



4033-A

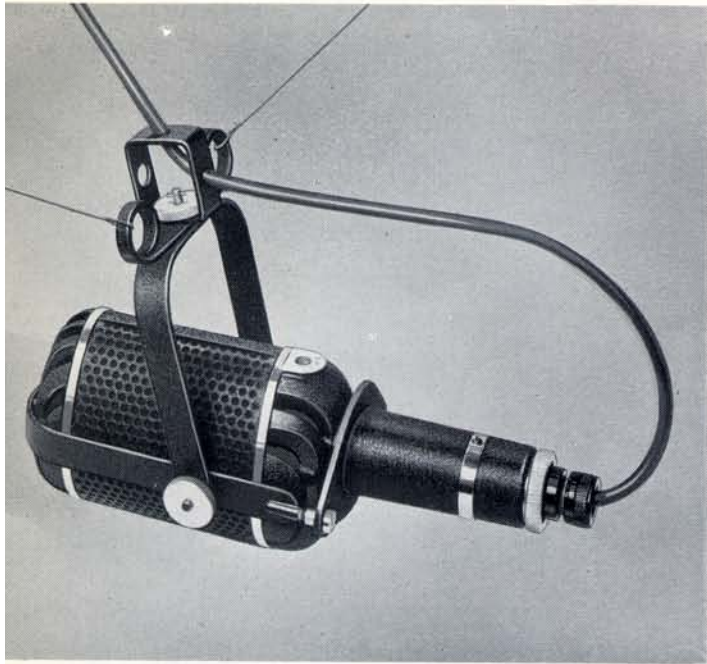
CARDIOID MICROPHONE



Principal Features

- ★ 3 MICROPHONES IN ONE; CAN BE SWITCHED TO CARDIOID, RIBBON AND PRESSURE TYPE.
- ★ STAND OR BOOM MOUNTING.
- ★ FOR HIGH QUALITY STUDIO WORK.
- ★ ACCURATELY CONTROLLED POLAR RESPONSE OVER WIDE FREQUENCY RANGE.





Two views of the 4033-A microphone and suspension mounting.

cardioid microphone

The Stantel *Cardioid* is a composite microphone with the outstanding feature of an almost perfect heart-shaped (*Cardioid*) polar response over a wide range of frequencies in both its horizontal and vertical planes. It is composed of a moving coil and a ribbon type microphone either of which may also be used independently, thereby affording three distinct types of microphone in one.

The significance of a heart-shaped characteristic is that the response is substantially uniform over a solid angle of about 120° at the front of the microphone, while outside this area and in the rear, the microphone is comparatively *dead*. It is, therefore, pre-eminently suitable for all applications where sound from one direction is required to the exclusion of sound from another.

This one-sided pick-up characteristic of the cardioid microphone makes it invaluable for use in theatres and where audience noises are to be eliminated. Similarly, in television studios, noises *off the set* can effectively be cut out, whilst the frequency range of the microphone fully accords with the wide band transmission channels available for television sound.

