

Customer \_\_\_\_\_

G. E. Req. No. \_\_\_\_\_

Customer Order No. \_\_\_\_\_



## **MAINTENANCE MANUAL**

CUSTOM MVP REPEATER SYSTEM

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LBI32772 A

**GENERAL  ELECTRIC**

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## SPECIAL INSTRUCTIONS

The Custom MVP Radio Unit has been modified for low power repeater operation in the UHF frequency band. The addition of a repeater control board, duplexer and AC power supply enables this radio to perform as a low power repeater when connected to a suitable antenna.

## MODIFICATIONS

The following modifications were made to the Custom MVP radio unit:

1. The radio unit cover 19B227434G1 was removed and discarded.
2. The existing nameplate on the front was replaced with a new nameplate 19B234394P1.
3. The Repeater Control Board RP3A was mounted next to the existing System Board.
4. The interconnect wiring of the Repeater Control Board and the radio unit is shown on Interconnection Diagram 19R622574 and as follows:
  - a. Molex connector P6R of the Repeater Control Board was connected to J6 on System Board.
  - b. The square contact P11 (BLUE wire) on J11 of System Board was removed and reconnected to JJ3-2 on 4-pin nylon connector from the Repeater Control Board.
  - c. The square contact P13 (YELLOW wire) on J13 of System Board was removed and reconnected to JJ3-1 on 4-pin nylon connector from the Repeater Control Board.
  - d. (Does not apply)
  - e. The square contact P12R (ORANGE/BLACK wire) from the Repeater Control Board was connected to J12 of System Board.
  - f. The square contact P11R (GREEN/BLACK wire) from the Repeater Control Board was connected to J11 of System Board.
  - g. The square contact P8R-3 (RED wire) from the Repeater Control Board was connected to J8-3 connector of System Board.
  - h. The square contact P10 (ORANGE wire) from Control Panel was connected to JJ3-3 of Repeater Control Board.

## SPECIAL INSTRUCTIONS

- i. Plug P905 on J5 of the System Board was unplugged and contact 1 (RED wire, shielded) was removed from Plug P905.
- j. Contact 1 removed in step i was inserted into J5R-1 butt-splice connector (YELLOW wire) from Repeater Control Board.
- k. Plug P905 was reconnected to J5 of System Board.
- l. Plug P4 on J4 of System Board was unplugged and contact 2 (VIOLET wire) was removed.
- m. Contact 2 removed in step l was inserted into J4R-2 butt-splice connector (BLUE wire) from Repeater Control Board.
- n. Plug P4 was reconnected to J4 of System Board.
5. The Repeater On/Off mini-toggle switch S1R was mounted to the front panel and wired as shown on Interconnection Diagram 19R622574.
6. The six-conductor gray cable (phone patch) was removed from connector JJ2 of Repeater Control Board.
7. The GREEN wire and the shielded pair gray cable from the Repeater Control Board were routed along existing cable bundle to bottom rear of radio chassis and connections made as follows and as shown on Interconnection Diagram 19R622574.
  - a. Plug J902 was removed from P902A on Transmitter Exciter and pin 4 (WHITE/GREEN wire) removed and insulated.
  - b. The conductors in the shielded-pair gray cable were inserted into J902 as follows:
    - RED into J902-9
    - BLACK into J902-4
    - CLEAR into J902-7
  - c. Plug J902 was reconnected onto P902A on Transmitter Exciter.
  - d. The contact on end of long GREEN wire was connected to capacitor terminal FL210-1 (may be soldered).
8. A notch was cut in the rear wall of the radio chassis using a chassis nibbler or sheet-metal punch above the transmitter output connector J3. This allows passage for the duplexer-to-receiver coax cable.
9. The antenna relay-to-receiver cable W4 between J1 and J2 was removed.

## SPECIAL INSTRUCTIONS

10. The duplexer-to-receiver cable 19A129544P3603 was connected with the right angle phono-type plug to J1 (receiver) and the cable routed through the notch made in step 8.

