SERVICE MANUAL

MODEL IM-3003 SERIES RADIO-INTERCOM SYSTEM
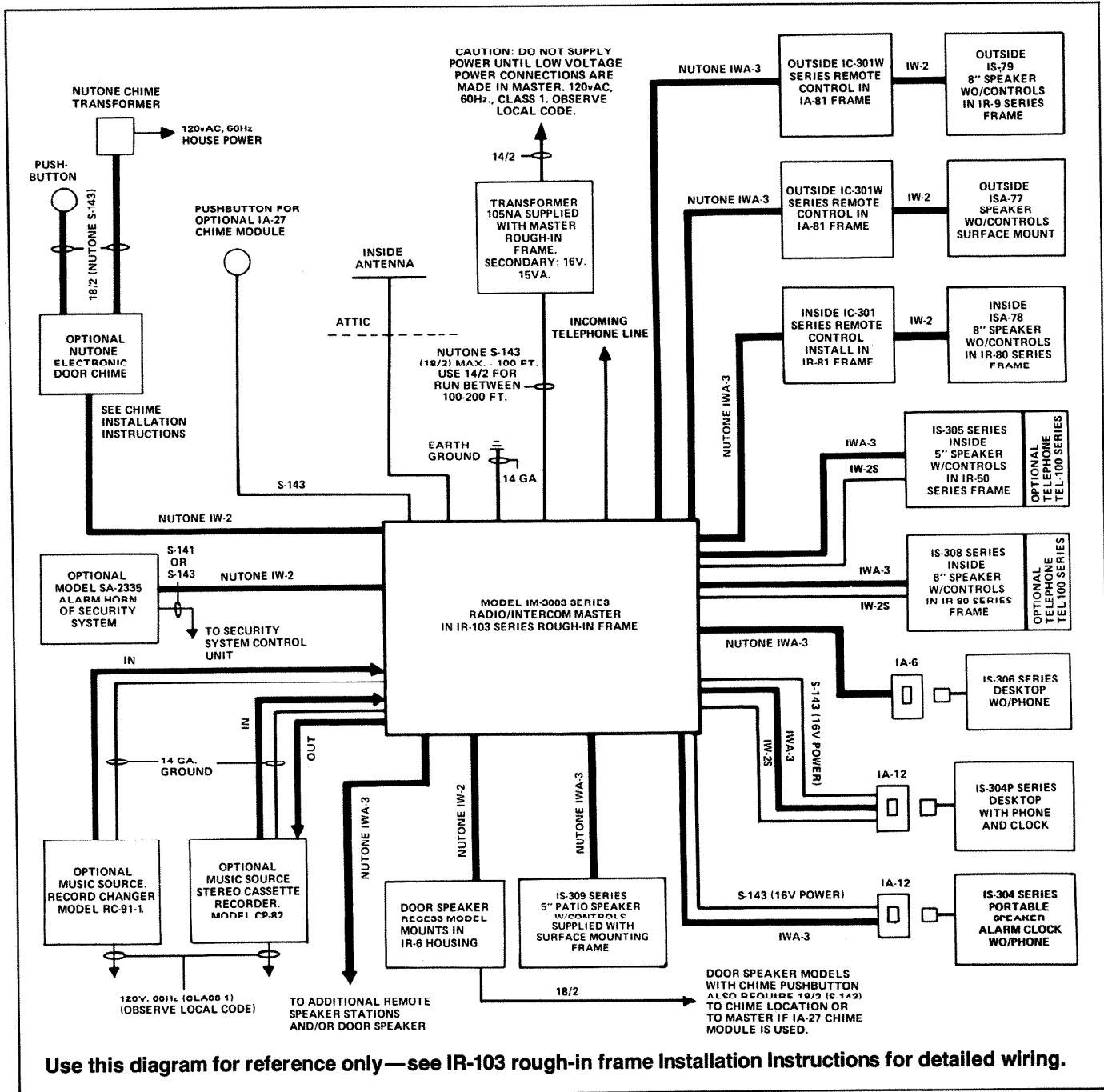
CONTENTS

NuTone

WIRING INSTALLATION GUIDELINES

IM-3003 Series Representative Wiring Illustration

NUTONE CHIME TRANSFORMER

120vAC, 60Hz HOUSE POWER

PUSH-BUTTON

18/2 (NUTONE S-143)

PUSHBUTTON FOR OPTIONAL IA-27 CHIME MODULE

OPTIONAL NUTONE ELECTRONIC DOOR CHIME

SEE CHIME INSTALLATION INSTRUCTIONS

CAUTION: DO NOT SUPPLY POWER UNTIL LOW VOLTAGE POWER CONNECTIONS ARE MADE IN MASTER. 120vAC, 60Hz., CLASS 1. OBSERVE LOCAL CODE.

14/2

TRANSFORMER 105NA SUPPLIED WITH MASTER ROUGH-IN FRAME. SECONDARY: 16V. 15VA.

INSIDE ANTENNA

ATTIC

INCOMING TELEPHONE LINE

NUTONE S-143 (18/2) MAX. 100 FT. USE 14/2 FOR RUN BETWEEN 100-200 FT.

EARTH GROUND

14 GA

S-143

NUTONE IW-2

NUTONE IWA-3 — OUTSIDE IC-301W SERIES REMOTE CONTROL IN IA-81 FRAME — IW-2 — OUTSIDE IS-79 8" SPEAKER WO/CONTROLS IN IR-9 SERIES FRAME

NUTONE IWA-3 — OUTSIDE IC-301W SERIES REMOTE CONTROL IN IA-81 FRAME — IW-2 — OUTSIDE ISA-77 SPEAKER WO/CONTROLS SURFACE MOUNT

INSIDE IC-301 SERIES REMOTE CONTROL INSTALL IN IR-81 FRAME — IW-2 — INSIDE ISA-78 8" SPEAKER WO/CONTROLS IN IR-80 SERIES FRAME

IWA-3 / IW-2S — IS-305 SERIES INSIDE 5" SPEAKER W/CONTROLS IN IR-50 SERIES FRAME — OPTIONAL TELEPHONE TEL-100 SERIES

IWA-3 / IW-2S — IS-308 SERIES INSIDE 8" SPEAKER W/CONTROLS IN IR-80 SERIES FRAME — OPTIONAL TELEPHONE TEL-100 SERIES

NUTONE IWA-3

S-143 (16V POWER) — IWA-3 — IA-6 — IS-306 SERIES DESKTOP WO/PHONE

IA-12 — IS-304P SERIES DESKTOP WITH PHONE AND CLOCK

S-143 (16V POWER) — IA-12 — IS-304 SERIES PORTABLE SPEAKER ALARM CLOCK WO/PHONE

IWA-3

NUTONE IWA-3

MODEL IM-3003 SERIES RADIO/INTERCOM MASTER IN IR-103 SERIES ROUGH-IN FRAME

S-141 OR S-143 — NUTONE IW-2

OPTIONAL MODEL SA-2335 ALARM HORN OF SECURITY SYSTEM

TO SECURITY SYSTEM CONTROL UNIT

IN

14 GA. GROUND

OPTIONAL MUSIC SOURCE. RECORD CHANGER MODEL RC-91-1

OPTIONAL MUSIC SOURCE STEREO CASSETTE RECORDER. MODEL CP-82

120V. 60Hz (CLASS 1) (OBSERVE LOCAL CODE)

DOOR SPEAKER RECESS MODEL MOUNTS IN IR-6 HOUSING

IS-309 SERIES 5" PATIO SPEAKER W/CONTROLS SUPPLIED WITH SURFACE MOUNTING FRAME

TO ADDITIONAL REMOTE SPEAKER STATIONS AND/OR DOOR SPEAKER

18/2

DOOR SPEAKER MODELS WITH CHIME PUSHBUTTON ALSO REQUIRE 18/2 (S-143) TO CHIME LOCATION OR TO MASTER IF IA-27 CHIME MODULE IS USED.

NUTONE IWA-3 / NUTONE IW-2 / NUTONE IWA-3

Use this diagram for reference only—see IR-103 rough-in frame Installation Instructions for detailed wiring.

Wiring Specifications

NuTone IW-2: 22 GA. Twisted Pair.
NuTone IW-2S: 22 GA. Shielded Twisted Pair. Used for phone wiring.
NuTone IWA-3: Flat Ribbon Type 3-wire, 22 GA. cable.
NuTone S-143: 18 GA. 2-conductor Insulated.
No. 14/2: 120v, 60Hz Power Cable: Class I. U.L. Listed (not supplied by NuTone).
14 GA.: Ground Wire (not supplied by NuTone).

Speaker Wiring

An individual 3-wire cable (IWA-3) must be connected from each remote speaker or remote control to the master unit's terminal board.
● **Maximum speaker run: 300 feet.**
● **Maximum total of IWA-3 per system: 2000 feet.**

2

Maximum Number of Speakers

The IM-3003 Series Radio Intercom system will accomodate up to 13 speakers. **If more than 9 speakers are connected, use only terminals 1, 2, 6, 7 for double wiring connections.**

IMPORTANT: NuTone cannot be responsible for improper radio-intercom operation that results from interference generated by light dimmers, fluorescent lighting fixtures, and similiar electrical products, such interference must be corrected at the source. As an aid to help reduce this interference, all remote speaker wires and cables must be placed at least 12 inches from any A.C. power wiring.

Mounting the Terminal Board

1. Locate the terminal board in the right rear section of the rough-in frame. See Figure 1.
2. Use four No. 6 x 3/8" screws to secure terminal board to rough-in frame. See Figure 1.
3. Make certain that the upper left screw is secure and snug against the ground lug which covers mounting hole in terminal board. Do not bend ground lug — make sure it is positioned between mounting screw and terminal board. See Figure 1.

FIGURE 1

Wire Matching Chart

NuTone has adopted the use of a new 3-wire color-coded cable. If you are replacing an older model Radio-Intercom, use this chart to match the "copper/center/silver" designations of older wiring with the blue/grey/red-stripe color-coded wire.

OLD CABLE	NEW CABLE	
	Insulation	Wire
Copper	Blue	Copper
Center	Grey	Center
Silver	Red Stripe	Silver

Connecting the Remote Speaker Wiring

NOTE: All speaker and door wiring must return directly to master unit. Do not connect wiring from speaker to speaker.

1. Dress all speaker wiring through the oblong wiring holes in the rough-in frame. All wiring connections are made to the master unit's terminal board.
2. Connect the three-conductor wire (IWA-3) from each speaker to a set of terminal screws. See Figure 2. **The IM-3003 Series Radio Intercom system will accomodate up to 13 speakers. If more than 9 speakers are connected, use only terminals 1, 2, 6, 7 for double wiring connections.**
3. Connect speaker wiring as follows:
   RED STRIPE wire to terminal screw marked **SILVER RED.**
   GREY wire to terminal screw marked **CENTER.**
   BLUE wire to terminal screw marked **COPPER BLUE.**
NOTE: See "Wire Matching Chart" if you are retrofitting a system with the previously used Copper/Center/Silver wire.

4. Refer to installation instructions packaged with remote speakers or remote controls for wiring of the units.
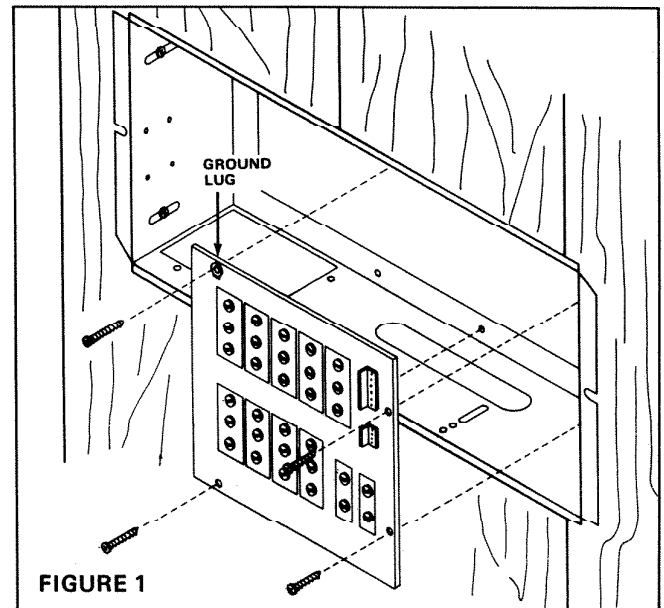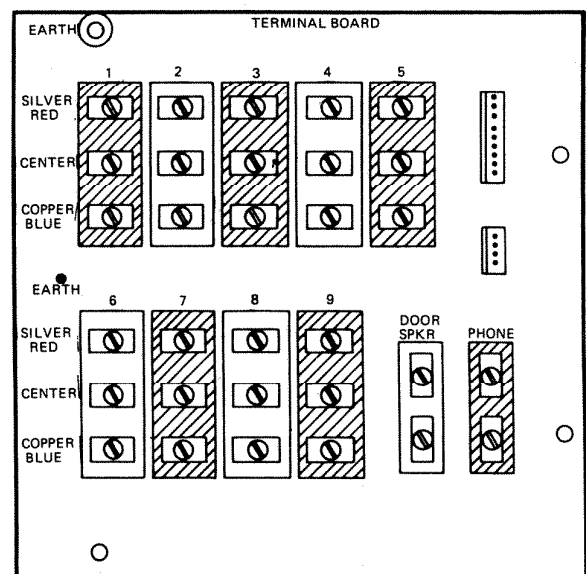

FIGURE 2

OR SYSTEMS USING 10–13 SPEAKERS, MAKE DOUBLE CONNECTIONS TO ONLY TERMINALS 1, 2, 6, 7.

Connecting the Door Speaker Wiring

1. The door speaker connects to the terminal board with two conductor (IW-2) 22 gauge twisted pair wire.

2. Connect two wires from the door speaker to the two terminal screws marked **DOOR SPKR** on the terminal board. See Figure 3.
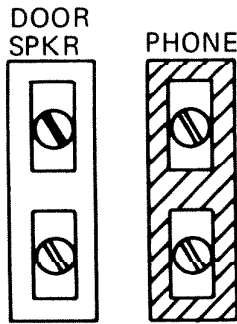

FIGURE 3

Connecting Optional Electronic Chime and Security Alarm

1. Connect two-conductor (IW-2 twisted pair) wires from electronic chime to the black and white wires shown in Figure 4.

2. See Installation Instructions packaged with chime for complete wiring details.

3. For optional hook-up to a NuTone Security System, connect NuTone IW-2 cable from Model SA-2335 Alarm Horn to the black and white wires shown in Figure 5.

4. See Installation Instructions packaged with the alarm horn for complete wiring details.

5. For hook-up of both a security system and an electronic chime connect the two wires from the security and the two wires from the chime to the black and white wires shown in Figure 6.

FIGURE 4

FIGURE 5

FIGURE 6
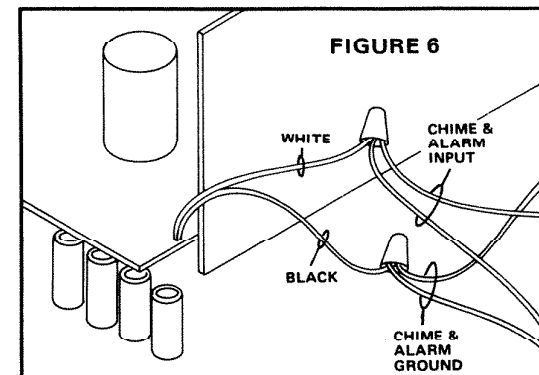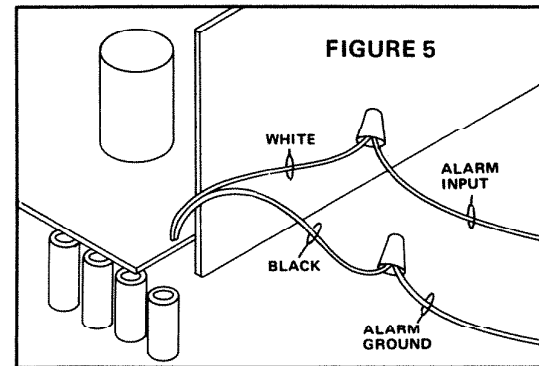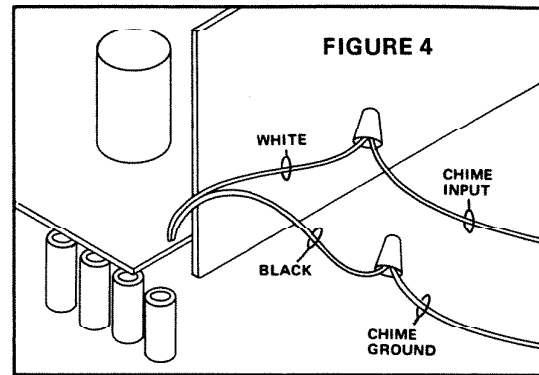
CONNECTING OPTIONAL PHONE WIRING

1. See Installation Instructions provided with Model TEL-100-UD Intercom Telephone for complete installation and wiring information.

2. If the Intercom Telephone is used, the wiring from the phone demarcation block must be NuTone IW-2S two-conductor insulated cable (shielded twisted pair).

3. Connect phone wires and TEL-100-UD phone cradle wires to two terminal screws marked PHONE on the master panel's terminal board. See Figure 7.

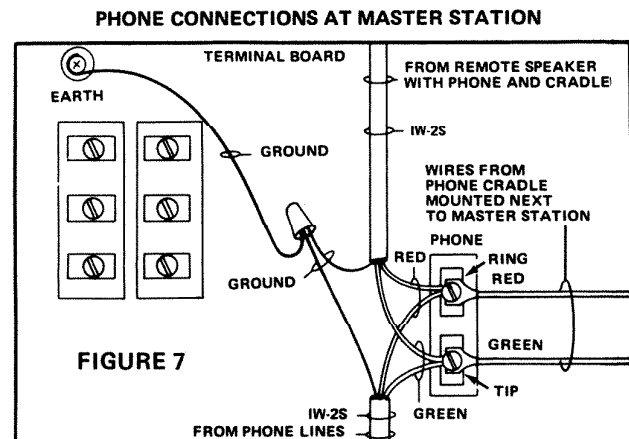**PHONE CONNECTIONS AT MASTER STATION**

FIGURE 7

4. Connect IW-2S ground wire to EARTH ground screw in the upper left corner of the terminal board. For more than one phone cable, twist all the IW-2S ground wires together and connect to a common jumper wire using a wire nut. Connect the jumper wire to Earth ground screw.

