

NuTone®

Rough-In Frame

MODEL IR-105

INSTALLATION INSTRUCTIONS READ & SAVE THESE INSTRUCTIONS

Model IR-105 Rough-In Frame is to be used with NuTone Model IM-4406 Series Radio/CD Player/Intercom Master Unit.

This literature also includes information regarding the accessory rough-ins for this Master Unit.

OVERVIEW OF INSTALLATION PROCEDURE

1. Determine the exact location of all components. See "Planning Guide" below. Contact the architect, builder or homeowner for the system plans. Check plans against the "Installation Don'ts" section of these instructions.
2. Mount the rough-in frames for the master unit, remote speakers and/or controls, and optional accessories. Note that all components may not require rough-in frames.
3. Run appropriate wiring to all component locations, including 120vAC power wiring to the master unit rough-in frame's transformers. See "Master Unit Rough-In Frame", page 4.
4. At this point, the rough-in installation is complete. See the installation instructions packaged with the master unit and other units for instructions to complete the final installation of the system.

PLANNING GUIDE

To determine all the components required in the installation, layout the system plans on the building plans or on a sketch of the building.

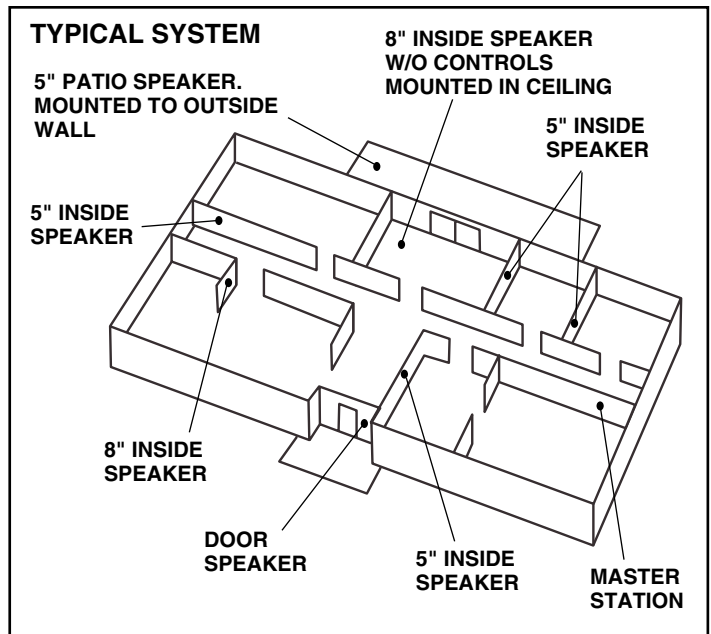
Familiarize yourself with the available components by studying the "Typical System" and "Representative Wiring" illustration.

COMPONENTS

Where will the **master station** be located? How many **inside speakers** will be required? What size inside speakers will be used? Where will the inside speakers be located? How many **outside speakers** will be required? What size speakers will be used? Where will the outside speakers be located? Will **speakers without controls** be used? Where will these speakers be located? Where will their **remote controls** be located? Will the system require the use of **door speakers**? At what doors will these speakers be located? Will **portable speakers** be used? Where will wall receptacles for portable speakers be located? Will an **optional electronic chime** be used? Will an **optional cassette player** be installed?

INSTALLATION DON'TS

1. **INSIDE SPEAKERS** –
 - (A) Don't locate inside speaker stations on exterior walls.
 - (B) Don't place more than one speaker station in a room.
 - (C) Don't locate two speaker stations in a common wall between rooms.
 - (D) Don't place a speaker station so it is facing another station, even if the other speaker station is across a hallway in another room.
 - (E) Don't locate speaker stations where doors or furniture will interfere with the operation of the speaker.
2. **MASTER STATION** – The master station has a built-in speaker with separate controls; therefore, observe the previous precautions when determining a location for the master station.
3. **DOOR SPEAKERS** – Don't mount door speakers with built-in pushbuttons out of normal reach; locate near door and not more than 60" above floor. Door speakers without pushbuttons can be mounted as desired near door (adjacent wall, porch ceiling, or overhang can be used but audio to system will be reduced).
4. **CABLE LENGTHS** – Observe cable limitations.



IM 4406 SYSTEM WIRING AND PRECAUTIONS

CONTENTS OF CARTON

Check (✓) for the following IR-105 carton contents.

