

QO-EPD

Molded Case Circuit Breakers with 30 mA Equipment Ground-Fault Protection

Class 950



Single-Pole
Circuit Breaker

Two-Pole
Circuit Breaker

| CONTENTS | | |
|----------------------------|--------------|--------------|
| Description | Class | Pages |
| Application Data | .950 | 3-4 |
| Overcurrent Characteristic | | |
| Tripping Curves | .950 | 5-6 |
| Dimensions | .950 | 7 |



SQUARE D
GROUPE SCHNEIDER

QO-EPD and QOB-EPD Molded Case Circuit Breakers with 30mA Equipment Ground-Fault Protection

Description

QO-EPD and QOB-EPD one- and two-pole thermal-magnetic circuit breakers provide overcurrent protection and switching as well as equipment ground-fault protection on ac systems. These circuit breakers are not designed to protect people against the hazard of electrical shock. The ground-fault protection level is preset at 30 milliamperes. Two-pole circuit breakers are common trip with a single operating handle.

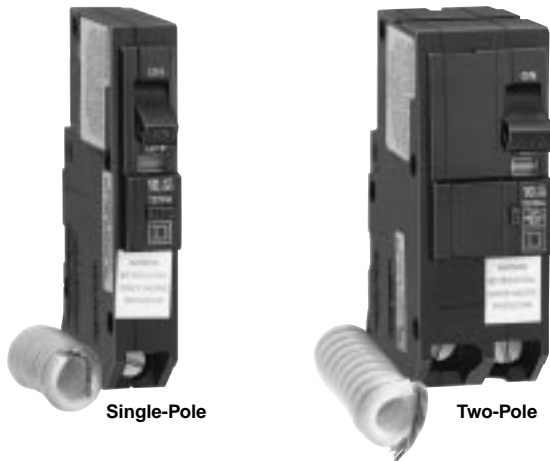
NEC Requirements

The 1996 National Electrical Code (NEC) shows a major change in Article 427 - "Fixed Electric Heating Equipment For Pipelines and Vessels." Now **all** electric heating equipment is required to have equipment ground-fault protection. This type of heating equipment is commonly used to keep liquids fluid in pipelines and storage tanks. NEC Section 427-22 now requires ground-fault protection for each **branch circuit** supplying electric heating equipment, *including all heating equipment with metal covering* (the '93 NEC did not require ground-fault protection on electric heating equipment with metal covering).

Another requirement for equipment ground-fault protection was introduced in Article 426 of the '93 NEC - "Fixed Outdoor Electrical Deicing and Snow Melting Equipment." The most common applications for this type of equipment include keeping ice from building up in gutters or on exterior structures, or to melt ice and snow on concrete slabs. NEC Section 426-28 requires ground-fault protection for this type of equipment on the **branch circuit** supplying the equipment.

In both cases, the protection must be provided for the **branch circuit** - a perfect application for **Square D QO/QOB-EPD** circuit breakers.

The QO/QOB-EPDs have been used to protect heat trace cable in accordance with Section 427-22 for 14 years. With the NEC changes in 1993 and 1996, the requirements for Square D QO/QOB-EPD circuit breakers have doubled.



Single-Pole

Two-Pole

Application

Plug-on QO-EPD circuit breakers are for use in QO load centers, NQOD panelboards or SPEED-D® switchboard distribution panels. Bolt-on QOB-EPD circuit breakers are for use in NQOD panelboards. Unit mounting bases are also available for plug-on or bolt-on circuit breakers.

Construction Standards

QO-EPD circuit breakers are built in accordance with Underwriters Laboratories Standard 489 and NEMA Standard AB-1-1975 and meet Federal Specification W-C-375B/GEN. 15-30 ampere circuit breakers are Listed as Type QO or Type QOB under UL File E181374 and are CSA certified under File LR29971.

Operating Mechanism

QO EPD circuit breakers have an overcenter, trip-free toggle mechanism with quick-make, quick-break action and positive handle indication. An integral crossbar assures simultaneous opening of both poles in two-pole circuit breakers.

