



## Ribbon Microphone *Type BD506 (AXB T)*

THE BBC-MARCONI Type BD 506 (AXB T) microphone is primarily intended for studio and concert-hall use, where the highest quality of reproduction is of paramount importance. No better claim can be made for the microphone, than to say that it satisfies the high standards set by the British Broadcasting Corporation, which uses it almost exclusively.

It can be used with all high-quality studio control equipments and its bi-directional properties render it particularly suitable where difficult problems in studio balance are involved.

The performance of the microphone is of a very high order; the frequency and transient response is such that the reproduction is very faithful, with a notable absence of 'ring' and other spurious sounds which are a feature of certain microphones. The effects of pick-up from magnetic fields are zero for practical purposes.

### FEATURES

Unexcelled reproduction made possible by use of thin ribbon element.

Freedom from resonance effects.

Uniform frequency response over wide audio range.

Bi-directional polar diagram permits grouping of artistes on both sides of microphone and elimination of unwanted sounds.

Freedom from pick-up from strong magnetic fields.

Robust construction, shock-proof mounting, adjustable angle of tilt.

Unaffected by temperature, humidity and atmospheric pressure changes. With ordinary care, the maintenance required over long periods will be found to be negligible.

Attractive appearance.



### CONSTRUCTION

The microphone uses a very thin crimped aluminium-foil ribbon, supported with very low tension between specially shaped pole pieces of a powerful permanent-magnet system, and having a natural period of well below 20 c/s. The impedance of the ribbon is very low and is, therefore, stepped up by a transformer housed inside the case of the microphone, to give an output impedance of 300  $\Omega$ . The leads connecting the low-impedance ribbon circuit to the transformer are arranged, by means of balanced loops and twisted wires, to reduce magnetic pick-up to an absolute minimum, and the resultant pick-up is about 30 db lower than that obtained in other ribbon microphones in which such precautions are not taken.

Under the influence of a sound wave the ribbon is actuated by the difference in air pressure between its two sides, thus producing a voltage in the ribbon which is stepped up to line by the transformer. The electrical output of the system is proportional to the particle velocity of the

impinging sound wave, which leads to the term 'velocity' microphone for this type of instrument.

Two gauze-lined perforated metal shields protect the ribbon from dust and from the effects of draughts which could cause undesirable LF rumbles. The microphone is provided with three terminals, two of which connect to the transformer and the third to the case; the external connecting cable is of the screened twin type.

The microphone is fitted with two side studs and captive knurled nuts which are used to fix the instrument to a stirrup, the latter being provided with a shock-absorber mounting which, when used with a desk stand or pedestal, gives adequate protection from vibration. The stirrup may also be used to enable the microphone to be suspended and in this case stranded rubber cords are supplied to provide protection from vibration in the supporting wires or boom. The mounting enables the inclination of the microphone to the vertical plane to be varied.

Various stands and booms to meet all studio requirements are available (see page 43).

### DATA SUMMARY

**Frequency response:** Typical figures for microphone with 300  $\Omega$  load.

Sound incident at 0°:

Sensitivity between -77.5 and -88 db\*.

Sound incident at 30° to side:

Sensitivity between -78.6 and -88 db\*.

Sound incident at 60° to side:

Sensitivity between -84.5 and -92 db\*.

\* Relative to 1 V/dyne/cm<sup>2</sup> from 30 to 10,000 c/s.

**Sensitivity:** Minus 70 db on open circuit with reference to 1 V/dyne/cm<sup>2</sup>, with warble tone (950  $\pm$  650 c/s) for plane-wave condition.

**Horizontal and vertical polar diagrams:** Figure-of-eight.

**Output impedance:** 300  $\Omega$ .

**Finish:** Oxidised bronze.

**Mounting:** Stirrup with shock absorber.

**Dimensions:**

Height	Width	Depth	Weight
9.1 in.	3.9 in.	2.8 in.	9.3 lb
(23 cm)	(10 cm)	(7 cm)	(4.2 kg)

**Marconi**

**MARCONI'S WIRELESS TELEGRAPH COMPANY LIMITED**

*Head Office: Marconi House, Chelmsford*

*Telephone: Chelmsford 3221. Telegraphic Address: Expanse, Chelmsford*



## Microphone Stands

AVAILABLE FOR USE with the Type BD 506 (AXBT) microphone are various types of stands, which, while being highly efficient for their work, are attractive in appearance, and will grace any studio or hall.

**The Desk or Announcer's Stand** Type BD 507 is suitable for mounting on an announcer's desk in the studio, or on the speaker's table at banquets and similar functions.

The pillar is a brass tube finished in oxidised bronze, and this fits the microphone stirrup. The height of the stand is  $3\frac{1}{2}$  in., but an extension piece is provided to give a height of  $9\frac{1}{2}$  in., when required.

The base of the stand is a heavy circular casting 8 in. in diameter with a rubber ring insert in the underside to avoid damage to any polished table on which it may be placed. The base is given a rivelled finish.

