

1. GENERAL

1.01 This specification covers general requirements applicable to the recovery and repair of telephone sets. Each requirement shall be applied to all products of such design as to be affected by that requirement unless specified otherwise in the individual BSRS.

1.02 Specifications covering individual products will refer to this specification and will include such additional requirements as may apply to the individual unit.

R 1.02A When a SUPL SPEC to an individual BSRS has a specific requirement designated as an "R" requirement, that requirement shall be an "R" requirement for the individual BSRS.

1.02B The use of all materials containing silicone is prohibited in the repair of telephone sets and telephone set components unless specifically permitted in an applicable BSRS.

1.02C The term "registered" telephone set pertains to those telephone sets which are registered in accordance with Section 68 of the FCC Rules and Regulations.

1.02D Requirements pertaining to "registered" telephone sets take precedence over all other requirements with respect to the recovery and repair of those sets which are "registered".

R 1.02E Components shipped to the telephone company and replacement of parts and components in "registered" telephone sets should be in accordance with the manufacturing information specified for the individual product; however, unless specifically listed below under Unauthorized Apparatus or prohibited in the individual BSRS, new or used parts and components may be used providing they presently are, or previously were, standard for the particular product.

Unauthorized Apparatus

A. Ringers

- (a) C, D, H and J Type having stick wound coils. ←
- (b) Omitted on Issue 15 of this page.

B. Buzzers

KS-20419 Type not having the new logo or black ink stripe marking on bracket.

C. Dials

- (a) Deleted on Issue 15 of this page. ←

- (b) Rotary

All 9-Type Dials equipped with pawl retainers or those without a formed tab on the cam follower.

1. GENERAL (Cont'd.)

Unauthorized Apparatus (Cont'd.)

D through J omitted on this page with Issue 13

1.02F A "Grandfathered" set is defined as one manufactured prior to the implementation of registration and not having a registration label attached to its base.

- (a) When a set is returned for repair and contains no FCC Registration Label and no legible date of manufacture it shall be considered "grandfathered".

Requirements Needing Special Consideration by the Telephone Co.

1.03 This specification includes certain requirements which need special consideration and, in some cases, action on the part of the telephone company. The paragraph numbers and a brief description of these requirements are shown in the following table.

Requirements Needing Special Consideration by the Telephone Co. (Cont'd)

<u>Paragraph NO.</u>	<u>Description</u>
1.04	Selection of appearance standards for interior of sets.
2.01 (d)	Color conversion authorization.
2.03A	Satin-Silver (-87) Mounting Cords
2.05A	Use of friction pads on sets in color
4.05	Sets equipped with converted 12-Button TOUCH-TONE Dials
4.06	Converting sets equipped with convertible TOUCH-TONE Dials

Appearance Standards

1.04 The telephone company, pending availability of system standards, shall establish appearance standards covering minimum appearance of interior surfaces of telephone sets that may be exposed to view in service as a result of removal of the housing.

1.05 Interior surfaces of telephone sets shall meet or be superior to the minimum established appearance standards.

2. MECHANICAL

Cleaning - Finish

2.01 Exterior thermoplastic surfaces of housing and handsets may be made to meet the appearance standards by any of the following:

- (a) Buffing
- (b) Cleaning with an approved soap or detergent solution. KS-14427 Cleaning Emulsion shall not be used on thermoplastic parts since it is known that its use results in cracking in highly stressed areas.
- (c) Refinishing with any of the following paint coatings; all as specified in KS-21420 of the same color for sets in color:

- (1) Midland Division Dexter Corps' WECOthane-2 polyurethane enamel.
- (2) Sherwin Williams' Polane "WE" Quality Catalyzed Polyurethane Enamel.

Feet and Base

- 2.05 Feet shall be made to meet the requirements regarding appearance and foreign material by the following means.
- (a) Brushing with a stiff bristle or wire brush.
 - (b) Use of Isopropyl Alcohol on leather covered feet.
 - (c) Brown dye on leather covered feet.
 - (d) Addition of KS-8035 Triangular Friction Pads on other than neoprene feet. If a foot is equipped with a friction pad, all feet shall be equipped with friction pads.
 - (e) Wiping neoprene feet with a cloth slightly moistened with KS-14356 Dry Cleaning Fluid.
 - (f) Replacement.
- 2.05A Unless otherwise specified by the telephone company, friction pads shall not be used on telephone sets color.
- 2.06 If a foot is replaced, the following shall apply:
- (a) Either Neoprene rubber feet or thermoplastic rubber feet shall be used and both feet on that end of the set shall be either P-10E943 or P-44E081 Neoprene, or 840503932 Thermoplastic.
 - (b) Neoprene rubber feet shall be secured to the base plate either by a P-10E944 Rivet, and expansion rivet, or with a P-297756 Screw and P-11E212 Nut. Screws shall be tightened sufficiently so they will not turn in a tightening direction when a torque of 10-inch pounds is applied.
 - (c) Thermoplastic rubber feet shall be assembled to the base plate with a 840503940 Rivet.
- 2.07 Exterior surfaces of the base and/or base pad shall be hand cleaned using KS-14427 Cleaning Emulsion. Care shall be taken to prevent the cleaning emulsion from entering the interior of the base assembly.
- 2.08 Exterior surfaces of base plates exposed to view in service shall have bare spots touched up or refinished with an approved paint that approximates the color of the base.
- NOTE: When the base plates are touched up or refinished, provision shall be made to prevent the paint from entering the interior of the set.

- 2.08 Exterior surfaces of base plates exposed to view in service shall have bare spots touched up with a matching lead-free fast air dry enamel or acrylic lacquer, obtained locally.
- (a) Black Bases - Use matching black lacquer. This type base plate is no longer manufactured.
 - (b) 289A Zinc Plate, Passivated - This base has a yellowish tint due to the passivation process. Use a quick dry enamel or tinted acrylic lacquer that approximates this color.
 - (c) 584A Zinc Plate - This base is aluminum in color and has a clear lacquer dip passivation process on its surface. Use a silver or aluminum lacquer approximates the finish.

NOTE: When the base plates are touched up or refinished, provision shall be made to prevent the paint from entering the interior of the set. Special care shall be taken to prevent contamination of electrical contacts, such as line switch, etc.

Plunger or Switchhook Operation

R 2.12 With the telephone set in its normal position of use and the handset released from the position of just touching the plunger(s) or switchhook, the plunger(s) or switchhook shall move downward until the handset rests on one or both of the supporting surfaces on the housing, or the switchhook shall move to the extreme downward position. Removing the handset, the plunger(s) or switchhook shall move upward to the off-hook position. When the tests are performed as outlined above, the plunger(s) or switchhook shall move freely without binding or squeaking.

2.13 If pivot bar bearing surfaces of the line switch assembly require lubrication, KS-19589 L2 Lubricant shall be used.

2.14 The line switch plungers shall meet the following requirements.

- (a) Except as specified in (b) and (c), both plungers shall either be clear or match the color of the set.
- (b) Exclusion plungers on sets in color shall be white or natural (cloudy in color).
- (c) Exclusion plungers on black sets shall be black, white or natural (cloudy in color).

Exclusion Switch

2.15 The exclusion plunger or button shall remain in the operated position when actuated to the full extent of its stroke, and shall return to the fully unoperated position when a handset is dropped into place on the housing or switchhook, as applicable, from a distance of 1/4 inch from the top of the plunger or switchhook. ←

Lamps

2.16 Products of particular codes which have lamps shall be reissued with lamps. ←

Face Plates

2.17 Face plates shall be color-coordinated and shall have an anti-glare surface.

Face Plates (Cont'd.)

- 2.18 Face plates shall be made to meet the appearance standards by any of the following means.
- (a) Cleaning with a solution of one part "JOY" dishwashing detergent and four parts water.
 - (b) Touching up the underside of the same color with Finish #734 (nitrocellulose lacquer) or Finish #745 through 752 and 770 (acrylic lacquer). (Painted Acrylic face plates only).
 - (c) Restoring the anti-glare surface with an application of a mixture of equal parts of #75-80 Flat Clear Acrylic Lacquer and #75-40A Clear Acrylic Lacquer obtainable from the American Lacquer Solvents Co., Phoenixville, Pa., or equivalent. (Painted acrylic face plates only).
- 2.18A One P-25E803 Retainer Card shall be packed separately with each 250-Type Face Plate.

Dials

- 2.19 Dials assembled in 500-Type Telephone Sets equipped with three leg brackets shall be secured with three mounting screws.
- 2.20 The 7-Type Dials manufactured prior to 1954 do not have locating projections (bosses) on the dial frame and they shall be assembled either in sets having three-leg dial mounting brackets or in sets having two-leg brackets equipped with locating stops for positioning the dial.
- 2.21 The front mounting screw on 7- and 9-Type Dials assembled in sets equipped with two-leg brackets need not be present. If present, the screw shall be run in, to prevent it from becoming loose inside the set.

Line Switch Cover

2.22 With the exception of those sets which have the cam-slide type line switch, all telephone sets for which line switch covers are specified on the manufacturing drawings shall be reissued with polyvinyl chloride (PVC) covers of the same piece part numbers as the clear polystyrene covers. The PVC covers have been made flame-retardant and are tinted green for identification purposes.

2.22A Those sets which have the cam-slide type line switch have been manufactured with line switch covers made of clear, flame-retardant polycarbonate. These switch covers need not be tinted green.

Line Switch Cover (Cont'd.)

R 2.23 The PVC cover (P-347341) has been modified to relieve switch spring and dial dust cover interference with the line switch cover. For this application, new and old design PVC (green tinted) covers shall be used in the following manner.

(a) The old design PVC Cover can be used on 500-Type Sets manufactured since 1967 and on 2500-Type Sets manufactured since 1967 with 35Y3A Dials. New design covers will satisfy this requirement also.

(b) The new design PVC cover shall be used on:

1. 500- and 2500-Type Sets manufactured before 1967.
2. 2500-Type Sets manufactured since 1967 with dials other than 35Y3A.

(c) All other sets designed to have P-347341 Line Switch Covers shall use the new (modified) PVC Cover.

3. ELECTRICAL

3.01 Lamps recovered in the assembled product shall light when tested with a voltage not to exceed the rated lamp voltage, and shall show a light that is clearly distinguishable at a distance of approximately three feet under normal lighting conditions.

Testing of Modular Telephone Sets

R 3.02 Unless otherwise specified in the individual BSRS, modular type telephone sets shall be tested using the circuit shown on Att. Dwg. L-761177.

500V Breakdown Test

R 3.03 With 500 volts RMS, 60 Hz, ac applied, wiring and current-carrying parts shall not be crossed electrically with non-current-carrying metal parts. This test condition shall be capable of being met with the switchhook in the off-hook position. ←

Line Switch Cover (Cont'd.)

R 2.23 The PVC cover (P-347341) has been modified to relieve switch spring and dial dust cover interference with the line switch cover. For this application, new and old design PVC (green tinted) covers shall be used in the following manner.

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(b) The new design PVC cover shall be used on:

1. 500- and 2500-Type Sets manufactured before 1967.
2. 2500-Type Sets manufactured since 1967 with dials other than 35Y3A.

(c) All other sets designed to have P-347341 Line Switch Covers shall use the new (modified) PVC Cover.

3. ELECTRICAL

3.01 Lamps recovered in the assembled product shall light when tested with a voltage not to exceed the rated lamp voltage, and shall show a light that is clearly distinguishable at a distance of approximately three feet under normal lighting conditions. ←

Testing of Modular Telephone Sets

R 3.02 Unless otherwise specified in the individual BSRS, modular type telephone sets shall be tested using the circuit shown on Att. Dwg. L-761177.

500V Breakdown Test

R 3.03 With 500 volts RMS, 60 Hz, ac applied, wiring and current-carrying parts shall not be crossed electrically with non-current-carrying metal parts. This test condition shall be capable of being met with the switchhook in either the on-hook or off-hook positions, or during switchhook operation.

3. ELECTRICAL

3.01 Lamps recovered in the assembled product shall light when tested with a voltage not to exceed the rated lamp voltage, and shall show a light that is clearly distinguishable at a distance of approximately three feet under normal lighting conditions.

3.02 Unless otherwise specified in the individual BSRS, modular type telephone sets shall be tested using the circuit shown on Att. Drawing L-761177.

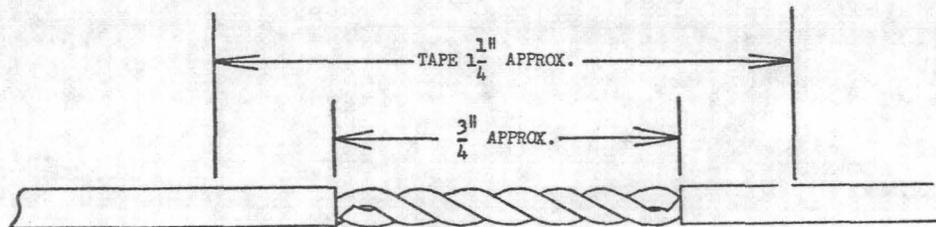
INSULATION BREAKDOWN TEST

- 3.03 (a) The current that flows when a potential 1000 volts RMS 60 Hz is applied between the simplexed telephone connections (tip and ring) and exposed conducting surfaces of "registered" telephone sets shall be as specified in X-17986, Issue 3.
- (b) The current that flows when a potential of 1500 volts RMS 60Hz is applied between all power connections and points having a conducting path to the secondary of any power supply of "registered" telephone sets shall be as specified in X-17986, Issue 3.
- (c) "Grandfathered" and non-registered telephone sets shall satisfy the 500 Volt 60Hz insulation breakdown test performed in accordance with Specification X-38, supplement C.
- (d) Requirements 3.03(a), (b), and (c) shall be tested with the switchhook in the off-hook positions. Sets shall be capable of meeting 3.03(a), (b) and (c) with the switchhook in the on-hook position.
- (e) Requirements 3.03a, b and c shall be tested with the set in it's normal operating position.
- (f) Class C components intended for installation in Class C "registered" telephone sets or shipped loose to the field shall meet the 1000 Volt RMS 60Hz insulation breakdown requirements specified in X-17986 Issue 3 when the test potential is applied between the points specified in the individual BSRS. All other components shall satisfy the 500 Volt RMS 60Hz requirement specified in X-38 Supplement C when the test potential is applied between the same points.
- (g) The current that flows when a potential of 1500 volts RMS 60Hz is applied between all power connections and points having a conducting path to the secondary of any power supply of Class C components for use with "registered" telephone sets shall be as specified in X-17986, Issue 3.

