

RECEPTION SETS, P.C.R., NOS. 1, 2 AND 3

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

(Service data - Second to fourth echelon)

ALIGNMENT AND PERFORMANCE TESTINGI.F. MEASUREMENTS1. Sensitivity

Apply a signal of approx. 465kc/s modulated 30% at 400c/s to the F.C. grid. With the receiver gain at maximum, adjust the input for an output of 50mW, tuning the signal generator to resonance with the I.F. amplifier. The input must not be greater than 15 μ V. The resonance frequency must be within 465 \pm 1kc/s.

2. Selectivity

With an input as described in para. 1 increase the input by the amounts given in the table below, and in each case detune the signal generator to each side in turn until the output drops to 50mW. Note the difference between the two frequencies at which this occurs to obtain the bandwidth, which must be within the tolerances in the following table:-

Input	Bandwidth
+ 6db.	4kc/s min.
+ 20db.	10.5kc/s max.
+ 40db.	16kc/s max.
+ 60db.	23kc/s max.

R.F. MEASUREMENTS3. Adjustments

During trimming and while measuring the R.F. sensitivity, a load consisting of 3,000 Ω in series with 0.1 μ F is connected between the second I.F. grid and the chassis. This reduces the I.F. amplification 40 to 50 times.

The following table gives the trimming points:-

P.C.R.2			P.C.R.3		
Band	Trim	Track	Band	Trim	Track
S.V.	20Mc/s	6.5Mc/s	S.W.2	20Mc/s	8.5Mc/s
M.W.	200m.	520m.	S.W.1	7Mc/s	2.6Mc/s
L.W.	1,000m.	1,800m.	M.W.	200m.	520m.

(Note: On the P.C.R.3., S.W.2 must be trimmed before S.W.1 and M.W.)

4. R.F. sensitivity

Connect a signal generator to the aerial and earth terminals via a standard dummy aerial on M.W. and L.W. and via a 4,00Ω non-inductive resistance on S.W. The signal generator should be modulated 30% at 400c/s. With the set damped as described in para. 3, the input for 50mW output must not be greater than the figures in the following table, which gives the production test frequencies and wavelengths:-

P.C.R.2		P.C.R.3	
Frequency	μV	Frequency	μV
20Mc/s	60	20Mc/s	60
14Mc/s	60	12Mc/s	60
9Mc/s	70	8.5Mc/s	70
6.5Mc/s	70	7Mc/s	30
		4Mc/s	30
200m.	20	2.6Mc/s	35
300m.	20		
520m.	25	200m.	20
		300m.	20
1,000m.	60	520m.	25
1,800m.	80		

5. I.F. rejection

With the set damped, apply an input of approx. 465kc/s connected as described in para. 4 with the set tuned to 520m. Tune the signal generator for maximum output from the set and adjust the input for an output of 50mA. The input must not be less than 40mV.

6. A.V.C.

With the signal generator connected as described in para. 4 and the set not damped, tune in a signal of 10μV at 300m., and adjust the gain-control for an output of 10mV. Increase the input to 100mV; the output must not rise more than 11db.

7. Over-all A.F. response

With the signal generator connected as described in para. 4 and the set not damped, tune in a signal of 10mV at 300m. Change the modulation frequency to 5,000c/s, and readjust both the tuning control and the aerial trimmer for the minimum between the two maxima indicated on the output meter. Return the modulation frequency to 400c/s, and adjust the gain for an output of 500mW (referred to as 0db.). Set the modulation frequency to the values given below and the output readings should be within the limits given:-

A.F.	Output
100c/s	+3 to -1db.
150c/s	+2 to -1db.

7. (contd.)

A.F.	Output
100c/s	0db.
1,000c/s	+2 to -1db.
2,000c/s	+3 to 0db.
3,000c/s	+2db.
4,000c/s	-1 to -6db.
5,000c/s	-8 to -17db.

Set the Tone switch to 'Low'

A.F.	Output
5,000c/s	-22 to -28db.

