Mobile Communications

MPI-II
403-512 MHz SYNTHESIZED
PERSONAL RADIO
COMBINATION

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Maintenance Manual

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TYPICAL SPECIFICATIONS

FCC FILING DATA

Frequency Range	403-440 MHz (Low Split) 440-470 MHz (Mid Split) 470-512 MHz (High Split)
RF Power	2 Watts (with 7.5V battery) 4 Watts (with 10V battery)

GENERAL

Input Voltage	6.0 to 12.0 Volts	
Channel Capacity	2 Channels	
Frequency Spread	**RX**	**TX**
	10 MHz no degradation	7 MHz no degradation
	15 MHz 1 dB degradation	10 MHz 1 dB degradation
	20 MHz 2 dB degradation	15 MHz 3 dB degradation
Frequency Stability	±5 PPM	
Channel Spacing	25 kHz	
Dimensions (less antenna) H x W x D		
With 2 Watt Battery	7.11 x 2.59 x 1.46 inches (18.05 x 6.57 x 3.71 cm)	
With 4 Watt Battery	7.81 x 2.59 x 1.46 inches (19.83 x 6.57 x 3.71 cm)	
Weight		
With 2 Watt Battery	15.5 oz	
With 4 Watt Battery	17 oz	
Ambient Temperature Range	-30° to +60°C (-22° to +140°F)	
Vibration	Meets EIA and U.S. Forest Service Specifications	
Shock	1 meter drop test	
Relative Humidity	90% @ 50°C	
Altitude	15000 Feet	
Construction		
Front	POLYCARBONATE/PET BLEND	
Rear	DIE-CAST ALUMINUM	
Battery Drain		
Receiver Standby	36 mA	
Receiver Full Audio	200 mA	
Transmit (@ 4 Watts)	1100 mA	
Transmit (@ 2 Watts)	800 mA	
Battery Life (Between Charges)		
2 Watt (5-5-90% duty cycle)	8.0 hours	
4 Watt (5-5-90% duty cycle)	6.0 hours	

TRANSMIT CIRCUIT

Frequency Spread	7 MHz no degradation 10 MHz 1 dB degradation 15 MHz 3 dB degradation
Power Output	
10.0 V battery	4 Watts
7.5 V battery	2 Watts

(Continued)

COMBINATION

TRANSMIT CIRCUIT (Continued)

Conducted Spurious	-20 dBm
Modulation Deviation	±5.0 kHz (maximum)
Audio Response	Within +1 dB and -3 dB of a standard 6 dB/octave pre-emphasis from 300 to 3000 Hz per EIA.
FM Noise (companion receiver method)	-40 dB
Distortion	5% (maximum)
Deviation Symmetry	0.1 kHz
RF Load Impedance	50 ohms
Carrier Attach Time	50 milliseconds
Audio Attack Time	50 milliseconds

RECEIVER

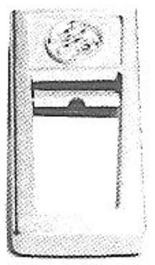
Frequency Range	403-440 MHz (Low Split) 440-470 MHz (Mid Split) 470-512 MHz (High Split)
Audio Output (EIA)	0.5 Watts (less than 5% distortion)
Sensitivity	-120 dBm (typical)
Selectivity (EIA 2-signal method)	65 dB ±25 kHz
Spurious Response	70 dB
Intermodulation	65 dB
Hum and Noise	
Squelched	-80 dB
Unsquelched	-40 dB
Modulation Acceptance	±7 kHz
Frequency Response	Within +2 dB and -8dB of a standard of 6 dB/octave de-emphasis curve from 300 to 3000 Hz (EIA).
RF Input Impedance	50 ohms
Receiver Attack Time	140 milliseconds (EIA)
Receiver Recovery Time	110 milliseconds (EIA)

NOTE

OPTIONS AND ACCESSORIES

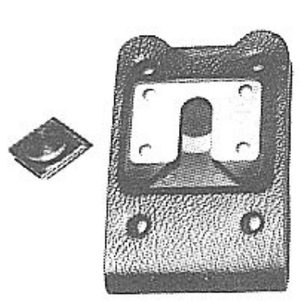
ANTENNA (403-440 MHz, Option MPNC3C)
ANTENNA (440-470 MHz, Option MPNC3D)
ANTENNA (470-512 MHz, Option MPNC3E)

EARPIECE (Option MPAC1D)



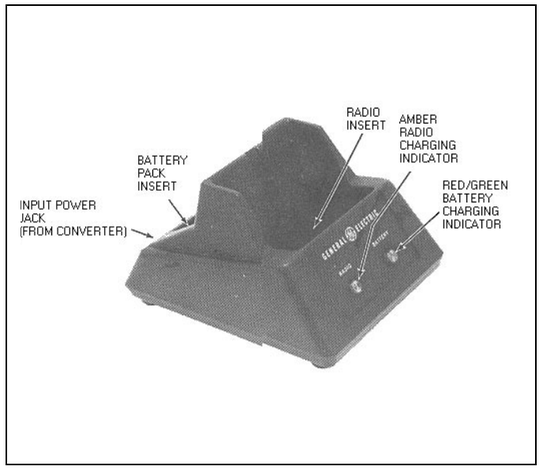
BELT CLIP (Option MPHC1C)

SPEAKER MICROPHONE (Option MPAE1N)



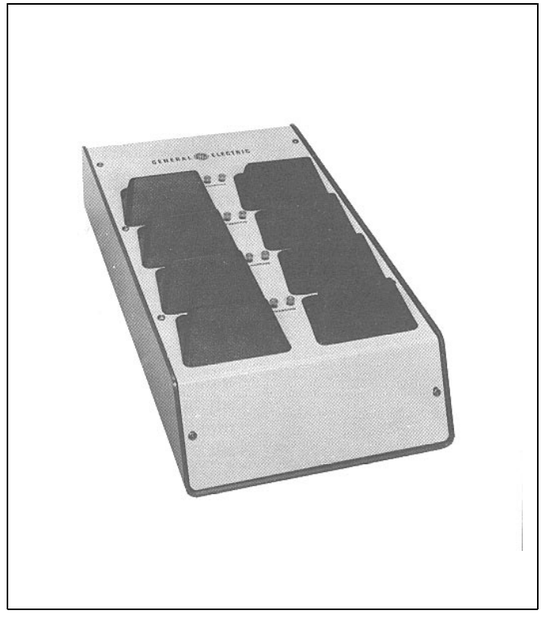
SWIVEL PLATE (Option MPHC1D)