Splicing of Component Leads

3.04 The leads on components in telephone sets and telephone set bases, other than those of tinsel ribbon conductor construction, may be spliced (rather than replaced) with a solder connection as follows: ←

- 1.) The conductor lead used for the splice shall be of the same type and color as the lead on the component.
- 2.) The overall length of the lead after splicing shall be within $\pm 1/2$ inch of the nominal lead length for the manufactured product.
- 3.) No more than three leads in a telephone set or base shall be permitted to be spliced. This is an addition to the number of splices permitted for cords as covered in the applicable BSRS.
- 4.) Outer insulation shall be removed. Removal shall not result in damage to a solid wire conductor or remove more than two strands of a stranded wire lead.
- 5.) Solder splices shall be in accordance with the following drawing.



- 6.) Solder spliced areas shall be insulated by wrapping two complete turns of plastic electrical tape around the wire so that the tape overlaps the wire insulation on both ends of the splice by at least 1/4 inch.

3.04A Existing B-wire connections need not be removed. ←

Connections

3.05 Unless otherwise specified in the individual BSRS, sets shall be connected in accordance with the applicable wiring diagrams listed on the BSRS Index. If the drawing is not listed and the product is being manufactured, the set shall be wired according to latest manufacturing information.

3.06 Telephone sets and telephone set bases may be reissued having dials equipped with different color leads on the pulsing contacts (i.e. -blue and green or blue and blue/green connected in the following manner:

<u>Dial Pulse Lead Color</u>	<u>Network Terminal Designation</u>
Blue	F
Green or Blue/Green	RR
or	
Green or Blue/Green	F
Blue	RR

4. MODIFICATIONS AND CONVERSIONS

Radio Frequency Suppression of "Grandfathered" Sets

- 4.01 Omitted on issue 5 of this page. Information now carried in the individual BSRS's.
- 4.02 Omitted on issue 5 of this page. Information now carried in the individual BSRS's.
- 4.03 Omitted on issue 5 of this page. Information now carried in the individual BSRS's.



Radio Frequency Suppression (Cont'd.)

4.04 Omitted on issue 4 of this page. Information now carried in the individual BSRS's.

Sets Equipped with Convertible Touch-Tone Dials

4.05 Unless otherwise specified by the telephone company, sets equipped with 10-Button Touch-Tone Dials (25P4, 25R3, 25W3, and 25Y3) that have been converted to 12-Button Dials shall be reissued as 12-Button Telephone Sets.

4.06 When specified by the telephone company, telephone sets equipped with convertible 10-Button Touch-Tone Dials, as shown in the following table, shall be converted to 12-Button Touch-Tone Dial Sets in accordance with BSRS-451.917.

<u>Type of Set</u>	<u>Convertible Dial</u>
1500 GP Desk Set	25W3
1500 GP Wall Set	25W3
1560 Multibutton Key Set	25W3
1660 Card Dialer Set and 26 Card Dials	25R3
1700 Princess Set	25P4
1750 Panel Set	25W3
Sets for use with Speakerphone	25Y3

4.07 The code marking on the base of the converted sets and on the cartons shall agree with the Standard 12-Button Code (2000 Series).

4.08 Telephone sets equipped with 10-Button, 25-Type, Touch-Tone dials, which are not converted to 12-Button Dials may be reissued with a D-180597 Kit of Parts and an equivalent 12-Button Type Housing or Faceplate. This requirement does not apply to sets having 25E, H, L or P-Type Dials.

- 4.09 This addition of options to "registered" sets is permissible only when the combination has previously been registered.
- 4.10 Modifications which would change the basic registration of the set are not permitted.

CONVERSION OF REGISTERED SETS

4.11 The conversion of a "registered" set to another code is permissible provided the set is converted to a registered type, the parts used are approved for use and the converted set satisfies all BSRS requirements applicable to the new code. The old registration label shall be removed, if not applicable to the new code, and the appropriate new registration label shall be applied to the set. The original date of manufacture shall remain on the set.

4.12 The conversion of a "registered" set to a "grandfathered" set or a "grandfathered" set to a "registered" set is not permissible.

5. MARKING

5.01 All "Grandfathered" telephone sets, telephone bases, and telephone set bases shall be marked on the outer surface in the following manner.

(a) The original date of manufacture shall be retained if the date the set is repaired is twelve (12) months or less from the original date of manufacture. (e.g. a set manufactured in July 1978 will retain its mfg. date thru July 1979.)

- 1.) The product code and repair date shall be present.
- 2.) The repair date shown on an adhesive backed printed label or ink stamped on the base shall be located in close proximity to the manufacturing date but so as not to interfere with the set code or manufacturing date markings.

(b) The original date of manufacture shall be covered or removed from the base if the date the set is repaired is more than twelve (12) months from the original date of manufacture. (e.g. a set manufactured in July 1978 will have its manufacturing date removed or covered in August 1979).

- 1.) The product code and repair date shall be present.
- 2.) If labels are used to designate the marking, the date of manufacture shall be covered over by the label.
- 3.) If ink stamping is used, the date of manufacture shall be removed from the outer surface of the base.

5. MARKINGS (Cont'd.)

5.01 Continued -

- (c) The location of the code and date marking shall be the same as that specified for current product, or as specified for the specific tel set or base when issued as new product. The character size shall be 1/8 inch minimum.
- (d) All required markings shall be readable under average lighting conditions.
- (e) Either adhesive-backed printed labels or ink stamping shall be used to designate the code and/or repair date.
- (f) If ink marking is employed; orange or vermillion-colored ink may be used in lieu of aluminum or black.
- (g) If labels are used, they shall be white in color with black printing.
- (h) Adhering one label on top of another for subsequent recovery or repair operations shall not be permitted.
- (i) The existing (old) repair date shall be removed.

5.02 On all "registered" telephone sets, telephone bases, and telephone set bases:

- (a) The registration label, set code, and date of manufacture shall be retained. If any of these markings are unreadable under average lighting conditions, they shall be restored as specified for the specific telephone set or base when issued as new product except that when restoring the product code marking it may be combined with the repair date information. Registration labels shall always be applied directly to the flat surface of the substrate. It shall not be applied over an existing hole, a rivet, "Bell System Property Not For Sale" permanent stamping or other markings. It is permissible to apply one registration label over the existing registration label (maximum of two labels). In applying one registration label over another registration label, the alignment of the two labels must be exact.

5. MARKINGS (Cont'd)

5.02 Continued -

- (b) The repair date and/or combined repair date and code information shown on an adhesive backed printed label or ink stamped on the base shall whenever possible be located in close proximity to the manufacturing date but so as not to interfere with other markings listed in this specification. Existing old repair dates shall be removed. Adhering one repair date label on top of another for subsequent recovery or repair operations shall not be permitted.

5.03 The repair marking shall be in Arabic numerals and shall consist of the repair symbol "R" followed by the year, a dash (or repairing location if applicable), and the month. For example, a set repaired during July, 1980 would be marked R80-7. If the repair was done at a Service Center that is required to use a location symbol it would be R80XX7.

Bell System Property Markings

5.04 "Bell System Property Not For Sale" marking shall be present on the exterior of the bases of all telephone sets not equipped with telephone company set identification marking. Where such marking has not been steel stamped in manufacture, marking shall be by means of a label.

- (a) The location of the label on the base shall be the same as new. For type of sets where Bell System Property marking location has not been established, the label shall be located convenient for application and consistent with standardized steel stamping practice.
- (b) Two label sizes have been established. Selection of label may be made to suit location. Specifications are:

Equip. Sketch No.	Charac. Size & Type Spec.	Comcode Number	Label Size
RS-9153	B-140763	401306154	.50"X.75"
RS-9154	B-140764	401306162	.25"X1.25"

(Color shall be black on a white background.)

- (c) Labels shall be of the W. H. Brady Company, 727 W. Glendale Avenue, Milwaukee, Wisconsin, Tamper-proof-Type XB-351 with the adhesive bonding action stronger than the vinyl backing such that attempted removal of label without leaving pieces is very difficult.

5. MARKINGS (Cont'd)

5.04A The "Bell System Property Not For Sale" marking need not be readable on Handsets and Housings.

Telephone Company Set Identification Marking

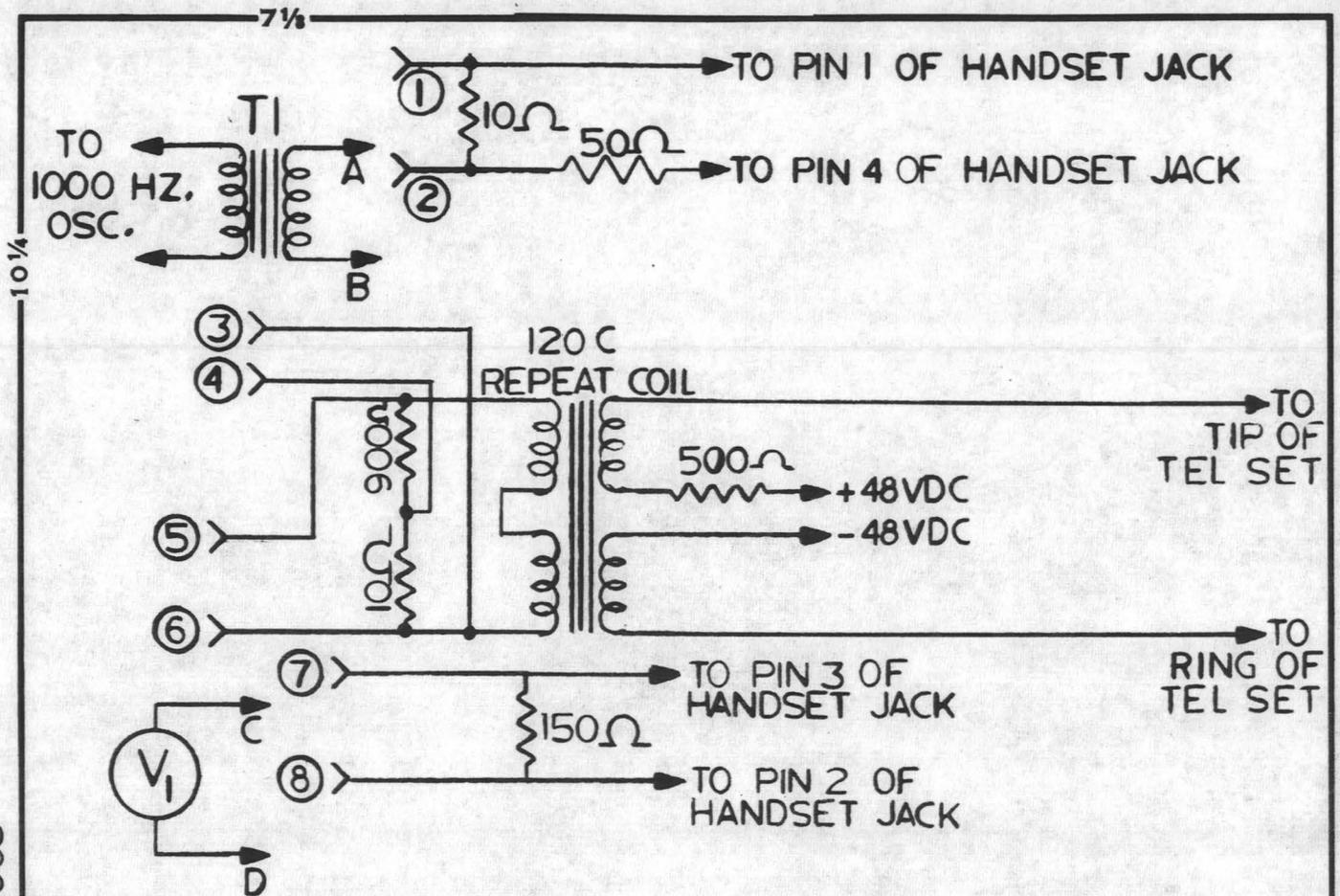
5.05 Reissued sets need not have existing Telephone Company Ownership labels removed provided the labels meet all other standards.

6. PACKING

6.01 In order to comply with FCC Regulation Part 68.218 an information insert shall be packed with each registered set. Customer owned Design Line® Telephone Sets are excluded.



