PICO
400 SERIES
SERVICE MANUAL

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1st EDITION
- *Dec, 2001*

REVISED,
- *Feb, 2003*

LIMITED 90 DAY WARRANTY

All equipment sold by Pico Crimping Tools Co. Inc. ("Pico" herein) is warranted solely against defective parts, materials and workmanship for a period of 90 days from the date of shipment. This warranty does not cover parts becoming defective through abuse, neglect or operation contrary to instructions. Pico is not obligated for incidental expenses in fulfillment of the warranty provisions, and its' liability is limited to the replacement of defective parts returned to its' factory at the cost of purchaser.

Except as specifically set forth above, Pico expressly disclaims any and all warranties, express or implied by law, including any implied warranty of merchantable quality. Pico further expressly disclaims liability to any person or entity for general, special, indirect or consequential damages occasioned by any negligence of Pico in the manufacture, sale, use, repair, maintenance or any handling of such equipment.

MODEL # _____

SERIAL # _____

DATE SOLD _____

Important Precautions

Air For optimal performance & tool lifetime, use clean, filtered dry air providing 70-120 PSI.

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MAINTENANCE

Main Unit Assembly

Component Assembly / Disassembly

SPECIFICATIONS

Pico Model 400 Pneumatic Tool with Foot Pedal

OVERVIEW

Congratulations on your purchase of a Pico Pneumatic Crimp tool. This versatile crimping tool eliminates human effort in four/eight-indent crimping of pin and socket contacts as well as solderless terminals.

Nonadjustable die heads, interchangeable between Models 400, 400 BHD, and 400-B -1, are available from stock to handle No. 26 wire through 4/0, all using the same safety cycling "Crimpmaster" power unit.

Factory air pressure is now sufficient for even the largest sizes, made possible by the addition of a power booster as standard equipment. The Model 400 Crimpmaster is also supplied with a bench mount as standard equipment, and can be used as a portable hand tool, a bench-mounted tool, or an optional foot controlled unit.

Pico Crimp Tools are precision, pneumatic, full cycling tools capable of producing:

- **Four/eight- indent crimps on pin and socket type contacts size 22 thru 350 MCM.**
- **Four or two indent crimps on terminals, splices or pigtails, insulated or non insulated size 26 thru 350 MCM.**
- **Hexagonal crimps on coaxial contacts and connectors.**
- **Custom designs for unique applications**
- **Human engineered to prevent accidents.**

This can be accomplished simply by changing dies and locators in accordance with factory directions.

For further information on this product and other Pico products, please visit us on the web at: **www.picotools.com**

Setup

SETUP OVERVIEW

Each tool is shipped from the factory pre-assembled. However, the tool will not have a locator and die assembly pre-installed. These are purchased separately and are installed by the user. For help in choosing the correct die & locator solution, refer to the cross-reference guide included with your product, or contact the factory for assistance.

The tool can be operated manually through the use of the hand trigger, or through a foot control pedal (P/N 104), which is an optional purchase.

Setting the tool up for operation consist of the following:

SETUP

- Connect Air supply to tool
- Use a 1/4" ID, 3/8" OD line capable of 70 to 125 PSI (1-2 CFM).
- Nominal pressure is 80 PSI.
- Use clean, filtered, dry air

Do not use an oiler

- Install Locator
- Install Die
- Install Cover Nut

ADJUST • CHECK • RUN

- Check Tool Operation - cycle tool with air, **without** inserting a wire and contact to check operation of indentors
- Gage Tool
- Proceed with normal operation.

Detailed setup and operating instructions follow:

AIR SETUP

Air Supply Requirements

The tools can be operated with either the hand trigger, or an optional Foot Pedal Assembly (**P/N 104**). The main advantage with the foot pedal assembly is operator convenience.

The tools operate on air pressure of 70 to 125 PSI, (1-2 CFM). Recommended air pressure is **80 PSI**.

Note **Use clean, dry air with a quality filter and regulator installed within 25 feet of the tool.**

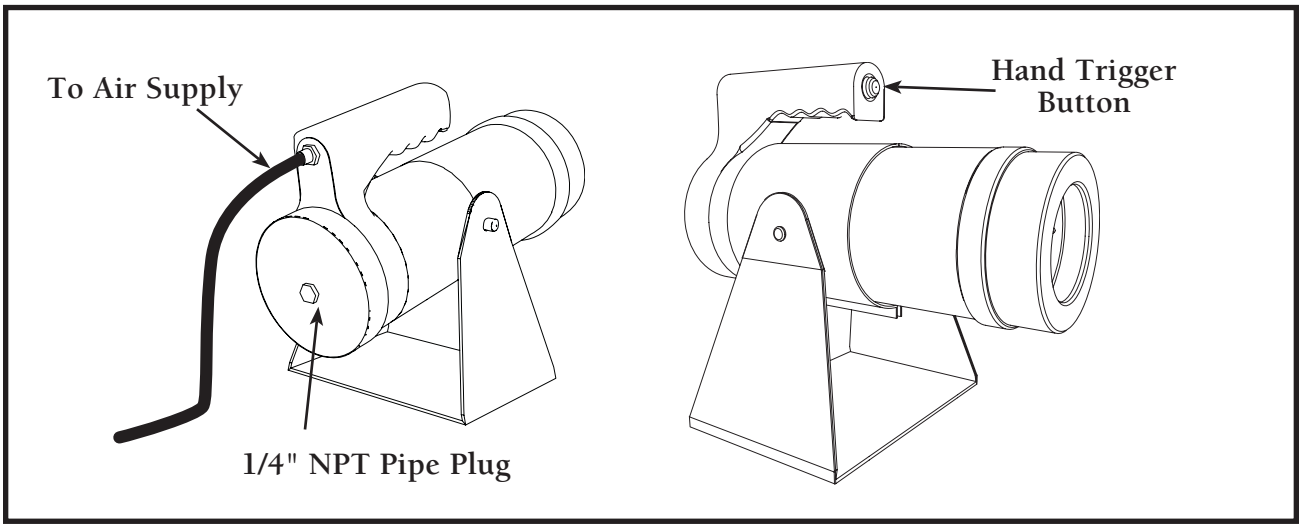
Do not use an oiler

Connecting Air (Hand Trigger)

The air inlet port on the rear of the handle is tapped to accommodate 1/4" NPT fittings. The air supply should be connected to the port at the rear of the handle. Insure that the connection is tight enough to prevent leaks.

Use of pipe thread tape is suggested. We recommend a 1/4" ID, 3/8" OD air hose be used.

Note **There is also a 1/4 NPT threaded hole in the center of the cylinder housing. When operating the tool with the hand trigger, this opening must be sealed with a pipe plug.**



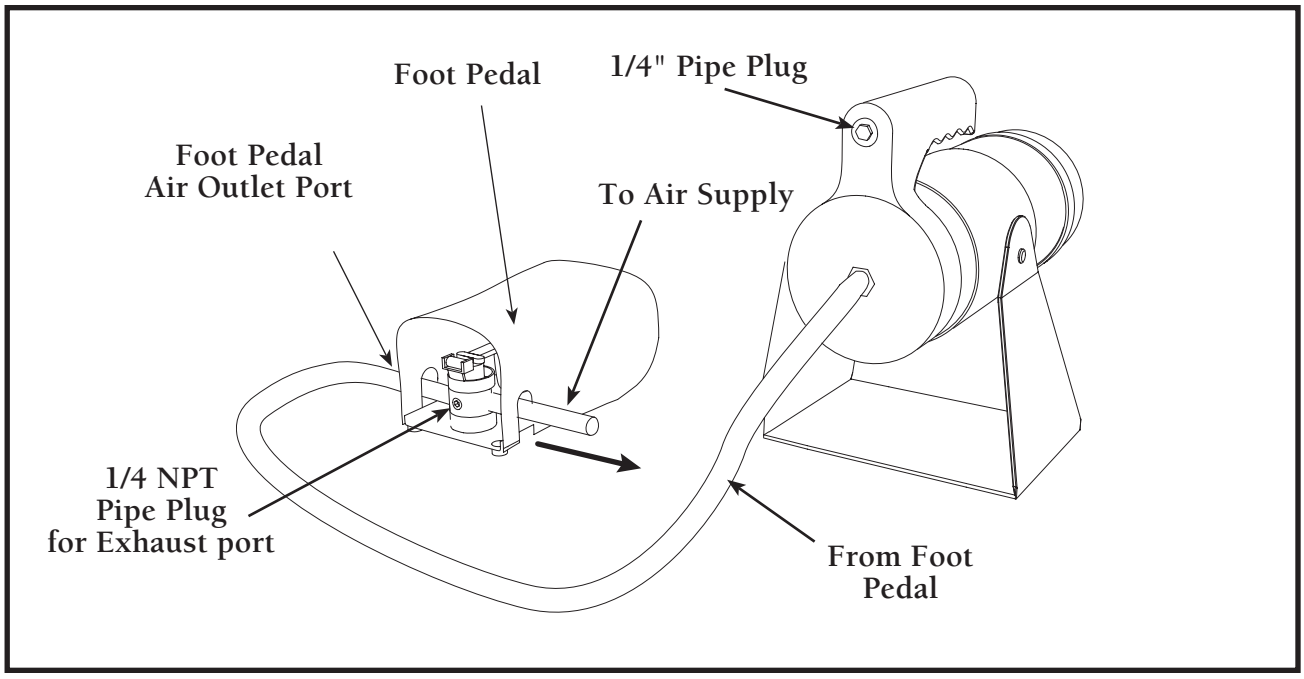
Connecting Air to Hand Trigger Port

Connecting Air (Foot Pedal)

For foot pedal use, the air hose must be connected to the port in the center of the cylinder.

The air hose connected to the tool cylinder is in turn connected to the outlet port of the foot pedal. Connect the hose from the air supply to the inlet port of the foot pedal.

Note ***For foot pedal use, the port in the rear of the handle must be sealed with a 1/4" NPT pipe plug, and a plug must be installed in the exhaust port of the foot pedal.***



Tool with Foot Pedal Connection

INSTALLING LOCATOR

Remove the open ended cover nut (P/N 400-26) on the front of the tool housing.

Note

Tool is not shipped with die installed from factory - if die is installed, it must be removed before locator can be installed.

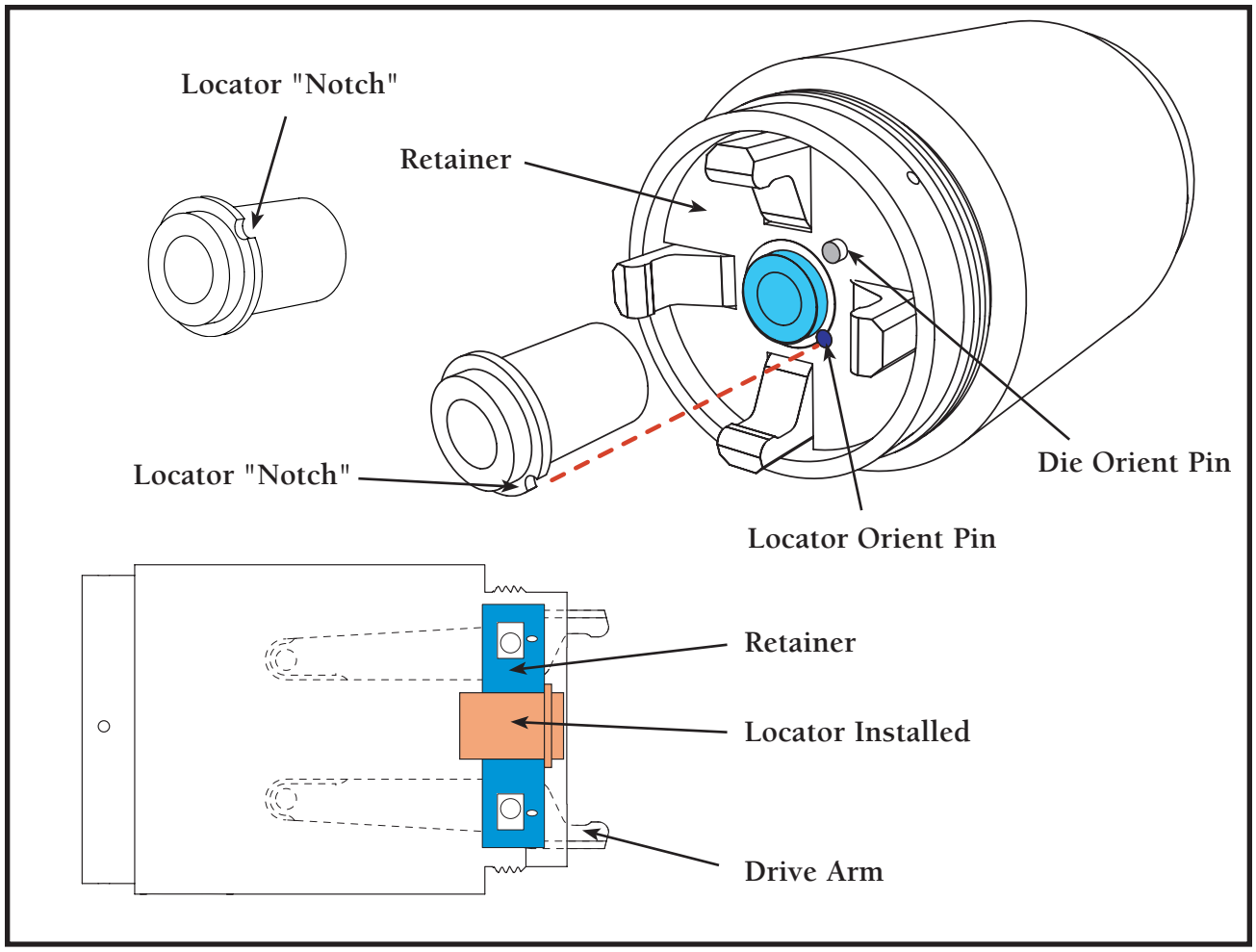
Insert the locator into the retainer. (The retainer is the component thru which the four drive arms protrude and which has an opening in the center which accepts the locator).

Observe the notch in the shoulder of the locator. There is a corresponding pin in the face of the counterbore in the retainer.

Orient the notch in the locator shoulder to coincide with the pin in the retainer. When properly installed, the front of the locator shoulder will be flush with the retainer face.

Note

Never crimp without the correct locator in the tool. Contacts or terminals can fall into the tool, causing the tool to jam and may cause damage to the unit.



Installing Locator in Tool

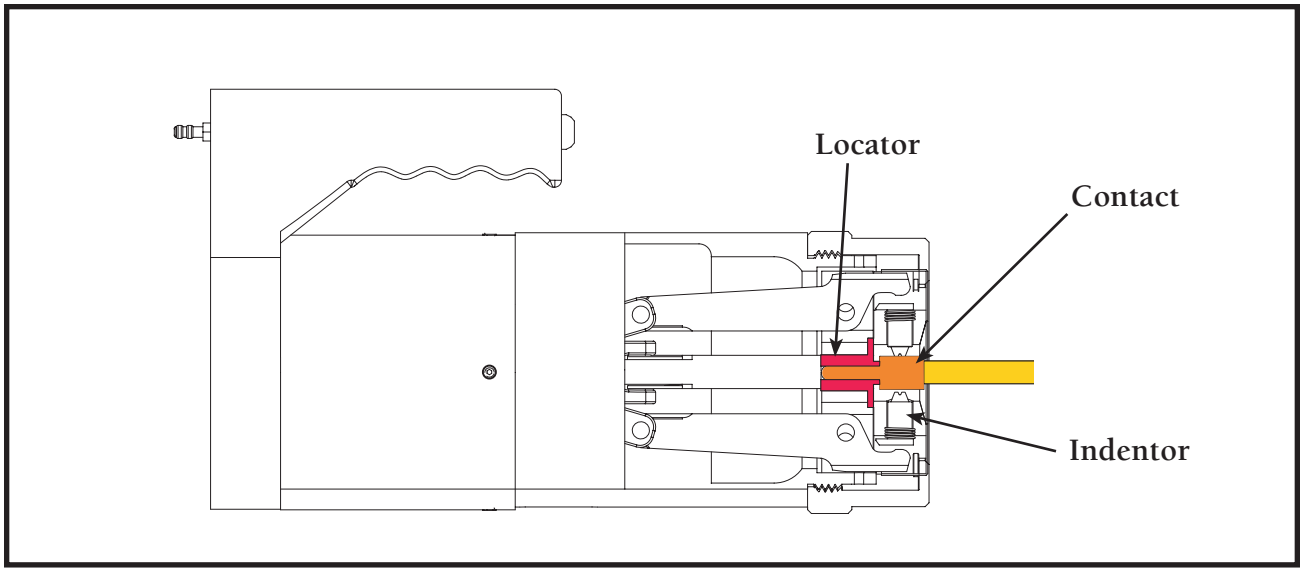
Locator Function

The function of the locator is to orient the contact in the die housing, such that the contact barrel is directly in line with the die indentors.

This will result in a crimp meeting specifications for the particular contact being processed.

The locator is matched to a specific contact & die configuration. Use of non-factory specifications in this regard can result in a poor crimp and/or damage to the tool and contact.

For help in choosing the correct die & locator solution, refer to the cross-reference guide included with your product, or contact the factory for assistance.

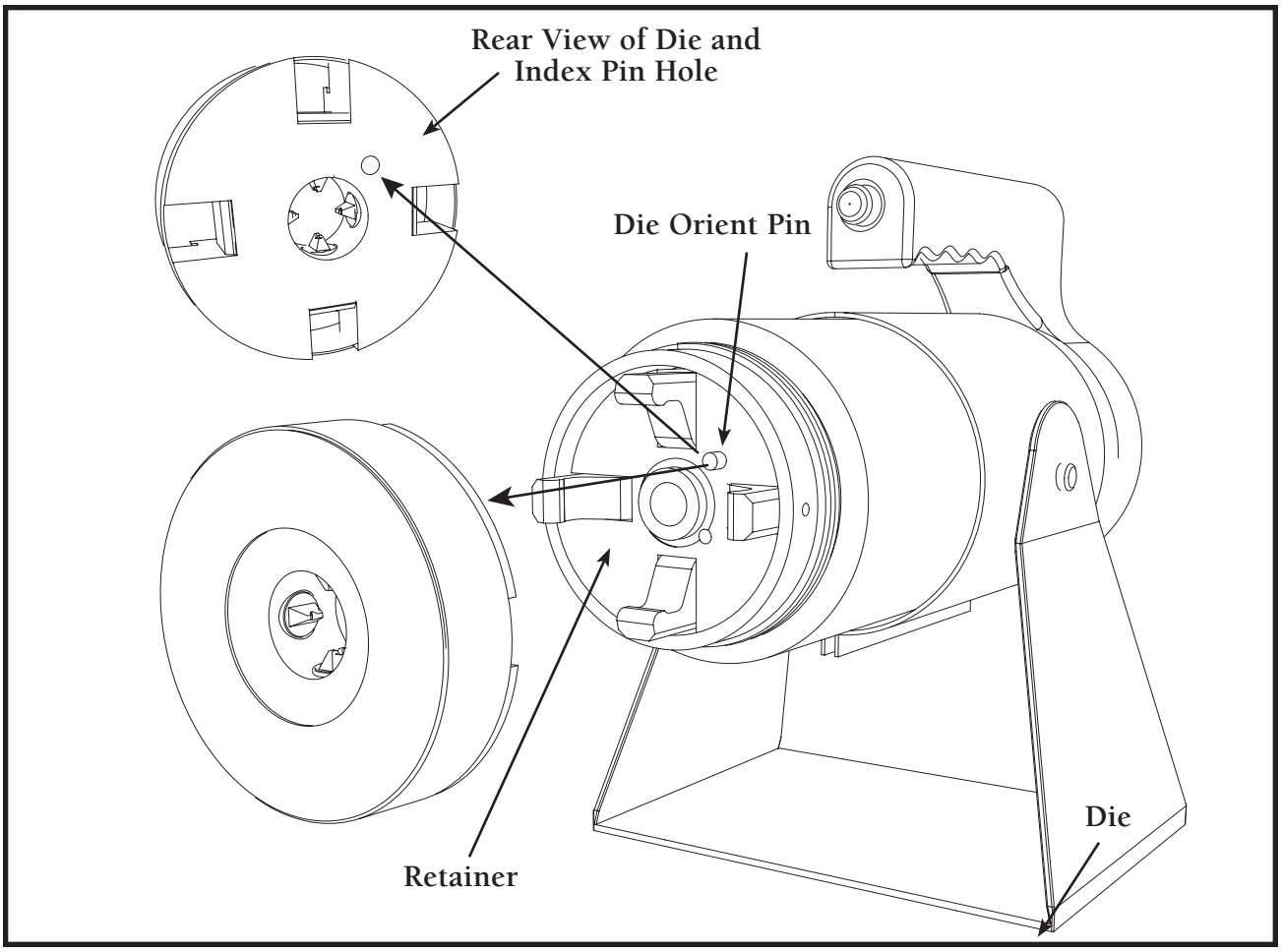


Cutaway view of locator and Die Assembly

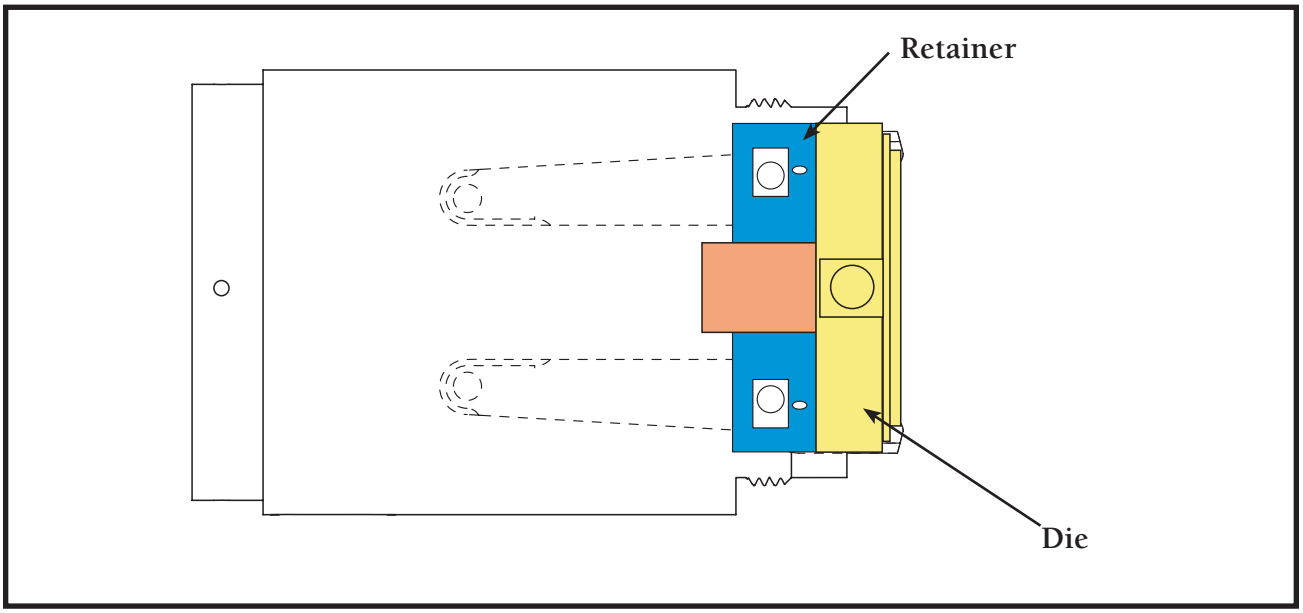
INSTALLING DIE

Install the die set. There is an index pin in the face of the retainer. Observe the drilled hole in the rear of the die housing. Orient this hole to fit over the index pin in the retainer and press the die set into place. There will be some resistance when the four drive arms come into contact with the indentors. The die set must sit flat on the retainer face.

Note ***Locator should be installed prior to installing die.***



Installing Die in Tool



Mounting Die - side view

INSTALLING COVER NUT

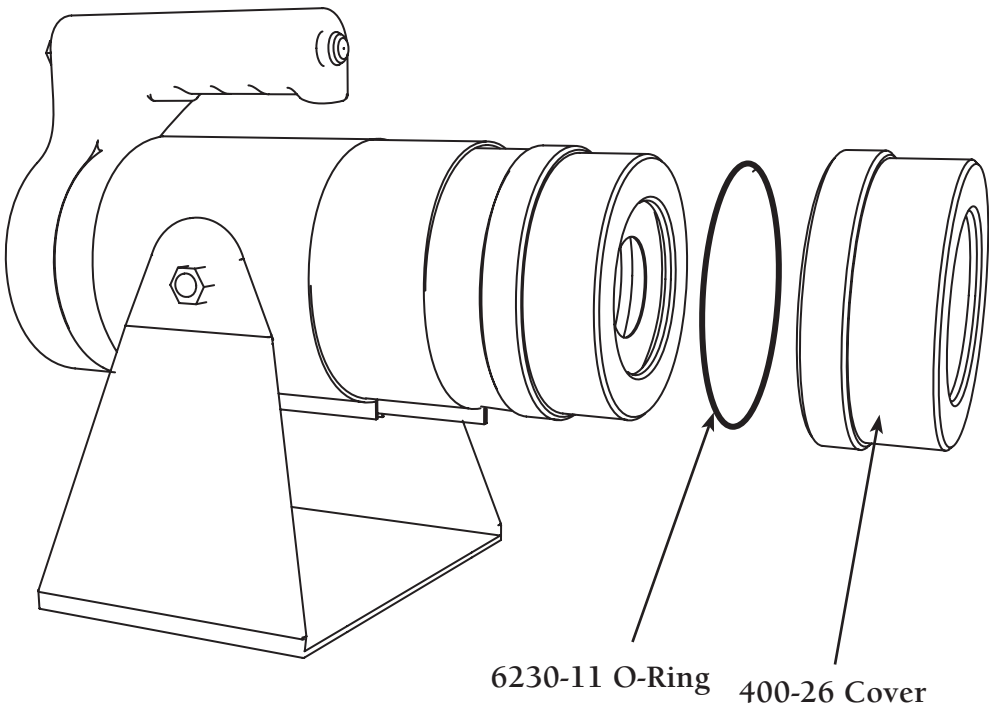
When you have insured that the die set is flush with the face of the retainer-the cover nut can then be installed.

Please note the "O" ring (**P/N 6230-11**) on the inside face of the cover nut. During the process of crimping contacts and terminals, the contact or terminal will grow in length with the displacement of material.The function of the "O" ring is to allow the die set to move forward .040 as the contact is being crimped.

This prevents excessive side load being applied to the side of the indentors. Reduces wear and prevents the contact from bending.

When installing the cover nut it should be installed with finger tip pressure only. Turn the nut on until you feel the "O" ring come in contact with the die face.

Tightening the cover nut down excessively will prevent the "O" ring from performing it's intended purpose.



