3,6, 8 & 9 Series Rotary Cutters

JOHN DEERE

TECHNICAL MANUAL

3,6, 8 & 9 Series
Rotary Cutters

TM1394 (01MAY87) English

John Deere Welland Works
TM1394 (01MAY87)

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ENGLISH

3, 6, 8 AND 9 SERIES ROTARY CUTTERS TECHNICAL MANUAL TM-1394 (MAY 87)

SECTION AND GROUP CONTENTS

SECTION 10—SAFETY AND SPECIFICATIONS

Group 05—Introduction and Safety Information
Group 10—General Specifications
Group 15—Hardware Torque
Group 20—Lubrication
Group 30—Serial Numbers

SECTION 20—DRIVELINE REPAIR

Group 05—Specifications
Group 10—Driveline Repair
Group 15—Driveline Shield Repair

SECTION 30—CLUTCH AND SHEAR DEVICE REPAIR

Group 05—Shear Device Repair
Group 10—Slip Clutch Repair

SECTION 40—GEAR CASE REPAIR

Group 00—General Information
Group 05—3 Series Gear Case Repair
Group 10—6 Series Gear Case Repair
Group 15—8 Series Outer and 9 Series Gear Case Repair
Group 20—1008 Integral or Center Pull-Type Center Gear Case Repair
Group 25—1008 Offset Pull-Type, Left-Hand Gear Case Repair
Group 30—1408, 1418 Center Gear Case Repair
Group 35—1508 Center Gear Case Repair

SECTION 50—MISCELLANEOUS REPAIR

Group 05—Blades
Group 10—Blade Holders
Group 15—1408 Frame Replacement

All information, illustrations and specifications contained in this technical 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.

W11;;0000 -A 090687

Section 10
GENERAL INFORMATION

CONTENTS

Page

GROUP 05—Introduction And Safety
Introduction 10-05-1
Safety 10-05-2

GROUP 10—General Specifications
Specifications
403, 503 Rotary Cutter 10-10-1
506, 606 Rotary Cutter 10-10-2
509, 609, 709 Rotary Cutter 10-10-4
1008 Rotary Cutter 10-10-6
1418, 1508 Rotary Cutter 10-10-8

INTRODUCTION

This technical manual is part of a twin concept of service.

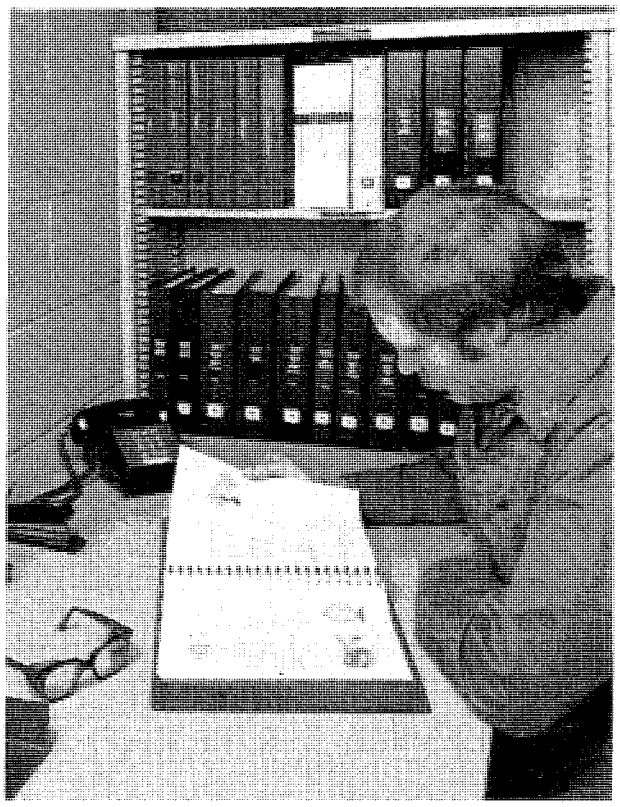
FOS Manuals—reference

Technical Manuals—machine service

The two kinds of manuals work as a team to give you both the general background and technical details of shop service.

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

Technical Manuals are concise service guides for specific machines. Technical manuals are on-the-job guides containing only the vital information needed by an experienced service technician.



AB6;RW5559 053;;INTR01 071085

FEATURES OF THIS TECHNICAL MANUAL

John Deere ILLUSTRUCTION format emphasizing illustrations and concise instructions in easy-to-use modules.

Emphasis on diagnosis, analysis, and testing so you can understand the problem and correct it.

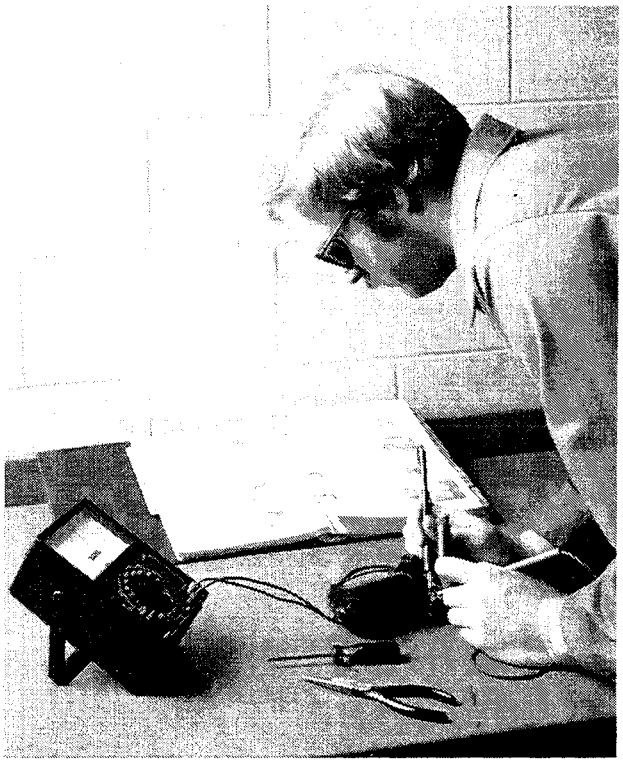
Diagnostic information presented with the most logical and easiest to isolate problems first to help you identify the majority of routine failures quickly.

Step-by-step instructions for teardown and assembly.

Summary listing at the beginning of each group of all applicable specifications, wear tolerances, torque values, essential tools, and materials needed to do the job.

An emphasis throughout on safety—so you do the job right without getting hurt.

