



## 4MX 50

### 50kW AM Transmitter PA Motherboard Replacement Guide

## **4MX 50 – 50kW AM Transmitter PA Motherboard Replacement Guide**

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# 1 Prepare to Replace the 4MX 50 PA Motherboard

## 1.1 Tools / Items Needed

- No. 2 Phillips Screw Driver
- Flat Blade Screw Driver (short shank)
- 11/32" Nut Driver
- Small 6" Ty-wrap
- Side Cutters

## 1.2 Estimated Time for Replacement

Providing that you have the tools listed above, it will take approximately 30-45 minutes to complete the replacement of a Power Amplifier Motherboard.

# 2 Replacing a 4MX 50 PA Motherboard

## 2.1 Turn the 4MX 50 AC Breaker OFF

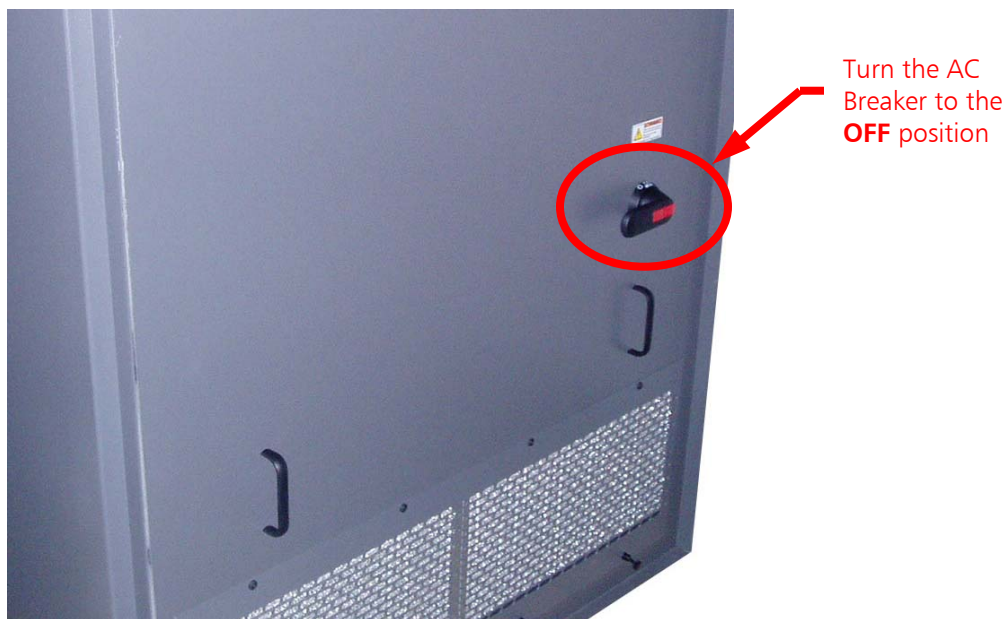


Figure 1 – Turn 4MX AC Breaker to OFF

## 2.2 PA Module / Motherboard Locations

The 4MX 50 has 32 PA Modules (2 per PA Motherboard). **Figure 2** illustrates how the PA Modules are numbered. **Figure 3** shows how the PA Motherboards are numbered. PA Motherboards will be referred to in this document as either **Top** or **Bottom**. This document focuses on the replacement of a **Top** PA Motherboard. The same steps are necessary to replace a **Bottom** PA Motherboard.

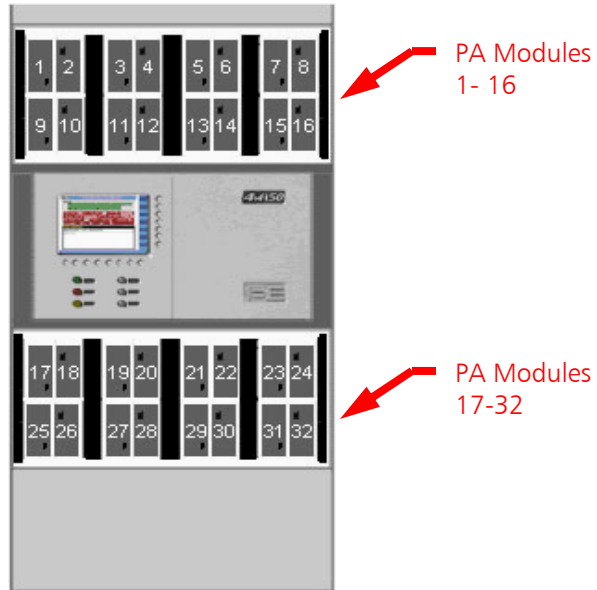


Figure 2 – PA Module Locations

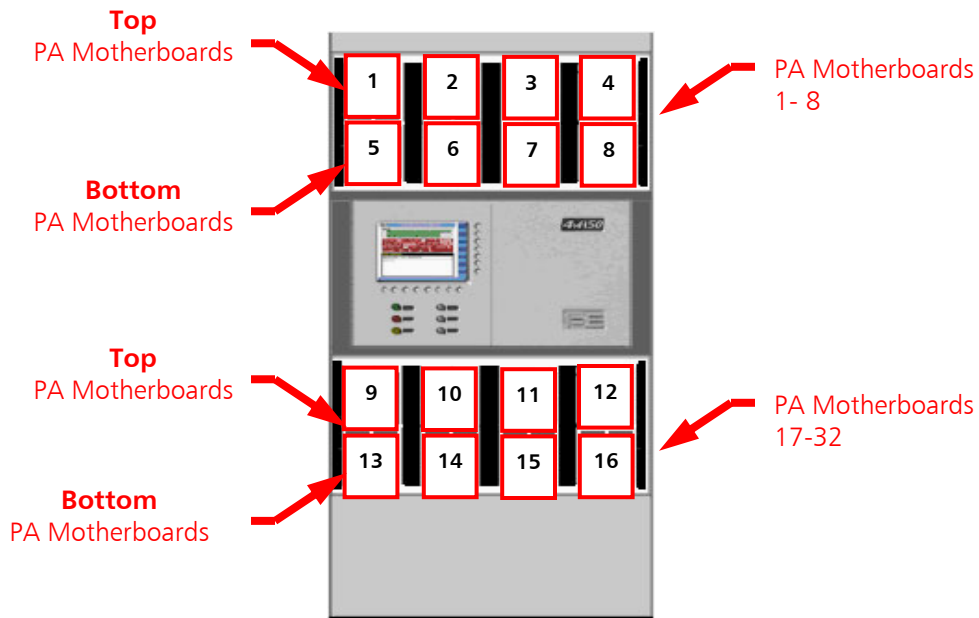


Figure 3 – PA Motherboard Locations



## 2.3 PA Module Removal

In the following instructions we will be replacing Motherboard No. 10. PA Modules 19, 20, and 27 must be removed first.

