

ORBIT TDD-3A1 RINGER ISOLATION RELAY
INSTALLATION

1. **GENERAL**

1.01 This section provides installation instructions for the Orbit Industries model TDD-3A1 ringer isolation relay, and has been reissued and retitled to cover the latest model of the device, to clarify its usage, and to correct the central office wiring shown in Figure 2. Significant revisions are noted by marginal arrows.

2. **DESCRIPTION**

2.01 The TDD-3A1 ringer isolation relay (see Figure 1) can be used to prevent noise introduced through divided (grounded) ringers by power induction. The device consists of a her-

metically sealed reed relay, a diode bridge, a rare gas tube, and a series capacitor. The isolation relay is responsive to all ringing frequencies in the range of 16 to 66-2/3 cps.

2.02 A schematic diagram of the TDD-3A1 ringer isolation relay is shown in Figure 2. The gas in the series tube ionizes when ringing potential is applied to the line. Alternating current conducted by the tube is rectified by the diode bridge and applied to the coil, where the flux thus generated actuates the contacts of the reed relay. The capacitor in parallel with the coil prevents relay chatter. The series capacitor prevents false operation from d-c test potentials in excess of the tube ionization value. The series resistor is a current-limiting device to protect the gas tube.

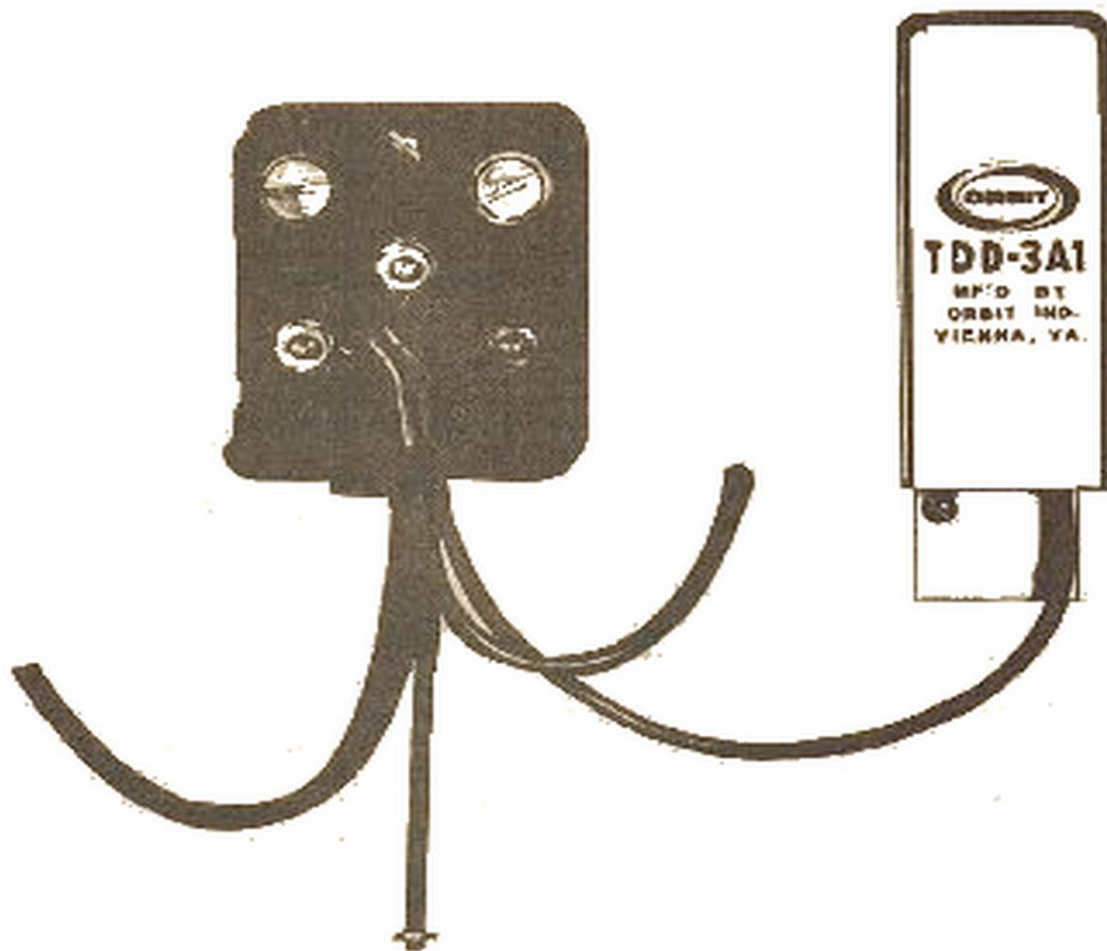


Figure 1. TDD-3A1 Ringer Isolation Relay, Installed and Connected to Protector.

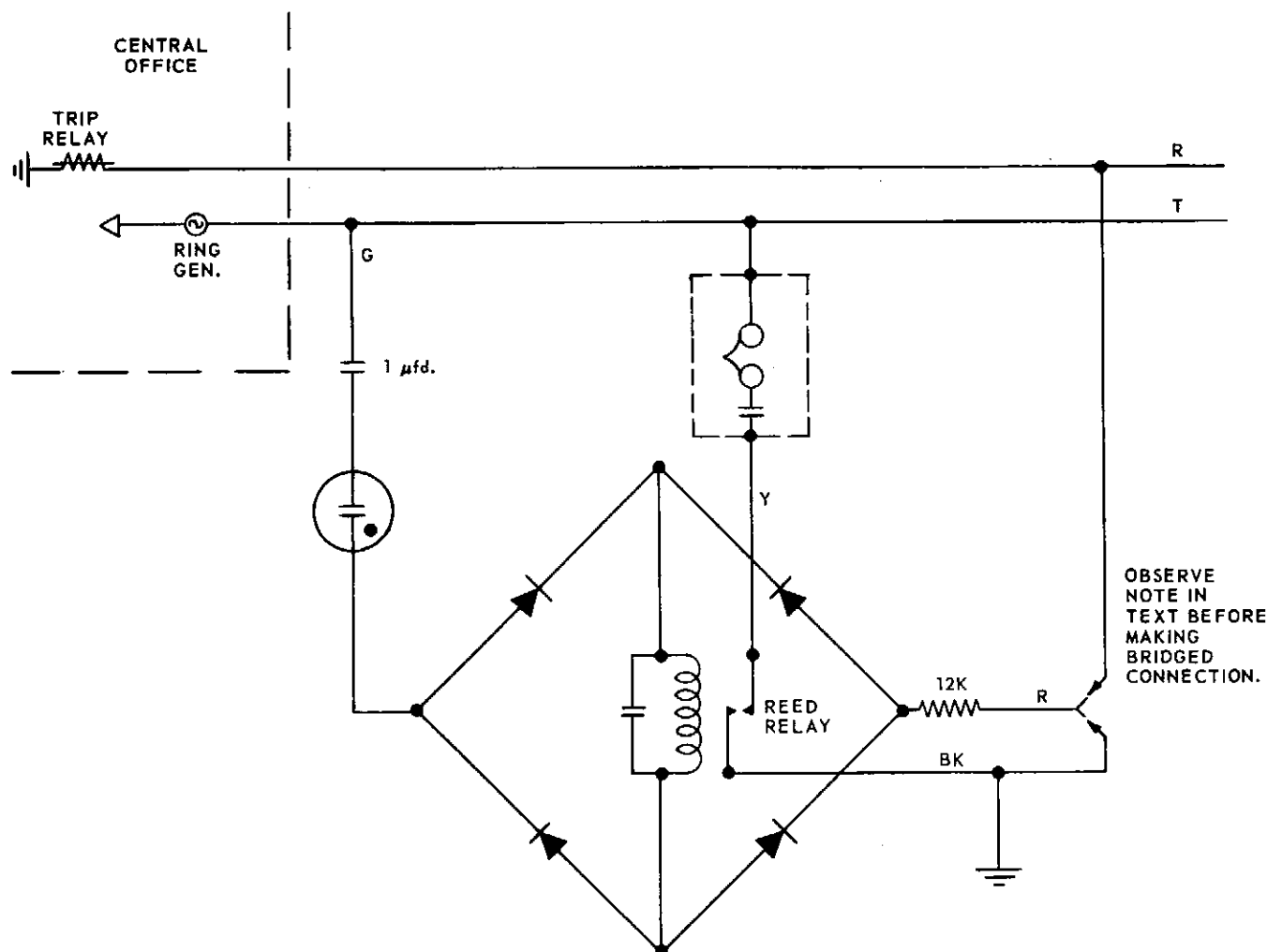


Figure 2. Schematic Diagram, TDD-3A1 Ringer Isolation Relay at Tip Party Station.