BSRS 350.003

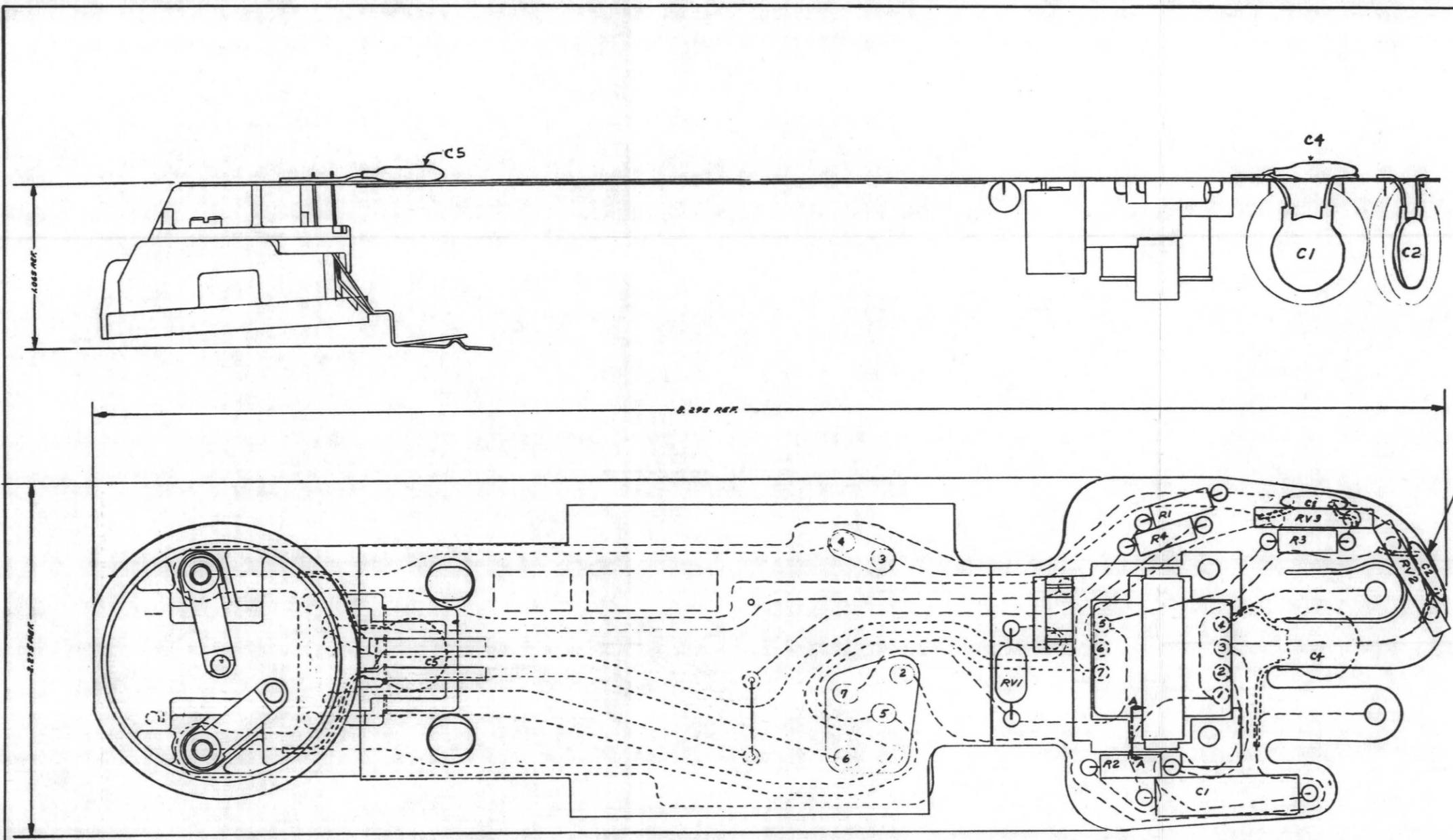


NOTES

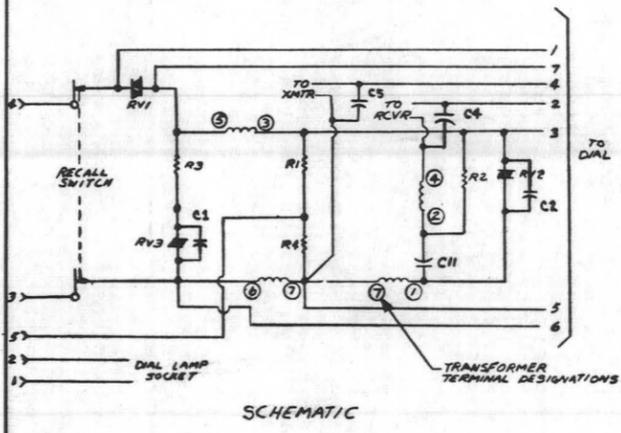
- ① T₁ SHALL MATCH THE OSCILLATOR TO A 10 Ω LOAD
- ② THE VOLTAGE ACROSS TERMINALS A & B SHALL BE .25 VOLTS AC
- ③ VOLT METER SHALL BE HEWLETT PACKARD MODEL 400E OR EQUIVALENT
- ④ ALL RESISTORS AND CAPACITORS ARE 1%
- ⑤ TO TEST TRANSMIT, RECEIVE, AND SIDE TONE LEVELS, CONNECT T₁ AND V₁ IN ACCORDANCE WITH THE FOLLOWING TABLE:

	CONNECT			
	A & B TO	C & D TO		
TRANSMIT	1 & 2	5 & 6		
RECEIVE	3 & 4	7 & 8		
SIDE TONE	1 & 2	7 & 8		

ENG <i>Keating</i>	DRAWN //	2-18-68	ISSUE 1	CHANGED - 500 Ω RESISTOR WAS 80 Ω	REMOVED 4 - 300 Ω RESISTORS	ADDED 1 - 0.20 μF CAPACITOR	LCH LDT - 239	ISSUE - 2	DWG	TEST CIRCUIT FOR MODULAR TYPE TEL SETS		SCALE
										WESTERN ELECTRIC COMPANY, INC. ENGINEER OF MANUFACTURE		
USED ON									BELL TELEPHONE LABORATORIES INCORPORATED		SHEET	
									L 761177			
NO. OF SHEETS PER SET										SEE SHEET 1		



BSRS350.003



R.F. SUPPRESSION NOTES:

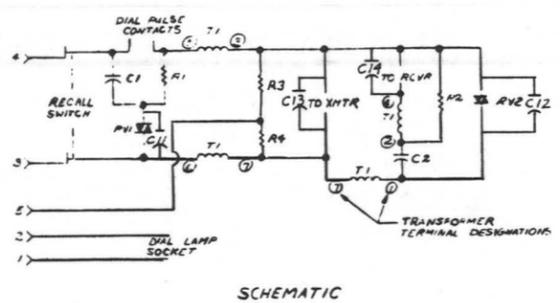
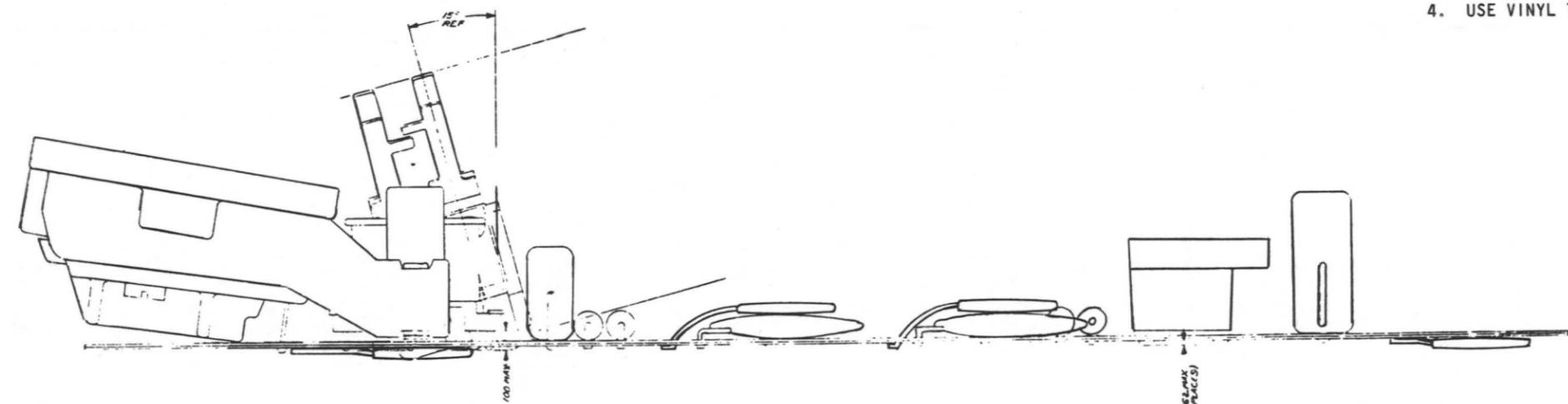
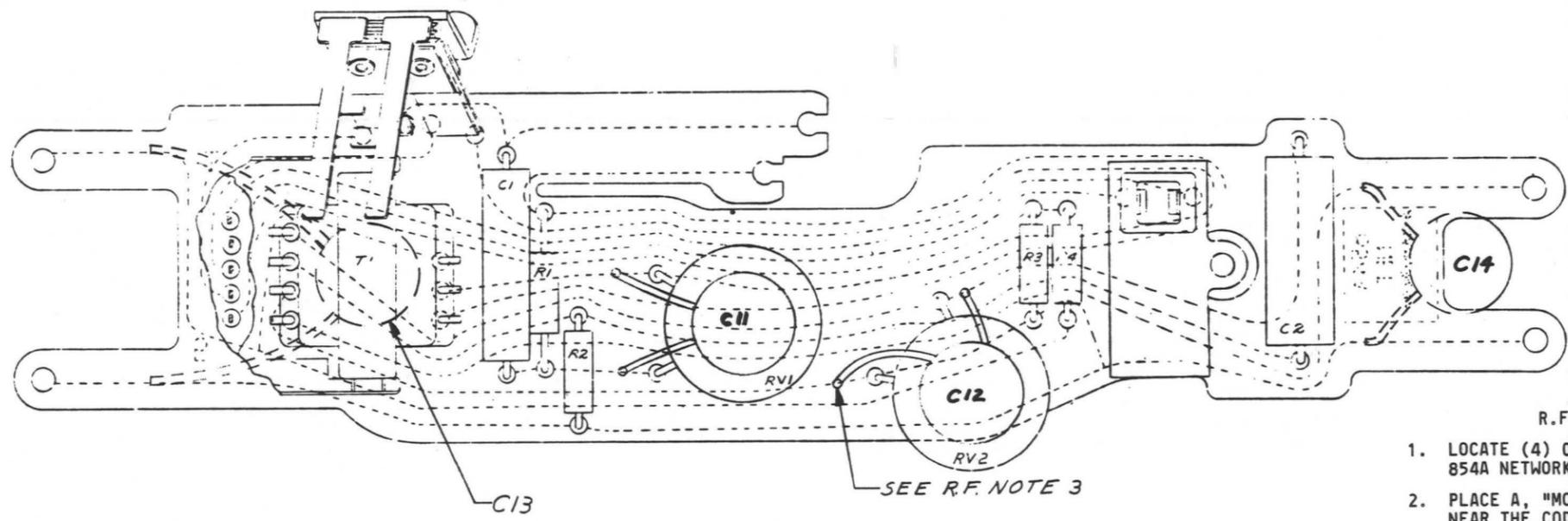
1. LOCATE (4) 0.022 uf (KS 19953-L3) CAPACITORS ON THE 861A TOUCH-TONE TRIMLINE NETWORK APPROXIMATELY AS SHOWN.
2. IF NECESSARY, TAPE CAPACITORS C1 AND C2 TO REDUCE MECHANICAL CONTACT WITH HANDSET HOUSING.
3. PLACE A, "MODIFIED FOR R.F. SUPPRESSION," LABEL NEAR THE CODE MARKING.
4. USE VINYL TUBING ON LEADS OF CAPACITORS C4 AND C5.
5. DRILL 0.035 HOLES NEAR VARISTOR LEADS AND SOLDER CAPACITOR LEADS TO PATH CONTAINING VARISTOR LEADS (4 PLACES).

ISS-2-527-68
Delete Material Referring To R.F. Supp.
10-12-67
1

B-991721

861A NETWORK MODIFICATION N.T.S.

BSRS350.003



SCHEMATIC

R.F. SUPPRESSION NOTES:

1. LOCATE (4) 0.022 μ f (KS 19953-L3) CAPACITORS ON THE 854A NETWORK APPROXIMATELY AS SHOWN.
2. PLACE A, "MODIFIED FOR R.F. SUPPRESSION," LABEL NEAR THE CODE MARKING.
3. DRILL 0.035 HOLES NEAR VARISTOR LEADS AND SOLDER CAPACITOR LEADS TO PATH CONTAINING VARISTOR LEAD. (4 PLACES)
4. USE VINYL TUBING ON LEADS OF CAPACITORS C13 AND C14.

