ALLIED
Construction Products, LLC

TECHNICAL MANUAL

Manual Part No. 002050
September 22, 2003

HOLE-HOG Models 1000C 1000C-TH

Allied Hole-Hog, Model 1000C Series

Document Change Notice

Date	Page	Change
11/12/99	17 thru 39	Updates to Disassembly, Assembly and Maintenance
09/22/03	Throughout	Update to CE Compliance and specifications

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SECTION 1.0 INTRODUCTION

Hole-Hog Technical Manual: Part Number 002050

This Technical Manual is applicable to Hole-Hog:

Models: 1000C and 1000C-TH

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 1000C Series 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 (1) and the body (2). 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.

2.1.1 Plain Anvil (1000C)

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.

2.1.2 Threaded Anvil (1000C-TH)

The Model 1000C-TH anvil is threaded for mounting optional accessories that enhance operation of the Hole-Hog. Refer to Section 11.0 for more information on accessories and their functions. When an accessory is not installed, the anvil cap protects the anvil threads.

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 End Cap secure the Tail Assembly to the Body/Anvil. The Whip Hose attaches to the Tail Assembly at the other end of the End Cap. Hole-Hog servise and repair require removal of the tail assembly to access the serviseable parts.

2.4 Differences Between Models

This manual covers both Models of Allied's 1000C Hole-Hog Series:

1000C
1000C-TH

All information in this manual applies to both models unless specifically noted otherwise. These two models are identical except for the provisions for securing optional attachments to the 1000C-TH.

SECTION 3.0 SPECIFICATIONS AND DECALS

3.1 Specifications

Outside Diameter: . . . 3 in. (76 mm)

Overall Length:. . . 54 in. (1372 mm)

Weight: . . . . . 72 lbs. (33kg)

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

Air Consumption/Min.: . 40 cfm (1.2m^{3}m)

Whip Hose (inside diameter):. . . 5/8 in. (16 mm)

Recommend Delivery Hose (inside diameter): . . . ¾ in. (19 mm)

Percussion Rate Per Minute: . . . 400

* 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 compact able 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.

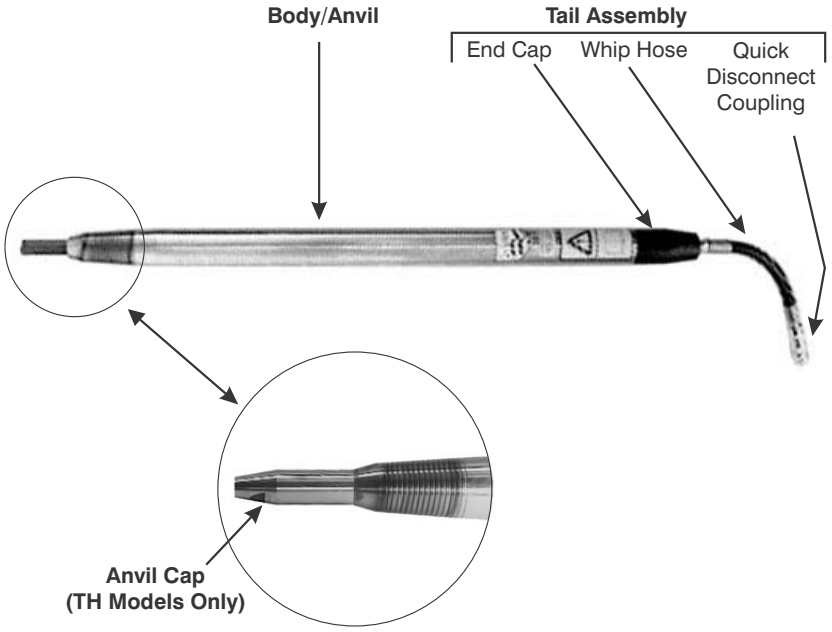
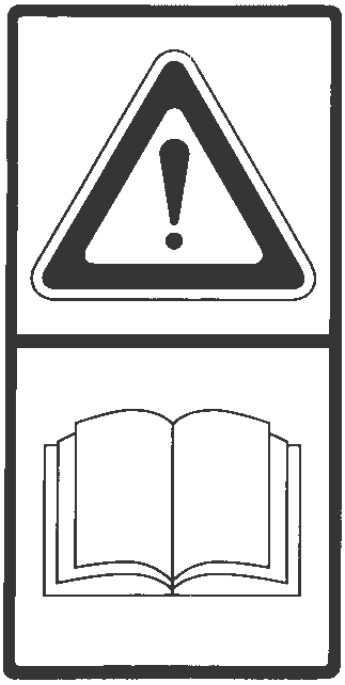


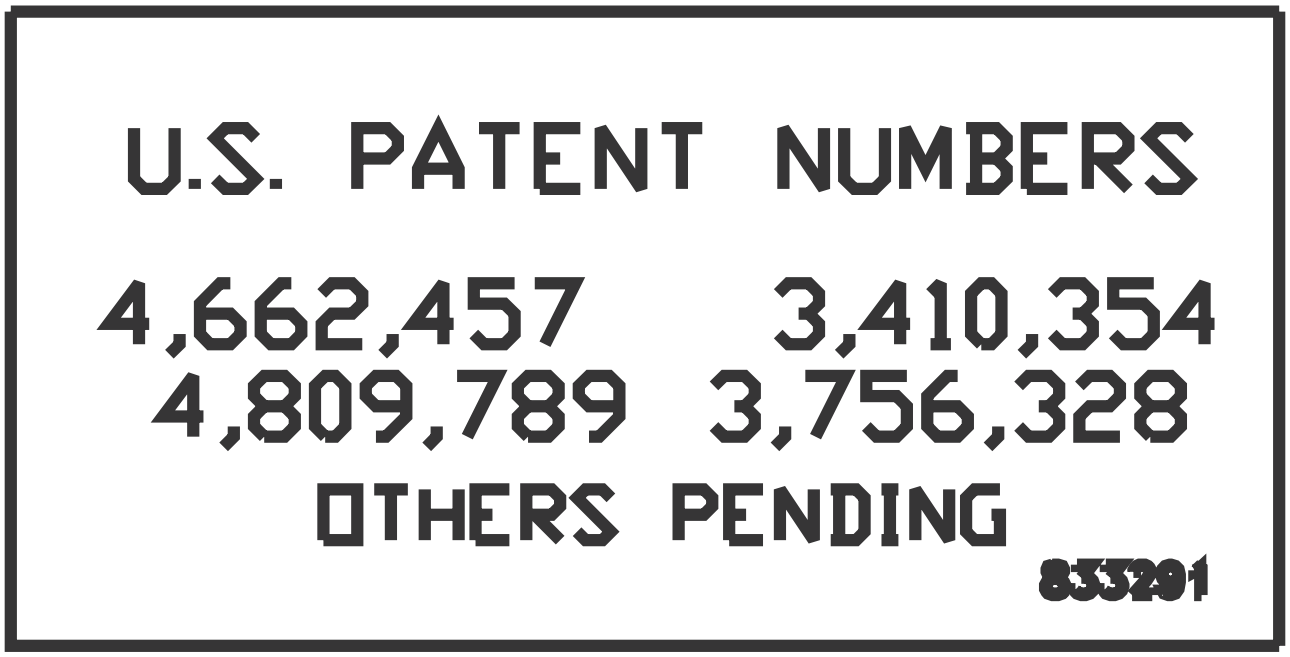
Figure 3-1. Major Components: Hole-Hog Models 1000C and 1000C-TH

3.3 DECAL IDENTIFICATION



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

Made in USA



Hole-Hog Patent Numbers.

The ALLIED LOGO decal is the Allied brand identifier and is a registered trademark of Allied Construction Products, LLC

Hole-Hog®

Model:
Year:

Serial Number:
Mass (kg):

ALLIED 3900 Kelley Avenue, Cleveland, Ohio 44114 USA

Hole-Hog CE Serial Number Plate

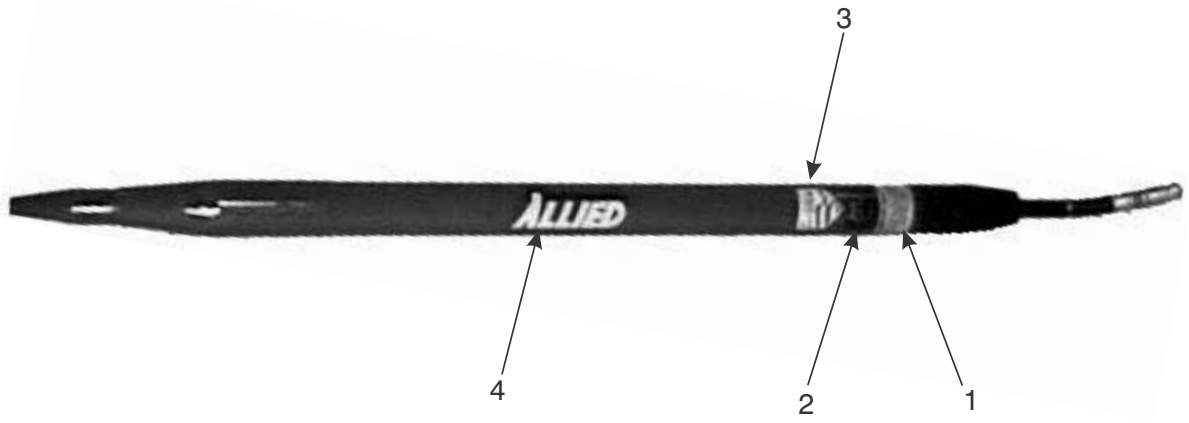


Figure 3-2. Hole-Hog Decal Location

Hole-Hog Decal Kit Part Number 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

- 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

Each of the Hole-Hog Models covered in this manual are heavy; refer to Section 3.0 Specifications. Even when disassembled, component parts like 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/or its components from rolling when they are placed on a horizontal surface.
- Always use suitable lifting equipment that will assure the safety of personnel and not damage 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. For the TH models only: verify that the Anvil Cap or other required tool is secured to the threaded anvil.
5. 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.

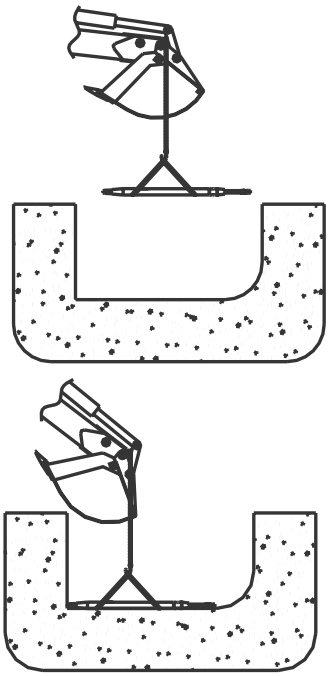


Figure 6-1. Lifting the Hole-Hog

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.
   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.

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SECTION 8.0 DISASSEMBLY

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.

