

**RECTIFIER STACKS AND RECTIFIER
BASKETS OF
KS-5651, KS-5651-01, KS-5651-02,
KS-15689, J86239A, J86239B, J86239C,
J86249A, J86249B, and J86249C RECTIFIERS
REPLACEMENT PARTS AND PROCEDURES**

1. GENERAL

1.01 This section is reissued to include the J86249A, J86249B, and J86249C rectifiers and to add ordering information and replacement procedures for rectifier stacks.

1.02 Part 2 of this section covers ordering information for those parts which it is practicable to replace in the field in the maintenance of this apparatus. No attempt should be made to replace parts not designated. Part 2 also contains explanatory figures showing the different parts. This information is called Replacement Parts.

1.03 Part 3 of this section covers the approved procedures for the replacement of the parts covered in Part 2. This information is called Replacement Procedures.

2. REPLACEMENT PARTS (Fig. 1 and 2)

2.01 The figures included in this part show the various replacement parts with their corresponding names in their proper relation to other parts of the apparatus. The numbers of the various parts are given together with the names listed by the Western Electric Company Merchandise Department.

2.02 When ordering replacement parts, give the names of the parts as shown in the figure and table and also the complete nameplate data of the rectifier, including the KS or J number, serial number, and manufacturer's name. For example: 1-PEC-8000E rectifier stack kit for Power Equipment Co, KS-15689, L1 rectifier, input ac volts 210-250, 3-phase, 60 cycles, 69 amperes, dc output, 48 volts, 200 amperes, serial number 9999. Do not refer to the BSP number or to any information in parentheses following the name of the part.

2.03 When necessary to replace a round plate rectifier stack in KS-5651, List 1, 2, or 3 rectifiers, order the complete basket assembly as follows. Any subsequent replacement of stacks should use those specified for the corresponding KS-5651-01 rectifiers.

RECTIFIER	ORDER BASKET ASSEMBLY
KS-5651, List 1	PEC-795D2
KS-5651, List 2	PEC-795E2
KS-5651, List 3	PEC-795F2

2.04 When necessary to replace a rectifier stack (other than a round plate type) or a complete basket assembly, order a stack kit or basket assembly as shown in Table A.

TABLE A

REPLACEMENT OF RECTIFIER STACKS OR BASKET ASSEMBLIES		
RECTIFIER	STACK KIT (See Note A)	BASKET ASSEMBLY (See Note B)
KS-5651-01, List 1	PEC-8000A	PEC-795D2
KS-5651-01, List 2	PEC-8000B	PEC-795E2
KS-5651-01, List 3	PEC-8000C	PEC-795F2
KS-5651-02, List 1	PEC-8000A	PEC-795D3
KS-5651-02, List 2	PEC-8000B	PEC-795E3
KS-5651-02, List 3	PEC-8000D	PEC-795F3
→ KS-15689, List 1	PEC-8000E See Note C	
↖ J86239A J86239B J86239C	PEC-8000F See Notes D and F See Notes E and F	PEC-795G1
↙ J86249A J86249B J86249C	See Note G See Note G See Note G	

Note A: The rectifier stack kits are to be ordered when an individual rectifier stack becomes defective. The code number consists of a complete set of rectifier stacks and is a complete replacement of all the stacks in a basket assembly.

Note B: The basket assemblies are to be ordered when major damage such as fire has affected the rectifier basket or associated parts. The code number covers a complete basket assembly consisting of a set of rectifier stacks, baskets, lugs, wire, etc.

Note C: When replacing a defective stack in the KS-15689, L1 rectifier, a KS-15729 rectifier stack shall be ordered; this is a single stack.

Note D: When replacing a defective stack in the J86239B rectifier, KS-15653, L1 rectifier stack shall be ordered; this is a single stack.

Note E: When replacing a defective stack in the J86239C rectifier, KS-15733, L1 or L2 rectifier stacks may be ordered; these are single stacks.

All rectifier stacks in a basket assembly shall have the same list number and be from the same supplier.

↖ **Note F:** When replacing stack or stacks in these rectifiers, all other stacks that have been in service 2 years or more shall also be replaced.

Note G: When replacing defective originally furnished selenium stacks with silicon stacks in the J86249 rectifiers follow the information given below for ordering.

APPLICATION	SELENIUM	SILICON
J86249A	KS-15652, L2 or KS-15729	KS-19243, L1
J86249B	KS-15651, L2 or KS-15741, L1	KS-19243, L1
J86249C	KS-15651, L2 or KS-15742, L1	KS-19243, L2

