DESCRIPTION AND MAINTENANCE
MASTR® II BASE STATION COMBINATIONS

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ILLUSTRATIONS

ComNet Ericsson
CRITICAL RADIO SYSTEMS

Com-Net Ericsson Critical Radio Systems, Inc.
P.O. Box 2000
Lynchburg, Virginia 24501
1-800-528-7711 (Outside USA, 804-592-7711)

Printed in U.S.A.

WARNING

No one should be permitted to handle any portion of the equipment that is supplied with high voltage; or to connect any external apparatus to the units while the units are supplied with power. KEEP AWAY FROM LIVE CIRCUITS.

High level RF energy in the transmitter Power Amplifier assembly can cause RF burns KEEP AWAY FROM THESE CIRCUITS WHEN THE TRANSMITTER IS KEYED.

SPECIFICATIONS*

EIA DIMENSIONS (H X W X D)

DESK MATE (30-INCH)	30-1/4" X 21-1/2" X 15.5"
DESK MATE (44-INCH)	44-1/4" X 21-1/2" X 15.5"
POLE MOUNT	45" X 21-l/2" X 21"
FLOOR MOUNT	69" X 23" X 21"

WEIGHT

DESK MATE (30-INCH)	160 lbs
DESK MATE (44-INCH)	180 lbs
POLE MOUNT	225 lbs
FLOOR MOUNT	290 lbs

INPUT VOLTAGE 121/242 VAC, 60 Hz Only (50 Hz Optional)

AC INPUT POWER

RF OUTPUT POWER	TRANSMIT	RECEIVE	STANDBY
LOW BAND			
100 WATTS	260 WATTS	105 WATTS	65 WATTS
HIGH BAND			
40 WATTS	270 WATTS	75 WATTS	40 WATTS
110 WATTS	560 WATTS	105 WATTS	65 WATTS
UHF			
40 WATTS	270 WATTS	75 WATTS	40 WATTS
100 WATTS	560 WATTS	105 WATTS	65 WATTS

TEMPERATURE RANGE -30° TO + 60°C (-22 to + 140 F)

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

FCC FILING NUMBERS

MODEL SERIES	FCC FILING NO.	DUTY CYCLE	POWER OUTPUT
LOW BAND			
C74	KT-61-A	CONTINUOUS	50 - 100 WATTS
HIGH BAND			
C56	KT-47-J	CONTINUOUS	10 - 40 WATTS
C76	KT-49-J	CONTINUOUS	20 - 110 WATTS
UHF			
C55	KT-55-K	CONTINUOUS	1 - 40 WATTS
C75	KT-114-K	CONTINUOUS	30 - 100 WATTS

(o) /CABINET/STYLE (1st Digit "D", "S", "P", or "V")

NOTE: FCC Filing number not relevant to equipment operating in the 406 - 420 MHz frequency range.

COMBINATION NOMENCLATURE

Digits 1&2	Digit 3	Digits 4- 6	Digit 7	Digit 8	Digit 9	Digit 10	Digit 11
Product	Cabinet	Power	Control	Number of	Options	Frequency	Application
S3 Mil Station	D 30 - inch Desk Mate	030 30 - watts	R DC Remote	A 1 TX 1 RX	D Duplex	B 29.7 - 36	A LB & HB
	S 44 - inch Desk Mate	035 35 - watts	T Tone Remote	C 2 TX 2 RX	G CG & UHS	C 36 - 42	B UHF
	P Pole Mount Cabinet	040 40 - watts	U DC Remote/	F 4 TX 4 RX	H DCG & UHS	D 42 - 50	
	V Floor Mount Cabinet	080 80 - watts	V Tone Remote/		L CG & Duplex	G 138 - 155	
		100 100 - watts	Y Repeat		N Noise Blanker	H 150.8 - 174	
		110 110 - watts			P UHS	R 406 - 420	
					S Standard	T 420 - 450	
					U Channel Guard	U 450 - 470	
					W CG & NB	V 470 - 484	
					M DCG/Duplex	W 484 - 512	
					V DCG		

- D & L Combinations are PTT with separate receiver antenna cables.
- L Station Combinations have simultaneous Encode/Decode Channel Guard.

DESCRIPTION

The MASTR II radio station combinations are designed for either DC or Tone Remote Control or Repeater operation. The station receiver is mounted on a shielded enclosure on the radio panel front door, along with a receiver system board which accommodates Channel Guard and other option boards. Jacks are provided on the system board for plug-in interface with the options and control functions. The transmitter exciter is located in a separate shielded compartment on the radio panel front door. See Figure l.

The continuous duty transmitter power amplifier hinges from the bottom of the radio housing. The PA assembly consists of a frame mounted to a heat sink. A cover snaps over the frame to form an RF-tight enclosure for the PA board assembly.

Directly above the PA assembly is the station control shelf. This shelf houses the Control Panel and the Mini Backplane option S3MB01. The option cards used with the Control Shelf are installed in the Mini-backplane housing. These options include: Auxiliary Control, Auxiliary Receiver (DC or Tone), and Scan functions. Refer to LBI-31877 for a complete description of Mini Backplane option S3MB01.

Two front panels are used: one for all station applications and one for repeater applications. A Front Panel is shown in Figure 2. Typical Front Panel controls include the transmit (TF1-TF4) and receive (RF1-RF4) frequency select, REM PTT, Speaker, Auxiliary receiver, ICOM (Intercom) and TEST switches, and the VOLUME Control. Indicators include the TX (transmit), RPTR Disable, and Frequency Select (F1-F4).

External control connections are made to TB1201 located on the back of the Control Shelf.

The station power supply is connected to a 121 VAC power source. Conversion from 121 VAC to 242 VAC is made by jumper changes on the back of the power supply front panel. The input voltage is stepped down to 12 Volts by a ferroresonant transformer which provides line regulation of 2% for a 20% primary change. A power switch, primary and secondary fuses and two AC outlets are located on the front panel. A high-current fuse is located on the back panel.

SYSTEM DESCRIPTION

RECEIVER

The station receiver consists of an oscillator/multiplier assembly (OSC/MULT), RF Assembly, Mixer/IF Assembly (MIF) and IF-Audio Squelch Assembly (IFAS). In receivers with noise blankers, the noise blanker circuit replaces the standard MIF board. Refer to the Receiver Maintenance Manual for a complete description of the station receiver.

TRANSMITTER

The station transmitter consists of an exciter board assembly and a power amplifier assembly. In continuous duty transmitters, the PA assembly consists of a printed wiring board mounted on a heat sink at the rear of the radio housing. In intermittent duty stations, the heat sink assembly is fastened to two sheet metal adaptor plates which hinge at the radio panel. Refer to the transmitter Maintenance Manual for a complete description of the station transmitters.

SYSTEM BOARD A1

The station System Board is located on the Radio Panel Front Door and the receiver modules plug directly into the board. Along the edge of the System Board are two connectors which interconnect with the Remote Control Shelf and Power-Supply. Plug-in Channel Guard and Carrier Control ~ Timer option jacks are provided. A metering jack is provided for accommodating the Com-Net Ericsson Model 4EX3A11 Test Set. VOLUME Control R3 is located on the System Board. SQUELCH Control R901 is located on the Radio Panel Front Door.

A jumper is normally present between J933-4 and J933-8 in single-frequency transmit stations. A jumper is also present between H47 and H48 on A901 in single-frequency receive stations. In multiple-frequency receive stations, selecting a particular receive frequency at the remote control unit applies a ground to the particular pin at J931 corresponding to the frequency selected. The ground is then connected via the System Board printed wiring to the receiver. OSC/MULT to select the desired oscillator.

VOLUME/SQUELCH from the receiver Audio PreAmp is connected via J904-12 to the VOLUME (R3) and SQUELCH (R901) controls. The VOLUME arm is returned to the receiver IFAS Board where the signal is amplified by the receiver audio power amplifier circuit. The audio output of the PA is then connected to the speaker leads at J904-18 & 19. The station VOLUME control (R3) is normally adjusted for 1-watt output and the station speaker level is controlled by the service speaker VOLUME control.