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 Allied Tool Kit 831880 must also be available.

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.

8.2 Disassembly and Assembly Tool Kit Part Number 831880

The tools contained in this kit are listed below and illustrated in Figure 8-1.

1. Shock Absorber Installation Tool; P/N 831781, quantity 1.
2. First Stage Shock Absorber Pusher Tool, P/N 831785, quantity 1.
3. Second Stage Shock Absorber Pusher Tool, P/N 831786, quantity 1.
4. Valve Guide Installation Tool, P/N 831784, quantity 1.
5. Valve Guide Installation Tool, P/N 831795, quantity 1.
6. Valve Bushing Installation Tool, P/N 831794, quantity 1.
7. End Cap Wrench, P/N 831150, quantity 1.

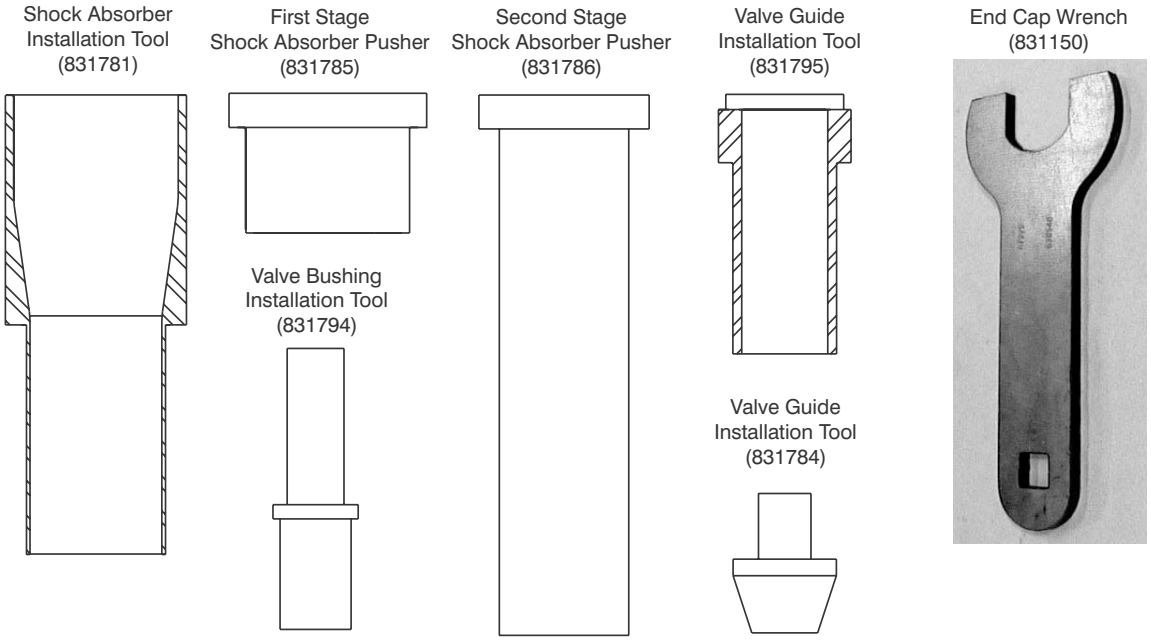

Figure 8-1. Hole-Hog Tool Kit

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.

8.3 Extent of Disassembly

The procedures in this section provide instructions to 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 (section 8.5), 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.

8.4 Whip Hose Replacement

- To replace the Whip Hose (20) in the field, refer to section 11.1.
- To replace the Whip Hose (20) as part of shop disassembly, follow the procedures in this section, starting with 8.7.1.

8.5 Replacing Body/Anvil and Anvil Cap

1. When replacing the Body/Anvil (1) only, it is not necessary to disassemble the Whip Hose (20) and tail assembly components.
   a. Remove Striker (2) and the assembled Whip Hose and tail assembly as described in section 8.6.
   b. Until the new Body/Anvil is installed, place the Striker (2), Whip Hose (20) and tail assembly where they will not be contaminated with dust and dirt. Cover or wrap them in cloth or plastic as required.
2. For 1000C-TH only.
   a. When replacing a worn Body/Anvil (1), also replace the Anvil Cap (24).
   b. To replace only the Anvil Cap, refer to Section 9.4.1, Step 2.

8.6 Removing Tail Assembly and Striker

1. Place the Hole-Hog on a level surface. Holding the Hole-Hog body with a strap wrench, use wrench P/N 831150 from the Tool Kit to 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 8-2.

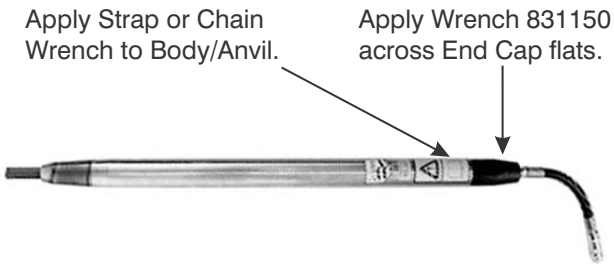

Figure 8-2. Loosening the End Cap.

2. Remove the tail assembly by unthreading the End Cap and pulling the assembly from the Body/Anvil (1) as shown in Figure 8-3.

Figure 8-3. Removing the Tail Assembly.

3. Place the tail assembly where it will not be contaminated with dust and dirt. Wrap it 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 6 to 8 inches. (Figure 8-4).

Figure 8-4. 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 8-5.
6. Place the striker where it will not be contaminated with dust and dirt. Wrap it in cloth or plastic if necessary.

Figure 8-5. Removing Striker from Body/Anvil.

8.7 Disassembling the Tail Assembly

NOTE

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

8.7.1 Remove Whip Hose and Fittings

1. Place the Tail Assembly in a vise or saddle clamp and, and secure it tight enough to hold the End Cap in place.
2. Using a 1-1/4-inch open-end wrench to hold the Adapter (18) in place, use a 1-1/8-inch open-end wrench to loosen and thread the hose fitting of Whip Hose (20) from the Adapter. Refer to Figure 8-6.

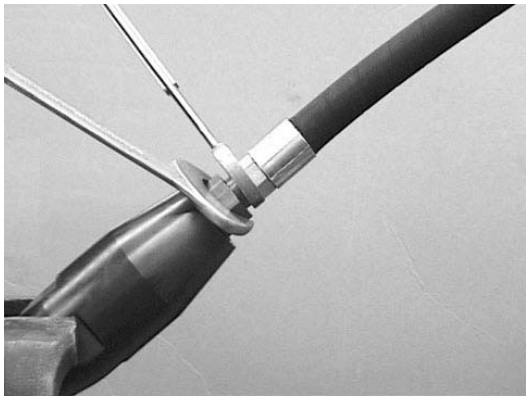

Figure 8-6. Remove Whip Hose.

3. Remove the End Cap and the other Tail Assembly parts from the vise. Place them where they will not be damaged or contaminated with dust and dirt while the Whip Hose is repaired and replaced.
4. Using a 1-3/8-inch open-end wrench to hold the Quick Disconnect Socket (22) in place, use a 1-1/8-inch open-end wrench to loosen and thread the hose fitting of Whip Hose (20) from the Socket. Refer to Figure 8-7.

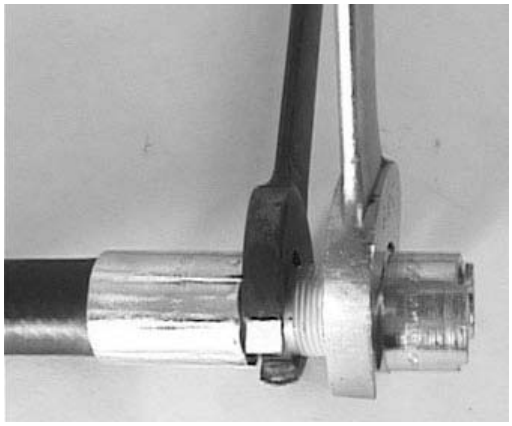

Figure 8-7. Remove Coupling Socket from Whip Hose.

5. If parts replacement is not required, leave the Quick Disconnect (Q.D.) Couplings assembled. Otherwise, separate the Socket (19) from the Plug (21).
6. As shown in Figure 8-8, use a screw driver or needlenose plyers to pry the Gasket (23) from the Socket. Discard the gasket.

Figure 8-8. Remove Gasket from Coupling Socket.

8.7.2 Remove Valve from End Cap

1. Turn the End Cap (16) so the Cone Point Set Screw (19) is accessible and secure the End Cap horizontally in a vise.
2. Remove the Cone Point Set Screw (19) as shown in Figure 8-9.

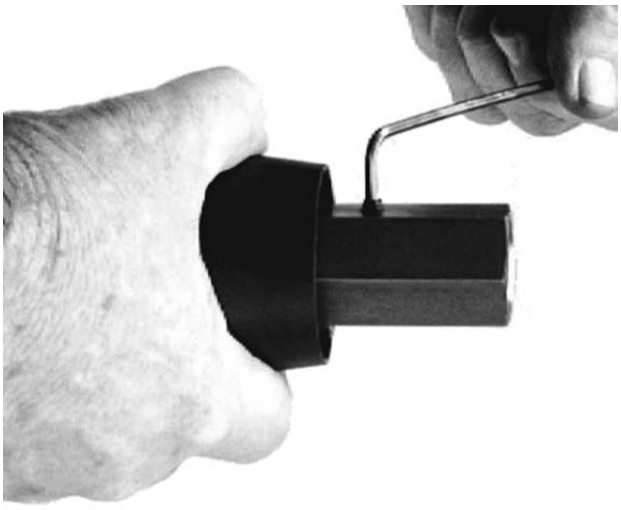

Figure 8-9. Remove Set Screw.

3. Use a 1-1/4-inch open-end wrench to hold the Adapter (18) in place, as shown in Figure 8-10.
4. With a 3/4-inch open-end wrench across the flats of the Valve Stem (11), thread the Valve Stem (11) from the Adapter (18) as shown in Figure 8-10.

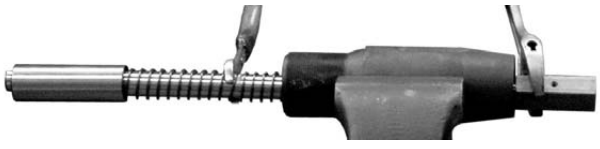

Figure 8-10. Loosen Valve Stem.

5. Holding the Bias Spring (9) and Valve Stem (11) in one hand, pull the valve assembly out of the Valve Guide (14). Refer to Figure 8-11.

Figure 8-11. Remove Valve Stem Assembly.

8.7.3 Remove Valve Stem Components

NOTE

DO NOT disassemble the Valve and Valve Stem components unless component replacement is required.

After disassembly, Retaining Rings (4 & 7), Valve Bushing (6), and Bushing and Spring Retainers (5 & 8) are not re-usable. Discard as they are removed.

