

# AKG ACOUSTICS

## THE NEXT GENERATION C 414

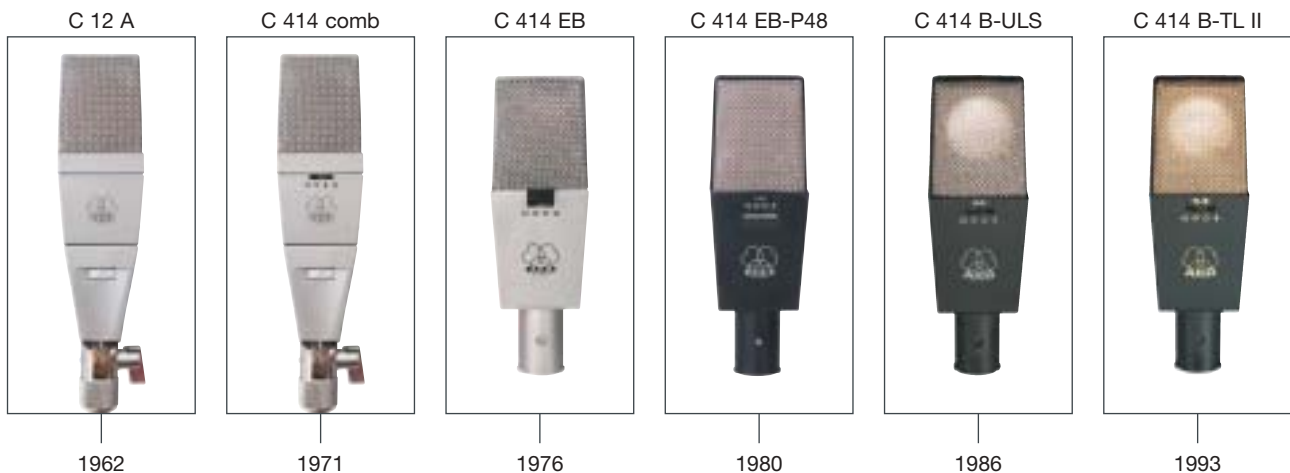


C 414B-XLS / C 414B-XLII

# AKG ACOUSTICS

## THE EVOLUTION

### of the classic reference-standard recording microphone



#### From the original 1971 C 414 brochure:

AKG ... a name that has amassed an enviable world-wide reputation for performance, dependability and service. A microphone for every need ... television studios, motion-picture production centers, theaters, stadiums, concert halls, opera houses, communication links, schools, home tape recorders ... and the personal choice of hundreds of performers.

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

Based on intensive scientific research, an extensive knowledge of acoustics and measurement techniques, design competence, precision tooling and meticulous manufacturing standards, AKG has achieved many firsts in microphone development.

In the past three decades, AKG research has resulted in numerous significant acoustical developments, reflected in over 600 worldwide patents held by AKG.

Today, AKG operates one of the largest research facilities devoted exclusively to the development of new condenser and dynamic microphones, headphones, phonocartridges and other related acoustic products. It is staffed by over 40 scientists and engineers, who have at their disposal more than 20 walk-in anechoic chambers complete with the the latest acoustical, mechanical and electronic measuring equipment.

Research and development is ongoing, and new projects – e.g., ultrasonic transducers, infrared and other wireless techniques, digital and analog delay lines, materials analysis, artificial reverberation, phonocartridges, electret transducers, and more – are under investigation. Manufacturing methods are constantly updated.

Product ruggedness and serviceability are continually improved without compromising quality. AKG is proud to be in the forefront of newer and better sound reproduction.



The professional microphones and accessories-folder highlights the C 414 EB in its elastic shock mount on its cover.



One of the first AKG manufacturing buildings in Vienna/Austria.

# AKG ACOUSTICS

## “PUSHING THE ENVELOPE”

### The legacy of AKG

For more than five decades, AKG Acoustics has been a leading manufacturer of microphones, headphones and wireless systems for studio, stage and broadcast that conform to the highest standards of quality and reliability. The accumulated experience of working with professionals and tremendous engineering know-how are the foundation of the unique sound and popularity of the legendary AKG brand.

AKG was one of the first companies to recognize the emergence of affordable project studio equipment, the proliferation of digital gear in broadcasting, the trend towards quality-conscious live sound audiences and the demand for superior mics that these trends would drive. AKG's product portfolio is used for all these applications all over the world and has become the standard for top engineers and musicians.

