

TESTER WL 53400

This instrument is a small portable D.F. receiver suitable for use in the immediate vicinity of a transmitter. The receiver covers the waverange 12 - 2000 metres in a series of ten coil ranges. The set is in the form of a box and the coils are mounted in a series of ten interchangeable clip-on lids. The coils are about four inches in diameter and lie in the plane of the lids.

Coil No.	RANGE	
	Frequency	Wavelength
1.	0.15 - 0.23 Mc/s	2000 - 1305 Metres
2.	0.23 - 0.36 Mc/s	1305 - 833 Metres
3.	0.36 - 0.6 Mc/s	833 - 500 Metres
4.	0.6 - 1.0 Mc/s	500 - 300 Metres
5.	1.0 - 1.6 Mc/s	300 - 187 Metres
6.	1.6 - 2.7 Mc/s	187 - 111 Metres
7.	2.7 - 4.6 Mc/s	111 - 65.3 Metres
8.	4.6 - 9.0 Mc/s	65.3 - 33.3 Metres
9.	9.0 - 16 Mc/s	33.3 - 18.7 Metres
10.	16 - 28 Mc/s	18.7 - 10.7 Metres

The circuit of the tester consists of a tuned reacting detector followed by a D.C. amplifying stage. The tuning is by two condensers; one marked "Tune" is divided into five ranges by a "click" action on its control and each of these ranges is more than covered by 180° rotation of the second condenser marked "Trimmer". The reaction control is a small variable condenser and by its use the set can be brought smoothly into oscillation on any frequency throughout the complete range of coils. The "Reaction" knob when rotated clockwise is divided into 24 sections over 180° by a "click" action and enables the control to be pre-set on any fixed frequency. When rotated anti-clockwise the click spring acts as a friction drive and enables the degree of reaction to be set with greater precision. A 0-1 mA meter with luminous scale and a single earpiece headphone are provided in the output circuit to give visual and aural results. The headphone plugs in and its disconnection does not interfere with the operation of the set. The meter is also arranged to monitor the H.T. and L.T. supplies. The H.T. gives full scale deflection for 30 Volts and the L.T. full scale deflection for 1½ Volts. The supplies are checked with the set off, by operation of the appropriate push button switch. The loading of the batteries in the monitor condition is equivalent to normal loading with the set in use. The L.T. batteries should be changed when the voltage falls below 1.3 Volts and the H.T. battery should be changed when the voltage falls below 24 volts. The life of the batteries on continuous load is of the order of 14 hours for L.T. and 200 hours for H.T. Intermittent use should give considerable improvement to the L.T. battery life.

With the set in operation in a non-oscillating condition the standing current should in the absence of any signals lie between 0.25 and 0.4 milliamperes. The actual value between these limits is not critical and is adjustable by operation of the pre-set screwdriver control potentiometer P.1.

Diagrams W.L. 53,396, 53,399 and 53,400 show the layout, wiring and circuit of the tester.

