MINISTRY OF SUPPLY (D.C.D.)

VALVE ELECTRONIC **CV213**

Specification MAP/CV213/Issue 4 Dated 19.11.49. To be read in conjunction with K.1001 ignoring clause:- 5.2.	SECURITY	
	Specification	Valve
	RESTRICTED	UNCLASSIFIED

→ Indicates a change

TYPE OF VALVE: Gas filled resonator spark-gap

PROTOTYPE: As CV.157 with die-cast resonator.

REQUIREMENTS

Resonant frequency: The nominal frequency on which the spark gap will operate is 3185 Mc/s.

Gas filling Water vapour with a pressure equivalent to 6mm. of mercury and argon with a pressure equivalent to 6mm. of mercury.

Copper parts All internal and external copper parts should be carefully cleaned with acid.

Other metal parts The resonator shall be plated first with copper then with silver, then with gold.

MARKING

See K. 1001/4

PACKING

See K.1005

BASE

None

TOP CAP

See K1001/A1/D5.2

DIMENSIONS AND CONNECTIONS

See drawing on page 5.

TESTS

To be performed in addition to those applicable in K. 1001.

	Test Conditions	Test	Limits Min.	Limits Max.	No. Tested	Note
a	Valve to be tuned by the adjustment of two tuning plungers only, the third tuning plunger being omitted during the test. Test shall be carried out by an approved method; one method, together with the test apparatus, is described on pages 3 and 4.	Frequency Tuning Range (Mc/s)	3120 to 3250		100%	1
b	A variable D.C. voltage shall be applied between ignitor electrode and resonator through a series resistor of between 0.5MΩ and 1.0 MΩ The D.C. voltage shall be increased smoothly until a discharge occurs and shall then be adjusted to give a current of 0.5 mA. The ignitor electrode shall be negative with respect to resonator.	1. Striking Voltage between ignitor and resonator. (V)	-	500	100%	
		2. Voltage between ignitor and resonator for a current of 0.5 mA. (V)	270	365	100%	
c	Valve to be set up in apparatus used for test (a) and tuned to one of the local oscillators. The mixer crystal current shall be noted with no current flowing in the ignitor circuit, and then with 1.0 mA in the ignitor circuit.	Percentage drop in crystal current as result of ignitor current change from 0 to 1.0 mA.	-	3	100%	1 & 2

NOTES

1: Test to be carried out after at least two days shelf life.

2: The purpose of this test is to ensure that the spacing between ignitor electrode and resonator is not too close. If preferred the minimum spacing corresponding to the 3% drop in crystal current may be determined from experience on initial production, and then the assembly may be jigged to maintain this minimum spacing. The maximum spacing is this minimum + 3 mm.

CV213

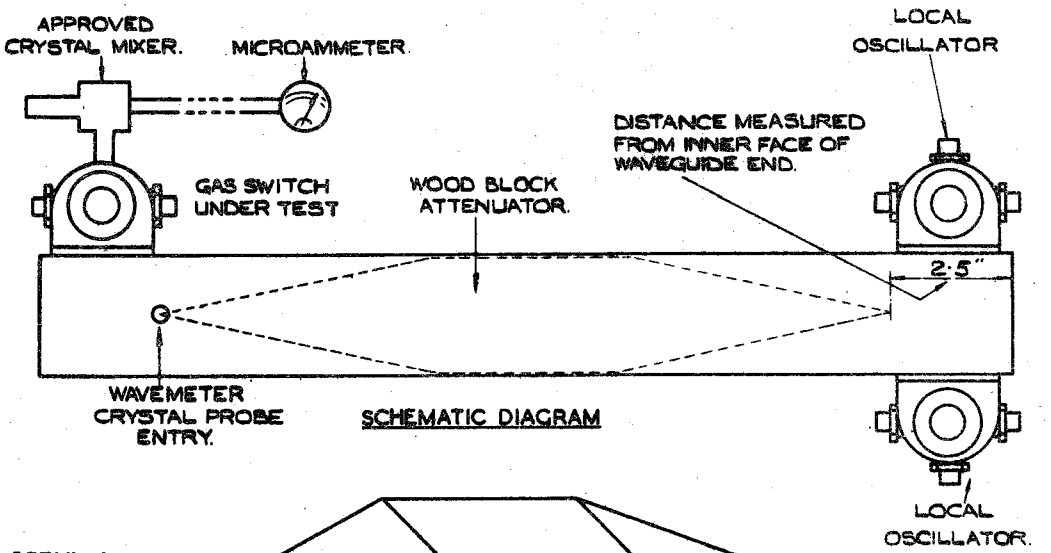
APPROVED METHOD OF TESTING FOR FREQUENCY RANGE

