Chain
C—Spring Pin
D—Washers
E—Sprocket
F—Nuts



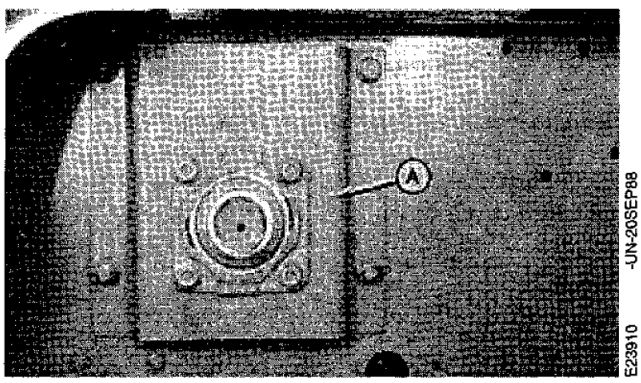
335—Early Baler Shown



435 Baler

EX,1472,2030,R -19-06NOV95

6. Remove plate (A) with bearing. Count washers on shaft. Remove washers and chamfered spacer.



EX,1472,2030,S -19-04APR89

7. Remove spring pin (A), washers (B), sprocket (C), and washers behind sprocket.

8. Remove plate (D) with bearing. Count washers on shaft. Remove washers and chamfered spacer.

CAUTION: Make sure belts are properly supported.

9. Remove roll through left-hand side hole in baler.

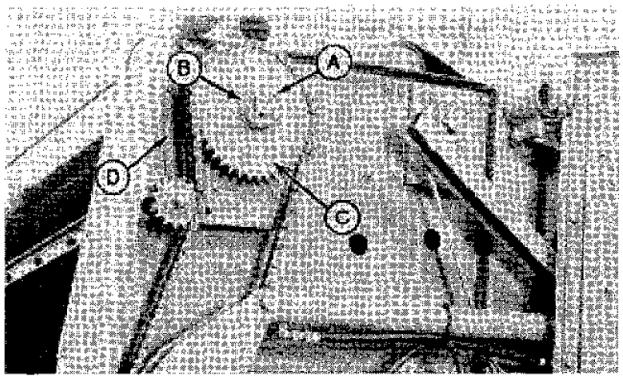
10. To install roll in baler, reverse removal procedure. Install tapered spacer with taper toward roll. Install same number of washers under bearing as before.

NOTE: If installing new roll, measure O.D. of rubber strips on new roll and compare to lower drive roll. If more than 0.5 mm (0.02 in.) difference replace both drive rolls.

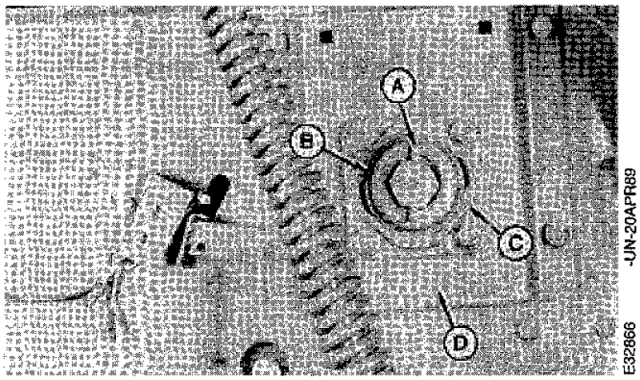
11. Check for a maximum of 2 mm (5/64 in.) end play.

12. Check to be sure washers can be rotated by hand after final assembly.

A—Spring Pin
B—Washers
C—Spacer
D—Plate



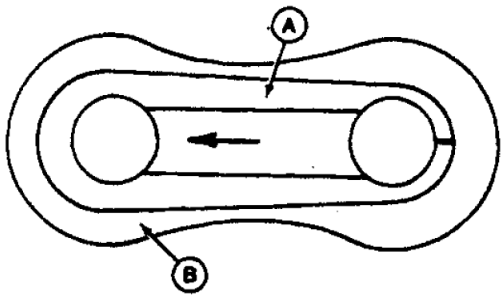
335—Early Baler Shown



435 Baler

EX,1472,2030,T -19-06NOV95

13. Install chain. Position chain clip (A) on master link (B) so that split end of clip trails in the direction of travel (arrowed).



EX,1472,2030,U -19-04APR89

NOTE: Early 335 (S.N. —885115) and 375 (S.N. —885558) balers are sliding idler design. Later 335 (S.N. 885116—) and 375 (S.N. 885559—) balers use a spring and pivoting arm for chain tension.

20 30 10

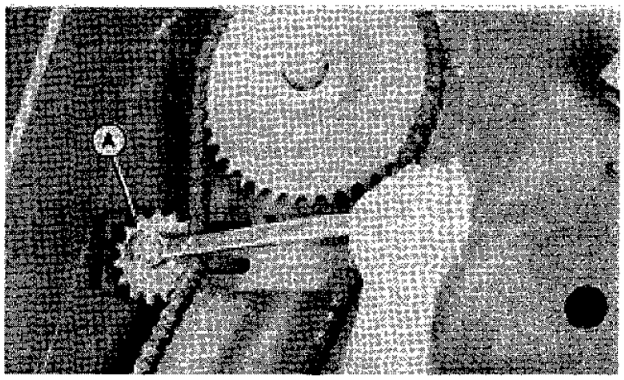
14. (335 and 375, early balers) Tighten chain with idler (A). Chain should deflect 13 mm (1/2 in.) at mid-span with 2.3 to 4.5 kg (5 to 10 lb) force. Tighten nut to 163 N·m (120 lb-ft).

(335 and 375, later balers) Adjust nuts on spring eyebolt until chain deflects approximately 13 mm (1/2 in.) at mid-span with 2.3—4.5 kg (5—10 lb) force.

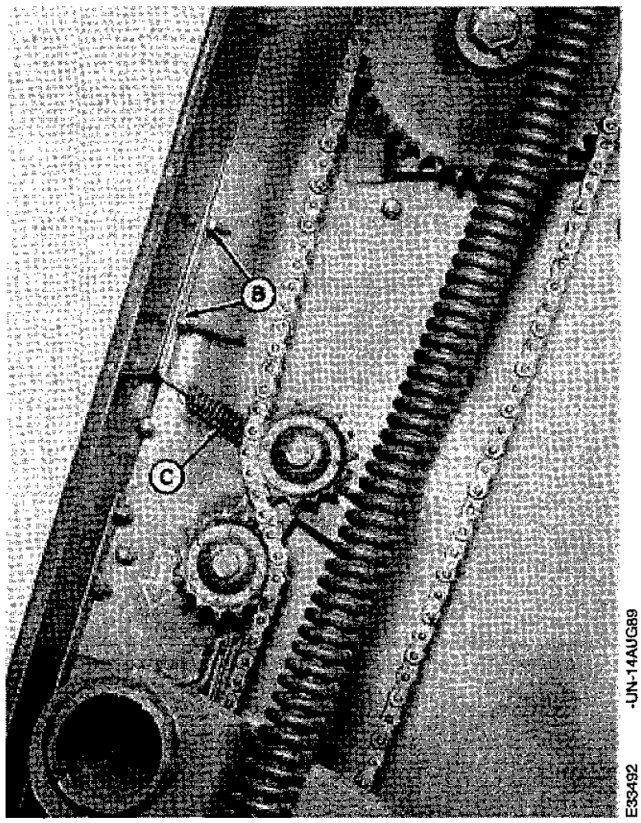
If chain cannot be tightened to specification, remove a link from the chain, and repeat step.

15. (435 and 535) Tighten nuts (B) to apply tension to chain.

If dimension between hooks on spring (C) is less than 150 mm (5-29/32 in.) remove one link from drive chain.



335—Early Baler Shown



435 Baler

EX,1472,2030,V -19-06NOV95

REMOVE UPPER BELT DRIVE ROLL (385)

1. Loosen idler (A) to release chain tension.

2. Remove chain (B).

3. Remove spring pin (C), washers (D), sprocket (E) and washers behind sprocket.

4. Open gate 12 to 15 in. (305 to 381 mm) (F) to slacken belts.

5. Remove bearing plate (G) from upper drive roll.

6. Raise gate completely and engage cylinder lock.

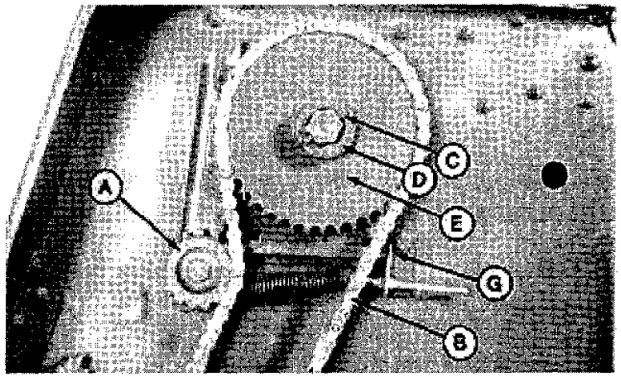
7. Tie belts up or place a long rod under belts to keep belt tension off roll.

8. (Right Side) Remove spring pin, spacer, and washers from end of upper drive roll shaft.

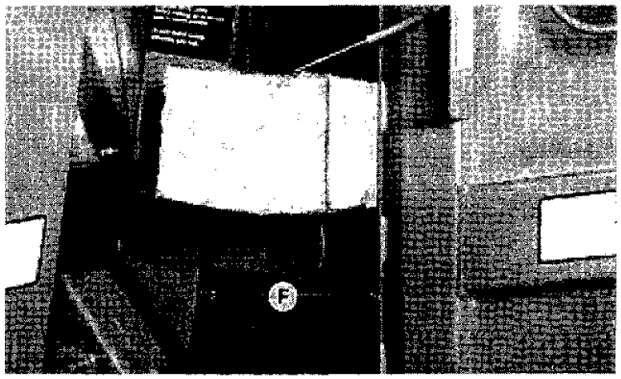
9. Remove upper drive roll from left side of machine.

10. Reverse steps to reinstall upper drive roll.

11. Adjust drive chain. (See procedures in this group.)



E36474 -UN-11MAR93



E36475 -UN-11MAR93

EX,1472,2030,V1-19-06NOV95

REMOVE TOP ARM ROLL

1. Raise and lock gate to slacken belts.

2. (335, 375 and 385 Balers) Slide a bar (A) between belts and roll with both ends sticking out of baler. Lift both ends of bar with a hoist to remove belt tension.

3. (435 and 535 Balers) Hydraulically raise center arm to maximum position.

4. Remove cap screw (B).

5. Support roll to keep it from falling.

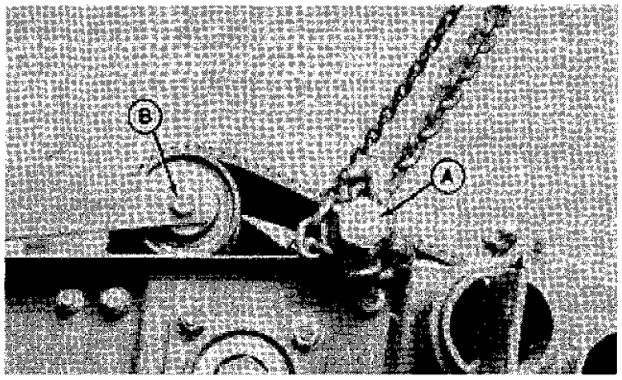
6. Remove cap screw from opposite side of baler.

7. Remove roll.

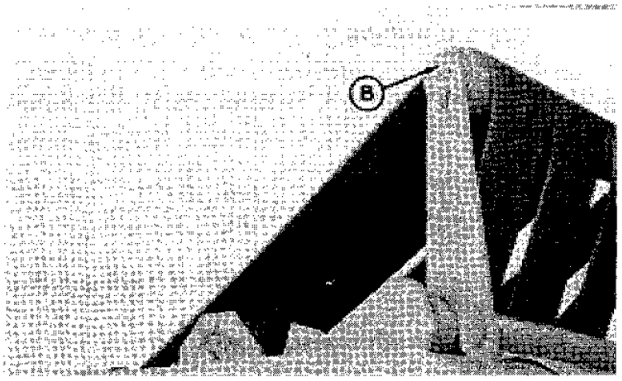
8. Refer to Replace Bearings in Roll, this group.

9. Reverse removal procedure to install roll. Installed roll should be in end of arm as shown.

10. Tighten cap screws to 130 N·m (97 lb-ft).



335 Baler Shown

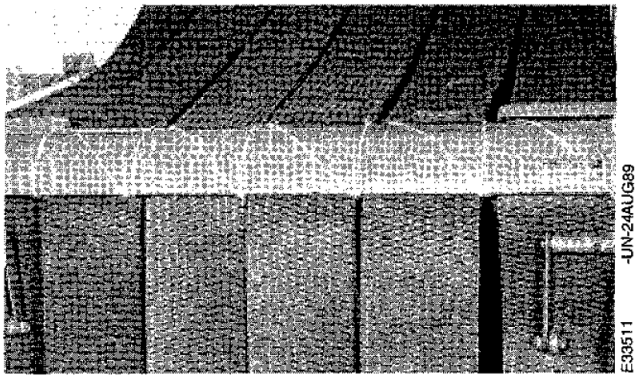


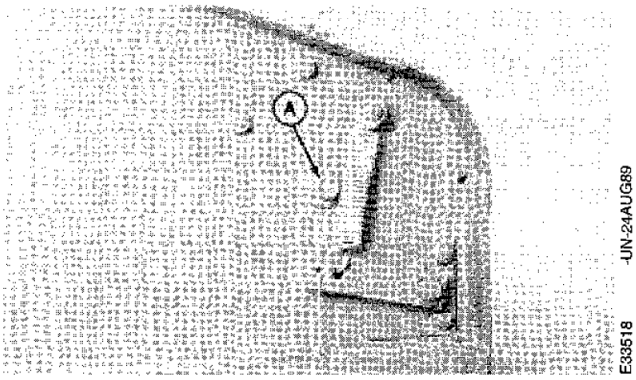
435 Baler Shown

EX,1472,2030,W -19-06NOV95

REMOVE UPPER REAR GATE ROLL

1. To keep belts from falling down, tie belts up.
2. Remove cap screw (A) and washer. Repeat on opposite side.
3. (335 and 435 Only) Remove two spacers.
4. Remove roll through belts.
5. See Replace Bearings in Roll in this group.
6. To reinstall roll, reverse removal procedure.
7. Tighten cap screws to 130 N·m (97 lb-ft).

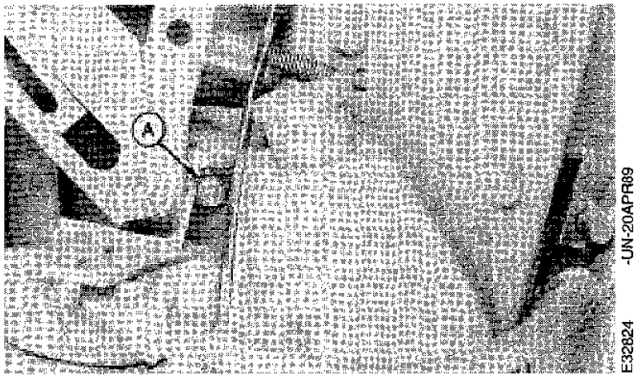




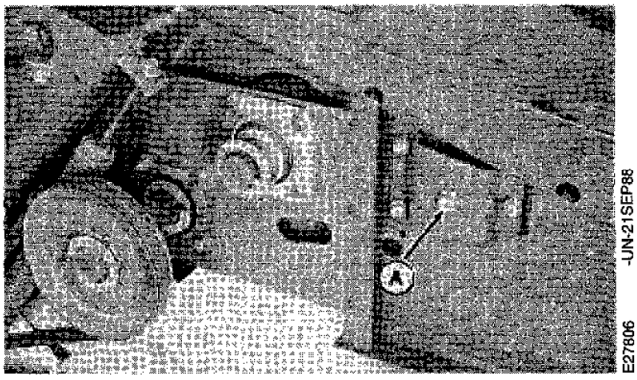
EX,1472,2030,X -19-11MAR93

REMOVE BELT STAGGERING ROLL

1. Remove cap screw (A) on right side of baler.



435 Baler Shown

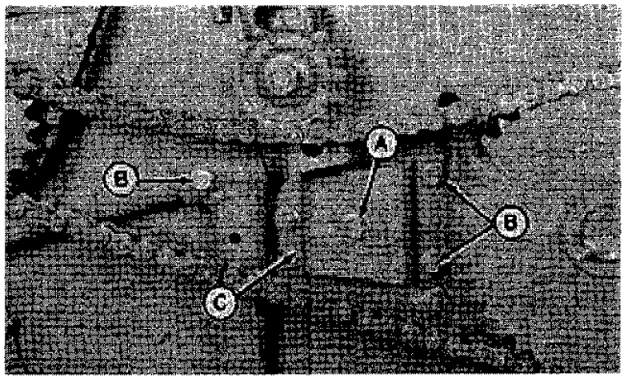


335 Baler Shown

EX,1472,2030,Y -19-06NOV95

2. Remove cap screw (A) on left side of baler.

3. Remove three nuts (B) and plate (C).



EX,1472,2030,Z -19-04APR89

4. Remove spacer (A) from left side of baler.

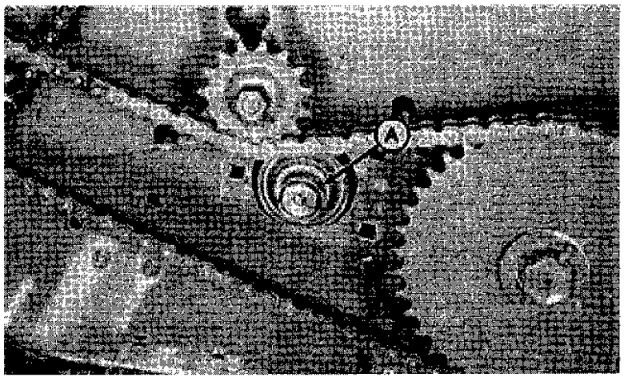
5. Remove roll.

6. Refer to Replace Bearing in Roll, this group.

7. Be certain to place roll through the correct belts.

8. Reverse procedure to replace roll. Be sure roll clears side sheet when rotated.

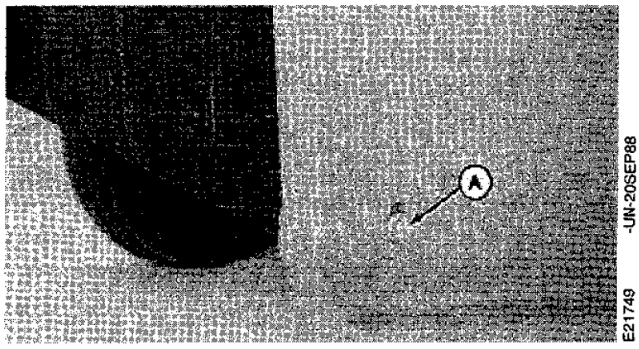
9. Tighten all cap screws to 130 N·m (97 lb-ft).



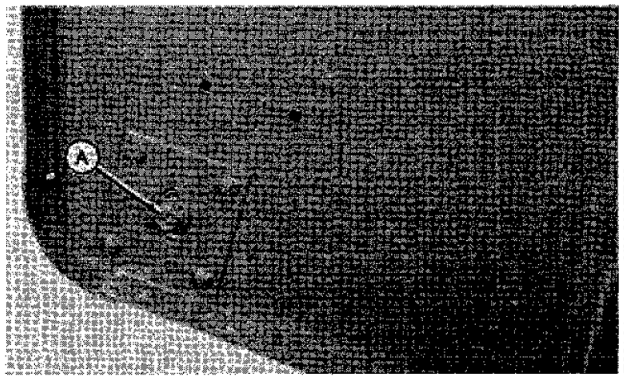
EX,1472,2030,AA-19-04APR89

REMOVE LOWER REAR GATE ROLL—LESS SURFACE WRAP OPTION

1. Raise gate fully and lock.
2. Lock gate.
3. Raise belt tension arm with SCV lever.
4. Remove cap screw (A) from both ends of roll.
5. Remove roll.
6. Refer to Replace Bearings in Roll, this group.
7. Reverse procedure to replace roll. Adjust roll for correct belt tracking. (See Adjust Belt Tracking in this group.)
8. Tighten cap screws to 130 N·m (97 lb-ft).



335 Baler Shown

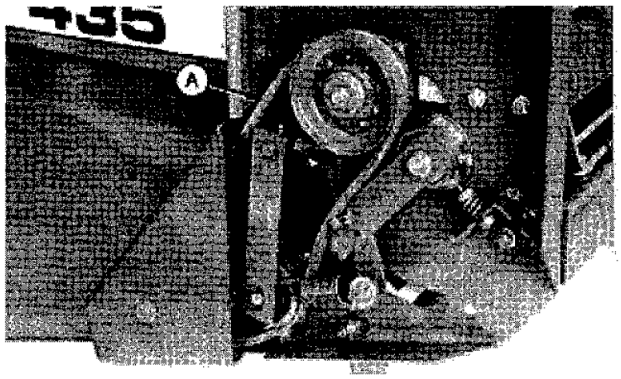


435 Baler Shown

EX,1472,2030,AB-19-06NOV95

REMOVE AND INSTALL LOWER REAR GATE ROLL—SURFACE WRAP OPTION

1. Open rear gate slightly.
2. Move gate valve to lock position.
3. Remove belt tension by raising belt tension arm using tractor hydraulics.
4. Remove surface wrap drive belt (A). (See procedure in Section 50 for models (S.N. —CC010000) or Section 51 for models (S.N. 880001—).

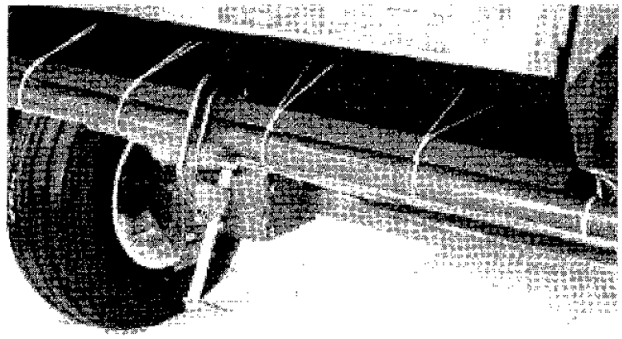


EX1472,2030,1 -19-11MAR93

NOTE: Lower surface wrap guide assembly can be removed instead of using a clamp to hold guide away from roll. Refer to Section 51, Group 15 for removal procedures.

5. Use a C-clamp to move lower surface wrap guide away from roller.

6. Tie belts to lower guide to ease roll removal and installation.



EX1472,2030,2 -19-10JUL91

7. Remove cap screw (A) and washer (B) from right end of roll shaft. Use care not to lose spacer (C) on right end of roll shaft.

8. Slide lower rear gate roll and shaft out the left side of gate.

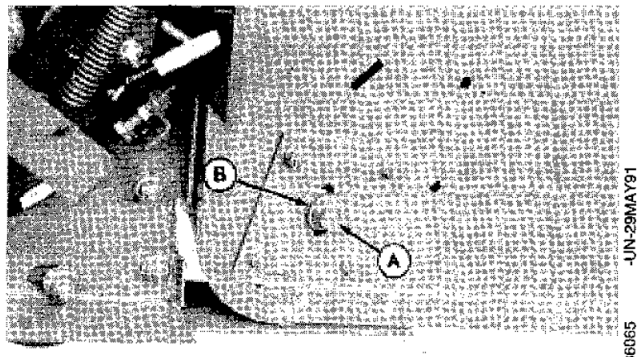
9. Service roll as necessary. (See procedure in this group.)

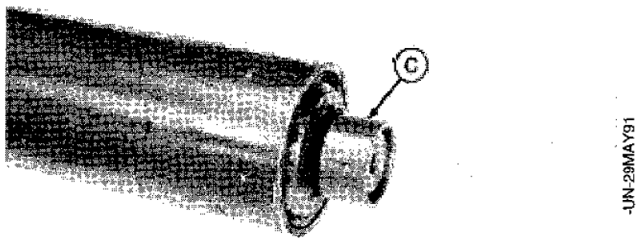
10. Install spacer (C) on right end of roll shaft.

11. Slide lower rear gate roll and shaft into gate from the left side.

12. Install washer (B) and cap screw (A) on right end of shaft. Position roll in center of slot and tighten cap screw (A) to 122 N·m (90 lb-ft).

13. Install surface wrap drive belt. (See procedure in Section 50 or 51.)





EX1472,2030,3 -19-11MAR93

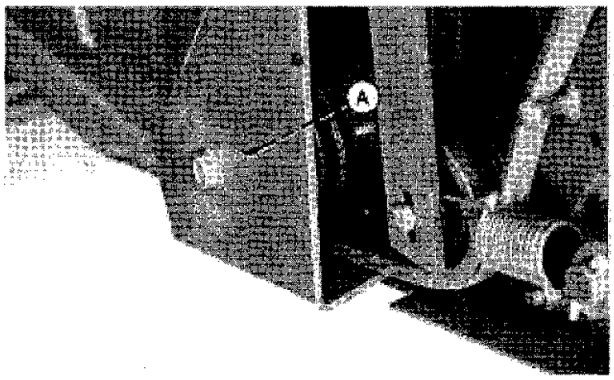
14. Check that roll has side-to-side movement of 1—4 mm (0.04—0.15 in.). If necessary, remove or add washers (A) on end of hex shaft to obtain proper movement.

Be sure roll rotates freely by hand.

15. Untie belts and remove C-clamp.

16. Unlock gate valve and close the gate.

17. Check and adjust belt tracking. (See procedures in this group.)



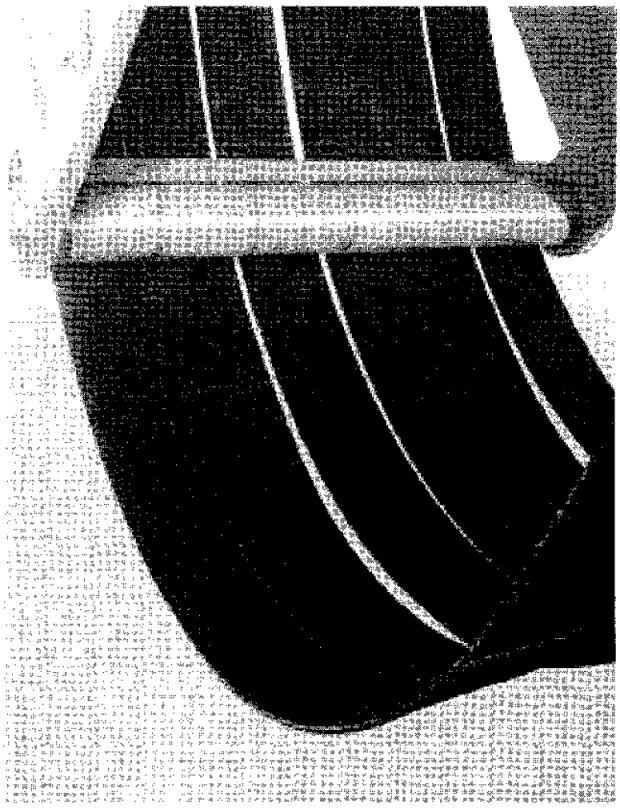
E36067 -UN-29MAY91

EX1472,2030,4 -19-10JUL91

REMOVE LOWER GATE ROLL—LESS SURFACE WRAP OPTION

1. Raise and lock gate.

2. Release belt tension.



E22033 -UN-20SEP88

EX,1472,2030,AC-19-11MAR93

3. Remove spring pin (A), collar and washers. Note collar orientation.

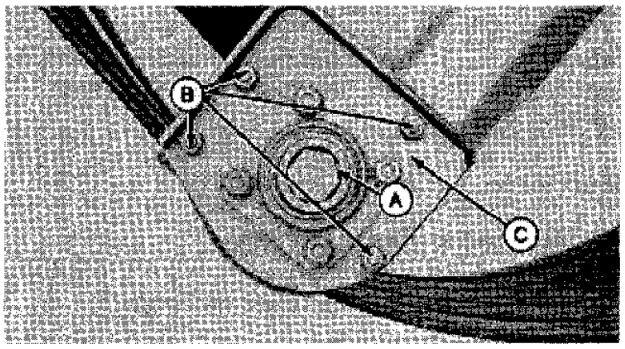
4. Remove four mounting bolts (B).

5. Remove spring pin (A) on opposite side of machine.

6. Pull roll and plate (C) from baler.

7. To assemble roll in baler, reverse removal procedure.

8. Rotate roll to check that roll clears hole in gate when bolts are tightened to correct torque.



EX,1472,2030,AD-19-06NOV95

REMOVE AND INSTALL LOWER GATE ROLL—SURFACE WRAP OPTION

1. Raise gate until gate roll will clear baler tire when removed.

2. Remove lower surface wrap guide assembly. (See procedure in Section 51, Group 15.)

3. Remove spring pin (A) to remove collar and washers. Note the position of hole in collar for spring pin.

4. Remove two cap screws (B).

5. Repeat steps 3 and 4 for other end of roller.

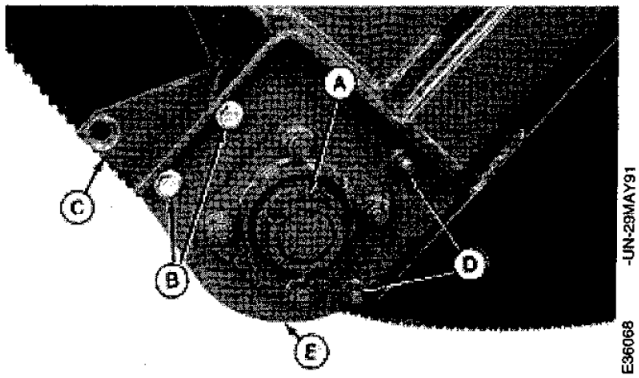
6. Remove two nuts (D) and bolts from each side to remove support plate with bearing (E) and lower gate roll from gate.

7. Install roll and support plate and bearing (E) in gate. Install two bolts and nuts (D) on each side.

8. Tighten cap screws (B) and nuts (D) to 122 N·m (90 lb-ft).

9. Install washers, collar, and spring pin (A) on each end of roll shaft. Be sure to install collar with hole in the same position as removed.

10. Adjust scraper. (See procedure in this group.)



E36068 -UN-29MAY91

A—Spring Pin
B—Cap Screw and Nut
C—Belt Guide
D—Nut and Bolt
E—Support Plate with Bearing and Flangettes

EX1472,2030,6 -19-11MAR93

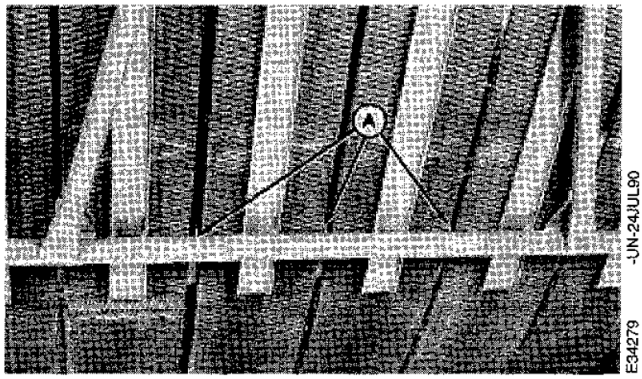
11. Position belts between straps (A) of belt guide.

12. Install surface wrap lower guide assembly. (See procedure in Section 51, Group 15.)

13. Check clearance between ends of all belt guide straps (A) and crossmember of surface wrap lower guide assembly. If necessary, loosen cap screws to adjust lower guide assembly until there is 2—4 mm (3/32—5/32 in.) clearance.

14. Move gate valve to unlock position. Close gate and lower tension arm.

15. Check belt tracking. (See procedure in this group.)

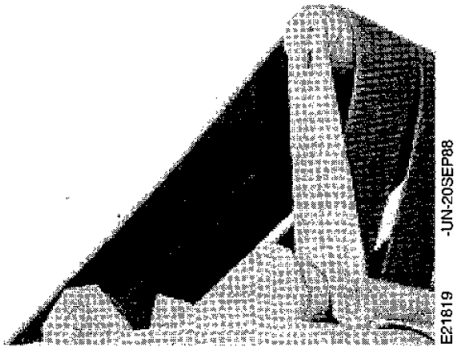


EX1472,2030,7 -19-25JUN91

REMOVE TOP IDLER ROLL

1. Raise and lock gate.

2. Raise center arm to maximum height with SCV lever.



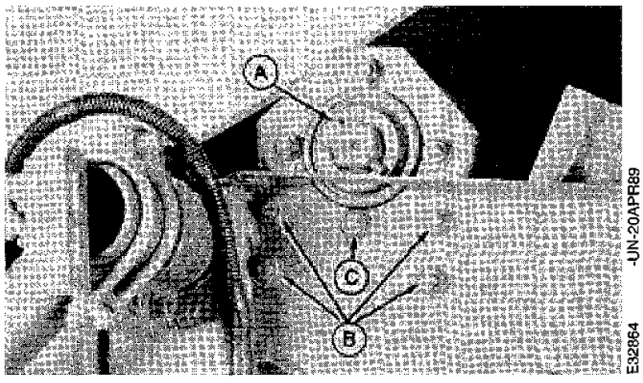
EX,1472,2030,AE-19-11MAR93

3. Remove spring pin (A).

NOTE: When equipped with bale ramp, bottom two bolts (B) attach ramp bracket as well as idler roll. Remove bottom two bolts and bale ramp first, before removing top idler roll.

4. Remove four lower bolts (B) and loosen one bolt (C).

5. Remove spring pin (A) on both sides of baler.

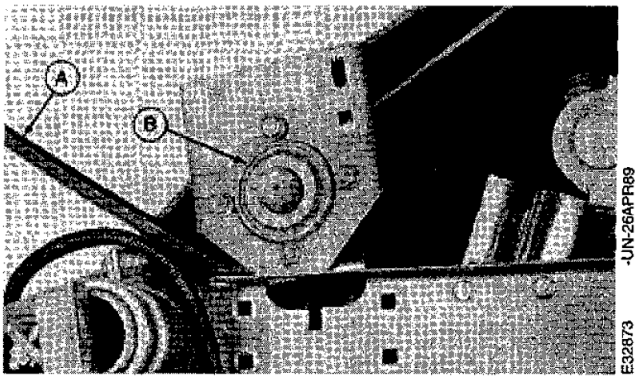


EX,1472,2030,AF-19-11MAR93

6. Raise roll with pry bar (A) and rotate as shown.

7. Remove plate and bearing (B).

NOTE: Steps 8 and 9 are not necessary if belts are removed from baler.



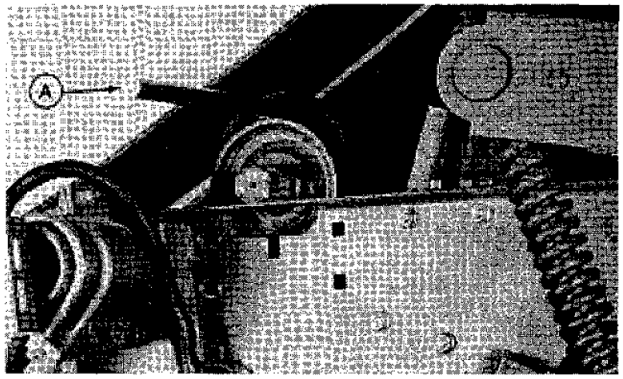
EX,1472,2030,AG-19-04APR89

8. Slide bar (A) between belts and roll with both ends sticking out of baler.

9. Lift both ends of bar (with a hoist) to remove belt tension.

10. Count washers on ends of roll. Remove washers and chamfered spacers from roll. Remove roll from baler.

11. To assemble roll in baler, reverse removal procedure. Install chamfered washer with chamfer toward roll. Install same number of washers on each end of roll as removed in step 10.



EX,1472,2030,AH-19-04APR89

REMOVE REAR TENSION ARM ROLL (335—375)

1. To remove rear roll (A), raise tension arm.

CAUTION: To avoid possible injury, place a solid 102 x 102 mm (4 x 4 in.) block above cylinder between gate and main frame. Lower tension arm to position shown.

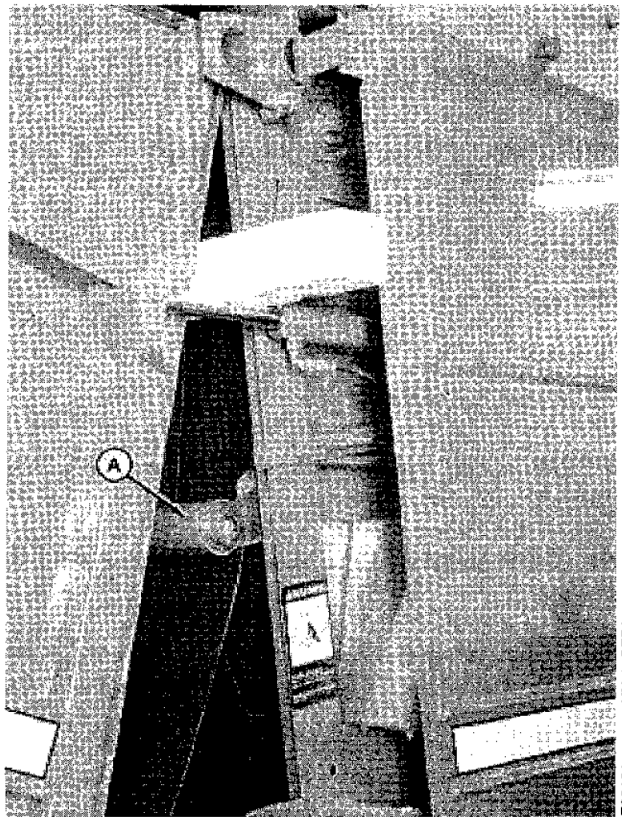
IMPORTANT: Insert end of block flush with inside of side sheet so tension arm will clear block when lowered.

2. Support roll (A) on both ends and remove cap screws.

3. If roll is broken, check for bent shaft. Do not straighten shaft. Install a new one.

4. Install roll (A) with belts on front side as shown.

5. Install cap screws and torque to 130 N·m (97 lb-ft).



EX,1472,2030,AI-19-06NOV95

REMOVE REAR TENSION ARM ROLL (385)

CAUTION: Place a solid 406 x 102 mm (16 x 4 in.) block below cylinder between gate and main frame to prevent gate from closing.

1. To remove rear roll (A), raise tension arm.

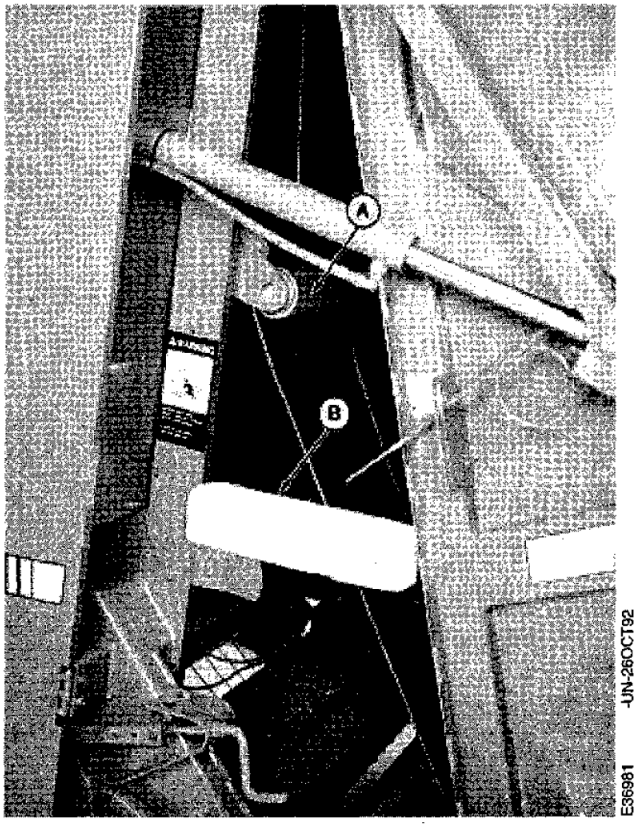
2. Put a solid block (B) between gate and main frame.

3. Lower tension arm to position shown.

4. Support roll (A) on both ends and remove cap screws.

5. Install roll (A) with belts on front side as shown.

6. Install cap screws and tighten to 140 N·m (103 lb-ft).



EX,1472,2030,A2-19-11MAR93

REMOVE CENTER AND FRONT TENSION ARM ROLLS (335—375)

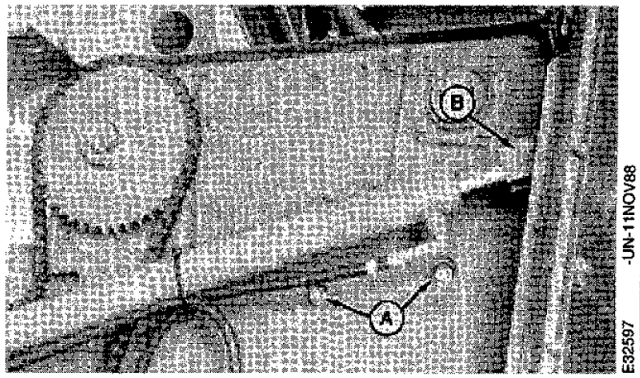
1. Raise gate to highest position and engage gate lock (B).

NOTE: Access holes (A) are provided for removal of roller shaft cap screws.

2. Support rolls on both ends and remove cap screws.

3. When reinstalling rolls, refer to the belt threading diagram. (See Install Belts in Section 80 Group 30.)

4. Install cap screws and tighten to 130 N·m (97 lb-ft)



EX,1472,2030,AJ-19-11MAR93

REMOVE CENTER AND FRONT TENSION ARM ROLLS (385)

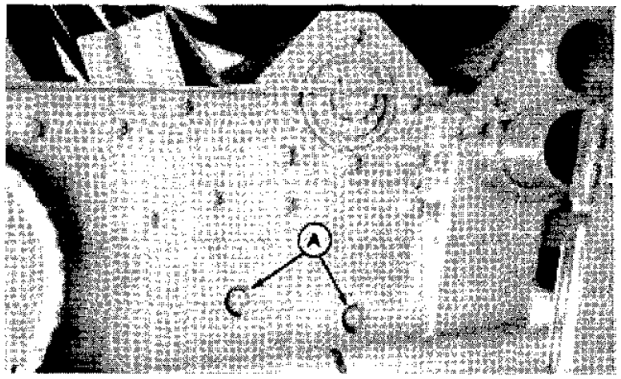
1. Raise gate to highest position and engage gate lock.

NOTE: Access holes (A) are provided for removal of roller shaft cap screws.

2. Support rolls on both ends and remove cap screws.

3. When reinstalling rolls, refer to the belt threading diagram. (See Installing Belts in Section 80, Group 30.)

4. Install cap screws and tighten to 140 N·m (103 lb-ft).



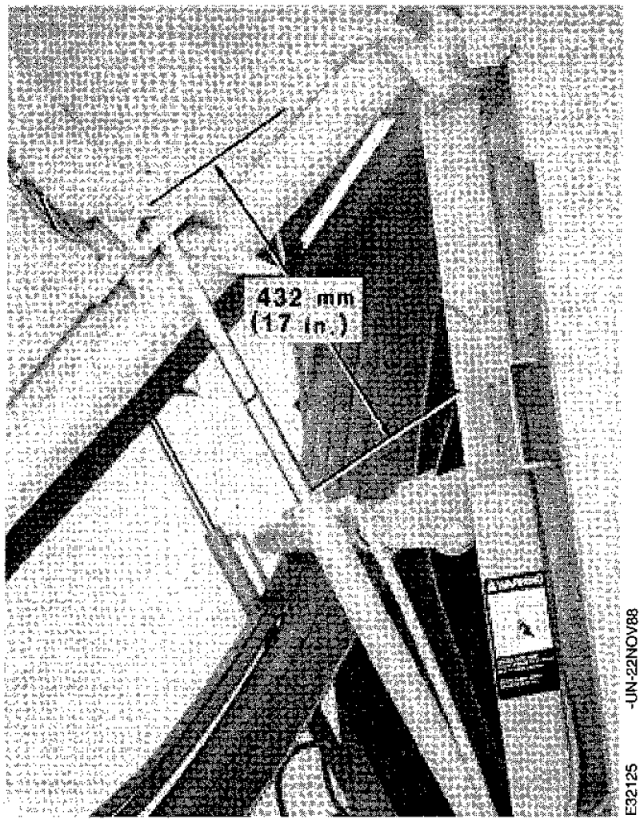
EX,1472,2030,A3-19-11MAR93

REMOVE CENTER AND REAR TENSION ARM ROLLS (435—535)

1. Close gate and lower belt tension arm with tractor selector valve.

2. Raise gate until cylinder is extended approximately 432 mm (17 in.).

3. Lock the gate with gate lock valve.



EX,1472,2030,AK-19-11MAR93

4. Lower tension arms until bolts (B) and (D) are accessible. Shut off tractor.

5. To remove rear roll (A), remove bolt (B). Repeat on opposite side.

6. To remove center roll (C), remove bolt (D). Repeat on opposite side.

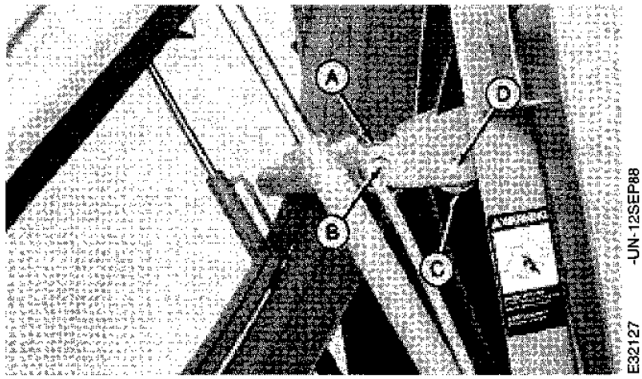
NOTE: Reinstall rolls with belts between them as shown.

7. Install center roll (C) and fasten with bolts. Tighten bolts to 130 N·m (97 lb-ft).

8. Install rear roll (A) and fasten with bolts. Tighten bolts to 130 N·m (97 lb-ft).

9. Lower the belt tension arm.

10. Unlock and close gate.



A—Rear Roll
B—Bolt
C—Center Roll
D—Bolt

EX,1472,2030,AL-19-05APR89

REMOVE FRONT TENSION ARM IDLER ROLL (435—535)

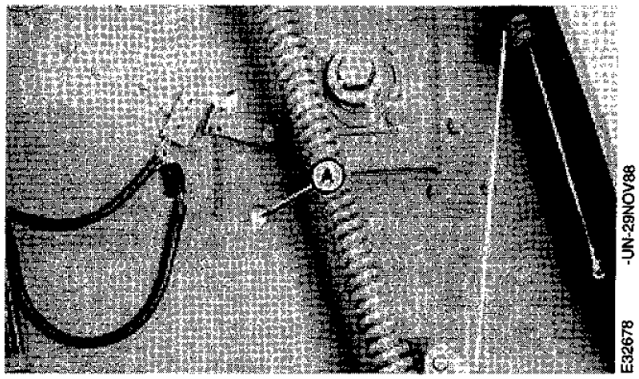
1. Raise gate fully. Lock gate.

2. Adjust tension arm to align front roll cap screws (A) with hole in side sheet.

3. Support roll on both ends and remove cap screws (A).

4. When reinstalling roll, refer to belt threading diagram. (See Install Belts in Section 80 Group 30.)

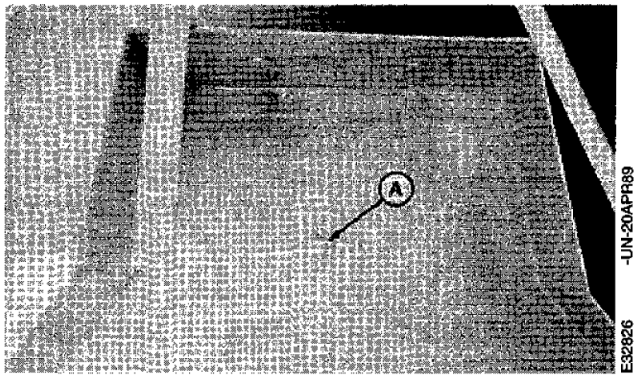
5. Install cap screws (A). Tighten to 130 N·m (97 lb-ft).



EX,1472,2030,AM-19-11MAR93

REMOVE FRONT IDLER ROLL (435—535)

1. Remove cap screw (A) on right side of baler.



EX,1472,2030,AN-19-11MAR93

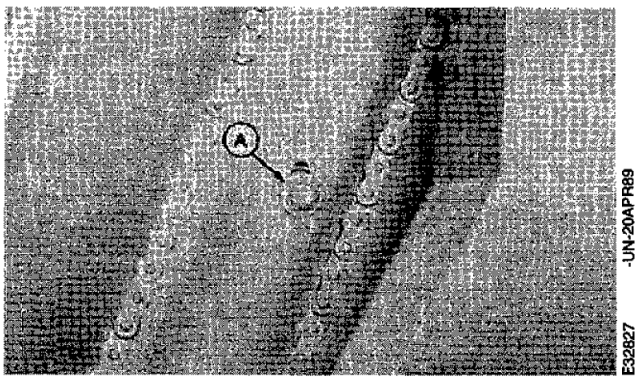
2. Hold end of roll and remove cap screw (A) on left side of baler.

3. Pull roll between belts and remove from front of baler.

4. To assemble roll in baler, reverse removal procedure.

5. Tighten cap screws to 130 N·m (97 lb-ft).

6. Check and adjust belt tracking. See Adjust Belt Tracking, this section.



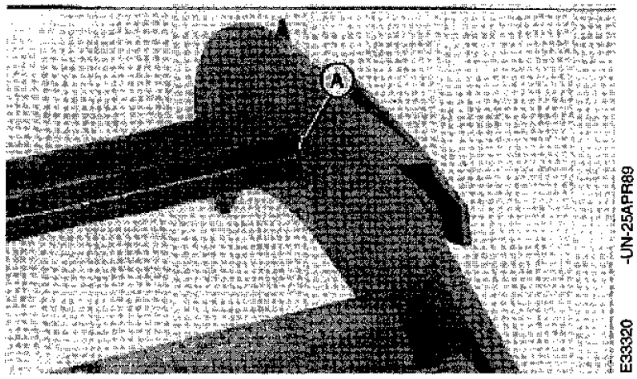
EX,1472,2030,AO-19-05APR89

REPLACE TENSION ARM ROLLER SHAFT OR BOLT

IMPORTANT: Failure to follow these instructions could cause subsequent breakage of the roll mounting bolts. Breakage of the bolts during operation can result in tension arm roll being thrown from the baler toward the tractor.

20
30
26

1. If previous shaft was bent as a result of a broken roll, it is likely that washer (A) has been damaged.



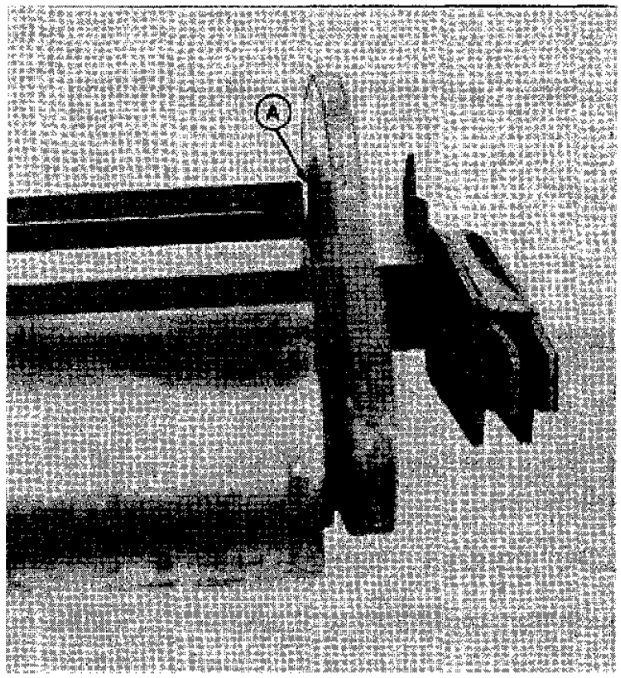
EX,1472,2030,AP-19-11MAR93

IMPORTANT: Do not attempt to straighten a bent shaft. Replace it.

2. Check washer to see if it appears bent or warped.

3. Install new shaft using new bolts. Tighten bolts until end of shaft barely contacts washer. Before tightening bolts further, carefully check for ANY gap (A) between shaft and washer.

NOTE: If there is a gap, it will usually occur near the top of the washer/shaft joint.



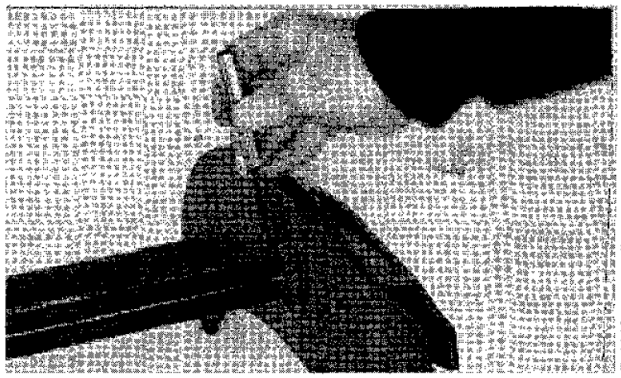
EX,1472,2030,AQ-19-11MAR93

IMPORTANT: Any gap present between shaft and washer may result in failure of bolts which hold the roll in place.

4. If unsure of gap, use a 0.13 mm (0.005 in.) or thinner feeler gauge to detect ANY gap between shaft and washer. If ANY gap exists, washer must be filed or ground until flat and parallel with end of shaft.

5. To assemble roll in baler, reverse removal procedure.

Tighten bolts to 130 N·m (97 lb-ft).



EX,1472,2030,AR-19-06NOV95

REPLACE BEARINGS WITH CAST HOUSINGS

1. Remove spring pin, washers and sprocket or sheave if applicable. Count washers when removed and note number and placement for reassembly.

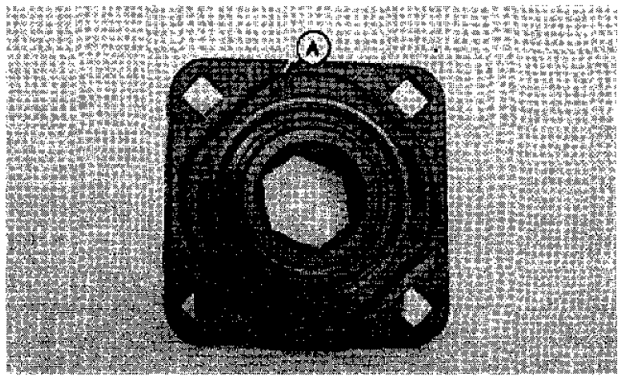
2. Remove bearing and cast housing.

3. Install new bearing with the word UP (A) and arrow toward top of baler.

4. Snug up round head bolts and nuts. Pull upward on shaft to remove tolerance from the bearing mounting holes. Tighten round head bolts and nuts.

5. Reverse removal procedure for remainder of assembly.

6. Install washers exactly as removed. Use new spring pin.



EX,1472,2030,AS-19-11MAR93

REPLACE BEARINGS WITH STEEL FLANGETTES

1. Remove spring pin, washers, sprocket, and sheave or spacer. Note number and location of washers for reassembly.

2. Remove outer flangette.

3. Replace bearing and outer flangette.

4. Snug up round head bolts and nuts. Pull upward on shaft to remove tolerance from the bearing mounting holes. Tighten round head bolts and nuts.

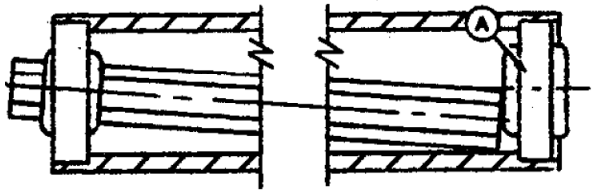
5. Reverse removal procedure for remainder of assembly.

6. Install washers exactly as removed. Use new spring pin(s).

EX,1472,2030,AT-19-11MAR93

REPLACE BEARINGS IN ROLL

Bearings in rolls can be replaced by removing the cap screws that hold the roll in the baler, removing the roll from the baler and driving the bearing from the roll.



E23917 -UN-20SEP88

1. Grind off staked area on shaft.

2. Remove shaft and rotate each bearing to determine which should be replaced.

3. Remove worn bearing (A) by hitting shaft with a rubber hammer. Discard bearing.

IMPORTANT: Replace all bearings with new. Do not re-use bearings which have been removed. Removal causes internal bearing damage.

4. Replace bearing(s) and shaft.

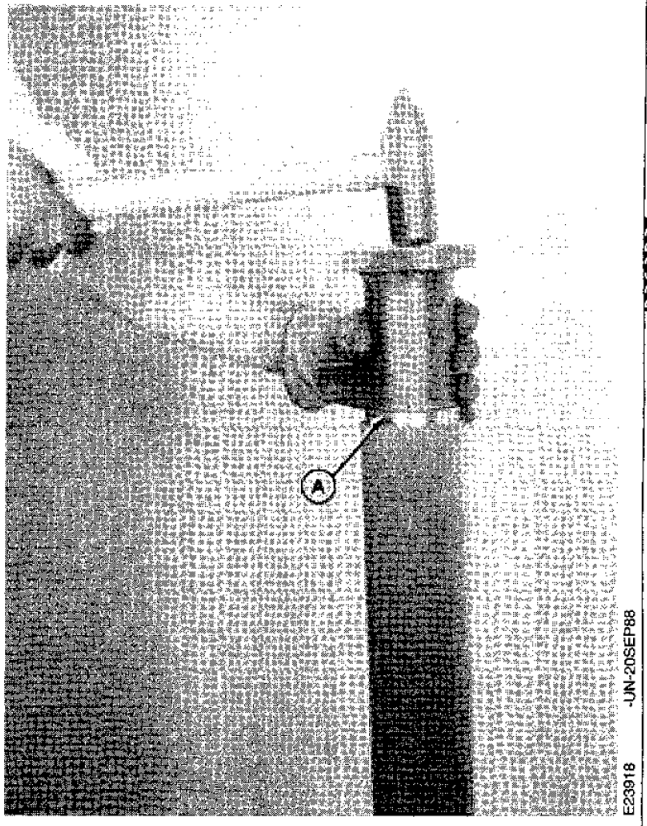
EX,1472,2030,AU-19-11MAR93

IMPORTANT: Install bearing by driving on outer race of bearing. Driving bearing on inner race will reduce bearing life. Do not drive bearing by driving on seal. Driving on seal will significantly reduce bearing life. Do not apply load to inner race of opposite bearing.

5. Install new bearing (A) by pressing outer race into roll as shown. Press bearing to bottom of counterbore.

6. Install shaft in bearing. Stake end of shaft to ease handling during reassembly.

7. Install roll in baler. Use procedure in this section to replace roll.



EX,1472,2030,AV-19-05APR89

ADJUST LOWER FRONT GATE ROLL SCRAPER

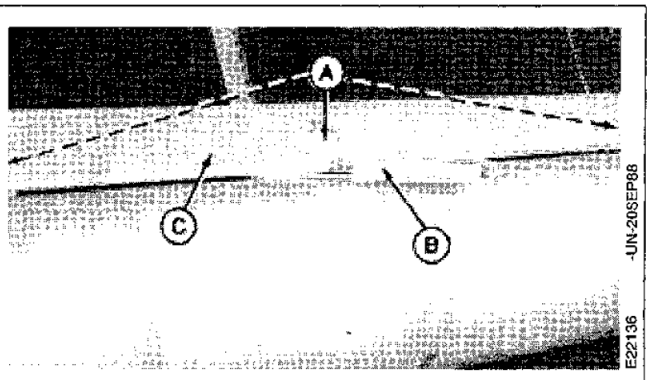
1. (335-375-385) Raise gate fully and lock. (435-535) Raise gate to convenient height and lock with gate lock valve.

2. Raise center arm to highest position.

3. Loosen nuts on cap screws (A).

4. With feeler gauge (B), set scraper (C) to clear gate roll by 1 to 2 mm (0.039 to 0.0787 in.). Rotate roll. Check to make sure scraper does not hit roll.

5. Tighten nuts (A).



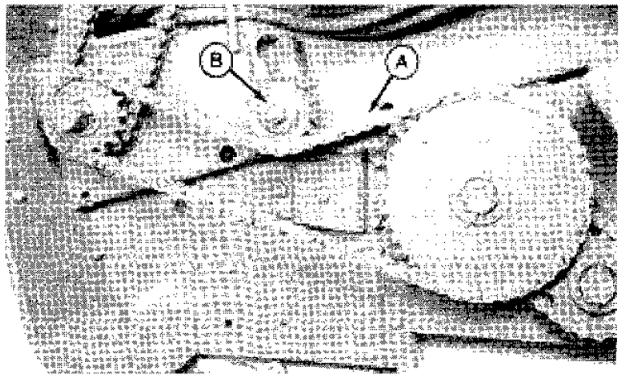
EX,1472,2030,AW-19-11MAR93

ADJUST LOWER BELT DRIVE ROLL CHAIN

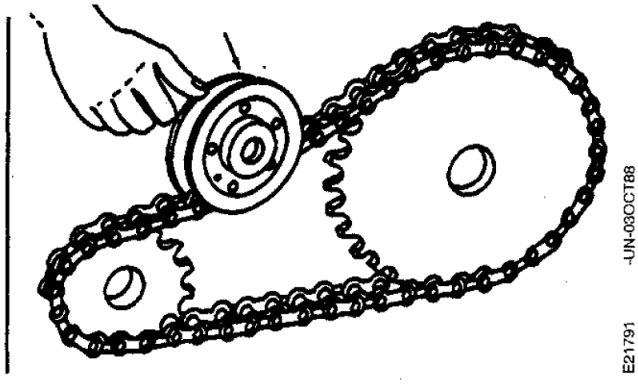
To ensure that all slack is removed from chains, close gate and engage PTO a few seconds. Shut off tractor.

Adjust tension on lower belt drive roll chain (A) by loosening idler mounting nut (B) and pressing idler against chain with 22 to 44 N (5 to 10 lb) force.

Tighten idler mounting nut to 163 N·m (120 lb-ft). Readjust if necessary.



E36390 -UN-17JAN92



E21791 -UN-03OCT88

EX,1472,2030,AX-19-11MAR93

ADJUST UPPER DRIVE ROLL CHAIN—335—375

NOTE: Early 335 (S.N. —885115) and 375 (S.N. —885558) balers are sliding idler design. Later 335 (S.N. 885116—) and 375 (S.N. 885559—) balers use a spring and pivoting arm for chain tension.

SLIDING IDLER DESIGN:

To ensure that all slack is removed from chain, close gate and engage PTO a few seconds. Shut off tractor.

Adjust tension on upper drive roll chain by loosening idler (A) mounting cap screw and pressing idler against chain with 22 to 44 N (5 to 10 lb) force.

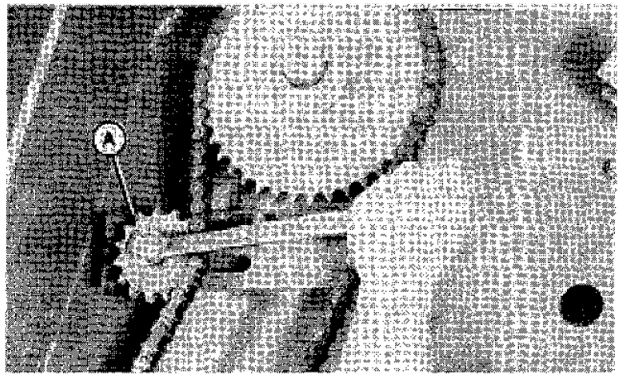
Tighten idler mounting cap screw to 163 N·m (120 lb-ft). Readjust if necessary.

SPRING AND ARM DESIGN:

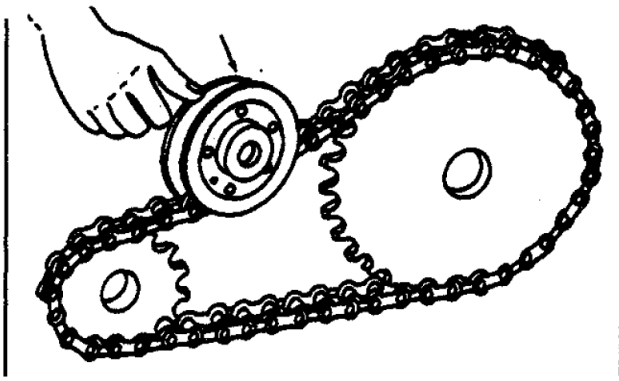
To ensure that all slack is removed from chains, close gate and engage PTO a few seconds. Shut off tractor.

Adjust tension on upper drive roll chain by adjusting nuts on spring eyebolt until chain deflects approximately 13 mm (1/2 in.) at mid-span with 22 to 44 N (5 to 10 lb) force.

If chain cannot be tightened to specification, remove a link from the chain and repeat adjustment.



335—Early Baler Shown



EX,1472,2030AX0-19-06NOV95

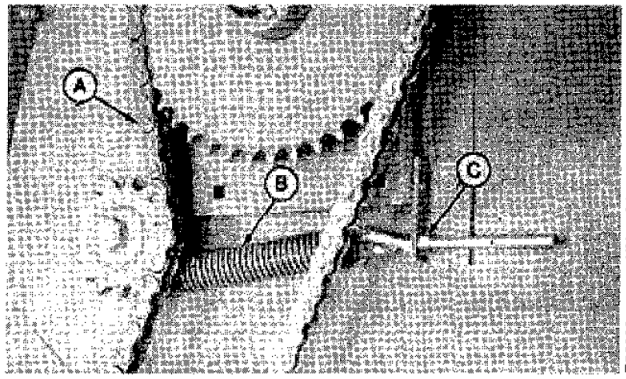
ADJUST UPPER ROLL DRIVE CHAIN (385)

Remove link from chain (A) if there is no separation between spring coils (B).

To remove chain link:

20 30 32

1. Loosen nut (C) on eyebolt to release chain tension.
2. Remove link from chain.
3. Tighten nut (C).
4. Check spring coils (B) for separation. Repeat procedure if necessary.

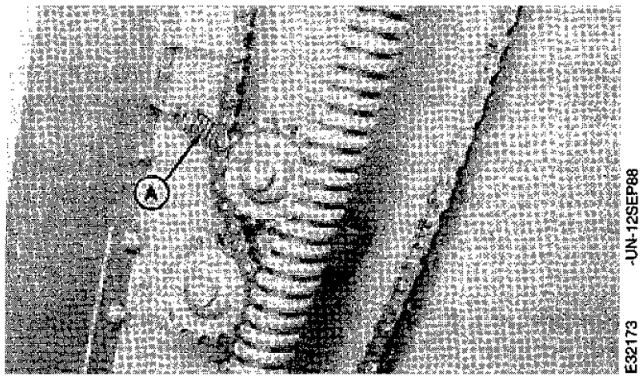


EX,1472,2030,A4-19-11MAR93

ADJUST UPPER DRIVE ROLL CHAIN—435—535

To ensure that all slack is removed from chains, close gate and engage PTO a few seconds. Shut off tractor.

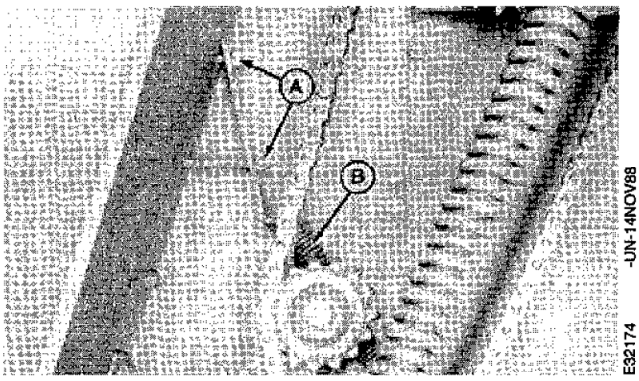
If dimension between hooks on spring (A) is less than 150 mm (5-29/32 in.), remove one link from upper drive roll chain.



EX,1472,2030AX1-19-11MAR93

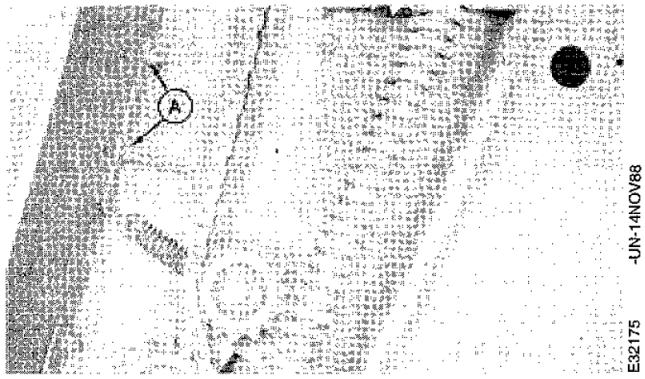
REPLACE UPPER CHAIN AND IDLER—435—535

1. Loosen nuts (A) to release spring tension. Remove spring (B). Chain and idler assembly are now able to be removed or replaced.



EX,1472,2030AX2-19-11MAR93

2. To assemble, install spring and tighten nuts (A).

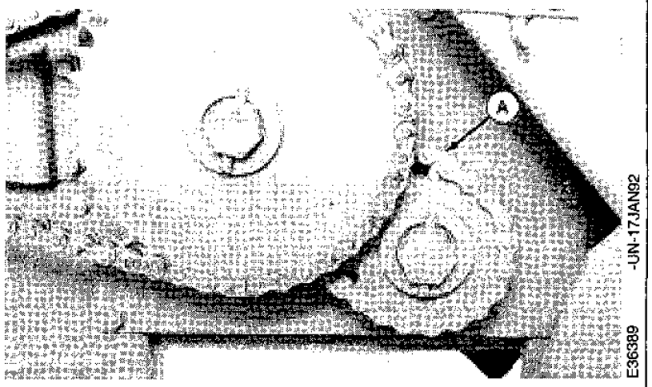


EX,1472,2030AX3-19-17JAN92

INSPECT STARTER ROLL DRIVE CHAIN

To ensure that all slack is removed from chains, close gate and engage PTO a few seconds. Shut off tractor.

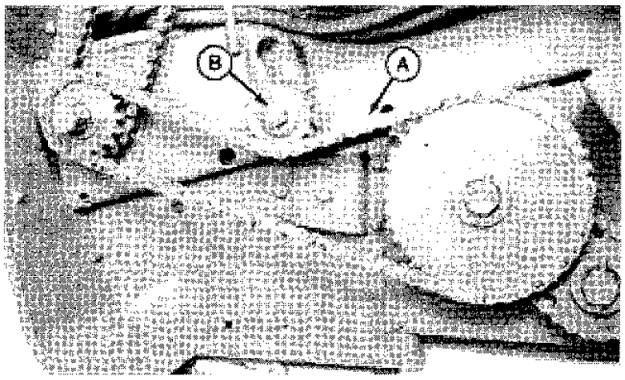
Check starter roll drive chain (A) for slack. If chain can be moved up and down more than 25.5 mm (1.0 in.), replace drive chain.



EX,1472,2030AX4-19-11MAR93

REPLACE AND ADJUST STARTER ROLL DRIVE CHAIN

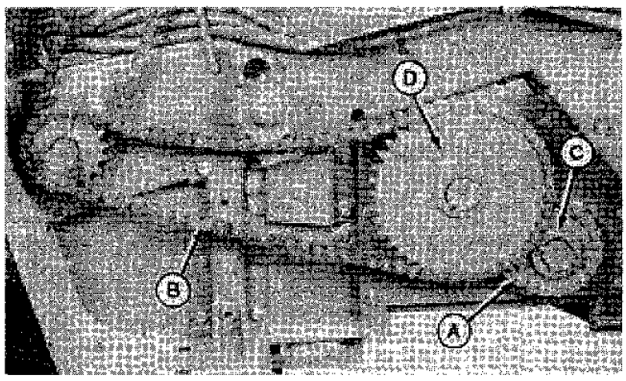
1. Loosen idler (B) to remove tension from lower belt drive roll chain (A).



EX,1472,2030,A5-19-11MAR93

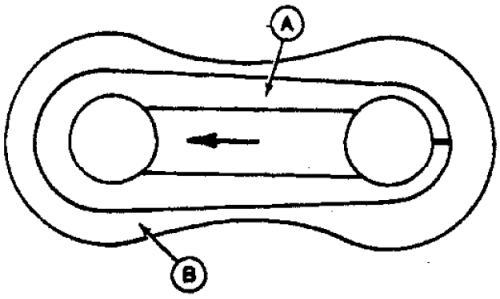
2. Remove lower belt drive roll chain (B).

3. Remove roll pins and lower belt drive roll sprocket (D), starter roll sprocket (C), chain (A) and washers. Note and record the number of washers removed from each shaft to aid in sprocket alignment at assembly.



EX,1472,2030,A6-19-11MAR93

4. Replace starter roll chain. Position chain clip (A) on master link (B) so that split end of clip trails in the direction of travel (arrowed).



E27797 -UN-21SEP88

EX,1472,2030,A7-19-11MAR93

5. Install washers and sprockets with chain attached. Use same number of washers as removed at disassembly.

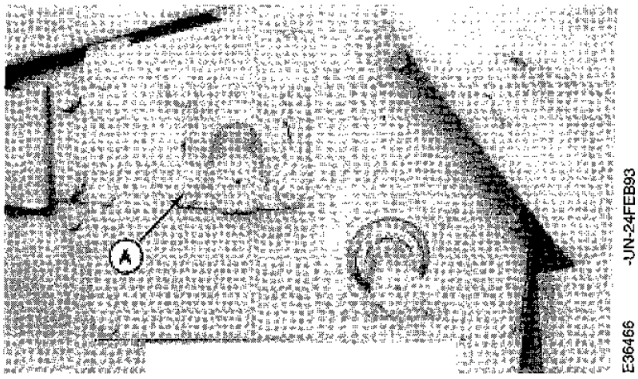
6. Check chain tension; if acceptable install outer washers and roll pins, if adjustment is needed proceed as follows.

7. Remove sprockets and chain.

8. Loosen lower belt drive roll bearing mounting hardware (A). Return sprockets with chain to shaft ends.

9. At the front of the baler, place a suitable bar between rolls and pry rolls apart to tension chain. Check roller-to-side sheet clearance. Reposition rolls as needed to avoid contact.

10. With chain properly tensioned (no more than 25.5 mm [1.0 in.] slack) tighten hardware and install outer washers and roll pins.



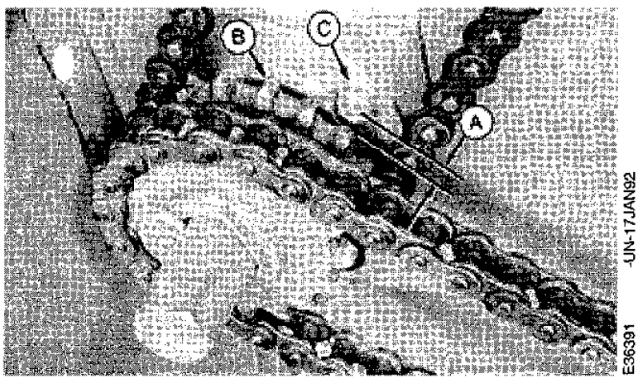
E36466 -UN-24FEB93

EX,1472,2030,A8-19-06NOV95

CHECK UPPER DRIVE CHAIN SPROCKETS ALIGNMENT

1. Make sure clearance (A) between inner surface of sprocket (B) and head of cap screw (C) is 12 ± 1.5 mm (1/2 ± 1/16 in.).

2. Add or remove shims as necessary.

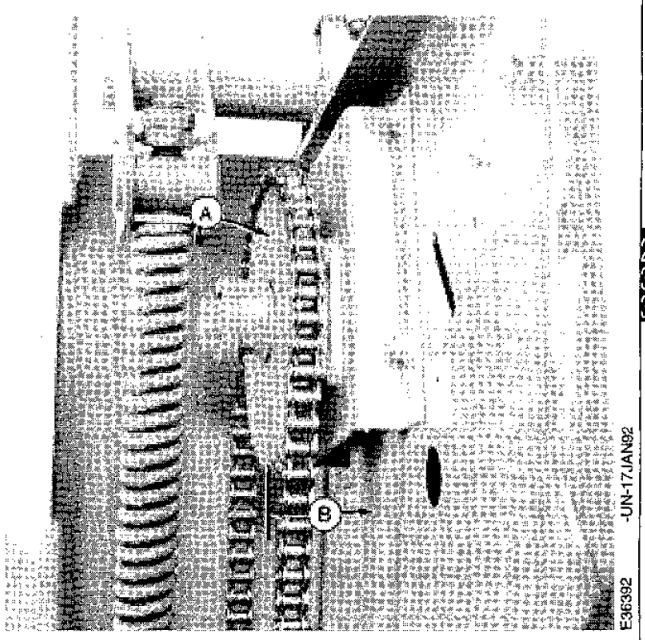


E36391 -UN-17JAN92

EX,1472,2030AX5-19-11MAR93

3. Check position of upper drive roll sprocket (A). Sprocket should be 89 + 1-2 mm (3.50 + 0.04-0.08 in.) (B) from the side sheet to the outer surface of sprocket for 435 and 535 balers.

Distance (B) should be 86 mm (3.39 in.) for 335 and 375 balers.



435/535 Balers Shown

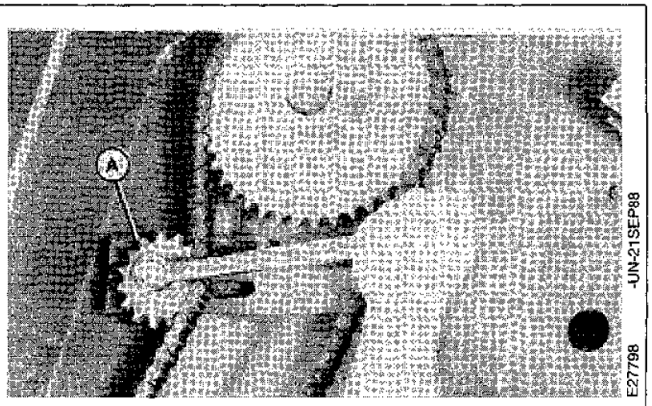
EX,1472,2030AX6-19-06NOV95

NOTE: Early 335 (S.N. —885115) and 375 (S.N. —885558) balers are sliding idler design. Later 335 (S.N. 885116—), 375 (S.N. 885559—), and 385 (S.N. 943001—) balers, use a spring and pivoting arm for chain tension.

4. (335 and 375, early balers) Loosen idler (A) cap screw.

(335, 375, later balers and 385) Loosen nuts to release spring tension.

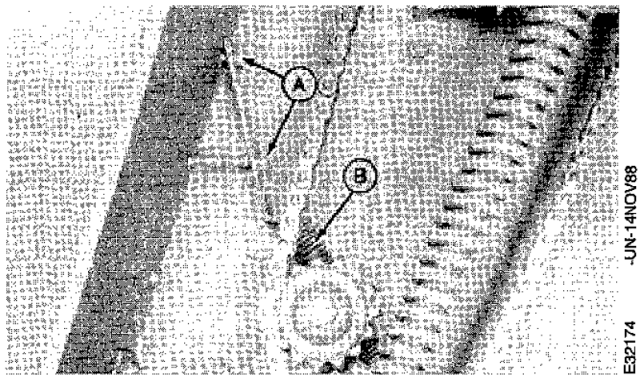
Move chain to other side of idler and slide idler rearward.



335—Early Baler Shown

EX,1472,2030AX7-19-06NOV95

5. (435/535) Loosen nuts (A) to release spring tension. Remove spring (B).



EX,1472,2030AX8-19-17JAN92

6. With the front side of the drive chain loop tight, check idler gear (A) alignment with drive chain.

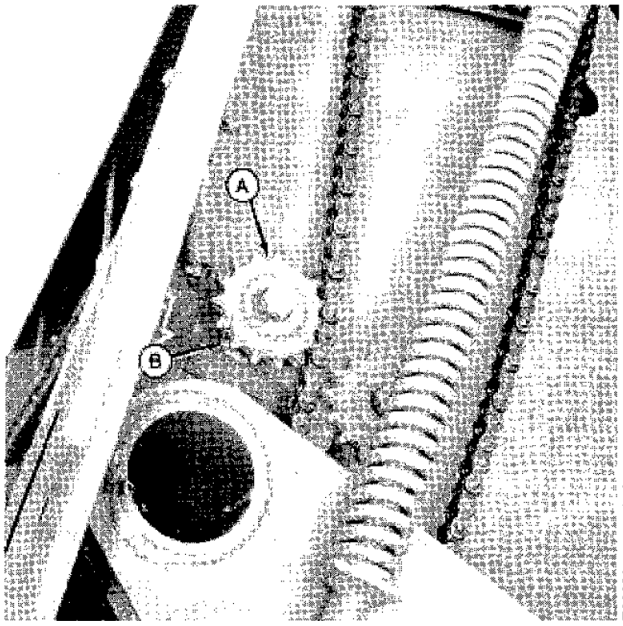
Add or remove shims (B) to position idler in line with chain:

- For 335/375/385 balers, shims are located behind the idler gear.
- For 435/535 balers, shims are located behind idler pivot arm.

7. (335/375) Move drive chain behind idler.

(435/535) Connect spring and tighten bracket nuts.

8. Adjust upper drive roll chain. (See procedure in this group.)



435/535 Baler Shown

EX,1472,2030AX9-19-06NOV95

CHECK BELT TRACKING

1. If belts are new and have not been used, add talcum powder to simulate crop dust or the belts may not track on the rolls.

2. Remove any wrappage or buildup on rollers.

3. Determine if gate closes evenly by moving tractor selector valve control to float position, with the tractor shut off. If both sides contact at the bottom, proceed. If there is a gap on one side when the other side is contacting, straighten the gate. (See procedure in Section 80, Group 10.)

4. Adjust gate latches properly. (See Adjust Gate Latch Stop in Section 80, Group 10.)

5. Park baler on a level surface. With baler empty and gate closed, engage PTO and run at slow speed. Check the tracking of the belts.

NOTE: Lock gate with hydraulic valve and raise tension arm with tractor selector control valve to release belt tension before adjusting rollers.

6. Shut off tractor engine and adjust rollers, if necessary. (See Adjust Belt Tracking in this group.)

EX,1472,2030,AY-19-06NOV95

ADJUST BELT TRACKING

IMPORTANT: Belt tracking must be checked before adjustments are made. (See Check Belt Tracking, this group.)

NOTE: Refer to illustration on facing page.

20
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38

If belts are new and have not been used, add talcum powder to allow belts to track freely.

1. (All Models) If belts are not centered at the lower belt guide (D), make the following adjustments:

• If belts track to the right, raise left end of lower rear gate roller (C).

• If belts track to the left, raise right end of lower rear gate roller (C).

NOTE: If optional surface wrap is installed, adjustment is made only on right end of lower rear gate roller.

2. (385/435 and 535) If belts are not centered at the upper front belt guide (I), make the following adjustments:

• If belts track to the right, raise the right end of the front idler roller (F).

• If belts track to the left, raise the left end of the front idler roller (F).

3. (435-535) If belts are not centered at the upper rear guide, make the following adjustment:

• If belts track to the right, move the right end of the top arm roll (J) in the direction shown in the short leg portion of the "L" shaped slot.

• If belts track to the left, move the left end of the top arm roll (J) in the direction shown in the short leg portion of the "L" shaped slot.

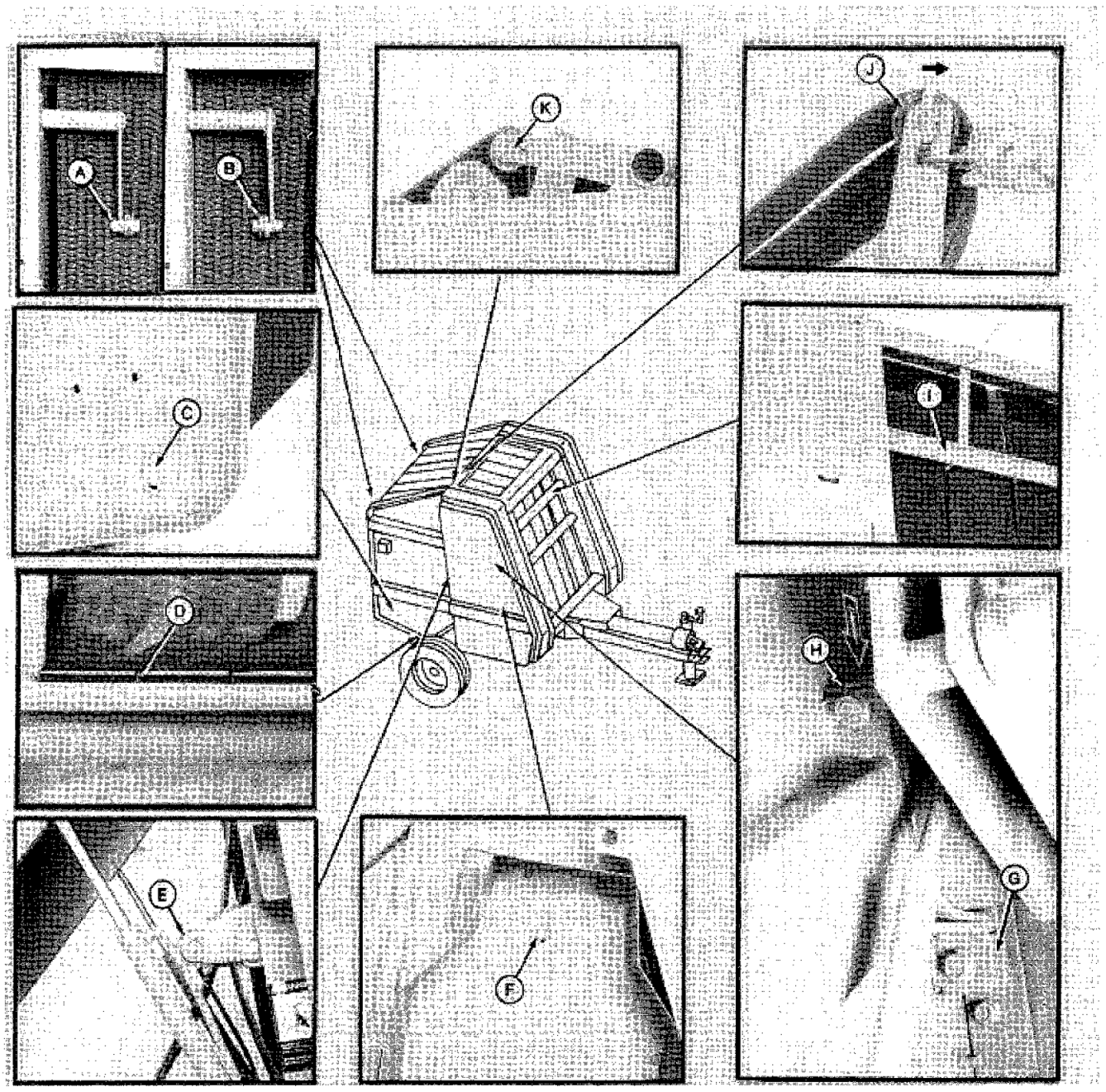
4. (All models) If outside belts track to the outside rubbing the lower belt guide (D) or side of baler, adjust as follows:

• Move the roller from the normal outside position (B) on the sender arm to the inside position (A). The belt will track towards the middle of the baler.

5. (435-535) If tension arm is rubbing inside of side sheet and/or the outside belt is rubbing hard at the rear tip of the tension arm (E), make the following adjustment:

• Center tension arm at the front pivot brackets by transferring shims (G) and (H) from one side of baler to the other side.

EX,1472,2030,AZ-19-06NOV95



A—Inside Position
B—Normal Position
C—Lower Rear Gate Roller
D—Lower Belt Guide
E—Tension Arm Tip
F—Front Idler Roller
G—Pivot Bracket Shims
H—Tension Arm Spacers
I—Upper Front Belt Guide
J—Top Arm Roll
K—Top Arm Roll Normal Operation Position

EX,1472,2030,BA-19-04DEC91

Section 30
HYDRAULICS

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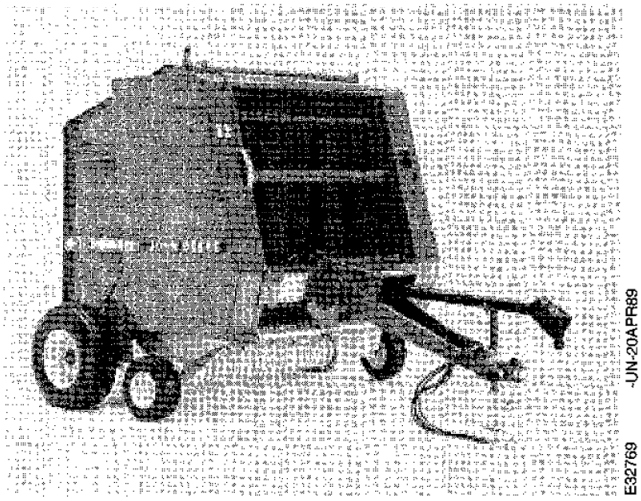
HYDRAULIC SYSTEM OPERATION

John Deere 335, 375 and 385 Round Balers have two separate hydraulic systems; one system operates the twine wrapping mechanism and the other system controls bale tension and operates the gate.

Both hydraulic systems are powered by the tractor.

Two sets of hydraulic outlets are required to operate the baler. A hydra-selector valve is available for tractors having only one dual hydraulic outlet.

An additional set of hydraulic outlets is needed if the baler is equipped with the optional hydraulic pickup lift.



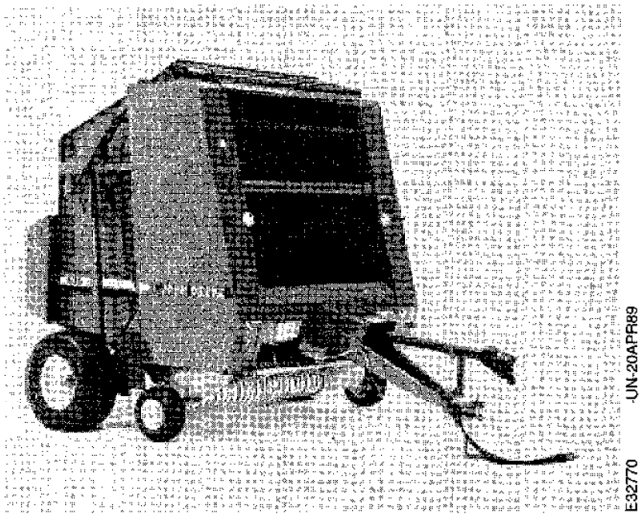
EX,1472,3005,A -19-11MAR93

John Deere 435 and 535 Round Balers have two separate hydraulic systems; one system operates the twine wrapping mechanism and the other system controls bale tension and operates the gate.

The hydraulic system that operates the twine wrapping mechanism is powered by a self-contained pump mounted under the right-hand twine box. This pump is belt driven off the lower belt drive roll.

The hydraulic oil for controlling bale tension and for lifting the rear gate is supplied by the tractor hydraulic system.

One set of hydraulic outlets is required to operate the baler. An additional set of hydraulic outlets is needed if the baler is equipped with the optional hydraulic pickup lift.



EX,1472,3005,B -19-06DEC91

PRELIMINARY CHECKS

(A) ASK OPERATOR:

1. How is machine performing?
2. When does it malfunction?
3. In what applications?

(B) CHECK MAINTENANCE RECORDS FOR:

1. Service intervals.
2. Unusual, frequent, or similar failures.

(C) CHECK FOR:

1. Broken or binding operating linkage.
2. Broken drives.
3. Other mechanical failures.

(D) CHECK HYDRAULIC OIL CONDITION:

1. Oil level low?

Possible Causes:

1. Incorrect fill.
2. External leaks.
3. Use of hydraulic cylinder.

(E) OIL MILKY OR DIRTY

Possible Causes:

Water in oil (milky).
Filter failure (dirty).
Metal particles (mechanical failure).

(F) OIL DISCOLORED OR HAS BURNED ODOR (over-heated oil)

Possible Causes:

Kinked lines.
Mechanical failure.
System failure.
Water in oil.

(G) CHECK FOR EXTERNAL LEAKS:

Possible Causes:

Broken or loose lines.
Leaking O-rings or seals.
Cracked housings.

EX,1472,3005,C -19-06NOV95

DIAGNOSING HYDRAULIC FUNCTIONS

Symptom	Problem	Solution
Baler Won't Feed Hay-Plugged at Feed Opening.	Bale density too high. (435-535)	Decrease density.
		Install variable soft core option.
	Pick-up drive belt is slipping.	Check adjustment of pick-up dive belt.
	Leading edge of bar stock on starter roll is worn.	Replace starter roll. For balers without surface wrap only, build up edge of bar stock by applying a weld bead.
	Gate opening while baling.	Adjust gate latch. Correct leaky gate hydraulic components.
Bale Sticks in Chamber.	New baler.	Reduce density until bales have worn paint off side sheets. Follow break-in instructions.
	Bale density is too high.	Lower bale density at adjustable relief valve (435-535).
	Damp crop or "gummy" buildup on side sheets.	Clean side sheets and install crop deflectors in gate.
	Excessive side sheet friction.	Straighten front side sheets of baler. (See procedure in Section 80, Group 35.)
Bale Density Too Low.	Faulty tension cylinder.	Repair cylinder if leaking. See Check Tension Cylinder For Leakage.
	Faulty relief valve.	Check relief valve. See Relief Valve Check. Replace if defective.
	Damaged O-rings and/or backup rings on relief or check valves.	Replace O-rings and backup rings.
	Damaged seat or poppet in relief or check valves.	Inspect seat and poppet. Replace if damaged. See Check For Damaged Seat or Poppet in Valve.
	Foreign material keeping poppet from seating.	See Remove Foreign Material From Valve Seat.

Continued on next page

Symptom	Problem	Solution
Gate Opens While Baling.	Hydraulic cylinder not completely retracted when gate is closed (operator error).	Hold tractor selector control valve (SCV) lever 2—3 seconds after green light is on.
	After gate is closed and (SCV) in neutral, gate cylinder extends.	Bleed gate cylinder.
		Replace fixed relief valve (435 and 535).
	Tractor selector control valve (SCV) leaking.	Make necessary repairs.
	Air in hydraulic system.	Open and close gate several times to remove air.
	Internal leak in baler hydraulic system.	Test system.
	Bale density valve pressure low (335, 375 and 385).	Test system.
Gate Won't Close.	Obstruction between gate and frame.	Remove obstruction.
	Hay buildup on belts in some crop conditions.	Remove buildup. Operate PTO while closing gate.
	Adjustable relief valve setting too low (435 and 535).	Increase relief valve setting.
	Faulty adjustable relief valve or fixed relief valve (435 and 535).	See Remove Foreign Material From Valve Seat ad Check For Damaged Seat Or Poppet in Valve.
	Hydraulic flow of tractor too low.	Increase tractor flow adjustment.
		Add orifice to control valve. See Optional Orifice.
Twine Arm Moves Too Slow From Left To Right (More Than 9 Seconds).	Tractor hydraulic fluid dirty or dirt in cylinder port (335, 375 and 385).	Flush baler hydraulic system. Change tractor filter and/or fluid.
Bale Density Gauge Reading in Red (435 and 535).	Tractor selector valve not in neutral while baling.	Move hydraulic lever to neutral.
	Defective density gauge.	See Bale Density Gauge, this section. Increase bale density with knob. Bale hay. Replace gauge if bales weigh more, but gauge does not register more pressure than before.

Continued on next page

Symptom	Problem	Solution
		To check for faulty gauge without baling hay, substitute a known 5000 psi gauge for the bale density gauge.
	Defective relief valve.	Check relief valve. See Relief Valve Check.
Green light goes out and gate opens while baling. For (S.N. 915001—), alarm will sound also (435 and 535).	Hydraulic cylinder not completely retracted when gate is closed (operator error).	Hold tractor selector control valve (SCV) lever 2—3 seconds after green light is on.
	Air in hydraulic system.	Open and close gate several times to remove air.
	Tractor valve leaking high pressure oil.	Close gate and leave tractor running. If gate latch slowly opens, repeat with tractor engine stopped. If gate remains latched, repair tractor valve.
	Internal leak in gate hydraulic cylinder.	Repair or replace cylinder.
	Defective seals on pilot pistons of relief valve.	Replace seals.
Twine Arm Cycles Early In Bale Formation (435 and 535).	Tension arm comes down after gate closes - twine mechanism not latched.	Hydraulic flow of tractor too low - add optional orifice to control valve or increase tractor flow.
		4-to-1 check valve interchanged with 12-to-1 check valve. 4-to-1 check valve should be on relief valve side of control valve. See Check Valve Placement In Control Valve.
	Twine pump drive linkage does not latch.	Check entire linkage for binding.
Gate Comes Down Jerky (435 and 535).	4-to-1 check valve interchanged with 12-to-1 check valve.	See Check Valve Placement In Control Valve.
Bale Density Control Valve Hard to Turn (435 and 535).	Locking ring locked against valve body.	Unscrew locking ring before adjusting density control knob.

Continued on next page

Symptom	Problem	Solution
	Dry threads on adjusting screw.	Apply a few drops of oil or graphite lubricant to thread.
	Raised gate and/or belt tension arm creates additional turning force.	Adjust with gate closed and belt tension arm down.

EX,1472,3010,A -19-06NOV95

SPECIFICATIONS

Item	Measurement	Specification
335-375-385 Low Pressure Relief Valve (Marked RV3-1890)	Pressure	5171 kPa (52 bar) (750 psi)
335 High Pressure Relief Valve (Marked RV3-2201 or RV-4626-27.5)	Pressure	18 961 ± 689 kPa (2750 ± 100 psi)
375-385 High Pressure Relief Valve (Marked RV3-2729 or RV-4626-35)	Pressure	24132 ± 689 kPa (3500 ± 100 psi)

EX,1472,3015,A -19-06NOV95

ESSENTIAL TOOLS

NOTE: Order tools from the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

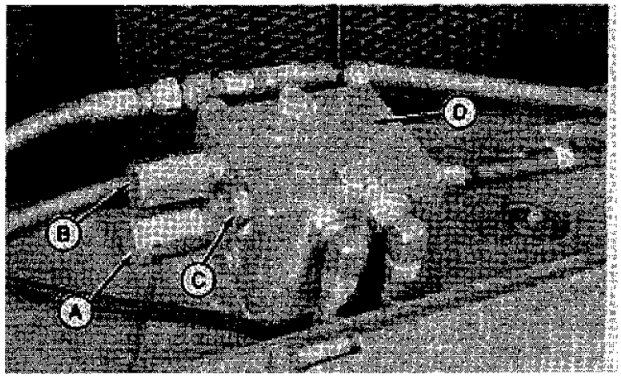
Number	Name	Use
JTO5635	35000 kPa (5000 psi) Liquid Filled Pressure Gauge	To test baler hydraulic system
D-01074AA	Flow Meter	To check oil flow, pressure and temperature in the hydraulic system
JDH-6	O-Ring Seal Hook	To remove and install O-ring seals.

EX,1472,3015,B -19-11MAR93

TENSIONING VALVE

The valve consists of a pre-set, low pressure relief valve (A), pre-set, high pressure relief valve (B), pilot-operated check valve (C), and a valve body (D).

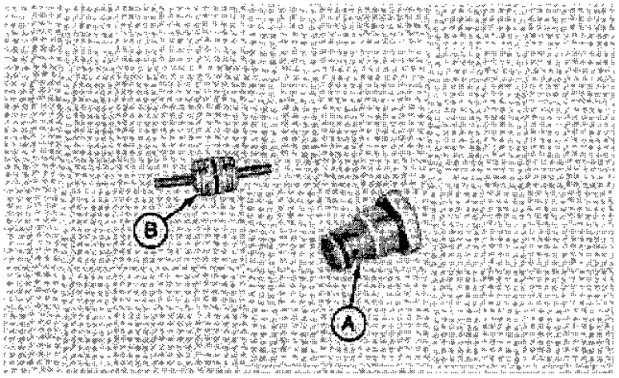
A—Low Pressure Relief Valve
B—High Pressure Relief Valve
C—Pilot-Operated Check Valve
D—Valve Body



EX,1472,3015,C -19-11MAR93

PILOT-OPERATED CHECK VALVE

This valve (A) reduces leakage by checking flow in one direction. The pilot piston (B) operates the check valve at a 4 to 1 differential to operate the hydraulic cylinders smoothly.



