



REPLACEMENT OF THYRISTORS
IN M5B TPM ASSEMBLIES

TABLE OF CONTENTS

- I. INTRODUCTION
- II. PROCEDURES
 - A Replacement of Thyristors in M5B Size 2 Single Converter.
 - B. Replacement of Thyristors in M5B Size 3 Single Converter.
 - C. Replacement of Thyristors in Inside Heat Sinks of M5B Size 2 or 3 Double Converters
 - D. Replacement of Thyristors in Outside Heat Sinks of M5B Size 2 or 3 Double Converters.
- III. INSTRUCTION LEAFLETS (REFERENCE)

I. INTRODUCTION

After it has been determined that a thyristor failure had occurred in the M5B TPM assemble use of the following procedures will simplify thyristor replacement.

II. PROCEDURES

A. Replacement of Thyristor in M5B Size 2 Single Converter (See Figure 1 & 2)

Tools Required:

Medium size screwdriver
7/16 Socket
1/2 Socket
5/16 Socket

1. Remove fuse next to blown thyristor. If drive has no fuses, remove hardware from end of ferrite core assy nearest blown thyristor.
2. Loosen nut on opposite end of ferrite core assy and push down about one inch.
3. Remove U bracket that held fuse or ferrite core assy.
4. Remove gate and cathode leads of the blown thyristor from PC card (screws must be removed).
5. Loosen 1/4 inch board mounting hardware from upper heat sink of blown thyristor.
6. If unit has cover over the heat sink remove the cover.
7. Remove 5/16 nuts on the clamp that holds the thyristor and heat sinks.
8. Remove clamp, from heat sink and thyristor.
9. Snap out thyristor from centering collar and replace with new thyristor.
10. Use Alcoa #2 compound on both sides of the thyristor.
11. Replace thyristor, heat sink and clamp on U bolt.
12. Finger tight 5/16 nuts on U bolt. IMPORTANT check gage, it should read 0. If reading is other than 0, remove clamp and reset gage. The use of a small mirror at right angles to clamp will be helpful in reading gage.
13. Tighten down nuts until gage reading is between 350 to 400.
14. Replace board mounting hardware (1/4" bolt & washer).
15. Replace thyristor gate leads on PC card red lead is K, white lead is G.
16. Replace U bracket that holds fuse or ferrite core assy.
17. Replace fuse (if used) and tighten down including nut on the opposite end of ferrite core assy.