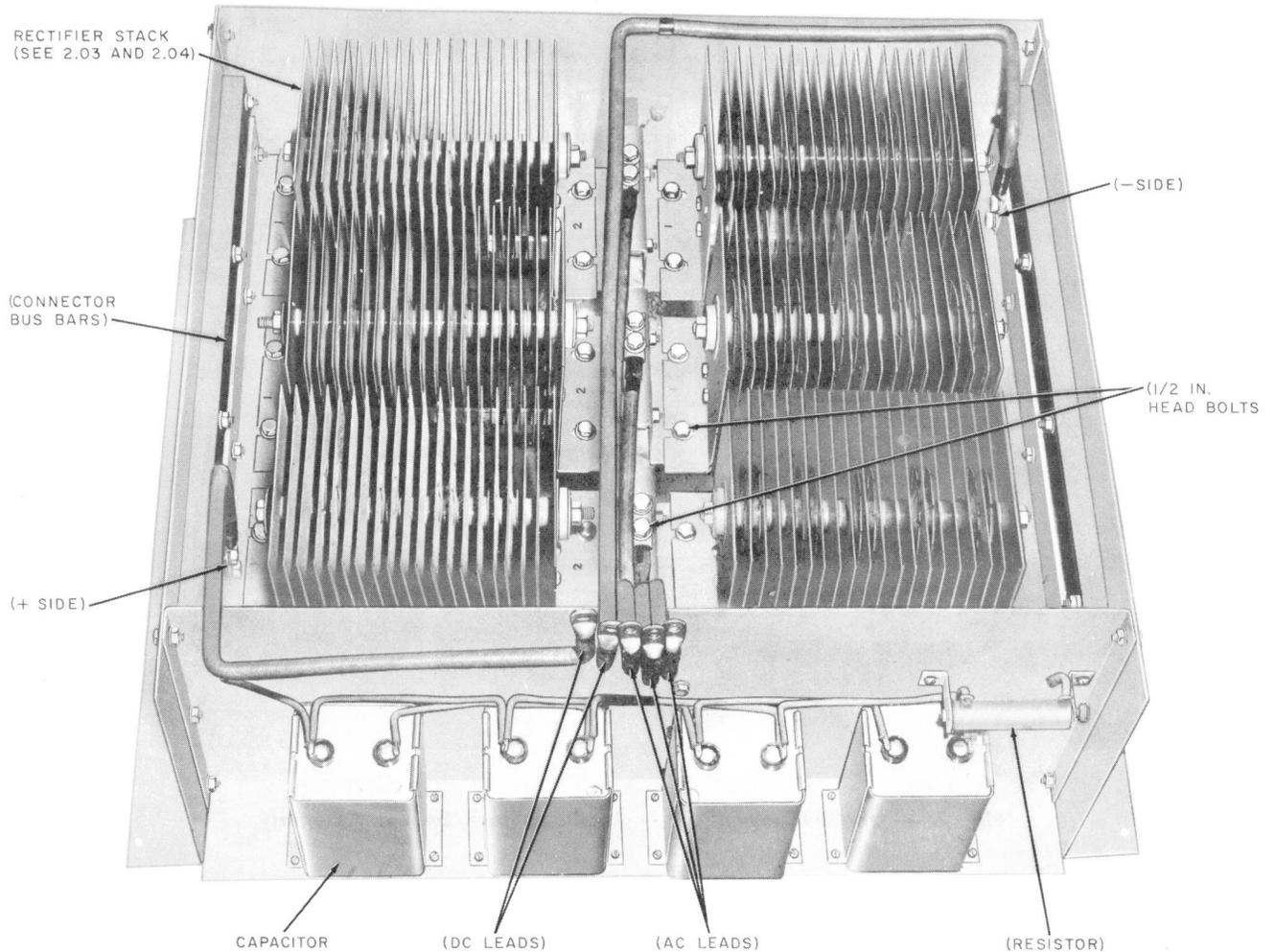


Fig. 1 — Typical Rectifier Stack Basket Assembly — Front View

3. REPLACEMENT PROCEDURES

3.01 List of Tools

CODE OR SPEC. NO.	DESCRIPTION
245 (2 reqd)	3/8- and 7/16-inch Hex. Open Double-end Flat Wrench
D-1770 (2 reqd)	1/2- and 9/16-inch Open Double-end Flat Wrench
—	4-inch Regular Screwdriver
—	Electrical Tape
—	7/16-inch and 1/2-inch Socket Wrench With Extension and Ratchet Handle

3.02 Before making any replacement of parts, make sure that service will not be interrupted by transfer to a spare rectifier. Remove any fuses necessary to insure that the rectifier being worked on is not connected to power.

