



### DESCRIPTION

The D-224E is the premier, studio-quality member of AKG's distinguished — and totally unique — family of two-way cardioid dynamic microphones. It represents the most sophisticated application of AKG's exclusive two-way design principle\*. A fully professional unit with extraordinarily high performance, the D-224E is unhesitatingly recommended for critical musical applications in recording, scoring, and broadcast studios — especially those requiring extremely accurate reproduction of instrumental soloists, chamber or jazz ensembles, and large choruses or orchestras. Because of its unique characteristics, the D-224E is also a superb dais or lectern microphone in sound-reinforcement applications.

The microphone is the product of an intensive AKG research program that has succeeded in finding a way to transcend the performance limitations of conventional cardioid designs. It employs *two*, coaxially mounted, dynamic transducers: one designed for optimum performance at high frequencies and placed closest to the front grille, the other designed for optimum performance at low frequencies and placed behind the first. Each transducer incorporates a hum-bucking compensating winding to cancel the effects of stray magnetic fields. Both transducers are coupled to a 500-Hz inductive-capacitive crossover network that is electroacoustically phase corrected. (This is essentially the same design technique used in a modern two-way speaker system, but applied in reverse.)

As a result, the D-224E exhibits several outstanding characteristics that make it vastly superior to conventional cardioid dy-

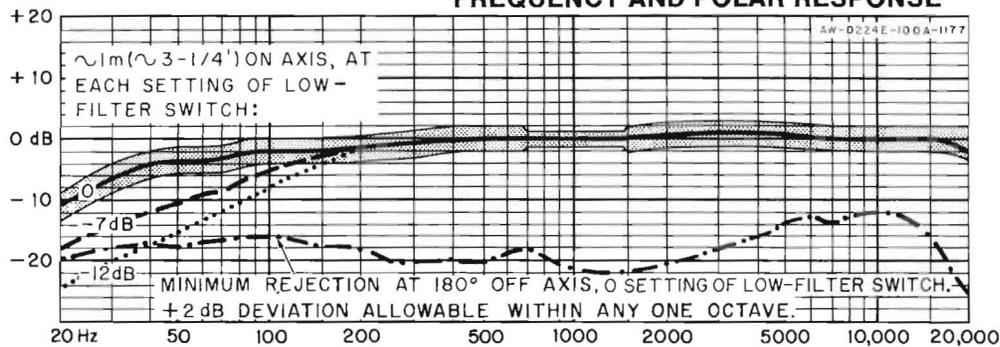


amic microphones for its intended applications: (1) an extraordinarily smooth and wide-range on-axis frequency response — rivaling that of a condenser microphone at frequencies up to and beyond 20 kHz; (2) a predominantly frequency-independent directional pattern — producing more linear frequency response at the sides of the microphone and far more constant discrimination at the rear of the microphone; (3) a total absence of proximity effect at working distances down to 15 cm ( $\approx 6$  in.); (4) extremely low harmonic distortion at high sound-pressure levels.

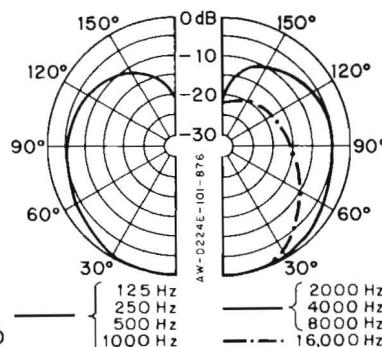
In all applications — recording, broadcasting, and sound reinforcement — these qualities contribute to more natural, uniform and uncolored tonal quality, regardless of the relative position or distance of performers and instruments within a semicircle around the front and sides of the microphone. Furthermore, stereo separation is improved and greater isolation (lower leakage) is achieved in multiple-microphone in-

\*U.S. Patent No. 3,204,031

### FREQUENCY AND POLAR RESPONSE



continued overleaf



### TECHNICAL DATA

Transducer Type: Dynamic, two-way system  
 Directional Characteristic: Cardioid  
 Frequency Range: 20 Hz-beyond 20,000 Hz (filter switch at "0")  
 Crossover Frequency: 500 Hz  
 Nominal Impedance: 200 ohms  
 Recommended Load Impedance:  $\geq 500$  ohms