8. A.F. output

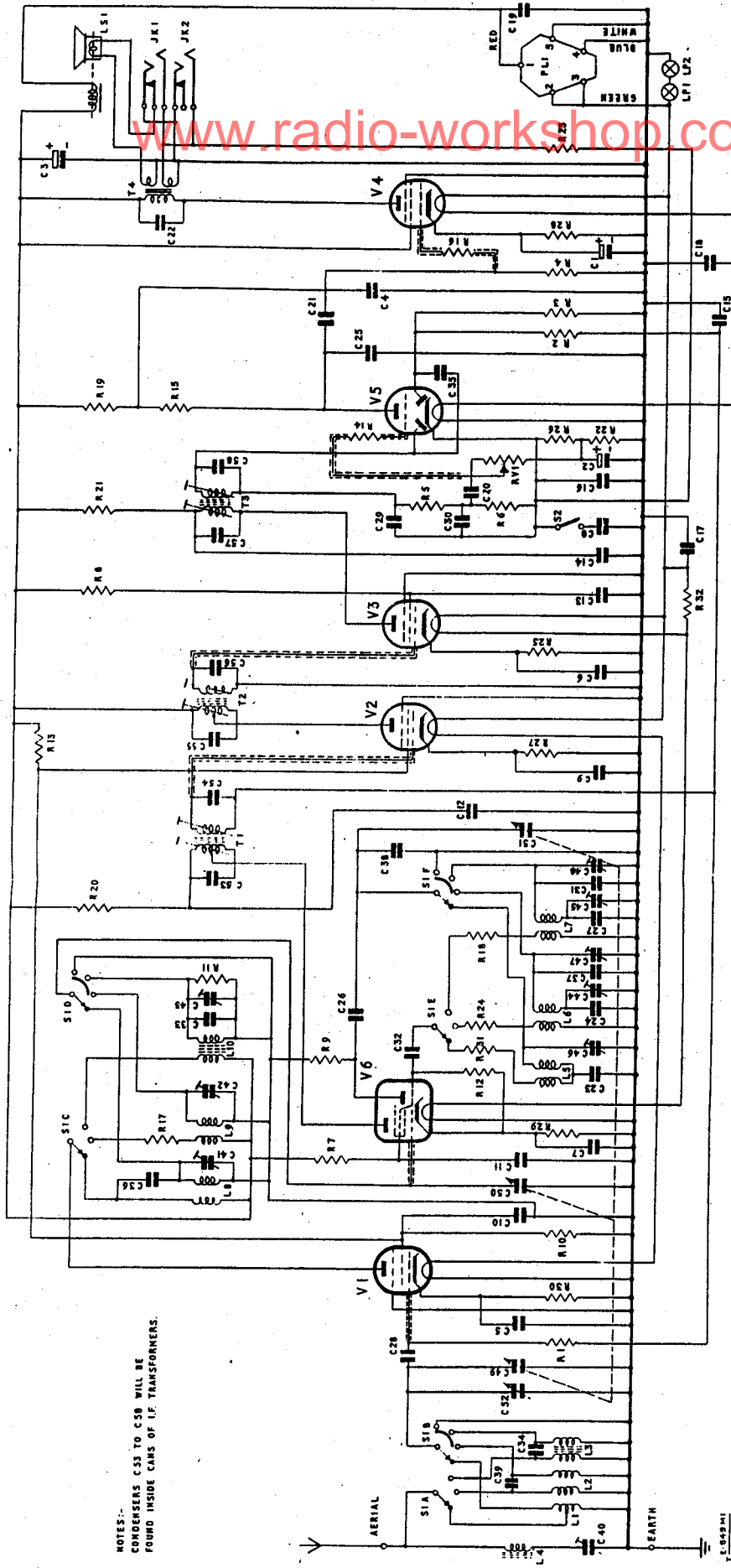
With input as described in para. 7 and 400c/s modulation, increase the gain-control until the point where distortion just becomes evident. Then measure the output, which should be at least 2W. Next turn the gain to maximum and again read the output, which should be at least 3W.

9. Calibration

Maximum tolerances:-

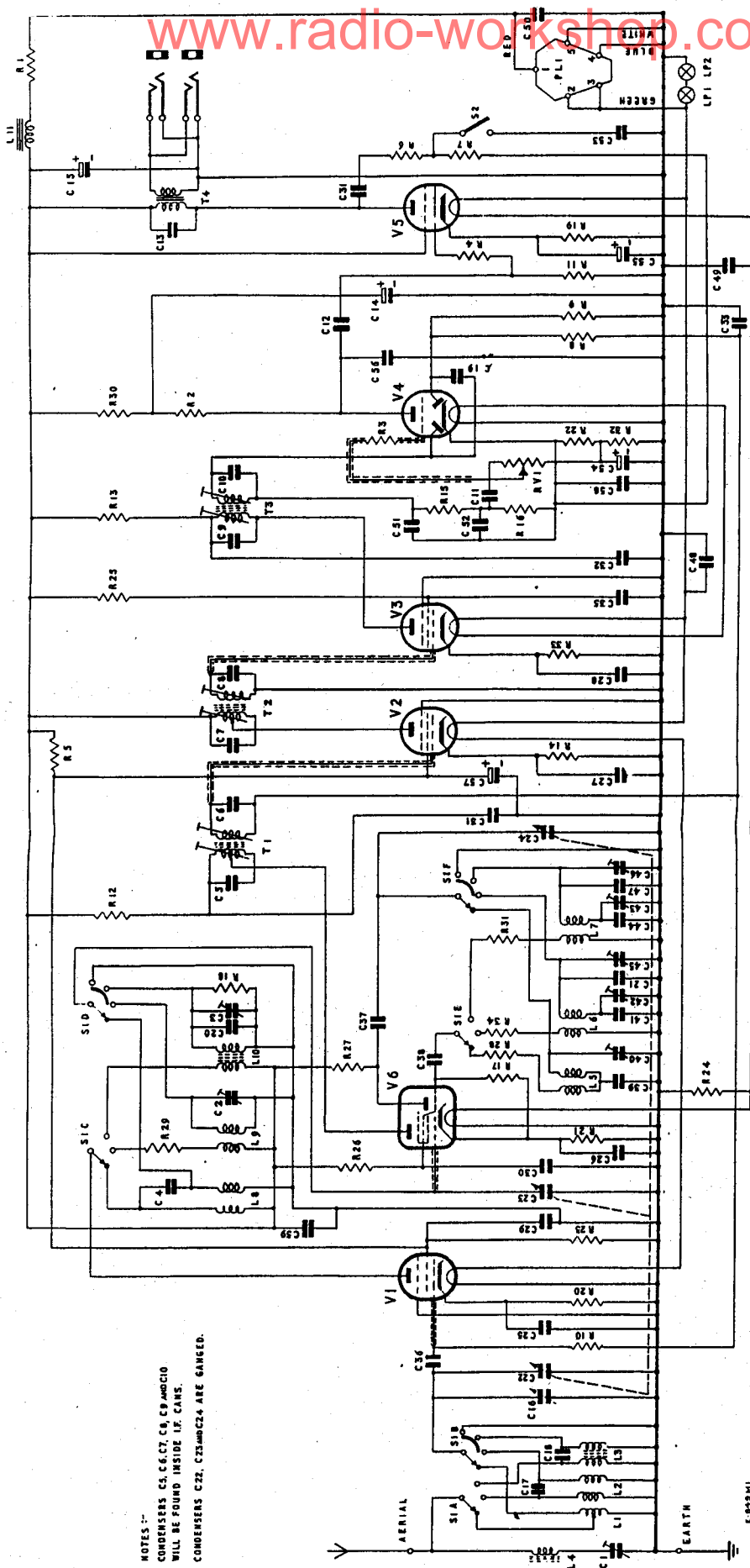
P.C.R.2	P.C.R.3
<p>S.W. $\left(\begin{array}{l} + 100\text{kc/s above } 12\text{Mc/s} \\ \pm 50\text{kc/s below } 12\text{Mc/s} \end{array} \right)$</p> <p>M.W. $\pm 2.5\text{m.}$ L.W. $\pm 10\text{m.}$</p>	<p>S.W.2 $\left(\begin{array}{l} + 100\text{kc/s above } 12\text{Mc/s} \\ \pm 50\text{kc/s below } 12\text{Mc/s} \end{array} \right)$</p> <p>S.W.1 $\left(\begin{array}{l} + 50\text{kc/s above } 5\text{Mc/s} \\ \pm 25\text{kc/s below } 5\text{Mc/s} \end{array} \right)$</p> <p>M.W. $\pm 2.5\text{m.}$</p>

