

FIRST CLASS MAIL

COMPANY PRIVATE

Installation Engineering Handbook 18
(File after T of C)
Western Electric Company, Incorporated
Columbus Works

T.I. - All Sections
11-13-70
Replacing Issue of
4-15-70

TEMPORARY INSTRUCTION

INSTALLING INSTRUCTIONS
NORTHERN ELECTRIC COMPANY NO. 5 CROSSBAR FRAMES

CONTENTS

- | | |
|------------------------------------|---|
| 1. GENERAL | 2. INSTALLATION |
| 1.1 Scope of Section | 2.1 Frame Assembly |
| 1.2 Frame Description | 2.2 Appliance Outlets |
| 1.3 Installing Tools and Materials | 2.3 Connecting Appliance
Outlet Cables |
| 1.4 Packing | 2.4 Stamping and Name Plates |
| | 2.5 Wiring |
| | 3. TESTING |
| | 4. INSPECTION |

1. GENERAL

1.1 Scope of Section

1.11 This special method provides instructions for installing No. 5 Crossbar Frames manufactured by the Northern Electric Company, Limited, Canada. It covers only those conditions requiring special instructions due to deviations from standard requirements and practices found in these frames. Standard requirements and practices covered in Installation handbooks shall be used, where applicable, in conjunction with this methods.

1.12 For brevity, the names Northern Electric and Western Electric will be abbreviated N.E. and W.E. respectively throughout this special method.

1.2 Frame Description

1.21 Two types of frames - Basic 290-Line, Line Link and Split 100-Line, Supplementary Line Link - are being furnished by N.E. for installation. These frames will conform generally with specification drawings J27451K-50 and J27451H-50 respectively and SD-26030-01.

1.22 Acceptable N.E. frame deviations from standard equipment designs include the following:

- a) Piece part color - green and ivory instead of gray.
- b) Wiring dress.
- c) Stamping - Frequency and use of brown ink.
- d) N.E. apparatus.
- e) Appliance outlets and three wire armored cable.
- f) Mounting hardware - units, screws, connectors.
- g) Frame upright hoisting hold location.

- 1.23 The N.E. frames have other differences, but these have no direct bearing on installation procedures.

1.3 Installing Tools and Materials

1.31 Tools

- 1.311 No special tools in addition to standard Installation tools are required.

1.32 Materials

- 1.321 Obtain following items locally if required:

Green Semi Gloss Enamel

Ivory Semi Gloss Enamel

Note: Match as close as possible with N.E. finish colors.

1.4 Packing

- 1.41 Frames are shipped skid mounted in wood and corrugated board containers. Unpack frames but leave frame secured to skid by band iron straps until ready for erecting.

- 1.42 Shipped loose items, such as cap screws and connectors, are packed in small boxes which are tied to the under side of the frame top member.

2. INSTALLATION

2.1 Frame Assembly

- 2.11 Frame base molding is installed using plastic connectors and screws furnished as shipped loose items with the frame.

- 2.111 Install plastic connectors in slots in the base of the frame so that, when the molding is secured to the frame, the screw used forces the connector tabs against the slot sides, locking the assembly in place.

- 2.112 If plastic connectors are lost or missing, substitute C7284-8A speed nuts and No. 8 screws per ED-26525-70.

- 2.12 When adding end guards per ED-27011-70 to N.E. frames, drill a 1" hole in end guard mounting P40C205 or P40C206, 2 1/4" above the existing hold in order that the mounting will be aligned with the frame hoisting hole.

- 2.13 In areas requiring earthquake protection or disaster bracing, holes in N.E. frame top members are not large enough for 5/8" cap screws used in conjunction with P 30A349 brackets as shown in Handbook 30, Section 17A, Figure 12K. These holes must be reamed out to the proper 21/32" size.

2.2 Appliance Outlets

2.21 N.E. frames are equipped with two appliance outlets (Kondu Co.) wired with armored cable having two, No. 12 circuit conductors and a grounding conductor. Cables entering and leaving the frame, and those running to the frame outlets, terminate in a frame junction box. See Figure 1.

2.22 All fittings, wire nuts and bushing required to complete installation of outlet - cable assemblies within a N.E. frame are provided with the assemblies. Supplementary items per ED-26528-71 for bridging frame gaps, terminating cable assemblies at the end of a lineup and frame lineup power supply are furnished in the normal manner.

