

## CLICK REDUCING VARISTORS IN PBX SWITCHBOARD AND ORDER TURRET TELEPHONE CIRCUITS INSTALLATION

### 1. GENERAL

1.01 This section covers the general requirements and methods for the installation of No. 3A varistors (No. 93A resistances) in the telephone circuits of cord type P.B.X. switchboards and order turrets.

1.02 This section is reissued to provide conformity with other Plant Series sections.

1.03 In P.B.X. positions the varistor is mounted in the keyshelf either on the left-hand side panel or on the lockrail, depending on the manner in which the local wiring has been run to the attendant's telephone jacks.

1.04 For No. 1 and No. 2 order turrets the varistor is mounted inside of the turret in a location where the leads running between the No. 65 induction coil and the telephone jacks can easily be connected to the varistor without having to splice the wire.

1.05 For No. 3 order turrets the varistor is mounted on the underside of the table top upon which the turret is mounted and in a location near the telephone jacks so that the wiring can be disconnected from the jacks and connected to the varistor without splicing.

1.06 Two 3/4 inch No. 6 round head wood screws are furnished with each varistor for mounting purposes. While the mounting bracket has three holes drilled in it, only the two outside holes are used for fastening the varistor in place.

1.07 The adjustment of the clamping nut which holds the copper washers on the bolt shall not be changed. Any change in this adjustment will result in rapid loss of effectiveness of the varistor.

1.08 In soldering to the terminal lugs of the varistor, only sufficient heat should be applied to ensure a good soldered connection, as excessive heat may impair the effectiveness of the varistor.

1.09 The detailed procedures called for under Method specify that the existing leads to the receiver shall be disconnected from the telephone jacks, cord fasteners or terminal strip and connected to the varistor and new leads shall be run from the varistor to the jacks, cord fasteners or terminal strip. This is important in that it guards against the possibility of the varistor becoming ineffective because of an undetected open occurring in the circuit wiring.

1.10 The varistor should not be installed in any circuit where d-c. voltage is impressed across the receiver.

1.11 Since it is necessary to temporarily disconnect the attendant's telephone circuit when installing the varistor, this work should be done during periods of light traffic.

1.12 The circuit label in the P.B.X. switchboard or order turret should be marked to show the addition of the varistor.

### 2. TOOLS AND MATERIALS

2.01 The tools and installing material required are those specified in the practices covering specific installation methods.

2.02 No. 3A Varistors, as required.

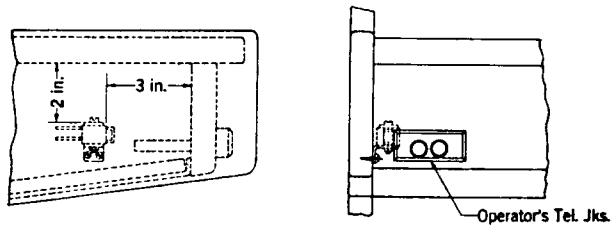
2.03 No. 22 D.S.C.C. Wire, color and amount as required.

### 3. REQUIREMENTS AND METHODS

#### Preparation and Mounting in P.B.X.'s

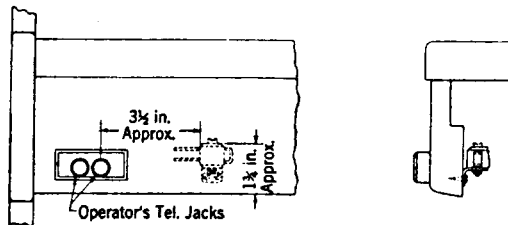
3.01 Using the mounting bracket as a templet, drill the end panel or lockrail of the keyshelf for mounting the varistor as indicated by 3.02 or 3.03.

3.02 Where the wiring to the telephone jacks enters along the left-hand side of the keyshelf, mount the varistor on the end panel of the keyshelf on the left-hand side as indicated by Fig. 1.



**Fig. 1 - Varistor Mounted on the End Panel at the Left-Hand Side of Keyshelf**

**3.03** Where the wiring to the telephone jacks enters along the right-hand side of the keyshelf, mount the varistor on the lockrail as indicated by Fig. 2.

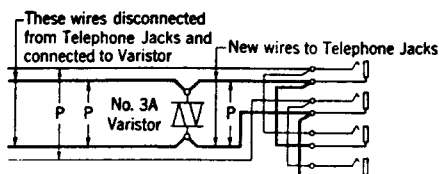


**Fig. 2 - Varistor Mounted on Lockrail**

**3.04** Disconnect the existing leads from the sleeve terminals of the telephone jacks. Open up the local cable form and cut these leads back, if necessary, so that they can be connected to the varistor.

**3.05** Run a new pair of No. 22 D.S.C.C. wire (color as required) from the varistor to the telephone jacks and resew the local cable form.

