SHURE®

Model SM99 User Guide

MINIATURE GOOSENECK-MOUNTED SUPERCARDIOID CONDENSER MICROPHONE
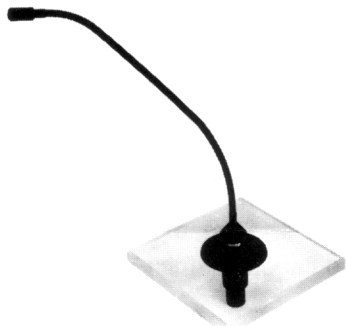
GENERAL

The SM99 is a miniature gooseneck-mounted condenser microphone (electret bias) designed primarily for mounting on a lectern, pulpit, or conference table. Its wide frequency response, supercardioid pickup pattern, and two-stage pop filter make it especially suitable for speech or vocal pickup. The SM99 can also be used to pick up various musical instruments. The microphone is available with three different gooseneck lengths to suit the widest variety of applications.

The excellent, uniform supercardioid polar pattern of the SM99 discriminates against sounds coming from the sides and rear of the microphone, permitting higher gain before feedback in sound reinforcement applications. Because of the uniformity of this pattern, extending out to 20,000 Hz, the SM99 can be used to reduce background noise in pickup of a speaker or vocalist or to pick up a particular instrument in an ensemble or orchestra, minimizing the need for isolation booths or barriers.

The microphone preamplifier is housed in the gooseneck base; power can be derived from any 5- to 52-volt dc phantom supply. Internal Allen setscrews on the furnished mounting flange permanently lock the gooseneck in place; another Allen setscrew locks the microphone cartridge securely to the top of the gooseneck. A standard 3-pin professional audio connector (XLR-type) at the bottom of the preamp housing permits using a standard audio cable between the SM99 gooseneck microphone and the audio mixer or amplifier. The microphone can also be mounted on a conventional microphone stand by using a Shure A25C flexible swivel adapter slipped on to the preamp housing or an A57E attached to the microphone connector housing and cable connector.

Features:

- Smooth wide response for accurate sound reproduction across the entire audio spectrum
- Symmetrical supercardioid pattern, uniform with frequency out to 20 kHz, maximizes gain before feedback, minimizes need for isolation when picking up single instruments out of a group
- Fixed 12 dB/octave rolloff below 100 Hz to minimize pickup of low-frequency noise and vibration
- Low distortion and wide dynamic range
- Phantom (simplex) powered, accepts wide range of phantom voltages, from 5 to 52 Vdc
- Low susceptibility to RFI, electrostatic and electromagnetic hum
- Usable over very wide range of temperature and humidity
- Can be permanently mounted on lectern or podium, attached to surface-mounted standard XLR-type receptacle, or stand-mounted using A25C Flex–mount or A57E swivel adapter
- Gooseneck in SM99-12 and SM99-18 designed with rigid central length to preserve neat appearance even after repeated adjustments; flexing occurs only in sections at each end (73 mm [2-$^7/_8$ in.] at top and bottom)

VARIATIONS

Available with three different gooseneck lengths

SM99-6: 150 mm [6-in.] **gooseneck (flexible throughout)**

SM99-12: 300 mm [12-in.] **gooseneck (approximately 150 mm [6 in.] rigid central section)**

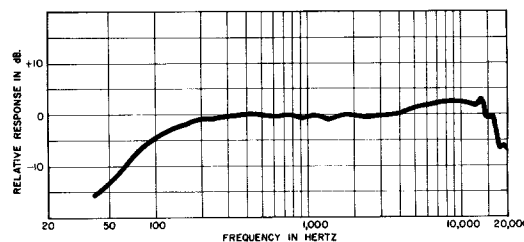**SM99-18:** 450 mm [18-in.] **gooseneck (approximately 225 mm [9 in.] rigid central section)**

SPECIFICATIONS

Type

Supercardioid condenser (electret bias)
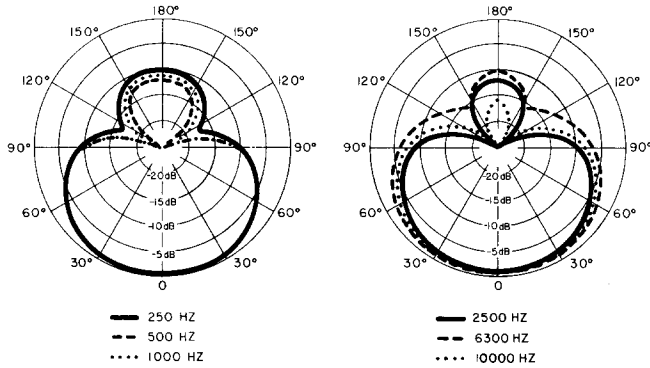
Frequency Response

80 to 20,000 Hz (see Figure 1)

TYPICAL FREQUENCY RESPONSE
FIGURE 1

Printed in U.S.A.