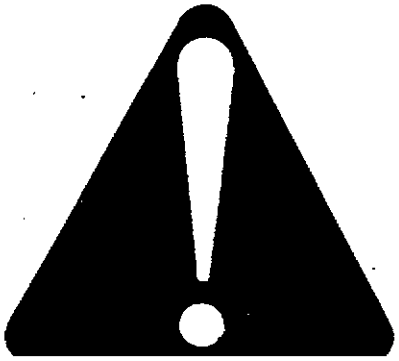
This technical manual was planned and written for you—an experienced service technician. Keep it in a permanent binder in the shop where it is handy. Refer to it when you need to know correct service procedures or specifications.



AB6;RW5560 053;INTR03 071085

SAFETY AND YOU

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.



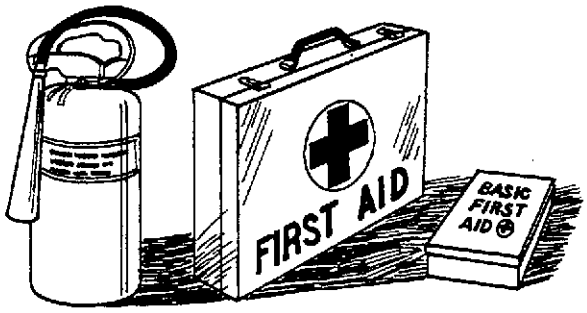
AB6;T81389 053;TMSAFE 071085

PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguishers handy.

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



AB6;TS186 053;FIRE2 080785

STAY CLEAR OF PTO

Entanglement in rotating driveline can cause serious injury or death.

Keep tractor master shield and driveline shields in place at all times except for special applications as directed in the implement operator's manual.

Wear fairly tight fitting clothing. Stop the engine and be sure PTO driveline is stopped before making adjustments, connections, or cleaning out PTO driven equipment.

AB6;TS198 053;PTO 280186

WEAR PROTECTIVE CLOTHING

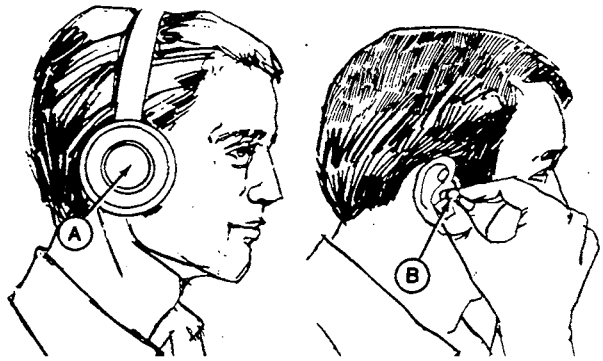
Wear fairly tight clothing. . . . . and safety equipment.

AB6;TS184 053;WEAR2 080785

PROTECT AGAINST NOISE

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

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

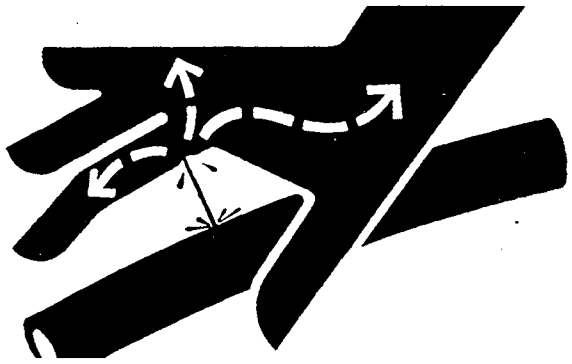


AB6;X7662 053;NOISE 270886

AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Use a piece of cardboard or paper to search for leaks.

If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type injury or gangrene may result.



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OPERATE CUTTER SAFELY

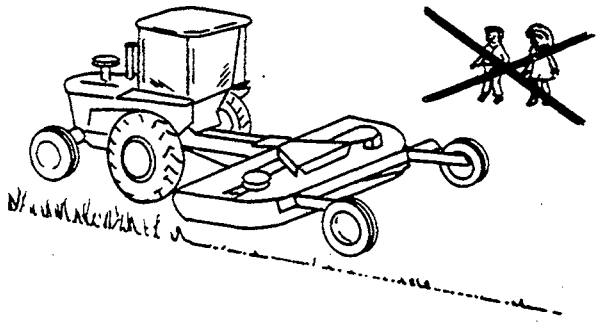
This machine should not be used in areas where bystanders may be present and could be injured, or property could be damaged by thrown objects. Debris can be thrown hundreds of feet. Be sure cutter is equipped with front and rear safety shields.

Operate cutter from tractor operating station only.

Do not allow riders on cutter or tractor.

Avoid holes when operating on hillsides. Tractor roll-over could result.

Components behind shields may rotate several minutes after power is shut off. Look and listen for evidence of rotation before removing shielding.

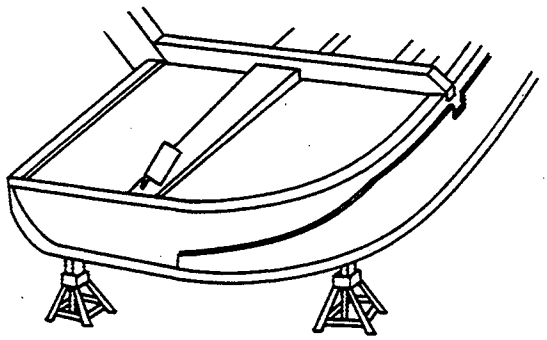


6DA;W11127 W11;;1005 -A 020387

PRACTICE SAFE MAINTENANCE

The blades and blade holder may rotate for several minutes after PTO is shut off. Look and listen for rotating driveline to stop before working on the cutter.

When servicing blades or blade holder, it will be necessary to work underneath cutter. Be sure to support cutter frame with safety stands to prevent accidental lowering. Do not position safety stands under axle or wheel supports because these components can rotate.



5DA;W12803 W01;;14SY E 270187

KEEP SERVICE AREA CLEAN

Keep the service area clean and dry; wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment.

Be sure all electrical outlets and tools are properly grounded.

Use adequate light for the job at hand.

