ERICSSON

Mobile Communications

ACN-186

DELTA/RANGR DESK TOP STATION
(LOCAL/REMOTE)

Maintenance Manual

TABLE OF CONTENTS

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SYSTEM SPECIFICATIONS*

FREQUENCY RANGE	Refer to the applicable DELTA or RANGR Mobile Radio Maintenance Manual
INPUT VOLTAGE	90-130 VAC @ 50-65 Hz 180-260 VAC @ 50-65 Hz (Standby Battery 13.8 VDC Nominal)
INPUT POWER	
Receive	60.5 Watts @ 0.5 amperes
Transmit	847 Watts @ 7 amperes (maximum)
POWER OUTPUT RATINGS	Refer to the applicable DELTA or RANGR Mobile Radio Maintenance Manual
DUTY CYCLE(EIA)	Receiver 100%, Transmitter 20%
TEMPERATURE RANGE	-30°C to +60°C (-22°F to +140°F) (Performance specified per EIA)
SPEAKER	8 ohms
DESK MICROPHONE	Transistorized Electret (standard)
DIMENSIONS (HXWXD)	14x50x43 cm (5.5x20x17 in.)
WEIGHT	20 kg (44 lbs)

* For detailed transmitter and receiver specifications, refer to the appropriate mobile Maintenance Manual.

COMBINATION NOMENCLATURE

Digits 1 & 2	Digit 3	Digit 4	Digit 5	Digit 6	Digit 7
Product Code	Version	Control	Power Source	Package	Standard
N8	**A** Basic Data Obsolete	**J** Local/Remote Tone	**0** No Power Supply Obsolete	**F** Desk Top	**S** Standard
	B PST	**K** Local/Remote (DC)	**1** AC Power Supply 12A (TX0-50 W)		
	C Delta/Rangr	**L** Local	**2** AC Power Supply 30A (TX 51-110W)		
		R Remote (DC)			
		T Remote Tone			

STRUCTURED OPTIONS

OPTION A Obsolete	OPTION B Obsolete	OPTION T	OPTION V Obsolete
Antenna Connector	Universal Tone Cables	Scan	Voice Guard
0 Standard	**0** None	**0** None	**0** None
R Rangr 800 (non PST)	**A** Decoder Cable	**D** Scan 2 Freq	**G** DES & FS-1027 Endorsed
	B Encoder Cable		**V** VGE
	C Enc/Dec Cables		**W** DES Non-FS-1027 Endorsed

DESCRIPTION

The General Electric DELTA/RANGR station is a fully solid state station for local/remote control operation. The most advanced manufacturing techniques are used to provide the highest quality and reliability.

The station is available in all frequency bands and power levels available in the DELTA and RANGR Mobile Radio Units.

MECHANICAL PACKAGE

The station is housed in an attractively styled Desk Top cabinet, and will operate over a wide range of AC power sources. The basic station consists of a control and indicator panel, a 13-ampere or 30-ampere power supply, and a DELTA or RANGR mobile radio unit. It will operate from 120 or 240 VAC sources @ 50/60 Hz. Input power variations of ±20% are tolerated. (See Figures 1 and 2). The station combination may be equipped with:

- RF channel
- Microcomputer control
- Up to 16 channels
- Two channel scan
- 0.0002% or 0.0005% frequency stability
- Optional UHS (Ultra High Sensitivity) preamplifier
- Tone or Digital Channel Guard
- Battery standby operation
- External Tone Encoder & Decoder
- Memory Backup Supply

RADIO PACKAGE (DELTA)

The basic radio consists of two printed wiring boards mounted in a cast aluminum frame. The two boards are the transmitter-receiver-system (TRS) board and the power amplifier board.

The radio is of single-layer construction with all major modules and tuning adjustments easily accessible from the top of the radio.

Centralized metering jacks for the transmitter, receiver and system functions are provided for simplified alignment and troubleshooting.

Refer to the Maintenance Manual for the DELTA or RANGR radio for more detailed information.

RADIO PACKAGE (RANGR)

The basic radio consists of five printed wiring boards mounted in a cast aluminum frame. The five boards are the System Control Board, Synthesizer Board, Receiver Board, Exciter Board, and Power Amplifier Board.

The radio is of single-layer construction with all major modules and tuning adjustments easily accessible.

Centralized metering jacks for the transmitter, receiver and system functions are provided for simplified alignment and troubleshooting.

Refer to the Maintenance Manual for the radio for more detailed information.

REMOTE

The Remote board provides the electrical interface between the Local Controller and the base station. It generates the different currents or tones required to select functions. Refer to the Maintenance Manual for the Remote board for detailed information.

VOICE GUARD

General Electric VG-9600 series Voice Guard modules are used in digital speech encryption/decryption systems with DELTA/RANGR station combinations. Refer to the appropriate Maintenance Manuals for detailed information.

CONTROL PANEL

The control panel houses the loudspeaker, keyboard, and display board. A system cable interconnects the station control, power and audio functions and the radio package (See Figures 1 and 2).

OPERATION

All operating controls, except for the power OFF-ON switches, are located on the control panel. The station fits easily on a desk, shelf or table, and should be within easy reach of the operator (See Figure 1).

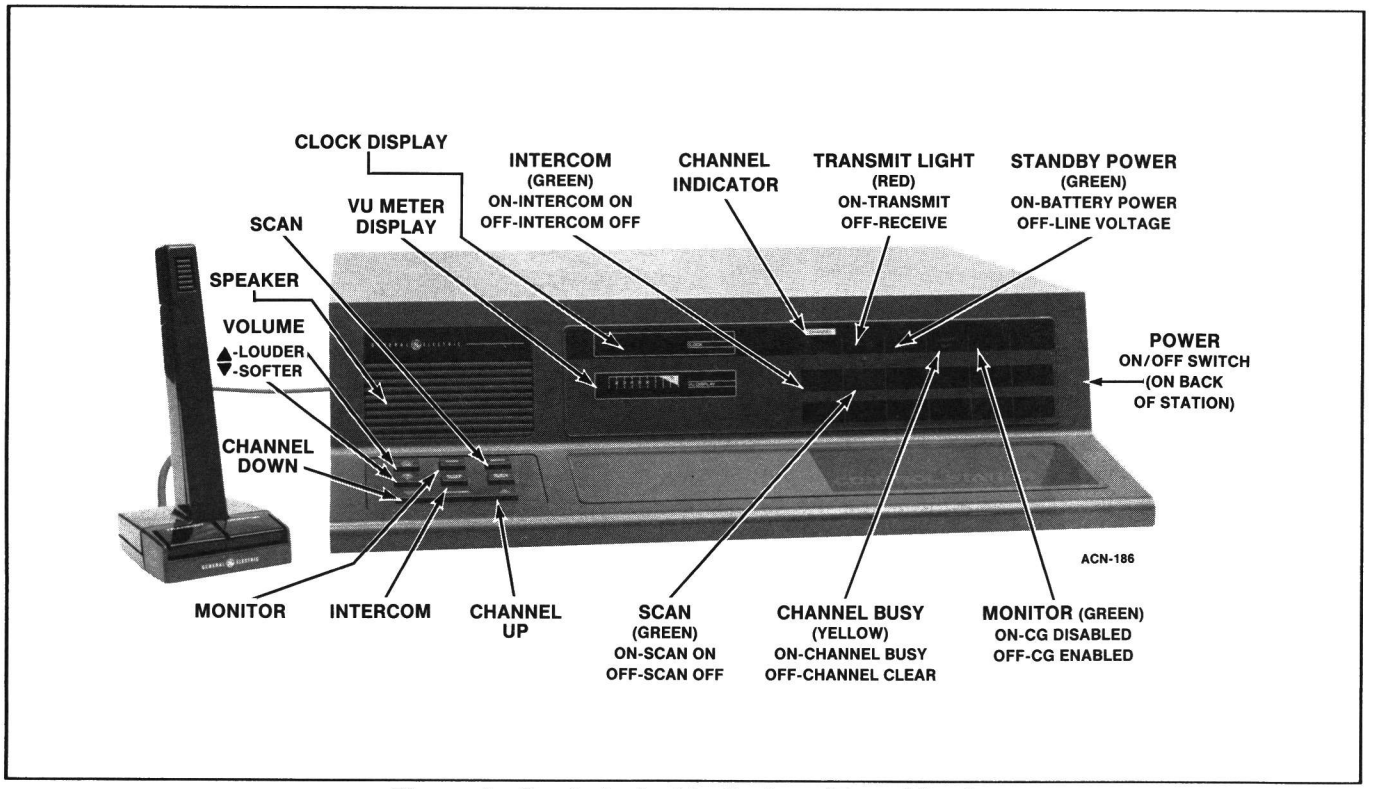

Figure 1 - Controls And Indicators (Front View)