**The Studio Stand** Type BD 508 is of brass tube in two sections, the top one of which slides into the lower, giving a minimum height of 3 ft 6 in. and a maximum height of 6 ft. A very simple but effective clamping device permits height adjustments to be made easily and quietly without operating any release mechanism. The up and down motion is smooth and the locking operation positive. The clamp will give years of trouble-free service, and is so arranged that the moving pillar is not marked in any way, thus preserving the smart 'new' appearance over a long period.

The three-legged base is a heavy casting, and its weight, combined with its adequate size (10 in. radius), ensures a stable foundation for the stand at its fullest extension. The base rests on rubber ball feet.

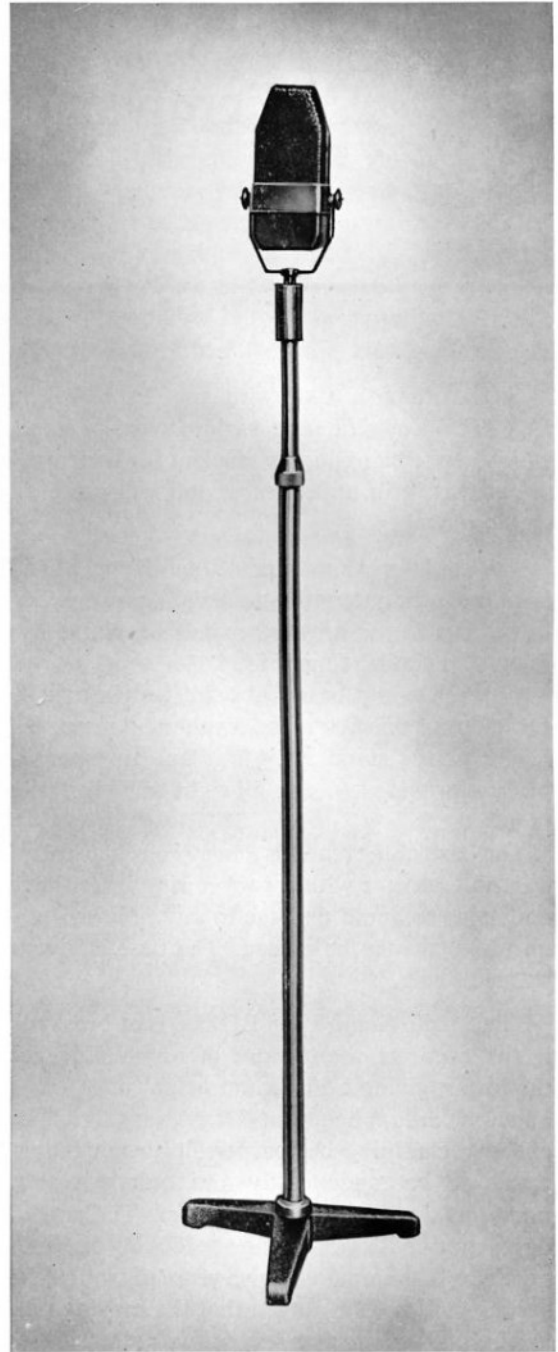


The top tube is designed to fit the shock-absorber mounting of the microphone stirrup, and a knurled screw engaging in a channel on the mounting enables the microphone head to be captured safely while leaving it free for orientation. The screw can be tightened to hold the mounting firmly when the desired position has been found.

The upright is finished in oxidised bronze to match the microphone, and the base is rivelled in an appropriate shade. Cable guides on the base and on the upright keep the microphone cord in place as the instrument is raised or lowered.

**The Boom Type** of adjustable microphone support can be supplied in two forms. One is of comparatively light construction for moving about the studio when the microphone is required to be slung over the heads of performers in an orchestra or other ensemble to aid in balancing an item. This is known as the Type BD 523.

The second type (BD 524) is a heavier device incorporating a small winch for raising or lowering the microphone at the end of its boom during the performance so that action can be followed closely in television or film studios.



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## Commentator's Microphone Type BD 512

THE BBC-MARCONI COMMENTATOR'S MICROPHONE is a ribbon instrument of small dimensions and robust construction, developed by the British Broadcasting Corporation for close-range speech at outside broadcasts.

Although special features have been incorporated in the design to reduce the effects of extraneous noises, the performance is nevertheless of the same order as that of a high-quality studio microphone such as the BBC Type AXBT (see page 41).

The magnet/ribbon assembly is supported in a cradle by a damped spring suspension which gives protection from vibration and mechanical shocks, and the insulation is further improved by the soft rubber handle-grip.

Associated with the microphone is an equaliser which provides a sufficiently wide tone control to cater for all variations in speakers' voices which are encountered in practice. The equaliser, together with the microphone and 20 ft of rubber-covered cable, is fitted into a special teak carrying case for transport.

### FEATURES

*High speech/background ratio.* The microphone is designed so that the ratio of speech to background noises is exceptionally high, and, in fact, the instrument has been successfully used for commentaries from flying aircraft.

