SHURE BROTHERS Microphone Headquarters
225 WEST HURON STREET • CHICAGO • U•S•A
TELEPHONE DELAWARE 8383 • CABLE: SHUREMICRO

DATA SHEET No. 181

DATE: January, 1942

SUBJECT: Models 556A, 556B, 556C Broadcast "Unidyne" Dynamic Microphones

"556" Series Broadcast "Unidyne" Microphones (Super Cardioid Uni-directional Moving-Coil Dynamic)

GENERAL: Models 556A, 556B, and 556C are Super-Cardioid type unidirectional moving-coil dynamic microphones 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 10,000 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. An eighteen inch 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 insolation unit, and may be easily replaced by longer lengths.

APPLICATIONS: Models 556A, B, and C are especially constructed and tested to meet the requirements of the broadcast studio, and are held within close tolerances in frequency response and directivity. They 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 maybe mounted on any Shure desk, banquet, or floor stand. The Shure Model S51OA floor stand is especially recommended because of the effective isolation against floor vibration which it provides. For overhead suspension, an A35B suspension Adapter may be used.

CONNECTION: Model 556A works directly into a 35-50 ohm line while models 556B and 556C include an internal high quality impregnated transformer with special high-permeability core.

Low impedance models 556A and 556B are recommended where long cable lengths are required. The permissible line length is practically unlimited since neither the level nor the frequency response is appreciably affected by reasonable lengths of line. As shown in the following table, the cable loss is very small. 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.

Model 556A Broadcast Unidyne
(Shown with A72A Call Letter Plate)

Cable Length	Loss In Level* Model 556A	Loss In Level* Model 556B
25 ft.	0 db	0
250 ft.	0.5 db	0 db
500 ft.	1.0 db	0.2 db
1000 ft.	2.0 db	0.4 db
2000 ft.	3.5 db	0.8 db

(*Based on 2-conductor #20 equivalent, twisted and shielded)

Low impedance models 556A and 556B may be fed into a standard low impedance input amplifier (See Fig. A-3) 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. A double-winding primary permits coupling either a 35-50 ohm line or 200-250 ohm line to the high impedance input.

High impedance model 556C may be used with any crystal microphone amplifier or other amplifier with an input impedance of 100,000 ohms or more (See Fig. A-1). For best high frequency response, the total cable length should be as short as possible and In any event not over 25 feet. Longer cable lengths may be used with loss of high frequency response. The loss at 5,000 cycles is of the order of 3.5 db with a 25 ft. length of cable and 7 db with 50 ft. length.

OPERATION: No special precautions beyond ordinary care are necessary in the operation of 556 Series Dynamic microphones. They 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.

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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 undirectional 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

Voltage Sensitivity:

Model 556A — 83.0 db below 1 volt per bar open circuit, or 62.8 db below 6 milliwatts for 10 bar signal when loaded with 35-50 ohms.

Model 556B — 76.5 db below 1 volt per bar open circuit, or 63.8 db below 6 milliwatts for 10 bar signal when loaded with 200-250 ohms.

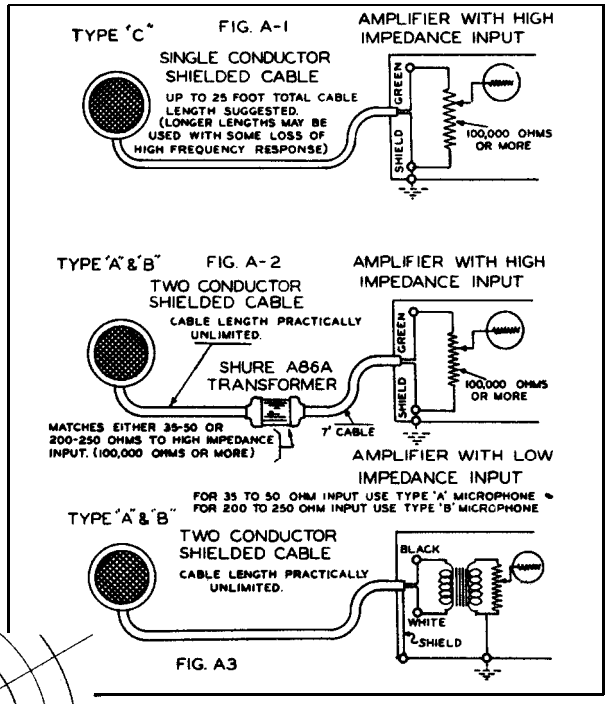
Model 556C — 55.5 db below 1 volt per bar when loaded with 100,000 ohms or more. This is equivalent to 1.7 millivolts per bar across 100,000 ohms or more.

