

# Capacitors

Service Information

## Pole-Mount with Single-Phase Capacitors Installation Instructions

# S230-20-1

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## PRODUCT INFORMATION

### Introduction

Service Information S230-20-1 covers instructions for mounting capacitor rack assemblies on poles. (The single-phase capacitors in these assemblies are furnished in hermetically sealed cases containing pack assemblies impregnated with a dielectric fluid; refer to S230-10-1 for installation, maintenance, and field-testing instructions of individual capacitors.) Where applicable, the requirements of national and/or local codes and insurance underwriters must be followed.

### Read This Manual First

Read and understand the contents of this manual and follow all locally approved procedures and safety practices before installing or operating this equipment.

### Additional Information

These instructions cannot cover all details or variations in the equipment, procedures, or process described nor provide directions for meeting every possible contingency during installation, operation, or maintenance. For additional information, contact your representative.

### Acceptance and Initial Inspection

Each capacitor rack assembly shipped is in good condition when it leaves the factory. Immediately upon receipt of a capacitor rack shipment:

1. Check each capacitor nameplate to make sure the rating is correct for the application.
2. Check the rack and each capacitor case and bushing for signs of rough handling and shipping damage. Check each capacitor case for fluid leaks.  
  
If initial inspection of a capacitor rack indicates a damaged bushing, dented or bulged capacitor case, a fluid leak, or damaged rack, immediately file a claim with the carrier and notify Cooper Power Systems, 1520 Emerald Road, Greenwood, SC 29646.
3. Tighten all bolts that may have loosened during shipment. Tighten the capacitor terminal clamp nuts to a torque of 16–19 ft.-lb.
4. Check for proper wiring of the capacitor units. Refer to Figure 1.

### Handling and Storage

Be careful during handling and storage of the capacitor rack assembly is to be stored for any length of time prior to installation, provide a clean, dry storage area.

### Standards

ISO 9001:2000 Certified Quality Management System

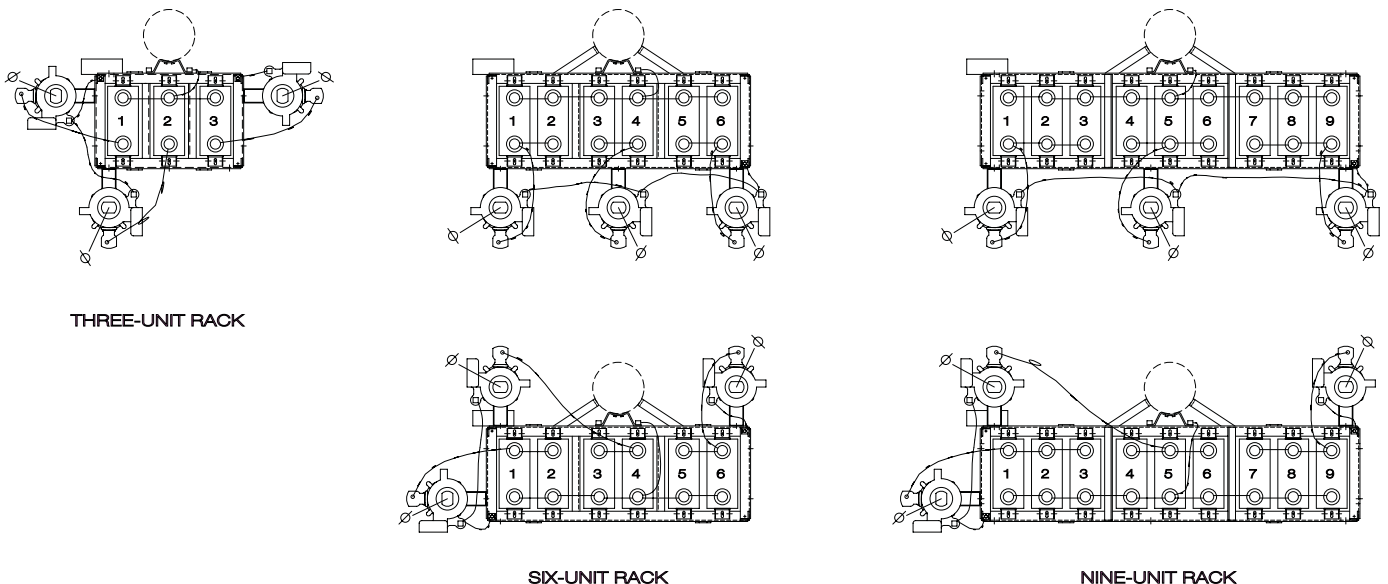


Figure 1.  
Rack pole-mounting bracket.



