

*Model MRT327
Intercom Station*



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Technical questions should be directed to:

Customer Service Department
RTS/Telex Communications, Inc.
12000 Portland Avenue South
Burnsville, MN 55337 USA
Telephone: 800-392-3497
Fax: 800-323-0498

RETURN SHIPPING INSTRUCTIONS

Customer Service Department
Telex Communications, Inc. (Lincoln, NE)
Telephone: 402-467-5321
Fax: 402-467-3279
Factory Service: 800-553-5992

Please include a note in the box which supplies the company name, address, phone number, a person to contact regarding the repair, the type and quantity of equipment, a description of the problem and the serial number(s).

SHIPPING TO THE MANUFACTURER

All shipments of product should be made via UPS Ground, prepaid (you may request from Factory Service a different shipment method). Any shipment upgrades will be paid by the customer. The equipment should be shipped in the original packing carton. If the original carton is not available, use any suitable container that is rigid and of adequate size. If a substitute container is used, the equipment should be wrapped in paper and surrounded with at least four (4) inches of excelsior or similar shock-absorbing material. All shipments must be sent to the following address and must include the Proof of Purchase for warranty repair. Upon completion of any repair the equipment will be returned via United Parcel Service or specified shipper, collect.

Factory Service Department
Telex Communications, Inc.
8601 East Cornhusker Hwy.
Lincoln, NE 68507 U.S.A.
Attn: Service

This package should include the following:

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SECTION 1: DESCRIPTION AND SPECIFICATIONS

1.1 DESCRIPTION

1.1.1 GENERAL

The Model MRT327 is a two-channel intercom station for use in RTS TW intercom systems. It may be used as a headset station or as a speaker station (with an optional MCS325 Modular Speaker). The MRT327 may be installed in optional console or rack mount configurations (see Figure 1-2).

1.1.2 FEATURES

Features of the MRT327 include:

- **Call signaling:** The MRT327 can send and receive 20 kHz call signals.
- **Dual-Action Momentary/Latching Mic Switch:** The Mic on/off switch can be used as a momentary push-to-talk switch or as a latching on/off switch.
- **The MRT327 can receive 24 kHz "talk-off" signals** for deactivation of the MRT327 microphone from a remote location.
- **Microphone limiter:** The microphone preamplifier circuit contains a limiter which helps to equalize output for different voice levels.
- **Optional Microphone/Speaker and Headset Configurations:** The standard MRT327 accepts an unbalanced, dynamic-mic headset or a dynamic microphone used in conjunction with an external speaker connected at the rear panel. It also has a jack for an optional Model MCP5 or MCP6 gooseneck panel microphone. Additionally, the MRT327 may be internally modified for use with a carbon or balanced-dynamic microphone. It can also be modified to provide the microphone audio as an unswitched, balanced output.
- **Powering Options:** The MRT327 receives operating power from the intercom line. It may be internally modified for local powering from a separate dc power supply or batteries.

1.1.3 OPERATIONAL CONTROLS

See Figure 1-1.

CHANNEL 1-2: Selects either channel 1 or channel 2 for intercommunication.

CALL: Sends call signal to all stations on channel.

PANEL MIC: Selects microphone input from either the dynamic-mic headset connector or from the panel mic jack.

SPKR ON: Activates output to the rear panel speaker jack.

MIC ON: Turns the microphone on or off. The mic on/off LED is lit when the microphone is on.

VOLUME: Adjusts headphone/external speaker volume.

Sidetone: When an external speaker is used, this trimmer may be used to cancel acoustic feedback between the microphone and speaker. When a headset is used, this trimmer adjusts the level of the user's own voice in his or her headset.

1.1.4 CONNECTORS

1.1.4.1 Front Panel

DYN MIC HEADSET: Accepts a monaural, dynamic-microphone headset.

Panel Microphone: The MRT327 may be optionally fitted with a gooseneck panel microphone by pulling out the plug located in the upper-right corner of the front panel. The panel microphone jack accepts an optional RTS Model MCP5 (12-inch) or MCP6 (20-inch) gooseneck panel microphone.

1.1.4.2 Rear Panel

Line Input/ Line Loop: These are the intercom channel connectors. The connectors are parallel-wired for loop-through connection to additional stations.

Speaker: A 1/4-inch phone jack accepts an external speaker such as the Model MCS325 (8-ohms minimum).

1.1.5 INDICATORS

CALL: flashes for incoming call on currently selected channel.

MIC ON: Lights when microphone is switched on.

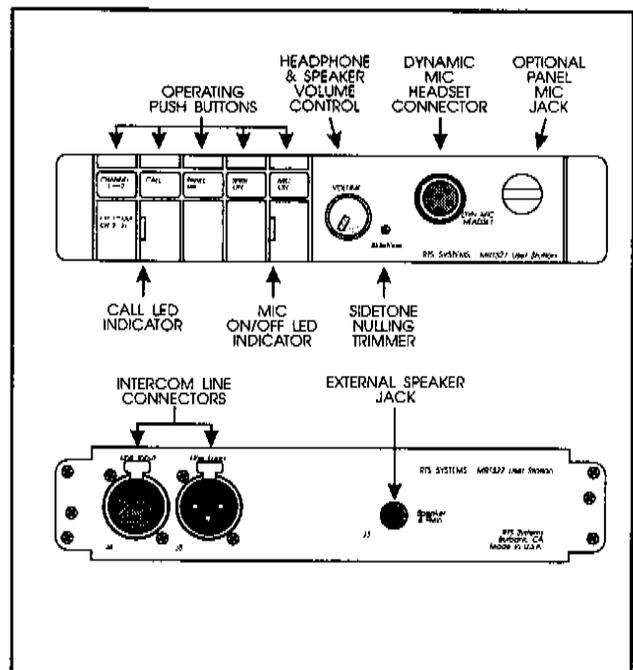


Figure 1-1
MRT327 Reference View

1.2 SPECIFICATIONS

1.2.1 GENERAL

Input DC Voltage

TW Mode: 18 to 35 volts DC
Local Power: 15 to 35 volts DC (12 to 15 volts DC, reduced performance)

DC Current Drawn from TW Line

Quiescent: 45 mA \pm 10%
Operating, 25-ohm phones: 75 mA \pm 10%
Operating, 25-ohm phones + call light: 90 mA \pm 10%
Operating, 8-ohm speaker: 240 mA \pm 10%
Operating, 8-ohm speaker + call light: 300 mA \pm 10%

Notes:

Operating current is measured with output level at 10 dB below clipping.
Local power option draws no current from TW line.

Impedance Across Line

10,000 ohms, minimum (designed for use with 200-ohm "TW" intercom lines)

Environmental Temperature

Operating: 0°C to 60°C
Storage: -40°C to 85°C

Humidity

Operating and Storage: 5% to 95%, non-condensing

Noise Contribution

(Ch 1): > -60 dB μ
(Ch 2): > -80 dB μ

1.2.2 MICROPHONE PREAMPLIFIER

Input Impedance

470 ohms \pm 5% (dynamic mic)

Source Impedance

200 ohms, nominal

Maximum Input Level

150 millivolts

Frequency Response

(-54 dBu input): 100 Hz to 8 kHz \pm 3 dB

Limiter Range

30 dB

Carbon Mic Excitation Current

10 mA, nominal

1.2.3 CURRENT SOURCE

Transfer Ratio

3.3 mA/volt = 3.3 millisiemens

Output

\pm 5 mA into 200 ohms = \pm 1 volt peak, nominal

1.2.4 SPEAKER AMPLIFIER

Maximum Voltage Gain

30 dB

Frequency Response

100 Hz to 8 kHz \pm 4 dB

Output Power

1.5 watts into 8 ohms nominal

Speaker DIM (speaker muting during mic activation)

adjustable, -4 to -30 dB (Factory set to -6 dB)

1.2.5 HEADPHONE AMPLIFIER

Voltage Gain

34 dB

Output Voltage

8 volts peak-to-peak into 25 ohms nominal

Output power

1/2 watt peak into 25 ohms

Frequency Response

150 Hz to 10 kHz \pm 3 dB

Headphone Impedance Range

25 to 600 ohms (600 to 2000 ohms with reduced levels)

Sidetone Adjustment Range

-20 dB to full on

1.2.6 CALL LIGHT

Signalling Frequency

20 kHz \pm 100 Hz

Flashing Rate

5 Hz \pm 2 Hz

1.2.7 TALK-OFF

Frequency

24 kHz nominal

1.2.8 CONNECTORS

Dynamic Microphone Headset

XLR type 6-pin female

Panel Microphone

1/4-inch standard phone jack, 3-circuit

Line Input

One (1) XLR type 3-pin female and one (1) XLR type 3-pin male, wired in parallel

1.2.9 MECHANICAL

Dimensions (Height x Width x Depth)

1.71" x 8.85" x 9.0" (44 mm x 224 mm x 228 mm)

Weight

2.75 pounds, 1.25 kilograms

Construction/Finish

Aluminum case, thermoplastic front panel, light gray finish

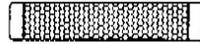
SPECIFICATION NOTES

0 dBm is a power level corresponding to 0.775 volts rms into 600 ohms (1 milliwatt)

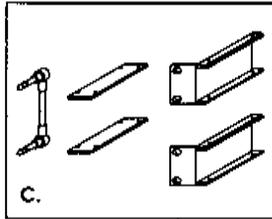
dBu is a power level like dBm, but without the 600 ohm reference



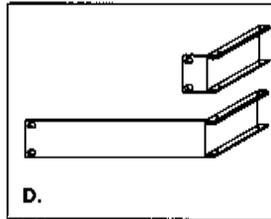
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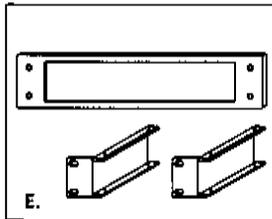
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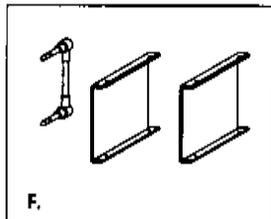
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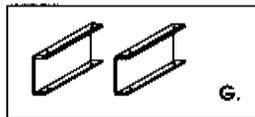
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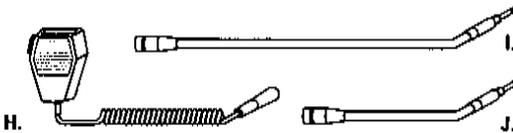
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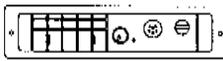


H.

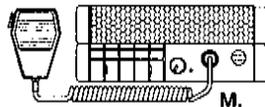
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K.



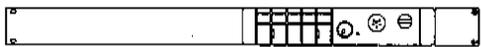
L.



M.



N.



O.

Main Components

- A. MRT327 User Station
- B. MCS325 Modular Speaker

Optional Components

- C. MCP1 Rack Mount Kit (For Two Main Components)
- D. MCP2 Rack Mount Kit (For Single Main Component)
- E. MCP3 Console Mount Kit
- F. MCP4 Tandem Mount Kit
- G. MCP8 Side Channels (pair)
- H. MCP7 Hand-Held Microphone w/6-pin connector
- I. MCP6 Panel Mount Microphone 20"
- J. MCP5 Panel Mount Microphone 12"

Most Common Package Configurations

- K. Desk Top Headset Station, includes:
 - MRT327 User Station (A)
 - MCP8 Side Channels (G)
- L. Console Mount Headset Station, includes:
 - MRT327 User Station (A)
 - MCP3 Console Mount Kit (E)
- M. Portable Speaker Station, includes:
 - MRT327 User Station (A)
 - MCS325 Modular Speaker (B)
 - MCP4 Tandem Mount Kit (F)
 - MCP7 Hand-Held Microphone (H)
- N. Rack Mount Speaker Station, includes:
 - MRT327 User Station (A)
 - MCS325 Modular Speaker (B)
 - MCP1 Rack Mount Kit (C)
 - MCP5 (J) or MCP6 (I) Panel Mic
- O. Rack Mount Headset Station, includes:
 - MRT327 User Station (A)
 - MCP2 Rack Mount Kit (D)

Figure 1-2

Optional Components and Configurations

SECTION 2: INSTALLATION

2.1 USER-INSTALLED OPTIONS

To install options, the top cover of the MRT327 must be removed as shown in Figure 2-1. The following numbered paragraphs are keyed to the numbered items in Figure 2-2.

2.1.1 BALANCED MICROPHONE INPUT

The microphone input is factory configured for use with unbalanced type dynamic microphones. The input can be modified for use with balanced dynamic microphones.

1. Cut traces W1 and W2 across T1 on the top side of the board.
2. Install a 600:600 ohm, LM9003 type transformer (RTS part number 2306-0001-05) at T1 on the circuit board.

2.1.2 CARBON MICROPHONE INPUT

This procedure adds a carbon mic headset/handset jack to the back panel of the MRT327.

1. Install resistors R6 (68 kohm), R7 (820 ohm) and R101 (100 ohm, 1/2 W).
2. Install capacitors C4 (.033 μ F/50V mono) and C5 (.1 μ F/50V mono).
3. Install diode D1 (1N6263).
4. Drill a 3/8-inch diameter hole on the rear panel, and install a Switchcraft number M114B phone jack (RTS part number 2013-0048-00).
5. Wire phone jack as follows using 24 AWG wire:

Tip: to E1 on MRT327 board
Ring: to E3 on MRT327 board
Sleeve: to E2 on MRT327 board

2.1.3 UNSWITCHED MICROPHONE BALANCED (USMB) OUTPUT

This procedure adds an unbalanced microphone output to route the MRT327 microphone signal to external equipment. The output is taken before the microphone on/off switching circuitry.

