

## OMNI-DIRECTIONAL DYNAMIC Dual-Impedance

**General:** The Model "535" Microphone is a slender moving-coil microphone, built to provide wide-range reproduction of music and voice and featuring an omni-directional pickup pattern. The microphone has complete versatility and reliability for outdoor and indoor use and may be used in the following manner:

1. Mounted in swivel adapter on a conventional floor or desk stand.
2. Quick-disengage feature permits the microphone to be removed from the swivel adapter for use as a hand microphone during audience-participation, interviews, etc.
3. The Shure Model "A28L" adjustable lavalier cord is an available accessory. It permits the microphone to be worn around the neck by lecturers, announcers, demonstrators and all similar applications where freedom of both hands is necessary. The lavalier cord clips easily to the microphone, can be readily fastened around the wearer's neck, and quickly removed.
4. Readily accessible impedance switch permits quick change from the high impedance setting common in P.A. work, to the low impedance setting for use with long lines, broadcast equipment, etc.
5. The accessory switch adapter furnished with this unit, will serve in applications where an "ON-OFF" switch is necessary at the microphone. (See section on switch adapter.)

The smooth frequency response and attending faithful reproduction are largely due to a newly designed diaphragm attached to a sensitive coil suspended in a magnetic structure. The use of high efficiency magnetic materials and specially designed magnetic circuits has made it possible to develop this small microphone and still achieve maximum operating efficiency.

The microphone is ruggedly built to withstand hard usage and is unaffected by temperature and humidity variations. The 18-foot high-quality, shielded, two-conductor cable is supplied with a microphone plug equivalent to the Amphenol 91-MC3M plug.

The Model "535" meets the requirements for maximum quality and minimum size. A self-adjusting swivel adapter is supplied with the microphone and permits the microphone to be tilted through 90° from vertical to horizontal, making it simple to aim the microphone at a source of sound.

**Applications:** Model "535" is ideal for high quality public address, theater-stage sound systems, and all recording applications where an omni-directional microphone may be desired. Model "535" is specially recommended for "interview" type use where the "hand-a-bility" of the microphone is important. The microphone may be used for either a single performer, a dialogue, a group, an orchestra—practically all individual and group applications. (For studio recording, TV use, and similar applications where utmost in quality is desired, Model "525" Studio Microphone is recommended. In reverberant locations where feedback might be a problem, or for distance pickup a directional microphone, such as Models 300, 315 Gradient (Bi-directional) or Models 333, 330, 55S Ultra-Cardioid (Uni-directional) should be employed.)

**Installation:** The Model "535", when used with the swivel adapter, has a standard 5/8"-27 thread and may be mounted on any conventional desk, banquet or floor stand. Adapter Stand Couplers are available at no charge for 1/2" pipe thread or 5/8"-24 thread. (Write Shure Brothers, Inc.) To avoid A.C. hum induction when long lines are used, care should be taken that the cable does not parallel A.C. power lines for long distances.

**Connections:** The Model "535" Microphone is a dual-impedance microphone. It may be connected directly to a 50-250 ohm line, or high impedance input. Selection of either impedance is accomplished by removing the impedance switch cover plate on the microphone and changing the position of the switch. The switch positions are marked "L" for low impedance (50-250 ohms) "H" for high impedance (35,000 ohms). The center position of the impedance switch is the "OFF" position.

The microphone cable plug is the equivalent of the Amphenol 91-MC3M plug. The cable shield is connected to the #1 pin;



the black conductor is connected to the #2 pin; and the white conductor to the #3 pin.

The #1 pin of the microphone receptacle is connected to the microphone case. Pins #2 and #3 are connected to the internal elements and the microphone may be used with a balance line. In the low impedance position, the Model "535" may be connected directly to a standard low or medium impedance input amplifier (Fig. A-1). For use with high impedance amplifiers connect as shown in Fig. A-3.

