ACE AIR VALVE

O. M. 23938

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⚠ WARNING

**Do not proceed with these instructions until you have READ 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 Parts Guide, refer to the orange warnings insert preceding the Index before continuing with the enclosed instructions.**

Electronic files include a Preface containing important information.

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1.0 INTRODUCTION

1.1.1 Scope: These instructions cover operation, service, and replacement parts for the ACE Air Valve. The valve is a part of a blast machine remote control system. Do not put the valve in operation until all personnel involved with the blast machine operation read this entire manual, including the orange cover, and all accessory manuals.

1.1.2 These instructions contain important safety information. All operators and personnel involved with the abrasive blast process must read and understand the contents of these instructions, including the orange cover. It is equally important that the operator is trained and qualified to safely operate the blast machine and remote controls, and all other equipment used with the blast machine.

1.1.3 All personnel involved with the abrasive blasting process must be made aware of the hazards associated with abrasive blasting. The Clemco booklet ″Abrasive Blasting Safety Practices″ is included with every blast machine, and contains important safety information about abrasive blasting that may not be included in equipment operation manuals. To request additional copies, email info@clemcoindustries.com.

1.2 Safety Alerts

1.2.1 Clemco uses safety alert signal words, based on ANSI Z535.4-2011, 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 you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

NOTICE

Notice indicates information that is considered important, but not hazard-related, if not avoided, could result in property damage.

⚠ CAUTION

Caution indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

⚠ WARNING

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

⚠ DANGER

Danger indicates a hazardous situation that, if not avoided, will result in death or serious injury.

1.3 Description: When correctly installed as shown in Figure 1, the ACE air valve is normally-closed and pneumatically-operated, requiring compressed air to open. The valve is typically used with a pneumatically-operated abrasive metering valve on pressure-hold remote control systems.

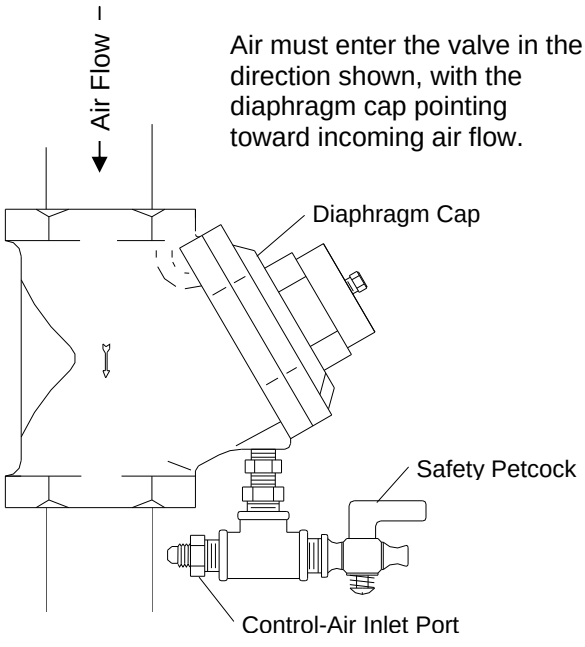


Figure 1

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 from the blast machine.

2.2 Use new pipe fittings to connect the valve to the blast machine. The air valve is a directional-valve; it must be installed so air flows through the valve as shown in Figure 1.

2.3 The illustration in Figure 2 shows a typical piping arrangement. This arrangement shows the ACE used in conjunction with an Auto-Quantum metering valve. Refer to the remote control system manuals for specific plumbing and air connections for the system.

2.4 Connect the air control lines to the air fittings shown in Figure 2.

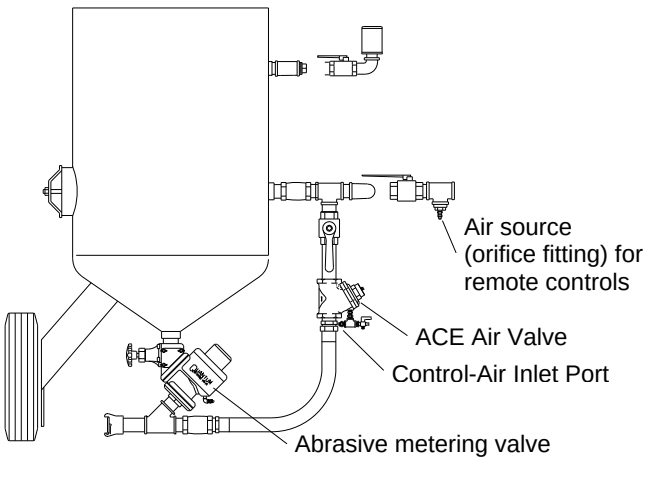


Figure 2

2.5 Refer to the remote control system manual for which the valve is used, as additional set up may be required.

3.0 OPERATION

3.1 The valve is normally closed. When air is supplied to the control air fitting, the valve opens.

3.2 Refer to the instructions for the blast machine and remote control system to supply air to the blast machine. Check for air leaks.