The apparatus, of which a schematic diagram appears on page 4, consists of a 22-inch length of rectangular waveguide of internal cross section 2½ in. x 1 in. having closed ends. Two local oscillators are mounted against flanges let into opposite sides of one end of the waveguide. The position of these flanges and their apertures is shown in Detail 2. The gas switch to be tested is mounted against a flange similar to the oscillator flanges and positioned similarly to one of the oscillator flanges but with respect to the other end of the waveguide. All three flanges have their inner faces flush with the inner surface of the side of the waveguide.

Inside the waveguide is a wood block attenuator as shown in Detail 1. The shape of the wedge-shaped end sections is such that the two points both lie on an extended centre line of one of the 4 in. x 2½ in. faces of the centre section. The block is positioned as shown in the schematic diagram. Any fixing pins must be in a plane parallel to the 2½ in. side of the waveguide.

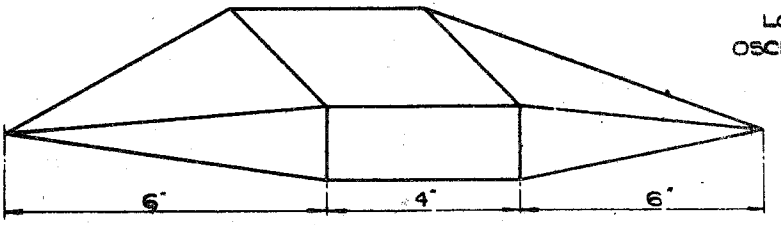
The crystal probe for the wavemeter should be approximately over the point of the wood block at the gas switch end of the waveguide and may enter the waveguide for a maximum depth of 1.0 cm.

The output from the gas switch under test is fed into an approved crystal mixer and the rectified current is read on a microammeter. The two oscillators are tuned to oscillate respectively at the extreme frequencies of the range required from the gas switch, and when the gas switch is tuned with two tuning plungers it must resonate at both these frequencies.