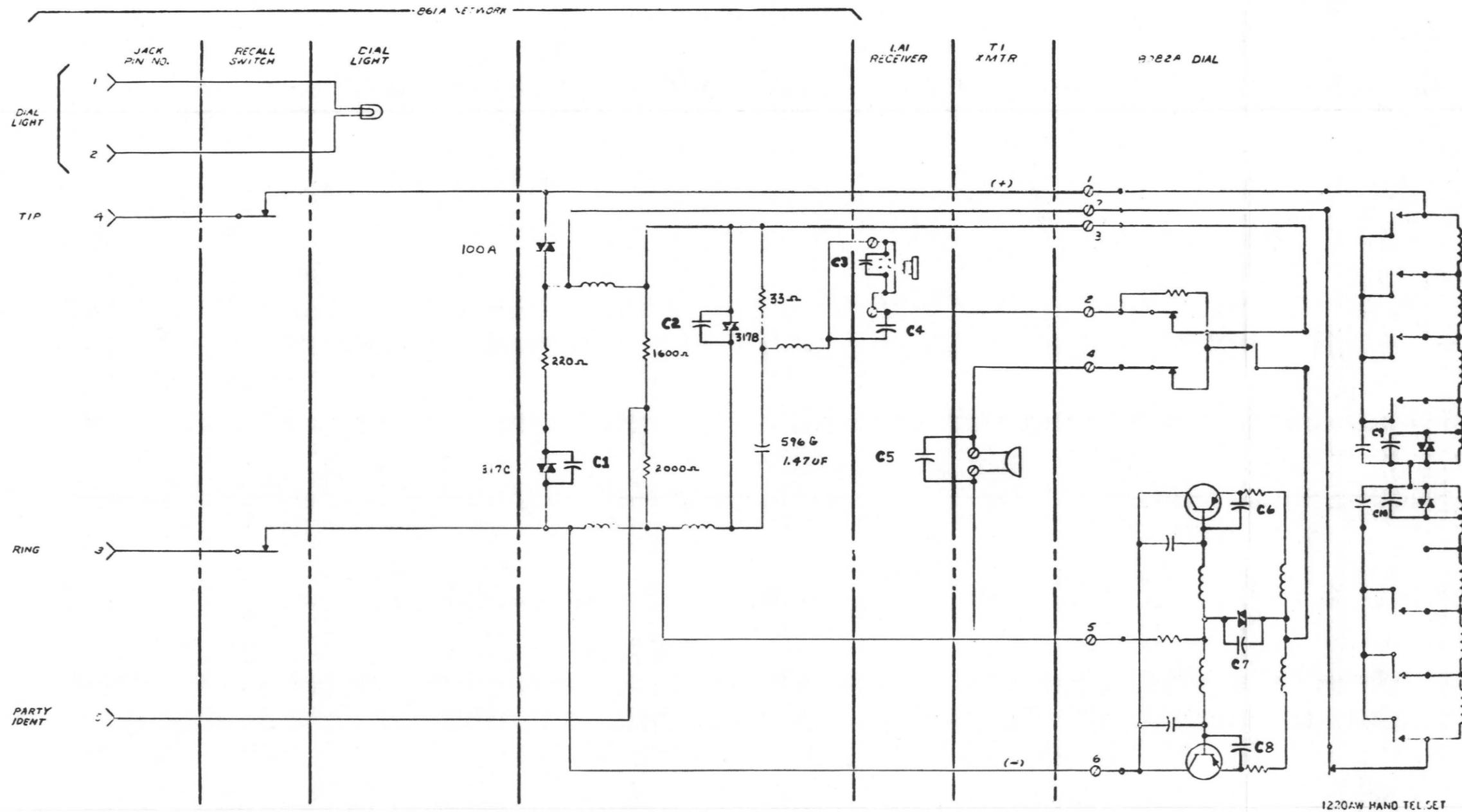
DESIGNED BY: J. JACKSON
 DRAWN BY: R. KOT
 10-12-67
 135-2 5/68
 Delete Material Not Refering To R.F. Suppression
 APPROVED:

B-991722

854A NETWORK MODIFICATION N.T.S.
 WESTERN ELECTRIC CO. INC.
 TELEPHONE DIVISION
 1967-1968

Handwritten mark

BSRS350.003



C1, C2, C4, AND C5 - (KS 19953-L3) .022 uf CERAMIC
 C3, C6, C7, C8, C9, AND C10 - (KS 19708-L4) .01 uf CERAMIC

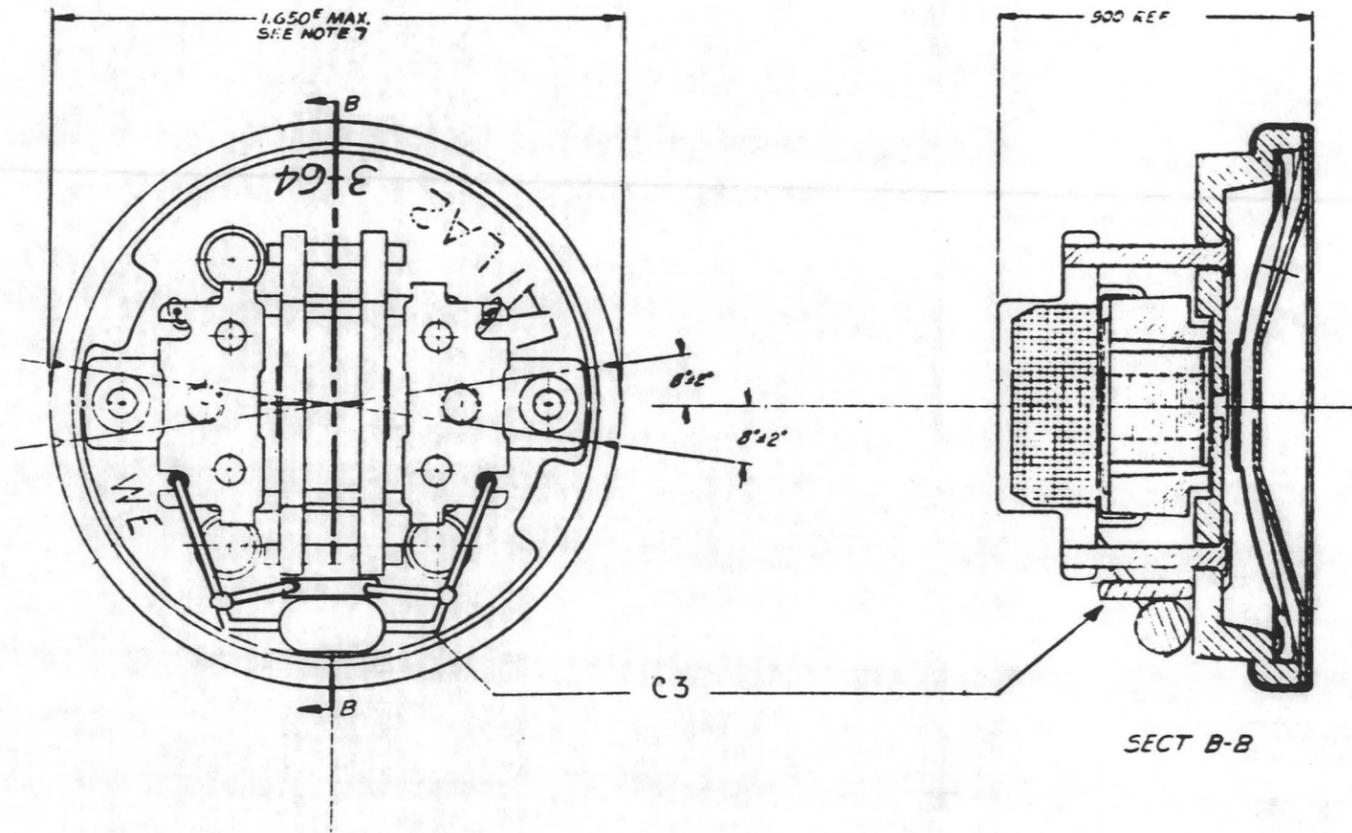
MODIFIED FOR R.F. SUPPRESSION

REVISED BY JACKSON 6/1
 DATE 10-12-67
 ISS-2 5-27-68
 Delete Material Not Refering To R.F. Suppression
 P.P.K./C.S.

B-991723

1220A HAND TEL SET MODIFICATION
 SCALE NONE

BSR350.003



R.F. SUPPRESSION NOTES:

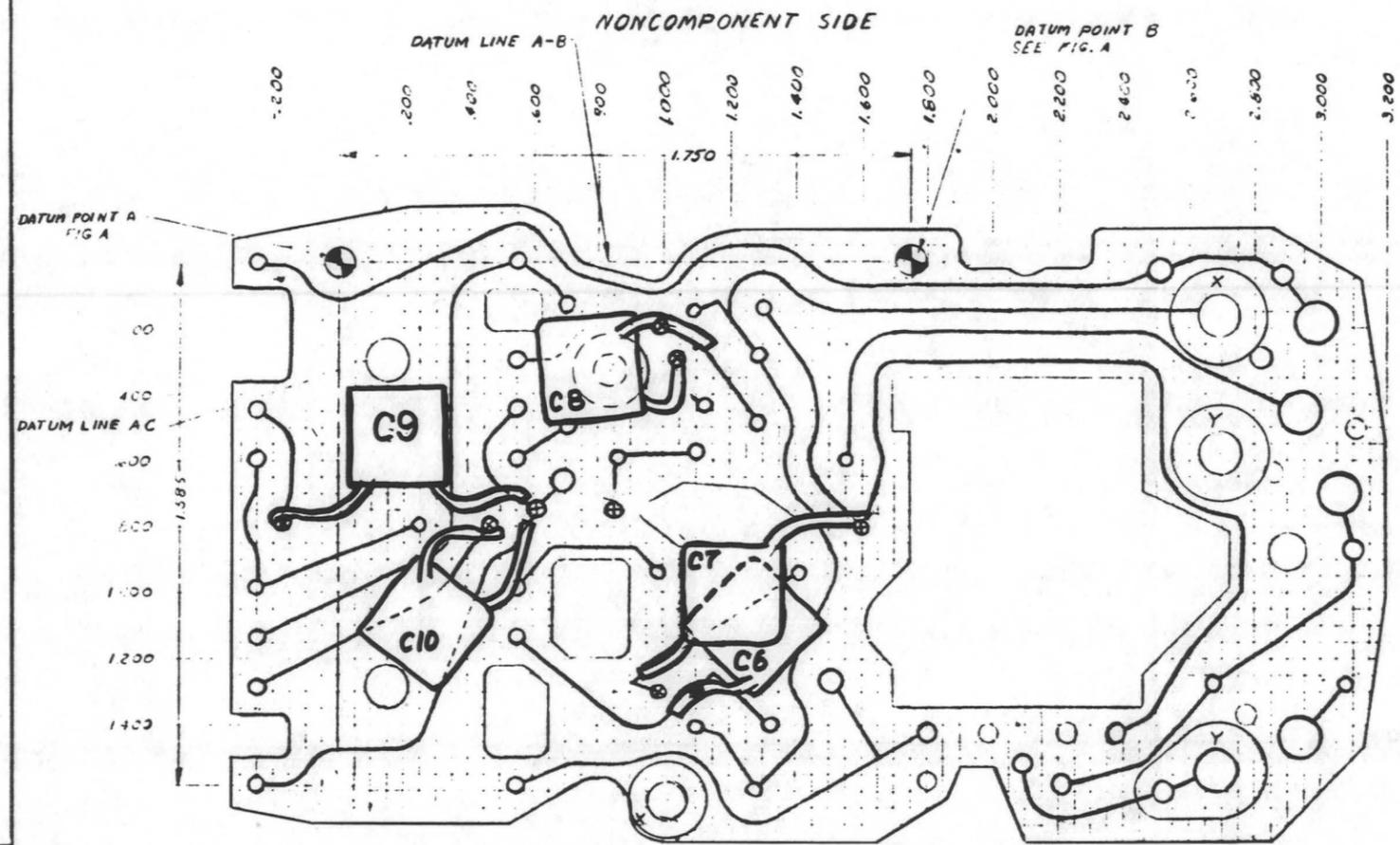
1. LOCATE (1) 0.01 uf (KS 19708-L4) CAPACITOR ON THE LA1 RECEIVER UNIT APPROXIMATELY AS SHOWN.(C3)
2. PLACE INSULATING TAPE AROUND THE CAPACITOR TO PROVIDE ELECTRICAL AND MECHANICAL PROTECTION.

ENGR.	G.E. JENSEN	1
DRAWN	R. KOT	1
DATE	10-12-67	1
ISS	2 5-27-68	
Delete Material Not Referring to R-F Suppression		
P.P.K. (Ch)		

B-991724

L A TYPE
 RECEIVER
 UNIT
 MODIFICATION
 N.T.S.
WESTERN ELECTRIC CO. - INC.
 ENG. DEPT. OF MANUFACTURE

35 B-991724



BSRS350.003

R.F. SUPPRESSION NOTES:

1. LOCATE (5) 0.01 uf (KS 19708-L4) CAPACITORS ON THE 80B2A TOUCH-TONE TRIMLINE DIAL APPROXIMATELY AS SHOWN.
2. PLACE INSULATING TAPE UNDER CAPACITORS FOR ELECTRICAL AND MECHANICAL PROTECTION. USE VINYL TUBING ON THE LONG CAPACITOR LEADS.
3. ⊕ INDICATES TERMINAL AREAS BEING BYPASSED BY THE APPROPRIATE CAPACITOR.
4. RETUNE DIAL AFTER MODIFICATION.
5. PLACE A, "MODIFIED FOR R.F. SUPPRESSION," LABEL NEAR THE CODE STAMP ON THE FACE OF THE DIAL.

