

SERVICE  
SPECIAL SAFEGUARD MEASURES  
SPECIAL SERVICE PROTECTION  
RADIO AND TELEGRAPH LOOPS

1. GENERAL

1.01 This section provides information about protective devices used on special service circuits requiring special service protection (SSP) or special safeguarding measures (SSM).

2. PROTECTIVE DEVICES

2.01 Protective devices may be installed or removed upon receipt of form E-4106 which is supplied to field forces when special service orders and/or toll circuit layout orders are noted *SSP* or *SSM* alongside the circuit number. Install the protective devices as shown in the following figures.

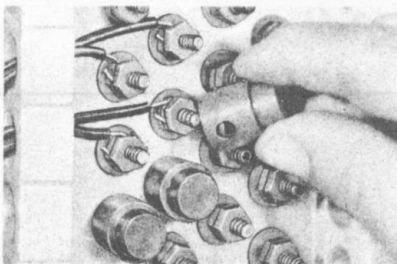


Fig. 1

Install binding post caps as follows:

- (1) Clean faceplate.
- (2) Place cap over binding post and push until seated against faceplate.

Slip the KS-6660 indicator over end of wire as shown in Fig. 2, 3, and 4. Binding post caps B and C, for use with N-type cable terminals, wiring

terminals, or fuseless protector terminal blocks, are also shown in Fig. 2 and 3. Split-ring feature of the KS-16847 indicator (Fig. 5) permits placing or removing on terminated wires.

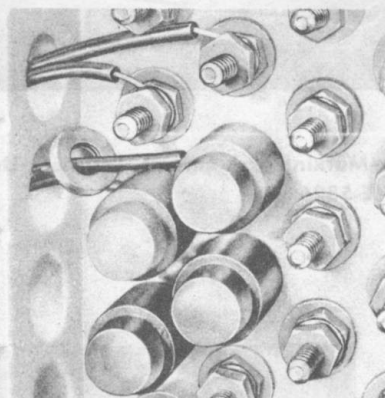


Fig. 2

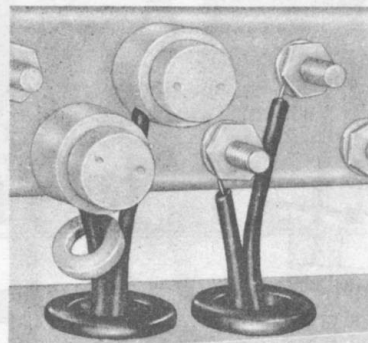


Fig. 3

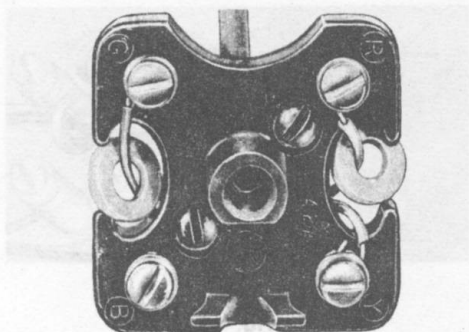


Fig. 4

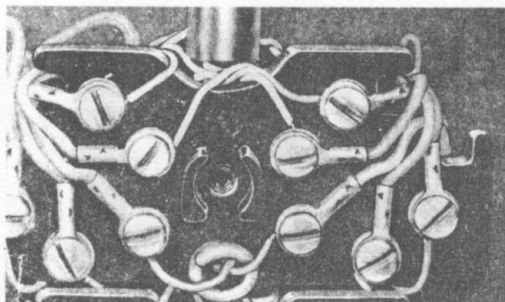


Fig. 5

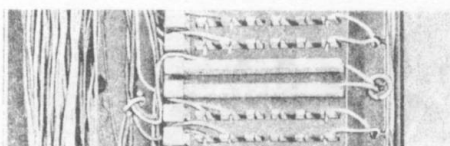


Fig. 6

B clip terminal insulators installed on 66-type connecting block.

