ALLIED
Construction Products, LLC

TECHNICAL MANUAL

Manual Part No. 002048
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HOLE-HOG Model 218C

Allied Hole-Hog, Model 218C

Document Change Notice

Date	Page	Change
11/05/99	19 thru 45	Updates to Disassembly, Assembly and Maintenance
02/04/03	Throughout	Update to CE Compliance and specifications

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SECTION 1.0 INTRODUCTION

Hole-Hog Technical Manual: Part Number 002048

This Technical Manual is applicable to Hole-Hog:

Model: 218C

Years of Manufacture: 1993 and beyond

Serial Number(s)_____

This manual contains important information for the safe use and maintenance of the Allied Hole-Hog. Read this manual thoroughly before installing, operating or servicing the Hole-Hog. This manual must be easily accessible to operators or service and transport personnel. Store this manual in a convenient location.

Pay careful attention to all instructions and follow all governing regulations. Operation or service other than in accordance with these instructions may subject the Hole-Hog to conditions beyond its design capability. Improper operation, service or the use of non-Allied parts may result in Hole-Hog failure or personnel injury.

1.1 Safety Information

When using the Hole-Hog, underground safety procedures such as the location of existing underground service lines, cables and conduit must be followed. See Sections 4.0 and 5.0 for further safety guidelines.

Pay particular attention to WARNINGS and CAUTIONS, identified with this symbol.

These instructions are important for personnel safety and full service life of the Hole-Hog. Follow them carefully.

1.2 Warranty Information

Warranty coverage of the Allied Hole-Hog, depends on proper maintenance and operation of the Hole-Hog as detailed in this manual. Improper maintenance or operation shall void Hole-Hog warranty coverage. Immediately upon receipt of the Hole-Hog, read all Allied warranty documents delivered with the unit for a thorough understanding of warranty coverage.

Record the Hole-Hog Serial Number in the space provided above.

1.3 Allied Product Policies

Allied reserves the right to make modifications to the design or changes to the specifications without prior notice.

In this manual, Allied recommends Hole-Hog applications, maintenance and service consistent with industry practices. Allied takes no responsibility for the results of actions not recommended in this manual and specifically the results of:

- Operation in non-recommended applications
- Incorrect operation
- Improper maintenance
- Use of service parts not approved or supplied by Allied.

These exclusions apply to damage to the Hole-Hog, associated equipment, and injury to personnel.

SECTION 2.0 OVERVIEW

The Allied 218C Hole-Hog is a pneumatically propelled, reversible, ground piercing tool designed to pierce continuous, blind horizontal, inclined and vertical holes in compressible soils. With optional attachments, the Hole-Hog can also be used to install or remove rigid pipe from the ground.

The tool consists of three primary sections: Body/Anvil, Striker and Tail Assembly. A simple reversing mechanism allows the operator to easily change the tool's direction from forward to reverse.

2.1 Body/Anvil

The body/anvil forms the majority of the Hole-Hog's exterior. It consists of the anvil and the body. Refer to Figure 2-1. The body/anvil is the ground contact surface. Wear of this component is expected and normal. The body is internally threaded at the rear for attaching the Tail Assembly.

The anvil is the conical surface that forms the front of the body/anvil. The anvil is pressed into the body, and cannot be removed from the assembled body/anvil.

2.2 Striker

The striker is moved by air pressure back and forth within the body. Internally, the striker impacts either the anvil in the front or the tail assembly in the rear to propel the Hole-Hog through the ground.

2.3 Tail Assembly

Except for the Striker, the Tail Assembly contains all internal operating components, including the reversing mechanism . The external threads of the Tail Assembly's End Cap secure the Tail Assembly to the Body/Anvil. The Whip Hose attaches to the other end of the Tail Assembly. Hole-Hog service and repair require removal of the tail assembly to access the serviceable parts.

2.4 Difference Among 218C Models.

This manual covers all Allied Hole-Hogs with the model number 218C. There is one significant difference among the Hole-Hogs with this model number: newer units have an extended End Cap. Also, additional tools are added to the Tool Kits for the newer units. Two serial number groups cover this difference:

02649 and Below

- Have the short End Cap.

02650 and Above

- Have the extended End Cap
- Have a new Tool Kit

These differences affect only four sections of the manual:

- Disassembly
- Assembly
- Field Maintenance
- Parts and Warranty Information

Notations in these sections indicate the parts that apply specifically to a serial number group. The parts not annotated and information in the other sections of the manual apply to all Hole-Hogs regardless of unit serial number.

The short and extended End Caps are interchangeable. The short End Cap is no longer manufactured. When an End Cap is ordered, the new, extended End Cap is supplied.

SECTION 3.0 SPECIFICATIONS AND DECALS

3.1 Specifications

Outside Diameter: 2-1/8 in. (60.3mm)

Overall Length: . . . 40 in. (1016mm)

Weight: . . . . . 28 lbs. (12.7kg)

Operating Air PSI *:90 psi(6.3 kg./cm^2)

Air Consumption/Min.: 20 cfm (.57m^3)

Whip Hose
(inside diameter):. . . ½ in. (12.7mm)

Recommended Delivery Hose
(inside diameter): . . .3/4 in. (19 mm)

Percussion Rate Per Minute: . . . 535

* Pressure required at the tool. Allow 5 psi (0.4 kg/cm^2) pressure drop for each 100 ft. (30m) of hose. Pressure above 100 psi (7 kg./cm^2) at the tool decreases the life of the Hole-Hog.

3.2 Minimum Recommended Operating Depths

Hard Glacial Clay . . . . . 18 in.

Clay/Sand Mix. . . . . 18 in.

Wet/Dry Sand . . . . . 24 in.

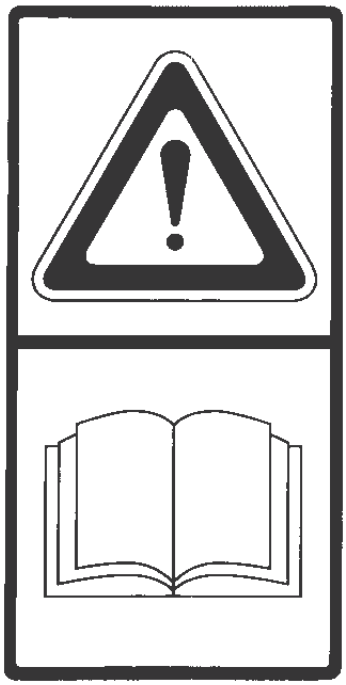
Cultivated Soil . . . . . 24 in.

Clay/Loam Mix . . . . . 20 in.

The Hole-Hog operates best in compactable soils. The minimum depth of operation varies with soil conditions and the length of the hole. The chart above is intended as a guide only. Specifications subject to change without notice.

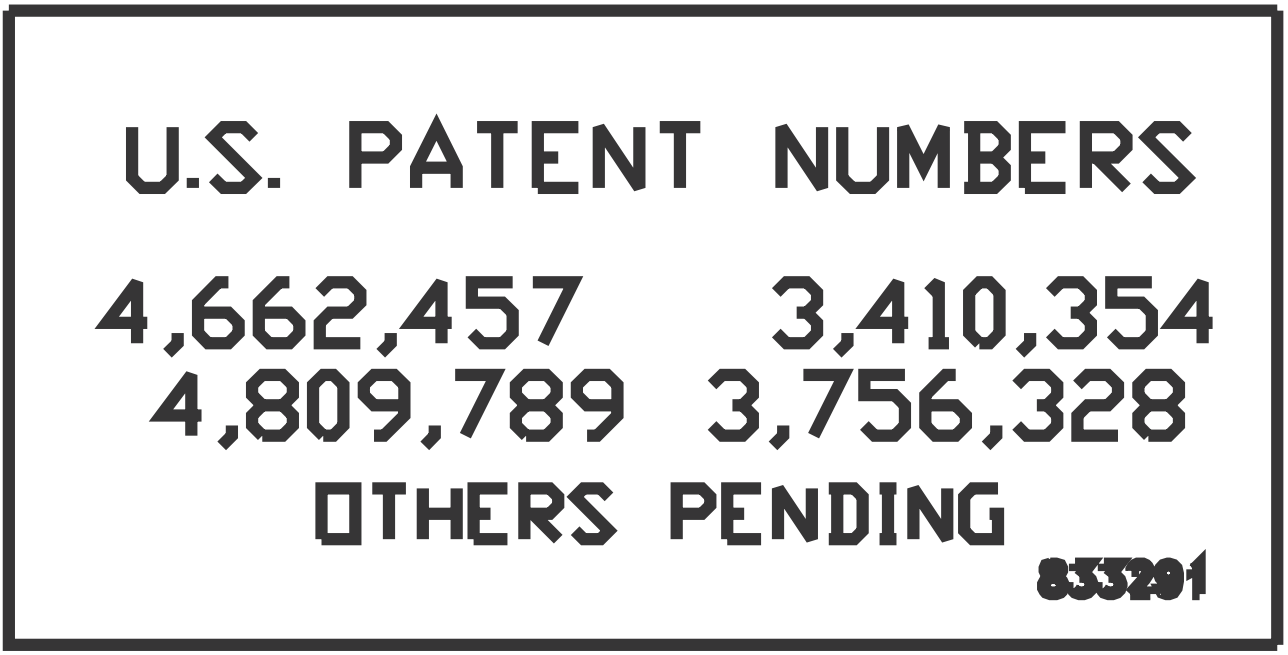
Figure 3-1. Major Components: Hole-Hog, Model 218C

3.3 DECAL IDENTIFICATION



IMPORTANT! Read Technical Manual.
Follow Instructions, Cautions and Warnings.

Made in USA



Hole-Hog patent numbers.

Hole-Hog®

Model:
Serial Number:
Year:
Mass (kg):

ALLIED 3900 Kelley Avenue, Cleveland, Ohio 44114 USA

Hole-Hog CE Serial Number Plate

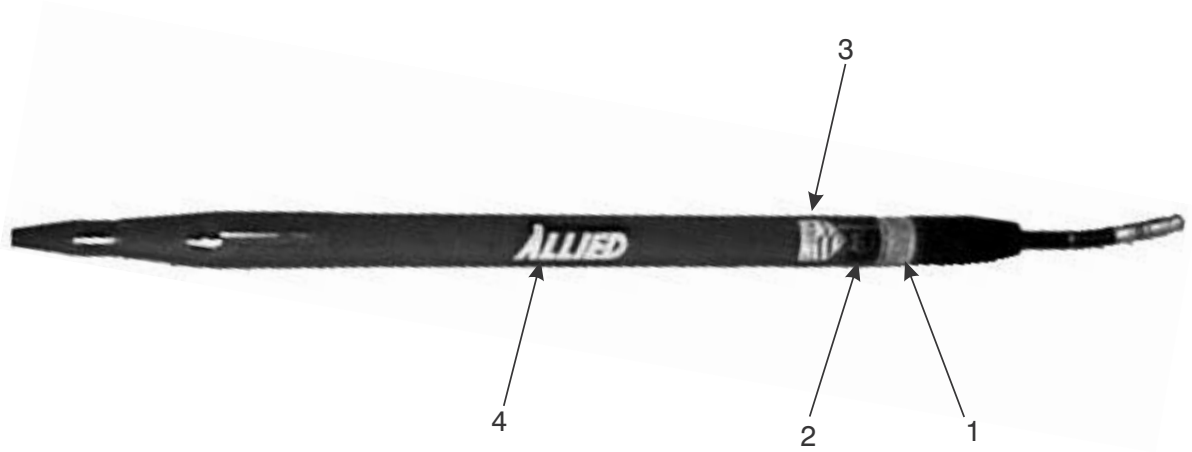


Figure 3-2. Hole-Hog Decal Location

Hole-Hog Decal Kit Part No. 833295			
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	676984	Decal - Read Instructions
2	1	833291	Decal - Hole-Hog Patents
3	1	815696	Decal - Made in USA

SECTION 4.0 GENERAL CONSTRUCTION SAFETY

4.1 Owner's Responsibilities

The equipment owner shall:

- Provide this technical manual to the Hole-Hog operators.
- Train all operating personnel and enforce the procedures explained in this manual, especially regarding safety to personnel and equipment.
- Adapt these general instructions to specific applications.

4.2 General Construction Safety

Follow standard safety precautions expected and required of those working in construction, including but not limited to: locating existing underground service and utility lines, establishing pedestrian barriers and using personnel protection equipment, etc.

4.3 Federal, State, Local and OSHA Construction Guidelines and Regulations

Use the Hole-Hog in accordance with all federal, state and local regulations regarding construction practices and public safety. Identification of, and compliance to, governing regulations are the responsibility of the owner and operator.

In the United States, comply with the recommendations of the Occupational Safety and Health Administration standards of the U.S. Department of Labor. For OSHA construction guidelines contact your local federal government office or write:

U.S. Government Printing Office
Superintendent of Documents
P.O. Box 371954
Pittsburgh, Pa. 15250

Ask for Construction Industry OSHA Standards Stock #869-034-00107-6.

4.4 General Safety Summary

The safe and effective use of any heavy construction equipment depends upon proper installation, operation, maintenance and repair. Operational safety must encompass all of these factors. Section 5.0 includes minimum safety policies the Hole-Hog owner shall establish for all Hole-Hog installations. The operational safety program must be tailored by the Hole-Hog owner to the specific site and application. Such a program will result in increased equipment life and performance and reduced downtime. Most importantly, it will reduce the risk of equipment damage and personnel injuries.

4.4.1 CAUTIONS and WARNINGS.

Throughout this manual detailed CAUTIONS and WARNINGS are included with the instructions and procedures. Even experienced service technicians are to review these CAUTIONS and WARNINGS prior to performing a procedure. These are highlighted by the symbol shown here.

WARNING

Instructions preceeded by this symbol identify hazards to personnel. WARNING instructions must be followed to ensure safe handling and operation. These instructions shall be followed at all times. Improper operation or servicing can result in personal injury. Read this manual thoroughly before operating or maintaining the Hole-Hog.

CAUTION

Instructions identified with this symbol are important to prevent damage to equipoment and to maintain full service life of the Hole-Hog. Follow them carefully. Operation or service not in accordance with these instructions may subject the Hole-Hog to conditions beyond its design capability. Read this manual thoroughly before operating or maintaining the Hole-Hog.4.4.2 Personnel Precautions

4.4.2 Personnel Precautions

- Always wear safety glasses and protective clothing when operating or handling the Hole-Hog.
- All personnel in the immediate area must wear ear protection.

SECTION 5.0 HOLE-HOG SAFETY PRECAUTIONS

5.1 Receiving A New Hole Hog

The Hole-Hog is delivered assembled, lubricated, and factory tested. Inspect for possible shipping damage. Pay particular attention to the hose.

WARNING

Ensure that the End Cap is properly tightened. A loose End Cap could blow out with damaging force causing injury to the operator and bystanders. Before operation, check the tightness of the end cap using the proper tools and torque (Section 9.13, Steps 10, 11, and 12).

CAUTION

If the end cap becomes loose at any time, do not retighten. Remove end cap and clean thoroughly. Pay special attention to cleaning the threads of end cap and body. Lubricate threads as instructed in the maintenance section, then reassemble according to Section 9.8

It is recommended that the air hose be connected to an air compressor of sufficient capacity and the Hole-Hog operated above ground momentarily.

5.2 Record The Serial Number

Upon receipt of the Hole-Hog, record the Serial Number, as listed on the shipping papers, in the space provided in Section 3.1.

5.3 Hole-Hog Use

The Allied Hole-Hog is an underground peircing tool used to pierce underground holes and to drive pipe. Do not use the Hole-Hog in any manner not described in this manual. Personal injury may result from improper use of the Hole-Hog.

5.4 Lifting and Blocking Precautions

The assembled Model 310 Hole-Hog covered in this manual is heavy; refer to Section 3.0 Specifications. Even when disassembled, components such as the Body/Anvil and Striker are heavy enough to cause serious bodily injury if not handled with caution.

When handling and lifting these Hole-Hogs, follow all precautions normal to the lifting and operating of heavy equipment with particular attention to the following.

- Always use sufficient blocking to prevent accidental or sudden movement of the Hole-Hog or its components.
- Always prevent the Hole-Hog and its components from rolling when they are placed on a horizontal surface.
- Always use suitable lifting equipment to insure the safety of personnel and avoid damage to the Hole-Hog or its components.
- Any unit over 88 pounds (40kg) cannot be lifted manually. Use slings on either end of the Hole-Hog as shown in Figure 6-1 to lift the Hole-Hog in and out of the trench.

- Never stand under Hole-Hog being lowered into trench.
- Always wear gloves and keep hands and feet away from pinch points.
- Hole-Hog surface may be extremely hot or cold. Always wear gloves or burns may result.
- Always wear a hard-hat when any part of the Hole-Hog will be lifted above waist level.
- When manually handling the Hole-Hog or its components, make sure enough personnel are used to safely distribute the strain among them. Make sure they are wearing the following safety items.
  - Steel-toed shoes suitable to protect the arch as well as the toes.
  - Kidney belt wide enough and tight enough to protect against herniating internal organs and lower back.

5.5 Operating Precautions

- Daily, before operation, check the tightness of the end cap using the proper tools and tightening method as described in Section 9.13, Steps 10, 11, 12. A loose end cap could blow out with damaging force, injuring the operator or bystanders.
- Daily, before operation, check the tightness of the anvil cap on models with a threaded anvil; refer to Section 9.9.
- Observe all safety precautions outlined in the air compressor operating manual.
- The owner/operator/contractor is responsible for locating underground utilities.
- Do not attempt to pierce a hole in frozen ground.
- Entrance and exit pits may be unstable and dangerous. These trenches must be shored to meet federal, state and local guidelines. Allied's TrenShore is recommended.
- The work site must be properly illuminated to provide enough light to work safely.
- There shall be a safety person at the compressor to shut the unit down in case of emergency. The operator and safety person shall have agreed upon hand signals to indicate the necessity of immediate shut down.
- Be aware of Hole-Hog travel distance by marking air supply hose. Place marking tape at two foot intervals on the hose to monitor travel.
- Check air supply hose periodically for fitting and hose damage.
- Serious injury from flying debris may result if personnel are in line with the Hole-Hog exhaust. Stand clear.
- Never stand directly over the Hole-Hog air supply hose. Retain hoses to protect against whipping in case of failure.
- Never pull on whip hose or air compressor hose to move or position Hole-Hog. Injury could result from broken or separated hoses.

SECTION 6.0 OPERATION

6.1 Operating Overview

There are 9 steps in piercing an underground hole with a Hole-Hog :

- Review all safety precautions.
- Select a safe path for the hole to be pierced.
- Dig an entrance pit at one end of the path.
- Dig an exit pit or set a target marker at the other end of the path.
- Prepare the Hole-Hog and air supply lines.
- Place the Hole-Hog in the entrance pit and align it with the target or exit hole.
- Operate the Hole-Hog until it completes the hole.
- Remove the Hole-Hog.
- Install material into the pierced hole.

6.2 Operating Guidelines

When performing each of the the steps listed in 6.1, pay particular attention to the related guidelines below.

6.2.1 Safety Precautions

Review the safety sections, 4.0 and 5.0, of this manual. Perform all operations according to the precautions and recommendations described in these sections.

WARNING

Use extreme caution working with electric and gas lines. Cutting a utility line could cause serious injury or death.

6.2.2 Select a Safe Piercing Path

Plan and mark the complete piercing path and the depth of the hole prior to starting Hole-Hog operation.

1. Locate all utility lines: water, electric, gas and sewer lines, in the area to be penetrated.
2. Select the shortest possible path under the obstacle (road, walk, driveway, etc.).
3. Determine the depth (elevation) of the hole to be pierced.
   a. Refer to 3.2 Minimum Recommended Operating Depths.
   b. Identify the type of soil to be pierced and the minimum depth of the hole.
   c. If possible, select a hole depth well below the minimum. In some soils, the Hole-Hog may raise while piercing a shallow hole.
   d. When the piercing path is very long through low density soil, the hole depth should be as deep as practical for the application.
   e. Do not attempt to pierce a hole through frozen ground. However, a hole can be peirced under the frost line.

6.2.3 Prepare Entrance Trench

WARNING
Entrance and exit trenches may be unstable and dangerous. These trenches must be shored to meet federal, state and local guidelines or injury to personnel could occur.

Excavate the entrance trench to the depth, width and length required to properly align the piercing tool and work comfortably. Shore entrance trench to meet safety guidelines. Allied's TrenShore is recommended.

Trench length should:

- Allow enough room for the operator to push the Hole-Hog into the wall to be pierced, approximately one foot beyond the end of the whip hose.
- Permit a soft bend in the Whip Hose. Do not crimp the air supply.

6.2.4 Prepare Exit Pit or Target

Excavate the exit pit. The length, width, and depth of the exit pit should exceed the entrance pit dimensions by 6 in. to 10 in./152mm to 254mm.

In cases where the exit pit length is limited and for blind holes, the unit is reversed and drives itself back out through the pierced hole.