1. As shown in Figure 8-12, the Retaining Ring (4) is attached to the Valve Stem (11) and is just inside the end of the Valve (3).
2. Use retaining ring pliers to expand and remove the Retaining Ring (4) from the Valve Stem (11) and Valve (3) as shown in Figure 8-13.

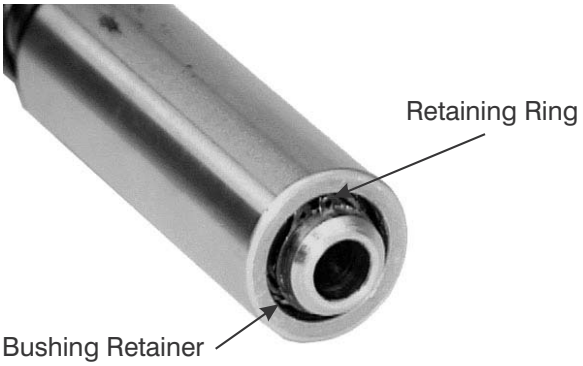

Figure 8-12. Retaining Ring on Valve Stem inside the Valve.

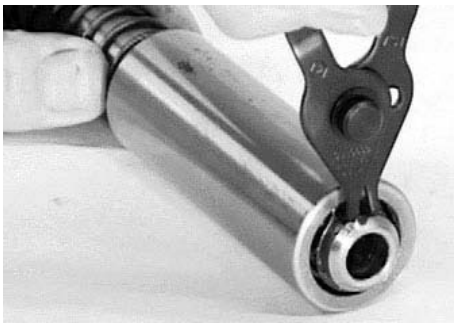

Figure 8-13. Remove Valve Retaining Ring from Valve Stem and Valve.

3. After removing the Retaining Ring, pull the Bushing Retainer, Valve Bushing and Valve from the Valve Stem by hand. Sometimes additional force must be used to unseat the components.
   - If the Valve Components can be removed by hand, proceed to step 7.
   - If additional force is required, proceed to step 4.
4. Refer to Figure 8-14-A, and position the Valve Stem (11) and its assembled components in an arbor press.
   - Support the edges of the Valve (3) with standard blocking. Allow the Valve Stem to hang freely below the blocking.

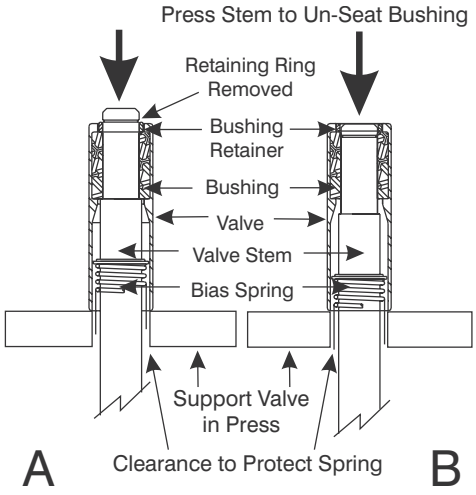

Figure 8-14. Valve Stem and Components in Arbor Press.

- The Bias Spring (9) should be clear of the blocking and the press. Make sure the Spring is not crimped or bent during pressing.

- Place the plunger of the arbor press against the tip of the Valve Stem (11) protruding above the Valve.

5. Press the Valve Stem (11) from the assembled Valve (3), Bushing Retainer (5) and Valve Bushing (6) as shown in Figure 8-14-B.

6. When the Valve Stem is unseated from the Bushing and Retainer, use a thin bladed screwdriver or knife to pry the Bushing Retainer (5) from the Valve Stem and Valve. See Figure 8-15-A.

7. By hand, finish pulling the assembled Valve (3) and Bushing (6) from the Valve Stem (11). See Figure 8-15-B.

8. With a sharp knife or hacksaw, cut the Bushing (6) inside the Valve into two or three pieces. Pry the bushing pieces from the Valve (3) with a screwdriver or needle-nose pliers.

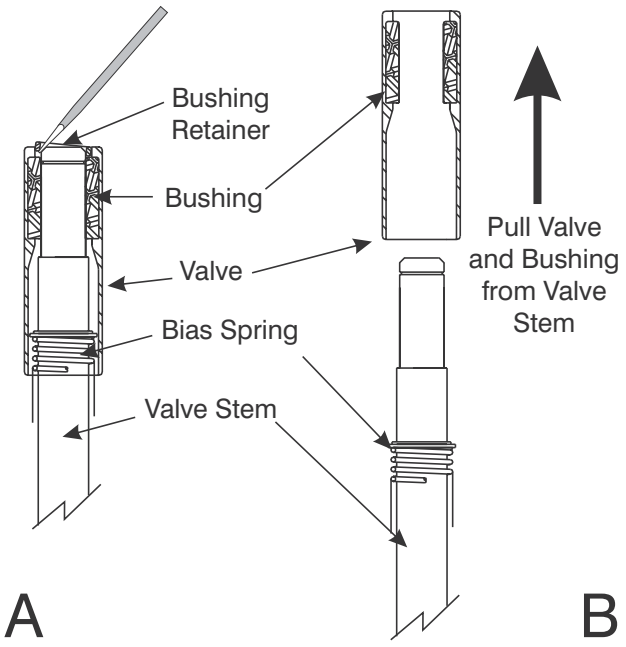

Figure 8-15. Remove Retainer from Valve and Valve Stem.

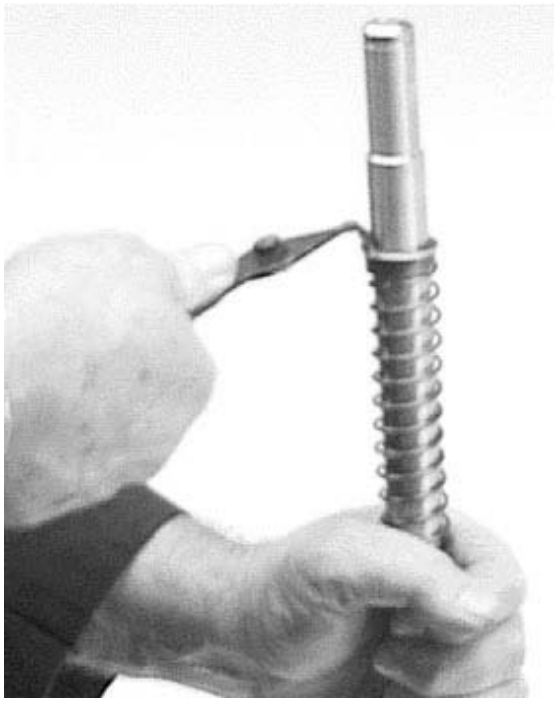

Figure 8-16. Remove Bias Spring Retaining Ring from Valve Stem.

9. Use retaining ring pliers to expand and remove Retaining Ring (7) from the Valve Stem (11) as shown in Figure 8-16.

10. Slide the Retaining Ring (7), Spring Retainer (8), Bias Spring (9), and Spring Stop (10) from the Valve Stem (11). See Figure 8-17.

Figure 8-17. Remove Bias Spring Components from Valve Stem.

8.7.4 Disassemble End Cap Components

CAUTION

Removal destroys Shock Absorber. DO NOT remove Shock Absorber (8) and Valve Guide (7) from End Cap (9) unless replacement is necessary.

1. Use a sharp knife or hack saw to cut through the Valve Seal (17). Using a large screw driver or needlenose pliers, pry the Valve Seal from the End Cap. Discard the Seal. See Figure 8-18.
2. With threaded end down, place the End Cap in the arbor press as shown in Figure 8-19.
   - Support the edges of the End Cap (16) with standard blocking.
   - Provide additional space below the blocking to permit Valve Guide travel during pressing.
3. Insert the Valve Guide Installation Tool 831784 in the Valve Guide as shown in Figure 8-20-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.

4. Press the Valve Guide from the Shock Absorber as shown in Figure 8-20-B.
5. Once started from the Shock Absorber, the Valve Guide can be pulled free by hand.

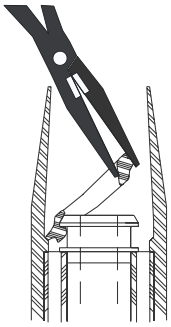

Figure 8-18. Removing the Valve Seal from the End Cap.

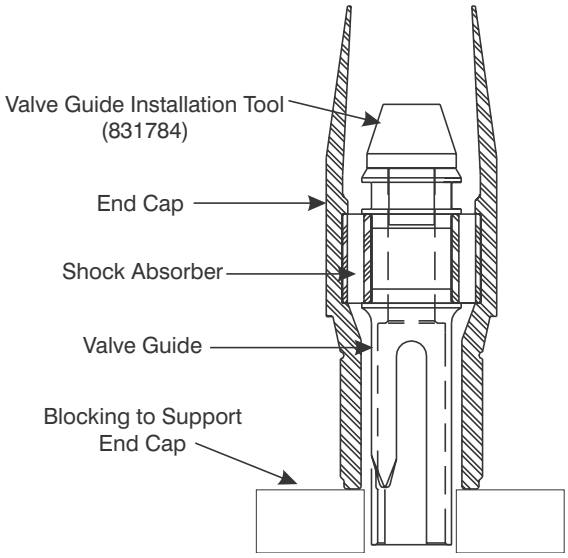

Figure 8-19. Insert Valve Guide Tool in the Valve Guide.

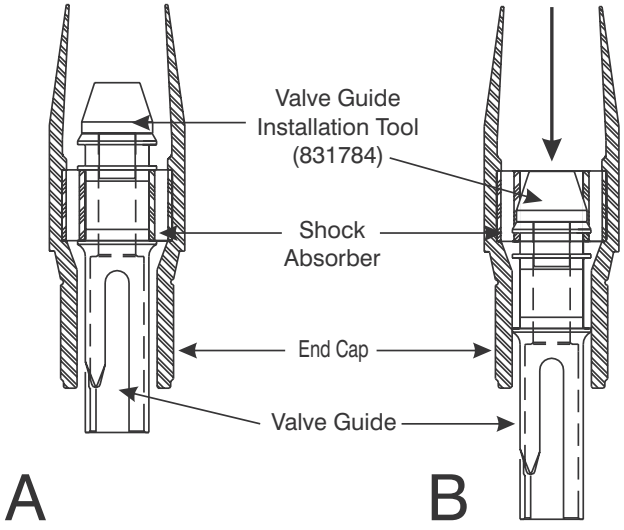

Figure 8-20. Press Valve Guide from the Shock Absorber.

6. Use a sharp knife or hack saw to cut through the Shock Absorber (15), and remove it from the Valve Guide (14). See Figure 8-21.