There is no greater evidence of AKG's technical mastery and spirit of innovation than its 1,500 patents in the field of electro-acoustics, more than all its competitors combined.

AKG is continuously “pushing the envelope” of what's possible to give you the best performance for your application. There is no greater evidence of AKG's clear superiority than the new C 414 B-XL.



From a two-man operation, AKG has evolved into an internationally leading manufacturer of audio equipment (over 1,400 patents).

# AKG ACOUSTICS

## THE HISTORY OF THE C 414

### How a legendary product evolved

#### 1962

The introduction of the **C 12 A**, the fore-runner of the now-classic C 414 design. The C 12 A had a Nuvistor tube in its preamp section and its miniaturized housing became a trademark of AKG's large-diaphragm microphones. This model was marketed until 1976.

#### 1971

The launch of the first C 414 model, the **C 414 comb**. This model had a special module with a permanently-attached cable, but was a solid-state design that allowed upgrades as technology im-



**AKG became the world's first manufacturer of freely-vibrating, edge-terminated one-inch diaphragms more than 50 years ago.**

proved and also permitted phantom powering instead of requiring an external supply.

#### 1976

In response to the emergence of 3-pin XLR-type connectors as the world standard, AKG introduces the **C 414 EB** with this connector integrated into the microphone. The integral connector eliminates the need for the cable module so the microphone can be easily used with different cables to meet application requirements.

#### 1980

The launch of the **C 414 EB-P48**, the first model with a black housing.

This model featured certain technical improvements that lowered self-noise and improved sensitivity and headroom made possible by standardizing on 48 V phantom power, which was the becoming standard, especially in the U.S.

#### 1986

Introduction of the **C 414 B-ULS**, a model that combined several milestones in the development of the C 414:

1. ULS technology in its electronic circuitry that achieved maximum signal linearity.
2. The **C 414 B-TL**, the first transformerless version of the C 414. These pioneering technologies made the C 414 B-ULS the most popular, longest-lived C 414 model.

#### 1993

The **C 414 B-TL II**, the first sonic alternative to the C 414 B-ULS, was introduced. This microphone was designed to meet customer demands for a microphone with more "presence" to its sound. Its capsule was developed with the sonic signature of the original capsules used from the 1950s to the 1970s.

The enhanced presence of the C 414 B-TL II means that solo voices and instruments can be placed in a dense mix while still retaining their original character.

The C 414 B-TL II is also useful in distant-micing vocal or instrument applications where some of the sonic timbre is lost as high frequencies propagate in air.

# AKG ACOUSTICS

## BACK TO THE FUTURE

### New features for superior performance!



The new AKG C 414 B-XLS

#### 2004

AKG introduces the new C 414 models **C 414 B-XLS** and **C 414 B-XL II**.

In developing the new models, we have carefully maintained the sonic character and traditional shape of the C 414 series, while integrating new features like a vastly improved capsule shock mount, new switching functions and more modern design – into the classic shape of the previous models.

Instantly recognizable as a C 414, the new models will be familiar to anyone who has used and heard the famous predecessors.

The new XLS and XL II models were developed to give professional users improved functionality they need: control switches with status LED for selecting the polar pattern, pre-attenuation pad and bass cut/roll-off. An overload indicator function, status indicators and positioning aid have been integrated into the microphone too. An optional remote control device to switch all these functions at the mixer will be available by the end of 2004.



The new AKG C 414 B-XL II

# AKG ACOUSTICS

## THE NEXT GENERATION C 414 C 414 B-XLS / C 414 B-XLII

- High sensitivity and extremely low self noise
- High sound pressure level capability and wide dynamic range
- Five switchable polar patterns for placement and application flexibility
- Completely immune to electrostatic and electro-magnetic interference from digital gear, computer monitors, etc. thanks to solid metal housing and transformerless output stage
- Two-color LEDs provide quick visual indication of selected polar pattern and output overload
- Three switchable bass cut filters and three pre-attenuation pads with LEDs for quick visual indication
- All switchable components operate in low-impedance circuits for ultra-high reliability even in extremely humid conditions
- Elastic capsule suspension greatly minimizes structurally-transmitted noise from chassis vibration
- Both versions available in stereo pairs factory-matched for response and sensitivity
- Both models come complete with a deluxe kit including a hard-shell carrying case, professional shock mount/stand adapter, PF 80 external pop filter and W 414 X external windscreen. Stereo pairs include stereo bar for X/Y configuration and single-stand placement
- Optional R 414 remote control unit (available by the end of 2004) offers full control of all switchable parameters via standard microphone cable and 3-pin XLR-type connectors



