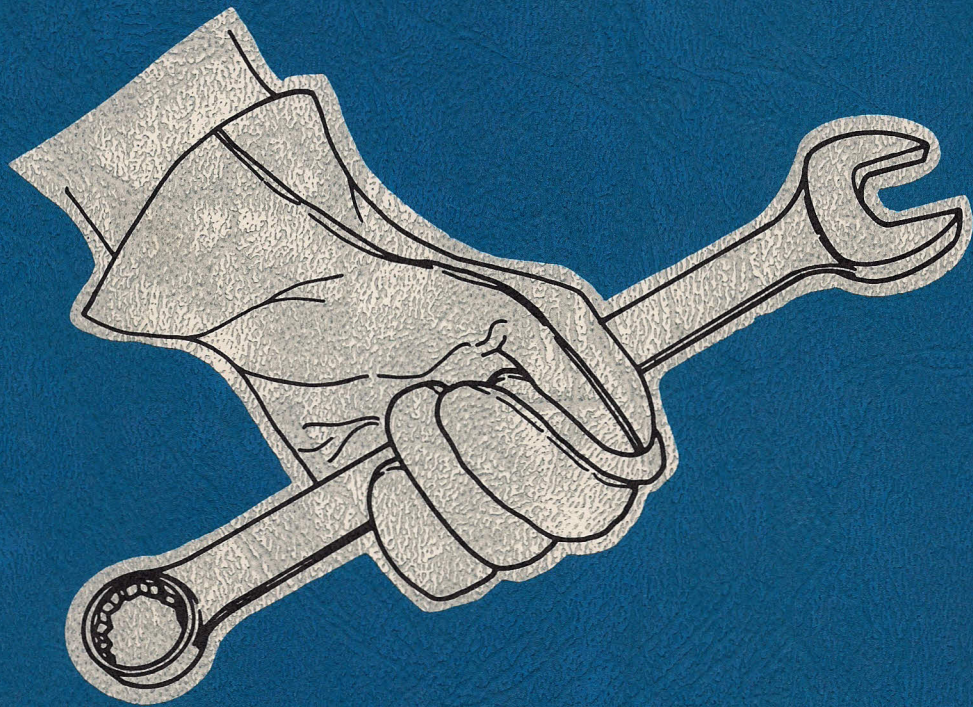




HYDRAULIC CYLINDERS

COMPONENT REPAIR MANUAL



6570091 (8-92)-1.5M

A BUSINESS UNIT OF CLARK EQUIPMENT COMPANY

Printed in U.S.A.

MAINTENANCE SAFETY



WARNING

Instructions are necessary before operating or servicing machine. Read Operation & Maintenance Manual, Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Failure to follow instructions can cause injury or death.

W-2003-1089

Safety Alert Symbol: This symbol is used for important safety messages. When you see this symbol, follow the safety message to avoid personal injury or death.

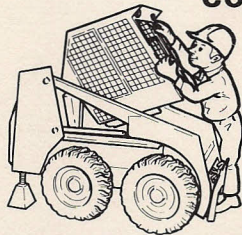
CORRECT



B-10731

- ⚠ Never service the Bobcat loader without instructions.

CORRECT



B-12365

- ⚠ Don't lift or lower operator cab without instruction.

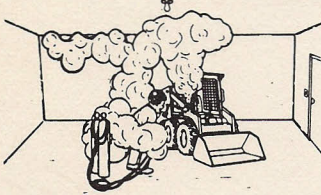
CORRECT



B-7469

- ⚠ Cleaning and maintenance are required daily.
- ⚠ Keep rear door closed except for service. Close and latch door before operating the loader.

WRONG



B-11799

- ⚠ Have good ventilation when welding or grinding painted parts. Wear dust mask when grinding painted parts. Toxic dust and gas can be produced.

WRONG



B-3724

- ⚠ Vent exhaust to outside when engine must be run for service.
- ⚠ Exhaust system must be tightly sealed. Exhaust fumes can kill without warning.

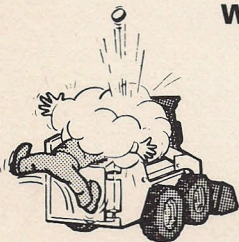
WRONG



B-6593

- ⚠ Never work on loader with lift arms up unless lift arms are held by a lift arm support device.
- ⚠ Never modify equipment or add attachments not approved by Melroe Company.

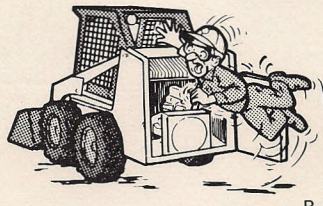
WRONG



B-6590

- ⚠ Stop, cool and clean engine of flammable materials before checking fluids.
- ⚠ Never service or adjust loader with the engine running unless instructed to do so in the manual.
- ⚠ Avoid contact with leaking hydraulic fluids or diesel fuel which is under pressure. It can penetrate the skin or eyes.
- ⚠ Never fill fuel tank with engine running, while smoking or when near open flame.

WRONG



B-6580

- ⚠ Keep body, jewelry and clothing away from moving parts, electrical contacts, hot parts and exhaust.
- ⚠ Wear eye protection to guard from battery acid, compressed springs, fluids under pressure and flying debris when engines are running or tools are used. Use eye protection approved for type of welding.

WRONG



B-6589

- ⚠ Lead-acid batteries produce flammable and explosive gases.
- ⚠ Keep arcs, sparks, flames and lighted tobacco away from batteries.
- ⚠ Batteries contain acid which burns eyes or skin on contact. Wear protective clothing. If acid contacts body, flush well with water. For eye contact flush well and get immediate medical attention.

INTRODUCTION

Melroe recommends that all service technicians attend either field or factory Bobcat Service Workshops for necessary information and education.


Workshops are held many times a year at various locations throughout the U.S. and Canada. Contact your District Service Manager or Melroe Service Office Gwinner, N.D. (701) 678-6465 for schedule.

This Component Repair Manual provides the Service Technician with information for servicing Melroe Hydraulic Cylinders.

Refer to the SERVICE MANUAL for your MODEL Loader to troubleshoot, test, remove and install the hydraulic cylinders.

SAFETY INSTRUCTIONS

We Care About your Safety.

**WARNING**

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

W-2019-1285

BEFORE YOU WORK ON THE HYDRAULIC CYLINDER

Read the complete sequence so you know the complete disassembly or assembly procedure before the work is actually started.

**WARNING**

Warnings on the machine and in the manuals are for your safety. Failure to obey warnings can cause injury or death.

W-2044-1285

IMPORTANT

This notice identifies procedures which must be followed to avoid damage to the loader.

I-2019-0284



bobcat

HYDRAULIC CYLINDER

CYLINDER IDENTIFICATION

Tilt Cylinder Components on 753 & 853	7
Tilt Cylinder Components on 753 & 853	8
Tilt Cylinder Components 640 & 740 Series (Equipped with Cushion Sleeve)	6
Tilt Cylinder Components on 540, 640, *740 Series & 843 (* Not Equipped with Cushion Sleeve)	5
Tilt Cylinder Components on farmboy, 440, 443	4
Lift Cylinder Components on All 40 Series	3

HYDRAULIC CYLINDER

Assembly	11
Cylinders With Cushioned Piston	14
Cylinders Without Cushioned Piston	15
Disassembly	9

HYDRAULIC CYLINDER SERVICE TOOLS

MEL-1032 or MEL-1033 Rod Seal Tool	1
MEL-1075 Adjustable Gland Nut Wrench	1
MEL-1178 Seal Tool	2
MEL-1076 Cylinder Wrench	2
MEL-1074 O-ring Seal Hook	1
MEL-1396 Seal Tool	1

TORQUE SPECIFICATIONS

Aluminum Piston	17
Gray Iron Piston	17

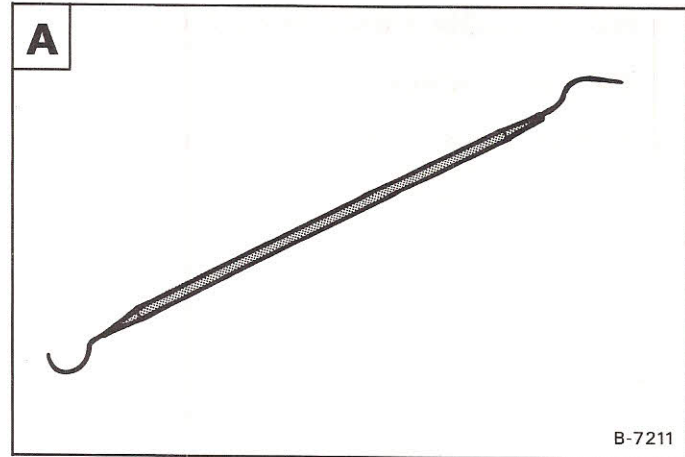


bobcat

HYDRAULIC CYLINDER SERVICE TOOLS

MEL-1074 O-Ring Seal Hook

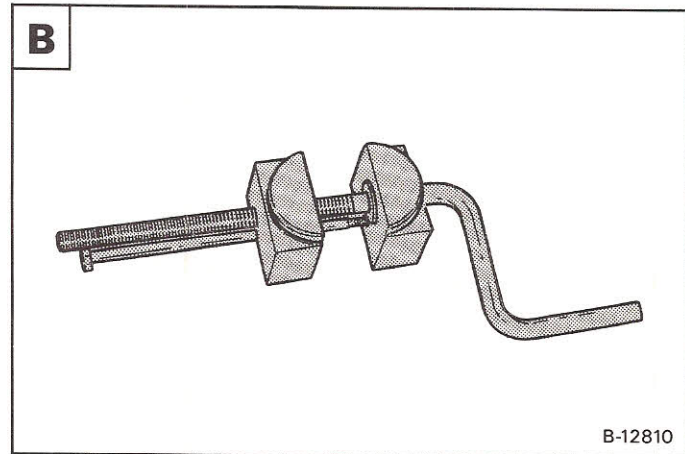
Use this tool to remove the seals from the piston and the cylinder head **A**.