- Frame
- Transformer housing
- Transformer bracket
- (2) 801T transformers
- AM/FM antenna
- (4) No. 6x3/8" screws
- Installation instructions

PRECAUTIONS AND GUIDELINES

1. Observe local code requirements.
2. Route all system wiring as far as practical (at least 12") from household power wiring, lamp dimmers, furnace control, etc.
3. All remote station, remote control, volume control and door speaker wiring MUST return directly to rough-in frame.
4. Avoid stapling cables.
5. Be sure the IR-105 frame is properly grounded to an earth ground source.
6. The IM-4406 is designed to be installed with only NuTone specified wire. No other wire should be used. The use of wire other than NuTone will void all NuTone warranties and may result in faulty installation and improper operation.

The 801T transformers contain an internal fuse. THE TRANSFORMER WILL FAIL INSTANTLY IF THE SCREW TERMINALS ARE SHORTED.

WIRING SPECIFICATIONS

Use NuTone IW-6, 3 twisted pair for connecting:

- Remote controls to master
- Remote stations to master

Use NuTone IW-2, 22 ga. twisted pair for connecting:

- Door speakers to master
- Remote controls to speakers
- Speaker volume control (IC901) to master
- Speaker volume control (IC901) to speakers
- Electronic chime audio output to master
- Pushbutton to chime module

Use NuTone S-143, 18 ga. twisted pair for connecting:

- Pushbutton to electronic chime
- Electronic chime to chime transformer
- Door release

Use N^o14/2 power cable with ground, Class 1 UL Listed (Observe local codes) for connecting:

- Transformers to 120v AC

Use shielded audio cable for connecting external audio sources to the master station.

REMOTE STATION WIRING

An individual 6-wire cable (IW-6) must be connected from each remote station or remote control location to the master station's terminal board.

Maximum station wire length: 750 ft.

Maximum total length of IW-6 cable per system: 4,000 ft.

IMPORTANT! NuTone cannot be responsible for improper system operation that results from interference generated by light dimmers, fluorescent lighting fixtures, and similar electrical products. Such interference must be corrected at the source.

TO HELP REDUCE THIS INTERFERENCE, ALL WIRING CONNECTIONS TO THE MASTER MUST BE PLACED AT LEAST 12 INCHES FROM ANY AC POWER WIRING. AVOID RUNNING INTERCOM WIRES PARALLEL TO AC POWER WIRING.

MAXIMUM NUMBER OF REMOTE STATIONS

The master station will accommodate up to 9 connections at the terminal board. These connections can be any combination of remote stations, remote controls or volume controls. It will also accommodate 3 door speaker connections.

NOTE: NEVER connect more than one remote station to a set of screw terminals.

If more than 9 stations are required, use the optional Model N^o IA-440 expansion kit. This will allow an additional 6 connections at the master.

VOLUME CONTROL WIRING

An individual twisted pair (IW-2) must be connected from each volume control location to the master station terminal board.

Maximum wire length: 100 ft. IW-2. (Note: use S-143 18 ga twisted pair wire for lengths up to 250 ft).