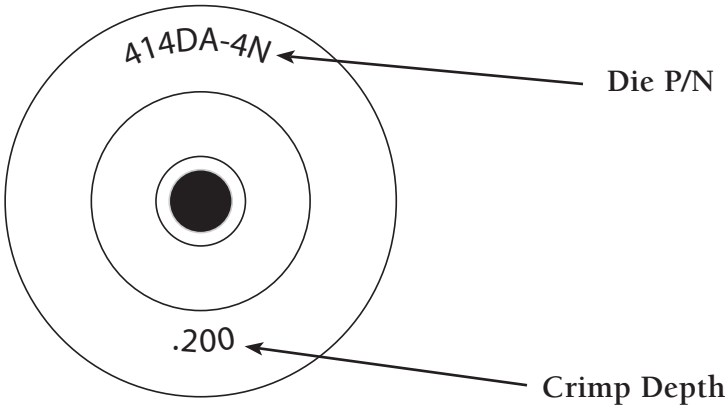
Installing 400-26 Cover Nut

CALIBRATING DIES

All die sets are marked at the factory with the nominal crimp depth setting. This is the fully closed diameter when the tool is actuated.

The dies can be easily checked with **Go-No Go gages**.
A complete line of gages are available from the factory.

The tolerance, unless otherwise specified: **is plus .002, minus .005.**



EXAMPLE

Die P/N	Crimp Depth	Go	No-Go
414DA-4N	.200	.195	.202

CALIBRATION

- Select the proper go no-go gage for the die set which is in the tool.
- ***Hand Trigger:*** If operating with the hand trigger, holding the trigger down will cause the tool to actuate and remain in the closed position. The gage can then be used to check the opening between the indentors to determine if the die set is to the correct dimension.
- **Go gage** should enter, snug fit is acceptable. The **No-Go gage** should not enter.

Calibrating Dies - continued

- ***Foot Pedal:*** If operating with a foot pedal, hold the pedal down. The indentors will then remain in the closed position for gaging.

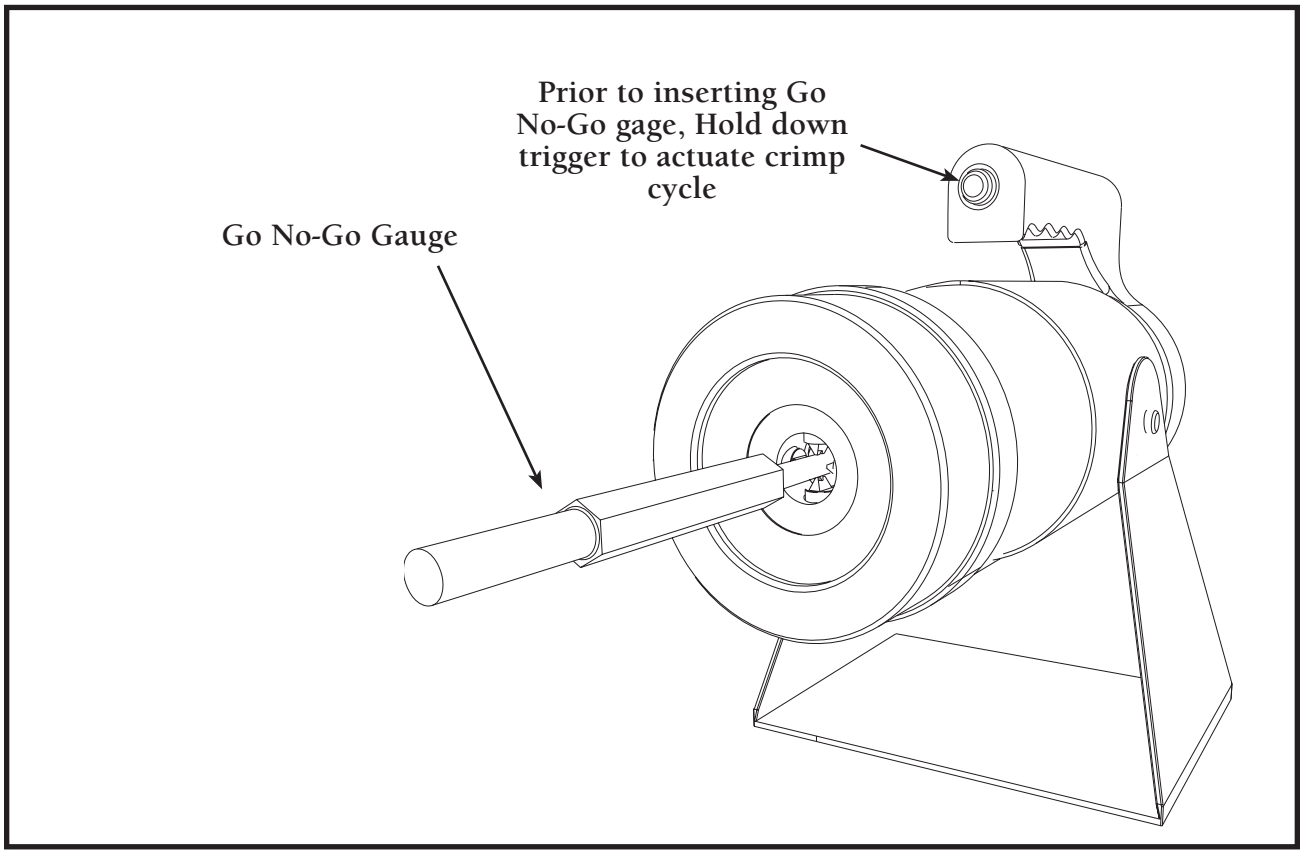
If the Go gage does not enter freely into the Die, check to see that you have the correct Go No-Go gage.

If the No-Go gage enters freely into the Die, in most cases this is indication that wear has occurred to the indentors. Less probable is wear to the drive arms. Confirm that the tool is within spec by calibration specified on page 12.

Note **The indentors are manufactured using S-7 tool steel, and are heat treated to Rc 56-58. As a result, they are should have a life span of many thousand cycles.**

Indentors are available for purchase separately from a die assembly. Contact the factory for details.

Note ***CAUTION: Do not crimp against a gage. To do so will damage the tool and void the warranty.***



Gaging Tool

OPERATION & ADJUSTMENT

1

Adjust Regulator

With the air supply connected, adjust the regulator to provide approximately 80 lbs PSI.

2

Test Crimp Cycle

Without a contact and wire in place, operate the trigger. Observe the action of the indentors to be sure they operate freely.

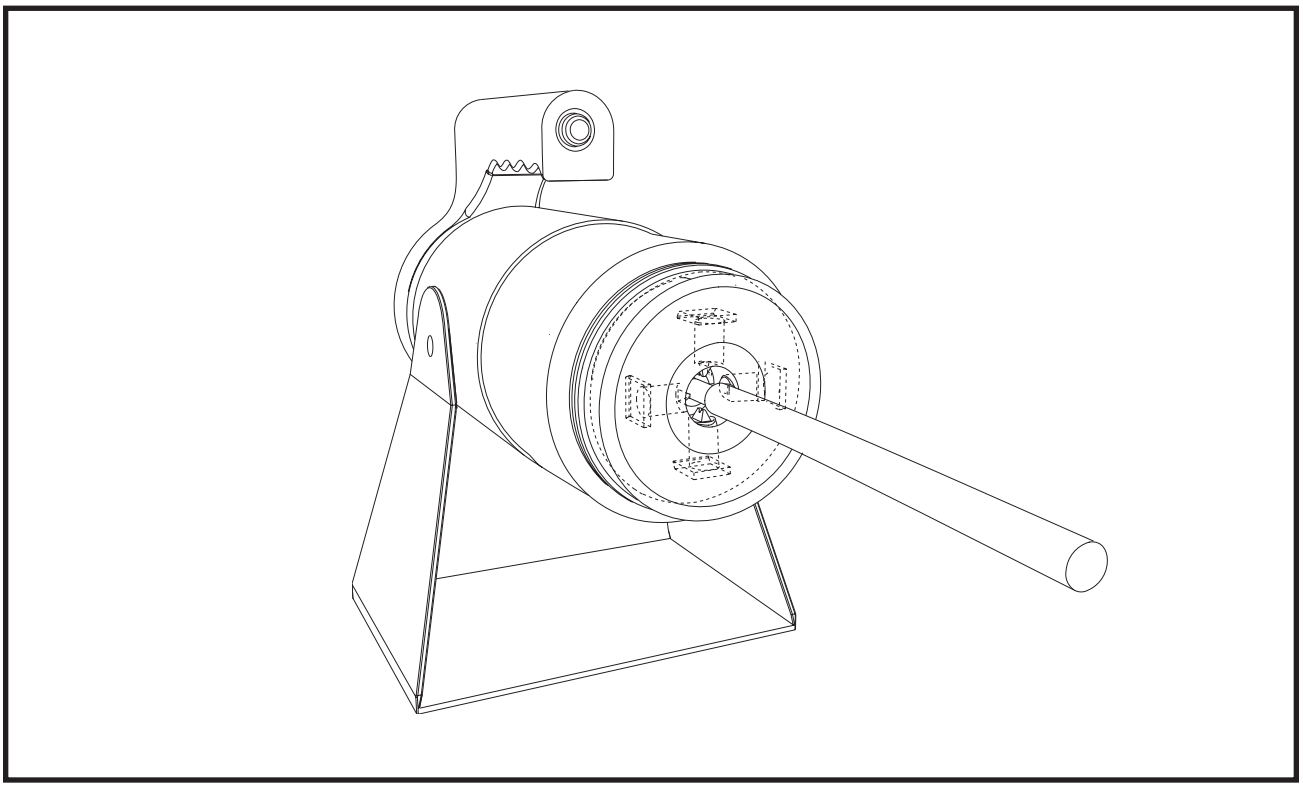
3

Normal Operation

Insert the contact or terminal and wire assembly and proceed to crimp.

After operating personnel have become accustomed to using the tool, the air need not be turned off while changing dies and locators.

If a die set fails to calibrate within an acceptable range, calibrate the tool following the steps below to insure that the tool is within specification.



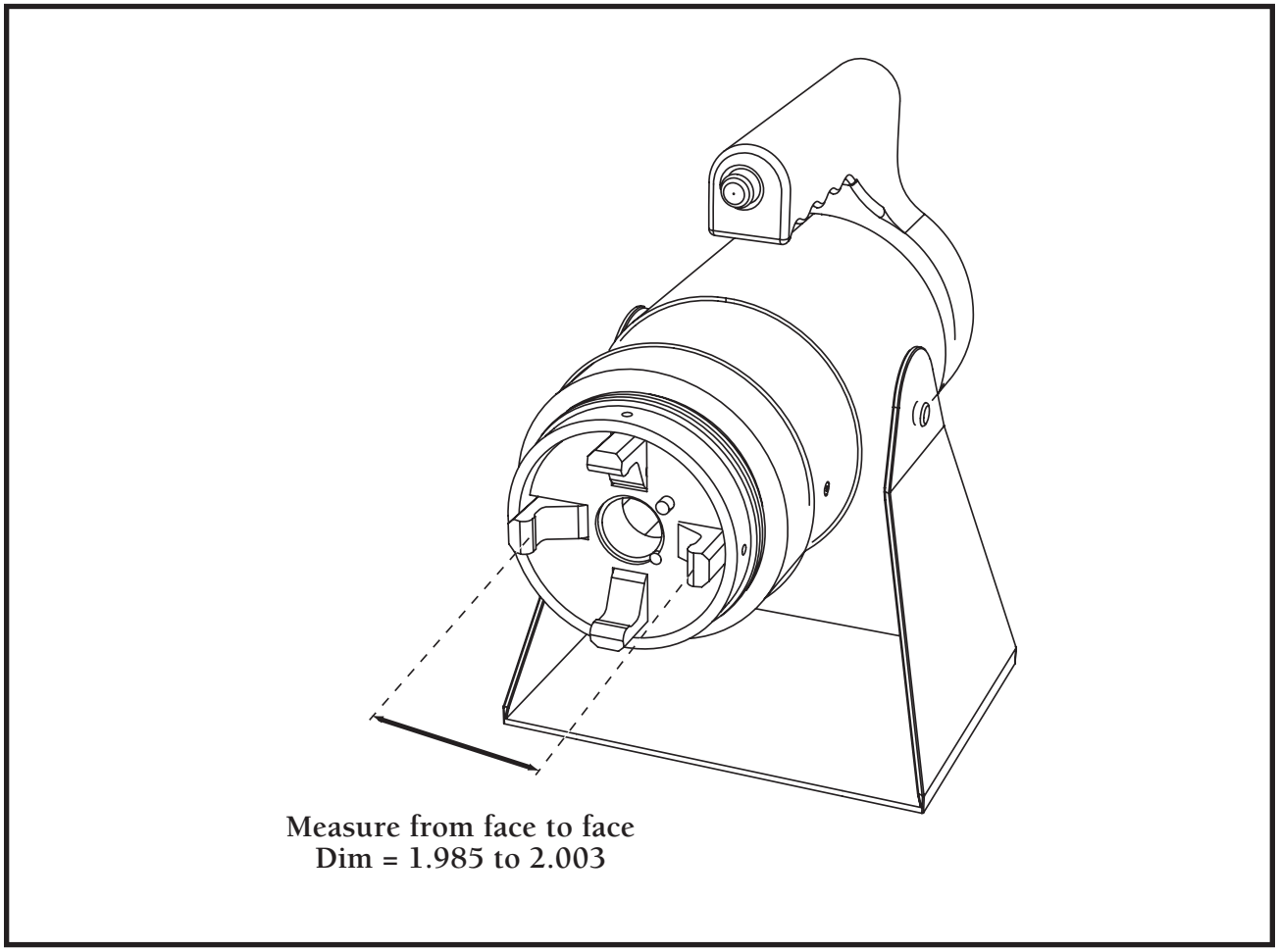
Contact inserted for crimp

CALIBRATING TOOL

If a die set fails to calibrate within an acceptable range, calibrate the tool following the steps below to insure that the tool is within specification.

- To gage the tool remove the cover nut and die set.
- Cause the tool to be actuated and held in the closed position. If using a foot pedal, hold it down. If using the thumb button, hold it down.
- Measure the distance between the face of two opposing arms.

This dimension should be: **1.985 to 2.003.** If this is not the case, the arms are out of alignment or worn. Contact the factory for replacement.



Calibrating Tool

TROUBLESHOOTING

SYMPTOM: TOOL OPERATES SLUGGISHLY

1. Check the air supply to insure that there is a minimum of 80 P.S.I. provided to the tool.
2. Check the air line size. It should be a 1/4" ID, 3/8" OD line.

If this does not correct the condition, the usual causes are:

- Worn "O" rings.
- A build up of debris and congealed lubricant.
- Misalignment of the booster cylinder piston rod in the B or B-1 models.

To correct any of the above, the tool must be disassembled. To disassemble, refer to specific model instructions in the Maintenance chapter, or contact the factory.

SYMPTOM: TOOL CYCLES FORWARD, DOES NOT RETURN

- The usual problem is the cycling valve (P/N 400-27A) This unit is mounted in the face of the piston and the tool must be disassembled to replace it.

Follow the disassembly specified in the maintenance section. When the piston is removed, check the valve to determine if the spring and "o" ring are functioning properly. Replace if necessary.

- Check the alignment of the booster cylinder rod.

Remove the booster cap (P/N 400-29) by screwing the cap counterclockwise. The piston rod will now be exposed. Follow the directions on page ? to check alignment.

SYMPTOM: TOOL CRIMPS TOO LOOSE

- If terminations are failing tensile or electrical tests:

Calibrate the die set per section, "Calibrating Die", pages 9.

Calibrate the tool, instructions found on the page 12.

SYMPTOM: TOOL CRIMPS TOO LOOSE

If the tool and die set calibrate properly, contact the factory to determine if the correct die set is being used for the application.

Maintenance

GENERAL MAINTENANCE

The Pico model 400 series tools should be supplied with filtered, dry air. The tools are thoroughly lubricated at the factory and if clean, filtered, dry air is provided, they should not require additional lubrication for the first year. The tools are assembled with the highest quality "O" ring lubrication, and should provide adequate lubrication under normal conditions for the lifetime of the tool. If it becomes necessary to lubricate the tool, Dow Corning DC-55 O Ring lubricant is recommended.

Factory personnel are available to advise on additional repair questions which may occur. Additional information, including video files, are available at our web site - **www.picotools.com**

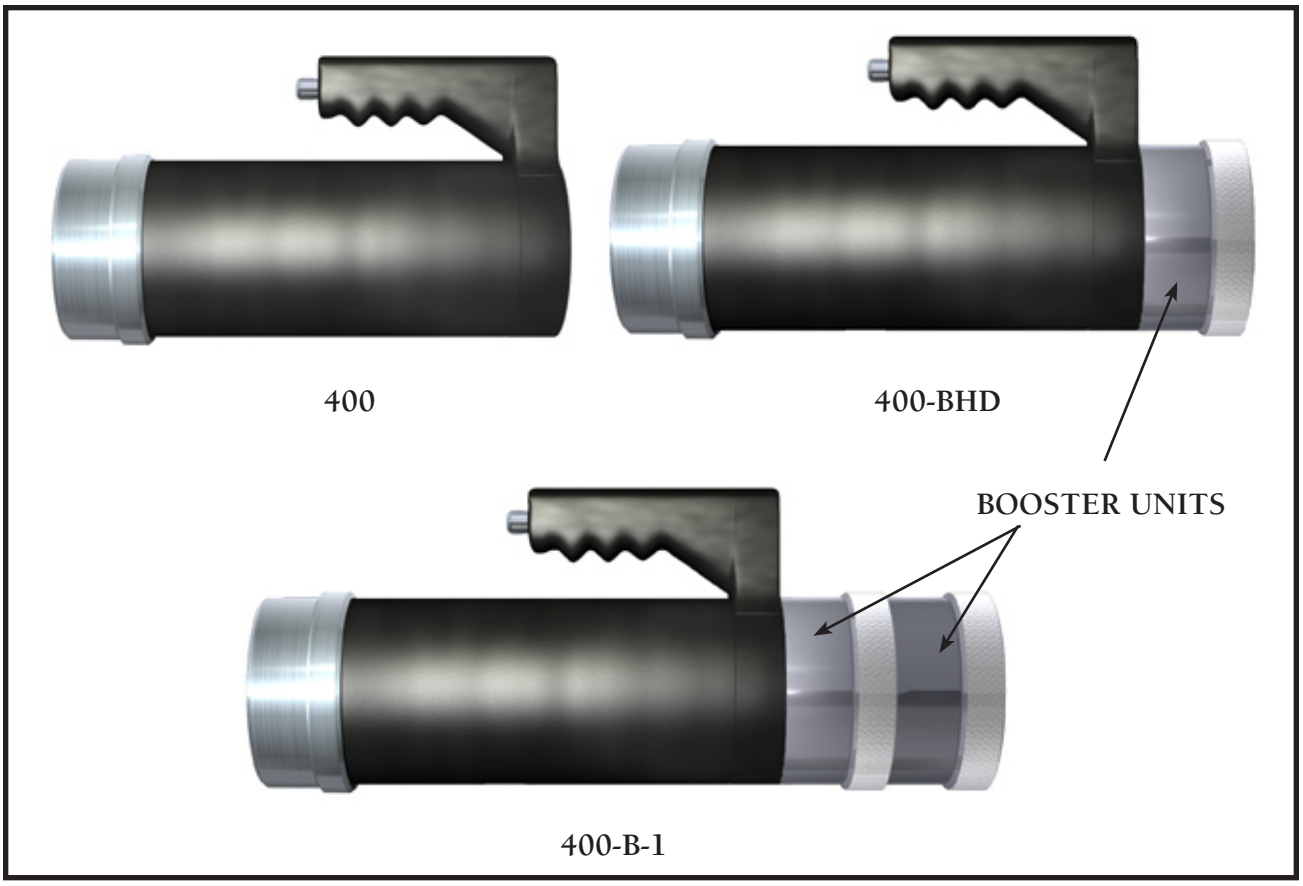
GENERAL OVERHAUL

General overhaul for the unit can be accomplished by disassembling the tool into its component parts, and after inspection, replacing parts as needed. Pico recommends replacing all springs & O rings when performing any general overhaul to the tool.

For other problems such as a broken arm or a broken link in the Toggle assembly, it is suggested that the tool be sent to the factory for repair. To produce a symmetrical crimp, the face of the drive arms must be equidistant from the theoretical centerline. When a new arm is replaced it may not match the other three due to wear which has occurred.

DISASSEMBLY SEQUENCE

- **Remove Cover-nut, Die & Locator, Bench Mount** (if installed)
- **Detach 400-18 Housing from 400-1 Body**
  Remove set-screw prior to 400-18 removal
- **Remove 400-TOG from 400-18**
- **Separate 400-1H, 400-1 (Model 400 Only)**



SERIES 400 MODEL TYPES

Note **Models 400-BHD & 400-B-1 have additional booster units not present on models 400.**

- **Remove Booster Units (Note: Only Models 400-BHD & 400-B-1 have Booster Units)**
  Remove 400-30 (2 units on 400-B-1), 400-31 Piston Assemblies
- **Remove 400-5 Stop**
- **Remove 400-2A Piston Assembly from 400-1 Body**
- **Disassemble (as needed) internal components**
  (Cycling Valve), Piston Assemblies

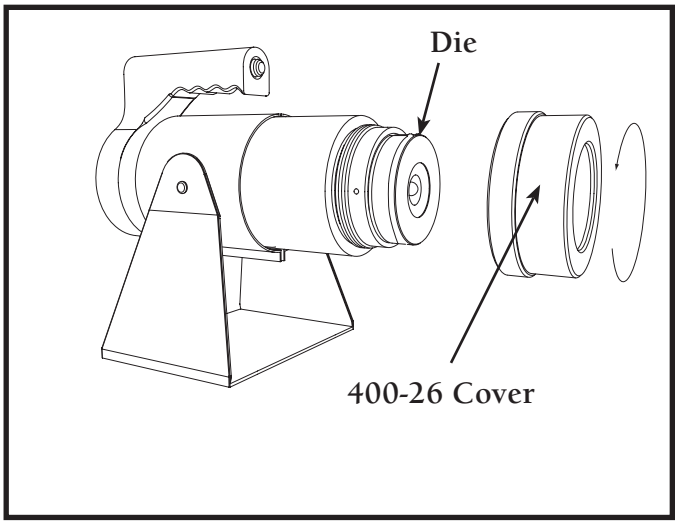
MAIN UNIT DISASSEMBLY

General overhaul for the unit is accomplished by first disassembling the main unit, and then (depending on need) disassembly of the toggle unit and piston assemblies.

Note **Models 400-BHD and 400-B-1 have additional booster unit(s).**

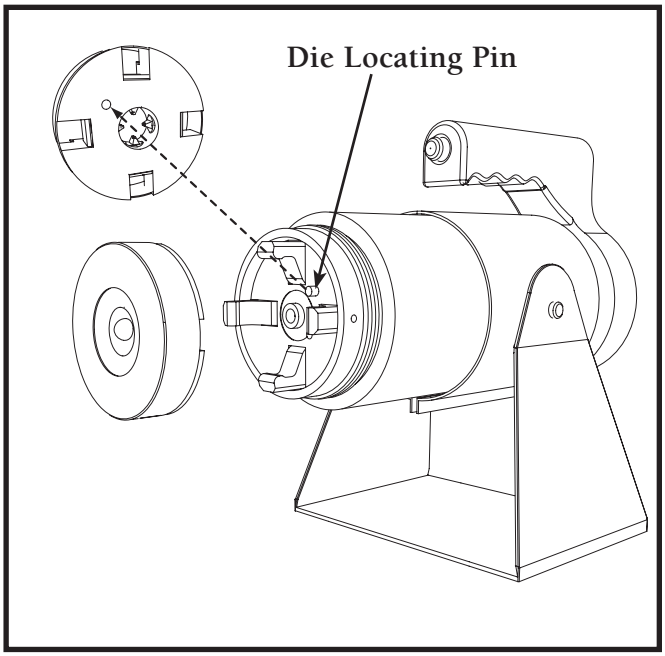
1 Remove Cover Nut

Remove by turning counterclockwise. Die will now be exposed.



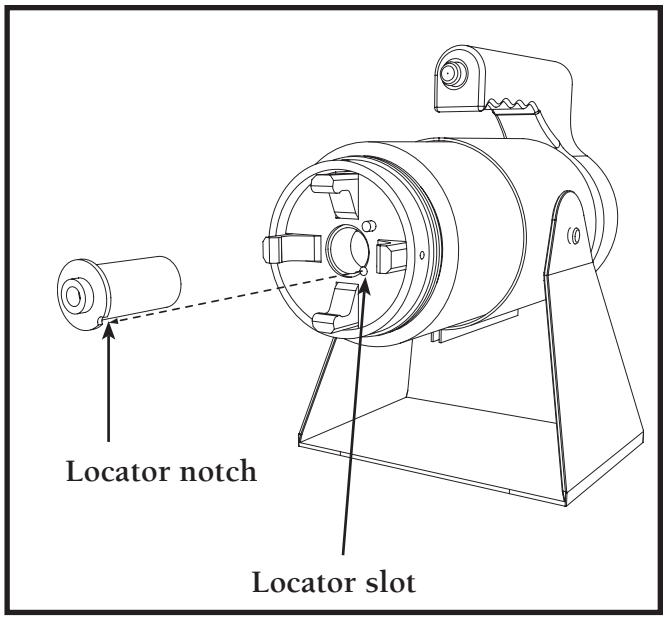
2 Remove Die

Remove die pulling (with hand pressure) directly away from the retainer, in a straight line.



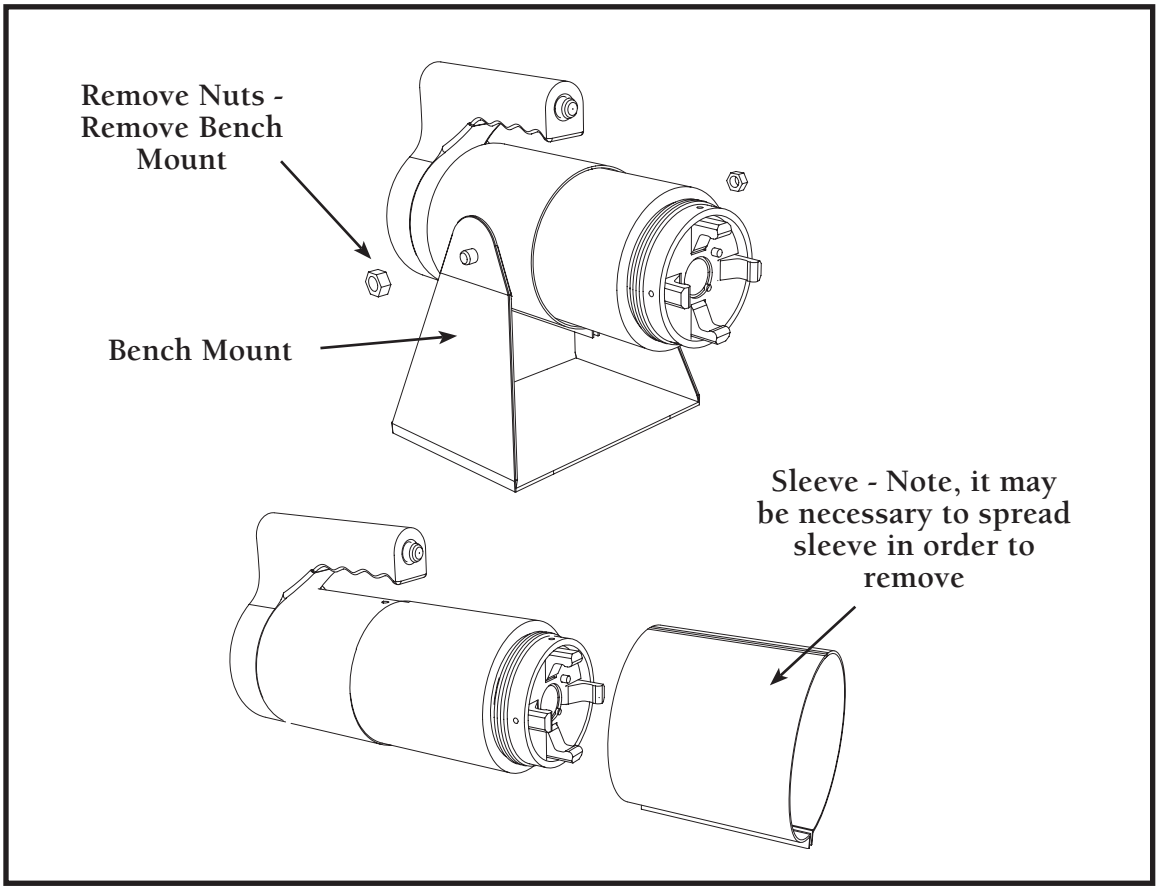
3 Remove Locator

Remove by pulling directly from retainer.