END



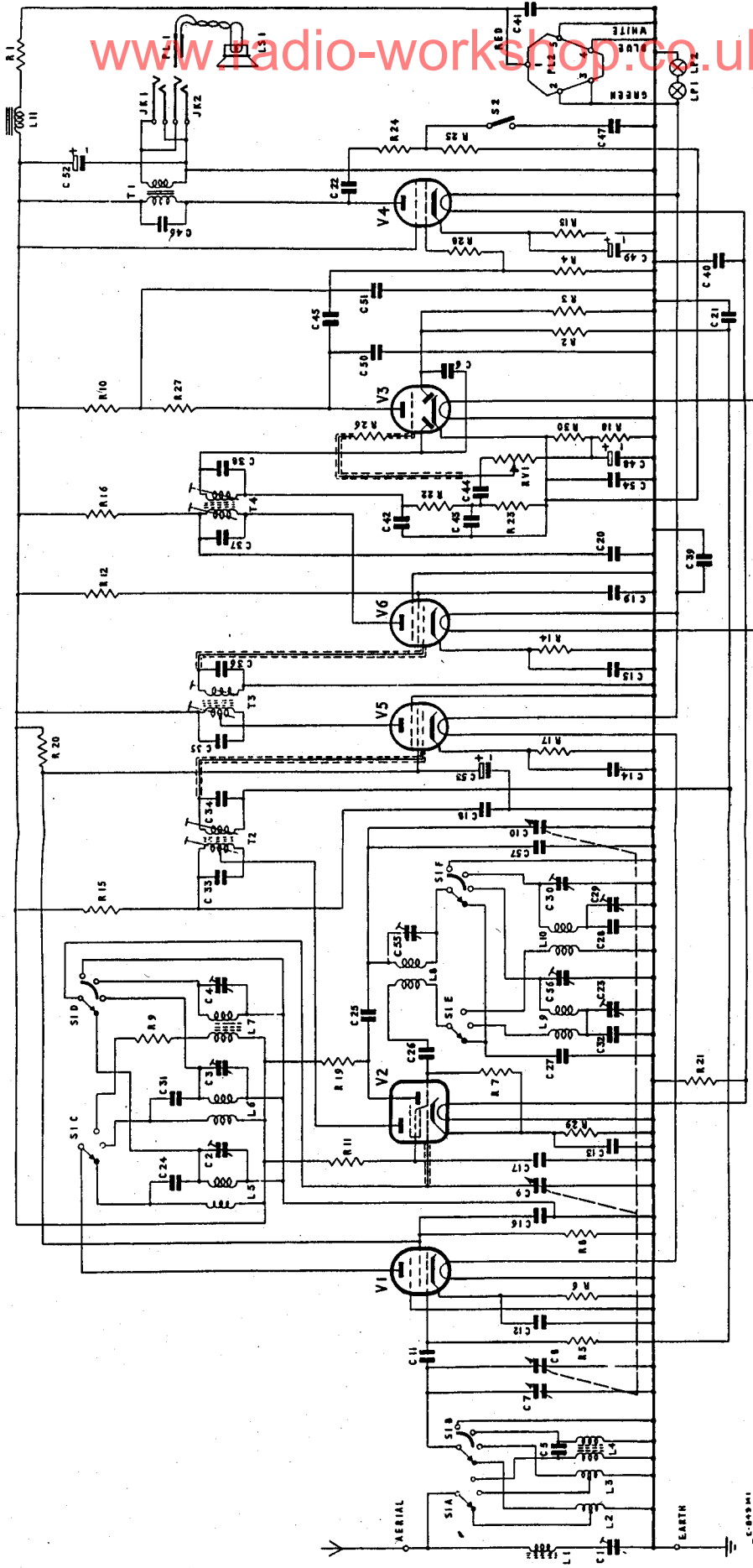
NOTES:-
CONDENSERS C51 TO C59 WILL BE
FOUND INSIDE CANS OF I.F. TRANSFORMERS.

Fig. 1 - Reception set, P.C.R. No. 1



NOTES:-
CONDENSERS C5, C6, C7, C9, C9 AMPCIO
WILL BE FOUND INSIDE I.F. CANS.
CONDENSERS C22, C23 AMPC24 ARE CHANGED.