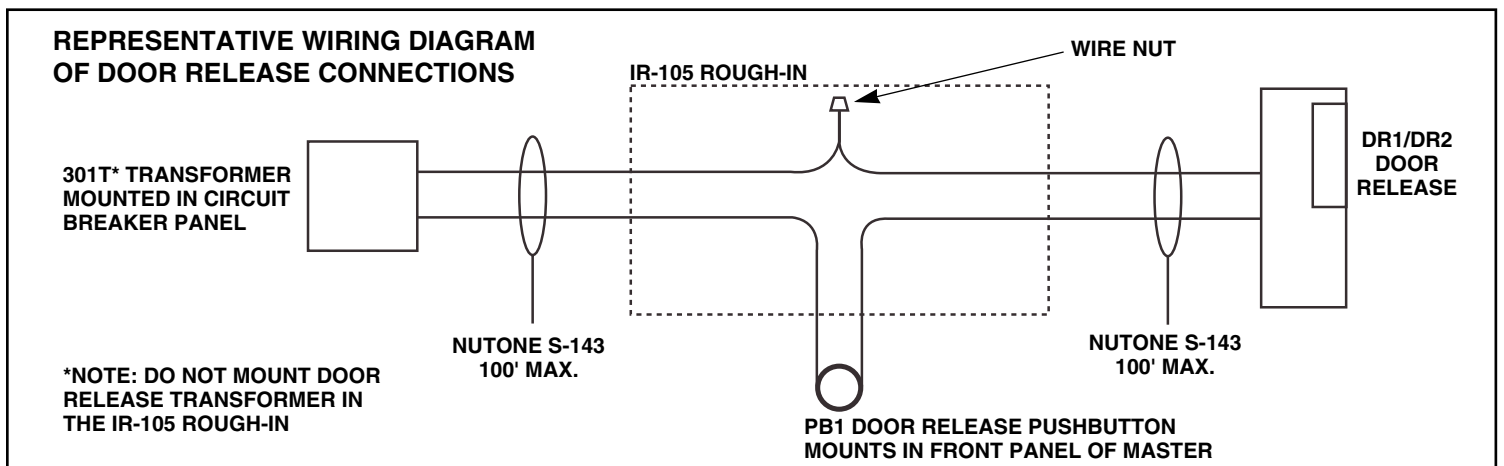
Only ONE NuTone speaker may be connected to each volume control. Each volume control/speaker counts as a remote station. Remember: The maximum remote connections to the Master Station is 9. Adding the optional IA-440 expansion module will increase the system remote capability to 15 stations.

WARNING! NEVER EXCEED A TOTAL OF 15 NUTONE 25 OHM SPEAKERS ON THIS SYSTEM.

WARNING! NEVER USE STANDARD 8 OHM STEREO SPEAKERS ON THIS SYSTEM. USE ONLY NUTONE SPECIFIED SPEAKERS ON THIS MASTER.

IM-4406 REPRESENTATIVE WIRING

IM-4406 MASTER STATION IR-105 ROUGH-IN



MASTER UNIT ROUGH-IN FRAME

MODEL IR-105 FRAME

1. **REQUIREMENTS** – Mounts between 16" center-to-center wall studs, with a minimum wall depth of 3½". Allow at least 4" from edge of frame to adjacent wall or cabinet.
2. Refer to Fig. 1. Position frame only as shown. Install square and level at a convenient operation height (60" above floor to top of frame is normal for most installations).
3. Using screws or nails, mount frame between wall studs, securing through mounting slots in side of frame. Slots are provided to allow frame to be adjusted to fit flush against the finished wall surface.

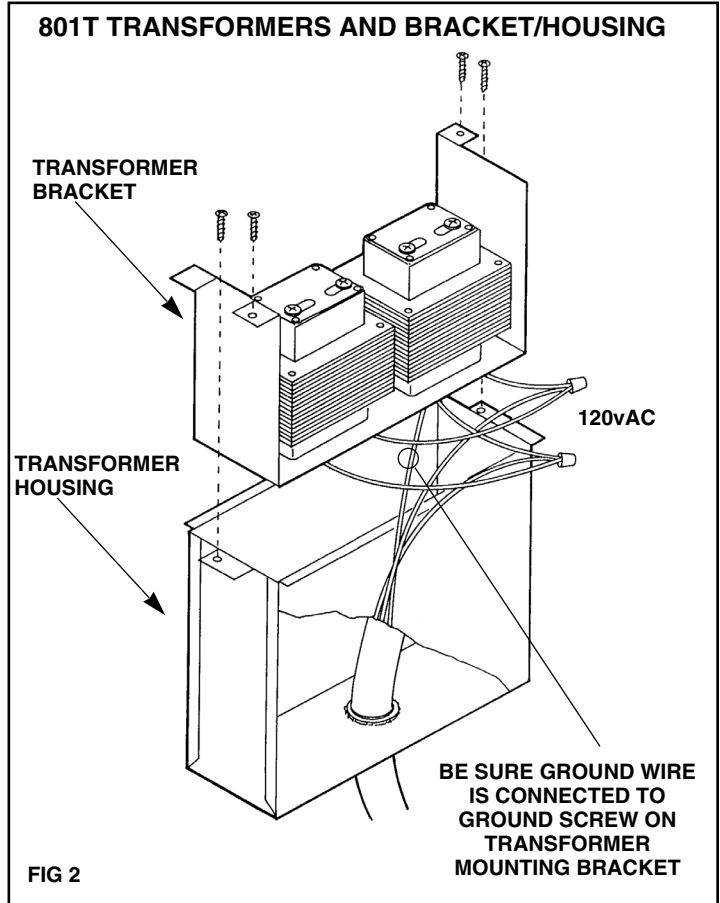
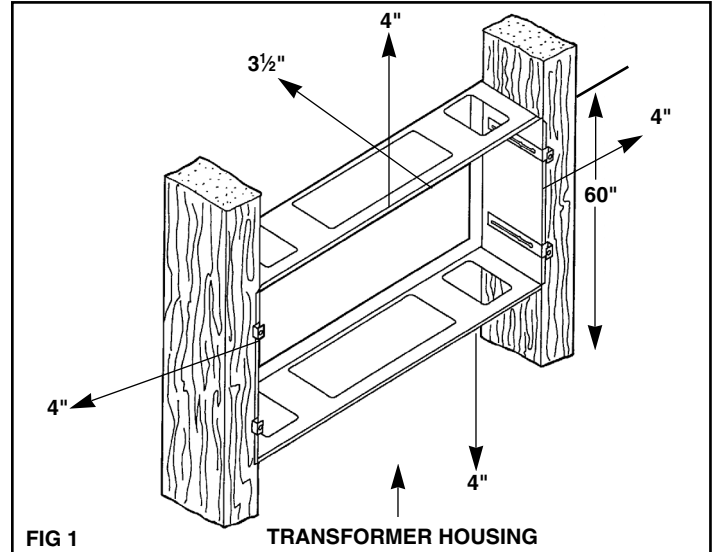
FOR EXISTING WALL CONSTRUCTION – Make wall cutout 14½" wide by 9½" high between wall studs.