4 Remove Bench Mount & Sleeve

Remove by first unscrewing the bench mount nuts. When removing the sleeve, it may be necessary to spread it partway to remove.



5 Remove Set-Screw

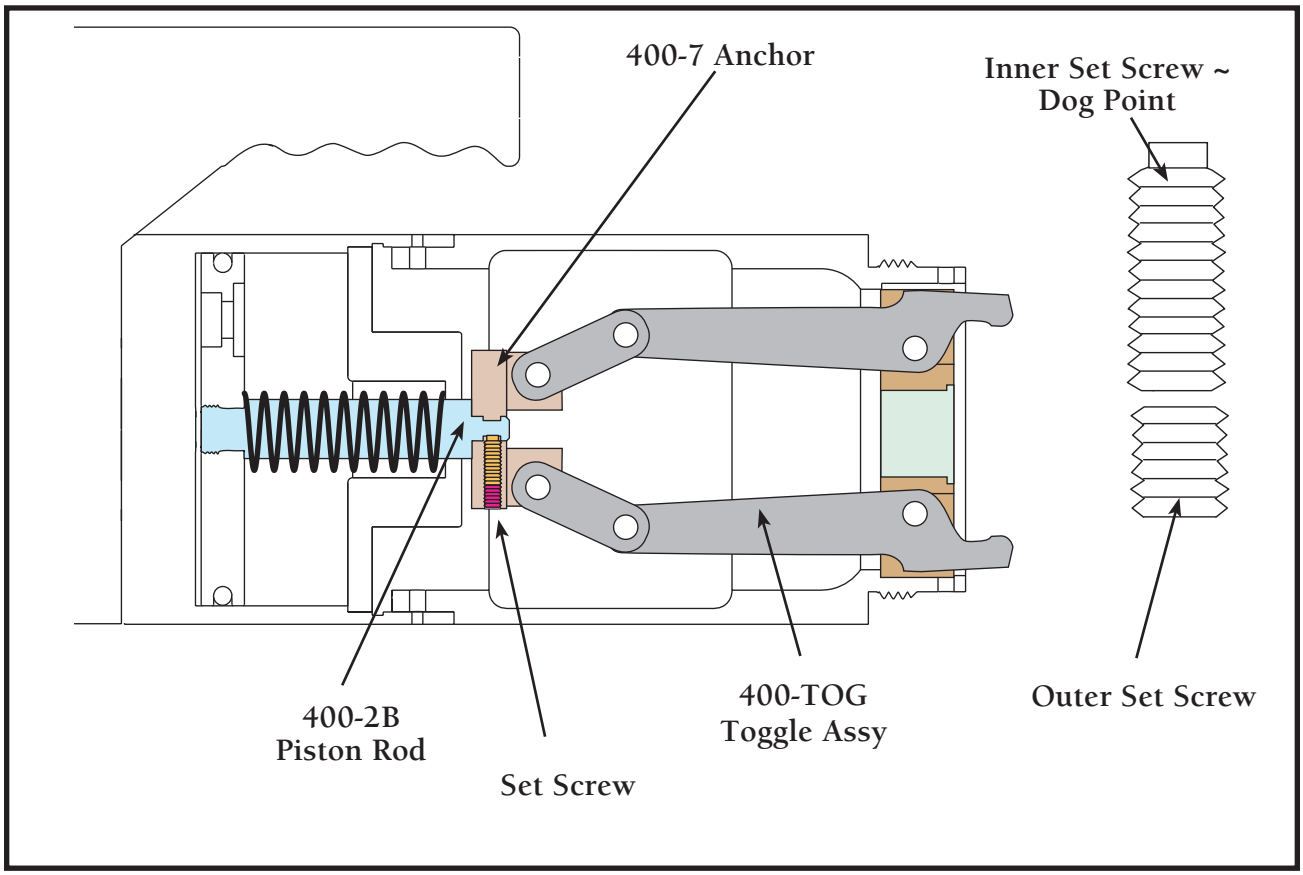
The toggle assembly is attached to the piston rod (**P/N 400-2B**) with two set screws. The innermost set screw is a dog point which locks into a groove on the piston rod. The second set screw is a flat point and is installed behind the dog point and used to lock it in place.

Note

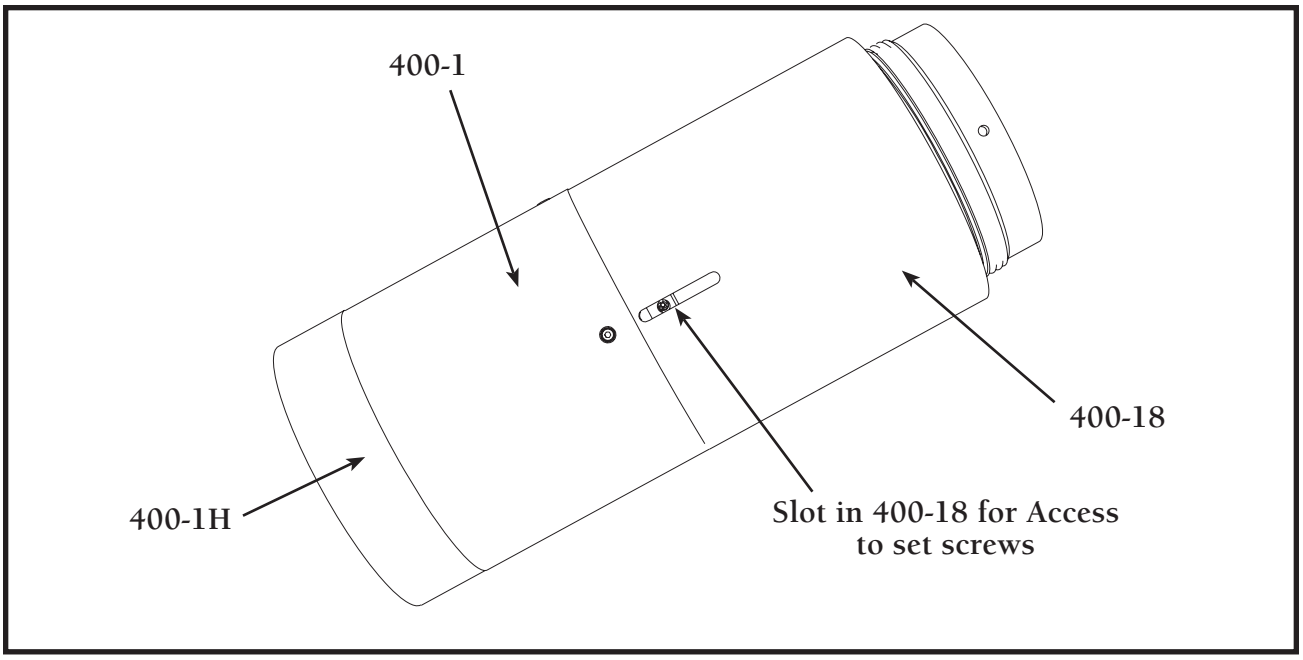
A **3/32 Allen wrench** will be required to remove the two screws. Applying hard grease to the end of the allen wrench will assist in keeping the screw attached to the allen wrench so that it can be lifted out of the housing.

There are two methods for removing the screw - and these are dependent upon the serial number for the unit being disassembled.

For each serial number sequence, first locate the rectangular slot in the bottom side of the housing, P/N 400-18. (see diagram on following page)



Side view showing location of setscrew in relation to piston assy and toggle



Set-Screw Slot location - looking upside down at 400-18 & 400-1 housing

5A

Serial Number Tools 6200 and newer:

The set screw will be visible and accessible when the tool is in the retracted position. If the set screw is visible, remove the locking set screw completely. Applying hard grease to the end of the allen wrench will assist in keeping the screw attached to the allen wrench so that it can be lifted out of the housing.

Next back out the dog point screw (approx. 4 complete turns) until you are sure that it is no longer engaged into the piston rod.

5B

Serial Number Tools 6199 and older:

If the tool is an older model, the set screw may not be visible when the tool is in the retracted position. With this condition, the tool must be caused to move to the closed position.

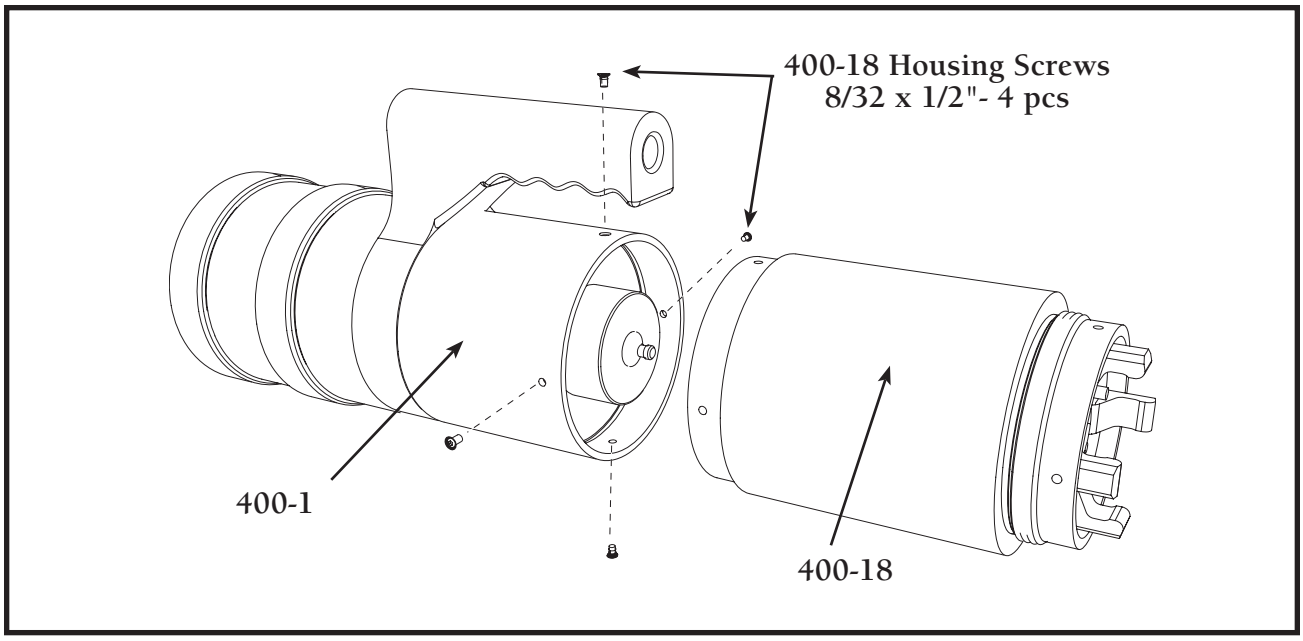
Using Hand Trigger:

If using the push button to operate the tool, hold the button down - keeping the toggle in its' forward position. The set screw will now be visible through the 400-18 slot. Remove set-set screw as described in previous section.

Using Foot Pedal:

If using the foot pedal to operate the tool, depress the pedal down keeping the toggle in its' forward position. The set screw will now be visible through the 400-18 slot.

Remove set-set screw as described in previous section **5A**.



Removing 400-18 Housing

6 *Remove 400-18 from 400-1 Housing*

There are **four 8/32 x 1/2"** screws locking the 400-18 assembly into the main housing 400-1. Remove these screws and the 400-18 assembly can be pulled from the front of the 400-1.

7 *Remove 400-TOG from 400-18 Housing*

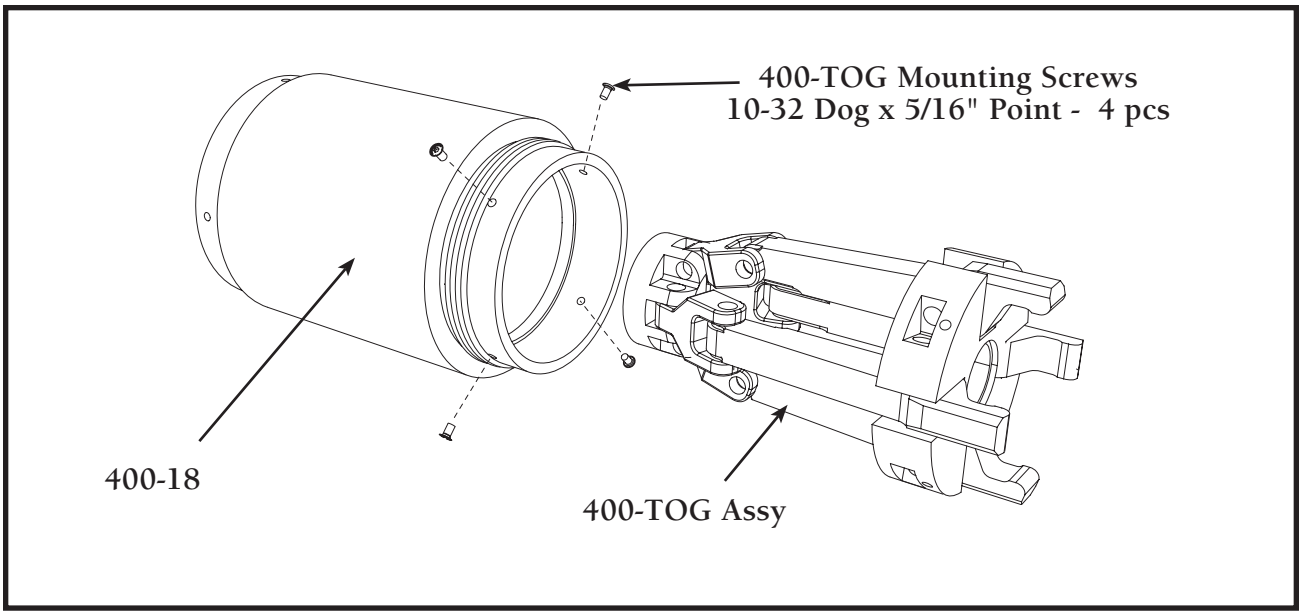
There are **four 10-32 x 5/16"** dog point set screws locking the toggle assembly into the main housing 400-18. Remove these set screws and the toggle assembly can be pulled from the front of the 400-18.

Note When reassembling, the set screw opening in the anchor, **P/N 400-7**, must be aligned with the rectangular opening in the 400-18. ***See figure on page 21.***

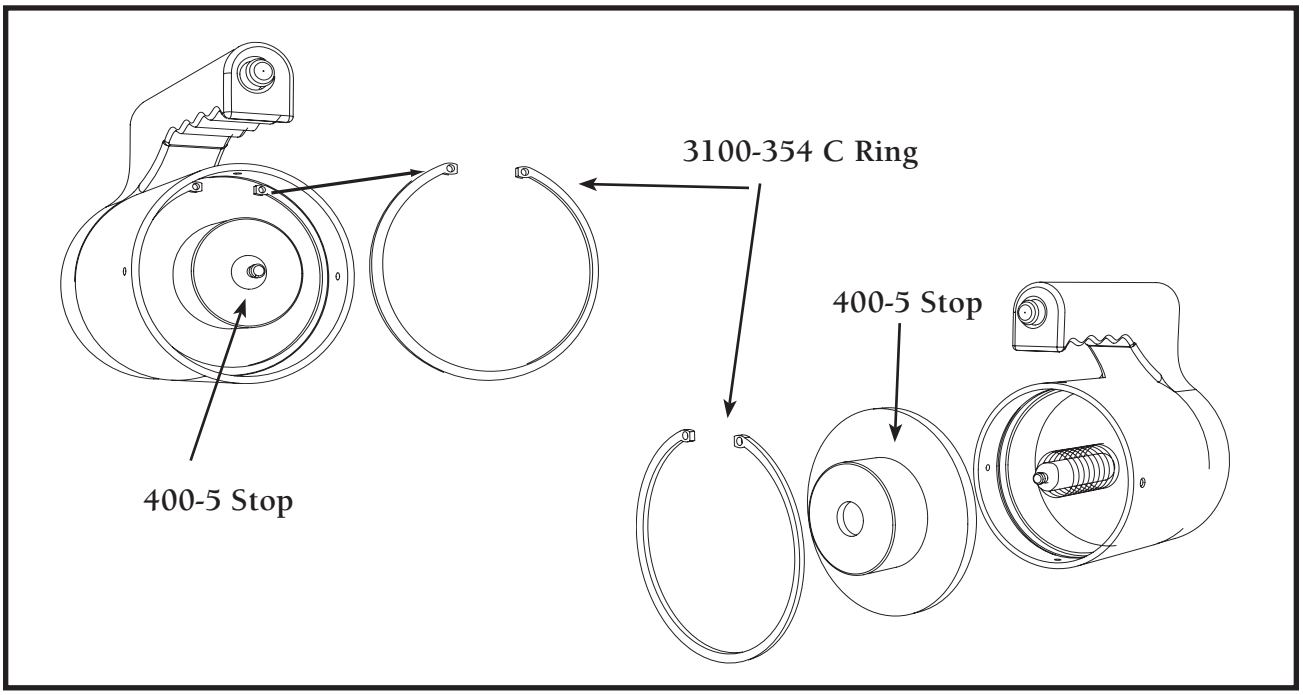
8 *Remove 400-5 Stop from 400-1 housing*

Remove the "C" ring, P/N 3100-354 using suitable snap ring pliers. This snap ring holds down the 400-5 stop in place.

Note **The C ring is under considerable pressure. Remove with caution.**



Removing 400-TOG from 400-18

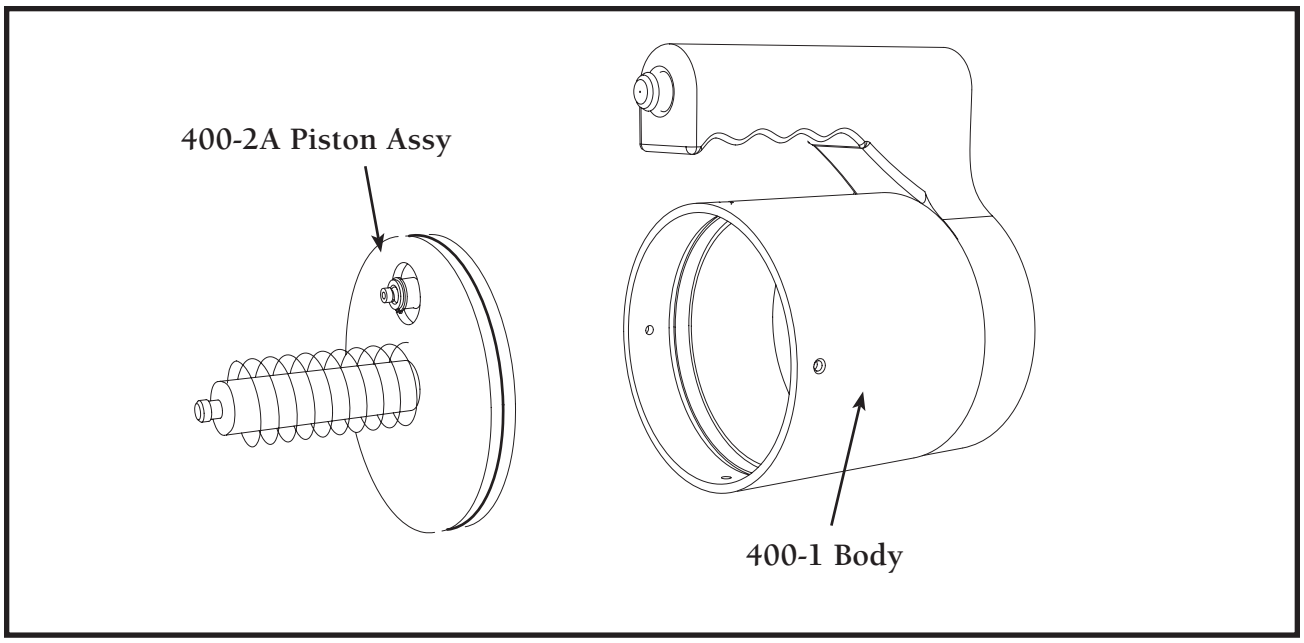


Removing 400-5 Stop

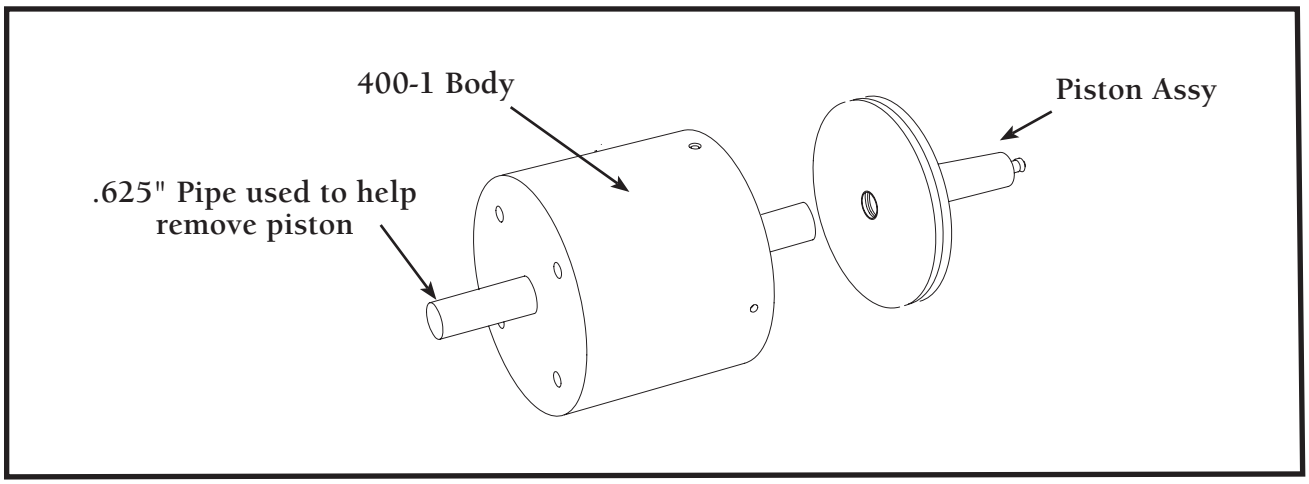
9 *Remove Piston Assembly from 400-1 Body - Model 400 Only*

Withdraw the piston assembly from the 400-1. If the piston will not remove easily with hand pressure, it may be necessary to use a pipe (**.625 dia or smaller**) inserted in the rear to assist removal. See diagram. Use a soft rubber mallet and gently tap on the pipe to remove the piston.

Note **For models 400-BHD & 400-B-1, it will be necessary to first remove the booster units in order to insert the pipe. Go to step 11 on page 26.**



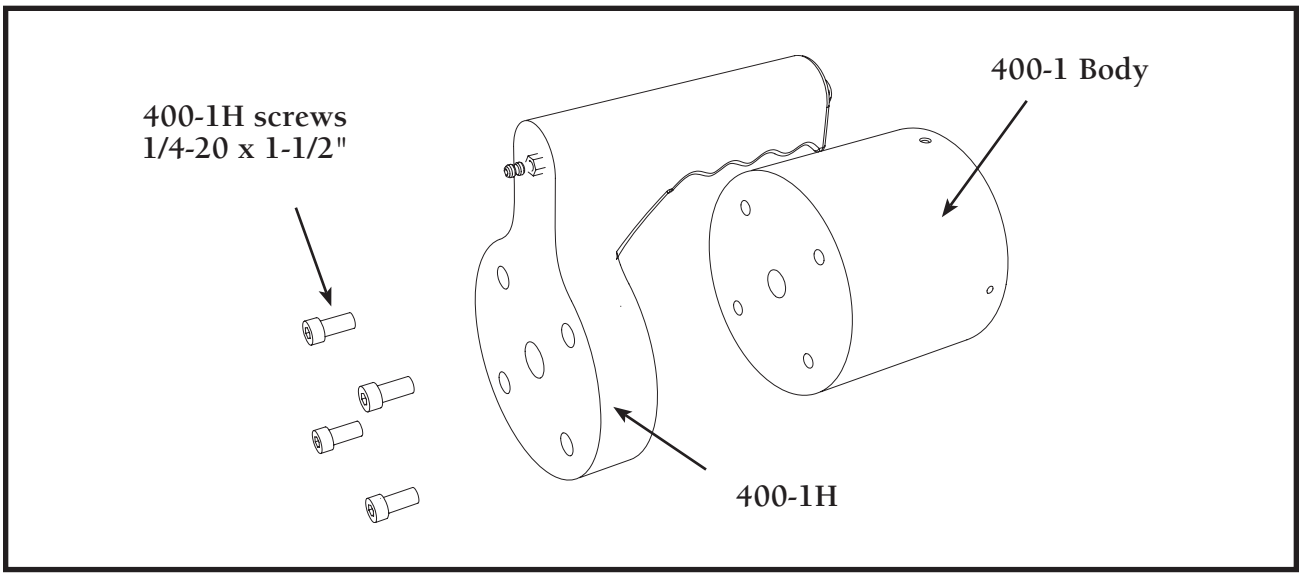
Removing 400-2A Piston from 400-1 Body



Removing 400-2A Piston from 400-1 Body using .625" pipe

10 Remove 400-1 Body from 400-1H Handle - Models 400 only

Remove the four **1/4-20 x 1-1/2"** inch bolts from the 400-1H handle. Once these are removed, separate the units.



Removing 400-1H Handle

At this stage, the model 400 tool has been disassembled into its component parts: Toggle assembly, Piston & Cycling valve, body housings.

For information concerning components parts, see pages 39-44.

Models 400-BHD and 400-B-1 will still have booster assemblies attached. Refer to the instructions below to remove

.

