

# PVR PINCH-TUBE VALVES

O. M. 09327

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## **WARNING**

**Do not proceed with these instructions until you have READ the orange cover of this MANUAL and YOU UNDERSTAND its contents. \***

**These WARNINGS are included for the health and safety of the operator and those in the immediate vicinity.**

**\*If you are using a Clemco Distributor Maintenance and Part Guide, refer to the orange warnings insert preceding the Index before continuing with the enclosed instructions.**

**Electronic files include a Preface containing the same important information as the orange cover.**

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**1.0 INTRODUCTION**

**1.1 Scope:** These instructions cover operation, service, and replacement parts for PVR Pinch-Tube Air Valves and PVR Pinch-Tube Grit (abrasive Metering) Valves. The valves are part of a remote control system and blast machine. Do not put the valves in operation until all personnel involved with the blast machine operation read this entire manual, including the orange cover, and all accessory manuals.

**1.2 Safety Alerts**

**1.2.1 Clemco uses safety alert signal words, based on ANSI Z535.4-1998, to alert the user of a potentially hazardous situation that may be encountered while operating this equipment. ANSI's definitions of the signal words are as follows:**

 This is the safety alert symbol. It is used to alert the user of this equipment of potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

**CAUTION**

Caution used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

 **CAUTION**

Caution indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

 **WARNING**

Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

 **DANGER**

Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

**1.3 Description:** PVR valves are normally-closed and pneumatically operated, requiring compressed air to open. The components are shown in Figure 1.

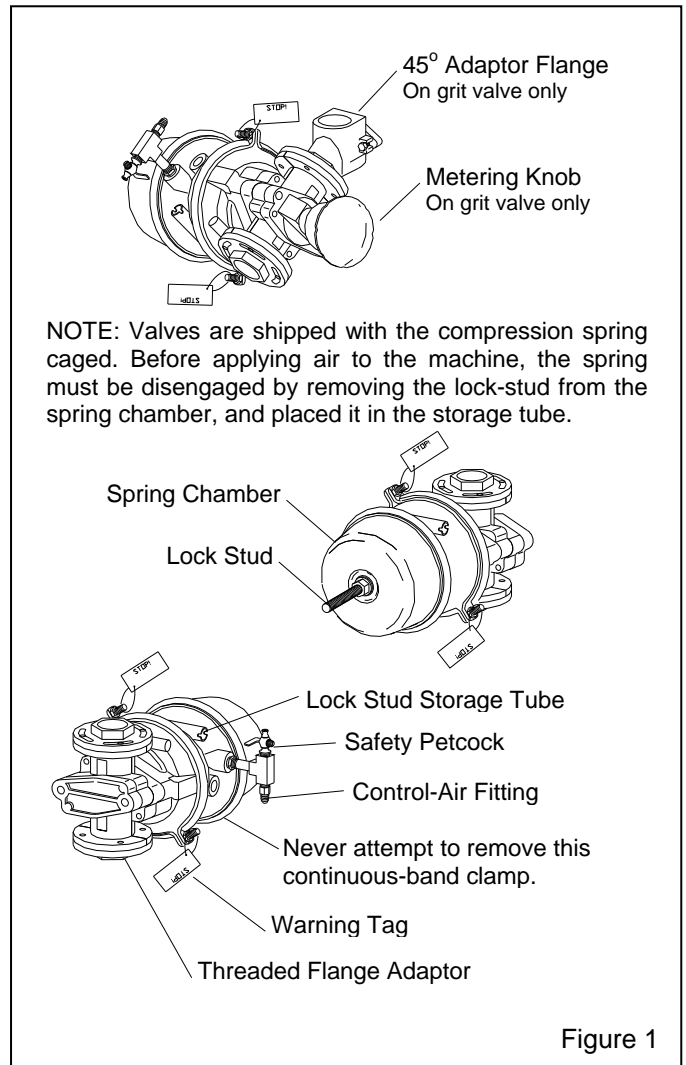


Figure 1

**2.0 INSTALLATION**

 **WARNING**

Failure to observe the following before performing any maintenance could cause serious injury or death from the sudden release of trapped compressed air.

