



SHURE BROTHERS
INCORPORATED

Microphones and Acoustic Devices
225 WEST HURON STREET :: CHICAGO 10, ILLINOIS
PHONE Delaware 7-4550 :: CABLE: SHUREMICRO

DATA SHEET

DATE: FEBRUARY, 1947

SUBJECT: **Model 556 Multi-Impedance Broadcast "Unidyne" Dynamic Microphone.**

"556" Multi-Impedance Broadcast "Unidyne" Microphone (Super-Cardioid Uni-directional Moving-Coil Dynamic)

General: Model 556 is a Super-Cardioid type uni-directional moving-coil dynamic microphone providing wide-range high quality reproduction of sound. The true unidirectional characteristic of the "Unidyne", obtained by the "uniphase" principle* provides highly satisfactory operation under adverse acoustic conditions where a conventional microphone would be practically useless. (See "Acoustic Considerations").

The microphone has a New Acousto-Mechanical circuit containing a moving-coil element, which operating in conjunction with a high flux magnet provides high efficiency and smooth peak free response from 40 to 15,000 cycles. The rear response is down approximately 15 db due to the "uniphase" unidirectional acoustic network.

The new moving-coil unit is provided with a double wind-screen to permit quiet out-door operation. As a precaution against mechanical vibration pickup, the unit is spring-suspended inside the microphone case, which is in turn floated in live rubber in the stand connector.

The case is modern in design with attractive streamlining and grille treatment, and is provided with a swivel that allows the microphone to be aimed at the source of sound for best pickup. A seven foot length of two conductor shielded cable is provided for attachment of any type plug the user may desire. This cable is held by screw terminals in the base of the isolation unit, and may be easily replaced by longer lengths.

Applications: Model 556 is especially constructed and tested to meet the requirements of the broadcast studio, and is held within close tolerances in frequency response, and directivity. It may also be used for high-quality recording, public address, and similar applications. The true unidirectional characteristic of the "Unidyne" provides an easy solution to the feedback problem in reverberant locations, facilitates orchestral placement, permits best utilization of space in small broadcast studios, and allows, practically complete exclusion of unwanted noises. The swivel allows the head to be tilted through an angle of 90° permitting the microphone to be aimed at the source of sound.

The instrument is unusually rugged and is practically immune to the effects of moisture, temperature and mechanical vibration.

Installation: All microphones have the standard 5/8"-27 thread and may be mounted on any Shure desk, banquet, or floor stand. When long lines are used, care should be taken that the cable does not parallel A.C. power lines for long distances to avoid A.C. hum induction.

Connections: The Model 556 Microphone is of the multi-impedance type. Model 556 may be worked directly into a 30-50 ohm line, a 150-250 ohm line, or a high impedance input. Selection of these impedances is accom-



Model 556 Broadcast Unidyne

plished by changing the position of the switch at the rear of the microphone. The switch positions are marked "L" for low impedance (30-50 ohms), "M" for medium impedance (150-250 ohms), and "H" for high impedance (35,000 ohms).

The low and medium impedance positions of the Model 556 may be fed into a standard low or medium impedance input amplifier (Fig. A-1), or into an amplifier with high impedance input (Fig. A-2). In the latter case, Shure Model A86A Cable-Type Transformer is available for coupling the low impedance line to the amplifier input. The double winding primary of the Shure Model A86A Cable type transformer permits coupling either a 30-50 ohm line or 150-250 ohm line to high impedance input.

The low and medium impedance positions are recommended where long cable lengths are required or under conditions of severe hum disturbances. The permissible line length is practically unlimited, since neither response nor level is appreciably affected by reasonable lengths of line.

The high impedance position on the Model 556 Microphone may be used with any crystal microphone amplifier or other amplifier with an input impedance of 100,000 ohms or more (See Fig. A-3). For best high frequency response, the total cable lengths should not exceed 25 feet: longer cable lengths may be used with some loss of high frequency response. The additional loss at 5000 cycles is of the order of 2.5 db for an additional 25 ft. length of cable (50 ft. total) and 6 db for an additional 50 ft. length (75 ft. total). If the Model 556 Microphone is being used in the high impedance position, single conductor shielded cable may be used to provide additional cable-lengths; also, the two-conductor cable furnished with the Microphone may be replaced with single conductor shielded cable, if the microphone is intended to operate directly into high impedance (grid) input only.

Operation: No special precautions beyond ordinary care are necessary in the operation of the Model 556 Dynamic microphone. It will operate efficiently and dependably under all ordinary conditions in hot and cold climates. Dropping the microphone or other severe mechanical shocks should be avoided.

Acoustic Considerations: The expression "Super-Cardioid type" response simply means that the polar characteristic of the microphone approximates a modified cardioid of revolution. There is a wide, useful pickup angle at the front of the microphone while the response at the sides is down 8.5 db from that at the front. The rear response is down of the order of 15 db over a broad range of frequencies. The true unidirectional characteristic of the "Unidyne" should not be confused with the relatively slight directional effect at high frequencies only which can be produced by baffle effects in the conventional pressure microphone.

By directing the rear side of the microphone towards the audience or other source of interfering sound, pickup can be concentrated on the desired source. Reverberation energy pick up is decreased over two-thirds. The microphone can be placed close to reflecting surfaces without objectionable effects if the rear side of the microphone is toward the reflecting surface. This is particularly valuable in small broadcast studios.

It is desirable to experiment with microphone placement and orientation in order to secure the greatest benefits from the unidirectional characteristic.