6.2.5 Prepare The Hole-Hog and Air Hose

1. Refer to Section 10.0 Maintenance and perform Daily and Preventive Maintenance.
2. Review all of Section 7.0 Lubrication. Startup Lubrication, paragraph 7.1 must performed at the beginning of piercing operations, paragraph 6.2.7
3. To monitor Hole-Hog travel along the piercing path, mark the air hose in two ways.
   a. Place tape at two foot intervals along the hose.

      This provides an indication of how far the Hole-Hog has traveled along the path.

   b. Measure the total length of the piercing path. Measure that length from the piercing tip, back along the Hole-Hog and hose. Make a special tape mark at that point.

      This provides an indication of when the piercing tool should reach the exit point. It will also indicate if the tool has been deflected off course.
4. Connect air supply hose to compressed air supply and purge air hose.

6.2.6 Position and Aim The Hole-Hog

1. Verify that the bottom of the entrance pit is at the depth (elevation) determined in 6.2.2, step 3.

WARNING
Do not manually lift any unit over 88 pounds (40kg). Use slings on either end of the Hole-Hog to lift the Hole-Hog in and out of the trench.

WARNING
Do not stand under Hole-Hog being lowered into trench. The Hole-Hog could fall and cause serious injury or death.

2. Lower the Hole-Hog into the entrance trench with slings, as shown in Figure 6-1., with the piercing tip just touching the wall to be pierced.

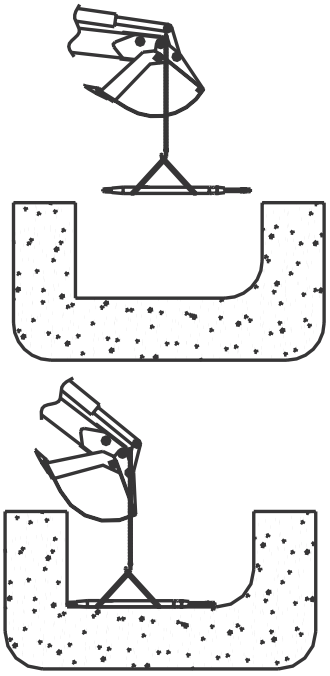


Figure 6-1. Lifting the Hole-Hog

3. Align the length of the Hole-Hog with the center of the exit pit or target at the other end of the piercing path.

4. The nose of the tool must be pitched down to compensate for a tendency of the tool to raise along the path.

   The amount of pitch depends on the length of travel and the soil type. Normally one half a bubble on a construction level is sufficient.

5. Block the Hole-Hog in this position.

WARNING
Always wear safety glasses, gloves and protective clothing when operating or handling the Hole-Hog to prevent injury from flying debris.

WARNING
All personnel in the immediate area must wear ear protection to protect the ears from the noise of the compressor and the Hole-Hog.

WARNING
Do not stand in the Hole-Hog exhaust. Serious injury from flying debris may result. Stand clear.

WARNING
Do not stand behind Hole-Hog. If an obstruction is hit, the unit could kick back and cause serious injury.

WARNING
Never pull on whip hose or air supply hose**.** Serious injury could result if hoses break or separate.

WARNING
Hole-Hog surface may be extremely hot or cold. Always wear gloves or burns may result.

6.2.7 Piercing The Underground Hole

1. To “wet” the air line, pour a small amount of Allied Hog Wash into air line at the compressor connection and connect it to piercing tool air line.(Refer to Section 7.0 Lubrication.)

2. Quickly turn on the air supply and immediately reduce air pressure to approximately 2/3 of full open and start

piercing tool penetration into the ground. It is necessary to apply force in the direction of motion.

3. After approximately 1/3 of the body length has penetrated into the forward wall of the entrance pit, check alignment on target and pitch using suitable level. Refer to paragraph 6.2.6, step 4 for the proper pitch.
4. Restart air supply to piercing tool. If tool fails to start, simply open and close the quick-acting valve to create pulses of air to start the tool.
5. Continue checking alignment and pitch (steps 3 and 4) until the Hole-Hog is completely enveloped by the forward wall of the entrance pit.
6. Increase air pressure to 100 psi (7.0kg/cm^2) and complete hole penetration. Never exceed 100 psi (7.0kg/cm^2). Pressures above 100 psi (7.0kg/cm^2) decrease tool life.
7. Monitor Hole-Hog progress along the piercing path. Use the 2-foot tape markers on the air hose to estimate the length of hose used and progress along the path.
8. The Hole-Hog can be stopped or deflected from its path by some underground obstacles.
   - If the Hole-Hog stops moving along the path, it has hit an obstacle.
   - If total path marker on the air hose is reached but the Hole-Hog has not reached the target or exit pit, the Hole-Hog has been deflected by an obstacle.

In either case:

a. Retrieve the Hole-Hog by reversing Hole-Hog direction as described in paragraph 6.2.8.

WARNING

Locate all utility lines before starting operation of the Hole-Hog. Use extreme caution working with electric and gas lines. Cutting a utility line could cause serious injury or death.

Verify location of all utilities before starting a second hole.

b. Pierce another hole that will bypass the object, repeating steps 6.2.6 and 6.2.7. In extreme circumstances it may be necessary to relocate the entrance or exit pit.

9. When the Hole-Hog reaches the exit pit or target, stop compressed air delivery by closing the air supply valve.

   DO NOT REMOVE THE HOLE-HOG from the exit pit or pierced hole.

10. Before removing the Hole-Hog from the exit pit or pierced hole, verify the means by which the pipe, tube, cable, etc. will be installed in the pierced hole.

    Refer to paragraph 6.2.9 Install Material in the Pierced Hole.

CAUTION

If the end cap becomes loose at any time, do not retighten. Remove end cap and clean thoroughly. Pay special attention to cleaning the threads of end cap and body. Lubricate threads as instructed in the maintenance section, then reassemble according to Section 9.8.

6.2.8 Reversing The Hole-Hog

If the Hole-Hog meets an obstacle or deviates from course, stop the tool and reverse it out of the hole. The tool may also be stopped and returned when a blind hole is required.

To reverse the tool, proceed as follows:

1. Stop compressed air delivery by closing the air supply valve.

CAUTION

Do not pull on the air hose or use hose as a handle. This could damage internal components.

2. With the air supply off, rotate hose assembly 120 degrees counterclockwise. The hose may need to be turned several times to account for hose twist.
3. Open the air supply valve and verify that the tool is in reverse mode.
4. Increase air pressure to 100 psi (7.0kg/cm^2) and drive the tool out of the hole. Never exceed 100 psi (7.0kg/cm^2). Pressures above 100 psi (7.0kg/cm^2) decrease tool life.

6.2.9 Install Material in the Pierced Hole

Many attachments are available for the Hole-Hog. Some of these install materials in the pierced hole; for example: pipe drivers and cable /tube pullers.

If one of these attachments is used to install material in the pierced hole:

1. Refer to the manual provided with the attachment and proceed as instructed.
2. Once the material is installed in the pierced hole, remove and service the Hole-Hog as described in 6.2.10.

6.2.10 Remove and Service Hole-Hog

1. When the Hole-Hog is no longer required for piercing or material installation, proceed as follows:
   a. Stop compressed air delivery by closing the air supply valve.
   b. Disconnect the hose and remove the hose from the hole.

WARNING

Any unit over 88 pounds (40kg) shall not be lifted manually. Use slings on either end of the Hole-Hog as shown in Figure 6-1. to lift the Hole-Hog out of the trench.

   c. Remove the tool from the pit.
2. Clean all mud and other debris from the Hole-Hog. Refer to Section 10.0 Maintenance and perform appropriate procedures.

SECTION 7.0 LUBRICATION

WARNING
Always read and follow lubricant safety precautions. Lubricant is harmful if breathed or swallowed and could cause illness or death. Use caution when applying lubricant.

WARNING
Never use flammable lubricants or in-line cleaners. Explosion and fire could result causing serious personal injury. Flammable lubricants can damage Hole-Hog parts.

To insure proper operation and tool life, the Hole-Hog must be lubricated during use. Allied recommends the use of Allied Hog Wash lubricant or equivalent and de-icing agent dispensed by the Allied Air Line Lubricator. At temperatures below 60°F (15°C), the use of a lubricator and de-icing agent is recommended.

7.1 Startup

Just prior to operation, purge the supply hose of any debris and water. Next, pour approximately 2 ounces (60cc) of Allied Hog Wash into the hose at the compressor and at every 100 ft. (30m) interval. This wets the hose and ensures that lubricant flows into the Hole-Hog. An initial heavy mist of lubricant in the exhaust air may be experienced upon tool startup.

7.2 Normal Operation

During normal Hole-Hog operation, dispense lubricant at the following rate:

- At temperatures below 40°F (5°C): 5 to 7 drops per minute.
- At temperatures above 40°F (5°C): 3 to 5 drops per minute.

After several minutes of operation at the proper lubricant rate, the whip hose should be lightly coated with lubricant. If a heavy mist of lubricant is continuously present in the exhaust air, the lubrication rate is too great. Adjust the lubrication rate accordingly.

7.3 De-Icing

Because the tool is powered by expanding compressed air, a normal cooling effect inside the tool is experienced. Under certain temperature and humidity conditions, the moisture in the compressed air can condense and freeze on internal components. The weather conditions of cool, damp days are ideal for icing problems to develop.

Icing problems can be minimized by conditioning (heating or drying) the compressed air prior to delivery to the Hole-Hog. Consult the air compressor manufacturer for the availability of these accessories.

An early indicator of internal icing is the presence of ice chips in the air exhaust. Excessive icing restricts striker movement which results in erratic or non-performance.

If internal ice buildup is suspected:

1. Stop the air delivery to the tool.
2. Wait several minutes to allow the tool to warm.
3. Prior to restarting the tool, follow the instructions in Section 7.1. This step may need to be repeated if icing is severe.

4. If icing persists, increase the amount of lubricant delivered to the Hole-Hog. The use of a lubricant with a de-icing agent is extremely important under these conditions. Allied Hog Wash is recommended.

SECTION 8.0 DISASSEMBLY

CAUTION

Do not remove the End Cap from the Body/Anvil under field operating conditions. This may expose the internal operating parts to contamination, and reduce the operating life of the Hole-Hog.

CAUTION

Using a pipe wrench on the Hole-Hog Body/Anvil relieves Allied of all warranty responsibilities.

WARNING

Applying heat with a torch or by any other method to any part of the Hole-Hog relieves Allied of all warranty responsibilities. Applying heat can destroy the main body, striker and other parts beyond use. Heating Hole-Hog components can cause altered component strength and result in premature failure, such as ruptures or a blown out end cap. This could cause personal injury or death.

CAUTION

Before starting any of the Disassembly procedures in this section, refer to Section 3.1 and verify the Serial Number of the unit to be disassembled. Refer to sections 8.2 and 8.3 for information about the differences among serial number groups.

8.1 General

The procedures in this section must be performed in a machine shop suitable for the disassembly, cleaning, inspection and repair of pneumatic construction equipment. In addition to the tools and fixtures normally stocked in such a shop, the End Cap Wrench, 830540 and the Allied Tool Kit 830542 must also be available. This Tool Kit is described and illustrated in section 8.4.

In the following procedures, reference numbers in parentheses accompany most part names. These numbers refer to the part item numbers on the exploded views and parts lists in Section 13.0, specifically:

Figure 14-1. Complete Hole-Hog Assembly

8.2 Hole-Hog Serial Numbers

Each Hole-Hog's Serial Number is etched on the Striker. In addition, it is recorded upon receipt by the owner in section 3.1 of this manual. Refer to that section for the Serial Number.

Hole-Hog Serial Numbers are issued sequentially at the time of manufacture. For example: The Hole-Hog with S/N 499 is the four hundred and ninety-ninth unit built. The next unit built would be assigned S/N 500, and so forth.

8.3 Variations by Serial Number

There is a significant difference among the 218C-Series Hole-Hogs covered in this manual. The newer units have an extended End Cap. The new End Cap has been lengthened approximately two inches.

This extension protects the hose and hose fittings during operation. Refer to Figure 8-1. Two serial number groups cover this difference. Hole-Hogs with:

SN 02649 and Below

- Have the short End Cap.
- Require old Tool Kit or use spacer in the new Tool Kit.

SN 02650 and Above

- Have the extended End Cap
- Require the new Tool Kit or at least extended Tools 837615 and 839543.

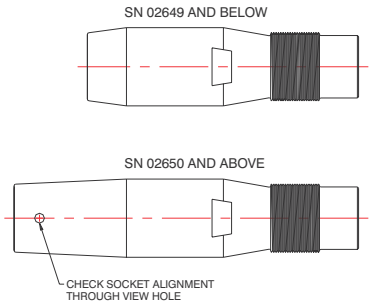


Figure 8-1. Short and Long End Caps.

8.3.1 Extended End Cap Retrofit

The short and extended End Caps are interchangeable. The short end cap is no longer manufactured and the new End Cap retains the old End Cap part number. The new, extended End Cap is supplied on all replacement orders.

8.3.2 Tool Kit Variations

The Disassembly and Assembly Tool Kit (Part Number 830542) has been changed to match the new End Caps. The Shock Absorber Installation Tool, P/N 837615 and the Shock Absorber First Stage Pusher Tool, P/N 830543, have been lengthened.

A Spacer Ring, P/N 101474, has been added to adapt the new, lengthened pusher tools to the old, short End Caps, as illustrated in Figure 8-2.

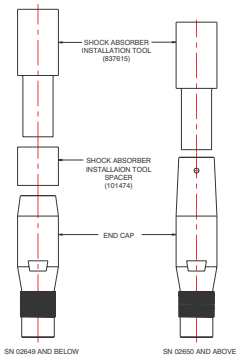


Figure 8-2. Spacer and Short End Cap.

8.4 Disassembly and Assembly Tool Kit Part Number 830542

The tools contained in this kit are listed below and illustrated in Figure 8-3. Items 1 & 2 are lengthened to match the new long End Cap.

1. Shock Absorber Installation Tool (long shank), P/N 837615, quantity 1.
2. Shock Absorber First Stage Pusher Tool, P/N 830543, quantity 1.
3. Shock Absorber Second Stage Pusher Tool (long shaft), P/N 830544, quantity 1.
4. Valve Guide Installation Tool, P/N 830546, quantity 1.
5. Valve Guide Pusher Tool, P/N 830547, quantity 1.
6. End Cap Wrench, P/N 830540, quantity 1.

Used with 218CHole-Hog SN 02649 and Below:

7. Shock Absorber Installation Tool (short shaft), P/N 830545, quantity 1.
8. Shock Absorber Second Stage Pusher Tool (short shaft), P/N 830544, quantity 1.
9. Spacer Ring, P/N 101474, quantity 1.

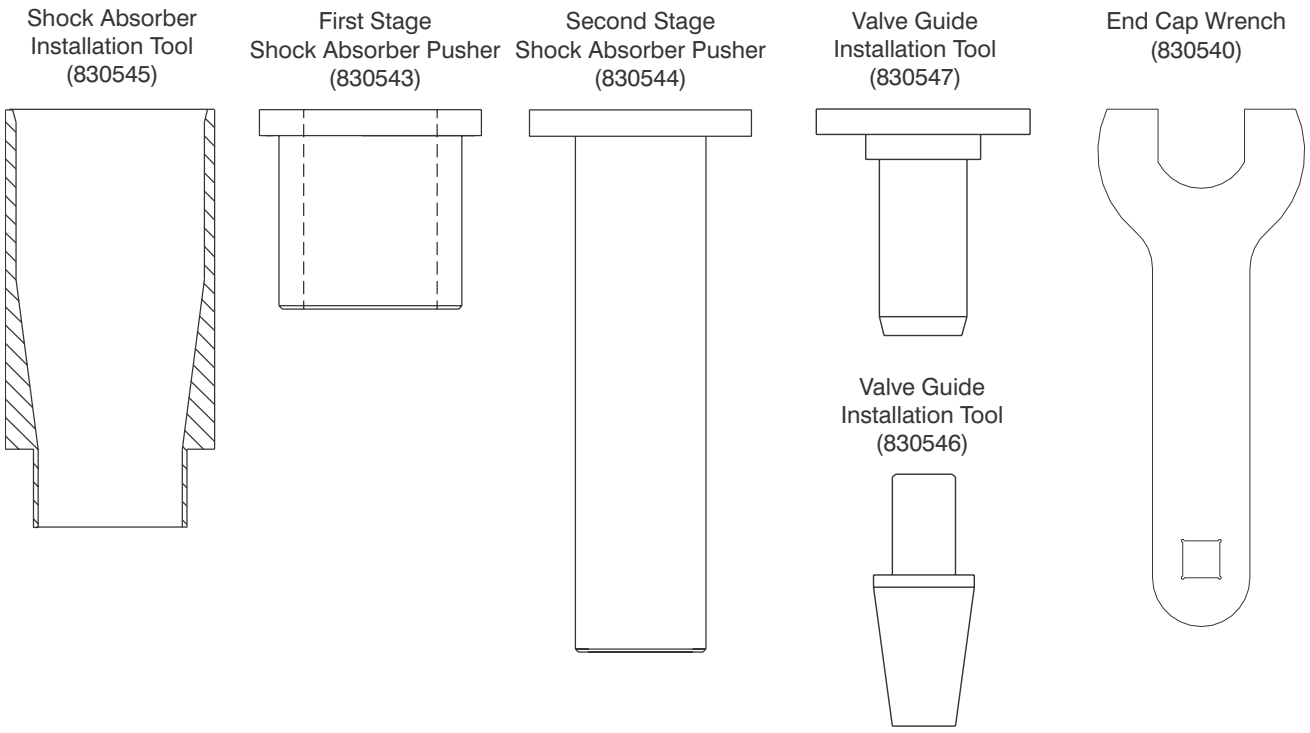


Figure 8-3. Hole-HogTool Kit

8.5 Extent of Disassembly

The procedures explained in this section completely disassemble every replaceable component in the Hole-Hog. Most repairs do not require such a complete disassembly. After removing the Tail Assembly and Striker from the Body/Anvil (paragraph 8.8), clean and inspect the internal components while they are still assembled. After cleaning and inspection, perform only the minimum disassembly required to replace worn or broken parts.

8.6 Whip Hose Replacement

- To Replace the Whip Hose (18) in the field, refer to paragraph 11.12.
- To Replace the Whip Hose (18) as part of shop disassembly, follow the procedures in this section, starting with 8.9.1.

8.7 Replacing The Body/Anvil

When replacing the Body/Anvil (1) only, it is not necessary to disassemble the Whip Hose (18) and tail assembly components.

1. Remove Striker (2) and the assembled Whip Hose (18) and tail assembly as described in paragraph 8.8.
2. Until the new Body/Anvil is installed, place the Striker (2), Whip Hose (18) and tail assembly where they will not be contaminated with dust and dirt. Cover or wrap them in cloth or plastic as required.

8.8 Removing Tail Assembly and Striker

1. Place the Hole-Hog on a level surface. Holding the body/anvil (1) with a strap wrench, use wrench P/N 830540 to loosen the End Cap (16). It may be necessary to strike the wrench handle sev-

eral times with a hammer to loosen the End Cap. Refer to Figure 8-4.

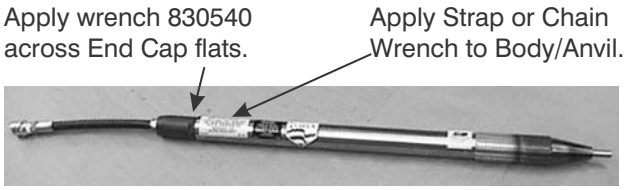


Figure 8-4. Loosening the End Cap.

2. Remove the tail assembly by unthreading the End Cap (16) and pulling the tail assembly from the Body/Anvil (1) as shown in Figure 8-5.

Figure 8-5.Tail Assembly Removed.

3. Place the tail assembly where it will not be contaminated with dust and dirt. Wrap in cloth or plastic if necessary.
4. Tip the Body/Anvil (1) so the end of the Striker (2) slides out of the body/anvil about six to eight inches. (Figure 8-6).

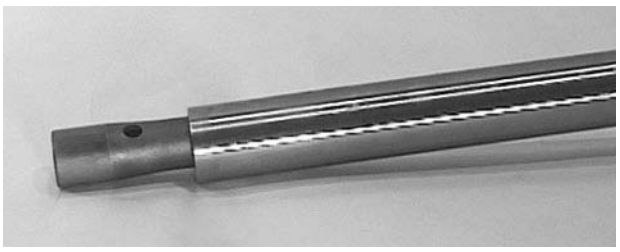


Figure 8-6. Tilting the Body/Anvil to Access the Striker.

5. Once the striker (2) is accessible, lower the body/anvil (1) to the level surface. Pull the striker from the body/anvil by hand as shown in Figure 8-7.