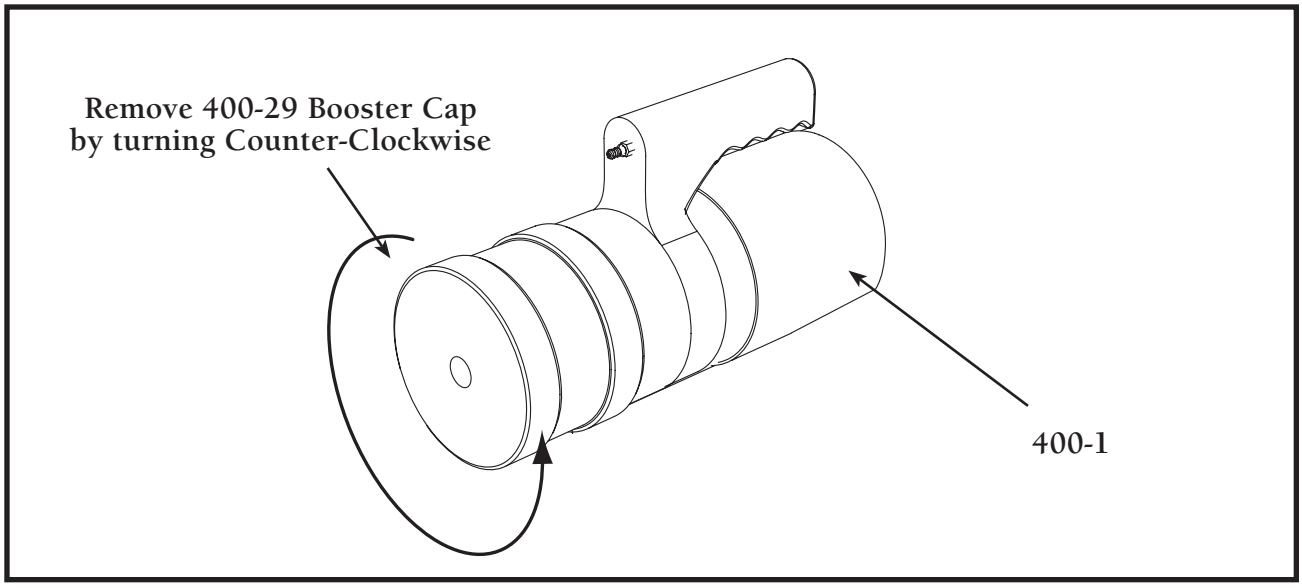
Models 400-BHD & 400-B-1 Booster Assembly Removal

The procedure for removing the booster assemblies for each model is essentially identical, except that model 400-BHD has only one booster unit, while model 400-B-1 has two.

We will describe the procedure for removing the two booster units for model 400-B-1. For model 400-BHD, the basic procedure is the same, with the exception that this model has only one booster unit.

11 *Remove 400-29 Booster Cap - Model 400-B-1*

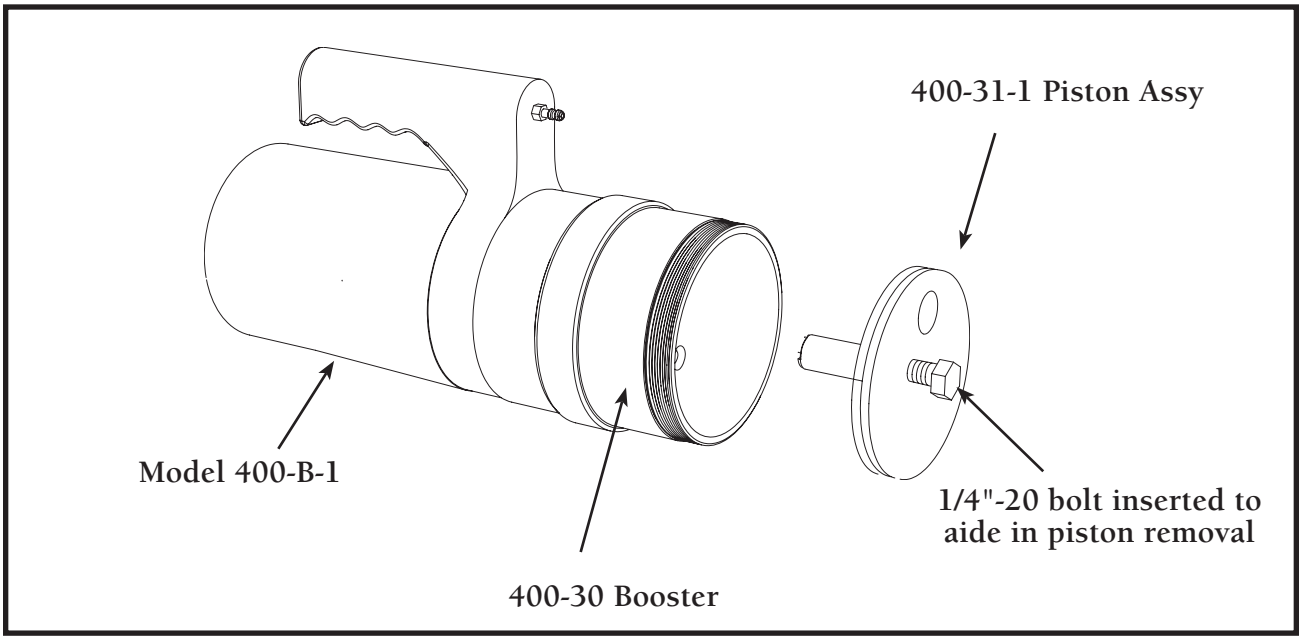
Turn the 400-29 booster cap counterclockwise to remove.
If the cap cannot be removed by hand, use a strap wrench to gain additional leverage.



Removing 400-29 Booster Cap (Model 400-B-1 shown)

12 *Remove 400-31-1 Piston from 400-30 Booster - Model 400-B-1*

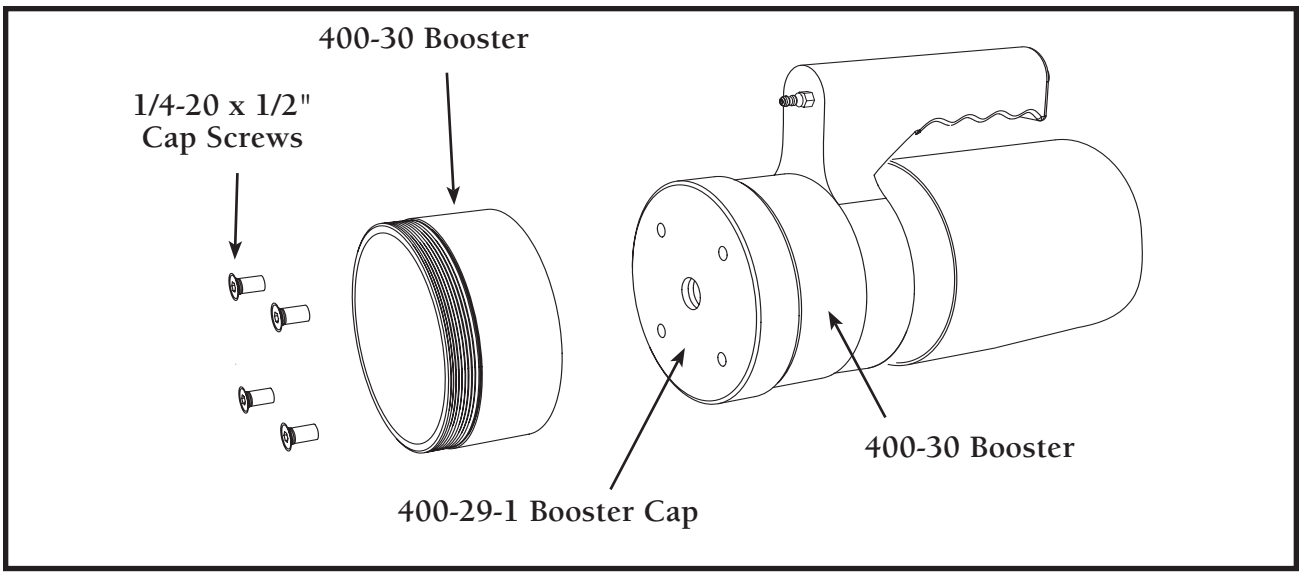
There is a 1/4-20 thread in the center of the piston rod. With the 400-29 booster cap removed, screw a 1/4-20 bolt into the rear of the piston rod. You will now be able to pull the piston from the housing. It should move with minimal resistance.



Removing 400-31-1 Piston Assy

13 Remove 400-30 Booster from 400-29-1 Booster Cap - Model 400-B-1

You will see four screws (**1/4-20 x 1/2**") which mount the booster cylinder (400-30) to the 400-29-1 booster cap. Loosen these screws and remove the booster from the rear of the booster cap.

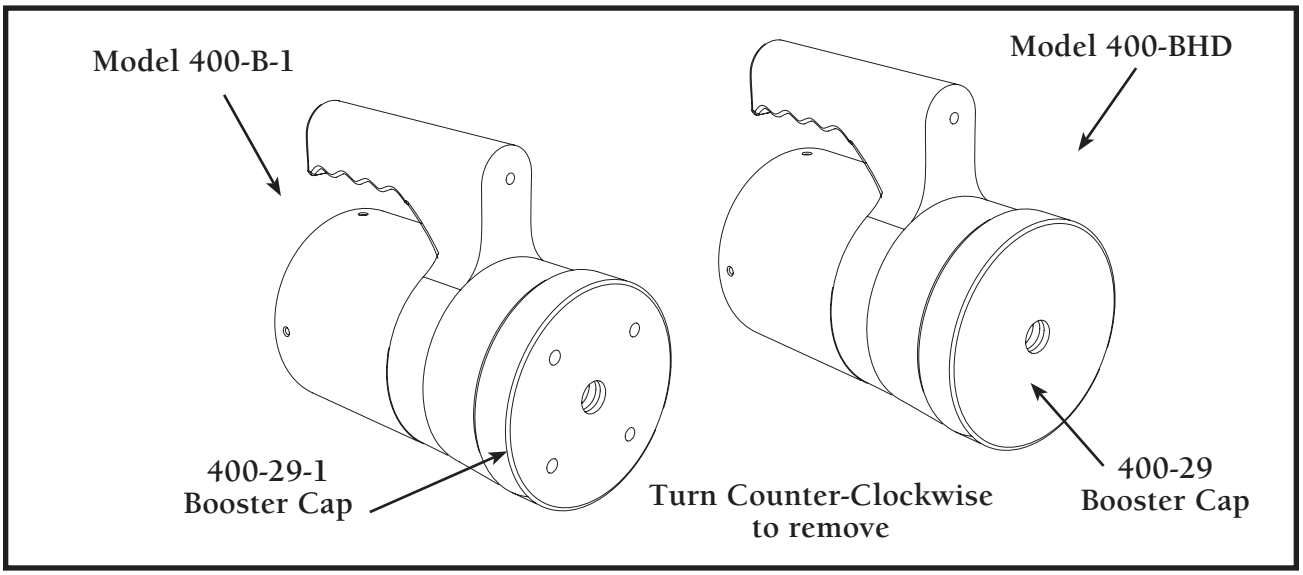


Removing 400-30 booster - Model 400-B-1 shown

14 Remove 400-29-1 Booster Cap

Model 400-B-1: Turn the 400-29-1 booster cap counterclockwise to remove.
Model 400-BHD: Turn the 400-29 booster cap counterclockwise to remove.

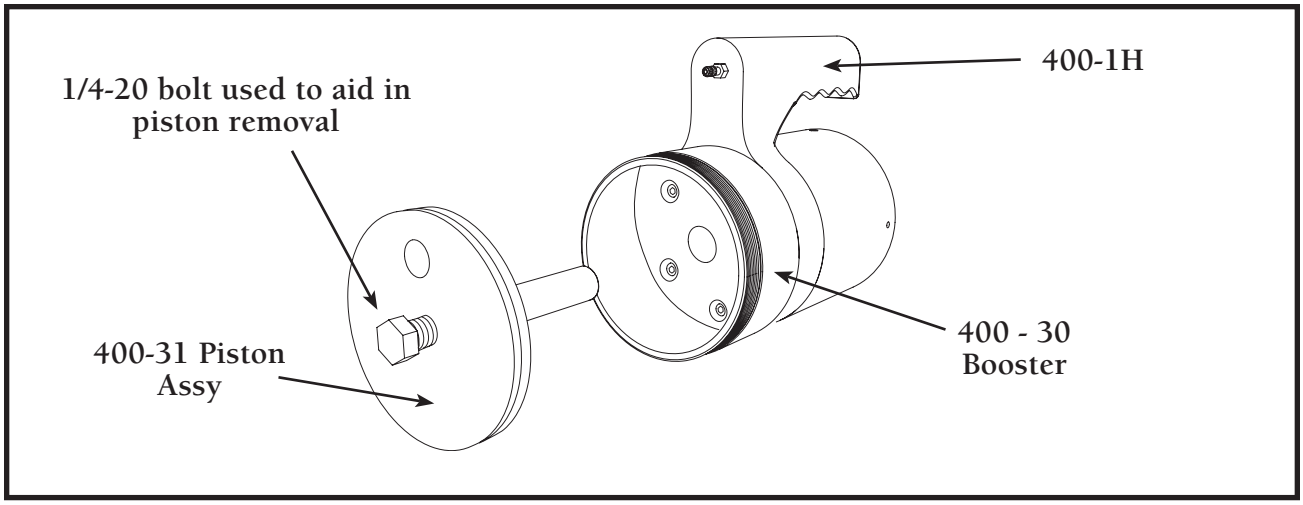
If the cap cannot be removed by hand, use a strap wrench to gain additional leverage.



Removing 400-29-1 (or 400-29) Booster Cap

15 *Remove 400-31 Piston - Model 400-BHD & 400-B-1*

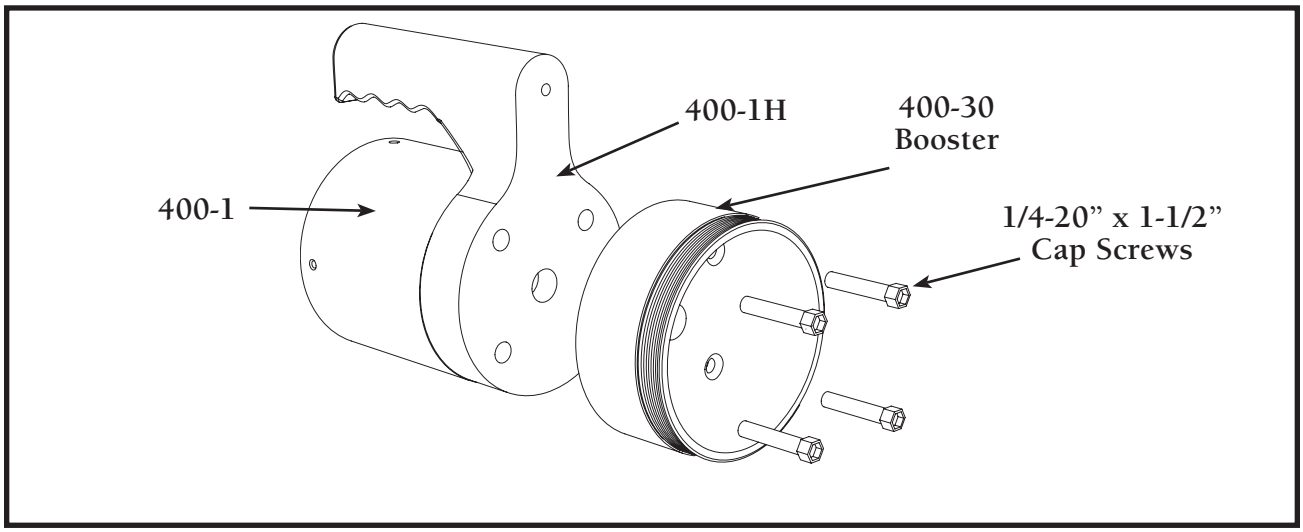
There is a 1/4-20 thread in the center of the piston rod. With the 400-29-1 booster cap removed, screw a 1/4-20 bolt into the rear of the piston rod. You will now be able to pull the piston from the housing. It should move with minimal resistance.



Removing 400-31 Piston Assy

16 *Remove 400-30 Booster - Model 400-BHD & 400-B-1*

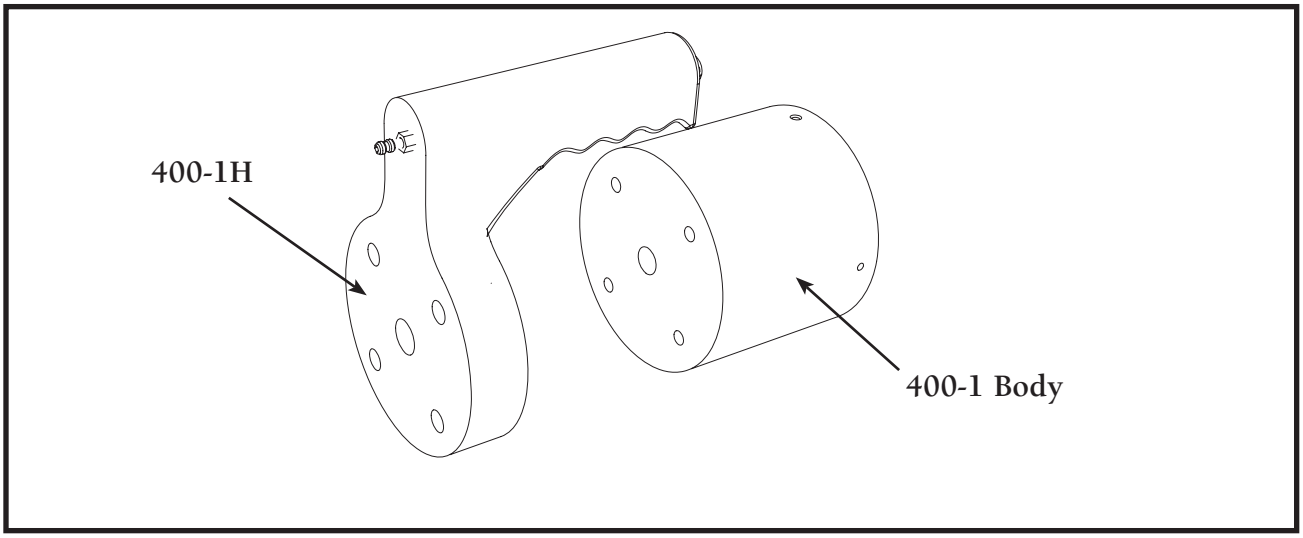
There are four **1/4-20 x 1-1/2"** screws securring the 400-30 booster to the 400-1H handle. Remove these screws and seperate the two units.



Remove 400-30 Booster

17 Remove 400-1 Body from 400-1H Handle

Once the four 1/4-20" x 1-1/2 inch bolts are removed in step 16, you can separate the handle from the 400-1 body.



Removing 400-1H Handle

Disassembly of the unit is now complete.
For information on individual components and repair, see pages 39-44.

Assembly instructions begin on page 30.

MAIN UNIT ASSEMBLY

Note

- It is suggested that all "O" rings & springs be replaced prior to reassembly. Refer to the parts list for your particular model included in the specification section of this manual.

Note

- Lubricate all O-rings prior to assembly. **Dow Corning DC-55** "O" Ring lubricant is recommended.

Note

- There are two critical steps in reassembly of the 400 series pneumatic tools. Careful attention should be placed to the alignment of the piston assemblies including the piston assemblies that are contained in the booster units for models 400-BHD & 400-B-1. An assembly guide tool, **400-1000**, is available for use in alignment of the cylinders. It is strongly recommend that this guide be used. Alignment problems can cause cycling problems and/or damage to the tool.

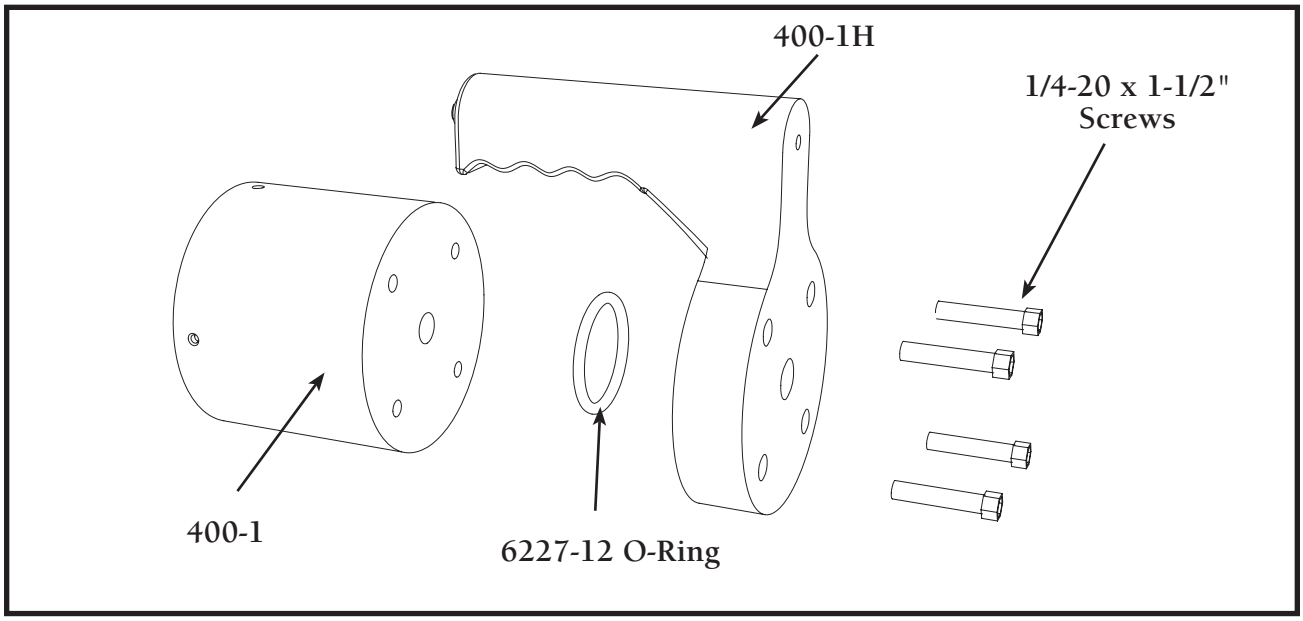
1 *Attach 400-1H Handle to 400-1 Body - Model 400 Only*

Note **Models 400-BHD & 400-B-1 go to step 2 on page 31.**

Insert a new 6227-12 O-ring into the 400-1H handle.

Mount the 400-1H handle to the 400-1 Body housing using the four 5/16-18 x 1" flat head cap screws.

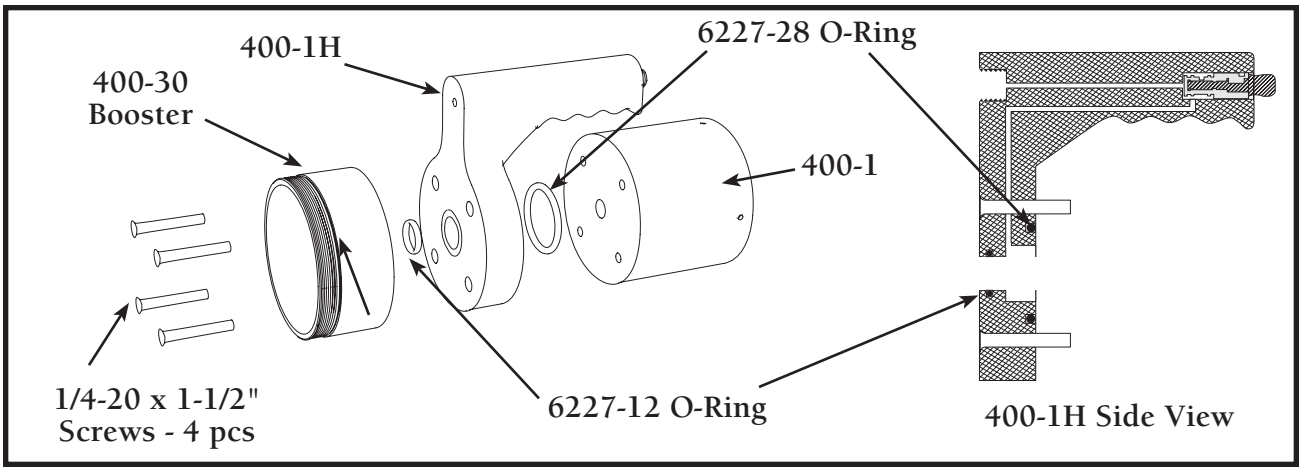
Models 400 - go to step 9 on page 34.



Installing 300-1H Handle to 400-1 body (Model 400 Only)

2 Mount 400-30 Booster to 400-1H and 400-1 - Model 400-BHD & B-1

Install new 6227-12 & 6227-28 O-rings in the 400-1H handle. Mount the 400-30 booster to the handle and the 400-1 body; install the four **1/4-20 x1-1/2**" flat head cap screws, **leaving them loose**.

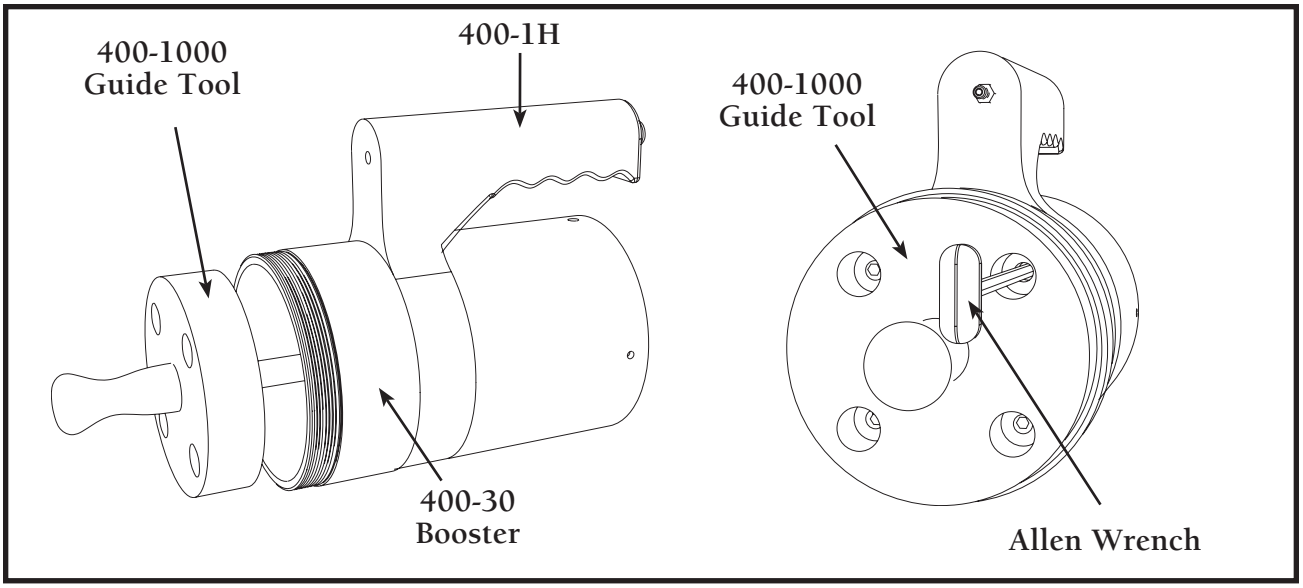


Attaching 400-30 Booster, 400-1H & 400-1 Body

3 Use Guide tool 400-1000 to align

The alignment of the booster to the main cylinder is critical. The cylinders must be aligned so that the piston rods are on the same centerline. If there is misalignment, the piston rod will bind and cause malfunction of the tool, or will reduce the force available to complete the crimp.

