

RADIO SIGNAL SUPPRESSION IN TELEPHONE SETS

1.00 INTRODUCTION

1.01 This section tells how to identify, select, and install devices to reduce or eliminate radio interference in telephone sets.

1.02 It is reissued to:

- Add color on 1542A inductor.
- Show latest drop wire and protector.

2.00 GENERAL

2.01 Radio interference in telephone sets normally occurs where a transmitting station is located near telephone facilities.

2.02 There are two types of interference; commercial (low frequency, 550 to 1600 kc) and amateur (high frequency, 1800 kc and higher). Police, fire, military, or private systems may also operate in the high-frequency region.

2.03 Interference in telephone sets can originate from either the wiring or the set components.

2.04 The main wiring conditions which cause radio interference are:

- Abandoned drops still connected.
- Corroded connections.
- Loose wire terminations.
- Inside wire connected but not used.
- Drop wire located near transmitting antenna.

- Inside wire located near transmitting antenna.

- Defective telephone set cords.



Check these conditions before using any suppression device.

2.05 Telephone set components which act as demodulators of rf signals are:

- Varistors in the networks of some 500- and 700-type telephone sets.
- Carbon transmitters in handsets.
- The 44A varistor across the receiver unit in G-type hand sets.

2.06 More than one suppression device may be needed to reduce or eliminate radio interference. In some instances the suppressors may not completely eliminate the interference.

2.07 It is useful in investigating radio interference to contact the operator of the radio station, before visiting the premises on which telephone service is receiving radio interference, to:

- Determine the frequency band or bands used.
- Arrange for operation of the radio station during the trouble visit in order that the effectiveness of corrective measures may be evaluated immediately, thereby saving a considerable amount of time.

3.00 SUPPRESSION DEVICES, IDENTIFICATION

3.01 The KS-13814, List 7 capacitor shown in Fig. 1 should be the most effective device for eliminating radio interference in 500- and 700-type telephone sets.

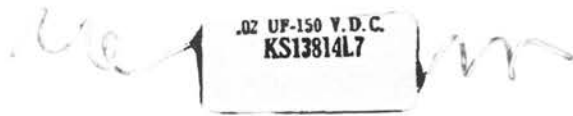
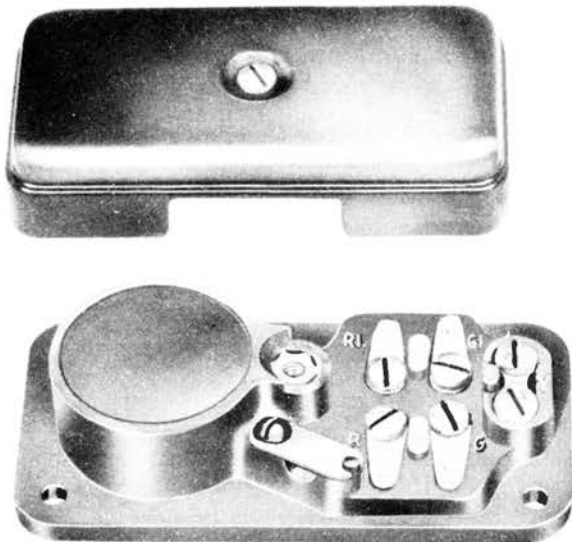


Fig. 1 - KS-13814, List 7 Capacitor

3.02 The 1542A inductor shown in Fig. 2 is designed for eliminating low-frequency interference in all types of telephone sets. It is substituted for the 42A connecting block.



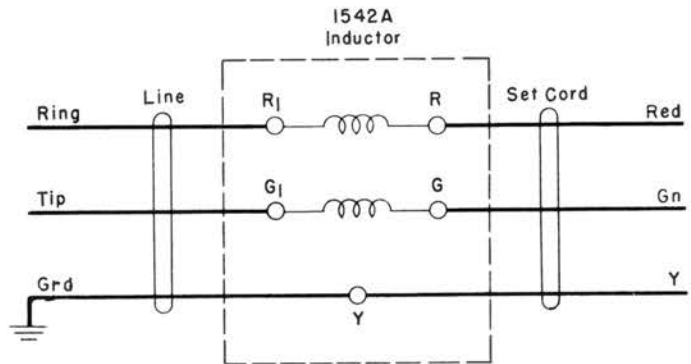
3.03 On services with more than one station, one 1542A inductor may be connected between the protector and all inside wires, rather than at each station.

