



Service Repair Manual

Models

420E BACKHOE LOADER

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Product: BACKHOE LOADER

Model: 420E BACKHOE LOADER DAN

Configuration: 420E Backhoe Loader Parallel Lift DAN00001-UP (MACHINE) POWERED BY C4.4 Engine

Disassembly and Assembly

416E, 420E and 430E Backhoe Loaders Machine Systems

Media Number -UENR0232-00

Publication Date -01/03/2010

Date Updated -22/03/2010

i03007516

Lift Cylinder - Remove and Install

SMCS - 5102-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1P-1860	Retaining Ring Pliers As	1
B	1P-1863	Retaining Ring Pliers As	1

Start By:

- A. Release the pressure in the hydraulic oil system. Refer to Disassembly and Assembly, "Hydraulic System Pressure - Release".


WARNING

Cylinders equipped with lock valves can remain pressurized for very long periods of time, even with the hoses removed.

Failure to relieve pressure before removing a lock valve or disassembling a cylinder can result in personal injury or death.

Ensure all pressure is relieved before removing a lock valve or disassembling a cylinder.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Caterpillar Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

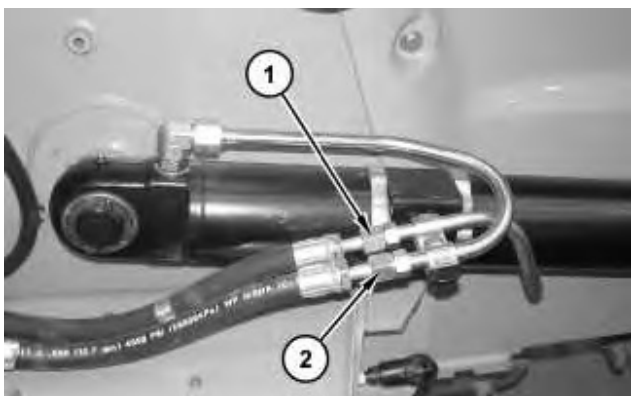


Illustration 1

g01247267

1. Disconnect hose assemblies (1) and (2) .



Illustration 2

g01247269

2. Attach a suitable lifting device to lift cylinder (4). The weight of lift cylinder (4) is approximately 57 kg (125 lb).

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3. Use Tooling (A) in order to remove retaining ring (6). Remove pin assembly (5) and lower the rod end of lift cylinder (4). Use Tooling (B) in order to remove retaining ring (3). Remove washer (7). Remove lift cylinder (4) .

Disassembly and Assembly Information

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
C	1P-0510	Driver Gp	1
D	5P-0960	Grease Cartridge	1
E	4C-9507	Retaining Compound	1
F	9S-3263	Thread Lock Compound	1
G	125-0079	Hydraulic Cylinder Repair Stand Gp	1



Cylinders equipped with lock valves can remain pressurized for very long periods of time, even with the hoses removed.

Failure to relieve pressure before removing a lock valve or disassembling a cylinder can result in personal injury or death.

Ensure all pressure is relieved before removing a lock valve or disassembling a cylinder.

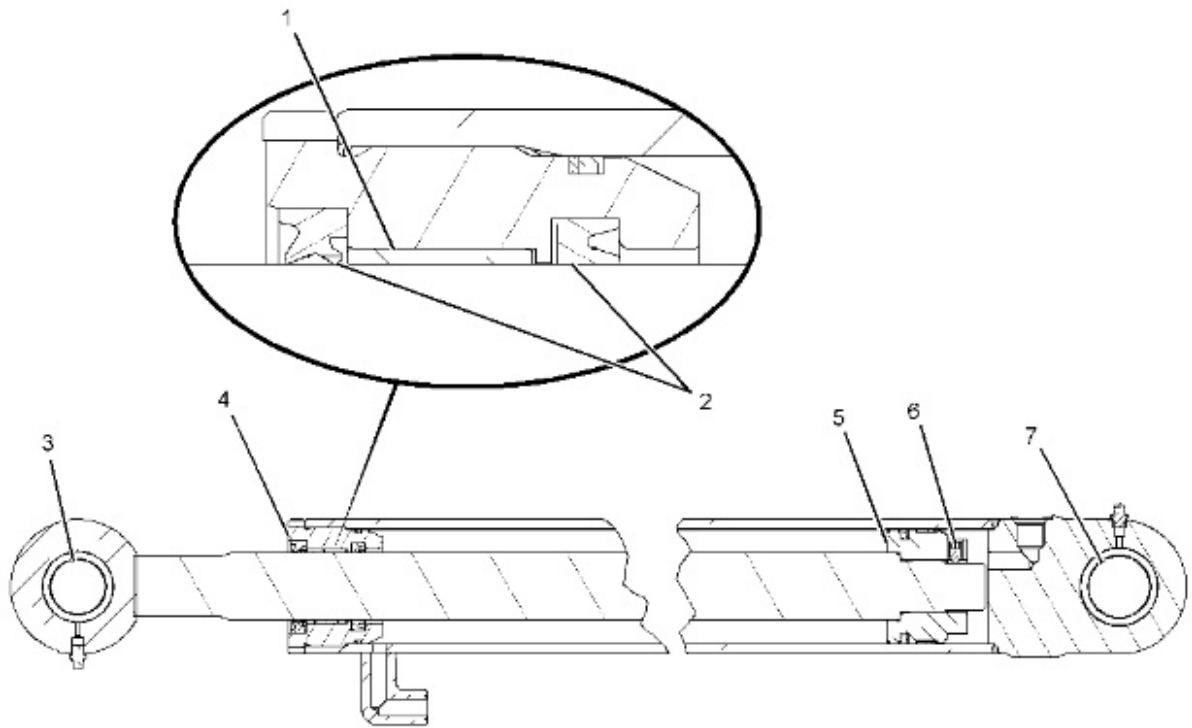


Illustration 3

g01248083

- (1) Apply Tooling (E) to the bearing.
- (2) Lubricate the seals with the fluid that is being sealed.
- (3) (7) Use Tooling (C) for the removal of the bearings.
- (4) Torque for the head ... $650 \pm 50 \text{ N}\cdot\text{m}$ ($480 \pm 37 \text{ lb ft}$)
- (5) Torque for the piston ... $875 \pm 25 \text{ N}\cdot\text{m}$ ($645 \pm 18 \text{ lb ft}$)
- (6) Apply Tooling (F) to the threads of setscrew. Torque for the setscrew ... $26 \pm 2.5 \text{ N}\cdot\text{m}$ ($18 \pm 2 \text{ lb ft}$)

Installation Procedure

Table 3

Required Tools			
Tool	Part Number	Part Description	Qty
A	1P-1860	Retaining Ring Pliers As	1
B	1P-1863	Retaining Ring Pliers As	1

Note: Cleanliness is an important factor. Before assembly, all parts should be thoroughly cleaned in cleaning fluid. Allow the parts to air dry. Wiping cloths or rags should not be used to dry parts. Lint may be deposited on the parts which may cause later trouble. Inspect all parts. If any parts are worn or damaged, use new parts for replacement.



