

UNIDIRECTIONAL DYNAMIC EQUALIZER MICROPHONE

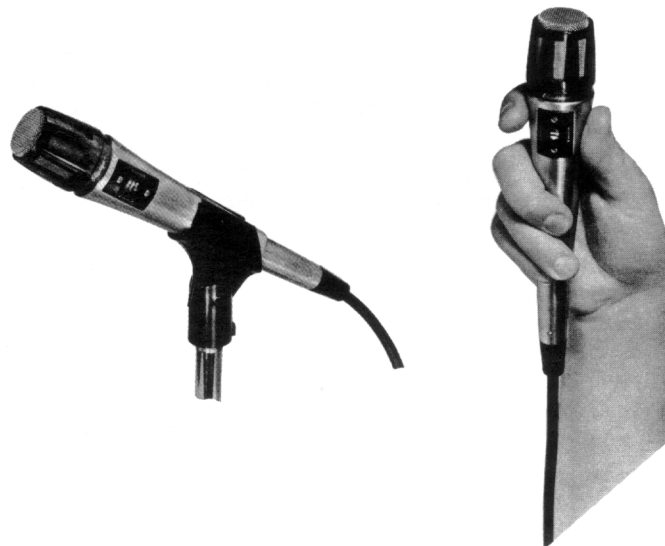
GENERAL

The Shure Model 516EQ is a unidirectional dynamic microphone with built-in capabilities for equalization or feedback control. The 516EQ is designed to improve the quality of home tape recordings by providing the recordist with the ability to make selective changes in frequency response without the need for elaborate audio equipment. Four switches, conveniently located on the microphone handle, activate filters that attenuate microphone response by approximately 6 dB at each switch frequency.

In addition to response shaping, the 516EQ's four switches also provide up to 16 different combinations of special effects. These effects range from eliminating nasal and sibilant sounds to emphasizing various instruments.

The unidirectional design of the 516EQ also contributes to quality sound reproduction. Since it picks up sound only from the front of the microphone, unwanted sounds occurring at the rear or sides of the microphone are suppressed. This permits a greater working distance from the microphone with minimal background sound pickup.

The 516EQ is ruggedly built of metal and high-impact ARMO-DUR® with internal vibration isolation for years of dependable service. The microphone is supplied with a foam windscreen, swivel adapter, microphone cable, mini-plug adapter cable, and carrying case.



VARIATION

Model 516EQ-PR: Same as Model 516EQ, except designed for stereo tape recording. Two microphones, windscreens, swivel adapters, microphone cables, and mini-plug cables are supplied in a single carrying case.

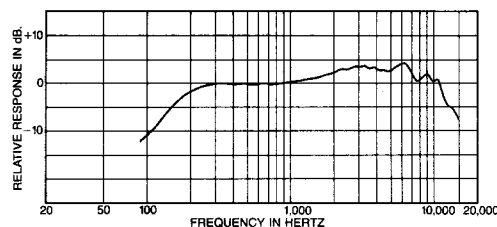
SPECIFICATIONS

Type

Dynamic, Equalizer (switch-selectable)

Frequency Response

50 to 15,000 Hz (see Figure 1)



TYPICAL FREQUENCY RESPONSE

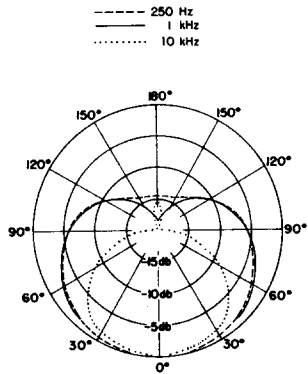
FIGURE 1

Polar Pattern

Cardioid (unidirectional) uniform with frequency, symmetrical about axis (see Figure 2)

Model 516EQ Features:

- Provides equalization for home recording without expensive audio accessories
- Four microphone filter switches function in critical regions of audio spectrum
- Various switch combinations for special audio effects
- Cardioid (unidirectional) pattern picks up sound from front of microphone only, suppresses unwanted side and rear sounds
- Rugged construction for years of dependable service
- Low impedance for unlimited cable lengths
- Cable equipped with phone plug and supplied with mini-plug adapter for direct connection to most tape recorders



POLAR PATTERNS
FIGURE 2

Impedance

Microphone rating impedance is 150 ohms (170 ohms actual) for connection to microphone inputs rated at 100 to 3,000 ohms

