MAINTENANCE MANUAL
REMOTE MOUNT KIT FOR MDX
344A4584G1 ,G2

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DESCRIPTION

The Remote Mount Kit Option PMMA3K allows the MDX mobile radio user to separate the front cap assembly from the radio transceiver section of the radio for remote mount applications. The front cap assembly is located near the mobile radio user, while the radio transceiver is remotely mounted in the vehicle i.e., rear mount. This option is used when space for the mobile radio installation is limited or when the user requires it.

The Option provides all of the same user controls, radio functions, and external options that are available in a standard mobile radio unit with the ability to remotely control the radio transceiver from the front cap assembly.

The external options, supported through the Option Cable, are used near the front cap assembly to provide the user with quick, easy access to the external options.

The Remote Mount Kit Options consist of two groups: group 1 is the Remote Mount Kit (Option PMMA3K) which includes the Radio Interface Board (19D904056), 18 foot remote mount cable (19B802419), radio transceiver front cap cover (19D904187), front mount casting (19D904344) heat sink plate (344A4568) standoffs (19B802575), connector (19B209727), and associated hardware. Group 2 (Option PMMA3J) is the Remote Control Unit Mounting Bracket which includes the mounting bracket, support 19C852319P1, and associated hardware.

CIRCUIT ANALYSIS

The Radio Interface Board is used to interface the radio transceiver to the front cap assembly through three connectors.

Connector J901 is used to interface to the System Board via the system cable in the mobile radio. Connector P701 is used to interface directly to the Audio/Logic Board as part of the Radio Interface Board installation.

The Radio Interface Board interfaces with the front cap assembly through connector P1001. An 18 foot interface cable is used to provide the link between the Radio Interface Board and the Audio Amplifier Board in the front cap assembly.

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RADIO INTERFACE BOARD

The Radio Interface Board provides the electrical link between the radio transceiver and the front cap assembly in a remote mount installation. The interface is accomplished through an 18 foot interface cable.

Most lines pass through, go to, or come from the radio transceiver and the front cap assembly. The pass-thru lines include power (SW A+), ground (A-), transmit audio (MIC HI and MIC LO), power control (POWER SW), and input/output controls (KEYPAD SERIAL, DISPLAY SERIAL, SERIAL RQST, OPTION, AUDIO MUTE, PTT, RELAY, HS PWR ENBL).

The audio outputs from the radio transceiver, RX AUDIO and VOL/SQ HI, are buffered to drive audio signals through the 18 foot interface cable to the front cap assembly. 8 volt regulator U1002 and op amp U1001 are used to drive the audio signals through the cable while providing rejection to alternator whine, cable coupling noise, and other ground loop noise that exists between the radio transceiver and the front cap assembly.

RX AUDIO (P701-5) is buffered through op amps U1001.1 and U1001.2. Op amp U1001.1 is configured as a follower stage to drive subsequent op amp U1001.2. Op amp U1001.2 is configured as an inverter stage to drive BUF RX AUDIO HI (P1001-24) down the cable. The positive input of op amp U1001.2 receives a ground return from the front cap assembly on BUF RX AUDIO LO (P1001-23) in order to eliminate coupled noise. Capacitors C1051, C1053, and C1054 provide DC blocking.

VOL/SQ HI (J90 1-14), is buffered through op amp U1001.3. Op amp U1001.3 is configured as an inverter stage to drive BUF VOL/SQ HI (P1001-1) down the 18 foot cable. The positive input of op amp U1001.3 receives a ground return from the front cap assembly on BUF VOL/SQ LO (P1001-2) in order to eliminate coupled noise in the interface cable. Capacitors C1055, C1057, and C1058 provide DC blocking.

Regulator U1002 receives SW A+ (J901-5,6) from the System Board and provides a stable 8 volt power supply to the op amp U1001. Op amp U1001.4 provides a filtered bias supply of 5.8volts to op amps (U1001.1,U1001.2,and U1001.3). Resistors R1012 and R1013 set the bias point, while capacitors C1059 and C1060 provide additional filtering on the input side of bias generator op amp U1001.4.

INSTALLATION INSTRUCTIONS

Follow the installation instructions provided on the modification instruction, 19D904372, included in this manual.

Option Cable 19C851585, if used, must be moved from the System Board to the Audio Amplifier Board connector J1102. All external options are supported at the front cap assembly of the remote mount kit.