Illustration 4

g01247269

1. Attach a suitable lifting device to lift cylinder (4). The weight of lift cylinder (4) is approximately 57 kg (125 lb).
2. Install the head end of lift cylinder (4). Install washer (7). Use Tooling (B) in order to install retaining ring (3). Raise the rod end of lift cylinder (4) and install pin assembly (5). Use Tooling (A) in order to install retaining ring (6).

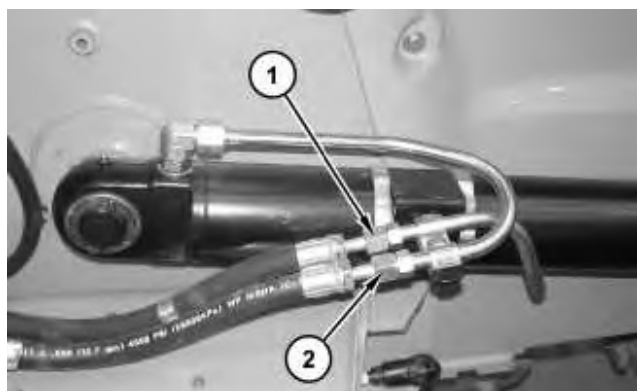


Illustration 5

g01247267

3. Connect hose assemblies (1) and (2) .

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Product: BACKHOE LOADER

Model: 420E BACKHOE LOADER DAN

Configuration: 420E Backhoe Loader Parallel Lift DAN00001-UP (MACHINE) POWERED BY C4.4 Engine

Disassembly and Assembly 416E, 420E and 430E Backhoe Loaders Machine Systems

Media Number -UENR0232-00

Publication Date -01/03/2010

Date Updated -22/03/2010

i03007488

Lift Arms - Remove

SMCS - 6107-011; 6119-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1P-1860	Retaining Ring Pliers	1
B	1P-1863	Retaining Ring Pliers	1
C	1U-9200	Lever Puller Hoist	1
D	140-7742	Sleeve	2
E	1P-1831	Bearing Puller Adapter	1
	FT-1410	Sleeve	1
	4K-0684	Hard Washer	1
	9U-5345	Nut	1
	9U-5343	Puller Stud	1
	3S-6224	Hydraulic Pump	1
	6V-3160	Double Acting Cylinder	1
F	1P-1834	Bearing Puller Adapter	1
	FT-1410	Sleeve	1
	4K-0684	Hard Washer	1
	9U-6833	Nut	1

4C-9633	Puller Stud	1
3S-6224	Hydraulic Pump	1
6V-3160	Double Acting Cylinder	1

Start By:

- A. Remove the tilt cylinder. Refer to Disassembly and Assembly, "Tilt Cylinder - Remove and Install".
- B. Remove the bucket. Refer to Disassembly and Assembly, "Bucket - Remove and Install".

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Caterpillar Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

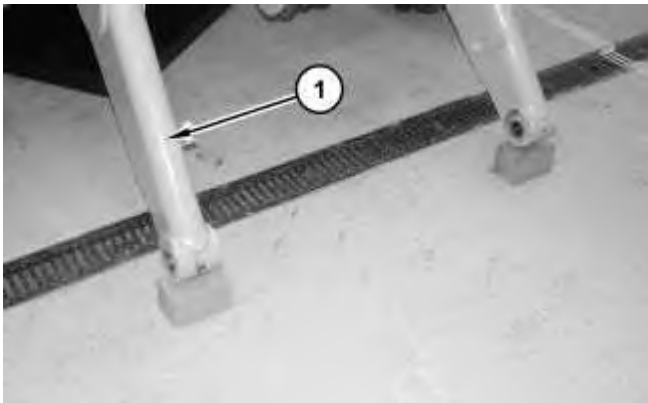


Illustration 1

g01247933

1. Place suitable cribbing under the front of lift arms (1) .
-

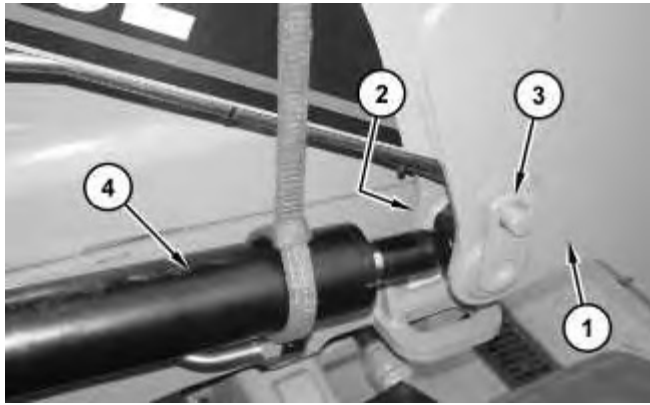


Illustration 2

g01247934

2. Attach a suitable lifting device to the rod end of lift cylinder (4). The weight of lift cylinder (4) is approximately 57 kg (125 lb). Use Tooling (A) in order to remove retaining ring (2) (not shown). Remove pin assembly (3). Use the suitable lifting device in order to lower the rod end of lift cylinder (4) away from lift arms (1). Repeat for the other side.

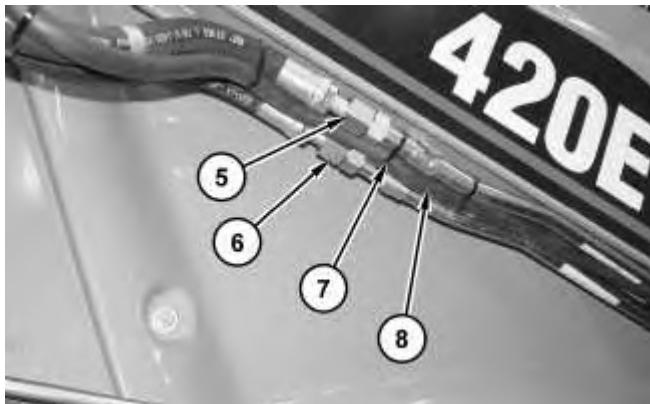


Illustration 3

g01247935

3. Disconnect hose assemblies (5) and (6) from each side of the machine. Cut all cable straps (7) that secure harness assembly (8) for the bucket positioner. Place harness assembly (8) to the side.