MEL-1396 Seal Installation Tool

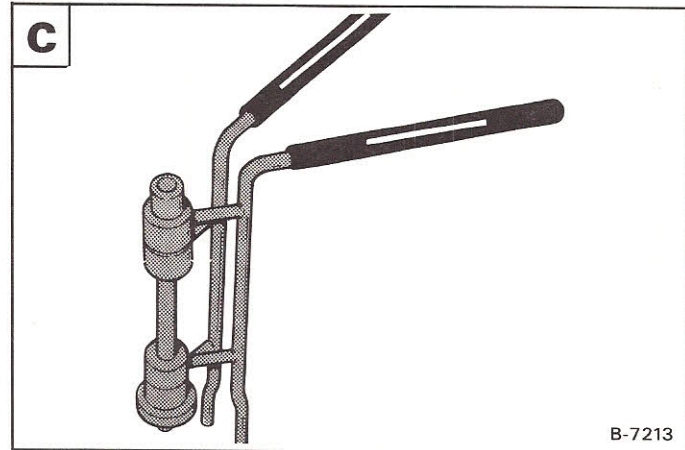
Use this tool to stretch the Teflon seals before installing seals on cylinder pistons **B**.

Use ring compressor to compress the Teflon seal into the groove after installing it on the piston.



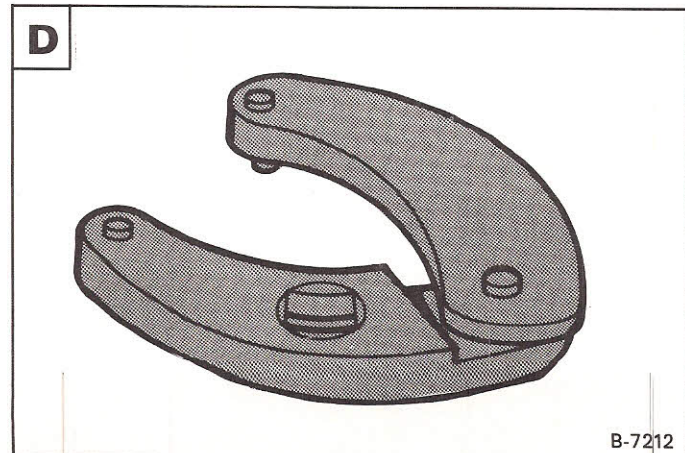
MEL-1032 or MEL-1033 Rod Seal Installation Tool

Use one of these tools to install internal seals in the cylinder head. Use Tool #MEL-1033 when servicing cylinders with rods 1-1/4" in diameter through 2" diameter **C**.



MEL-1075 Adjustable Gland Nut Wrench

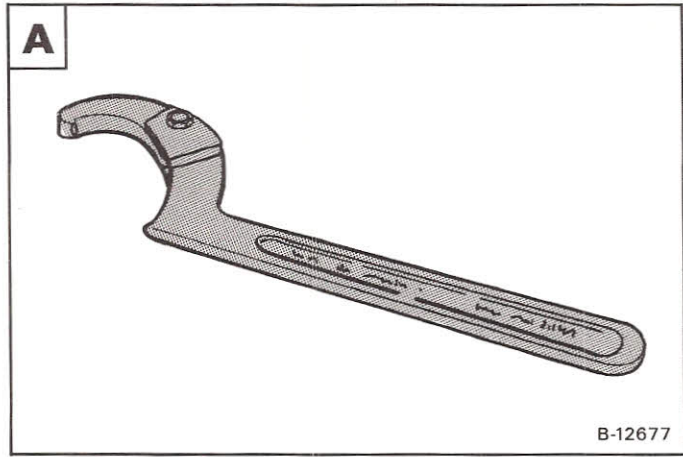
Use this tool with correct pins (Tool #MEL-1075-1 or MEL-1075-2) for the cylinder head removal and installation **D**.



HYDRAULIC CYLINDER SERVICE TOOLS (Cont'd)

MEL-1076 Cylinder Wrench

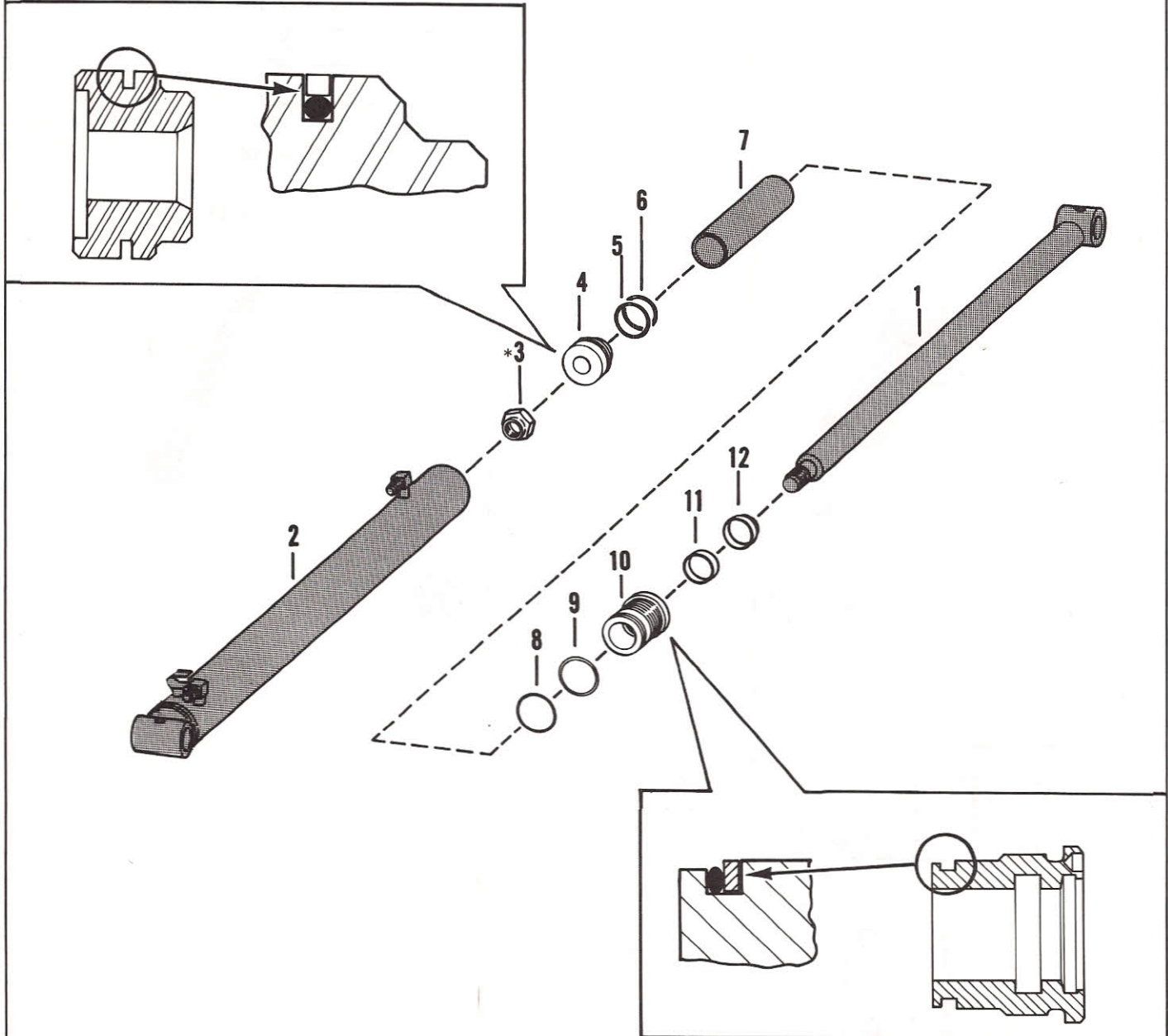
Use this tool to remove the end cap from the hydraulic cylinder
A.



CYLINDER IDENTIFICATION

Lift Cylinder Components on All 40 Series

- 1. Rod
- 2. Case
- 3. Nut
- 4. Piston
- 5. Piston Seal
- 6. O-Ring
- 7. Spacer
- 8. O-Ring
- 9. Back-Up Washer
- 10. Head
- 11. Rod Seal
- 12. Wiper Seal



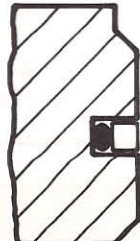
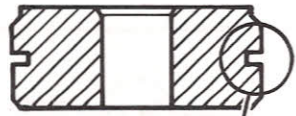
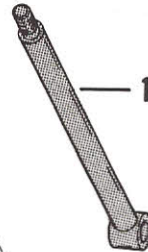
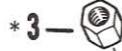
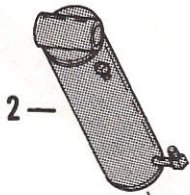
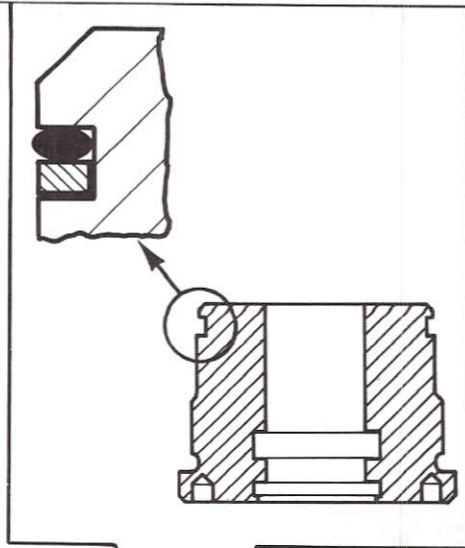
* See Page 17 for torque.