EX,1472,3015,D -19-11MAR93

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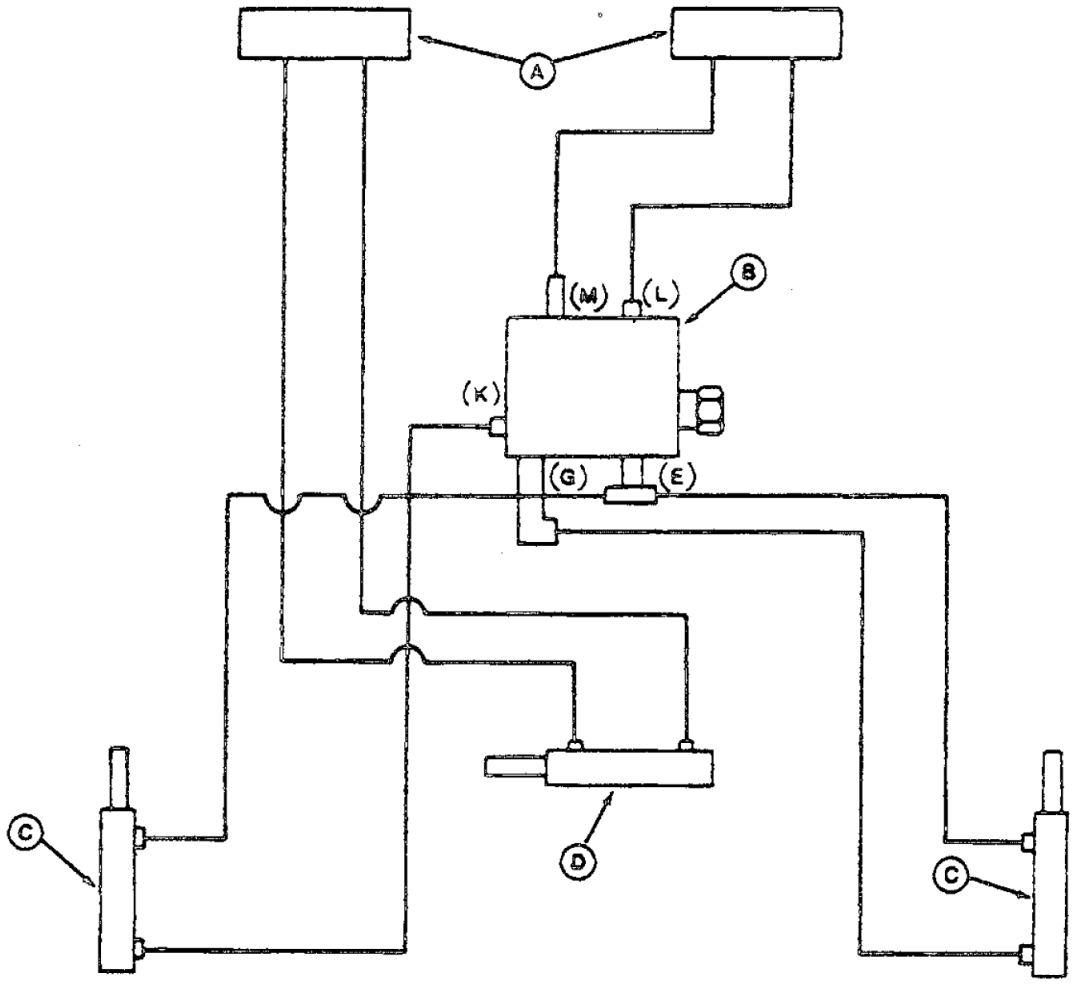
2

BALE TENSION AND GATE HYDRAULIC SYSTEM DIAGNOSIS



E27821 -UN-14SEP88

A—Tractor Outlet Ports **B—Tensioning Valve** **C—Belt Tension and Gate Cylinders** **D—Twine Cylinder**

The primary hydraulic system uses three major components:

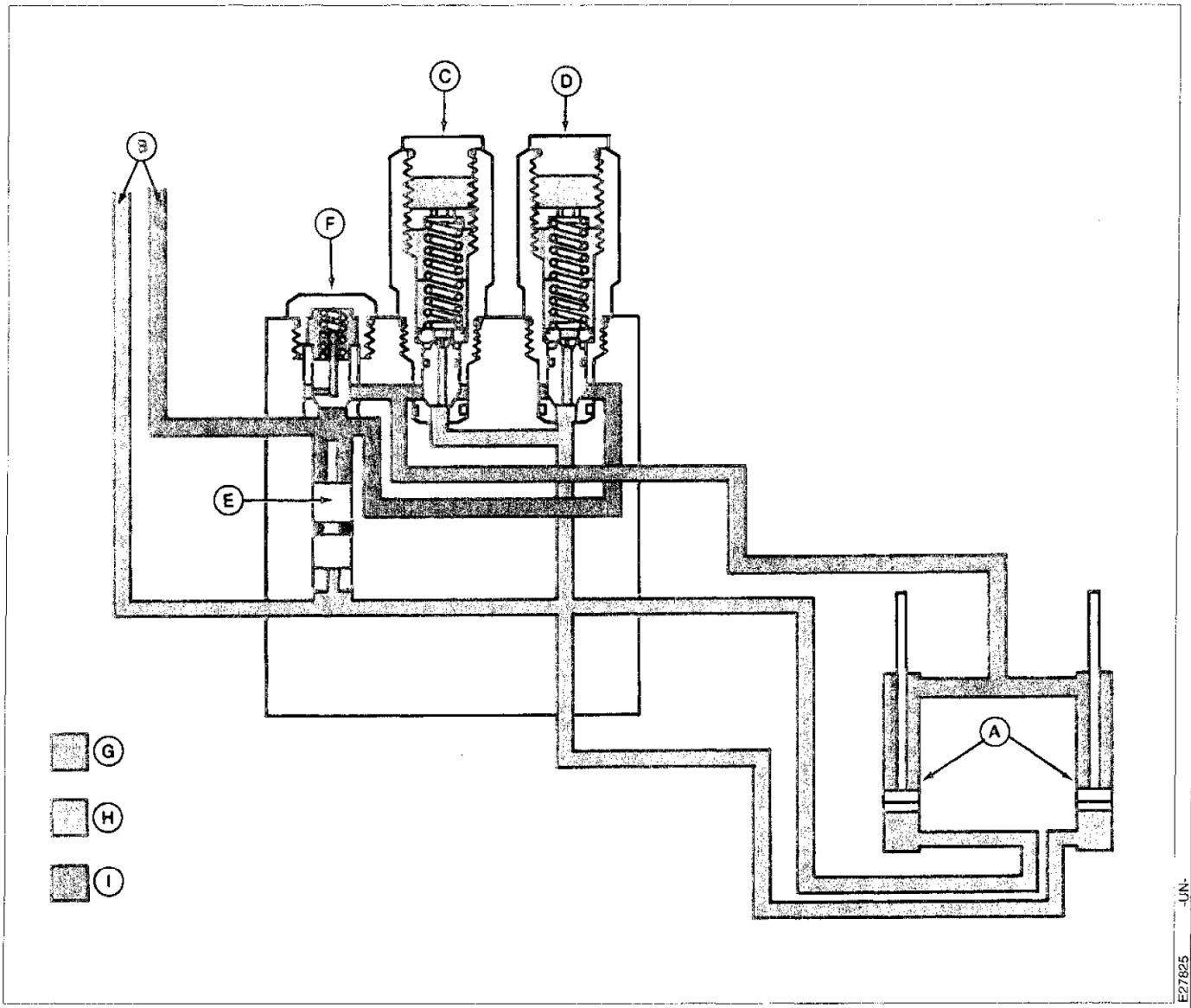
1—A tension valve (B) is used to check flow, direct flow, and limit hydraulic pressures.

2—Two double-acting cylinders (C) are used to raise and lower the gate and to control bale tensioning.

3—A double-acting cylinder is used to actuate the twine arm to wrap the bale.

EX,1472,3015,E -19-11MAR93

STARTING A BALE



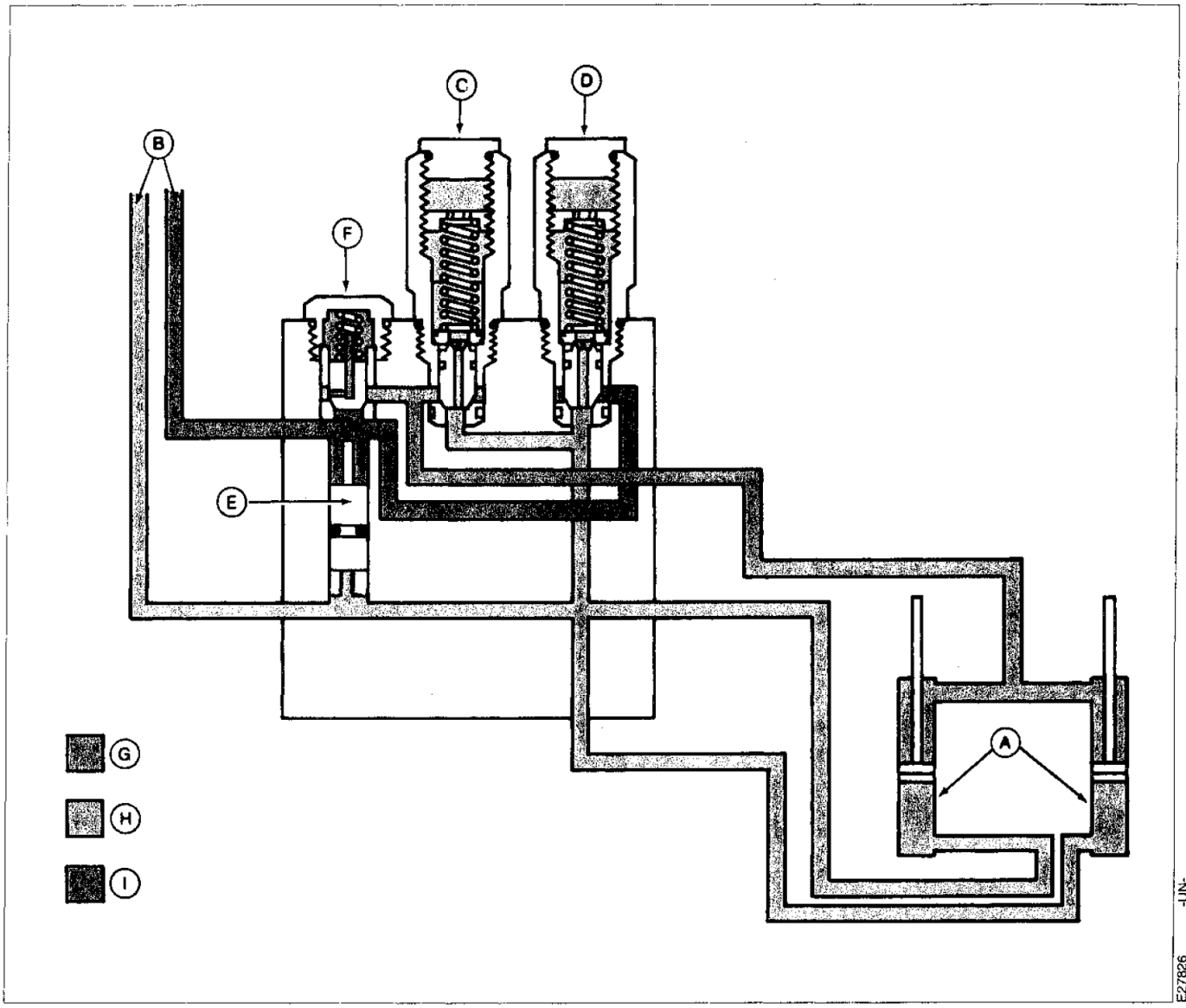
A—Tension Cylinders
B—Tractor SCV Lever
C—High Pressure Relief Valve (Bale Density)
D—Low Pressure Relief Valve (Gate Closing)
E—Pilot Piston
F—Check Valve
G—Medium Pressure Oil
H—Pressure Free Oil
I—Trapped Oil

At the start of the bale, the tension cylinders (A) are completely retracted and the tractor SCV lever (B) is in the neutral position. In this position, no oil flows between the baler and the tractor.

As the bale grows, it pushes upward on the tension arm which will try to extend the tension cylinders. This force will increase the pressure in the line to the rod end of the tension cylinders until the poppet in the high pressure relief cartridge (C) is unseated.

EX,1472,3015,F -19-25FEB92

DURING BALING



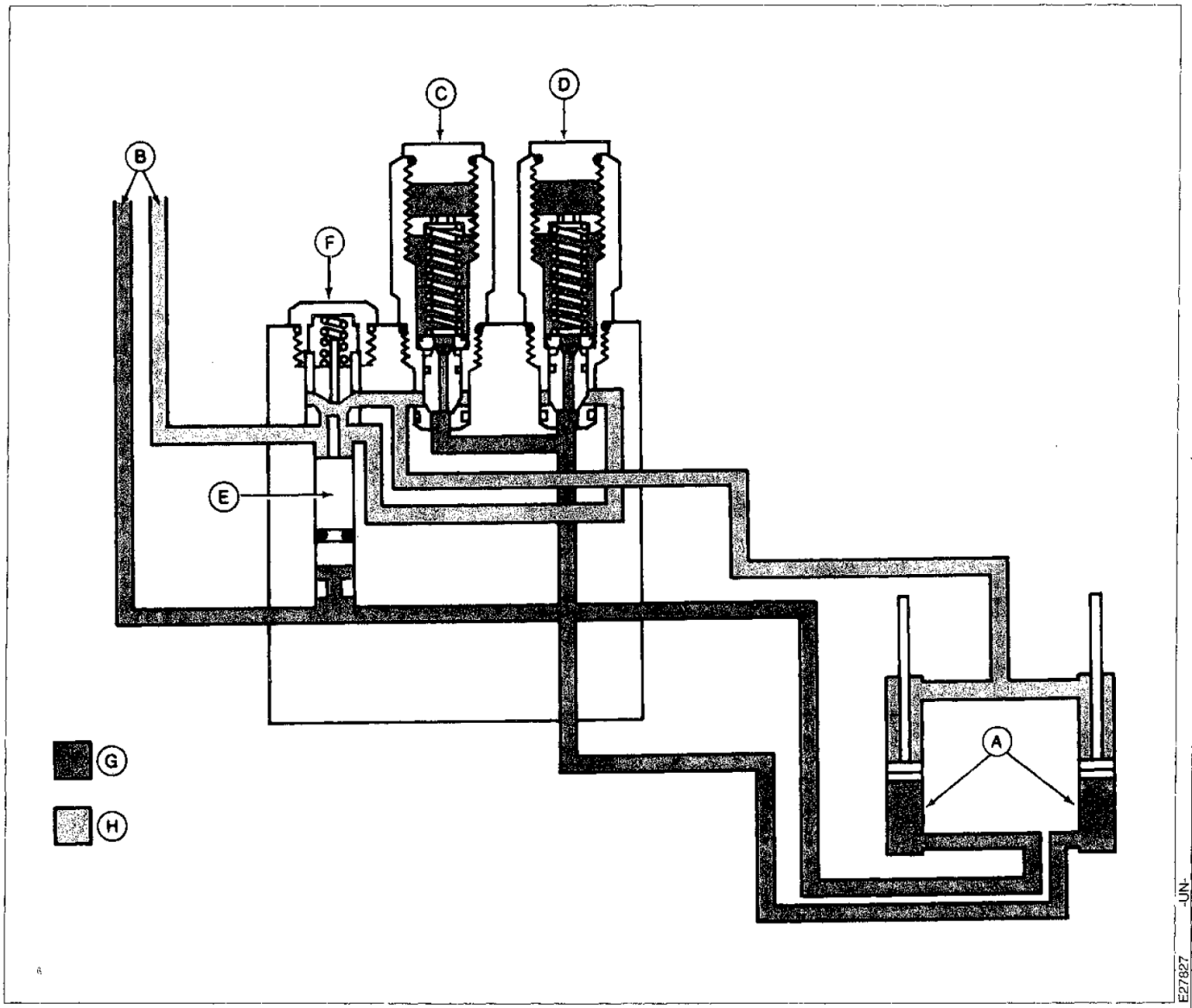
A—Tension Cylinders
B—Tractor SCV Lever
C—High Pressure Relief Valve (Bale Density)
D—Low Pressure Relief Valve (Gate Closing)
E—Pilot Piston
F—Check Valve
G—High Pressure Oil
H—Pressure Free Oil
I—Trapped Oil

The poppet in the relief valve (C) remains seated until the desired pressure is made. The poppet unseats allowing oil to flow through the relief valve (C) and check valves (F) connected to the piston ends of the tension cylinders (A).

As the bale continues to grow in diameter and the tension cylinders (A) continue to extend, oil will continue to flow from the rod end to the piston end of the cylinder. The relief valve (C) maintains a constant pressure on the rod end of the tension cylinders at this time.

EX,1472,3015,G -19-25FEB92

OPENING THE GATE

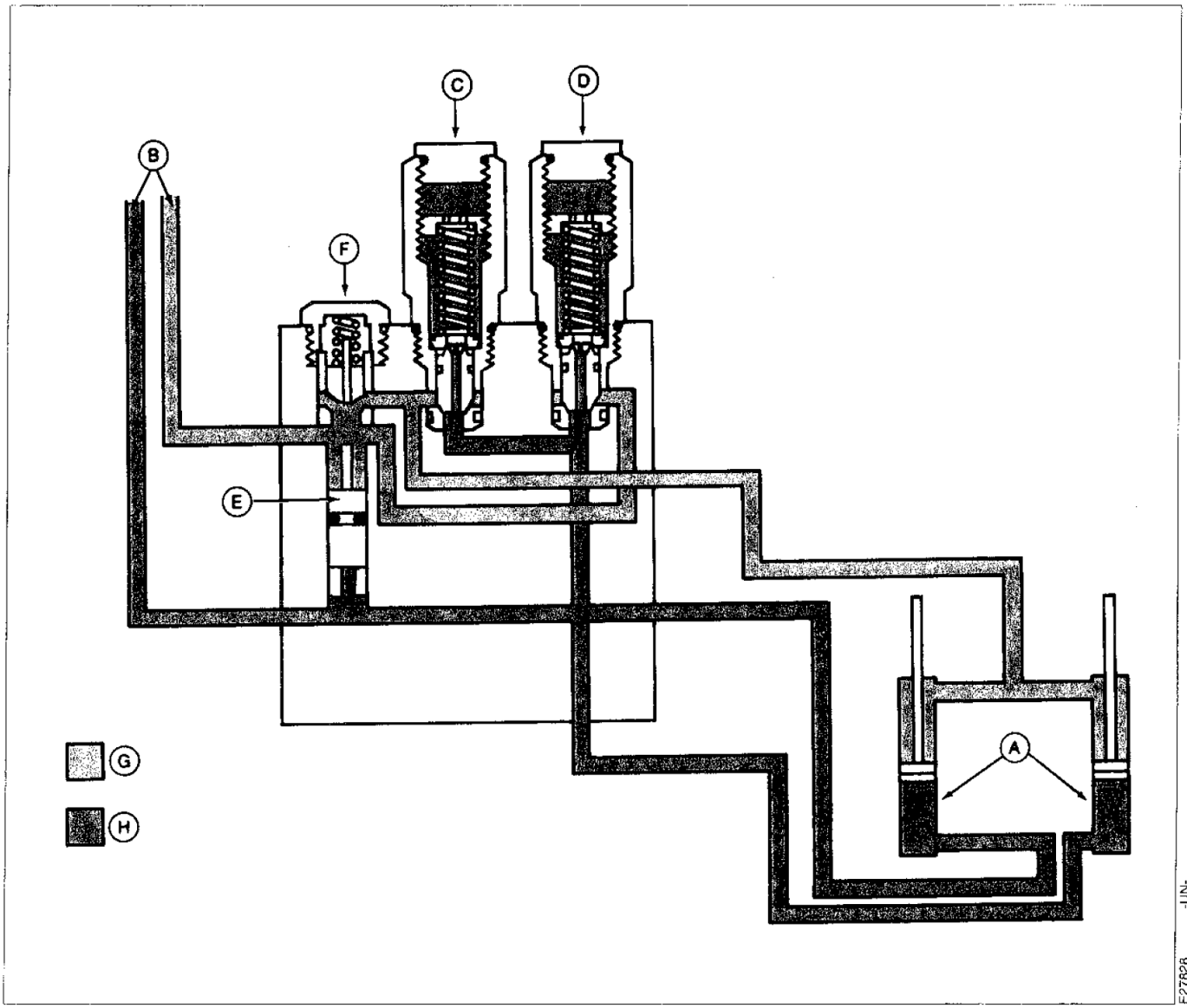


A—Tension Cylinders
B—Tractor SCV Lever
C—High Pressure Relief Valve (Bale Density)
D—Low Pressure Relief Valve (Gate Closing)
E—Pilot Piston
F—Check Valve
G—Medium Pressure Oil
H—Low Pressure Oil

When the operator moves the tractor SCV lever (B) to raise the gate, the base ends of the tension cylinders (A) are pressurized. This pressure causes the double-ended pilot piston to open the poppet in the check valve cartridge allowing the tension cylinders to extend.

EX,1472,3015,H -19-26FEB92

CLOSING THE GATE



A—Tension Cylinders
B—Tractor SCV Lever
C—High Pressure Relief Valve (Bale Density)
D—Low Pressure Relief Valve (Gate Closing)
E—Pilot Piston
F—Check Valve
G—Medium Pressure Oil
H—Low Pressure Oil

When the operator moves the tractor SCV lever (B) to close the gate, hydraulic pressure will cause the pilot piston to unseat the poppet in the check valve cartridge (F). This allows oil to return from the tension cylinders (A).

Hydraulic oil will flow to the rod end of the tension cylinders and cause them to retract. Oil from the bottom end of the cylinder flows back to the tractor.

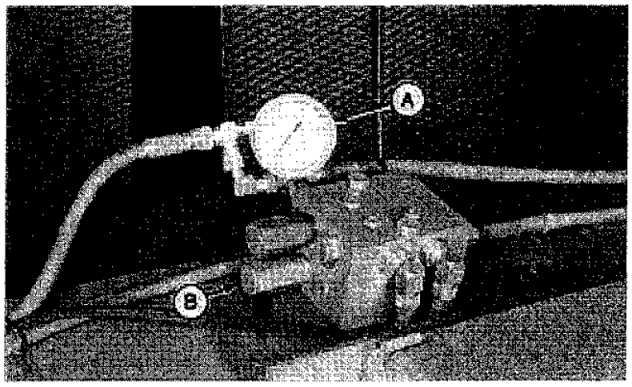
EX,1472,3015,I -19-25FEB92

TEST LOW PRESSURE RELIEF VALVE

1. Install a 34480 kPa (5000 psi) pressure gauge (A) in hydraulic line as shown.

2. Start tractor, engage SCV lever to lower gate.

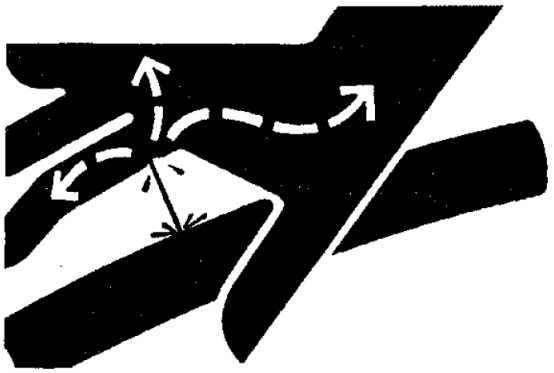
3. Pressure should be approximately 5171 kPa (52 bar) (750 psi) with 19 L/min (5 gpm) flow.



E27829 -UN-14SEP88

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

NOTE: Low pressure relief valve can be identified by number stamped on valve body, RV3-1890.

4. If pressure is less, check low pressure relief valve (B) for foreign material and/or damaged seat or poppet. Check O-rings and backup rings for damage.

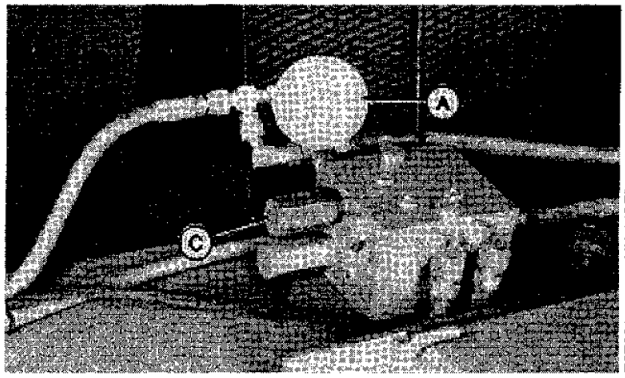
5. If poppet will not seat because of foreign material, clean valve. See Remove Foreign Material From Valve Seat, Group 20.

6. Check for damage in valve. See Check For Damaged Seat or Poppet in Valve, Group 20.

7. Replace O-rings and backup rings if damaged.

EX,1472,3015,J -19-11MAR93

TEST HIGH PRESSURE RELIEF VALVE (OPERATING)



E27831 -UN-14SEP88

NOTE: If this test cannot be made while the baler is baling, make the static test.

1. Install a 34480 kPa (5000 psi) pressure gauge (A) in hydraulic line as shown.

2. Take baler to field and begin baling.

3. Check pressure.

335 Baler	375—385 Baler
18961 ± 689 kPa (2750 ± 100 psi)	24132 ± 689 kPa (3500 ± 100 psi)

NOTE: High pressure relief valve can be identified by number stamped on valve body:
335 Baler—RV3-2201 or RV-4626-27.5
375—385 Baler—RV3-2729 or RV-4626-35

4. If pressure is low, replace high pressure relief valve (C) or check hydraulic cylinders for internal leakage.

EX,1472,3015,K -19-06NOV95

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TEST HIGH PRESSURE RELIEF VALVE (STATIC)

NOTE: Use this procedure to test relief valve when actual baling conditions are not available.

1. Install a 34480 kPa (5000 psi) pressure gauge (A) in hydraulic line as shown.

2. Secure baler axle to floor. Raise gate and lock gate valve.

3. Attach hoist to tension arm (B) using a spreader bar. Close gate fully.

CAUTION: To avoid injury, stay clear of gate while it is being raised or lowered.

4. Lift tension arm slowly with hoist to simulate making a bale.

5. Check pressure.

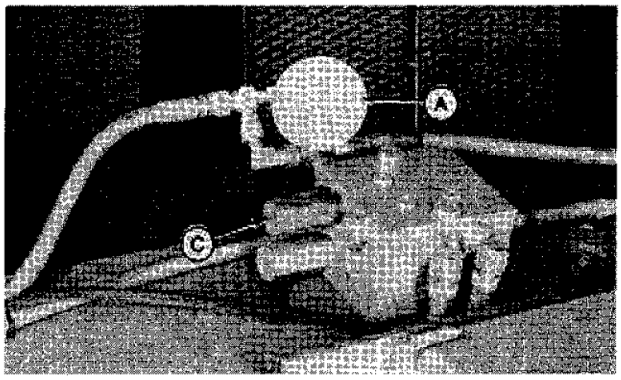
335 Baler	375—385 Baler
18961 ± 689 kPa (2750 ± 100 psi)	24132 ± 689 kPa (3500 ± 100 psi)

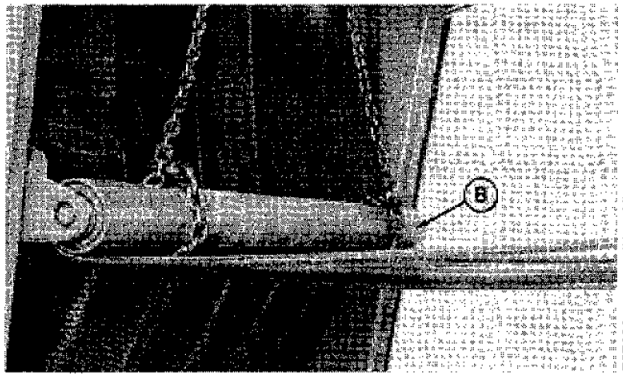
6. After hoist has stopped, wait one minute. Pressure gage should read:

335 Baler	375—385 Baler
15168 kPa min. (2200 psi) min.	19305 kPa min. (2800 psi) min.

NOTE: High pressure relief valve can be identified by number stamped on valve body:
335 Baler—RV3-2201 or RV-4626-27.5
375—385 Baler—RV3-2729 or RV-4626-35

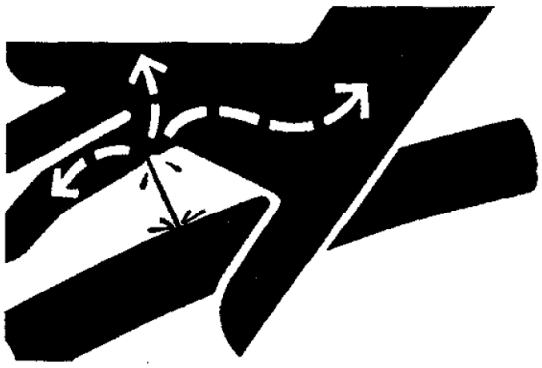
7. If pressure is low, replace high pressure relief valve (C) or check for internal cylinder leakage. See Group 30.





EX,1472,3015,L -19-06NOV95

CHECK TENSION CYLINDER FOR LEAKAGE


X9811 -UN-23AUG88

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.

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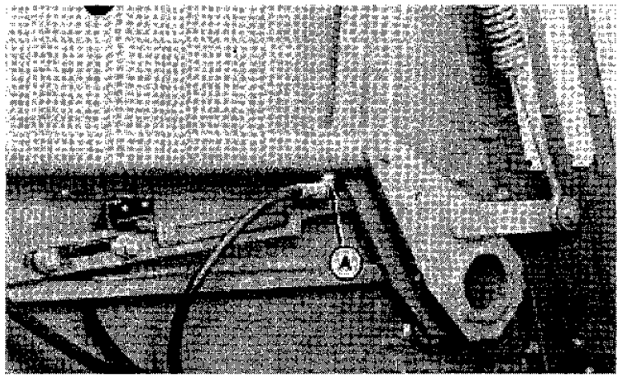
EX,1472,3015,M -19-11MAR93

1. Disconnect hoses at bottom of tension cylinders (A). Plug hose ends and leave cylinder ports open.

2. Close gate with SCV lever and hold lever in this position. There may be an initial surge of oil out the open ports. Wipe oil from open ports. Then check oil leakage. Twenty drops of oil per minute is the maximum allowable leakage. If leakage exceeds 20 drops per minute, repair cylinder. (See Disassemble and Repair Cylinders, Group 40.)



E27833 -UN-14SEP88

EX,1472,3015,N -19-06NOV95

ESSENTIAL TOOLS

NOTE: Order tools from the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

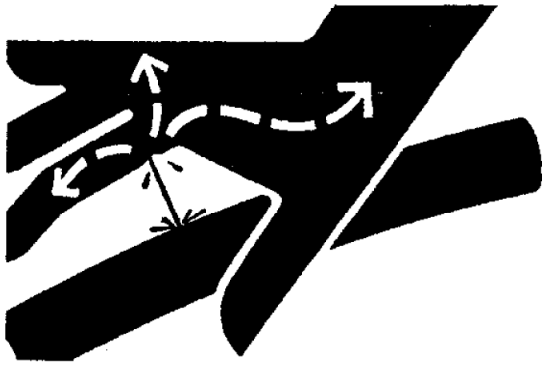
Number	Name	Use
JDH-6	O-Ring Seal Hook	To remove and install O-ring seals.

EX,1472,3020,A -19-11MAR93

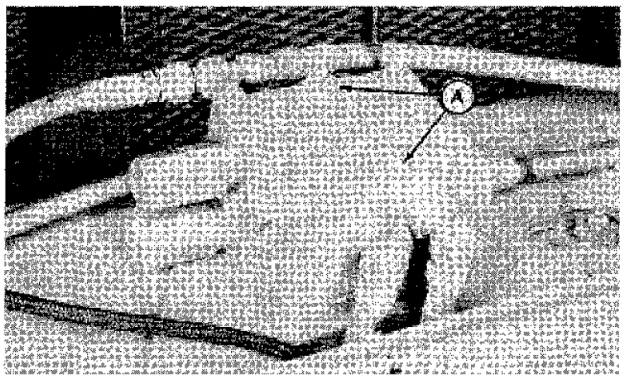
REMOVE TENSIONING VALVE

NOTE: Both relief valves and check valve can be removed without removing the valve.

Use the following procedure if the valve is to be removed and flushed:



X9811 -UN-23AUG88



E27834 -UN-14SEP88

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.

1. Wash and clean area thoroughly around valve.

2. Mark and disconnect hydraulic hoses. Cap ends of hoses to prevent foreign material from entering hydraulic system.

3. Remove elbows and connectors.

4. Remove two nuts, cap screws (A), and valve.

5. Refer to exploded view to disassemble and clean the valve.

EX,1472,3020,B -19-06NOV95

INSPECT VALVE

Inspect piston for excessive wear or damage.

Check that piston seat (using a light) has a sharp unbroken edge to contact piston.

Check remaining parts for excessive wear and damage.

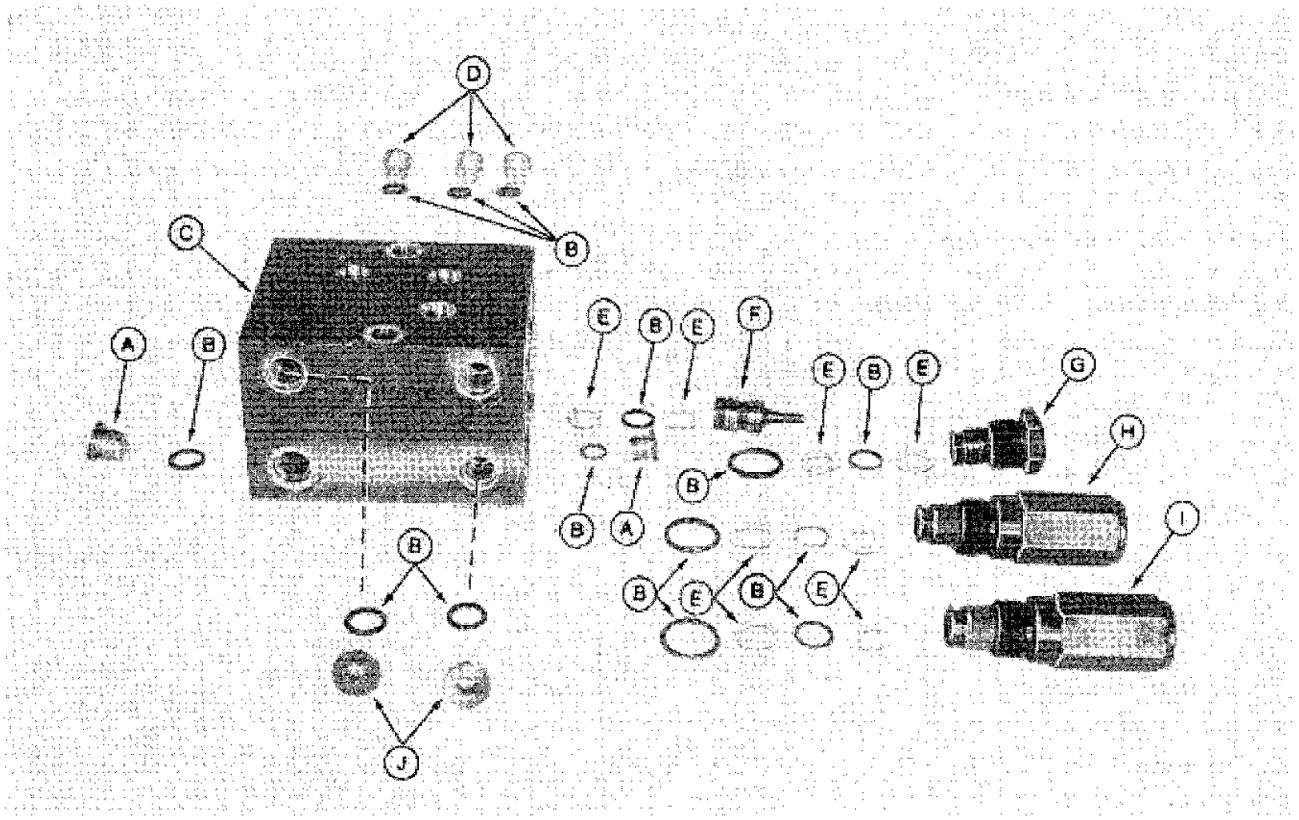
Discard O-rings and replace with new.

Coat parts lightly with oil before installing.

Check seat area of check valve for nicks. Depress poppet. It should move freely. Replace check valve if seat is damaged or poppet will not move easily.

EX,1472,3020,C -19-11MAR93

ASSEMBLE TENSIONING VALVE



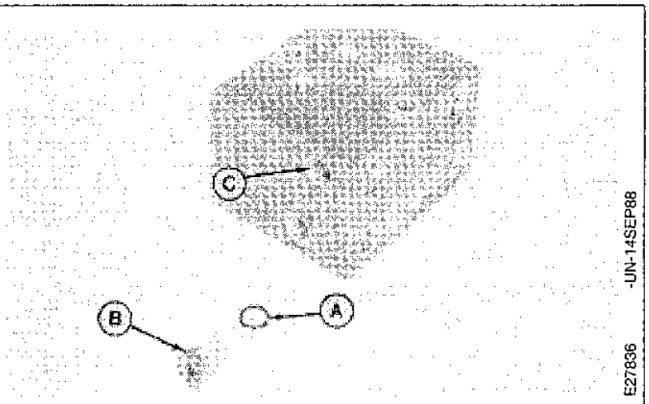
A—Fitting
B—O-Ring
C—Valve Body
D—Fitting
E—O-Ring
F—Piston
G—Check Valve
H—Low Pressure Relief Valve
I—High Pressure Relief Valve
J—Fitting

Exploded View of Tensioning Valve

1. Refer to exploded view and the following steps to assemble the valve.

EX,1472,3020,D -19-11MAR93

2. Place O-ring (A) on fitting (B) and install in port (C). Tighten securely.



EX,1472,3020,E -19-11APR89

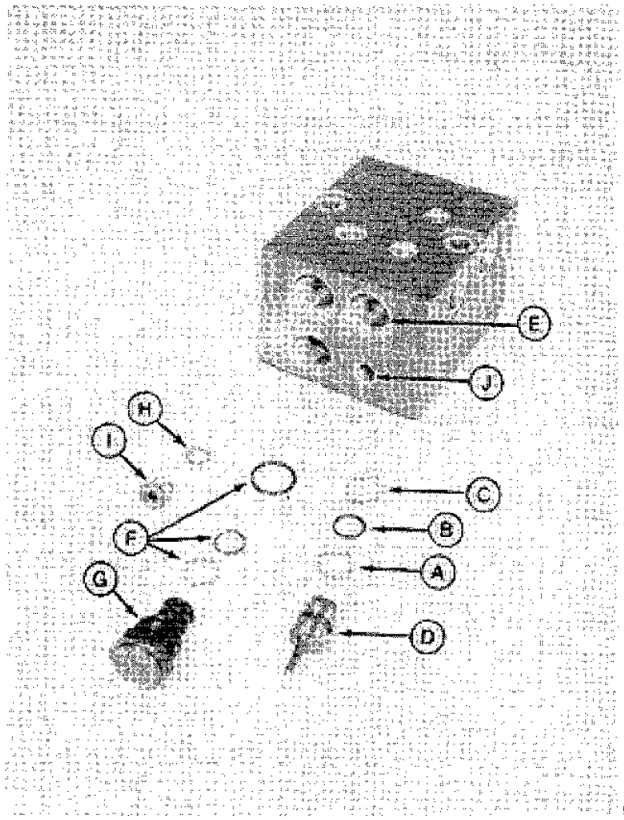
3. Place backup ring (white) (A), O-ring (B), and backup ring (white) (C) on piston (D).

4. Install piston assembly in port (E).

5. Place both O-rings (F),on check valve (G). Install in port (E).

6. Place backup ring (H) on fitting (I). Install in port (J).

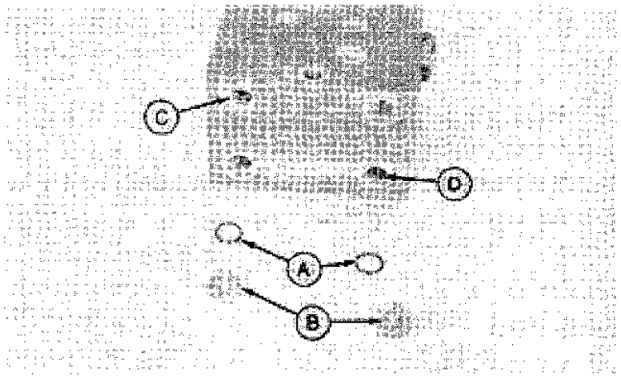
A—Backup Ring
B—O-Ring
C—Backup Ring
D—Piston
E—Port
F—O-Rings (2 Used)
G—Check Valve
H—Backup Ring
I—Fitting
J—Port



EX,1472,3020,F -19-11APR89

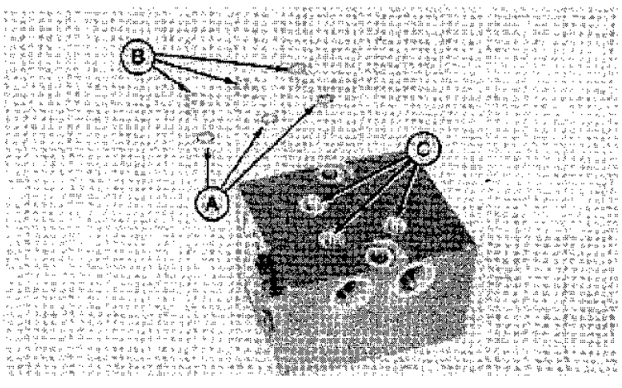
7. Place O-rings (A) on fittings (B). Install in ports (C) and (D).

A—O-Rings
B—Fitting
C—Port
D—Port



EX,1472,3020,G -19-11APR89

8. Place three O-rings (A) on fittings (B). Install in top ports (C).

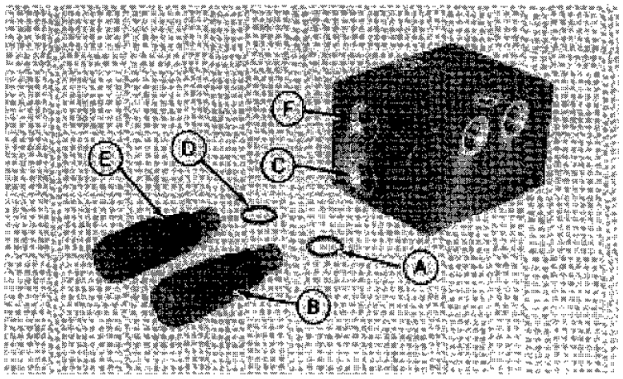


EX,1472,3020,H -19-11APR89

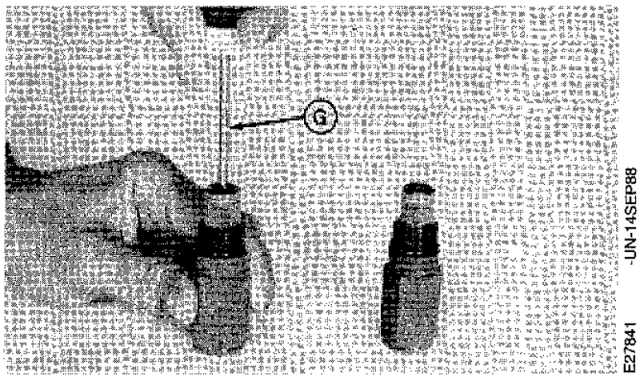
9. Place O-ring (A) on low pressure relief valve (B). Install in port (C).

10. Place O-ring (D) on high pressure relief valve (E). Install in port (F).

A—O-Ring
B—Low Pressure Relief Valve
C—Port
D—O-Ring
E—High Pressure Relief Valve
F—Port
G—Screwdriver



E27840 -UN-14SEP88



E27841 -UN-14SEP88

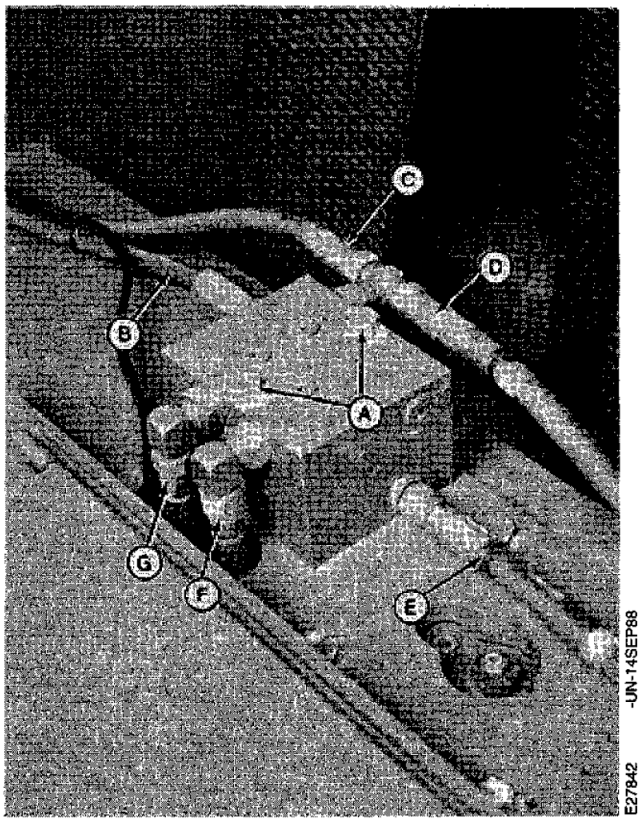
EX,1472,3020,I -19-11APR89

11. Secure valve to frame using two cap screws (A) and nuts.

12. Attach hydraulic lines as shown.

13. Start baler and visually check for leaks.

A—Cap Screws (2 Used)
B—(Port G) Right-Hand Tension Cylinder (Piston)
C—(Port E) Right-Hand Tension Cylinder (Rod)
D—(Port E) Left-Hand Tension Cylinder (Piston)
E—(Port K) Left-Hand Tension Cylinder (Piston)
F—(Port M) To Tractor
G—(Port L) To Tractor



E27842 -UN-14SEP88

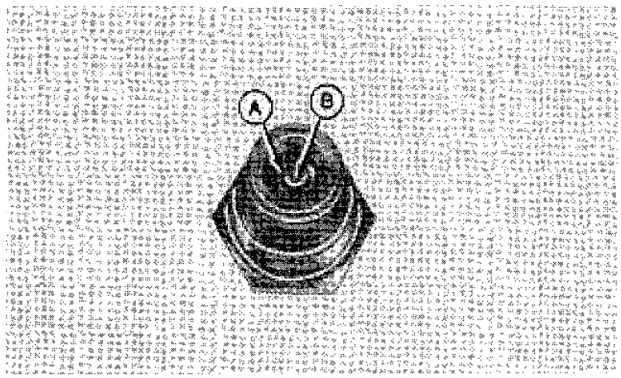
EX,1472,3020,J -19-11APR89

CHECK FOR DAMAGED SEAT OR POPPET IN VALVE

1. Check seat area (A) for nicks.

2. Depress poppet (B). It should move freely.

3. Replace entire valve if seat (A) is damaged or if poppet (B) will not move freely.



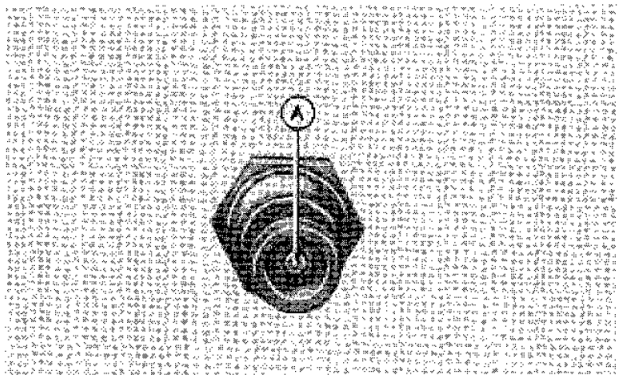
EX,1472,3020,K -19-06NOV95

REMOVE FOREIGN MATERIAL FROM VALVE SEAT

1. Loosen hose fitting slowly on rod end of cylinder to relieve pressure.

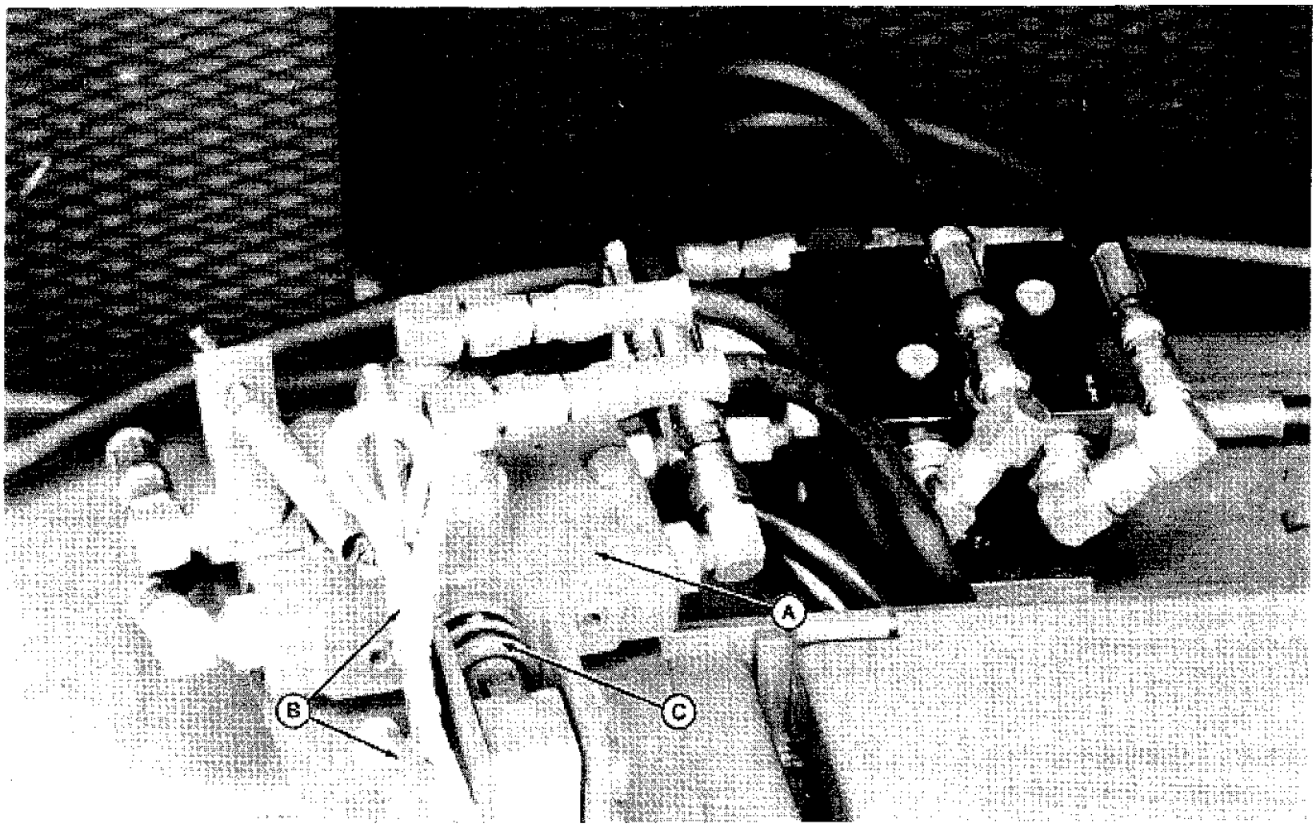
2. Remove valve.

3. With small punch, depress poppet (A). Flush with clean solvent to wash away foreign material.



EX,1472,3020,L -19-11MAR93

GENERAL INFORMATION



The hydra-selector valve (A) is used with tractors that have only one dual hydraulic outlet. It is a six port valve with two integral pilot operated check valves.

The gate and wrapping systems are connected to the valve by hoses. A single pull-shift mechanism (B) controls the flow of oil to either the gate system or the wrapping system.

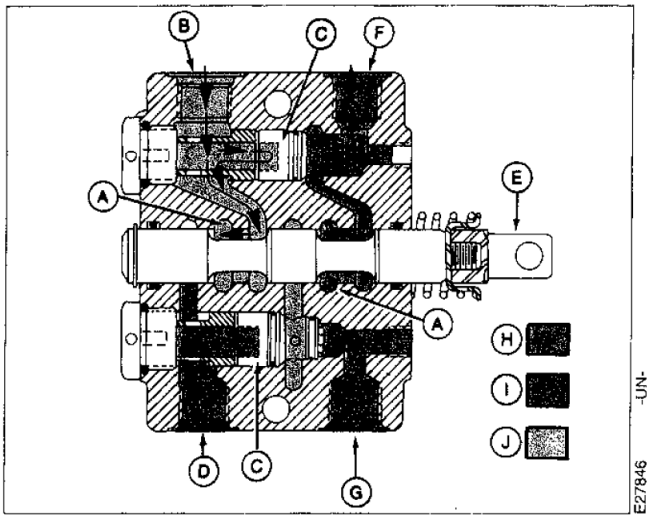
When the shift mechanism is engaged and the cam (C) is in the vertical position, oil will then flow to the wrapping system.

When the shift mechanism is engaged and the cam (C) is in the horizontal position, oil will then flow to the rear gate system.

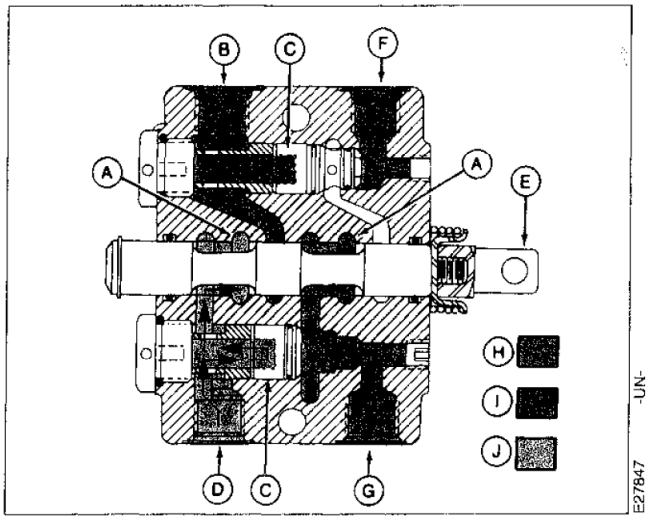
The hydraulic system is controlled by the tractor hydraulic lever.

EX,1472,3025,A -19-11MAR93

FLOW DIAGRAMS FOR HYDRA-SELECTOR VALVE



Wrapping System



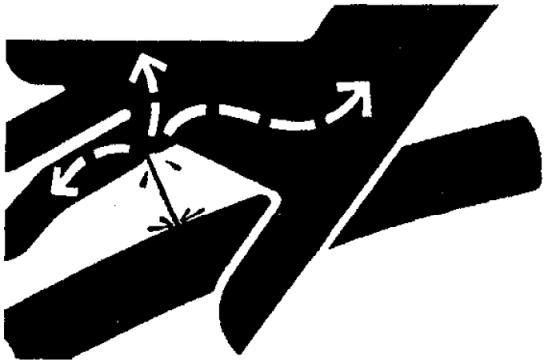
Rear Gate Lift System

A-Tractor Hose Ports
B-Wrapping System (Port F)
C-Check Valves
D-Gate System (Port D)
E-Plunger
F-Wrapping System (Port E)
G-Gate System (Port C)
H-High Pressure Oil
I-Static Oil
J-Low Pressure Oil

NOTE: For additional oil flow information on each system, refer to Group 15.

EX,1472,3025,B -19-11MAR93

REMOVE HYDRA-SELECTOR VALVE

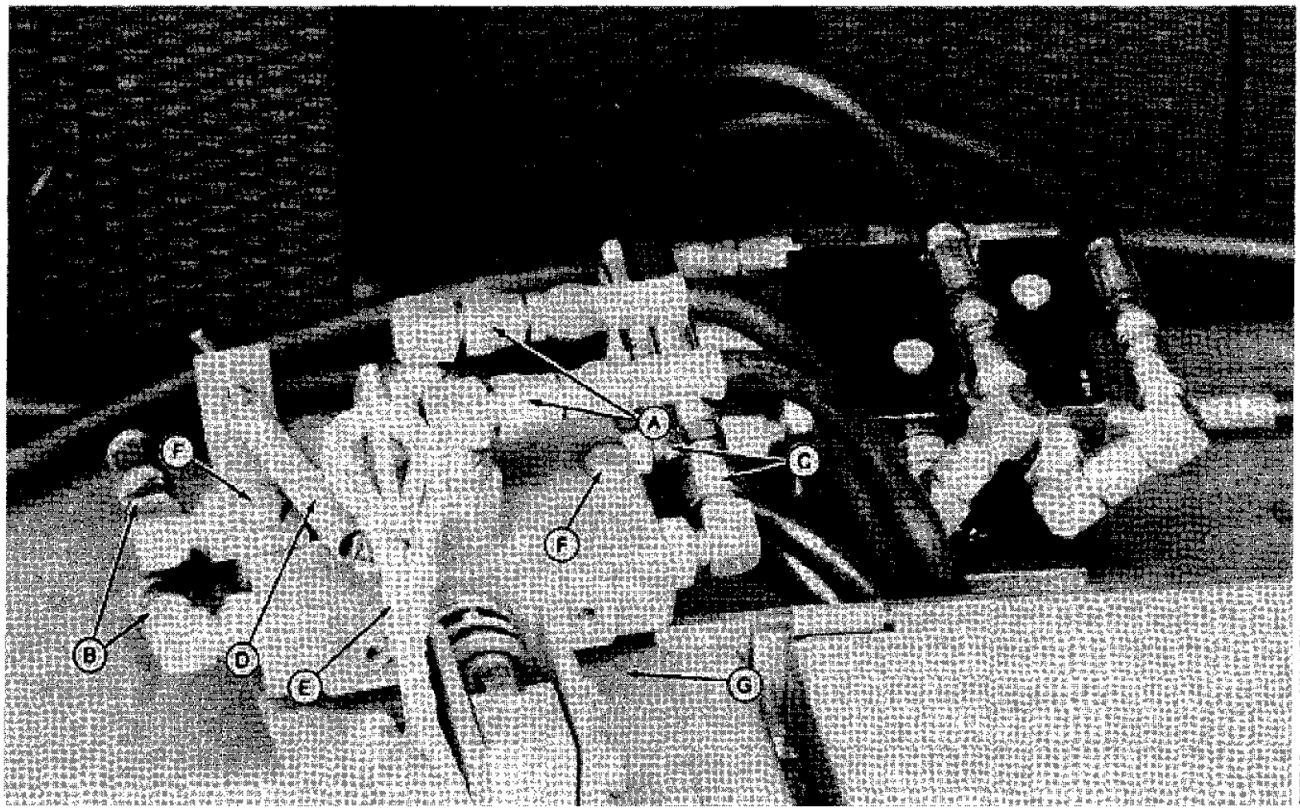


X9811 -UN-23AUG88

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.

EX,1472,3025,C -19-11MAR93



A—Tractor Hoses
B—Wrapping System Hoses
C—Gate System Hoses
D—Spring
E—Shifting Arm
F—Cap Screws
G—Mounting Plate

IMPORTANT: Keep foreign material from entering hydraulic system. Cap ends of hoses after removal.

NOTE: Mark all hoses after removal for ease in assembling.

1. Remove tractor hoses (A) from valve fittings.

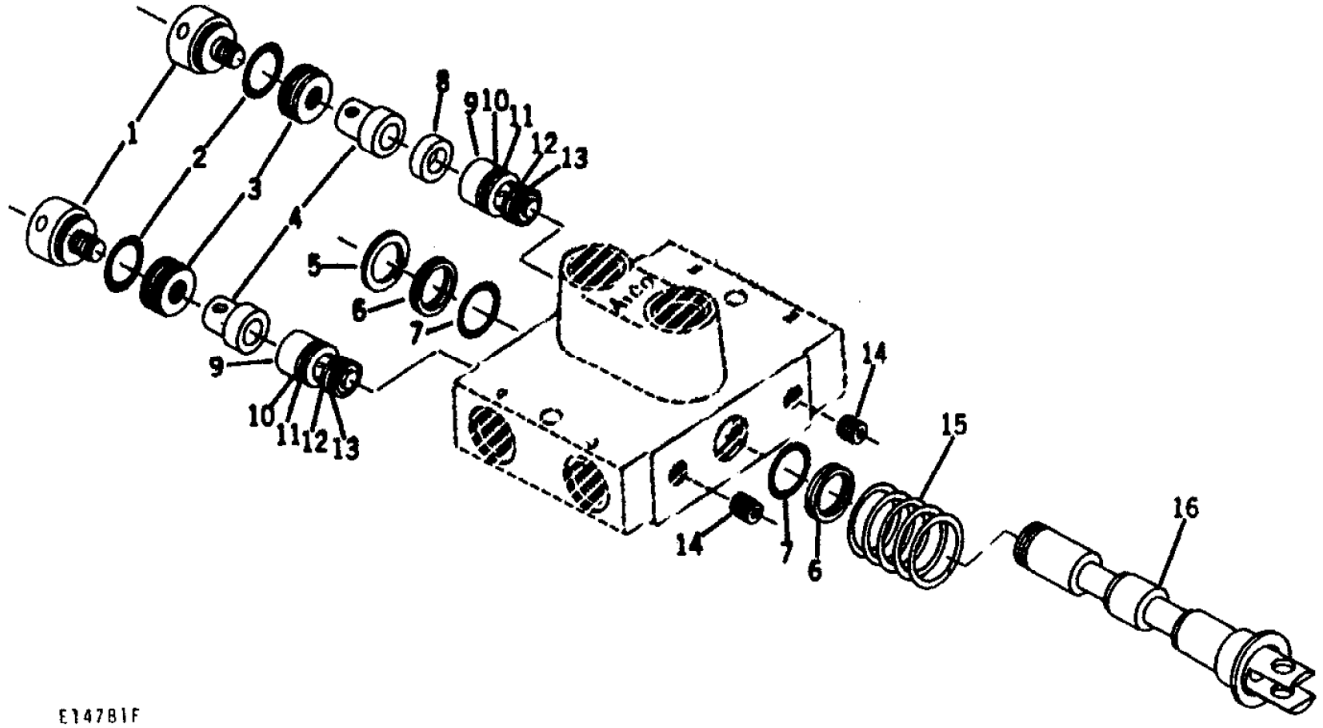
2. Remove wrapping system (B) and gate system (C) hoses from valve fittings.

3. Remove spring (D) from shifting arm (E).

4. Remove mounting cap screws (F) and valve from mounting plate (G).

EX,1472,3025,D -19-20APR89

REPAIR HYDRA-SELECTOR VALVE

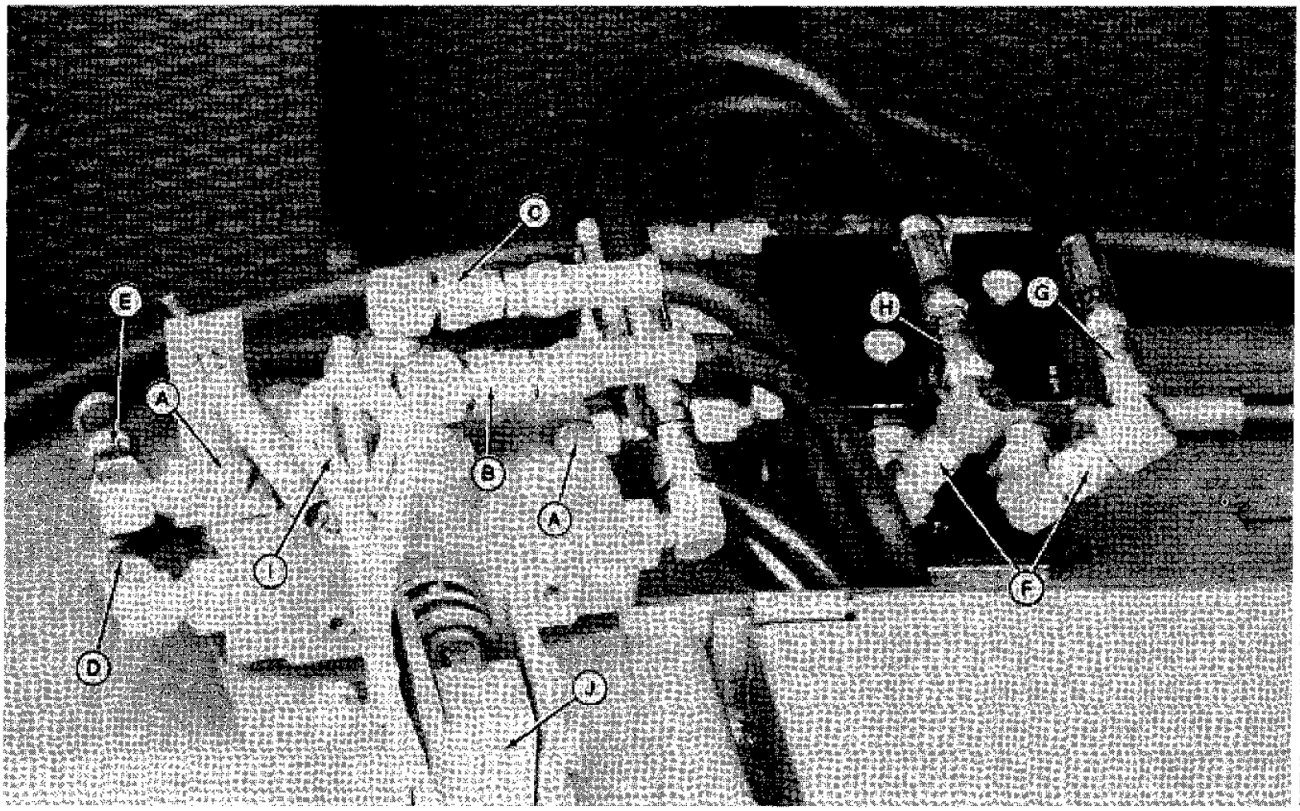


1—Plug (2 Used)	5—Snap Ring	9—Check Valve (2 Used)	13—O-Ring (2 Used)
2—O-Ring (2 Used)	6—Backup Ring (2 Used)	10—Backup Ring (2 Used)	14—Pipe Plug (2 Used)
3—Hollow Screw (2 Used)	7—O-Ring (2 Used)	11—O-Ring (2 Used)	15—Spring
4—Spacer (2 Used)	8—Spacer	12—Backup Ring (2 Used)	16—Spool

Exploded View of Hydra-Selector Valve

Refer to exploded view to make all necessary repairs.

EX,1472,3025,E -19-06NOV95



A—Screw
B—Hydraulic Line
C—Hydraulic Line
D—Hydraulic Line
E—Port
F—Elbow
G—Hydraulic Line
H—Hydraulic Line
I—Cable Thimble
J—Tape

1. Attach selector valve using two cap screws (A), washers, and nuts.

2. Place a new O-ring on all six 90 degree elbows and install.

3. Attach hydraulic lines (B) and (C). Tighten securely.

4. Attach hydraulic line (D) (rod end to port C and port end (E) to port (D) as shown. Tighten securely.

NOTE: For ease in assembling, letters are stamped by each outlet.

5. Install two 90 degree elbows (F) as shown.

6. Attach both hydraulic lines (G) to port (E) and (H) to port (F). Tighten securely.

IMPORTANT: If hydraulic lines (D) and (E) or (G) and (H) are attached opposite to way shown, gate may open when operating twine arm or vice versa, causing damage to baler.

7. Insert cable thimble (I) through hole in valve handle and insert rope through hole and around thimble. Measure down rope approximately 76 mm (3-in.) squeeze rope making an opening and insert end. Pull securely.

8. If installing a new valve, remove tape (J) covering both sides of cam to expose yellow painted surface.

9. Visually check all fittings for leaks.

10. Adjust valve, this group.

EX,1472,3025,F -19-20APR89

ADJUST HYDRA-SELECTOR VALVE

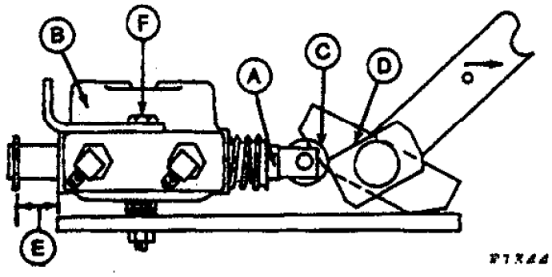
If twine arm is actuated and the rear gate begins to raise also, adjust as follows:

IMPORTANT: If valve assembly (B) is not parallel to cam (D), roller will be off-centered on cam resulting in excessive wear.

1. Shut tractor off. Push control handle forward (note direction of arrow) and check that roller shaft (A) is pushed completely into valve assembly (B) while roller (C) is resting on lobe of cam (D).

2. The selector control is correctly adjusted when dimension (E) is 13 mm (1/2 in.).

3. To adjust, loosen adjusting cap screws (F) and slide valve until 13 mm (1/2 in.) dimension (E) is obtained. Tighten cap screws.



E13447 -UN-20SEP88

A—Roller Shaft
B—Valve Assembly
C—Roller
D—Cam
E—13 mm (1/2 in.)
F—Cap Screws

EX,1472,3025,G -19-06NOV95

SPECIFICATIONS

Item	Measurement	Specification
435-535 Low Pressure Relief Valve (Marked RV3-1890)	Pressure	5171 kPa (52 bar) (750 psi)
435 High Pressure Relief Valve (Marked RV8-2564, RV8-2971 or RV-4627-35)	Pressure	24132 ± 1034 kPa (3500 ± 150 psi)
535 High Pressure Relief Valve (Marked RV8-2712, RV8-3327 or RV-4627-40)	Pressure	27579 ± 1034 kPa (4000 ± 150 psi)

EX,1472,3030,B -19-06NOV95

GENERAL INFORMATION

The primary hydraulic system uses four major components:

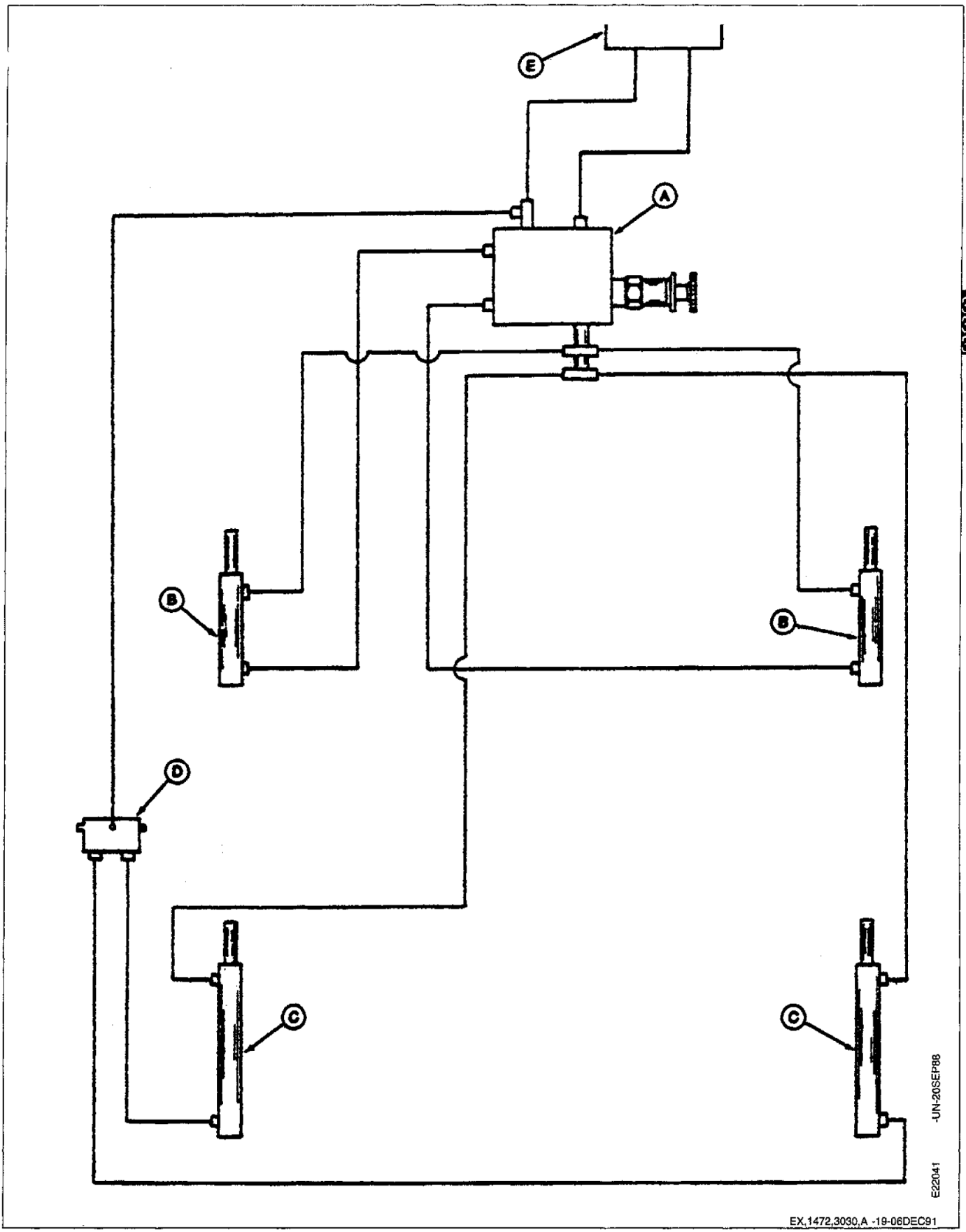
1—A control valve (A) is used to check flows, direct flow, and limit hydraulic pressures.

2—Two double-acting cylinders (B) are used to control bale tensioning.

3—Two larger double-acting cylinders (C) are used to raise and lower the gate.

4—A two position spool valve (D) is in the lines between the hydraulic gate cylinders and the modular control valve. When this valve is engaged, it blocks the flow of oil, both to and from lower ports of gate cylinders (C).

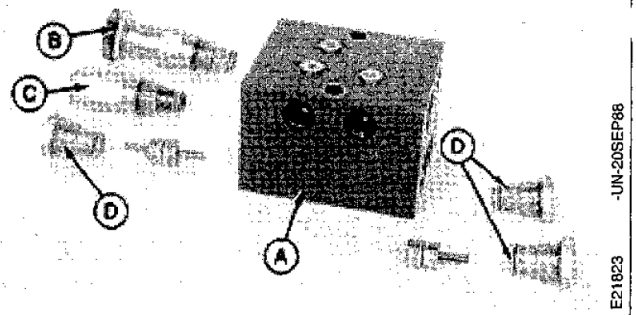
EX,1472,3030,C -19-11MAR93



EX,1472,3030,A -19-06DEC91

CONTROL VALVE

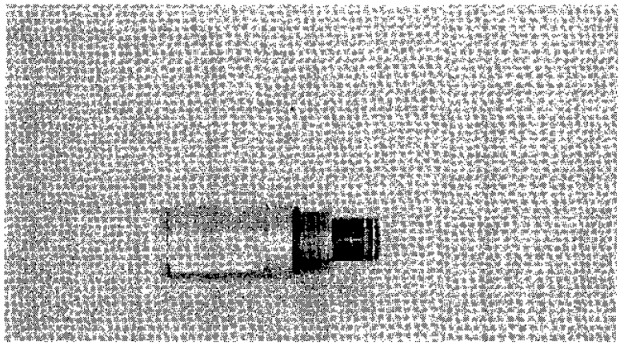
The control valve consists of a manifold (A), an adjustable relief cartridge (B), a pre-set relief cartridge (C), and three pilot-operated check valves (D).



EX,1472,3030,D -19-20APR89

NON-ADJUSTABLE RELIEF VALVE CARTRIDGE

The pre-set relief valve cartridge is designed to limit hydraulic pressure at the rod end of the gate cylinders to 5171 kPa (750 ± 50 psi). This cartridge protects the baler should the operator close the gate on top of a bale.



EX,1472,3030,E -19-20APR89

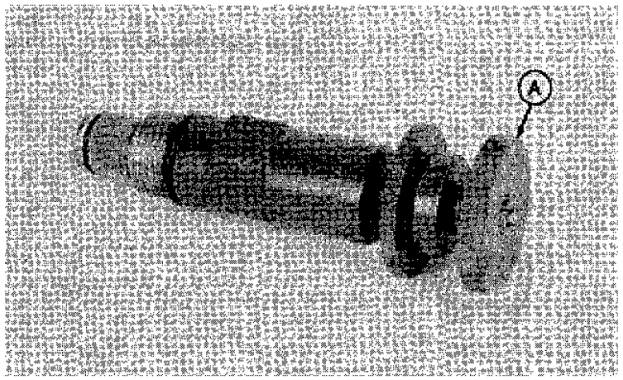
ADJUSTABLE RELIEF VALVE CARTRIDGE

The adjustable relief valve cartridge allows the operator to vary bale density by adjusting knob (A).

Maximum pressure:

435 18961 kPa (3500 psi)

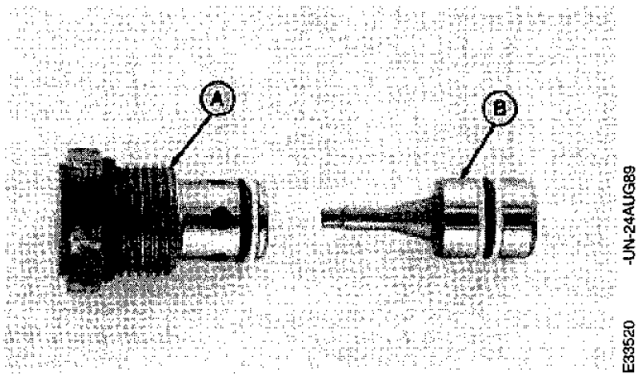
535 27579 kPa (4000 psi)



EX,1472,3030,F -19-21JAN92

PILOT-OPERATED CHECK VALVES

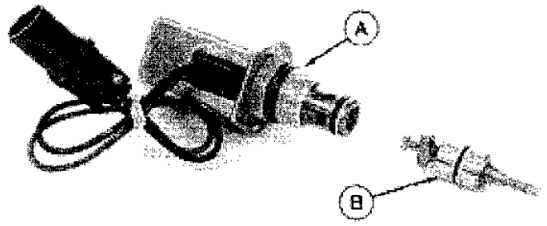
Pilot operated check valves (A) reduce leakage by checking flow in one direction. The pilot pistons (B) operate three check valves (one at a 4 to 1 differential and two at a 12 to 1 differential) to operate the hydraulic cylinders smoothly.



EX,1472,3030,G -19-20APR89

SOLENOID-OPERATED SOFT CORE VALVE

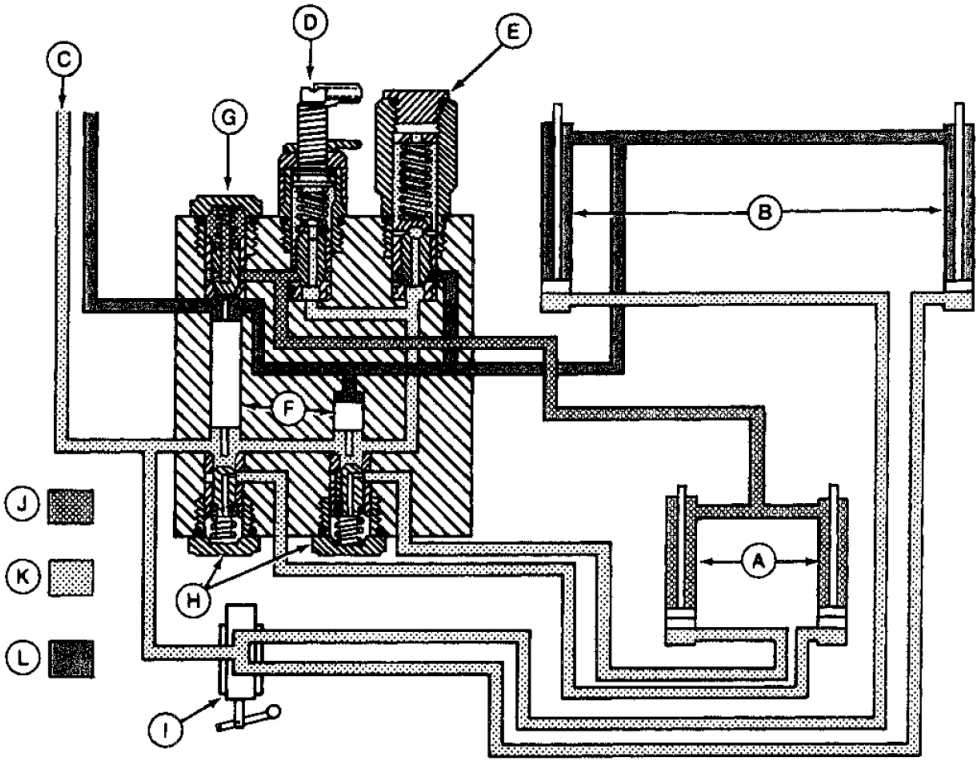
The optional solenoid valve (A) controls oil flow to reduce pressure of the tension arm creating a looser wrapped bale initially. The solenoid valve also operates as a pilot operated check valve when the coil is de-energized. The pilot piston (B) activates the check valve.



E36334 -UN-18DEC91

EX,1472,3030,G1-19-17JAN92

STARTING A BALE



A—Tension Cylinders
B—Gate Cylinders
C—Tractor SCV
D—Adjustable Relief Valve
E—Pre-Set Relief Valve
F—Pilot Pistons
G—4 to 1 Check Valve
H—12 to 1 Check Valve
I—Gate Lockout Valve
J—Medium Pressure Oil
K—Low Pressure Oil
L—Trapped Oil

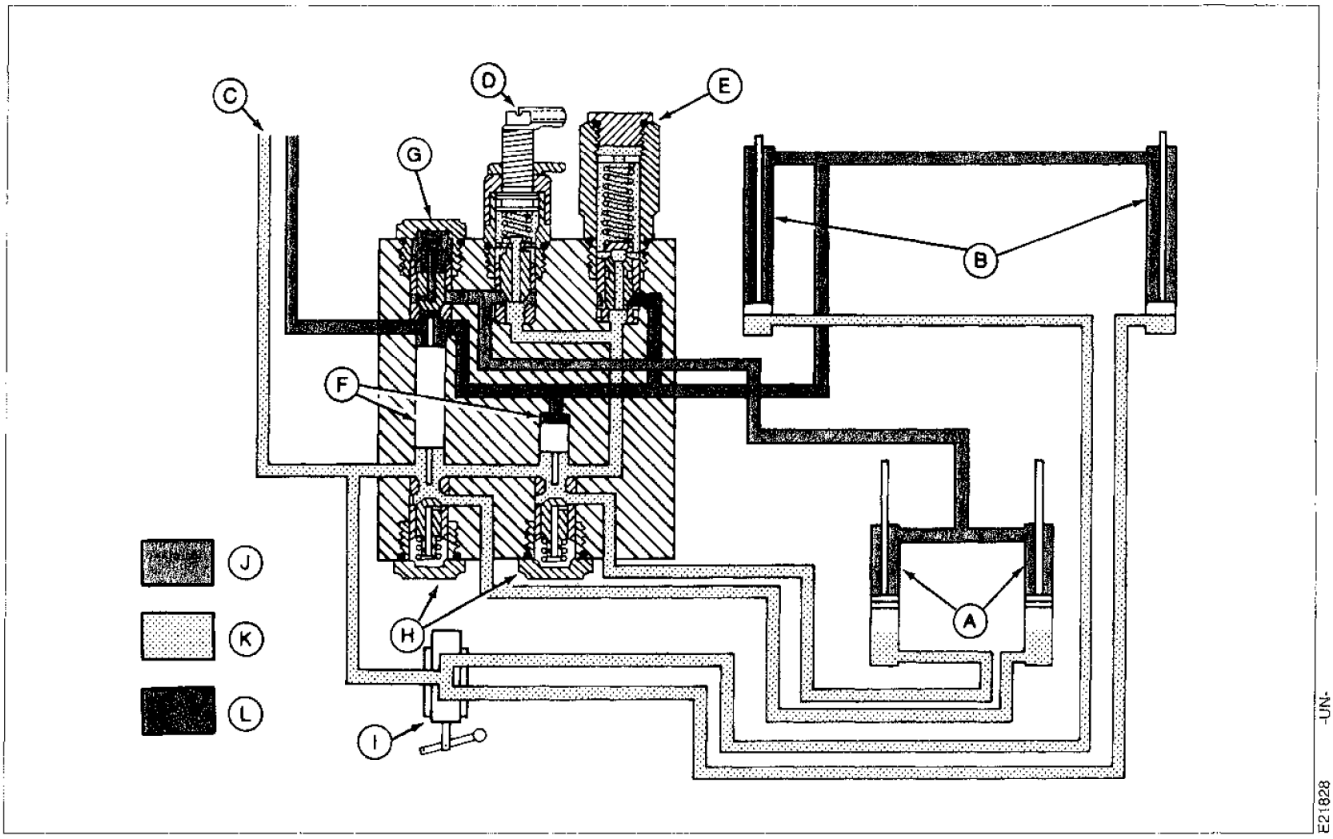
At the start of the bale, the tension cylinders (A) and gate cylinders (B) are completely retracted and the tractor SCV (C) is in the neutral position. In this position, no oil flows between the baler and the tractor.

As the bale grows, it pushes upward on the tension arm which will try to extend the tension cylinders. This force will increase the pressure in the line to the rod end of the tension cylinders until the poppet in the adjustable relief cartridge (D) is unseated. This hydraulic pressure is monitored by the bale density gauge.

If one hydraulic hose would break, check valves (H) will prevent the tension arm from lowering. Lockout valve (I) prevents accidental lowering of gate. Gate locking valve shuts off each gate cylinder independently.

EX,1472,3030,H -19-25FEB92

DURING NORMAL OPERATION



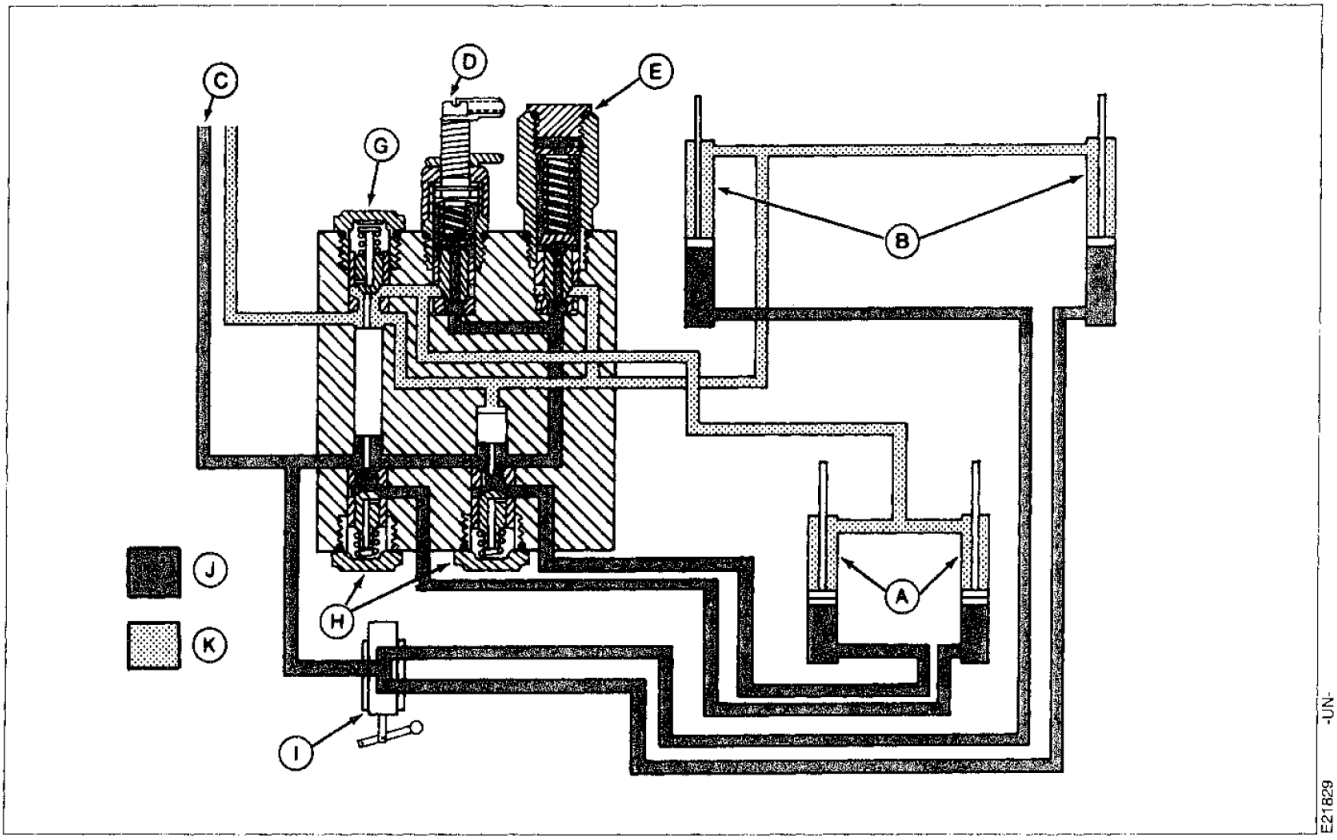
A—Tension Cylinders
B—Gate Cylinders
C—Tractor SCV
D—Adjustable Relief Valve
E—Pre-Set Relief Valve
F—Pilot Pistons
G—4 to 1 Check Valve
H—12 to 1 Check Valve
I—Gate Lockout Valve
J—High Pressure Oil
K—Pressure Free Oil
L—Trapped Oil

The poppet in the adjustable relief cartridge (D) remains seated until the desired pressure is met. When the desired pressure is met, the poppet unseats allowing oil to flow through the relief valve (D) and the two check valves (H) to the piston ends of the tension cylinders (A).

As the bale continues to grow in diameter and the tension cylinders (A) continue to extend, oil will continue to flow from the rod end to the piston end of the cylinder. The relief valve (D) maintains a constant pressure on the rod end of the tension cylinders at this time.

EX,1472,3030,I -19-25FEB92

OPENING THE GATE

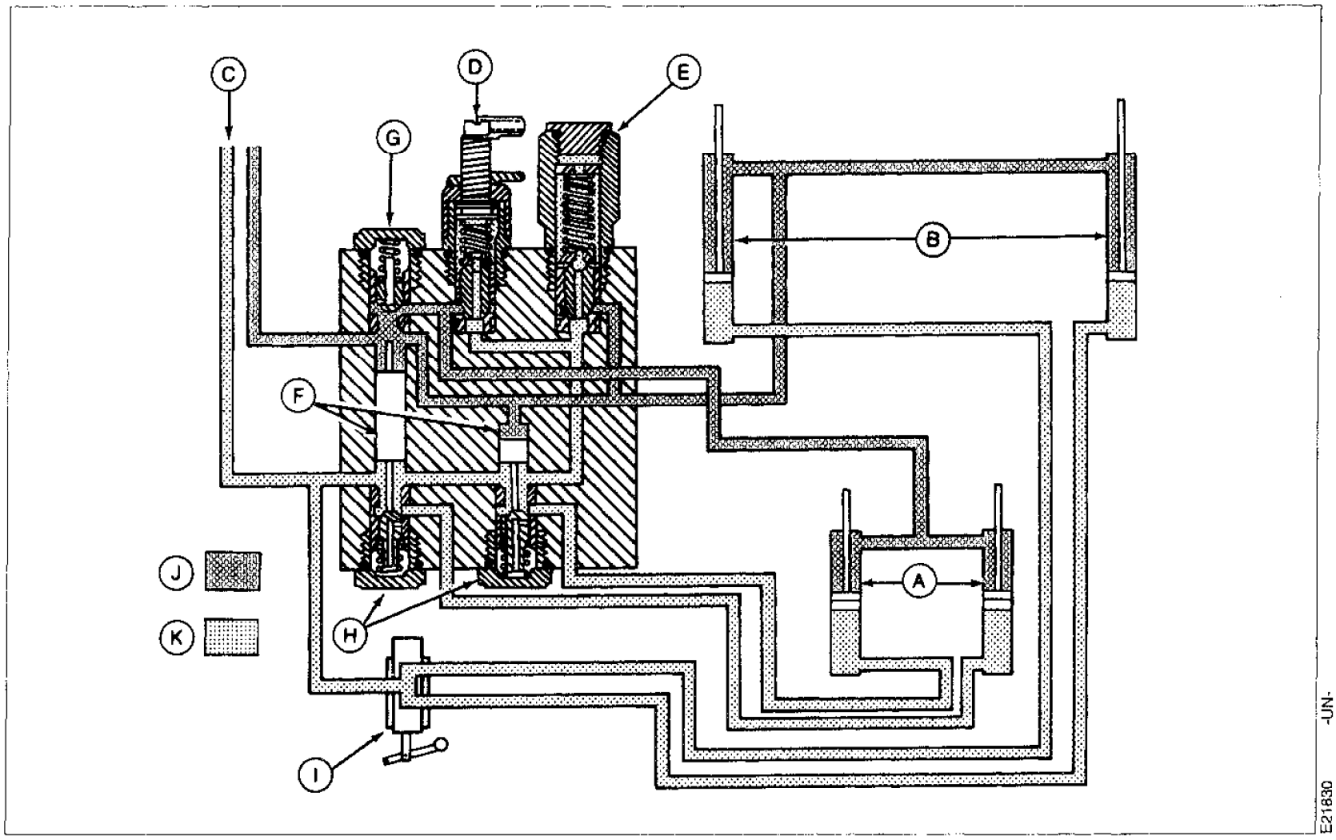


A—Tension Cylinders
B—Gate Cylinders
C—Tractor SCV
D—Adjustable Relief Valve
E—Pre-Set Relief Valve
F—Pilot Pistons
G—4 to 1 Check Valve
H—12 to 1 Check Valve
I—Gate Lockout Valve
J—High Pressure Oil
K—Low Pressure Oil

When the operator moves the tractor SCV lever to raise the gate, the piston end of the gate and tension cylinders become pressurized. This pressure causes the double-ended pilot piston to open the poppet in the check valve cartridge allowing the tension cylinders to extend. As the tension cylinders are extending, oil is also flowing to the piston end of the gate cylinders. As they extend, the gate opens.

EX,1472,3030,J -19-25FEB92

CLOSING THE GATE



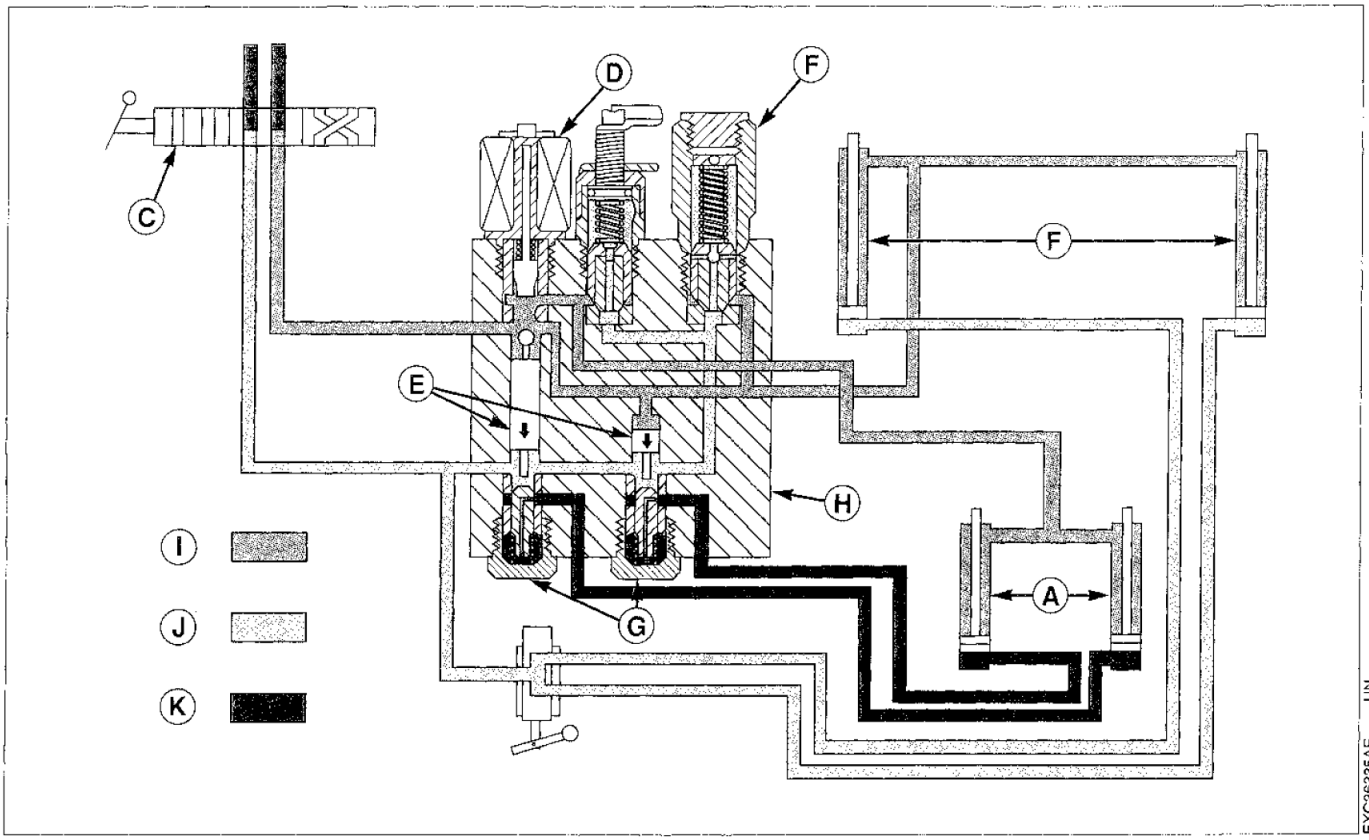
A—Tension Cylinders
B—Gate Cylinders
C—Tractor SCV
D—Adjustable Relief Valve
E—Pre-Set Relief Valve
F—Pilot Pistons
G—4 to 1 Check Valve
H—12 to 1 Check Valve
I—Gate Lockout Valve
J—Medium Pressure Oil
K—Low Pressure Oil

When the operator moves the tractor SCV to close the gate, hydraulic pressure will cause both pilot pistons to unseat the poppets in the two check valve cartridges. This allows oil to return from the tension cylinders.

Hydraulic oil will flow to the rod end of the tension cylinder and cause them to retract. Pressurized oil also flows to the rod end of the gate cylinders causing them to retract. Oil from the bottom end of the gate cylinder flows back through the gate lock valve to the tractor.

EX,1472,3030,K -19-25FEB92

SOFT CORE OPERATION



A—Tension Cylinders
B—Gate Cylinders
C—Tractor SCV
D—Soft Core Solenoid Valve
E—Pilot Piston
F—Low Pressure Relief Valve
G—12 to 1 Check Valves
H—Control Valve
I—Medium Pressure Oil
J—Low Pressure Oil
K—Trapped Oil

At the start of the bale, the tension cylinders (A) and the gate cylinders (B) are completely retracted and the soft core solenoid valve (D) is energized. The tractor SCV (C) is in neutral position so oil flow between the tractor and baler is blocked.

As the bale increases in diameter, the tension arm is pushed up which also tries to extend the tension cylinders. This upward force increases the pressure in the rod end of the tension cylinders and hoses.

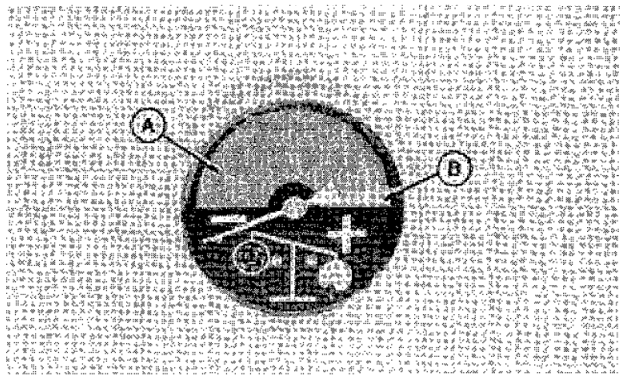
With the solenoid valve open, the pressure in the rod side of the tension cylinders is also present at the pilot pistons (E) and the low pressure relief valve (F).

When the pressure reaches approximately 5171 kPa (750 psi) the low pressure relief valve opens. The pilot pistons have opened the check valves (G) and oil from the low pressure relief valve is allowed to flow to the piston end of the tension cylinder. This creates a closed loop flow of oil from the rod end of the tension cylinders, to the control valve and back to the piston end of the tension cylinders.

When the soft core operation is ended, the solenoid valve is de-energized, closing the valve. The control valve then functions normally for bale forming and gate operations.

EX,1472,3030,K1-19-17JAN92

BALE DENSITY GAUGE



This gauge indicates the relative pressure within the hydraulic bale tensioning system while forming a bale. Turning bale density knob counterclockwise will cause the needle to move toward the minus sign and make lighter bales. Turning the knob clockwise will cause the needle to move toward the plus sign and make heavier bales.

NOTE: The gauge will not register a higher setting until more hay is fed into baler.

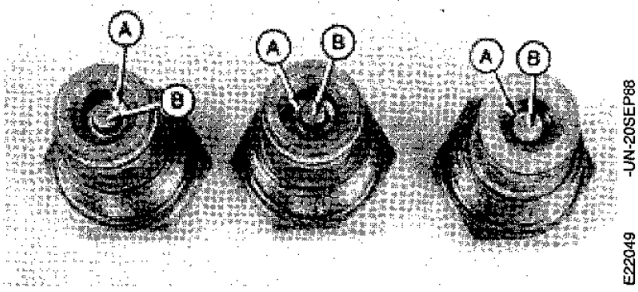
The green band (A) represents normal baler operating pressure of up to 24132 kPa (3500 psi) for the 435 Baler, and up to 27579 kPa (4000 psi).

If the needle reaches the red band (B):

1. Make sure tractor SCV lever is in neutral while baling.
2. Check for faulty gauge or relief valve.
3. Reduce bale density.

EX,1472,3030,L -19-24FEB92

CHECK FOR DAMAGED SEAT OR POPPET IN VALVE



1. Check seat area (A) for nicks.
2. Depress poppet (B). It should move freely.

NOTE: Unscrew knob fully on adjustable relief valve before attempting to depress poppet.

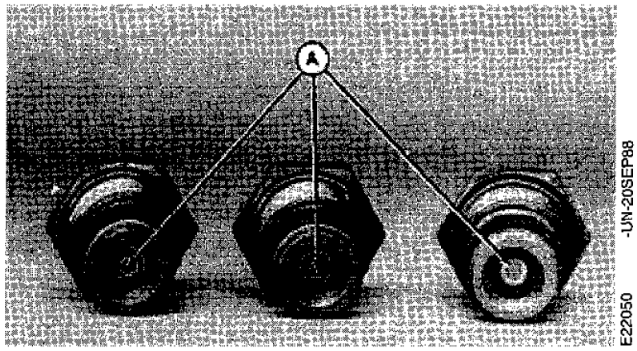
3. Replace entire valve if seat (A) is damaged or if poppet (B) will not move freely.

EX,1472,3030,M -19-20APR89

REMOVE FOREIGN MATERIAL FROM VALVE SEAT

NOTE: Unscrew knob fully on adjustable relief valve before attempting to remove foreign material.

1. With small punch, depress poppet (A). Flush with clean solvent to wash away foreign material.



EX,1472,3030,N -19-20APR89

30
30
12

CLOSING THE GATE UNDER LOW HYDRAULIC FLOW (TRACTOR WITH LESS THAN 6.5 GPM)

If the gate is closed with the tractor idling or by a tractor with hydraulic pump flow of less than 25 L/min (6.5 gpm), the gate may close before the tension arm retracts. If this happens, the twine linkage will not latch and the twine arm will feed twine into the bale as it is being formed. Slack belts may also pinch between axle and gate causing belt damage.

When the gate closes before the tension arm retracts, gravity causes the gate cylinders to retract faster than the hydraulic pump can fill the rod end of the cylinders. Thus, no pressure is generated in the rod end of the cylinders, the pilot-operated check valves aren't opened, and the tension arm remains up.

To overcome this problem, first run the tractor at full speed when lowering the gate. If the problem persists, add an orifice (shown in parts catalog) to the control valve. This orifice will generate sufficient pressure within the valve body to open the pilot-operated check valves allowing the tension arm to come down.

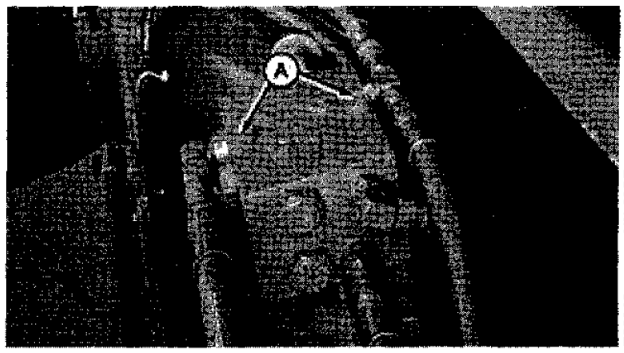
EX,1472,3030,O -19-20APR89

DISASSEMBLE TENSION VALVE

All relief valves and check valves can be removed from the tension valve without removing the valve from the baler.

If the valve is to be removed and flushed out:

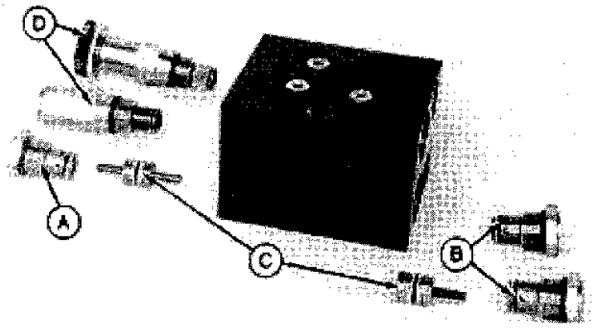
1. Remove cap screws (A) and hydraulic lines. Label hoses to aid in reassembly.