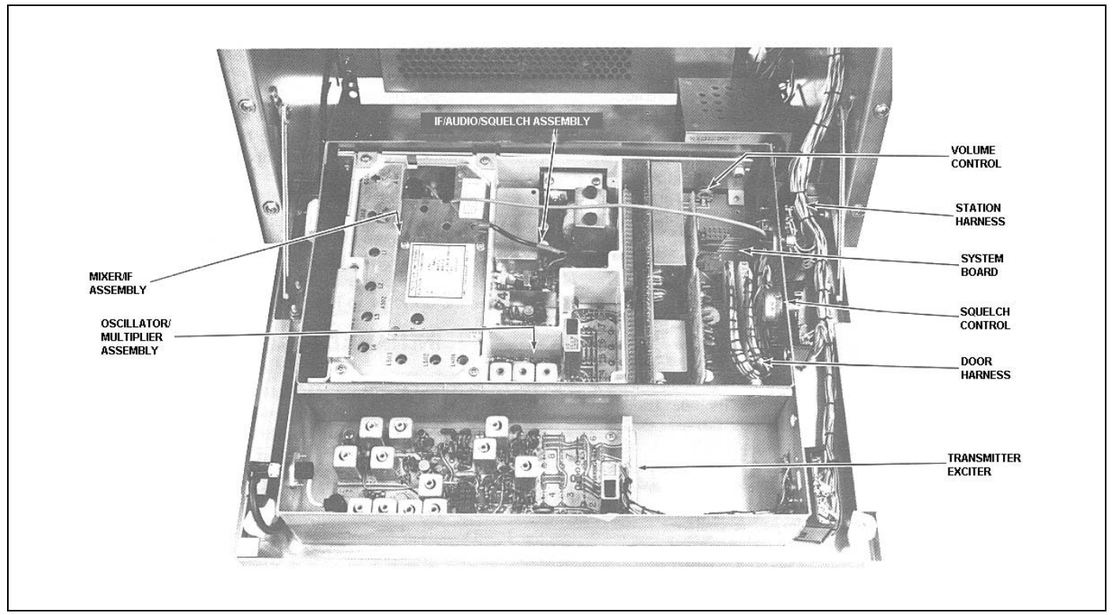


Figure 1 - Radio Panel Front Door

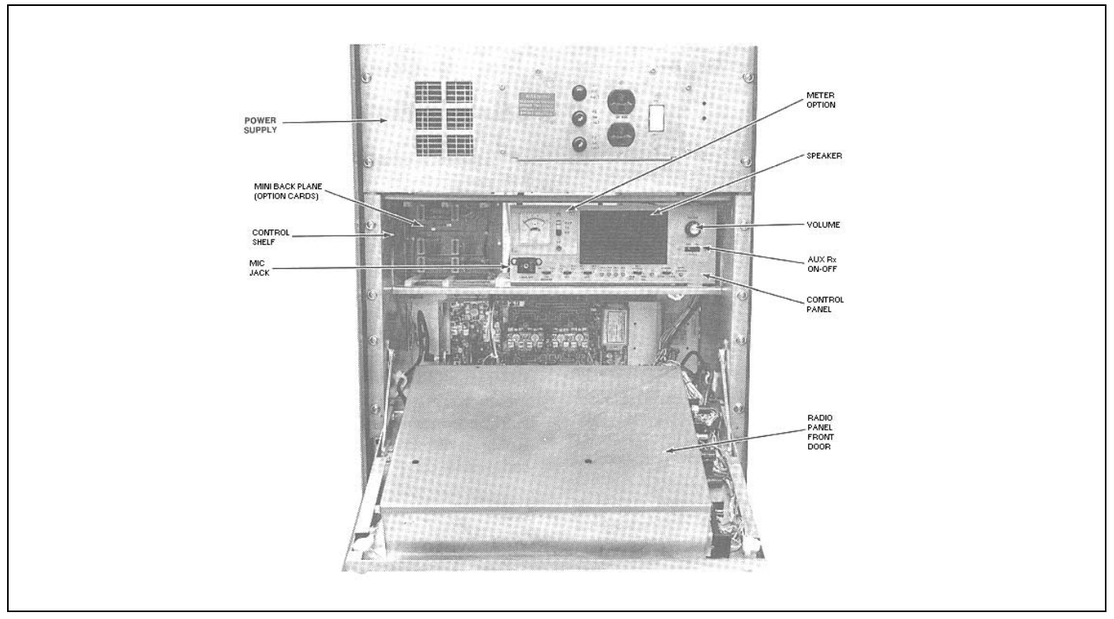


Figure 2 - Typical Station Assembly

DC REMOTE CONTROL

In DC Remote Control Systems, DC currents are selectively applied to a telephone pair at a remote control console to set the system operating characteristics. Items that are controlled by the DC Remote Control system include selecting the number of channels, scan option, Channel Guard Disable, Repeater Disable, and Auxiliary Receiver. In some cases combinations of the above may be selected. Refer to the Control Panel Manual for details.

TONE REMOTE CONTROL

Up to 13 functions may be controlled in the Tone Remote Control system. This is accomplished by applying the specified tone frequency at the prescribed level to the transmission medium at a remote control console for detection by the Tone Remote Control system on the Control Shelf. The controlled functions include transmitter/receiver selection, Rx Channel Guard Disable, Channel Guard or Repeater Enable/Disable, Auxiliary function on/off, repeater enable, scan or sim. monitor or repeater disable, and Tx hold. Refer to the Maintenance Manual for the Control Shelf for a complete description of the system.

CHANNEL GUARD

In stations equipped with Channel Guard, the Channel Guard Board is plugged into the System Board at P908 and P909. Each MASTR II receiver is equipped with a tone reject filter to prevent the CG tone from being heard in the speaker. In addition, all transmitters are provided with a Channel Guard Modulation control which is adjusted for proper deviation.

Channel Guard is a continuous tone controlled squelch system that provides communications control in accordance with EIA standard RS-220. The system utilizes standard tone frequencies from 721.9 to 203.5 Hz with both the encoder and operating on the same frequency. The STE circuit (Squelch Tail Eliminator) employs a phase shift of approximately 180 degrees in the encode function to eliminate an undesirable noise burst after each transmission.

The decoder operates in conjunction with the receiver to inhibit all calls that are not tone coded with the proper Channel Guard tone frequency. The Volume/Squelch output of the receiver is applied to the Channel Guard decoder at P908-1. When the received signal is not properly coded with the CG tone, a ground is supplied through P908-5 to mute the receiver. When a properly coded signal is received, the receiver unsquelches and the desired signal is heard. In duplex combinations, a separate encoder is used in the exciter and a separate decoder is used in the receiver.

A Channel Guard Filter is used in the remote audio to attenuate frequencies below 203.5 Hertz to prevent the Channel Guard tone from being applied to the remote audio pair.

A repeater will not key in Channel Guard systems unless the received signal is coded with the proper Channel Guard tone. The CG MONITOR function when selected‘will not allow the repeater to key on an encoded signal but will allow the operator to hear all channel activity.

INITIAL ADJUSTMENT

After the MASTR II station has been installed as described in the Installation Manual, the following adjust-ments should be made by an authorized electronics technician before the station is placed in service.

TEST EQUIPMENT REQUIRED

1. Deviation Monitor
2. Wattmeter, 50 ohms, rated power
3. RF Generator, (Station RF Frequencies)
4. AC Voltmeter
5. 30 dB Coupler

TRANSMITTER ADJUSTMENT

Transmitter adjustment includes measuring the forward and reflected power and adjusting the antenna length for optimum ratio, then setting the transmitter to the rated power output. Next measure and record the frequency and modulation for future reference. For complete transmitter adjustment procedures, refer to the Alignment Procedure in the applicable radio Maintenance Manual.

RECEIVER ADJUSTMENT

Initial adjustment of the receiver includes tuning the input circuit to match the antenna, adjusting the station volume control, and setting the station squelch control. Refer to the Front End Alignment and Adjustment Procedures in the Maintenance Manual.

STATION VOLUME (R3 on System Board)

1. Apply a 1000 microvolt on-frequency test signal modulated by 1000 Hz with 3 kHz deviation to the receiver antenna jack J937.
2. Turn service speaker switch (S1) to desired RCVR position.
3. Connect an AC Voltmeter across J905 terminals 1 & 2 and adjust R3 for a reading of 6.3 Volts RMS on the meter.

CAUTION

Adjusting the VOLUME control for levels higher than specified may cause damage to the speaker.

4. Set VOLUME switch S2 on the service speaker to the desired listening level.

STATION SOUELCH (R901 on Receiver Exciter Door)

1. Turn the SQUELCH control clockwise as far as possible.
2. Turn the SQUELCH control counterclockwise until the noise just disappears, then advance the control (clockwise) another 20 degrees.

LOCAL CONTROL MODULATION ADJUSTMENT

1. Apply a 1000 Hz, 1 VRMS signal across P3-2 (MIC HI) and P3-1 (low). Connect a 0.5 microfarad (or larger) DC blocking capacitor in series with the MIC HI lead, P3-2.
2. Set MOD ADJUST control R127 on the exciter for 4.5 kHz deviation as indicated on a frequency modulation monitor.
3. While talking in a normal voice, at the station microphone adjust LOCAL TX MOD LEVEL R222 (Tone Panel) or R46 (DC Panel) on the Control Panel for a deviation of 3 to 4 kHz as measured on the deviation monitor.

REPEATER CONTROL ADJUSTMENT

1. Apply a 1000 Hz, on frequency signal modulated with 1000 Hz tone at 3 kHz deviation to the station receiver.
2. Adjust TX MOD control R60 on the Control Panel for a 3.0 kHz deviation as indicated on the deviation monitor.

REMOTE CONTROL ADJUSTMENTS

The transmitter modulation gain, the remote audio input and line output must be adjusted before placing the station in operation. Refer to the DC Remote Control or the Tone Remote Control Maintenance Manual for these adjustments.

REPEATER CONTROL ADJUSTMENT

The repeater drop out delay timing may be adjusted before placing the station in operation. Refer to the MASTR II Repeater Station Control Panel Maintenance Manual for these adjustments.

MAINTENANCE

To insure high operating efficiency and to prevent mechanical and electrical failures from interrupting system operation, routine checks should be made of all mechanical and electrical parts at regular intervals. This preventive maintenance should include the checks listed in the table of Maintenance Checks.

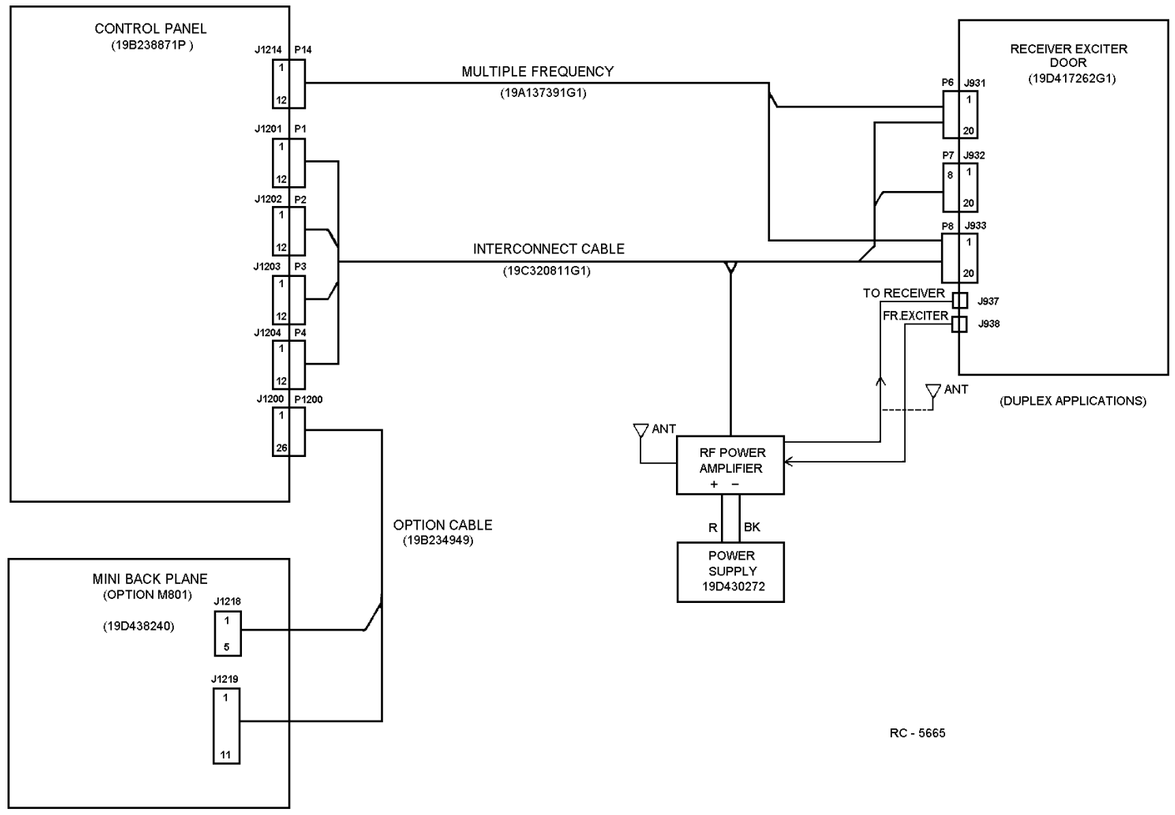
TEST AND TROUBLESHOOTING PROCEDURES

The individual Maintenance Manuals for the transmitter and receiver describe standard test procedures which the technician can use to compare the actual performance of the transmitter or receiver against the specifications of the unit when shipped from the factory. In addition, specific troubleshooting procedures are available to assist the technician when servicing the transmitter and receiver.