Disconnect and remove  
PA Modules 19, 20, and 27.  
(Module 27 not yet removed  
in photo)

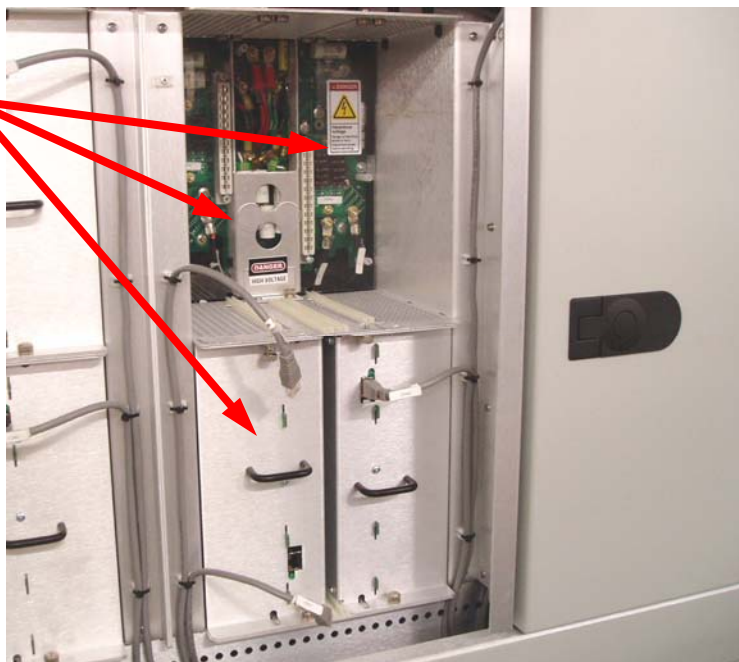
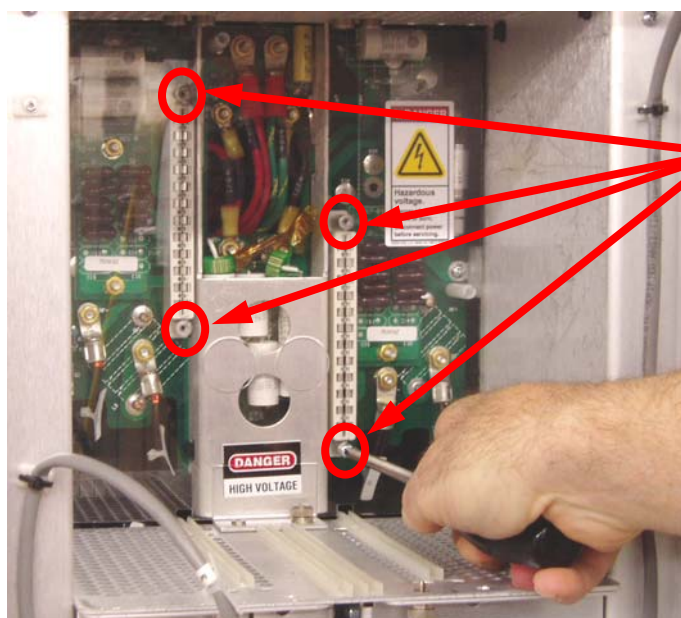


Figure 4 – Remove Appropriate PA Modules

## 2.4 Remove Motherboard Cover



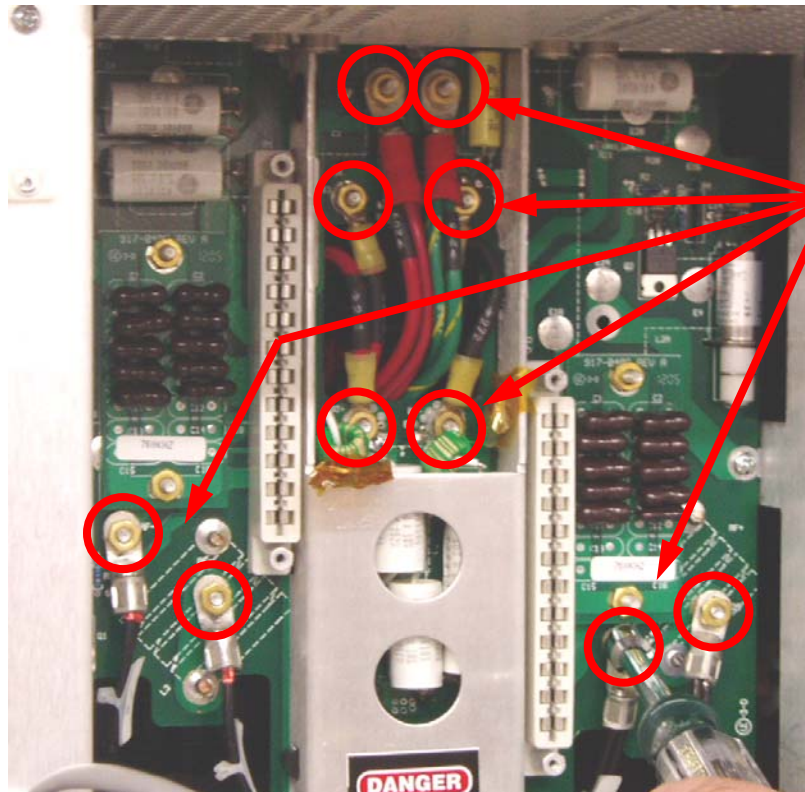
**STEP 1** - Using a No. 2  
Phillips Screw Driver  
remove the (4) screws  
and (4) lock washers

