OPERATING INSTRUCTIONS FOR NEUMANN CONDENSER MICROPHONES U 47/U 48 AND ACCESSORIES

May 1958

A. TECHNICAL DATA

Microphones:		
Useable Range of Frequencies		35 to 15,000 cps
Directional Characteristics	U 47	non-directional and cardioid
	U 48	bi-directional and cardioid
Source Impedance		200 or 50 ohms
Sensitivity	U 47	approx. 2.5 mv/dyne/cm² (cardioid)
	U 48	approx. 2.0 mv/dyne/cm² (cardioid)
Total Harmonic Distortion		less than 0.8% (at 1000 cps) up to a sound pressure level of 110 db
Tube Complement		1 VF-14 M (selected)
Power Supply NG:		
Power Requirement		110/220 volts 50-60 cps
Operating Voltage		105 volts D.C. (40 ma) (the heater voltage is taken from the 105 volt supply)
Fuse		0.3/0.125 amp
Pilot Lamp		110 volts (neon)
Interconnecting Cable UC 4:		
Standard Length		33 ft. (other lengths on request)
Stand Mount		1/2" right-hand thread (5/8-27 thread on request)

B. GENERAL

The U 47 and U 48 microphones are identical in every way with the exception of their directional characteristics (U 47: non-directional and cardioid; U 48: bi-directional and cardioid) which can easily be selected by means of a slide-switch located at the base of the wire-mesh part of the microphones.

The newer type U 48 is designed in such a way that the plug-in head of the U 47 may be inserted in place of the U 48 head, thus making possible all three patterns with the same basic unit, whereas it is impossible to use the U 48 head in place of the U 47 head.

C. PLACING IN OPERATION

1. The U 47 and U 48 microphones are equipped with special 6-pin plugs in their base, the No. 5 pin carrying the D.C. supply voltage to the microphone being purposely shortened to make provision that the ground pin connects before the plate voltage. As a further pre-caution, always make sure that the power supply is switched off when plugging the microphone into the mating receptacle on the UC 3 extension cable or the UC 4 interconnecting cable, with microphone stand mount, to avoid possible shock to the operator.
2. The UC 4 stand mount, incorporating a swivel joint, comes normally equipped with a 1/2" right-hand thread (in the case of U.S.A. use, with 5/8—27 thread) for the purpose of mounting the microphones on stands and booms.
3. The four-conductor shielded cable comes normally 33 ft. long, but lengths up to 300 feet are admissible between microphone and power supply, and can be supplied on order.
4. The NG power supply delivers the required single voltage of 105 volts D.C. at 40 ma to the microphone. The required heater voltage is taken from this single voltage.
5. The power supply is equipped with a two-pole plug to which the power cord has to be connected. A mating A.C. connector for this plug is supplied with the power supply on special request.
6. First, make certain that the power supply is properly strapped for the A.C. line voltage (110 or 220 volts) required. The correct setting of this strap is visible through a small window at one side of the power supply cover. The strapping board is accessible after removal of the cover.
7. Make also sure that the proper value fuse for the voltage used has been inserted in the fuse holder. 300 ma for 110 volts; 125 ma for 220 volts.
8. The output signal from the microphone is fed to a three-prong chassis-mounted plug on the power supply unit. The mating cable connector for this plug is supplied with each unit. Connection to the microphone input of the console or recorder is accomplished by means of a two-conductor shielded cable of any desired length.
9. The U 47 and U 48 microphones are designed to work into a load impedance (input impedance of console preamplifier) of 250 respectively 1000 ohms, or even higher. To provide a sufficiently low source impedance from the microphones, they have been designed for a source impedance one-fifth the load impedance. For a 250 ohm load impedance, the source impedance of the microphones is set for 50 ohms, and for a 1000 ohm load impedance, it is set for 200 ohms. This prevents overloading of the preamplifier in the microphone itself.

   The microphones are usually supplied strapped for a 1000 ohm load impedance, but on request will be delivered for 250 ohms. The 250 ohm-adjusted microphones may be identified by a red dot located on the type number tag of the microphone.
10. After interconnection of the microphone, power supply, and A.C. line, the main switch may be switched on. Operating condition will be indicated by a neon lamp. It is not harmful to the power supply if it is operated even for longer periods of time without connection of a microphone.
11. The warm-up time of the U 47 and U 48 microphones is somewhat over one minute. This is due to the 55 volt heater voltage which is tapped off the 105 volt supply voltage.

D. TESTING AND MAINTENANCE

NEUMANN microphones are made with extreme care and accuracy, and careful handling is required if consistently excellent results are expected.

Warning

The plug-in head as well as the amplifier part of the microphones are sealed at the factory, and we recommend that these seals not be broken, otherwise the guarantee will be void.

Should the microphones need servicing, it is recommended that they be repaired at our factory or at our authorized service centers.

The following instructions are given on the explicit understanding that all such operations performed on NEUMANN microphones are undertaken at your own risk.

1. Work performed on the microphones should be approached with extreme care and dry hands. Such repair should only be attempted by a skilled technician.
2. Under no circumstances should one blow into the microphone capsule itself, and the diaphragm should remain untouched.
3. The microphone head can be removed after unscrewing the three fastening screws, and the protecting cover of the amplifier can be taken off after removal of the screw at the microphone base.
4. The amplifier tube VF-14M (which, incidentally, is especially selected for low noise at our factory and should only be obtained through us or our representatives) is of the plug-in type and can therefore be quickly replaced.
5. The amplifier characteristics can be measured by means of the test capsule Z 9. Instructions for test procedure are furnished with the Z 9 test capsule.

   A voltage of 100 mv at the test capsule Z 9 is equivalent to a sound pressure of 70 µbar (110 phon) at the microphone capsule.

   For microphones adjusted to a source impedance of 200 ohms, the gain of the amplifier amounts to approximately 3 db.
6. Without connection of microphone, the voltage at the power supply unit is approximately 300 volts.
7. Should the diaphragm have become dusty after a long period of service, it may be cleaned by means of an extremely soft camel hair brush. For that purpose, the capsule itself is accessible after removal of the three outer fastening screws located at the bottom of its mounting plate.
8. Caution! Never remove the four fastening screws located in the middle of the capsule mounting plate.
9. Re-strapping from one impedance to the other can be simply performed after removal of the microphone housing, by following the diagram and pictorial presentation of the terminal board attached.
10. When ordering spare parts, it is recommended that you include the serial number, so that the proper parts for your particular model can be supplied.

E. RECOMMENDATIONS

1. U 47 and U 48 microphones can be suspended from film and television booms by means of special full-elastic suspensions (type Z 37) which help reduce mechanical shock interference carried through the floor, and which permit rapid turning at the end of the boom.
2. Where U 47 or U 48 microphones are permanently installed in studios or other locations, we recommend the installation of microphone outlets (T 3040) into which the microphone interconnecting cable can be plugged. Concealed lines should lead from these wall sockets to the equipment rack or console where type NGK plug-in power supply may be installed in a suitable plug-in frame.
3. Where two or more type U 47 or U 48 microphones are used in the same location, we recommend the use of double power supply NG 2. Two U 47 or U 48 microphones (or one of each) can be operated from this unit whose dimensions are identical to those of the single type NG power supply.

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