System Board 19C331617G1 SPL

The System Board was modified by cutting the PWB pattern on component side going to U902-6.

AC Power Supply 19D423793G1 SPL

The cover for the AC Power Supply was removed and discarded.

Housing 19C336152G1

The Housing for the Custom MVP repeater unit is shown on Outline Diagram TE1543. The Custom MVR radio unit was inserted into the top cavity and the AC power supply was installed into the lower cavity of the Housing.

1. The RF cable (19A129544P1510) was connected from transmitter output connector J3 to the TX input port on the PD 7660 duplexer.
2. The RF cable (19A129544P3603) connected to the receiver was connected to the RX input port on the PD 7660 duplexer.

Repeater Control Board RP3A

Circuit description and additional modifications for different operational modes is found in LBI32792.

## ADJUSTMENTS

Standard adjustments and checks should be performed as specified in the applicable maintenance manuals. The following checks should be performed for the Custom MVP Repeater Unit.

## NOTE

Standard receiver adjustments and checks must be performed prior to performing the following steps.

1. Program the encode/decode frequency for the desired Channel Guard tone by setting the DIP switch SW-1 on the TS-32 board mounted to the Repeater Control Board.
2. Temporarily disable the repeater mode by placing switch S1R to the OFF position.

## SPECIAL INSTRUCTIONS

3. Key the transmitter using the local microphone and adjust control R40 on Repeater Control Board through existing CG-MOD-ADJ slot for 0.75 kHz deviation.

## NOTE

If additional adjustment range is needed, adjust trimmer R29 on TS-32 board.

4. If CG encode or decode is not required, perform the following:
  - a. Eliminate CG encode by turning trimmer R29 on TS-32 board and trimmer R40 on Repeater Control Board to minimum tone out.
  - b. Eliminate CG decode by adding a jumper on the TS-32 board from pin labelled OUT 1 to anode of D4.
5. Enable the repeater mode by placing switch SlR to the ON position.
6. Adjust repeat audio modulation for 3.75 kHz deviation using control trimmer R50 on the Repeater Control Board. (Both local audio and repeat audio is adjusted by using control R104 on the Exciter Board per standard adjustment procedures and should be done prior to adjusting trimmer R50.)

