

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

SECTION G38.125.1
Issue 1, January, 1953
AT&T Co Standard

PROTECTION

104A PROTECTOR MOUNTING

Contents	Page
1. General	1
2. Description of 104A Protector.....	1
3. Grounding Conductors	2
4. Installation of 104A Protector	3

1. GENERAL

1.01 This section provides instructions for installing 104A Protectors when required on open wire telephone circuits that are exposed to power circuits. Section G31.181.1 is hereby canceled.

1.02 This section constitutes a revision of the practice on the installation of 104A Protectors as drainage devices on open wire.

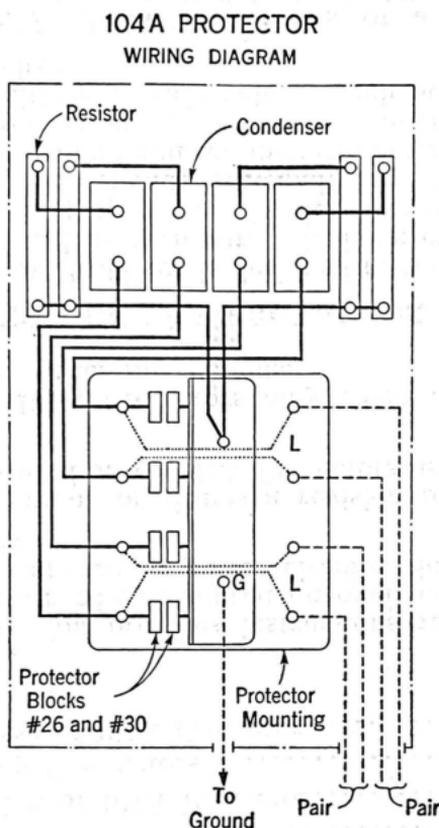
1.03 Install 104A Protectors only when directed by detail plans or other instructions.

2. DESCRIPTION OF 104A PROTECTOR

2.01 The 104A Protector is designed to reduce voltages that are induced in open wire telephone circuits as a result of exposure to near-by power circuits. The voltage induced in a telephone circuit depends principally on the voltage of the power circuit to ground and the distance between the telephone wires and the power wires. The 104A Protector acts to reduce such induced voltages to safe values. Each protector will serve two open wire circuits.

2.02 The 104A Protector consists of a galvanized steel housing, about 8-3/16" high, 5-1/4" wide, and 2-7/8" deep, containing 4 condensers, 4 resistors, and 4 sets of protector blocks. Wire entrance holes in the bottom of the housing have temporary putty fillings.

2.03 The following diagram shows the circuit arrangement of the 104A Protectors:



3. GROUNDING CONDUCTORS

3.01 If 104A Protectors are installed on telephone circuits that are carried on joint-use poles with a power circuit which includes a multi-grounded neutral wire, the ground wire from each 104A Protector should, wherever possible, be connected to a power system vertical grounding conductor that is connected to the neutral wire and to a ground. Grounding conductors on transformer poles in multi-grounded neutral systems are satisfactory for grounding 104A Protectors. Grounding conductors from power system lightning arrestors shall not be used unless they are connected to the power neutral wire.

3.02 If 104A Protectors are to be installed at a pole that is not equipped with a grounding conductor that meets the requirements of Paragraph 3.01, it will be necessary to install a grounding conductor (104 copper, 109 steel, or larger) and connect it to a "D" ground rod placed at the base of the pole. Connect the grounding conductor to the tail of the ground rod with an S Sleeve. The grounding conductor should be fastened to the pole at 18-inch intervals with galvanized staples, and if required by local regulations, should be covered with molding. Fasten wooden molding with No. 16 cable straps and 1-1/2-inch strap nails at 4-foot intervals.