3. USE

3.01 In the past, power induction noise due to the longitudinal imbalance of divided ringer connections was reduced either by installing a dummy ringer in an attempt to balance the line, or by replacing low- and medium-impedance ringers with high-impedance ringers. More recently the common method has been to install a gas-filled electron tube in series with each grounded ringer on the line. However, present-day telephone sets, ringer boxes and fuseless protectors lack space for enclosed mounting of such a tube, and the clipping of all but the peaks of the generator waveform by a series tube has an adverse effect on the performance of a frequency ringer. Since the TDD-3A1 unit is provided with a weather proof housing and completes a direct metallic path to the ringer, it should be used in preference to a series tube at frequency-ringing stations, and at stations equipped

with straight-line ringers where a fuseless protector is mounted in an exposed outdoor location.

3.02 The TDD-3A1 Ringer Isolation Relay should be installed adjacent to the station protector. The assembly can be installed indoors or outdoors. However, in areas where temperatures lower than 0° F are common, the unit should be mounted indoors. Low temperatures tend to cause sluggish relay operation but do not permanently harm the device.

3.03 An earlier model of the device, which lacks the series capacitor and bears the code TDD-3A, can cause false and unnecessary reports of trouble if used on lines tested by an automatic line insulation routiner. Should it be desired to eliminate false reports in such cases, connect a 1 μfd. capacitor (or one of greater value) in series with the green lead of the TDD-3A device. Use any molded tubular or equally

moistureproof capacitor with a minimum working rating of 600 volts d.c., and mount it inside the station protector.

3.04 The preferred connection of the actuating circuit is with the red lead connected to ground. If the interfering a-c potential (noise) is so high as to ionize the gas in the tube permanently and thus to restore the unwanted noise at least in part, try connecting the actuating circuit on a bridged basis, with its red lead connected to one line conductor and the green lead to the other. This will solve the false operation problem, but may cause cross-ringing at one or more frequencies, as ringing potential applied to one side of the line reaches the other side in series with the relay and there sounds the ring-er of an unwanted party. When the bridged connection is used, the installer shall make a series of reverting test calls, using each assigned ringing digit, and check in each case for cross-ringing at the station assigned to the same frequency on the opposite side of the line.

4. INSTALLATION

4.01 Insert the two wood screws provided with the relay through the holes in the bracket

molded into the bottom of the housing to fasten the unit to the mounting surface. Connect as follows for tip party divided ringing (see Figure 3):

- (1) Connect the telephone set ground return wire to the yellow relay lead. Use the connector furnished.
- (2) Connect the black relay lead to the protector ground terminal.
- (3) Connect the red relay lead to the protector ground terminal.
- (4) Connect the green relay lead to the protector tip terminal, or
- (5) When installing an older TDD-3A unit in an office equipped with an automatic line insulation routiner, connect its green lead to a $1\mu\text{fd.}$ capacitor, using a type UR connector, or equal, and terminate the other lead of the capacitor on the tip terminal of the protector.