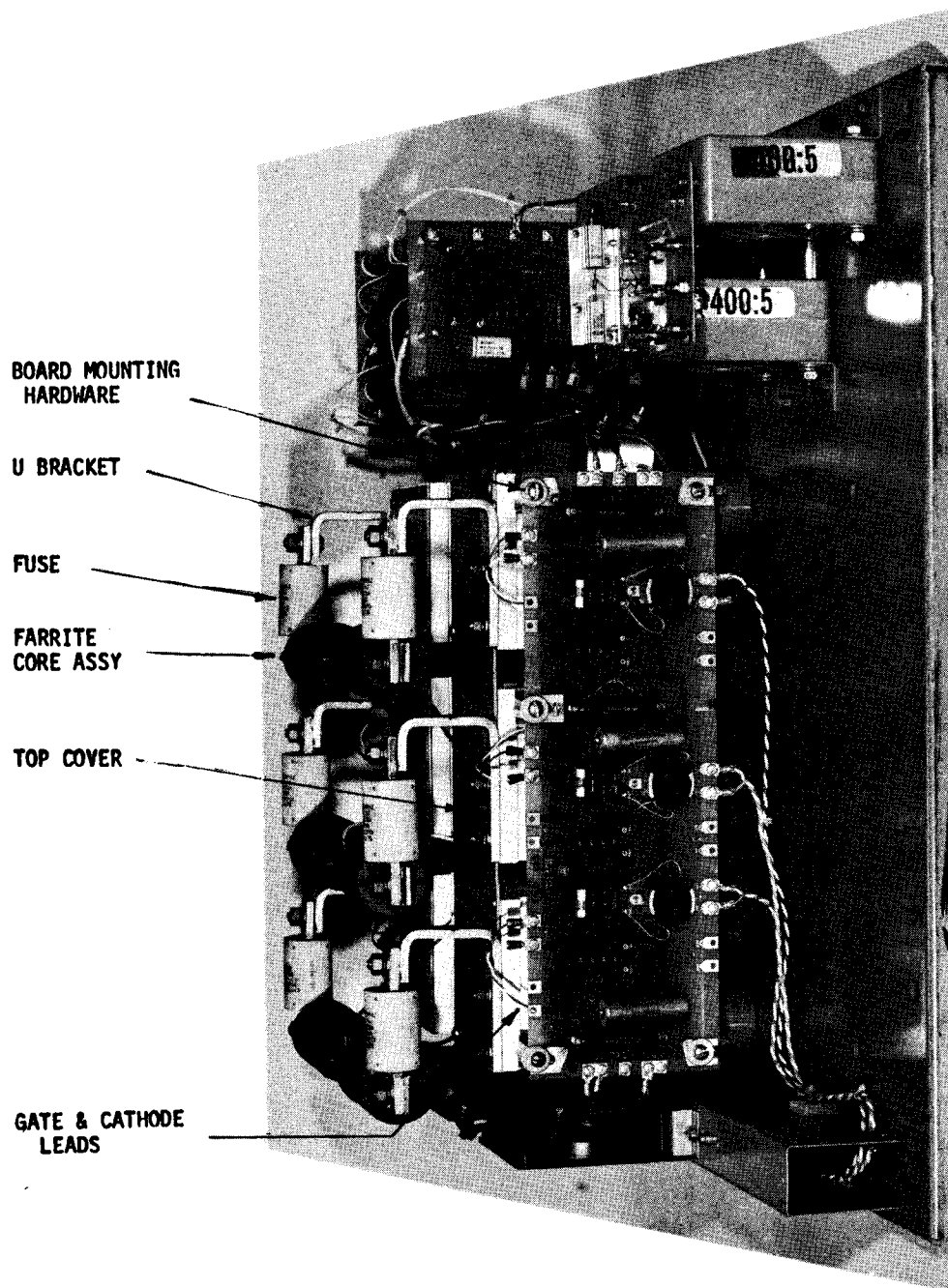


FIGURE 1
SIZE 2 SINGLE CONVERTER

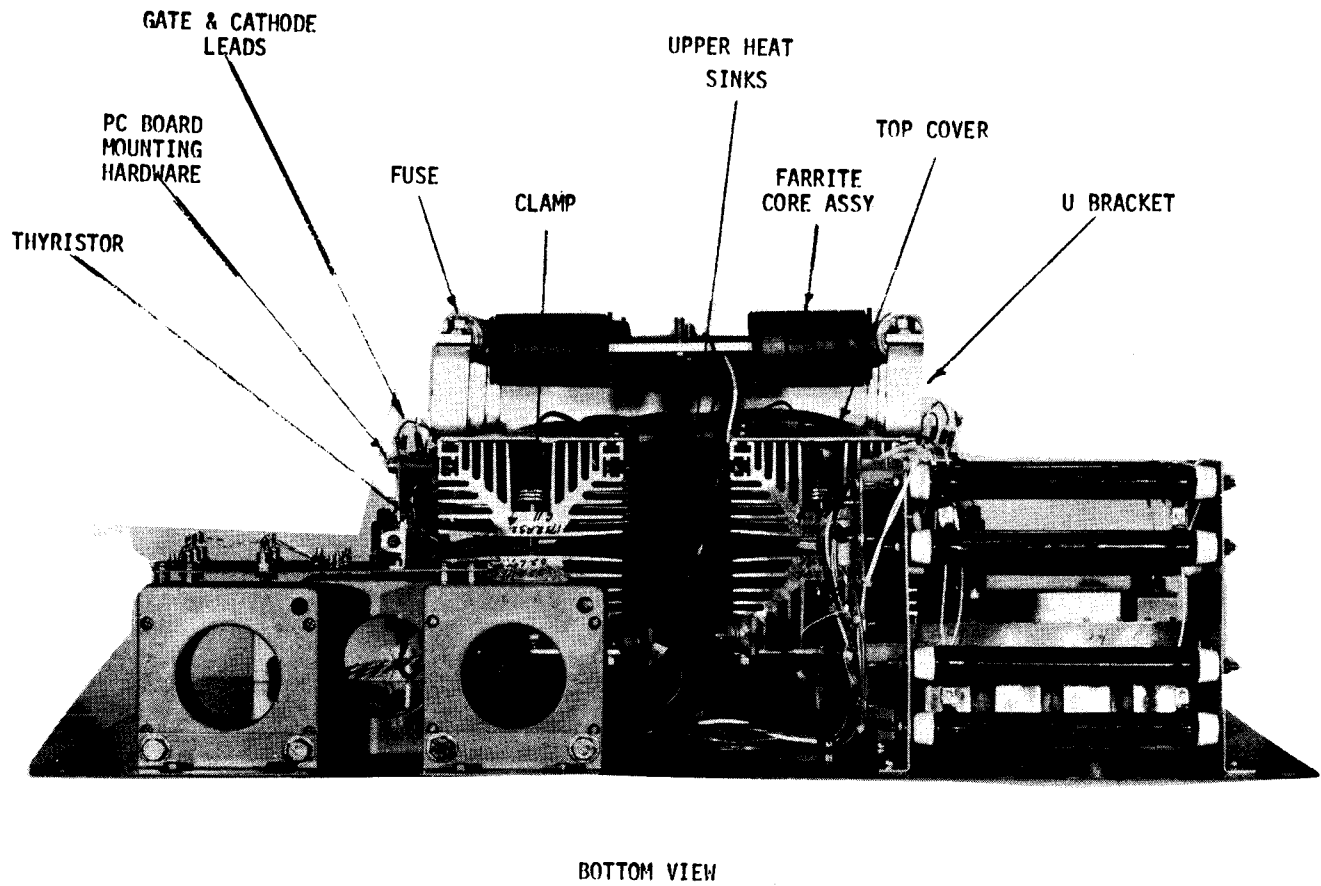


FIGURE 2
SIZE 2 SINGLE CONVERTER

B. Replacement of Thyristor in M5B Size 3 Single Converter (See Figures 1, 2, & 3).

Tools Required:

Medium Size Screwdriver
7/16 Socket
1/2 Socket
9/16 Socket
5/16 Socket

1. Remove fuse next to blown thyristor. If drive has no fuses, remove hardware from end of ferrite core assy. nearest blown thyristor.
2. Loosen nut on opposite end of ferrite core assy and push bar down about one inch.
3. Remove U bracket that held fuse or ferrite core assy.
4. Remove gate and cathode leads of the blown thyristor from PC card (screws must be removed).
5. If unit has front cover over the heat sink, remove the cover.
6. If unit has side plates loosen front 1/4 inch hardware from plate to heat sink of blown thyristor.
7. Remove 5/16 nuts on the clamp that holds the thyristor and heat sinks.
8. Remove clamp, front heat sink and thyristors.
9. Snap out thyristor from centering collar and replace with new thyristor..
10. Use Alcoa #2 compound on both sides of the thyristor.
11. Replace thyristor, heat sink and clamp on U bolt.
12. Finger tight 5/16 nuts on U bolts. IMPORTANT check gage, it should read 0. If reading is other than 0, remove clamp and reset gage. The use of a small mirror at right angle to clamp will be helpful in reading gage.
13. Tighten down nuts until gage reading is between 350 to 400.
14. If unit has side plates replace 1/4 inch hardware.
15. If unit has a front cover, replace the cover.
16. Replace thyristor gate leads on PC card red lead is K, white lead is G.
17. Replace U bracket that holds the fuse or ferrite core assy.
18. Replace fuse (if used) tighten down, including nut on the opposite end of ferrite core assy.