**STEP 2** – Remove the  
Motherboard Cover

Figure 5 – Remove Motherboard Cover

## 2.5 Remove Wiring Connection Hardware

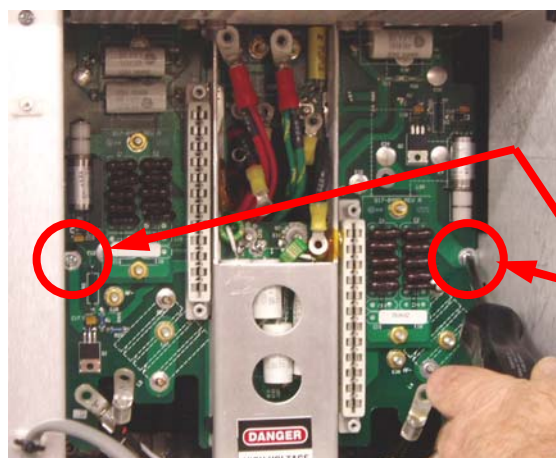
**PLEASE NOTE:** It is a good idea to label the wires to ensure that they are connected properly later. If possible, take some close up digital photos for reference as well.



Using a 11/32" Nut Driver, loosen the brass nuts (10). Once loosened, carefully remove the brass nuts (10) and lock washers (10) by hand.

