NuTone

INSTALLATION INSTRUCTIONS

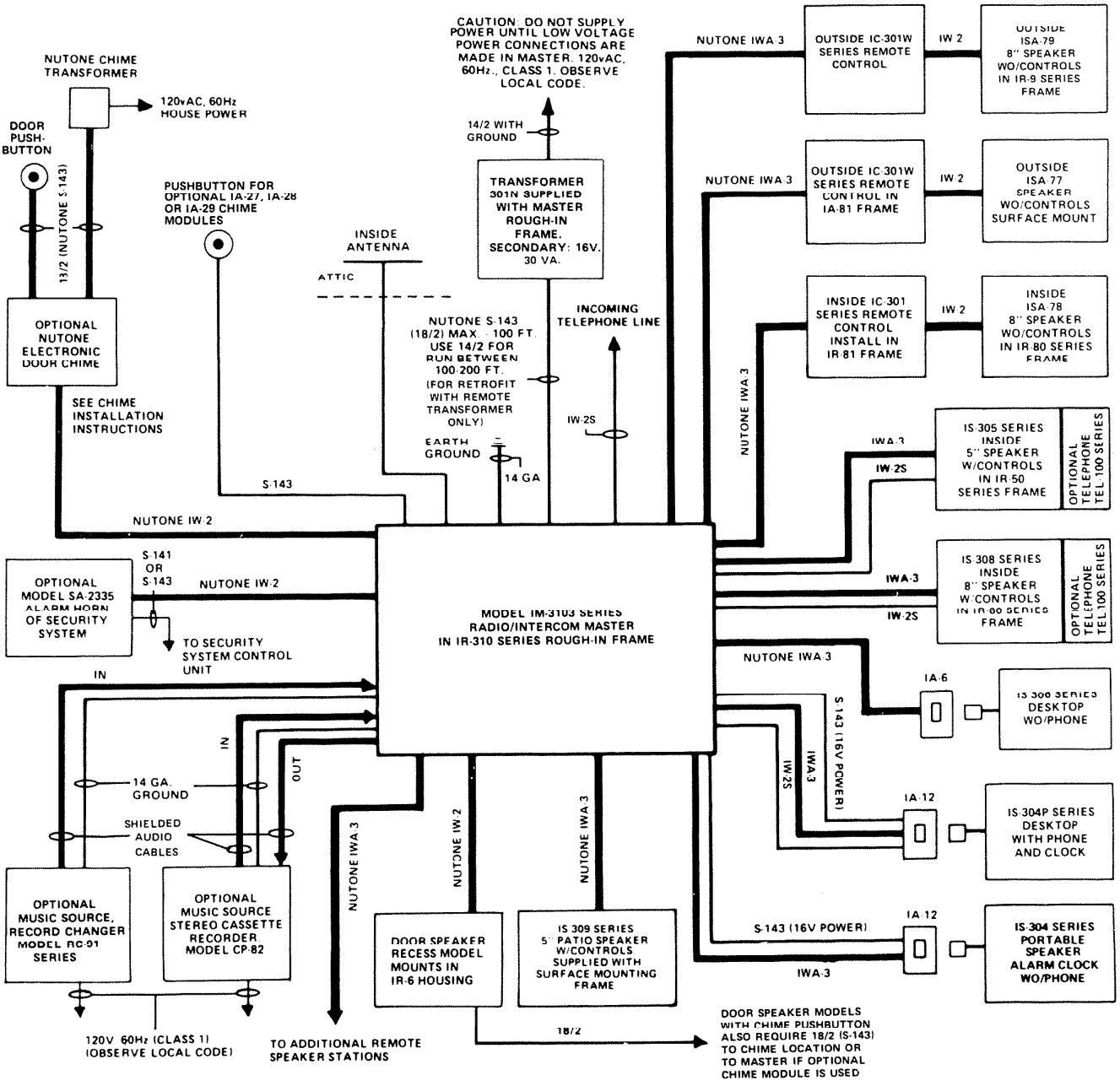
Radio-Intercom System

MODEL IM-3103 SERIES MASTER STATION

This booklet contains information for installing the IM-3103 Series master station. All system wiring and rough-in frames should be installed before mounting and wiring the master station.

Refer to the installation instructions packaged with the Model IR-310 Series rough-in frame for detailed wiring information. For more detailed information on wiring and mounting other system components (i.e., speakers, remote controls, etc.), refer to the installation instructions packaged with each separate component.

REPRESENTATIVE WIRING ILLUSTRATION



WIRING INSTALLATION GUIDELINES

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.

IMPORTANT: NuTone cannot be responsible for improper radio-intercom operation that results from interference generated by light dimmers, fluorescent lighting fixtures, and similar 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.

MAXIMUM NUMBER OF SPEAKEF

The IM-3103 Series Radio Intercom system will accommodate up to 13 speakers. **If more than 9 speakers are connected, use only terminals 1, 2, 6, 7 for double wiring connections.**

If more than two clock speakers (Models IS-304 and IS-304P) are used in an average system, use a separate Model 105N transformer to supply power to the clock speakers. **No more than six clock speakers may be powered by one separate transformer.**