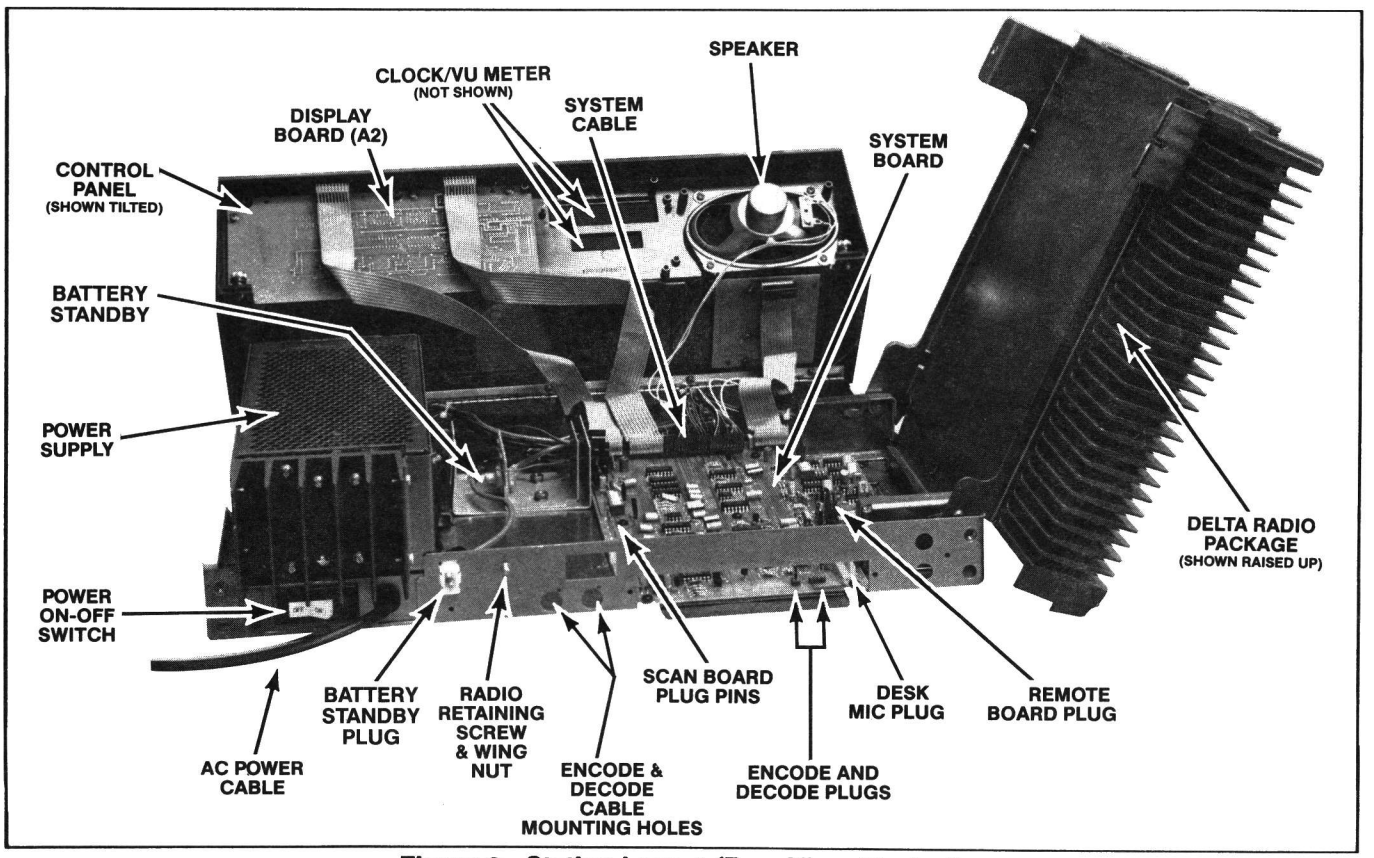

Figure 2 - Station Layout (Rear View, Typical)

TO RECEIVE A MESSAGE

1. Turn the radio on by placing the power switch in the ON position. This lights the CHANNEL indicator and optional CG MONITOR indicator.

2. Press down the keyboard MONITOR switch, and adjust the VOLUME control for a comfortable listening level. Then press and release the MONITOR switch again.

3. If more than one frequency is available, select the proper frequency with the CHANNEL selector switch.

4. The station is now ready to receive messages from other radios in the system. When the first call is received, it may be necessary to adjust the VOLUME control for the desired listening level.

TO TRANSMIT A MESSAGE

1. If more than one channel is available, select the proper channel with the CHANNEL selector switch.

2. Check the CHANNEL BUSY indicator to make sure no one else is using the channel. The channel is clear when the indicator is off.

3. Press the TRANSMIT switch on the microphone. This will cause the red indicator light on the Control Panel to glow. Then speak into the microphone using a normal speaking voice. Always release the TRANSMIT switch as soon as the message is completed, and listen for an answer to the call.

INITIAL ADJUSTMENT

After the Desk Top Station has been installed as described in the Installation Manual, the following adjustments should be made by an authorized electronics technician.

RECEIVE AUDIO

An audio plug must be installed in the T/R/S Board in DELTA radio (Option AP04) or on the System Control Board in the RANGR radio to complete the receive audio path for the station. If those jumpers are not correctly installed, no receive audio will be heard from the station.

DELTA RADIO: Install jumper P610/J610 on the T/R/S Board in the DELTA-S, SX radio.

RANGR RADIO: Verify that P708 is connected across pins 2 and 3 on the System Control Board.

TRANSMITTER ADJUSTMENT

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

RECEIVER ADJUSTMENT

The initial adjustment for the receiver includes tuning the input circuit to match the antenna. For receiver adjustment, refer to the Receiver Alignment Procedure in the applicable radio unit Maintenance Manual.

POWER SUPPLY

The power supply is a self contained module which provides a single output of 13.8 VDC. Two versions of the power supply are available; one for low power applications and one for high power applications. Refer to the Power Supply Maintenance Manual for detailed information.

DISPLAY BOARD

The Display board contains all the LED indicators and indicator interface circuitry. Refer to the Operators Manual and the Display Board Maintenance Manual for detailed information.

STATION OPTIONS

9-VOLT MEMORY BACKUP

The 9-Volt Memory Backup battery (Option BU1A) supplies 9-Volt battery assembly 19B801331G1 to provide backup power for a 5-Volt regulator. The regulator supplies 5-Volt DC to portions of the channel select circuit, which allows the station to remain on the selected channel during power interruptions.

The 9-Volt battery connects to J8 on the System Board. To install the 9-Volt Memory Backup option, simply connect the battery leads to J8-2 (+ 9-Volts) and J8-1 (GND) located on the System Board.

EXTERNAL ENCODER & DECODER

Two cables (Option CC3V) are available for connecting an optional external encoder or decoder to the System Board. The cables are mounted in holes in back of the station chassis, and are connected to J19 (encoder) and J18 and J27 for the decoder.

CLOCK VU METER OPTION (CM1A)

The clock portion of this option displays either 12 hour or 24 hour readout. The VU meter gives an indication of relative transmission input signal. See LBI-31533 for a detailed description of this option.

STATION BATTERY STANDBY OPTION (BU02) (EARLIER MODELS - 19C851129G1)

A station battery standby option is available to permit continued station operation in the event of an AC power failure. The option provides internal switching in the station to a customer-supplied 13.8-Volt battery supply.

NOTE

The station battery standby option does not charge the 9-Volt Memory Backup battery.

CIRCUIT DESCRIPTION

The standby battery option consists of a diode assembly mounted on the station chassis, and one black cable and a red fused cable that connects from the battery to battery standby board 19C851129G1. The output of the battery standby board connects to the station power supply plug P1-8 (13.8 V) and P1-2 (ground).

When the station is powered by an AC voltage, diode D1 on the battery standby board is reverse biased so that the battery standby voltage is not applied to the station.

If the AC power fails, diode D1 is forward biased, and the battery voltage is applied through power supply connector P1 and then to the station and radio.

When AC power is again applied to the station, diode D1 is reverse biased, disabling the battery standby circuit. The power supply output also turns off the STANDBY POWER indicator.

A second battery output is connected directly to the standby power indicator circuit on the Systems Board. In the event of power failure, the battery voltage is applied to the STANDBY POWER indicator on the display board, turning the indicator on.

STATION BATTERY STANDBY OPTION (BU1B) 19D438326G1-3

A station battery standby option is available to permit continued station operation in the event of an AC power failure. The option provides internal switching in the station to a customer-supplied 13.8 Volt battery supply.

NOTE

The station battery standby option does not charge the 9Volt Memory Backup battery.

For complete Description, Circuit Analysis and Installation Procedures, refer to associated Maintenance Manual LBI-31979 which is provided with Option BU1B.

MAINTENANCE

PREVENTIVE MAINTENANCE

To ensure high operating efficiency and to prevent mechanical and electrical failures from interrupting system operations, routing checks should be made of all mechanical and electrical parts at regular intervals. This preventive maintenance should include the checks as listed in the table of Maintenance Checks that follows.

DISASSEMBLY

To gain access to the station radio unit for servicing:

1. Remove the desk station top cover (See Figure 2).
2. Unlock the radio.
3. Pull down the handle.
4. Pull the radio forward and lift radio out of mounting place if desired.
5. Pry up the front of top cover and lift the cover off.