OPTIONS AND ACCESSORIES



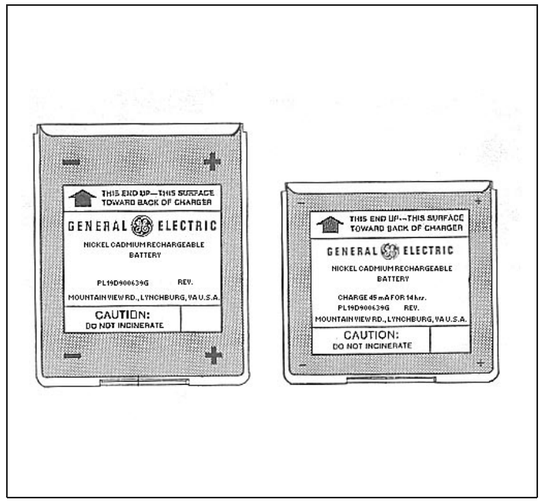
120V DESK CHARGER (Option MPPS3G)
120V C/3 DESK CHARGER (Option MPPS3H)
220V DESK CHARGER (Option MPPS3U)
220V C/3 DESK CHARGER (Option MPPS3V)

VEHICULAR CHARGER (Option MPPS3K)



120V MULTI CHARGER (Option MPPS3W)
220V MULTI CHARGER (Option MPPS3X)

OPTIONS AND ACCESSORIES



7.5V BATTERY (Option PA1M)
10V BATTERY (Option PA1M)

MPI-II RADIO PACKAGE NUMBERS

PACKAGE NUMBER	DESCRIPTION
MP12U1	2 WATT, 403-440 MHz
MP14U1	4 WATT, 403-440 MHz
MP12U2	2 WATT, 440-470 MHz
MP14U2	4 WATT, 440-470 MHz
MP12U3	2 WATT, 470-512 MHz
MP14U3	4 WATT, 470-512 MHz

COMBINATION

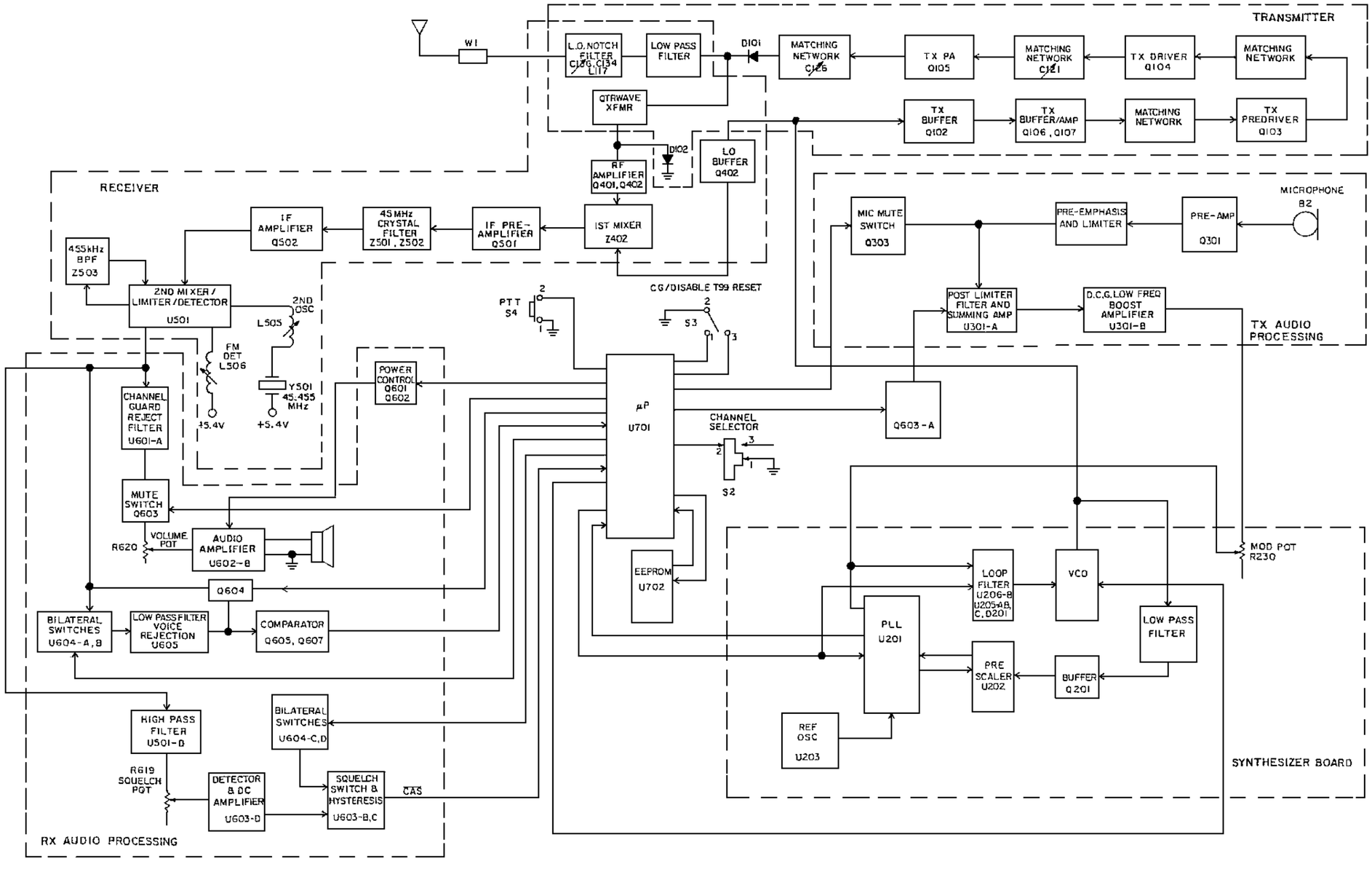


Figure 1 - Synthesized MPI Radio Block Diagram (UHF)

DESCRIPTION

The synthesized MPI-II Personal Radio is the second generation of the MPI radio, The MPI-II is a two channel radio offering full performance over each UHF band split; 403-440 MHz (low split), 440-470 MHz (mid split) and 470-512 MHz (high split). There are two versions, a 2 watt and a 4 watt. The radio is programmed using a personal computer and a programming interface box. The interface box connects to the Accessory Jacks located on the side of the radio.

The radio is compact and the controls are easy to use. The radio battery pack fits into the back casting and is held securely in place, The radio antenna has a BNC base for rapid connection to the radio BNC connector. The antenna base is overmolded to fit flush against the housing and provide weather protection. Operation of the radio is achieved through controls on the top and side of the radio.

The MPI-ll Personal Radio consists of the following:

- T/R assembly (includes the T/R board)
- Front Cover assembly
- Rear Cover assembly
- Synthesizer Board (plugs into the T/R board)
- Top Cover
- Side Panel

The T/R Board contains all of the transmit, receive, audio and logic circuits. The frequency synthesizer circuits reside on the Synthesizer Board. The side panel contains the Push-To-Talk switch and accessory jack connector.

The Front Cover Assembly 19D900647G8 contains the Front Cover, the Microphone Board and the Speaker. The Microphone and the Speaker are attached to the metallized plastic Front Cover.

