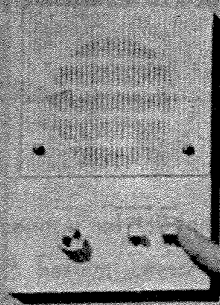


# NuTone

## SERVICE MANUAL



**DIRECT-A-COM SERIES 3  
470 AMPLIFIER**

NuTone Housing Products

**Scovill**

## **GENERAL DESCRIPTION DIRECT-A-COM**

### **SERIES NO. 3 MODEL 470 AMPLIFIER**

The Model 470 Amplifier is completely transistorized and designed for surface mounting. Power is supplied by a Nutone Model 301N 16 V AC 30 VA transformer which is remotely mounted.

## **SERVICING**

### **AMPLIFIER DISASSEMBLY**

1. Lift cover off base plate.
2. Disconnect all remote station wiring and low voltage power wiring.

NOTE: Tape low voltage power wiring leads to prevent them from shorting since the transformer is connected directly to 120 V AC source. To facilitate installation after servicing, tag all leads removed from amplifier.

3. In some instances the amplifier may be mounted on a single gang junction box. To remove amplifier from the junction box, remove the two mounting screws shown in Figure 1.

## **OPERATION AND BENCH TESTING — SHOP SERVICE**

1. An auxiliary low voltage transformer is required to furnish power to the amplifier for testing. Connect 16V AC from Nutone Model 301N transformer or equivalent to the terminal screws marked "16V POWER TRANSFORMER."
2. Connect a test speaker, 3.2 or 8 ohms, to the "OUTPUT" (red) terminals of the amplifier. See Fig. 2.
3. Connect a second test speaker to the "INPUT" (orange) terminals of the amplifier. See note.

NOTE: Feedback will indicate operation of system. However, in order to determine proper operation, that is, Lobby speaker to Apartment speaker and, Apartment speaker to Lobby speaker, the speakers should be separated physically as far from each other as possible in order to eliminate or reduce squeal (feedback). In actual installation these speakers are separated by wiring from Lobby to Apartments which could run 50 to 500 feet or more.

5. To gain access to the foil side of the Printed Circuit board, remove the two screws securing the board to the baseplate.

**A typical installation showing speaker wiring —directory wiring — and riser wiring for the townhouse and apartment house systems is shown on page 4.**

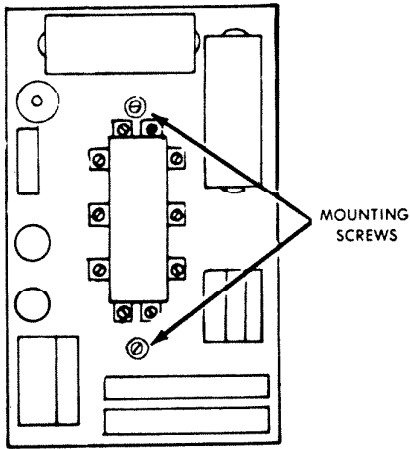


Fig. 1

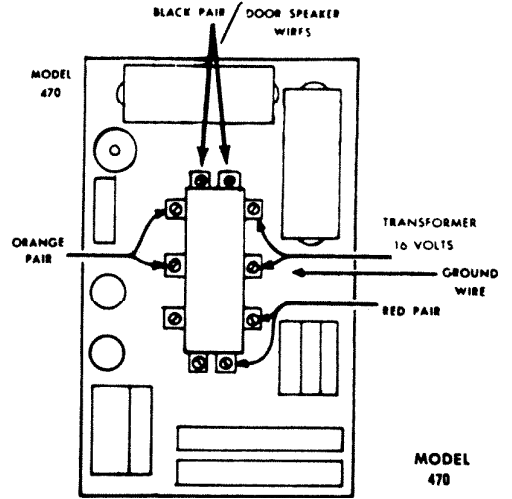
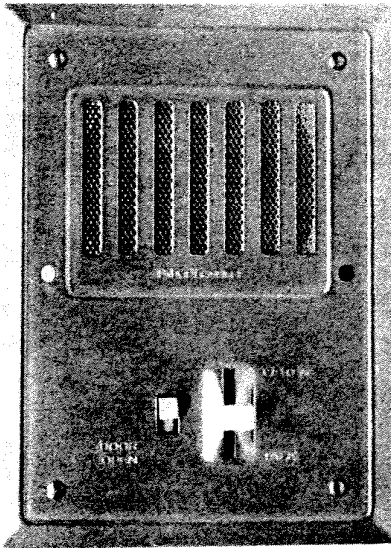
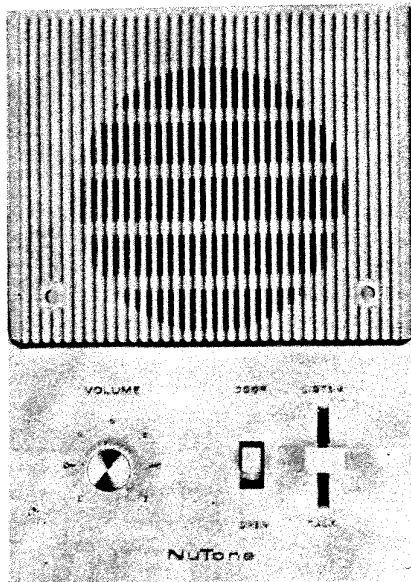


