M-PA 101

Part #2: *M-PA Components and Assemblies*

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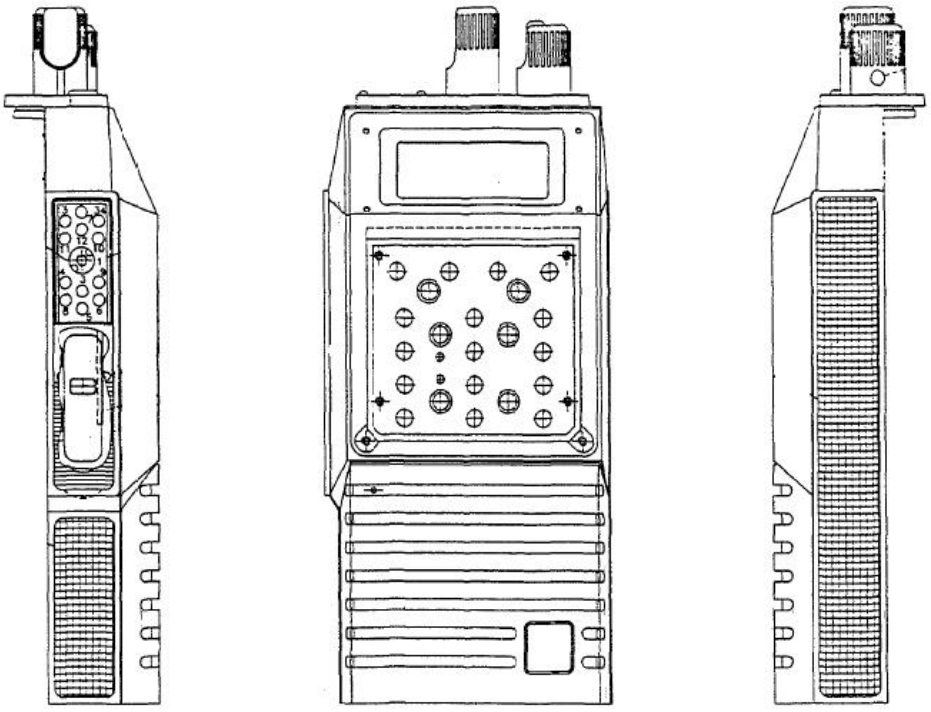
COMPONENT INTRODUCTION:

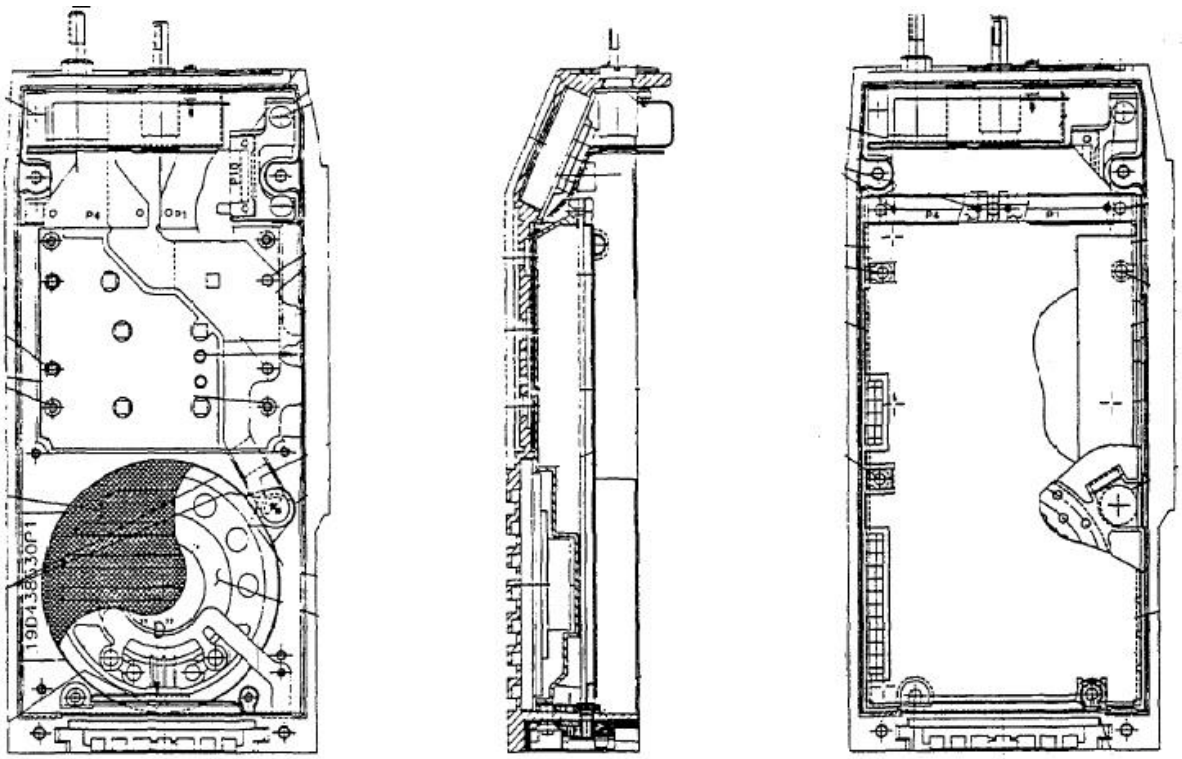
To de-mystify the M-PA series of radios, you need to look at the building blocks of what makes the radio. When you take away the external items and accessories (battery, speaker-microphone, chargers and vehicular chargers), what you have left is metal 'brick' which is the radio. This brick is comprised from a front and rear assembly.

