MINISTRY OF AVIATION DLRD(T) R.R.E.

VALVE ELECTRONIC **CV6142**

Specification MOA/CV6142	SECURITY	
	Specification	Valve
Issue 1 Dated 17th June 1965	Unclassified	Unclassified
To be read in conjunction with K1001 & BS448		

Type of valve: Velocity modulated oscillator
Cathode: Indirectly Heated
Prototype: RVTS 0031. K391/A

RATINGS AND CHARACTERISTICS

(Absolute, non-simultaneous and not for Inspectorate)

			Note
Heater Voltage	(V)	6.3	
Heater Current	(A)	0.565	
Max. Resonator Voltage	(V)	400	
Max. Resonator Dissipation	(W)	20	
Reflector Voltage Range	(V)	140-200	A B
Min.r.f. Power Output	(mW)	40	
Mechanical Tuning Range	(Mc/s)	8805 - 8885	C
Typical Electrical Tuning Rate @ Mode centre	(Mc/s/V)	0.9	
Typical Mechanical Tuning Rate	(Mc/s/°)	1.0	
Min. Electronic Tuning Range	(Mc/s)	30	
Max. Total Impedance in the Reflector cathode circuit	(Mohms)	0.5	

MARKING
See K1001/4

BASE
Flying leads

CONNECTIONS
See Drawing Page 4

MOUNTING POSITION
Any

PACKAGING
See K1005

DIMENSIONS
See Page 4

ALTITUDE
80,000 feet

NOTES

A. Each valve shall be marked with the reflector voltage at which the valve will oscillate and give a power output of at least 40 mW over the whole band.

B. The Reflector voltage must always remain negative with respect to cathode. If during AFC working there is any possibility that the reflector voltage will become equal to or more positive than the cathode a protective diode should be incorporated.

C. Clockwise rotation of the tuner decreases frequency.

D. Joint Services Catalogue No:- 5960-99-037-4077

Test conditions unless otherwise stated

V_h (V)	V_{res} (V)	V_{ref} (V)	Freq (Mc/s)
6.3	350		8845 ± 20

Adjust to give maximum Power Output

K1001 Ref. 5B	Test	Test Condition	AQL %	Insp. Level	Sym-bol	Limits Min.	Limits Max.	Units
	GROUP A			100%				
3.1.1	Heater Current				I_h	0.52	0.61	Amps
	Power Oscillation (1)							
4.1	r.f Power Output				P_{out}	40	-	mW
	Resonator Current				I_{res}	20	38	mA
	Reflector Voltage				V_{ref}	140	200	V
	Power Oscillation (2)	At any frequency in the band 8805 to 8885 Mc/s not less than 20 Mc/s from the centre frequency.						
4.1	r.f. Power Output				P_{out}	40	-	mW
	Reflector Voltage				V_{ref}	140	200	V
4.2.6	Electronic Tuning Range				Δf	30	-	Mc/s
	Vibration Frequency Modulation	25 to 1000 c/s at 10g swept at rate of 1 Oct/min Note 1.			Δf	-	100	kc/s
	GROUP B		6.5	II				
3.4	Emission	V_h = 5.7 Volts Note 2.			ΔI_{res}	-	10	%
4.3.1.1	Negative Temperature Coefficient	Over any 30°C range within the overall temperature range -20°C to +70°C				50	200	Kc/s/°C
1.1.3	Warm up Test	Note 3			ΔP_{out}	-	± 1	dB
					Δf	-	10	Mc/s
	GROUP C		6.5	I				
4.4.1	R.F. Noise	Note 5				-	4×10^{-14}	W/Mc/s/mW
	Tracking Factor	Measured over frequency 8805 to 8885 Note 4.				-	2	Mc/s

GROUPS D and E Omitted

TESTS (Cont'd)

K1001 Ref. 5B	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max.	Units
	GROUP F							
	Life test					1000	-	Hours
	Life test end points							
	r.f. Power Output				P_{out}	40	-	mW
	Reflector Voltage				V_{ref}	140	200	V
	GROUP G							
	Retest after 14 days holding period	Tests and Limits as in Group A						

NOTES

1. The vibration test shall be performed with the valve attached by its waveguide flange to an approved mount. The valve shall be vibrated with sinusoidal excitation in the direction of the electron beam.

2. The Heater Voltage shall be lowered from 6.3 to 5.7 volts and after a minimum period of 2 minutes the Resonator current shall not have decreased by more than 10% from the value obtained at 6.3 Volts.

3. Measurements shall be within the given limits in a period of time not exceeding 2 minutes following the application of all voltages.

