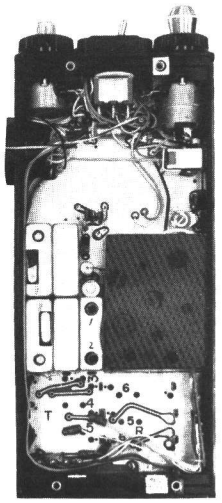
MOBILE RADIO

# MASTR®

# MVP Personal

## SYSTEMS BOARD AND CASE ASSEMBLY 19D417330G6





SYSTEMS BOARD AND CASE ASSEMBLY 19D417330G6

## SPECIFICATIONS *

| | |
|---|---|
| MODEL NUMBERS | |
| 19D417330G6 | 450-470 MHz |
| CONTROLS | Volume ON-OFF Switch |
| | Squelch Control |
| | Six-Frequency Selector Switch |
| | PTT Switch |
| | Tone Option Switch |
| | Collapsible Antenna |

*These specifications are intended primarily for the use of the serviceman. Refer to the appropriate Specification Sheet for the complete specifications.

GENERAL ELECTRIC

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ILLUSTRATIONS

## DESCRIPTION

System Board A707 provides system interfacing between the transmitter, receiver, tone options and operating controls in the 450 to 470 MHz, six-frequency, local/remote operated MVP, PY Series. The system board contains transmitter oscillator modules A5 through A10. Other modules on the system board are receiver oscillator modules A11 and A12, audio amplifier module A1, 5.4 Volt regulator module A2, compensator module A3, and modulator module A4. The system board also contains system relay K1 and audio and DC switching circuits.

Accessory jack J701 and jacks J702 and J703, on the case assembly, provide connections for an external speaker, microphone and antenna. Accessory jack J701 provides connections for a remote speaker/microphone. Jack J702 connects an external speaker and antenna. Jack J703 connects an external microphone. Jacks J702 and J703 and used when the PY radio is plugged into either a vehicular or desk charger.

## CIRCUIT ANALYSIS

### AUDIO SWITCHING

Audio switching for local speaker/microphone LS1 is controlled by forward biasing diode CR5 (See Figure 1). Pressing PTT switch S701 causes the PTT circuit to complete the conduction path of CR5 to system ground. Pressing S701 also causes system relay K1 to apply bias voltage to the anode of CR5. Audio from the local speaker/microphone is then applied through CR5 to the input of transmitter audio module A1.

Audio from an external or remote speaker/microphone is applied directly to the input of the transmitter audio module.

Receiver audio is connected directly to all speakers, external, local or remote.

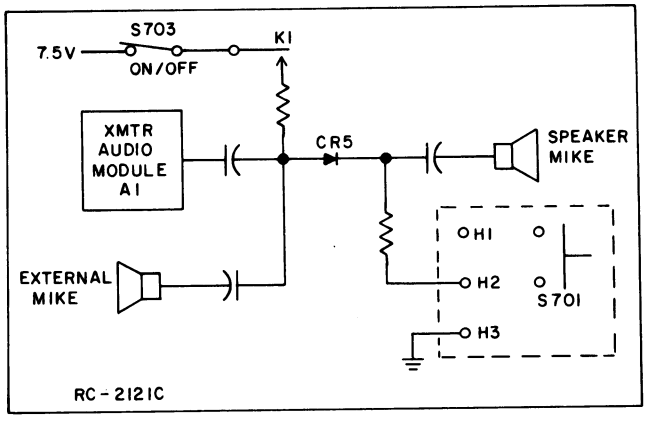


Figure 1 - Audio Switching

### DC SWITCHING

Operation of the system relay, keyed locally, is controlled by diode CR2 and PTT circuit A705 (See Figure 2). Pressing PTT switch S701 causes the PTT circuit to complete the conduction path of K1 through CR2 to system ground. Completing the conduction path energizes K1 to switch the battery voltage to the transmitter audio and regulator module. Energizing K1 also connects the transmitter output to the antenna. Keying the radio with an external or remote PTT switch directly energizes the system relay.

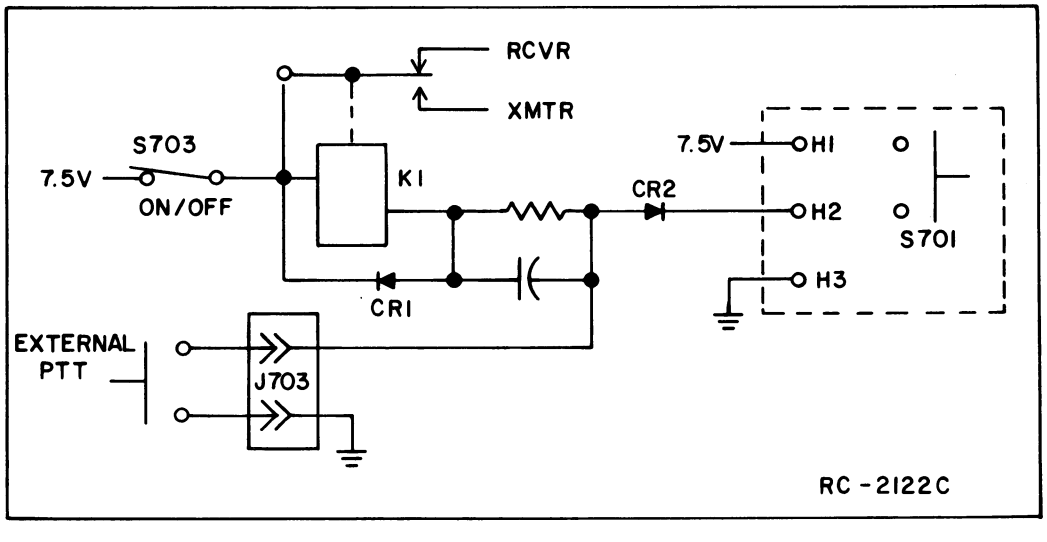


Figure 2 - DC Switching

PTT Switch (A705)

Solid state PTT switch S701 forward biases diodes CR2 and CR5 to energize relay K1, keying the radio and applying audio from the local speaker/microphone to the input of the transmitter audio module.

When S701 is pressed, PNP transistor Q1 of A705 conducts. Transistor Q1 conducting, applies a positive voltage to the base of NPN transistor Q2, causing Q2 to also conduct. Transistor Q2 conducting, provides a conduction path to ground for diode CR2. Relay K1 is energized and the radio is keyed.

## REPEATING OSCILLATOR MODULES

Both the transmitter and receiver can be adapted to repeat the use of the same frequency without the use of additional Oscillator Modules. The Oscillator Module is replaced by a diode, allowing the frequency selector switch to have the same frequency on one or more switch positions even though only one Oscillator Module is used for each of the repeated channels. A typical diagram with repeated Oscillator Modules is shown in Figure 3.