3.04 The 129F capacitor shown in Fig. 3 is used to bypass rf energy from the transmitter unit in an F-type hand set.

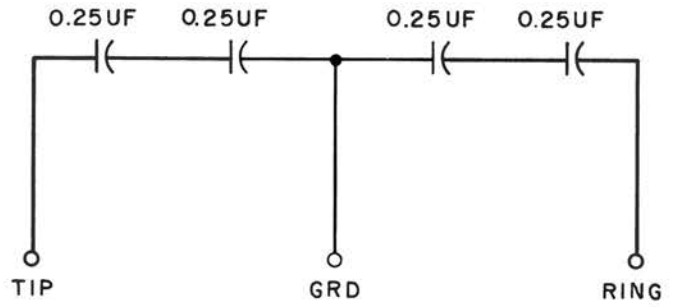
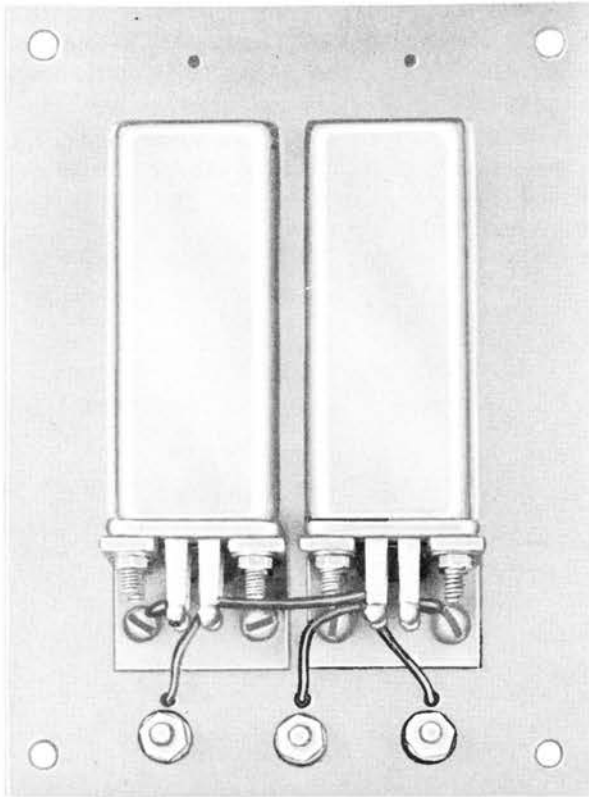


Fig. 3 - 129F Capacitor

3.05 In case of severe interference it may be necessary to install drainage capacitors. The 40BA capacitor shown in Fig. 4 is used to bypass rf energy to ground.



▲ Fig. 2 - 1542A Inductor and Schematic



▲
◀ Fig. 4 — 40BA Capacitor and Schematic

4.00 SUPPRESSION DEVICES, INSTALLATION

4.01 Table A lists the suppression devices in order of probable effectiveness for 300-, 500-, and 700-type telephone sets. The most effective location for the suppression device must be determined experimentally.

TABLE A
SUPPRESSION DEVICES FOR 300-, 500-, AND 700-TYPE TELEPHONE SETS

Telephone Set	Band	Suppression Devices (in order of probable effectiveness)		
300 Type	Low frequency (broadcast) 500 to 1600 kc	129F capacitor	1542A-type* inductor	40BA capacitor
	High frequency (amateur) 1800 kc and higher	129F capacitor		40BA capacitor
500 Type	Low frequency (broadcast) 550 to 1600 kc	KS-13814, L7 capacitor†	1542A-type inductor*	40BA capacitor
	High frequency (amateur) 1800 kc and higher	KS-13814, L7 capacitor† Fig. 8, 9, and 11		40BA capacitor
700 Type	Low frequency (broadcast) 550 to 1600 kc	KS-13814, L7 capacitor†	1542A-type inductor*	40BA capacitor
	High frequency (amateur) 1800 kc and higher	KS-13814, L7 capacitor†		40BA capacitor

* Available in grey (-49) and ivory (-50).

† This capacitor is suggested as a first choice because of its low cost in comparison to that of a 1542A inductor.

4.02 Installation of the 1542A inductor is shown in Fig. 5. It is used as a connecting block for the telephone set cord. If used on a wall-type set, it should be located near the instrument.