## NOTE

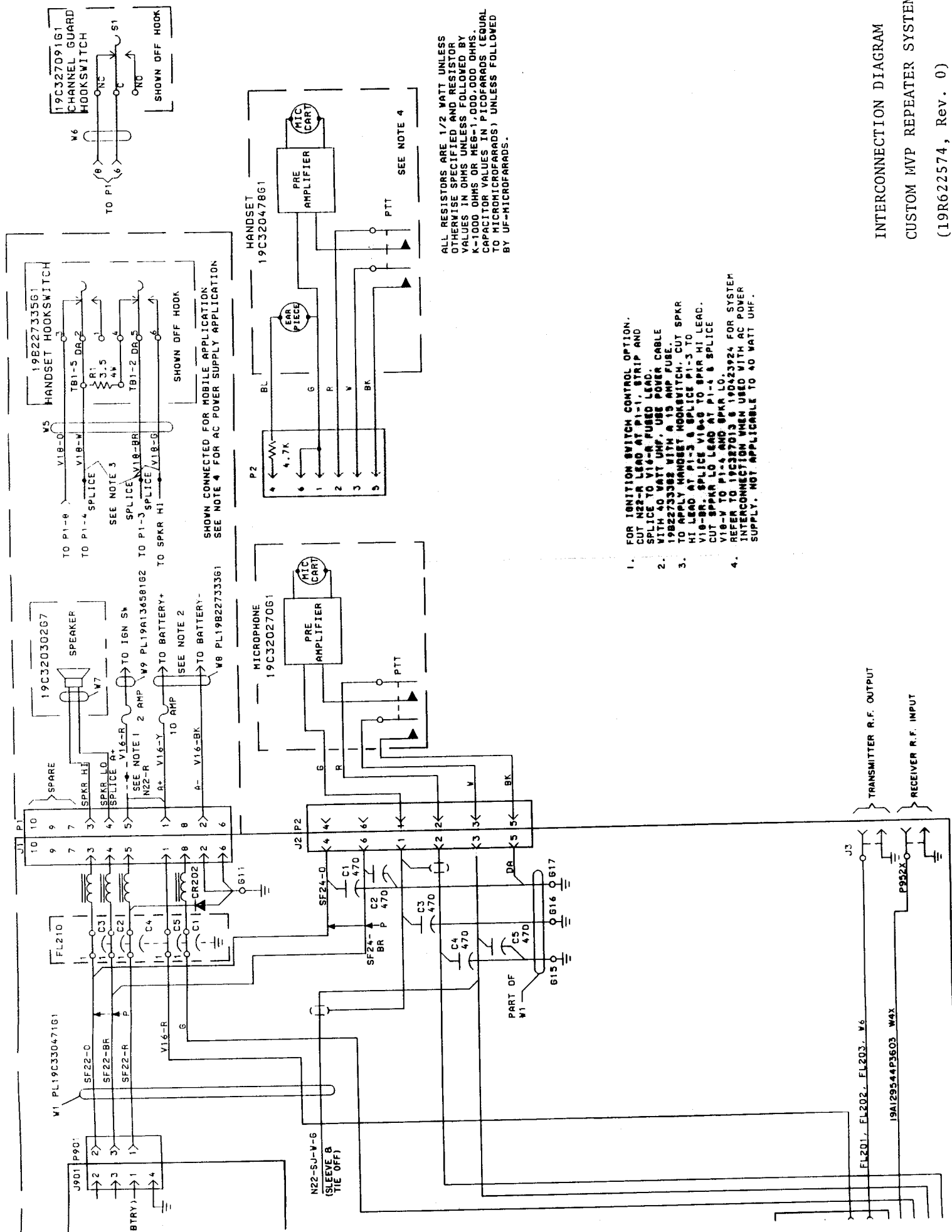
For non-CG repeater mode, adjust trimmer R50 for 4.5 kHz deviation.

7. Adjust trimmer R44 for 3 seconds to set the transmit dropout delay timer.
8. Key the transmitter and verify that the transmitter unkeys after approximately 2 minutes.
9. Receiver sensitivity through the duplexer should be no worse than 0.42 mV for 12 dB SINAD.
10. Adjust transmitter power output for 2 watts output from the duplexer.