EX,1472,3030,P -19-11MAR93

2. Remove hydraulic fittings.

3. Remove 4 to 1 check valve (A), 12 to 1 check valves (B), pilot pistons (C), and relief valves (D).

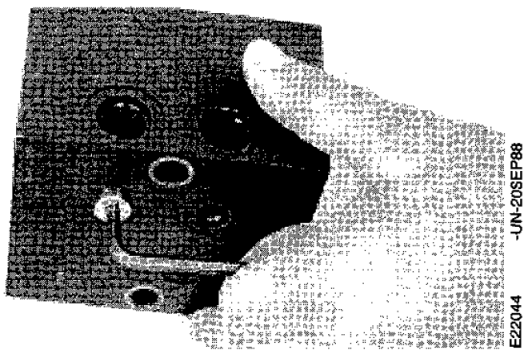


EX,1472,3030,Q -19-20APR89

4. Remove plugs and flush with clean solvent.

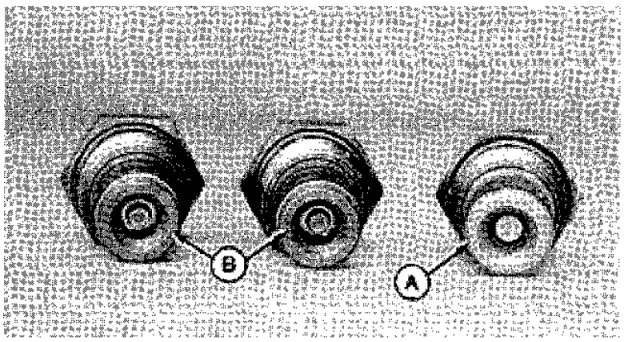
5. Inspect components. Replace O-rings and back-up rings if needed.

6. When assembling control valve, refer to Install Check Valves Correctly for correct installation of 4 to 1 and 12 to 1 check valves.



EX,1472,3030,R -19-20APR89

INSTALL CHECK VALVES CORRECTLY



The check valve with the large poppet (A) has a 4 to 1 differential and is installed on the same side of the control valve as the two relief valves.

The other two check valves (B) with 12 to 1 differential, have smaller poppets and are installed on the opposite side of the control valve.

If the 4 to 1 check valve is installed in the wrong port, the baler will not function properly when used with 10 gpm or less hydraulic capacity tractors.

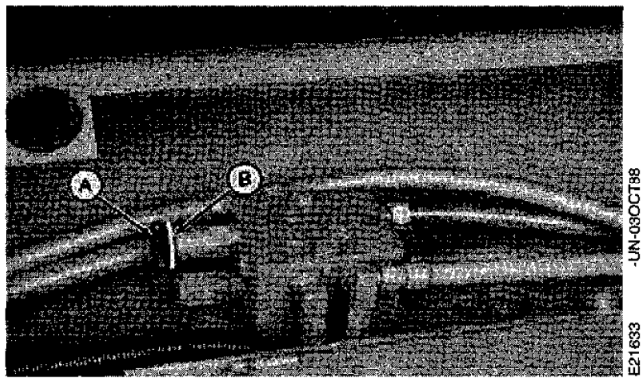
The 4 to 1 check valve installed in the wrong port will be indicated by:

1. Gate latching before tension arm comes down. If this happens, the twine linkage will not lock and the twine will feed into the bale as it is being formed.

2. Tension arm "jerking down" rather than coming down smoothly.

EX,1472,3030,S -19-11MAR93

ADJUST RELIEF VALVE

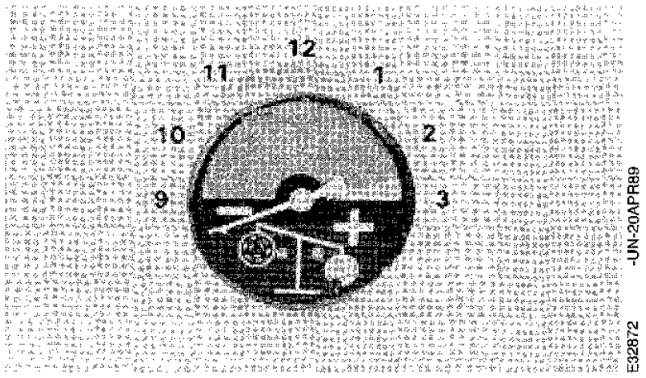


1. Close gate and lower belt tension arm. This allows the knob to turn easier.

2. Loosen locking ring (B). Turn knob (A) counterclockwise for looser bales and clockwise for tighter bales. Retighten locking ring (B).

EX,1472,3030,T -19-11MAR93

CHECK ADJUSTABLE RELIEF VALVE



NOTE: Adjustable relief valve can be identified by number stamped on valve body:
435 Baler—RV8-2564, RV8-2971 or RV-4627-35
535 Baler—RV8-2712, RV8-3327 or RV-4627-40

1. Screw knob all the way in to set adjustable relief valve at maximum pressure.

2. Interchange pre-set relief valve (non-adjustable) with one of the 12 to 1 check valves on the opposite side of the control valve.

3. Lower gate with tractor SCV lever. Pressure gauge should read tractor system pressure, 12:00 o'clock position or higher reading on gauge. If below 12:00 and tractor system goes over relief, tractor system is not capable of checking valve. Use a tractor with a higher hydraulic pressure to check relief valve.

If the bale tension gauge registers 12:00 or higher, shut off tractor and move SCV lever to float position. Bale tension gauge indicator will move downward. Maximum indicator drop allowable is 45 degrees (1/8 of gauge) in ten seconds. If indicator drop is more than 45 degrees in ten seconds, either the adjustable relief valve or the check valve is dirty or faulty.

NOTE: For tractors without a float position, shut off tractor and move SCV lever back and forth. Watch bale tension gauge, it should not drop more than 45 degrees in ten seconds.

Approximate Pressures

435	535
9:00—3447 kPa (500 psi)	9:00—3447 kPa (500 psi)
12:00—13790 kPa (2000 psi)	12:00—17926 kPa (2600 psi
Green/Red	Green/Red
Zone—24132 kPa (3500 psi)	Zone—27579 (4000 psi)

4. Check for faulty component in following sequence:

- Remove high pressure relief cartridge and inspect O-ring and backup rings for damage. Check for damaged or dirty seats.

- Check tension cylinders for leakage. Repair or replace as needed.

- If valve and cylinder checks are okay, replace high pressure cartridge.

IMPORTANT: To release pressure, the gate lock valve must be in the locked position. Back off the adjustable relief valve to bring the pressure to zero.

EX,1472,3030,U -19-06NOV95

CHECK FIXED LOW PRESSURE RELIEF VALVE

NOTE: Low pressure relief valve can be identified by number stamped on valve body, RV3-1890.

1. Attach flow meter in a hydraulic hose going to bottom end of one of the gate cylinders.

2. Start tractor, engage SCV lever to lower gate.

3. Adjust flow meter to obtain a flow of one gallon per minute or less.

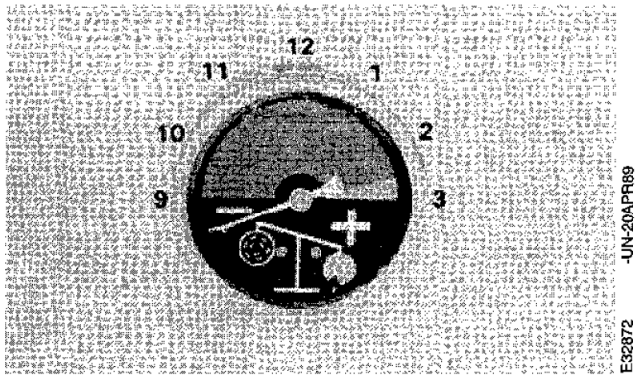
Bale density gauge should read approximately 5171 kPa (750 psi) between 9:00 and 10:00 o'clock position.

If bale density gauge is not to specification between 9:00 and 10:00, check fixed relief valve for foreign material and/or damaged seat or poppet. Check O-rings and back-up rings for damage.

4. If poppet will not seat because of foreign material, clean valve. (See Remove Foreign Material From Valve Seat in this group.)

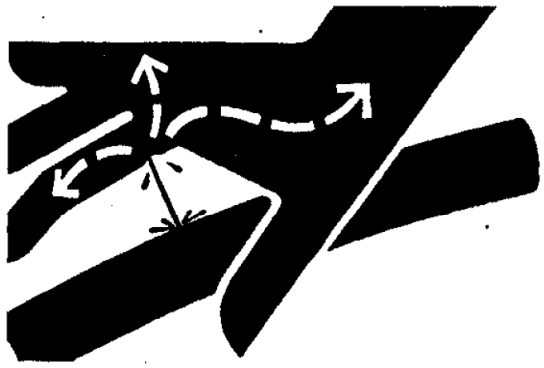
5. Check for damage in valve. (See Check For Damaged Seat Or Poppet In Valve in this group.)

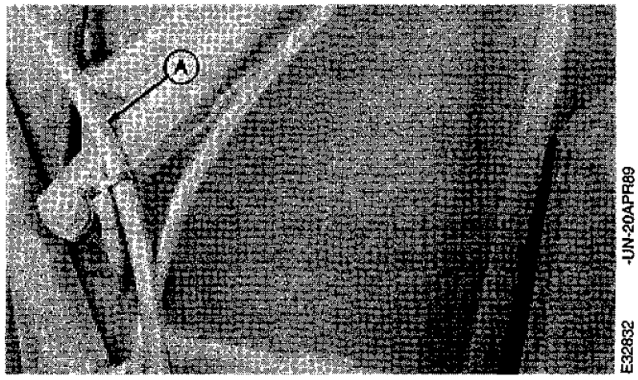
6. Replace O-rings and back-up rings if damaged.



EX,1472,3030,V -19-11MAR93

CHECK TENSION CYLINDER OR GATE CYLINDER FOR LEAKAGE


X9811 -UN-23AUG88



E32832 -UN-20APR89

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.

IMPORTANT: 435 (SN —969344) and 535 (SN —971694) balers equipped with pushbars and used with 6000 or 7000 series John Deere tractors, MUST have a Hydraulic Pressure Reducing Kit (AE51067) installed and SCV flow control adjusted to a five second gate opening cycle, or premature cylinder failures could occur.

1. Disconnect hoses at bottom of tension cylinders (A). Plug hose ends and leave cylinder ports open.

2. Close gate with SCV lever and hold lever in this position. There may be an initial surge of oil out the open ports. Wipe oil from open ports. Then check oil leakage. Thirty drops of oil per minute is the maximum allowable leakage. If leakage exceeds 20 drops per minute, repair cylinder. (See Disassemble And Repair Cylinders, this section.)

EX,1472,3030,W -19-06NOV95

CHECK TWINE ARM HYDRAULIC SYSTEM

1. Hook up tractor to baler.

2. Lower pickup to operating position.

3. Eliminate air in hydraulic system. Raise and lower gate several times. For 435-535—raise gate fully and lock.

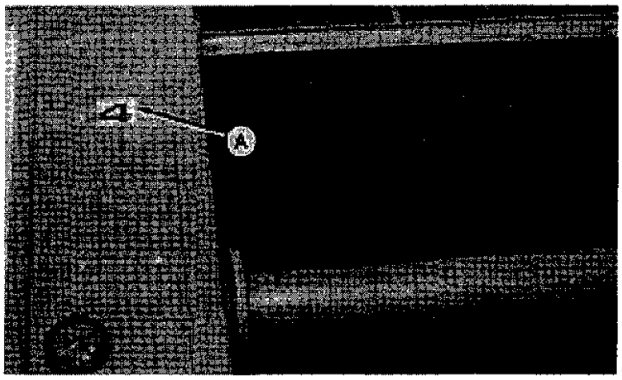
4. Lower center arm till number 4 appears in bale size window (A) as shown. Pull twine trip release rope. When twine arm completes cycle, pull rope to cycle again.

5. Operate twine arm several times.

6. Check oil level in tractor hydraulic reservoir. Add oil if low.

7. Check entire baler hydraulic system and eliminate any leaks before operating baler in field.

CAUTION: Do not operate baler in this mode for any extended time.



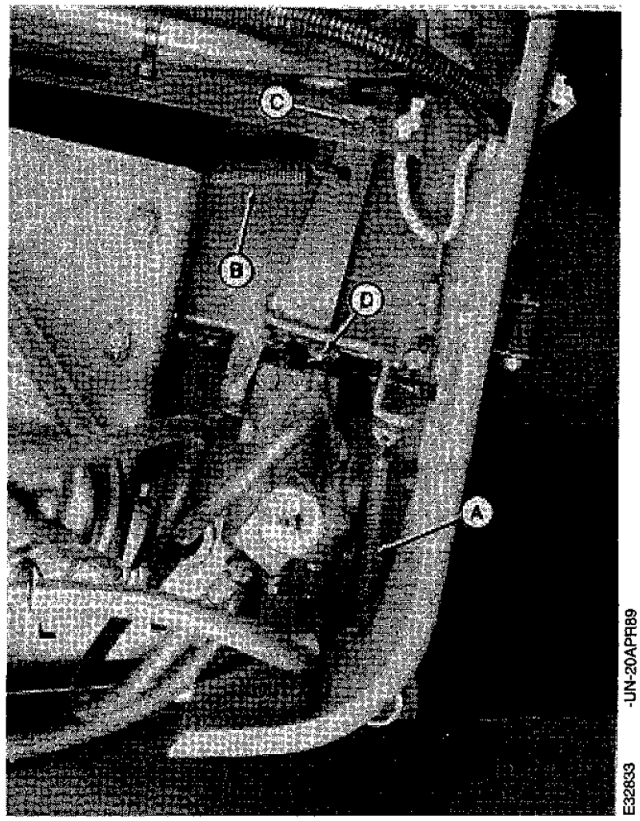
535 Baler Shown

EX,1472,3030,X -19-06NOV95

REMOVE SINGLE SPOOL VALVE

1. Remove springs (A) and (B).
2. Remove cotter pin (C).
3. Remove hydraulic lines.
4. Remove cap screws.
5. Remove pin (D).

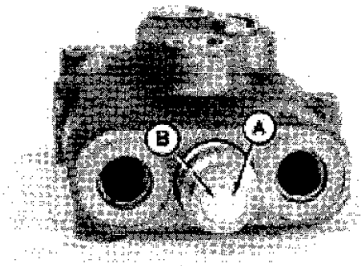
A—Springs
B—Springs
C—Pin
D—Pin



EX,1472,3035,A -19-11MAR93

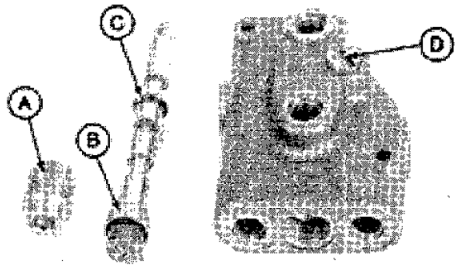
REPAIR SINGLE-SPOOL VALVE

1. Remove cover (A).
2. Remove end cap (B) with Allen wrench.



EX,1472,3035,B -19-11MAR93

3. With end cap (A) removed, push spool (B) out of valve.
4. Check O-ring (C). Replace if damaged.
5. Remove screw plug (D).

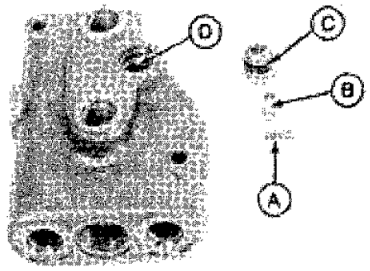


EX,1472,3035,C -19-21APR89

6. Remove spring (A) and check valve (B) from port (D).

7. Check O-ring (C) on screw plug. Replace if damaged.

A—Spring
B—Check Valve
C—Port
D—O-Ring



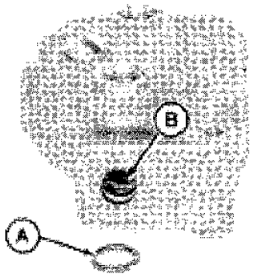
E22066 -UN-20SEP88

EX,1472,3035,D -19-21APR89

30
35
2

8. Remove O-ring (A) from spool bore (B). Replace if damaged.

9. Assemble O-rings. Install check valve, springs, screw plug, push spool, and end cap.



E22067 -UN-20SEP88

EX,1472,3035,E -19-21APR89

CHECK GATE LOCKING VALVE

WITH GATE CLOSED:

1. Remove hydraulic hoses (A) to gate cylinders.

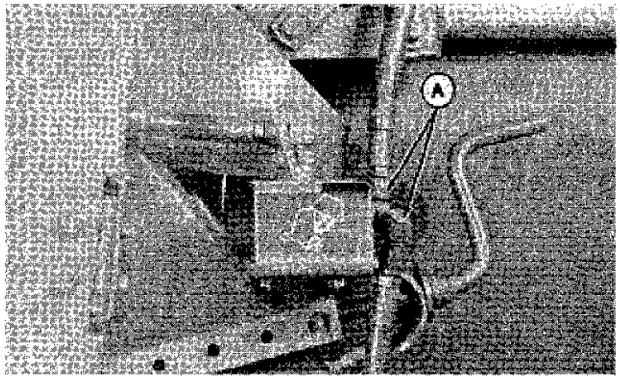
2. Lock valve.

3. Pressurize system with tractor to raise gate.

4. Check leakage.

NOTE: Maximum leakage for either port should be 20 drops per minute.

5. If leakage exceeds this rate, repair or replace valve.



E32834 -UN-08JUN89

EX,1472,3035,F -19-11MAR93

REPAIR GATE LOCKING VALVE

1. Remove bolts (A).

2. Remove snap ring (C) and remove spool from valve.

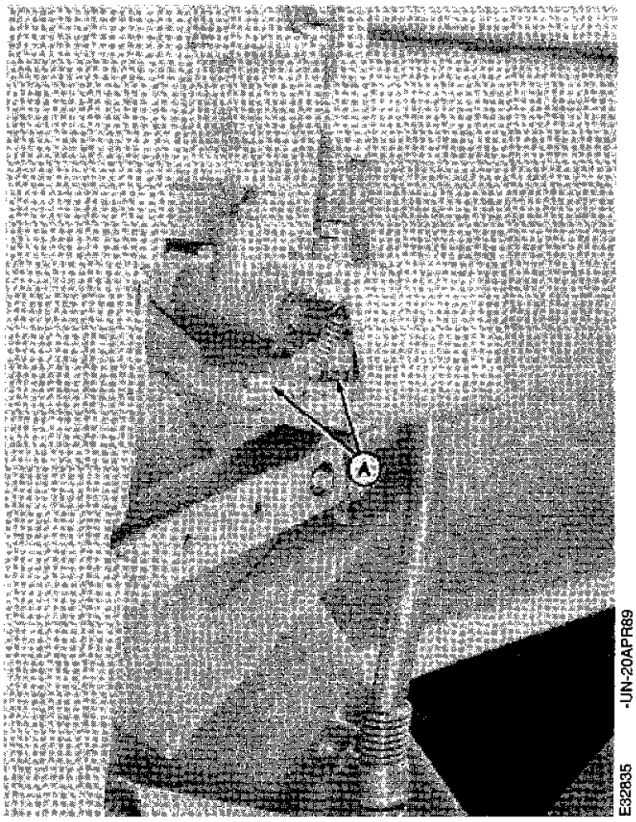
3. Replace O-rings (D).

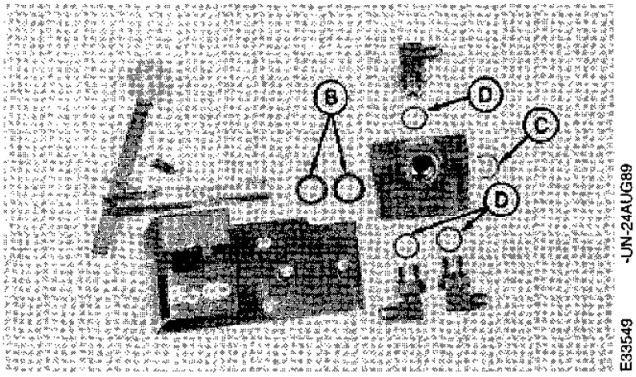
4. Replace quad rings (B).

5. Assemble and install valve.

6. Check for smooth operation of valve spool. Snap rings must contact valve body in both directions when actuated by valve lever.

A—Bolts
B—Quad Rings
C—Snap Ring
D—O-Rings





EX,1472,3035,G -19-11MAR93

SPECIFICATIONS

Item	Measurement	Specification
Twine Cylinder Piston Rod		
Lock Nut	Torque	41 to 48 N·m (30 to 35 lb-ft)
End Cap	Torque	136 to 169 N·m (100 to 124 lb-ft)

EX,1472,3040,A -19-11MAR93

REMOVE TENSION CYLINDER (335—375—385)

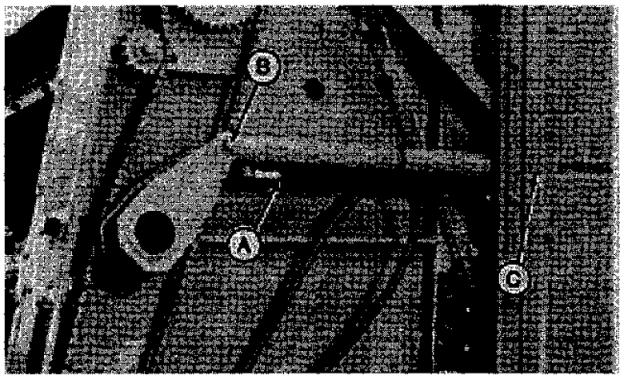
X9811 -UN-23AUG88

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.

EX,1472,3040,B -19-11MAR93

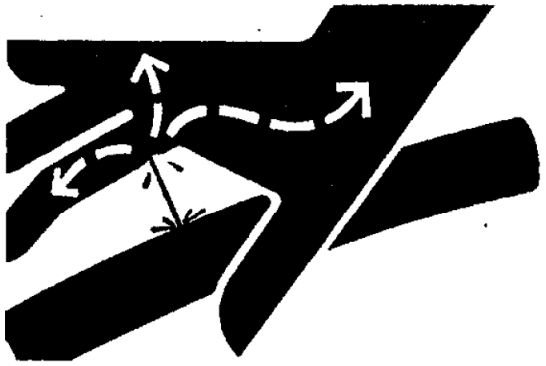
1. Close gate fully.
2. Remove hydraulic lines (A).
3. Remove nut, washer, and cap screw (B).
4. Remove lock nut, cap screw (C), and cylinder.



E27650 -UN-14SEP88

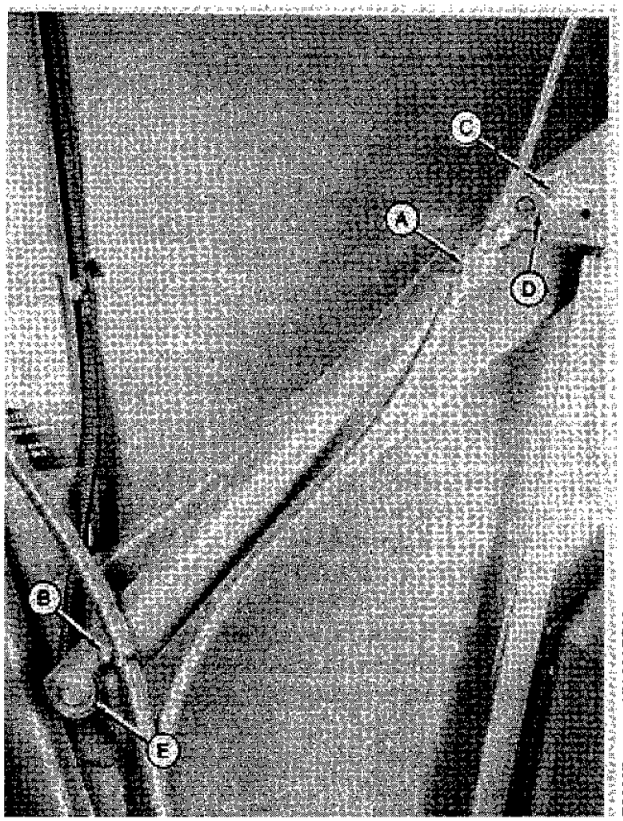
EX,1472,3040,C -19-21APR89

REMOVE TENSION CYLINDERS (435—535)



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.



A—Hydraulic Port
B—Hydraulic Port
C—Nut
D—Plate and Pin
E—Nut

1. Remove hydraulic lines from ports (A) and (B).
2. Remove nuts (C).
3. Remove plate (D) with pin.
4. Remove nut (E).

NOTE: Make sure to note order of washers.

5. Remove cylinder. Repeat on opposite side of baler.

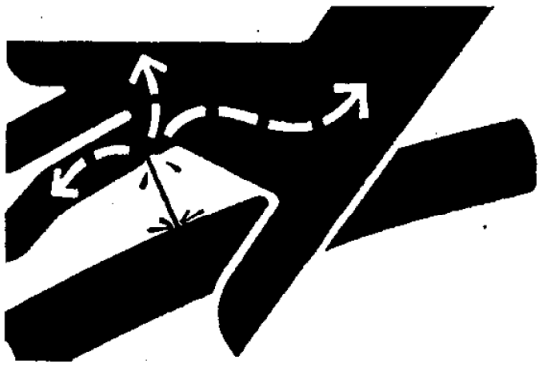
NOTE: Be sure belts or spring rod and tension arm stops are in place before removing cylinders.

6. To assemble, reverse procedure.

NOTE: If both tension cylinders are removed, be sure belts are in place or tension arm stops and spring rods are in place, otherwise serious machine damage can occur.

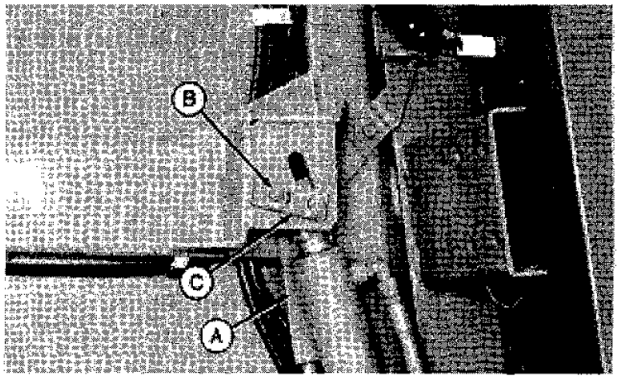
EX,1472,3040,D -19-11MAR93

REMOVE GATE CYLINDERS (435—535)



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.

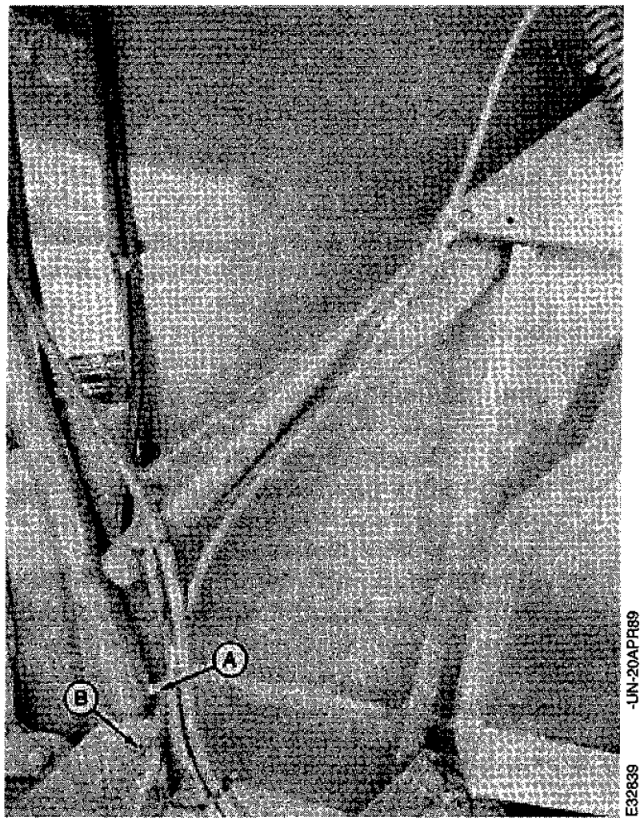


1. Close gate.
2. Remove hydraulic line (A).
3. Remove nut (B).
4. Remove plate (C) with cylinder pin.

NOTE: If optional bale push bar is installed, gate must be opened slightly and blocked between gate roller and axle to hold gate slightly open before plate assembly can be removed.

EX,1472,3040,E -19-11MAR93

5. Remove hydraulic line (A).
6. Remove cap screw and plate (B).
7. Remove cylinder.
8. Repeat on opposite side of baler.



EX,1472,3040,F -19-21APR89

TENSION AND GATE CYLINDER IDENTIFICATION

There are two manufacturers of the tension and gate cylinders, Bruning and Cessna.

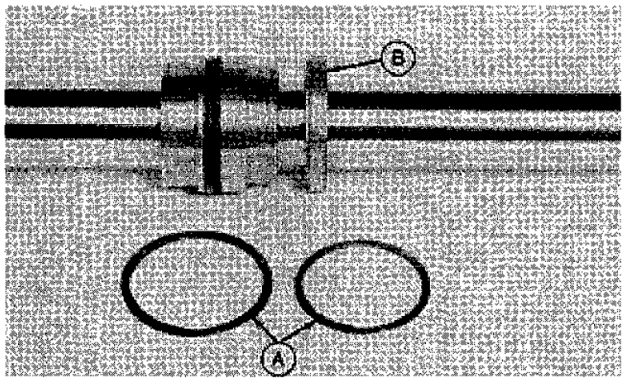
Each manufacturer's cylinder design is different and requires different disassembly procedures and repair parts.

Bruning cylinders are assembled with spring-type lock rings (A), and also include a spacer (B).

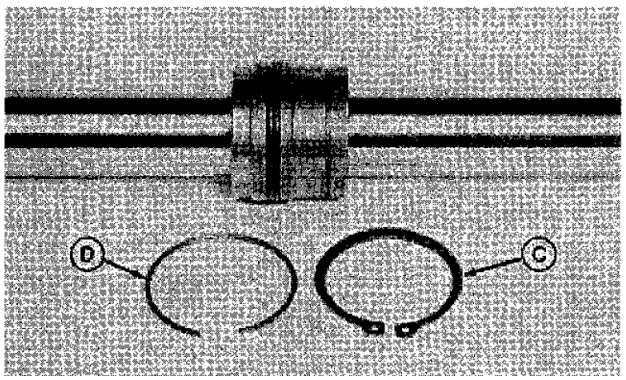
Cessna cylinders are assembled with a snap ring (C) and a wire stop ring (D).

Before disassembling cylinders, determine which type of cylinder is used and which type of repair kit is needed. See Disassemble Tension or Gate Cylinder.

A—Lock Ring
B—Spacer
C—Snap Ring
D—Stop Ring



Bruning Cylinder



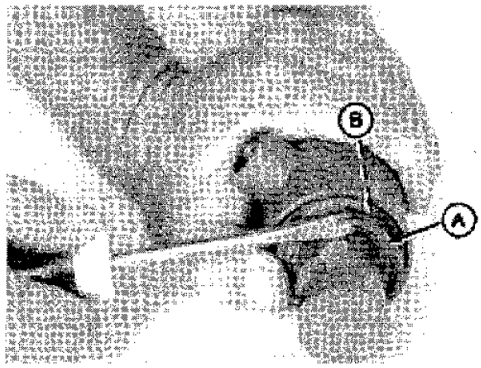
Cessna Cylinder

EX,1472,3040,G -19-24FEB92

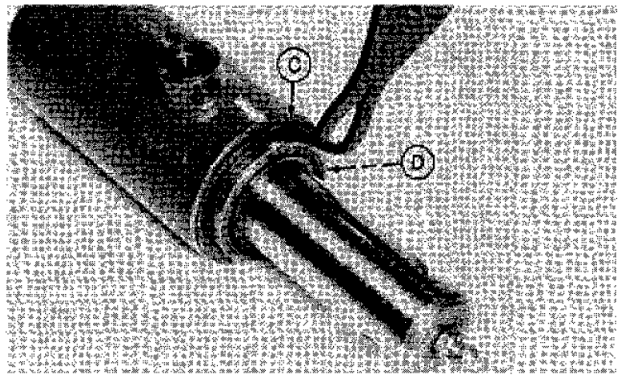
DISASSEMBLE TENSION OR GATE CYLINDER

1. (Bruning Cylinder) Remove spacer locking ring (A). Push assembly (B) inside tube approximately 19 mm (3/4 in.).

2. (Cessna Cylinder) Using snap ring plyers, remove snap ring (C). Push assembly (D) inside tube approximately 19 mm (3/4 in.).



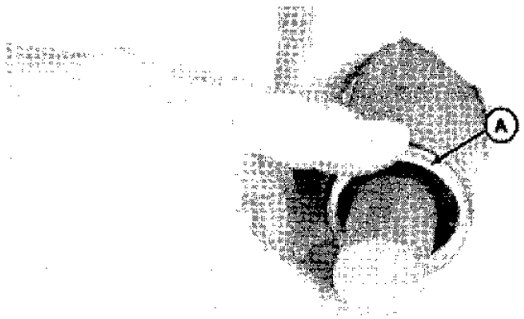
Bruning Cylinder



Cessna Cylinder

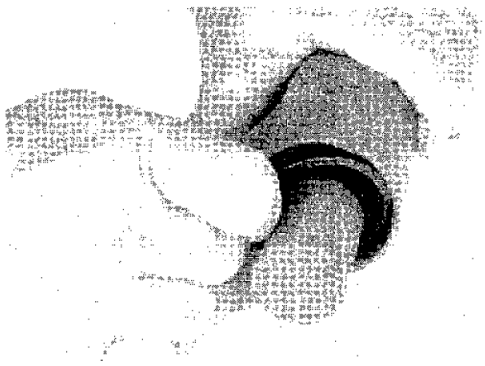
EX,1472,3040,H -19-11MAR93

2. (Bruning Cylinder) Remove spacer (A).



EX,1472,3040,I -19-21APR89

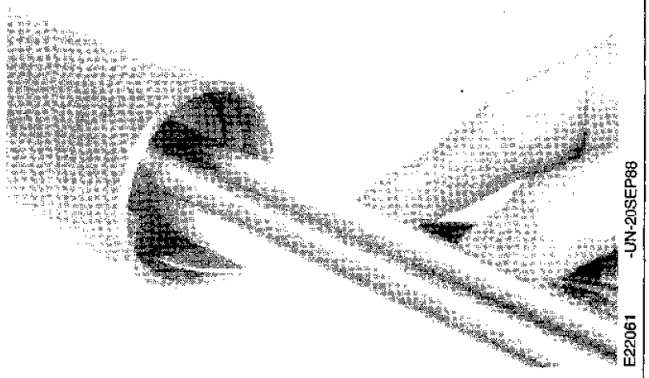
3. Using screwdriver, pry head lock ring from groove inside tube. Remove head lock ring.



EX,1472,3040,J -19-21APR89

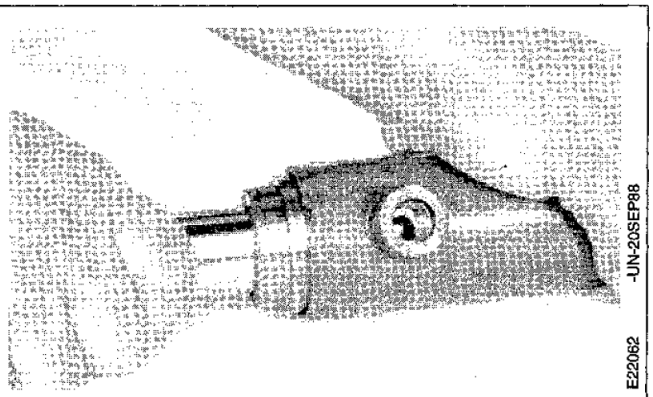
4. Remove sharp edge from outside edge of head lock ring groove using a deburring tool or a sharp knife.

Failure to remove this burr can damage seals.



EX,1472,3040,K -19-21APR89

5. Carefully pull rod and head assembly from tube.



EX,1472,3040,L -19-21APR89

6. Remove piston jam nut (A) and piston (B).

7. Slide rod bearing (C) off rod at piston end of rod.

8. Remove old seals and clean metallic parts thoroughly.

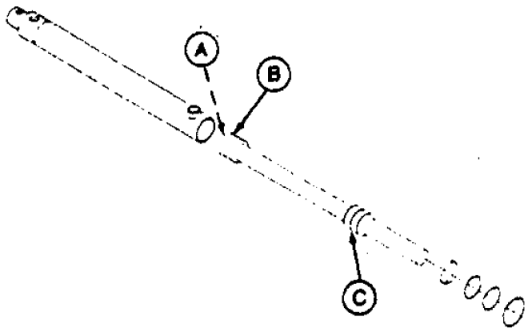
9. Lubricate new seals with oil or grease and reassemble.

10. Reverse steps 1 through 8 to reassemble cylinder.

NOTE: Avoid damaging seals on grooves or barrel port.

11. Bruning Cylinder— Use a strap wrench to tighten the piston against the shoulder. Torque piston nut to 68 N·m (50 lb-ft).

Cessna Cylinder—Use a spanner wrench to tighten the piston against the shoulder. Torque piston nut to 115 N·m (85 lb-ft).



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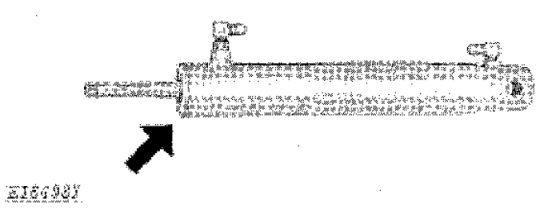
DISASSEMBLE AND REPAIR TWINE AND PICKUP LIFT CYLINDERS

NOTE: Do not clamp cylinder barrel in vise to remove end cap.

Insert a pin through the hole in the barrel to keep it from turning. Remove the end cap.



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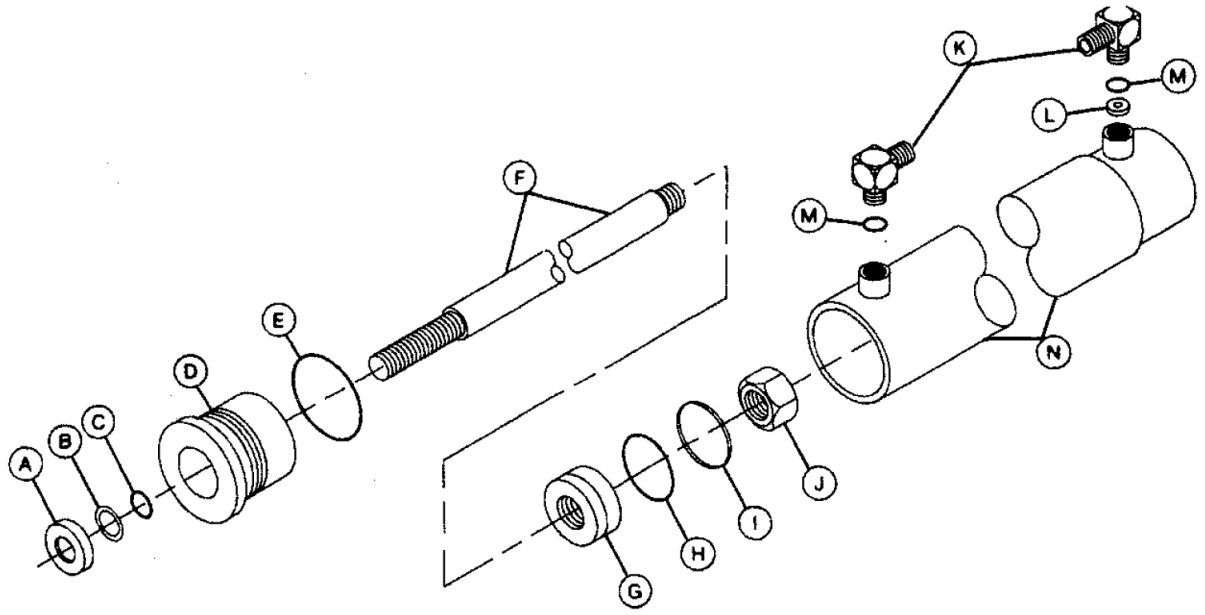

A—Oil Seal
B—Backup Washer
C—O-Ring
D—End Cap
E—O-Ring
F—Piston Rod
G—Piston
H—O-Ring
I—Piston Ring
J—Lock Nut
K—Elbow
L—Orifice
M—O-Ring
N—Barrel

NOTE: • One screened orifice (L) is used for the twine cylinder. The orifice is located in the barrel end port.
• Pickup lift cylinder does not use orifice (L).

1. Disassemble cylinder as shown.

2. When reassembling cylinder, tighten lock nut (J) on piston rod (F) to 41 to 48 N·m (30 to 35 lb-ft).

3. Torque end cap to 136 to 169 N·m (100 to 125 lb-ft).

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INSPECT TWINE OR LIFT CYLINDER

Note position of seals for proper assembly of new seals.

Remove old seals and discard. Clean parts thoroughly.

Remove all nicks and burrs.

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

Inspect piston rod for dents, scratches, scoring or pitting.

Inspect orifice for dirt.

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TEST TWINE CYLINDER

1. With cylinder installed on baler, engage tractor PTO and cycle twine arm. (See Section 40, Group 15.)

NOTE: 435—535 Hydraulics are operated by a pump. 335—375—385 Hydraulics are operated by tractor hydraulics.

2. Shut off tractor engine.

3. Remove hose from base (head end) of cylinder and plug hose.

4. Restart tractor and engage PTO for 435/535. Activate tractor SCV for 335/375/385.

5. Check for leakage of cylinder fittings. 20 Drops per minute is maximum leakage allowed.

6. If cylinder speed is slow or erratic, check removable orifice for contamination.

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Section 40
TWINE MECHANISM

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DIAGNOSING TWINE WRAP MALFUNCTIONS

NOTE: • Indicates 435 and 535 Balers Only

Symptom	Problem	Solution
Twine arms move too slow from left to right (more than 9 seconds).	• Spool valve not shifting fully. Binding in linkage or valve.	Find cause of binding and correct.
	Tractor hydraulic fluid dirty. Dirt in cylinder port screen or orifice.	Replace filter and/or replace hydraulic oil.
		Clean and flush cylinder. See FOS 1003B manual on hydraulics.
	(335—375—385) Flow valve is installed backwards (double twine arm installed).	See installation instruction (double twine arm bundle).
	Internal cylinder leakage.	Install cylinder seal kit or replace cylinder. See Disassemble and Repair Twine Cylinder in Section 30 Group 40.
	• Springs on valve linkage weak or broken.	Replace springs.
	• Drive belt slipping.	Replace belt or adjust idler clevis.
	• If surface wrap bundle is installed, surface wrap flow control valve closed.	Open valve. (See Adjusting Number of Surface Wraps in Surface Wrap—Operating the Baler section of the operator's manual.)
	• If surface wrap bundle is installed, surface wrap flow control valve dirty.	Flush valve.
	Wrong orifice size in hydraulic cylinder.	Replace orifice.
Twine arms will not move from home position (flashing yellow light does not go solid)	• Spool valve not shifted up.	1) Pull recycle rope and release, letting rope return freely.
		2) Look for binding in valve linkage or latch. Repair.
		3) Valve shifting spring broken.
	• Low oil level in pump.	Fill to proper level. (See Lubrication and Maintenance section.)

Continued on next page

Symptom	Problem	Solution
	• Bale too small.	Bale must be at least 991 mm (39 in.) in diameter for pump to drive.
	• Recycle rope tied too short not allowing valve to shift.	Provide slack in rope. (See Adjusting Twine Trip Rope in Service section of operator's manual.)
	• If surface wrap bundle is installed, surface wrap flow control valve closed.	Open valve.
	• Broken or slipping drive belt.	Replace belt.
	• Belt idler tension spring broken.	Replace spring.
	• PTO speed too slow.	Run tractor full PTO speed.
	• Valve latch out of adjustment.	Adjust valve latch clearance.
	• Pump lost prime due to low oil level.	See instructions for priming pump. (Check pressure output as described in Priming Hydraulic Pump in Service section.)
	• Defective pump.	Replace pump, if necessary.(See Section 30, Group 30.)
Twine too tight or twine breaks while wrapping.	PTO speed too slow.	Run tractor full PTO speed.
	Twine routing wrong.	Check for correct routing. (See Preparing the Baler section in the operator's manual.)
	Bad twine, knots in twine, new ball with tight core, wet twine.	Pull out bad twine or replace twine.
	Wrong twine tension plate pin or springs.	Replace with correct parts.
	Deep grooves worn in twine guide.	Replace twine guide.
Twine falls off twine indicator wheel.	Twine indicator wheel not free to rotate.	Determine cause and correct.
	Retaining strap behind twine indicator wheel is not in correct position.	Adjust retaining strap. (See Adjusting Twine Indicator Retaining Strap in Service section of operator's manual.)
	Twine not wrapped a full turn around pulley.	Wrap twine a full turn around pulley.

Continued on next page

Symptom	Problem	Solution
Twine too loose on bale.	Broken or missing twine tension spring.	Replace spring.
	Wrong tension spring pin.	Replace pin.
	Worn twine tension plates.	Replace worn parts.
	(335—375—385) Less than two wraps of twine on end of bale.	Pause longer to provide more wraps. (See Forming a Bale in Operating the Baler section of the operator's manual.)
	Twine not wrapped a full turn around pulley.	Wrap twine a full turn around pulley.
Twine tension not uniform across width of bale.	Twine catching on bent compressor rod.	Straighten rod.
	Bale tension not uniform from side to side.	See Operating the Baler section in the operator's manual for proper baling technique.
		Check for leaks in tension system.(Refer to Section 30.)
		Adjust bale shape senders (See Adjusting Bale Shape Senders in Service section of the operator's manual.)
Twine arms cycle prematurely at approximately 915 mm (36 in.) bale diameter.	Pump drive latch does not latch.	Replace pump latch adjusting stud with pump latch adjusting stud and ramp.
		Adjust twine trip rod and valve latch clearance. (See procedure in Section 40, Group 15.)
Solid yellow light on, no hay in baler. Twine arms not in home position.	• Twine arm went part way through cycle.	Fully raise gate. Engage PTO. If twine arm does not return in normal cycle time, stop this operation. See "Twine arm moves too slow from left to right."
		See Operating Twine Arm with Empty Baler in Operating the Baler section of the operator's manual.
	• Spool valve leaking.	Check for poppet and spring in spool valve.(Refer to Section 30, Group 35.)

Continued on next page

Symptom	Problem	Solution
	Cylinder leaking.	Check cylinder. Repair or replace. (See Test Twine Cylinder in Section 30, Group 40.)
Yellow light does not flash.	Pump idler switch defective or needs adjustment.	Adjust pump idler switch. (See Section 60, Group 20.)

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Symptom	Problem	Solution
Twine arms move to right side of baler and will not return.	• Flow control valve closed.	Open valve and readjust (See Adjusting Twine Spacing in Operating the Baler section of the operator's manual.)
	• Low oil level in twine pump.	Fill to proper level. (See Lubrication and Maintenance section in the operator's manual.)
	• Spool valve or valve arm does not move freely.	Find interference and repair or replace part. (See Section 30, Group 35.)
		Paint or rust is present on valve spool. Clean with crocus cloth.
	Dirt in line between flow control valve and hydraulic cylinder.	Remove hose between flow control valve and hydraulic cylinder. Clean hose and connecting ports.
	Flow control valve dirty or plugged.	See "Cleaning Flow Control Valve."
	• Valve latch does not trip because of binding or obstruction in latch linkage or twine arm.	Repair or remove obstruction.
	(435 only) Twine arm return plunger not adjusted or missing.	Adjust or replace part.
	(435 only) Twine arm hangs up on compressor rod.	Model compressor rod down.
	Broken valve trip linkage spring(s).	Replace spring(s).
	(435) Valve shifter push rod adjusted too short.	Adjust. (See Adjusting Twine Distance From Right Side of Baler in Service section of operator's manual.)
	(535) Twine arm not shifting valve linkage.	Adjust. (See Adjusting Twine Arm Travel to Shift Valve (535) in the Service section of the operator's manual.)
	Twine arm hangs up on compressor rod.	Align compressor rod down. (See Adjusting Compressor Rack Assembly in Operating the Baler section of the operator's manual.)
	Internal cylinder leakage.	Install cylinder seal kit or replace cylinder. (See Disassemble and Repair Twine Cylinder in Section 30, Group 40.)

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Symptom	Problem	Solution
Twine spacing not consistent.	Twine arm speed and arm spacing are not matched.	See Adjusting Twine Spacing in Preparing the Baler section of the operator's manual.
	Contamination in hoses causing orifice or flow valve to be plugged.	Flush hoses, cylinder and orifice to remove contamination.
	Locking ring on flow valve loose.	Tighten locking ring after making flow valve adjustment.
	• Low oil level in pump.	Fill to proper level. (See Lubrication and Maintenance section in operator's manual.)
	• Slipping or worn pump drive belt.	Adjust idler rod or replace belt.
	• Dirty oil filter.	Replace filter.
	• Two-way spool valve not shifting down fully due to binding in valve or linkage, or spring(s) are weak or broken.	Correct binding. Replace spring(s). See Hydraulic Section for valve repair.
	Twine or twine arm contacting compressor rod.	Lower compressor rack or align rod. (See Adjusting Compressor Rack Assembly in Operating the Baler section in the operator's manual.)
	Internal cylinder leakage.	Install cylinder seal kit or replace cylinder.
	• Flow control valve moving out of adjustment.	Make adjustment and lock locking ring. (See Adjusting Twine Spacing in Operating the Baler section in operator's manual.)
	Oil cold at start-up.	Some change in twine spacing may be expected during the first few bales made with cold oil.
	Varying tractor engine speed.	Maintain consistent engine speed while wrapping bales.
	(335—375—385) Inconsistent operation of manual system.	See twine arm operating instructions. (See Forming a Bale in Operating the Baler section of the operator's manual.)
	Dirt in hydraulic hose between base end of cylinder and flow control valve.	Remove hose and flush out dirt. Connect hose using care to keep dirt out.

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Symptom	Problem	Solution
No twine on bale or twine not caught by bale.	Twine from end of twine tube too short.	With tractor shut off, pull out twine until 305 to 381 mm (12 to 15 in.) is exposed from end of twine arms.
	Twine tension too high.	See "Twine too tight or twine breaks while wrapping" in this section.
	Twine not fed in with crop.	Do not stop forward travel of tractor as soon as yellow light goes solid. Continue to drive until oncoming crop picks up the twine.
	Twine box empty.	Add twine.
Twine too close to edge of bale.	Missing or bent twine guide rod.	Replace or straighten rod.
	Barrel- or cone-shaped bales.	Fill ends of bale by crowding windrow. Adjust bale shape senders as necessary. (See Adjust Bale Shape Senders, Section 60.)
	Dry, slick crops, such as straw or flax.	Use more twine. Install adjustable twine guide bundle for adjusting left side twine spacing.
	(435) Twine arm travel on right side is out of adjustment.	Adjust. (See Adjust Twine Distance From Right Side of Baler in the Service section of the operator's manual.)
Twine too close or too far from right edge of bale.	(375—535) Missing or bent twine guide rod.	Replace or straighten rod.
	Barrel- or cone-shaped bales.	Fill ends of bale by crowding windrow.
		Adjust bale senders as necessary. (See Adjust Bale Shape Senders in Section 60, Group 20.)
	(335—375—385) Not extending cylinder fully when tying off.	Before pausing for end wraps, make sure twine cylinder is fully extended.
	Dry, slick crops, such as straw or flax.	Use more twine on bale ends.
	(335) Twine arm is not in desired position.	Adjust square block and readjust cutter tension. (See Adjust Twine Distance From Right End of Bale (335) in Group 15, this Section.)
Twine too close or too far from left edge of bale.	Missing or bent twine guide rod.	Straighten or replace rod.
	Barrel or cone-shaped bales.	Fill ends of bale by crowding windrow.

Continued on next page

Symptom	Problem	Solution
	Dry, slick crops, such as straw or flax.	Install adjustable twine guide bundle. Refer to Attachments section of operator's manual.
		Adjust bale shape senders as necessary.
Twine not cut.	PTO disengaged or gate is raised before twine is cut.	Look at twine to see that it has stopped moving before disengaging PTO or raising gate to discharge bale.
	(335—375—385) Operator stops twine arm movement before twine is cut.	Move twine to full home position to actuate cutter. Check twine to see that it has stopped before discharging bale.
	Twine cutter out of adjustment.	Adjust twine cutter. (See Adjust Twine Cutter Tension in Group 15, this section.)
	Dull knife or uneven edge not making contact with anvil.	Sharpen or replace knife.
	(435) Front twine arm stop installed backwards.	Install stop with trimmed edge toward twine arm.
	Crop buildup on top of anvil.	Adjust height of twine cutter to allow 0.5 to 3.5 mm (0.020 to 0.138 in.) between anvil and bottom of front twine arm tube. (See Adjust Twine Cutter Anvil in Group 15, this section.)
		Check shield for gap at side sheet.
	Twine cutter anvil not level.	Adjust twine cutter so anvil is level (parallel with bottom edge of frame).
	Knife not parallel to anvil.	Align knife pivot shaft so knife makes contact with anvil in area where twine is cut.
	Obstruction causing twine not to be guided under knife.	Remove obstruction.
	Knife not contacting anvil fully.	Align knife pivot shaft so full length of knife makes contact with anvil. (See Check Knife Register in Group 15, this section.)
	Bent twine guide rod (twine misses cutter).	Straighten or replace.
	Anvil is worn under knife.	Replace anvil.

Continued on next page

Symptom	Problem	Solution
	Binding in twine arm or cutter linkage.	Repair or replace so linkage operates freely.
	Incorrect twine routing or bad ball of twine causing high twine tension.	Correct cause of high tension.
	Twine arm gears out of time.	Check alignment of timing marks and retime if necessary.
Bale size alert continues sounding while wrapping bale (335-375-385).	Made an oversize bale.	Wrap bale after first bale size alert stops. (See Indicators for Baler Operation in Operating the Baler section of the operator's manual.)
Twine arm won't return (with double twine arm installed) (335-375-385).	Flow valve closed too far.	Open flow valve.
Solid yellow light comes on, twine arms go through cycle prematurely and wrap a small bale.	• Bale size knob adjusted for small bale size.	Readjust to desired size. (See Adjusting Bale Size in Operating the Baler section of the operator's manual.)
	• Pump drive latch does not relatch.	Free up binding in twine pump drive, bale size, or latch linkage.
		Make sure belt tension arm is returning all the way to start position when closing gate. (See Installing Orifice in Tractors with Low Hydraulic Flow in Service section of the operator's manual.)
		V-belt tension bellcrank spring is missing. Replace spring.
		Check twine trip rod for proper adjustment. (See Adjust Twine Trip Rod and Valve Latch Clearance in Group 15, this section.)
		Mud buildup on rollers. Clean rollers.
		Trip rope tied too short. (See Adjusting Twine Trip Rope in Service section of the operator's manual.)
	• Bale size link does not telescope freely.	Find cause of binding and correct.
	• Tractor tire trips rope.	Check for proper rope routing.

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SPECIFICATIONS

Item	Measurement	Specification
Dimension between twine arm and starter roll	Clearance	10 mm (13/32 in.) Minimum
Dimension between rear twine arm and front twine arm	Height	4.5—7.5 mm (3/16—5/16 in.)
Dimension between anvil and twine arm	Clearance	0.5—3.5 mm (0.020—0.138 in.)
Dimension between twine arm and cutter link support	Clearance	6—12 mm (1/4—1/2 in.)
Position of contact tab below strap on twine arm	Height	2—4 mm (3/32—5/32 in.)
Dimension from cutter strap mark to support	Adjustment	5—7 mm (3/16—9/32 in.)
Twine distance from right end of baler	Adjustment	83—133 mm (3-1/2—5-1/4 in.)

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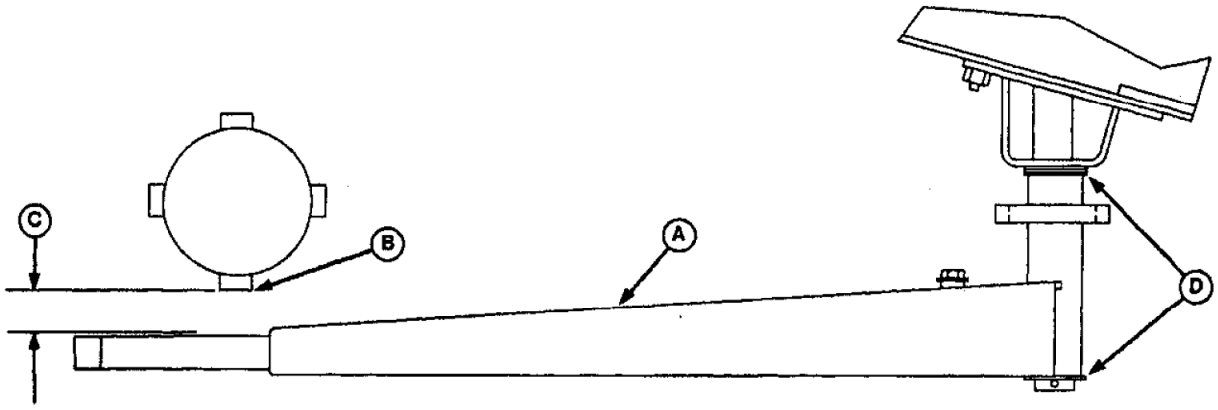
ADJUST TWINE ARM AND DRIVE GEAR HEIGHT



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A—Twine Arm

B—Starter Roll Welded Bar Stock

C—10 mm (13/32 in.) Minimum

D—Washers (as required)

1. Move twine arm so arm is under starter roll.

2. With the twine arm (A) pushed up towards the starter roll to eliminate any endplay, check clearance (C) between twine arm and welded bar stock (B) on starter roll.

3. Adjust clearance (C) if necessary, by removing spring pin and change position of washers:
   - Move washers from bottom to top to increase clearance.
   - Move washers from top to bottom to decrease clearance.

4. Add washers as necessary to keep endplay to a minimum. Keep at least one washer between twine arm and spring pin.

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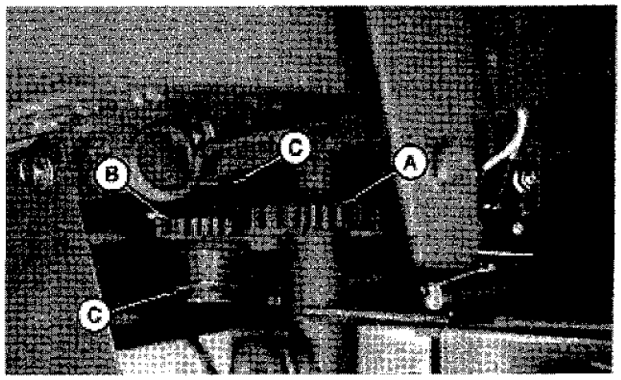
5. Check alignment of twine arm gear (A) with drive arm gear (B). Full width of gears must be engaged.

6. Adjust gear alignment by removing spring pin and change position of washers (C):
- Move washers from bottom to top to lower drive arm gear.
- Move washers from top to bottom to raise drive arm gear.

7. Add washers as necessary to keep drive gear arm endplay to a minimum. Keep at least one washer between drive gear arm and spring.



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ADJUST FRONT TWINE ARM (IF EQUIPPED)

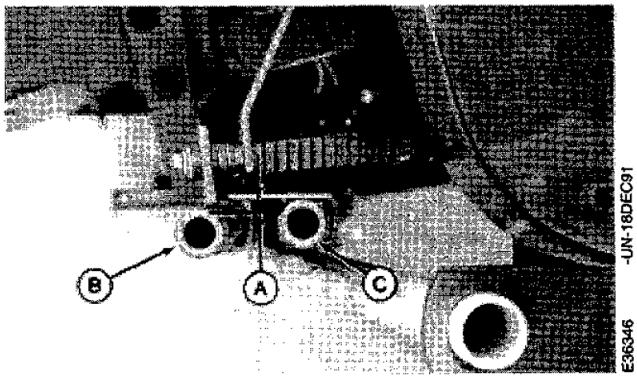
NOTE: Remove spring between twine arms to measure height difference easier.

1. Measure height difference (A) between the tops of twine arms (B and C).

2. To adjust distance (A), remove cap screw and nut. Adjust position of washers (D):
- Move washers from bottom to top to increase distance.
- Move washer from top to bottom to decrease distance.

3. Install and tighten nut and cap screw.

A—4.5—7.5 mm (3/16—5/16 in.)
B—Front Twine Arm
C—Rear Twine Arm
D—Washers



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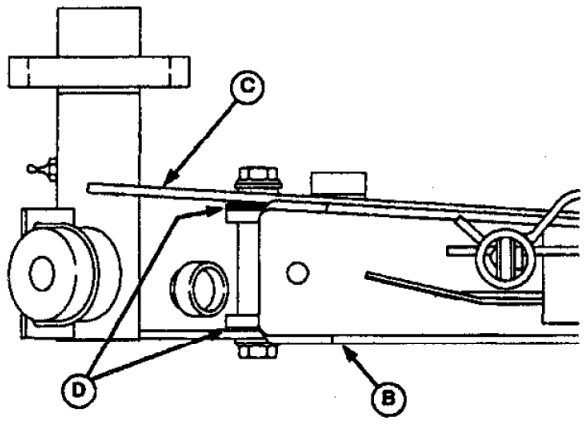

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EX,1472,4010,A3-19-11MAR93

ADJUST TWINE CUTTER ANVIL

IMPORTANT: Do not operate twine arm with pickup in raised position, or damage to pickup teeth may occur.

1. Move twine arm (A) with tractor hydraulic lever until it is centered over knife anvil (B).

2. Shut off tractor.

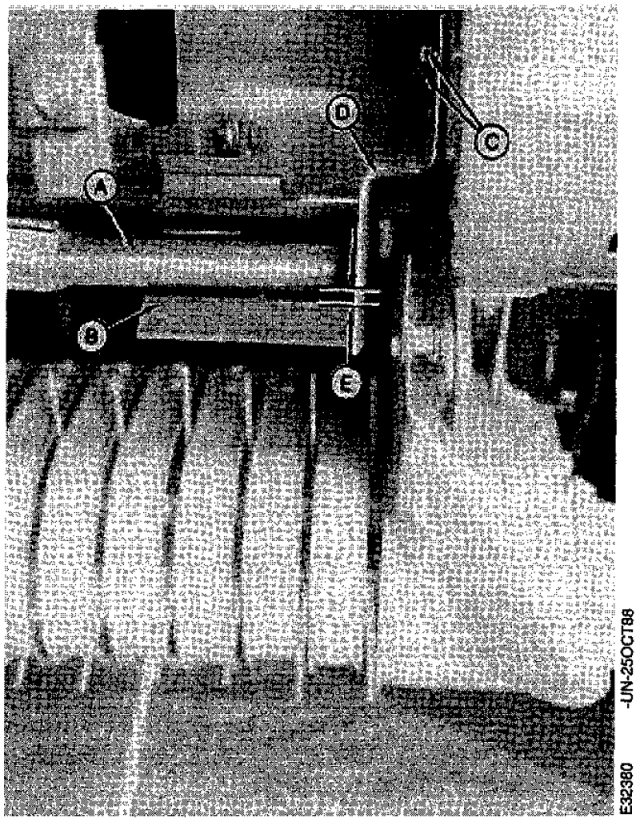
3. Loosen nuts (C).

4. Adjust twine cutter assembly (D) so clearance between knife anvil (B) and twine arm (A) is 0.5 to 3.5 mm (0.020 to 0.138 in.) (E).

NOTE: If baler is equipped with double twine arm, dimension (E) applies to the rear arm. Front arm must clear the bottom of the twine knife.

5. Retighten nuts (C).

6. Return twine arm (A) to home position.



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A—Twine Arm
B—Knife Anvil
C—Nuts
D—Twine Cutter Assembly
E—0.5 to 3.5 mm (0.020 to 0.138 In.) Clearance

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ADJUST TWINE CUTTER CONTACT BAR

NOTE: Adjust twine arm(s) and cutter anvil before proceeding with this adjustment.

Double twine arm shown.

1. Move twine arm (A) using tractor hydraulic lever until it is under cutter link support (B).

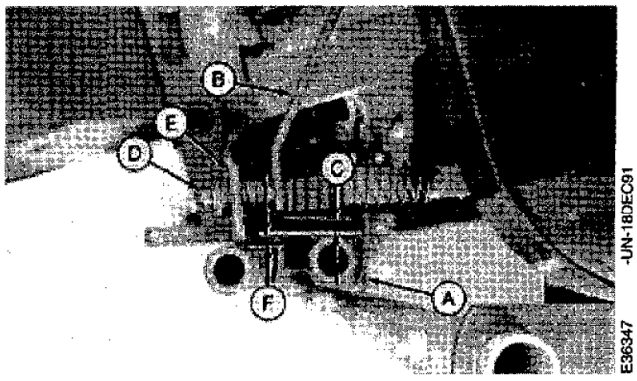
2. Shut off tractor.

3. Adjust support by slightly bending until clearance (C) of 6—12 mm (1/4—1/2 in.) is obtained between strap on top of twine arm and bottom of support.

NOTE: There are two washers in front of contact tab and four washers behind tab.

4. Loosen nut (D) and move contact tab (E) until bottom of tab is 2—4 mm (3/32—5/32 in.) (F) below bottom of strap on twine arm.

5. Keep tab vertical and tighten nut.



A—Twine Arm
B—Cutter Link Support
C—6—12 mm (1/4—1/2 in.)
D—Nut
E—Contact Tab
F—2—4 mm (3/32—5/32 in.)

EX,1472,4010,B1-19-11MAR93

ADJUST TWINE CUTTER TENSION

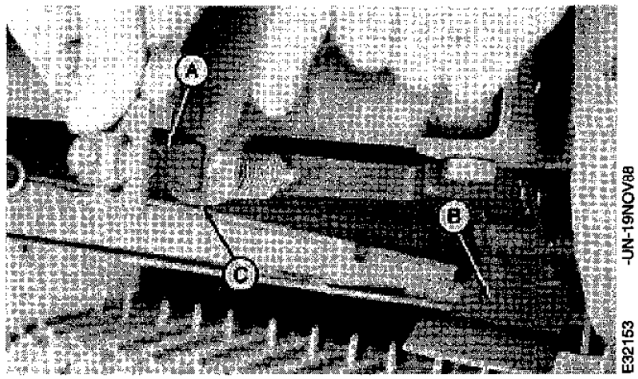
1. Move twine arm back from home position using tractor selector control valve.

2. Shut off tractor.

3. Pull cutter strap (A) gently and bring knife (B) into light contact with anvil. Remove slack, but do not deform cutter strap.

4. Mark cutter strap (A) at support (C) as shown.

NOTE: If baler is equipped with double twine arm, the twine arm stop must be in the down position.



EX,1472,4010,C -19-11MAR93

5. Cycle twine arm fully with tractor hydraulics.

With twine arm (A) in home position (cylinder retracted and long hex block contacting cylinder barrel), distance (B) from mark on cutter strap to support should be 5 to 7 mm (3/16 to 9/32 in.).

6. To adjust distance (B), loosen jam nut and turn long hex block on cylinder rod.

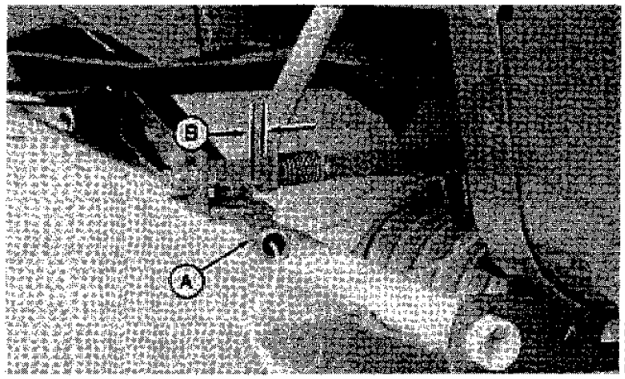
To increase distance (B), turn long hex block away from cylinder barrel.

To decrease distance (B), turn long hex block toward cylinder barrel.

7. Tighten jam nut after adjustment is made.

40 10 6

If twine cylinder, long hex block, or end block have been removed or replaced, or if the twine arm adjustments cannot be made, refer to Twine Cylinder Installation Dimensions in this section.



EX,1472,4010,D -19-25APR89

ADJUST TWINE DISTANCE FROM RIGHT END OF BALE (335/385)

1. Loosen jam nut (A) and turn cylinder rod in end block to adjust the distance between the far right twine wraps and the right end of the bale.

Recommended distance (B) from right side sheet to twine arm tube is 83 to 133 mm (3-1/4 to 5-1/4 in.) with cylinder fully extended.

2. To increase distance, turn cylinder rod into end block.

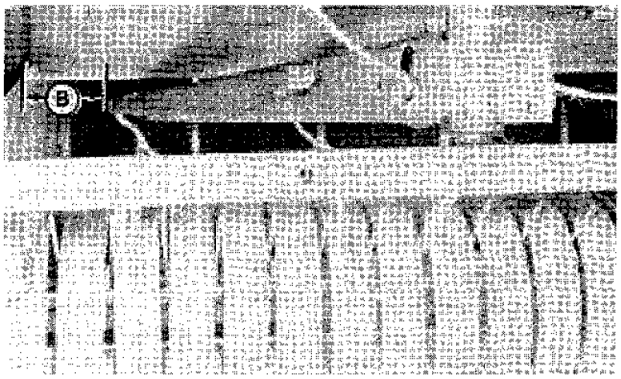
To decrease distance, turn cylinder rod out from end block.

3. Tighten jam nut (A) after making adjustment.

If adjustment is changed, twine cutter tension must be rechecked and adjusted if necessary.

If twine cylinder, long hex block, or end block have been removed or replaced, or if the twine arm adjustments cannot be made, refer to Twine Cylinder Installation Dimensions in this section.

-UN-23MAY89
E32674



-UN-29NOV88
E32675

40 10 7

EX,1472,4010,E -19-06NOV95

TWINE CYLINDER INSTALLATION DIMENSIONS (SN 800001—960000)

If twine cylinder long hex block, or end block have been removed or replaced, or if the twine arm adjustments cannot be made, assemble cylinder and blocks in this manner:

1. With end block removed, retract cylinder until long hex block (A) contacts cylinder barrel.

Distance (B) from center of hole in base of cylinder to end of cylinder rod should be:

335, 375 and 385 Baler—396 mm (15-19/32 in.)

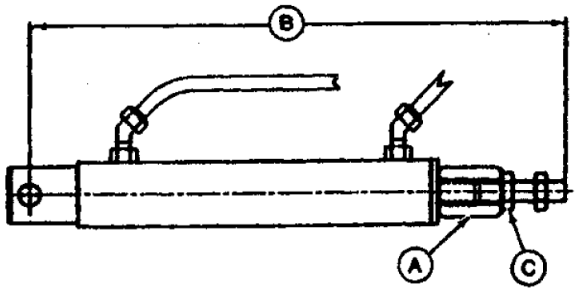
2. Loosen jam nut (C) and turn long hex nut (A) on cylinder rod to reach above length. Retighten jam nut (C).

4. Turn cylinder rod into end block until distance (D) from center of hole in base end of cylinder to center of hole in end block is:

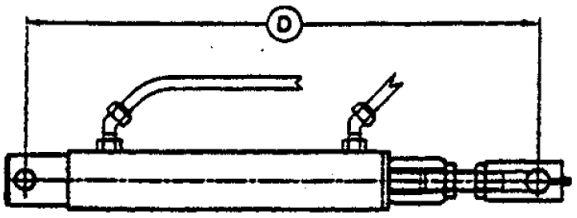
335—385 Baler—409 mm (16-3/32 in.)

375 Baler—434 mm (17-3/32 in.)

This will be close to the desired setting for right end wrap placement (335) and twine cutter tension. Adjustments must be checked and reset (if necessary) with cylinder in place. (See Adjust Twine Distance From Right End of Bale and Adjust Twine Cutter Tension in this group.)



E32642 -UN-23MAY89



E32673 -UN-23MAY89

A—Long Hex Nut
B—396 mm (15-19/32 in.) Dimension
C—Jam Nut
D—(335—385) 409 mm (16-3/32 In.) Dimension
(375) 434 mm (17-3/21 in.) Dimension

EX,1472,4010,F -19-06NOV95

TWINE CYLINDER INSTALLATION DIMENSIONS (SN 960001—)

If twine cylinder long hex block, or end block have been removed or replaced, or if the twine arm adjustments cannot be made, assemble cylinder and blocks in this manner:

1. With end block removed, retract cylinder until long hex block (A) contacts cylinder barrel.

Distance (B) from center of hole in base of cylinder to end of cylinder rod should be:

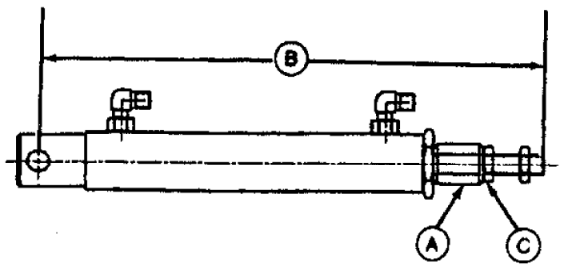
335 and 385 Baler—394 mm (15-1/2 in.)

375 Baler—385 mm (15-5/32 in.)

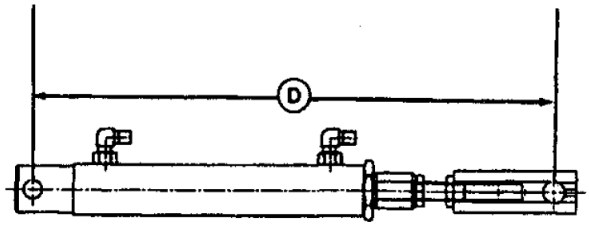
2. Loosen jam nut (C) and turn long hex nut (A) on cylinder rod to reach above length. Retighten jam nut (C).

4. Turn cylinder rod into end block until distance (D) from center of hole in base end of cylinder to center of hole in end block is 466 mm (18-11/32 in.).

This will be close to the desired setting for right end wrap placement (335) and twine cutter tension. Adjustments must be checked and reset (if necessary) with cylinder in place. (See Adjust Twine Distance From Right End of Bale and Adjust Twine Cutter Tension in this group.)



E37428 -UN-24AUG93



E37429 -UN-24AUG93

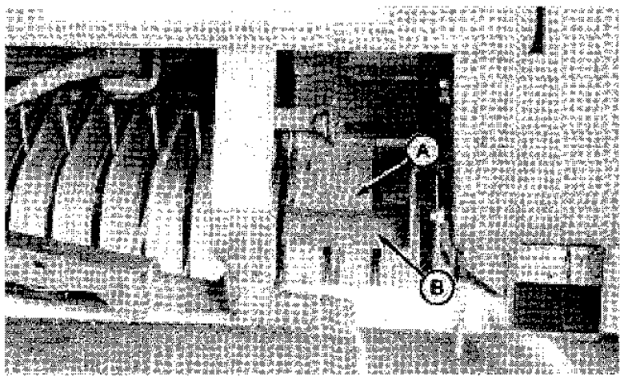
A—Long Hex Nut
B—(335-385) 394 mm (15-1/2 in.)
(375) 385 mm (15-5/32 in.)
C—Jam Nut
D—466 mm (18-11/32 in.)

EX,1472,4010,I -19-06NOV95

CHECK KNIFE REGISTER

With knife (A) in cutting position and cutter link stretched 5 to 7 mm (3/16 to 9/32 in.), full length of knife (A) must contact anvil (B). If not, align knife and anvil. (See Adjust Twine Cutter Tension, Group 15, this section.)

Check clearance between twine arm and anvil. (See Adjust Twine Cutter Anvil in Group 15, this section.)

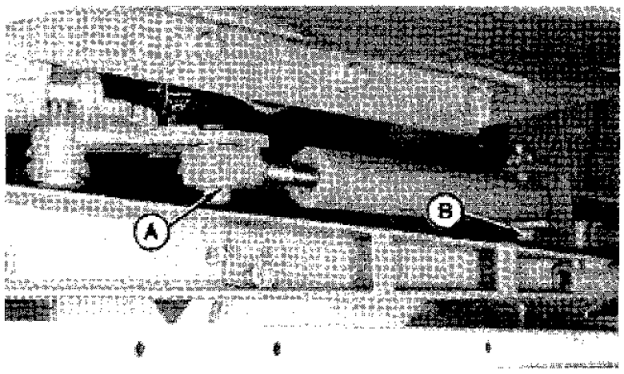


E32213 -UN-12SEP88

EX,1472,4010,G -19-11MAR93

REMOVE TWINE CYLINDER

1. Remove spring pin (A).
2. Remove cap screw (B).
3. Remove cylinder.
4. See Section 30, Group 40 for disassembly.



EX,1472,4010,H -19-06NOV95

SPECIFICATIONS

Item	Measurement	Specification
Dimension from trip rope link bracket to spring link	Length	42 mm (1-21/32 in.)
Distance between valve arm latch and valve arm	Clearance	1 mm (1/32 in.) Minimum
Distance between ramp (or stud) and trip link bracket	Clearance	1 mm (1/32 in.) Minimum
Distance between drive gear cylinder arm and tongue angle (435 only)	Clearance	1.5 mm (1/16 in.) Minimum
Distance between twine arm and starter roll	Clearance	10 mm (13/32 in.) Minimum
Distance between rear and front twine arms	Height	4.5—7.5 mm (3/16—5/16 in.)
Distance between anvil and twine arm	Clearance	0.5—3.5 mm (0.020—0.138 in.)
Dimension from cutter strap mark to support	Adjustment	5—7 mm (3/16—9/32 in.)
Distance between twine arm and cutter link support	Clearance	6—12 mm (1/4—1/2 in.)
Position of contact tab below strap on twine arm	Height	2—4 mm (3/32—5/32 in.)
Twine cylinder	Length, Pivot-to-Pivot	
	435	460 mm (18-1/8 in.)
	535	434 mm (17-3/32 in.)

EX,1472,4015,1A-19-06NOV95

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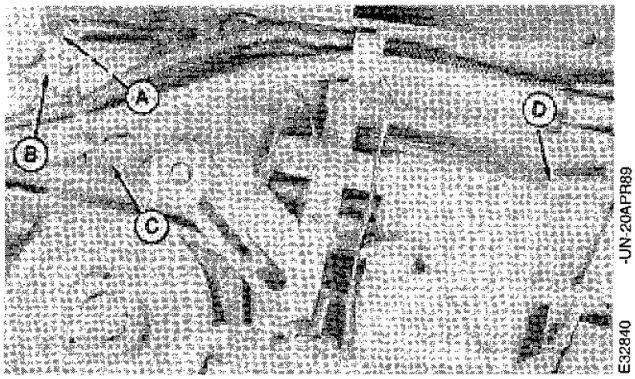
15
1

DESCRIPTION

NOTE: Early model (S.N. —915000) shown.

The twine trip rod (A) is connected between the belt tension arm and bell crank (B). As the bale is formed and the belt tension arm moves up, bell crank (B) is rotated by the twine trip rod in a clockwise direction. Springs (C) and (D) are connected to the bell crank and extend as the bell crank rotates.

A—Twine Trip Rod
B—Bell Crank
C—Spring
D—Spring



EX,1472,4015,A -19-11MAR93

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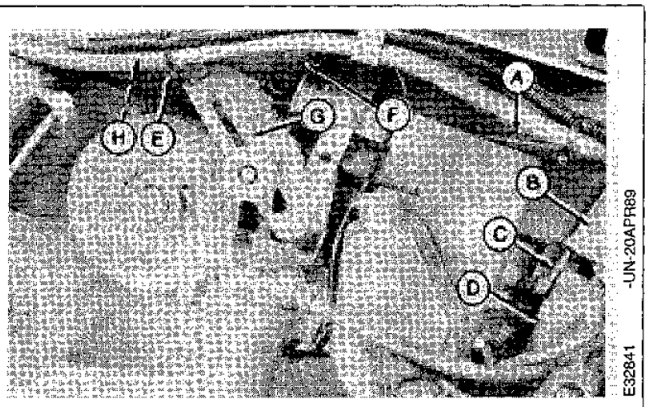
2

As spring (A) extends, it pulls on arm (B) pivoting it about latch (C). This shifts spool valve (D) to the up position. Spring (E) is used to tension the pump drive belt when latch (F) is tripped. The latch link assembly (G) is attached to bell crank (H).

A—Spring
B—Arm
C—Latch
D—Spool Valve
E—Spring
F—Latch
G—Latch Link Assembly
H—Bell Crank

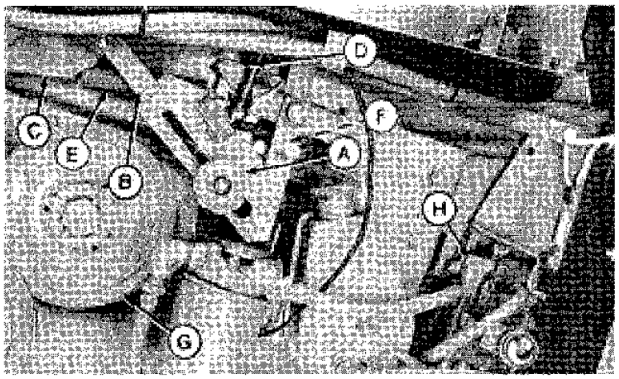


EX,1472,4015,B -19-25APR89

NOTE: New model (S.N. 915001—) shown.

The bale size adjusting knob (A) is used to vary the extended length of link (B) which determines bale diameter. As bell crank (C) rotates and link (B) reaches its extended length, it trips the pump drive latch (D). This allows spring (E) to tension the pump belt idler through link (F). The pump is driven by sheave (G). Oil is now pumped to spool valve (H).

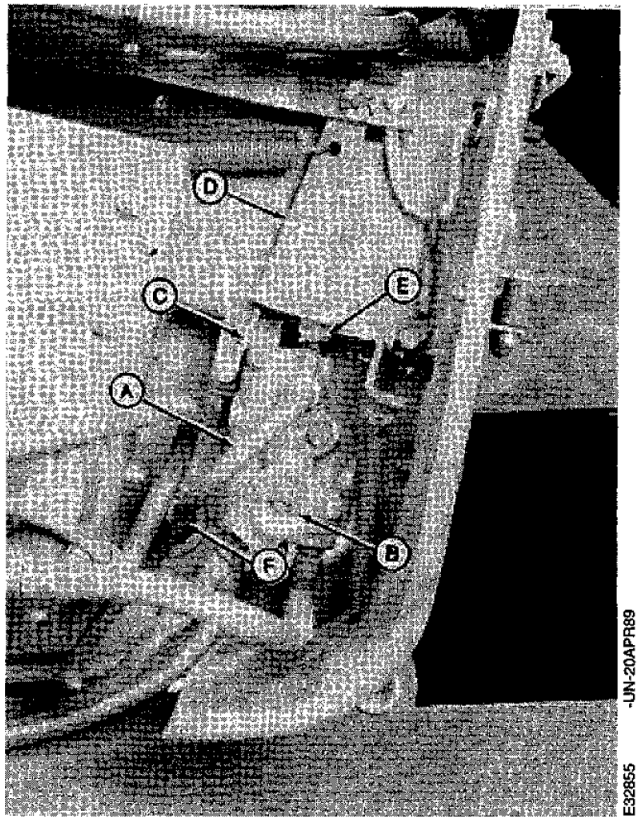
A—Bale Size Adjusting Knob
B—Link
C—Bell Crank
D—Pump Drive Latch
E—Spring
F—Link
G—Sheave
H—Spool Valve



EX,1472,4015,C -19-09DEC91

With the spool valve (A) shifted to the up position, oil flows through flow control valve (B), in the free-flow direction, to the base of the twine cylinder. The cylinder extends, moving the twine arm from left to right. When the twine arm is at the end of its travel on the right side, it trips latch (C). This allows arm (D), still under spring tension, to pivot about rod (E), shifting spool valve down. Oil now flows from the pump through the spool valve and to the rod end of the cylinder through hose (F).

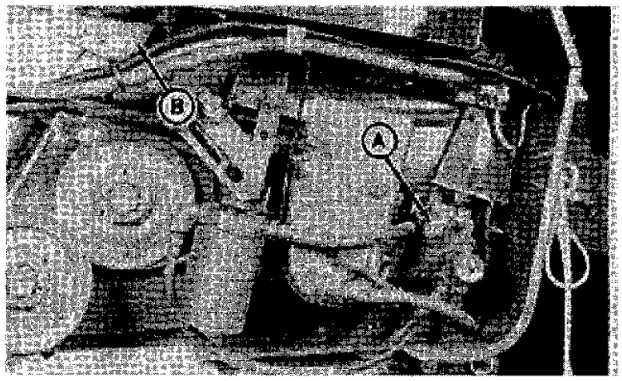
A—Spool Valve
B—Flow Control Valve
C—Latch
D—Arm
E—Rod
F—Hose



E32855 -UN-20APR89

EX,1472,4015,D -19-06NOV95

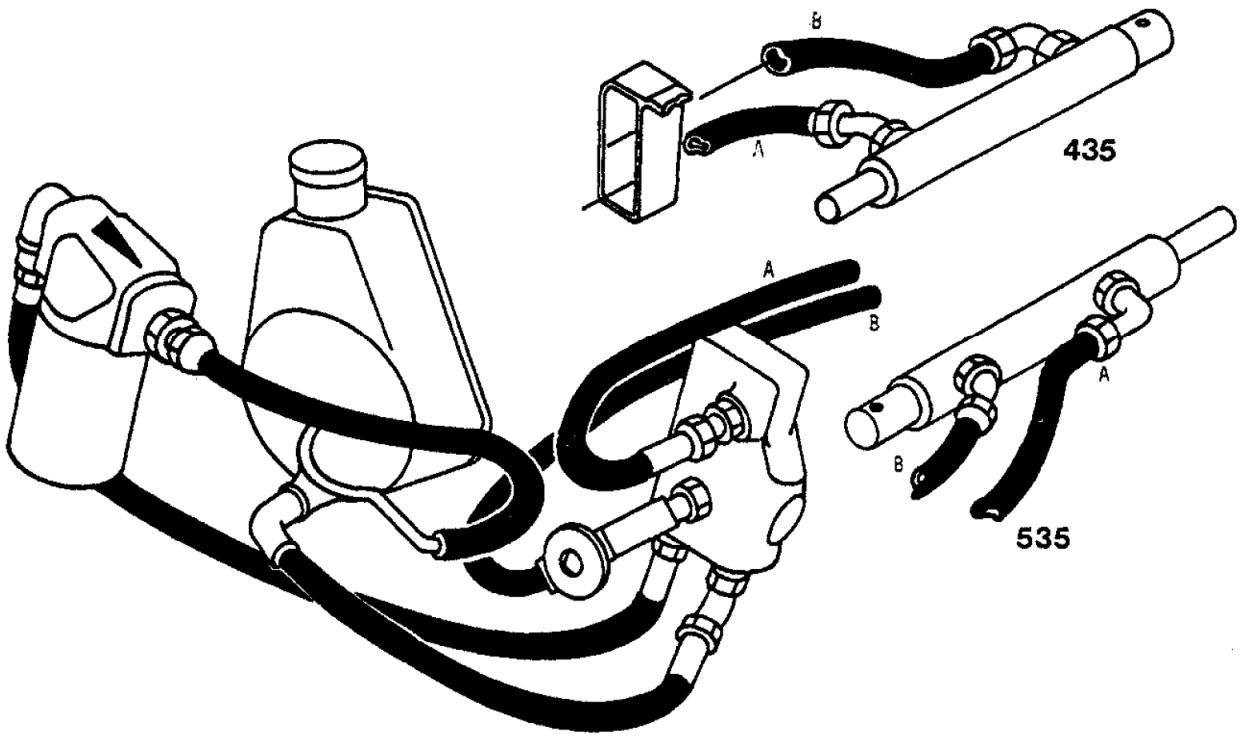
The flow of return oil from the base end of the cylinder is controlled by the variable flow orifice in valve (A). This determines the spacing of twine on the bale as the twine arm returns to the left side. As the twine arm nears its home position, it activates the twine cutter, completing the wrapping cycle. At this point, the pump continues to pump oil over its built-in relief valve until the PTO is disengaged. After the bale is discharged and the gate is closed, bell crank (B) returns to its starting position. Return springs return all linkages and latches to their starting positions.



E32856 -UN-20APR89

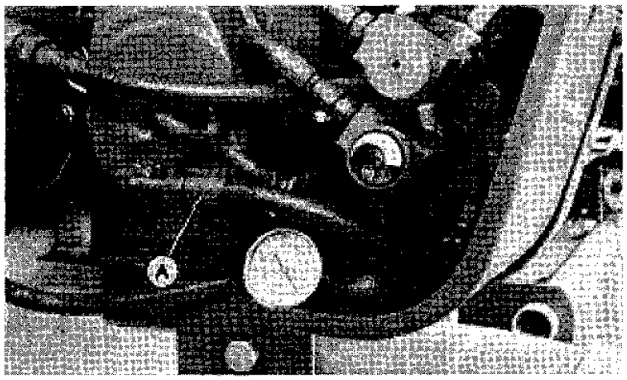
EX,1472,4015,E -19-06NOV95

HOSES FOR PUMP



EX,1472,4015,F -19-25APR89

CHECK TWINE PUMP PRESSURE



⚠ CAUTION: Do not run baler in this mode for an extended period of time. Pump overheating may occur.

1. Place pressure gauge in output line (A) of pump.

NOTE: Oil in pump must be warm and baler running at rated PTO speed with twine arm in home position.

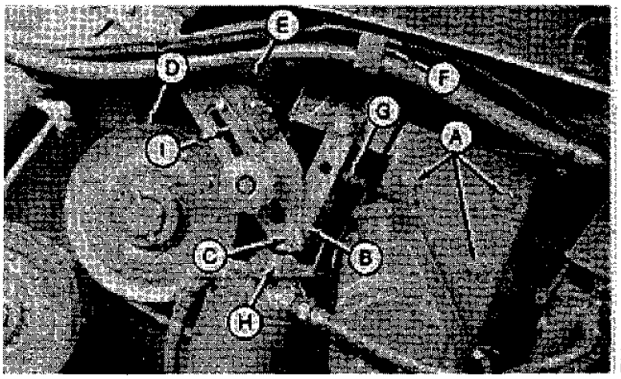
2. Pressure gauge should read:

435	535	Pressure
SN —985275	SN —986059	6900 kPa (1000 psi)
SN 985276—	SN 986060—	8619 kPa (1250 psi)

EX,1472,4015,G -19-06NOV95

REPLACE HYDRAULIC PUMP

1. Remove springs (E) and (G).
2. Remove linkage pins (C) and (F).
3. Remove hoses from pump.
4. Remove belt (D).
5. Remove clevis linkage pin (B).
6. Remove cap screws (A). Remove bracket and pump from baler.
7. Remove pump from bracket.

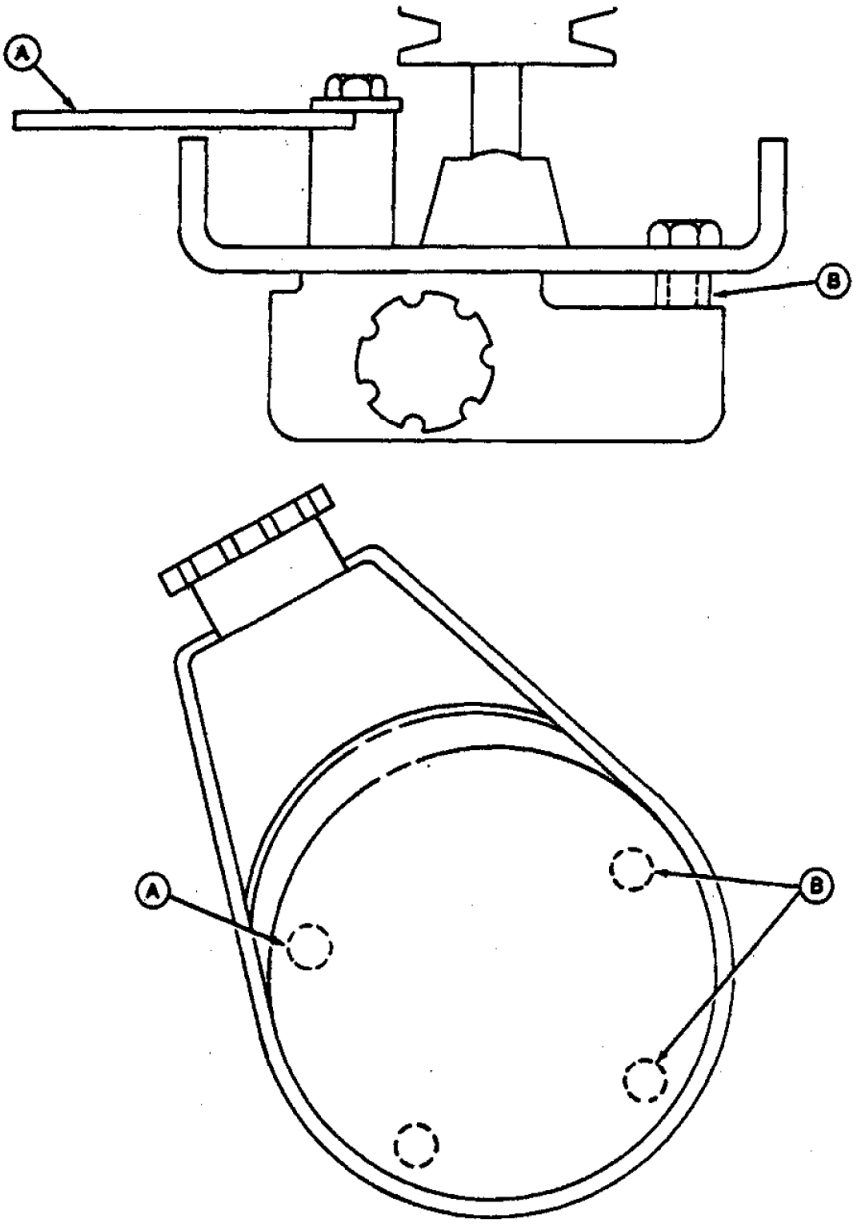


UN-20APR89
E32843

A—Cap Screws
B—Pin
C—Pin
D—Belt
E—Spring
F—Pin
G—Spring

EX,1472,4015,H -19-11MAR93

40 15 5



E22144 -UN-13SEP88

A—Idler Arm **B—3/8 In. Spacer**

8. Replace pump. Assemble parts and spacers as shown. Spacers are between pump and bracket.

EX,1472,4015,I -19-25APR89

REMOVE AND REPLACE PUMP PULLEY

To remove pulley, screw 3/8 - 16 UNC bolt into pump shaft and remove with puller.

To replace pulley:

1. Screw a 76 mm (3 in.) piece of 3/8 - 16 UNC threaded rod (A) into pump shaft (B) until it bottoms out.

2. Apply oil to pump shaft (B).

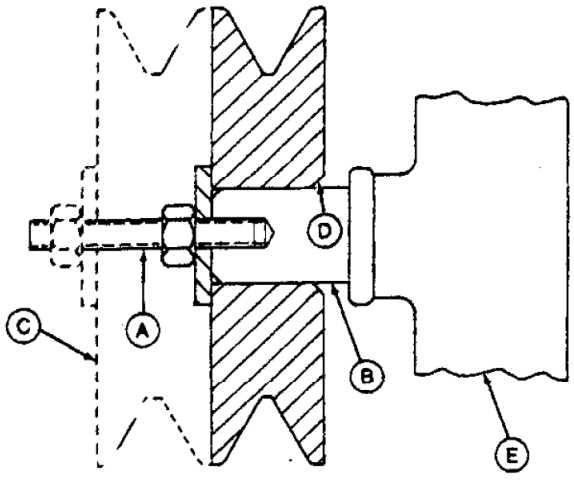
3. Place pulley (C) on shaft with chamfer (D) starting onto shaft.

4. Install 13/32 x 2 x 1/4 in. washer and 3/8 - 16 UNC nut on threaded rod.

5. Hold pulley from rotating. With pulley sitting square on shaft, tighten nut until pulley is flush with shaft as shown.

6. Remove rod, nut, and washer.

NOTE: Pulley does not need bolt to hold it to pump shaft.

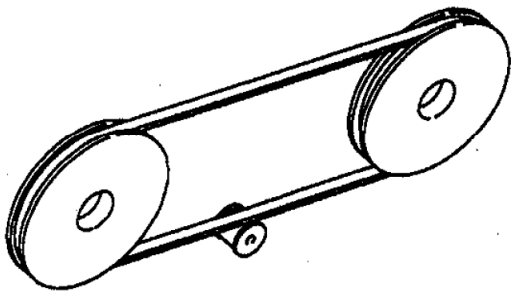


E32900 -UN-26APR89

A—Threaded Rod
B—Pump Shaft
C—Pulley
D—Pulley Chamfer
E—Pump

EX,1472,4015,J -19-06NOV95

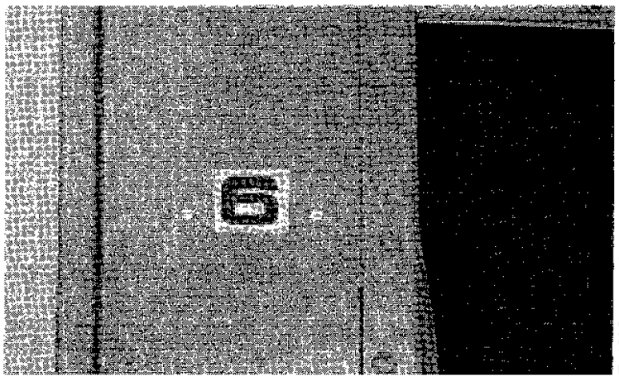
7. When pump pulley is reinstalled, engage idler. Belt strands should have a minimum clearance of 20 mm (3/4 in.) (A). If not, replace belt.



E33580 -UN-11SEP89

EX,1472,4015,K -19-06NOV95

OPERATE TWINE ARM WITH EMPTY BALER



1. Raise gate until bale size indicator reads "6".

2. Lock gate.

3. With tractor SCV lever, lower belt tension arm until bale size indicator reads "4".

IMPORTANT: Do not leave the PTO engaged for more than one or two minutes with twine arm in its home position. With the twine arm in its home position, oil is pumped through the pump's built-in relief valve, causing the oil to heat up. Prolonged heating of the oil will damage the pump.

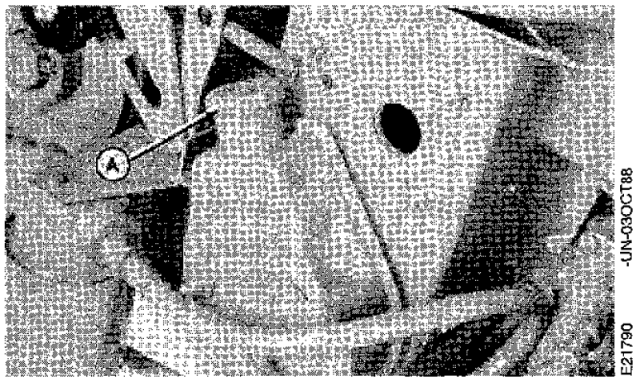
40 15 8

4. Engage PTO with tractor running at rated PTO speed. Twine arm will move through its cycle.

5. To recycle, pull and release twine rope.

EX,1472,4015,L -19-25APR89

PRIMING TWINE HYDRAULIC PUMP



If the twine mechanism will not cycle after installing a new pump or adding a large quantity of oil, use the following procedure to prime the pump.

NOTE: Check pump drive belt for wear and proper adjustment.

1. Open right shield door and clean area around pump filler cap (A). Remove dipstick and check oil level. Add oil if needed.

EX,1472,4015,M -19-06NOV95

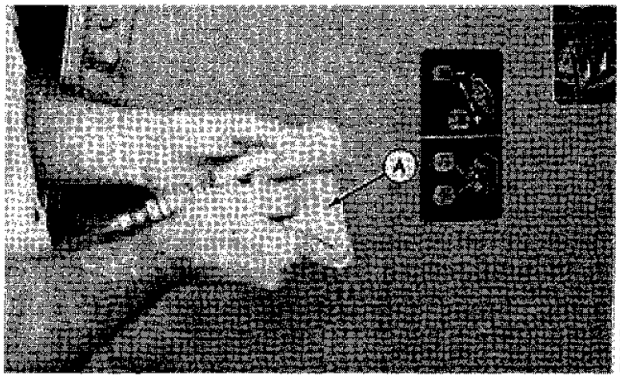
2. Fold a shop cloth (A) until it is about 60 mm (2-3/8 in.) wide.

3. Wrap the cloth tightly around end of air nozzle.

NOTE: If operating with surface wrap, close on-off valve. (See Changing from Surface Wrapping to Twine Wrapping in Section 50.) After pump is primed, open on-off valve for surface wrap operation.

4. Raise gate fully with tractor hydraulics. Lock the gate.

5. With gate hydraulic selector lever on tractor, lower belt tension arm until belts are tight.



EX,1472,4015,N -19-24APR89

40 15 9

6. With tractor in neutral and parking brake engaged or with tractor in park, engage PTO and run at maximum rpm.

CAUTION: Stay clear of moving parts.

7. Remove pump filler cap and place end of hose with cloth on filler opening. Form a tight seal between cloth and filler neck as shown.

8. Blow air into reservoir for three or four seconds. The twine arm should start to move immediately. Let twine arm complete its normal cycle.

9. Check oil level. Add oil if necessary.

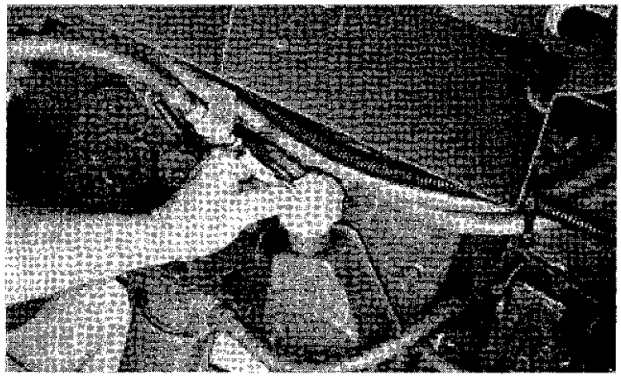
10. If twine arm does not move, tap pump lightly with plastic mallet to unseat vanes in pump. Repeat step 8, if needed.

IMPORTANT: Do not operate baler PTO for more than 2 minutes after the pump is primed or pump may overheat.

11. Disengage PTO.

12. Unlock gate.

13. Lower gate and shut off tractor.



EX,1472,4015,O -19-24APR89

REMOVE DIRT FROM TWINE FLOW CONTROL VALVE

NOTE: If baler is equipped with surface wrap option, refer to Section 50 or 51, Group 15 to service surface wrap flow control valve (B).

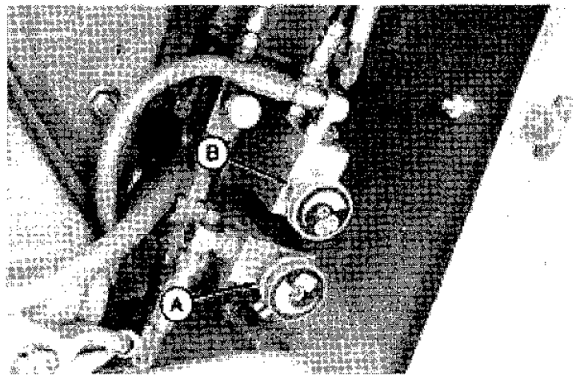
To remove dirt trapped in the flow control valve or the hydraulic line between it and the hydraulic cylinder, use the following procedure:

1. With tractor SCV lever, raise gate and belt tension arm fully. Lock gate.

2. Engage PTO. Twine arm will move to right side of baler. When the valve shifts and twine arm starts back, shut off PTO and tractor.

