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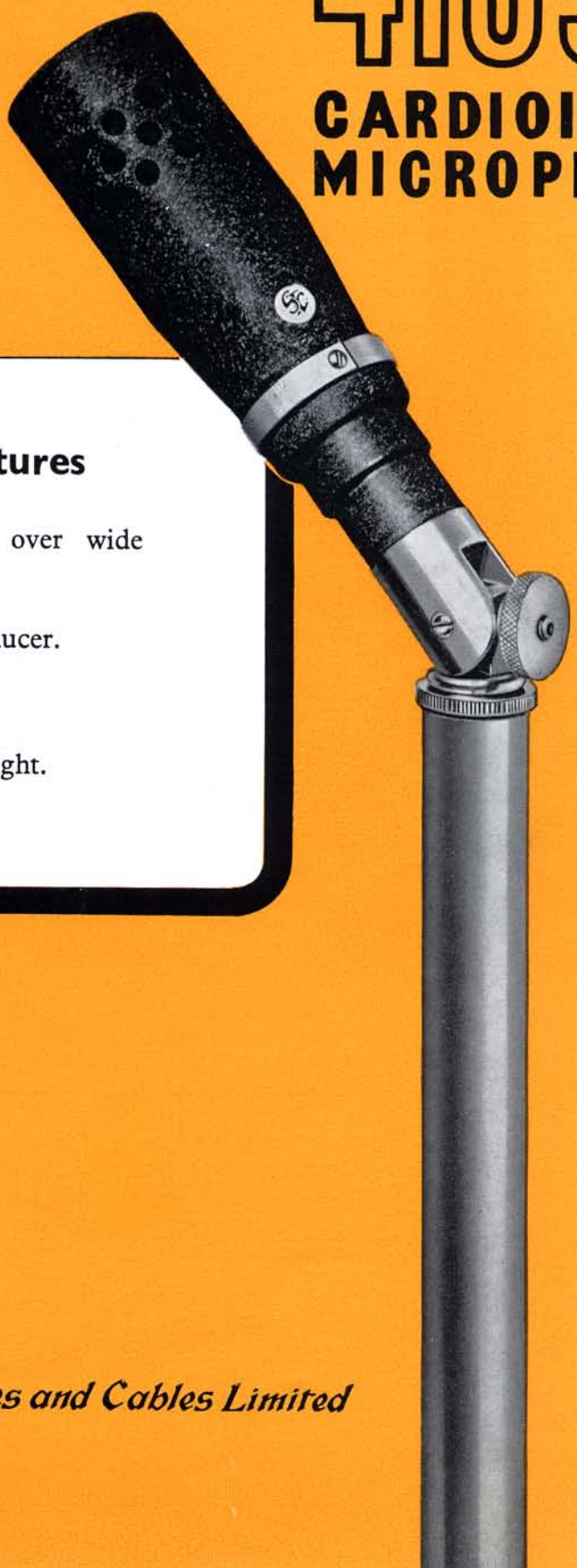
SOUND REPRODUCTION EQUIPMENT

4105
CARDIOID MICROPHONE



Principal Features

- ★ Unidirectional response over wide frequency range.
- ★ Single moving coil transducer.
- ★ Unobtrusive appearance.
- ★ Small in size, light in weight.

Standard Telephones and Cables Limited

DESCRIPTION

The 4105 Microphone is a pressure gradient operated moving coil or 'dynamic' microphone with a unidirectional 'Cardioid' response characteristic which is obtained by an acoustic phase-shifting network.

The microphone is small, unobtrusive and robust in construction.

The directional response discrimination makes the instrument particularly suitable for use in high quality sound reinforcement systems where a high degree of intelligibility and a good feedback margin are required. The frequency response (see Figure 1) provides a useful amount of bass taper under free-field conditions, but the response becomes flat at a talking distance of 6 to 12 inches.

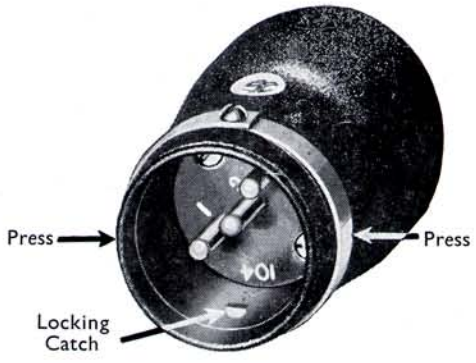
It should be noted, however, that pressure gradient microphones are inherently liable to produce blasting effects on explosive consonants or under the effect of the direct air streams involved in heavy breathing. If, therefore, it is intended to talk very close to this microphone it is advisable to fit a simple windshield.

