

(C) Disconnecting Means. A disconnecting means shall be provided in each ungrounded conductor for each capacitor bank and shall meet the following requirements:

- (1) The disconnecting means shall open all ungrounded conductors simultaneously.
- (2) The disconnecting means shall be permitted to disconnect the capacitor from the line as a regular operating procedure.
- (3) The rating of the disconnecting means shall not be less than 135 percent of the rated current of the capacitor.

Exception: A separate disconnecting means shall not be required where a capacitor is connected on the load side of a motor controller.

460.9 Rating or Setting of Motor Overload Device. Where a motor installation includes a capacitor connected on the load side of the motor overload device, the rating or setting of the motor overload device shall be based on the improved power factor of the motor circuit.

The effect of the capacitor shall be disregarded in determining the motor circuit conductor rating in accordance with 430.22.

Where a capacitor is connected on the load side of the motor overload relays [see Exhibit 460.1, diagram (a)], the line current will be reduced due to an improved power factor, which must be taken into account when selecting the rating of a motor overload device. A value lower than that specified in 430.32 should be used for proper protection of the motor.

The most effective power factor correction is obtained where the individual capacitors are connected closest to the inductive load. Capacitor manufacturers publish tables in which the required capacitor value is obtained by referring to the speed and the horsepower of the motor. Those values improve the motor power factor to approximately 95 percent. To improve a plant power factor, capacitor manufacturers also publish tables to assist in the calculation of the total kVAR rating of capacitors required to improve the power factor to any desired value.

460.10 Grounding. Capacitor cases shall be connected to the equipment grounding conductor.

Exception: Capacitor cases shall not be connected to the equipment grounding conductor where the capacitor units are supported on a structure designed to operate at other than ground potential.

460.12 Marking. Each capacitor shall be provided with a nameplate giving the name of the manufacturer, rated voltage, frequency, kilovar or amperes, number of phases, and, if filled with a combustible liquid, the volume of liquid. Where filled with a nonflammable liquid, the nameplate shall so state. The nameplate shall also indicate whether a capacitor has a discharge device inside the case.

Part III. Over 1000 Volts, Nominal

460.24 Switching.

(A) Load Current. Switches shall be rated for switching of capacitive loads. Capacitor switch operation shall open all ungrounded conductors and the switch shall be capable of the following:

- (1) Carrying continuously not less than 135 percent of the rated current of the capacitor installation
- (2) Interrupting the maximum continuous load current of each capacitor, capacitor bank, or capacitor installation that will be switched as a unit
- (3) Withstanding the maximum inrush current, including contributions from adjacent capacitor installations
- (4) Carrying currents due to faults on capacitor side of switch

(B) Isolation.

(1) General. A means shall be installed to isolate from all sources of voltage each capacitor, capacitor bank, or capacitor installation that will be removed from service as a unit. The isolating means shall provide a visible gap in the electrical circuit adequate for the operating voltage.

Δ (2) Isolating or Disconnecting Switches with No Interrupting Rating. Isolating or disconnecting switches (with no interrupting rating) shall be interlocked with the load-interrupting device or be provided with prominently displayed caution signs in accordance with 495.22 to prevent switching load current.

(C) Additional Requirements for Series Capacitors. The proper switching sequence shall be ensured by use of one of the following:

- (1) Mechanically sequenced isolating and bypass switches
- (2) Interlocks
- (3) Switching procedure prominently displayed at the switching location

460.25 Overcurrent Protection.

(A) Provided to Detect and Interrupt Fault Current. A means shall be provided to detect and interrupt fault current likely to cause dangerous pressure within an individual capacitor.

(B) Single Pole or Multipole Devices. Single-pole or multipole devices shall be permitted for this purpose.

(C) Protected Individually or in Groups. Capacitors shall be permitted to be protected individually or in groups.

(D) Protective Devices Rated or Adjusted. Protective devices for capacitors or capacitor equipment shall be rated or adjusted to operate within the limits of the safe zone for individual capacitors.

460.26 Identification. Each capacitor shall be provided with a permanent nameplate giving the manufacturer's name, rated voltage, frequency, kilovar or amperes, number of