3.3 Before putting the blast machine in service, make sure the system operates correctly, especially the start and stop blast functions.

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

4.0 SERVICE MAINTENANCE

The valve does not need to be removed from the machine for service. However, make sure the air supply is off and the air supply line is bled as noted in the warning below.

⚠ 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.**
- **Lockout and tagout the compressed air supply.**
- **Bleed the air supply line to the blast machine.**

NOTE: Before beginning service make sure a 24075 service kit is available to replace worn or damaged parts.

4.1 Remove and Inspect Spring

4.1.1 Refer to Figure 3 and unscrew the spring retainer from the cap.

4.1.2 Remove the spring, if it is reusable, set it aside. Replace it (not included in service kit) as needed.

4.1.3 Inspect the exhaust breather muffler for blockage. Replace the breather (not included in service kit) if dirty or blocked.

4.1.4 If no additional service is required on the valve, reassemble the spring and retainer per Section 4.6.

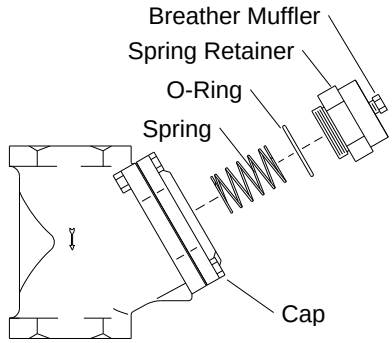


Figure 3

4.2 Remove Diaphragm Assembly

4.2.1 Remove the cap assembly by removing the four nuts and cap screws.

4.2.2 Refer to Figure 4 and place a wrench over the diaphragm retaining nut, insert a flat-tip screwdriver in the stem slot to prevent the stem from turning, then loosen and remove the nut.

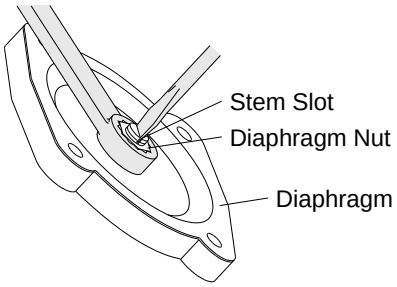
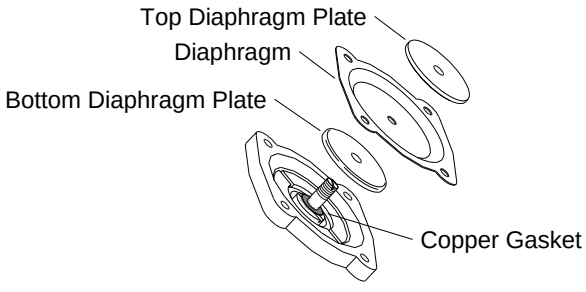


Figure 4

4.2.3 Refer to Figure 5 and remove the top and bottom diaphragm plate, diaphragm, and copper gasket from the stem. A new diaphragm and copper gasket is included in the service kit.



Note: Top and bottom diaphragm plates are identical; it does not matter which is installed first.

Figure 5

4.2.4 Inspect the seat and disc per Section 4.3. If certain the seat and disc are in good working condition, proceed to Section 4.5 to reassemble the diaphragm assembly.

4.3 Remove Disc and Seat Assembly

Refer to Figures 6 and 7

4.3.1 Remove the diaphragm assembly per Section 4.2.

4.3.2 Insert the guide-bushing installation tool, stock no. 24191, into the slots on top of the guide as shown in Figure 6, and use a large adjustable wrench to unscrew the guide-bushing from the body. Lift the stem to remove the bushing and disc assembly.