MOUNTING THE TERMINAL BOARD

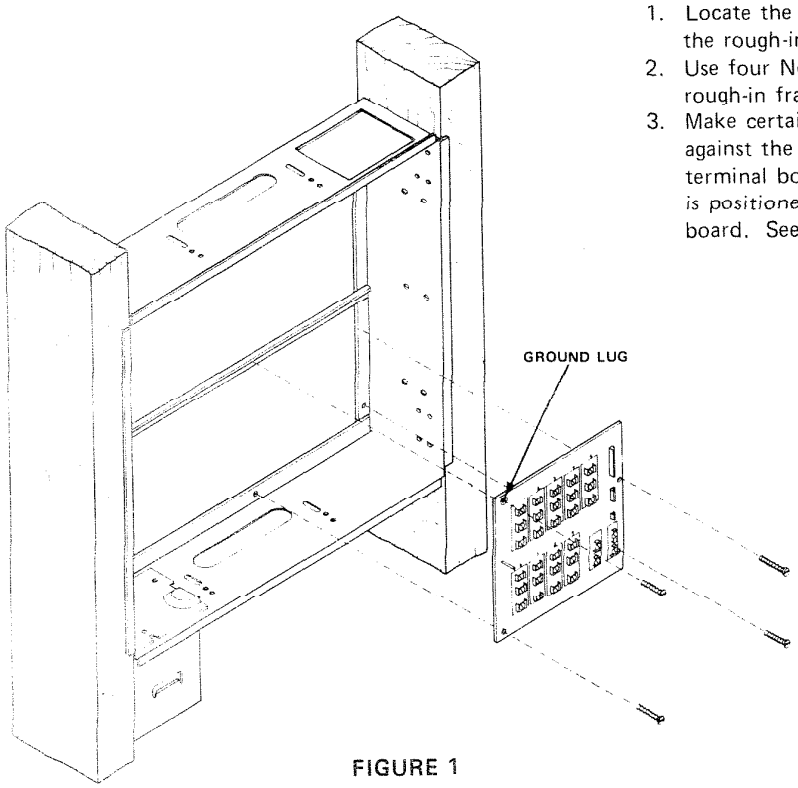


FIGURE 1

1. Locate the terminal board in the bottom right 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.

WIRING CONNECTIONS

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

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

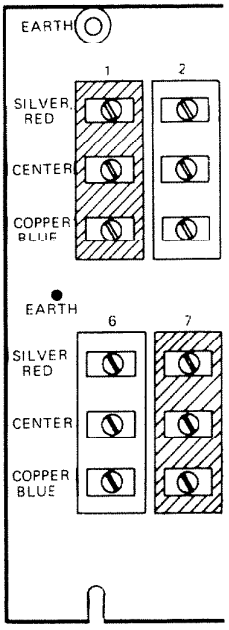


FIGURE 2

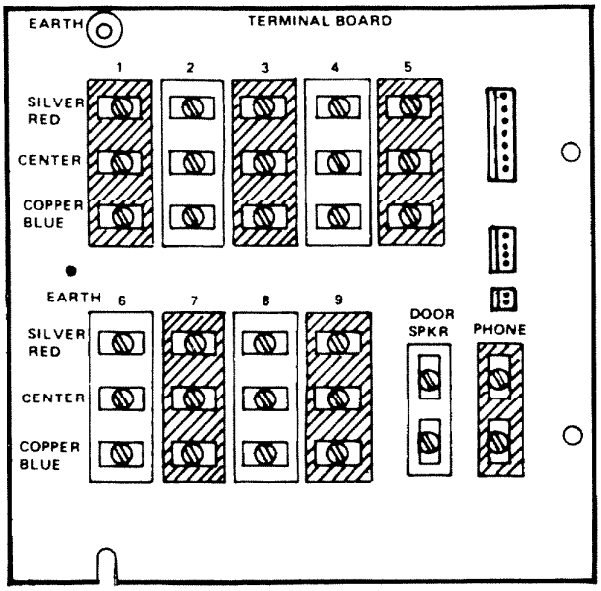


FIGURE 3

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 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 Figures 3 and 4. **The IM-3103 Series Radio Intercom system will accommodate 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.
5. If more than two clock speakers (Models IS-304 and IS-304P) are used in an average system, use a separate Model 105N transformer to supply power to the clock speakers. **No more than six clock speakers may be powered by one separate transformer.**

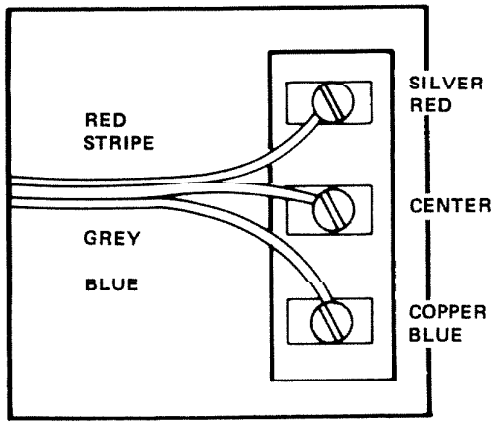


FIGURE 4

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 5.

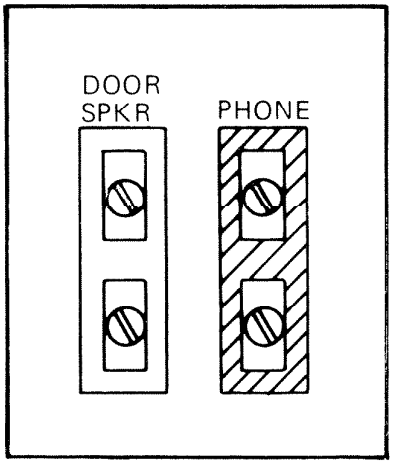


FIGURE 5

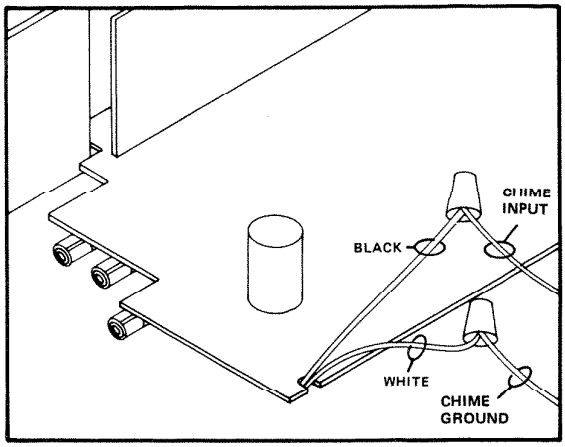


FIGURE 6

CONNECTING OPTIONAL ELECTRONIC CHIME AND SECURITY ALARM (EXTERNAL MODELS ONLY)

1. Connect two-conductor (IW-2 twisted pair) wires from electronic chime to the black and white wires shown in Figure 6.
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 7.
4. See Installation Instructions packaged with the alarm horn for complete wiring details.

NOTE: Optional Chime Modules (IA-27, IA-28, IA-29) which plug into master, may be used instead of external electronic chime units. Refer to installation instructions packaged with these modules for wiring details.

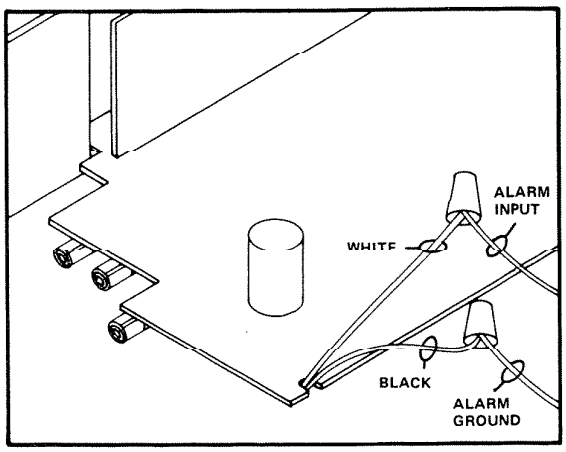


FIGURE 7

CONNECTING PHONE WIRING

1. The IM-3103 Series Radio Intercom master unit has a built-in telephone and telephone answering machine. For this purpose, NuTone IW-2S two-conductor **insulated** cable (shielded twisted pair) must be run from the incoming phone lines to the master unit location. See Figure 8. **(Use only specified wire.)**
2. Connect phone wires and any optional remote phone wiring to two terminal screws marked **PHONE** on the master panel's terminal board. See Figure 8.
3. 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. See Figure 8.
4. See Figure 9 for remote speaker phone wiring.
5. For complete installation and wiring information for remote speaker with phone and cradle, see Installation Instructions provided with Model TEL-100 Series Intercom Telephones.