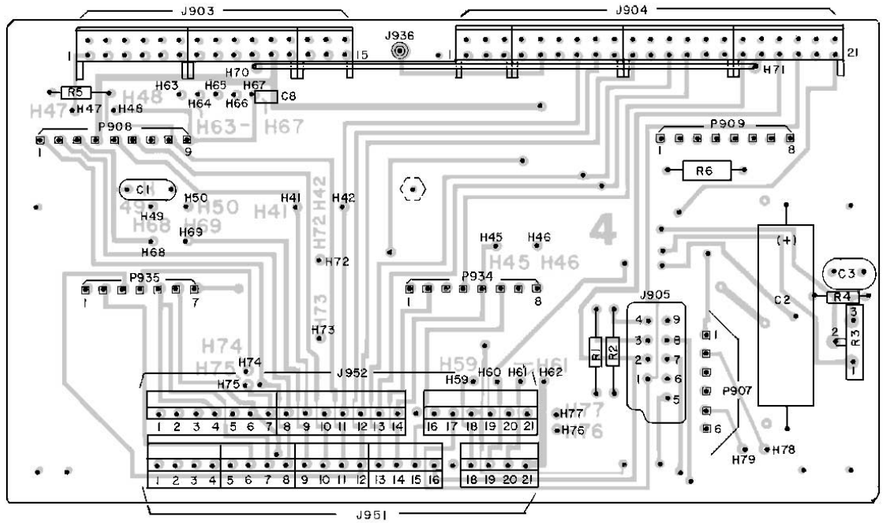
Removing IC "s and other soldered-in components can be easily accomplished by using a de-soldering tool. To remove an IC, heat each lead separately on the solder side and remove the old solder with the de-soldering tool.

An alternate method is to use a special soldering tip that heats all of the pins simultaneously.

MAINTENANCE CHECKS	INTERVAL BETWEEN CHECKS	
	Every 6 months	**As Required**
Transmitter Alignment: Compare meter readings at transmitter multiplier metering jacks with voltages read during initial tune up. Touch up multiplier tuning. Check power output. (See Alignment Procedure for Transmitter).		**X**
Receiver: While receiving an unmodulated signal on the station frequency(s), adjust OSC-1 trimmer for each operating frequency for a zero discriminator reading. (See the Receiver Alignment Procedure).		**X**
Transmission Line: Check for positive indication of pressure on transmission line pressure gauge (if pressurized line is used).	**X**	
Antenna: Check antenna & mast for mechanical stability.	**X**	
Mechanical Inspection: Visually check cables, plugs, sockets, terminal boards & components for good electrical connections. Check for tightness of nuts, bolts, & screws to make sure that nothing is working loose from its mounting.	**X**	
Cleaning: Use a vacuum cleaner to remove dust which may have accumulated inside the cabinet.	**X**	
Frequency Check: Check transmitter frequency & deviation.		**X**

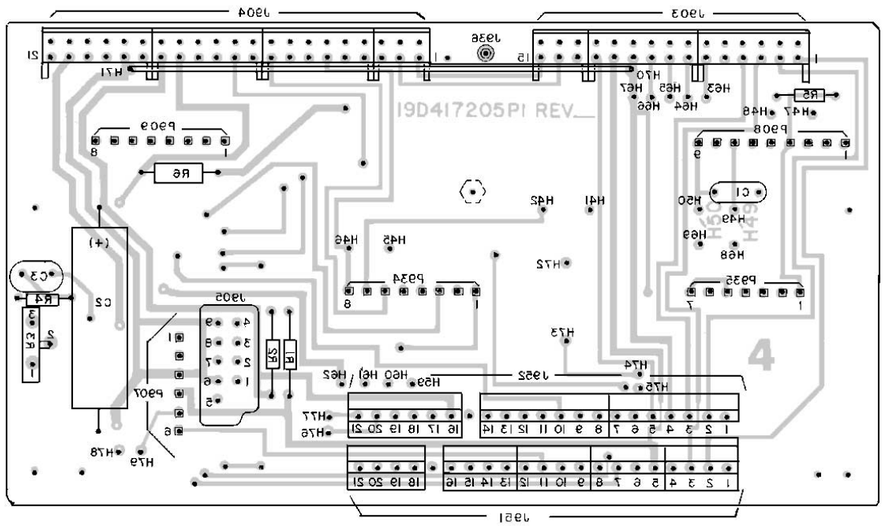


COMPONENT SIDE



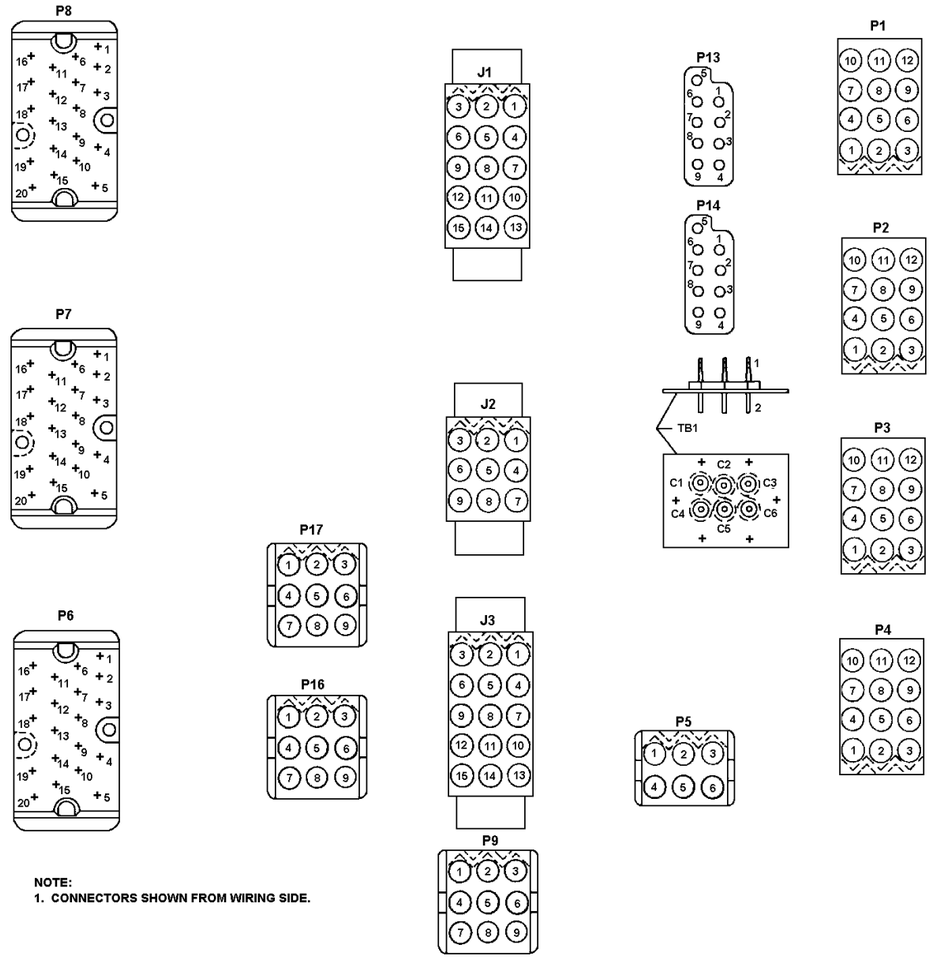
(19D423147, Rev. 3)
(19D417205, Sh. 2. Rev. 4)

SOLDER SIDE



(19D423147, Rev. 2)
(19D417205, Sh. 2. Rev. 4)

SYSTEM BOARD A901

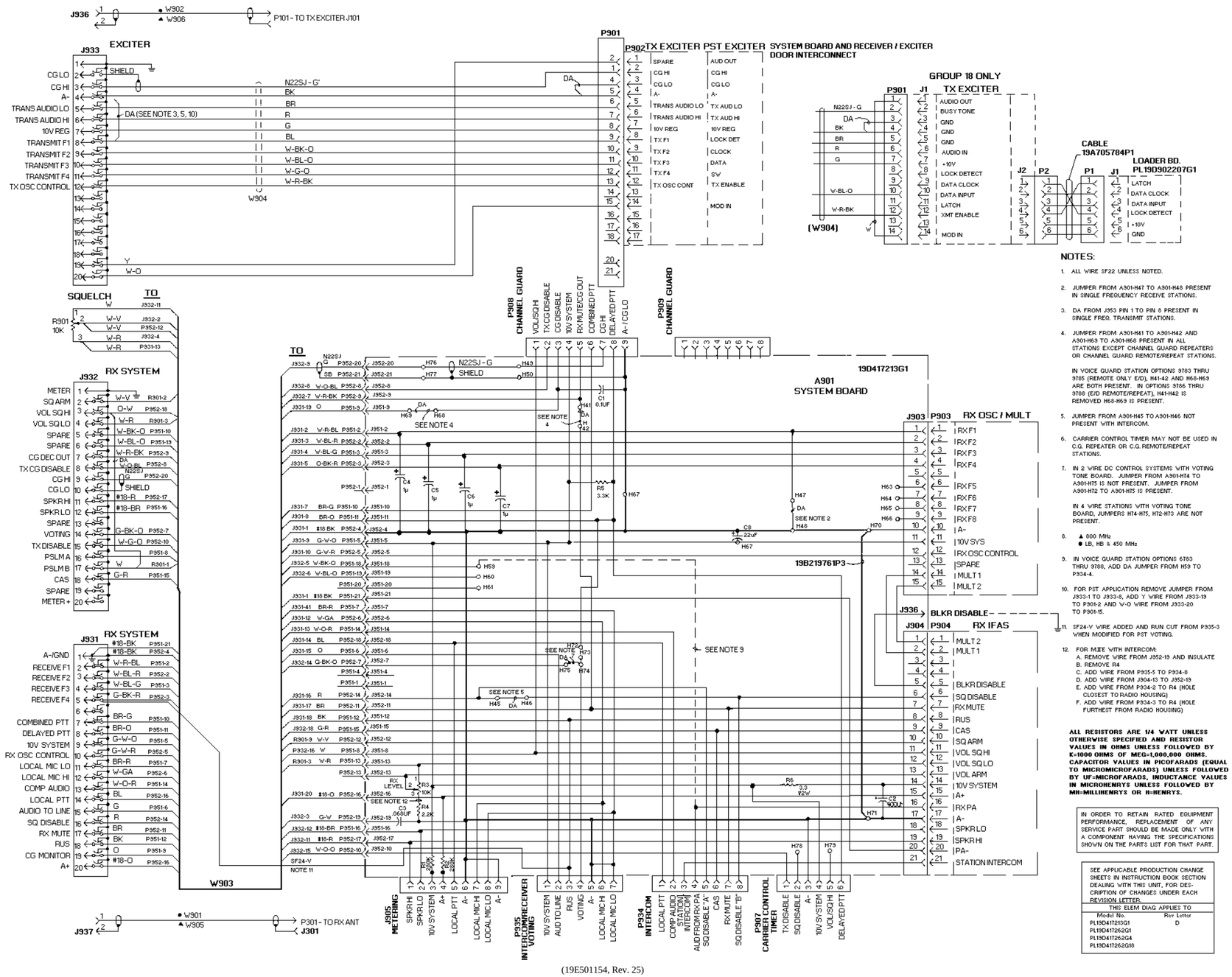


NOTE:
1. CONNECTORS SHOWN FROM WIRING SIDE.