The **FRONT COVER ASSEMBLY** is comprised of the following:

- Front Cover (metal) casting
- The Audio/Logic board (nine different versions, only three of which we will cover)
- The Front Cover flex
- The keypad
- The Speaker and microphone
- Volume and channel controls
- The LCD Display
- The UDC (Universal Device Connector) for programming, maintenance and audio accessories
- DC Power Connections to the battery
- A 5 Amp Fuse for DC Power
- (OPTIONAL) one of four different digital voice 'daughter' boards.



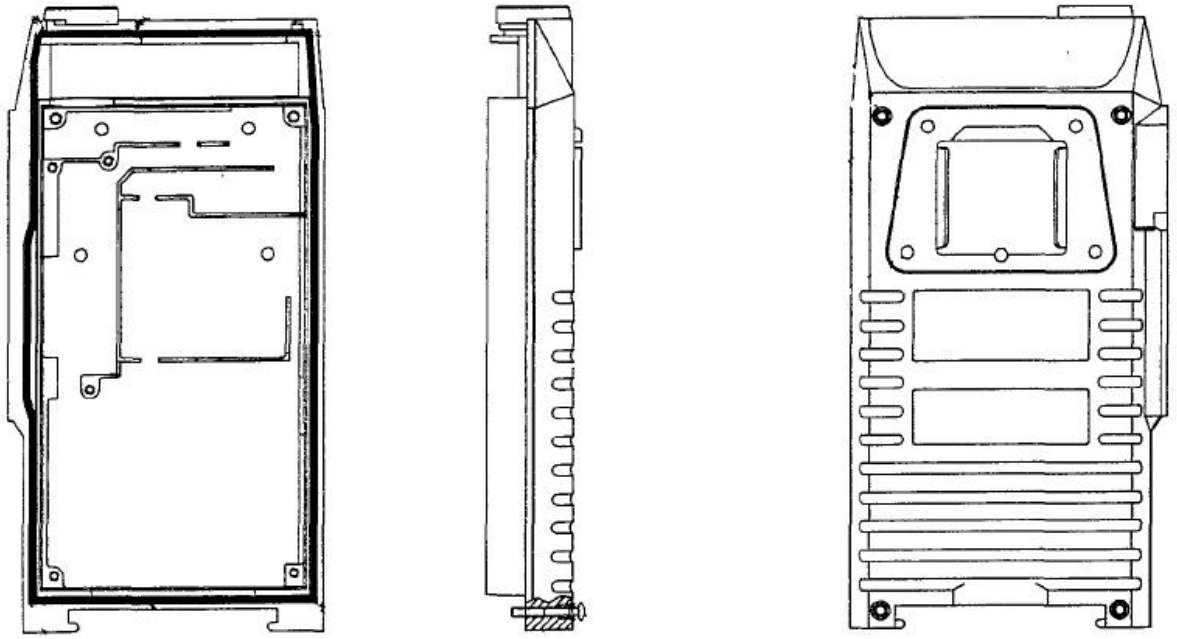
FRONT ASSEMBLY – OUTSIDE VIEW



FRONT ASSEMBLY – INSIDE VIEW

The **REAR COVER ASSEMBLY** is comprised of the following:

- Rear Cover (metal) casting
  - Two physically different versions which are NOT interchangeable:
    - 68-512 MHz Bandsplits
    - 896-941 MHz Bandsplits
- The RF board
  - 68- 88 MHz
  - 136-150.8 MHz
  - 146-162 MHz
  - 157-174 MHz
  - 378-413 MHz
  - 403-423 MHz
  - 403-440 MHz...100mW RF Output [SPECIAL: US Navy version]
  - 450-470 MHz
  - 470-494 MHz
  - 485-505 MHz...NARROWBAND 12.5 kHz [SPECIAL: Taiwan National Police]
  - 492-512 MHz
  - 806-870 MHz
  - 896-941 MHz



REAR ASSEMBLY

Now that you have an overview of that, here is the really beautiful feature of the M-PA series of radios. ***With rare exception, all of the front and rear assemblies will function with each other***. This allows the builder (YOU) to create a radio to meet your unique specifications, building a radio from dissimilar pieces from any mix of M-PA, MTL or P400 versions of the radio, collectively known as the M-PA Series.

FACTORY OFFERED MODELS versus USER BUILT VARIATIONS:

During the production lifetime of the M-PA series of radios, the manufacturer (General Electric) produced radios to meet a variety of needs in the public safety, business, industrial and military market segments. Also, over this period from the 1980's to 2000, the product itself evolved as technology improved.