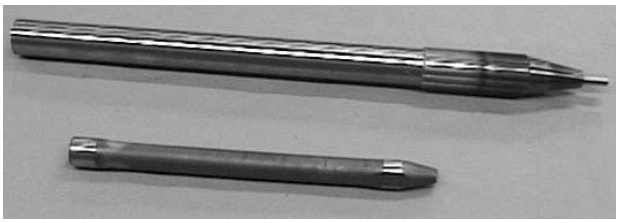


Figure 8-7. Removing Striker from Body/Anvil.

6. Place the striker where it will not be contaminated with dust and dirt. Wrap in cloth or plastic if necessary.

8.9 Disassembling the Tail Assembly

NOTE

DO NOT disassemble components of the tail assembly unless replacement is necessary.

8.9.1 Secure Tail Assembly

1. Before securing the Tail Assembly for disassembly, protect the threads of the End Cap (16) by padding the vise jaws or wrapping the threads with a heavy cloth or canvas.
   a. If a vise is used, install the jaw pads. If jaw pads are not available, tape or bind strips of wood to the vise jaws as shown in Figure 8-8.
   b. If a saddle clamp is used, protect the End Cap threads by wrapping them in thick cloth or canvas.

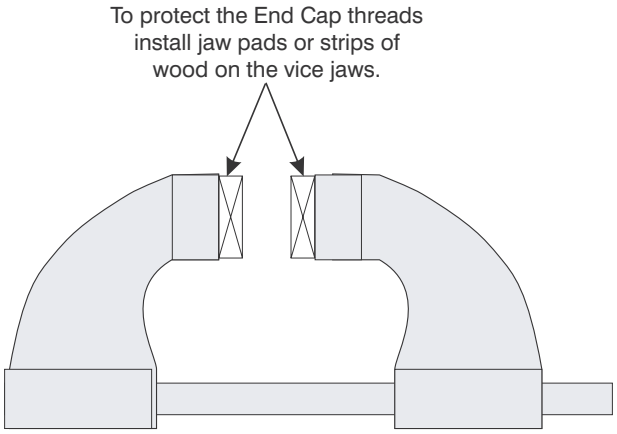


Figure 8-8. Pad the vise jaws to protect the End Cap threads.

2. Place the End Cap (16) horizontally in a vise or saddle clamp as shown in Figure 8-9.

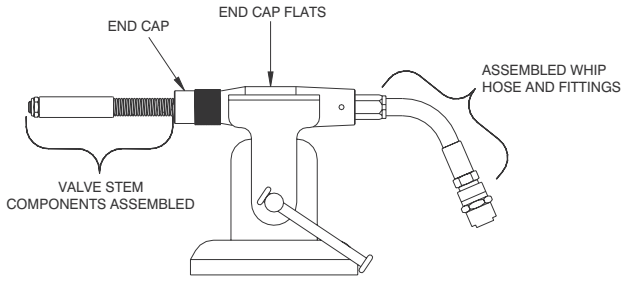


Figure 8-9. Place Tail Assembly in Vise.

a. Place the End Cap between the vice jaws so the jaws grip across the hub near the flats.

b. Place the Whip Hose end of the End Cap so the Whip Hose (18) clears the vise jaws.

c. Clamp the End Cap (16) tight enough to hold the Tail Assembly in place during disassembly.

8.9.2 Remove Whip Hose and End Cap

1. With the End Cap secured as in 8.9.1, hold the Valve Stem (11) at its flats with an 1/2-inch open-end wrench. Refer to Figure 8-10.

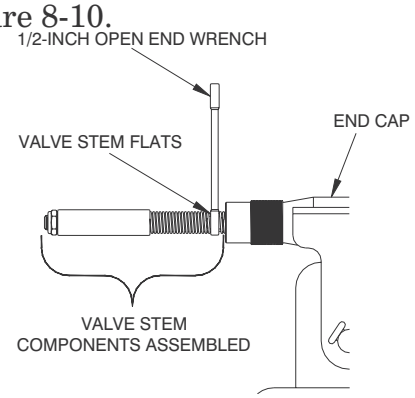


Figure 8-10. Hold Valve Stem Across Flats.

2. Push the Valve (7) toward the End Cap (16) until the flats of the Hose Socket (17) project from the Whip Hose end of the End Cap. Refer to Figure 8-11.

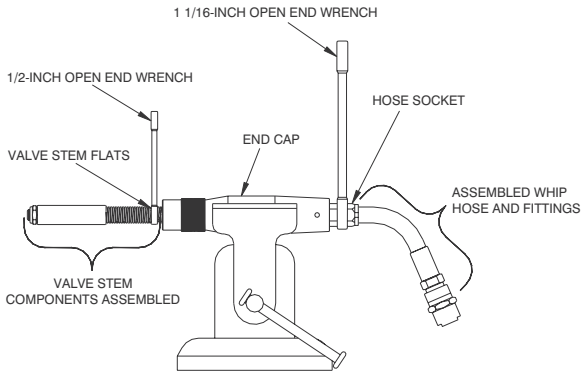


Figure 8-11. Thread the Hose Socket from the Valve Stem.

3. With an xx-inch open end wrench across the flats of the Hose Socket (17), thread the Hose Socket from the Valve Stem. Refer to Figure 8-11.

4. Holding the Bias Spring (9) and Valve (7) in one hand, pull the Valve Stem (11) and its assembled components from the End Cap (17). Refer to Figure 8-12.

Figure 8-12. Remove the Valve Stem from the End Cap.

8.9.3 Disassemble Whip Hose and Fittings

WARNING

Always use Allied's Whip Hose Assembly (see parts list in Section 13.0) or equivalent - 100R2 hose. Failure to use 100R2 hose could result in injury to personnel.

NOTE

DO NOT remove the Whip Hose from the Hose Socket unless replacement of either component is necessary.

1. Clamp the Hose Socket in a vise with the attached Whip Hose standing vertically above the jaws. See Figure 8-13.

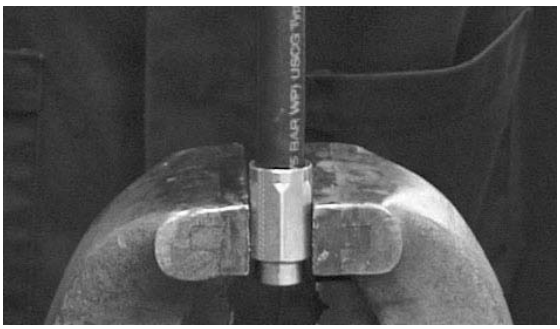


Figure 8-13. Whip Hose Socket in Vise

NOTE

The threads on the hose side of the Hose Socket are left hand threads; turn hose:

- Clockwise to loosen.
- Counterclockwise to tighten.

2. Grip the hose by hand or with a large pliers. Turn the hose clockwise to remove it from the Hose Socket.
3. Using a 1-3/8-inch open-end wrench to hold the Quick Disconnect Socket (20) in place, use a 7/8-inch open-end wrench to loosen and thread the hose fitting of Whip Hose (18) from the Socket. Refer to Figure 8-14.

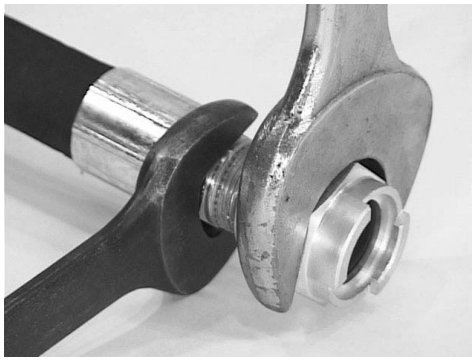


Figure 8-14. Remove Quick Disconnect Coupling Set from Whip Hose.

4. If the Hose Socket was removed from the Whip Hose in steps 1 and 2, discard the Whip Hose.
5. If parts replacement is not required, leave the Quick Disconnect (Q.D.) Couplings assembled. Otherwise, separate the Socket (20) from the Plug (22).
6. As shown in Figure 8-15, use a screw driver or needlenose pliers to pry the Gasket (20) from the Socket. Discard the gasket.

Figure 8-15. Remove Gasket from Socket

8.9.4 Remove Valve Stem Components

NOTE

DO NOT disassemble components from the Valve Stem unless replacement is necessary.

1. Place the Valve Stem (11) and the assembled components on a clean, level surface.
2. Holding the Valve Stem (11) at its flats with a ½-inch open-end wrench, as shown in Figure 8-16, use a 7/8-inch wrench to loosen the Elastic Nut (3).

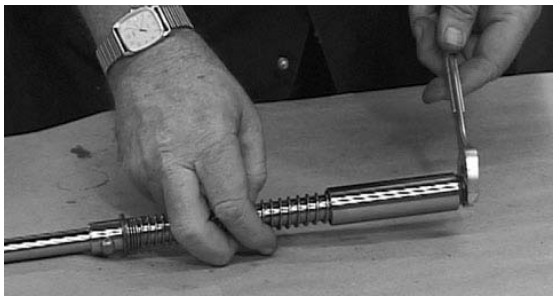


Figure 8-16. Elastic Nut and Valve Stem

3. Thread the Elastic Nut (3) from the Valve Stem (11). Discard the Elastic Nut (3). See Figure 8-17-A.
4. Remove the Spacer (4), Ball Swivel (6) and Swivel Seat (5) from the Valve Stem (11) as shown in Figure 8-17-B.

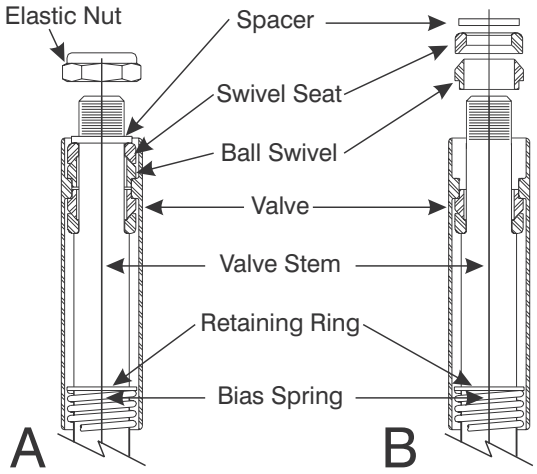


Figure 8-17. Remove Upper Ball Swivel and Seat, and Valve from Valve Stem.

5. Remove the Valve (7) from the Valve Stem (11) as shown in Figure 8-18-A.

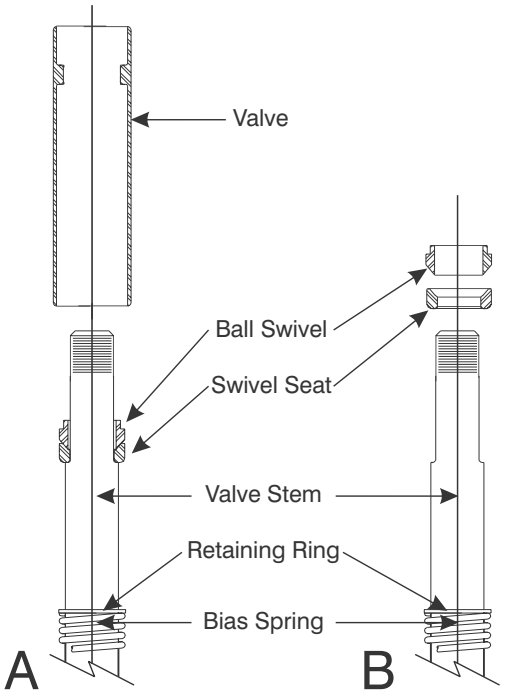


Figure 8-18. Remove the Valve, Lower Ball Swivel, and Seat from the Valve Stem.

6. Remove the Swivel Seat (5) and Ball Swivel (6) from Valve Stem (11) as shown in Figure 8-18-B.
7. Depress Bias Spring (9) and remove Retaining Ring (8). See Figure 8-19.

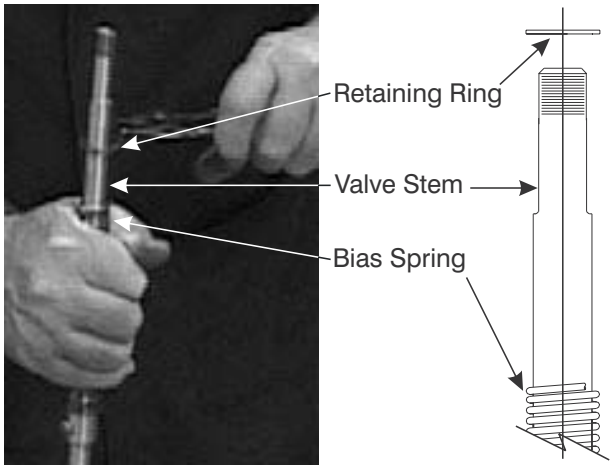


Figure 8-19. Remove Retaining Ring from Valve Stem

8. Slide Bias Spring (9) and the Spring Seat (10) from the Valve Stem (11) as shown in Figure 8-20.

Figure 8-20. Remove Bias Spring and Seat.

9. Refer to Figure 8-21. Do not remove the Dowel Pin (13) from Stem (12). If either are damaged, replace the entire Valve Stem Assembly (11).

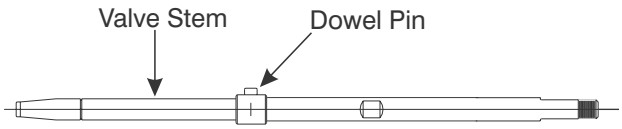


Figure 8-21. Valve Stem Assembly

8.9.5 Disassemble End Cap Components

CAUTION

Removal destroys Shock Absorber. DO NOT remove Shock Aborber(15) and Valve Guide (14) from End Cap (16) unless replacement is necessary.

1. With threaded end down, place the End Cap in the arbor press as shown in Figure 8-22.
   - Support the edges of the End Cap (16) with standard blocking.
   - Provide additional space below the blocking to permit Valve Guide travel during pressing.

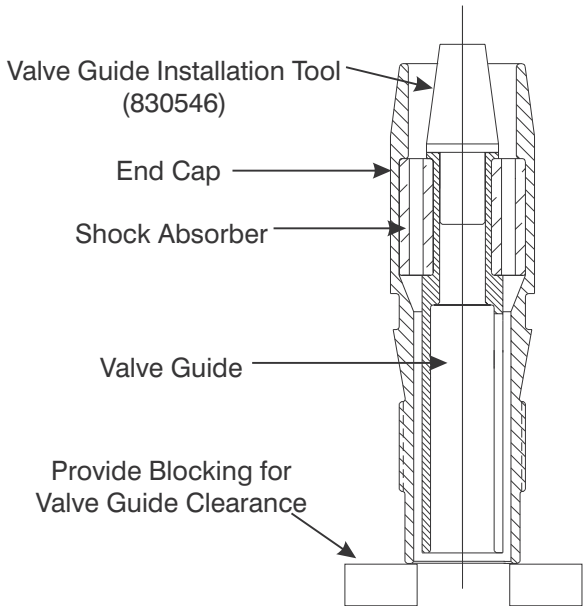


Figure 8-22. End Cap in Arbor Press

2. Insert the Valve Guide Installation Tool 830546 into the Valve Guide as shown in Figure 8-23-A.

NOTE

If the plunger of the arbor press does not fit inside the End Cap as illustrated, use a standard push bar of the required diameter.

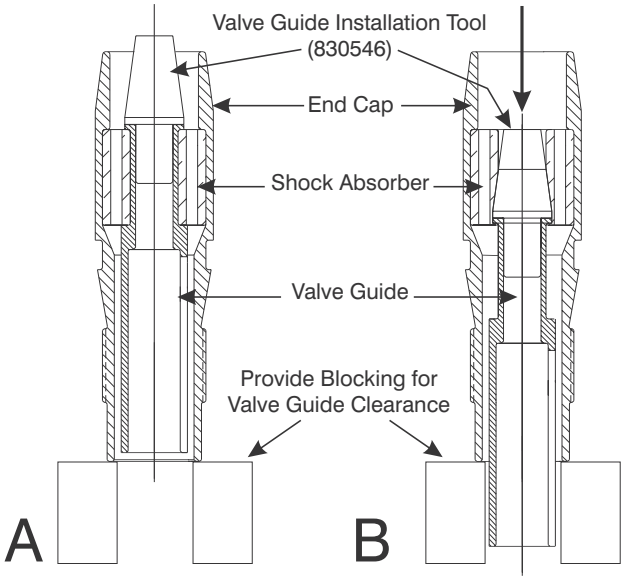


Figure 8-23. Press Valve Guide from Shock Absorber.

3. Press the Valve Guide from the Shock Absorber as shown in Figure 8-23-B.
4. Once started from the Shock Absorber, the Valve Guide can be pulled free by hand.
5. Use a sharp knife or hack saw to cut through the Shock Absorber (15), and remove it from the End Cap. See Figure 8-24 for recommended cutting pattern.

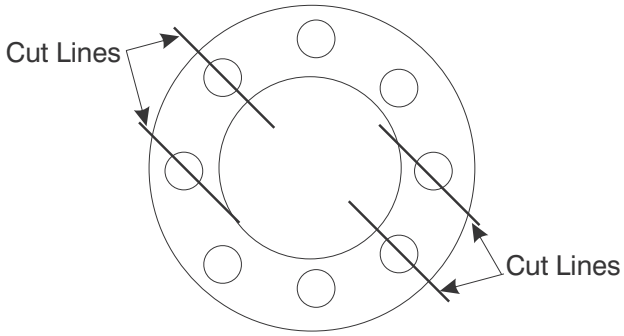


Figure 8-24. Cutting Pattern to Remove Shock Absorber from End Cap

SECTION 9.0 ASSEMBLY

WARNING

Applying heat with a torch or by any other method to any part or parts of the Hole-Hog relieves Allied of all warranty responsibilities. Applying heat can destroy the main body, striker and other parts beyond use. Heating Hole-Hog components can cause altered component strength and result in premature failure or personal injury.

WARNING

Using a pipe wrench on the Hole-Hog Body/Anvil relieves Allied of all warranty responsibilities.

CAUTION

Lubricate all rubber parts & tools with lithium grease before pressing.

CAUTION

Before starting any of the Disassembly procedures in this section, refer to Section 3.1 and verify the Serial Number of the unit to be disassembled. Refer to sections 8.2 and 8.3 for information about the differences among serial number groups.

9.1 General

The procedures in this section must be performed in a machine shop suitable for the disassembly, cleaning, inspection and repair of pneumatic construction equipment. In addition to the tools and fixtures normally stocked in such a shop, the End Cap Wrench, 830540 and the Allied Tool Kit 830542 must also be available. This Tool Kit is described and illustrated in section 9.4.

In the following procedures, reference numbers in parentheses accompany most part names. These numbers refer to the part item numbers on the exploded views and parts lists in Section 14.0, specifically:

Figure 14-1. Complete Hole-Hog Assembly

9.2 Hole-Hog Serial Numbers

Each Hole-Hog's Serial Number is etched on the Striker. In addition, it is recorded upon receipt by the owner in section 3.1 of this manual. Refer to that section for the Serial Number.

Hole-Hog Serial Numbers are issued sequentially at the time of manufacture. For example: The Hole-Hog with S/N 499 is the four hundred and ninety-ninth unit built. The next unit built would be assigned S/N 500, and so forth.

9.3 Variations by Serial Number

There is a significant difference among the 218C-Series Hole-Hogs covered in this manual. The newer units have an extended End Cap. The new End Cap has been

lengthened approximately two inches. This extension protects the hose and hose fittings during operation. Refer to Figure 8-1. Two serial number groups cover this difference. Hole-Hogs with:

SN 02649 and Below

- Have the short End Cap.
- Require old Tool Kit or use spacer in the new Tool Kit.

SN 02650 and Above

- Have the extended End Cap
- Require the new Tool Kit or at least extended Tools 837615 and 839543.

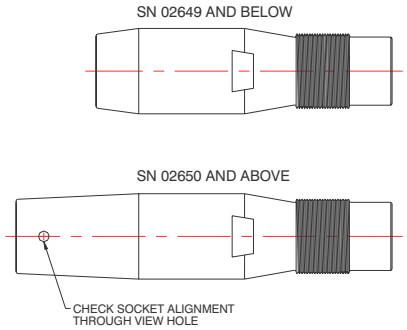


Figure 9-1. Short and Long End Caps.

9.3.1 Extended End Cap Retrofit

The short and extended End Caps are interchangeable. The short end cap is no longer manufactured and the new End Cap retains the old End Cap part number. The new, extended End Cap is supplied on all replacement orders.

9.3.2 Tool Kit Variations

The Disassembly and Assembly Tool Kit (Part Number 830542) has been changed to match the new End Caps. The Shock Absorber Installation Tool, P/N 837615 and the Shock Absorber First Stage Pusher Tool, P/N 830543, have been lengthened.

