

## General information

### Description & capacitor construction



- Large terminals for easy cable connections
- Built-in discharge resistors
- Heavy duty enclosure
- Metallized film design
- Internally Protected Elements (IPE) & self-healing design
- Low losses
- Thermal equalizer for low element temperature
- Dry granulated vermiculite insulation
- Easy mounting, low weight



### Principal Components of a 3-Phase Capacitor

The principal components of a 3-phase ABB capacitor include:

#### 1. Sequential Protection System:

##### • Self-Healing Capacitor Elements

One or more self-healing capacitor elements are installed for each phase. These elements are connected in Y or Δ. In case of dielectric breakdown, the fault is cleared by evaporation of the metallized layer around the breakdown with negligible loss of capacitance and continued operation of the capacitor!

##### • Internally Protected Elements

A unique Sequential Protection System including the IPE design (IPE - internally protected elements) ensures that each individual element can be disconnected from the circuit at the end of the element's life.

##### • Nonflammable Dry Vermiculite Filler

Vermiculite is a dry, granular insulating material that is solid, inert and fire proof. This material fills all open spaces in the enclosure to isolate the capacitor elements and exclude free oxygen.

#### 2. Discharge Resistors

Discharge resistors (one for each phase) are sized to ensure safe discharge of the capacitor to less than 50 volts in one minute or less as required by the NEC.

#### 3. Terminal Studs

Large terminal studs are located inside the enclosure at the top of the capacitor for quick and easy cable connections.

#### 4. Enclosure

All ABB enclosures are made of welded heavy gauge steel. Available enclosure types include Indoor NEMA 1, Outdoor Raintight, and Indoor Dusttight. (RAL 7032, Beige)

### What is a Metallized-Film Element?

Metallized-film is a microscopically thin layer of conducting material (called an electrode), usually aluminum or zinc on an underlying layer of insulating film. The electrode thickness averages only .01 microns while insulating (polypropylene) film ranges from 5 to 10 microns in thickness depending upon the design voltage of the capacitor (the higher the voltage rating, the thicker the insulating film).

### Advantages of Metallized-Film Elements

There are two electrode layers separated by one layer of insulating film. Thousands of these layers are tightly wound around a core in such a manner that the edge of one electrode is exposed on one side of the element and the edge of the other electrode is exposed on the other side of the element. See Fig. 1 & 2.



Fig. 1

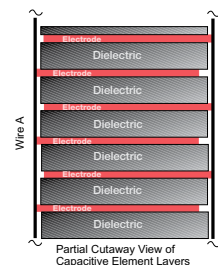


Fig. 2

Wires are then connected to each side of the element. The element is enclosed in a container and then filled with a hardening protective sealant.

#### 1. Self-Healing Design