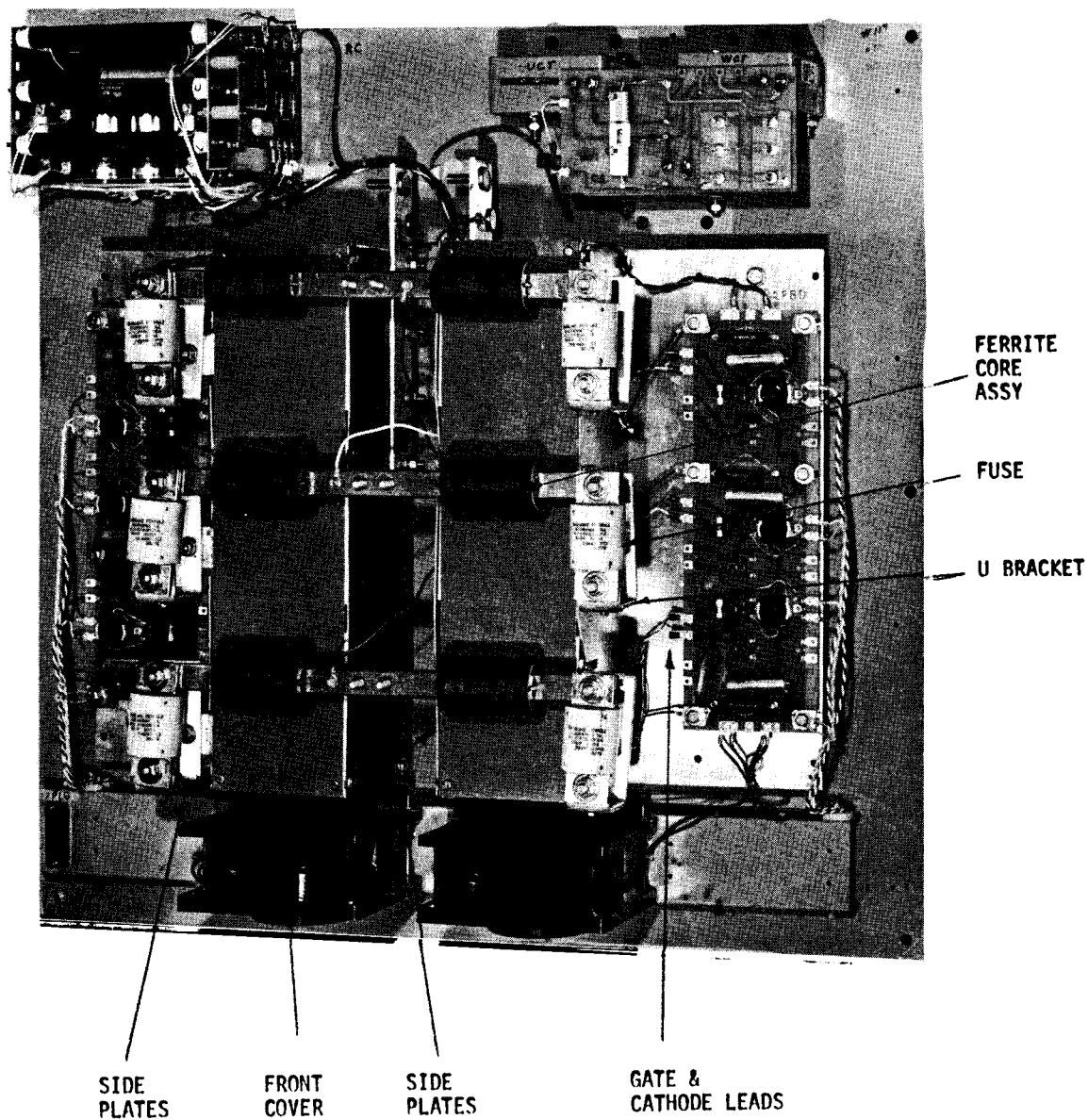


FIGURE 3
SIZE 3 SINGLE CONVERTER

C. Replacement of Thyristor in Inside Heat Sinks of M5B Sizes 2 or 3 Double Converter.
(See Figure 4 & 5)

Tools Required:

Medium size screwdriver
7/16 Socket
1/2 Socket
9/16 Socket (only in size 3)
5/16 Socket

1. Remove fuse next to blown thyristor. If drive has no fuses remove hardware from end of ferrite core assy. nearest blown thyristor.
2. Loosen nut on opposite end of ferrite core assy and push bar down about one inch.
3. Remove U bracket that held fuse or ferrite core assy.
4. Remove gate and cathode leads of the blown thyristor from PC card (screws must be removed).
5. If unit has cover over the heat sink, remove the cover.
6. Remove 5/16 nuts on the clamp that holds the thyristor and heat sinks.
7. Remove clamp, front sink and thyristors.
8. Snap out thyristor from centering collar and replace with new thyristor.
9. Use Alcoa #2 compound on both sides of the thyristor.
10. Replace thyristor, heat sink and clamp on U bolt.
11. Finger tight 5/16 nuts on U bolts. IMPORTANT check gage, it should read 0. If reading is other than 0, remove clamp and reset gage. The use of a small mirror at right angles to clamp will be helpful in reading gage.
12. Tighten down nuts until gage reading is between 350 to 400.
13. If unit has a front cover, replace the cover.
14. Replace thyristor gate leads on PC card red lead is K, white lead is G.
15. Replace U bracket that holds the fuse or ferrite core assy.
16. Replace fuse (if used), tighten down, including nut on the opposite end of ferrite core assy.