A Spacer Ring, P/N 101474, has been added to adapt the new, lengthened pusher tools

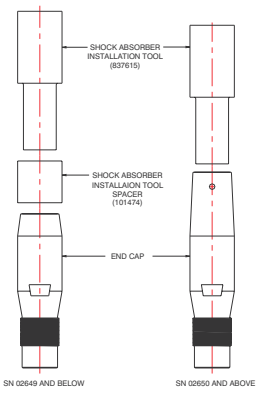


Figure 9-2. Spacer with Short End Cap.

to the old, short End Caps, as illustrated in Figure 8-2.

9.4 Disassembly and Assembly Tool Kit Part Number 830542

The tools contained in this kit are listed below and illustrated in Figure 8-3. Items 1 & 2 have are lengthened to match the new long End Cap.

1. Shock Absorber Installation Tool (long shank), P/N 837615, quantity 1.
2. Shock Absorber First Stage Pusher Tool, P/N 830543, quantity 1.
3. Shock Absorber Second Stage Pusher Tool (long shaft), P/N 830544, quantity 1.
4. Valve Guide Installation Tool, P/N 830546, quantity 1.
5. Valve Guide Pusher Tool, P/N 830547, quantity 1.
6. End Cap Wrench, P/N 830540, quantity 1.

Used with 218CHole-Hog SN 02649 and Below:

7. Shock Absorber Installation Tool (short shank), P/N 830545, quantity 1.

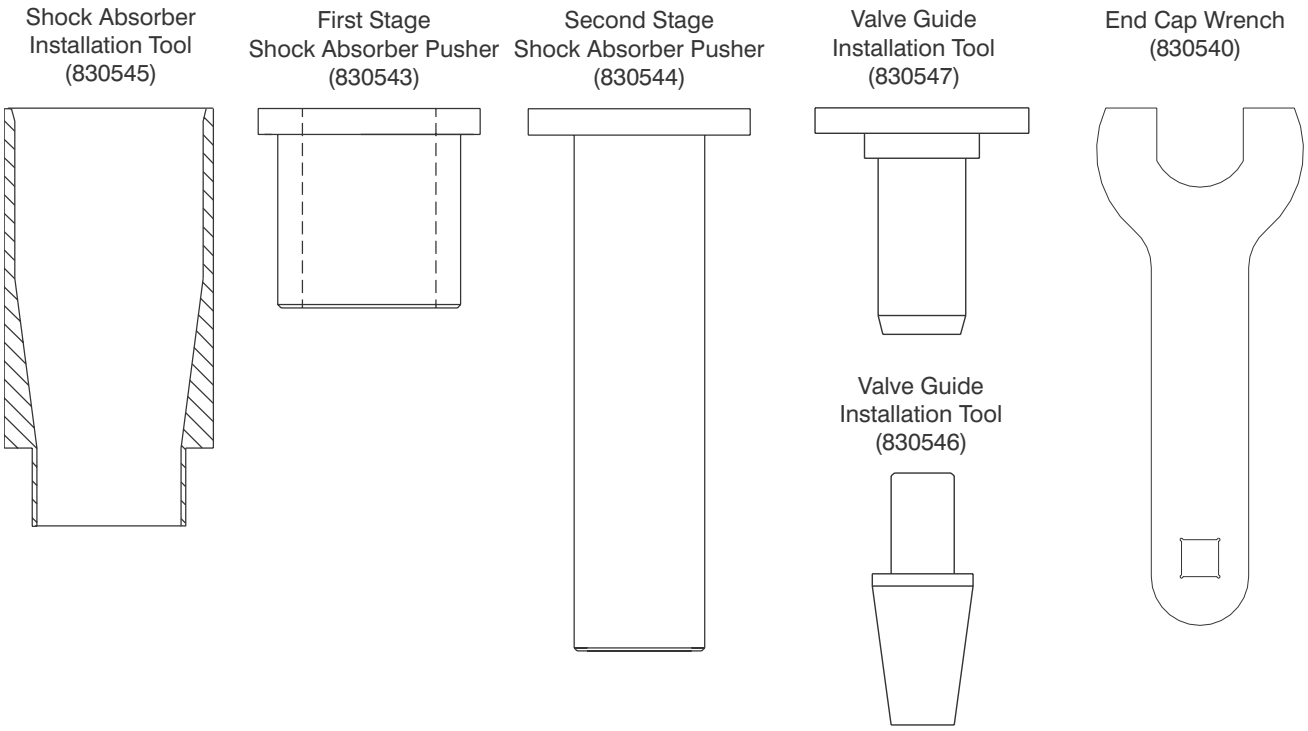


Figure 9-3. Hle-HogTool Kit

8. Shock Absorber Second Stage Pusher Tool (short shaft), P/N 830544, quantity 1.
9. Spacer Ring, P/N 101474, quantity 1.

9.5 Replacing The Body/Anvil Only

When replacing the Body/Anvil (1) only, the Striker (2), the Whip Hose (18) and tail assembly components have all been removed from the Body/Anvil and stored with no further disassembly.

1. When the new Body/Anvil is available, bring the Striker (2), the Whip Hose (18) and tail assembly components to the work area for reassembly.
2. Install all of the assemblies in the Body/Anvil following the assembly procedures in this section, starting with section 9.9.

9.6 Assemble End Cap Components

Installation of the Shock Absorber (15) varies depending on the length of the End Cap (16) and the tool kit available.

When installing the Shock Absorber in Hole-Hogs with serial numbers:

- 2649 and below, and using the tool kit supplied at the same time as the Hole-Hog, refer to paragraph 9.5.1
- 2649 and below, and using a new tool kit, refer to paragraph 9.5.2
- 2650 and above, and using a new tool kit, refer to paragraph 9.5.3

9.6.1 Install Shock Absorber in Hole-Hog with 2649 or below, using the old tool kit

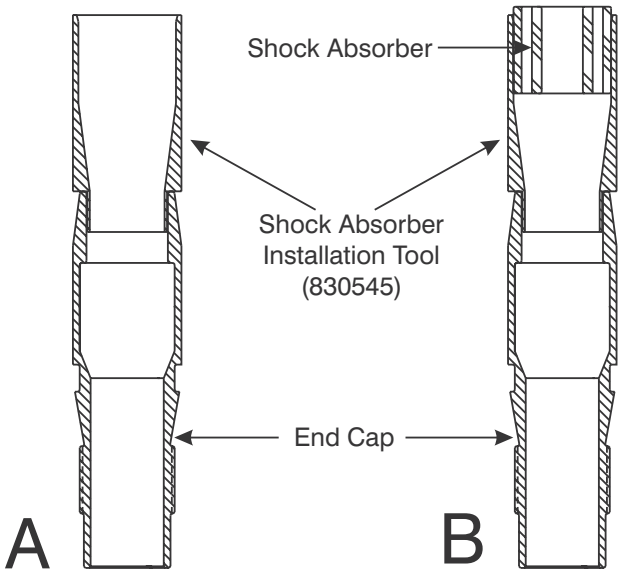


Figure 9-4. End Cap and Tool 837615 in Press

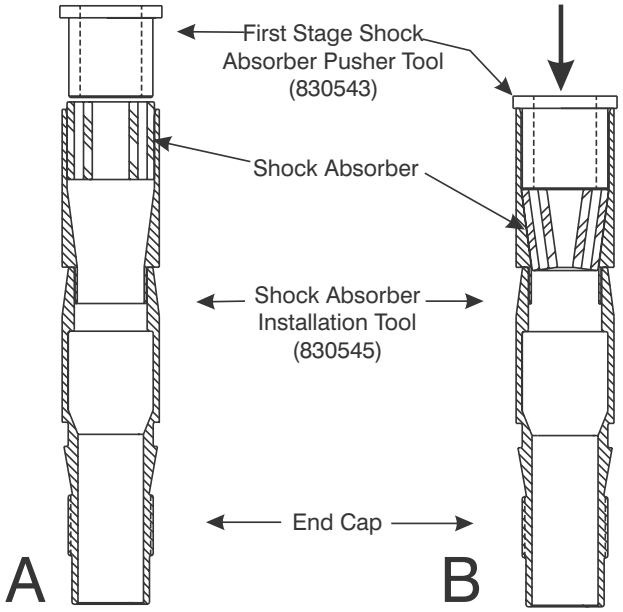


Figure 9-5. Compress Shock Absorber in Installation Tool

1. Position the End Cap (16) in an arbor press with the threaded end down. Insert the Shock Absorber Installation Tool, 830545, into the End Cap as shown in Figure 9-4-A.
2. Lubricate the OD of the Shock Absorber (15) and The I.D. of the Shock Absorber Installation Tool, 830545. Place the Shock Absorber into tool P/N 830545 as shown in Figure 9-4-B.
3. Center the First Stage Shock Absorber Pusher Tool, 830543, over the Shock Absorber as shown in Figure 9-5-A.
4. Compress the Shock Absorber in Installation Tool 830545 as shown in Figure 9-5-B.
5. DO NOT REMOVE the First Stage Shock Absorber Pusher Tool from the Shock Absorber Installation Tool.

   The First Stage Shock Absorber Pusher Tool is used as a centering guide for the Second Stage Shock Absorber Pusher.
6. Lubricate the O.D. of the Second Stage Shock Absorber Pusher Tool, 830544, and the I.D. of the First Stage Shock Absorber Pusher Tool, 830543.
7. Insert the the Second Stage Shock Absorber Pusher Tool, 830544, into the First Stage Shock Absorber Pusher Tool, 830543 as shown in Figure 9-6-A.

CAUTION

When using Tool 830544, DO NOT press Shock Absorber past the seat at the non-threaded end of the End Cap.

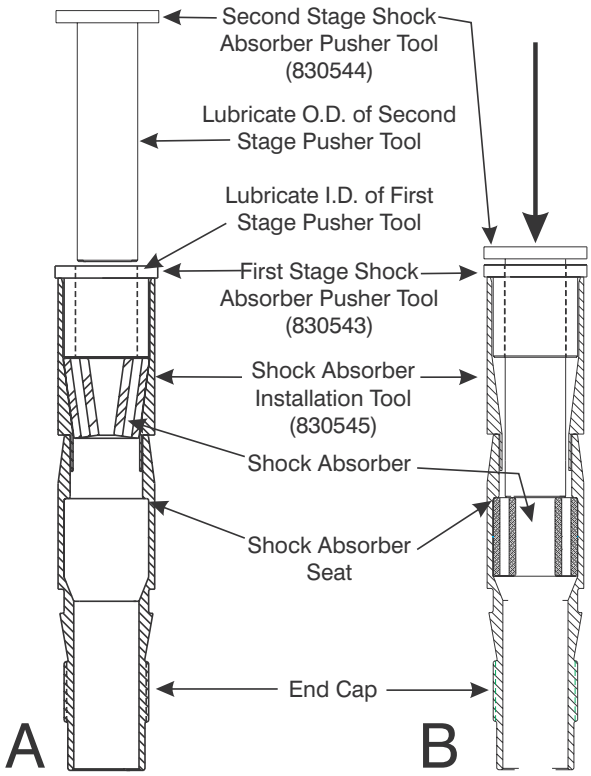


Figure 9-6. Press The Shock Absorber into The End Cap

8. Press the Shock Absorber into the End Cap until it seats against the shoulder at the non-threaded end of the cap as shown in Figure 9-6-B.

9.6.2 Install Shock Absorber in Hole-Hog with 2649 and below, using the new tool kit

1. Lubricate the inner surface of the Spacer, 101474, and the outer surface of the Shock Absorber Installation Tool, 837615.

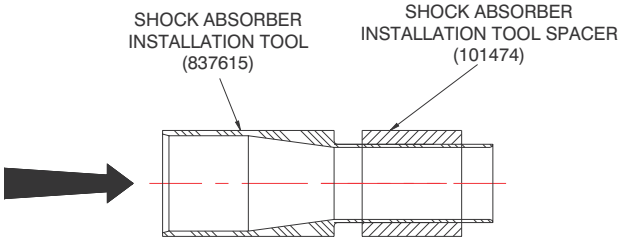


Figure 9-7. Assemble Spacer and Shock Absorber Installation Tool

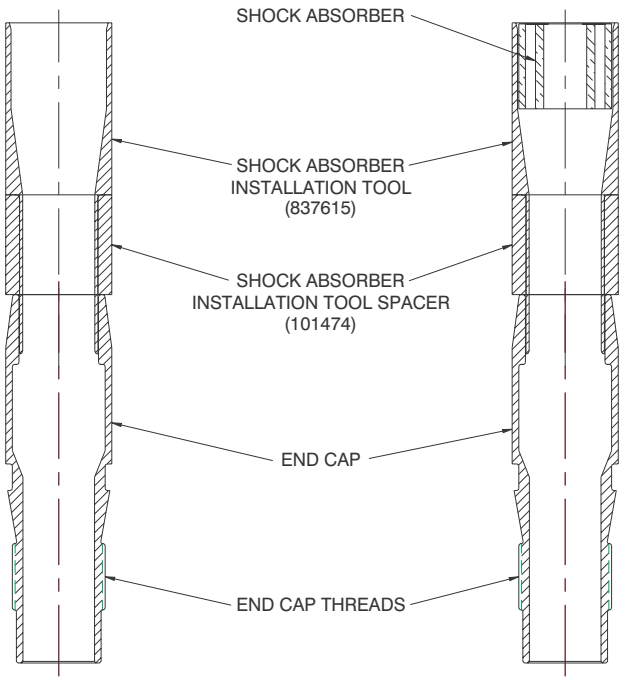


Figure 9-8. End Cap, Spacer 101474, and Tool 837615 in Press

2. Slide the Spacer, 101474, onto the Shock Absorber Installation Tool, 837615, as shown in Figure 9-7.
3. Position the End Cap (16) in an arbor press with the threaded end down, as shown in Figure 9-8-A.
4. Insert the assembled Spacer, 101474, and Shock Absorber Installation Tool, 837615, into the End Cap as shown in Figure 9-8-A.
5. Lubricate the OD of the Shock Absorber (15) and The I.D. of the Shock Absorber Installation Tool, 837615. Place the Shock Absorber into tool P/N 837615 as shown in Figure 9-8-B.
6. Center the First Stage Shock Absorber Pusher Tool, 830543, over the Shock Absorber as shown in Figure 9-9-A.

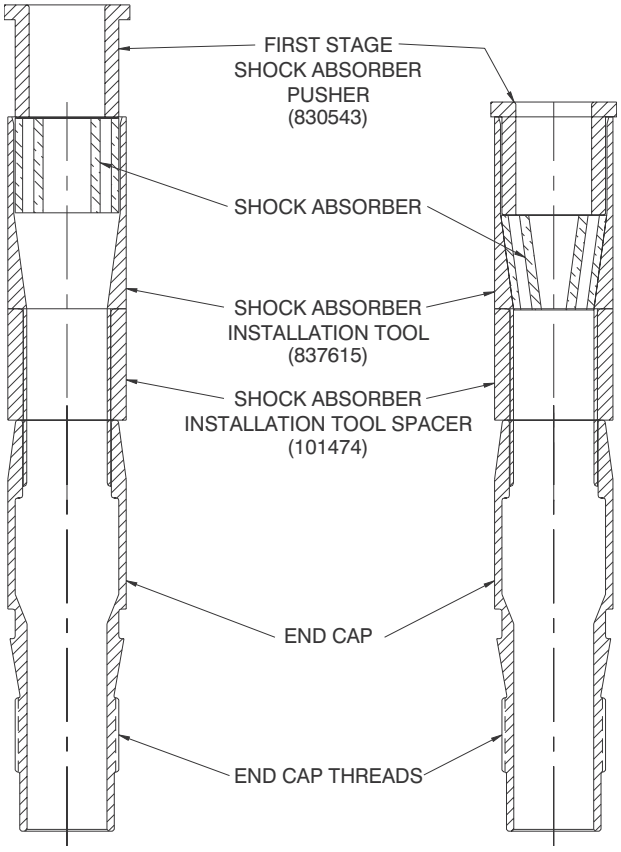


Figure 9-9. Compress Shock Absorber in Installation Tool

7. Compress the Shock Absorber in Installation Tool 837615 as shown in Figure 9-9-B.

8. DO NOT REMOVE the First Stage Shock Absorber Pusher Tool from the Shock Absorber Installation Tool.

   The First Stage Shock Absorber Pusher Tool is used as a centering guide for the Second Stage Shock Absorber Pusher.

9. Lubricate the O.D. of the Second Stage Shock Absorber Pusher Tool, 830544, and the I.D. of the First Stage Shock Absorber Pusher Tool, 830543.

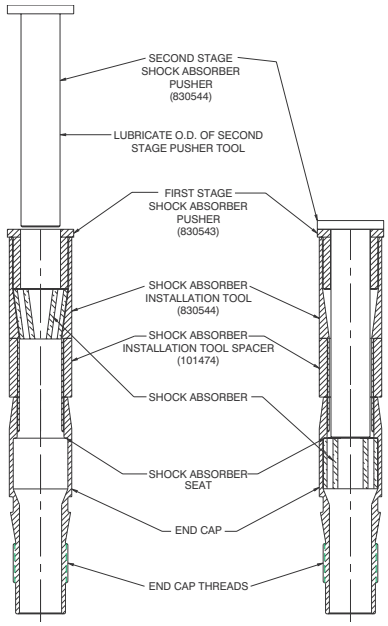


Figure 9-10.Press The Shock Absorber into The End Cap

10. Insert the the Second Stage Shock Absorber Pusher Tool, 830544, into the First Stage Shock Absorber Pusher Tool, 830543 as shown in Figure 9-10-A.

> **CAUTION**
> When using Tool 830544, DO NOT press Shock Absorber past the seat at the non-threaded end of the End Cap.

11. Press the Shock Absorber into the End Cap until it seats against the shoulder at the non-threaded end of the cap as shown in Figure 9-10-B.

9.6.3 Install Shock Absorber in Hole-Hog with 2650 and above, using the new tool kit

1. Position the End Cap (16) in an arbor press with the threaded end down. Insert the Shock Absorber Installation

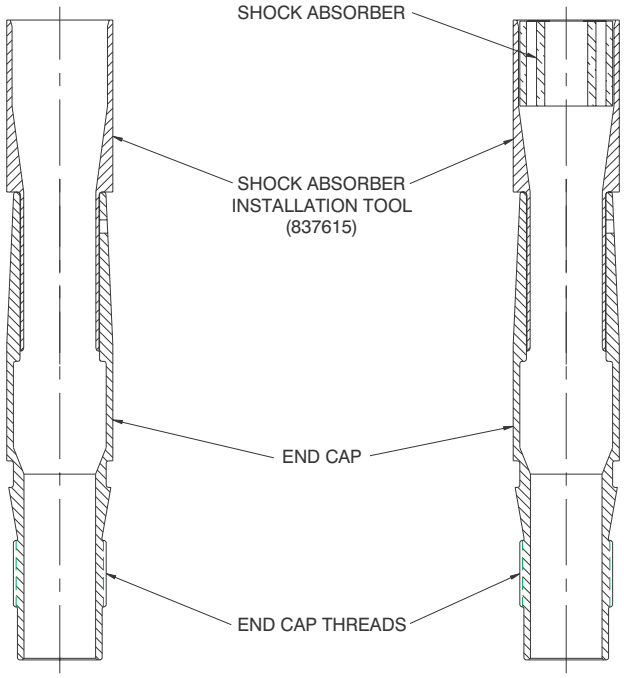


Figure 9-11. End Cap and and Tool 837615 in Press

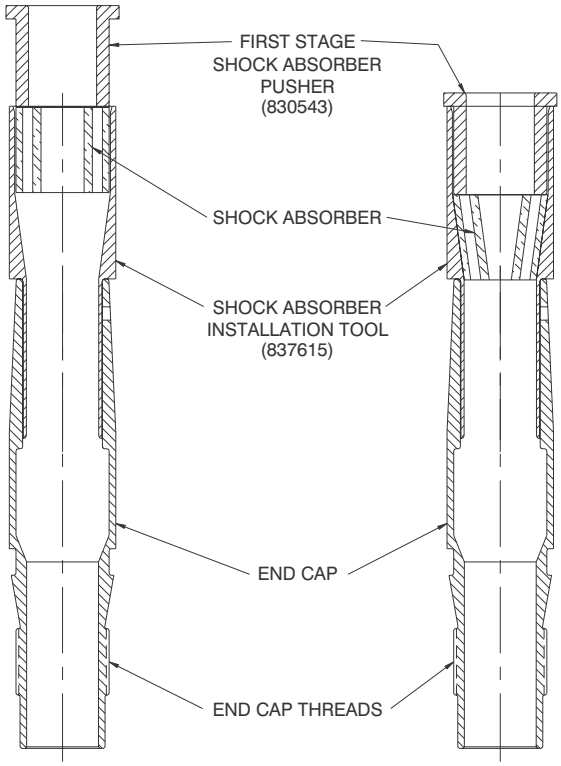


Figure 9-12. Compress Shock Absorber in Installation Tool

Tool, 837615, into the End Cap as shown in Figure 9-11-A.