Operation/

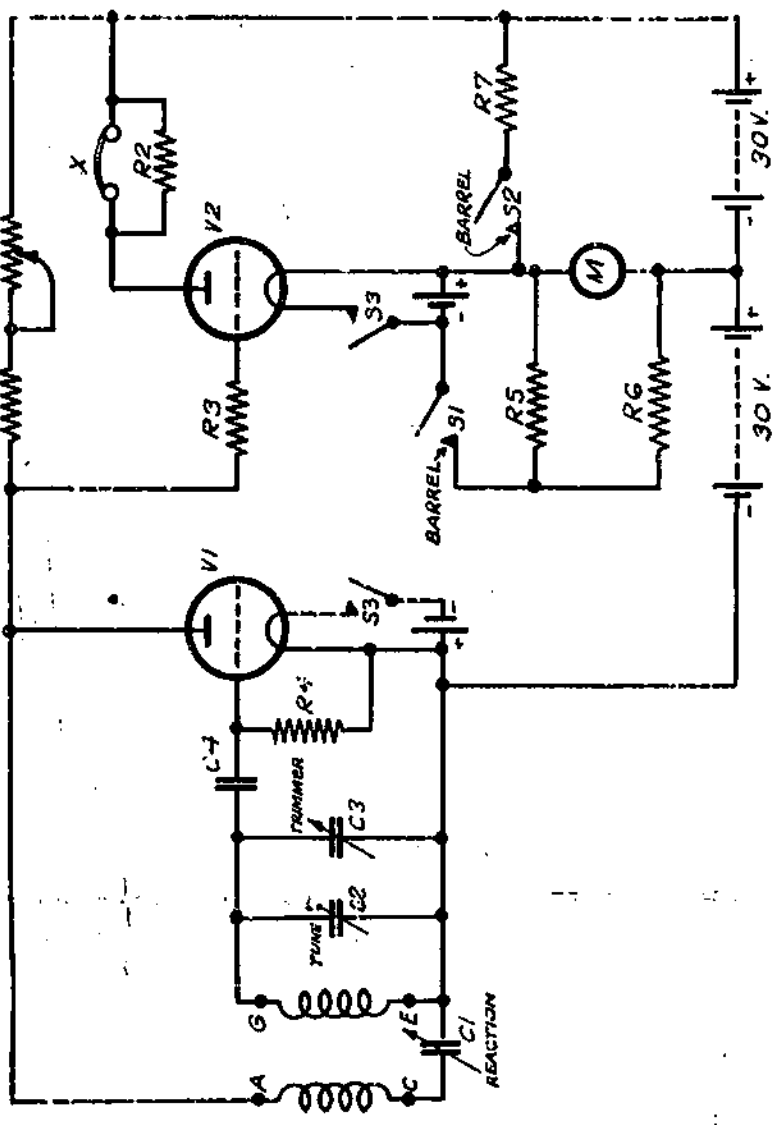
Operation

Check the L.T. and H.T. Voltages. Select the coil lid covering the required frequency and clip it onto the set. Plug in the headphone and switch on. Make sure the set is not oscillating and check that the standing current falls within the required limits. Tuning in the desired signal is best done with the set oscillating. Keeping the reaction control adjusted so that the meter deflection is approximately 0.6 - 0.8 mA. search through the tuning ranges using the "Tune" and "Trimmer" controls until the heterodyne note is heard. It is useful to note the location of the required frequency in the particular coil range in use. If the signal is of sufficient strength the set can be used in a non oscillatory condition when tuning will produce a visible deflection on the meter,

Should the set have to be used in the oscillating condition aural results only will be obtainable, in this case it is preferable to work with minima in the usual D.F. manner. The transmitter will then lie in a plane at right angles to the coils. When working on maxima using a visual signal the transmitter will lie in the plane of the coils. To reduce sensitivity the reaction control should be turned towards the "MIN" position, should this prove inadequate further reduction can be obtained by reducing the set standing current by means of P.1. Should this still be not enough the only alternative remaining is to work with minima instead of maxima

CHECKED	PELL
APPROVED	H.T.M.
DATE.	30/11/39.

Code	Component.
R1	50,000 Ω
R2	5,000 Ω
R3	100,000 Ω
R4	10 MΩ
R5	20 Ω
R6	1-150 Ω ± 2%
R7	30,000 Ω ± 2%
M1	Meter 0-1mA. (50 Ω ± 10%)
C1	50 μF
C2	100 μF
C3	25 μF
C4	0.0001 μF
X	2000 Ω. Single Earpiece.
P1	50,000 Ω
V1	Hivac. XL. 15 V.
V2	Hivac. XR. 15 V.
S1-2	Button Switch.
S3	Toggle Switch.



*Assembly WL. 53396.
 Prac. Wiring. WL. 53,399.

