

**Instructions for INSTALLATION -- OPERATION -- MAINTENANCE  
of the SELAS GAS/GAS BLENDER VALVE**

**(for LANDFILL GAS, DIGESTER GAS, MINE GAS AND OTHER GAS BLENDS)**

**DESCRIPTION**

The SELAS Blender Valve is a three-port, adjustable area valve which accurately mixes any two of a wide variety of gases. "Gas" ports in a movable piston are matched to complimentary ports in a mating sleeve. Adjustment knob can vary the proportion for any required mixture ratio. The ratio adjustment will simultaneously restrict one port opening as the other port is increased. Inlet pressure exerted below the blender valve diaphragm moves the piston upward, opening the ports for greater flow.

**INSTALLATION**

**Location**

All equipment covered in this description should be housed in a well ventilated room or building. All pits or depressions below ground level must be avoided to prevent accumulation of heavier than air gases. Maintaining temperatures above 32°F will avoid malfunction through freezing of condensate in system components.

**Handling**

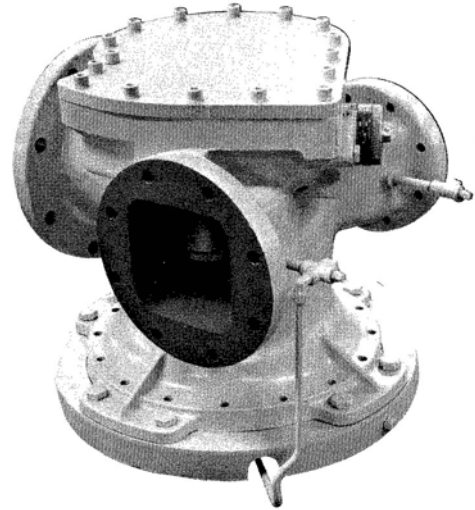
Avoid rough handling while unloading and moving equipment to location. Arrange any sling or lifting fork to avoid distortion of any components and especially damage to the copper tubing.

**Piping**

The larger flow should be connected to inlet marked "GAS B", unless otherwise specified.

The smaller flow requires regulation to match the inlet pressure of the larger flow.

All piping must be thoroughly cleaned. Support piping independently of the valve. Pipe flanges and threaded connections must be properly aligned to avoid straining or distortion of castings. Use gaskets on all flanges.




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**NOTE:**

The SELAS Gas Blender Valve can be installed by your personnel, but without responsibility on the part of SELAS. (Questions and guidance on installation will be answered by telephone, fax or e-mail.) SELAS service personnel are available for installation assistance at prevailing rates.

Manufacturer has produced these products with great care and skill. Each unit is inspected before leaving our facilities. Upon receipt, check for shipping damage. Before using any unit, however, it is recommended that the unit be carefully inspected by purchaser to insure that it conforms to purchaser specifications. Manufacturer's liability shall be limited to replacement of any unit found to be damaged, defective or non-conforming.

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### OPERATION

#### Blender Valve Adjustment (Figure 2)

Once installed, the only adjustment which might be required is the ratio adjustment. The desired gas/gas ratio or gas/gas mixture may be obtained by turning the adjustment knob (#50).

### MAINTENANCE

#### Cleaning of Blender Valve (Figure 1)

Due to the close tolerance between the bushing and piston, a regular program of cleaning is required. Until a determination can be made as to the proper schedule for your particular application, a monthly cleaning schedule is recommended. This cleaning must be a preventive maintenance function. The frequency is dictated by the severity of your particular application.

To expose the internal parts, remove valve cover (#6). Next, unscrew piston locknut (#13) from diaphragm spindle (#14) and remove piston (#3) [use 1/4x20 bolts to help lift piston].

Remove all debris that has accumulated in the valve. Wipe clean all accessible areas, using a cloth saturated with solvent. Do not overlook orifice opening located in valve body; it must be free of any obstruction.