1. Install resistor R27 (220 ohm)
2. Install capacitor C13 (22 μ F, 50V electrolytic)
3. Install a 600:600 ohm, LM9003 type transformer (RTS part number 2306-0001-05) at T2 on the circuit board.
4. Balanced output is obtained at pads E4 and E5 on the circuit board.

2.1.4 HEADPHONE GAIN BOOST

This modification raises the gain of the headphone amplifier from 26 dB to 34 dB for use with headphones that are outside the normal impedance range of 25 to 600 ohms.

1. Install R42 (1.2 kohm)
2. Install C30 (10 μ F, 25V electrolytic).

2.1.5 LOCAL POWERING OPTION

This modification lets you use a separate power source to power the MRT327. This procedure can be used, for example, to power the MRT327 when wire resistance for long cable runs reduces the supply voltage from the intercom system below a usable level.

Use a dc power supply with a minimum output of +14 Vdc at 500 mA. Connect the positive side to pad E10. Connect negative side to either pad E11 or E12.

2.2 SPEAKER MUTING TRIMMER ADJUSTMENT

The speaker muting trimmer is accessible with the top cover removed. This trimmer adjusts the amount of speaker muting (also called speaker DIM) when the microphone is activated. Normally some amount of muting is required to prevent feedback between the microphone and speaker. Muting is factory preset at -6 dB. Turn trimmer R32 counterclockwise to increase speaker muting.

Note

If the MRT327 is always used as a speaker station and is not used with headphones, it may be possible to stop feedback using the *Sidetone* trimmer (accessible through the front panel) instead of removing the top cover and readjusting the speaker muting trimmer.

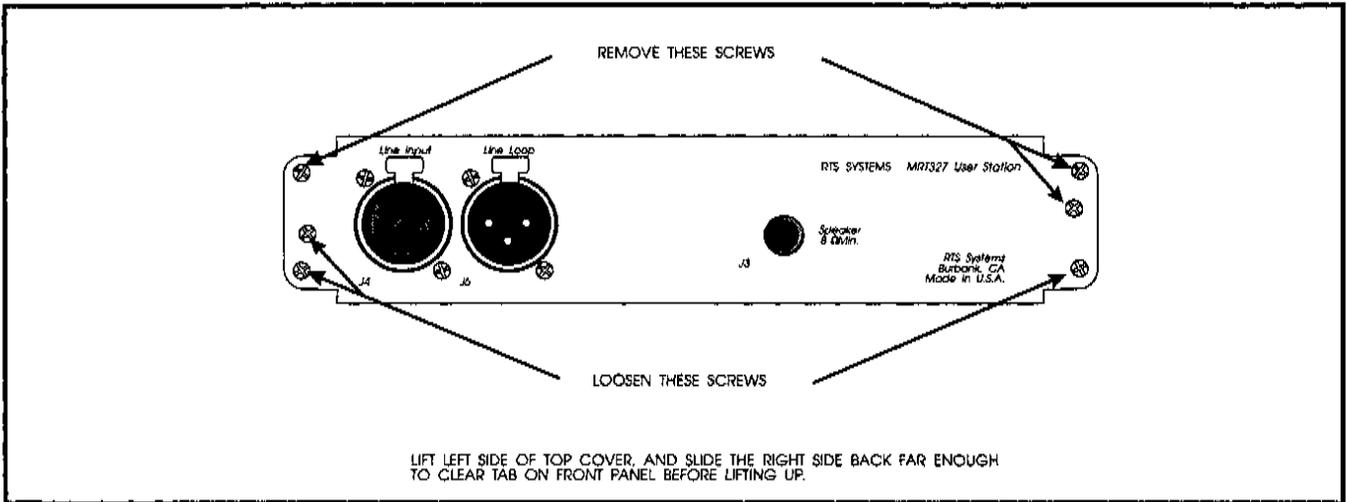


Figure 2-1
Top Cover Removal

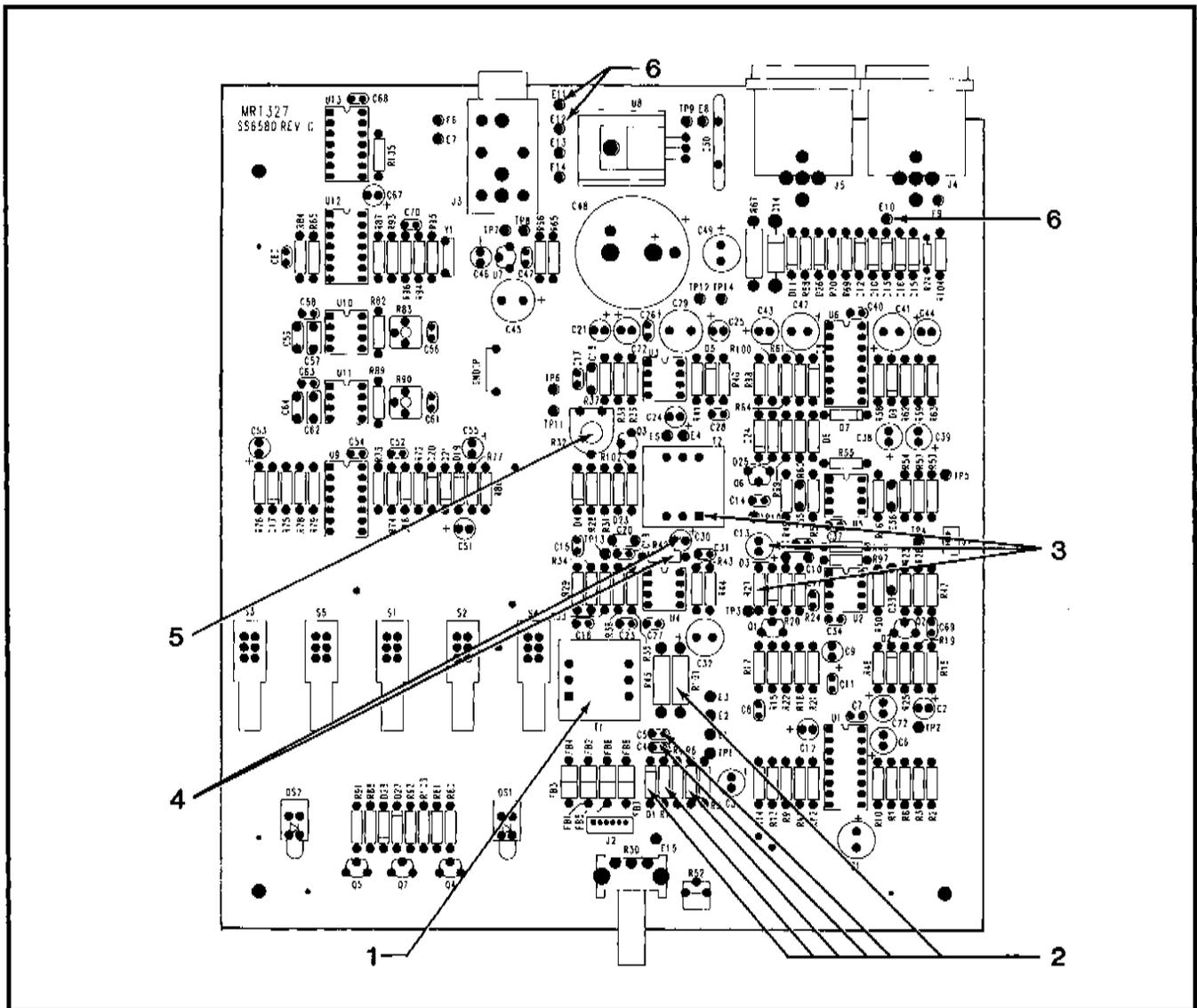


Figure 2-2
User-Installed Options / Speaker Muting Trimmer Location

2.3 MECHANICAL INSTALLATION

Dimensional requirements for the various mounting configurations are illustrated in Section 5 (See drawing number OD6916). Allow an additional 4.0 inches (102 mm) of rear panel clearance for connectors. The MRT327 has no special ventilation space requirements.

2.4 ELECTRICAL INSTALLATION

2.4.1 INTERCOM LINES, J4 AND J5

Intercom line connectors J4 and J5 are wired in parallel for loop-through connection to other intercom stations. Connector pin-outs are as follows:

- Pin 1: Common (audio and DC)
- Pin 2: CH 1/+DC input voltage
- Pin 3: CH 2

2.4.2 EXTERNAL SPEAKER, J27

The SPEAKER OUTPUT jack provides an output for an external speaker (8 ohms minimum). The external speaker is connected using a 1/4-inch phone plug as follows:

- Tip: Speaker high
- Ring: Speaker low
- Sleeve: No connection

2.4.3 HEADSET

Headphones should be 25-600 ohms. Lower impedance headphones are not recommended. Headphones with good acoustic isolation (20 to 40 dB) improve communication in high-noise environments and allow the user to listen at a less tiring, lower volume. The headset jack is wired as follows:

- Pin 1: Balanced mic* low/unbalanced mic common
- Pin 2: Balanced*/unbalanced mic high
- Pin 3: Headphone/mic switch common
- Pin 4: Headphone high
- Pin 5: Headphone high
- Pin 6: Mic switch high

*Balanced mic optional, see paragraph 2.1.1.

SECTION 3: OPERATION

1. Tap the *CHANNEL 1-2* button to select the desired channel.
2. Tap the *PANEL MIC* button once to select the optional panel mic jack (button in); tap it again to select the dynamic mic headset jack (button out).
3. The *MIC ON* button has two modes of operation:
 - a. For push-to-talk operation, press and hold the button while talking. When you release the button the microphone will shut off.
 - b. For hands-free talk, tap the button once to turn on the microphone. Tap the button again to turn off the microphone.

The mic LED indicator lights when the mic is on.

4. Tap the *SPKR ON* button once to activate the optional external speaker (button in). Tap it again to turn the speaker off (button out).
5. Adjust the headphone / speaker listening level using the *VOLUME* control.
6. The *Sidetone* trimmer may be used in either of two ways:
 - a. When using a headset, the *Sidetone* trimmer may be used to adjust the level of the user's own voice in the headphones. While speaking into the microphone, adjust the trimmer for the desired voice level.
 - b. When using an external speaker and a panel microphone instead of headset, the *Sidetone* trimmer may be used to minimize feedback between the speaker and the microphone. While talking into the microphone, adjust the trimmer to minimize the speaker output.
7. To send a call signal, select the channel to be called, then press and hold the *CALL* button. The call LED will light while the button is pressed. When the called station responds, release the *CALL* button.

The call LED will flash when there is an incoming call signal on the currently selected channel. To respond, activate the microphone and begin talking.

SECTION 4: PARTS LISTS

4.1 WHERE TO OBTAIN PARTS

Telex Communications, Inc.
12000 Portland Avenue South
Burnsville, MN 55337 U.S.A.
Telephone: (877) 863-4169
Fax: (800) 323-0498

4.2 FINAL ASSEMBLY

Reference AS6593 Drawing in Section 5 for item numbers.

FINAL ASSEMBLY		
Item No.	Description	RTS Part No.
1	Front Panel Assy. Complete (See list below for breakdown.)	9020659100
2	Rear Panel Assy. Complete (See list below for breakdown.)	9020659200
3	Case Top/Bottom	9060626000
4	Printed Keycap. <i>CALL</i>	9150669801
5	Printed Keycap. <i>PANEL MIC</i>	9150669802
6	Printed Keycap. <i>SPKR ON</i>	9150669803
7	Printed Keycap. <i>MIC ON</i>	9150669804
8	Printed Keycap. <i>CHANNEL 1-2</i>	9150669805
9	Switch Stem	2705002100
10	Volume Knob	2703003700
11	Case Screw	9160630500
12	Screw, Machine, CR PH. #4-40 x 3/8	51845039

4.3 FRONT PANEL ASSEMBLY

Reference AS6591 Drawing in Section 5 for item numbers.

FRONT PANEL ASSEMBLY		
Item No.	Description	RTS Part No.
1	Bezel, Screened	9070659100
2	Bushing Adaptor	9110627300
3	Plug, Panel Microphone	4501006300
4	Lightpipe, Call Indicator	4501006200
5	Phone Jack With Metal Bushing (Panel Mic)	2013004800
6	Connector Insert, 6-pin Female (Dynamic Mic Headset)	2018007700

PARTS LIST ABBREVIATIONS: CD, Ceramic Disk; CF, Carbon Film; CM, Ceramic Monolithic; EL, Electrolytic; LP, Denotes Local Purchase Item; MF, Metal Film; Rad, Radial Leads; Tant, Tantalum.

4.4 REAR PANEL ASSEMBLY

Reference AS6592 Drawing in Section 5 for item numbers.

