

**CONTROLLED MAGNETIC® NOISE-CANCELING COMMUNICATIONS MICROPHONES**



**GENERAL**

The Shure Model 419 Series RANGER 2 CONTROLLED MAGNETIC® noise-canceling microphones are designed especially for use where surrounding high noise levels make intelligible transmission a problem. The microphones provide clear, crisp, natural voice response in even the noisiest surroundings. These small, rugged, hand-held CONTROLLED MAGNETIC microphones are available in two versions: the high-impedance 419A and the low-impedance 419B.

The Model 419 Series noise-canceling microphones represent a significant improvement over most microphones with anti-noise features. Noise cancellation in the 419 Series is provided through the combination of highly directional operation and superior discrimination against noise from distant sources over an unusually wide frequency range. The 419 Series are equally well suited for mobile or fixed station use where wind, traffic, and engine noise or machinery, vibration, and ventilation noise may interfere with speech transmission.

With greater clarity and improved reliability and durability, the microphones are available as either the 419A for connection to high-impedance microphone inputs or the 419B for connection to low-impedance microphone inputs.

The 419 Series microphones fit naturally and comfortably in the hand, and are not affected by heat or humidity. The exclusive ARMO-DUR® case is immune to oil, grease, fumes, salt spray, sun, rust, and corrosion—and is outstanding in its ability to resist mechanical shocks and vibration. The "Million-Cycle" leaf-type switch is designed to withstand rigorous operating conditions and constant use.

**Microphone Features:**

- Highly intelligible speech response
- Extremely effective noise cancellation
- Available as either high-impedance or low-impedance model
- Sturdy and reliable CONTROLLED MAGNETIC cartridge
- Unparalleled ruggedness and durability
- Tough ARMO-DUR case
- Mounting bracket supplied — fits hang-up button on back of microphone

**NOISE CANCELLATION**

The important characteristics contributing to noise cancellation and clear speech transmission in the Model 419 Series are shaped frequency response, directionality, and distance discrimination.

**Shaped Frequency Response:** The acoustical elements are arranged to optimize performance in the critical voice frequency range of 200 to 4,000 Hz. The result is the reduction in pickup of sounds outside the desired frequency range and proper control of those sounds within the desired range.

**Directionality:** Through their inherent directional properties, the Model 419 Series reject sounds that do not originate from the front of the microphone. This reduces pickup of off-axis sounds extraneous to the user's voice.

**Distance Discrimination:** The Model 419 Series discriminate against sounds arriving from a distance in favor of sounds from a near source. The microphones operate on the pressure gradient principle. Two sound entry ports spaced a small distance apart produce, by means of phase cancellation, reduction of sensitivity to all distant sounds.

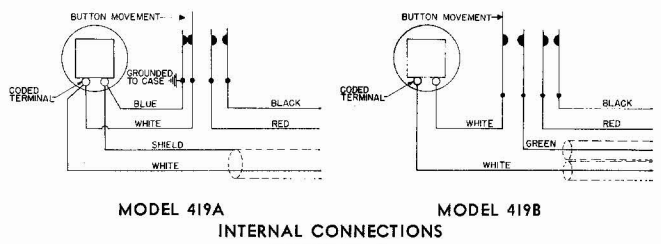
**OPERATION**

In order to obtain the best noise-canceling performance with the Model 419 Series, "close-talking" is required. The lips must be as close as possible to the microphone grille (directly facing the grille and pressed against the rubber lip guard). For greatest discrimination between voice sounds and background noise, do not hold the microphone more than 25 mm (1 in.) from the mouth.

No special precautions beyond ordinary care are necessary in operating the Model 419A and 419B. They will function very satisfactorily under most conditions of humidity and temperature. Dropping the microphone or other similar severe mechanical shocks should be avoided.

**CONNECTIONS**

The internal connections of Models 419A and 419B are shown in Figure 1.



MODEL 419A MODEL 419B  
 INTERNAL CONNECTIONS  
**FIGURE 1**

In both models, the RED and BLACK cable leads control an external relay or switching circuit.

In the high-impedance Model 419A, the WHITE cable lead is the "hot" conductor for the audio input circuit; the shield is connected to the amplifier or chassis ground.