C 414 B-XLS

C 414 B-XL II

With the introduction of the Next Generation C 414 B-XL models, AKG sets new benchmarks for useful features, improved technical specifications, ease of use and available accessories. All of these improvements are answers to requests from ever-demanding recording studios, broadcast stations and concert engineers, but with the basic sonic character of the legendary C 414 unaltered.

Everyone who is used to working with either a C 414 B-ULS or a C 414 B-TL II will find the acoustic advantages of an AKG large-diaphragm microphone very familiar. Since the mid-1980's, the C 414 has been THE reference microphone of the recording industry.

# AKG ACOUSTICS

## THE ANATOMY for great performance!

1.

The one-inch twin-diaphragm transducer delivers five polar patterns. The diaphragms are made of a special gold-sputtered plastic foil. The capsule has ultra-high precision parts with tolerances in the region of microns. It is assembled with great care in our factory in Vienna, Austria.

2.

The high-impedance converter stage is encapsulated for extra protection against humidity and moisture which could degrade performance.

3.

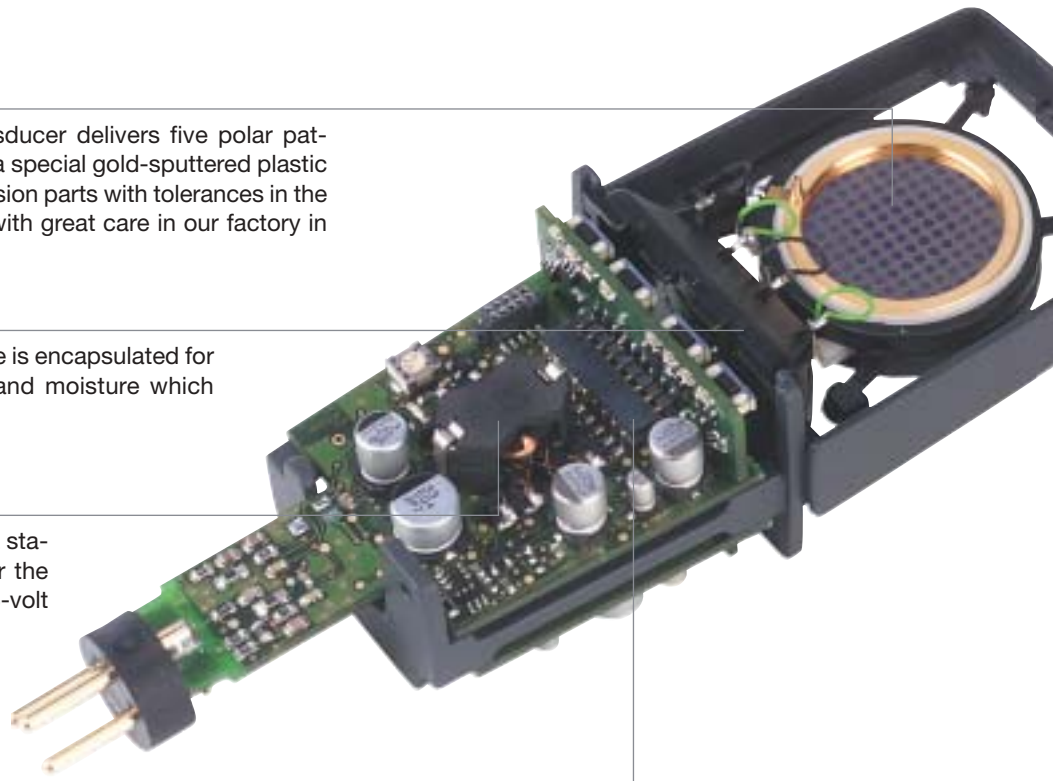
The DC converter circuitry creates a stable, noise-free operating voltage for the transducer and electronics from a 48-volt phantom power supply.

4.

The micro-controller circuit regulates operation of all switching commands from the built-in switches or from the optional R 414 remote control (available by the end of 2004).