Tripping Mechanism

Each pole contains an individual thermal-magnetic trip element calibrated for 40°C ambient temperature for circuit overcurrent protection. Integral equipment ground-fault protection circuitry activates a solenoid for initiating tripping in the event of ground-fault currents above 30 milliamperes.

Trip Indication

When tripped by either an overcurrent or a ground-fault condition, the handle assumes a center position between ON and OFF and the VISI-TRIP® indicator appears in the window of the circuit breaker. The circuit breaker can be reset by pushing the handle to the extreme OFF position and then to the ON position.

Ratings

| Ampere Rating | One Pole - 120/240Vac | | Two-Pole - 120/240Vac | |
|---|-----------------------|----------|-----------------------|-----------|
| | Plug-on | Bolt-on | Plug-on | Bolt-on |
| 10,000 Amperes RMS-UL Listed Interrupting Rating | | | | |
| 15 | QO115EPD | QO115EPD | QO215EPD | QOB215EPD |
| 20 | QO120EPD | QO120EPD | QO220EPD | QOB220EPD |
| 25 | QO125EPD | QO125EPD | QO225EPD | QOB225EPD |
| 30 | QO130EPD | QO130EPD | QO230EPD | QOB230EPD |



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Operational Test

This equipment protective device is easily identified by its black test button which provides a means of testing its equipment ground-fault protection circuitry. One-pole circuit breakers have the word "TEST" molded into the test button to indicate the test function. Two-pole circuit breakers have a label that reads "EQPT. PROT. TEST" adjacent to the test button to indicate the test function. Pushing the test button simulates a ground fault within the solid state circuitry. This circuitry then initiates the tripping operation. Proper operation is verified when the circuit breaker trips, causing the handle to move to the tripped position and the trip indicator to move into the VISI-TRIP window.

Terminations

15 through 30 ampere circuit breakers have pressure plate terminals.

UL Listed Wire Sizes★

| QO-EPD | Aluminum | Copper |
|--------|---------------------------------------|---------------------------------------|
| 15-30 | #12-#8 AWG 3.3-8.4 mm ² | #12-#8 AWG 2.8-8.4 mm ² |

★ Suitable for use with 60°C or 75°C conductors.

Accessories

QO-EPD circuit breakers can be supplied with accessory devices factory assembled to one- or two-pole circuit breakers. Only one accessory may be installed per circuit breaker and all accessories occupy one additional pole space. Terminal wire range – (2) #14-#12 CU (2-3.3 mm²). The following accessories are available on QO-EPD molded case circuit breakers. To order, add the proper suffix to the circuit breaker catalog number.

| Accessories | | Catalog Suffix |
|---------------------------------|--|----------------|
| Auxiliary Switch "A" Contact | One contact only opens when circuit breaker is OFF or tripped. 5A max. at 120Vac 50/60 Hz | 1200 |
| Auxiliary Switch "B" Contact | One contact only, closed when circuit breaker is OFF or TRIPPED. 5A max. at 120Vac 50/60 Hz. | 1201 |
| Alarm Switch | One contact only, closed when circuit breaker is tripped. 5A max. at 120Vac 50/60 Hz | 2100 |

The following information should be used for each respective trip curve.

| Circuit Breaker Prefix | Continuous Ampere Rating | Maximum AC Voltage | Number of Poles |
|--|--------------------------|---------------------------|-----------------|
| Curve 910-1▲ QO-EPD | 15 | 120 | 1 |
| Curve 910-2▲ QO-EPD | 20 | 120 | 1 |
| Curve 910-3▲ QO-EPD QO-EPD QO-EPD | 15 20 & 25 25 | 120/240 120/240 120 | 2 2 1 |
| Curve 910-4▲ QO-EPD QO-EPD | 30 30 | 120 120/240 | 1 2 |

▲ The QO-EPD circuit breakers are not shown on any tissue stock curve. They are equivalent to the QO curves Class 910.