- Depressurize the blast machine.
- Lock-out and tag-out the compressed air supply.
- Bleed the air supply line to the blast machine.

**2.1** Remove existing valve(s) from the blast machine.

**2.2** Use new pipe fittings to connect the valves to the blast machine. Use a schedule 80 nipple to connect the 45° adaptor flange on the grit valve to the bottom of the blast machine. The air valve is a non-directional valve; it does not matter which end is the inlet, or in what direction the valve is rotated.

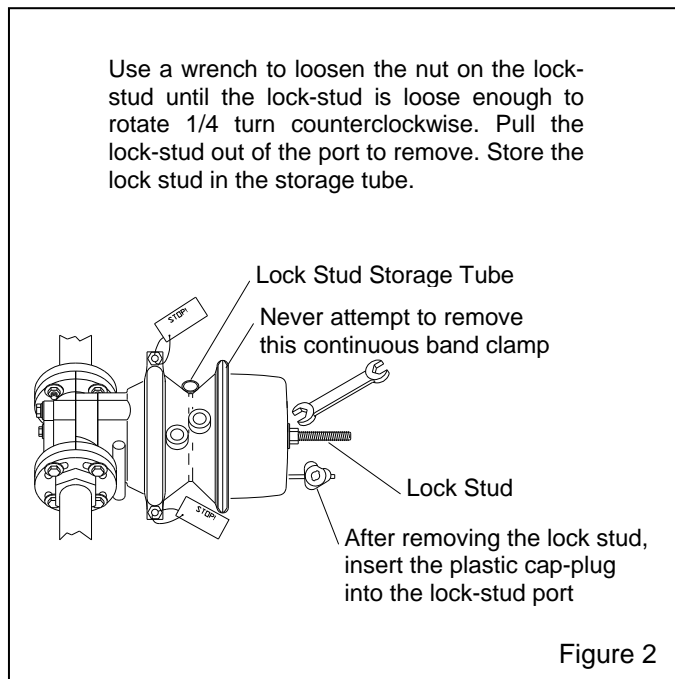
**2.3** Connect the air control line to the air fitting shown in Figure 1.

**2.4** Refer to the remote control system manual for which the valve is used, as additional installation may be required.

### 3.0 OPERATION

NOTE: Valves shown in the following illustrations are air valves. The main difference between the air valve and grit valve is: the grit valve has a metering knob assembly that closes off the pinch tube, and therefore adjusts abrasive flow. Operation and service of the valves are the same unless otherwise noted.

**3.1** Before supplying air to the system, remove the lock-stud from the port in the spring chamber. Place the lock-stud in the storage tube. Use the nut and washer to secure the stud in the tube. Install the plastic cap-plug into the lock-stud port. See Figure 2.



## WARNING

**PVR Valves are shipped with the lock-stud in place. The lock-stud holds the valve open by compressing the compression spring. The lock-stud must be removed from the valve before air is applied to the blast machine. Severe injury could occur if compressed air is supplied to the valve before the lock-stud is removed.**

**3.2** PVR valves are normally closed; when air is supplied through the control air fitting, the valve opens.

**3.3** Supply air to the system and check for leaks.

**3.4** Opening the safety petcock disables the pneumatic controls. Refer to the remote control system manual for use of the safety petcock.

## CAUTION

**To avoid pinch tube deformation, reinstall the lock stud and cage the spring whenever the valve will be out of use for more than two days.**

### 4.0 SERVICE

**4.1** The spring chamber spring must be caged before doing any service. Ref. Section 4.3. Read the following instructions prior to servicing the valves, and follow the instructions exactly.