Insert guide 400-1000 into the booster cylinder. Position the booster cylinder such that the guide moves freely in the cylinder.



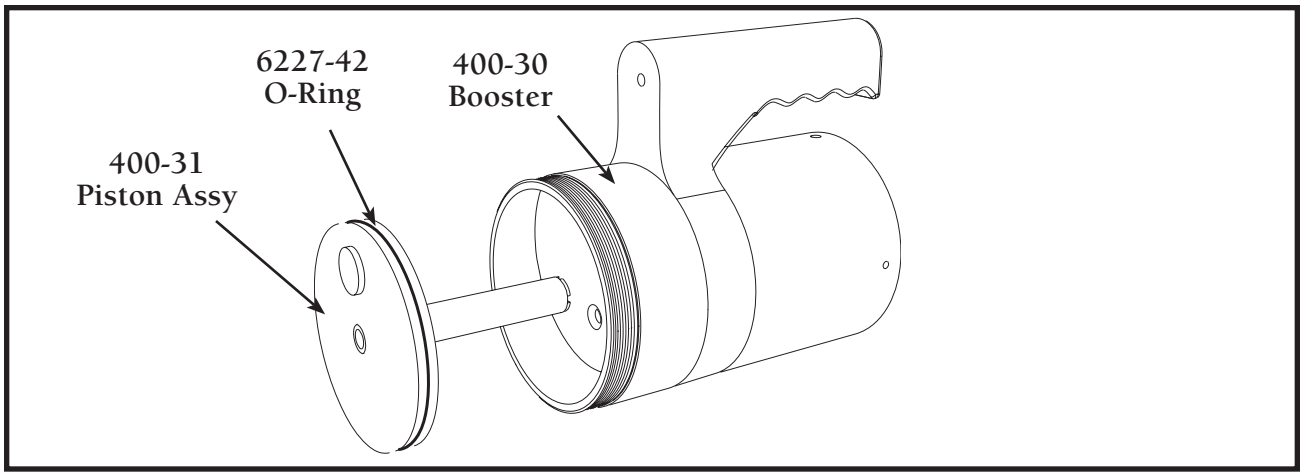
Using Alignment tool with booster assembly

3 Guide Tool - continued

Tighten the four flat head screws to a snug condition, test the movement of the guide in the cylinder. If the guide does not move freely, reposition the booster cylinder until it does.

4 Install 400-31 Piston Assembly - Model 400-BHD & B-1

Install the complete 400-31 piston assembly - consisting of 400-2A Piston, 400-31 Piston rod, 6227-42 O-ring. Install by inserting the assembly into the rear of the 400-30 booster until the unit is flush with the booster.



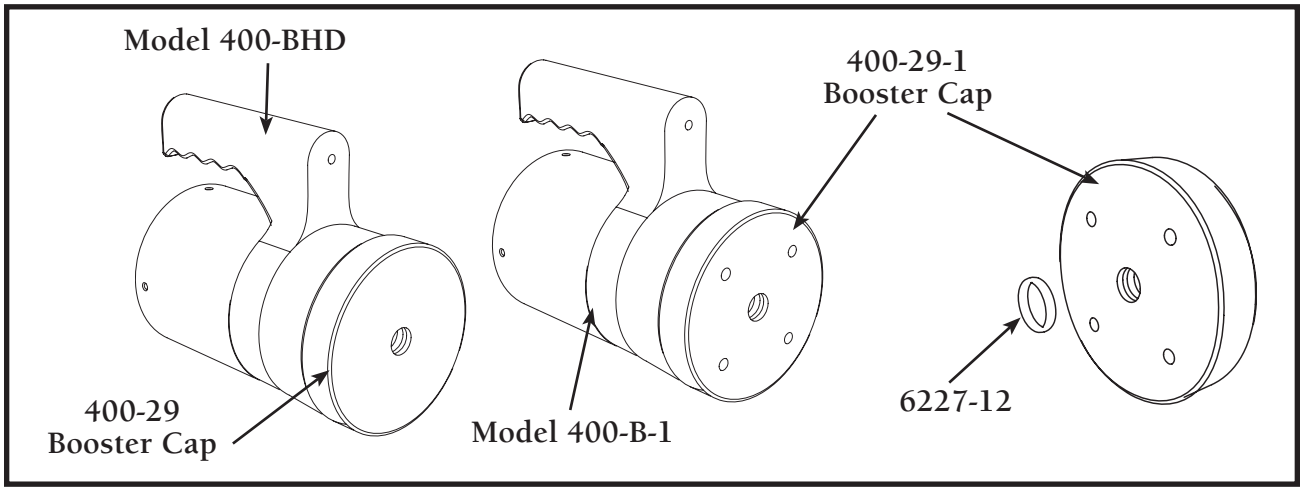
Installing 400-31 Piston in 400-30 Booster

5 Install Booster Cap (400-29 or 400-29-1)

Model 400-BHD: Screw on P/N 400-29 Cap and proceed to step 9 on page 34.

Model 400-B-1: Screw on P/N 400-29-1 onto the 400-30 booster.

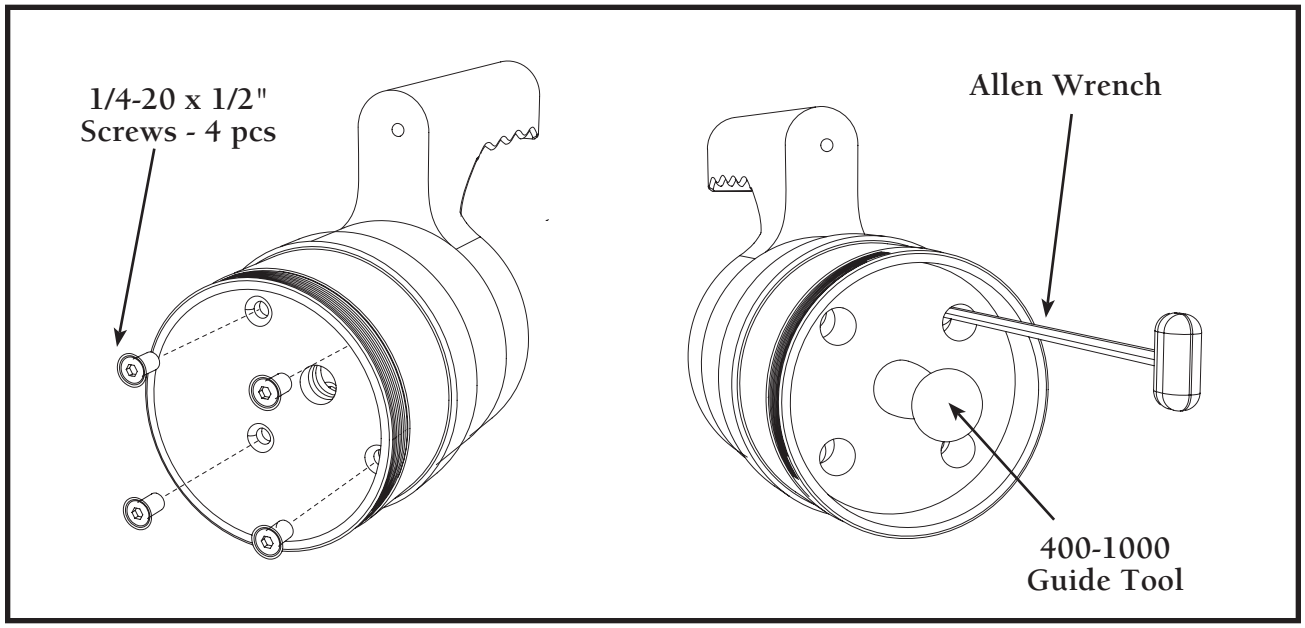
Note *In both cases, insure that the P/N 6230-17 O ring is installed in the booster cap prior to installing. P/N 400-29-1: Install new 6227-12 O-ring in Cap*



Difference between 400-29-1 & 400-29 Booster Caps

6 Install second 400-30 Booster - Model 400-B-1 only

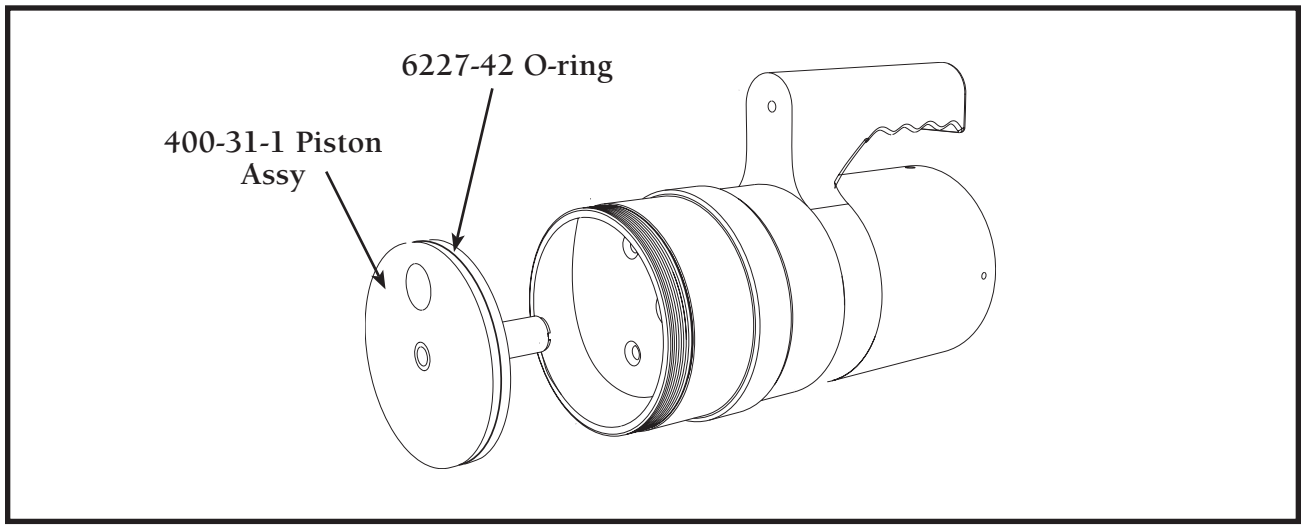
Mount the booster to the 400-29-1 booster cap. Insert the four **1/4-20 x 1/2**" flat head cap screws, leaving them loose. Insert the 400-1000 guide tool, and tighten the cap screws.



Tightening Second Booster Screws

7 Install 400-31-1 Piston Assembly - Model 400-B-1

Install the complete 400-31-1 piston assembly - consisting of 400-2A Piston, 400-31-1 Piston rod, 6227-42 O-ring and 400-27 Cycling valve. Install by inserting the assembly into the rear of the 400-30 booster until the unit is flush with the booster.

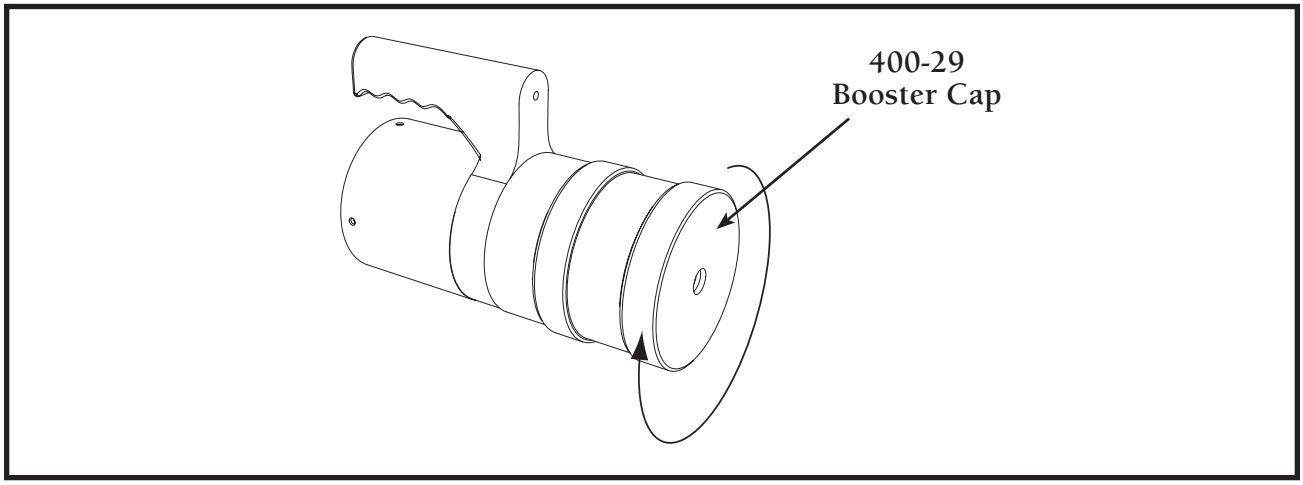


Installing 400-31-1 Piston in Model 400-B-1

8 Install Booster Cap 400-29 - Model 400-B-1

Install booster cap, P/N 400-29 and P/N 6230-17 O ring. The cap mounts onto the 400-30 booster, and is tightened by turning clockwise.

Booster installation for 400-B-1 now complete.

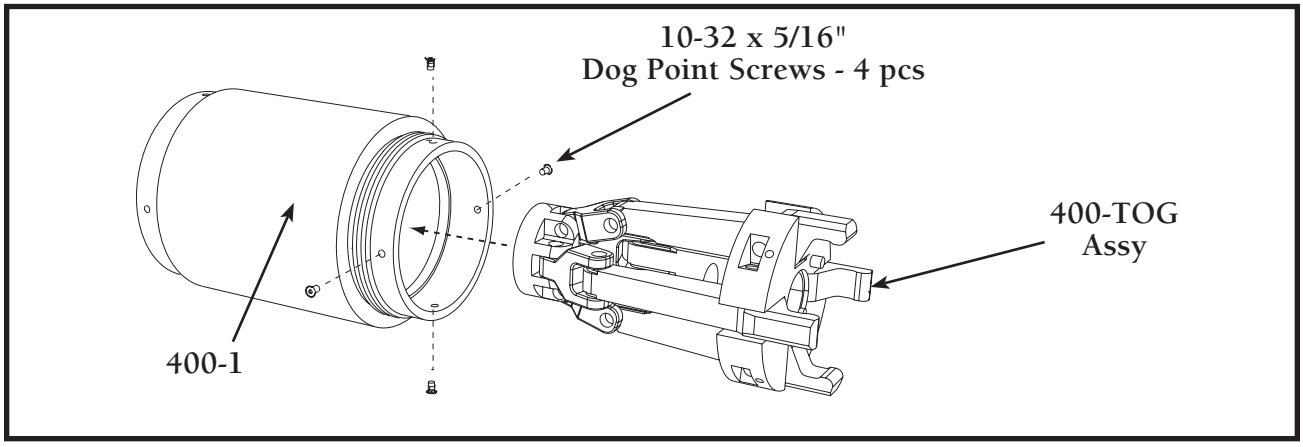


Installing 400-29 Booster Cap

9 Install 400-TOG into 400-18 Housing - All Models

The following proceedures apply to all models, 400, 400-BHD & 400-B-1.

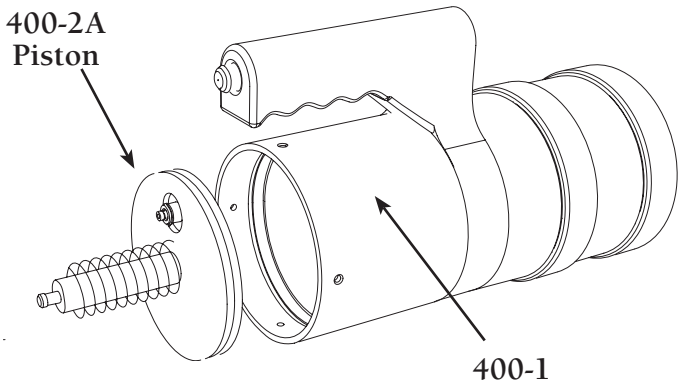
Mount the 400-TOG assembly into the 400-18 housing using four **10-32 x 5/32**" half dog screws.



Installing 400-TOG into 400-18 Housing

10 Install 400-2A Piston Assembly into 400-1

Install 400-2A Piston assembly directly into 400-1 body. Insert until assembly is flush with the rear of the 400-1 body and the front of the 400-1H handle.



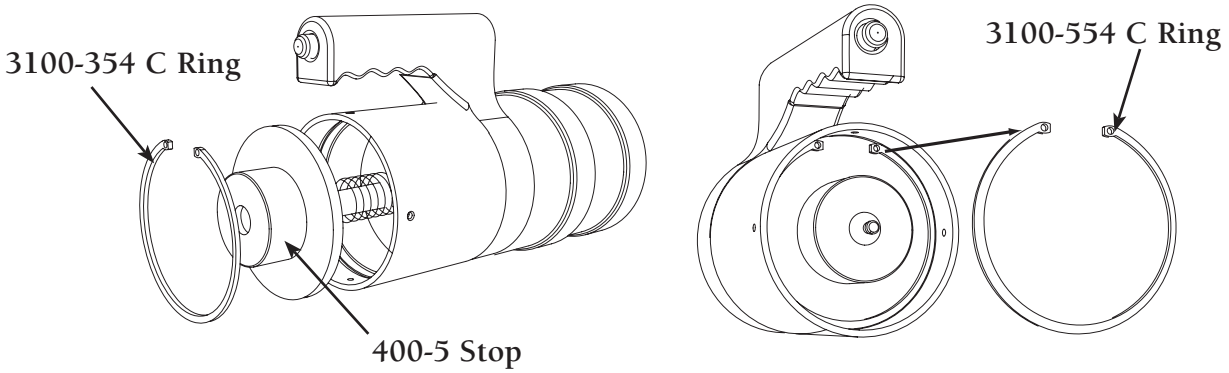
Installing 400-2A Piston Assy into 400-1 body - Model 400-B-1 shown

11 Install 400-5 Stop and C-clip

Install the 400-5 stop until it seats on the 400-2B piston rod.

Install the "C" ring, P/N 3100-354.

Note **C ring pliers are helpful in installing this item. This ring holds the front stop, P/N 400-5 in place.**



Installing 400-2A Piston Assy into 400-1 body - Model 400-B-1 shown

12 Connect 400-18 Housing to 400-1 Body

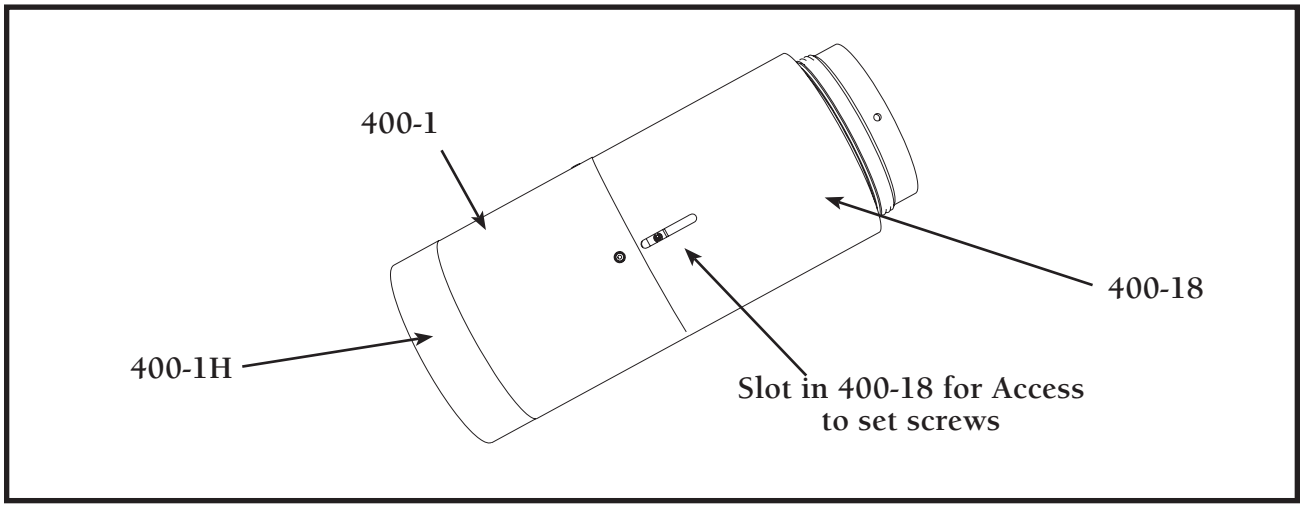
When mounting the front housing, 400-18, containing the toggle assembly, it is imperative that the anchor, 400-7 be firmly seated against the shoulder of the piston rod 400-2B.

The suggested procedure is:

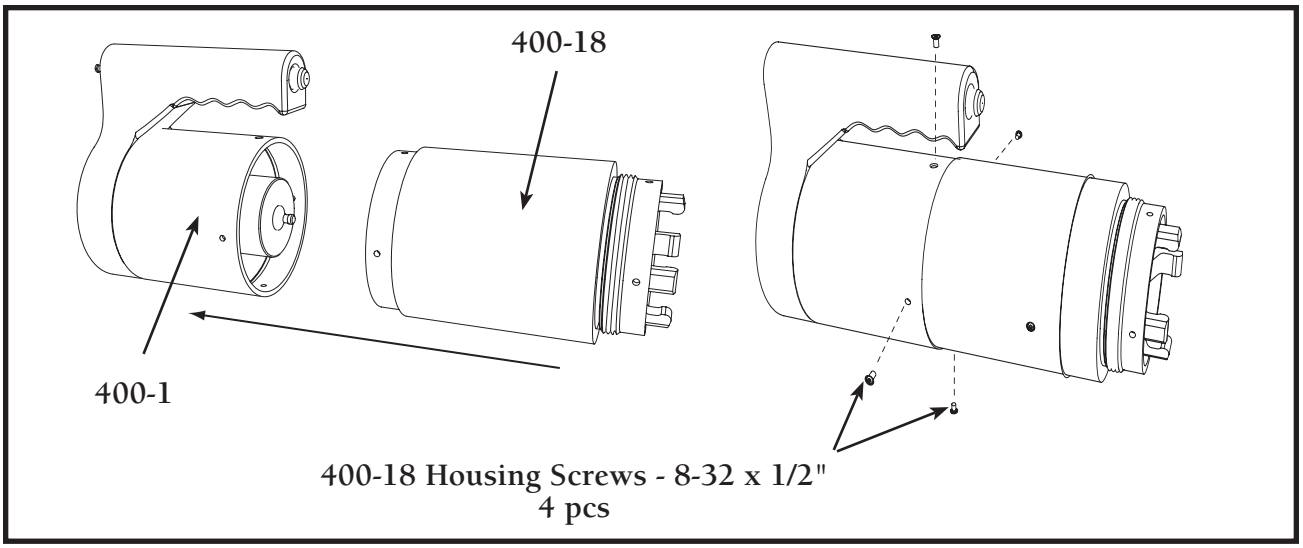
- Place the 400-18 housing-toggle assembly on the tool body 400-1.
- Align the mounting holes and the rectangular slot in the body. Do not install the flat head housing mounting screws.

View the position of the anchor and piston rod thru the rectangular slot. There should be no gap between the base of the anchor and the shoulder of the piston rod.

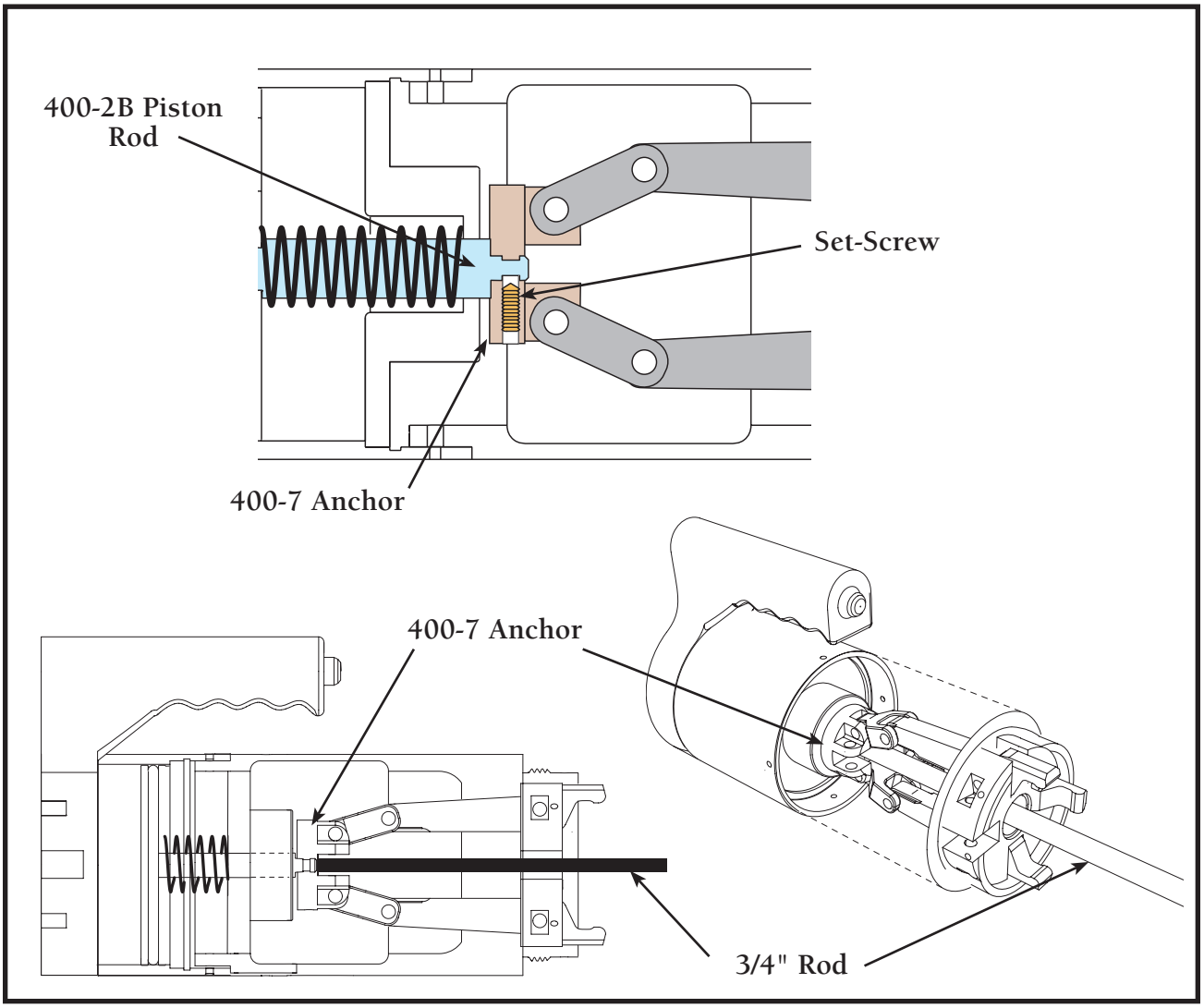
- Check to insure that the dog point set screw is in the anchor 400-7.
- Apply air to the tool, causing the piston to come forward and remain in that position.
- Use a rod of about 3/4 inch diameter, insert it thru the retainer 400-11 and tap the anchor 400-7 to insure that it is firmly against the shoulder of the piston rod.
- While still maintaining air to the tool and the piston in the forward position, tighten the dog point set screw.
- Install the locking set screw against the dog point screw.
- Air can now be removed from the tool.
- Check the alignment of the 400-18 clearance holes to the threaded holes in the 400-1 body. Reposition if necessary and install the four 8-32 X 1/2" housing screws.



