

MOUNTING AND ALIGNING APPARATUS
"A" TO "CH" (ASSEMBLIES THRU CHARTS)

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<u>1. GENERAL</u>		<u>2. INSTALLING EQUIPMENT</u>	
1.1	<u>Scope of Section</u>	2.1	<u>Tools</u>
1.11	This section covers the requirements and methods for mounting and aligning apparatus classified alphabetically from "A" to "CH" inclusive.	2.11	In addition to tools supplied in the general kits, the tools and supplies listed may be required for the operations covered by this section.
1.12	The requirements covered in this section should be followed except as modified by applicable specifications and drawings.	2.12	<u>Additional Tools</u>
1.13	Refer to the Associated Handbook Reference Chart on Page 2 for the location of information to which reference may be necessary when performing operations covered by this section.	ED-63343-01	Brackets, Maintenance (See Note 1)
		319B	Extractor, Lamp Cap
		RM-669152	Gloves, Cotton
		→ R-6854	Screwdriver, 3-1/2"
		→ R-4300	Wrench Set, Small Nut and Bolt
1.2	<u>General Information Pertaining to Arrangement of Tools, Precautions, Verification, Specifications, Drawings and Figures, and Associated Information</u>	NOTE 1: Used to support equipment units mounted on double-sided or back-to-back duct type bays when performing work operation on the normally inaccessible side of the unit. Method of using the brackets is covered in BSP 065-125-801. (Brackets and BSP may be borrowed from the telephone company.)	
1.21	Refer to Section 52 for information pertaining to the above subjects.		

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ASSOCIATED HANDBOOK REFERENCE CHART

Subject	Handbook	Section
Blocks, Connecting, 11C	8	20A
Clips, Retaining, P-255706	30	50G
Common Requirements and Information	30	52
Verification	30	52V

2.2 Supplies

Obtain Locally Cement, Ambroid or Cement,
Household, Duco
R-3156 Cement, Paper Chart
R-1445 Brush, Flat, 1" Stiff
Obtain Locally Roller, 6" Rubber
→ KS-8446 Remover, Multiple Marking
KS-14666 Cloth, Cleaning

3. ASSEMBLIES, BANK, STEP-BY-STEP

- 3.1 To avoid damage to fiber insulators when handling proceed as follows:
- 3.11 After removing assembly from outside shipping container turn assembly so that the threaded portion of the bank rods face up.
- 3.12 Remove packing details allowing assembly to remain on the bottom board.
- 3.13 Use the bottom board for carrying the assembly to the required location.

4. BLANKS, APPARATUS

- 4.1 Apparatus blanks are required in power boards, and in switchboards, toll test boards, sealed terminal test bays, cabinets and similar places where attendants or operators may be stationed for extended periods of time. They may be omitted on other equipments.
- 4.2 Apparatus blanks should fit so that they will not work loose during the handling or ordinary use of the equipment. When they do not fit tightly, place a small piece of canvas or twine around the portion of the blank which enters the drilling for the apparatus.
- 4.3 No. 15-type blanks should be fastened in place by applying a liberal amount of Ambroid cement or Duco Household cement to the end face only of the apparatus blank. No cement should be applied on the sides or under the head.

5. BLOCKS, CONNECTING

- 5.1 Mount 18A connecting blocks with No. 1 terminal at the upper left corner as viewed from the wiring side.
- 5.11 Center connecting blocks, such as the 18-type for plug in type relays, such as the 209- and 215-types, in the mounting plate position before tightening the mounting screws.

- 5.2 Mount 26B connecting blocks so that the frame is on the bottom.
- 5.3 Mount 33-type connecting blocks as shown on ED-90046-01. When mounting these blocks on 5/8" fanning strips, the spacer furnished with the block should be discarded.

6. BLOCKS, FUSE

- 6.1 The 18- or similar type fuse blocks require either a 70-type fuse or a 72-type dummy fuse to insure the retention of the fuse block cap. Fuse blocks used with power equipment which take a 70-type fuse do not always require a 72-type dummy fuse where 70-type fuses are omitted. Refer to Handbook 18 and the job information for the applicable power requirement.

Fuse Block	Fuse Block Cap Assembly
18A	P-344900
19A	P-344900
20A	P-17A497
21A	P-344900

- 6.2 To replace broken terminal studs (P-11F012) on 22B, 23B, 25A, 26A, or 27A Modular fuse blocks. Remove mounting nut on the rear of block and push stud out with an orange stick or spudger.

7. BLOCKS, PORCELAIN AND CARBON PROTECTOR

- 7.1 Porcelain and carbon protector blocks should be installed so that the outside protector spring rests

squarely against the carbon insert of the porcelain block. Avoid sliding motion between the blocks as any such movement will tend to loosen carbon particles which may cause service trouble.

- 7.2 Handle protector blocks carefully to prevent damaging them. They should be kept in the original shipping cartons until assembled and placed. They should not be emptied indiscriminately into other containers.
- 7.3 Assemble protector blocks with the front ends approximately in line before placing them in the protector mountings.
- 7.4 Hold assembly firmly and place blocks between protector springs with fingers. Pliers of any kind should not be used for holding the blocks.
- 7.5 If protector blocks are subsequently removed from the protector mounting for any reason, clean them with a small clean brush (such as a type-writer brush) to remove loose dirt and other foreign matter from their operating surfaces.
- 7.6 Test protector blocks, after mounting, using a test receiver with ringing current. If ringing current is not available, use 90 volts DC current with a resistance of 1000 to 1500 ohms in series with the test receiver. Ground the negative side of the battery if the positive terminal of the central office battery is grounded.
- 7.61 Run the pick of the test receiver slowly over the protector springs.
- 7.62 Repeat tests on each mounting until no clicks are heard in the receiver indicating that all grounds are cleared. In a few cases the protector blocks may have to be removed and cleaned to clear the grounded condition.