Complete instructions for multi-frequency modifications are contained in the Multi-Frequency Modification diagram (see Table of Contents).

For radios equipped with Channel Guard, Type 90 Encoders/Decoders or Type 99 Decoders, repeating Oscillator Modules also permit switching or disabling tones on the same RF frequency with the multi-frequency switch. Also the tone and RF frequency can be changed at the same time.

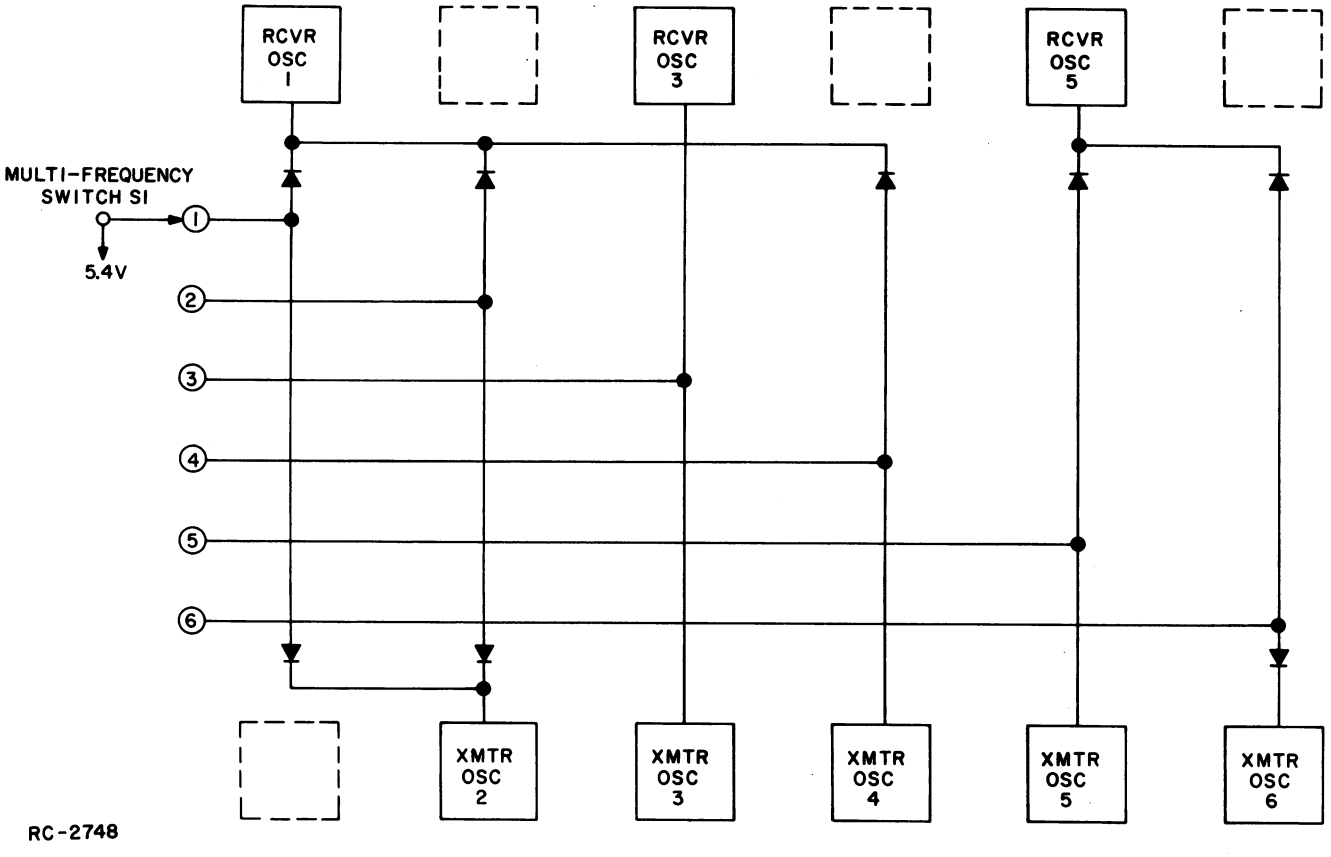


Figure 3 - Repeating Oscillator Modules

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WORLD HEADQUARTERS • LYNCHBURG, VIRGINIA 24502 U.S.A.