TRANSFORMER INSTALLATION

IMPORTANT WARNING!
THE POWER TRANSFORMER CONTAINS
AN INTERNAL FUSE.
DO NOT SHORT THE LOW VOLTAGE
CONNECTING SCREWS OF THE TRANSFORMER
OR THE TRANSFORMER WILL BE DESTROYED!

801T TRANSFORMERS (2 supplied with rough-in)

1. Place transformer housing into IR-104 frame as shown in Fig. 1.
2. Pull 120vAC house wiring through the hole in the bottom of transformer housing and secure with box connectors (not supplied).
3. Refer to Fig. 2. Attach the 801T transformer to the transformer mounting bracket using the clamp/screw or threaded hub/nut on bottom of each transformer. Orient the transformers as shown.
4. Connect transformers' primary leads to 120vAC house wiring as shown in illustration. **Be sure ground wires are connected to transformer brackets.**
5. Place transformers and bracket into the transformer housing being careful not to trap the transformer and house wires between bottom of transformer bracket and top of support tabs on sides of transformer housing.
6. As illustrated, secure transformer box with four screws.



INSTALLING THE ANTENNA

The folded dipole antenna has a 20' lead which may be increased by attaching standard 300 ohm, twin lead (T.V. antenna wire) and should be installed using one of the following methods.

INSTALLATION METHODS

DIMENSIONS

Antenna Span: 60 inches.
Lead Length: 20 feet.

STAPLING

Refer to Figure 3.

Use staples to attach twin lead wire to rafters or joists. Insert the staple lengthwise in the plastic between the wires. **Do not staple across the wires.**

NAILING

Refer to Figure 4.

Nails may be used to attach the twin lead wire to rafters or joists. Place nails in the plastic between the two wires. **Do not nail over or through a wire. Do not wrap the twin-lead wire around a nail.**

Refer to Figure 5.

Nails may be used to attach the plastic center block and the two plastic end caps. Use nail holes provided in these pieces.

ATTIC RAFTER INSTALLATION

1. Refer to Figure 6. Staple antenna to attic rafters horizontally.
2. Refer to Figure 7. Nail a 5 foot piece of scrap board horizontally between rafters to provide a clear span of 60". Nail the center block to the center of the board. Staple antenna leads to board.