Fig. 2

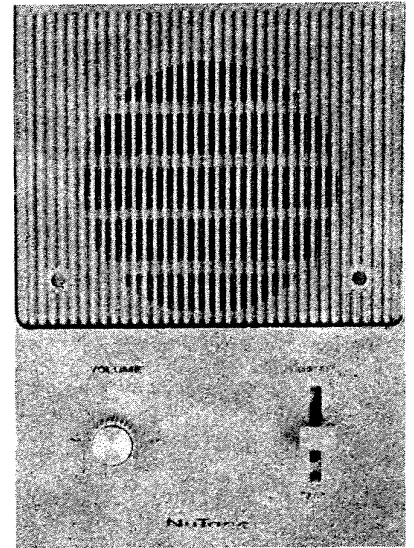
Fig. 3



481



482



483

# Typical Wiring Diagrams

NOTE: Always refer to INSTALLATION INSTRUCTIONS for complete wiring and installation information.

## MULTI-FLOOR APARTMENT HOUSE WIRING

For System using 481 or N482X Speakers with Buzzer

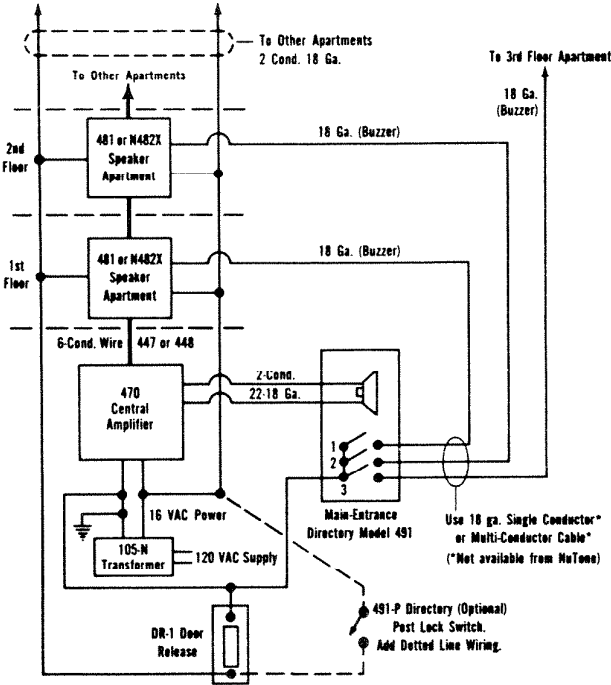


Fig. 4

For system using N482 Speaker and separate Chime

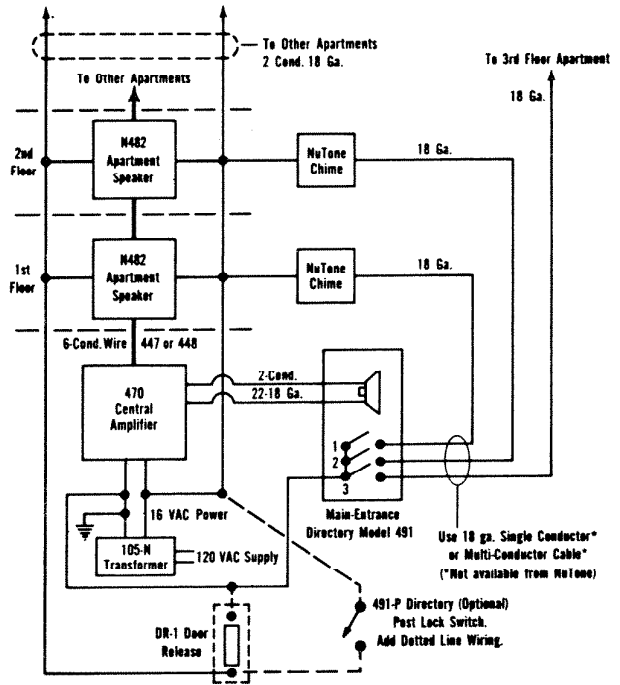
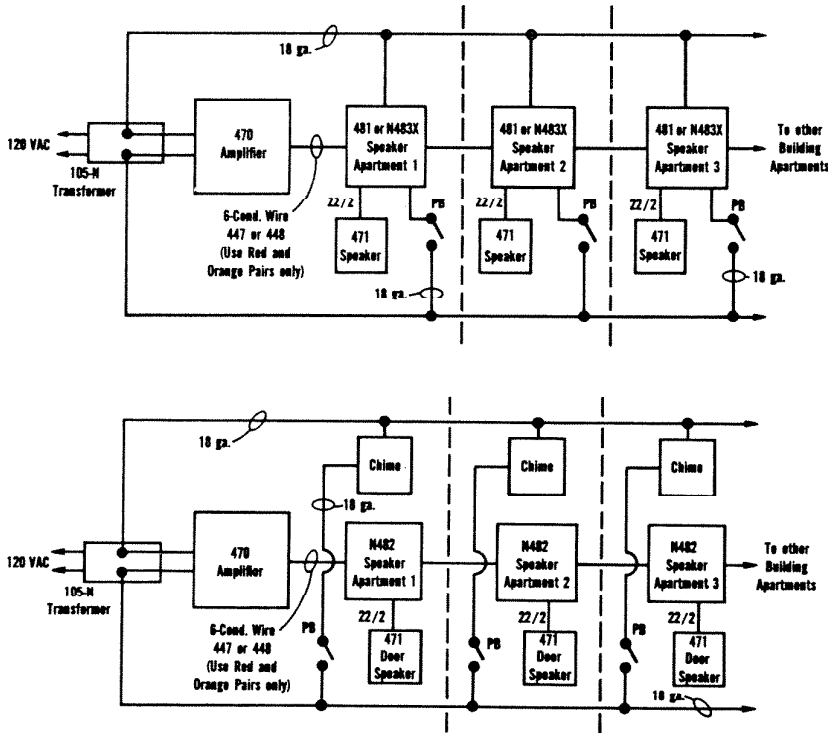