Fig. 2 - Reception set, P.C.R. No. 2



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Fig. 3 - Reception sets P.C.R. Nos. 3 and 3 TFL

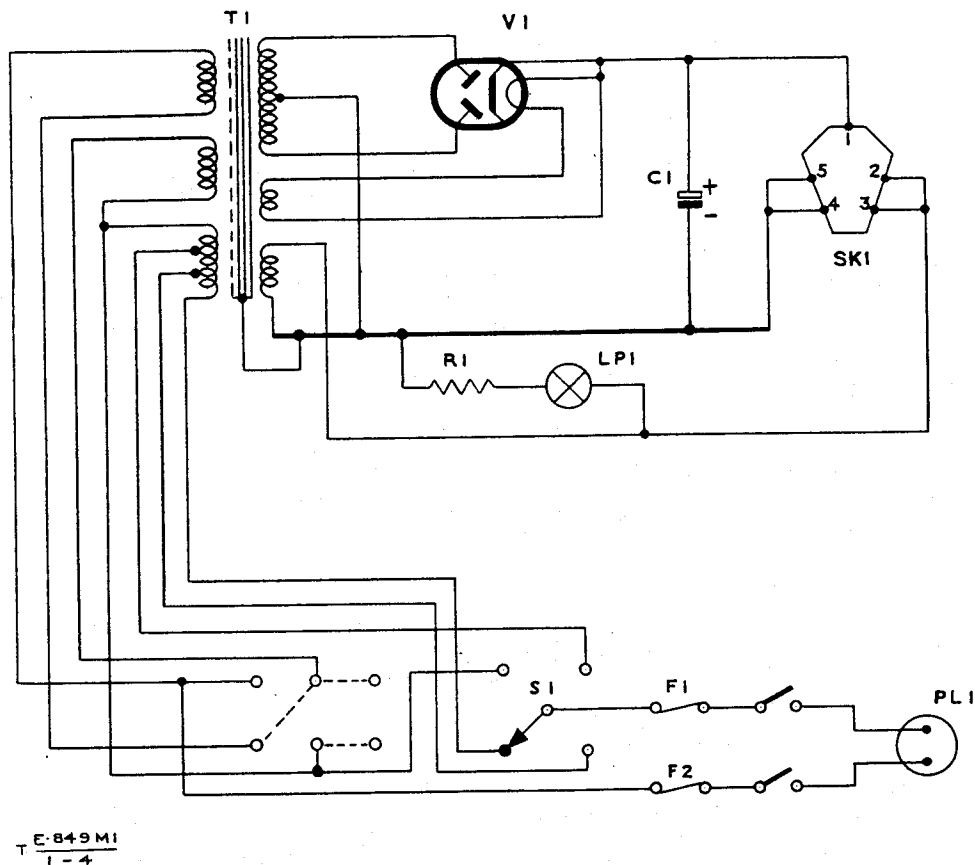


Fig. 4 - Supply unit, rectifier No. 17

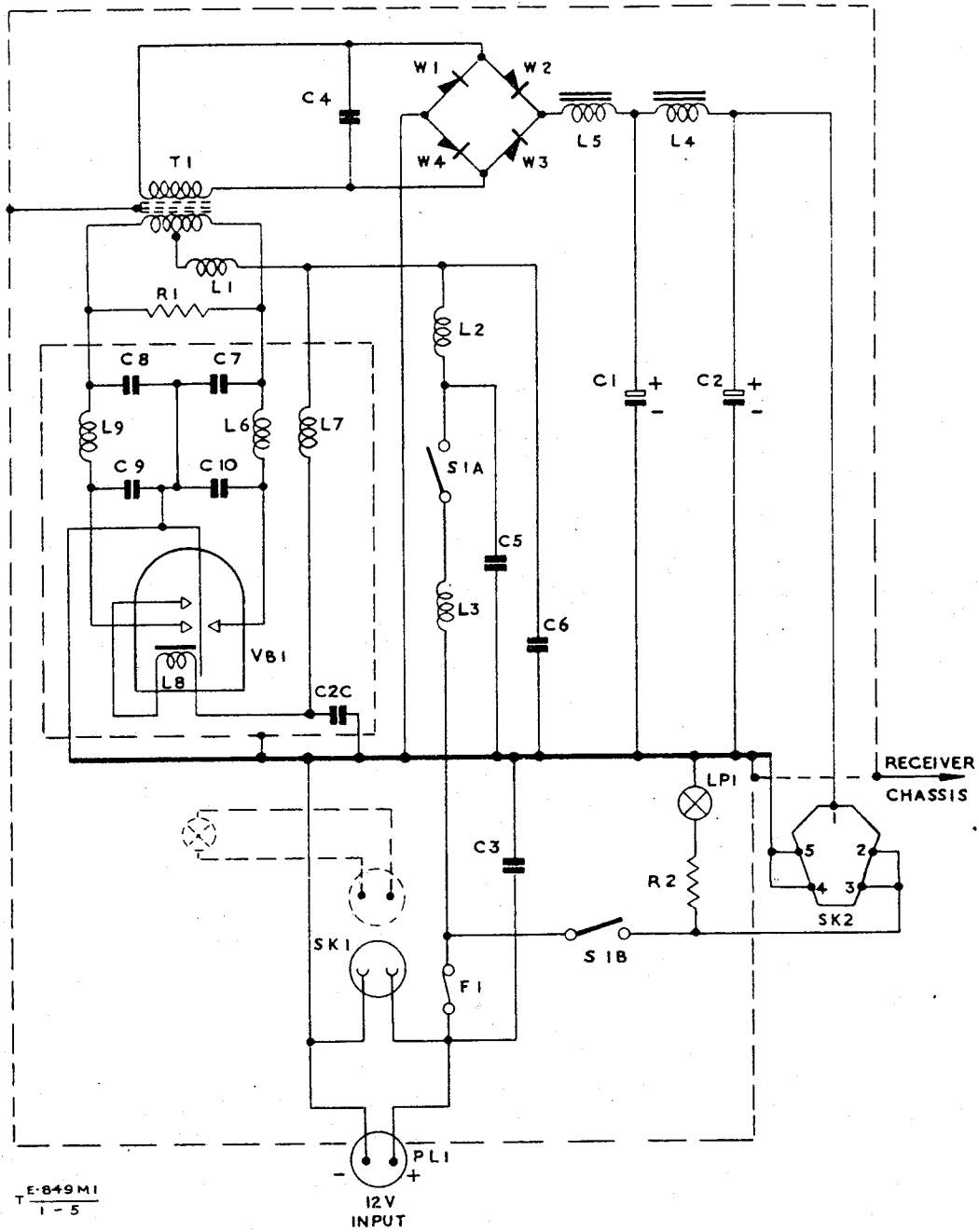


Fig. 5 - Supply unit, vibratory No. 8 and No. 9

END

NOTES:

TO DATE FOUR MODELS OF P.C.R. RECEIVER ARE AVAILABLE. ALTHOUGH ALL THESE MODELS ARE OF SIMILAR APPEARANCE & CONSTRUCTION, THEY CAN BE CLASSIFIED BY REFERENCE TO THE MAKERS' LABEL WHICH IS ON THE FRONT PANEL. THE FOUR TYPES OF RECEIVER ARE AS FOLLOWS:-
 (1) P.C.R. 1 (2) P.C.R. 2 (3) P.C.R. 3
 THE CIRCUIT DIAGRAM ABOVE REFERS TO THE TYPE P.C.R. 2, BUT SINCE TYPE P.C.R. 1 IS ALMOST IDENTICAL TO THIS, THEY ARE GROUPED TOGETHER FOR THE PURPOSES OF THIS DESCRIPTION.
 ESSENTIAL DIFFERENCES OF THE OTHER TYPES ARE THAT THE P.C.R. HAS A BUILT-IN LOUDSPEAKER WHILST THE P.C.R. 3 OMMITS THE LONG-WAVE BAND TO INCORPORATE BETTER SHORT-WAVE COVERAGE. OTHER MINOR VARIATIONS IN CIRCUITRY OF THE P.C.R. & P.C.R. 3 ARE REPRODUCED ON THIS SHEET

GENERAL SPECIFICATIONS:

- ① FREQUENCY COVERAGE IN 3 SWITCHED BANDS