5.

3-pin XLR-type connector with gold-plated contacts for loss-free signal connection to the associated equipment.



# AKG ACOUSTICS



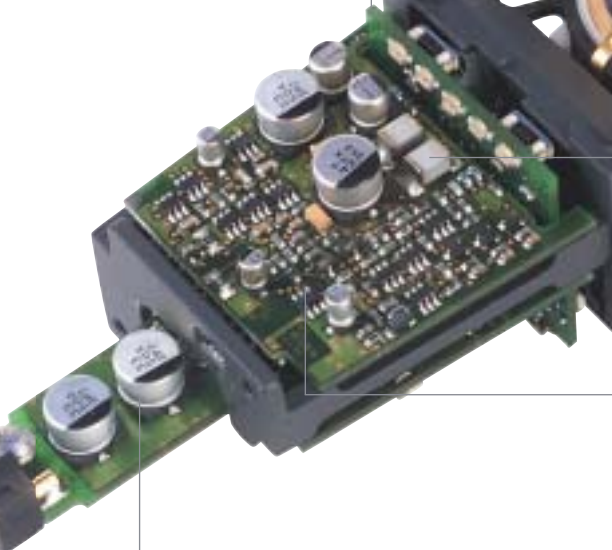
6.

The user interface board holds all the switches necessary for the switchable functions of the microphone.



7.

All electrical components are mounted on high-quality double-sided p.c. boards. Notice the extensive use of surface-mount devices to save space and improve mechanical stability.



8.

The main signal output section contains generously-specified components for wide dynamic range and low impedance over the entire audio spectrum.

9.

The components of the transformerless output stage.



# AKG ACOUSTICS

## CONTROL SETTINGS ... ... are only a glance away!

With the new two-color-LEDs on the front of the microphone, important information can be read out at a glance.



### Polar Pattern

The polar pattern being used is indicated.



### Overload Warning

A green LED changes to red indicating that the output signal is distorted.



### Status Indication

When correct phantom power level is switched on, all the illuminated LEDs indicate that the mic is ready to go.



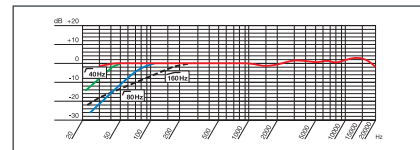
### Positioning Aid

As you move off-axis of the microphone, the LED's illumination dims.



### C 414 B-XLS

A reference-quality microphone widely used for accurate, beautifully-detailed pickup of any acoustic instrument.

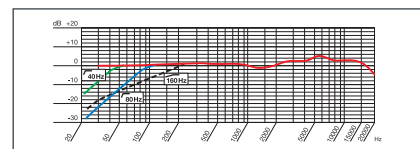


Cardioid



### C 414 B-XL II

A classic microphone with a distinctive timbre designed to add presence to vocals and for distant miking of instruments.



Cardioid

# AKG ACOUSTICS

## SUPERIOR TECHNOLOGY

### Exactly what you expect from AKG



#### Absolute reliability

The solid metal housing and transformerless output stage combine to make the C 414 B-XL microphones immune to electrical interference from digital equipment, video monitors or from rf from wireless microphone or other communications systems.

#### Five polar patterns

The twin-diaphragm system gives you a choice of five different polar patterns (omni-directional, wide cardioid, cardioid, hypercardioid, and figure eight). The diaphragm is made from a special gold-sputtered plastic foil and the gold layer is deposited on the diaphragm only on the outer sides to prevent short circuiting to the back plate if strong blasts of air are applied.



#### Elastic capsule suspension

Structurally-transmitted vibrations that interfere and color the sound are almost completely eliminated thanks to a new elastic capsule suspension system.

#### Three switchable pre-attenuation levels

Pre-attenuation levels are controlled by changes in the polarization voltage of the capsule and permit increases of 6, 12 or 18 dB in the maximum sound pressure level for close-up recording or for use on high output sources.



# AKG ACOUSTICS

## SUPERIOR TECHNOLOGY

### Exactly what you expect from AKG

#### Three switchable bass filters

The switchable bass-cut filters reduce sonic coloration and the risk of low-frequency distortion.

The slope of the 40 and 80 Hz filters is more than 12 dB-per-octave and these are especially useful in combating wind noise or vibrations from stage floors. The 160 Hz filter has a gentler 6 dB-per-octave slope useful in minimizing proximity effect.



