IC-1 AND IC-1F

GENERAL DESCRIPTION

The IC-1 and IC-1F are single-channel, single-line intercom stations designed for use with dynamic headsets.

The IC-1 is a compact, lightweight unit which may be worn on the user's belt, or mounted permanently to other equipment. Parallel-wired male and female XLR-3 connectors, mounted on the rear panel, allow units to be daisy-chained using prefabricated intercom cables.

The IC-1F is a flush-mount version of the IC-1 designed for permanent installation in an electrical pull box. The unit is connected to the intercom system by means of combination wire-wrap, screw clamp terminals.

Both the IC-1 and IC-1F are available with and without light signalling capability. The light signal versions are distinguished by the presence of a Call Indicator Light on the front panel. For purposes of documentation, the light signal versions will be designated the IC-1/LS (an IC-1 with light signalling, and the IC-1F/LS (an IC-1F with light signalling).

SPECIFICATIONS

Specifications apply to all versions unless otherwise noted.

Frequency Response:
Transmit: 150-7,000 Hz +1, -3 dB.
Receive: 180-6,000 Hz +1, -3 dB.

Equivalent Input Noise:
Mic Input: 2 microvolts (-116 dBV) 150-7,000 Hz.

Input Level:
Mic: 5 millivolts nominal, 12 millivolts maximum.
Line: 1 volt (0 dBM) nominal, 4 volts (12 dBM) maximum.

Input Impedance:
Mic: Greater than 5,000 ohms. (Unit is designed for use with 50-600 ohm phones).
Line: Greater than 10,000 ohms.

Output Impedance:
Phones: 60 ohms (Unit is designed for use with 150-600 ohm phones.)

Output Power:
Phones: 75 milliwatts into 150 ohms.
Line: 10 milliwatts (+10 dBM).

Total Harmonic Distortion:
Transmit: 1% at 10 dBM.
Receive: 1% at 75 milliwatts.

Common Mode Rejection:
Line: 40 dB at 60 Hz.

Power Requirements:
Voltage: 24 Vdc nominal. Unit will operate on 12-30 Vdc.
Current: No signal - 8 milliamps (IC-1, IC-1F), 12 milliamps (IC-1/LS, IC-1F/LS).
Average talk - 12 milliamps (IC-1, IC-1F), 20 milliamps (IC-1/LS, IC-1F/LS).
Signalling - 30 milliamps (IC-1/LS, IC-1F/LS).

Dimensions (without external connectors):
IC-1, IC-1/LS: 1.75 inches (44.45 mm) high x 3.0 inches (76.2 mm) wide x 5.39 inches (136.9 mm) long.
IC-1F, IC-1F/LS: 4.5 inches (114.3 mm) high x 4.62 inches (117.35 mm) wide x 2.5 inches (63.5 mm) deep behind front panel. If unit is installed using screw-clamp terminals, wire-wrap pins may be cut off and depth reduces to 2.15 inches (54.61 mm).

Weight:
IC-1, IC-1/LS: 1.5 lbs (0.51 kg)

Connectors:
IC-1/LS: One XLR-4M for headset connection. One XLR-3M and one XLR-3F, wired in parallel, for intercom line connection.
IC-1F, IC-1F/LS: One XLR-4M for headset connection. Three combination screw-clamp, wire-wrap terminals for intercom line connection. Screw-clamp terminals accept No. 22 through No. 14 AWG stranded or solid wire.

INSTALLATION

IC-1 and IC-1/LS

Permanent installation may be accomplished by removing the belt clip and utilizing the threaded belt clip mounting holes along with the additional threaded hole in the case to secure the unit to other equipment. These holes accept No. 6-32 machine screws. Screws may extend 3/16-inch into unit. These units may also be rack mounted using an RM-13 Rack Mounting Kit.

IC-1F and IC-1F/LS

After running wires to the electrical box where the unit will be located, refer to the label on the rear cover of the unit and make connections as indicated. It is not necessary to observe polarity when connecting intercom line wires. Connect the power supply dc return wire to the SHLD terminal. If another set of wires is to be run from this unit to another intercom station, connect these wires at this time.

OPERATION

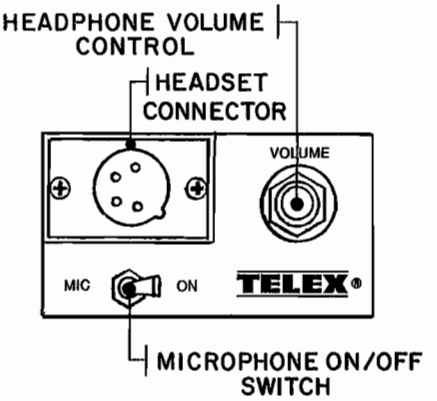
Headset Jack: Accepts headsets with dynamic microphone and dynamic headphone(s).

Headphone VOLUME Control: Adjusts headphone listen level. Does not affect mic level.