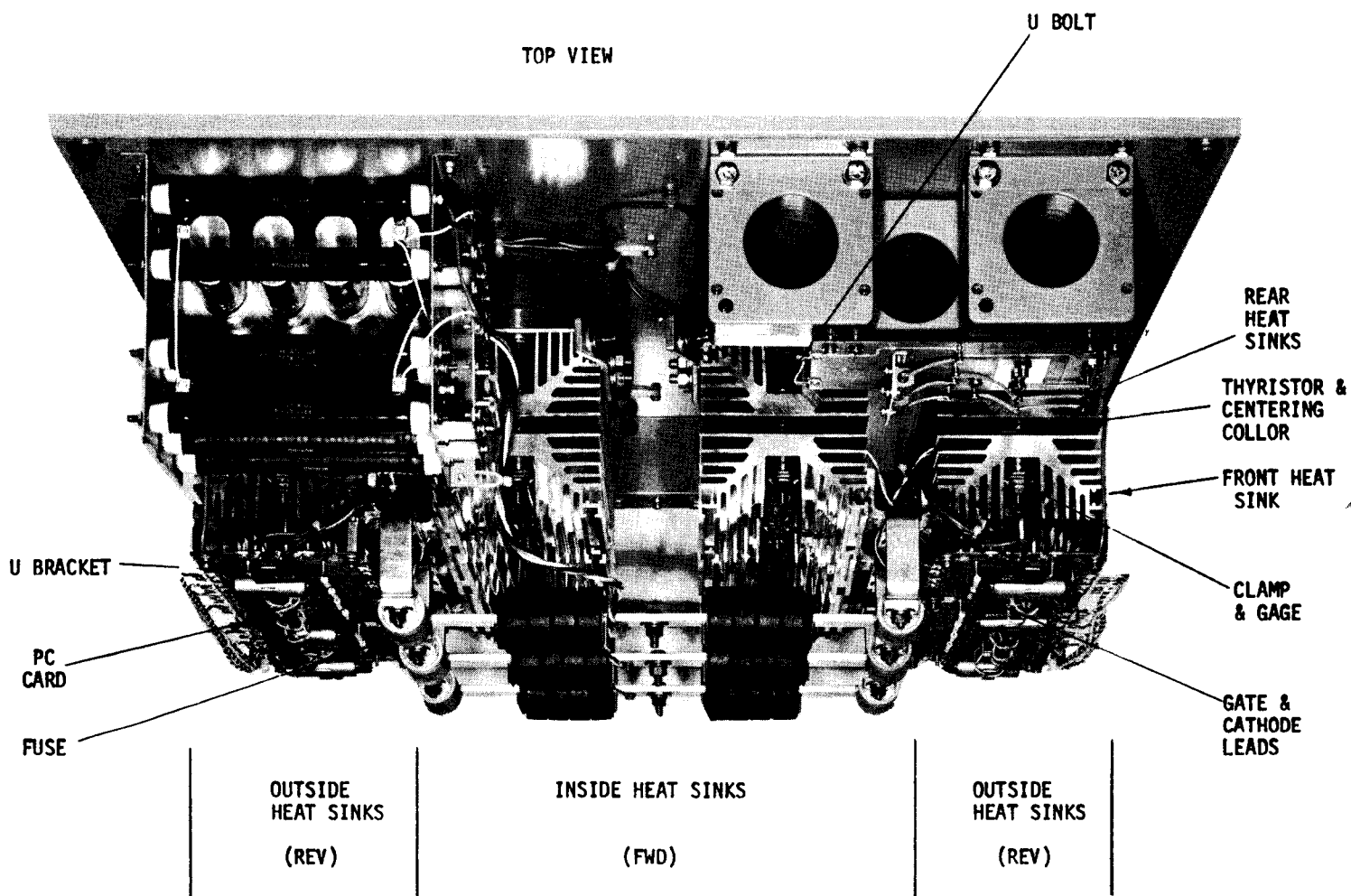


FIGURE 4
DOUBLE CONVERTER

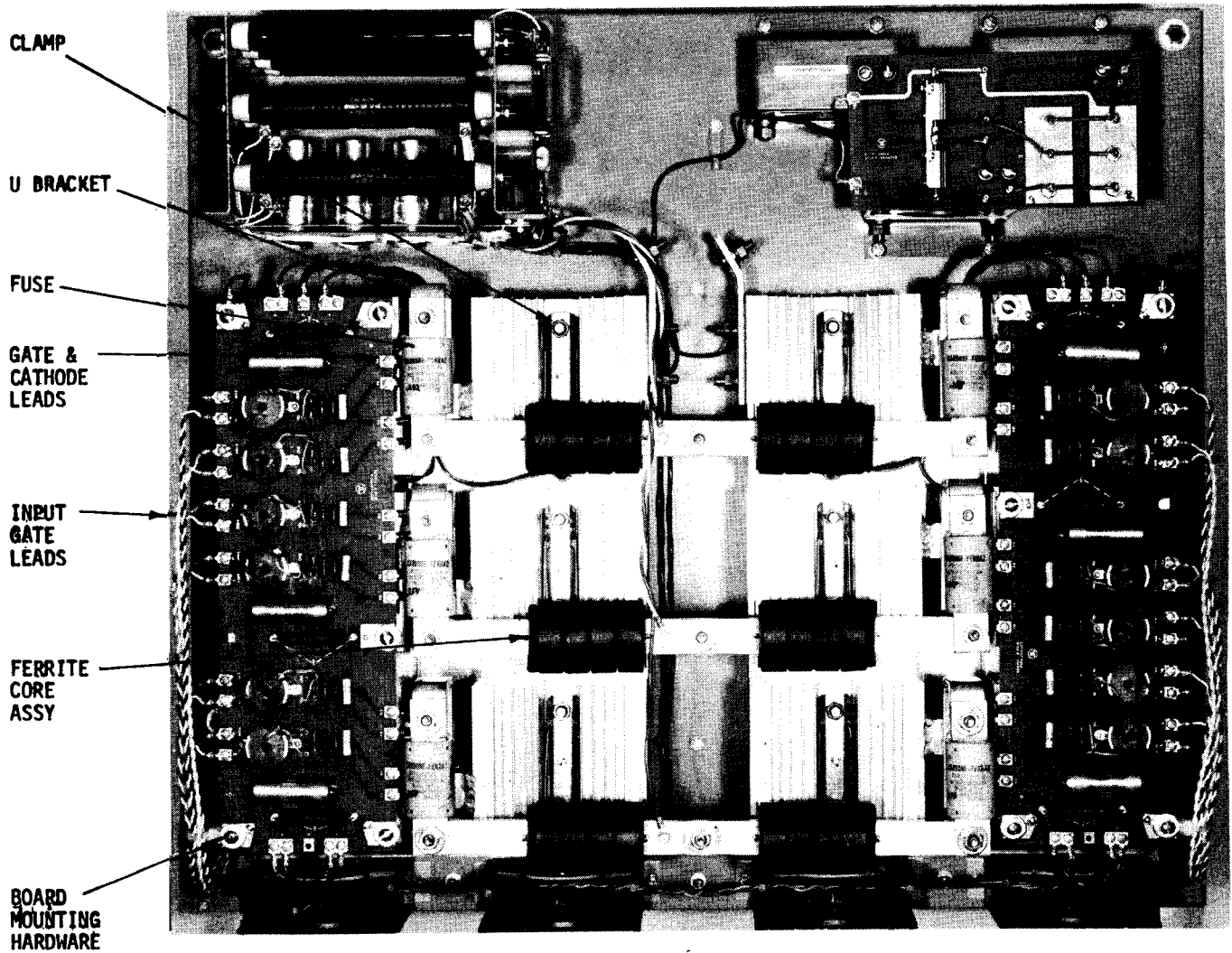


FIGURE 5

DOUBLE CONVERTER

D. Replacement of Thyristor in Outside Heat Sinks M5B Sizes 2 or 3 Double Converter
(See Figure 4 & 5)

Tools Required

Medium Size Screwdriver
7/16 Socket
1/2 Socket
9/16 Socket (only in sizes 3)
5/16 Socket