5. See Figure 8 for Remote Speaker phone wiring.

REMOTE SPEAKER TERMINAL BOARD
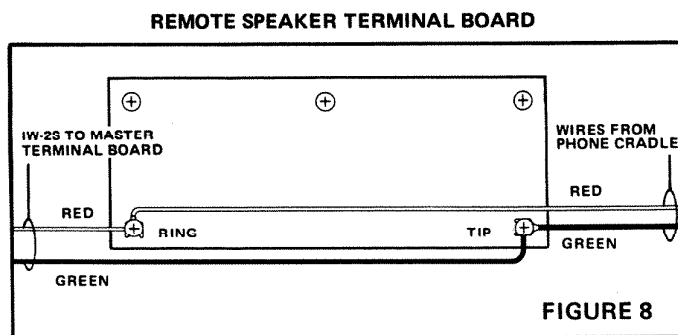
FIGURE 8

ASSEMBLING THE MOUNTING HINGES

1. Assemble hinge and bracket as shown in Figure 9.
2. Use two No. 6 x 9/16" screws (provided) to secure each hinge and bracket assembly and insulator to the mounting bosses on the master panel. See Figure 10.
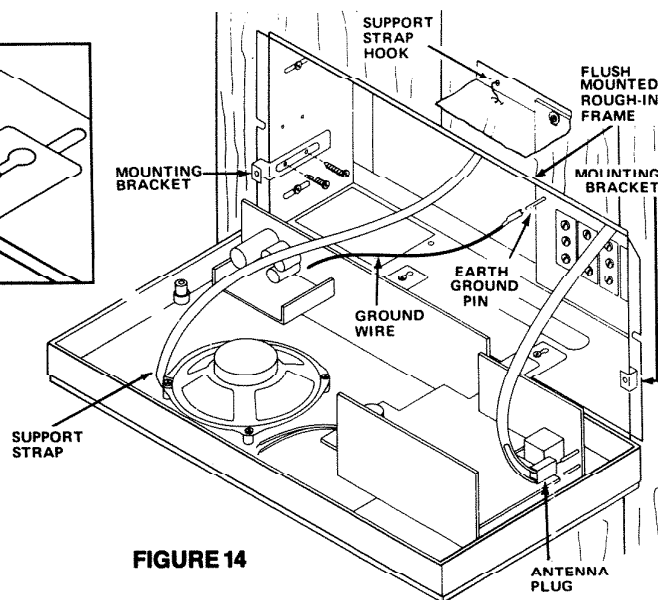

HINGE

BRACKET

FIGURE 9

BOSSES
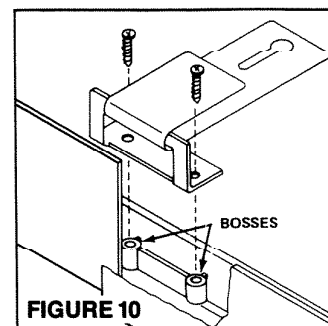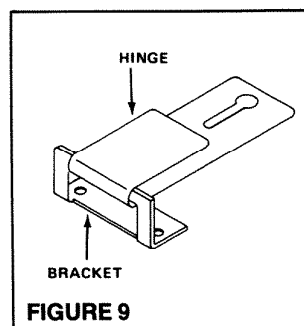
FIGURE 10

MOUNTING THE MASTER PANEL

1. **For rough-in frames which are recessed into the wall opening.** Insert two No. 6 x 3/8" screws (provided) into the **front** two holes in the rough-in frame. Do not completely tighten screws. See Figure 11.

2. **For rough-in frames which are mounted flush with the wall.** Insert two No. 6 x 3/8" screws (provided) into the **back** two holes in the rough-in frame. Do not completely tighten screws. See Figure 11.

3. Align master panel with rough-in frame.
4. Attach master panel to rough-in frame by placing keyhole slots in both mounting hinges over screw heads in rough-in frame. See. Figure 12.
5. Slide one hinge toward inside of rough-in frame as far as possible and securely tighten the screw. Position and secure the second hinge. See Figure 13.

FIGURE 11

BACK HOLE – FOR FLUSH MOUNTED ROUGH-INS

FRONT HOLE – FOR RECESSED ROUGH-INS

FIGURE 12
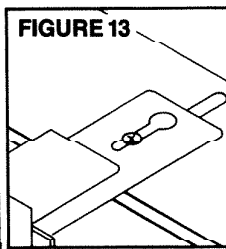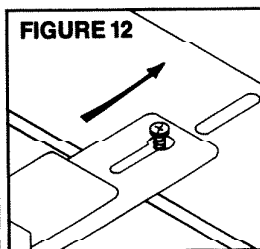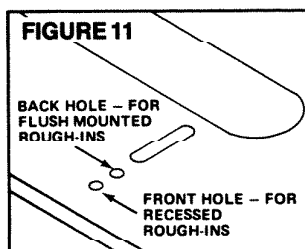
FIGURE 13

6. Attach support strap to rough-in by placing hook into hole in rear flange of rough-in frame. See. Figure 14.
7. Use two No. 6 x 3/8" screws to attach mounting brackets to rough-in frame. **Make sure brackets flush to wall or rough-in.** See Figure 14.
8. Connect ground wire lug to pin marked EARTH on terminal board.
9. Place antenna plug onto two pins on tuner board. See Figure 14.

SUPPORT STRAP HOOK

FLUSH MOUNTED ROUGH-IN FRAME

MOUNTING BRACKET

MOUNTING BRACKET

EARTH GROUND PIN

GROUND WIRE

SUPPORT STRAP

ANTENNA PLUG

FIGURE 14

Connecting the Master Panel to the Terminal Board

1. Connect the 4-pin ribbon cable from the master panel to the 4-pin connector on the terminal board. See Figure 15.
2. Connect the 9-pin ribbon cable from the master panel to the 9-pin connector on the terminal board. See Figure 15.

FIGURE 15

9-PIN RIBBON CABLE

4-PIN RIBBON CABLE

WIRING CONNECTIONS

TRANSFORMER BOX COVER

POWER GROUND
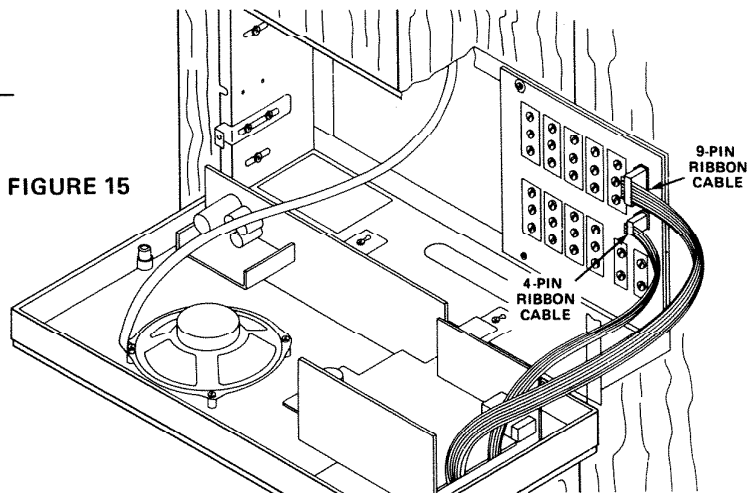
TRANSFORMER

FIGURE 16

Connecting the Transformer

Before connecting any wiring to the terminal board, turn off power to the transformer.
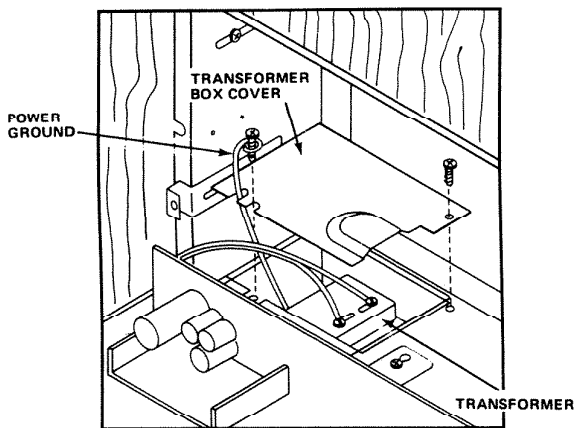
1. The transformer's primary leads should already be connected to the 120vAC house supply wiring.
2. Connect two low voltage wires (red and white) to the transformer's terminal screws. See Figure 16.
3. Dress wires through raised section of transformer box cover and secure box cover with two screws. See Figure 16.

CAUTION: DO NOT SHORT TRANSFORMER TERMINALS — TRANSFORMER DAMAGE MAY OCCUR.

CONNECTING OPTIONAL ACCESSORIES

1. To connect an optional NuTone Record Changer or Stereo Cassette Player/Recorder, locate the **PHONO INPUT, TAPE INPUT,** and **RECORD OUTPUT** jacks on the master panel. See Figure 17.
2. To play the phonograph over the intercom system, insert the accessory's output plug into the master panel's **PHONO INPUT** jack. See Figure 17.
3. To play the cassette player over the intercom system, insert the accessory's output plug into the master panel's **TAPE INPUT** jack. See Figure 17.
4. To use the radio as a program source for recording on the cassette player, insert the tape player's input plug into the master panel's **RECORD OUTPUT** jack. See Figure 17.
5. **OPTIONAL HOOK-UP TO PROVIDE RADIO ONLY:** The radio and optional entertainment sources can be channelled through an auxiliary amplifier to provided uninterrupted music (no intercom) to separate speakers. This type of installation can be used for a doctor's office, where intercom and music are desired in the office area, but music only is desired in the waiting room. Refer to the instructions with the Model IMA-516 Amplifier, which is used as the auxiliary amplifier in such an installation. Connect the IMA-516 to the master station's **RECORD OUTPUT JACK.** If IMA-516 is used, the system cannot also use the Cassette Player/Record's recording capability.
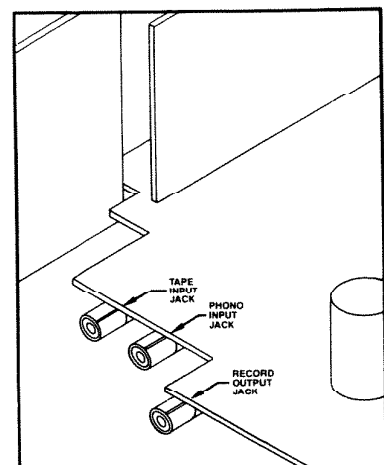

TAPE INPUT JACK

PHONO INPUT JACK

RECORD OUTPUT JACK

FIGURE 17

Radio and Program Controls

POWER ON/OFF PUSHBUTTON — Press the **POWER** button to the **ON** (⊥) position to supply power to the system and turn on the program source (radio, phono, tape). The red **POWER INDICATOR LIGHT** will illuminate. Press and release the button to the **OFF** (⊥) position to turn off the program source. The **POWER** button must be in the **ON** (⊥) position to operate the intercom system and to play a program source.

PROGRAM SELECT SWITCH — Use this switch to select the program source: AM, FM, PHONO, TAPE. The red indicator light will illuminate above the selected program source.

TIME/FREQUENCY SWITCH — Use this switch to set the function of the digital display. When tuning the radio, set the switch to the **FREQUENCY** position and the digital display will show you the radio frequencies as you tune the radio.

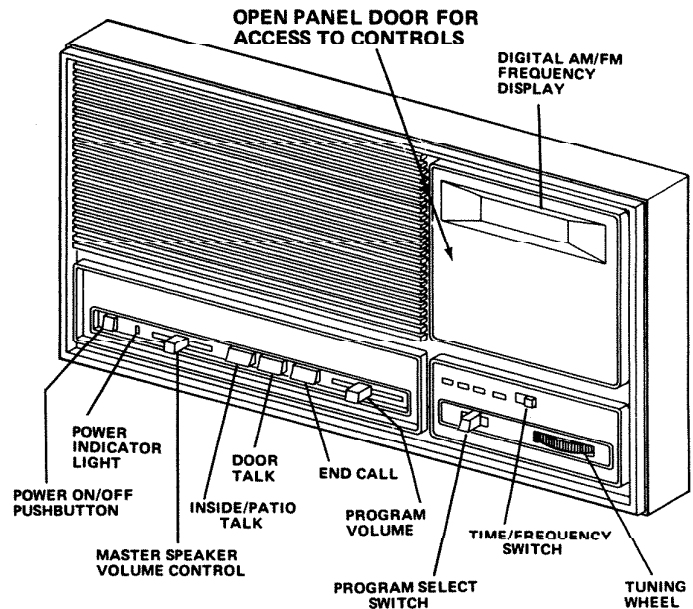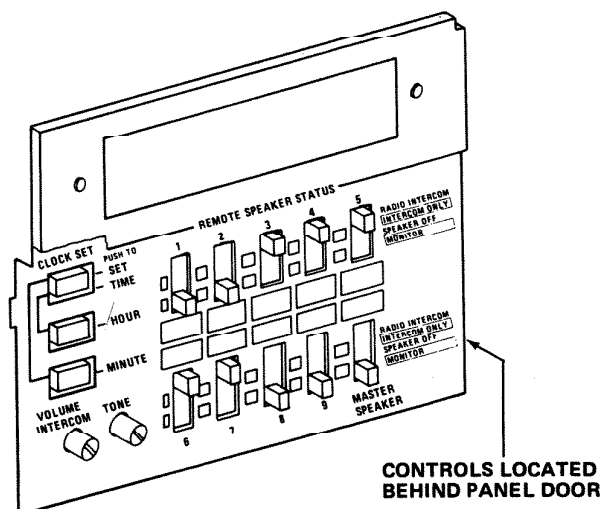**TUNING WHEEL** — Turn the **TUNING WHEEL** to tune the radio.

DIGITAL AM/FM FREQUENCY DISPLAY — When the **TIME/FREQUENCY** switch is in the **FREQUENCY** position, the digital display shows you the **AM or FM** frequencies to which you have tuned the radio.

MASTER SPEAKER VOLUME CONTROL — Use this slide control to adjust the **MASTER SPEAKER VOLUME**. Slide the control from left to right to increase volume at the Master Station.

PROGRAM VOLUME — Use this slide control to set the **PROGRAM VOLUME** for all speakers in the system. Slide the control from left to right to increase volume level. This control governs the volume level for the entire system.

TONE CONTROL — Turn the control clockwise to increase treble (high range); counterclockwise to decrease treble.

REMOTE SPEAKER STATUS — These switches set the function of individual remote stations. For a remote station to receive program material, the switch that controls that station must be set to **RADIO INTERCOM**. See "Remote Speaker Status Controls," page 8.

OPEN PANEL DOOR FOR
ACCESS TO CONTROLS

DIGITAL AM/FM
FREQUENCY
DISPLAY

POWER
INDICATOR
LIGHT

POWER ON/OFF
PUSHBUTTON

DOOR
TALK

END CALL

INSIDE/PATIO
TALK

PROGRAM
VOLUME

MASTER SPEAKER
VOLUME CONTROL

TIME/FREQUENCY
SWITCH

PROGRAM SELECT
SWITCH

TUNING
WHEEL

CONTROLS LOCATED
BEHIND PANEL DOOR

Intercom Controls

MASTER SPEAKER VOLUME — Slide this control from left to right to increase intercom volume at the master station.

INSIDE/PATIO TALK — Press this button to make a call to other stations — except the door speakers. Release the button to hear the reply.

DOOR TALK — Press this button to make a call to the door speaker. To hear a reply, release the button. The call and reply will be heard at all stations.

END CALL — Press this button to end an intercom call. When you press **END CALL** the system will automatically return to playing the program source.

> **END CALL TIMEOUT** — You can end a call and return the system to the program source in two ways:
>
> (1) Push the **END CALL** button.
> (2) Allow the **END CALL TIMEOUT** function to return the system to playing the program source. This timeout period — factory set at approximately 30 seconds — begins each time you release a **TALK** button.

VOLUME INTERCOM — Turn this control clockwise to increase intercom volume. Set **VOLUME INTERCOM** control at 3/4 to maximum for normal intercom use.

Speaker Status Switches

The **REMOTE SPEAKER STATUS** switches set the operating mode of each speaker in the intercom system. The master station's operating mode is also controlled by a status switch. Locate these switches behind the master station's panel door.

SETTING THE STATUS SWITCHES — Each speaker may be set for one of the four following functions: **RADIO INTERCOM, INTERCOM ONLY, SPEAKER OFF, MONITOR.** For each remote speaker in the system, set the switch for the desired function. Also set the switch marked **MASTER SPEAKER.**

DETERMINING SPEAKER LOCATIONS — Each SPEAKER STATUS SWITCH is numbered and labeled. You will want to determine the location of each speaker in your home and write each location on the blank label above or below the switch that controls that speaker. To determine the speaker locations, set all the REMOTE SPEAKER STATUS switches to SPEAKER OFF. Set the MASTER SPEAKER switch to RADIO INTERCOM, tune in a radio station, and slide the PROGRAM VOLUME control to maximum (+). Slide the MASTER SPEAKER VOLUME control to minimum volume (—). Make sure each remote speaker's VOLUME control is turned completely clockwise for maximum volume.

Now, one at a time, set a REMOTE SPEAKER STATUS switch to RADIO INTERCOM and locate the speaker by sound. Write the speaker's location on its label. Repeat the procedure until you locate and label every speaker in your system.
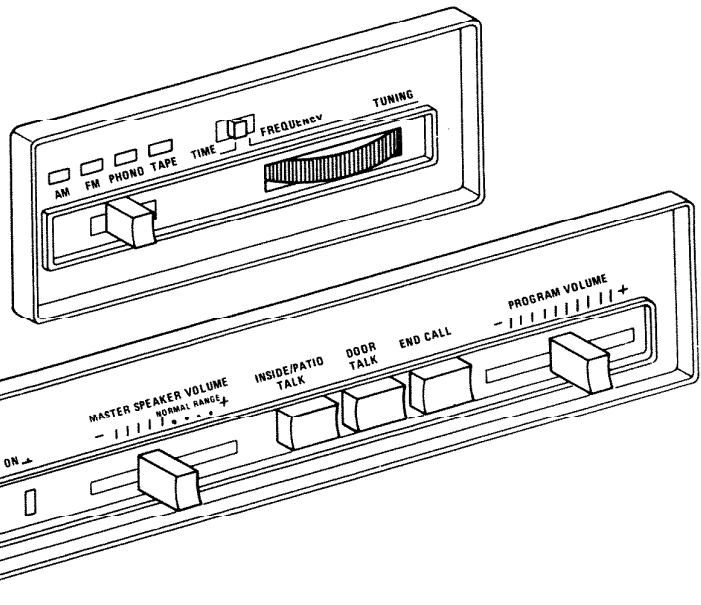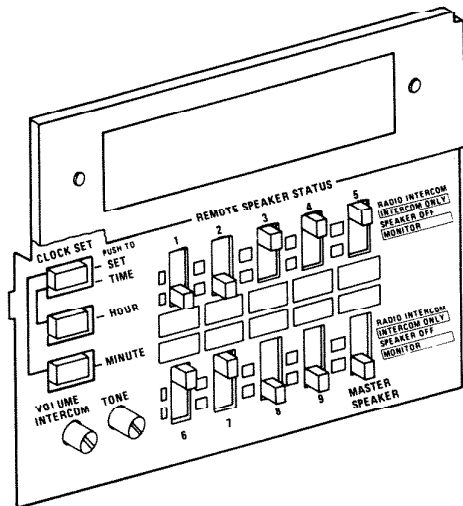
2. Simultaneously depress and hold the SET TIME and HOUR pushbuttons. After a two-second delay, the display will begin to step through the hours. Release both pushbuttons at the correct hour setting.

3. Simultaneously depress and hold the SET TIME and MINUTE pushbuttons. After a two-second delay, the display will begin to step through the minutes. Release both pushbuttons at correct minute setting.

If the Radio-Intercom does not operate according to the following instructions, refer to the INSTALLER'S TROUBLESHOOTING GUIDE, pages 10 and 11.

Digital Clock Controls

TIME/FREQUENCY SWITCH — Use this switch to set the function of the digital display. Set the switch to the TIME position for using the display as a clock.

Setting Digital Clock

1. Place the TIME/FREQUENCY switch in the TIME position.

REMOTE SPEAKER CONTROLS
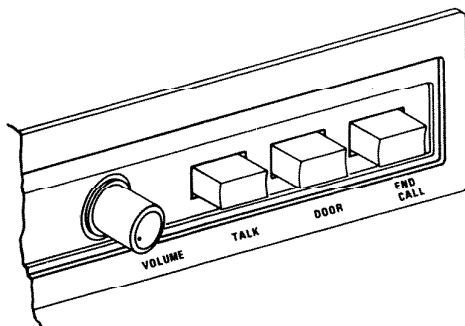
Setting Volume

1. At each remote station, turn the VOLUME control completely clockwise to maximum volume.

2. At the master station, set all REMOTE SPEAKER STATUS switches to the RADIO INTERCOM position. Set MASTER STATION switch to RADIO INTERCOM.