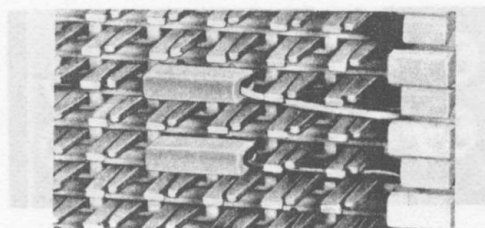


Fig. 7

C clip terminal insulators installed on 66G-type connecting block.

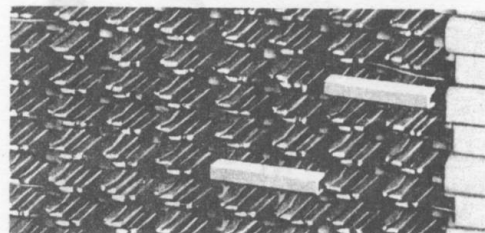


Fig. 8

D clip terminal insulators installed on 66H-type connecting block.

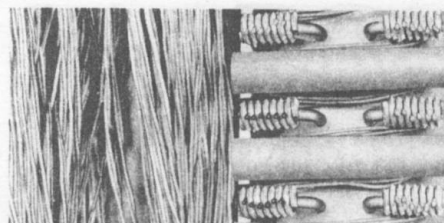


Fig. 9

B coil spring insulators (MD) installed on 70-type connecting block.

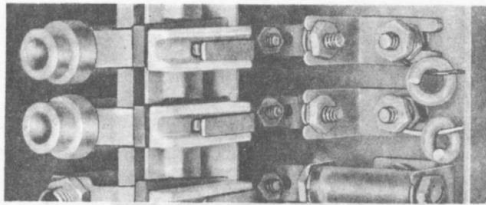


Fig. 10

D binding post caps installed in L-Type fuse chamber.

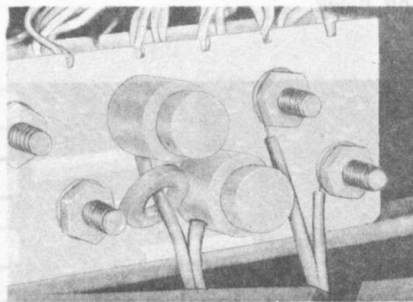


Fig. 11

E binding post caps and indicators used with 49A cable terminal.

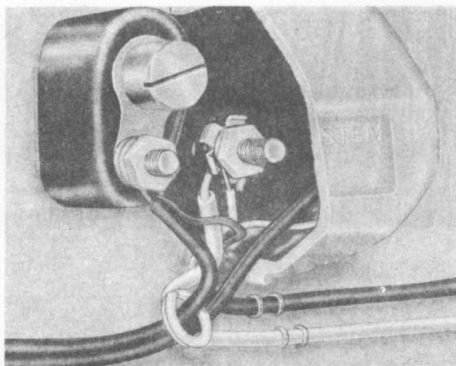


Fig. 12

Indicator used with station protector 123A1A. The 150A cover (shown cut away) gives added security.

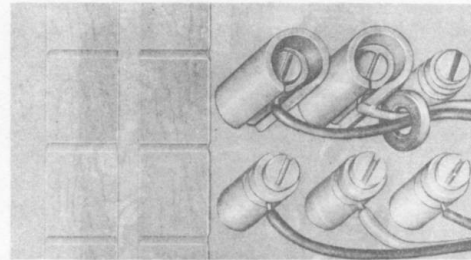


Fig. 13

No. 3 binding post insulators installed in BD-type cable terminal. **Remember**—SSP is required at both ends of cross-connecting wires.