MAINTENANCE CHECK	INTERVAL BETWEEN CHECKS	
	Every 6 Months	As Required
Transmitter Alignment - Compare meter readings with voltages read during initial tune up. Check power output. (See Alignment Procedure for Transmitter.)		X
Receiver - Retune the front end and check meter readings taken during initial tune up. (See Alignment Procedure for Receiver.)		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 has accumulated inside the cabinet.	X	
Frequency Check - Check transmitter frequency and deviation as required.		X

ADJUSTMENT PROCEDURE

The adjustment procedure consists of setting the audio levels, volume, squelch and modulation controls on the System Board, and the remote audio levels on the Remote Board.

EQUIPMENT REQUIRED

1. Signal Generator
2. Audio Oscillator
3. AC VTVM
4. Audio Isolation Transformer (1:1); GE Part No. 19A116736P1 or equivalent (See Figure 4).
5. 8-ohm, 10-watt resistor
6. 600-ohm resistor

PROCEDURE

Receiver Squelch

1. Depress the MON button and hold down. Noise should be heard from the panel speaker. Adjust the volume control on the front panel for a comfortable listening level.
2. Release the MON button and the receiver should squelch. However, if the noise is still present when the MON button is released, adjust squelch control R11 until the receiver squelches.

Receiver Volume

1. Apply an on frequency, 1000 microvolt RF signal modulated with a 1 kHz tone at 3.0 kHz deviation to the receiver antenna input.
2. Adjust the front panel volume control for maximum.

3. Connect an AC VTVM as shown in Figure 4 using the isolation transformer and 8-ohm, 10-watt resistor.

4. Adjust volume control R50 on the System Board for 4.0 Volts (2 watts) audio power across the speaker.

Local Audio To Transmitter

1. Remove the microphone high lead from J7-4. Connect a 22 uf capacitor (+) to J7-4.

2. Connect an audio oscillator with 20 mV output at 1 kHz to the (-) end of the 22 uf capacitor. Connect the low side of the audio oscillator to J6-9.

3. Adjust R61 on the System Board to mid-range.

4. Jumper J7-2 to ground for PTT and adjust R66 on the System Board for 3.0 kHz transmitter deviation.

Local Audio To Remote

1. Remove the microphone high lead from J7-4. Connect a 22 uf capacitor (+) to J7-4.

2. Connect an audio oscillator with 20 mV output at 1 kHz to the (-) end of the 22 uf capacitor. Connect the low side of the audio oscillator to J6-9.

3. Connect a 600 load across the line Output.

4. Connect an AC VTVM across the 600 load.

5. Press the Intercom switch and adjust R70 on the System Board for 0 dBm.

Remote Audio To Transmitter And Local Speaker

1. Connect an audio oscillator with 250 mV (-10 dBm) output at 1 kHz to Remote Line Input.

2. Simulate a remote PTT by jumpering J9-4 or J19-2 (Remote PTT) to J6-9 (GND).

3. DC Remote Board: Adjust R1 on the DC remote control board for 3.0 kHz transmitter deviation.

4. Adjust R86 of the System Board in conjunction with the Local Volume Control for a comfortable listening level.

Receiver To Remote Audio

1. Apply an on frequency 1000 microvolt RF signal modulated with a 1 kHz tone at 3.0 kHz deviation to the receiver antenna input.

2. Connect a 600 load across the Line Output.

3. Connect an AC VTVM across the 600 load.

4. DC Remote Board: Adjust R2 on the DC remote board for + 7 dBm across J1-1 and J1-2.

   Tone Remote Board: Adjust R35 for a 0 dBm across terminals J1-3 and J1-4.

After all the System Board adjustments have been made as outlined above, connect the local microphone to the station. Speak into the microphone from a distance of 6 inches and note the transmitter deviation. If the transmitter deviation needs to be changed, R61 on the System Board should be adjusted for the desired level.

RADIO PROGRAMMING

The DELTA/RANGR Desk Top Station radio is programmed using the General Electric Universal Radio Programmer TQ2310. The radio may be programmed through programming jack J17 on the System Board.

NOTE

When programming the desk top station, jumper P3 on the station Systems Board must be removed for serial programming of the radio through J17. After programming the radio, reconnect jumper P3.

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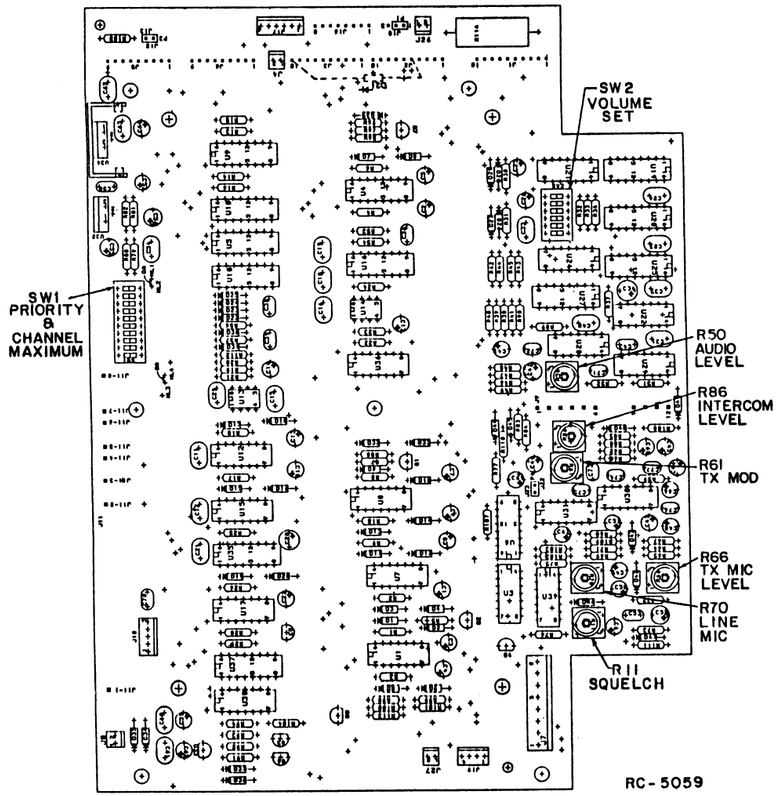


Figure 3 - System Board Adjustment

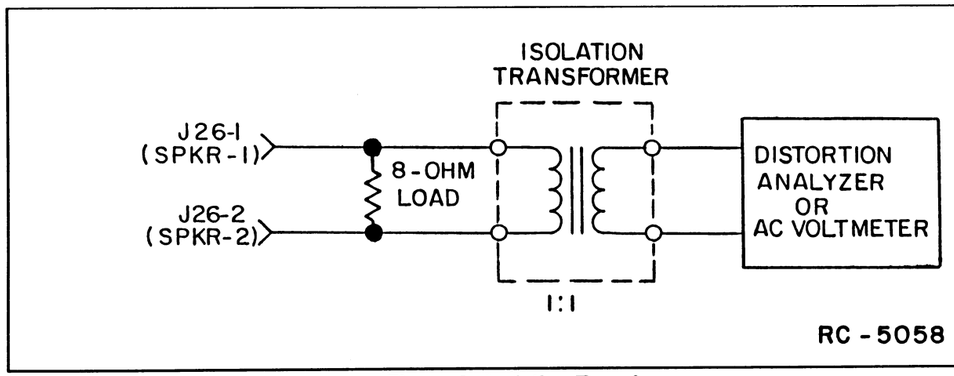
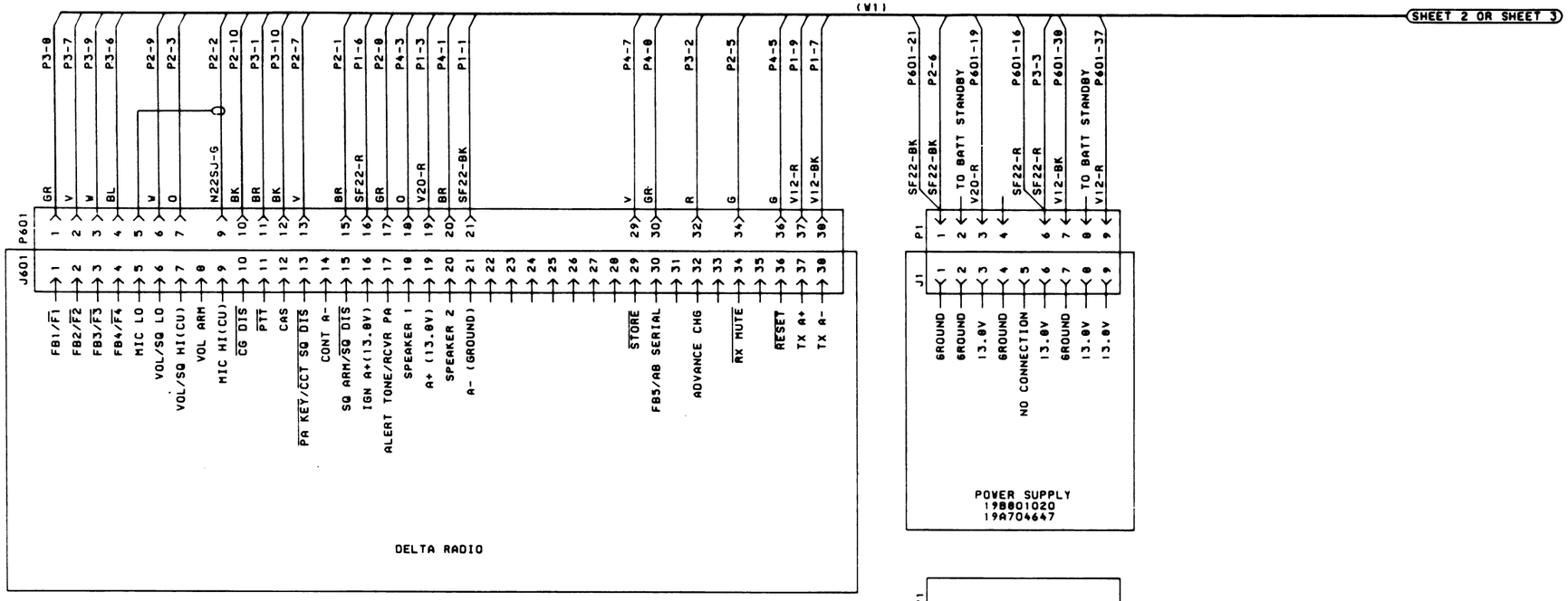