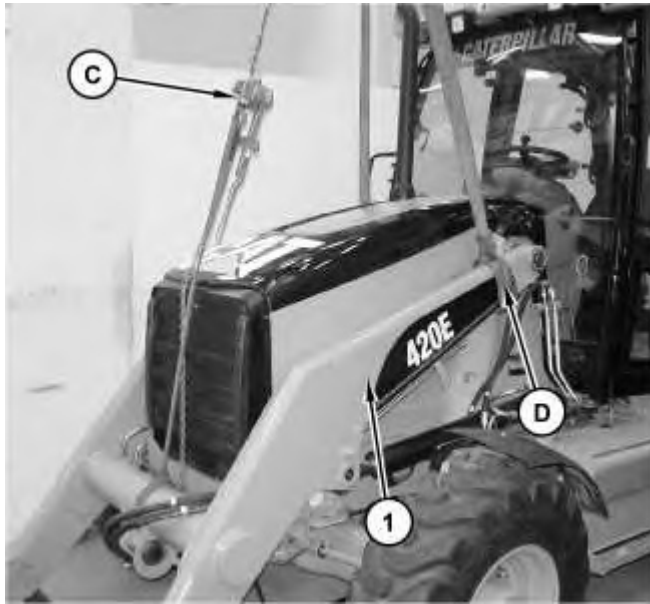


Illustration 4

g01247936

4. Attach Tooling (C), Tooling (D), and a suitable lifting device to lift arms (1). The weight of lift arms (1) is approximately 408 kg (900 lb).

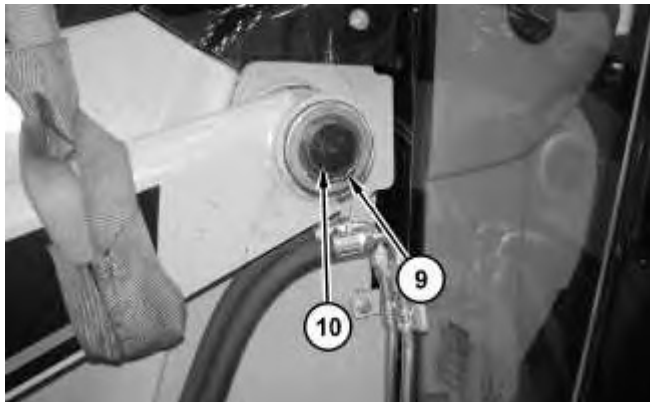


Illustration 5

g01247938

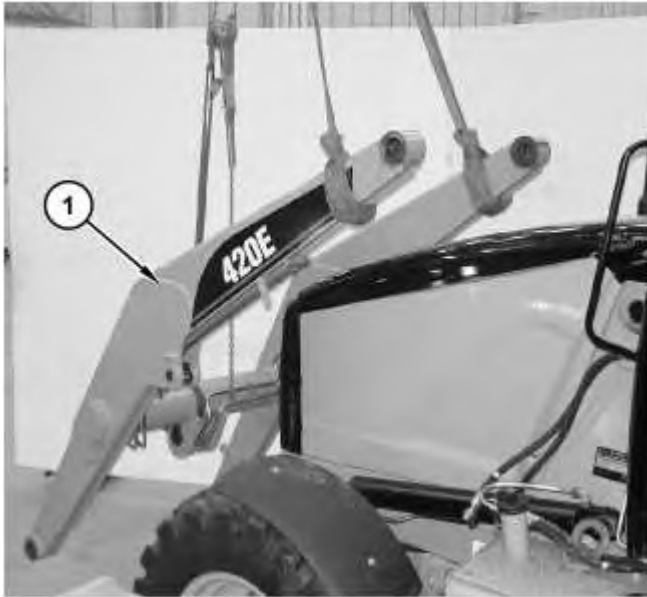


Illustration 6

g01248250

5. Use Tooling (B) in order to remove retaining ring (9). Remove pin (10). Remove lift arms (1) .

Note: Note the number and the location of the shims for assembly purposes.

