

AUXILIARY SIGNALS

CONNECTIONS

1. GENERAL

1.01 Certain auxiliary signals and power relay sets for use on telephone lines are equipped with a 0.5- or 0.45-uf capacitor in series with a relay which operates on telephone ringing current. The relay and capacitor constitute a high-impedance ringing bridge which is subject to provisions of appropriate section covering ringing-bridge limitations.

1.02 The total number of auxiliary signals which may be connected to a power relay set is limited by the individual signal-operating currents, the sum of which cannot exceed current-carrying capacity of relay contacts. Individual

signal-operating currents and current-carrying capacity of power-relay set contacts are covered in Tables A and B of Section 463-120-100, entitled Power Relay Sets — Identification, Installation, and Maintenance.

1.03 Marginal arrows have been used to indicate changes.

2. CONNECTIONS KS-16301 SIGNALS

2.01 Connections for relays and signals are shown in Fig. 1. Also shown are the voltage values and terminal locations on the List 7 or 15 Relay.

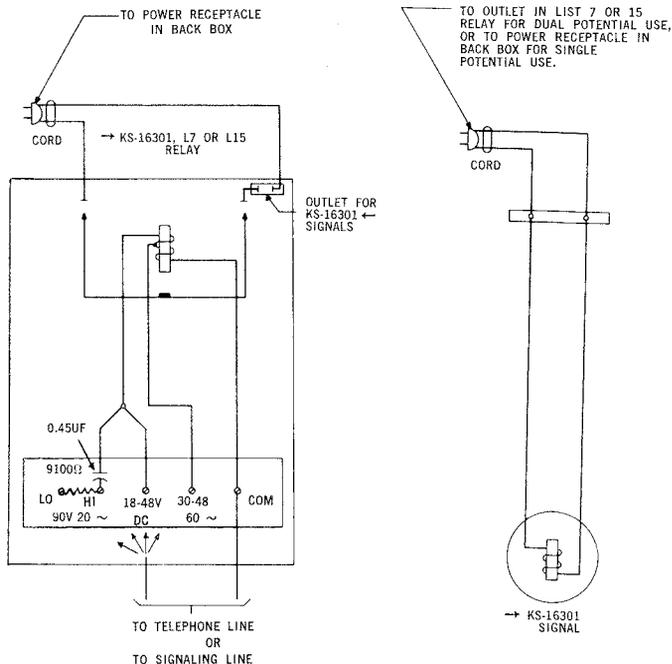


Fig. 1 — KS-16301 Signal Connections

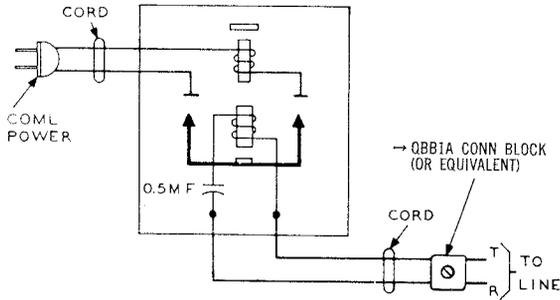


Fig. 2 - Typical Relay-equipped Signal Connections

KS-8000 Series signals (Relay equipped) No longer available. Shown for maintenance purposes only.

2.02 Connections for typical relay-equipped signals are shown in Fig. 2.

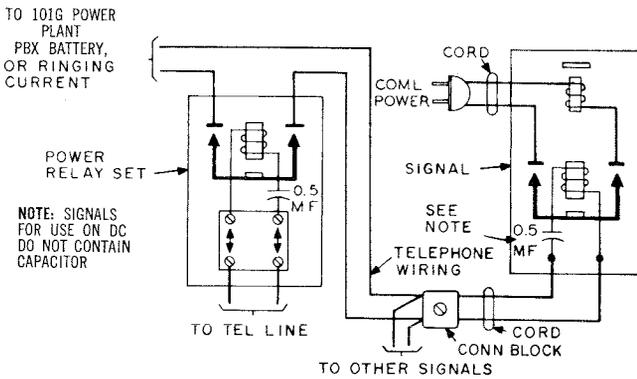


Fig. 3 - Multiple Signal Connections

2.03 Several signals may be connected as shown in Fig. 3. This has the advantage of only one ringing bridge on the telephone line for several auxiliary signals. Special commercial power wiring is not needed between the relay set and the signals.

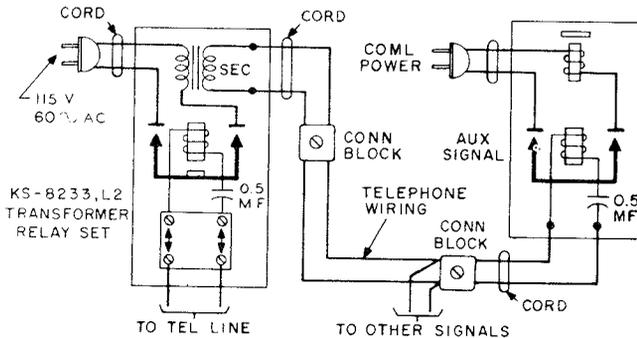


Fig. 4 - KS-8233, List 2 Transformer Relay Set Connections

2.04 The KS-8233, List 2 Transformer Relay Set has been used to connect several signals to one telephone line, as shown in Fig. 4, and may be encountered in some existing installations.