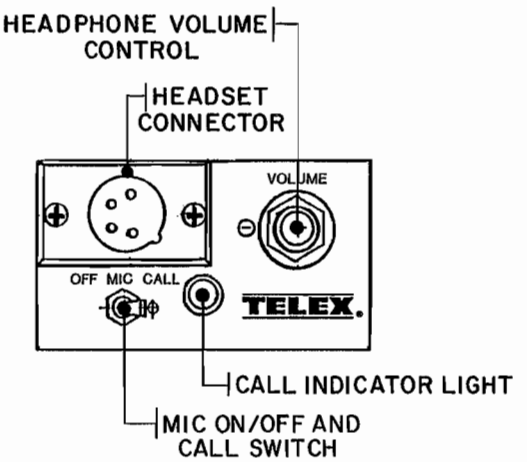
MIC/ON Switch (IC-1, IC-1F): In the MIC position, the microphone is shut off but the intercom line is still monitored by the phones. In the ON position, the microphone is operational for two-way communication.

OFF/MIC/CALL Switch (IC-1/LS, IC-1F/LS): In the OFF position, the microphone is shut off but the intercom line is still monitored by the phones. In the MIC position, the microphone is operational for two-way communication. In the CALL position, with the switch held continuously, an inaudible signal is sent to all other stations on the line: on those stations with light signalling, the Call Indicator lights will illuminate. When another station responds verbally, release the switch and it will automatically return to the MIC position for two-way communication.

Call Indicator LED (IC-1/LS, IC-1F/LS): Illuminates when station is being called. Does not illuminate when sending a call signal.