CE

Polar Pattern

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

TYPICAL POLAR PATTERN
FIGURE 2

Output Impedance

Rated at 150 Ω (90 Ω actual)

Recommended minimum load impedance: 800 Ω

(May be used with loads as low as 150 Ω with reduced clipping level)

Output Level (at 1,000 Hz)

Open Circuit Voltage . . . . −73.0 dB (0.22 mV)

0 dB = 1 V/μbar

Preamplifier Output Clipping Level (at 1, 000 Hz)

800 Ω load . . . . −18 dBV (0.13 V)

150 Ω load . . . . −29 dBV (0.036 V)

Maximum SPL (at 1,000 Hz, less than 1% THD)

800 Ω load . . . . 130 dB

150 Ω load . . . . 122 dB

Hum Pickup (maximum)

+10 dB equivalent SPL in 1 mOe field

Output Noise

30 dB SPL A-weighted

32 dB SPL weighted per DIN 45 405

Signal-to-Noise Ratio

64 dB re 94 dB SPL

Dynamic Range

100 dB

Phasing

Positive pressure on diaphragm produces positive voltage on pin 2 relative to pin 3 of output connector

Power

5 to 52 Vdc Phantom (simplex) voltage, 0.33 mA current drain

Case

Microphone, gooseneck, preamplifier housing, and mounting flange: matte black enamel finished

Microphone case: brass with stainless steel inner grille

Gooseneck and preamplifier housing: steel

Mounting flange: aluminum

Dimensions

See figure 3

Environmental Conditions

Operating Temperature: −18 to 57° C (0 to 135° F)

Storage Temperature: −28 to 74°C (−20 to 168°F)

Relative Humidity: 0 to 95%

Net Weight

Gooseneck microphone assembly

SM99-6:   123 g (4.3 oz)

SM99-12:   165 g (5.8 oz)

SM99-18:   207 g (7.3 oz)

Mounting flange: 38.4 g (1.35 oz)

INSTALLING THE SM99

Three mounting methods are possible. Either connect the SM99 directly to a surface mounted 3-socket XLR type
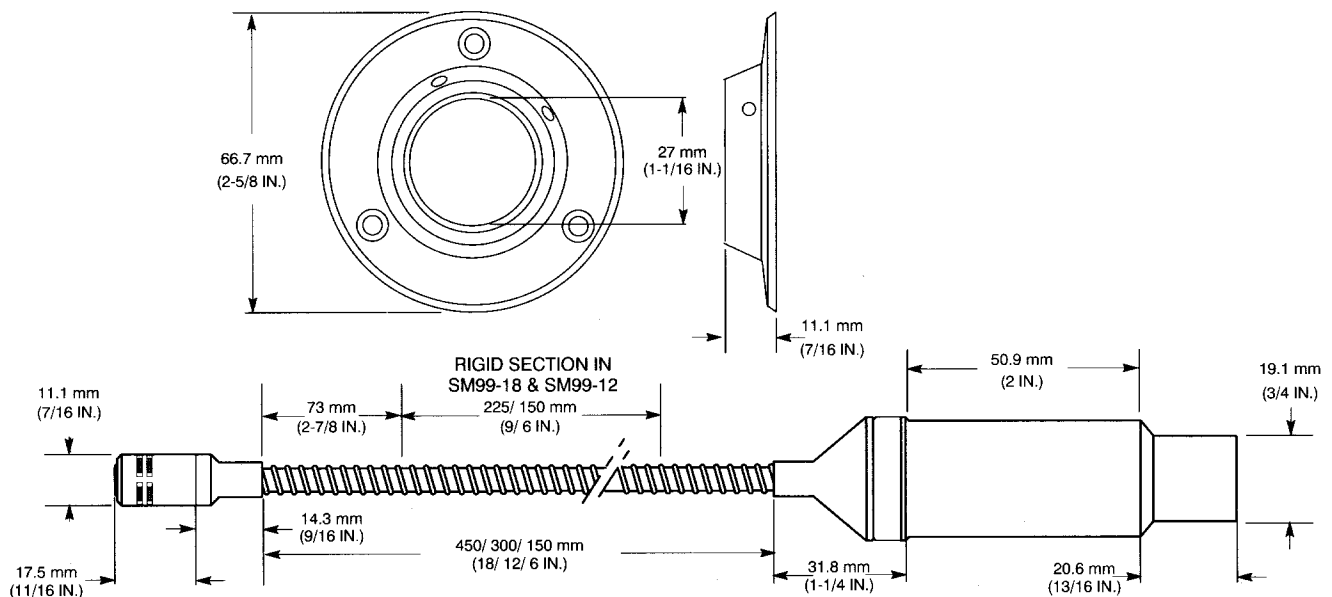