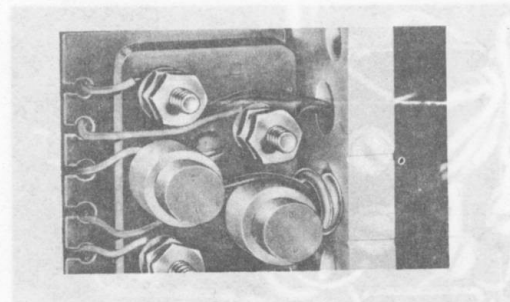


Fig. 14

A 30-type connecting block with SSP.

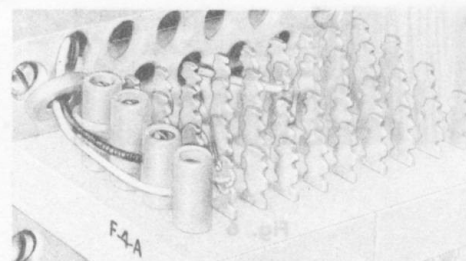


Fig. 15

Typical terminal strip with SSP. Terminal punching insulators shown here are No. 4 (short) and No. 5.



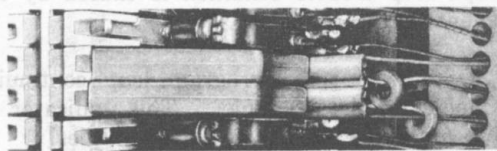


Fig. 16

C50 type frame with KS-14539 guard and terminal punching insulators. **Protect each special circuit appearing on frame. Place SSP on each end of jumper wire.**

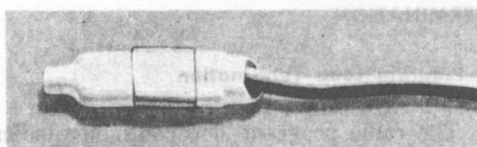


Fig. 17

Warning marker Form E-5190 installed on B wire connector.

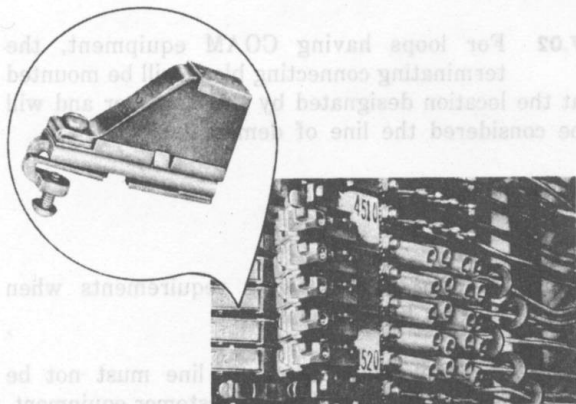


Fig. 18

SSP on frame equipped with 444A test jacks or 401 connector.

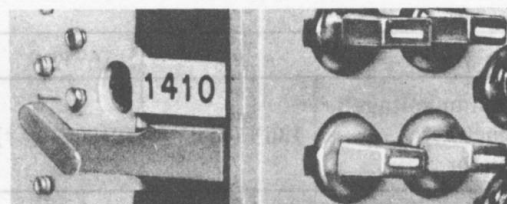


Fig. 19

Protected 300-type connector (jumper wire side) on frame protected with KS-16576, List 5 designation plate.



Fig. 20

Protected 300-type connector (test-terminal side) protected with KS-16576, List 6 designation plate.

### 3. SPECIAL SERVICE CIRCUITS

**3.01** Special service circuits as discussed in this section, are cable and wire facilities furnished by the Telephone Company to connect with customer owned and maintained (COAM) and Telephone Company maintained (TCM) electrical equipment.

### 4. NORMAL CURRENT AND VOLTAGE LIMITATIONS

**4.01** Table A shows maximum permissible values of current and voltage for leased facility operation. These values are generally acceptable from the standpoint of preventing injury to personnel, damage to plant, and interference with telephone facilities. These values are also representative of current and voltage ranges within which normal telephone equipment is designed to operate; therefore, the listed values should not be exceeded under normal operating conditions unless given special consideration.