5EA;W9966 W02;;1010 E. 050886

GENERAL SPECIFICATIONS 403, 503 ROTARY CUTTER

	403	503
Body		
Depth	180 mm (7.0 in.)	180 mm (7.0 in.)
Deck and Skirt Thickness	3 mm (0.118 in.)	3 mm (0.118 in.)
Overall Width	1294 mm (50 in.)	1598 mm (62 in.)
Overall Length	2100 mm (82.5 in.)	2400 mm (94.5 in.)
Cutting Width	122 mm (48 in.)	152 mm (60 in.)
Cutting Height Range	25-250 mm (1.0-9.8 in)	25-250 mm (1.0-9.8 in.)
Hitch	Category 1	Category 1
Blade Holder	Oval pan	Oval pan
Blades	Flat	Flat
Gear Case Rating	34 kW (45 hp)	34 kW (45 hp)
Blade Holder Shaft Speed	913 rpm	913 rpm
Blade Tip Speed	209 km/h (130 mph)	262 km/h (163 mph)
Tailwheel		
Type	Solid rubber	Solid rubber
Size	100 x 400 mm(3.9 x 15.7in)	100 x 400 mm(3.9 x 15.7 in.)
Driveline		
Protection	Shear bolt Slip clutch (optional)	Shear bolt Slip clutch (optional)
Tractor PTO hp	11-56 kW (14.5-75 hp)	13.5-56 kW (18-75 hp)
Tractor PTO shaft	35-mm (1-3/8-in.) diameter 540 rpm	35-mm (1-3/8-in.) diameter 540 rpm
Size	Category 3	Category 3
Weight		
(with front chain shields)	207 kg (455 lb)	231 kg (510 lb)
(without front chain shields)	193 kg (425 lb)	215 kg (474 lb)

Specifications and design subject to change without notice

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	506	606
Body	Unibody design, continuous weld	Unibody design, continuous weld
Depth	190 mm (7.5 in.)	190 mm (7.5 in.)
Deck Thickness	3.5 mm (.138 in.)	3.5 mm (.138 in.)
Side Thickness	3.5 mm (.138 in.)	3.5 mm (.138 in.)
Overall Length		
Integral	229 mm (90 in.)	259 mm (102 in.)
Pull-Type	—	335 mm (132 in.)
Overall Width	168 mm (66 in.)	198 mm (78 in.)
Cutting Width	152 mm (60 in.)	183 mm (72 in.)
Cutting Height Range		
Integral	25-229 mm (1-9 in.)	25-229 mm (1-9 in.)
Pull-Type	—	25-305 mm (1-12 in.)
Hitch		
Integral	Category 1	Category 1
Pull-Type	—	Adjustable parallel lift
Blade Holder	Bar type	Bar type
Blades	Multipurpose	Multipurpose
Gear Case Rating	45 kW (60 hp)	45 kW (60 hp)
Blade Holder Shaft Speed	746 rpm	746 rpm
Blade Tip Speed	214 km/hr (133 mph)	257 km/hr (160 mph)
Tailwheel		
Integral	Laminated 305 mm (12 in.) O.D.	Laminated 305 mm (12 in.) O.D.
Pull-type	—	Laminated 533 mm (21 in.) O.D.
	—	Pneumatic 5.90 x 15 tire 660 mm (26 in.) O.D.

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	506	606
Driveline		
Protection	Shear device Slip clutch (optional)	Shear device Slip clutch (optional)
Tractor PTO shaft	540 rpm	540 rpm
Size	Category 2	Category 3
Weight (less safety shields)		
Integral	259 kg (571 lb)	345 kg (760 lb)
Pull-Type	—	391 kg (861 lb)
Attachments and Weights		
Chain Front Shield	19 kg (42 lb)	25 kg (55 lb)
Skid Shoes	2 kg (4 lb)	2 kg (4 lb)
Laminated Tires		
Pull-Type	—	59 kg (130 lb)
Pan for Blade Holder	15 kg (34 lb)	19.5 kg (43 lb)
Jack	—	8.5 kg (19 lb)
Slip Clutch Drive	6 kg (13 lb)	6 kg (13 lb)

Specifications and design subject to change without notice

W11;1010 -C 130487

	509	609	709
Body	Unibody design, continuous weld	Unibody design, continuous weld	Unibody design, continuous weld
Depth	254 mm (10 in.)	254 mm (10 in.)	254 mm (10 in.)
Deck Thickness	3.5 mm (.138 in.)	3.5 mm (.138 in.)	3.5 mm (.138 in.)
Side Thickness	6 mm (.25 in.)	6 mm (.25 in.)	6 mm (.25 in.)
Overall Width	165 mm (65 in.)	196 mm (77 in.)	226 mm (89 in.)
Cutting Width	152 mm (60 in.)	183 mm (72 in.)	213 mm (84 in.)
Cutting Height Range			
Integral	25 -229 mm(1-9 in.)	25 -229 mm(1-9 in.)	25 -229 mm(1-9 in.)
Pull-Type		25-305 mm (1-13 in.)	25-305 mm (1-13 in.)
Hitch			
Integral	Category 1, 2	Category 2, 3N 3-point hitch or quick-coupler	Category 2, 3N 3-point hitch or quick-coupler
Pull-Type	—	Adjustable parallel lift	Adjustable parallel lift
Blade Holder	Bar type	Bar type	Bar type
Blades	Flat, Suction, Dual with suction lower	Flat, Suction, Dual with suction lower	Flat, Suction, Dual with suction lower
Gear Case Rating	75 kW (100 hp)	75 kW (100 hp)	75 kW (100 hp)
Blade Holder Shaft Speed			
540 rpm	746 rpm	746 rpm	746 rpm
1000 rpm	—	—	724 rpm
Blade Tip Speed			
540 rpm	214 km/hr (133 mph)	257 km/hr (160 mph)	299 km/hr (186 mph)
1000 rpm	—	—	219 km/hr (181 mph)
Tailwheel			
Integral	Laminated 387 mm (15 in.) O.D.	Laminated 387 mm (15 in.) O.D.	Laminated 387 mm (15 in.) O.D.
Pull-type	—	Laminated 533 mm (21 in.) O.D.	Laminated 533 mm (21 in.) O.D.
	—	Pneumatic 5.90 x 15 tire 660 mm (26 in.) O.D.	Pneumatic 5.90 x 15 tire 660 mm (26 in.) O.D.

W11;;1010 -D 240487

	509	609	709
Driveline			
Protection	Adjustable slip clutch	Adjustable slip clutch	Adjustable slip clutch
Tractor PTO hp	30-104 kW (40-140 hp)	30-104 kW (40-140 hp)	34-104 kW (45-140 hp)
Tractor PTO shaft			
Integral	540 rpm	540 rpm	540 or 1000 rpm
Pull-Type	540 rpm	540 rpm	540 rpm
Size	Category 4	Category 4	Category 4
Weight (base machine less safety shields and attachments)			
Integral Cutter	363 kg (799 lb)	461 kg (1016 lb)	535 kg (1178 lb)
Pull-Type Cutter	—	474 kg (1044 lb)	548 kg (1207 lb)
Attachments and Weights			
Rubber Front Shield	7 kg (16 lb)	18 kg (18 lb)	11 kg (25 lb)
Chain Front Shield	25 kg (55 lb)	30 kg (67 lb)	35 kg (77 lb)
Solid Rear Shield	28 kg (62 lb)	29 kg (65 lb)	35 kg (77 lb)
Chain Rear Shield	14 kg (30 lb)	15 kg (32 lb)	19 kg (42 lb)
Skid Shoes	4 kg (9 lb)	4 kg (9 lb)	4 kg (9 lb)
Laminated Tires			
Pull-Type	—	59 kg (130 lb)	59 kg (130 lb)
Pan for Blade Holder	15 kg (34 lb)	19.5 kg (43 lb)	19.5 kg (43 lb)
Jack	—	8.5 kg (19 lb)	8.5 kg (19 lb)