1. Remove fuse next to blown thyristor. If drive has no fuses, remove hardware from end of ferrite core assy nearest blown thyristor.
2. Loosen nut on opposite end of ferrite core assy and push down about 1 inch.
3. Remove U bracket that held fuse or ferrite core assy.
4. Remove gate and cathode leads.
5. Loosen (do not remove) screws on the PC card for the input gate leads. (color coded twisted pair).
6. Slide out input gate leads.
7. Remove 1/4 board mounting hardware on the input gate lead side of PC card.
8. Loosen (do not remove) 1/4 hardware on the thyristor gate lead side.
9. Pull PC card away from bolts and flip towards center (do not remove any wires).
10. If unit has a side plate loosen upper 1/4" hardware (do not remove).
11. Remove 5/16 nuts on the clamp that holds the thyristor and heat sink.
12. Remove clamp, upper heat sink and thyristor.
13. Snap out thyristor from centering collar and replace with new thyristor.
14. Use Alcoa #2 compound on both sides of the thyristor.
15. Replace thyristor, heat sink and clamp on U bolt.
16. Finger tight 5/16 nuts on U bolt. IMPORTANT Check gage, it should read 0. If reading is other than 0, remove clamp and reset gage. The use of a small mirror at right angles to clamp will be helpful in reading gage.
17. Tighten down nuts until gage reading is between 350 to 400.
18. If unit has a side plate, tighten 1/4 inch bolts. (Washer on outside)
19. Slide PC card under the inside 1/4 inch hardware (washers on top of card).
20. Replace out side 1/4 hardware, make sure that the gray wire from the lower heat sink is under the top outside bolt and so the wire tie is under the lower outside bolt.
21. Replace thyristor gate leads on PC card red lead is K, white lead is G.
22. Replace input gate leads on PC card.
23. Replace U bracket that holds fuse or ferrite core assy.
24. Replace fuse (if used) and tighten down, including nut on the opposite end of ferrite core assy.

III. Instruction Leaflets (Reference)

The following Instruction Leaflets (I.L.'s) describe the M5B system and it's standard components.

I.L. 16-800-287	M5B Thyrisor power systems field start-up procedure for motor armature supplies.
I.L. 16-800-288	M5B Variable Regulator.
I.L. 16-800-289	M5B Gating System.
I.L. 16-800-296	M5B Thyristor Power System.



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I. INTRODUCTION

After it has been determined that a thyristor failure had occurred in the M5B TPM assemble use of the following procedures will simplify thyristor replacement.

II. PROCEDURES

A. Replacement of Thyristor in M5B Size 2 Single Converter (See Figure 1 & 2)

Tools Required:

Medium size screwdriver
7/16 Socket
1/2 Socket
5/16 Socket

1. Remove fuse next to blown thyristor. If drive has no fuses, remove hardware from end of ferrite core assy nearest blown thyristor.
2. Loosen nut on opposite end of ferrite core assy and push down about one inch.
3. Remove U bracket that held fuse or ferrite core assy.
4. Remove gate and cathode leads of the blown thyristor from PC card (screws must be removed).
5. Loosen 1/4 inch board mounting hardware from upper heat sink of blown thyristor.
6. If unit has cover over the heat sink remove the cover.
7. Remove 5/16 nuts on the clamp that holds the thyristor and heat sinks.
8. Remove clamp, from heat sink and thyristor.
9. Snap out thyristor from centering collar and replace with new thyristor.
10. Use Alcoa #2 compound on both sides of the thyristor.
11. Replace thyristor, heat sink and clamp on U bolt.
12. Finger tight 5/16 nuts on U bolt. IMPORTANT check gage, it should read 0. If reading is other than 0, remove clamp and reset gage. The use of a small mirror at right angles to clamp will be helpful in reading gage.
13. Tighten down nuts until gage reading is between 350 to 400.
14. Replace board mounting hardware (1/4" bolt & washer).
15. Replace thyristor gate leads on PC card red lead is K, white lead is G.
16. Replace U bracket that holds fuse or ferrite core assy.
17. Replace fuse (if used) and tighten down including nut on the opposite end of ferrite core assy.