2.23 Caution: Appliance outlet circuits are not essential for maintenance of service and shall never be worked on while alive. Refer to Handbooks 3 and 18 for information on precautionary measures to be taken while working with power equipment.

2.3 Connecting Appliance Outlet Cables

2.31 At N.E. Frames

2.311 Terminate cable conductors as shown in Figure 1.

2.312 To stay within the maximum number of ten conductors (including grounding conductors) allowed in a junction box of the size provided, one or two of the armored cable grounding conductors should be terminated at the associated armored cable connector. Turn the conductor back and arrange the connector so that the grounding conductor is securely clamped between the armored cable and the connector. Dispose of excess conductor length by cutting near the connector.

NOTE: Grounding conductors of non metallic cables (Type NM) terminating in the junction box shall be secured under screws provided in the box. See Figure 1.

2.313 At the last frame in a lineup, growing from right to left, the unused interconnecting cable shall be terminated in a P45V561 outlet box per Figure 9 on ED-26528-71.

2.314 The power supply cable at the head of a lineup and at each side of a frame gap (See Figures 1, 2 and 3 on ED-26528-71) shall be brought down the left bay upright and terminated at the frame junction box as shown in Figure 1 of this section.

2.3141 Remove and discard unused interconnecting cables at the first frame in a lineup growing from left to right and at the frame following a gap in the lineup.