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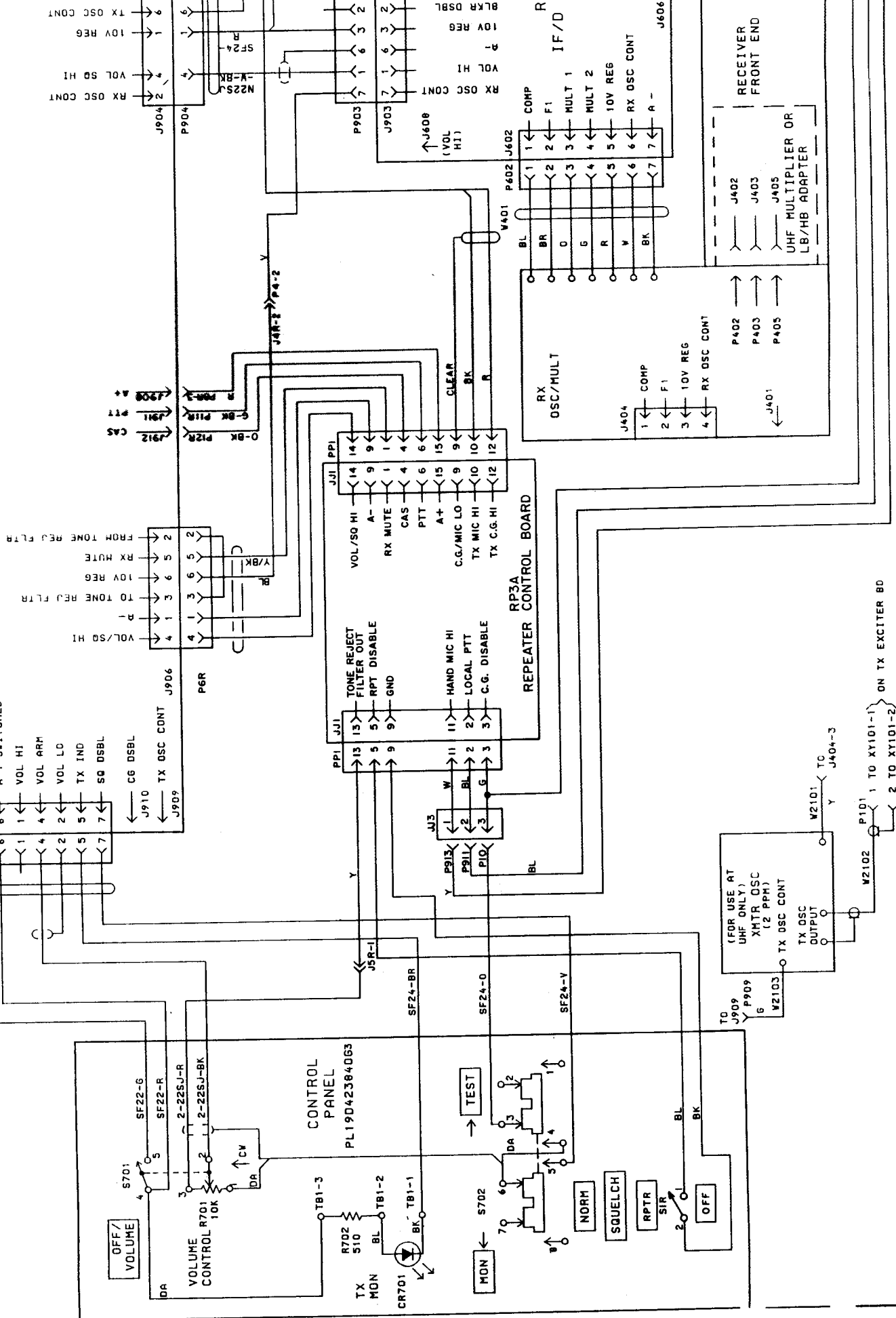
SHOWN CONNECTED FOR MOBILE APPLICATION  
SEE NOTE 4 FOR AC POWER SUPPLY APPLICATION

ALL RESISTORS ARE 1/2 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.

1. FOR IGNITION SWITCH CONTROL OPTION. CUT NZ2-R LEAD AT P1-17. STRIP AND SPLICE TO V16-R FUSED LEAD.
2. WITH 40 WATT UHF, USE POWER CABLE 19B22733382 WITH A 15 AMP FUSE.
3. TO APPLY HANDSET HOOKSWITCH, CUT SPKR HI LEAD AT P1-3 & SPLICE P1-3 TO V18-BR. SPLICE V18-B TO SPKR HI LEAD. CUT SPKR LO LEAD AT P1-4 & SPLICE V18-V TO P1-4 AND SPKR LO.
4. REFER TO 19C327013 & 19D423924 FOR SYSTEM INTERCONNECTION WHEN USED WITH AC POWER SUPPLY. NOT APPLICABLE TO 40 WATT UHF.

