GENERAL CATALOGUE

MICROPHONES
HEADPHONES
WIRELESS MICROPHONE SYSTEMS
SOUND CONTRACTING COMPONENTS

beyerdynamic

beyerdynamic

1924 Company founded in Berlin. Development and manufacture of cinema speakers.

1937 World's first dynamic headphones, the DT 48. Still in production today!

1939 First dynamic microphone for studio use: M 19. Made history as the standard microphone of the "Reichsrundfunkgesellschaft" for outdoor applications.

1945 The final days of the war took their tribute; the manufacturing facilities were completely destroyed during the battle of Berlin.

1948 Reconstruction of the company in Heilbronn. In addition to the production of the pre-war developments such as the M 19 and the DT 48 which sold like hot cakes to the newly founded broadcasting companies of the young Federal Republic of Germany, the company proceeded with the development of horn loudspeakers and ribbon microphones.

1950 First public demonstration of artificial head with stereophonic headphones DT 48 which were also the world's first hi-fi stereo headphones!

1951 Development of the "Stenomatic" dictating machine which later achieved worldwide success under the name of GRUNDIG-Stenomatic.

1953 A revolutionary development for record shops: the "stick" headphone DT 49 gave rise to the famous disc bars.

1958 The famous "Beyer Short Ribbon" reaches the market, the world's first ribbon microphone of the same size as dynamic moving coil microphones.

1959 The first prototypes of the new Beyer input transformer which can later be found in products of all famous tape recorder and mixing console manufacturers such as Ampex, Collins, MCI, Studer, etc., feature a new winding technique.

End 1959 Completely unexpected death of the untiring inventor and founder of the company, Eugen Beyer; his son, Fred R. Beyer, assumes the management of the company.

1962 The "transistophone", the first wireless microphone goes into production.

1963 The newly developed beyerdynamic directional microphone M 88 is selected and admitted as the only microphone for Queen Elizabeth's first official visit to Australia.

1965 When assessing the quality of phonograph recordings, audio engineers can practically no longer determine whether these have been made with traditional condenser microphones or by means of the new Beyer ribbon microphone M 360. This microphone, built only in small quantities, is traded at incredible fancy prices in subsequent years.

1966 First Beatles tour through Germany and instant success for the E 1000 microphone exclusively used by this group.

1967 The legendary "Soundstar X1" microphone is put on the market.

1969 With the ribbon-type soloist's microphone M 500, the company proves that the lacking ruggedness of ribbon microphones, described in old textbooks, is now definitely a thing of the past.

1972 Tours through industrial plants are significantly improved through the new wireless RF tour guidance system.

1973 Development and production of the quadro headphones DT 204.

1974 Introduction of the DT 302, at that time the world's lightest open headphones.

1975 beyerdynamic condenser microphones enter series production.

1976 The first electrostatic headphones developed and manufactured in Germany comes from beyerdynamic: the ET 1000.

1979 The world's smallest studio-type lapel microphone: beyerdynamic MCE 5.

1980 The sensational new development, the dynamic headphones DT 880, breaks with old traditions. For the first time it was possible to build dynamic headphones with electrostatic reproduction characteristics.

1981 The world's first closed headphones with bass reflex system, the beyerdynamic DT 660, offers new possibilities to audiophiles who prefer closed headphones.

1983 Development of the outstanding acoustical boundary microphone MPC 50.

1983 beyerdynamic translates its decades of experience as an OEM supplier to sound contracting customers into its own product line. Today, beyerdynamic sound reinforcement equipment can be found not only in community and sports centers, multipurpose halls and swimming pools, but also in parliaments, in airport buildings and so on. A long-established trademark becomes successful in new fields.

1984 The totally new wireless systems with the transmitting microphone S 85 have induced many well-known artists, including some top stars, to abandon the cable-connected microphone. The "headmicrophone" HM 560 for singing drummers, keyboarders, and also for sports reporters is, despite its small size, still a ribbon microphone! Dynamic acoustical transducers for accordion and E-bass, electret transducers for practically all wind instruments such as flute, trumpet, saxophone, and trombone, but also for guitar, complement the line for the musicians.

1985 The new headphones DT 770 and DT 990 which feature a so-called "diffuse-field-equalized" frequency response are suited not only for audiophiles but serve also as a control instrument.
With the studio condenser microphone MC 740 featu[illegible] switch-selectable directi[illegible] patterns, beyerdynamic n[illegible] joins the manufacturers of the very best products in this field.

These are only the key dates in the history of beyerdynamic.

New production, research, and development facilities expanded in 1981 by some 1800 m^2, including a 363 m^3 anechoic chamber, one of the largest measuring rooms of its type in Europe, are essential to further trend-setting developments, to ensure that the trade-mark beyerdynamic will also in the future be associated with revolutionary, advanced products.

Now you are better informed when you come across products bearing the name "beyerdynamic".

For solving your specific problems, you may possibly be able to use one of the many products manufactured by our company. The following product summary should help you in this respect. If you still have problems after you have studied this brochure, please do not hesitate to call us or one of the representatives listed on the back page!

Your beyerdynamic team

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Explanation of frequently used technical terms

Close-talking effect
Physical effect in conjunction with pressure-gradient microphones, causing the bass frequencies to be picked up more strongly at close distances than at long ones. Frequently used by singers to give the voice more volume. Also important for close-talking microphones. For a number of beyerdynamic microphones, the frequency response in the free sound field is, therefore specified not only for the normal measurement distance of 1 m but also for 10 cm and 2 cm.