Figure 6 – Remove Wiring Connection Hardware

## 2.6 Remove Wiring From Studs / Remove Mounting Screws



**STEP 1** – Remove all wiring from studs (10 places)

**STEP 2** – Using a No. 2 Phillips Screw Driver, remove (2) mounting screws and (2) lock washers

Figure 7 – Remove Wiring From Studs / Remove Mounting Screws



### 2.7 Loosen PA Motherboard Bracket Thumbscrews

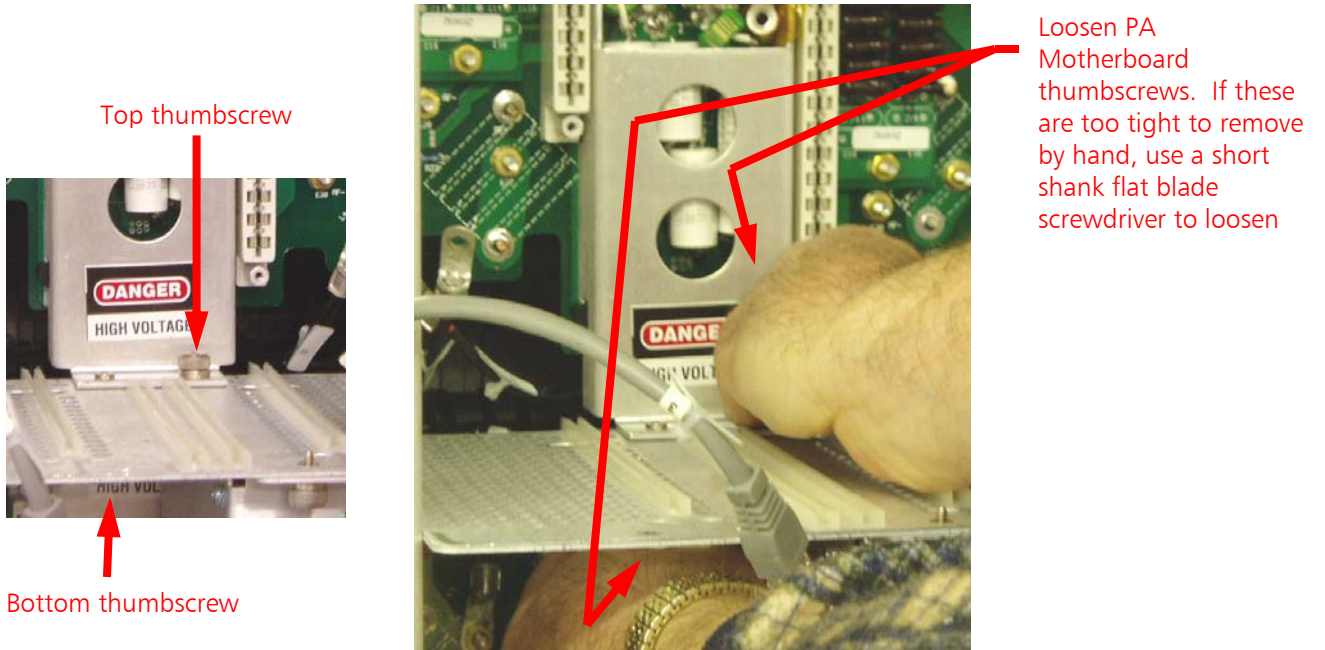


Figure 8 – Loosen PA Motherboard Bracket Thumbscrews

### 2.8 Remove the PA Motherboard from the Transmitter

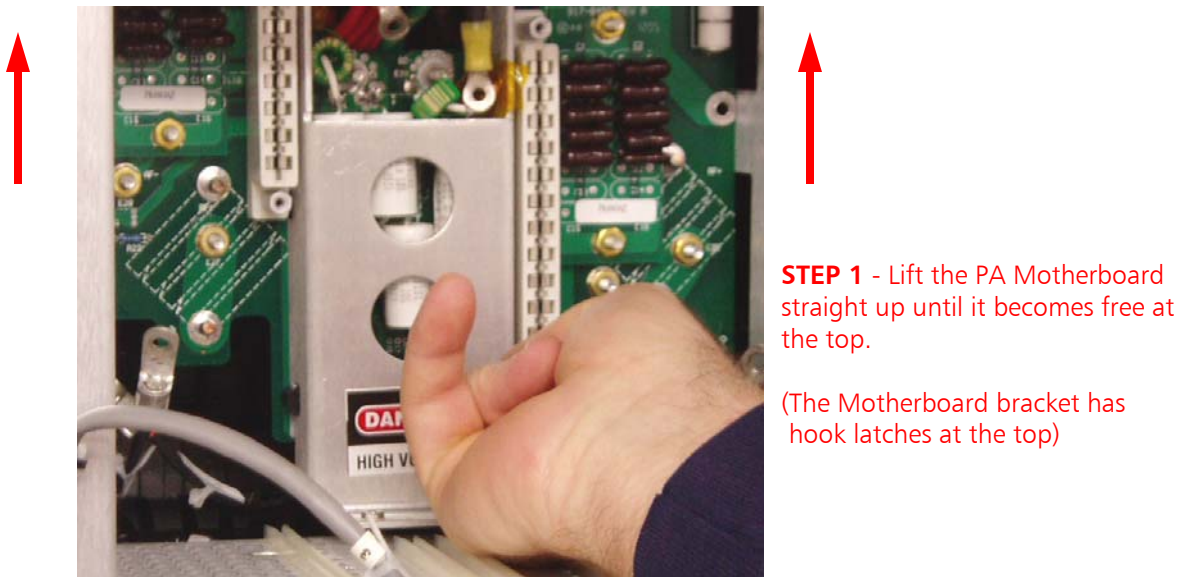
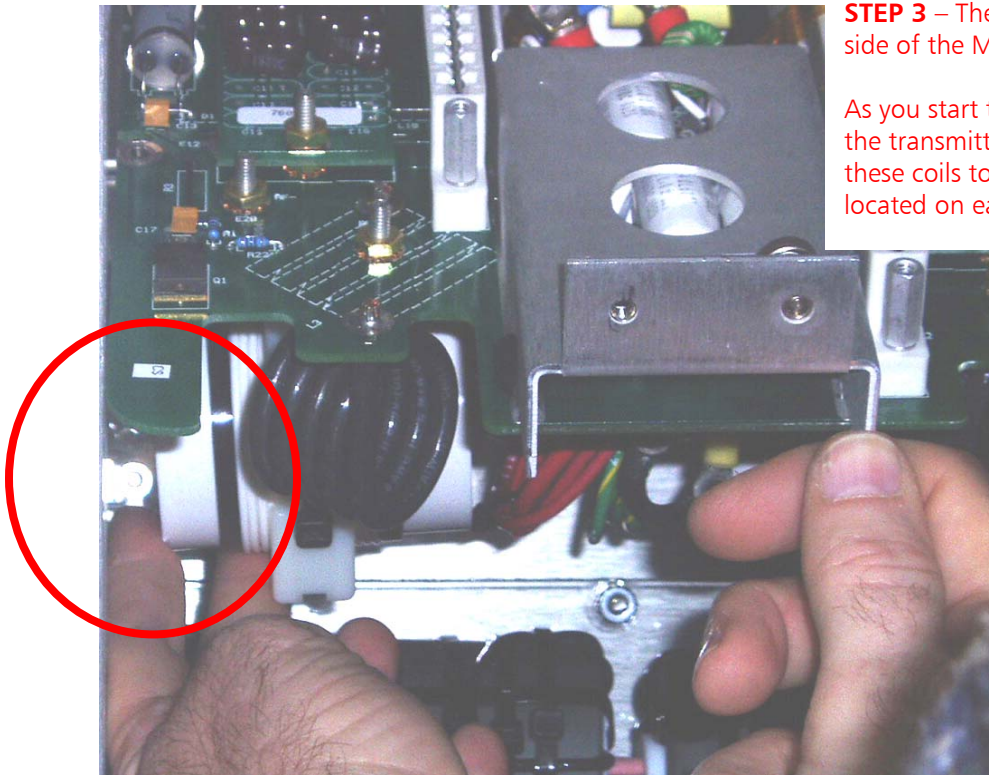


Figure 9 – Lift the Motherboard Straight Up



**STEP 2** – Tilt the Motherboard to horizontal position

**Figure 10 – Tilt Motherboard**



**STEP 3** – There are (4) large coils on the back side of the Motherboard (see Figure 11).

As you start to pull the Motherboard out of the transmitter it is necessary to “gently” flex these coils to clear the mounting screw bosses located on each side of the compartment.

