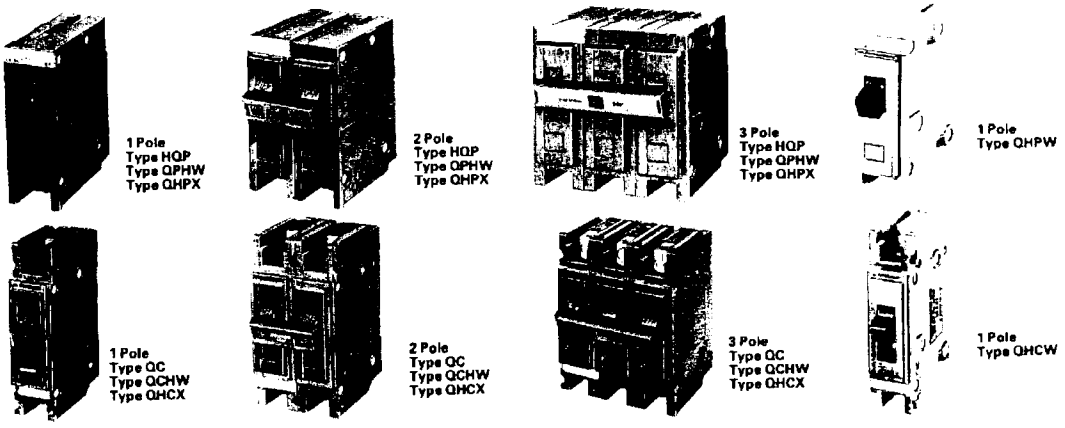
August, 1980
Supersedes Application Data 29-160, pages 21-22, dated September, 1976
Mailed to: E, D, C/1901, 1928/DB

Standard Types HQP, QC, QPHW, QCHW, QHPX, QHCX, and MARK 75® Types QHCW and QHPW 10-125 Amperes, 1,2 and 3 poles, 120/240 and 240 Volts Ac.

AB DE-ION® Quicklag® Circuit Breakers



Note: MARK 75 Breaker Cases Are of Gray Molded Material

Continuous Ampere Ratings and Interrupting Capacity
Underwriters' Laboratories, Inc. Listed

Types HQP, QC
10,000 Amperes Asym, and Sym. I.C.①
1-Pole, 120/240 Volts Ac: 10 to 70 Amps.
2-Poles, 120/240 Volts Ac: 10 to 125 Amps.
2-Poles, 240 Volts Ac: 15 to 50 Amps.
3-Poles, 240 Volts Ac: 15 to 100 Amps.

Types QPHW, QCHW
22,000 Amperes Sym., 25,000 Amps Asym. I.C.
1-Pole, 120/240 Volts Ac: 15 to 70 Amps.
2-Poles, 120/240 Volts Ac: 15 to 100 Amps.
2-Poles, 240 Volts Ac: 15 to 100 Amps.
3-Poles, 240 Volts Ac: 15 to 100 Amps.

Types QHPX, QHCX
42,000 Amperes Sym
1-Pole 120/240 Volts Ac: 15-70 Amps.
2-Pole 120/240 Volts Ac: 15-100 Amps.
2-Pole 240 Volts Ac: 15-100 Amps.
3-Pole 240 Volts Ac: 15-100 Amps.

MARK 75 Types QHCW, QHPW
65,000 Amperes Sym., 75,000 Amperes Asym. I.C.
1-Pole, 120/240 Volts Ac: 15-30 Amps.
2-Poles, 120/240 Volts Ac: 15-30 Amps.
3-Poles, 240 Volts Ac: 15-20 Amps.

① Panelboards using these 10,000 I.C. breakers as Branch Breakers in series with Type CAH or QP 22,000 Amp I.C. Main Breakers can be listed for application at 22,000 amperes.

Application
These breakers are designed to protect small branch circuits in residential, commercial, or industrial applications. Typical uses are in loadcenters, lighting panelboards, and for individual mounting. They are listed with Underwriters' Laboratories Inc.