## SAFETY FOR LIFE



Cooper Power Systems products meet or exceed all applicable industry standards relating to product safety. We actively promote safe practices in the use and maintenance of our products through our service literature, instructional training programs, and the continuous efforts of all Cooper Power Systems employees involved in product design, manufacture, marketing and service.

We strongly urge that you always follow all locally approved safety procedures and safety instructions when working around high-voltage lines and equipment and support our “Safety For Life” mission.

## SAFETY INFORMATION

The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe operation of the equipment described. Only competent technicians, who are familiar with this equipment should install, operate and service it.


*A competent technician has these qualifications:*


- *Is thoroughly familiar with these instructions.*
- *Is trained in industry-accepted high- and low-voltage safe operating practices and procedures.*
- *Is trained and authorized to energize, de-energize, clear, and ground power distribution equipment.*
- *Is trained in the care and use of protective equipment such as flash clothing, safety glasses, face shield, hard hat, rubber gloves, hotstick, etc.*


Following is important safety information. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings.

### Hazard Statement Definitions

This manual may contain four types of hazard statements:

 **DANGER:** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.


 **WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.


 **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.


**CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in equipment damage only.


### Safety Instructions

Following are general caution and warning statements that apply to this equipment. Additional statements, related to specific tasks and procedures, are located throughout the manual.

 **DANGER:** Hazardous voltage. Contact with high voltage will cause death or severe personal injury. Follow all locally approved safety procedures when working around high- and low-voltage lines and equipment.

 **WARNING:** Before installing, operating, maintaining, or testing this equipment, carefully read and understand the contents of this manual. Improper operation, handling or maintenance can result in death, severe personal injury, and equipment damage.

 **WARNING:** This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply may result in death, severe personal injury and equipment damage.

 **WARNING:** Power distribution equipment must be selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures. Failure to properly select, install or maintain power distribution and transmission equipment can result in death, severe personal injury, and equipment damage.

## Wye-Connected Racks

All factory-assembled racks connected for wye systems are wired for grounded-wye operation with a neutral-to-frame jumper provided. If ungrounded-wye operation is desired, this jumper must be removed.

## INSTALLATION PRODEDURE

**CAUTION:** Lift a capacitor rack by the lifting eyes on the rack frame. Do not lift the rack assembly by the capacitor unit hangers.

### Mounting Instructions

#### User-Furnished Hardware:

#### Rack Mounting

- Two 3/4-in. bolts. (Required length is determined by pole diameter.)
- Two 3/4-in. lockwashers.
- Four 3/4-in. washers.
- Two 3/4-in. nuts.

#### Pole Brace Mounting

- Two 1/2-in. lagscrews or thru bolts.

#### Control Wiring

- Compression-type entrance bushing.
- Control and low-voltage supply cable.

#### Procedure

1. On an 18-in. center on the pole, drill two holes for the 3/4-in. bolts.
2. Insert the two 3/4-in. bolts through the holes, using washers and lockwashers as needed. Thread the nuts onto the bolts but do not tighten.

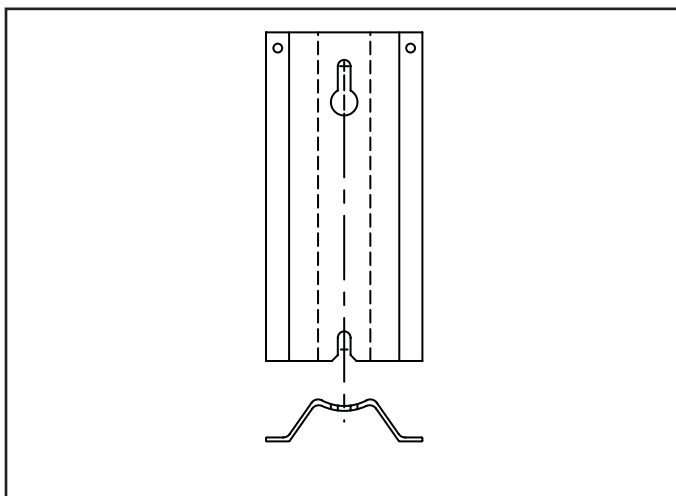


Figure 2.  
Rack pole-mounting bracket.