The moving coil unit is a development of the well known S T C moving coil studio microphones, and it incorporates a new plastic diaphragm with a high surround compliance. The plastic material chosen is such that the high temperatures which may be experienced near studio lighting, footlights etc., will have no effect on the performance. The plastic material is inert and highly resistant to mechanical damage.

The microphone is virtually distortionless at 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.

The electrical impedance rises from about 25 ohms at the mid-frequencies to approximately 35 ohms at 70 to 100 c/s.

The outlet of the microphone is a shrouded three-pin connector. A 4069A Jack is required for connection. 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 jack (see illustration on right).



Locking device on the 4105 Microphone. The chrome ring is pressed at the arrowed positions to release.

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.

SPECIFICATION 4105-A (TYPICAL VALUES)

MEAN SENSITIVITY

Open circuit voltage per dyne/cm.^{2} (micro-bar)	0·085 mV
Open circuit voltage level per micro-bar, ref. 1 volt	—82 dB
Power delivered into 30 ohms for 1 micro-bar, ref. 1 mW	—72 dB
American ASA rating, ref. 1 mW	—148 dB

ELECTRICAL IMPEDANCE

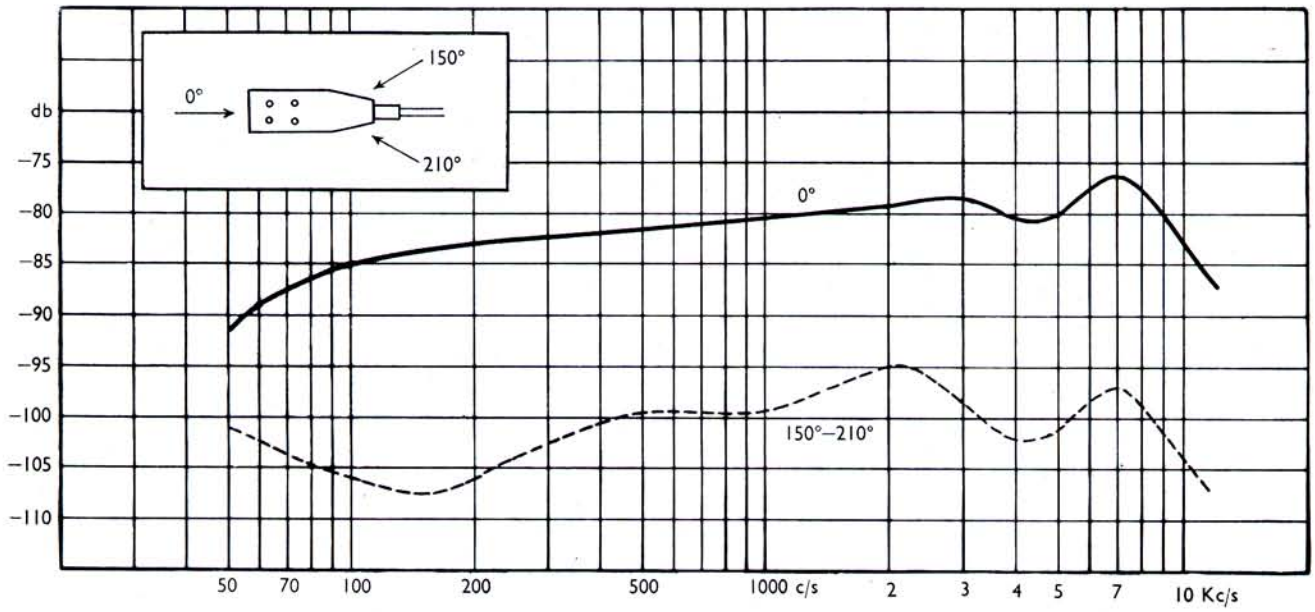
Resistance	20 ohms
Nominal impedance	30 ohms

NOTE. The microphone is normally operated into an impedance which is high compared with 30 ohms. It may, however, be terminated by an impedance as low as 200 ohms without appreciably impairing the frequency response although 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

Figure 1: Typical free field response curve (0 dB = 1 volt/dyne/cm.^{2} — open circuit).



DIRECTIONAL DISCRIMINATION

Between front 0 deg. response and rear response (averaged over solid angles 150 deg. to 210 deg.) discrimination is better than 15 dB.

DISTORTION

Less than 0·5% for a sound intensity level of 125 dB above 0·0002 dyne/cm.^{2}. (20 micro-Newtons per square metre) at 500 c/s.

DIMENSIONS

3·6 in. (91,5 mm.) long × 1·47 in. (37,3 mm.) diameter.

WEIGHT

6·3 oz. (177 grammes).

FINISH

Normally supplied with black shrivel finish.

ACCESSORIES

4069A Jack.

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

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

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