EXPLOSIMETER® COMBUSTIBLE GAS INDICATORS

08-00-03

FEATURES

- Quickly detects and measures concentrations of combustible vapors and gases in air
- Suitable for remote sampling
- Durable cast aluminum case
- Four models tailored to specific applications

DESCRIPTION

The Explosimeter Combustible Gas Indicator detects and measures concentrations of combustible gases or vapors in the air. The unit, contained in a cast aluminum case, has an aspirator bulb on one side, opposite an inlet coupling. The instrument can be used in the immediate environment or, by use of sampling lines and probes, can draw samples from remote areas. A built-in filter chamber, normally fitted with a cotton filter, prevents moisture and dust from

entering the system. A charcoal filter may be substituted to aid in differentiating between natural gas (methane) and combustible vapors such as gasoline.

All four Explosimeter units are well suited for use by public utilities, municipalities, mining and marine services, the Explosimeter Combustible Gas Indicator is excellent for testing confined spaces such as the interiors of tanks, manholes and vessels. The unit is also effective for testing confined areas found in sewage disposal plants, refineries and paint factories.

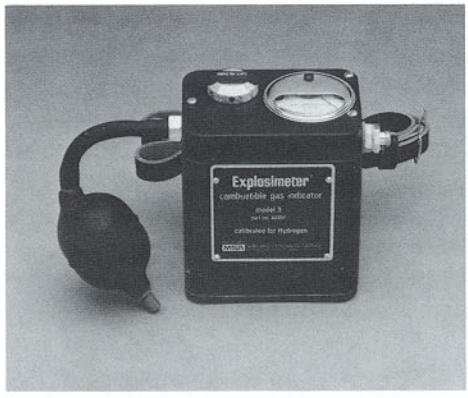
A single control knob turns the instrument on and sets the detection filament voltage. It is mounted on top of the case, next to an illuminated meter dial calibrated to read from 0 to 100% of LEL (Lower Explosive Limit).

Four Models

Four Explosimeter Indicator Models are available to meet varying general-purpose testing needs or special situations. Operating principles and general specifications are the same for all models.

Model 2A

The Model 2A Explosimeter Indicator is designed for general testing applications for combustible gases or vapors in air. The unit is factory calibrated on a general-purpose Pentane-air mixture that is representative of petroleum vapors.



Models 3 and 4

Explosimeter Models 3 and 4 are designed for use in testing atmospheres that may be oxygen enriched (more than 21% oxygen). Model 3 is calibrated on hydrogen. Model 4 is calibrated on acetylene.

The rate of flame propagation of such mixtures is much higher than that of other combustibles in the air. Therefore, these models are equipped with heavy-duty flashback arrestors, capable of confining explosions of hydrogen or acetylene and oxygen within the combustion chamber.

Because Models 3 and 4 are calibrated on hydrogen and acetylene, they are not recommended for general-purpose testing.

Model 5

Model 5 Explosimeter Combustible Gas Indicator is designed for use where leaded gasoline vapors are likely to be present.

When a hot-wire indicator, found on other Explosimeter Models, is used with leaded gasoline vapors, oxidation of tetraethyl lead can produce a solid

lead combustion product which condenses on the filament and reduces its catalytic activity. In the Model 5, a special filament minimizes lead contamination.

The Model 5 Explosimeter Indicator is identified by a red, painted top.

OPERATION

The instrument operates by the catalytic action of a heated platinum filament in contact with combustible gases. The filament is heated to operating temperature by passage of an electric current. When the gas sample contacts the heated filament, combustion on its surface raises the temperature in proportion to the quantity of combustibles in the sample. A Wheatstone bridge circuit, incorporating the filament as one arm, measures the change in electrical resistance due to the temperature increases. This change indicates the percentage of combustibles present in the sample.

The sample is drawn through the instrument by the aspirator bulb, passes through the filter and the inlet flashback arrestor, and is exhausted through the bulb. When no more than five feet of sampling line is used, positive readings are obtained on the second squeeze of the aspirator bulb.