Set-Screw Slot location - looking upside down at 400-18 & 400-1 housing



Mounting 400-18 to 400-1 Body



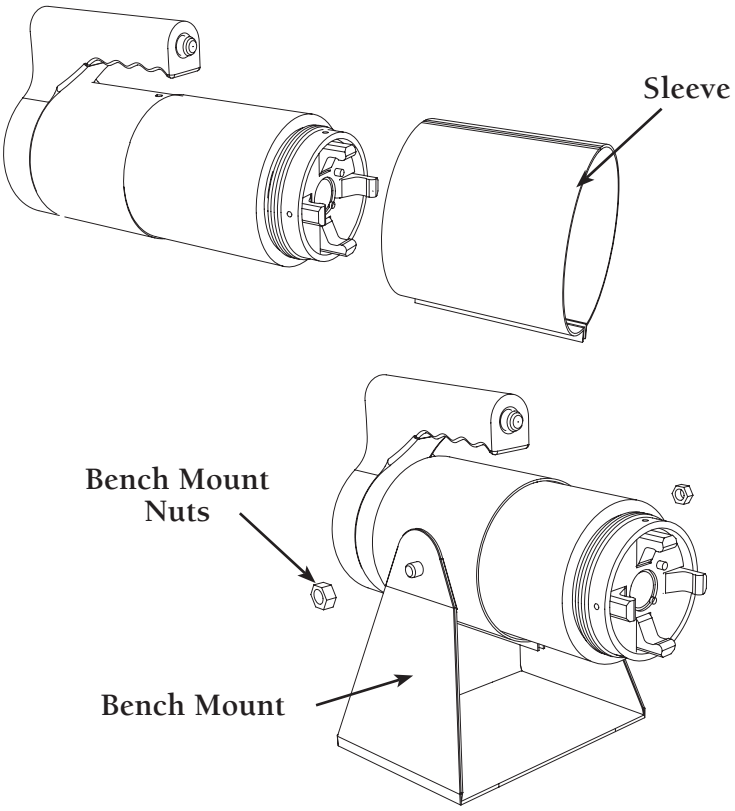
Side View - Mounting 400-18 Housing to 400-1 Body

13 *Install Sleeve and Bench Mount*

Install the sleeve and bench mount.

At this stage, assembly is complete. Refer to the setup guide for operating instructions.

For information on components, refer to the next section.



Installing Sleeve and Bench Mount

COMPONENT DISASSEMBLY

Toggle Unit

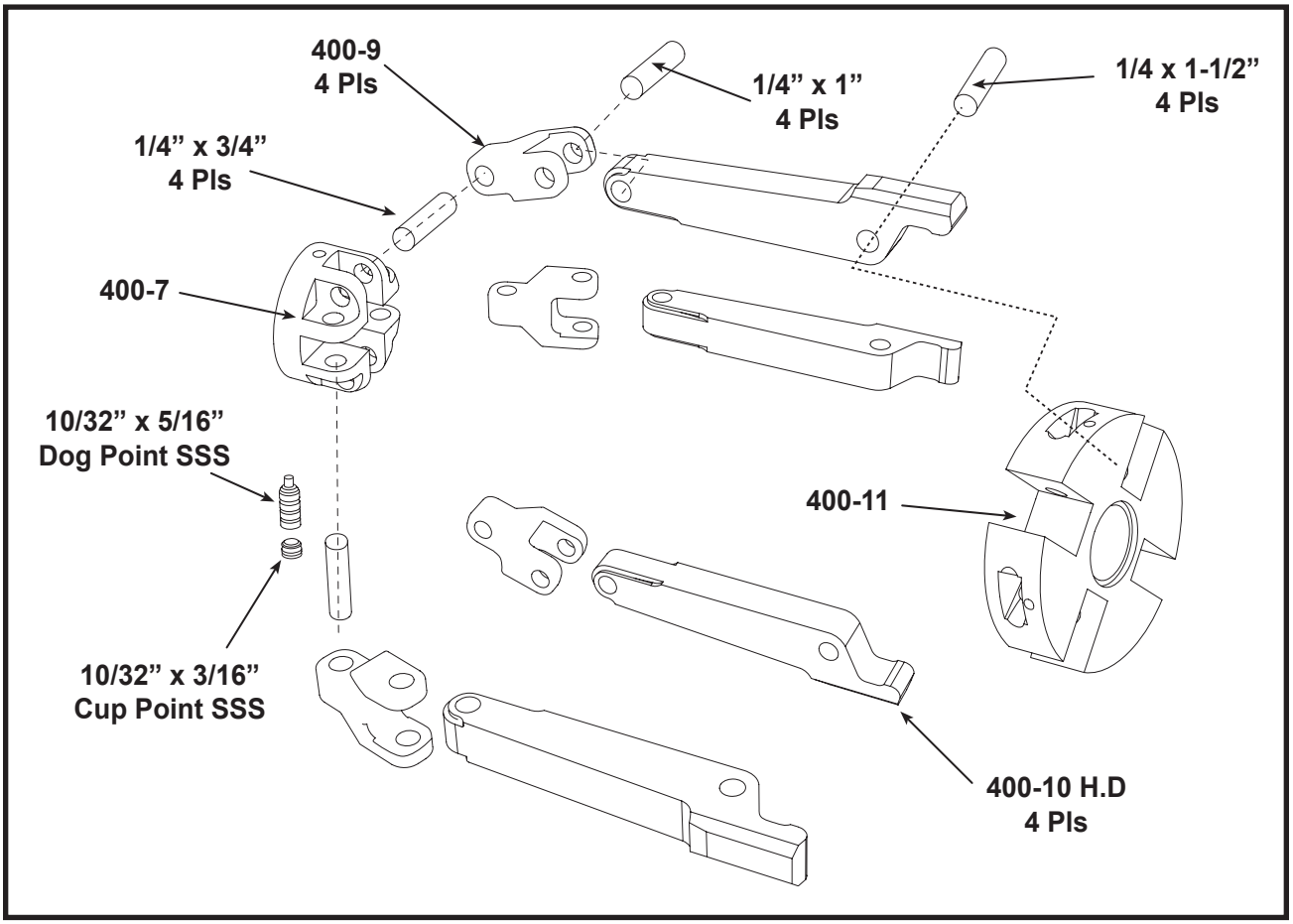
Disassembly of the toggle unit consists of removing the links connecting the arm to the yoke (400-7), and the front retainer, 400-11. Using the proper diameter drive punch will aid in removal.

1 ***Remove Pins from 400-11 Retainer***

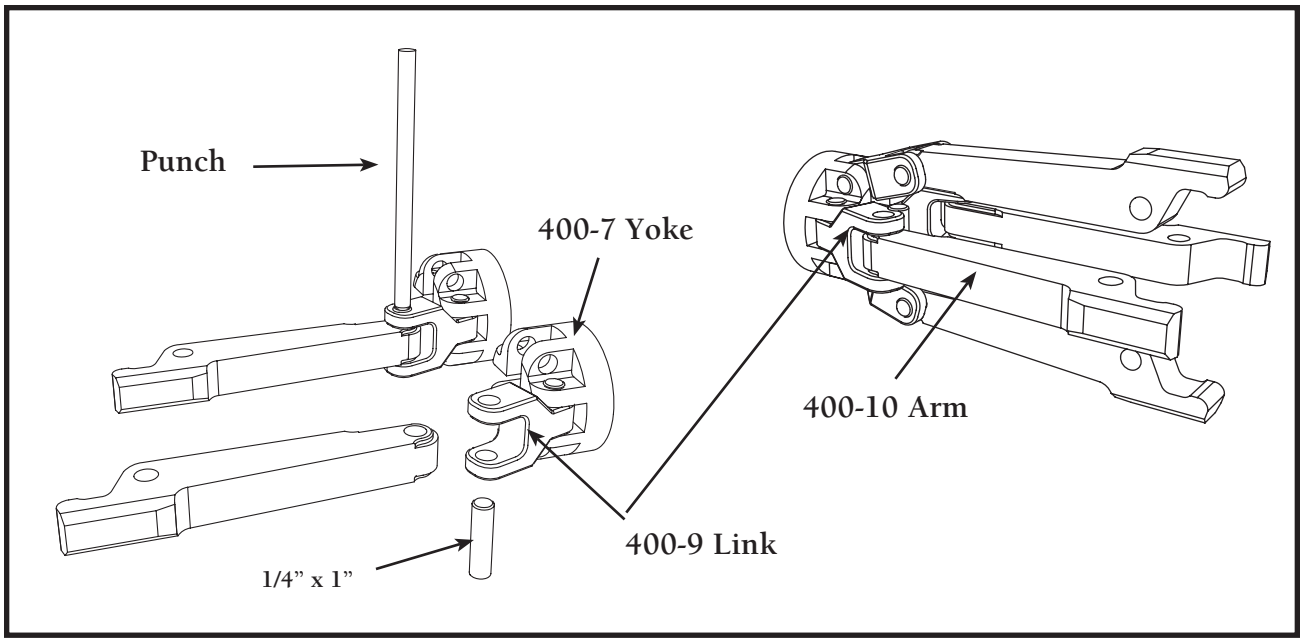
Using a suitable punch, use light pressure to tap the pins out from the retainer. There are 4 pins, 1/4 x 1-1/2" long.

2 ***Remove Pins from 400-10 Arm***

Using a suitable punch (or cylinder rod), use light pressure to tap the pins out from each 400-10 arm. Note, each arm is connected to a 400-9 Link. There are 4 dowel pins, each is 1/4 x 1" long.



Exploded Toggle

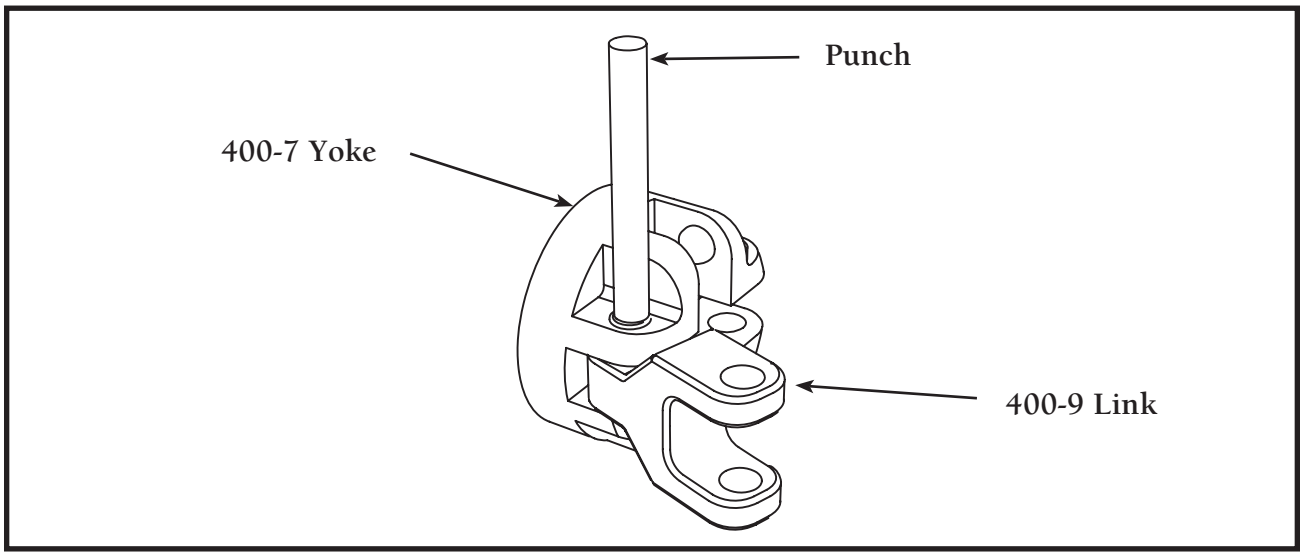


Removing 400-10 Arms

3 *Remove Pins from 400-9 Link & 400-7 Yoke*

Using a suitable punch, use light pressure to tap the pins out from each 400-9 link. Note, each link is connected to the 400-7 yoke. There are 4 pins, each is 1/4 x 3/4" long.

To reassemble: Reverse steps 1-3 from previous section.



Removing 400-19 Link from Yoke

Piston Assembly

1 Remove O Ring

Remove the 6227-42 O ring from the piston.

For booster piston assemblies, all use the same O-ring and piston - however the piston rod P/N is different. Refer to the parts list for specific part numbers.

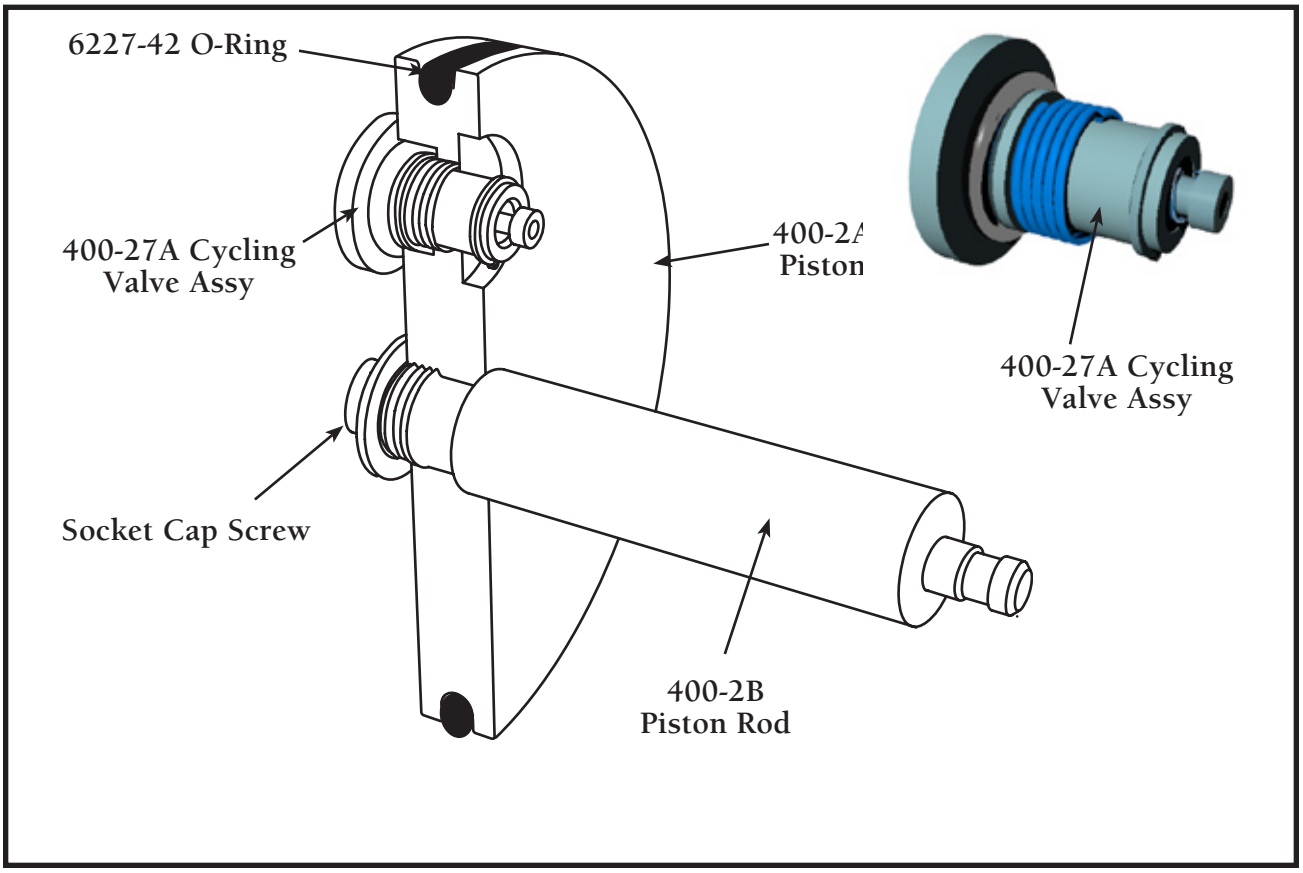
2 Remove Piston Rod

Generally there is no reason to remove the rod unless it needs to be replaced.

Unscrew the socket cap screw located at the rear of the piston rod. Next, unscrew 400-2B piston rod from the 400-2A piston by turning counterclockwise. Locktite is used during initial assembly - it may be necessary to heat up the assembly if difficulty unscrewing the piston rod from the piston is encountered.

To reassemble: Reverse steps 1-2. It is recommended that the "O" ring be replaced, Pico recommends applying **Dow Corning DC-55** "O" Ring lubricant prior to reassembly.

Cycling Valve Assembly removal instructions in next section.

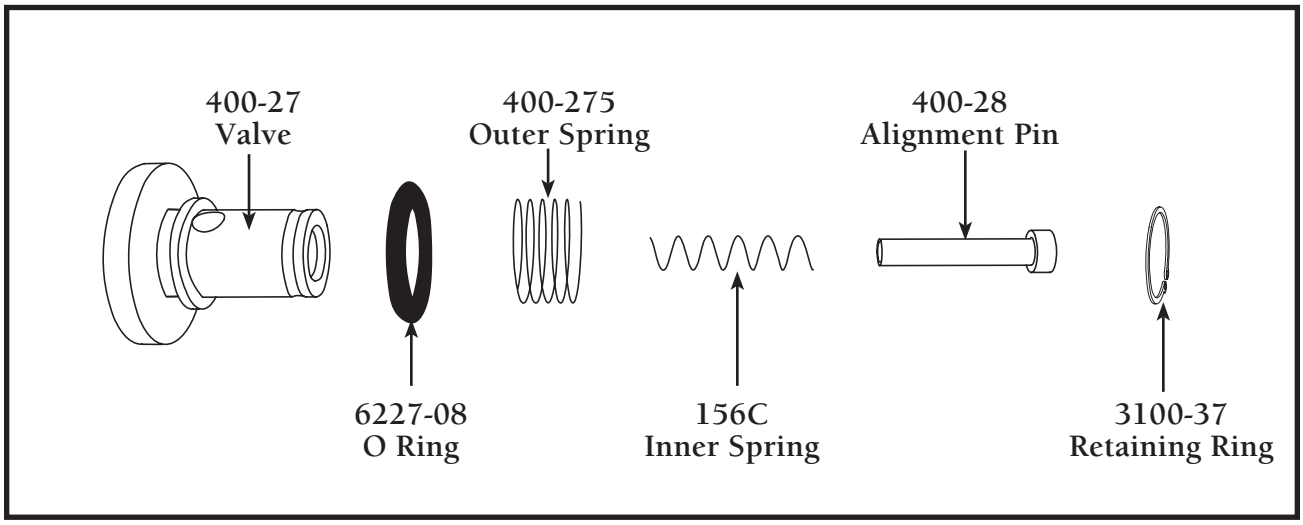


Piston Assembly

Cycling Valve Disassembly

Remove 3100-37 retaining ring. Remove 400-27A Cycling Valve Assy from the rear of the 400-2A Piston.

Extract the 400-28 alignment pin by pulling it out from the 400-27 valve. Typically, the 156C spring will come when withdrawing the alignment pin. The remaining components can now be removed.



Cycling Valve Assembly

Cycling Valve Assembly

Install 6227-8 O-Ring
Reassemble the cycling valve, starting first by installing a new 6227-8 "O" ring. Pico recommends applying Dow Corning DC-55 "O" Ring lubricant prior to reassembly.

Install 400-275 outer spring

Install alignment pin
Insert the 400-28 alignment pin into the 400-27 valve. Prior to insertion, the 156C inner spring should be placed over the alignment pin rod. There is a groove at the base of the 400-27 body that the first coil of the 156C spring snaps into. Press the 400-28/ 156C assembly in until the snap is heard to insure that these are firmly seated.

Install Cycling Valve
With "O" ring 6227-08 and outer spring 400-275 installed on the cycling valve body, from the rear of the piston, insert the cycling valve assembly into the 400-2A piston.

Install 3100-37 retaining ring
Insert the 400-27A Assy into the 400-2A Piston from the rear. Apply pressure to the head of the valve body and using c ring pliers, insert the retaining ring onto the cycling valve, from the front side of the 400-2A Piston.

Installation is now complete.

Trigger Assembly

Malfunction of the trigger assembly is an extremely rare occurrence. If it becomes necessary to remove the trigger components, the procedure is as follows.

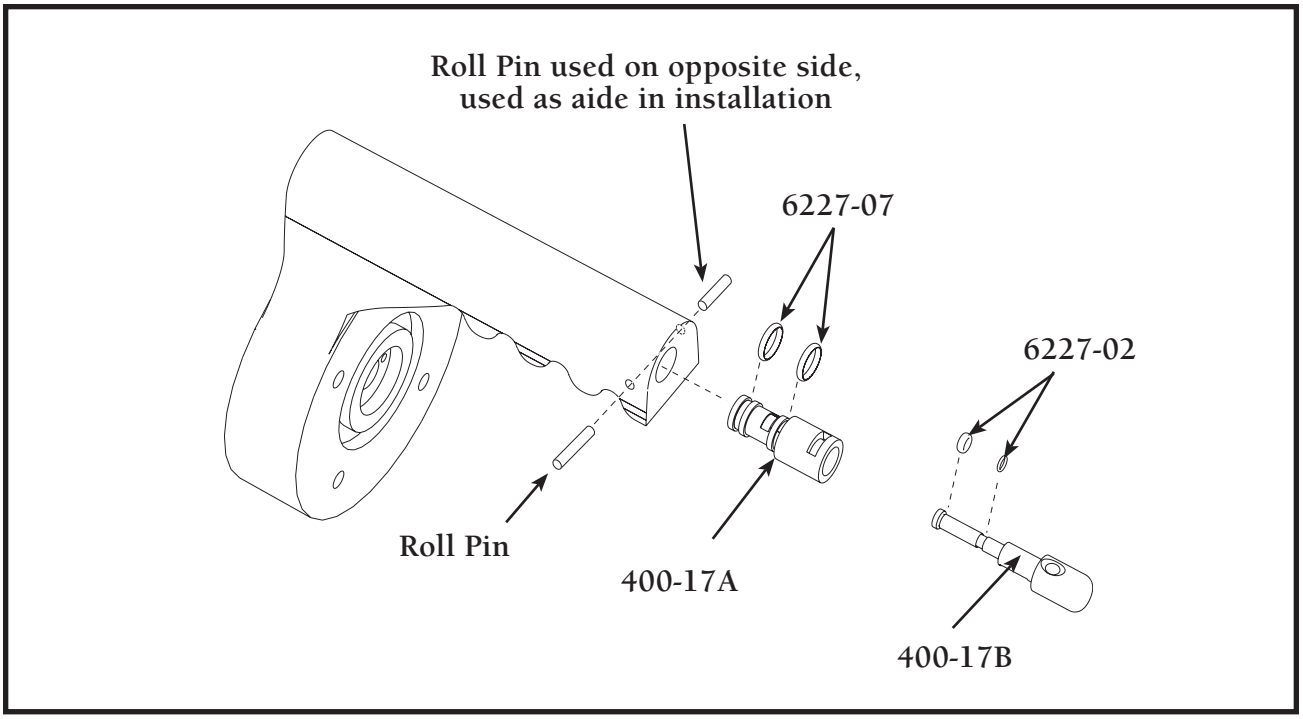
Locate the .093 diameter roll pin in the handle on the exploded view of the tool.

Using a drive punch with a diameter less than .093 inch, punch out the roll pin. The trigger housing and trigger slide can now be pulled from the handle.

To Reassemble:

- Locate the roll pin groove in the trigger housing part number 400-17A. Insert the trigger slide, 400-17B, into the housing aligning the milled slot in the slide with the corresponding slot in the housing.
- Insert the assembly into the tool handle. To assist in aligning the roll pin slot with the opening in the handle it is suggested that a small diameter pin or paper clip be used to check that the openings are in line.
- Drive the roll pin into the handle

It may be helpful to first insert a roll pin from the opposite side. This will help to ensure that the trigger is properly aligned while inserting the roll pin.



Trigger Assembly

Die Assembly

Note

The only reason to disassemble the Die is to replace worn indenters.

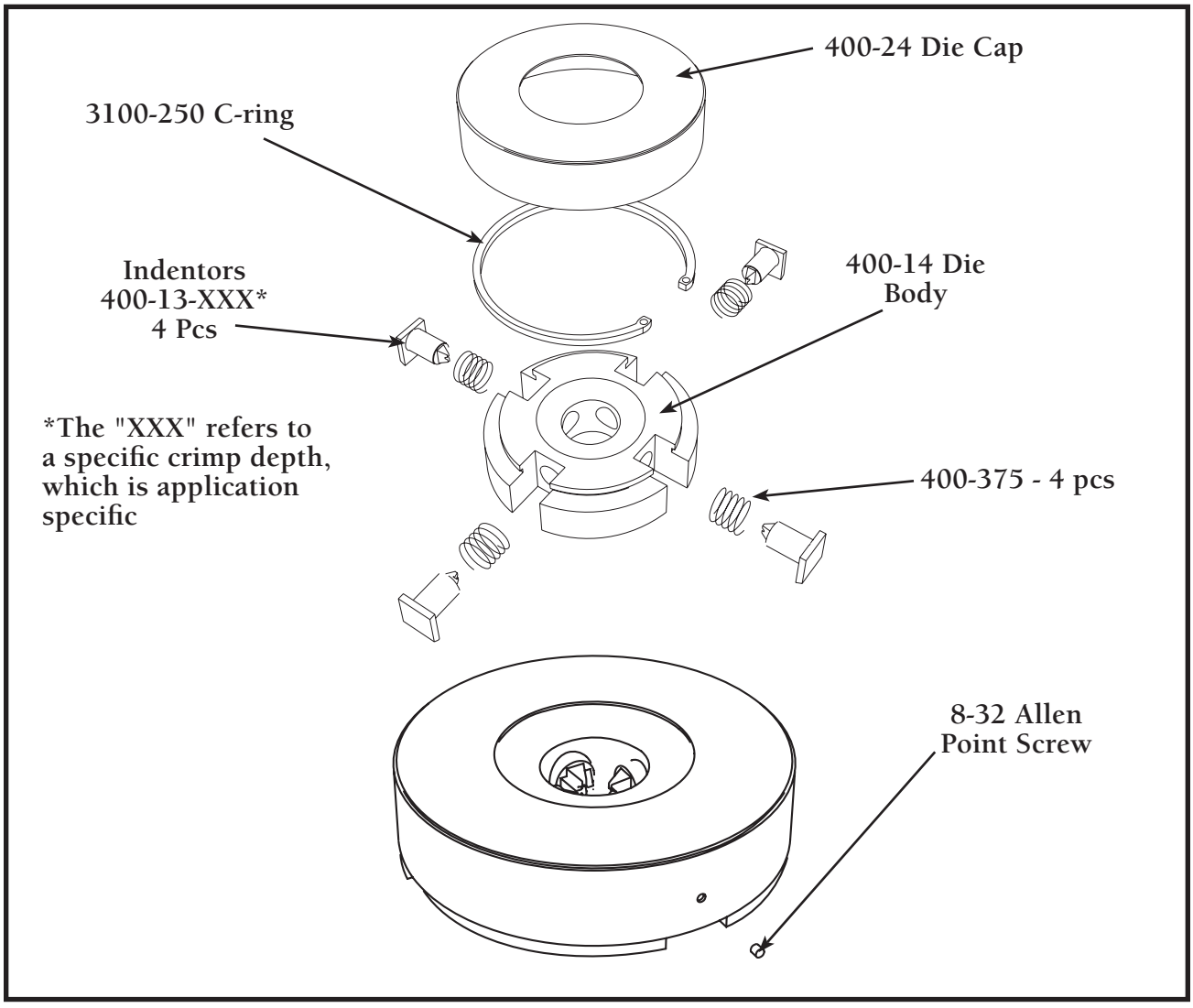
The indentors are manufactured using S-7 tool steel, and are heat treated to Rc 56-58. As a result, they are should have a life span of many thousand cycles.
Indentors are available for purchase separately from a die assembly. Contact the factory for details.