Remove loose grit and dirt from the piston (#3) and bushing (#2) and carefully inspect surfaces for corrosion and abrasions. Remove stubborn deposit with crocus cloth dipped in a solvent. Never use grit or emery since metal removal can alter fit of components. It is important during this cleaning operation not to mar or deform in any way the sharp metering edges of both piston and bushing ports.

**Never coat outside of piston or inside of bushing with oil or grease, as this will tend to attract abrasive impurities from the gas supply. This will eventually cause sticking or excessive wear.** Use dry lubricant and wipe off excess before reassembling.

Remove balancing line tubing (#7) and clean by blowing high pressure air through the tube. (Make sure that both ends of balancing lines are disconnected.)

A drain pug (#44) is located in the diaphragm cap (#16). It should be removed to drain excessive condensation from the mixing valve.

Ordinarily, it is not necessary to remove the bushing for cleaning. However, if it does not rotate easily in valve

body or if grease needs to be replaced, disassemble as follows:

Remove ratio adjustment assembly (#9) from adjustment pivot (#15) or disconnect u-joint. Carefully lift bushing from valve body, using a steady vertical lift in order to prevent binding. Clean thoroughly as indicated above for piston cleaning.

Before reassembling bushing in valve body, coat outside of bushing and inside of valve body with Mobilith AW-2 grease or equivalent. Replace all parts with care. Do not use force to reassemble parts. (Remove all grease from port area.)

To reinstall piston, apply a light coat of molybdenum disulfide base dry film lubricant (Dri-Slide) to the outer surface of piston and the inner surface of the bushing. **DO NOT USE OIL OR GREASE ON THESE INTERFACES.** Line up the piston with guide (#4), being careful not to cock or force while sliding into bushing. Replace piston locknut.

#### **RESETTING OF SCALE (Figure 2)**

An indicator dial on the adjustment assembly correlates the relative opening of blender ports. If the ratio assembly was disengaged, it is necessary to reset this dial. Scribe marks have been provided on the piston and bushing to show their relative alignment. When the two scribe marks are matched (see figure 2), they indicate the position of 100% "GAS B / 0% "Gas A".

To correctly set the scale, first turn adjustment knob (#50) to indicate 100 on the "GAS B" scale. Now, with the scribe marks matched, screw the ratio adjuster assembly into the adjustment pivot or re-attach u-joint. Remember to maintain the 100% "GAS B" position on the scale.

When the assembly is flush with the valve body and the scribe marks are aligned, secure ratio adjustment assembly. The scale is now properly aligned.

Locknuts are provided on the adjustment screw of blender valves to prevent the inadvertent blending of undesirable mixtures such as a combustible mixture of propane and air in a feed line supplying a replacement natural gas fuel. For blends of gas/gas mixtures, which are non-combustible, these locknuts are not required.

**NOTE:** When an automatic ratio adjuster is not used, a locking device has been provided on the ratio adjustment assembly. After setting ratio, gently

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tighten locking screw (#70) with an Allen wrench.

**REPLACING DIAPHRAGMS (Figure 1)**

The elastomeric diaphragm (#19) supplied requires little maintenance and need be replaced only in the event it is ruptured or becomes embrittled. If this occurs, replacement can be effected as follows:

- Disconnect tube fitting (#8) and remove diaphragm cap (#16).
- Unscrew hex nut (#33), removing diaphragm assembly (#19), diaphragm plates (#17) and diaphragm washers (#18).
- Discard the ruptured diaphragm and replace with a new diaphragm. Reassemble plates and washers.

- Check for full travel to assure that new diaphragm does not restrict movement.
- Lift diaphragm cap into position and fasten to valve body with cap screws.