REAR PANEL ASSEMBLY		
Item No.	Description	RTS Part No.
1	Rear Panel, Screened	9080659200
2	PC Board Assy. Complete (See list below for parts breakdown.)	9030658000
3	Screw, Machine, CR PH. #4-40 x 1/4	51845038
4	Nut, Keps. #4-40	51745000
5	Terminal	43965P3
6	Nut, Keps. #6-32	51745004
7	Tubing	LP

4.5 PC BOARD ASSEMBLY

PC BOARD ASSEMBLY		
Ref No.	Description	RTS Part No.
C1	Capacitor, EL, Rad, 100 μ F, 50V, 20%	1513R1074I
C2	Capacitor, EL, 10 μ F, 25V	1513R1064F
C6	Capacitor, EL, 47 μ F, 16V	1513R4764E
C7, C8	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C9	Capacitor, EL, 10 μ F, 25V	1513R1064F
C10	Capacitor, CD, 47 pF, 50V	1510R4702I
C11	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C12	Capacitor, EL, 1 μ F, 50V	1513R1054I
C14	Capacitor, CM, 0.22 μ F, 50V	1511R2242I
C15 - C17	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C19	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C20	Capacitor, CD, 220 pF, 100V	1510R8212R
C21	Capacitor, EL, 1 μ F, 50V	1513R1054I
C22	Capacitor, EL, 22 μ F, 50V	1513R2263I
C23	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C24, C25	Capacitor, EL, 10 μ F, 25V	1513R1064F
C26	Capacitor, CD, 470 pF, 50v	1510R4712I
C27, C28	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C29	Capacitor, EL, Rad, 220 μ F, 16V, 20%	1513R2274E
C31	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C32	Capacitor, EL, Rad, 100 μ F, 50V, 20%	1513R1074I
C34	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C35	Capacitor, CD, 470 pF, 50v	1510R4712I
C36	Capacitor, CD, 10 pF, 500V	1510R1002I
C36	Capacitor, CD, 100pF, 50V	1510R1012I
C37	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C38	Capacitor, EL, 47 μ F, 16V	1513R4764E
C39	Capacitor, EL, 22 μ F, 50V	1513R2263I
C40	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C41, C42	Capacitor, EL, Rad, 100 μ F, 50V, 20%	1513R1074I
C43	Capacitor, EL, 22 μ F, 50V	1513R2263I
C44	Capacitor, EL, 22 μ F, 50V	1513R2263I

PC BOARD ASSEMBLY		
Ref No.	Description	RTS Part No.
C45	Capacitor, EL, 1000 μ F, 16V	1513R1084E
C46	Capacitor, EL, 10 μ F, 25V	1513R1064F
C47	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C48	Capacitor, EL, 4700 μ F, 25V	1513R4784F
C49	Capacitor, EL, Rad, 100 μ F, 50V, 20%	1513R1074I
C50	Capacitor, CD, 0.1 μ F, 500V	1510R1042Q
C51	Capacitor, EL, 1 μ F, 50V	1513R1054I
C51	Capacitor, EL, 1 μ F, 50V	1513R1054I
C52	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C53	Capacitor, EL, 1 μ F, 50V	1513R1054I
C54	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C55	Capacitor, EL, 22 μ F, 50V	1513R2263I
C56	Capacitor, NPO Mono, 0.0033 μ F, 50V	1511R3321I
C57	Capacitor, Mylar, 0.047 μ F, 100V	1514R4732L
C58	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C59	Capacitor, CD, 100pF, 50V	1510R1012I
C60	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C61	Capacitor, NPO Mono, 0.0033 μ F, 50V	1511R3321I
C62	Capacitor, Mylar, 0.047 μ F, 100V	1514R4732L
C63	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C64	Capacitor, CD, 100pF, 50V	1510R1012I
C66	Capacitor, CD, 47 pF, 50V	1510R4702I
C67	Capacitor, EL, 1 μ F, 50V	1513R1054I
C68, C69	Capacitor, CM, 0.1 μ F, 50V	1511R1042I
C70	Capacitor, CM, 0.001 μ F, 50V	1511R1022I
C71	Capacitor, CM, 0.01 μ F, 50V	1511R1032I
C72	Capacitor, EL, 47 μ F, 16V	1513R4764E
D2 - D4	Diode, 1N914B	160109140B
D5 - D9	Diode, 1N4004, 1A, 400V	1601400400
D10	Diode, 1N914B	160109140B
D11, D12	Diode, 1N4004, 1A, 400V	1601400400
D13	Diode, 1N5245B Zener, Voltage Reg 15V	160152450B
D14	Diode, 1N5365B Zener, Voltage Reg 36V	160153650B
D15, D16	Diode, 1N4004, 1A, 400V	1601400400
D17 - D20	Diode, 1N914B	160109140B
D21	Diode, 1N4004, 1A, 400V	1601400400
D23 - D28	Diode, 1N914B	160109140B
DS1, DS2	LED, Red, Striking Bright, AND 180 $\text{\textcircled{R}}$ P	1801002700
FB1-FB8	#73 Shield Bead	2404000100
J1	Connector, Top Entry, 3-Pin Male	2007013900
J2	Connector, Top Entry, 6-Pin Male	2007013800

PARTS LIST ABBREVIATIONS: CD, Ceramic Disk; CF, Carbon Film; CM, Ceramic Monolithic; EL, Electrolytic; MF, Metal Film; Rad, Radial Leads; Tant, Tantalum.

PC BOARD ASSEMBLY		
Ref No.	Description	RTS Part No.
J3	Jack, PC Mt, 3/8" H	2013004900
J4	Connector, PC Mt, 3-Pin Male, NC3MDH	2018001000
J5	Connector, PC Mt, 3-Pin Female, NC3FDH	2018001100
Q1	Transistor, J305	1602030500
Q2	Transistor, 2N5210	1602521000
Q3	Transistor, J305	1602030500
Q4, Q5	Transistor, 2N5087	1602508700
Q6	Transistor, 2N5460	1602546000
Q7	Transistor, 2N5210	1602521000
R1	Resistor, CF, 1K Ohm, 1/4W, 5%	140210015D
R2	Resistor, CF, 2K Ohm, 1/4W, 5%	140220015D
R3	Resistor, CF, 100 Ohm, 1/4W, 5%	52154305
R4	Resistor, CF, 470 Ohm, 1/4W, 5%	140247005D
R5	Resistor, CF, 200 Ohm, 1/4W, 5%	140220005D
R8	Resistor, CF, 470 Ohm, 1/4W, 5%	140247005D
R9, R10	Resistor, CF, 22K Ohm, 1/4W, 5%	140222025D
R11, R12	Resistor, CF, 470 Ohm, 1/4W, 5%	140247005D
R13	Resistor, CF, 22K Ohm, 1/4W, 5%	140222025D
R14	Resistor, CF, 10K Ohm, 1/4W, 5%	140210025D
R15	Resistor, CF, 5.1M Ohm, 1/4W, 5%	140251045D
R16	Resistor, CF, 22K Ohm, 1/4W, 5%	140222025D
R17, R18	Resistor, CF, 5.1M Ohm, 1/4W, 5%	140251045D
R19	Resistor, CF, 100K Ohm, 1/4W, 5%	140210035D
R20	Resistor, CF, 200 Ohm, 1/4W, 5%	140220005D
R21	Resistor, CF, 22K Ohm, 1/4W, 5%	140222025D
R22, R23	Resistor, CF, 100K Ohm, 1/4W, 5%	140210035D
R24	Resistor, CF, 220K Ohm, 1/4W, 5%	140222035D
R25	Resistor, CF, 15K Ohm, 1/4W, 5%	140215025D
R26	Resistor, CF, 10K Ohm, 1/4W, 5%	140210025D
R28	Resistor, CF, 180K Ohm, 1/4W, 5%	140218035D
R29	Resistor, CF, 220K Ohm, 1/4W, 5%	140222035D
R30	Trimpot, 10K Audio, Right Angle	1406004400
R31	Resistor, CF, 22K Ohm, 1/4W, 5%	140222025D
R32	Trimpot, 100K	1409001800
R33	Resistor, CF, 10K Ohm, 1/4W, 5%	140210025D
R34	Resistor, CF, 100K Ohm, 1/4W, 5%	140210035D
R35	Resistor, CF, 22K Ohm, 1/4W, 5%	140222025D
R36	Resistor, CF, 100K Ohm, 1/4W, 5%	140210035D
R37	Resistor, CF, 100 Ohm, 5%, 1/4W	140210005D
R38	Resistor, CF, 100K Ohm, 1/4W, 5%	140210035D
R39	Resistor, CF, 100 Ohm, 5%, 1/4W	140210005D
R40	Resistor, CF, 2.7 Ohm, 1/4W, 5%	14022R705D
R41	Resistor, CF, 22K Ohm, 1/4W, 5%	140222025D
R43	Resistor, CF, 2.7 Ohm, 1/4W, 5%	14022R705D
R44	Resistor, CF, 22K Ohm, 1/4W, 5%	140222025D
R45	Resistor, CF, 10 Ohm, 1/2W, 5%	140210R05E
R46	Resistor, CF, 22K Ohm, 1/4W, 5%	140222025D

PC BOARD ASSEMBLY		
Ref No.	Description	RTS Part No.
R47	Resistor, CF, 10K Ohm, 1/4W, 5%	140210025D
R48	Resistor, CF, 22 Ohm, 1/4W, 5%	140222R05D
R50, R51	Resistor, CF, 22K Ohm, 1/4W, 5%	140222025D
R52	Trimpot, 10K Ohm Linear, Horiz	1409006000
R53, R54	Resistor, MF, 60.4K, 1/4W, 1%	140360422D
R55	Resistor, CF, 22 Ohm, 1/4W, 5%	140222R05D
R56, R57	Resistor, MF, 20.0K, 1/4W, 1%	140320022D
R58	Resistor, CF, 100 Ohm, 5%, 1/4W	140210005D
R59 - R61	Resistor, CF, 100K Ohm, 1/4W, 5%	140210035D
R62	Resistor, CF, 10K Ohm, 1/4W, 5%	140210025D
R63, R64	Resistor, CF, 220K Ohm, 1/4W, 5%	140222035D
R65	Resistor, CF, 200 Ohm, 1/4W, 5%	140220005D
R66	Resistor, CF, 620 Ohm, 1/4W, 5%	140262005D
R67	Resistor, CF, 10 Ohm, 1/2W, 5%	140210R05E
R68	Resistor, MF, 301 Ohm, 1/4W, 1%	140330102D
R69	Resistor, MF, 3.01K, 1/4W, 1%	140330112D
R70	Resistor, CF, 1K Ohm, 1/4W, 5%	140210015D
R71	Resistor, MF, 3.3 Ohm, 1/8W, 1%	14023R305B
R72 - R74	Resistor, CF, 10K Ohm, 1/4W, 5%	140210025D
R75	Resistor, CF, 1K Ohm, 1/4W, 5%	140210015D
R76	Resistor, CF, 270K Ohm, 1/4W, 5%	140227035D
R77	Resistor, CF, 100K Ohm, 1/4W, 5%	140210035D
R78	Resistor, CF, 10K Ohm, 1/4W, 5%	140210025D
R79	Resistor, CF, 1K Ohm, 1/4W, 5%	140210015D
R80	Resistor, CF, 47K Ohm, 1/4W, 5%	140247025D
R81	Resistor, CF, 470K, 1/4W, 5%	140247035D
R82	Resistor, MF, 10.5K, 1/8W, 1%	140310522D
R83	Trim Pot, Cermet, 5K	1409006600
R84	Resistor, CF, 2.2M Ohm, 1/4W, 5%	140220045D
R85	Resistor, CF, 470K, 1/4W, 5%	140247035D
R86	Resistor, CF, 150 Ohm, 1/4W, 5%	140215005D
R87	Resistor, CF, 10K Ohm, 1/4W, 5%	140210025D
R88	Resistor, CF, 47K Ohm, 1/4W, 5%	140247025D
R89	Resistor, MF, 8.25K, 1/4W, 1%	140222045D
R90	Trim Pot, Cermet, 5K	1409006600
R91	Resistor, CF, 470K, 1/4W, 5%	140247035D
R92	Resistor, CF, 22K Ohm, 1/4W, 5%	140222025D
R93	Resistor, CF, 1M Ohm, 1/8W, 5%	140210045D
R94, R95	Resistor, CF, 51K Ohm, 1/4W, 5%	140251025D
R96	Resistor, CF, 100K Ohm, 1/4W, 5%	140210035D
R97	Resistor, CF, 180K Ohm, 1/4W, 5%	140218035D

PC BOARD ASSEMBLY		
Ref No.	Description	RTS Part No.
R98	Resistor, CF, 100 Ohm, 5%, 1/4W	140210005D
R99	Resistor, CF, 1M Ohm, 1/8W, 5%	140210045D
R100	Resistor, CF, 220K Ohm, 1/4W, 5%	140222035D
R102	Resistor, CF, 1M Ohm, 1/8W, 5%	140210045D
R103	Resistor, CF, 150 Ohm, 1/4W, 5%	140215005D
R104	Resistor, CF, 100K Ohm, 1/4W, 5%	140210035D
R105	Resistor, CF, 1K Ohm, 1/4W, 5%	140210015D
S1-S3	Switch, Push Button, Alternate Action	1911004600
S4, S5	Switch, Push Button, Momentary	1911004700
U1	IC, Analog Switch, CD4053BE	16034053BE
U2	IC, LM833	1603083300
U3	IC, Amp, SGS TB4820M	160308200M
U4	IC, Op Amp, National LM386N-1	1603038600
U5	IC, MC34072D	1603014300
U6	IC, Analog Switch, CD4053BE	16034053BE
U7	IC, Voltage Regulator, LP2950C2-5	1603014100
U8	IC, Voltage Regulator, National LM317T	160303170T
U9	IC, 4093B, Quad 2-input NAND	160340930B
U10, U11	IC, Tone Decoder, XR-L567	1603014200
U12	IC, 14001B	160314001B
U13	IC, 4013	160314001B
XDS1, XDS2	90-Degree LED Mount, Bivar T-1.75	1801002800
XU1	Socket, 16-Pin DIP	2001000300
XU2-XU5	IC Socket, 8-Pin	2001000100
XU6	Socket, 16-Pin DIP	2001000300
XU9	IC Socket, 14-Pin	2001000200
XU10, XU11	IC Socket, 8-Pin	2001000100
XU12, XU13	IC Socket, 14-Pin	2001000200
Y1	Crystal, 40 kHz	3301001000
	Nut, Hex, #4-40 (Qty 1)	1007002500
	Washer, Compression, #4-40 (Qty 1)	1006004100
	Heatsink, Aham 361 (Qty 1)	4502000700
	Screw, #2-56 x 3/16, PH Phil (Qty 2)	1008200900
	Screw, #4-40 x .375 (Qty 1)	1008400300
	Washer, Nylon, #4 (Qty 2)	1006005300

9030658000, B

PARTS LIST ABBREVIATIONS: CD, Ceramic Disk;
 CF, Carbon Film; CM, Ceramic Monolithic;
 EL, Electrolytic; LP, Denotes Local Purchase Item;
 MF, Metal Film; Rad, Radial Leads; Tant, Tantalum.

