

# SHURE®

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## Models Beta 98H/C and WB98H/C User Guide



### Condenser Instrument Microphone

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CE

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## GENERAL

The Shure BETA 98H/C is a premium cardioid condenser instrumental microphone that clamps onto the bell of wind instruments or onto the rim of percussion instruments. The integrated gooseneck and ratcheting swivel joint allows the microphone to be easily positioned and secured in place, and an isolation shock-mount reduces the transmission of instrument “key noise” and other mechanical noise. **A gooseneck angle brace is included to provide better retention of the microphone placement during more active performances** (see Figure 9 for application).

The BETA 98H/C features transformerless preamplifier circuitry, which improves linearity across the full frequency range. The pickup pattern of the BETA 98H/C provides high gain-before-feedback and excellent rejection of unwanted noise. Its high maximum sound pressure level (SPL) enables it to handle the extreme demands of brass, woodwind and percussion instruments.

The microphone is supplied with a snap-on windscreen, a storage bag, a gooseneck angle brace, and a cable management device. The preamplifier is attached to the microphone via a 10-foot high-flex cable and requires 11–52 Vdc phantom power.\*

\*Where phantom power is not available, use the Shure WB98H/C with the MX1BP battery-powered preamplifier.

## FEATURES

- *Tailored frequency response for open, natural sound reproduction*
- *Adjustable gooseneck and ratcheting swivel joint allow for optimal microphone positioning*
- *Gooseneck angle brace retains microphone placement in more active performances*
- *Compact, lightweight construction provides a low degree of visibility*
- *Designed for use in high SPL environments*
- *Uniform cardioid pattern provides for high gain-before-feedback and excellent rejection of ambient sound*
- *Interchangeable microphone cartridges with different pick-up patterns are available*
- *Legendary Shure quality, ruggedness and reliability*

## MODEL VARIATIONS

**BETA 98H/C** includes microphone, 3 m (10 ft.) high-flex cable with attached preamplifier, two snap-on windscreens, a gooseneck angle brace and a cable management device.

**WB98H/C** includes microphone, 1.6 m (5.3 ft.) high-flex cable terminated to mini-connector (TA4F) for wireless applications, two snap-on windscreens, a gooseneck angle brace and a cable management device.

## **APPLICATIONS AND PLACEMENT**

The most common BETA 98H/C applications and placement techniques are described below. Keep in mind that microphone technique is largely a matter of personal taste; there is no one “correct” microphone position.

**SAXOPHONE** (see Figure 4): Clamp the microphone onto the bell of the saxophone, so the microphone is a few inches from and facing into the bell. This will produce a bright tonal balance while minimizing feedback and leakage.

**SOPRANO SAXOPHONE** (see Figure 5): Clamp the microphone onto the bell of the saxophone and adjust the gooseneck so the microphone is facing the keys of the instrument, a few inches from the lower keys. This will produce a warm and full tonal balance. For a brighter tone, adjust the gooseneck so the microphone is facing into the bell, a few inches away.

**TROMBONE PLACEMENT** (see Figure 6): Clamp the microphone onto the bell of the trombone and adjust the gooseneck so the microphone is facing directly into the bell, a few inches away. This will produce a bright tonal balance while providing maximum isolation.

**TRUMPET PLACEMENT** (see Figure 7): Clamp the microphone onto the bell of the trumpet and adjust the gooseneck so the microphone is facing directly into the bell, a few inches away. This will produce a bright tonal balance while providing maximum isolation.

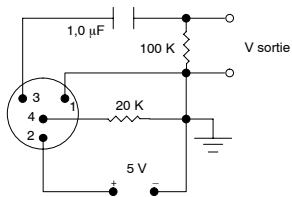
**DRUM PLACEMENT** (see Figure 8): Clamp the microphone onto the drum rim and adjust the gooseneck so the microphone is aiming a few inches above the drum head and an inch from the rim. This provides a full tonal balance.

**ENGLISH**

<b>SPECIFICATIONS</b>	<b>WB98H/C Microphone</b> (with standard test circuit shown in Figure 1)	<b>BETA 98H/C Microphone</b> (with preamplifier)
Type	Condenser (electret bias)	
Polar Pattern	Unidirectional (cardioid). See Figure 2.	
Frequency Response	20 to 20,000 Hz. See Figure 3.	
Output Impedance	1200 $\Omega$	Rated at 150.0 $\Omega$ (actual) Recommended minimum load impedance: 1 k $\Omega$ May be used with loads as low as 150 $\Omega$ with reduced clipping level)
Output Level (0 dB = 1 volt per Pascal)	Open Circuit Voltage: -56.5 dB (1.5 mV)	Open Circuit Voltage: -56 dB (1.6 mV)
Output Clipping Level (at 1kHz, THD < 1%)	-9 dBV (0.35 V)	2.5 k $\Omega$ load ..... 11 dBV (3.5 V) 1.0 k $\Omega$ load ..... 3 dBV (1.4 V)
Maximum SPL	143.5 dB	2.5 k $\Omega$ load ..... 163 dB 1.0 k $\Omega$ load ..... 155 dB