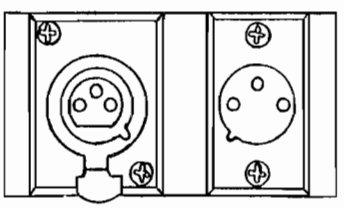


IC-1 FRONT PANEL



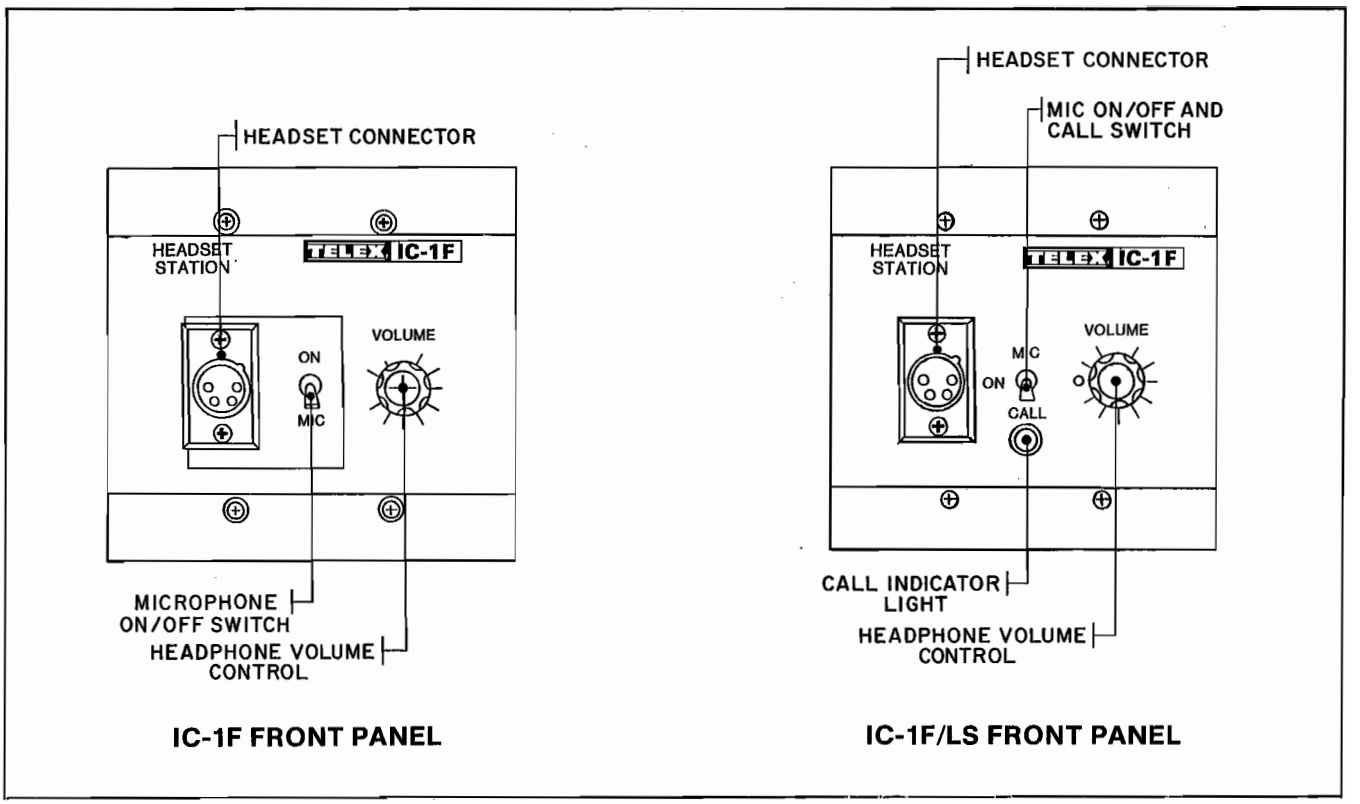
IC-1/LS FRONT PANEL

INTERCOM LINE CONNECTORS

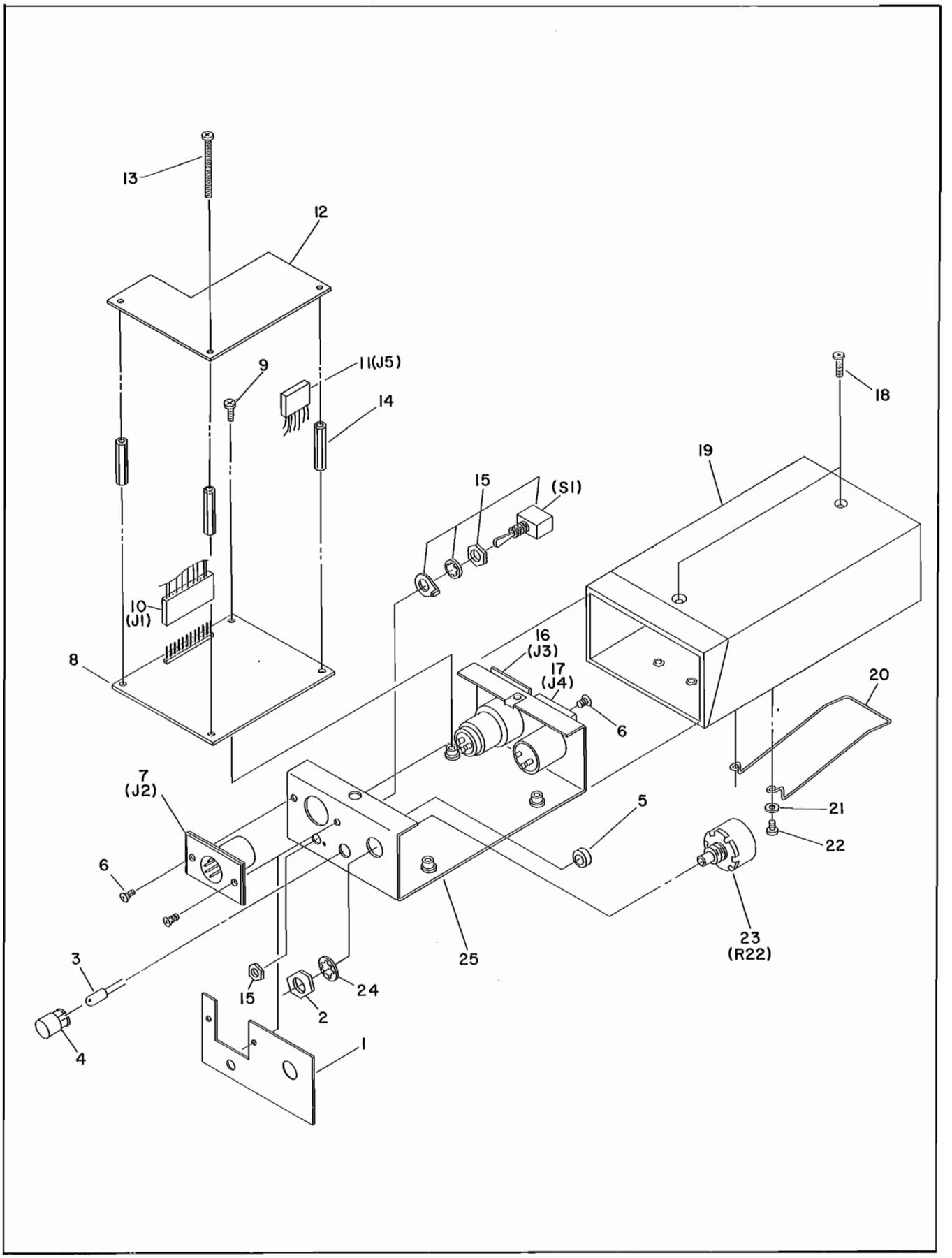


REAR PANEL

IC-1 Reference Guide



IC-1F Reference Guide

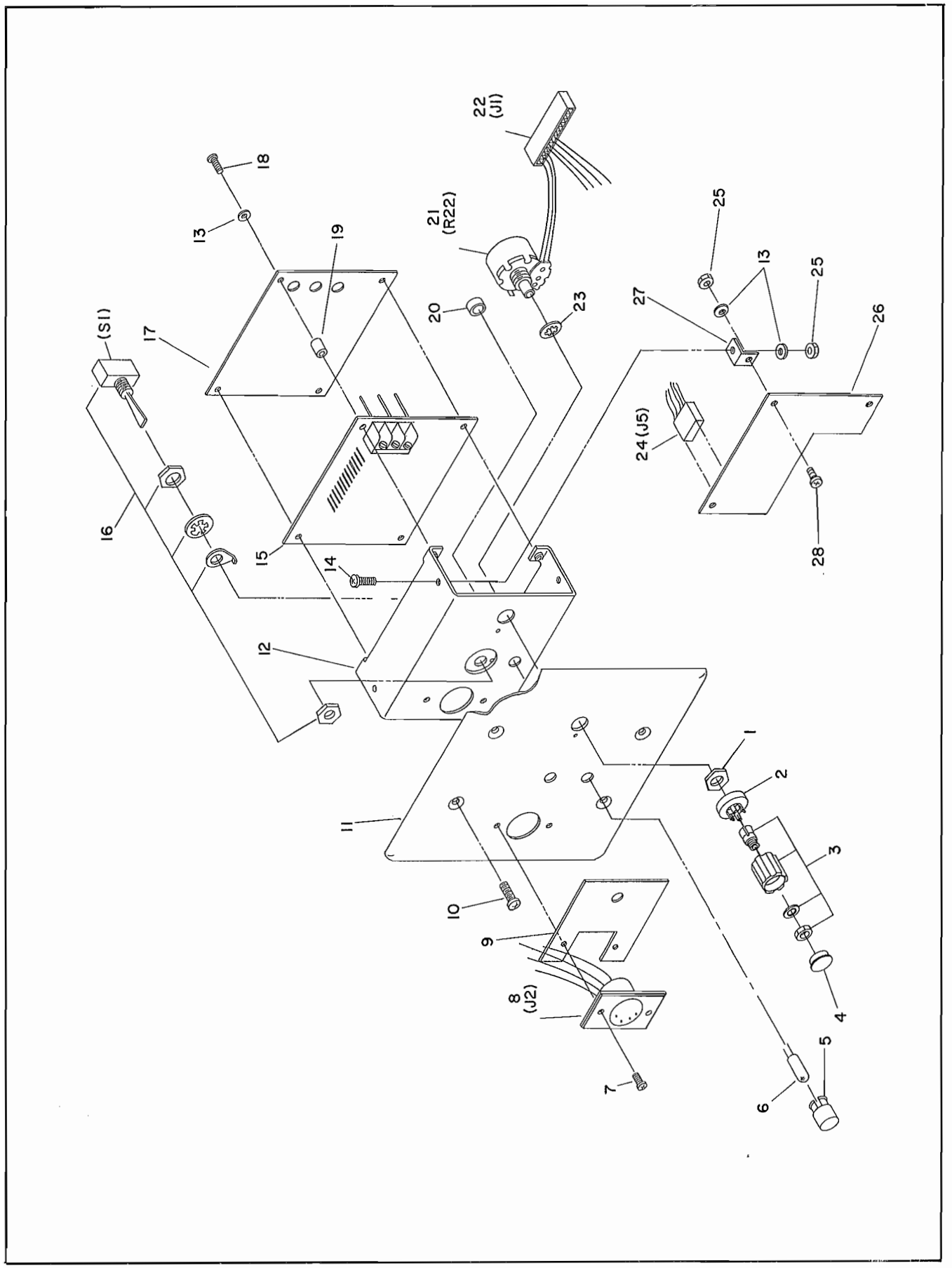


IC-1, IC-1/LS Mechanical Exploded View

IC-1, IC-1/LS Mechanical Parts List

ITEM NO.	DESCRIPTION	PART NO.
1*	Bezel	95220-000
2	Nut, Hex No. 3/8-32	50033-001
3**	LED	58683-000
4**	Lens, LED	59739-000
5**	Clip, Lens Mtg.	53627-002
6	Screw No. 4-40 x 1/4	51847-111
7	Connector, XLR-4M (J2)	50994-004
8	PCB Assembly, Audio	92847-005
9	Screw, No. 4-40 x 1/4	51849-011
10	Connector, 14-Position (J1)	52264-014
	Pin, Snap In (Not Shown)	54460-000
11**	Connector (J5)	52264-007
	Pin, Snap In (Not Shown)	54460-000
12**	PCB Assembly, 20 kHz Light Signal	96080-000
13	Screw, No. 4-40 x 1 1/4	51845-046
14	Spacer, Hex, 15/16-inch	63410-002
15*	Switch, Toggle, SPDT (w/hardware) (S1)	57481-000
**	Switch, Toggle, SPDT (w/hardware) (S1)	57481-003
16	Connector, XLR-3F (J3)	50995-003
17	Connector, XLR-3M (J4)	50994-003
18	Screw, No. 6-32 x 3/8	51847-122
19*	Housing, Remote	92874-003
**	Housing, Remote	92874-004
20	Clip, Belt	92873-001
21	Washer, Lock, Ext. Tooth, No. 6	50049-001
22	Screw, No. 6-32 x 1/4	54993-074
23	Potentiometer, 100K, 1/8W, ±20% (R22)	57145-001
24	Washer, Lock, Int. Tooth, No. 3/8	50014-004
25	Chassis	92854-000
	* Units without light signalling only.	
	** Units with light signalling only.	