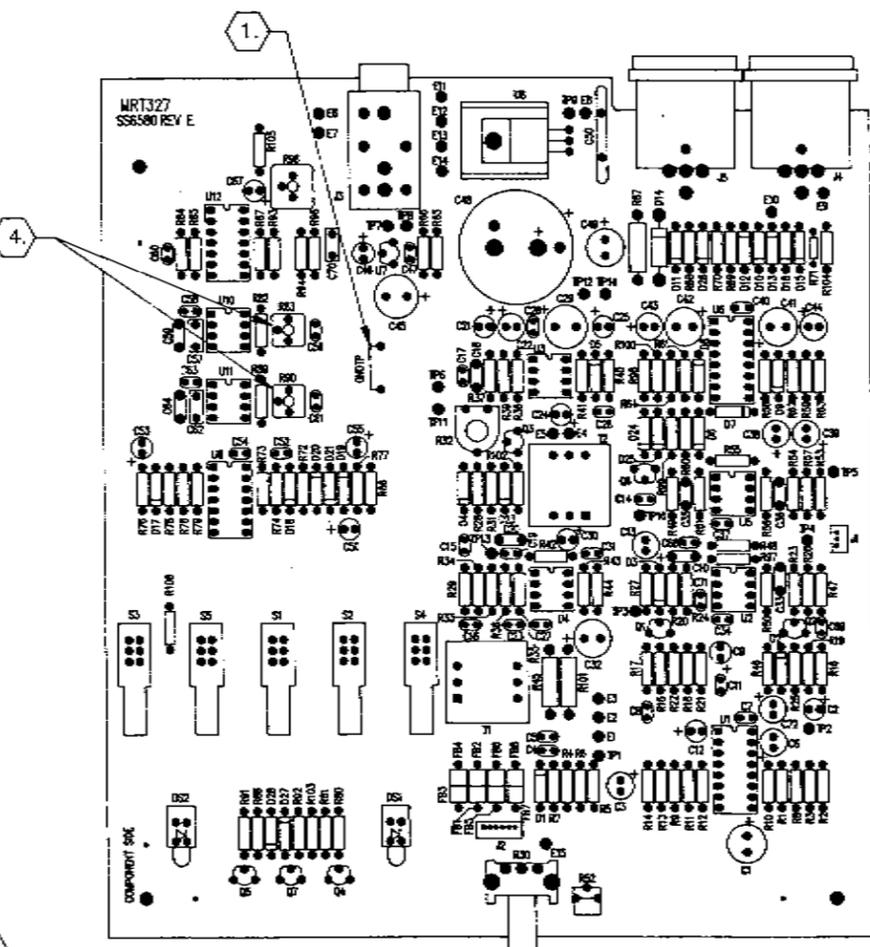
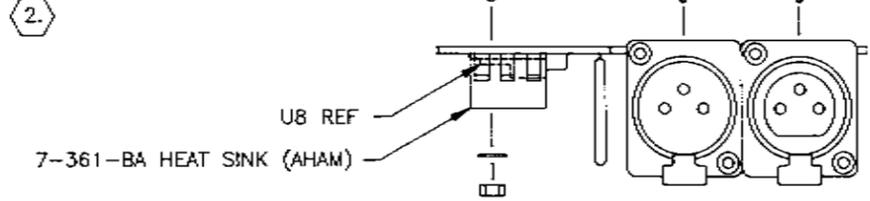
SECTION 5: DRAWINGS

(Arranged in alphabetical order)

Drawing Number	Title
AS6580	PC Board Assembly
AS6591	Front Panel Assembly
AS6592	Rear Panel Assembly
AS6593	Final Assembly
BD6593	Block Diagram, MRT327
OD6916	Outline and Dimension Drawings (4 sheets)
PD6593	Packaging Drawing
SD6580	Schematic Diagram (2 sheets)

#4-40UNC .375 LG FLAT HD SCREW
 #4-40 COMPRESSION WASHER
 #4-40UNC HEX NUT

#2-56UNC X .187 LG PAN HD SCREW
 (2 PLACES) (SECURES J4 & J5 TO PCB)



DS1 AND DS2 REF
 #4-40 NYLON WASHER (RAF #5165-N-125)

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	REV AND REDRAWN TO COMPLY WITH ARTWORK CHANGES.	5/29/90	RKB
	B	ADDED NOTE 4 PER ECO#3229	10/9/90	RTC
	C	CHG. VIEW OF ASSEMBLY TO REFLECT REV E ARTWORK.	13 MAY 94	MK

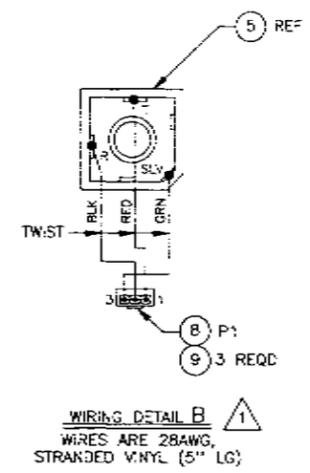
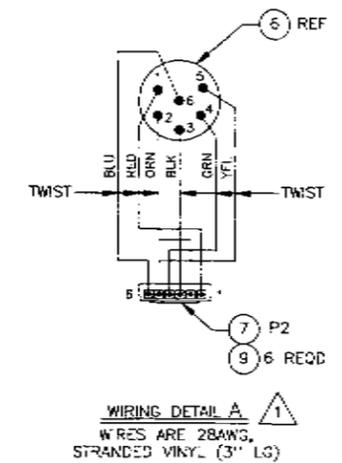
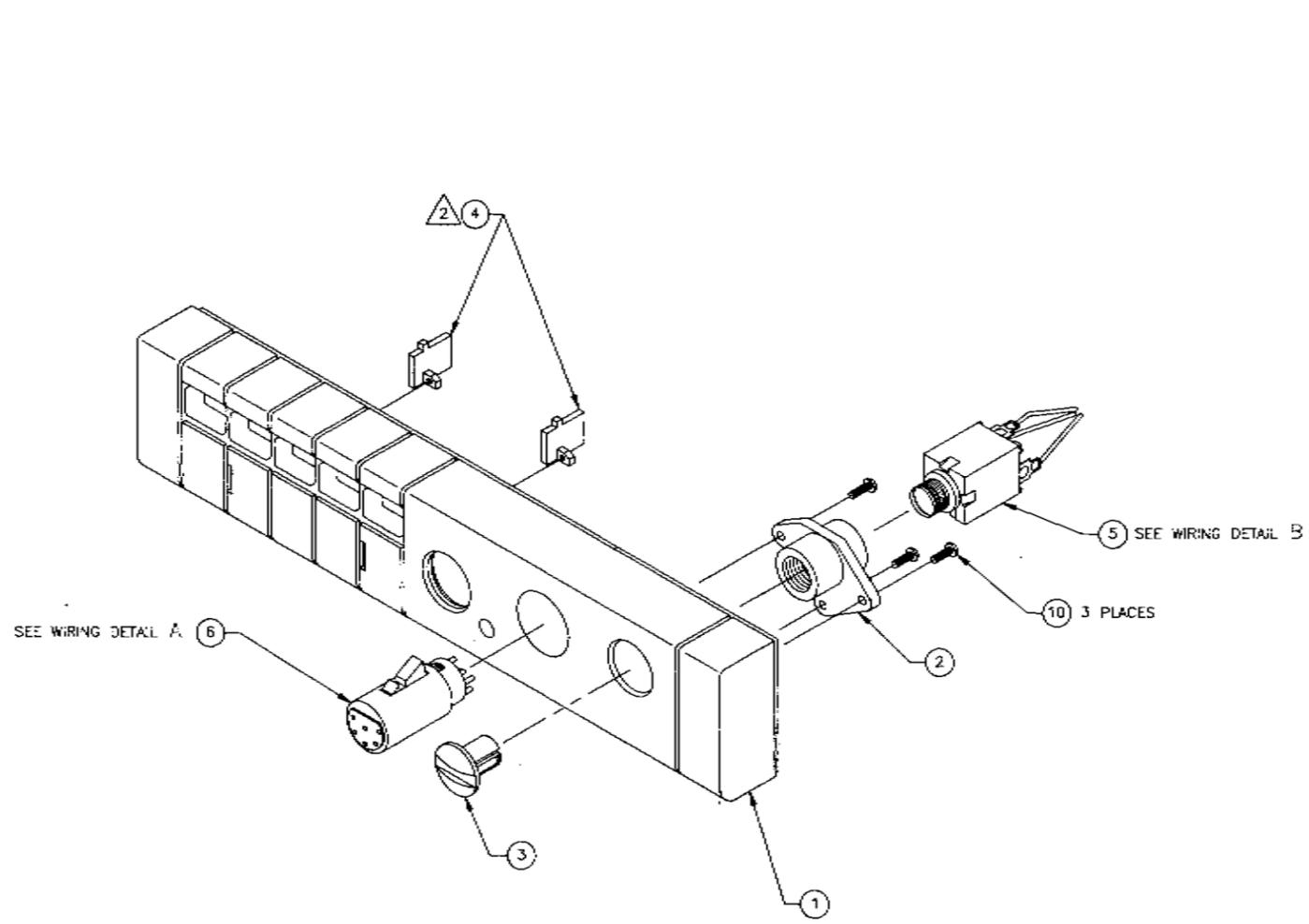
NOTES:

1. INSTALL GROUND TEST POINT (GND TP) 0.12 ABOVE PCB SURFACE.
2. APPLY TORQUE UNTIL COMPRESSION WASHER COMPRESSES TO HALF ITS ORIGINAL HEIGHT.
3. ANY HOLE NOT BEING USED (OPT PARTS, TEST POINTS, AND E HOLES) SHOULD BE MASKED BEFORE WAVE SOLDERING.
4. APPLY GLYPTOL, OR EQUIV., TO TRIM POTS R83 AND R90 AFTER THEY ARE SET PER TEST PROCEDURE. DO NOT APPLY ADHESIVE TO TRIMMERS R52 AND R32.

SEE SEPARATE PARTS LIST 9030-6580-00

UNLESS OTHERWISE SPECIFIED REMOVE ALL BURRS & BREAK SHARP EDGES HOLE TOLERANCES PER ANSI B94.11-1987, R1 B72 DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES ±1/16 .X ±.060 ±30 XX ±.030 XXX ±.010		CONTRACT NO.		RTS SYSTEMS BURBANK, CALIFORNIA, USA	
AS6593		MRT327		APPROVALS	DATE
NEXT ASSY		USED ON		DRAWN R.K. BOOTH	5/29/90
APPLICATION				CHECKED	
				ISSUED	
				SIZE	FSCM NO.
				C160572	AS6580
				SCALE	1/1
				A6580B01	SHEET 1 OF 1

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



- \triangle 1 SHRINK SLEEVE WIRE CONNECTIONS TO ITEMS 5 AND 6 (9 PLACES).
- \triangle 2 INSTALL LIGHTPIPES (ITEM 4), THEN APPLY SOLDERING IRON TO THE PROTRUDING GUIDE PINS TO SET LIGHTPIPES PERMANENTLY IN PLACE.