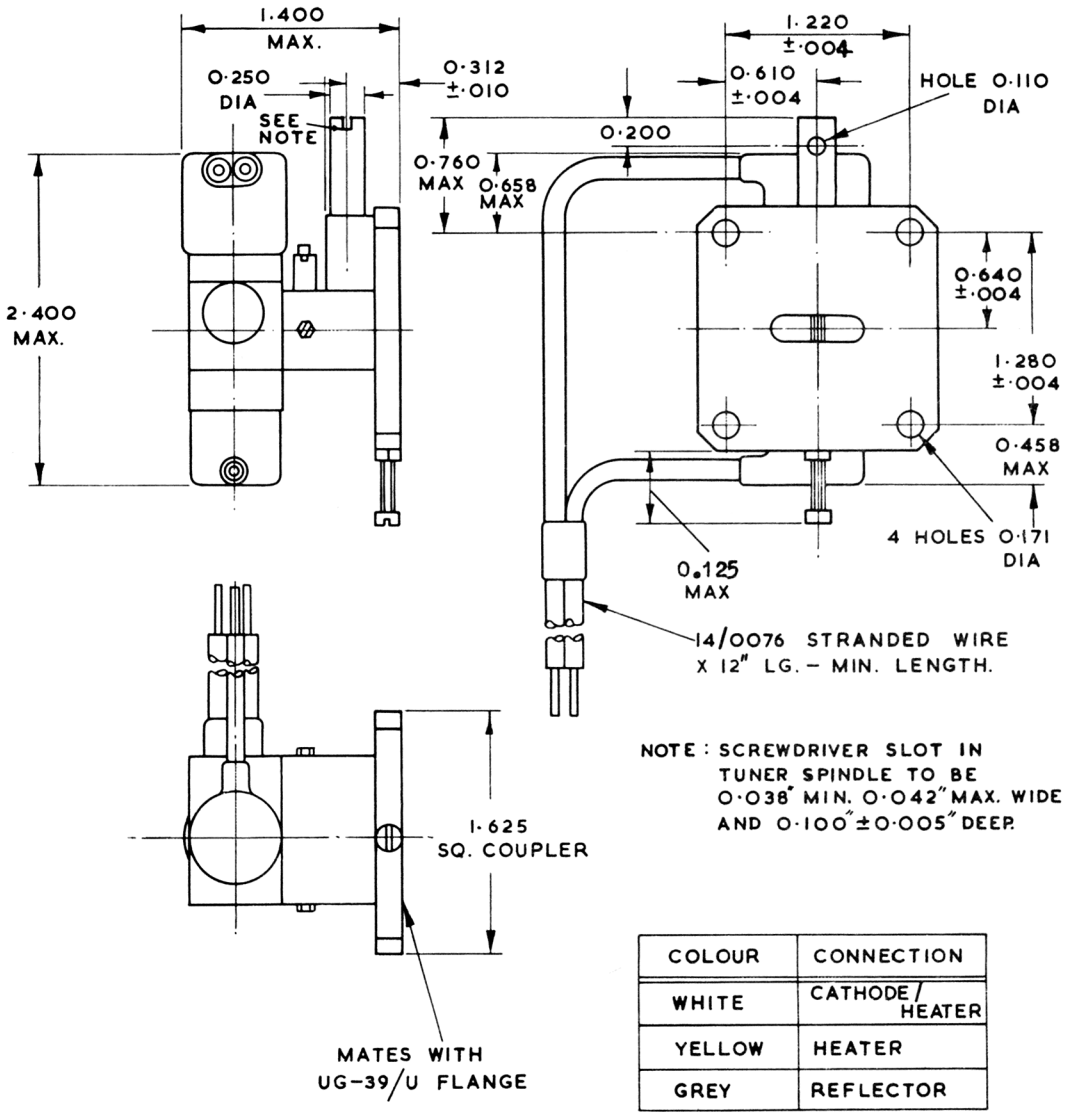
4. Reflector voltage for mode optimum shall be plotted as a function of the angular position of the tuning shaft over the frequency range 8805 to 8885 Mc/s. The tracking error is defined as the product of the voltage deviation of this plotted curve from the straight line drawn through the two voltages corresponding to 8805 and 8885 Mc/s and the corresponding electronic tuning rate sensitivity at the measuring point; the tracking error being expressed in Mc/s.

5. The rf noise is defined as the sum of the rf noise powers in two channels 40 Mc/s above and below the frequency of oscillation compared with the thermal noise at 290°K in the same channels.

   The recommended noise standard is the CV 1881. The noise power is to be expressed in watts per megacycle of IF bandwidth per milliwatt of power output.

CV6142

OUTLINE DRAWING
(THIRD ANGLE PROJECTION)



NOTE : SCREWDRIVER SLOT IN TUNER SPINDLE TO BE 0·038" MIN. 0·042" MAX. WIDE AND 0·100" ±0·005" DEEP.

COLOUR	CONNECTION
WHITE	CATHODE / HEATER
YELLOW	HEATER
GREY	REFLECTOR

DIMENSIONS IN INCHES