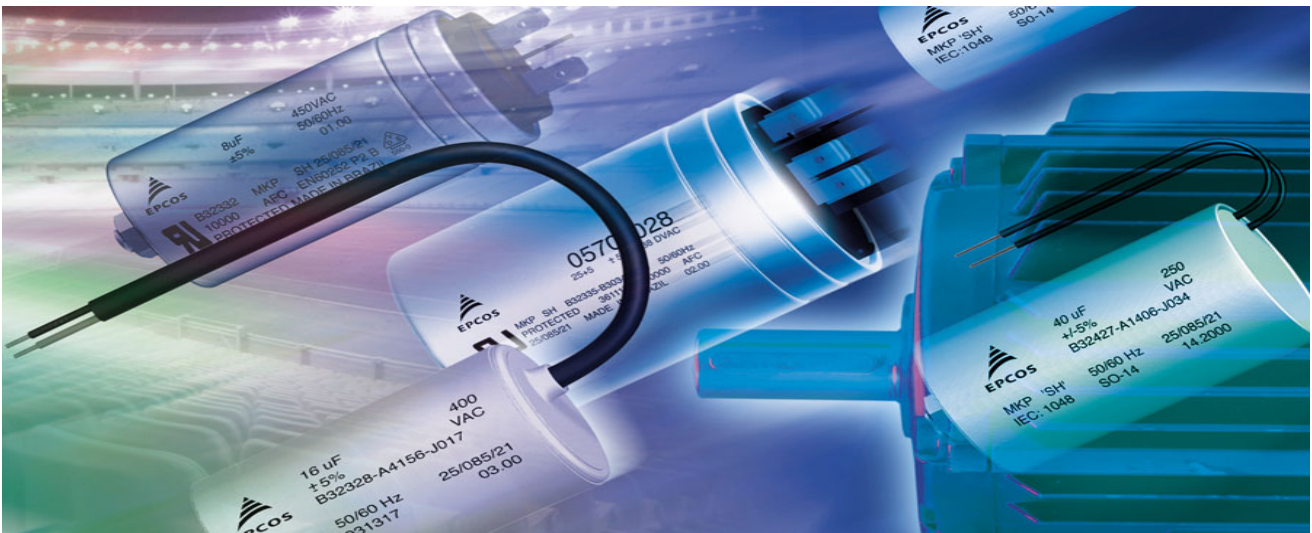




Film capacitors – AC capacitors

Applications, warnings, installation and maintenance instructions

Date: September 2007
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Read this first

Read the following installation and maintenance instructions carefully before installing a capacitor in your application.

Purpose

The information stated in this manual applies to typical approved usage. Please also refer to our product manual.

Read the following installation and maintenance instructions carefully before installing the AC capacitor in your application. The information stated in this manual applies to typical approved usage. Please refer to our product specifications or request our approval for your own individual specifications before installing a capacitor.



General safety notes for installation and operation

Disregarding the guidelines in this manual could result in operational failure, bursting and fire. In case of doubt, contact your local EPCOS sales organization or distributor for assistance.

- Handle the capacitor units carefully, as they may remain charged even after disconnection.
- Follow appropriate engineering practices.
- Also, consider that the capacitor terminals, connected bus bars and cables as well as any other devices connected to them may be charged. The entire device is electrically charged!

Storage and Operating Conditions.

Do not use or store capacitors in corrosive atmospheres, especially where chloride gas, sulfide gas, acids, alkalis, salt or similar substances are present. In a dusty environment, regular maintenance and cleaning – especially of the terminals – is required to avoid a conductive path forming between phases and/or phases and ground.

Ambient temperature

The capacitor must not be allowed to overheat. The minimum and maximum permissible temperatures are specified on the capacitor as follows:

25/70/21 = minimum permissible temperature: $-25\text{ }^{\circ}\text{C}$, maximum permissible temperature: $+70\text{ }^{\circ}\text{C}$.

25/85/21 = minimum permissible temperature: $-25\text{ }^{\circ}\text{C}$, maximum permissible temperature: $+85\text{ }^{\circ}\text{C}$.

Temperature is one of the main stress factors for polypropylene type capacitors. It has a major influence on their useful life expectancy. Please note that the useful life is considerably shorter at higher temperatures.



Exceeding the maximum allowed temperature may render the optional safety device inoperable.