Fig. 5

## TOWNHOUSE WIRING

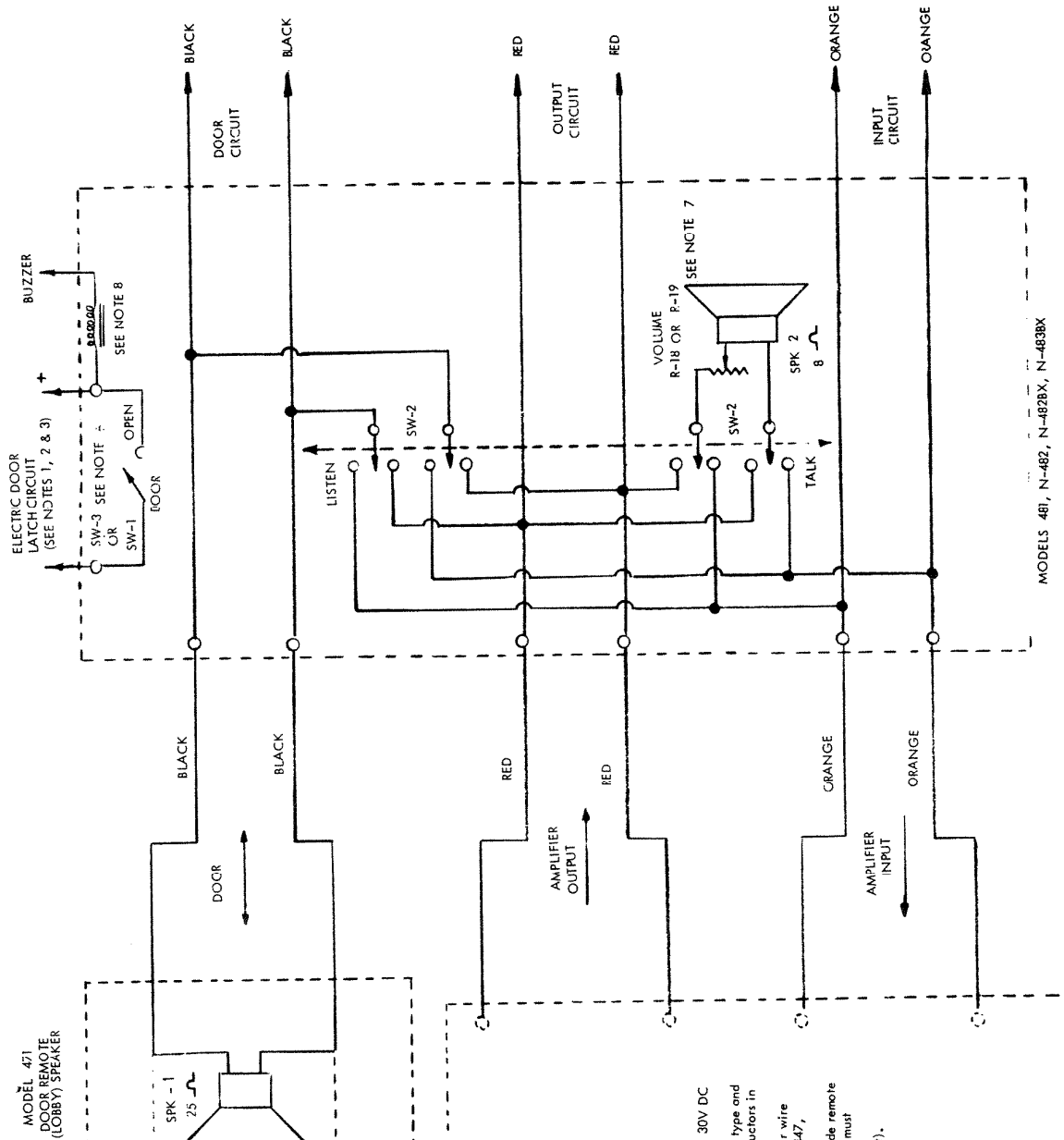


For system using 481 or N483X Speakers with Buzzer.