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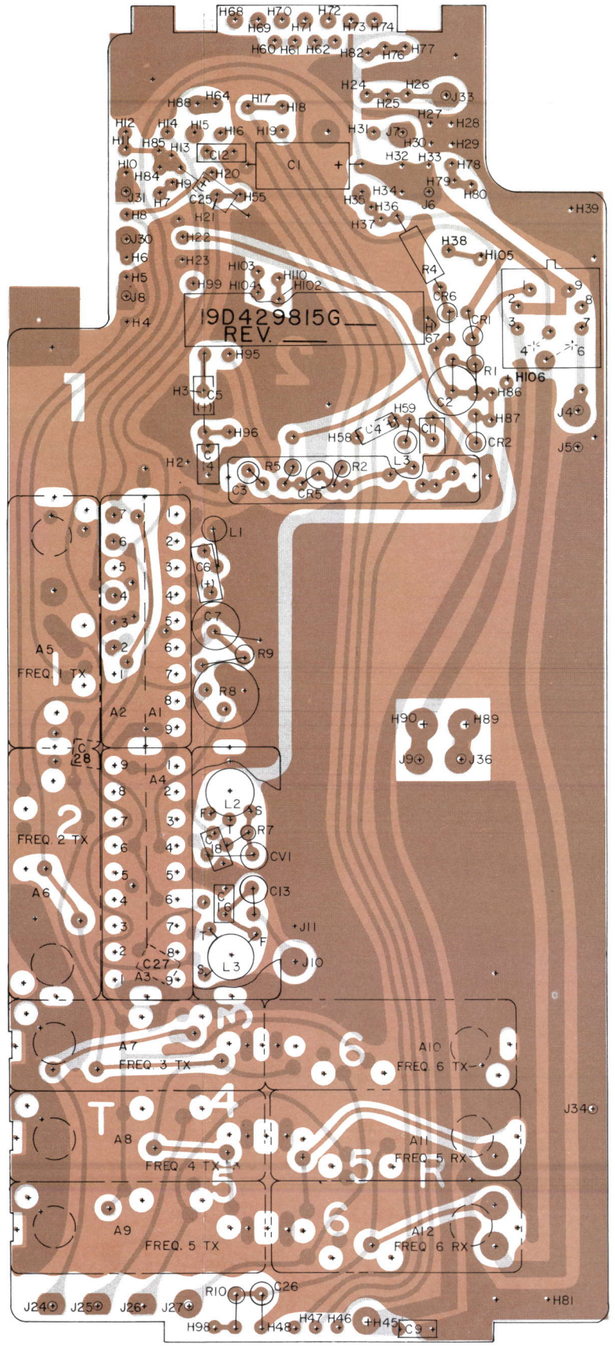
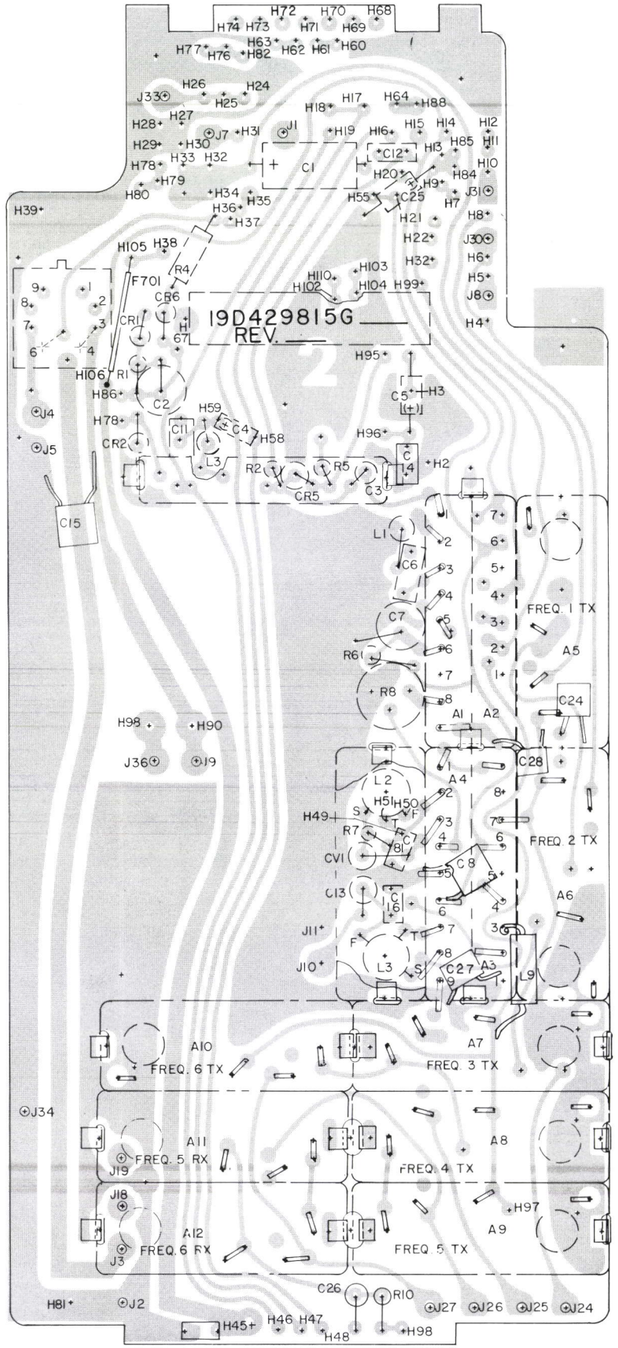
# COMPONENT SIDE



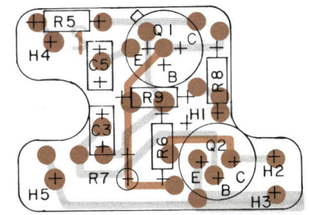

(19D429814, Sh. 2, Rev. 2)
(19D429814, Sh. 3, Rev. 1)

# SOLDER SIDE

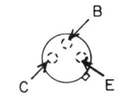



(19D429814, Sh. 2, Rev. 2)

# A705



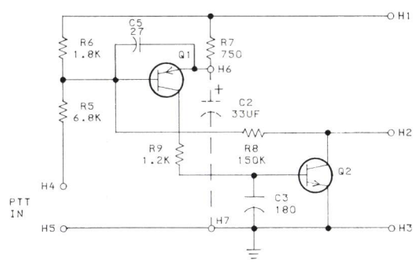

LEAD IDENTIFICATION FOR Q1 AND Q2




IN-LINE OR TRIANGULAR
TOP VIEW

NOTE, LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION

(19B232296, Rev. 3)
(19B233970, Sh. 1, Rev. 1)
(19B233970, Sh. 2, Rev. 2)




| MODEL NO | REV LETTER |
|---|---|
| PL19B23258692 | C |

NOTE:
1. IS PART OF KIT 19A136579

ALL RESISTORS ARE 1/8 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K-1000 OHMS OR MEG-1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF-MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH-MILLIHENRYS OR H-HENRYS.

(19B232959, Rev. 4)

CR1, CR5
CR6, CV1

LEAD FORMING FOR
CR2 — C6, C6, C26

C3

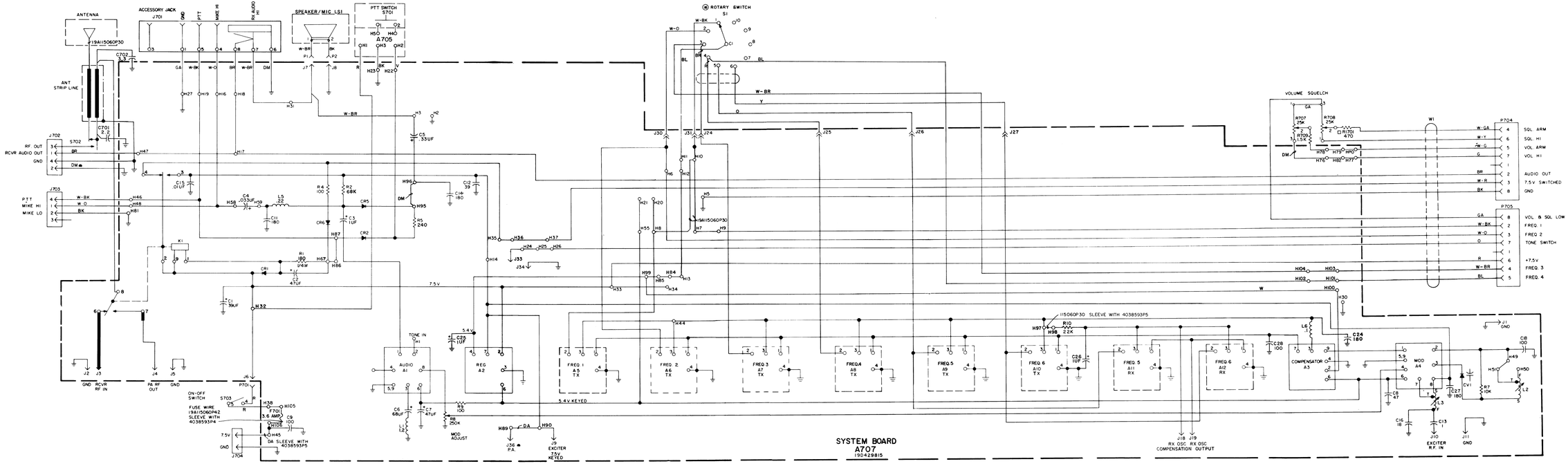
RUNS ON SOLDER SIDE
RUNS ON BOTH SIDES
RUNS ON COMPONENT SIDE

# OUTLINE DIAGRAM

450-470 MHz SYSTEM BOARD



(19D430207, Rev. 2)




SYSTEM BOARD
A707
19D429815

(1986223A67, Rev. 9)

MODEL NO. REV LETTER
PLI19D429815G1 E
PLI19D417330G6

ALL WIRE T # 28 UNLESS OTHERWISE SPECIFIED.