NOTES

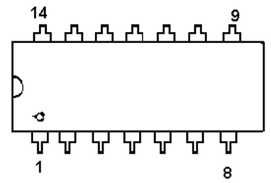
Jumper P7 on the Audio Amplifier Board (19D904025) may need to be moved.

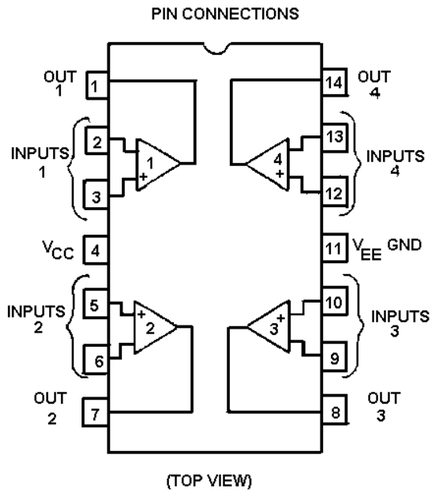
If the option cable is not used as part of the remote mount installation, place P7 on J7-1&2 on the Audio Amplifier Board.

If the option cable is used, place P7 on J7-1&2 for external options not requiring external decoders (e.g. T90/T99) or on J7-2&3 for external options requiring external decoders.

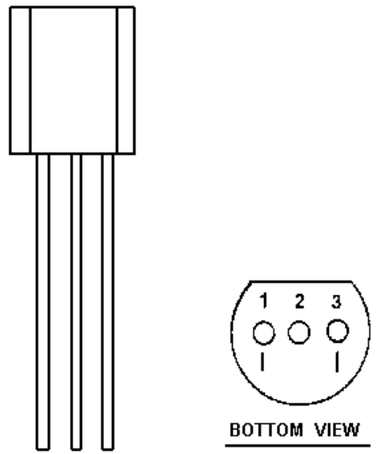
Jumper plug, P905, installed on the System Board, routes VOL/SQ HI and RELAY through the 18 foot cable to the front cap assembly of the remote mount control unit for use with external options.

U1001 QUAD OP AMP
19A704883P1





U1002 +8 VOLT REGULATOR
19A704971P2



PIN IDENTIFICATION

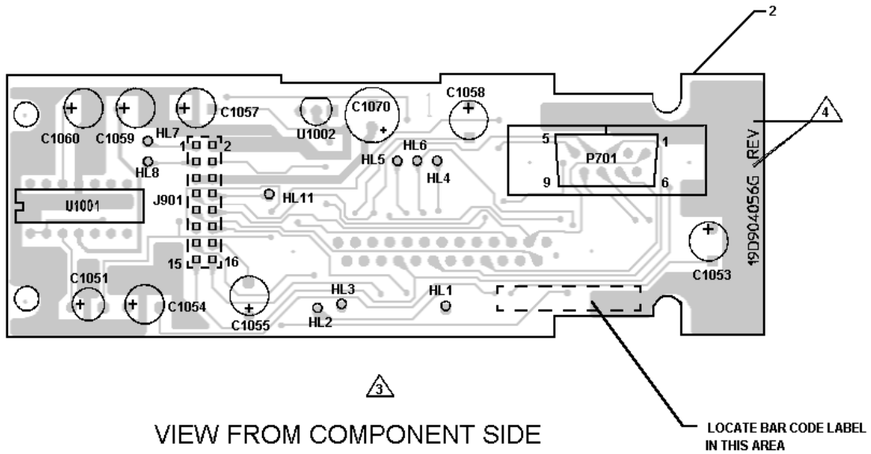
PIN 1. OUTPUT
PIN 2. GROUND
PIN 3. INPUT

REMOTE MOUNT KIT OPTION
344A458G1 Remote Mount Kit (includes radio interface board)
344A4584G2 Remote Control Unit Mounting bracket)
RADIO INTERFACE BOARD
19D904056G1