B-6942

CYLINDER IDENTIFICATION (Cont'd)

Tilt Cylinder Components on farmboy, 440, 443

1. Rod
2. Case
3. Nut
4. Piston
5. O-Ring
6. Piston Seal
7. O-Ring
8. Back-Up Washer
9. End Cap
10. Head
11. Wiper Seal



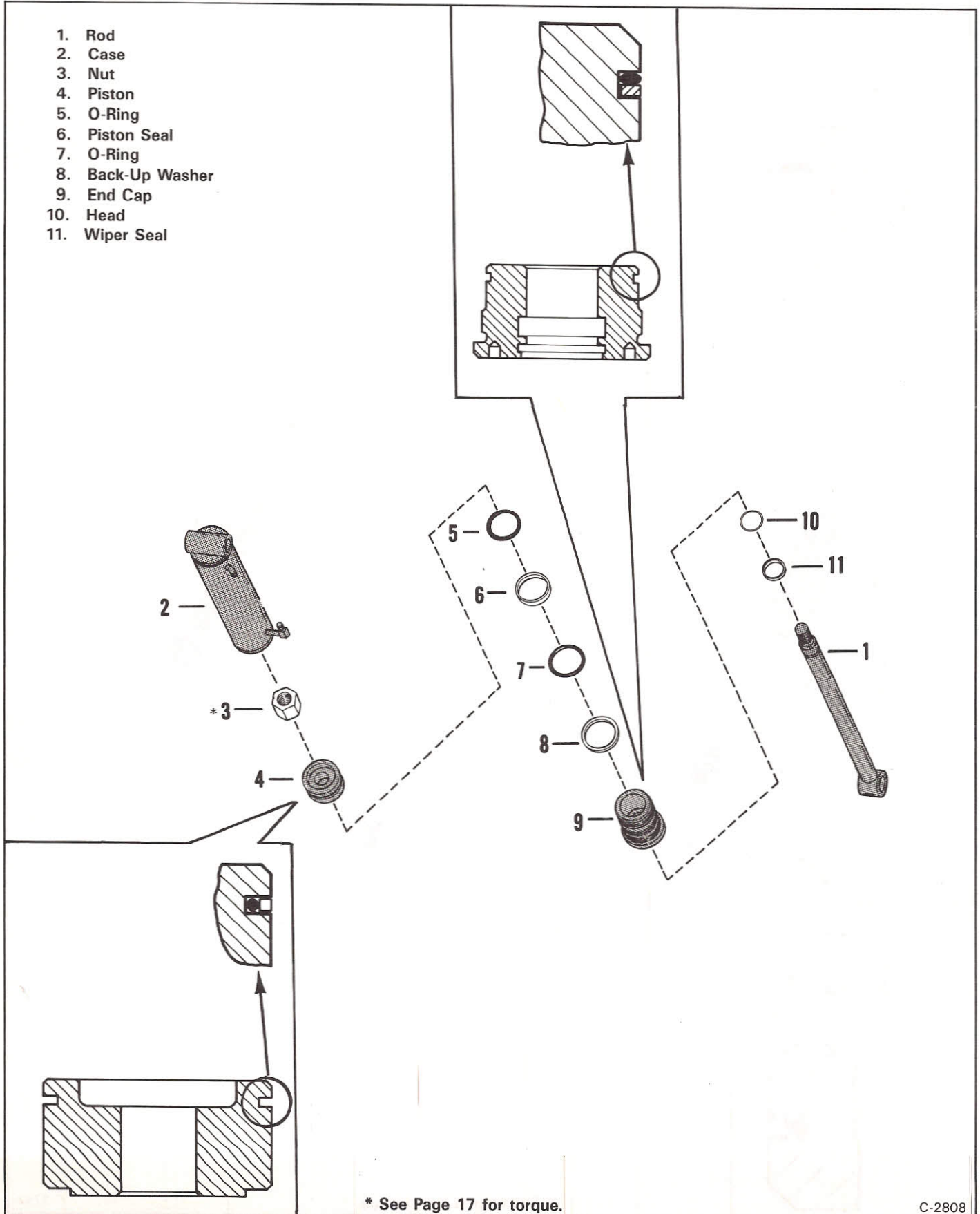
* See Page 17 for torque.

C-2808

CYLINDER IDENTIFICATION (Cont'd)

Tilt Cylinder Components on 540, 640, 740* Series & 843
(* Not Equipped With Cushion Sleeve)

- 1. Rod
- 2. Case
- 3. Nut
- 4. Piston
- 5. O-Ring
- 6. Piston Seal
- 7. O-Ring
- 8. Back-Up Washer
- 9. End Cap
- 10. Head
- 11. Wiper Seal



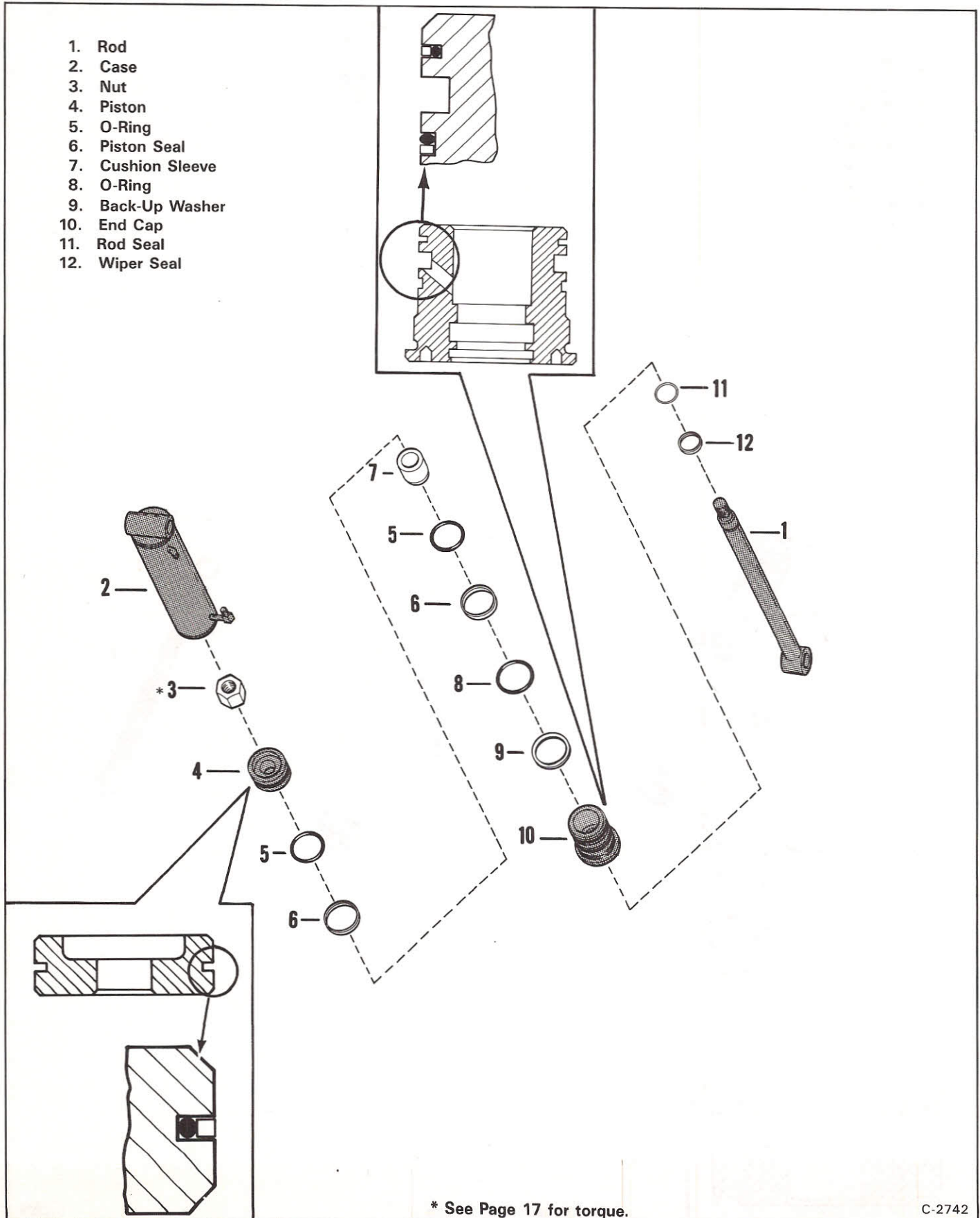
* See Page 17 for torque.