Figure 4 - Isolation Transformer



MODEL NO.	REV. LETTER	DESCRIPTION
PL19C851129G1	-	BATTERY STANDBY OPTION
PL19D901529G1	-	S1 KEYBOARD
PL19D901490G1	-	EXTERNAL BATTERY OPTION

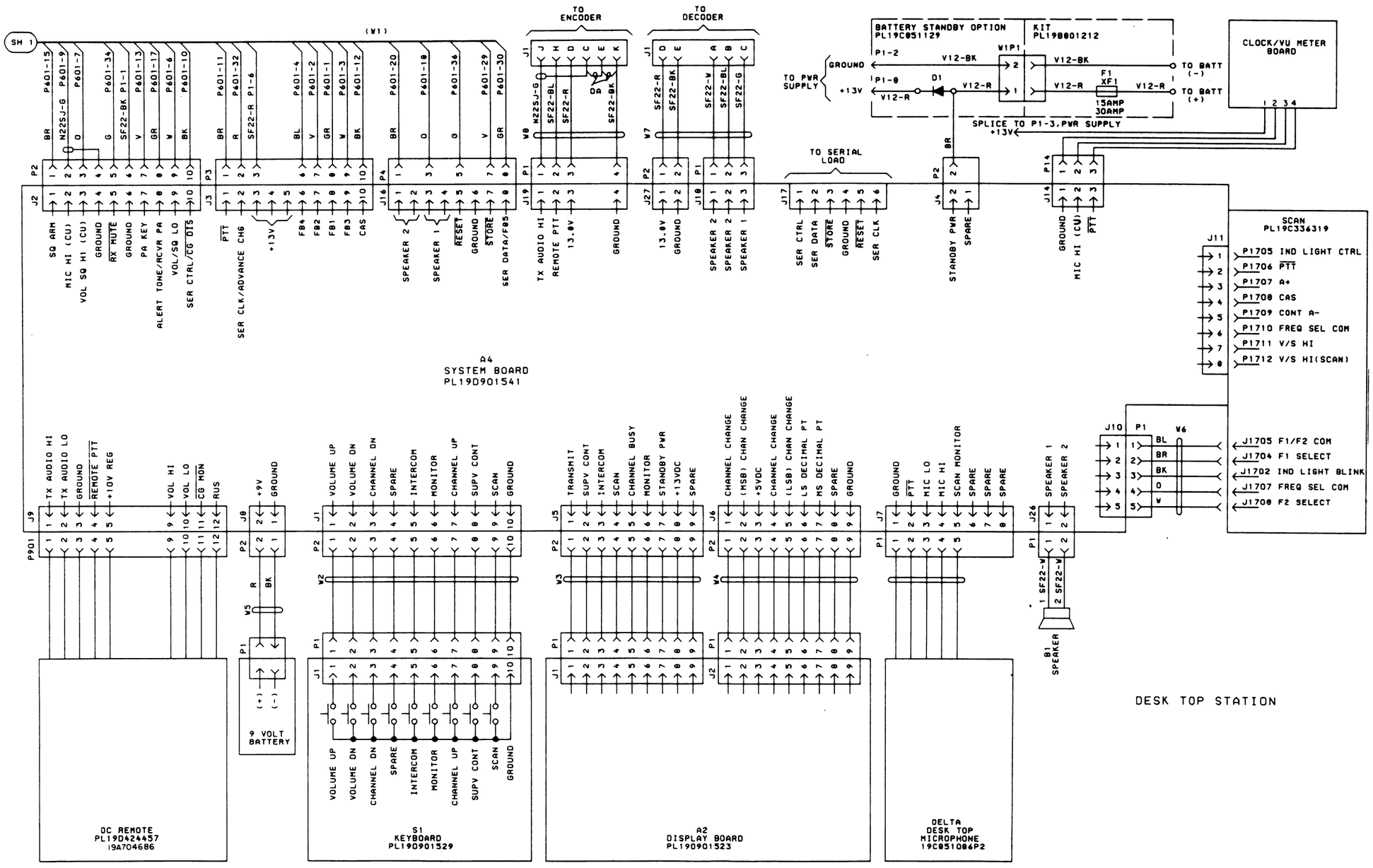
NOTES:

1. ALL WIRE IS SF24 UNLESS OTHERWISE SPECIFIED.

DESK TOP STATION AND
WALL MOUNT STATION

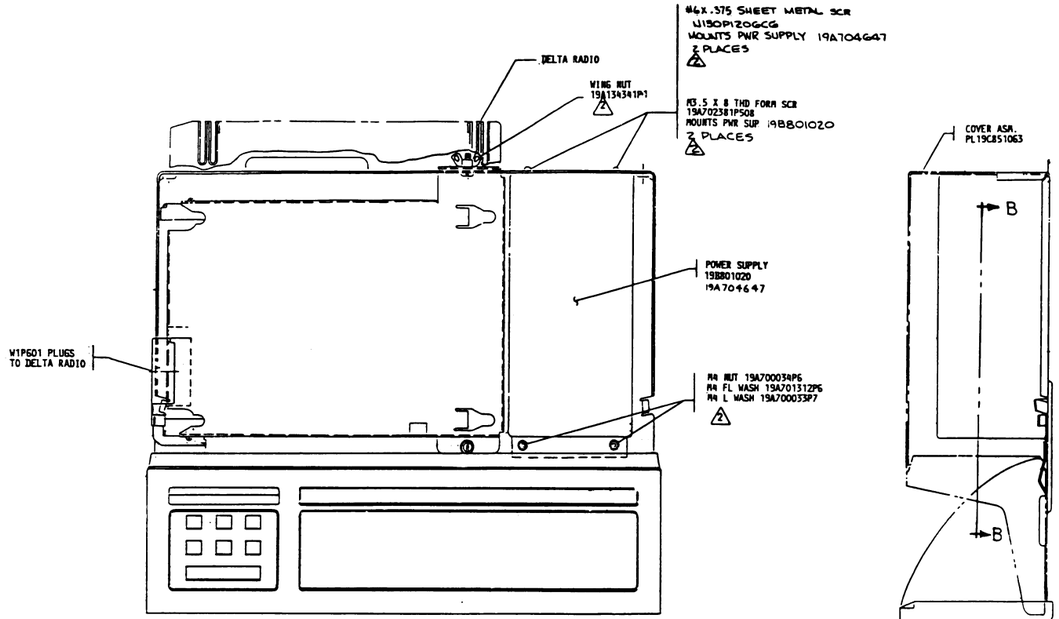
DESK TOP STATION

(19D901564, Sh. 1, Rev. 2)



(19D901564, Sh. 2, Rev. 4)

DESK TOP STATION



PART NO	ASSEMBLY OF
1	DESK TOP STATION
2	SCAN BD
3	DEALER NAMEPLATE
4	REMOTE
5	TONE DECODE CABLE
6	TONE ENCODE CABLE
7	EXTERNAL BATTERY POWERED SUPPLY UNIT
8	9V BATTERY STANDBY
9	STATION BATTERY STANDBY (DIODE)
10	CLOCK/VU
11	STATION BATTERY STANDBY (RELAY)

NOTES:

1 MODIFY DC REMOTE BOARD AS FOLLOWS: (19D424457 ONLY) (SEE DETAIL J)

1. REMOVE AND DISCARD THE CABLE CLAMP ASSEMBLY WHICH HOLDS THE CABLE TO THE BOARD.
2. REMOVE Q26.
3. INSERT DA JUMPER BETWEEN Q26-E AND Q26-C
4. REPLACE THE FOLLOWING COMPONENTS: 6

R10 = 3.3K
R13 = 100K
C9 = .47uF
C10 = .01uF

MODIFY THE SYSTEM BOARD AS FOLLOWS:
SEE VIEW B.B.