PHONE CONNECTIONS AT MASTER STATION

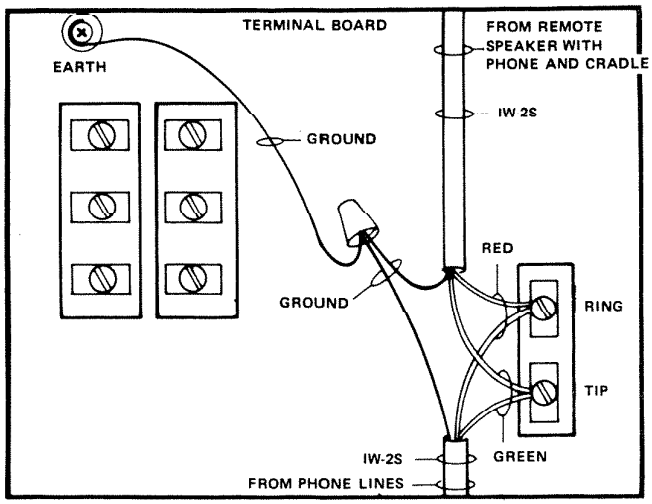


FIGURE 8

REMOTE SPEAKER TERMINAL BOARD

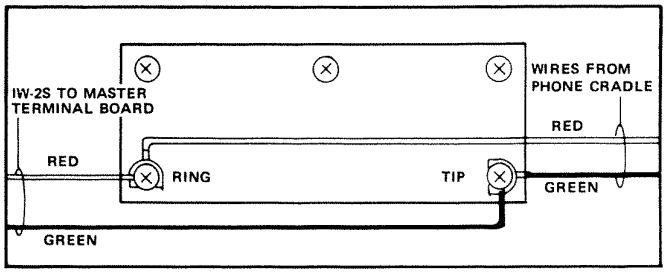


FIGURE 9

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 12.
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 12.
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 13.
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 14.
6. Attach support strap to rough-in by placing hook into hole in rear flange of rough-in frame. See Figure 15.
7. Use two No. 6 x 3/8" screws to attach each mounting bracket to rough-in frame. **Make sure all four brackets are flush to wall or rough-in.** See Figure 15.
8. Connect ground wire lug to pin marked EARTH on terminal board.
9. Place antenna plug onto two pins on tuner board. See Figure 15.

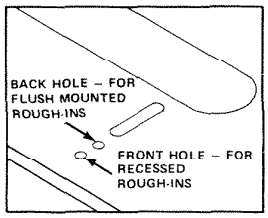


FIGURE 12

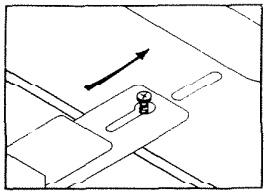


FIGURE 13

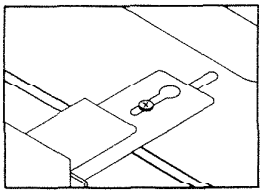


FIGURE 14

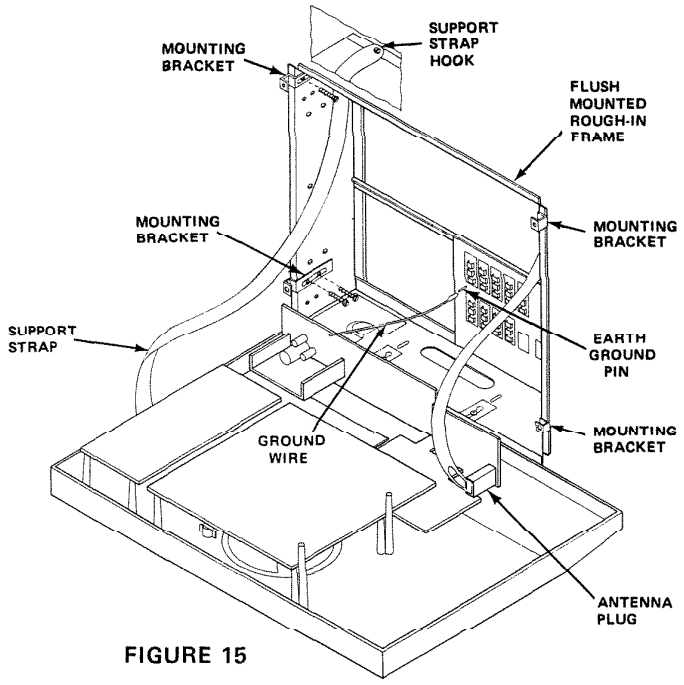


FIGURE 15

CONNECTING MASTER PANEL TO TERMINAL BOARD

1. Connect the 4-pin ribbon cable from the master panel to the 4-pin connector on the terminal board. See Figure 16.
2. Connect the 9-pin ribbon cable from the master panel to the 9-pin connector on the terminal board. See Figure 16.
3. Connect the 2-pin ribbon cable from the master panel to the 2-pin connector on the terminal board. See Figure 16.

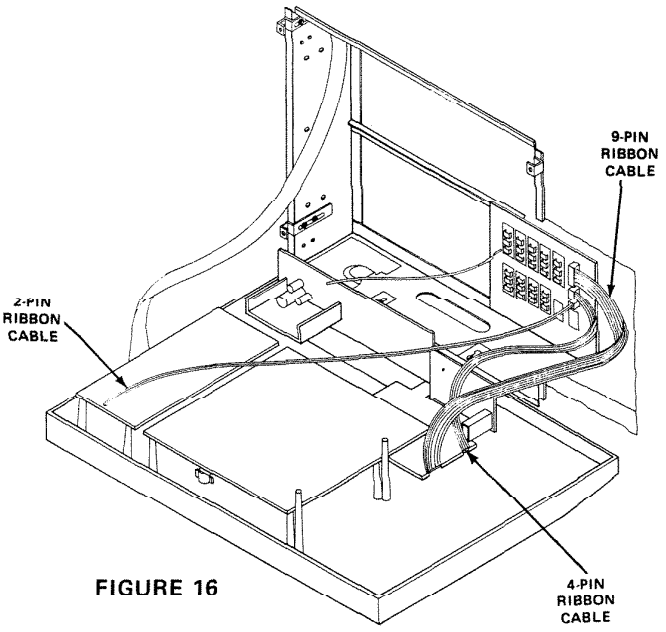


FIGURE 16

TRANSFORMER WIRING CONNECTIONS

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 17.
3. Dress wires through raised section of transformer box cover and secure box cover with two screws. See Figure 17.
4. Connect power ground as shown in Figure 17.

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

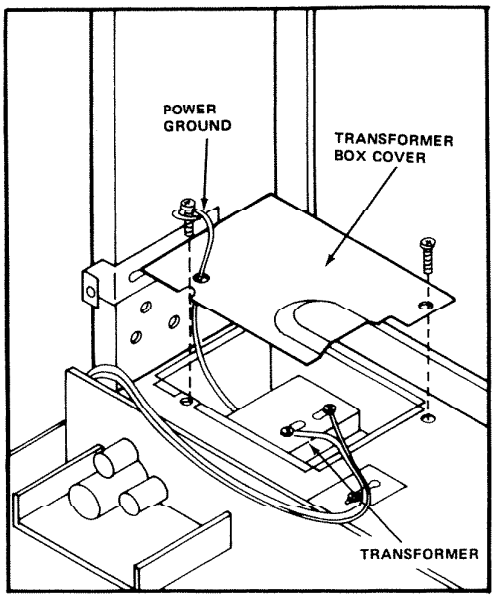


FIGURE 17

CONNECTING OPTIONAL ACCESSORIES

1. To connect an optional NuTone Record Changer (Model RC-91 Series) or Stereo Cassette Player/Recorder, locate the **PHONO INPUT, TAPE INPUT,** and **RECORD OUTPUT** jacks on the master panel. See Figure 18.
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 18.
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 18.
4. To use the radio as a program source for recording on the separate cassette player, insert the tape player's input plug into the master panel's **RECORD OUTPUT** jack. See Figure 18.
5. **OPTIONAL HOOK-UP TO PROVIDE RADIO ONLY:** The radio and optional entertainment sources can be channelled through an auxiliary amplifier to provide 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 IM-516 or 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 external Cassette Player/Recorder's recording capability.

