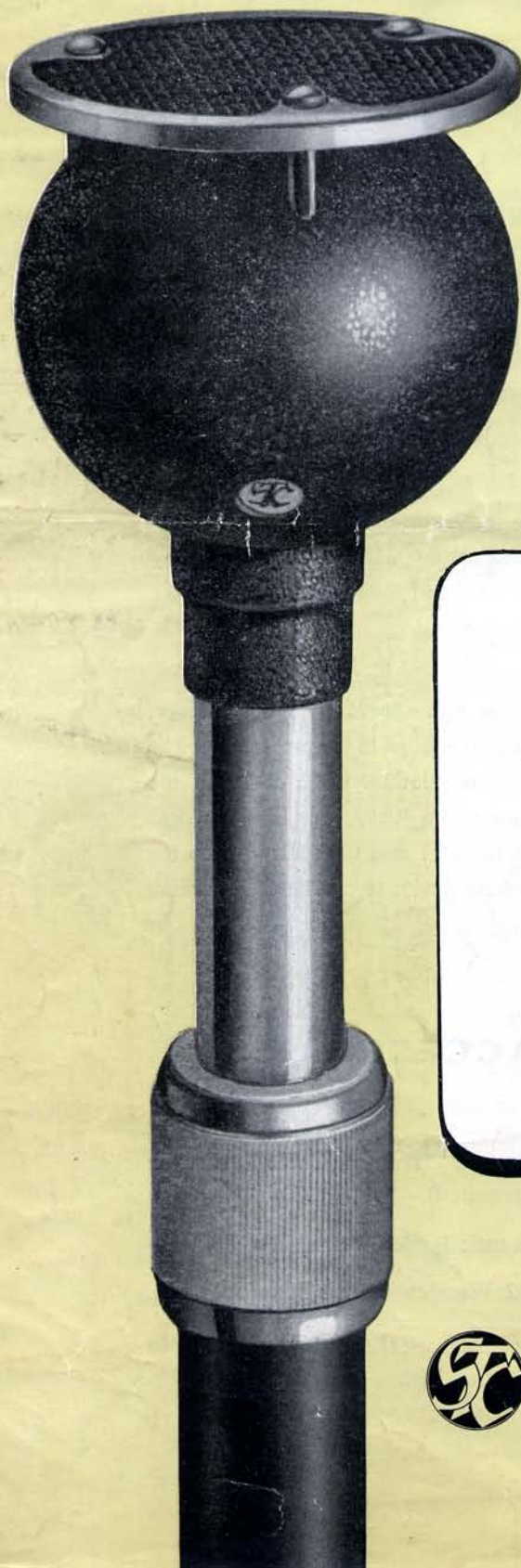




SOUND REPRODUCTION EQUIPMENT



4021

**MOVING COIL
MICROPHONE**

Principal Features

- ★ Accurate omnidirectional polar response.
- ★ Designed for high quality studio work and acoustical measurement.
- ★ Suitable for tropical and marine atmospheric conditions.
- ★ Acoustic baffle available to give high frequency directional properties.
- ★ Suitable for measurement and standardisation applications.



Standard Telephones and Cables Limited

DESCRIPTION

The 4021 microphone is a pressure operated moving coil or 'dynamic' microphone and is a carefully engineered and precision built instrument, the general design of which has been proved over many years of use in high quality studio work and acoustical measurements. Each microphone is tested in free-field conditions to stringent performance requirements.

The polar response is omnidirectional, i.e., the mean sensitivity is independent of the direction of the incident sound, and the frequency characteristic is nearly so. This is, in part, achieved by the use of a spherical case and a porous front screen designed according to the principles disclosed by F. F. Romanow in Brit. patent 436508.

Because of the wide frequency range, reliability and robustness of the 4021 microphone it is suitable for measurement and standardisation work. For this purpose it is possible to supply free field calibrations at particular frequencies. Further details of this service are available on application.