8. BRIDGE, WHEATSTONE

- 8.1 Fit Wheatstone Bridges per KS-3011 snug and flush with keyboard. In some cases it will be necessary to dress the opening with a file or rasp to permit a snug fit. Remove enough material from the maple cleats on the bridge supporting brackets to permit the proper seating of the bridge.

- 8.2 Wheatstone Bridge per KS-5411 is highly insulated to prevent leakage from affecting measurements. Handle the following apparatus associated with this bridge with clean RM-669152 Cotton Gloves at all times during the installation period.
- 8.21 Keyshelf unit, including all hard rubber insulators.
- 8.22 Galvanometer per KS-5410.
- 8.23 399 jacks which are part of the binding post mounting assembly for test trunks at distributing frames.

9. CAPACITORS

- 9.1 When mounting stud mounted capacitors (437, 438 and similar types), avoid exerting too much torque to prevent damaging condensers if nuts are tightened excessively.
- 9.2 On panel frames where the capacitors for sequence switch contact protection are mounted on rear of the sequence switch mounting bar by means of brackets P-422973 having slotted mounting holes, insert P-103722 washers between the bracket and the capacitors to maintain alignment. Insert the washers furnished with the capacitors under the hex, nuts in the usual manner.
- 9.3 Substitution of 437 to 442 type capacitors for 137 to 142 type or vice versa, may become necessary depending on stock conditions.
- 9.31 Different type of capacitors should not be used in the same unit of equipment such as a switchboard, a relay rack unit, a panel, a keybox, a shop wired bay, etc.
- 9.32 Ground 137 to 142 type capacitors when specified by the use of two "Shakeproof" lock washers.
- 9.33 Ground 437 to 442 type capacitors when specified as follows:
 - (a) 437 and 438 types using ground plates per KS-8429.
 - (b) 439 and 440 types using ground plates per KS-8428.
 - (c) 441 and 442 types using ground plates per KS-8427.

9.34 When 441 type capacitors are substituted for 141 type and are mounted between Y type relays, equip the 441 type capacitors with 44A shields to produce a magnetic shielding effect. Arrange the 44A shield to slip over the top of the capacitor and hold it in place and ground it magnetically by means of two clips clamped between the capacitor and mounting plate.

9.4 Mount electrolytic capacitors per KS-8471 and similar types so that the lock washer is under the nut and the fiber washer between the capacitor and the mounting plate in order to insure that the can of the condenser will be insulated.

10. CAPS, LAMP

10.1 Fit lamp caps in the mountings so that they cannot be readily turned where turning might cause confusion in the interpretation of the symbols or designations.

10.11 Place lamp caps in accordance with job information and fit them tightly by spreading prongs if necessary.

10.12 Use 319B Lamp Cap Extractor for removing lamp caps.

11. CHARTS, APPARATUS DESIGNATION

11.1 Apparatus designation charts, circuit labels, and similar paper forms mounted on equipment surfaces should be firmly and permanently mounted using R-3156 Paper Chart Cement. The forms should be free of air bubbles, cracks, or creases and should be smooth over the entire surface. After the charts are mounted and allowed to dry for at least approximately two hours, a thin coat of R-3156 Paper Chart Cement should be applied to the surfaces to prevent them from becoming soiled. An exception to the use of this cover coat is on schematics mounted on print display boards; on these schematics the cover coat should be omitted.

11.2 To facilitate application of the R-3156 Paper Chart Cement it may be thinned slightly with water not exceeding one part of water to nine parts of cement. Use the R-1445 1" Stiff Flat Brush for applying the cement. Spreading the cement will be easier if the brush is first

washed in water and if washed in water from time to time to remove thickened cement.

11.3 When mounting charts, apply a coating of R-3156 Paper Chart Cement to the entire surface on which they are to be mounted. Immediately after the cement has been applied, place the chart in position and smooth by rubbing from the center towards the edges with a cloth such as the KS-14666 Wiping Cloth. Any excess cement around the edges can be removed with a damp cloth. Cement should not extend more than 1/4" beyond the border of the chart. When a large number of charts are to be mounted, a 6" roller purchased locally, may be used for smoothing the charts.

11.4 After the cement used to mount the charts has been allowed to dry for at least approximately two hours, apply a thin coating of R-3156 Paper Chart Cement to the surface of the charts. Applying the coating before the charts are dry may cause them to loosen. The coating should extend over the edges of the charts to form a small even margin not to exceed 1/4".

11.5 On changed or modified jobs, remove loose parts of old charts and smooth surface with sandpaper. Apply new chart as outlined in Paragraphs 4.082 to 4.084.

11.6 The latest issue of apparatus designation charts will normally be furnished on orders involving changes in these charts. However, where minor changes occur, such as the straight addition of apparatus on existing mounting plates, the installer may make the necessary changes on the existing charts. To do this, it will be necessary to remove the coating over the spot where the designation change is to be made. First, try removing the coating by lightly rubbing the spot where the designation change is to be made with a damp cloth. Avoid excessive rubbing, as it will damage the surface of the chart. If a damp cloth is not effective, use a small amount of multiple marking remover which is contained in the R-2315 General Numbering and Lettering Set.

→ Indicates new or changed information.

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indicate requirements.

Engineering Planning Manager
(Installation)

Reason for Reissue:
Update BSP Issue.