ALL RESISTORS ARE 1/8 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN MICROFARADS UNLESS FOLLOWED BY P= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

□ R1701 IS PART OF KIT PLI9A130602G1

NOTES:
1. ● USED IN HI POWER UNIT ONLY
2. DA = #22 AWG
3. Ⓡ THESE ITEMS ARE PART OF KIT
4. GROUND MAY BE MADE THROUGH CAN ONLY ON SICOMS.

# SCHEMATIC DIAGRAM

450-470 MHz SYSTEM BOARD

Issue 3

## PARTS LIST

SYSTEM BOARD/CASE ASSEMBLY
19D417230G6
ISSUE 3

| SYMBOL | GE PART NO. | DESCRIPTION |
|---|---|---|
| A705 | | PTT SWITCH BOARD 19B232586G2 |
| | | - - - - - - - - - CAPACITORS - - - - - - - - - |
| C3 | 19A700229P73 | Ceramic: 180 pf ±10%, 100 VDCW. |
| C5 | 19A700221P44 | Ceramic: 27 pf ±5%, 100 VDCW; temp coef -80 PPM. |
| | | - - - - - - - - - TRANSISTORS - - - - - - - - - |
| Q1 | 19A129187P1 | Silicon, PNP. |
| Q2 | 19A116201P3 | Silicon, NPN. |
| | | - - - - - - - - - RESISTORS - - - - - - - - - |
| R5 | 3B151P682J | Composition: 6.8K ohms ±5%, 1/8 w. |
| R6 | 3B151P182J | Composition: 1.8K ohms ±5%, 1/8 w. |
| R7 | 3B151P331J | Composition: 330 ohms ±5%, 1/8 w. |
| R8 | 3B151P154J | Composition: 150K ohms ±5%, 1/8 w. |
| R9 | 3B151P122J | Composition: 1.2K ohms ±5%, 1/8 w. |
| A707 | | SYSTEM BOARD 19D429811G1 |
| A1 | 19C320062G1 | Audio Transmitter. |
| A2 | 19C328070G1 | Voltage Regulator. |
| A3 | 19C320063G3 | Oscillator Compensator. |
| A4 | 19C320084G1 | Modulator. |
| | | - - - - - - - - - OSCILLATORS - - - - - - - - - |
| | | NOTE: When reordering, give GE Part Number and specify exact frequency needed. |
| A5 thru A10 | 4EG27A11 | Oscillator Module. Fx= Fo/24 |
| A11 and A12 | 4EG28A28 | Oscillator Module. Fx= Fo/21 MHz |
| | | - - - - - - - - - CAPACITORS - - - - - - - - - |
| C1 | 5491674P30 | Tantalum: 39 µf ±20%, 10 VDCW; sim to Sprague Type 162D. |
| C2 | 5491674P62 | Tantalum: 47 µf ±20%, 6 VDCW; sim to Sprague Type 162D. |
| C3* | 5491674P1 | Tantalum: 1.0 µf ±40-20%, 10 VDCW; sim to Sprague Type 162D. |
| | 5491674P51 | In KEY D & earlier: Earlier than KEY A: Tantalum: 0.033 µf ±10%, 20 VDCW; sim to Kemet T376P33K. |
| C4* | 5491674P51 | Tantalum: 0.033 µf ±10%, 20 VDCW; sim to Kemet T376P33K. In KEY D & earlier: |
| | 5491674P1 | Tantalum: 1.0 µf ±40-20%, 10 VDCW; sim to Sprague Type 162D. |
| C5 | 5491674P52 | Tantalum: 0.33 µf ±10%, 20 VDCW; sim to Kemet T376B334K020AS. |
| C6 | 19C307102P19 | Tantalum: 68 µf ±20%, 4 VDCW. |
| C7 | 5491674P42 | Tantalum: 47 µf ±20%, 6 VDCW; sim to Sprague Type 162D. |
| C8 | 19A700226P53 | Ceramic: 47 pf ±5%, 100 VDCW; temp coef -750 PPM. |
| C9 | 19A700226P65 | Ceramic: 100 pf ±5%, 100 VDCW; temp coef -750 PPM. |