Gas concentrations up to 100 percent of LEL are measured directly on the meter. Concentrations in the explosive range are indicated by full-scale deflection of the meter pointer. By use of a dilution tube, concentrations above LEL are diluted with air in a ratio selected so that the diluted mixture is measured on the instrument scale; then the actual gas concentration can be easily calculated.

For locating large leaks in pipelines, the aspirator bulb is removed to reduce resistance to gas flow. Probe tubes with plugs or packing are inserted into bar holes. Gas pressure forces samples through the instrument. Where pressure is greatest, gas will flow most rapidly. By comparing times required to obtain full-scale deflection, it is possible to determine where pressure is greatest, and therefore, which bar hole is nearest the leak.

there is suspicion that such materials are present, the instrument should be checked frequently--at least once after every five tests. A Calibration Kit is available to check the instrument.

Except for the Model 5 Explosimeter Indicator, leaded gasoline vapors can also poison detector filaments quickly. When such vapors are present, an inhibitor filter should be used to nullify their effect.

Explosimeter Combustible Gas

Replacement Parts

Part No.	Description
46314	Orifice
11355	Filament unit, Models 2A, 3 and 4
75476	Filament unit for Model 5
15264	Flashback arrestors-Models 2A and 5 (2 required)
16499	Filters, cotton, 6 per package
16839	Bulb, aspirator, complete

Probe Tube
Hollow probe for sampling from bar holes or manholes or other confined spaces. Use dielectric probes near high-voltage sources to minimize risk of shock hazard.

Part No.	Description
486934	Tube, 20-inch hollow dielectric plastic probe
11961	Tube, 3-foot hollow probe
73743	Tube, 3-foot dielectric plastic probe

Probe Rod
For use in testing tanks that may contain liquids, to avoid drawing liquid into the sampling system

Part No.	Description
11960	Rod, 4-foot solid probe

Charcoal Filter
Charcoal filters may be used in an external cartridge to absorb organic vapors, and aid in distinguishing between natural gas (methane) and combustible vapors in sample.

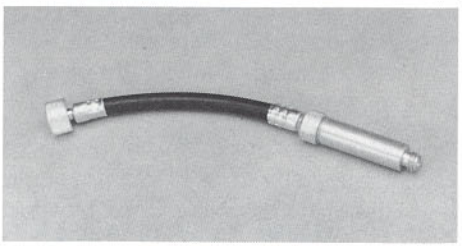
Part No.	Description
14318	Cartridges, charcoal, package of 6
14273	Holder, external cartridge

Dilution Tube
For diluting samples with air in a fixed ratio for approximate measurement of gas concentrations above LEL (use 10:1 or 20:1 dilution tubes) or where the sampled atmosphere may be oxygen deficient (use 1:1 dilution tubes).

Part No.	Description
11377	Tube, dilution (ratio 20:1)
45174	Tube, dilution (ratio 10:1)
85375	Tube, dilution (ratio 1:1)

Inhibitor Filter
For use on models other than Model 5 when testing in atmospheres where leaded gasoline vapors are present.

Part No.	Description
47740	Filter, inhibitor, package of 6



External Cartridge Holder
To hold charcoal, cotton and lead inhibitor prefilters. Attaches to the sample line connection of the instrument.

Part No.	Description
14273	External Cartridge Holder

Line trap assembly

Miscellaneous Accessories

Part No.	Description
74814	Line trap assembly
48940	Carrying case, Explosimeter

Calibration Accessories

Part No.	Description
454380	Calibration test kit complete with gas cylinder (aerosol type)
476609	Calibration Check Kit, Model R, with 1.5 L/m regulator complete (less calibration gas) including:
	459948 Regulator (1.5 L/m)
	449401 Adapter hose (with sampling line connection)
459945	Calibration Check Gas Model R--2% Methane in Air
459942	Calibration Check Gas Model R--2.5% Methane in Air

NOTE: This Data Sheet contains only a general description of MSA's Explosimeter Combustible Gas Indicators. While uses and performance capabilities are described, under no circumstances should these products be used until the instructions, labels or other literature accompanying the products have been read and understood and the precautions therein set forth followed. Only they contain the complete and detailed information concerning these products.

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