3. Latch the master station's POWER switch to ON (⊥) position.

4. Slide the MASTER SPEAKER VOLUME control to maximum (+) volume.

5. Slide the PROGRAM VOLUME control on the master station to approximately 1/3 volume.

6. Set the master station's PROGRAM SELECT switch to AM or FM. Tune in a radio station with a strong, clear signal.

7. Adjust the master station's PROGRAM VOLUME control until you have enough volume at the remote station that requires the highest volume (i.e., a large living room or family room, a basement, etc.).

8. Adjust each remote station's VOLUME control to the volume level you desire. Do not set the remote station's volume controls below the NORMAL RANGE setting.

Using System Controls

1. Make intercom calls from the master and all remote stations. See page 7.
2. NOTE: "Hands-Free" Operation — If a call is initiated from the master station, the person answering from a remote station does not have to use any controls. The entire intercom conversation is controlled from the master station.
3. Test intercom operation to the door speaker(s). Door answering is controlled from the master or remote stations — door speakers in this system have "hands-free" operation.
4. Set all **REMOTE SPEAKER STATUS** switches to **MONITOR**. With the radio playing, have someone speak or make a noise near the remote speaker (**not directly into the speaker**). The voice or noise should be heard over the radio at the master station. Test each speaker for this function. Adjust the **VOLUME INTERCOM** switch as required.

   See the Model IM-3003 Series Operator's Manual for a more detailed explanation of the Radio Intercom system's operation.
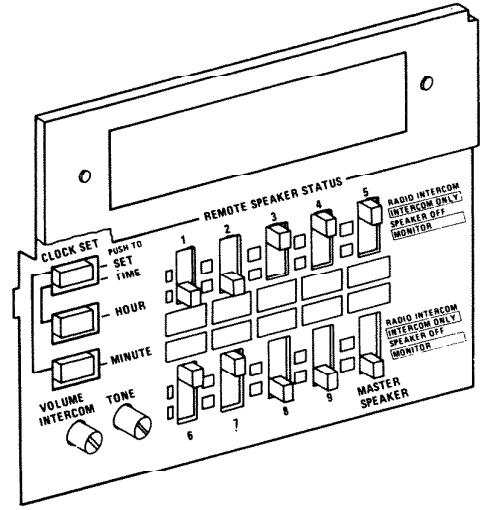
PLACING THE MASTER STATION IN SERVICE POSITION

1. Remove the two screws which secure the master station to the rough-in frame.
2. The master station can now be opened on its hinges. Make sure the support strap is secure so that it holds the master panel at approximately a 90° angle to the wall.
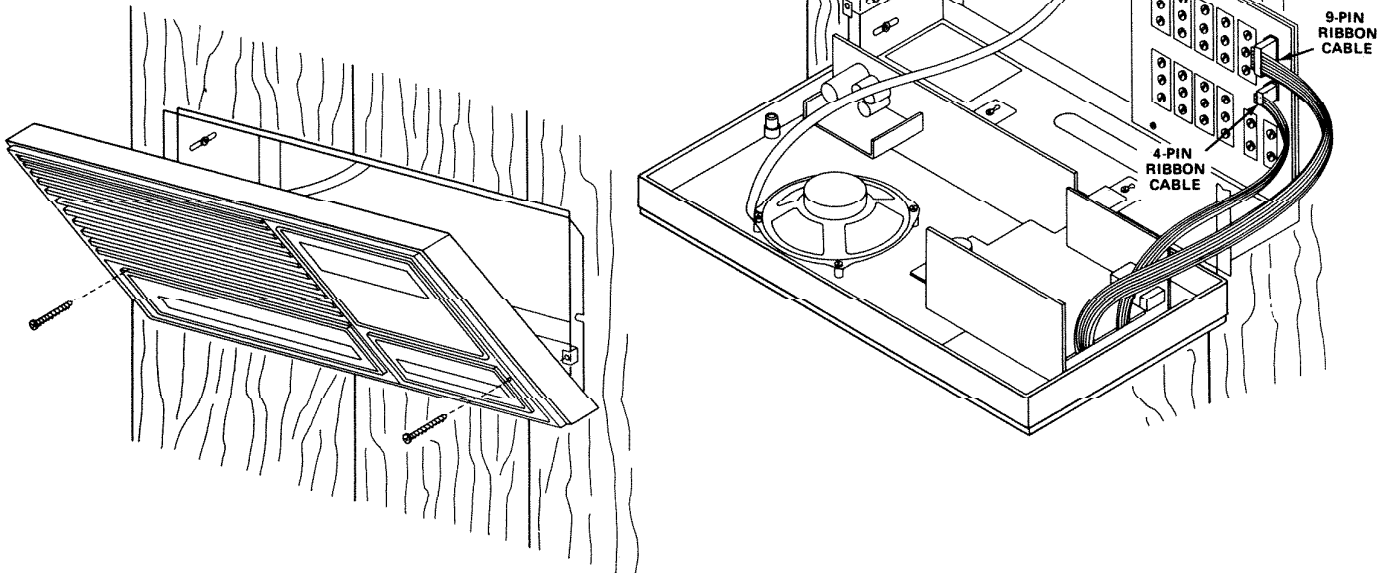
INSTALLER'S TROUBLE-SHOOTING GUIDE

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
1. No radio, no intercom. (Power light off).	1a. No electrical power.	1a. Be sure there is 120vAC, 60Hz power to transformer primary. Next, check 16vAC to intercom Master from transformer secondary. Check continuity of wiring from transformer.
	1b. Defective transformer.	1b. Replace transformer.
2. No radio, intercom working. (Power light on).	2a. Faulty Master Station.	2a. Isolate Master Station from installation by removing two ribbon cables from terminal board and wait one minute for timeout. With power on, radio should be playing at Master. If no radio, Master is probably faulty. If radio plays, reconnect ribbon cables.
	2b. Installation problem.	2b. Check terminal board for shorted terminals or miswired cables. Remove one 3-wire cable at a time to locate faulty line. When radio comes on, check speaker connections and run continuity check of speaker wiring. Also check for water-damaged patio remote control.
	2c. Antenna problem.	2c. Check for shorted antenna connection. Remove antenna connector from tuner board and touch each pin with metalic object. If radio plays, antenna is not functioning; be sure it is installed properly. In weak signal areas, an outside antenna may be necessary.
3. Low or distorted radio volume.	3. Incorrect volume setting.	3. Follow "Setting Volume" instructions under OPERATIONAL CHECKOUT.
4. Low or no intercom volume from remote speaker in MONITOR mode.	4a. Improper operation.	4a. Be sure remote speaker set for MONITOR has it's volume control set in NORMAL RANGE and receiving speakers has volume controls set in NORMAL RANGE. Follow "SETTING VOLUME" instructions in Operational Checkout.
	4b. Program and Intercom Volume Control adjustment.	4b. Follow these instructions whenever the radio tends to overpower transmissions from a remote speaker in the MONITOR mode. These instructions will help you get the proper balance between the radio and the monitored speaker. 1. Set system volume control to midpoint. 2. Set master to tape or phono position. 3. Adjust volume control for each remote speaker and speaker in master station to the middle of the **normal** range. 4. Set master to AM or FM and tune to a strong AM or FM station. 5. Adjust program volume control for a desired listening level. 6. Increase Intercom volume control setting. Adjust clockwise to desired monitor volume.
5. System squeals when using intercom.	5a. Shorted wire on master or remote terminal board.	5a. Check for short between terminals or loose wire.
	5b. Two or more Remote Stations on same wire run to Master.	5b. Make separate cable (IWA-3) runs from each Remote Station to the Master.
	5c. Speakers in adjacent rooms mounted on common wall, or mounted back to back.	5c. If speakers are mounted directly back to back, one speaker will have to be relocated. If speakers are in a common wall, try placing fiberglass insulation behind each speaker, or isolate the speakers from the wall by placing rubber washers or weather stripping between speaker and wall.
	5d. Improper wire used in installation.	5d. NuTone Model IWA-3 3-conductor, flat-ribbon cable must be used.

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
6. Hum in speakers.	6a. Intercom wiring run too close to household AC power wiring.	6a. Keep intercom wiring as far as practical from household AC power wiring. Do not run intercom wiring parallel to AC power wiring.
	6b. Shorted intercom power wiring or power wiring shorted to ground.	6b. Check power connections to Master and connections to transformer.
	6c. Interference from household electrical fixtures.	6c. Dimmer controls on fluorescent lighting may cause interference. For fluorescent lighting interference, try new replacement tubes or install filters on each fixture (G.E. 89G635, purchase locally). For dimmer interference, contact manufacturer for recommended corrections.
7. Static	7a. Loose ground connection.	7a. Check ground connection to Master and connection to earth ground source.
	7b. Interference from household electrical fixtures.	7b. Dimmer controls on fluorescent lighting may cause interference. For fluorescent lighting interference, try new replacement tubes or install filters on each fixture (G.E. 89G635, purchase locally). For dimmer interference, contact manufacturer for recommended corrections.
	7c. Interference from household appliances.	7c. Correct interferences at the source — fish tank, motor, appliances, etc. — by installing E.M.I. line filter (purchase locally) on power source.
8. Remote Station not working.	8a. Wire installation.	8a. Check terminal board for broken wire or loose connection. Check continuity of wire.
	8b. Speaker.	8b. Check continuity of speaker. Clean speaker and switch controls. Check with speaker known to be in working order.
9. No door communication.	9a. Wire installation.	9a. Check continuity of wiring. Check connections at speaker and Master.
	9b. Speaker.	9b. Check with a speaker known to be in working order.
10. Optional electronic chime does not work through intercom, or low volume.	10a. Wire installation.	10a. Be sure chime is wired to proper terminals on Master board and connections are good.
	10b. Improper operation.	10b. Be sure chime is electronic model. Be sure radio-intercom system is on. Check control settings and system volume control on Master station. Chime will be heard only through speakers set for RADIO/INTERCOM.
	10c. Chime.	10c. Increase volume control on chime. Check electronic pickups and continuity of chime input wiring.
11. Cannot receive radio	11. Faulty antenna connection.	11. Antenna should be located in attic and connected to tuner in Master. Check antenna connector to be sure it is connected to header on tuner board. In weak signal areas an outside antenna may be necessary.
12. Telephone is inoperative.	12. Wiring installation error.	12. Check all wiring for shorts and opens. If some phones work and others don't, problem may be loose connections or broken wires.
13. NO END CALL TIME DELAY: When, during intercom operation, the TALK or DOOR TALK switch is released the entertainment program returns immediately.	13. The black earth ground wire from the Amplifier/Power Supply PC board is not connected to the EARTH terminal on the Wiring Terminal Board. See Figure 15.	13. Connect the black ground wire from the Amplifier/Power Supply PC board to the EARTH terminal on the Wiring Terminal Block. See Figure 15.
14. The black earth ground wire from the Amplifier/Power Supply PC board is not connected to the EARTH terminal on the Wiring Terminal Board. See Figure 15.	14. With the DISPLAY in TIME mode, the HOURS and/or MINUTE display does not change when minutes and/or change buttons are pressed. NOTE: TIME SET button must be pressed in when setting either hours or minutes.	14. Connect the black ground wire from the Amplifier/Power Supply PC board to the EARTH terminal on the Wiring Terminal Block. See Figure 15.

REMOVING THE MASTER STATION FROM MODEL IR-103 ROUGH-IN FRAME

1. Remove two (2) No. 6 x ¾ screws from front of master panel. (See Figure 1.)
2. Remove two (2) screws and ground wire from transformer box cover. Remove cover and disconnect the white and red/white low voltage wires from the transformer. (See Figure 2.)
3. Remove the antenna connection from the tuner board. (See Figure 4.)

4. Unplug the 4-pin and 9-pin ribbon connectors and disconnect the black ground wire from the terminal PC board. (See Figure 5.)
5. Remove screws that secure the hinges to the rough-in frame. (See Figure 3.)
6. While supporting the master station, unhook the support strap from the rough-in frame. (See Figure 4.)

FIGURE 1

FIGURE 2
TRANSFORMER BOX COVER
POWER GROUND
RED AND WHITE LOW VOLTAGE WIRES
TRANSFORMER

FIGURE 3

FIGURE 4
SUPPORT STRAP HOOK
FLUSH MOUNTED ROUGH-IN FRAME
MOUNTING BRACKET
SUPPORT STRAP
EARTH GROUND PIN
GROUND WIRE
MOUNTING BRACKET
ANTENNA PLUG
5.

FIGURE 5
9-PIN RIBBON CABLE
4-PIN RIBBON CABLE
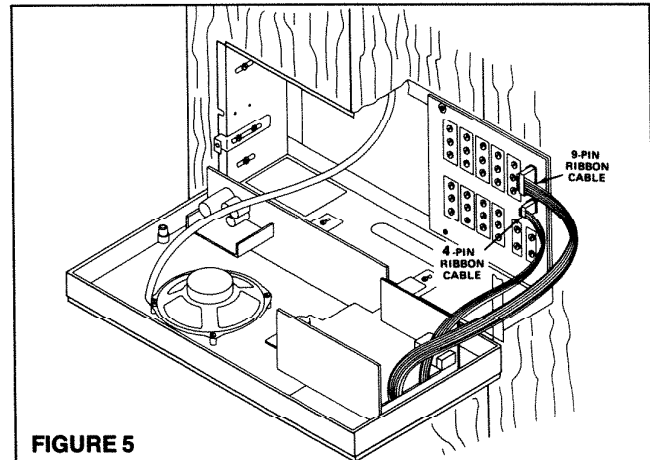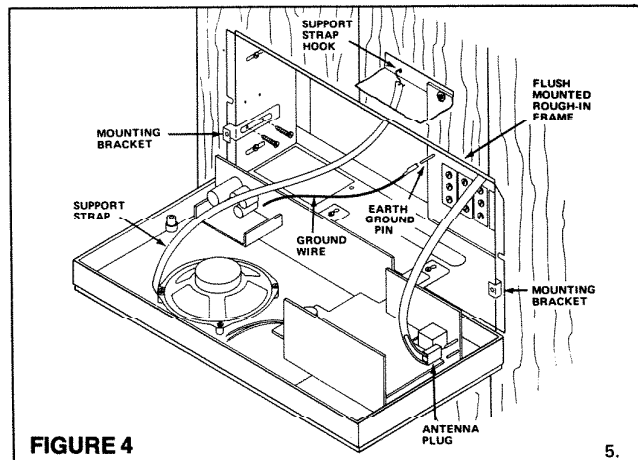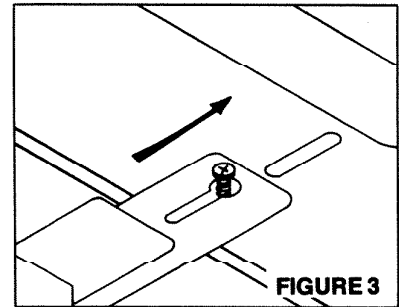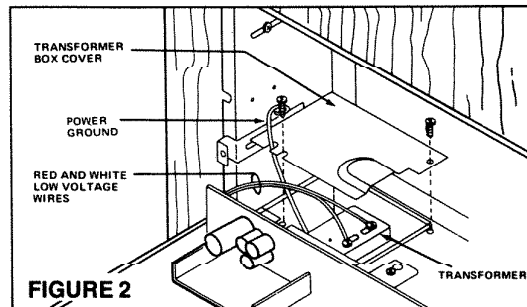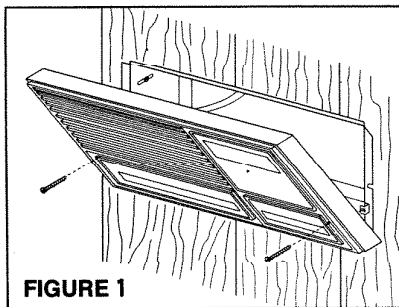
SERVICING THE MASTER STATION

1. A standard 20,000 ohm/volt multi-meter will suffice for most voltage and resistance measurements in this system. It is suggested that when a VTVM (or other high-impedance input meter) is available, it be used.

2. A VTVM with a DC scale of 0 to 1.5 volts will be especially useful when measuring base and emitter voltages.

3. The voltages included with the schematic diagram are for reference. Actual voltages may vary ± 10% to 20%. THE RELATIONSHIP BETWEEN THE VOLTAGES ON THE DIFFERENT ELEMENTS SHOULD REMAIN FAIRLY CONSTANT TO ACHIEVE DESIGN PERFORMANCE.

4. To prevent leakage paths when measuring resistance of some components, it may be necessary to disconnect one side of the component under measurement.

5. OBSERVE POLARITY WHEN MAKING RESISTANCE MEASUREMENTS IN TRANSISTOR CIRCUITS. IMPROPER POLARITY MAY RESULT IN FALSE READINGS AND IN SOME CASES REVERSE POLARITY MAY EXCEED THE REVERSE BREAKDOWN RATINGS OF THE DEVICE.

6. Make certain that power is OFF when making resistance measurements and when replacing components.

7. Treat all printed circuit boards with care. Do not burn nor mutilate when making or breaking solder connections. Be careful of the foil paths.

NOTE: Hum and/or squeal may result if circuit grounds or commons are tied together. Be cautious not to produce this condition when connecting grounds of test instruments to master station.

(1) Entire System Dead.
Check:
- 16 Vac from secondary of 105N power transformer.
- Wiring between power transformer and master station.
- 120 Vac supply to 105N transformer.
- Power switch S104.
- DC supply at high side of C129.
- Program selector switch S311.
- Speaker and wiring.

(2) No Display — Other Operations Normal
Check:
- Input voltage at pin 11 of IC203.
- Output voltage at pin 11 of IC203.
- IC201, IC202 operating voltages and D201.

(3) Power Indicator Light Emitting Diode Off — All Other Operations Normal
Check:
- R138 and D501.

(4) No Radio — Intercom Operation Normal
Check:
- Selector switch S311.
- Audio continuity between PHONO jack J301 and speaker through S311 in PHONO position. If audio signal is present, check the AM/FM tuner.
- Voltage of S311 common terminal which should be 15.5Vdc.
- Intercom INSIDE/PATIO TALK switch S103 and DOOR TALK switch S102. S102 and S103 must not be stuck in INSIDE/PATIO TALK or DOOR TALK position, otherwise radio signals will be muted.
- Antenna is securely connected to terminals.

(5) No FM Radio — All Other Operations Normal
Check:
- Antenna. Antenna must be installed, connected to the tuner and not shorted at printed circuit board.
- Program selector switch S311.
- FM connections between S311 and tuner module.
- Regulated voltage 15.5 Vdc at terminal of S311 in FM position.
- Q1, Q2, Q3 and IC1 operating voltages.
- FM alignment.

(6) No AM Radio — All Other Operations Normal
Check:
- Antenna. Antenna must be installed, connected to the tuner and not be shorted at printed circuit board.
- Program selector switch S311.
- AM circuit connections between S311 and tuner module.
- 15.5 Vdc at terminal of S311 in AM position.
- Q6 and IC1 operating voltages.
- AM alignment.

(7) No FM Frequency Display — All Other Operations Normal
Check:
- Connections between tuner P.C. board, and the frequency and time P.C. board.
- Q4, Q201, Q202, Q203, Q301, IC201, IC202 operating voltages.
- D201 and S312 TIME-FREQUENCY switch.

(8) No AM Frequency Display — All Other Operations Normal
Check:
- Connection between tuner P.C. board, and the frequency and time P.C. board.
- Q5, Q201, Q202, Q301, IC201 operating voltages.
- S312 TIME-FREQUENCY switch.