Coupler transmission rate
The frequency response of headphones is published only rarely, giving rise to questions since these curves are normally supplied for speakers and microphones. The reason for this is that up to now there is no coupler or "artificial ear" that supplies results corresponding to the subjective sound impression. This means that the frequency response curves of headphones published and commented in test reports are to be used with discretion. For this reason couplers can only be used for comparative measurements, e.g. for quality control in series production or adherence to the sensitivity specifications, etc.

dB level
The human ear is able to perceive sounds up to a pain inflicting sound pressure level that is e.g. 1,000,000 times greater than the level for a tone at the lower audibility threshold. In order to represent this enormous range graphically, a logarithmic scale is used in the field of electroacoustics, analogously to the auditory sensitivity. This scale is based on decibels (dB). A sound pressure ratio of 1 : 2 corresponds e.g. to a difference of 6 dB, a ratio of 1 : 4 to a difference of 12 dB, 1 : 8 = 18 dB, etc. Since a multiplication in the dB scale is equivalent to an addition, the enormous difference of a ratio of 1 :1.000.000 can be represented with a 120 dB scale.

Diffuse-field transmission factor
The hi-fi standard DIN 45 500 prescribes e.g. for headphones a free-field frequency response that is as linear as possible (refer to free-field transmission rate). Since the conditions in a concert hall come closer to those of a diffuse field (sound reflections from all directions) rather than a free sound field (sound diffusion in one direction without reflections), the headphones manufacturers now attempt to achieve a nearly flat diffuse-field frequency response. The measuring method is currently still being debated; e.g. it is possible to measure with a sensor the sound pressure in the ear canal of a test person located in a diffuse sound field that is produced in a reverberant chamber. This measurement is subsequently compared with the sound pressure produced by headphones to which a continuous AF-voltage is applied. In place of this objective measurement it would also be possible to perform a sound level test. After all the interrelations have been explored, the existing standard will be revised.

Directivity index
Specifies by how much weaker the sound pickup is at a specific angle relative to the main sound incidence angle.

Directivity factor
Applies to directional microphones. Specifies how much larger the absorbed power of the room sound would be than for a microphone of the same sensitivity with omnidirectional characteristic. The directivity factor of an ideal cardioid microphone and a microphone with bilateral characteristic is the same, the value is 3. This means that the distance for speaking into these microphones can be increased by a factor of $\sqrt{3} = 1{,}73$. Somewhat more favorable is the hypercardioid; a directivity factor of 4 is attained, and with $\sqrt{4}$ the distance for speaking into a microphone can be twice as large as for conventional omnidirectional microphones with the same sensitivity.

Distortion factor
When the diaphragm movement does not accurately follow the electrical signal or if the amplitude at very high sound pressure levels becomes so high that the coil loses the magnetic equilibrium, so-called nonlinear distortions occur, i.e. hamonics are created in addition to the basic signal. The ratio of the sum of all harmonics to the aggregate signal is referred to as the harmonic distortion factor.

Diversity reception
When wireless microphone installations are used, dreaded "intermittencies" can occur even if the distance between the transmitter and the receiver is small, i.e. no RF signal is received because the squelch circuit switches the receiver off to prevent the inherent noise of the receiver of parasitic signals from reaching the speaker system. This is always the case when the radiated electromagnetic waves are reflected by heavy steel laminates in ceilings and walls and when direct and reflected waves with a path length difference of 50 % arrive at the receiver antenna in which case the phase offset is exactly 180° and the two waves cancel each other. A remedy is offered by diversity reception: a diversity receiver is equipped with two receiver sections, each of which is fed by an antenna installed in a different location. An electronic monitoring unit ensures that only that receiver section is connected to the output that receives the best signal.

Dynamic headphones
Design analogous to the dynamic microphone. When an audio-frequency AC current flows through the moving coil mounted on a diaphragm located within a permanent magnetic field, oscillations are induced in the diaphragm that are radiated as sound waves and which correspond to the audio-frequency AC current.

Dynamic microphones
A diaphragm, excited to analog oscillations by the impact of sound waves, is fitted with a copper coil which on account of this oscillation intersects the line of force of an annular magnetic field that is generated by a permanent magnet. According to the law of induction, a voltage representing an image of the soundwave is induced in the coil.

Electret condenser microphone
In contrast to normal low frequency condenser microphones, the electret condenser microphone does not require a polarization voltage for the capsule but only the operating voltage for the subsequent amplifier. The polarization voltage is produced by an electric charge that is permanently "frozen" in the diaphragm or the backplate electrode (back electret), which in certain electrical materials is possible by special polarization processes, analogously to the hard magnetic material of permanent magnets.

Electrical impedance
Frequency-dependent internal resistance of the microphone (normally specified for 1000 Hz). Important for optimum matching: The internal resistance of the amplifier input should be at least five times higher than the impedance of the microphone.

Free-field sensitivity
Quotient of the effective microphone output voltage and the effective sound pressure. Previously specified in mV/μbar, today in mV/Pa. In the international system of units the μbar has been replaced by the unit Pascal, where 1 Pa = 1 N/m^2 (Newton per square meter) = 10 μbar. As this term implies, the "free-field sensitivity" has been determined by measurements in a free sound field with the microphone in no-load state (Open circuit voltage).