   NOTE: Stereo accessories require a "Y" adaptor for connection of left and right channels. The adaptor is not supplied by NuTone. See accessory installation instructions for details.

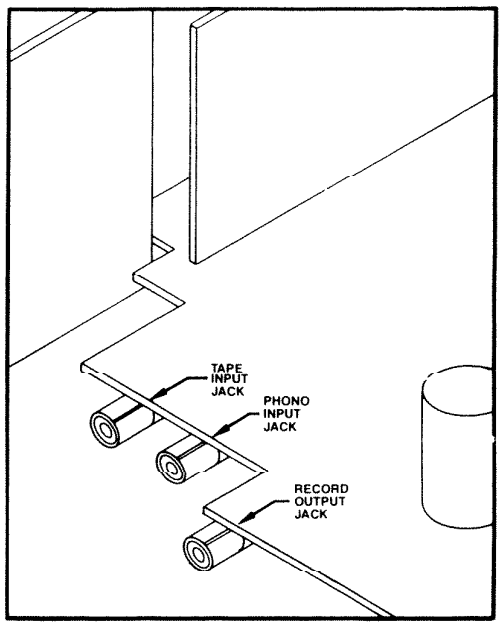


FIGURE 18

SYSTEM OPERATING CONTROLS

RADIO AND PROGRAM CONTROLS

POWER ON/OFF PUSHBUTTON – Press the **POWER** button to the **ON** (⊥) position to supply power to 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 play a program source. When **POWER** button is in the **OFF** (⊥) position, the chime and intercom are still operative.

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.

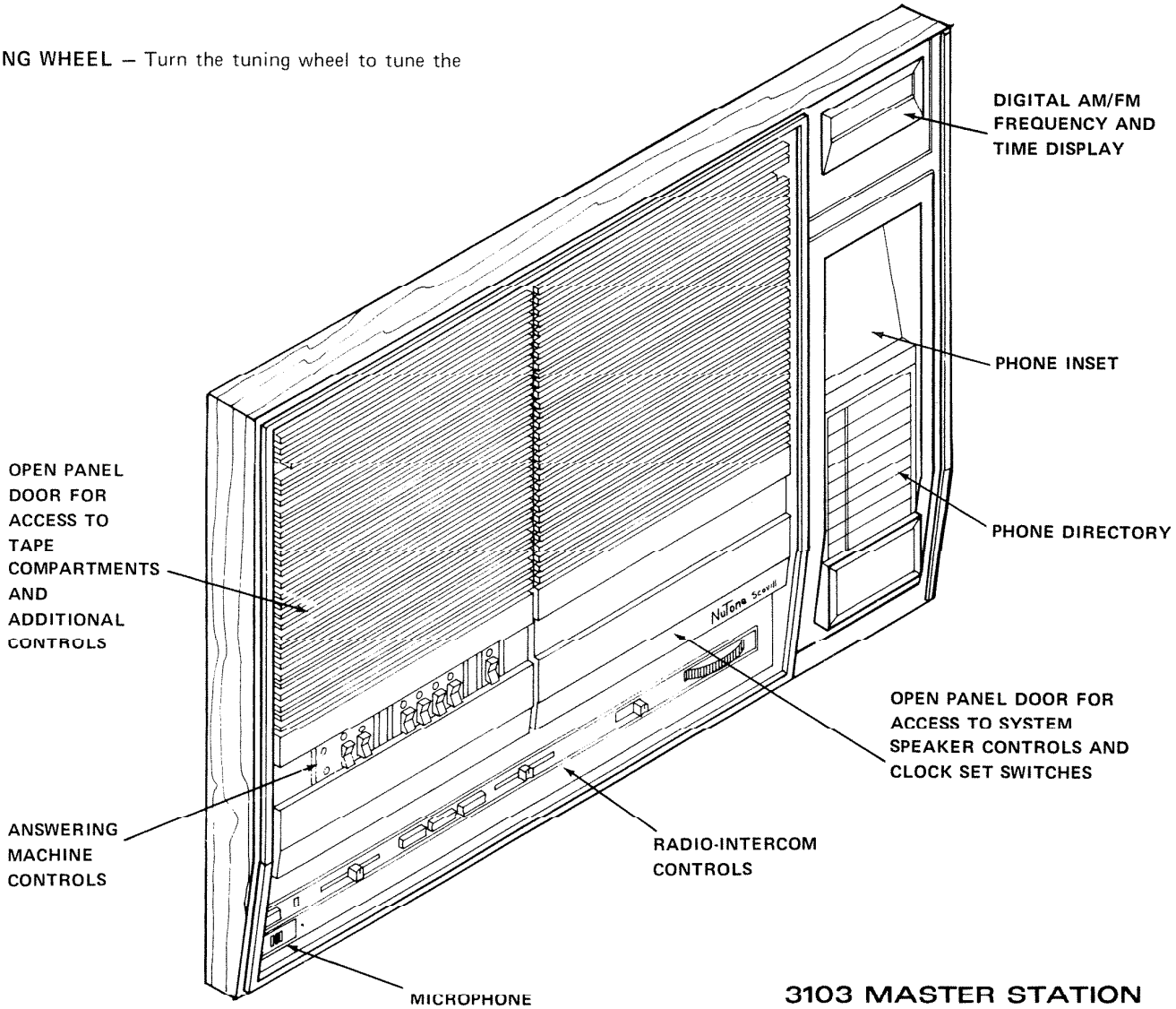
TIME/FREQUENCY SWITCH – Use this switch to set the function of the digital display. When tuning the radio, set the switch to the **FREQUENCY** position and the digital display will show you the radio frequencies as you tune the radio.

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's 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.