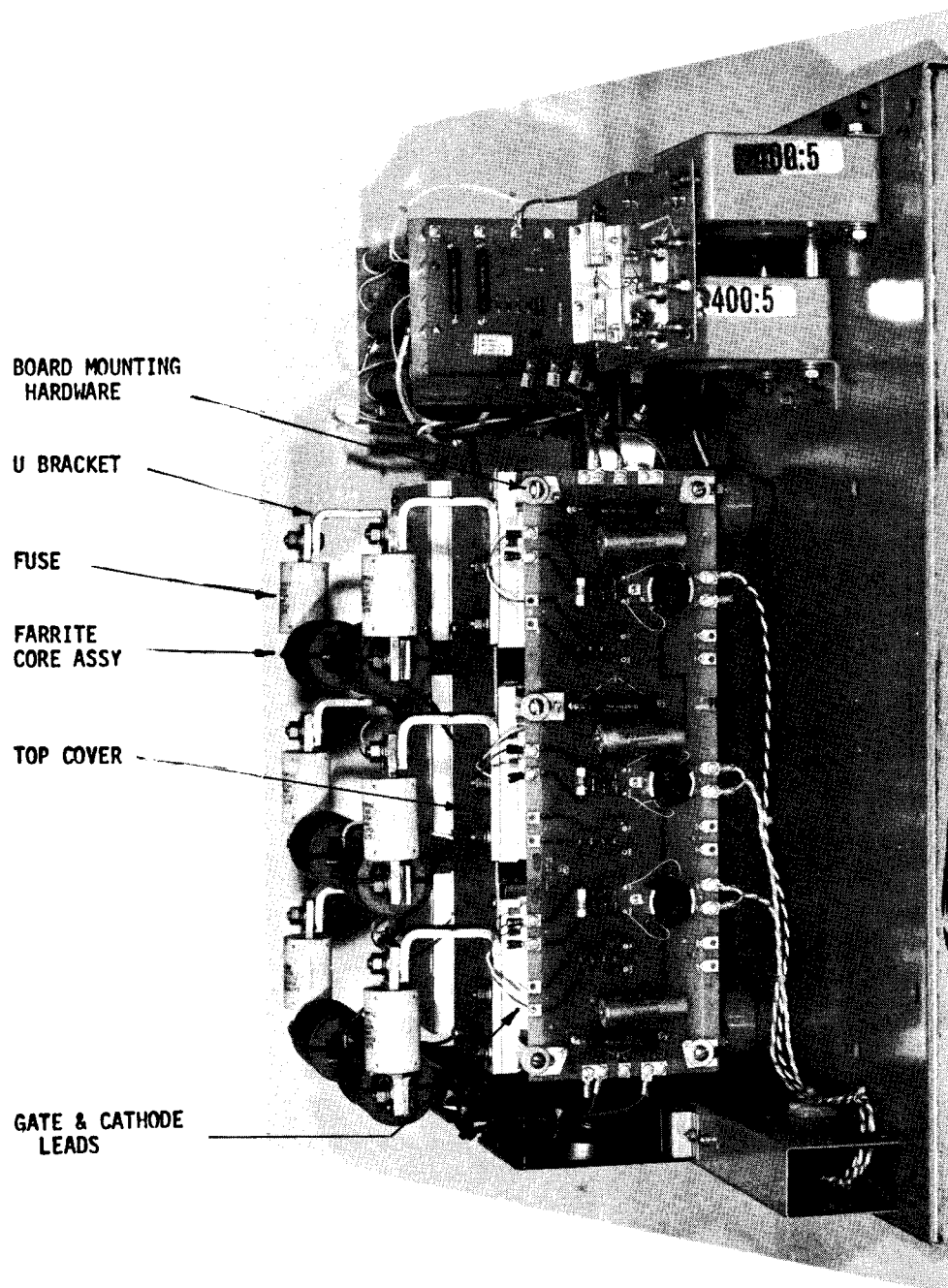
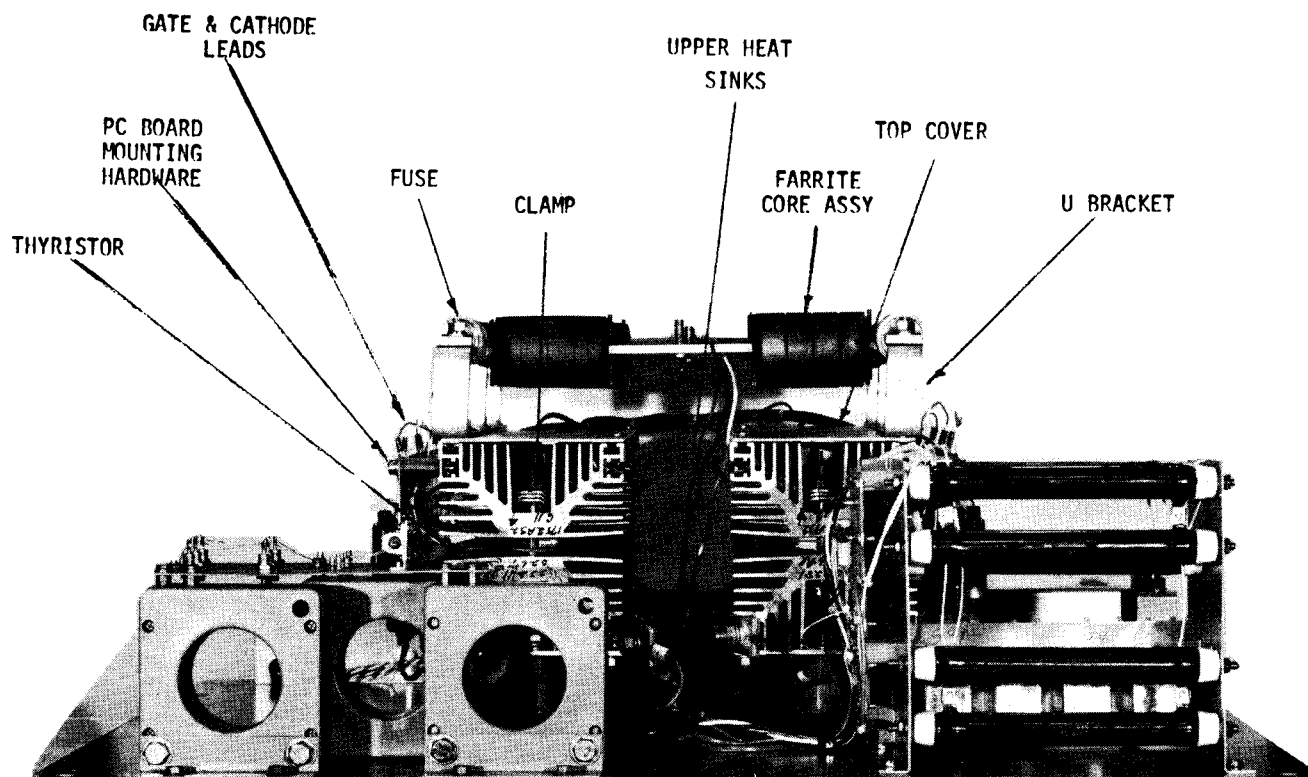


FIGURE 1
SIZE 2 SINGLE CONVERTER



BOTTOM VIEW

FIGURE 2
SIZE 2 SINGLE CONVERTER

B. Replacement of Thyristor in M5R Size 3 Single Converter (See Figures 1, 2, & 3).

Tools Required:

Medium Size Screwdriver
7/16 Socket
1/2 Socket
9/16 Socket
5/16 Socket

1. Remove fuse next to blown thyristor. If drive has no fuses, remove hardware from end of ferrite core assy. nearest blown thyristor.
2. Loosen nut on opposite end of ferrite core assy and push bar down about one inch.
3. Remove U bracket that held fuse or ferrite core assy.
4. Remove gate and cathode leads of the blown thyristor from PC card (screws must be removed).
5. If unit has front cover over the heat sink, remove the cover.
6. If unit has side plates loosen front 1/4 inch hardware from plate to heat sink of blown thyristor.
7. Remove 5/16 nuts on the clamp that holds the thyristor and heat sinks.
8. Remove clamp, front heat sink and thyristors.
9. Snap out thyristor from centering collar and replace with new thyristor.
10. Use Alcoa #2 compound on both sides of the thyristor.
11. Replace thyristor, heat sink and clamp on U bolt.
12. Finger tight 5/16 nuts on U bolts. IMPORTANT check gage, it should read 0. If reading is other than 0, remove clamp and reset gage. The use of a small mirror at right angle to clamp will be helpful in reading gage.
13. Tighten down nuts until gage reading is between 350 to 400.
14. If unit has side plates replace 1/4 inch hardware.
15. If unit has a front cover, replace the cover.
16. Replace thyristor gate leads on PC card red lead is K, white lead is G.
17. Replace U bracket that holds the fuse or ferrite core assy.
18. Replace fuse (if used) tighten down, including nut on the opposite end of ferrite core assy.