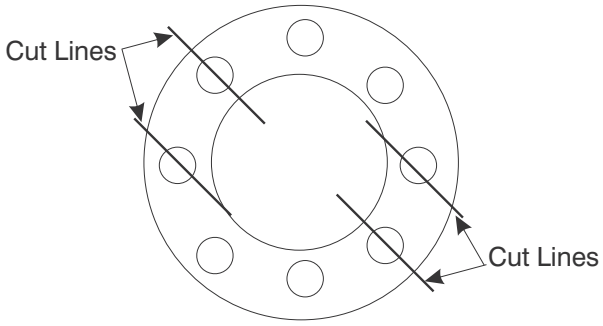

Figure 8-21. Cutting Pattern for Shock Absorber

SECTION 9.0 ASSEMBLY

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.

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

CAUTION

Before starting any of the Assembly 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.

9.1 General

The procedures in this section must be performed in a machine shop suitable for the cleaning, inspection, repair and assembly of pneumatic construction equipment. In addition to the tools and fixtures normally stocked in such a shop, the Allied Tool Kit 831880 must also be available.

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.

9.2 Disassembly and Assembly Tool Kit Part Number 831880

The Allied Disassembly and Assembly Tool Kit, P/N 831880, is described and illustrated in Disassembly Section 8.2.

9.3 Whip Hose Replacement

- To replace the Whip Hose (20) in the field, refer to section 11.1
- To replace the Whip Hose (20) as part of shop assembly, follow the procedures in this section, starting with 9.6.

9.4 Replacing The Body/Anvil Only

When replacing the Body/Anvil (1) only, the Striker (2) and tail assembly components are removed from the Body/Anvil and stored with no further disassembly as described in 8.5.

1. When the new Body/Anvil is available, bring the Striker (2), 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 9.8.

9.4.1 Threaded Anvil (TH) Units Only

1. A replacement Body/Anvil (1) includes a new Anvil Cap (24). Check that it is securely attached to the Body/Anvil as described below.
2. If the Anvil Cap alone is being replaced, install it hand tight on the Anvil/Body. Then, with the Body/Anvil held securely by a strap wrench, use a 1-1/4-inch open-end wrench to tighten the Anvil Cap another 1/8-inch. Refer to Section 9-9.

9.5 Assemble End Cap Components

1. Position the End Cap (16) in an arbor press with the threaded end up. Insert the Shock Absorber Installation Tool, P/N 831781 into the threaded end of the End Cap as shown in Figure 9-1-A.

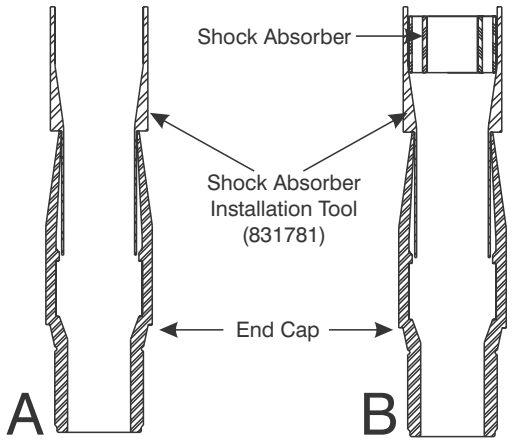

Figure 9-1. End Cap, Tool P/N 831781 and Shock Absorber

2. Lubricate the O.D. of the Shock Absorber (15) and the I.D. of the Shock Absorber Installation Tool, 831781. Place the Shock Absorber into the Installation Tool as shown in Figure 9-1-B.
3. Center the Shock Absorber First Stage Pusher Tool P/N 831785 over the Shock Absorber as shown in Figure 9-2-A.
4. Compress the Shock Absorber in Installation Tool 831781 as shown in Figure 9-2-B.

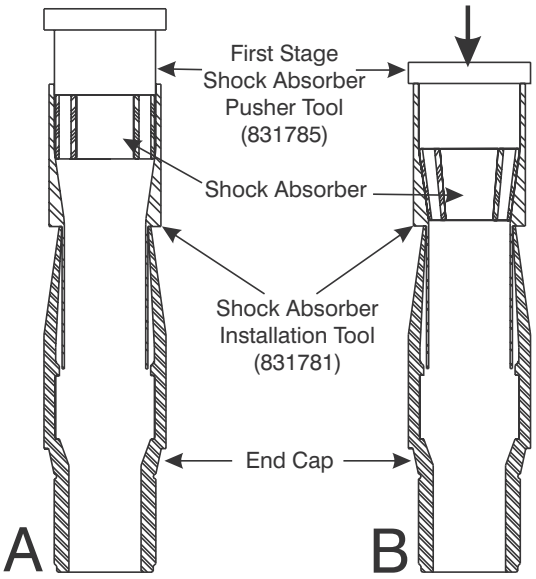

Figure 9-2. Compress Shock Absorber in Installation Tool 831781.

5. Center the Second Stage Shock Absorber Pusher Tool P/N 831786 in the Installation Tool and over the Shock Absorber as shown in Figure 9-3-A.

CAUTION

When using Tool 831786, DO NOT press Shock Absorber past the seat at the non-threaded end of the End Cap.

6. 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 9-3-B.

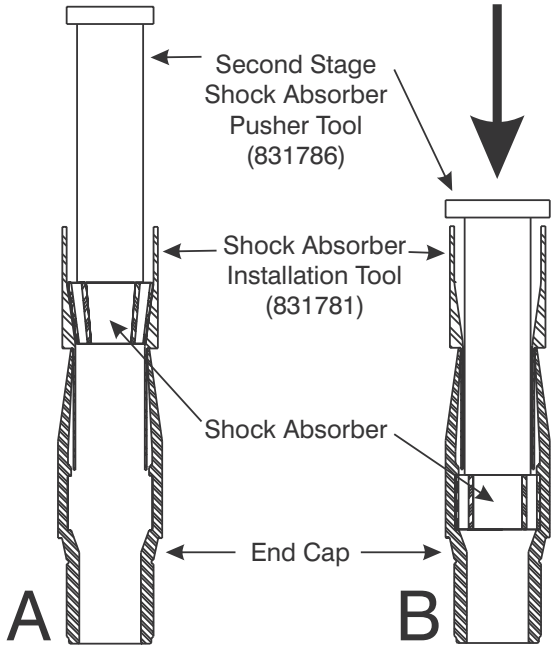

Figure 9-3. Press the Shock Absorber into the End Cap.

7. Before installing the Valve Guide (14) , lubricate:
   - the outer surface of the Valve Guide.
   - the I.D. of the Shock Absorber (15).
   - Installation Tool P/N 831784.
   - Installation Tool P/N 831795.
8. Center the Valve Guide Installation Tool P/N 831784 and the Valve Guide (14) over the bore of the shock absorber as shown in Figure 9-4-A.
9. Slide the Valve Guide Installation Tool P/N 831795 over the Valve Guide (14) as shown in Figure 9-4-A. Press the Valve Guide into Shock Absorber.
10. Refer to the 1-inch reference line in Figure 9-4-B. The stop block on Installation Tool P/N 831795 assures that:
    - The upper end of the Valve Guide is 1-inch above the threaded end of the End Cap.
    - The center shoulder of the Valve Guide seats against the edge of the Shock Absorber.
11. The Valve Guide Installation Tool P/N 831784 will fall free of the Valve Guide when the Valve Guide seats against the Shock Absorber.
12. Remove the End Cap from the arbor press and remove the Valve Guide Installation Tools 831784 and 831795.
13. Look inside the non-threaded end of the End Cap and lubricate that part of the Valve Guide that protrudes from the Shock Absorber. See Figure 9-5-A.

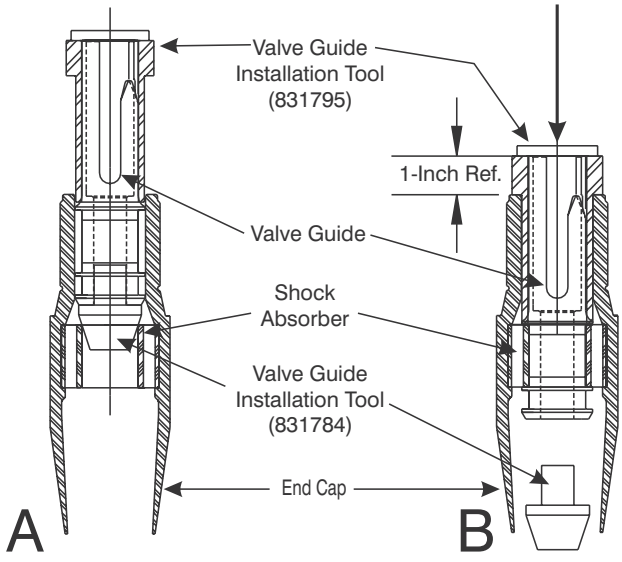

Figure 9-4. Press the Valve Guide into the Shock Absorber.

14. Lubricate the Valve Guide Installation Tool 831784 and place it into the Valve Guide. The smaller part of the cone faces up as shown in Figure 9-5-A.
15. Lubricate the Valve Seal (17) and fit it around the cone of the Valve Guide Installation Tool. See Figure 9-5-A.
16. With a large, flat screw driver, press the Valve Seal into the End Cap. Moving progressively around the seal, press each quarter of the seal deeper into the End Cap until the seal seats between the Shock Absorber and the

shoulder at end of the Valve Guide as shown in Figure 9-5-B.

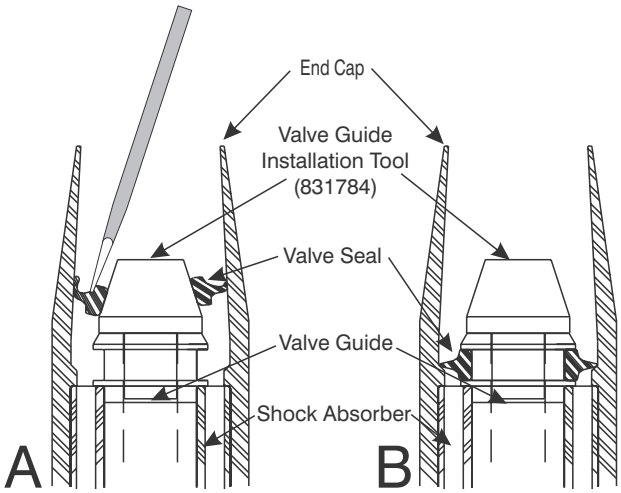

Figure 9-5. Press Valve Seal into End Cap and onto Valve Guide.

9.6 Assemble Whip Hose Components

WARNING
Always use Allied's Whip Hose Assembly (see parts lists 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 (23) toward the Quick Disconnect (Q.D.) Socket (22) and Whip Hose (20), insert the new Gasket (23) into the Socket (22). Check that the gasket seats properly. Refer to Figure 9-6.
2. Place the assembled Q.D. fittings and the Whip Hose on the assembly bench.
3. At one end of the Whip Hose, wrap the external threads of the hose fitting with teflon tape as shown in Figure 9-7.
4. Use a 1-3/8-inch open-end wrench to hold the Q.D. Socket in place, and a 1-1/8-inch open-end wrench to tighten the fitting of Whip Hose into the Q.D. Socket. See Figure 9-8.