4.3.3 Remove the guide bushing from the stem.

4.3.4 Remove the internal and external o-rings from the guide-bushing.

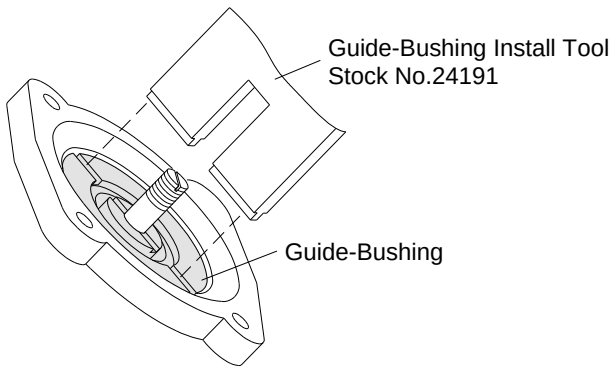


Figure 6

4.3.5 Remove the nut, disc plate, disc retainer with disc and copper gasket from the stem.

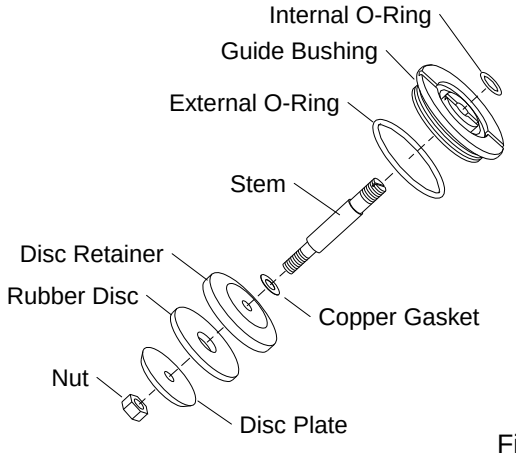


Figure 7

4.3.6 Remove the rubber disc from the retainer.

4.3.7 The seat, which is still in the body, seldom needs replacement but inspect it for wear while the disc assembly is removed. If the seat requires replacement, insert a 1-5/16" flat bar or seat tool, stock no. 24192, between the seat lugs, and unscrew the seat. Replace the seat o-ring and reassemble in reverse order.

4.3.8 Reassemble the disc and seat assembly per Section 4.4.

4.4 Reassemble Disc and Seat Assembly

Refer to Figures 6 and 7

4.4.1 Clean all items to be reused.

4.4.2 Slide the smaller copper gasket onto the stem and place it against the stem flange.

4.4.3 Slide the disc retainer (tapered side toward the copper gasket) onto the stem.

4.4.4 Place the rubber disc in the retainer and slide the disc plate onto the stem, with the large side against the disc.

4.4.5 Apply a small dab of Loctite 565 thread sealant to the stem threads and install the hex nut to secure the assembly; do not over-tighten to distort the rubber disc.

4.4.6 Insert the internal o-ring into the guide bushing, use a small screwdriver to pop it into the groove.

4.4.7 Place the external o-ring onto the guide bushing.

4.4.8 Lubricate the stem and guide bushing threads with silicone lubricant and slide the guide bushing onto the stem.

4.4.9 Insert the assembly into the body and tighten the guide. The guide should thread easily into the body until it is fully in place. Use the guide bushing install tool to secure it. Do not over-tighten.

4.5 Reassemble Diaphragm Assembly

Refer to Figure 5

4.5.1 Clean all items to be reused.

4.5.2 Slide the larger copper gasket onto the stem and place it against the stem flange.

4.5.3 Place one of the diaphragm plates onto the stem.

4.5.4 Slide the diaphragm and remaining plate onto the stem.

4.5.5 Apply small dab of Loctite 565 thread sealant to the stem threads and install the hex nut.

4.5.6 Place a wrench over the diaphragm retaining nut, insert a flat-tip screwdriver in the stem slot to prevent the stem from turning, and then tighten the nut to secure.

4.5.7 Rotate the diaphragm to make sure the shape of the diaphragm matches the body.

4.5.8 Align the screw holes in the diaphragm with those in the body and install the cap, making sure the shape of the cap matches the shape of the body.

4.5.9 Install bolts and tighten the nuts to secure.

4.6 Reassemble Spring and Retainer

Refer to Figure 3

4.6.1 Inspect the retainer o-ring and replace it (not included in service kit) as needed.

4.6.2 Inspect the exhaust breather muffler for blockage. Replace the breather (not included in service kit) if dirty or blocked.

4.6.3 Insert the spring into the valve cap and slide it over the end of the stem and nut.

4.6.4 Place the spring retainer over the spring, thread the retainer into the cap, and tighten to secure.

5.0 TROUBLESHOOTING

5.1 Air leaks from nozzle when not blasting

5.1.1 While the machine is pressurized, but in the non-blast mode, close the choke valve; if the air leak does not stop, the problem is with the abrasive metering valve. Refer to the metering valve manual for service. If the air leak does stop, the air valve requires service; the probable cause is a damaged diaphragm, disc, or broken spring. Refer to Section 4.0 for service instructions.

Refer to the remote control system manual for troubleshooting the system.