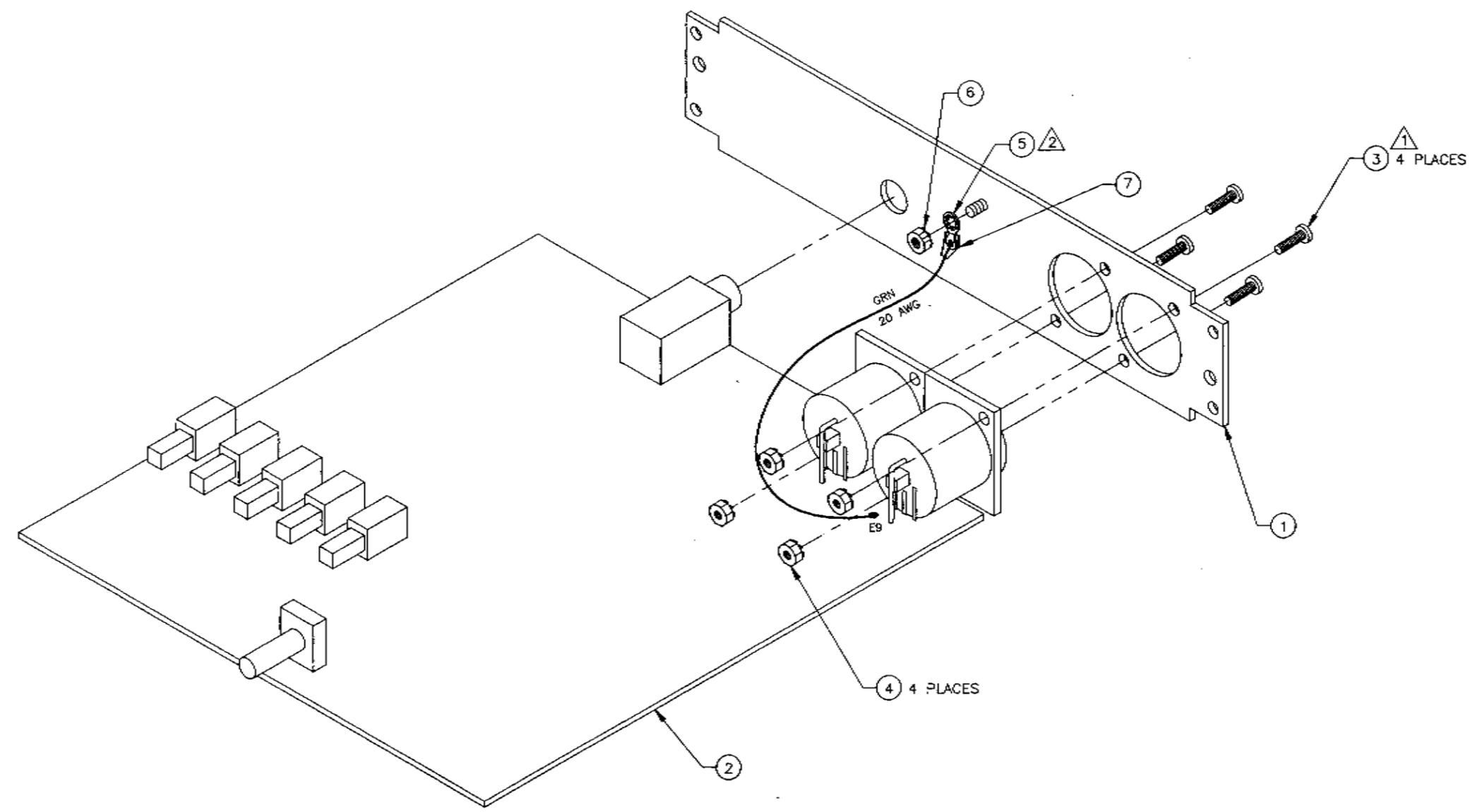
NOTES: UNLESS OTHERWISE SPECIFIED

SEE SEPARATE PARTS LIST 9020-6591-00

UNLESS OTHERWISE SPECIFIED REMOVE ALL BURRS & BREAK SHARP EDGES HOLD TOLERANCES PER MIL-B-8835-100, P1372 DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES ±1/16 ±.005 ±30		CONTRACT NO.	RTS SYSTEMS, INC. BURBANK, CALIFORNIA, USA		
APPROVALS		DATE	ASSEMBLY DRAWING-- FRONT PANEL, MRT327		
DRAWN R.T. CRUZ		5/2/90			
CHECKED EM		15-25-90			
ISSUED					
NEXT ASSY	USED ON	FINISH	SIZE	FSCW NO. D 60572	
APPLICATION			DWG NO. AS6591	REV	
			SCALE 1/1	A6591-D1.DWG	SHEET 1 OF 1

LN 6

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	ADDED NOTES & ITEM 7 PER ECO#3229	RTC	10/9/90
				GM 10-11-90

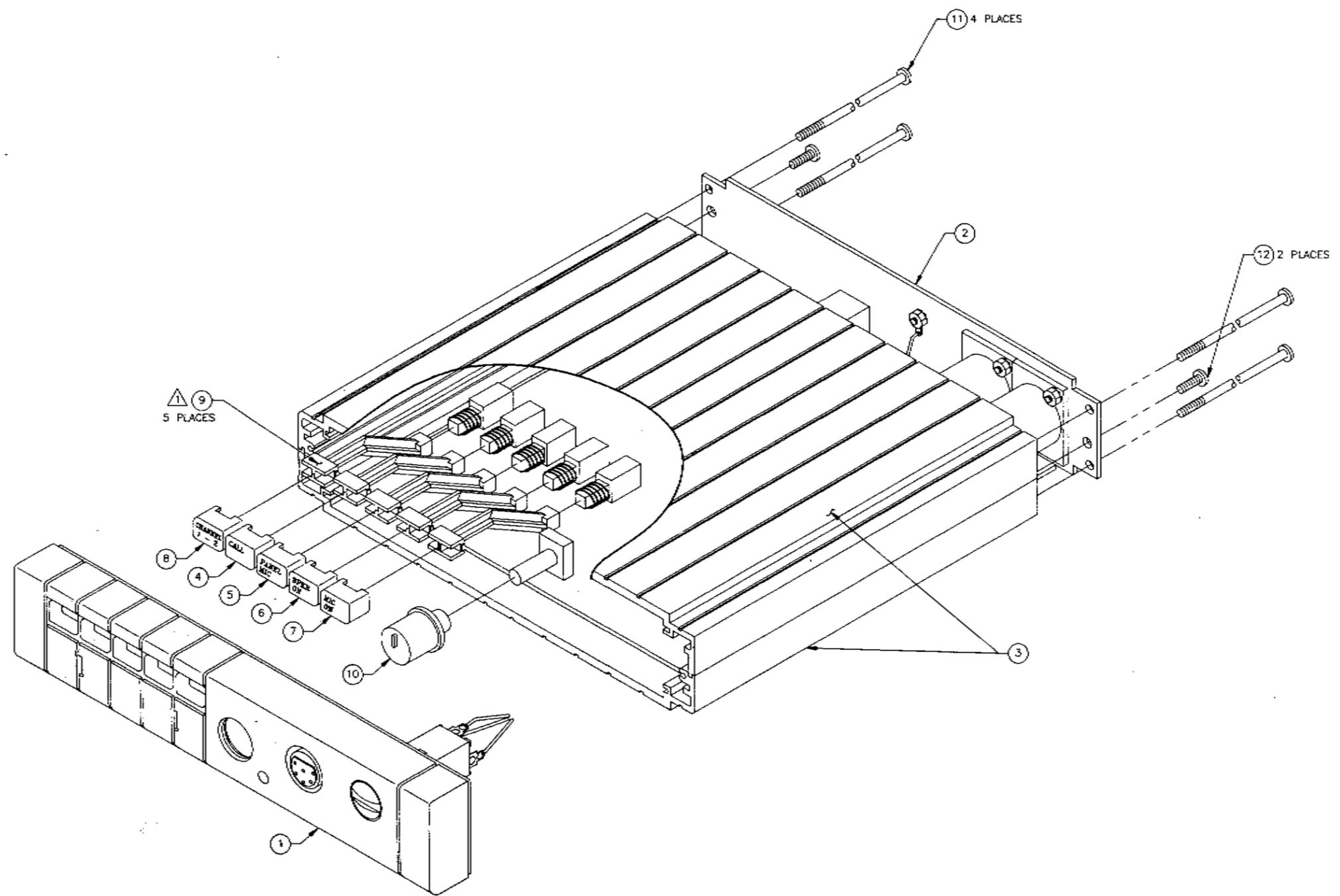


SEE SEPARATE PARTS LIST 9020-6592-00

- 1 APPLY ADHESIVE COMPOUND (LOCTITE 425/TELEX JM328) TO THREADS OF SCREWS (ITEM 3) TO PREVENT NUTS FROM GETTING LOOSE.
 - 2 SOLDER LUG (ITEM 5) MUST NOT COME IN CONTACT WITH HEATSINK OF UB ON CIRCUIT BOARD.
- NOTES: UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED REMOVE ALL BURRS & BREAK SHARP EDGES HOLE TOLERANCES PER ANSI B94.11-1987, R1972 DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES ±1/16 .X ±.000 ±30° .XX ±.030 .XXX ±.010		CONTRACT NO.		RTS SYSTEMS BURBANK, CALIFORNIA, USA	
NEXT ASSY		USED ON		APPROVALS	DATE
APPLICATION				R.T. CRUZ	5/2/90
				CHECKED	
				G.M.	5/25/90
				ISSUED	
		SIZE	FSCM NO.	DWG NO.	REV
		C 60572		AS6592	A
		SCALE 1/1	A6592A01.DWG	SHEET 1 OF 1	