(19C328112, Rev. 2)

CAUTION
OBSERVE PRECAUTIONS FOR HANDLING
ELECTROSTATIC SENSITIVE DEVICES

WIRING HARNESS 19C320811



NOTES:

1. ALL WIRE SF22 UNLESS NOTED.
2. JUMPER FROM A301-H47 TO A301-H48 PRESENT IN SINGLE FREQUENCY RECEIVE STATIONS.
3. DA FROM J953 PIN 1 TO PIN 8 PRESENT IN SINGLE FREQ. TRANSMIT STATIONS.
4. JUMPER FROM A301-H41 TO A301-H42 AND A301-H63 TO A301-H68 PRESENT IN ALL STATIONS EXCEPT CHANNEL GUARD REPEATERS OR CHANNEL GUARD REMOTE/REPEAT STATIONS.

   IN VOICE GUARD STATION OPTIONS 3783 THRU 3785 (REMOTE ONLY E/D), H41-H42 AND H63-H63 ARE BOTH PRESENT. IN OPTIONS 3786 THRU 3788 (E/D REMOTE/REPEAT), H41-H42 IS REMOVED H68-H63 IS PRESENT.
5. JUMPER FROM A301-H45 TO A301-H46 NOT PRESENT WITH INTERCOM.
6. CARRIER CONTROL TIMER MAY NOT BE USED IN C.G. REPEATER OR C.G. REMOTE/REPEAT STATIONS.
7. IN 2 WIRE DC CONTROL SYSTEMS WITH VOTING TONE BOARD, JUMPER FROM A301-H74 TO A301-H75 IS NOT PRESENT. JUMPER FROM A301-H72 TO A301-H73 IS PRESENT.

   IN 4 WIRE STATIONS WITH VOTING TONE BOARD, JUMPERS H74-H75, H72-H73 ARE NOT PRESENT.
8. ▲ 800 MHz
   ● LB, HB & 450 MHz
9. IN VOICE GUARD STATION OPTIONS 6783 THRU 6788, ADD DA JUMPER FROM H59 TO P934-4.
10. FOR PST APPLICATION REMOVE JUMPER FROM J933-1 TO J933-8, ADD Y WIRE FROM J933-19 TO P301-2 AND W-O WIRE FROM J933-20 TO P301-15.
11. SF24-V WIRE ADDED AND RUN CUT FROM P935-3 WHEN MODIFIED FOR PST VOTING.
12. FOR MJE WITH INTERCOM:
    A. REMOVE WIRE FROM J952-19 AND INSULATE
    B. REMOVE R4
    C. ADD WIRE FROM P935-5 TO P934-8
    D. ADD WIRE FROM J904-13 TO J952-19
    E. ADD WIRE FROM P934-2 TO R4 (HOLE CLOSEST TO RADIO HOUSING)
    F. ADD WIRE FROM P934-3 TO R4 (HOLE FURTHEST FROM RADIO HOUSING)

ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OF 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.

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER.

THIS ELEM DIAG APPLIES TO	
Model No.	Rev Letter
PL19D417213G1	D
PL19D417262G1	
PL19D417262G4	
PL19D417262G16	

SYSTEM BOARD A901

19D417262G1

(19E501154, Rev. 25)

MASTR II STATION RADIO PANEL
FRONT DOOR ASSEMBLY
19D417262G1

SYMBOL	PART NUMBER	DESCRIPTION
A901		**COMPONENT BOARD 19D417213G1**
		——— CAPACITORS ———
C1	19A116080P107	Polyester: 0.1 uF ±10%, 50 VdcW.
C2	19A115680P24	Electrolytic: 400 uF +150% -10%, 18 VdcW; sim to Mallory Type TTX.
C3	19A116080P106	Polyester: 0.068 uF ±10%, 50 VdcW.
C4 thru C7	19A701534P4	Tantalum: 1 uF ±20%, 35 VdcW.
C8	19A701534P8	Tantalum: 22 uF ±20%, 16 VdcW.
		——— JACKS ———
J903 and J904		Connector. Includes:
	19A116659P1	Connector, printed wiring: 3 contacts rated at 5 amps; sim to Molex 09-52-3032.
	19A116659P4	Connector, printed wiring: 6 contacts rated at 5 amps; sim to Molex 09-52-3062.
J905	19B219374G2	Connector, 9 contacts. Includes: Shell.
J936	4033513P4	Contact, electrical: sim to Bead Chain L93-3.
J937		Part of W901 & W905.
J938		Part of W902 & W906.
J951	19A116659P13	Connector, printed wiring: 4 contacts rated at 5 amps; sim to Molex 09-64-1041.
J952		Connector includes:
	19A116659P11	Connector, printed wiring: 7 contacts rated at 5 amps; sim to Molex 09-64-1071.
	19A116659P12	Connector, printed wiring: 6 contacts rated @ 5 amps; sim to Molex 09-64-1061.
		——— PLUGS ———
P907 thru P909		Part of A901
P934 and P935		Part of A901
		——— RESISTORS ———
R1 and R2	19A701250P444	Metal film: 280K ohms ±1%, 1/4 w.
R3	19B209358P106	Variable: 10K ohms ±5%, 1/4 w; sim to CTS X-201.
R4	19A700106P71	Composition: 2.2K ohms ±5%, 1/4 w.
R5	19A700106P75	Composition: 3.3K ohms ±5%, 1/4 w.
R6	19A700113P3	Composition: 3.3 ohms ±5%, 1/2 w.
		——— MISCELLANEOUS ———
	5491541P302	Spacer. (Used in G1).
	19B219761P3	Jumper (Used in G1).
		——— CABLES ———
W901	19B233742G1	Cable, RF: approx 14 inches long, 350 VRMS, 500 Vdc operating voltage.
W902	5491689P104	Cable, RF: approx 4 inches long, 350 VRMS, 500 Vdc operating voltage.
W903		**CABLE ASSEMBLY 19D417262G2**
		——— JACKS ———
J931 and J932	19C851861P1	Assembly.

* COMPONENTS, ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	PART NUMBER	DESCRIPTION
	19C317957P2	Connector, Includes: Shell.
	19A700237P1	Contact, electrical: sim to Malco 003-0132-001.
	19A116781P3	Contact: 16-20 AWG; sim to Molex 08-50-0105.
		——— PLUGS ———
P101		Part of W902 & W906 (Used in G1).
P301		Part of W901&W905 (Used in G1).
P907		Part of AX01 (Used in G1).
P908 and P909		Part of A901 (Used in G1).
P934 and P935		Part of A901 (Used in G1).
P951 and P952	19A116659P25	Shell.
		——— RESISTORS ———
R901	5496870P31	Variable, carbon film: 10K ohms ±20%, sim to Mallory LC(25K). (Used in G2).
W904		EXCITER CABLE 19D417262G3
J933	19C851861P1	Assembly.
		——— PLUGS ———
P901	19A116659P25	Shell.
P906	19A127042P1	Terminal, solderless: sim to Malco 12093-12.
		——— MISCELLANEOUS ———
	7878455P1	Lug terminal; sim to GE89473. (Used in G1).
	19A116781P4	Contact: 22-26 AWG; sim to Molex 08-50-0107. (Used in G2 and G3).
	19A701785P1	Contact, electrical; sim to Molex 08-50-0404. (Used with P907, P908, P909).
	19C320679G1	Door. (Used in G1).
	19C320664P1	FR (Used in G1).
	19B226035G1	Support (Used in G1).
	19B226105G2	Support (Used in G1).
	19B234589P1	Pawl. (Used in G1).
	19C336435P1	Knob. (Used in G1).
	N193P808B6	Tap Screw;, Phillips POZIDRIV: No. 6-20 X 1/2 (Part of door latch)
	5493361P8	Washer, spring tension. (Part of door latch)
	4035664P8	Nut, self locking. (Used on hinge).
	19A115161P2	Sleeving. (Used in G1).
	19B226035G2	Support (Used in G1).
	N402P39B6	Flatwasher: No. 10. (Used in G1).
	19A115874P1	Catch, friction. (Used in G1).
	19B201074P204	Tap screw, phillips POZIDRIV: No. 4-40 x 1/4. (Used with P101).
	19A116686P2	Nut, sheet spring. (Used in G1).
	N529P11B6	Plug Button (Used in 3/8 inch hole).
	19B201074P305	Tap screw, Phillips POZIDRIV: No. 6-32 x 5/16. (Used to secure J937).
	19B209519P1	Polarity tab. (Used with P901, P951, and P952.
	19A121676P2	Guide Pin (Used with J931-J933).
	19A116496P1	Cable clip. (Used in G1).
	7115130P9	Lockwasher, Internal tooth: No. 3/8. (Used in G1).
	7165075P2	Hex nut, brass: thread size No. 3/8-32. (Used in G1).
	4037158P4	Rubber channel. (Used in G1).
	N529P18B6	Plug button (Used in G1).