Specifications and design subject to change without notice

W11;;1010 -E 130487

	1008 Integral & Center Pull-Type	1008 Offset Pull-Type
Body	Unibody design, continuous weld	Unibody design, continuous weld
Depth	254 mm (10 in.)	254 mm (10 in.)
Deck Thickness	3.5 mm (.138 in.)	3.5 mm (.138 in.)
Side Thickness	6 mm (.25 in.)	6 mm (.25 in.)
Overall Width	326 mm (128 in.)	326 mm (128 in.)
Cutting Width	312 mm (123 in.)	312 mm (123 in.)
Cutting Height Range	25-305 mm (1-12 in.)	25-305 mm (1-12 in.)
Hitch		
Integral	Category 2, 3, or 3N 3-point hitch or quick-coupler	—
Pull-Type	Adjustable parallel lift	Adjustable parallel lift
Blade Holder	Bar type	Bar type
Blades	Flat, Suction, Dual with suction lower	Flat, Suction, Hooked, Dual with suction lower
Gear Case Rating		
Main	75 kW (100 hp)	75 kW (100 hp)
Outer	60 kW (80 hp)	60 kW (80 hp)
Blade Holder Shaft Speed		
540 rpm	818 rpm	746 rpm
1000 rpm	793 rpm	724 rpm
Blade Tip Speed		
540 rpm	251 km/hr (156 mph)	229 km/hr (142 mph)
1000 rpm	243 km/hr (151 mph)	222 km/hr (138 mph)
Tailwheel		
Integral	Laminated 387 mm (15 in.) O.D.	—
Pull-type	Laminated 533 mm (21 in.) O.D. Pneumatic 5.90 x 15 tire 660 mm (26 in.) O.D.	Laminated 533 mm (21 in.) O.D. Pneumatic 5.90 x 15 tire 660 mm (26 in.) O.D.

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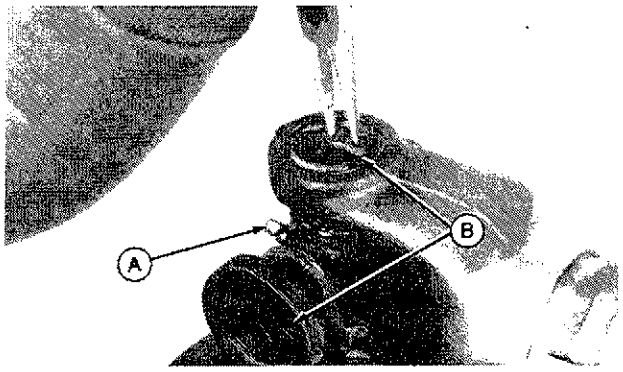
	1008 Integral & Center Pull-Type	1008 Offset Pull-Type
Driveline		
Protection	Adjustable slip clutch	Adjustable slip clutch
Speed	540 or 1000 rpm	540 or 1000 rpm
Front Yoke Size		
Integral	35 mm (1-3/8-in.) Cat. 4	—
Pull-Type	35 mm (1-3/8-in.) Cat. 4 or 44.5 mm (1-3/4-in.)Cat.5	35 mm (1-3/8-in.) Cat. 4 or 44.5 mm (1-3/4-in.)Cat.5
Weight (base machine less safety shields and attachments)		
Integral	896 kg (1970 lb)	—
Pull-Type	889 kg (1960 lb)	864 kg (1904 lb)
Attachments and Weights		
Rubber Front Shield	10 kg (23 lb)	10 kg (23 lb)
Chain Front Shield	36 kg (80 lb)	36 kg (80 lb)
Solid Rear Shield	28 kg (61 lb)	28 kg (61 lb)
Chain Rear Shield	23 kg (50 lb)	23 kg (50 lb)
Anti-Windrow Attachment	9 kg (20 lb)	—
Jack (Pull-Type)	8.5 kg (19 lb)	8.5 kg (19 lb)
Laminated Tires(Pull-Type)	29 kg (65 lb) each	29 kg (65 lb) each
Wheel Support (Pull-Type)	18 kg (41 lb)	18 kg (41 lb)
Pan for Blade Holder	19.5 kg (43 lb) each	19.5 kg (43 lb) each
Fruit Limb Deflector	—	117 kg (257 lb)
Bumper Wheel (less tire)	—	5 kg (11 lb)

Specifications and design subject to change without notice

W11;1010 -G 090687

DISASSEMBLE UNIVERSAL JOINT

1. Note position of grease fitting (A) so it can be properly positioned during reassembly. Support yoke and shaft assembly in vise. Remove snap rings (B). If snap rings stick, loosen by tapping with a rubber hammer.



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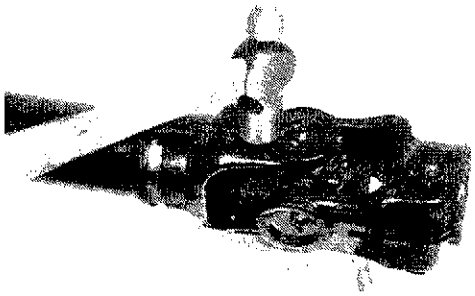
2. Position joint in an open vise with each ear of one yoke supported by a vise jaw.

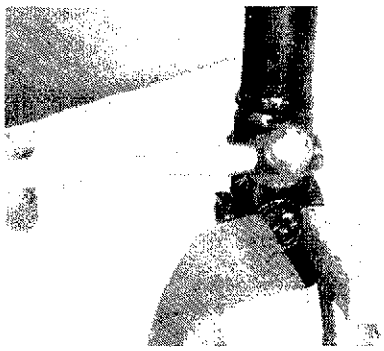
3. With a soft hammer or mallet, strike the top ear of the unsupported yoke. This will drive the top bearing outward approximately (9.5 mm) 3/8-in.



0FA;E19272 W02;;2015 -BF 160487

4. Clamp loosened bearing in vise and drive yoke off.

5. Repeat this procedure for removing bearing directly opposite the one just removed, after which the yoke itself may be removed.



