



PRIMARY CONNECTIONS AND TESTING OF JKM-95 AND JVM-95 INSTRUMENT TRANSFORMERS

INTRODUCTION

These instructions describe the procedure for connecting the non-loadbreak potential connector assembly, shown in Fig. 1, to both the Type JKM-95 current transformer and Type JVM-95 voltage transformer to form a completely insulated and ground-shielded assembly. Also, the suggested procedure for testing instrument transformers is outlined.

PARTS USED FOR EACH JKM-95/JVM-95 COMBINATION

- A. For Installations With JVM-95 Voltage Transformers Connected Line-to-Ground.
- 1 JKM-95 Current Transformer
 - 1 JVM-95 Voltage Transformer
 - 1 Potential Connector Assembly (Fig. 1) — Cat. No. 9930884G10, G11, or G12
 - 1 Insulating Plug (Fig. 3) — Cat. No. 9930877G1. For use in a three-CT/two-VT installation to plug the unused potential terminal in the third CT.
 - 1 Connector Kit (Includes one cloth and two lubricants) — Cat. No. 9930894G4
- B. For Installations With JVM-95 Voltage Transformers Connected Line-to-Line.
- 1 JKM-95 Current Transformer
 - 1 JVM-95 Voltage Transformer
 - 1 Potential Connector Assembly — Cat. No. 9930884G10, G11, or G12
 - 1 Potential Connector Assembly — Cat. No. 9930884G13, G14, or G15
 - 2 Connector Kit (Includes one cloth and two lubricants) — Cat. No. 9930894G4

GENERAL REQUIREMENTS

- A. All associated apparatus must be de-energized before any primary connections can be made.
- B. All mating surfaces of transformers and connectors must be free of flaws which could cause a void at an interface. Inspect each part.
- C. In making connections between CT's and VT's, all mating surfaces on transformers and connectors must be lubricated with the lubricants provided in the connector kit.

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- D. In any installation of JKM-95 CT's and JVM-95 VT's, the potential terminal openings on each transformer must be within one inch of the same vertical plane to minimize mechanical stresses on potential connector assemblies.

INSTALLATION PROCEDURE

Voltage Transformers Connected Line-to-Ground

1. After the transformers have been bolted solidly in place and the secondary wiring is completed, the interconnections between the current and voltage transformers can be made. Begin by removing the protective caps from the elbow probe ends (Fig. 2) and inspecting the conductor rod to be sure that:
 - a. Its locking ring is in place and fits loosely in its groove so that it can compress and spring back freely when inserted into a transformer potential terminal.
 - b. It cannot be turned or loosened with fingers. If it is loose when received, tighten to a snug position with an adjustable wrench.
 - c. The slot in the rod has parallel sides.
2. Lubricate the probe end of each elbow connector from the rubber locating ring to its free end, making sure that the entire outside of the probe is covered with a thin film of lubricant.
3. Lubricate the opening of each potential terminal on each transformer to be connected.