2.32 Interconnecting N.E. Frames and W.E. Frames Equipped with Appliance Outlets Per ED-26528-71.

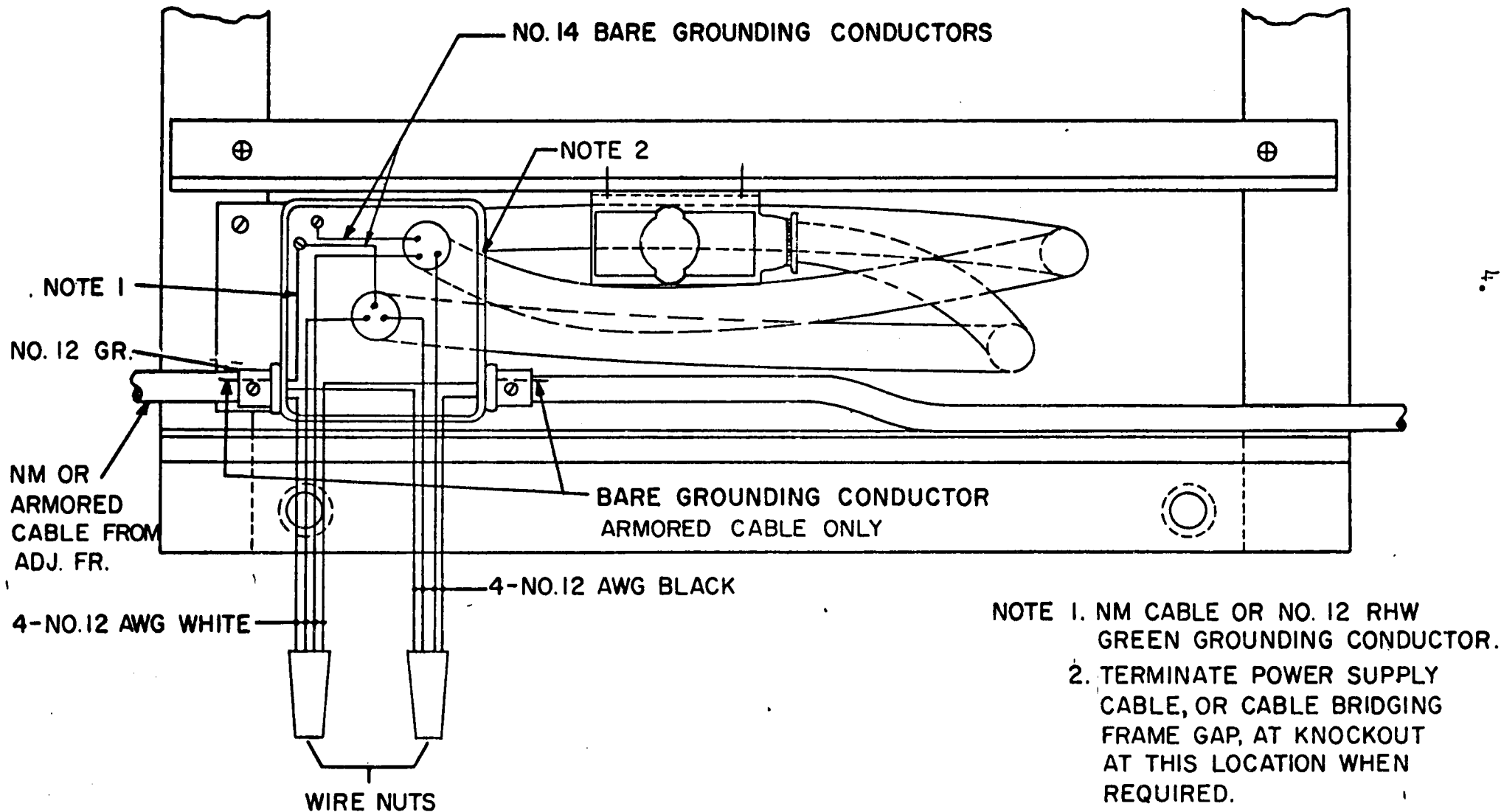


FIG.1 N.E. FRAME APPLIANCE OUTLET WIRING

2.321 Right to Left Growth - Connect NM cable from W.E. frame at N.E. frame junction box per Fig. 1. Secure grounding conductor under screw provided in the box.

2.322 Left to Right Growth - Terminate armored cable at W.E. frames at the rear outlet box. Connect to the three, 3 1/2" wire ends using wire nuts.

2.3221 Secure armored cable to right bay upright using AT6933, Size 7, Cable Clamp.

2.33 Interconnecting N.E. Frames and Western Electric Frames Equipped With Appliance Outlets Per ED-26528-70.

2.331 Right to Left Growth - Connect two conductor NM Cable at N.E. frame junction box per Fig. 1. No. 12 Green wire required to extend ground to new frame is terminated under screw provided in junction box.

2.332 Left to Right Growth -
 a) Remove 4 1/2" section of cable from rear receptacle of W.E. frame.
 b) Install P45V561 outlet box at left upright of N.E. frame per Fig. 9 on ED-26528-71 and connect armored cable to 2 foot length of No. 12, NM cable (less grounding conductor) in box.
 c) Run No. 12 Green wire to armored cable termination at the head of the lineup and connect other end to N.E. armored cable grounding conductor in P45V561 box us using wire nut.
 d) Connect other end of 2 foot NM cable to rear receptacle of W.E. frame.

2.34 Interconnecting N.E. Frames and W.E. Frames Equipped with Appliance Outlets Per ED-25770-70.

2.341 Right to Left Growth -
 a) Remove Hubbel 7224 connector body from existing frame appliance outlet cable end.
 b) Connect two conductor non metallic or armored W.E. frame cable at N.E. frame junction box per Fig. 1. Use T & B 3302 or KS 5497-01 List 31 connectors as required.
 c) Where adjacent W.E. frames have two conductor non metallic cable multiple, extend ground from armored cable at the head of the lineup to the new frame using No. 12 green wire. Terminate green wire under screw provided in junction box.

2.342 Left to Right Growth -

- a) Attach Hubbel No. 7224 connector body to end of N.E. frame armored cable.
- b) Plug No. 7224 connector body into No. 9105 base on adjacent W.E. frame.
- c) When adjacent W.E. frame has two conductor non metallic cable multiple extend ground per

Paragraph 2.341C.

2.4 Stamping and Name Plates

2.41 Frame designations are stamped with dark brown ink. If it becomes necessary to restamp individual designation, use R-2880 Black Ink.

2.42 Decal type N.E. name plates furnished with each frame are not to be used and should be discarded.

2.5 Wiring

2.51 N.E. apparatus is approved for solderless wrapped connections on the same basis as W.E. equivalent apparatus. On crossbar switch embossed, 009 terminals, N.E. connections are soldered; however, other connections made on the same apparatus, but not on soldered terminals, may be solderless wrapped, provided all requirements are met.

2.52 The wire dress at crossbar switch HON terminals may interfere with the connecting of cable leads to vertical multiple terminals. Redress as required to conform with W.E. wire dress.

3. TESTING

3.1 N.E. frames are to be tested in accordance with standard test methods per Handbooks 69 and 69A.

4. INSPECTION

4.1 N.E. Frames shall conform generally with standard requirements. Obvious differences, however, such as paint color, stamping designation size, wire dress, etc., shall not be considered as demerit items.

Manager, Crossbar Product Engineering
Control Center

➔ Arrowed lines indicate new
or changed information.

Reason for reissue:

To add paragraph 2.13

To remove reference to Handbook 30

in heading