For system using N482 Speaker and separate Door Chime.

Fig. 6

# SPEAKER WIRING DIAGRAM



MODELS 481, N-482, N-482BX, N-483BX

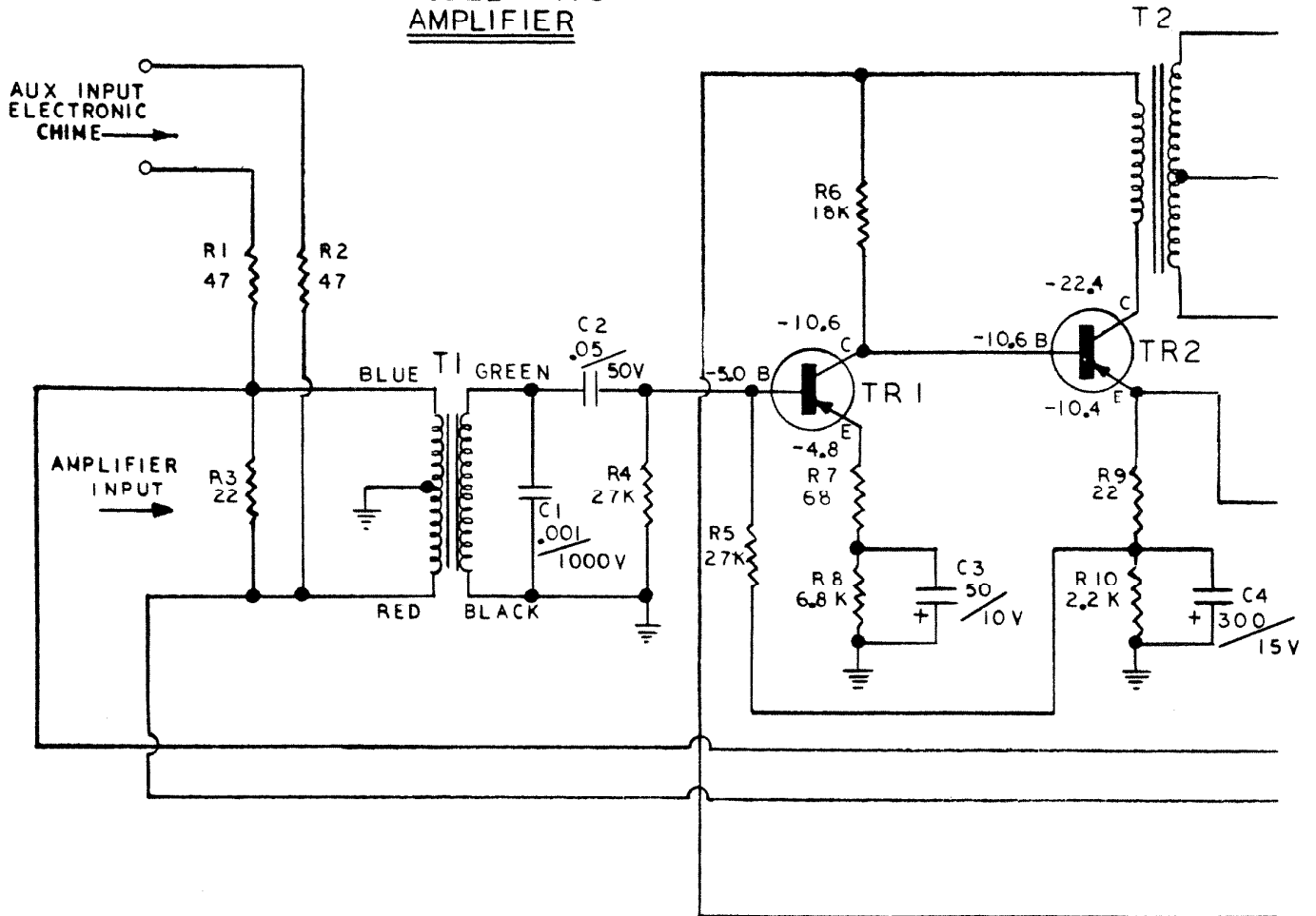
## NOTES:

- SW-1 and SW-3 Door Latch switch not used on Model N-483-B.
- SW-1 and SW-3 Door Latch switch is rated to 4 Amp, 30V A.C., 1 Amp, 30V D.C. and is spring return to "Off". (Do not use on 120V A.C. Circuit!)
- SW-1 and SW-3 Door Latch circuit use a separate twisted pair cable of type and gauge recommended by door lock manufacturer. (Do not use blue conductors in audio cable).
- Audio circuits wire to other identical remotes using NiTone twisted pair wire (Model 2421, 2424, 2425 (4 pair) [Blue conductors not used] or Model 1447, 448 (3 pair).
- Door Remote (Lobby speaker) may be connected at amplifier or any inside remote (Across black pair). Total cable length from Door Remote to Amplifier must not exceed 100 feet.
- Door Latch switch, SW-1, is used on Model 481-B only. (see parts list).
- Volume Control, R-18, used on Model 481-B only. (see parts list).
- Buzzer used on Models 481-B, N482-BX and N483-BX.

Fig. 7

# 470 AMP

## MODEL 470 AMPLIFIER

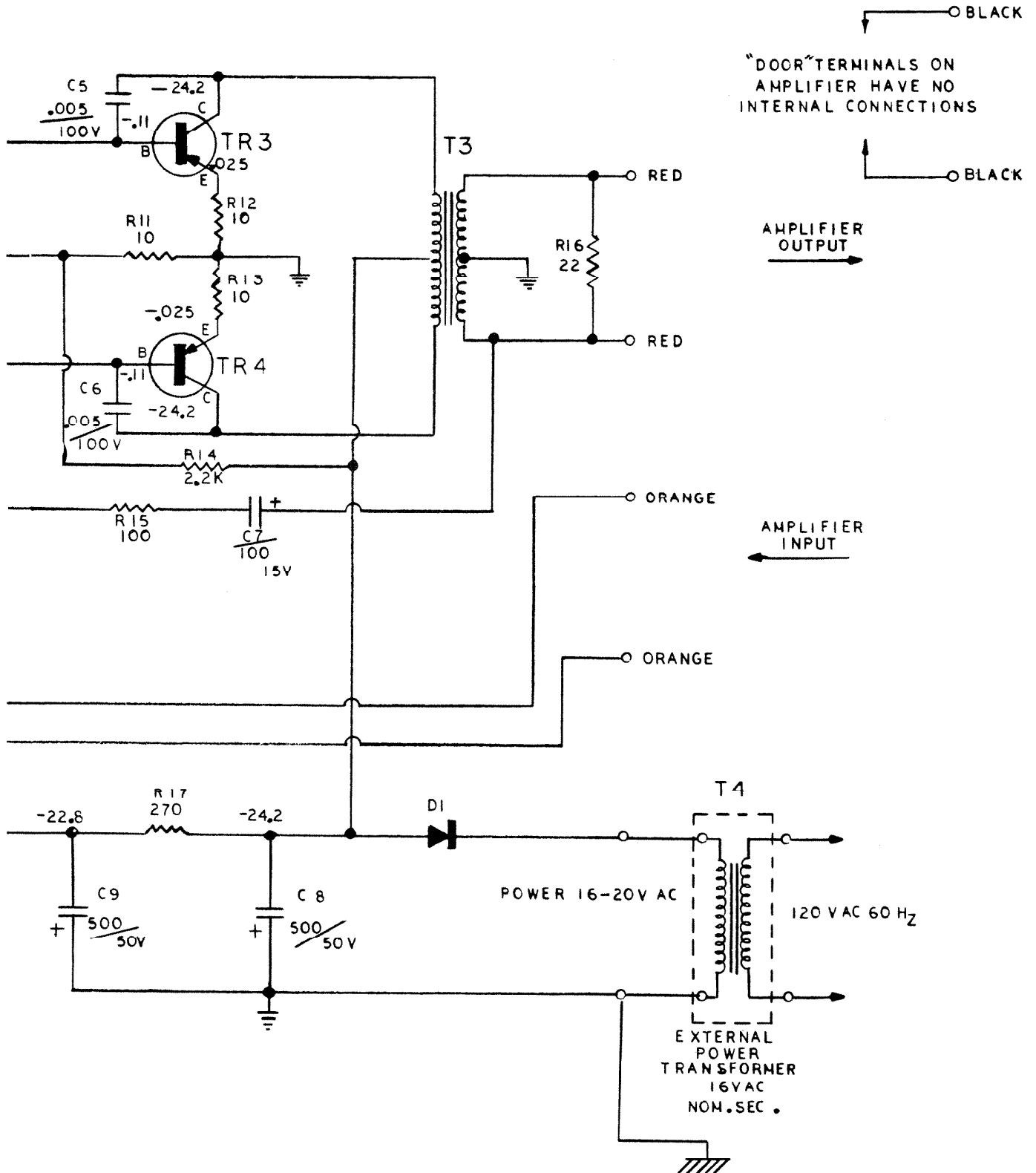


### NOTES:

1. All resistors 1/2 watt, 10% tolerance unless otherwise noted, values in ohms, K=1,000.
2. All capacities shown are in microfarads.
3. DC Voltages shown are measured with VTVM (at zero signal condition) when AC voltage into amplifier measures 19.5 V. AC at power terminals.