#### Sensitivity at 1 kHz:

Open circuit: 0.13 mV/ $\mu$ b; -77.7 dBV  
 Maximum power level: -56.5 dBm (re: 1 mW/10 dynes/cm<sup>2</sup>)  
 EIA G<sub>m</sub>: -149.5 dBm  
 Tolerance: +0, -1 dB

#### Sound Pressure Level for 0.5% THD:

40 Hz: 128 dB  
 1000 Hz: 128 dB

Hum Sensitivity: -142 dBm (1 mG field)

Case Material: Nickel-plated brass

Dimensions: See Dimensions figure overleaf

Schematic: See Schematic figure overleaf

Net Weight: 285 g ( $\approx 10$  oz)

#### Included Accessories:

- SA-18/3 clamp stand adapter with 5/8-in. -27 thread
- W-2 foam windscreen (for front of microphone)
- W-2A foam windscreen (for rear of microphone)
- Foam-lined vinyl case

#### Optional Accessories:

- SA-26 clothespin stand adapter with 5/8-in. -27 thread
- SA-70/3 boom-suspension adptr for use with H-70 below
- H-9 clamp for surface-mounting or hanging H-10 below
- H-10 stereo bar for stand-mounting 2 microphones
- H-70 boom-suspension shock mnt for use with SA-70/3
- W-22 wire-mesh windscreen
- KM-series floor and boom stands, stand accessories
- ST-series table stands
- MCH-series heavy-duty cable assemblies (listed overleaf)

stallations. In sound-reinforcement applications, these same qualities also permit greater freedom in microphone and speaker placement, more effective and predictable suppression of acoustic feedback, and higher overall system gain.

A built-in three-position low-filter switch provides an additional 7 dB or 12 dB rolloff at 50 Hz, as required. This feature is especially useful in speech applications and in acoustically unfavorable environments with excessive low-frequency ambient noise, reverberation, or feedback.

### ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The microphone shall be a dynamic pressure-gradient type incorporating a two-way electroacoustical system. The two-way system shall consist of two coaxially mounted transducers and an inductive-capacitive crossover network. One transducer shall be designed for optimum pickup and reproduction of high frequencies, and shall be positioned closest to the front port of the microphone. The second transducer shall be designed for optimum pickup and reproduction of low frequencies, and shall be positioned behind the first transducer. Each transducer shall incorporate a hum-bucking compensating winding to cancel the effects of stray magnetic fields. The inductive-capacitive network shall have an electrical crossover frequency of 500 Hz and shall be electroacoustically phase corrected in the crossover-frequency region.

The microphone shall incorporate a low-frequency filter network with a three-position selector switch to shape frequency-response characteristics at 1 m ( $\approx 3\text{-}1/4$  ft) on axis as follows: (1) the "0" position of the switch shall produce an unmodified frequency range of 20 Hz to beyond 20,000 Hz with 3 dB rolloff attenuation at 50 Hz; (2) the "-7" position of the switch shall introduce an additional 7 dB rolloff at 50 Hz for a total attenuation of 10 dB at that frequency; (3) the "-12 dB" position of the switch shall introduce an additional 12 dB rolloff at 50 Hz for a total attenuation of 15 dB at that frequency.

The microphone shall have a predominantly frequency-independent cardioid directional pattern throughout most of its frequency range. The off-axis frequency response shall be linear from 125-8000 Hz at a sound-incidence angle of 90 degrees. The typical front-to-rear dis-

The D-224E is a low-impedance balanced-output unit fitted with a standard 3-pin male XLR-type connector. Each microphone is supplied complete with individual proof-of-performance curves (showing measured frequency response on axis and discrimination vs. frequency at 180 degrees off axis), an SA-18/3 stand adapter, a W-2 foam front windscreen, a W-2A foam rear windscreen, and a foam-lined vinyl protective case. Several optional accessories — listed in the Technical Data section — are available.

crimination shall remain a constant 20 dB from 125-8000 Hz at a sound-incidence angle of 180 degrees.