On all three-phase Delta, grounded B phase applications, refer to Westinghouse.

Construction
Features of these breakers include arc quenchers, quick-make, quick-break trip-free mechanisms, silver alloy contacts, electrically welded connections, and Molded case. The MARK 75 breakers have these same standard features, plus a higher grade molded case (identified by light gray color) for higher interrupting capacity.

Two and three-pole breakers are common trip to insure simultaneous manual or automatic opening of all poles. Ferrous parts are chemically plated to insure corrosion resistance.

Federal Specification W-C-375b
See tabulation on page 20.1.

Terminals
Types HQP, QHPX, QPHW and QHPW plug-in breakers have a female, clamp-type line terminal which clips onto a bus stab projection of a panelboard or loadcenter. Load terminals are pressure-type connectors.

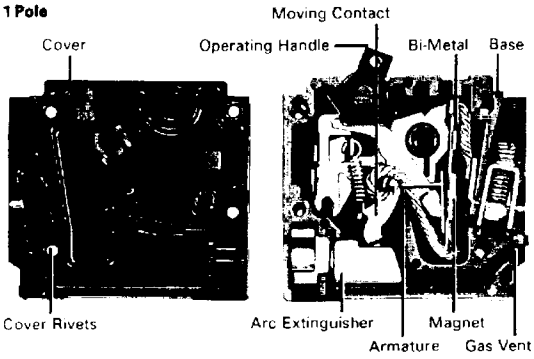
Breaker types QC, QHCW, QHCX and QCHW line and load terminals up to 20 amperes use binding head screws. Line and load terminals 30 amperes and above use pressure-type removable connectors.

Operation
The breaker is shown in the "off" position. In tripping, the contacts part and the handle moves to a mid-way position. Moving handle to extreme "off" position resets the breaker and it can be restored to service by moving handle to "on" position. Quicklag Breakers are U/L listed for inverted mounting and reverse feed.

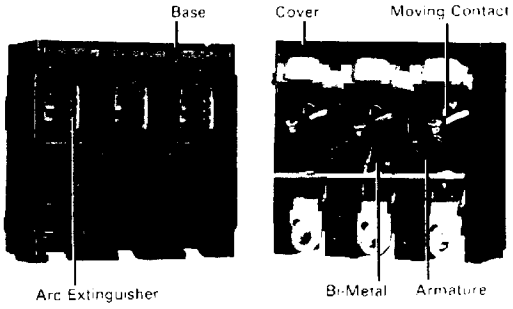
Thermal Magnetic Trip
These breakers are equipped with a thermal magnetic trip. On temporary overloads, the breaker will not trip. On sustained overloads beyond safe limits for wire, the bi-metal will deflect, causing the breaker to trip. Instantaneous tripping is provided by a magnetic element under short circuit conditions. Trip elements are non-adjustable and non-interchangeable. Quicklag breakers are calibrated at 40°C as standard. Breakers applied in ambients higher than 40°C should be derated.

Typical Exploded View (Type P Plug-in Breaker Shown)

1 Pole



3 Pole



Switching Neutral Breakers
Types HQNPL and HQCL 10,000 Amps, I.C. Only

Switching neutral breaker is available in 2-pole, 15 and 20 ampere ratings. Its application is gasoline station dispensing pump circuits. Meets the requirements of NEC (Article 514-5); "Each circuit leading to or through a dispensing pump or island shall be provided with a switch or other acceptable means to disconnect simultaneously from the source of supply all conductors of the circuit including the grounded neutral, if any".

Switching Duty
For switching duty requirements for 120 Volts Ac fluorescent light applications, use type QPHW, HQP, QCHW, QC, QHPW, QHCW, QHPX and QHCX, 15 and 20 amperes 1 pole breakers only.

Breaker Mounting
Types HQP, QHPX, QHPW, QPHW (Plug-in): The load end of the breaker is inserted under the mounting clamp of a panelboard and the line end is merely snapped into position over the bus stab.