*High close-voice sensitivity.* The microphone is particularly useful when the commentator is seated amongst the audience, since he need only speak in an undertone and his remarks do not, therefore, disturb his neighbours.

*Sound-proof booth unnecessary.* With the Commentator's Microphone sound-proof booths are no longer necessary. The high noise suppression permits a commentator to receive verbal instructions from a colleague without causing an interruption to the broadcast.



*The microphone ready for use.  
Note the soft rubber handle grip.*

**Constant output.** The mouth-rest keeps the commentator's mouth at a fixed distance from the microphone so that the commentary is not liable to large changes in level, or to variations in frequency response, as he moves his head.

**High quality.** As the performance of the microphone is fully up to 'studio' standards, it may be used for making indoor announcements at concerts, etc.

### DATA SUMMARY

**Sensitivity:**  $-95 \text{ db} \pm 2 \text{ db}$  at 1000 c/s relative to 1 V/dyne/cm<sup>2</sup> on open circuit (measured with plane wave from sound source on microphone axis).

**Output volume:** In normal use, the output volume is approximately  $-65 \text{ VU}$ .

**Frequency response:** See curve.

**Output impedance:**  $300 \Omega \pm 10\%$  between 50 and 10,000 c/s (measured at output of equaliser).

**Cable:** Twin-screened, rubber covered, 20 ft (6 m) long.

**Dimensions:**

Microphone body  $2 \times 2.5 \times 2.75 \text{ in.}$   
( $5 \times 6.3 \times 7 \text{ cm}$ )

Mouth rest  $2 \times 3 \text{ in.}$   
( $5 \times 7.6 \text{ cm}$ )

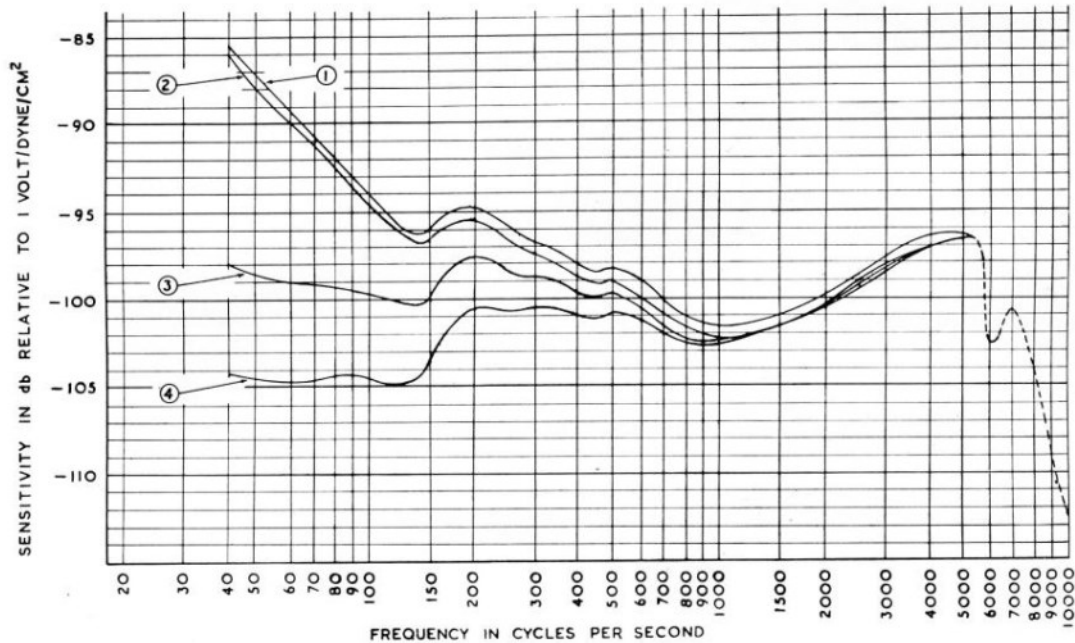
Handle length 8 in.  
( $20.3 \text{ cm}$ )

Carrying case  $11\frac{1}{4} \times 15\frac{3}{4} \times 6\frac{1}{4} \text{ in.}$   
( $30 \times 44 \times 16 \text{ cm}$ )

**Weights:**

Microphone 1 lb 10 oz (0.74 kg)

Complete unit  $16\frac{1}{2} \text{ lb}$  (7.5 kg)



Frequency/sensitivity curves of BBC-Marconi Commentator's Microphone No. 141 Inst. No. 311460.  
Microphone loaded with  $300 \Omega$ .

Note 1. The curves are shown dotted above 5000 c/s because at these higher frequencies small variations in the position of the microphone produce large variations in the results.

Note 2. Curve 1. Artificial voice, equaliser disconnected.  
Curve 2. Artificial voice, equaliser set to Max. Bass.  
Curve 3. Artificial voice, equaliser set to Med. Bass.  
Curve 4. Artificial voice, equaliser set to Min. Bass.

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