3.03 No replacement procedures are specified for parts where the replacement consists of a simple operation.

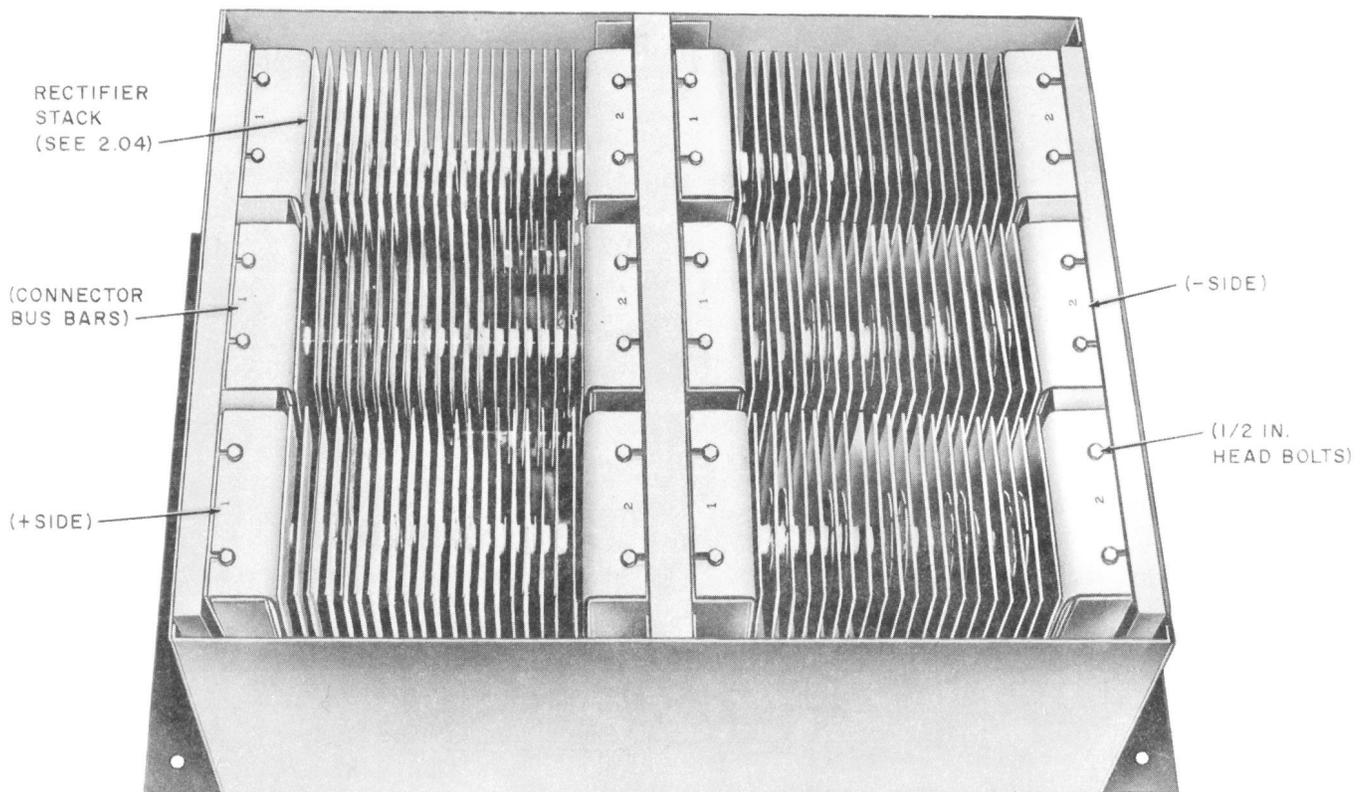


Fig. 2 — J86329C Rectifier — Rectifier Stack Basket Assembly

Rectifier Stacks

→ **3.04** Disconnect power from the rectifier as follows (see Fig. 3, 5, and 7).

(a) On the J86239C rectifier, operate the RECT circuit breaker to OFF. On other rectifiers, operate ON-OFF switch (under output current meter) to OFF.

(b) Operate left-hand large rotary switch to OFF for the KS-5651 rectifier, the rotary switch to SPARE for the J86239A, J86239B, → and J86239C rectifiers, to OPEN for the → J86249A, J86249B, and J86249C and other rectifiers.

(c) Operate DC CONTROL switches or circuit breakers to OFF.

(d) Remove AC CONTROL and CHARGE fuses or operate the VM and AC CONTROL circuit breakers to OFF.

→ **3.05** Remove the rectifier front cover as follows (see Fig. 3, 4, 5, 6, and 7).

(a) Take out the screws holding the large rotary switch knobs using the 4-inch screwdriver and remove the knobs.

(b) Open the rectifier front doors and remove the four screws that hold the rectifier lower front cover, using the 4-inch screwdriver.

(c) Pull the lower front cover outward from the top to clear the fuse holders or the circuit breakers and then upward and out. The lower edge of this cover fits in a groove at the bottom of the bay.