## DANGER

**Never attempt to remove the continuous band around the spring chamber. The chamber is a non-serviceable area. The chamber contains a spring under extreme compression. Tampering with the sealed band could release the spring. Impact from a released spring will cause severe injury or death.**

**4.2** The differences between the air valve and grit valve are:

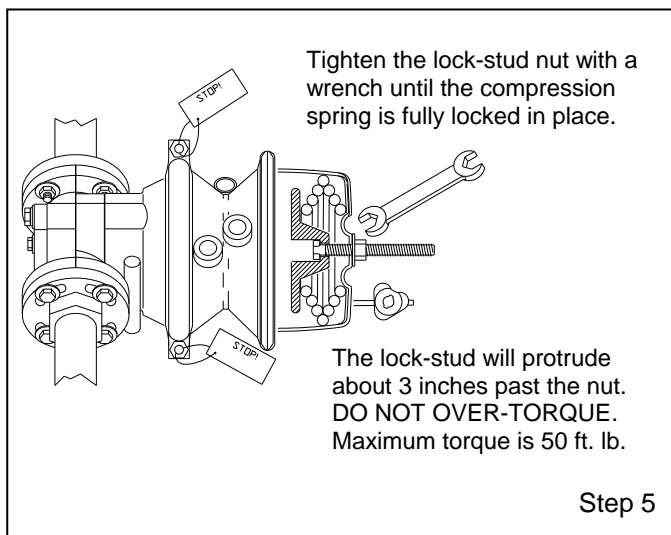
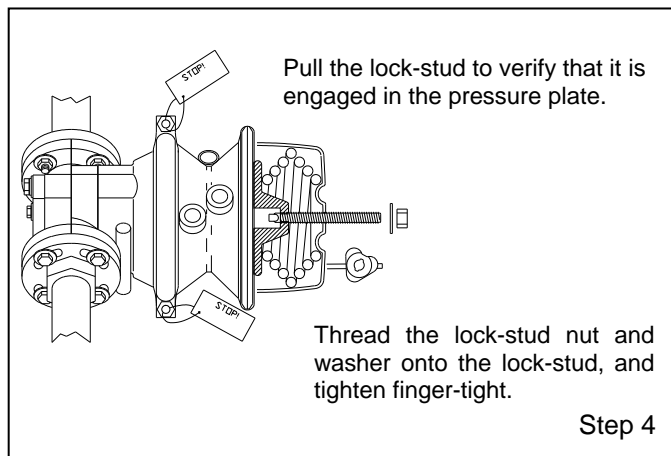
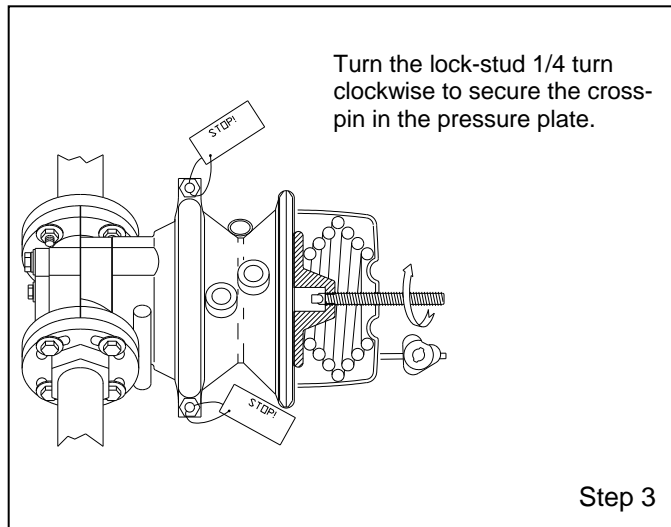
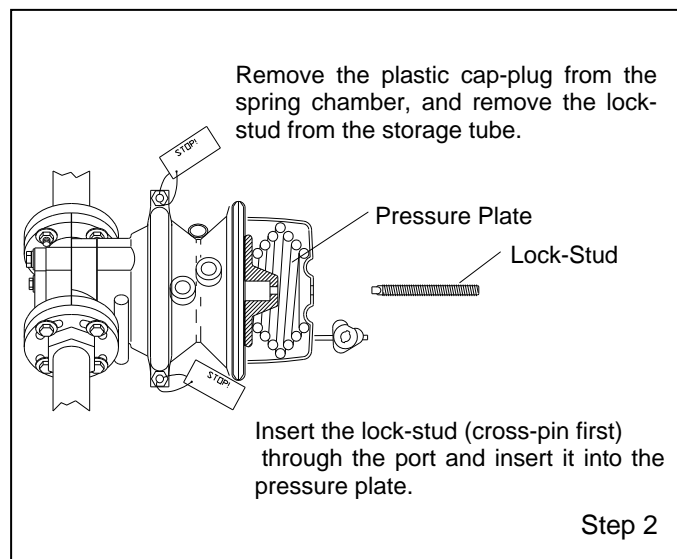
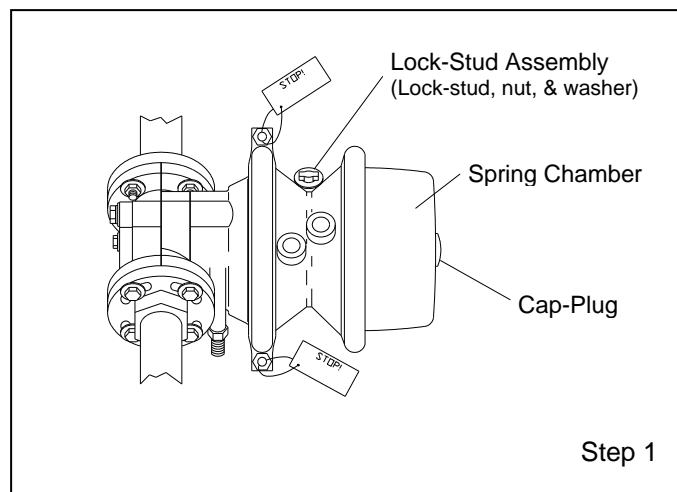
- The grit valve has a metering knob opposite the spring chamber, and the air valve has a plate.
- The pinch tube in the air valve is 1-1/4" ID, and the tube on the grit valve is 1" ID. The following illustrations show the air valve.
- When servicing the grit valve, fully open the metering knob by turning it counterclockwise.