- ② POWER SUPPLIES BY EXTERNAL UNIT
- ③ DIMENSIONS & WEIGHT ALL MODELS

ALL MODELS
 HT 250V (ABOUT 65WA)
 LT 12V (ABOUT 7A)

17", 8" x 10" 25 lbs

P.C.R. AND P.C.R. 1, 2	P.C.R. 3
800-2120M 190-1850M E	190-570M 23-7.5MVA 7-23MVA

RESISTORS:

ALL RESISTORS ARE 1/2 WATT CARBON TYPE UNLESS OTHERWISE STATED

REFERENCE	P.C.R.	P.C.R. 1	P.C.R. 2	P.C.R. 3
R 1 A	470k	470k	470k	470k
B	470k	470k	470k	470k
C	470k	470k	470k	470k
D	470k	470k	470k	470k
R 2 A	220n	220n	220n	220n
R 3 A (with)	47k	47k	47k	47k
R 4 A	10k	10k	10k	10k
B	10k	10k	10k	10k
C	10k	10k	10k	10k
R 5 A	47k	47k	47k	47k
B	47k	47k	47k	47k
R 6 A	150k	150k	150k	150k
B	150k	150k	150k	150k
R 7 A	470n	270n	270n	270n
R 8 A	56k	56k	56k	56k
R 9 A	68n	68n	-	-
R 10 A	1k	1k	-	-
B	1k	1k	1k	1k
R 11 A	2.2k	2.2k	2.2k	2.2k
B	2.2k	2.2k	2.2k	2.2k
C	2.5k	2.2k	2.2k	2.2k
R 12 A	3.3k	1.5k	1.5k	1.5k
R 15 A	39k	39k	39k	39k
R 14 A (w)	-	39n	39n	39n
R 15 A	270k	270k	270k	270k
B	270k	270k	270k	270k

NOTE:
 IN TYPE P.C.R. 3, R 4 A IS TO BE FOUND IN SERIES WITH L 7 A AND NOT AS INDICATED HEATER CONNECTIONS INVOLVING 68n IN ADDRESS V2A HEATER

CONDENSERS:

C - COMPRESSION TRIMMER
 S - SILVER MICA
 B - BEEHIVE TRIMMER
 M - MICA
 N - MICA

REF	P.C.R.	P.C.R. 1	P.C.R. 2	P.C.R. 3	REF	P.C.R.	P.C.R. 1	P.C.R. 2	P.C.R. 3
C 1 A	CT	CT	C	C	C 13 A	400pF	400pF	400pF	400pF
B	CT	CT	C	C	C 14 A	540pF	540pF	540pF	540pF
C	CT	CT	C	C	C 15 A B	375n	375n	375n	375n
C 2 A	5pF	5pF	5pF	5pF	C 16 A B	BT	BT	BT	BT
C 3 A	5pF	5pF	5pF	5pF	C 17 A	180pF	180pF	180pF	180pF
C 3 B	5pF	5pF	5pF	5pF	C 18 A	80pF	80pF	80pF	80pF
C 4 A	50pF	50pF	50pF	50pF	C 19 A B	180pF	180pF	180pF	180pF
C 5 A B C	0.005	0.005	0.005	0.005	C 20 A B	0.1uF	0.1uF	0.1uF	0.1uF
C 6 A	100pF	100pF	100pF	100pF	C 21 A B	100pF	100pF	100pF	100pF
C 7 A B C D	1uF	1uF	1uF	1uF	C 22 A	0.05uF	0.05uF	0.05uF	0.05uF
C 8 B C	1uF	1uF	1uF	1uF	B C	1000V	1000V	1000V	1000V
C 8 G	-	1uF	1uF	1uF	C 23 A	-	0.02uF	0.02uF	0.02uF
C 10 A B	10pF	10pF	10pF	10pF	C 24 A B	2.2uF	2.2uF	2.2uF	2.2uF
C 11 A	200pF	200pF	200pF	200pF	C 25 A	10pF	10pF	10pF	10pF
C 12 A	50pF	50pF	50pF	50pF	B	10pF	10pF	10pF	10pF
					C 26 A	1uF	1uF	1uF	1uF
					C 27 A	1uF	1uF	1uF	1uF
					C 28 A	-	2uF	2uF	2uF
					C 29 A	0.5uF	0.5uF	0.5uF	0.5uF
					C 30 A	500V	500V	500V	500V
					B T	B T	B T	B T	B T

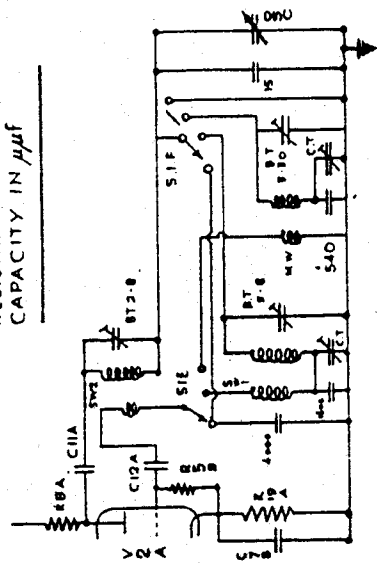
USEFUL TECHNICAL DATA

- ① INTERMEDIATE FREQ. 461 KCS
- ② IF SENSITIVITY 1.7
- 1 μV SIGNAL SENSITIVE AT 800% ATTEN TO MIXER GRID GAINES ROUGHLY 125% OUTPUT
- ③ OUTPUT IMPEDANCE 70

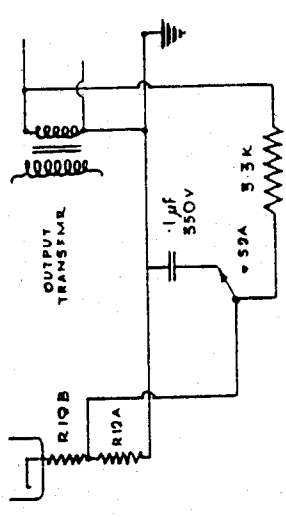
MODIFIED CIRCUITRY

- ① PCR 3 OSC CIRCUIT

RESISTANCES IN OHMS
CAPACITY IN μμf



- ② PCR TONE CIRCUIT



CIRCUIT DIAGRAM OF PCR.2.