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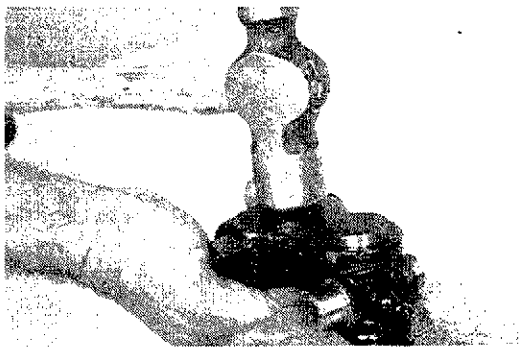
6. To remove remaining two bearings, support cross as shown making certain that vise jaws are covered with brass protectors. By striking yoke ear, the remaining bearings can be removed by repeating procedure in step 3.



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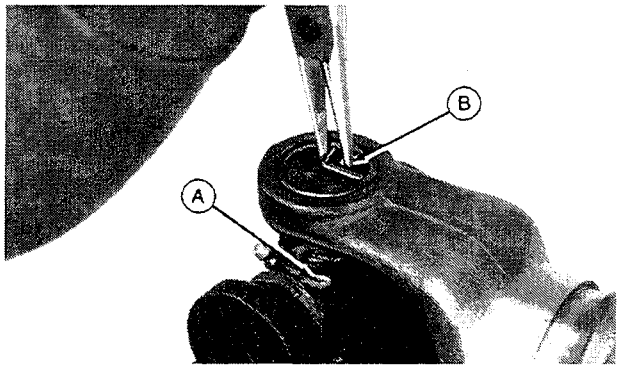
ASSEMBLE UNIVERSAL JOINT



1. Start one bearing in yoke. Position cross (A) through yoke.

2. Press bearing into yoke until flush with surface.

3. Clamp yoke in vise. Use a punch or socket with slightly smaller diameter than that of bearing and press bearing past snap ring groove.

4. Install snap ring (B).

5. Position cross and install bearing on opposite side.

6. Properly position grease fitting to allow greasing before installing third and fourth bearing.

7. Assemble remaining bearings and lubricate.

0FA;E18299 W02;;2015 -BI 161286

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

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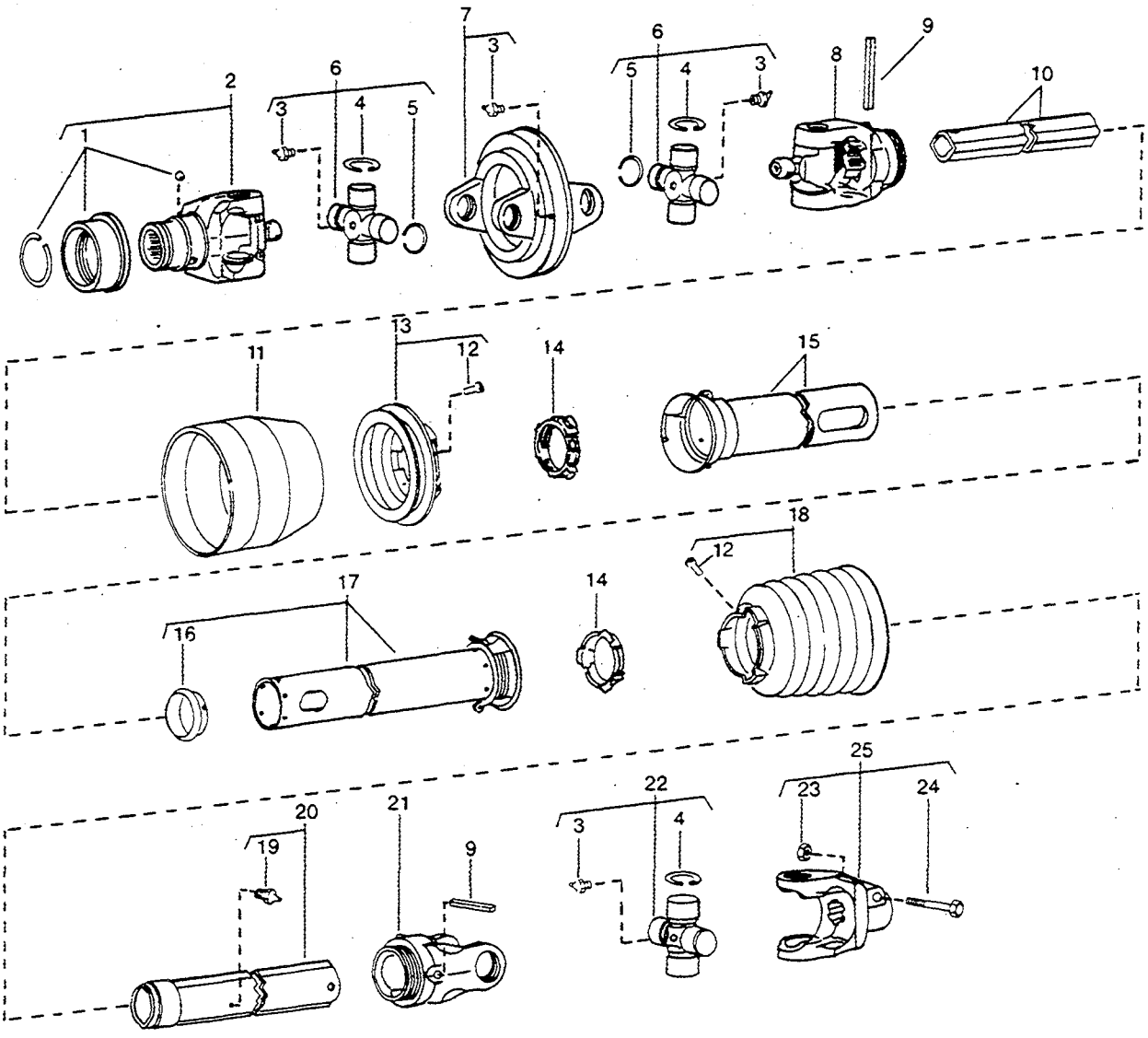
CONSTANT VELOCITY DRIVELINE, 1-3/8-INCH YOKE—EXPLODED VIEW



1—Locking Collar
2—Yoke
3—Lubrication Fitting
4—Snap Ring
5—Snap Ring
6—Cross and Bearing
7—Housing
8—Yoke
9—Spring Pin
10—Tube, Inner
11—Shield, Front Yoke
12—Screw
13—Shield
14—Shield Bearing
15—Shield, Outer
16—Shield Bearing
17—Shield, Inner
18—Shield, Rear Yoke
19—Lubrication Fitting
20—Tube, Outer
21—Yoke
22—Cross and Bearing
23—Lock Nut
24—Cap Screw
25—Yoke