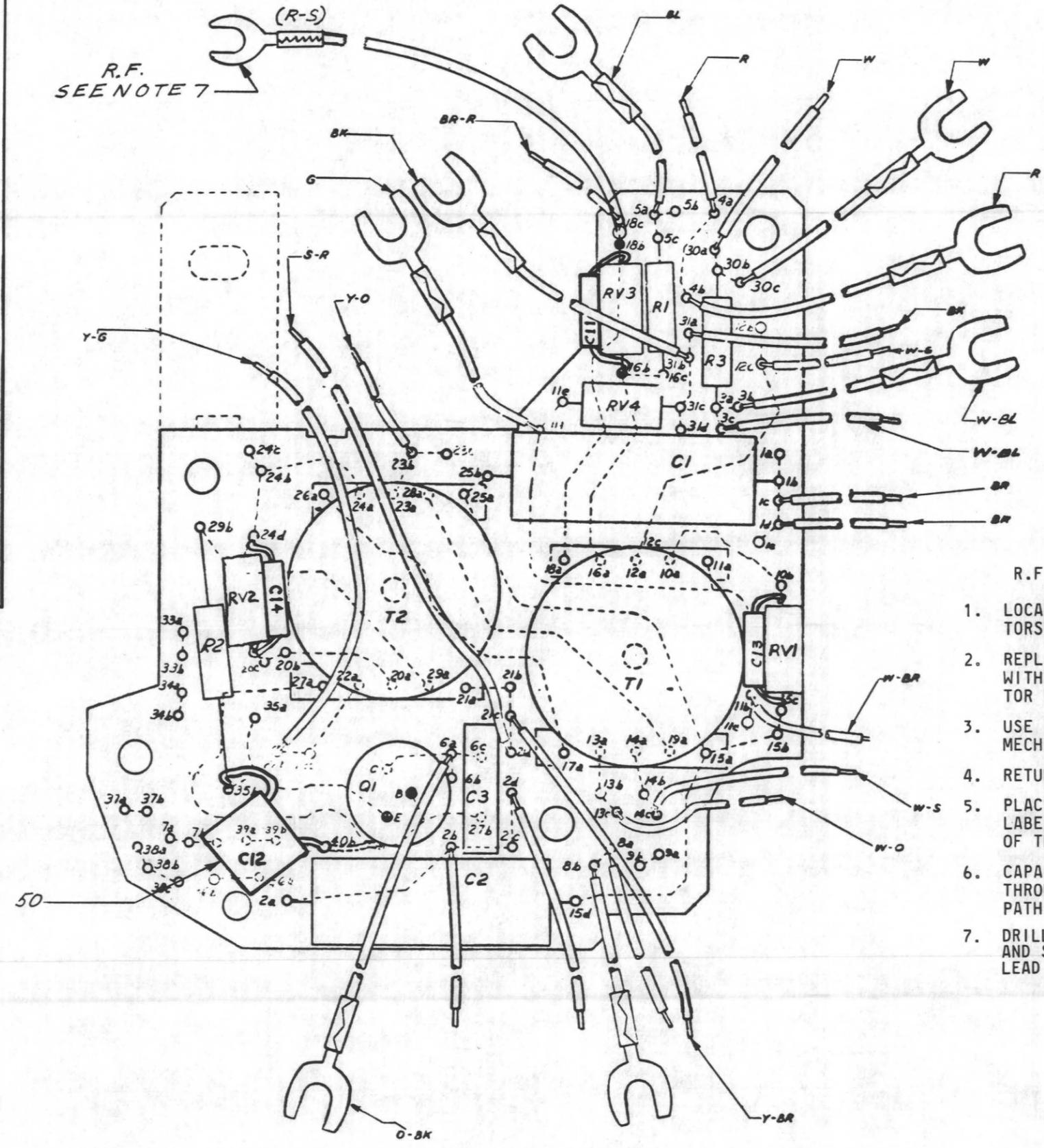
ENGR. G. E. JACKSON
 DRAWN R. KOT
 10-12-67
 15548 R 5-27-68
 Delete Material
 Not Referring
 to R.F.
 Suppression
 M.K.S.

2 B-991725

USED ON DWG
 80B2A
 DIAL
 MODIFICATION
 M.K.S.

8

R.F.
SEE NOTE 7



25Y3 DIAL
25W3 DIAL
35A3 DIAL

R.F. SUPPRESSION NOTES:

1. LOCATE (1) 0.01 uf (KS 19708-L4) CAPACITORS, ITEM 50, APPROXIMATELY AS SHOWN. (C12)
2. REPLACE VARISTORS RV1, RV2, AND RV3 WITH PREASSEMBLED VARISTOR AND CAPACITOR UNITS (B-991730) AND MOUNT AS SHOWN.
3. USE TAPE WHERE NECESSARY TO PROVIDE MECHANICAL ISOLATION.
4. RETUNE DIAL AFTER MODIFICATION.
5. PLACE A, "MODIFIED FOR R.F. SUPPRESSION," LABEL NEAR THE CODE STAMP ON THE FACE OF THE DIAL.
6. CAPACITOR C12 CONNECTS TO R2 AND GOES THROUGH HOLE 40b TO BE SOLDERED TO PATH BETWEEN HOLES 27a AND 27b.
7. DRILL 0.043 HOLE APPROXIMATELY AS SHOWN AND SOLDER AN 8 INCH (R-S) SPADE-TIPPED LEAD TO THE X CONTACT SIDE OF RV3.

6. F. JACKSON
 R. KOT
 10-12-67
 ISSUE 2 5/27/68
 Delete Material Not Refer-
 ing to R.F. Suppression.
 PPK CAS

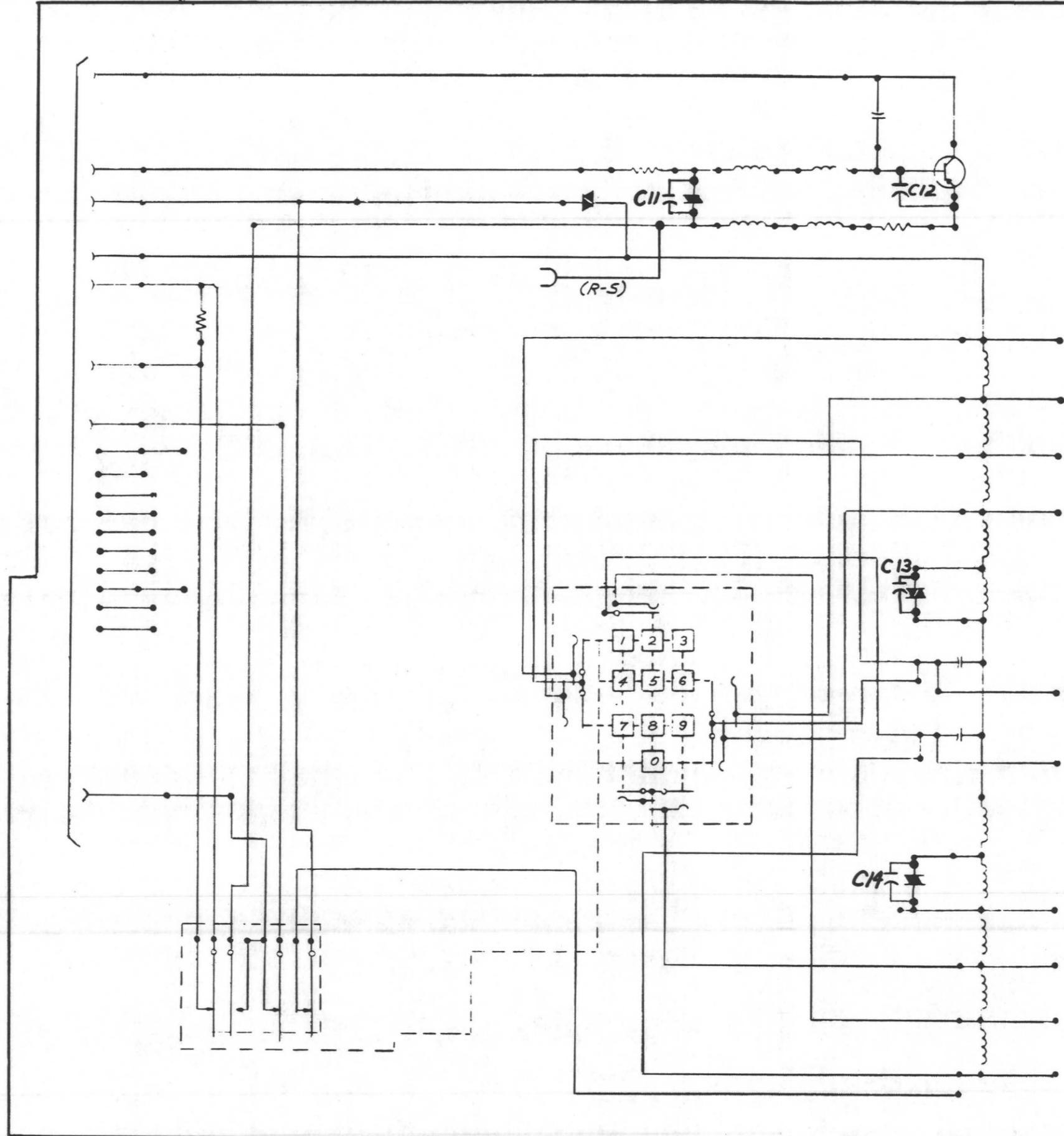
25 SHEETS
2 B-991726

25W3, -Y3,
 35A3
 Dial Mod-
 ification
 WESTERN ELECTRIC CO. INC.
 ONE YEAR OF WARRANTY

35 B-991726 2 SHEETS

ENGR. G. JACKSON
DRAWN R. KOT
10-12-67
ISS 2 5-27-68
Delete Material Not Refering to R.F. Suppression
P.P.K. OLS

BSRS350.003



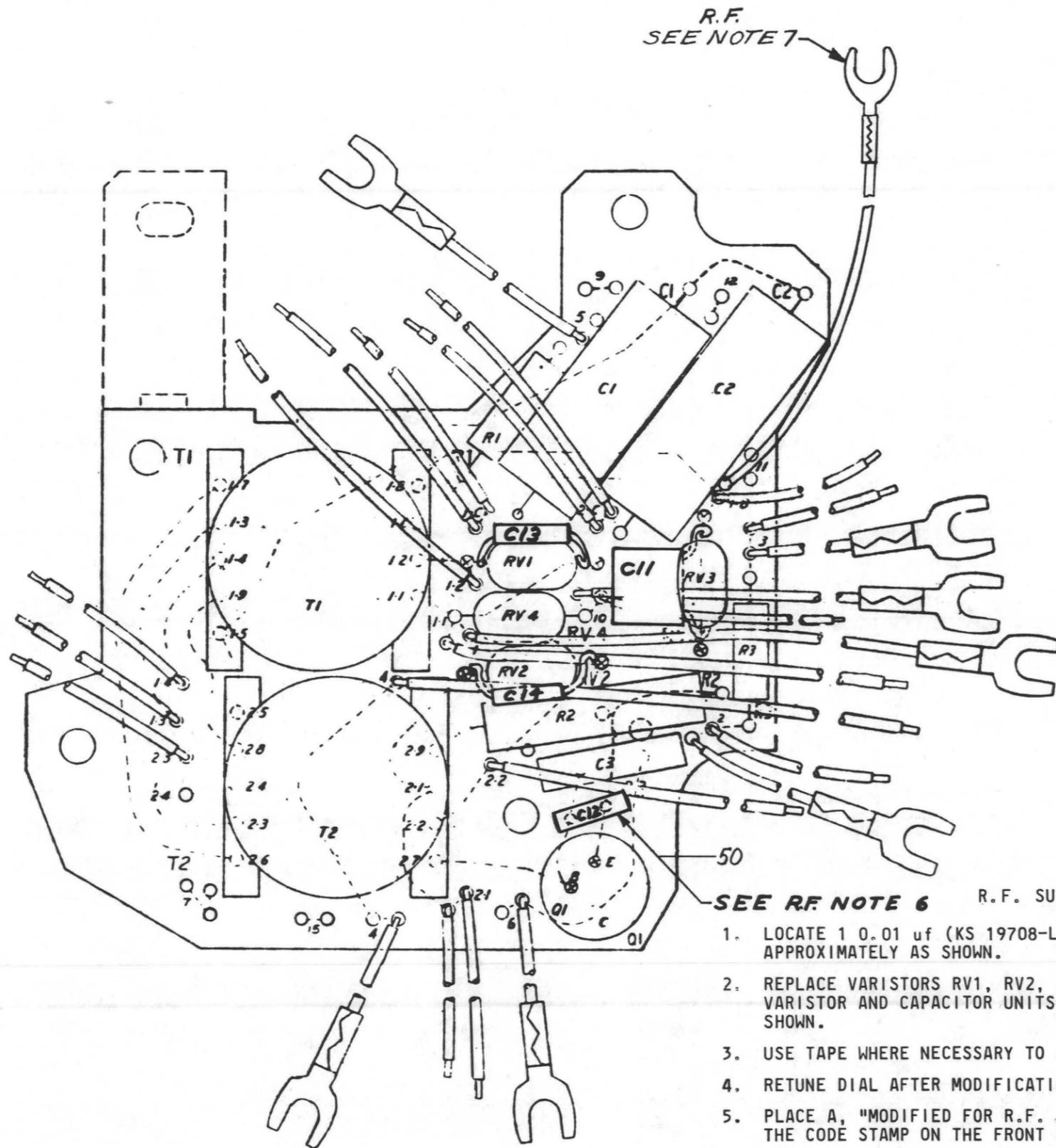
B-991726 SH2

25W3E
35A3
DIAL
MODIFICATION
M.T.S.

B-991726
SHEET 2

2

BSRS350.003



25H4 DIAL

SEE R.F. NOTE 6 R.F. SUPPRESSION NOTES:

1. LOCATE 1 0.01 uf (KS 19708-L4) CAPACITORS, ITEM 50, APPROXIMATELY AS SHOWN.
2. REPLACE VARIATORS RV1, RV2, AND RV3 WITH PREASSEMBLED VARIATOR AND CAPACITOR UNITS B-991730, AND MOUNT AS SHOWN.
3. USE TAPE WHERE NECESSARY TO PROVIDE MECHANICAL ISOLATION.
4. RETUNE DIAL AFTER MODIFICATION.
5. PLACE A, "MODIFIED FOR R.F. SUPPRESSION," LABEL NEAR THE CODE STAMP ON THE FRONT OF THE DIAL.
6. DRILL 0.025 HOLES NEAR PATHS AS SHOWN AND SOLDER CAPACITOR LEADS TO PATHS. (2 PLACES)
7. DRILL 0.043 HOLE APPROXIMATELY AS SHOWN AND SOLDER AN 8 INCH (R-S) SPADE-TIPPED LEAD TO THE X CONTACT SIDE OF RV3.