SYMBOL	PART NUMBER	DESCRIPTION
		——— CAPACITORS ———
C701 thru C709	19A702061P61	Ceramic: 100 pF ± 5%, 50 VDCW, temp coef 0 ± 30 PPM.
C901	19A702061P61	Ceramic: 100 pF ± 5%, 50 VDCW, temp coef 0 ± 30 PPM.
C903 thru C916	19A702061P61	Ceramic: 100 pF ± thru%, 50 VDCW, temp coef 0 ± 30 PPM.
C1001 thru C1006	19A702061P61	Ceramic: 100 pF ± 5%, 50 VDCW, temp coef 0 ± 30 PPM.
C1008	19A702061P61	Ceramic: 100 pF ± 5%, 50 VDCW, temp coef 0 ± 30 PPM.
C1010 thru C1012	19A702061P61	Ceramic: 100 pF ± 5%, 50 VDCW, temp coef 0 ± 30 PPM.
C1014 thru C1025	19A702061P61	Ceramic: 100 pF ± 5%, 50 VDCW, temp coef 0 ± 30 PPM.
C1051	19A701534P4	Tantalum: 1 µF ± 20%, 35 VDCW.
C1052	19A702061P61	Ceramic: 100 pF ± 5%, 50 VDCW, temp coef 0 ± 30 PPM.
C1053 thru C1055	19A701534P7	Tantalum: 10µF ± 20%, 16 VDCW.
C1056	19A702061P61	Ceramic: 100 pF ± 5%, 50 VDCW, temp coef 0 ± 30 PPM.
C1057 thru C1060	19A701534P7	Tantalum: 10µF ± 20%, 16 VDCW.
C1070	19A703314P15	Electrolytic:100µF±20%, 25 VDCW.
		——— JACKS ———
J901	19A703248P11	Post: Gold Plated, 10 mm length.
		——— PLUGS ———
P701	19B209727P31	Connector, shielded: 9 contacts; sim to 74951-1.
P1001	19B209727P58	Connector: 25 position with 25 press contacts; sim to 745626-2.
		————RESISTORS———
R1001	19B800607P103	Metal film: 10K ohms ± 5%, 1/8 w.
R1002 thru R1004	19A702931P301	Metal film: 10K ohms ± 1%, 200 VDCW, 1/8 w.
R1005	19B800607P470	Metal film: 47 ohms ± 5%, 1/8 w.
R1006 thru R1009	19A702931P301	Metal film: 10K ohms ± 1%, 200 VDCW, 1/8 w.
R1010	19B800607P470	Metal film: 47 ohms ± 5%, 1/8 w.
R1011	19A702931P301	Metal film: 10K ohms ± 1%, 200 VDCW, 1/8 w.
R1012	19B800607P392	Metal film: 3.9K ohms ± 5%, 1/8 w.
R1013	19A702931P301	Metal film: 10K ohms ± 1%, 200 VDCW, 1/8 w.
R1015	19B800607P1	Metal film: Jumper.
		——INTEGRATED CIRCUITS———
U1001	19A704883P1	Linear: Quad Op Amp: sim to MC3303P.
U1002	19A704971P2	Linear: +8 Volt Regulator: sim to MC78L08ACP.
		———MISCELLANEOUS———
P905	19A149448P1	Jumper. (Used in G1).
	19D904344P1	Casting, Remote Mount.(Used in G1).
	19D904344P2	Casting, Remote (Used with casting 19D904344P1 to allow entry of Option cable 19C851585). (Used in G1).
	19B802550P1	Grommet, (Used with casting 19D904344P2), (Used with cable 19851585P14).
	344A4565P1	Gasket. (Used with casting 19D904344P2). (Used in G1).
	344A4568P1	Plate, mounting. (Used in G1 to secure speaker cable).
	19D904037P2	Gasket. (Used in G1 between remote mount casting and control Panel).
	19A702364P310	Machine screw, TORX Drive: No. M3-0.5 x 10. (Used in G1).
	19B802575P1	Standoff. (Used in G1). (For earlier version of radios).
	19B802575P2	Standoff. (Used in G1).
	19A702339P510	Screw, thread forming, TORX drive: No. M3.5-.6 x 10. (Used in G1).
	19A702381P508	Screw, thd. from: No. 3.5-0.6 x 8. (Used in G1).
	19A701365P4	Washer. (Used in G1).
	19B209727P42	Connector Plug. (Used in G1).
	N187P21010B1	Screw, machine. (Used in G2).
	19A115409P4	Washer, Lock. (Used in G2).
	19C852319P1	Support, mounting bracket. (Used in G2).
	N710P1624B17	Screw, (Used in G2).
	N710P1612B17	Screw, (Used in G2).
	19B802550P2	Grommet. (Used with cable 19C851585P18).