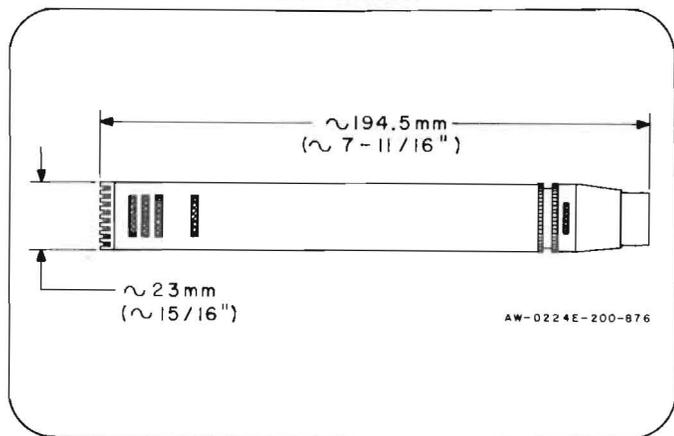
The microphone shall have a nominal impedance of 200 ohms. The output level shall be  $-56.5$  dBm (re:  $1\text{ mW}/10\text{ dynes/cm}^2$ ), and the microphone shall be capable of handling a maximum sound-pressure level of 500  $\mu$ bar (128 dB SPL) at 1000 Hz with distortion not exceeding 0.5%. The EIA sensitivity rating ( $G_m$ ) shall be  $-149.5$  dBm.

A wire-mesh grille, commensurate with the acoustical properties of the unit, shall protect the microphone system from metal particles and dust. The diaphragm material of each transducer shall be nonmetallic MAKROFOL.

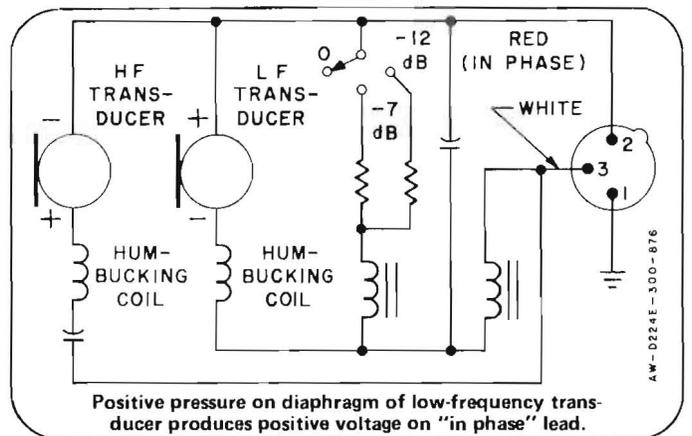
The microphone shall incorporate a 3-pin male audio connector designed to mate with Cannon XLR, Switchcraft A3, or equivalent connectors. A set of individual proof-of-performance curves (showing measured frequency response on axis and discrimination vs. frequency at 180 degrees off axis), an AKG model SA-18/3 swivel stand adapter with standard 5/8-in.  $-27$  thread, an AKG model W-2 foam front windscreen, an AKG model W-2A foam rear windscreen, and a foam-lined vinyl carrying case shall also be provided. The finish of the microphone shall be matte nickel and shall not create specular light reflections.

The microphone shall be 194.5 mm ( $\approx 7\text{-}11/16$  in.) long by 23 mm ( $\approx 15/16$  in.) in diameter, and the net weight shall not exceed 285 g ( $\approx 10$  oz). The microphone herein specified shall be the AKG D-224E.

### DIMENSIONS



### SCHEMATIC



### OPTIONAL AKG HEAVY-DUTY SHIELDED CABLE ASSEMBLIES FOR THIS MICROPHONE

**NOTE:** All cable assemblies except the MCH-50 are 6.1 m ( $\approx 20$  ft) long. All are available in black. Model numbers with an asterisk (\*) are also available in red, green, and blue — please specify cable-color choice in such cases.

- MCH-20\* Low-impedance cable assembly w/o switch (female XLR-type connector to male XLR-type connector)
- MCH-20F Low-impedance cable assembly w/o switch (female XLR-type connector to stripped-and-tinned ends)
- MCH-20P Low-impedance cable assembly w/o switch (female XLR-type connector to phone plug)
- MCH-20S Low-impedance cable assembly w/switch (female XLR-type connector to male XLR-type connector)
- MCH-20T High-impedance cable assembly w/o switch (female XLR-type connector to transformer w/phone plug)
- MCH-20TS\* High-impedance cable assembly w/switch (female XLR-type connector to transformer w/phone plug)
- MCH-50\* Low-impedance 15.2 m ( $\approx 50$  ft) cable assembly (female XLR-type connector to male XLR-type connector)



Product design and prices are subject to change without notice.

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