KS-8000 Series or Customer Owned Signals (Without Relay)

2.05 Connections for signals which do not have a self-contained power relay are shown in Figs. 5, 6 and 7. These signals require commercial power wiring between the relay set and the signal.

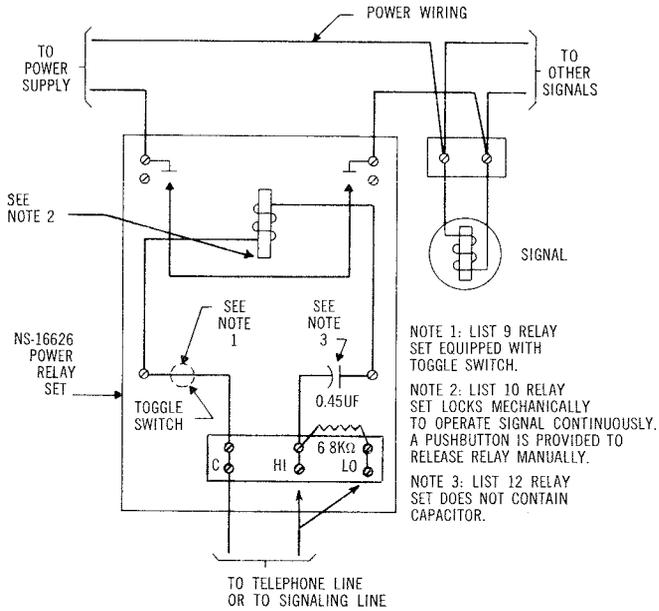


Fig. 5 — NS-16626, List 8 Power Relay Set Connections

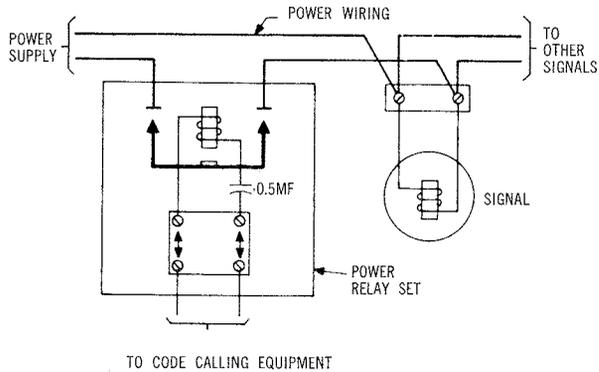


Fig. 6 — KS.16527 or Equivalent, Power Relay Set Connections

Explosive Atmosphere Signals

- 2.06 The KS-16763, List 4 Power Relay Set is intended for use in explosive atmosphere areas. Follow general installation and safety requirements described in Section 502-415-100 before working on this equipment.
- 2.07 The KS-16763, List 4 Relay has two sensitivity terminals. The "HI" sensitivity terminal is for use on manual ringing lines or where the loop resistance would cause the relay operation to be uncertain. The "LO" sensitivity ter-

минаl is for use on dial operated telephone lines or whenever relay is slow to release due to stray pickup.



To ensure the reliable release of power relays operated from ringing current, it is advisable to cut-off the live side of the generator supply and to ground the return side locally, especially when using local power plant. (See Fig. 8).