The low impedance position is recommended where long cable lengths are required or under conditions of severe hum disturbance. To achieve maximum freedom from hum disturbance and internal cable noise, broadcast quality two-conductor shielded cable (such as supplied with the microphone) should be used. The Shure Model A27A extension cable (with plugs attached) is available in 25 foot lengths. In this case, the shield of the cable may be connected to Pin #1 of the microphone plug. The two "hot" conductors should be connected to pins #2 and #3. The permissible cable length is practically unlimited, since neither response nor level is appreciably affected. For use with high impedance amplifiers, Shure Model A86A Cable-Type Transformer is available for coupling the low impedance line to the amplifier input as shown in Fig. A-2. The double winding primary of the Shure Model A86A Cable-Type Transformer permits coupling a 50-250 ohm line to the high impedance input.

The high impedance position in the Model "535" Microphone may be used with any high gain amplifier with an input impedance of 100,000 ohms or more (See Fig. A-3). To connect the amplifier plug to the two-conductor shielded cable supplied with the microphone, connect the shield lead and the black lead together to a ground terminal of the amplifier plug, and connect the white lead to "hot" terminal of the amplifier plug.

The maximum recommended length of cable between the microphone and the amplifier when used in the high impedance position is 25 feet. Longer cable may be used with a loss of approximately 3 db at 5,000 c.p.s. for each additional 25 feet of cable. In using longer cable, the two-conductor shielded cable furnished with the microphone should be replaced with a single conductor shielded cable. When this is done, the shield of the cable must be connected to pins #1 and #2 of the microphone plug and the center or "hot" conductor must be connected to pin #3.

The shield, chassis or amplifier ground should be securely connected to a water pipe or similar ground to prevent shock hazard during operation of amplifying system.

When used with amplifiers using the grid leak type of bias at the input tube, it may be desirable to use a .01 mfd. condenser between the microphone and the input grid circuit.

**Switch Adapter Installation:** Remove the impedance switch cover plate by removing the two #2-56 binding head machine screws at each end of the cover plate. Position the switch plate in place of the cover plate. (The key of the switch plate must be set into the slot of the impedance change switch in the microphone). Replace the two #2-56 binding head machine screws.

The center position on the switch plate marked "O" is the "OFF" position; "H" is the high impedance (35,000 ohms) position; "L" is the low impedance (50-250 ohms) position. Most applications require use of only one impedance. In this case, insert the small #2-56 fillister head screw in the threaded hole below the impedance position NOT being used. This prevents the switch from accidentally being turned to the wrong impedance setting during use as "ON-OFF" switch.

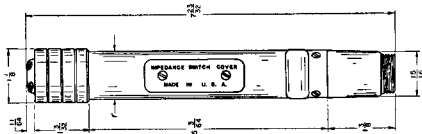
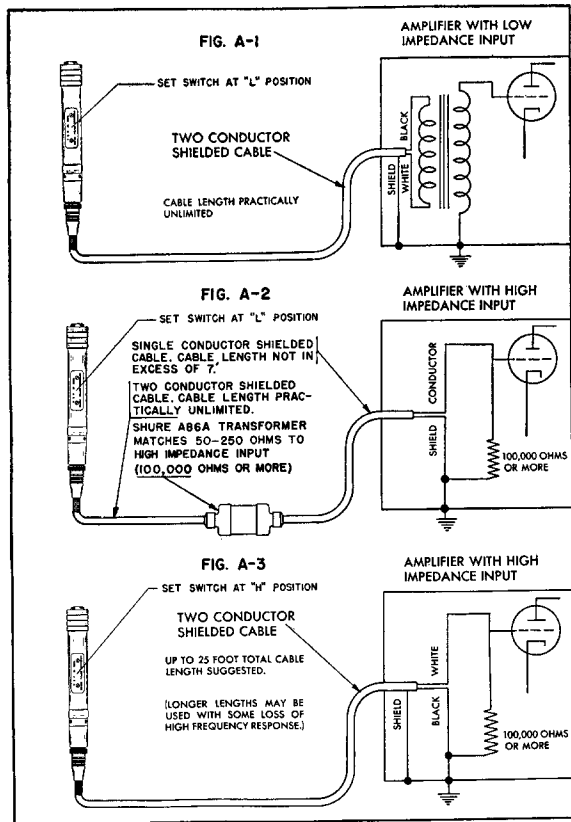