#### Predictable performance even in humid conditions

To minimize the negative effects of humidity, all switching circuits are located in a sealed low-impedance section to prevent problems.

To test the stability of our microphones' performance, they are tested in simulated climatic conditions between  $-25^{\circ}\text{C}$  ( $-13^{\circ}\text{F}$ ) and  $+65^{\circ}\text{C}$  ( $+149^{\circ}\text{F}$ ) as well as relative humidity as high as 99% (immediately below point of condensation) above  $+20^{\circ}\text{C}$  ( $+68^{\circ}\text{F}$ ). The new C 414 B models can handle temperature extremes anywhere and still deliver perfect performance.

#### Matched stereo pairs

The new C 414 B models are also available in factory-matched pairs.

The matched pairs consist of two microphones that come closest to each other in sensitivity and frequency response when used in the cardioid mode. The kit includes all the standard accessories of the deluxe package (excluding the PF 80) along with a stereo bar and proof of performance charts.



#### Optional remote control

All switchable functions of the microphone can also be controlled by the optional R 414 remote control unit (available by the end of 2004). The remote control transmits its commands to the microphone over conventional two-conductor shielded microphone cables to maintain complete interface compatibility with your other equipment.

# AKG ACOUSTICS

## APPLICATION GUIDE

We recommend the C 414 B-XLS and C 414 B-XL II for the following applications in the recording studio:

	C 414 B-XLS	C 414 B-XL II
Lead/solo vocals	Preferred	Preferred
Backing vocals/choir	Preferred	Recommended
Speech	Preferred	Recommended
Acoustic guitar	Preferred	Recommended
Electric guitar	Recommended	Preferred
Electric bass guitar	Preferred	Recommended
Double bass	Preferred	Recommended
Violin	Preferred	Recommended
Cello	Preferred	Recommended
Zither	Preferred	Recommended
Grand piano (classical)	Preferred	Recommended
Piano (rock/jazz)	Preferred	Recommended
Organ	Preferred	Recommended
Trumpet	Preferred	Recommended
Trombone	Preferred	Recommended
French horn	Preferred	Recommended
Tuba	Preferred	Recommended
Saxophone	Preferred	Recommended
Flute	Preferred	Recommended
Clarinet	Preferred	Recommended
Harmonica	Preferred	Recommended
Bass drum	Preferred	Recommended
Tom-toms	Preferred	Recommended
Cymbals	Preferred	Recommended
Bongos	Preferred	Recommended
Congas	Preferred	Recommended