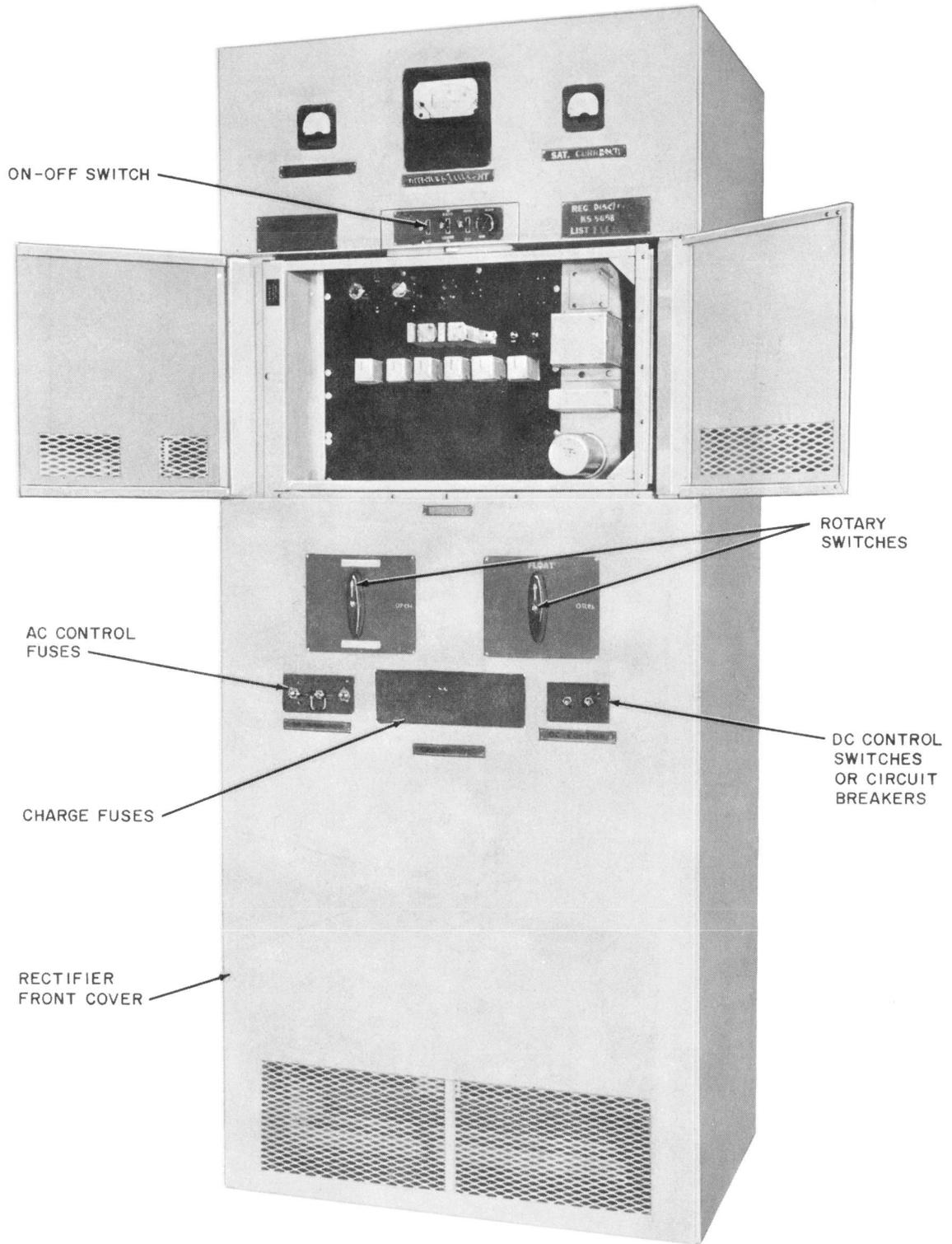


Fig. 3 — KS-5651-02 Rectifier — Front Cover On — Also General Appearance of KS-5651, KS-15689, and J86249A, B and C Rectifiers