(9) No Sound From Master Station Speaker — All Remote Speakers Operating Normally
Check:
- Setting of MASTER SPEAKER VOLUME control VR102.
- S101, S102, S103 and S310.
- Speaker and connections.

(10) No Sound From Inside/Patio Speaker(s) — Master Station Speaker Operating Normally
Check:
- Station selector switches S301 - S309 located behind panel door must be in RADIO INTERCOM mode.
- Controls and connections at individual inside/patio speakers.
- Flat 3-wire cable between inside/patio speaker(s) and master station terminal board.
- Wiring between amplifier P.C. board through switch P.C. board to terminal board.

(11) Distortion At All Speakers
Check:
- Setting of MASTER SPEAKER VOLUME control; VOLUME control at every INSIDE/PATIO speaker and setting of PROGRAM VOLUME VR101.
- Amplifier and control P.C. board.

(12) Master Station On — No Sound From Any Speaker
Check:
- Program selector switch S311.
- The 4 and 9 wire ribbon cables from the P.C. board to the terminal board.
- Voltage at high side of C116. Voltage should be between 16 and 22 Vdc.
- Regulated + 15.5 Vdc at emitter of Q108.
- Amplifier transistors' operating voltages.
- Individual VOLUME controls at master station and at inside/patio speakers.
- PROGRAM VOLUME control VR101.
- Q101, Q109, Q302, Q303, and IC101 operating voltages.

(13) Record Player And/Or Tape Player Silent—All Other Operations Normal

Check:

• Program Selector Switch S311. S311 must be in correct position.

• Shielded cable between record player and/or tape player and J301 and J302. Plug must be pushed all the way in at both ends.

• Cartridge in record player.

(14) Hum From Record Player—All Other Operations Normal

Check:

• Shielded cable between record player and master station. Outer shield must make good contact at both ends.

• Separate ground wire between record player rough-in and ground connection in master station rough-in.

• Connections to cartridge in record player.

(15) No Muting During Intercom Operation

Check:

• Muting voltage at emitter of Q102.

• Control line voltage at pin 11 and other operating voltages of IC106, (TP9).

• Voltages of muting transistor Q109.

(16) Muting On—When No Inside/Patio Talk Or Door Talk Switch Is Being Activated

Check:

• INSIDE/PATIO TALK and DOOR TALK switches in master station and in INSIDE/PATIO speaker controls. Switches must not be stuck and should work freely.

• Control line voltage at pin 11 and other operating voltages of IC106, (TP9).

• For collector to emitter short in Q101 and Q109.

• IC102 operating voltages.

(17) Signals From Chime And/Or Alarm And From Speakers In Monitor Mode Are Too Low

Check:

• Volume settings. To correct problem, lower volume of entertainment program and increase the over-all volume of the system with VOLUME INTERCOM control VR301.

(18) No Intercom Signals From Any Speaker Or From Chime And/Or Alarm—All Other Functions Normal

Check:

• Intercom input transformer T301, D305, D306 and Q302.

• For "Key Click" voltage on base of Q101 and for emitter-collector short in Q101.

• Q102 operating voltages and for shorts between elements.

(19) Door Speakers Cannot Receive Nor Transmit Intercom Signals—All Other Functions Normal

Check:

• Wiring between DOOR SPEAKER terminals and the door speaker. This wiring should not be open or shorted.

• Door Relay L101.

• Door volume control VR103 trim pot located on amplifier and control P.C. board.

(20) Door Speaker(s) Can Hear Inside/Patio And Master Station Speakers But Cannot Send Signals To Inside/Patio And Master Station Speakers—All Other Operations Normal

Check:

• C121, D105.

• Control line voltage at pin 11 of IC106, (TP9).

(21) Door Speaker(s) Can Send Signals To, But Cannot Receive From Inside/Patio And Master Station Speakers—All Other Operations Normal

Check:

• Door relay L101.

• Control line voltage at pin 11 of IC106, (TP9).

• C122.

(22) Signals Cannot Be Heard From Inside/Patio Speaker In Monitor Mode—All Other Operations Normal

Check:

• Individual inside/patio speakers VOLUME controls. Make sure that control is set at maximum.

(23) No Monitor

Check:

• REMOTE SPEAKER STATUS switches S301 - S309. Appropriate switches must be in MONITOR position.

• Q101.

(24) High Pitch Squeal

Check:

• Check for shorts between the SILVER (OUTPUT) wire and the COPPER (INPUT) wire in the flat-3-wire cables between the terminal board and the individual INSIDE/PATIO speakers.

• The center (COMMON) wire from each inside/patio speaker. Make sure that the center wire from each inside/patio speaker is connected to its own common terminal.

• Shorts on terminal board.

(25) Low Frequency Feedback Between Speakers During Intercom Operation

Check:

• Volume settings of the problem speakers. Adjust volume of speakers to determine nature of coupling between speakers.

• Speakers to make sure they are not installed back-to-back on a common wall.

**AMPLIFIER
AND CONTROL
BOARD**

SWITCH
BOARD
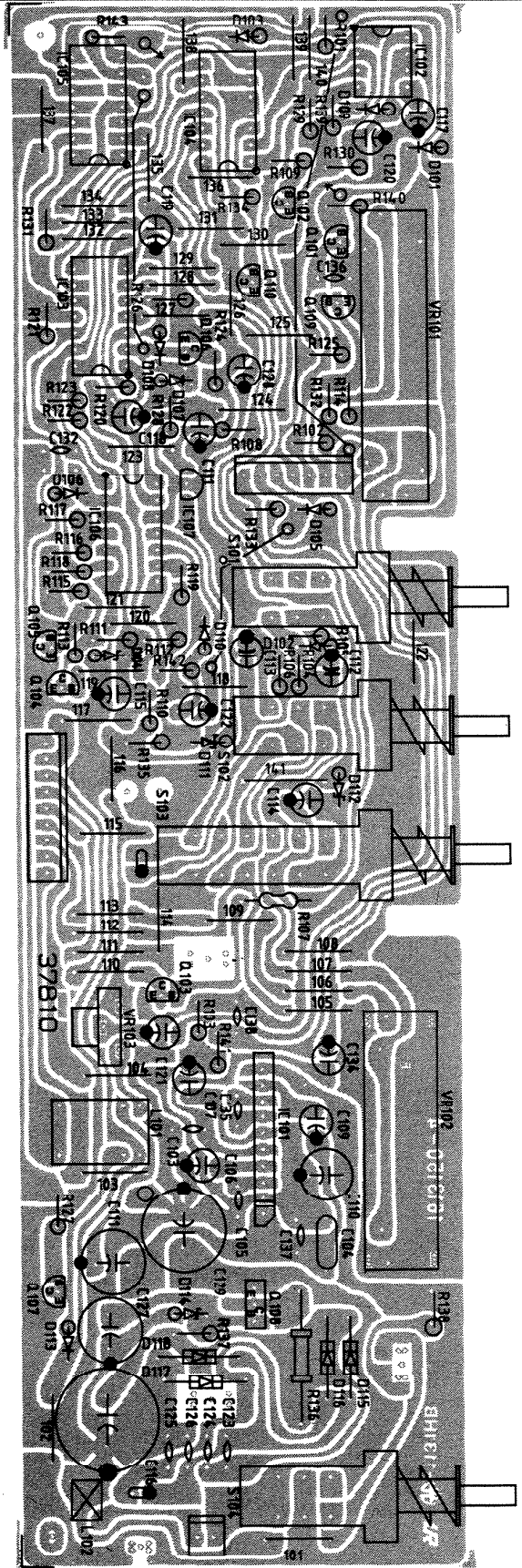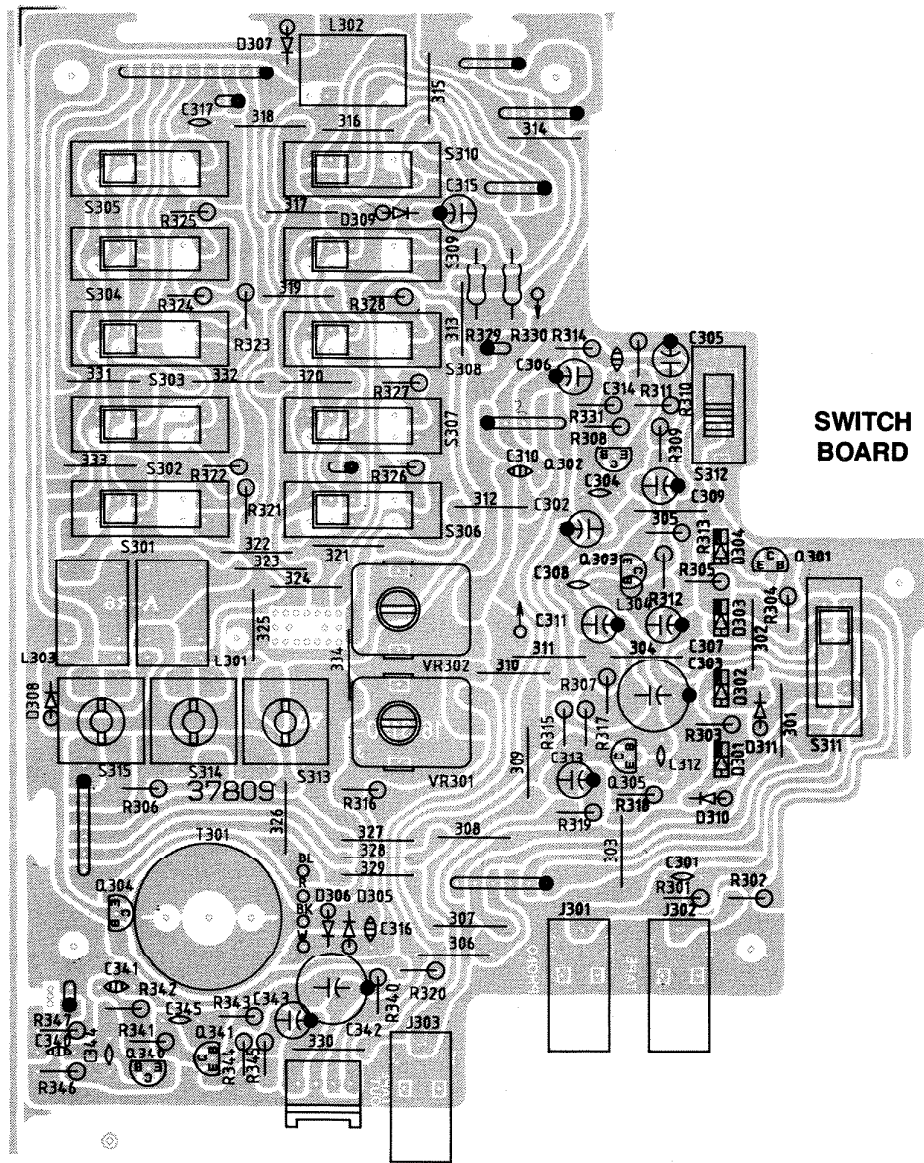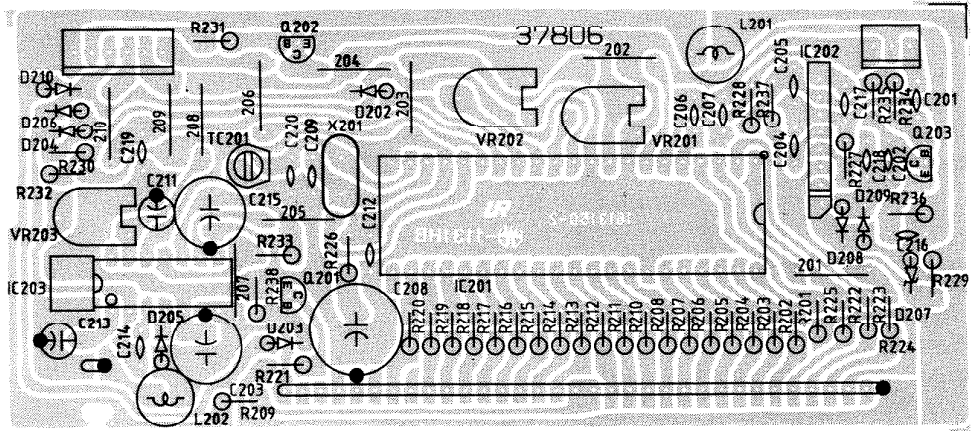
FREQUENCY AND TIMER BOARD
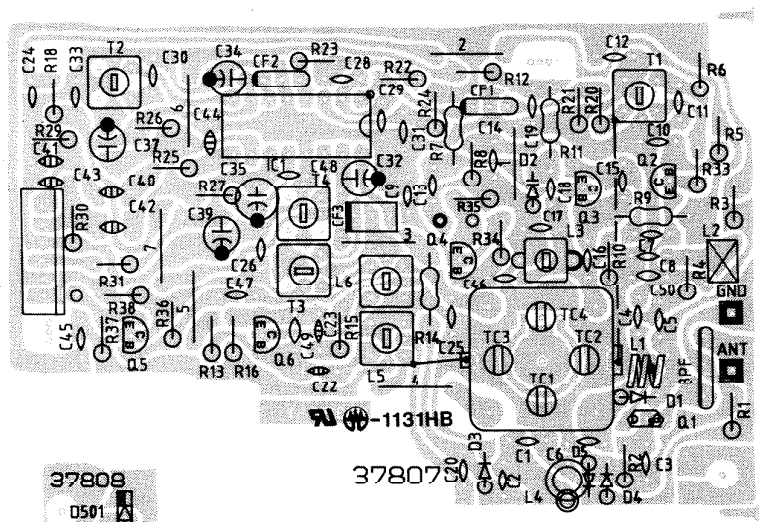
**TUNER
BOARD**

**POWER
LED
BOARD**

TERMINAL BOARD
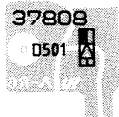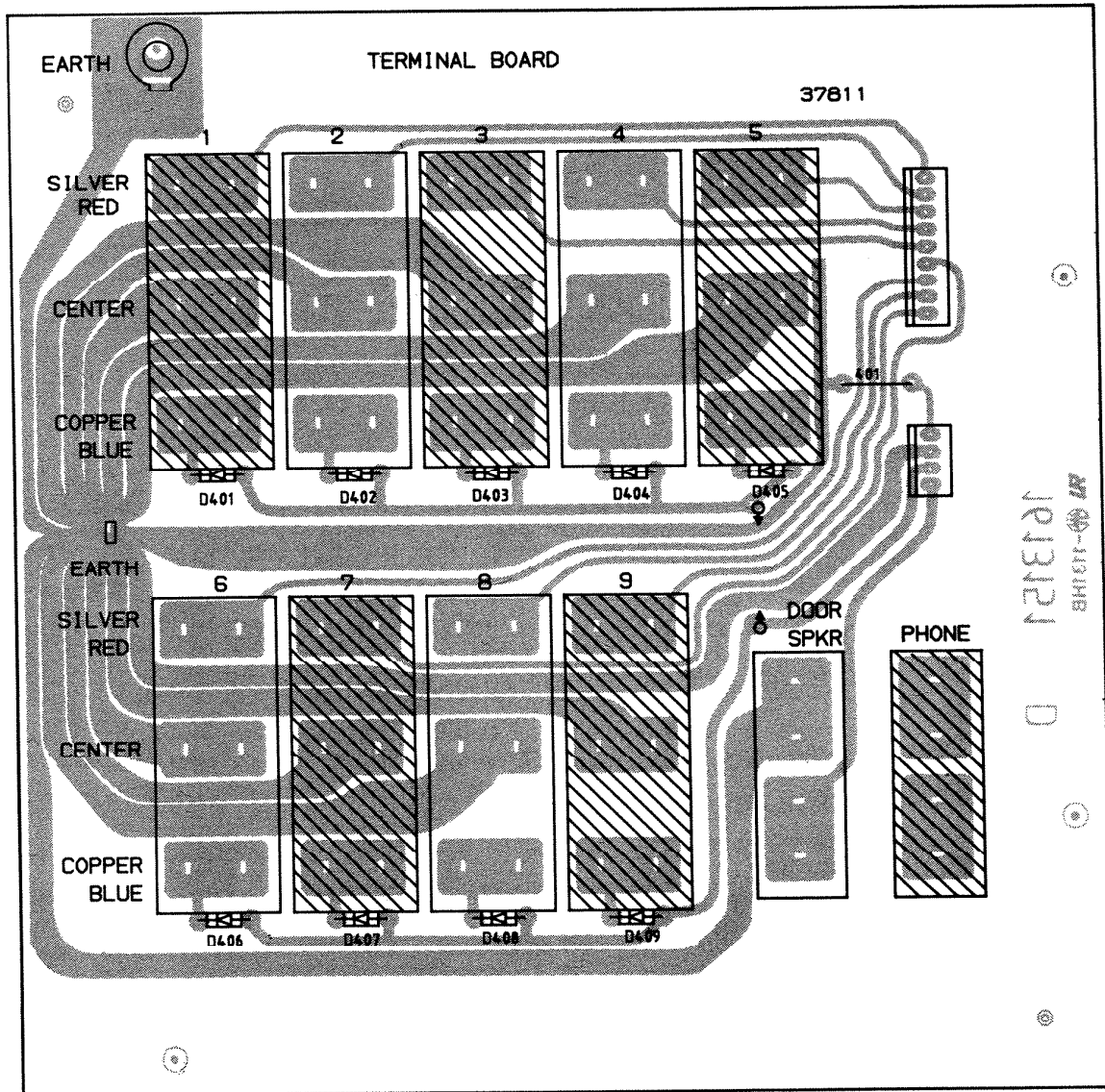
NOTE: The Master Unit's schematic diagram (FS-1325) is printed on a separate fold-out sheet and inserted in back of this service manual. Additional copies of the Master Unit schematic are available from National Field Service Engineering.