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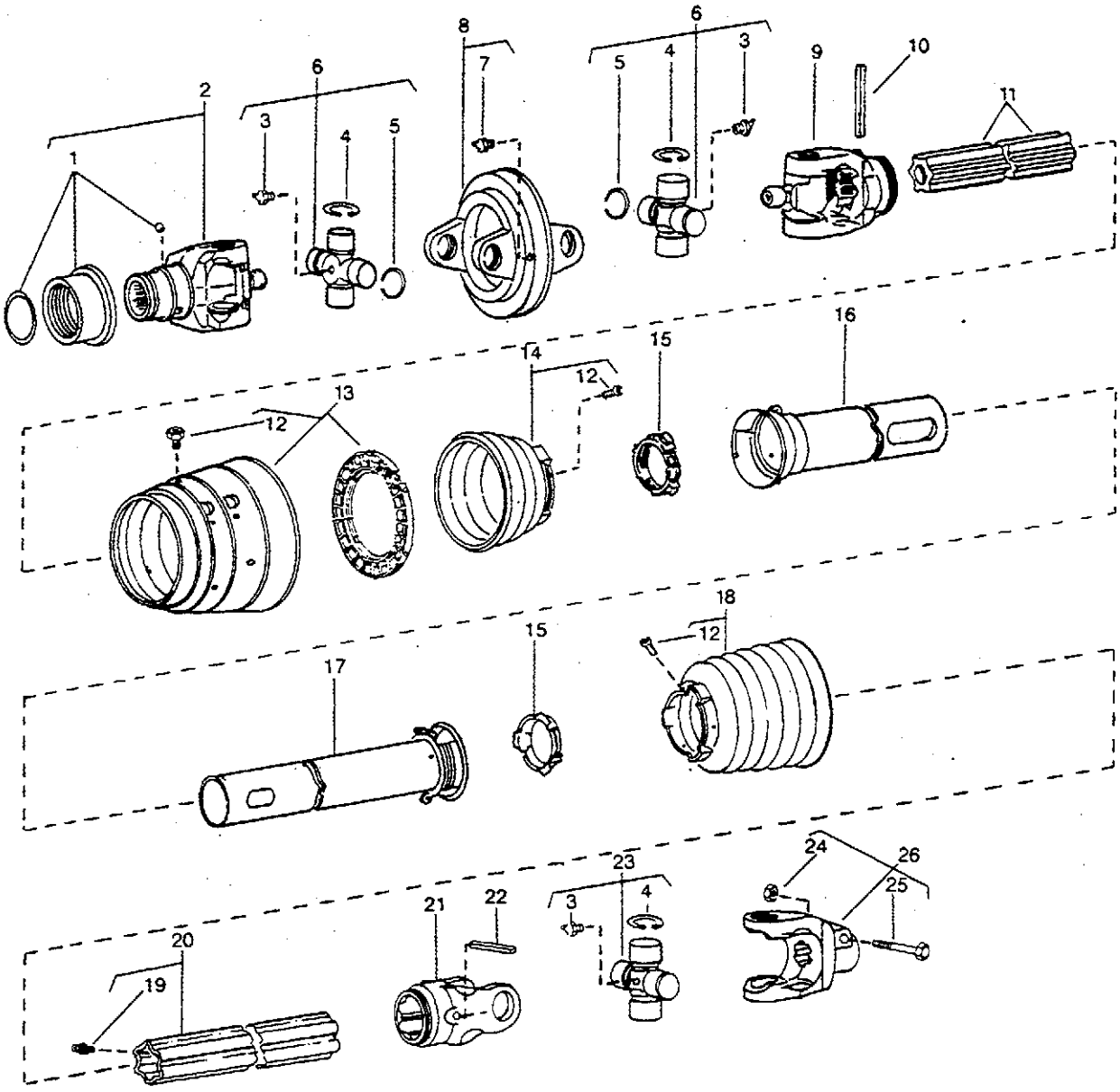
CONSTANT VELOCITY DRIVELINE, 1-3/4-INCH YOKE—EXPLODED VIEW



1—Locking Collar
2—Yoke
3—Lubrication Fitting
4—Snap Ring
5—Snap Ring
6—Cross and Bearing
7—Lubrication Fitting
8—Housing
9—Yoke
10—Spring Pin
11—Tube, Inner
12—Screw
13—Shield, Front Yoke
14—Shield, Front Yoke
15—Shield Bearing
16—Shield, Outer
17—Shield, Inner
18—Shield, Rear Yoke
19—Lubrication Fitting
20—Tube, Outer
21—Yoke
22—Spring Pin
23—Cross and Bearing
24—Lock Nut
25—Cap Screw
26—Yoke

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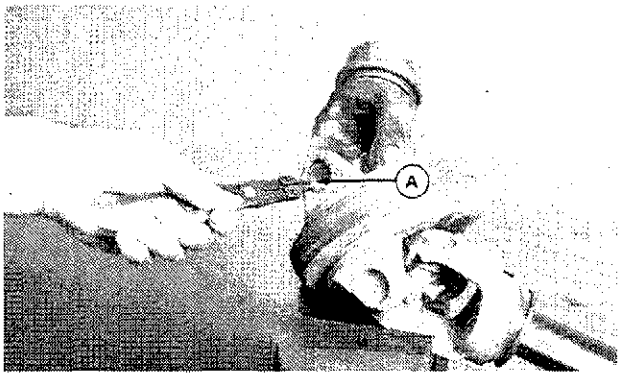
DISASSEMBLE CONSTANT VELOCITY JOINT

1. Remove snap ring (A) from housing yoke first.



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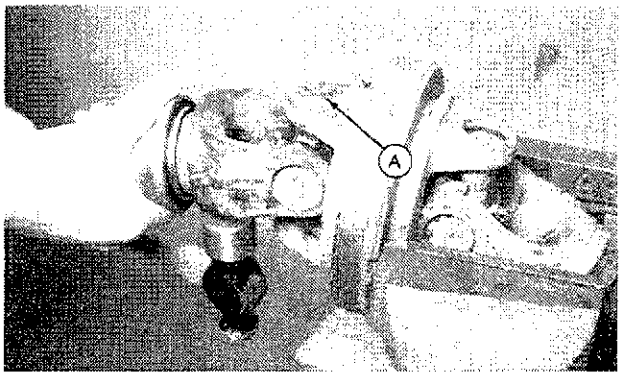
2. Place CV joint in vise and using light hammer blows, strike the unsupported yoke. This will force the bearing (A) outward approximately 5 mm (3/16-in.).