| SYMBOL | GE PART NO. | DESCRIPTION |
|---|---|---|
| C11 | 19A700229P73 | Ceramic: 180 pf ±10%, 100 VDCW; temp coef -3300 PPM. |
| C12 | 19A700221P49 | Ceramic: 39 pf ±10%, 100 VDCW; temp coef -80 PPM. |
| C13 | 19A700013P13 | Phenolic: 1.0 pf ±5%, 500 VDC. |
| C14 | 19A700229P73 | Ceramic: 180 pf ±10%, 100 VDCW; temp coef -3300 PPM. |
| C15 | 19A116192P1 | Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121 SPECIAL. |
| C16 | 19A700221P38 | Ceramic: 18 pf ±5%, 100 VDCW; temp coef -80 PPM. |
| C18 | 19A700227P65 | Ceramic: 100 pf ±5%, 100 VDCW; temp coef -1500 PPM. |
| C24 | 19A700229P73 | Ceramic: 180 pf ±10%, 100 VDCW; temp coef -3300 PPM. |
| C25 and C26 | 5491674P1 | Tantalum: 1.0 µf ±40-20%, 10 VDCW; sim to Sprague Type 162D. |
| C27* | 19A700229P73 | Ceramic: 180 pf ±10%, 100 VDCW; temp coef -3300 PPM. Added by REV D. |
| C28* | 19A700229P65 | Ceramic: 20 pf ±5%, 100 VDCW; temp coef -1500 PPM. Added by REV D. |
| | | - - - - - - - DIODES AND RECTIFIERS - - - - - |
| CR1 | 19A115250P1 | Silicon, fast recovery, 225 mA, 50 PIV. |
| CR2 | 5494922P1 | Silicon; sim to Type 1N456. |
| CR5 | 5494922P1 | Silicon; sim to Type 1N456. |
| CR6 | 19A115250P1 | Silicon, fast recovery, 225 mA, 50 PIV. |
| CV1 | 5493769P9 | Silicon, capacitive. |
| | | - - - - - - - - - - FUSES - - - - - - - - - - |
| F701* | 19A127884G1 | Fuse Kit. Added by REV C. |
| | | - - - - - - - - JACKS AND RECEPTACLES - - - - - |
| J1 thru J5 | 19A116366P4 | Contact, electrical: sim to Concord 10-891-1. |
| J6 thru J8 | 19A116366P2 | Contact, electrical: sim to Cambion 323301-03. |
| J9 thru J11 | 19A116366P6 | Contact, electrical: sim to Concord 10-891-1. |
| J18 and J19 | 19A116366P4 | Contact, electrical: sim to Concord 10-891-1. |
| J24 thru J27 | 19A116366P4 | Contact, electrical: sim to Concord 10-891-1. |
| J30 and J31 | 19A116366P4 | Contact, electrical: sim to Concord 10-891-1. |
| J33 and J34 | 19A116366P2 | Contact, electrical: sim to Cambion 3233-01-03. |
| | | - - - - - - - - - - RELAYS - - - - - - - - - - |
| K1* | 19B209562P2 | Hermetic sealed: between 70-110 ohms ±10%, 2 form C contacts, 5.0 VDC nominal, 1.0 w max operating; sim to Teledyne 122-2A4. |
| | 19B209562P3 | In KEY D & earlier: Hermetic sealed: between 70-110 ohms ±10%, 2 form C contacts, 5.0 VDC nominal, 1.0 w max operating; sim to GE 5SC81002A2. |
| | | - - - - - - - - - - INDUCTORS - - - - - - - - - |
| L1 | 19B209420P114 | Coil, RF, 1.20 µh ±10%, 0.18 ohms DC res max; sim to Jeffers 4434-1K. |
| L2 | 19A127798G2 | Coil: 3.5-4.3 µh. Includes: |
| | 19B209436P1 | Tuning slug. |
| L3 | 19B218527G1 | Coil. Includes: |
| | 19B209436P1 | Tuning slug. |

| SYMBOL | GE PART NO. | DESCRIPTION |
|---|---|---|
| L5 | 19B209420P105 | Coil, RF, 0.22 µh ±10%, 0.14 ohms DC res max; sim to Jeffers 4434-5K. |
| L6 | 19B209420P101 | Coil, RF: 0.10 µh ±10%, 0.08 ohms DC res max; sim to Jeffers 4434-1K. |
| | | - - - - - - - - - - RESISTORS - - - - - - - - - - |
| R1 | 19A700106P45 | Composition: 180 ohms ±5%, 1/4 w. |
| R2 | 3B151P683J | Composition: 68K ohms ±5%, 1/8 w. |
| R4 | 3B151P101K | Composition: 100 ohms ±10%, 1/8 w. |
| R5 | 3B151P241J | Composition: 240 ohms ±5%, 1/8 w. |
| R7 | 3B151P103J | Composition: 10K ohms ±5%, 1/8 w. |
| R8 | 19A116412P4 | Variable, cermet: 250K ohms ±10%, 1/2 w; sim to Bellgot Model 62 PT. |
| R9 | 3B151P101K | Composition: 100 ohms ±10%, 1/8 w. |
| R10* | 3B151P223J | Composition: 22K ohms ±5%, 1/8 w. In KEY A & earlier: |
| | 3B151P103J | Composition: 10K ohms ±5%, 1/8 w. |
| | | - - - - - - - - - - CAPACITORS - - - - - - - - - |
| C701 | 19A700221P9 | Ceramic: 2.2 pf ±10%, 100 VDCW; temp coef -80 PPM. |
| C702 | 19A700219P14 | Ceramic: 3.3 pf ±5%, 100 VDCW; temp coef 0 PPM. |
| | | - - - - - - - JACKS AND RECEPTACLES - - - - - - |
| J701 | 19B216594G2 | Connector, female: 6 contacts. |
| J702 | | See Mechanical Parts. |
| J703 | | See Mechanical Parts. |
| J704 | | See Mechanical Parts MC3744 items 57-61. |
| | | - - - - - - - - - - PLUGS - - - - - - - - - - |
| P701 | 19A115834P4 | Contact, electrical: sim to AMP 2-332070-9. |
| P704 and P705 | 19A116137P3 | Socket, crystal: 8 contacts; sim to Cinch 133-98-90-001 Special. (Part of W14.) |
| | | - - - - - - - - - - RESISTORS - - - - - - - - - - |
| R707 | 19A116227P1 | Resistor/Switch: variable, carbon film, 25K ohms ±20%, 1/8 w. (includes S702), rotary, SPST, 3 amps at 125 VAC; sim to Mallory Type MAC. |
| R708 | 19A116227P2 | Variable, carbon film: 25K ohms ±20%, 1/8 w; sim to Mallory Type MAC. |
| R709 | 3B151P152K | Composition: 1.5K ohms ±10%, 1/8 w. |
| R1701 | 3B152P471J | Composition: 470 ohms ±5%, 1/4 w. (Part of Intrinsically Safe Kit 19A126905G1.) |
| | | - - - - - - - - - - SWITCHES - - - - - - - - - - |
| S701 | | See Mechanical Parts MC3744 items 36-42. |
| S702 | | See Mechanical Parts MC3744 items 46-53. |
| S703 | | (Part of R707). |
| | | - - - - - - - - - - CABLES - - - - - - - - - - |
| W1A | 19C330826G2 | Cable assembly. (Includes P704 & P705). |
| | | ASSOCIATED ASSEMBLIES |
| | | FRONT COVER ASSEMBLY 19C317416G9 LOW POWER 19C317416G10 HIGH POWER |
| | | - - - - - - - - - LOUDSPEAKERS - - - - - - - - - |
| LS1 | 19A134949P1 | Permanent magnet: 2.00 inch, 8 ohms ±15% voice coil imp, 500 Hz 450 Hz resonant; sim to Oaktron Sample No. 70703. |
| | | - - - - - - - - - - PLUGS - - - - - - - - - - |
| P1 and P2 | 19A115834P4 | Contact, electrical: sim to AMP 2-332070-9. |

