AKG Two-Way Microphones

Similar to a Two-Way Speaker System, the total response range of AKG Two-Way Microphones are subdivided between a high frequency transducer **(tweeter)** and a low frequency transducer **(woofer)**, combined with a **crossover** at 500Hz...

D-200E Two-Way Cardioid Dynamic Microphone

The D-200E characterized by its smooth, wide range frequency response, linear off-axis response and uniform front-to-back discrimination – features inherent in the two-way system technique – indicates that this principle can also be successfully adopted where economics are at a premium.

The D-200E features a "floating" rubber suspension system. No direct contact exists between the transducer portion and the microphone housing. This construction feature virtually eliminates both handling and cable noise, and protects the microphone system from even the severest shocks. In addition, the microphone housing has been designed to offer maximum ruggedness and a modern aesthetic appearance.

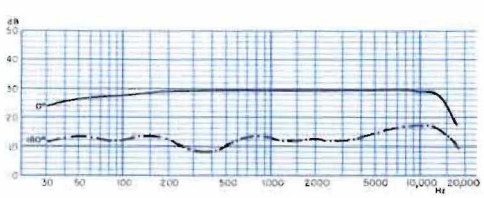
The D-200E is a low impedance (200 ohm) microphone. It is equipped with XLR type connector and is supplied with a *"quick disconnect"* 5/8"-27 thread stand adapter plus 15 foot cable with mating connector. A unique cable assembly incorporating an on-off switch and built-in low to high impedance transformer is available as an accessory (please consult "Ordering Information").

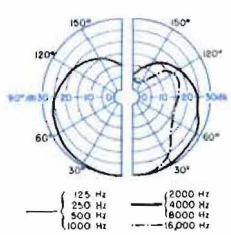
TECHNICAL DATA

Frequency range	30-15,000 Hz
Frequency response	±3 dB
Sensitivity	—55 dB (re 1 mW/10 dynes/cm²) 0.16 mv/μbar
Impedance	200 ohms + 15%-30%
Min. actual load impedance	≧500 ohms
Directional characteristics	Frequency-independent cardioid
Max. sound pressure level	At a distortion of 0.5%: at 40 Hz = 120 dB SPL (200 μbar) at 1,000 Hz = 128 dB SPL (500 μbar) at 5,000 Hz — 128 dB SPL (500 μbar)
Diaphragm	Non-metallic MAKROFOL
Connections	XLR-3: 1 = Shield 2 = Positive (in phase) 3 = Negative
Dimensions	7 3/16" long, 1 3/8" diameter
Weight	8 ounces

ACCESSORIES:

SA-20 ..... Stand adapter (quick disconnect)
SA-10/3 ... Stand adapter (around connector)
SA-18/6 ... Stand adapter with built-in suspension
W-4 ..... Windscreen (foam)
ST-4 ..... Table stand
ST-305 .... Table stand
ST-200 .... Floor stand
MSH-58E .. Flexible shaft





This AKG series of cardioid dynamic microphones is based on a new revolutionary concept — the two-way microphone system*, representing the most significant advancement in microphone development and audio engineering.

CONCEPT

The communication field is growing at a rapid pace. Primarily the electro-acoustical engineer is concerned with transmitting a message, in our case a sound event, without deterioration and as faithfully as possible, including all its tangible and irrational components.

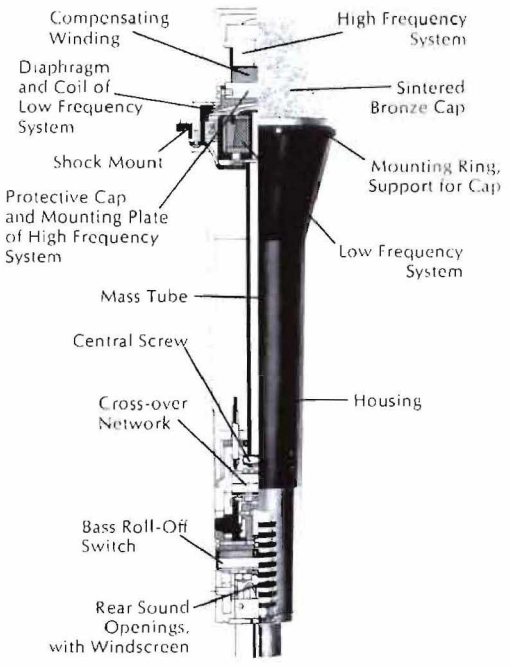
Usually acoustic message transmission begins with a microphone and ends with a loudspeaker. It is interesting to note that development engineers in the U.S. have concentrated primarily on loudspeaker improvement, whereas the microphone received greater attention in Europe. However, the first basic work on dynamic directional microphones was conducted in the U.S. and reported in 1933.