40 15 10

3. Remove cartridge (A) from flow control valve.



E36359 -UN-06JAN92

EX,1472,4015,P -19-24FEB92

4. Clean cartridge (A) in solvent and use compressed air to clean slot (B) in piston.

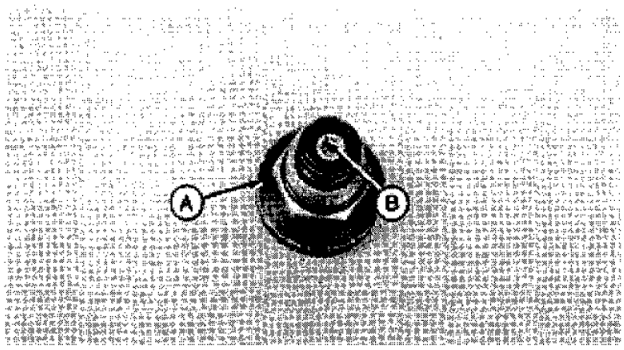
5. Carefully remove O-ring (C) and screen filter (D). Clean filter in solvent and dry.

6. Start tractor and engage PTO momentarily to flush hydraulic line (oil will come out of port where cartridge was removed). Shut off tractor.

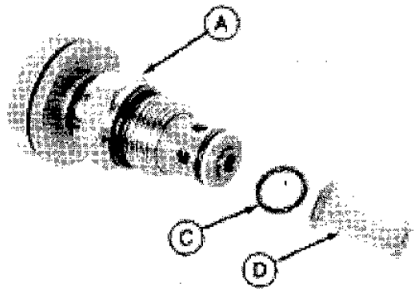
7. Install filter, O-ring and flow control valve cartridge. Unlock gate.

8. Check oil level in pump. Fill to proper level.

9. Start tractor and engage PTO. Twine arm should return to home position. Close gate.



E22149 -UN-13SEP88

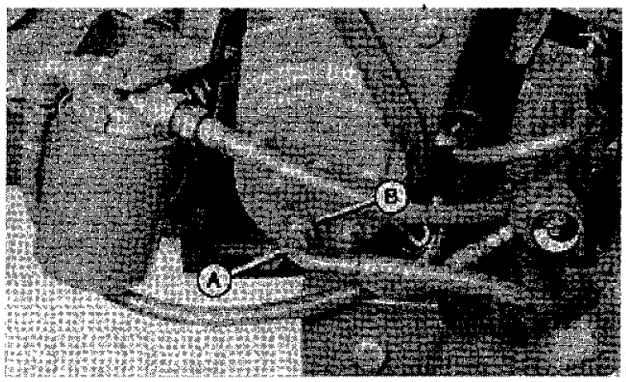


E36360 -UN-06JAN92

EX,1472,4015,Q -19-22JAN92

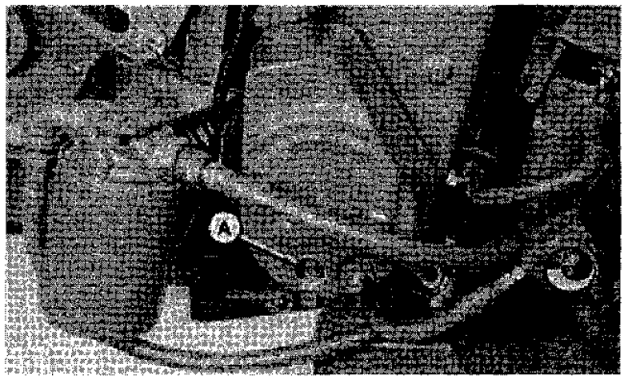
CLEAN PUMP SCREEN

1. Remove pressure hose (A) from pump.
2. Remove fitting (B).



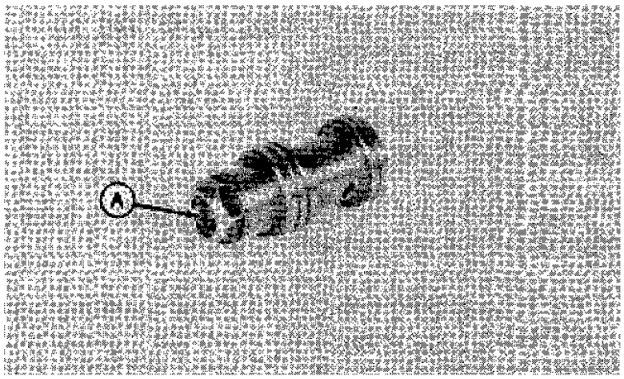
EX,1472,4015,R -19-11MAR93

3. Remove valve and spring from hole (A).



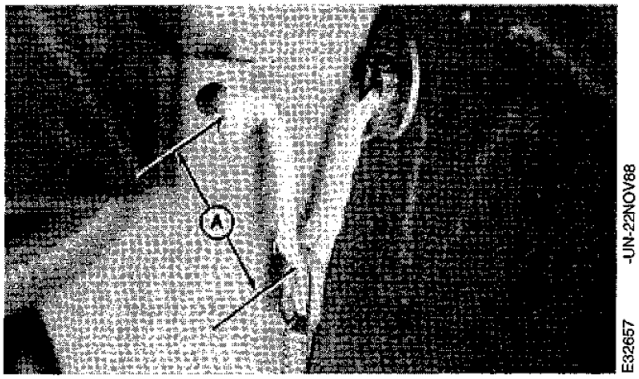
EX,1472,4015,S -19-25APR89

4. Clean screen (A).
5. Reverse procedure to assemble.



EX,1472,4015,T -19-25APR89

ADJUST TWINE TRIP ROPE



1. Raise tension arm until number "4" appears in the bale size window. Shut off tractor.

2. Pull rope from tractor seat and release. Pump linkage should be tripped (V-belt tight). If not, rope is tied too long. If pump linkage trips properly, lower tension arm fully and be sure pump linkage re-latches. If not, rope is tied too short.

If an adjustment is needed, set rope length as follows:

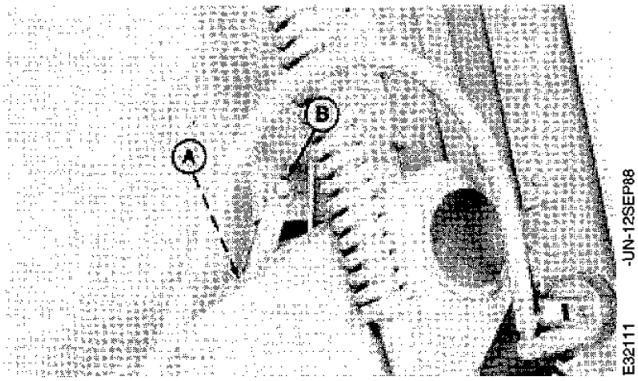
3. With pump trip linkage latched and rope pull strap in home position, against the baler, length of rope between the trip link bracket and the return spring link should be 42 mm (1-21/32 in.) (A).

40 15 12

4. Adjust knot in front of the rope pull strap as required.

EX,1472,4015,T1-19-11MAR93

ADJUST TWINE TRIP ROD AND VALVE LATCH CLEARANCE



1. Close gate and lower belt tension arm using tractor selector valve. Shut off tractor.

2. Check that pin (B) is free to rotate within clevis (not contacting either end of slot in tension arm).

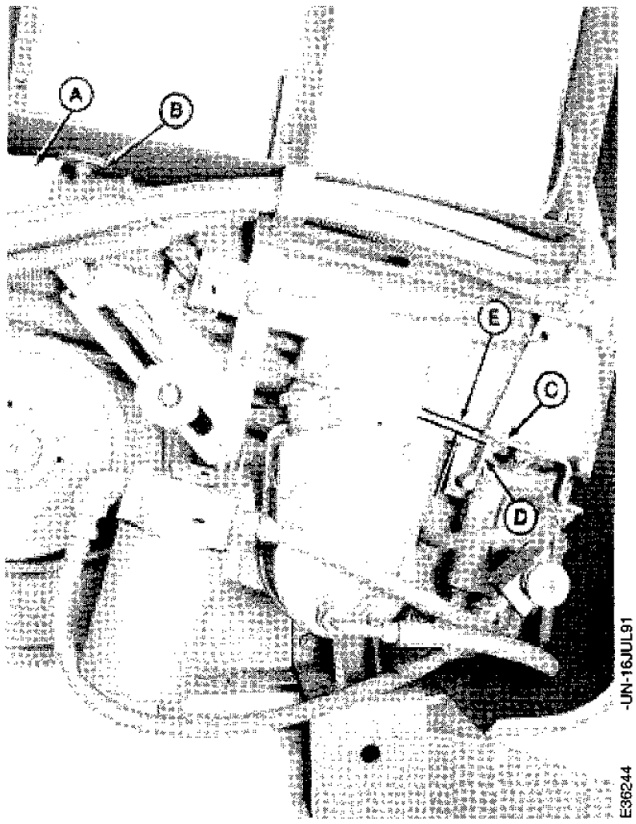
3. If pin is contacting either end of slot, remove pin and adjust clevis to approximately 3 mm (1/8 in.) clearance between pin and end of slot. Tighten clevis jam nut (A). Install pin and cotter pin.

EX,1472,4015,T2-19-11MAR93

4. With bell crank (A) against stop washers (B), check for a minimum of 1 mm (1/32 in.) clearance (E) between valve arm latch (D) and valve arm (C).

5. If clearance is less than 1 mm (1/32 in.) remove one stop washer and check clearance again. Make sure bell crank (A) contacts stop washers (B). If not, check clevis adjustment again. (Refer to step 2.)

A—Bell Crank
B—Stop Washers
C—Valve Arm
D—Valve Arm Latch
E—1 mm (1/32 in.) Minimum



EX,1472,4015,T3-19-09DEC91

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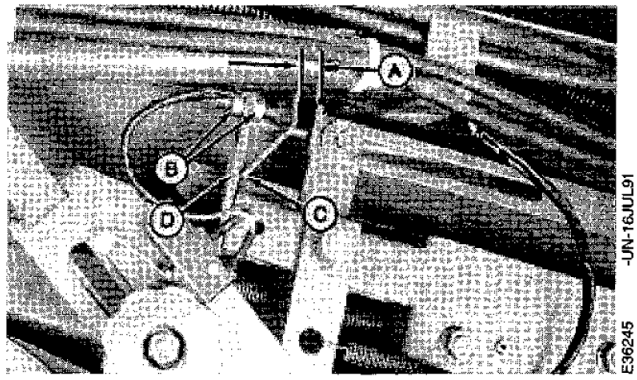
NOTE: For early models, ramp (C) may not exist. Early units used an adjusting stud only. The stud is replaced with ramp welded to a stud.

6. Check for a minimum of 1 mm (1/32 in.) clearance (A) between ramp (or stud) and trip link bracket.

7. If clearance is less than 1 mm (1/32 in.), adjust nuts (B) until clearance (A) is obtained.

8. If there is a gap between bottom of ramp (C) and bell crank (D) after making adjustments, bend ramp until it touches bell crank.

IMPORTANT: To ensure correct bale size, repeat this procedure if any adjustments were made.

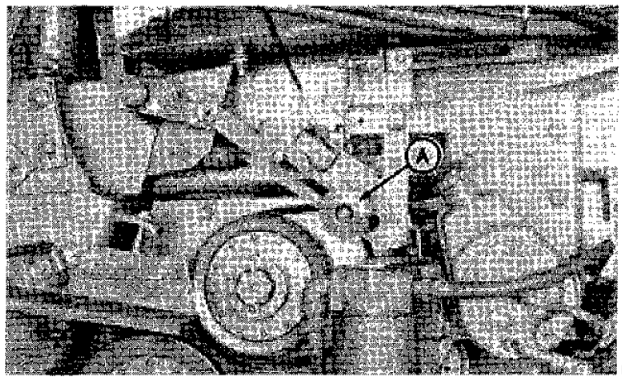


A—1 mm (1/32 in.) Minimum
B—Adjusting Nuts (2 used)
C—Ramp
D—Bell Crank

EX,1472,4015,T4-19-22JAN92

ADJUST PUMP DRIVE LATCH FOR BALE SIZE

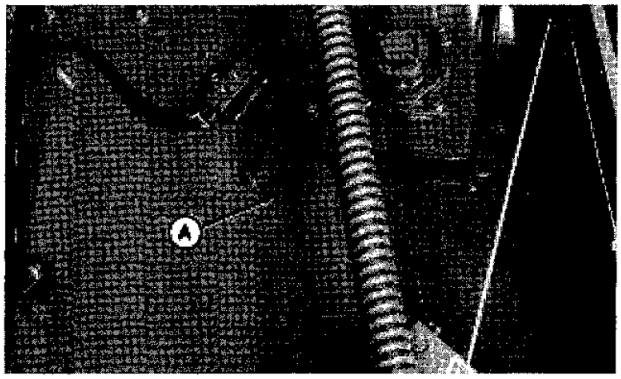
1. Adjust bale size knob (A) to largest bale size (all the way forward in slot).



EX,1472,4015,X -19-11MAR93

CAUTION: Keep fingers and all objects out of inspection hole when checking tension arm position.

2. Raise belt tension arm VERY SLOWLY until the hole in the tension arm is centered in the right side sheet hole (A).



EX,1472,4015,Y -19-06NOV95

3. Check if pump latch (A) has tripped. If the pump latch (A) has not tripped, it must be adjusted as follows:

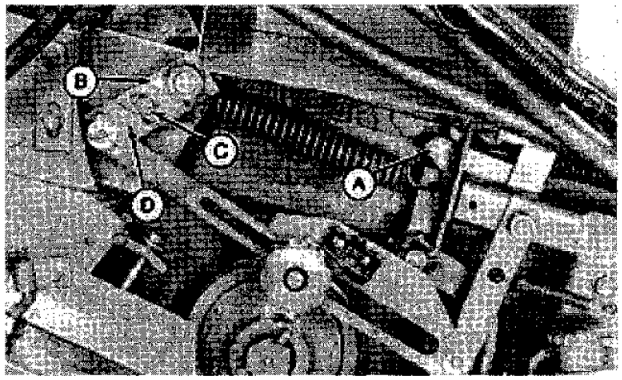
4. Loosen pump drive belt tension.

5. Remove rivet (B).

6. Loosen nut (C).

7. Move arm (D) slowly upward until pump latch (A) is unlatched.

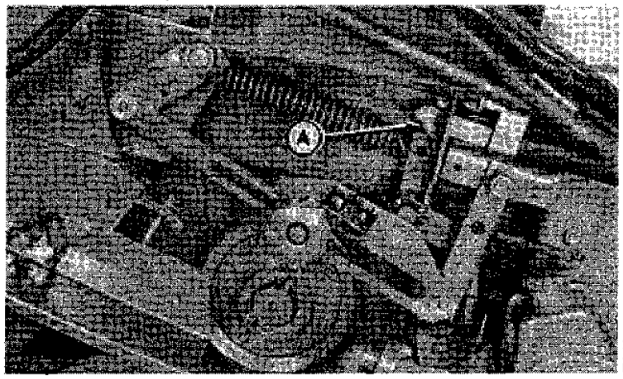
8. Retighten nut (C) to maintain adjustment.



A—Pump Latch
B—Rivet
C—Cap Screw and Nut
D—Arm

EX,1472,4015,Z -19-25APR89

9. Recheck adjustment by lowering belt tension arm until pump latch (A) relatches.



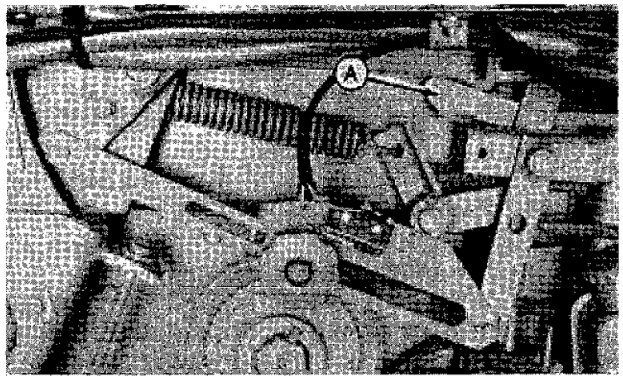
EX,1472,4015,AA-19-25APR89

10. Raise belt tension arm VERY SLOWLY until pump latch (A) just unlatches. Top edge of belt tension arm should be in the lower one quarter of the side sheet hole.

11. Repeat adjusting procedures, if necessary.

12. Do not reinstall rivet removed in step 5.

IMPORTANT: Serious damage to baler will result if bale size is increased beyond 1929 mm (72 in.)



EX,1472,4015,AB-19-25APR89

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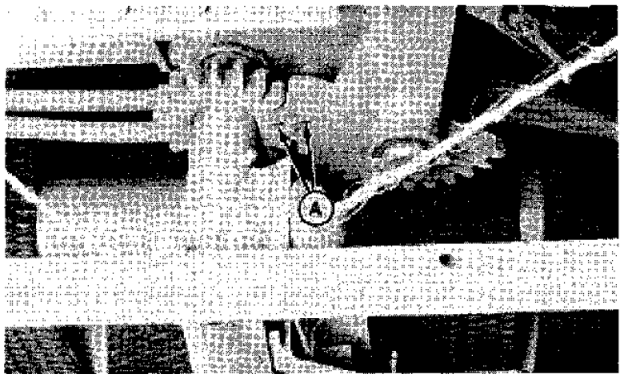
TWINE ARM TIMING (435)

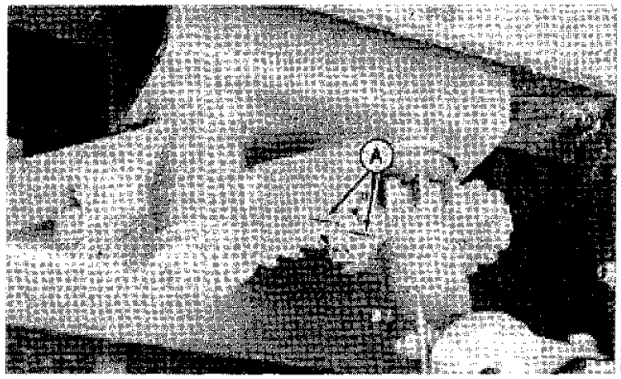
When replacing or servicing twine arm or drive gear, make sure timing marks (A) are lined up as shown.



EX,1472,4015,AF-19-25APR89

TWINE ARM TIMING (535)

When replacing or servicing twine arm or drive gear, make sure timing marks (A) are lined up as shown.



EX,1472,4015,AG-19-25APR89

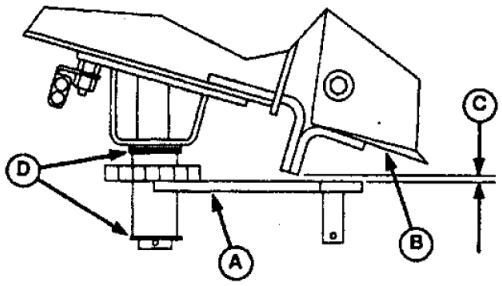
ADJUST TWINE ARM AND DRIVE GEAR HEIGHT

1. Move twine arm so arm is under starter roll.

2. (435 only) With the drive gear assembly (A) pushed up towards the baler frame to eliminate endplay, check the minimum clearance (C) between twine cylinder arm of drive gear and tongue angle (B).

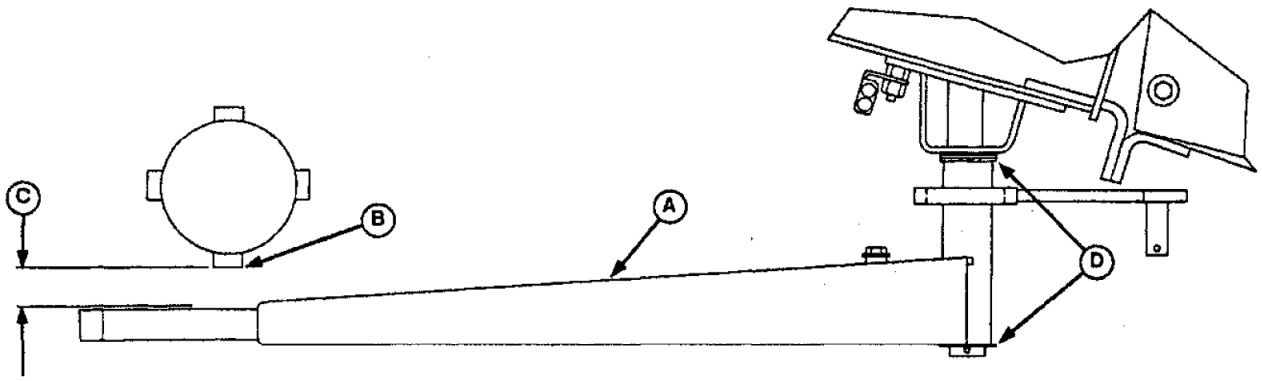
3. (435 only) Adjust clearance (C), if necessary by removing spring pin and change position of washers (D):
   - Move washers from bottom to top to increase clearance.
   - Move washer from top to bottom to decrease clearance.

4. Add washers to keep endplay to a minimum. Keep at least one washer between drive gear assembly and spring pin.



A—Drive Gear Assembly
B—Tongue
C—1.5 mm (1/16 in.) Minimum
D—Washers (as required)

EX,1472,4015,A1-19-11MAR93



E36348AE -UN-06JAN92

A—Twine Arm

B—Starter Roll Welded Bar Stock

C—10 mm (13/32 in.) Minimum

D—Washers (as required)

5. With the twine arm (A) pushed up towards the starter roll to eliminate the endplay, check clearance (C) between twine arm and welded bar stock (B) on starter roll.

Also make sure twine arm gear and drive gear are aligned.

6. Adjust clearance (C) and gear alignment if necessary, by removing spring pin and change position of washers:

- Move washers from bottom to top to increase clearance.
- Move washers from top to bottom to decrease clearance.

7. Add washers as necessary to keep endplay to a minimum. Keep at least one washer between twine arm and spring pin.

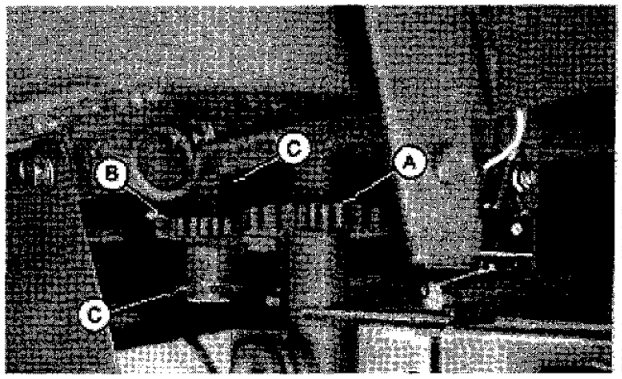
EX,1472,4015,A2-19-06NOV95

8. (535 only) Check alignment of twine arm gear (A) with drive arm gear (B). Full width of gears must be engaged.

9. (535 only) Adjust gear alignment by removing spring pin and change position of washers (C):

- Move washers from bottom to top to lower drive arm gear.
- Move washer from top to bottom to raise drive arm gear.

10. Add washers as necessary to keep drive gear arm endplay to a minimum. Keep at least one washer between drive gear arm and spring.



E36342 -UN-18DEC91

EX,1472,4015,A3-19-06NOV95

ADJUST FRONT TWINE ARM (IF EQUIPPED)

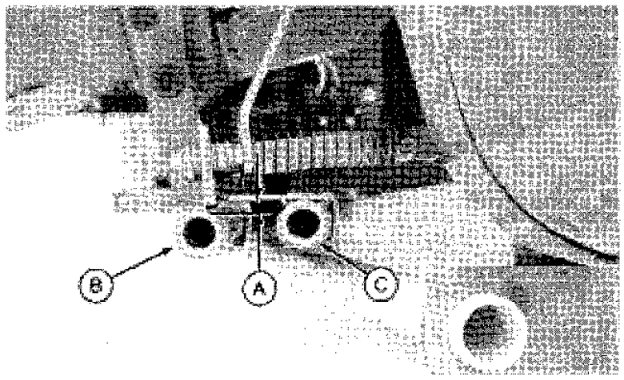
NOTE: Remove spring between twine arms to make measuring height difference easier.

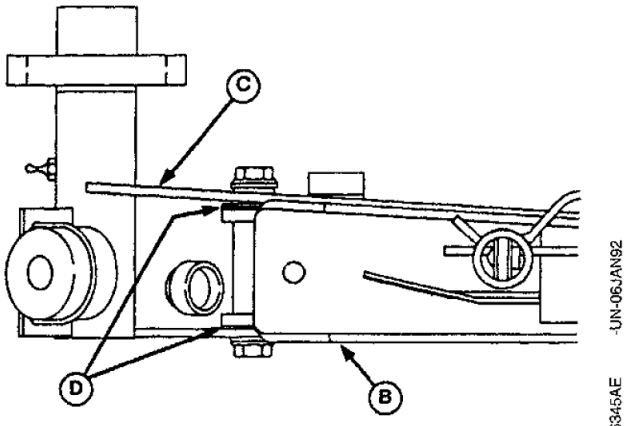
1. Measure height difference (A) between the tops of twine arms (B and C).

2. To adjust distance (A), remove cap screw and nut to adjust position of washers (D):
   - Move washers from bottom to top to increase distance.
   - Move washers from top to bottom to decrease distance.

3. Install and tighten nut and cap screw.

A—4.5—7.5 mm (3/16—5/16 in.)
B—Front Twine Arm
C—Rear Twine Arm
D—Washers



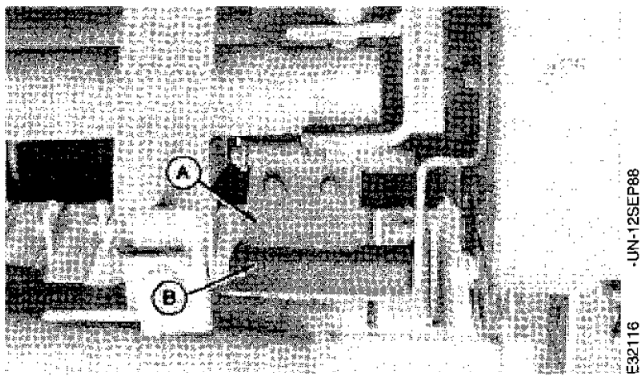


EX,1472,4015,A4-19-06NOV95

CHECK KNIFE REGISTER

With knife (A) in cutting position and cutter link stretched 5 to 7 mm (3/16 to 9/32 in.) (see Adjust Twine Cutter Tension, this section), full length of knife (A) must contact anvil (B). If not, align knife and anvil.

Check clearance between twine arm and anvil. (See Adjust Twine Cutter Anvil, this section.)



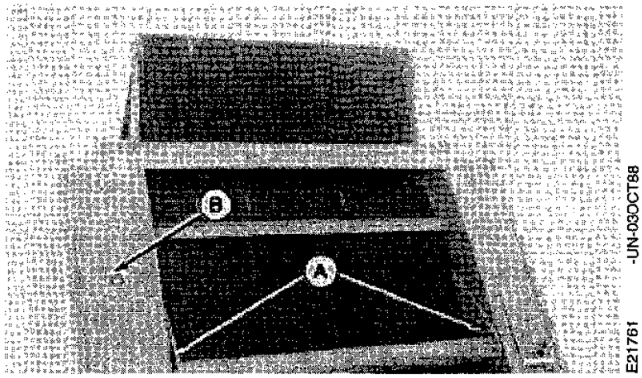
EX,1472,4015,AC-19-06NOV95

ADJUST TWINE CUTTER ANVIL

1. Lock gate in closed position with gate lock valve.

2. Move tractor selector valve to raise belt tension arm (A) until the number "6" appears in bale size window (B). This will shift the twine valve to the up position, allowing the twine arm to be moved by hand.

3. Shut off tractor.



EX,1472,4015,AD-19-06NOV95

4. Manually move front twine arm tube (A) until centered over knife anvil (B).

5. Loosen nuts (C).

6. Adjust twine cutter assembly so clearance between knife anvil (B) and front twine arm tube (A) is 0.5 to 3.5 mm (0.020 to 0.138 in.) (D). Anvil should be level (parallel with bottom edge of frame).

7. Tighten nuts (C).

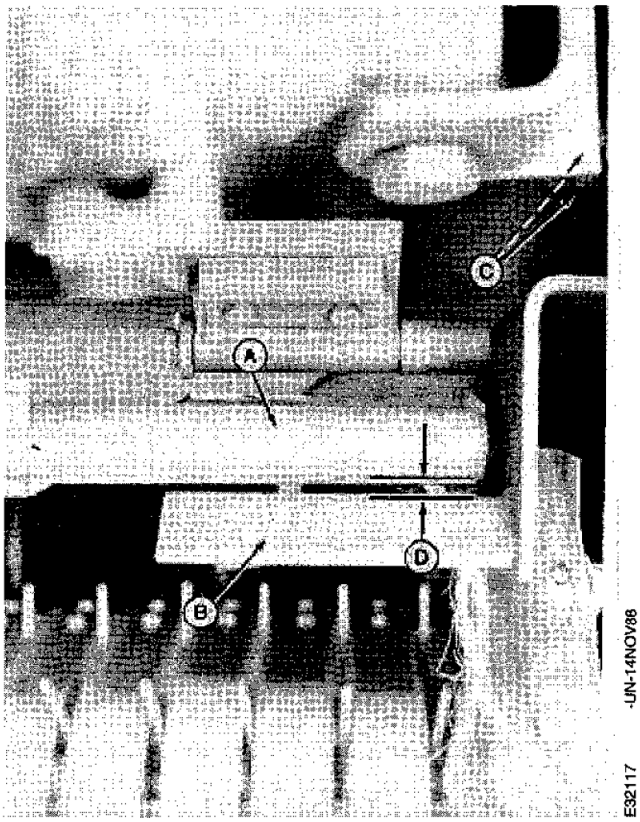
8. Manually move twine arm forward to home position.

9. Start tractor and move tractor selector valve to lower belt tension arm.

10. Shut off tractor.

11. Unlock gate.

A—Twine Arm Tube
B—Knife Anvil
C—Nuts
D—0.5 to 3.5 mm (0.020 to 0.138 In.) Clearance



EX,1472,4015,AE-19-06NOV95

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ADJUST TWINE CUTTER CONTACT BAR

NOTE: Adjust twine arm(s) and cutter anvil before proceeding with this adjustment.

Double twine arm shown.

1. Move twine arm (A) using tractor hydraulic lever until arm is under cutter link support (B).

2. Shut off tractor.

3. Adjust support by slightly bending until clearance (C) of 6—12 mm (1/4—1/2 in.) is obtained between strap on top of twine arm and bottom of support.

NOTE: There are two washers in front of contact tab and four washers behind tab.

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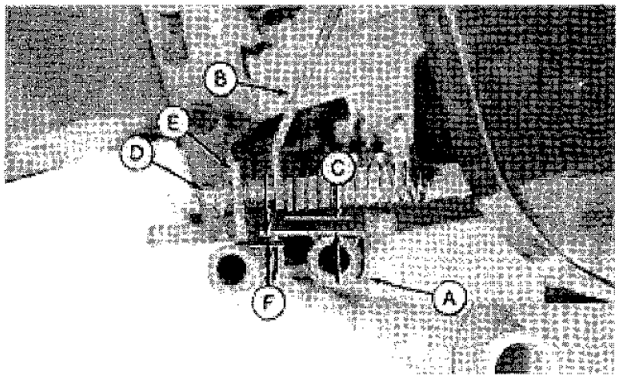
4. Loosen nut (D) and move contact tab (E) until bottom of tab is 2—4 mm (3/32—5/32 in.) (F) below bottom of strap on twine arm.

5. Keep tab vertical and tighten nut.



A—Twine Arm
B—Cutter Link Support
C—6—12 mm (1/4—1/2 in.)
D—Nut
E—Contact Tab
F—2—4 mm (3/32—5/32 in.)

EX,1472,4015,B1-19-11MAR93

ADJUST TWINE CUTTER TENSION (435)

NOTE: If surface wrap is installed, be sure the on-off valve is shut off (turn fully clockwise). (See Changing From Surface Wrap to Twine Wrap in Section 50.)

1. Raise gate fully.

2. Lock gate.

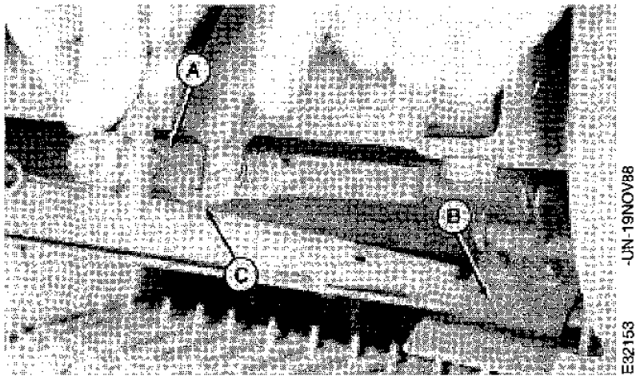
3. With selector control valve lever on tractor, lower belt tension arm until belts are tight.

4. Shut off tractor.

5. Manually move twine arm back from home position.

6. Pull cutter strap (A) gently forward until knife (B) contacts anvil. Remove slack, but DO NOT deform cutter strap.

7. Put a mark along cutter strap (C).



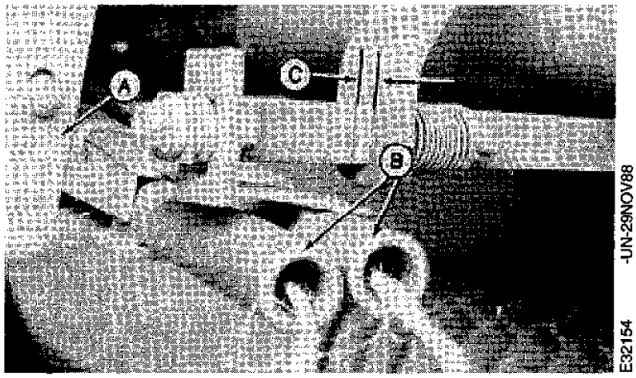
EX,1472,4015,AH-19-11MAR93

8. Make sure twine arm stop (A) is in the down position.

IMPORTANT: Do not leave PTO engaged for more than two minutes with twine arm in home position, or oil in baler pump may overheat.

9. Cycle twine arms (B) and return to home position by engaging PTO and running tractor at rated PTO speed.

10. Distance between mark on cutter strap and strap support should be 5 to 7 mm (3/16 to 9/32 in.) (C).



EX,1472,4015,AI-19-25APR89

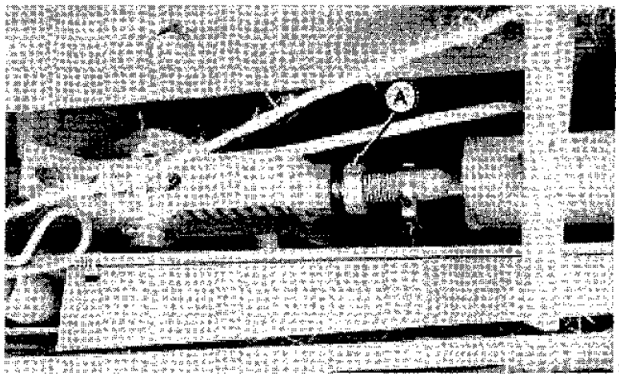
11. If an adjustment is needed, loosen jam nut (A) and turn cylinder rod in cylinder clevis slightly.

To increase the distance, turn rod into clevis.

To decrease the distance, turn rod out of clevis.

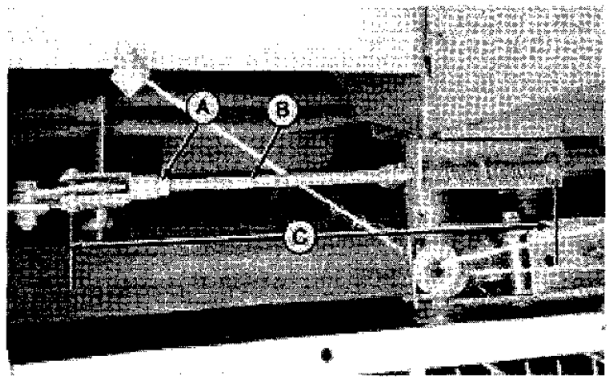
12. Tighten jam nut (A).

If twine cylinder or clevis assembly have been removed or replaced; or if twine cutter tension adjustment cannot be made, see Twine Cylinder Installation Dimensions (435) in this section.



EX,1472,4015,AJ-19-25APR89

ADJUST NUMBER OF TWINE WRAPS ON RIGHT END OF BALE (435)



1. Loosen jam nut (A) and turn push rod (B) in clevis to adjust number of wraps on right end of bale.

To increase number of end wraps, turn rod into clevis.

To decrease number of end wraps, turn rod out of clevis.

2. Tighten jam nut (A). If push rod has been removed or replaced, and twine arm will not return from right side, set dimension (C) to 387 mm (15-1/4 in.). Additional adjustments may be required after wrapping a bale.

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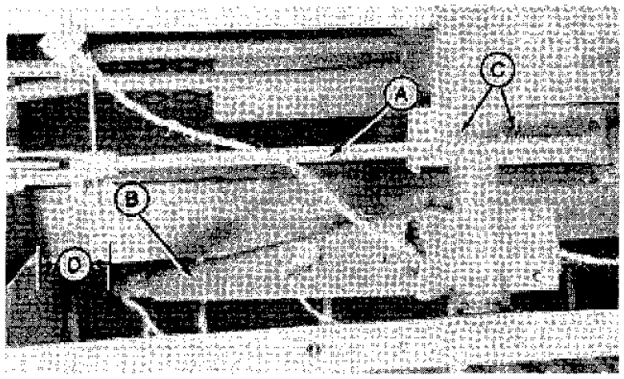
EX,1472,4015,AK-19-06NOV95

ADJUST TWINE DISTANCE FROM RIGHT END OF BALE (435)



1. Raise gate fully.

2. Lock gate.

3. Using gate selector lever on tractor, lower belt tension arm until belts are tight.

4. With tractor running at rated PTO speed, engage PTO. When valve trip rod (A) starts to move, disengage PTO. Twine arm (B) will be in extreme right position.

5. Shut off tractor.

6. Loosen bolts (C).

7. Move twine arm to desired position. Recommended distance (D) from right side sheet to closest twine arm tube is 83 to 133 mm (3-1/4 to 5-1/4 in.) when arm and stop contact.

A—Valve Trip Rod
B—Twine Arm
C—Bolts
D—83 to 133 mm (3-1/4 to 5-1/4 in.) Dimension

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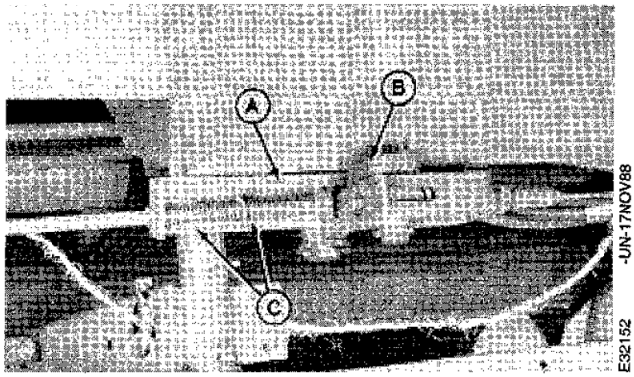
8. Set stop (A) to contact cylinder arm (B) squarely.

9. Tighten bolts (C).

If twine cylinder or clevis assembly have been removed or replaced; or if twine arm adjustments cannot be made, see Twine Cylinder Installation Dimensions (435) in this section.



EX,1472,4015,AM-19-25APR89

TWINE CYLINDER INSTALLATION DIMENSIONS (435)

If twine cylinder or clevis assembly has been removed or replaced, or if twine cutter tension adjustment cannot be made, assemble cylinder in this manner:

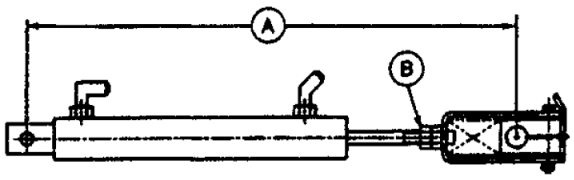
1. Retract cylinder fully.

2. Dimension (A) between center of hole in base end of cylinder to center of hole in block should be 460 mm (18-1/8 in.)

3. If an adjustment is necessary, loosen jam nut (B) and adjust clevis.

4. Tighten jam nut (B).

This will be close to the desired setting for right end wrap placement and twine cutter tension. Adjustments must be checked and reset if necessary with cylinder in place. (See Adjust Twine Distance From Right End of Baler (435) and Adjust Twine Cutter Tension (435) in this section.)



EX,1472,4015,AN-19-06NOV95

ADJUST TWINE CUTTER TENSION (535)

NOTE: If surface wrap is installed, be sure the on-off valve is shut off (turn fully clockwise). (See Changing From Surface Wrap to Twine Wrap in Section 50.)

1. Raise gate fully.

2. Lock gate.

3. With selector control valve lever on tractor, lower belt tension arm until belts are tight.

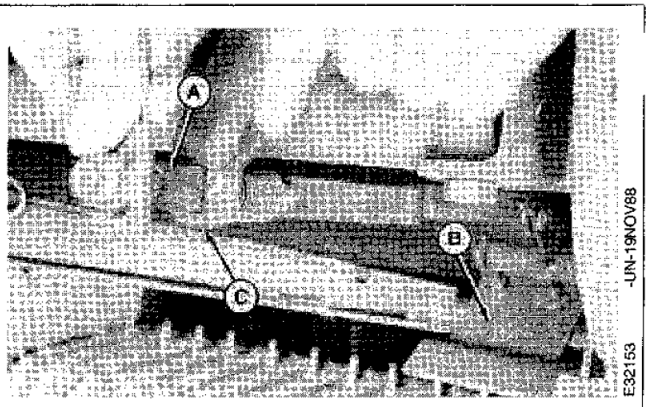
4. Shut off tractor.

5. Manually move twine arm back from home position.

40 15 24

6. Pull cutter strap (A) gently and bring knife (B) into light contact with anvil. Remove slack, but DO NOT deform cutter strap.

7. Mark cutter strap (A) at support (C) as shown.



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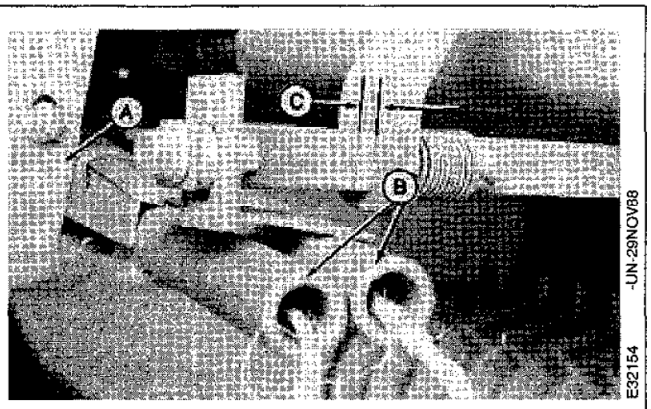
8. Make sure twine arm stop (A) is in the down position.

9. Cycle twine arms (B) and return to home position by engaging PTO and running tractor at rated PTO speed.

10. Place twine arm in home position with cylinder retracted (long hex block contacting cylinder barrel).

Distance from mark on cutter strap to support should be 5 to 7 mm (3/16 to 9/32 in.) (C).



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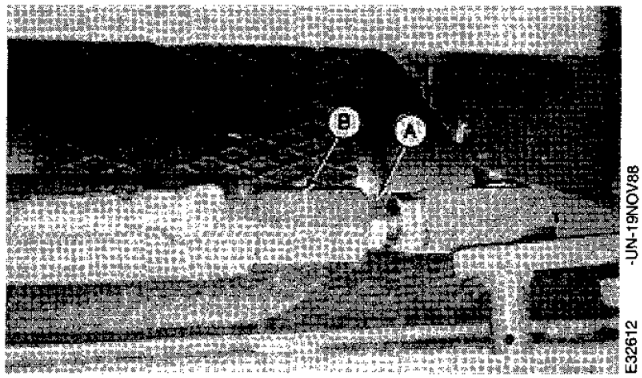
11. To adjust distance, loosen jam nut (A) and turn hex block (B) on cylinder rod.

To increase distance, turn hex block (B) away from cylinder barrel.

To decrease distance, turn hex block (B) toward cylinder barrel.

12. Tighten jam nut (A) after adjustment.

If twine cylinder, hex block, or end block have been removed or replaced; or if twine system adjustments cannot be made, see Twine Cylinder Installation Dimensions (535) in this section.



EX,1472,4015,AQ-19-25APR89

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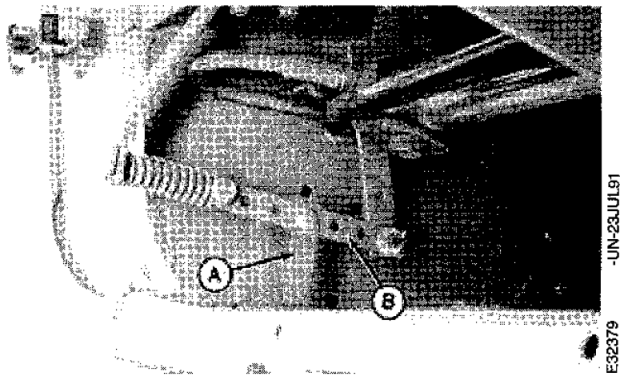
ADJUST NUMBER OF TWINE WRAPS ON RIGHT END OF BALE (535)

Change position of strap (A) along sliding strap (B) to increase or decrease number of wraps on right end of bale.

To increase, move strap (A) forward on sliding strap (B).

To decrease, move strap (A) rearward on sliding strap (B).

If strap is moved forward, cycle twine arm to be sure the twine arm will shift the valve linkage to reverse the arm direction. (Refer to Adjust Twine Arm Travel to Shift Valve, this section.)



EX,1472,4015,AR-19-06NOV95

ADJUST TWINE ARM TRAVEL TO SHIFT VALVE (535)

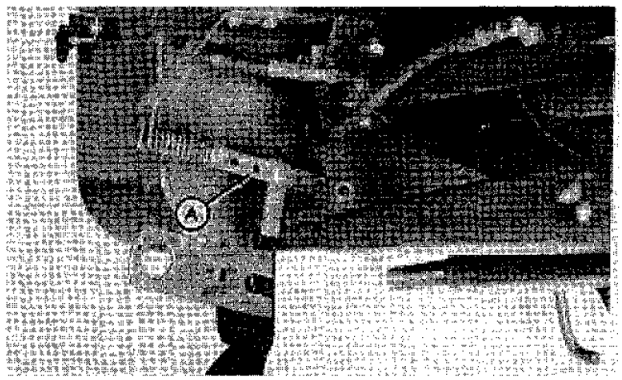
For normal twine arm operation, arm must swing far enough forward on the right side to shift the valve linkage (A) to reverse the arm direction.

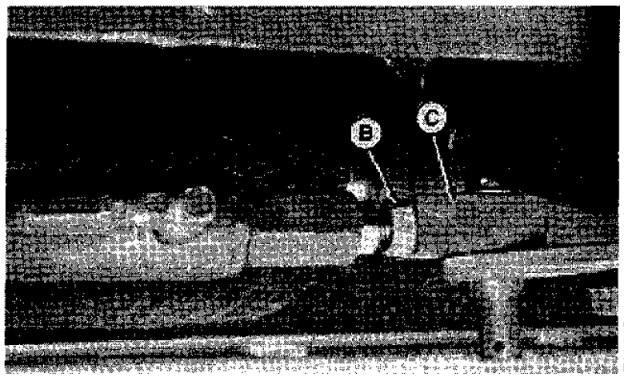
1. If the arm does not swing far enough forward, loosen jam nut (B) and turn cylinder rod out slightly from end block (C).

2. Tighten jam nut (B) after making adjustment. Check adjustment.

3. Recheck twine cutter tension and adjust if necessary. (Refer to Adjust Twine Cutter Tension (535) in this section.)

40 15 26 If twine cylinder, hex block, or end block have been removed or replaced; or if twine system adjustments cannot be made, see Twine Cylinder Installation Dimensions (535) in this section.





EX,1472,4015,AS-19-06NOV95

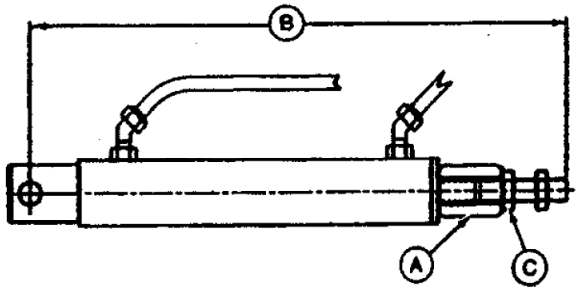
TWINE CYLINDER INSTALLATION DIMENSIONS (535)

If twine cylinder, hex block, or end block have been removed or replaced; or if twine system adjustments cannot be made, assemble cylinder and blocks as follows:

1. Remove end block.

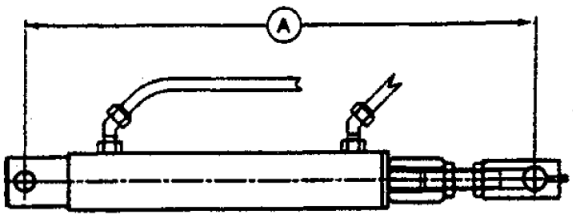
2. Retract cylinder until hex block (A) contacts cylinder barrel. Distance (B) from center of hole in base end of cylinder to end of cylinder rod should be 396 mm (15-19/32 in.).

3. If an adjustment is necessary, loosen jam nut (C). Turn hex block (A) on cylinder rod to obtain correct dimension. Tighten jam nut (C).



EX,1472,4015,AT-19-25APR89

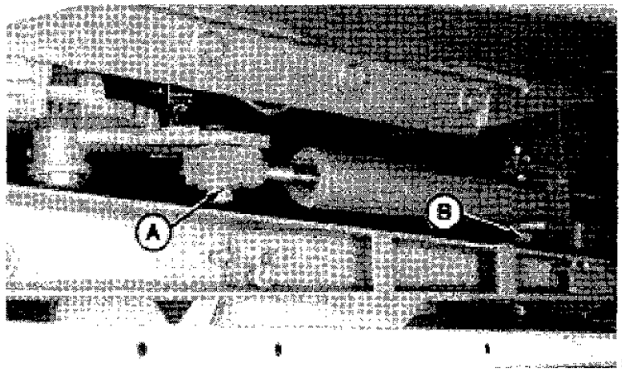
4. Turn cylinder rod into end block until distance (A) from center of hole in base end of cylinder to center hole in end block is 434 mm (17-3/32 in.). This will be close to the desired setting for valve shifting and twine cutter tension. Adjustments must be checked and reset if necessary with cylinder in place. (See Adjust Twine Arm Travel to Right Side (535) and Adjust Twine Cutter Tension (535) in this section.)



EX,1472,4015,AU-19-06NOV95

REMOVE TWINE CYLINDER

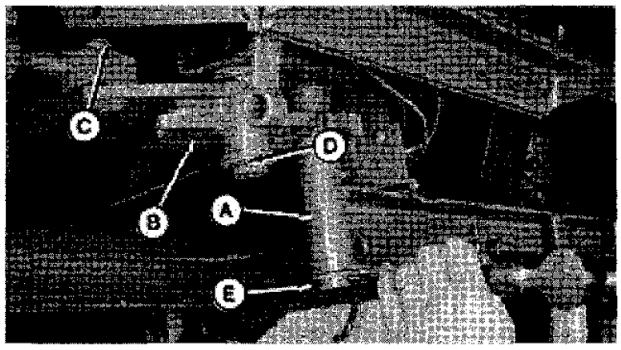
1. Remove spring pin (A).
2. Remove cap screw (B).
3. Remove cylinder.
4. See Section 30 Group 35 for disassembly.



EX,1472,4015,AV-19-11MAR93

REMOVE AND INSPECT TWINE ARM

1. Remove compressor rack.
2. Note number of washers on top and bottom of twine arm (A) and gear (B).
3. Remove spring pins (C), (D) and (E).
4. Remove twine arm (A) and gear (B) from shafts.
5. Inspect shafts for wear. Inspect gears for chipped teeth and wear.
6. To install, reverse procedure.



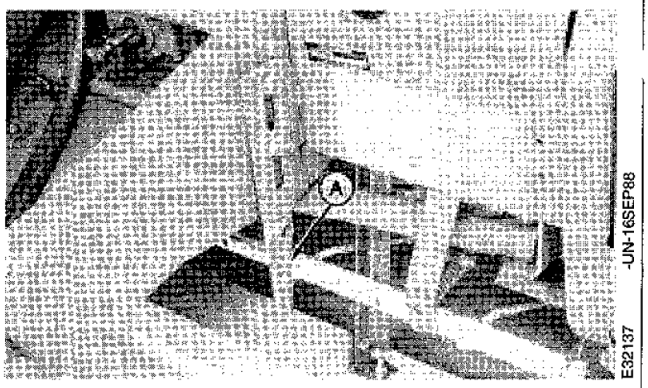
535 Baler Illustrated

A—Twine Arm
B—Gear
C—Spring Pin
D—Spring Pin
E—Spring Pin

EX,1472,4015,AW-19-11MAR93

INSTALL TWINE ARM STOP (435)

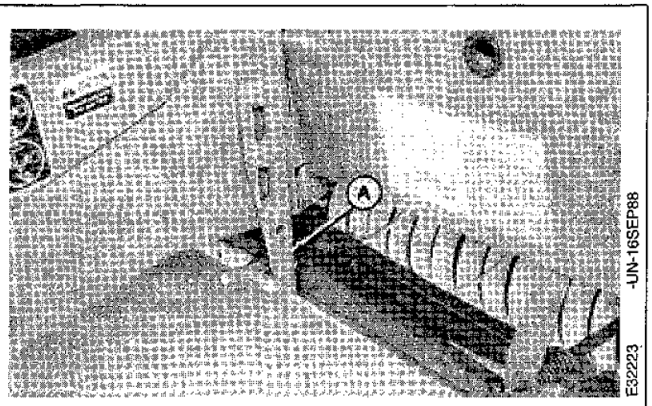
Install stop assembly with trimmed edge (A) toward twine arm. Fasten with two flange nuts. Tighten to 140 N·m (103 lb-ft). Twine arm stop should raise and lower freely.



EX,1472,4015,AX-19-11MAR93

INSTALL TWINE ARM STOP (535)

Install stop assembly with straight edge (A) toward twine arm. Fasten with two flange nuts. Tighten to 140 N·m (103 lb-ft). Twine arm stop should raise and lower freely.



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Section 50
SURFACE WRAP SYSTEM (SERIAL NO. —CC010000)

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GENERAL INFORMATION

The baler can operate in either the surface wrapping or twine wrapping mode.

Instructions regarding the operation of the surface wrapping system and changing from one wrapping mode to the other are found in the operator's manual.

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HOW THE SURFACE WRAPPING MECHANISM WORKS

While the bale is being formed, the surface wrapping system is idle. The surface wrapping mechanism is automatically tripped in the same manner as the conventional twine wrapping system.

When the baler is in the surface wrapping mode, both twine and surface wrapping mechanisms operate simultaneously. Although twine arms move when surface wrap is being applied, twine will not be applied to bale because twines are not threaded out the end of the tubes.

When the wrapping cycle begins, oil from the pump flows to extend the twine arm cylinder (moving the twine arm toward the right side of the baler). Oil also flows to the top surface wrap cylinder, which moves the knife arm back, and engages the V-belt, which drives the rubber feed rolls.

While twine arm is moving from left to right, the surface wrap is fed from the surface wrap roll through the rubber feed rolls, along the baler belts underneath the gate, and is caught by the bale and wrapped around it. The number of surface wraps applied to the bale is determined by the amount of time required for twine arm to travel from left to right.

When the twine arm reverses the valve, oil is directed to retract the twine cylinder (returning twine arm to home position). The lower surface wrap cylinder extends, which moves the knife arm forward, disengaging the V-belt, stopping the rubber feed rollers with a brake, and cutting off the surface wrap.

As the surface wrap is cut off, the knife pushes the surface wrap forward. The surface wrap moves a lever, compressing a microswitch. The switch activates an alarm and lights the red light. After the surface wrap is cut off, the lever and switch return to their original positions, and the light and alarm shut off. The entire cutting process takes approximately 1 second.

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BALE-TRAK MONITOR OPERATION WITH SURFACE WRAP

The basic function of the monitor is very similar, whether using twine wrap or surface wrap. The function of the green light (gate closed and latched), bale shape gauges, flashing yellow light (bale near full), and solid yellow light (twine arm moving) are the same.

When either wrapping system starts, a short buzzer sounds and the flashing yellow light changes to solid yellow. When baling with surface wrap, stop forward travel immediately to ensure surface wrap ends up on the outside of the bale and will not be partially covered by loose incoming material.

A second alarm will sound and the red light will flash a few seconds after the first alarm. The green light will stay on with this signal.

This indicates the surface wrap has fed onto the bale and has cut off properly. The bale may be ejected immediately.

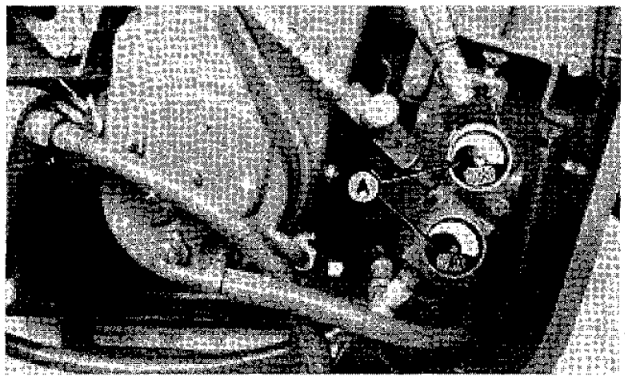
If the second alarm does not sound, there is no wrap on the bale. The surface wrap roll may be empty, or the surface wrap may have misfed. Investigate cause and wrap bale properly prior to ejection of the bale. (See Troubleshooting section.)

If second alarm and red light stay on (with green light on), surface wrap is not cut off properly. Investigate prior to ejection of the bale. (See Troubleshooting section.)

The red light and alarm (without green light) indicate an oversize bale.

EX,1472,5005,C -19-06NOV95

OPERATE SURFACE WRAP SYSTEM WITH EMPTY BALER



To observe knife operation and V-belt idler:

1. Lock gate in closed position with gate lock valve.

2. Raise tension arm fully.

3. Open shield doors to observe movement of knife arm and V-belt idler.

CAUTION: Stay clear of moving parts. Knife will return automatically without warning.

4. Engage PTO.

5. Pull rope to recycle the system if necessary.

Twine arm and surface wrap will cycle. However, bale forming belts will not turn and V-belt drive does not rotate.

IMPORTANT: Do not operate more than one minute in this mode or bale forming belts may be damaged.

NOTE: Surface wrapping is a fast process. When adjusted for normal operation it takes only about 5 to 10 seconds for a complete cycle. It may be helpful to slow the process down by turning both flow control knobs (A) clockwise approximately 1 turn each to allow more time for observation.

Be sure flow valves are returned to original setting before making the next bale.

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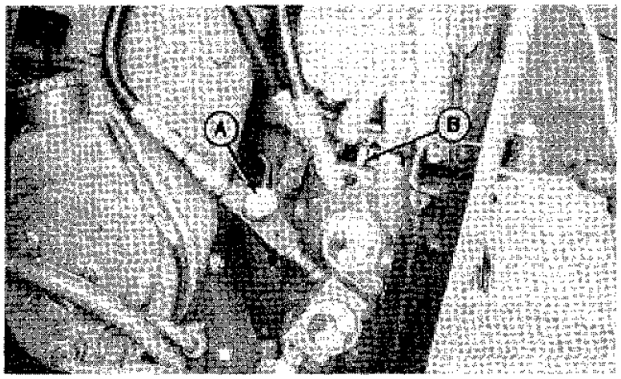
RELEASE KNIFE ARM MANUALLY



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If it is necessary to manually rotate the rollers, service the knife, or check V-belt length:

1. Disengage PTO and shut off tractor engine.

2. Open right baler shield door to access the hydraulic valves.

NOTE: On-off valve (A) must be opened fully (counterclockwise). The spool in the shifter valve (B) must be raised to release the hydraulic oil which holds the knife arm forward.

If tension arm is up, pull the trip rope and release to lift the spool. If the tension arm is not high enough to raise the spool fully when trip rope is actuated, lift the spool manually by placing fingers on either side of spool (illustrated) and pulling upward for 1 to 2 seconds.

3. With left side door of the surface wrap unit open, swing the knife arm back until the brake is clear of the sheave. The rollers should be free to rotate.

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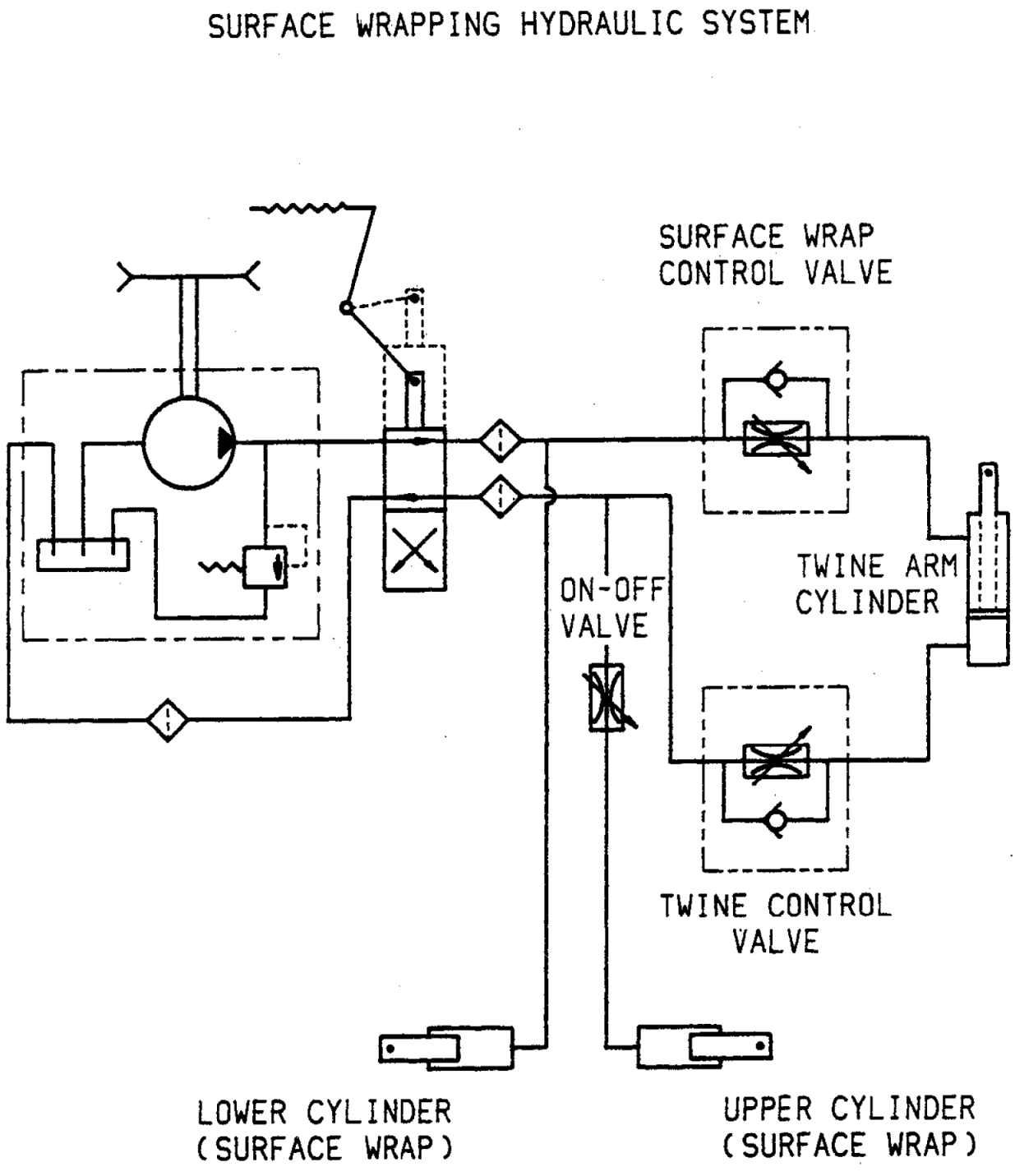
EX,1472,5005,E -19-06NOV95

SURFACE WRAPPING HYDRAULIC SYSTEM DIAGRAM



EX,1472,5005,F -19-11MAR93

Symptom	Problem	Solution
Bale not wrapped (No cut-off signal).	On-off valve shut off.	Open valve fully.
	Surface wrap supply roll empty.	Install new roll.
	Surface wrap material wrapped on roll with spirals.	File or grind smooth any weld slag or sharp end on spirals.
	Surface wrap material not started between rubber feed rolls.	Route surface wrap correctly.
	Surface wrap roll installed in the box backwards.	Install roll correctly.
	Surface wrap feed roll drive not engaged.	Check for broken or too long V-belt. (See Check Drive Belt Length, this section.)
		Check for binding at knife arm pivots.
	Twine arm did not cycle normally.	See Automatic Twine Wrap in Troubleshooting section.
		Check for binding at knife arm pivots.
	Feed roll pressure set too low.	Adjust feed roll pressure. (See Adjust Feed Roll Pressure, this section)
	Roll of surface wrap material larger than 305 mm (12 in.).	Use correct size roll of surface wrap.
	Rust on box panels where roll of surface wrap contacts.	Remove rust. Protect areas from rust during periods of non-use by painting.

EX,1472,5010,A -19-06NOV95

Symptom	Problem	Solution
Surface wrap material wrapped around rubber feed rolls.	V-belt on surface wrap drive too short.	Check belt length. (See Check Drive Belt Length, this section.)
IMPORTANT: Do not cut surface wrap material from rubber feed rolls. Any knife cuts in the rubber roll covering may result in more frequent wrapping around the rollers and may require roller replacement. See Removing Wrappage from Surface Wrap from Rollers in Service section.	Feed roller pressure set too high.	Adjust feed roll pressure. (See Adjust Feed Roll Pressure, this section.)
	Surface wrap material improperly routed, or too much of the end loop started through feed rolls when threading.	Route and thread surface wrap correctly.
	Rubber roll damaged or sticky.	Clean by wiping with clean rag or soap and water. NEVER use solvents. Replace roller if damaged.
	Static electricity or dampness causing surface wrap material to cling to the rolls.	Dust the rubber drive rolls with talcum powder (A51237).
	Surface wrap material sticky from adhesive used in packaging (tape, etc.).	Remove any sticky material from the supply roll by unrolling, cutting and discarding.
	Knife not holding the surface wrap.	See Adjust Knife Arm Stop, this section.
	Roller scraper/guide damaged.	Replace.
	Knife installed on top of knife arms with bevel up, or bolts through knife upside down.	Position knife and attaching bolts correctly. (See Remove and Install Knife, this section.)

EX,1472,5010,B -19-06NOV95

Symptom	Problem	Solution
Bale wrapped normally, but cut-off signal does not activate.	Surface wrap microswitch misadjusted.	Adjust. (See Adjust Microswitch, Section 50, Group 15.)
	Gate latch misadjusted (green light goes out while baling).	Adjust gate latch. (See Section 80, Group 10.)
	Right or left gate latch microswitch misadjusted or defective (green light not on).	Adjust gate latch switch (green light). (See Section 60, Group 20.)
	Knife arm stop not adjusted properly.	Adjust knife arm correctly. (See Adjust Knife Arm Stop, Section 50, Group 15.)
	Wrong return spring on cutoff indicator flap (surface wrap microswitch ramp).	Replace with correct spring.
	Defective microswitch.	Check microswitch. (See Section 60, Group 20.) Replace switch if necessary.
	Wire connections unplugged or corroded/dirty.	Inspect connections in harness next to oversize bale switch, just ahead of the surface wrap unit on right side, and at the surface wrap microswitch.
Too many wraps of surface wrap are applied.	Twine arm speed is too slow. Orifice not removed from head end port of twine arm cylinder.	Remove orifice in head end port of twine arm cylinder.
	Twine arms move too slow.	Refer to Section 40, Group 05, Diagnosing Malfunctions, Twine arms move too slow from left to right.
	Internal cutoff cylinder leakage.	Inspect and/or replace cutoff cylinder.

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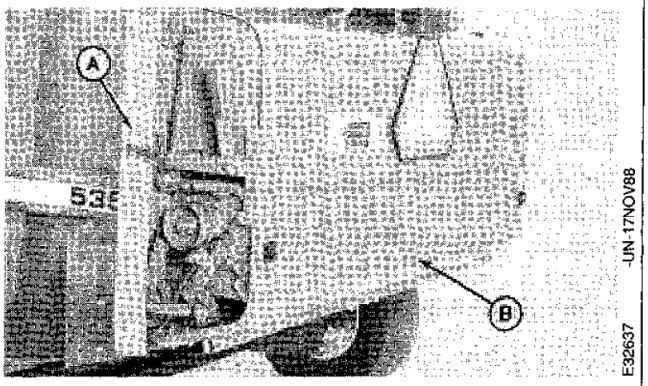
REMOVE AND INSTALL KNIFE

1. Manually move knife arm back. (See Release Knife Arm Manually in this section.)

2. Open side doors (A) and remove rear shield (B).



EX,1472,5015,A -19-11MAR93

CAUTION: Be careful when working around the knife. It is sharp.

3. Note position of knife cutting edge for reinstallation.

4. Remove bolts and nuts (B) on each end of knife (C). Remove knife (C) from knife arms (A).

5. Install knife (C) with bevel (D) down, under knife arms (A).

NOTE: Round heads of bolts must be up.

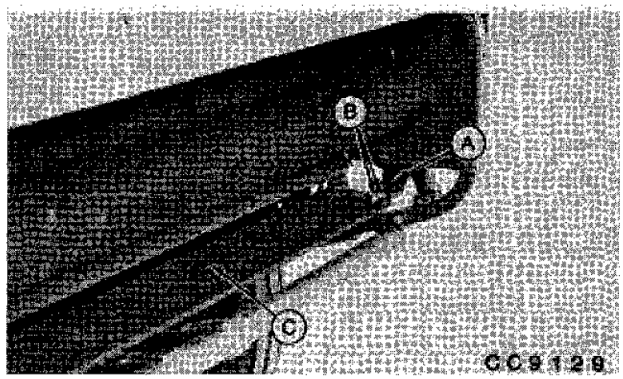
6. Tighten bolts to 55 N·m (40 lb-ft).

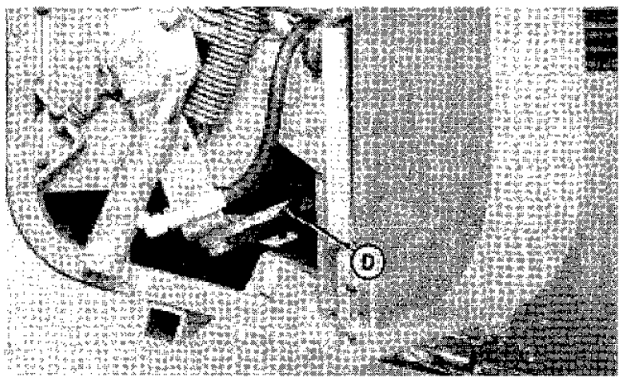
7. Manually push knife arm forward.

8. Install rear shield.

9. Unlock gate valve.

A—Knife Arms
B—Bolts and Nuts
C—Knife
D—Knife Bevel





EX,1472,5015,B -19-12MAY89

SHARPEN KNIFE

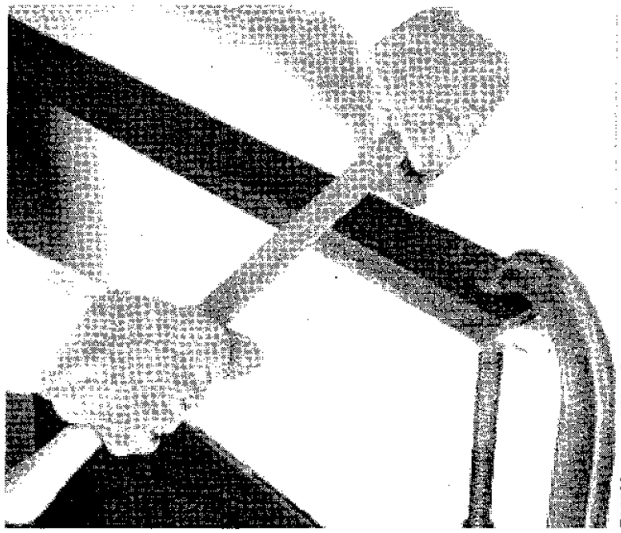
CAUTION: Prevent personal injury by using gloves to handle knife.

1. Remove any residue from beveled edge.

2. Clamp knife to a bench or table.

3. Draw-file the beveled edge maintaining a 25° angle.

4. Keep the sharpened edge straight, within 1 mm (0.04 in.).



EX,1472,5015,B1-19-22JAN92

ADJUST KNIFE ARM STOP

50 15 2

1. Manually release knife arm. (See Release Knife Arm Manually in this section.)

2. Push the knife arm (A) forward until it contacts the stop bolt (B).

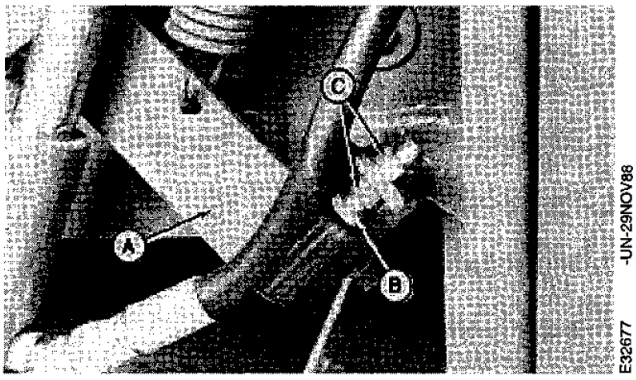
CAUTION: Be careful when working around the knife. It is sharp.

3. Check for light contact between the front edge of the knife and the rubber flap with the arm against the stop bolt.

NOTE: If the knife contacts the rubber flap too hard, it may cause the upper drive roll to wrap, or it may clamp the surface wrap after it is cut off and cause the cutoff signal (buzzer, red light and green light) to stay on.

If the knife does not contact the rubber flap, the cut end of the surface wrap material may snap back to the feed rolls. This end may wrap around the rubber rolls when the next wrapping cycle starts.

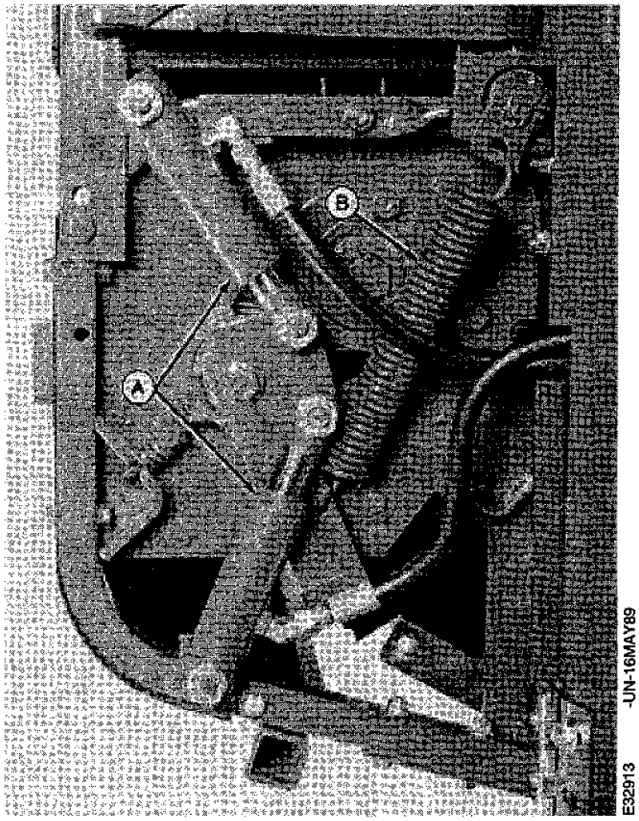
4. Adjust the stop position as required by loosening jam nuts (C) and turning bolt (B) to desired position. Retighten jam nuts (C).



EX,1472,5015,C -19-06NOV95

REMOVE DRIVE ROLL

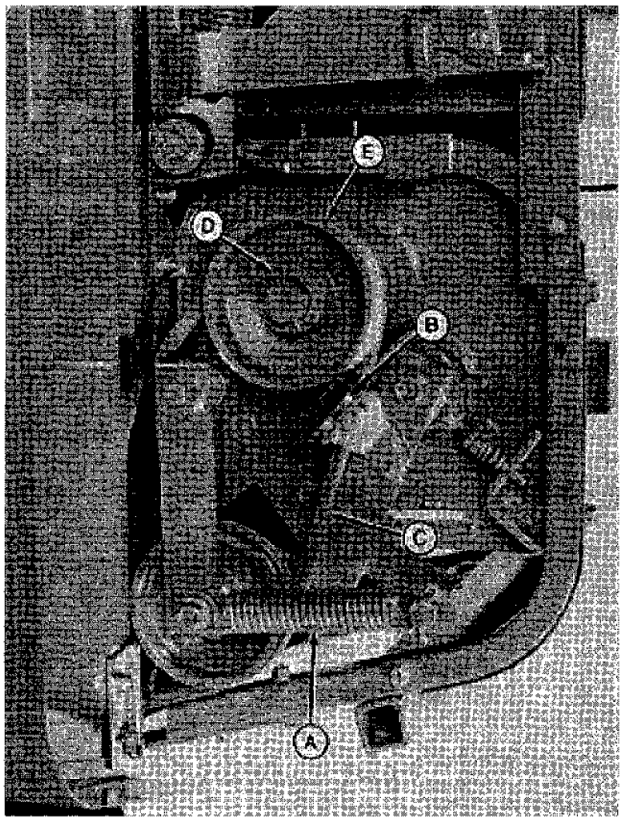
1. Remove cylinders (A) on right side of surface wrap.
2. Remove spring (B).



EX,1472,5015,D -19-06NOV95

3. Remove spring (A) on left side of surface wrap.
4. Remove brake (B).
5. Remove drive belt (C).
6. Remove cotter pin and washers (D).
7. Remove sheave (E).

A—Spring
B—Brake
C—Drive Belt
D—Cotter Pin and Washers
E—Sheave

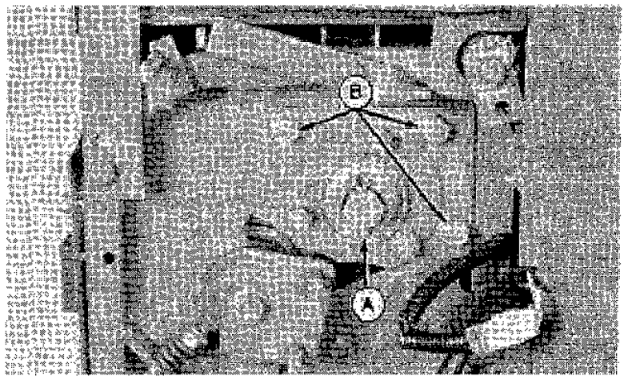


EX,1472,5015,E -19-06NOV95

8. Remove cotter pin (A) and washers.

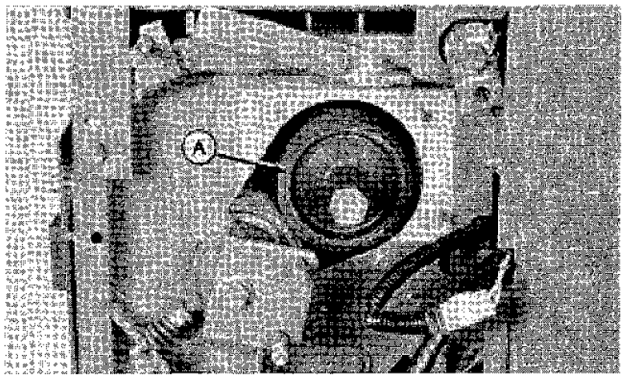
9. Remove cap screws (B) and plate.

NOTE: To replace bearings without removing roll see Replace Bearing With Steel Flangettes, this section.)



EX,1472,5015,F -19-12MAY89

10. Remove roll through side sheet hole (A).



EX,1472,5015,G -19-12MAY89

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REMOVE FEED ROLL

CAUTION: Be careful when working around the knife. It is sharp.

1. Remove knife. (See Remove and Install Knife in this section.)

2. Remove hydraulic cylinders (A) on right hand side of surface wrap.

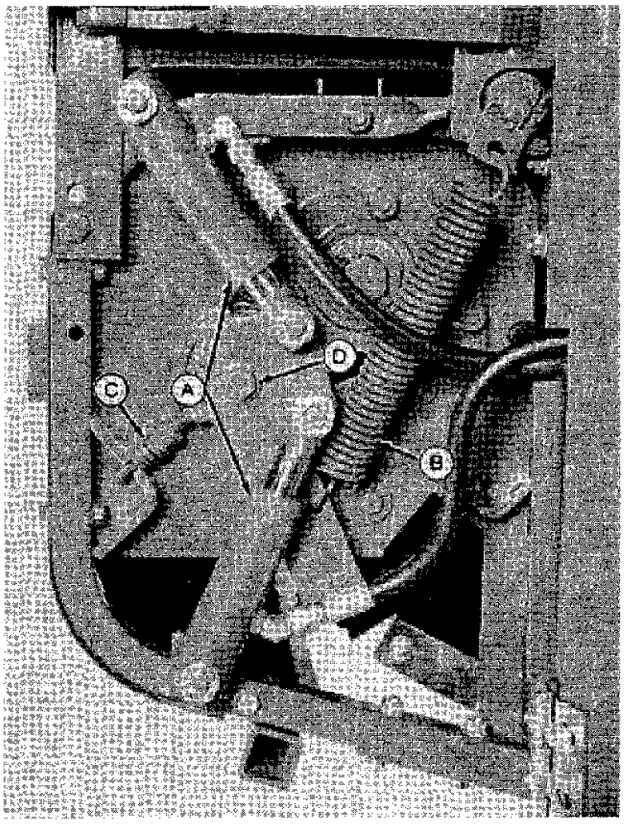
3. Remove spring (B).

4. Loosen nut (C) to release feed roll pressure.

5. Remove cap screw (D).

6. Pull outward on knife assembly to remove.

A—Cylinders
B—Spring
C—Nut
D—Cap Screw



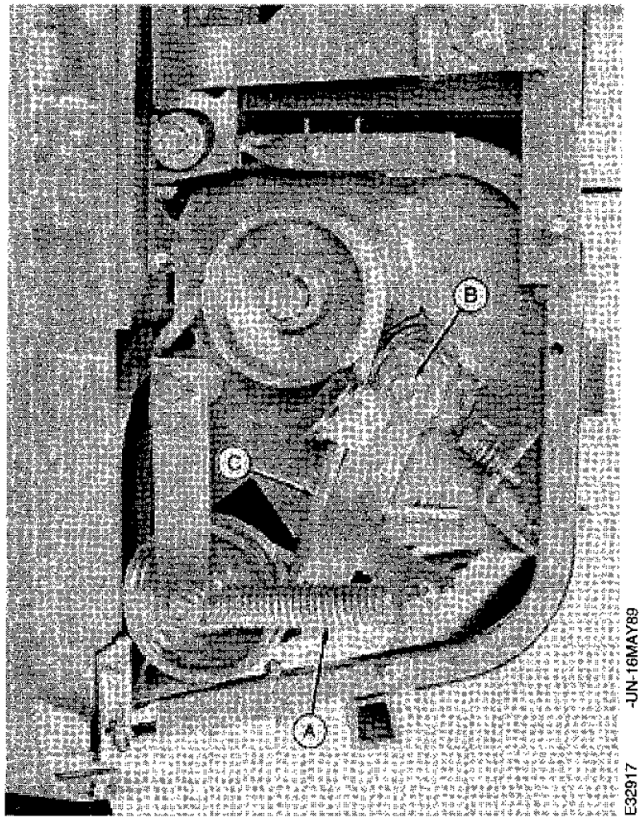
EX,1472,5015,H -19-11MAR93

CAUTION: Roll must be supported to prevent it from falling and causing personal injury.

7. Remove spring (A) on left side of surface wrap.

8. Remove cap screw (B).

9. Pull outward on knife assembly (C) to remove.



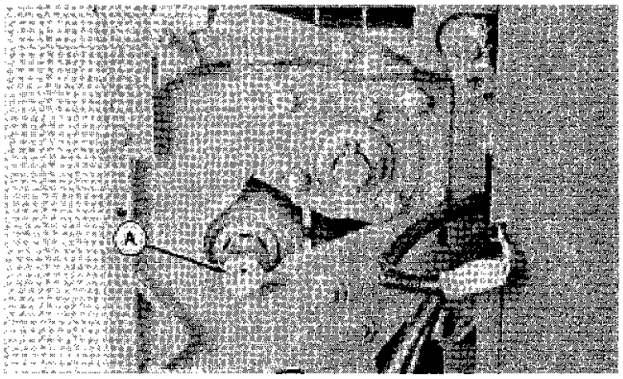
EX,1472,5015,I -19-06NOV95

10. Using a soft mallet, drive roll shaft (A) into roll until shaft clears side sheet.

11. Remove roll.

NOTE: To replace bearings see Replace Bearing in Roll in this section.

12. Reverse procedure to reinstall roll.



EX,1472,5015,J -19-12MAY89

ADJUST FEED ROLL PRESSURE

1. Release knife arm manually. (Refer to Release Knife Arm Manually, this section.)

2. Open both side doors (A) and open surface wrap box.

3. Remove any foreign material or surface wrap from between the rolls.

4. Loosen lock nut (B).

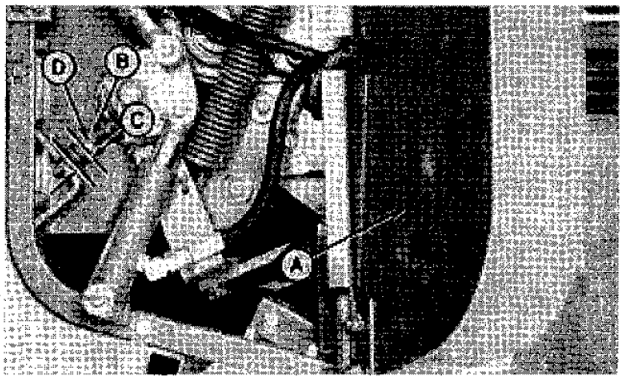
5. Adjust spring length by loosening or tightening spring adjusting nut (B) until 20.5 mm (25/32-in.) dimension (C) is obtained.

6. Retighten lock nut (B).

7. Repeat steps 2 through 4 for left side.

NOTE: Too much pressure can cause surface wrap to wrap on rubber rolls. A lack of pressure will prevent surface wrap from being fed by the rolls to the bale.

When knife arm is actuated by hydraulic force, it is normal for rolls to be slightly separated on the brake side.



A—Side Doors
B—Lock Nut
C—20.5 mm (25/32 in.) Dimension
D—Spring Adjusting Nut

EX,1472,5015,K -19-06NOV95

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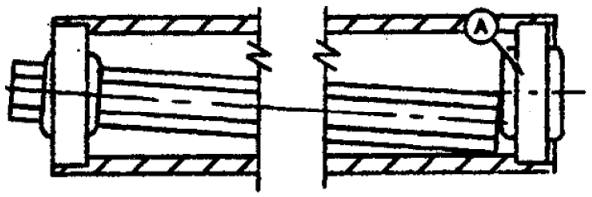
REPLACE BEARINGS IN ROLL

Bearings in rolls can be replaced by removing the cap screws that hold the roll in the baler, removing the roll from the baler and driving the bearing from the roll.



1. Grind off staked area on shaft (both ends).

2. Slide shaft until shaft drops out of bearing (A) as shown.

3. Remove bearing (A) by hitting shaft with a rubber hammer.

IMPORTANT: DO NOT reuse a bearing that has been removed. Driving against inner race of bearing causes internal bearing damage.

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EX,1472,5015,L -19-12MAY89

IMPORTANT: Install bearing by driving on outer race of bearing. Driving bearing on inner race will reduce bearing life. Do not drive bearing by driving on seal. Driving on seal will significantly reduce bearing life.

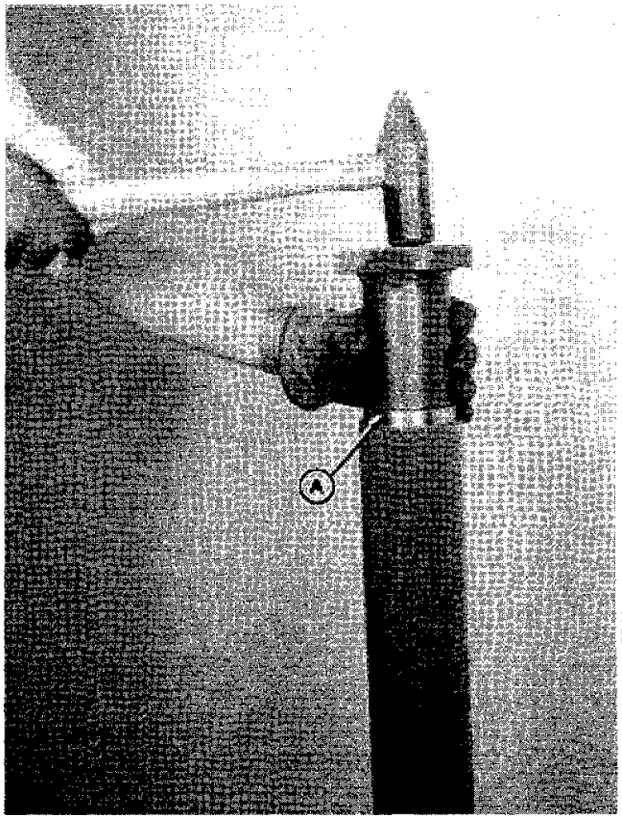
4. Install new bearing (A) by pressing outer race into roll as shown. Press bearing to bottom of counterbore.

IMPORTANT: Use caution not to apply load to inner race of opposite bearing race.

5. Install shaft in bearing.

NOTE: Stake end of shaft to ease handling during reassembly.

6. Install roll in baler. Use procedure in this section to replace roll.



EX,1472,5015,M -19-12MAY89

REPLACE BEARINGS WITH STEEL FLANGETTES

1. Remove spring pin, washers, sprocket, and sheave or spacer. Note number and location of washers for reassembly.

2. Remove outer flangette.

3. Replace bearing. Install outer flangette.

4. Reverse removal procedure for remainder of assembly. Install washers exactly as removed. Use new spring pin(s).

EX,1472,5015,N -19-12MAY89

SERVICE LOWER FRONT GATE ROLL

NOTE: Model 535 baler is shown.

1. Raise gate fully until lower front gate roll is approximately 1 m (3-1/3 ft) above the ground.

2. Lock gate. Shut off tractor.

3 Remove two round-head bolts (A) holding front corners of lower surface wrap guide assembly to belt guide.

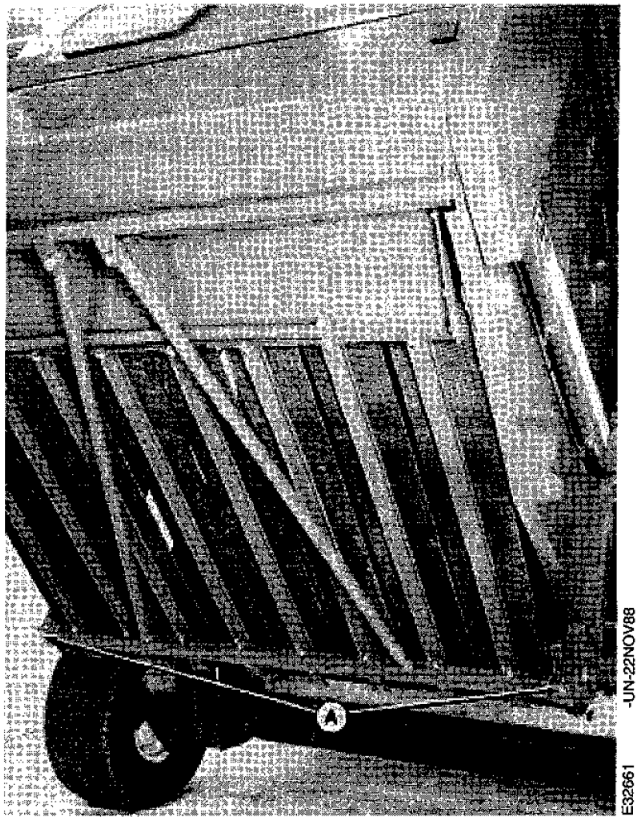
4. Swing assembly (B) away from gate roll.

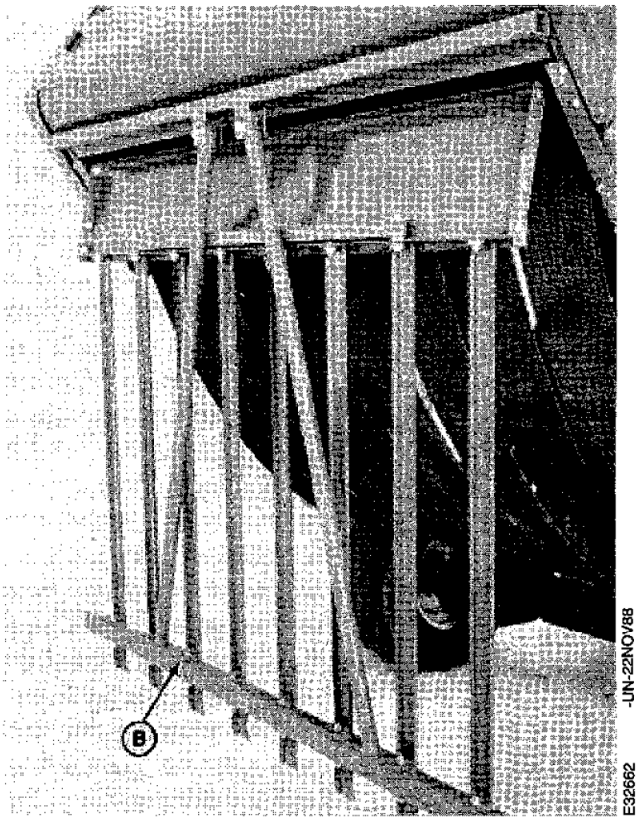
IMPORTANT: Do not lower gate when the lower surface wrap guide assembly is detached from the belt guide or damage to the guide will result.

Do not operate the baler belts when the lower surface wrap guide assembly is detached from the belt guide or belt damage may result.

5. Lower tension arm. Shut off tractor.

6. To service gate roll see Section 20, Group 30.





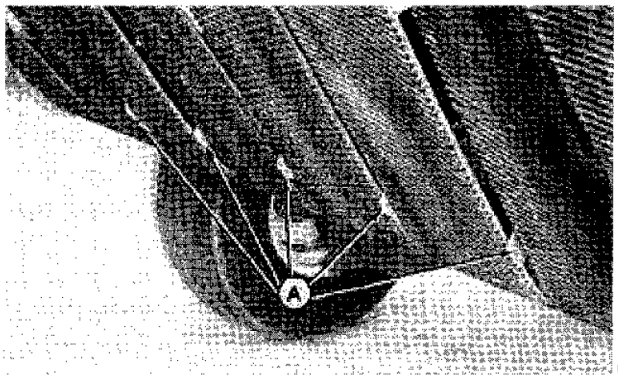
EX,1472,5015,O -19-22JAN92

7. Position belts between guide straps (A).

8. Swing assembly toward the roll.

9. Align the holes and attach with round-head bolts.

9. Check clearance between ends of all belt guide straps and the bottom crossmember. There must be 2 to 5 mm (3/32 to 3/16 in.) clearance.



EX,1472,5015,P -19-06NOV95

ADJUST MICROSWITCH

1. Open surface wrap box.

2. Check that switch ramp (A) pivots freely. Ramp must return freely under spring (C) force.

3. Loosen both screws (B) on switch mounting plate. Move switch horizontally until it is positioned as shown.

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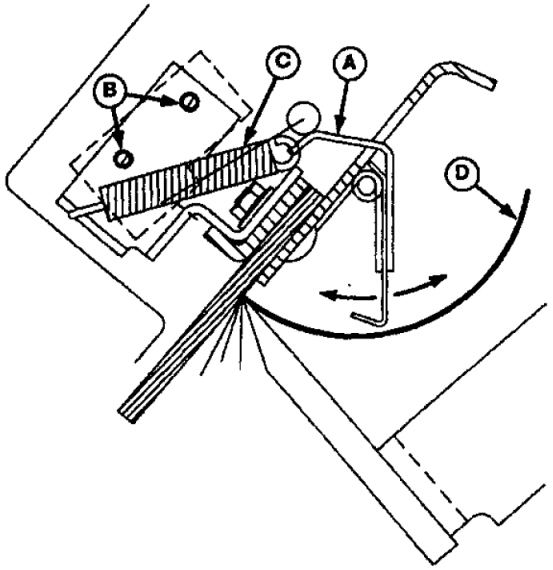
4. Move switch vertically until it just contacts ramp (A), but is not activated.

NOTE: Switch should be activated when ramp is at midpoint of its travel. Mounting holes can be enlarged or switch lever bent to obtain switch activation at the midpoint of ramp travel.

5. Tighten screws (B).

6. Close surface wrap box.

NOTE: For more information see Test Microswitch in Section 60, Group 20.

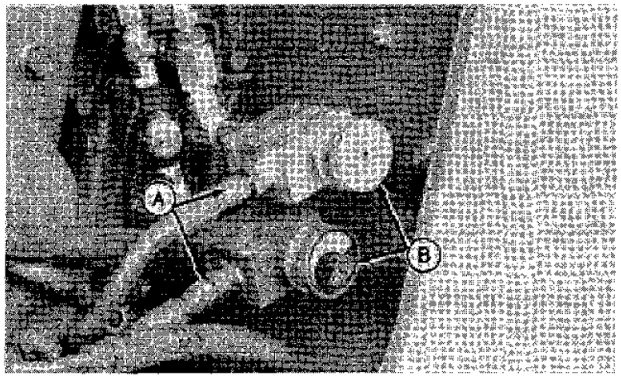


A—Microswitch Ramp
B—Mounting Screws
C—Spring
D—Surface Wrap Material

EX,1472,5015,Q -19-11MAR93

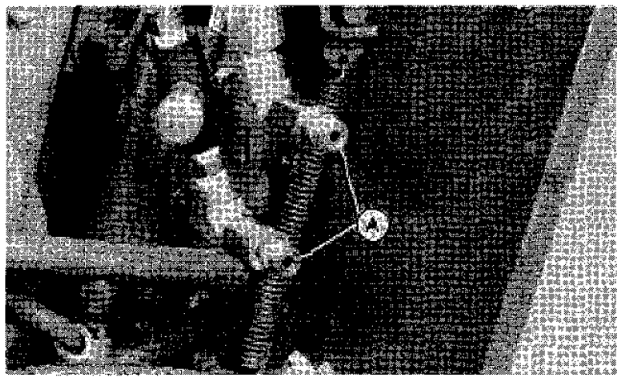
REMOVE AND CLEAN HYDRAULIC FILTERS

1. Remove hydraulic hoses (A).
2. Remove control valves (B).



EX,1472,5015,R -19-11MAR93

3. Remove and clean filters (A).
4. Reverse procedure to reassemble.



EX,1472,5015,S -19-12MAY89

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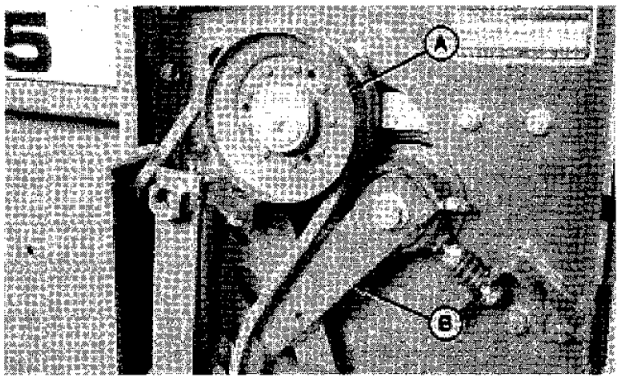
CHECK BRAKE

1. Check that surface wrap roll (A) will not rotate by hand when knife arm (B) is in its most forward position.
2. Manually release knife arm. (See Releasing Knife Arm Manually in Operating Baler with Surface Wrap section.)
3. Brake must be completely disengaged when knife arm is swung back and belt is tightened.



EX,1472,5015,AB-19-06NOV95

4. When knife contacts stop bolt, brake (B) must be deformed by roll 1 to 2 mm (0.030 to 0.080-in.) (D).

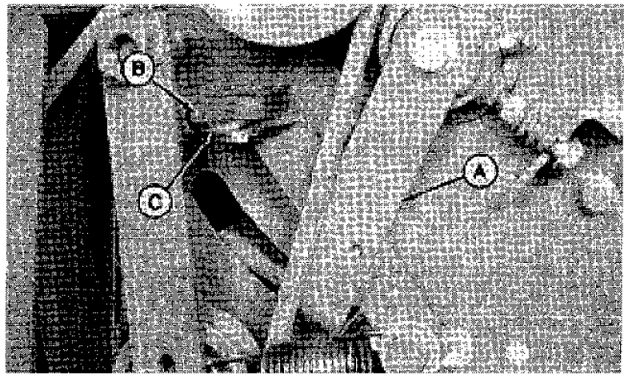
If adjustment is required, pull knife arm (A) back. Install (or remove) washers as necessary, between rubber brake (B) and bracket (C).

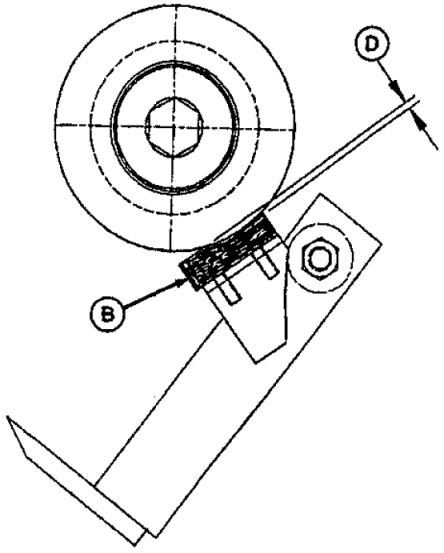
NOTE: If worn, rubber brake pad can be reversed.

5. Check brake adjustment as described in steps 1 through 3.

6. Push knife arm forward.

A—Knife Arm
B—Rubber Brake
C—Bracket
D—1 to 2 mm (0.030 to 0.080-in.)





EX,1472,5015,AC-19-06NOV95

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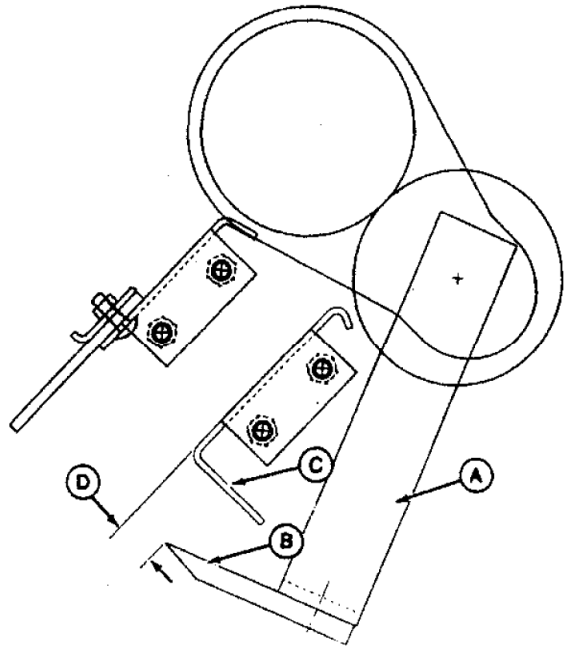
CHECK DRIVE BELT LENGTH

1. Move knife arm manually. (See Release Knife Arm Manually, this section.)

2. Pull knife arm (A) back until belt is tight. Cutting edge of knife (B) should be behind the corner of rear guide (C) 10 to 20 mm (13/32 to 25/32 in.) (D).

