Instructions for Dri-Var Capacitors

I.L.39-211-5C

SAFETY NOTICE

- Keep these instructions available to those responsible for products proper installation, maintenance, and operation.
- These instructions are a guide to the safe use of DRI-VAR Capacitors. They do not supplant or take the place of any applicable national and/or local codes, or requirements of insurance underwriters.
- Follow your company's safety procedures.
- Apparatus covered by this instruction literature should be operated and serviced only by competent personnel familiar with good safety practice. These instructions are written for such personnel and are not intended as a substitute for proper training and experience in safety procedures for this type of equipment.
- Read these instructions carefully before attempting to install, operate, or maintain this device. Failure to follow these instructions could cause severe personal injury, death, or property damage.
- The capacitor has discharge resistors to decrease residual voltage from rated voltage to 50 volts or less in one minute. Before handling equipment or removing the equipment cover, wait one minute after disconnecting from service. Then short and ground the capacitor using an insulated tool. Shorting should be between all capacitor terminals and ground.

DESCRIPTION

Westinghouse DRI-VAR Capacitor equipments are suitable for both indoor and outdoor applications. They are used for power factor correction and voltage improvement, and comply with NEMA CP1.

The DRI-VAR Capacitor equipment utilizes capacitors designed with a metallized film dielectric which is self protecting against most short circuits. The equipment is provided with brackets at its base and a removable cover for convenient installation. Optional line protection fuse kits and blown fuse indicator kits are available to those users who wish to mount fuses at the capacitor. These line fuse kits do not substitute for the NEC overcurrent protection requirements. The optional fuse and blown fuse indicator kits are available for 480 volt, 3 phase indoor equipments only.

RECEIVING, HANDLING

When unpacked, carefully inspect the unit for damage and check the nameplate to be sure the desired rating has been received. File a claim immediately with the carrier for any damages sustained in transit, and notify the nearest Westinghouse Sales Office.

INSTALLATION

Mounting

DRI-VAR capacitors have rigid steel mounting

All possible contingencies which may arise during installation, operation, or maintenance, and all details and variations of this equipment do not purport to be covered by these instructions. If further information is desired by purchaser regarding his particular installation, operation or maintenance of his equipment, the local Westinghouse Electric Corporation representative should be contacted.

Supersedes I.L.39-211-5B

brackets at the base of the unit for easy mounting. Equipments may be mounted on the floor, wall or ceiling. Outdoor units mounted horizontally must have the cable entry from the lower side of the unit.

WARNING

Capacitors, fused or unfused, may rupture upon failure. This possibility must be considered when choosing a location for the capacitors. Explosion is also a possibility when hi-pot tests are performed on a capacitor, and personnel should be protected during these tests.

Cable Sizes and Switching Equipment

Capacitors may operate with a maximum of 135% rated kVAR in accordance with NEMA Standards. This permits operation up to 110% rated voltage including harmonic effects. Applications with excessive harmonics should be referred to Westinghouse for application guidance.

The National Electrical Code, Article 460, requires capacitor installations be provided with overcurrent protection in each ungrounded conductor. Fuses, cable size, and switching equipment, per NEC, should be selected with a current capability of at least 135% of rated current given by:

Three phase units:

$$I\,(\text{amps}) = \frac{\text{kVAR} \times 1000}{\text{Volts} \times 1.73}$$

Single phase units:

$$I\,(\text{amps}) = \frac{\text{kVAR} \times 1000}{\text{Volts}}$$

Switches and circuit breakers used for capacitor switching must be rated for capacitor switching duty.

Connections

Connections are made directly to the power circuit through a suitable switch or circuit breaker. Appropriate openings need to be made in the enclosure, conduit installed, and cables drawn into the terminal compartment and connected. When installing capacitors in outdoor applications, a U.L. listed rain tight conduit hub is required. Care must be taken to observe proper electrical clearances when locating conduit opening. The outer edge of the opening should be located no closer than 1 inch from any adjacent surface. When attaching cables to the capacitor terminals, care should be taken so that cables are positioned no closer than .5 inch from any resistor surface. Two typical installations are shown at the top of page 3.

