

# SERVICE NOTE



412A-5

Ⓜ MODEL 412A/AR VOLTMETER-OHMMETER-AMMETER  
SERIALS 134-07482 AND BELOW

INPUT CABLE MODIFICATION KIT  
Ⓜ STOCK NO. 412A-95B

Installation of this modification kit will prevent damage to the input cables by reducing the effects of excess strain. As a result, you will experience longer and more reliable operation of the Ⓜ Model 412A/AR.

This Service Note is written in two sections. The first section concerns kit installation instructions for cabinet model instruments. The second section concerns rack mount instruments.

Special tools other than an electric drill and a 1/4" drive ratchet wrench with a 5/16" socket are not required.

## PARTS SUPPLIED IN KIT 412A-95B

<u>Quantity</u>	<u>Description</u>	<u>Ⓜ Stock No.</u>
1	Cable Assembly-Volt . . . . .	412A-21D-1
1	Cable Assembly-Common . . . . .	412A-21E
1	Cable Assembly-Ohm-ma . . . . .	412A-21F
6	Clamp, cable . . . . .	428A-21A-1
1	Bracket, tie point . . . . .	412A-12E
1	Bracket, cable support, (cabinet model) . . . . .	412A-12C
1	Bracket, cable support, (rack mount model) . . . . .	412A-12D
3	Boot, cable . . . . .	412A-83A
4	Machine screw, 6-32 x 3/8 BH, with lockwasher . . . . .	2390-0009
2	Hex Nut #6 . . . . .	2420-0001

## SECTION I, INSTALLATION INSTRUCTIONS CABINET MODEL

1. Remove cabinet and turn instrument on its top.
2. Remove shield on the function switch side of the instrument by removing the three #6 screws.
3. Unsolder all wires from the tie point bracket located on main chassis where the input cables enter the instrument.

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4. Using a 1/4" drive ratchet wrench, 5/16" socket, and a short extension, remove the two 5/16" nuts which hold the tie point bracket to the main chassis. Remove and discard bracket.

### Note

It may be necessary to carefully separate two resistors to remove the inside nut.

5. Remove original input cables and boots from front panel. Do not discard the voltage cable assembly.
6. Install three new boots on the front panel.
7. Install new tie point bracket using the original #6 bracket screws (Refer to Figure 1).
8. Solder wires (not input cables) to tie points as indicated in Figure 2.
9. Install new ohms input cable by passing it through the appropriate boot into instrument. Pull 12 inches of cable through boot.
10. Place the cable-clamp halves together on ohms cable 2 inches back from stripped end. Pass cable through the appropriate hole in cable support bracket and press clamps firmly into hole. Heavy needle-nosed pliers may be used.
11. Repeat steps 9 and 10 for new "volts" and "common" cables.

12. Pull the cables forward through the boots.
13. Install the cable support bracket with #6 x 3/8 inch screws so that the plastic clamps are butted up to the boot mounting studs. Tighten the two screws.
14. Solder the input cable wires as shown in Figure 2.
15. Replace shield removed in step 2.
16. Replace instrument cabinet.

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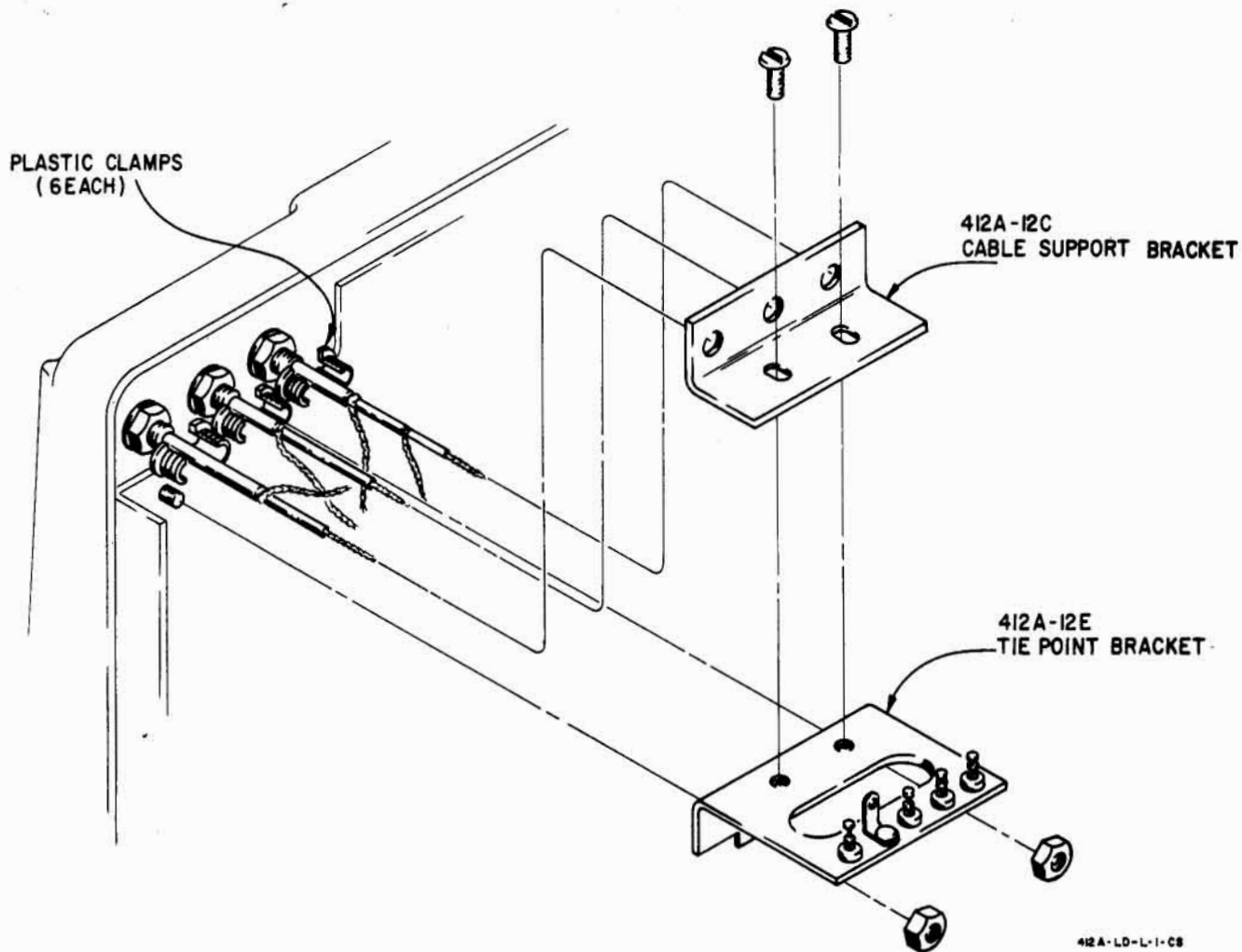