3. If top edge of knife (B) is less than 10 mm (13/32 in.) behind guide (C), the belt is too short. This condition can cause surface wrap to wrap on rubber rolls. Replace belt.

A—Knife Arm
B—Knife
C—Guide
D—10 to 20 mm (13/32 to 25/32 in.)



E32645 -UN-29NOV88

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EX,1472,5015,U -19-06NOV95

REMOVE AND INSTALL BELT

1. Lock gate.

2. Raise tension arm to release belt tension.

3. Shut off tractor.

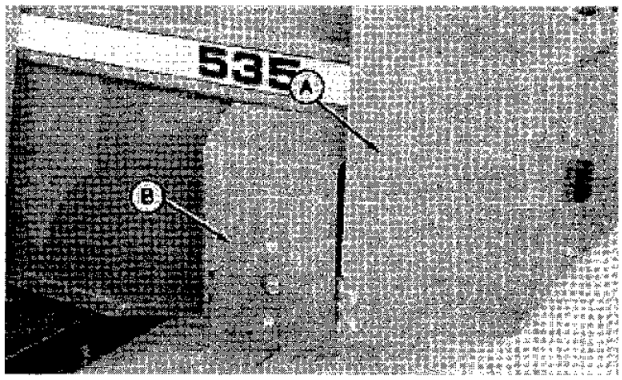
4. Manually release knife arm. (See Release Knife Arm Manually, this section.)

5. Remove left door (A).

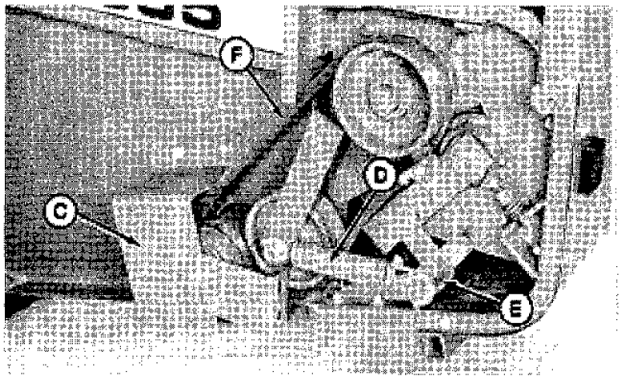
6. Remove shield (B), gate roll support (C), and tension spring (D) from knife arm (E).

7. Remove belt (F) from surface wrap roll sheave and gate roll sheave.

A—Left Door
B—Shield
C—Gate Roll Support
D—Tension Spring
E—Knife Arm
F—Belt



E32638 -UN-17NOV88



E32639 -UN-23JUL91

EX,1472,5015,V -19-06NOV95

8. Install new belt around surface wrap roll sheave (A), gate roll sheave (B), and idler (C).

9. Install tension spring (D).

10. Install gate roll support (E).

11. Check clearance between roll and side sheet.

12. Install shield (F) and left door (G).

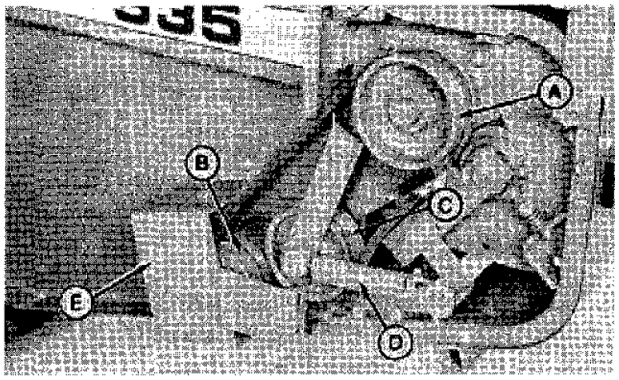
13. Check for correct position of knife edge. (See Check Drive Belt Length, this section.)

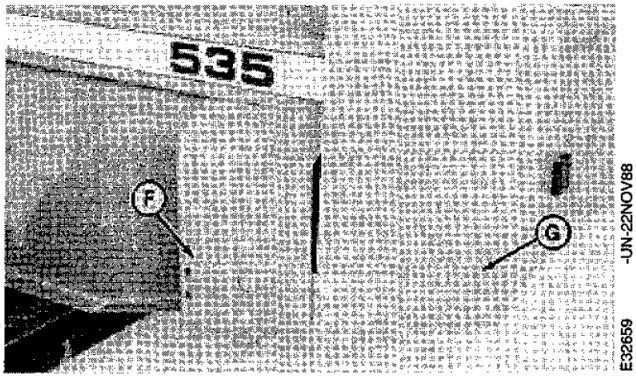
14. Manually move knife arm forward to cut-off position.

15. Lower tension arm fully.

16. Unlock gate.

17. Check belt tracking. (See Adjust Belt Tracking, Section 20, Group 25.)





A—Surface Wrap Roll Sheave
B—Gate Roll Sheave
C—Idler
D—Tension Spring
E—Gate Roll Support
F—Shield
G—Left Door

EX,1472,5015,W -19-06NOV95

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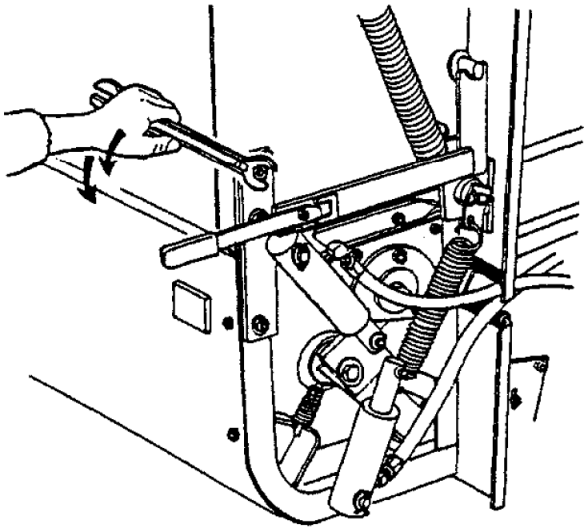
ADJUST ROLL BOX LATCH

1. Open side door of surface wrap and pivot latch handle down.

2. Loosen upper nut of surface wrap strap.



E36416 -UN-27FEB92

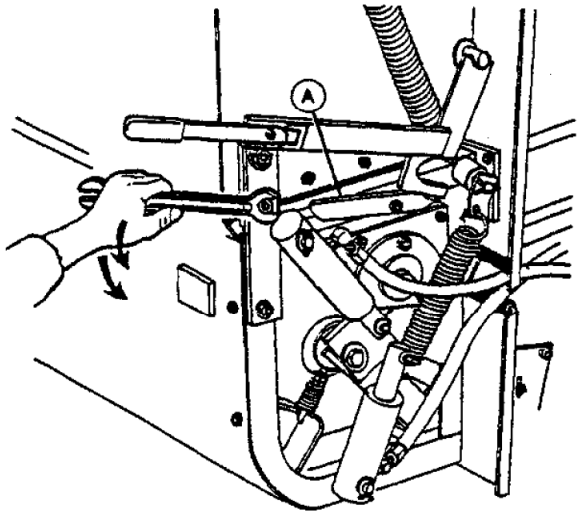
EX,1472,5015,X -19-11MAR93

CAUTION: Latch handle is spring loaded in upward direction. Hold handle firmly when releasing to avoid personal injury.

3. Push down on latch handle to release stop (A) and slowly raise latch handle.

4. Loosen middle nut of surface wrap strap.

5. Pull handle down until latch is locked in position by stop.



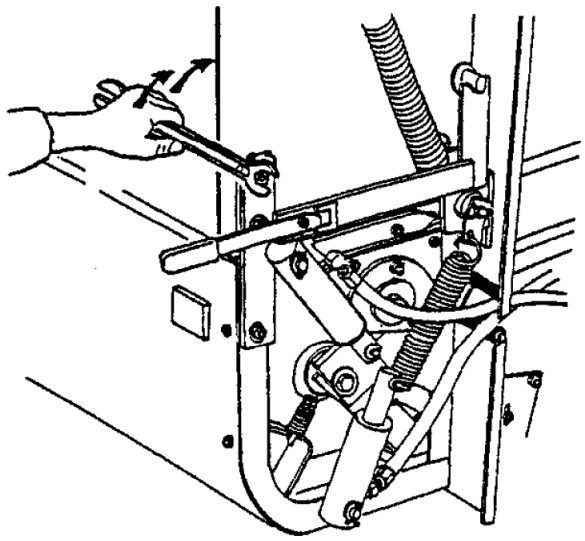
E36417 -UN-27FEB92

EX,1472,5015,Y -19-24FEB92

6. Tighten upper nut of strap.

7. Pull down on latch handle to release stop and slowly raise latch handle.

8. Tighten middle nut of strap.



E36418 -UN-27FEB92

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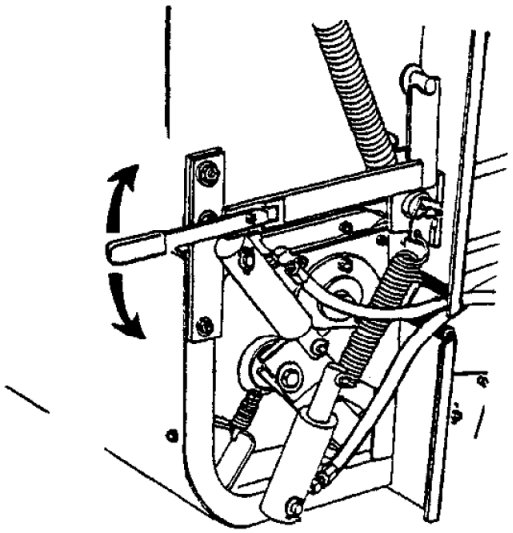
EX,1472,5015,Z -19-24FEB92

9. Check for proper operation of latch by engaging and disengaging latch. Latch must operate without binding or sticking. Repeat adjustment if necessary.

10. Repeat adjustment for other side of surface wrap.



E36419 -UN-27FEB92

EX,1472,5015,AA-19-24FEB92

Section 51
SURFACE WRAP SYSTEM (SERIAL NO. 880001—)

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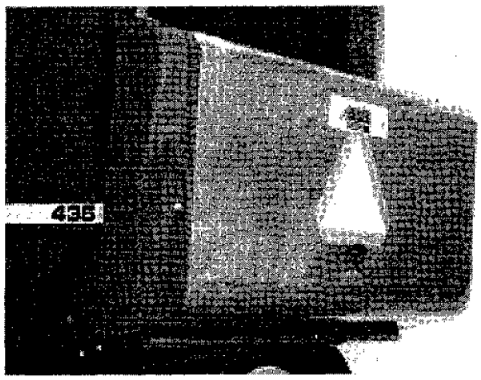
GENERAL INFORMATION

The baler, when equipped with optional surface wrap, can operate in either the surface wrapping or twine wrapping modes.

When using the twine wrapping mode, refer to Preparing the Baler section in the baler operator's manual for proper operation.

Instructions for the operation of the surface wrapping system and how to change from one wrapping mode to the other are found in the surface wrap operator's manual.



E36069 -UN-29MAY91

EX,1472,5105,1 -19-29MAY91

REMOVE SURFACE WRAP UNIT

IMPORTANT: To prevent damage to surface wrap unit, follow these precautionary steps before removing the surface wrap unit from baler.

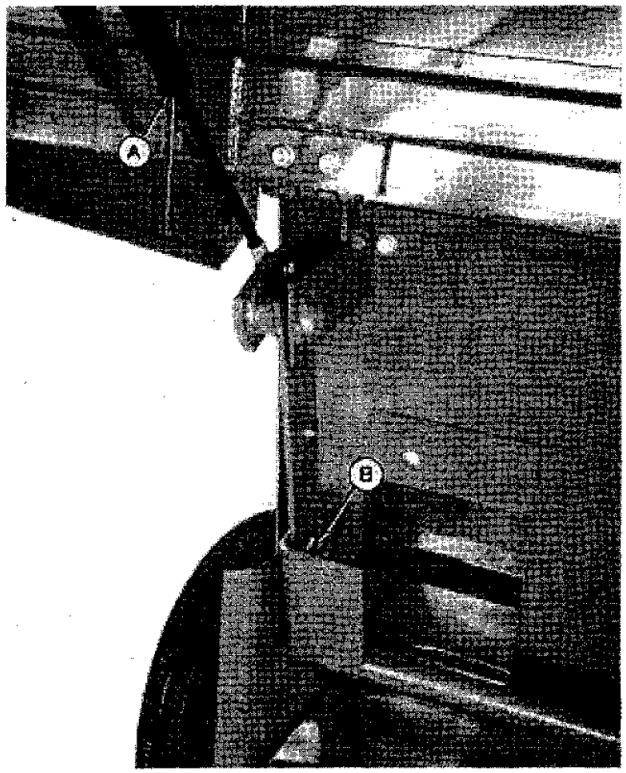
1. Open and support surface wrap cover.

2. Remove gas springs (A) from cover and brake arm.

3. Install cap screw and nut (B) through brake arm and roll plate on both sides of unit.

4. Attach surface wrap to hoist using chain straps (C) at the top of surface wrap unit.

5. Continue to remove the surface wrap unit. (Refer to surface wrap system operator's manual.)



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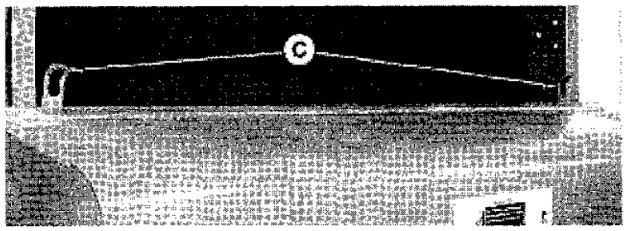

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EX,1472,5105,6 -19-11MAR93

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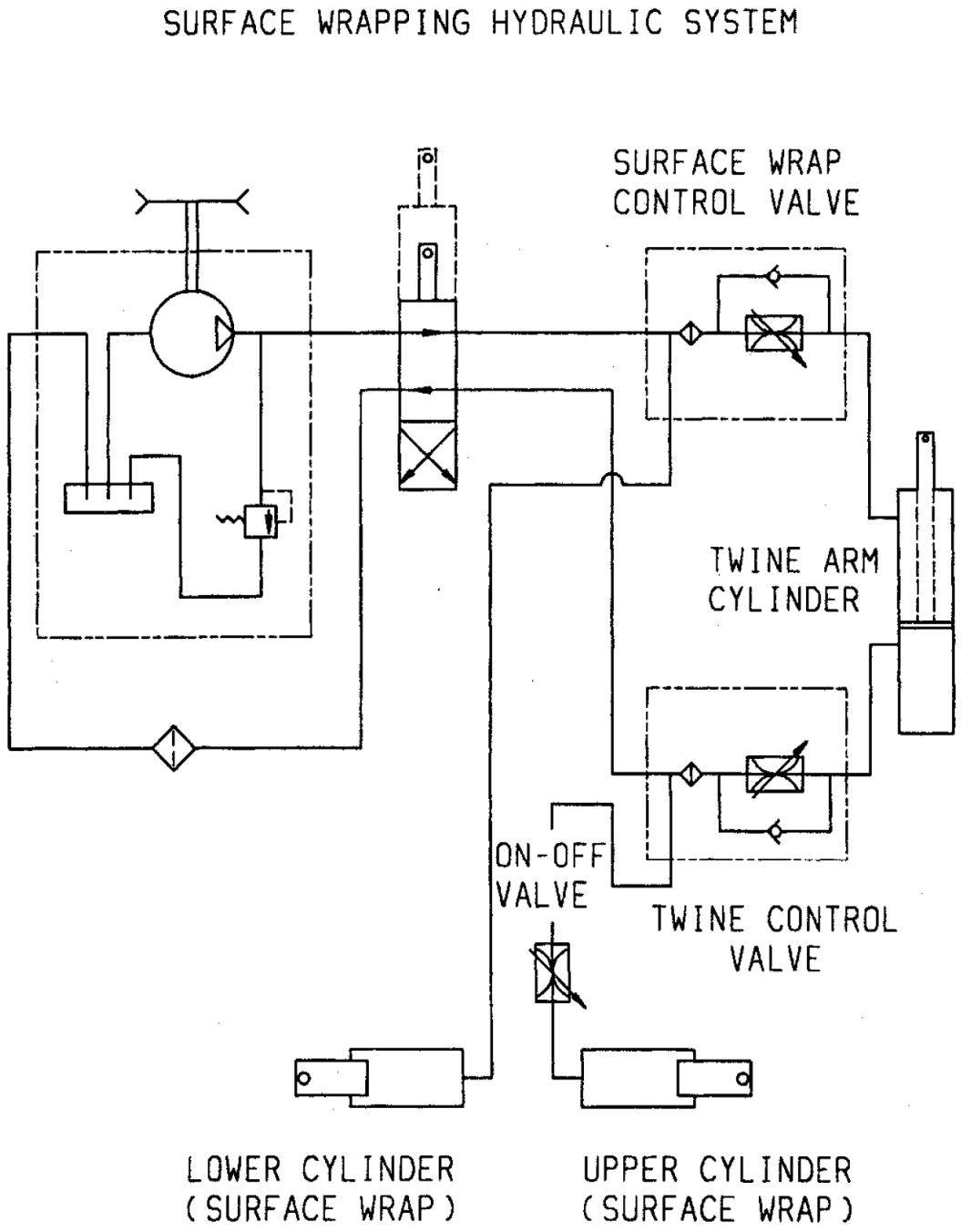
SURFACE WRAPPING HYDRAULIC SYSTEM DIAGRAM



EX,1472,5105,2 -19-11MAR93

HOW THE SURFACE WRAPPING MECHANISM OPERATES

While the bale is being formed, the surface wrapping system is idle. The surface wrapping mechanism is automatically tripped in the same manner as the conventional twin wrapping system.

When the baler is in the surface wrapping mode, both twine and surface wrapping mechanisms operate simultaneously. Although twine arms move when surface wrap is applied, twine will not be applied to the bale because twine is not threaded through twin arm tubes.

When the wrapping cycle begins, oil from the pump flows to the twine arm cylinder, extending the cylinder and moving the twine arm toward the right side of the baler. Oil from the pump also flows to the top surface wrap cylinder, which moves the knife arm rearward, and engages the V-belt, which drives the rubber feed rolls.

While the twine arm is moving from left to right, the surface wrap is fed from the surface wrap roll, through the rubber feed rolls, along the baler belts under the gate, and is picked up by the bale and wrapped around the bale. The number of wraps applied to the bale is determined by the amount of time required for the twine arm to move from left to right.

When the twine arm trips the shifting valve, oil is directed to retract the twine cylinder, returning the twine arm to its home position. Oil is also directed to the lower surface wrap cylinder which moves the knife arm forward, disengaging the V-belt, stopping the rubber feed rolls with the brake, and cutting the surface wrap material.

As the surface wrap material is cut, the knife pushes the material forward against a bar. The bar pivots, moving a microswitch. The switch activates a buzzer and turns on the red light. After the surface wrap is cut, the bar and switch return to their original positions, and the light and buzzer are shut off. The surface wrap material is held by the rubber strike belt and knife pressure until the wrapping mode begins again. The entire cutting process takes approximately 1 second.

EX,1472,5105,3 -19-06NOV95

BALE-TRAK MONITOR OPERATION WITH SURFACE WRAP

The basic function of the monitor is very similar, whether using twine wrap or surface wrap. The function of the green light (gate closed and latched), bale shape gauges, flashing yellow light (bale near full), and solid yellow light (twine arm moving) are the same.

When either wrapping system starts, a short alarm sounds and the flashing yellow light changes to solid yellow. When baling with surface wrap, stop forward travel immediately to ensure surface wrap is on the outside of the bale and will not be partially covered by loose incoming material.

51 05 4

A second alarm will sound and the red light will flash a few seconds after the first alarm. The green light will stay on with this signal.

This indicates the surface wrap has fed onto the bale and has cut off properly. The bale may be ejected immediately.

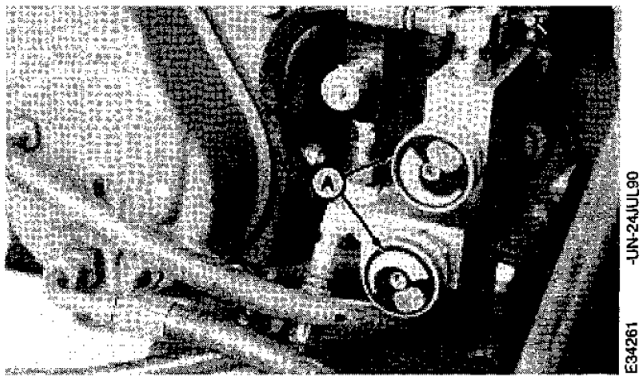
If the second alarm does not sound, there is no wrap on the bale. The surface wrap roll may be empty or surface wrap may have misfed. Investigate cause and wrap bale properly prior to ejection of the bale. (See Troubleshooting section.)

If second alarm and red light stay on (with green light on), surface wrap is not cut off properly. Investigate prior to ejection of the bale. (See Troubleshooting section.)

The red light and alarm (without green light) indicate an oversize bale.

EX,435USJ,C -19-06NOV95

OPERATING SURFACE WRAP SYSTEM WITH EMPTY BALER



NOTE: Use this procedure to observe operation of knife and V-belt idler.

Surface wrapping is a fast process. When system is adjusted for normal operation, the cycle takes only about 5—10 seconds to complete. It may be helpful to slow the process down by turning both flow control knobs (A) clockwise approximately 1 turn each to increase the cycle time for observation.

1. With gate closed, move gate valve to lock position.

2. Raise tension arm fully.

3. Open surface wrap cover for observation of knife and V-belt idler.

CAUTION: Knife will return automatically without warning. Stay clear of all moving parts to avoid personal injury.

IMPORTANT: DO NOT operate baler in this mode for more than one minute. Bale forming belts can be damaged.

4. Engage tractor PTO.

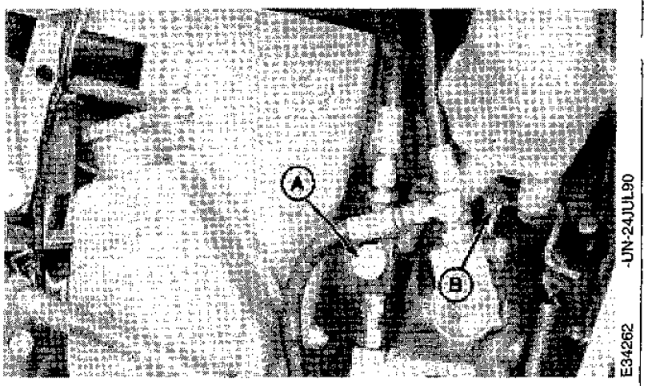
5. Pull manual trip rope to cycle the wrapping system if necessary.

Twine arm and surface wrap knife arms will cycle. Bale forming belts will not turn and V-belt will not turn feed rolls.

6. If flow knobs were turned, turn flow control knobs (A) counterclockwise to original setting.

EX,1472,5105,4 -19-30DEC91

RELEASE KNIFE ARM MANUALLY



NOTE: Knife arm must be released to rotate feed roll manually, service the knife or to check the V-belt.

1. Be sure PTO is disengaged and tractor engine is stopped.

2. Open right baler door to access hydraulic control valves.

3. Open the on-off valve (A) by turning knob fully counterclockwise.

NOTE: If baler tension arm is up, pull and release the trip rope to lift the shift valve spool.

If the tension arm is not high enough to raise the spool fully when trip rope is pulled, lift the spool manually by placing fingers on side of spool and pulling upward for 1—2 seconds as shown in the photograph.

4. The spool in the shifting valve (B) must be in the raised position momentarily to release the oil holding the knife arm forward.

CAUTION: Knife edge is sharp. Wear gloves when handling knife.

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NOTE: If knife arm is pulled back too far, V-belt will be tightened and rolls will not rotate freely.

5. With cover of the surface wrap open, pull the knife back just until the brake is clear of the sheave. The rolls should be free to rotate.

EX,1472,5105,5 -19-25JUN91

TROUBLESHOOTING

Symptom	Problem	Solution
Bale not wrapped (no cut-off signal).	Surface wrap supply roll is empty.	Install new roll.
	On-off valve shut off.	Open valve fully.
	Wrap material incorrectly threaded around yellow bar.	Make sure wrap material is routed between the top drive roll and the yellow bar.
	Surface wrap material wrapped around rubber feed rolls.	IMPORTANT: DO NOT cut surface wrap material from rubber feed rolls. Any knife cuts in the rubber roll covering may result in more frequent wrapping around the rolls and may require roll replacement. Remove material from rolls. See Surface Wrap Material Wrapped Around Rubber Feed Rolls, below in this table.
	Surface wrap material not started between rubber feed rolls.	Route surface wrap material correctly.
	Surface wrap roll installed in baler backwards.	Wrap material must come off the roll towards the front of the baler. Install roll correctly.
	Surface wrap V-belt drive not engaged.	Check for broken, worn, or too long V-belt. (See Check Drive Belt Length, Group 15.) Check for binding at knife arm pivots.
	Twine arm does not cycle normally.	See Automatic Twine Wrap Troubleshooting, Section 40, Group 05. Check for binding at knife arm pivots.
	Broken or weak spring on V-belt idler.	Replace spring.
	Feed roll pressure is too low.	Adjust feed roll pressure. (See Adjust Feed Roll Pressure, Group 15.)
	Roll of surface wrap material is larger than 305 mm (12 in.).	Use 305 mm (12 in.) or smaller diameter roll of surface wrap.
Surface wrap material wrapped around rubber feed rolls.	V-belt on surface wrap drive roll is too tight.	Check belt tension length. (See Check Drive Belt Idler Setting, Group 15.)

Continued on next page

Symptom	Problem	Solution
IMPORTANT: DO NOT cut Surface wrap material from rubber feed rolls. Any knife cuts in the rubber roll covering may result in more frequent wrapping around the rolls and may require roll replacement.	Feed roll pressure adjusted too high.	Adjust feed roll pressure. (See Adjust Feed Roll Pressure in Group 15.)
	Dust and/or moisture on surface of rubber rolls causing material to stick to rolls.	Be sure all sheet metal is in place and in proper alignment. Check cover/hinge seal across top of surface wrap cover for damage. (See Inspect Cover/Hinge Seal, Section 51, Group 15.) Dry rolls if dew or moisture is present. Apply talcum powder (such as part no. A51237) to the rubber rolls. Install wrap material through rolls again.
	Surface wrap material improperly routed, or too much of the end loop started through feed rolls initially.	Route surface wrap material correctly.
	Rubber roll(s) damaged or sticky.	Clean roll(s) by wiping with soap and water and a clean rag. NEVER use solvents. Replace roller if damaged.
	Static electricity or dampness causing surface wrap material to cling to the rolls.	Apply talcum powder (such as part no. A51237) to the rubber rolls.
	Surface wrap material sticky from adhesive used in packaging (tape, glue, etc.).	Remove any sticky material from the supply roll by unrolling, cutting, and discarding.
	Knife not holding the surface wrap material.	See Adjust Knife Arm Stop, Group 15.
	Roll scraper/guide damaged.	Replace scraper and/or roll. (See Section 20, Group 30.)
	Knife installed on top of knife arms, bevel side up, or bolts upside-down.	Position knife and mounting bolts correctly. (See Remove and Install Knife, Group 15.)
Bale not wrapped (cut-off signal does not activate).	Surface wrap material fed to other areas of the baler.	Locate and remove misfed surface wrap material before making the next bale. Otherwise, improper belt tracking and further misfeeding may result if material is not removed promptly and the cause is not corrected.

Continued on next page

Symptom	Problem	Solution
	a) Starter roll wrappage.	Remove all burrs, weld splatters, rough spots, etc. on starter roll. Mud or sticky crop residue can cause occasional starter roll wrappage.
	b) Baler drive roll wrappage.	Do not damage rubber strips on roll when removing misfed material.
	c) Upper idler roll.	In rare occasions misfed material can be found on the upper idler roll.
	d) Surface wrap material caught in rough belt splices. (Material is not transferred from belts to bale during wrapping cycle.)	Be sure bent ends of belt pins are pointing toward smooth side of belt.
		Inspect and repair broken or damaged belt splices or pins.
	e) Surface wrap bunched behind lower belt guide on gate due to crop buildup.	Remove crop buildup from lower gate area. In some crops, reducing PTO rpm while baling will reduce buildup tendency. Ejecting bale with PTO running will reduce buildup in some conditions. (See Baling Short, Dry, Slick Crops in Operating the Baler section of the baler operator's manual.)
		Install Buildup Reduction Kit. (See parts catalog.)
Bale not uniformly wrapped (cut-off signal does activate).	Buildup of crop, dirt, etc. behind lower belt guide on gate.	Remove buildup. In some crops, reducing PTO rpm will reduce buildup tendency. Ejecting bale with PTO running will reduce buildup in some conditions.
		Install Buildup Reduction Kit. (See parts catalog.)
	Insufficient number of wraps.	Check to be sure the surface wrap supply roll is not empty.
		Baler should be set to apply a minimum of two wraps. (Refer to Adjusting Number of Surface Wrap Turns in Operating Baler section of surface wrap operator's manual.)

Continued on next page

Symptom	Problem	Solution
	Belts not tracking properly.	Adjust belt tracking. (See Section 20, Group 30.)
	Surface wrap cover not closed completely.	Cover must be closed and latched for best bale wrapping.
	Surface wrap supply roll is installed in baler backwards.	Wrap material must come off the roll towards the front of the baler. Install material correctly.
	Surface wrap cover gas spring(s) are weak.	Check spring on both sides of cover. Replace if necessary. (See Section 51, Group 15.)
	Roll support brackets damaged or out of adjustment.	See Adjust Roll Support Brackets in Group 15.
		Polish surface scratches on stainless steel strips with crocus cloth or ultra fine sandpaper, 400 grit. Polish marks must be parallel to movement of wrap material.
	Surface wrap not routed under steel guide roll.	Install and route wrap material properly.
	Roll of surface wrap material too narrow.	Use only approved wrap material for best results.
	Surface wrap partially on bale, partially on feed roll or baler roll.	See Bale Not Wrapped (Cut-off Signal Does Activate) in this chart.
	Bale has crop between layers of surface wrap on the bale or loose crop is outside the surface wrap on the bale.	Stop forward travel immediately when the full bale alarm sounds and solid yellow light goes on. Surface wrap begins to feed at that time and any crop picked up after this signal will be placed between the layers of surface wrap or outside the wrapping.
	Weak feedroll springs.	Spring free length should be 22 mm (7/8 in.).
Surface wrap material breaks as it is wrapped on bale.	Too much V-belt idler spring tension.	Adjust V-belt tension. (See Check Drive Belt Tension, Group 15.)
		For 435 units, gas spring may be mounted in hole. For 535 units, mount on the brake arm.
Surface wrap not cut at end of wrapping cycle.	Dull knife.	Sharpen knife. Knife must be very sharp for clean cuts.

Continued on next page

Symptom	Problem	Solution
	Knife arm stop out of adjustment.	Adjust. (See Adjust Knife Arm Stop, Group 15.)
	Brake on drive roll out of adjustment or worn.	Check and adjust brake. (See Check Brake, Group 15.)
	Knife not moving to cutting position freely.	Check for proper lubrication and binding at knife arm pivots.
		Check twine pump pressure. (See Section 40, Group 15.)
	Twine arm not cycling normally.	See Automatic Twine Wrap Troubleshooting, Section 40, Group 05.
	Poor quality surface wrap material.	For best results, use only John Deere approved wrap material.
	Hydraulic lines reversed at surface wrap cylinder or valves.	Refer to Surface Wrap Hydraulic System in Group 05.
	Defective hydraulic lines to surface wrap unit.	Check and replace if necessary.
	Surface wrap cover open.	Cover must be closed for best cut.
Alarm, green light and red light stay on after surface wrap is cut.	Surface wrap microswitch out of adjustment.	Adjust. (See Adjust Microswitch, Group 15.)
	Return spring on cut-off indicator bar for surface wrap microswitch is missing or damaged.	Replace spring.
	Knife arm stop bolt is out of adjustment (surface wrap material is tightly gripped between knife and rubber flap after cut).	Adjust stop bolt. (See Adjust Knife Arm Stop, Group 15.)
	Knife is dull, causing long strings to keep cut-off indicator bar and microswitch activated.	Sharpen knife.
	Binding at cut-off indicator bar for microswitch.	Tighten lock nut and back off 1/4 turn. Check for free movement. Spring must return the switch trip lever.
		Check for bent or damaged parts. Repair or replace as necessary.

Continued on next page

Symptom	Problem	Solution
Brief, intermittent alarm signal when baling or transporting in very rough ground conditions.	Travel speed too high.	Slow travel speed.
	Cut-off microswitch on surface wrap needs adjustment.	Adjust switch. (See Adjust Microswitch in Group 15.)
	Return spring on cut-off indicator bar for surface wrap microswitch is damaged or defective.	Replace spring.
Surface wrap material is loose around bale.	Too many wraps applied.	Normally, no more than three wraps are needed. Excess wraps may appear to be loose.
	V-belt has wrong tension or length, or is damaged.	See Check Drive Belt Length, Group 15. Replace if necessary.
	Spring on V-belt idler arm is weak or damaged.	Replace spring.
	Cover gas spring(s) are weak.	Check and replace springs if necessary.
Varying number of wraps of material from one bale to the next.	Bale size and shape is not uniform.	Tighten loose bale size adjustment knob.
		Make bales uniform in shape. Follow operating instructions in Operating the Baler section of the baler operator's manual.
		NOTE: If wrapping a smaller bale with the manual trip rope, the small bale will have a higher number of wraps unless flow valve is adjusted.
	Varying PTO speed while wrapping from one bale to the next bale.	Maintain rated PTO speed while wrapping. If difficult crop conditions require varying PTO speed while baling, return to rated speed at the "full bale" alarm.
	Flow valve lock ring is loose.	After adjusting flow valves for setting the number of wraps, tighten lock ring.
	Low oil in twine pump.	Check oil level. (See Section 40, Group 15.)
	Change in ambient air temperature from previous baling operation.	If air temperature is greatly different from last wrap adjustment, flow valve may need to be adjusted again.

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Symptom	Problem	Solution
	Dirt in the hydraulic system.	Cycle system with both flow valves fully open to move dirt into filters. Change or clean filters in flow control valves. (See procedure, Group 15.)
Surface wrap is split around bale or stays behind the pickup.	Buildup of crop stems, etc. in lower gate belt guide area.	Remove buildup. In some crops, reducing PTO rpm will reduce buildup tendency. Ejecting bale with PTO running will reduce buildup in some conditions. Install Buildup Reduction Kit. (See parts catalog.)
	Insufficient clearance between ends of lower belt guide straps and crossmember of surface wrap lower guide.	Check for clearance of 2—4 mm (3/32—5/32 in.) between all straps and guide. Adjust as necessary. (See Remove and Install Lower Gate Roll—Surface Wrap Option in Section 20, Group 30.)
	End or corner of guide channel(s) bent upward into baler belts.	Straighten damaged end or replace part.
	Material snagging on splices or pins.	Be sure end of belt pins are toward smooth side of belt.
	Extremely stemmy crops cause splitting or snagging.	Use more wraps of surface wrap material. Install Buildup reduction Kit. (See parts catalog.)
Bale wrapped normally, but cut-off signal does not activate.	Surface wrap microswitch requires adjustment.	Adjust. (See Adjust Microswitch, Group 15.)
	Gate latch need adjustment. (Green light goes out while baling.)	Adjust gate latch. (See adjusting Gate Latch Stop and Adjusting Gate Latch Switch (Green Light) in the Service section of the baler operator's manual.) Be sure green light is on before starting a bale.
	Right or left gate latch microswitch is out of adjustment or has failed (green light not on).	Adjust or replace microswitch. (See Adjust Gate Latch Switches (Green Light), Section 60, Group 20.)
	Knife arm stop not adjusted properly.	Adjust knife arm stop. (See Adjust Knife Arm Stop, Group 15.)

Continued on next page

Symptom	Problem	Solution
	Wrong return spring on cut-off indicator bar (surface wrap microswitch lever).	Replace with correct spring.
	Cut-off indicator bar binding on pivot bolts.	Check for bent or damaged parts. Repair or replace as necessary.
	Cut-off switch is out of adjustment or defective.	Check and adjust cut-off microswitch. (See Group 15.)
	Wire connections unplugged, corroded, or dirty.	Inspect connections of surface wrap harness to oversize bale switch and to surface wrap microswitch.
Cover does not stay open.	Gas spring(s) are weak.	Replace gas spring(s).
Surface wrap feed rolls damaged with grooves in rubber or excessive heat.	Yellow stop bar or lower stripper brackets rubbing against feed rolls.	Adjust yellow stop bar or stripper brackets away from feed rolls approximately 3 mm (1/8 in.).
	Roll bearings worn or seized.	Replace roll bearings.

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SPECIFICATIONS

Item	Measurement	Specification
Knife Mounting Nuts	Torque	55 N·m (40 lb-ft)
Initial Setting of Knife Stop	Length	21 mm (13/16 in.)
Drive Roll Brake	Distance between knife stop cap screw and knife arm	4 mm (5/32 in.)
Feed Roll Pressure	Spring Length	20.5 mm (25/32 in.)
Drive Belt Length	Distance from knife edge to front corner of rear guide	10 mm (13/32 in.) minimum
Wrap Material Roll Support Bracket Contact Point	Distance from side panel	102—152 mm (4—6 in.)
Rubber Strike Belt Extension	Length exposed beyond lower edge of clamp angle	25 ± 2 mm (0.98 ± 0.08 in.)
Rubber Strike Belt Nuts	Torque	7.9 N·m (70 lb-in.)

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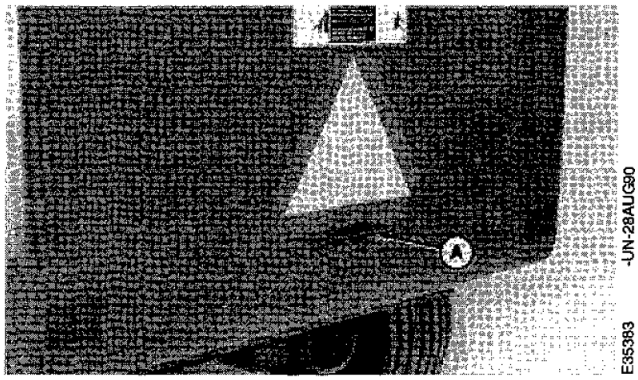
REMOVE AND INSTALL KNIFE

1. Pull handle (A) out and raise surface wrap cover.
2. Disconnect spring from right knife arm.
3. Manually move knife arm rearward. (See Release Knife Arm Manually in Group 05.)



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CAUTION: Knife is sharp. Use gloves when handling knife.

4. Remove bolts (A) and nuts on each end of knife (B). Remove knife from knife arms (C).

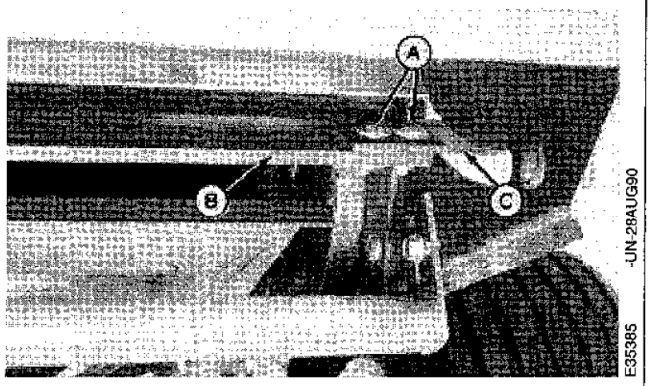
5. Install knife (B) with the beveled surface down and knife under the knife arms (C).

IMPORTANT: Round heads of bolts MUST be up. This will prevent tears in surface wrap material by the knife hardware.

6. Install bolts (A) and nuts. Tighten nuts to 55 N·m (40 lb-ft).

7. Move knife arm forward. Connect spring to right knife arm.

8. If new knife has been installed or knife was sharpened, check and adjust knife arm stop and brake. (See procedures in this group.)



EX,1472,5115,3 -19-06NOV95

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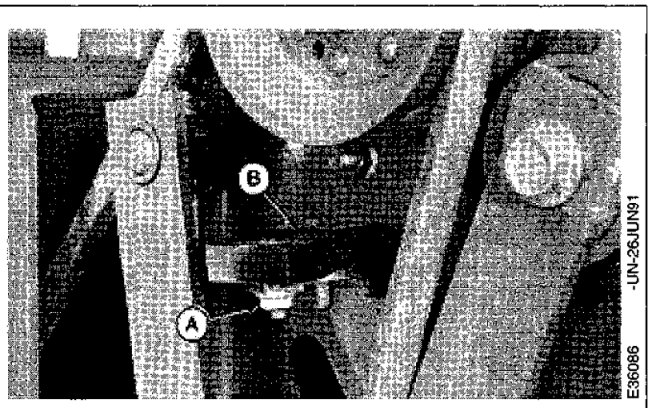
ADJUST KNIFE ARM STOP

1. Remove nut (A) to remove rubber brake pad (B) and washers (if used).



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2. Push the knife arm (A) forward until arm contacts the stop bolt (B).

CAUTION: Knife is sharp. Use care when working around the knife.

NOTE: Knife may not contact belt over the entire length of the belt. Gaps may appear. This is due to natural waviness of the rubber strike belt.

3. Check that the front edge of the knife contacts the rubber strike belt but does not deflect the belt when the arm is against the stop bolt. The initial factory setting for the stop bolt length (C) is approximately 21 mm (13/16 in.).

NOTE: If light contact is not made, cut-off signal stays on, or cut-off signal is erratic or not activated, perform steps 3—5.

4. Manually release knife arm. (See Release Knife Arm Manually in Group 05.)

5. Adjust the stop position as required by loosening jam nut (D) and adjusting bolt (B) until light knife contact is made (knife contacts rubber strike belt but does not deflect belt).

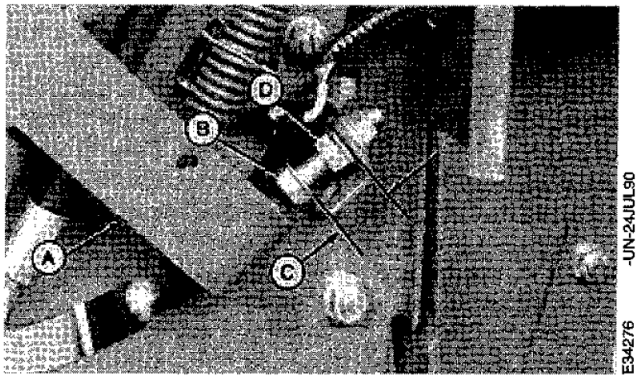
NOTE: If the knife contacts the rubber flap too hard, it may cause the upper drive roll to wrap, or knife may clamp the wrap material after it is cut and cause the cut-off signal (buzzer, red light and green light) to stay on. If cut-off signal stays on, lengthen bolt (B) 1/2 turn at a time.

If the knife does not move far enough forward,the surface wrap material may not cut off, the cut-off signal may not come on and/or cut end of material may tend to wrap around the rubber rolls when the next wrapping cycle starts. If cut-off signal is not heard or is erratic, shorten bolt (B) 1/2 turn at a time.

6. Tighten jam nut (D).

7. Install rubber brake pad, washers, and nuts.

8. Adjust drive roll brake. (See procedure in this group)



A—Knife Arm
B—Stop Bolt
C—21 mm (13/16 in.) Initial Setting
D—Jam Nut

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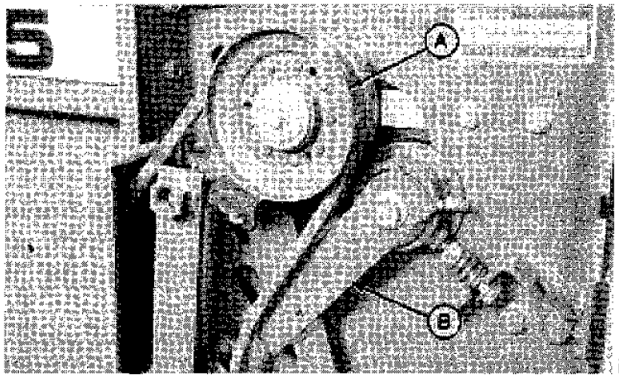
CHECK BRAKE

1. Check that surface wrap roll (A) will not rotate by hand when knife arm (B) is in its most forward position.

2. Manually release knife arm. (See Releasing Knife Arm Manually in Operating Baler with Surface Wrap section.)

3. Brake must be completely disengaged when knife arm is swung back and belt is tightened.



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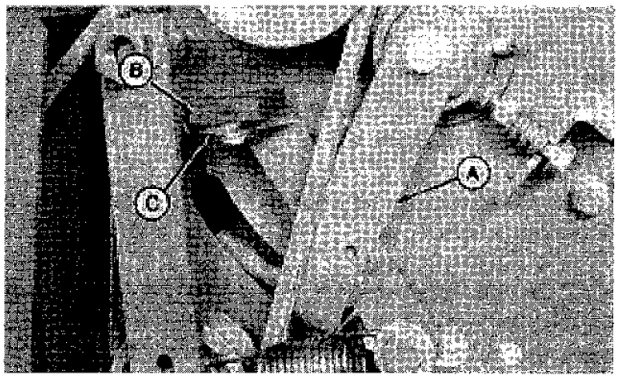
4. When knife contacts stop bolt, brake (B) must be deformed by roll 1 to 2 mm (0.030 to 0.080-in.) (D).

If adjustment is required, pull knife arm (A) back. Install (or remove) washers as necessary, between rubber brake (B) and bracket (C).

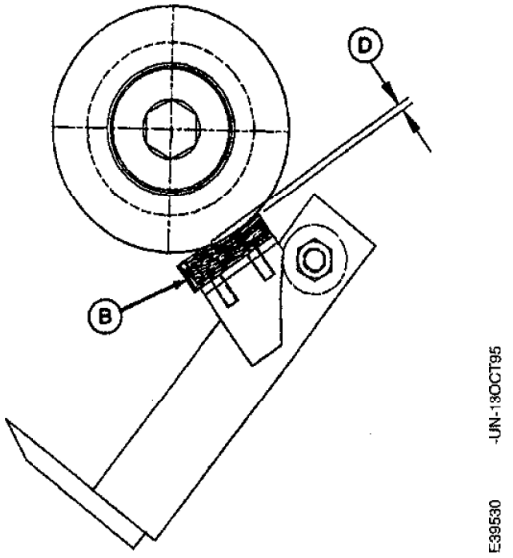
NOTE: If worn, rubber brake pad can be reversed.

5. Check brake adjustment as described in steps 1 through 3.

6. Push knife arm forward.



A—Knife Arm
B—Rubber Brake
C—Bracket
D—1 to 2 mm (0.030 to 0.080-in.)



EX,1472,5015,AC-19-06NOV95

CHECK AND ADJUST MICROSWITCH

1. Open surface wrap cover.

2. Check switch lever (A) on right side of surface wrap to make sure switch lever pivots freely. Lever must return freely under spring force.

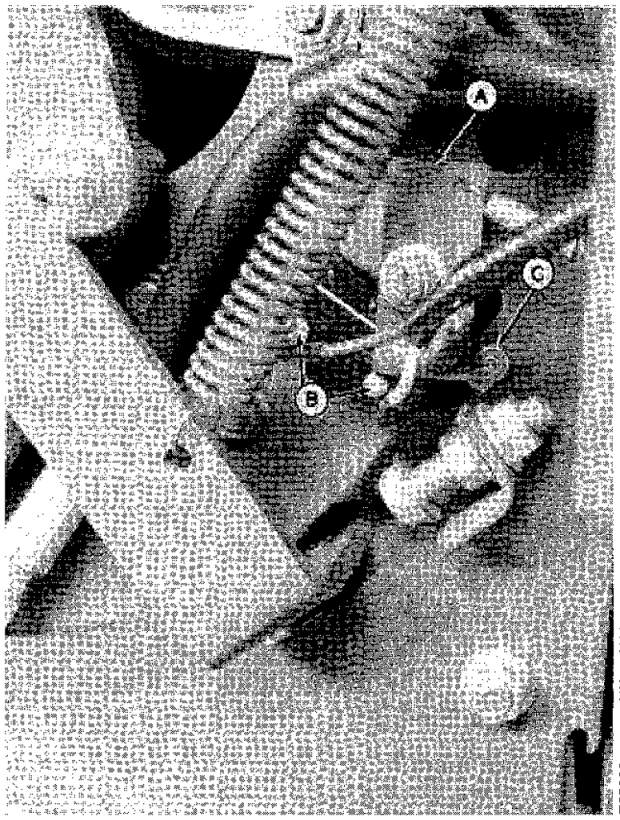
3. With baler connected to tractor, turn tractor switch on and make sure gate latches are closed (green light on).

4. Move switch arm (C) down. Alarm must sound and red light must be on.

5. If microswitch functions properly when switch lever is moved, an adjustment of microswitch position is necessary:

   - Loosen screws (B).
   - Move switch until switch lever (C) is fully compressed and switch is activated by pin on cut-off indicator bar.
   - Tighten screws (B).

6. Close surface wrap cover.



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EX,1472,5115,5 -19-11MAR93

REMOVE AND INSTALL SMALL STEEL ROLLER

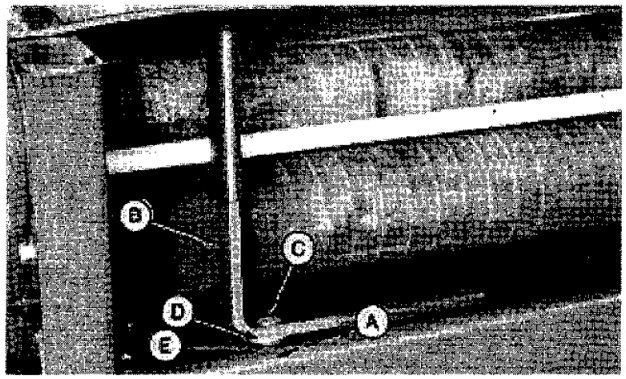
1. Open surface wrap cover.

NOTE: Steel roller (F) is located in front of upper drive roll.

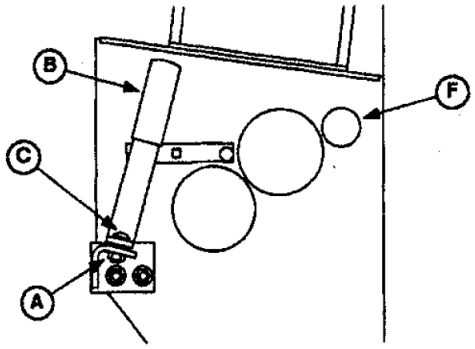
At least one surface wrap loading bracket must be removed to allow clearance for removal of small steel roller.

2. Remove nut (A) to remove loading bracket (B), bolt (C), washer (D), and belville washer (E).

A—Nut
B—Surface Wrap Loading Bracket
C—Bolt
D—Flat Washer
E—Belville Washer
F—Small Steel Roller



E36070 -UN-29MAY91



E36087A -UN-26JUN91

EX,1472,5115,6 -19-11MAR93

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IMPORTANT: Do not cut, snag, or damage surface of rubber rolls. Damage to surface can cause wrap material to stick and wrap around rubber feed rolls.

NOTE: Put a string or wire around small steel roller to assist in removing and installing roller.

3. Loosen nut (A) on both ends of roller (C).

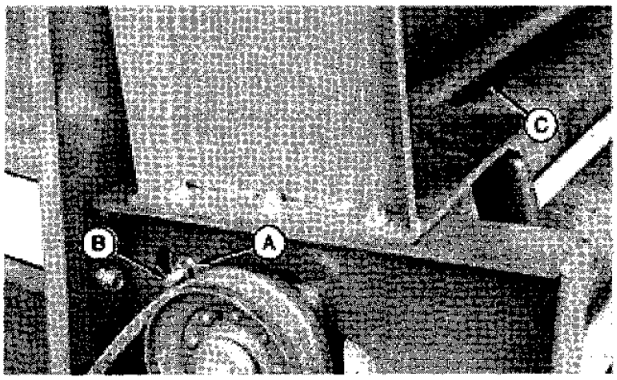
4. Slide end of roller forward and remove nut (A) with cap screw (B) from each end to remove small steel roller (C).

5. Repair or replace roller and bearings as necessary.

NOTE: If shims are used, shims must be installed through hole of side plate under head of cap screw.

6. While holding roller (C) in position, install hex head of cap screw (B) through large hole of side plate and into roller bearing. Repeat step for other end of roller.

7. Move roller rearward and tighten both nuts (A).

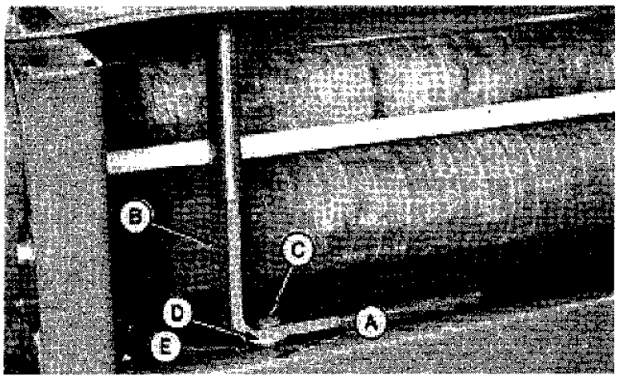


EX,1472,5115,7 -19-30DEC91

8. Install bracket (B), bolt (C), flat washer (D), and belville washer (E). Make sure the center raised portion of the belville washer is installed toward the bracket.

9. Install and tighten nut (A).

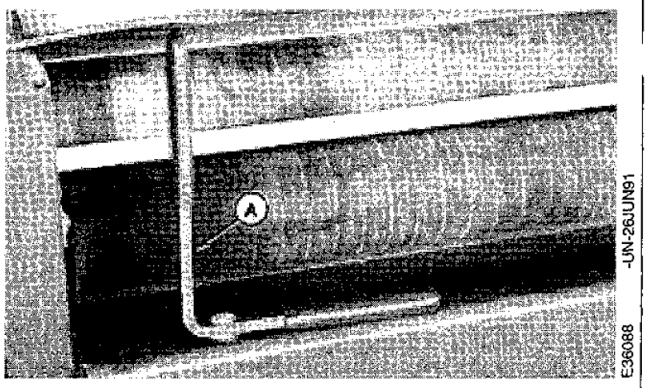
A—Nut
B—Surface Wrap Loading Bracket
C—Bolt
D—Flat Washer
E—Belville Washer



EX,1472,5115,8 -19-29MAY91

REMOVE AND INSTALL LOWER FEED ROLL

1. Remove at least one surface wrap loading bracket (A) to allow for clearance to remove lower feed roll.



EX,1472,5115,8A-19-11MAR93

CAUTION: Knife is sharp. Use gloves when handling knife.

2. Remove knife. (See procedure in this group.)

3. Disconnect spring (A) from right knife arm (B).

4. Turn pressure adjusting nut (C) to release spring and feed roll pressure. Repeat step for opposite end of roll.

5. Remove cap screw (D) and pull right knife arm (B) from feed roll.

6. Remove large washer (E) and right saddle/adjuster assembly (F).

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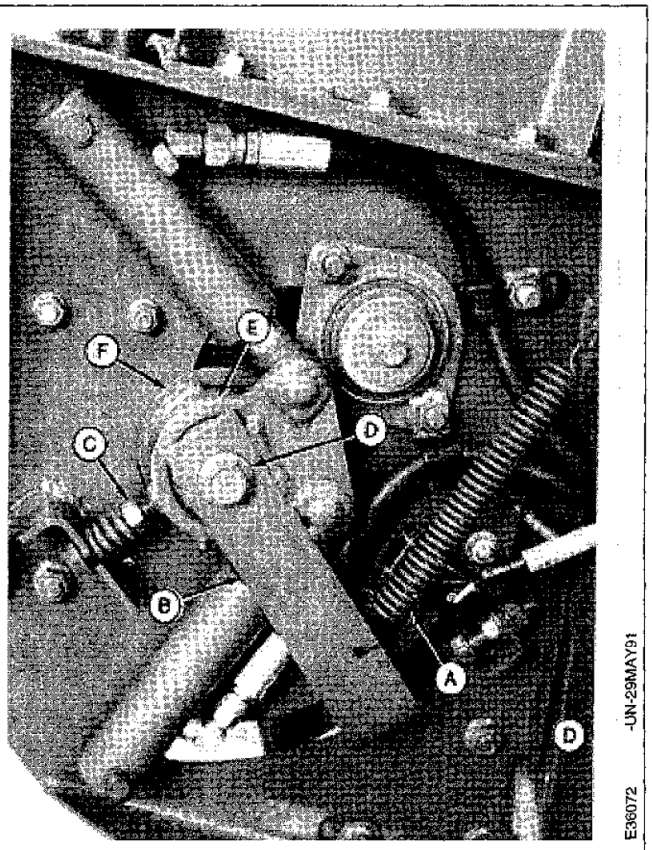
A—Spring
B—Right Knife Arm
C—Pressure Adjusting Nut
D—Cap Screw
E—Large Washer
F—Right Saddle/Adjuster Assembly



EX,1472,5115,9 -19-25JUN91

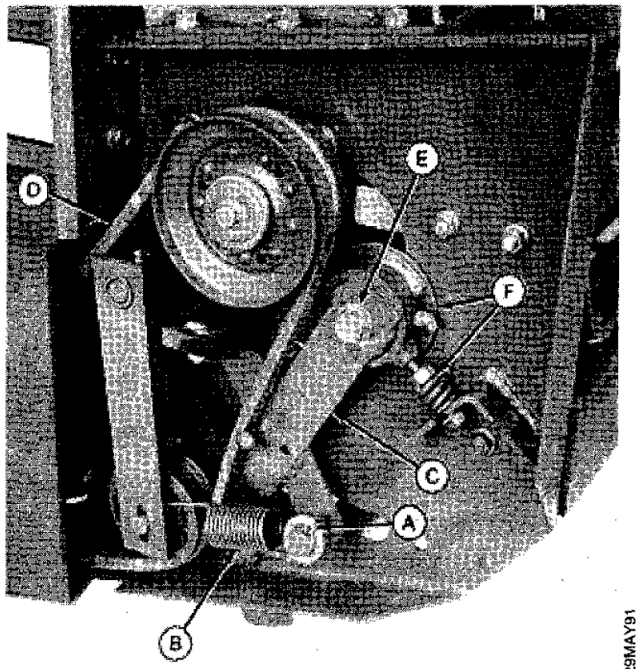
7. Remove cotter pin (A) and washer to remove idler spring (B) from left knife arm (C).

8. Remove drive belt (D) from drive roll sheave.

9. Remove cap screw (E) and pull left knife arm (C) from feed roll.

10. Remove left saddle/adjuster assembly (F).

A—Cotter Pin
B—Idler Spring
C—Left Knife Arm
D—Drive Belt
E—Cap Screw
F—Left Saddle/Adjuster Assembly



-UN-29MAY91
E36073

EX,1472,5115,10-19-25JUN91

IMPORTANT: Do not cut, snag, or damage surface of rubber rolls. Damage to surface can cause wrap material to stick and wrap around rubber feed rolls.

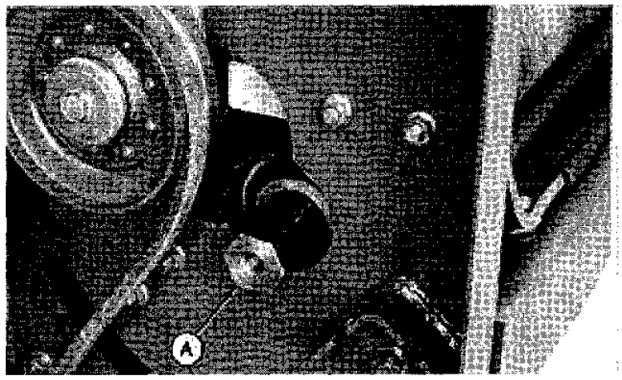
11. Support feed roll. Using a soft mallet, push feed roll shaft (A) into roll until end of the shaft is inside of the side plate.

12. Remove roll from baler.

13. Replace bearings in roll if necessary. (See procedure in this group.)

14. Install shaft in roll until one end of shaft is flush with the end of bearing.

15. Install feed roll into baler with extended shaft end of roll in first. Use a soft mallet to center the feed roll shaft.



-UN-29MAY91
E36074

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EX,1472,5115,11-19-25JUN91

IMPORTANT: Make sure saddle is in cut-out of side sheet and welded flange of saddle is against side sheet. Damage to side sheet can occur if saddle is not installed fully into cut-out.

16. Install left saddle/adjuster assembly (F).

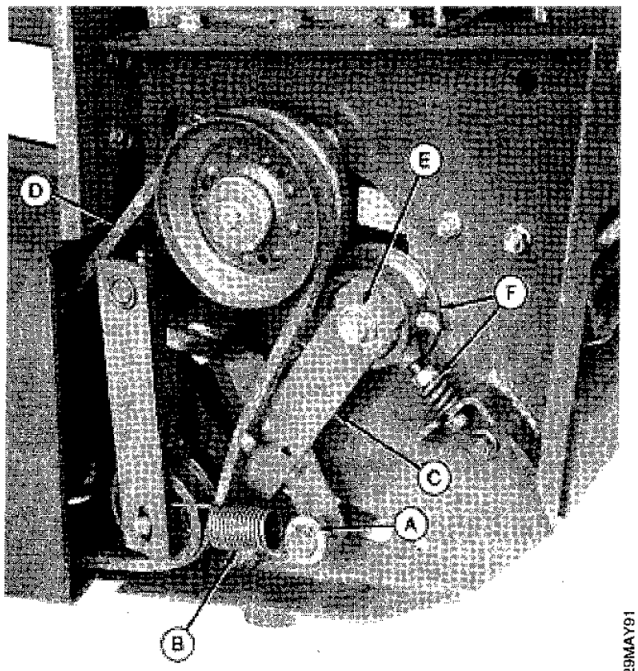
17. Apply multipurpose grease to outer diameter of pivot on left knife arm. Install left knife arm (C).

18. Install and tighten cap screw (E).

19. Put drive belt (D) on drive roll sheave.

20. Connect idler spring (B) to left knife arm. Fasten spring using washer and cotter pin (A).

A—Cotter Pin
B—Idler Spring
C—Left Knife Arm
D—Drive Belt
E—Cap Screw
F—Left Saddle/Adjuster Assembly



E36073 -UN-29MAY91

EX,1472,5115,12-19-25JUN91

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IMPORTANT: Make sure saddle is in cut-out of side sheet and welded flange of saddle is against side sheet. Damage to side sheet can occur if saddle is not installed fully into cut-out.

21. Install right saddle/adjuster assembly (F) and large washer (E).

IMPORTANT: Right and left knife arms must be installed on the hex shaft in the same position. If not, knife can not be installed.

22. Apply multipurpose grease to outer diameter of pivot on right knife arm (B). Install right knife arm, making sure pins of arm fit into cylinder rods.

23. Install and tighten cap screw (D).

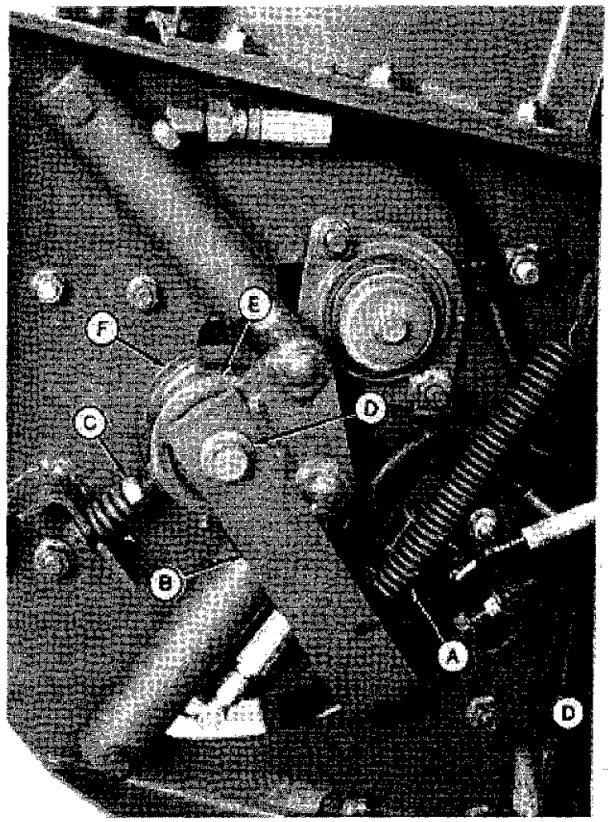
24. Install knife. (See procedure in this group.)

25. Connect spring (A) to right knife arm.

26. Apply multipurpose grease to knife arm lubrication fittings.

27. Adjust feed roll pressure. (See procedure in this group.)

28. Check and adjust stop bar clearance. There must be 3 mm (1/8 in.) clearance between yellow stop bar and each rubber roll.



A—Spring
B—Right Knife Arm
C—Pressure Adjusting Nut
D—Cap Screw
E—Large Washer
F—Right Saddle/Adjuster Assembly

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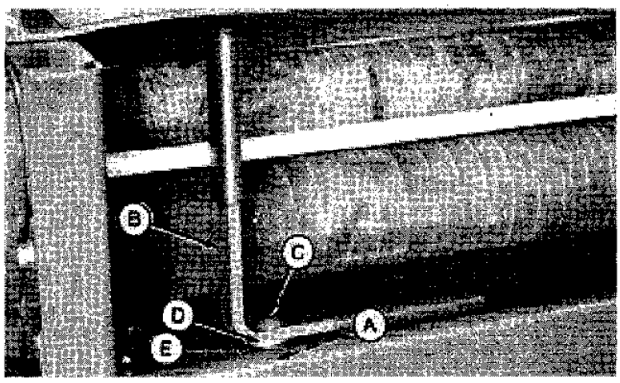
EX,1472,5115,13-19-25JUN91

29. Install bracket (B), bolt (C), flat washer (D), and belville washer (E). Make sure the center raised portion of the belville washer is installed toward the bracket.

30. Install and tighten nut (A).

A—Nut
B—Surface Wrap Loading Bracket
C—Bolt
D—Flat Washer
E—Belville Washer



EX,1472,511513A-19-25JUN91

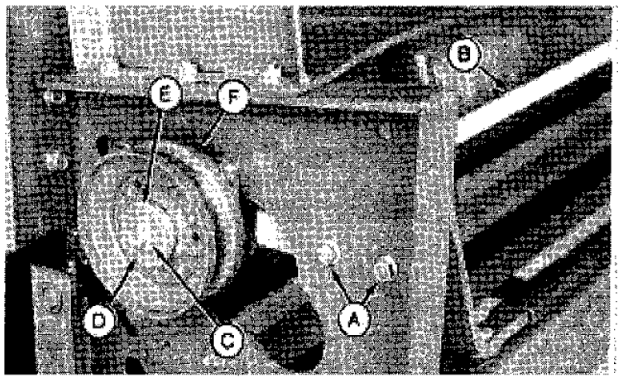
REMOVE AND INSTALL UPPER DRIVE ROLL

1. Remove lower feed roll. (See procedure in this group.)

2. Remove two bolts and nuts (A) from each end of yellow stop bar (B). Remove bar.

3. Remove cap screw (C), washer (D), spacers (E), and sheave (F) from left side of surface wrap.

A—Bolt and Nut (4 used)
B—Stop Bar
C—Cap Screw
D—Washer
E—Shims (as required)
F—Drive Roll Sheave

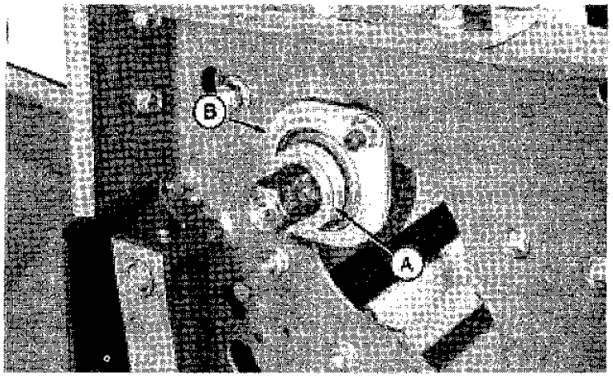


E36075 -UN-29MAY91

EX,1472,5115,14-19-11MAR93

4. Remove shims (A). Note quantity for reinstallation.

5. Remove two nuts to remove bearing flangettes (B) and bearing.



E36076 -UN-29MAY91

EX,1472,5115,15-19-10JUL91

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6. Remove cap screw (A), washer (B), and shims (C) from right side of surface wrap. Note quantity of shims.

7. Remove two nuts to remove bearing flangettes (D) and bearing.

IMPORTANT: Do not cut, snag, or damage surface of rubber rolls. Damage to surface can cause wrap material to stick and wrap around rubber feed rolls.

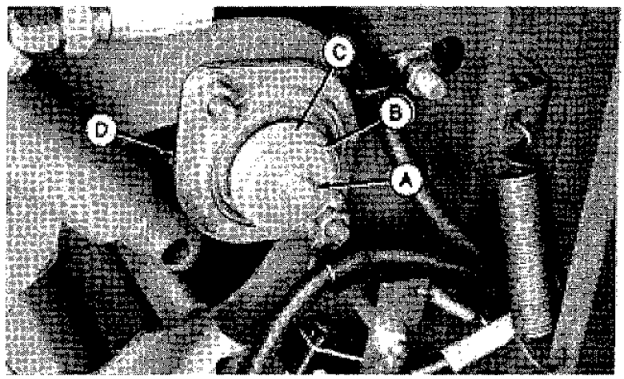
8. Remove drive roll through larger opening in side plate. Replace drive roll if worn, bent, or damaged.

9. Install drive roll in surface wrap unit. Put the end with the longer shaft extension on the left side. Center roll between side plates.

NOTE: Hose clamp for lower hydraulic hose is installed under lower bearing flangette nut.

10. Install the bearing flangettes (D) and bearing. Install and tighten nuts.

11. With upper drive roll centered between sidesheets, install as many shims (C) as necessary, washer (B), and cap screw (A). Tighten cap screw.



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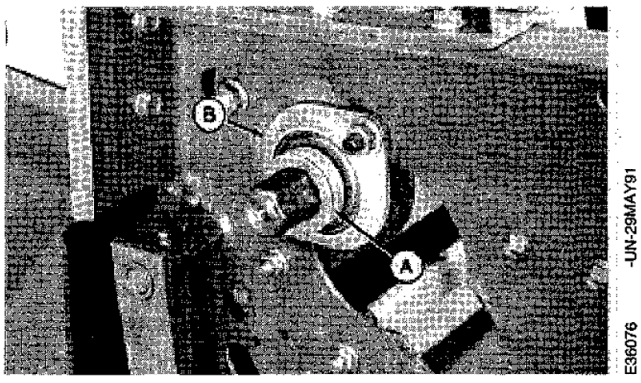
EX,1472,5115,16-19-06NOV95

12. Install bearing flangettes (B) and bearing. Install and tighten nuts.

13. Install enough shims (A) so that when sheave is installed, sheave is aligned with belt groove in lower rear gate roll.



EX,1472,5115,17-19-25JUN91

14. Install sheave (F), shims (E), washer (D), and cap screw (C). Tighten cap screw.

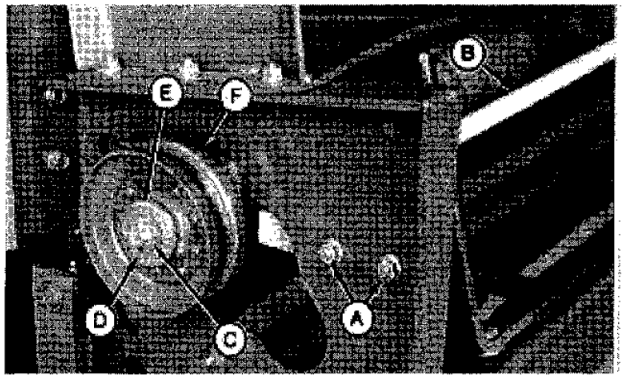
15. Check upper drive roll end play. Turn shims (E) on both ends of roll using your fingers.

- If shims do not turn, end play is too tight. Remove shim and check again.
- If shims turn but fit loosely on shaft, end play is too loose. Add shim and check again.

16. Install feed roll. (See procedure in this group.)

17. Install stop bar (B) and bolts and nuts (A). Head of bolt must be towards inside of surface wrap unit.

18. Check and adjust stop bar so there is 3 mm (1/8 in.) clearance between stop bar and each rubber roll.



E36075 -UN-29MAY91

A—Bolt and Nut (4 used)
B—Stop Bar
C—Cap Screw
D—Washer
E—Shims (as required)
F—Drive Roll Sheave

EX,1472,5115,18-19-21JAN92

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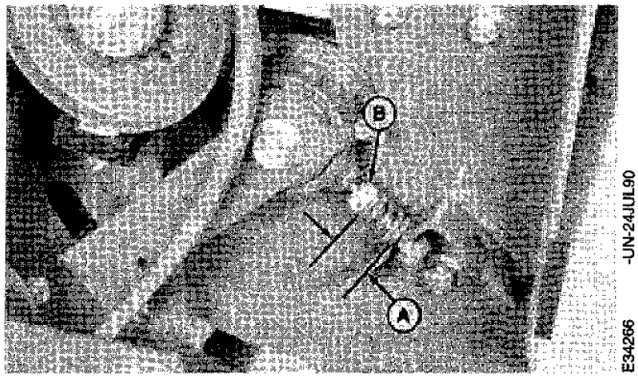
ADJUST FEED ROLL PRESSURE



NOTE: Too much pressure can cause surface wrap material to wrap on rubber rolls. A lack of pressure will prevent surface wrap from being fed to the bale or may cause poor application of surface wrap material on the bale.

1. Release knife arm manually. (See Release Knife Arm Manually in Group 05.)

2. Open surface wrap cover.

3. Remove any foreign material of surface wrap from between the rolls.

IMPORTANT: Make sure brake pad does not contact drive sheave and V-belt is not tensioned. These forces can cause an incorrect roll pressure adjustment.

4. Turn adjusting nut (B) until spring length (A) of 20.5 mm (25/32 in.) is obtained.

5. Repeat step 4 for other side of surface wrap unit.

NOTE: When knife arm brake is actuated by hydraulic pressure, it is normal for rolls to be slightly separated on one end.

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EX,1472,5115,19-19-11MAR93

REPLACE SURFACE WRAP BEARINGS

Bearings in the surface wrap unit are similar to bearings used in the baler. Refer to Section 20, Group 30 for general bearing replacement.

EX,1472,511520A-19-11MAR93

CHECK DRIVE BELT IDLER SETTING

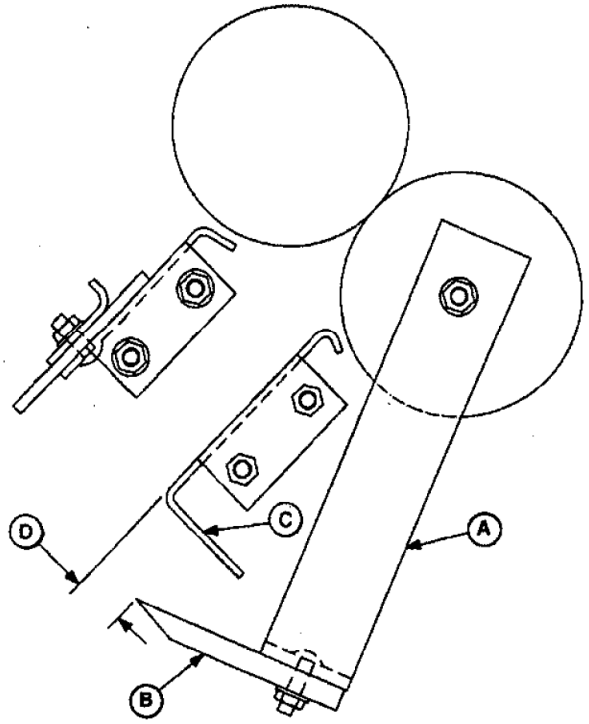
1. Move knife arm manually. (See Release Knife Arm Manually in Group 05.)

2. Pull knife arm (A) back until belt is just tight, coils of idler spring are separated slightly. Cutting edge of knife (B) should be a distance (D) of 10 mm (13/32 in.) minimum behind the corner of the stripper bracket (C).

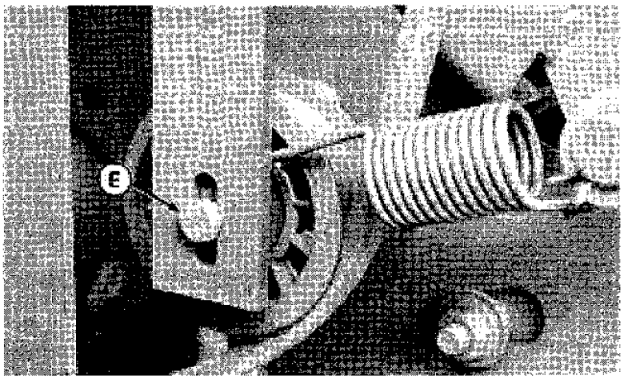
3. If drive belt is slipping or is too tight and causing wrappage around rubber rolls, loosen cap screw and nut (E). Adjust idler pulley in slot to obtain correct knife position (D). Tighten cap screw and nut.

4. If idler cannot be adjusted to give the correct knife position, replace the drive belt.

A—Knife Arm
B—Knife
C—Rear Stripper Bracket
D—10 mm (13/32 in.) Minimum
E—Cap Screw and Nut



E36079A -UN-29MAY91



E36092 -UN-26JUN91

EX,1472,5115,25-19-11MAR93

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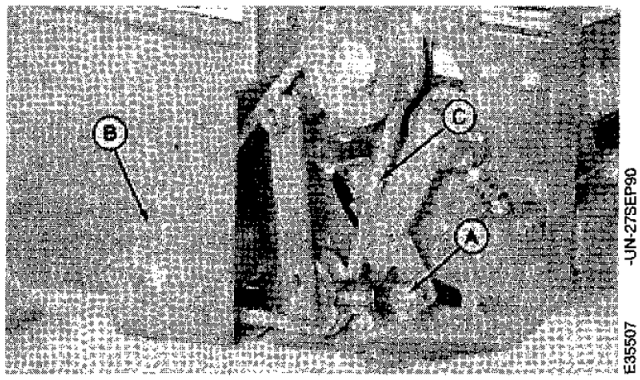
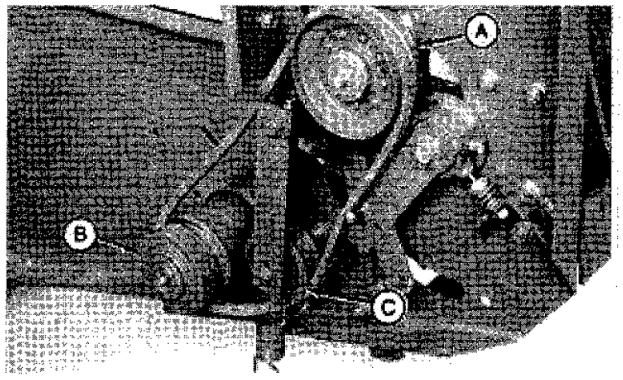
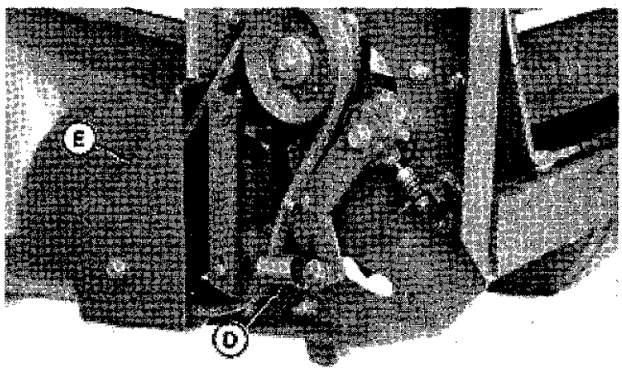
REMOVE AND INSTALL DRIVE BELT



1. Move gate valve to lock position.
2. Raise tension arm to release forming belts tension using tractor hydraulics.
3. Stop tractor engine.
4. Manually release knife arm. (See Release Knife Arm Manually in Group 05.)
5. Remove cotter pin (A) and washer.
6. Remove gate roll support (B).
7. Remove belt (C) from drive roll sheave and gate roll sheave.

EX,1472,5115,26-19-11MAR93





8. Install new belt around gate roll sheave (B), drive roll sheave (A), and idler (C).
9. Connect spring (D) to left knife arm. Secure with washer and cotter pin.
10. Install gate roll support (E).
11. Check for clearance between gate roll and side sheet.
12. Check for correct position of knife edge. (See Check Drive Belt Idler Setting in this group.)
13. Manually move knife arm to forward position.
14. Lower tension arm.
15. Move gate valve to unlock position.
16. Check belt tracking. (See Section 20, Group 30.)

A—Drive Roll Sheave
B—Gate Roll Sheave
C—Idler
D—Spring
E—Gate Roll Support

EX,1472,5115,27-19-10JUL91

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REMOVE AND INSTALL DRIVE BELT IDLER ARM

1. Remove cotter pin (A) and washer. Remove idler spring from knife arm.

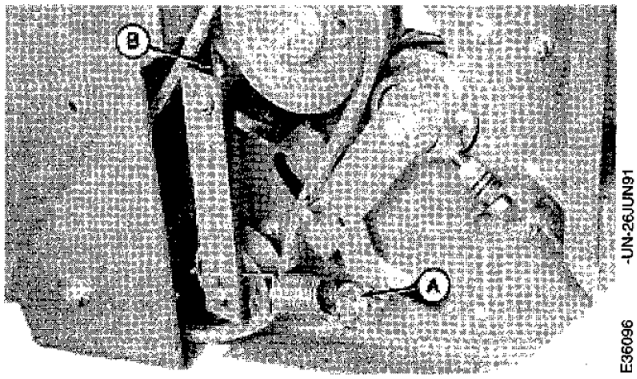
2. Remove grease fitting (B). Slide idler arm assembly from shaft. Repair or replace parts as necessary.

3. Slide idler arm assembly on shaft.

4. Install and tighten grease fitting (B). Make sure grease fitting fits into groove of shaft.

5. Connect idler spring and secure with washer and cotter pin (A).

6. Apply multipurpose grease to idler arm grease fitting (B).



EX,1472,5115,28-19-11MAR93

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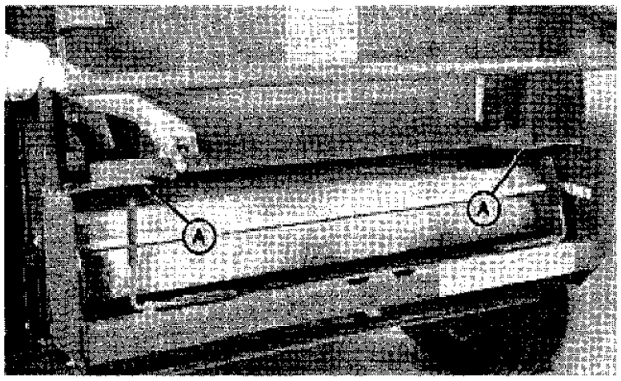
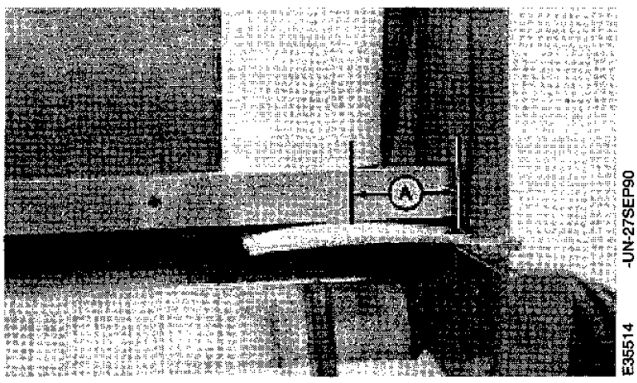
ADJUST ROLL SUPPORT BRACKETS

1. Place straight edge across both support brackets (A). Be sure straight edge is long enough to contact both support brackets.



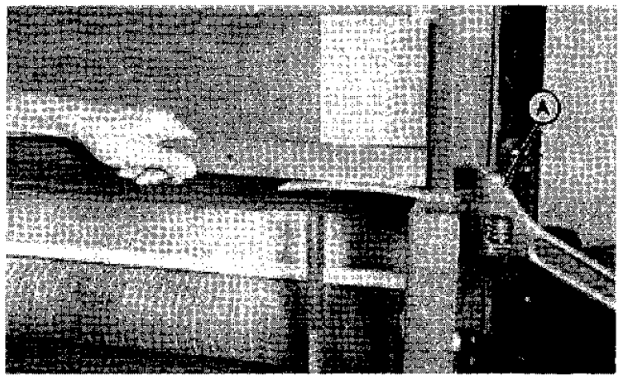
EX,1472,5115,29-19-11MAR93

2. Make sure contact area between the straight edge and support brackets is 102—152 mm (4—6 in.) (A) from each side panel.



EX,1472,5115,30-19-06NOV95

3. If adjustment is necessary, put an adjustable wrench (A) on outside edge of bracket. Move bracket using wrench until contact area is to specification.



EX,1472,5115,31-19-25JUN91

REMOVE DIRT FROM SURFACE WRAP FLOW CONTROL VALVE

NOTE: To service twine flow control valve refer to Section 40, Group 15.

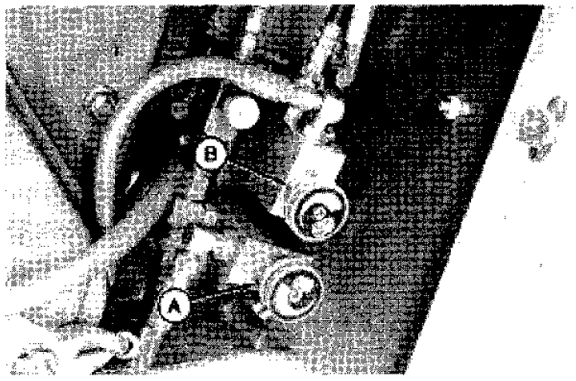
To remove dirt trapped in the flow control valve or the hydraulic line between it and the lower hydraulic cylinder, use the following procedure:

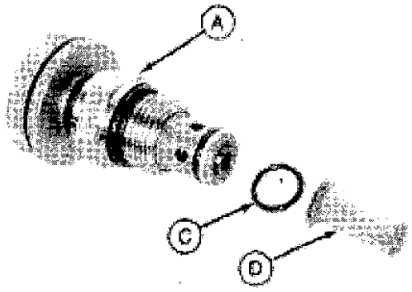
1. Remove cartridge (B) from flow control valve.

2. Carefully remove O-ring (C) and screen filter (D). Clean filter in solvent and dry.

3. With tractor SCV lever, raise gate and belt tension arm fully. Lock gate.

4. Engage PTO momentarily to flush hydraulic line (oil will come out of port where cartridge was removed). Shut off tractor.





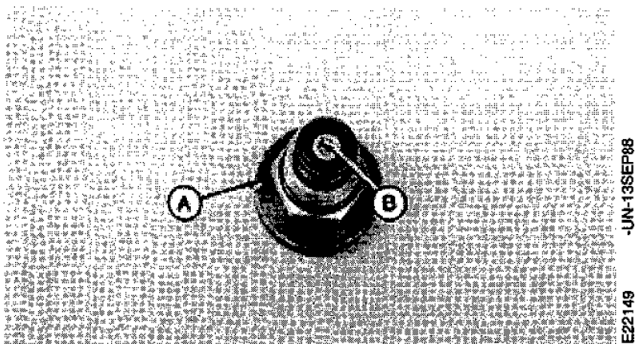
EX,1472,5115,60-19-24FEB92

5. Clean cartridge in solvent and use compressed air to clean slot (B) in piston.

6. Install filter, O-ring and flow control valve cartridge. Unlock gate.

7. Check oil level in pump. Fill to proper level.

8. Start tractor and engage PTO. Twine arm should move to right side of baler then return to home position. Close gate.



EX,1472,5115,61-19-30DEC91

REPLACE SURFACE WRAP KNIFE CYLINDERS

CAUTION: Knife is sharp. Use care when working with knife.

1. Remove knife. (See procedure in this group.)

2. Disconnect spring (A) from right knife arm (B).

3. Turn nut (C) to release feed roll pressure.

4. Remove cap screw (D) and right knife arm (B).

5. Disconnect hose (E or G). Close all openings using caps and plugs.

6. Remove snap ring (F or H) to remove surface wrap cylinder.

7. Install upper cylinder with 45° fitting towards the top and lower cylinder with 90° fitting towards the bottom. Install snap ring (F or H).

NOTE: Hose with larger end fitting is connected to the upper cylinder.

8. Connect hose (E or G).

9. Install right knife arm (B), making sure pins of knife arm fit into cylinder rods.

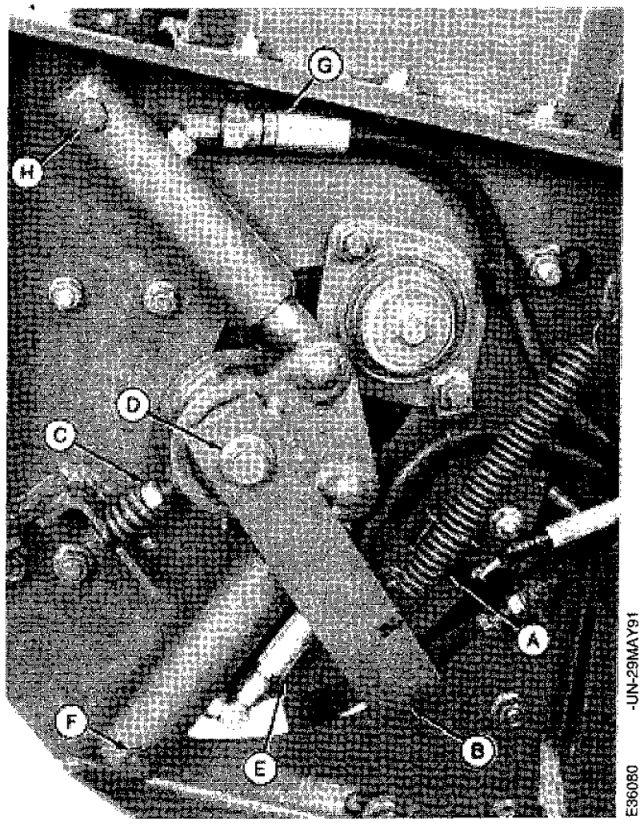
10. Install and tighten cap screw (D).

11. Connect spring (A).

12. Install knife. (See procedure in this group.)

13. Adjust nut (C) to set feed roll pressure. (See procedure in this group.)

14. Cycle surface wrap hydraulic system. Check oil level of hydraulic pump.



A—Spring
B—Right Knife Arm
C—Adjusting Nut
D—Cap Screw
E—Surface Wrap Control Valve-to-Lower Cylinder Hose
F—Lower Cylinder Snap Ring
G—Twine Control Valve-to-Upper Cylinder Hose
H—Upper Cylinder Snap Ring

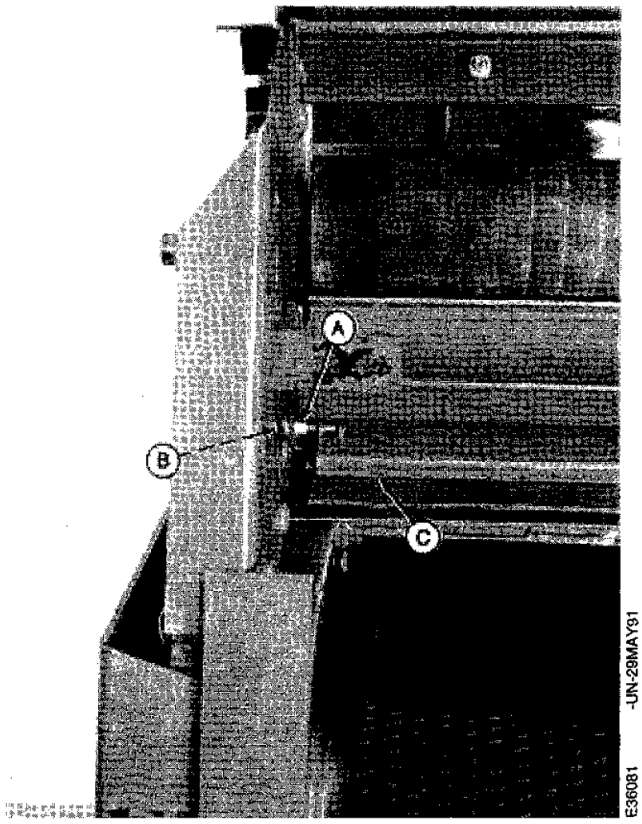
EX,1472,5115,32-19-11MAR93

REPLACE KNIFE STRIKE BELT

1. Remove knife. (See procedure in this group.)

2. Remove surface wrap lower guide assembly. (See procedure in this group.)

3. Loosen nut (A) and turn cap screw (B) until cap screw is clear of pivot angle (C). Move pivot angle to the left and remove angle from baler.

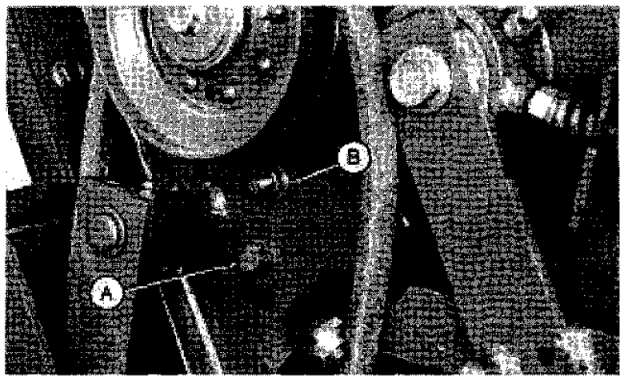


Bottom Left View of Surface Wrap

EX,1472,5115,38-19-11MAR93

4. Remove pivot cap screw (A) and nut.

5. Remove bolt and nut (B).



EX,1472,5115,39-19-25JUN91

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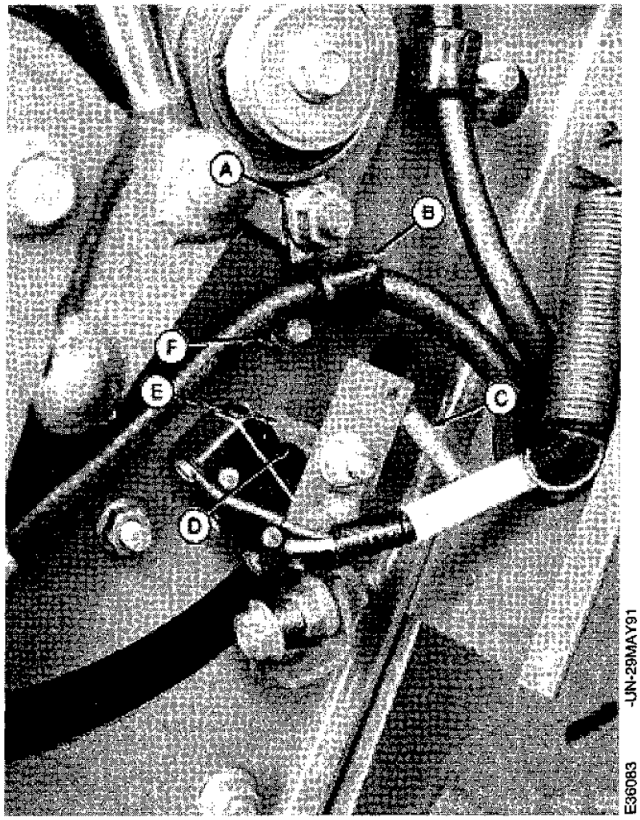
6. Loosen nut (A) to move hose and strap (B) if necessary.

7. Disconnect spring (C).

8. Remove nut (E) to remove pivot stud assembly (D).

9. Remove nut (F) and bolt. Remove flap assembly from surface wrap unit.

A—Nut
B—Hose Strap
C—Indicator Spring
D—Pivot Stud Assembly
E—Nut
F—Nut and Bolt



EX,1472,5115,40-19-25JUN91

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10. Remove nuts and bolts (A) to remove clamp angle (B) and rubber strike belt (C).

IMPORTANT: Strike belt must be installed with the smooth side away from the clamp angle. Mesh material may not stay in place if the flap is not installed correctly.

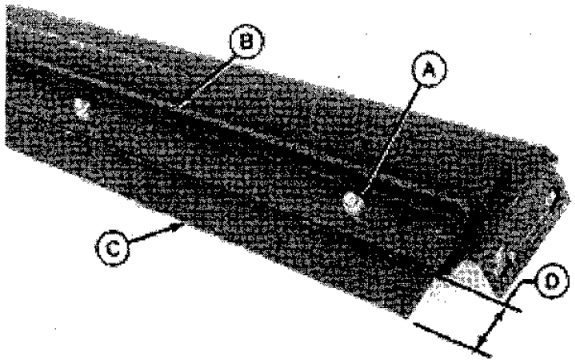
NOTE: Turn strike belt end-for-end to use strike belt again before replacement is necessary. Belt must be replaced when both exposed surfaces of the smooth side are worn.

11. Install strike belt on bracket with the smooth side away from clamp angle. Install clamp angle, bolts and nuts. Do not tighten nuts at this time. Make sure nuts are on the same side as clamp angle.

12. Adjust extension of strike belt from clamp angle to dimension (D) for entire length of belt.

IMPORTANT: Do not overtighten clamp angle nuts. Strike belt can be distorted causing problems when cutting wrapping material.

13. Tighten nuts to 7.9 N·m (6 lb-ft) using care not to distort or deform the strike belt.

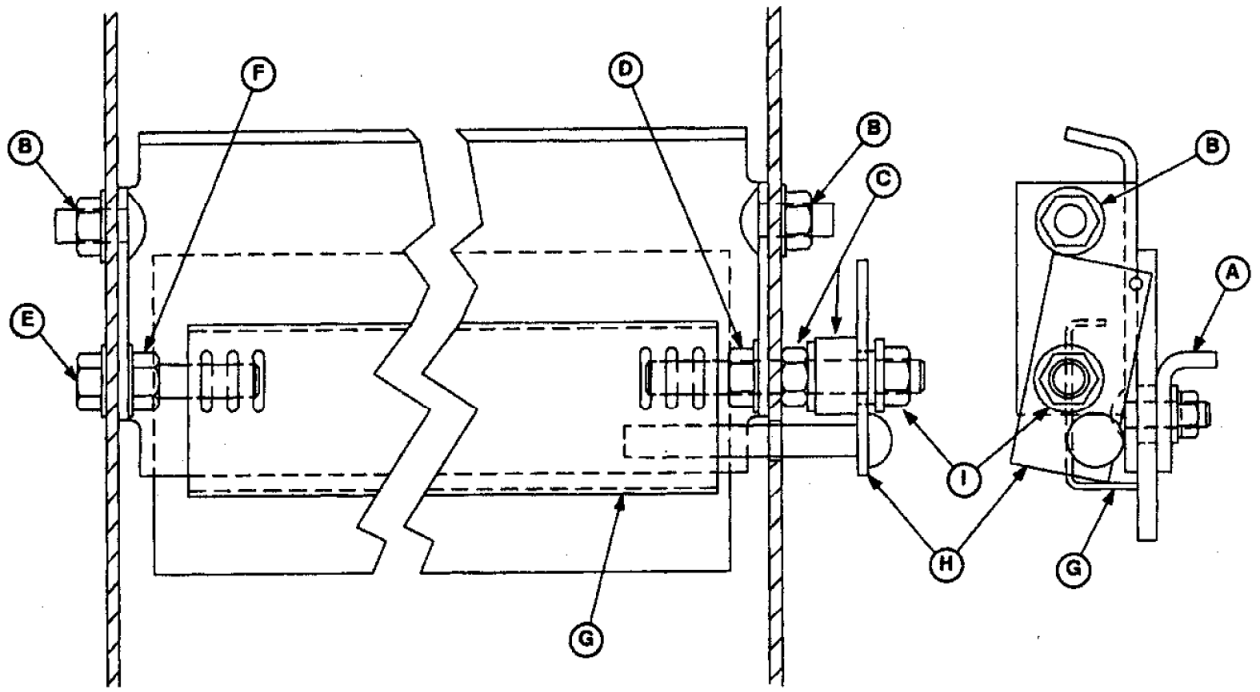


E36084 -UN-29MAY91

A—Bolt and Nuts (6 used)
B—Clamp Angle
C—Rubber Strike Belt
D—25 ± 2 mm (0.98 ± 0.08 in.)

51 15 23

EX,1472,5115,41-19-10JUL91



E36085A -UN-29MAY91

A—Clamp Angle
B—Bolt and Nut (2 used)
C—Pivot Stud Assembly
D—Nut
E—Pivot Cap Screw
F—Nut
G—Pivot Angle
H—Microswitch Lever
I—Nut

14. Install strike belt assembly in surface wrap unit with the clamp angle (A) towards the front of the baler.

15. Install bolt and nut (B) on each side with the nut to the outside of the surface wrap.

16. Install pivot stud assembly (C) and nut (D). Tighten nut (D).

17. Install pivot cap screw (E) and nut (F). Just start nut on cap screw at this time.

18. Install pivot angle (G) on pivot stud (C) with the longer leg of angle to the bottom and towards the front of the baler. Pin of microswitch lever (H) must be ahead of angle.

19. Put pivot cap screw into pivot angle and tighten nut (F). Make sure pivot angle and mircoswitch lever move freely.

20. If nut (I) was removed or loosened, tighten nut until resistance is felt when microswitch lever (H) is pivoted. Then turn nut 1/4 turn off (counterclockwise).

EX,1472,5115,42-19-25JUN91

21. Connect spring (C) to microswitch lever.

22. Install hose and hose strap (B) on stud, if removed. Install and tighten nut (A).

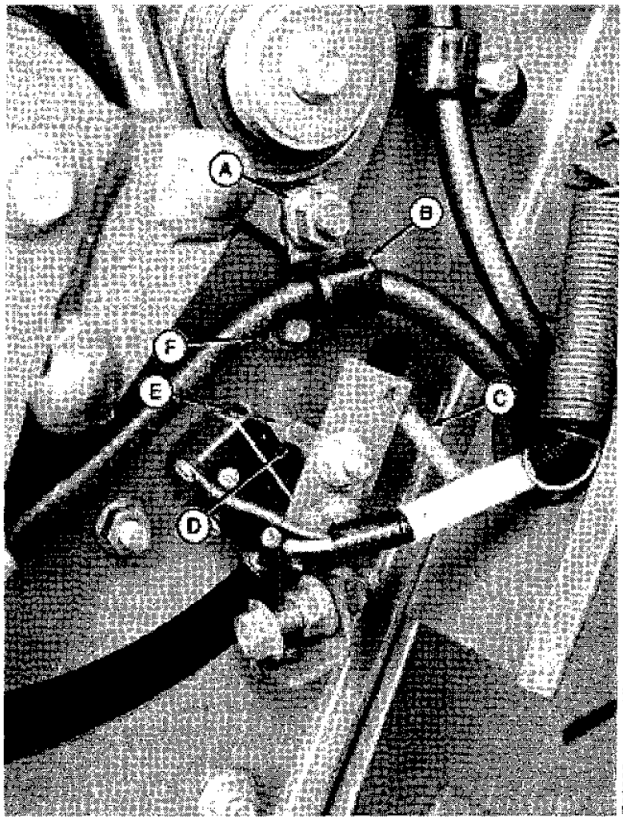
23. With fingers at the center of the pivot angle, push to make sure angle pivots and returns freely.

