

**CONTROLLED MAGNETIC<sup>®</sup> HAND-HELD MICROPHONES**

**GENERAL**

Model 404 Series hand-held communications microphones are compact size, CONTROLLED MAGNETIC<sup>®</sup> units designed for clear, crisp, natural voice response of high intelligibility.

**Microphone Features:**

- Frequency response from 200 to 4,000 Hz especially suitable for voice communications use
- Small, light and compact case, fits naturally and comfortably in the palm of the hand
- Extremely sturdy, high impact, ARMO-DUR<sup>®</sup> case, lighter and stronger than die-cast metal, comfortable to the touch in hot or cold weather
- Heavy-duty, long-life, leaf-type push-to-talk switch
- Extra contact provided on switch for modification to either normally shorted or normally open microphone circuit
- Durable rubber-jacketed coil cable
- Rugged and dependable under all operating conditions

**APPLICATIONS**

The Model 404 Series microphones are especially recommended for indoor and outdoor paging systems, all types of mobile communications, amateur radio, and all other applications where a rugged hand-held microphone is needed. The microphones are also suitable for indoor and outdoor public address.

Model 404C is a high-impedance microphone with high output level, making it suitable for connection to high-impedance amplifier inputs when cable lengths of 15.2m (50 ft) or less are needed.

Model 404B is a low-impedance microphone and is recommended when long cable lengths are required or under conditions where severe hum pickup may exist. The Model 404B may be connected directly to the input of a low-impedance amplifier, or a Shure Model A95 Series Line Matching Transformer may be used for connecting the Model 404B to the input of a high-impedance amplifier.

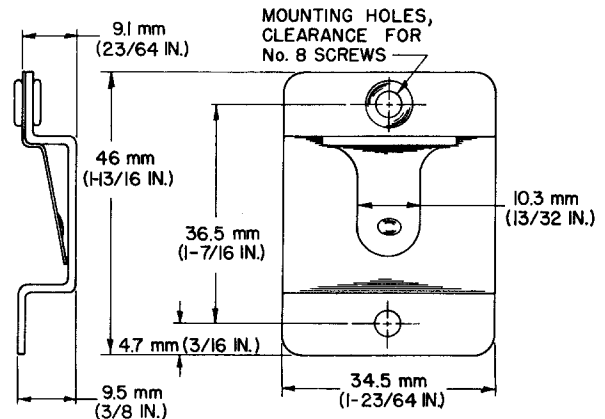
The 404 series microphones will replace certain Shure 405 and 505 series microphones. Listed below are CONTROLLED MAGNETIC communication microphones and recommended replacement.

Model No.	Shure Replacement Microphone
CR4B, 405B, 505B	404B
CR4C, 405C, 505C	404C



**MOUNTING**

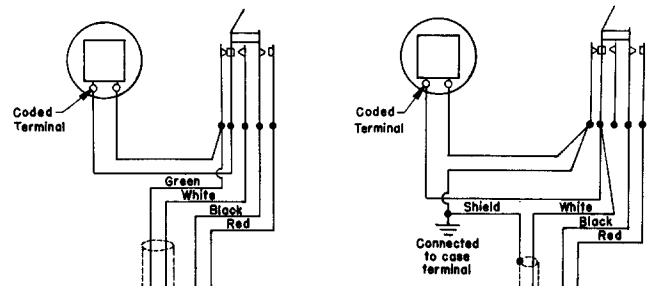
A mounting bracket for permanent installation is supplied with each microphone. (See Figure 1)



MOUNTING BRACKET  
**FIGURE 1**

**CONNECTIONS**

The internal switch connections of Models 404B and 404C are shown in Figure 2.



MODEL 404B

MODEL 404C

INTERNAL CONNECTIONS  
**FIGURE 2**

Model 404B is a low-impedance microphone with a four-conductor (two conductors shielded) coil-cord cable and a single-throw double-pole leaf-type switch to control the microphone circuit and an external relay or switching circuit. The GREEN and WHITE leads are the "hot" conductors for balanced-line connection to the microphone circuit; the shield is connected to the microphone circuit ground. The RED and BLACK leads control the relay or switching circuit. The microphone circuit of the switch is normally open but can be easily modified for normally shorted operation.