C-2808

CYLINDER IDENTIFICATION (Cont'd)

Tilt Cylinder Components on 640* & 740* Series
(* Equipped With Cushion Sleeve)

- 1. Rod
- 2. Case
- 3. Nut
- 4. Piston
- 5. O-Ring
- 6. Piston Seal
- 7. Cushion Sleeve
- 8. O-Ring
- 9. Back-Up Washer
- 10. End Cap
- 11. Rod Seal
- 12. Wiper Seal



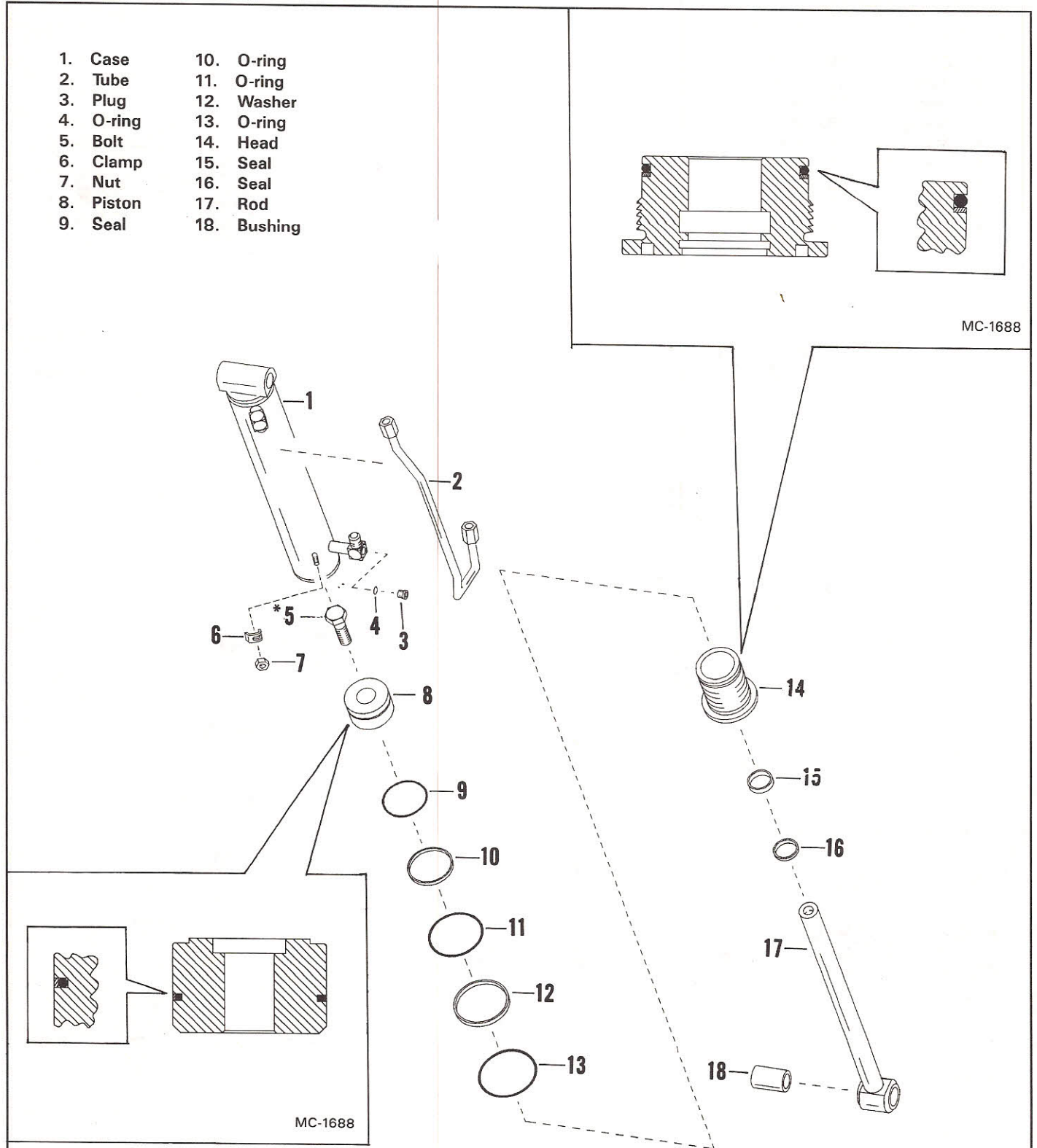
* See Page 17 for torque.

C-2742

CYLINDER IDENTIFICATION (Cont'd)

Tilt Cylinder Components on 753 & 853

- | | |
|-----------|-------------|
| 1. Case | 10. O-ring |
| 2. Tube | 11. O-ring |
| 3. Plug | 12. Washer |
| 4. O-ring | 13. O-ring |
| 5. Bolt | 14. Head |
| 6. Clamp | 15. Seal |
| 7. Nut | 16. Seal |
| 8. Piston | 17. Rod |
| 9. Seal | 18. Bushing |



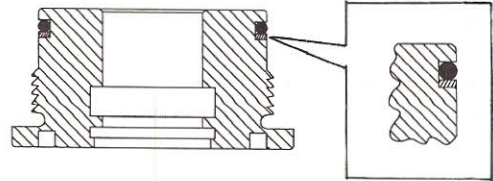
* Tighten To 400-425 ft.-lbs. (543-577 Nm) Torque.

TS-1012

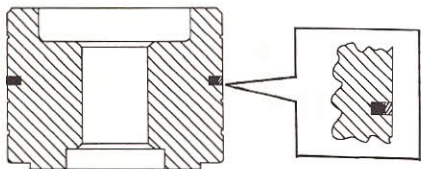
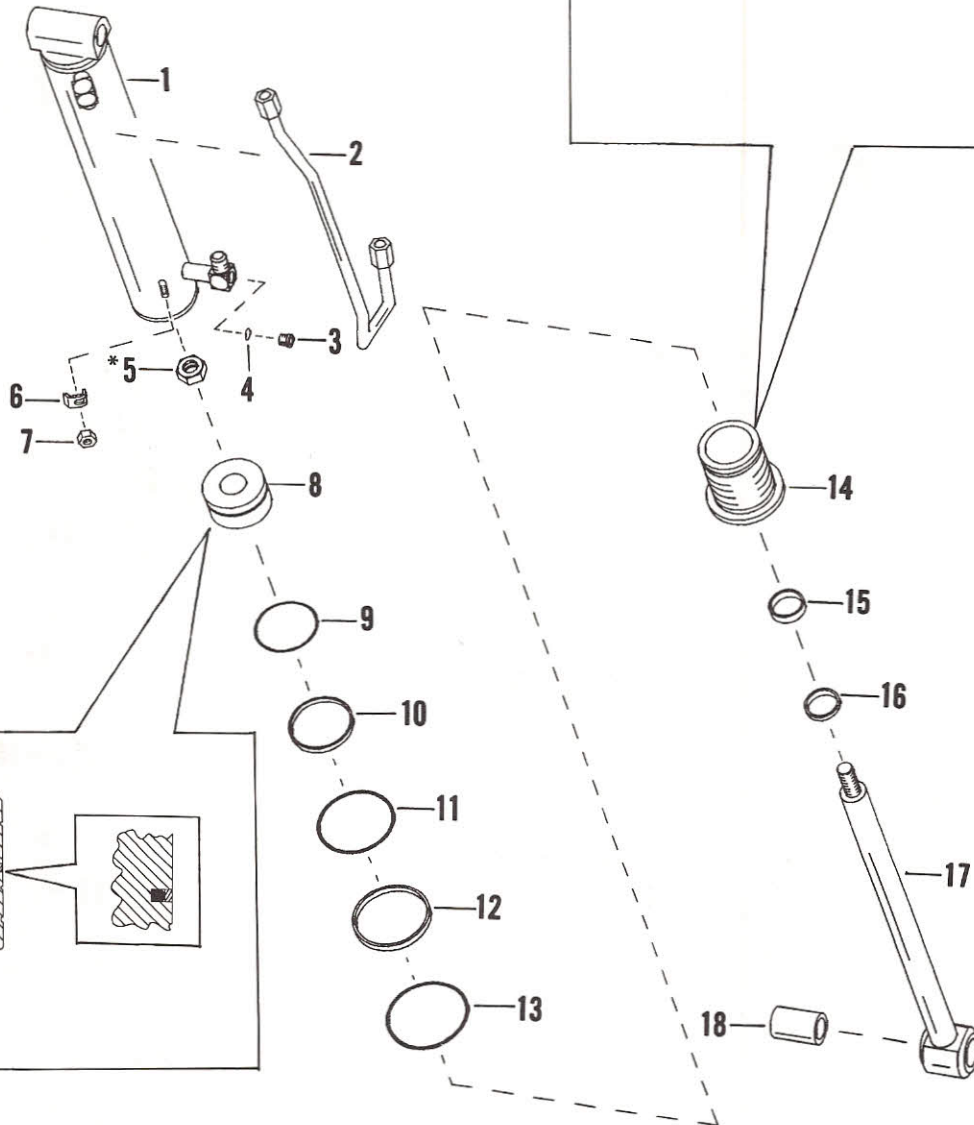
CYLINDER IDENTIFICATION (Cont'd)

Tilt Cylinder Components on 753 & 853

- | | |
|-----------|-------------|
| 1. Case | 10. O-ring |
| 2. Tube | 11. O-ring |
| 3. Plug | 12. Washer |
| 4. O-ring | 13. O-ring |
| 5. Nut | 14. Head |
| 6. Clamp | 15. Seal |
| 7. Nut | 16. Seal |
| 8. Piston | 17. Rod |
| 9. Seal | 18. Bushing |



MC-1688



* Tighten To 425-525 ft.-lbs. (576-712 Nm) Torque.