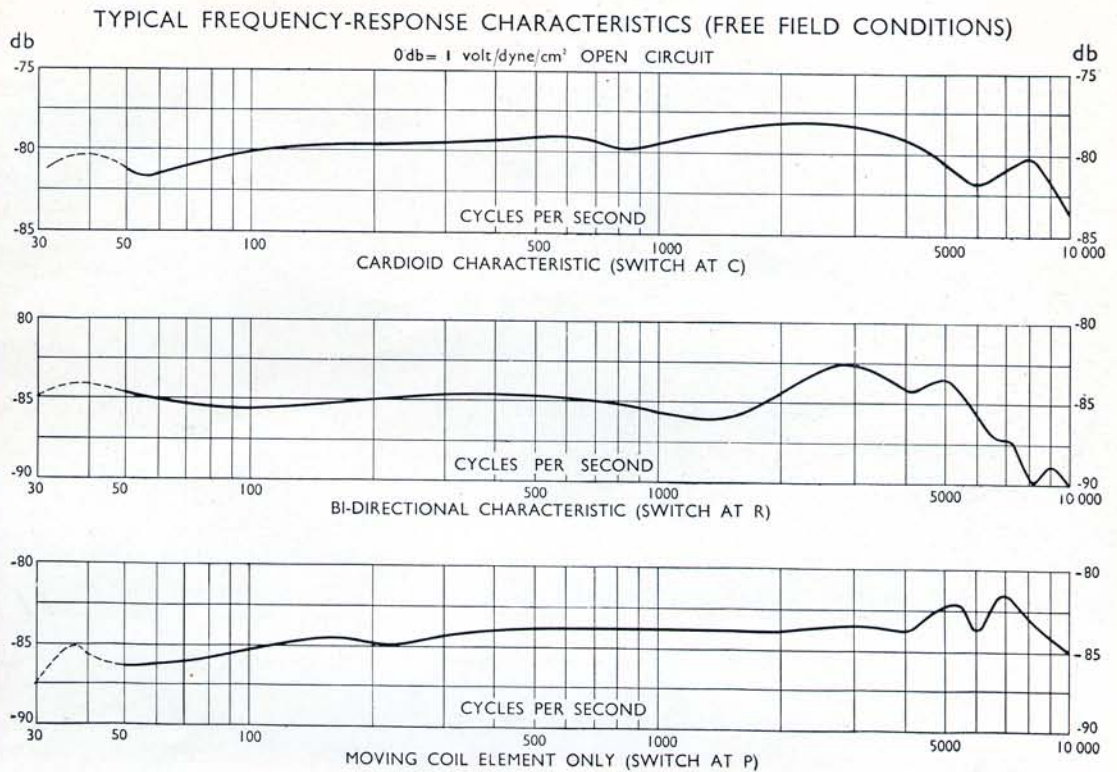
This same uni-directional property of the cardioid microphone makes it equally suitable for suspending above a group of artistes. It will then provide uniform pick-up from each member of the group while remaining comparatively insensitive to reflected sounds from the walls and ceiling even under acoustic conditions which would normally render a room unsuitable for use as a studio. Another practical aspect of cardioid response in reverberant auditoria, where sound reinforcement is limited by acoustic feedback, is that the degree of discrimination between direct and reflected sound permits a substantial increase in working level without risk of *singing*.

Yet another noteworthy feature of this multi-purpose microphone is its comparative immunity from *shock effects*. The more robust construction of the ribbon element, while sacrificing nothing in sensitivity, makes it most suitable for mounting on a boom or in other positions where it is liable to be exposed to slight air currents.

3

microphones
in one

Three axial frequency characteristics obtained with the STANTEL 4033-A microphone with the switch on the microphone at positions C, R & P.



THREE MICROPHONES IN ONE

Many studio presentations demand a microphone with bi-directional pick-up characteristics. A turn of the switch at the back of the microphone from the C or *Cardioid* position to the R or *Ribbon-element-only* position results in a figure of eight response with substantially dead areas on either side.

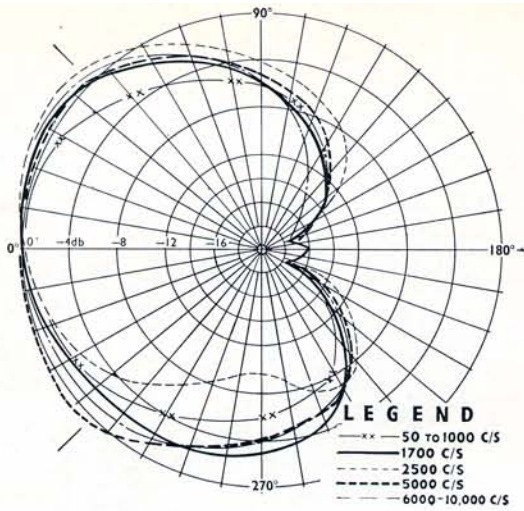
As a third application, the same microphone may also be used for announcing purposes by simply switching to the P or *Pressure-unit-only* position. It will then function as a simple moving-coil microphone whose response is similar to that of the 4035 type or the 4021 type with an acoustic baffle. This type has the merit that, unlike that of the ribbon type microphone, bass notes are not accentuated when the microphone is used for close talking. Response in the P position is non-directional up to a frequency of 2000 c/s but becomes directional at higher frequencies.