Power factor correction capacitors should not be applied indiscriminately to motors. If the capacitor rating is significantly larger than the no load kVAR of the motor, then damaging overvoltages or transient torques could occur. (See National Electric Code, Section 460).

MAINTENANCE

CAUTION: Before inspecting or working on capacitors, power must be removed by a visible disconnect.

A capacitor is normally maintenance-free, requiring only periodic inspection. Equipment should be checked periodically for failed capacitors. This check can be made (after de-energizing and following "Safety Instructions, Shock Hazard" in the first part of these instructions) by (1) Checking for line fuse operation on electrical service and at the capacitor in the event capacitor fuses are present. (2) measuring capacitance, and/or (3) feeling the capacitor case (a capacitor which has been operating will be warmer than the ambient temperature). Any capacitor showing mechanical damage to its case may result in an electrical failure and should be replaced.

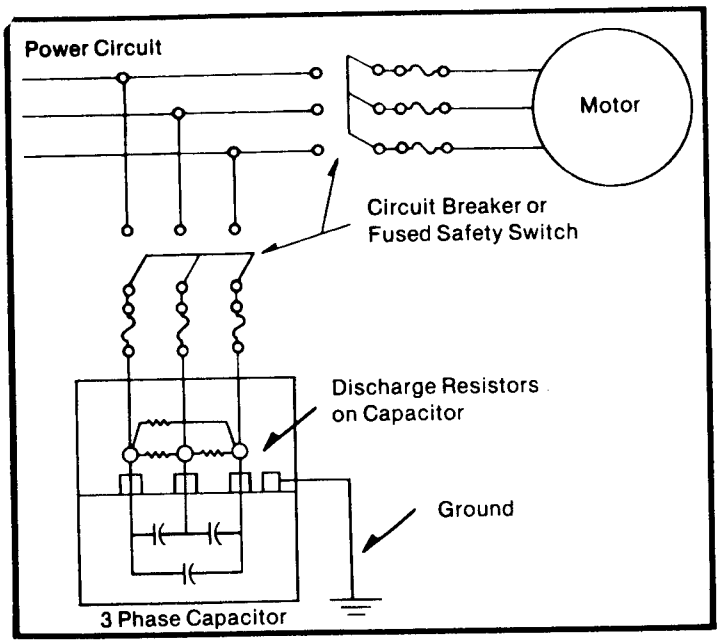

Diagram of Capacitor Equipment Connected on the Line Side of a Motor with Separate Switch

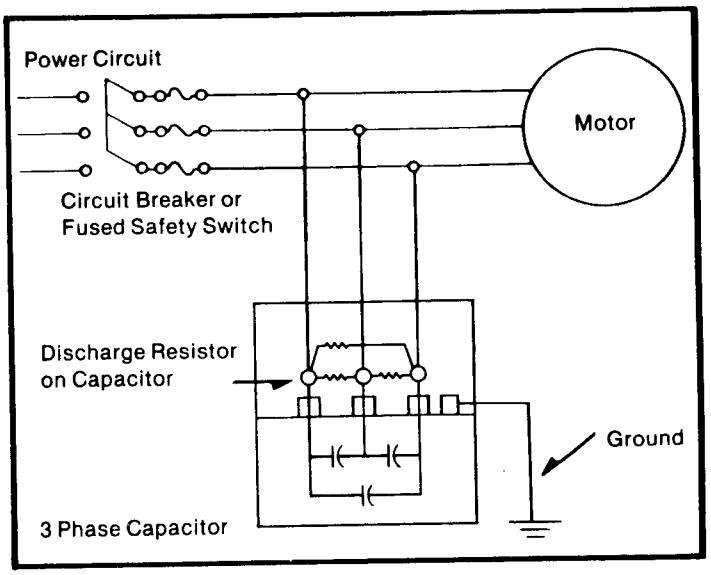

Diagram of Capacitor Equipment Connected on the Load Side of a Motor Switch and Using the Motor Switch for Connection. Reduce rating of over current device to compensate for reduced line current.

DISPOSAL

Incineration or other disposal should be in accordance with Federal, State, and Local Regulations.

Westinghouse Electric Corporation

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