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

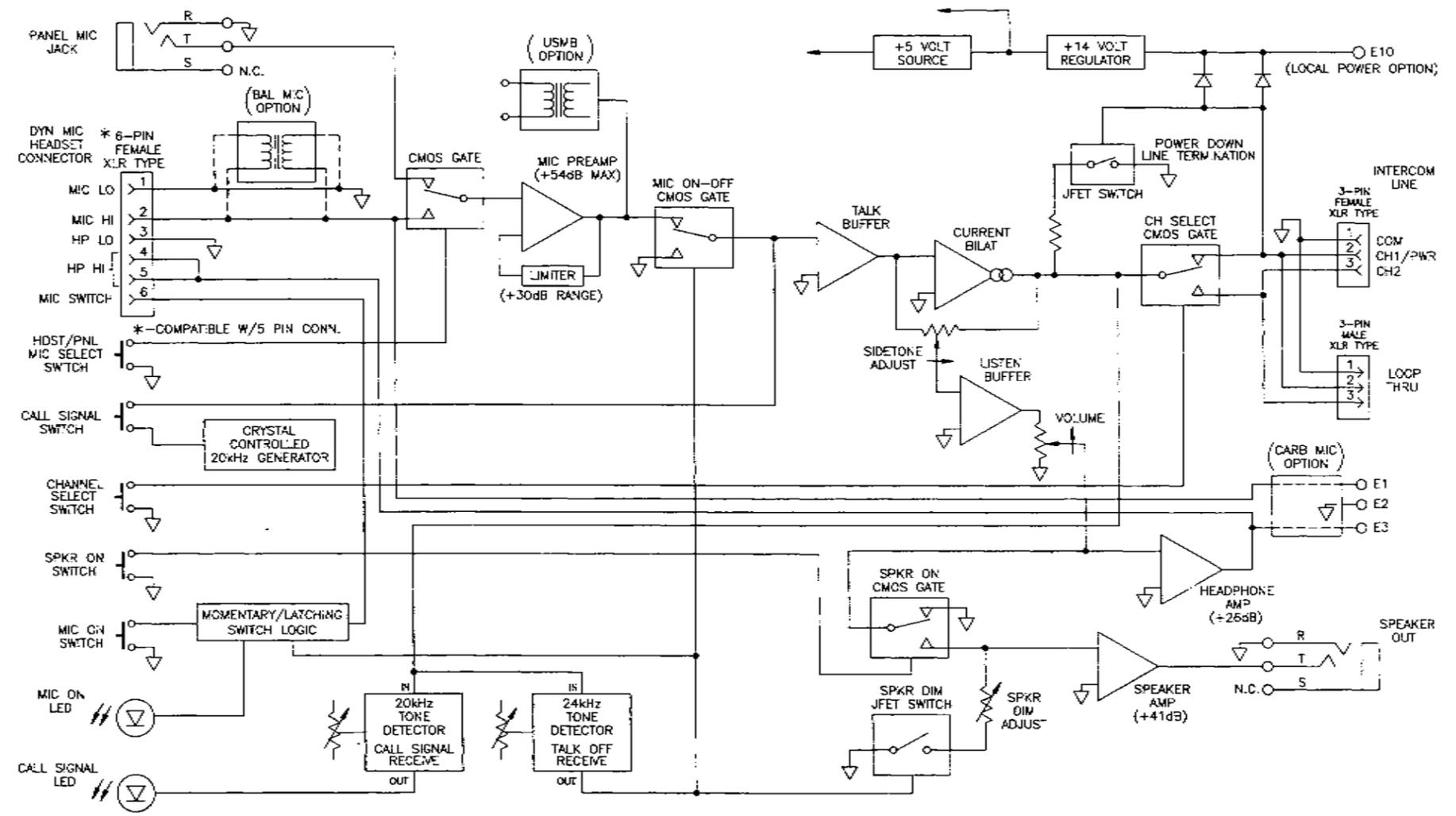


⚠ PUSH SWITCH STEM (ITEM 9) ONTO SWITCH UNTIL IT LOCKS (5 PLACES).
 NOTES: UNLESS OTHERWISE SPECIFIED

SEE SEPARATE PARTS LIST 9010-6593-00

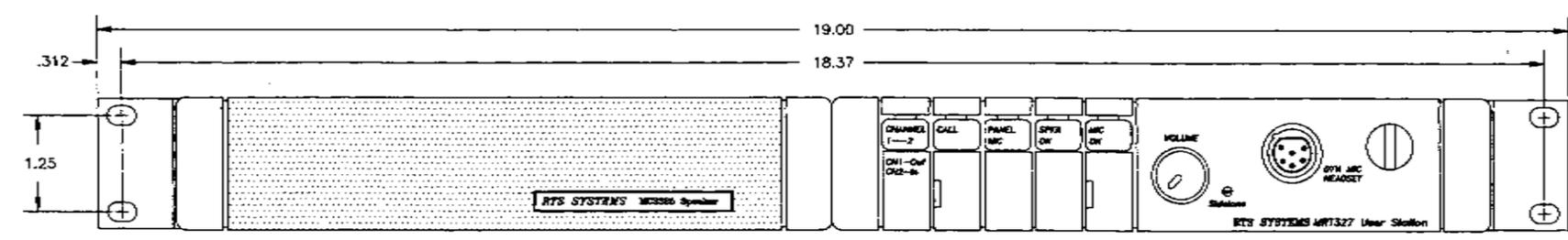
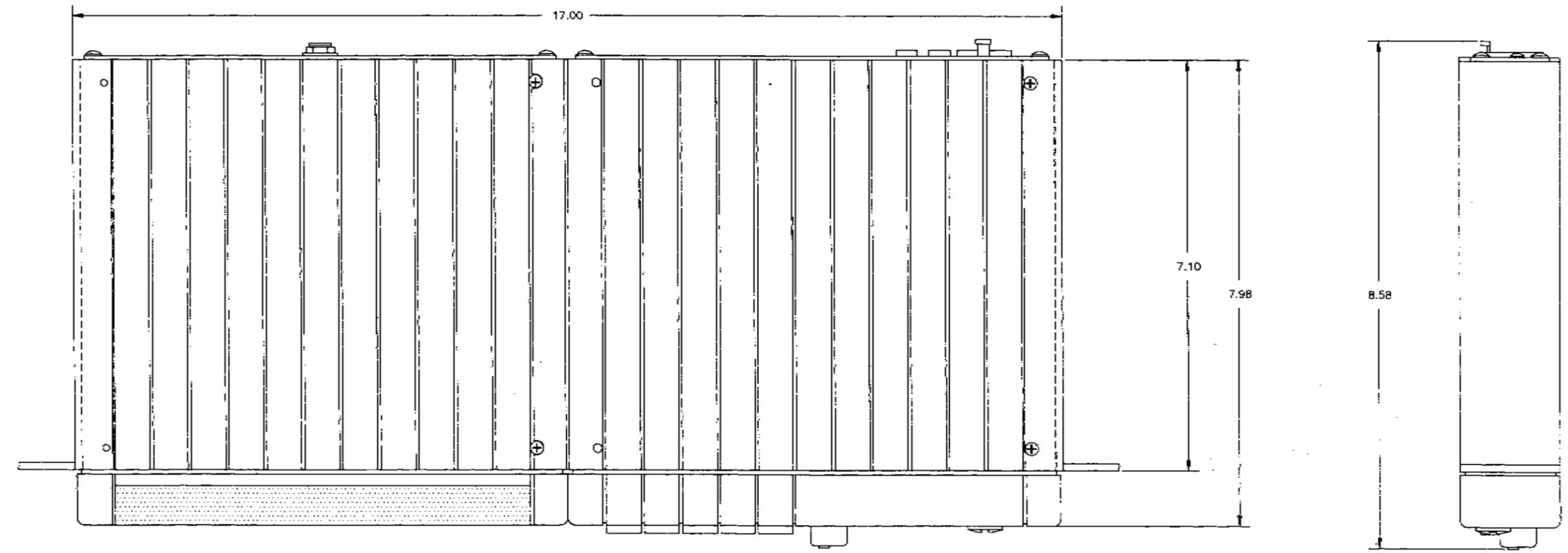
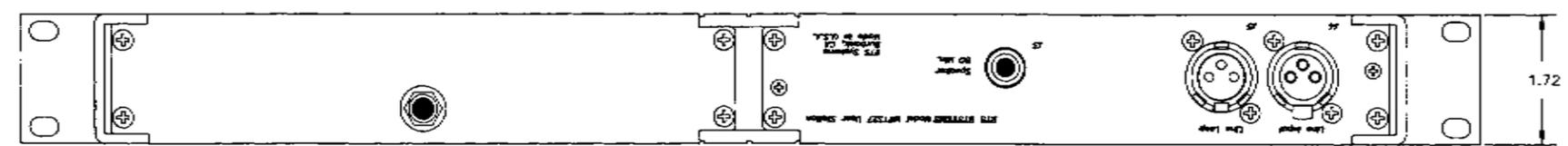
UNLESS OTHERWISE SPECIFIED REMOVE ALL BURRS & BREAK SHARP EDGES HOLE TOLERANCES FOR HOLE DIA. ±0.010 -0.015 DIMENSIONS ARE IN INCHES TOLERANCES ARE: FINISHES: ±1/32" DECIMALS: ±0.000 ANGLES: ±30' ±1/16" ±0.005 ±0.010 ±0.020		CONTRACT NO.	RTS SYSTEMS, INC BURBANK, CALIFORNIA, USA			
APPROVALS		DATE	FINAL ASSEMBLY— MODEL MRT327			
DRAWN		R.T. CRUZ 5/3/90				
CHECKED		GM 15-25-90				
ISSUED						
NEXT ASSY	USED ON	FINISH	SIZE	FSCM NO.	DWG NO.	REV
			3	160572	AS6593	
APPLICATION			SCALE 1/1	A6593-01.DWG	SHEET 1 OF 1	

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	REVISED PER MKTG REQUEST	RTC 3/4/91	



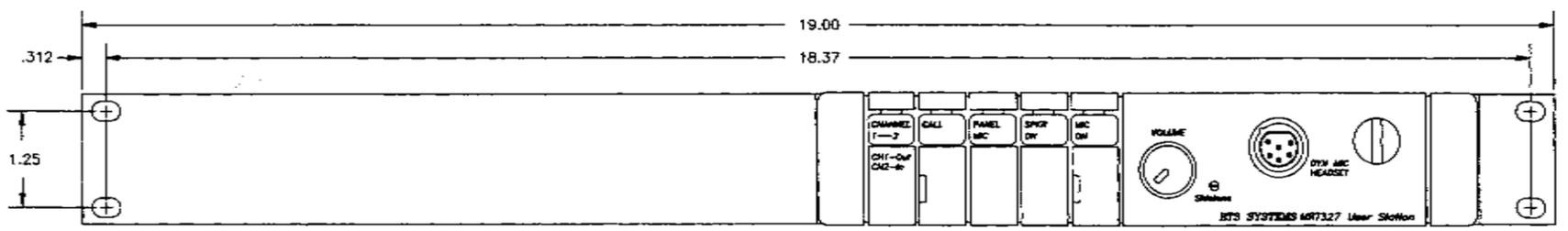
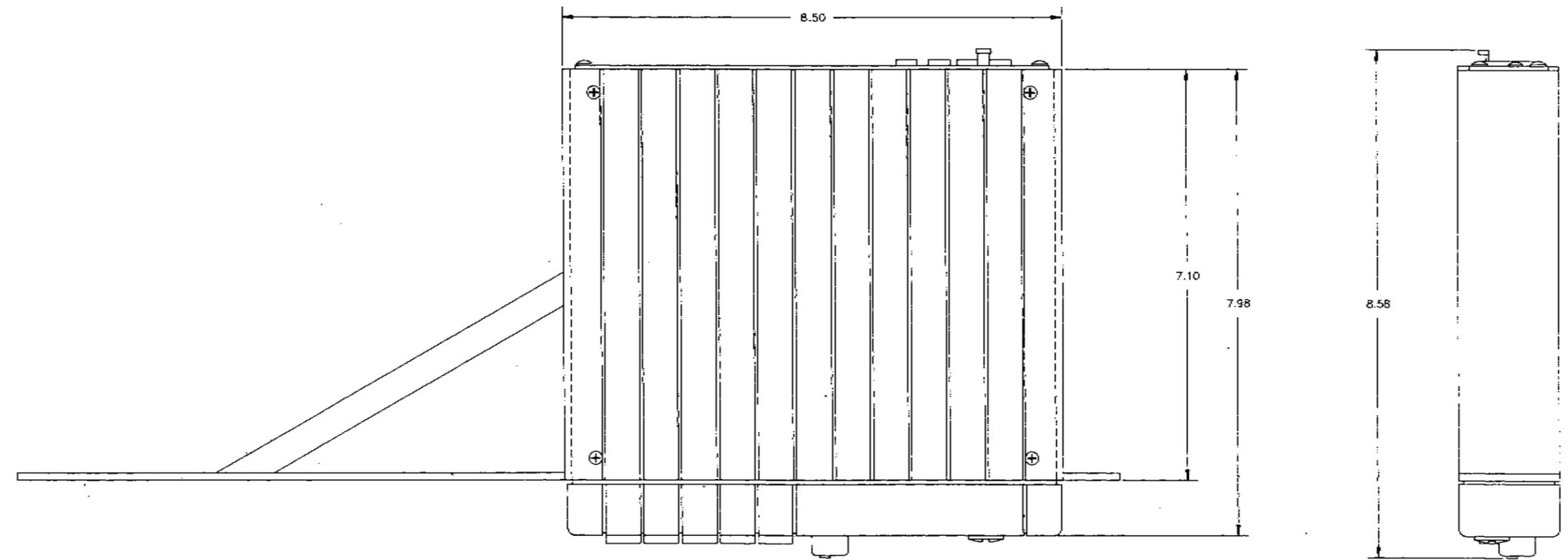
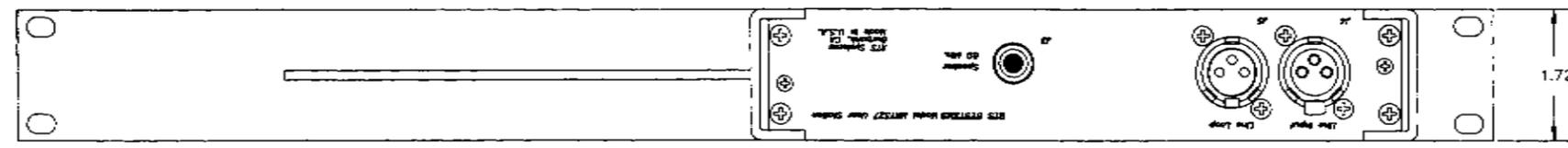
UNLESS OTHERWISE SPECIFIED: TOLERANCES ARE: DIMENSIONS ARE IN INCHES FRACTIONS DECIMALS ANGLES 2/-/16 3/32.00 30.00		CONTRACT NO.	RTS SYSTEMS BURBANK, CALIFORNIA, USA	
APPROVALS		DATE	BLOCK DIAGRAM— USER STATION, MODEL MRT327	
DRAWN R.T. DRUZ		1/19/91	SIZE FSCM NO. DWG NO. D 60572 BD6593	
CHECKED G.M.		1/23/91	REV A	
ISSUED		SCALE — B6593A01.DWG SHEET 1 OF 1		
NEXT ASSY	USED ON	APPLICATION		