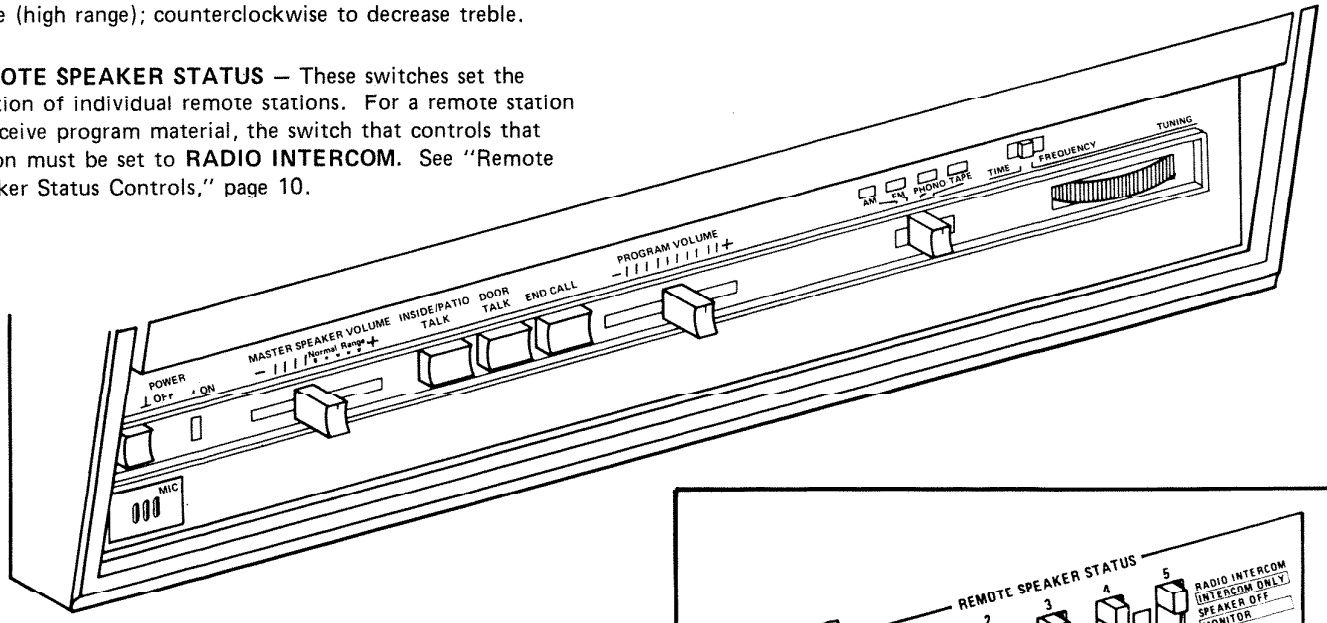
3103 MASTER STATION

SYSTEM OPERATING CONTROLS (Continued)

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 10.

3103 CONTROL PANEL



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.

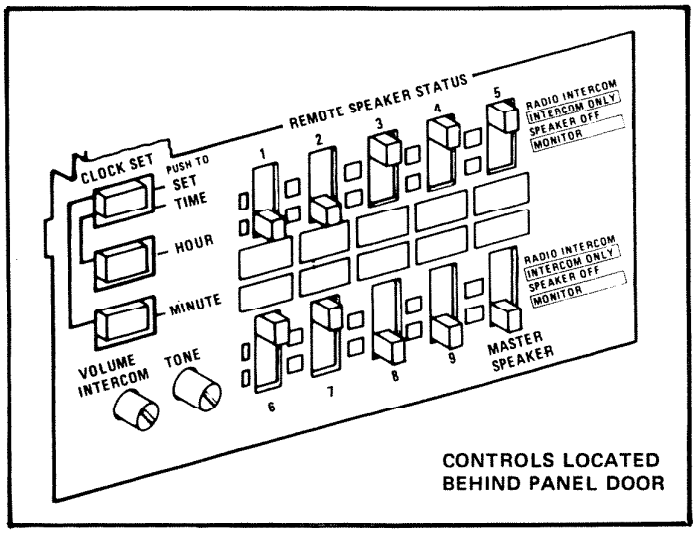
DOOR TALK – Press this button to make a call to the door speaker. To hear a reply, release the button. The call and reply will be heard at all stations.

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.

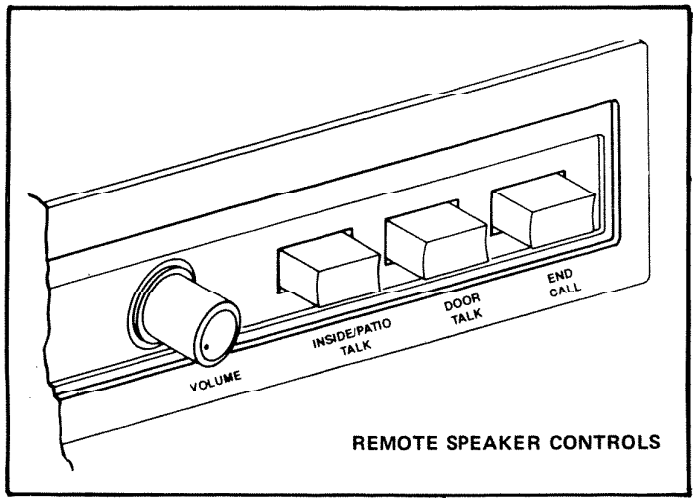
END CALL TIMEOUT – You can end a call and return the system to the program source in two ways:

(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.



CONTROLS LOCATED BEHIND PANEL DOOR



REMOTE SPEAKER CONTROLS

SYSTEM OPERATING CONTROLS(Continued)

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 the Digital Clock

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

SPEAKER STATUS SWITCHES

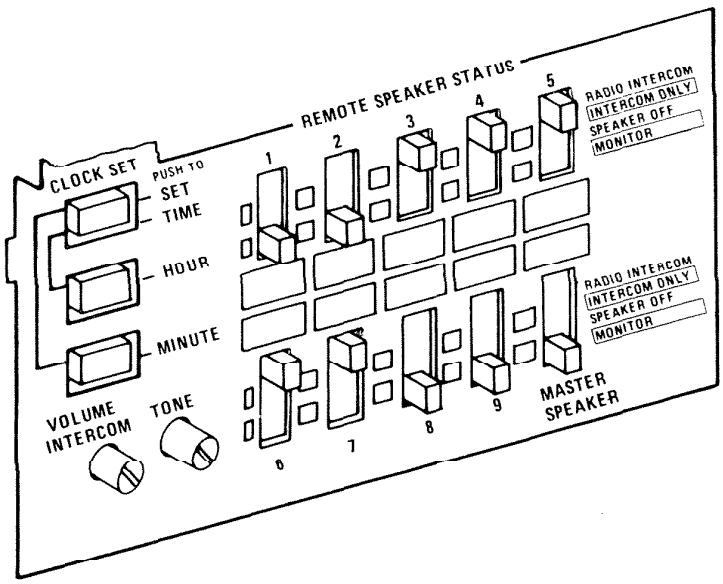
The **REMOTE SPEAKER STATUS** switches set the operating mode of each speaker in the intercom system. The master station's operating mode is also controlled by a status switch. Locate these switches behind the master station's panel door.

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.