2. Lubricate the OD of the Shock Absorber (15) and The I.D. of the Shock Absorber Installation Tool, 837615. Place the Shock Absorber into tool P/N 837615 as shown in Figure 9-11-B.
3. Center the First Stage Shock Absorber Pusher Tool, 830543, over the Shock Absorber as shown in Figure 9-12-A.
4. Compress the Shock Absorber in Installation Tool 837615 as shown in Figure 9-12-B.
5. DO NOT REMOVE the First Stage Shock Absorber Pusher Tool from the Shock Absorber Installation Tool.

   The First Stage Shock Absorber Pusher Tool is used as a centering guide for the Second Stage Shock Absorber Pusher.
6. Lubricate the O.D. of the Second Stage Shock Absorber Pusher Tool, 830544, and the I.D. of the First Stage Shock Absorber Pusher Tool, 830543.
7. Insert the the Second Stage Shock Absorber Pusher Tool, 830544, into the First Stage Shock Absorber Pusher Tool, 830543 as shown in Figure 9-13-A.

CAUTION

When using Tool 830544, DO NOT press Shock Absorber past the seat at the non-threaded end of the End Cap.

8. Press the Shock Absorber into the End Cap until it seats against the shoulder at the non-threaded end of the cap as shown in Figure 9-13-B.

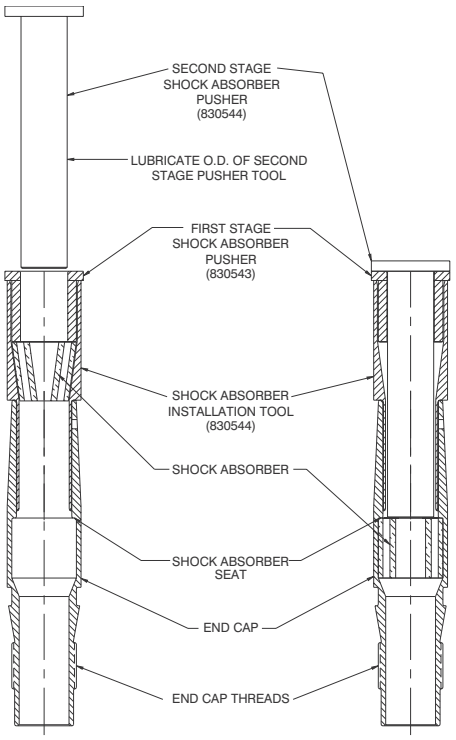


Figure 9-13.Press The Shock Absorber into The End Cap

9.6.4 Install Valve Guide in Hole-Hog

1. Before installing the Valve Guide (14), lubricate:
   - the outer surface of the Valve Guide.
   - the I.D. of the Shock Absorber (15).
   - Pusher Tool P/N 830547.
   - Installation Tool P/N 830546.
2. Insert the small end of the Installation Tool 830546 into the small end of the Valve Guide, as shown in Figure 9-14.

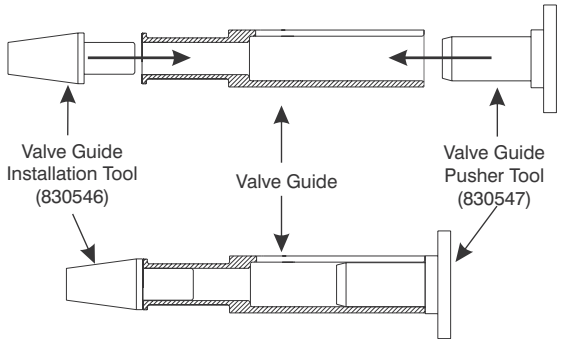


Figure 9-14.Valve Guide and Installation Tools

3. Insert Pusher Tool 830547 into the large end of the Valve Guide, as shown in Figure 9-14.

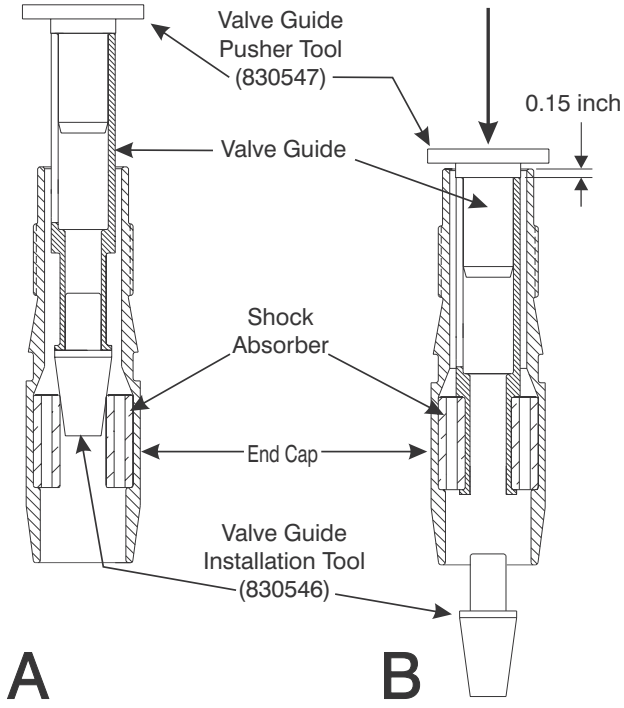


Figure 9-15. Press The Valve Guide into The Shock Absorber.

4. Center the assembled Valve Guide (14) and Tools 830547 and 83054 over the bore of the shock absorber as shown in Figure 9-15-A.
5. Press the Valve Guide (14) into the Shock Absorber (15) until the center shoulder of the Valve Guide seats against the Shock Absorber, as shown in Figure 9-15-B.
6. Valve Guide Installation Tool 830546 will fall free of the Valve Guide as the guide protrudes from the Shock Absorber, as shown in Figure 9-15-B.
7. Remove the End Cap from the arbor press and remove the Valve Guide Tools 830547 and 830546.

9.7 Assemble Valve Stem Components

1. Collect the Valve Stem (11), Spring Seat (10) and Bias Spring (9) on a clean, flat work bench. Lightly lubricate each of these components prior to assembly.
2. Slide the Spring Seat (10) and the Bias Spring (9) onto the Valve Stem (11) as shown in Figure 9-16.
3. Depress the Bias Spring (9) and install Retaining Ring (8) onto the Valve Stem (11) to secure the Bias Spring and Seat in place as shown in Figure 9-17.

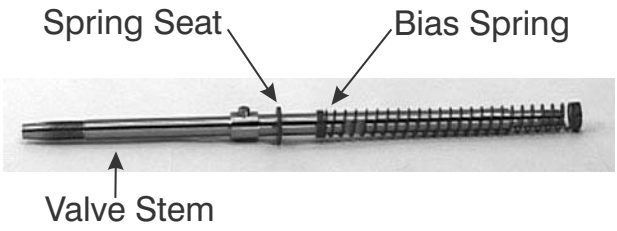


Figure 9-16. Place Bias Spring and Spring Seat on Valve Stem.

4. Place the Valve Stem (11), the components of the Ball Swivel (6) and Swivel Seat (5) on a clean, flat work bench.

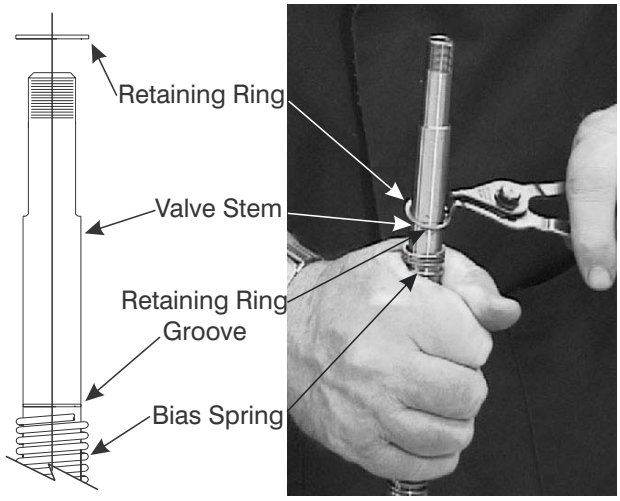


Figure 9-17. Secure Bias Spring and Seat on Valve Stem.

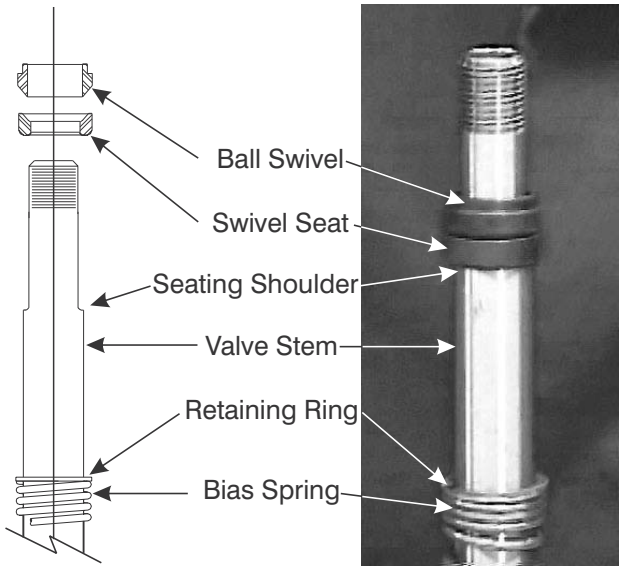


Figure 9-18. Install Lower Swivel Seat and Ball Swivel Half.

5. Refer to Figure 9-18 and lightly lubricate the Valve Stem (11) between the threads and shoulder seat.
6. Lightly lubricate the I.D. of the the Ball Swivel (6) and Swivel Seat (5).
7. Refer to Figure 9-18, and place the bottom Swivel Seat (5) and the lower half of Ball Swivel (6) onto the Valve Stem (11).
8. Refer to Figure 9-19. Position the Valve (7) so the end without an internal shoulder slides onto the Valve Stem (11) first.
9. Slide Valve (7) onto the Valve Stem (11) until the internal shoulder touches the installed lower half of the Ball Swivel (6), as shown in Figure 9-19.
10. Refer to Figure 9-20 and install the upper half of the Ball Swivel (6) onto the Valve Stem (11) inside the Valve (7). Slide the Swivel half into the Sleeve until it touches the internal shoulder of the Valve.
11. Install the top Swivel Seat (5) and the Spacer (4). Refer to Figures 9-20 and 9-21.

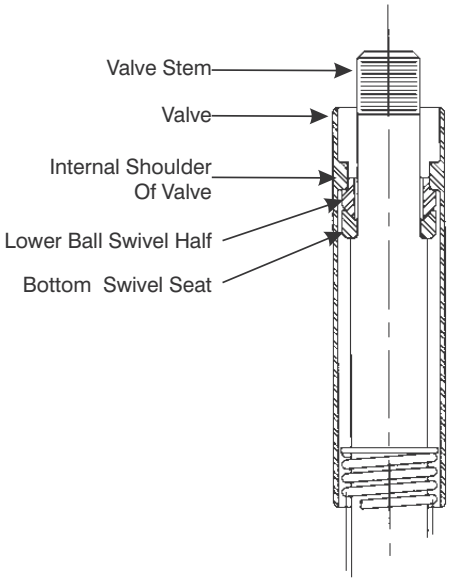


Figure 9-19. Valve Internal Shoulder Seats on Ball Swivel Lower Half.

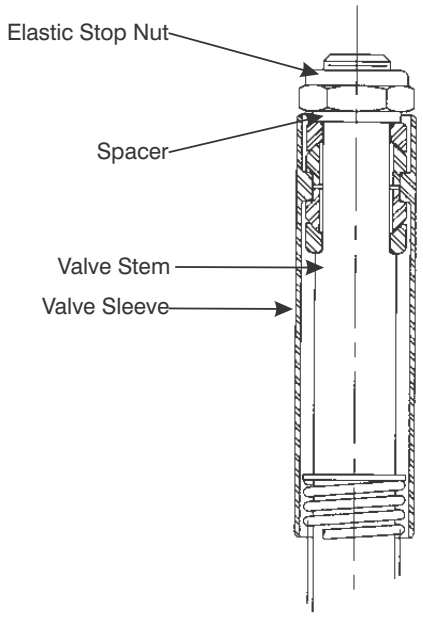


Figure 9-21. Elastic Stop Nut and Spacer

12. Use a new Elastic Stop Nut (3). A re-used nut may not sustain sufficient holding torque.
13. Thread the new Elastic Stop Nut (3) onto the Valve Stem (11). Tighten the nut finger tight.

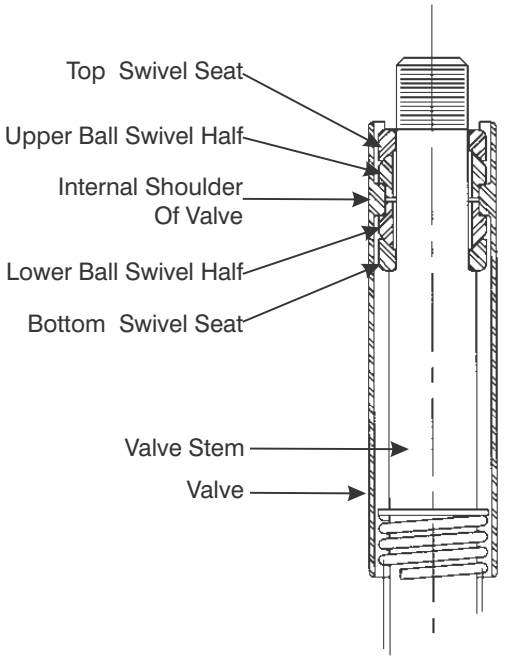


Figure 9-20. Upper Ball Swivel and Seat

14. Use a ½-inch open-end wrench across the flats of the Valve Stem (11) to hold it in place. See Figure 9-12.
15. Use a 7/8-inch wrench to tighten the Elastic Stop Nut (3) onto the Valve Stem (11). See Figure 9-12.
16. Adjust Valve movement:
    a. Tighten the nut just enough to remove play from the swivel assembly.
    b. Then back the nut off by ¼ to ½ a turn to allow swivel movement.

9.8 Assemble Whip Hose and Fittings

Figure 9-22. Tighten Elastic Stop Nut and Adjust the Valve Play

WARNING

Always use Allied's Whip Hose Assembly (see parts list in Section 13.0) or equivalent: 100R2 hose. Failure to use 100R2 hose could result in injury to personnel.

1. With the grooved face of the Gasket (21) toward the Quick Disconnect (Q.D.) Socket (20) and Whip Hose (18), insert the new Gasket (21) into the Socket (20). Check that the gasket seats properly. Refer to Figure 9-23.
2. Place the assembled Q.D. fittings and the Whip Hose on the assembly bench.

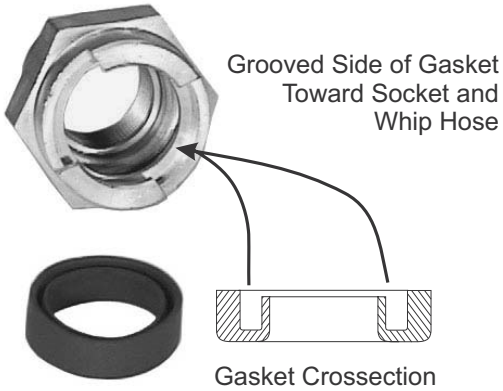


Figure 9-23. Install Gasket in Q.D. Socket.

3. Wrap the external threads of the hose fitting with teflon tape as shown in Figure 9-24.
4. Use a 1-3/8-inch open-end wrench to hold the Q.D. Socket (20) in place. Start the Whip Hose fitting into the Q.D. Socket. See Figure 9-25.

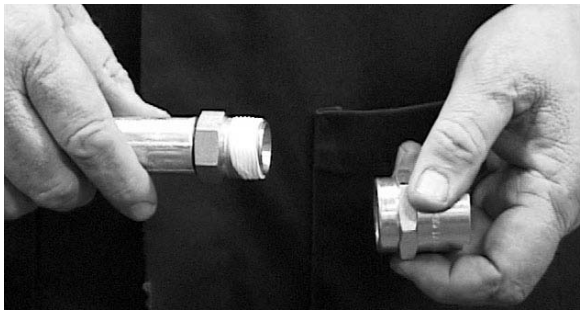


Figure 9-24. Wrap Threads with Teflon Tape.

5. Use a 7/8-inch open-end wrench to tighten the fitting of Whip Hose (18) into the Q.D. Socket (20). See Figure 9-25.

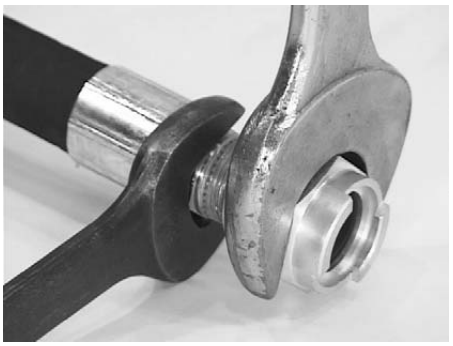


Figure 9-25. Secure Whip Hose to Q.D. Socket.

6. With its larger internal bore (hose end) facing up, clamp the Hose Socket (17) in a vise. Refer to Figure 9-26.

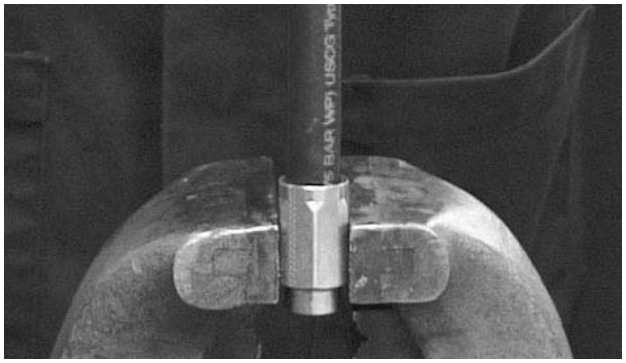


Figure 9-26. Thread Whip Hose into Hose Socket.

NOTE

The threads on the hose side of the Hose Socket are left hand threads; turn the hose:

- Clockwise to loosen.
- Counterclockwise to tighten.

7. Thread the Whip Hose counterclockwise into the socket until it bottoms in the Hose Socket. Then back it out clockwise ½ of a turn.

9.9 Assemble Whip Hose & Tail Assembly

1. Before securing the End Cap for assembly, protect the threads of the End Cap (16) by padding the vise jaws or wrapping the threads with a heavy cloth or canvas.

   a. If a vise is used, install the jaw pads. If jaw pads are not available, tape or bind strips of wood to the vise jaws as shown in Figure 9-27.

   b. If a saddle clamp is used, protect the End Cap threads by wrapping them in thick cloth or canvas.

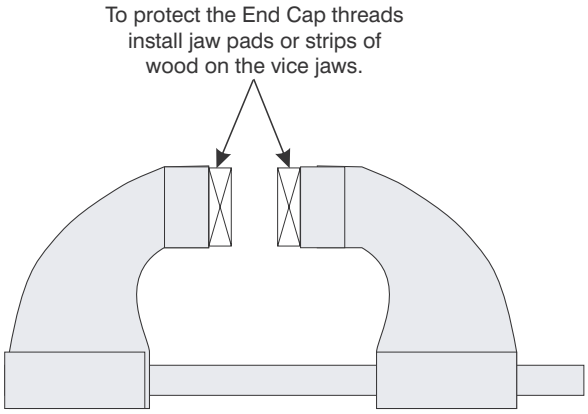


Figure 9-27. Pad the vise jaws to protect the End Cap threads.

2. Place the End Cap (16) horizontally in a vise or saddle clamp as shown in Figure 9-28.

   a. Place the End Cap between the vice jaws so the jaws grip across the hub near the flats.

   b. Clamp the End Cap (16) tight enough to hold the Tail Assembly in place during disassembly.

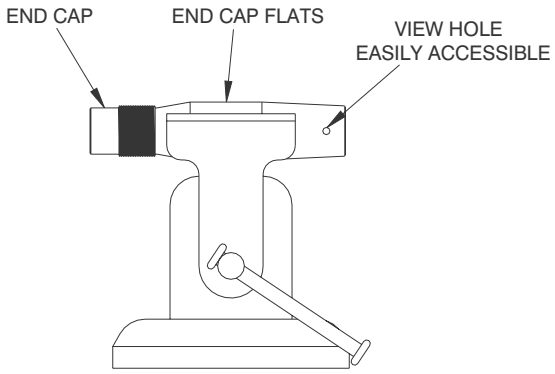


Figure 9-28. Secure End Cap in Vise.

3. Refer to Figure 9-29, and slide the tapered and threaded end of the Valve Stem (11) into the threaded end of the End Cap (16), and then into the Valve Guide (14).

