700–TYPE CONNECTORS
DESCRIPTION, INSTALLATION, AND MARKING

1. GENERAL

1.01 This practice covers the description, installation, and marking of the Reliable Electric Company 700-type connector. These connectors are used in terminating outside plant cables on existing central office main distributing frames where there is a shortage of vertical frame space.

1.02 The 700-type connector will provide up to 600-pair termination on an 11' 6" vertical. Verticals should be on 8" centers. The 700-type connectors should not be mounted on frames having verticals on 6-1/2" centers.

1.03 The 700-type connectors provide features for voltage protection, current protection, testing, identification of special circuits, and disconnecting the cable pairs.

2. DESCRIPTION

2.01 The basic component of the Reliable Electric 700 connector is the 10" long 50-pair unit of molded plastic with attached fanning strips. Two 50-pair connectors are secured as a single unit by two continuous grounding-mounting bars on an aluminum supporting bar to make up the 100-pair unit. See Figure 1. They are equipped with a 101-pair stub and 100 protector units.

2.02 The connector has a factory-connected color coded stub cable consisting of tinned-copper PVC insulated conductors, mylar tape core wrapper, corrugated aluminum shield under the outer PVC sheath and factory installed gas plug near the terminated end of the stub cable.

2.03 The stub cables are available in both 22- and 24-gauge conductor sizes. The standard length of the cable is 20'. Additional lengths may be obtained in increments of 1' up to a maximum length of 100'. The stub cable is mounted for downward extension from the frame unless otherwise specified when ordered.

2.04 The color of the outer jacket of the 24-gauge cable is beige and the 22-gauge cable is slate gray.

2.05 The stub cables contain an extra pair (red-white) which is folded and tied to the cable form.

2.06 The Reliable Electric No. 1104 Protector Unit (Figure 2) with four carbon blocks and heat coils is used on circuits requiring both voltage and sneak current protection. When the six metallic pins and one plastic polarizing pin of this protector are inserted in the connector unit (Figure 3), they provide the following contact for one cable pair:

a. Tip and ring to outside plant conductor (long pins).

b. Tip and ring to central office equipment (short pins).

c. Ground (long center pin between two long pins).

d. Alarm (long center pin between two short pins).

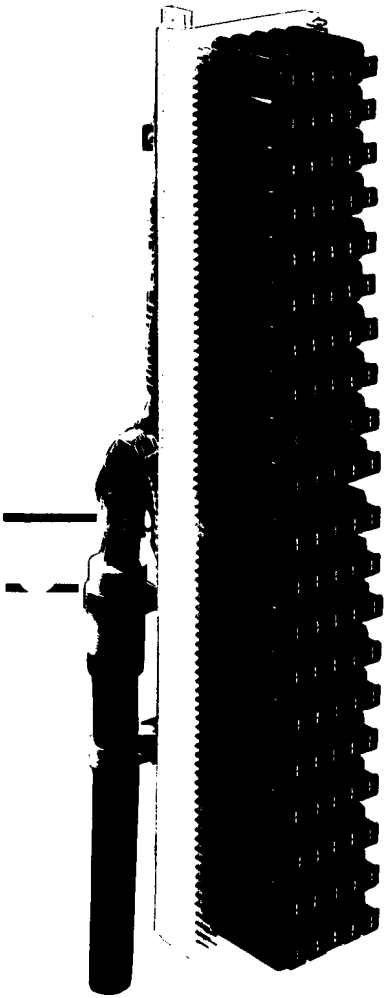

FIGURE 1. 100-Pair Connector With Stub

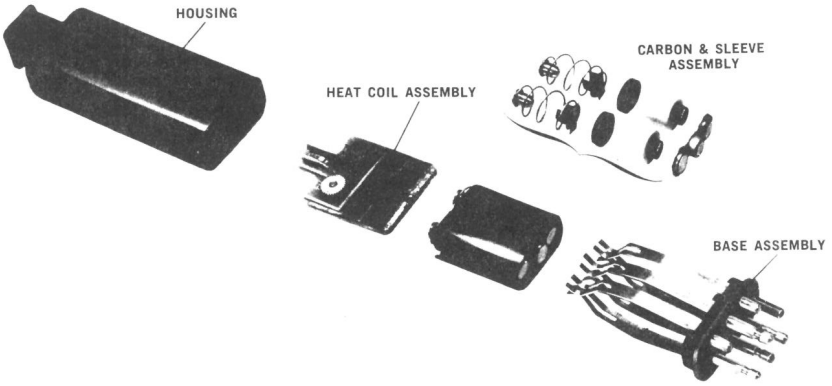

FIGURE 2. 1104 Protector Unit

2.07 The Reliable Electric No. 1100 protector unit (Figure 4) with four carbon blocks for voltage protection is used on circuits where sneak current protection is not required. When the five metallic pins and one plastic polarizing pin of this protector are inserted in the connector unit, they provide the following contact for one cable pair:

a. Tip and ring to outside plant conductor (long pins).

b. Tip and ring to central office equipment (short pins).

c. Ground (long center pin between two long pins).