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



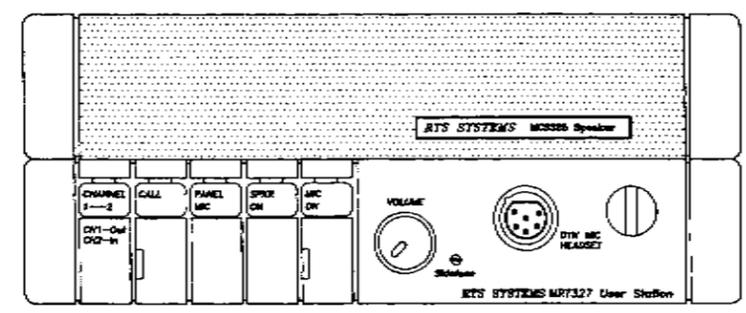
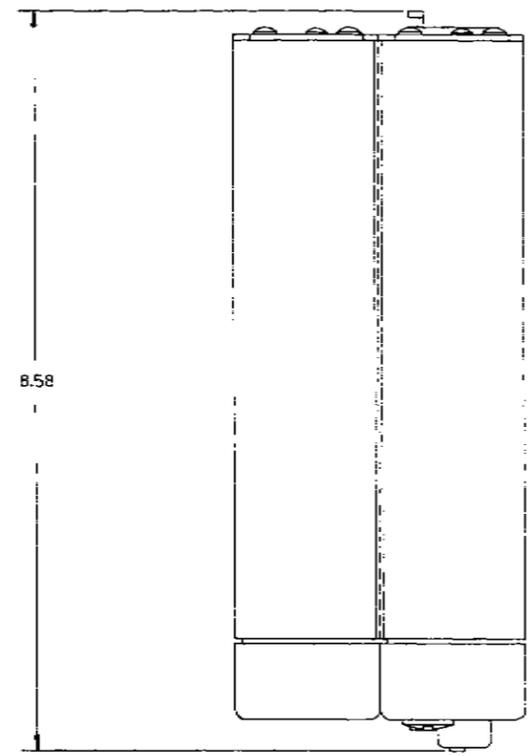
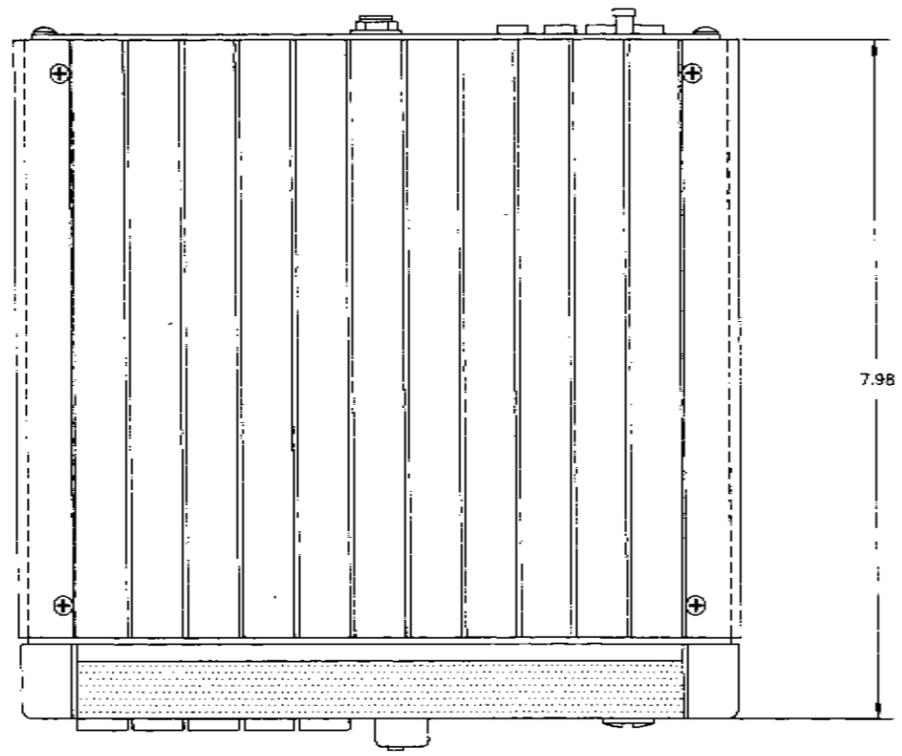
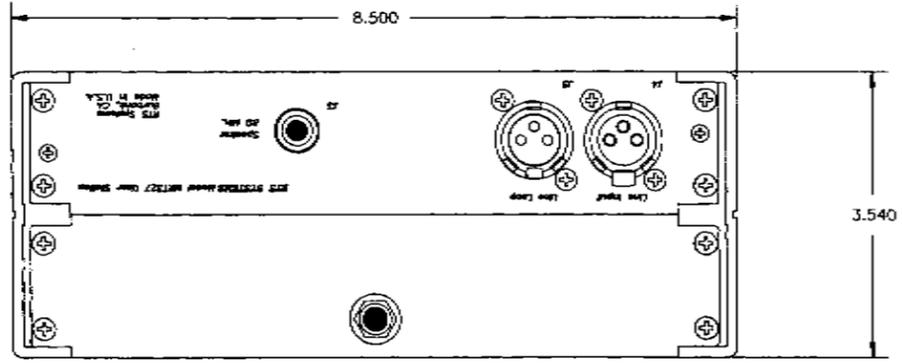
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APPROVALS		DATE		OUTLINE DRAWING - RACK MOUNT SPEAKER STATION, MCS325/MRT327	
DRAWN R.T. CRUZ		11/19/90			
CHECKED GM		11-21-90			
ISSUED				SIZE FSCM NO. DWG NO. REV	
NEXT ASSY USED ON				D60572 OD6916	
APPLICATION				SCALE 1/1 06916-01.DWG SHEET 1 OF 4	

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



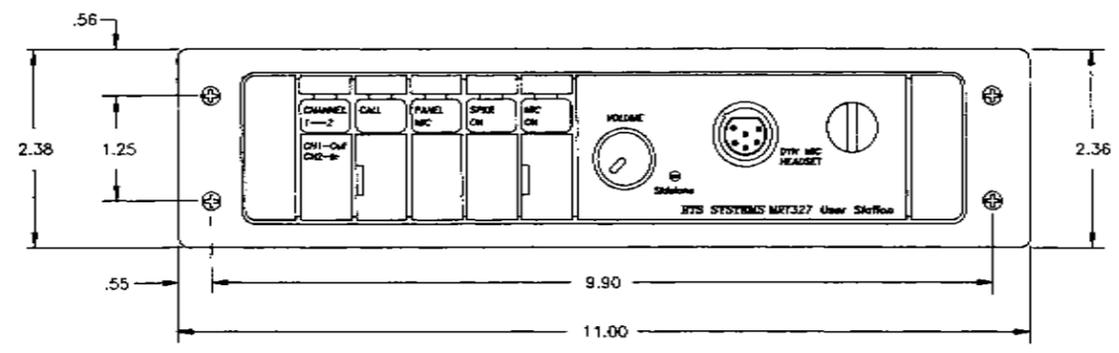
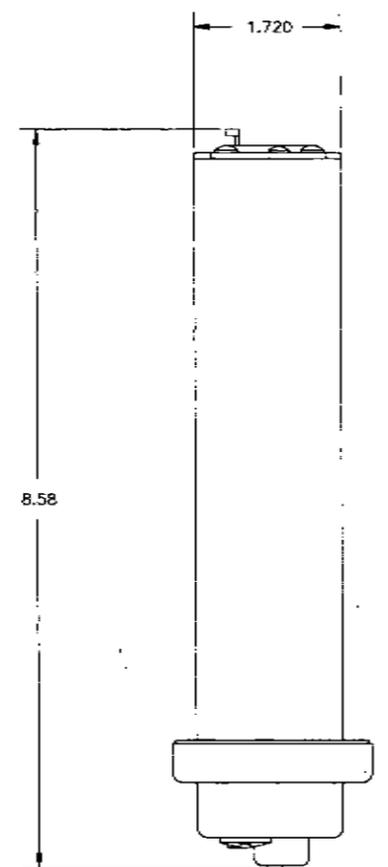
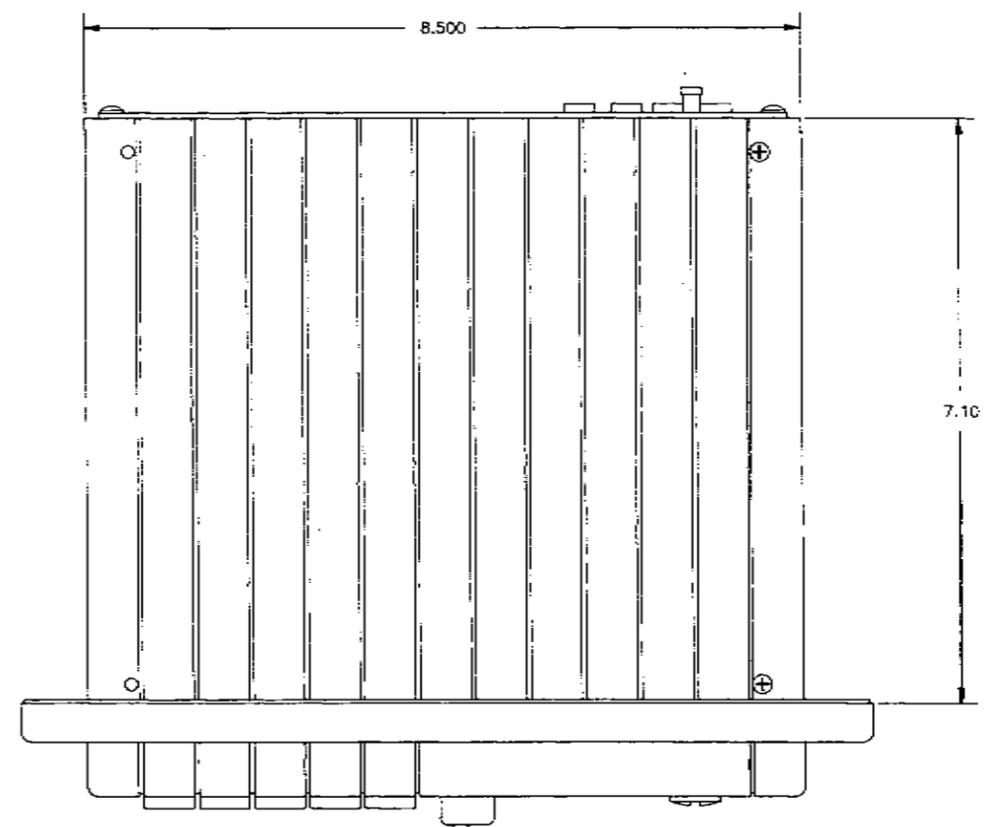
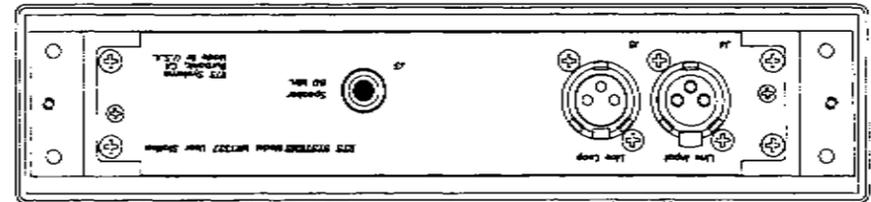
UNLESS OTHERWISE SPECIFIED: FICHE: ALL SURFS & BREAK SHARP EDGES HOLE TOLERANCES PER MIL STD 11-1987, R10P2 DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES 1/16 .0005 90.00		CONTRACT NO.		RTS SYSTEMS BURBANK, CALIFORNIA, USA	
APPROVALS		DATE		OUTLINE DRAWING— RACK MOUNT HEADSET STATION, MRT327	
DRAWN R.T. CRUZ		11/19/90			
CHECKED GM		11-21-90			
ISSUED					
NEXT ASSY		USED ON		SIZE D160572	DWG NO. OD6916
APPLICATION				SCALE 1/1	SHEET 2 OF 4

REV. NO.		DESCRIPTION	DATE	APPROVED



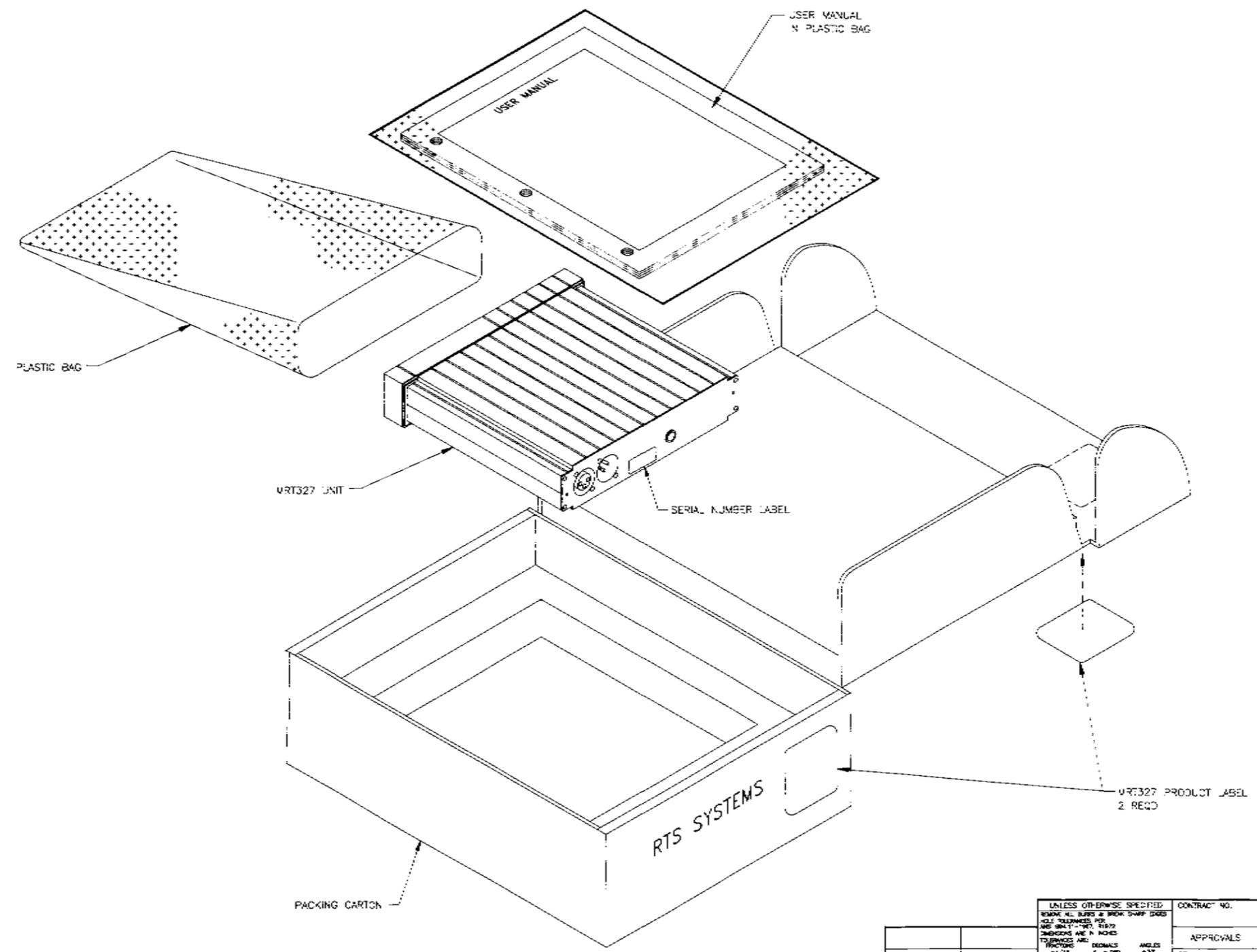
UNLESS OTHERWISE SPECIFIED REMOVE ALL BURRS & BREAK SHARP EDGES HOLE TOLERANCES PER MIL 8841-180, R172 DIMENSIONS ARE IN INCHES FRACTIONS ARE DECIMALS ANGLES 21/16 .1 2.000 .03.30 31 2.000 .000.010		CONTRACT NO.		RTS SYSTEMS BURBANK, CALIFORNIA, USA	
APPROVALS		DATE		DRAWN	
DRAWN R.T. CRUZ		11/19/90		CHECKED	
CHECKED G.M.		11-21-90		ISSUED	
MATERIAL		SIZE		FSCM NO.	
FINISH		DWG NO.		REV	
NEXT ASSY		USED ON		SCALE 1/1	
APPLICATION		06916-03.DWG		SHEET 3 OF 4	