TECHNICAL DESCRIPTION

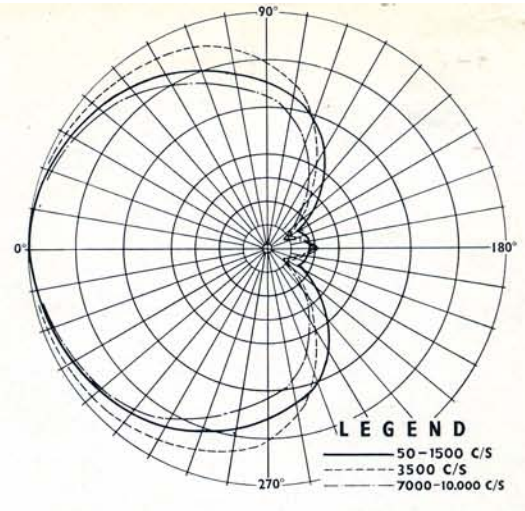
The cardioid shape of the polar response of this microphone is obtained by the combination of a ribbon element with a moving-coil unit. Theoretically, if the moving-coil element were sufficiently small to produce negligible diffraction effects in the frequency range, and were mounted clear of other reflecting objects, the combination of this type with a ribbon microphone which has a response proportional to the cosine of the angle of incidence, would produce a pure cardioid polar response curve. Practical mechanical considerations prevent the moving-coil element from being an omnidirectional transducer. The construction, therefore, has to be a compromise, and the



The 4033-A microphone used with a desk (right) and table stand incorporating extension piece (left).



VERTICAL CHARACTERISTICS



HORIZONTAL CHARACTERISTICS

Vertical and horizontal characteristics of the 4033-A microphone shown here with the main axis vertical; stem downwards.

response, as in all other microphones of this type, is accomplished by combining the outputs of the two components in a suitable electrical network. The schematic drawing shows an inductance L_1 , which in association with the capacitance C_1 , progressively attenuates the contribution of the ribbon element to the combined output. The effect of this at the higher frequencies is to confine the output of the combination to that of the moving-coil element alone. The operation of the three-position switch at the rear of the case can be seen from the schematic. In position C (*Cardioid*) both elements are connected, their outputs being in series. In the position P (*Pressure*) the ribbon element is short-circuited, and in the position R (*Ribbon*) the moving-coil element is short-circuited.

SPECIFICATION

Output Impedance:—

50 ohms approximately, at 1000 c/s

Mean Open-circuit Response:—

As cardioid combination -80db*

As ribbon or dynamic only -85db*

Dimensions:—

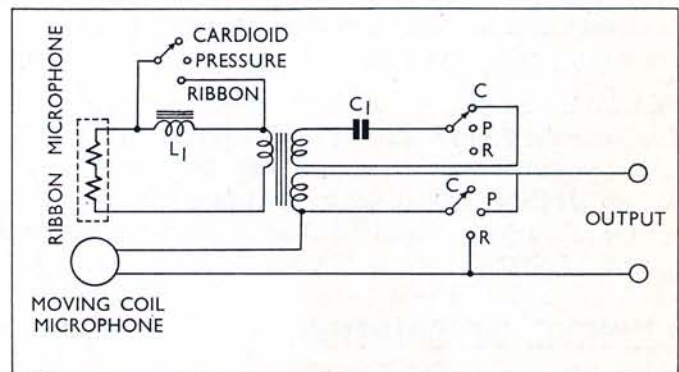
Overall height 9 in × 3 in × 3½ in
(288 × 77 × 89 mm)

Weight:—3 lb (1360 grammes)

Connections:—To fit 4069-A jack**

* 0 db equals 1 volt/dyne/cm².

** Suitable microphone stands are available in which this jack is embodied in the upper part of the stand.



Standard Telephones and Cables Limited

(Registered Office: Connaught House, Aldwych, London W.C.2)

PUBLIC ADDRESS DEPARTMENT

ESTERBROOKE STREET

LONDON, S.W.1

Telephone: VICTORIA 7741

Telegrams: Relay, London W.C.2.

Enquiries concerning Public Address equipment may be made at any of the following Branch Offices of the Industrial Supplies Division

BRANCH OFFICES

PRIVATE COMMUNICATION EQUIPMENT DIVISION

FOOTSCRAY · SIDCUP · KENT

Telephone: FOOTscray 3333

BIRMINGHAM

DEVONSHIRE HOUSE, GREAT CHARLES STREET, BIRMINGHAM 3. Telephone: Central 3042

MANCHESTER

CORONATION HOUSE, 69-71 MARKET STREET, MANCHESTER 1. Telephone: Deansgate 3245

LEEDS

NORWICH UNION BUILDINGS, CITY SQUARE, LEEDS 1. Telephone: Leeds 27227

BRISTOL

51 BROAD STREET, BRISTOL 1. Telephone: Bristol 20613

GLASGOW

49 QUEEN STREET, GLASGOW C.1. Telephone: Glasgow Central 6193

BELFAST

14 ADELAIDE STREET, BELFAST 2. Telephone: Belfast 24900