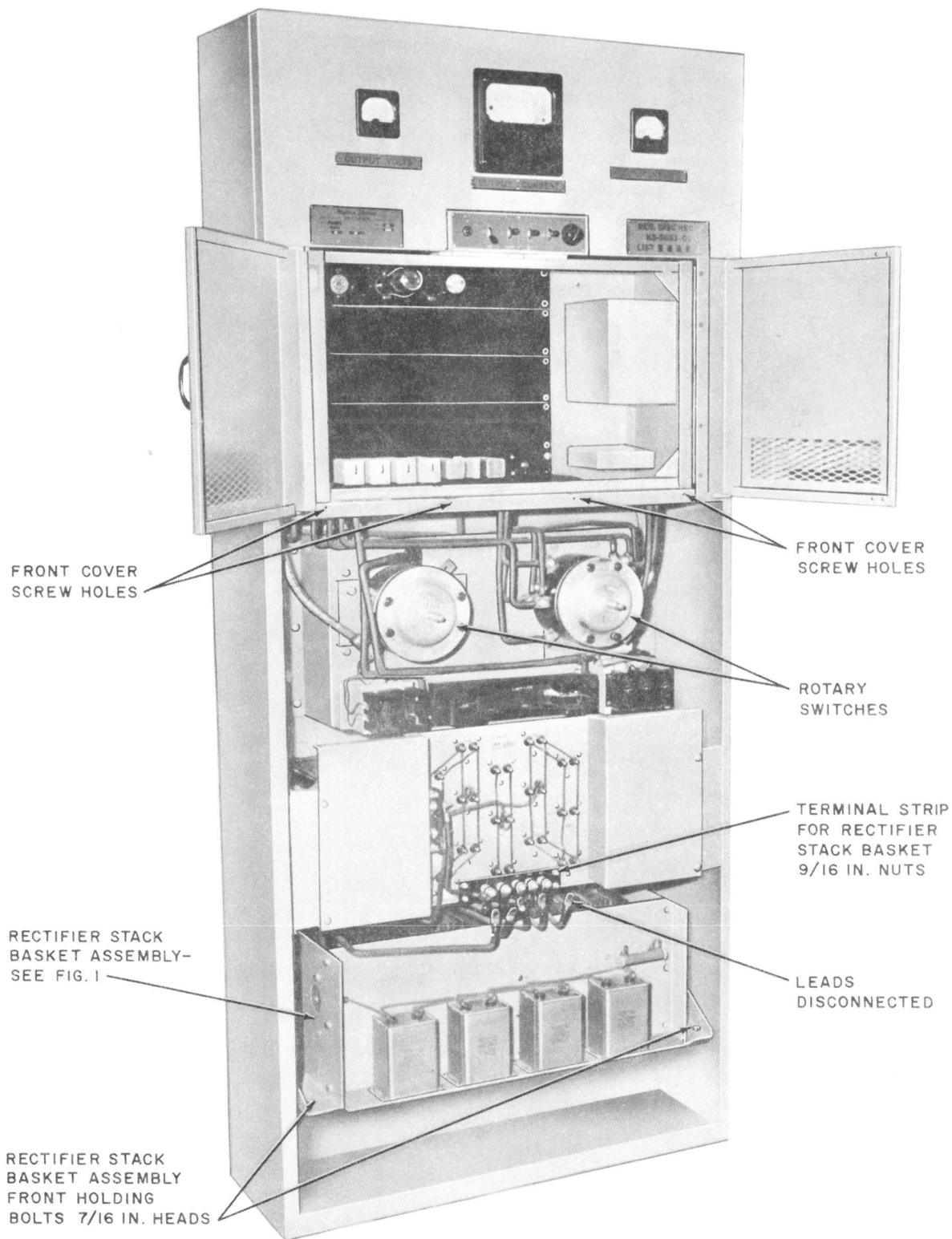


Fig. 4 — KS-5651-01 Rectifier — Front Cover Removed — Also General Appearance of KS-5651 and KS-15689 Rectifiers