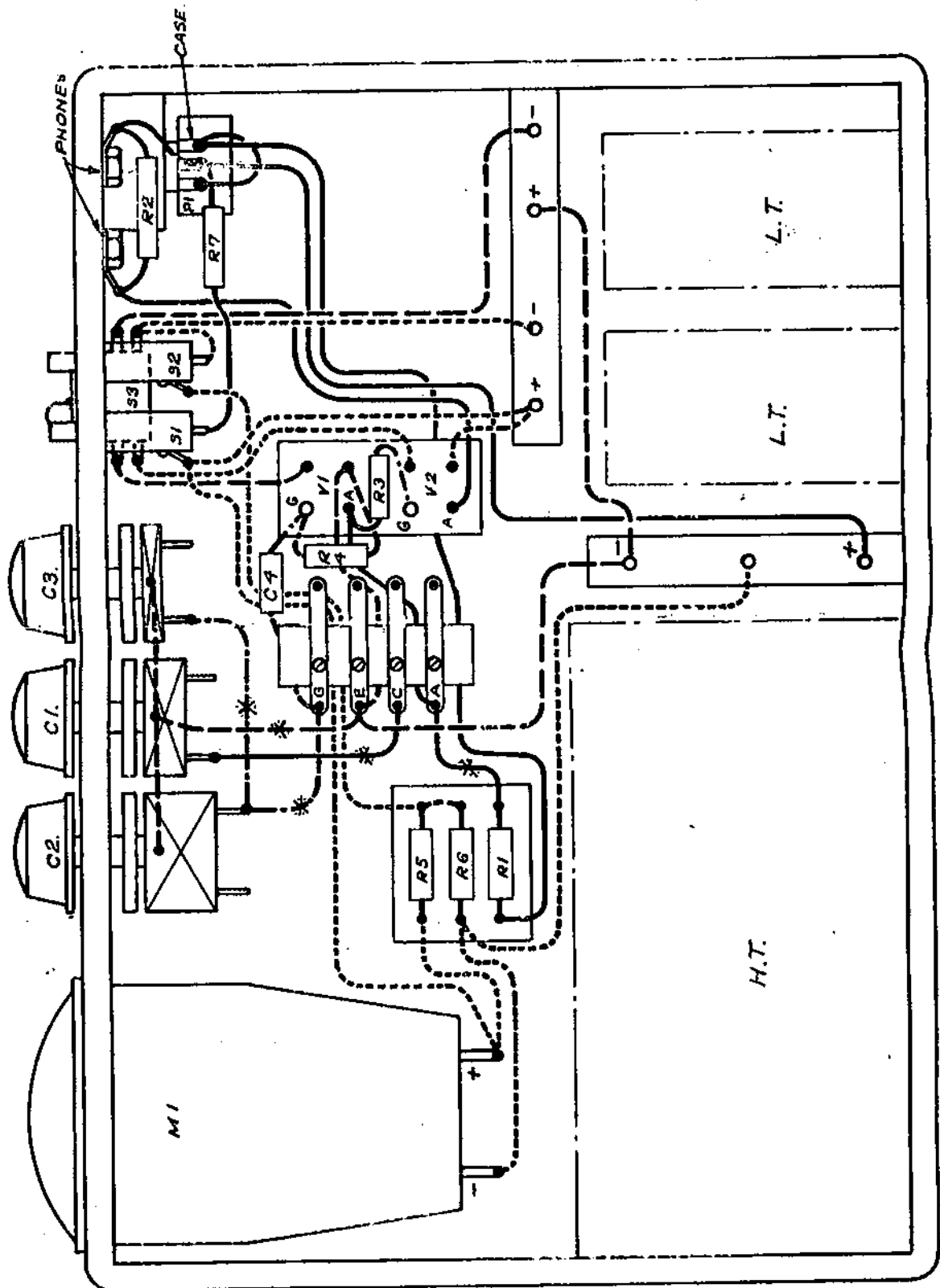
TESTER WL. 53400.
 CIRCUIT.

APPROVED	H.T.M.
DATE	30/11/39

WL. 53,399.

TESTER WL. 53,400.
PRAC. WIRING.

The set to be form wired throughout, except wires marked * which should be as direct as possible. All wire 1 wire 6 1/4.



— Anode Circuits
 - - - 1st Valve Filament Circuit
 Grid Circuits
 2nd Valve Filament Circuit

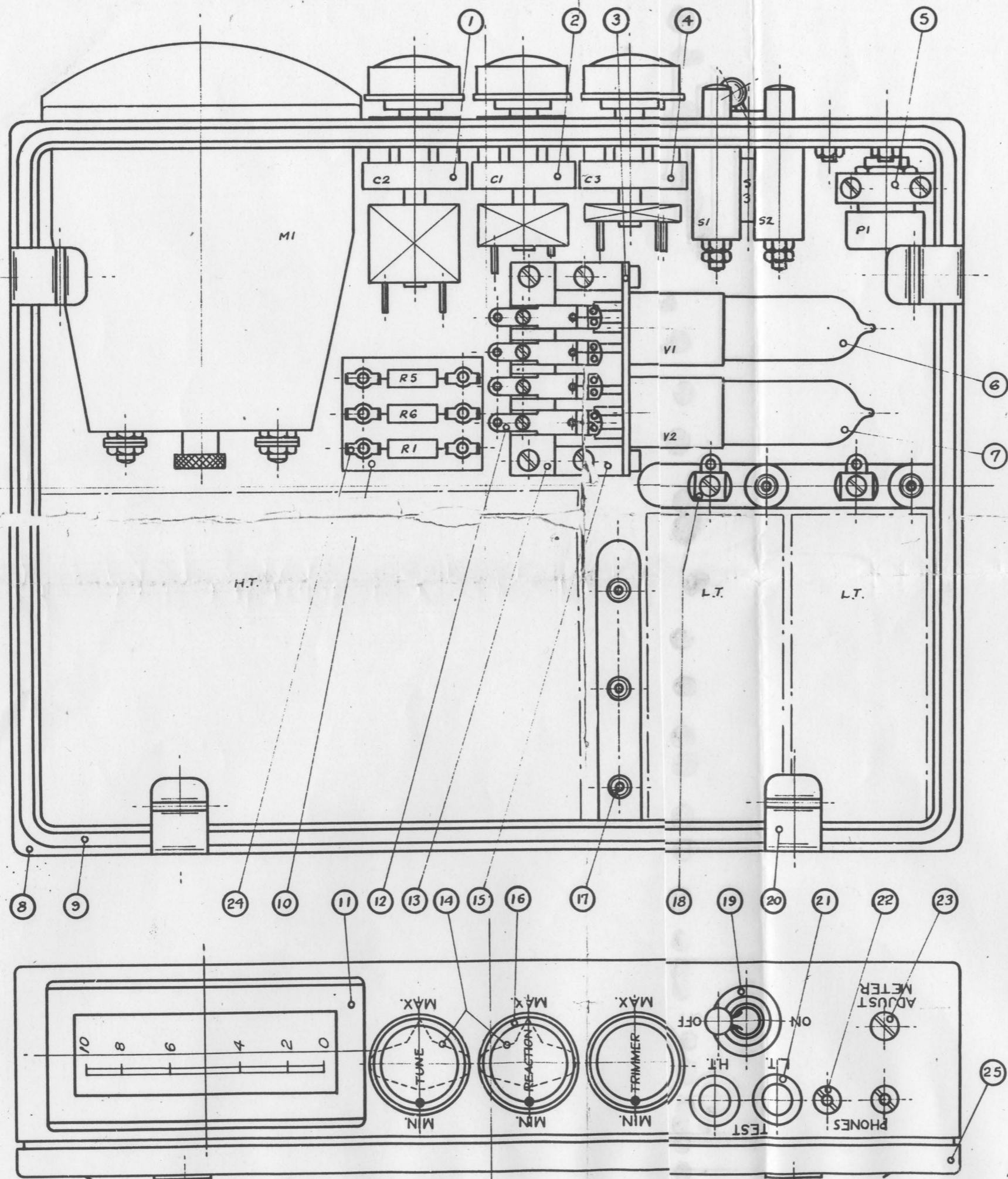
WL. 53,399.