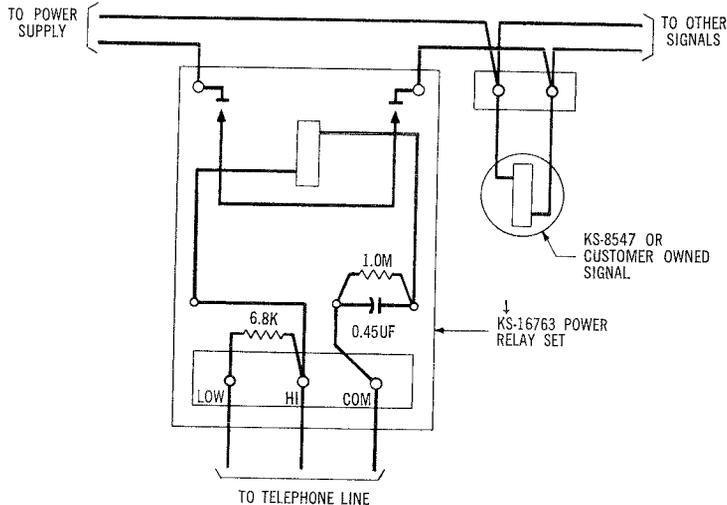


Fig. 7 - KS-16763, List 4 Power Relay Set Connections

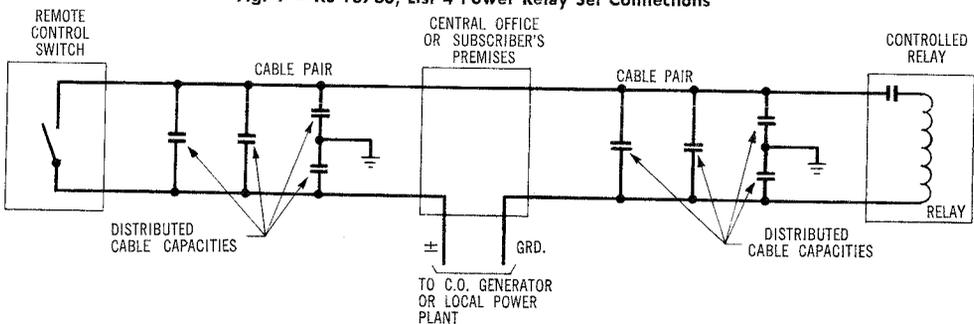
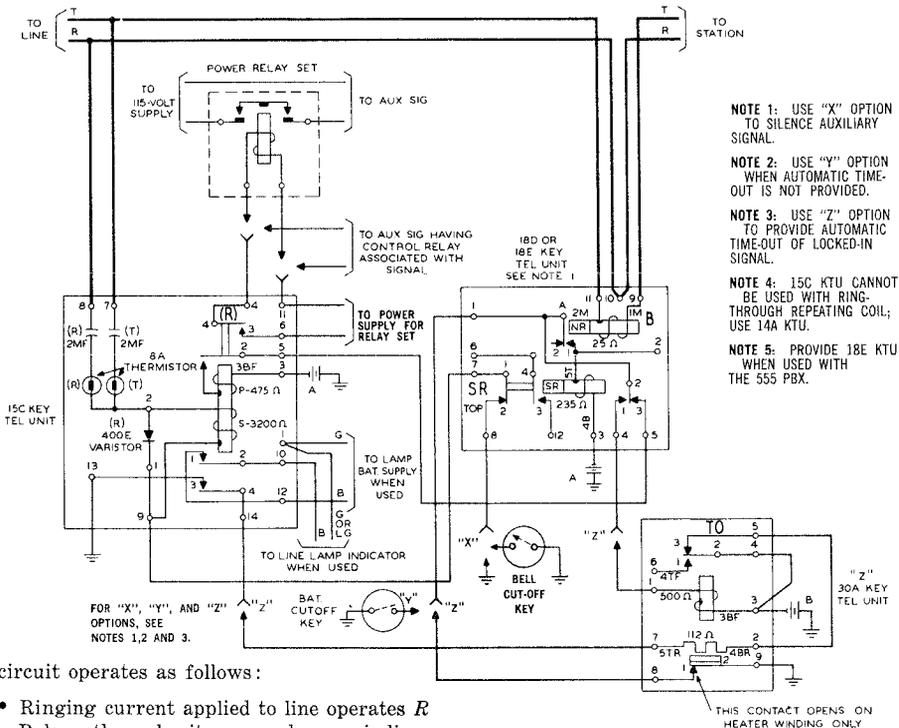


Fig. 8 - Typical Remote Control Relay Connections

Note: If live side of generator supply is connected directly to the relay and the ground return is opened at the remote control point, the distributed cable capacitances may be enough to keep relay operated.



The circuit operates as follows:

- Ringing current applied to line operates *R* Relay through its secondary winding, through top Contacts 1 and 2 of *SR* Relay-to-ground.
- *R* Relay locks operated by battery through its primary winding, through its own top Contacts 1 and 2, through bottom Contacts 3 and 2 of *SR* Relay, through bottom Contacts 1 and 2 of *TO* Relay (*Z* Wiring) to ground, or to switch-to-ground (*Y* Wiring).
- *R* Relay operated completes circuit through its own top Contacts 3 and 4 to operate auxiliary relay or signal.
- Bottom Contacts 1 and 2 of *R* Relay may be used to operate a line lamp indicator.
- When call is answered, *B* Relay operates by central office or PBX battery through station.
- *SR* Relay operates by battery through its winding, through Contacts of *B* Relay (operated), and through bottom Contacts 1 and 2 of *TO* Relay-to-ground (*Z* Wiring).
- Operation of *SR* Relay opens locking circuit of *R* Relay which releases.
- Circuits to auxiliary signal and line lamps open when *R* Relay releases.
- Unanswered calls are handled by a time-out feature. When *R* Relay operates, ground is connected through bottom Contacts 3 and 4, through 112-ohm heater winding of *TO* Relay (*Z* Wiring), and through top Contacts 3 and 2 of *TO* Relay-to-battery. After approximately 30 seconds, thermally operated bottom Contacts 1 and 2 of *TO* Relay will open. This opens locking circuit of *R* Relay, and circuit restores to normal.
- If call is answered, *SR* Relay operates as previously described. Circuit is completed from battery through *TO* Relay, through bottom Contacts 1 and 2 of *SR* Relay (operated), and through bottom Contacts 1 and 2 of *TO* Relay-to-Ground. This opens heater winding circuit of *TO* Relay.

Fig. 9 — Connections and Circuit Operation for Continuous Auxiliary Signals