There are two versions of the Rear Cover Assembly. The 19D901087G5 is used with 2 watt radios and the 19D901087G6 is used with 4 watt radios. The Rear Cover houses the T/R Board and the battery. Contacts for the battery and cable from these contacts to the T/R Board are part of the Rear Cover assembly. The receptacle for the swivel mount option is mounted to the back of the Rear Cover.

Refer to the Interconnection Diagram on page 20 for all circuit board connections. A Mechanical Layout of the radio is found on page 21. A mechanical parts breakdown for the various assemblies including the Front and Rear Cover assemblies is located on page 22 and 23. Figure 1 provides a block diagram of the radio.

STANDARD FEATURES

PROGRAMMABLE OPTIONS

Channel Guard

Continuous Tone Coded Squelch Signal (CTCSS) Encode/Decode and Digital Channel Guard (DCG) Encode/Decode are available. Each channel can have its own set of Channel Guard Tones or codes (See Table 1 for Standard Channel Tone Frequencies and Digital Codes). Channel Guard is enabled by placing the options switch, located at the top of the radio, in the middle position.

Squelch Tail Elimination

This option will eliminate squelch pops which may occur at the end of a received message. Squelch Tail Elimination is programmable on a per channel basis.

Carrier Control Timer

The Carrier Control Timer (CCT) turns the Transmitter off when the transmitter is keyed for over a programmed length of time. The CCT is programmable from 15 to 225 seconds in 15 second increments.

Global Alert Beep

Self Check Each time the radio is powered on, there is self check function performed. A good self check function will be indicated by three beeps. If the self check fails, no beeps will be heard.

Channel Failure If the synthesizer fails to lock on frequency the radio will beep repeatedly. If the channel selected does not have the transmit frequency programmed in, the radio will beep repeatedly when the Push-To-Talk bar is pressed.

Channel Busy Inhibit The radio will inhibit transmission on a channel that is already in use. A continuous tone will be heard from the radio when the Push-To-Talk bar is pressed and this condition occurs.

Talk-Around

A Talk-Around feature is provided for systems using a repeater. With the toggle switch in the middle position, the radio will transmit and receive on the programmed frequencies. The Talk-Around feature is enabled by moving the toggle switch to the rear position. This will enable the radio to transmit on the receive frequency, bypassing the repeater.

Two Tone (Type 99) Decode

The MPI-II radio may be programmed with two sets of Type 99 tones. Any channel can be programmed to decode any call or calls based on any one of the two tone sets. Individual, group and super group paging can all be used. Motorola formats are acceptable. Both receive and transmit channel guard may also be programmed to any channel with Type 99 tone.

After the correct tone set is detected, intermittent beeps will be sounded for the duration of the second tone to alert the operator of an incoming call.

SURVEILLANCE FEATURE

This feature is permissible via the Earphone and Accessory Connector on the side of the radio.

DETAILED TYPE 99 TONE OPERATION AND PROGRAMMING

The original Type 99 Tone programming provides individual, group and super group call decode. The Motorola format two-tone sequential signaling schemes can also be decoded.

The MPI-II radio can be PC programmed with up to two separate tables of tones. Either the Type 99 Tone format or the Motorola format can be assigned to each tone table. The tone decoder (Individual, Group and Super Group for the format or Individual, Group and Quick Call for the Motorola format) can be enabled individually for each channel. Once enabled, one of the two tone tables can be selected for each channel.

The Group Call format allows communication with all radios within a subgroup. The Super Group Call (in tone systems) or Quick-Call (in Motorola tone systems) allows communications between all radios in a system.

TYPE 99 TONE FORMAT

Tone frequencies in the tone system fall within the range of 517.5 to 997.5 Hz.

In the tone format, the first tone may be from tone group A (for Individual or Group calls) or from tone group C (for Super Group calls). The second tone may be from tone group B (for Individual calls) or from tone group D (for Group and Super Group calls).

The tone format is illustrated as follows:

INDIVIDUAL CALL FORMAT

<...1.0 SEC...> ±20% TONE A	<...200 MS...> ±25% GAP	<...1.0 SEC...> +300%, -0% TONE B

GROUP CALL FORMAT

<...1.0 SEC...> ±20% TONE A	<...200 MS...> ±25% GAP	<...1.0 SEC...> +300%, -0% TONE D

SUPER GROUP CALL FORMAT

<...1.0 SEC...> ±20% TONE C	<...200 MS...> ±25% GAP	<...1.0 SEC...> +300%, -0% TONE D

For example, assume the paging number to be 123. The first digit of the paging number is a 1. Look in Table 1 and read down the column labeled "**100's Digit**" to a 1. Read horizontally across the column labeled "**10's Digit**". The tone group is **B**. The second digit of the paging number is a 2. The tone number is B2. Look in Table 2 and down the column labeled "Tone Designator" to find **B2**. Read horizontally across the column labeled "**Tone Frequency**". The first tone frequency is 787.5 Hz.

To determine the second tone frequency look in Table 1 and as before, find the first digit of the paging number (1).

The second tone group is **A**. The third digit of the paging number is a 3 and the Tone Designator is **A3**. In Table 2 read down the column labeled "**Tone Designator**" and find **A3**. Read horizontally across the column labeled "**Tone Frequency**". The second tone frequency is 802.5 Hz.

For different paging numbers, locate the first digit in the "**100's Digit**" column and determine the tone frequencies as described in the example. For a complete description of tone applications refer to **DATAFILE BULLETIN DF-5000-3A**.

Tone D is the diagonal tone used (in tone systems only) when the first and second tone frequencies are the same. The standard frequency for **Tone D** is 742.5 Hz, but may be programmed with any tone frequency.

COMBINATION

TABLE 1-TONE GROUPS

100's Digit	10's Digit	1's Digit
	For First Tone	For Second Tone
0	A	A
1	B	A
2	B	B
3	A	B
4	C	C
5	C	A
6	C	B
7	A	C
8	B	C
9	NOT USED	

MOTOROLA FORMAT

Tone frequencies in the Motorola tone system are within the range of 288.5 to 1433.4 Hz. In the Motorola tone format, the first tone may be one of three tones: **A** for Individual Call, **B** for Quick Call and **C** for Group Call. The second or final tone is **B** in all cases.

NOTE

The **Synthesized MPI** radio is able to recognize the **A**, **B**, and **C** tones. Individual, Group and Quick Call formats may be used simultaneously.