Free-field transmission rate
According to DIN 45619 a test person in an anechoic chamber compares the sound level of a speaker-generated signal having a steady sound pressure with the sound level produced by the headphones. In this method the audio-frequency AC voltage applied to the headphones is varied (volume up/down) until a similar loudness perception results. The free-field transmission rate of the corresponding headphones is determined by averaging the test results (at least 8 test persons).

Frequency response
This value, specified by the manufacturer, specifies the usable range for sound pickup and radiation.

Interference transducer
For physical reasons the directivity factor of directional microphones has an upper limit. If even higher values than 4 are to be achieved (refer to "Directivity factor") a so-called directional waveguide coupler must be installed in front of the microphone. This tube features a large number of sound inlet slots that are covered by an acoustical damping material. For lateral sound incidence, interferences cause sound extinction within the tube, resulting in a lobe pickup pattern. For practical reasons the dimensions of a microphone are also limited which means that a compromise will be necessary, e.g. in the case of the MC 737 the directivity factor for low frequencies is approximately 4, for high frequencies approximately 12.

LN compander technique
Most wireless microphone systems made by beyerdynamic are equipped with a LN compander (LN = low noise). The input signal is compressed in the transmitter as a function of the volume and reexpanded in the receiver to the original value. The advantage of this method is that noise pulses entering through the transmission link are largely suppressed, resulting in a 20 dB improvement of the signal-to-noise ratio. To ensure that the signals will not be corrupted, the transmitter and the receiver must, of course, be equipped with the same compander, i.e. a LN transmitter must also be paired with a LN receiver. In certain receiver types, the LN expander can be disabled so that these receivers can also work with transmitters that are not fitted with a compressor.

Magnetic field interference factor
This is the effective output voltage of a microphone that is generated by a magnetic stray field in the most unfavorable alignment, relative to the RMS value of the flux density of the stray field at the microphone installation site when the microphone is removed from the field. To compensate such interference, many microphones are equipped with a compensating coil that is connected to the moving coil in phase opposition. Normally the magnetic field interference factor is specified for 5 μ Tesla and 50 Hz.

Matching
Frequently there are doubts whether or not the microphone or the headphones can be connected to a given amplifier etc., i.e. whether these 2 components "match" or not. Microphones should be operated in no-load mode, i.e. the input impedance of the amplifier should be considerably higher than the impedance of the microphone (an amplifier input labelled with 200 Ω normally has an input impedance of at least 1 kΩ). Because of their low power requirement, also dynamic headphones can be operated in no-load mode, i.e. with a headphones impedance of e.g. 600 Ω they can be connected not only to the headphones socket but also to the speaker terminal of the amplifier (do not open the volume control until after the headphones have been connected!). Electrostatic headphones must always be connected to the speaker output!

Noise voltage
The noise voltage in a defined frequency band is the effective inherent noise voltage measured on the output when the microphone does not receive any sound, and in the absence of an external noise field.

Noise voltage (weighted)
This is the inherent noise voltage measured with a "noise voltage meter" described in DIN 45 405 specifications. The weighted signal-to-noise ratio specified in the technical data relates to a useful sound pressure of 1 $N/m^2 = 1$ Pa. From this value it is easy to compute the formerly used "equivalent sound level". Example: The weighted signal-to-noise ratio of a microphone is specified as 69 dB. Since 1 Pa is equivalent to 94 dB, the equivalent sound level is 94 dB – 69 dB = 25 dB, i.e. the inherent noise of the microphone corresponds to the output voltage of an ideal microphone that would have no inherent noise when exposed to sound with a level of 25 dB. This imagined exposure to sound waves led to the term "equivalent sound level".

Nominal sound pressure level
This is the sound pressure level generated by headphones in a coupler (artificial ear such as Brüel & Kjaer type 4153) when an electric power of 1 mW is applied.

Overloading limit
Is not specified for dynamic microphones because very high sound pressure levels can be handled. Important specification for condenser microphones, because nonlinear distortions occur when this limit is exceeded.

Phantom powering
According to DIN 45 596, three voltages have been standardized: 12 V, 24 V and 48 V, 48 V being the most frequently used.
Used for supplying the preamplifiers required for condenser microphones. beyerdynamic condenser microphones of the MCM series can be connected with the amplifier module CV 720 to all phantom power sources (only for units manufactured after in 1984 or later, otherwise the value of feeding resistors has to be changed).

Pickup pattern
The characteristic of a microphone is recorded in the free sound field (an anechoic chamber) by rotating the microphone by 360° in front of a speaker that radiates a tone with a steady frequency. The transmission coefficient which changes with the sound wave incidence angle is plotted on a measuring log that rotates in synchronism. The pickup pattern or polar diagram of the microphone is obtained by repeating the measurement at different frequencies but with the same sound pressure level: The rotation of this diagram around its axis would give a spacial representation of the microphone's directivity.

Polarity
If several microphones are used concurrently, they must have the same polarity. beyerdynamic microphones have standard polarity, i.e. a positive sound pressure pulse produces a positive voltage pulse on the output connector pin with the lower number.

