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SHURE®

KSM44

User Guide

SHURE®

SHURE Incorporated Web Address: <http://www.shure.com>

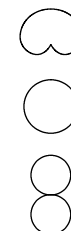
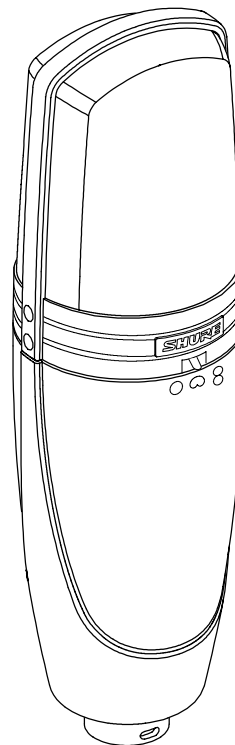
222 Hartrey Avenue, Evanston IL 60202-3696, U.S.A.

Phone: 847-866-2200 Fax: 847-866-2279

In Europe, Phone: 49-7131-72140 Fax: 49-7131-721414

In Asia, Phone: 852-2839-4290 Fax: 852-2839-4055

Elsewhere, Phone: 847-866-2200 Fax: 847-866-2585



Declaration of Conformity

We of

Shure Incorporated
222 Hartrey Ave.
Evanston IL 60202-3696 U.S.A.
847-866-2200

declare under our sole responsibility that the following product,

KSM44 Multiple Polar Pattern Condenser Microphone

was tested and found to comply with Part 15 of the FCC rules.

Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Testing was completed by the following NVLAP or A2LA accredited laboratory:

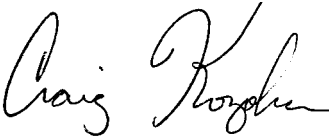
D.L.S. Electronic Systems, Inc.
1250 Peterson Drive
Wheeling, Illinois 60090, U.S.A.

at the test sites 1 and 2 of

D.L.S. Electronic Systems, Inc.
166 South Center
Genoa City, Wisconsin 53128, U.S.A.

Shure Inc., Manufacturer.

Signed:



Date: June 16, 2000

Name, Title: Craig Kozokar, Senior Quality Engineer

SHURE INCORPORATED

KSM44 MULTIPLE POLAR PATTERN CONDENSER MICROPHONE



Thank you for selecting the KSM44

Over 75 years of audio experience has contributed to making the KSM44 one of the finest microphones available.

If you have any questions not answered in this booklet, please contact Shure Applications Engineering at 847-866-2525, Monday through Friday, from 8:00 am to 4:30 pm, CST. In Europe, call 49-7131-72140. Our web address is www.shure.com.

GENERAL DESCRIPTION

The Shure® KSM44 is a side-address condenser microphone with multiple polar patterns (cardioid, omnidirectional, bidirectional). Designed for studio use, the KSM44 has externally biased, dual 1-inch diaphragms, extremely low self-noise and an extended frequency response specially tailored for vocal tracking and instrument recording.

FEATURES

- *Multiple polar patterns—cardioid, omnidirectional and bidirectional—for maximum flexibility in a wide variety of recording applications.*
- *Dual 1 inch, externally biased, ultra-thin, 2.5 µm, 24 Karat gold-layered, low mass, Mylar® diaphragms provide superior transient response*
- *Class A, discrete, transformerless preamplifier for transparency, extremely fast transient response and no crossover distortion. Minimizes harmonic and intermodulation distortions.*
- *Premium electronic components and gold-plated internal and external connectors.*
- *Subsonic filter eliminates rumble from mechanical vibration below 17 Hz.*
- *Switchable 15 dB pad for handling extremely high sound pressure levels (SPLs).*
- *3-position switchable low-frequency filter helps reduce unwanted background noise or counteract proximity effect.*
- *Integrated three-stage “pop” protection grille reduces plosives and other breath noise.*
- *Internal shock mount reduces handling and stand noise.*

PERFORMANCE CHARACTERISTICS

- *Extended frequency response*
- *Ultra-low self noise*
- *Exceptional low-frequency reproduction*
- *High output level*
- *High input SPL capability*
- *No crossover distortion*
- *Extremely uniform polar response*
- *Superior common mode rejection and suppression of radio frequency interference*

APPLICATIONS

The KSM44 provides superior results in any application requiring a high quality microphone. Some typical applications are listed below.