The Motorola tone format is illustrated as follows:

INDIVIDUAL CALL FORMAT

<...1.0 SEC...> (Minimum) TONE A	<...NONE...> GAP	<...3.0 SEC...> Minimum TONE B

GROUP CALL FORMAT

<...1.0 SEC...> (Minimum) TONE A	<...NONE...> GAP	<...3.0 SEC...> Minimum TONE D

SUPER GROUP CALL FORMAT

<.....8 SEC.....>
TONE B

TABLE 2 - TONE GENERATOR FREQUENCIES

TONE GROUP	TONE GENERATOR	TONE FREQUENCY
A	A0	682.5 Hz
	Al	592.5 Hz
	A2	757.5 Hz
	A3	802.5 Hz
	A4	847.5 Hz
	A5	892.5 Hz
	A6	937.5 Hz
	A7	547.5 Hz
	A8	727.5 Hz
	A9	637.5 Hz
B	B0	652.5 Hz
	B1	607.5 Hz
	B2	787.5 Hz
	B3	832.5 Hz
	B4	877.5 Hz
	B5	922.5 Hz
	B6	967.5 Hz
	B7	517.5 Hz
	B8	562.5 Hz
	B9	697.5 Hz
C	C0	667.5 Hz
	C1	712.5 Hz
	C2	772.5 Hz
	C3	817.5 Hz
	C4	862.5 Hz
	C5	907.5 Hz
	C6	952.5 Hz
	C7	532.5 Hz
	C8	577.5 Hz
	C9	622.5 Hz
DIAGONAL TONE		742.5 Hz

INDIVIDUAL CALL

Tables 3 and 5 may also be used to determine the tone frequencies. The first digit of the code determines the tone group used in the code (see Table 3). Then Table 4 is used to determine the actual tone frequencies. For a code of 124, the tone groups used are shown in Table 3. **Tone A** and **Tone B** are both located in tone group l and **Tone B** is tone number 4. Refer to the following examples for additional information.

Example 1 - Code 098:

The digit "**0**" in Table 3 (First Digit of Code) shows that **Tone A** is in Tone Group 4 and **Tone B** is in Tone Group 2 (see Table 4).

Tone number 9 in Tone Group 4 is 524.6 Hz.

Tone number 8 in Tone Group 2 is 879.0 Hz.

Example 2 - Code 265:

The digit "**2**" in Table 3 shows that both **Tone A** and **Tone B** are both in Tone Group 2.

Tone number 6 is 788.5 Hz.

Tone number 5 is 746.8 Hz.

GROUP CALL (Quick-Call Format)

NOTE

Group Call code numbers range from 00 to 99. However, there are several Group Calls with the same Tone B frequency. This limits the total number of Group Calls to 40.

In Group Call applications, the Tone Group is determined by Table 5, while the frequency is determined by Table 4. Refer to the following examples.

Example 1 - Group Call Code 07 (also code 27 and 37):

The digit "0" in Table 5 shows that **Tone B** is in Tone Group 2 along with 20 to 29 and 30 to 39. Tone number 7 in Tone Group 2 is 832.5 Hz (see Table 4).

Example 2 - Group Call 98 (also code 48 and 88):

The digit "9" in Table 5 shows that **Tone B** is in Tone Group 4 along with 40 to 49 and 80 to 89. Tone number 8 in Tone Group 4 is 496.8 Hz.

TABLE 3 - MOTOROLA TYPE CODER NUMBERS

First Digit of Code	Group From Which Tone A Is Selected	Group From Which Tone B Is Selected
1	1	1
2	2	2
3	1	2
4	4	4
5	5	5
6	2	1
7	4	5
8	5	4
9	2	4
0	4	2
A	3	3

TABLE 4 - MOTOROLA GROUP CALL TONE GROUPS (TG)

Tone No.	Tone Group 1	Tone Group 2	Tone Group 3	Tone Group 4	Tone Group 5	Tone Group 6
1	349.0 Hz	600.9 Hz	288.5 Hz	339.6 Hz	584.8 Hz	1153.4 Hz
2	368.5 Hz	634.5 Hz	296.5 Hz	358.6 Hz	617.4 Hz	1185.2 Hz
3	389.0 Hz	669.9 Hz	304.7 Hz	378.6 Hz	651.9 Hz	1217.8 Hz
4	410.8 Hz	707.3 Hz	313.0 Hz	399.8 Hz	688.3 Hz	1251.4 Hz
5	433.7 Hz	746.8 Hz	953.7 Hz	422.1 Hz	726.8 Hz	1285.8 Hz
6	457.9 Hz	788.5 Hz	979.9 Hz	445.7 Hz	767.4 Hz	1321.2 Hz
7	483.5 Hz	832.5 Hz	1006.9 Hz	470.5 Hz	810.2 Hz	1357.6 Hz
8	510.5 Hz	879.0 Hz	1034.7 Hz	496.8 Hz	855.5 Hz	1395.0 Hz
9	539.0 Hz	928.1 Hz	1063.2 Hz	524.6 Hz	903.2 Hz	1433.4 Hz
0	330.5 Hz	569.1 Hz	1092.4 Hz	321.7 Hz	553.9 Hz	1122.5 Hz

TABLE 5 - MOTOROLA GROUP CALL TONE GROUPS (TG)

GROUP CALL CODE NUMBER	TONE GROUP TONE B)
00-09	TG2
10-19	TG1
20-29	TG2
30-39	TG2
40-49	TG4
50-59	TG5
60-69	TG1
70-79	TG5
80-89	TG4
90-99	TG4

RADIO PROGRAMMER

Any IBM compatible Personal Computer using **MS DOS** and an Ericsson/GE Programmer Interface Box TQ-3310 plus the proper programming software are used to program the MPI-II radio. The Programmer Interface Box connects between the Accessory Jacks on the side of the radio and the back of the Personal Computer (refer to the applicable Programming Guide, TQ3351).

CHANNEL GUARD TONE FREQUENCIES

Standard Tone Frequencies Hz			
67.0	97.4	136.5	192.8
71.9	100.0	141.3	203.5
74.4	103.5	146.2	210.7
77.0	107.2	151.4	
79.7	110.9	156.7	
82.5	114.8	162.2	
85.4	118.8	167.9	
88.5	123.0	173.8	
91.5	127.3	179.9	
94.8	131.8	186.2	

CHANNEL GUARD
Primary and Equivalent DigitaI Codes (OCTAL)

PRIMARY CODE	EQUIVALENT CODE	PRIMARY CODE	EQUIVALENT CODE	PRIMARY CODE	EQUIVALENT CODE
023	340,766	132	605,634,714	237	464,642,772
025		133	413,620	243	267,342
026	566	134	273	245	370,554
031	374,643	135	205,610	246	542,653
032		136	502,712	252	661
036	137	142	174,270	254	314,612,706
037	560,627	143	333	255	425
043	355	144	466,666	262	316,431,730
047	375,707	145	525	266	655
051	520,771	147	303,306,761	271	427,510,762
053		150	256,703	274	652
054	405,675	152	366,415	276	326,432
056	465,656	153	606,630	307	362,565
057	172	155	233,660	311	330,456,561
060	116,737	156	517,741	312	515,663,743
065	301	157	322,503	315	321,673
066	734	161	345,532	317	546,614,751
067	516,720	162	416	324	343,570
071	603,717,746	163	460,607,654	325	550,626
072	470,701	164	207,732	331	372,507
073	640	165	354	332	433,552
074	360,721	171	265,426	344	471,664,715
075	501,624	176	244,417	346	616,635,724
076	203,754	212	253	351	353,435
104	226,557	213	263,736	356	521
107	365	217	371,453,530	363	436,443,444,662
114	327,615	222	445,457,575	446	467,511,672
115	534,674	223	350,475,750	447	473,474,731,744
117	411,756	224	313,506,574	452	524,765
122	535	225	536	454	513,545,564
123	632,657	227	261,567	455	533,551
125	173	231	504,631,636,745	462	472,623,725
127	412,441,711	234	423,563,621,713	523	647,726
130	364,641	235	611,671,723	526	562,645
131	572,702	236	251,704,742		