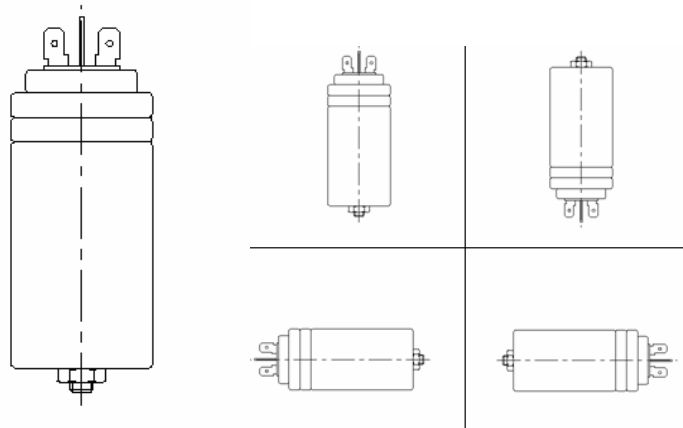
Installation

Mounting orientation

Motor-run and lighting capacitors may be mounted in any orientation. However, the capacitor is preferentially mounted with its terminals facing upwards.



In case of dents deeper than 0.5 mm, do not install the capacitor.

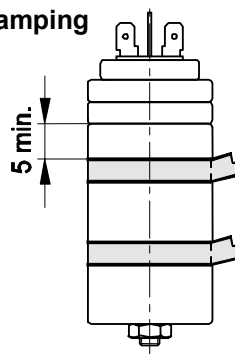


Preferential orientation

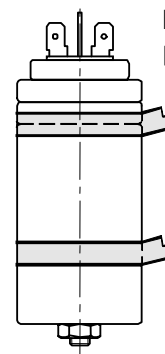
Fixation

Motor-run and lightning capacitors must be installed in a cool and well-ventilated place away from objects radiating heat. The maximum torque of capacitors with an M8 bolt is 5 Nm. This bolt is used for grounding the aluminum case. If the capacitor is fixed with a clamp, make sure this does not block or disable its safety device.

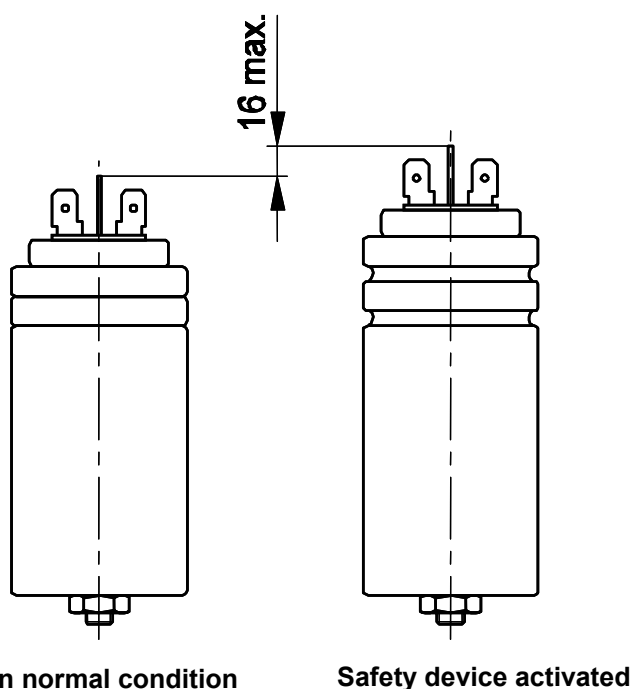
Correct clamping procedure



Incorrect clamping procedure



If the capacitor is fitted with an optional safety device (e.g. B32330, B32331, B32332 or B32335), keep a gap of at least 16 mm above the capacitor free and do not attach any mounting component at the crimp or on the top. This gap will allow the overpressure disconnecter to operate properly thanks to the longitudinal extension of the can.



Lighting application with ballast

If the capacitor is placed next to an electromagnetic ballast, please note that this operates at a high temperature. The reactor and capacitor must be far enough apart so that heat is not conducted from the reactor (via the connection cable) nor radiated from it to the capacitor.

Connectors

In case of fast-on terminals, the female connectors must be appropriate for the terminal. A good contact must be ensured.

Do not solder cables directly onto the fast-on terminals. The terminal may overheat, the capacitor may leak and any safety device will not operate properly.



If the female connector becomes loose, the terminal may overheat, the capacitor may leak and any safety device will not operate properly.

The hermetic seal of the capacitor is extremely important for a long operating life and correct functioning of the break-action mechanism of the over-pressure disconnecter. Do not damage the rubber seal and the soldering at the tab connectors.