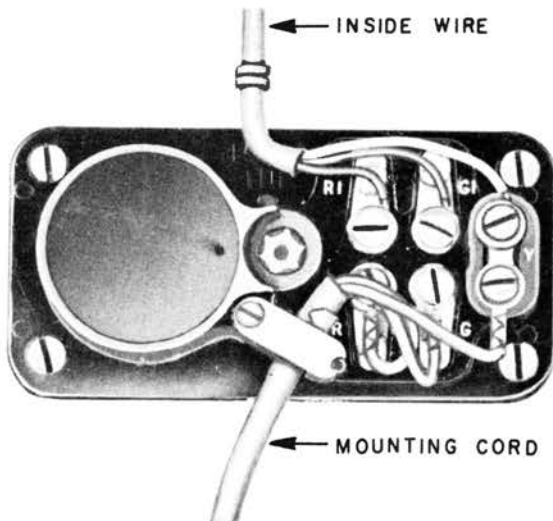


Fig. 5 — Cording Diagram, 1542A Inductor

4.03 The 129F capacitor is connected across the transmitter in an F-type hand set as shown in Fig. 6. The outer terminal of the capacitor (with eyelet) is placed under the mounting screw of the center contact spring. The inner terminal of the capacitor is placed under the mounting screw of the outer contact spring.



Fig. 6 — F-Type Hand Set with 129-Type Capacitor

4.04 The KS-13814, List 7 capacitor is installed in the 500A, B and 501A, B telephone sets as shown in Fig. 7. It is connected across the L and RW terminals of the 311A equalizers. Place the capacitor against the equalizer as shown. Cover the exposed portions of the leads with tubular insulation.

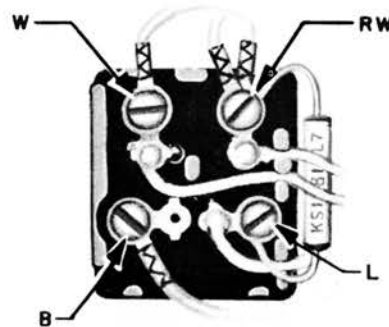


Fig. 7 — 500A, B or 501A, B Telephone Set, KS-13814, List 7 Capacitor Installed

4.05 The KS-13814, List 7 capacitor is installed in the 500C, D and 501C, D telephone sets as shown in Fig. 8. It is connected across the F and L2 terminals of the 425B network. If the set is used as the tip station on 2-party message rate service, the capacitor should be connected across L1 and L2 of the 425B network. Cover the exposed portions of the capacitor leads with tubular insulation. For low-frequency interference, another KS-13814, List 7 capacitor may be needed across terminals R and RR on the 425B network.

4.06 The KS-13814, List 7 capacitor is installed in the 500J, K and 501J, K telephone sets as shown in Fig. 9. It is connected across the L2 and GN terminals of the 425A network as shown. Place the capacitor against the side of the network nearest the ringer. Cover the exposed portions of the capacitor leads with tubular insulation.

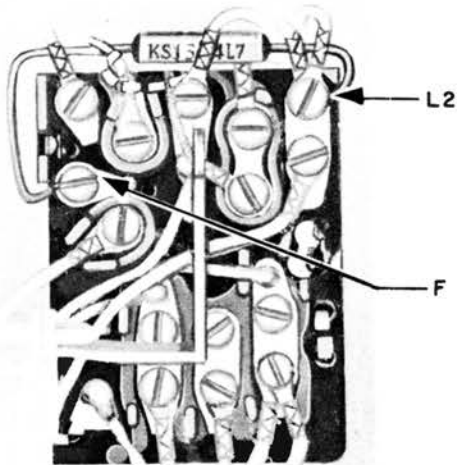


Fig. 8 - 500C, D or 501C, D Telephone Set, KS-13814, List 7 Capacitor Installed

4.07 The KS-13814, List 7 capacitor is installed in the 701B, 701D, and 711B telephone sets as shown in Fig. 10. It is connected between the F and C terminals of the 495A network. Cover the exposed portion of the capacitor leads with tubular insulation.

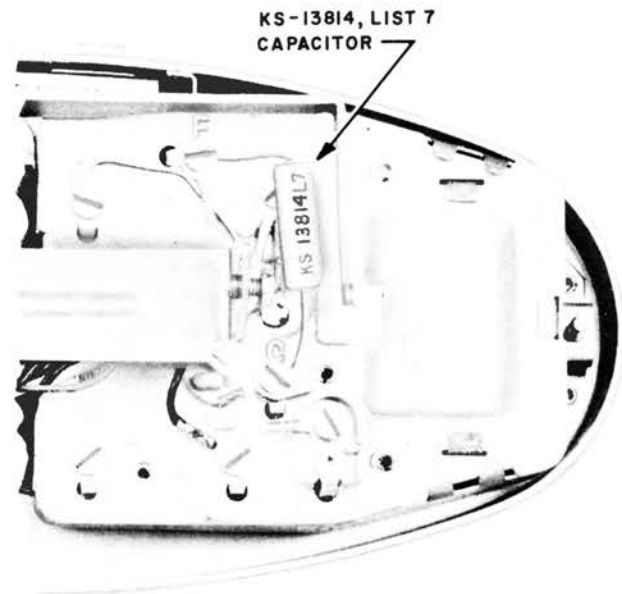


Fig. 10 - 701B or D, 711B Telephone Set, KS-13814, List 7 Capacitor Installed. Dial Removed for Clarity.