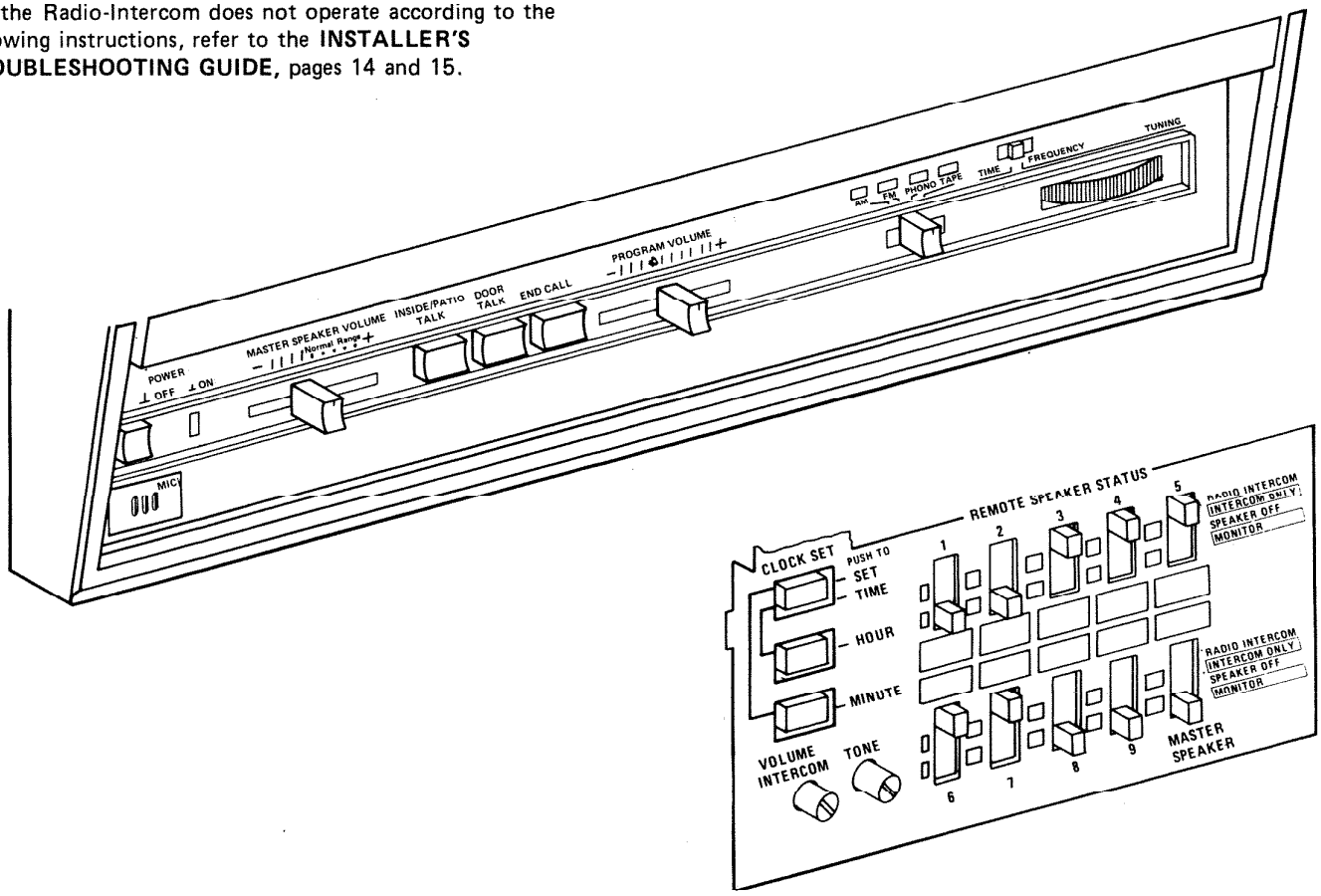
Now, one at a time, set a **REMOTE SPEAKER STATUS** switch to **RADIO INTERCOM** and locate the speaker by sound. Write the speaker's location on its label. Repeat the procedure until you locate and label every speaker in your system.

REMOTE SPEAKER STATUS



OPERATIONAL CHECKOUT

If the Radio-Intercom does not operate according to the owing instructions, refer to the **INSTALLER'S TROUBLESHOOTING GUIDE,** pages 14 and 15.



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 stations'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 stations's **PROGRAM SELECT** switch to **AM** or **FM.** Tune in a radio station with a strong, clear signal.
7. Adjust the master stations'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 stations's **VOLUME** control to the volume level you desire. Do not set the remote stations's volume controls below the **NORMAL RANGE** setting.

INTERCOM CONTROLS

1. Make intercom calls from the master and all remote stations. See "System Operating Controls," pages 8 and 9.
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** control as required.

See the Model IM-3103 Series Operator's Manual for a more detailed explanation of the Radio Intercom system's operation.

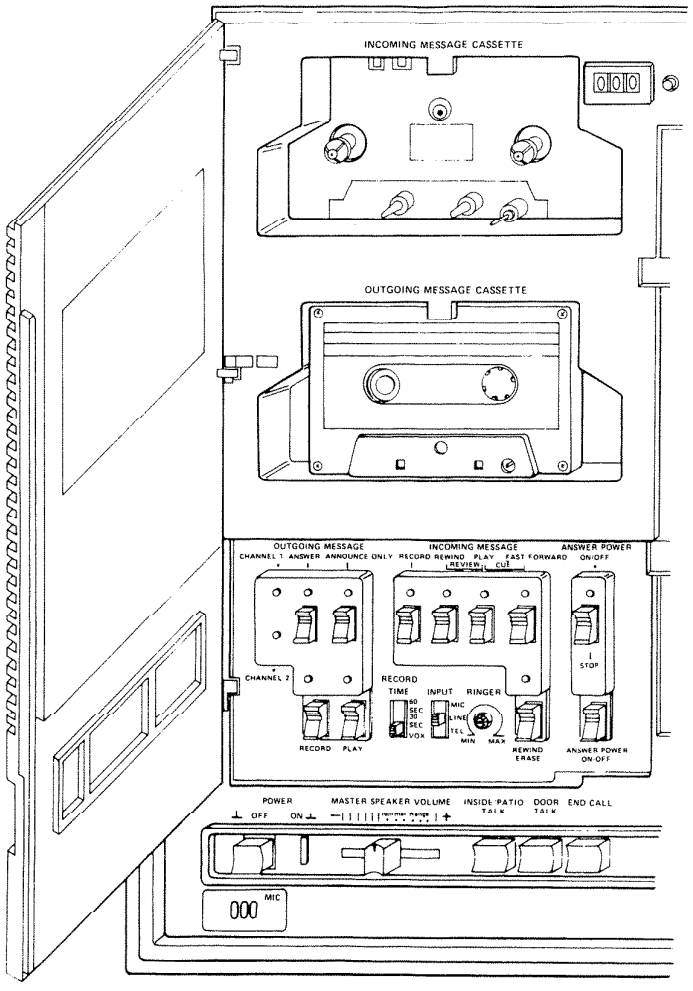
ANSWERING MACHINE OPERATING CONTROLS

ANSWER POWER ON/OFF – Press this button to supply power to the answering machine. (The answering machine is powered independently of the radio-intercom. Unless you want to monitor a conversation or play a tape, the answering machine will operate without the radio-intercom being turned on.)

RINGER CONTROL – Adjust this control to set the number of phone ring signals that will activate the answering machine. The setting range is as follows: MIN – approximately 2 rings; MAX – approximately 9 rings.