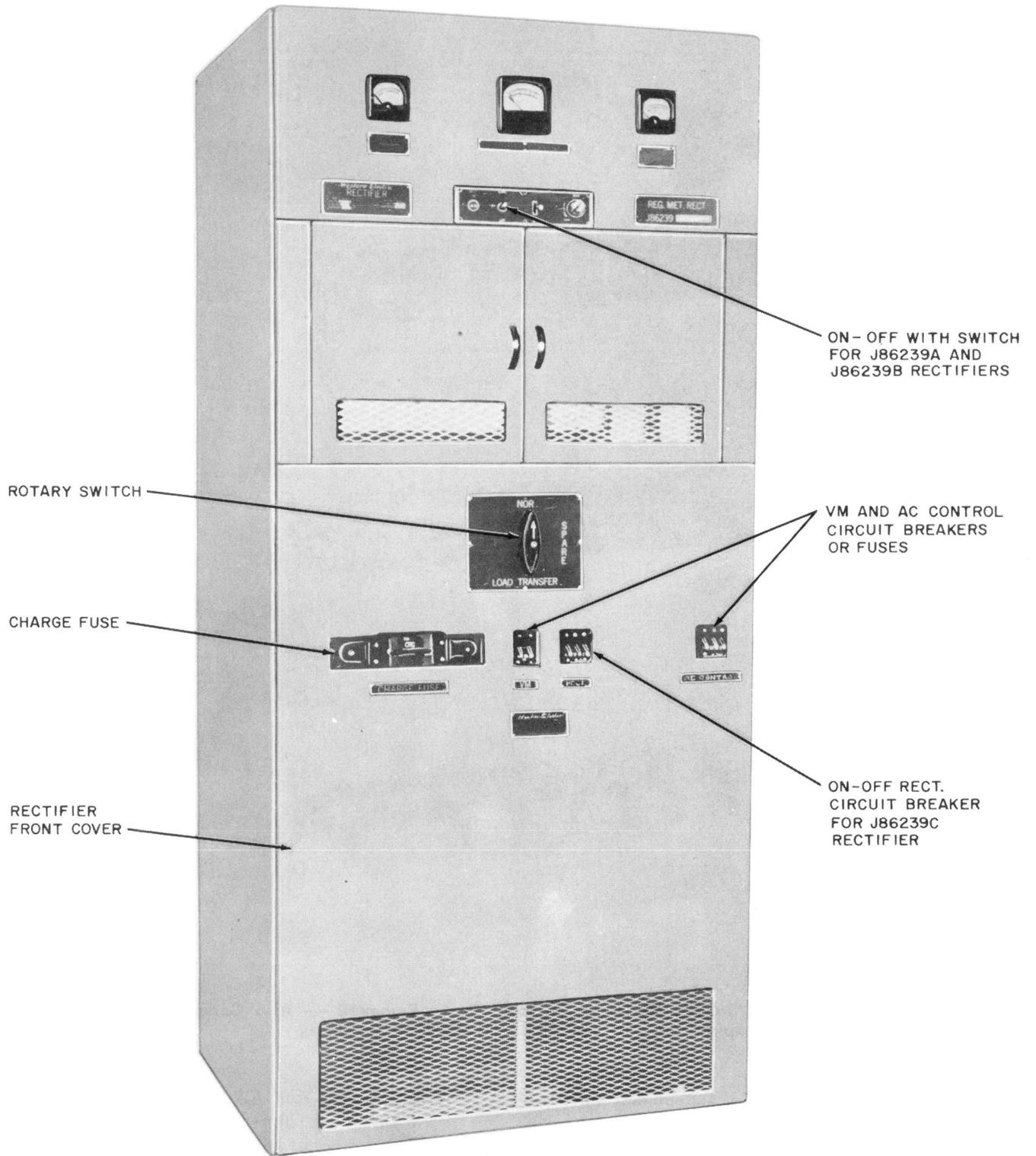


Fig. 5 — General Appearance of the J86239A, J86239B, and J86239C Rectifiers

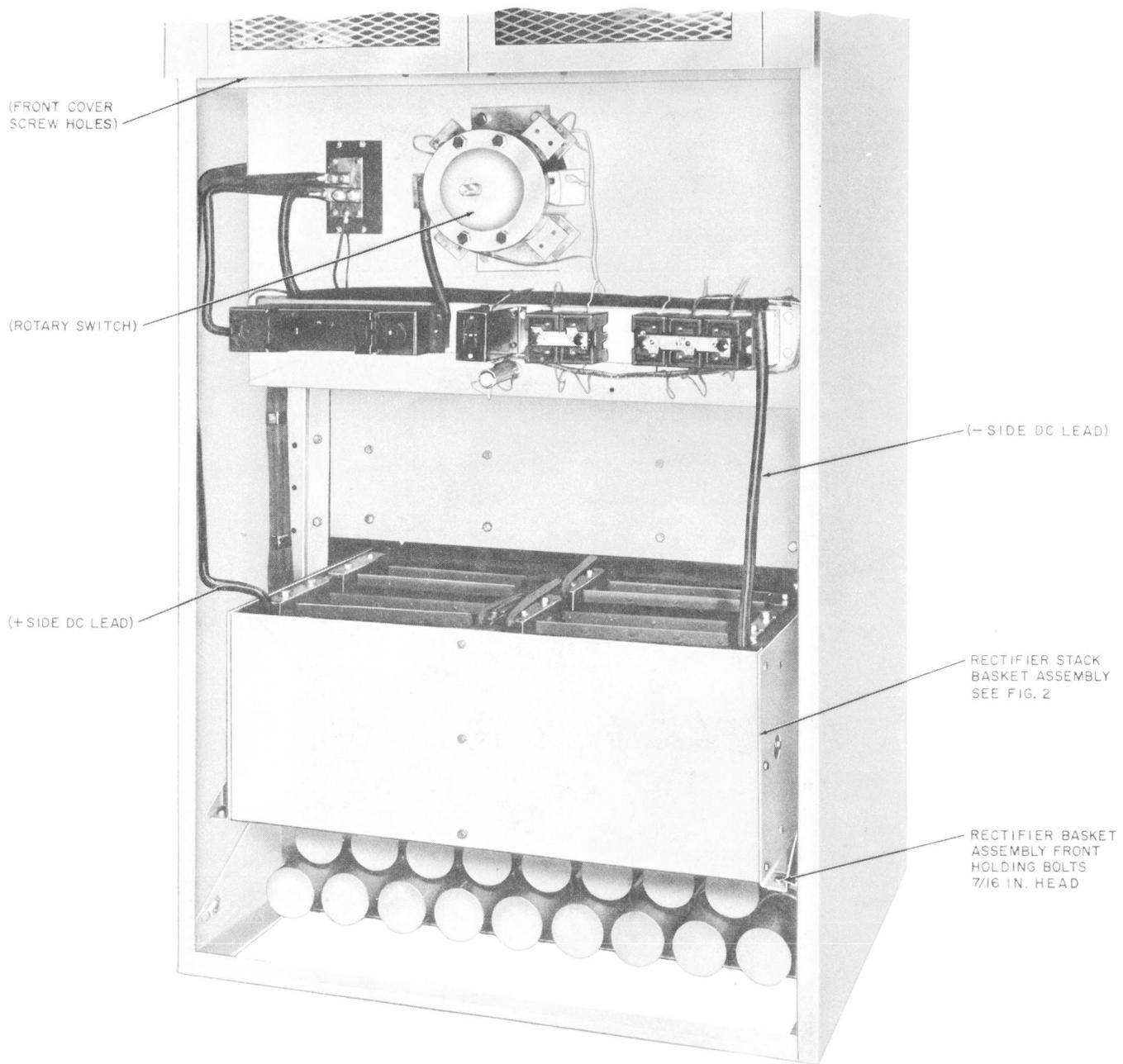


Fig. 6 — J86239C Rectifiers — Front Cover Removed — Also General Appearance of J86239A and J86239B Rectifiers

3.06 Remove the rectifier stack basket as follows (see Fig. 1, 2, 4, and 6).

(a) Disconnect the leads which connect the basket to the rectifier using the R-1770 wrenches (see Fig. 4).

(1) *KS-5651 and KS-5651-01 Rectifiers:* On these rectifiers the five leads, two dc and three ac, are brought to a terminal strip on the front of rectifier located just above the basket. Use the R-1770 wrench to remove the nuts from the terminal strip studs.

It may be necessary to use another R-1770 wrench on an inner stud nut to prevent the stud from turning as the outer nut is loosened.