Specifications

1000 C.P.S. Response:

Model 556 "L" Position:

- Open Circuit Voltage Level. -84.1 db. (*)
- Loaded With 40 Ohms. -90.1 db. (*)
- Power Level Into 40 Ohms. -56.1 db. (**)

Model 556 "M" Position:

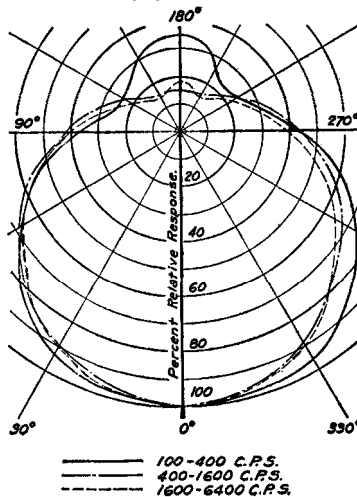
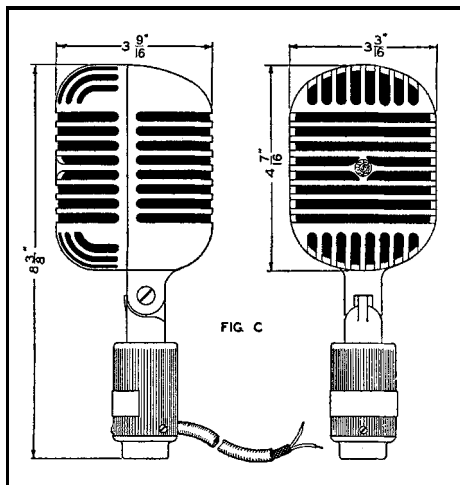
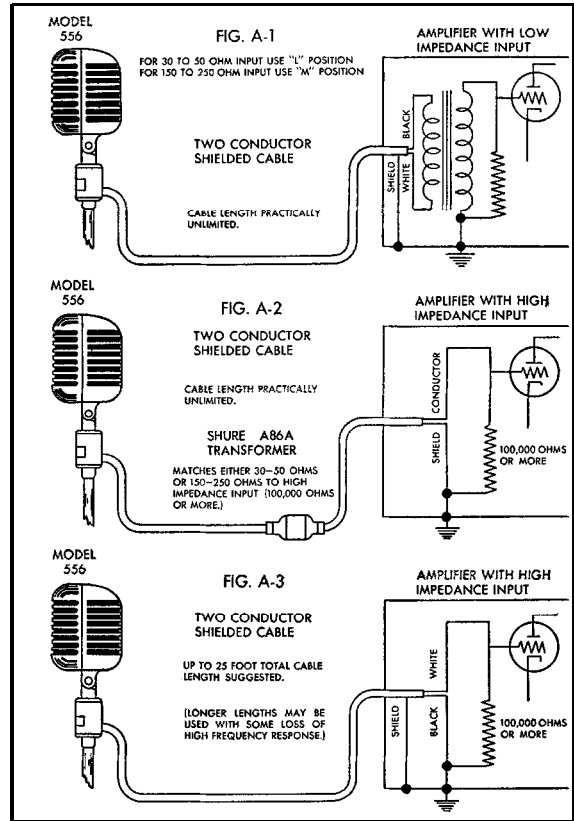
- Open Circuit Voltage Level. -76.8 db. (*)
- Loaded With 250 Ohms. -82.8 db. (*)
- Power Level Into 250 Ohms. -56.8 db. (**)

Model 556 "H" Position:

- Open Circuit Voltage Level. -57.5 db. (*)
- Loaded With 100,000 Ohms. -60.1 db. (*)
- (*) 0 db. = 1 Volt Per Dyne Per Sq. cm.
- (**) 0 db. = 1 Milliwatt with 10 Dynes Per Sq. cm.

Recommended Load Impedance:

- Model 556 "L" Position 30-50 Ohms.
- Model 556 "M" Position 150-250 Ohms.
- Model 556 "H" Position 100,000 Ohms or More.



Model 556 Microphone Horizontal Polar Response

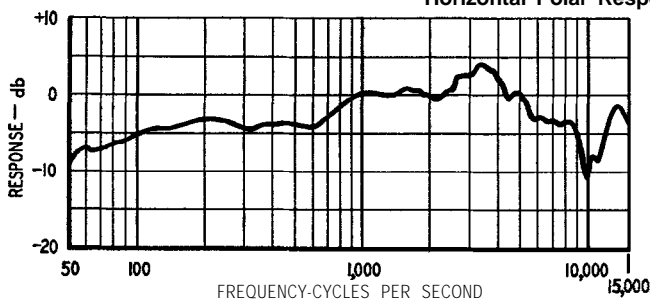
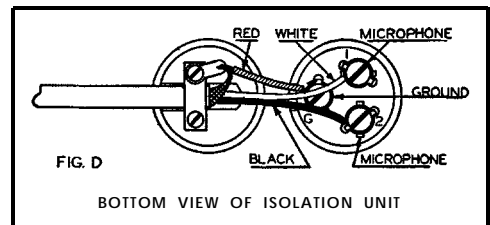


Fig. B. Typical Frequency Response, Model "556" Microphone.

MODEL 556	
Code Word	RUMUB
Net Wt.	2 3/4 lb.
Shipping Weight	4 1/2 lbs.
Height, Case *	8-3/8"
Width *	4-7/16"
Thickness *	3-3/16"
Height, Overall *	3-9/16"
Finish	Satin Chrome

*See Fig. C.



Guarantee: Each microphone is guaranteed to be free from electrical and mechanical defects for a period of one year from date of shipment from the 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 case is opened.