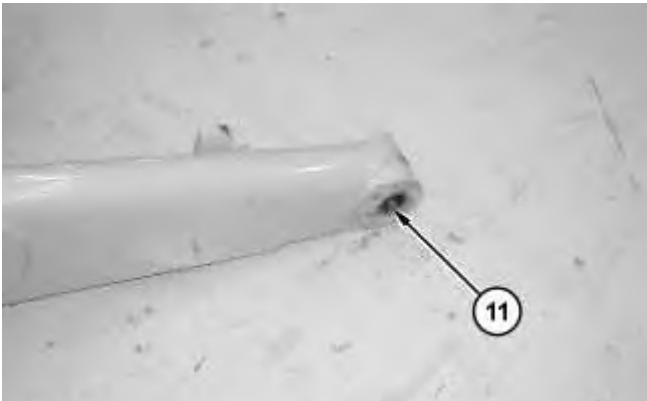


Illustration 7

g01248263



Illustration 8

g01248018

6. Use Tooling (E) in order to remove bearings (11) .

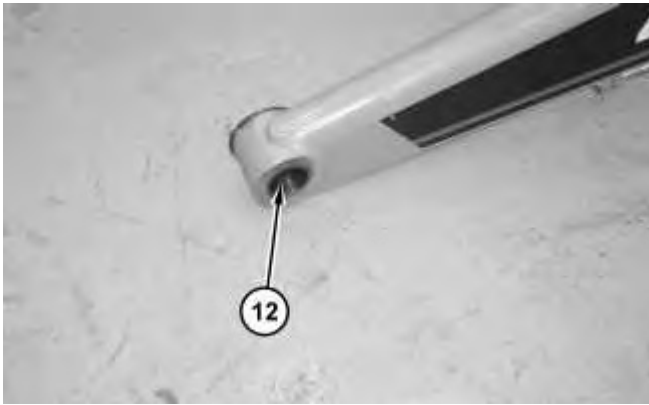


Illustration 9

g01248265

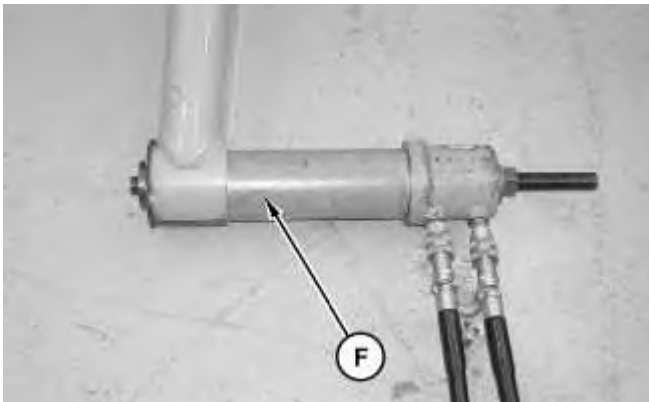


Illustration 10

g01248029

7. Use Tooling (F) in order to remove bearings (12) .

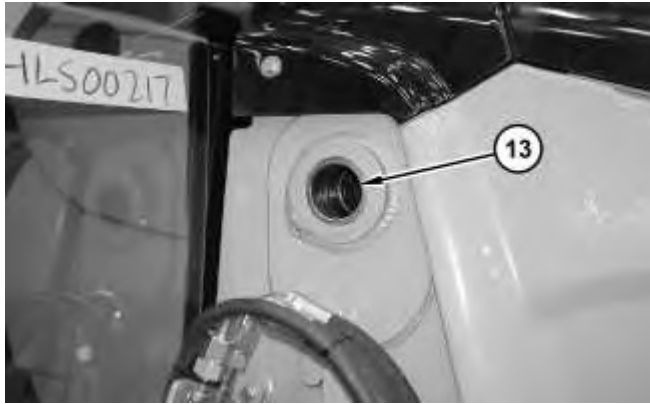


Illustration 11

g01248315

8. Remove bearings (13) .

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Product: BACKHOE LOADER

Model: 420E BACKHOE LOADER DAN

Configuration: 420E Backhoe Loader Parallel Lift DAN00001-UP (MACHINE) POWERED BY C4.4 Engine

**Disassembly and Assembly
416E, 420E and 430E Backhoe Loaders Machine Systems**

Media Number -UENR0232-00

Publication Date -01/03/2010

Date Updated -22/03/2010

i03007492

Lift Arms - Install

SMCS - 6107-012; 6119-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1P-1860	Retaining Ring Pliers	1
B	1P-1863	Retaining Ring Pliers	1
C	1U-9200	Lever Puller Hoist	1
D	140-7742	Sleeve	2
E	1P-0520	Driver Gp	1

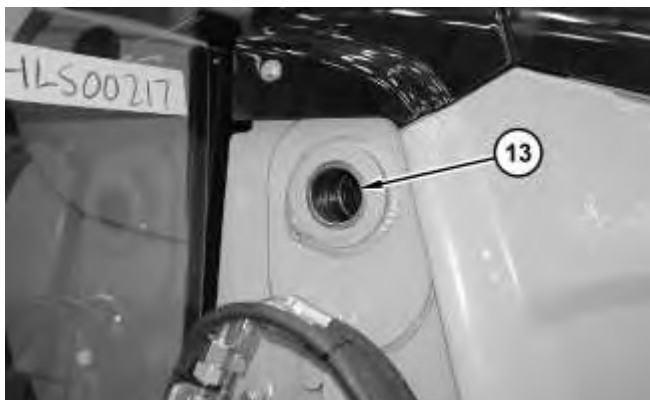


Illustration 1

g01248315

1. Lower the temperature of bearings (13). Use Tooling (E) in order to install bearings (13) .



Illustration 2

g01248265

2. Lower the temperature of bearings (12). Use Tooling (E) in order to install bearings (12) .

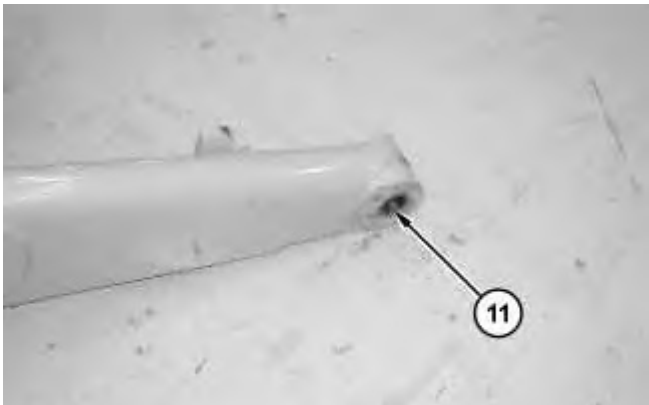


Illustration 3

g01248263

3. Lower the temperature of bearings (11). Use Tooling (E) in order to install bearings (11) .

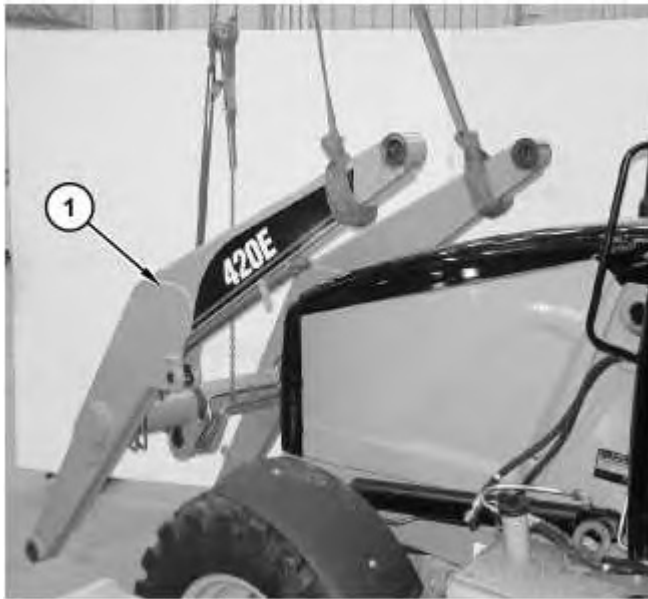


Illustration 4

g01248250

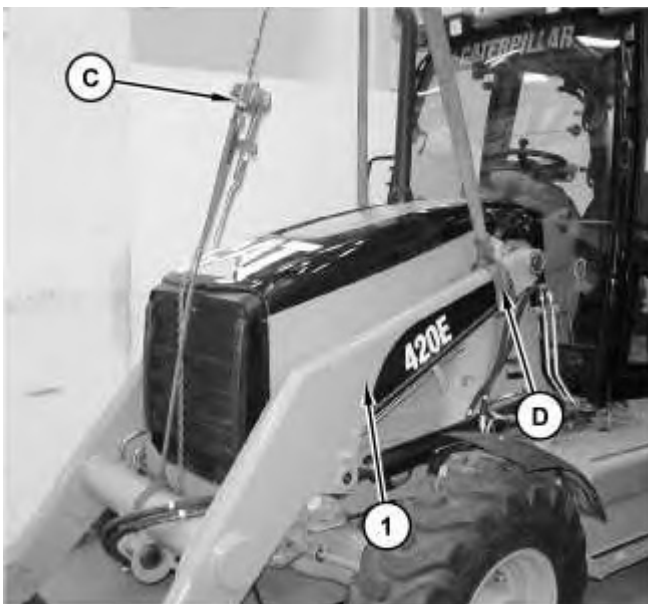


Illustration 5

g01247936

4. Attach Tooling (C), Tooling (D), and a suitable lifting device to lift arms (1). The weight of lift arms (1) is approximately 408 kg (900 lb).
5. Install lift arms (1). Install shims between lift arms (1) and the machine in order to obtain a maximum total clearance of 1.0 mm (0.04 inch).