TS-1063

HYDRAULIC CYLINDER

Disassembly

NOTE: The drawings may not show the cylinder exactly as it appears, but the procedure is correct for all cylinders.

See the Service Manual for your model loader to find the correct information for removing and installing the cylinder.

Put the base end of the hydraulic cylinder in a drain pan. Move the rod in and out to remove the fluid from the cylinder. Move the rod slowly so the fluid will go directly into the drain pan.

Put the base end of the cylinder in a vise.

Use the adjustable gland nut wrench to loosen the head **A**.

Remove the rod assembly from the cylinder case **B**.

Remove the cylinder case from the vise.

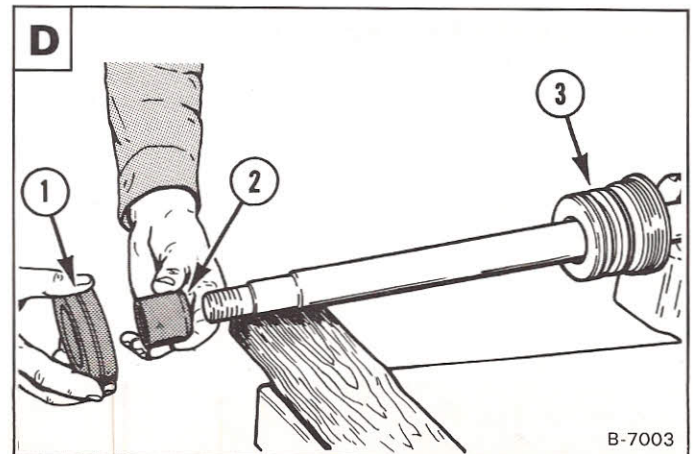
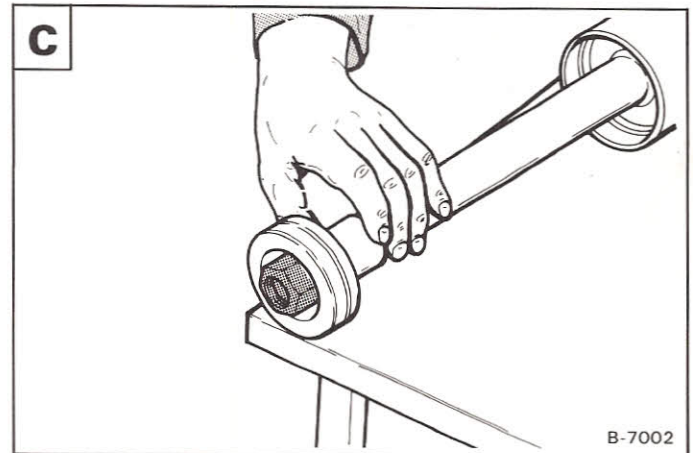
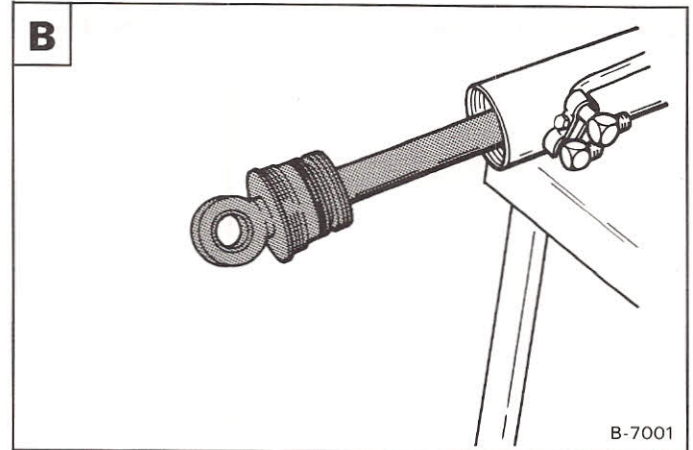
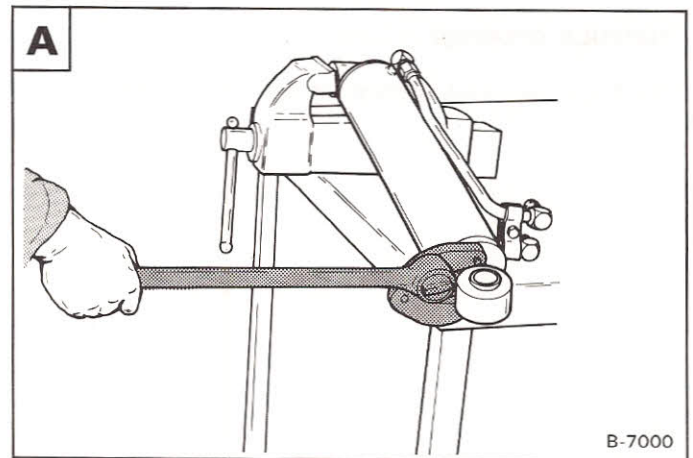
Put the rod end in the vise.

Remove the nut from the piston end of the rod **C**.

Pull the piston off the rod (Item 1) **D**.

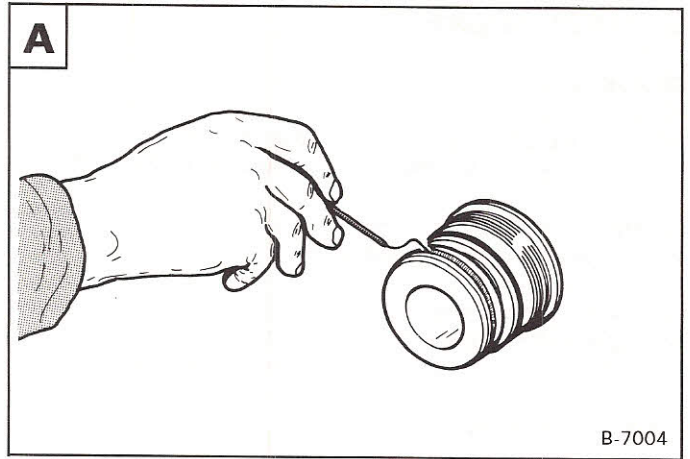
If the cylinder has a cushion sleeve (Item 2), pull it off the rod **D**.

Pull the head (Item 3) off the rod **D**.

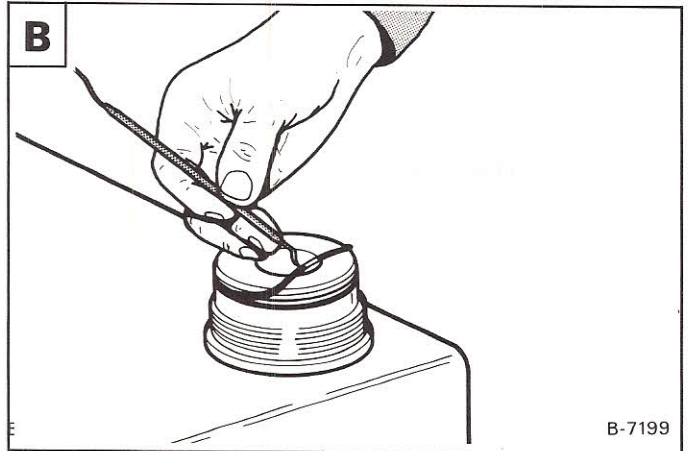


HYDRAULIC CYLINDER (Cont'd)

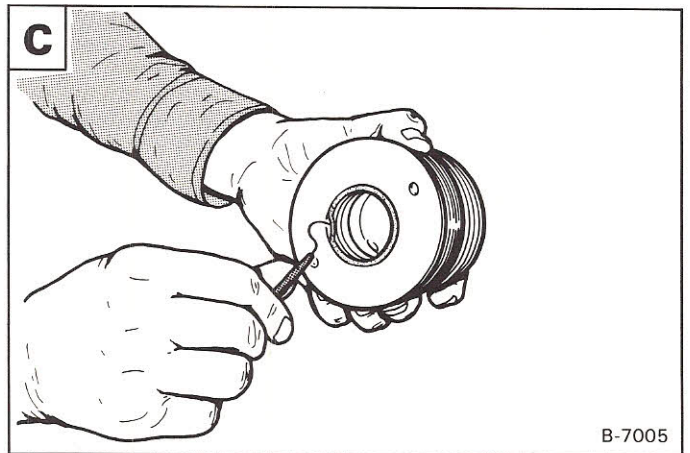
If the head has a seal, remove the seal from the head **A**.



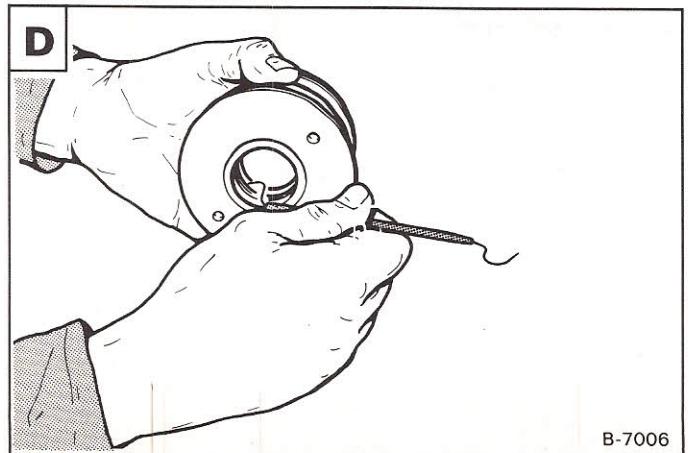
Remove the O-ring and back-up washer from the head **B**.



