Bristol Fire Department
Standard Operating Procedures

Multi Gas Detector

January 2022

Bristol Fire Department
Standard Operating Procedures

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SECTION **1-01**	**Fresh Air Setup – Altair 4X Multi Gas Detector**	REVISION **1/1/22** Next Revision Date **1/1/23**

Purpose – To develop a procedure for conducting Fresh Air Setup on MSA Altair 4X Multi Gas Detector.

Scope – All Altair 4X Multi Gas Detectors owned by Bristol Fire Department.

Responsibility – It is the responsibility of the firefighter assigned to the Multi Gas Detector on each incident to perform a Fresh Air Setup.

Policy – All Altair 4X Multi Gas Detectors (MGD) will be run through a Fresh Air Setup (FAS) and a Bump Test prior to any incident where they will be put into service. **The FAS will always be completed prior to the Bump Test**. On arrival at scene the firefighter will proceed a distance away from apparatus, to a fresh air environment, and perform a FAS. Once the FAS has passed, the Bump Test will be completed.

Procedure –

1) Move the MGD to a fresh air environment away from apparatus.

2) The MGD will go through a startup cycle.

4) If you miss the auto prompt for the FAS,

- press and hold the ▲ for 3 seconds, until screen shows ZERO CAL.
- Press ▼ and the unit will perform a FAS test**.**

NOTE: If the device fails the FAS, take it out of service and notify BFD MGD Technician!

BRISTOL FIRE DEPARTMENT STANDARD OPERATING PROCEDURE		
SECTION **1-02**	**Bump Test– Altair 4X Multi Gas Detector**	REVISION **1/1/22** Next Revision Date **1/1/23**

Purpose – To develop a procedure for conducting a Bump Test on Altair 4X Multi Gas Detector.

Scope – All Altair 4X Multi Gas Detectors owned by Bristol Fire Department.

Responsibility – It is the responsibility of the firefighter assigned to the Altair 4X Multi Gas Detector on each incident to perform a Bump Test.

Policy – All Altair 4X Multi Gas Detectors (MGD) will be run through a Fresh Air Setup (FAS) and a Bump Test prior to any incident where they will be put into service. **The FAS will always be completed prior to the Bump Test**. On arrival at scene the firefighter will proceed a distance away from apparatus, to a fresh air environment, and perform a FAS. Once the FAS has passed, the Bump Test will be completed.

Procedure –

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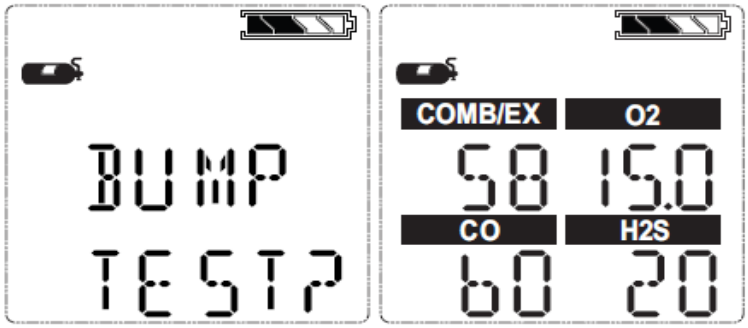
Attention!

Perform a Bump Test before each day's use to verify proper device operation. Failure to perform this test can result in serious personal injury or death.

Performing a Bump Test

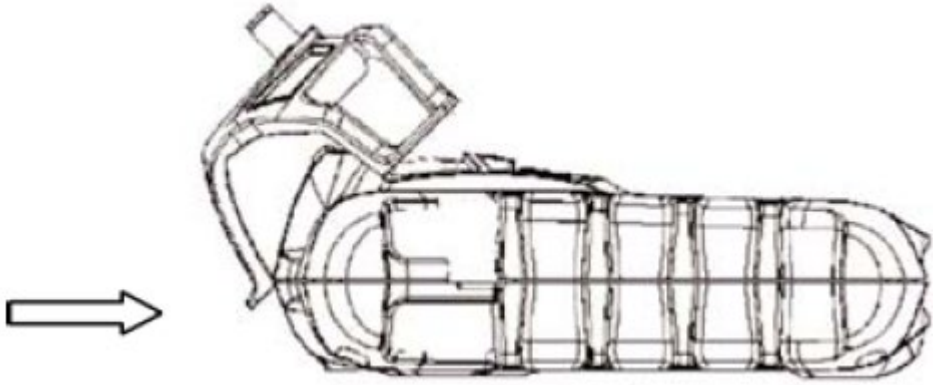
2) MGD will go through it's startup cycle.

3) From the normal measure screen press the ▼button to display "BUMP TEST?"

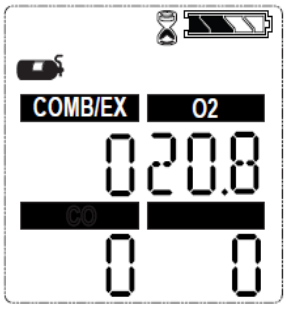


4) Attach the calibration cap to the device.