**NOTE:**

**Flat diaphragms require a pleating along outer edge to provide the slack which will allow vertical movement. To accomplish this, evenly space the pleats between the bolt holes allowing no more than one fold at any one point under the clamping surface.**

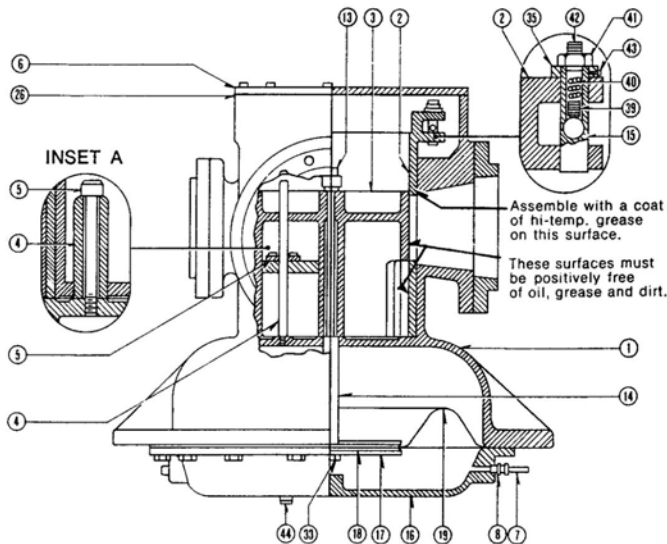
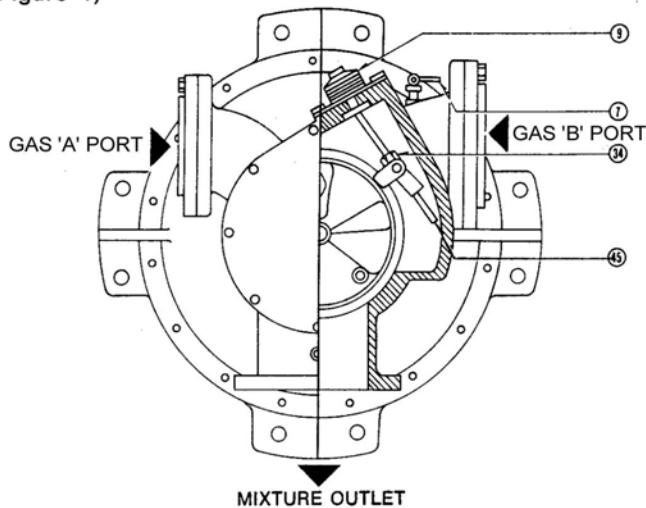
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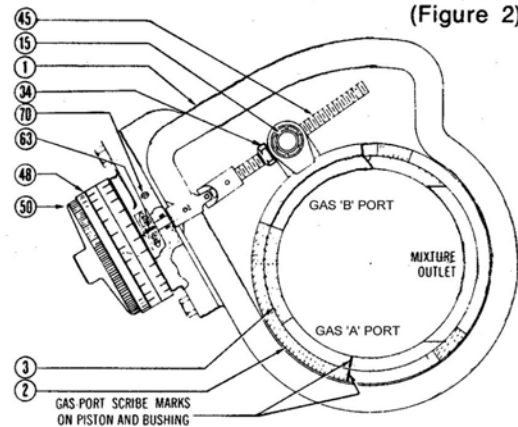
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(Figure 1)



(Figure 2)



PARTS LIST

INDEX NO.	NO. REQ'D.	PART
1	1	VALVE BODY
2	1	VALVE BUSHING
3	1	VALVE PISTON
4	1	GUIDE
5	1	GUIDE POSITIONER
6	1	VALVE COVER
7	1	BALANCING LINE TUBING
8	1	TUBING CONNECTOR
9	1	RATIO ADJUSTMENT ASSY
13	1	PISTON LOCKNUT
14	1	DIAPHRAGM SPINDLE
15	1	ADJUSTMENT PIVOT
16	1	DIAPHRAGM CAP
17	2	DIAPHRAGM PLATES
18	2	DIAPHRAGM WASHERS
19	1	DIAPHRAGM ASSEMBLY
26	1	VALVE COVER GASKET
33	1	HEX NUT
34	2	ADJUSTMENT LOCKNUT
35	1	RETAINING COLLAR
39*	1	THREADED BEARING
40*	1	COMPRESSION SPRING
41*	1	HEX JAM NUT
42*	1	SOC. HD SCREW
43*	1	SOC. HD SCREW
44	1	DRAIN PLUG
45	1	ADJUSTMENT SCREW
48	1	SCALE
50	1	ADJUSTMENT KNOB
63	1	AIR/GAS POINTER
70	1	LOCKING SCREW

\* 800 CAV, 1250 CAV, HP-6 and HP-7 valves only.