OPERATION

The Synthesized MPI-II Personal Radio is designed to provide personal communications in a lightweight, handheld unit. There are two versions available, a two watt and a four watt. The description of operation is the same for both versions. Each radio is equipped with two Accessory Jacks to allow connections of external audio devices and programming of radio information through a personal computer and PC programming software.

Each communications channel can be programmed for tone or digital Channel Guard Encode/Decode operation and Talk-Around/Type 99 Tone operation. Carrier Control Timer, Global Alert Beep, and Squelch Tail Elimination are programmed on a per radio basis.

CONTROLS

ON/OFF/VOL The ON/OFF/VOL knob located on the top of the radio controls power from the battery pack to the radio and adjusts the volume level.

SQUELCH The SQUELCH knob located on the top of the radio is used to set the Signal-To-Noise level required to open the speaker. This level is normally set around 8 dB SINAD.

OPTION SW The OPTION SWITCH is a three position toggle switch located on the top of the radio. It performs the following functions:

1. With the toggle switch toward the front of the radio, all tone decodes (CG, DCG, Type 99) are disabled.

2. With the toggle switch in the middle position, tone decode is enabled and Type 99 Decode is in the Selective Mode. In this mode an incoming call will open the audio and Type 99 Decode is in Monitor Mode. To reset the Type 99 Decode to Selective Mode, move the toggle switch to the rear position and back to the middle.

3. With the toggle switch toward the rear of the radio, the radio will be in one of two states:

   Talk-Around: The radio will now transmit on the programmed receive frequency. This enables one to "Talk-Around" a repeater.

   T99 Monitor: If the radio is instead programmed for Type 99 Decode, this will put the radio in Type 99 Monitor Mode. In this mode, audio will open for any on channel RF signal with the correct Channel Guard tone. An incoming call will alert the user by beeping, and Type 99 Decode will stay enabled to receive the next call.

CHANNEL SELECTOR Selects the transmit/ receive channel(channel 1 or channel 2).

PTT Keys the radio on the communication channel selected.

TO RECEIVE A MESSAGE

1. Turn the OFF-VOLUME control clockwise to about mid-range.

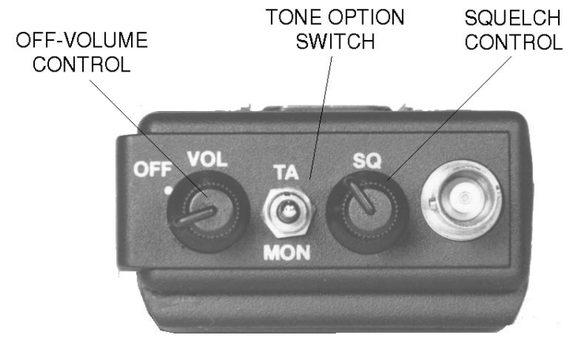
2. Disable any option by placing the option control toggle switch in the front or "MON" POSITION.

3. Turn the SQUELCH (SQ) control fully clockwise. A hissing sound will be heard from the speaker.

4. Adjust the VOLUME control until the hissing sound is easily heard but not annoyingly loud.

5. Turn the SQUELCH control slowly counterclockwise until the hissing noise stops. This adjustment is very important as it eliminates annoying noise when no one is calling. It also determines how sensitive the radio will be to incoming calls. In Channel Guard and Type 99 operation, battery life will be degraded if the squelch control is not set in this way.

6. Select the proper channel. Place the option switch in the appropriate position for the desired decoding function. All is now ready to receive messages from other radios in the system.



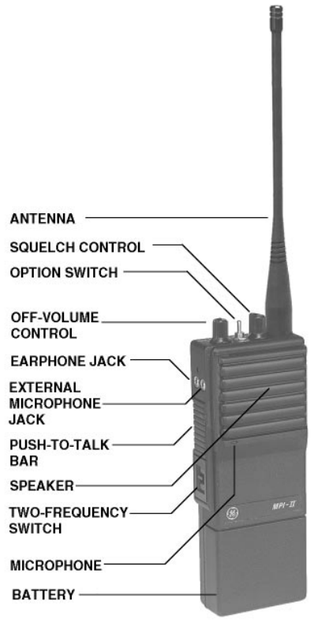


Figure 2 - Operating Controls

TO SEND A MESSAGE

1. Turn on and adjust the radio as directed in the "To Receive a Message" section.

2. Select the proper channel. With the Option Switch in the "MON" position, listen to make sure that no one is using the channel.

3. Hold the radio so that the antenna is vertical. Press the Push-To-Talk (PTT) bar and speak directly into the microphone in a clear and distinctive voice. The microphone is located in the lower left corner of the speaker grille. Always release the PTT bar as soon as you stop talking. You cannot receive messages while the PTT bar is pressed.

TO RECEIVE A TYPE 99 TONE CALL

1. Select the appropriate channel to receive Type 99 tone signalling. Set the Option Switch for either Type 99 Selective Mode or Type 99 Monitor Mode.

2. After receiving a Type 99 Tone call, answer in one of two ways as follows:

   a. To reply to a message - After hearing the Type 99 paging tone, press the PTT switch and answer the call. After completing the communication, push the toggle switch to the rear of the radio and back to the middle position if Selective Mode is desired. If Monitor Mode is desired, leave the toggle switch in the rear position.

   b. To avoid listening to nuisance calls - After hearing the Type 99 paging tone, push the toggle switch to the rear of the radio and back to the middle position to reset the radio in the Selective Mode.

BATTERY INFORMATION

CHARGERS

Several battery chargers are available for recharging the rechargeable battery pack. For specific instructions, refer to the applicable operating instructions or maintenance manual.

BATTERIES

The MPI-II radio uses a rechargeable battery. A 7.5 Vdc battery is shipped with 2 watt radios and a 10 Vdc battery is shipped with 4 watt radios. The batteries can be charged while connected to the radio or removed for charging. For further information about the rechargeable batteries, refer to the Service Section LBI-38561.

BATTERY PACK REPLACEMENT

To remove the battery pack from the radio:

l. Turn the radio OFF.