★ COMPONENTS, ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

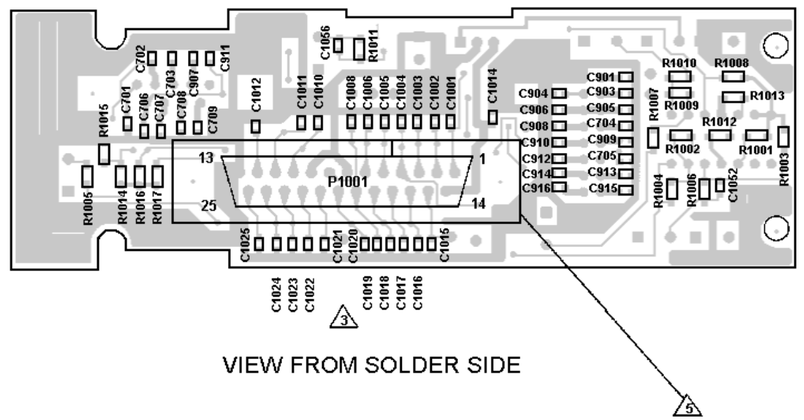
COMPONENT SIDE



VIEW FROM COMPONENT SIDE

(19D904056, Rev. 1)

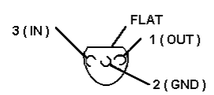
SOLDER SIDE



VIEW FROM SOLDER SIDE

(19D904056, Rev. 1)

LEAD IDENTIFICATION
FOR U1002



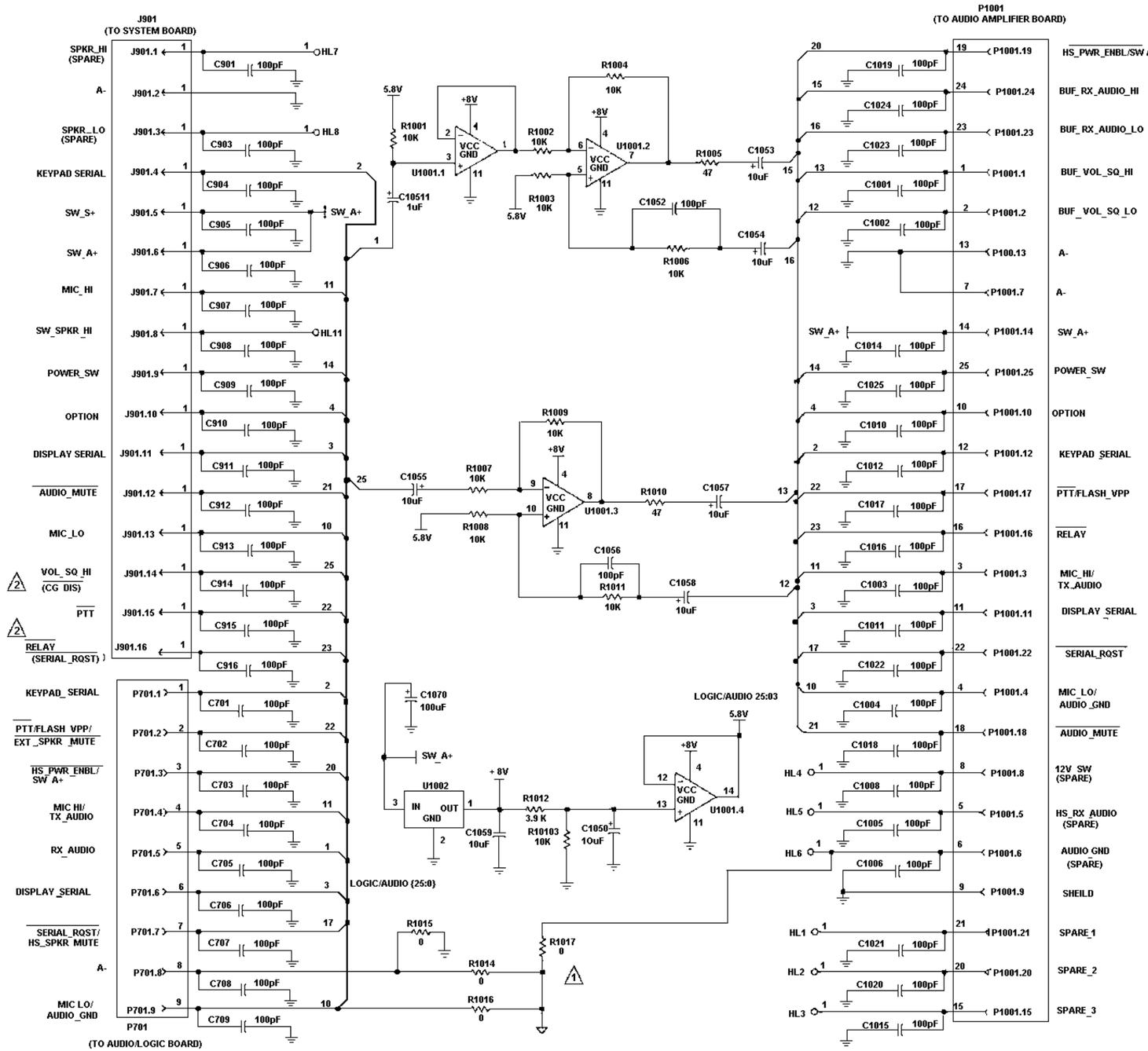
TOP VIEW

RADIO INTERFACE BOARD
19D904056

(19D904054 Rev. 1, Component Side)
(19D904054 Rev. 1, Solder Side)