REF NO C 92156
DRN
TRD
CHEKD
APPD

INDUCTANCES :		CONDENSERS :		VALVES		SWITCHES	
REF	PCR	REF	PCR	ALL INTERNATIONAL OCTAL	ALL MODELS	ALL INTERNATIONAL OCTAL	ALL MODELS
L1A	WAVE TRAP	C13A	4000p	C20A	0.01μf	V1A	6X4
L2A	SW. A.E. COIL	C14A	540p	C21A	100p	V2A	6X4
L3A	MW. A.E. COIL	C15A	CT	C22A	100p	V3A	6X4
L4A	LW. A.E. COIL	C16A	B.T.	C23A	0.02μf	V4A	6X4
L5A	SW. R.F. COIL	C17A	190p	C24A	100p	S1A	6-POLE
L6A	MW. R.F. COIL	C18A	80p	C25A	10μm	S2A	3-POLE
L7A	LW. R.F. COIL	C19A	180p	C26A	1μf	S3A	3-POLE
L8A	SW. OSC. COIL	C20A	0.01μf	C27A	50p	S4A	3-POLE
L9A	MW. OSC. COIL	C21A	100p	C28A	0.05μf	S5A	3-POLE
L10A	LW. OSC. COIL	C22A	100p	C29A	0.05μf	S6A	3-POLE
L11A	I.F. TRANS.	C23A	0.02μf	C30A	B.T.	S7A	3-POLE
L12A	I.F. TRANS.	C24A	100p	C31A	100p	S8A	3-POLE
L13A	I.F. TRANS.	C25A	10μm	C32A	100p	S9A	3-POLE
L14A	I.F. TRANS.	C26A	1μf	C33A	100p	S10A	3-POLE
L15A	I.F. TRANS.	C27A	50p	C34A	100p	S11A	3-POLE
L16A	I.F. TRANS.	C28A	0.05μf	C35A	100p	S12A	3-POLE
L17A	I.F. TRANS.	C29A	0.05μf	C36A	100p	S13A	3-POLE
L18A	I.F. TRANS.	C30A	B.T.	C37A	100p	S14A	3-POLE
L19A	I.F. TRANS.	C31A	100p	C38A	100p	S15A	3-POLE
L20A	I.F. TRANS.	C32A	100p	C39A	100p	S16A	3-POLE
L21A	I.F. TRANS.	C33A	100p	C40A	100p	S17A	3-POLE
L22A	I.F. TRANS.	C34A	100p	C41A	100p	S18A	3-POLE
L23A	I.F. TRANS.	C35A	100p	C42A	100p	S19A	3-POLE
L24A	I.F. TRANS.	C36A	100p	C43A	100p	S20A	3-POLE
L25A	I.F. TRANS.	C37A	100p	C44A	100p	S21A	3-POLE
L26A	I.F. TRANS.	C38A	100p	C45A	100p	S22A	3-POLE
L27A	I.F. TRANS.	C39A	100p	C46A	100p	S23A	3-POLE
L28A	I.F. TRANS.	C40A	100p	C47A	100p	S24A	3-POLE
L29A	I.F. TRANS.	C41A	100p	C48A	100p	S25A	3-POLE
L30A	I.F. TRANS.	C42A	100p	C49A	100p	S26A	3-POLE
L31A	I.F. TRANS.	C43A	100p	C50A	100p	S27A	3-POLE
L32A	I.F. TRANS.	C44A	100p	C51A	100p	S28A	3-POLE
L33A	I.F. TRANS.	C45A	100p	C52A	100p	S29A	3-POLE
L34A	I.F. TRANS.	C46A	100p	C53A	100p	S30A	3-POLE
L35A	I.F. TRANS.	C47A	100p	C54A	100p	S31A	3-POLE
L36A	I.F. TRANS.	C48A	100p	C55A	100p	S32A	3-POLE
L37A	I.F. TRANS.	C49A	100p	C56A	100p	S33A	3-POLE
L38A	I.F. TRANS.	C50A	100p	C57A	100p	S34A	3-POLE
L39A	I.F. TRANS.	C51A	100p	C58A	100p	S35A	3-POLE
L40A	I.F. TRANS.	C52A	100p	C59A	100p	S36A	3-POLE
L41A	I.F. TRANS.	C53A	100p	C60A	100p	S37A	3-POLE
L42A	I.F. TRANS.	C54A	100p	C61A	100p	S38A	3-POLE
L43A	I.F. TRANS.	C55A	100p	C62A	100p	S39A	3-POLE
L44A	I.F. TRANS.	C56A	100p	C63A	100p	S40A	3-POLE
L45A	I.F. TRANS.	C57A	100p	C64A	100p	S41A	3-POLE
L46A	I.F. TRANS.	C58A	100p	C65A	100p	S42A	3-POLE
L47A	I.F. TRANS.	C59A	100p	C66A	100p	S43A	3-POLE
L48A	I.F. TRANS.	C60A	100p	C67A	100p	S44A	3-POLE
L49A	I.F. TRANS.	C61A	100p	C68A	100p	S45A	3-POLE
L50A	I.F. TRANS.	C62A	100p	C69A	100p	S46A	3-POLE
L51A	I.F. TRANS.	C63A	100p	C70A	100p	S47A	3-POLE
L52A	I.F. TRANS.	C64A	100p	C71A	100p	S48A	3-POLE
L53A	I.F. TRANS.	C65A	100p	C72A	100p	S49A	3-POLE
L54A	I.F. TRANS.	C66A	100p	C73A	100p	S50A	3-POLE
L55A	I.F. TRANS.	C67A	100p	C74A	100p	S51A	3-POLE
L56A	I.F. TRANS.	C68A	100p	C75A	100p	S52A	3-POLE
L57A	I.F. TRANS.	C69A	100p	C76A	100p	S53A	3-POLE
L58A	I.F. TRANS.	C70A	100p	C77A	100p	S54A	3-POLE
L59A	I.F. TRANS.	C71A	100p	C78A	100p	S55A	3-POLE
L60A	I.F. TRANS.	C72A	100p	C79A	100p	S56A	3-POLE
L61A	I.F. TRANS.	C73A	100p	C80A	100p	S57A	3-POLE
L62A	I.F. TRANS.	C74A	100p	C81A	100p	S58A	3-POLE
L63A	I.F. TRANS.	C75A	100p	C82A	100p	S59A	3-POLE
L64A	I.F. TRANS.	C76A	100p	C83A	100p	S60A	3-POLE
L65A	I.F. TRANS.	C77A	100p	C84A	100p	S61A	3-POLE
L66A	I.F. TRANS.	C78A	100p	C85A	100p	S62A	3-POLE
L67A	I.F. TRANS.	C79A	100p	C86A	100p	S63A	3-POLE
L68A	I.F. TRANS.	C80A	100p	C87A	100p	S64A	3-POLE
L69A	I.F. TRANS.	C81A	100p	C88A	100p	S65A	3-POLE
L70A	I.F. TRANS.	C82A	100p	C89A	100p	S66A	3-POLE
L71A	I.F. TRANS.	C83A	100p	C90A	100p	S67A	3-POLE
L72A	I.F. TRANS.	C84A	100p	C91A	100p	S68A	3-POLE
L73A	I.F. TRANS.	C85A	100p	C92A	100p	S69A	3-POLE
L74A	I.F. TRANS.	C86A	100p	C93A	100p	S70A	3-POLE
L75A	I.F. TRANS.	C87A	100p	C94A	100p	S71A	3-POLE
L76A	I.F. TRANS.	C88A	100p	C95A	100p	S72A	3-POLE
L77A	I.F. TRANS.	C89A	100p	C96A	100p	S73A	3-POLE
L78A	I.F. TRANS.	C90A	100p	C97A	100p	S74A	3-POLE
L79A	I.F. TRANS.	C91A	100p	C98A	100p	S75A	3-POLE
L80A	I.F. TRANS.	C92A	100p	C99A	100p	S76A	3-POLE
L81A	I.F. TRANS.	C93A	100p	C100A	100p	S77A	3-POLE

CIRCUIT DIAGRAM OF PCR.2.