1. INSTALL JUMPER PLUG 19A702104P1 6 ON J22 AND J23

2 COMPONENTS OR SYSTEM BD. WHICH ARE TALLER THAN 8mm (.312) SHALL BE LAID DOWN UNDER REMOTE BOARD.

2 THESE ITEMS ARE OF HARDWARE KIT 19A704499G1

3 REMOVE DA JUMPERS BETWEEN HOLES 1, 2, 3 AND 4 WHEN SCAN BD. IS PRESENT(VIEW BB)

4 REMOVE JUMPER PLUG ON J18-1 AND J18-2 WHEN TONE ENCODER CABLE IS INSTALLED.

5 LOCATE BUMPER, SEE VEIW H, APPROXIMATELY AS SHOWN TO PREVENT SCAN BD. FROM SHORTING AGAINST HEAT SINK 19B801213.

6 THESE ITEMS ARE OF HARDWARE KIT PL19A704579

7 ASSEMBLE STANDBY PLATE AND HEAT SINK (19B801213) TO CHASSIS SEE VIEW C AND B-B. MAKE THE FOLLOWING PLUG OR CONNECTIONS: P1 TO CHASSIS BACK.P2 TO J4 ON SYSTEM BOARD. RED WIRE TO P1-2 ON POWER SUPPLY,BLACK WIRE TO P1-8 ON POWER SUPPLY (SEE VIEW D FOR P1)

8 PLACE HOOK ON MICROPHONE CABLE THROUGH HOLE IN CHASSIS AND CRIMP HOOK.

9 APPLY PAD TO UNDERSIDE OF RADIO BRACKET CENTERING IT OVER THE SCAN BOARD BETWEEN THE HYBRID AND STAND UP DIODE.

9A SEE SH 1A

11 REMOVE AND DISCARD FREQUENCY SELECT CABLE FROM 19A704686 IF PRESENT. MODIFY THE SYSTEM BOARD AS DESCRIBED IN STEP 1

12 ASSEMBLE THE RELAY ASM 19D413026 TO CHASSIS PER VIEW "K". MAKE THE FOLLOWING PLUG CONNECTIONS: P3 TO POWER SUPPLY, J1 TO P1 OF W1 HARNESS , P2 TO CHASSIS BACK, P4 TO J4 ON SYSTEM BOARD. CUT PATTERNS AND CONNECT WIRE FROM R97 TO J4-1 PER VIEW "L" IF NOT ALREADY DONE.

PARTS LIST

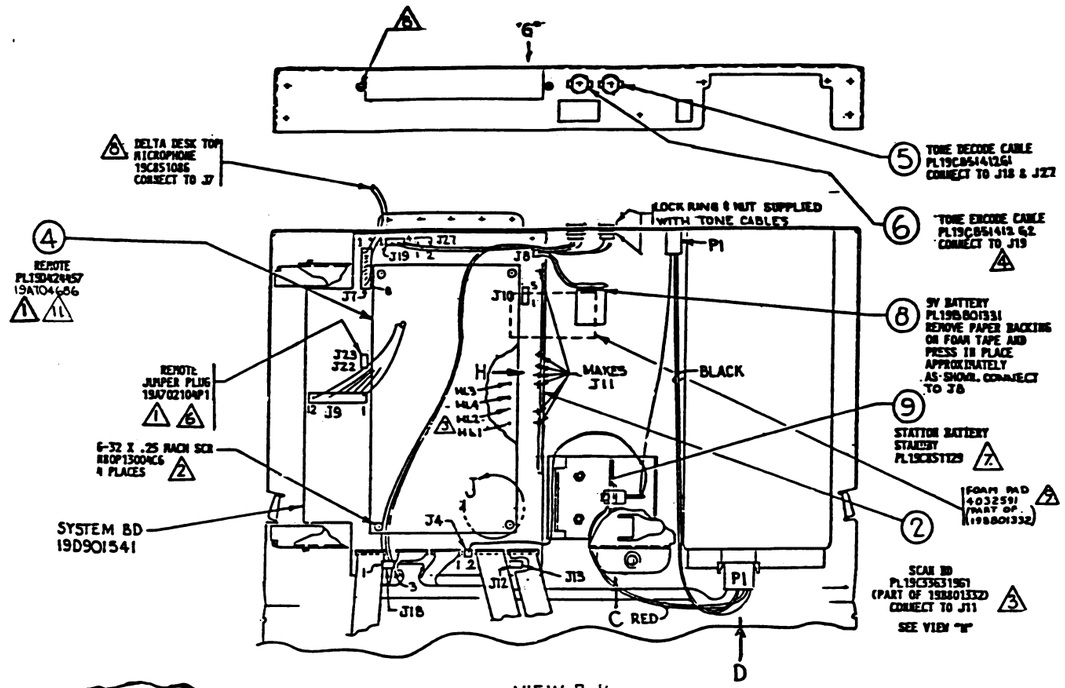
STATION HARDWARE KIT
19A704499G1 (DESK TOP)
19A704499G2 (WALL MOUNT)
ISSUE 3

SYMBOL	GE PART NO.	DESCRIPTION
	N80P13004R6	Machine screw: No. 6-32 x 1/4. (Secures DC remote and grill).
	N80P21005R6	Machine screw: No. 1/4 x 20 x .312. (Secures chassis to cabinet).
	N402P7R6	Flatwasher, narrow: No. 6. (Secures grill).
	N402P11R6	Flatwasher. (Secures chassis to cabinet).
	N403P25R6	Lockwasher, external tooth: 1/4 inch. (Secures chassis to cabinet).
	N404P13R6	Lockwasher, internal tooth: No. 6. (Secures grill).
	5490407P4	Rubber grommet. (Located on back side of chassis).
	7141225P3	Hex Nut: No. 6-32. (Secures grill).
	19A134341P1	Wing nut. (Secures radio to frame).
	19A700033P7	Lockwasher. (Secures W1 and power supply).
	19A700034P6	Hex nut. (Secures W1 and power supply).
	19A701312P6	Flatwasher: 1.7 - 1.85 ID. (Secures W1 and power supply).
	4035306P10	Filter, washer. (Quantity 2).
	19A702104P1	Receptacle: 2 position, shorting, rated at 3 amps; sim to Berg 65474-002. (DC Remote Jumper Plug).
	19A701863P21	Clip, loop. (Secures W1).
	19A702364P510	Screw, machine, pan head TORX®DRIVE: M4. (Quantity 2).
	19A702381P508	Screw, thd. form: No. 3.5-0.6 x 8. (Secures power supply).
	19B209591P1	Knob, push-on. (VOLUME, SQUELCH, and CHANNEL SELECT).

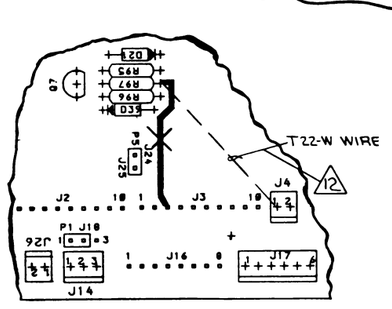
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

DESK TOP STATION

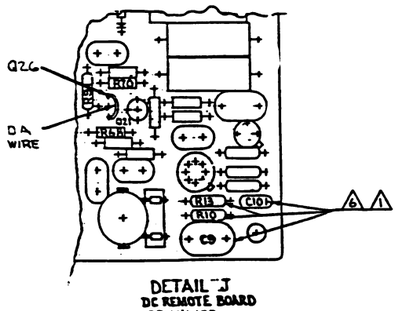
(19D901594, Sh. 1, Rev. 7)



VIEW B-B

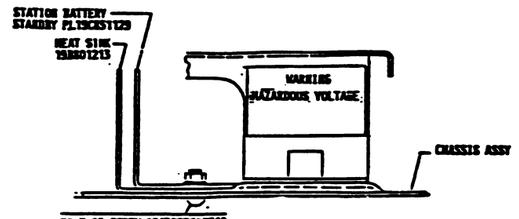


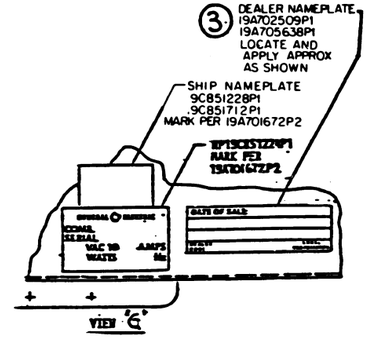
VIEW "L"