INPUT SWITCH – Use this switch to select the input source for recording: MIC (microphone), LINE (AM, FM, Phono, Tape), and TEL (Telephone).

RECORD TIME SWITCH – Use this switch to set the record time for the incoming message tape: 60 SECONDS, 30 SECONDS, VOX (voice-activated).



OUTGOING MESSAGE CONTROLS

RECORD – Press this button to record a message on the outgoing message tape. Both the RECORD and PLAY indicator lights will illuminate.

PLAY – Press this button to play the outgoing message tape. The PLAY indicator light will illuminate.

ANSWER – Press this button to set the answering machine in the ANSWER mode, preparing the machine to answer the telephone with your recorded message. (The ANSWER message must be recorded on Channel 1.) The ANSWER indicator light will illuminate.

ANNOUNCE ONLY – Press this button to set the answering machine to play the ANNOUNCE ONLY ("Tape Full") message. (The ANNOUNCE ONLY message must be recorded on Channel 2.) The ANNOUNCE ONLY indicator light will illuminate.

INCOMING MESSAGE CONTROLS

STOP – You must press this button to stop both the incoming and outgoing tape drives between all operations – i.e., Rewind–Stop–Play or Answer–Stop–Announce Only.

RECORD – Press this button to record onto the incoming message tape or onto any other cassette. Both the RECORD and PLAY indicator lights will illuminate.

REWIND – Press this button to rewind the incoming message tape drive at high speed. The REWIND indicator light will illuminate.

PLAY – Press this button to play the incoming message tape drive. (To hear the tape over the intercom, the master panel's program select switch must be set to TAPE.) The PLAY indicator light will illuminate.

FAST FORWARD – Pressing this button advances the incoming message tape drive at high speed. The FAST FORWARD indicator light will illuminate.

REWIND ERASE – Use this button to erase the incoming message tape while it rewinds at high speed. The following indicator lights will illuminate: REWIND ERASE, REWIND, PLAY.

REVIEW – Press the REWIND and PLAY buttons at the same time. The REVIEW function rewinds and plays the incoming message tape at high speed, allowing you to search for the beginnings and endings of messages on the tape.

CUE – Press the PLAY and FAST FORWARD buttons at the same time. The CUE function advances and plays the incoming message tape at high speed, allowing you to stop the tape at the end of the last recorded message.

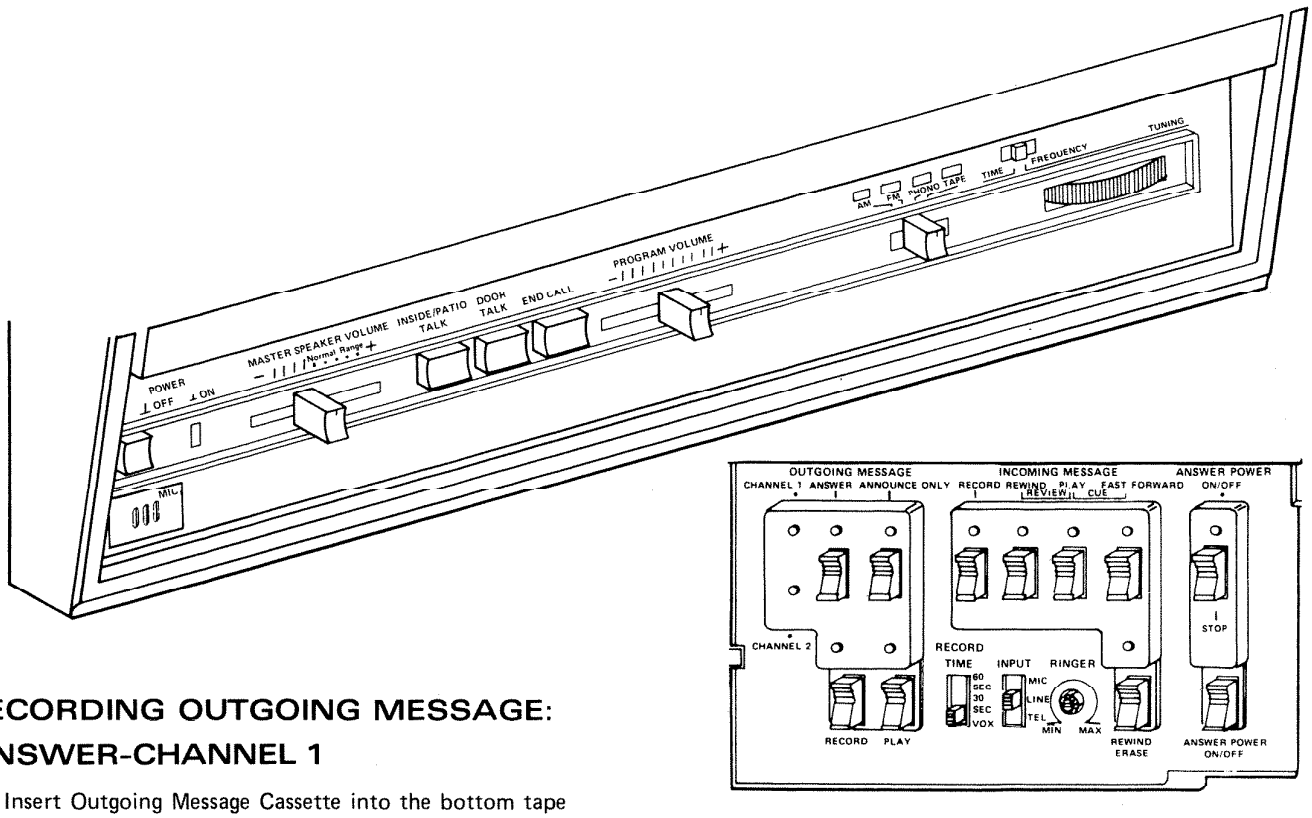
TAPE DRIVES AND TAPE COUNTER

OUTGOING MESSAGE – The bottom tape compartment is used for the endless loop Outgoing Message Cassette.

INCOMING MESSAGE – The top compartment is used for the Incoming Message Cassette.

TAPE COUNTER – Use the tape counter to keep track of the Incoming Message tape.

OPERATIONAL CHECKOUT



RECORDING OUTGOING MESSAGE: ANSWER-CHANNEL 1

Insert Outgoing Message Cassette into the bottom tape compartment.

2. Supply power to answering machine by pressing the ANSWER POWER ON/OFF button. The ANSWER POWER ON/OFF and the CHANNEL 1 indicator lights will illuminate. The answer message must be recorded on Channel 1.
3. Set the INPUT switch to MIC (microphone).
4. Set the radio-intercom's PROGRAM SELECT control to PHONO.
5. Stand at arm's length from microphone for clear recording.
6. Press the outgoing message RECORD button. The outgoing message RECORD and PLAY indicator lights will illuminate. Wait a second or two before speaking.
7. Speaking clearly, record the outgoing answer message. The answer loop is 20 seconds long; accordingly, brief messages will leave several seconds between end of message and the beep tone. Allow the loop to completely play out – do not interrupt loop by pressing the stop button.
8. When the Channel 1 loop winds out, the outgoing message endless loop tape automatically switches to Channel 2, which is used for the ANNOUNCE ONLY ("Tape Full") message.

