BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

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COILS AND CASES
STUB CABLES—VOICE FREQUENCY TOLL LOADING CASES

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1. GENERAL

1.01 This section describes the stub cables and gives the color codes of the conductors used in the standard voice frequency toll loading cases. Issue 1 is replaced.

1.02 **Reason for Reissue:** The section has been reissued to reflect changes made in the design of the stub cables of cases containing phantom loading units.

2. STUB CABLES FOR PHANTOM LOADING UNITS

2.01 Welded steel toll loading cases (109 and 110 series of aerial cases, 209 and 210 series of underground cases, 259 and 260 series of buried cases and 261 and 262 series of buried cases with lepeth sheath) are equipped with "Universal" type paper-insulated 22-gauge stub cables. These cables are employed to simplify the assembly of the units in the cases and to facilitate identification of the coil terminations when the case contains loading units of more than one type.

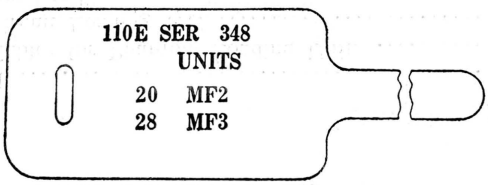
2.02 **Core Make-up:** The core of stub cables for all cases is of layer construction. In each layer there is one quad with Orange-Red insulation and the adjacent quad in a clockwise direction has Green-Red insulation. These serve as the "marker" and "direction" quads, respectively. The remaining quads in each layer have Blue-White insulation. To assist in counting, Black threads are included in the binder strings of every sixth quad. The edge of the paper insulation of alternate layers is stained Black to facilitate distinguishing

the quads of adjacent layers. The terminals for the various loading units in the case can be identified by counting around the various layers progressively, starting with the marker quad in the outer layer and continuing in the direction of the "direction" quad throughout the stub.

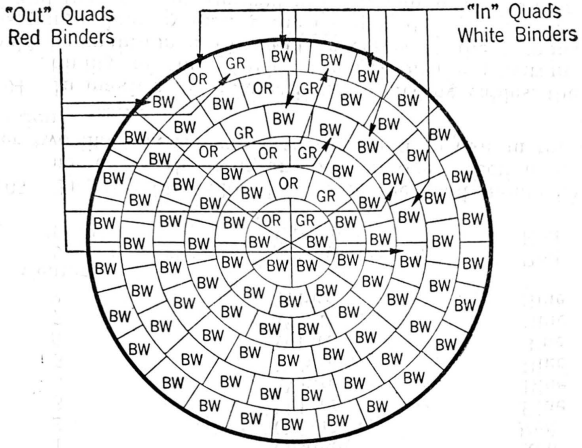
2.03 **Connection of Units to Stub:** From one to three types of loading units may be potted in a case equipped with a Universal type stub. The name-plate attached to the stub indicates the type of units and the number of each. If the case contains two or three types of MF units other than MF2 units, the loading units having the lowest code designation are connected to quads in the stub having the lowest quad count, units with the next higher code designation to quads with the next higher count, and so on. If the case contains two or three types of loading units including MF2 units, one-half of the MF2 units are connected to the lowest numbered quads, followed by the other MF units in numerical order, and then the remaining MF2 units. In cases that contain MF2 units only, there is no segregation of the units into two groups.

2.04 If the stub contains quads that are not connected to loading units, the first unused quad will be designated by means of a tag marked "DEF."

2.05 **Identification of Units:** The following figure illustrates the name-plate of a 110E case containing 20 MF2 units and 28 MF3 units.



2.06 The stub cable used on the 110E case, which is designed to pot from 41 to 48 units, contains 96 quads. The cross-section of the stub is illustrated below.



NOTE:
Letters indicate color of insulating paper.
A few black threads are included in the binder of every sixth quad.
The edge of the paper insulation is stained black in alternate layers.

3. SIDE CIRCUIT LOADING

3.01 Cases containing 641 and 642-type (non-phantom) coils are equipped with heavy pulp-insulated 24-gauge stubs having high dielectric strength from core to sheath. The stubs are of unit-type construction. A quad is used to terminate each coil in the case. All quads have the same colors of insulation, the IN pair of each quad being Blue and White, and the OUT pair Red and Red-White. Unused or defective quads are marked with tags having the code "DEF" attached to them or with brass eyelets placed over them.

4. PROGRAM LOADING

4.01 Lead sleeve cases for program loading are made in sizes containing four, five or six, and seven to ten coils, respectively.

4.02 The IN and OUT terminals of each coil are brought out in one quad of the stub. Each quad is individually shielded with metal backed paper. The color code of the stubs of the current standard cases is given in the following table.

Cases Containing Four Coils

Quad No.	IN Pair	OUT Pair
1	Orange	Red
2	Green	Red
3	White	Blue
4	White	Blue

Cases Containing Five or Six Coils

Quad No.	IN Pair	OUT Pair
First Layer		
1	Orange	Red
2	Green	Red
3	White	Blue
4	White	Blue
5	White	Blue
Center		
6	Orange	Red

Cases Containing Seven to Ten Coils

Quad No.	IN Pair	OUT Pair
First Layer		
1	Orange	Red
2	Green	Red
3	White	Blue
4	White	Blue
5	White	Blue
6	White	Blue
7	White	Blue
8	White	Blue
Center		
9	Orange	Red
10	Green	Red

4.03 The two like-colored wires of the quad should be connected to the program pair in one direction and the other two like-colored wires, to the program pair in the other direction.

4.04 In making the connections to existing cables, the continuity of the individual wires of the program pairs should be maintained to avoid reversals at the terminations. This can be done by testing the IN and OUT conductors of the coil and then splicing the coil into the pair one wire at a time.