24. Install lower surface wrap guide assembly. (See procedure in this group.)

25. Install knife. (See procedure in this group.)

26. Adjust knife arm stop. (See procedure in this group.)

A—Nut
B—Hose Strap
C—Indicator Spring
D—Pivot Stud Assembly
E—Nut
F—Nut and Bolt



EX,1472,5115,43-19-25JUN91

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REMOVE AND INSTALL LOWER SURFACE WRAP GUIDE ASSEMBLY

1. Raise gate until lower surface wrap guide assembly is clear of axle and optional bale push bar.

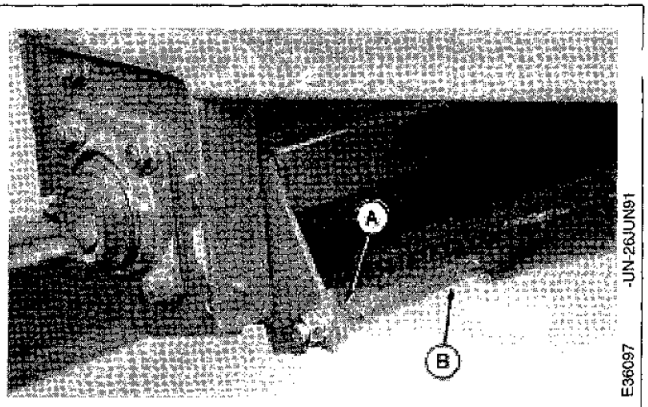
2. Move gate valve to lock position. Stop tractor engine.

CAUTION: Surface wrap lower guide assembly will swing down when cap screws are removed. Use care to avoid personal injury.

3. Remove cap screw (A) on each side of gate holding front corners of surface wrap lower guide assembly (B) to belt guide.

IMPORTANT: DO NOT lower gate with the surface wrap lower guide assembly disconnected from the belt guide, damage to the guide will result.

DO NOT operate the baler belts with the surface wrap lower guide assembly disconnected from the belt guide, belt damage can occur.



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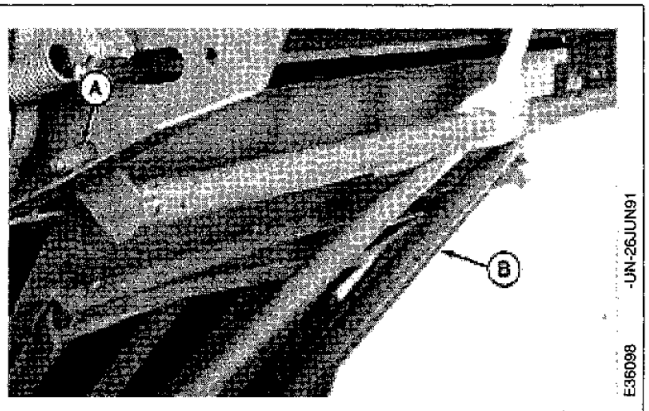
EX,1472,5115,44-19-11MAR93

4. Remove nut, washer, spacer, and cap screw (A) from each side of surface wrap unit to remove lower surface wrap guide assembly (B).

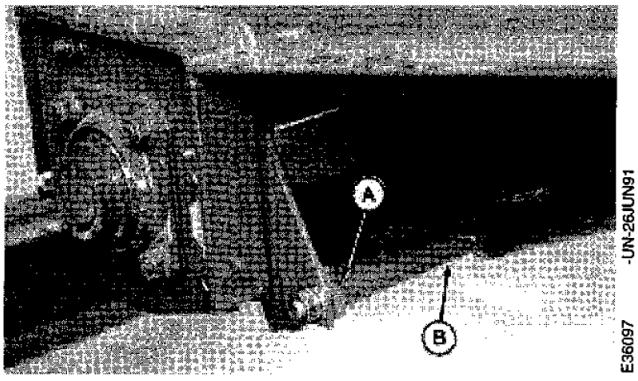
5. Install lower surface wrap guide assembly. Install cap screw, spacer, washer, and nut on each side of surface wrap unit. Do not tighten at this time.



EX,1472,511544A-19-06NOV95

6. Swing surface wrap guide assembly (B) toward belt guide.

7. Install cap screw and nut (A) on each side of gate.

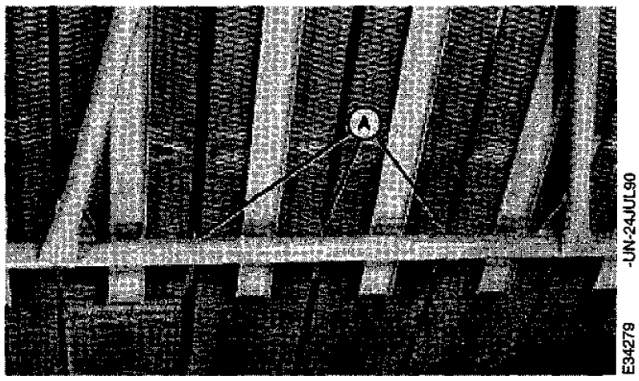


EX,1472,511544B-19-25JUN91

8. Check clearance between ends of all belt guide straps (A) and cross member of lower guide assembly. If necessary, loosen front cap screws to adjust front lower guide assembly until there is 2—4 mm (3/32—5/32 in.) clearance.

9. Move gate valve to unlock position. Close gate and lower tension arm.

10. Adjust rear mounts of lower surface wrap guide assembly. (See procedure in this group.)

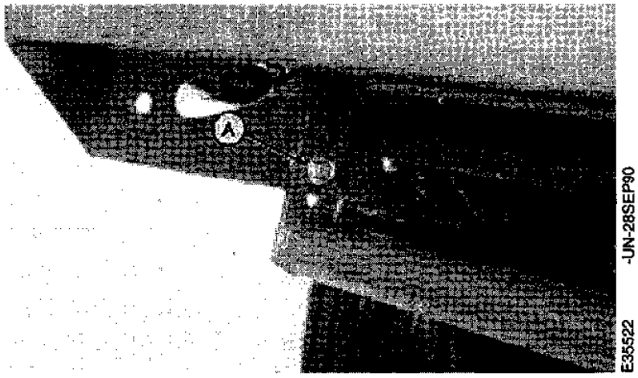


EX,1472,511544C-19-10JUL91

ADJUST REAR MOUNTS OF LOWER SURFACE WRAP GUIDE ASSEMBLY

1. Check belt tracking before adjusting lower surface wrap guide assembly. Adjust belt tracking if necessary. (See procedure in Section 20, Group 30.)

2. Make sure left end of crosstube for guide assembly is in center of slot (A). This left position will never change regardless of the position of the lower rear gate roll.



EX,1472,5115,33-19-11MAR93

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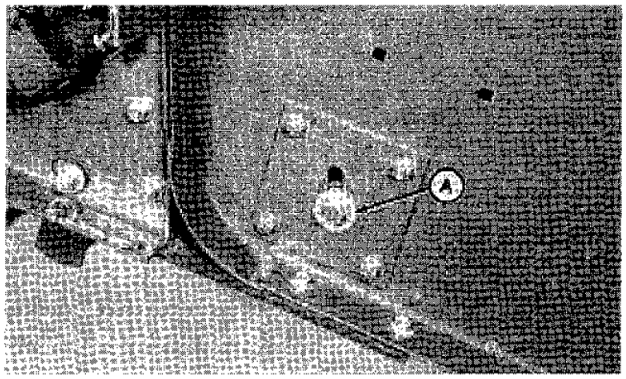
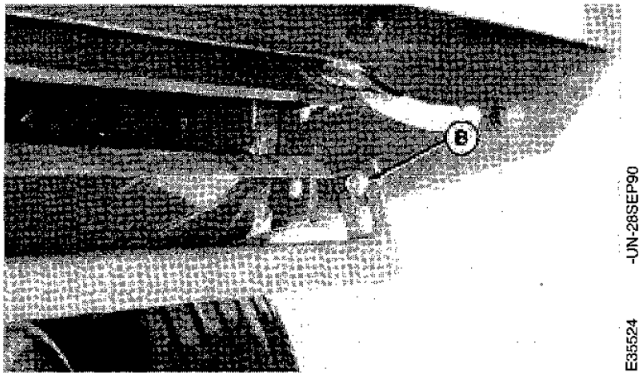
3. If lower rear gate roll is adjusted at the bottom of slot (A), adjust right side of crosstube to lowest position (B).





EX,1472,5115,34-19-29MAY91

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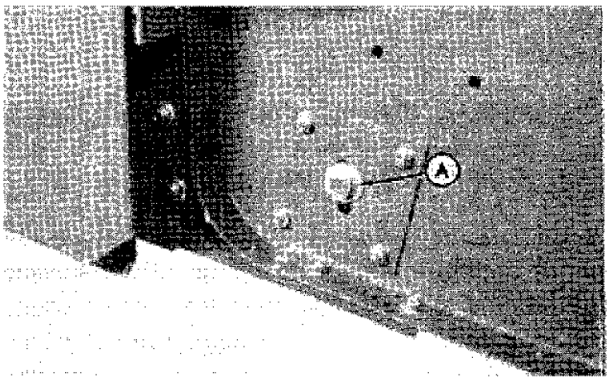
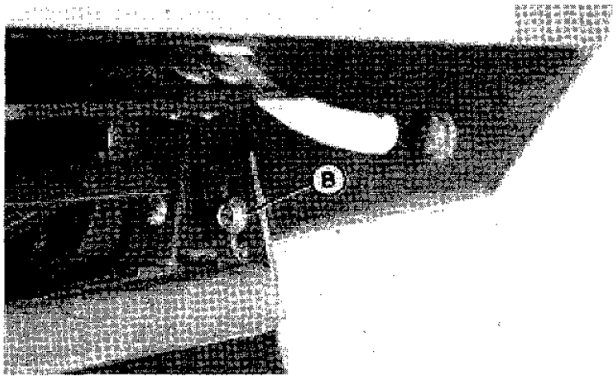
28

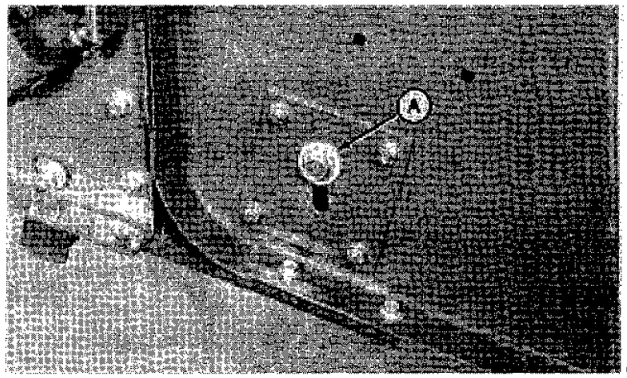
4. If lower rear gate roll is adjusted at the center of slot (A), adjust right side of crosstube to center position (B).

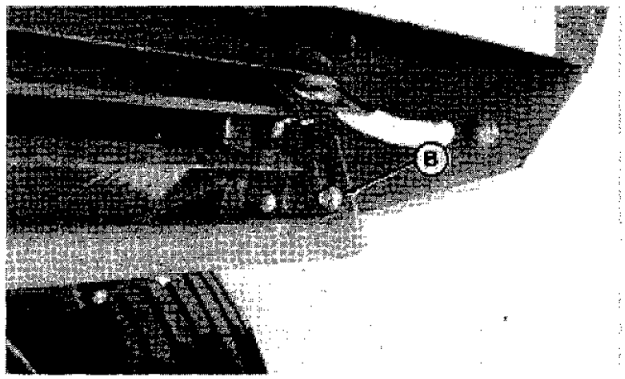




EX,1472,5115,35-19-29MAY91

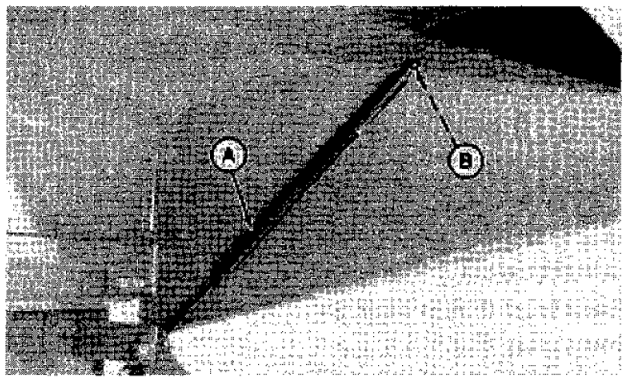
5. If lower rear gate roll is adjusted at the top of slot (A), adjust right side of crosstube to highest position (B).





EX,1472,5115,36-19-21JAN92

CHECK COVER GAS SPRINGS



NOTE: If the gas spring force is weak, the surface wrap on the bale may appear loose or wrap material may be pulled in substantially from one or both ends of bale.

1. Open cover.

2. Remove surface wrap roll or put surface wrap roll on loading brackets.

CAUTION: Use care when disconnecting gas spring. Cover is heavy and can fall causing bodily injury.

IMPORTANT: Use care when handling gas springs to prevent damage to surface of rods. Gas spring life will be shortened if rods are even slightly damaged.

3. Carefully disconnect cylinder end (B) of right gas spring (A) from cover and lower gas spring along side of surface wrap.

EX,1472,511547A-19-11MAR93

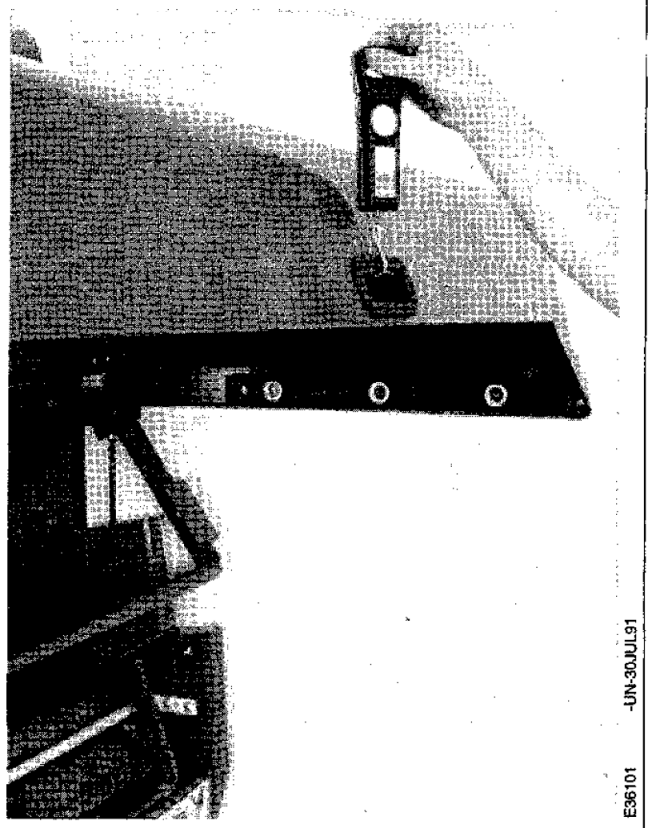
4. Check left gas spring:
   - 435 Units
     If gas spring just keeps cover open, gas spring is within specification. If cover is not held open, replace gas spring.

   - 535 Units
     Attach spring scale to hand hole in cover. Lower cover until cover is horizontal (check with spirit level). If more than 62 N (14 lb) of vertical force is required to hold cover, gas spring must be replaced.

5. Connect right gas spring to cover. Tighten nut to 25 N (18 lb-ft).

6. Repeat steps 3—5, disconnecting left gas spring to check the right gas spring.

7. Install surface wrap material and close cover.



EX,1472,511548A-19-30DEC91

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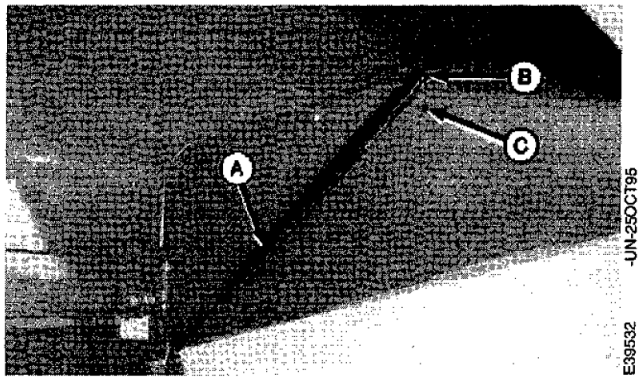
INCREASE BRAKE BAR TENSION

In certain conditions, friction between surface wrap material and stainless steel supports may be too low, causing one or more of the following symptoms:

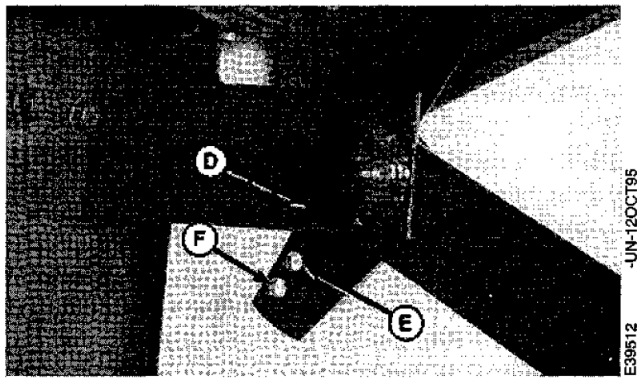
- Surface wrap material loose on bale.
- Surface wrap material less than full width of bale.
- Surface wrap roll continues to turn after cutoff, causing material to wrap on rubber drive roll.
- Surface wrap material appears loose on ends of rubber rolls or on roll of surface wrap.



If any of the above conditions occur:

- Make sure the approved surface wrap material is being used.
- Increase tension on brake bar.

Increase tension on brake bar by moving gas spings (A) to alternate hole positions. If alternate hole positions can not be found as shown, see procedures for installation of alternate hole positions in this Section.



NOTE: Support surface wrap cover while removing and installing gas spring.

To relocate gas springs:

1. Remove gas spring from one side.

2. Reposition other gas spring to desired position.

3. Reposition first gas spring.

This procedure will prevent binding and make repositioning of springs easier.

BRAKE BAR TENSION	HOLE POSITION (COVER)	HOLE POSITION (BRAKE ARM)
Lowest—Normal Position (435)	B	D
Medium—Normal Position (535) —Optional Position (435)	B	E
Highest—Optional Position (535 Only)	C	F

EX,1472,5115,A -19-06NOV95

DECREASE BRAKE BAR TENSION

In certain conditions, friction between surface wrap material and stainless steel supports may be too high, causing one or more of the following symptoms:

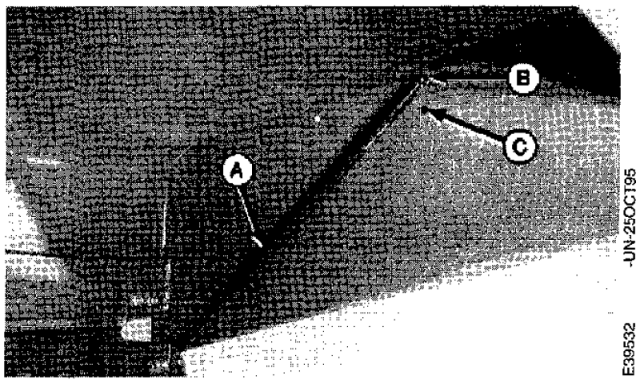
- Breaks in surface wrap material causing ruptures from bulges of crop material.
- Surface wrap roll will not rotate and feed onto bale.
- Surface wrap material is tight on some areas of the bale and loose on other areas.
- Surface wrap material is split around the bale.
- Plastic, powder-like residue is present on stainless steel supports.

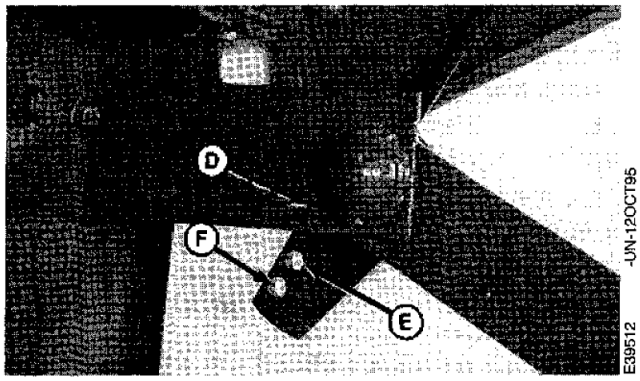
If any of the above conditions occur:

- Make sure the approved surface wrap material is being used.
- Decrease tension on brake bar.

Decrease tension on brake bar by moving gas springs (A) to alternate hole positions. If alternate hole positions can not be found as shown, see procedures for installation of alternate hole positions in this Section.

NOTE: Support surface wrap cover while removing and installing gas springs.





51 15 32

To relocate gas springs:

1. Remove gas spring from one side.
2. Reposition other gas spring to desired position.
3. Reposition first gas spring.

This procedure will prevent binding and make repositioning of springs easier.

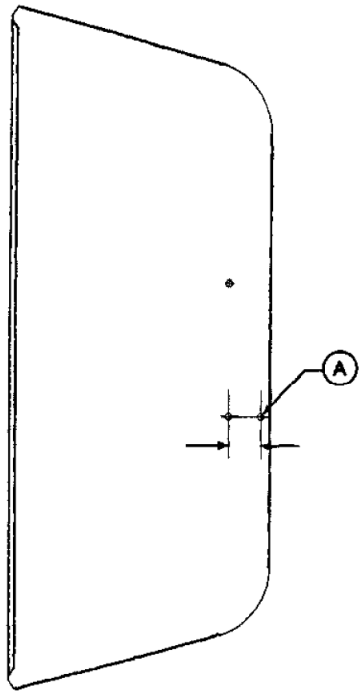
BRAKE BAR TENSION	HOLE POSITION (COVER)	HOLE POSITION (BRAKE ARM)
Lowest—Normal Position (435)	B	D
Medium—Normal Position (535) —Optional Position (435)	B	E
Highest—Optional Position (535 Only)	C	F

EX,1472,5115,B -19-06NOV95

INSTALL GAS SPRING ALTERNATE HOLE POSITIONS

Adding holes to surface wrap cover:

• Drill 9 mm (11/32-in.) hole (A) in left-hand side of cover, 46 mm (1-13/16 in.) from center of existing hole. Repeat on right-hand side.



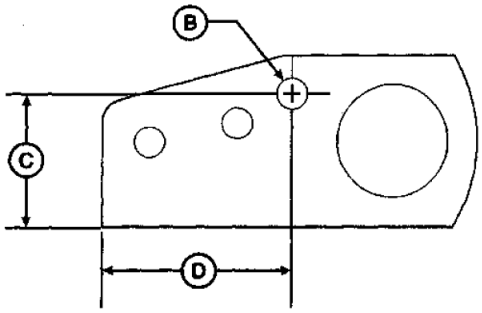
Surface Wrap Cover

-UN-19OCT95
E39543

Adding hole to brake bar pivot:

• Drill 9 mm (11/32-in.) hole (B) in brake bar pivot. Repeat on opposite side.

B—9 mm (11/32-in.) Hole
C—39 mm (1-17/32 in.)
D—55.5 mm (2-3/16 in.)

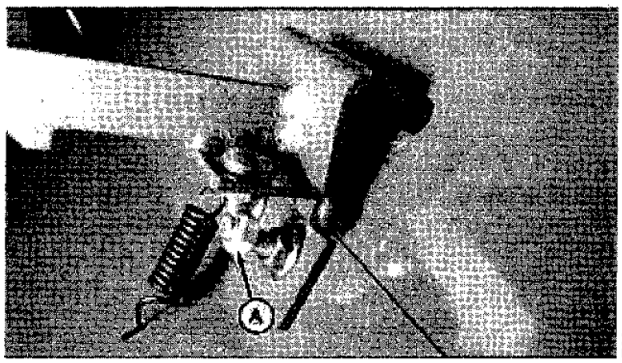


Brake Bar Pivot

-UN-24OCT95
E39544

EX,1472,5115,C -19-06NOV95

CHECK AND ADJUST COVER LATCH



1. Close surface wrap cover.

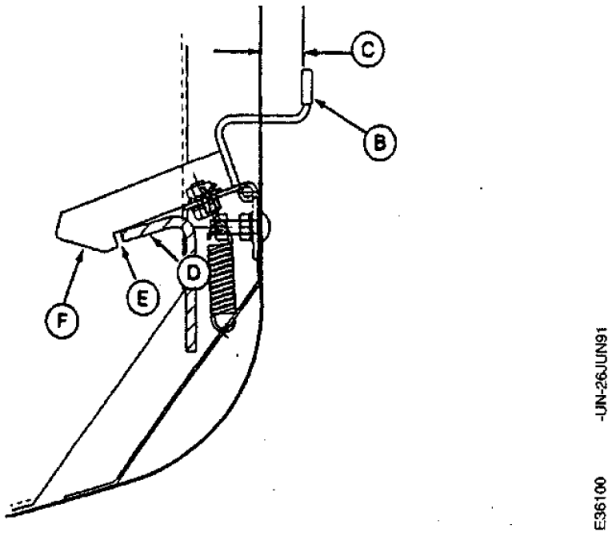
2. The latch hook (F) should engage the full thickness of the cross angle (D). Latch engagement can be viewed from bottom of surface wrap unit.

3. If adjustment is necessary, turn stop nut (A) until handle (B) is approximately 20 mm (0.79 in.) (C) from cover.

4. Move cross angle (D) by loosening mounting hardware to obtain 0.5—2.0 mm (0.02—0.08 in.) gap (E) between cross angle and latch hook (F).

5. Tighten cross angle mounting hardware.

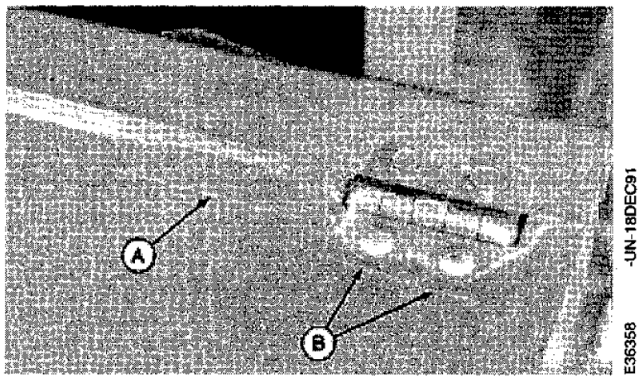
A—Stop Nut
B—Latch Handle
C—20 mm (0.79 in.)
D—Cross Angle
E—0.5—2.0 mm (0.02—0.08 in.) Gap
F—Latch Hook



EX,1472,511536A-19-11MAR93

INSPECT COVER/HINGE SEAL

IMPORTANT: Seal must remain in position and good condition to prevent moisture, dust and chaff from entering surface wrap unit. Moisture can cause wrap material to stick and wrap around rolls.



Replace seal if damaged, cracked or peeling.

Apply seal (A) over top seam of cover, between hinges.

Apply two short pieces (B) over each hinge. Be sure hinge is covered and seal strips overlap each other.

EX,1472,511536B-19-11MAR93

Section 60
ELECTRICAL

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ELECTRICAL SYSTEM DESCRIPTION

The 435 and 535 electrical system consists of a BALE TRAK® electrical monitor, six switches, and two potentiometers.

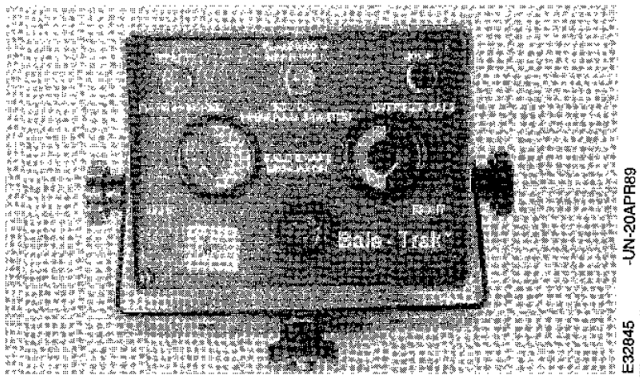
The bale monitor is mounted on the tractor.

The monitor is powered by the tractor's 12-volt electrical system. See Install Convenience Outlet in operator's manual for installation of convenience outlet and circuit breaker.

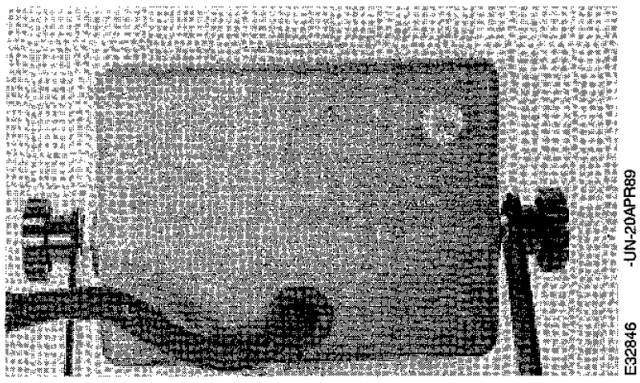
EX,1472,6005,A -19-11MAR93

The BALE-TRAK® electrical monitor monitors the following functions:

1. Gate latched (both sides).
2. Bale near completion.
3. Twine wrap starting.
4. Oversize bale.
5. Bale shape.
6. Cut off indicator (when equipped with surface wrap).



E32845 -UN-20APR89



E32846 -UN-20APR89

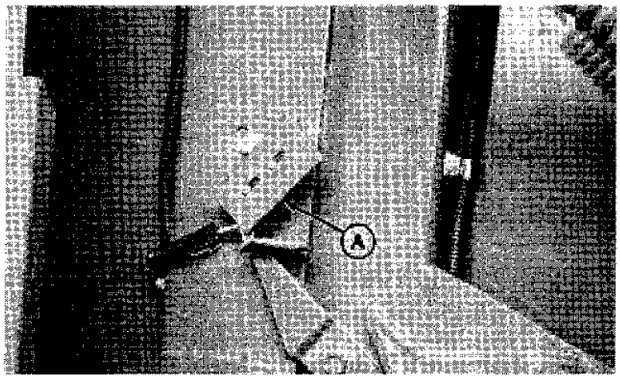
EX,1472,6005,B -19-10DEC91

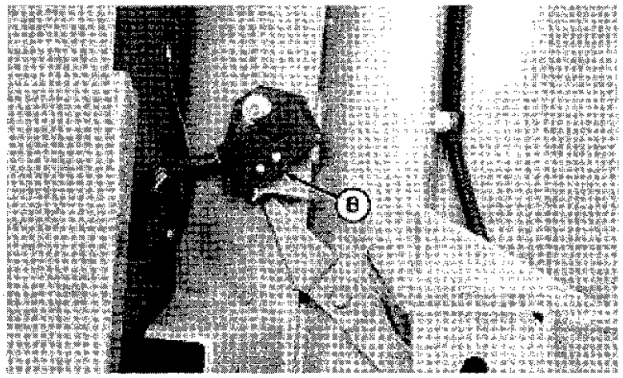
60 05 1

Gate latch switches (A and B) are located on both sides of the baler. When the gate is latched, the switch levers will be depressed and the green light visible in the monitor.

- If the oversize bale switch is activated, the green light will not be visible.
- Both gate latch switches must be depressed for green light to be activated.
- On units with surface wrap, if red light and alarm come on and remain on with green light on, surface wrap switch or knife require adjustment.

A—Gate Latch Switch,
435, S.N. —921150
535, S.N. —921939
B—Gate Latch Switch,
435, S.N. 921151—
535, S.N. 921940—



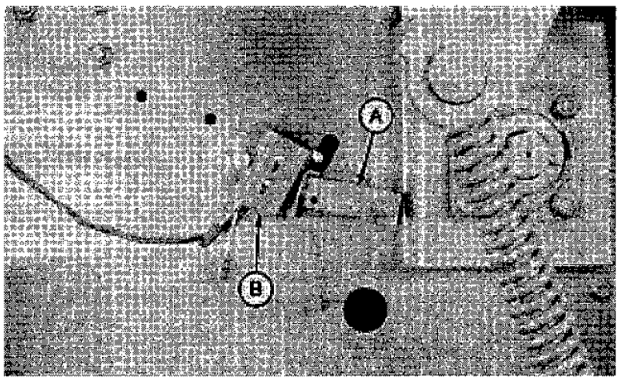


EX,1472,6005,C -19-24FEB92

IMPORTANT: Belts and drive loads increase as bale size approaches maximum diameter. Forming of oversize bales (red light on and alarm sounding) can lead to premature failures.

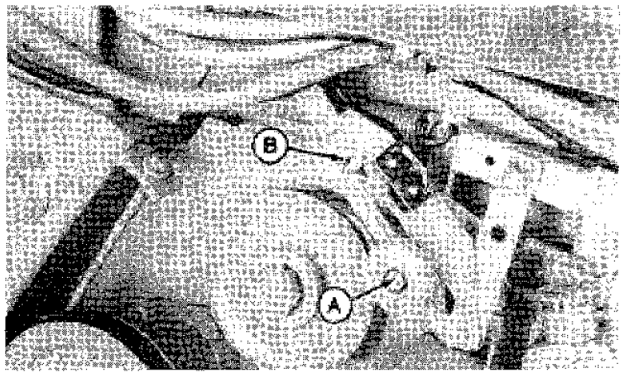
60 05 2

An oversize bale switch is mounted on the upper portion of the right sidesheet. When the bale grows to the maximum possible diameter, the oversize bale arm (A) pivots upward and depresses the contact on the microswitch (B). This will activate the red light and warning alarm to notify the operator that baling must be stopped immediately, the bale wrapped, and discharged.



EX,1472,6005,D -19-06NOV95

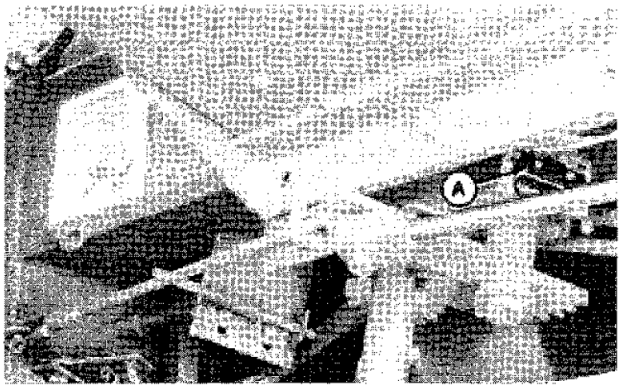
A bale size switch is located on the lower front portion of the right sidesheet. When this bale size adjustment knob (A) reaches the end of the slot in the linkage (B), it depresses the switch contact causing the yellow light to flash on the bale monitor. This flashing yellow light means the bale is near completion and the wrapping cycle is about to occur.



EX,1472,6005,E -19-06NOV95

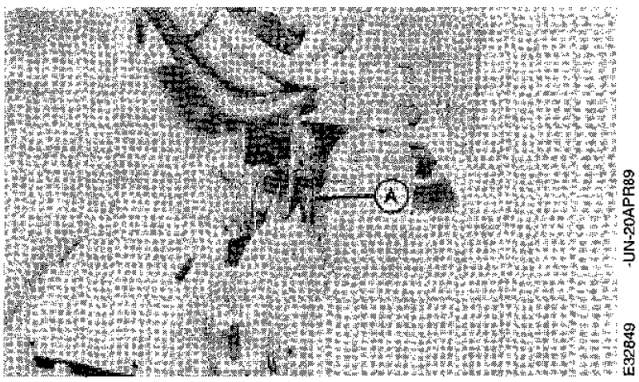
The wrapping cycle switch (A) is located under the baler tongue above the twine arm. The switch is depressed during most of the baling cycle. When the twine wrapping cycle begins, the twine arm moves, activating the switch. This changes the flashing yellow light activated by the bale size switch to a solid yellow light.

When the twine arm returns to the home position, the solid yellow light goes off.



EX,1472,6005,F -19-01MAY89

The bale switch is located behind the hydraulic oil filter. When the pump drive is engaged to begin the twine wrapping cycle, the switch is released, activating a short-term buzzer signal.



EX,1472,6005,G -19-01MAY89

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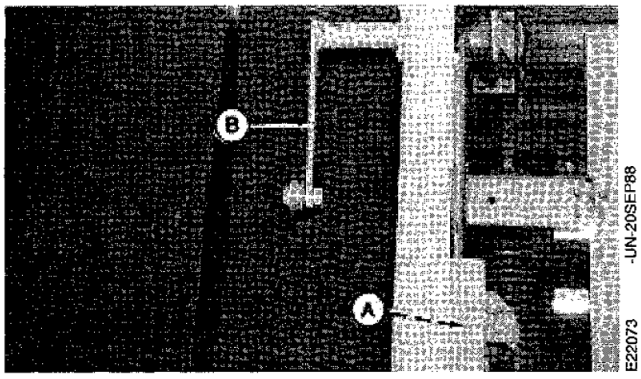
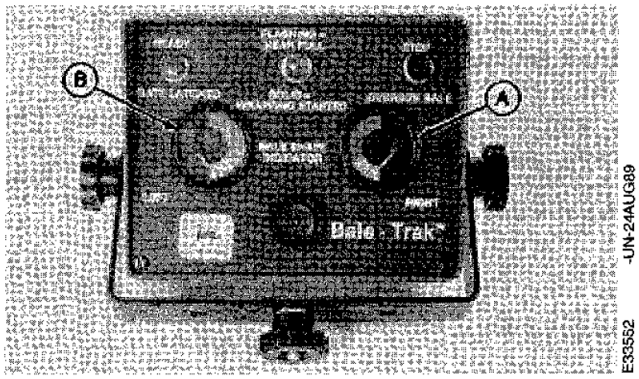
05
3

The bale shape potentiometers (A) are located on the rear of each sidesheet. Each potentiometer uses a bell crank (B) which pivots on the sidesheet to monitor the slack in the outside belt on each side of the baler.



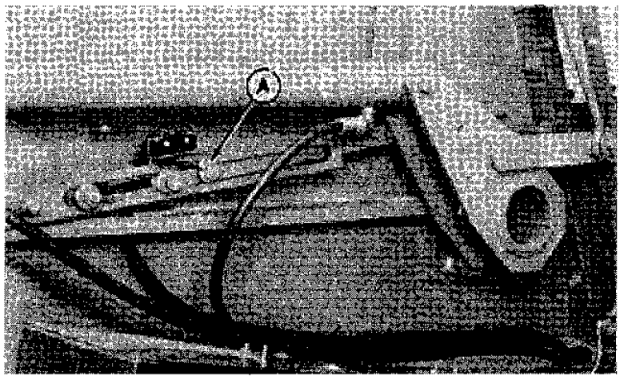
EX,1472,6005,H -19-01MAY89

Belt slack on the right side of the baler will be shown on the right bale shape indicator (A). Belt slack on the left side of the baler will be shown on the left bale shape indicator (B). Needles drop to indicate slack in belts and rise to indicate tight belts.



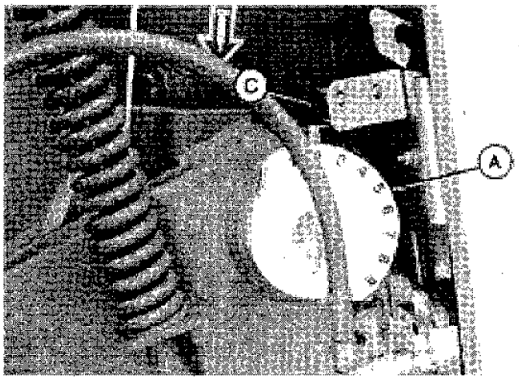
EX,1472,6005,I -19-06NOV95

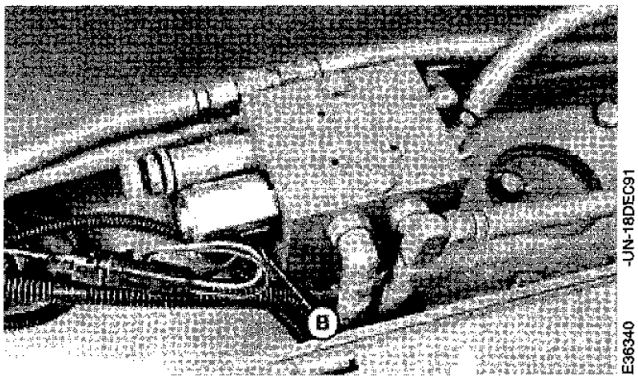
The 335, 375 and 385 electrical system consists of only one switch located on the right side of the baler and a buzzer mounted near the operator. This system is used to alert the operator that the bale is near completion or oversized. A "buzzer" sound will be heard in the cab when this happens.



EX,1472,6005,J -19-11MAR93

A variable soft core option can be installed on 435 and 535 balers. An adjustable cam (A) varies the diameter of the soft core by energizing solenoid valve (B) through microswitch (C). The solenoid valve reduces hydraulic pressure for easier bale starting in difficult conditions. The reduced pressure also reduces the core density.





EX,1472,6005,J1-19-22JAN92

DIAGNOSING 335/375/385 ELECTRICAL MALFUNCTIONS

Symptom	Problem	Solution
Buzzer does not work.	Tractor-baler harness disconnected.	Check connection. Reconnect harness.
	Switch out of adjustment.	Adjust switch.
	Loose or broken wires.	Repair or tighten wires.
	Polarity of power supply from tractor to baler is reversed.	Refer to wiring diagram.
	Tractor electrical hookup wired wrong.	Refer to wiring diagram.
	Red wire connected to negative terminal of bale size alert.	Connect red wire to positive terminal of bale size alert.
	Defective switch.	Use continuity tester to check for faulty switch.(See Check Microswitches in Group 20 of this section.)
	Faulty bale size alert.	Check bale size alert. Replace if necessary.
Buzzer operating continuously or intermittently.	Moisture or buildup around switch.	Clean and dry switch and wire terminals. Coat exposed terminals with silicon sealer to seal out water.
Bale size alert activated with tractor switch off.	Moisture and/or crop buildup near switch causes current flow.	Provide power through tractor ignition switch. See above for cleaning/sealing switch/wires.
Bale size alert is faintly audible continuously while baling.	Moisture and/or crop buildup near switch causes current flow.	Clean bale size switch terminal area. Apply silicon sealer to switch terminals.
Bale size alert cannot be heard or is too loud.	Shutter on alert may be closed or open too far.	Adjust shutter to control volume.

EX,1472,6010,A -19-06NOV95

60 10 1

DIAGNOSING 435/535 ELECTRICAL MALFUNCTIONS

Symptom	Problem	Solution
Light doesn't work.	Switch out of adjustment.	Adjust switch. (See Adjust Switch Procedure for the particular light function in Group 20.)
	Loose switch wires.	Connect switch or light wire.
	Faulty switch.	Use volt-ohm meter to check switch. (See Check Microswitches, in Group 20.)
	Defective light bulb.	Replace bulb.
	Broken wire.	See Check Wire For Continuity in Group 20.
None of lights or gauges work.	Tractor-baler harness disconnected.	Connect tractor-baler harness.
	Monitor connection to tractor electrical hookup socket is unplugged.	Plug in connection.
	Tractor electrical hookup wired incorrectly.	See Tractor Electrical Hookup in operator's manual.
Red light and continuous buzzer comes on, green light goes out, solid yellow light did not come on and twine arm did not cycle.	Twine trip bell crank arm out of adjustment.	Adjust arm. (See Adjust Twine Trip Rod and Valve Latch Clearance in Section 40, Group 15.)
	Twine trip rod clevis out of adjustment.	Adjust clevis. (See Adjust Twine Trip Rod and Valve Latch Clearance in Section 40, Group 15.)
	Red light switch not adjusted correctly.	Adjust switch. (See Adjust Oversize Bale Switch in Section 60, Group 20.)
	Twine arms have not cycled correctly.	See "Twine arms will not move (flashing yellow light does not go solid)." in Section 40, Group 05 Troubleshooting. See "Solid yellow light comes on, twine arms go through cycle prematurely and wraps a small bale." in Section 40, Group 05 Troubleshooting.
Solid yellow light on, twine arm in home position.	Switch not adjusted correctly.	Adjust twine arm switch. (See Adjust Twine Arm Switch in Section 60, Group 20.)

Continued on next page

Symptom	Problem	Solution
	Defective switch.	Check microswitch. Replace if necessary. (See Check Microswitches in Section 60, Group 20.)
	Wire from twine arm switch shorted to baler or tractor frame.	Find short and repair.
No flashing yellow light, yellow light comes on solid, and twine arm goes through its normal cycle.	Pump idler switch (behind oil filter) not adjusted correctly.	Adjust pump idler switch. (See Adjust Pump Idler Switch Section 60, Group 20.)
	Bale size switch not adjusted correctly.	Adjust switch near bale size knob. (See Adjust Flashing Yellow Light Switch in Section 60, Group 20.)
	Defective flasher or loose connection.	Replace flasher or repair connection.
	Defective switch.	Check microswitch. Replace if necessary. (See Check Microswitches in Section 60, Group 20.)
	Low voltage.	Make sure connection to power source is full 12-volt. Check with tractor engine running (fast idle) (13.5 volts).
	Defective module or circuit board inside monitor.	Replace module or circuit board if necessary.
No flashing yellow light, no solid yellow light, and twine arms do not cycle normally.	Binding in linkage does not allow pump drive linkage to relatch.	1)Make sure belt tension arm is returning all the way to start position when closing the gate. 2) Check for linkage binding and correct. 3) Check pump latch hook for burrs. 4) V-belt tension bellcrank spring is broken or missing. Replace spring. 5) Check twine trip rod for correct adjustment. (See Check Twine Trip Rod and Valve Latch Clearance in Section 40, Group 15.) 6) Trip rope tied too short. (See Adjust Twine Trip Rope in Section 40, Group 15.)

Continued on next page

Symptom	Problem	Solution
		7) Mud buildup on rollers. Clean rollers.
Green light does not come on when gate is closed. Red light and buzzer may come on.	Gate lockout lever in locked position.	Unlock gate.
	Gate not fully closed due to an obstruction or twisted condition.	Remove obstruction or straighten gate. (See procedure in Section 80, Group 10.)
	Belts pinched between lower gate roller and axle tube.	Raise gate fully and close gate at full tractor rpm. If tractor has low hydraulic flow, install orifice. (See Installing Orifice in Tractors with Low Hydraulic Flow in Operator's manual.)
	Defective bulb or switch.	Replace defective bulb. Check microswitch. Replace if necessary. (See Check Microswitches in Section 60, Group 20.)
	Poor connection or broken wire.	Make repair.
	Gate latch switch not adjusted properly.	Check and adjust both gate switches. (See procedure in Section 60, Group 20.)
Green light goes out, red light and buzzer come on while baling.	Gate latch switch not adjusted properly.	Adjust switch. (See Adjust Gate Latch Switch in Section 60, Group 20.)
	Gate latch not adjusted properly.	Adjust gate latch. (See Adjusting Gate Latch Stop in Section 80, Group 10.)
	Tractor hydraulic valve leaking oil to baler.	Repair tractor hydraulic valve.
	Air in hydraulic system.	Open and close gate several times to remove air.
	Internal leak in gate hydraulic cylinder.	Repair or replace cylinder. (See Section 30, Group 40.)
	Hydraulic cylinder not completely retracted when gate is closed.	Hold tractor selector control valve lever 2 to 3 seconds after green light is on.
Red light and buzzer come on when gate is closed.	Oversize bale switch out of adjustment.	Adjust switch. (See Adjust Oversize Bale Switch (Red Light) in Section 60, Group 20.)
	Gate is not latched on one side.	Hold tractor selector control valve lever 2 to 3 seconds after green light is on to make sure both sides are latched.
		Repair or adjust latch.

Continued on next page

Symptom	Problem	Solution
Gate not latched. Green light on.	Switch not adjusted correctly.	Adjust switch. (See Adjust Gate Latch Switch in Section 60, Group 20.)
	Shorted wire to baler or tractor frame.	Repair wire.
	Defective switch.	Check microswitch. Replace if necessary. (See Check Microswitches in Section 60, Group 20.)
Gauges won't work.	Wires not connected to potentiometers or gauges.	Connect wires.
	Broken wire.	Check continuity. (See Check Wires For Continuity in Section 60, Group 20.)
	Faulty potentiometer.	Check potentiometer. (See Section 60, Group 20.)
	Faulty gauge.	Check gauge. (See Section 60, Group 20.)
Gauges read low or uneven with tight well-shaped bale.	Gauge sending units not adjusted properly.	Adjust sending units. (See Adjust Bale Shape Senders in Section 60, Group 20.)
	Defective gauge or sending unit.	Replace defective part.
Bale shape gauge needles stay at bottom and will not respond. Lights function, buzzer sounds continuously when gate latch switches are open.	Reversed polarity on electrical hookup.	Check tractor for positive ground system. Center contact should be positive. Outside contact should be negative.
		Check plug for correct wiring. Red to center contact—black to outside (ground) contact. (Refer to wiring diagram in Group 25.)
Lights too bright or too dim.	Dimmer switch in wrong position.	Move switch on back of monitor box to correct position.
Intermittent buzzer actuation while operating in rough ground conditions.	Bale size microswitch is tripped intermittently due to movement in the pump trip linkage.	Slow down travel speed.
		Reset bale size switch to just actuate when bale size linkage is extended and switch roller is centered on knob.

Continued on next page

Symptom	Problem	Solution
	Defective switch.	Replace switch.

EX,1472,6010,B -19-11MAR93

GENERAL

Refer to electrical diagrams in Group 25 to help aid in diagnosis.

The bale size switch (flashing yellow light), twine arm switch (solid yellow light) and twine pump idler switch (short buzz at the start of the tying cycle) are wired in series. The operation of each of these functions depends upon the correct adjustment of all three switches.

The design of the short term buzzer circuit is based upon charging a capacitor, and discharging the stored energy by sounding the buzzer. The alternate opening and closing of the microswitches provides charging and discharging circuits.

After the system is charged (flashing yellow light action charges the capacitor), opening any of these switches causes the short term buzzer to sound:

- Pump idler switch
- Bale size switch
- Twine arm switch
- Tractor switch

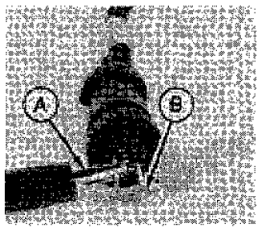
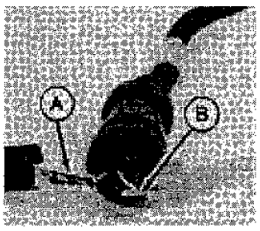
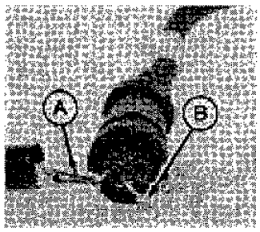
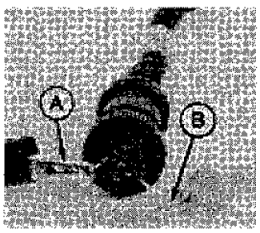
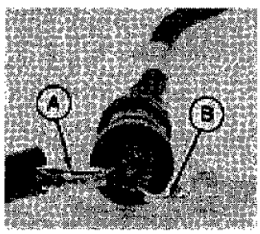
EX,1472,6015,A -19-01MAY89

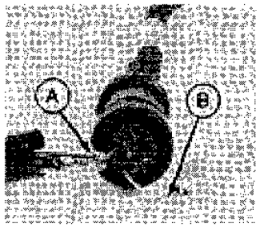
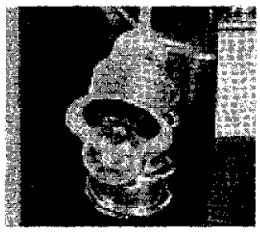
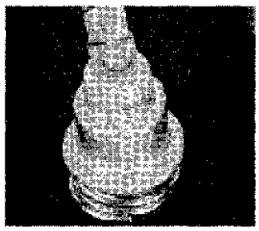
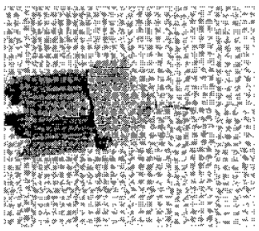
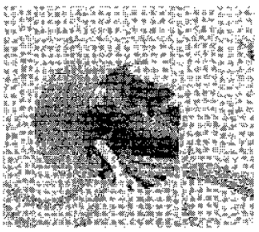
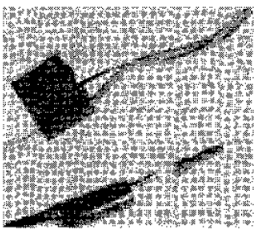
❶ **BALER HARNESS TEST**	Unplug 9-pin connector from the tractor (monitor) harness.	*LOOK: Check harness and switch component for continuity using a volt-ohmmeter.*	*LOOK: Check monitor box.*	**OK:** Go to ❷ **NOT OK:** Replace harness

EX,1472,6015,B -19-01MAY89

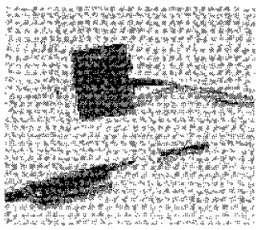
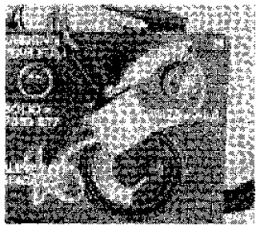
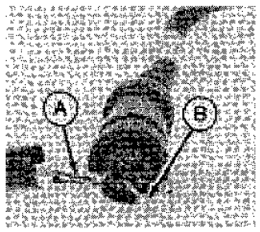
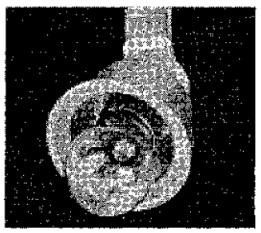
❷ **TRACTOR CONVENIENCE OUTLET TEST**	Unplug monitor power input connector from tractor convenience outlet.	Turn tractor switch to ON position.	*LOOK: Check for 12 volts between center terminal (+) and outer ring (-) of convenience outlet using a volt-ohmmeter.*	**OK:** Go to ❸ **NOT OK:** Less than 12 volts, check tractor electrical system.

EX,1472,6015,C -19-01MAY89

3 MONITOR BOX AND HARNESS TEST Plug monitor connector into tractor convenience outlet.	Unplug 9-pin connector from tractor harness. Check that wires are correctly connected to 9-pin connector. Turn tractor switch to ON position.	 E32875 -UN-20APR89	Connect a jumper wire between the ground terminal 3(A) and terminal 1(B). *LOOK: Continuous yellow light operates with dimmer switch on bright and dim positions.*	**OK:** Go to 3A **NOT OK:** Go to 4 EX,1472,6015,D -19-06NOV95
3A MONITOR BOX TERMINAL 2 TEST	 E32876 -UN-20APR89	Turn tractor switch to ON position. Connect a jumper wire between the ground terminal 3 (A) and terminal 2 (B).	*LOOK: Flashing yellow light operates with dimmer switch in bright and dim positions.* *LISTEN: Short term buzzer sounds when jumper connection is broken.*	**OK:** Go to 3B **NOT OK:** Go to 5 EX,1472,6015,E -19-01MAY89
3B MONITOR BOX TERMINAL 5 TEST	 E32877 -UN-20APR89	Turn tractor switch to ON position. Connect a jumper wire between the ground terminal 3 (A) and terminal 5 (B).	*LOOK: Continuous red light operates with dimmer switch in bright and dim positions.* *LISTEN: Continuous buzzer sounds.*	**OK:** Go to 3C **NOT OK:** Go to 6 EX,1472,6015,F -19-06NOV95
3C MONITOR BOX TERMINAL 7 TEST	 E32907 -UN-20APR89	Turn tractor switch to ON position. Connect a jumper wire between the ground terminal 3 (A) and terminal 7 (B).	*LOOK: Left-hand gauge needle falls.*	**OK:** Go to 3D **NOT OK:** Go to 7 EX,1472,6015,G -19-01MAY89
3D MONITOR BOX TERMINAL 8 TEST	 E32879 -UN-20APR89	Turn tractor switch to On position. Connect a jumper wire between the ground terminal 3 (A) and terminal 8 (B).	*LOOK: Continuous green light operates with dimmer switch in bright and dim positions.*	**OK:** Go to 3E **NOT OK:** Go to 8 EX,1472,6015,H -19-01MAY89

3E MONITOR BOX TERMINAL 9 TEST	 E32880 -UN-20APR89	Turn tractor switch to ON position. Connect a jumper wire between the ground terminal 3 (A) and terminal 9 (B).	*LOOK: Right-hand gauge needle falls.*	**OK:** Go to 4 **NOT OK:** Check for misadjusted or faulty component on the baler side of the circuit. EX,1472,6015,I -19-01MAY89
4 TERMINAL 1 TESTS	 E32881 -UN-20APR89	Check for burned out light bulb.	*LOOK: Bulb must be lit when terminal 3 is connected to terminal 1.*	**OK:** Go to 4A **NOT OK:** Replace light bulb. EX,1472,6015,J -19-06NOV95
4A TERMINAL 1 LAMP SOCKET TEST	 E32882 -UN-20APR89	Check connections to lamp socket.	*LOOK: Connections must be firmly attached to lamp socket.*	**OK:** Go to 4B **NOT OK:** Repair connections. EX,1472,6015,K -19-06NOV95
4B TERMINAL 1 DIMMER SWITCH CONNECTIONS TEST	 E32883 -UN-20APR89	Check connections and proper wire locations on dimmer switch. See control monitor schematic.	*LOOK: Connections must be tight and all wires in the proper location.*	**OK:** Go to 4C **NOT OK:** Connect wires to proper location. EX,1472,6015,L -19-01MAY89
4C TERMINAL 1 ELECTRONIC MODULE TEST	 E32884 -UN-20APR89	Check connections and proper wire locations on electronic module. See control monitor schematic.	*LOOK: Connections must be tight and all wires in the proper location.*	**OK:** Go to 4D **NOT OK:** Connect wires to proper location. EX,1472,6015,M -19-06NOV95
4D TERMINAL 1 ELECTRONIC MODULE TEST	 E32885 -UN-20APR89	Disconnect white wire from module to yellow lamp and green wire to the dimmer switch.	Check wires for continuity using a volt-ohmmeter.	CONTINUITY: Go to 4E NO CONTINUITY: Connect white wire to green wire using a crimp connector. Tape connection. EX,1472,6015,N -19-01MAY89

60 15 3

4E TERMINAL 1 HARNESS AND DIMMER SWITCH TEST	 E32886 -UN-20APR89	Disconnect white wire from the module to the harness and white wire from the module to the dimmer switch.	Check wires for continuity using a volt-ohm meter.	CONTINUITY: Go to 5 NO CONTINUITY: Check for loose or broken connections. Repair break in white wires using a crimp connector. Tape connection. EX,1472,6015,O -19-22JAN92
5 TERMINAL 2 TESTS *NOTE: Before diagnosing flashing yellow light, be sure solid yellow light operates properly.*	 E32887 -UN-20APR89	Remove flasher bulb. Connect a jumper wire between flasher terminals.	*LOOK: Continuous yellow light is on.*	**OK:** Replace flasher bulb. Be sure to use correct light bulb. **NOT OK:** Go to 5A EX,1472,6015,P -19-01MAY89
5A TERMINAL 2 SHORT TERM BUZZER TEST *NOTE: Perform this test when short term buzzer does not sound when jumper connection between terminal 2 and 3 is interrupted.*	 E32877 -UN-20APR89	Turn tractor switch to ON position. Connect a jumper wire between the ground terminal 3 (A) and terminal 5 (B).	*LOOK: Continuous red light operates with dimmer switch in bright and dim positions.* *LISTEN: Continuous buzzer sounds.*	**OK:** Replace module **NOT OK:** Go to 6 EX,1472,6015,Q -19-01MAY89
6 TERMINAL 5 RED LIGHT TEST	 E32888 -UN-20APR89	Check for burned out light bulb.	*LOOK: Bulb must be lit when terminal 3 is connected to terminal 5.*	**OK:** Go to 6A **NOT OK:** Replace light bulb. EX,1472,6015,R -19-01MAY89

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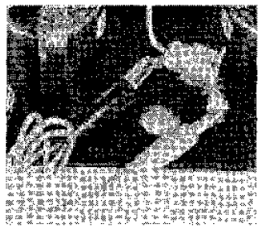
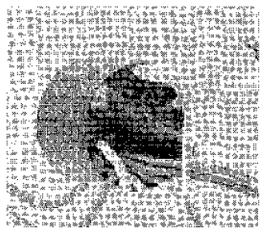
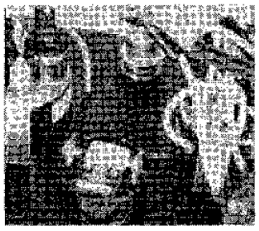
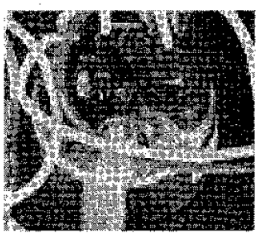
6A TERMINAL 5 LAMP SOCKET TEST	 E32889 -UN-20APR89	Check connections to lamp socket.	*LOOK: Connections must be firmly attached to lamp socket.*	**OK:** Replace module. Go to 6B **NOT OK:** Repair connections EX,1472,6015,S -19-01MAY89
6B TERMINAL 5 BUZZER TEST *NOTE: Perform this test when buzzer does not work with jumper connection between terminals 3 and 5.*	Check for proper polarity attachment of wires to buzzer. See control monitor schematic.	 E32884 -UN-20APR89	*LOOK: Red wire from module is connected to positive (+) terminal.*	**OK:** Go to 6C **NOT OK:** Connect wires to proper location. EX,1472,6015,T -19-01MAY89
6C TERMINAL 5 BUZZER FUNCTION TEST	 E32890 -UN-20APR89	Disconnect wires from buzzer. Apply 12 volts to buzzer. **⚠ CAUTION: Do not apply power to buzzer while wiring harness is attached to prevent damage to module.**	*LISTEN: Buzzer sounds.*	**OK:** Recheck polarity of voltage at convenience plug. **NOT OK:** Replace module. EX,1472,6015,U -19-01MAY89
7 TERMINAL 7 LEFT BALE SHAPE INDICATOR GAUGE TEST *NOTE: Perform this test if left bale shape indicator gauge does not respond to jumper connection between terminals 3 and 7.*	 E32892 -UN-20APR89	Check connections and proper wire locations on left bale shape indicator gauge. See control monitor schematic.	*LOOK: Connections must be tight and all wires in the proper locations.*	**OK:** Go to 7A **NOT OK:** Connect wires to proper locations. EX,1472,6015,V -19-01MAY89

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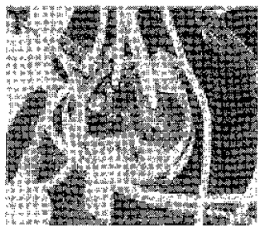
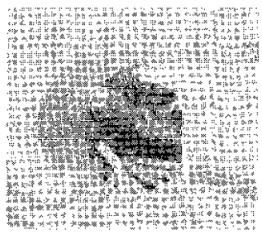
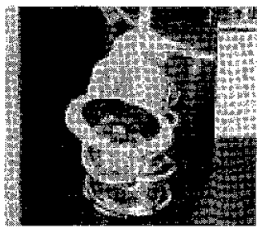
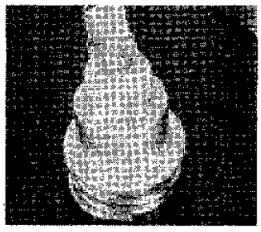
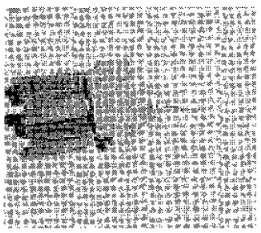
7A TERMINAL 7 LEFT BALE SHAPE INDICATOR VOLTAGE TEST	 E32893 -UN-20APR89	Check for at least 12 volts between ground (brown wire) and input (red wire). See control monitor schematic.	Check for proper polarity at the gauge.	**OK:** Go to 7B **NOT OK:** Inspect the wiring harness. EX,1472,6015,W -19-06NOV95
7B TERMINAL 7 LEFT BALE SHAPE INDICATOR CONTINUITY TEST	 E32884 -UN-20APR89	Check for continuity in blue (signal) wire from the gauge to terminal 7. See control monitor schematic.	*LOOK: Blue wire must have continuity from the gauge to terminal 7.*	**OK:** Replace left bale shape indicator gauge. **NOT OK:** Replace blue wire. EX,1472,6015,X -19-02MAY89
8 TERMINAL 8 TESTS *NOTE: Perform this test if continuous green light does not work on either bright or dim switch setting, or works only on one setting.*	 E32881 -UN-20APR89	Check for burned out light bulb.	*LOOK: Bulb must be lit when terminal 3 is connected to terminal 8.*	**OK:** Go to 8A **NOT OK:** Replace light bulb. EX,1472,6015,Y -19-06NOV95
8A TERMINAL 8 LAMP SOCKET TEST	 E32882 -UN-20APR89	Check connections to lamp socket.	*LOOK: Connections must be firmly attached to lamp socket.*	**OK:** Go to 8B **NOT OK:** Repair connections. EX,1472,6015,Z -19-02MAY89
8B TERMINAL 8 DIMMER SWITCH CONNECTIONS TEST	 E32883 -UN-20APR89	Check connections and proper wire locations on dimmer switch. See control monitor schematic.	*LOOK: Connections must be tight and all wires in the proper location.*	**OK:** Go to 8C **NOT OK:** Connect wires to proper location. EX,1472,6015,AA-19-02MAY89

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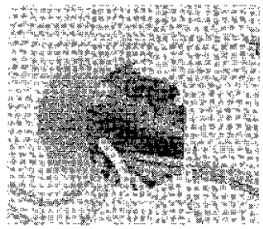
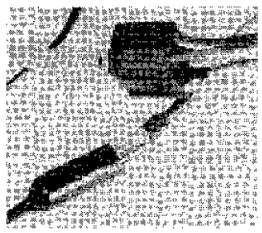
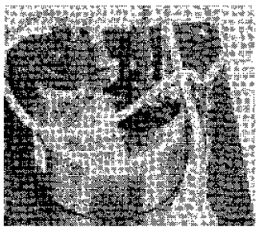
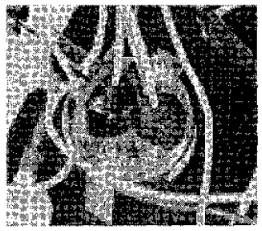
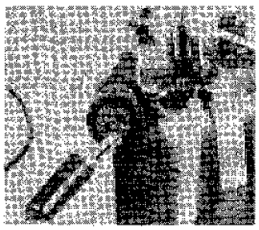
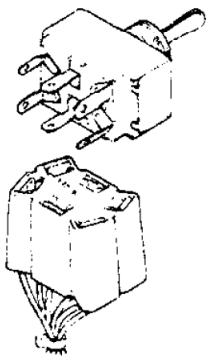
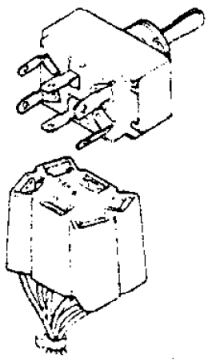
8C TERMINAL 8 ELECTRONIC MODULE TEST	 E32884 -UN-20APR89	Check connections and proper wire locations on electronic module. See control monitor schematic.	*LOOK: Connections must be tight and all wires in the proper location.*	**OK:** Go to 8D **NOT OK:** Connect wires to proper locations. EX,1472,6015,AB-19-02MAY89
8D TERMINAL 8 MODULE AND DIMMER SWITCH TEST	 E32895 -UN-20APR89	Disconnect purple wire from module to green light and the brown wire from the module to the dimmer switch.	Check wires for continuity using a volt-ohmmeter.	CONTINUITY: Go to 10. NO CONTINUITY: Check for loose or broken connections. Repair break in purple wire or brown wire using a crimp connector. Tape connection. EX,1472,6015,AC-19-06NOV95
9 TERMINAL 9 RIGHT BALE SHAPE INDICATOR GAUGE TEST	*NOTE: Perform this test if right bale shape indicator gauge does not respond to jumper connections between terminals 3 and 9.*	 E32896 -UN-20APR89	Check connections and proper wire locations on right bale shape indicator gauge. See control monitor schematic. *LOOK: Connections must be tight and all wires in the proper location.*	**OK:** Go to 9A **NOT OK:** Connect wires to proper locations. EX,1472,6015,AD-19-02MAY89
9A TERMINAL 9 RIGHT BALE SHAPE INDICATOR VOLTAGE TEST	 E32893 -UN-20APR89	Check for at least 12 volts between ground (brown wire) and input (red wire). See control monitor schematic.	Check for proper polarity at the gauge.	**OK:** Go to 9B **NOT OK:** Inspect the wiring harness. EX,1472,6015,AE-19-02MAY89

9B **TERMINAL 9 RIGHT BALE SHAPE INDICATOR CONTINUITY TEST**	 E32897 -UN-20APR89	Check for continuity in yellow (signal) wire from the gauge to terminal 9. See control monitor schematic.	*LOOK: Yellow wire must have continuity from the gauge to terminal 9.*	**OK:** Replace right bale shape indicator gauge. **NOT OK:** Replace yellow wire. EX,1472,6015,AF-19-02MAY89
10 **DIMMER SWITCH DIM (DOWN) POSITION TEST**	 E32921 -UN-22MAY89	With dimmer switch on dim setting, check continuity between: • White and orange wires • Purple and yellow wires • White and green wires • Purple and brown wires • Green and orange wires • Brown and yellow wires	*LOOK: There must be continuity between:* • White and orange wires • Purple and yellow wires *LOOK: There must not be continuity between:* • White and green wires • Purple and brown wires • Green and orange wires • Brown and yellow wires	**OK:** Go to **10A** **NOT OK:** Repair wires. EX,1472,6015,AG-19-06NOV95
10A **DIMMER SWITCH BRIGHT (UP) POSITION TEST**	 E32921 -UN-22MAY89	With dimmer switch on bright setting, check continuity between: • White and green wires • Purple and brown wires • White and orange wires • Purple and yellow wires • Green and orange wires • Brown and yellow wires	*LOOK: There must be continuity between:* • White and green wires • Purple and brown wires *LOOK: There must NOT be continuity between:* • White and orange wires • Purple and yellow wires • Green and orange wires • Brown and yellow wires	**NOT OK:** Repair wires. EX,1472,6015,AH-19-06NOV95

60 15 8

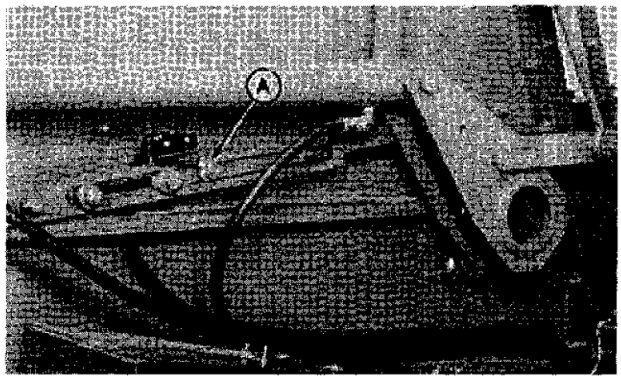
ESSENTIAL TOOLS

NOTE: Order tools from the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

Number	Name	Use
JTO5682	Analog/Digital Multimeter	To test electrical circuit of the baler.

EX,1472,6020,A -19-11MAR93

TEST BALE SIZE SWITCH (335—375—385)



E27853 -UN-14SEP88

1. Turn on tractor ignition and manually depress microswitch arm.

If bale size warning buzzer (in tractor cab) does not should sound with microswitch arm depressed or stop when arm is released.

2. Check for broken or bent switch arm.

NOTE: Microswitch arm roller must contact washer (A) and activate microswitch. Loosen microswitch mounting screws to adjust. See Adjusting Bale Size Switch (this group), adjust if necessary.

3. Check adjustment of roller arm contacting washer (A).

4. Check for loose wires on microswitch.

5. Check for 12 volts at power supply plug.

6. Disconnect black wire from microswitch and check for 12 volts between tan and black wire.

7. If machine voltage checks, turn off tractor switch, disconnect other wire from microswitch and test microswitch for continuity. Replace microswitch if necessary.

EX,1472,6020,B -19-26AUG93

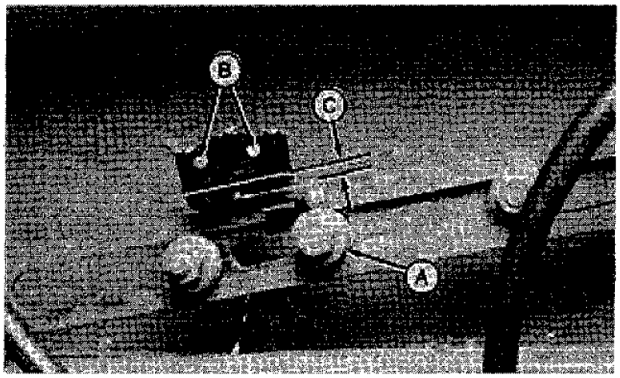
60 20 1

ADJUST BALE SIZE SWITCH (335—375—385)

1. Raise the gate until roller on microswitch arm is centered over washers (A).

2. Loosen screws (B) and adjust switch to obtain a 3 mm (1/8-in.) gap (C) between microswitch arm and body. Tighten screws (B).

3. With ignition switch on bale size alert should be on with microswitch in this position. If not, repeat step 2 and decrease gap (C) dimension.



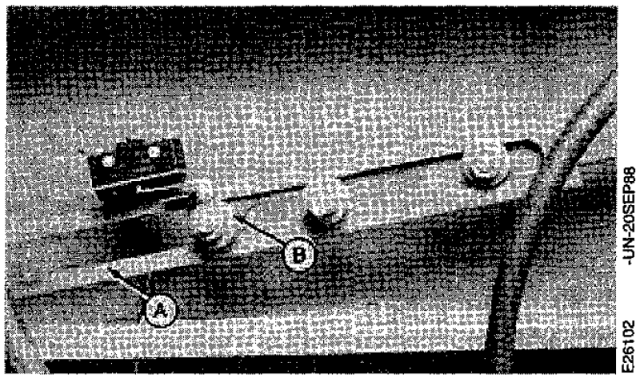
E26101 -UN-12SEP88

EX,1472,6020,D -19-26AUG93

4. With tractor hydraulics, raise gate fully (tension arm raised fully) and lock gate.

5. Manually push sliding link (A) forward until microswitch roller is centered over washers (B).

6. With ignition switch on,bale size alert should be on with microswitch in this position. If not, repeat step 2 and degrease gap.



E26102 -UN-20SEP88

EX,1472,6020,E -19-26AUG93

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2

ADJUST LINKAGE FOR MAXIMUM BALE SIZE (335, 375, 385)

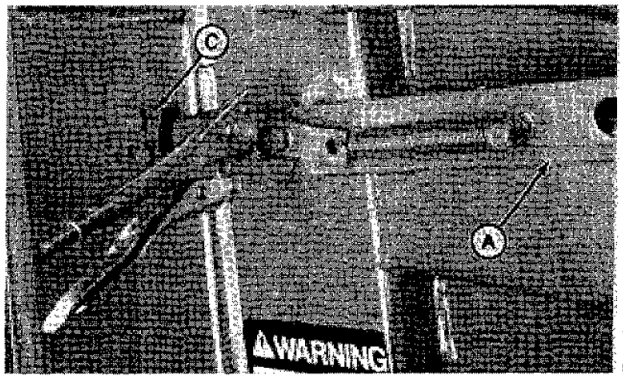
1. Adjust bale size switch. (See ADJUST BALE SIZE SWITCH in this section.)

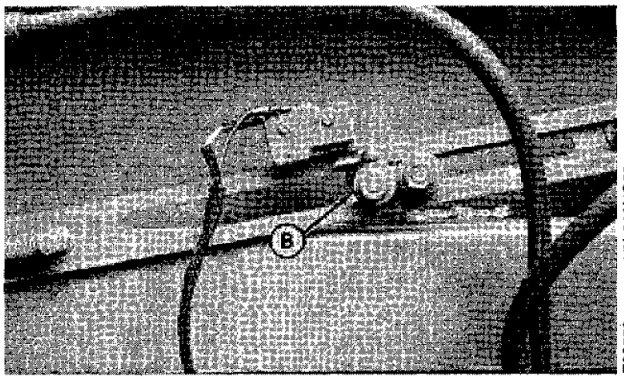
2. With gate fully closed, clamp bale size switch linkage together, using a pair of locking jaw pliers. Place the jaws under spring strap (or washers) and over microswitch linkage (A), to keep linkage from moving as the gate is opened.

3. With tractor hydraulics, open gate fully (raise tension arm fully).

4. Microswitch roller must be centered on the rear washers (B) and bale size alert actuated. If not, close gate and adjust bracket (C) on gate to move the linkage forward or rearward as needed.

5. Repeat steps 2 through 4 to check new setting.





EX,1472,6020,F -19-27AUG93

ADJUST GATE LATCH SWITCHES (GREEN LIGHT) (435—535)

1. Close and latch gate. Cylinder should be fully retracted.

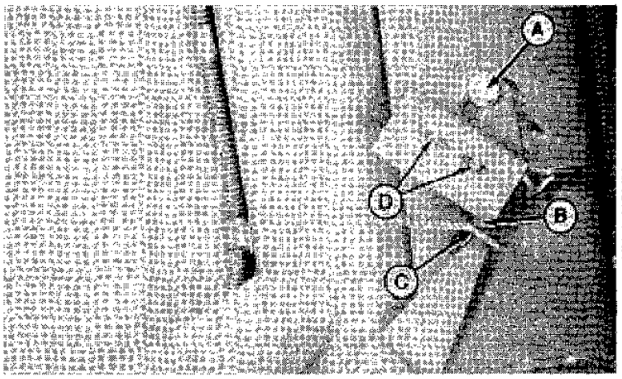
2. Roller (B) must be centered on short leg of switch ramp (C).

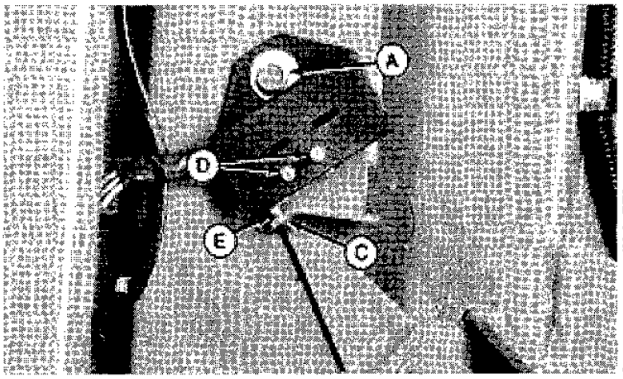
3. With switch arm contacting the switch body, the dimension should be 0.50 to 2 mm (1/64 to 3/32 in.) between the switch roller (B) and the ramp (C).

4. Adjust bracket on switch using cap screw (A) and/or screws (D) to obtain correct dimension.

5. Repeat on opposite side.

A—Cap Screw
B—Switch Roller
435, S.N. —921150
535, S.N. —921939
C—Ramp
D—Screws
E—Switch Roller
435, S.N. 921151—
535, S.N. 921940—





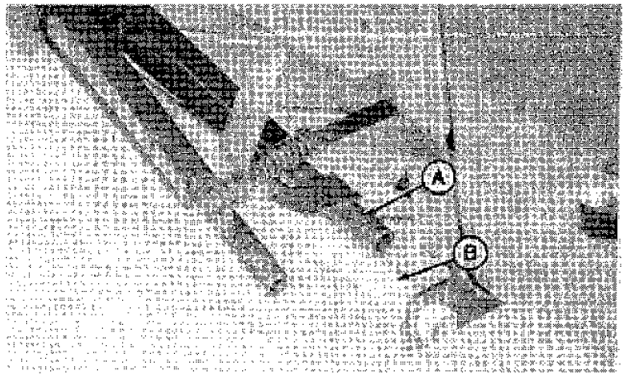
EX,1472,6020,G -19-11MAR93

60 20 3

ADJUST TWINE ARM SWITCH (SOLID YELLOW LIGHT) (435—535)

1. Raise and lock gate to shift twine valve so twine arms can be moved manually. Shut off tractor.

2. Move twine arms so rear arm (A) is over compressor tube (B).



EX,1472,6020,H -19-11MAR93

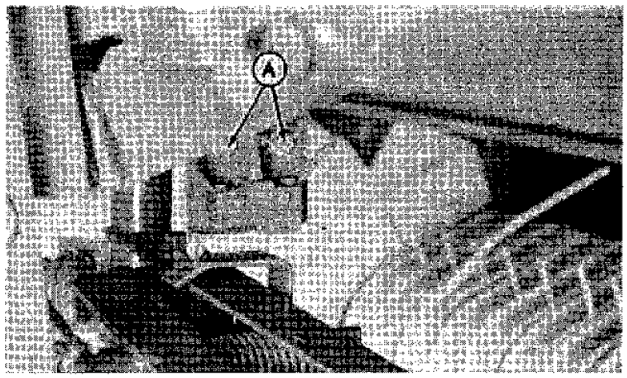
3. Loosen two cap screws (A) on switch mounting plate.

4. Move switch horizontally until it is positioned as shown.

5. Move switch vertically until switch is just activated.

6. Tighten cap screws (A).

7. Unlock and close gate.



EX,1472,6020,I -19-02MAY89

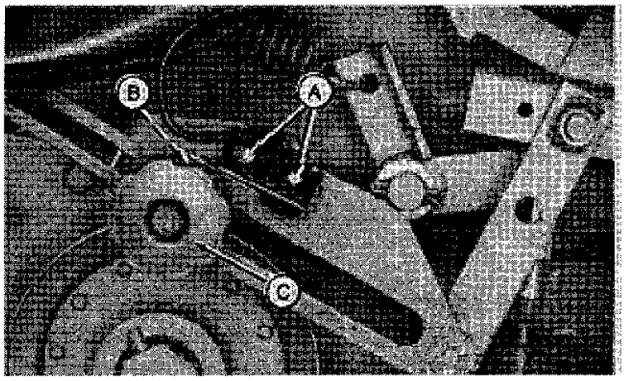
ADJUST FLASHING YELLOW LIGHT SWITCH (435—535)

1. Using tractor hydraulics, raise tension arm fully. Shut off tractor.

2. Loosen switch mounting screws (A).

3. Position switch roller (B) on highest point of bale size adjusting knob (C).

4. Adjust switch so it is just activated.



EX,1472,6020,J -19-11MAR93

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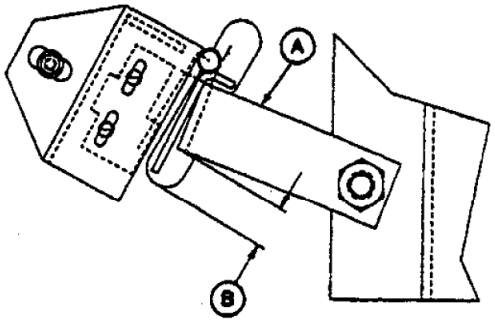
4

ADJUST OVERSIZE BALE SWITCH (RED LIGHT) (435—535)



1. Close gate. The green light must be on to make this adjustment.

2. Raise oversize bale switch lever (A) to a position 13 mm (1/2 in.) (B) above the lower end of the slot in side sheet.

3. Position switch roller on ramp as shown. Clearance between switch arm and switch body should be 1 to 2 mm (1/32 to 3/32 in.).

4. Red light and buzzer will be activated, green light will go out when oversize bale switch lever is in this position.

NOTE: If green light is not operating (due to poor gate latch switch adjustment) red light and buzzer will not operate.

5. Rotate oversize bale switch lever upward fully. Lever must not bind or interfere with switch or switch bracket.

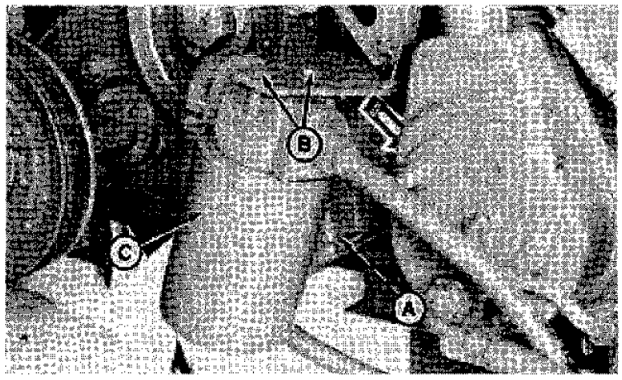
EX,1472,6020,K -19-11MAR93

ADJUST PUMP IDLER SWITCH (435—535)

NOTE: If twine pump has been removed or replaced, the pump idler switch adjustment should be checked.

1. Close gate and lower tension arm fully to latch pump linkage. Shut off tractor.

2. To access switch (A), remove two cap screws (B) and lower filter assembly (C).

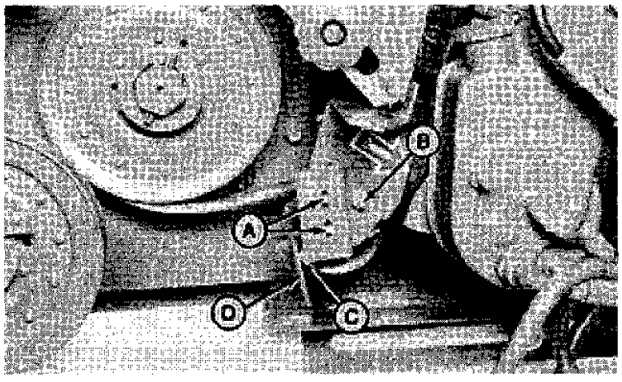


EX,1472,6020,L -19-11MAR93

3. Make sure screws (A) are at the upper end of slots. Loosen cap screw (B) and adjust bracket to obtain 1 mm (1/32 in.) clearance between roller (C) and ramp (D) when switch arm is pushed against switch body.

4. Tighten cap screw (B).

A—Screws
B—Cap Screw
C—Roller
D—Ramp



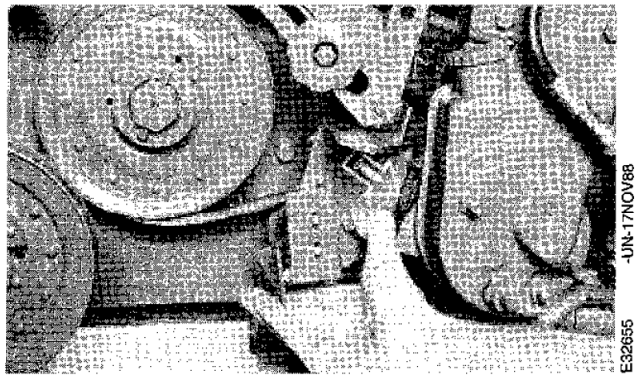
EX,1472,6020,M -19-22JAN92

5. Check switch adjustment by lifting pump idler arm to remove slack in the linkage. The switch must remain activated while pump idler arm is raised.

6. The switch ramp must clear the switch bracket through its full travel.

7. Raise tension arm fully to trip linkage and check for interference with the switch bracket in the upper switch ramp position.

8. Install filter assembly.



EX,1472,6020,N -19-02MAY89

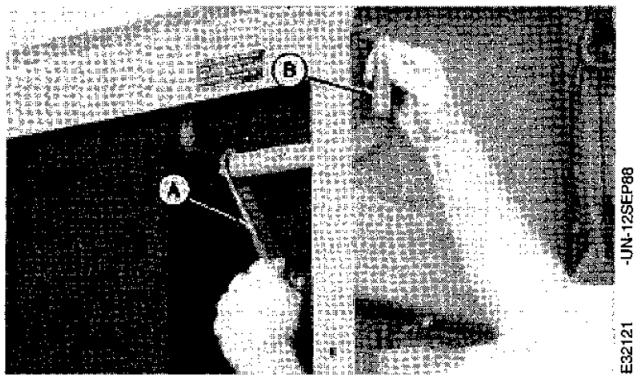
ADJUST BALE SHAPE SENDERS (435—535)

Bale shape senders are located at the rear of baler on the left and right sides.

1. Lock gate in closed position.

2. Raise belt tension arm to highest position with tractor selector valve to slacken belts.

3. Push in bale shape sender arms (A) and unhook springs (B).



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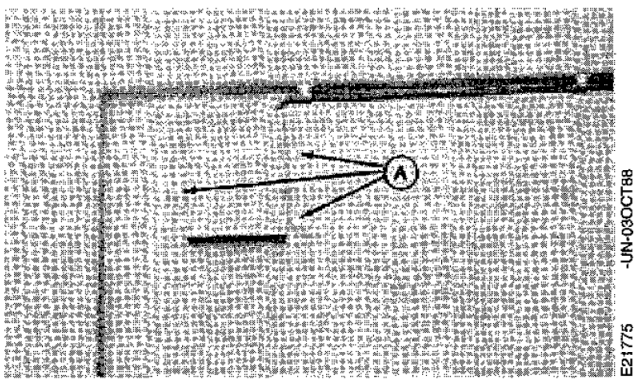
EX,1472,6020,O -19-06NOV95

4. Lower belt tension arm and engage PTO for a few seconds to ensure belts are tensioned. Shut off tractor.

5. Loosen nuts (A).



EX,1472,6020,P -19-02MAY89

NOTE: Shield (C) has been cut away for illustration purposes only.

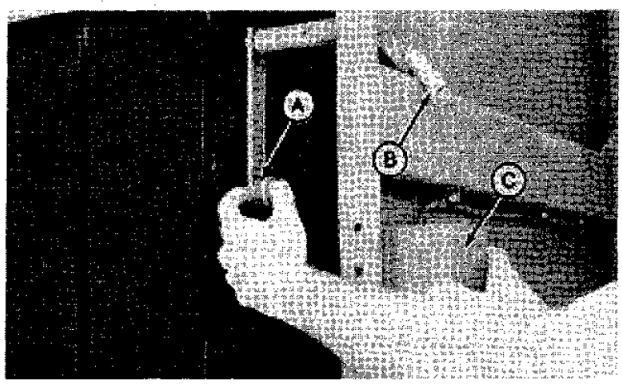
6. With roller (A) just contacting belt, move shield (C) up or down as needed to obtain approximately 1 mm (1/32 in.) between sending unit arm (E) and bottom stop.

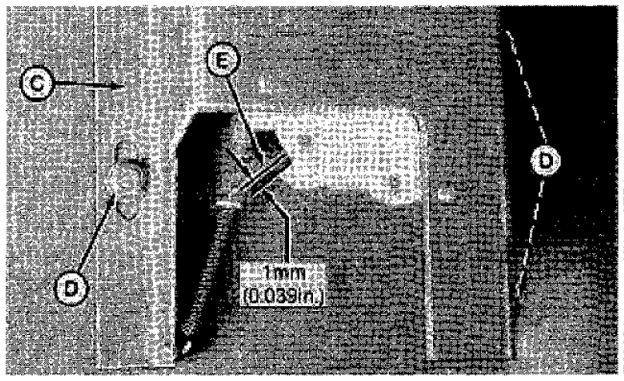
7. Tighten nuts (D).

NOTE: Both gauges in monitor box should be in full position at this point (needle pointing at top dot).

8. Raise belt tension arm to slacken belts and hook up spring (B).

A—Roller
B—Spring
C—Shield
D—Nuts
E—Sending Unit Arm





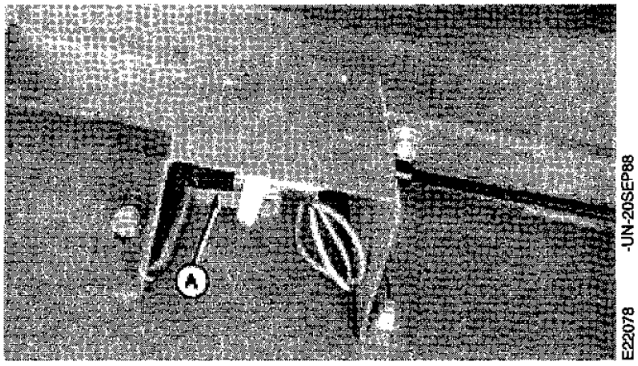
EX,1472,6020,Q -19-11MAR93

CHECK POTENTIOMETER (435—535)

1. Attach volt ohmmeter to potentiometer.

2. Move potentiometer arm (A) slowly (approximately 5 seconds from stop to stop). Volt-ohmmeter needle movement should correspond to movement of bell crank arm - no dead spots in needle movement. Volt-ohmmeter should register approximately 5 to 90 ohms resistance from stop to stop.

3. Replace potentiometer if there are dead spots in needle movement or if resistance is not within approximate range.



EX,1472,6020,R -19-11MAR93

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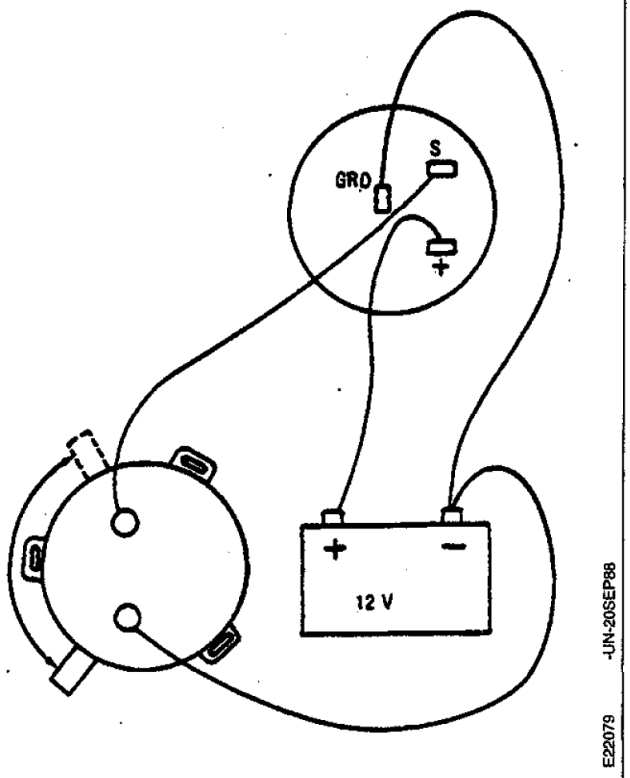
CHECK BALE SHAPE INDICATOR GAUGE (435—535)

1. Use a good potentiometer for checking bale shape indicator gauge. See CHECK POTENTIOMETER, this section.

2. Attach wires from 12 volt battery to gauge on monitor and potentiometer as shown.

3. Move potentiometer arm slowly (approximately 5 seconds from stop to stop). Needle on gauge should correspond to movement of potentiometer arm.

4. Replace gauge if gauge needle movement does not correspond to potentiometer arm movement.



EX,1472,6020,S -19-11MAR93

CHECK BUZZER (435—535)

Connect buzzer to 12 Volt battery, positive to positive - negative to negative. Replace buzzer if there is no sound.

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EX,1472,6020,T -19-11MAR93

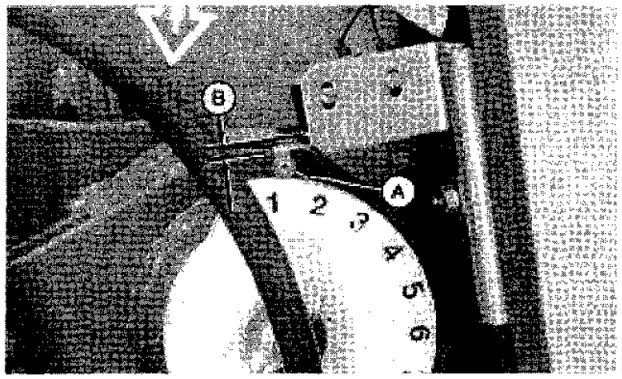
ADJUST SOFT VARIABLE CORE SWITCH

1. Close gate and lower tension arm.

2. Make sure the switch roller (A) is on the raised part of the numbered cam.

3. Clearance (B) between switch arm and switch body should be 1—2 mm (1/32—3/32 in.).

4. Loosen mounting screws and position switch to obtain clearance. Tighten screws.



EX,1472,6020,T1-19-11MAR93

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9

CHECK WIRE FOR CONTINUITY (435—535)

1. Disconnect the baler-tractor wiring harness at the connector.

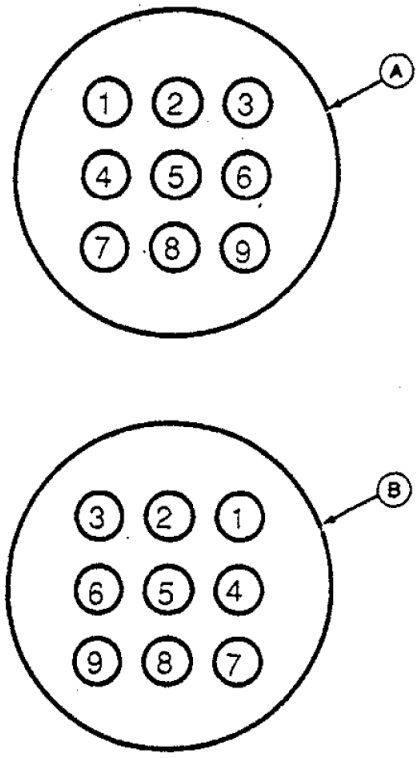
2. Use a volt-ohmmeter and check continuity from switch to connector. The connector has molded-in numbers next to the terminal holes. The numbers and wire colors correspond as such:

1-White	**4-None**	**7-Blue**
2-Gray	**5-Green**	**8-Purple**
3-Brown	**6-None**	**9-Yellow**

3. If continuity of switch to connector wire checks OK, check continuity of connector to monitor.

4. If continuity of connector to monitor wire checks OK, re-connect the two halves of the harness and check continuity from the switch to the inside of the monitor box. If there is no reading on the volt-ohmmeter the connector is faulty. Check for corroded pins and pins that are pushed too far into the end of the connector to make a good connection. Clean pins if corroded. If a pin has been pushed into the connector too far, use a par of needle-nose pliers and pull it out flush with the other pins.

If a wire is broken, attach volt-ohmmeter to wire end and connector end of harness. Start at one end of harness and flex harness watching the volt-ohmmeter; work along entire harness. If you get a reading on the volt-ohmmeter, the wire is broken in that approximate area. Cut off a section of the protective cover and splice the wire together. Replace the section of protective cover with electrical tape.



A—Baler Half
B—Tractor Half

EX,1472,6020,U -19-11MAR93

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CHECK MICROSWITCHES

1. Disconnect all wires at switch.

2. Attach one lead of continuity tester to "common" terminal.

3. Attach the other lead of continuity tester to "normally open" terminal.

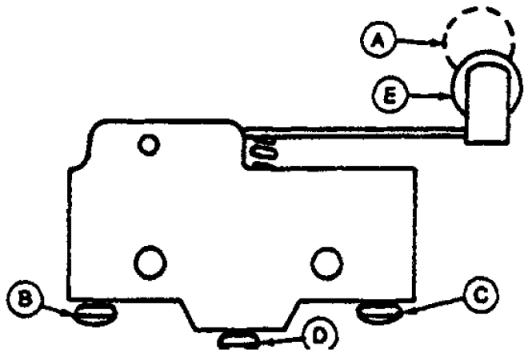
When switch lever is free (not compressed), there should be no continuity through the switch.

When switch is compressed (click is heard), there should be continuity through the switch.

4. Move the lead from the "normally open" to the "normally closed" terminal.

When the switch lever is free (not compressed), there should be continuity through the switch.

When the switch is compressed (click is heard), there should be no continuity through the switch.



E27209 -UN-22SEP88

A—Normal
B—Common
C—Normally Closed
D—Normally Open
E—Depressed

EX,1472,6020,V -19-11MAR93

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11

CHECK GATE LATCH SWITCH

NOTE: For 435 balers (serial nos. 921151—) and 535 balers (serial nos. 921940—), use this procedure to check gate latch switches. For earlier units, refer to Check Microswitches to check gate latch switches.

1. Disconnect switch connector.

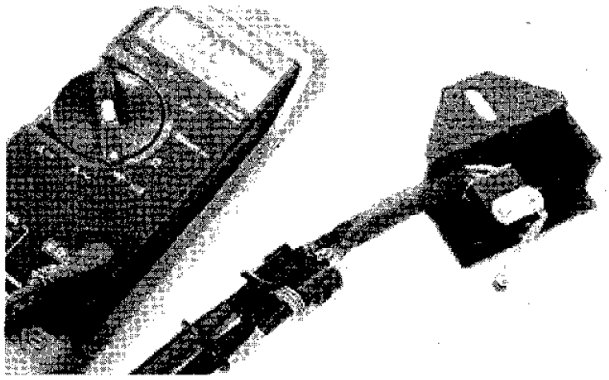
NOTE: Switch does not have to be removed for this check. Switch is removed for clarity.

2. Check continuity between four terminals (A—D) of switch connector with the switch lever released and depressed.

NOTE: Terminal identification letters (A—D) are molded into switch connector.