Fig. 8

# SCHEMATIC



## PARTS LIST

TRANSISTORS	NUTONE PART NUMBER	DESCRIPTION
<b>TRANSISTORS</b>		
TR-1	36576	AUDIO AMPLIFIER
TR-2	36557	AUDIO DRIVER
TR-3	36567 (2N1039)	AUDIO OUTPUT
TR-4	36567 (2N1039)	AUDIO OUTPUT
<b>DIODES</b>		
D-1	36549 (MOTOROLA IN4002)	SILICON RECTIFIER
<b>RESISTORS</b>		
R-1		47 OHMS
R-2		47 OHMS
R-3		22 OHMS
R-4		27K OHMS
R-5		27K OHMS
R-6		18K OHMS
R-7		68 OHMS
R-8		6.8K OHMS
R-9		22 OHMS
R-10		2.2K OHMS
R-11		10 OHMS
R-12		10 OHMS
R-13		2.2K OHMS
R-14		100 OHMS
R-15		22 OHMS
R-16		270 OHMS
R-17		270 OHMS
R-18	34019 POTENTIOMETER (481-B only)	50 OHMS
R-19	34034 POTENTIOMETER	50 OHMS
<b>CAPACITIES</b>		
C-1		.001 mfd 1KV
C-2		.05 mfd 50V
C-3		50 mfd 10V
C-4		300 mfd 15V
C-5		.005 mfd 100V
C-6		.005 mfd 100V
C-7		100 mfd 15V
C-8		500 mfd 50V
C-9		500 mfd 50V
<b>TRANSFORMERS</b>		
T-1	30563	INPUT
T-2	30562	DRIVER
T-3	30561	OUTPUT
<b>SWITCHES</b>		
SW-1	34551	SLIDE SWITCH (model 481)
SW-2	34528	LEVER SWITCH (all models)
SW-3	34589	SLIDE SWITCH
<b>SPEAKER</b>		
SP-1	36053	SPEAKER 3½" 8 ohms (all models)
<b>BUZZER</b>		
B-1	36059 36040 (alternate)	SIGNAL BUZZER (all models)
<b>KNOBS</b>		
K-1	31651	LEVER
K-2	31435	VOLUME

Parts may be ordered — by NuTone part number, direct from our factory — at the following address.

Nutone — Division of Scovill  
P. O. Box 27  
Cincinnati, Ohio 45227

Our minimum service parts order is \$2.00. Allow (2) weeks for filling your service parts order at the factory.