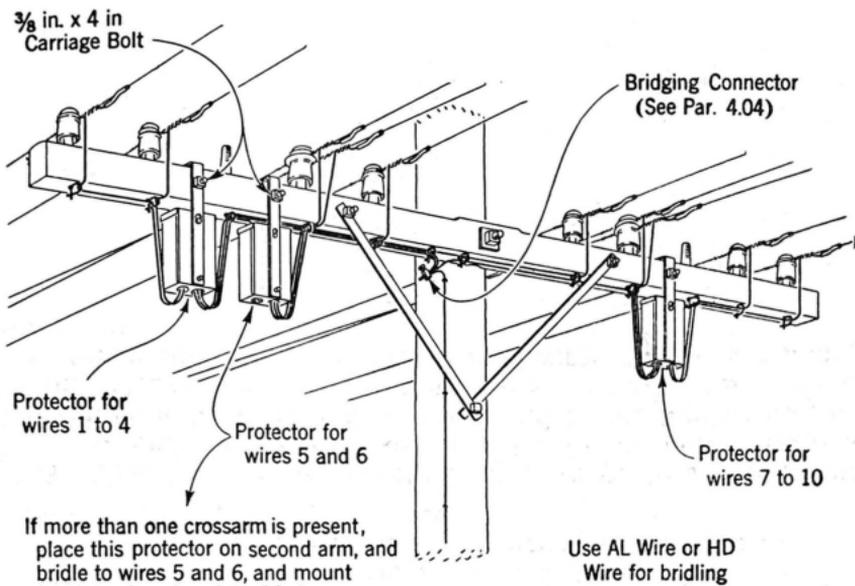
4. INSTALLATION OF 104A PROTECTOR

4.01 The housing cover is opened by grasping the sides near the bottom, and pulling the cover out, away from the back of the housing. This releases the cover and permits it to be swung down, thus giving access to the equipment. To close the housing, swing the cover up, and insert the top end of the cover under the hood at the upper end of the housing, then force the lower end of the cover toward the back of the housing until it snaps into place.

4.02 To remove the protector housing from the mounting bracket, proceed as follows:

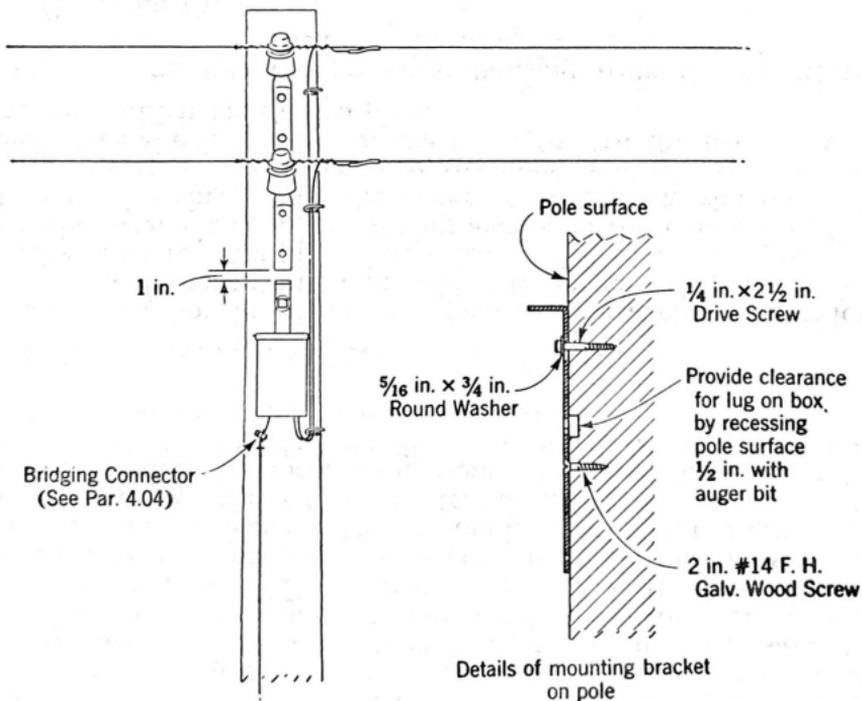
- (1) Open the cover.
- (2) Remove the round-head machine screw located below the protector block mounting.
- (3) Move the housing up a short distance, thus releasing the knob in the back of the housing from the keyhole slot in the mounting bracket.

4.03 The manner of mounting 104A Protectors and wiring to open wire lines is shown in the following illustrations. The protector leads should be connected to the line wires with bridging sleeves or bridging connectors. Use AL Wire or HD Wire for making connections to line wires and to grounding conductors.



If more than one crossarm is present, place this protector on second arm, and bridle to wires 5 and 6, and mount protector for wires 1 to 4 between pins 3 and 4

Use AL Wire or HD Wire for bridling



Details of mounting bracket on pole

4.04 Connect the protector ground wire to a 104 copper grounding conductor with a 104 x 064 S Copper Sleeve, or with a 3B Bridging Connector, or to a 109 steel grounding conductor with a 6C Bridging Connector. Connect protector ground wires to a No. 6 grounding conductor with No. 5006 Fargo Connectors. Two such connections to a No. 6 grounding conductor may be made in one No. 5006 Fargo Connector. Where three ground wires are to be connected to the No. 6 grounding conductor, use two Fargo connectors. Remove the insulation from the 14-gauge ground wire for a distance of 2-1/2 inches, and double the bare end before inserting it in the Fargo connector.