Figure 1. Exploded View of  $\text{Ⓢ}$  Model 412A Cable Support Assembly

17. Remove outer and inner probe sleeve from original volt cable as follows:

- a. Hold volt cable by the probe boot and loosen the sleeve locknut by turning it clockwise.
- b. Turn inner and outer sleeves (together) counter-clockwise and remove.
- c. Remove locknut noting that the threaded end came off first (it must be replaced in the same manner).
- d. Loosen the set-screw in the collar near threads with a 3/32" Allen wrench.
- e. Remove the shield assembly by turning counter-clockwise.

18. Reverse the procedures in step 17 to assemble the probe tip on the new volt cable.

19. Turn the instrument on and perform front panel checks. No re-calibration of the instrument is necessary.

## SECTION II, INSTALLATION INSTRUCTIONS RACK MODELS

1. Remove the dust cover from the instrument.
2. Unsolder the input cable wires only at the tie points just behind input cable boots. Remove the input cables and boots from the front panel. Do not discard the voltage cable probe assembly.
3. Perform steps 9 through 12 in Section I.
4. Refer to Figure 3. Position the cable support bracket by pulling on input cables so that the plastic clamps are aligned with the boot studs. Mark and then drill two #28 holes in the chassis using the cable support bracket as a guide.
5. Install the cable support bracket with #6 x 3/8 inch screws. Solder the input cable wires as shown in Figure 3.
6. Perform steps 16 through 19 of Section I.

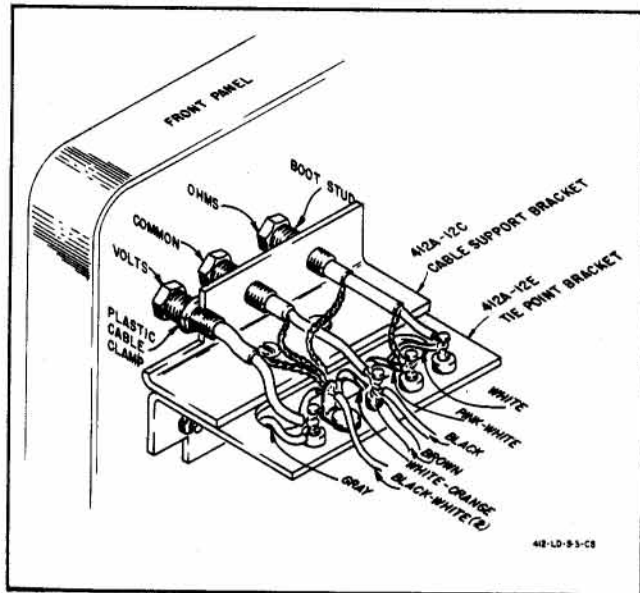



Figure 2.  Model 412A (Cabinet Mount)  
Cable Support Assembly

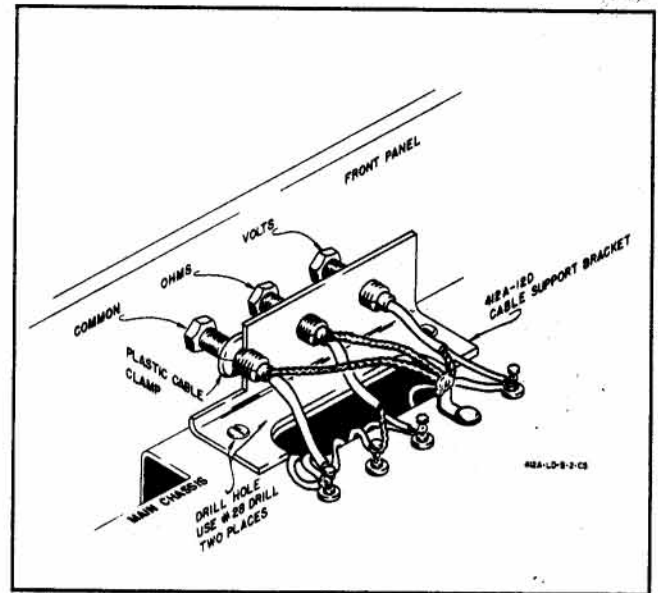



Figure 3.  Model 412AR (Rack Mount)  
Cable Support Assembly