Pressure build-up
At high frequencies, when the length of the soundwave approaches the size of the microphone itself, reflections lead to a sound pressure increase on the diaphragm when the microphone receives soundwaves from the front (= axis of the microphone). This so-called pressure build-up manifests itself in a higher transmission coefficient of the microphone at elevated frequencies. If the soundwaves reach the microphone at an angle of 90°, this pressure build-up disappears. Since a microphone is rarely operated in a free sound field (sound waves impinging only from the front) but more frequently in a diffuse sound field (sound waves impinging from all directions), this pressure build-up is exploited to keep the so-called diffuse-field frequency response of the transmission coefficient flat up to the highest possible frequencies.

Pressure-gradient microphones (directional microphones)
The sound pickup is direction-dependent. In this type of microphone the sound is taken with a delay also to the back of the diaphragm. The desired directional characteristics e.g. bidirectional, cardioid, super- or hyper-cardioid etc. are produced by dimensioning the sound paths correspondingly.

Pressure microphones (omnidirectional microphones)
They pick up the sound evenly from all sides.

Reverberation radius
With increasing distance from the source, the intensity of the sound decreases. However, in a room the sound is reflected by walls etc. The reverberation radius is the distance from the sound source at which the signal arriving directly from the source has the same intensity as the sound reflected by the walls. Outside the reverberation radius the intensity of the sound is nearly uniform, i.e. the sound field is largely diffuse. Microphone recordings are principally made within the reverberation radius. Using microphones equipped with a directional waveguide coupler, productions outside the reverberation radius are also possible because the direction-dependent sensitivity of the microphone has the effect of enlarging the reverberation radius.

Sensitivity
Still widely used term that specifies the ratio of the microphone's AC voltage to the sound pressure. Has been replaced by the term "free-field sensitivity".

Squelch
If the distance between transmitter and receiver of a wireless microphone system is too large or if the received signal is attenuated by reflections, the transmission could be adversely affected by parasitic signals or noise. In this case the receiver output is muted by the squelch circuit. Frequently the response threshold of the squelch circuit is adjustable as a function of the antenna voltage.

Wireless microphone installations
The cable connection between the microphone and the amplifier is replaced by a radio transmitter and receiver. Stage performances, presentations, or on-the-spot coverage of events can be produced without cables. This method is particularly well liked in the show business because the artist can move freely without leaving the pickup range of the microphone.

Explanation of the product codes for certain models:

Connectors and wiring
The connectors and the wiring of the microphones are identified by letters that follow the type designation. The same identification letters are used for the microphone accessories.

N	Small 3-pin DIN connector or matching coupling, balanced, 1+, 3-, 2 ground.
N (C) or C	3-pin cannon XLR connector or matching coupling or equivalent, balanced, 2+, 3-, 1 ground.
N (CF)	3-pin XLR female connector with special screwable locking device.
N (C/5) S	5 pin XLR connector, switch to control an external relay circuit.
N (T)	Large 3-blades DIN connector or matching coupling, balanced, 1+, 2-, 3 ground.
N (T/5)	Large 5-blades DIN connector or matching coupling, balanced, 2+, 4-, 3 ground, 1 and 5 for switch or push button.
N (6)	Small 6-pin DIN connector, special wiring.
L	Small 3-pin DIN connector, unbalanced 3+, 2 ground.
LM	Small 3-pin DIN connector, unbalanced, 1 and 3+, 2 ground (in some cases it may be necessary to open the bridge between pins 1 and 3).
N (K) or K	2-pole jack, 1/4" diameter, unbalanced, tip+ shaft ground.
K 3	2-pole jack, 1/8" diameter, unbalanced, tip+, shaft ground.
H	Small 3-pin DIN connector, unbalanced, 1+, 2 ground.

Additional identification letters

Additional letters may be appended to the foregoing designations:

S	with built-in ON/OFF or control switch
(AE)	with built-in ON/OFF switch
FS	with built-in remote control switch

For condenser microphones and accessories, the type of powering and the supply voltage is identified by:

P 48	Phantom powering, 48 V
P 12	Phantom powering, 12 V
PV	Phantom powering, variable voltage between 8 and 52 V possible
T 12	AB powering, 12 V

Notes concerning the technical data of microphones:

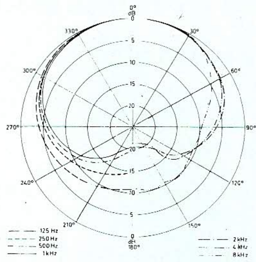
Free-field sensitivity:
Reference value 0 dBV ≙ 1 V/Pa

Nominal frequency response curves:
The nominal frequency curve (solid line) is determined at a measuring distance of 100 cm in a free sound field. Other measuring distances (dotted lines) are correspondingly identified. They give the applicable close-talking frequency response.

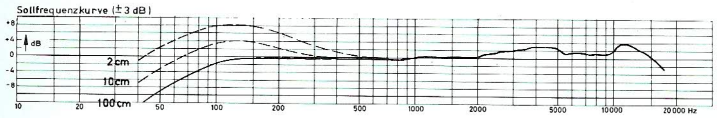
*The products identified with an asterisk are not produced in series. They are only available on request and in larger quantities.

DYNAMIC MICROPHONES FOR MUSICIANS

M 300



Dynamic directional microphone.
Cardioid characteristic.
Moderately priced musician's microphone. Wide frequency response. Fairly low feedback. Built-in popscreen. Rugged stainless-steel wire-mesh basket. Equally well suited for instrumental as for vocal productions.
Also available with noise-free, lockable ON/OFF switch. User replaceable microphone element.