In the low-impedance Model 419B, the GREEN and WHITE leads are the "hot" conductors for connection to a balanced line audio input circuit; the shield is connected to the amplifier or chassis ground.

## SPECIFICATIONS

### Type

CONTROLLED MAGNETIC<sup>®</sup>, Noise-Canceling

### Frequency Response

Optimized response in the critical 200 to 4,000 Hz range (see Figure 2)

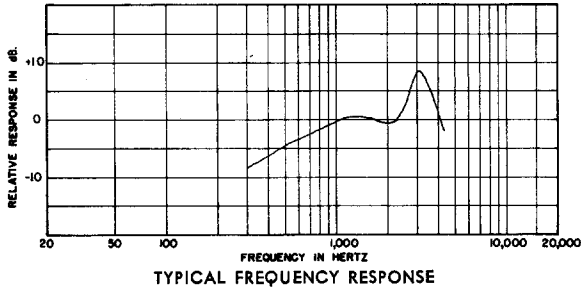


FIGURE 2

### Impedance

Model 419A: Microphone impedance is "High"

Model 419B: Microphone rating impedance is 150 ohms (200 ohms actual)

### Load Impedance Range

Model 419A: 15 kilohms to 100 kilohms

Model 419B: 200 ohms to 1,000 ohms

### Output Level (at 1,000 Hz)

	419A	419B
Open Circuit Voltage* .....	-18.5 dB (.119 V)	-40.5 dB (9.44 mV)
Power Level** .....	-59.5 dB	

\*0 dB = 1 volt per 100 microbars

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

### Switch

Push-to-talk leaf-type switch to actuate microphone circuit and an external relay or switching circuit.

### Cable

Model 419A: 1.5m (5 ft) three-conductor, one-conductor shielded, coiled cable

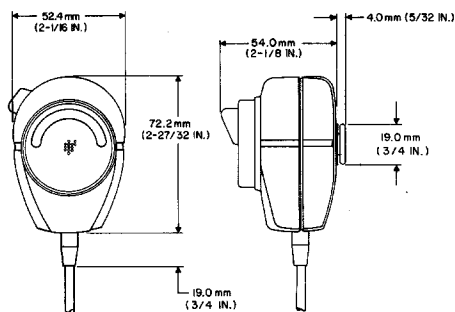
Model 419B: 1.5m (5 ft) four-conductor, two-conductors shielded, coiled cable

### Case

Matte black ARMO-DUR<sup>®</sup>

### Dimensions

See Figure 3



OVERALL DIMENSIONS

FIGURE 3

### Net Weight

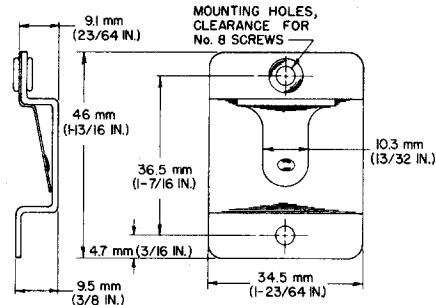
260 grams (9 oz)

### Packaged Weight

401 grams (14 oz)

## MOUNTING

A mounting bracket for permanent installation is supplied with each microphone (see Figure 4).



MOUNTING BRACKET

FIGURE 4

## FURNISHED ACCESSORY

Mounting Bracket .....RK6MB

## REPLACEMENT PARTS

	419A	419B
Cartridge .....	90A1756	R19B
Cable .....	C24C	C25C
Case .....	RK19C	RK20C
Switch .....	90B1008	RK15S
Switch Button .....	RK16SB	RK16SB

## GUARANTEE

This Shure product is guaranteed in normal use to be free from electrical and mechanical defects for a period of one year from date of purchase. Please retain proof of purchase date. This guarantee includes all parts and labor. This guarantee is in lieu of any and all other guarantees or warranties, express or implied, and there shall be no recovery for any consequential or incidental damages.

## SHIPPING INSTRUCTIONS

Carefully repack the unit and return it prepaid to:  
 Shure Brothers Incorporated  
 Attention: Service Department  
 1501 West Shure Drive  
 Arlington Heights, Illinois 60004

If outside the United States, return the unit to your dealer or Authorized Shure Service Center for repair. The unit will be returned to you prepaid.