**3.06** Connect the leads to the varistor and telephone jacks as indicated by Fig. 3.



**Fig. 3 - Connections for P.B.X.'s**

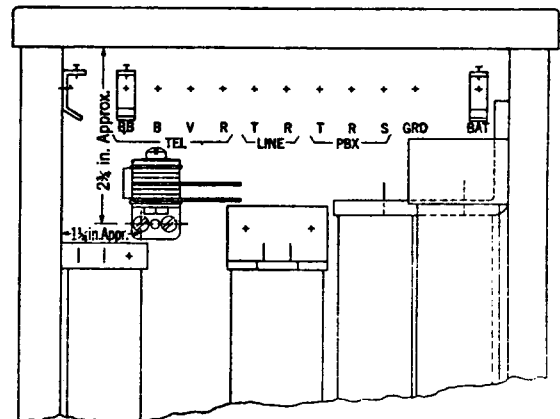
**3.07** Dress up the wiring at the varistor and telephone jacks and also at any other place where the local wiring may have been disturbed by this work.

#### **No. 1 Order Turret**

**3.08** Using the mounting bracket as a templet, drill the back panel of the turret and mount the varistor as indicated by Fig. 4.

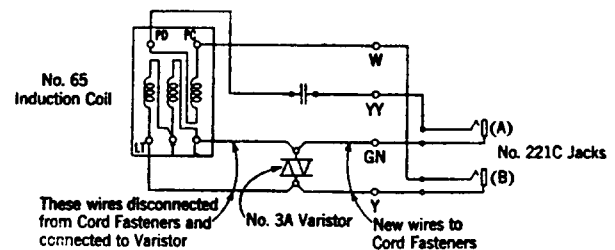
**3.09** At the cord fasteners designated GN and Y disconnect the leads which come from the induction coil. Open up the local cable form and cut these leads back, if necessary, so that they can be connected to the varistor.

**3.10** Run a new pair of No. 22 D.S.C.C. wire (color as required) from the varistor to the GN and Y cord fasteners and resew the local cable form.



**No. 4 Varistor Mounted in No. 1 Order Turret**

**3.11** Connect the leads to the varistor and GN and Y cord fasteners as indicated by Fig. 5.

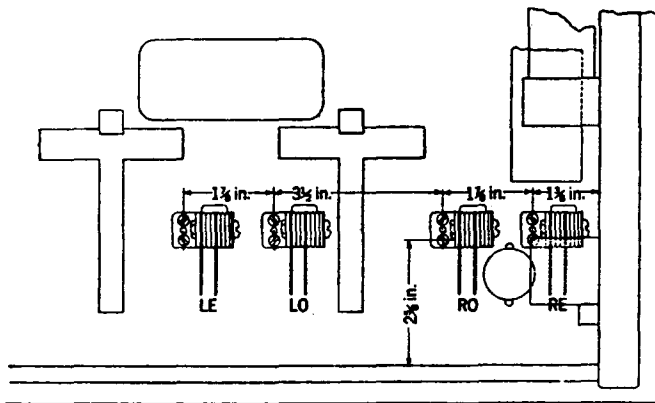


**Fig. 5 - Connections for No. 1 Order Turret**

**3.12** Dress up the wiring at the varistor and cord fasteners and also at any other place where the local wiring may have been disturbed by this work.

### No. 2 Order Turret

**3.13** Using the mounting bracket as a templet, drill the base of the turret in the right even position and mount the varistors as indicated by Fig. 6. If the turret is equipped with a retardation coil designated AUX, it may have to be moved slightly in order to mount the one varistor in the location indicated by Fig. 6.



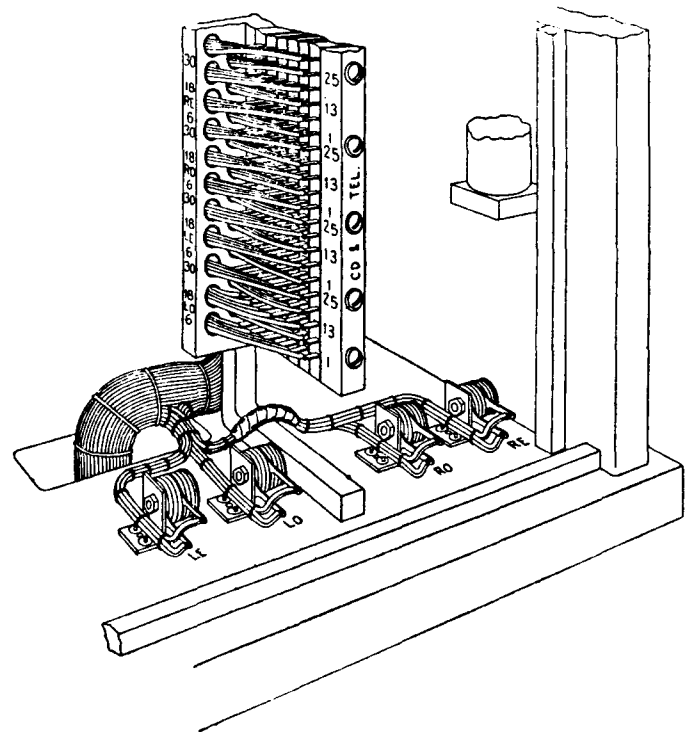
**Fig. 6 - Varistors Mounted in No. 2 Order Turret**

**3.14** Disconnect the leads at the terminal strip which run to the sleeve terminals of the telephone jacks in the four positions of the turret. Open up the local cable form and bring these leads out to the varistors.