Remove the wiper seal **C**.

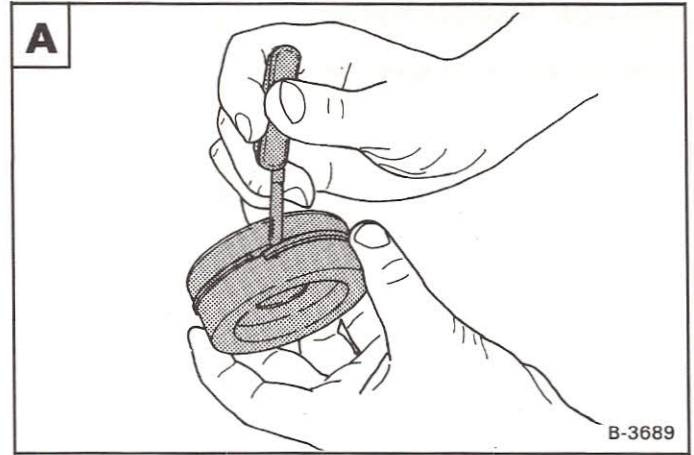


Remove the oil seal from the head **D**.



HYDRAULIC CYLINDER (Cont'd)

Remove the piston seal from the piston **A**.

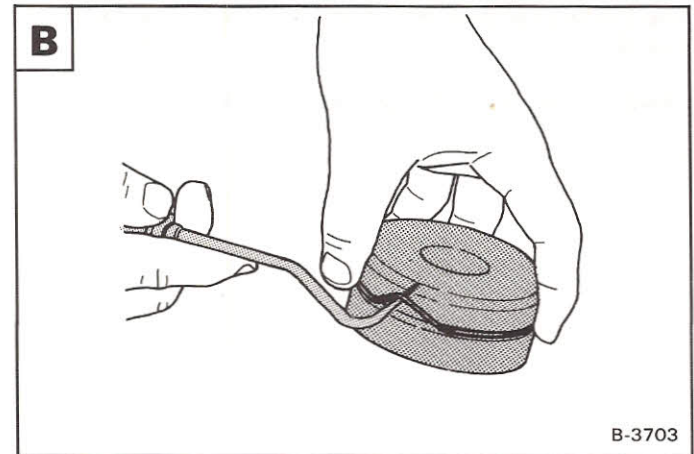


Remove the O-ring from the piston **B**.

Wash the cylinder parts in solvent and air dry them.

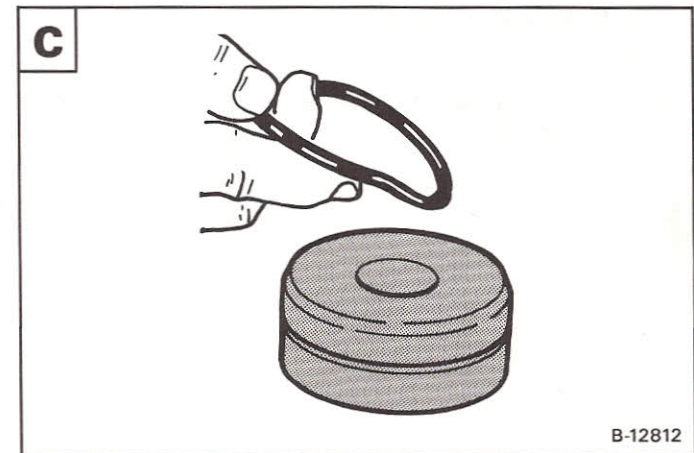
While servicing the cylinder do not damage the parts. Inspect for nicks, scratches or otherwise damaged or bent parts before assembling the cylinder. Replace parts that appear damaged in any way. The cylinder may not function correctly if there is damage to any of the parts.

Destroy all the O-rings and seals and replace them with NEW O-rings and seals.



Assembly

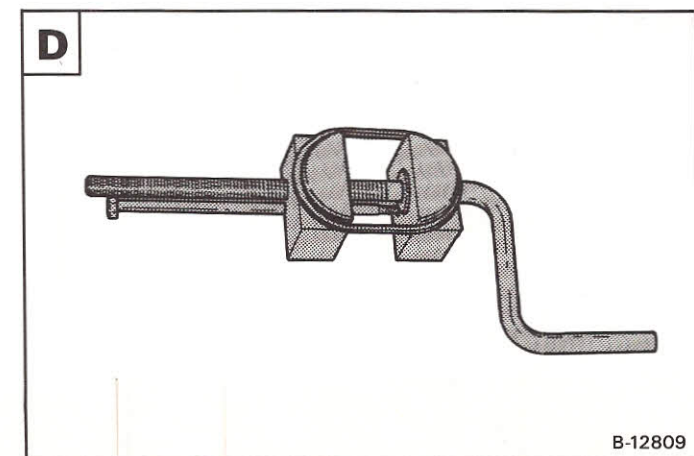
Install the O-ring on the piston **C**.



NOTE: Do not overstretch the seal.

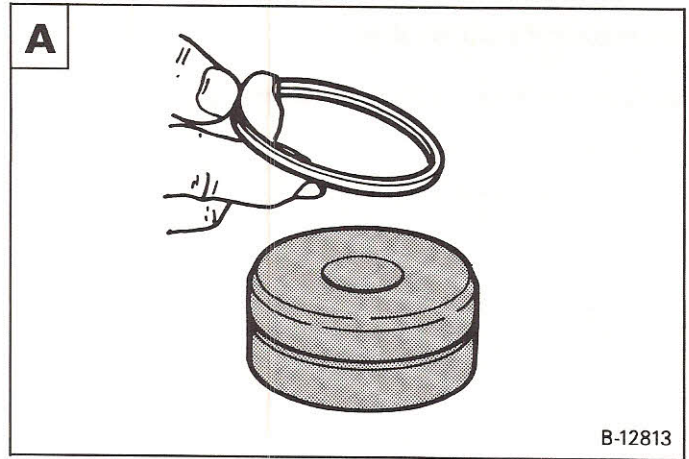
Install the seal on the tool and stretch it until it fits the piston **D**.

Allow the O-ring to stretch for 30 seconds before removing it from the tool.



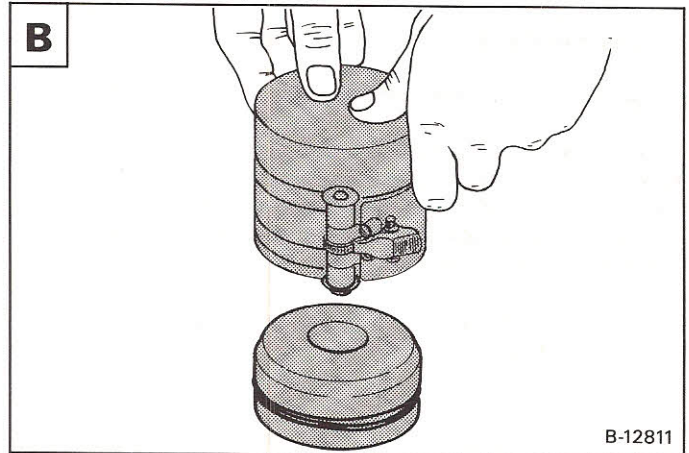
HYDRAULIC CYLINDER (Cont'd)

Install the seal on the piston **A**.



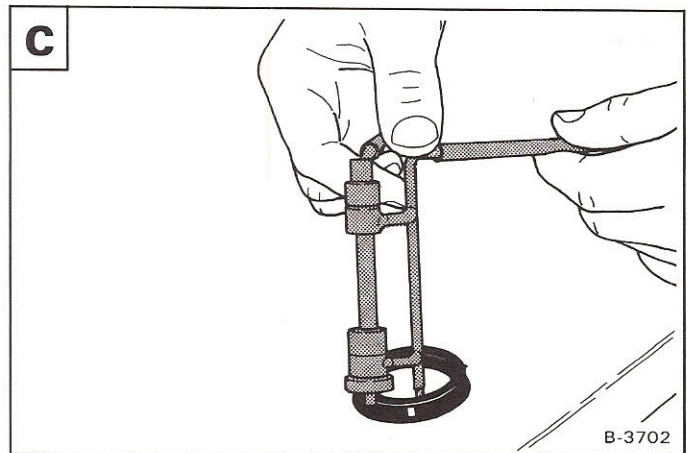
Use the ring compressor to compress the seal to the correct size **B**.

Leave the piston in the ring compressor for three minutes.

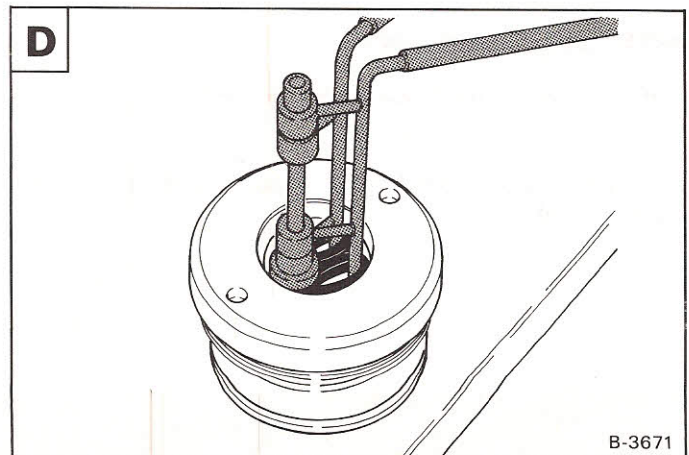


Install the oil seal on the rod seal tool **C**.