**Figure 11 – Gently Flex Coils (both sides) to Clear Mounting Screw Bosses**



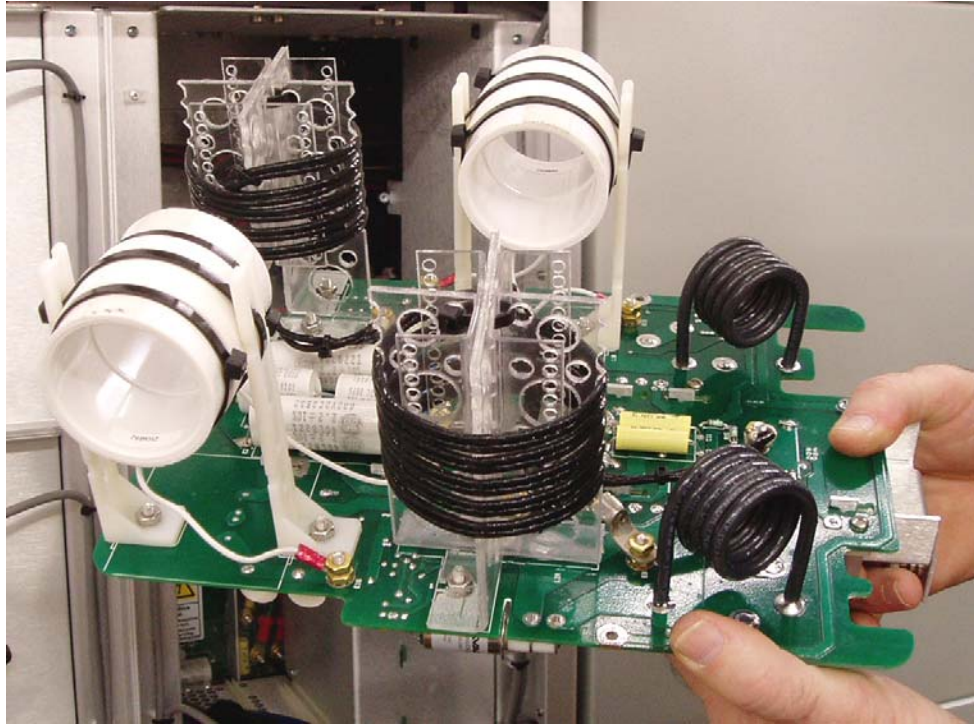


Figure 12 – PA Motherboard Removed

## 2.9 Ty-rap Center Wire Bundle

Before installing the new PA Motherboard, ty-rap the center wire bundle as shown to ease installation.

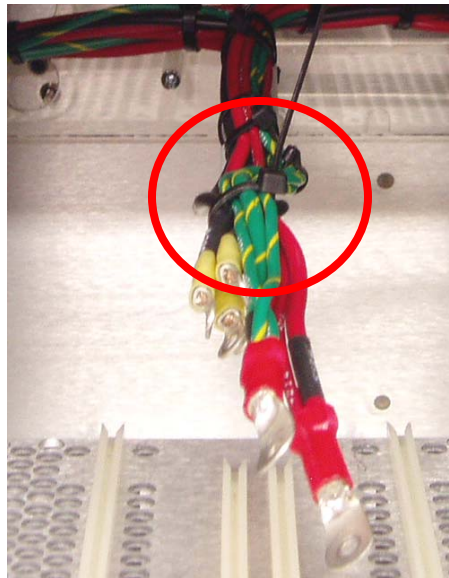
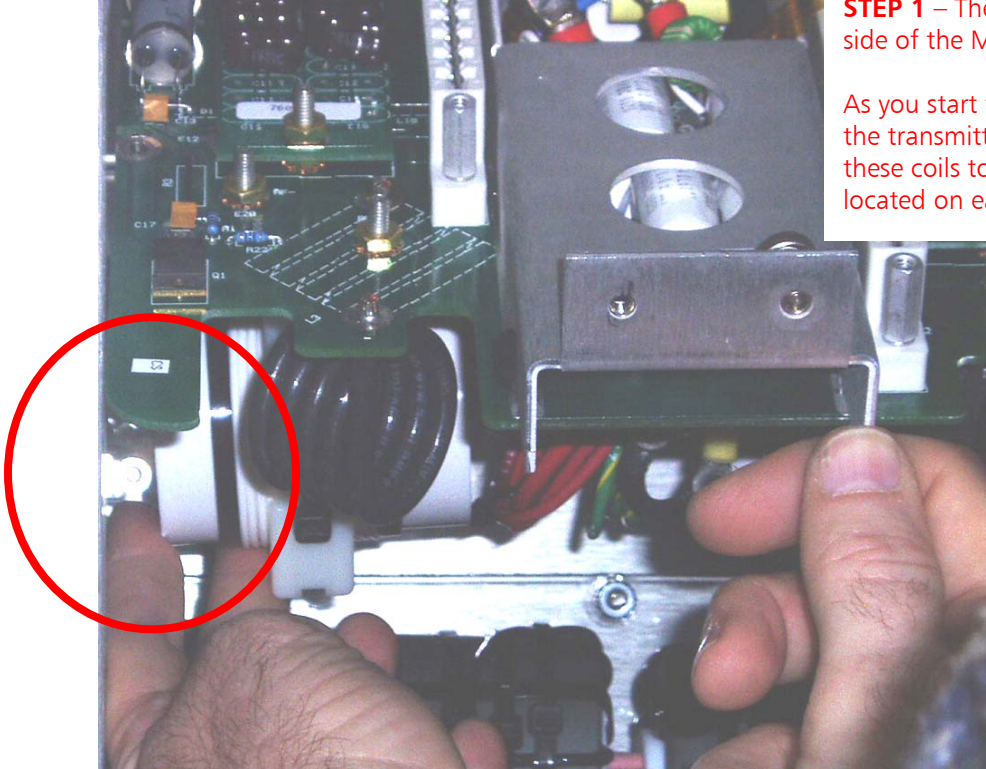


Figure 13 – Ty-rap Wire Bundle



## 2.10 Install New PA Motherboard



**STEP 1** – There are (4) large coils on the back side of the Motherboard (see Figure 11).

As you start to install the Motherboard into the transmitter, it is necessary to “gently” flex these coils to clear the mounting screw bosses located on each side of the compartment.

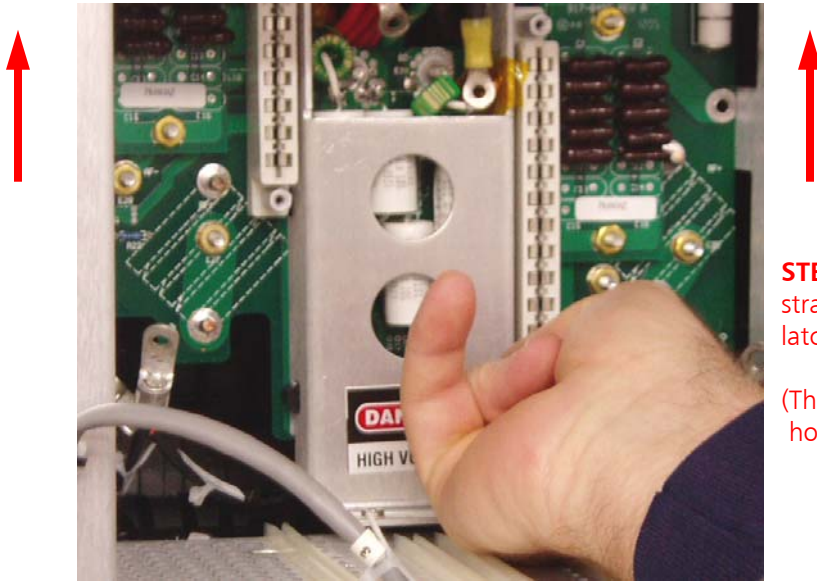
Figure 14 – Gently Flex Coils (both sides) to Clear Mounting Screw Bosses