NOTE: CASE SHAPE IS DETERMINING FACTOR FOR LEAD IDENTIFICATION

CAUTION
OBSERVE PRECAUTIONS FOR HANDLING
ELECTROSTATIC SENSITIVE DEVICES



THIS SCHEMATIC DIAGRAM APPLIES TO	
MODEL NO.	REV LETTER
19D904056G1	

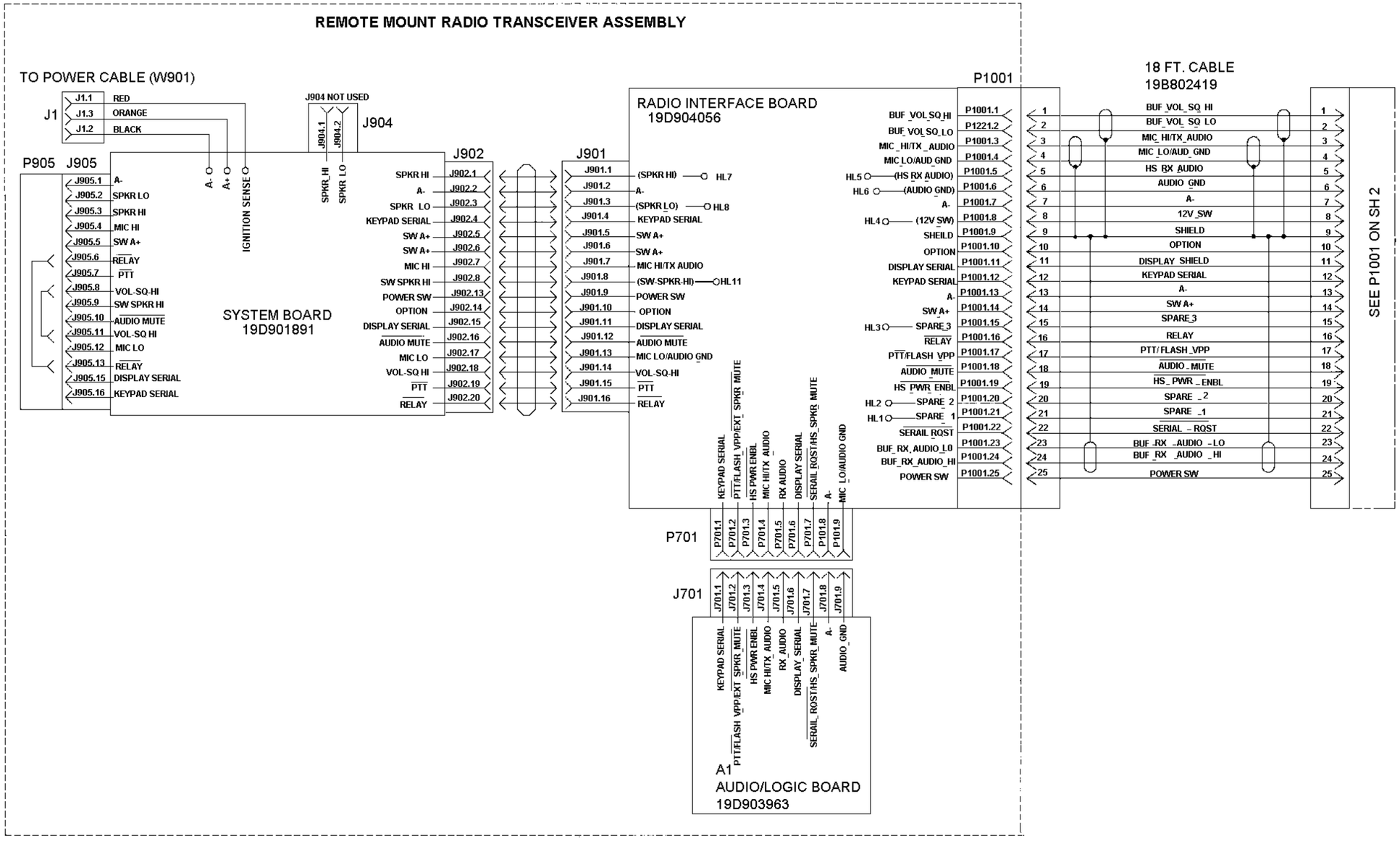
RESISTOR VALUES ARE IN OHMS
UNLESS FOLLOWED BY A MULTIPLIER
K OR M. CAPACIOR VALUES IN F
UNLESS FOLLOWED BYA MULTIPLIER
U, N OR P. INDUCTANCE VALUES IN
H UNLESS FOLLOWED BY A MULTIPLIER
M OR U.