NOTE: The O-ring side of the oil seal goes toward the inside of the cylinder.



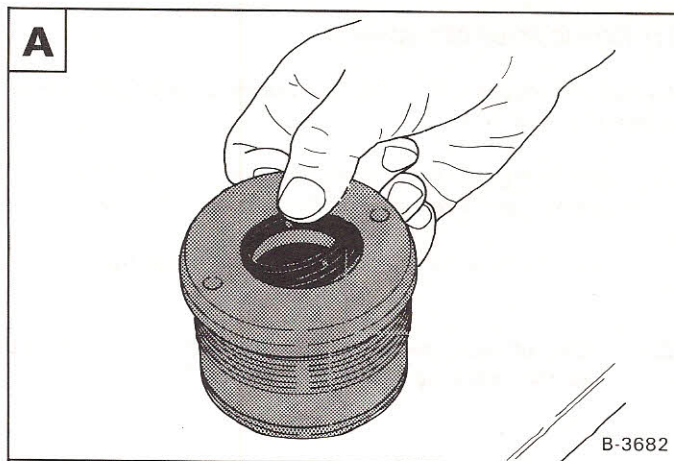
Install the oil seal in the head **D**.



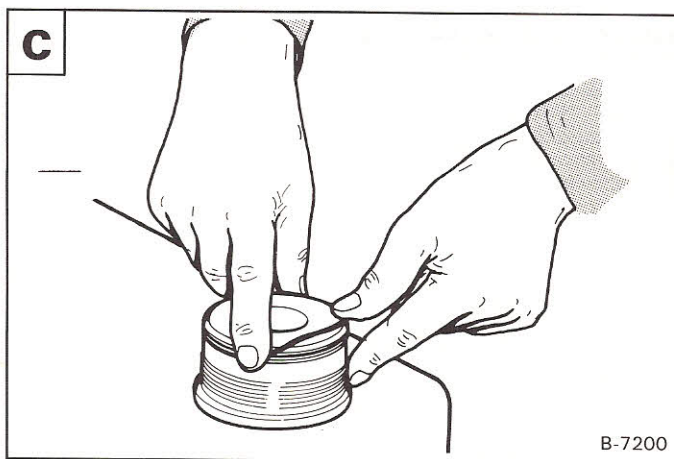
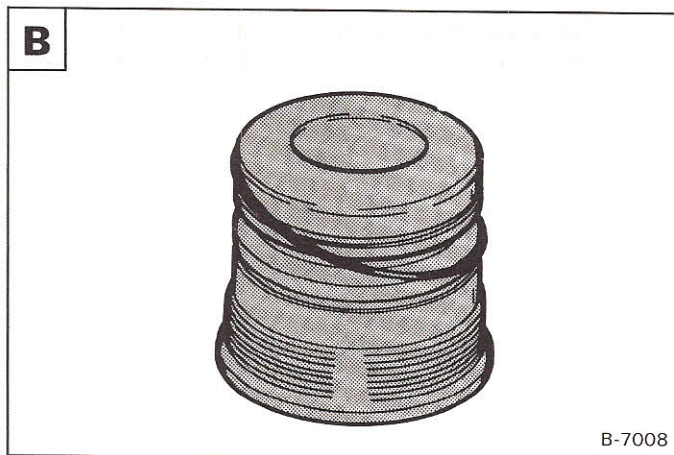
HYDRAULIC CYLINDER (Cont'd)

Install the wiper seal with the lip toward the outside of the head

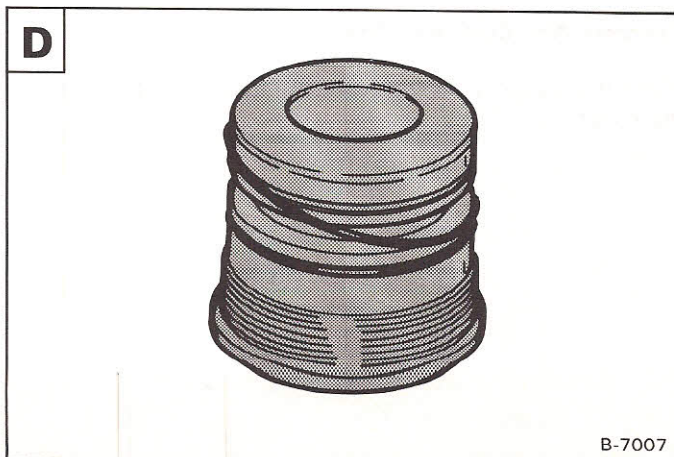
A.



Install the back-up washer on the head **B C**.



Install the O-ring next to the back-up ring **D**.



HYDRAULIC CYLINDER (Cont'd)

If a seal was removed from the head use the following procedure to install a new one.

1. Install the guide (with a pilot and an adapter if they are required (See Special Tools Page 1) on the head.
2. Install the seal on the head using the guide **A**.

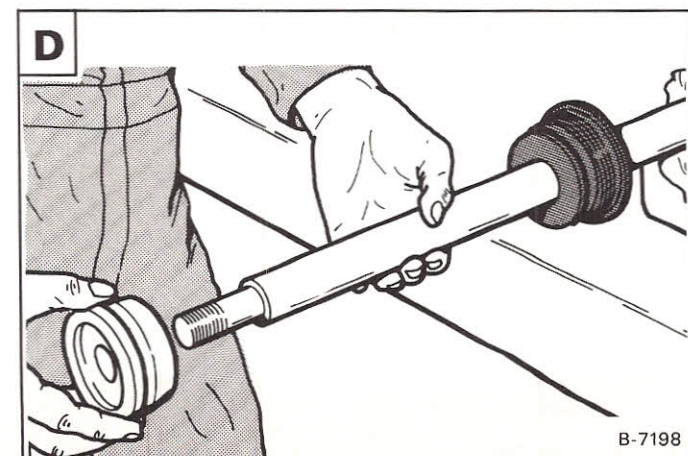
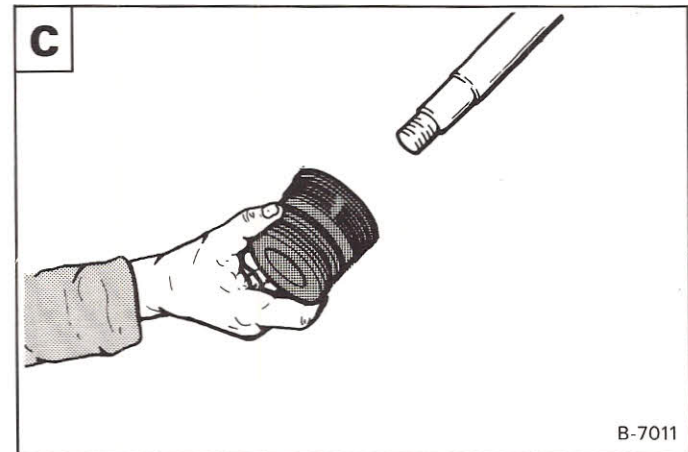
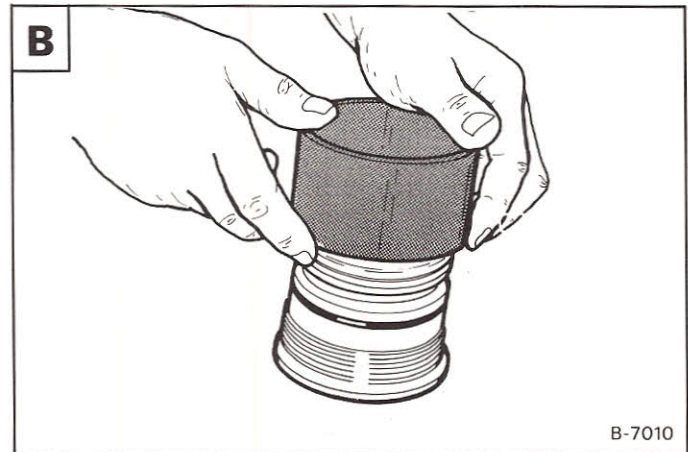
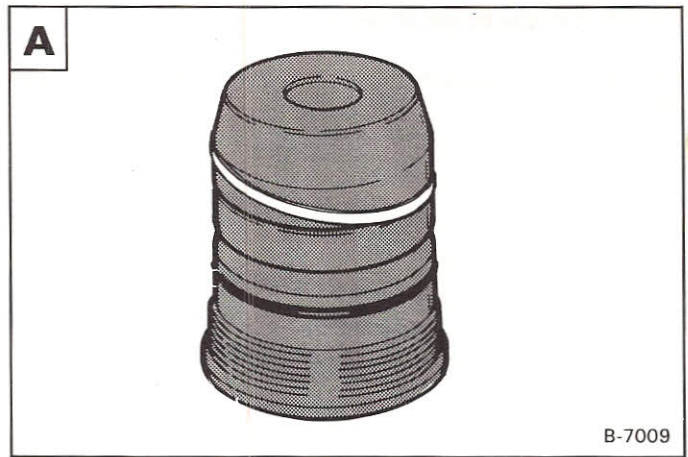
NOTE: Do not turn (roll) the seal as you install it. Damage to the seal may result.

3. Use a ring compressor to compress the seal to the correct size **B**. Leave the tool over the Teflon seal for five minutes.

Install the head on the rod **C**.