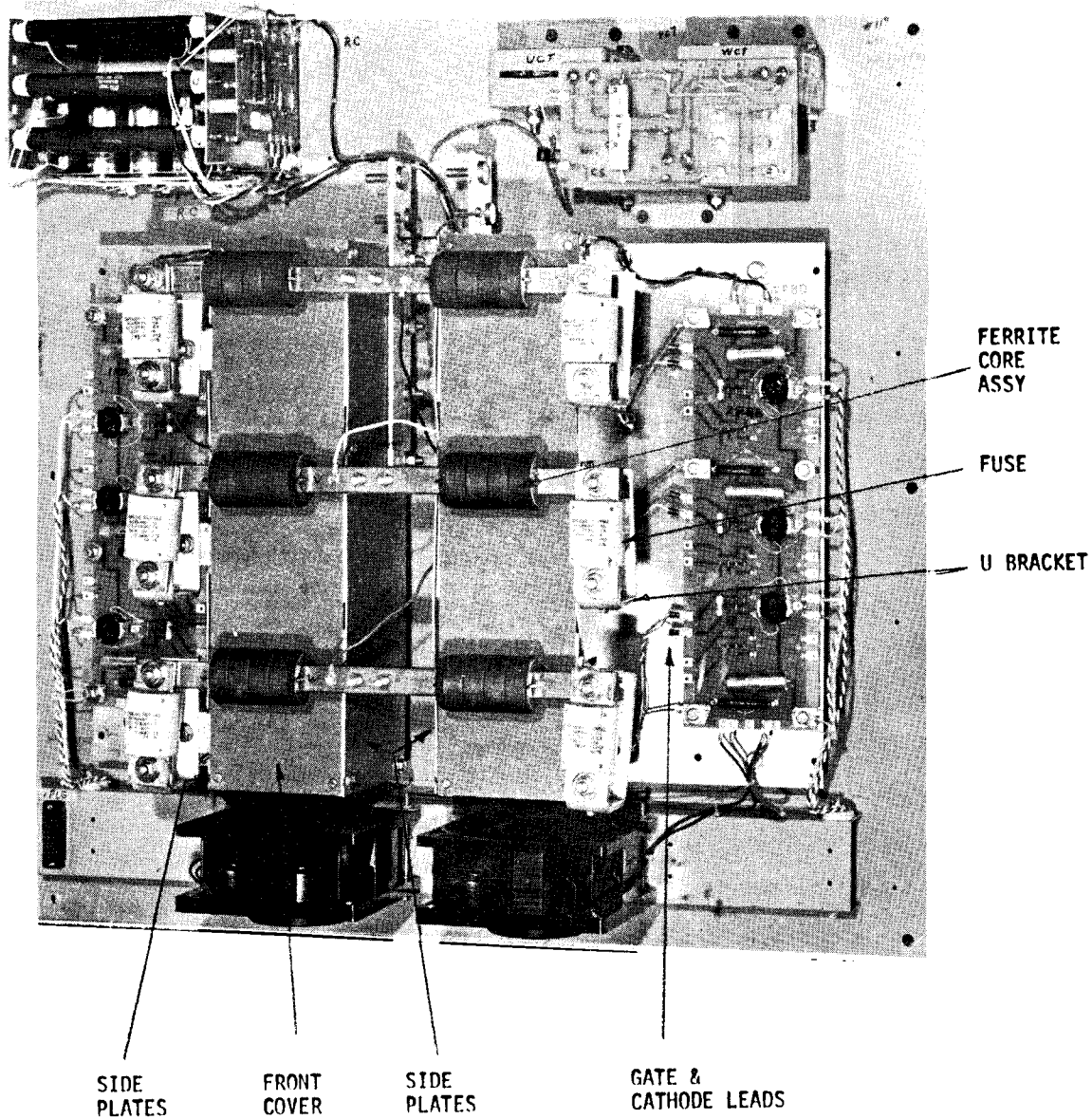


FIGURE 3
SIZE 3 SINGLE CONVERTER

C. Replacement of Thyristor in Inside Heat Sinks of M5B Sizes 2 or 3 Double Converter.
(See Figure 4 & 5)

Tools Required:

Medium size screwdriver
7/16 Socket
1/2 Socket
9/16 Socket (only in size 3)
5/16 Socket