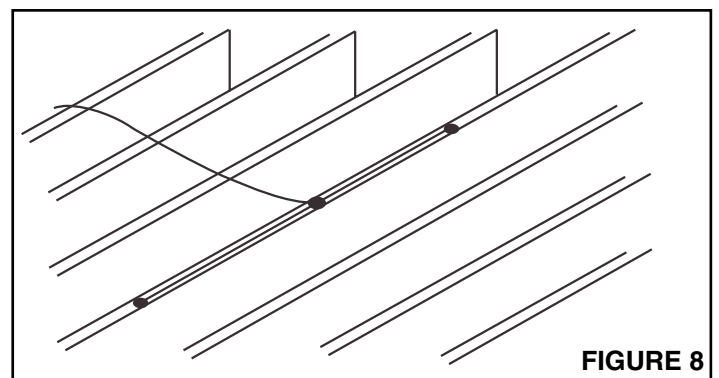
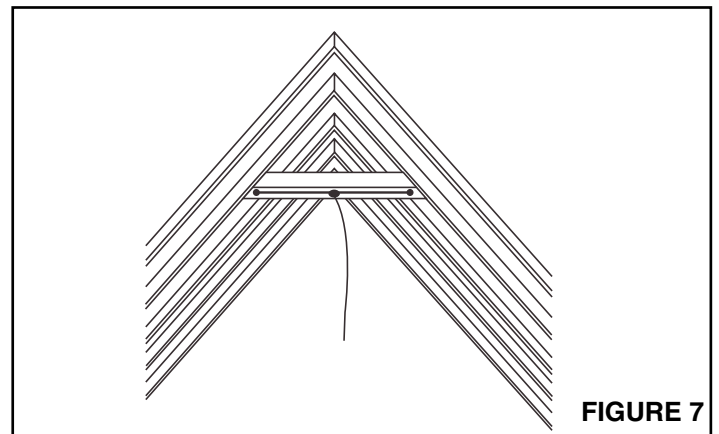
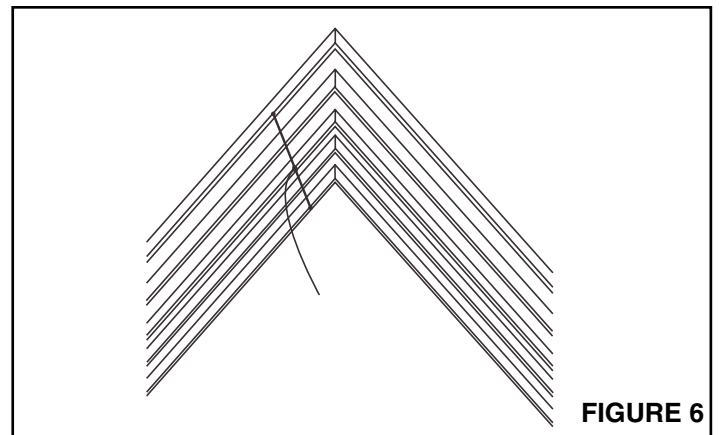
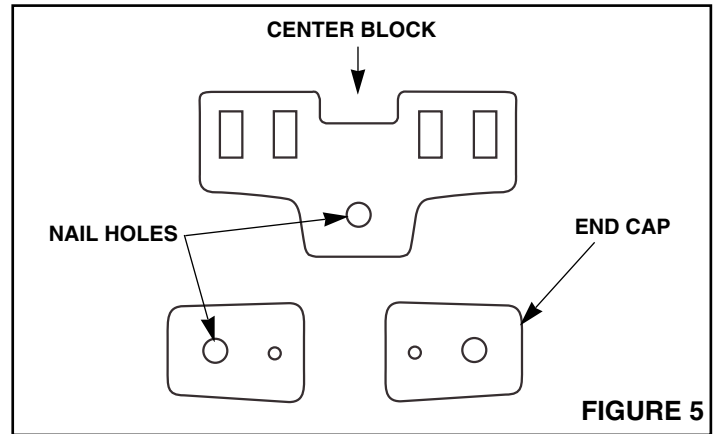
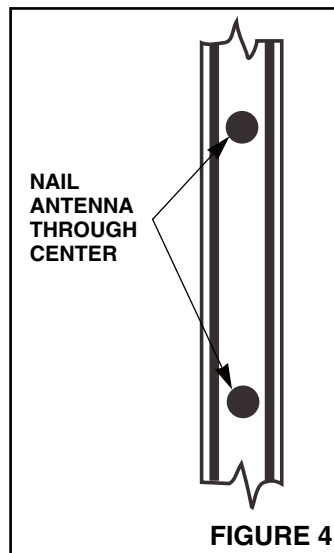
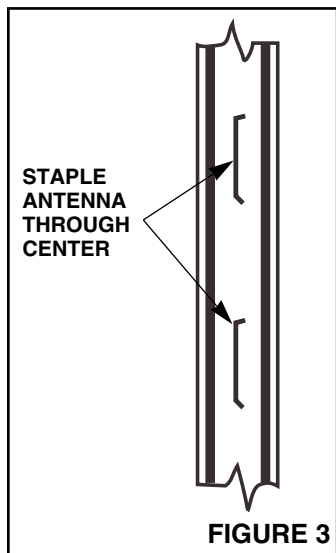
CEILING JOIST INSTALLATION

Refer to Figure 8.