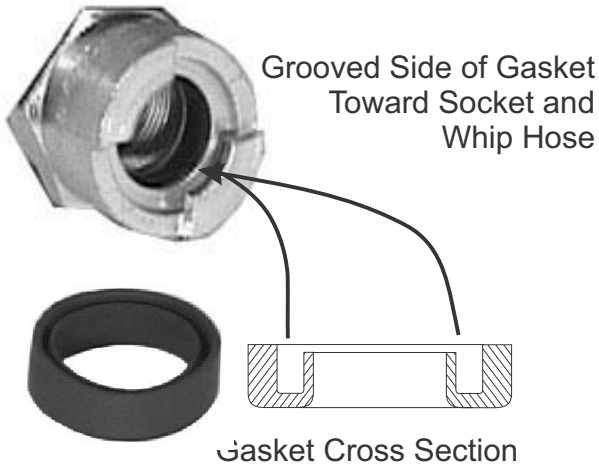

Figure 9-6. Insert New Gasket in Q.D. Socket.

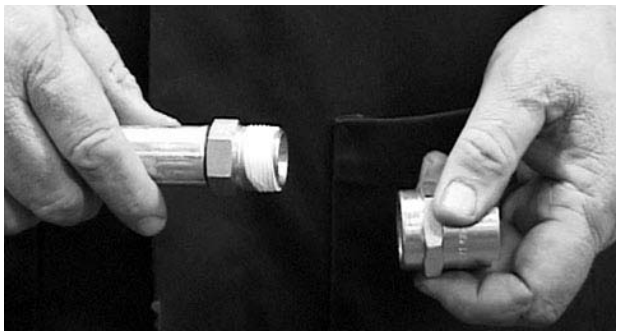

Figure 9-7. Apply Teflon Tape to Hose Fitting.

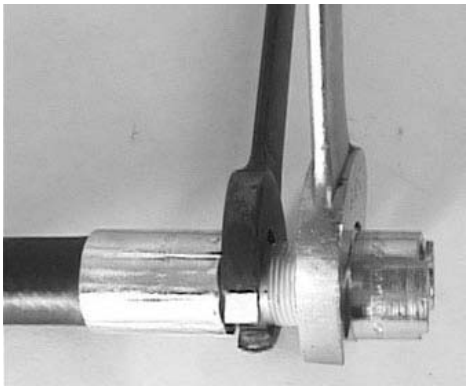

Figure 9-8. Secure Whip Hose to Q.D. Socket.

9.7 Assemble Tail Assembly Components

NOTE

Except for the End Cap, lubricate all tail assembly components prior to assembly.

9.7.1 Assemble Bias Spring Components

1. Collect the Valve Stem (11), Spring Stop (10), Bias Spring (9), Spring Retainer (8), and Retaining Ring (7) on a clean flat work bench as shown in Figure 9-9.

Figure 9-9. Bias Spring Components.

2. Slide the Spring Stop (10), the Bias Spring (9) and the Spring Retainer (8) onto the Valve Stem (11) as shown in Figure 9-10.

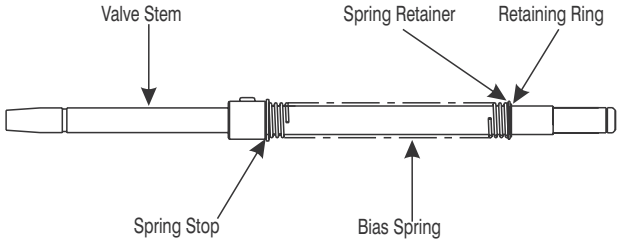

Figure 9-10. Install Bias Spring Components.

3. Install Retaining Ring (7) to secure the other Bias Spring components on the Valve Stem, as shown in Figures 9-10 and 9-11.

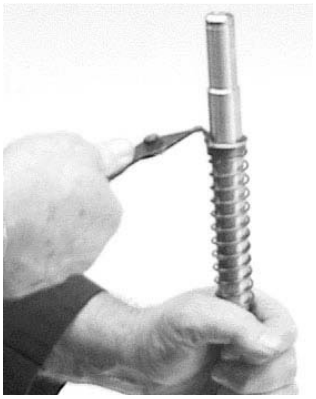

Figure 9-11. Secure Bias Spring Components with Retaining Ring.

9.7.2 Assemble Valve Components

1. Collect Valve (3), Valve Bushing (6), Bushing Retainer (5), Retaining Ring (4), and Valve Stem, (11) on a clean flat work bench as shown in Figure 9-12. The Bias Spring components must be installed on the Valve Stem (as described in 9.7.1) before attaching the Valve and Bushing to the Stem.

Figure 9-12. Valve Components

2. Lubricate the external surface of the Valve Bushing (6) and the internal bore of the Valve (3). Slide the Bushing into the large bore end of the Valve by hand as far as it will go. See Figure 9-13-A.
3. Lightly lubricate the surface of the Bushing Installation Tool 831794.

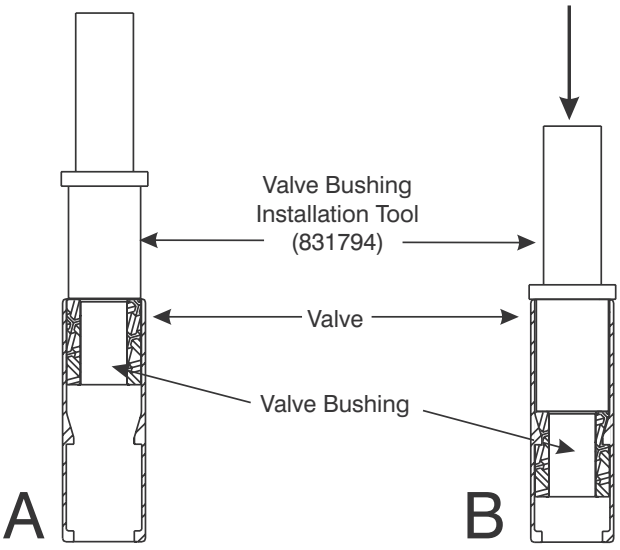

Figure 9-13.Press Valve Bushing into Valve.

4. Place the Valve in an arbor press with the large bore end up. Center the large end of the Bushing Installation Tool 831794 over the Bushing inside the bore of the Valve. See Figure 9-13-A
5. Press the Valve Bushing (6) into the Valve (3) until the stop on the Installation Tool touches the top of the Valve, as shown in Figure 9-13-B.
6. Remove the Bushing Installation Tool 831794 from the Valve. Insert the small diameter end of the tool into the large bore end of the Valve. Center it over the Bushing. See Figure 9-14-A.
7. Press the Valve Bushing (6) into the Valve (3) until the Bushing is seated between the internal and external shoulders of the Valve. See Figure 9-14-B.

9.7.3 Attach the Valve to the Valve Stem

After the Bias Spring components are attached to the Valve Stem (9.7.1) and the Valve Bushing is pressed into the Valve (9.7.2), secure the Valve to the Valve Stem as described below.

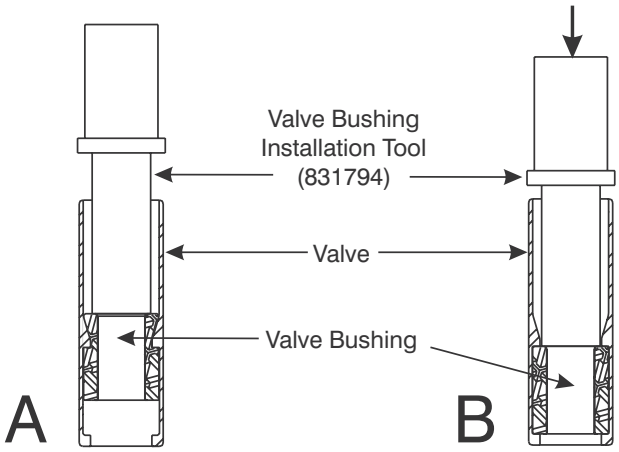

Figure 9-14. Seat Valve Bushing in Valve.

1. Lubricate the internal bore of the Valve Bushing (6), the non-threaded end of the Valve Stem (11) and the first two inches of Bias Spring as shown in Figure 9-15.

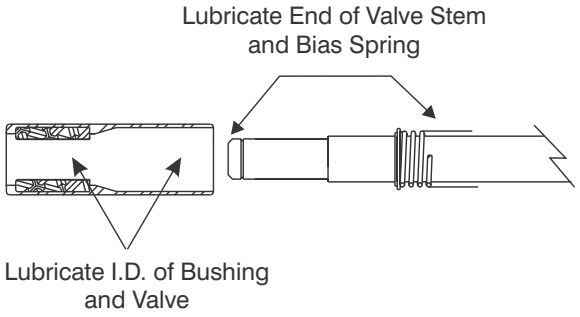

Figure 9-15. Lubricate the Valve Stem and the Valve Bushing.

2. Center the assembled Valve and Bushing over the non-threaded end of the Valve Stem as shown in Figure 9-16-A.
3. Slide the Valve onto the Stem until the Stem centers on the internal shoulder of the Valve and just starts into the Bushing, as shown in Figure 9-16-B.
4. By hand, press the Valve onto the Valve Stem until the retaining ring groove in the Stem is level with the top of the Valve as shown in Figure 9-17-B.

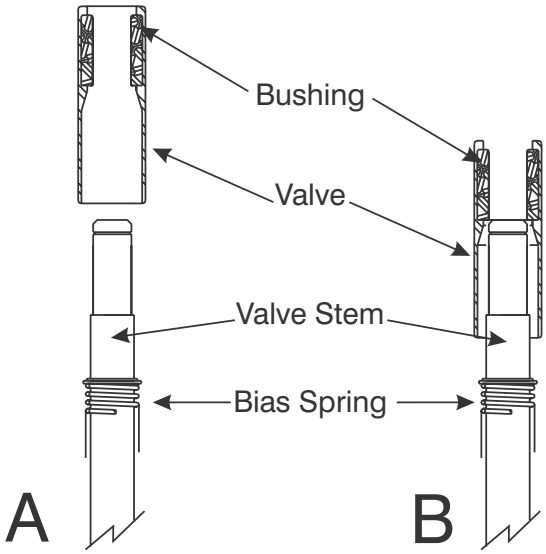

Figure 9-16. Slide Valve onto Valve Stem.

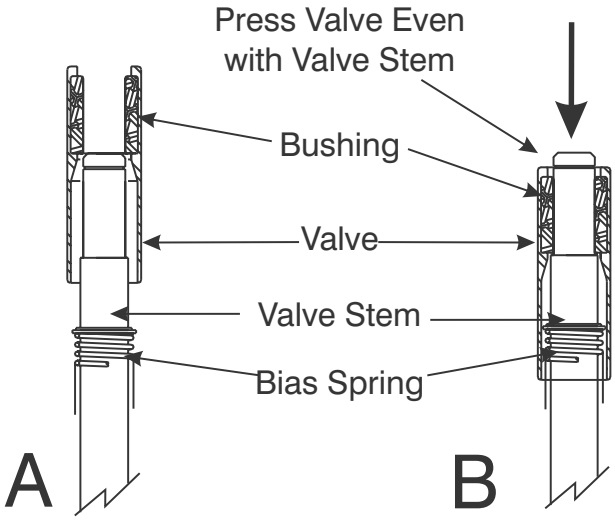

Figure 9-17. Press Valve onto Valve Stem.