Terminals	Switch Lever Position	
	Released	Depressed
A—C	No Continuity	Continuity
A—D	Continuity	No Continuity
B—D	No Continuity	Continuity

3. If switch continuity is not according to above table, replace and adjust switch.



E36413 -UN-23FEB92

EX,1472,6020,W -19-11MAR93

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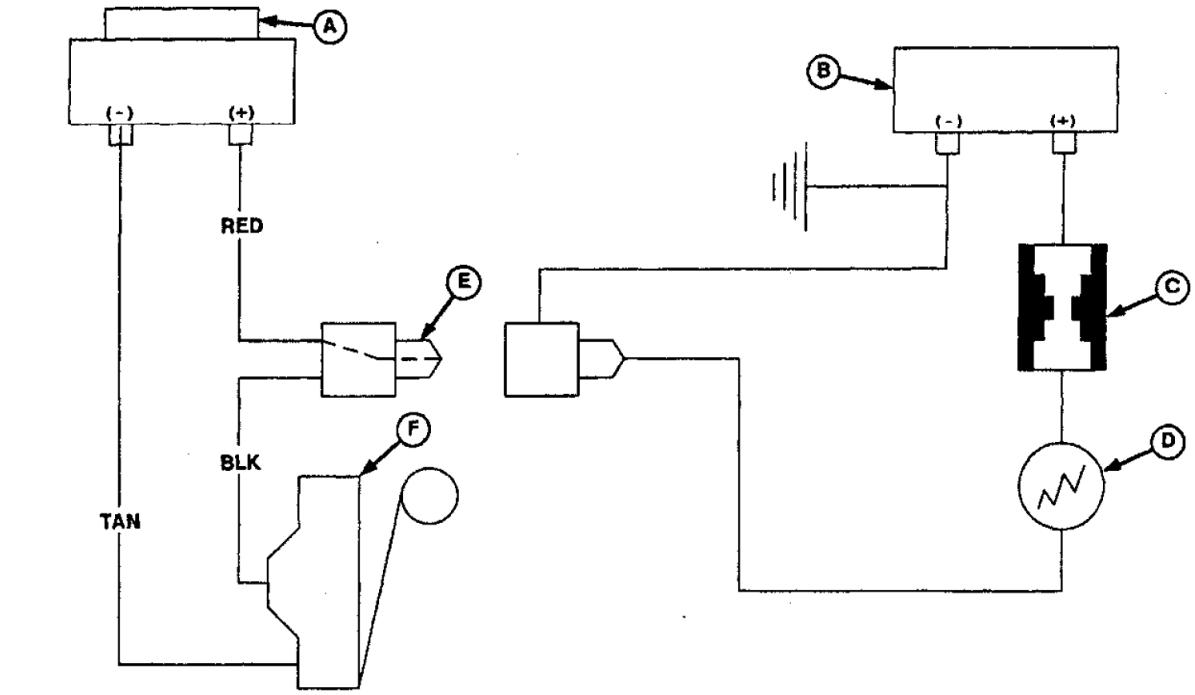
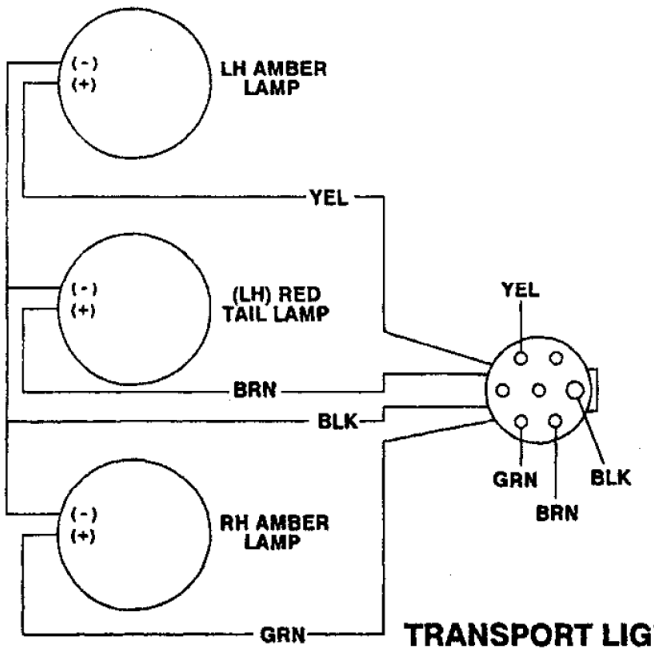
12

BALER WIRING DIAGRAM (335—375—385)





TRANSPORT LIGHTS

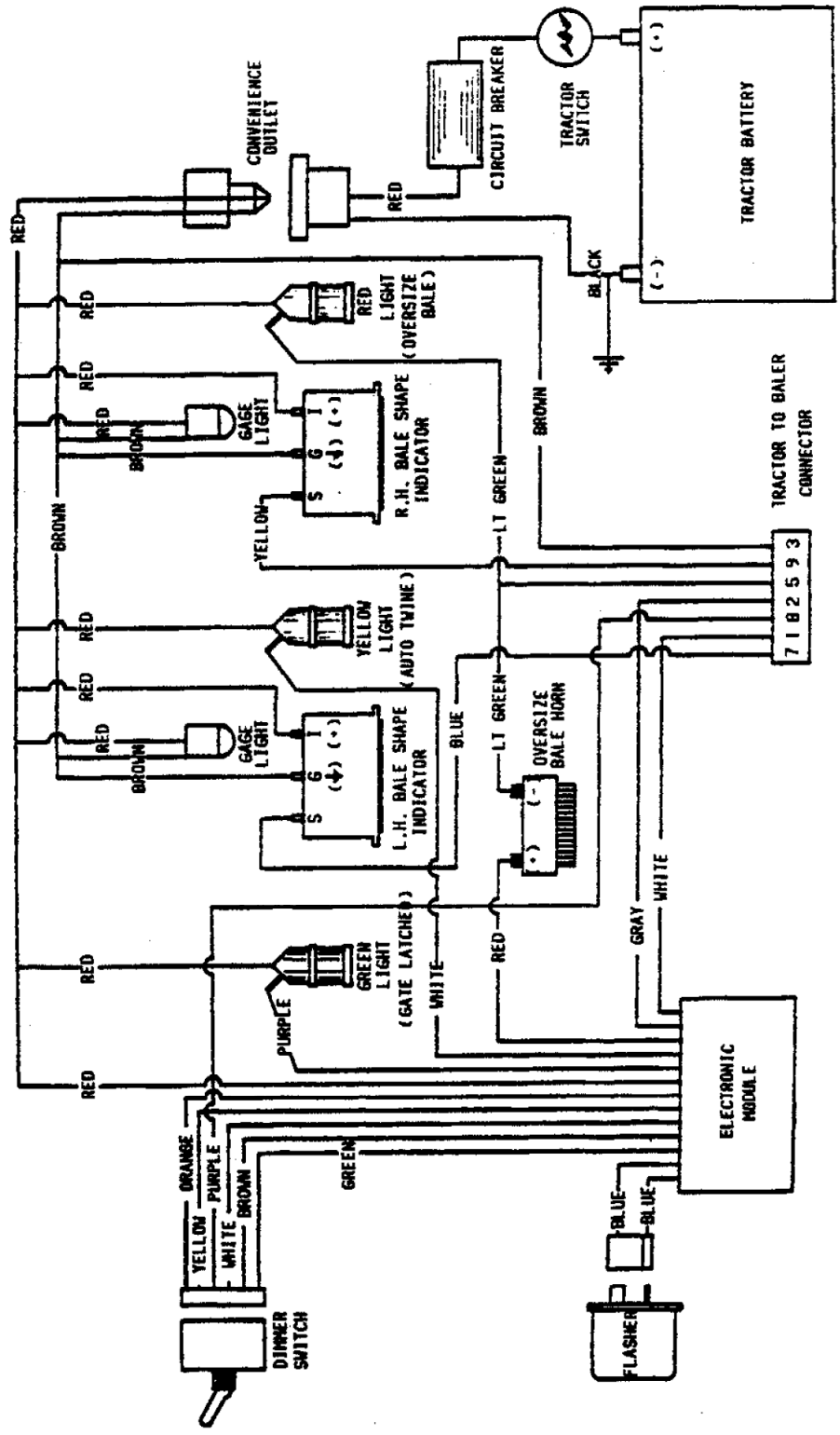
A—Bale Size Alert
B—Tractor Battery
C—Circuit Breaker
D—Tractor Switch
E—Power Supply Plug
F—Bale Size Switch

E36464 -19-23FEB93

60 25 1

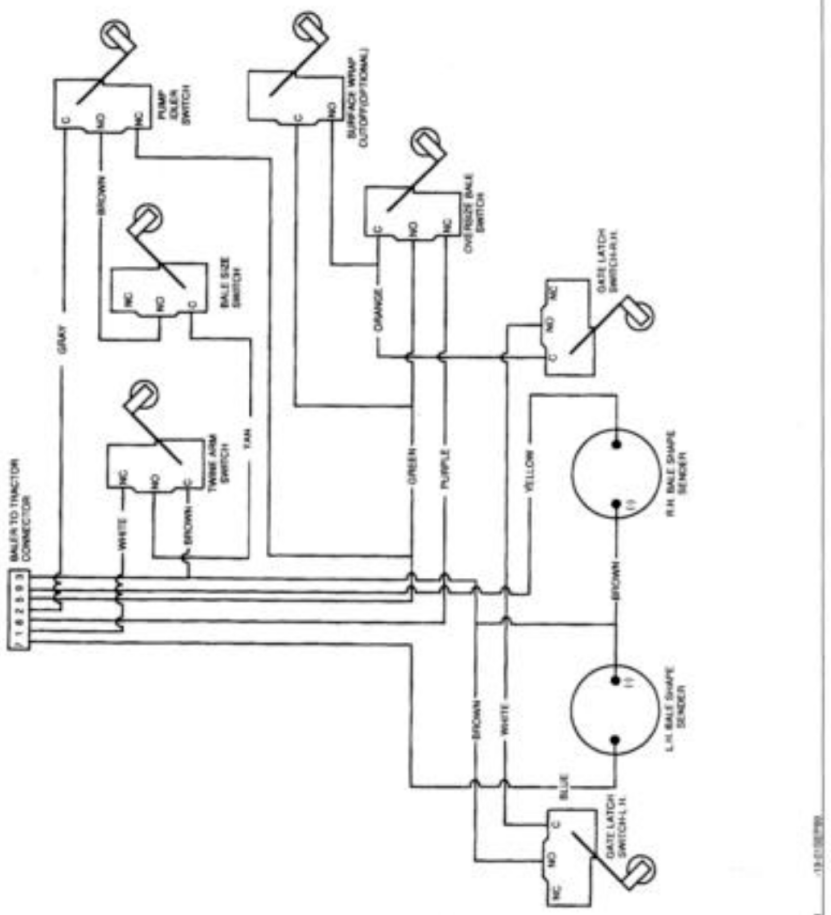
EX,1472,6025,A1-19-11MAR93

TRACTOR/MONITOR WIRING DIAGRAM 435—535 (S.N. —915000)



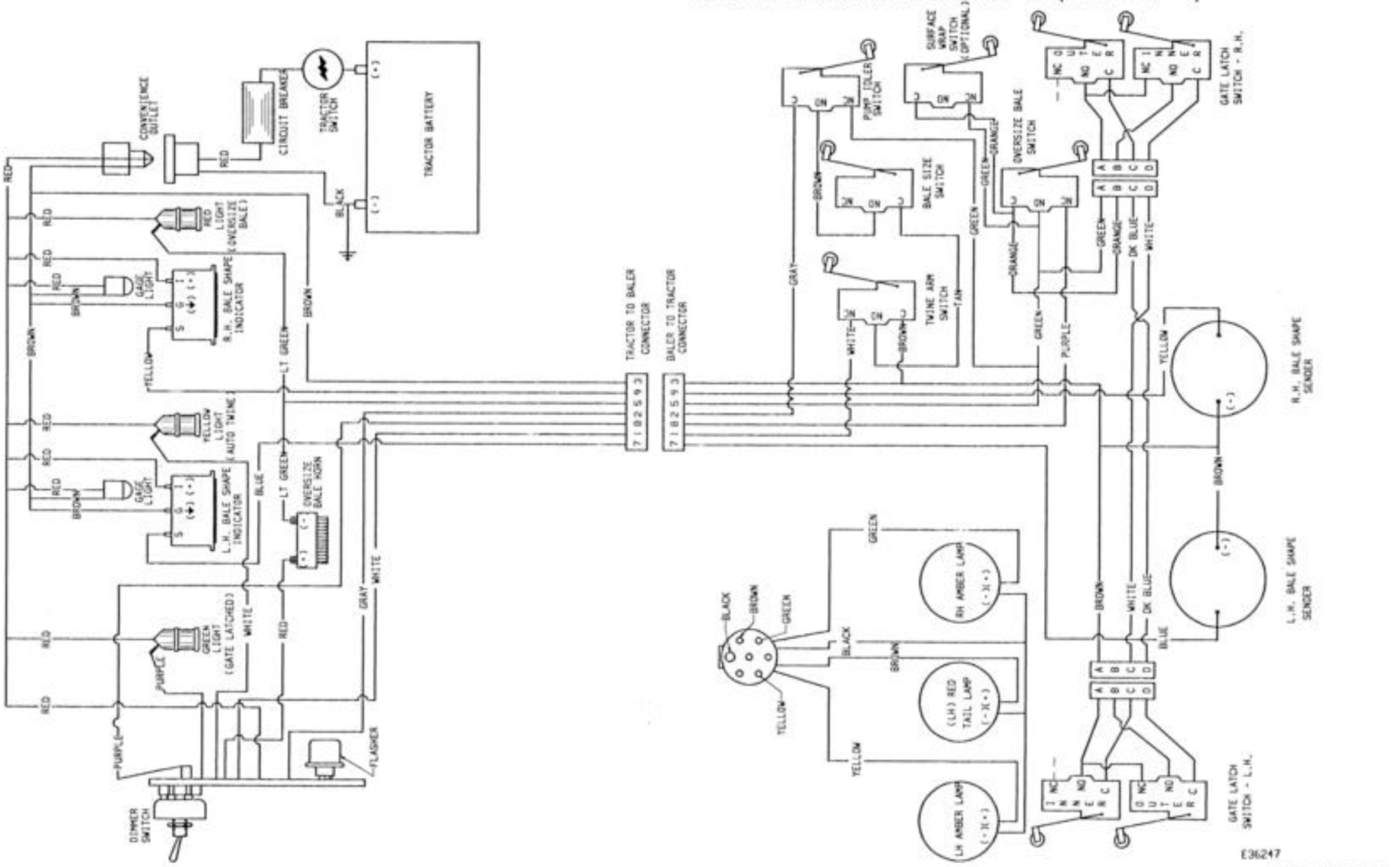
EX,1472,6025,B -19-11MAR93

BALER WIRING DIAGRAM 435—535 (S.N. —915000)

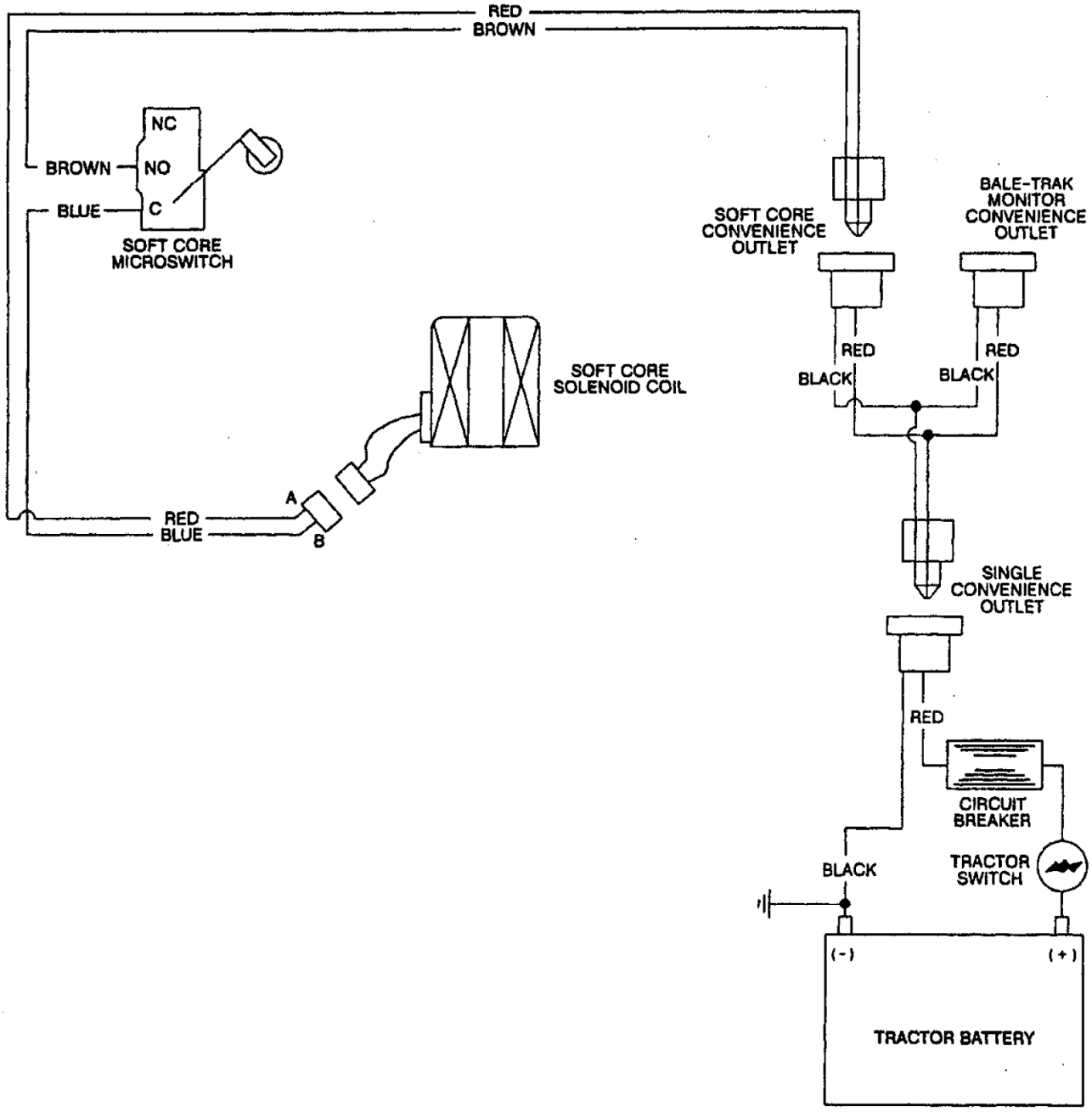


EX,1472,6025,C -19-11MAR93

MONITOR/BALER WIRING DIAGRAM 435—535 (S.N. 915001—)



SOFT CORE OPTION WIRING DIAGRAM



EX,1472,6025,E -19-11MAR93

Section 70
PICKUP

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Symptom	Problem	Solution
Pickup teeth do not revolve	Belt slipping.	Replace or adjust belt. Raise compressor rack. (See Adjusting Pickup Belt Idler and Adjusting Compressor Rack Assembly in Operating the Baler section of the operator's manual.)
	Drive chain broken or missing.	Repair or replace.
	Broken cam and/or other internal pickup parts.	Check for failed or worn cam and/or internal parts. Replace if necessary.
Pickup will not float or lower easily	Excess or insufficient float assist.	Adjust float springs. (See Adjusting Pickup Float Springs in Service section of operator's manual.)
	Binding at pivots (crop divider and stripper).	Remove chaff and dirt. Straighten any bent parts.
		Install gauge wheel(s) to improve ground gauging.
Not picking up hay cleanly	Pickup teeth set too high.	Lower pickup (See Adjusting Pickup Height in Operating the Baler section of the operator's manual.)
	Pickup stays up.	Loosen float springs. (See Adjusting Pickup Float Springs in Service section of operator's manual.)
	Ground speed too fast.	Reduce ground speed.
	Windrows too light.	Rake heavier windrows.
	Pickup teeth bent or broken.	Straighten or replace teeth.
Pickup teeth digging in ground	Pickup set too low.	Raise pickup. (See Adjusting Pickup Height in Operating the Baler section of the operator's manual.)
	Poor pickup flotation.	Tighten float springs. Check pivots. (See Adjusting Pickup Float Springs in Service section of operator's manual.)
	Rough terrain.	Install gauge wheel.

Continued on next page

Symptom	Problem	Solution
Pickup tooth breakage	Pickup set too low.	Raise pickup. (See Adjusting Pickup Height in Operating the Baler section of the operator's manual.)
	Foreign material inside pickup strippers and/or broken teeth.	Remove material and/or replace teeth.
	Baling cornstalks.	Raise pickup. Expect higher tooth breakage.
	Operating twine arm with pickup in transport position.	Lower pickup.
Pickup teeth bent or broken	Set too low.	Raise pickup.
	Foreign material inside pickup strippers and/or broken teeth.	Remove material and/or replace teeth.
Pickup too high in down position	Wheel spindles installed upside down.	Correctly install spindles.
Plugging at crop dividers	Over-crowding ends.	Reduce crowding. Install converging wheels. (See Attachment section of operator's manual.)
	Pickup set too low.	Raise pickup. (See Adjusting Pickup Height in Operating the Baler section of the operator's manual.)
	Tractor tires smashing crop into stubble.	Widen wheel spacing.
	Pivoting crop divider overlaps (shingles) stationary end stripper on the wrong side.	Straighten pivoting crop divider as needed to give proper overlap (shingle). Front crop dividers should be inside end stripper.
		Widen wheel spacing.
Inside of strippers worn	Strippers bent up hitting tooth coils.	Check for binding at crop dividers.
		Increase float. (See Adjusting Pickup Float Springs in Service section of operator's manual.)
		Raise pickup. (See Adjusting Pickup Height in Operating the Baler section of the operator's manual.)

Continued on next page

Symptom	Problem	Solution
		Install gauge wheels. (See attachment section of the operator's manual.) Bend strippers down for clearance and check tooth coils on pickup teeth for damage.

EX,1472,7005,A -19-11MAR93

SPECIFICATIONS

Item	Measurement	Specification
Cam Bearing Cap Screw	Torque	122 N·m (90 lb-ft)
Tooth Bar	Straightness	6 mm (0.236 in.) Maximum
Cylinder Shaft	Straightness	5 mm (0.188 in.) Maximum
Pickup Tooth Socket Head Screws	Torque	34 ± 12 N·m (25 ± 9 lb-ft)
Spider to Shaft Cap Screws	Torque	28 N·m (21 lb-ft)
Cam Follower to Tooth Bar	Torque	81 N·m (60 lb-ft)
Pickup Drive Chain	Adjustment	2.3 to 4.5 kg (5 to 10 lb) Pressure with 13 mm (1/2-in.) Deflection
Pickup Float Spring	Adjustment	138 mm (5-7/16-in.) Bolt Length

EX,1472,7010,A -19-06NOV95

INSPECTION CHECKLIST

When replacing pickup parts check these areas:

Pickup Teeth
- Remove twine, broken teeth, and hay inside of strippers.
- Check for loose hardware.
- Look for wear patterns on outside of tooth coils and inside of strippers.
- Check for clearance between teeth and strippers.

Cam Follower Bearing, Cam Follower Arm, Cam, and Spider
- Check follower bearings for uneven outer race wear, bad seals or looseness. Uneven wear on outer race is usually due to bent or twisted follower arms.
- Rotate bearings by hand and check for roughness.
- Check follower bearing retaining cap screw heads for wear. If heads are worn, shims are needed between cam mounting plate and pickup frame.
- Check cam for wear and cracks.
- Check spiders for wear and cracks. Make sure spring pins are retained with wires.
- Check cam follower and spider for looseness. Replace when looseness at spider bore exceeds 2 mm (0.09 in.).
- Check hex bearings at cylinder shaft for looseness and bad seals. Rotate by hand and check for roughness.

Crop Dividers
- Check for binding, straighten and align as needed.

EX,1472,7010,B -19-06NOV95

REPLACE TEETH WITH PICKUP INSTALLED

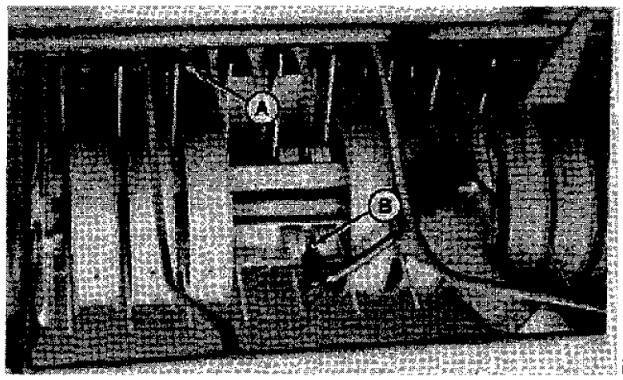
NOTE: Two strippers removed for clarity of photograph.

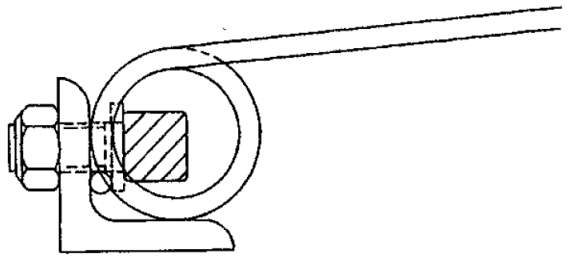
1. Remove four self-tapping screws (A) and stripper over broken or bent teeth.

2. Remove M10 x 25 socket head screw (B), washer, and lock nut.

3. Install new teeth, socket head screw (B), washer and lock nut. Tighten to 34 ± 12 N·m (25 ± 9 lb-ft). Be sure teeth are away from the bar and washer is under head of socket head screw as shown.

4. Install stripper using four self-tapping screws (A).

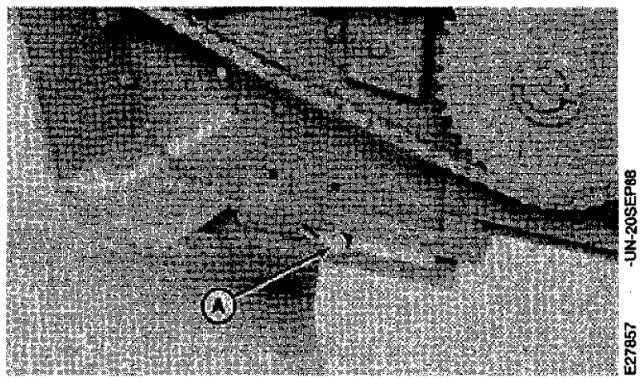




EX,1472,7010,C -19-06NOV95

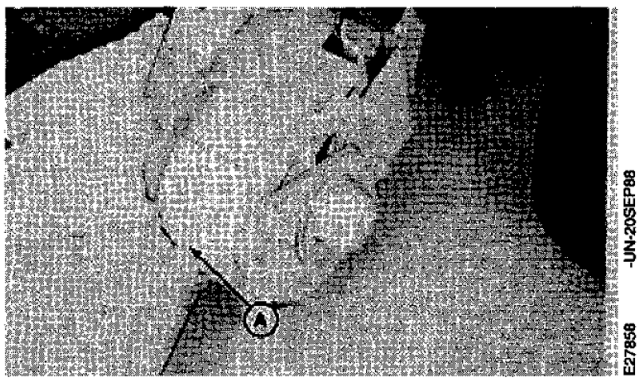
REPLACE CAM FOLLOWER BEARINGS

1. Remove lock nut, washer, cap screw (A), two washers, and spacer.



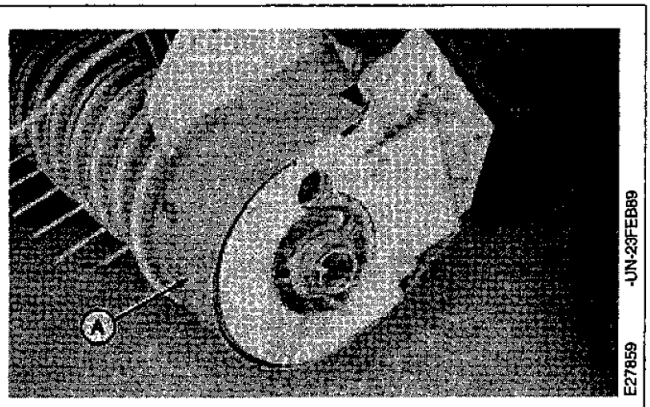
EX,1472,7010,D -19-11MAR93

2. Remove cap screw and cap screw with washer, and nut. Remove outer flare (A).



EX,1472,7010,E -19-08MAY89

3. Remove six cap screws, four nuts, and outer stripper (A).

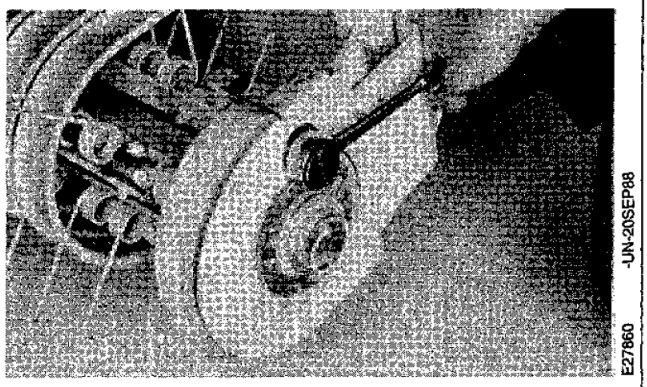


EX,1472,7010,F -19-08MAY89

4. Rotate pickup tooth bars until cam bearing is aligned with access hole in cam.

5. Remove cap screw through access hole.

6. Install bushing and bearing. Tighten cap screw to 122 N·m (90 lb-ft).



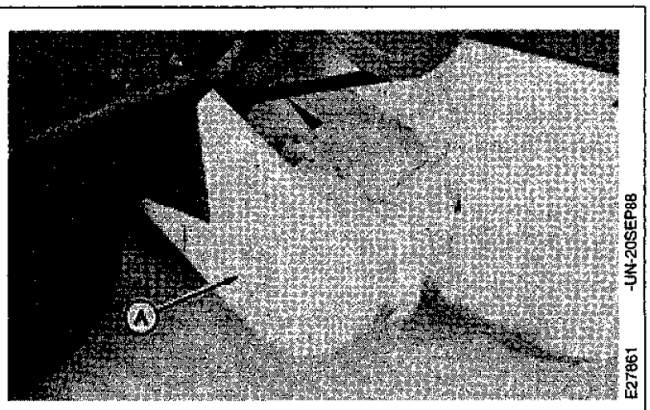
EX,1472,7010,G -19-26DEC91

REMOVE PICKUP

1. Raise gate and lock in position.

2. Raise baler jack to higher position. Block tongue.

3. Remove two self-tapping screws and shield (A).



EX,1472,7010,H -19-11MAR93

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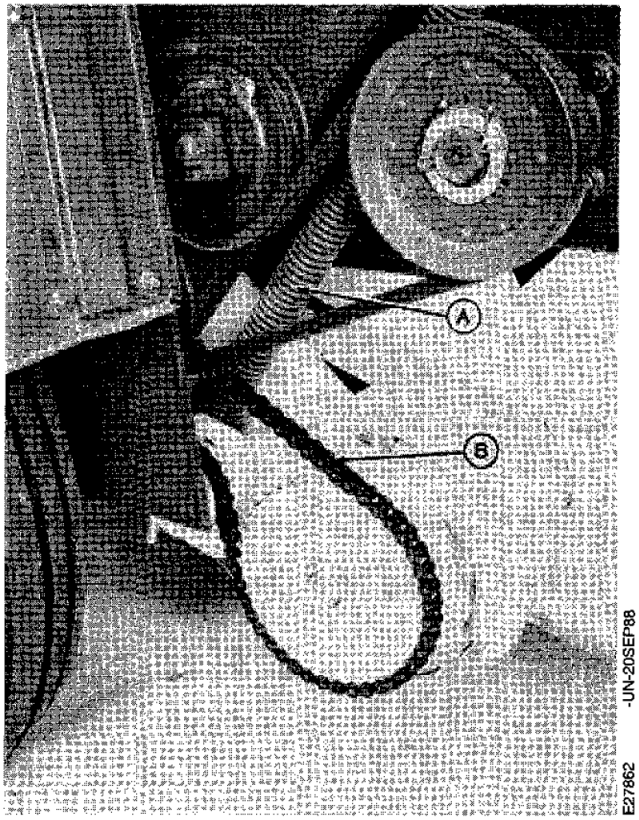
4

4. Raise pickup. Loosen float spring (A) enough to remove from pickup.

5. Rotate pickup tooth bars to minimize teeth contact with jack.

6. Place floor jack under pickup and lower pickup onto jack.

7. Loosen chain idler and remove drive chain (B).

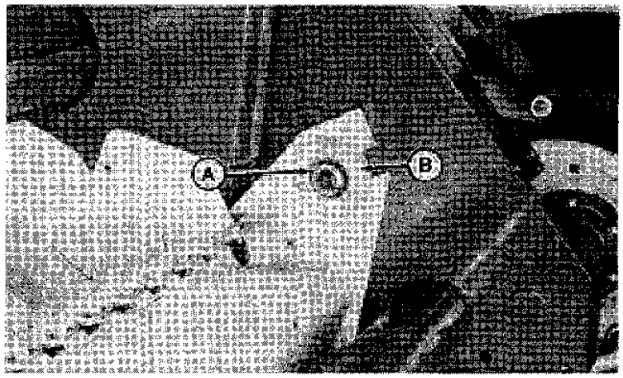


EX,1472,7010,I -19-26DEC91

8. Remove cotter pin (A) and washers.

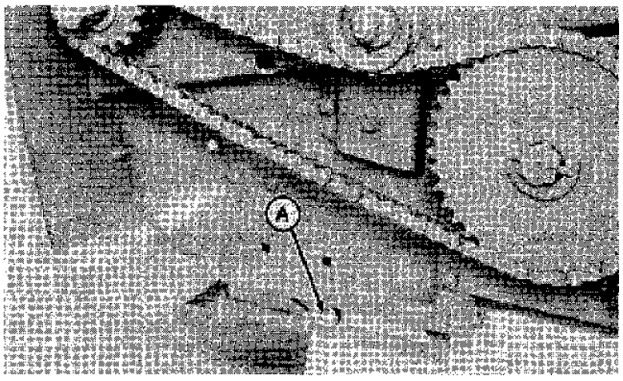
9. Remove three cap screws, washers (if used), and flange (B).

10. Remove bearing, flange, and spacer washers.



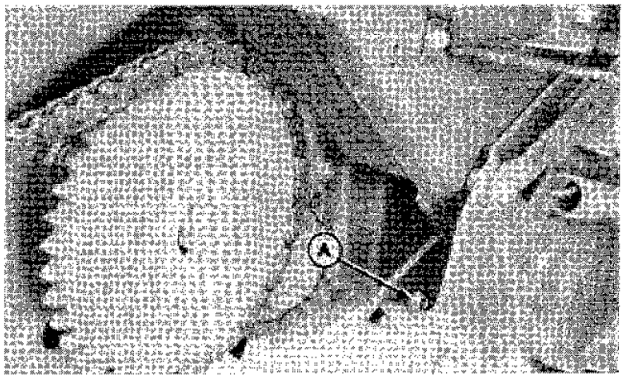
EX,1472,7010,J -19-06NOV95

11. Remove lock nut, washer, cap screw (A), two washers, and spacer.



EX,1472,7010,K -19-08MAY89

12. Remove nut, cap screw (A), and spacer.

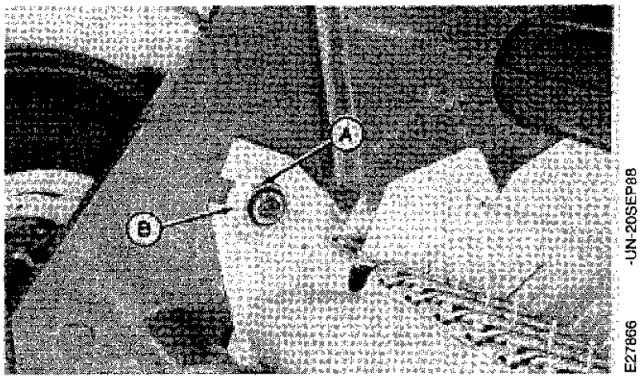


EX,1472,7010,L -19-08MAY89

13. Remove cotter pin (A) and washers.

14. Remove three cap screws, washers, and flange (B).

15. Remove bearing, flange, and spacer washers.



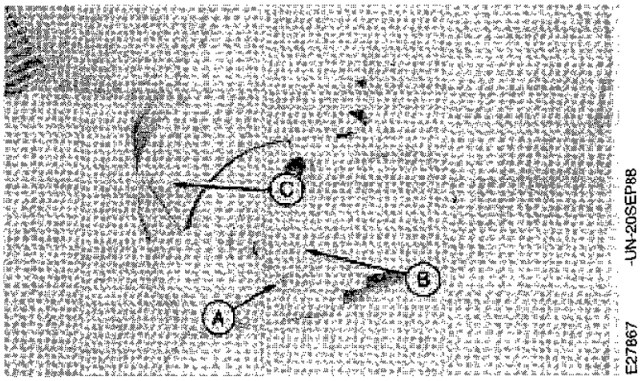
EX,1472,7010,M -19-06NOV95

DISASSEMBLE PICKUP

1. Remove nut (A).

2. Remove two cap screws, washer, cover (B), and flangette.

3. Remove two carriage bolts and nuts. Remove four cap screws, flare (C), and end stripper.



EX,1472,7010,N -19-11MAR93

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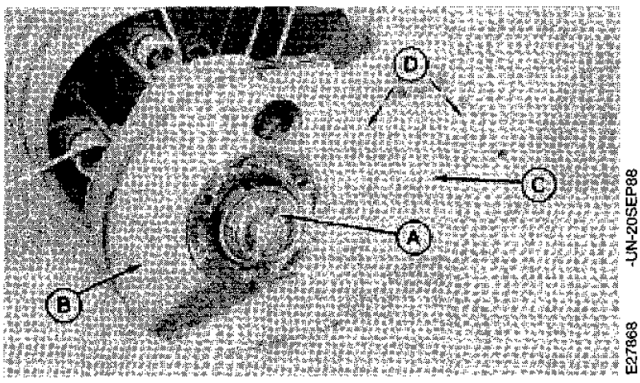
4. Remove quick-lock pin (A), hexagon washer, and washers.

NOTE: Record location of washers.

5. Remove bearing, flange, and support (B).

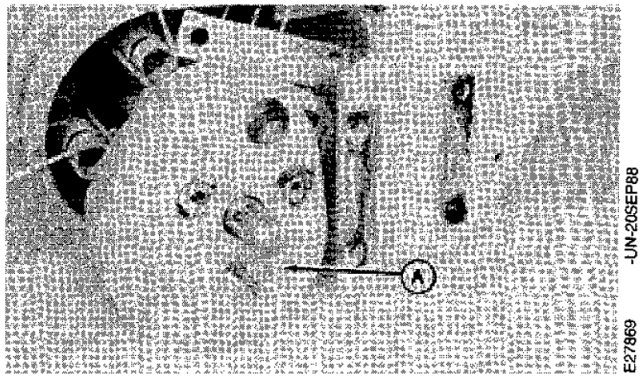
6. Remove four cap screws, plate (C), and straps (D).

A—Quick-Lock Pin
B—Support
C—Plate
D—Straps



EX,1472,7010,O -19-06NOV95

7. Remove cam (A).

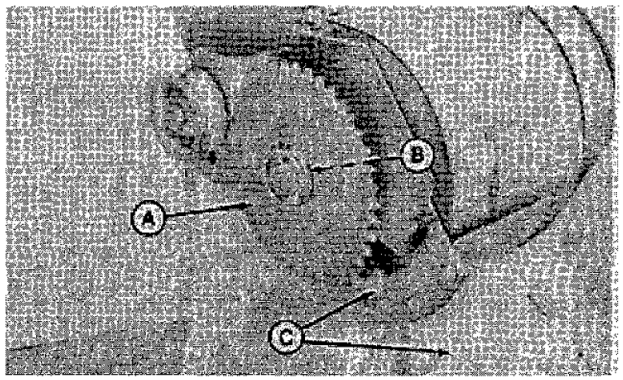


EX,1472,7010,P -19-08MAY89

8. Remove quick-lock pin, washers, and sprocket (A).

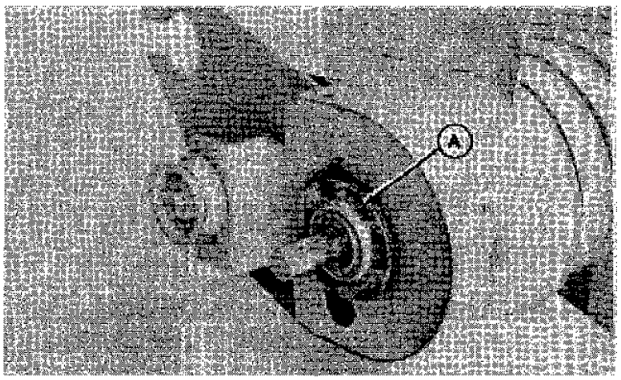
9. Remove spacer (B) and washers.

10. Remove three nuts, cap screws, plate, and flare (C).



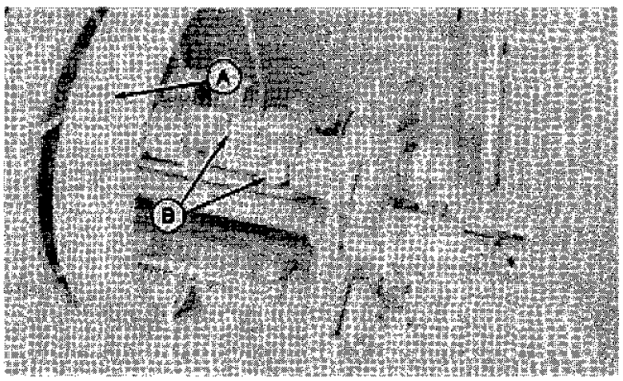
EX,1472,7010,Q -19-08MAY89

11. Remove flange (A), bearing, and flange.



EX,1472,7010,R -19-06NOV95

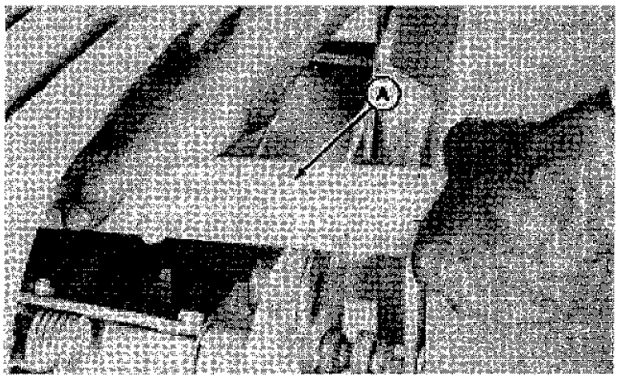
12. If the strippers (A) do not have to be replaced, remove two lock nuts (B), cap screws, cam bearing, and washer.



EX,1472,7010,S -19-08MAY89

13. Tooth bar (A) can be removed from spider.

14. After three remaining tooth bars have been removed, shaft assembly with spiders can be removed.



EX,1472,7010,T -19-08MAY89

INSPECT PICKUP

1. Check left and right-hand cylinder shaft bearings for wear. Check cam follower bearings for wear.

2. Check cam for wear and cracks.

3. Check for bent or broken teeth.

4. Check for damaged strippers.

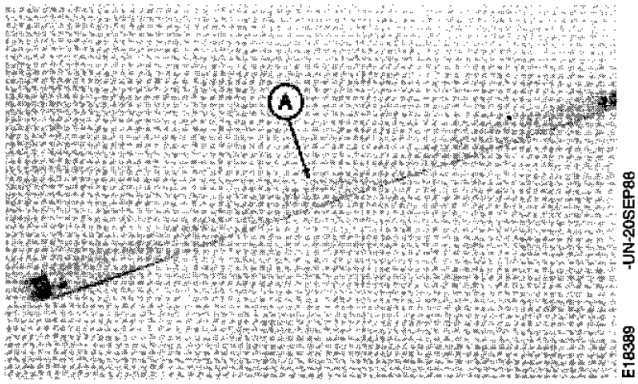
5. Check rear attaching pickup bearings for wear.

EX,1472,7010,U -19-11MAR93

6. Check spiders for wear or cracks.

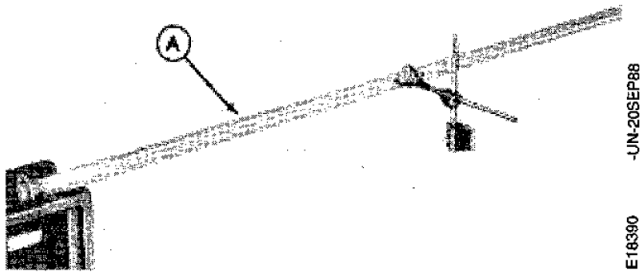
7. Place tooth bar (A) on flat surface to check for straightness. If tooth bar is bowed 6 mm (0.236 in.) or more, replace or straighten.

NOTE: It is not necessary to remove teeth before checking straightness of tooth bar, this can be done with teeth in place.



EX,1472,7010,V -19-06NOV95

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,1472,7010,W -19-06NOV95

ASSEMBLE TOOTH BAR

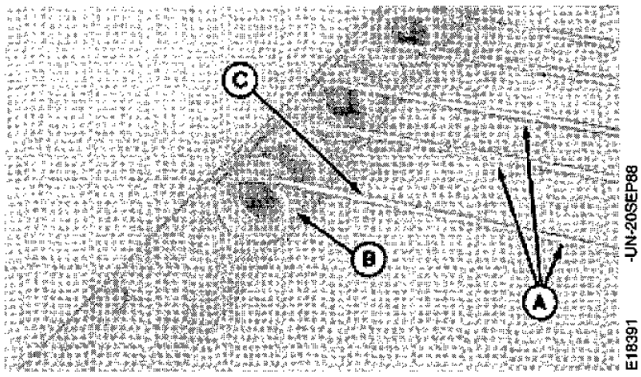
1. Install teeth (A) on bar with tooth coil (B) against bar and tooth (C) away from bar as shown.

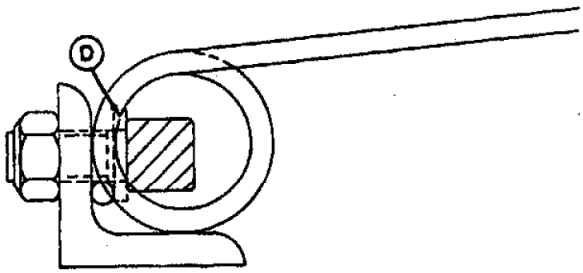
2. Secure using M10 x 25 socket head screws, washers, and lock nuts.

NOTE: When assembling tooth bar, washers (D) must be in place to properly secure tooth to bar.

3. Tighten screws to 34 ± 12 N·m (25 ± 9 lb-ft).

A—Teeth
B—Tooth Coil
C—Tooth
D—Washers

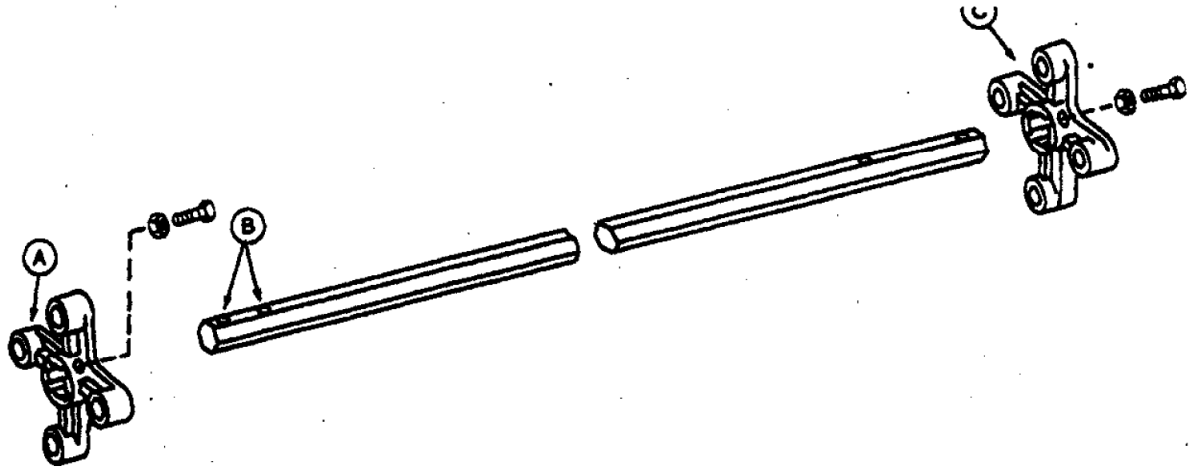




EX,1472,7010,X -19-06NOV95

70 10 9

ASSEMBLE PICKUP

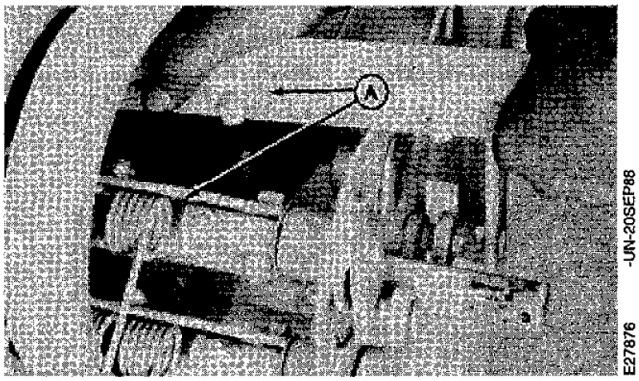


1. Install shaft in spider (A) with closer pair of holes (B) to right side. Secure with cap screw and lock nut. Tighten to 28 N·m (21 lb-ft).

2. Install left spider (C) with bosses toward shaft as shown. Secure with cap screw and nut. Tighten to 28 N·m (21 lb-ft).

EX,1472,7010,Y -19-06NOV95

3. Install tooth bars (A) with teeth "leading" when rotated in a clockwise direction as viewed from left side of pickup.



EX,1472,7010,Z -19-26DEC91

4. Install follower arm assembly (A) in the "trailing" position.

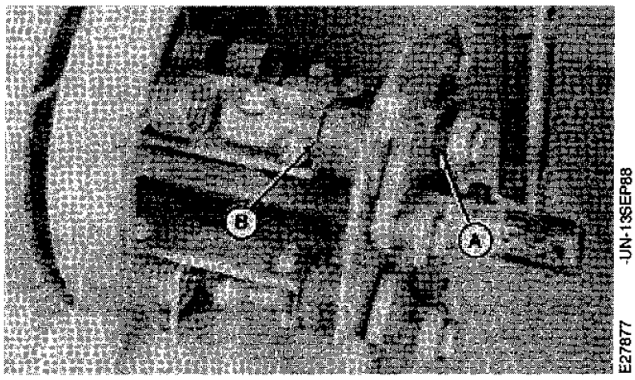
5. Place washer (B) on arm. Secure using two cap screws and lock nuts. Tighten to 81 N·m (60 lb-ft).

6. Reverse disassembly steps 1 through 11 to complete assembly.

7. Install pickup. See Remove Pickup, this group.

8. Manually rotate pickup several times to check clearances.

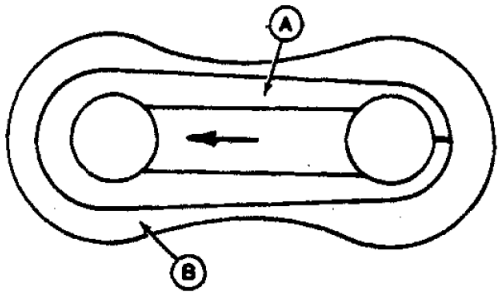
9. Adjust drive chain and pickup float. (See procedures in this group.)



EX,1472,7010,AA-19-26DEC91

INSTALL CHAIN

When installing chain, position chain clip (A) on master link (B) so the split end of the clip trails in the direction of normal travel (arrowed).



EX,1472,7010,AB-19-11MAR93

ADJUST PICKUP DRIVE CHAIN

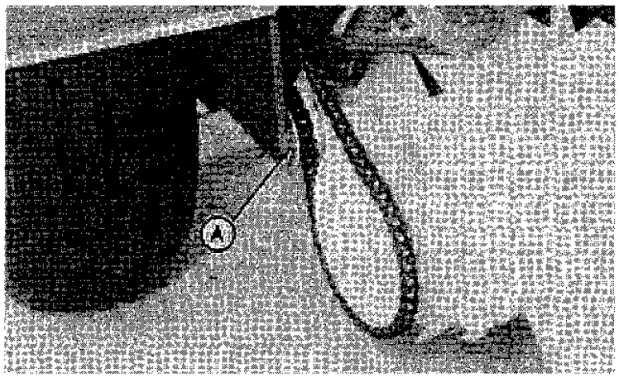
1. Remove shield.

2. Loosen idler (A).

3. Press idler against chain with 2.3 to 4.5 kg (5 to 10 lb) pressure and 13 mm (1/2 in.) deflection.

4. Tighten idler cap screw to 163 N·m (120 lb-ft).

5. Install shield.



EX,1472,7010,AC-19-11MAR93

ADJUST PICKUP BELT IDLER

IMPORTANT: The belt tensioner is designed to protect pickup components; overtightening reduces the protection. Check adjustment daily.

Before adjusting idler, engage PTO and observe spacer (D) relative to roll pin (B). If total movement is more than 3 mm (1/8 in.), there may be a burnt or thin spot in the belt. Inspect belt and replace if necessary.

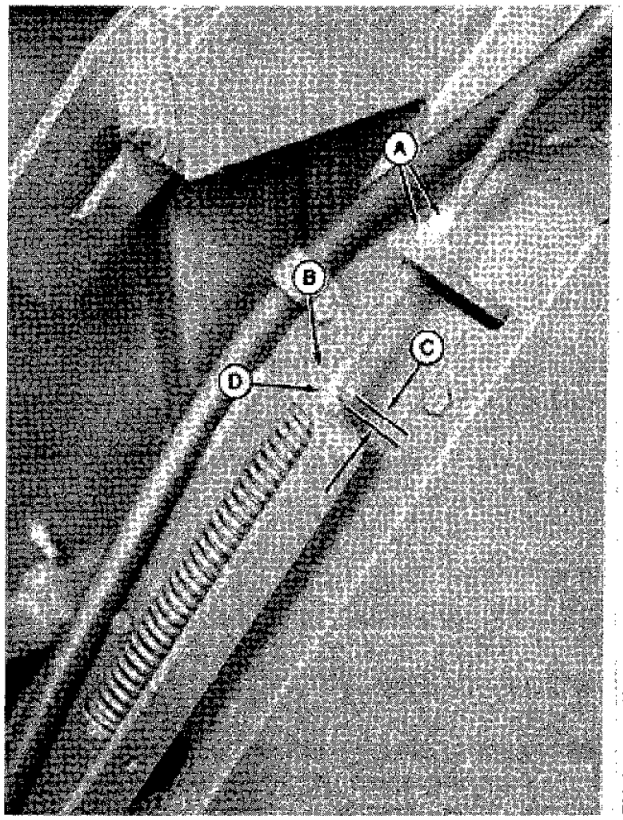
To adjust pickup belt idler:

1. Shut off tractor.

2. Loosen jam nuts (A).

3. Adjust spring until a 5 to 7 mm (3/16 to 9/32 in.) clearance (C) is between roll pin (B) and top of spacer (D).

4. Lock jam nuts (A).



EX,1472,7010,AF-19-11MAR93

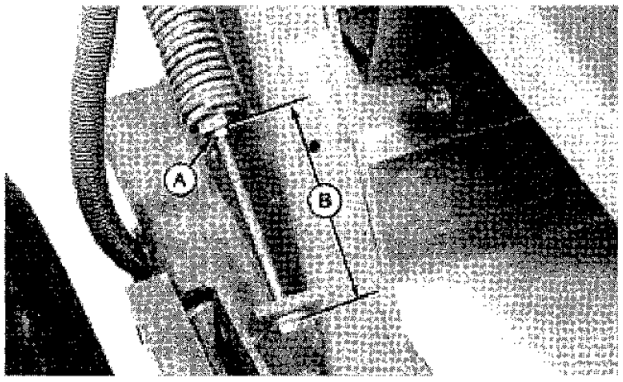
ADJUST PICKUP FLOAT SPRINGS

1. Loosen jam nut (A).

2. Adjust left side by tightening screw into spring plug until 138 mm (5-7/16 in.) dimension (B) is attained between spring plug and end of adjusting screw.

For 435 Wide Pickup, dimension (B) is:
- With gauge wheels, 75 mm (3 in.)
- Without gauge wheels, 97 mm (3-13/16 in.)

3. Tighten jam nut.



Left Side

EX,1472,7010,AD-19-06NOV95

4. Loosen jam nut (A).

5. Adjust right side by tightening screw into spring plug until 138 mm (5-7/16 in.) dimension (B) is attained.

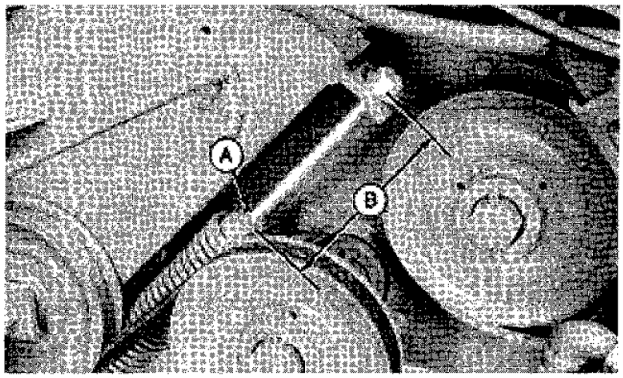
For 435 Wide Pickup, dimension (B) is:
- With gauge wheels, 75 mm (3 in.)
- Without gauge wheels, 97 mm (3-13/16 in.)

6. Tighten jam nut.

This setting should allow the pickup to drop completely when lowered. If not, slightly reduce spring setting by lengthening dimension (B).

NOTE: Gauge wheels are standard on 435 Wide Pickup.

When operating at heights other than extreme down position, or when optional gauge wheels are installed, additional spring force will be required to obtain adequate float. Reduce dimension to increase spring force.



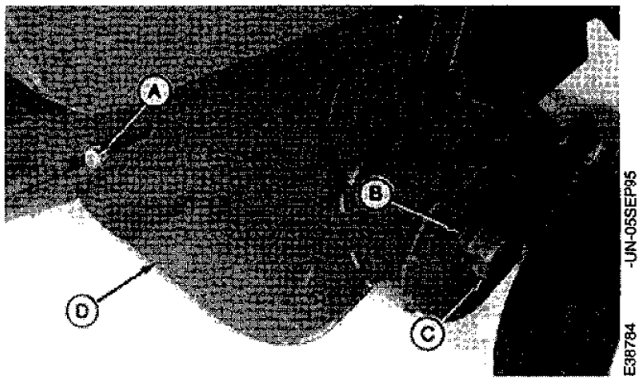
Right Side

EX,1472,7010,AE-19-06NOV95

REPLACE CAM FOLLOWER BEARINGS — WIDE PICKUP

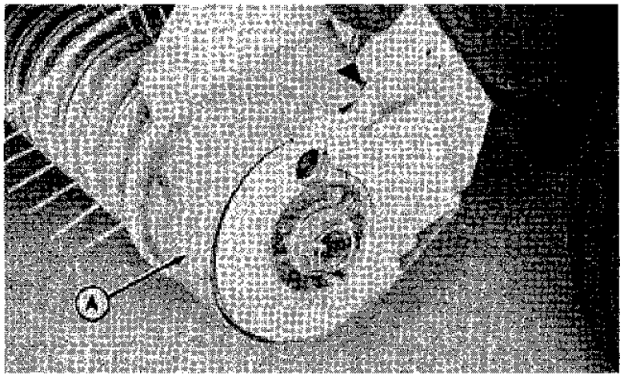
1. Remove lock nut, washer, cap screw (A), two washers, and spacer.

2. Remove two cap screws, washer, nut, cover (C), disk (B), and crop divider (D).



EX,1472,7010,AG-19-06NOV95

3. Remove seven cap screws, three nuts, and outer stripper (A).



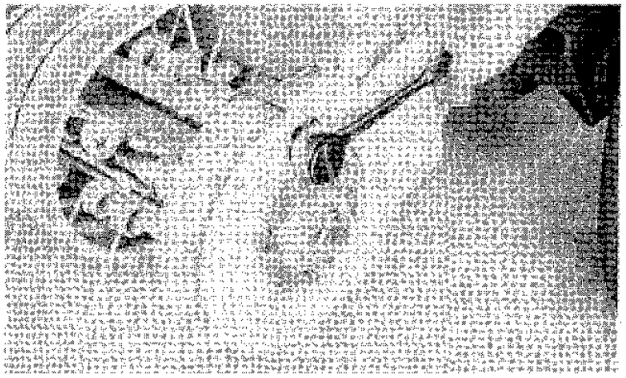
EX,1472,7010,AH-19-06NOV95

4. Rotate pickup tooth bars until cam bearing is aligned with access hole in cam.

5. Remove cam bearing retaining cap screw, bearing, and bushing through access hole.

6. Install bushing and bearing. Tighten cap screw to 122 N·m (90 lb-ft).

7. Install remaining parts in reverse order as removed.



EX,1472,7010,AI-19-06NOV95

REMOVE AND INSTALL WIDE PICKUP

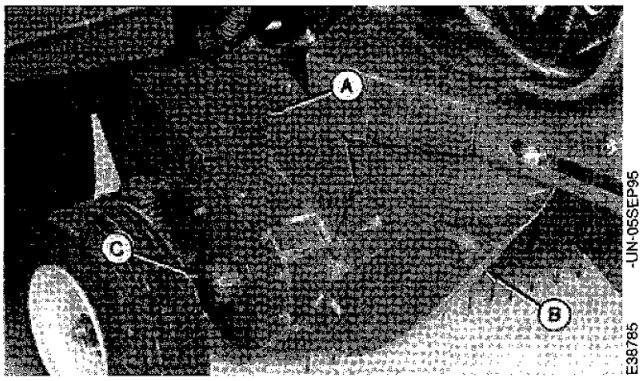
1. Raise gate and lock in position.

2. Raise baler jack to highest position. Block tongue.

3. Remove three cap screws, washer, disk, and cover (C).

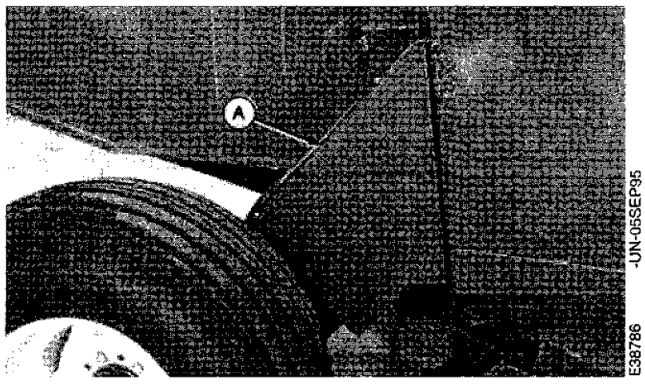
4. Remove cap screw, three washers, spacer, locknut, and crop divider (B).

5. Remove two cap screws and shield (A).



EX,1472,7010,AJ-19-06NOV95

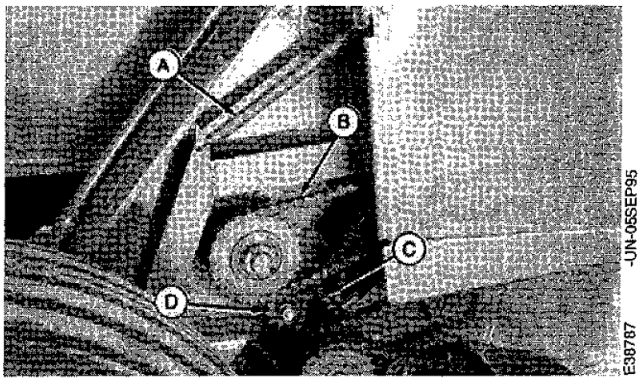
6. Remove two cap screws, two nuts, and guard (A).



EX,1472,7010,AK-19-06NOV95

7. Remove spring (A) and chain (B).

8. Loosen gear nut (D) and remove chain (C).



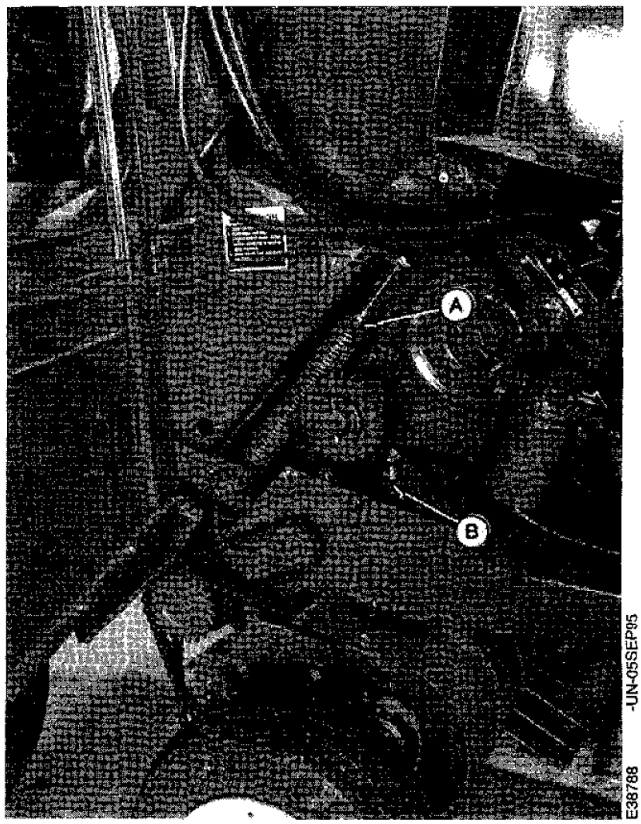
EX,1472,7010,AL-19-06NOV95

9. Raise pickup. Loosen float spring (A) enough to remove from pickup.

10. Rotate pickup tooth bars to minimize teeth contact with jack.

11. Place floor jack under pickup and lower pickup onto jack.

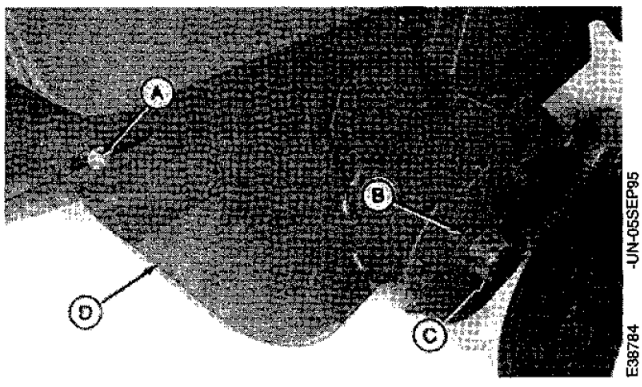
12. Remove two nuts, two washers, two cap screws, and deflector (B).



EX,1472,7010,AM-19-06NOV95

13. Remove lock nut, washer, cap screw (A), two washers, and spacer.

14. Remove two cap screws, washer, nut, cover (C), disk (B), and crop divider (D).

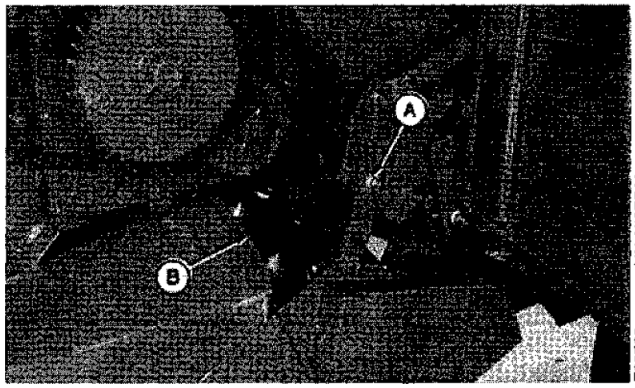


EX,1472,7010,AN-19-06NOV95

CAUTION: Bracket under spring tension, use pry-bar or similar tool to hold bracket down while removing cap screw.

15. Remove nut, cap screw (A), and spacer.

16. Remove two nuts, two washers, two cap screws, and deflector (B).



EX,1472,7010,AO-19-06NOV95

17. On left side of baler remove cotter pin (A) and washers.

18. Remove three cap screws, washers, and flange (B).

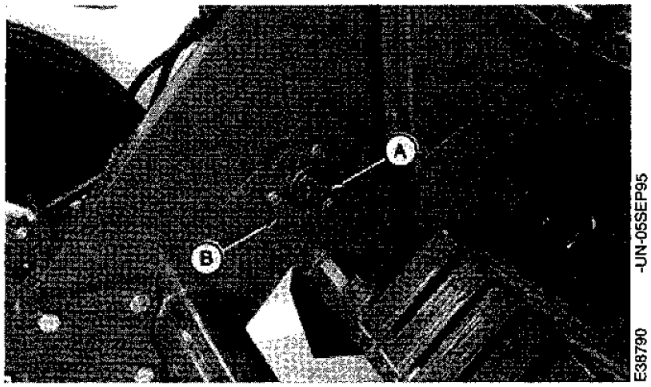
19. Remove bearing, flange, and spacer washers.

20. Repeat steps (17-19) on right side of baler.

21. With baler jack at highest position, roll floor jack and pickup away from baler.

22. To install wide pickup, reverse removal procedure. Install all spacers and washers to same locations.

23. After wide pickup is installed, slowly raise and lower pickup a few times to check for binding and proper operation.



EX,1472,7010,AP-19-06NOV95

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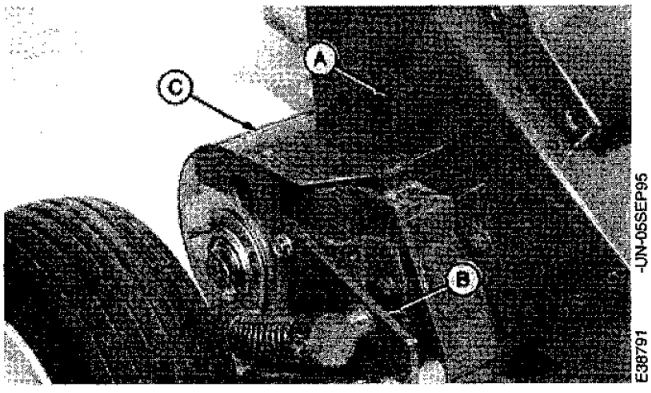
16

DISASSEMBLE, INSPECT AND ASSEMBLE WIDE PICKUP

1. Remove two cap screws and wheel assembly (B).

2. Remove cap screw, two washers, two nuts, and chain guard (A).

3. Remove six cap screws, two nuts, and shield (C).



EX,1472,7010,AQ-19-06NOV95

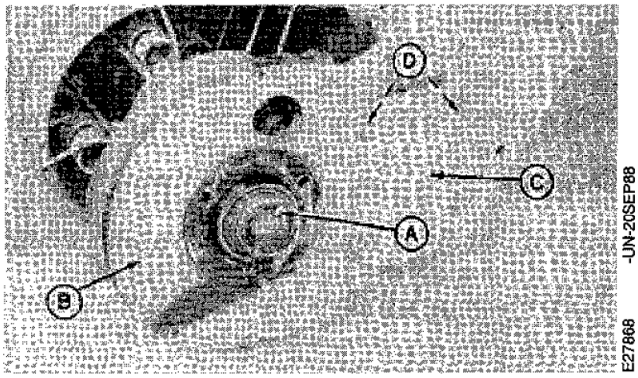
NOTE: Record location of washers.

4. Remove quick-lock pin (A), hexagon washer, and washers.

5. Remove bearing, flange, and support (B).

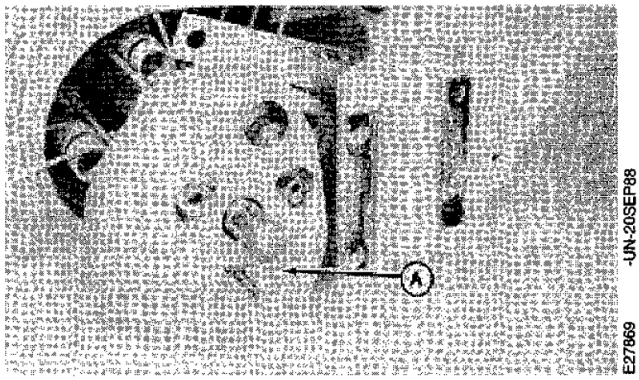
6. Remove four cap screws, plate (C), and straps (D).

A—Quick-Lock Pin
B—Support
C—Plate
D—Straps



EX,1472,7010,AR-19-06NOV95

7. Remove cam (A).

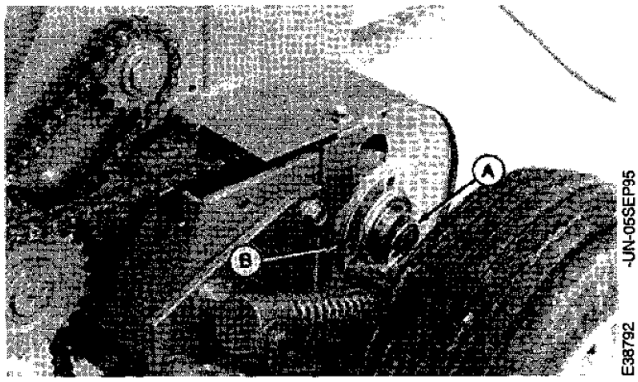


EX,1472,7010,P -19-08MAY89

NOTE: Record location and quantity of washers.

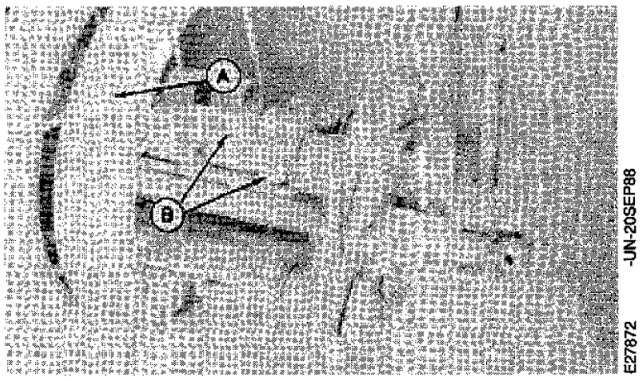
8. Remove quick-lock pin (A), hexagon washer, and washers.

9. Remove flange (B), bearing, and flange.



EX,1472,7010,AS-19-06NOV95

10. If the strippers (A) do not have to be replaced, remove two lock nuts (B), cap screws, cam bearing, and washer.



EX,1472,7010,AT-19-06NOV95

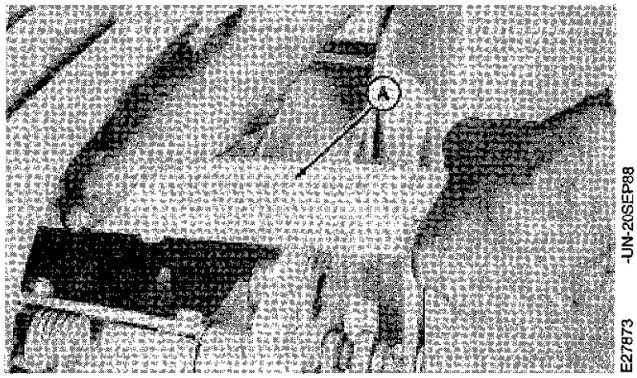
11. Tooth bar (A) can be removed from spider.

12. After three remaining tooth bars have been removed, shaft assembly with spiders can be removed.

13. Inspect pickup. (See procedure in this section.)

14. Assemble tooth bar. (See procedure in this section.)

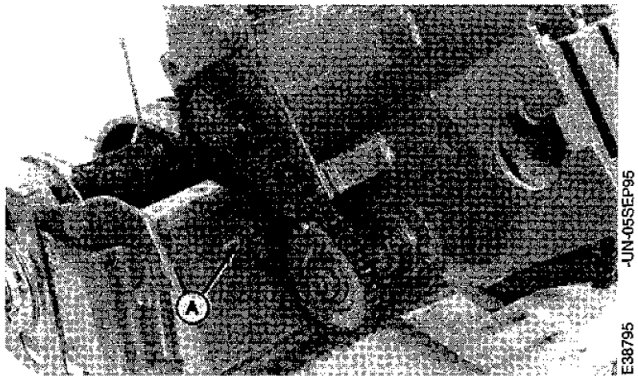
15. Assemble pickup. (See procedure in this section.)



EX,1472,7010,AU-19-06NOV95

DISASSEMBLE AND ASSEMBLE WIDE PICKUP AUGER

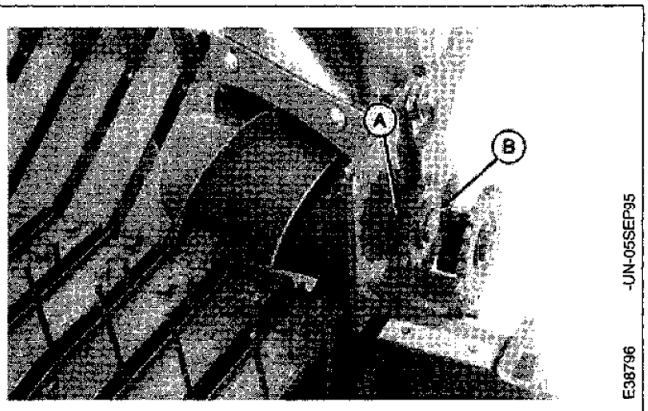
1. Remove chain tightener (A). Remove chain by removing coupler link.



EX,1472,7010,AW-19-06NOV95

2. Remove spring pin (A) from base of gear.

3. Using a soft drift and hammer, drive shaft (B) through gear. Remove gear and continue removing shaft and auger.



EX,1472,7010,AX-19-06NOV95

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18

NOTE: Record location and quantity of washers and shims.

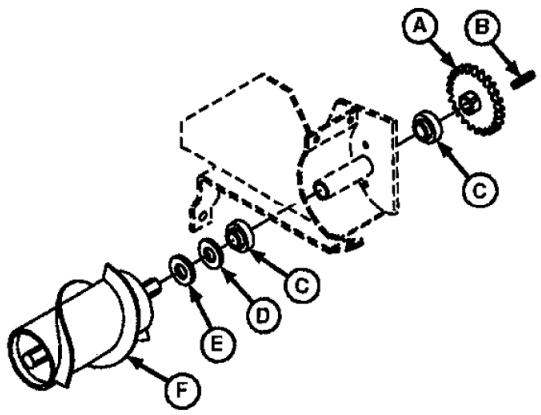
4. Remove shims (D) and washer (E).

5. Remove bearings (C).

6. Inspect parts for wear or damage. Replace where necessary.

7. Assemble as shown, in reverse order of disassembly.

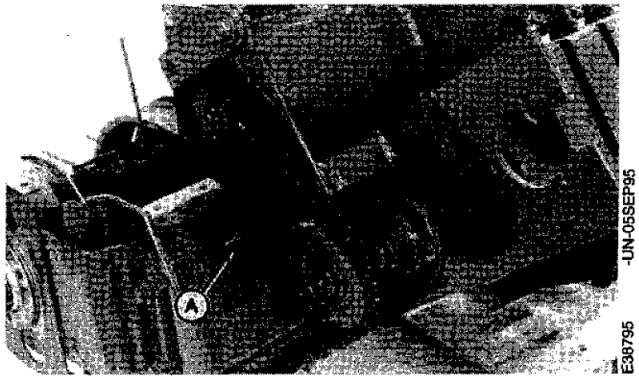
A—Gear
B—Spring Pin
C—Bearing
D—Shim
E—Washer
F—Auger



EX,1472,7010,AY-19-06NOV95

8. Install chain. (See procedure in this section.)

9. Install chain tightener (A).



EX,1472,7010,AZ-19-06NOV95

DISASSEMBLE AND ASSEMBLE WIDE PICKUP FORKS

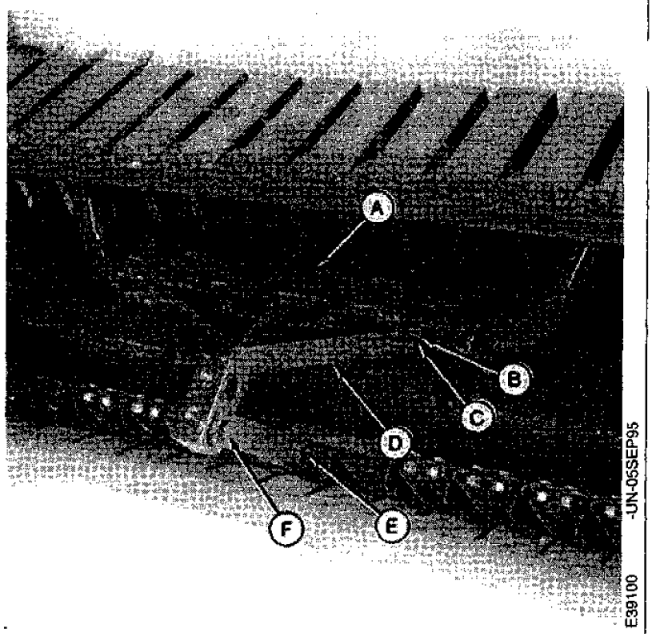
NOTE: Photos shown with pickup removed from baler. Wide pickup forks can be serviced without removing pickup.

1. Remove jam nuts (C), nuts (B), and fork (A).

2. Remove cap screw (F), bushing, washer, and locknut.

3. Remove arm (D) and bearings.

4. Remove cap screw (E), bushing, washer, locknut, and straps.

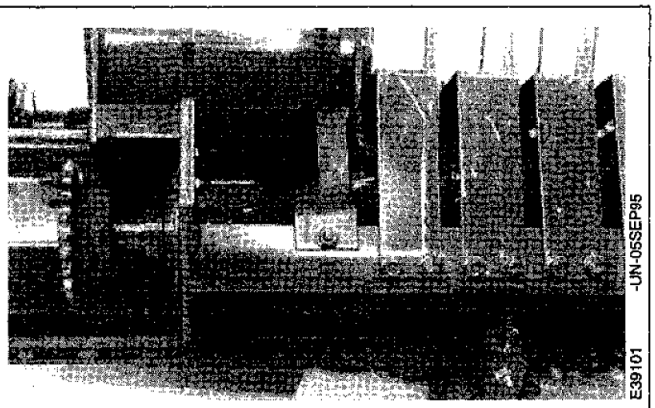


EX,1472,7010,BA-19-06NOV95

5. Inspect parts for wear or damage. Replace where necessary.

NOTE: Record location and quantity of washers removed.

6. If cam shaft or ball bearings need replacement, remove gears, locking collars, flanges, ball bearings and washers from ends of shaft.



EX,1472,7010,BB-19-06NOV95

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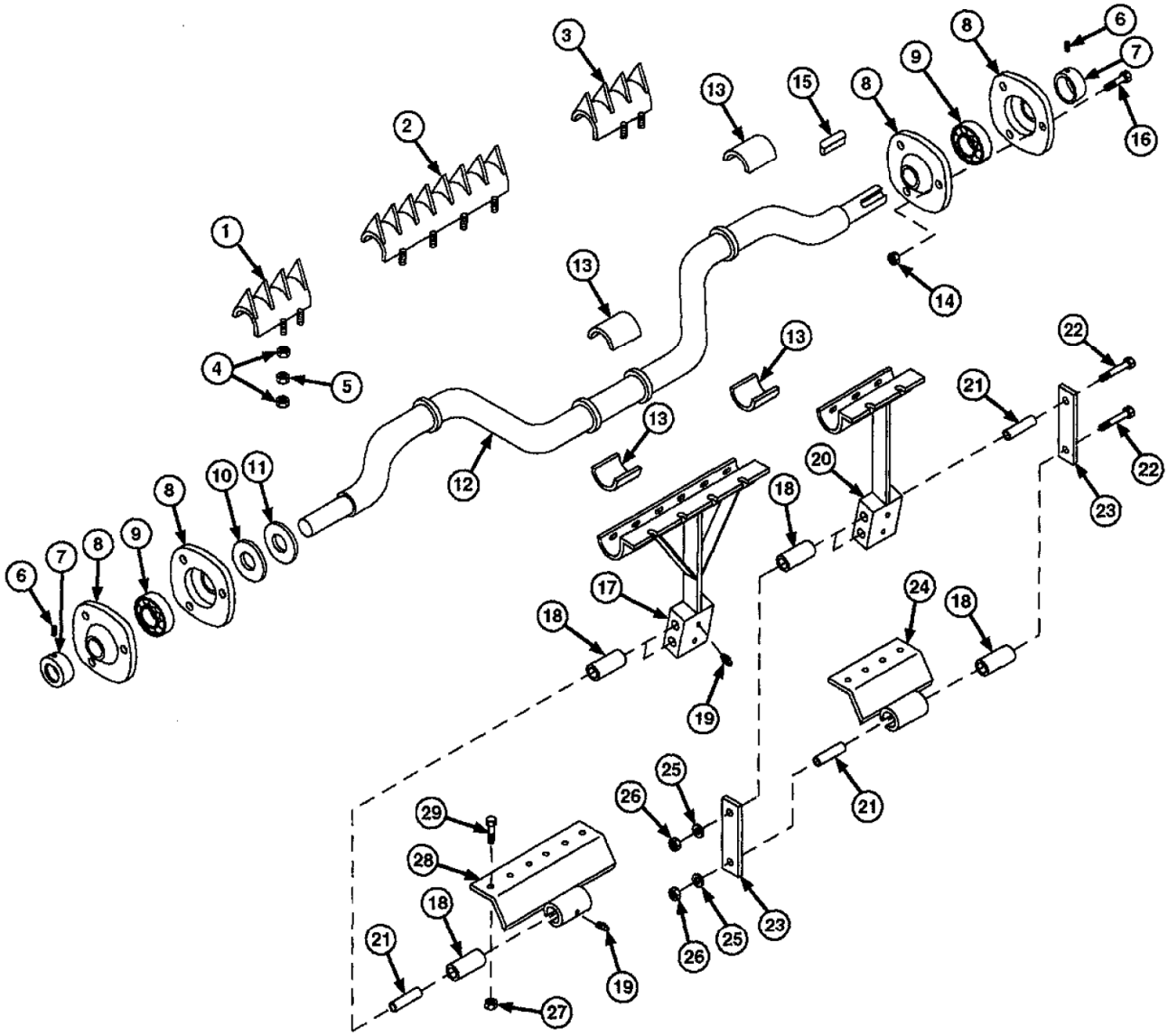

1—Fork	9—Ball Bearing	16—Bolt	23—Strap
2—Fork	10—Washer	17—Arm	24—Bracket
3—Fork	11—Washer	18—Bushing	25—Washer
4—Jam Nut	12—Cam Shaft	19—Grease Fitting	26—Lock Nut
5—Nut	13—Bearing	20—Arm	27—Nut
6—Set Screw	14—Lock Nut	21—Bushing	28—Bracket
7—Eccentric Locking Coller	15— Shaft Key	22—Cap Screw	29—Bolt
8—Flange			

7. Assemble pickup fork as shown:

- Apply John Deere High Temperature EP Grease on all bushings and bearings before installation.
- Adjust fork retaining nuts so forks sit square on arms and bearings. Tighten nuts evenly.

EX,1472,7010,BC-19-06NOV95

Section 80
MISCELLANEOUS

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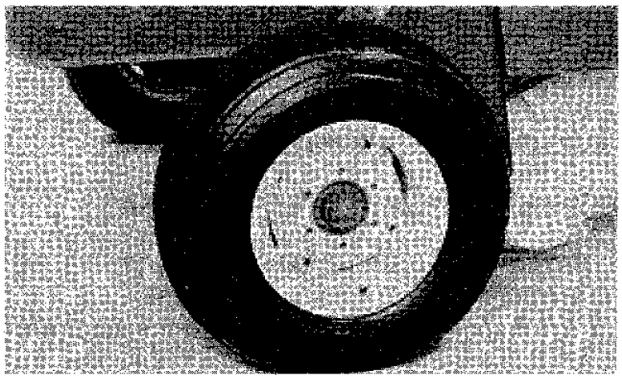
SPECIFICATIONS

Item	Measurement	Specification
Wheel Bolts	Torque	115 N·m (85 lb-ft)
Tire	Pressure	207 kPa (30 psi)
Pickup Gauge Wheel	Pressure	138 kPa (1.4 bar) (20 psi)
8 Ply Pickup Wheel	Pressure	36 psi
Converging Wheel (Castellated Nut)	Torque	1.7 N·m (15 lb-in) back off to first castellation
Converging Wheel Pivot Cap Screw	Torque	235 N·m (173 lb-ft)

EX,1472,8005,A -19-11MAR93

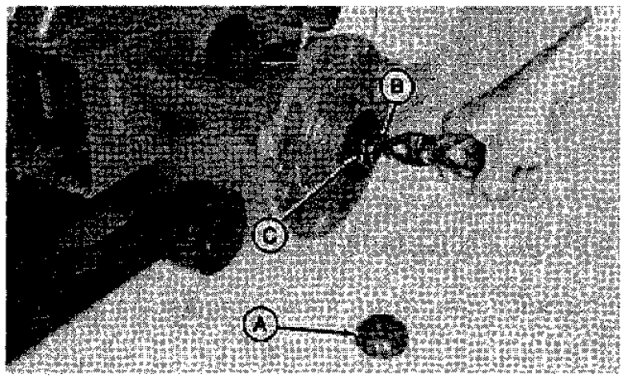
REMOVE WHEEL

1. Raise baler off ground with a jack placed under axle. Block securely.
2. Remove wheel.



EX,1472,8005,B -19-11MAR93

3. Remove hub cap (A).
4. Remove cotter pin (B) and slotted nut (C).
5. Remove washer, bearing cone, and hub.
6. Remove cup, cone, and seal.



EX,1472,8005,C -19-08MAY89

INSPECT WHEEL COMPONENTS

Inspect parts carefully for damage or excessive wear.

Check seal and spindle. Replace parts as necessary.

EX,1472,8005,D -19-11MAR93

ASSEMBLE WHEEL

1. Pack bearings (E) and (I) with wheel bearing grease.

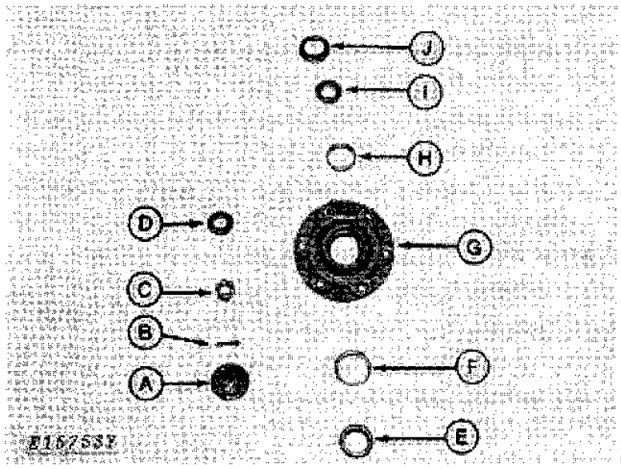
2. Coat seal (J) with John Deere Multipurpose Grease or equivalent.

3. Refer to exploded view to reassemble parts.

4. Tighten slotted nut (C). Rotate tire until a small amount of drag is obtained. Back off nut enough to insert cotter pin in hole. Install grease cap.

5. Check tire pressure for 207 kPa (30 psi).

6. Torque wheel bolts to 115 N·m (85 lb-ft).

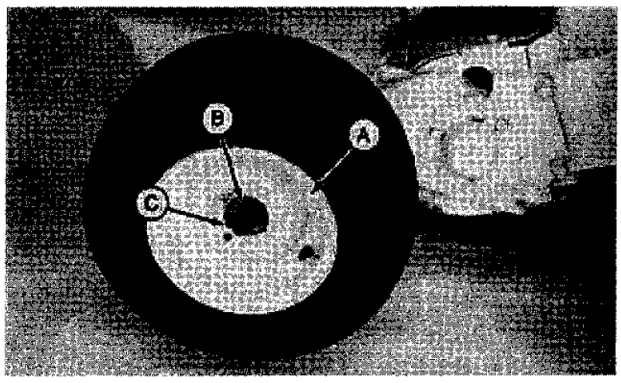


A—Hub Cab
B—Cotter Pin
C—Slotted Nut
D—Retaining Washer
E—Cone Bearing
F—Cup
G—Hub
H—Cup
I—Cone Bearing
J—Seal

EX,1472,8005,E -19-11MAR93

REPAIR PICKUP GAUGE WHEEL

1. Remove cotter pin (C), washers (B), and gauge wheel (A).

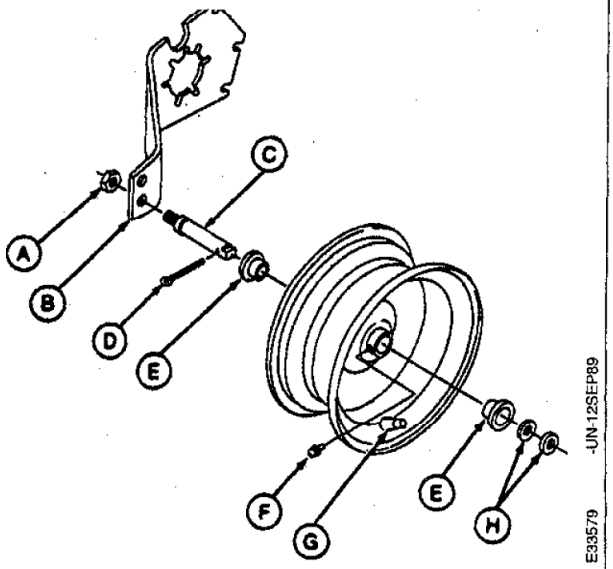


EX,1472,8005,F -19-11MAR93

Refer to exploded view to replace bearings.

Pack bearings using John Deere Multipurpose Grease or equivalent.

A—Lock Nut
B—Arm
C—Spindle
D—Cotter Pin
E—Bearing (2 Used)
F—Lubrication Fitting
G—Tire Valve Stem
H—Washer (Use As Required)

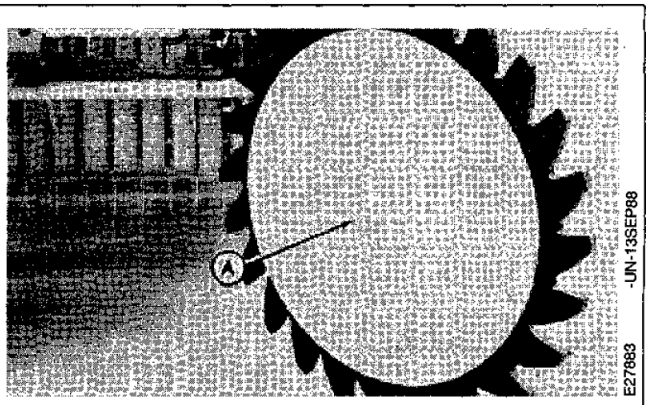


Pickup Gauge Wheel

EX,1472,8005,G -19-08MAY89

REPLACE BEARINGS IN CONVERGING WHEEL

1. Remove hub cap (A).
2. Remove cotter pin and slotted nut.
3. Remove wheel.
4. Remove bearing cones. Clean thoroughly and install.
5. Replace bearing cones and cups, if necessary.



EX,1472,8005,H -19-11MAR93

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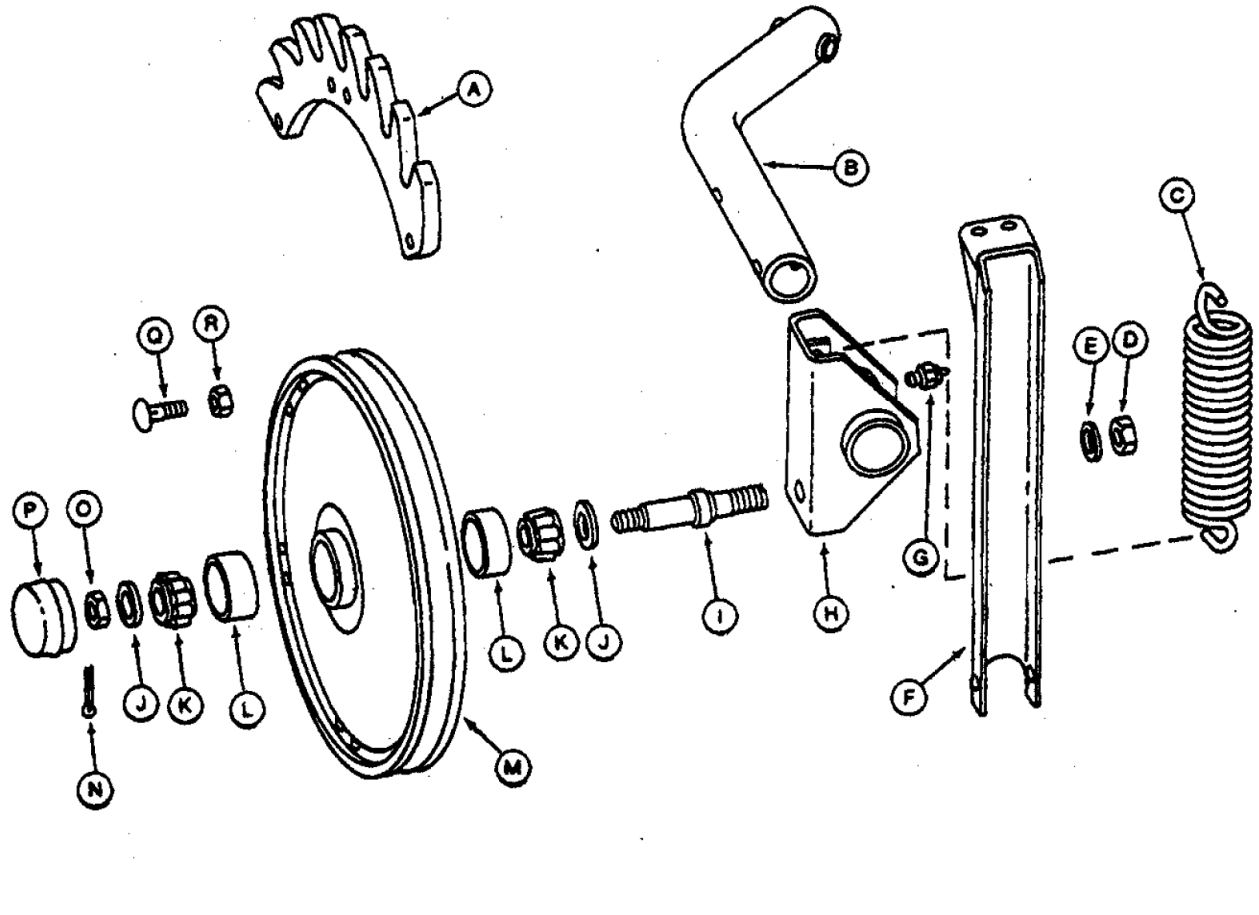
05
3



A—Selector (3 Used)
B—Support
C—Spring
D—Nut
E—Lock Washer
F—Channel
G—Lubrication Fitting
H—Support
I—Shaft
J—Seal
K—Bearing Cone (2 Used)
L—Bearing Cup (2 Used)
M—Wheel
N—Cotter Pin
O—Nut
P—Cap
Q—Carriage Bolt (12 Used)
R—Nut (12 Used)

Exploded View of Converging Wheel

1. Refer to exploded view to repair wheel.

2. Pack bearings using John Deere Multipurpose Grease. Coat seal with grease.

3. Tighten adjusting nut to 1.7 N·m (15 lb-in). Back nut off to first castellation and install cotter pin in hole.

4. Install hub cap.

80
05
4

EX,1472,8005,I -19-08MAY89

REMOVE EXCESSIVE PLAY FROM CONVERGING WHEEL PIVOT

NOTE: Illustration view is left rear.

1. Install one washer (A) at each end of spacer (B).

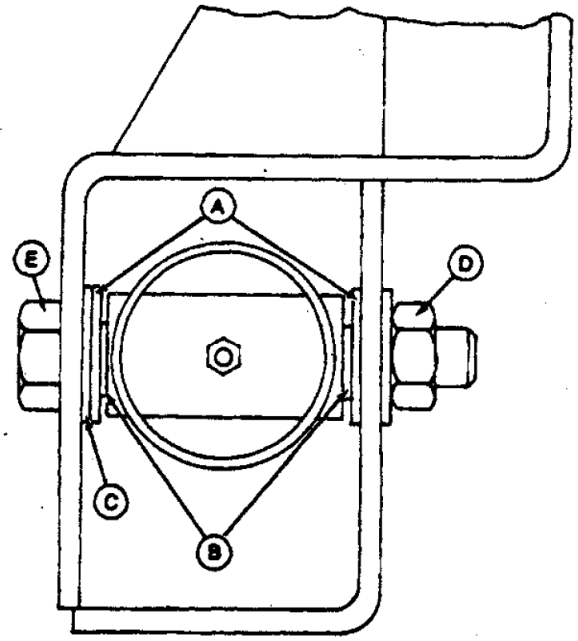
2. Install additional washers (C) if there is clearance between mounting surface and spacer (B). Store remaining washer(s) under nut (D).

3. Tighten cap screw (E) to 235 N·m (173 lb-ft).

4. Check torque on cap screw (E) after 10 hours use. Retighten to 235 N·m (173 lb-ft) if needed.

5. Repeat procedure on remaining converging wheel.

A—Washer
B—Spacer
C—Additional Washers
D—Nut
E—Cap Screw



E27885 -UN-13SEP88

EX,1472,8005,J -19-06NOV95

STRAIGHTEN GATE

1. Check rear gate and determine which side does not close against main frame:
   - Raise rear gate using tractor hydraulics.
   - Stop tractor. Put SCV in float position, allowing rear gate to close by its own weight slowly.
   - Check both sides of gate to see which side does not close (gapped).

2. Raise rear gate (B) until it is open about 1.22 mm (4 ft).

3. Shut off tractor and move gate lock lever (D) to the locked position.

CAUTION: While working inside or around the baler with an open gate, the gate lock lever (D) must be moved to the locked position. Use this safety feature any time the gate is open. Close the gate any time the baler must be left unattended.

NOTE: This procedure shows the left side as being gapped or not closing. If right side is gapped, switch sides of chain arrangements.

4. Attach a chain (A) between gate and main frame. It may be necessary to apply force on the gate straight or diagonally:
   - Straight force (on the same side)—to move one side forward.
   - Diagonal force (opposite sides)—side-to-side movement of gate.

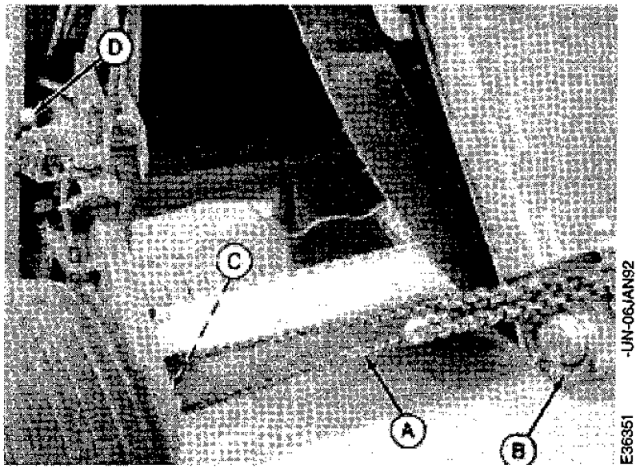
5. Move gate lock lever to unlock position.

NOTE: The following step requires two people.

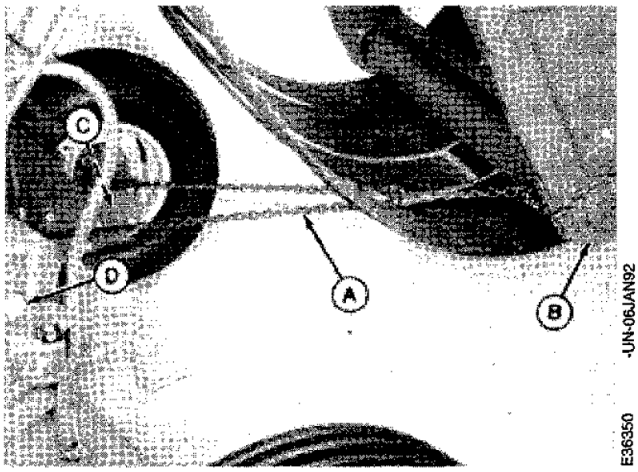
6. With one person operating tractor SCV and the other person observing gate and signaling the operator, raise the gate. Use a trial and error approach to pull the gate into position.

Remove chain and repeat steps 1—6 as necessary to position gate properly with main frame.