Ckd. *[Signature]*
 Appd. *[Signature]*
 Date 2-12-39

Case No. :-

Suffix
M1
B
SM.F.P. 18/5/40
ITEMS 5, 14, 15, AMEND.

POST OFFICE ENGINEERING DEPT.
 E-IN-C'S OFFICE. Bch.



ITEM	CCT REF.	DESCRIPTION.	NO.OFF.	WL. N.
1	C2	Cond. 100 μ F. Polar. Air Spaced. Type C802.	1	
2	C1	" 50 μ F. " " "	1	
3		Valve Mounting. Clix. Type X114. Mod.	1	53399
4	C3	Cond. 25 μ F. Polar. Air Spaced. Type C802.	1	
5		Pot'r. Mounting.	1	53399
6	V1	Valve. Hivac. XL. 1.5V.	1	
7	V2	" " XR "	1	
8		Case	1	31122
9		Gasket. 1/8" dia. About 29" Lg.	1	
10		Resistor Mounting.	1	53399
11	M1	Meter. Edgewise. 0-1 mA. (50 \pm 10%)	1	
12		Spring. Relay. S.T.&C. LP.59508. Mod.	4	53398
13		Spring Mounting.	1	53397
14		Knob Click Spring.	2	53398
15		Spring & Valve Mounting Block.	2	53399
16		Knob. Black. Bulgin Type K94. Mod.	3	53397
17		Terminal. 6 BA.	5	
18		Spring Clip. Bulgin Part 704. Ph. Bze	2	
19	S3	Switch. Bulgin. Type S126. (D.P.)	1	
20		Lid Clip.	4 SETS	31122
21	S1-2	Switch. Bulgin. 1 off Type MPI. 1 off MP2	2	
22	X	Plug P. 175 & Socket P178 (METAL PARTS) Bulgin	1 SET.	
23	P1	Pot'r. 50,000 Ω . Bulgin. V.C. 95.	1	
24		Tag M.110. Bifurcated & Tubular Rivet Co	6	
25		Interchangeable. Coil Unit.	10 SETS	31122
	R1	Resistor. 50,000 Ω . 1/3 W. Erie. Type 4N.	1	
	R2	" 5,000 Ω . " " " "	1	
	R3	" 100,000 Ω . " " " "	1	
	R4	" 10 M Ω . " " " "	1	
	R5	" 20 Ω . " " " "	1	
	R6	" 1450 Ω . " " " " \pm 2%	1	
	R7	30,000 Ω . " " " "	1	
	C4	Condenser. .0001 μ F. T.C.C. Type MW.	1	
	X	Phones. 2000 Ω . Single Earpiece.	1	
	H.T.	Battery. H.T. Special. 0-30-60 V.	1	
	L.T.	" L.T.	2	

TESTER WL. 53400.
 ASSEMBLY.

Practical Wiring WL. 53399.
 Circuit. WL. 53400.

WL. 53396.