The Model 404B is wired for balanced-line operation and is recommended for use where long cable lengths are required or conditions where severe hum pickup may exist. The Model 404B can be connected directly to the input of a low-impedance amplifier or a Shure A95 Series Line Matching Transformer can be used for coupling the Model 404B to the input of a high-impedance amplifier. A two-conductor shielded cable can be used for extending only the microphone circuit. If both the microphone and remote circuits are to be extended, a four-conductor cable should be used with two shielded conductors for the microphone circuit.

Model 404C is a high-impedance microphone with a three-conductor coil-cord cable (one conductor shielded) and a single-throw double-pole leaf-type switch to control the microphone circuit and an external relay or switching circuit. The WHITE lead is the "hot" conductor for connection to the microphone circuit; the shield is connected to the microphone circuit ground. The hangup button and the wire strain relief are also grounded to the cable shield in the 404C only. The RED and BLACK leads control the relay or switching circuit. The microphone circuit of the switch is normally shorted but can be easily modified for normally open operation.

Model 404C can be used with any amplifier having a high-impedance microphone input. A single-conductor shielded cable can be used for extending only the microphone circuit. If both the microphone and remote circuits are to be extended, a three-conductor cable should be used with one shielded conductor for the microphone circuit. Cable lengths over 15m (50 ft) are not recommended.

**Model 404B Circuit Modification:** The microphone circuit of the 404B is open when the microphone switch button is in the normal position. The microphone can be modified to provide a normally shorted microphone circuit as follows:

1. Remove the three No. 5-20 pan head screws from the back of the microphone case. (Caution: the

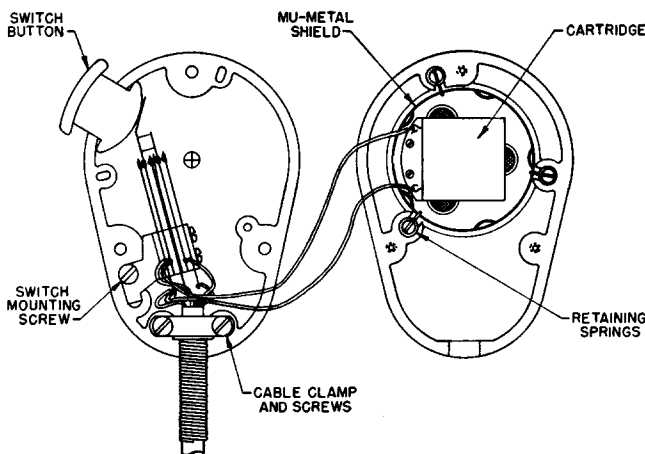


FIGURE 3

the microphone cartridge is spring loaded and care must be taken to hold the two halves of the microphone case firmly together.)

2. Separate the case front and back and remove the switch button. See Figure 3.
3. Remove the No. 5-40 round head switch mounting screw and lock washer holding the switch assembly in the case back.
4. Disconnect or clip the WHITE cable lead from the switch solder lug.
5. Strip the insulation from the WHITE lead approximately 6 mm (1/4 in.) and solder the WHITE lead to the switch blade next to the blade with the GREEN lead connections. (This is the blade that the switch button pushes against.) The outside solder lug may be bent out of the way to aid soldering.
6. Reassemble the switch in the case back using the previously removed screw and lock washer.
7. Replace the switch button in the case back.
8. Making certain that the cartridge shield retaining springs are in the proper position and that no leads are pinched, place the case back on the case front and firmly press the cases together. Fasten with the three previously removed No. 5-20 screws.

**Model 404C Circuit Modification:** The microphone circuit of the 404C is shorted when the microphone switch button is in the normal position. The microphone can be modified to provide a normally open microphone circuit as follows:

1. Remove the three No. 5-20 pan head screws from the back of the microphone case. (Caution: the microphone cartridge is spring loaded and care must be taken to hold the two halves of the microphone case firmly together.)
2. Separate the case front and back and remove the switch button. See Figure 3.
3. Remove the No. 5-40 round head switch mounting screw and lock washer holding the switch assembly in the case back.
4. Disconnect or clip the WHITE cable lead from the switch solder lug.
5. Strip the insulation from the WHITE lead approximately 6 mm (1/4 in.) and solder the WHITE lead to the unused solder lug at the bottom end of the switch.