TABLE A

	DC	AC (rms)
Maximum voltage* Conductor to conductor	135V (270V†)	50V (100V‡)
Maximum voltage* Conductor to ground	135V	50V
Maximum current‡ Any conductor	0.35A	0.35A

\* These values apply to continuous dc and ac (low-frequency sine wave) voltages and are measured at point of connection to telephone facilities.

† Permitted only if the voltage source is center tapped to ground.

‡ Use of multiple conductors to limit the current per conductor to this value is not desirable.

## 5. PROTECTION

**5.01** Special electrical protection may be required to limit the current and voltage that the customer equipment can deliver to the telephone plant, or in some cases, to minimize the effect that a momentary disturbance in the telephone plant can have on the customer equipment.

**5.02** Special electrical protection, as called for on the service order or any attached memoranda, may be any of the following:

- (a) Drainage coils
- (b) Fuses (usually 60-type)
- (c) Resistors or ballast lamps
- (d) Transformers (neutralizing or isolating)

## 6. RADIO PROGRAM LOOP DC TELEGRAPH LOOP CONTINUITY INDICATOR

**6.01** The radio program loop continuity indicator provides the serving test center (STC) with a simple means of testing, without the need for personnel at the customer location, to determine whether a radio program loop trouble, or a dc

telegraph loop trouble condition is caused by the equipment or the conductor.

**6.02** One basic radio program loop continuity indicator is available. This indicator is suitable for either COAM or TCM facilities.

**6.03** Two basic dc telegraph loop continuity indicator circuits are available, one for loops arranged for neutral operation, and one for loops arranged for polar operation where ground is obtained from the central office. If ground is obtained at the customer location, the indicator cannot be used.

## 7. TERMINATION

### Radio Program Loop Termination

**7.01** The radio program loop continuity indicator is mounted on the 42A connecting block used for terminating this type of circuit. The connecting block will be considered the line of demarcation between the Telephone Company and customer facilities. It will be identified as described in 7.03(d).

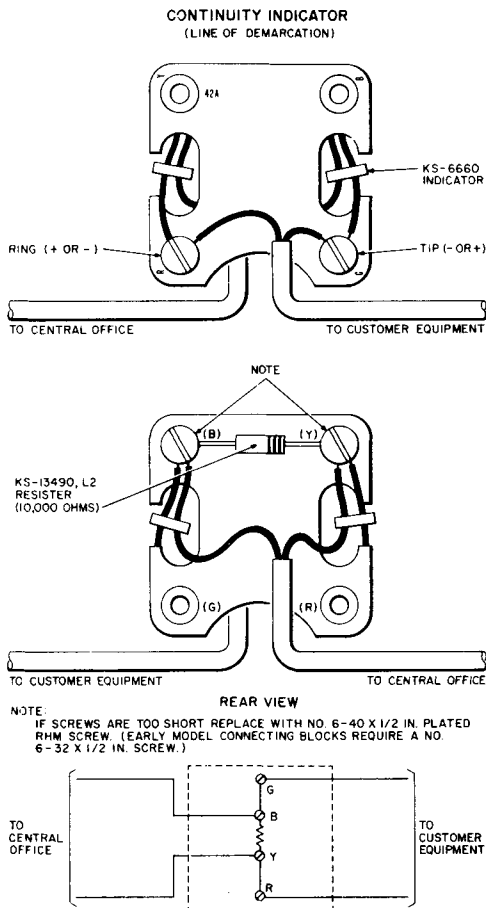
### DC Telegraph Loop Termination

**7.02** For loops having COAM equipment, the terminating connecting block will be mounted at the location designated by the customer and will be considered the line of demarcation.

### Requirements

**7.03** Observe the following requirements when making terminations:

- (a) The Telephone Company line must not be connected directly to the customer equipment. A connecting block must be installed between the last cable terminal and the customer equipment. This connecting block serves as the line of demarcation between the Telephone Company facilities and the customer owned equipment. The continuity indicator may be mounted on the continuity block or on a separate terminal facility.
- (b) Customer wiring must not be run into a cable terminal box.