LBI4799A

MASTR II CONTINUOUS DUTY
STATION HARNESS WITH METERING
19C320811G4

SYMBOL	PART NO.	DESCRIPTION
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J1		Connector. Includes:
	19B209288P5	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 13).
J2		Connector. Includes:
	19B209288P3	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 9).
J3		Connector. Includes:
	19B209288P5	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 9).
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P1		Connector. Includes:
	19B209288P20	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 11).
P2		Connector. Includes:
	19B209288P20	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 6).
	19B209288P30	Contact, electrical: male; sim to Molex 02-09-2141. (Quantity 1).
P3		Connector. Includes:
	19B209288P20	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 9).
P4		Connector. Includes:
	19B209288P20	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 7).
	19B209288P30	Contact, electrical: male; sim to Molex 02-09-2141. (Quantity 1).
P5		Connector. Includes:
	19B209288P23	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 4).
P6 thru P8	19A143191G1	Connector includes 19C330656P1 - SHELL and 19A115793P1 - CONTACTS
P9		Connector. Includes:
	19B209288P4	Shell.
	19B209288P30	Contact, electrical: male; sim to Molex 02-09-2141. (Quantity 1).
	19B209288P2	Contact, electrical: sim to Molex 02-09-2101. (Quantity 1).
P12	19A115793P1	Contact, electrical: sim to Malco 2700.
P13	19B219534P1	Connector, plug: 9 male contacts.
		- - - - - - - - - TERMINAL BOARDS - - - - - - - - -
TB1	19A130651G1	Plate.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

LBI4796B

MASTR II CONTINUOUS DUTY
STATION HARNESS
19C320811G1

SYMBOL	PART NO.	DESCRIPTION
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J1		Connector. Includes:
	19B209288P5	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 13).
J2		Connector. Includes:
	19B209288P3	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 9).
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P1		Connector. Includes:
	19B209288P20	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 11).
P2		Connector. Includes:
	19B209288P20	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 6).
	19B209288P30	Contact, electrical: male; sim to Molex 02-09-2141. (Quantity 1).
P3		Connector. Includes:
	19B209288P20	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 9).
P4		Connector. Includes:
	19B209288P20	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 7).
	19B209288P30	Contact, electrical: male; sim to Molex 02-09-2141. (Quantity 1).
P5		Connector. Includes:
	19B209288P23	Shell.
	19B209288P29	Contact, electrical: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (Quantity 2).
P6 thru P8	19A143191G1	Connector includes 19C330656P1 - SHELL and 19A115793P1 - CONTACTS
P9		Connector. Includes:
	19B209288P4	Shell.
	19B209288P30	Contact, electrical: male; sim to Molex 02-09-2141. (Quantity 1).
	19B209288P2	Contact, electrical: sim to Molex 02-09-2101. (Quantity 1).
P12	19A115793P1	Contact, electrical: sim to Malco 2700.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

PRODUCTION CHANGES

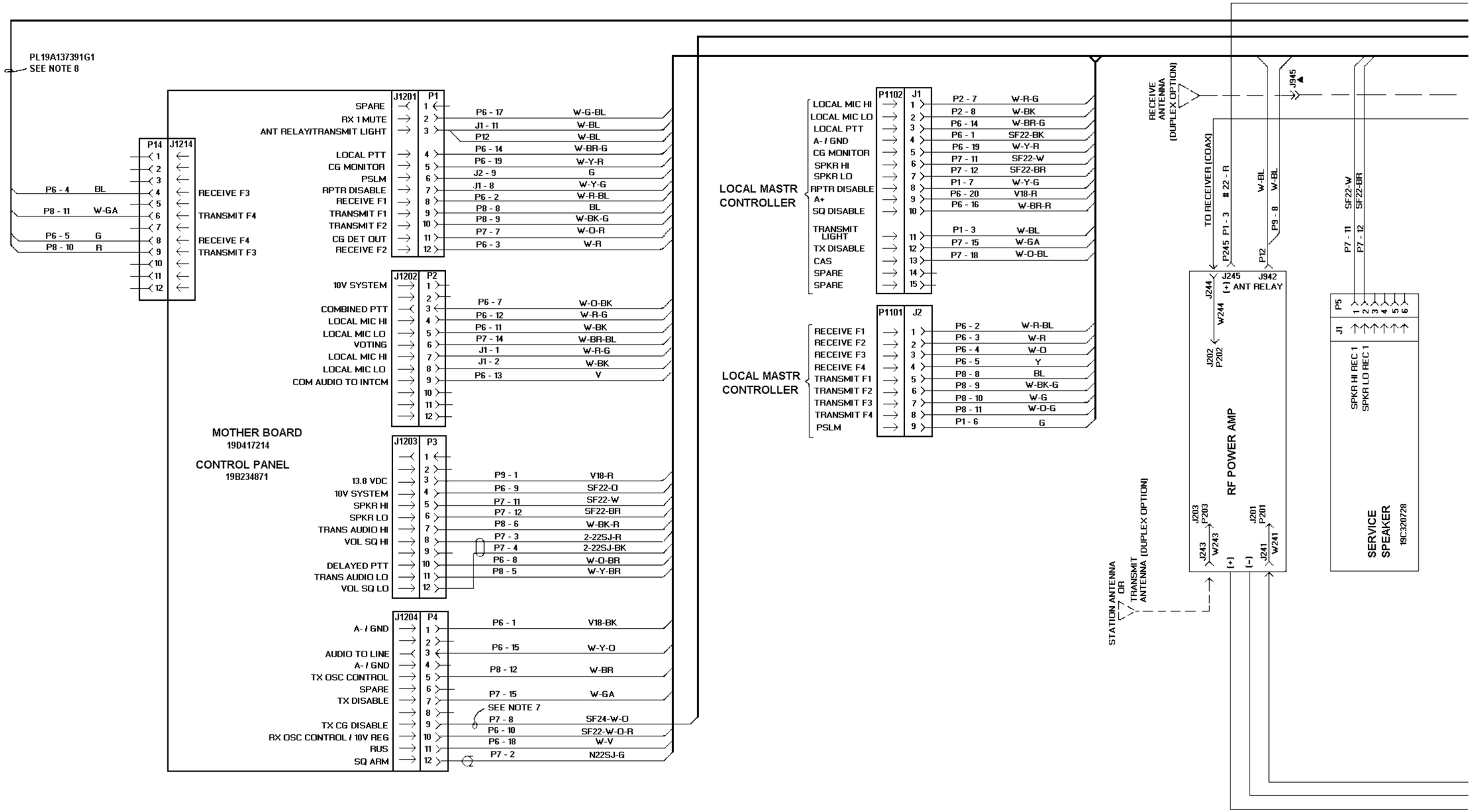
Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter" which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for the descriptions of parts affected by these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

REV. A - COMPONENT BOARD 19D417213G1
To provide carrier control alarm access holes, to provide alarm tone capability. Added H78 and H79 at P907 pin 2 and 6 on the printed wire board 19D417205P1.

REV. B - COMPONENT BOARD 19D417213G1
To improve adjacent channel selectivity. Added a No. 18 black wire from P951-21 to J931-1. Deleted H62. Added connection between J951-21 to J904-20. Deleted connection between J904-17 and J904-20.

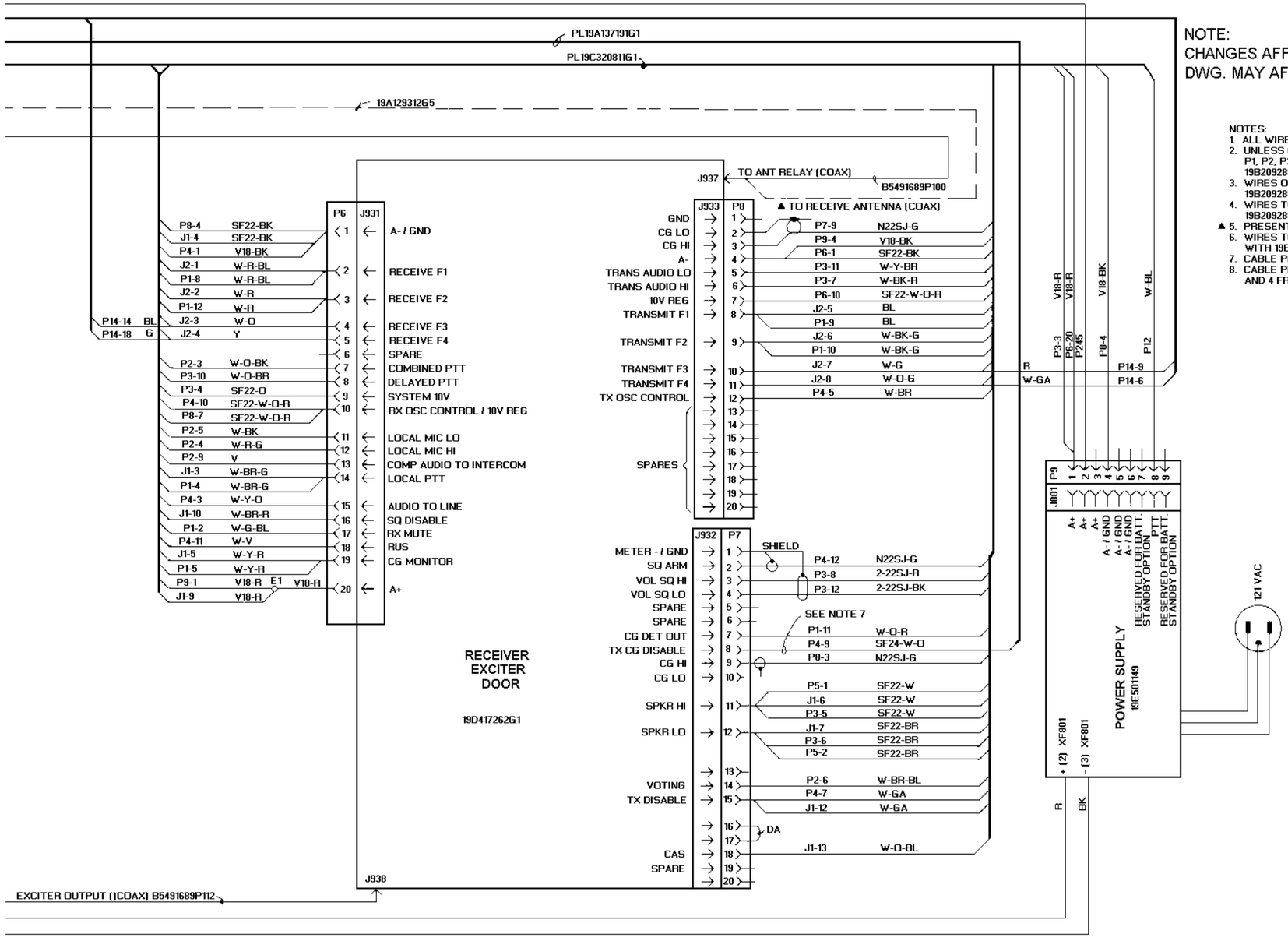
REV. C - COMPONENT BOARD 19D417213G1
To improve adjacent channel selectivity of Mile Stations. Added C4 through C7.

REV. D - COMPONENT BOARD 19D417213G1
To reduce noise on 10V line. Added capacitor C8 (19A701534P8), from J903-11 to A-.