- Voice—solo, background, voice-over or broadcasting
- Acoustic instruments such as piano, guitar, drums, percussion, strings
- Wind instruments—brass and woodwind
- Low-frequency instruments such as double bass, electric bass, kick drum
- Overhead miking—drums or percussion
- Ensembles—choral or orchestral
- Room ambience pick-up—guitar amplifier or drums

Both the acoustic environment and microphone placement strongly affect the sound obtained from miking a source, especially with a high-resolution microphone like the KSM44. You may need to experiment with microphone placement, room treatments and polar pattern to achieve the best overall sound for each application.

OPERATION

Mounting


Use either the ShureLock™ swivel mount or the elastic shock mount to secure the KSM44 to a floor or boom stand. When using the swivel mount, the internal shock mount provides good isolation from vibration. For even greater reduction of noise from external vibrations, use the elastic shock mount.

Important: When using the swivel mount or elastic shock mount, be sure that the threaded, knurled locking grip is screwed securely onto the threads at the base of the microphone. Do not overtighten.

Power

The KSM44 requires phantom power and performs optimally with a 48 Vdc supply (IEC-268-15/DIN 45 596). However, it will operate with slightly decreased headroom and sensitivity with supplies as low as 11 Vdc.

Positioning the Microphone

The front of the KSM44 is marked by the **SHURE** logo and the polar-pattern selection switch. See Figure 1. Position this side of the microphone toward the sound source to be recorded. The rear of the microphone is marked by the  logo, the low-frequency filter switch and the 15dB attenuation switch.

Selecting a Polar Pattern

The three position switch on the front of the KSM44 sets the polar response pattern of the microphone. The sensitivity of the microphone to sounds coming from different angles varies according to this switch's setting.

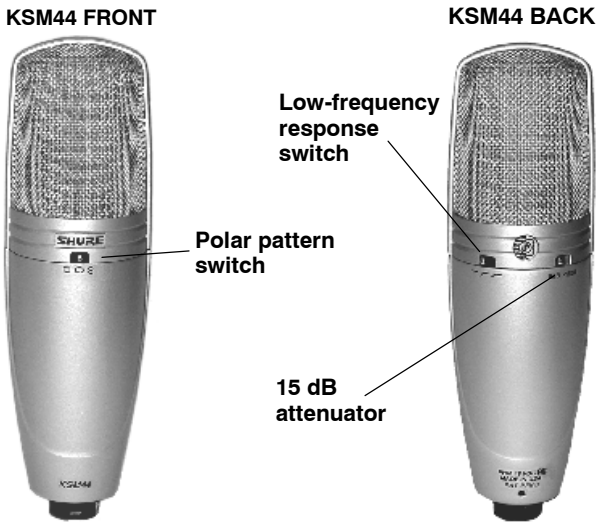





FIGURE 1. KSM44 Front and Back

 **Cardioid.** Picks up sounds directly in front of the microphone and is least sensitive to those in back. Cardioid is the most commonly used pattern in studio recording and live-sound applications. See Figure 4.

 **Omnidirectional.** Picks up sound equally from all directions. This pattern is best for picking up room ambience and miking several sources at once, such as singers or an ensemble. Omnidirectional patterns do not exhibit proximity effect. See Figure 6.

 **Bidirectional.** Picks up equally from the front and back of the microphone while rejecting sounds from the sides. Bidirectional is often used in microphone configurations for stereo recording (such as mid-side and Blumlein techniques). See Figure 8. Note: As with all bidirectional microphones, sounds picked up from the front will be in polarity with the source and those picked up from the back will be out of polarity with the source.

Selecting Low-Frequency Response

A three-position switch on the back of the KSM44 allows you to adjust the low-frequency response of the microphone, as shown in Figure 2. The low-frequency filter settings can be used to reduce wind noise, room noise or proximity effect.

— **Flat response.** Use this setting when you desire the most natural reproduction of the source. Since the microphone will reproduce ultra-low frequencies, the ShureLock™ elastic-suspension shock mount may be required to reduce low-frequency mechanical vibrations transmitted through the microphone stand.

Low-frequency cutoff.

Provides an 18 dB-per-octave cutoff at 80 Hz. Helps eliminate stage rumble or low-frequency room noise from heating, ventilation, or cooling (HVAC) systems. It may also be used to compensate for proximity effect or to reduce low frequencies that make an instrument sound dull or muddy.

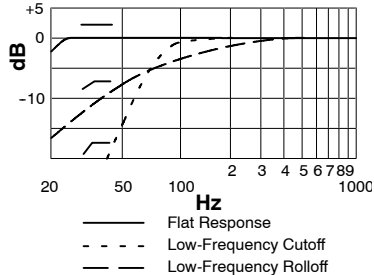


Figure 2. Low Frequency Responses

— **Low-frequency rolloff.** Provides a 6dB-per-octave rolloff filter at 115Hz. Use this setting with vocals or instruments to compensate for proximity effect or to reduce low frequencies that could make an instrument sound dull or muddy.