92852, Rev F
92853, Rev W



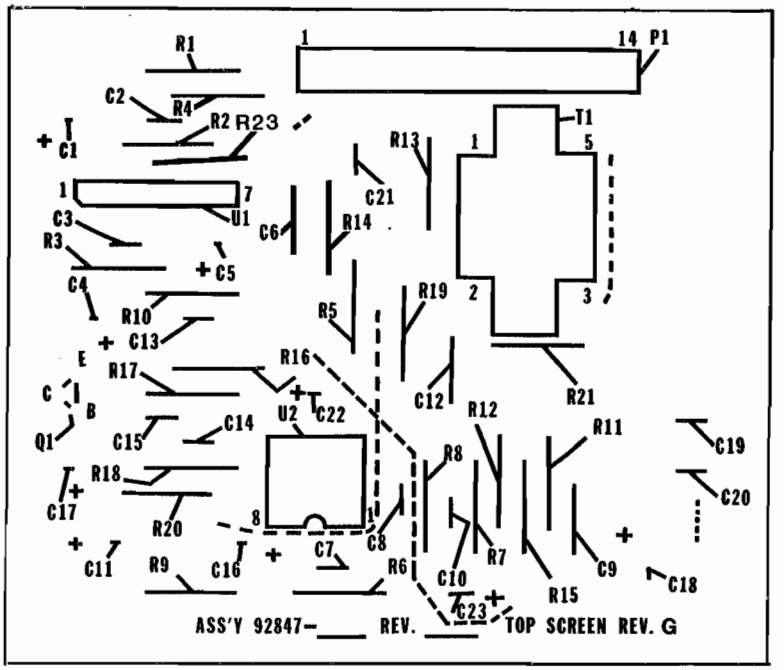
IC-1F, IC-1F/LS Mechanical Exploded View

IC-1F, IC-1F/LS Mechanical Parts List

ITEM NO.	DESCRIPTION	PART NO.
1	Nut, Hex, No. ⅜-32	50033-001
2	Collet	53434-101
3	Knob, Control	53432-116
4	Cap	53433-115
5**	Lens, LED	59739-000
6**	LED	58683-000
7	Screw, No. 4-40 x ¼	51847-111
8	Connector, XLR-4M (J2)	50994-004
9*	Bezel	95218-000
10	Screw, No. 6-32 x ⅜	51847-124
11	Cover Plate, Front	92857-000
12	Bracket	92859-000
13	Washer, Lock, Int. Tooth, No. 4	50014-002
14**	Screw, No. 4-40 x 3/16	51845-037
15	PCB Assembly, Audio	92847-004
16*	Switch, Toggle, SPDT (w/hardware) (S1)	57481-000
**	Switch, Toggle, SPDT (w/hardware) (S1)	57481-003
17*	Cover, Rear	92862-003
**	Cover, Rear	92862-004
18	Screw, 4-40 x ½	51845-041
19	Spacer, 3/16 lg	57798-000
20	Clip, LED Mtg.	53627-002
21	Potentiometer, 100k, ⅛W, ±20% (R22)	57145-000
22	Connector, 14-Position (J1)	52264-014
	Terminal (Not Shown, For J1)	54460-000
23	Washer, Lock, Int. Tooth, No. ⅜	50014-004
24	Connector, 7-Position (J5)	52264-007
	Terminal, (Not Shown, For J5)	54460-000
25	Nut, Hex, No. 4	52188-006
26**	PCB Assembly, 20 kHz Light Signal	96080-000
27	Angle Bracket	95215-000
28	Screw, 4-40 x ¼	51845-038

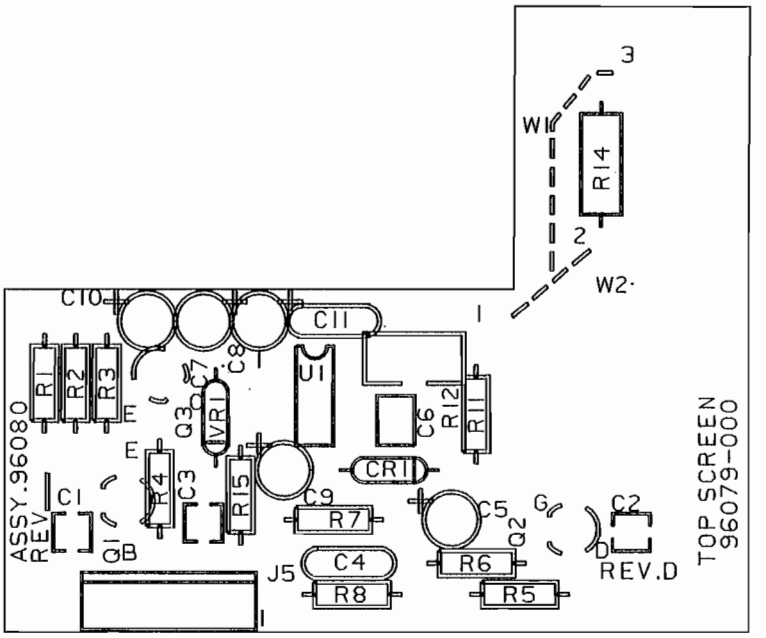
*Units without light signaling only.
**Units with light signaling only.

