



C716

CARDIOID CONDENSER MICROPHONE

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MADE IN USA

The Josephson C716 is the latest in the Series Seven range of large diaphragm side-address microphones. It uses large dual-diaphragm capsule similar to the one used in the C700 microphones, with a fixed cardioid directional pattern.

A unique feature of the C716 is its (patent pending) open-cell metal foam grille. Unlike traditional microphone housings made of perforated metal or wire screen with reflective metal support structures, this highly open material protects the capsule mechanically, provides electrical shielding and some pop and wind screening without needing any additional support structure. A fine, acoustically transparent screen inside the grille helps protect the capsule from breath moisture when the C716 is used as a vocal mic. We were able to avoid using a traditional basket support structure because the foam itself is a tough self-supporting aluminum alloy. It's a highly open structure so that internal reflections are negligible, while the metal still provides full protection for the capsule. Traditional designs incorporate rings and bars to support the basket material, leading to the reflections shown in the left illustration on the next page.

C716 Specifications

Type: Electrostatic pressure/pressure-gradient transducer

Marking: In accordance with IEC 61938

Rated power supply: Phantom 48 \pm 4 volts, 5 mA max. in accordance with IEC 61938

Internal impedance: <80 ohms

Rated impedance: 200 ohms

Minimum load impedance: 1k ohms

Sensitivity: 26 mV/Pa (-32 dB ref 1V/Pa)

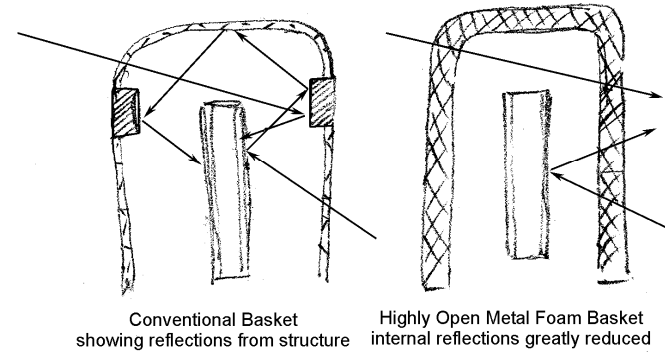
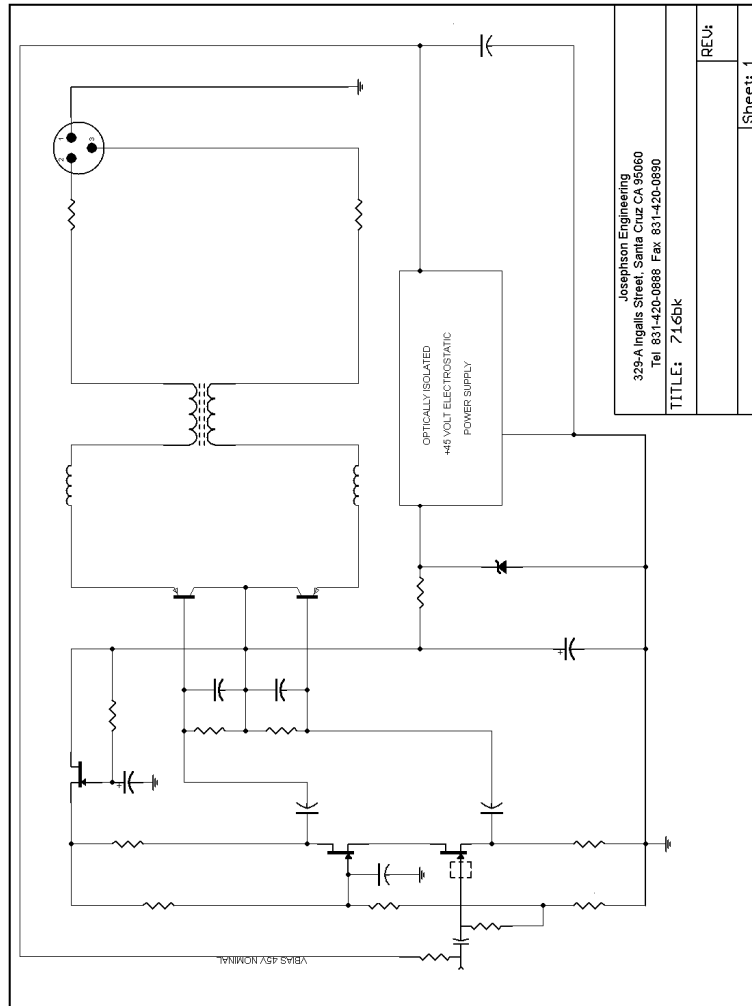
Frequency Range: 20-20,000 Hz

Directional characteristics: cardioid

Overload sound pressure: 134 dB SPL at 1000 Hz

Equivalent sound pressure due to inherent noise: 15 dB SPL, A-weighted rms in accordance with IEC 60268-1

C716 Schematic Diagram



These reflections in turn introduce acoustic resonances in the microphone response which contribute to frequency response and phase anomalies (which can lead to harshness and other unpleasant sounds in the pickup). Maintaining acoustical transparency around the capsule is important in achieving the sonic clarity that is this mic's signature.

Using the C716

The C716 is a fixed cardioid-only microphone suited for most studio pickup applications where a highly detailed sound image is desired, with effective rejection of unwanted sound off-axis. The dynamic range is about 120 dB, sufficient to capture sounds from the softest studio background to the loudest percussion or amplified instrument.

Pickup is uniform over the entire front side of the microphone, with no hot spots or dead zones that are sometimes created by large-diaphragm microphones having conventional basket grilles. Sensitivity drops 6 dB at 90 and 270 degrees, and then to a sharp null at the rear of the microphone. It's often effective to point the rear of the microphone toward a specific unwanted sound source, rather than trying to point the front precisely at the desired sound.

The C716 incorporates a true dual diaphragm capsule. Even though only the front diaphragm is electrically active, the presence of the rear diaphragm produces improved pop and plosive handling abilities compared with similar single-diaphragm designs.

Vocal performers can use the microphone at any distance from nearly touching the grille to many meters away in the reverberant sound field. In addition to the metal foam grille, a very fine internal screen protects the capsule from breath sounds and moisture, although an external pop screen may be needed in some cases. Proximity effect yields flat frequency response at about 75 cm (30") with some low frequency boost for closer sources, and low frequency rolloff for more distant sources.

About the C716 Circuit

Like most Josephson microphones, the C716 uses an all-discrete class-A circuit to transform the high impedance of the capsule to a suitable level for interface with mic preamps and consoles. A cascode stage made of large-geometry field effect transistors directly drives a pair of matched PNP bipolar transistors in balanced emitter-follower configuration. The emitter leads of the transistors are brought out directly through a common-mode choke; the phantom resistors in the powering equipment form the load resistors of the mic circuit. The output impedance is very low, and the output level can be quite high due to the low loss nature of the circuit. High output level can overload preamps and mixers when used close to loud sound sources, so C716 users should take care to monitor input levels to avoid clipping.

The internal power supply of the C716 uses a new optically-isolated electrostatic circuit that provides stable capsule polarization charge without the use of oscillators or external power supplies.