3. Using the lifting eyes on the rack frame, lift the rack, positioning it at the pole so that the bolts can slip into the slots on the rack pole-mounting bracket. (Figure 2)
4. Lower the racks onto the bolts.
5. Tighten the nuts on the bolts securely.

#### Pole Brace Installation

After the rack has been securely mounted on the pole, install the pole braces (not supplied for 3 unit frames):

1. Using the furnished hardware, attach one end of a brace to the slot located under the capacitor mounting angle on the rack frame as shown in Figure 3, but do not tighten the nut on the bolt.
2. Place the other end of the brace against the pole at an angle of approximately 45° and fasten with a 1/2-in. lagscrew or thru bolt.
3. For a snug fit, force the end of the brace attached to the rack toward the pole and tighten the nut and bolt in the rack frame.
4. Repeat steps 1, 2, and 3 for the other brace.

#### Control Wiring Instructions

Switches are factory-wired to the junction box on pole-mounted racks similar to that shown in Figure 4. To connect the user-supplied control cable and low-voltage supply cable to the terminals in the junction box:

1. Insert the control cable through the bottom junction box hole using a compression-type entrance bushing.
2. Insert the low-voltage supply cable into the junction box using a compression-type entrance bushing.
3. Wire the control cable and the low-voltage supply cable as shown on inside of the junction box cover.

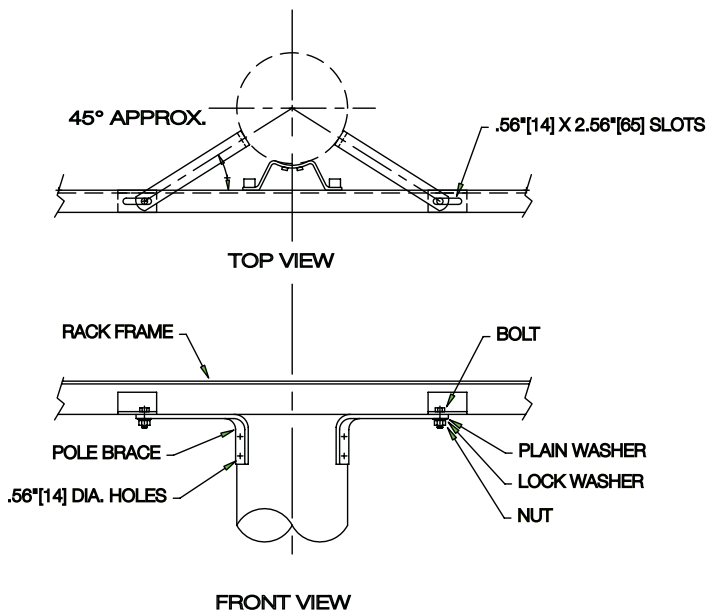


Figure 3.  
Pole brace installation.

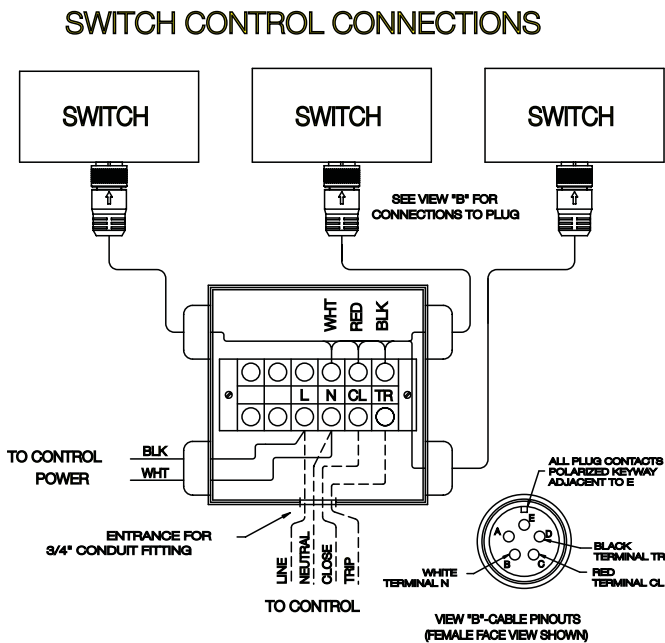


Figure 4.  
Junction box and switch wiring diagram.