When attic space is limited, staple antenna to ceiling joists.

TWIN-LEAD CONNECTION

1. Run the 20 foot twin lead to the master unit.
2. Allow 12" of antenna lead with pin connector for connection to master unit.



ACCESSORY ROUGH-IN FRAMES

NOTE: Refer to NuTone's catalog for model number information of the rough-in(s) that are required for mounting the components of the radio-intercom system.

Each rough-in has been illustrated in the following pages of this booklet; a brief description of the installation procedure is provided for each rough-in.

Refer to the installation instructions packaged with each rough-in for a more detailed installation procedure.

HOUSING (for recess-mounted door speakers)

NOTE: Surface-mounted door speaker models are available. For these models, no rough-in is required.

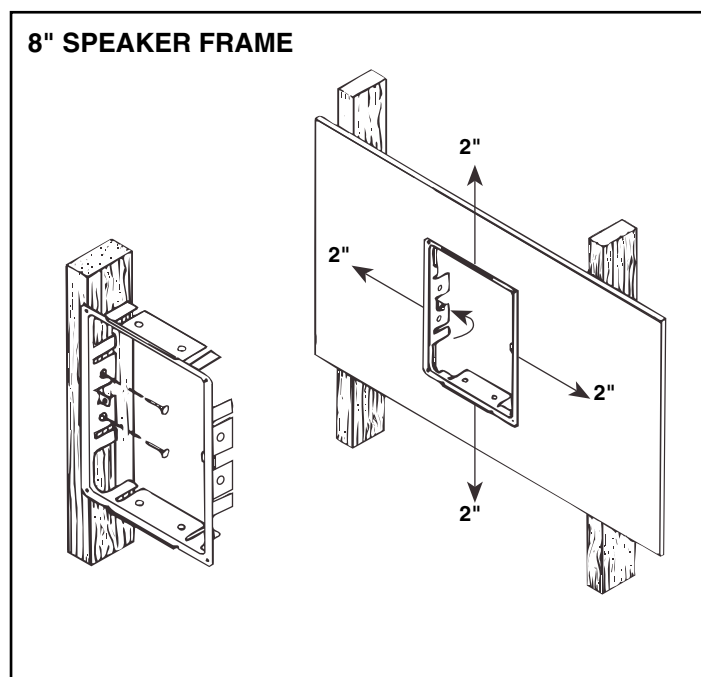
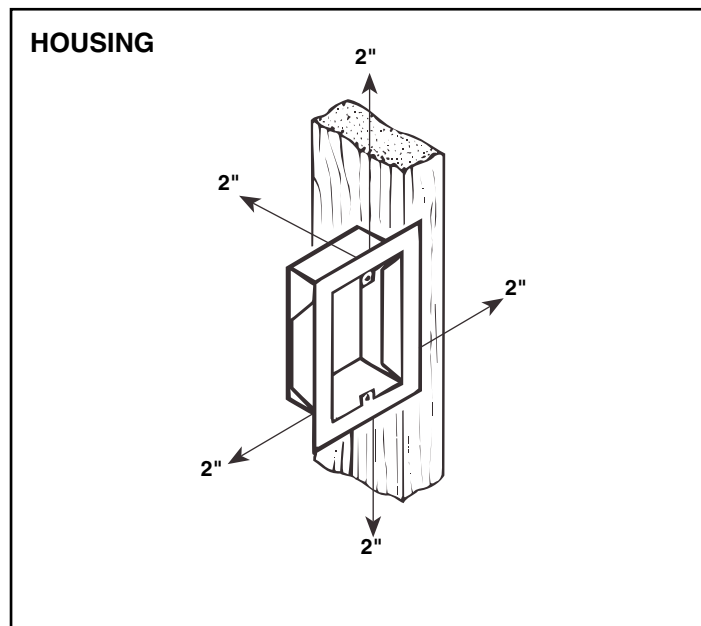
1. **REQUIREMENTS** – 2" from all sides of housing and a minimum wall depth of 2".
2. **DOOR SPEAKERS** – Don't mount door speakers with built-in pushbuttons out of normal reach; locate near door and not more than 60" above floor. Door speakers without pushbuttons can be mounted as desired near door (adjacent wall, porch ceiling, or overhang can be used, but audio to system will be reduced).
3. **FOR FRAME CONSTRUCTION** – Mount to stud through side of housing.
FOR MASONRY CONSTRUCTION – Make opening $3\frac{1}{16}$ " wide by 5" high and grout housing in place.