Cylinders With Cushioned Piston:

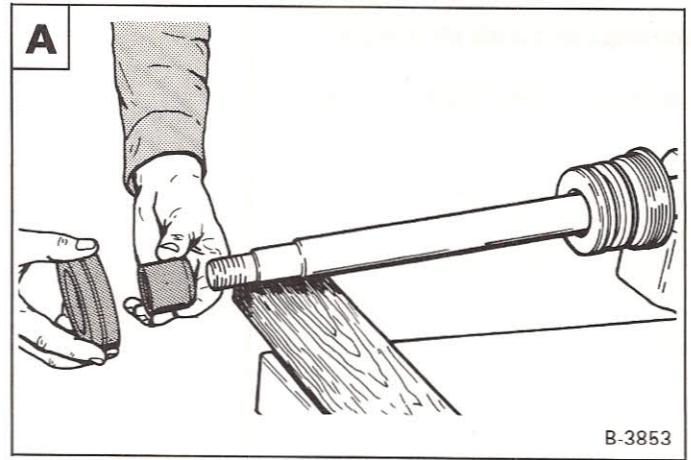
Install the piston on the rod with the tapered end first (toward the head) **D**.



HYDRAULIC CYLINDER (Cont'd)

Cylinders Without Cushioned Piston:

Install the cushion sleeve and the piston on the rod **A**.

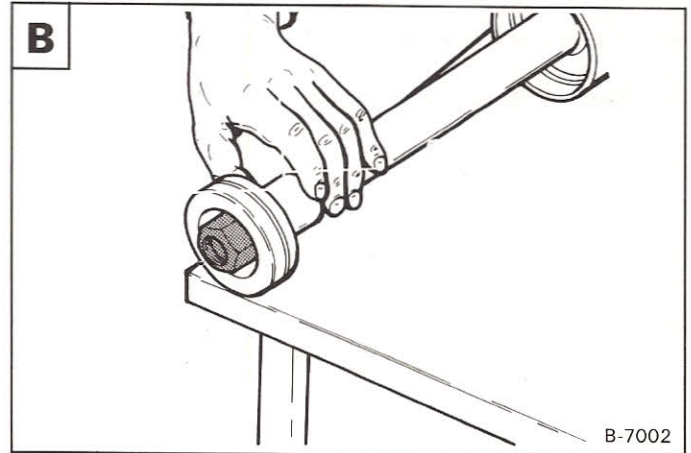


Lubricate the threads and install the nut **B**.

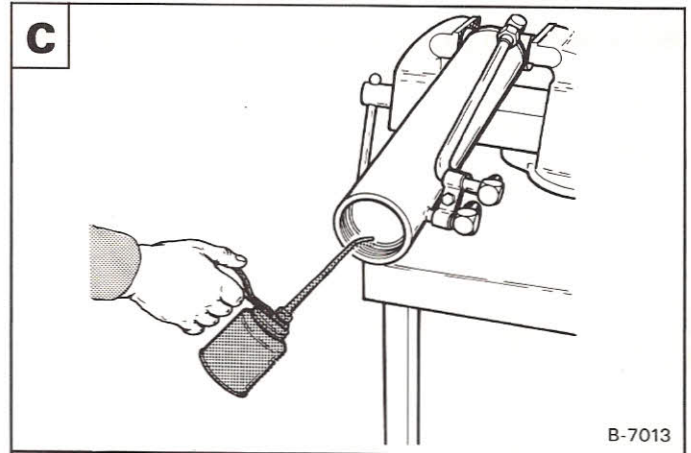
See Page 15 for the correct torque specifications.

Remove the rod from the vise.

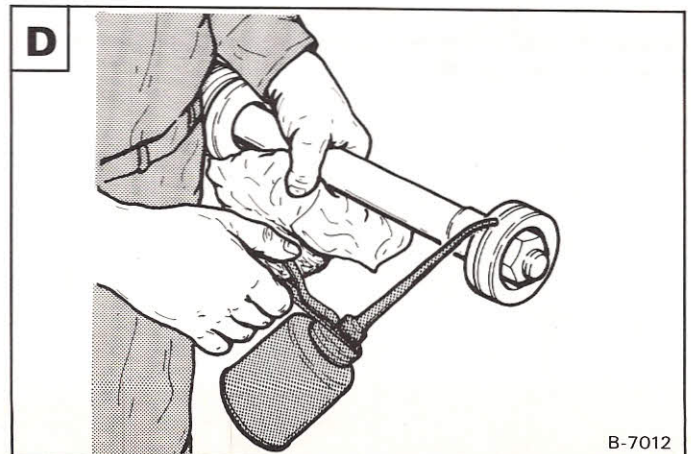
Install the cylinder case in the vise.



Put oil on the seal surface of the cylinder case **C**.

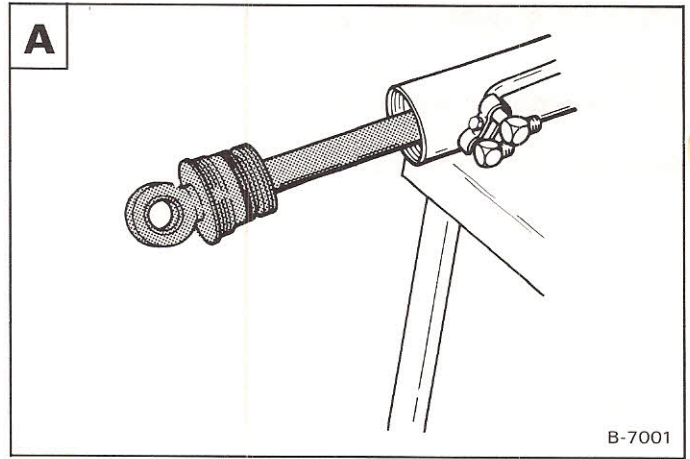


Put oil on the Teflon seal on the piston **D**.



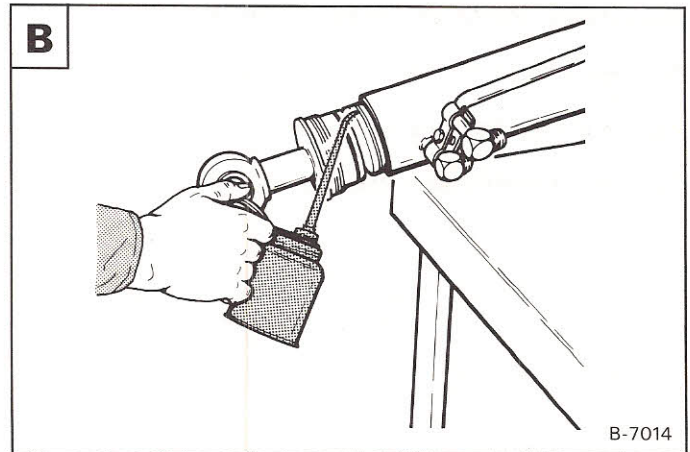
HYDRAULIC CYLINDER (Cont'd)

Install the rod assembly in the cylinder case **A**.

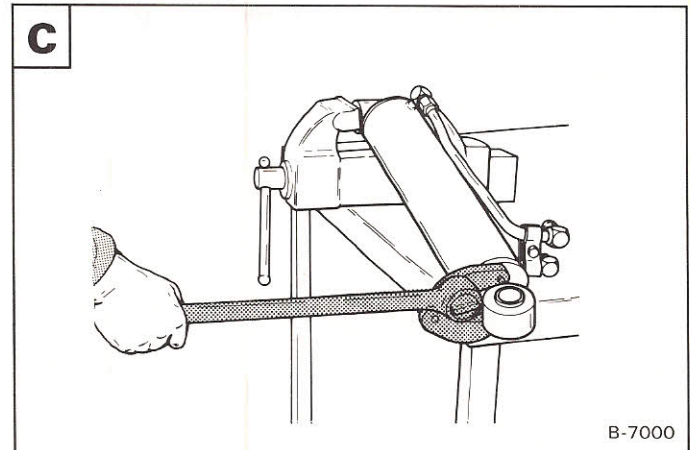


Put oil on the seals on the head **B**.

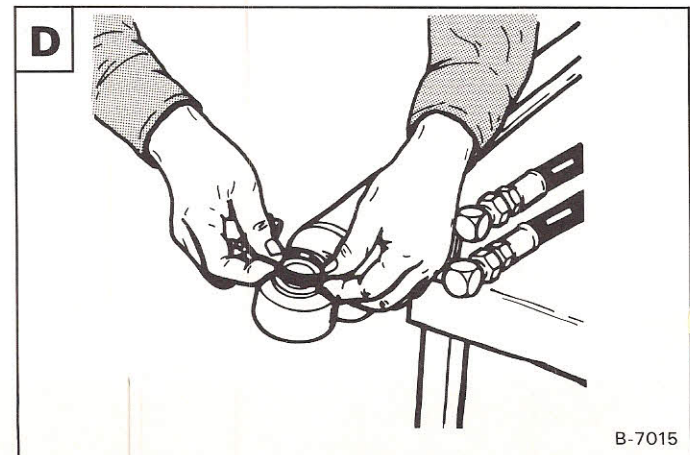
Put oil on the threads of the head.

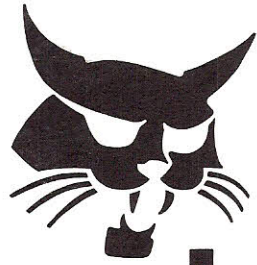


Use the adjustable gland nut wrench to tighten the head **C**.



Replace the seal on the rod end (if so equipped) if it shows signs of wear or damage **D**.





bobcat

NOTES

Lined paper template with horizontal lines for writing.