1 R1014, R1016, AND R1017 NOT INSTALLED.

2 VOL SQ HI AND $\overline{\text{RELAY}}$ ROUTED TO AUDIO AMPLIER BOARD VIA PLUG P905 INSTALLED ON SYSTEM BD.

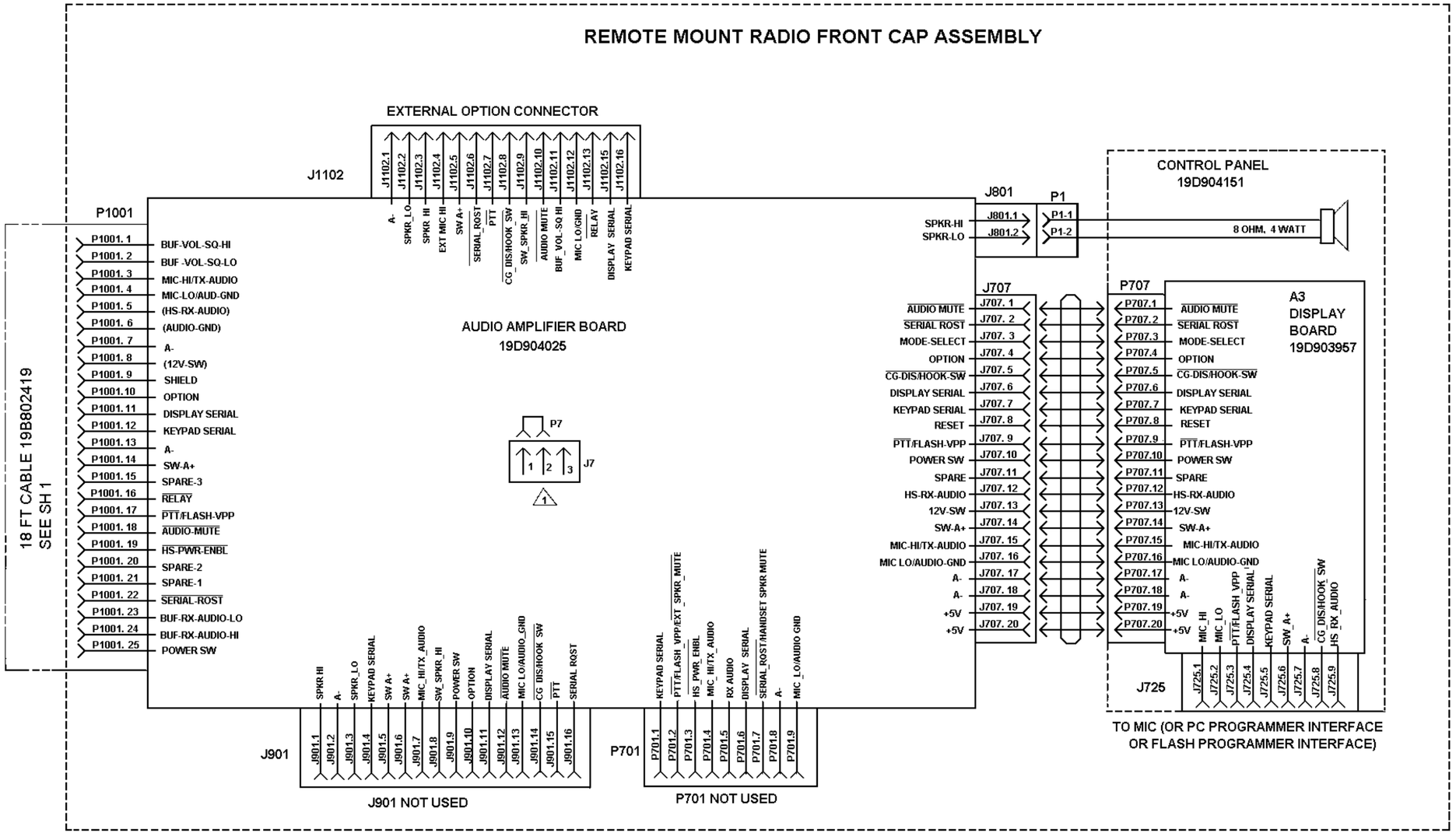
RADIO INTERFACE BOARD

(19D904055, Rev. 1)