OVERALL DIMENSIONS
FIGURE 3

connector, use an optional accessory A25C Flex-mount swivel adapter or A57E snap-in swivel adapter to mount the SM99 on a conventional microphone stand, or use the supplied flange to mount the SM99 preamplifier housing below a mounting surface. (For this installation, the material thickness should not exceed 60.3 mm [2-3/8 in.]).

To install the SM99 below a mounting surface, proceed as follows.

1. Drill a 28.6 mm (1-1/8 in.) diameter hole in the surface on which the SM99 is to be mounted. (See Figure 4)
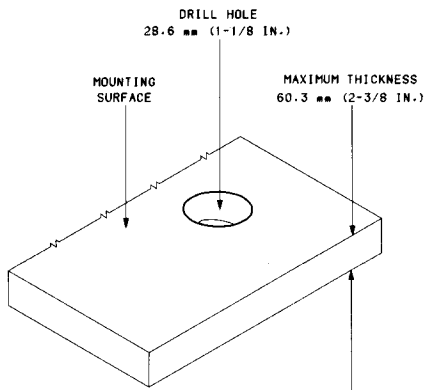
HOLE SIZE IN MOUNTING SURFACE
FIGURE 4

2. Center the mounting flange on the surface above the hole and insert the SM99 preamp housing into the hole.

3. Mark the location of the three screw holes in the flange, remove the microphone and flange, and drill starter holes in the three marked places.

4. Fasten the flange to the mounting surface using the three supplied screws. (See Figure 5.)
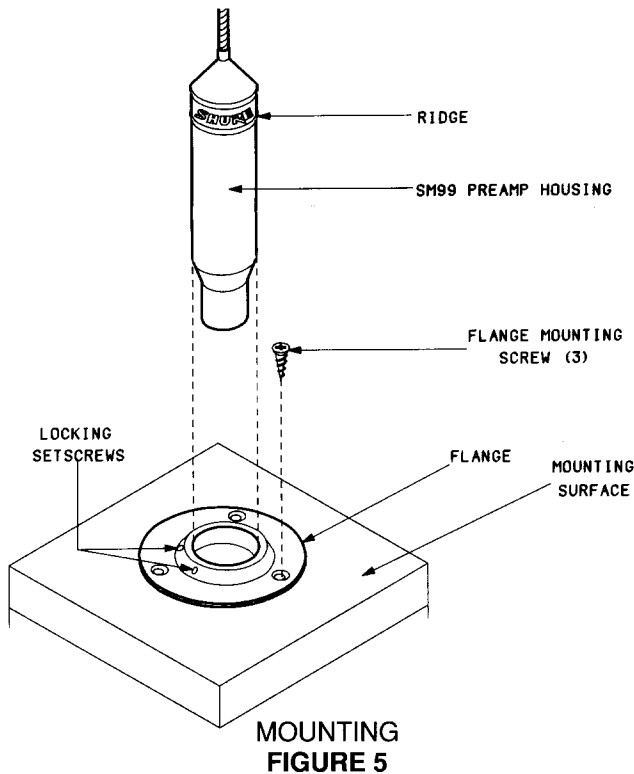
MOUNTING
FIGURE 5

5. Insert the SM99 preamp housing in the flange so that the ridge at the top of the preamplifier housing butts against the flange.

NOTE: Some additional height of the microphone can be obtained by positioning the preamp housing higher in the flange.

6. Use the supplied Allen wrench to tighten the two set-screws on the flange against the SM99 preamp housing.

USING THE SM99

Pop Filter

Always use the supplied pop filter when the SM99 is employed to pick up speech or voice. To install the pop filter, remove the backing from the adhesive hook fastener strip supplied in the hardware kit, and attach the strip around the circumference of the microphone below the entry ports. **Never cover the ports with the adhesive strip.** See Figure 6. Slip the pop filter over the microphone. The hook fastener strip will hold the pop filter in place while still permitting easy removal when the pop filter is not required.
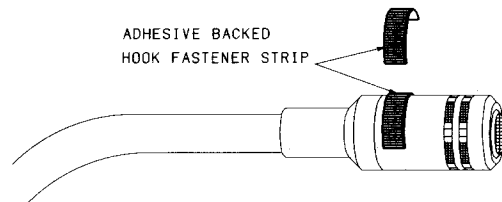
**ATTACH THE HOOK FASTENER STRIP**
FIGURE 6

Gooseneck

To preserve a neat appearance in the SM-99-12 and SM99-18 even after repeated adjustments, their goose-necks are designed with a rigid central length (approximately 150 mm [6 in.] and 225 mm [9 in.] respectively). Flexing occurs only in the sections at each end. **Do not attempt to bend the central length of these goose-necks** (see Figure 3).