Setting Attenuation

The attenuation switch on the back of the KSM44 reduces the signal level from the cartridge by 15 dB without altering the frequency response. This can prevent extremely high SPLs from overloading the microphone. To activate attenuation, move the switch to the “-15 dB” position. Note: In situations where the high output of the KSM44 might overload the microphone preamplifier of a console or mixer, use an attenuation pad in the mixer.

Integral Pop Filter

The KSM44 has an integral pop filter which helps reduce wind and breath noise. An external pop-protection screen or windscreen may be necessary when close-miking vocalists. The low-frequency cutoff filter may also be effective.

Load Impedance

A load impedance of at least 1000 Ω is recommended. When used with typical modern microphone preamplifiers (rated at about 2500 Ω), the KSM44 provides higher maximum SPL capability and output clipping level. With the -15 dB pad engaged, the KSM44 can handle up to 156 dB SPL and output +15 dBV into a 5500 Ω or greater load.

SPECIFICATIONS

Cartridge Type	Externally biased condenser		
Frequency Response	20 to 20,000 Hz (See Figures 3, 5, 7)		
Output Impedance	150 Ω (actual)		
Attenuation Switch	0 or 15 dB attenuation		
Low Frequency Response Switch	Flat; -6 dB/octave below 115 Hz; -18 dB/octave below 80 Hz		
Phantom Power	48 Vdc \pm 4 Vdc (IEC-268-15/DIN 45 596), positive pins 2 and 3		
Current Drain	5.4 mA typical at 48 Vdc		
Common Mode Rejection	\geq 50 dB, 20 Hz to 20 kHz		
Polarity	Positive pressure on front diaphragm produces positive voltage on output pin 2 relative to pin 3		
Dimensions and Weight	55.9 mm (2.20 in.) maximum body diameter, 187 mm (7.37 in.) long; 490.5 grams (17.30 oz)		
Directional polar Patterns	Cardioid (See Figure 4)	Omnidirectional (See Figure 6)	Bidirectional (See Figure 8)
Sensitivity (typical; at 1000 Hz; 1 Pa = 94 dB SPL)	-31 dBV/Pa	-37 dBV/Pa	-36 dBV/Pa
Self-noise (typical, equivalent SPL; A-weighted (IEC 651))	7 dB	10 dB	10 dB
Maximum SPL* 2500 Ω load (Attenuator on)	132 (149) dB	138 (151) dB	137 (150) dB
1000 Ω load	127 (144) dB	132 (145) dB	131 (144) dB
Output Clipping Level* 2500 Ω load	7 dBV	7 dBV	7 dBV
1000 Ω load	1 dBV	1 dBV	1 dBV
Dynamic Range 2500 Ω load	125 dB	128 dB	127 dB
1000 Ω load	120 dB	122 dB	121 dB
Signal to Noise ratio	87 dB	84 dB	84 dB

*20 Hz to 20 kHz; THD < 1%. THD of the microphone preamplifier when applied input signal is equivalent to the cartridge output at specified SPL.