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



UNLESS OTHERWISE SPECIFIED: REMOVE ALL BURRS & BREAK SHARP EDGES HOLE TOLERANCES PER MFG SHALL BE ±.001, F ±.002 DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES 1/16 .006 .010		CONTRACT NO.		RTS SYSTEMS BURBANK, CALIFORNIA, USA	
APPROVALS		DATE		OUTLINE DRAWING - MODEL MRT327 CONSOLE MOUNT OPTION	
DRAWN R.T. CRUZ		11/19/90		SIZE: FSCM NO. D:60572	
CHECKED GM		11-21-90		DWG NO. 036916	
ISSUED				REV	
NEXT ASSY		USED ON		SCALE 1/1"	
APPLICATION				06916-04.DWG SHEET 4 OF 4	

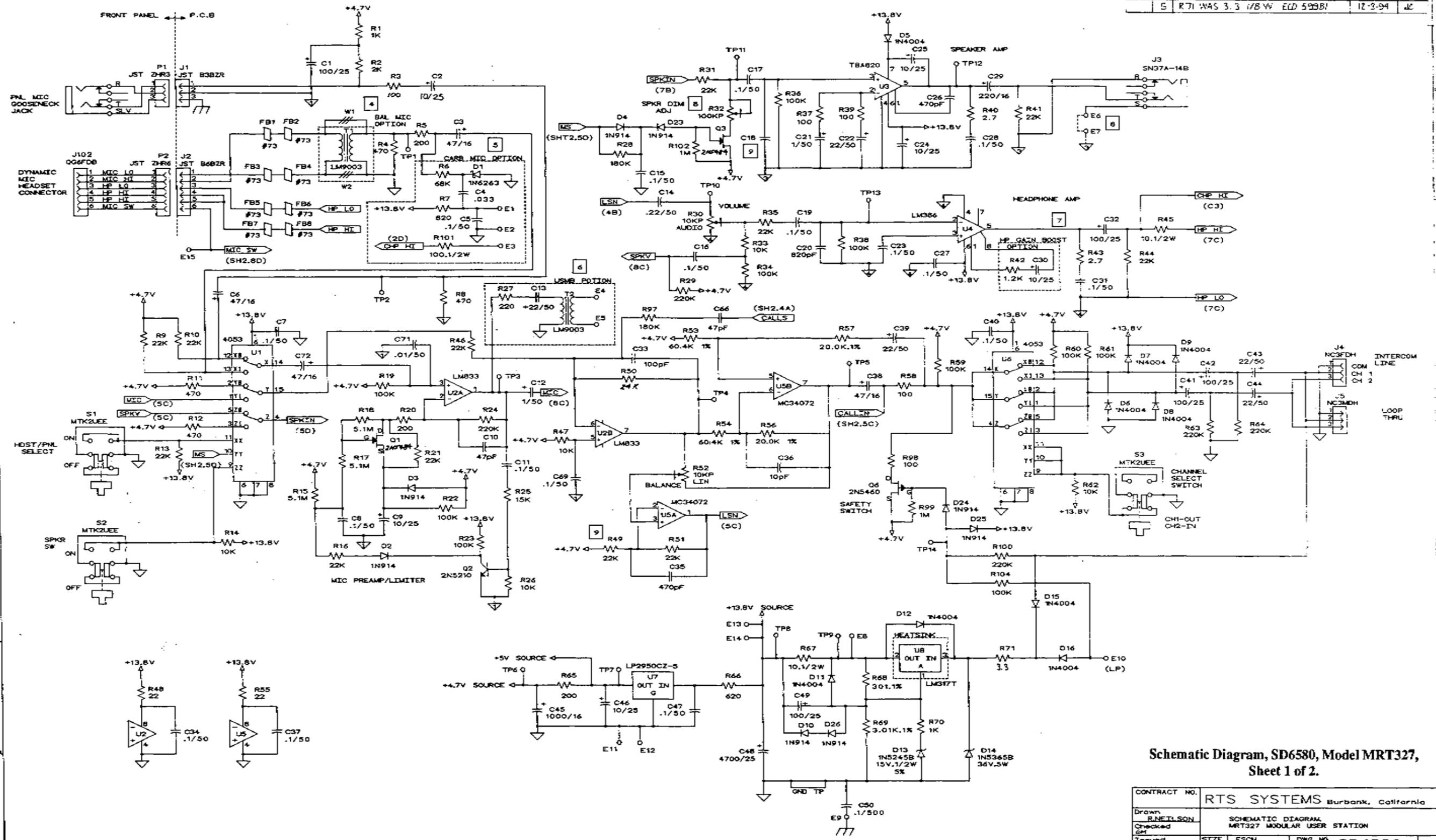
ZONE/REV		REVISIONS	DATE	APPROVED



Packaging Drawing, Model MRT327
Sheet 1 of 1

UNLESS OTHERWISE SPECIFIED: REMOVE ALL BURRS & BRUSH SHARP EDGES HOLE TOLERANCES FOR HOLE DIA. ± .005, .010, .015, .020 TOLERANCES ARE IN INCHES DIMENSIONS ARE: FRACTIONS DECIMALS ANGLES 1/16 1/32 3/32 1/8 1/16 1/32 1/64 1/8 3/16 1/4 1/2 3/4 1 1 1/2 2 3 4 5 6 8 10 12 15 20 25 30 36 48 60 72 96 120 150 180 240 300 360 480 600 720 960 1200		CONTRACT NO.	RTS SYSTEMS ESPERANCA, CALIFORNIA, USA	
NEXT ASSY		USED ON	APPROVALS	DATE
APPLICATION			DRAWN	10/16/99
			CHECKED	
			ISSUED	
			SIZE	FSCM NO.
			D	60572
			DWG NO.	D6593
			SCALE	1:1
			P6593-01.DWG	SHEET 1 OF 1

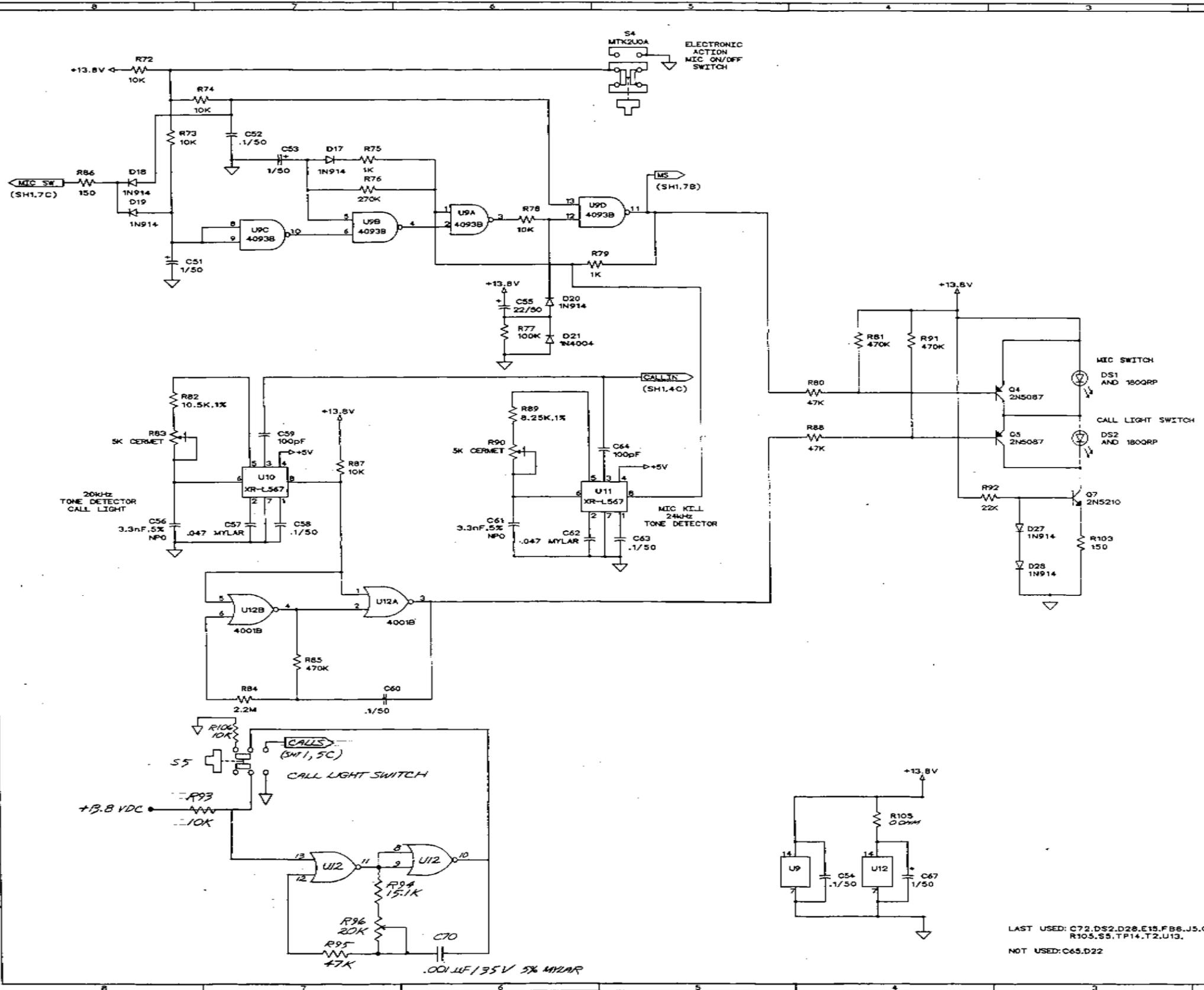
Zone	Rev	Description	Date	Apprv
F	1	Rev 2 1994 WAD: TDDP, P.D. WALT-282, 282 EA FOR REV. 282, 282 EA FOR REV. 282, 282 EA FOR REV. 282	7-2-94	JL
G	1	RTI WAS 3.3 I/B/W ELD 59981	12-2-94	JL



Schematic Diagram, SD6580, Model MRT327, Sheet 1 of 2.

CONTRACT NO.	RTS SYSTEMS Burbank, California		
Drawn	E. NELSON		
Checked	EM		
Issued	SIZE	DWG NO	
	D 60572	SD6580	
	DATE	5-31-90	S6580C01 SHEET 1 of 2





Schematic Diagram, SD6580, Model MRT327, Sheet 2 of 2.

- 9. CAP C18 AND RES R49 IS NOT INSTALLED ON THE BOARD.
- 8. SPEAKER DIA. ADJUST AS FOLLOWS:
TURN R32 COUNTER CLOCK-WISE TO INCREASE DIA.
- 7. OPTIONAL "HP (HEADPHONE) GAIN BOOST" PARTS C30,R42 ARE NOT INSTALLED ON STANDARD ASSEMBLIES. INSTALLATION RAISES U4 GAIN FROM 26dB TO 34dB.
- 6. OPTIONAL "USMB (UNSWITCHED LINE LEVEL MICROPHONE OUTPUT-BALANCED)" CIRCUIT PARTS, C13,T2 (600ohm/500ohm) ARE NOT INSTALLED ON STANDARD ASSEMBLIES.
- 5. OPTIONAL "CARBON MICROPHONE" CIRCUIT PARTS, R6,D1,C4,R7 & C5 ARE NOT INSTALLED ON STANDARD ASSEMBLIES.
- 4. OPTIONAL "BALANCED MICROPHONE INPUT" CIRCUIT PART, T1 (600ohm/600ohm), IS NOT INSTALLED ON STANDARD ASSEMBLIES.
- 3. CAP VALUES ARE SHOWN MICROFARADS/VOLTS.
- 2. RESISTORS ARE SHOWN IN OHMS.
- 1. ALL RESISTORS ARE CARBON FILM,1/4W,+-5%.

NOTES: UNLESS OTHERWISE SPECIFIED

LAST USED: C72,DS2,D28,E15,FB8,J5,Q7,
R105,S5,TP14,T2,U13,
NOT USED: C65,D22

CONTRACT NO.	RTS SYSTEMS Bureank, California		
Drawn	R. NELSON		
Checked	SCHEMATIC DIAGRAM MRT327, MODULAR USER STATION		
Issued	SIZE	FSCN	DWG NO
	D	60572	SD6580
	DATE	5-31-90	S658DC02 SHEET 2 of 2