FIG. B

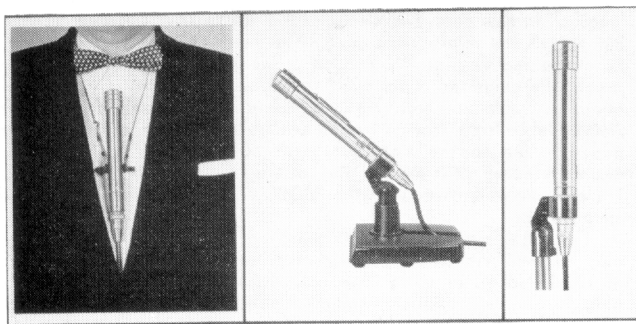
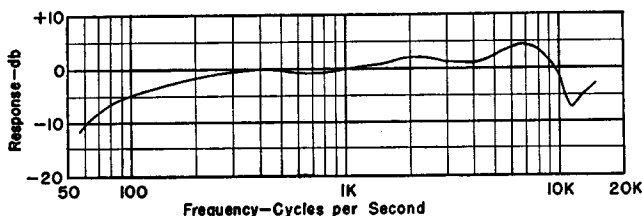


FIG. C



Response-Frequency Characteristic Model 535 Microphone  
 FIG. D

**Operation:** No special precaution beyond ordinary care is necessary in the operation of the Model "535" Microphone. It will operate efficiently and dependably under all ordinary conditions in hot and cold climates. To retain the full strength of the highly efficient permanent magnet and to maintain alignment of the structure, dropping or other severe mechanical shocks should be avoided.

The swivel adapter fits conventional floor stands, desk stands and the Shure S33 and S33B Desk Stands. The microphone may be easily removed from this adapter for use as a hand microphone. Additional versatility in the use of the microphone is obtained by using the lavalier cord in applications where freedom of both hands is necessary. Fig. C illustrates use of these accessories.

### Specifications

#### 1000 C.P.S. Response

Model 535 "L" Position

Open Circuit Voltage Level.....	83 db*
Loaded with 150 ohms.....	90 db*
Power Level into 150 ohms.....	61 db**
RETMA Microphone Rating $G_M$ (Sensitivity).....	154.7 db***

Model 535 "H" Position

Open Circuit Voltage Level.....	61 db*
Loaded with 100,000 ohms.....	63 db**
RETMA Microphone Rating $G_M$ (Sensitivity).....	157 db***

- (\* ) 0 db = 1 volt per Microbar
- (\*\* ) 0 db = 1 milliwatt with 10 Microbars
- (\*\*\* ) RETMA Standard SE-105, August 1949

#### Recommended Load Impedance:

Model 535 "L" Position 50-250 ohms.  
 Model 535 "H" Position 100,000 or more.

MODEL 535	
Code Word	RUDEK
Nt. Wt. Less Cable	7/8 lb.
Packaged Weight	2 7/8 lbs.
Cable	18-Foot, Two-Conductor
Dimensions	See Fig. B
Finish	Satin Chrome

**Guarantee:** Each microphone is guaranteed to be free from electrical and mechanical defects for a period of one year from date of shipment from factory, provided all instructions are complied with fully. In case of damage, return the microphone to the factory for repairs. Our guarantee is voided if the microphone is subjected to accident or if the case is opened.

### MODEL 535

#### Architect's Specifications

The microphone shall be a moving coil type microphone with a frequency range of 60 to 13,500 c.p.s. This unit shall have an omni-directional horizontal polar characteristic. The microphone shall be equipped with a two-position impedance change switch for adjusting the microphone rating impedance to 150 ohms or 40,000 ohms. The microphone rating  $G_M$  (Sensitivity) at 1000 c.p.s. shall be within  $\pm 3$  db of the following levels.

"L" Position of switch.....154.7 db

"H" Position of switch.....157 db

RETMA Standard SE-105, August 1949.

The microphone shall be provided with a swivel adapter adjustable through 90° from vertical to horizontal, switch adapter, and a receptacle equivalent to the Amphenol 91-MC3F capable of connecting to a Two-Conductor shielded cable plug. (See Connections). The microphone swivel adapter will mount on a stand having 5/8"-27 thread. The overall dimensions shall be 7 3/8"  $\pm$  1/4" in length and 1  $\pm$  1/8" in diameter.