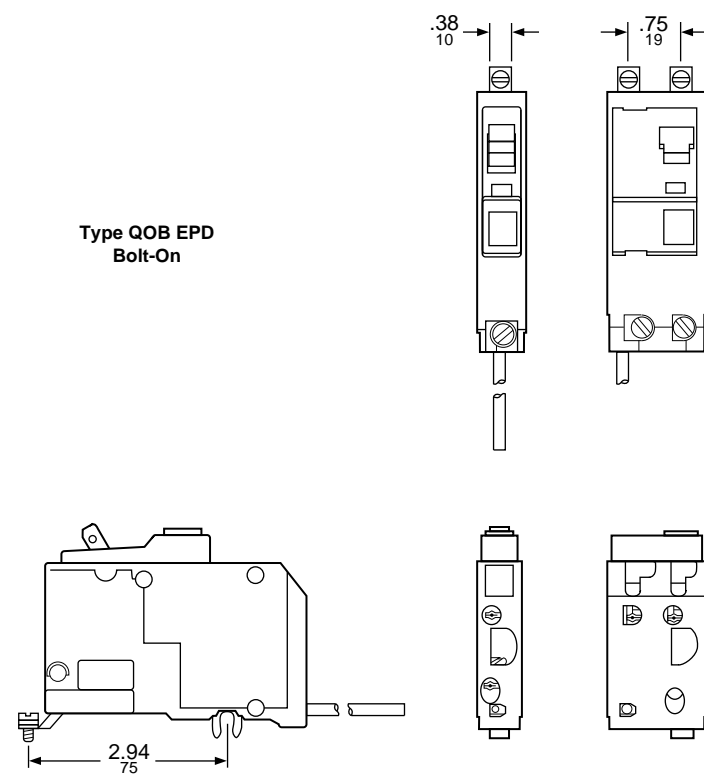
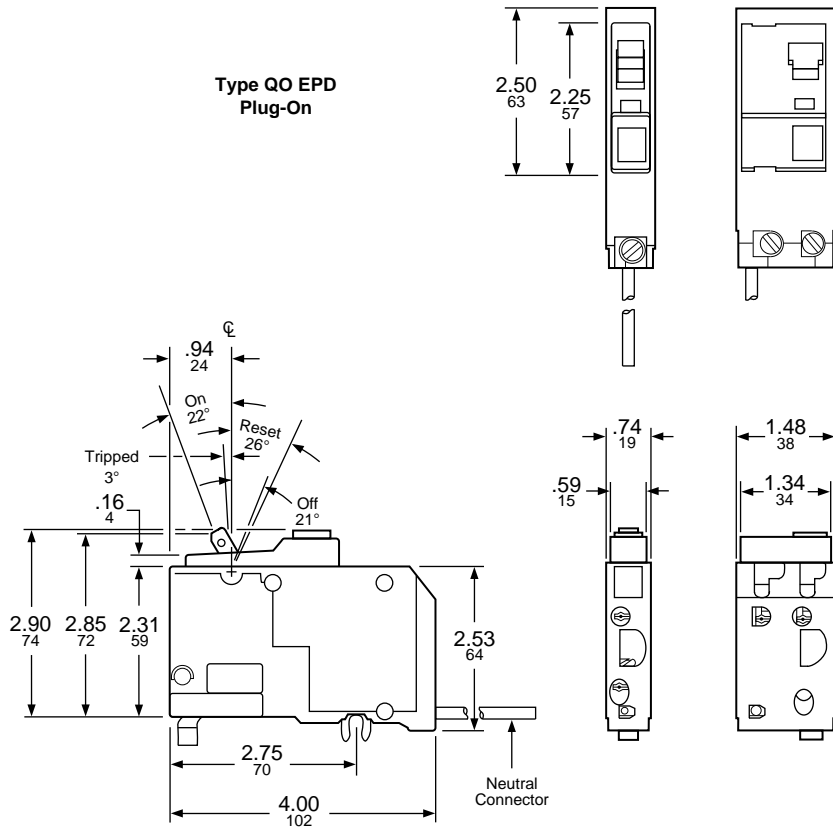
QO-EPD and QOB-EPD Molded Case Circuit Breakers
Overcurrent Characteristic Tripping Curve



QO-EPD and QOB-EPD Molded Case Circuit Breakers
Overcurrent Characteristic Tripping Curve

QO-EPD and QOB-EPD Molded Case Circuit Breakers

Dimensions



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