NOTE: Instructions for connecting the telephone set tip and ring leads,

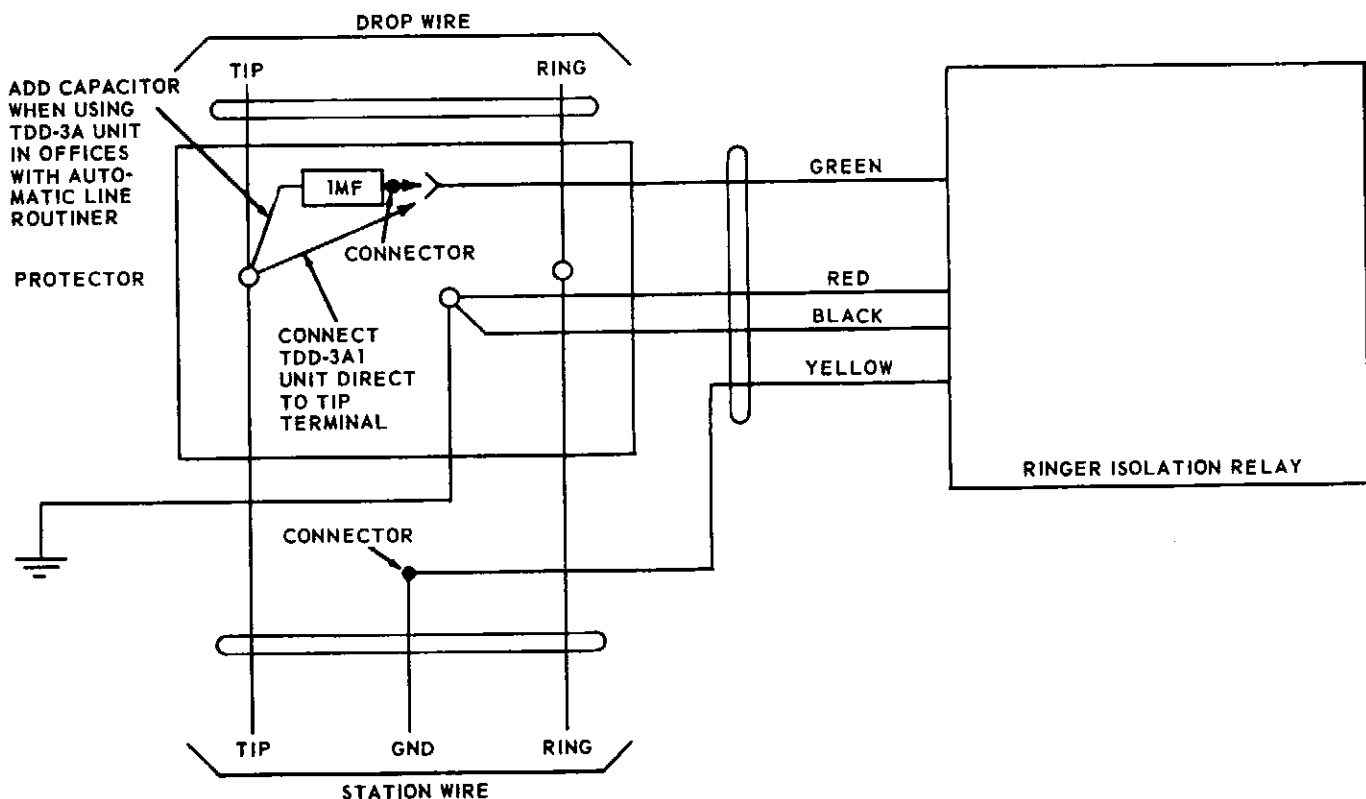


Figure 3. Wiring Diagram, TDD-3A or TDD-3A1 Ringer Isolation Relay, Shown With Grounded Connection for Tip Party.

SECTION 471-151-200
ISSUE 3

the drop leads, and the station ground lead to the protector are provided in Section 435-300-200.

4.02 For ring party divided ringing, make connections as described in Paragraph 4.01, except that the green relay lead (Step 4) or capacitor lead (Step 5) must be connected to the protector ring terminal.

4.03 If the line is subject to excessive power-line exposure, the red relay lead should be connected to the ring side of the line instead of to the protector ground terminal. The line will then be completely balanced with no path to

ground at any station except during ringing or protector operation.

NOTE: See Paragraph 3.04.

4.04 If direct ground is required at the telephone set for ANI party marking, use four-conductor station wire and, in the case of a desk set, a four-conductor line cord. Connect the party identity circuit to the yellow conductor of the cord, and the ringer return path to the black conductor. At the protector, connect the yellow relay lead to the protector ground terminal, together with the yellow conductor of the station wire. Use the type UR connector furnished with the unit to splice the black relay lead to the black conductor of the station wire.