Specifications

Transducer type:	Dynamic, moving coil
Frequency response:	50 - 15 000 Hz
Polar pattern:	cardioid
Attenuation at 180°, 1 kHz:	> 20 dB
Open circuit voltage at 1 kHz:	1.2 mV/Pa
Output level:	- 58.5 dB (0 dB ≙ 1 mW/Pa)
EIA G_m output:	- 150.2 dB (0 dB ≙ 1 mW/2 · 10^{-5} Pa)
Nominal output impedance:	250 Ω
Load impedance:	1 000 Ω

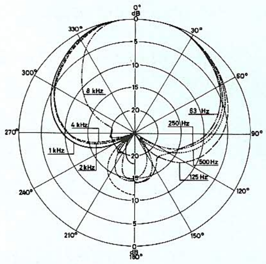
Dimensions

Length:	169.5 mm
Shaft diameter:	24/37 mm (conical)
Head diameter:	51 mm
Weight:	approx. 240 g

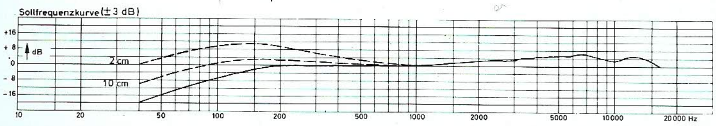
Models
M 300 N (C)
M 300 N (C) S
M 300 N (C/5) S

M 400 – soundstar mk II

design center Stuttgart



Dynamic unidirectional microphone. Supercardioid pickup pattern. A microphone, especially designed for the musician and performer, available with or without on/off switch. "Presence" boost. Excellent feedback rejection. Popping is prevented by a built-in filter. "Hum-buck" coil reduces influence from magnetic fields. Rugged, stainless-steel, wire-mesh basket. The S-version has a lockable noise-free on/off turn switch.
Best applications: Ideal for pop and rock vocalists, instrumentalists and other performers.



Specifications

Transducer type:	Dynamic, moving coil
Frequency response:	40 - 16 000 Hz
Polar pattern:	Supercardioid
Side attenuation at 135°, 1kHz:	> 20 dB
Open circuit voltage at 1 kHz:	2 mV/Pa
Output level:	- 53 dB (0 dB ≙ 1 mW/Pa)
EIA G_m output	- 146 dB (0 dB ≙ 1 mW/2 · 10^{-5} Pa)
Magnetic field suppression:	> 20 dB at 50 Hz
Nominal output impedance:	200 Ω
Load impedance	≧ 1000 Ω

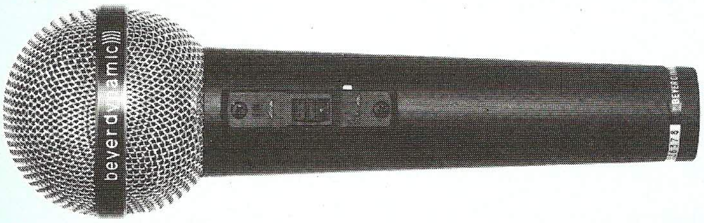
Dimensions

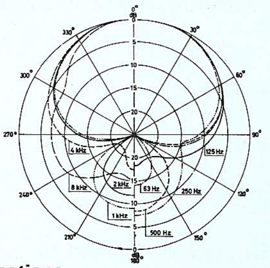
Length:	180 mm
Shaft diameter:	24/31.5 mm (conical)
Head diameter:	51.5 mm
Weight:	approx. 260 g

Models
M 400 N (C)
M 400 N (C) S
M 400 N (C/5) S

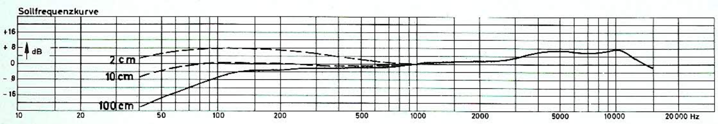
M 500

design center Stuttgart





Dynamic directional microphone.
Hypercardioid characteristic.
High-quality ribbon microphone for vocal soloists. Rising frequency response curve for optimum voice reproduction and vocal presence. Extremely low feedback. Built-in popscreen. Widely used vocalist's and announcer's microphone.
Also available with noise-free, lockable ON/OFF switch.



Specifications

Transducer type:	Dynamic, ribbon
Frequency response:	40 - 18 000 Hz
Polar pattern:	Hypercardioid
Side attenuation at 120°, 1 kHz:	> 20 dB
Open circuit voltage at 1 kHz:	1.2 mV/Pa
Output level-	57 dB (0 dB ≙ 1 mW/Pa)
EIA G_m output:	- 150 dB (0 dB ≙ 1 mW/2 · 10^{-5} Pa)
Nominal output impedance:	200 Ω
Load impedance	≧ 1000 Ω

Dimensions

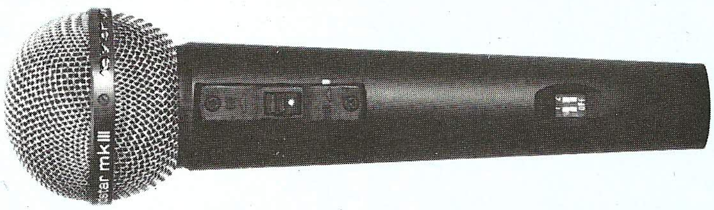
Length:	182 mm
Shaft diameter:	24/34 mm (conical)
Head diameter:	56.5 mm
Weight:	approx. 250 g