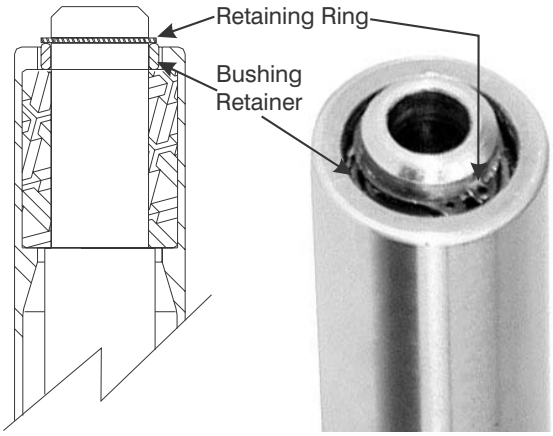

Figure 9-18. Install Bushing Retainer and Retaining Ring.

5. Slide the Bushing Retainer (5) on to the Valve Stem. Install Retaining Ring (4) to secure these components in place. Refer to Figure 9-18.

9.7.4 Valve Stem, End Cap and Whip Hose

1. To prevent it from moving during assembly, fasten the End Cap (16) securely in a vise or saddle clamp.
2. Refer to Figure 9-19, and guide Valve Stem (11) with the assembled Valve and Spring components into the threaded end of the End Cap (16), and then into the Valve Guide (14).

Figure 9-19. Slide Assembled Valve Stem Components into End Cap.

3. Continue to slide Valve Stem (11) into Valve Guide (14) until the Valve Stem threads protrude from the other side of the End Cap (9). See Figure 9-20.

Figure 9-20. Threaded End of Valve Stem.

4. Thread the Adapter (18) onto the Valve Stem (11) and hand tighten. See Figure 9-21.

Figure 9-21. End Cap and Adapter

5. Use a 1-1/4-inch open-end wrench to hold the Adapter (18) in place, as shown in Figure 9-22.

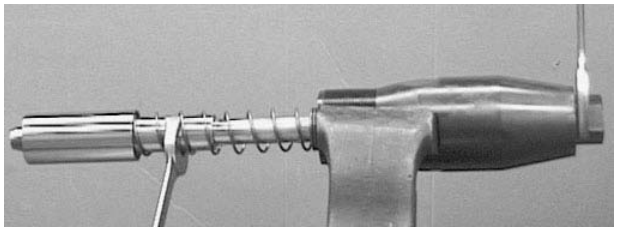

Figure 9-22. Secure Adapter to Valve Stem.

6. With a 3/4-inch open-end wrench across the flats of the Valve Stem (11), thread the Valve Stem into the Adapter (18) until it is wrench tight. Refer to Figure 9-22.
7. Insert the Cone Point Set Screw (19) and tighten to prevent the Adapter from backing off of the Valve Stem. Refer to Figure 9-23.

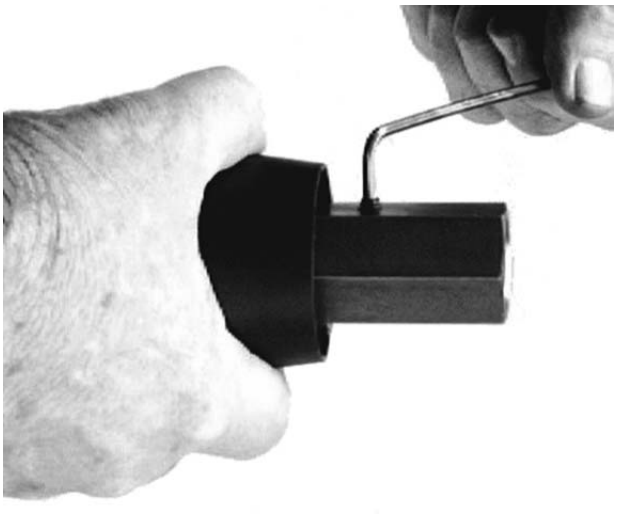

Figure 9-23. Tighten Set Screw.

8. Apply teflon tape to the external threads of the hose fitting at one end of the Whip Hose. See Figure 9-24.
9. Start the teflon covered fitting into the Adapter.

Figure 9-24. Apply Teflon Tape to Hose Fitting.

10. Use a 1-1/4-inch open-end wrench to hold the Adapter (18) in place, and a 1-1/8-inch open-end wrench to secure the Whip Hose (20) fitting in the Adapter (18). See Figure 9-25.

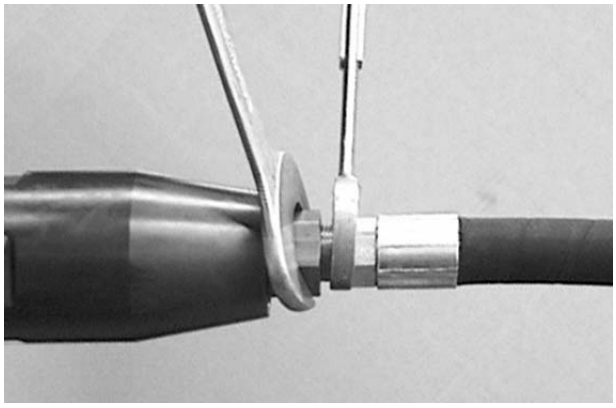

Figure 9-25. Secure Whip Hose To Adapter.

9.8 Body/Anvil, Striker and Tail Assembly

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 9-26 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.

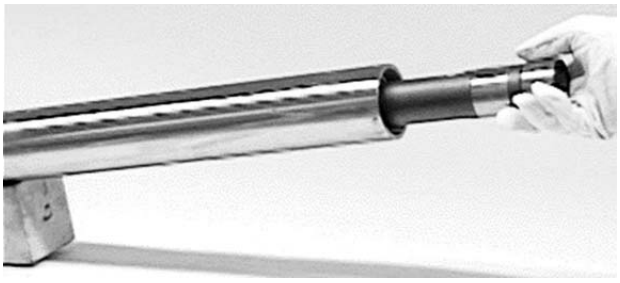

Figure 9-26. Slide Striker into Body/Anvil.

3. Apply anti-seize thread lubricant sparingly to the threads of the End Cap (16) and Body/Anvil (1). See Figure 9-27.

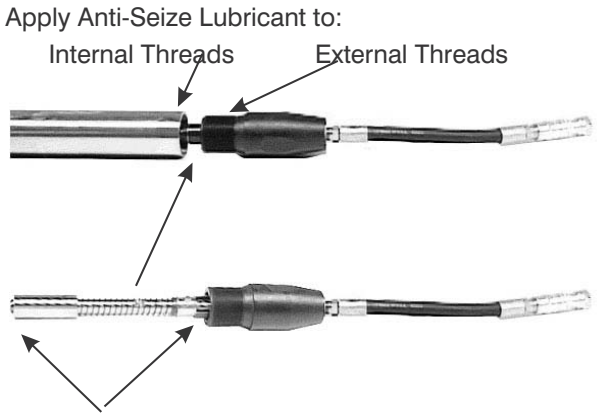

Figure 9-27. Prepare Tail Assembly and Body/Anvil for Assembly.

4. Coat the valve assembly components with hydraulic fluid, as shown in Figure 9-27.
5. Insert the Valve (3) into the Striker (2) and thread the End Cap (16) into the Body/Anvil (1). See Figure 9-28.
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 831150 from the Tool Kit to tighten the End Cap (16), as shown in Figure 9-29.

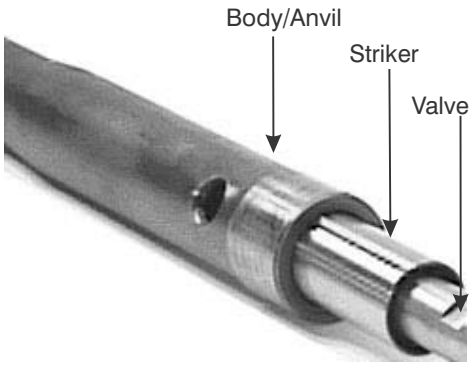

Figure 9-28. Insert Valve into Striker.

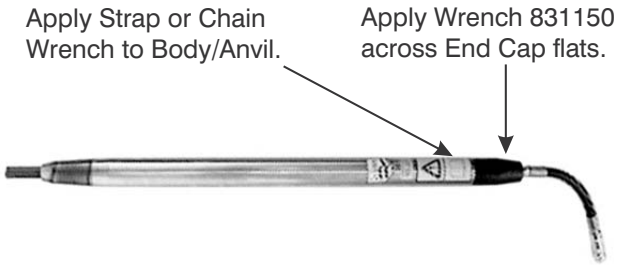

Figure 9-29. Fasten End Cap to Body/Anvil.

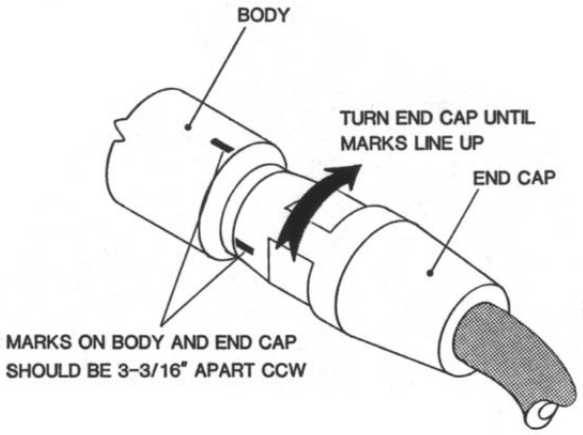

Figure 9-30. Tighten End Cap to Required Torque..

8. Tighten the End Cap to a torque of 750-1000 ft.-lbs (1015-1355 n-m). If a torque wrench is not available, use the following procedure. See Figure 9-30.
   a. After tightening the End Cap hand tight, put a scribe mark on the Body/Anvil next to the End Cap.
   b. On the End Cap, place a second scribe mark 3-3/16-inch counter-clockwise to the first mark.
   c. Using P/N 831150 wrench, tighten the End Cap until the two scribe marks align.

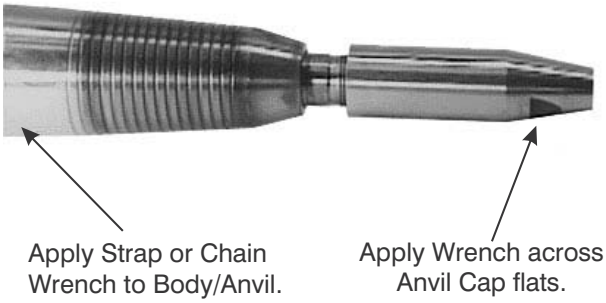

Figure 9-31. Secure Anvil Cap To Body/Anvil.