**STEP 2** – Once the coils clear the screw bosses, tilt the Motherboard to vertical position.

**STEP 3** – Pull the wires through the board.

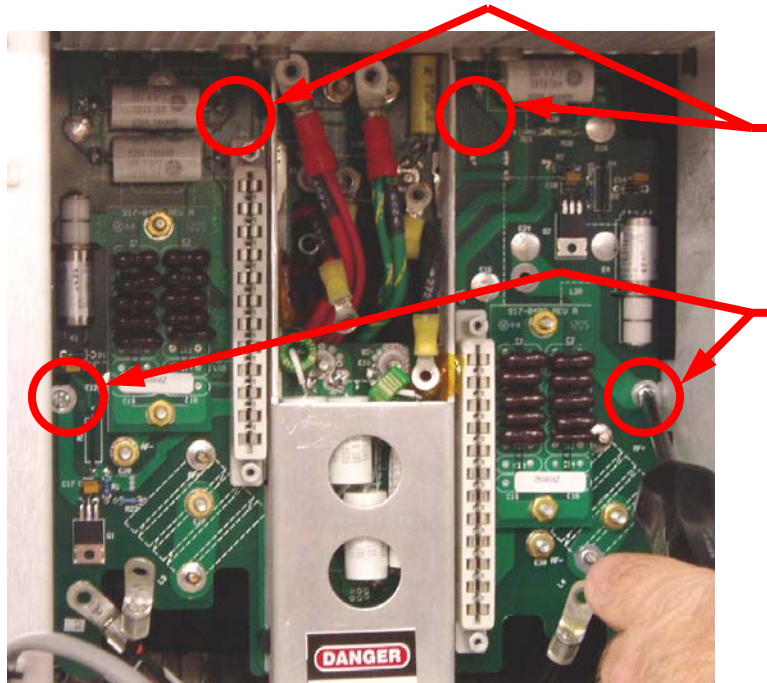
Figure 15 – Tilt Motherboard into Vertical Position



**STEP 4** - Lift the PA Motherboard straight up and engage the hook latches.

(The Motherboard bracket has hook latches at the top)