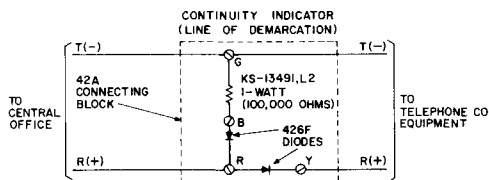
**Fig. 21—Radio Program Loop Continuity Indicator**

(c) An outside-type terminal must be used when the final termination is exposed to the weather.

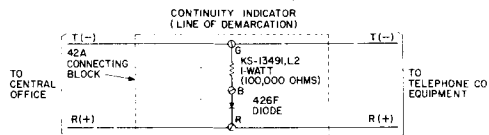
(d) A white linen tag, or equivalent, must be attached at the final termination. This tag is used to identify the circuit for the customer work force.

(e) The 426F diode(s) used in the dc telegraph loop continuity indicator (Fig. 22, 23, 24, 25, and 26) must be connected, as shown, to ensure correct polarity.

(f) When used for mounting the continuity indicator parts, the 42A connecting block must use a plastic cover. If the existing cover is metal, it must be substituted with a plastic cover.



**Fig. 22—DC Telegraph Loop Continuity Indicator—TCM Equipment, Neutral Operation**



**Fig. 23—DC Telegraph Loop Continuity Indicator—TCM Equipment, Polar Operation**

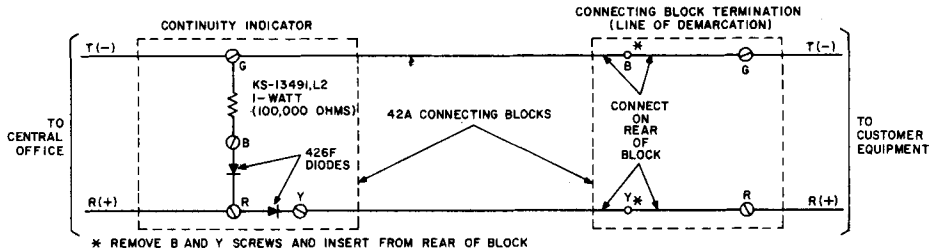


Fig. 24—DC Telegraph Loop Continuity Indicator—COAM Equipment, Neutral Operation

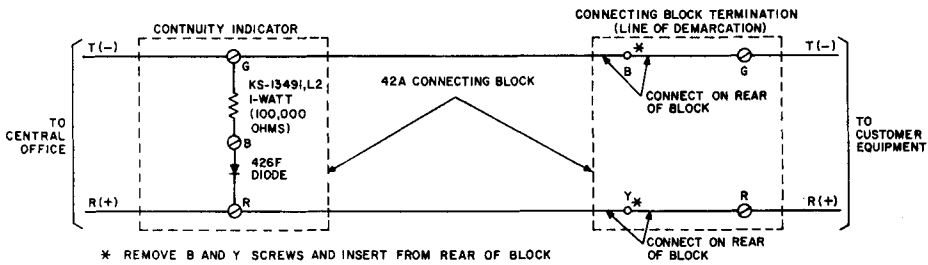
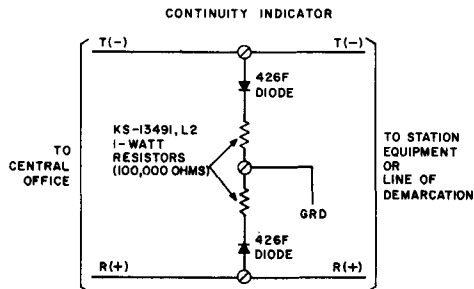


Fig. 25—DC Telegraph Loop Continuity Indicator—COAM Equipment, Polar Operation

Fig. 26—DC Telegraph Loop Continuity Indicator  
(Alternate Method)