Note: Lift arms (1) must be centered on the machine in order to be within 3.0 mm (0.12 inch) from one side to the other side.

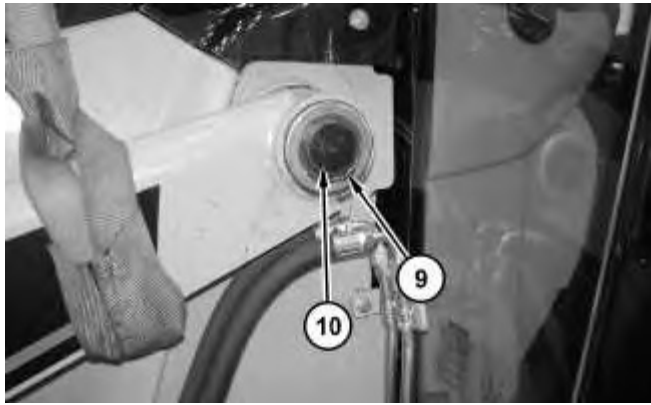


Illustration 6

g01247938

6. Install any shims that were present during the removal procedure. Install pin (10). Install shims between lift arms (1) and the machine in order to obtain a maximum total clearance of 1.0 mm (0.04 inch). Use Tooling (B) in order to install retaining ring (9) .

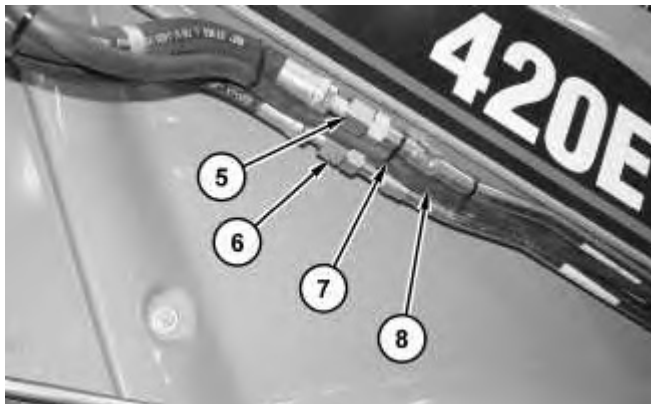
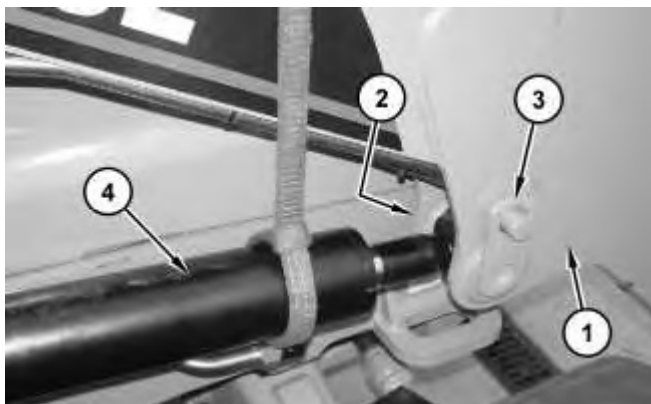


Illustration 7

g01247935

7. Position harness assembly (8) and install all cable straps (7) that secure harness assembly (8) for the bucket positioner. Connect hose assemblies (5) and (6) to each side of the machine.



8. Attach a suitable lifting device to the rod end of lift cylinder (4). The weight of lift cylinder (4) is approximately 57 kg (125 lb). Raise the rod end of lift cylinder (4) into position. Install pin assembly (3). Use Tooling (A) in order to install retaining ring (2). Repeat for the other side of lift arms (1) .

End By:

- a. Install the bucket. Refer to Disassembly and Assembly, "Bucket - Remove and Install".
- b. Install the tilt cylinder. Refer to Disassembly and Assembly, "Tilt Cylinder - Remove and Install".

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Product: BACKHOE LOADER

Model: 420E BACKHOE LOADER DAN

Configuration: 420E Backhoe Loader Parallel Lift DAN00001-UP (MACHINE) POWERED BY C4.4 Engine

Disassembly and Assembly

416E, 420E and 430E Backhoe Loaders Machine Systems

Media Number -UENR0232-00

Publication Date -01/03/2010

Date Updated -22/03/2010

i02499757

Hoe Bucket - Remove and Install

SMCS - 6503-010

Removal Procedure

Note: Put identification marks on all lines, on all hoses, on all wires, and on all tubes for installation purposes. Plug all lines, hoses, and tubes. This helps to prevent fluid loss and this helps to keep contaminants from entering the system.

1. Place the hoe bucket on the ground.
2. Release the pressure in the hydraulic oil system. Refer to Disassembly and Assembly, "Hydraulic System Pressure - Release".

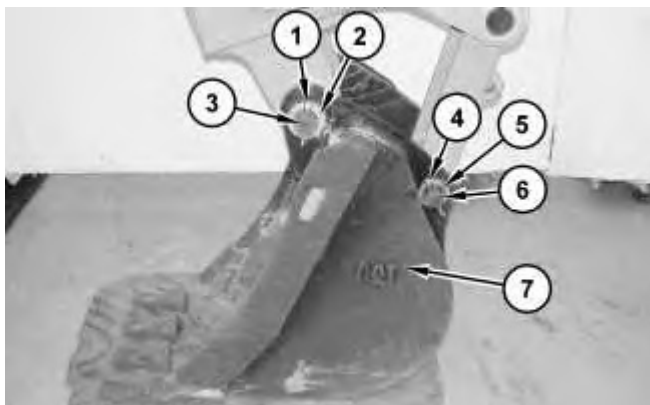


Illustration 1

g01249878

3. Remove cotter pins (1) and (4). Remove spacers (2) and (5). Remove pins (3) and (6). Raise the stick off hoe bucket (7). Remove hoe bucket (7). The weight of hoe bucket (7) is approximately 148 kg (325 lb).