1. Remove the 8-32 set screw holding the 400-24 die cap, using an allen wrench.

2. Remove the 3100-250 C-Ring using C-ring pliers

3. Once the C-ring has been removed, you can remove the indenters.

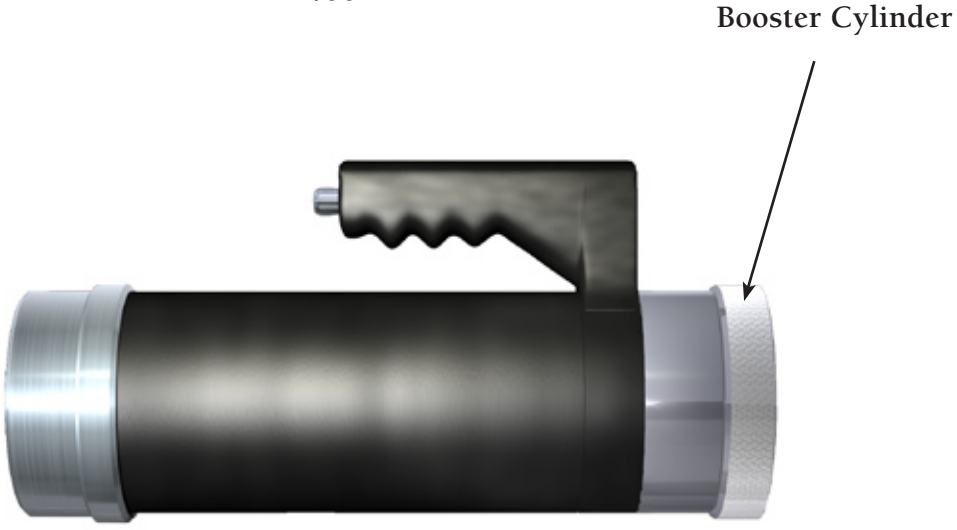
Assembly is simply reversing steps 1-3.



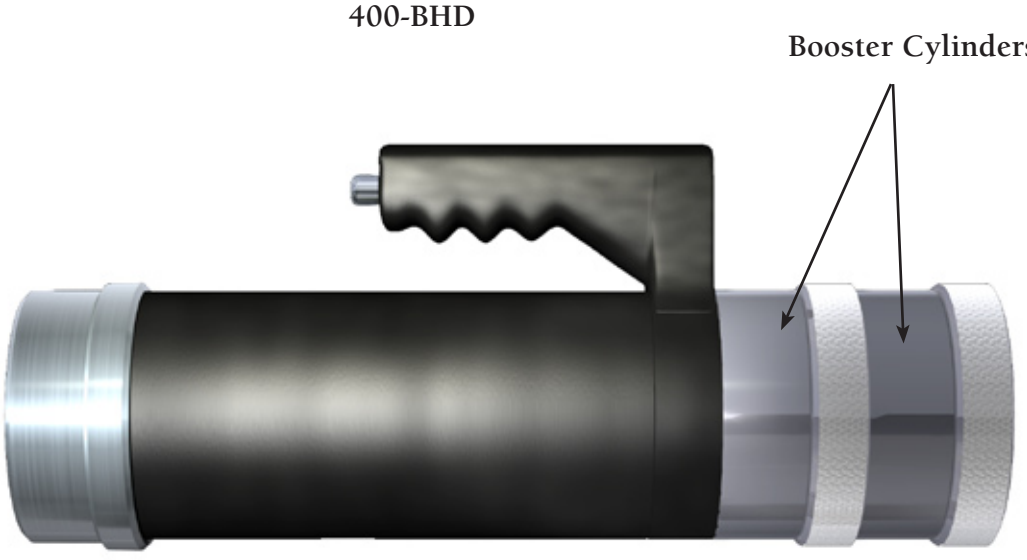
Die Assembly

Specifications

400



400-BHD



400-B-1

MODELS

There are 3 basic models available in the 400 Series. The applications chart on the following pages help to differentiate the models and their capabilities.

The basic difference between each model is determined by the addition of one or more boosters. The 400 model does not come with a booster; the 400-BHD has one booster unit, and the 400-B-1 has two booster units.

The booster unit(s) facilitate crimping larger diameter contacts.

An optional Foot pedal assembly for engaging the crimp cycle, P/N 104, is available for purchase for all models.

AIR For optimal performance & tool lifetime, use clean, filtered dry air providing 70-120 PSI.

WEIGHT	400	400-BHD	400-B-1
	14 lbs.	17 lbs.	21 lbs.

APPLICATIONS

APPLICATIONS		400	400-B-1	400-BHD
CONTACTS				
PINS		*22 thru 2*	*22 thru 4/0*	*22 thru 4/0*
SOCKETS				
SOLDERLESS TERMINALS				
INSUALATED		*26-24 thru 6*	*26-24 thru 2*	*26-24 thru 1/0*
UNINSULATED		*26-24 thru 6*	*26-24 thru 2*	*22-18 thru 2/0*
COAXIAL APPLICATIONS				
		MAX. DIA.	*MAX. DIA.*	*MAX. DIA.*
CONTACTS		*1.00*	*1.00*	*1.00*
CONNECTORS		*1.00*	*1.00*	*1.00*

• Consult Factory on Specific Applications

NOTE: Applications listed above represent a small sample of connector applications serviced by PICO Pneumatic crimping tools. If your particular application is not listed on page 48-49 contact the factory. By providing connector specifications, Pico can often produce a Die and locator solution that will meet your needs.

400 Series

STANDARD DIES		400	400-BHD	400B-1
414DA-22N	Pins & Sockets	Yes	Yes	Yes
414DA-20N	Pins & Sockets	Yes	Yes	Yes
414DA-16N	Pins & Sockets	Yes	Yes	Yes
414DA-12N	Pins & Sockets	Yes	Yes	Yes
414DA-8N	Pins & Sockets	Yes	Yes	Yes
414DA-6N	Pins & Sockets	Yes	Yes	Yes
414DA-4N	Pins & Sockets	Yes	Yes	Yes
414DA-2N	Pins & Sockets	Yes	Yes	Yes
414DA-0N	Pins & Sockets	No	Yes	Yes
414DA-2/ON	Pins & Sockets	No	Yes	Yes
414DA-4/ON-1	Pins & Sockets	No	Yes	Yes
414DA-26-24-IT	Insulated Terminals	Yes	Yes	Yes
414DA-22-18-IT	Insulated Terminals	Yes	Yes	Yes
414DA-16-14-IT	Insulated Terminals	Yes	Yes	Yes
414DA-12-10-IT	Insulated Terminals	Yes	Yes	Yes
414DA-8IT	Insulated Terminals	Yes	Yes	Yes
414DA-6IT	Insulated Terminals	Yes	Yes	Yes
414DA-4T	Insulated Terminals	No	Yes	Yes
414DA-2IT	Insulated Terminals	No	Yes	Yes
414DA-1/O-IT	Insulated Terminals	No	No	Yes
414DA-26-24-NIT	Non-Insulated Terminals	Yes	Yes	Yes
414DA-22-18-NIT	Non-Insulated Terminals	Yes	Yes	Yes
414DA-16-14-NIT	Non-Insulated Terminals	Yes	Yes	Yes
414DA-12-10-NIT	Non-Insulated Terminals	Yes	Yes	Yes
414DA-8NIT	Non-Insulated Terminals	Yes	Yes	Yes
414DA-6NIT	Non-Insulated Terminals	Yes	Yes	Yes
414DA-4NIT	Non-Insulated Terminals	No	Yes	Yes
414DA-2NIT	Non-Insulated Terminals	No	Yes	Yes
414DA-1/0-NIT	Non-Insulated Terminals	No	Yes	Yes
414DA-2/0-NIT	Non-Insulated Terminals	No	Yes	Yes

OPTIONAL ACCESSORIES

Foot Controls

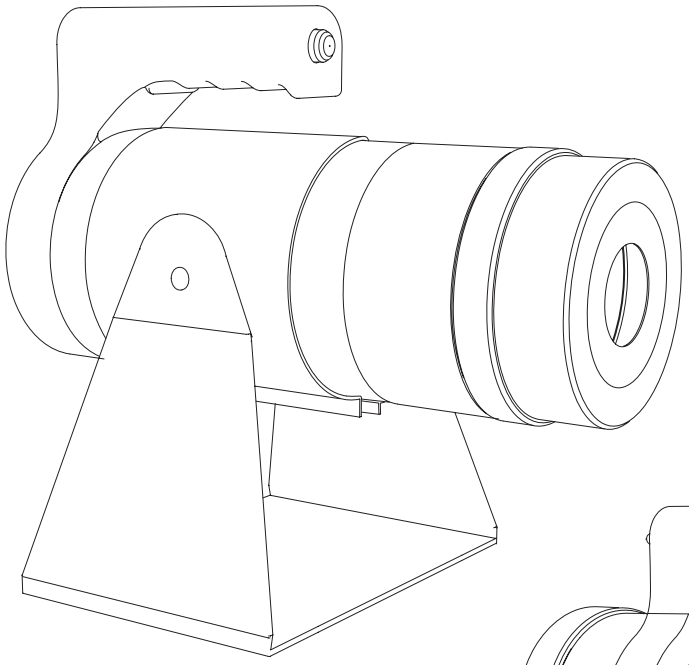
Gages

Fitted Storage Cases

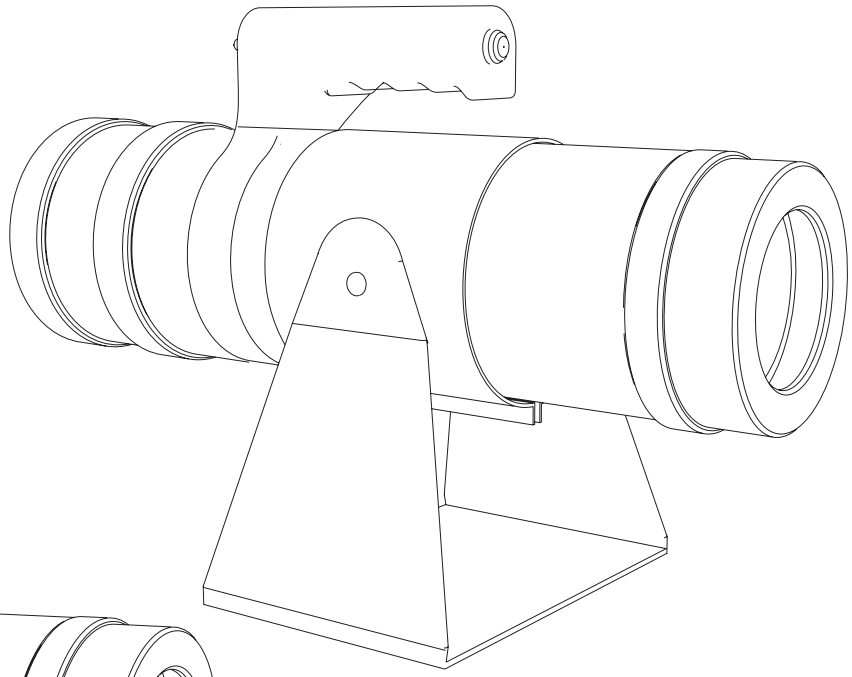
NOTE:

1. Consult locator catalog or factory for proper locators.
2. Tools are warranted for 90 days against defects in material or workmanship but should be returned to the factory every year for servicing.
3. Consult factory for special applications