2.08 The Reliable Electric No. 1101 protector unit (dummy) may be used when no protection is required. When breakdown tests are being conducted, see Table A, Note 4.

2.09 The type of protection required will be indicated in the detail plans.

2.10 When the protector units are fully inserted into the connector, the outside plant and central office equipment is connected and protection is provided. For protection purposes, ground is provided for the heat coils and carbon blocks through the grounding pin of the protector unit. Two vertically oriented copper bars are recessed at the rear of the connector panel assembly. These serve the dual function of connector ground and connector mounting to the frame supporting bar. These bars are grounded by the mounting screws securing the connector to the protector frame.

2.11 When the protector unit is pulled out to the detent position (Figure 5), the central office equipment is disconnected to isolate outside pairs for testing purposes or service denial. In this position, protection is still provided on the outside cable pair.

2.12 The protector units used on the Reliable Electric 700-type connector for circuit identification are listed in Table A.

2.13 The protector units are installed on the connector in 20 horizontal rows with 5 protector units in each row.

2.14 The molded plastic panel of the Reliable Electric 700-type connector is equipped with 100 groups of six pin-grip type terminals and one polarizing jack. Four of these terminals provide contact for tip and ring connections. One terminal provides a ground connection and one provides an alarm connection.

2.15 Electro-tin plated line terminals project through the connector panel to the front for convenient test points. To protect workmen against high voltage during a breakdown test, a Reliable Electric No. 1105 RGT terminal guard should be placed over the wire wrap terminals on the front of the connector.

2.16 Codes for the basic Reliable Electric 700-type connectors and protector units are listed in Table B.

3. PRECAUTIONS

3.01 Store the Reliable Electric 700-type connector in a dry location. Do not leave these units on loading docks or outside where they may be exposed to the weather.

3.02 When unpacking the connector, open the carton on the side marked "OPEN FROM THIS SIDE".

3.03 Do not bend the cable stub in a radius of less than 5".

3.04 Do not bend the cable stub in a 5" radius more than twice at the same general location.

3.05 Do not remove the packing material from the connector until it is ready for installation on the protector frame.

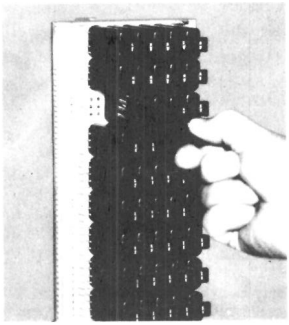

FIGURE 3. Installing Protector Units Into Connector Block

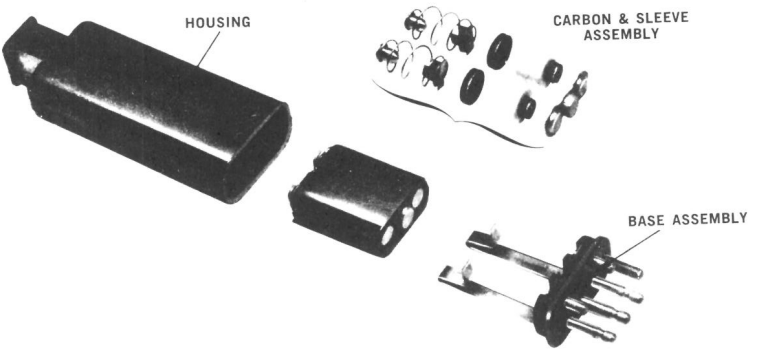

FIGURE 4. 100 Protector Unit

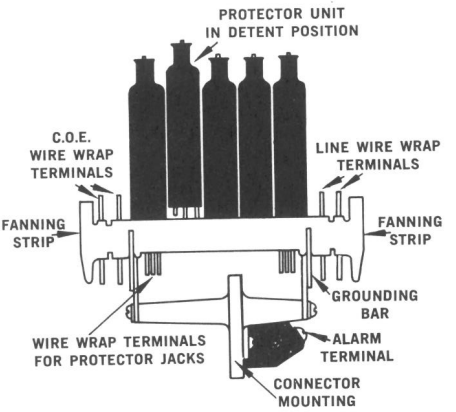

FIGURE 5.