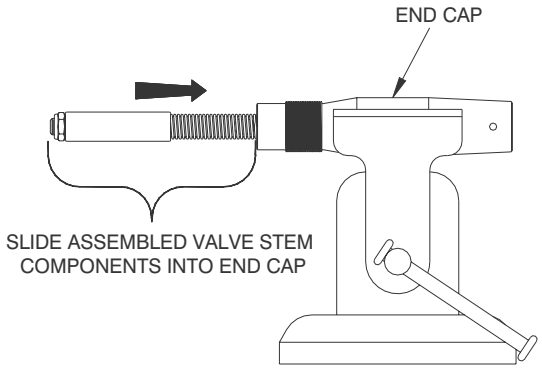


Figure 9-29. Slide Valve Stem into End Cap

4. Continue to slide the Valve Stem (11) into the Valve Guide (14) until the threaded part of the Valve Stem protrudes from the other side of the End Cap (16), as shown in Figure 9-30.

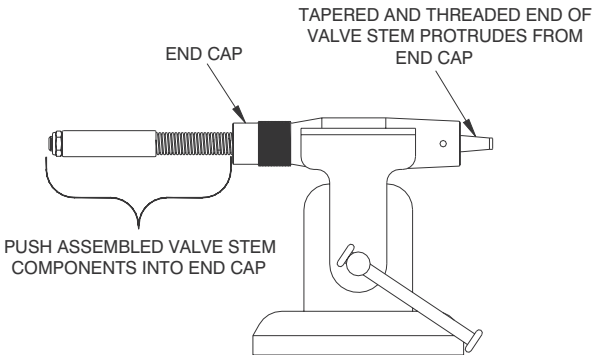


Figure 9-30. Threaded End of Valve Stem

5. Thread the Hose Socket (17) with the Whip Hose (18) onto the Valve Stem (11). Hand tighten the Hose Socket to the Valve0 Stem. Refer to Figure 9-31.

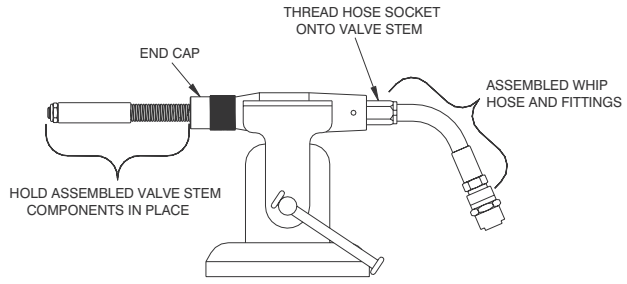


Figure 9-31. Hose Socket on Valve Stem.

6. With the End Cap secured in a vice, hold the Valve Stem (11) at its flats with an 1/2-inch open end wrench. Refer to Figure 9-32.

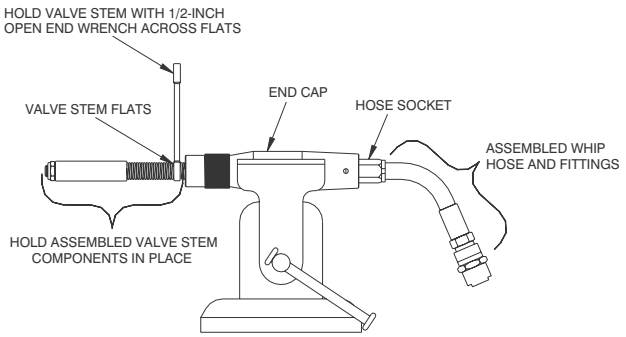


Figure 9-32. Hold Vale Stem in Place

7. Push the Valve (7) toward the End Cap (16) until the flats of the Hose Socket (17) project from the Whip Hose end of the End Cap. Refer to Figure 9-32.

8. With an xx-inch open end wrench across the flats of the Hose Socket (17), tighten the Hose Socket onto the Valve Stem. Refer to Figure 9-33.

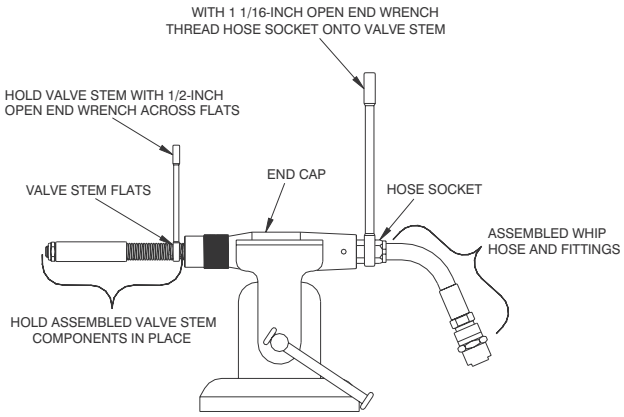


Figure 9-33. Tighten Hose Socket on Valve Stem.

9. Continue tightening the Valve Stem into the Hose Socket until the Valve Stem undercut reaches the edge of the Hose socket, as shown in Figure 9-34.

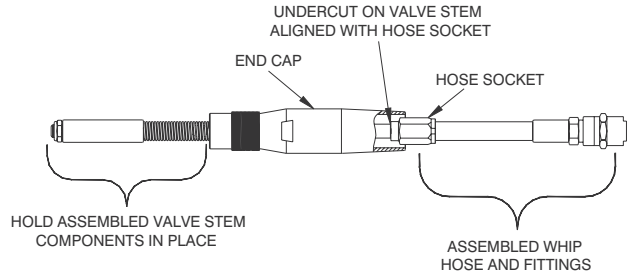


Figure 9-34. Hose Socket and Valve Stem Undercut.

10. For Hole-Hogs with 2650 and above, it may be necessary to view the Valve Stem undercut through the hole in the side of the End Cap. Refer to Figure 9-35.

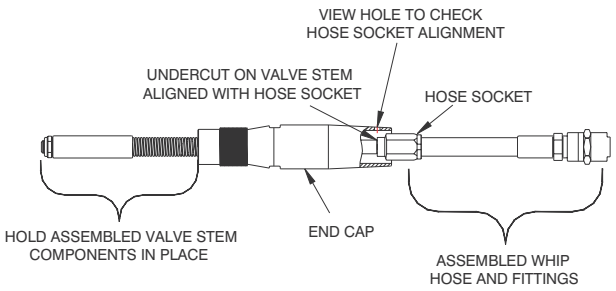


Figure 9-35. End Cap View Port.

9.10 Assemble Body/Anvil, Striker and Tail Asembly

NOTE

The Body/Anvil and Striker are not customer serviceable. If these components are worn or damaged, replace them with new components.

1. Coat the Striker (2) with hydraulic fluid before installing it into Body/Anvil (1).
2. Refer to Figure 9-36, and slide the Striker (2) into the Body/Anvil (1). The back end of the Striker should be about 6 in. to 8 in. past the threads of the Body/Anvil.

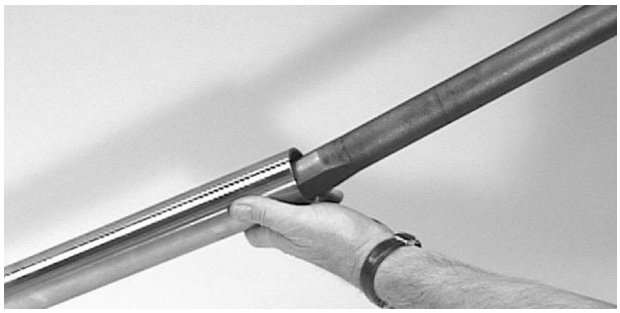


Figure 9-36. Install Striker into Body/Anvil.

3. Apply anti-seize thread lubricant sparingly to the threads of the End Cap (16) and the Body/Anvil (1). See Figure 9-37.

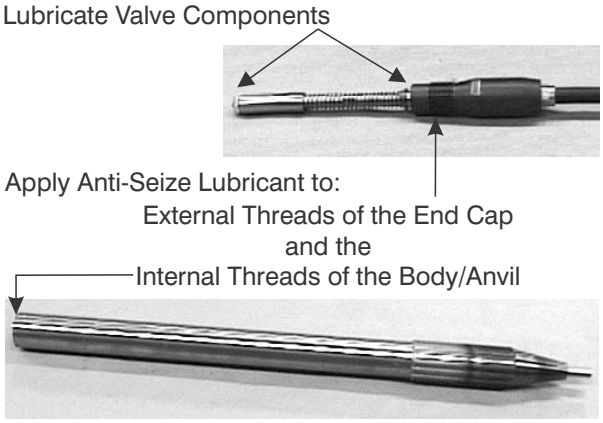


Figure 9-37. Prepare Tali Assembly and Body Anvil for Assembly

4. With the exception of the End Cap (16) and Whip Hose (14), lightly coat the tail assembly components with hydraulic fluid. Refer to Figure 9-37.
5. Insert the Valve (7) into the Striker (2) and thread the End Cap (16) into the Body/Anvil (1), as shown in Figure 9-38.

Figure 9-38. Insert Valve into Striker.

6. Hand tighten the End Cap (16) to the Body/Anvil (1).
7. Place the Hole-Hog on a level surface. Holding the Body/Anvil (1) with a strap wrench, use wrench P/N 830540 from the Tool Kit to tighten the End Cap (16), as shown in Figure 9-39.

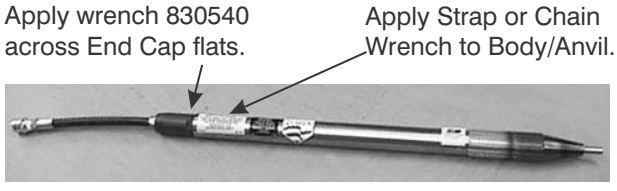


Figure 9-39.Secure End Cap to Body/Anvil

8. The End Cap should be tightened to a torque of 175-200 ft.-lbs. If a torque

wrench is not available, use the following procedure. See Figure 9-40.

a. After tightening the End Cap hand tight, put a scribe mark on the End Cap next to the Body/Anvil.

b. Measure from the scribe line 1-inch ±1/8-inch and put another scribe mark on the Body/Anvil.

c. Using P/N 830540 wrench, or equivalent, tighten the end cap until the mark on the end cap is in alignment with the mark second on the body within the tolerance indicated.

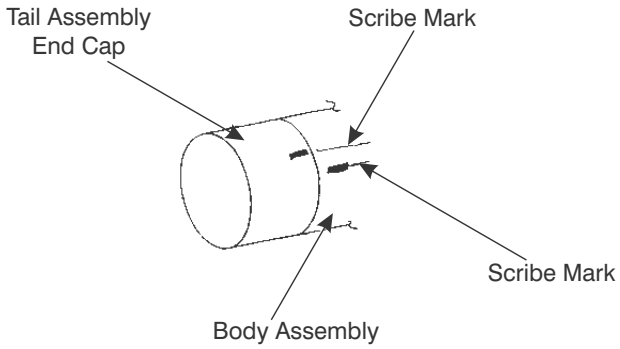


Figure 9-40.Tighten End Cap.

SECTION 10.0 MAINTENANCE

10.1 Daily Maintenance

- Clean and lubricate end cap threads with an anti-seize lubricant. Tighten end cap according to procedure in Section 9.9, Step 8.
- Clean and oil Hole-Hog.
- Lubricate Hole-Hog according to Section 7.0.
-
-

10.2 Inspection And Preventive Maintenance

After every 100 hours of operation, the Hole-Hog should be disassembled, cleaned and inspected.

- Check all components for abrasion and excessive wear. Repair or replace as required.
- Inspect the body and anvil for cracks or large chips. Replace if excessively worn. A smoothly worn body is acceptable.
- Check the exhaust ports in the shock absorber for obstructions. Clean and check for damage.
- Check hose for excessive wear or kinks. Replace a damaged hose.
-
- Check shock/valve guide for proper seating. Press into place or replace shock if necessary.

The frequency of maintenance depends upon the operating environments and conditions of operation. Refer to 10.3 for additional maintenance considerations.

When disassembling the Hole-Hog, refer to 8.5 Extent of Disassembly for guidelines in planning disassembly maintenance.

10-3. Conditional Maintenance

Disassemble, clean and lubricate all Hole-Hog working surfaces under the following conditions:

- The Hole-Hog is to be stored for more than one week.
- The Hole-Hog is operated in extremely humid weather conditions.
- The Hole-Hog is operated in muddy or extremely wet soils.
- If reduced performance is observed.

10.4 Warranty Protection

Maintain written records of Hole-Hog maintenance, service and repair. These records will be helpful if warranty coverage is ever in question. Each record shall include :

- The date of service, maintenance or repair.

- A description of the service, maintenance or repair performed. Include part numbers if applicable.
- Copies of purchase order(s) and invoice(s) for repair parts and service.

The name and signature of the person performing the service, maintenance or repair.

SECTION 11.0 FIELD MAINTENANCE

WARNING

Do not remove the End Cap from the Body/Anvil under field operating conditions. This may expose the internal operating parts to contamination, and reduce the operating life of the Hole-Hog.

WARNING

Always use Allied's Whip Hose Assembly (see parts list in Section 13.0) or equivalent - 100R2 hose. Failure to use 100R2 hose could result in injury to personnel.

WARNING

Using a pipe wrench on the Hole-Hog Body/Anvil relieves Allied of all warranty responsibilities.

WARNING

Applying heat with a torch or by any other method to any part or parts of the Hole-Hog relieves Allied of all warranty responsibilities. Applying heat can destroy the main body, striker and other parts beyond use. Heating Hole-Hog components can cause altered component strength and result in premature failure or personal injury.

CAUTION

Before starting any of the maintenance procedures in this section, refer to Section 3.1 and verify the Serial Number of the unit to be assembled. Refer to sections 9.2 and 9.3 for information about the differences among serial number groups.

11.1 Field Replaceable Components.

Allied does not recommend field replacement of the components housed inside the Body/Anvil. When field repairs must be made, Allied recommends limiting them to replacement of (Refer to Figure 11-1.):

- Body/Anvil
- Striker
- Tail Assembly
- Whip Hose and Fittings

When replacing these components in the field,it is important to prevent contamination of the Hole-Hog internal components. Follow all contamination prevention precautions outlined in section 11.7 Repair Preparations.

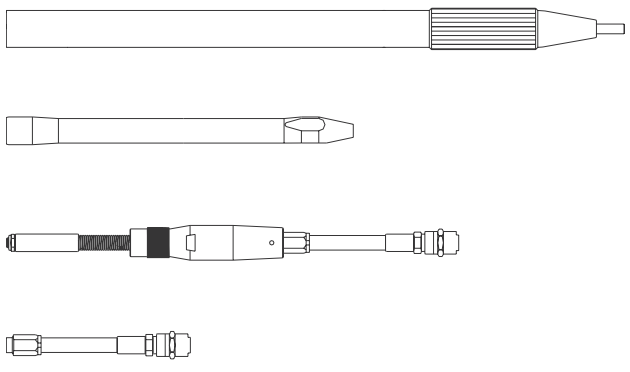


Figure 11-1. Field Replaceable Components

11.2 Reference to Parts Drawings

In the following procedures, reference numbers in parentheses accompany most part names. These numbers refer to the part item numbers on the exploded views and parts lists in Section 13.0, specifically:

Figure 13-1. Complete Hole-Hog Assembly

11.3 Hole-Hog Serial Numbers

Each Hole-Hog's Serial Number is etched on the Striker. In addition, it is recorded upon receipt by the owner in section 3.1 of this manual. Refer to that section for the Serial Number.

Hole-Hog Serial Numbers are issued sequentially at the time of manufacture. For example: The Hole-Hog with S/N 499 is the four hundred and ninety-ninth unit built. The next unit built would be assigned S/N 500, and so forth.

11.4 Variations by Serial Number

There is a significant difference among the 218C-Series Hole-Hogs covered in this manual. The newer units have an extended End Cap. The new End Cap has been lengthened approximately two inches. This extension protects the hose and hose fittings during operation. Refer to Figure11-2. Two serial number groups cover this difference. Hole-Hogs with:

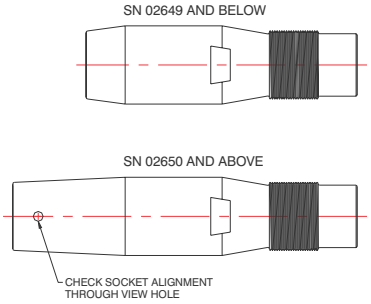


Figure 11-2. Short and Long End Caps.

SN 02649 and Below

- Have the short End Cap.
- Require old Tool Kit or use spacer in the new Tool Kit.

SN 02650 and Above

- Have the extended End Cap
- Require the new Tool Kit or at least extended Tools 837615 and 839543.

11.4.1 Extended End Cap Retrofit

The short and extended End Caps are interchangeable. The short end cap is no longer manufactured and the new End Cap retains the old End Cap part number. The new, extended End Cap is supplied on all replacement orders.

11.4.2 Tool Kit Variations

The Disassembly and Assembly Tool Kit (Part Number 830542) has been changed to match the new End Caps. The Shock Absorber Installation Tool, P/N 837615 and the Shock Absorber First Stage Pusher Tool, P/N 830543, have been lengthened.

A Spacer Ring, P/N 101474, has been added to adapt the new, lengthened pusher tools to the old, short End Caps, as illustrated in Figure 11-3.

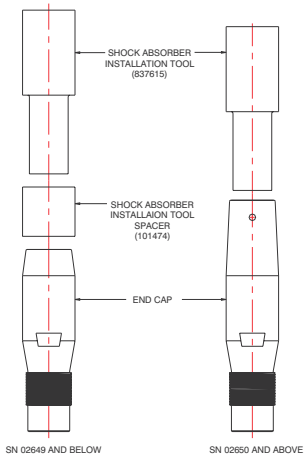


Figure 11-3. Spacer and Short End Cap.

11.5 Disassembly and Assembly Tool Kit Part Number 830542

The tools contained in this kit are listed below and illustrated in Figure 11-4. Items 1 & 2 are lengthened to match the new long End Cap.

1. Shock Absorber Installation Tool (long shank), P/N 837615, quantity 1.
2. Shock Absorber First Stage Pusher Tool, P/N 830543, quantity 1.
3. Shock Absorber Second Stage Pusher Tool (long shaft), P/N 830544, quantity 1.
4. Valve Guide Installation Tool, P/N 830546, quantity 1.
5. Valve Guide Pusher Tool, P/N 830547, quantity 1.
6. End Cap Wrench, P/N 830540, quantity 1.

Used with 218CHole-Hog SN 02649 and Below:

7. Shock Absorber Installation Tool (short shank), P/N 830545, quantity 1.
8. Shock Absorber Second Stage Pusher Tool (short shaft), P/N 830544, quantity 1.
9. Spacer Ring, P/N 101474, quantity 1.

11.6 Extent of Disassembly

To limit contamination of the Hole-Hog internal components, limit the extent disassembly. Perform only the minimum disassembly required to replace the worn or broken parts that are causing the field malfunctions. If parts other than those listed as field replaceable in section 11.1 require replacement, the unit must be moved

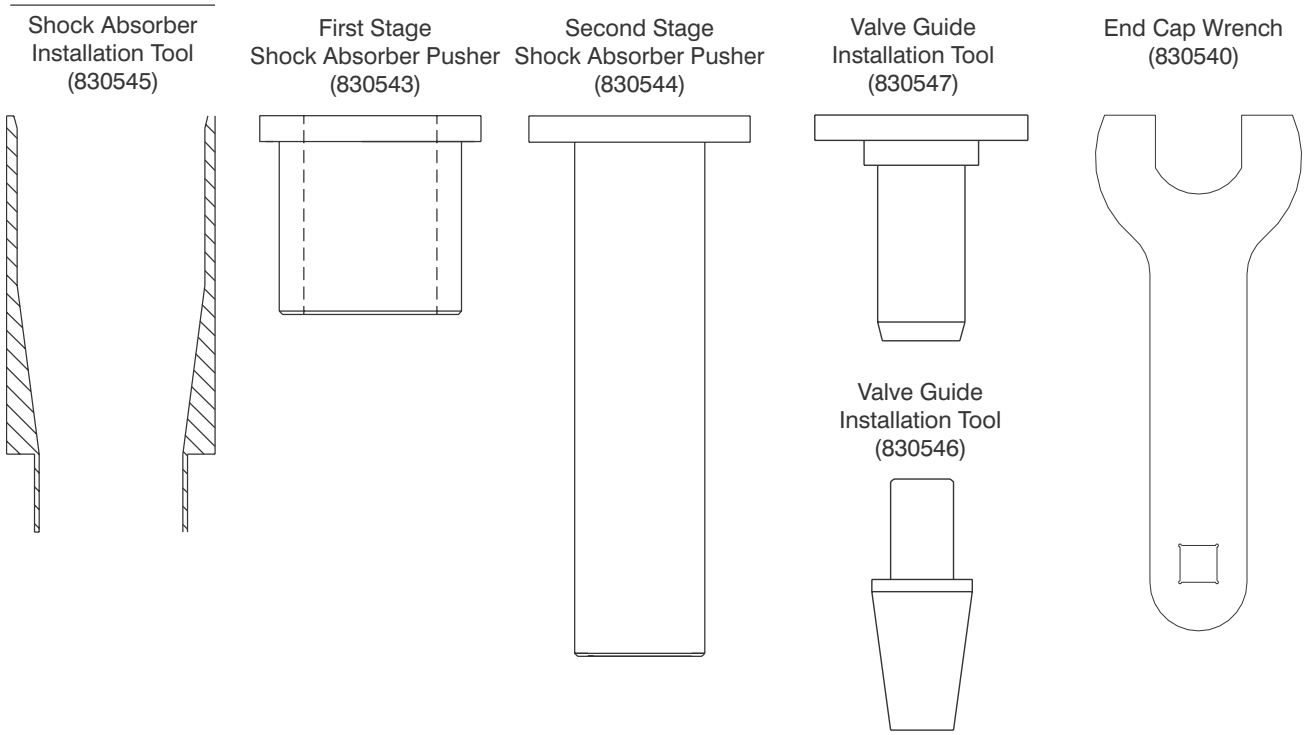


Figure 11-4. Hole-HogTool Kit

to a suitable service location for the repairs.