DETAIL "J"
DC REMOTE BOARD
19D424457

VIEW D
INSTALL BLACK WIRE FROM STATION BATTERY STANDBY INTO P1-2. INSTALL RED WIRE INTO P1-8





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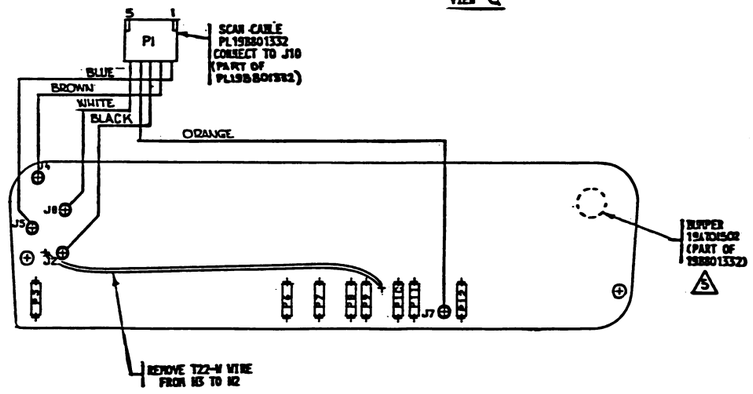
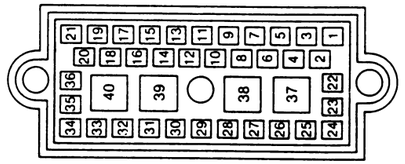
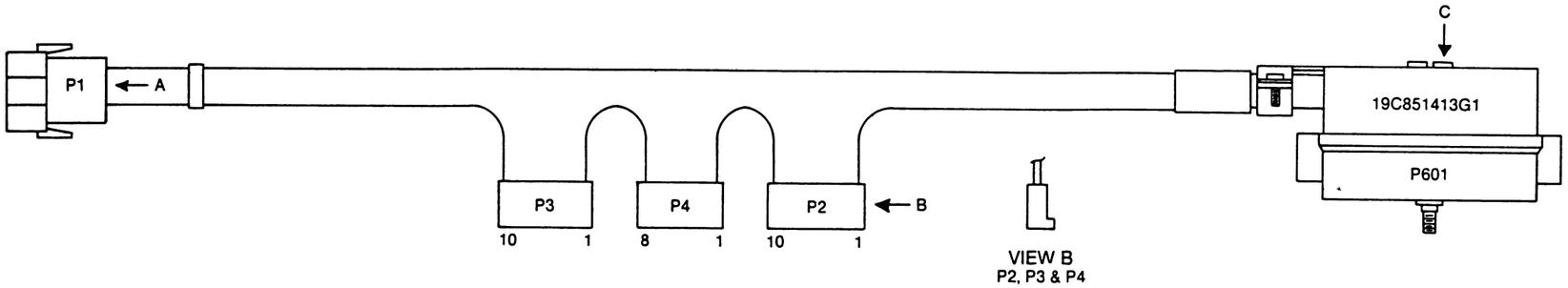


VIEW H

VIEW A



VIEW C WITH COVER REMOVED



VIEW B
P2, P3 & P4

RC5043

STATION BATTERY STANDBY (EARLIER MODELS)

CONNECTION CHART		
FROM	TO	WIRE
D1 ANODE	P2-2	SF24-BR
D1 ANODE	W1-P1	W12-R

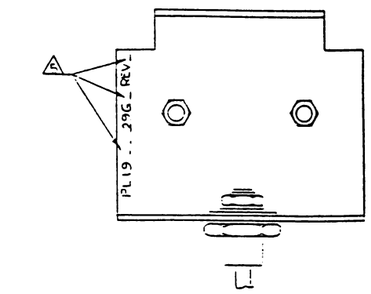
(1) NOTES:
1. SOLDER ALL ELECTRICAL CONNECTIONS.

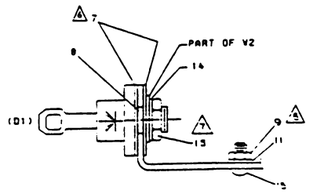
⚠5 MARK APPLICABLE GROUP NUMBER AND REV LETTER. CHARACTERS 2.3 HIGH. COLOR BLACK. PER 19A700154P1. FOR LATEST REV LTR SEE 19C851051 SHT.

⚠4 APPLY SILICONE GREASE PER 19A701431 TO BOTH SIDES OF INSULATING WASHER. ITEM 7.

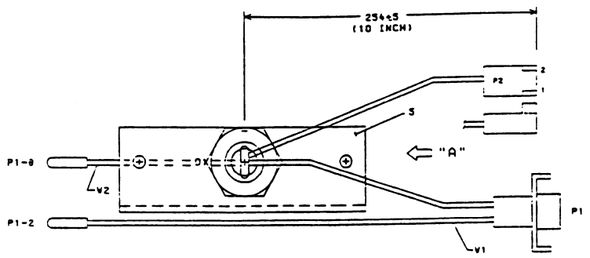
⚠3 NUT SHALL BE TORQUED TO 30 INCH-POUNDS MAX.

⚠6 LIGHTLY FINGER TIGHTEN ONLY.



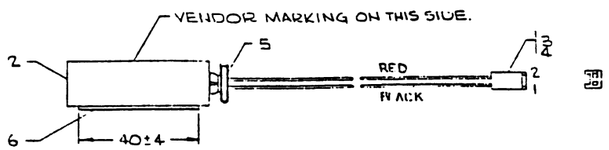


VIEW AT "A" (PARTIAL)



(19C851129, Rev. 5)

9-VOLT BATTERY ASSEMBLY

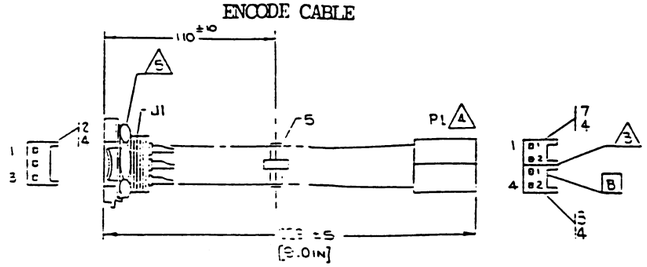


(1) NOTES:
1. LOCATE TAPE APPROXIMATELY AS SHOWN. DO NOT REMOVE BACKING PAPER.

(8) ASSEMBLE CABLE TO CONNECTOR AS SHOWN.

(19B801331, Rev. 2)

ENCODE CABLE

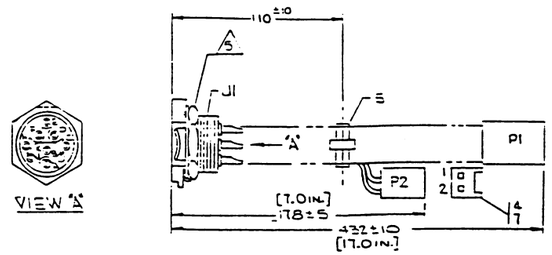


CONNECTION CHART GROUP 2

FROM	TO	WIRE
J1-E	J1-K	DM.SLEEVED
J1-K	P1-1	SF22-BK
J1-D	P1-3	SF22-R
J1-H	P1-2	SF22-BL
J1-J	P1-1	IN225J-G CENTER
J1-C	J1-E	DM. SLEEVED
J1-C	—	IN225J-G SHIELD

(6) AS SHOWN, OTHERWISE SAME AS PART 1.

DECODE CABLE



VIEW "A"

CONNECTION CHART GROUP 1

FROM	TO	WIRE
J1-A	P1-1	SF22-W
J1-B	P1-2	SF22-BL
J1-C	P1-3	SF22-G
J1-D	P2-1	SF22-R
J1-E	P2-2	SF22-BK

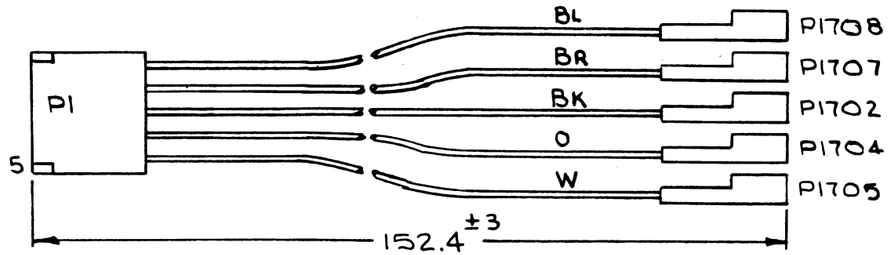
(1) NOTES:
1. SOLDER ALL WIRES AT J1.
2. USE DILATING OR HEAT SHRINK TUBING OVER N225J-6 JOINT.

⚠3 REMOVE TABS FLUSH WITH SURFACE 'B'. ROUGH SURFACE PERMISSIBLE.

⚠4 P1 OF GROUP 2 CONSISTS OF TWO 2 PIN CONNECTORS TO ALLOW THE CONNECTOR NUT TO PASS OVER THEM. ONCE TRIMMED (SEE NOTE 3) AND PLACED TOGETHER AS SHOWN, THEY CAN BE INSTALLED AS A KEYED 4 PIN CONNECTOR ON THE SYSTEM BD. AS INTENDED.

⚠5 INSTALL CONNECTOR HARDWARE WHICH CONSIST OF LOCKING RING, LOCK WASHER AND NUT ON THE CONNECTOR. TIGHTEN FINGER TIGHT.

(19C851412, Rev. 2)



(1) NOTES:
1. ALL WIRES ARE SF 24.
2. SLEEVE P1702 - P1708 WITH DILATING OR HEAT SHRINK SLEEVING.