| SYMBOL | GE PART NO. | DESCRIPTION |
|---|---|---|
| | | MULTI-FREQUENCY KIT 19A129765G2 |
| | | - - - - - - - - - - SWITCHES - - - - - - - - - - |
| S1 | 19B219976G2 | Switch Assembly. |
| | | - - - - - - - - - - MISCELLANEOUS - - - - - - - - - |
| | 19B216897G3 | Rear Cover. (Without clip). |
| | 19B216897G4 | Rear Cover. (With clip). |
| | 19B209568P1 | Antenna Assembly. |
| | 19D413522G4 | Rechargeable Battery. |
| | 4038831P5 | Alignment tool, fork tip. |
| | 19B219079G1 | Alignment tool, allen tip. |
| | 7150729P4 | Allen wrench. (Used with No. 10 set screw or No. 5-6 socket head cap screw). |
| | 19A134457P1 | Tuning tool, variable capacitor. (.029 inch square metal tip). |
| | | MECHANICAL PARTS (SEE MC3744) |
| 1 | 19A127319P1 | Hex nut: 1/4-32. |
| 2 | 4037004P18 | Washer, non metallic: 1/4 inch. |
| 3 | 4033630P1 | Washer, teflon: 1/4 inch. |
| 4 | 19B232784G2 | Knob assembly. (Includes items 5 & 6). |
| 5 | 19A143453P2 | Set screw, self locking: No. 3-48 x 3/16. (Part of item 4). |
| 6 | 19A137254P1 | Insert, tapered. (Part of item 4). |
| 7 | 19A127802P1 | Rivet shield. |
| 8 | 19A116773P805 | Tap screw, Phillips PAGIDRIV®: No. 4-24 x 5/16. |
| 9 | 19B227270G1 | Grille. (Used in low power only). |
| 10 | 19B227270G2 | Grille. (Used in high power only). |
| 11 | 19D413542G8 | Case. (Includes item 7, 17, 22, 54, 56 & 62). |
| 12 | NP280150P1 | Nameplate. (GE Monogram). |
| 13 | NP280150P2 | Nameplate. (GE Monogram - HI POWER). |
| 14 | 19B216858P1 | Insert. |
| 15 | 8681P5002C6 | Screw, phillips head: No. 2-56 x 1/8. |
| 16 | NP270887 | Nameplate. (Property of General Electric). |
| 17 | 19A134548P1 | Threaded insert. (Not Used). |
| 18 | | |
| 19 | X170P9004C17 | Cap screw: No. 4-40 x 1/4. |
| 20 | 19A127779G8 | Antenna tube. (Includes item 21, teflon insert). |
| 21 | 19A129651P1 | Teflon insert. |
| 22 | 19B216873P1 | Support. |
| 23 | 19B209568P1 | Antenna assembly. |
| 24 | 19B219884P4 | Antenna cap. (Not Used). |
| 25 | 19C323437P1 | Dummy plug. |
| 26 | 19A115983P3 | "O" ring. |
| 27 | R509P606C | Dowel pin: 1/16 x 3/8. |
| 28 | 19B219510P1 | Insulator. |
| 29 | 19A130397P1 | Strap. |
| 30 | 19C317394P6 | Gasket. |
| 31 | 19A130993P1 | Gasket. (Not Used). |
| 32 | 19A143483P1 | Diaphragm. |
| 33 | 19A116270P1 | Tape, pressure sensitive. (Specify length). |
| 34 | X330P602F22 | Metallic eyelet. |
| 35 | 19C311491P3 | Can. |

| SYMBOL | GE PART NO. | DESCRIPTION |
|---|---|---|
| 36 | X55P1006 | Machine screw: No. 0-80 x 3/8. (Part of S701). |
| 37 | 19C328416G1 | Button assembly. (Part of S701). |
| 38 | 19C328407P1 | Collar. (Part of S701). |
| 39 | 19A137621P1 | Plate. (Part of S701). |
| 40 | 19A137620P1 | Spring. (Part of S701). |
| 41 | X207P1C6 | Hex nut. (Part of S701). |
| 42 | 19B209643P2 | Switch, push. (Part of S701). |
| 43 | 19B216897G3 | Rear cover assembly. (Without clip). |
| 44 | 19B216897G4 | Rear cover assembly. (With clip). |
| 45 | 19C317394P6 | Gasket. |
| 46 | 19B216865P1 | Insulator. (Part of S702). |
| 47 | X6675P506C | Cap screw: No. 2-56 x 1/4. (Part of S702). |
| 48 | 19B216864P1 | Contact. (Part of S702). |
| 49 | 19B216863P1 | Spring contact. (Part of S702). |
| 50 | X9109P6C6 | Retaining ring. (Part of S702). |
| 51 | 19A127754P1 | Gasket. (Part of S702). |
| 52 | 19A127755P1 | Spring. (Part of S702). |
| 53 | 19B216862P1 | Contact. (Part of S702). |
| 54 | 19A127753P1 | Contact. |
| 55 | 19A127762P1 | Strap. |
| 56 | X330P605F22 | Metallic eyelet. |
| 57 | 19B232109P1 | Button plug. |
| 58 | 19A130586P1 | Insulator. |
| 59 | 19A115794P3 | Flat head screw: steel, No. 2-56 x 5/16. |
| 60 | 19D413467P1 | Fastener. |
| 61 | 19B216891G1 | Spring. |
| 62 | 19A129723P1 | Rivet. |
| 63 | 19C317006P1 | Protective Cover. |
| 64 | 19B219540P1 | Catch. |
| 65 | 19A129399P1 | Disc. |
| 66 | 19A130626G2 | Knob assembly. (Includes items 67 & 68). |
| 67 | 19A130517P1 | Insert. (Part of item 66). |
| 68 | 19A143453P2 | Set screw, self locking: No. 3-48 x 3/16. (Part of item 66). |
| 69 | 19B216520P4 | Washer, non- metallic. (Located against hex nut, item 72). |
| 70 | 19A136425P1 | Machine screw, hex: No. 2-56 x 3/16. |
| 71 | 19C317383P1 | Dummy plug. |
| 72 | 4033198P18 | Metallic eyelet. (Not Used). |
| 73 | 19A127319P2 | Hex nut: thd. size No. 1/4-28. |

## PRODUCTION CHANGES

Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter," which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A - PTT Switch Board 19B232586G2
To improve performance of PTT switch in a RF environment and low battery voltage.
Deleted C1. Changed R7.

REV. A - System Board 19D429811G1
To replace system relay with one more reliable.
Changed K1.

REV. B - To ignore receiver operation with Channel Guard.
Changed R10.

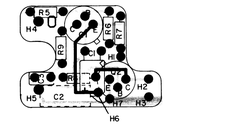
REV. C - To reduce the size of fuse wire and improve reliability when a short circuit occurs.
Changed fuse wire.