(2) **KS-5651-02, J86239A, J86239B, and KS-15689 Rectifiers:** These rectifiers have only the two dc leads brought to the terminal strip. Remove these as above. The three ac leads in this case are connected directly to components in the rectifier. The leads should be disconnected from the rectifier stack basket. Use a 7/16-inch or a 1/2-inch socket wrench (depending upon the bolt size) to remove the bolts holding these lead lugs.

(3) **J86239C Rectifier:** This rectifier has the two dc leads and the six ac leads connected directly to components in the rectifier. The leads should be disconnected from the rectifier stack basket. Use the No. 245 wrench to remove the bolts holding the lead lugs.

(b) Remove the two front bolts holding the basket to the slides, using two No. 245 wrenches, one for the bolt and the other for the nut or a No. 245 wrench for the bolt head and an R-1770 wrench for the nut depending upon the size of the nut. Open the rectifier rear door and remove the two rear bolts holding the basket to the slides using the proper tools.

(c) Slide the rectifier basket straight out from the front of the rectifier. After removal of the basket from the KS-5651-02, L3 rectifier, remove the three ac transformer cables from the terminal strip at the junction point of the main transformers and from their connector bus bars using the R-1770 wrench. Replace these three cables with the new cables supplied with the replacement kit for this rectifier. If necessary, tape up the shanks of the lugs at the junction of lugs and cables using electrical tape. Fasten the three cables to their respective connector bus bars and corresponding transformer terminals. Dress the cables so as to obtain maximum clearances.

3.07 Removal of Old Rectifier Stacks From Basket: On other than the J86239C rectifier, the rectifier stack end brackets are fastened to the basket assembly with four nuts and bolts. Turn the basket on its side. Using a 1/2-inch socket wrench for the bolt heads and an R-1770 wrench for the nuts, remove the nuts, bolts, washers, and rectifier stacks. On the J86239C rectifier, the rectifier stack end brackets are fastened with bolts and washers only and it is only necessary to use the 1/2-inch socket wrench.

(a) In replacing stacks for the J86239A, J86239B, J86239C, and KS-15689 rectifiers, both upper and lower portions of the existing basket are used. In all other cases, these stacks should be located in the top or upper portion of the basket. The individual stacks for KS-5651-01, KS-5651-02, J86249A, ← J86249B, and J86249C rectifiers should be po- ← sitioned in the basket so that the mounting brackets for the individual stacks are located on the underside of the connector bus bars with the stacks in the upper part of the basket. This underslung mounting position will provide an additional clearance of approximately 1/4 inch between the top surface of the rectifier stacks and the equipment main transformers located directly over the stack basket assembly (see Fig. 8). ←

3.08 Installation of New Rectifier Stacks in the Basket: [See Fig. 1 and 2, and Par. 307(a).]

(a) Place each new stack in position, on the connector bus bars with the side marked 1 to the left (+) and the side marked 2 to the right (-) when facing the front side of the basket.

(b) For other than J86239C rectifier, fasten the new stacks to the connector bus bars in the basket assembly, using the flat washer under the bolt head and the lockwasher under the nut. Use the 1/2-inch socket wrench for the bolts and an R-1770 wrench for the nuts. For the J86239C rectifier, fasten the new stacks using the bolts and washers and the No. 245 wrench. Tighten the bolts firmly as this is an electrical connection as well as a mechanical fastening.