INSET A—Alternate guide pin arrangement used on 10 CAV, 40 CAV, 75 CAV, 150 CAV, 300 CAV, HP-3, HP-4 & HP-5 valves.

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### Attachment 1

#### Direct Drive Blender Instructions

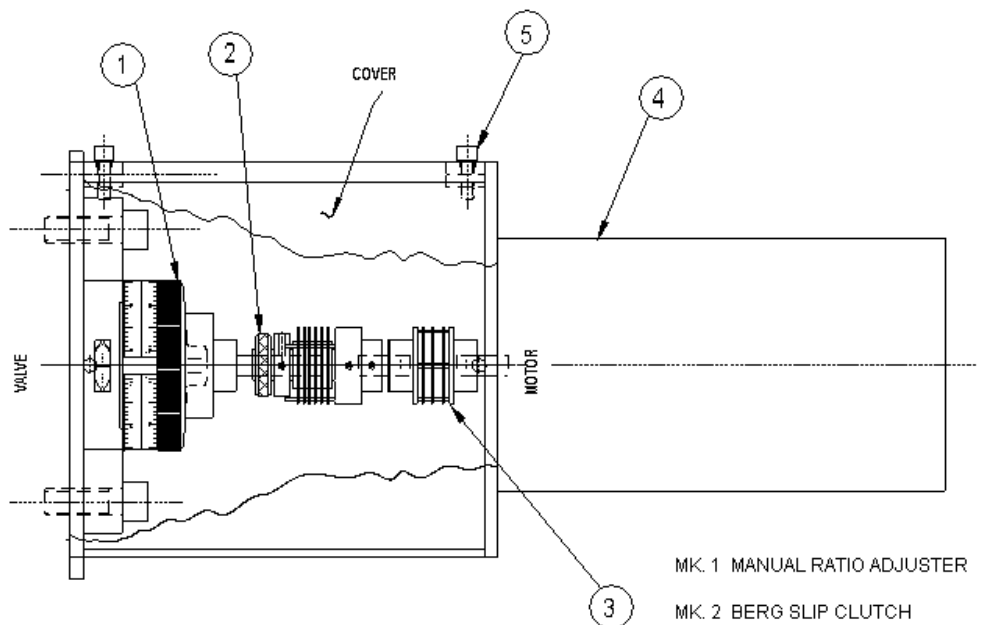
The SELAS direct drive automatic ratio adjuster is designed to give a greater range of ratio control than the standard right angle automatic ratio adjuster. It is designed to work with the SELAS Qual-O-Rimeter or any other 0-5vdc, 0-10vdc or 4-20ma control.

Proper wiring of the Jordan Actuator Motor should be done by qualified personnel according to Jordan Controls Drawing No. 95-C-036000-1.

Remove cover by taking out cover screws (5).

After loosening the clutch adjustment knob (2), an optimal blend of gases should be established by manual adjustment of the ratio adjuster (1) with the clutch disengaged. This setting should be recorded for future reference.

With the motor set to mid travel (i.e. 12ma position), the clutch should be engaged by turning the clutch adjustment knob (2) clockwise (looking at the shaft end of the Jordan Actuator) until finger tight only. This will give maximum control range in both directions.



BLENDER DIRECT DRIVE RATIO ADJUSTER

- MK. 1 MANUAL RATIO ADJUSTER
- MK. 2 BERG SLIP CLUTCH
- MK. 3 FLEXIBLE SHAFT COUPLING
- MK. 4 JORDAN ROTARY ACTUATOR
- MK. 5 COVER SCREWS

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