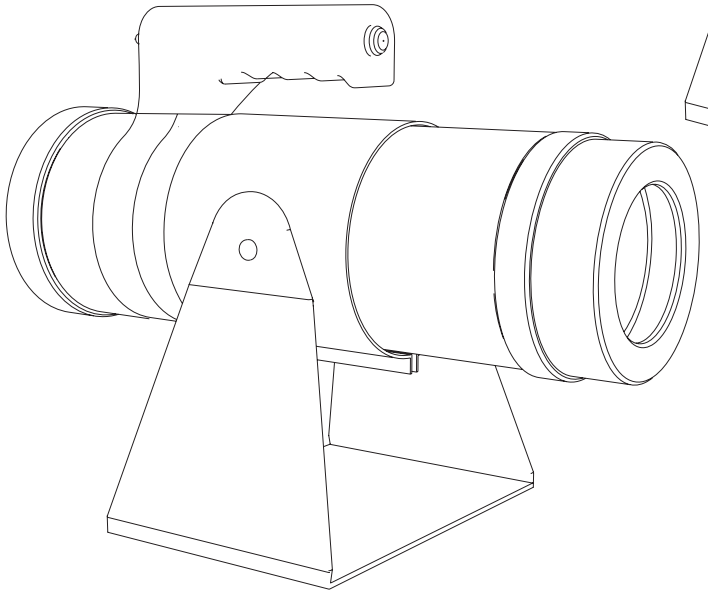
400 Series Power Unit Parts List



Model 400

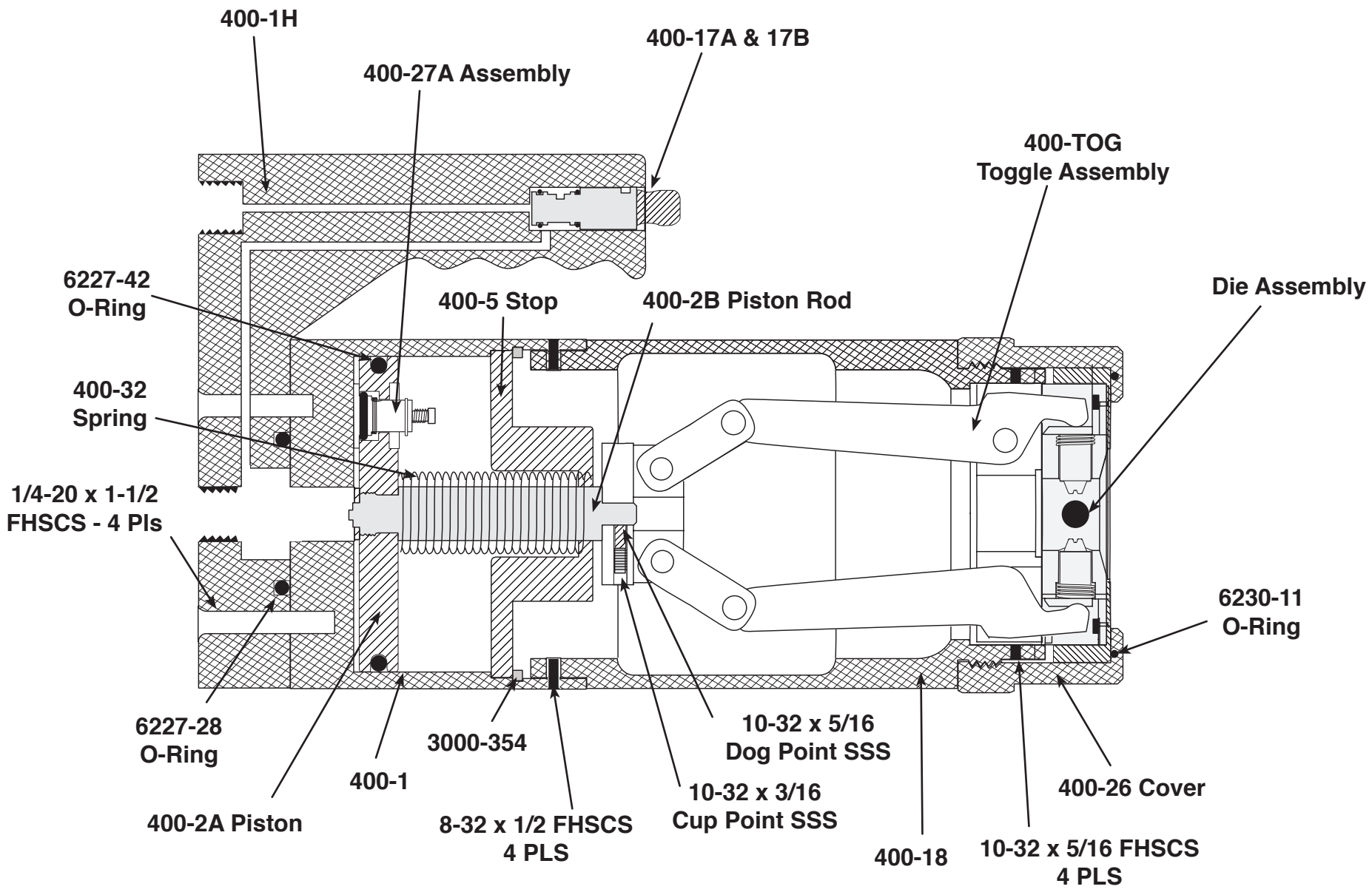


Model 400-B-1

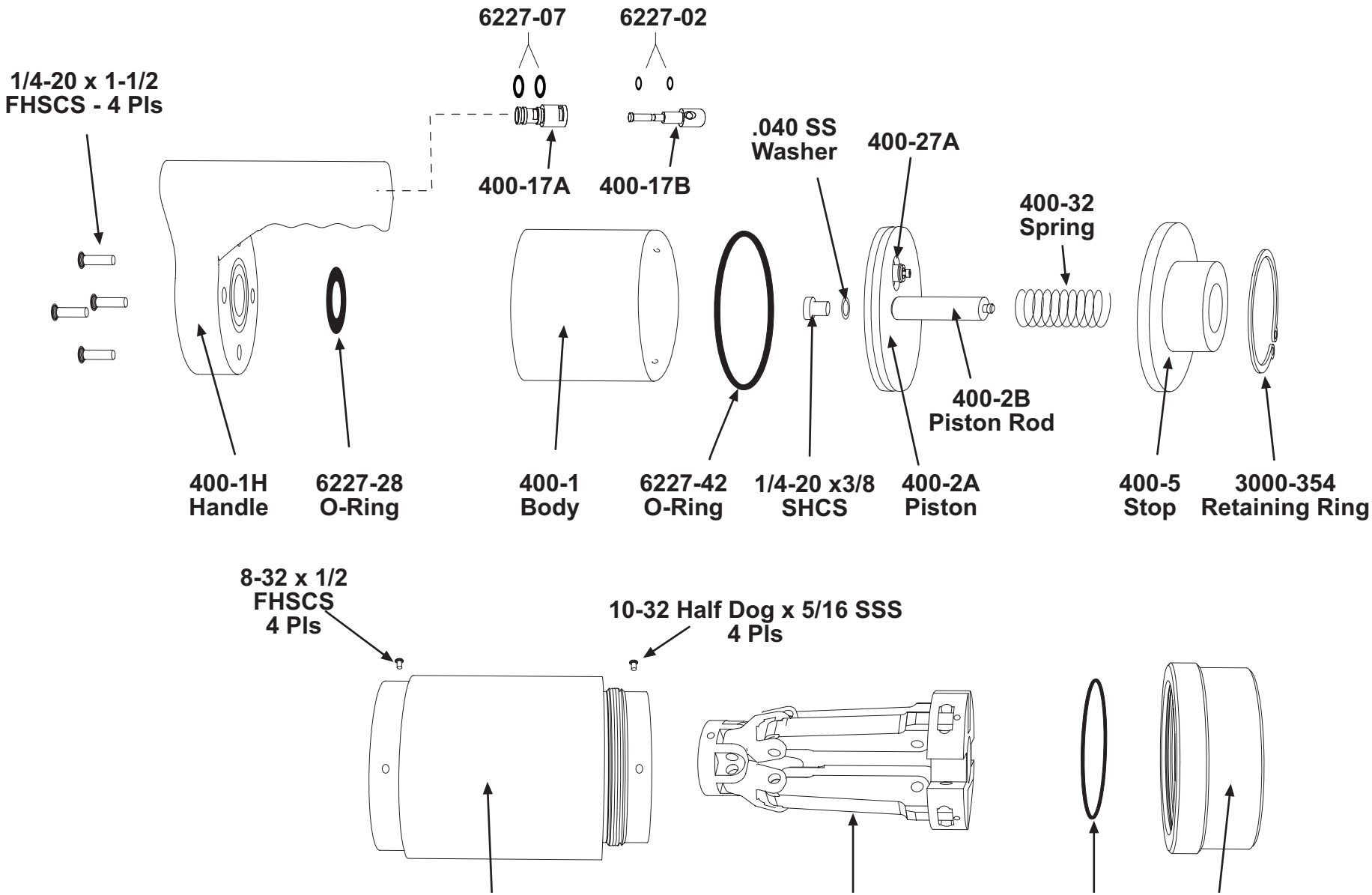


Model 400-BHD

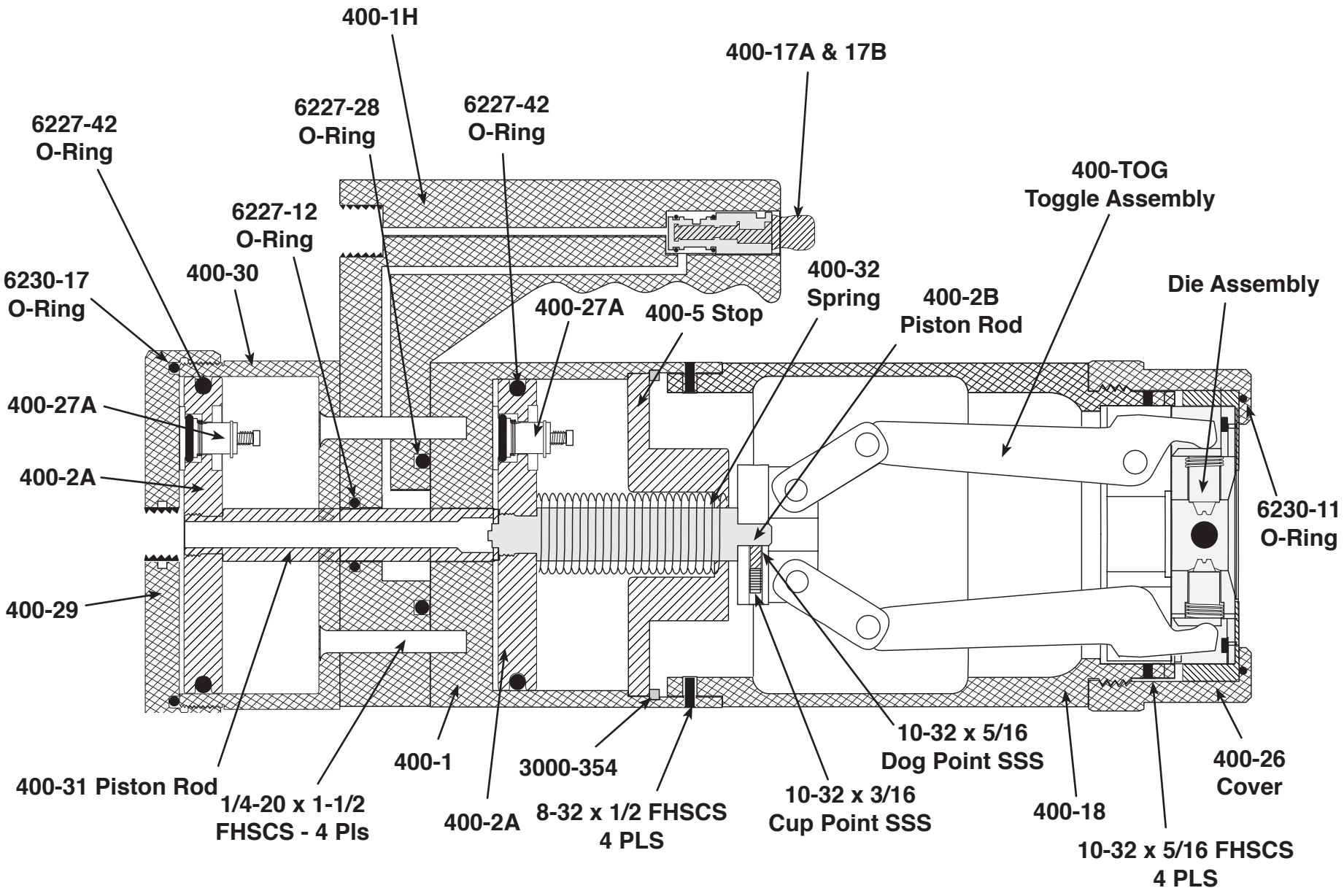
Model 400 Cross-section View



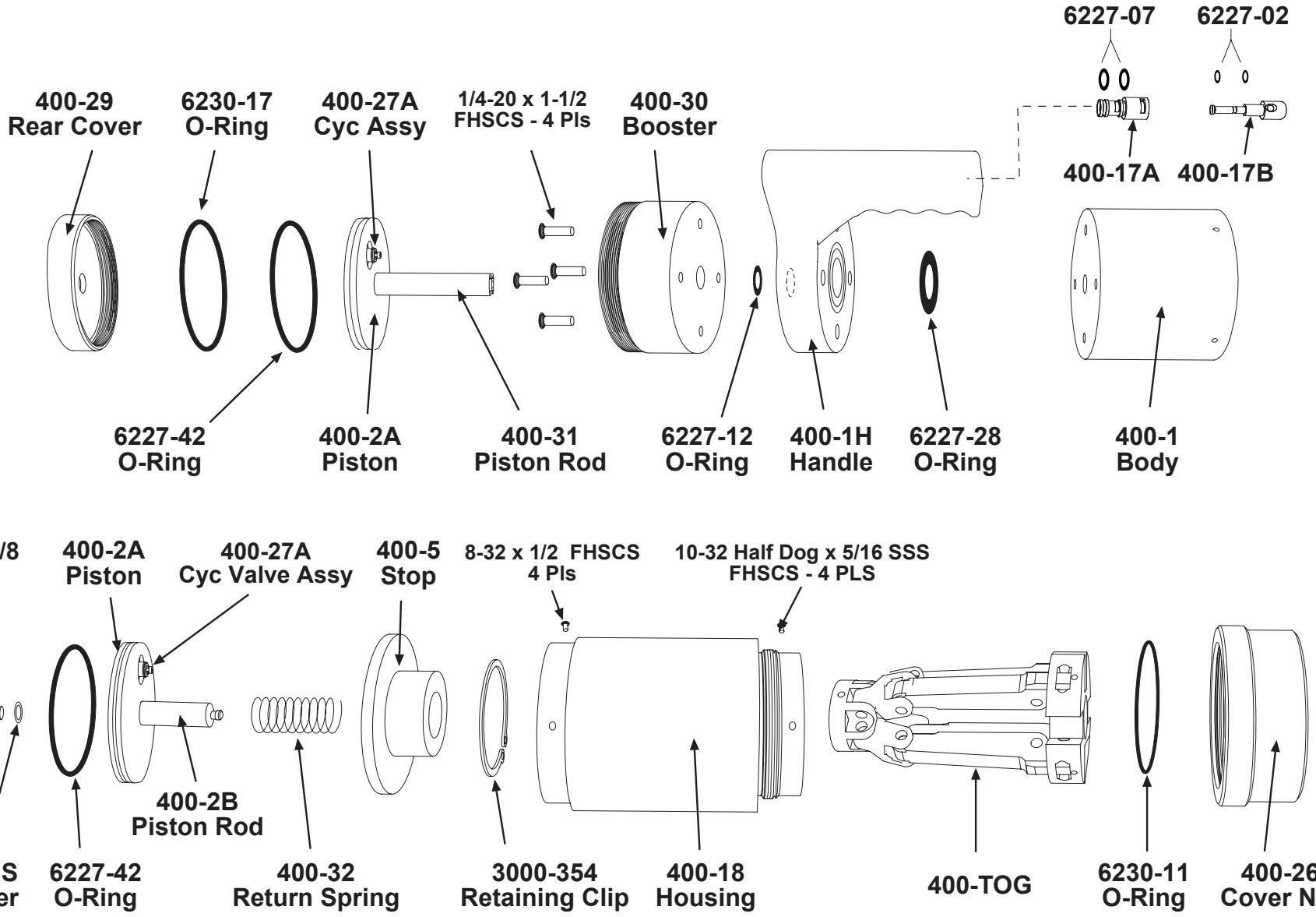
Model 400 Exploded View



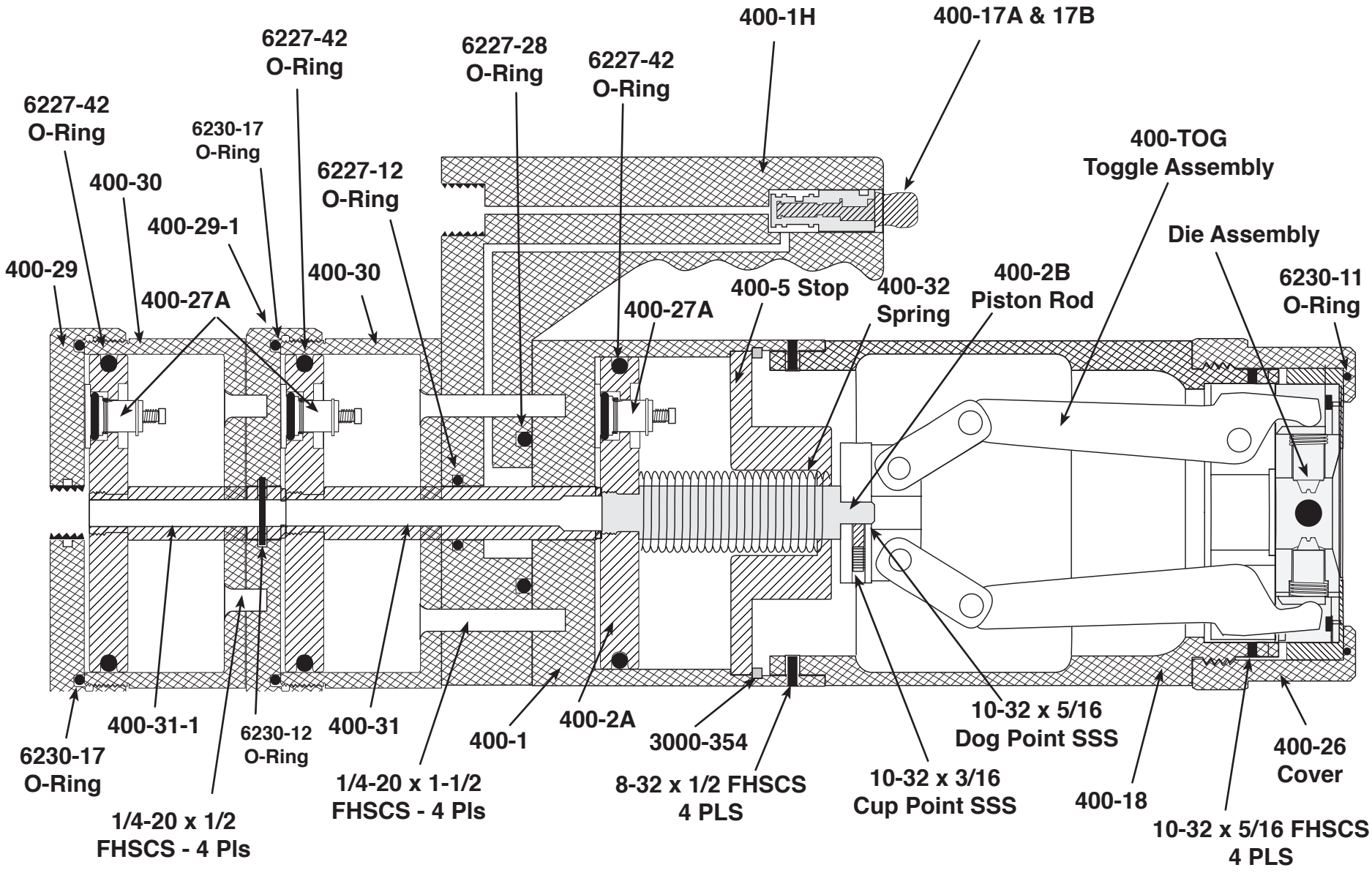
400-BHD Cross-section View



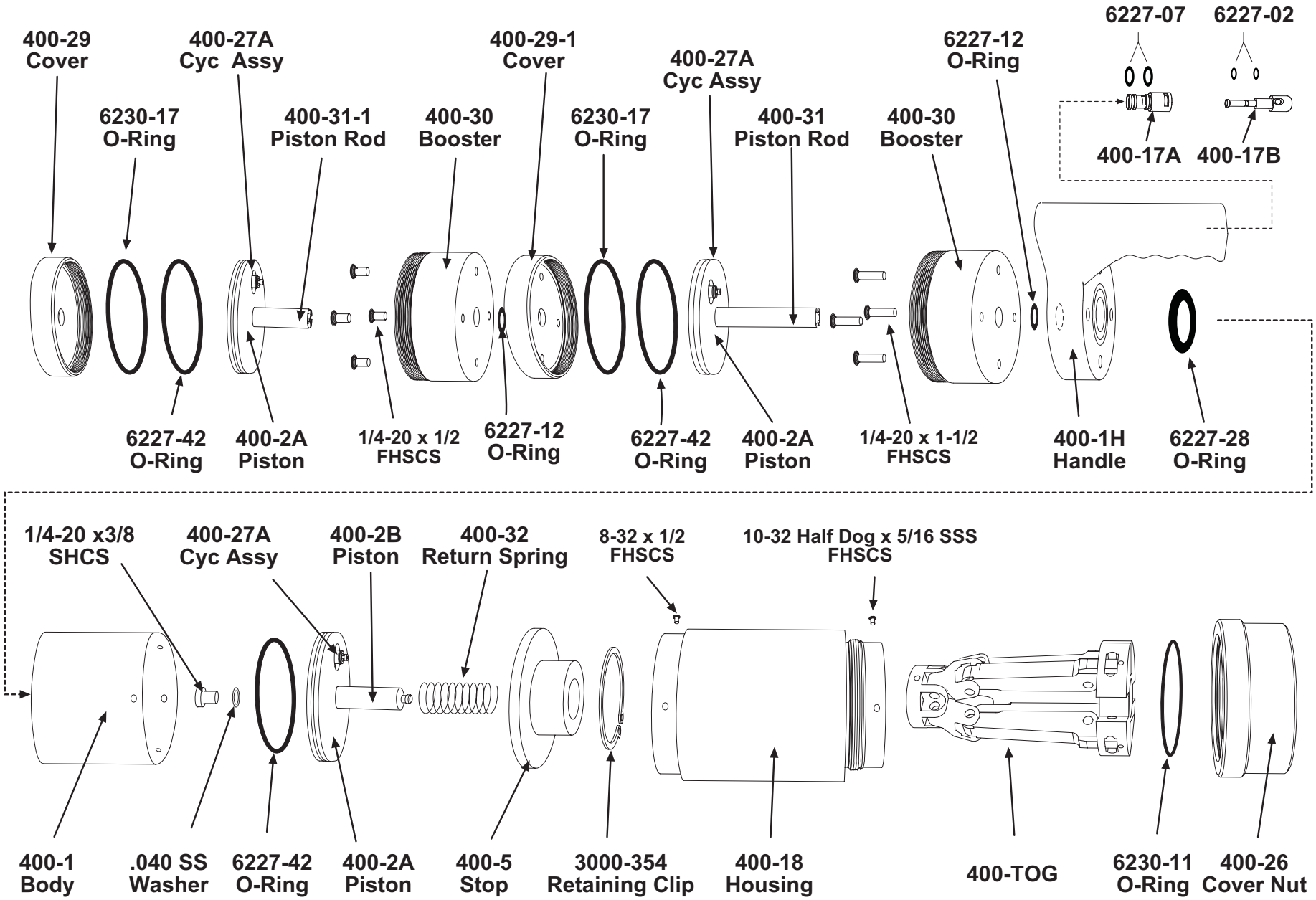
400-BHD Exploded View



400-B-1 Cross-section View

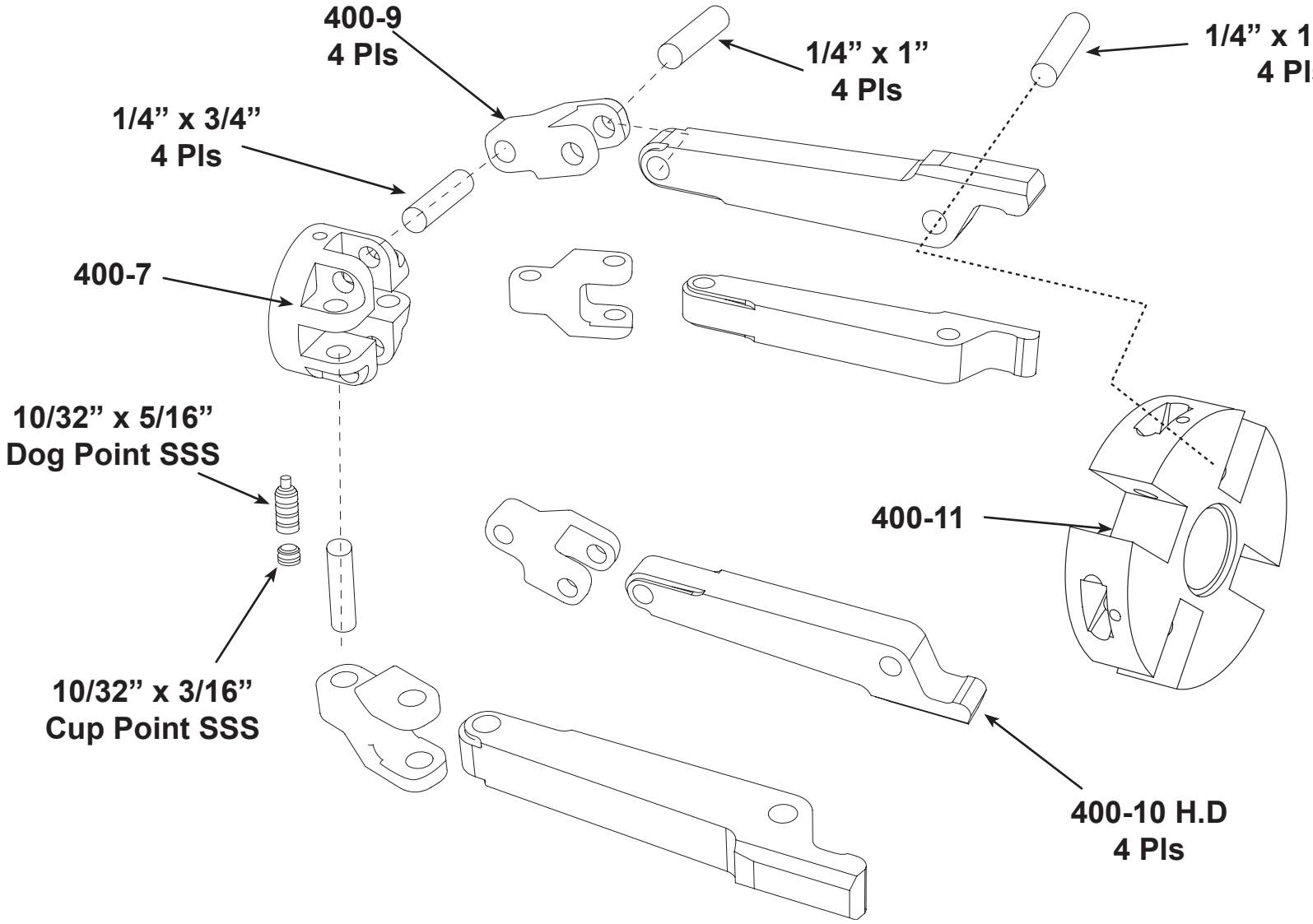


400-B-1 Exploded View



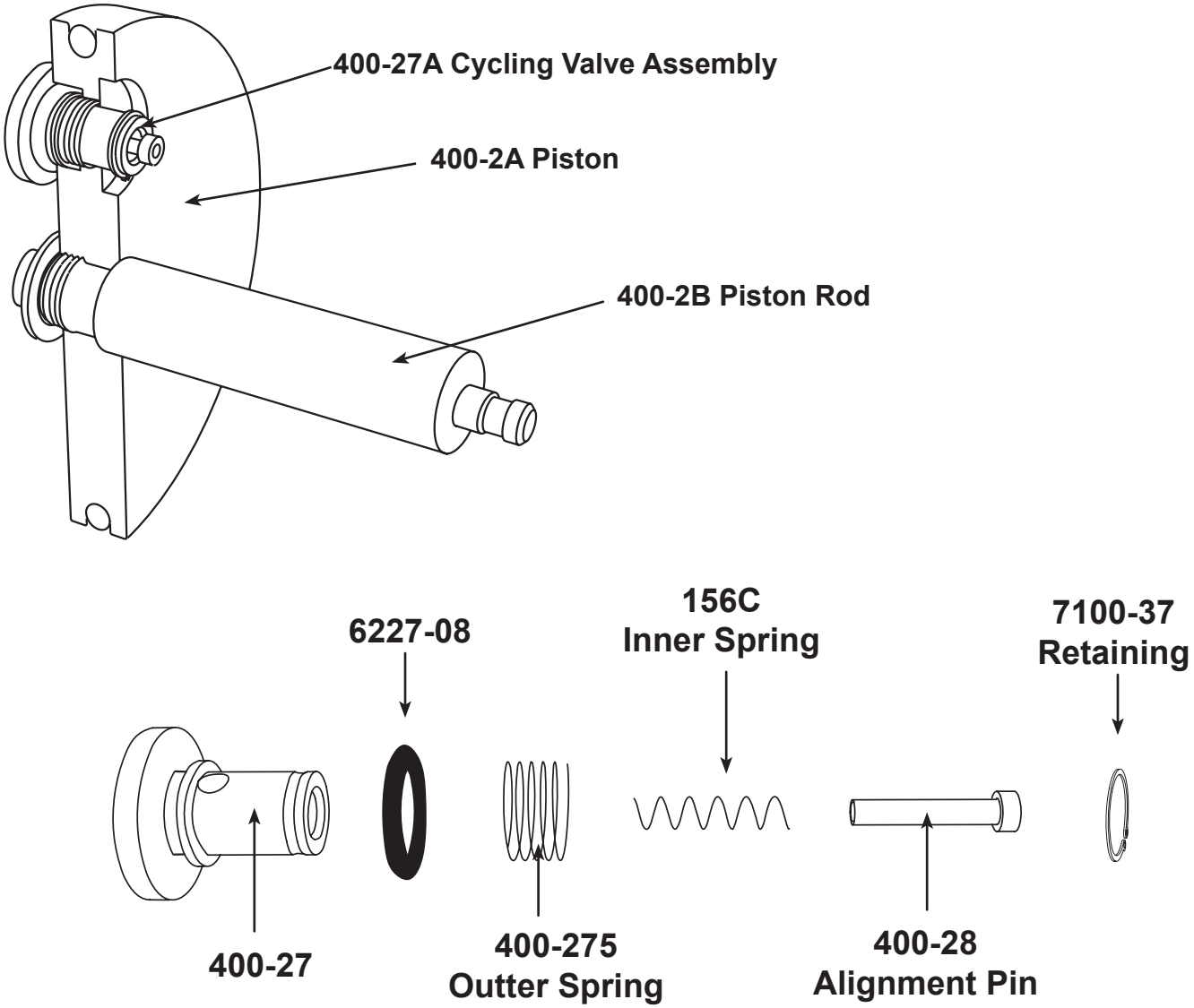
400-TOG Toggle Assembly

(all models)

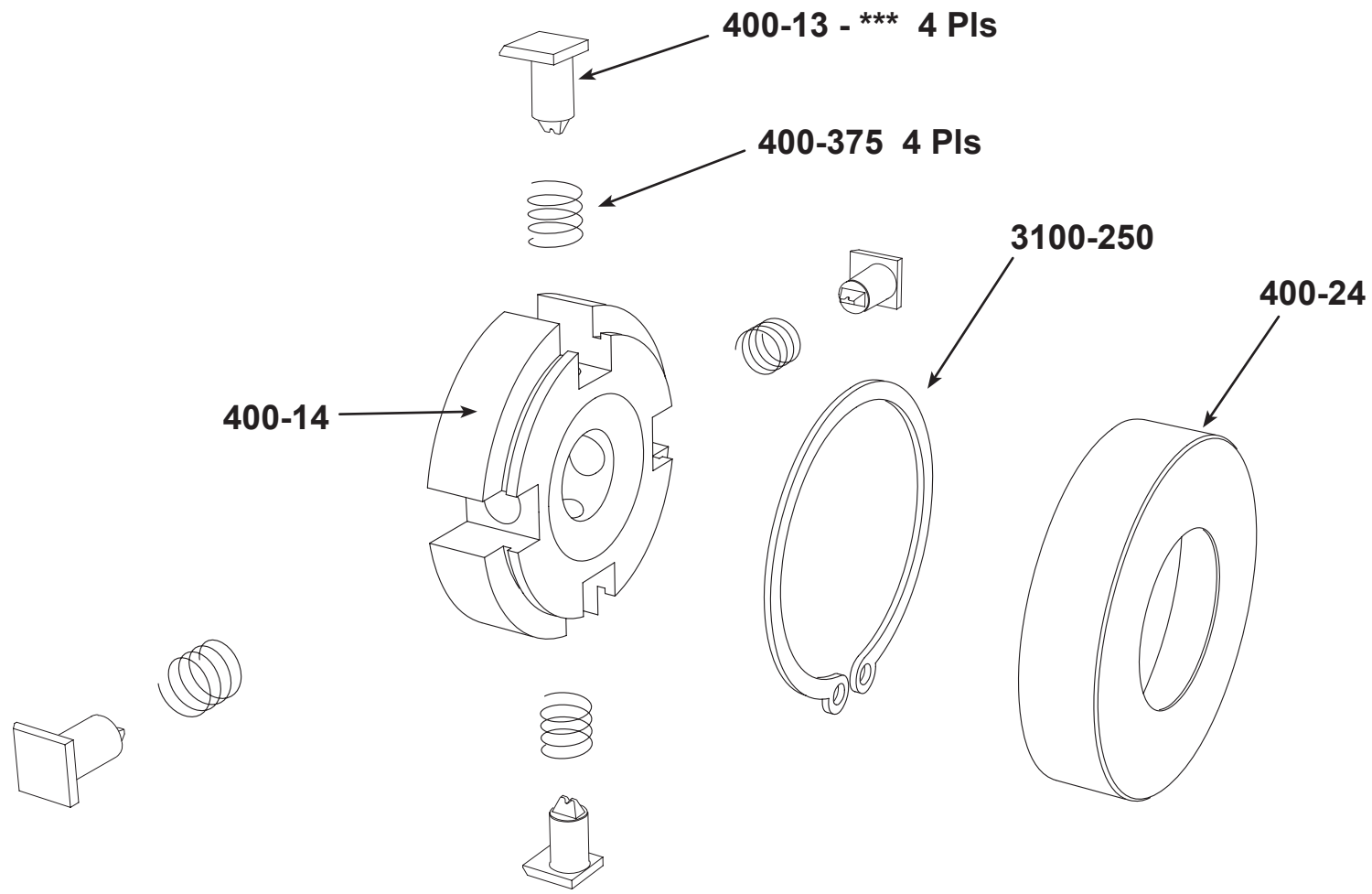


400-27A Cycling Valve Assembly

(all models)



Die Assembly



*** Specific Indentor Part Number
is determined by the Die Application

PARTS LISTS • MODEL 400 POWER UNIT

Part #	Description	Qty
.040 SS Washer	Washer	1
8-32 x 1/2 FHSCS	Flat Head Cap Screw	4
10-32 x 5/16 FHSCS	Half Dog SSS	4
1/4-20 x 3/8 SHCS	Socket Head Screw	1
1/4-20 x 1-1/2 FHSCS	400-1H Screws	4
400-1	Body	1
400-1H	Handle	1
400-2A	Front Piston	1
400-2B	Front Piston Rod	1
400-5	Piston Stop	1
400-17A	Trigger Housing	1
400-17B	Trigger Slide	1
400-18	Front Housing	1
400-26	Cover Nut	1
400-27A	**Cycling Valve Assembly**	**1**
156C	Inner Spring	1
400-27	Cycling Valve Body	1
400-275	Outer Spring	1
400-28	Alignment Pin	1
6227-08	O-Ring	1
7100-37	Retaining Ring	1
400-32	Return Spring	1
400-BM	Bench Mount	1
400-TOG	**Toggle Unit**	**1**
1/4 x 3/4	Dowel	4
1/4 x 1	Dowel	4
1/4 x 1-1/2	Dowel	4
10-32 x 3/16 SSS	Cup Point Screw	1
10-32 x 5/16 SSS	Dog Point Screw	1
400-7	Rear Anchor	1
400-9	Yoke	4
400-10-HD	Heavy Duty Arm	4
400-11	Retainer	1
3000-354	Retaining Ring	1
6227-02	O-Ring	2
6227-07	O-Ring	2
6227-28	O-Ring	1
6227-42	O-Ring	1
6230-11	O-Ring	1

PARTS LISTS • 400-BHD POWER UNIT

Part #	Description	Qty
.040 SS Washer	Washer	1
8-32 x 1/2 FHSCS	Flat Head Cap Screw	4
10-32 x 5/16 FHSCS	Half Dog SSS	4
1/4-20 x 3/8 SHCS	Socket Cap Screw	1
1/4-20 x 1-1/2 FHSCS	Booster Body Cap Screw	4
400-1	Body	1
400-1H	Handle	1
400-2A	Front Piston	2
400-2B	Front Piston Rod	1
400-5	Piston Stop	1
400-17A	Trigger Housing	1
400-17B	Trigger Slide	1
400-18	Front Housing	1
400-26	Cover Nut	1
400-27A	**Cycling Valve Assembly**	**2**
156C	Inner Spring	1
400-27	Cycling Valve Body	1
400-275	Outer Spring	1
400-28	Alignment Pin	1
6227-08	O-Ring	1
7100-37	Retaining Ring	1
400-29	Booster Cap	1
400-30	Booster Body	1
400-31	Piston Rod	1
400-32	Return Spring	1
400-BM	Bench Mount	1

Part #	Description	Qty
400-TOG		
1/4 x 3/4	Dowel	4
1/4 x 1	Dowel	4
1/4 x 1-1/2	Dowel	4
10-32 x 3/16 SSS	Cup Point Screw	1
10-32 x 5/16 SSS	Dog Point Screw	1
400-7	Rear Anchor	1
400-9	Yoke	4
400-10-HD	Heavy Duty Arm	4
400-11	Retainer	1
3000-354	Retaining Ring	1
6227-02	O-Ring	2
6227-07	O-Ring	2
6227-12	O-Ring	1
6227-28	O-Ring	1
6227-42	O-Ring	2
6230-11	O-Ring	1
6230-17	O-Ring	1

PARTS LISTS • 400-B-1 POWER UNIT

Part #	Description	Qty
.040 SS Washer	Washer	1
8-32 x 1/2 FHSCS	Flat Head Cap Screw	4
10-32 x 5/16 FHSCS	Half Dog SSS	4
1/4-20 x 1/2 FHSCS	Booster Body Cap Screw	4
1/4-20 x 3/8 FHSCS	Socket Head Cap Screw	1
1/4-20 x 1-1/2 FHSCS	Booster Body Cap Screw	4
400-1	Body	1
400-1H	Handle	1
400-2A	Front Piston	3
400-2B	Front Piston Rod	1
400-5	Piston Stop	1
400-17A	Trigger Housing	1
400-17B	Trigger Slide	1
400-18	Front Housing	1
400-26	Cover Nut	1
400-27A	**Cycling Valve Assembly**	**3**
156C	Inner Spring	1
400-27	Cycling Valve Body	1
400-275	Outer Spring	1
400-28	Alignment Pin	1
6227-08	O-Ring	1
7100-37	Retaining Ring	1
400-29	Booster Cap	1
400-29-1	Booster Cap	1
400-30	Booster Body	2
400-31	Piston Rod	1
400-31-1	Piston Rod	1
400-32	Return Spring	1
400-BM	Bench Mount	1
400-TOG		
1/4 x 3/4	Dowel	4
1/4 x 1	Dowel	4
1/4 x 1-1/2	Dowel	4
10-32 x 3/16 SSS	Cup Point Screw	1
10-32 x 5/16 SSS	Dog Point Screw	1
400-7	Rear Anchor	1
400-9	Yoke	4
400-10-HD	Heavy Duty Arm	4
400-11	Retainer	1
3000-354	Retaining Ring	1
6227-02	O-Ring	2
6227-07	O-Ring	2
6227-12	O-Ring	2
6227-28	O-Ring	1
6227-42	O-Ring	3
6230-11	O-Ring	1
6230-17	O-Ring	2