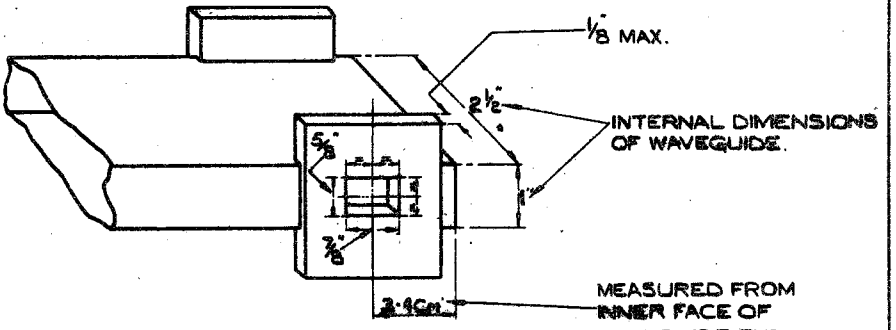


SCHEMATIC DIAGRAM

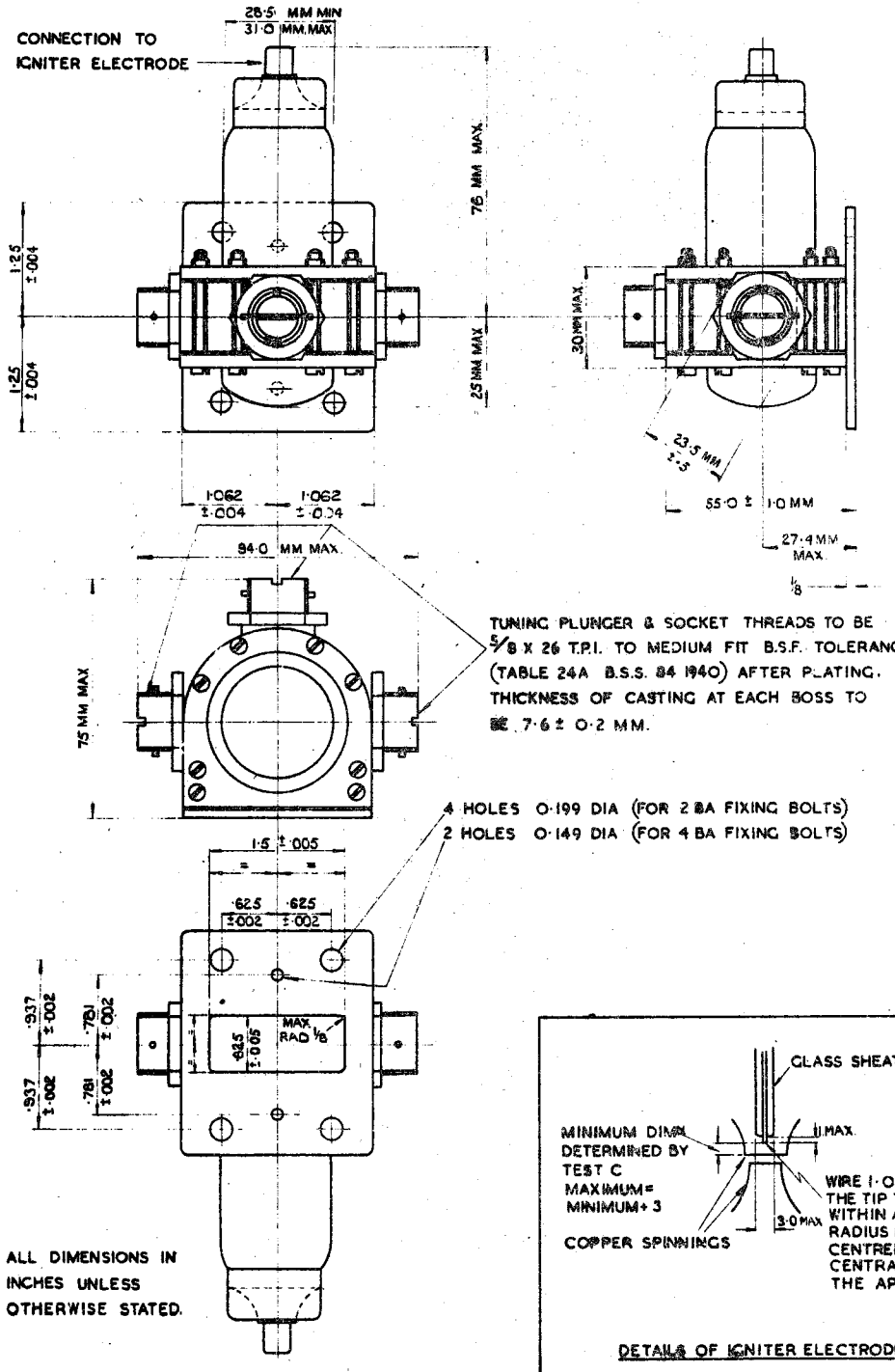
DETAIL. 1.



DETAIL. 2.



CV213


CONNECTION TO IGNITER ELECTRODE
28·5 MM MIN
31·0 MM MAX
76 MM MAX.
25 MM MAX.
1·25 ±·004
1·25 ±·004
30 MM MAX.
23·5 MM ±·5
55·0 ± 1·0 MM
27·4 MM MAX.
1/8
1·062 ±·004
1·062 ±·004
94·0 MM MAX.
75 MM MAX
TUNING PLUNGER & SOCKET THREADS TO BE 5/8 X 26 T.P.I. TO MEDIUM FIT B.S.F. TOLERANCES (TABLE 24A B.S.S. 84 1940) AFTER PLATING. THICKNESS OF CASTING AT EACH BOSS TO BE 7·6 ± 0·2 MM.
4 HOLES 0·199 DIA (FOR 2 BA FIXING BOLTS)
2 HOLES 0·149 DIA (FOR 4 BA FIXING BOLTS)
1·5 ±·005
·625 ±·002
·625 ±·002
·937 ±·002
·781 ±·002
·937 ±·002
·781 ±·002
·645 ±·005
MAX RAD 1/8
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED.
GLASS SHEATH
MINIMUM DIM DETERMINED BY TEST C MAXIMUM = MINIMUM + 3
1 MAX.
WIRE 1·0 MAX DIA THE TIP TO BE WITHIN A CIRCLE OF RADIUS 1·0 MM, CENTRED ON THE CENTRAL AXIS OF THE APERTURE.
3·0 MAX
COPPER SPINNINGS
DETAILS OF IGNITER ELECTRODE.
ALL DIMENSIONS IN MILLIMETRES.