**⚠ WARNING**

Failure to observe the following before performing any service could cause serious injury or death from the sudden release of trapped compressed air.

- Depressurize the blast machine.
- Lock-out and tag-out the compressed air supply.
- Bleed the air supply line to the blast machine.

**4.3 Caging the Compression Spring**

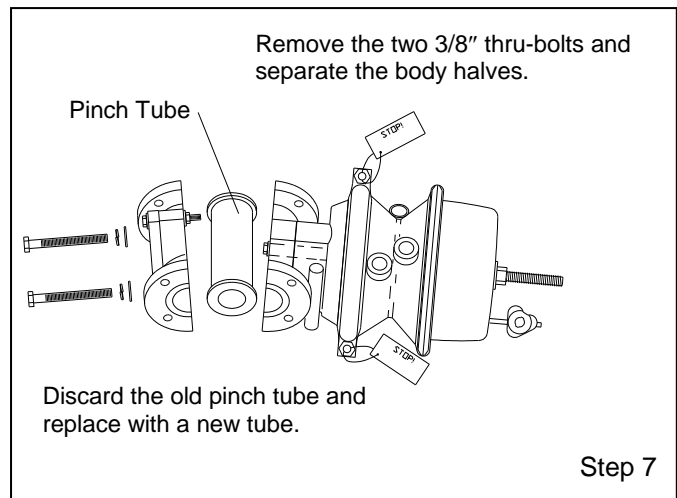
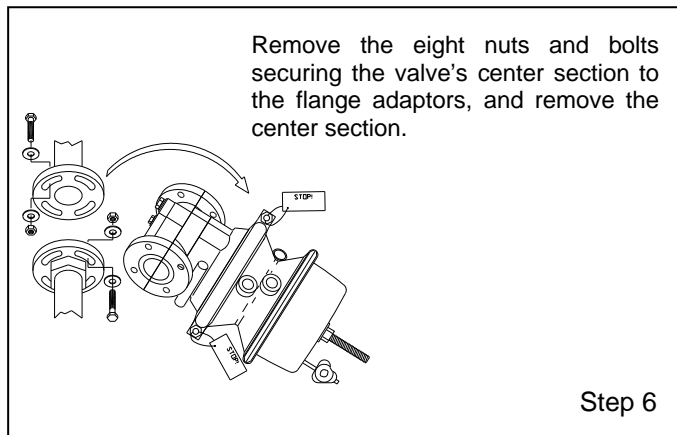


#### 4.4 Pinch Tube Replacement

### CAUTION

Do not proceed with steps 6 and 7 until steps 1 through 5 have been completed. Failure to cage the compression spring before separating the body halves will cause the actuator to close, making it difficult or impossible to service.