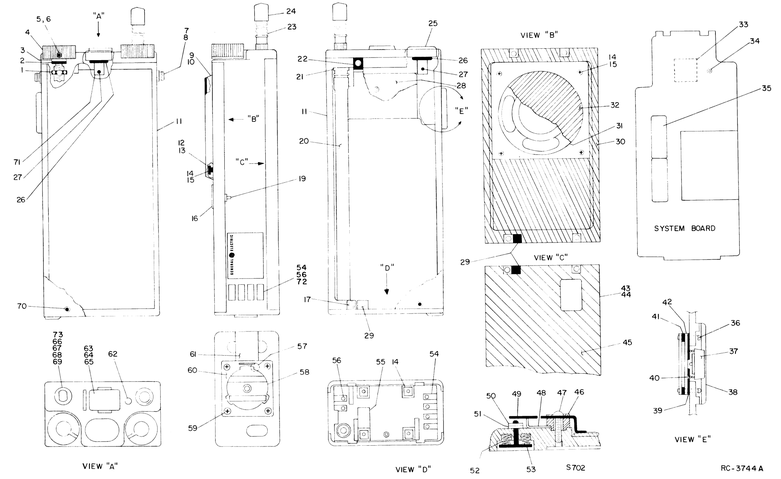
REV. D - To improve audio modulation.
Added C27 and C28.

REV. B - PTT Switch Board 19B232586G2
To improve performance in VHF RF environment.
Added C5.

REV. C - To make compatible with other options.
Relaid out circuit board.

Outline Diagram was:





*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

## MULTI-FREQUENCY MODIFICATIONS

(19D429830, Sh. 1 Rev. 2 & Sh. 2, Rev. 0)

The multi-frequency modifications include instructions for adjusting the stop post on multi-frequency switch S1, for adding oscillator modules, for repeating frequencies, and repeating oscillator modules.

### 1- STOP POST ADJUSTMENT

CAUTION

Due to the small size of the stop posts, be very careful when making adjustments to avoid losing the stops.

1. Remove the multi-frequency switch as directed in the Disassembly Procedure (See LBI-4995).
2. Turn the shaft fully counterclockwise as viewed from the knob end.
3. Unscrew the panel seal to gain access to the stop post (see Figure 1).
4. Install the stop post in the appropriate hole as shown in the following chart.

| STOP POST ADJUSTMENTS | |
|---|---|
| No. of Freq. | Move Adjustment Stop To: |
| 2 | H2 |
| 3 | H3 |
| 4 | H4 |
| 5 | H5 |
| 6 | H6 |

5. Replace the panel seal with the side marked "Bottom" against surface "Z".
6. Re-install the Multifrequency Switch.

### 2- ADDING OSCILLATOR MODULES

1. After completing the stop post adjustment, connect the leads from multi-frequency switch S1 as shown in the following chart (see Figure 3 for connection points). Tape back all unused leads.

| CONNECTION CHART | | | |
|---|---|---|---|
| FROM | TO | WIRE COLOR | S1 POSITION |
| S1-C1 | H11 (solder) | BL | |
| S1-1 | J31 | W-BK | 1 |
| S1-2 | J30 | W-O | 2 |
| S1-3 | J24 | BR | 3 |
| S1-4 | J25 | R | 4 |
| S1-5 | J26 | O | 5 |
| S1-6 | J27 | Y | 6 |
| S1-3 | H104 | W-R | 3 |
| S1-4 | H102 | W-Y | 4 |

2. Place the oscillator module(s) in the proper holes (see Figure 3). Then bend over tabs on the can and solder to the adjacent pads (see Figure 2).
3. Bend the leads of the oscillator module as shown in Figure 2 (or appropriate Outline Diagram) and solder to the adjacent pads.
4. For two or more transmitter frequencies and one receiver frequency, remove the jumper from H7 to H10 and add a sleeved jumper (#26 AWG) from H7 to H13 on the Systems Board.
5. For two or more receiver frequencies and one transmitter frequency, remove the jumper from H8 to H10 and add a sleeved jumper (#26 AWG) from H20 and H21 on the Systems Board.

### 3- REPEATING FREQUENCIES

For repeating both transmitter and receiver frequencies without adding additional oscillator modules, add a sleeved jumper (#26 AWG) between the frequencies to be repeated. For example, if transmitter and receiver channels 1 and 5 are to be repeated, add the jumper from S1-1 to S1-5.

### 4- REPEATING OSCILLATOR MODULES

To repeat frequencies for the transmitter only or the receiver only, diodes can be used in place of oscillator modules.

1. Set the stop on S1 and install the oscillator modules whose frequencies are not to be repeated as directed in Section 1 and 2.
2. Install the oscillator(s) whose frequencies are to be repeated as directed above except solder the Number 2 pin to the "E" pad instead of the "P" pad (see Figure 2).
3. For every channel that a frequency is being repeated, assemble a diode 19A115100P1 in the space normally intended for the oscillator module by putting the annode lead in the Number 2 hole, bending it over and soldering to the "P" pad. The cathode lead will be terminated later.
4. For each different frequency that is repeated, an additional diode (19A115100P1) is to be assembled in respective channel closest to the oscillator module being repeated. Assemble the diode in the Number 1 hole, annode lead down and sleeved, and connect to the associated "E" pad. Then run the jumper from this pad to the "P" pad of related oscillator module.

The cathode end of the diodes should be connected together using mid air connections. Make the connection and run the wire down the side of the diode along the component side of the board to the next diode, and so on until all the diode's cathodes are connected together. Route these wires to give the shortest connections. Now connect a lead to the cathode of the diode that is closest to the repeated oscillator module and run this lead down the side of the diode and through any empty hole or slot to the solder side of the board, and connect the lead to the "E" pad of the oscillator module. Next, sleeve the diodes as shown in Figure 4.

Example: Channel 3 and 4 to be same as Channel 1.
Channel 5 and 6 to be same as Channel 2.

1. Assemble the oscillator module in Channels 1 and 2 as normal except connect the Number 2 lead to the "E" pad instead of "P" pad.
2. Assemble (1) diode in the Number 2 hole, anode lead down, in each of Channels 3, 4, 5, & 6 and solder to "P" pads.
3. Since two frequencies are being repeated, two additional diodes will be required, one in the Number 1 hole of Channel 3 and the other in the Number 1 hole of Channel 5. Sleeve, bend, and solder leads to the "E" pad. Connect jumper between the "E" pad of the Number 3 Channel and "P" pad of oscillator module Number 1. Connect a jumper between the "E" pad of Number 5 Channel and "P" pad of oscillator module Number 2.
4. Connect the top lead (cathode) of diodes (3) in Channel 3 and 4 to each other by soldering jumper wire to leads, dressing the wire down the side of the diodes and along the board. Connect a jumper from the top of diode in the Number 1 hole of Channel 3 to the "E" pad of oscillator module Number 1. Run the wire down through the board using any available hole or slot to the solder side. Connect the jumper from the diode in Channel Number 5 to oscillator module Number 2 in the same manner.

