OPERATING INSTRUCTIONS
for the NEUMANN MODEL U 67 CONDENSER MICROPHONE

M 363/173/511

A Technical Data

U 67 Microphone

Frequency range	~~30~~ 40 ... 16 000 cps
Directional characteristics	Omni-directional, Cardioid, Figure 8
Sensitivity	Omni-directional: 1.1 mV/µb Cardioid: 2.0 mV/µb Figure-8: 1.4 mV/µb
Nominal terminating resistance	1000 Ω (250 Ω)
Source impedance	200 (50) Ω 20% (switchable)
Total harmonic distortion ..	0.5 % up to 116 dB SPL.

NU 67(u) Power Supply

Mains voltage	117/127/220/240 Volts 10% 50/60 cps
Fuses	160 mA for 117/127 Volts m.sl.bl. 80 mA for 220/240 Volts m.sl.bl.
DC output voltages	210 Volts 0.8 to 1.0 mA 6.3 Volts 200 mA

B General

The microphone capsule of the U 67 microphone is a pressure-gradient device. It is composed of two identical cardioid systems arranged back to back. By switching of the polarizing voltage these two cardioid patterns can so be combined as to produce the three directional characteristics cardioid, omni-directional, and figure-8. Selection of these patterns is accomplished by a switch located at the front of the microphone directly beneath the wire cage. The symbol of the characteristic selected appears in a window directly above the switch. Two additional switches are located at the rear of the microphone. One switch provides for a sensitivity reduction of 12...16 dB ahead of the amplifier section

permitting transmission of the highest sound pressure levels without danger of overloading the amplifier. The second switch produces a roll - off at the low frequency end beginning at 200 cps. This permits the compensation of the normally occurring low frequency rise when a pressure - gradient microphone is addressed at close range. This position further serves to suppress low frequency mechanical interference. These two switches likewise have windows in which their position is indicated. When the sensitivity reduction is effective, the window shows " -14 dB ", and when the low frequencies are attenuated, the window shows a horizontal line with its left end bent downward. (These symbols are described as viewed when the microphone is on a stand with its connector end facing the floor.)

A special circuit within the amplifier distinctly attenuates all frequencies blow 30 cps, while those above 40 cps are reproduced linearly. The microphone amplifier's response may be extended to blow 20 cps flat by opening the jumper "S-2" in the amplifier itself.

C Operating Instructions

1. The microphone is equipped with a 7-pin male plug which is to be connected by neans of any of the cables UC 5,UC 7, UC 9,or UC 10 with the corresponding 7-pole receptacle on the NU 67(u) power supply. The extension cables carry the designation UC 5 or UC 7 while the cables UC 9 and UC 10 have a swivel microphone stand connector permitting the microphone to be attached to floor stands and booms having either a 1/2" or 5/8-27 thread.

   The UC 7 and UC 10 cables are double shielded and use the RF - proof connectors T 3468-10 + T 3469-10.The UC 5 and UC 6 cables provide normal shielding and terminate in connectors T 3460-10 + T 3461-10.

2. The microphone cables have a normal length of 33 feet. Other lengths may be ordered special.

   The cable length between microphone and power supply may be up to 250 feet without the necessity of increasing the filament voltage adjustment. Further extensions to 600 feet are permissible,but in such cases the adjusting potentiometer R-6 within the power supply must be changed to provide the initial filament voltage at the microphone end.

3. When using the table stand M 270-10 or the floor stand M 272-10, the extension cable is to be mated with the connector of the stand.

4. The power supply is equipped with a two-pole power connector.The audio output connector for NU 67u is a cannon XLR 3-32 and the mating cable connector, XLR 3-11C is likewise supplied.

5. The proper supply voltage strapping is readily controlled through the lucite window at the side of the power supply.

6. A coin operated latching screw is located under the power supply's carrying handle.When the slot is in its length-wise po-

sition,the supply's cover may be removed upward while the carrying handle remains on the supply chassis.

7. Make certain that the proper fuse has been inserted in the fuse holder. 160 ma for 117/127 Volts, and 80 ma for 220/240 Volts.