9.9 Installing the Anvil Cap

For Threaded Anvil (TH) Units Only

1. Place the Hole-Hog on a level surface and thread the Anvil Cap (24) onto the Body/Anvil (1) hand tight.
2. Hold the Body/Anvil (1) in place with a strap or chain wrench. See Figure 9-31.
3. With a 1-1/4-inch open-end wrench, tighten the anvil cap a minimum 1/8-inch past hand tight.

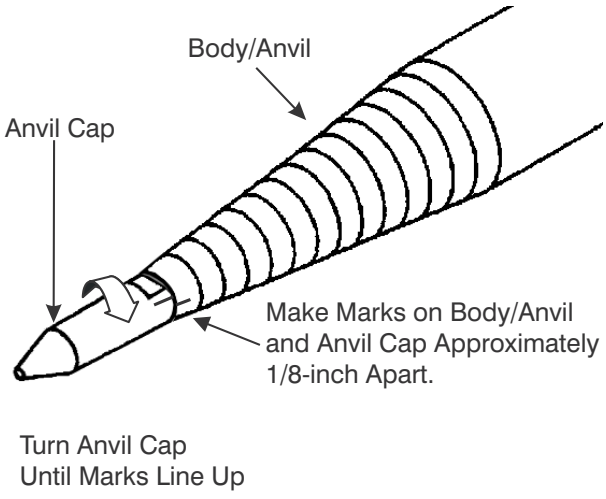

Figure 9-32. Tighten Anvil Cap to Required Torque.

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 9.8, Steps 7 & 8.
- Clean and oil Hole-Hog.
- Lubricate Hole-Hog according to Section 7.0.
- 1000C-TH: Check anvil cap. If anvil cap is loose, remove cap and clean and lubricate threads with an anti-seize lubricant. Install cap hand tight on the anvil, then tighten another minimum 1-8-inch (refer to Section 9.9).

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.

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

11.1 Field Replacement of the Whip Hose

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.

The Whip Hose (20) may be changed as part of shop disassembly, Section 8.0, or changed in the field by the following procedure.

11.1.1 Remove Old Whip Hose

1. Place the Hole-Hog on a clean, level surface. If necessary, hold it in place with a strap wrench.
2. Using a 1-1/4-inch open-end wrench to hold the Adapter (18) in place, use a 1-1/8-inch open-end wrench to loosen and thread the hose fitting of Whip Hose (20) from the Adapter. Refer to Figure 11-1.

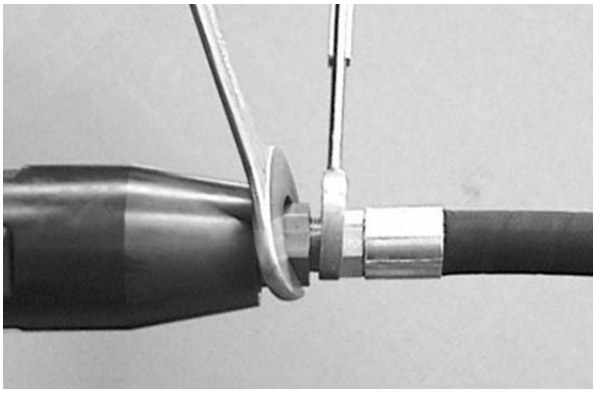

Figure 11-1. Remove Whip Hose from Adapter.

3. Using a 1-3/8-inch open-end wrench to hold the Quick Disconnect (Q.D.) Socket (22) in place, use a 1-1/8-inch open-end wrench to loosen and thread the hose fitting of Whip Hose (20) from the Q.D. Socket. Refer to Figure 11-2.

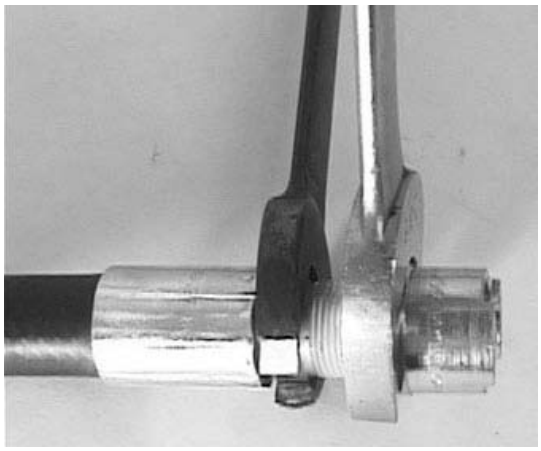

Figure 11-2. Remove Whip Hose from Q.D. Socket

4. Separate the Q.D. Socket and Plug. Inspect the Q.D. Gasket for damage or wear.
5. Remove the gasket only if it is is worn or damaged. To remove it, use a screw driver or needlenose plyers to pry the Gasket (23) from the Socket. Discard the gasket. See Figure 11-3.

Figure 11-3. Remove Q.D. Gasket

11.1.2 Install New Whip Hose

1. Place the new Allied Whip Hose and the Quick Disconnect (Q.D.) fittings on a clean, level assembly surface.
2. If the old Q.D. Gasket (23) was removed, insert a new one in the Q.D. Socket (22).
   a. With the grooved face of the Gasket (15) toward the Q.D. Socket (14) and Whip Hose (13), insert the new Gasket (15) into the Socket (14). Refer to Figure 11-4.
   b. Check that the gasket seats properly as shown in Figure 11-4.

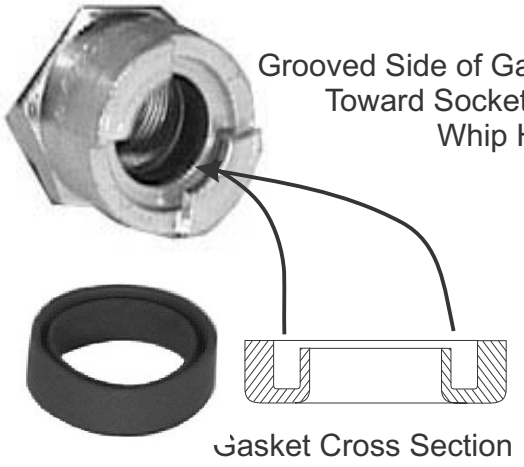

Figure 11-4. Install Q.D. Gasket

3. At both ends of the Whip Hose, wrap the threads of the hose fittings with teflon tape as shown in Figure 11-5.
4. Use a 1-3/8-inch open-end wrench to hold the Q.D. Socket in place, and a 1-1/8-inch open-end wrench to tighten the Whip Hose fitting into the Q.D. Socket.
5. Place the Hole-Hog on a clean, level assembly surface. If necessary, hold it in place with a strap wrench.

Figure 11-5. Q.D. Gasket

6. Use a 1-1/4-inch open-end wrench to hold the Adapter (18) in place, and a 1-1/8-inch open-end wrench to secure the Whip Hose (20) fitting in the Adapter (18).

11.2 Hole-Hog Accessories

Following is a list of Hole-Hog accessories with part numbers.

Nose Covers

A nose cover is used to protect the front end wear surface of the body. Nose covers are easily replaceable.

P/N 831808 - Smooth Nose Cover
P/N 832107 - Stepped Nose Cover

Expanders

Expanders are installed over the front end of the body with the anvil cap. They are used to increase the hole diameter.

P/N 831065- 4-inch Nose Expander
P/N 831066 - 4.1/2-inch Nose Expander
P/N 831067 - 3-3/4-inch Reversible Expander
P/N 831068 - 4-1/2-inch Reversible Expander

Pullers

The Pipe Pullers are attached in place of the end cap at the hose end of the Hole-Hog.

PVC pipe is slid over the supply and whip hoses into the PVC Pipe Puller and tightened with four screws.

P/N 831807 - PVC Pipe Puller

Puller - Anvil Cap (TH Models)

To install cable with the Pulling Anvil Cap, first the hole is made using the standard anvil cap. The standard anvil cap is then replaced with the Pulling Anvil Cap with cable attached. The Tool is reversed to pull cable back through hole.
P/N 831858 - Pulling Anvil Cap

Pulling Grip Assembly

Available in 7 sizes:

P/N 831038 - 3/4-inch to 1-inch
P/N 831045 - 1-inch to 1-1/4-inch
P/N 831051 - 1-1/4-inch to 1-1/2-inch
P/N 831052 - 1-1/2-inch to 1-3/4-inch
P/N 831053 - 1-3/4inch to 2-inch
P/N 831054 - 2-inch to 2-1/2-inch
P/N 831059 - 2-1/2-inch to 3-inch

Air Line Lubricator

The Air Line Lubricator is used to provide continuous lubrication to the Hole-Hog. Refer to Parts Diagram, Section 13.0

P/N 831035 - Air Line Lubricator

11.3 Installing Nose Covers and Expanders

11.3.1 Models without Anvil Cap

To install either the nose covers or expanders, slide the accessory over the front end of the Hole-Hog.

CAUTION
Use pipe wrench ONLY on the thick part of the Hole-Hog body.

11.3.2 Models with Anvil Cap

1. Secure the Hole-Hog with a strap or chain wrench.
2. Using a 1-3/4-inch open end wrench, remove the standard anvil cap.
3. To install either the nose covers or expanders, slide the accessory over the front end of the Hole-Hog and secure in place with the standard anvil cap.
4. The pulling anvil cap is installed in place of the standard anvil cap.

