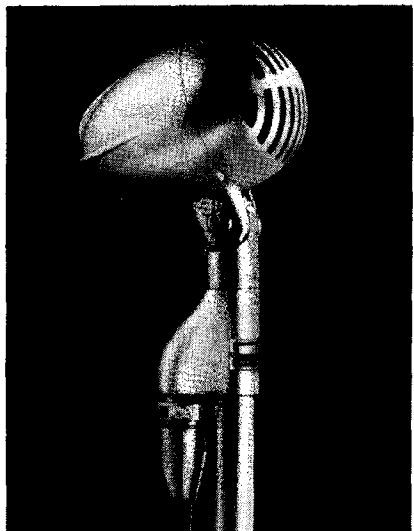


DATE: September, 1938

SUBJECT: Model 705A
 "Rocket" Crystal Microphone

MODEL 705A "ROCKET" CRYSTAL MICROPHONE



"Rocket" with Baffle



Non-Directional Position

GENERAL: Model 705A "Rocket" is a pressure-actuated diaphragm-type semi-directional crystal microphone with "Ultra" wide range response for high quality reproduction of sound. The crystal used is a grafoil (high capacity) bimorph unit, triple moisture-sealed to withstand adverse climatic conditions. The case is attractively streamlined for improved acoustical performance and modern appearance. The microphone is provided with built-in receptacle and 25-foot shielded rubber-jacketed cable with microphone plug attached.

APPLICATIONS: Model 705A is suitable for high quality Public Address, Broadcasting, Recording, and Industrial applications. The frequency response characteristic is unusually good (see Fig. B) and the microphone is therefore capable of providing sound reproduction of exceptional quality. The pickup characteristic is of the conventional semi-directional type. (See "Acoustic Considerations"). A swivel is provided which permits pointing the microphone toward the source of sound. A removable directional baffle (Model A91A) is available for the 705A, which considerably increases discrimination against high-frequency sounds coming from the sides and the rear. When turned to the vertical position (without baffle) the microphone becomes non-directional in the horizontal plane and artists may be placed all around it without frequency discrimination.

INSTALLATION: Model 705A is equipped with the standard 5/8"-27 thread and may be mounted on any Shure desk, banquet, or floor stand. For overhead suspension, an A35B Suspension Adapter may be used. Convenient cable changing is possible due to the built-in receptacle. A 25-foot single-conductor shielded rubber-jacketed cable is furnished with plug attached. (See catalog for bulk length and special cables with plug attached.) External flexible couplings are unnecessary since the internal elements of the microphone are substantially isolated from the outer case.

CONNECTIONS: The inner conductor or "green" lead should be connected to the grid of the first tube in the amplifier across a load resistance of 5 megohms. Input resistances as low as 1 megohm may be used if necessary but higher values are recommended because of the better low-frequency response obtained. The black lead or ground 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.

Total Cable Length	Output Level* at Cable Terminals
7 Ft.	-53.0 db
25 Ft. (Standard)	-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.

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. For unusually long cable lengths or for applications where the hum conditions are bad, Shure Type C30A Super-Shielded cable is recommended. (See Catalog).

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.

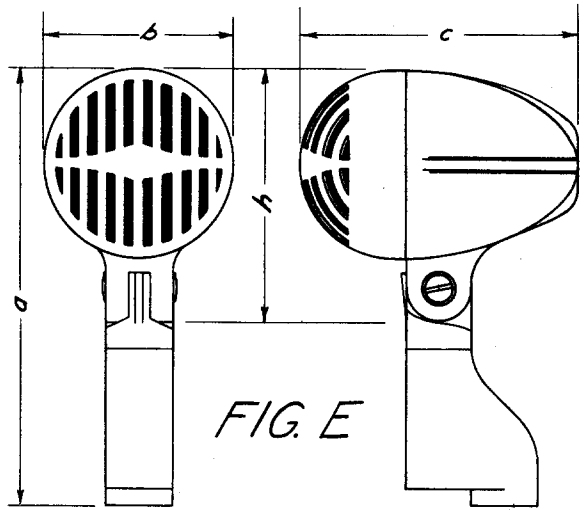
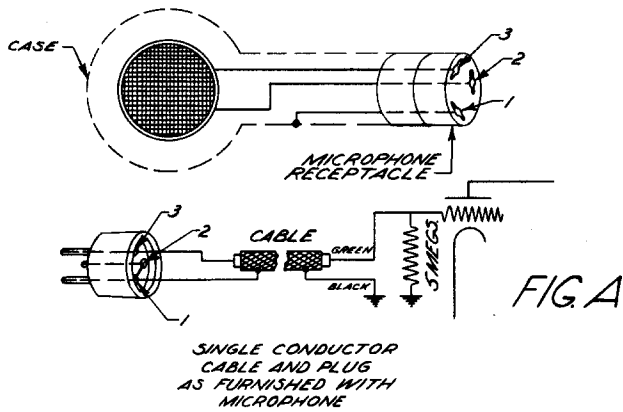
Crystal microphones should not be used or kept in places where the temperature exceeds 125°F. They should not be exposed to the rays of the sun in very hot weather for any considerable length of time - or left in closed automobiles parked in the sun during hot weather, as the temperature inside the automobile may easily built 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 705A is a semi-directional microphone with polar characteristics as shown in Fig. C. Note the smooth contours at all frequencies, due to acoustic streamlining. The pickup angle is unusually wide; it is permissible to include the sources of sound within an angle of 120° at the front of the microphone without appreciable frequency discrimination.