Because of its convenient and reliable operating characteristics, the dynamic microphone has found widespread applications in studio use – particularly in field work and public address installations. Compared to the condenser microphone its disadvantages have until now been considered to include its narrower frequency range, some irregularity in frequency response, lower sensitivity, susceptibility to magnetic stray fields and – especially in the case of directional microphones – directional characteristics that were not completely satisfactory and rather frequency-dependent.

Assisted by computer research findings it was found that it is not possible, even with complex acoustic networks, to significantly and concurrently increase frequency range, frequency response and uniform front-to-back discrimination of a cardioid dynamic microphone.

To aid in this research project, AKG's Research and Engineering Department developed an Analog-Computor (Simulator), unique in this field. The Simulator is capable of electronically imitating all acoustical-physical relations of electro-acoustical transducers.

A two-way cardioid dynamic microphone system evolved from this research. In a two-way microphone system, the total response range has been subdivided between a high frequency and a low frequency transducer, each of which is optimally adjusted to its specific range (similar to a two-way speaker system). The two systems are connected by means of a cross-over network with the cross-over frequency at 500 Hz.



This arrangement is depicted in the cross-section drawing shown at bottom of left column. The high frequency system is mounted on the protective cap of the low frequency system. The low frequency system is connected to a mass tube with apertures at the rear of the microphone. For maximum reduction of wind sensitivity at the rear sound openings, the aperture of the mass tube does not connect directly with the open air but instead leads to a chamber which communicates with the sound field via slotted openings covered with damping material.

The high frequency system is shock-mounted to reduce handling sensitivity and is provided with a compensating winding to eliminate the effects of magnetic stray fields.

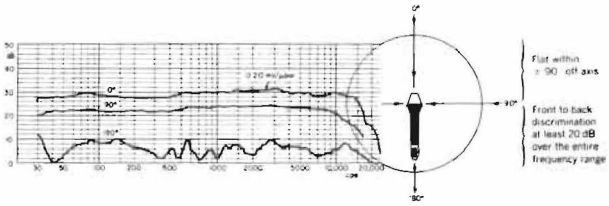
The cross-over network is housed in the lower portion of the microphone. In the case of the D-202E and D-224, the output circuit of the microphone contains an electrical bass attenuator to permit a reduction in low frequencies.

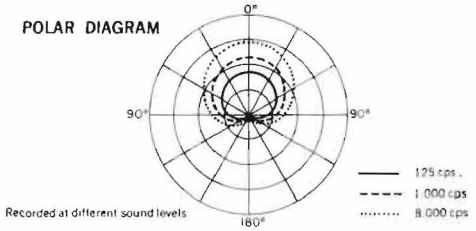
This unique arrangement achieves a number of previously unobtainable performance characteristics for cardioid dynamic microphones:

Flat frequency response over the entire audible range. The low as well as the high frequency system is optimally adjusted to its specific frequency range and the cross-over point, at 500 Hz, is unnoticeable.

Linear off-axis response. Sound reaching the microphone 90° off-axis is reproduced naturally. No frequency discriminating characteristics, which commonly arise from dynamic microphones, are audible.

Uniform front-to-back discrimination. The two-way system maintains a front-to-back discrimination of at least 20 dB over its entire range, even in the critical low frequency and upper mid-range area. The polar pattern shows the directional characteristics of the microphone at 125 Hz, 1,000 Hz and 8,000 Hz as recorded with a polaroscope. For better graphic clarity, a different sound level was used for each pattern.





Proximity effect. A complete absence of proximity effect–the rise of low frequency response when microphone is used in close-up applications–is a distinguishing characteristic of the two-way system compared to other directional microphones.