**Figure 16 – Lift the Motherboard Straight Up**



**STEP 5** – Push on the board in these locations to ensure that the hook latches are engaged.

**STEP 6** – Using a No. 2 Phillips Screw Driver, install (2) mounting screws and (2) lock washers

**Figure 17 – Install Mounting Screws**

## 2.11 Tighten PA Motherboard Bracket Thumbscrews

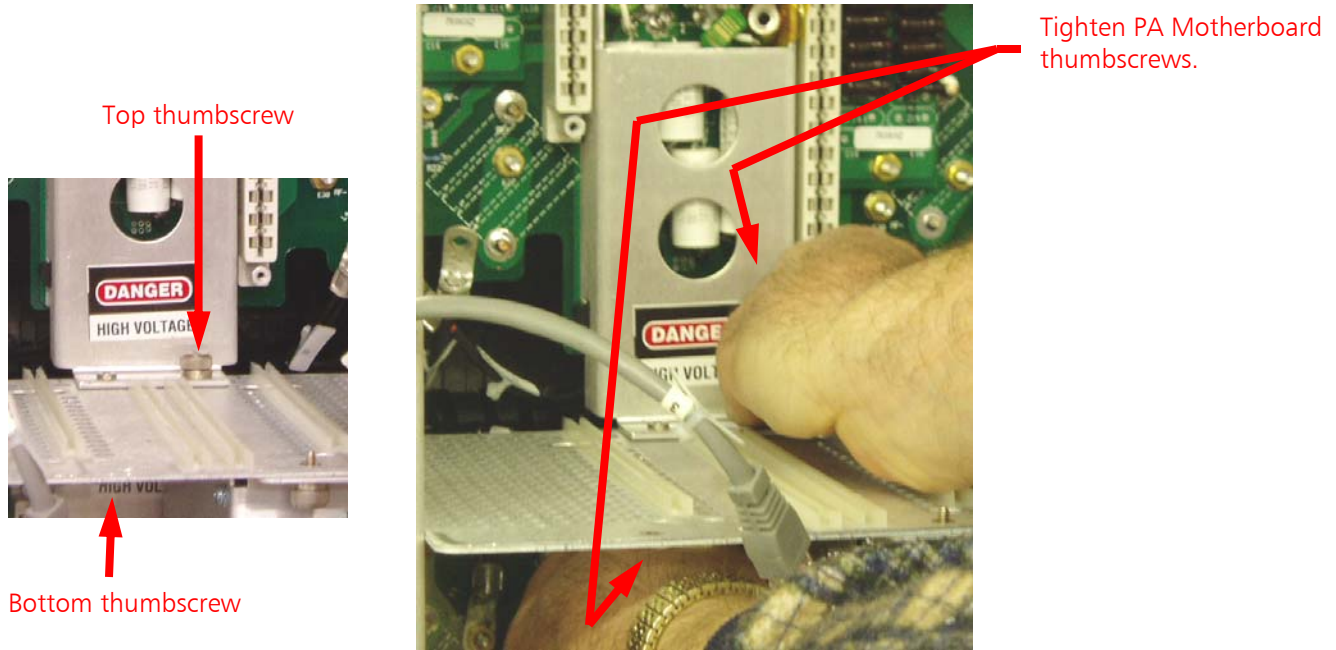


Figure 18 – Tighten PA Motherboard Bracket Thumbscrews



### 2.12 "TOP" PA Motherboard Wiring Connections

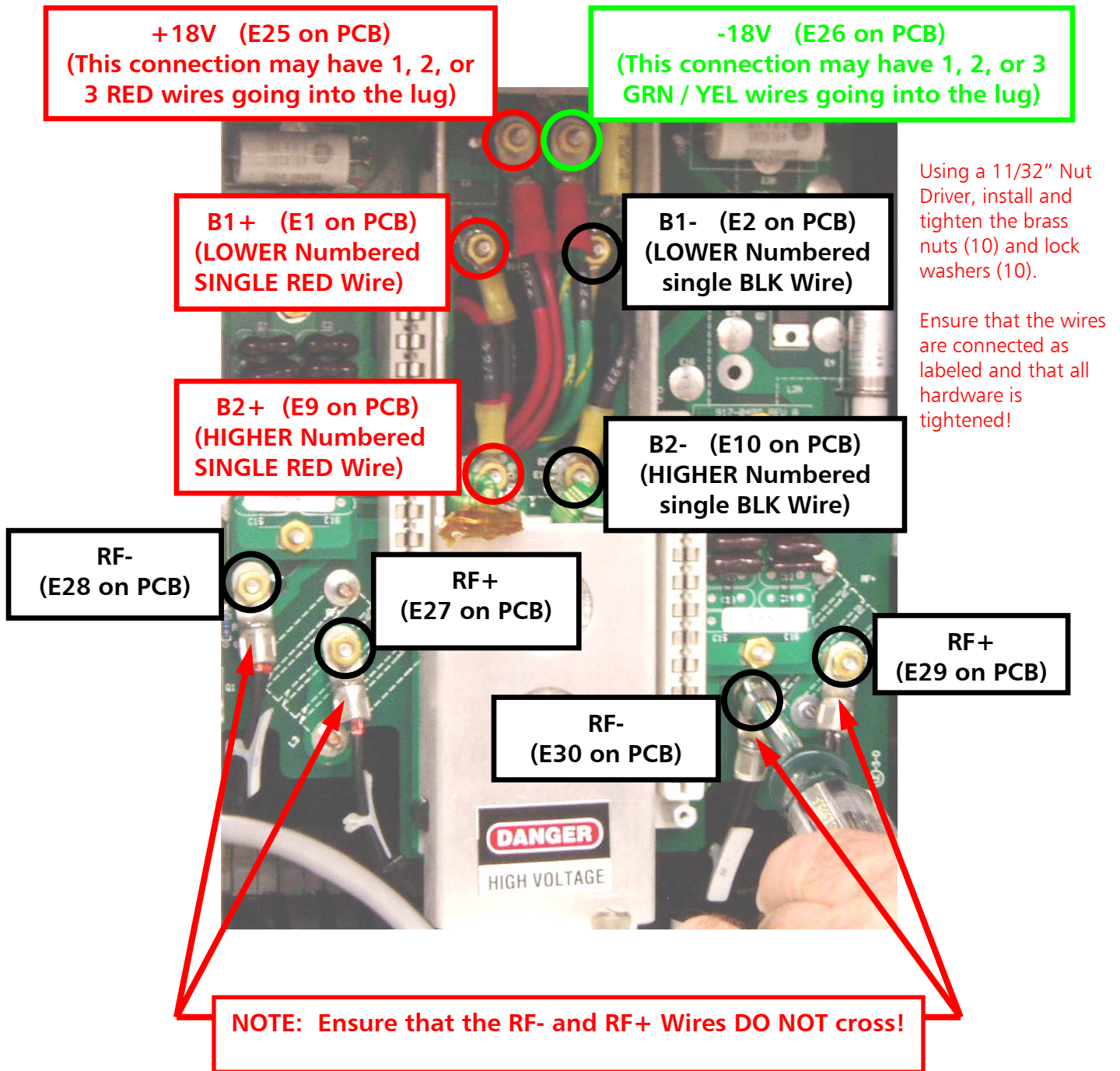


Figure 19 – "TOP" PA Motherboard Wiring Connections

### 2.13 "BOTTOM" PA Motherboard Wiring Connections

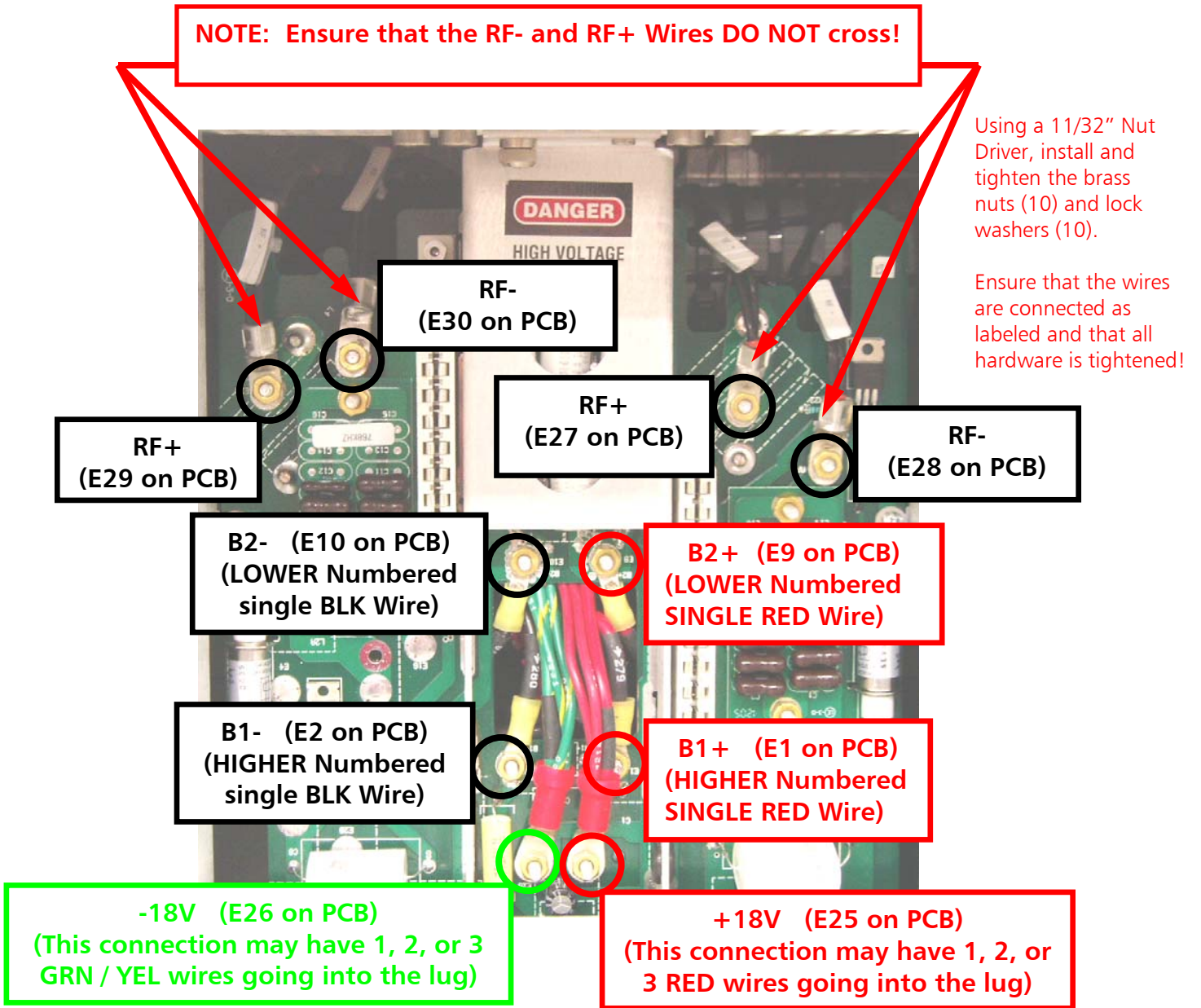