IS-305, IS-308, IS-309, IC-301, IC-301W
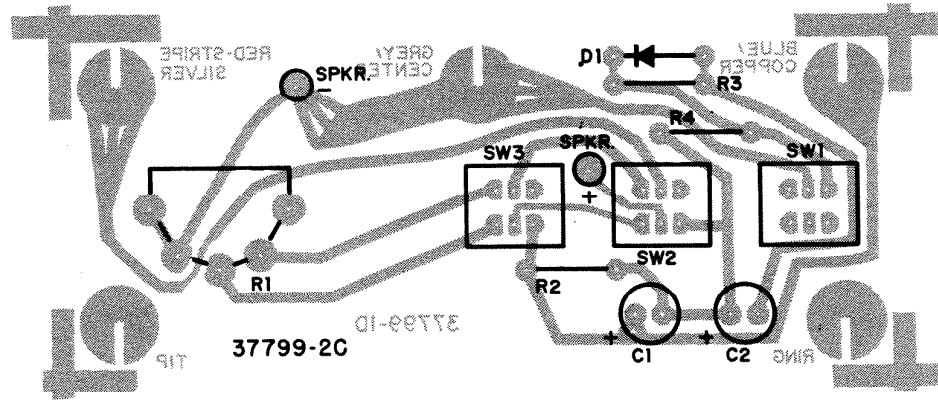
P.C. BOARD
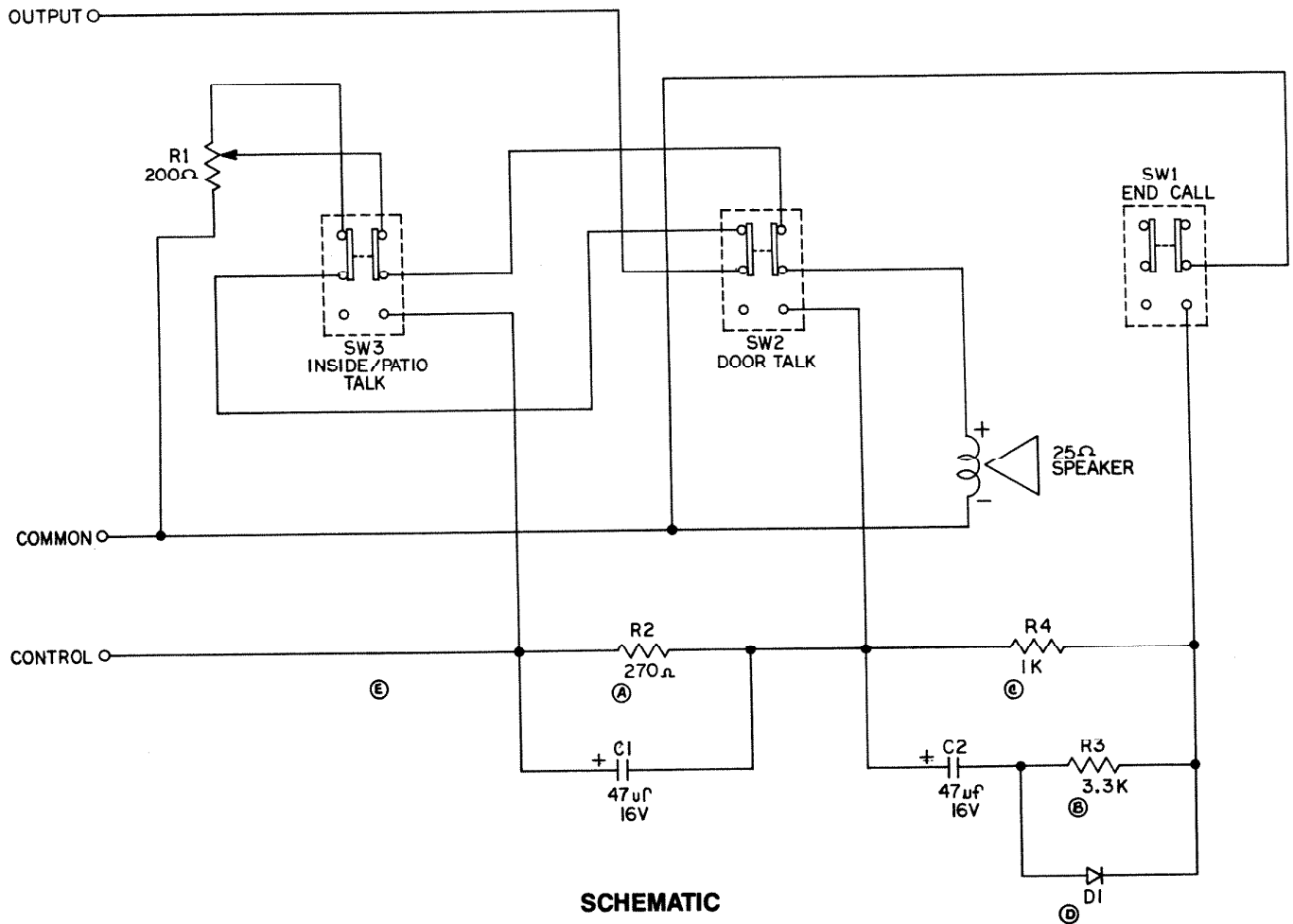
SCHEMATIC

IS-306
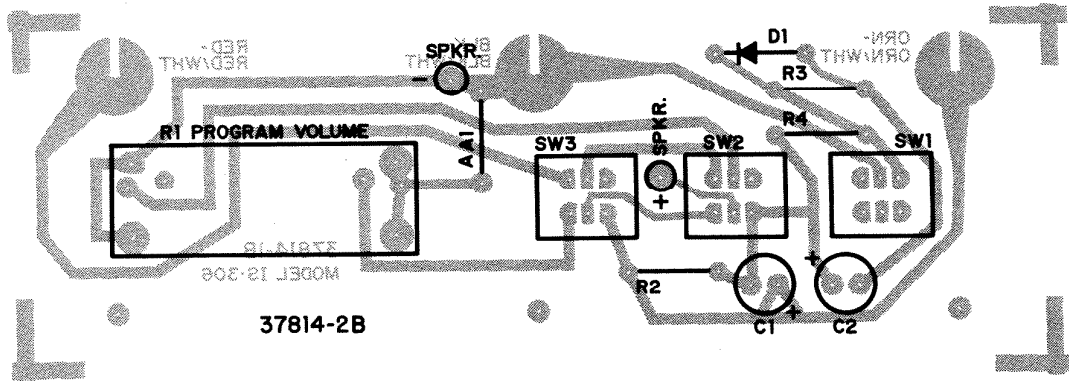
P.C. BOARD
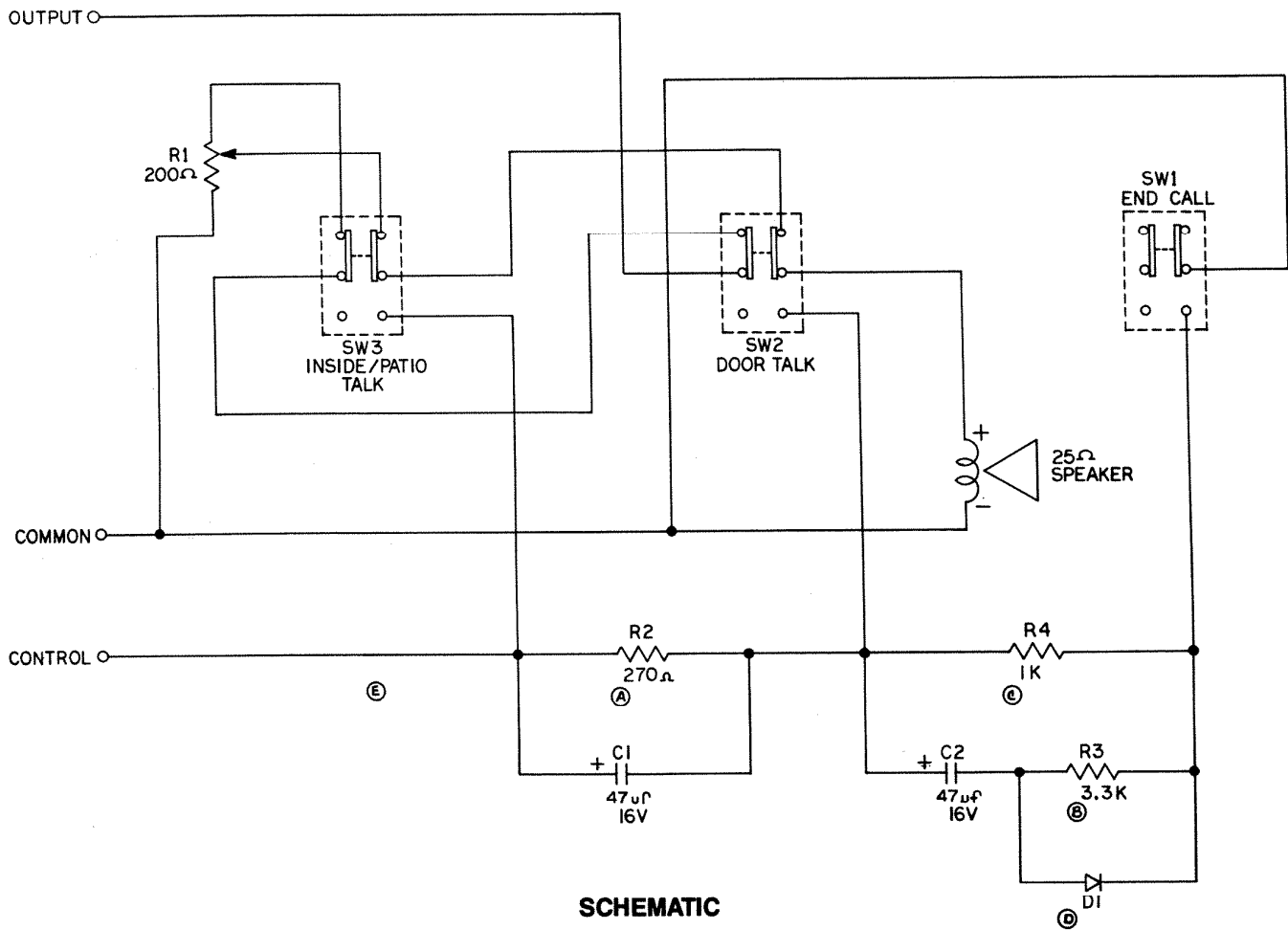
SCHEMATIC

IS-304, IS-304P
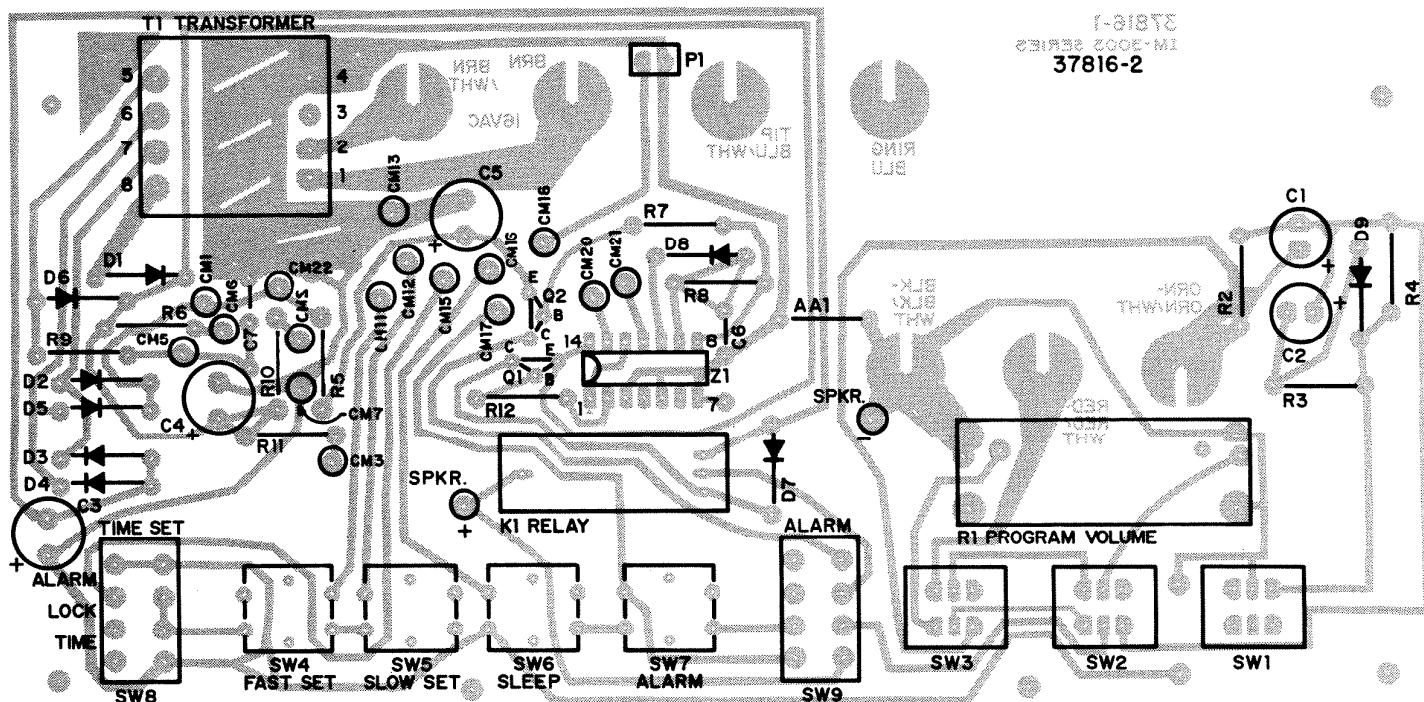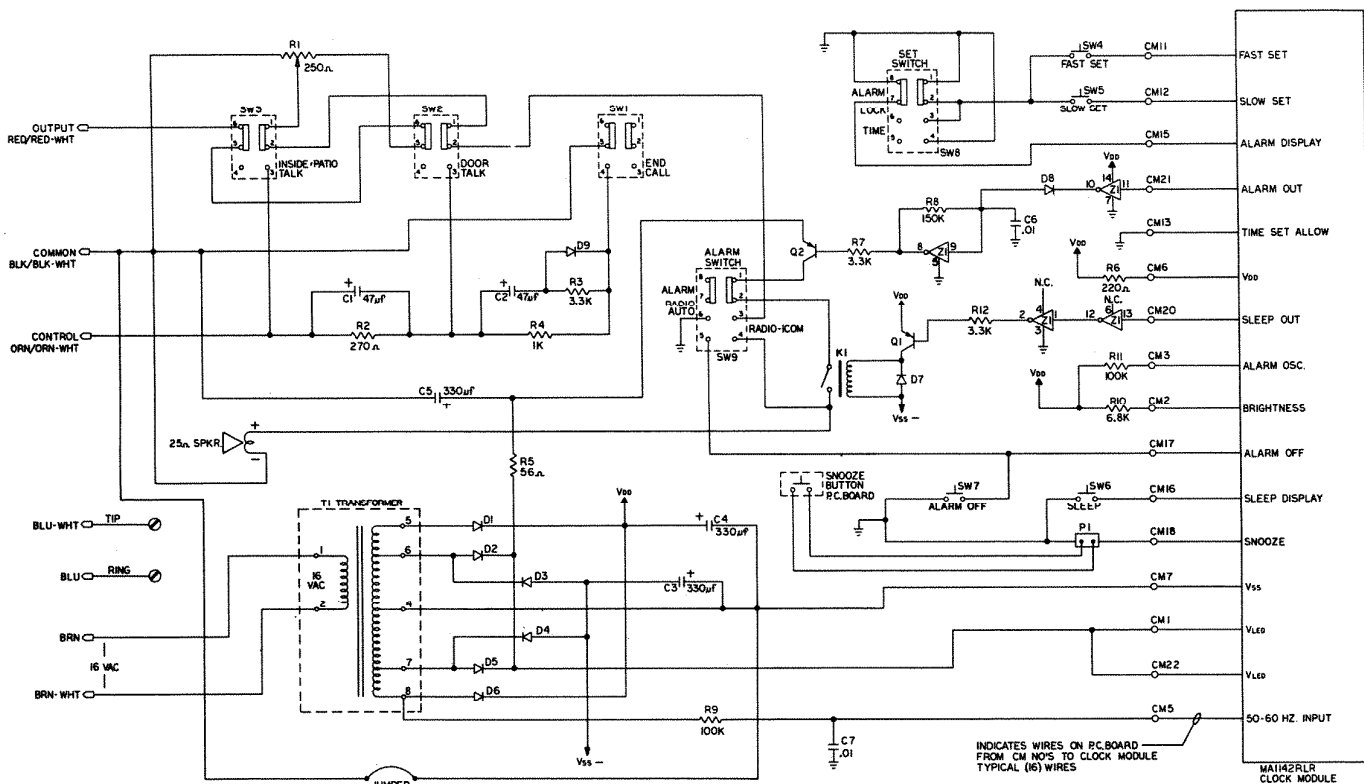
P.C. BOARD

SCHEMATIC

INTERCONNECT DIAGRAM
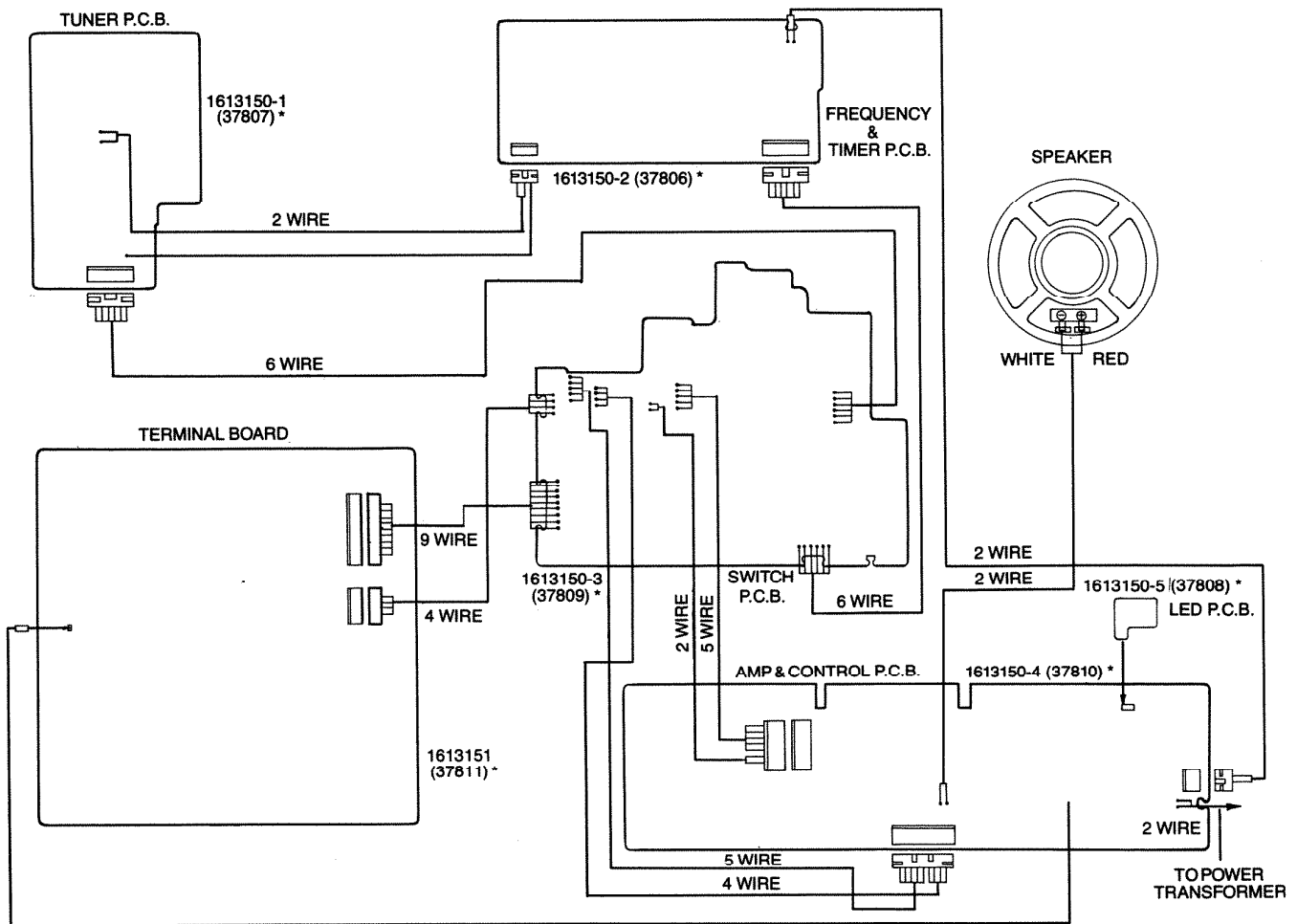
*Part numbers for P.C. Board only—refer to Replacement Parts section for part numbers for complete P.C. Board assembly.

TRANSISTOR VOLTAGE CHARTS (All readings are DC volts.)