APPROVED	9/
BY JACKSON	
DATE	
R. KOT	
10-12-67	1

ISSUE 2 5-27-66
Delete Material Not Referring to R.F. Suppression.
P.P.K. C.S.

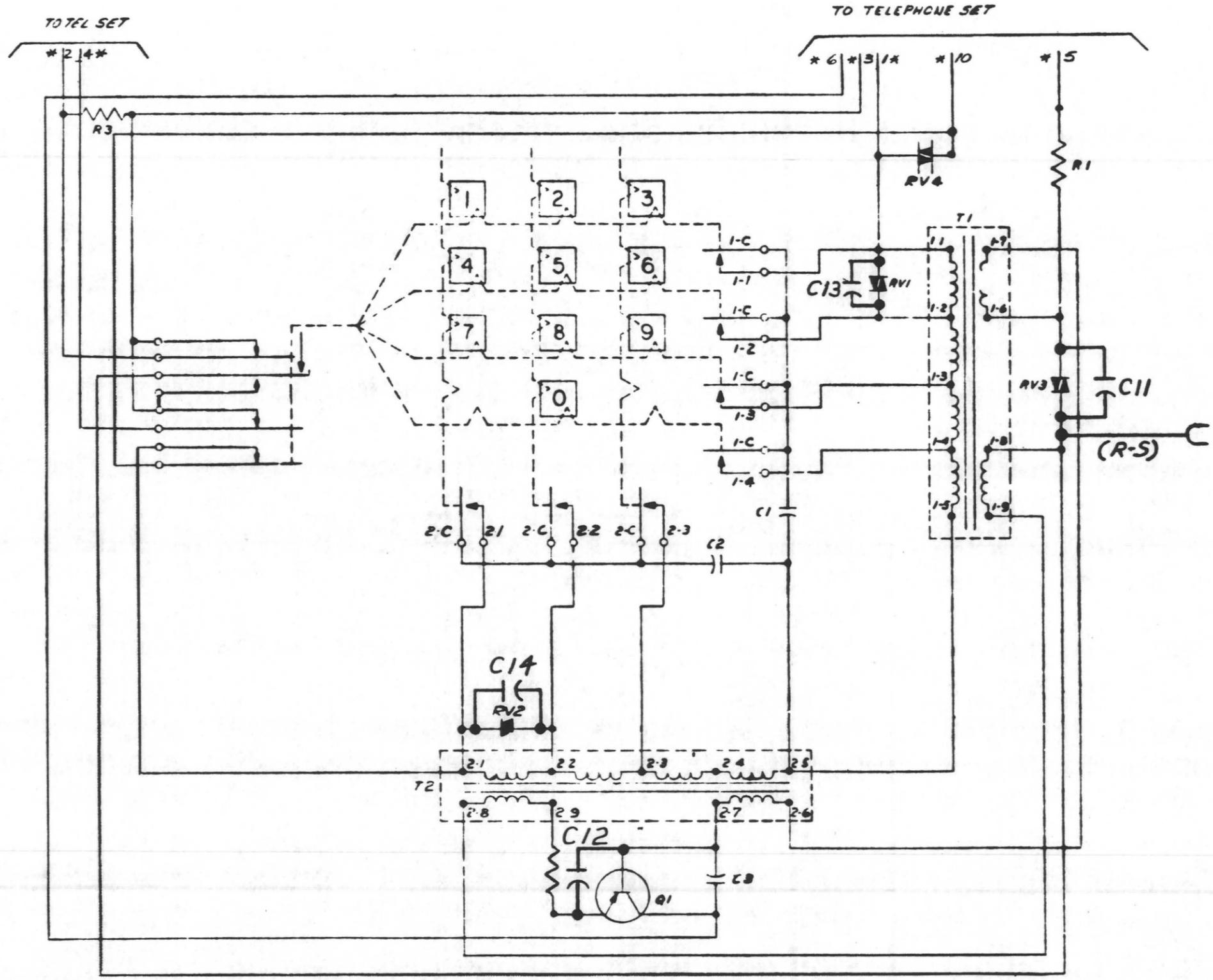
2 B-991727

REV	DATE	BY
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

25H4 DIAL MODIFICATION
N.T.S.
DESIGNED ELECTRIC CO. INC.
1000 W. 10TH AVE. S.E.
TUMACACI, ARIZONA

35 B-991727 2 Sheets

BSRS350.003



62 JACKSON
 DRAWN BY
 B. KOTI
 10-12-67
 155-2 5/27/68
 Delete Material Not Refering to R.F. Suppression
 PPK 10/15

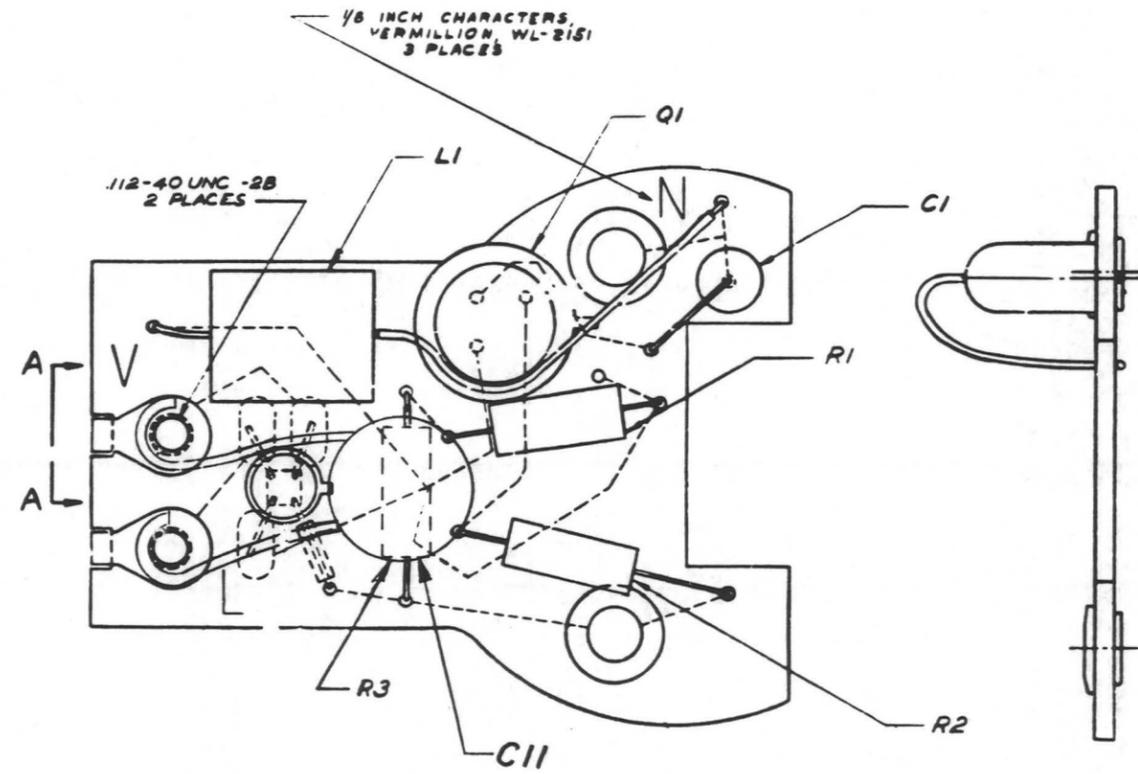
25H4
 DIAL
 MODIFICATION
 N.T.S.

WESTERN ELECTRIC CO. INC.
 DIVISION OF GENERAL ELECTRIC

22

P-90D154

BSRS350.003



R.F. SUPPRESSION NOTES:

1. LOCATE (1) 0.022 uf (KS 19953-L3) CAPACITOR ON THE 227A AMPLIFIER APPROXIMATELY AS SHOWN. (C11)
2. USE VINYL TUBING ON CAPACITOR LEADS.
3. PLACE A, "MODIFIED FOR R.F. SUPPRESSION," LABEL ON THE TRANSMITTER CUP.

B-991728

ENGR.	GE JACKSON	5
DRAWN	R. KOT	3
		10-12-67
		1
155.2 5-27-68		
Delete Material Not Referring to R.F. Suppression		
P.P.K. GS		

B-991728

277A	A-590128
REV	DWG

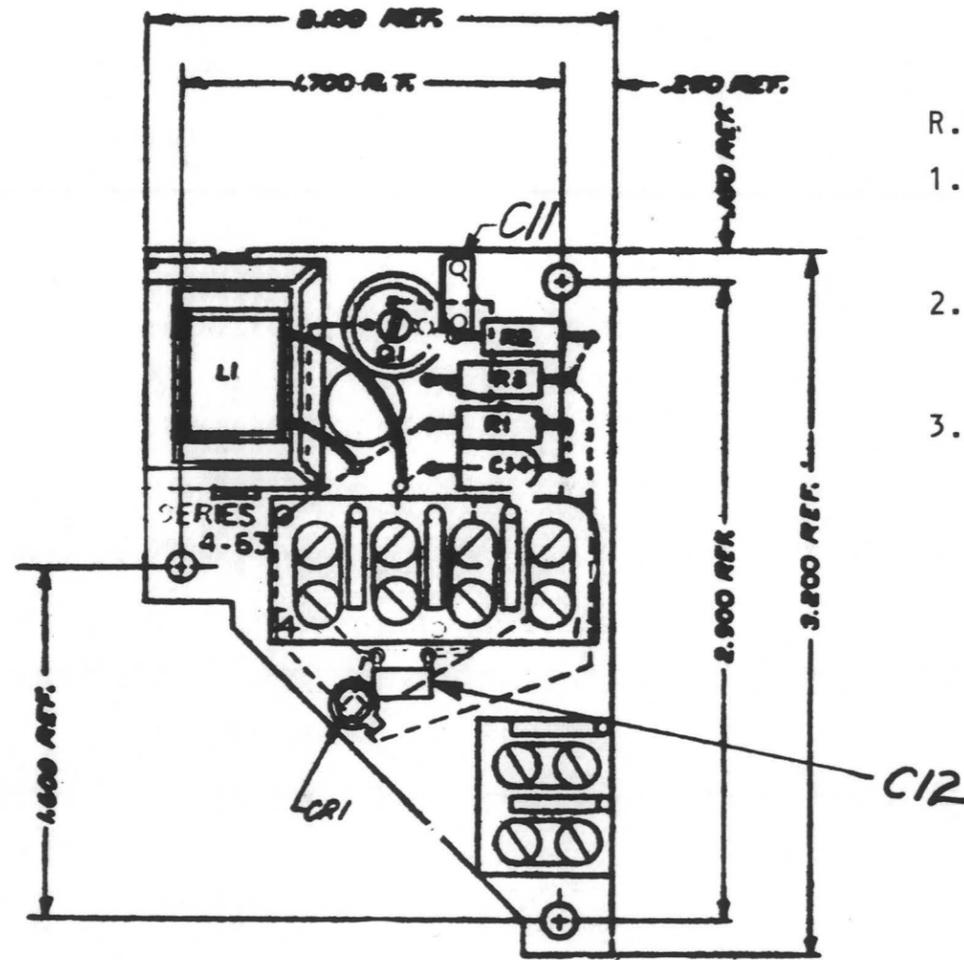
277A
AMPLIFIER
MODIFICATION
N.T.S.
WESTERN ELECTRIC CO INC

35 B-991728

ed

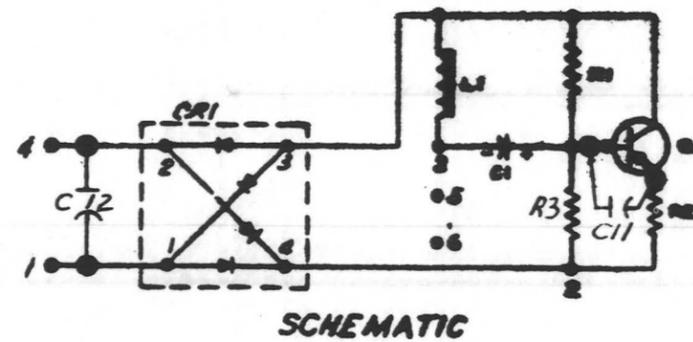
A-580160

BSRS350.003



R.F. SUPPRESSION NOTES:

1. LOCATE (2) 0.01 uf (KS 19708-L4) CAPACITORS ON THE 241A AMPLIFIER APPROXIMATELY AS SHOWN. (C11 AND C12)
2. PLACE A, "MODIFIED FOR R.F. SUPPRESSION," LABEL NEAR THE CODE STAMP.
3. DRILL 0.025 HOLES NEAR PATHS AS SHOWN AND SOLDER CAPACITOR LEADS TO PATHS. (4 PLACES)



B-991729

ENGR.	GE JACKSON
DRAWN	R. KOT

10-12-67. 1

155-2 5-27-68
Delete Material Not Referring To R.F. Suppression

W.P.K. 1/15

B-991729

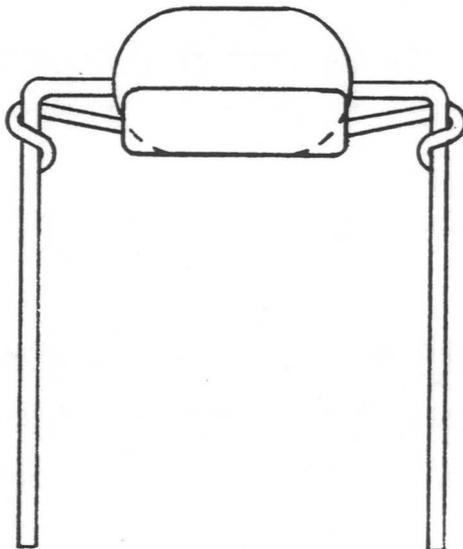
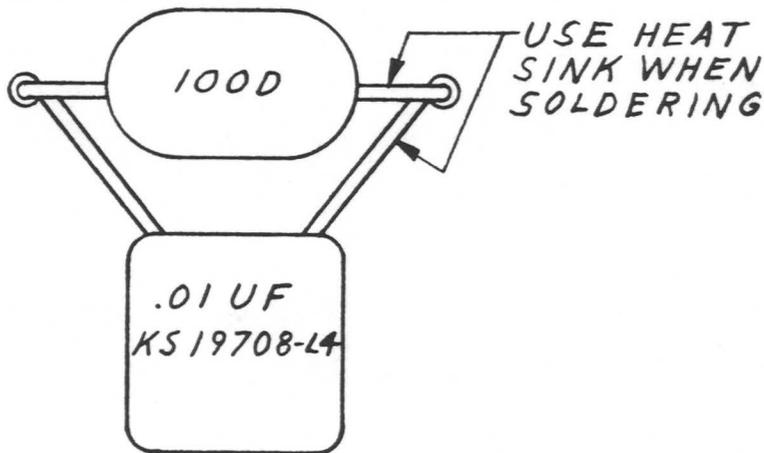
241A
AMPLIFIER
MODIFICATION
N.T.S.