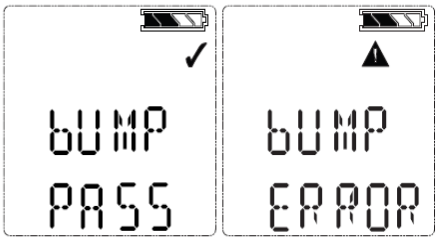
a) Insert tab of the calibration cap into top slot of the instrument.
b) Press calibration cap as shown until it seats onto instrument.



c) Press both side tabs down onto the instrument until they snap in.
d) Ensure that the calibration cap is properly seated.



After the Bump Test completes, the device momentarily displays "BUMP PASS" or "BUMP ERROR" along with the label of any sensor that failed before returning to Measure mode. If the device fails the Bump Test, perform a calibration as described in chapter 3.9.



NOTE: If the device fails the Bump Test, take it out of service and notify BFD MGD Technician!

6) Turn off gas and remove calibration cap.
7) Scroll ▼to max values
8) Select ▲to reset Max.
9) Scroll ▼to min values
10) Select ▲ to reset min.
11) Scroll ▼ to go to Home Screen.

The √ symbol will be displayed in the Measure mode for 24 hours after a successful Bump Test.

BRISTOL FIRE DEPARTMENT STANDARD OPERATING PROCEDURE		
SECTION **1-03**	**Monthly Calibration Test – Altair 4X Multi Gas Detector**	REVISION **1/1/22** Next Revision Date **1/1/23**

Purpose – To develop a schedule for calibrating Altair 4X Multi Gas Detectors to insure they are in good working order.

Scope – All Altair 4X Multi Gas Detectors owned by Bristol Fire Department.

Responsibility – It is the responsibility of the Officer assigned to Multi Gas Detector inspections to complete calibration. Only individuals who have completed MSA's online training can perform monthly Altair 4X Multi Gas Detector calibrations.

Policy – All Altair 4X Multi Gas Detectors will be run through a Calibration Test monthly.

Procedure –

Calibration Test (Zero Calibration / Span Calibration)

1) The monthly calibration test will be done in a clean air environment.
2) Before the calibration is done, check the expiration date of the test gas. The expiration date is printed on the side of the bottle.
    a. When/if a new bottle is needed, contact;
        i. Michael Knight
        ii. Fire Service Sales Manager
        iii. mknight@reynoldsandson.com
        iv. 802-461-4076 (direct)
3) Press and hold the ▲button for 3 seconds.

5) The unit will proceed with a sensor refresh.
6) The unit will notify the user of a Zero Pass.

8) Attach calibration cap to device (see SOP 1-02.)
9) Open valve on regulator.
10) After the test is complete SPAN PASS should display.
11) If the unit fails either the Zero Cal or Span Cal it will be removed from service.

BRISTOL FIRE DEPARTMENT STANDARD OPERATING PROCEDURE		
SECTION **1-04**	**Alarm Thresholds, Exposure Limits, and Activation Times – Altair 4X Multi Gas Detector**	REVISION **3/9/22** Next Revision Date **1/1/23**

Purpose – To document the alarm threshold levels, exposure limit, and activation times for various gases when using the MSA Altair 4X Multi Gas Detector.

Scope – All Altair 4X Multi Gas Detectors owned by Bristol Fire Department.

Responsibility – It is the responsibility of the firefighter assigned to the Multi Gas Detector on each incident to know and understand the alarm thresholds, exposure limit, and activation times for the Altair 4X unit.

Policy – All Altair 4X Multi Gas Detectors (MGD) have a low alarm and high alarm for the following gases, combustible gas, O2, CO, and H2S. CO and H2S have varying exposure limits. Each of these gases have varying activation times. I.e. how long it will take the unit to register the level of the gas.

Alarm Threshold, Exposure Limits, and Activation Time–

Gas Type	Low Alarm	High Alarm	STEL	TWA	Activation Time (90% of final reading at normal temp range)
LEL (Combustible)	10% LEL	20%LEL	N/A	N/A	< 15 Sec (Pentane) < 10 Sec (Methane)
O2	19.5%	23%	N/A	N/A	< 10 Sec
CO	25ppm	100ppm	100ppm	25ppm	< 15 Sec
H2S	10ppm	15ppm	15ppm	25ppm	< 15 Sec

BRISTOL FIRE DEPARTMENT STANDARD OPERATING PROCEDURE		
SECTION **2-01**	**Use –** **Sensit Gold Multi Gas Detector**	REVISION **1/1/22** Next Revision Date **1/1/23**

Purpose – To detail the operation of the Sensit Gold Multi Gas Detector to insure they are in good working order.

Scope – Sensit Gold Multi Gas Detector owned by Bristol Fire Department.

Responsibility – It is the responsibility of the firefighter assigned to Multi Gas Detector inspections to deploy the unit.

Policy – The Sesnit Gold Multi Gas Detector will be deployed according to the procedures listed below.

Procedure –

1) Push the POWER/MUTE BUTTON (A) until the instrument beeps and the display illuminates.
2) If the display fails to illuminate or BAT LOW is shown on the display, replace the batteries.
3) The unit will enter a warmup period.
4) The unit will indicate the type of gas used for calibration (i.e. Nat or Pro) and the unit of measure (i.e.: LEL, PPM, % VOL) below all readings.
5) The unit is now ready to deploy.