RADIO INTERFACE BOARD

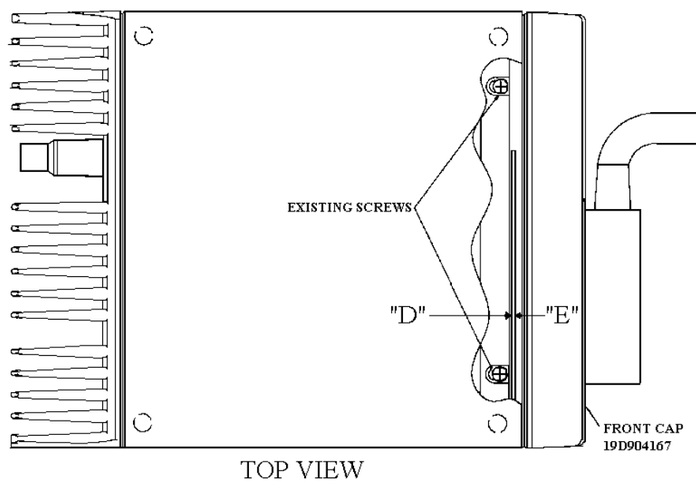
(19D904580, Sh. 1, Rev. 0)



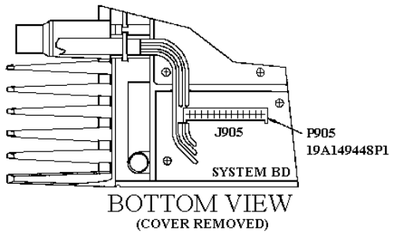
1 FOR MOST EXTERNAL OPTIONS, PLACE P7 ON J7-1 & 2 (SPKR HI ROUTED TO SW SPKR HI INTERNALLY.
FOR EXTERNAL DECODER OPTIONS, PLACE P7 ON J7-2 &3 (SPKR HI ROUTED TO SW SPKR HI THROUGH THE DECODER OPTIONS).

RADIO INTERFACE BOARD

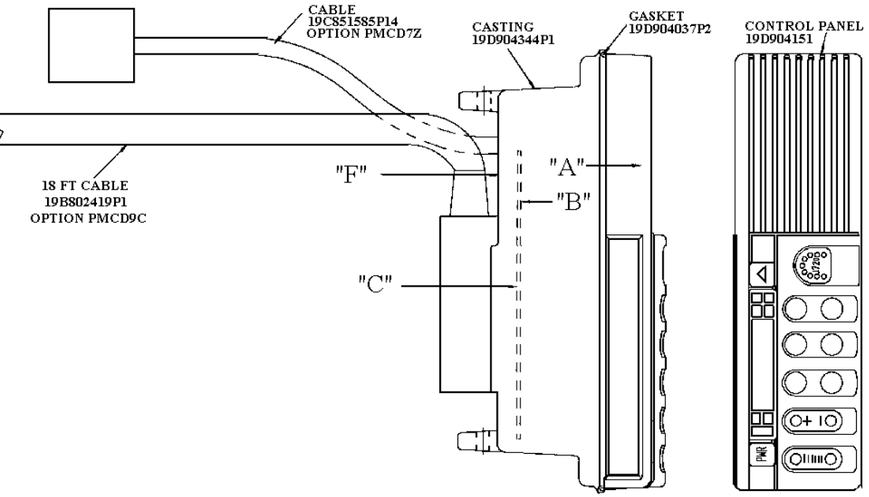
(19D904580, Sh. 2, Rev. 0)