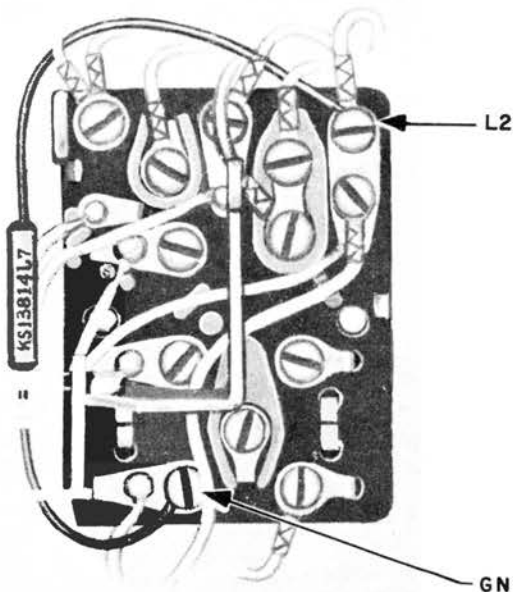


Fig. 9 - 500J, K or 501J, K Telephone Set, KS-13814, List 7 Capacitor Installed

4.08 The KS-13814, List 7 capacitor may be placed inside the G-type hand set to bypass the transmitter unit as shown in Fig. 11. Place the capacitor against the transmitter cup, keeping the capacitor leads as short as possible.

4.09 The KS-13814, List 7 capacitor may be used to bypass the 44A varistor on a U1 receiver unit as shown in Fig. 12. Place the capacitor against the varistor, keeping the capacitor leads as short as possible.



Fig. 11 - KS-13814, List 7 Capacitor, Handset Transmitter Cup



Fig. 12 - KS-13814, List 7 Capacitor, Handset Receiver Unit

4.10 The 40BA capacitor is installed near the protector as shown in Fig. 13. The inside wires are connected to the capacitor terminals. The capacitor is connected to the protector with a short piece of inside wire. The 40BA capacitor must be mounted inside when an outside protector is used.

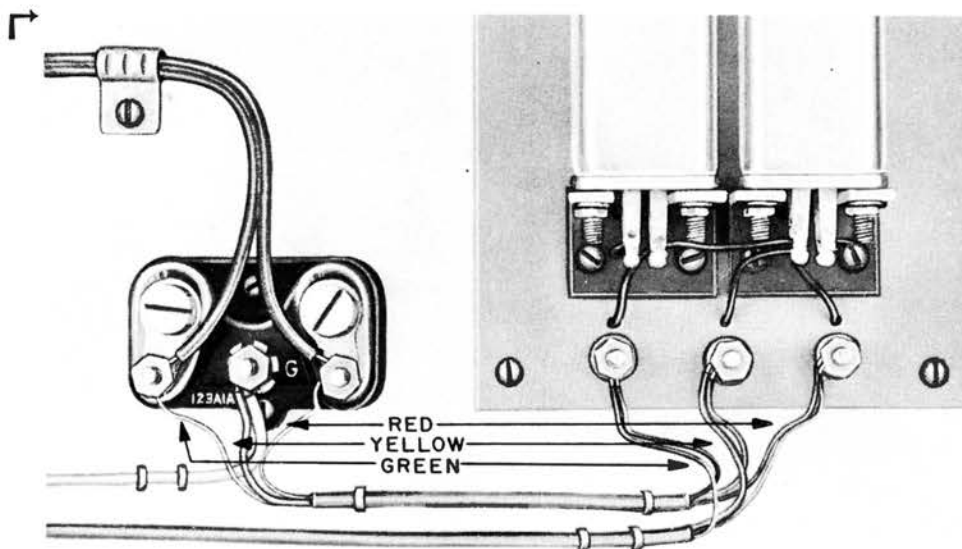


Fig. 13 - 123A1A Protector with 40BA Capacitor Installed