**4.4.1** Replacement of the pinch tube cannot be done until steps 1 through 5 have been completed.



**4.4.2** With the new pinch tube in place, reassemble the body halves and attach the valve's center section to the adaptor flanges.

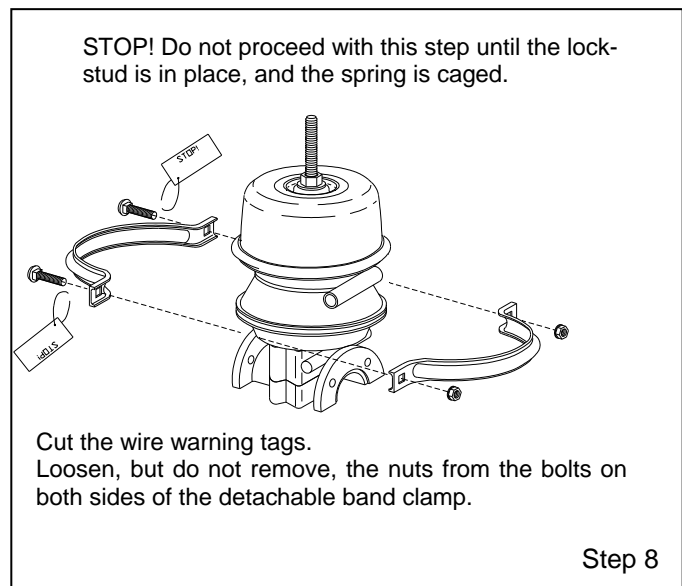
**4.4.3** Remove the lock-stud from the spring chamber and store in the storage tube. Install the plastic cap-plug into the lock-stud port.

#### 4.5 Return Spring and Actuator Service

### ! WARNING

Do not proceed with steps 8 through 12 until steps 1 through 5 have been completed. Failure to cage the compression spring before removing the detachable clamp will cause spring compression to force the actuator body and chamber body apart, which could cause severe injury.

**4.5.1** Cut the warning tags and loosen (DO NOT REMOVE) the clamp bolts on both side of the detachable clamp ring.

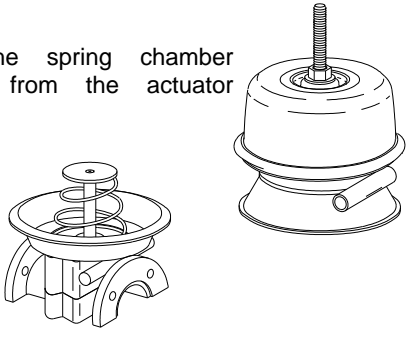


### ! WARNING

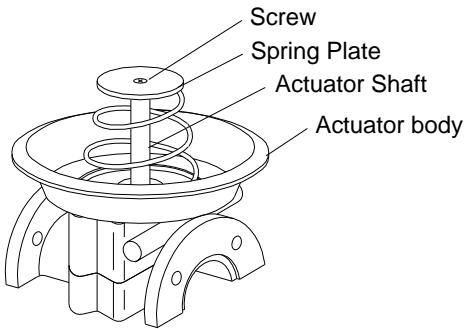
If the spring chamber is forced away from the actuator body, or if the clamp does not move freely when the nuts are loosened, STOP! The compression spring is not safely caged. CAREFULLY retighten the band clamp nuts, and review 1 through 5. DO NOT REMOVE THE CLAMP.

**4.5.2** After the clamp nuts are loose and the clamp moves freely, finish removing the nuts, clamp bolt, and clamp, as shown in Step 8.

Detach the spring chamber assembly from the actuator body.