UNION ELECTRIC CO. INC.
MEMBER OF GENERAL ELECTRIC

35 B-991729

Handwritten mark

BSRS350.003



ENGR G.Z. JACKSON 93	
DRAWN R.KOT	
10-12-67	ISSUE 1
ISSUE: 2 5-27-68 Delete Material Not Referring to R.F. Suppression	
P.P.K. C.S.	

25H4 DIAL	B-991727
25W3 DIAL	B-991726
USED ON	DWG

VARISTOR & CAPACITOR ASSEMBLY

SCALE N.T.S.

BELL TELEPHONE LABORATORIES INCORPORATED

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES. NONLIMITED DIMENSIONS OTHER THAN SIZE OF RAW MATERIAL SHALL BE HELD AS FOLLOWS WHEN EXPRESSED:

TO 2 DECIMAL PLACES ± AS ANGLES ±

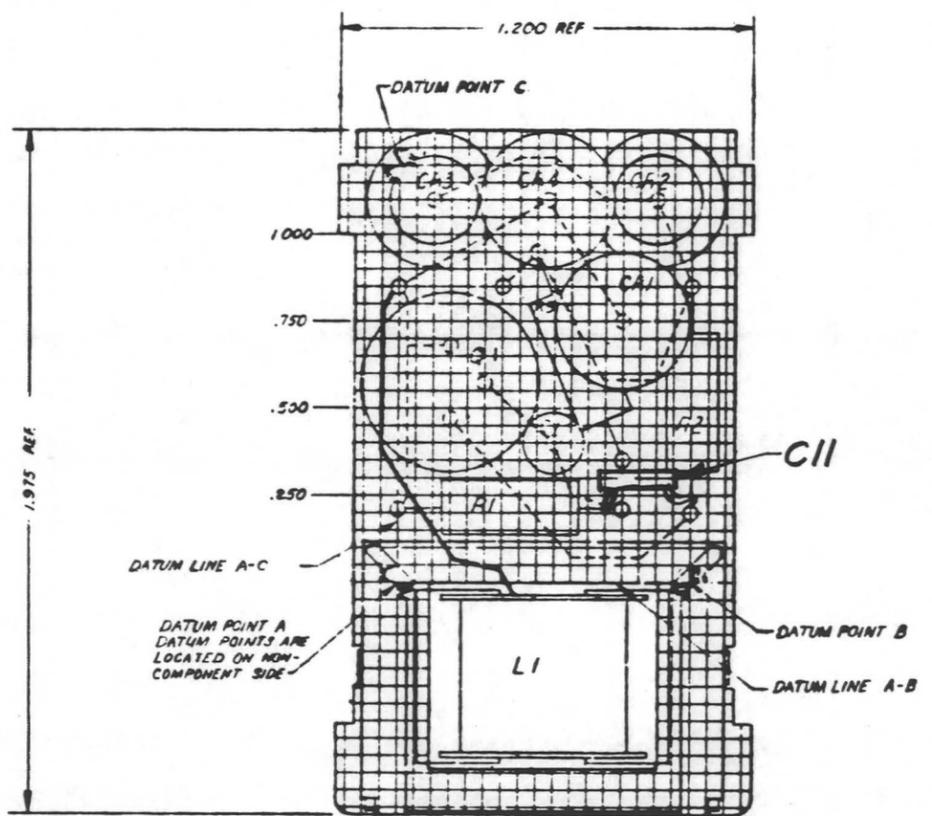
TO 3 DECIMAL PLACES ±

DWG SIZE
15 B-991730

R. F. SUPPRESSION NOTES:
1. LOCATE (1) 0.01uf (KS 19708-L4) CAPACITOR
APPROXIMATELY AS SHOWN. (C11)

ENGR.
G. Z. JACKSON
DRAWN
R. KOT
10-12-67 1
ISSUE 2 5-27-68
Delete Mater-
ial Not Re-
fering to R.F.
Suppression
P.P.K. C.K.S.

BSRS350.003



B-991796 2SA

DATE: 10-12-67
DWG

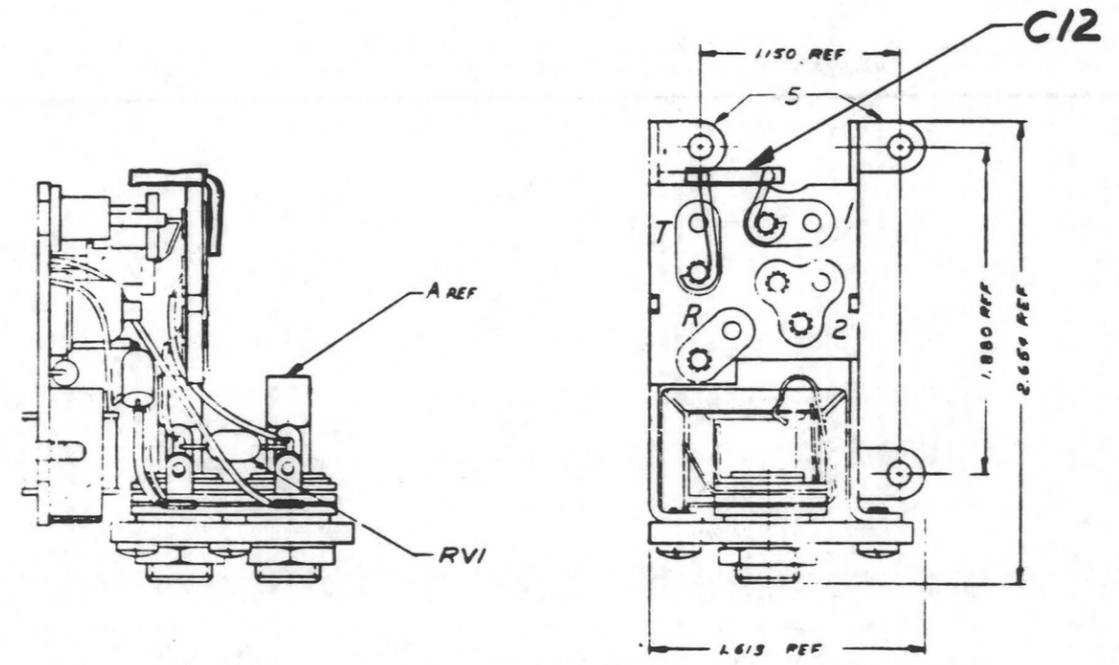
242
AMPLIFIER
MODIFICATION
16 TS.

WESTERN ELECTRIC CO INC
ELECTRONIC MANUFACTURING

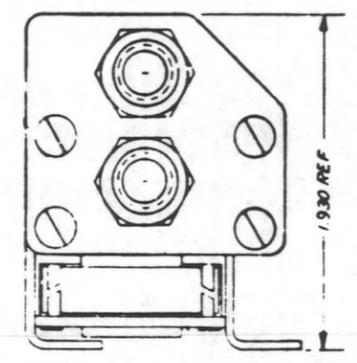
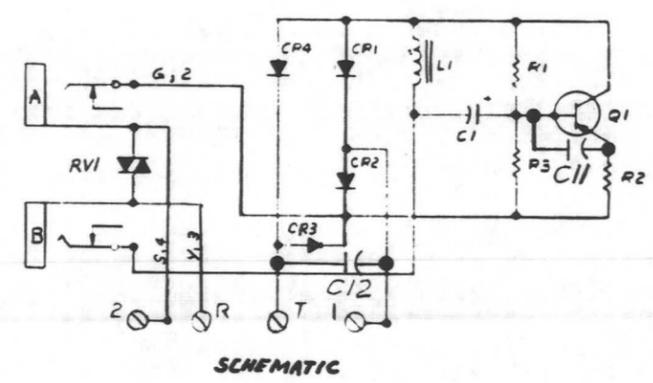
B-991796
2 SHEETS
Sheet #1

35

ENGR
G.F. JACKSON
DRAWN
R. KOT
10-12-67
ISSUE 2 527-00
Delete Material Not Referring to R.F. Suppression
*FRK. | C.S.



- R. F. SUPPRESSION NOTES:
1. LOCATE (1) 0.01uf CAPACITOR ON THE 242B AMPLIFIER APPROXIMATELY AS SHOWN. (C12)
 2. PLACE A "MODIFIED FOR RF" LABEL NEAR THE CODE STAMP.



28-991796 SH2

**242
AMPLIFIER
MODIFICATION
N.T.S.**

SEE DRAWING FOR ALL DIMENSIONS AND USE OF MATERIALS

**B-991796
SHEET 2**

J

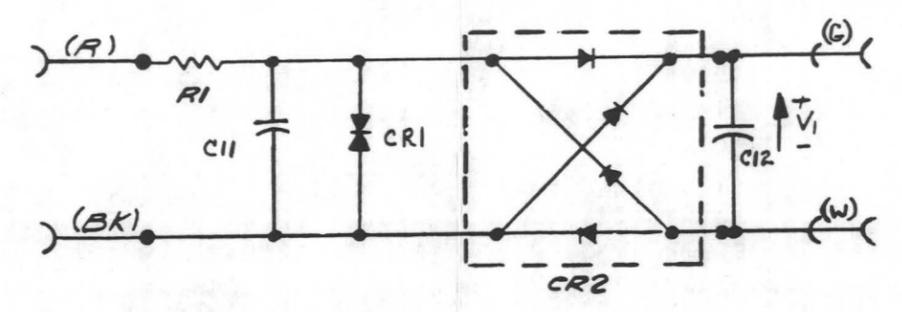
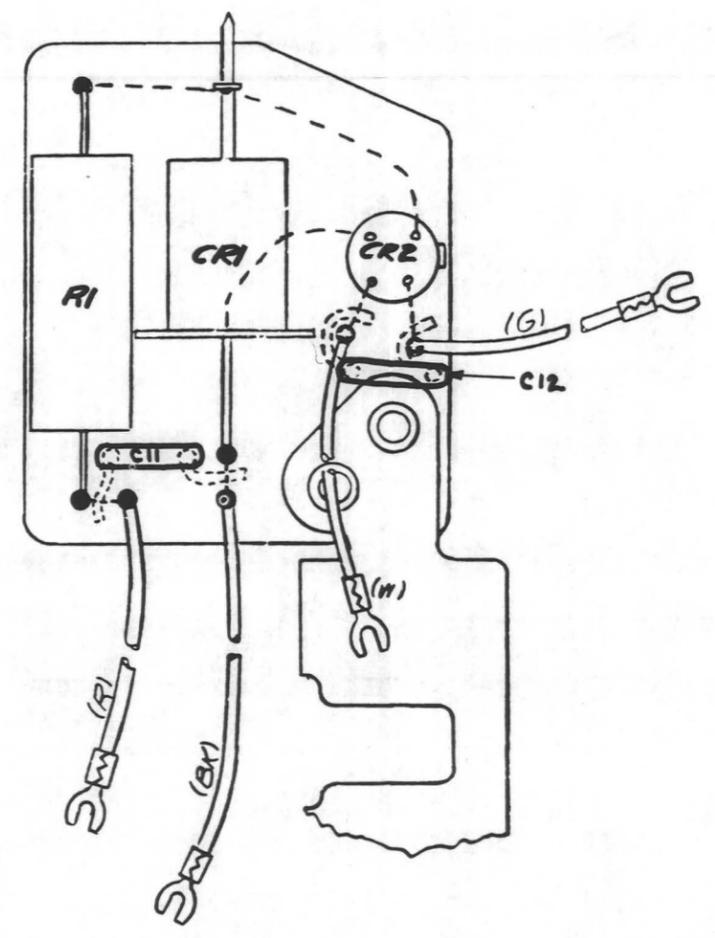
P-90D054

BSRS350.003

B-991797

ENGR
G. F. JACKSON G.D.
DRAWN
R. KOT
10-12-67 1
ISSUE 2 5-27-68
Delete Material
Not Referring to
R.F. Suppression
TKK. CIS

- R. F. SUPPRESSION NOTES:
1. LOCATE (2) 0.01uf (KS19708-L4) CAPACITORS ON THE D-180229 POLARITY GUARD APPROXIMATELY AS SHOWN. (C11 AND C12)
 2. DRILL (4) 0.025 HOLES.