CARDIOID RESPONSE GRAPHS

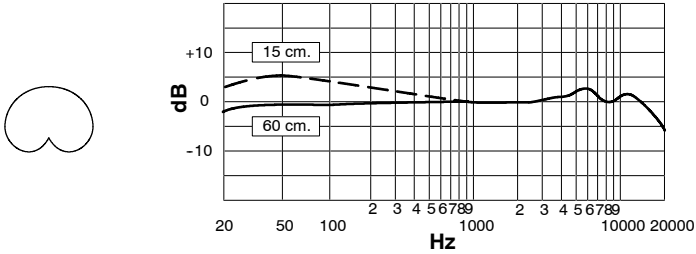


FIGURE 3. TYPICAL FREQUENCY RESPONSE

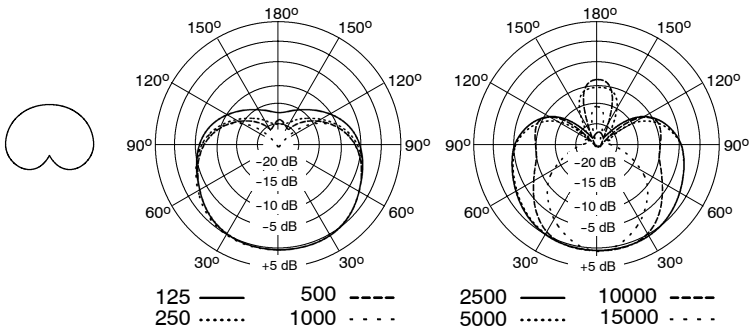


FIGURE 4. TYPICAL POLAR PATTERNS

OMNIDIRECTIONAL RESPONSE GRAPHS

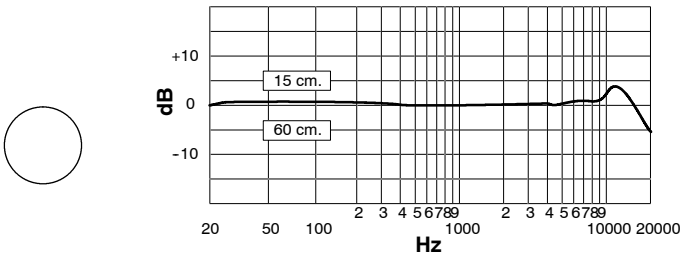


FIGURE 5. TYPICAL FREQUENCY RESPONSE

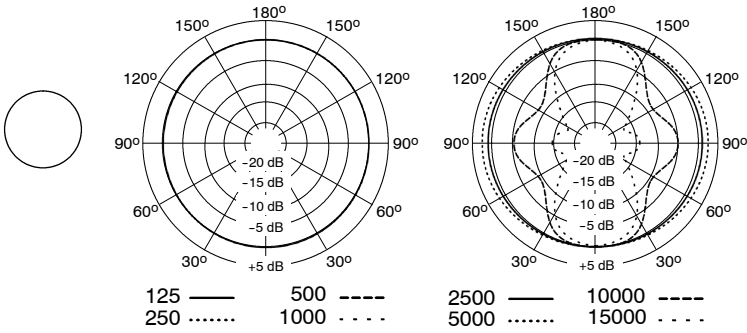


FIGURE 6. TYPICAL POLAR PATTERNS

BIDIRECTIONAL RESPONSE GRAPHS

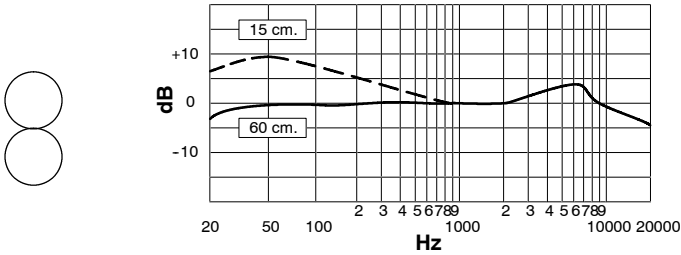


FIGURE 7. TYPICAL FREQUENCY RESPONSE

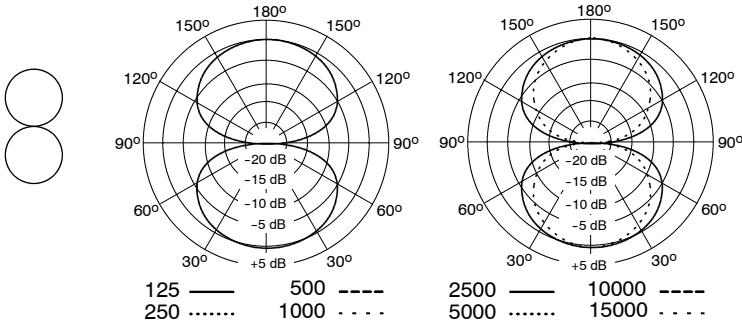
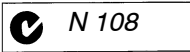


FIGURE 8. TYPICAL POLAR PATTERNS

CERTIFICATION

Tested to comply with FCC standards. For home or office use. This product complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: 1) This device may not cause harmful interference, and 2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by Shure Incorporated could void your authority to operate this equipment.

Eligible to bear CE Marking; Conforms to European EMC directive 89/336/EEC. Meets applicable tests and performance criteria found in European Professional Audio Products EMC Standard EN 55103 (1996); Part 1 (emissions) and part 2 (immunity). The KSM44 is intended for use in environments E1 (residential) and E2 (Light Industrial) as defined in European standard EN 55103. EMC conformance is based on the use of shielded interconnecting cable.



FURNISHED ACCESSORIES

ShureLock™ Champagne Elastic Shock Mount	A44SM
ShureLock™ Champagne Swivel Adapter	A44M
Aluminum Carrying Case	A44SC
Protective Velveteen Pouch	A44VB

OPTIONAL ACCESSORIES

Windscreen	A32WS
Padded, Zippered Carrying Bag	A32ZB

REPLACEMENT PARTS

Suspension Shock Mount Elastic Cord, Champagne (contains one)	95B2125
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SERVICE

For additional microphone 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.