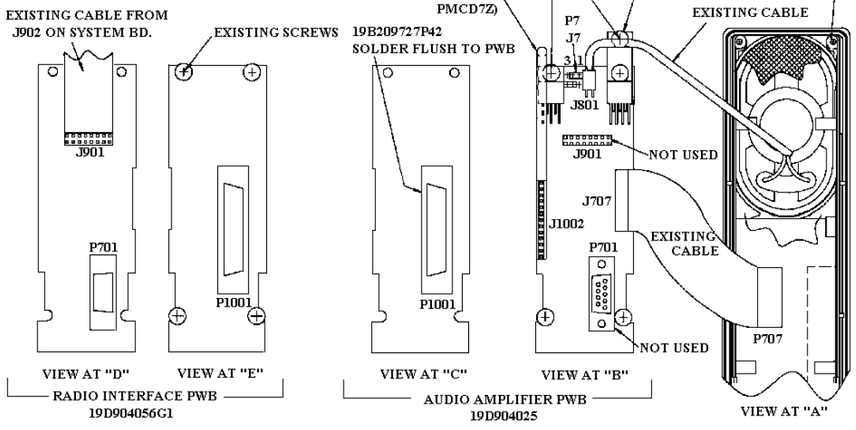


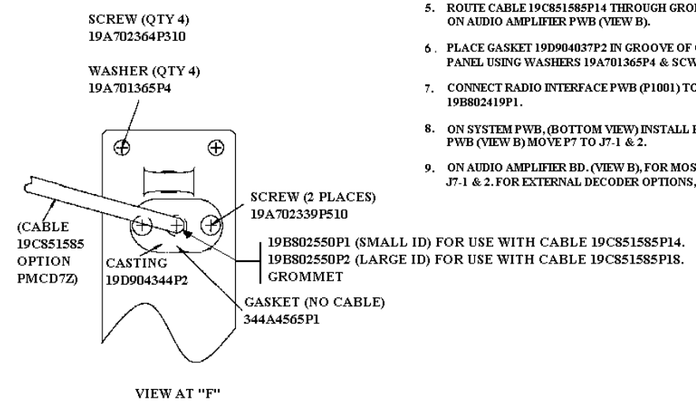
TOP VIEW



BOTTOM VIEW
(COVER REMOVED)







MODIFICATION INSTRUCTIONS FOR CHANGING THE MDX DUAL MODE (SIMPLEX) FRONT MOUNT RADIO TO A MOUNT RADIO.

1. REPLACE CONTROL PANEL 19D904151 & AUDIO AMPLIFIER PWB 19D904025 WITH FRONT CAP 19D904187 & INTERFACE PWB 19D904056. USE EXISTING HARDWARE TO MOUNT INTERFACE PWB. ATTACH EXISTING CABLE FROM J902 ON SYSTEM PWB TO J901 ON INTERFACE PWB. USE EXISTING HARDWARE TO MOUNT FRONT CAP. MAKE SURE GASKET 19D904037P2 IS IN PLACE.
2. AFTER SOLDERING CONNECTOR 19B209727P42 TO AUDIO AMPLIFER PWB (VIEW C), MOUNT PWB & PLATE 344A4568P1 TO CASTING 19D904344P1, USING SCWS. 19A702381P508 (VIEW B). APPLY SILICONE HEAT TRANSFER GREASE, SIMILAR TO GENERAL ELECTRIC G-641, TO CONTACT SURFACES OF PLATE 344A4568P1.
3. REPLACE EXISTING SCWS (4 CORNERS) IN VIEW A WITH STAND OFF 19B802575P1. TORQUE TO 2 INCH-POUNDS.
4. CONNECT EXISTING CABLES BETWEEN CONTROL PANEL & AUDIO AMPLIFIER (VIEWS A & B).
5. ROUTE CABLE 19C851585P14 THROUGH GROMMET 19B802550P1 (VIEW F) & CONNECT TO J1002 ON AUDIO AMPLIFIER PWB (VIEW B).
6. PLACE GASKET 19D904037P2 IN GROOVE OF CASTING 19D904344P1 & MOUNT CASTING TO CONTROL PANEL USING WASHERS 19A701365P4 & SCWS. 19A702364P310 (VIEW F).
7. CONNECT RADIO INTERFACE PWB (P1001) TO AUDIO AMPLIFIER PWB (P1001) USING CABLE 19B802419P1.
8. ON SYSTEM PWB, (BOTTOM VIEW) INSTALL P905 19A149448P1 ON J905. ON AUDIO AMPLIFIER PWB (VIEW B) MOVE P7 TO J7-1 & 2.
9. ON AUDIO AMPLIFIER BD. (VIEW B), FOR MOST EXTERNAL OPTION APPLICATIONS, PLACE P7 ON J7-1 & 2. FOR EXTERNAL DECODER OPTIONS, PLACE P7 ON J7-2 & 3.

REMOTE MOUNT KIT
344A4584G1, 2

(19D904372, Rev. 1)

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