Step 9



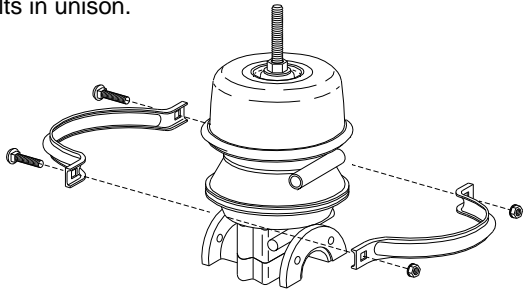
Loosen but **DO NOT REMOVE** the spring plate screw. After the screw is loose, use a press or similar means, and apply enough pressure on the plate to barely compress the spring. Finish removing the screw, and slowly release the press pressure (or other means used) to relieve compression on the spring.

Step 10

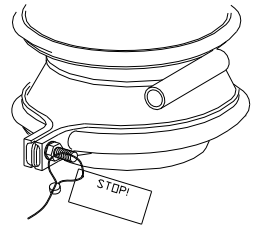
**4.5.3** Inspect and replace all worn parts, including the seal located in the shaft hole in the actuator body.

**4.5.4** Reassemble in reverse order. Use a press to compress the spring, and apply breakable thread-lock to the screw threads before securing the screw.

Place the spring chamber onto the actuator body. Put the band clamp around the valve and tighten the bolts in unison.



Step 11



Thread the seal wire through the warning tag, clamp bolt, and lead seal. Pull the wire through the lead seal to tighten. Crimp the lead seal to secure. Seal both clamp bolts.

Step 12

**4.5.5** Reassemble the valve's center section to the flange adaptors.

**4.5.6** Remove the lock-stud from the spring chamber, and secure it in the lock-stud storage tube.

**4.5.7** Place the cap-plug in the lock-stud port.

**4.6 Cage the Compression Spring During Periods of Non-Use**

**4.6.1** Whenever the valve(s) will be out of use for more than two days, cage the compression spring per Section 4.3, to take pressure off the pinch tube.

**CAUTION**

**To avoid pinch tube deformation, reinstall the lock stud and cage the spring whenever the valve will be out of use for more than two days.**

**4.6.2** Make sure the lock-stud is removed per Paragraph 3.1, before returning the valve to service.

**WARNING**

**The lock-stud holds the valve open by caging (compressing) the compression spring. The lock-stud must be removed from the valve before air is applied to the blast machine. Severe injury could occur if compressed air is supplied to the valve before the lock-stud is removed.**

5.0 REPLACEMENT PARTS

5.1 Pinch Tube Valve Assembly, Figure 3

Item	Description	Stock No.
(-)	Pinch Tube Grit Valve Assembly .....	04319
(-)	Pinch Tube Air Valve Assembly .....	04320
1.	Body, pinch valve, machined .....	05677
2.	Body, actuator (includes items 6 & 7) .....	05678
3.	Spring chamber .....	05663
4.	Cap screw, 5/16-NC x 1" .....	03152
5.	Nut, 5/16-NC wing .....	03213
6.	Bushing, actuator body .....	05684
7.	Seal, actuator body .....	05685
8.	Plunger, actuator .....	05676
9.	Shaft, actuator .....	05670
10.	Return spring .....	05686
11.	Plate, return spring .....	05687
12.	Screw, flat head, 1/4-NC x 5/8" .....	03090
13.	Pinch tube, 1-1/4" ID for air valve .....	07730
	1" ID for grit valve .....	04635
14.	Flanged adaptor .....	05673
15.	Flanged adaptor, 45 degree .....	05672
16.	O-ring .....	01990
17.	Inspection plate .....	02440
18.	Cover plate .....	05674
19.	Clamp assembly kit .....	20660
20.	Flat washer, s/s .....	05694
21.	Adapter, 1/4" NPS .....	02494
22.	Petcock .....	01993
23.	Lock-stud assembly, includes nut, item 24 ..	05691
24.	Nut, lock-stud, 1/2-10 .....	07628
25.	Metering knob assembly .....	05072
26.	Tee, 1/4" NPT brass .....	02025
27.	Nipple, 1/4" NPT x 2" .....	01828
28.	Plug, lock-stud port .....	05683
29.	Warning label and decal kit .....	20661