Output Level (at 1,000 Hz)

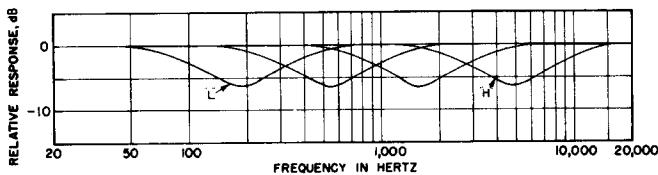
Open Circuit Voltage -81 dB (.09 mV)
(0 dB = 1 volt per microbar)
Power Level -59 dB
(0 dB = 1 milliwatt with 10 microbars)

Phasing

Positive pressure on diaphragm produces positive voltage on pin 2 of plug element

Filter Switches

Four filter switches in case. Switches provide approximately 6 dB cut at 190 (LO), 560, 1650 and 4900 (HI) Hz (see Figure 3). Filter attenuation varies slightly with load impedance.



TYPICAL FILTER ATTENUATION
FIGURE 3

Cables

4.6m (15 ft) single-conductor shielded microphone cable, with three-socket professional audio connector* on microphone end and phone plug on equipment end. 910 mm (36 in.) single-conductor shielded adapter cable, with phone jack and 9/64-inch mini-plug connectors.

* Designed to mate with Cannon XL series, Switchcraft A3 (Q.G.) series, or equivalent connector

Swivel Adapter

Positive action, adjustable through 90° from vertical to horizontal, permits easy removal for hand-held use, suitable for mounting on stand with 5/8"-27 thread

Operating Temperature Range

-40° to 74°C (-40° to 165°F)

Case

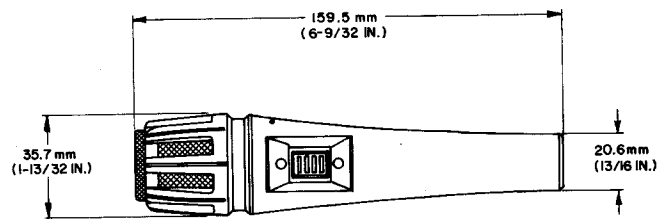
Satin-chrome die casting with ARMO-DUR® grille

Cartridge Shock Mount

Internal rubber vibration-isolator

Dimensions

See Figure 4



OVERALL DIMENSIONS
FIGURE 4

Weight

Net (less cable)

268 grams (9½ oz)

Combined Net (with accessories)

516EQ: 879 grams (1 lb, 15 oz)

516EQ-PR: 1.6 kg (3 lb, 10 oz)

Packaged

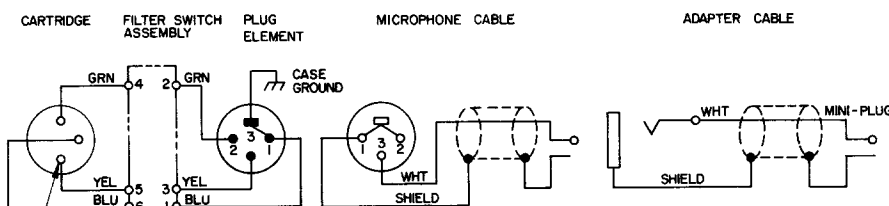
516EQ: 1 kg (2 lb, 4 oz)

516EQ-PR: 1.9 kg (4 lb, 2 oz)

OPERATION

Model 516EQ is a low-impedance microphone for connection to microphone inputs rated at 100 to 3,000 ohms. The microphone cable supplied with the 516EQ is a 4.6m (15 ft) single-conductor shielded type with a phone plug at the equipment end. The phone plug will provide proper input connections for the majority of quality tape recorders. If the tape recorder has a mini-plug microphone input, connect the 910 mm (36 in.) adapter cable between the microphone cable and recorder input.

If an extension cable is to be used, it is recommended that a two-conductor shielded type with professional three-pin and three-socket audio connectors be connected between the 516EQ and the supplied microphone cable.



INTERNAL CONNECTIONS
FIGURE 5

Equalization

The 516EQ may be used as an equalizer to attenuate certain frequencies which may be causing unpleasant effects due to poor room acoustics. The HI switch may be effective in diminishing sibilance or other high-frequency sounds in a highly reflective room while the LO switch will help overcome the "boominess" caused by excessive room reverberation. The mid-high and mid-low switches are used to provide mid-range de-emphasis, thereby emphasizing the bass and treble frequencies.