 preferred

 recommended



# AKG ACOUSTICS

## SPECIFICATIONS

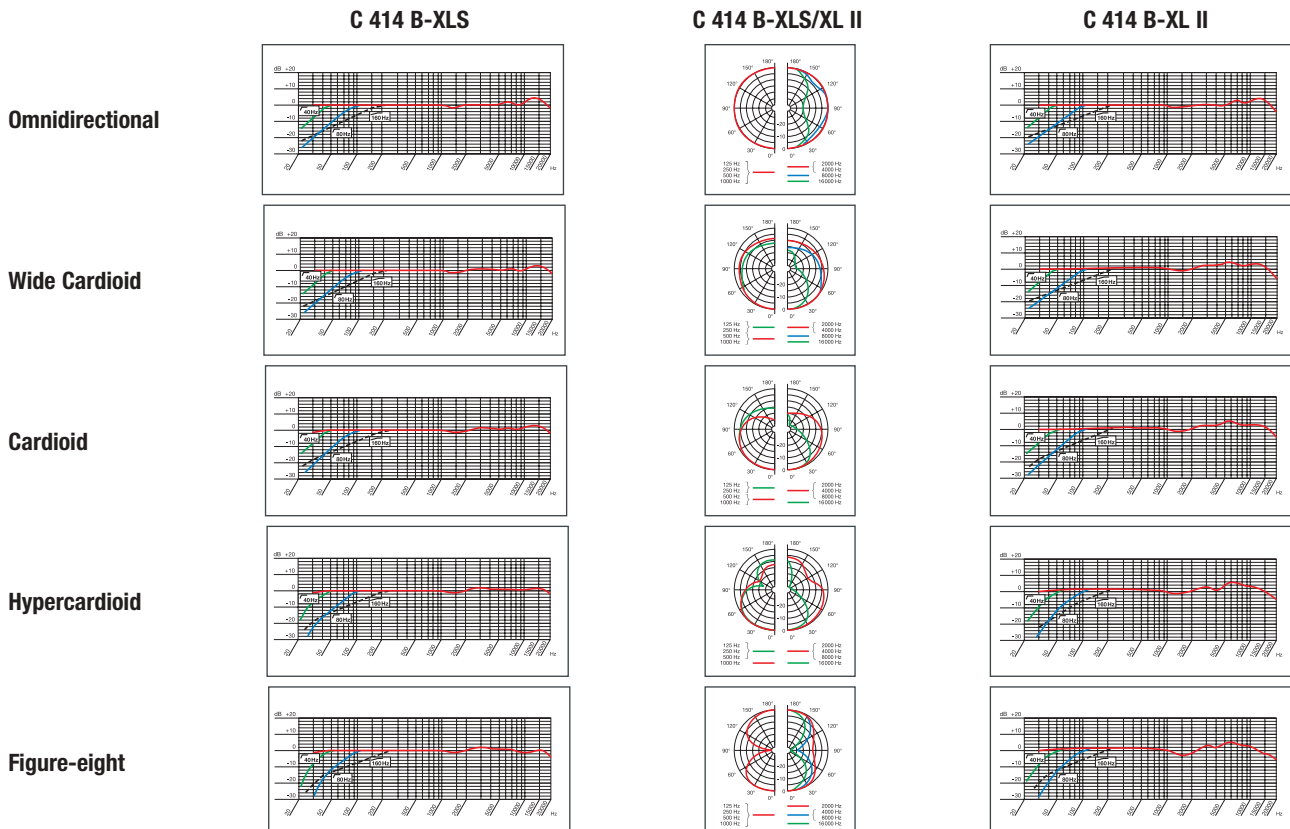
### C 414 B-XLS / -XL II

<b>Type:</b>	1-inch large-diaphragm pressure gradient microphone
<b>Polar patterns:</b>	Omnidirectional, wide cardioid, cardioid, hypercardioid, figure eight
<b>Sensitivity:</b>	23 mV/Pa (-33 dBV) $\pm$ 0.5 dB
<b>Frequency range:</b>	20 to 20,000 Hz (see frequency response traces)
<b>Electrical impedance:</b>	$\leq$ 200 ohms
<b>Recommended load impedance:</b>	$\geq$ 2,200 ohms
<b>Bass cut filter slope:</b>	12 dB/octave at 40 Hz and 80 Hz; 6 dB/octave at 160 Hz
<b>Preattenuation pads:</b>	-6 dB, -12 dB, -18 dB, switchable
<b>Equivalent noise level (CCIR 468-2):</b>	20 dB (0 dB preattenuation)
<b>Equivalent noise level (DIN 45 412, A-weighted):</b>	6 dB-A (0 dB preattenuation)
<b>Signal-to-noise ratio re 1 Pa (A-weighted):</b>	88 dB
<b>Maximum SPL for 0.5% THD:</b>	200/400/800/1600 Pa $\triangleq$ 140/146/152/158 dB SPL (0/-6/-12/-18 dB)
<b>Dynamic range:</b>	134 dB minimum
<b>Environment:</b>	Temperature range: -10° C to +60° C (14° F to 140° F) Relative humidity: 95% (+20° C/68° F), 85% (+60° C/140° F)
<b>Powering:</b>	48 V phantom power to DIN/IEC
<b>Current consumption:</b>	approximately 4.5 mA
<b>Connector:</b>	3-pin XLR to IEC
<b>Dimensions:</b>	50 x 38 x 160 mm (2.0 x 1.5 x 6.3 in.)
<b>Net weight:</b>	300 g (10.6 oz.)

This product conforms to standards EN 61 000-6-1:2001 and EN 61 000-6-3:2001.

Patents C 414 B-XLS: AT 395.225, DE 4.103.784, JP 2.815.488

Patents C 414 B-XL II: AT 395.225, DE 4.103.784, JP 2.815.488, AT 400.910



# AKG ACOUSTICS

## The complete C 414 B-XL package



**H 85**  
Elastic spider suspension with stand adapter



**PF 80**  
Professional external pop filter for vocal recordings



**W 414 X**  
External wind/pop filter

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