The addition of the A91A Directional Baffle increases the discrimination against high frequency sounds coming from the rear and sides of the microphone, thus decreasing feedback tendency and cutting down room noise pickup. (See Fig. D.) In cases where this type of discrimination is not sufficient, a true uni-directional microphone, which will provide marked directional discrimination throughout the entire principle audio frequency range, is recommended. Shure Model 730A "Uni-Plex" or Model 720B "Tri-Polar" are suggested.

When turned to the vertical position, the microphone is perfectly non-directional in the horizontal plane, and is ideal for the grouping of artists around it without frequency discrimination. It is also well-suited for "large-group" pickup of orchestras, etc.



SPECIFICATIONS

Voltage Sensitivity: 1.8 millivolts r.m.s. per bar at the end of a 25-foot cable across 1 to 5 megohms at 400 cycles. This is equivalent to 52 db below 1 volt per bar open circuit, or 55 db below 1 volt per bar at the terminals of the 25-foot cable.

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

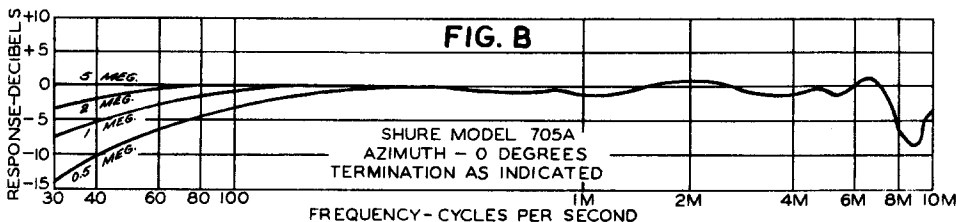
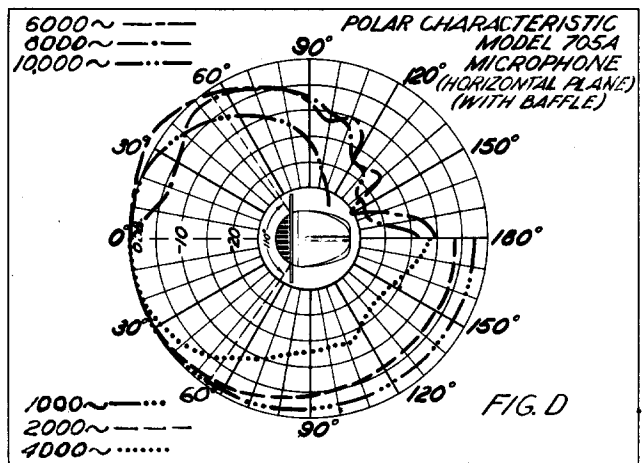
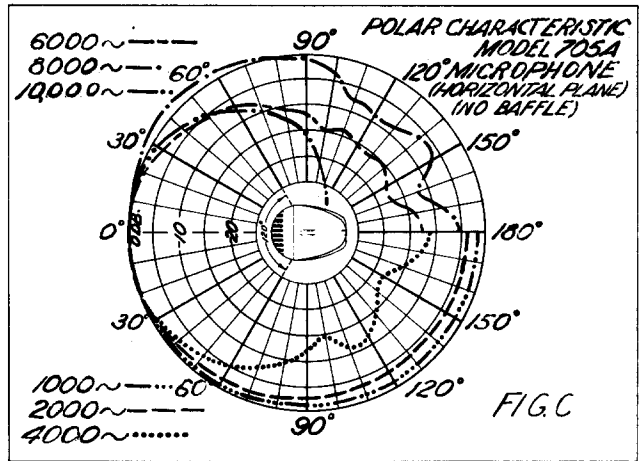
Recommended Load Impedance: 1 to 5 megohms.

	705A "Rocket"	A91A Baffle
Height, Overall (a)*.	5-1/2"	
Height, Case (h)*.	3-3/16"	
Width (b)*.	2-3/8"	4" Diam.
Thickness (c)*.	3-7/16"	1/16"
Finish.	Satin Chrome	Alumalite
Net Weight.	1-1/4 lb.	2 oz.
Shipping Weight	1-3/4 lb.	6 oz.
Code Word	RUPEB	RUPAB
List Price.	\$25.00	\$2.50

* See Fig. E.

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.

License Notice: Shure patents pending. Licensed under patents of the Brush Development Company.



FREQUENCY CHARACTERISTIC OF MODEL 705A