Similarly, the low, high or mid-range frequencies may be emphasized by activating all filter switches *except* that of the desired frequency. In this way, the overall frequency response of the 516EQ with exception of the desired frequency is reduced; the desired frequency remains at the original (higher) level.

The filter switches are activated by using a pencil or other instrument to move the switch to the IN position.

Special Effects

In addition to using the 516EQ as an equalization microphone, a number of special effects are possible by activating various combinations of filter switches. These effects are summarized in the following table. Note that the effects of the filter switches are often subjective; test tapes should be made to verify that the suggested switch positions will provide the desired sounds. (Dash lines show frequency response before filter switches have been activated.)

TYPICAL FREQUENCY RESPONSE	SWITCH POSITIONS OUT IN	EFFECTS
		Normal vocal/instrument recording with slight presence rise.
		Remove excessive sibilance ("s" sounds); reduces high-frequency background noises.
		De-emphasizes mid-range; "sweetens" strings and reeds.
		Reduces mid-low frequencies; provides cleaner bass without muddiness.
		Produces low-frequency rolloff; minimizes room resonance and muddiness in lower register of piano, kick-drums; recommended for windy outdoor recording.
		Minimizes mid and mid-high frequencies; excellent for low-frequency organ pickup, good for bass harmonica and electric bass.
		Attenuates mid-low and high frequencies, thereby accentuating deep bass and mid-frequencies; often used to correct some room response irregularities.
		Provides "rinky-tink" piano sound; reduces harshness of brass instruments.
		Accentuates bass and high treble vocal sounds; good for choir or pipe organs.
		De-emphasizes mid-high and low frequencies to correct room acoustics.
		Increases articulation and minimizes "boominess" in large rooms; emphasizes flute and reeds.
		Provides maximum bass boost; useful for miking string bass.
		Emphasizes mid-low frequencies for miking high-frequency section of organ speakers.
		Creates hollow, "telephone" sound with voices.
		Adds bright, sibilant sound to voices; aids in miking percussion and acoustic rhythm guitar.
		Reduces overall level by approximately 6 dB; avoids preamp overload.

PHASING

To test two microphones and/or their cables for proper phasing, connect them to an amplifier and talk or sing into them while holding them three or four inches apart. The sound from the speakers should be the same when talking into either microphone or directly between them if they are in phase with each other. If the sound drops drastically, or if a dead spot is found when talking between the two microphones, either the microphones or their cables (low impedance only) are out of phase. All cables and microphones should be tested in this manner to insure that they are in phase with each other.

To change the phase of a low-impedance microphone cable, interchange the wires connected to pins 2 and 3 of the connector at the microphone end of the cable. To change the phase of a microphone, the microphone cartridge leads must be interchanged (see Figure 5). This should be performed by your dealer, the Shure Factory Service Department, or qualified service personnel.

FURNISHED ACCESSORIES

Swivel Adapter A25B
Windscreen A61WS-WH
Mini-Plug Adapter Cable 95A866
Carrying Case 90Z1404

OPTIONAL ACCESSORIES

Desk Stand S33B, S37, S39A or S40A
Disconnect Adapter A45
Dual Mount A26M

REPLACEMENT PARTS

Grille Assembly RK54G
Cartridge R97
Filter Switch Assembly RK185S
Plug Element RK40P
Microphone Cable 90D1608

FULL ONE-YEAR WARRANTY

Shure Brothers Incorporated ("Shure"), 222 Hartrey Avenue, Evanston, Illinois 60204, warrants to the owner of this product that it will be free, in normal use, of any defects in workmanship and materials for a period of one year from date of purchase. You should retain proof of date of purchase. Shure is not liable for any consequential damages. If this Shure product has any defects as described above, carefully repack the unit and return it prepaid to:

Shure Brothers Incorporated
Attention: Service Department
1501 West Shure Drive
Arlington Heights, Illinois 60004

If you are not in the United States, return the unit to your dealer or Authorized Service Center for repair. The unit will be repaired or replaced and returned to you promptly, and if it cannot be repaired or replaced, you may elect to receive a refund.