CONTINUOUS DUTY STATION HARNESS WITHOUT METERING 19C320811G1

(19R622032, Rev. 15)

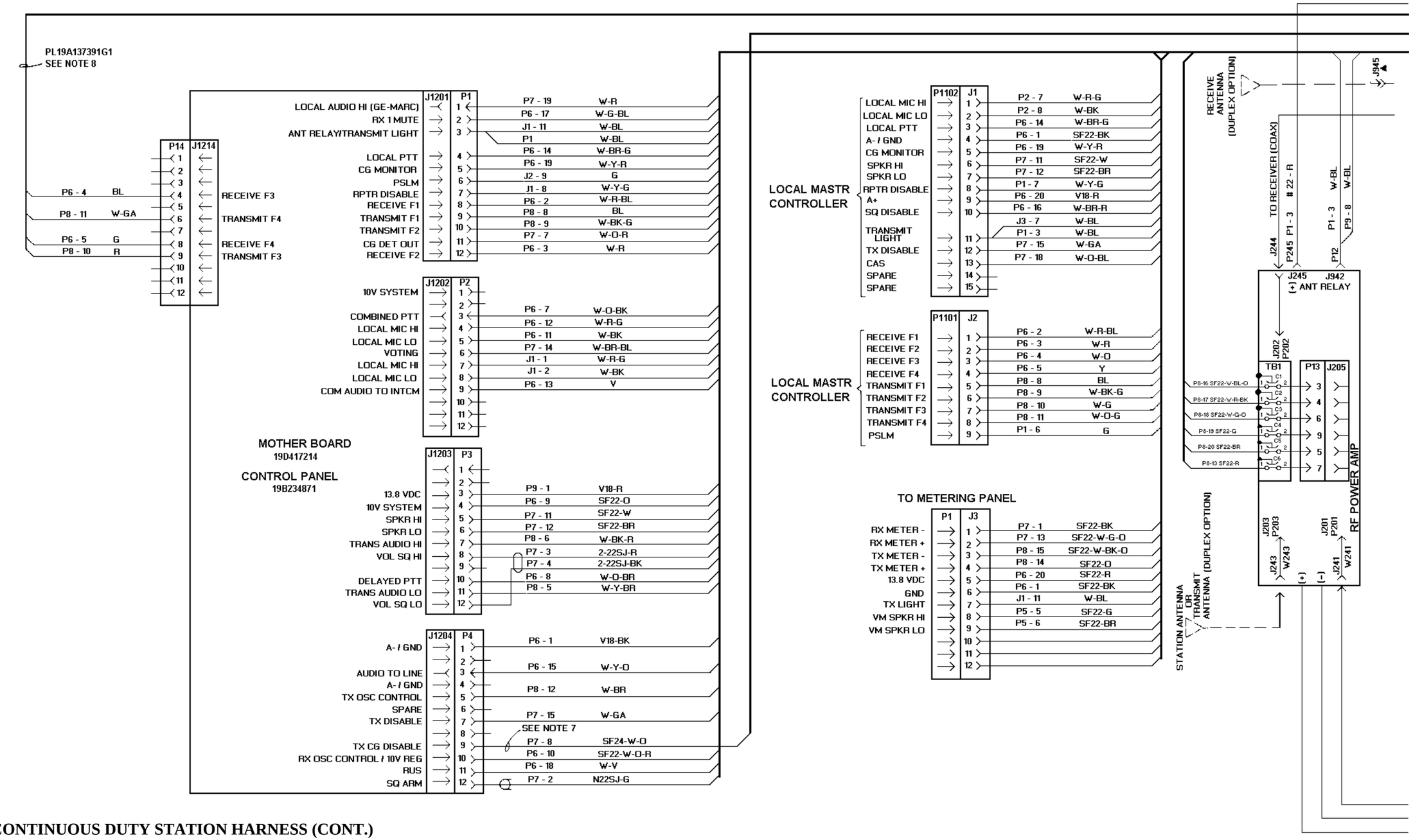


NOTE:
CHANGES AFFECTING THIS DWG. MAY AFFECT 19R622265 & 19R601615.

NOTES:
1. ALL WIRES ARE N24 UNLESS OTHERWISE NOTED.
2. UNLESS OTHERWISE NOTED ALL WIRES TO J1, J2, P1, P2, P3, P4 AND P5 TERMINATED WITH 19B209288P29.
3. WIRES OT P2-3 AND P4-3 ARE TERMINATED WITH 19B209288P30.
4. WIRES TO P9-1 AND P9-4 ARE TERMINATED WITH 19B209288P2.
5. ▲ PRESENT WITH DUPLEX OPTION ONLY.
6. WIRES TO P3-3, P4-1, P4-4 AND J1-9 ARE TERMINATED WITH 19B209288P1.
7. CABLE PL19A137191G1 USED ON "EACOM" APPLICATIONS ONLY.
8. CABLE PL19A137391G1 USED ON 4 FREQ TONE REMOTE AND 4 FREQ TONE REMOTE / REPEAT.

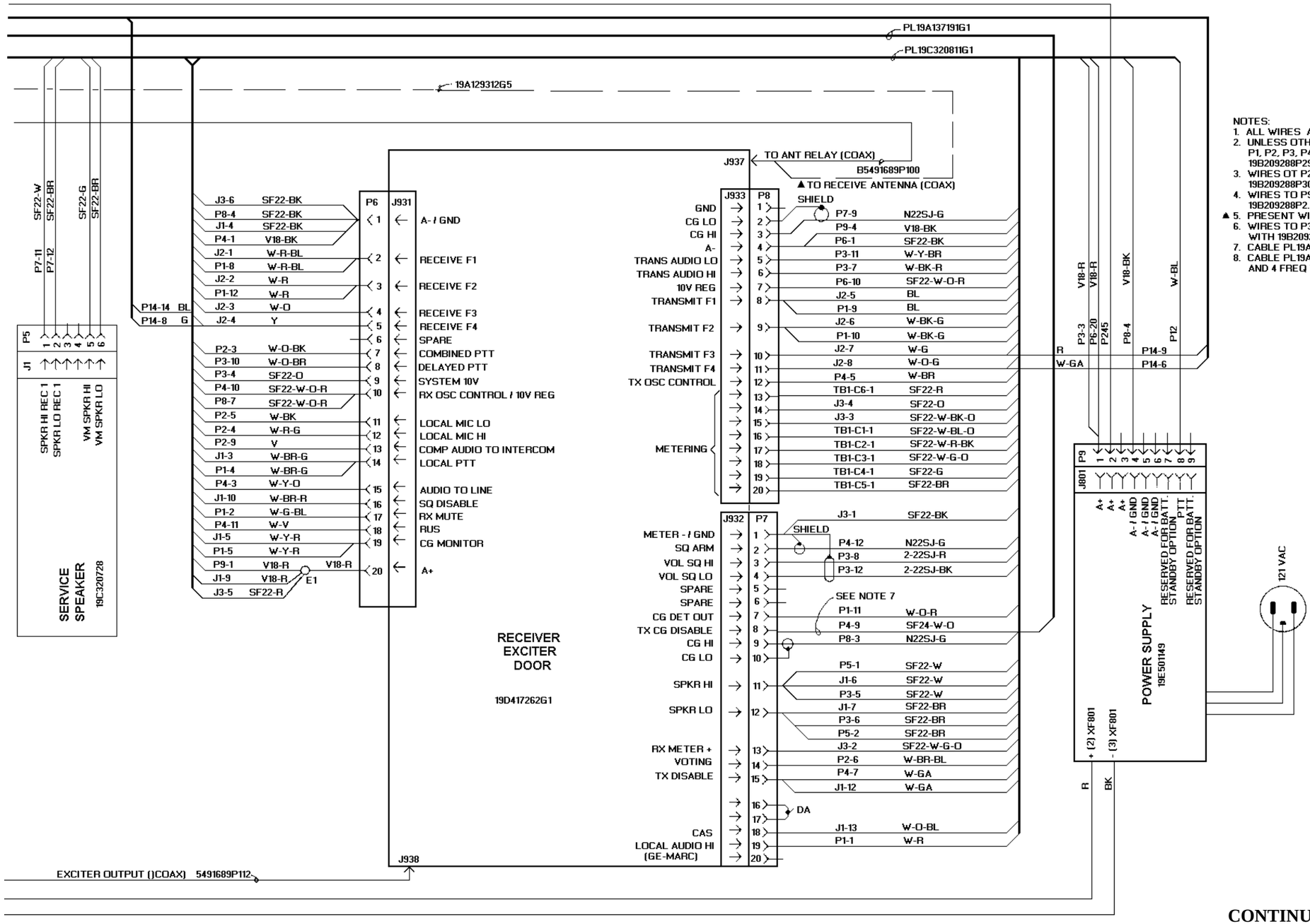
(19R622032, Rev. 15)

CONTINUOUS DUTY STATION HARNESS WITHOUT METERING 19C320811G1



CONTINUOUS DUTY STATION HARNESS (CONT.) WITH METERING 19C320811G4

(19R622055, Rev. 14)



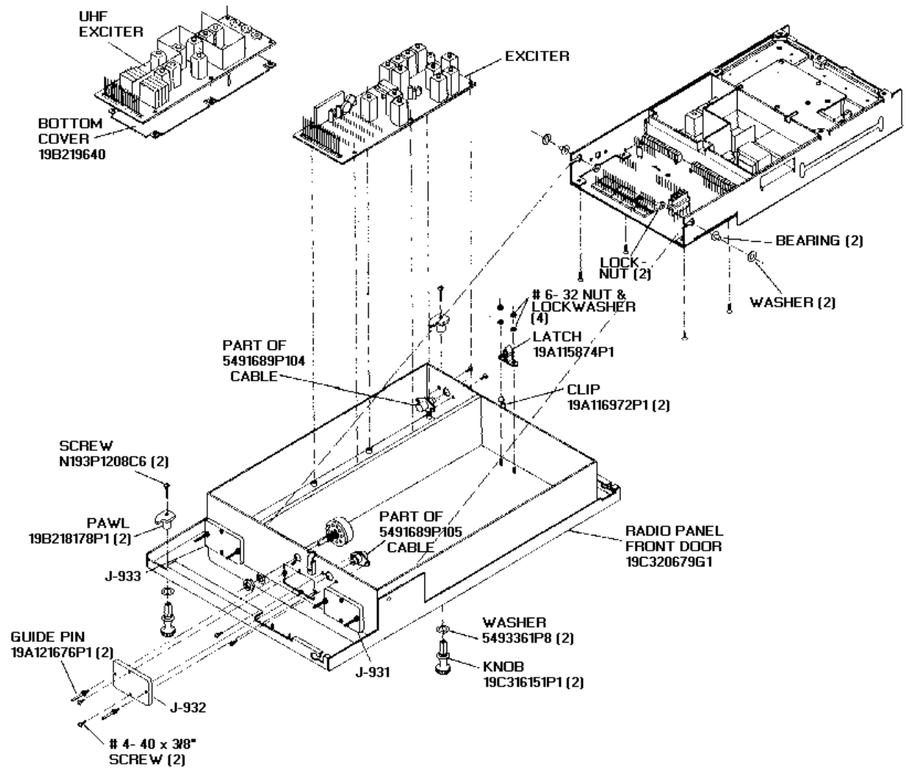
NOTES:
1. ALL WIRES ARE N24 UNLESS OTHERWISE NOTED.
2. UNLESS OTHERWISE NOTED ALL WIRES TO J1, J2, P1, P2, P3, P4 AND P5 TERMINATED WITH 19B209288P29.
3. WIRES OT P2-3 AND P4-3 ARE TERMINATED WITH 19B209288P30.
4. WIRES TO P9-1 AND P9-4 ARE TERMINATED WITH 19B209288P2.