2. Place thumb on bottom of battery pack and press battery pack toward the top of radio as shown in Figure 3.

3. While pressing the battery pack toward the top of the radio, push bottom of battery pack away from the radio.

To install battery pack:

1. Turn the radio OFF.

2. Insert the top of the battery into the radio as shown in Figure 4.

3. While pushing the battery toward the top of the radio, snap bottom of the battery to the radio.

RECHARGEABLE BATTERY PACK DISPOSAL

The product you have purchased contains a rechargeable battery. The battery is recyclable. At the end of its useful life under various state and local laws it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details concerning recycling options or proper disposal in your area. Call Toll Free 1-800-822-9362 for intormation and/or procedures for returning rechargeable batteries in your state.

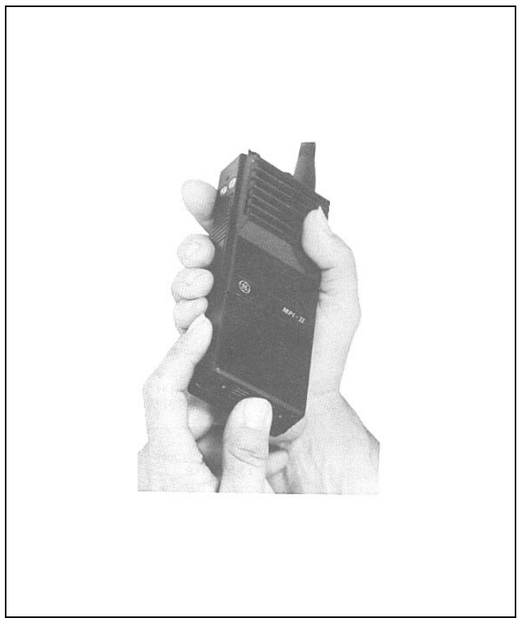


Figure 3 - Removing The Battery Pack

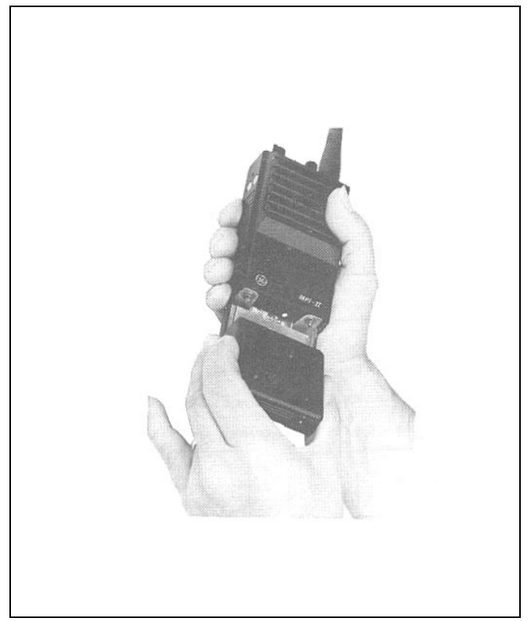
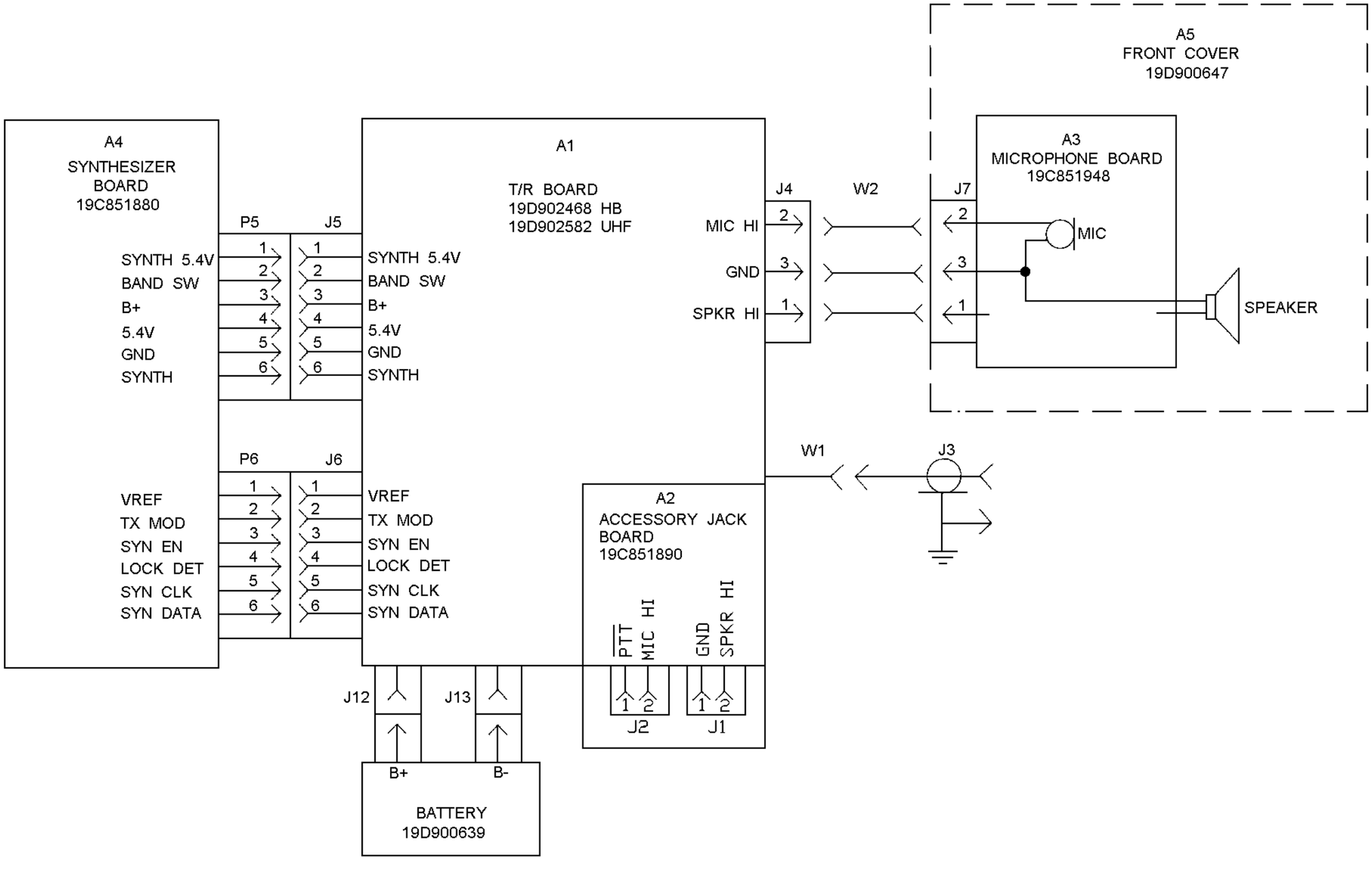


Figure 4 - Installing The Battery Pack

WARNING

Do not dispose of battery packs or batteries by burning. To do so may cause an explosion.



