

# CO<sub>2</sub> Component Description



## Manometer Test Kit - Instructions for Use

Effective: April 2002

K-81-7111

### TO FILL MANOMETER

Fill manometer glass tube at point marked FILL HERE on K-81-7100. "Rock" water level back and forth by squeezing rubber bulb to eliminate air bubbles. Add or pour out water until level is at fill point marked on K-81-7100 ("0" level).

### TO TEST PNEUMATIC CONTROL HEADS

- Connect the test fitting of the manometer test set to the diagram chamber of the control head.
- Make certain sufficient clearance is provided at swivel mounting nut so control head will not be damaged upon operation.
- If control head has been operated, reset by placing screwdriver in reset stem and, turning clockwise until stem locks in position (with arrow on reset stem lined up with "Set" arrow on name plate).

**Note:** Slight resistance will be met just before stem locks.

- Close off the rubber tube "A" by squeezing tightly with the fingers or use a crimp clamp, and then apply pressure by gradually squeezing the rubber bulb "C". The control head should operate at the factory pressure setting plus or minus the 10% tolerance allowed. The pressure required to operate the control head is the difference in inches on the manometer, between the water levels in the two tubes, and is equal to twice the reading of either, i.e., 3" both tubes or 1-1/2" for one tube.

### CAUTION

After the control head has operated be sure to release rubber tube "A" first before allowing the rubber bulb "C" to expand to normal; otherwise water may be sucked into the tubing and control head, causing serious problems.

### CONTROL HEAD VENT TEST

Before disconnecting manometer from the control head, the vent must be tested. To test the vent for correct calibration, perform the following steps:

- Squeeze rubber bulb "C" about halfway or enough to achieve sufficient vacuum for test. Then close tube A by pinching with fingers or crimp clamp.
- Let bulb expand gradually to its normal shape. This creates a partial vacuum, causing the water level to change, indicating inches of vacuum applied to the control head (the vacuum must be more than minimum of 3" in order to observe drop from 3" to 1").
- The water column will recede to "0" level as air passes through the vent. The time required (number of seconds) for the water column to recede 2" reading from 3" to 1" on both legs or 1-1/2" to 1/2" on either leg is the number of the vent (the calibrated rate of flow). i.e., if the time required to pass the above amount of water is 5 seconds the control head vent is "No. 5". When vents are tested in control heads, the time will vary due to the control head diaphragm volume and a No. 5 vent will test 5-7 seconds, which is acceptable. If a vent reads much higher, it will increase system sensitivity; if a vent reads much lower, it will decrease system sensitivity and may not be acceptable.
- Disconnect manometer test set from the control head (test fitting "A"). Reset the control head by turning the reset stem to its "SET" Position.

### TO TEST PNEUMATIC DETECTORS AND/OR SYSTEM TUBING FOR TIGHTNESS

Connect a manometer system tubing as shown on K-81-7100. Squeeze rubber bulb C, then close off rubber tube A. Allowing rubber bulb C to expand gradually will cause water level in manometer to change and then hold steady. If detector(s) and/or system tubing is tight, water level will not drop when observed for at least one minute. Relieve vacuum by opening rubber tube A. Hold a minimum of 8" vacuum difference between 2 sides of "U" tube, or 4" on each side of "U" tube.

### CAUTION

When making tests with manometer, do not allow water to enter rubber tubing, control head, detector, or system tubing. Do not blow through system tubing as moisture from breath will impair system operation.

### OTHER USES FOR MANOMETER

Testing tubing for freedom from obstructions before installation. Testing and adjusting mercury check setting and vents.

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