TR (FET)	E (S)	C (D)	B (G)	OPERATING POSITION
Q1	0.1	14.6	0	FM
Q2	1.3	15.5	1.7	FM
Q3	1.2	12.5	1.4	FM
Q4	2.9	12.5	1.7	FM
Q5	3.7	15.2	0	AM
Q6	1.2	15.2	0	AM
Q101	0	0	0.7	AM
Q102	3.8	5.1	3.4	I/P TALK
Q103	0	0.1	0.7	ALL LISTEN
Q104	0	0	0.6	ALL LISTEN
Q105	0	0	0.6	I/P TALK
Q106	0	5.0	0	I/P TALK
Q107	0	0.1	0.7	DOOR TALK

TR (FET)	E (S)	C (D)	B (G)	OPERATING POSITION
Q108	15.6	20.0	16.3	AM
Q109	0	0	0.6	I/P TALK
Q110	3.4	5.1	3.8	DOOR TALK
Q201	0	0	0.7	FM
Q202	0	0	0.7	AM
Q203	0.3	3.7	0.8	FM
Q301	0.9	0	0.2	PHONO
Q302	0.5	4.2	0.6	I/P TALK
Q303	3.8	10.0	9.0	PHONO
Q304	0	0.1	0.8	I/P TALK
Q305	0.4	4.0	0.75	PHONO
Q340	0.1	7.0	0.6	AM
Q341	8.6	14.0	2.3	AM

IC VOLTAGE CHARTS (All readings are DC volts.)

PIN	IC1 (AM)	IC1 (FM)	IC101 (FM)	IC102	IC103	IC104	IC105	I/P TALK	IC106 DOOR TALK	IC106 END CALL	IC106 ALL LISTEN	IC201 (FM)	IC202 (FM)	IC203 (FM)
1	1.3	1.7	8.2	0	H	H	H	5.0	0	5.0	5.0	✕	0	0
2	1.3	1.7	0	0	H	L	L	0	5.0	5.0	5.0	✕	0	7.6
3	0	12.7	1.1	4.8	L	H	H	8.5	8.2	9.3	9.3	✕	6.4	9.0
4	2.0	1.8	4.0	5.0	L	L	L	1.9	1.9	2.2	0	✕	3.0	15.1
5	0	0	3.4	3.4	H	L	H	0.9	2.6	5.0	9.3	—	3.0	3.6
6	1.3	1.3	4.1	0.5	H	H	L	0.5	3.4	4.0	0	—	0	8.3
7	2.1	2.0	1.4	0.5	0	0	0	0.9	2.6	5.0	9.3	9.0	5.3	8.3
8	1.9	1.8	9.2	5.1	L	H	L	0	0	6.6	0	0	0.3	15.0
9	2.3	1.9	14.9		H	H	H	0.9	2.6	5.0	9.3	7.6		15.0
10	2.3	2.0	15.6		H	L	L	0.2	1.9	4.3	14.5	0		0
11	12.0	12.0			H	L	H	0.9	2.6	5.0	9.3	7.2		14.5
12	0.5	0.3			H	H	L	0	0	0	0	5.1		4.7
13	0	0			L	H	H	5.0	5.0	5.0	0	3.8		3.2
14	2.0	2.0			5.0	5.0	5.0	5.0	5.0	0	5.0	—		3.2
15	0.2	1.63										3.8		
16	0.9	0.8										3.8		
17												8.3		
18												9.0		
19												3.8		
20												—		
21												9.0		

IC107	
ALL POSITION	
IN	15.6
GND	0
OUT	5.0

NOTES:
1. All voltage readings are referred to **EARTH** ground lug on Terminal Board. See page 18.
2. A High (H) is 4.5 to 5.5 volts (VDC).
3. A Low (L) is 0.0 to 0.5 volts (VDC).

IC AND TRANSISTOR LEAD IDENTIFICATION

D S G

E C B

E C B

Q1

Q2-Q6, Q101-Q107
Q109-Q110, Q201-Q203
Q301-Q305

Q108

1 2 3 4 5 6 7 8 9 10

AUDIO IC 101

PRESEALER IC 202

1 2 3 4 5 6 7 8

	COUNTER DISPLAY DRIVER IC 201	
SEG-D	1	42 SEG-E
SEG-C	2	41 SEG-F
SEG-G	3	40 SEG-A
SEG-B	4	39 SEG-B
FIN-FM	5	38 SEG-G
FIN-AM	6	37 SEG-C
IF-FM	7	36 VSS
IF-AM(2)	8	35 SEG-D
VREF	9	34 SEG-E
IF-AM(1)	10	33 SEG-F
FM/AM	11	32 SEG-A
FM-FINE	12	31 SEG-B
AM-FINE	13	30 SEG-G
CTR/CLK	14	29 SEG-C
SET	15	28 SEG-D
DEMAND	16	27 SEG-E
INHI	17	26 SEG-F
12/24H	18	25 SEG-A
OSC OUT	19	24 SEG-B
OSC IN	20	23 SEG-C
VDD	21	22 SEG-PM

DIGHT-4

DIGHT-3

DIGHT-2

DIGHT-1

14 13 12 11 10 9 8

REGULATOR IC 203

1 2 3 4 5 6 7

TUNER ALIGNMENT AND SETUP DIAGRAMS

Equipment Needed

1. AM Signal Generator
2. FM Signal Generator
3. IF Sweep Generator with marker capabilities
4. Oscilloscope
5. VTVM
6. Nonmetallic alignment tool
7. AF Oscillator
8. Frequency counter

Important Reminders

1. Check line voltage.
2. Set function switch to band being aligned.
3. Remove the antenna from the terminal.
4. Connect low side of signal source and output indicator to chassis ground (unless otherwise specified). Ground connection should be kept close to high side connection.
5. Signal input should be kept as low as possible to avoid AVC and AFC action. (Set output indicator to high sensibility).
6. Standard modulation is 1000Hz 30% amplitude for AM. (1000Hz 22.5KHz deviation for FM).

AM Alignment

Circuit Alignment Equipment Connection				
IF	AM Signal Generator with dummy antenna VTVM across 8ohm (See Fig. 1)			
	Step	Gen. Freq.	Dialsetting	Adjustments
	1	455KHz (1000Hz Mod)	Tuning gang Fully closed	T3.4 (AM IFT) Adjust for Maximum Output
	2			Repeat until no further improvement can be made.
BAND	AM Signal Generator with dummy antenna VTVM across 8ohm load. (See Fig. 2)			
	3	505KHz (1000Hz Mod)	Tuning gang Fully closed	L6 (AM OSC. Coil) Adjust for Maximum Output
	4	1680KHz (1000Hz Mod)	Tuning gang Fully open	TC4 (AM OSC. trimmer) Adjust for Maximum Output
	5			Repeat steps 3 and 4
Tracking	AM signal Generator with dummy antenna VTVM across 8ohm load. (See Fig. 2)			
	6	600KHz (1000Hz Mod)	Tune to Signal	L5 (AM Ant. Coil) Adjust Coil for Maximum Output
	7	1400KHz (1000Hz Mod)	Tune to Signal	TC3 (AM Trimmer) Adjust for Maximum Output
	8			Repeat steps 6 and 7 Several times.

AM IF

FIGURE 1

Sweep Generator / Scope

AM BAND/TRACKING

AM S.G. Dummy Ant. / SET / 8 ohm Load / VTVM / Scope

FIGURE 2

FM IF

Sweep Generator / Scope

FIGURE 3

FM BAND/TRACKING

FM S.G. Dummy Ant. / SET / 8 ohm Load / VTVM / Scope
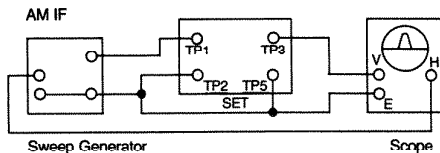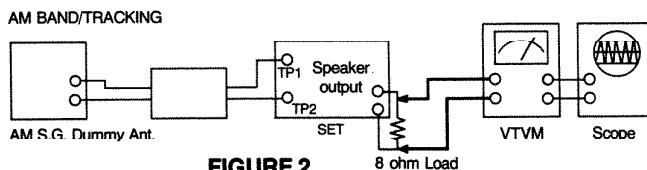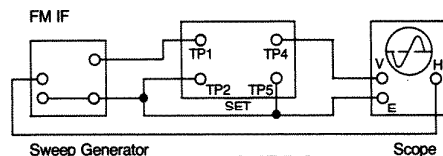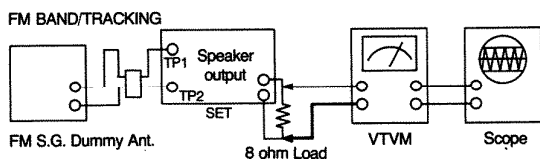
FIGURE 4

FM Alignment

Circuit Alignment Equipment Connection				
IF	FM Signal Generator with dummy antenna VTVM across 8ohm (See Fig. 3)			
	Step	Gen. Freq.	Dialsetting	Adjustments
	1	10.7MHz (1000Hz Mod)	Tuning gang Fully closed	T1.2 (FM IFT) Adjust for Maximum Output
	2			Repeat until no further improvement can be made.
BAND	FM Signal Generator with dummy antenna VTVM across 8ohm load. (See Fig. 4)			
	3	87MHz (1000Hz Mod)	Tuning gang Fully closed	L3 (FM OSC. Coil) Adjust for Maximum Output
	4	109MHz (1000Hz Mod)	Tuning gang Fully open	TC2 (FM OSC. trimmer) Adjust for Maximum Output
	5			Repeat steps 3 and 4
Tracking	FM signal Generator with dummy antenna VTVM across 8ohm load. (See Fig. 4)			
	6	90MHz (1000Hz Mod)	Tune to Signal	L1 (FM Ant. Coil) Adjust Coil for Maximum Output
	7	106MHz (1000Hz Mod)	Tune to Signal	TC1 (FM Trimmer) Adjust for Maximum Output
	8			Repeat steps 6 and 7 Several times.

Voltage Regulator Alignment

Adjust VR203, until the output voltage of #12 pin of IC203(TP6) becomes 9V. See Master Unit schematic diagram.

FM Display Alignment

FM SIGNAL GENERATOR connects to TP1, TP2. Scope & VTVM connect to speaker output leads with 8 ohm load. Set FM SIGNAL GENERATOR to 98.0MHz and tune to signal; then adjust VR201, until DISPLAY becomes 98.0MHz.

AM Display Alignment

AM SIGNAL GENERATOR connects to TP1, TP2. Scope & VTVM connect to speaker output leads with 8 ohm load. Set AM SIGNAL GENERATOR to 1000kHz and tune to signal; then adjust VR202, until DISPLAY becomes 1000kHz.

Door Speaker Level Set

Adjust VR103.

4MHz Clock Alignment

Connect Frequency counter as illustrated in Fig 5. Adjust TC201 until scope indicates 4.000000MHz.

4MHz CLOCK

TP8 / 100k ohm / TP7 / SET / FREQUENCY COUNTER
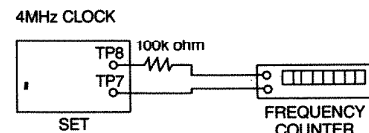
FIGURE 5
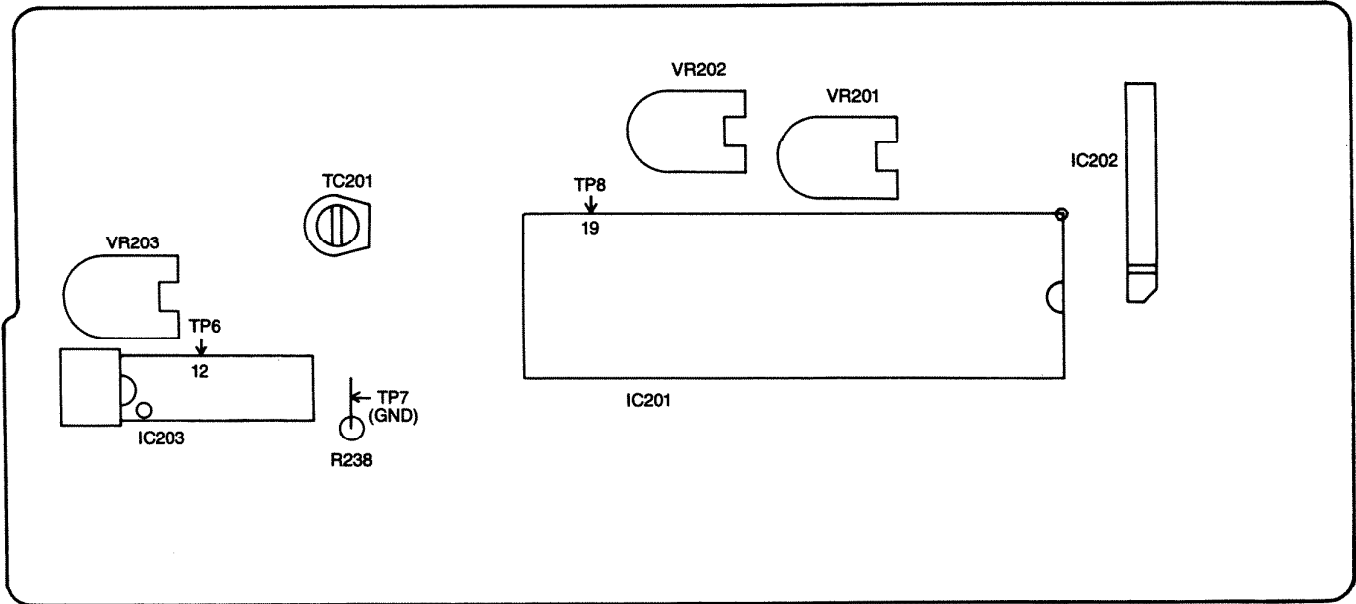
4 MHz CLOCK ALIGNMENT
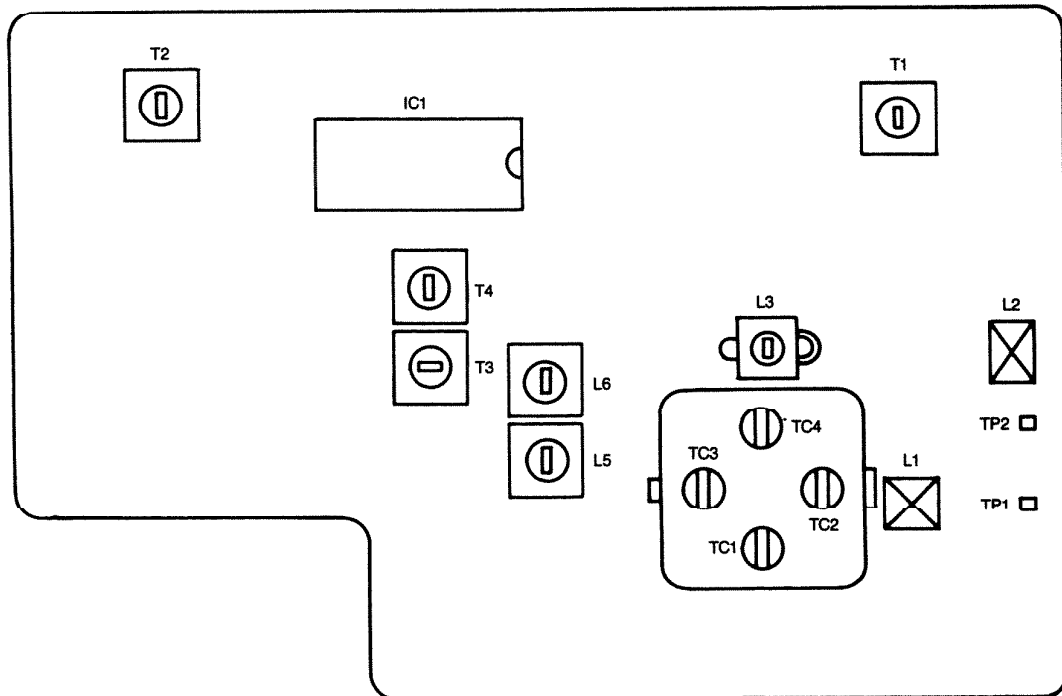
TUNER BOARD ALIGNMENT ADJUSTMENT POINTS

6991A-000
49263-000
6995A-000
7086A-000
7084A-000
7086A-000
6992A-000
6976A-000
7276A-000
7086A-000
7086A-000
7091A-000
6979A-000
7086A-000
7086A-000
7275A-000
6988A-000
7086A-000
7275A-000
6993A-000

T SERIES / 35415-000
M SERIES / 35417-000
L SERIES / 35529-000

6983A-000
T, M, L SERIES

7087A-000

6990A-000

6982A-000

6966A-000

7082A-000

6964A-000

6967A-000

6964A-000

6965A-000

T SERIES / 35414-000
M SERIES / 35416-000
L SERIES / 35530-000

FRONT PANEL WITH INLAYS
T-SERIES/0544A-000
M-SERIES/0545A-000
L SERIES/0546A-000

T SERIES / 35412-000
M SERIES / 35413-000
L SERIES / 35532-000

Capacitors: Value In Micro (10^{-6}) Farads. Other Specifications As Noted.
Resistors: Value In Ohms ± 5%, ¼ Watt. Other Specifications as Noted.
K=Kilo=1,000   M=Mega=1,000,000

Model IM-3003 Radio-Intercom Master Unit

Schematic Symbol	NuTone Part No.	Description
CONTROL AND AMPLIFIER BOARD		
	7001A-000	Control & Amplifier P.C. Board Assembly Complete
Integrated Circuits		
IC-101	7015A-000	Power Amplifier—BA532
IC-102	7238A-000	Single Timing Circuit—NE555
IC-103	7239A-000	Quad 2-Input Nand—SN74LS00
IC-104	7240A-000	Triple 3-Input Nand—SN74LS10
IC-105	7242A-000	Hex Inverter—SN74LS04
IC-106	7243A-000	Comparator—LM339
IC-107	7241A-000	Voltage Regulator—78L05A
Transistors		
Q101	7030A-000	Intercom Muting—2SC945Q or 2SC828S
Q102	7030A-000	Switching—2SC945Q or 2SC828S
Q104	7030A-000	Switching—2SC945Q or 2SC828S
Q105	7030A-000	Switching—2SC945Q or 2SC828S
Q110	7030A-000	Switching—2SC945Q or 2SC828S
Q103	7037A-000	Relay Driver—2SC945P or 2SC828R
Q106	7037A-000	Switching—2SC945P or 2SC828R
Q107	7037A-000	Relay Driver—2SC945P or 2SC828R
Q108	7235A-000	Voltage Stabilizer—2SD882Q or MJE9400
Q109	7236A-000	Radio Muting—2SC1317R
Diodes		
D101	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D102	7038A-000	Silicon—IN4148 or BA317 or 1S2473

Schematic Symbol	NuTone Part No.	Description
Diodes		
D103	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D105	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D106	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D107	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D108	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D109	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D110	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D113	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D104	7248A-000	Zener—UZ-9.1BH or RD-10EB1
D111	7249A-000	Zener—UZ-16BL or M RD-16EB3 or RD-18EB1
D112	7250A-000	Zener—UZ-6.2BH or RD-6.8EB1
D114	7251A-000	Zener—UZ-15BH or RD-16EB3
D115	7044A-000	Silicon Rectifier—1SR35-100 or SR-1K-2 or GP-15B
D116	7044A-000	Silicon Rectifier—1SR35-100 or SR-1K-2 or GP-15B
D117	7044A-000	Silicon Rectifier—1SR35-100 or SR-1K-2 or GP-15B
D118	7044A-000	Silicon Rectifier—1SR35-100 or SR-1K-2 or GP-15B
Variable Resistors		
VR101	7050A-000	50K Program Volume
VR102	7252A-000	200 Ω Master Volume
VR103	7253A-000	500 Ω Semi-Fixed
Switches		
	7278A-000	Switch & Bracket Assembly—Includes: Bracket
S101		Switch—End Call
S102		Switch—Door Talk
S103		Switch—I/P Talk
S104	7279A-000	Power On/Off

