

DATE: January, 1942

SUBJECT: Model 708S  
 "Stratoliner" Crystal Microphone

MODEL 708S "STRATOLINER" CRYSTAL MICROPHONE



**GENERAL:** Model 708S "Stratoliner" is a pressure-actuated diaphragm-type semi-directional crystal microphone with wide range response for high quality reproduction of speech. The crystal used is a grafoil (high capacity) bimorph unit, moisture-sealed to withstand adverse climatic conditions. The Microphone has a built-in filter circuit for protection against R.F. burnouts. The case is attractively streamlined for improved acoustical performance and modern appearance. The microphone is provided with built-in receptacle, a 7-foot shielded rubber-jacketed cable with microphone plug attached, and an S36A Desk Stand. The same Microphone without a stand is available under the Model No. 708SH.

**APPLICATION:** The Model 708S is designed for public address, amateur broadcast, and all general purpose use, where clear, intelligible reproduction of speech is of primary importance. The 708S exhibits the semi-directional properties shown in Fig. C. A swivel is provided to permit tilting of the microphone through an angle of 90°.

**INSTALLATION :** Model 708S is supplied with a heavy die-cast desk mount, and is equipped with the standard 5/8"-27 thread fitting any other Shure desk, banquet, or floor stand. For overhead suspension, an A35A Suspension Adapter may be used. Convenient cable changing is possible due to the built-in receptacle. A 7-foot single-conductor shielded rubber-jacketed cable is furnished with plug attached. (See catalog for bulk length and special cables with plug attached.)

**CONNECTIONS:** The inner conductor of the cable should be connected to the grid of the first tube in the amplifier across a load resistance of 1/2 to 5 megohms. Input resistance of approximately 1/2 megohm should be used to decrease the low frequency response of the Microphone, for improvement in speech transmission efficiency; but higher values are recommended if good low frequency response is desired. The shield should be connected to the chassis. See Fig. A.

Added lengths of connecting cable will be accompanied by a decrease in output level as given in the table below. There is no frequency discrimination introduced by the cable, regardless of length.

<u>Total Cable Length</u>	<u>Output Level* at Cable Terminals</u>
7 Ft. (Standard)	-53.0 db
25 Ft.	-55.0 db
50 Ft.	-58.0 db
75 Ft.	-60.0 db
100 Ft.	-61.5 db
150 Ft.	-64.0 db
200 Ft.	-66.0 db

\*(Expressed in db below 1 volt per bar.)

Most modern high-gain amplifiers have a sufficient margin of gain to make up for the decrease in output levels shown in the table. If the amplifier does not have the necessary gain a preamplifier at the microphone or near the main amplifier, is suggested. Preamplifiers with low impedance output are recommended if the main amplifier system has low impedance transformer or mixed input.

Added cable should be of high quality and low capacity. The inner leads should be soldered and insulated with a good grade of rubber tape. Metal braid sleeve or a serve of fine wire should be soldered between the shields of the cable to complete the shielding. Longer lengths of cables with standard plug attached may be purchased at small cost, and may be used interchangeably with shorter cables.

**OPERATION:** No polarizing voltage is required for crystal microphones.

Crystal microphones may be seriously damaged if accidentally connected to loud speaker or power supply outlets carrying high voltage. Check your connections carefully.

Crystal microphones should not be used or kept in places where the temperature exceeds 125°F. They should not be exposed to the rays of the sun in very hot weather for any considerable length of time - or left in closed automobiles parked in the sun during hot weather, as the temperature inside the automobile may easily build up to over 125° and permanently damage the crystal.

When used near a radio transmitter, use the minimum length of cable consistent with placement requirements. Careful grounding of the cable shield is advisable.

**ACOUSTIC CONSIDERATION:** Model 708S is a semi-directional microphone with polar characteristics as shown in Fig. C.

The high frequency response is accentuated for maximum intelligibility, and is smooth and free from undesirable peaks. The low frequency response is flat, but may be attenuated if necessary through the use of low values of termination resistance. (See Fig. B). When turned to the vertical position, the microphone is non-directional in the horizontal plane, and is ideal for the grouping of artists around it without frequency discrimination.

**SPECIFICATIONS**

Voltage Sensitivity: 2.2 millivolts r.m.s. per bar at the end of a 7-foot cable across 1 to 5 megohms at 400 cycles. This is equivalent to 53 db below 1 volt per bar at the terminals of the 7-foot cable.

Internal Output Impedance: Equivalent to a 1,500 micro-microfarad condenser.

Recommended Load Impedance: 1 to 5 megohms.