The microphone is practically distortionless in all normal sound fields. The total harmonic content is of the order of $\frac{1}{2}$ to 1% at sound intensity levels approaching the threshold of pain.

In certain applications it is desirable to have some rise in response and some directional properties at the high frequencies. To provide such characteristics a 4001B acoustic baffle may be easily fitted in place of the 'Romanow' front screen. The curves of figures 1 and 2 show the effect on the response.

The microphone is suitable for use in tropical or marine atmospheres. It is, however, essentially an indoor instrument and should not be used out-of-doors in severe wind. The standard finish is stoved black shrivel enamel and satin-chrome plating. The outlet of the microphone is a 3-pin connector located inside the die-cast case and a 4069A jack is required to make connection thereto. The two outer pins connect to the coil and the centre pin to the body of the microphone. The microphone incorporates a locking device to prevent it becoming accidentally detached from the 4069A jack.

IMPORTANT

COIL RESISTANCE AND BREAKDOWN MEASUREMENTS

Care must be exercised not to pass more than 1 mA. D.C. through the coil, and if it should be desired to check breakdown to case, the voltage should not exceed 80 volts applied through a protective resistance which will limit the current to 1 mA.

ACCESSORIES

4069A Jack.

LCR.1113 Twin Screened Cable (order in yards as required).

4001B Acoustic Baffle (optional).

PAS 45/42 Wooden Transit Box (optional).

For other accessories, stands, etc., refer to the Accessories List.

SPECIFICATION 4021J (TYPICAL VALUES)

MEAN SENSITIVITY

Open circuit voltage per dyne/sq.cm. (micro-bar)	...	...	...	...	0.100 mV.
Open circuit voltage level per micro-bar ref. 1 volt	...	...	...	...	-80 db.
Power delivered into 30 ohms for 1 micro-bar, ref. 1 mW.	...	...	...	...	-71 db.
American ASA rating ref. 1 mW. ...	...	...	...	...	-146 db.

ELECTRICAL RESISTANCE

Resistance	...	...	...	...	20 ohms.
Nominal impedance	...	...	...	...	30 ohms.

NOTE. The microphone is normally operated into an impedance which is high compared with 30 ohms. It may, however, be terminated by a resistance as low as 50 ohms without appreciably impairing the frequency response, though there will be some loss of sensitivity and a reduction of the signal-to-noise ratio.

The input transformer used to step up the signal to the grid of a valve should preferably present a high impedance to the microphone to meet the above condition, but must be designed to face a source impedance of 20 to 50 ohms.

FREQUENCY RESPONSE

Fig. 1 Free Field Frequency response curve (typical) (0db = 1V/dyne/cm²—open circuit).