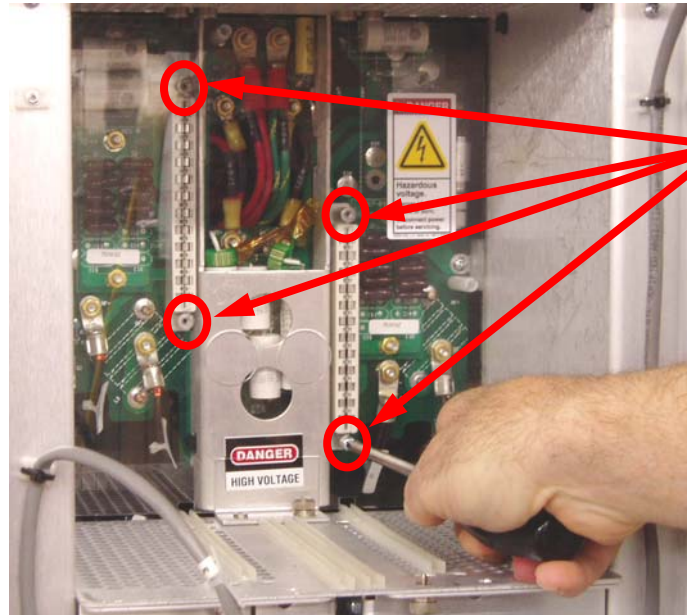


Figure 20 – "BOTTOM" PA Motherboard Wiring Connections





### 2.14 Install PA Motherboard Cover



**STEP 1** – Install the Motherboard Cover

**STEP 2** - Using a No. 2 Phillips Screw Driver install the (4) screws and (4) lock washers

Figure 21 – Install Motherboard Cover

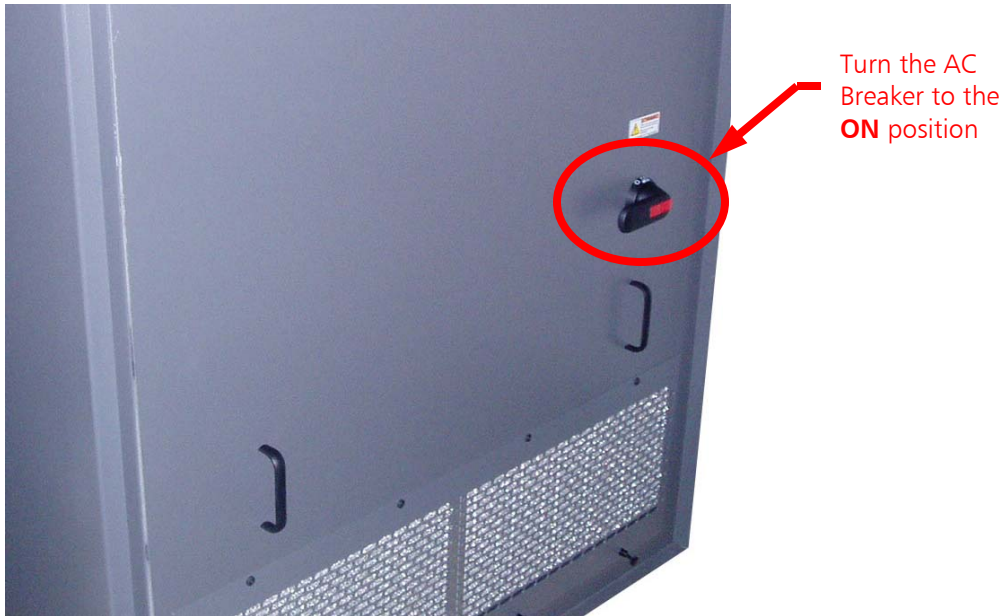
### 2.15 Install and Connect PA Modules

Install and connect all PA Modules that were previously removed.



Figure 22 – Install PA Modules

## 2.16 Turn the 4MX 50 AC Breaker ON



**Figure 23 – Turn 4MX AC Breaker to ON**

Once the transmitter comes up, there should not be any faults or alarms relating to Power Amplifiers.