These features offer several advantages in practical applications. The flat frequency response allows the most natural and faithful pick-up of the sound event for transmission during a recording application. In public address installations it permits control of feedback at any frequency.

The linear 90° off-axis response is of particular importance in recording applications whenever a number of microphones are used, since frequencies reaching the microphone ±90° off-axis (leakage from left or right of microphone, other instruments, etc.) are reproduced faithfully without discriminating characteristics. The same also applies to public address installations where a speaker may move to the left or right (off-axis) of the microphone.

Uniform front-to-back discrimination is of prime importance in public address installations since it virtually eliminates feedback and offers almost complete freedom in microphone and speaker placement. For instance, it was found that a gain of approximately 6 db could be achieved in a majority of sound systems. The exceptional front-to-back discrimination of this exclusive design offers better than average separation in recording applications.

*U.S. Patent #3,204,031

D-202E

The D-202E, the original deluxe cardioid dynamic microphone based on the two-way system development, offers virtually flat response over the entire audible range. The 90° off-axis response, approximately 4-6 dB lower in output, is parallel to the 0° on-axis response. The front-to-back discrimination is 20 dB over the entire range, with a tolerance of approximately 2 dB, and offers maximum feedback cancellation.

In view of its exceptional low frequency response, it might be desirable to roll-off the bass response in order to avoid low frequency environmental noise or undesirable room acoustics. Therefore, the D-202E is provided with low frequency attenuator of −7 and −20 dB at 50 Hz.

The D-202E features a sintered bronze cap which functions as a windscreen and pop filter, is waterproof and actually increases longevity of the unit by protecting the magnets of the dynamic systems from iron particles.

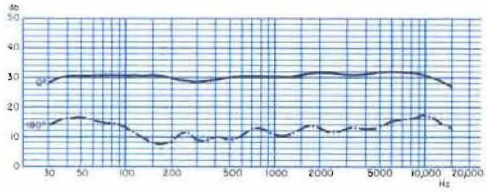
The D-202E is a low impedance (200 ohm) microphone equipped with standard XLR type connector. It is supplied with stand adapter for 5/8"-27 thread mounting and mating connector with 15' cable. A complete range of accessories is available.