8" SPEAKER FRAME (for 8" inside remote speakers)

1. **REQUIREMENTS** – To accommodate the speaker panel, allow a minimum clearance – on all sides of the rough-in frame – of 2". Wall depth required: $2\frac{3}{4}$ ".
The speaker frame must be mounted in vertical position.
2. **NEW CONSTRUCTION** – Position frame against wall stud. Use nails or wood screws to secure frame to stud.
3. **EXISTING CONSTRUCTION** – Frame may be mounted next to a wall stud or between wall studs. Mounting tabs make mounting easy. Use frame as template for cutout. See instructions provided with frame.

WALL RECEPTACLE (for portable speaker)

1. Mounts to single gang outlet box.
2. Mount single-gang outlet box to wall stud, generally at same height as standard electrical outlet – 19" - 20" above floor. If finished wall is in place, use outlet box as template, and make cutout beside wall stud.

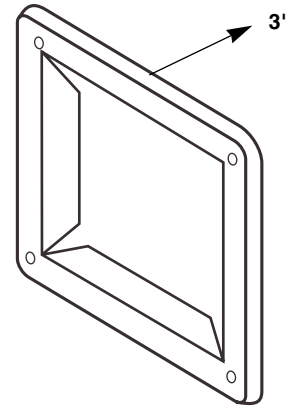


ACCESSORY ROUGH-IN FRAMES (CONTINUED)

8" SPEAKER FRAME (for 8" model outside speaker)

- 1. REQUIREMENTS** – Make an opening in an outside wall $10\frac{1}{16}$ " wide by $11\frac{1}{16}$ " high. The frame requires a minimum wall depth of 3".
2. Locate frame where desired (generally, top of frame about 60" from ground). For wood construction, mount frame through slots on each side. For other construction, frame must be grouted in place.

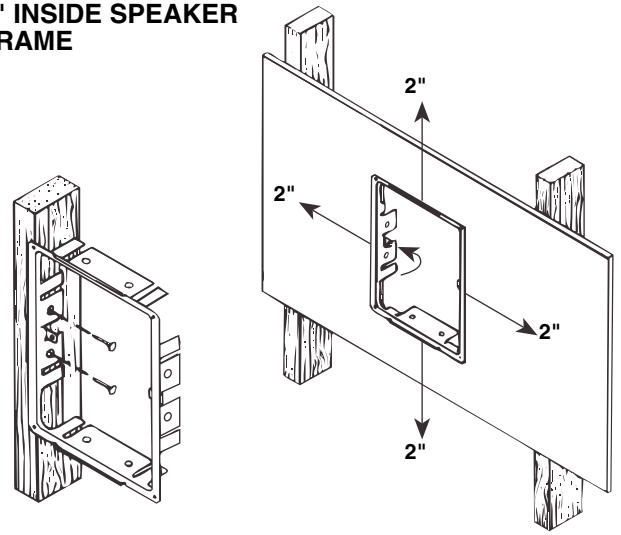
8" OUTSIDE SPEAKER FRAME



5" SPEAKER FRAME (for 5" inside remote speakers)

- 1. REQUIREMENTS** – To accommodate the speaker panel, allow a minimum clearance – on all sides of the rough-in frame – of two inches (2").
Wall depth required: $1\frac{5}{8}$ ".
The speaker Frame must be mounted in vertical position.
- 2. NEW CONSTRUCTION** – Position frame against wall stud. Use nails or wood screws to secure frame to stud.
- 3. EXISTING CONSTRUCTION** – Frame may be mounted next to a wall stud or between wall studs. Mounting tabs make mounting easy. Use frame as template for cutout. See instructions provided with frame.