Schematic Symbol	NuTone Part No.	Description
		Coils
L101	7264A-000	Relay (Door)
L102	7065A-000	Audio Output Choke
		Capacitors
C104	7134A-000	Mylar .15uf
C103	7133A-000	Ceramic YB .001uf
C105	7135A-000	Ceramic Z .01uf
C132	7135A-000	Ceramic Z .01uf
C123	7108A-000	Ceramic Z .022uf
C124	7108A-000	Ceramic Z .022uf
C125	7108A-000	Ceramic Z .022uf
C126	7108A-000	Ceramic Z .022uf
C135	7144A-000	Ceramic SL 56pf
C136	7114A-000	Ceramic YB330pf
C137	7114A-000	Ceramic YB330pf
C138	7114A-000	Ceramic YB330pf
C106	7126A-000	Electrolytic 100uf 10V
C109	7126A-000	Electrolytic 100uf 10V
C107	7136A-000	Electrolytic 10uf 10V
C118	7136A-000	Electrolytic 10uf 10V
C121	7136A-000	Electrolytic 10uf 10V
C131	7136A-000	Electrolytic 10uf 10V
C110	7126A-000	Electrolytic 100uf 16V
C111	7137A-000	Electrolytic 470uf 10V
C112	7138A-000	Electrolytic 47uf 16V
C113	7138A-000	Electrolytic 47uf 16V
C115	7138A-000	Electrolytic 47uf 16V
C122	7138A-000	Electrolytic 47uf 16V
C114	7125A-000	Electrolytic 1uf 50V
C134	7125A-000	Electrolytic 1uf 50V
C116	7139A-000	Electrolytic 2200uf 25V
C117	7140A-000	Electrolytic 1uf 50V
C119	7141A-000	Electrolytic 47uf 10V
C128	7141A-000	Electrolytic 47uf 10V
C120	7158A-000	Electrolytic 22uf 10V
C127	7142A-000	Electrolytic 220uf 25V
C129	7143A-000	Electrolytic 1000uf 16V
		Resistors
R101	7183A-000	Carbon Film 10K
R108	7183A-000	Carbon Film 10K
R109	7183A-000	Carbon Film 10K
R126	7183A-000	Carbon Film 10K
R128	7183A-000	Carbon Film 10K
R134	7183A-000	Carbon Film 10K
R143	7183A-000	Carbon Film 10K
R102	7197A-000	Carbon Film 22K
R103	7220A-000	Carbon Film 82
R104	7182A-000	Carbon Film 1K
R112	7182A-000	Carbon Film 1K
R133	7182A-000	Carbon Film 1K
R105	7201A-000	Carbon Film 3.3K
R117	7201A-000	Carbon Film 3.3K
R127	7201A-000	Carbon Film 3.3K
R106	7200A-000	Carbon Film 330
R141	7200A-000	Carbon Film 330
R110	7207A-000	Carbon Film 470

Schematic Symbol	NuTone Part No.	Description
		Resistors
R125	7207A-000	Carbon Film 470
R107	7211A-000	Carbon Film 5.6
R120	7211A-000	Carbon Film 5.6
R121	7211A-000	Carbon Film 5.6
R122	7211A-000	Carbon Film 5.6
R123	7211A-000	Carbon Film 5.6
R124	7211A-000	Carbon Film 5.6
R129	7211A-000	Carbon Film 5.6
R139	7211A-000	Carbon Film 5.6
R111	7218A-000	Carbon Film 3.9
R115	7205A-000	Carbon Film 3.9
R113	7184A-000	Carbon Film 100K
R118	7184A-000	Carbon Film 100K
R119	7184A-000	Carbon Film 100K
R114	7181A-000	Carbon Film 100
R116	7198A-000	Carbon Film 2.7K
R130	7189A-000	Carbon Film 1.2MEG
R131	7191A-000	Carbon Film 1.5K
R132	7202A-000	Carbon Film 33K
R140	7202A-000	Carbon Film 33K
R135	7185A-000	Carbon Film 1MEG
R138	7187A-000	Carbon Film 1.2K
R142	7204A-000	Carbon Film 3.3
R136	7179A-000	Metal 2W 1
R137	7180A-000	Metal 1W 220
		General
	7280A-000	Base Post—2 Pin
	7281A-000	Base Post—7 Pin
	7282A-000	Base Post—9 Pin
	6992A-000	Heat Sink
	6995A-000	P.C. Board Bracket
	7285A-000	Insulator—Plastic 3" x 10⅜"

TUNER BOARD

Schematic Symbol	NuTone Part No.	Description
	7002A-000	Tuner P.C. Board Assembly Complete
	7048A-000	Tuner Assembly—Includes:
VC1		FM-RF Tuning Section
VC2		FM Oscillator Tuning Section
VC3		AM RF Tuning Section
VC4		AM Oscillator Tuning Section
TC1		FM Antenna Trimmer
TC2		FM Oscillator Trimmer
TC3		AM Antenna Trimmer
TC4		AM Oscillator Trimmer
		Transformers
T1	7059A-000	FM IF 10.7 MHz
T2	7060A-000	FM Detector

Schematic Symbol	NuTone Part No.	Description
Transformers		
T3	7061A-000	1st AM IF 455K Hz
T4	7062A-000	2nd AM IF 455K Hz
Coils		
L1	7064A-000	FM RF
L2	7065A-000	Trap
L3	7066A-000	FM Oscillator
L4	7067A-000	Trap
L5	7068A-000	AM Antenna
L6	7069A-000	AM Oscillator
Filters and Amplifiers		
CF1	7073A-000	FM IF (Ceramic)
CF2	7073A-000	FM IF (Ceramic)
CF3	7074A-000	AM IF (Ceramic)
B.P.F.	7075A-000	FM RF (Print)
Integrated Circuit		
IC1	7014A-000	AM/FM IF Amplifier HA 12413-03
Transistors		
Q1	7025A-000	FM RF Amplifier—2SK212(E)
Q2	7026A-000	FM Mixer—2SC1674(L) or 2SC1359(C)
Q3	7026A-000	Local Oscillator—2SC1674(L) or 2SC1359(C)
Q4	7026A-000	FM Counter Buffer—2SC1674(L) or 2SC1359(B)
Q5	7283A-000	AM Counter Buffer—2SC1675(L) or 2SC1359(B), (C)
Q6	7283A-000	AM Converter—2SC1675(L), (M) or 2SC1359(B), (C)
Diodes		
D1	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D3	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D4	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D5	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D2	7039A-000	Vari-Cap—SD116

Schematic Symbol	NuTone Part No.	Description
Capacitors		
C1	7106A-000	Ceramic SL 10pf
C14	7106A-000	Ceramic SL 10pf
C50	7106A-000	Ceramic SL 10pf
C2	7107A-000	Ceramic SL 100pf
C49	7107A-000	Ceramic SL 100pf
C3	7108A-000	Ceramic Z .022uf
C5	7108A-000	Ceramic Z .022uf
C9	7108A-000	Ceramic Z .022uf
C11	7108A-000	Ceramic Z .022uf
C19	7108A-000	Ceramic Z .022uf
C24	7108A-000	Ceramic Z .022uf
C28	7108A-000	Ceramic Z .022uf
C29	7108A-000	Ceramic Z .022uf
C31	7108A-000	Ceramic Z .022uf
C48	7108A-000	Ceramic Z .022uf
C4	7109A-000	Ceramic SL 5pf
C6	7110A-000	Ceramic SL 22pf
C7	7111A-000	Ceramic NPO 5pf
C8	7112A-000	Ceramic YB 470pf
C10	7113A-000	Ceramic M .0047uf
C12	7114A-000	Ceramic YB 330pf
C13	7114A-000	Ceramic YB 330pf
C45	7114A-000	Ceramic YB 330pf
C15	7115A-000	Ceramic NPO 10pf
C16	7116A-000	Ceramic NPO 24pf
C17	7117A-000	Ceramic N330 16pf
C18	7118A-000	Ceramic NPO 7pf
C20	7119A-000	Ceramic Z .047pf
C26	7119A-000	Ceramic Z .047pf
C30	7119A-000	Ceramic Z .047pf
C33	7119A-000	Ceramic Z .047pf
C25	7121A-000	Ceramic SL 3pf
C46	7129A-000	Ceramic SL 1pf
C47	7129A-000	Ceramic SL 1pf
C22	7120A-000	Ceramic M .022uf
C23	7120A-000	Ceramic M .022uf
C40	7127A-000	Ceramic M .033uf
C41	7128A-000	Ceramic M .0068uf
C42	7130A-000	Ceramic M .056uf
C43	7131A-000	Ceramic M .015uf
C44	7132A-000	Ceramic K .018uf
C32	7122A-000	Electrolytic 22uf 10V
C34	7123A-000	Electrolytic 22uf 10V
C39	7126A-000	Electrolytic 22uf 10V
C35	7124A-000	Electrolytic .1uf 50V
C37	7125A-000	Electrolytic 1uf 50V
Resistors		
R1	7185A-000	Carbon Film 1MEG
R12	7185A-000	Carbon Film 1MEG
R2	7210A-000	Carbon Film 56
R3	7200A-000	Carbon Film 330
R6	7200A-000	Carbon Film 330
R21	7200A-000	Carbon Film 330
R22	7200A-000	Carbon Film 330
R4	7206A-000	Carbon Film 3.9K
R5	7213A-000	Carbon Film 6.8K
R26	7213A-000	Carbon Film 6.8K

Schematic Symbol	NuTone Part No.	Description
		Resistors
R7	7214A-000	Carbon Film 1K
R24	7214A-000	Carbon Film 1K
R35	7214A-000	Carbon Film 1K
R37	7214A-000	Carbon Film 1K
R8	7191A-000	Carbon Film 1.5K
R16	7191A-000	Carbon Film 1.5K
R9	7215A-000	Carbon Film 18K
R10	7196A-000	Carbon Film 2.2K
R25	7196A-000	Carbon Film 2.2K
R11	7217A-000	Carbon Film 330K
R34	7203A-000	Carbon Film 330K
R36	7203A-000	Carbon Film 330K
R13	7199A-000	Carbon Film 27K
R29	7199A-000	Carbon Film 27K
R14	7216A-000	Carbon Film 22K
R15	7194A-000	Carbon Film 22
R18	7201A-000	Carbon Film 3.3K
R20	7186A-000	Carbon Film 120
R23	7183A-000	Carbon Film 10K
R27	7183A-000	Carbon Film 10K
R30	7188A-000	Carbon Film 12K
R31	7207A-000	Carbon Film 470
R33	7181A-000	Carbon Film 100
R38	7178A-000	Carbon Film 120
		General
	7098A-000	Housing—3 Pin
	7101A-000	Contacts
	9259A-000	Base Post—6 Pin
	7104A-000	Wrapping Pin

FREQUENCY AND TIMER BOARD

Schematic Symbol	NuTone Part No.	Description
	7003A-000	Frequency and Timer P.C. Board Assembly Complete
		Integrated Circuits
IC201	7245A-000	Digital Display—LC7250
IC202	7246A-000	1/100 Divider—M54459L
IC203	7241A-000	Voltage Regulator—LA5700
		Crystal
X201	7247A-000	Crystal Clock 4MHz
		Diodes
D201	7284A-000	Display—1401193
D202	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D203	7038A-000	Silicon—IN4148 or BA317 or 1S2473

Schematic Symbol	NuTone Part No.	Description
		Diodes
D204	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D205	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D206	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D208	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D209	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D210	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D207	7255A-000	Zener—UZ-6.2BH or RD-6.8EB1
		Coils
L201	7256A-000	Micro Inductor
L202	7256A-000	Micro Inductor
		Variable Resistors
VR201	7254A-000	10K
VR202	7254A-000	10K
VR203	7254A-000	10K
		Transistors
Q201	7037A-000	Display Driver—2SC945P or 2SC828R
Q202	7037A-000	Switching—2SC945P or 2SC828R
Q203	7026A-000	FM Counter Amplifier—2SC1674 (L) or 2SC1359
		Capacitors
TC201	7257A-000	Trimmer
C201	7133A-000	Ceramic YB .001uf
C202	7133A-000	Ceramic YB .001uf
C204	7133A-000	Ceramic YB .001uf
C217	7133A-000	Ceramic YB .001uf
C218	7133A-000	Ceramic YB .001uf
C205	7108A-000	Ceramic Z .022uf
C207	7108A-000	Ceramic Z .022uf
C212	7108A-000	Ceramic Z .022uf
C216	7108A-000	Ceramic Z .022uf
C219	7108A-000	Ceramic Z .022uf
C206	7135A-000	Ceramic Z .01uf
C209	7147A-000	Ceramic NPO 27pf
C214	7150A-000	Ceramic SL 47pf
C220	7159A-000	Ceramic NPO 9pf
C203	7145A-000	Electrolytic 220uf 16V
C208	7146A-000	Electrolytic 1000uf 10V
C211	7148A-000	Electrolytic 3.3uf 50V
C213	7149A-000	Electrolytic .22uf 50V
C215	7150A-000	Electrolytic 470uf 16V
		Resistors
R201	7196A-000	Carbon Film 2.2K

Schematic Symbol	NuTone Part No.	Description
Resistors		
R202	7196A-000	Carbon Film 2.2K
R203	7196A-000	Carbon Film 2.2K
R204	7196A-000	Carbon Film 2.2K
R205	7196A-000	Carbon Film 2.2K
R206	7196A-000	Carbon Film 2.2K
R207	7196A-000	Carbon Film 2.2K
R208	7196A-000	Carbon Film 2.2K
R210	7196A-000	Carbon Film 2.2K
R211	7196A-000	Carbon Film 2.2K
R212	7196A-000	Carbon Film 2.2K
R213	7196A-000	Carbon Film 2.2K
R214	7196A-000	Carbon Film 2.2K
R215	7196A-000	Carbon Film 2.2K
R216	7196A-000	Carbon Film 2.2K
R217	7196A-000	Carbon Film 2.2K
R218	7196A-000	Carbon Film 2.2K
R219	7196A-000	Carbon Film 2.2K
R220	7196A-000	Carbon Film 2.2K
R221	7196A-000	Carbon Film 2.2K
R222	7196A-000	Carbon Film 2.2K
R223	7196A-000	Carbon Film 2.2K
R224	7196A-000	Carbon Film 2.2K
R225	7196A-000	Carbon Film 2.2K
R209	7182A-000	Carbon Film 1K
R226	7182A-000	Carbon Film 1K
R227	7209A-000	Carbon Film 47K
R228	7188A-000	Carbon Film 12K
R229	7207A-000	Carbon Film 470
R230	7211A-000	Carbon Film 5.6K
R231	7211A-000	Carbon Film 5.6K
R232	7192A-000	Carbon Film 1.8K
R233	7197A-000	Carbon Film 22K
R234	7193A-000	Carbon Film 180K
R235	7221A-000	Carbon Film 820
R236	7186A-000	Carbon Film 120
R237	7200A-000	Carbon Film 330
R238	7191A-000	Carbon Film 1.5K
General		
	7258A-000	Housing—2 Pin
	7101A-000	Contact
	7099A-000	Base Post—3 Pin
	7259A-000	Base Post—6 Pin

SWITCH BOARD

Schematic Symbol	NuTone Part No.	Description
	7005A-000	Switch P.C. Board Assembly Complete
Switches		
S301	7260A-000	Remote Speaker
S302	7260A-000	Remote Speaker
S303	7260A-000	Remote Speaker

Schematic Symbol	NuTone Part No.	Description
Switches		
S304	7260A-000	Remote Speaker
S305	7260A-000	Remote Speaker
S306	7260A-000	Remote Speaker
S307	7260A-000	Remote Speaker
S308	7260A-000	Remote Speaker
S309	7260A-000	Remote Speaker
S310	7260A-000	Master Speaker
S311	7260A-000	Function
S312	7261A-000	Clock-Frequency
S313	7262A-000	Minute
S314	7262A-000	Hour
S315	7262A-000	Time Set
Transformer and Coils		
T301	7263A-000	Intercom Input
L301	7264A-000	Relay (Hand Free)
L302	7264A-000	Relay (Intercom)
L303	7264A-000	Relay (Intercom)
L304	7072A-000	Bead Core
Jacks		
J301	7076A-000	Phono
J302	7076A-000	Tape
J303	7076A-000	Line Out
Diodes		
D301	7265A-000	LED (AM)—LN242RPH
D302	7265A-000	LED (FM)—LN242RPH
D303	7265A-000	LED (PHONO)—LN242RPH
D304	7265A-000	LED (TAPE)—LN242RPH
D305	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D306	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D307	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D308	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D309	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D310	7038A-000	Silicon—IN4148 or BA317 or 1S2473
D311	7038A-000	Silicon—IN4148 or BA317 or 1S2473
Transistors		
Q301	7266A-000	Switching—2SA564R
Q302	7267A-000	Intercom Pre-Amp—2SC1844(E), (F) or 2SC2634(S), (T)
Q303	7234A-000	Radio Signal Buffer—2SC1844(E), (F) or 2SC2634(S), (T)

Schematic Symbol	NuTone Part No.	Description
		Transistors
Q304	7037A-000	Relay Driver—2SC945P or 2SC828R
Q305	7037A-000	Line-Out Pre-Amp—2SC945P or 2SC828R
Q340	7037A-000	Chime Pre-Amp—2SC945P or 2SC828R
Q341	7037A-000	Chime Buffer—2SC945P or 2SC828R
		Variable Resistors
VR301	7268A-000	I-COM. Volume
VR302	7269A-000	Tone 20K
		Capacitors
C301	7152A-000	Ceramic SL33pf
D304	7133A-000	Ceramic YB .001uf
C308	7133A-000	Ceramic YB .001uf
C312	7133A-000	Ceramic YB .001uf
C344	7133A-000	Ceramic YB .001uf
C345	7133A-000	Ceramic YB .001uf
C310	7127A-000	Ceramic M .033uf
C340	7127A-000	Ceramic M .033uf
C341	7127A-000	Ceramic M .033uf
C314	7155A-000	Ceramic M .01uf
C316	7157A-000	Ceramic M .0082uf
C317	7114A-000	Ceramic YB 330pf
C302	7125A-000	Electrolytic 1uf 50V
C306	7125A-000	Electrolytic 1uf 50V
C307	7125A-000	Electrolytic 1uf 50V
C343	7125A-000	Electrolytic 1uf 50V
C303	7145A-000	Electrolytic 220uf 16V
C342	7145A-000	Electrolytic 220uf 16V
C305	7138A-000	Electrolytic 47uf 16V
C309	7153A-000	Electrolytic 47uf 50V
C311	7153A-000	Electrolytic 47uf 50V
C313	7154A-000	Electrolytic 47uf 50V
C315	7156A-000	Electrolytic 47uf 16V
		Resistors
R301	7212A-000	Carbon Film 560K
R302	7212A-000	Carbon Film 560K
R315	7212A-000	Carbon Film 560K
R303	7187A-000	Carbon Film 1.2K
R305	7187A-000	Carbon Film 1.2K
R304	7191A-000	Carbon Film 1.5K
R306	7196A-000	Carbon Film 2.2K
R313	7196A-000	Carbon Film 2.2K
R344	7196A-000	Carbon Film 2.2K
R307	7182A-000	Carbon Film 1K
R319	7182A-000	Carbon Film 1K
R308	7185A-000	Carbon Film 1MEG
R342	7185A-000	Carbon Film 1MEG
R309	7200A-000	Carbon Film 330
R318	7200A-000	Carbon Film 330
R331	7200A-000	Carbon Film 330
R340	7200A-000	Carbon Film 330
R310	7201A-000	Carbon Film 3.3K
R320	7201A-000	Carbon Film 3.3K