92863, Rev AB



92846, Rev R

IC-1 Audio PCB Assembly Component Layout



IC-1/LS, IC-1F/LS 20 KHz Light Signal PCB Assembly Component Layout

96079, Rev H

IC-1 Audio PCB Assembly Parts List

All resistors in ohms, ¼ watt, ±5% unless otherwise noted.
All capacitors are in microfarads unless otherwise noted.

REFERENCE NO.	DESCRIPTION	PART NO.
C1	Capacitor, 1, 35V, Tantalum	52257-049
C2,21	Capacitor, 0.01, 100V	52157-251
C5,11	Capacitor, 10, 25V Electrolytic	51821-020
C6,9,12	Capacitor, 0.1	52708-024
C7	Capacitor, 47 pF	52157-004
C8,14	Capacitor, 100 pF	52157-008
C13	Capacitor, 0.001	52157-022
C15	Capacitor, 220 pF	52157-012
C16,23	Capacitor, 4.7, 25V Electrolytic	51821-081
C17	Capacitor, 10, 10V Electrolytic	51821-045
C18	Capacitor, 10, 50V Electrolytic	51821-524
C22	Capacitor, 1, 50V Electrolytic	51821-106
J1	Connector, 12-Pin	52264-012
J2	Connector, XLR-4M	50994-001
J3	Connector, XLR-3F	50995-000
J4	Connector, XLR-3M	50994-000
Q1	Transistor, 2N2925	51547-000
R1	Resistor, 470 Ohm	52154-289
R2	Resistor, 220 Ohm	52154-297
R3,4	Resistor, 68K	52154-237
R5,6,7,8	Resistor, 150K	52154-229
R9	Resistor, 330 Ohm	52154-293
R10	Resistor, 2.7K	52154-271
R11,15	Resistor, 220K	52154-225
R12,16	Resistor, 1 M	52154-209
R13,18,19	Resistor, 100K	52154-233
R14,20	Resistor, 47K	52154-241
R17	Resistor, 2.7K	52154-271
R18,19	Resistor, 100K	52154-233
R22	Potentiometer, 100K, ⅛W, 20%	57145-002
R23	Resistor, 10K	52154-257
S1	Switch, Toggle SPST	57481-000
T1	Transformer	56741-000
U1	IC, Low Noise Preamplifier, AN360	53270-000
U2	IC, Dual Low Noise Op Amp, NE5532	53295-000