OPTIONAL ACCESSORIES

Flex-mount Slip-in Swivel Adapter............................. A25C
Snap-in Swivel Adapter A57E
Windscreen... A99WS
Cable, 7.6 mm (25 ft) TRIPLE FLEX® C25F
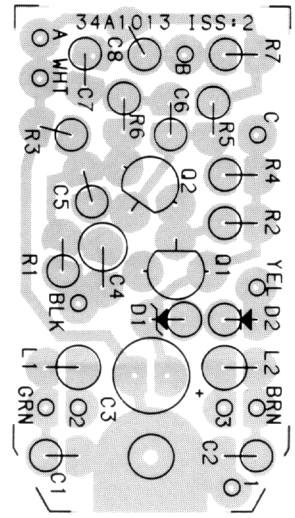Shock Mount Assembly A99SM

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.
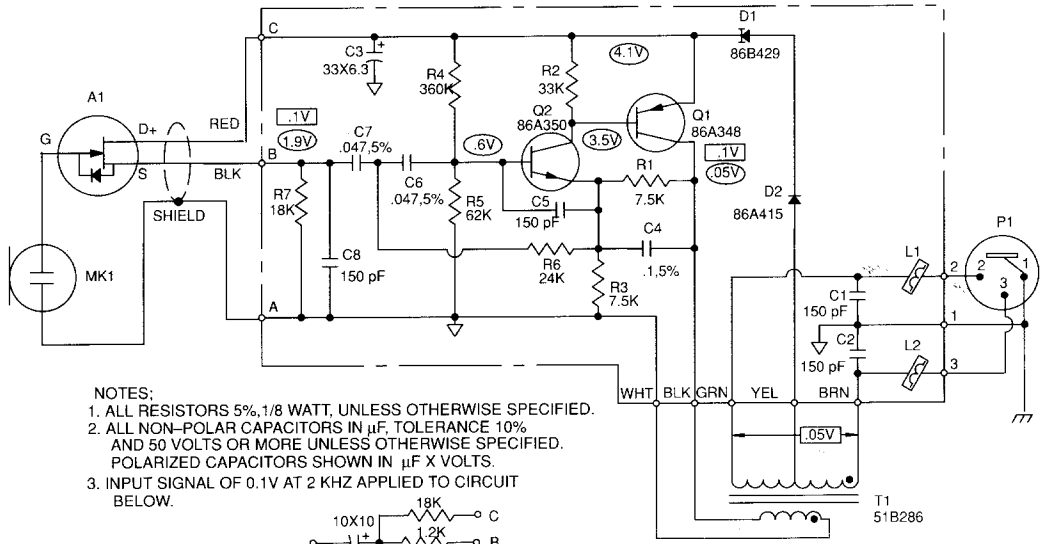
NOTES;
1. ALL RESISTORS 5%,1/8 WATT, UNLESS OTHERWISE SPECIFIED.
2. ALL NON-POLAR CAPACITORS IN µF, TOLERANCE 10%
   AND 50 VOLTS OR MORE UNLESS OTHERWISE SPECIFIED.
   POLARIZED CAPACITORS SHOWN IN µF X VOLTS.
3. INPUT SIGNAL OF 0.1V AT 2 KHZ APPLIED TO CIRCUIT
   BELOW.

4. POWER SOURCE IS 21 VDC THROUGH TWO 1.691K OHM,1%
   RESISTORS FROM SUPPLY TO PINS 2 AND 3 OF CONNECTOR P1.
5. D.C. VOLTAGES MEASURED WITH 11 MEG INPUT VOLTMETER;
   A.C. VOLTAGE MEASURED WITH 1 MEG INPUT VOLTMETER. VALUES
   SHOWN ARE TYPICAL AND MAY VARY ±20%.

6. THE FOLLOWING SYMBOLS DENOTE:
   ▽ CIRCUIT BOARD GROUND   ☐ A.C. VOLTAGE
   ⊥ CASE GROUND   ◯ D.C. VOLTAGE

INTERNAL CONNECTIONS
FIGURE 7

PREAMPLIFIER PC BOARD
FIGURE 8