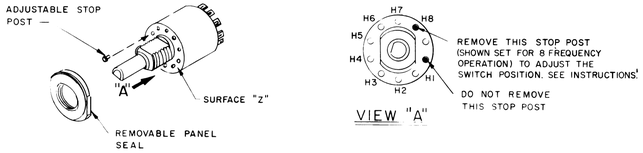



Figure 1 - Stop Post Adjusment

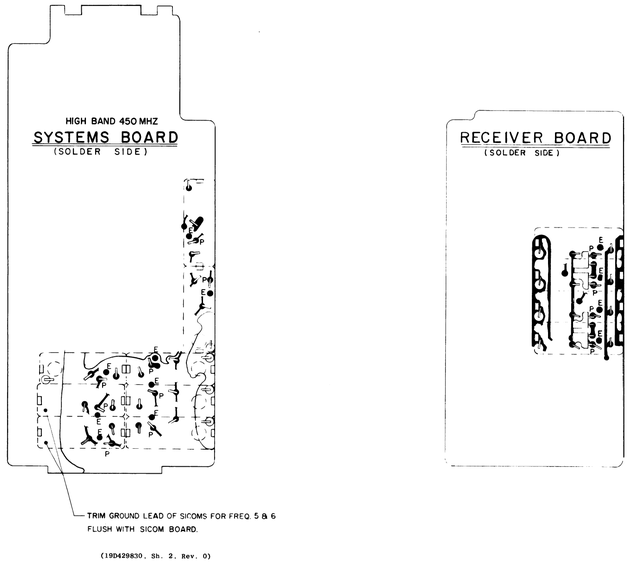



Figure 2 - Oscillator Module and Diode Installation

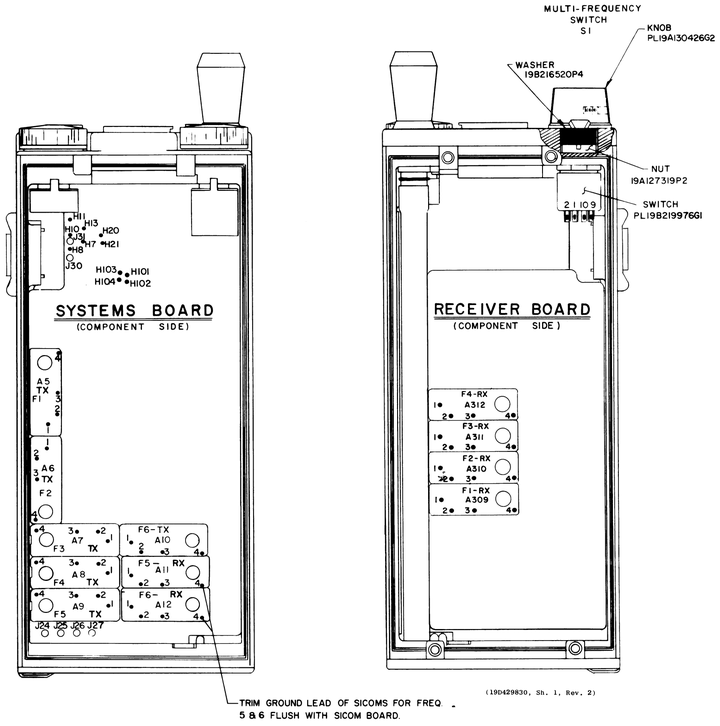



Figure 3 - Oscillator Mounting Positions & S1 Connection Points

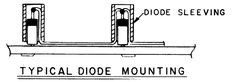



Figure 4 - Typical Diode Mounting

# ADDENDUM #1
# TO
# LBI4759C, LBI4762E, LBI4764B, LBI30695B and LBI30696B

This addendum adds to LBI4759C, LBI4762E, LBI4764B, LBI30695B and LBI30696B the revision changing PTT switch board A705. It includes the revision letter change, the outline diagram, the schematic diagram, and the parts list for the new PTT switch board.

## REVISION LETTER

REV. G - System Board and Case Assembly 19D417330G1
REV. L - System Board and Case Assembly 19D417330G2 & G3
REV. F - System Board and Case Assembly 19D417330G4
REV. B - System Board and Case Assembly 19D417330G5
REV. C - System Board and Case Assembly 19D417330G6

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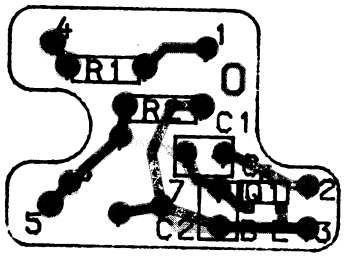
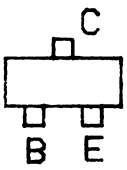
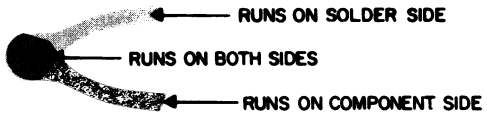
To incorporate a new design PTT switch board changed A705 from 19B232586G2 to 19B233821G1.

# A705

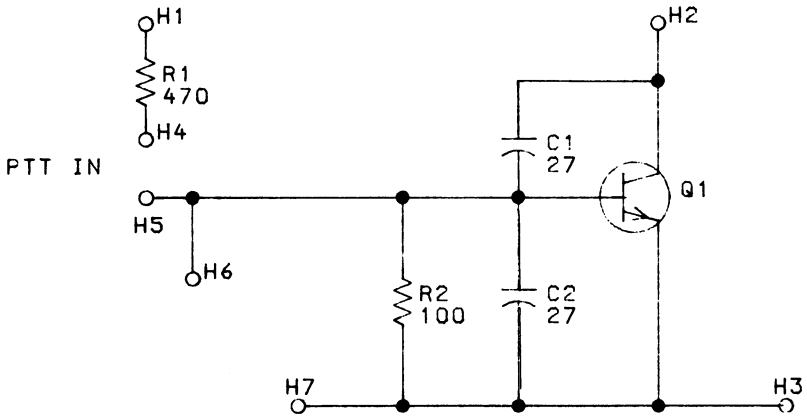



## LEAD IDENTIFICATION FOR Q1




(19B233822, Rev. 0)
(19A143811, Sh. 1, Rev. 0)
(19A143811, Sh. 2, Rev. 0)




ALL RESISTORS ARE 1/8 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K-1000 OHMS OR MEG-1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF-MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH-MILLIHENRYS OR H-HENRYS.

(19B233837, Rev. 1)

| SYMBOL | GE PART NO | DESCRIPTION |
|---|---|---|
| A705 | | PUSH TO TALK SWITCH BOARD<br>19D233821G1 |
| | | ----------CAPACITORS---------- |
| C1<br>and<br>C2 | 19A700222P44 | Ceramic: 27pf ±5%, 100VDC; temp coef -80PPM. |
| | | ----------TRANSISTORS---------- |
| Q1 | 19A134739P1 | Silicon, NPN. |
| | | ----------RESISTORS---------- |
| R1 | 3R151P471J | Composition: 470 ohms ±5%, 1/8 W. |
| R2 | 3R151P101J | Composition: 100 ohms ±5%, 1/8 W. |