NOTE: In certain instances where switch sequence is critical, it may be necessary to remove the effect of the shorted switch on the cartridge. This is done by insulating the shorting contacts with a piece of "spaghetti" tubing or a piece of insulating tape.

6. Reassemble the switch in the case back using the previously removed screw and lock washer.
7. Replace the switch button in the case back.
8. Making certain that the cartridge shield retaining springs are in the proper position and that no leads are pinched, place the case back on the case front and firmly press the cases together. Fasten with the three previously removed No. 5-20 screws.

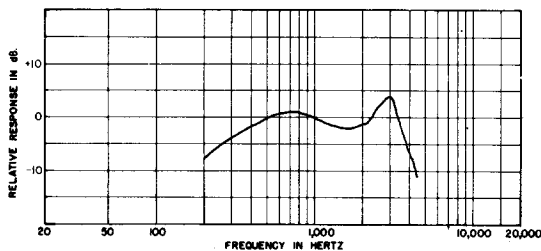
# SPECIFICATIONS

## Type

CONTROLLED MAGNETIC®

## Frequency Response

200 to 4,000 Hz (see Figure 4)



TYPICAL FREQUENCY RESPONSE

FIGURE 4

## Polar Pattern

Omnidirectional

## Impedance (at 1,000 Hz)

404B—Microphone rating impedance is 150 ohms (200 ohms actual) for connection to microphone inputs rated at 19 to 300 ohms

404C—Microphone impedance is "High" for connection to high-impedance microphone inputs

## Load Impedance Range

	MINIMUM	RECOMMENDED
404B	150 ohms	1000 ohms
404C	15 kilohms	100 kilohms

## Output Level (at 1,000 Hz)

	404B	404C
Open Circuit Voltage*	-33.0 dB (22.5 mV)	-13.5 dB (212 mV)
Power Level**	-52.0 dB	

\*0 dB = 1 volt per 100 microbars

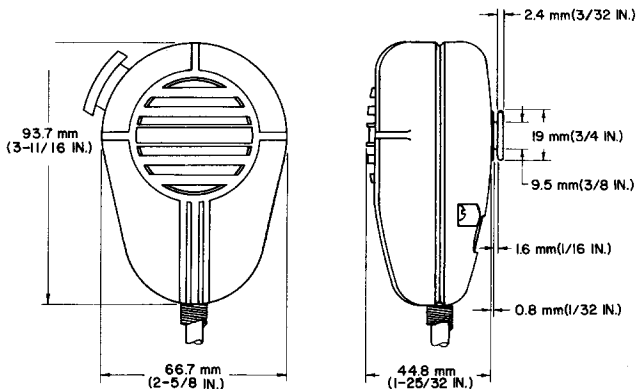
\*\*0 dB = 1 milliwatt per 10 microbars

## Switch

Built-in, push-to-talk, single-throw double-pole, leaf-type, to control microphone circuit and relay circuit

## Dimensions

See Figure 5



OVERALL DIMENSIONS

FIGURE 5

## Cable

404B—1.5m (5 ft) four-conductor, two conductors shielded, attached, coiled cable

404C—1.5m (5 ft) three-conductor, one conductor shielded, attached, coiled cable

## Mounting Bracket

Supplied (see Figure 1)

## Case

Gray, high-impact ARMO-DUR®

## Net Weight

340 grams (12 oz)

## Packaged Weight

482 grams (17 oz)

## FURNISHED ACCESSORY

Mounting Bracket (3 in replacement kit) ..... RK6MB

## OPTIONAL ACCESSORY

Line Matching Transformer ..... A95 Series

## REPLACEMENT PARTS

	404B	404C
Cartridge	R5E	R5F
Cable	C14C	C12C
Case	RK1C	90A2990
On-Off Switch	RK7S	RK7S

For additional service or parts information, please contact Shure's Service department at 1-800-516-2525. Outside the United States, please contact your authorized Shure Service Center.