5" INSIDE SPEAKER FRAME



5" OUTSIDE SURFACE-MOUNT FRAME (supplied with 5" outside remote speakers)

1. Allow a minimum clearance on all sides of frame of 2".
2. Mount approximately 60" above floor.
3. Secure to wall through two mounting holes.

FRAME (for remote controls)

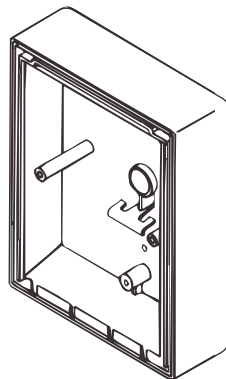
IMPORTANT: Speakers that do not have built-in controls require a separate remote control.

1. Remote Control should be located near the speaker which it will control. Locate Remote Control where it can be easily operated – generally, 50" - 60" above floor is satisfactory.

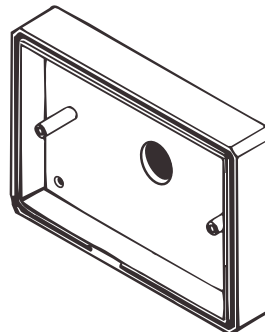
- 2. INSIDE HOUSE** – For recessed mounting, use rough-in housing and mount to wall stud.

OUTSIDE HOUSE – Must surface mount to the outside of the house. Secure to wall through four mounting holes (frame supplied with outside remote controls).

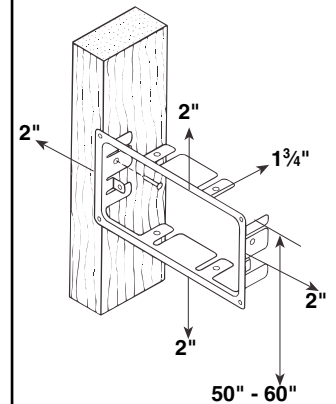
5" OUTSIDE SURFACE MOUNT FRAME



FRAME FOR OUTSIDE REMOTE CONTROLS



FRAME FOR INSIDE REMOTE CONTROLS



NuTone®

Two Year Limited Warranty

WARRANTY OWNER: NuTone warrants to the original consumer purchaser of its products that such products will be free from defects in materials or workmanship for a period of two (2) years from the date of original purchase. **THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

During this two year period, NuTone will, at its option, repair or replace, without charge, any product or part which is found to be defective under normal use and service. **THIS WARRANTY DOES NOT EXTEND TO FLUORESCENT LAMP STARTERS OR TUBES, FILTERS, DUCT, ROOF CAPS, WALL CAPS AND OTHER ACCESSORIES FOR DUCTING.** This warranty does not cover (a) normal maintenance and service or (b) any products or parts which have been subject to misuse, negligence, accident, improper maintenance or repair (other than by NuTone), faulty installation or installation contrary to recommended installation instructions.

The duration of any implied warranty is limited to the one year period as specified for the express warranty. Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you.

NUTONE'S OBLIGATION TO REPAIR OR REPLACE, AT NUTONE'S OPTION, SHALL BE THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY. NUTONE SHALL NOT BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH PRODUCT USE OR PERFORMANCE. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. This warranty supersedes all prior warranties.

WARRANTY SERVICE: To qualify for warranty service, you must (a) notify NuTone at the address stated below or telephone 1/800-543-8687, (b) give the model number and part identification and (c) describe the nature of any defect in the product or part. At the time of requesting warranty service, you must present evidence of the original purchase date.

Date of Installation

Builder or Installer

Model No. and Product Description

IF YOU NEED ASSISTANCE OR SERVICE:

For the location of your nearest NuTone Independent Authorized Service Center:

Residents of the contiguous United States Dial Free 1-800-543-8687

Please be prepared to provide:

Product model number • Date and Proof of purchase • The nature of the difficulty

Residents of Alaska or Hawaii should write to: NuTone Inc. Attn: Department of National Field Service, 4820 Red Bank Road, Cincinnati Ohio 45227-1599.

Residents of Canada should write to: Broan-NuTone Canada, 1140 Tristar Drive, Mississauga, Ontario, Canada L5T 1H9.

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Product specifications subject to change without notice.

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