



C715

MULTIPATTERN CONDENSER MICROPHONE



Certificate of Compliance

Josephson Engineering, Inc. certifies that the C715 microphone conforms to the applicable requirements of the European Union directives as follows:

Machinery 93/68/EEC	Exempt – passive sensor
Low Voltage 93/68/EEC	Exempt – passive sensor
EMC 93/68/EEC	Exempt – passive sensor

RoHS 2002/95/EEC	Compliant for Hg, Cd, Cr6, PBB, PBDE and Pb
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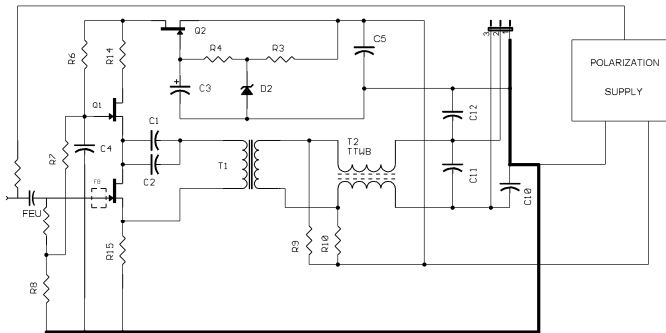
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Warranty

Josephson microphones are warranted to be free of defects for five years from the date of original purchase. If purchase documents are not available, the warranty period begins when the microphone was shipped from the factory. Josephson Engineering will, at its option, repair or replace any microphone that fails, providing that it is returned to the factory prepaid and has not been abused or altered.

There are no user-serviceable parts inside Josephson Engineering microphones. Disassembling a Josephson microphone will void its warranty.

For service information please contact Josephson at 831-420-0888. Repair shipments may be sent to Josephson Engineering, Inc., 329A Ingalls St., Santa Cruz CA 95060



C715 schematic diagram

C715 Specifications

Type: Electrostatic pressure/pressure-gradient transducer, omni and cardioid characteristic

Rated power supply: Phantom 48 \pm 4 volts, 5 mA max.

Internal impedance: 100 ohms

Rated impedance: 200 ohms

Minimum load impedance: 1k ohms

Sensitivity: 1.8 mV/Pa (-55 dB ref 1V/Pa)

Frequency Range: 20-20,000 Hz

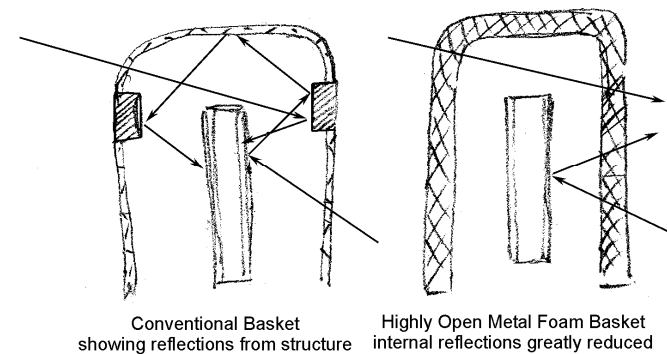
Directional characteristics: continuously adjustable omni to cardioid

Overload sound pressure: 140 dB SPL at 1000 Hz

Equivalent sound pressure due to inherent noise: 19 dB SPL, A-weighted rms in accordance with IEC 60268-1

The Josephson **C715** is part of the Series Seven range of large diaphragm side-address microphones. It uses a capsule with a single large diaphragm, with an adjustable rear port to select between cardioid and omnidirectional patterns.

A unique feature of the **C715** is its open-cell metal foam grille, subject of our US Patent 8,005,250. 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 **C715** 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.



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.

Pattern Control

The directional pattern of the C715 is adjusted using a mechanical vent that, when open, provides the additional acoustical port needed to produce a cardioid polar pattern from half pressure and half pressure-gradient operation. When the vent is closed, the microphone is omnidirectional. The vent is adjusted by turning the pattern control screw, which is accessible through a port in the rear of the grille. A special screwdriver is provided.



Pattern control port, as shown from back of microphone.

Turning the screw clockwise closes the vent (omni) while turning counterclockwise opens it (cardioid). These patterns are marked on the control port.

Although the adjustment screw is provided to adjust the acoustical circuit, it is also part of the electrical circuit of the microphone. Touching it with a screwdriver will produce a very high level signal at the microphone output.



Adjust the microphone pattern ONLY when the microphone is disconnected, powered off, or its output is muted.

While it won't damage the microphone, if you adjust the microphone pattern while the output is active, you risk damaging your hearing and any monitor speakers or headphones that might be connected to your equipment.

About Directional Patterns

The C715 achieves its directional response by subtracting sound that comes from the back, from the sound entering the front of the capsule. This allows us to tune a "null" toward the rear, and the response to sounds arriving from the back may be reduced 20 dB or more from response to sounds coming from other directions. The C715 allows the traditional omni and cardioid patterns to be selected repeatably, and with some care, it is possible to set the pattern control vent to produce "wide" or "subcardioid" patterns. However, the range from omni (full clockwise) to cardioid (counterclockwise 90 degrees to the stop) is not linear; subcardioid is achieved with the adjustment vent just slightly counterclockwise from omni (fully closed), and results for intermediate patterns are not easily repeatable from microphone to microphone or if the adjustment is moved.

About the C715 Circuit

Like most Josephson microphones, the C715 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 FET stage directly drives a special Lundahl output transformer, which uses a high permeability nickel alloy core material. The result is a much higher overload point, even when the mic is driving long cables. This also means that the output level is much lower than with many modern condenser microphones. High output level can overload preamps and mixers when used close to loud sound sources, so we have chosen to set the sensitivity of the C715 to work well with a wide range of sound sources and with a variety of preamps and other equipment.

The internal power supply of the C715 uses a new electrostatic circuit that provides capsule polarization charge without the use of oscillators or external power supplies.