(19B801332, Rev. 1)

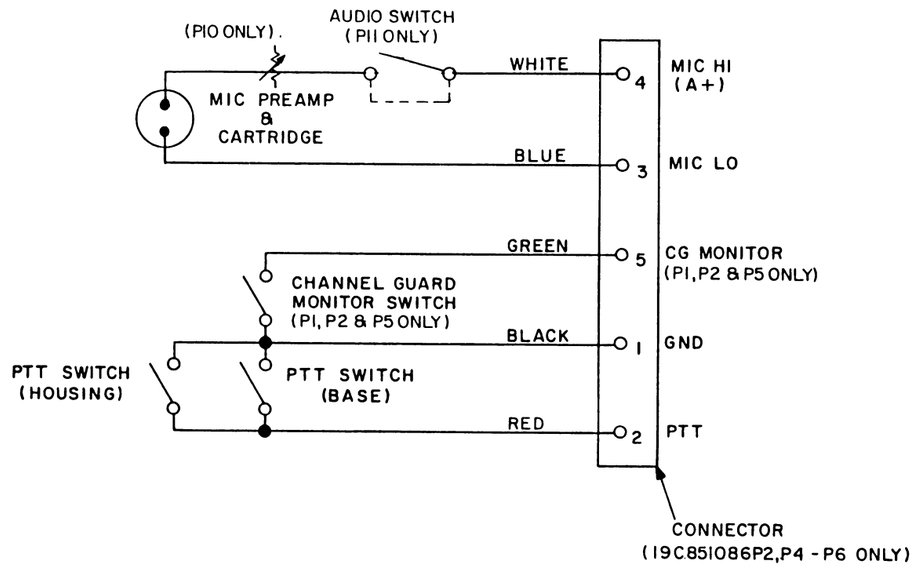
PARTS LIST

SCAN CABLE
19B80133202
ISSUE 1

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - - - PLUGS - - - - - - - - - - - -
P1		Connector. Includes:
	19A700041P31	Shell.
	19A700041P26	Contact: sim to Molex 08-50-0113.
P1702	19A702402P2	Contact, electrical; sim to AMP 42827-2.
P1704 and P1705	19A702402P2	Contact, electrical; sim to AMP 42827-2.
P1707 and P1708	19A702402P2	Contact, electrical; sim to AMP 42827-2.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SCAN CABLE 19B801332G2
DESK MICROPHONE 19C851086P1-P6, P11



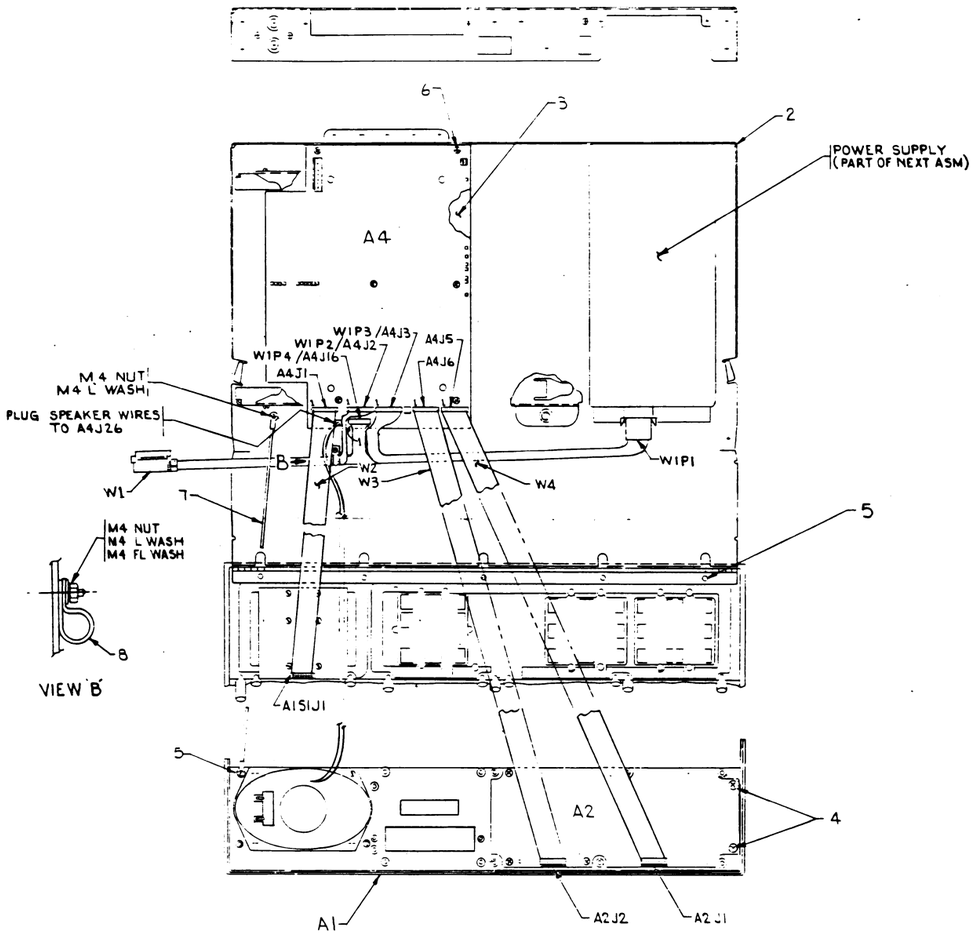
RC-4472A

PARTS LIST

DESK MICROPHONE
TRANSISTORIZED ELECTRET
19C851086P1-P6, P11
ISSUE 3

SYMBOL	GE PART NO.	DESCRIPTION
	19C851086P1	Channel Guard with terminals: 5% max distortion @ 300-3000 Hz; sim to Primo EM4093GE1.
	19C851086P2	Channel Guard with connector: 5% max distortion @ 300-3000 Hz; sim to Primo EM4093GE2.
	19C851086P3	Standard with terminals: 5% max distortion @ 300-3000 Hz; sim to Primo EM4093GE3.
	19C851086P4	Standard with connector: 5% max distortion @ 300-3000 Hz; sim to Primo EM4093GE4.
	19C851086P5	Channel guard with connector: 5% max distortion @ 300-3000 Hz; sim to Primo EM4093GE5.
	19C851086P6	Standard with connector: 5% max distortion @ 300-3000 Hz; sim to Primo EM4093GE6.
	19C851086P11	Channel Guard with connector: 5% max distortion @ 300-3000 Hz.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19A116659P20	Connector shell.
	19A116781P4	Contact electrical, wire range 22-26 AWG; sim to Molex 08-50-0107. (Used with 19A116659P20 connector).
	19A116781P6	Contact electrical, wire range 22-26 AWG; sim to Molex 08-50-0108. (Used with 19A116659P20 connector).
	19B209260P108	Terminal.
	4033271G1	Strain relief.
	19A703090P2	Nameplate. (General Electric).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



(1) SHOWN WITH FRONT HOUSING HINGED OPEN

(19D901569, Rev. 1)

HOUSING ASSEMBLY
19D901527G1

PARTS LIST

LBI31422A

DELTA-S, SX STATION (DESK TOP)
(EARLIER MODELS)

SYMBOL	GE PART NO.	DESCRIPTION
		DELTA DESK TOP STATION 19D901569G1
		A1 - 19D901527G1 (HOUSING) A2 - 19D901523G1 (DISPLAY MODULE) A4 - 19D901541G1 (SYSTEM BOARD)
A1		DELTA DESK TOP STATION (HOUSING) 19D901527G1
A2		(See Separate Parts List).
A4		(See Separate Parts List).
		- - - - - - - - - - SPEAKERS - - - - - - - - - -
B1	19B801336G1	Speaker Assembly.
B1	19C307094P3	Permanent magnet: 8 ohms ±15% voice coil imp, 3 x 5 inch speaker; sim to Pioneer Sample 5A7106.
P1		Connector. Includes:
	19A700041P28	Shell.
	19A700041P26	Contact: sim to Molex 08-50-0113.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1		Switch. Includes:
	19C851033P1	Shield.
	19C851010P1	Pad.
	19D901529G1	Board.
		- - - - - - - - - - SYSTEM CABLE - - - - - - - - - -
W1	19C851413G1	Cable.
P1		Connector. Includes:
	19A134281P3	Plug.
	19A134282P4	Contact. (Quantity 2).
	19A134282P5	Contact. (Quantity 4).
P2 thru P4		Connector. Includes:
	19A700041P26	Contact: sim to Molex 08-50-0113. (Quantity 23).
	19A700041P36	Shell. (Quantity 2).
P601		Connector. Includes:
	19D900037P1	Shell. (Quantity 1).
	19A701376P1	Contact, electrical rated @ 4 amps; sim to AMP 350657-1. (Quantity 24).
	19A701376P3	Contact, electrical rated @ 35 amps; sim to AMP 350655-1. (Quantity 2).
W2	19A703032P7	Cable.
W3 and W4	19A702032P6	Cable.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	19C851018G1	Chassis.
	19C851411P1	Insulator. (Used with A4).
	19J706212P302	Screw, thd. forming: POZIDRIV®: No. 6. (Secures A2).
	19J706212P303	Screw, thd. forming: POZIDRIV®: No. 6. (Quantity 6).
	19A702381P508	Screw, thd. form: No. 3.5-0.6 x 8. (Secures A4).
	19A704463G1	Cable. (Chassis Ground).
	19A701863P21	Clip, loop. (Secures W1).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
	19D900894P1	Housing.
	19C851041P2	Switch panel.
	19C851042P1	Panel.
	19B800969G14	Pushbutton. (VOL UP)
	19B800969G15	Pushbutton. (VOL DOWN)
	19B800969G23	Pushbutton. (MON)
	19B800969G25	Pushbutton. (SUPV CONT)
	19A121759P1	Thumbscrew.
	4036436P2	Lockwasher; sim to Fastex 8063-21-00.
	19A700140P4	Spring.
	19A703090P1	Nameplate. (GENERAL ELECTRIC)
	19J706212P302	Screw, thd. forming: POZIDRIV®: No. 6.
	19B800969G27	Pushbutton. (SCAN)
	19B800969G31	Pushbutton. (INTER COM)
	19B800969G38	Pushbutton. (CHANNEL)
	19A704390P1	Plate.
		ASSOCIATED ITEMS
	19C851063G1	Top cover.
	2R22P2	Plug, coaxial: right angle, sim to Amphenol 83-1AP.
	19B800716P2	Tuning tool.
	19B800004P3	Key.
	19B801331G1	Battery, 9 volt, Memory Back-Up.
	19C851412G1	Delta Station Decode Cable (W-7).
	19C851412G2	Delta Station Encode Cable (W-8).
	19A702609P1	Nameplate.
	19A702184P1	Nameplate.
	19B801213P1	Heat sink. (Used with Option BU02).
		STANDBY BATTERY CABLE 19B801212G1
		- - - - - - - - - - FUSES - - - - - - - - - -
F1	7102673P2	Cartridge, quick blow: 15 amps at 32 v; sim to Littelfuse 311015 or Bussmann AGC-15.
F1	19A115857P2	Cartridge, quick blow, 30 amp at 125 v; sim to Bussmann AGC 30.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P1		Connector. Includes:
	19A134281P1	Shell.
	19A134282P2	Contact. (Quantity 2).
		- - - - - - - - - - FUSE HOLDER - - - - - - - - - -
XF1		Fuse Holder. Consists of:
	19A703780P4	Fuseholder spring.
	19A703780P3	Fuseholder contacts.
	19A703780P2	Fuseholder.
	19A703780P1	Fuseholder knob.
		TELEPHONE LINE SURGE PROTECTOR KIT 19A129368G2
E1 and F2	19A134356P1	Protector, telephone, gas filled; sim to Joslyn 2022-24.