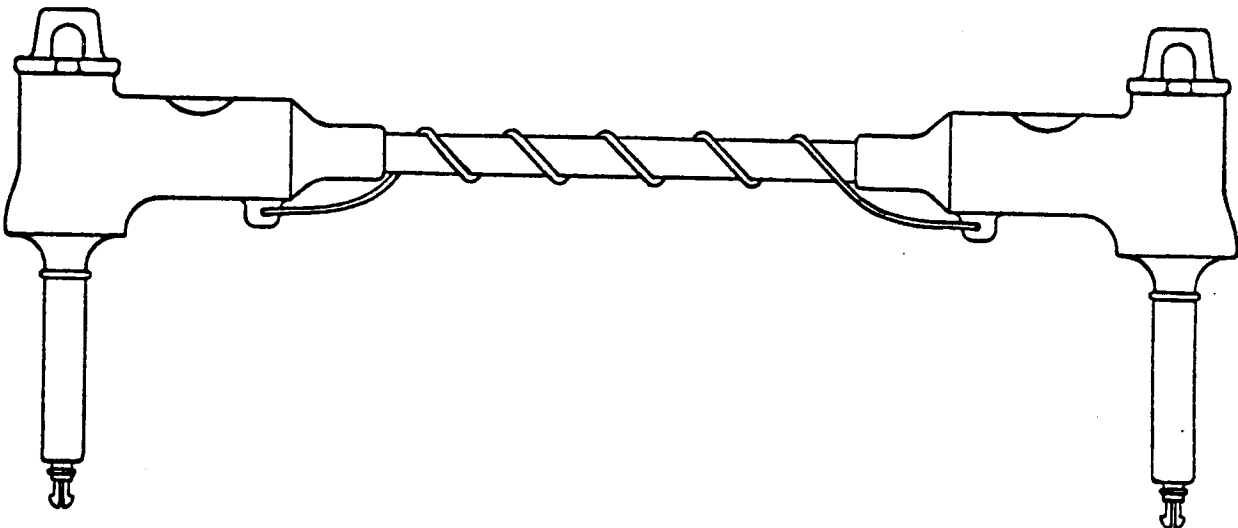


Fig. 1. Potential connector assembly

4. Insert both elbows of the assembly into the proper potential terminal openings, working them into a position where the rubber locating ring on the elbow is approximately 1/4 inch from the terminal opening on the transformer.

Note: After the elbows have been inserted far enough to align them with the potential terminal holes, each elbow can be individually seated to the position specified below.

5. The elbows are now ready for final seating in the locked position. This can be done by rapidly applying a force directly in line with the hot-stick eye of the elbow. See Fig. 2. This should move the locking ring into a slot in the contact inside the potential terminal, and the rubber locating ring should be within 1/8 inch from the potential terminal opening.

6. To insure proper grounding of the cable and elbow assembly, a ground wire should be run from the grounding eye (Fig. 2), at the cable entrance of the elbow connected to the potential transformer, to a ground clamp on the enclosure.