1. Remove fuse next to blown thyristor. If drive has no fuses remove hardware from end of ferrite core assy. nearest blown thyristor.
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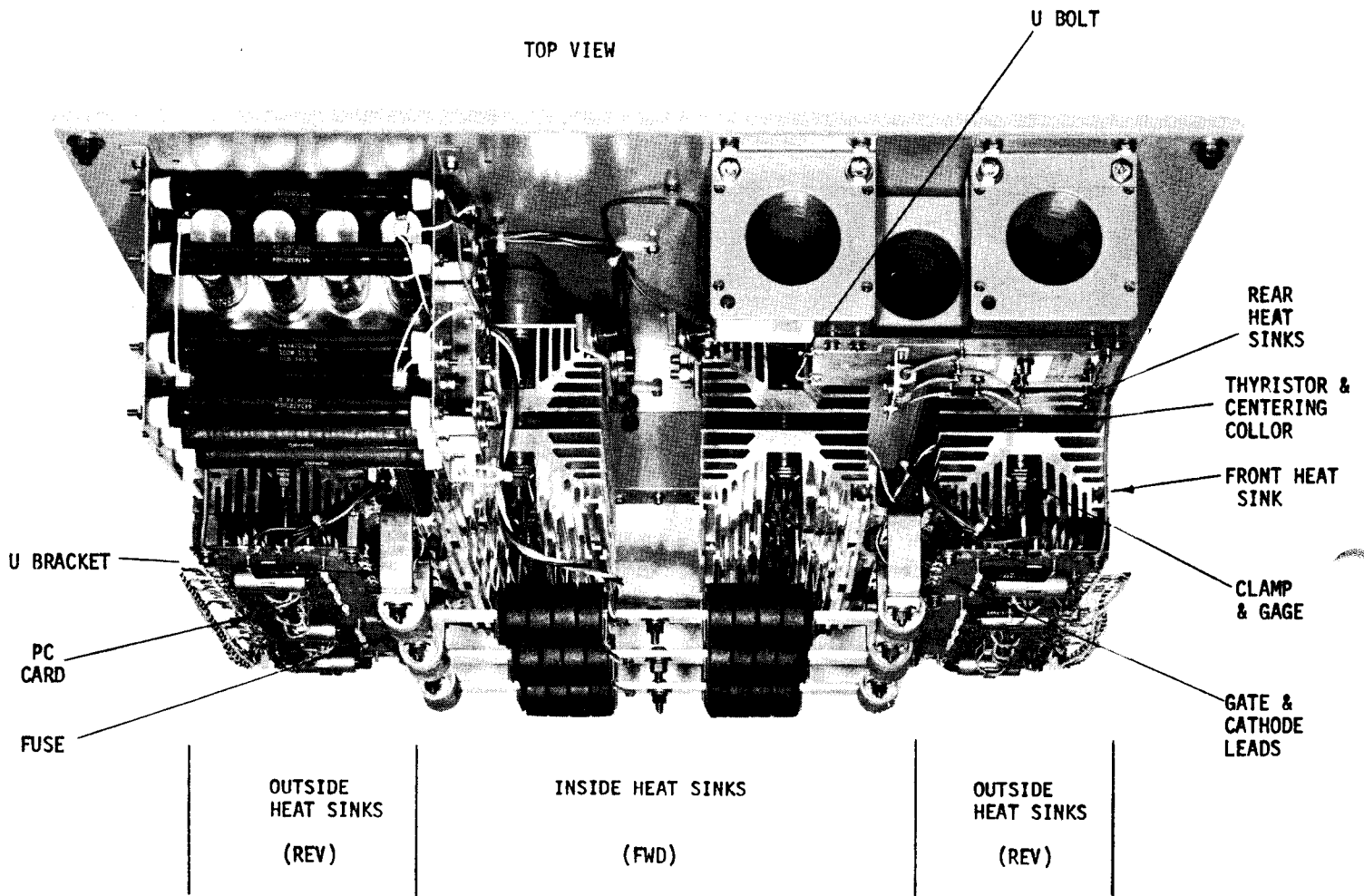


FIGURE 4
DOUBLE CONVERTER

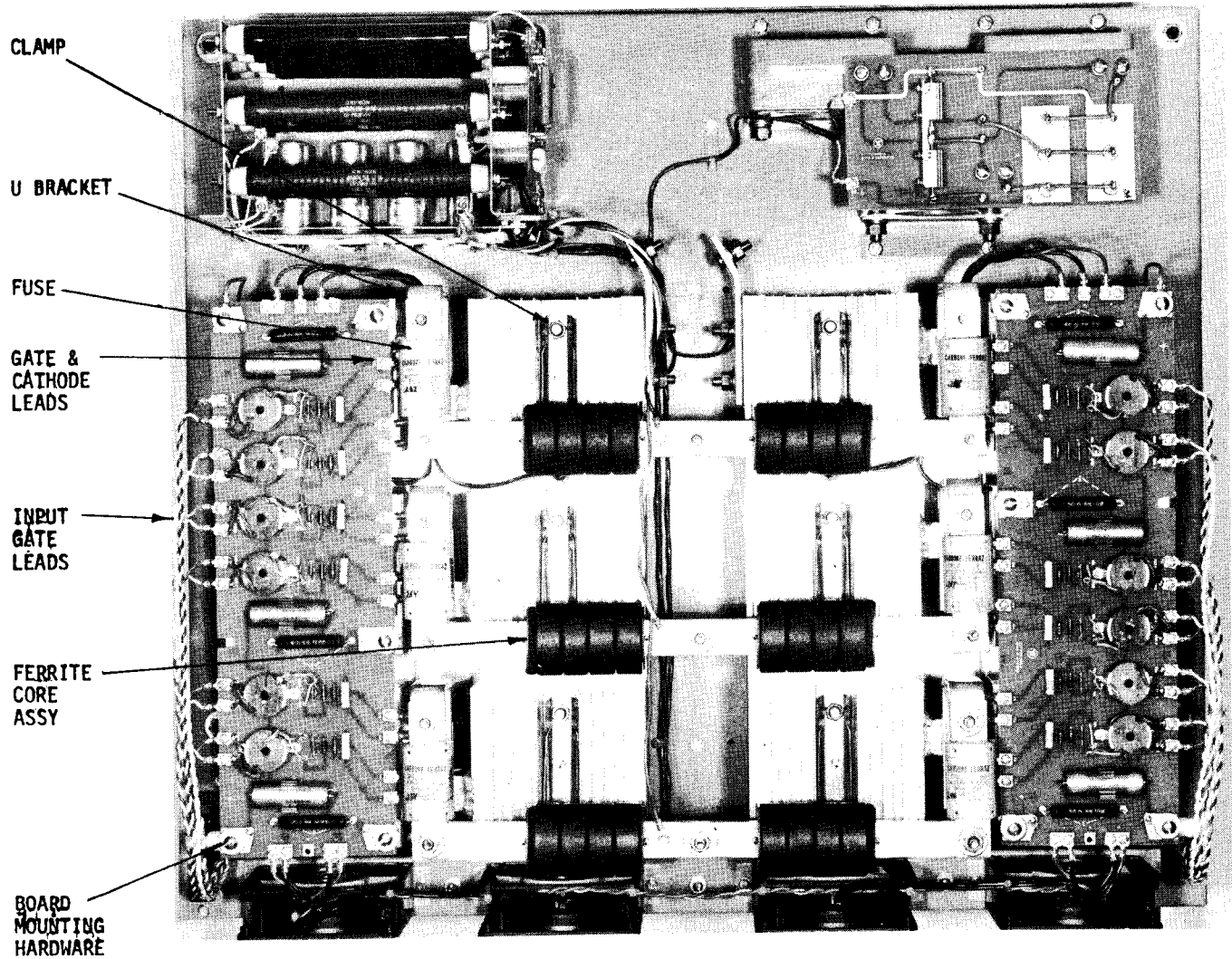


FIGURE 5

DOUBLE CONVERTER

Westinghouse Electric Corporation

D. Replacement of Thyristor in Outside Heat Sinks M5B Sizes 2 or 3 Double Converter
(See Figure 4 & 5)

Tools Required

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1/2 Socket
9/16 Socket (only in sizes 3)
5/16 Socket

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