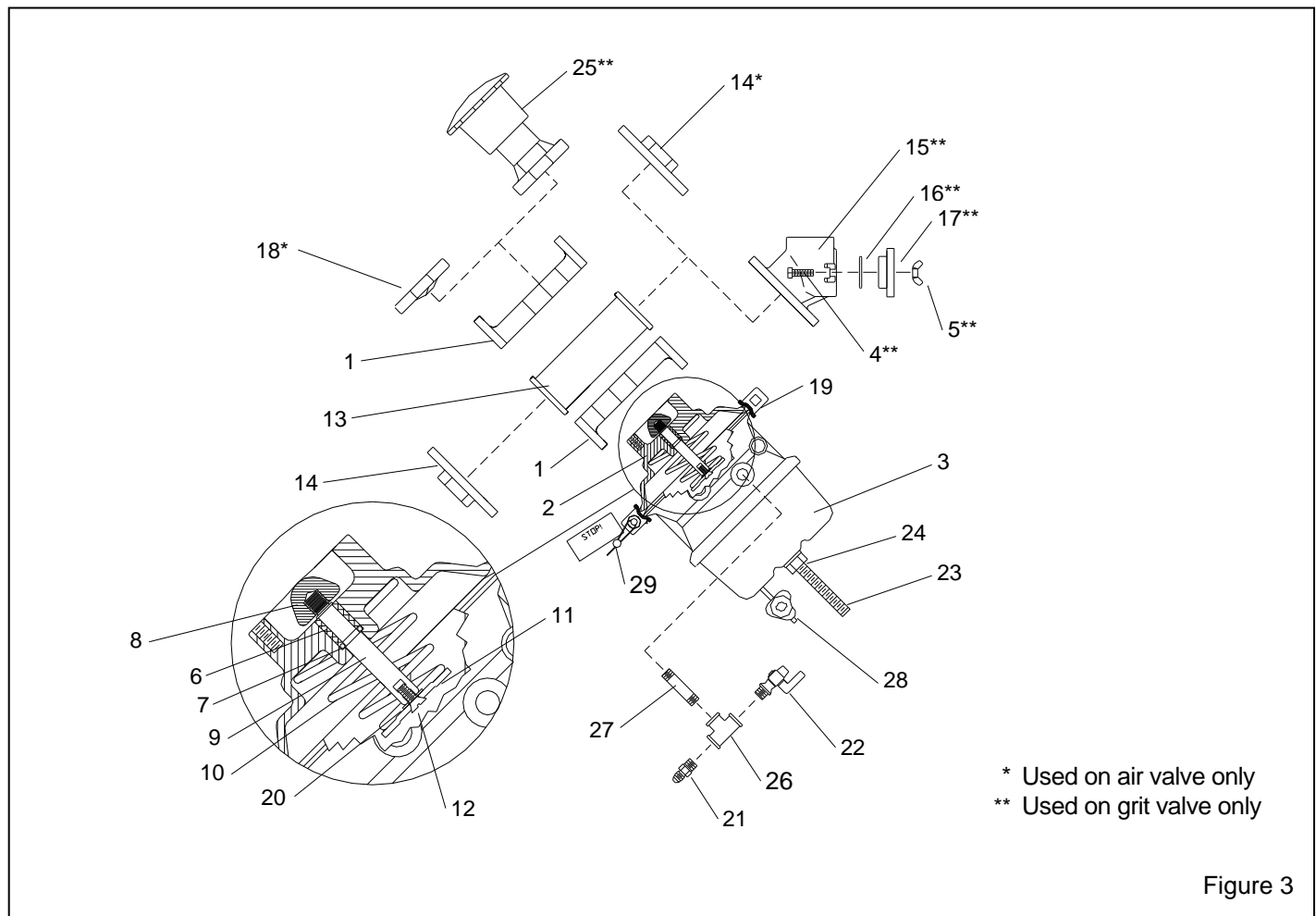


Figure 3