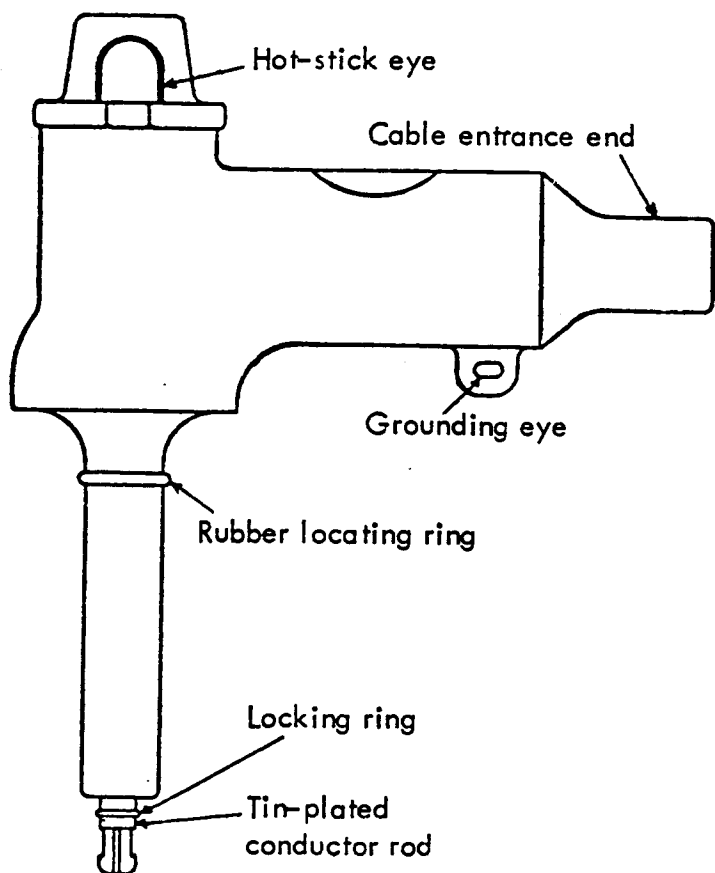


Fig. 2. Elbow assembly, located on each end of potential connector assembly

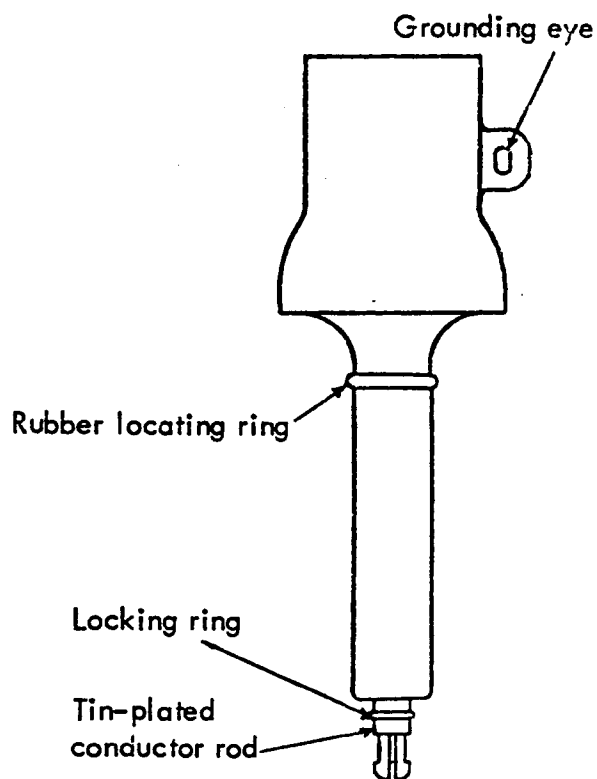


Fig. 3. Insulating plug assembly

7. In a three-CT/two-VT installation, an insulating plug, Cat. No. 9930877G1 (Fig. 3), is provided for the unused potential terminal on the third current transformer in this installation. Insert this plug into the potential terminal in the same manner as the elbow described above.

Voltage Transformers Connected Line-to-Line

Voltage transformers connected line-to-line have two high-voltage insulated terminals. The installation requires one high-voltage terminal to be connected to its associated current transformer as described under "Voltage Transformers Connected Line-to-Ground," and the other terminal to be connected to the third phase. A potential connector assembly (Fig. 1), Cat. No. 9930884G13, G14, or G15, has been provided to do this. This assembly includes a special elbow with conductor rod and locking ring and a section of 15-kV URD cable. The free end of this assembly can be adapted for whatever type connection the user desires to make to the third phase. Otherwise, follow the directions for line-to-ground connections (see above) for the interconnections between the current and voltage transformers and for the single connection of the Group 13, 14, or 15 connector assembly to the voltage transformer.

SUGGESTED TEST PROCEDURE

CAUTION: Read Complete Instructions Below Before Testing.

SECONDARY APPLIED POTENTIAL TEST ON INDIVIDUAL TRANSFORMERS

In connecting test leads to the Type JKM-95 or JVM-95 secondary terminals, make sure that the lead connectors do not touch the transformer ground shield, which is terminated near the X1 and X2 terminals. Otherwise, test per ANSI Standard C57.13-1968, Section 6.8. The secondary test level is 1875 volts rms.

PRIMARY APPLIED POTENTIAL TEST

Do not apply more than 600 volts to any JKM-95 CT or JVM-95 VT primary terminal without appropriate connectors. A description of the proper procedure is provided below.

JKM-95 Current Transformer

The most convenient method for energizing the JKM-95 is to make use of the potential connector assembly (Fig. 1) supplied with each JVM-95 voltage transformer. Simply remove one of the two elbows from the cable and replace it with a stress cone made for No. 2 stranded, 15-kV, URD cable. This can be done as follows:

1. Unscrew the tin-plated conductor rod (Fig. 2) from the elbow and remove it, using an adjustable wrench applied to the flats at the tip of the rod.

2. Disconnect the concentric neutral ground wire from the grounding eye.
3. Remove the elbow and replace it with the stress cone.

Insert the remaining elbow of the potential connector assembly into the primary potential terminal of the JKM-95 CT. To be sure that the elbow is seated properly, check to see that the "fat" part of the probe end of the elbow is within 1/8" of the edge of the current transformer. Orient the free end of the cable vertically for easy connection to the test lead. Now insert two loadbreak switch modules into the bushing wells to properly insulate them. The JKM-95 can now be tested per ANSI Standard C57.13-1968. The recommended test voltage is 25.5 kV maximum, 75% of the factory test level.

JVM-95 Voltage Transformer

1. JVM-95 VT with Two High-Voltage Terminals — Both primary terminals must be insulated with a potential connector assembly (Fig. 1) modified as described under "JKM-95 Current Transformer" above. When this is done, the transformer can be tested in the same manner as any voltage transformer with two fully-insulated primary terminals.

2. JVM-95 VT with One High-Voltage Terminal — Since the H₂ terminal is permanently connected to the base, an induced potential test must be used to raise H₁ to the applied potential test level. To do this, a test frequency of 400 Hertz is recommended. First, insulate H₁ using the modified potential connector assembly. Then, with H₁ open, and H₂, X₂, and base plate grounded, apply a voltage between the X₁ and X₂ terminals, which results in H₁ reaching the desired voltage. See the table below.

JVM-95 VT Induced Potential Test Levels

VT Ratio	H ₁ Terminal Voltage, rms	Secondary Voltage, rms
60:1	25.5 kV	425.0 volts
70:1	25.5 kV	364.3 volts
100:1	25.5 kV	255.0 volts
120:1	25.5 kV	212.5 volts