The original production model of the radio was vhf-highband, 146-162 MHz bandsplit, and only supported a total of sixteen (16) conventional channels. The next version supported forty eight (48) channels. These early Control/Logic Boards were 'hard coded'. The operating system used in the boards was written to an IC Chip on the board, and could not be upgraded through software, in a process known as REFLASHING. (PN# 19D902349 Control/Logic Boards)

The next major leap in technology was to support GE's version of the **APCO Project-16** trunking protocol. This became what is known as **EDACS Trunking**. (Enhanced Digital Access Controlled Trunking) In this next generation the "628" Control Logic Board was introduced, along with RF boards for 403-423, 806-870 and 896-941 MHz bandsplits. (PN# 19D902628 Control/Logic Boards) These boards can be identified by the presence of a tubular 3 volt Lithium battery on the board for memory backup. This board was the first flash-upgradable board, and also supported HamFlash firmware.

The next evolution of the M-PA's control/logic board was the introduction of the "Ø81" Control Logic Board. This board contained two major improvements over the previous versions of hardware in the form

of a Non-Volatile Memory chip which did not require a battery backup, and the addition of 'daughter' board sockets for installation of optional Digital Voice boards. (PN# 19D903081 Control/Logic Boards)

The final development of the M-PA radio was the special radio for the Taiwan National Police, and contained an embedded DSP chip for digital voice and secure voice operation. These radios contained the 188D6149G001 control/logic board, and due to being very rare in the US and Canada, will not be covered in this series. This radio's contribution was as 'bridge product' to the next major upgrade in technology, were digital voice operations, and the hardware to support them would become standard in the radios.

PHOTOGRAPHS:

M-PA Model radios: Select Model (no keypad), Scan Model (4-button keypad) and System Model (full keypad)

SCAN MODEL SELECT MODEL SYSTEM MODEL

M-TL Model radios: Select Model (no keypad) & Scan Model (3-button keypad) shown, identifiable by its LCD display being covered with a blank plate.

P400 Model radios: The European model radio, identifiable by its Orange keypad membrane. All P400's have a full keypad.