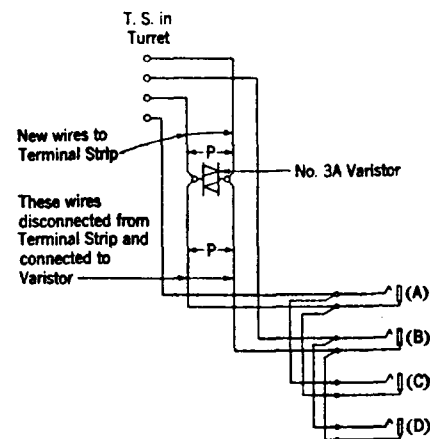
**Note:** Reference should be made to the circuit label to determine the terminals which are used for terminating the leads from the telephone jacks.

**3.15** Run a new pair of No. 22 D.S.C.C. wire (color as required) from each varistor to the terminals of the terminal strip where the other leads were disconnected and make up and sew these leads together with the ones disconnected in 3.14 into a local form as indicated by Fig. 7. Also resew the existing local cable form where it was opened up.

**3.16** Connect the leads to the varistors and terminal strip as indicated by Fig. 8.



**Fig. 7 - Local Cable Form in No. 2 Order Turret**



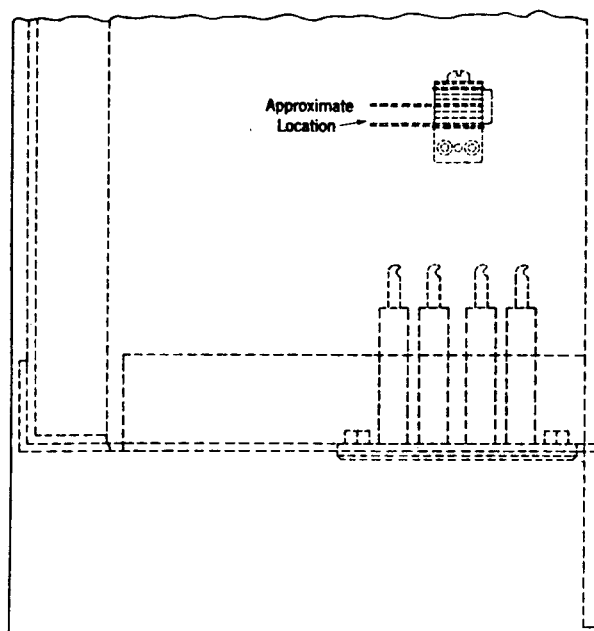
**Note:** The connections are the same for each attendant's telephone circuit.

**Fig. 8 - Connections for No. 2 Order Turret**

**3.17** Dress up the wiring at the varistors and terminal strip and also at any other place where the local wiring may have been disturbed by this work.

### No. 3 Order Turret

**3.18** Using the mounting bracket as a templet, drill the underside of the table top and mount the varistor near the telephone jacks as indicated by Fig. 9.



**Fig. 9 - Varistor Mounted on Underside of Table Top**

**3.19** Disconnect the existing leads from the sleeve terminals of the telephone jacks. Open up the local cable form and cut these leads back, if necessary, so that they can be connected to the varistor.

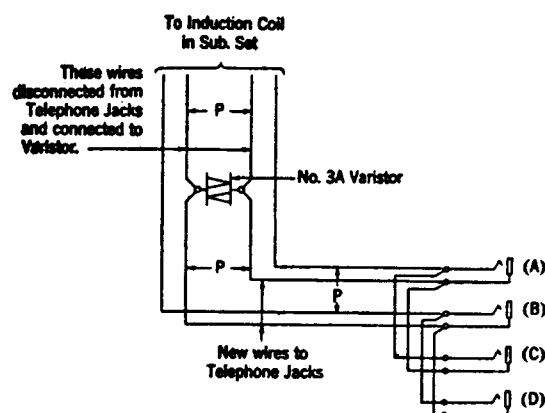
**3.20** Run a new pair of No. 22 D.S.C.C. wire (color as required) from the varistor to the telephone jacks and resew the local cable form.

**3.21** Connect the leads to the varistor and telephone jacks as indicated by Fig. 10.

**3.22** Dress up the wiring at the varistor and telephone jacks.

#### **4. INSPECTION**

**4.01** The keyshelf of the P.B.X. switchboard or the order turret should be clean and free from wire clippings, etc.



**Fig. 10 - Connections for No. 3 Order Turret**

**4.02** Check to see that the varistors are securely mounted.

**4.03** Inspect all wiring and check to see that the connections have been made in accordance with Figs. 3, 5, 8 or 10.

**4.04** See that the circuit label has been marked to show the addition of the varistor in the circuit.

**4.05** See that all removable panels, hinged panels, top, etc, are securely in place.

#### **5. TESTS**

##### **P.B.X. Switchboards**

**5.01** Call the central office operator or test deskman and observe that the talking connection is satisfactory.

##### **Order Turrets**

**5.02** Call the central office operator, test deskman or associated P.B.X. attendant and observe that the talking connection is satisfactory.