

ARCO ELECTRIC PRODUCTS

2325 E. MICHIGAN ROAD

SHELBYVILLE, IN 46176

BMC SERIES FIXED PFC CAPACITORS



DESCRIPTION

General

- The BMC Series capacitor design incorporates high quality three phase cells which are vacuum-impregnated metallized polypropylene filled and compact size. This series of power factor correction capacitors is suitable for low voltage linear applications

Construction

- The three phase cells which are used in the construction of the power factor banks are drawn steel rectangular cans which are vacuum-impregnated with a dielectric fluid to give added insulation, excellent corona protection, and a moisture barrier. The capacitor cells are housed in a NEMA 3R enclosure panel. The enclosure panel is manufactured from 16 gauge steel and is furnished with mounting holes for quick and easy installation. Other NEMA rated enclosures are available – consult the factory

Capacitor Cell Design

- The dielectric fluid used in the capacitor cells is a green Non-PCB, non-toxic, biodegradable, and Class III combustible fluid.
- Self-healing technology in case of overload, the self-healing properties of the low loss metallized polypropylene will prevent permanent dielectric breakdown.
- Internal Pressure-Sensitive Interrupter which safely removes the capacitor from service at the end-of-life or under heavy fault conditions while still maintaining the integrity of the steel casing.
- External resistors discharge voltage is less than 50 volts in less than 1 minute after the cell has electrically been removed from the circuit.

Phone 317/398-9713

Toll-Free 1-800-428-4370

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WEBSITE <http://www.arco-electric.com>

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- Standards – UL810, C22.2 No. 190 Canadian Standards, IEC 831, UL Recognized CYTW2, cUL Recognized CYTW8

Capacitor Losses

- The capacitor design has a total loss which is less than .5 Watts per kVAR at 60 HZ 25 degrees C.

Electrical Characteristics

- 240 VAC, 480 VAC, 600 VAC rated Voltage at 60 HZ
- The three phase capacitor internal connection is Delta.
- Capacitance Tolerance is + or – 15%.
- Overcurrent Tolerance is 135% of rated current continuously.
- Overvoltage Tolerance is 110% of rated voltage
- Standard Operating Temperature is -40 F to +115 F. Operation above 115 F will shorten the capacitor life.

Wiring Cable Insulation

- All internal conductors are insulated stranded copper wire rated at 90 C.

Fuse Protection & Indicator Lights (Optional – Add Suffix Letter “L” to Catalog Number)

- The internal protection fuses are time-delay and rated at 600 VAC with the sizing based upon the nominal amperage rating of the kVAR size in accordance with the National Electric Code requirements.

WARRANTY

- 5-YEAR WARRANTY on the capacitor cells**

HARMONIC DISTORTION

Harmonic distortion is the resulting non-sinusoidal current waveform generated by a non-linear. The most common non-linear load is a pulse rectifier, which is used in most switch mode power supplies, variable speed drives, and uninterruptible power supplies. The distorted current waveform generates a distorted source voltage due to the system (electrical power system) impedance. A distorted waveform can be analyzed by decomposing it into a fundamental component (line frequency) and higher frequency components of varying amplitude.

The effects of harmonic distortion on metallized film capacitors are (1) higher operating temperature because of higher I^2R losses, and (2) higher voltage stress on the dielectric. Both of these factors will shorten the life of a capacitor dramatically.

All “High Harmonic” power factor correction capacitors are designed to handle harmonic currents. This is why ARCO Electric Products offers capacitors that are custom designed for systems with high harmonic distortion. By using the High Harmonic capacitors in your harmonic-rich application, you will have a more

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robust construction compared to using the standard capacitors in the same application. Tuning filter reactors may also be incorporated for use with the high harmonic cells if the THD levels are at 3% or greater in the electrical system (PLEASE CONSULT FACTORY).

TUNING FILTER REACTOR SPECIFICATIONS

- The detuning filter reactors prevent resonance by shifting the capacitor/ network resonance frequency to a 4.7th level which is below the first dominant harmonic level of the 5th. The detuning filter inductors shall be designed for harmonic filtering and be U. L. component recognized.
Systems requiring a specifically tuned reactor lower than 4.7 should contact the factory.
- Construction shall be copper wire wound on steel cores. The tuning filter inductors shall be rated for three phase operation. They shall be designed and rated for 150% of the normal 50 HZ capacitor current (1.44 amperes per kVAR at 480 VAC/50HZ). Design maximum temperature rise for the tuning filter inductors shall be 115 degrees Celsius.
- The core shall be made of laminated grain oriented electrical steel (Grade M6 or better). Brackets shall be ASTM structural steel or structural aluminum. Coils shall be wedged in place and core locked in place using vertical ties or rods.
- Windings shall be copper wire (MW35C – round) (MW36C - rectangular) or copper foil. Terminations shall be tin plated copper alloy ring lugs, U. L. recognized terminal blocks, or solid copper bus. terminations shall be pressure crimped or TIG welded to the windings. Sheet insulation shall be DuPont Nomex 410 of thickness as required for U.L. insulation systems.
- Completed detuning filter inductors shall be doubleimpregnated (vacuum/pressure impregnated and baked by varnish dip and bake). All insulation systems shall be rated Class H (180 degrees Celsius) at 600 VAC. Inductors shall be Hi-Pot tested (2500 VAC 50 HZ for 1 minute) line-to-line and line-to-ground.
- The detuning filter inductors shall be air gapped to avoid saturation. Inductance shall be measured under full load and shall be within (+/-) 5% of design value. Inductor losses in wattes per unit shall be no greater than those listed in U.L. file #E116124.

OPERATING CHARACTERISTICS OF CAPACITOR CELL DESIGNS

High Harmonic Cell

Over Current - 150% x rated current continuous
(includes harmonic currents)

Standard Cell

Over Current - 135% x rated current continuous
(includes harmonic currents)

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High Harmonic Cell **Over Voltage** - 120% x rated voltage continuous

Standard Cell **Over Voltage**
120% x rated voltage continuous

CATALOG NUMBERING SYSTEM

Example: Catalog Number 348015BMCL-HH-HF

3	480	15	BMC	L	-	HH
PHASE	VAC	KVAR	SERIES	OPTION		CELL DESIGN

PHASE: 1 PH or 3 PH Available

VAC: 208, 240, 480, 600 available & rated at 60 HZ (for 50 HZ CONSULT FACTORY)

KVAR SIZE: 1 – 200 KVAR sizes available

OPTION: Fuses & Fuse Blown Indicator Lights on all phases

CELL DESIGN: Standard or High Harmonic (Suffix Letter "HH")

- For single phase applications change Prefix Number from 3 to 1 on the Catalog Number.
- For 208 VAC applications divide kVAR size by .75 to find equivalent in 240 VAC rated size.

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