

# **Combustible Gas Detector Elements**

## **SENSORTECH**

To be read in conjunction with "Introduction to Pellistor Gas Sensors" and Pellistor Application Notes 1, 2, 3, 4, 6 and 7.

## INTRODUCTION

The VQ23TB is an improved poison-resistant sensor consisting of two matched elements which are used for the detection of combustible gases, particularly methane in air mixtures in concentrations from 0.1% upwards. There is no interference from water vapour or carbon dioxide. Using the recommended bridge circuit below and the mounting arrangement shown on page 3, the minimum sensitivity is 15 mV/% methane.

The VQ23TB has been designed for use in atmospheres where traces of silicone and other poisoning agents may be present.

### **GENERAL DATA**

#### **Electrical**

The information given below relates to the VQ23TB operating in the recommended circuit shown.

| 1 5  |
|--|
| Operation (see note 1) continuous                |
| Bridge supply 2.4V to 2.6V                       |
| Bridge power consumption 1.1 W max               |
| Typical average sensor current                   |
| Minimum sensitivity (see note 2) 15 mV/% methane |
| Linearity linear up to 5% methane                |
| Response time to register 1 1/4% in a 2 1/2%     |
| concentration (see notes 2 and 3) 2 seconds      |
| Maximum methane concentration                    |
| (see note 4)                                     |

#### Mechanical

| Mounting  |  |  |  |  |  |  |  | see page 3 |
|-----------|--|--|--|--|--|--|--|------------|
| Outline . |  |  |  |  |  |  |  | see page 2 |

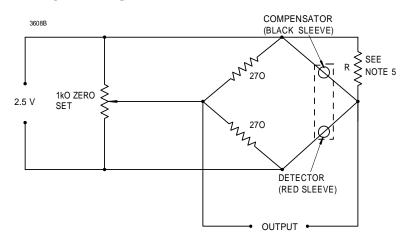
#### **MARKING**

Each element is identified by a unique serial number written on the can of both the detector and compensator. The serial number is written in red on the detector and black on the compensator. In addition, the detector carries a red circular label on the base identifying the device type.

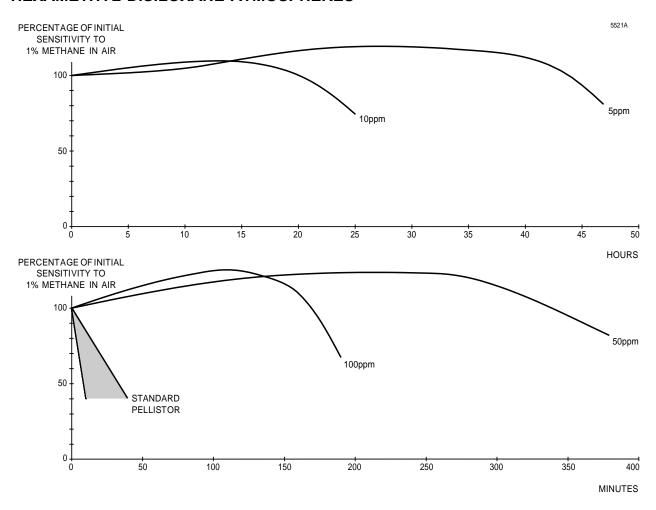
#### NOTES

- 1. Operation may be under either direct flow or diffusion conditions in appropriate mountings (see page 3).
- 2. With open-circuit conditions at the bridge output.
- 3. The response time is a function of the type of mounting used
- If the VQ23TB is exposed to greater than 5% methane concentration, the calibration of the instrument should be checked
- 5. The elements are supplied as a matched pair with a trimming resistor R of the correct value which is supplied where necessary. The trimming resistor is to be connected across the compensator element as shown below.
- 6. The resistance to poisoning by silicone compounds is partly dependent upon the type of housing within which the elements are mounted. The results shown on page 2 were obtained using a flow housing shown on page 3.
- 7. The response to certain of the heavy flammable vapours especially aromatic substances with side chains, may be lower than that calculated from the conversion (K) factors listed in the preamble.

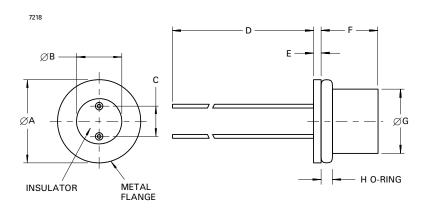
## **BRIDGE CIRCUIT**



# TYPICAL RESPONSE OF VQ23TB AND STANDARD PELLISTOR WHEN EXPOSED TO HEXAMETHYL DISILOXANE ATMOSPHERES



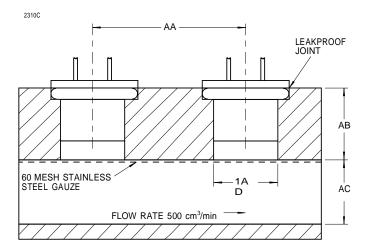
# **OUTLINE (All dimensions without limits are nominal)**



| A 11.3 max 0.445 max 10.8 min 0.425 min 6.35 max 0.250 max 5.85 min 0.230 min |  |
|---|--|
| A 10.8 min 0.425 min 6.35 max 0.250 max                                       |  |
| В   |  |
| 5.85 min 0.230 min  |  |
|   |  |
| 3.69 max 0.145 max  |  |
| 3.43 min 0.135 min  |  |
| D 40.0 min 1.575 min  |  |
| E 1.0 nom 0.039 nom   |  |
| 7.88 max 0.310 max  |  |
| 6.86 min 0.270 min  |  |
| G 8.2 max 0.323 max   |  |
| H 1.5 nom 0.059 nom   |  |

Inch dimensions have been derived from millimetres.

# RECOMMENDED MOUNTING ARRANGEMENTS



| Ref | Millimetres |  |
|-----|-------------|--|
| AA  | 19.05 max   |  |
| AB  | 9.53 + 0.13 |  |
| AC  | 8.33 + 0.13 |  |
| AD  | 8.20 min    |  |
| ΑE  | 19.05 max   |  |
| AF  | 9.53 + 0.13 |  |
| AG  | 8.20 min    |  |