# TOP VIEW 470 AMP

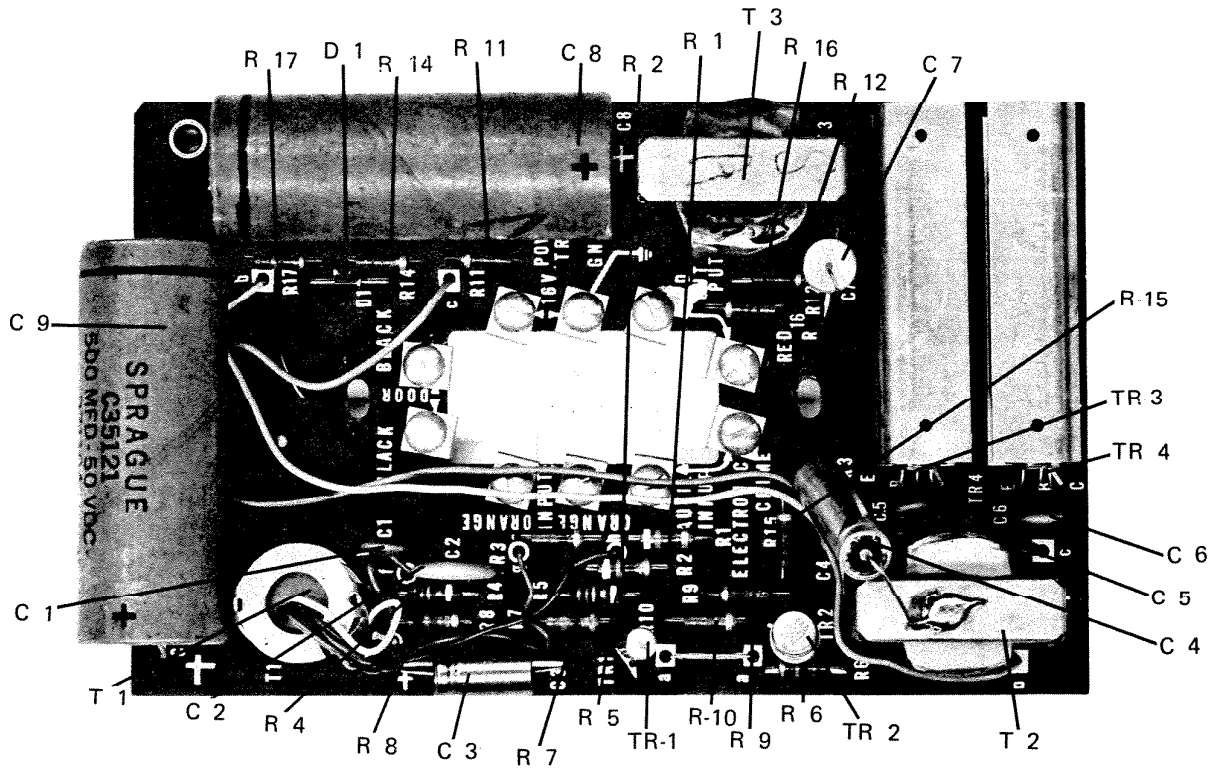


Fig. 9

# FOIL SIDE 470 AMP

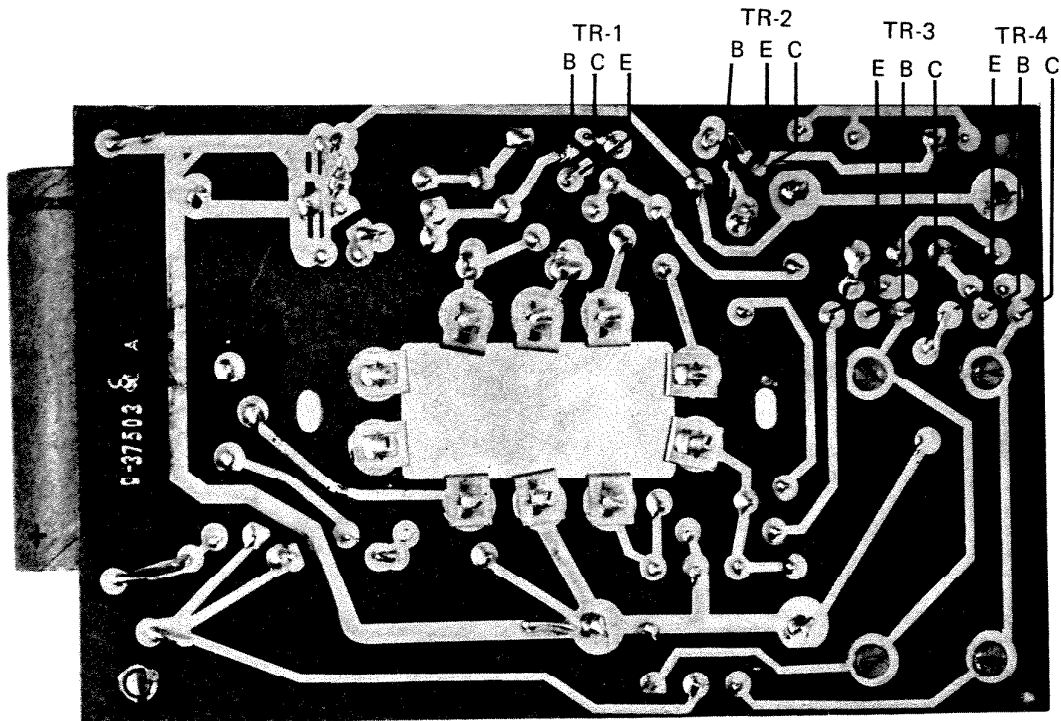
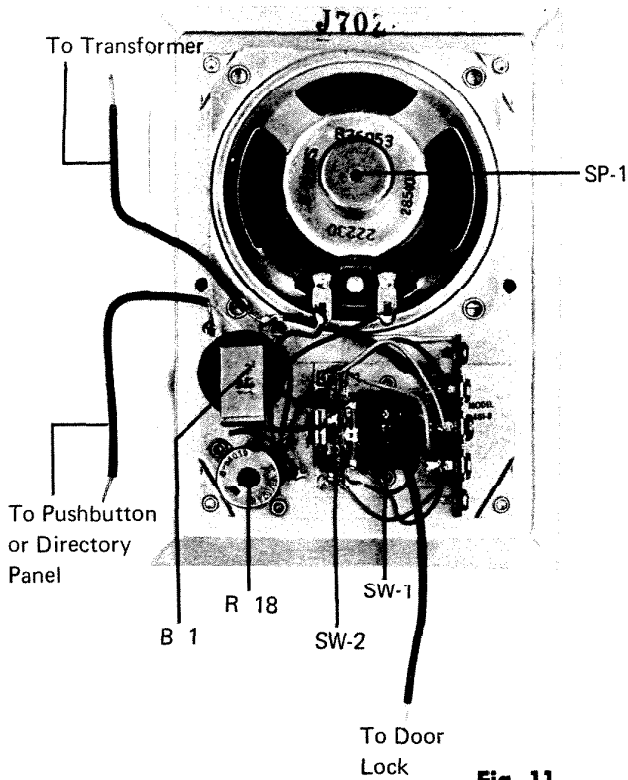