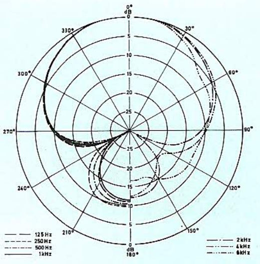
Models
M 500 N (C)
M 500 N (C) S

DYNAMIC MICROPHONES FOR MUSICIANS

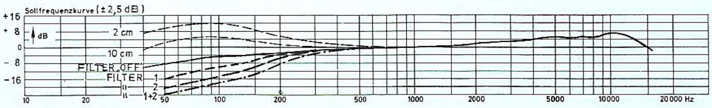
M 600 – soundstar mk III

design center Stuttgart





Dynamic directional microphone.
Hypercardioid characteristic.
The top model among musician's microphones. Wide frequency response. Extremely low feedback. Low frequency response can be contoured by means of built-in, switchable filters. Built-in popscreen. Hum compensation against magnetic stray field. Rugged stainless-steel wire-mesh basket.
Lockable noise-free ON/OFF switch.



Specifications

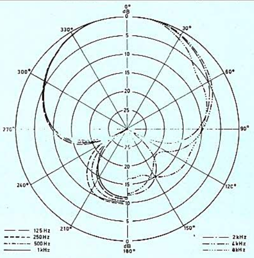
Transducer type:	Dynamic, moving coil
Frequency response:	40-16 000 Hz
Polar pattern:	Hypercardioid
Side attenuation at 120°, 1 kHz:	> 24 dB
Open circuit voltage at 1 kHz:	1.4 mV/Pa
Output level:	- 57 dB (0 dB ≙ 1 mW/Pa)
EIA G_m output:	-149 dB (0 dB ≙ 1 mW/2 · 10^{-5} Pa)
Magnetic field suppression:	> 20 dB at 50 Hz
Nominal output impedance:	250 Ω
Load impedance:	≧ 1000 Ω
Bass attenuator:	three steps -8 dB/-12 dB/ -16 dB at 50 Hz

Dimensions

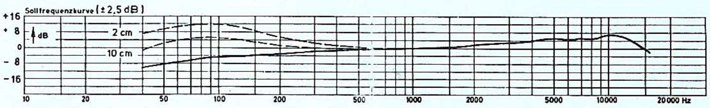
Length:	190 mm
Shaft diameter:	25/35 mm (conical)
Head diameter:	53.5 mm
Weight:	approx. 245 g

Models
M 600 N (C)
M 600 N (C) S

M 700



Dynamic unidirectional microphone. Hypercardioid polar pattern. Represents a new generation of beyerdynamic stage microphones. The very rugged design of the brass mesh basket protects the microphone element against damage. Extremely low feedback due to true hypercardioid polar pattern. Protection against magnetic stray field caused by stage equipment. Also available with ON-/OFF switch. For vocalists as well as for the pick-up of instruments.



Technical specifications

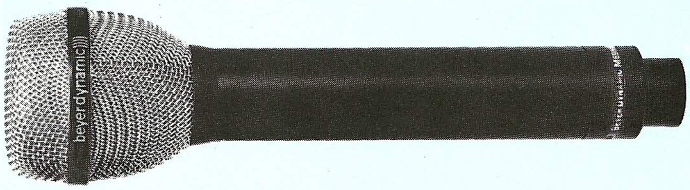
Transducer type:	Dynamic, moving coil, pressure gradient
Frequency response:	40-16 000 Hz
Polar pattern:	Hypercardioid
Side attenuation at 120° and 1 kHz:	> 24 dB
Open circuit voltage at 1 kHz (0 dBV ≙ 1 V/Pa)	1,4 mV/Pa ≙ -57 dBV
EIA sensitivity rating	-149 dB (0 dB ≙ 1 mW/2 · 10^{-5} Pa)
Hum compensation:	> 20 dB at 50 Hz
Nominal impedance:	250 Ω
Load impedance:	> 1000 Ω

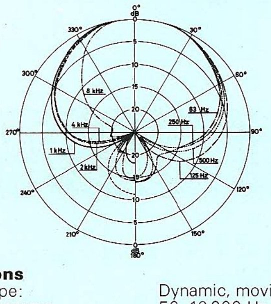
Dimensions

Length:	180 mm
Shaft diameter:	23/33 mm (conical)
Head diameter:	54 mm
Weight:	approx. 265 g

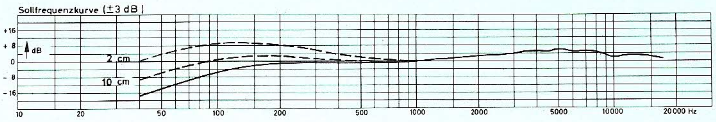
Models
M 700 (C)
M 700 N (C) S

M 69





Studio-quality dynamic directional microphone.
Hypercardioid characteristic.
For high-quality music and voice productions. Wide frequency response and unusually high sensitivity. Very low feedback. Flexibly usable as musician's microphone (instrumentalists), in electroacoustical installations (sound reinforcement for churches and halls), for outside broadcasts. Universal microphone for the demanding nonprofessional.