Model . . . . .	708S
Height, Overall (a)* . . . . .	4"
Height, Case (h)* . . . . .	2-1/2"
Width (b)* . . . . .	2-1/2"
Thickness (c)* . . . . .	4-7/8"
Finish . . . . .	Irridesc. Gray Chrome
Net Weight . . . . .	1 Lb.
Shipping Weight . . . . .	2-1/4 Lb.
Code Word (7' Cable) . . . . .	RUPOC

\* See Fig. D.

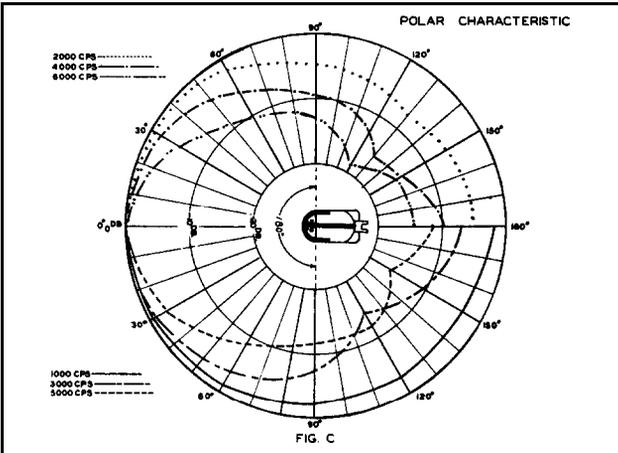
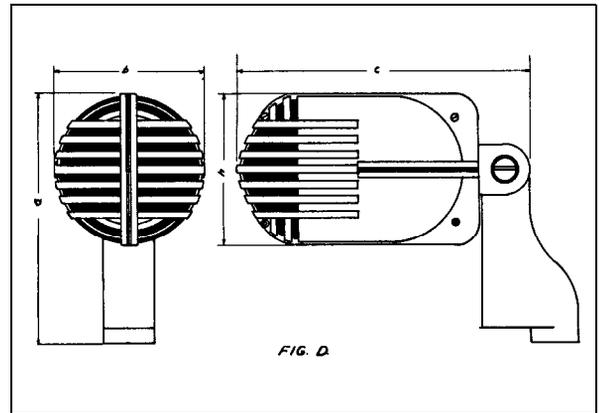
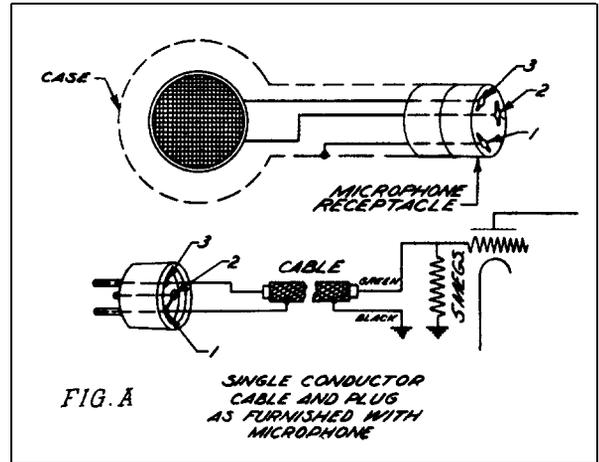
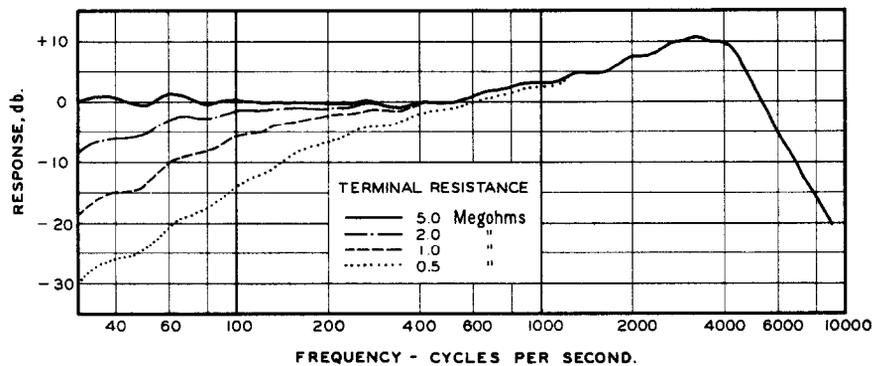


FIG. B--FREQUENCY CHARACTERISTIC OF MODEL 708S



0 db = 50.5 db. BELOW 1 VOLT PER DYNE PER SQ. CM.

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.

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