8. The connection between the audio output mating connector and the console is to be made using any suitable two conductor shielded microphone cable of any length.

9. For purposes of phasing of the U 67 microphone the following is of importance: For increasing sound pressure on the front diaphragm the following are the polarities at the various connectors: microphone connector and power supply receptacle -- pin 1 positive, pin 2 negative; at the XLR-3-32 audio output connector: pin 2 positive, pin 3 negative, pin 1 ground.

10. Most of the American preamplifiers and consoles are designed for operation with dynamic microphones. For proper matching of the U 67 microphone to such amplifiers the power supply NU 67u has a special pad built in which permits such direct connection. The microphone itself remains strapped for 50 Ω. The output impedance after this pad is 150/250 Ω. It may be restrapped for an output impedance of 30/50 Ω (see schematic diagram).

    This pad permits the connection of the U 67 microphone to amplifier inputs having nominal input impedance of 150/250 Ohms (as shipped) or 30/50 Ω when restrapped. The effective output level behind this pad is only a few dB higher than that of the usual high quality dynamic microphone. For a sound pressure of 10 µb, this EFFECTIVE OUTPUT LEVEL is as follows:

At the 150/250 Ω output	Omni-directional:	-53 dB
	Cardioid:	-48 dB
	Figure-8:	-53 dB
At the 30/ 50 Ω output	Omni-directional:	-59 dB
	Cardioid:	-55 dB
	Figure-8:	-59 dB

    For sound pressure of 1 µb add 20 dB to these figures.

11. The power is on at the power supply when the neon lamp lights.It is not necessary to switch off the power supply when the microphone is disconnected,as is the case with all previous models of NEUMANN microphones.

B Testing and Maintenance

Should your NEUMANN microphone require servicing, we recommend that you either return it to our factory or to our nearest representative for repair.Beyond that we offer the following helpful hints for the testing or repair of these microphones:

1. All work performed on the microphone should be done in a most

careful and workmanlike manner. Only experienced personnel should be permitted to do such work.

2. To gain access to the microphone's preamplifier unscrew the bottom fastening ring after which the conical housing tube easily slides off.

3. The head assembly can be unplugged after the two latches which lie within the side struts have been pressed together at the top.

4. The amplifier is now accessible and the EF-86 tube may be easily changed.

5. Around the perimeter of the lucite base of the head assembly there are three screw heads visible, one of which is sealed. When these screws are taken out the entire capsule assembly can be removed from its cage. Should there be dust on the diaphragms it may easily be removed by gently brushing it off using a very soft paint brush. The use of either compressed air or vacuum can lead to destruction of the capsule.

6. The plexiglass dome about the capsule may be cleaned using a cleaner intended for such plastic.

7. The actual properties of the amplifier can be ascertained using the dummy head Z-58.

8. For purposes of checking the frequency response of the amplifier a test signal may be fed to the instrument jack marked "Calibrating Input" at one end of the power supply. Proceed as follows: From the 600 Ohm output of a signal generator, feed a 1000 cps tone at a level of - 18 dBm to the calibrating input. You may use the model Z-58 dummy head or can proceed with the regular head assembly plugged in.The three switches are set for "omni-directional", full sensitivity, and linear response. The following output levels are to be observed at the output of the 150/250 Ω impedance, using a vacuum tube voltmeter:

1 000 cps	- 38 dB	1 dB
40 cps	- 43 dB	1 dB
1 500 cps	- 48 dB	1 dB

When using the M 275 test stand, a signal generator with a 50 Ω source impedance must be used. The output levels are then found to be 20 dB higher.

9. When communicating with the factory or its representatives, or when ordering parts be sure to include the serial number of your microphone.

E Accessories

1. The U 67 microphone may be suspended in a full elastic suspension Z 48 providing complete mechanical isolation and permitting any operating position desired.

2. A wind and close talking screen Z 67 is available for use outdoors or when speaking or singing into the microphone at close range.

3. For permanent installations of the U 67 microphone we recommend the use of the rackmounted plug-in power supply model NUK. This supply features transistor stabilized filament voltage adjustments even for interconnecting cable lengths of up to 1000 feet unnecessary!