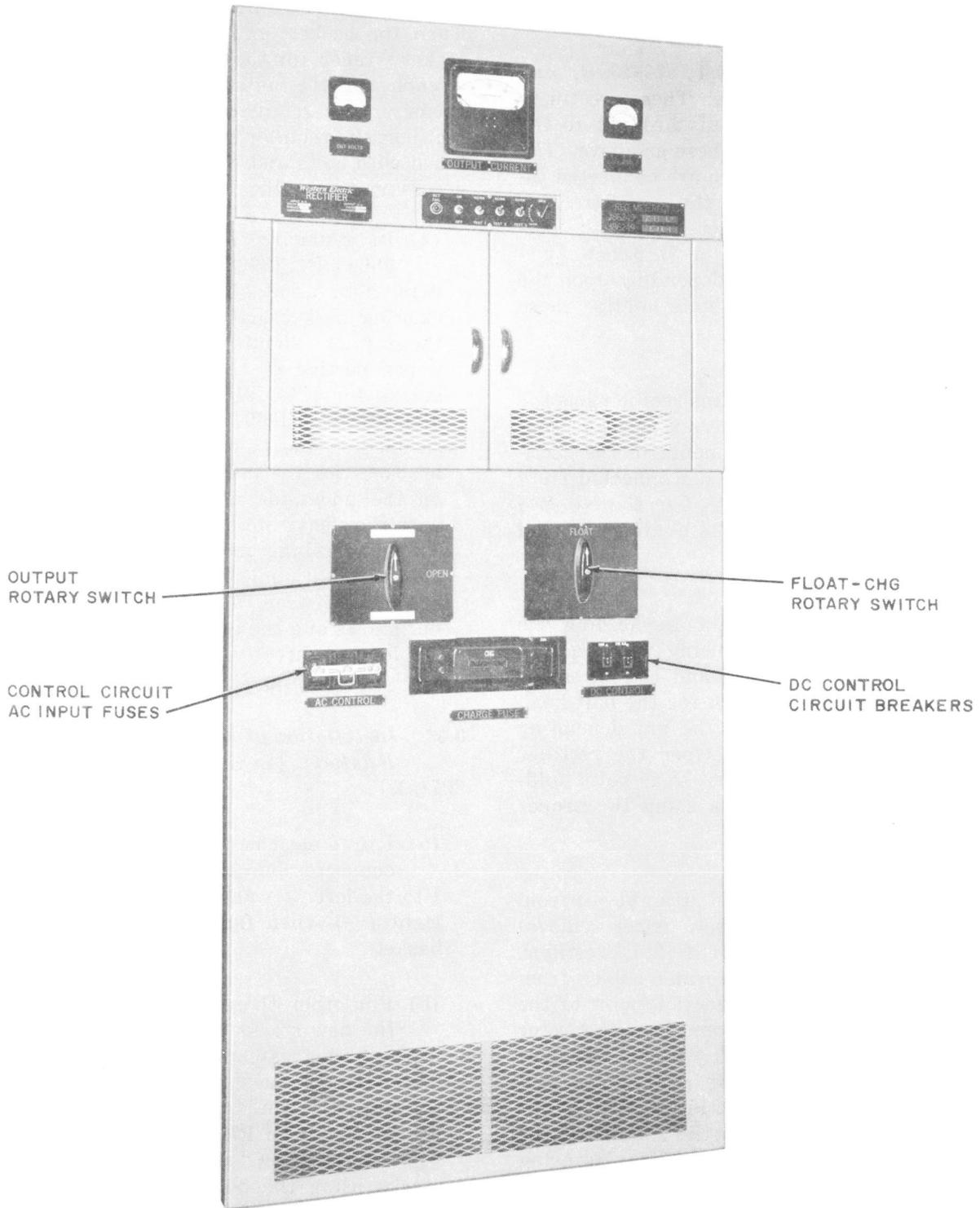


Fig. 7 — J86249, L1 and L2 Rectifier



- (c) Check, and if necessary, tighten the bolts holding the lugs on the leads to the connector bus bars. Use a 1/2-inch socket wrench.

3.09 Reassembly of the Rectifier

- (a) Slide the basket into the rectifier from the front and bolt it in place with the four bolts. Use the No. 245 wrench.
- (b) Reconnect the leads to the terminal strip or equipment as required (tighten nuts or bolts firmly). Use the R-1770 wrench.
- (c) Remount the front cover (four screws).
- (d) Remount the rotary switch knobs (two screws).
- (e) Close front and rear doors.
- (f) Install fuses and operate switches or circuit breakers as required.

Rectifier Stack Basket Assembly (For KS-5651-02, List 3 Rectifier)

- 3.10 To install a complete rectifier stack basket assembly, follow steps as outlined in 3.04 to 3.06(c), inclusive, and proceed as follows.

- (a) Discard the old basket.
- (b) Check, and if necessary, tighten the bolts holding lugs on the leads in the replacement rectifier stack basket assembly. Also check and tighten bolts holding the rectifier stacks.
- (c) Slide in the new rectifier stack basket assembly with the capacitors to the front, bolting it in place using the four nuts and bolts previously removed.
- (d) Follow 3.09(b) to (f).

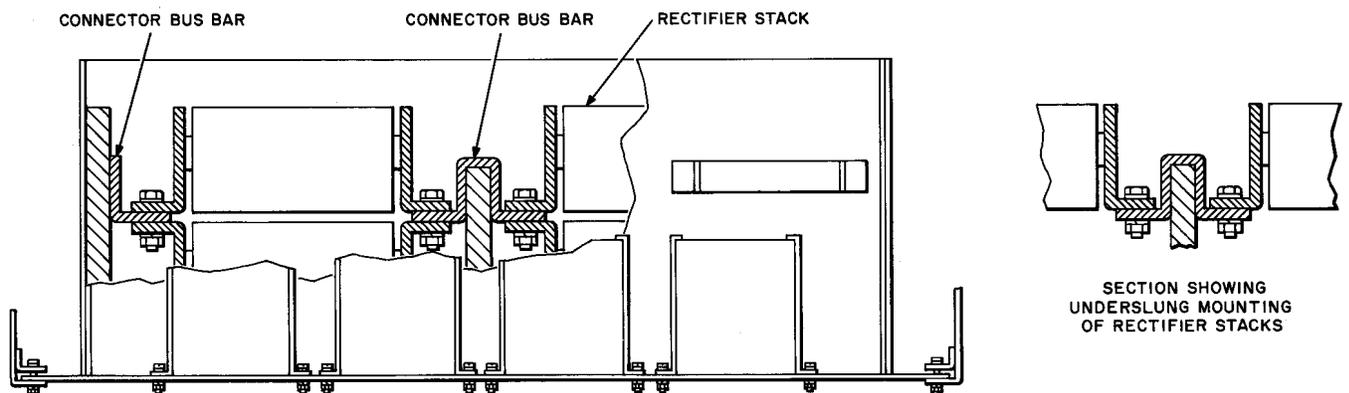


Fig. 8 — Rectifier Stack Basket Assembly Showing Stacks in Upper and Lower Halves of Basket