RECORDING OUTGOING MESSAGE: ANNOUNCE ONLY-CHANNEL 2

1. Check to make sure tha the Channel 2 indicator light is illuminated and that radio-intercom's PROGRAM SELECT control is set to PHONO.
2. The ANNOUNCE ONLY message is used to inform the caller that the incoming message tape is full and that no more incoming messages may be recorded. A typical message might be: "I'm sorry, but my message tape is full and no more messages can be recorded. Please call back later."
3. Press outgoing message RECORD button. Wait a second or two before speaking.
4. Record ANNOUNCE ONLY ("Tape Full") message. Allow loop to play out.

PLAYING BACK OUTGOING MESSAGES

Once you have recorded the outgoing messages, you should play them back to check the recordings.

1. Press the ANSWER ON/OFF button.
2. Set the radio-intercom's PROGRAM SELECT switch to TAPE.
3. Set radio-intercom's MASTER INTERCOM VOLUME and PROGRAM VOLUME controls to midrange.
4. Press the outgoing message PLAY button. Listen to the answer message.
5. Allow answer message (channel 1 loop) to play through completely. Then, the tape drive automatically switches to channel 2.
6. Press outgoing message PLAY button again. Listen to the announce only ("Tape Full") message.
7. If both messages are satisfactorily recorded, proceed to "Preparing the Answer Mode."

PREPARING THE ANSWER MODE

1. Set the RINGER control to MIN. At this setting, the answering machine should be activated on the second or third ring of the telephone.
2. Set the INPUT switch to TEL.
3. Set the RECORD TIME switch to VOX (voice-activated).
4. Depress the ANSWER POWER ON/OFF button. The answer power and channel 1 indicator lights will illuminate.
5. Press the ANSWER button. The channel 1 indicator will extinguish and the ANSWER indicator light will illuminate.
6. Set the radio-intercom PROGRAM SELECT control to TAPE.

CHECKING ANSWERING MACHINE OPERATION

If the phone line is active, check the answering machine's operation with the help of an outside caller. If the phone line is not active, proceed to "Preparing Materials For The Homeowner."

1. Ask a helper to call you from an outside phone.
2. At the second or third ring (with RINGER switch set to MIN), the outgoing message tape will begin to play. The outgoing message PLAY and CHANNEL 1 indicator lights will illuminate and the ANSWER indicator light will begin blinking.
3. You will be able to hear the outgoing message play. When the outgoing message is completed, the beep tone will sound and the incoming message tape begins to record. The outgoing message PLAY indicator light will extinguish and the incoming message PLAY and RECORD indicator lights will illuminate.
4. In the voice-activated mode, six to ten seconds after the caller stops speaking, the incoming message tape stops and the telephone line is automatically disconnected. The PLAY and RECORD indicator lights will extinguish.
5. After the message cycle is completed, the ANSWER indicator light continues to blink off and on to alert the user that the answering machine has received a message.
6. Refer to the Homeowner's Operator's Manual for remote control operation. To test the remote control, the phone line must be active. The remote control requires three triple-A batteries (not supplied).

PLAYING PRE-RECORDED TAPES

1. Insert cassette into incoming message (top) tape compartment.
2. Press ANSWER/POWER ON/OFF button to ON position
3. Set INPUT switch to LINE position.
4. Set intercom program select switch to TAPE.
5. Press incoming message PLAY button.

PREPARING MATERIALS FOR THE HOMEOWNER

1. Erase the incoming message tape by pressing the REWIND ERASE button.
2. Erase the outgoing message tape by pressing the outgoing message RECORD button. Erase both channels of the tape.
3. Place the Homeowner's Manual, the two cassettes, and the remote control in the provided plastic bag and afix the bag to the master panel's switch compartment door.

INSTALLER'S TROUBLESHOOTING 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.

INSTALLER'S TROUBLESHOOTING GUIDE (Continued)

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
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.
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 electrical 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. Faulty 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. Faulty 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. Faulty 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 inopperative.	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. Answering machine is inoperative.	13a. Improper operation.	13a. Carefully review "Operational Checkout." Refer to Homeowner's Operating Manual.
	13b. Incorrect terminal board connections.	13b. Check terminal board connections.

SECURING THE MASTER PANEL

1. Check all wiring connections to make sure they are complete and correct.
2. Check to make sure antenna connection is secure.
3. Dress all wiring away from master unit's speaker to avoid interference with speaker operation.
4. Position master panel over rough-in frame and align screw holes in master panel with mounting brackets.
5. Secure master panel to rough-in mounting brackets with four provided No. 6 x 3/4" screws. See Figure 19.

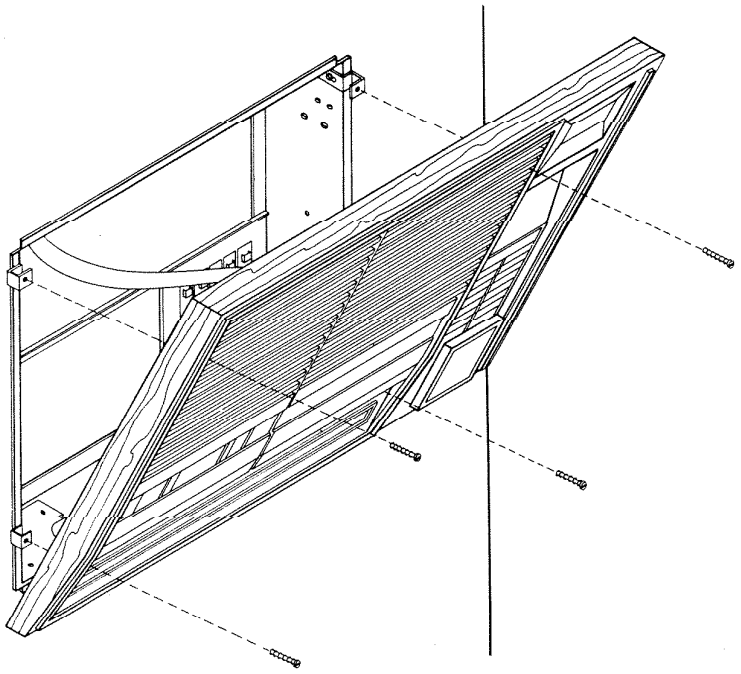


FIGURE 19

INSTALLING THE TELEPHONE

When master panel is in place, insert telephone cord's plug into jack in bottom master panel, directly under the telephone cradle.

If telephone lines are active, check telephone operation.

NOTICE TO INSTALLER

Make sure that the cassettes, the homeowner's manual, and the remote control are placed in the supplied plastic bag. Tie bag with pull string and hang over the panel door for the system intercom controls. Close panel door and make sure bag is secure for homeowner.

Please refer to IM-3103 Series Homeowner's Manual for Warranty Information. If Homeowner's Manual has been misplaced, write to: NuTone, Madison and Red Bank Roads, Cincinnati, Ohio 45227. Attention: Department of National Service.

Product specifications subject to change without notice.

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