REF NO C 92156
DRN
TRD
CHEKD
APPD

RECEPTION SETS, PCR, NOS 1, 2 AND 3
(PCR No 3 and 3 TPL)TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTIONDrive-box mechanism wearSUMMARY

1. Cases of wear occur in the drive-box mechanism of the Reception set, PCR, No 3 and 3 TPL resulting in the holes through which the spindle passes becoming elongated.

This instruction details the action to be taken when such wear occurs.

2. Items affected:-

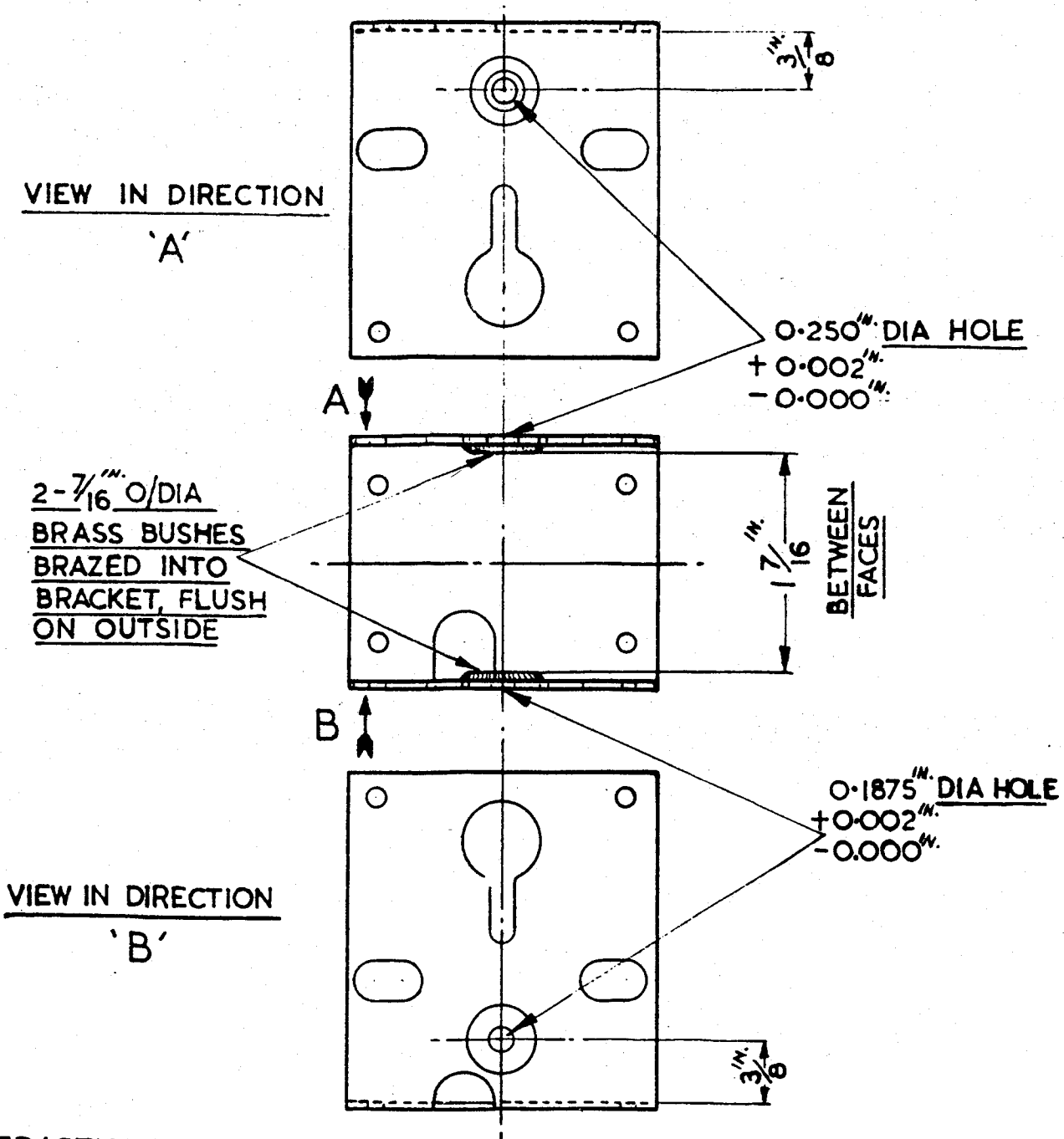
Reception sets, PCR, No 3 and No 3 TPL drive-box mechanism.

3. Action required by:-

- (a) REME workshops authorized to carry out field and base repairs
 - (i) Carry out this instruction when necessary.

DETAIL

4.
 - (a) Remove and strip the drive-box mechanism
 - (b) Enlarge front and back bearing holes to $3/8$ inch diameter
 - (c) Prepare two brass bushes, one drilled with a $1/4$ inch hole and the other with a $3/16$ inch diameter hole
 - (d) Insert each bush in turn into position from inside the box, using the bush with the $3/16$ inch diameter hole in the rear position. Silver solder both bushes into position
 - (e) Turn back the rear shoulder of the spindle $1/64$ inch approx, ie, the thickness of the flange on the rear-bearing bush
 - (f) In cases of severe wear it may be necessary to turn up new spindles as a badly grooved spindle can damage the new bearings
 - (g) Re-assemble and refit the drive-box mechanism



E-849M2
1-1

Fig 1 - Fitting of bushes

END