Note: The weight of the hoe bucket may vary depending on the configuration.

Installation Procedure

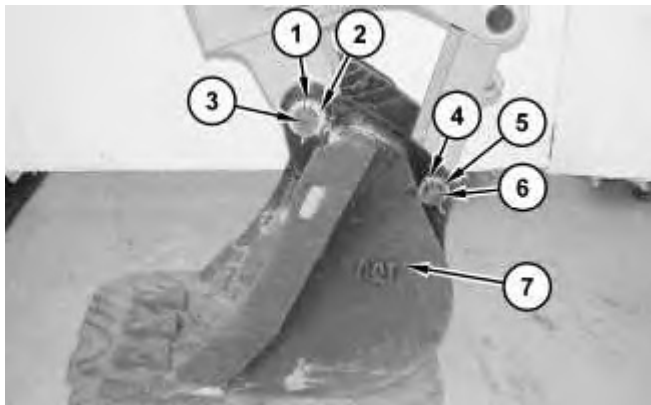


Illustration 2

g01249878

1. Position hoe bucket (7). The weight of hoe bucket (7) is approximately 148 kg (325 lb). Lower the stick onto hoe bucket (7). Install pins (3) and (6). Install spacers (2) and (5). Install cotter pins (1) and (4).

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Product: BACKHOE LOADER

Model: 420E BACKHOE LOADER DAN

Configuration: 420E Backhoe Loader Parallel Lift DAN00001-UP (MACHINE) POWERED BY C4.4 Engine

Disassembly and Assembly 416E, 420E and 430E Backhoe Loaders Machine Systems

Media Number -UENR0232-00

Publication Date -01/03/2010

Date Updated -22/03/2010

i03046303

Quick Coupler - Remove and Install

SMCS - 6129-010

Removal Procedure

Start By:

- a. Remove the backhoe bucket. Refer to Disassembly and Assembly, "Hoe Bucket - Remove and Install".



Illustration 1

g01549059

1. Position quick coupler (1) level on the ground.
2. Remove cotter pin (2) and remove pin (3).
3. Remove cotter pin (4) and remove pin (5).
4. Raise the boom in order to remove quick coupler (1).

Installation Procedure



Illustration 2

g01549059

1. Lower the boom into position on quick coupler (1).
2. Install pin (5) and install cotter pin (4).
3. Install pin (3) and install cotter pin (2).

End By:

- a. Install the backhoe bucket. Refer to Disassembly and Assembly, "Hoe Bucket - Remove and Install".

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Product: BACKHOE LOADER

Model: 420E BACKHOE LOADER DAN

Configuration: 420E Backhoe Loader Parallel Lift DAN00001-UP (MACHINE) POWERED BY C4.4 Engine

Disassembly and Assembly 416E, 420E and 430E Backhoe Loaders Machine Systems

Media Number -UENR0232-00

Publication Date -01/03/2010

Date Updated -22/03/2010

i03007158

Backhoe Bucket Linkage - Remove and Install

SMCS - 6513-010

Removal Procedure

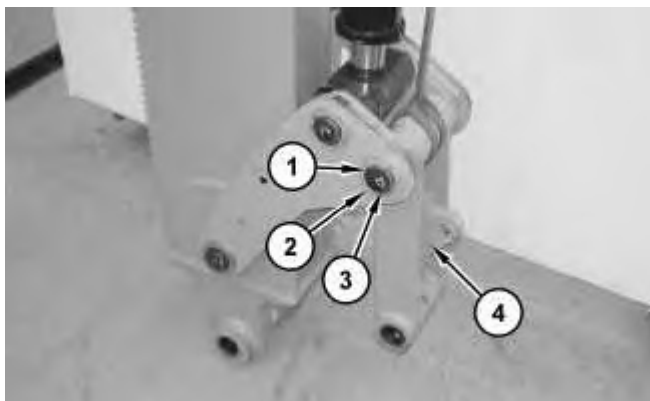
Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	5P-5197	Retaining Ring Pliers As	1
B	1P-0510	Driver Gp	1

Start By:

A. Remove the hoe bucket. Refer to Disassembly and Assembly, "Hoe Bucket - Remove and Install".

1. Place the stick on the ground.



2. Attach a suitable lifting device to link assembly (4). The weight of link assembly (4) is approximately 25 kg (55 lb). Use Tooling (A) in order to remove retaining ring (1). Remove shims (2). Remove pin (3) .

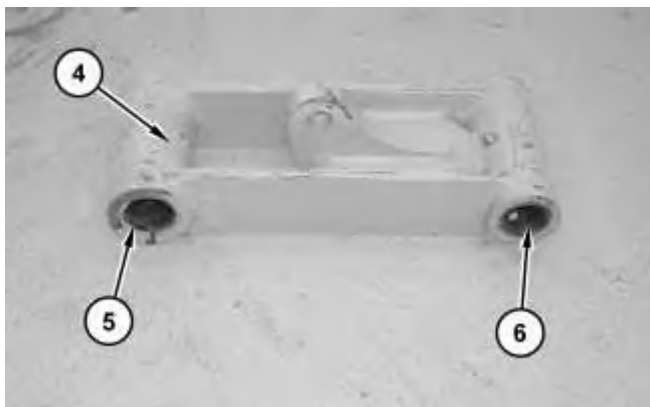


Illustration 2

3. Remove bearings (5) and (6) from both sides of link assembly (4) .

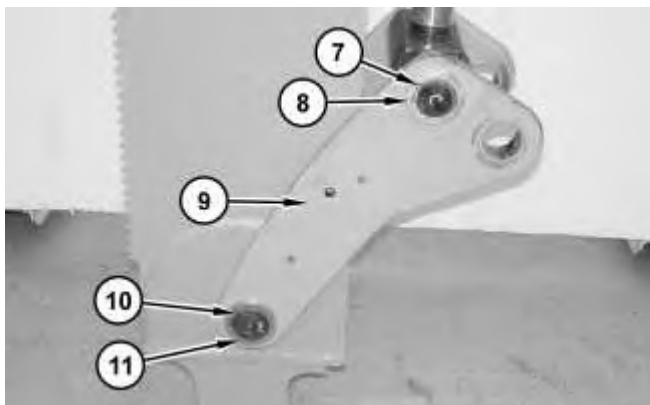


Illustration 3

4. Use Tooling (A) in order to remove retaining rings (7) and (10). Remove shims (8) and (11). Remove link assembly (9) .
-