Schematic Symbol	NuTone Part No.	Description
		Resistors
R311	7207A-000	Carbon Film 470
R312	7203A-000	Carbon Film 330K
R343	7203A-000	Carbon Film 330K
R314	7211A-000	Carbon Film 5.6K
R341	7211A-000	Carbon Film 5.6K
R316	7208A-000	Carbon Film 4.7K
R317	7208A-000	Carbon Film 4.7K
R321	7186A-000	Carbon Film 12
R322	7186A-000	Carbon Film 12
R323	7186A-000	Carbon Film 12
R324	7186A-000	Carbon Film 12
R325	7186A-000	Carbon Film 12
R326	7186A-000	Carbon Film 12
R327	7186A-000	Carbon Film 12
R328	7186A-000	Carbon Film 12
R329	7186A-000	Carbon Film 12
R330	7186A-000	Carbon Film 12
R345	7195A-000	Carbon Film 220
R346	7181A-000	Carbon Film 100
R347	7190A-000	Carbon Film 15
		General
	7270A-000	Housing—9 Pin
	7101A-000	Contacts
	7271A-000	Housing—7 Pin
	7101A-000	Contacts
	7272A-000	Connector—4 Pin
	7273A-000	Connector—9 Pin
	7103A-000	Cable Tie
	6993A-000	Spacer—LED

POWER LED BOARD

	7004A-000	Power LED Board Assembly Complete
D501	7274A-000	Power LED
		LED Spacer

TERMINAL BOARD

	7312A-000	Terminal Board Assembly Complete
	7314A-000	Wiring Terminal
	7315A-000	Earth Lug
D401— D409	7316A-000	Isolation—IN4148 or BA317 or 1S2473
	7317A-000	4-Pin Base Post
	7318A-000	9-Pin Base Post
	7319A-000	Connector Pin

Schematic Symbol	NuTone Part No.	Description
		Miscellaneous
	35410-000	Front Panel (IM-3003T)
	35411-000	Front Panel (IM-3003M)
	35531-000	Front Panel (IM-3003L)
	35412-000	Door (IM-3003T)
	35413-000	Door (IM-3003M)
	35532-000	Door (IM-3003L)
	35415-000	Inlay (IM-3003T)
	35417-000	Inlay (IM-3003M)
	35529-000	Inlay (IM-3003L)
	35414-000	Inlay (IM-3003T)
	35416-000	Inlay (IM-3003M)
	35530-000	Inlay (IM-3003L)
	6984A-000	Knob-Tuning
	6982A-000	Timer Window
	6983A-000	Control Insert Label
	6964A-000	Knob-Volume
	6966A-000	Pushbutton
	6967A-000	Pushbutton
	6988A-000	Timer Button
	6965A-000	Slide Knob
	49259-000	Rating Label
	7013A-000	Speaker—5" 25 OHM Voice Coil
	31986-000	Hanger Strap
	31987-000	"S" Hook
B1	6990A-000	Bracket—Tuner P.C. Board
B2	6976A-000	Volume Knob Guide (A)
B3	6991A-000	Volume Knob Guide (C)
L1	7082A-000	Screw—HEX. HD. M2.6 x 14
L2	7276A-000	Screw—PAN HD. M2.6 x 5
L3	7275A-000	Screw—PAN HD. Taptite, M3 x 6
L4	7084A-000	Screw—PAN HD. Taptite, M3 x 8
L8	7275A-000	Screw—PAN HD. Taptite, M3 x 6
L10	7086A-000	Screw—PAN HD. Taptite, M3 x 8
L11	7086A-000	Screw—PAN HD. Taptite, M3 x 8
L12	7086A-000	Screw—PAN HD. Taptite, M3 x 8
L14	7091A-000	Screw—PAN HD. Taptite, M3.5 x 4
L16	7087A-000	Screw—RD. WASHER HD. Taptite, M4 x 10
L17	7087A-000	Screw—RD. WASHER HD. Taptite, M4 x 10
L18	7277A-000	Earth Lug 4.2 x 17
	7320A-000	Hardware Bag Assembly Complete
	7305A-000	Hinge
	7306A-000	Hinge Bracket
	7307A-000	Side Bracket
	7308A-000	Tapping Screw M4 x 14
	7309A-000	Screw M3 5 x 20
	7310A-000	Tapping Screw M3 5 x 10
	7311A-000	Tapping Screw M3 5 x 10

Model IR-103 Rough-In Frame

Schematic Symbol	NuTone Part No.	Description
	42967-000	Frame Assembly
	35513-000	Housing — Transformer
	08525-910	Transformer (Reference: Model 105N)
	43012-000	FM Antenna Assembly Complete
	49313-000	Antenna Instruction Sheet
	43045-000	Plastic Bag Assembly
	43046-000	Cover Assembly Transformer
	52789-000	Screw #6 x 3/8 COMB. PH/SLT. OVAL "25"
	48627-000	Instruction Sheet

Model IC-301 Inside Remote Control

Schematic Symbol	NuTone Part No.	Description
	35479-000	Remote Control Panel
	42929-000	P.C. Board Assembly
R2	33082-271	Resistor—Film 1/4W. 270
R3	33082-332	Resistor—Film 1/4W. 3.3K
R4	33082-102	Resistor—Film 1/4W. 1K
C1, C2	35091-109	Capacitor 47 MFD. 16V
R1	34059-000	Potentiometer—Volume Control
SW1, SW2, SW3	34698-000	Switch — Momentary
	32558-W46	Wire Assembly — Blue
	39872-000	Terminal
	39403-000	Terminal
D1	36549-000	Diode — Rectifier
	L2607-000	Screw #8 x 3/8 PH. PAN. HD. "25" (terminal board mounting)
	35474-000	Knob — Switch
	35478-000	Knob — Volume Control
	42899-000	Bag Assembly
	52872-000	Screw #8 x 2" PH. FILL. HD. "A"
	49269-000	Instruction Sheet

Model IC-301W Outdoor Remote Control

Schematic Symbol	NuTone Part No.	Description
	35479-000	Remote Control Panel
	35497-000	Rain Shield
	31967-000	Cable Clamp
	42929-000	P.C. Board Assembly Complete
R2	33082-271	Resistor—Film 1/4W. 270
R3	33082-332	Resistor—Film 1/4W. 3.3K
R4	33082-102	Resistor—Film 1/4W. 1K
C1, C2	35091-109	Capacitor 47 MFD. 16V
R1	34059-000	Potentiometer—Volume Control
SW1, SW2, SW3	34698-000	Switch—Momentary
	32558-W46	Wire Assembly—Blue
	39872-000	Terminal
	39403-000	Terminal
D1	36549-000	Diode—Rectifier
	L2607-000	Screw #8 x 3/8 PH. PAN. HD. "25" (terminal board mounting)
	35474-000	Knob—Switch
	35478-000	Knob—Volume Control
	42966-000	Envelope Assembly
	66731-039	Screw #8 x 3/4 PH. FILL. HD. "25" (mounting screws—light finish)
	35351-000	Gasket
	39890-000	Surface Mount Bezel
	49036-000	Instruction Sheet

Model IS-304 Portable Alarm Clock Speaker

Schematic Symbol	NuTone Part No.	Description
	43055-000	Speaker Panel Assembly Complete
	35544-000	Speaker Panel—Desk Top
	35547-000	Panel Insert
	35551-000	Pushbutton—Snooze

Schematic Symbol	NuTone Part No.	Description
	35521-000	Pushbutton—Time Setting
	36133-000	Speaker
	L2607-000	Screw #8 x 3/8 PH. PAN. HD. "25" (speaker mounting)
	42989-000	P.C. Board (Snooze) Assembly Complete
	34683-000	Switch—Pushbutton
	42729-102	Ribbon Wire Assembly—2 CRKT.
	L2607-000	Screw #8 x 3/8 PH. PAN. HD. "25" (P.C. Board [snooze] mounting screws)
	42990-000	P.C. Board Assembly Complete
D1 thru D9	36549-000	Diode—Rectifier
R2	33082-271	Resistor—Film 1/4W. 270
R4	33082-102	Resistor—Film 1/4W. 1K
R5	33082-560	Resistor—Film 1/4W. 56
R6	33082-221	Resistor—Film 1/4W. 220
R7, R12, R3	33082-332	Resistor—Film 1/4W. 3.3K
R8	33082-154	Resistor—Film 1/4W. 150K
R9, R11	33082-104	Resistor—Film 1/4W. 100K
R10	33082-682	Resistor—Film 1/4W. 6.8K
AA1	32742-000	Jumper Wire (.500)
C1, C2	35091-109	Capacitor—Electrolytic 47uf
C3, C4, C5	35091-123	Capacitor—Electrolytic 330uf
C6, C7	35100-166	Capacitor—Ceramic .01uf
Q1, Q2	36606-000	Transistor—PNP
Z1	36677-000	Integrated Circuit—Trigger
R1	34101-000	Potentiometer—Volume Control
K1	39337-000	Relay
T1	30615-000	Transformer—P.C. Mount
SW1, SW2, SW3	34698-000	Switch—Momentary
SW4, SW5, SW6, SW7	34686-000	Switch—Pushbutton
SW8, SW9	34699-000	Slide Switch
	39897-103	Right Angle Post Header Assembly
	32558-W46	Wire Assembly—Blue
	39872-000	Terminal
	39403-000	Terminal
	32558-W4	Wire Assembly
	39872-000	Terminal
	42991-000	Connector & Cable Assembly
	39717-000	Receptacle—Pin Housing
	42996-000	Cable Assembly
	32780-000	Cable
	39677-000	Terminal—Pin
	39719-000	Strain Relief
	39718-000	Grommet
	52787-015	Screw #6 x 3/8 PH. PAN. HD. "B"
	36774-000	Clock Module
	35526-000	Tinnerman Clip
	L2607-015	Screw #8 x 3/8 PH. PAN. HD. "25" (clock module mounting screws)
	31851-000	Cable Clamp
	35525-000	Speaker Base
	39395-000	Screw #8 x 15/32 PH. PAN. HD. "25" (base mounting screws)
	39680-000	Foot Bumper
	35553-000	Inlay—Nameplate
	35523-000	Inlay—Plain
	35511-000	Knob—Slide Potentiometer
	35552-000	Knob—3 Position Switch
	35473-000	Knob—Switch
	49346-000	Instruction Sheet

Model IS-304P Portable Alarm
Clock Speaker with Telephone

Schematic Symbol	NuTone Part No.	Description
	43056-000	Speaker Panel Assembly Complete
	35545-000	Speaker Panel—Desk Top
	35547-000	Panel Insert
	35551-000	Pushbutton—Snooze
	35521-000	Pushbutton—Time Setting
	36133-000	Speaker
	L2607-000	Screw #8 x 3/8 PH. PAN. HD. "25" (speaker mounting screws)
	42989-000	P.C. Board Assembly Complete (Snooze)
	34683-000	Switch—Pushbutton
	42729-102	Ribbon Wire Assembly—2 CRKT.
	L2607-015	Screw #8 x 3/8 PH. PAN. HD. "25" (P.C. Board [Snooze] mounting screws)
	42990-000	P.C. Board Assembly Complete
D1 thru D9	36549-000	Diode—Rectifier
R2	33082-271	Resistor—Film 1/4W. 270
R4	33082-102	Resistor—Film 1/4W. 1K
R5	33082-560	Resistor—Film 1/4W. 56
R6	33082-221	Resistor—Film 1/4W. 220
R7, R12, R3	33082-332	Resistor—Film 1/4W. 3.3K
R8	33082-154	Resistor—Film 1/4W. 150K
R9, R11	33082-104	Resistor—Film 1/4W. 100K
R10	33082-682	Resistor—Film 1/4W. 6.8K
AA1	32742-000	Jumper Wire (.500)
C1, C2	35091-109	Capacitor—Electrolytic 47uf
C3, C4, C5	35091-123	Capacitor—Electrolytic 330uf
C6, C7	35100-166	Capacitor—Ceramic .01uf
Q1, Q2	36606-000	Transistor—PNP
Z1	36677-000	Integrated Circuit—Trigger
R1	34101-000	Potentiometer—Volume Control
K1	39337-000	Relay
T1	30615-000	Transformer—P.C. Mount
SW1, SW2, SW3	34698-000	Switch—Momentary
SW4, SW5, SW6, SW7	34683-000	Switch—Pushbutton
SW8, SW9	34699-000	Slide Switch
	39897-103	Right Angle Post Header Assembly
	32558-W46	Wire Assembly—Blue
	39872-000	Terminal
	39403-000	Terminal
	32558-W4	Wire Assembly—Blue
	39872-000	Terminal
	42991-000	Connector & Cable Assembly
	39717-000	Receptacle—Pin Housing
	42996-000	Cable Assembly
	32780-000	Cable
	39677-000	Terminal—Pin
	39719-000	Strain Relief
	39718-000	Grommet
	52787-000	Screw #6 x 3/8 PH. PAN. HD. "B"
	36774-000	Clock Module
	35526-000	Tinnerman Clip
	L2607-015	Screw #8 x 3/8 PH. PAN. HD. "25" (clock module mounting screws)
	31851-000	Cable Clamp
	35528-000	Speaker Base
	35507-000	Phone Jack

Schematic Symbol	NuTone Part No.	Description
	39395-000	Screw #8 x 15/32 PH. PAN. HD. "25" (base mounting screws)
	39680-000	Foot Bumper
	35553-000	Inlay—Nameplate
	35523-000	Inlay—Plain
	35511-000	Knob—Slide Pot
	35552-000	Knob—3 Position Switch
	35473-000	Knob—Switch
	49349-000	Directory Card
	35500-000	Telephone Handset
	49350-000	Instruction Sheet

Model IS-305 5″ Inside Speaker

Schematic Symbol	NuTone Part No.	Description
	35467-000	Remote Speaker Panel
	35494-000	Remote Speaker Panel
	36090-000	Speaker—5″
	L2607-000	Screw #8 x 3/8 PH. PAN. HD. "25" (speaker mounting)
	42929-000	P.C. Board Assembly Complete
R2	33082-271	Resistor—Film 1/4W. 270
R3	33082-332	Resistor—Film 1/4W. 3.3K
R4	33082-102	Resistor—Film 1/4W. 1K
C1, C2	35091-109	Capacitor 47 MFD. 16V
D1	36549-000	Diode—Rectifier
R1	34059-000	Potentiometer—Volume Control
SW1, SW2, SW3	34698-000	Switch—Momentary
	32558-W46	Wire Assembly—Blue
	39872-000	Terminal
	39403-000	Terminal
	L2607-000	Screw #8 x 3/8 PH. PAN. HD. "25" (terminal board mounting)
	35473-000	Knob—Switch
	35474-000	Knob—Switch
	35475-000	Knob—Volume Control
	35478-000	Knob—Volume Control
	42930-000	Envelope Assembly (dark finish)
	42931-000	Envelope Assembly (light finish)
	52872-068	Screw #8 x 2″ PH. FILL. HD. "A" (mounting screws—dark finish)
	52872-039	Screw #8 x 2″ PH. FILL. HD. "A" (mounting screws—light finish)
	49249-000	Instruction Sheet

Model IS-306 5″ Portable Speaker

Schematic Symbol	NuTone Part No.	Description
	43057-000	Speaker Panel Assembly Complete
	35544-000	Speaker Panel — Desk Top
	35546-000	Panel Insert
	36133-000	Speaker
	L2607-000	Screw #8 x 3/8 PH. PAN. HD. "25" (speaker mounting)
	42979-000	P.C. Board Assembly Complete
R2	33082-271	Resistor — Film 1/4W. 270
R3	33082-332	Resistor — Film 1/4W. 3.3K
R4	33082-102	Resistor — Film 1/4W. 1K
D1	36549-000	Diode — Rectifier
C1, C2	35091-109	Capacitor 47 MFD. 16V
R1	34100-000	Potentiometer — Volume Control
SW1, SW2, SW3	34698-000	Switch — Momentary
	32558-W46	Wire Assembly — Blue
	39872-000	Terminal
	39403-000	Terminal
AA1	32742-000	Jumper Wire (.500)
	42320-000	Connector & Cable Assembly Complete
	L2607-000	Screw #8 x 3/8 PH. PAN. HD. "25" (terminal board mounting)
	31851-000	Cable Clamp
	35473-000	Knob — Switch
	35511-000	Knob — Volume Control
	35512-000	Inlay — Nameplate
	35510-000	Speaker Base
	39680-000	Foot Bumper
	39395-000	Screw #8 x 15/32 PH. PAN. HD. "25" (base mounting screws)
	49327-000	Instruction Sheet

Model IS-308 8″ Inside Speaker

Schematic Symbol	NuTone Part No.	Description
	35471-000	Remote Speaker Panel
	35472-000	Remote Speaker Panel
	36089-000	Speaker — 8″
	L2607-000	Screw #8 x 3/8 PH. PAN. HD. "25" (speaker mounting)
	42929-000	P.C. Board Assembly Complete
R2	33082-271	Resistor — Film 1/4W. 270
R3	33082-332	Resistor — Film 1/4W. 3.3K
R4	33082-102	Resistor — Film 1/4W. 1K
C1, C2	35091-109	Capacitor 47 MFD. 16V
D1	36549-000	Diode — Rectifier
R1	34059-000	Potentiometer — Volume Control
SW1, SW2, SW3	34698-000	Switch — Momentary
	32558-W46	Wire Assembly — Blue
	39872-000	Terminal
	39403-000	Terminal
	L2607-000	Screw #8 x 3/8 PH. PAN. HD. "25" (terminal board mounting)
	35473-000	Knob — Switch

Schematic Symbol	NuTone Part No.	Description
	35474-000	Knob — Switch
	35475-000	Knob — Volume Control
	35478-000	Knob — Volume Control
	42932-000	Envelope Assembly (dark finish)
	42933-000	Envelope Assembly (light finish)
	39941-068	Screw #8 x 2-1/2 PH. FILL. HD. "A" (mounting screws — dark finish)
	39941-039	Screw #8 x 2-1/2 PH. FILL. HD. "A" (mounting screws — light finish)
	49251-000	Instruction Sheet

Model IS-309 5″ Patio Speaker

Schematic Symbol	NuTone Part No.	Description
	35495-000	Remote Speaker Panel
	36108-000	Speaker — 5″ (Weatherproof)
	L2607-000	Screw #8 x 3/8 PH. PAN. HD. "25" (speaker mounting screws)
	35497-000	Rain Shield
	31967-000	Cable Clamp
	42929-000	P.C. Board Assembly Complete (humi-sealed)
	37799-000	P.C. Board
R2	33082-271	Resistor — Film 1/4W. 270
R3	33082-332	Resistor — Film 1/4W. 3.3K
R4	33082-102	Resistor — Film 1/4W. 1K
C1, C2	35091-109	Capacitor 47 MFD. 16V
R1	34059-000	Potentiometer — Volume Control
SW1, SW2, SW3	34698-000	Switch — Momentary
	32558-W46	Wire Assembly — Blue
	39872-000	Terminal
	39403-000	Terminal
D1	36549-000	Diode — Rectifier
	L2607-000	Screw #8 x 3/8 PH. PAN. HD. "25" (terminal board mounting)
	35474-000	Knob — Switch
	35478-000	Knob — Volume Control
	35496-000	Surface Mount Frame
	42961-000	Envelope Assembly
	52872-039	Screw #8 x 2″ PH. FILL. HD. "25" (surface frame mounting)
	52807-015	Screw #6 - 32 x 1-1/4″ PH. OV. HD. (speaker mounting)
	35491-000	Gasket
	49277-000	Instruction Sheet