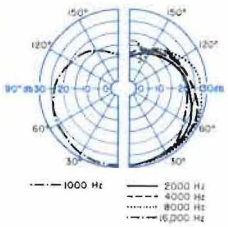
TECHNICAL DATA

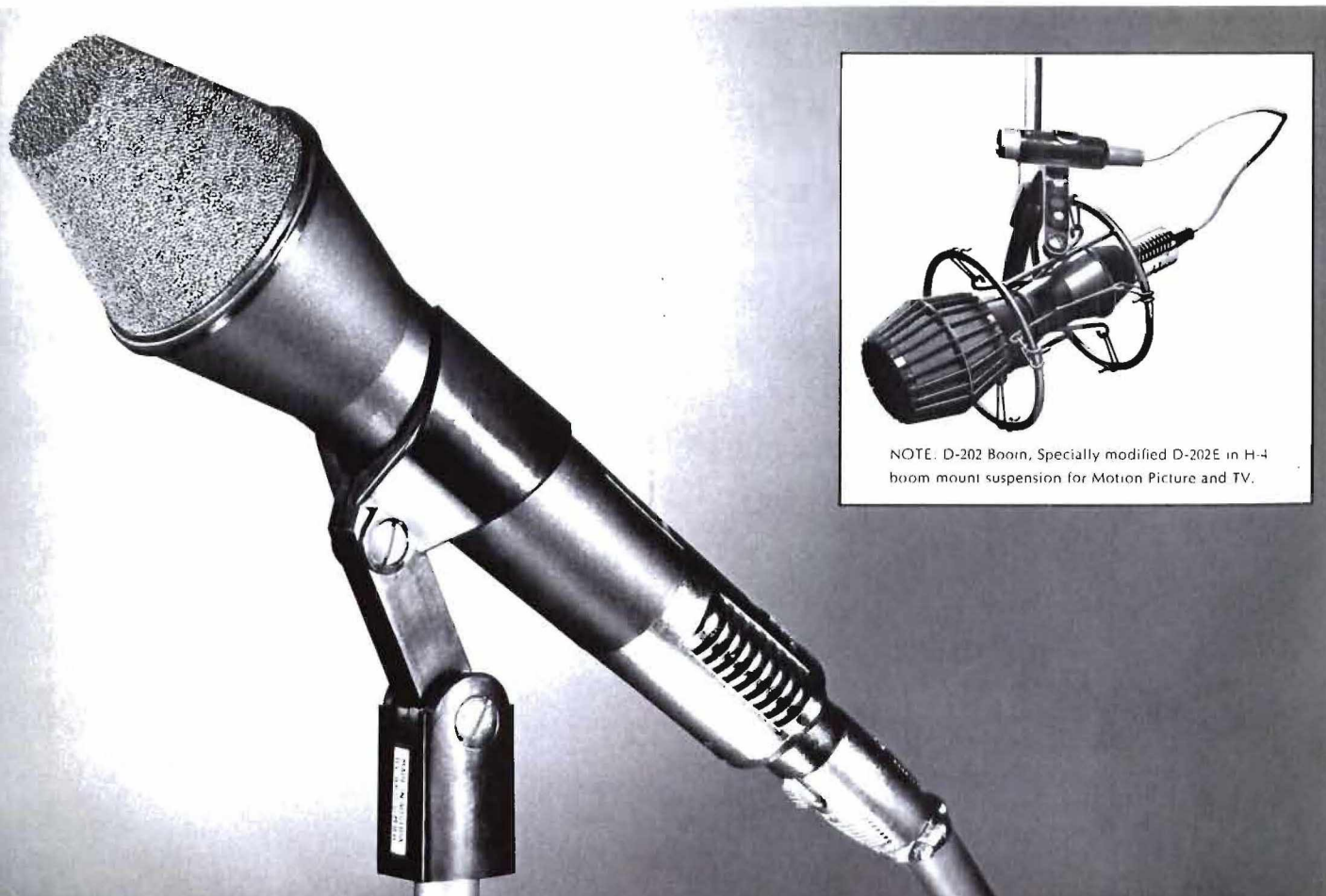
Frequency range	30-16,000 Hz
Frequency response	±2 dB
Sensitivity	−55 dB (re 1 mW/10 dynes/cm²) 0.16 mv/μbar
Impedance	200 ohms ±20%
Min. actual load impedance	≥500 ohms
Directional characteristics	Frequency-independent cardioid
Max. sound pressure level	At a distortion of 0.5% at 40 Hz, 1,000 Hz, 5,000 Hz = 124 dB SPL (300 μbar)
Diaphragm	Non-metallic MAKROFOL
Connections	XLR-3: 1 = Shield 2 = Positive (in phase) 3 = Negative
Dimensions	8½" long, 2½" dia. at largest point
Weight	10 ounces

ACCESSORIES:

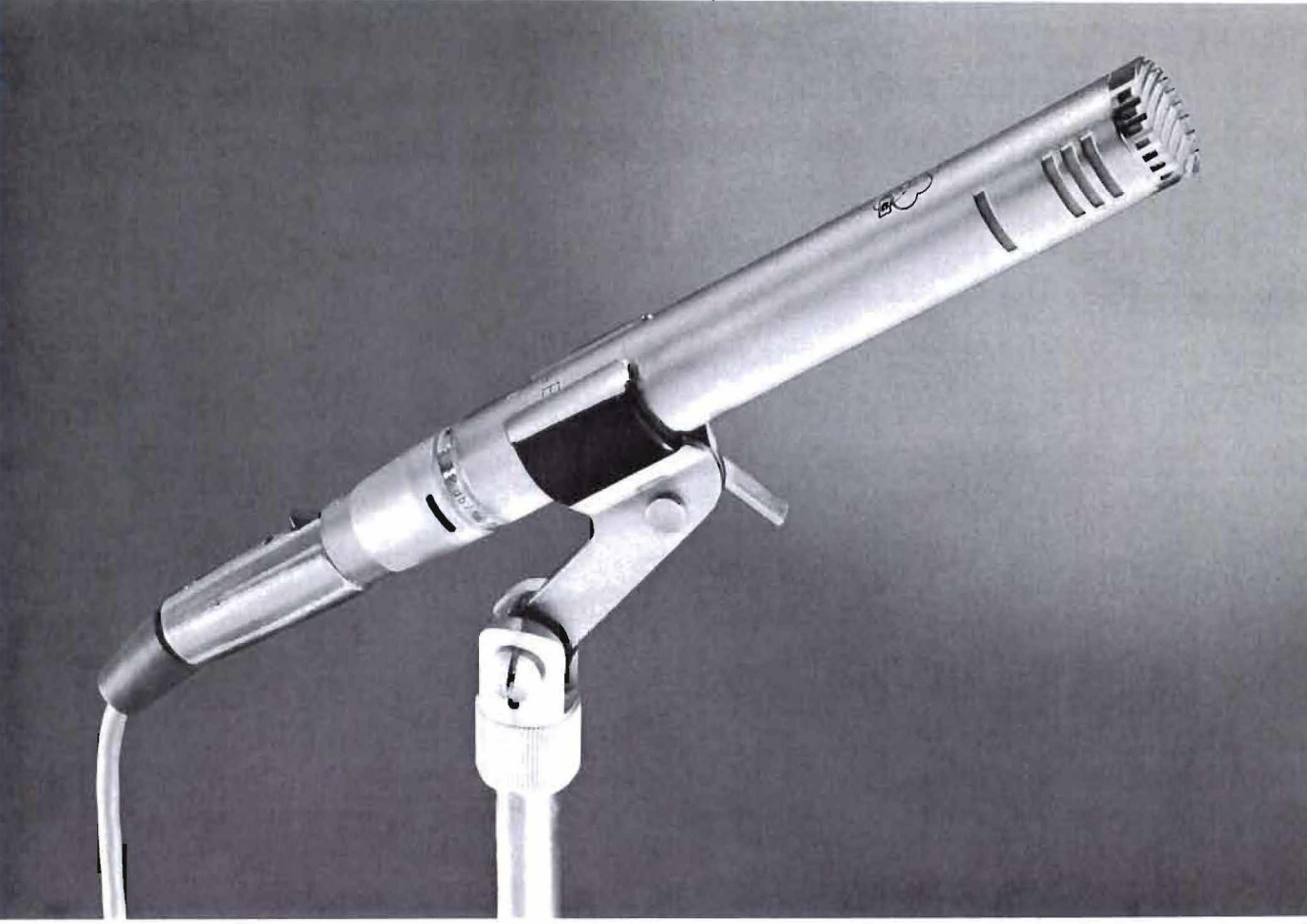
SA-16 ..... Stand adapter (quick disconnect)
SA-70/3 ... Stand adapter (around connector)
SA-78/9 ... Stand adapter with built-in suspension
W-10 ..... Windscreen
ST-4 ..... Table stand
ST-305 .... Table stand
ST-200 .... Floor stand







NOTE. D-202 Boom, Specially modified D-202E in H-4 boom mount suspension for Motion Picture and TV.



D-224E

The D-224 represents the studio version of a cardioid dynamic microphone incorporating the two-way system principle.

Its noteworthy feature is an exceptionally wide and smooth frequency response, normally expected only from condenser microphones. Since the off-axis response is parallel to the on-axis response, the microphone will have no frequency discriminating characteristics when sound is introduced off-axis. The front-to-back discrimination is maintained even in the critical low frequency area and the upper mid-range region.

The high frequency system is provided with a compensating winding to eliminate the effects of magnetic stray fields.

The low frequency response may be attenuated by an electrical, two position (—7 and —12 db at 50 Hz) bass roll-off switch.

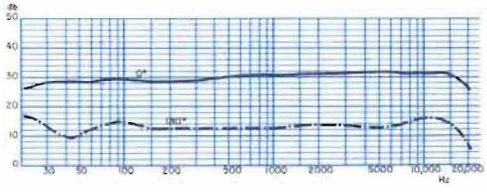
The D-224E is a low impedance (200 ohm) unit and is equipped with a standard XLR type connector. It is supplied with a stand adapter suitable for $^5/_8$"-27 thread mounting, mating connector with 15' of cable. A complete range of accessories is available.