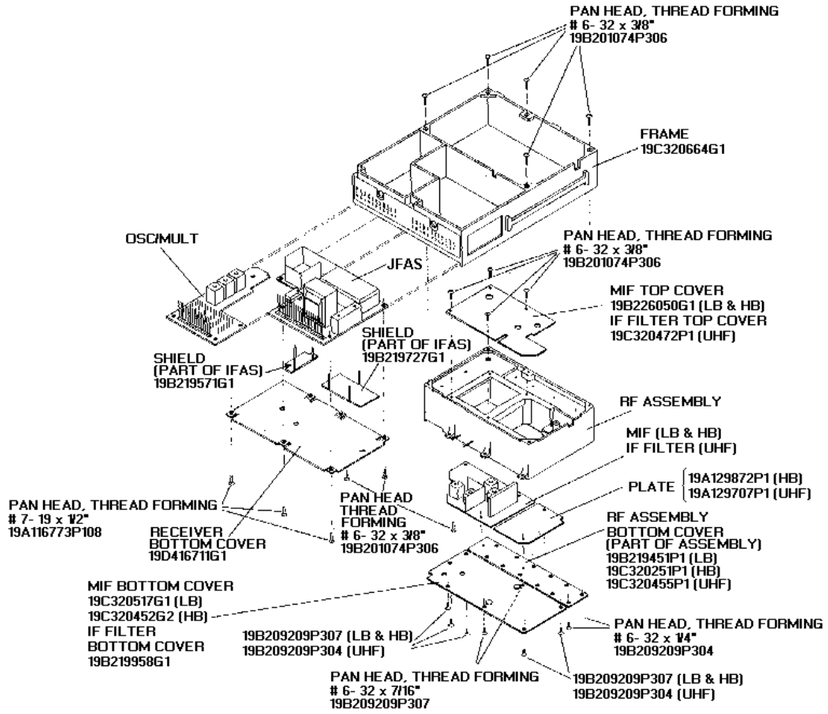
▲ 5. PRESENT WITH DUPLEX OPTION ONLY.

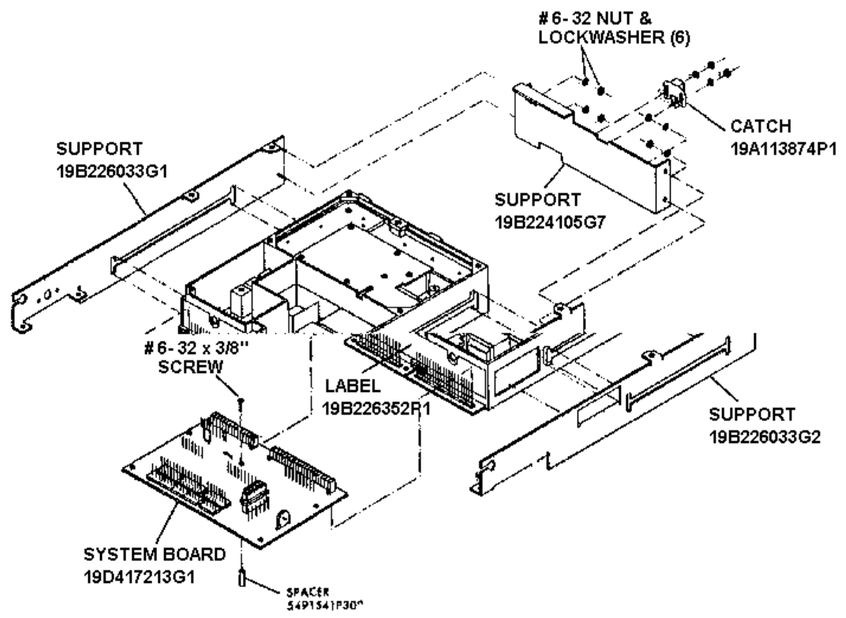
6. WIRES TO P3-3, P4-1, P4-4 AND J1-9 ARE TERMINATED WITH 19B209288P1.
7. CABLE PL19A137191G1 USED ON "EACOM" APPLICATIONS ONLY.
8. CABLE PL19A137391G1 USED ON 4 FREQ TONE REMOTE AND 4 FREQ TONE REMOTE / REPEAT.

CONTINUOUS DUTY STATION HARNESS WITH METERING 19C320811G4

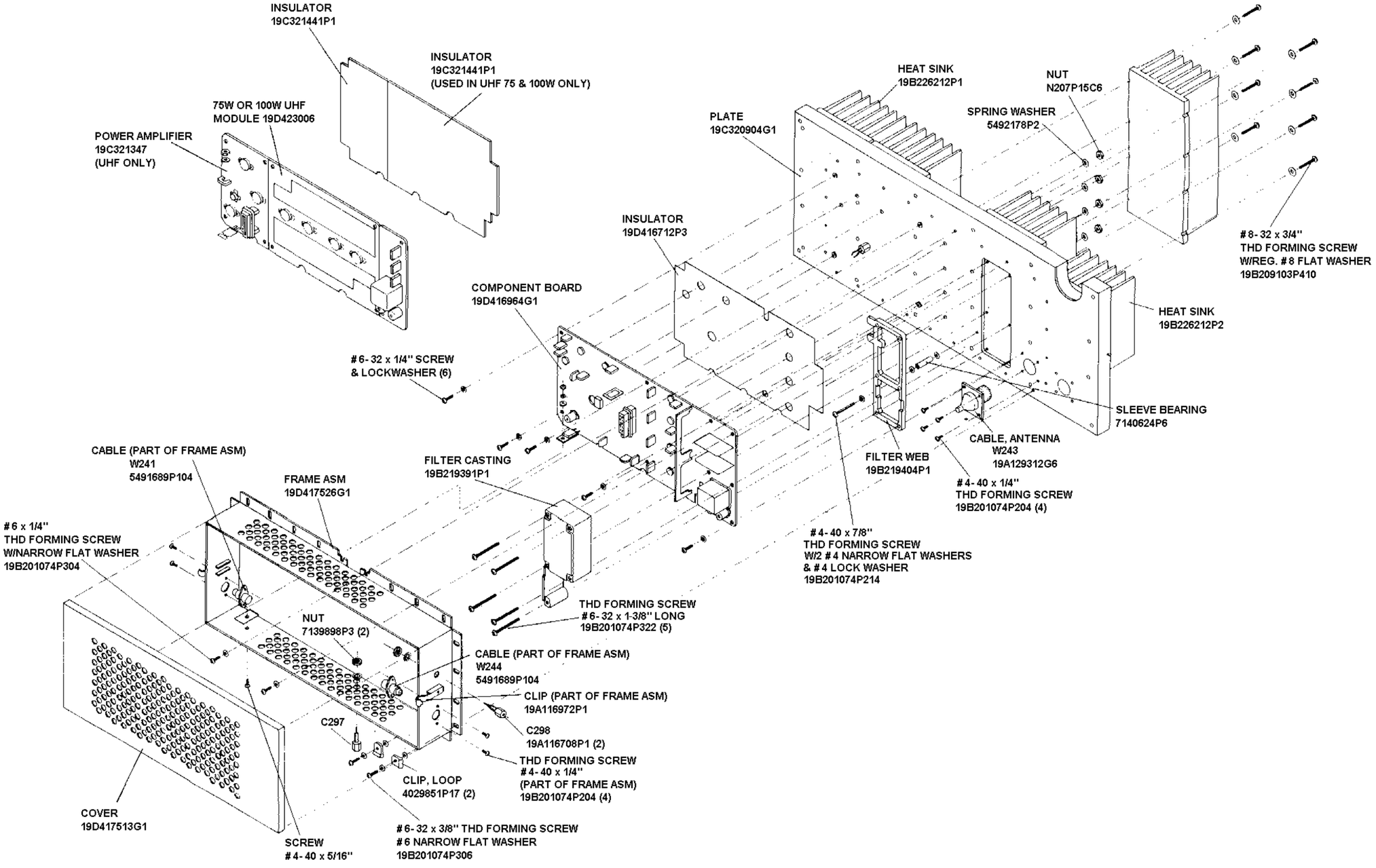
(19R622055, Rev. 14)