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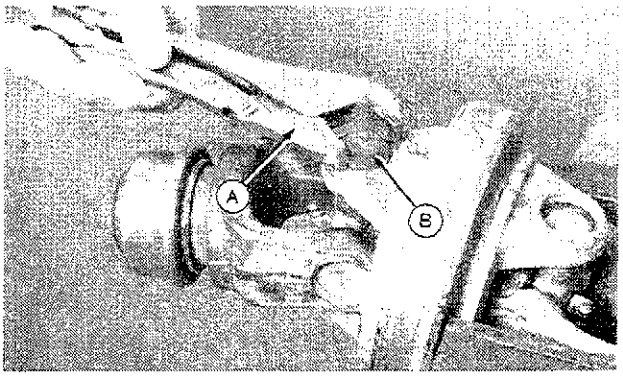
IMPORTANT: Do not apply excessive force with locking pliers. Too much pressure will mark bearing.

3. Using locking pliers (A), remove bearing (B) from yoke.

4. Repeat for opposite bearing.



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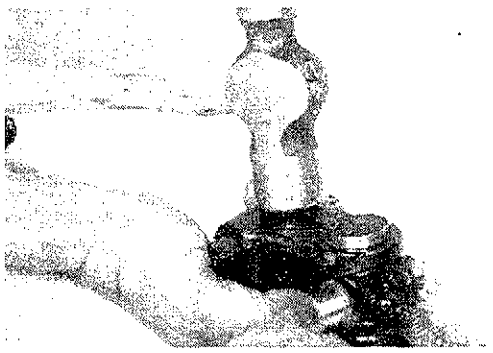
5. To remove remaining two bearings in yoke, support cross in vise with protective material on jaws.

6. Strike yoke ears lightly as in step 2 to remove bearings.



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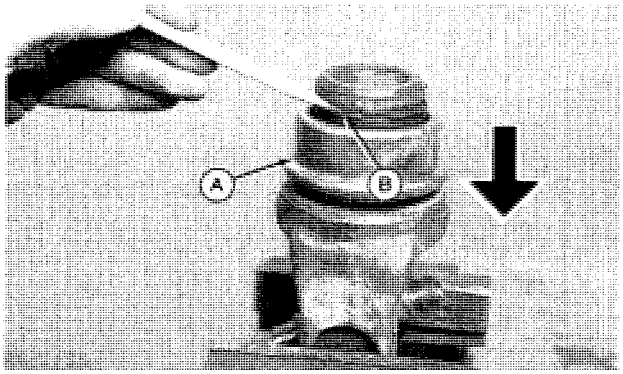
INSPECT COUPLER YOKE

1. Push down on collar (A) and remove snap ring (B).



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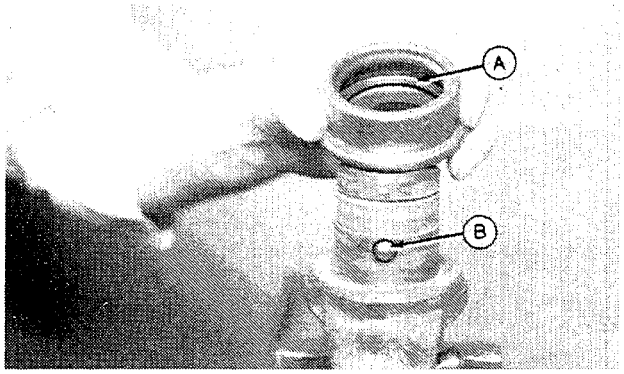
2. Inspect spring (A), ball bearings (B), and connection for dirt and corrosion.

3. Reassemble and replace snap ring.



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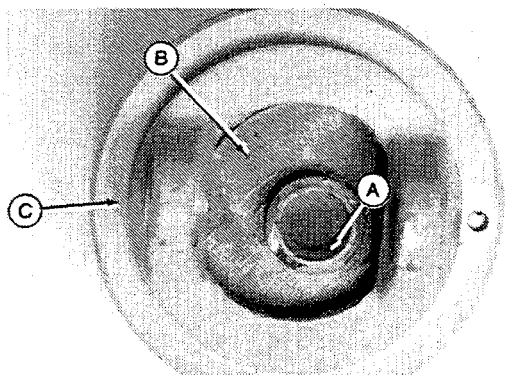
INSPECT CONSTANT VELOCITY JOINT HOUSING

1. Inspect inside diameter (A) and faces of floating disk (B) for excessive galling or wear.

2. If this condition exists, housing (C) must be replaced.

NOTE: Galling and wear is caused by improper lubrication. Advise customer of this to prevent reoccurence.



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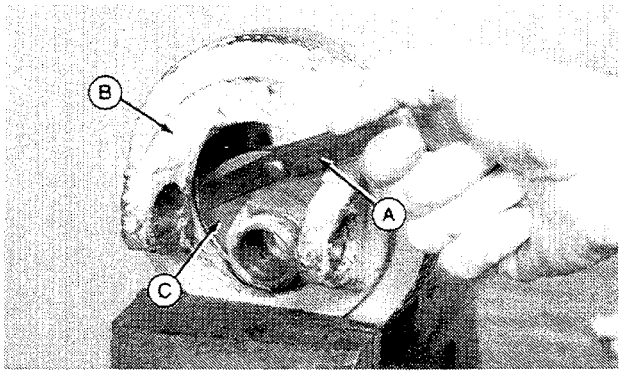
3. Using feeler gauge (A), check clearance between housing (B) and inner disk (C). Dimension should not be more than 0.4 mm (0.016 in.).

4. If clearance is greater than indicated, replace housing (B).



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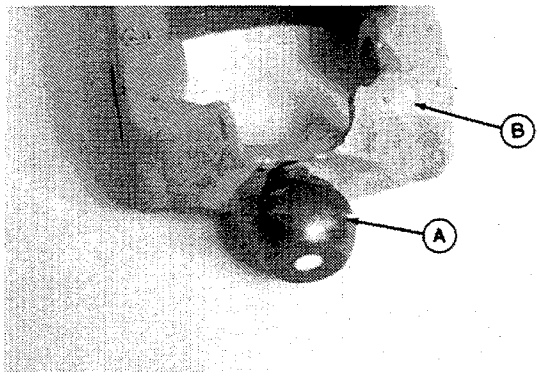
5. Inspect ball (A) on yoke for excessive galling or wear.

6. If this condition exists, replace yoke (B).

NOTE: Galling and wear are caused by improper lubrication. Advise customer of this to prevent reoccurence.