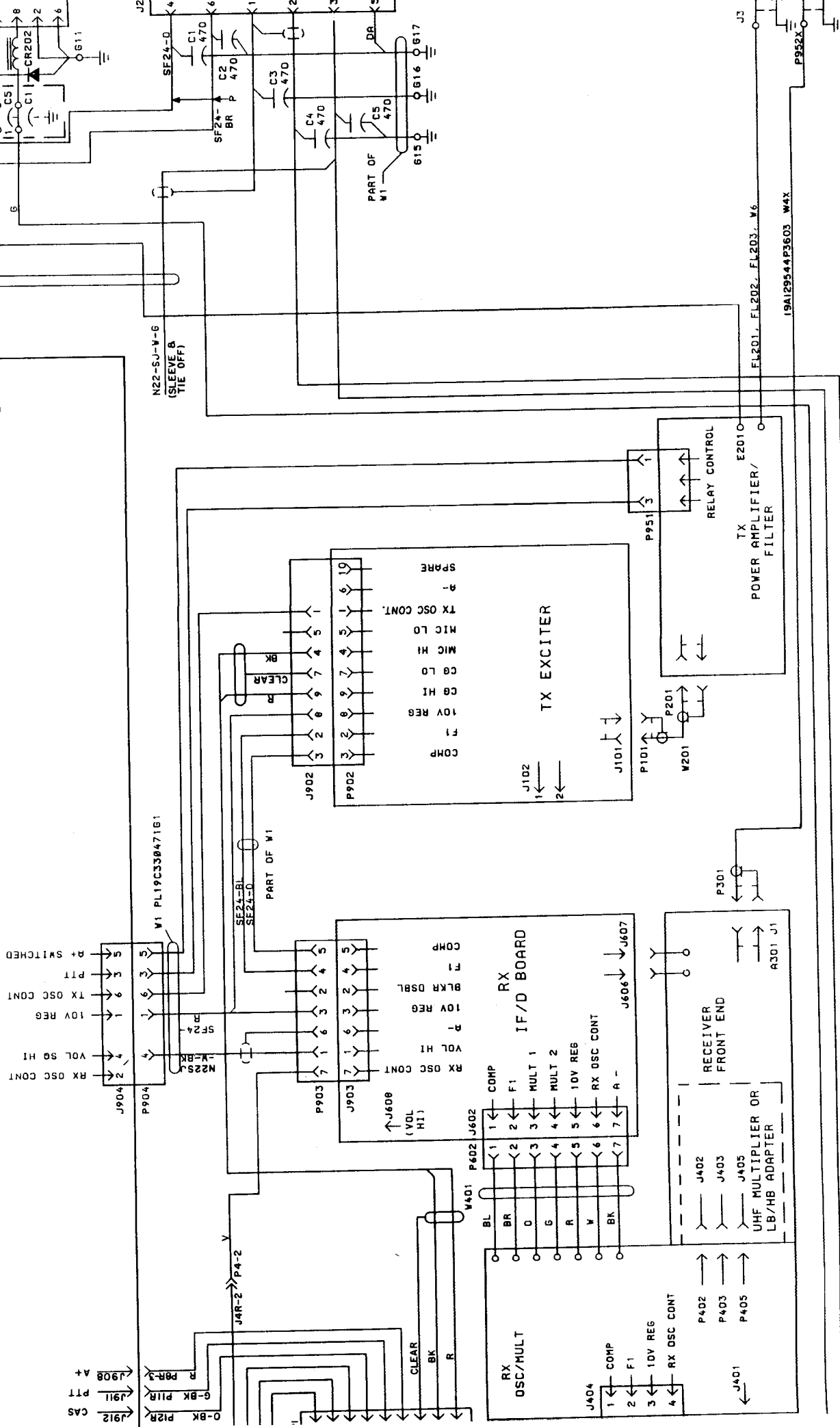
INTERCONNECTION DIAGRAM  
CUSTOM MVP REPEATER SYSTEM  
(19R622574, Rev. 0)

SYSTEM/AUDIO/SQUELCH





SYSTEM/AUDIO/SQUELCH BOARD



W1 PL19C330471G1

N22-SJ-W-6 (SLEEVE & TIE OFF)

FL210

FL201, FL202, FL203, W6

19A129544P3603 W4X

P952

J3

P951

E2010

RELAY CONTROL

TX POWER AMPLIFIER/FILTER

J101

J102

TX EXCITER

J902

J903

J904

J606

J607

J608

J609

J610

J611

J612

J613

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