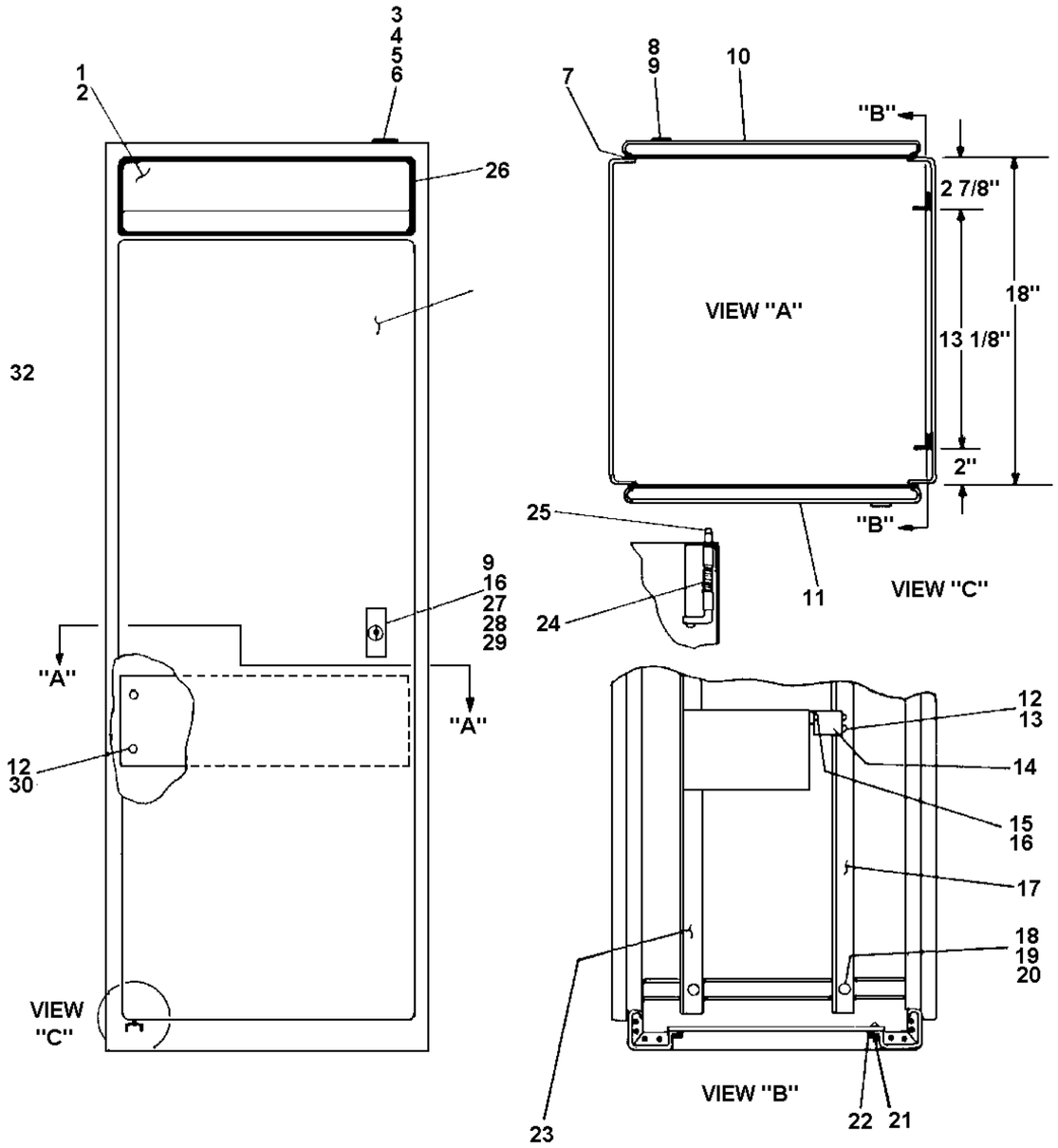




RADIO PANEL FRONT DOOR



TRANSMITTER POWER AMPLIFIER



PARTS LIST

LD114977A

PLOOR MOUNT STATION CABINET
19D417258G1
(SEE RC-2804)

SYMBOL	PART NO.	DESCRIPTION
1	19D417623G1	Grille.
2	19B226318P1	Grille plate. (Located under grille).
3	19B219744G2	Strain relief.
4	N80P15008C6	Machine screw: No. 8-32 x 1/2.
5	NZ10P15C6	Hex nut: No. 8-32.
6	N403P16C6	Lockwasher, external tooth: No. 8.
7	18A126220P1	Gasket, door.
8	19B209539P2	Lock, rear door; sim to Chicago Lock Co. 1703-ST.
9	19B209539P3	Key; sim to Chicago Lock Co. 1000 GR.
10	19C320756G2	Door, rear. 64 inch.
11	19C320758G1	Door, front. 59 inch.
12	18A134011P3	Tap screw: No. 10-16 x 1-1/8. (Quantity 52).
13	716086IP52	Nut, sheet spring; sim to Tinnerman C17B4-10Z-24. (Quantity 16).
14	19B226160P2	Support.
15	N80P16008C6	Machine screw: No. 10-32 x 1/2.
16	N403P16C6	Lockwasher: No. 10.
17	19B226094P2	Support.
18	N80P21012C6	Machine screw: No. 1/4-20 x 3/4.
19	N403P25C6	Lockwasher: No. 1/4.
20	N402P41C6	Flatwasher: No. 1/4.
21	N80P15006C6	Machine screw: No. 8-32 x 3/8.
22	716086IP5	Nut, sheet spring; sim to Tinnerman C1505-1032-157.
23	19B226094P1	Support.
24	19A129802P1	Spring.
25	19B226088P1	Pin hinge.
26	19B226092G1	Frame.
27	19B209539P1	Lock, front; sim to Chicago Lock Co. 4260-1.
28	N80P16007C6	Machine screw: No. 10-32 x 7/16.
29	N210P10C6	Hex nut: No. 10-32.
30	716086IP31	Nut, sheet spring; sim to Tinnerman C18810-031.
32	403105JP7	Nut, sheet spring; sim to Tinnerman C12046-D12-67.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

STATION CABINETS

PARTS LIST

LBI-4975K

DESK MATE STATION CABINET
CONTINUOUS AND INTERMITTANT DUTY
(SEE RC-2805)

SYMBOL	PART NO.	DESCRIPTION
		30 INCH CABINET
1	19C320655P1	Top.
2	19C320654P1	Screen.
3		(Not Used).
4		(Not Used).
5	5491682P23	Lock. Yale and Towne F6557DX1.
6	5491682P4	Key. Yale and Towne BF-10A.
7	19C336302G1	Front door.
	19C320744D7	Front door. (Earlier Models).
8	19D417231G3	Cabinet. (LESS DOORS). (Includes items 1 and 2).
9	19A134013P1	Tap screw: No. 10-16 x 3/4. (Quantity 52).
10	7160861P33	Nut, sheet spring: sim to Tinnerman C1794-10Z-24. (Quantity 52).
11	19C336302G2	Rear door.
	19C320744G8	Rear door. (Earlier Models).
12	19A134032P1	Protective plug. (Quantity 1).
13	19A134014P6	Bushing, strain relief: sim to Heyco HB 1093.
14	19A134015P1	Protective plug: sim to Caplug EPP-1/2. (Quantity 4).
		44 INCH CABINET
1	19C320655P1	Top.
2	19C320618P1	Screen.
3		(Not Used)
4		(Not Used).
5	5491682P23	Lock. Yale and Towne F6557(X).
6	5491682P4	Key. Yale and Towne BF-10A
7	19C336302G3	Front door.
	19C320744G9	Front door. (Earlier Models).
8	19D417231G4	Cabinet. (LESS DOORS). (Include items 1 and 2)
9	19A134013P1	Tap screw: No. 10-16 x 3/4 (Quantity 52).
10	7160861P33	Nut, sheet spring: sim to Tinnerman C19640-10AZ933R. (Quantity 52).
11	19C336302G4	Rear door.
	19C320744G10	Rear door. (Earlier Models).
12	19A134032P1	Protective plug. (Quantity 1).
13	19A134013P6	Bushing, strain relief: sim to Heyco HB-1093.
14	19A134015P1	Protective plug: sim to Caplug EPP-1/2. (Quantity 4).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

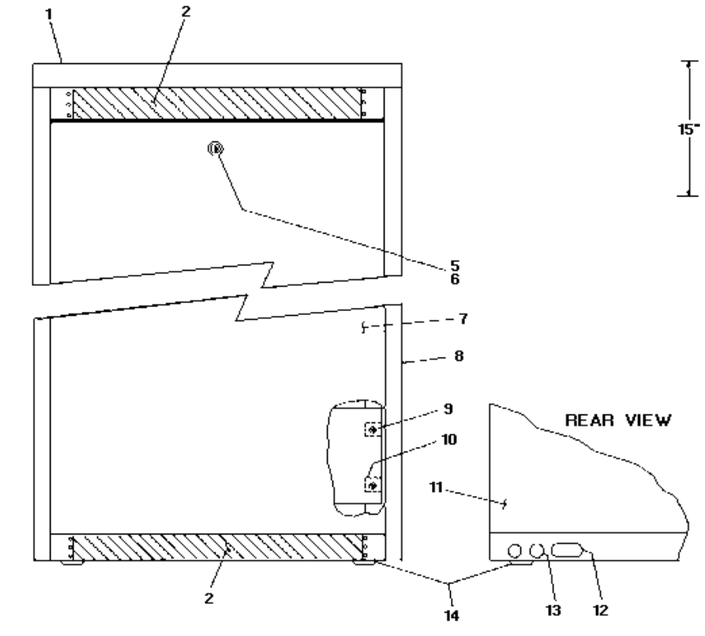
PARTS LIST

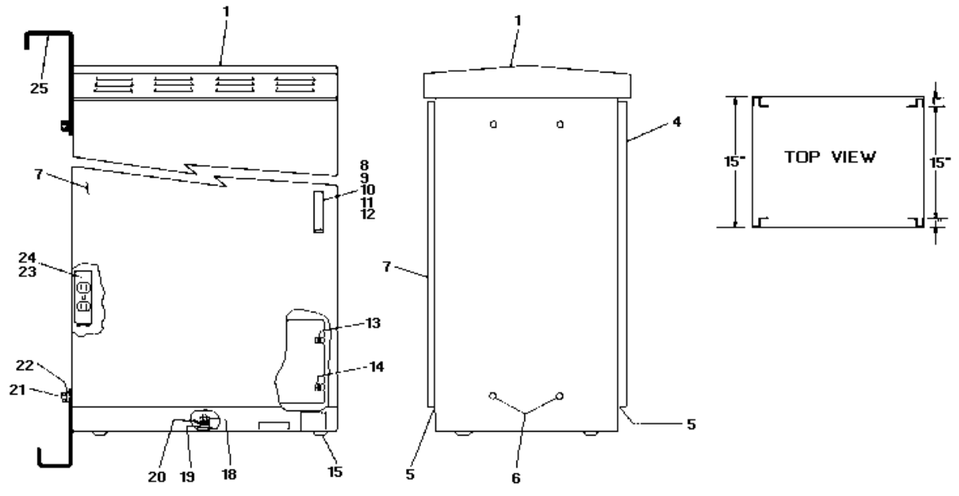
LBI-4976K

POLE MOUNT STATION CABINET
CONTINUOUS AND INTERMITTANT DUTY
19D417550G1
(SEE RC2806)

SYMBOL	PART NO.	DESCRIPTION
1	19D417330G1	Cabinet. (Less Doors).
4	19D417543G2	Door, left hand.
5	19A134128P1	Door seal. (Front and rear).
6	19A134058P1	Protective plug.
7	19D417543G1	Door, right hand.
8	19A136049P3	Door handle.
9	7150752P1	Strike catch.
10	NS4P150D8S5	Machine screw: No. 8-32 x 1/2.
11	N403P16B6	Lockwasher, external tooth: No. 8.
12	N210P15B6	Hex nut: No. 8-32.
13	19A134011P1	Tap screw: No. 10-16 x 1-1/8. (Quantity 52).
14	7160861P33	Nut, sheet spring: sim to Tinnerman C19640-10AB-600. (Quantity 52).
15	19A136015P2	Protective plug.
16	NP270687	Nameplate.
17	NP196405	Nameplate.
18	N210P2186	Hex nut: No. 1/4-20.
19	N403P2586	Lockwasher, external tooth: 1/4 inch.
20	19A115419P2	Solderless terminal: sim to ILSCO SLD70.
21	N22P25016C6	Cap screw: No. 3/8-16 x 1.
22	N405P43C6	Lockwasher: 3/8 inch.
23	19B226350G1	Outlet strip.
24	19B209103P506	Tap screw: No. 10-32 x 3/8. (Secures outlet strip).
25	19C320942P1	Mounting bracket.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES





STATION CABINETS