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Connecting cable

The cable for connecting capacitors must be capable of carrying at least 1.5 times the rated current of the capacitor. The cable must not exert any mechanical force on the capacitor terminals.



Any mechanical force exerted on the capacitor terminals may cause leakage and prevent any safety device from operating properly.

Harmonics

Harmonics are sinusoidal voltages and currents whose frequencies are multiples of the 50 or 60 Hz power supply frequency. They result from the operation of electrical loads with nonlinear voltage-current characteristics. These are mainly electronic devices such as converters, electrical drives, welding machines and uninterruptible power supplies (UPS).



Harmonics may cause a higher than rated current at the capacitors. The resulting overheating may damage the capacitors, leading to operational failures, bursting and fire.

The total RMS capacitor current (incl. fundamental and harmonic currents) specified in the technical data of the specific series must never be exceeded.

Operating voltage V_B

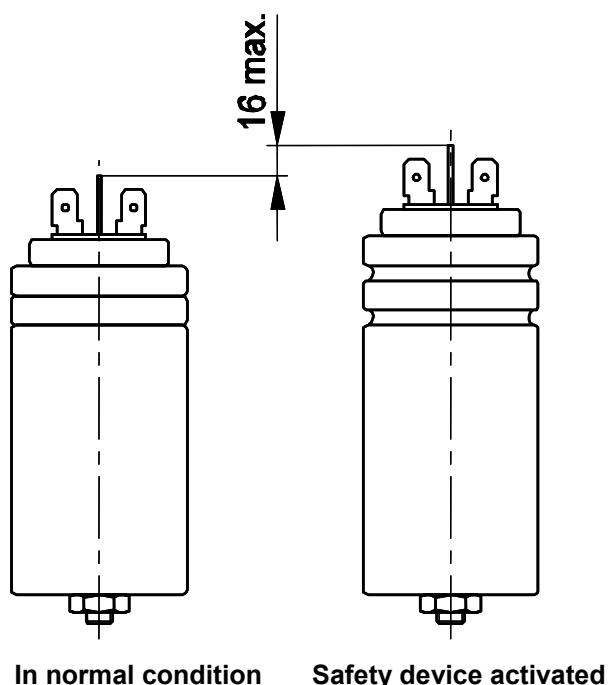
The capacitors have been designed for continuous operation at the rated voltage stated on the label. This voltage may only be exceeded within the limits permitted by the applicable standards:

V_B	Operating duration
$1.1 \cdot V_R$	24 h/d
$1.15 \cdot V_R$	6 h/d
$1.2 \cdot V_R$	5 min/d
$1.3 \cdot V_R$	1 min/d

Overpressure disconnecter

Electrical components do not have an unlimited operating life; this also applies to self-healing capacitors. All capacitors of the B32330, B32331, B32332 and B32335 series are consequently fitted with a disconnecter that responds to overpressure. If numerous electrical breakdowns occur at the end of the capacitor's operating life or as a result of thermal or electrical overload, the formation of gas increases the pressure inside the capacitor case.

This causes the expansion head to expand. If it does so beyond a certain point, the internal wires will separate (tear-off fuses) and disconnect the capacitor from the line. This safety mechanism is irreversible. Once the safety device has operated, the capacitor will remain switched off.



Fused film capacitors

Electrical components do not have an unlimited operating life; this also applies to self-healing capacitors. All capacitors of the B32350, B32351, B32352, B32353, B32354, B32355, B32319 and B32356 series are equipped with a film containing built-in fuses. If numerous electrical breakdowns occur at the end of the capacitor's operating life or as a result of thermal or electric overload, the fuses switch off the capacitor by segments. When all the fuses have opened, the capacitor is disconnected from the line.

Please also read *ZVEI – General safety data sheet for power capacitors* on the Internet at www.epcos.com/ac_capacitors.

Maintenance

There are no serviceable or repairable parts inside the capacitor. Please refrain from opening the capacitor.



Any opening or attempt to open or maintain the capacitor will void warranty and void liability of EPCOS.

Discharge and short-circuit the capacitor before handling. Do not apply excess vibration, mechanical shock (drop) or pressure to the capacitor.

Caution

Motor-run and lightning capacitors are classified as P0 or P2 to IEC 60252 or the related national regulations.

P0 capacitors have no specific failure mode. In case of overload, they may burst or catch fire.

P2 capacitors have a built-in safety device; in case of overload, they go into open circuit mode.



Disregarding the guidelines in this manual could result in operational failure, bursting or fire for all types of capacitors.