11.7 Repair Preparations

1. Obtain the required tools:
   a. Allied End-Cap wrench number 830540.
   b. Strap or chain wrench to hold the Body/Anvil (2-3/8" diameter).
   c. Open end wrench, 1-3/8".
   d. Open end wrench, 7/8".
   e. Open end wrench, ½".
2. For a clean work platform, obtain a clean plastic or canvas tarp. Spread this clean tarp over the work bench or work area to prevent contamination of the Hole-Hog internal components.
3. To prevent contamination of the Striker, Body/Anvil and Tail Assembly, obtain a canvas or plastic sheet to cover Tail Assembly and one to cover the open end of the Body/Anvil.
4. To clean parts that are accidentally contaminated, obtain:
   a. Mineral spirits and clean hydraulic fluid.
   b. Clean cloth rags to wipe away dirt, mineral spirits and excess hydraulic fluid.

11.8 Whip Hose and Hose Fitting Repairs

- To Replace the Whip Hose (18) and all its fittings as part of shop disassembly, refer to Section 8.0 Disassembly.
- For field replacement of the Quick Disconnect fittings only, refer to paragraph 11.10.
- For field replacement of the Whip Hose (18) and/or the hose fittings, refer to paragraph 11.12.

11.9 Replacing Body/Anvil and/or Striker

When replacing the Body/Anvil (1) and/or the Striker (2) only, it is not necessary to disassemble the Whip Hose (18) and tail assembly components.

1. Remove Striker (2), and the assembled Whip Hose (18) and tail assembly as described in paragraph 11-11.
2. Until the new component(s) arrive, place the undamaged components where they will not be contaminated with dust and dirt. Cover or wrap them in cloth or plastic as required.
3. When the new replacement component(s) become available, refer to section 11.14, and reassemble the Body/Anvil (1), Striker (2), Whip Hose (18) and tail assembly

11.10 Quick Disconnect Replacement

1. Place the Hole-Hog on a work area tarp or other flat clean surface. Block the unit so it will not roll during maintenance.

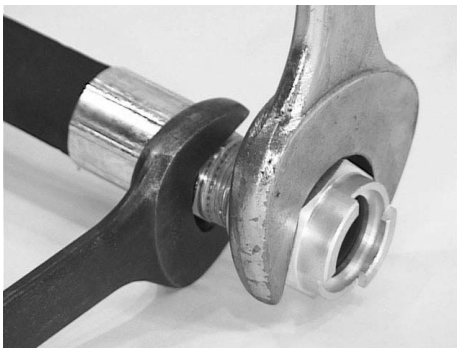


Figure 11-5. Remove Quick Disconnect Coupling Set from Whip Hose.

2. Using a 1-3/8-inch open-end wrench to hold the Quick Disconnect Socket (20) in place, use a 7/8-inch open-end wrench to loosen and thread the hose fitting of Whip Hose (18) from the Socket. Refer to Figure 11-5.
3. If parts replacement is not required, leave the Quick Disconnect (Q.D.) Couplings assembled. Otherwise, separate the Socket (20) from the Plug (22).

Figure 11-6. Remove Gasket from Socket

4. As shown in Figure 11-6, use a screw driver or needlenose plyers to pry the Gasket (20) from the Socket. Discard the gasket.
5. If this procedure is part of Whip Hose replacement, and the Hose Socket has been removed from the Whip Hose, discard the Whip Hose.

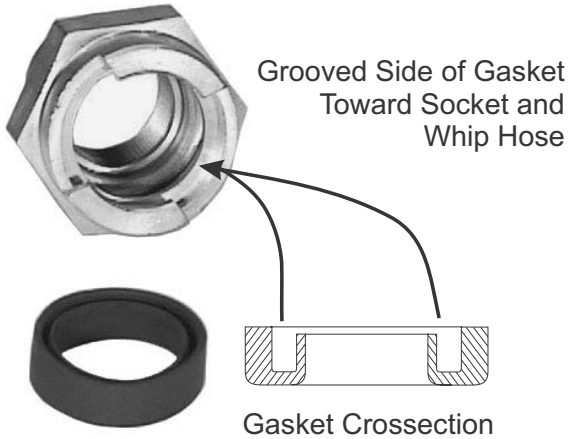


Figure 11-7. Insert Gasket into Socket

6. With the grooved face of the Gasket (21) toward the Quick Disconnect (Q.D.) Socket (20) and Whip Hose (18), insert the new Gasket (21) into the Socket (20). Check that the gasket seats properly. Refer to Figure 11-7.

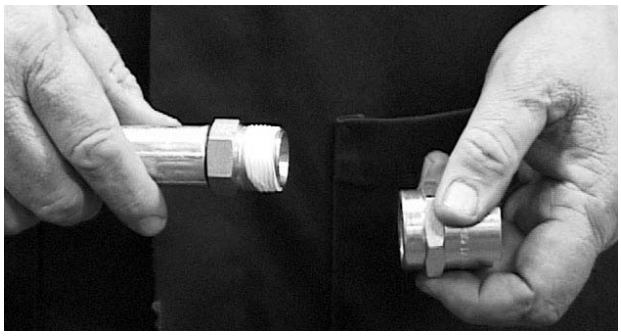


Figure 11-8. Wrap Threads with Teflon Tape.

7. Place the assembled Q.D. fittings and the Whip Hose on the assembly bench.
8. Wrap the external threads of the hose fitting with teflon tape as shown in Figure 11-8.
9.

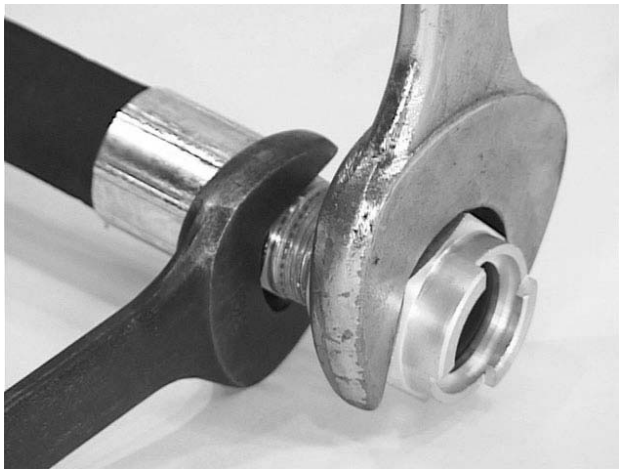


Figure 11-9. Tighten Whip Hose in Q.D. Coupling.

Use a 1-3/8-inch open-end wrench to hold the Q.D. Socket (20) in place. Start the Whip Hose fitting into the Q.D. Socket. See Figure 11-9.

10. Use a 7/8-inch open-end wrench to tighten the fitting of Whip Hose (18) into the Q.D. Socket (20). See Figure 11-9.

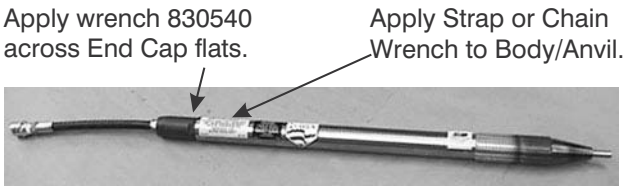


Figure 11-10. Loosening the End Cap

11.11 Remove Tail Assembly and Striker

1. Place the Hole-Hog on the work area tarp. Hold the body/anvil (1) with a strap wrench, use wrench P/N 830540 to

Figure 11-11.Tail Assembly Removed

loosen the End Cap (16). It may be necessary to strike the wrench handle several times with a hammer to loosen the End Cap. Refer to Figure 11-10.

2. Remove the tail assembly by the End Cap (16) and pulling the tail assembly from the Body/Anvil (1) as shown in Figure 11-11.
3. Place the tail assembly where it will not be contaminated with dust and dirt. If the repair area is very dusty, wrap it in a piece of cloth or plastic tarp until the Whip Hose is removed.

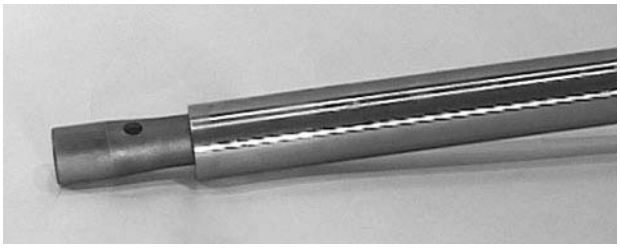


Figure 11-12. Tip Body/Anvil to Access the Striker.

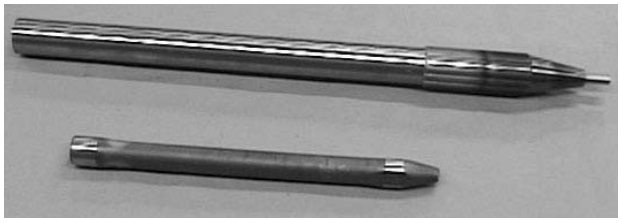


Figure 11-13. Striker and Body/Anvil.

4. Tip the Body/Anvil (1) so the end of the Striker (2) slides out of the body/anvil about six to eight inches. (Figure 11-12).
5. Once the striker (2) is accessible, lower the body/anvil (1) to the level surface. Pull the striker from the body/anvil by hand as shown in Figure 11-13.
6. Place the striker where it will not be contaminated with dust and dirt. Wrap in cloth or plastic if necessary.
7. Prevent dust and dirt from entering the Body/Anvil by wrapping its open end with a clean piece of plastic or canvas tarp. Secure this in place with an elastic cord or duct tape.
8. Place the Body/Anvil where it will not be contaminated with dust and dirt.

11.12 Disassemble the Tail Assembly

NOTE

DO NOT disassemble components of the tail assembly unless replacement is necessary.

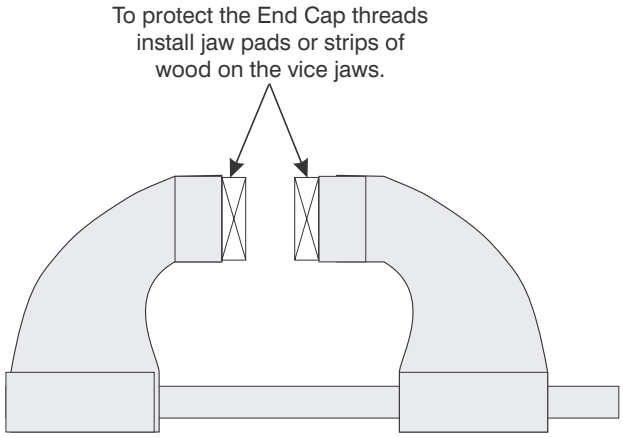


Figure 11-14. Pad the vise jaws to protect the End Cap threads.

11.12.1 Secure Tail Assembly

1. Before securing the Tail Assembly for disassembly, protect the threads of the End Cap (16) by padding the vise jaws or wrapping the threads with a heavy cloth or canvas.

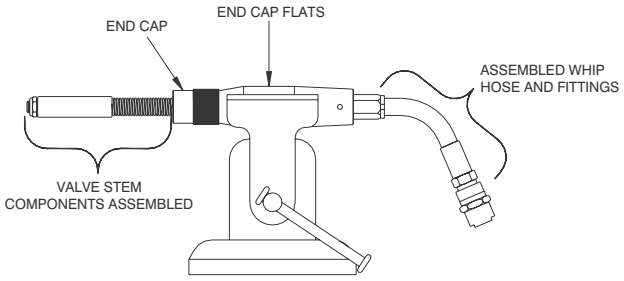


Figure 11-15. Place Tail Assembly in Vise.

   a. If a vise is used, install the jaw pads. If jaw pads are not available, tape or bind strips of wood to the vise jaws as shown in Figure 11-14.

   b. If a saddle clamp is used, protect the End Cap threads by wrapping them in thick cloth or canvas.

2. Place the End Cap (16) horizontally in a vise or saddle clamp as shown in Figure 11-15.

   a. Place the End Cap between the vice jaws so the jaws grip across the hub near the flats.

   b. Place the Whip Hose end of the End Cap so the Whip Hose (18) to clears the vise jaws.

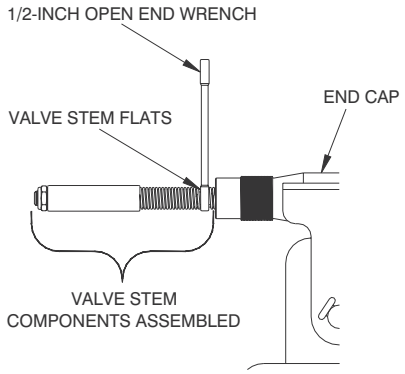


Figure 11-16. Hold Valve Stem Across Flats.

   c. Clamp the End Cap (16) tight enough to hold the Tail Assembly in place during disassembly.

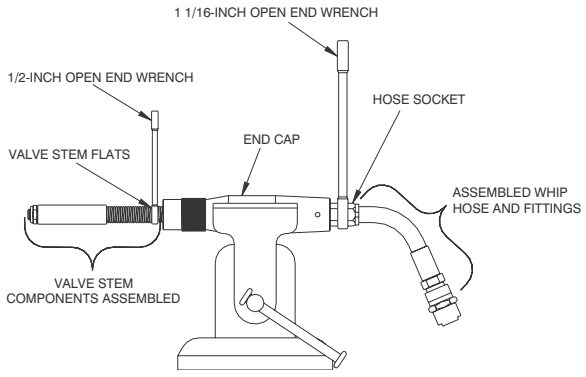


Figure 11-17. Thread the Hose Socket from the Valve Stem.

11.12.2 Remove Whip Hose and End Cap

1. With the End Cap secured as in 11.12.1, hold the Valve Stem (11) at its flats with an 1/2-inch open end wrench. Refer to Figure 11-16.
2. Push the Valve (7) toward the End Cap (16) until the flats of the Hose Socket (17) project from the Whip Hose end of the End Cap. Refer to Figure 11-17.
3. With an xx-inch open end wrench across the flats of the Hose Socket (17), thread the Hose Socket from the Valve Stem. Refer to Figure 11-21.
4. DO NOT remove the Valve Stem From the End Cap unless the End Cap requires replacement.
   - If the End Cap does not require replacement, wrap these components in a protective piece of plastic or canvas tarp and set them aside with the Body/Anvil.

Figure 11-18. Valve Stem Removed from the End Cap.

   - If the End Cap requires replacement, separate the it from the Valve Stem components:

   .a Holding the Bias Spring (9) and Valve (7) in one hand, pull the Valve Stem (11) and its assembled components from the End Cap (17). Refer to Figure 11-22.

> ⚠ CAUTION
> Equipment dammage may result. DO NOT disassemble the Valve Stem components in a field environment
> .

   b. Wrap the Valve Stem components in a protective piece of plastic or canvas tarp and set them aside with the Body/Anvil.

11.12.3 Disassemble Whip Hose and Fittings.

Disassemble the Whip Hose components only as far as required for repair or replacement.

- If the Whip Hose and all of the Quick Disconnect (Q.D.) components are to be replaced, disassembly of the old hose and coupling is not necessary.

  Discard the old assembly and proceed to the whip hose assembly instructions in paragraph 11.13.1.

- If only a few of the Whip Hose and Q.D. components are to be replaced, perform the following disassembly

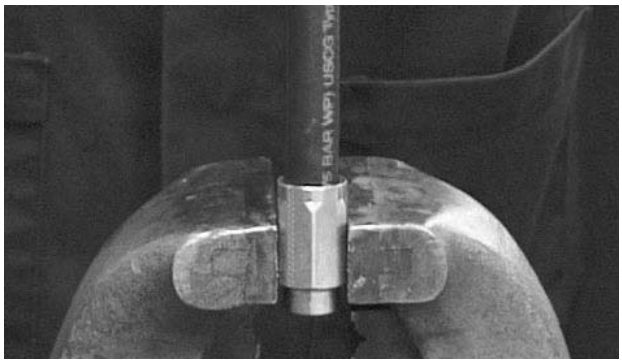


Figure 11-19. Whip Hose Socket in Vise

procedure.

1. Clamp the Hose Socket in a vise with the attached Whip Hose standing vertically above the jaws. See Figure 11-19.

NOTE

The threads on the hose side of the Hose Socket are left hand threads; turn hose:

- Clockwise to loosen.
- Counterclockwise to tighten.

2. Grip the hose by hand or with a large pliers. Turn the hose clockwise to remove it from the Hose Socket.
3. Refer to section 11.10, and remove the Quick Disconnect fitting from the Whip Hose, and discard the hose.

11.13 Re-assemble the Tail Assembly

WARNING

Always use Allied's Whip Hose Assembly (see parts list in Section 13.0) or equivalent: 100R2 hose. Failure to use 100R2 hose could result in injury to personnel.

11.13.1 Assemble Whip Hose Fittings

1. Refer to section 11.10, and install the Quick Disconnect fitting on the new Whip Hose.
2. With its larger internal bore (hose end) facing up, clamp the Hose Socket (17) in a vise. Refer to Figure 11-19.

NOTE:

The threads on the hose side of the Hose Socket are left hand threads; turn the hose:

- Clockwise to loosen.
- Counterclockwise to tighten.

3. Thread the Whip Hose counterclockwise into the socket until it bottoms in the Hose Socket. Then back it out

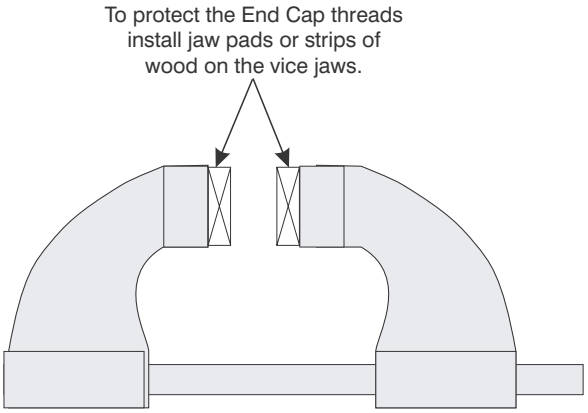


Figure 11-20. Pad the vise jaws to protect the End Cap threads.

clockwise ½ of a turn.

11.13.2 Secure End Cap for Assembly

1.

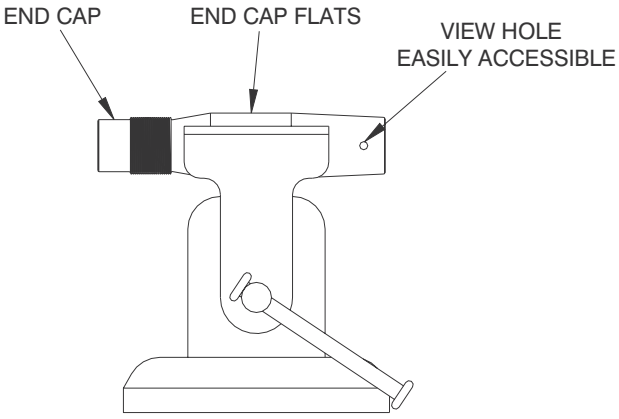


Figure 11-21. Secure End Cap in Vise.

Before securing the End Cap for assembly, protect the threads of the End Cap (16) by padding the vise jaws or wrapping the threads with a heavy cloth or canvas.

a. If a vise is used, install the jaw pads. If jaw pads are not available, tape or bind strips of wood to the vise jaws as shown in Figure 11-20.

b. If a saddle clamp is used, protect the End Cap threads by wrapping them in thick cloth or canvas.

2. Place the End Cap (16) horizontally in a vise or saddle clamp as shown in Figure 11-21.

a. Place the End Cap between the vise jaws so the jaws grip across the hub

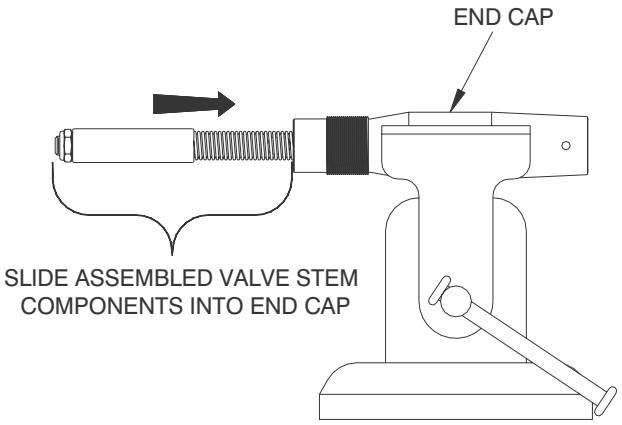


Figure 11-22. Slide Valve Stem into End Cap.

near the flats.

b. Clamp the End Cap (16) tight enough to hold the Tail Assembly in place during disassembly.