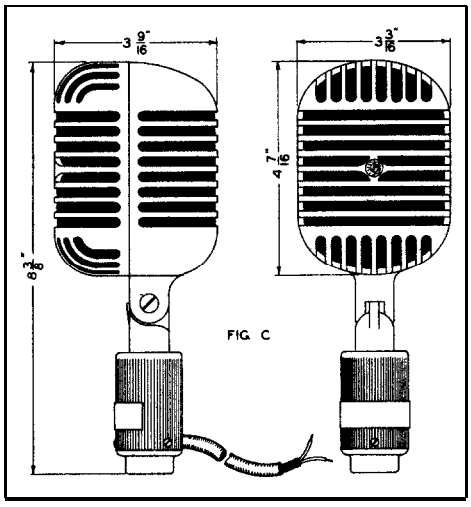
Recommended Load Impedance:

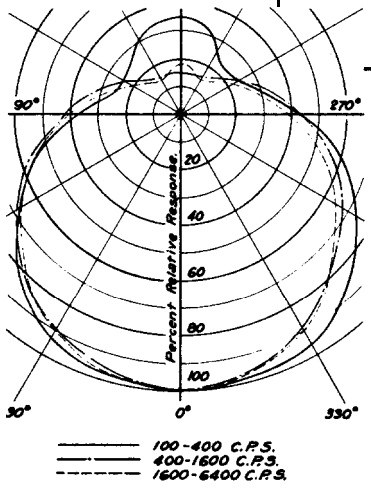
Model 556A	35-50 ohms.
Model 556B	200-250 ohms.
Model 556C	100,000 ohms or more.

MODEL	556A	556B	556C
Code Word	RUDOM	RUDOP	RUDOR
Net Wt.	2-3/4 lb.	2-3/4 lb.	2-3/4 lb.
Shipping Weight	4-1/2 lb.	4-1/2 lb.	4-1/2 lb.
Height, Overall (a)*	6-3/6"		
Height, Case (h)*	4-7/16"		
Width (b)*	3-3/16"		
Thickness (c)*	3-9/16"		
Finish	Satin Chrome		

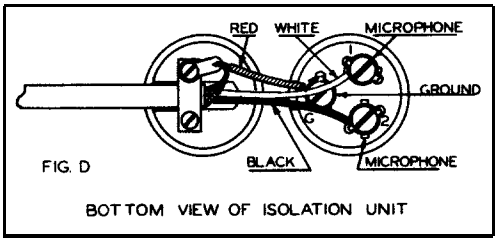
*See Fig. C.







Horizontal Polar Response
Series 556 Microphones



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 factoryfor repairs. Our guarantee is voided if the microphone case is opened.

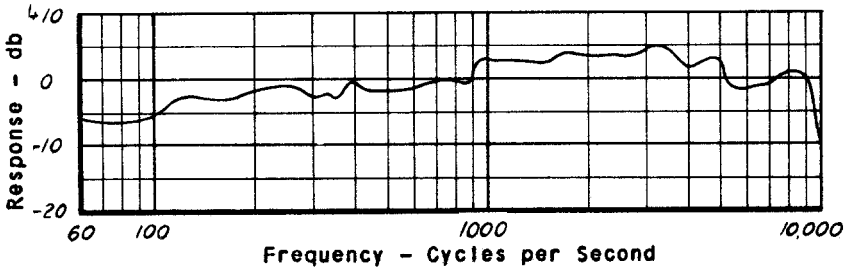


Fig. B. Typical Frequency Response, Series "556" Microphones