Specifications

Transducer type:	Dynamic, moving coil
Frequency response:	50-16 000 Hz
Polar pattern:	Hypercardioid
Side attenuation at 120°, 1 kHz:	> 20 dB
Open circuit voltage at 1 kHz:	2.3 mV/Pa
Output level:	- 52 dB (0 dB ≙ 1 mW/Pa)
EIA G_m output:	-145 dB (0 dB ≙ 1 mW/2 · 10^{-5} Pa)
Nominal output impedance:	200 Ω
Load impedance:	≧ 1 000 Ω

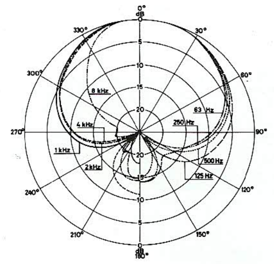
Dimensions

Length:	175.5 mm
Shaft diameter:	25.5 mm
Head diameter:	48.5 mm
Weight:	approx. 320 g

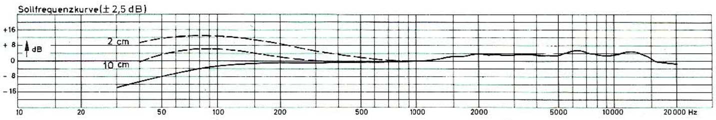
Models
M 69 N
M 69 N (C)

DYNAMIC STUDIO MICROPHONES FOR MUSICIANS

M 88



Studio-quality dynamic directional microphone.
Hypercardioid characteristic.
A microphone with exceptionally wide frequency response and unusually high sensitivity. Extremely low feedback. Unparalleled SPL capability. For all professional applications and most demanding electroacoustical engineering specifications. Outstanding musician's microphone (instrumental).



Specifications

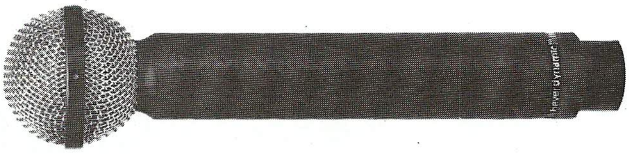
Transducer type:	Dynamic, moving coil
Frequency response:	30 - 20 000 Hz
Polar pattern:	Hypercardioid
Side attenuation at 120°, 1 kHz:	> 23 dB
Open circuit voltage at 1 kHz:	2.3 mV/Pa
Output level:	- 52 dB (0 dB ≙ 1 mW/Pa)
EIA G_m output:	-145 dB (0 dB ≙ 1 mW/2 · 10^{-5} PA)
Magnetic field suppression:	> 20 dB at 50 Hz
Nominal output impedance:	200 Ω
Load impedance:	≧ 1000 Ω

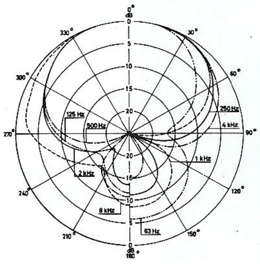
Dimensions

Length:	175 mm
Shaft diameter:	25.5 mm
Head diameter:	48.5 mm
Weight:	approx. 320 g

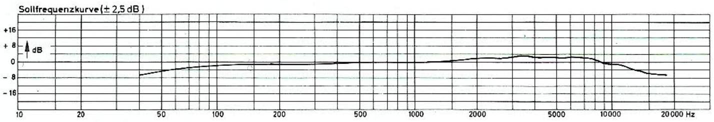
Models
M 88 N (C)

M 160





Studio-quality dynamic directional microphone.
Hypercardioid characteristic.
This double-ribbon microphone excels through the transparency inherent in ribbon microphones offering the performance of a condenser microphone. Very wide frequency response and extremely low feedback. Particularly suited for string instruments, particularly piano.



Specifications

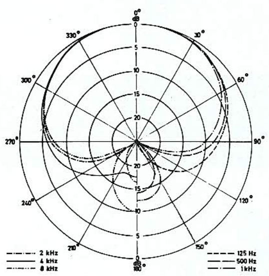
Transducer type:	Dynamic, ribbon
Frequency response:	40 - 18 000 Hz
Polar pattern:	Hypercardioid
Side attenuation at 110°, 1 kHz:	> 25 dB
Open circuit voltage at 1 kHz:	1.0 mV/Pa
Output level:	- 59 dB (0 dB ≙ 1 mW/Pa)
EIA G_m output:	-152 dB (0 dB ≙ 1 mW/2 · 10^{-5} Pa)
Nominal output impedance:	200 Ω
Load impedance:	≧ 1 000 Ω

Dimensions

Length:	156 mm
Shaft diameter:	23 mm
Head diameter:	38 mm
Weight:	approx. 156 g

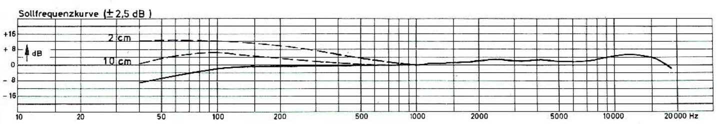
Models
M 160 N (C)

M 201



if 73
design center
Stuttgart

Studio-quality dynamic directional microphone.
Hypercardioid characteristic.
Exceptionally small dimensions. Wide frequency response. Very low feedback. Hum compensation against magnetic stray fields. Recommended where excellent reproduction and inconspicuous size are required.