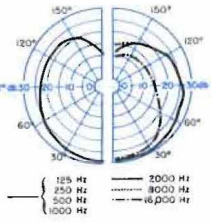
TECHNICAL DATA

Frequency range	20-18,000 Hz
Frequency response	±2 dB
Sensitivity	—55 dB (re 1 mW/10 dynes/cm²) 0.15 mv/μbar
Impedance	200 ohms ±15%
Min. actual load impedance	≧500 ohms
Directional characteristics	Frequency-independent cardioid
Max. sound pressure level	at a distortion of 0.5% at 40 Hz, 1,000 Hz, and 5,000 Hz 124 dB SPL (300 μbar)
Diaphragm	Non-metallic MAKROFOL
Connections	XLR-3: 1 = Shield 2 = Positive (in phase) 3 = Negative
Dimensions	7¾" long, 1⅜" diameter
Weight	9½ ounces

ACCESSORIES:

SA-18/3 ... Stand adapter with built-in suspension
SA-10/3 ... Stand adapter (around connector)
W-2 ..... Windscreen (foam)
ST-4 ..... Table stand
ST-305 .... Table stand
ST-200 .... Floor stand





U-212E Transformer

MK-7-S/5
Connector-Switch

SA-11 Stand Adapter

SA-16 Stand Adapter

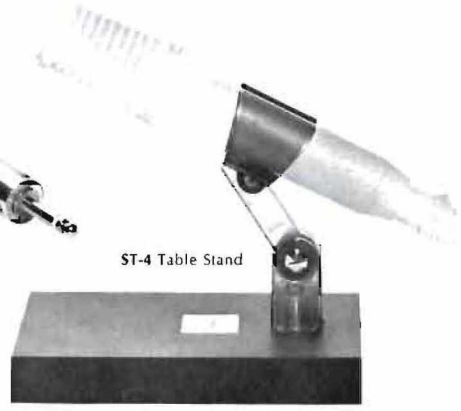
SA-18/9 Suspension
Stand Adapter

SA-18/3 Suspension
Stand Adapter

W-10 Windscreen

T-119 Case

MK-7TS/5 Cable
Assembly



ST-4 Table Stand

ORDERING INFORMATION

SPECIFICATIONS	ORDER	ORDER ADDITIONAL
1 – MICROPHONE Low impedance, 15' cable with mating connector, case and stand adapter	D-200E or D-202E or D-224E	
2 – MICROPHONE *WITH SWITCH* Low impedance, 15' cable with connector-switch, case and stand adapter	D-200E or D-202E or D-224E	MK-7-S/5 MK-7-S/5 MK-7-S/5
3 – MICROPHONE, *HI IMPEDANCE* 15' cable with transformer and phone jack, case and stand adapter	D-200E or D-202E or D-224E	MK-7-T/5 MK-7-T/5 MK-7-T/5
4 – MICROPHONE, *HI IMPEDANCE WITH SWITCH* 15' cable with switch-connector, transformer and phone jack, case and stand adapter	D-200E or D-202E or D-224E	MK-7-TS/5 MK-7-TS/5 MK-7-TS/5
For additional accessories such as wind screens, table and floor stands, stand adapter and suspensions, please consult listing nearest microphone.		

ST-305 Table Stand
Shock-Mounted

AKG is located in Vienna, Austria. The organization was founded over 20 years ago by a group of qualified audio engineers devoted to the art of sound transmission.

Today, it has one of the largest research facilities devoted exclusively to condenser and dynamic microphone development. It is staffed by 38 scientists and engineers who have at their disposal 19 walk-in type anechoic chambers complete with the latest acoustical and mechanical measuring equipment plus an analog computer.

Important developments of this group include a cardioid dynamic microphone with rear sound cancellation achieved via a continuous audio spectrum slotted tube*, miniature condenser microphone capsule, the two-way system microphone*, 16mm miniature dynamic capsule and headphone driver.

Among professionals – the name AKG is synonymous with the highest standards in quality and performance.

*Patented

AKG

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NORTH AMERICAN PHILIPS COMPANY, INC.
100 EAST 42nd STREET, NEW YORK, NEW YORK 10017

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Printed in U.S.A.