(19D902895, Sh. 1, Rev. 1)

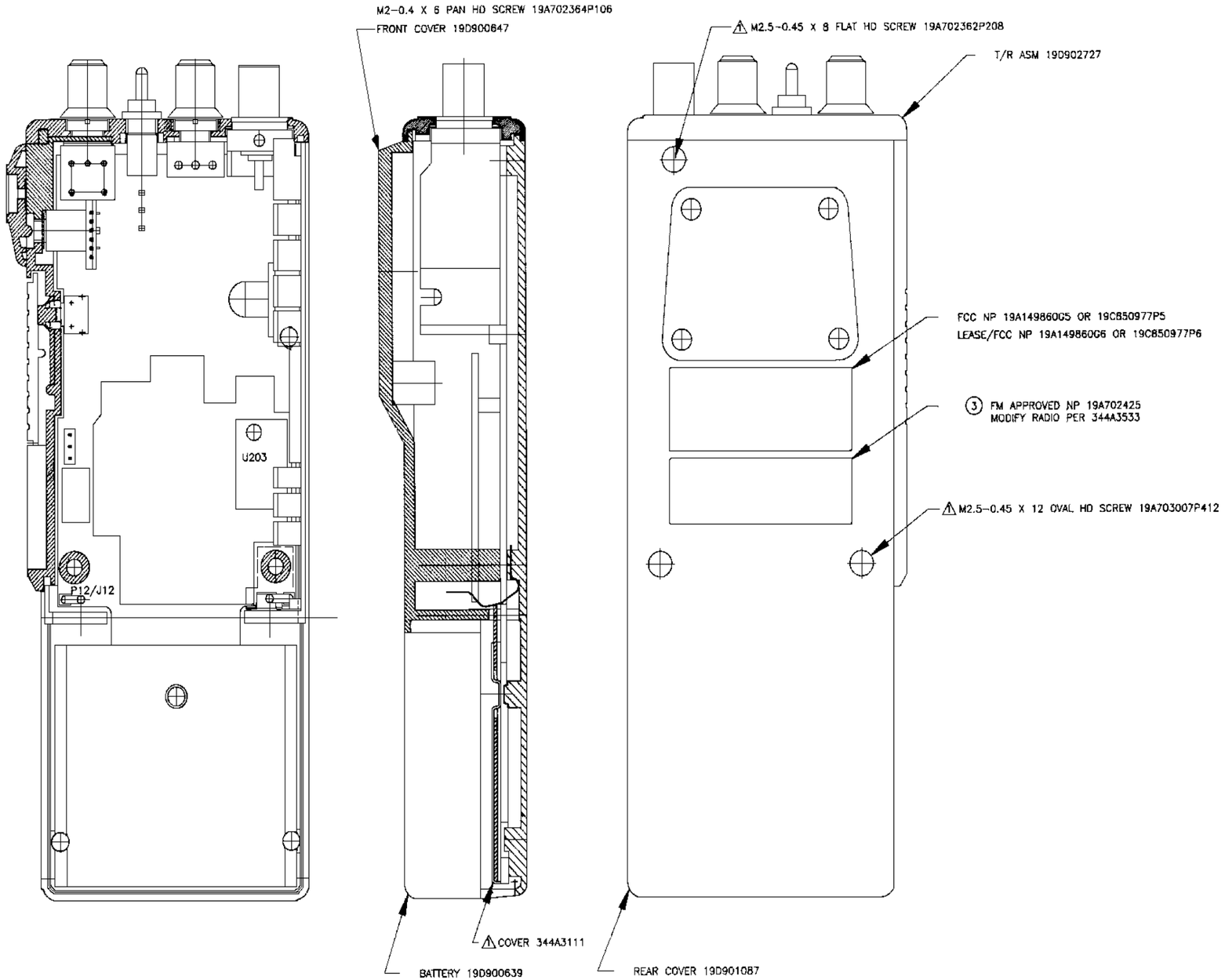
COMBINATION

MPI-II HARDWARE KIT (UHF)
19A702379G6 (440-470 MHz & 470-512 MHz)
19A702379G7 (403-440 MHz)
ISSUE 2

SYMBOL	PART NO.	DESCRIPTION
	19A702362P208	Machine screw, TORX Drive: M2.5-.45 x 8. (Quantity 1).
	19A703007P412	Machine screw, TORX Drive: M2.5-.45 x 12. (Quantity 2).
	19A702364P104	Machine screw, TORX Drive: M2-0.4 x 4. (Quantity 3).
	19A702364P106	Machine screw, TORX Drive: M2-0.4 x 6. (Quantity 1).
	19C851912P4	UDC connector cover.
	344A3111G2	Cover assembly.
	19B801566P5	Shield.
	19B801480P3	Battery contact. (Used in G7).

⚠ THESE ITEMS ARE PART OF HARDWARE KIT PL19A702379

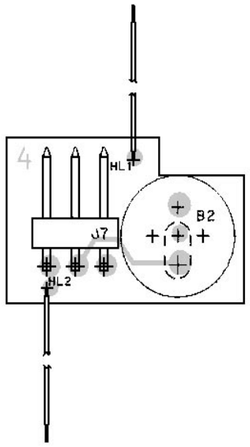
*COMPONENTS, ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



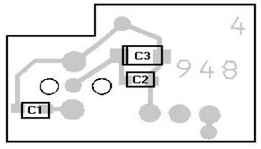
COMBINATION

(19D902726, Sh. 1, Rev. 6)

MICROPHONE BOARD

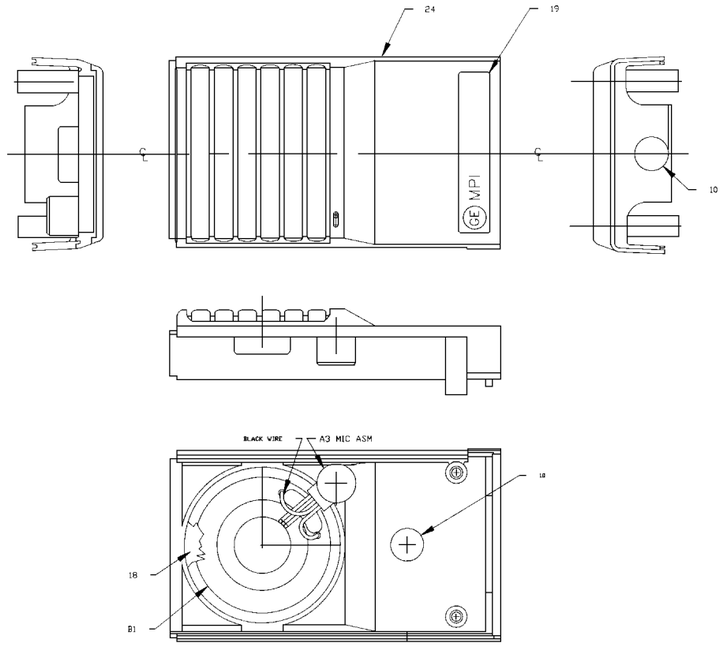


(19C851948, Sh. 1, Rev. 2)
(19C851949, Sh. 1, Rev. 4)