7. Adjust gate latch stops. (See procedure in this group.)



Straight Force on Rear Gate



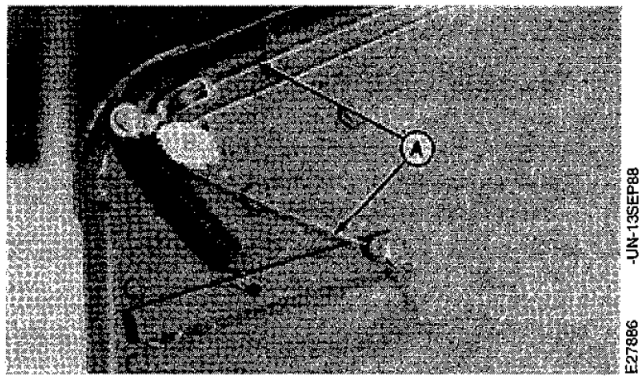
Diagonal Force on Rear Gate

A—Chain
B—Gate
C—Axle Tube or Spindle Assembly
D—Gate Lock Lever

EX,1472,8010,A -19-11MAR93

REMOVE GATE (335—375—385)

1. Disconnect bale shape monitor cables (A).

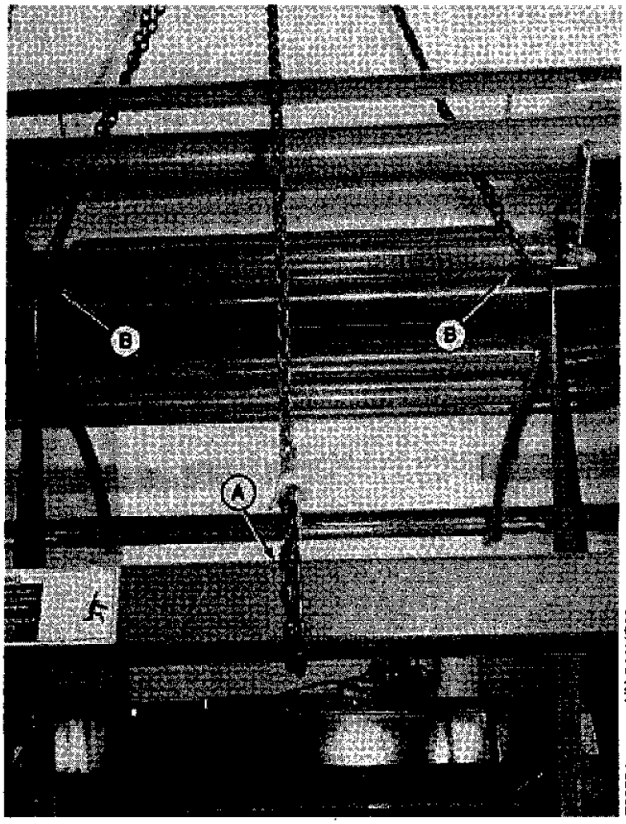


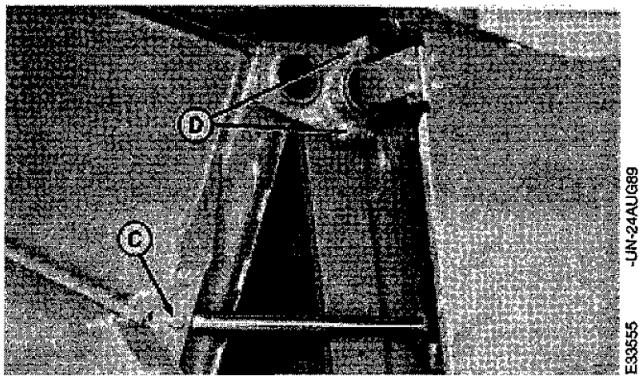
EX,1472,8010,B -19-11MAR93

CAUTION: Be careful gate does not shift when raised.

2. Remove belts.
3. Lower gate and tension arm.
4. Attach hoist to rear cross member (A).
5. Raise gate at least one-half way using hoist.
6. Attach hoist to baler cross member (B).
7. Disconnect hydraulic cylinder (C).
8. Disconnect U-bolts (D).

A—Cross Member
B—Cross Member
C—Hydraulic Cylinder
D—U-Bolts





EX,1472,8010,C -19-08MAY89

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10
2

INSTALL GATE (335—375—385)

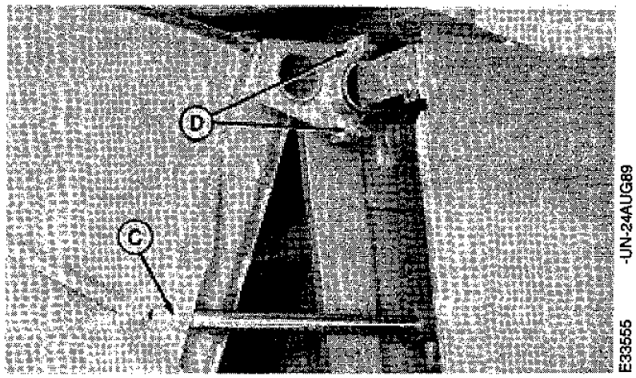
1. Install gate with one washer between mounting brackets and baler. Install U-brackets, cap screws (D), nuts and locknuts.

2. Install hydraulic cylinder using cap screw (C) and locknut.

3. Install belts. (See procedure in this section.)

4. Connect bale shape monitor cables. (See procedure in this group.)

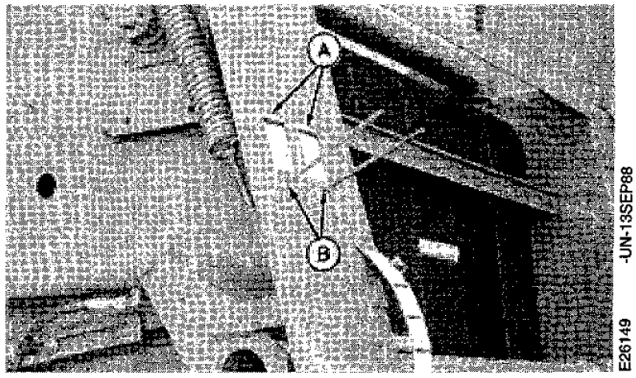
5. If both sides of gate do not close against main frame, straighten gate. (See procedure in this group.)



EX,1472,8010,N -19-06NOV95

ATTACH BALE SHAPE MONITOR CABLES (335—375—385)

1. Raise bale shape indicators (A) until holes in shield band and holes in indicator align. Insert pins through holes (B) to keep indicators in place.



EX,1472,8010,D -19-11MAR93

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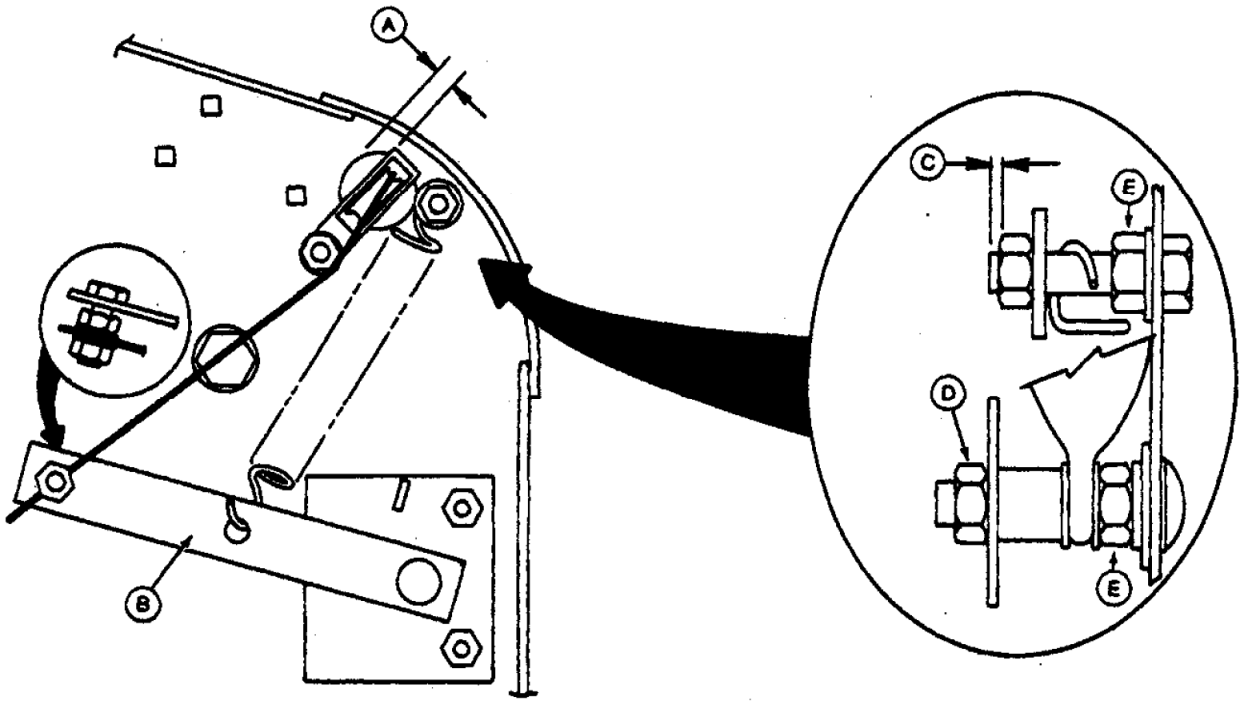
3



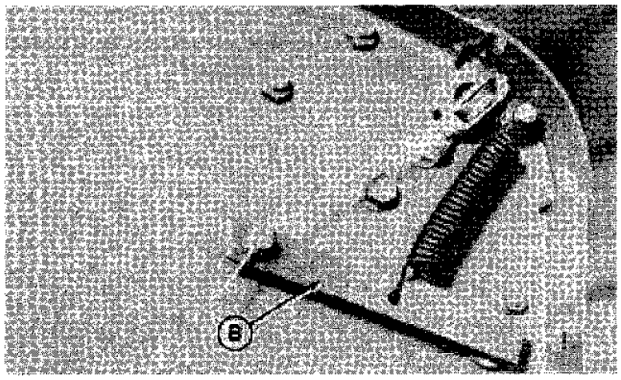
E27888 -UN-13SEP88

2. Center pulley to opening using 7 mm (9/32-in.) dimension (A).

3. Route cable to arm (B) as shown.

4. Refer to illustrations to complete assembly.

A—7 mm (9/32 in.)
B—Arm
C—2 mm (3/32 in.) Exposed Threads
D—12 N·m (10 lb-ft) Torque
E—24 N·m (18 lb-ft) Torque



E27889 -UN-13SEP88

EX,1472,8010,E -19-08MAY89

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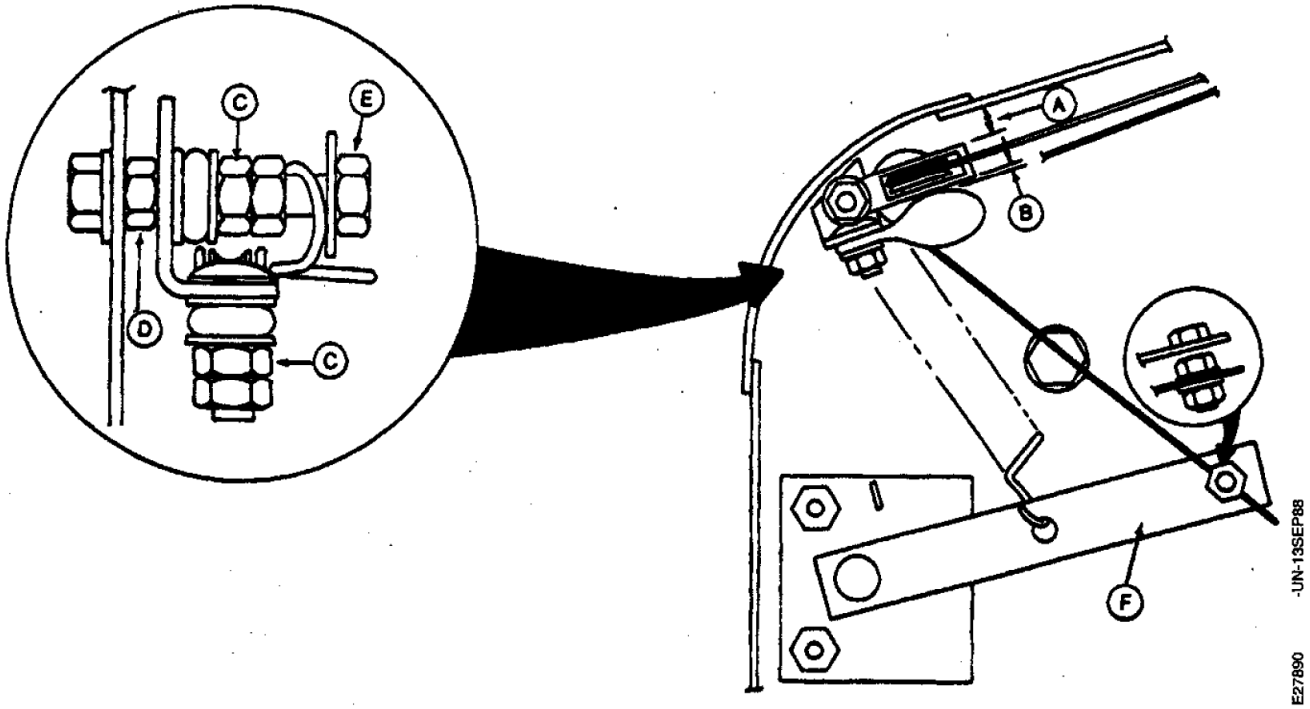
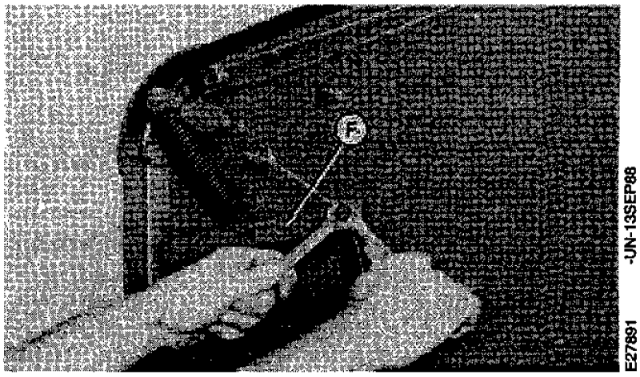
4



Attaching Right Cable

5. Route cables as shown.

A—13 mm (1/2 in.)
B—6 mm (1/4 in.)
C—12 N·m (10 lb-ft) Torque
D—24 N·m (18 lb-ft) Torque
E—Flush With End of Cap Screw
F—Arm



EX,1472,8010,F -19-06NOV95

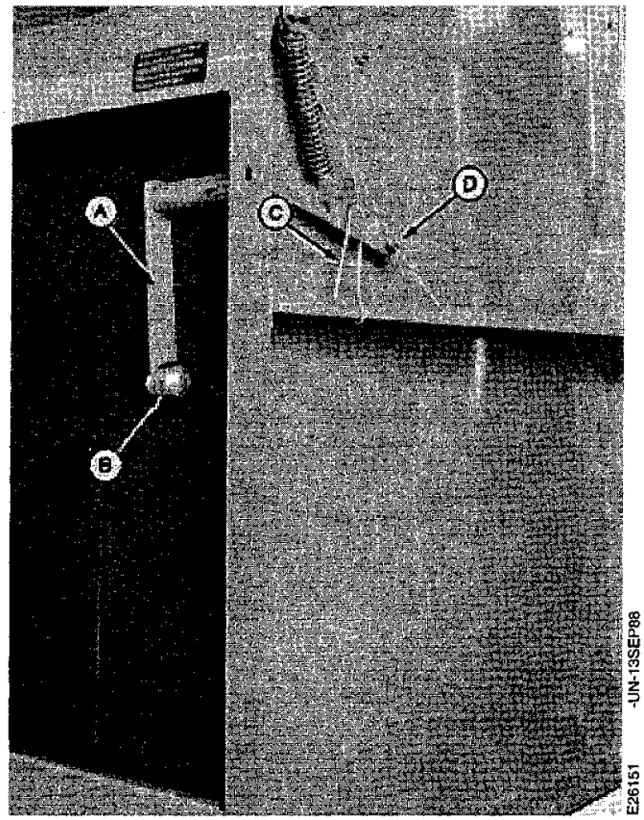
6. Pull arm (A) out so roller (B) just contacts belt without deflecting it.

7. Use wire (C) to hold arm (A) in this position.

8. Pull on cable until all slack is removed.

9. Tighten nut (D).

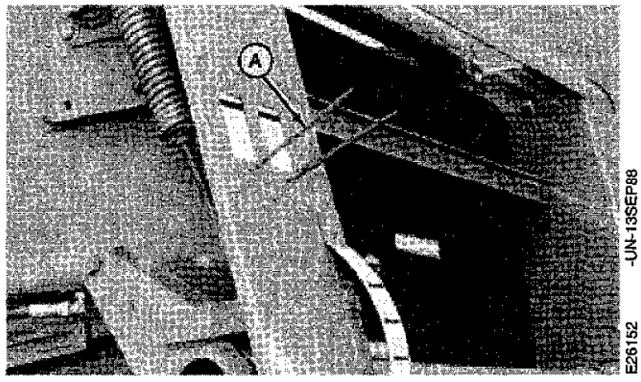
A—Arm
B—Roller
C—Wire
D—Nut



EX,1472,8010,G -19-08MAY89

10. To check adjustment, remove pin (A) from right indicator. A portion of the hole must be in alignment. If not, repeat steps 4 through 9.

11. Remove wire and repeat adjusting procedure on left side.



EX,1472,8010,H -19-06NOV95

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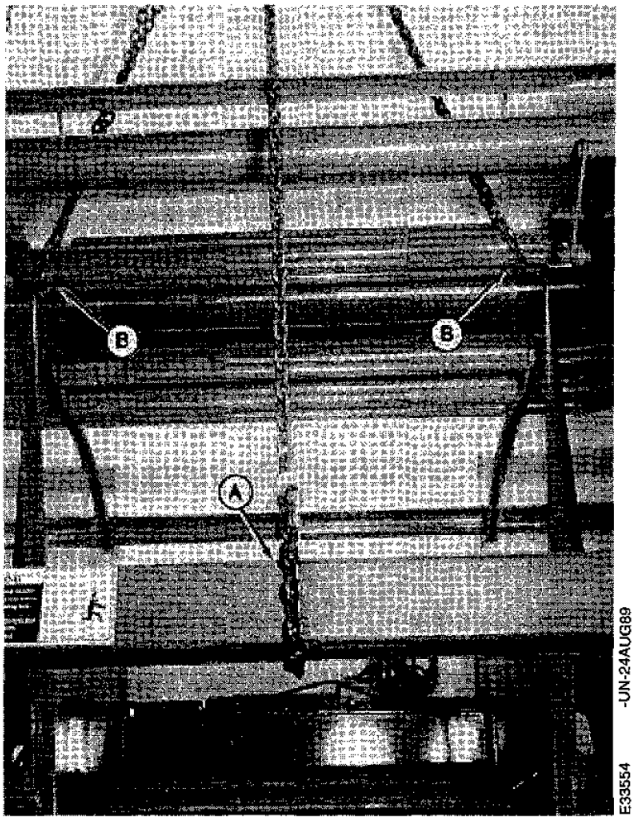
10
6

REMOVE GATE (435—535)

1. Remove belts.

2. Attach one ton chain hoist or equivalent to gate. Support weight of gate with chain at points (A) and (B).

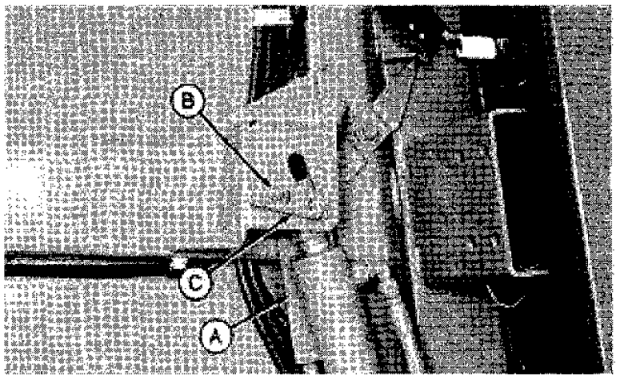


EX,1472,8010,I -19-11MAR93

3. Raise gate only enough to move rod linkage (A) and pivot pin away from bottom of slot.

4. Take up chain slack. Gate will be supported by chain hoist.

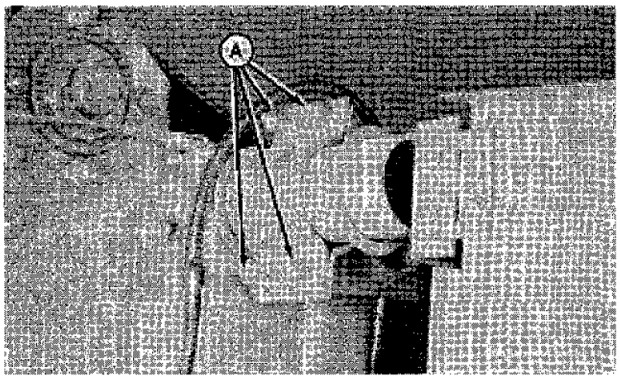
5. Remove nut (B) from locking plate. Remove plate and pin assembly (C) from cylinder.



EX,1472,8010,J -19-24FEB92

6. Remove cap screws (A) from both sides of baler.

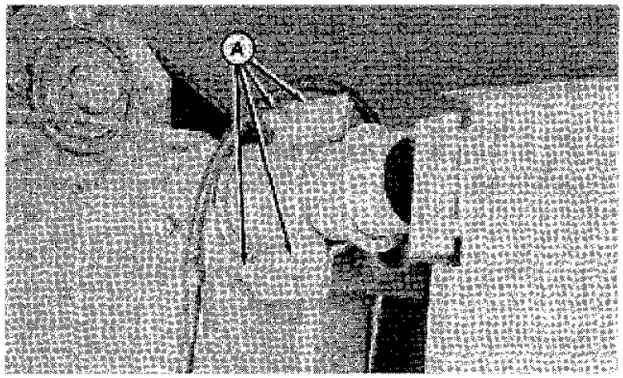
7. Remove gate from baler.



EX,1472,8010,K -19-08MAY89

INSTALL GATE (435—535)

1. Install gate with one washer installed between mounting bracket and baler. Center gate mounting brackets on mounting tubes and install U-brackets, cap screws (A), nuts, and locknuts.



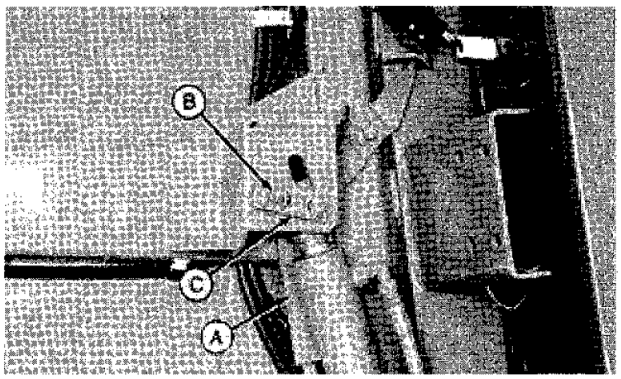
EX,1472,8010,O -19-06NOV95

2. Connect cylinder, linkage rod (A) and latch switch arm using pin and plate assembly (C), and locknut (B).

3. Install belts. (See procedure in this section.)

4. Adjust gate latch stop. (See procedure in this group.)

5. If both sides of gate do not close completely against main frame, straighten gate. (See procedure in this group.)



EX,1472,8010,P -19-06NOV95

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8

ADJUST GATE LATCH STOP (435/535)

1. Remove any material buildup between gate and frame.

2. Close and latch gate. Push gate latch (A) forward by hand to remove slack. If distance between gate latch stop (B) and stop pad (C) is not 1 to 3 mm (1/32 to 1/8 in.), shim as necessary following this procedure.

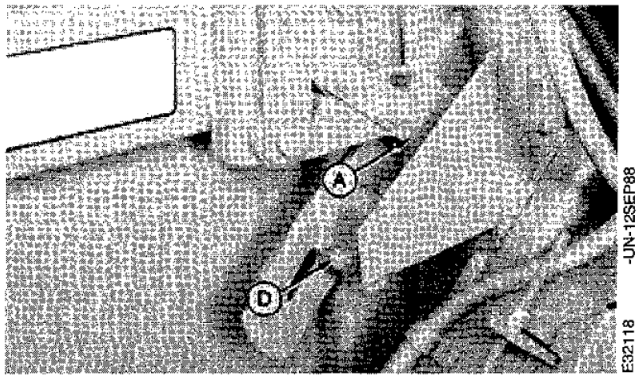
3. Loosen bolt (D). Shims are slotted so bolt does not have to be removed.

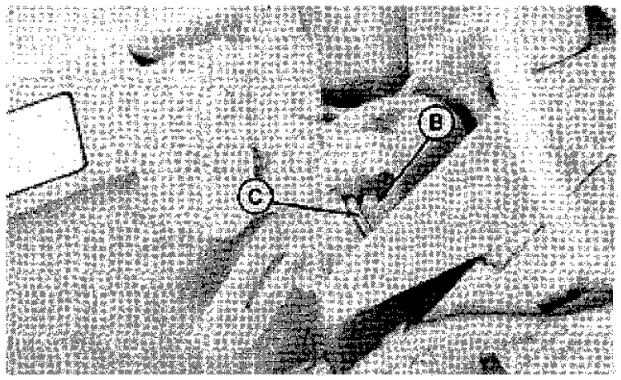
4. If dimension is greater than 3 mm (1/8 in.), transfer shims from storage position to shimming position until a dimension of 1 to 3 mm (1/32 to 1/8 in.) is obtained.

5. If dimension is less than 1 mm (1/32 in.), transfer shims from shimming position to storage position until a dimension of 1 to 3 mm (1/32 to 1/8 in.) is obtained.

NOTE: If proper adjustment cannot be obtained, lower gate with tractor engine shut off. If there is a gap on one side when the other side is contacting, see Straighten Gate, this section.

6. Center shims and stop pad and tighten bolt (D). If necessary, repeat procedure on opposite side.





A—Gate Latch
B—Gate Latch Stop
C—Stop Pad
D—Bolt

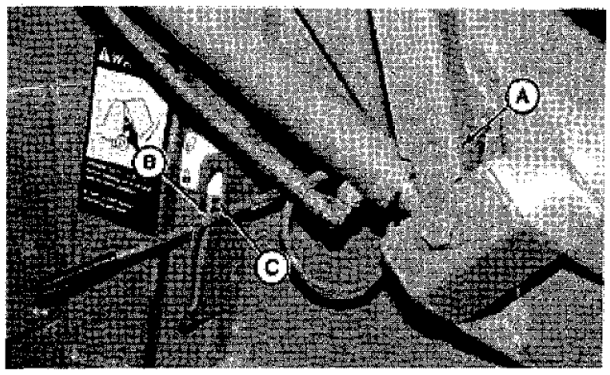
EX,1472,8010,L -19-11MAR93

ADJUST GATE LOCK ROD (385)

NOTE: Perform this procedure with gate closed.

1. Pull cylinder lock (A) back against stop.

2. Bend lock rod (B) as necessary so top of the rod aligns with bottom of lockout slot (C).



EX,1472,8010,M -19-11MAR93

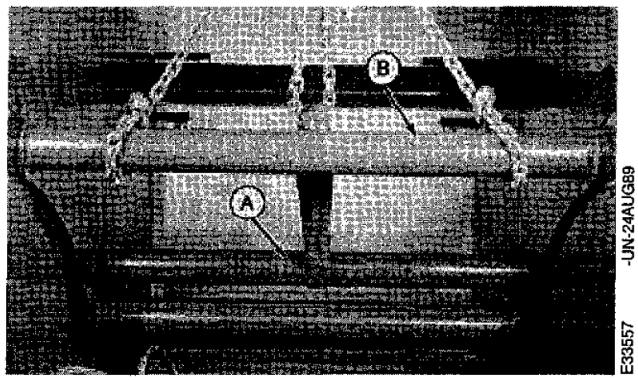
80 10 9

REMOVE TENSION ARM

NOTE: Belts removed for clarity of photograph.

1. Attach hoist to tension arm at front cross tube (B).

2. Remove three tension arm rolls, (See Section 20, Group 30 for procedure.)



EX,1472,8015,A -19-06NOV95

3. Release belt spring tension (A).

4. Disconnect eyebolt (B).

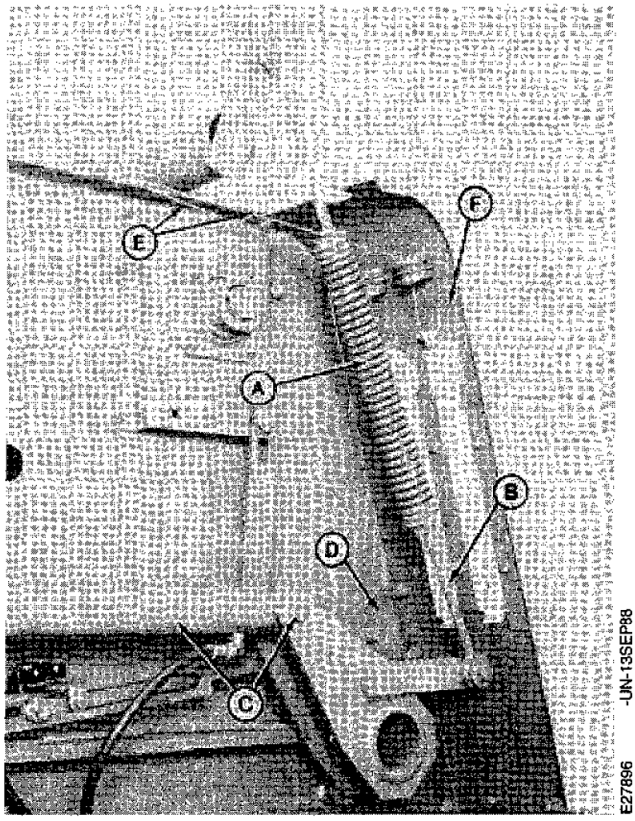
5. Disconnect cylinder (C).

6. Remove five nuts, cap screws, and angle (D).

7. Disconnect monitor cables (E) from gate. Do not disconnect from panel (F).

8. Remove ten nuts, carriage bolts, and panel (F).

A—Tension Spring
B—Eyebolt
C—Cylinder
D—Angle
E—Monitor Cables
F—Panel



EX,1472,8015,B -19-08MAY89

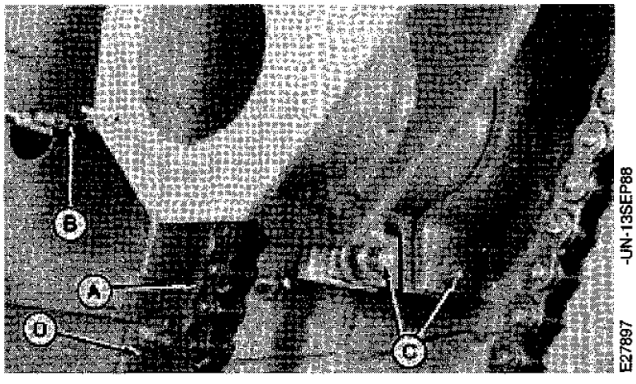
9. Remove drive chain (A).

10. Disconnect bale counter (B).

11. Remove four nuts, carriage bolts (C), and clamps.

12. Remove six nuts, carriage bolts, and angle (D).

A—Drive Chain
B—Bale Counter
C—Carriage Bolts
D—Angle



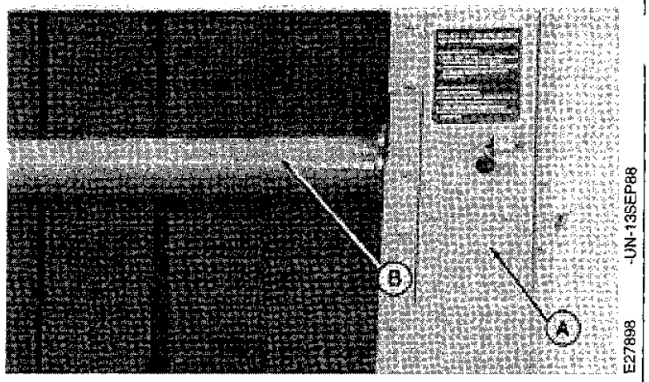
EX,1472,8015,C -19-08MAY89

13. Remove fire extinguisher, if equipped.

14. Remove six nuts, round-head bolts, and support (A).

15. Remove tension arm (B).

NOTE: Refer to Section 20, Group 30 for replacement of hex shaft, roll or shaft bolt.



EX,1472,8015,D -19-26FEB92

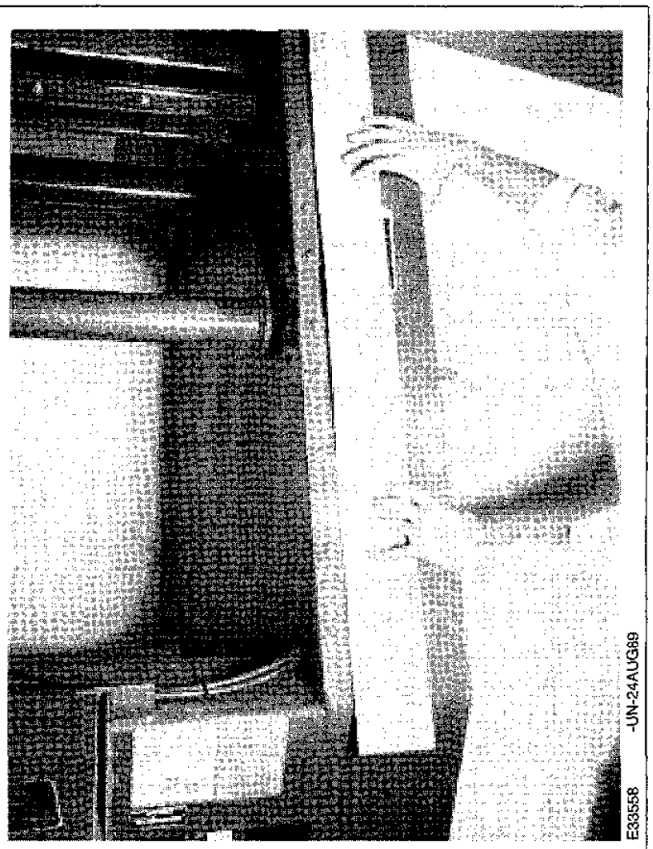
NOTE: Before tightening side sheet check, for straightness with a straight edge as shown.

16. Reverse removal procedure to install tension arm.

17. Install belts. (See Section 80, Group 30 for procedure.)

18. Attach bale shape monitor cables, (See Section 80, Group 05 for procedure.)

19. Install drive chain. Use 2.3 to 4.5 kg (5 to 10 lb) pressure against idler. Tighten idler nut to 163 N·m (120 lb-ft).



EX,1472,8015,E -19-06NOV95

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15
2

20. Thread right-hand (A) and left-hand threaded eyebolt (B) into spring evenly.

21. Secure spring assembly to upper and lower arms using cap screw (C), washer, spacer, and nut.

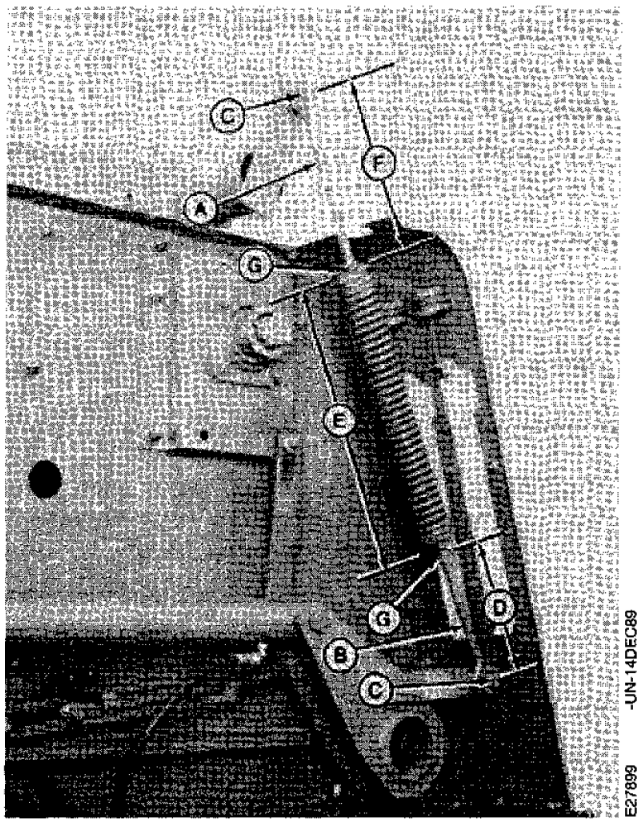
22. Rotate spring to obtain 213 mm (8-3/8 in.) dimension (D).

23. Check spring length for 393 mm (15-1/2 in.) dimension (E).

24. Eyebolt length should be 280 mm (11 in.) (F).

25. Secure spring with jam nuts (G).

A—Right-Hand Eyebolt
B—Left-Hand Eyebolt
C—Cap screw (2 Used)
D—213 mm (8-3/8 In.) Dimension
E—393 mm (15-1/2 In.) Dimension
F—280 mm (11 In.) Dimension
G—Jam Nuts



EX,1472,8015,F -19-06NOV95

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15
3

REPLACE TENSION WEAR CHANNEL

CAUTION: To avoid possible injury, place a solid 102 x 102 mm (4 x 4 in.) block above cylinder between gate and main frame. Lower tension arm.

IMPORTANT: Insert end of block flush with inside of side sheet so tension arm will clear block when lowered.

1. Raise gate and install blocks in gate.

2. Position tension arm. Shut off tractor.

IMPORTANT: To avoid damage, shield belts from heat and sparks (or remove belts) before cutting or welding.

3. Remove old channel.

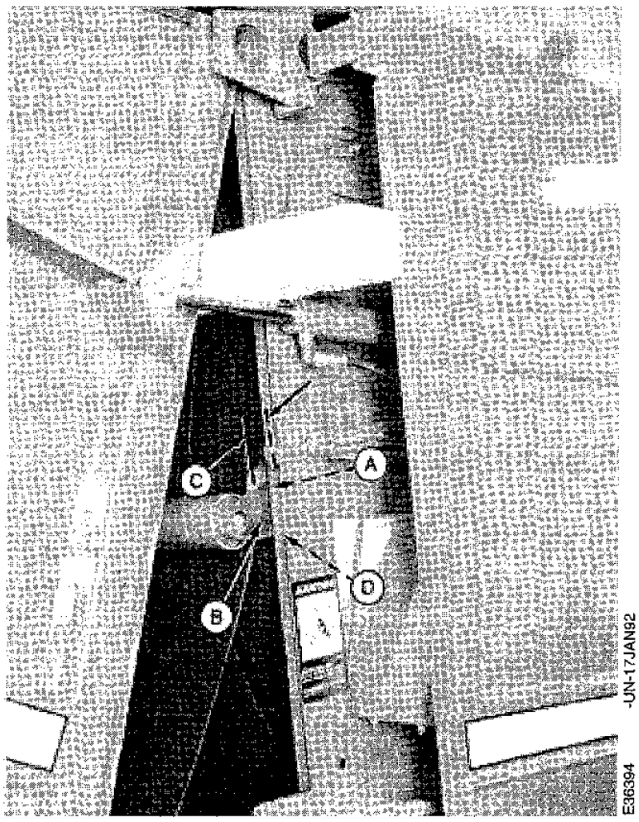
4. Place new channel in same location between rollers with bottom leg against arm.

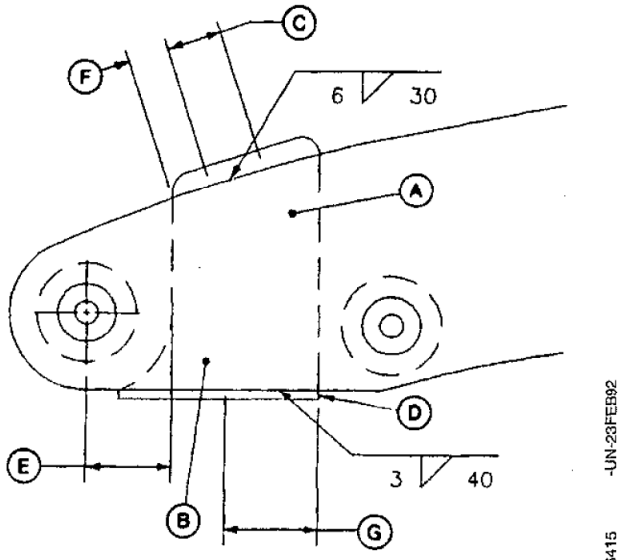
5. Clamp channel flat against arm at positions (A and B).

6. Start a 6 mm (1/4 in.) weld, distance (F) from rear edge and continue weld for distance (C).

7. Beginning at front edge (D), put a 3 mm (1/8 in.) weld along bottom of channel for distance (G).

A—Clamp Position
B—Clamp Position
C—30 mm (1-3/16 in.) Weld
D—Front Edge of Channel
E—30—33 mm (1-3/16—1-5/16 in.) Reference
F—20 mm (13/16 in.)
G—40 mm (1-9/16 in.) Weld





EX,1472,8015,G -19-11MAR93

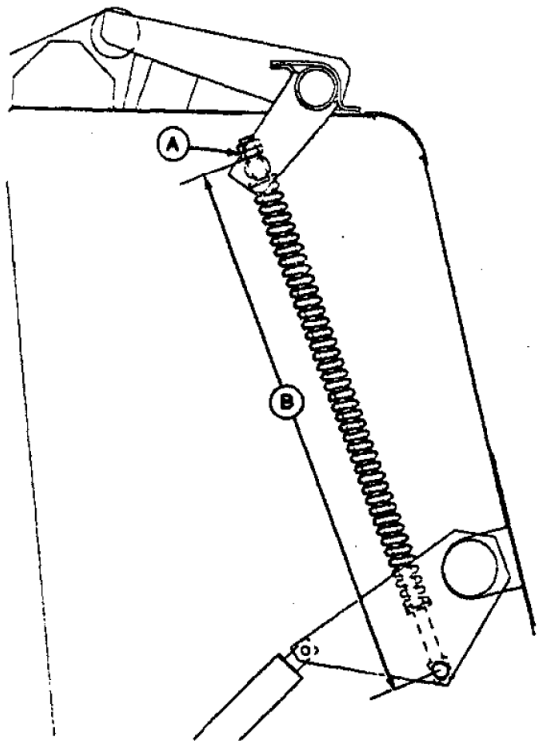
80
15
4

ADJUST TAKE-UP ARM COMPRESSION SPRING

If spring has been replaced or stop nuts have been removed, adjust spring as follows:

1. Close the gate and lower tension arm.

2. Adjust stop nuts (A) until dimension (B) is 699 mm ± 1.5 mm (27.52 in. ± 1/16 in.).



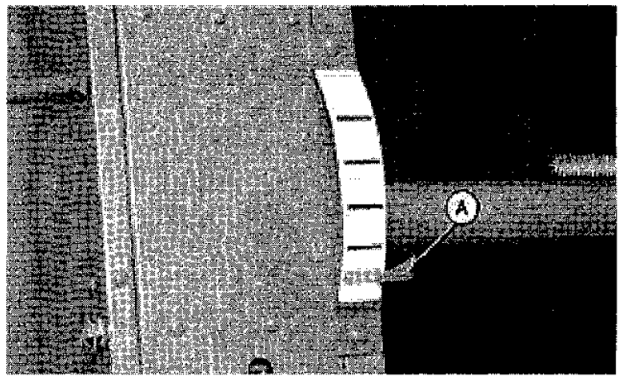
EX,1472,8016,A1-19-11MAR93

ADJUST BALE SIZE INDICATOR

1. Raise belt tension arm to highest position.

2. Shut off tractor and engage gate lock.

3. Line bottom edge of pointer (A) with bottom edge of red zone as viewed from tractor. Tighten bolts.



EX,1472,8016,A2-19-11MAR93

80 16 1

REPLACE TENSION ARM

1. Remove belts.

2. Fasten hoist to tension arm (I) and front cross tube (J) before removing cylinders and linkage.

3. Remove cotter pin (G).

4. Remove tension spring assembly (H).

5. Remove hose (A) from fitting (B).

6. Remove gauge (C) and hose (A) through front of support (D).

7. Attach hose (A) and gauge (C) to fitting (B). Do not route hose and gauge through front of support (D). Hose and gauge should hang down.

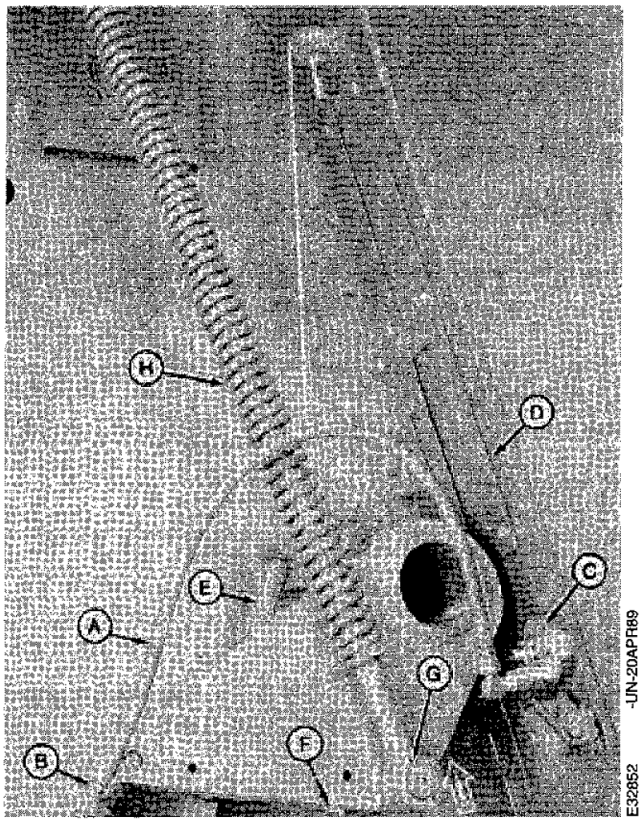
8. Remove pin from clevis (E).

9. Remove rope (F) from tension arm.

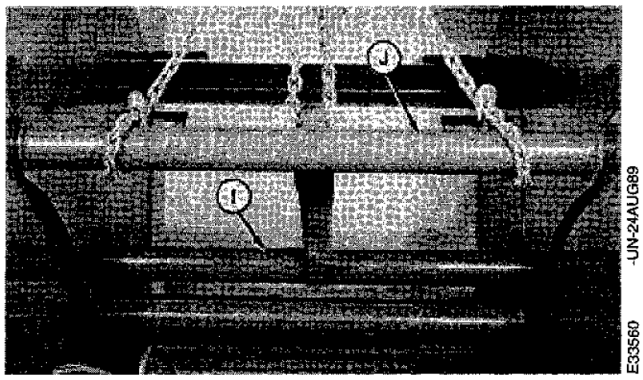
10. Remove twine boxes and support shield from both sides of baler.

11. Remove tension cylinder from both sides of baler.

A—Hose
B—Hydraulic Fitting
C—Gauge
D—Support Shield
E—Clevis
F—Rope
G—Cotter Pin
H—Tension Spring
I—Tension Arm
J—Front Cross Tube



E32852 -UN-20APR89



E33560 -UN-24AUG89

EX,1472,8020,A -19-11MAR93

80 20 1

13. Remove round-head bolts (A).

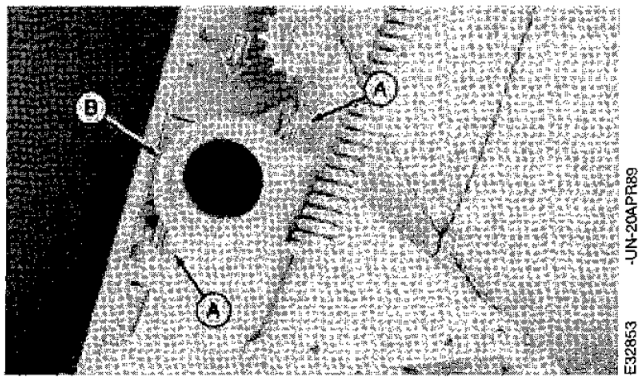
14. Remove plate (B) from tension arm.

15. Repeat steps 11 and 12 on opposite side of baler.

16. Remove tension arm from baler.

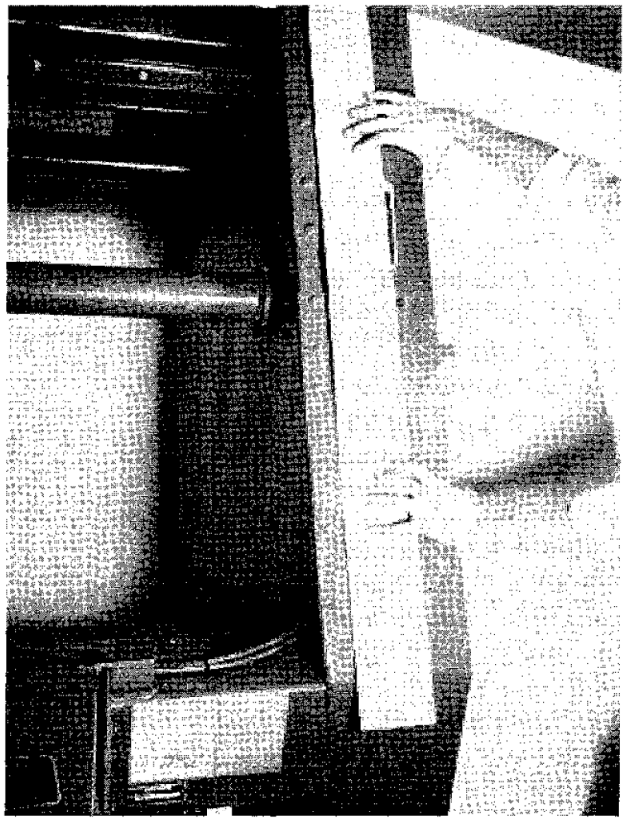
NOTE: Refer to Section 20, Group 30 for replacement of shaft, roll, or shaft bolt.

17. To reinstall, install tension arm, twine, box, and support shield.



EX,1472,8020,B -19-11MAR93

NOTE: Before tightening support shield, check side sheet for straightness with straight edge.



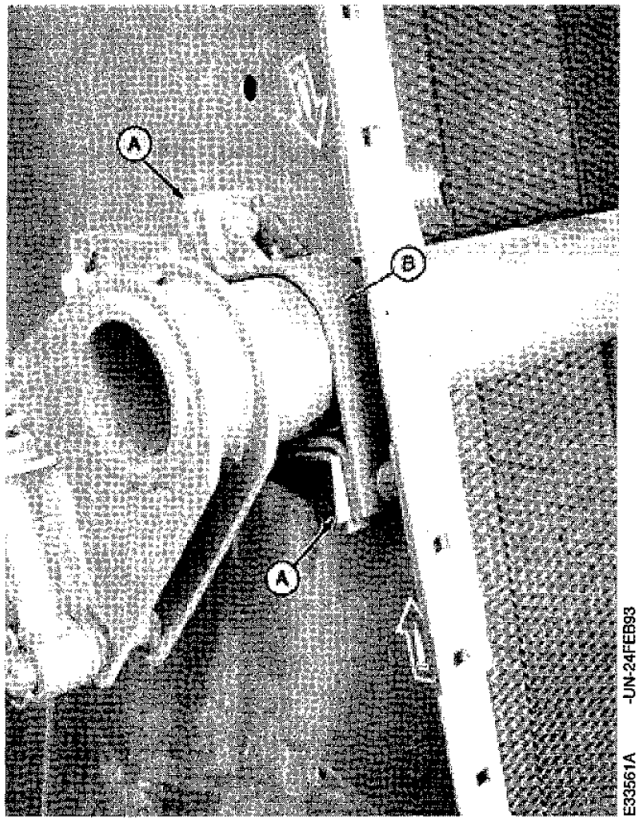
EX,1472,8020,C -19-21AUG89

80
20
2

18. Cycle tension arm to check for side sheet clearance and that arm is straight.

19. If arm is not straight, add or remove shims (A) on left or right side of baler as needed.

20. Tap cap (B) down, while tightening hardware, to remove gap at top.



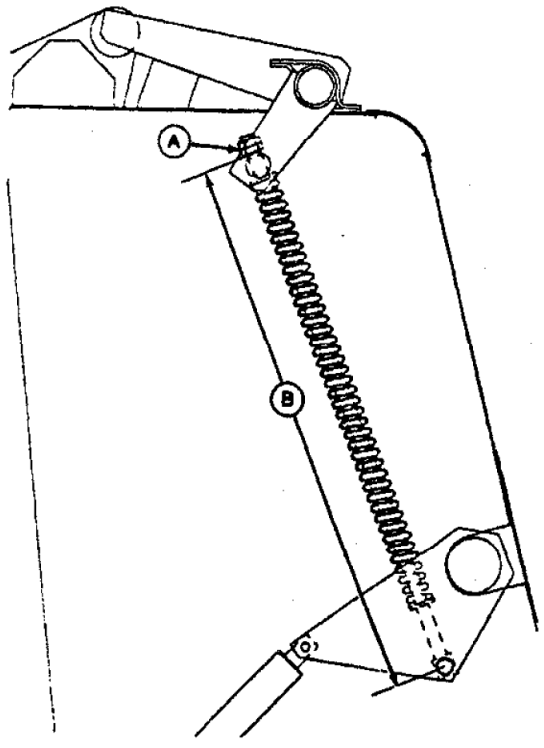
EX,1472,8020,DA-19-11MAR93

ADJUST TAKE-UP ARM COMPRESSION SPRING (435—535)

If spring assembly has been replaced or stop nuts have been removed, adjust spring as follows:

1. Close the gate and lower tension arm.

2. Adjust stop nuts (A) until dimension (B) from under lower stop nut to center of lower pivot is 973 ± 1.5 mm (38 5/16 ± 1/16 in.).



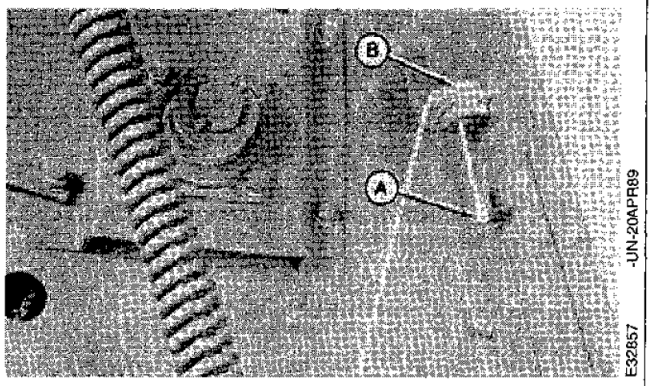
EX,1472,8020,D1-19-11MAR93

ADJUST BALE SIZE INDICATOR

1. Lock gate in closed position.

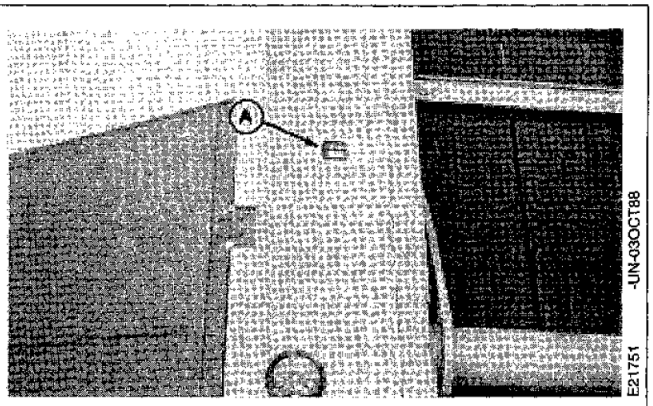
2. Using tractor selector valve, raise belt tension arm to the highest position.

3. Tie rope to the hole of bale size indicator (A) and thread it through the twine guide (B).



EX,1472,8020,E -19-11MAR93

4. Adjust rope so the number "6" is centered in the bale size window (A).

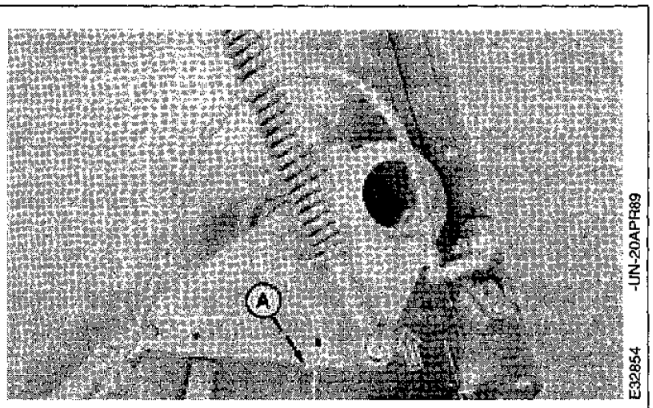


EX,1472,8020,F -19-08MAY89

5. Tie the other end of the rope to the belt tension arm (A) as shown.

6. Using tractor selector valve, lower belt tension arm.

7. Unlock gate.



EX,1472,8020,G -19-08MAY89

80
20
4

REPLACE TENSION WEAR CHANNEL

1. Raise gate and engage gate lock valve.

2. Position tension arm as shown. Shut off tractor.

IMPORTANT: To avoid damage, shield belts from heat and sparks (or remove belts) before cutting or welding.

3. Remove old channel.

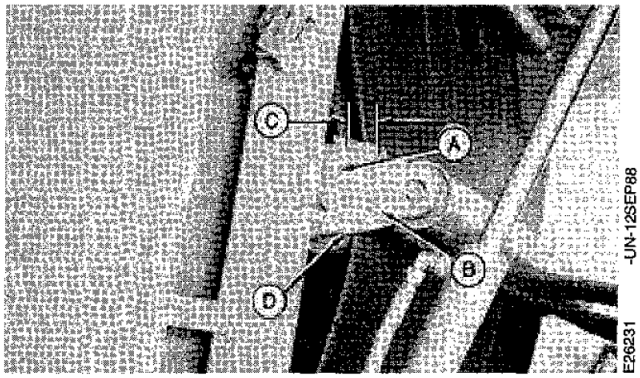
4. Place new channel in same location between rollers with bottom leg against arm.

5. Clamp channel flat against arm at positions (A and B).

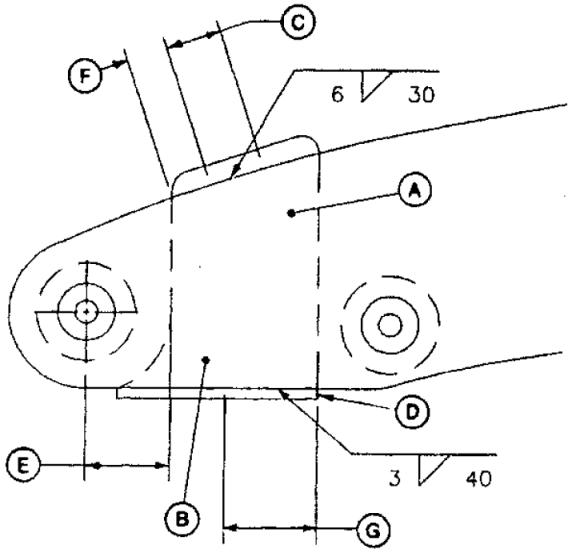
6. Start a 6 mm (1/4 in.) weld, distance (F) from rear edge and continue weld for distance (C).

7. Beginning at front edge (D), put a 3 mm (1/8 in.) weld along bottom of channel for distance (G).

A—Clamp Position
B—Clamp Position
C—30 mm (1-3/16 in.) Weld
D—Front Edge of Channel
E—30—33 mm (1-3/16 x 1-5/16 in.) Reference
F—20 mm (13/16 in.)
G—40 mm (1-9/16 in.) Weld



Left Side Shown



Right Side Shown

EX,1472,8020,H -19-11MAR93

80 20

REMOVE TONGUE

CAUTION: Make sure tongue and baler are both properly supported before removing tongue.

1. Remove tie down and wiring hold-down clamps.

2. Pull wiring harness through rear of tongue.

3. 335, 375 and 385—Remove nut, cap screw (A) and driveline (B).

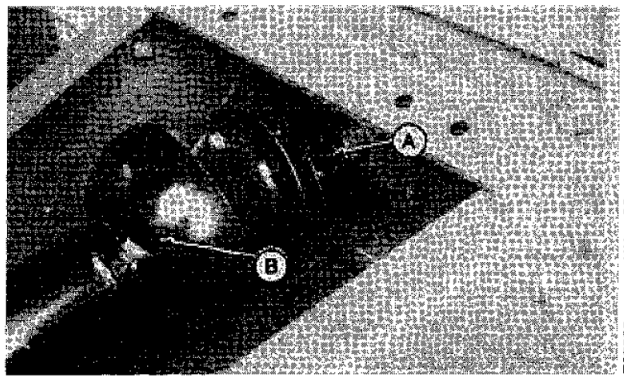
435 and 535—Remove cap screws (C). Remove slip clutch (D) from gear case.

4. Chain tongue to keep it from falling.

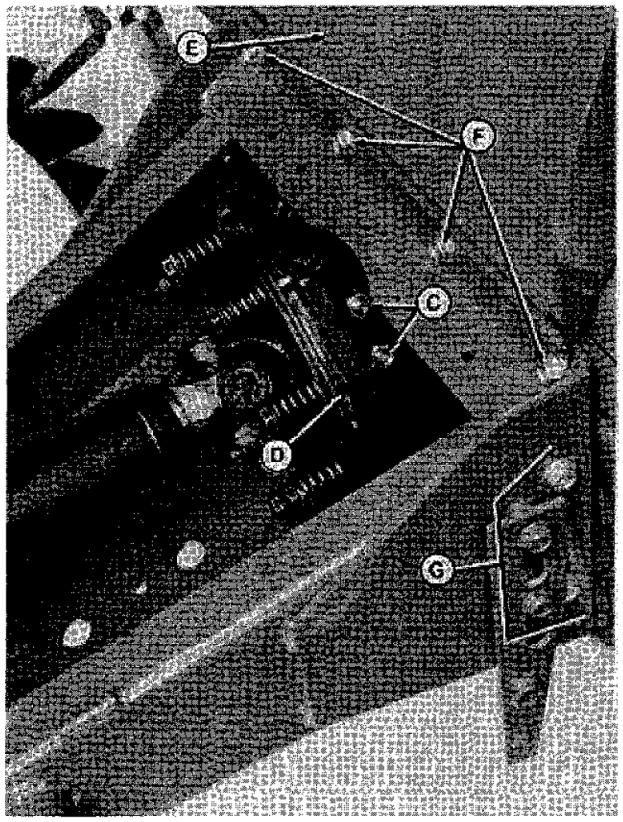
5. Remove shield (E) by removing cap screws (F).

6. Remove remaining cap screws (G).

A—Cap Screw
B—Driveline
C—Cap Screws
D—Slip Clutch
E—Shield
F—Cap Screws
G—Cap Screws



335 Baler Illustrated



535 Baler Illustrated

EX,1472,8025,A -19-06NOV95

INSTALL TONGUE

1. Install slip clutch or driveline, wiring harness, shields, and clamps.

2. Tighten flange nuts on side and bottom of tongue to 140 N·m (103 lb-ft).

3. Tighten lock nuts on top of tongue to 91 N·m (67 lb-ft).

EX,1472,8025,B -19-11MAR93

SPECIFICATIONS

Item	Measurement	Specification
335—375 Belts		
Short	Length	10242 mm (403.2 in.) maximum
Long	Length	10432 mm (410.7 in.) maximum
385 Belts		
Short	Length	11709 mm (461.0 in.) maximum
Long	Length	11849 mm (466.5 in.) maximum
435—535 Belts		
Short	Length	13347 mm (525.5 in.) maximum
Long	Length	13487 mm (531.0 in.) maximum

EX,1472,8030,A -19-11MAR93

ESSENTIAL TOOLS

NOTE: Order tools from the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

Number	Name	Use
JT07079	178 mm (7 in.) Belt Lacer	Repairing belts
AE43296	178 mm (7 in.) Belt Lacer	Repairing belts, used with vise

EX,1472,8030,B -19-11MAR93

80
30
1

INSTALL BELTS

NOTE: See following illustrations for location of long and short belts. Install belts with diamond portion of the belt to the outside. Make sure belts are installed through the individual guides.

Refer to Specification section for proper length of belts.

1. Loosen belt tension by raising gate fully and engaging gate lock. Shut off tractor.

2. When replacing an old belt, turn baler over until splice appears in back vertical strand.

3. Remove splicing pin. Hook trimmed end of new belt to square end of old belt with splicing pin. Pull new belt through baler using the old belt.

EX,1472,8030,C -19-11MAR93

80
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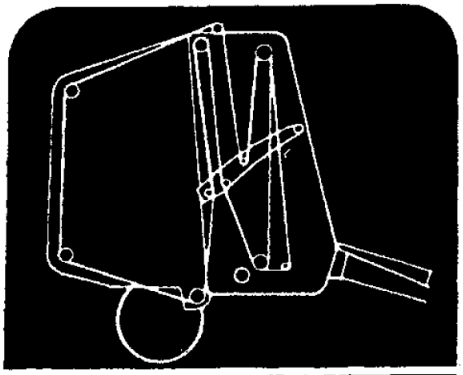
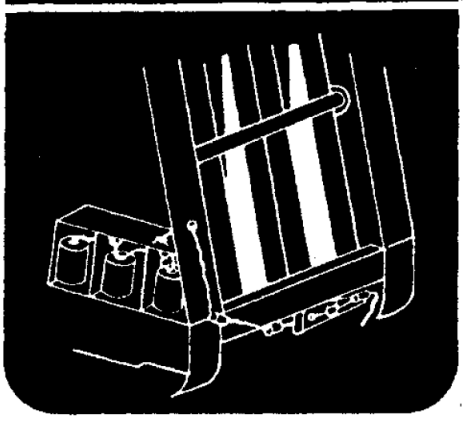
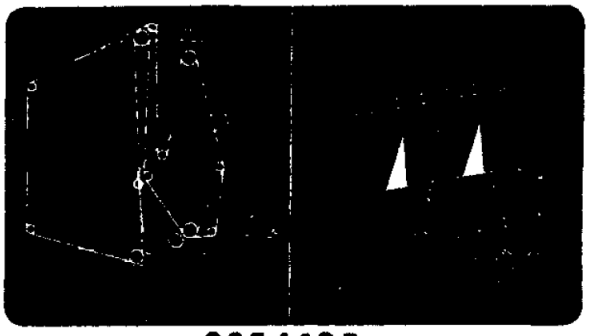
2

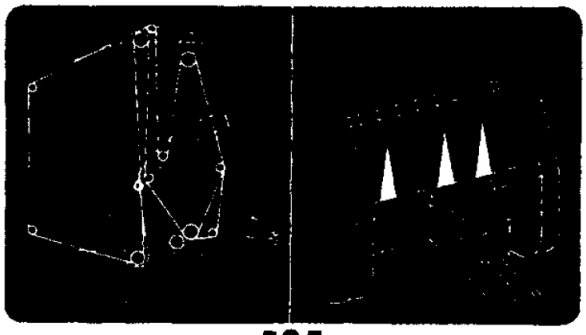




335

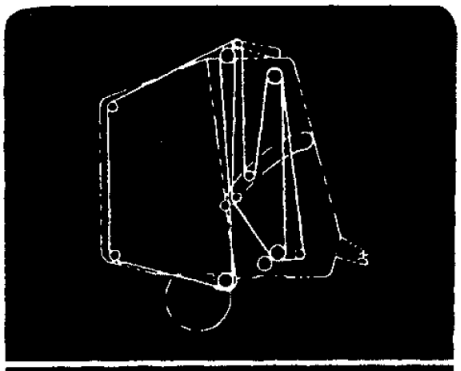


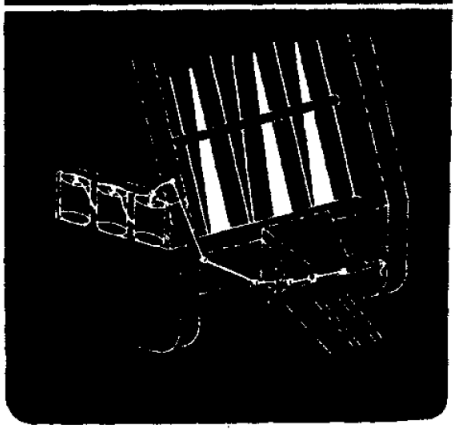
385/435



535

E36476 -UN-17MAR93



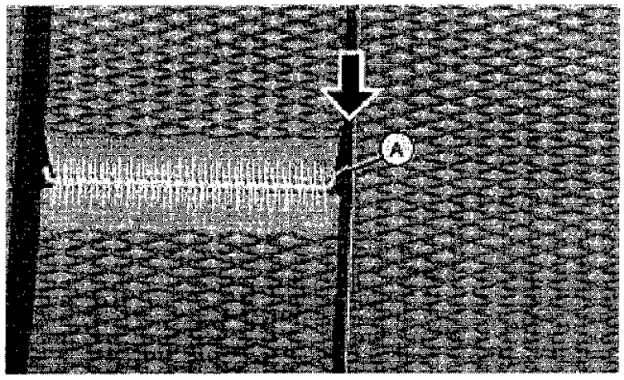


375

E32562 -UN-11NOV88

EX,1472,8030,C2-19-11MAR93

4. Thread belts so trimmed end of belts is trailing in normal direction of travel (arrowed). Insert pin and bend ends at 70 to 80 degree angle pointing toward the trimmed end of belt as shown.

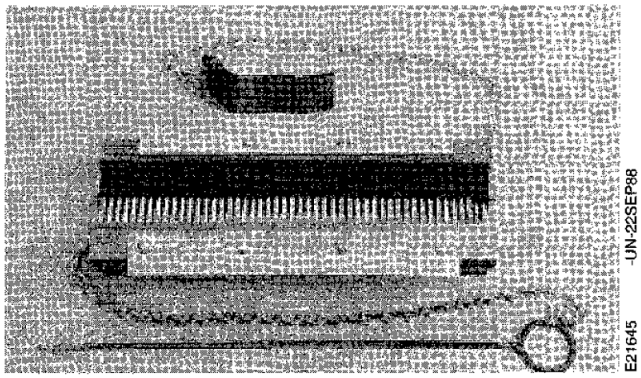


EX,1472,8030,D -19-09MAY89

REPAIR BELTS

A belt lacing tool and hardware is available for repairing belts.

Slacken belts by raising gate fully and engaging gate lock. Shut off tractor.

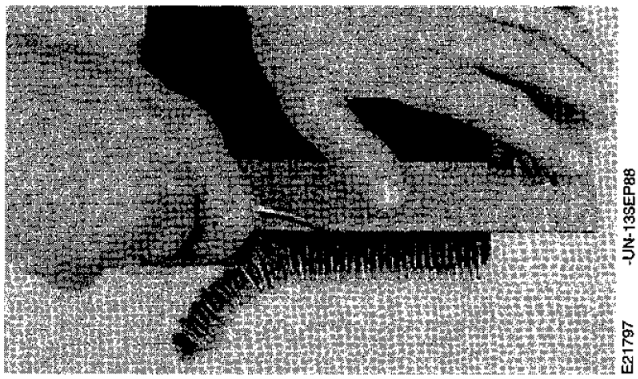


EX,1472,8030,E -19-11MAR93

80
30
4

1. Remove broken belt.

2. Using a square and sharp knife, remove damaged area.



IMPORTANT: Check belt length to make sure it is not less than:

- **335—375**
  Short Belt—10154 mm (399-3/4 in.)
  Long Belt—10344 mm (407-1/4 in.)
- **385**
  Short Belt—11633 mm (458 in.)
  Long Belt—11773 mm (463-1/2 in.)
- **435—535**
  Short Belt—13259 mm (522 in.)
  Long Belt—13411 mm (528 in.)

If belts are less than specified dimensions, they will contact each other damaging the diamond pattern.

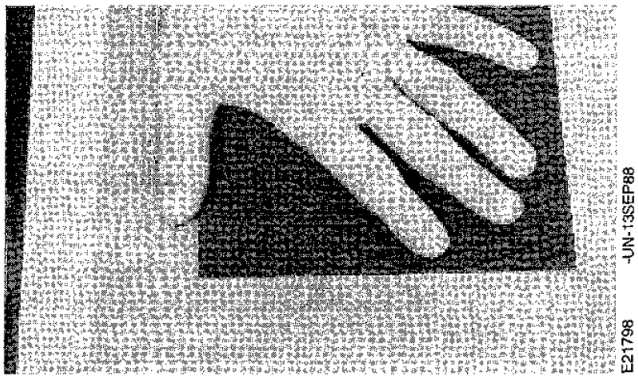
NOTE: If belts are shorter than the above dimensions, a short piece of belt must be added to bring all belts to within 38 mm (1-1/2 in.) of the same overall length. Splices within a belt should be at least 305 mm (12 in.) apart.

The maximum length of any belt should not exceed:

- *335—375*
  Short Belt—10281 mm (404-3/4 in.)
  Long Belt—10471 mm (412-1/4 in.)
- *385*
  Short Belt—11760 mm (463 in.)
  Long Belt—11900 mm (468-1/2 in.)
- *435—535*
  Short Belt—13386 mm (527 in.)
  Long Belt—13538 mm (533 in.)

EX,1472,8030,F -19-11MAR93

3. Check belt to be sure it is cut squarely.

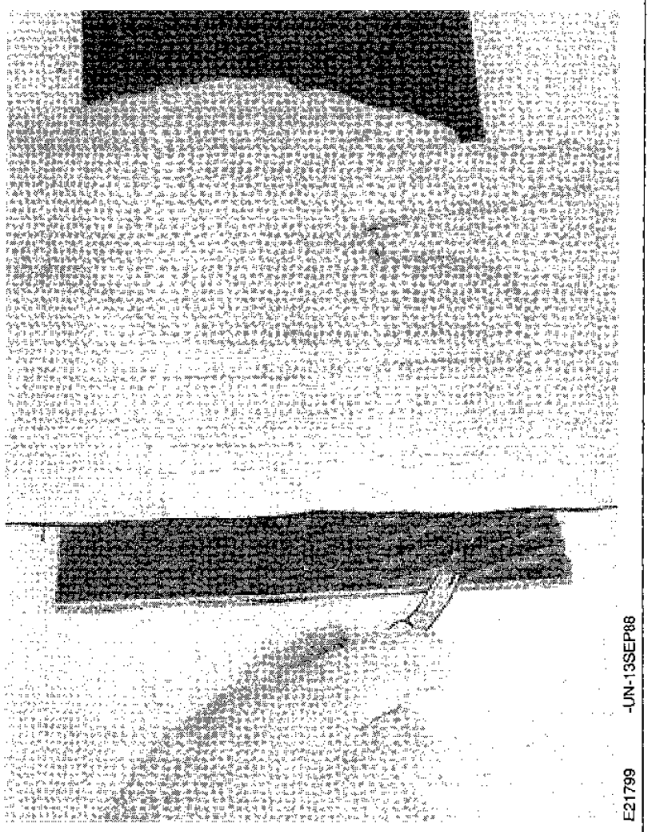


EX,1472,8030,G -19-29JAN92

4. Use a 25 to 51 mm (1 to 2 in.) thick board to hold belt as shown.

5. With a sharp knife, remove 25 mm (1 in.) of diamond pattern from end of belt, similar to that removed for original belt splice. To reduce cutting effort, dip knife blade in liquid soap.

IMPORTANT: Cut only the diamond pattern. Cutting deeper can damage the belt cords.



EX,1472,8030,H -19-06NOV95

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6

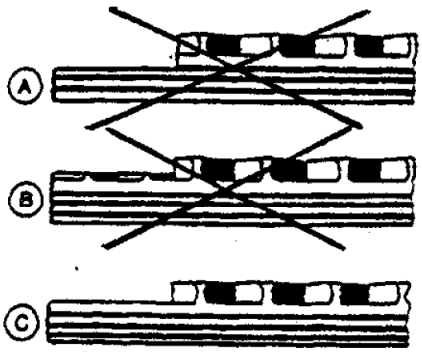
NOTE: The pictures of belts illustrate incorrect and correct removal of diamond pattern.

Belt (A) is cut too deep and will damage the belt cords.

Belt (B) is cut too high and will prevent the hooks from coming fully through the belt.

Belt (C) is cut correctly.

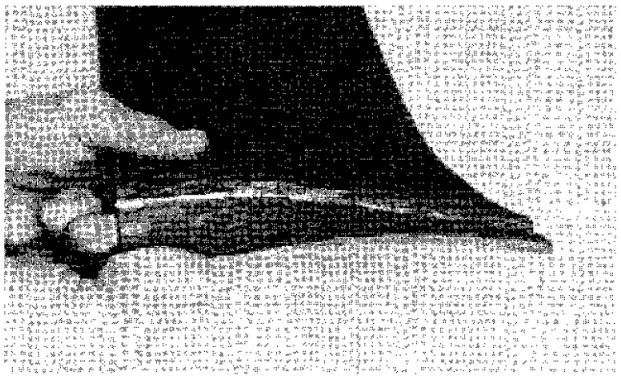
NOTE: Do not leave more than 0.5 mm (1/64 in.) of pattern on belt in area to be laced.



E27606 -UN-12SEP88

EX,1472,8030,I -19-09MAY89

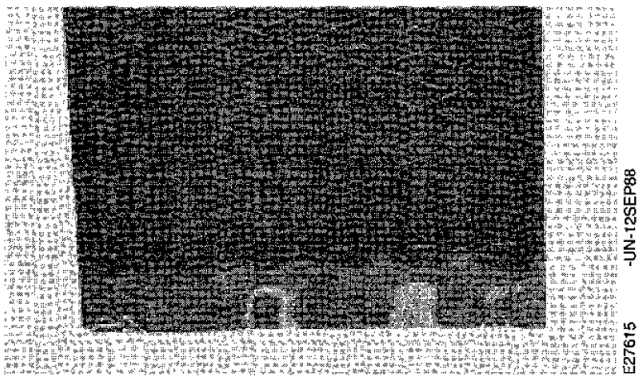
Belt fabric cut when cutting down toward surface of the belt to remove diamond pattern.



E27614 -UN-12SEP88

EX,1472,8030,J -19-10MAY89

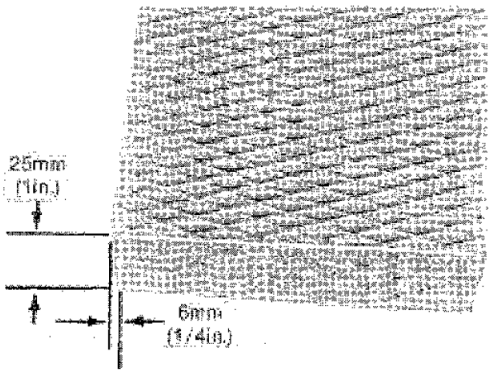
Too much of diamond pattern removed for belt lacing.



E27615 -UN-12SEP88

EX,1472,8030,K -19-10MAY89

6. Trim trailing end of belt ONLY as shown in illustration.



E22649 -UN-13SEP88

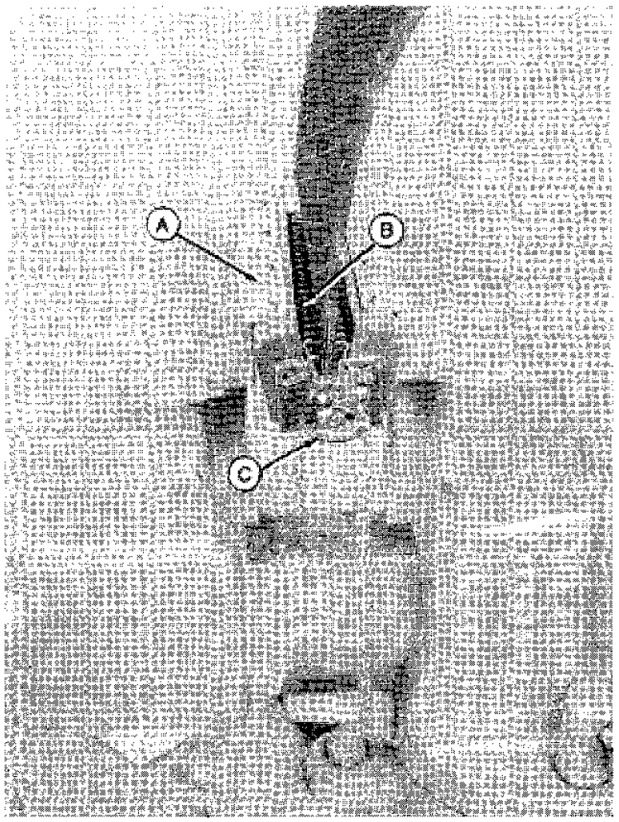
EX,1472,8030,L -19-29JAN92

IMPORTANT: If repair is needed on only one end of belt, count the hooks. There should be 44 hooks for the trimmed end of belt and 45 hooks for the square end of belt.

7. Put belt lacing tool (A) in a vise, setting the determined amount of hooks (B) in center of the lacing tool, and inserting long pin (C) to hold hooks (B) in place.

NOTE: Remove cardboard holding the hooks together before splicing the belt.

8. Visually align belt so hooks (B) are centered in belt. Make sure full width of belt is in contact with bottom of lacer. Tighten vise forcing hooks through the belt.

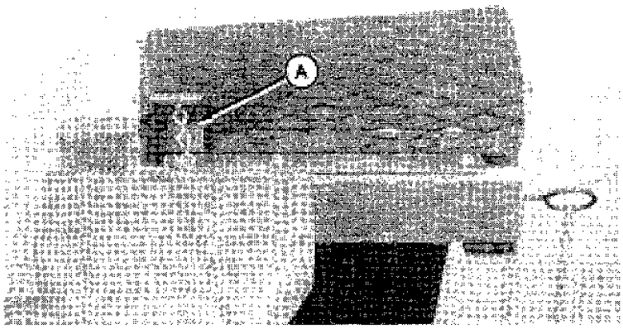


E21801 -UN-13SEP88

EX,1472,8030,M -19-10MAY89

IMPORTANT: To correctly clinch hooks in the belt and ensure proper splice life, use the following procedure:

9. Starting at one end of belt, and keeping PRESSURE PLATE (A) centered in the vise, retighten vise to exert maximum pressure on approximately six hooks at a time.

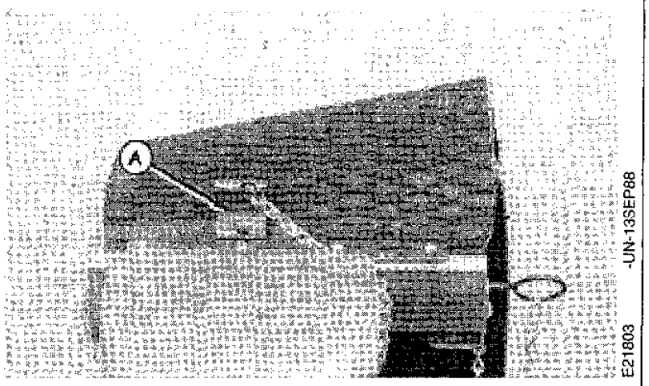


E21802 -UN-03AUG89

EX,1472,8030,N -19-10MAY89

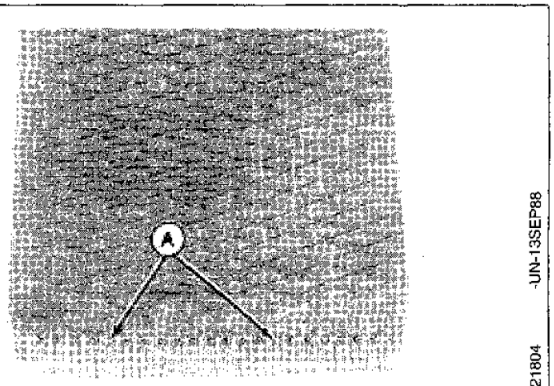
10. Always keeping pressure plate (A) centered in the vise, move belt and lacing tool over and retighten vise.

11. Repeat procedure until all hooks are clinched.



EX,1472,8030,O -19-10MAY89

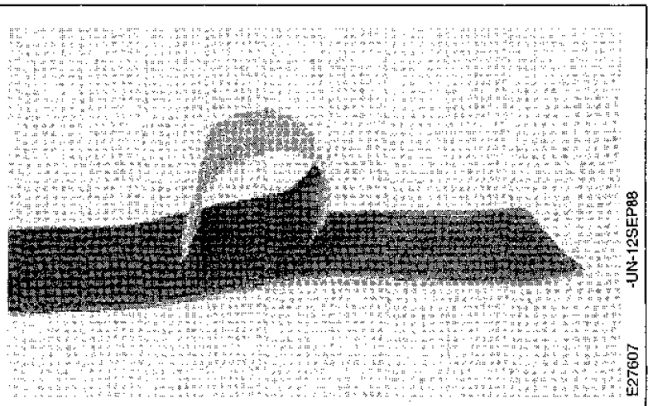
12. When properly installed, the points (A) have come through the belt from the opposite side and are slightly clinched. (See Install Belts, in this group.)



EX,1472,8030,P -19-06NOV95

BELTS ELIGIBLE FOR WARRANTY REPLACEMENT

Upper belts are warrantable if the material and/or workmanship is defective and machine is under warranty. Ply separation is considered warranty if within the item warranty.



EX,1472,8030,Q -19-10MAY89

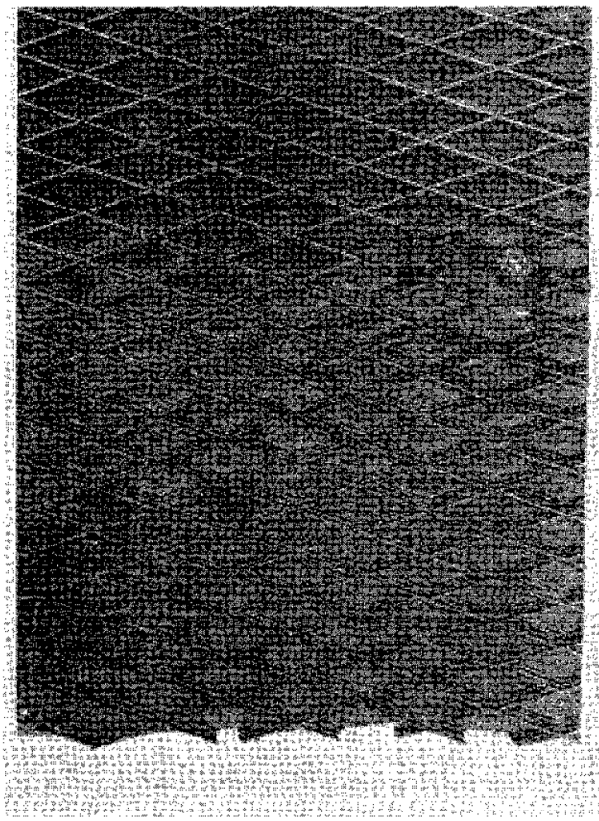
80 30 9

BELTS NOT ELIGIBLE FOR WARRANTY REPLACEMENT

The following illustrations are belts damaged by accumulation of crop and/or foreign objects on top of compressor rack and between belts in the starter roll area. A small slug of the buildup will pass between the lower drive roll and the belt, which forces the belt into the starter roll. The bars of the starter roll remove chunks of rubber from the belt and/or tear the belt fabric.

EX,1472,8030,R -19-10MAY89

Chunks of rubber missing from surface of belt.



EX,1472,8030,S -19-10MAY89

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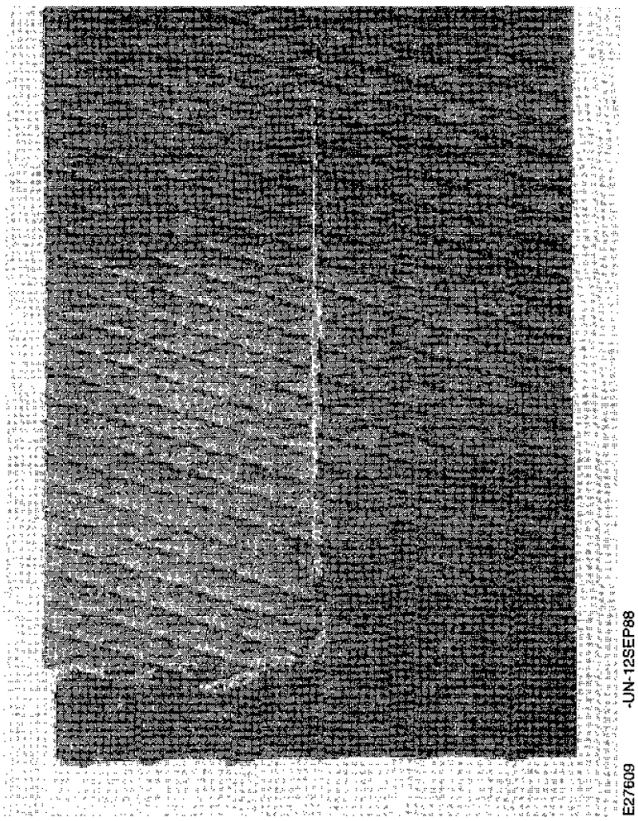
10

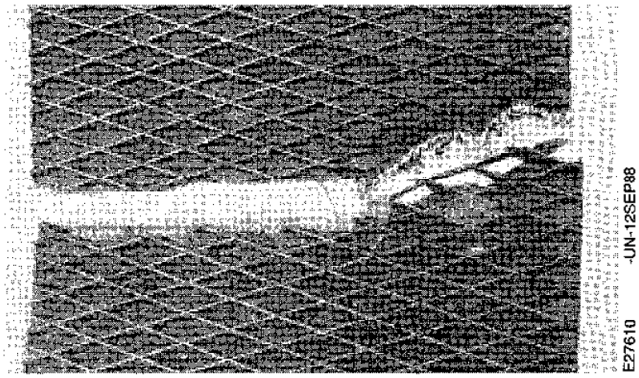
Belts with holes and/or tears.

NOTE: This is not ply separation.

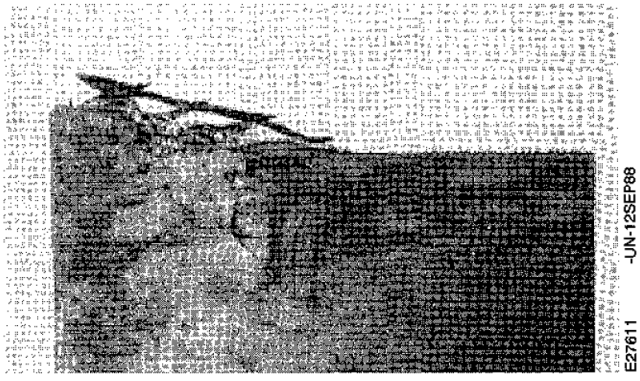


EX,1472,8030,T -19-10MAY89

Belts that are cut and/or torn in two.



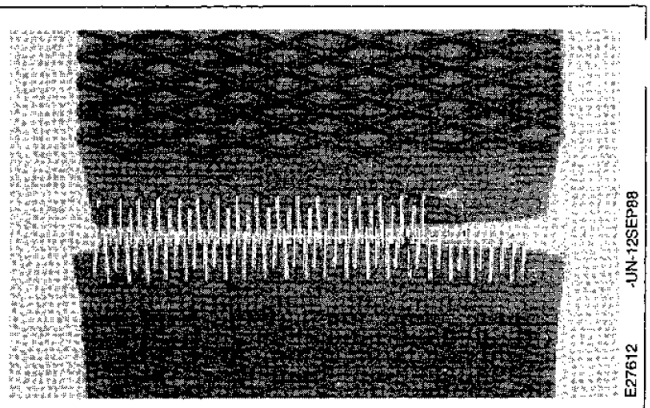
Back side of belt showing damage caused by foreign objects.



EX,1472,8030,U -19-10MAY89

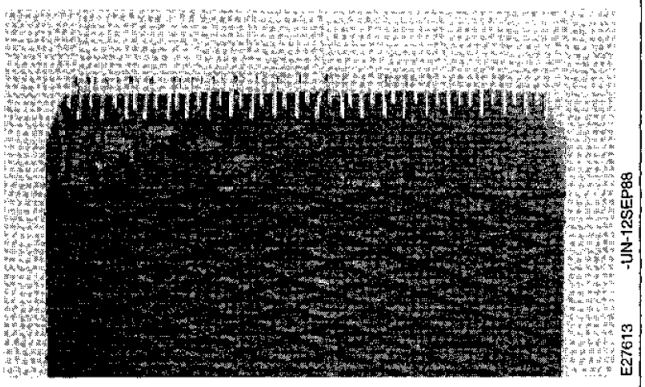
The following illustrations show the lacing (splice) pins wearing and/or breaking, and the use of improper hooks or lacing techniques.

The wearing and/or breaking of pins is normal. The severity of wear or breaking of pins is related to field conditions, density of bales, belt tracking and type of crop. Pins are wear items and should be checked weekly and replaced as needed.



EX,1472,8030,V -19-10MAY89

Belt lacing not holding due to an insufficient amount of diamond pattern removed.



EX,1472,8030,W -19-24JAN92

80
30
12

STRAIGHTEN MAIN FRAME

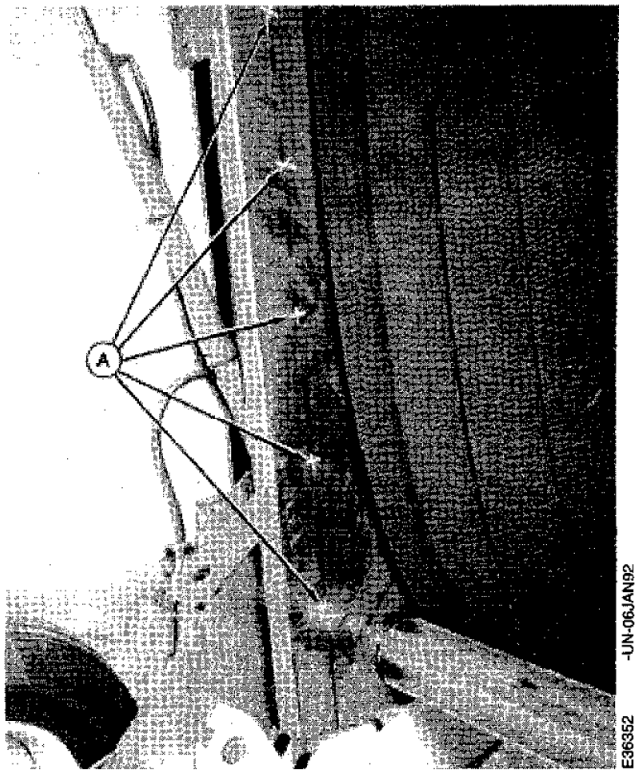
1. Raise rear gate.

CAUTION: While working inside or around the baler with an open gate, the gate lock lever must be moved to the locked position. Use this safety feature any time the gate is open. Close the gate any time the baler must be left unattended.

2. Shut off tractor and move gate lock lever to the locked position.

3. Pull belt slack out the front of the baler.

4. Starting at the bottom of the side sheet, put a mark every 300 mm (12 in.) approximately 100 mm (4 in.) in from the rear edge. The marks (A) should be at the line made by welds distorting through the side sheet. Repeat for the other side.



EX,1472,8035,A -19-21JAN92

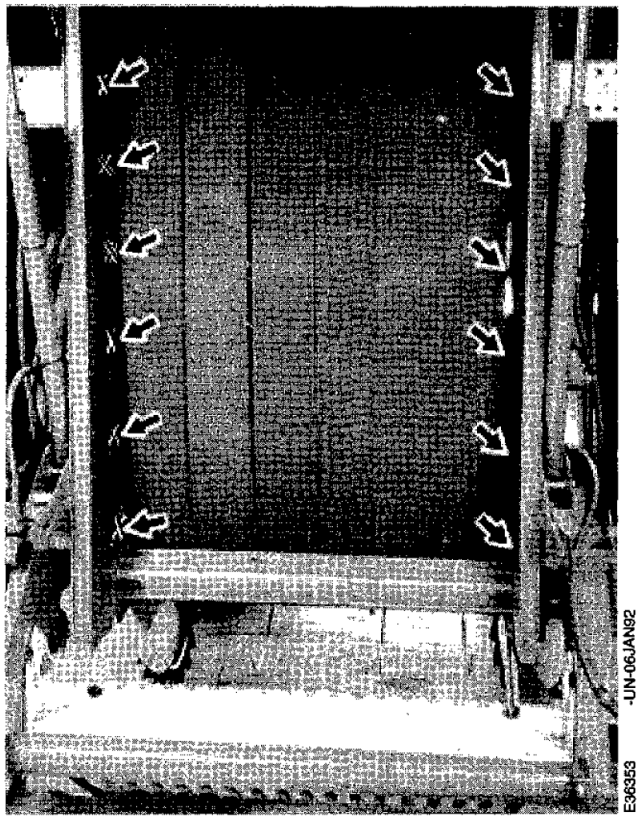
5. Measure and record the distance between each mark.

NOTE: Nominal dimensions of balers are:
335/385/435 .....1170 mm (46 1/16 in.)
375/535 .....1565 mm (61 5/8 in.)

Example:
1.8 m (6 ft) mark ....1170 mm (46 1/16 in.)
1.5 m (5 ft) mark ....1168 mm (46 in.)
1.2 m (4 ft) mark ....1164 mm (45 13/16 in.)
0.9 m (3 ft) mark ....1162 mm (45 3/4 in.)
0.6 m (2 ft) mark ....1164 mm (45 13/16 in.)
0.3 m (1 ft) mark ....1168 mm (46 in.)

Metric measurements may be easier to locate narrow area.

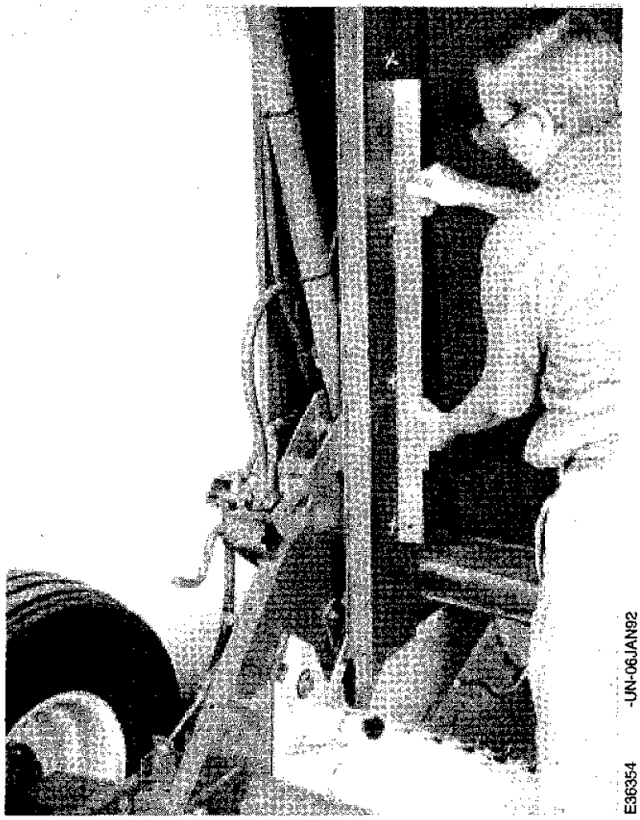
Tight area in example is at 0.9 m (3 ft) mark.



EX,1472,8035,B -19-11MAR93

6. Check both side sheets using a straight edge. Mark the exact tight spot on each side sheet. Tight spot will be raised area on inside of baler.

The tight spot may not be the same area on each side sheet or one side sheet may be bowed and not the other. Pay close attention for possible tight spots at welds and channels.



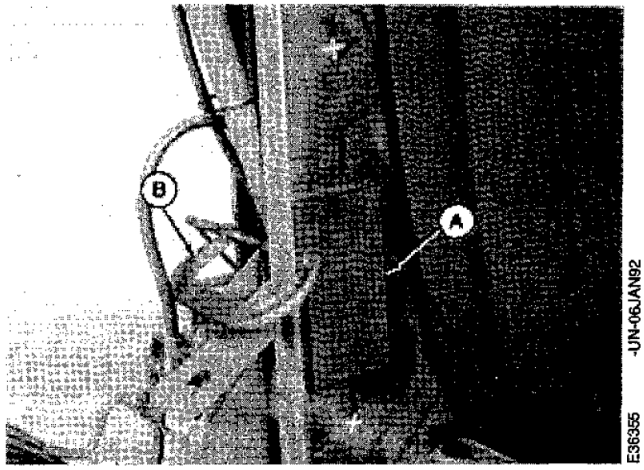
EX,1472,8035,C -19-11MAR93

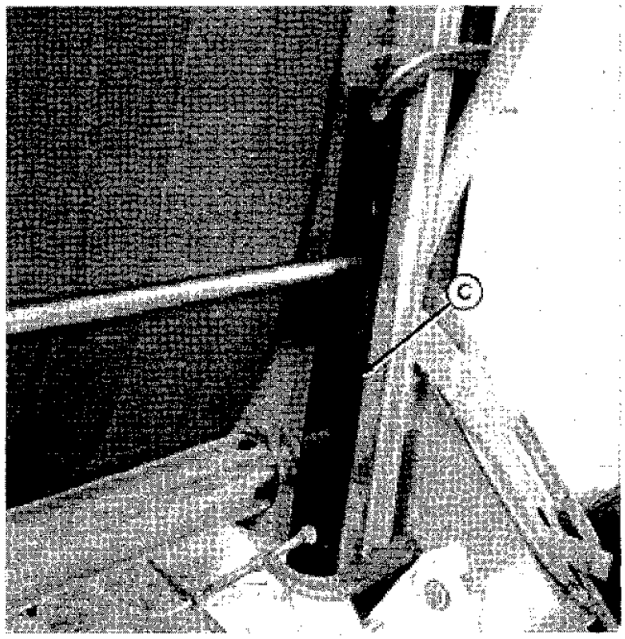
80
35
2

7. Put a 300 mm (12 in.) square by minimum 19 mm (3/4 in.) thick steel plate (A) on the tight spot. Use a clamp (B) to hold the plate in position.

IMPORTANT: Tubing should be at least 1.2 m (4 ft) long to distribute force and not bend opposite side sheet.

8. Put a heavy wall steel tubing, approximately 50 mm x 100 mm (2 in. x 4 in.) and at least 1.2 m (4 ft) long (C), on the other side of the baler. Use clamps to hold in position.





EX,1472,8035,D -19-21JAN92

CAUTION: To avoid personal injury, DO NOT use a hydraulic jack with blocks to spread side sheets. The blocks can twist and jackknife out of position.

9. Use a portable hydraulic cylinder (A) and pump to apply force to spread side sheet with smaller plate. Put the cylinder on the tight spot in line with the weld marks.

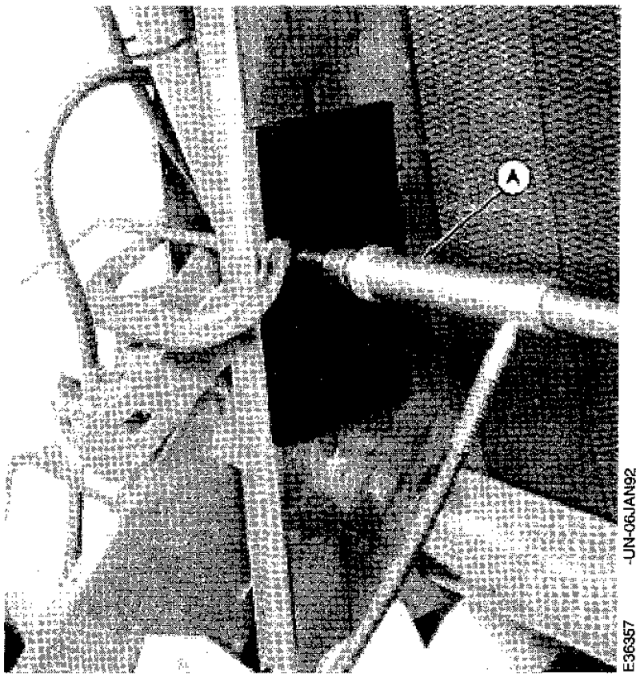
IMPORTANT: All dimensions should be within 2 mm (3/32 in.) of each other and no wider than the widest dimension measured in step 5.

Carefully watch cylinder for the amount of deflection. Relax cylinder pressure and check tight spot using a straight edge.

10. If side sheet has not moved enough, repeat step 9.

11. If necessary in move opposite side sheet, switch plate and tubing repeat steps 7—10.

12. Use a straight edge to make sure the side sheet(s) have been straightened.



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