11.13.3 Attach Whip Hose to Valve Stem

1. Keeping the Valve Stem components assembled, unwrap them.

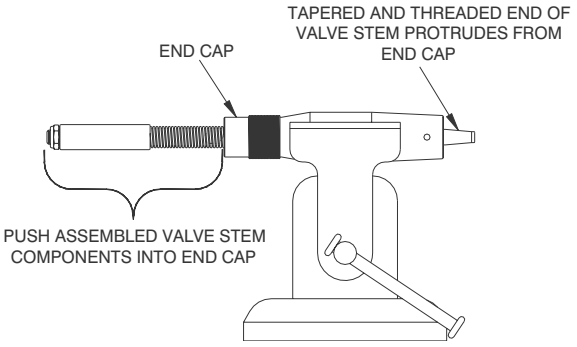


Figure 11-23. Threaded End of Valve Stem

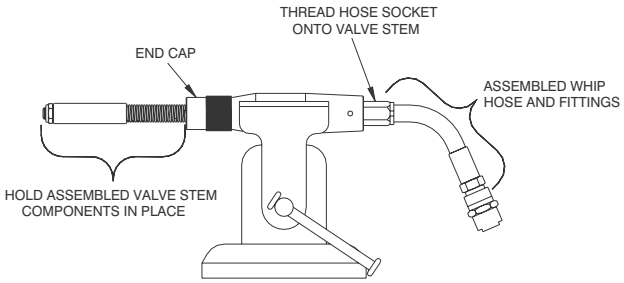


Figure 11-24. Hose Socket on Valve Stem.

2. Place the assembled Valve Stem components on the work area tarp.

3. Refer to Figure 11-22, and slide the tapered and threaded end of the Valve

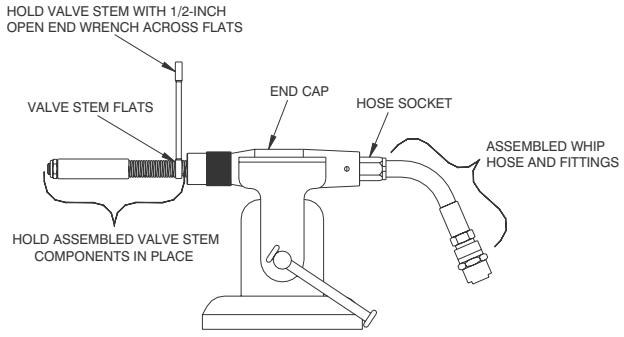


Figure 11-25. Hold Valve Stem in Place.

Stem (11) into the threaded end of the End Cap (16), and then into the Valve Guide (14).

4.

Continue to slide the Valve Stem (11) into the Valve Guide (14) until the threaded part of the Valve Stem protrudes from the other side of the End

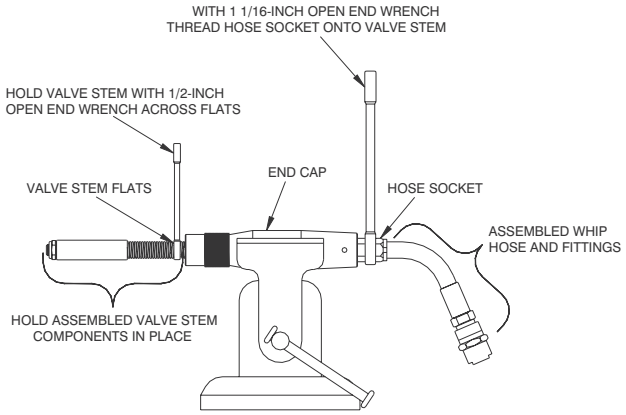


Figure 11-26. Tighten Hose Socket on Valve Stem.

Cap (16), as shown in Figure 11-23.

5. Thread the Hose Socket (17) with the Whip Hose (18) onto the Valve Stem (11). Hand tighten the Hose Socket to

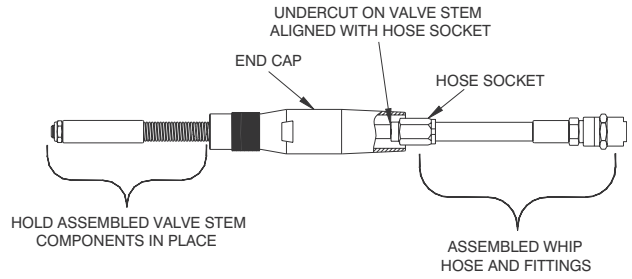


Figure 11-27. Hose Socket and Valve Stem Undercut.

the Valve Stem. Figure 11-24.

6. With the End Cap secured in a vice, hold the Valve Stem (11) at its flats

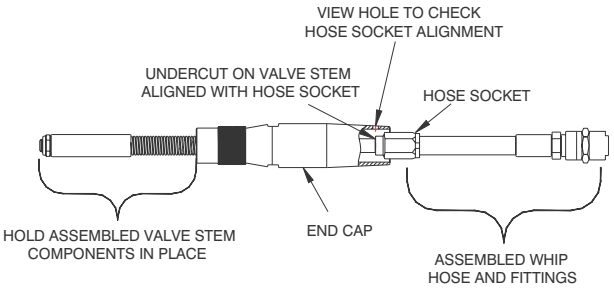


Figure 11-28. End Cap View Port.

with an 1/2-inch open end wrench. Refer to Figure 11-25.

7. Push the Valve (7) toward the End Cap (16) until the flats of the Hose Socket (17) project from the Whip Hose end of the End Cap. Refer to Figure 11-25.

8. With an xx-inch open end wrench across the flats of the Hose Socket (17), tighten the Hose Socket onto the Valve Stem. Refer to Figure 11-26.

9. Continue tightening the Valve Stem into the Hose Socket until the Valve Stem undercut reaches the edge of the Hose socket, as shown in Figure 11-27.

   For Hole-Hogs with 2650 and above, it may be necessary to view the Valve Stem undercut through the hole in the side of the End Cap. Refer to Figure 11-28.

10. If the Hole-Hog will not be reassembled immediately and the repair area is dusty, wrap the Tail Assembly in a protective piece of plastic or canvas tarp and set it aside with the Body/Anvil.

Figure 11-29. Install Striker into Body/Anvil

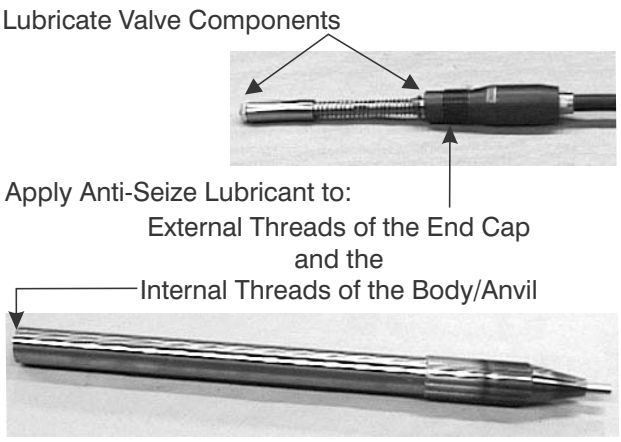


Figure 11-30. Prepare Tail Assembly and Body Anvil for Assembly.

Figure 11-31. Insert Valve into Striker.

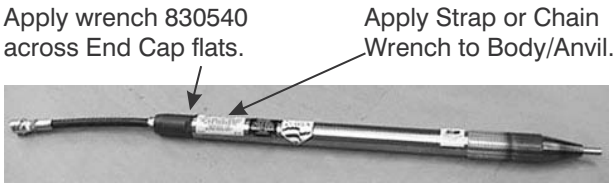


Figure 11-32. Secure End Cap to Body/Anvil.

11.14 Assemble The Hole-Hog

11.14.1 Clean Components

1. Place the Tail Assembly and Body/Anvil on the work area tarp and unwrap them.
2. Inspect the internal operating parts (striker and valve stem components) for dirt or other contamination that will hinder proper operation.3.

   Flush contaminated parts with clean hydraulic fluid. Use mineral spirits to remove persistent contamination.
4. Use clean cloths to wipe away excess cleaning fluids.
5. Repeat steps 2 through 4 until the parts are ready for assembly. Proceed to 11.14.2.

11.14.2 Body/Anvil and Tail Assembly

1. If the Striker (2) has been removed from the Body/Anvil for cleaning:
   a. Lightly coat the Striker with hydraulic fluid before re-installing it into Body/Anvil (1).
   b. Refer to Figure 11-29, and slide the Striker (2) into the Body/Anvil (1). The back end of the Striker should be about 6 in. to 8 in. past the threads of the Body/Anvil.
2. Apply anti-seize thread lubricant sparingly to the threads of the End Cap (16) and the Body/Anvil (1). Refer to Figure 11-30.
3. With the exception of the End Cap (16) and Whip Hose (18), lightly coat the tail assembly components with hydraulic fluid.

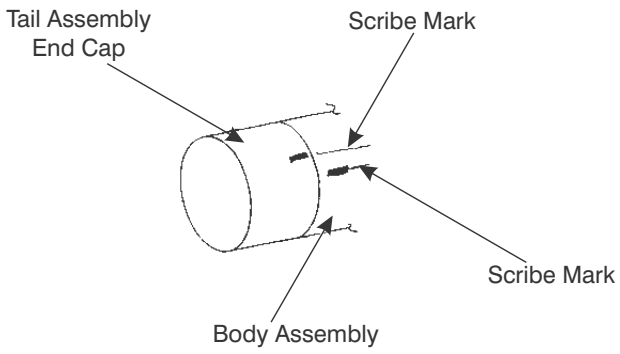


Figure 11-33. Tighten End Cap

4. Insert the Valve (7) into the Striker (2) and thread the End Cap (16) into the Body/Anvil (1). See Figure 11-31.
5. Hand tighten the End Cap (16) to the Body/Anvil (1).
6. Place the Hole-Hog on a level surface. Holding the Body/Anvil (1) with a strap wrench, use wrench P/N 830540 from the Tool Kit to tighten the End Cap (16), as shown in Figure 11-32.
7. The End Cap should be tightened to a torque of 175-200 ft.-lbs. If a torque wrench is not available, use the following procedure. See Figure 11-33.
   a. After tightening the End Cap hand tight, put a scribe mark on the End Cap next to the Body/Anvil.
   b. Measure from the scribe line 1-inch $\pm$1/8-inch and put another scribe mark on the Body/Anvil.
   c. Using P/N 830540 wrench, or equivalent, tighten the end cap until the mark on the end cap is in alignment with the mark second on the body within the tolerance indicated.

SECTION 12.0 HOLE-HOG TROUBLESHOOTING CHART

The following chart outlines corrective actions for several commonly encountered conditions. For further information, contact the Allied Technical Service Department.

Hole-Hog Troubleshooting Chart

Will not run or start	Runs erratically in forward	Runs erratically in reverse	Stops in ground	Low impact power	Slow ground penetration	**Cause & Corrective Action**
X	X	X	X	X		Restriction in air supply hose. Disconnect & purge hose.
X	X	X				Bent valve stem. Replace valve stem.
	X	X			X	Air pressure too high. Check air pressure.
X				X		Air pressure too low. Check air pressure.
X	X	X	X	X		Ice buildup inside unit. Follow de-icing instructions.
			X		X	Ground too hard or too soft. Re-evaluate application.
		X		X		Deteriorated shock absorber Replace shock absorber.
X				X		Excessive internal clearances. Replace body, striker, or valve.
		X		X		Improper lubrication. Follow lubrication instructions
X						Foreign material inside unit. Disassemble & clean.
X				X		Broken/misaligned internal parts. Disassemble, then repair or replace.
X				X		Rusted or rough sliding surfaces. Disassemble, clean and polish.
	X		X		X	Hit obstacle. Reverse tool from hole and retry.

SECTION 13.0 HOLE-HOG STORAGE

13.1 Short Term Field Storage

1. Clean exterior.
2. Clean out whip hose connection to the valve stem.
3. Lubricate interior of unit.
4. Wipe surface of unit with an oily rag to leave a thin coating of oil over the whole unit.
5. Position or tie whip hose in a manner to prevent it from being crushed.
6. Secure unit in a dry storage area or cover with a waterproof tarp.

13.2 Long Term Storage

1. Refer to Section 8.0 and disassemble the body/anvil from the end cap. Remove the striker.
2. Clean and inspect these components for damage and excessive wear.
3. Schedule replacement and repairs so unit will be ready to use after storage
4. Thoroughly clean all disassembled parts.
5. Lubricate all parts and reassemble.
6. Store in a protected, dry area.
7. Avoid wet or damp conditions to minimize rust.

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SECTION 14.0
PARTS & WARRANTY INFORMATION

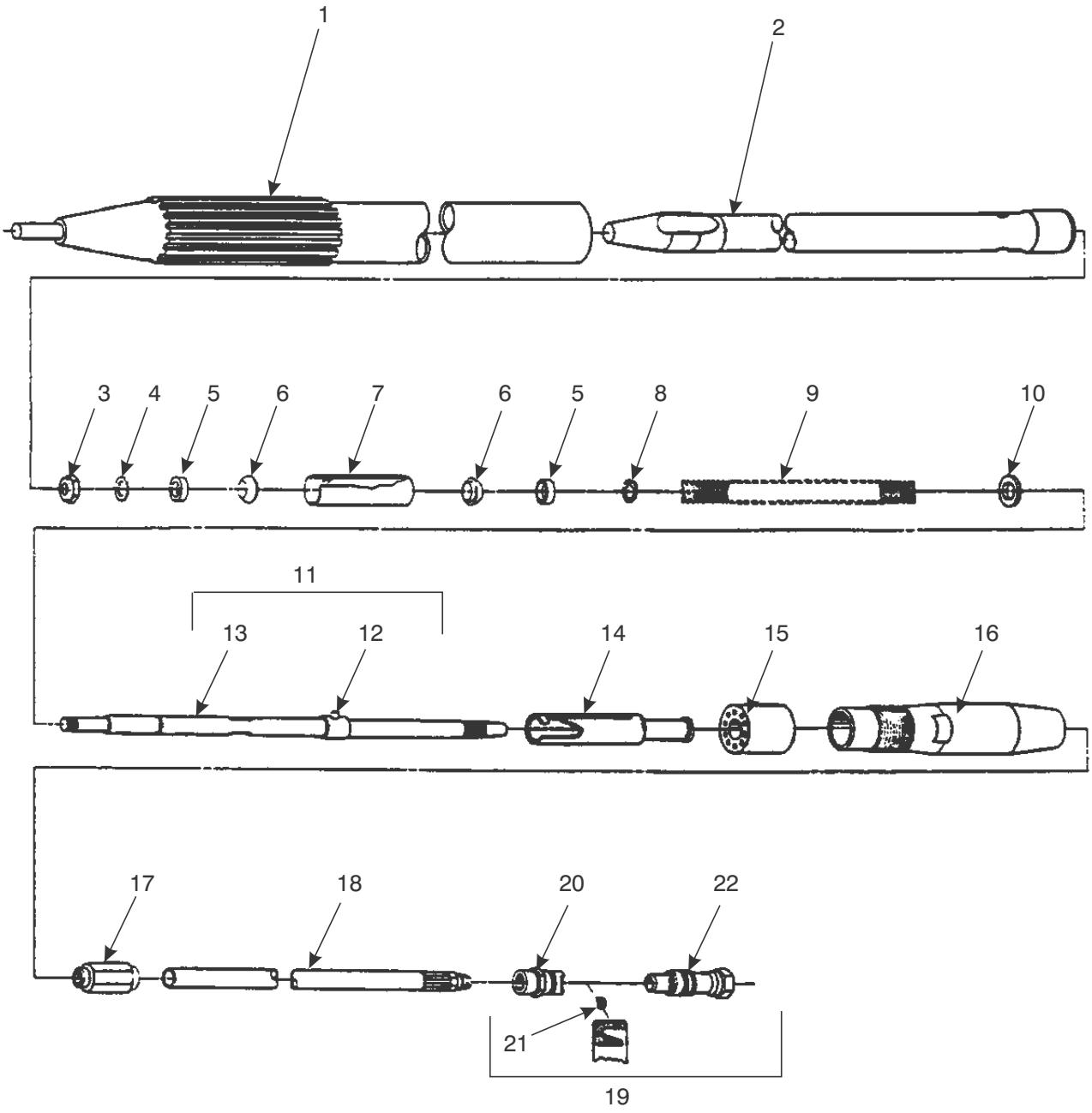

Figure 14-1. Model 218C Hole-Hog Complete Assembly

Model 218C Hole-Hog Complete Assembly Part No. 837600			
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	837620	Body/Anvil
2	1	837601	Striker
3	1	837610	Elastic Nut
4	1	837606	Spacer
5	2	837609	Swivel Seat
6	2	837607	Ball Swivel
7	1	837608	Valve
8	1	837613	Retaining Ring
9	1	830532	Bias Spring
10	1	830530	Spring Seat
11	1	837604	Valve Stem Assembly (Includes Items 12 & 13)
12	1	837605	Valve Stem
13	1	830537	Dowel Pin
14	1	830505	Valve Guide
15	1	830512	Shock Absorber
16	1	830507	End Cap (Serial Number 02649 and Below) End Cap (Serial Number 02650 and Above)
17	1	830538	Hose Socket
18	1	830567	Hose Assembly
19	1	831250	Quick Disconnect Coupling Set (Includes Items 20 & 22)
20	1	831027	Socket, Quick Disconnect Coupling (Includes Item 21)
21	1	831030	Gasket, Socket Coupling
22	1	831042	Plug, Quick Disconnect Coupling

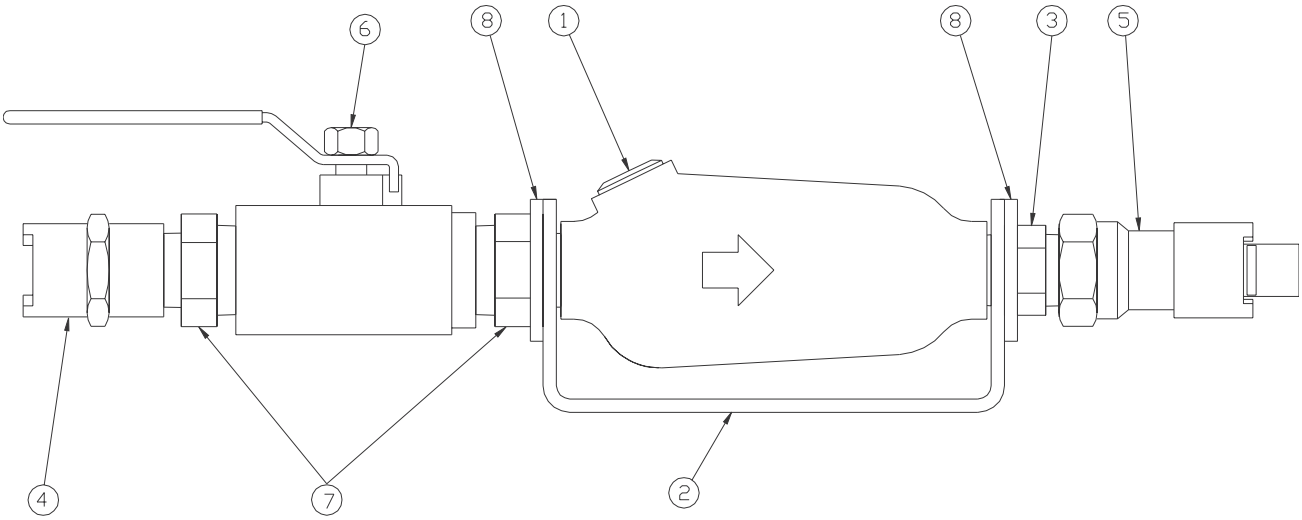

Figure 14-2. Air Line Lubricator Assembly

Model 218C Hole-Hog Air Line Lubricator Assembly (Accessory) Part No. 831035			
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	831021	In-Line Air Lubricator 3/4"
2	1	831022	Support Bracket
3	1	798057	Pipe Nipple
4	1	831027	Quick Disconnect Coupling - Socket 3/4
5	1	831042	Quick Disconnect Coupling - Plug 3/4
6	1	837099	Ball Valve
7	2	798092	Pipe Nipple
8	2	677346	Washers
			FOR USE WITH AIR LINE LUBRICATOR
		832240	Hog Wash, 1 quart
		832219	Hog Wash, 4 quart case
		832220	Hog Wash, 5 gallons

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