TABLE A – PROTECTOR UNIT COLOR CODE CIRCUIT IDENTIFICATION

Code	Cap Color	Protector Blocks (2 Each)	Circuit Identification
1100 B	Black	P-6082 and P-5841	Standard Circuit
1101 GY	Gray	None (dummy) (Note 1)	Standard Circuit
1104 B	Black	P-6082 and P-5841 (Note 2)	Standard Circuit
1100 R	Red	P-6082 and P-5841	Special Circuit
1101 R	Red	None (dummy) (Note 1)	Special Circuit
1104 R	Red	P-6082 and P-5841 (Note 2)	Special Circuit
1100 Y	Yellow	P-6082 and P-5841	PBX Battery
1101 Y	Yellow	None (dummy) (Note 1)	PBX Battery
1104 Y	Yellow	P-6082 and P-5841 (Note 2)	PBX Battery
1100 Gn	Green	P-6082 and P-5841	Denied Circuit
1101 Gn	Green	None (dummy) (Note 1)	Denied Circuit
1104 Gn	Green	P-6082 and P-5841 (Note 2)	Denied Circuit
1102 Gn	Green	P-6082 and P-5841 (Note 3)	Denied Circuit
1105 R	Red	None (dummy) (Note 4)	Breakdown Test

Note 1: Connects field side thru to C.O. equipment without protection

Note 2: Equipped with P-13984 resettable heat coils P-6082 carbon blocks and P-5841 insulator-carbon blocks

Note 3: Protector module without central office pins

Note 4: Protector stenciled "Breakdown Test Do Not Disturb"

TABLE B – CONNECTOR CODES

Code	Stub * Cable Size	Protector Unit Code	Type Protection
700A1A-100	24-gauge, 101-pair	1100	500 Volts
700A1C-100	24-gauge, 101-pair	1104	500 Volts & Sneak Current
700A1D-100	24-gauge, 101-pair	1101	None (dummy)
700B1A-100	22-gauge, 101-pair	1100	500 Volts
700B1C-100	22-gauge, 101-pair	1104	500 Volts & Sneak Current
700B1D-100	22-gauge, 101-pair	1101	None (dummy)
700C1A-100	None	1100	500 Volts
700C1C-100	None	1104	500 Volts & Sneak Current
700C1D-100	None	1101	None (dummy)

* (1) Indicate length of stub if over 20 feet.

(2) Specify on order if cable is to be mounted for upward extension from frame.

4. INSTALLATION OF RELIABLE ELECTRIC 700–TYPE CONNECTORS

4.01 To modify the verticals of a protector frame for installing the 700-type connector, the Reliable Electric Company will provide an adapter bar drilled and tapped ready for mounting with the necessary mounting screws; the adapter must be ordered separately as follows: (QUANTITY), ADAPTER, RELIABLE, SCB.

4.02 To install the adapter on the vertical, proceed as follows:

NOTE: The adapters are placed on the RIGHT hand side of the verticals as determined by the workman facing the verticals.

a. Remove the headboard brackets at the top of the frame.

b. Align the unthreaded holes in the adapter with the mounting holes in the frame vertical. Starting with the bottom hole, use the 12-24 screws furnished and bolt the adapter to the vertical. Place the adapter bar with the 7-1/8" offset at the top of the vertical.

c. Raise the headboard by reattaching the headboard bracket to the top of the adapter bar using the existing 12-14 screws. If no adapter bar is located at the end of a headboard section, a Reliable SCB, MDF DESIGNATION STRIP, ADAPTER can be bolted to the top of the frame at the point where the copper ground bar is attached. Attach the headboard bracket using the existing 12-14 screws.

4.03 In locations where there is a cable vault, install the 700 type connectors on the adapter as follows:

a. Mark the cable number and pair count of each stub on a linen tag or glass tape and attach to the stub cable before it is placed into the cable vault or splice location. If this in not done, regular cable identification procedures will be required to identify each connector before splicing.

b. Remove the connector from the shipping carton. Route the stub cable into the cable vault. Remove any cable twist that may be present. Install the 12-24 screws (furnished with the connector) in the threaded holes on the left-hand side of the adapters. Starting at the bottom, hook the ear-shaped mounting brackets on the connector over the screws in the adapter (Figure 6). Place all of the connectors on the vertical. Tighten the screws before starting the next vertical. Dress the stub cable.

4.04 Position and secure the stub cables laterally across the transverse arms with waxed cotton twine or 12-type distributing rings.

4.05 A bond wire is extended from the stub cable shield to the mounting bracket. When the connector is bolted to the frame, electrical continuity is provided between the shield of the stub cable and ground to reduce electrical noises in the cable.