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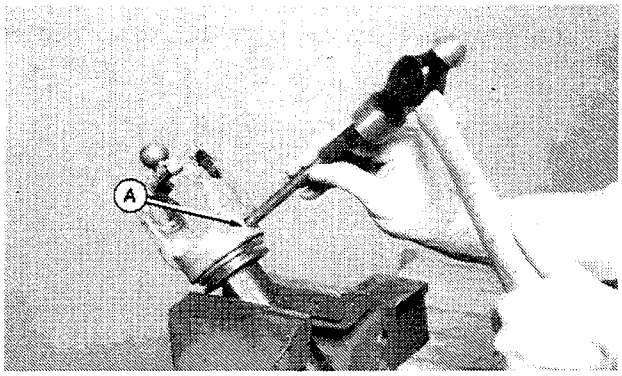
REMOVE TUBE FROM YOKE

1. Using hammer and punch, remove pin (A) from yoke and shaft. Drive out spring pin at (A).



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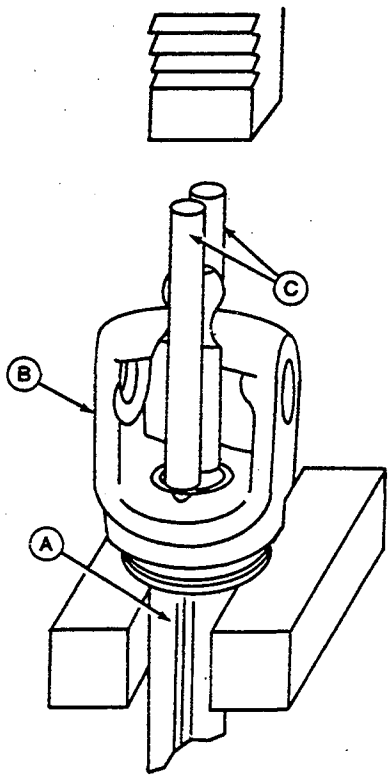
2. Using an arbour press, force tube (A) from yoke (B) using two 13 x 178 mm (0.5 x 7 in.) round rods (C).



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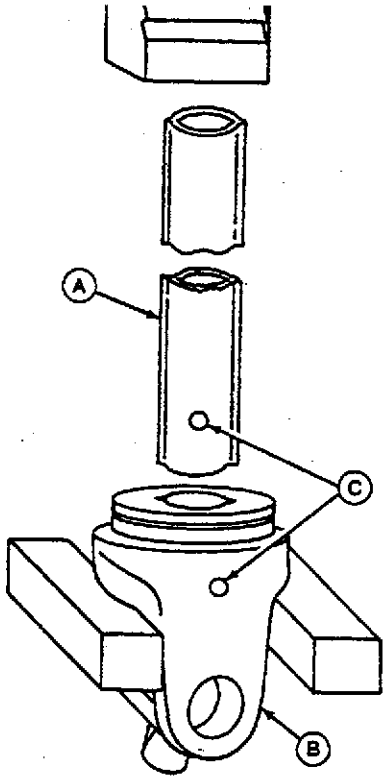
REPLACE TUBE IN YOKE

1. Using an arbour press, push tube (A) into yoke (B) until pin holes (C) are aligned.



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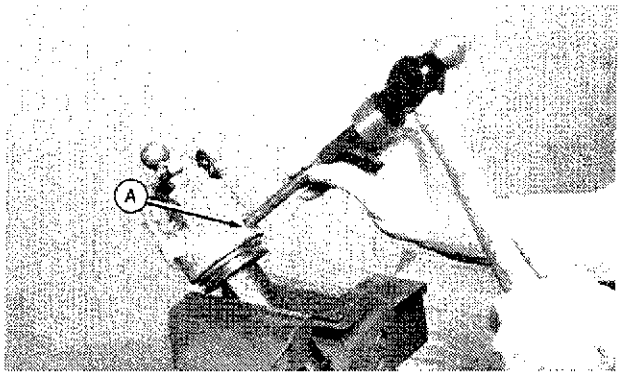
2. Drive in spring pin (A).



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to download the complete manual.

Thank you so much for reading

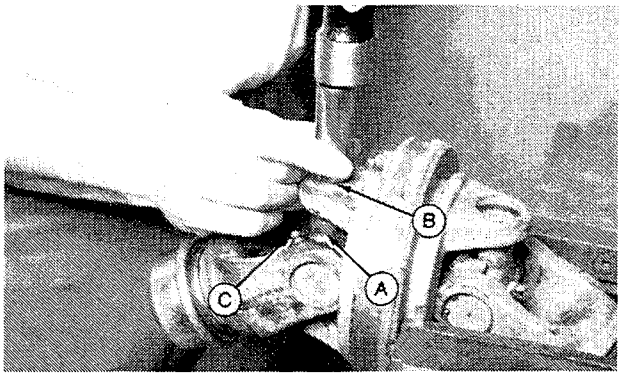
ASSEMBLE CONSTANT VELOCITY JOINT

1. Insert spider (A) into yoke and use spider to guide bearing needles to align bearing.

2. Drive in bearing (B) until snap ring groove is visible.

3. Replace snap ring.

NOTE: Be sure grease fittings (C) are in proper location.



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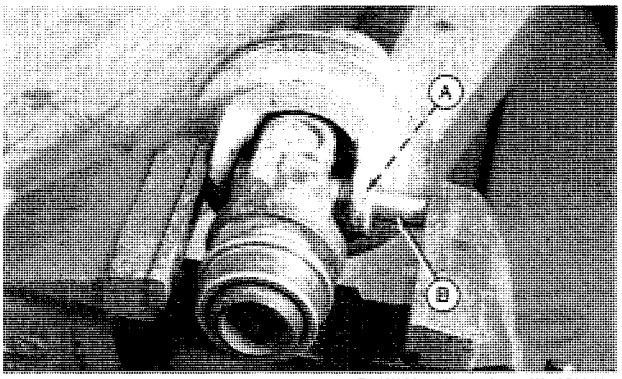
4. Install opposite bearing (A) and press into place using vise and block (B). Block can be a socket with slightly smaller diameter than that of bearing.



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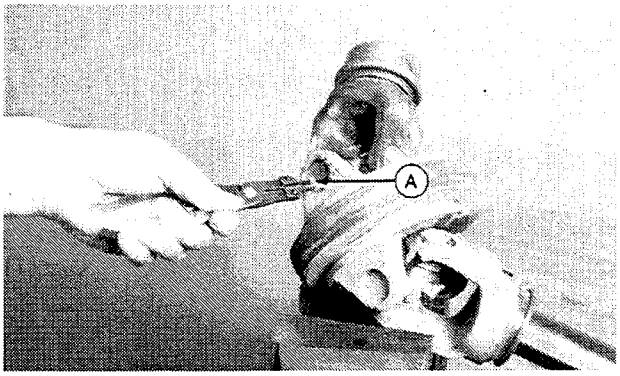
5. Install snap ring (A).



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