2 B-991797

USED ON DWG
D-180229
POLARITY
GUARD
MODIFICATION
NT.S
WESTERN ELECTRIC CO. INC.
ENGINEER OF MANUFACTURE

SUPERSEDES P-21F672

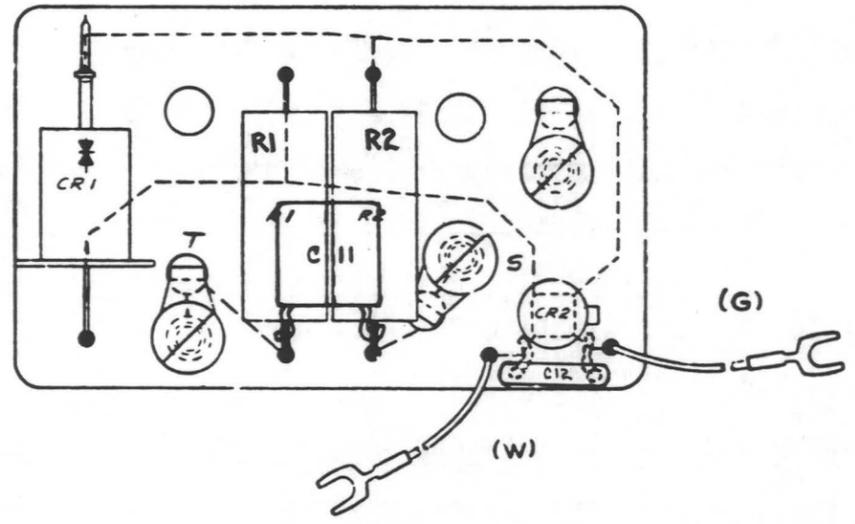
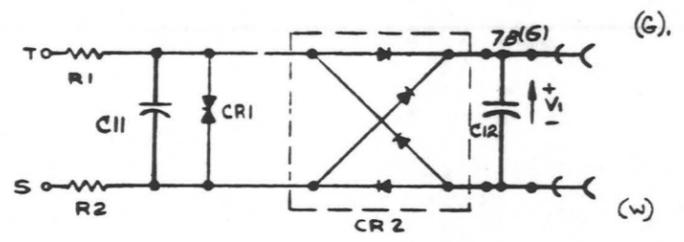
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES. NON-LIMITED DIMENSIONS OTHER THAN SIZE OF RAW MATERIAL SHALL BE HELD AS FOLLOWS WHEN EXPRESSED TO 3 DECIMAL PLACES AS ANGLES FOR GENERAL INFORMATION ON SYMBOLS AND NOTES REFER TO MANUFACTURING STANDARD IS 003, PART 2 SECTION 2ST.

3S

B-991797

R. F. SUPPRESSION NOTES:

1. LOCATE (2) 0.01uf (KS 19708-L4) CAPACITORS ON THE D-180191 POLARITY GUARD APPROXIMATELY AS SHOWN. (C11 AND C12)
2. DRILL (4) 0.025 HOLES.



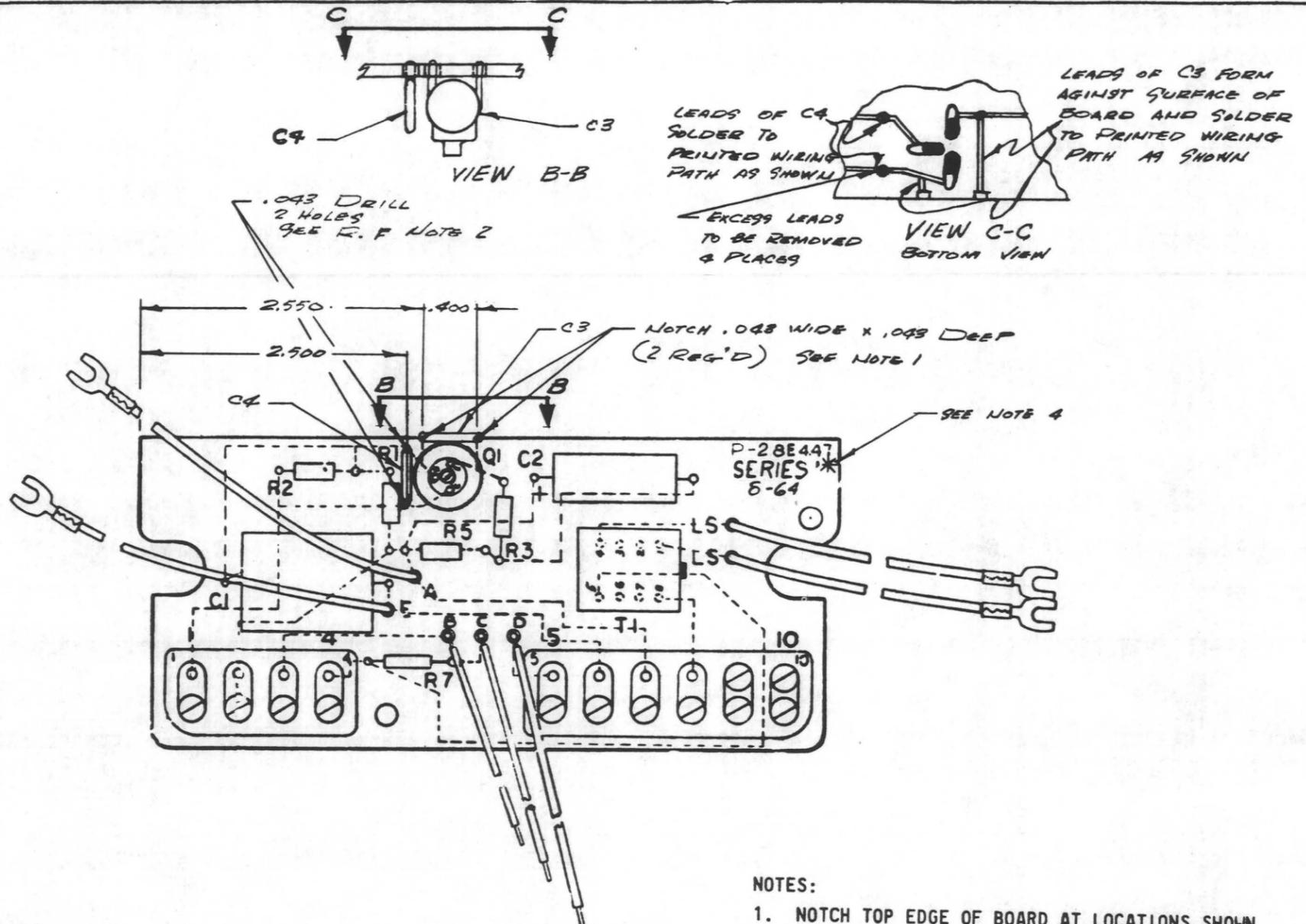
ENGR. G. E. JACKSON
 DRAWN R. KOT
 10-18-67
 ISSUE 2 5-27-68
 Delete Material Not Referring to R.F. Suppression
 P.P.K. CIS

B-991798

USED ON DWS
 D-180191
 POLARITY
 GUARD
 MODIFICATION
 N.T.S.

P-28E447

B-991799



- NOTES:
1. NOTCH TOP EDGE OF BOARD AT LOCATIONS SHOWN.
 2. HOLES TO BE DRILLED THROUGH PRINTED WIRING PATHS AS SHOWN.
 3. MOUNT TWO 0.01 mf CAPACITORS PER KS 16048 L4 (C3, C4) AS CLOSE AS POSSIBLE TO TRANSISTOR Q1 AND TOP SURFACE OF BOARD (SEE VIEW B). FORM AND SOLDER LEADS OF CAPACITORS TO PRINTED WIRING PATHS OF THE BOARD AS SHOWN IN VIEW C.
 4. RUBBER STAMP ASTERISK (*) PER WL 2151. LOCATE APPROXIMATELY AS SHOWN.

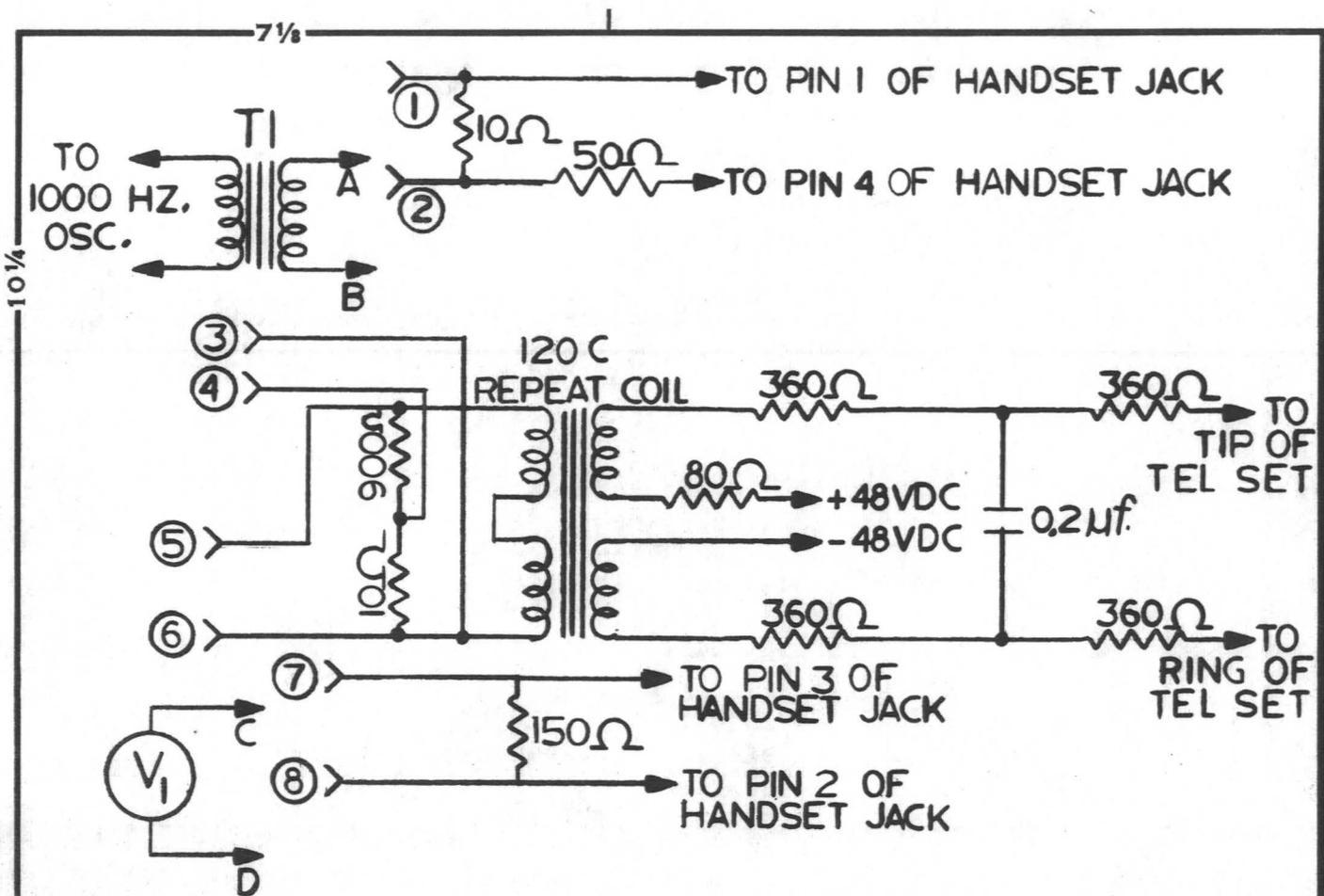
W. E. VALLI
 10-12-67
 ISSUE 2 5-27-68
 Delete Material Not Refering To R.F. Suppression
 P.P.K. / C.S.

BSRS350,003

2 B-991799

604A & 604B
 SUBSET
 MODIFICATION
 11/75
 [Signature]

35 B-991799



NOTES

- ① T₁ SHALL MATCH THE OSCILLATOR TO A 10 Ω LOAD
- ② THE VOLTAGE ACROSS TERMINALS A & B SHALL BE .25 VOLTS AC
- ③ VOLT METER SHALL BE HEWLETT PACKARD MODEL 400E OR EQUIVALENT
- ④ ALL RESISTORS AND CAPACITORS ARE 1%
- ⑤ TO TEST TRANSMIT, RECEIVE, AND SIDE TONE LEVELS, CONNECT T₁ AND V₁ IN ACCORDANCE WITH THE FOLLOWING TABLE:

	CONNECT	
	A & B TO	C & D TO
TRANSMIT	1 & 2	5 & 6
RECEIVE	3 & 4	7 & 8
SIDE TONE	1 & 2	7 & 8

ENGR Keating DRAWN " "	2-18-68	ISSUE	DWG	USED ON	TEST CIRCUIT FOR MODULAR TYPE TEL SETS	
					SCALE	
WESTERN ELECTRIC COMPANY, INC. ENGINEER OF MANUFACTURE					BELL TELEPHONE LABORATORIES INCORPORATED	
L 761177					SHEET 1	
NO. OF SHEETS PER SET					SEE SHEET 1	

BSRS 350.003