e2v technologies

VQ29
Combustible Gas Detector Elements

To be read in conjunction with the Combustible Gas Detector Preamble.

INTRODUCTION

The VQ29 consists of two matched elements mounted on one header 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 (see below) and the mounting arrangement shown on page 2, the minimum sensitivity is 60 mV/% methane.

The low power consumption of the VQ29 makes it suitable for use where the power consumption must be minimised, e.g. battery operated systems.

GENERAL DATA

Electrical

The information given below relates to the VQ29 operating in the recommended circuit shown.

Operation (see note 1)	continuous
Bridge supply	3.5 ± 0.1 V
Typical sensor current	90 mA
Maximum sensor current	100 mA
Minimum sensitivity (see note 2)	60 mV/% methane
Linearity	linear up to 3% 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)	5 %

Mechanical

Mounting	see page 2
Outline	see page 2
Shock test	250 g, 5 blows in each plane
Vibration test	20 g, 24 cycles from 100 to 3200 Hz

MARKING

Each element carries a serial number sleeve, fitted to one of the detector leads. The number is in standard colour code (see table), reading from the base towards the free end of the lead.

Colour Code

Black	0	Yellow	4	Grey	8
Brown	1	Green	5	White	9
Red	2	Blue	6		
Orange	3	Violet	7		

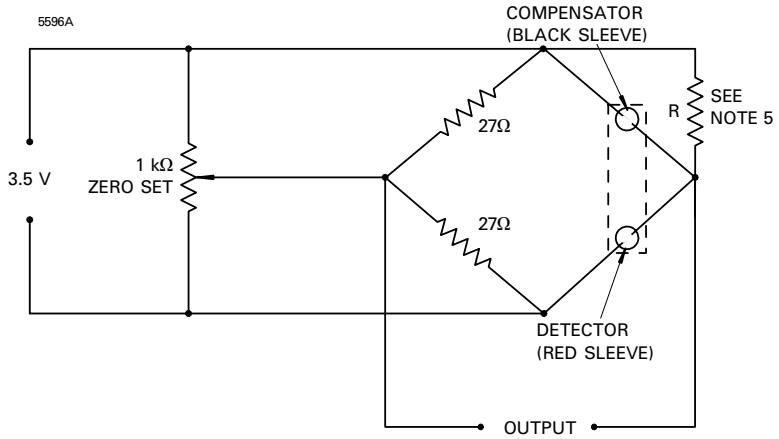
The detector bead is dark in colour and has a red sleeve on the second lead. This sleeve carries a letter code which, together with the serial number, fully identifies a pair of elements.

The compensator bead is white and carries black sleeves on both leads.

NOTES

1. Operation may be under either direct flow or diffusion conditions in appropriate mountings (see page 2).
2. With open-circuit conditions at the bridge output.
3. The response time is a function of the type of mounting used.
4. If the VQ29 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 mounted on a common header, together with a trimming resistor R of the correct value. The trimming resistor is to be connected across the compensator element as shown below.
6. The elements must be protected from certain organic and silicone vapours by suitable filtering, and caution should be exercised when operating in close proximity to hot, oily machinery.

BRIDGE CIRCUIT



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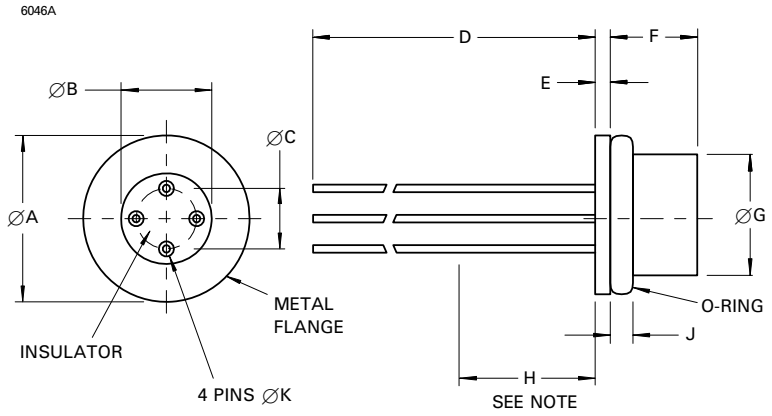
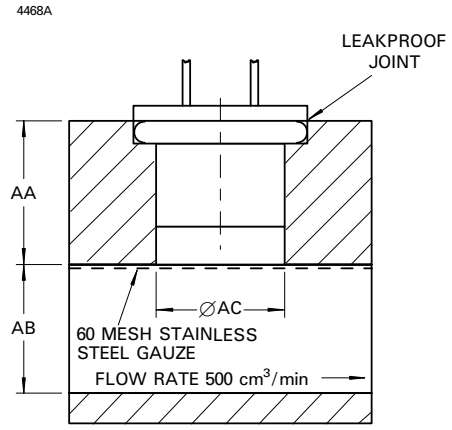
OUTLINE (All dimensions without limits are nominal)



Ref	Millimetres
A	11.05 ± 0.25
B	6.10 ± 0.25
C	3.56 ± 0.13
D	40.0 nom
E	1.02
F	5.84 ± 0.51
G	8.20 max
H	9.53
J	1.52
K	0.50

Note No bends may be made in this length.

RECOMMENDED MOUNTING ARRANGEMENTS



Ref	Millimetres
AA	9.53 ± 0.13
AB	8.33 ± 0.13
AC	8.20 min
AD	9.53 ± 0.13
AE	8.20 min