4.06 In locations where there is no cable vault, the connectors are mounted in the same manner as described in paragraphs 4.03 and 4.04, except that the stubs are taken to the top of the frame and are then taken on cable racks to the splice locations.

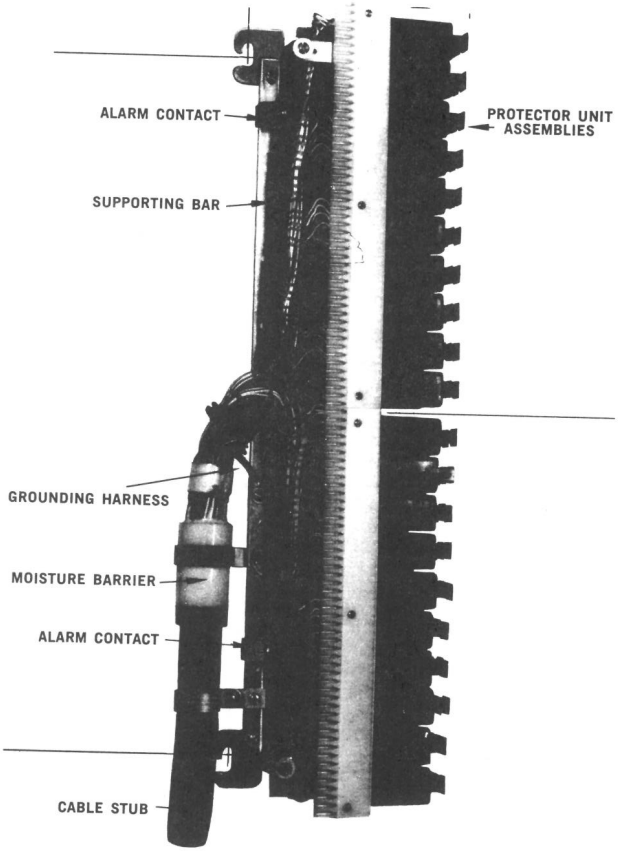

FIGURE 6. Stub and Mounting Bracket Arrangement

5. TESTING PROTECTOR UNITS

5.01 The primary purpose of this test is to remove carbon dust which may have accumulated in the .0035" gap between the protector blocks and to detect defective protector units. This test should be performed prior to splicing the stub cables to the entrance cables.

5.02 Connect the following components as shown in Figure 7 to perform the protector unit test:

a. A 7-1/2 watt, 120 volt frosted light bulb.

b. Two 90-volt KS-7890 dry batteries.

c. A light bulb socket.

d. A test probe (411A tool).

e. Cross-connecting wire.

5.03 Touch the test probe to each tip and ring on the cross-connecting terminals. The test probe should remain in contact for one second or longer. If a carbon condition exists, the light bulb will illuminate. The flow of the current should burn out the carbon and the lamp will then be extinguished. If the lamp remains illuminated, remove the protector unit and replace with a new protector unit. Test the new protector unit.

NOTE: Do not attempt to repair a defective protector unit. Return defective units for repair in accordance with local instructions.

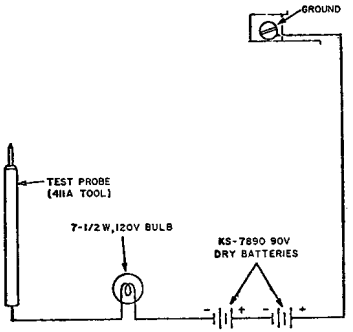

FIGURE 7. Circuit For Testing Protector Unit

6. MARKING

6.01 Factory-stenciled numbers on the face of the connector will identify protector modules associated with each cable pair.

6.02 Cable numbers are marked on 700-type connectors with adhesive backed number plates E-5293–G cable designation card (red numerals on aluminum background). Cable numbers should be placed below the first numbered pair of each 100 pair connector. If colored circuit designation plates are required on the space specified for the cable number, place the number on the next available space below that point.

6.03 Sensitive circuits are designated and protected by using blank adhesive number plates stamped with the required color designation.

7. TEST CORDS

7.01 A four conductor two-way test cord, Reliable Electric Model No. 1130A (12' in length) or No. 1130B (18' in length) is available for testing individual cable pairs or the associated central office equipment. The connector-end plug is inserted into the individual connector

jack position (protector removed) of the line under test. The connector-end plug consists of the housing and base plug of a protector unit. Twin plugs on the opposite end of the cord (5/8" centers) are provided as required for connecting into test trunk jacks.

7.02 Reliable Electric test cord Model No. 1131A (12' in length) or No. 1131B (18' in length) equipped with the necessary plugs is available for making Varley loop tests to locate grounded or crossed cable pairs.