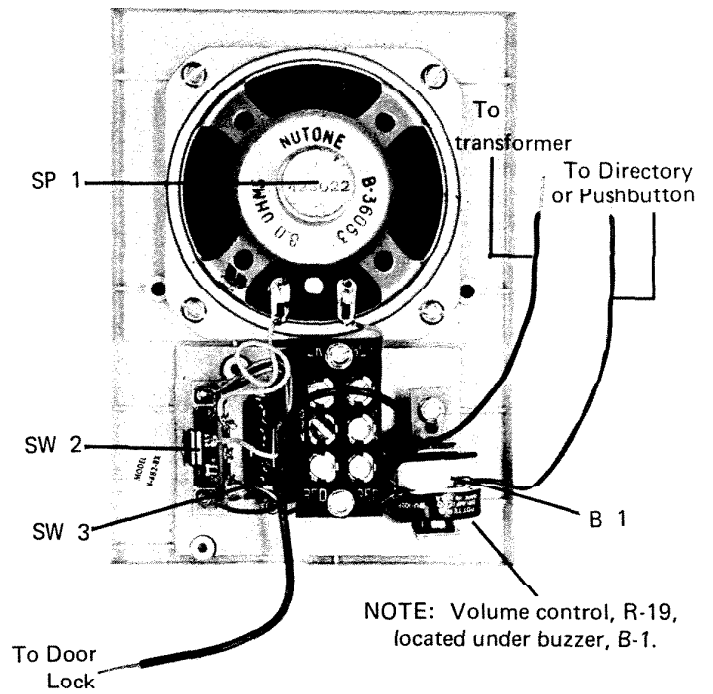
Fig. 10

**MODEL  
481-B**



**Fig. 11**

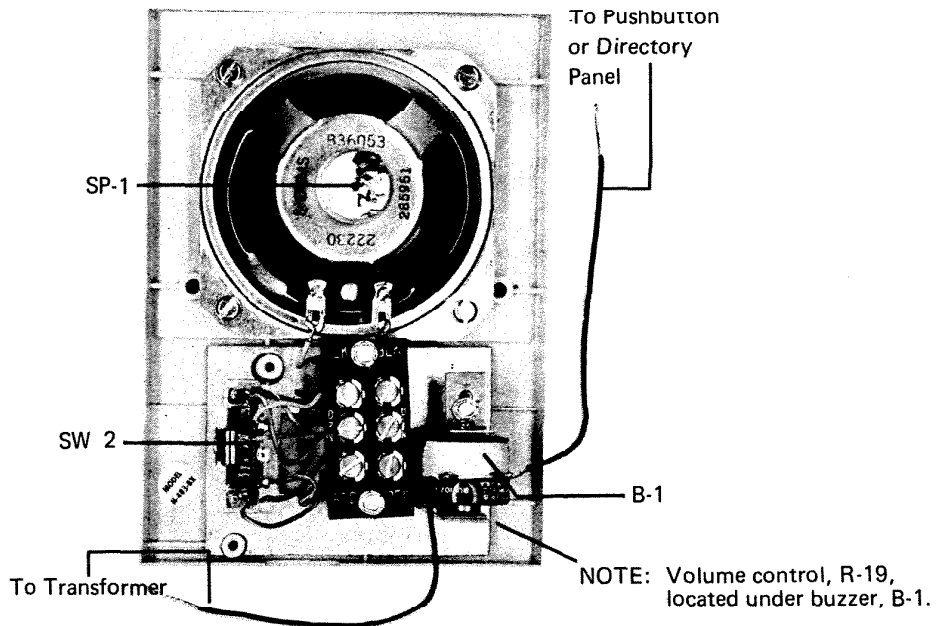
**MODEL  
N482-BX**



NOTE: Model, N-482-B is the same with the exception of the buzzer.

**Fig. 12**

**MODEL N483-BX**



NOTE: Model, N-483-B is the same with the exception of the buzzer.

**Fig. 13**

## NuTone Warranty

### READ CAREFULLY—DO NOT DISCARD

**GUARANTEE AND SERVICE POLICY:** NuTone products are designed for residential and light commercial use and have been carefully tested and inspected at the factory to insure against material and workmanship defects. All parts and labor (service) necessary to insure proper operation of this unit are warranted for a period of one full year (12 months) from date of use.

#### Provisions of Warranty:

- The above warranty applies only if the unit is delivered or returned prepaid to an Authorized NuTone Service Station.
- This warranty is void in case of abuse, misuse, abnormal usage, faulty installation or repair by unauthorized persons. NuTone's liability does not extend to consequential damages.
- This warranty does not include dial lights or record changer needles.

For the location of the nearest Authorized Service Station contact your local NuTone Sales Representative or Field Engineering Department, NuTone, Madison and Red Bank Roads, Cincinnati, Ohio 45227. Service after the warranty period will necessitate charges for the repair.

**IMPORTANT:** This warranty supersedes all previous warranties.