COMPONENTS VIEWED
FROM SOLDER SIDE

(19C851948, Sh. 1, Rev. 2)
(19C851949, Sh. 2, Rev. 4)



FRONT COVER ASSEMBLY
19D900647G8
ISSUE 4

SYMBOL	PART NO.	DESCRIPTION
A3		**MIKE COMPONENT BOARD 19C851948G3**
		- - - - - - - - - - - - - MODULE- - - - - - - - - - - - -
B2	19A134461P3	Microphone cartridge: 200-850 ohms impedance at 1 kHz, 1.5-10 VDC; sim to EM-80.
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1	19A700232P64	Ceramic: 100pF ±10%, 100 VDCW, temp coef -5600 PPM.
		- - - - - - - - - - - - - MODULE- - - - - - - - - - - - -
B1	19A149673P2	Round: water proof, 8 ohms, 1/2 w; sim to Line Electric Co. TL-50A.
		- - - - - - - - - - MISCELLANEOUS - - - - - - -
10	19A703346P1	Pad.
18	19A705861P1	Diaphragm.
19	19A702396P4	Nameplate.
24	19C850976G3	Front cover.

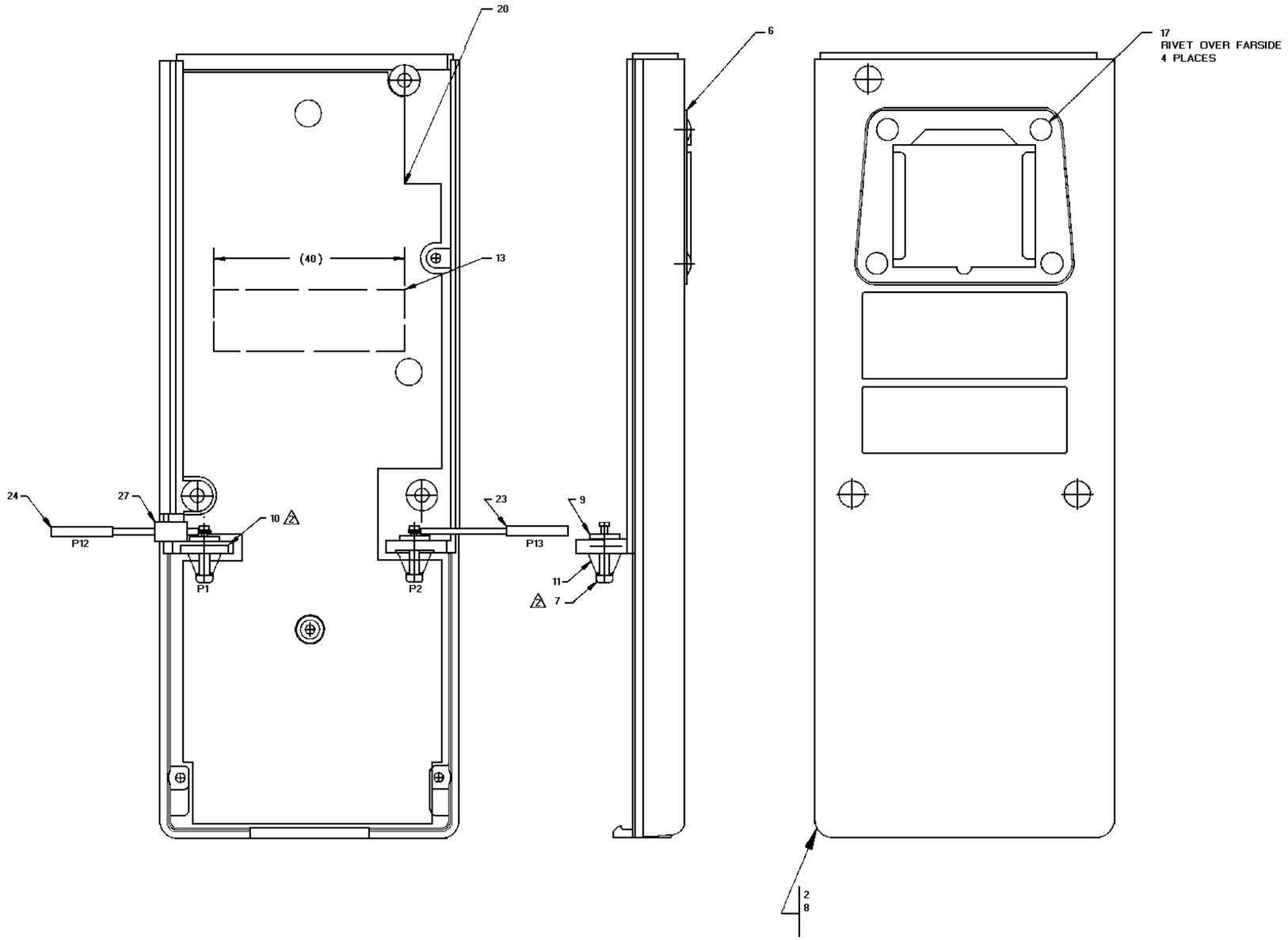
*COMPONENTS, ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

FRONT COVER ASSEMBLY
19D900647G8

REAR COVER ASSEMBLY
19D901087G5 2 WATT
19D901087G6 4 WATT
ISSUE 2

SYMBOL	PART NO.	DESCRIPTION
		- - - - - - - - - - - - - - PLUGS - - - - - - - - - - - -
P1 and P2		Part of mechanical assembly.
P12 and P13		Part of mechanical assembly.
		- - - - - - - - MISCELLANEOUS - - - - - - - - -
		NOTE: Refer to the Mechanical Drawing on the page for the location of the following miscellaneous parts.
2	19D900641G3	Rear cover. (Used in G8, 4 watt).
6	19C850865P1	Option receptacle.
7	19B800852G1	Contact.
8	19D8008641G7	Rear cover. (Used in G5, 2 watt).
9	19A701728P2	Washer, non-metallic.
10	19B800851P1	Insulator.
11	19B216401P5	Spring.
13	19A116357P2	Pressure sensitive tape.
17	N327P9008E	Rivet, tubular.
20	19C850861P3	Insulator.
23	344A3087P2	Wire assembly, black.
24	344A3087P3	Wire assembly, red.
27	19A700122P1	Torroidal core.

*COMPONENTS, ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



REAR COVER ASSEMBLY
19D901087G5 & G6

(19D901087, Sh. 2, Rev. 4)

COMBINATION