Specifications

Transducer type:	Dynamic, moving coil
Frequency response:	40 - 18 000 Hz
Polar pattern:	Hypercardioid
Side attenuation at 120°, 1 kHz:	> 20 dB
Open circuit voltage at 1 kHz:	1.2 mV/Pa
Output level:	- 57 dB (0 dB ≙ 1 mW/Pa)
EIA G_m output:	-150 dB (0 dB ≙ 1 mW/2 · 10^{-5} Pa)
Magnetic field suppression:	> 18 dB at 50 Hz
Nominal output impedance:	200 Ω
Load impedance:	≧ 1 000 Ω

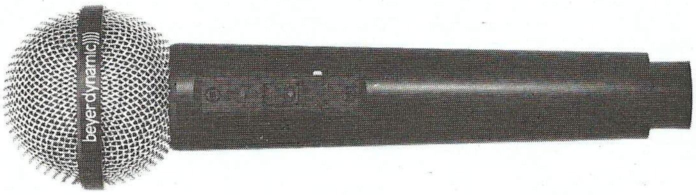
Dimensions

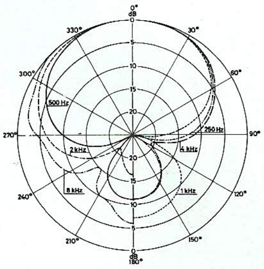
Length:	160 mm
Shaft diameter:	24 mm
Head diameter:	24 mm
Weight:	approx. 220 g

Models
M 201 N (C)

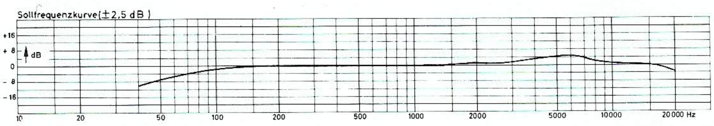
DYNAMIC MICROPHONES FOR MUSICIANS

M 260





Dynamic directional microphone.
Hypercardioid characteristic.
Versatile ribbon microphone. Wide frequency response. Very low feedback. Equally well suited as an instrumental soloist's microphone as for electroacoustical installations. Rugged stainless-steel cage. Also available with lockable, noise-free ON/OFF switch.



Specifications

Transducer type:	Dynamic, ribbon
Frequency response:	50 - 18 000 Hz
Polar pattern:	Hypercardioid
Side attenuation at 110°, 1 kHz:	> 20 dB
Open circuit voltage at 1 kHz:	1.2 mV/Pa
Output level:	- 57 dB (0 dB ≙ 1 mW/Pa)
EIA G_m output:	- 150 dB (0 dB ≙ 1 mW/2 · 10^{-5} Pa)
Nominal output impedance	200 Ω
Load impedance	≧ 1000 Ω

Dimensions

Length:	189.5 mm
Shaft diameter:	24/30 mm (conical)
Head diameter:	51.5 mm
Weight:	approx. 300 g

Models
M 260 N (C)
M 260 N (C) S

M 380

Dynamic directional microphone.
Bidirectional characteristic.
Special microphone with extremely large overload margin for picking up instruments emitting high sound pressure levels. Very low feedback. Protected against wind and mechanical vibration, hum-compensated. Eminently suited for bass drum, string bass, tuba, trombone, and speaker pickup of electronic bass guitar.

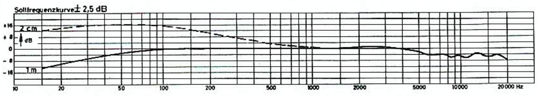
Specifications

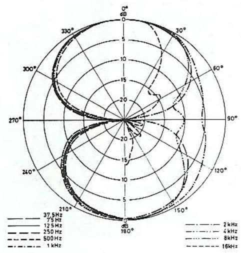
Frequency response:	15 - 20 000 Hz
Polar pattern:	Figure 8
Sensitivity at 1 kHz (0 dBV ≙ 1 V/PA):	5 mV/Pa ≙ - 46 dBV
Max. SPL at k < 0.5 % at 1 kHz:	140 dB
Nominal impedance:	600 Ω
Rated load impedance:	> 1000 Ω
Hum compensation:	> 20 dB at 50 Hz

Dimensions

Length:	160 mm
Width:	66 mm
Height:	60 mm
Shaft diameter:	24/30 mm (conical)
Weight:	approx. 370 g

Models
M 380 N (C)



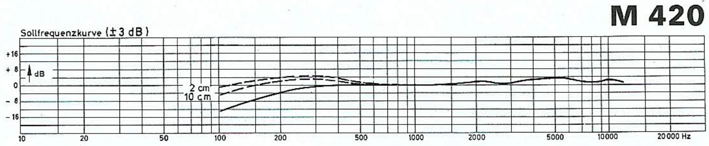


M 420

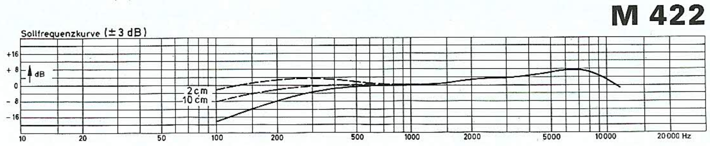
M 422

design center Stuttgart

M 420



M 422



Compact hypercardioid resp. supercardioid microphones. The M 420 is a dynamic moving coil microphone specially designed to reproduce the frequencies produced by rack toms and deepshelled snare drums, the M 422 is optimized for use with snare drums, hi-hats and cymbals. The small diaphragm of both microphones responds instantaneously to transients accurately capturing the initial attack of the drum or percussive attacks. The compact size of the microphones affords a wide range of positioning options. The solid casing is constructed to withstand the physical abuse a drum set endures. For technical specifications see page 15.