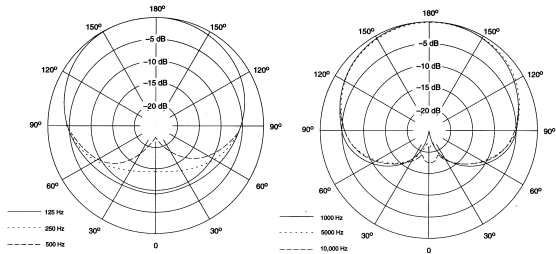
**ENGLISH**

<b>SPECIFICATIONS</b>	<b>WB98H/C Microphone</b> (with standard test circuit shown in Figure 1)	<b>BETA 98H/C Microphone</b> (with preamplifier)
Dynamic Range (maximum SPL to A-weighted noise level)	112.5 dB	132 dB (2.5 kΩ load)
Output Noise (equivalent SPL)	31 dB typical, A-weighted	
Signal-to-noise ratio	63 dB at 94 dB SPL (IEC 651)	
Polarity	Positive pressure on microphone diaphragm produces positive voltage on pins 3 and 4 with respect to pin 1 (ground).	Positive pressure on microphone diaphragm produces positive voltage on pin 2 relative to pin 3 of preamplifier output connector.
Recommended Operating Voltage	5 V (pin 2 to pins 3 and 4)	11 to 52 Vdc Phantom
Environmental Conditions	Operating temperatures: ..... -7° C to 49° C (20° F to 120° F) Storage temperatures: ..... -29° C to +74° C (-20° F to 165° F) Relative Humidity: ..... 0 to 95%	
Net Weight	Microphone w/cable and mini-connector (TA4F): 65 g (2.3 oz.)	Microphone w/cable and preamplifier: 156 g (5.5 oz.)



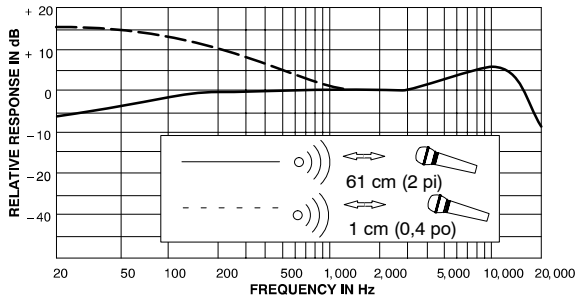
STANDARD TEST CIRCUIT

FIGURE 1



TYPICAL POLAR PATTERN

FIGURE 2



TYPICAL FREQUENCY RESPONSE

FIGURE 3



## CERTIFICATION

The Beta 98H/C conforms to European EMC Directive 89/336/EEC, and is eligible to bear the CE marking. Meets applicable tests and performance criteria in European standard EN 55103 (1996), parts 1 and 2, for residential (E1) and light industrial (E2) environments.

The WB98H/C conforms to European EMC Directive 89/33/EEC, and is eligible to bear the CE marking. Meets Requirements of EMC Standard EN 301 489 Parts 1 and 9.

## REPLACEMENT PARTS

Preamplifier Assembly .....	RPM440
Clamp and gooseneck assembly (less cartridge, windscreen), with 3 m (10 ft.) stripped and tinned cable .....	RPM540
Windscreen (4 per package) .....	RK183WS
Cardioid cartridge .....	RPM108
Supercardioid cartridge .....	RPM110
Cable Management Device .....	CMD-1
Battery Powered Supply .....	MX1-BP
Cable connector (for WB98H/C only) .....	WA330
Gooseneck Angle Brace .....	65A1963



SAXOPHONE PLACEMENT  
FIGURE 4



SOPRANO SAXOPHONE PLACEMENT  
FIGURE 5





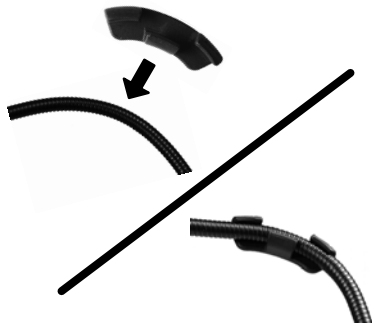
TROMBONE PLACEMENT  
**FIGURE 6**



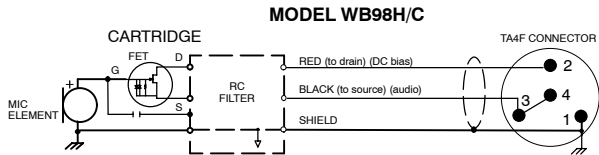
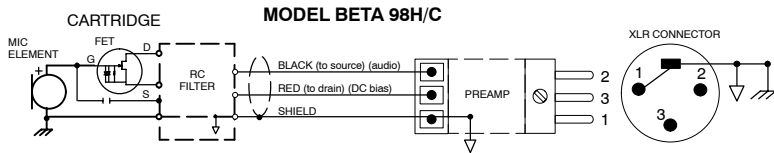
TRUMPET PLACEMENT  
**FIGURE 7**



DRUM PLACEMENT  
FIGURE 8



GOOSENECK ANGLE BRACE  
FIGURE 9



**FIGURE 10. WIRING DIAGRAMS**

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