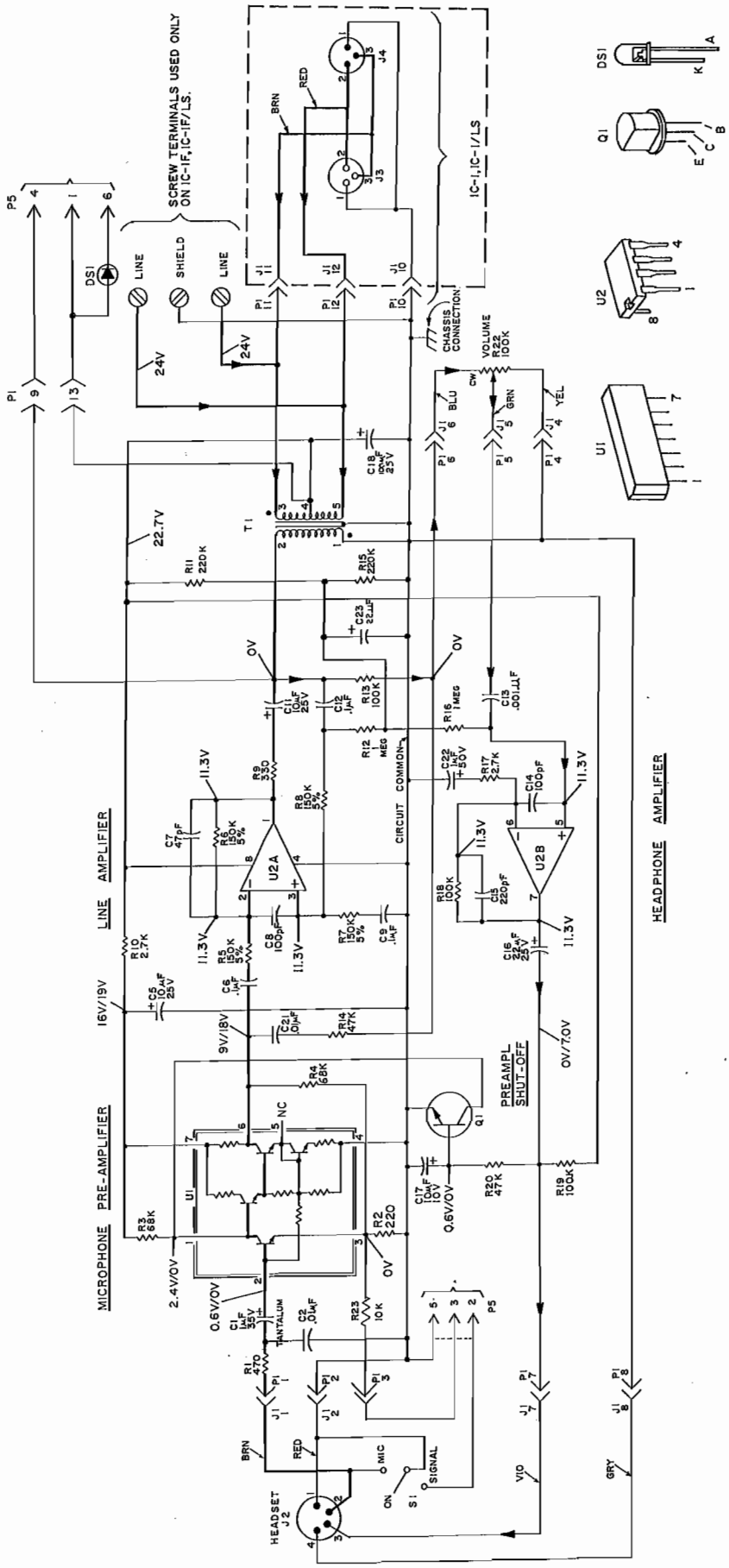
92847, Rev Y

IC-I/LS, IC-IF/LS 20 KHz Light Signal PCB Assembly Parts List

All resistors in ohms, ¼ W, ±5% unless otherwise noted.
All capacitors are in microfarads unless otherwise noted.

REFERENCE NO.	DESCRIPTION	PART NO.
C1,2,3	Capacitor, Ceramic, 0.001, 50V, ±10%	52676-101
C4	Capacitor, Ceramic, 100 pF, 500V, ±10%	52157-008
C5,7,9	Capacitor, Tantalum, 0.1, 35V, ±20%	52257-065
C6	Capacitor NPO, Ceramic, 0.0022, 50V, ±2%	35694-034
C8	Capacitor, Electrolytic, 4.7, 25V, ±20%	52723-013
C10	Capacitor, Electrolytic, 10, 25V, ±20%	52723-014
C11	Capacitor, Ceramic, 0.047, 25V, +80 -20%	52158-033
CR1	Diode, 1N4148	52228-000
J5	Connector, 7-Position	57721-007
Q1,3	Transistor, 2N2925	51547-000
Q2	Transistor, J175	54687-001
R1	Resistor, 2.2M	52154-201
R2,5	Resistor, 1M	52154-209
R3,15	Resistor, 20K	52154-250
R4	Resistor, 10K	52154-257
R6	Resistor, 62K	52154-238
R7	Resistor, 10K	52154-257
R8	Resistor, 47K	52154-241
R11	Resistor, 24K, ¼W, ±2%	52155-248
R12	Resistor, Variable, 5K, ½W, ±10%	57148-048
R14	Resistor, 1.2K, ½W, ±5%	52154-456
U1	IC, Tone Decoder, LM567	53258-000
VR1	Diode, Zener, 6.2V, ½W, ±5%	51302-017
	Socket, 8-Pin	53041-002