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 Servise 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

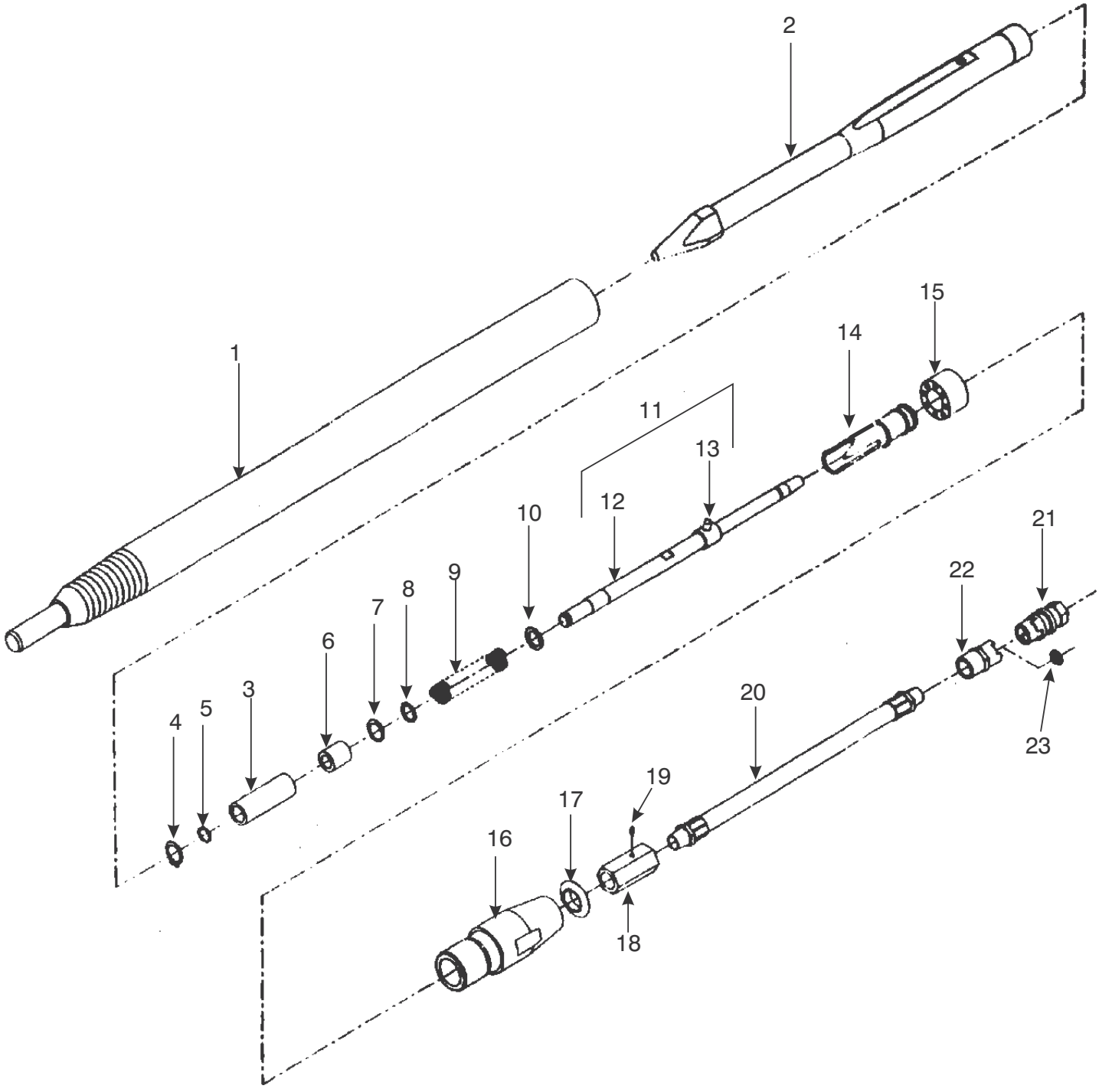

Figure 14-1. Model 1000C Hole-Hog Complete Assembly

Model 1000C Hole-Hog Complete Assembly Part No. 831800			
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	831720	Body/Anvil/
2	1	831701	Striker
3	1	831822	Valve
4	1	831818	Retaining Ring
5	1	831823	Bushing Retainer
6	1	831816	Valve Bushing
7	1	831819	Retaining Ring
8	1	831820	Spring Retainer
9	1	831824	Bias Spring
10	1	831821	Spring Stop
11	1	831806	Valve Stem Assembly (Includes Items 12 & 13)
12		831804	Valve Stem
13		831807	Dowel Pin
14	1	831805	Valve Guide
15	1	831812	Shock Absorber
16	1	831707	End Cap
17	1	831713	Valve Seal
18	1	831825	Adapter
19	1	831827	Set Screw
20	1	831826	Whip Hose
21	1	831042	Quick Disconnect Coupling/Plug
22	1	831027	Quick Disconnect Coupling/Socket (Includes Item 23)
23	1	831030	Gasket, Quick Disconnect Coupling/Socket

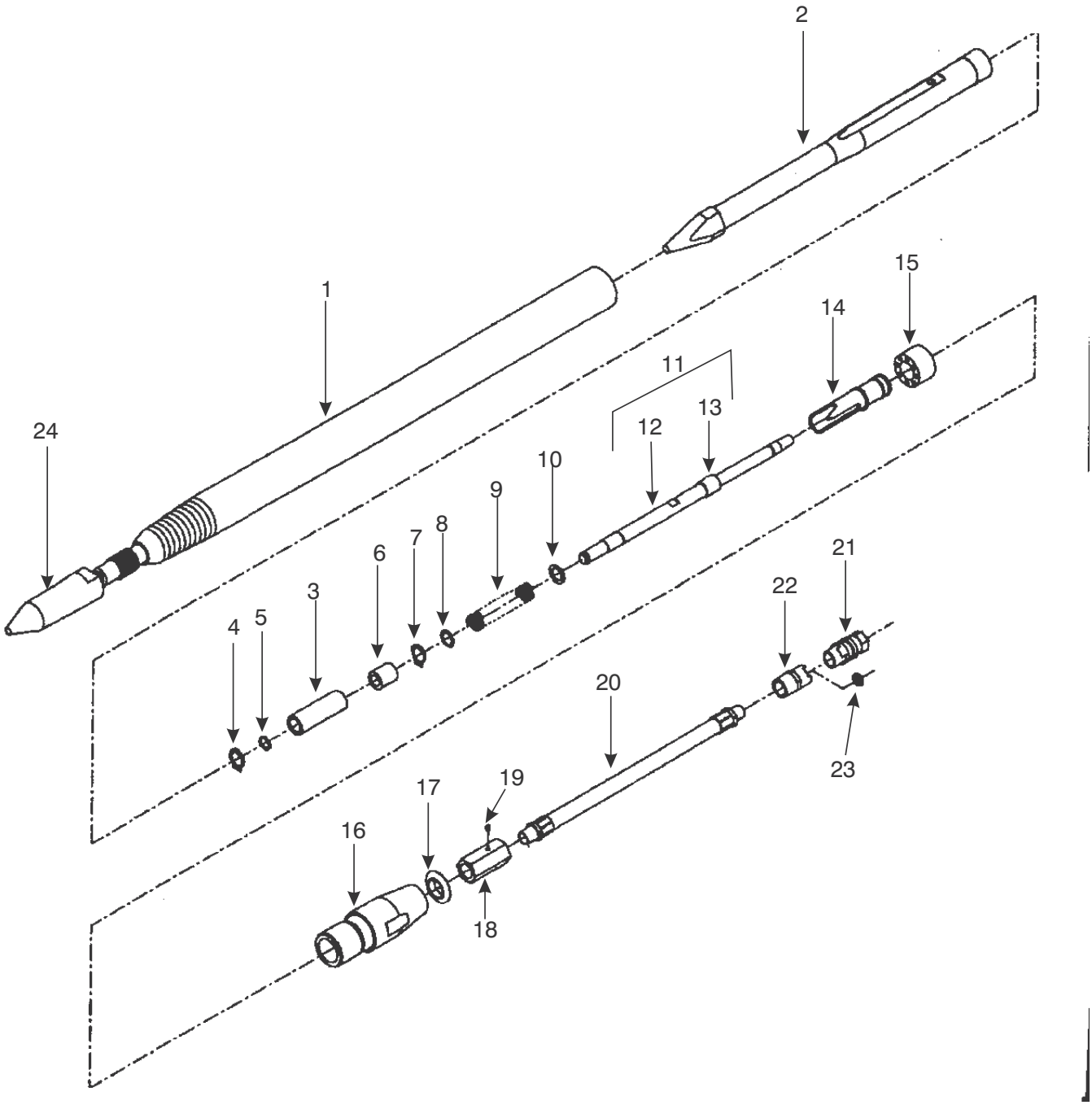

Figure 14-2. Model 1000C-TH Hole-Hog Complete Assembly

Model 1000C-TH Hole-Hog Complete Assembly Part No. 831815			
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	831810	Body/Anvil/
2	1	831701	Striker
3	1	831822	Valve
4	1	831818	Retaining Ring
5	1	831823	Bushing Retainer
6	1	831816	Valve Bushing
7	1	831819	Retaining Ring
8	1	831820	Spring Retainer
9	1	831824	Bias Spring
10	1	831821	Spring Stop
11	1	831806	Valve Stem Assembly (Includes Items 12 & 13)
12		831804	Valve Stem
13		831807	Dowel Pin
14	1	831805	Valve Guide
15	1	831812	Shock Absorber
16	1	831707	End Cap
17	1	831713	Valve Seal
18	1	831825	Adapter
19	1	831827	Set Screw
20	1	831826	Whip Hose
21	1	831042	Quick Disconnect Coupling/Plug
22	1	831027	Quick Disconnect Coupling/Socket (Includes Item 23)
23	1	831030	Gasket, Quick Disconnect Coupling/Socket
24	1	831091	Anvil Cap

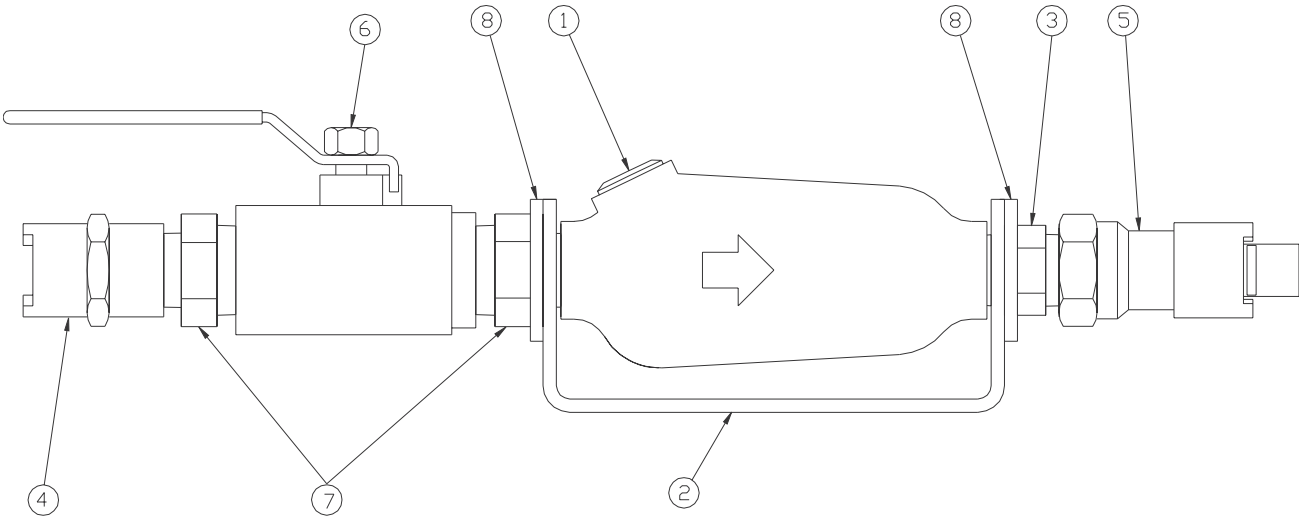

Figure 14-3. Air Line Lubricator Assembly

Model 1000C Series 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

Construction Products, LLC

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