Gas Type –

The Sensit Gold unit is able to detect the LELs of either Propane or Natural Gas / Methane, but not both at the same time. The user must manually select the gas type to be detected;

1. If not already powered on, do so by pressing and holding the A button.
2. Press and hold the B button until User Menu appears.
3. Press the C button until Gas Type appears.
4. Press the B button.
5. Press the B button to select Nat (Methane) or the C button to select Pro (Propane.)
6. Press the A button twice to return to the main screen.

BRISTOL FIRE DEPARTMENT STANDARD OPERATING PROCEDURE		
SECTION **2-02**	**Monthly Calibration – Sensit Gold Multi Gas Detector**	REVISION **1/1/22** Next Revision Date **1/1/23**

Purpose – To develop a schedule for calibrating the Sensit Gold G2 Gas Detectors to insure they are in good working order.

Scope – The Sensit Gold G2 Gas Detector is owned by Bristol Fire Department.

Responsibility – It is the responsibility of the Officer assigned to Multi Gas Detector inspections to complete calibration.

Policy – The Sensit Gold G2 Gas Detector will be run through a Calibration Test monthly. The Calibration will consist of multiple separate gas type calibrations. One for propane and one for natural gas / methane and CO.

Procedure -

Propane calibration.

1. Power on unit by pressing and holding the A button.
2. Press and hold the B button until the User Menu appears.
3. Press the C button until Gas Type appears.
4. Press the B button.
5. Press the C button to select Pro (Propane.)
6. Press the A button.
7. Press the C button until Auto Cal appears.
8. Press the B button.
9. Attach the bottle labeled 1.1% Propane.
10. Press the B button to begin the calibration;
    a. The propane calibration will run through 2 propane based calibrations. Once it reaches the third calibration, for CO, press the A button to end the calibration and remove the canister. The CO test will fail as propane canister doesn't contain CO. CO will be calibrated with the canisters which contain methane.
11. Return to the User Menu by pressing the A button.
12. Press the A button to return to the main screen.

Methane LEL, 2.5% methane, CO PPM, and 100% methane calibration.

7. If not already powered on, do so by pressing and holding the A button.
8. Press and hold the B button until User Menu appears.
9. Press the C button until Gas Type appears.
10. Press the B button.
11. Press the B button to select Nat (Methane.)
12. Press the A button.
13. Press the C button until Cal appears.
14. Press the B button.
15. Attach the 2.5% methane / 100 PPM CO bottle.
16. Press the B button to begin the calibration;
    a. This calibration will run through 3 calibrations;

i. Methane LEL
ii. 2.5% methane
iii. 100 PPM carbon monoxide

17. Once the calibrations have passed you have 30 seconds to attach the 100% methane bottle.
18. The fourth calibration will automatically begin once the timer has reached 0.
    a. Once the calibration has finished remove the bottle.
19. Return to the user menu by pressing the A button.
20. Press the A button to return to the main screen.
21. Press and hold the C button to zero out the sensors.
22. The unit must be returned to a Propane gas type.
    a. Press and hold the B button until the User Menu appears.
    b. Press the C button until Gas Type appears.
    c. Press the B button.
    d. Press the C button to select Pro (Propane.)
    e. Press the A button.

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BRISTOL FIRE DEPARTMENT STANDARD OPERATING PROCEDURE		
SECTION **2-03**	**Alarm Thresholds – Sensit Gold G2**	REVISION **3/9/22** Next Revision Date **1/1/23**

Purpose – To document the alarm threshold levels for the Sensit Gold G2.

Scope – Sensit Gold G2 Multi Gas Detectors owned by Bristol Fire Department.

Responsibility – It is the responsibility of the firefighter assigned to the Multi Gas Detector on each incident to know and understand the alarm thresholds for the Sensit Gold G2 Multi Gas Detector.

Policy – The Sensit Gold G2 Multi Gas Detector has a low and high alarm levels as shown below.

Alarm Threshold– The standard factory preset LED indicators and alarm points are:

1. Combustible gas: Methane, audio and visual alarm indicators from 5% LEL to 100% LEL.
    a. Green LED/Ready = 0% - 4.9% LEL Methane
    b. Amber LED/Low = 5% - 9.9% LEL Methane
    c. Red LED/Haz1 = 10.0% - 24.9% LEL Methane
    d. Red LED/Haz2 = 25.0% - 49.9% LEL Methane
    e. Red Flashing LED/Haz3
        i. METHANE: 50% LEL Methane to 17% volume* Methane (LED indicator only above 17% volume Methane)
        ii. PROPANE: 50% LEL Propane to 12% volume* Propane (LED indicator only above 12% volume Propane)
2. Oxygen - below 19.5% and above 23.5%
3. Carbon Monoxide - 35ppm per utility industry standards
4. Hydrogen Sulfide - 10ppm and above per Federal OSHA guidelines
5. Hydrogen Cyanide - 5ppm and above