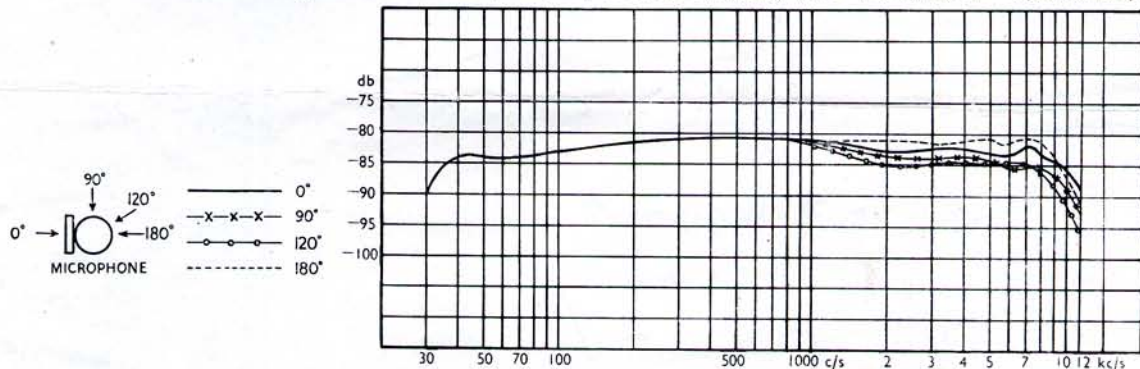
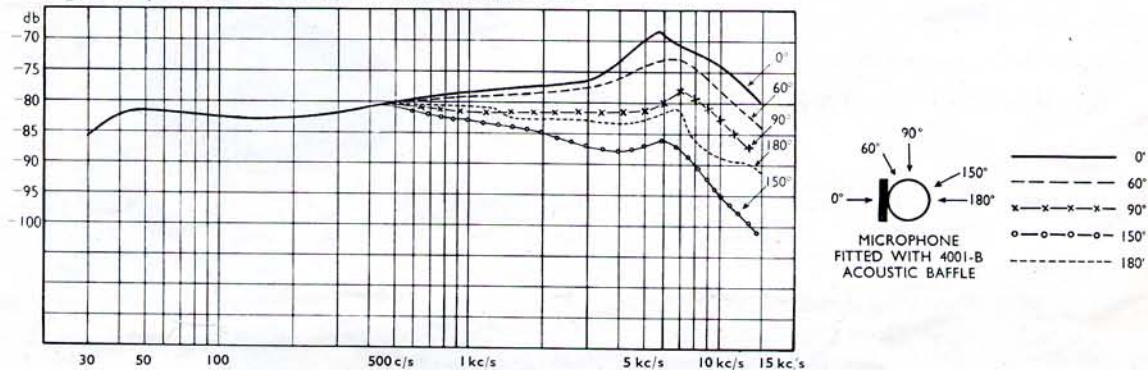


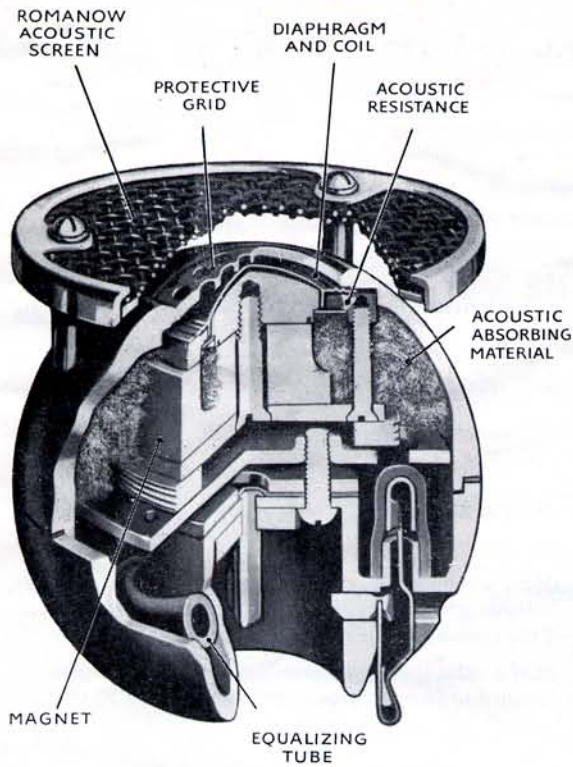
Fig. 2 Response curve with 4001B Acoustic Baffle fitted.



DISTORTION Less than 0.5% for a sound intensity level of 125 db above 0.0002 dynes/sq. cm. (20 micro-Newtons per sq. metre) at 500 c/s.

DIMENSIONS Sphere 2.5 in (6.3 cm) diameter.

WEIGHT 1 lb (450 gm)



Sectional view (*actual size*) of the 4021 microphone, showing the internal construction. The simple mechanism for locking the microphone to the 4069A jack is clearly shown at bottom right of the illustration.

The 4021 microphone is shown with a 4001B acoustic baffle and assembled on an adjustable table stand with an adaptor for adjusting the angle of the microphone.



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