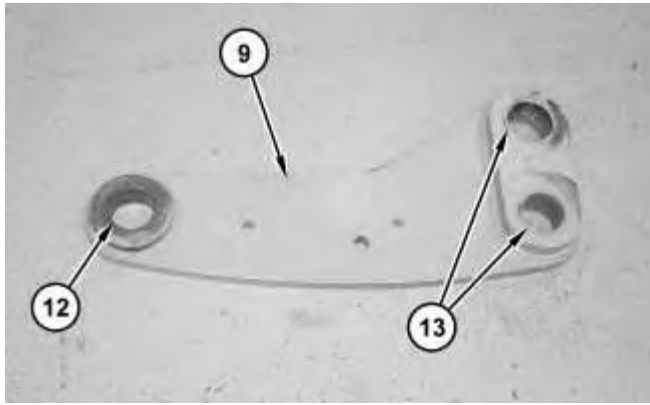


Illustration 4

g01249998

5. Use Tooling (B) in order to remove bearings (12) and (13) from link assembly (9) .

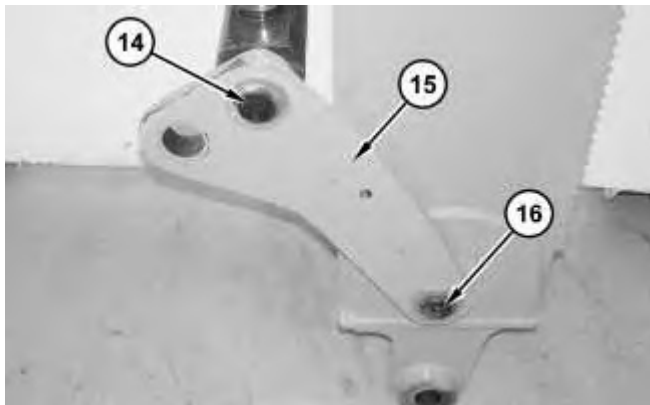


Illustration 5

g01250072

6. Remove pins (14) and (16). Remove link assembly (15) .

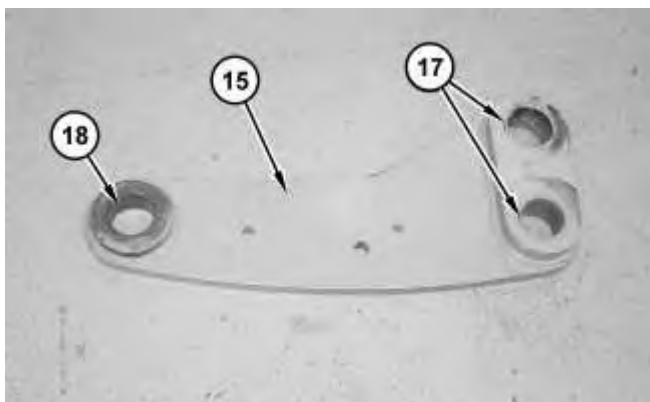


Illustration 6

g01250086

7. Use Tooling (B) in order to remove bearings (17) and (18) from link assembly (15) .

Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
A	5P-5197	Retaining Ring Pliers As	1
B	1P-0510	Driver Gp	1

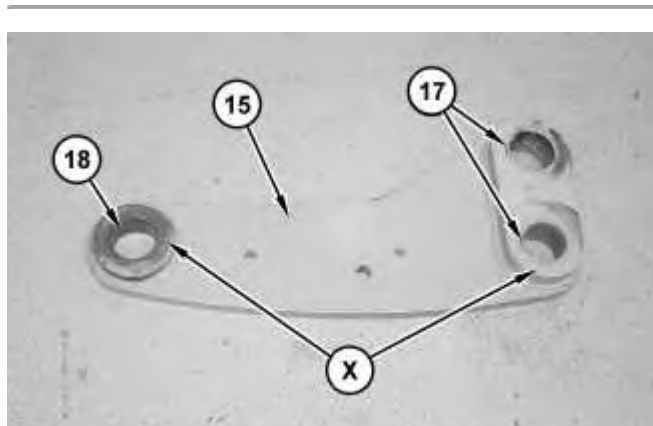


Illustration 7

g01523550

1. Lower the temperature of bearings (17) and (18). Use Tooling (B) in order to install bearings (17) and (18) into link assembly (15) .

Note: Make sure that bearings (17) and (18) are flush with Surface (X) during the installation process.

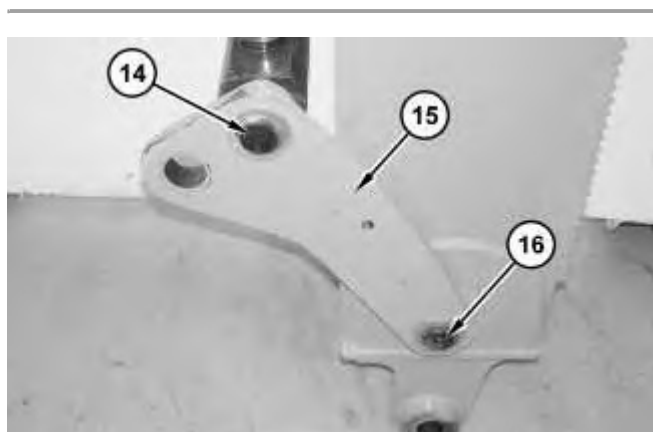


Illustration 8

g01250072

2. Install link assembly (15). Install pins (14) and (16) and any shims that were present during the removal procedure.

Note: Note that one shim is required on each side.

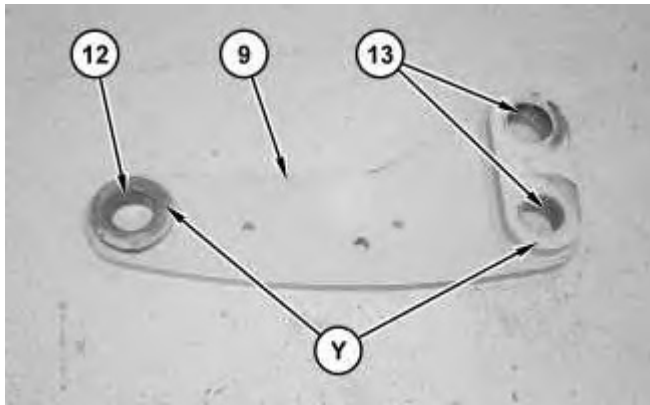


Illustration 9

g01523554

3. Lower the temperature of bearings (12) and (13). Use Tooling (B) in order to install bearings (12) and (13) into link assembly (9) .

Note: Make sure that bearings (12) and (13) are flush with Surface (Y) during the installation process.