96080, P

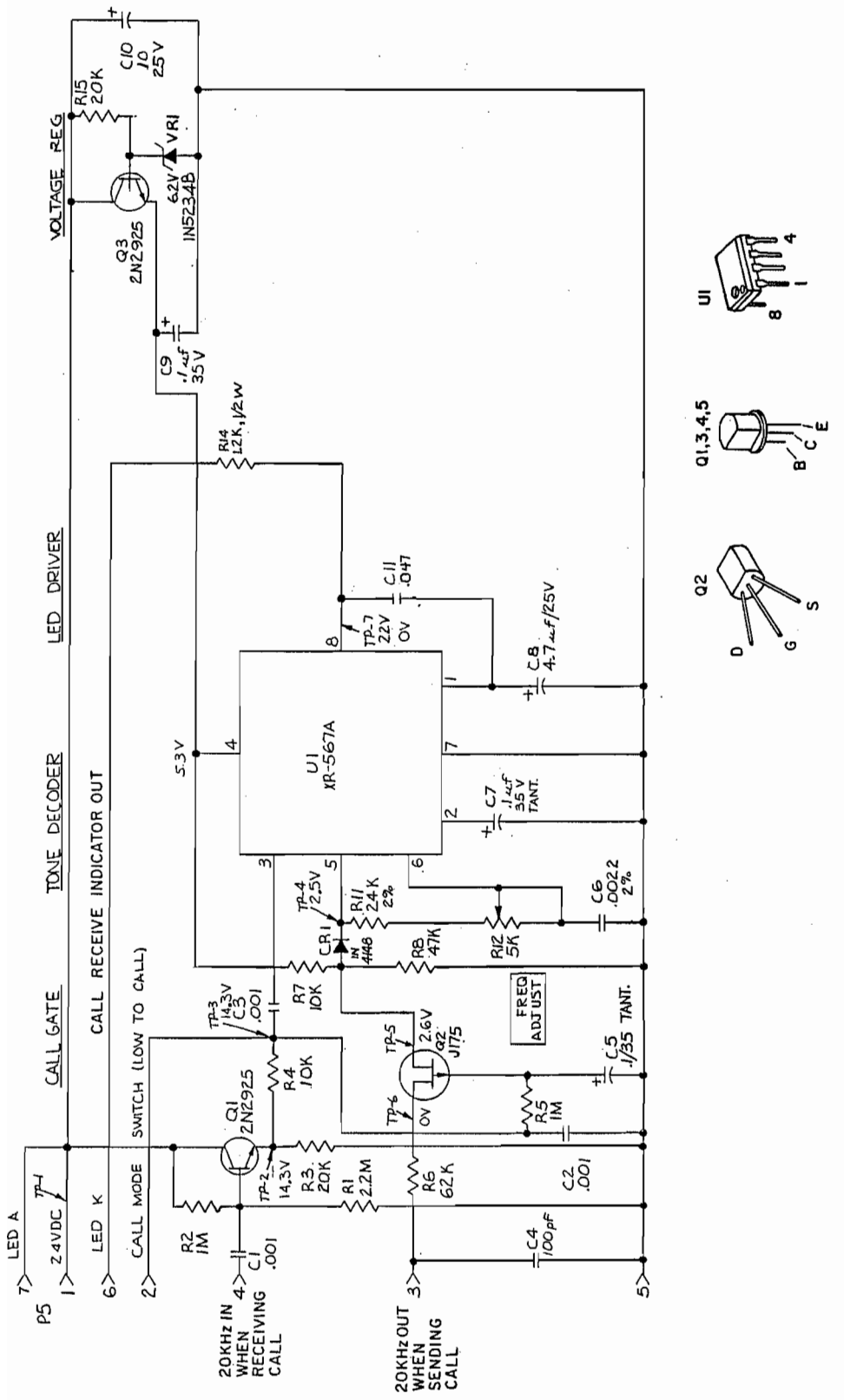


NOTES:

1. ALL RESISTORS IN OHMS, ¼ WATT, ±5% UNLESS OTHERWISE NOTED.
2. ALL CAPACITORS IN MICROFARADS UNLESS OTHERWISE NOTED.
3. ALL VOLTAGES ARE DC MEASURED USING A HIGH IMPEDANCE METER UNDER NO-SIGNAL CONDITIONS WITH CHASSIS AS REFERENCE.
4. WHERE TWO VOLTAGES ARE INDICATED, THE FIRST IS WITH A HEADSET CONNECTED AT J2 AND THE SECOND IS WITHOUT.
5. ——▲—— INDICATES RECEIVE SIGNAL PATH. ——▼—— INDICATES TRANSMIT SIGNAL PATH.
6. THIS SCHEMATIC SUBJECT TO CHANGE TO ACCOMMODATE DESIGN IMPROVEMENTS.

92849, Rev N

IC-1 Audio Schematic Diagram



PCB A554

96080-000

NOTES:

1. ALL RESISTORS IN OHMS, ¼ WATT, ±5% UNLESS OTHERWISE NOTED.
2. ALL CAPACITORS IN MICROFARADS UNLESS OTHERWISE NOTED.
3. ALL VOLTAGES ARE DC MEASURED USING A HIGH IMPEDANCE METER WITH CHASSIS AS REFERENCE.
4. WHERE TWO VOLTAGES ARE INDICATED, THE UPPER IS WITH NO SIGNAL AT P5-4 AND THE LOWER IS WITH 20 KHz AT 100 MV (CALL SIGNAL IN) AT P5-4.
5. ALL SINGLE VOLTAGES REPRESENT NO-SIGNAL CONDITIONS.
6. 20 KHz ADJUSTMENT: CONNECT FREQUENCY METER BETWEEN ANODE OF CR1 AND CHASSIS.ADJUST R12 FOR A READING OF 20 KHz ±100 Hz.
7. THIS SCHEMATIC SUBJECT TO CHANGE TO ACCOMMODATE DESIGN IMPROVEMENTS.

IC-1/LS, IC-1F/LS 20 KHz Light Signal Schematic Diagram