6.0 REPLACEMENT PARTS, Figure 8

Item	Description	Stock No.
(-)	ACE 1-1/4" Air Valve	
	valve only (less items 12 through 17)	24074
	valve assembly (w/items 12 through 17)	24044
(-)	ACE 1-1/2" Air Valve	
	valve only, (less items 12 through 17)	25288
	valve assembly (w/items 12 through 17)	25289
(-)	Service kit, for 1-1/4" and 1-1/2" valves includes items called out in Figure 9	24075
(-)	Service tool, guide-bushing	24191
(-)	Service tool, seat	24192
1.	Guide-bushing	24076
2.	Retainer, disc	24077
3.	Seat	24078
4.	Disc plate	24079
5.	Cap	24089
6.	Plate, diaphragm, each	24090
7.	Body	24091
8.	Stem	24092
9.	O-ring, spring retainer, 1-5/16" nom OD	24093
10.	Retainer, spring	24094
11.	Spring	24095
12.	Breather muffler, 1/8" NPT	07657
13.	Connector, 1/8" NPT brass	01962
14.	Bushing, 1/4" x 1/8" NPT brass	02010
15.	Tee, 1/4" NPT brass	02025
16.	Adaptor, 1/4" NPT x 1/4 JIC	02494
17.	Petcock, 1/4" NPT brass	01993

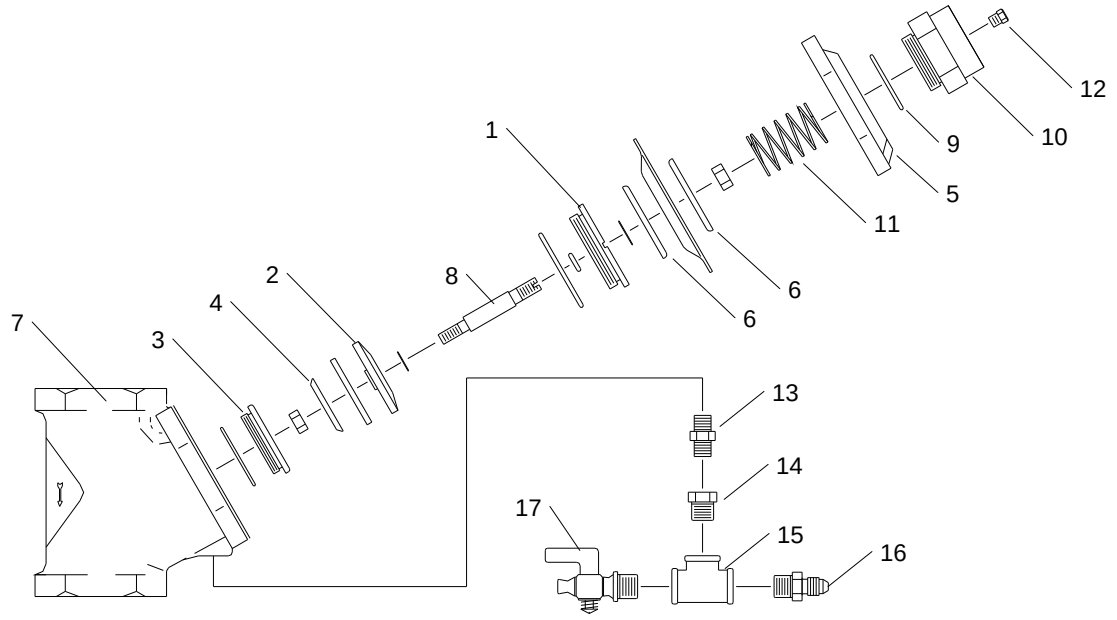
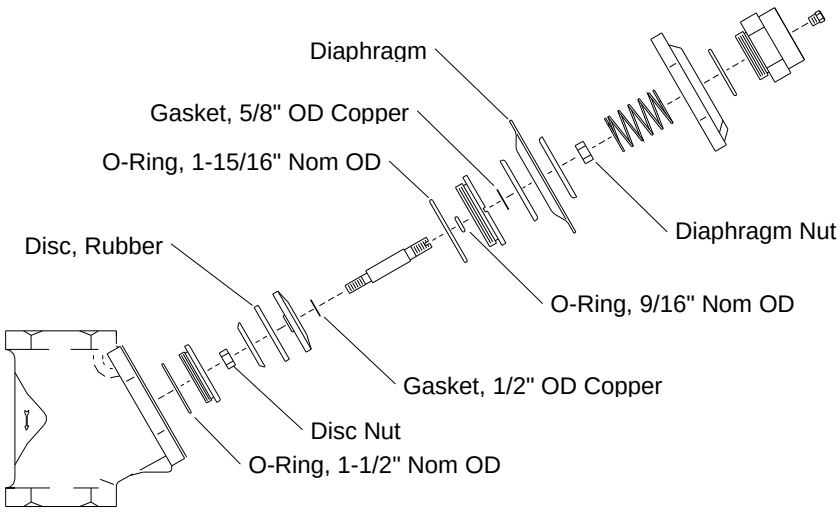


Figure 8



SERVICE KIT PARTS

Figure 9