SYMBOL	GE PART NO.	DESCRIPTION
		DELTA DESK TOP STATION BATTERY POWERED SUPPLY UNIT 19D901490G1
		- - - - - - - - - - FUSES - - - - - - - - - -
F1	19A704351P1	Circuit Breaker.
		- - - - - - - - - - JACKS - - - - - - - - - -
J1		Connector. Includes:
	19A1342R1P2	Shell. (Quantity 1).
	19A1342R2P4	Contact. (Quantity 2).
J2		Connector. Includes:
	19A1342R1P4	Plug. (Quantity 1).
	19A134282P2	Contact. (Quantity 8).
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	19C851389G1	Support.
	19R20926RP6	Terminal, solderless.
		(OPTION BU02) STANDBY STATION BATTERY 19C851129G1
		- - - - - - - - - - DIODES - - - - - - - - - -
D1	19A115791P1	Rectifier, stud mounted: silicon; sim to N1186.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P2		Connector. Includes:
	19A700041P26	Contact; sim to Molex 08-50-0113.
	19A700041P28	Shell.
		- - - - - - - - - - CABLES - - - - - - - - - -
W1	19B801210G1	Cable Assembly.
W2	19B801211G1	Cable Assembly.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	19A703493P1	Heat sink.
	19A115276P2	Insulator, washer. (Secures D1).
	19A115275P2	Insulator, disk. (Secures D1).
	N403P25B6	Lockwasher, external tooth: 1/4 inch. (Secures D1).
	N210P20B6	Hex nut: No. 1/4-28. (Secures D1).

PARTS LIST

LBI31826B

DELTA/RANGR
DESK TOP STATION

SYMBOL	GE PART NO.	DESCRIPTION
		A1 - 19D901527G3 (HOUSING) A2 - 19D901523G1 (DISPLAY MODULE) A4 - 19D901541G1 (SYSTEM BOARD)
A1		DELTA/RANGR DESK TOP STATION HOUSING 19D901527G3
A2		(See separate Parts List).
A4		(See separate Parts List).
		- - - - - - - - - - - MODULE - - - - - - - - - -
B1	19B801336G1	Speaker Assembly. Includes:
B1	19C307094P3	Permanent magnet: 8 ohms + or - 15% voice coil imp, 3 x 5 inch speaker; sim to Pioneer Sample 5A7106.
P1		Connector. Includes:
	19A700041P28	Shell.
	19A700041P26	Contact: sim to Molex 08-50-0113.
		- - - - - - - - - - - SWITCHES - - - - - - - - -
S1		Switch. Includes:
	19D901529G1	Board.
	19C851033P1	Shield.
	19C851010P1	Pad.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19A704463G1	Cable, chassis ground.
	19A121759P1	Thumbscrew.
	19J706212P302	Screw: No. 6.
	19A704390P1	Plate.
	19A705134P1	Nameplate.
	19C850984P33	Pushbutton. (SCAN).
	19C850984P36	Pushbutton. (VOL).
	19C850984P37	Pushbutton. (VOL).
	19C850984P38	Pushbutton. (MON).
	19C850984P39	Pushbutton. (INTER/COM).
	19C850984P40	Pushbutton. (SUPV/CONT).
	19C850984P41	Pushbutton. (CHANNEL).
	19D900894P3	Housing.
	19D901937P1	Switch panel.
	19D901938P1	Display panel.
	N402P7B6	Flatwasher, narrow: No. 6.
		DESK TOP STATION CHASSIS 19C851018G5
	N210P16B6	Nut, steel: No. 10-32.
	N80P16008B6	Machine screw, panhead: No. 10 - 32 x 1/2.
	19A116417P2	Bumper, leg.
	19B801199P1	Nameplate.
	N403P19B6	Lockwasher: No. 10.
	N402P39B6	Flatwasher: No. 10.
	19A115161P2	Sleeving.
	19B800979G2	Radio Mounting Frame.
	19B801422P1	Latch.
	N210P15B6	Nut, hex: No. 8-32.
	N402P38C6	Flatwasher: No. 8.
	N403P16B6	Lockwasher, internal tooth: No. 8.
	19D900886G5	Chassis.
		BATTERY STANDBY OPTION 19D438326G1,3
		BATTERY STANDBY CABLE 19B801212G1
		- - - - - - - - - - - FUSES - - - - - - - - - - -
F1	7102673P2	Cartridge, quick blow: 15 amps at 32 v; sim to Littelfuse 311015 or Bussmann AGC-15.
F1	19A115857P2	Cartridge, quick blow, 30 amp at 125 v; sim to Bussmann AGC 30.
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P1		Connector. Includes:
	19A134281P1	Shell.
	19A134282P2	Contact.
		- - - - - - - - - - - FUSE SOCKETS - - - - - - - -
XF1		Fuse Holder. Includes:
	19A703780P4	Fuseholder spring.
	19A703780P2	Fuseholder.
	19A703780P3	Fuseholder contacts.
	19A703780P1	Fuseholder knob.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	7491823P9	Solderless terminal.
	7491823P10	Solderless terminal.
	4029484P3	Terminal, quick disconnect: sim to AMP 61450
		DELTA DESK TOP STATION BATTERY POWERED SUPPLY UNIT 19D901490G1
		- - - - - - - - - - - FUSES - - - - - - - - - - -
F1	19A704351P1	Circuit breaker.
		- - - - - - - - - - - JACKS - - - - - - - - - - -
J1		Connector. Includes:
	19A134281P2	Shell.
	19A134282P4	Contact.
J2		Connector. Includes:
	19A134281P4	Connector: 9 contacts, sim to CAT 1-480672-0.
	19A134282P2	Contact.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19C851389G1	Support.
	19B209268P6	Solderless terminal.
		(OPTION BU02) STANDBY STATION BATTERY (EARLIER MODELS) 19C851129G1
		- - - - - - - - - - - DIODES - - - - - - - - - - -
D1	19A115791P1	Rectifier, stud mounted: silicon, sim to M1186.
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P2		Connector. Includes:
	19A700041P28	Shell.
	19A700041P26	Contact: sim to Molex 08-50-0113.
		- - - - - - - - - - - CABLES - - - - - - - - - - -
W1	19B801210G1	Cable Assembly.
W2	19B801211G1	Cable Assembly.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19A703493P1	Heat Sink.
	19A115276P2	Insulator, washer. (Secures D1).
	19A115275P2	Insulator, disk. (Secures D1).
	19A700033P7	Lockwasher, external tooth: #4.
	19A702364P510	Screw, machine, pan head, TORX DRIVE: M4.
	N403P25B6	Lockwasher, external tooth: 1/4(.250).
	N210P20B6	Hex nut: 1/4 x 28. (Secures D1).
		ASSOCIATED PARTS
	19C851063G3	Top cover.
	19B800716P2	Tuning tool.
	19B800004P3	Key.
	19C851086P5	Transistorized microphone.
	19B801331G1	Battery, 9 volt, memory back-up.
	19C851412G1	Decode cable.
	19C851412G2	Encode cable.
	19B801213P1	Heat sink. (Used with option BU02).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

ADDENDUM NO. 1 to LBI-31370F
(PCN8)

This addendum makes a text correction to LBI-31370F. Page 3, top of the right hand column should read as follows:

RANGER RADIO: Verify that P601 (P708 for earlier versions) is connected across pins 2 and 3 on the System Control Board.