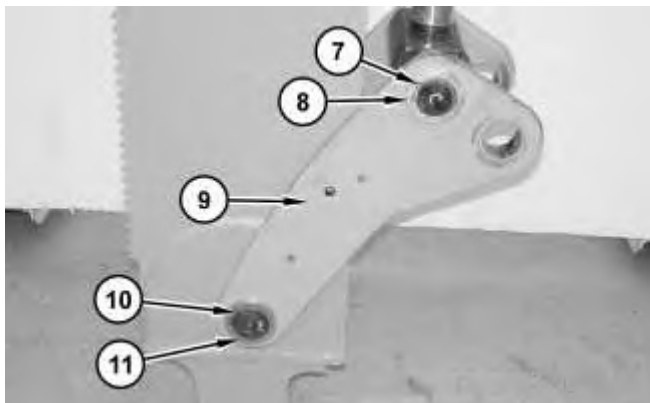


Illustration 10

g01249996

4. Install link assembly (9). Install shims (8) and shims (11) in order to obtain a maximum total clearance of 4.0 mm (0.16 inch). Use Tooling (A) in order to install retaining rings (7) and (10) .

Note: Note that one shim (8) and (11) is required on each side.

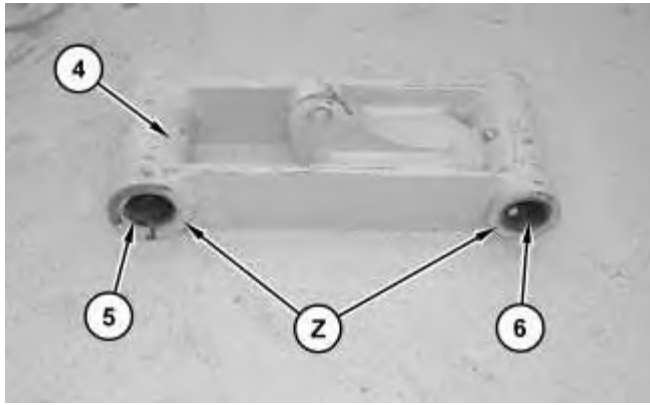


Illustration 11

g01523561

5. Lower the temperature of bearings (5) and (6). Use Tooling (B) in order to install bearings (5) and (6) into both sides of link assembly (4) .

Note: Make sure that bearings (5) and (6) are flush with Surface (Z) during the installation process.

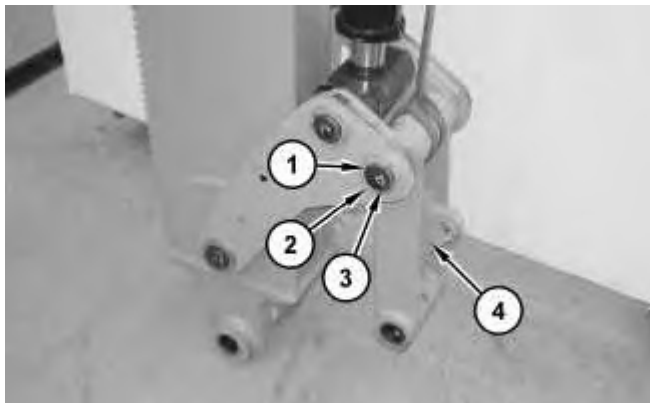


Illustration 12

g01249977

6. Attach a suitable lifting device to link assembly (4). The weight of link assembly (4) is approximately 25 kg (55 lb). Install link assembly (4). Install shims (2) and pin (3). Use Tooling (A) in order to install retaining ring (1) .

End By: Install the hoe bucket. Refer to Disassembly and Assembly, "Hoe Bucket - Remove and Install".

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Product: BACKHOE LOADER

Model: 420E BACKHOE LOADER DAN

Configuration: 420E Backhoe Loader Parallel Lift DAN00001-UP (MACHINE) POWERED BY C4.4 Engine

Disassembly and Assembly

416E, 420E and 430E Backhoe Loaders Machine Systems

Media Number -UENR0232-00

Publication Date -01/03/2010

Date Updated -22/03/2010

i03025382

Backhoe Bucket Cylinder - Remove and Install

SMCS - 5457-010-UH

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1P-1859	Retaining Ring Pliers	1

Note: Put identification marks on all lines, on all hoses, on all wires, and on all tubes for installation purposes. Plug all lines, hoses, and tubes. This helps to prevent fluid loss and this helps to keep contaminants from entering the system.


WARNING

Cylinders equipped with lock valves can remain pressurized for very long periods of time, even with the hoses removed.

Failure to relieve pressure before removing a lock valve or disassembling a cylinder can result in personal injury or death.

Ensure all pressure is relieved before removing a lock valve or disassembling a cylinder.



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Illustration 1

g01250103

1. Place the stick on the ground. Lower the hoe bucket to the ground.
2. Release the pressure in the hydraulic oil system. Refer to Disassembly and Assembly, "Hydraulic System Pressure - Release".

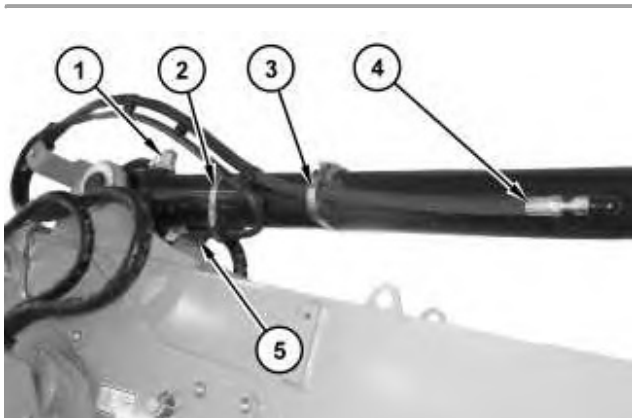
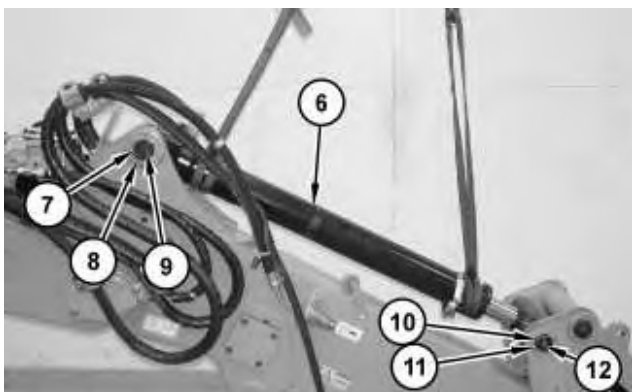


Illustration 2

g01530095

3. Disconnect hose assemblies (1) and (4). Disconnect clamps (2) and (3) .
4. Disconnect harness assembly (5) .



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