Types QC, QHCW, QHCX, QCHW (Bolt-on): The breaker is mounted in a panelboard by inserting the load end under the mounting clamp and bolting the line end to bus connections. For independent mounting, face mounting plates are used for flush mounting the breakers. Base mounting plates can be used where the plates are mounted in a panel, in this method the breaker base snaps into line and load clips to hold it firm.

Circuit Breaker Removal
Before inspecting, installing or removing from a circuit, the circuit breaker should be in the "off" position, and if practicable, the circuit should be de-energized.

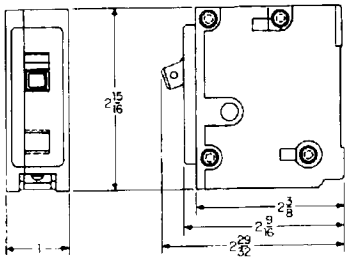
Inspection and Maintenance
Good maintenance procedure calls for periodic inspection of all electrical apparatus including molded case circuit breakers. Terminal lugs must be tight to prevent overheating. Due to the inherent wiping action built into the moving contacts of all Westinghouse circuit breakers, operating the breaker several times under load will remove any high resistance film that may have formed.

Accessories and Modifications
Accessories and modifications available include: lockdog, handle locks for use with padlock, moisture and fungus treatment, and handle ties for using two single-pole breakers for 120/240 volt 2 wire operation. Handle ties assure simultaneous switching, but allow either breaker to register independent trip positions.

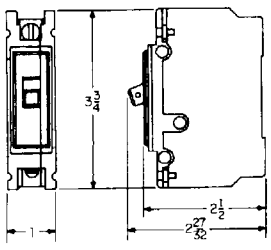
Further Information
Prices: Price List 29-020 P WE A
Ordering Data: Tech Data 29-120 T WE A
Dimensions: Dimension Sheet 29-170
Trip Curves: 29-161 A WE A

Printed in USA

Dimensions, Inches ② *Not to be used for construction purposes. See Dimension Sheet 29-170 for detailed dimensions.*



Type HQP



Type QC

② 2 pole breaker is 2" wide, 3-pole is 3" wide.

September, 1976
Supersedes Application Data
29-160 all previous issues.
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Standard Types P and B
15-30 Amperes, 120 Volts Ac 1 Pole,
120/240 Volts Ac 2 Poles

AB DE-ION® Quicklag® Ground Fault Circuit Breakers

Interrupting Capacity:
10,000 Amps Sym. or Asym., and 22,000 Amps. Sym., 25,000 Amps Asym.

Sensitivity: 5 Milliamps or Greater

Westinghouse Quicklag Ground Fault circuit breakers are UL listed as Class A, ground fault circuit interrupters.

Application

Quicklag Ground Fault circuit breakers are normally used in loadcenters or panelboards to protect small branch circuits in residential, commercial or industrial applications. They function to protect humans from ground faults of 5 milliamperes or greater, as well as normal circuit protection providing inverse time overload and instantaneous short circuit protection.

Typical applications include protection against ground fault hazards in circuits near swimming pools and outdoor receptacles for which the National Electric Code requires protection of human life against ground faults. (Ref. N.E.C. articles 680-31, 680-20, 680-6, and 210-8)

Construction

Quicklag Ground Fault circuit breakers are 1 or 2 pole thermal magnetic circuit breakers which incorporate a solid state ground fault sensing circuit to detect ground current. Available as plug-in (Type P) or bolt-on (Type B) design, they are interchangeable in load centers or panelboards with standard Westinghouse Type P plug-in and Type B bolt-on quicklag breaker. The breaker features a quick-make, quick-break trip free operating mechanism, silver alloy contacts and welded connections.

The ground fault sensing circuit consists of a monitor, a solid state amplifier, and a shunt trip mechanism.

Federal Specification W-C-375b

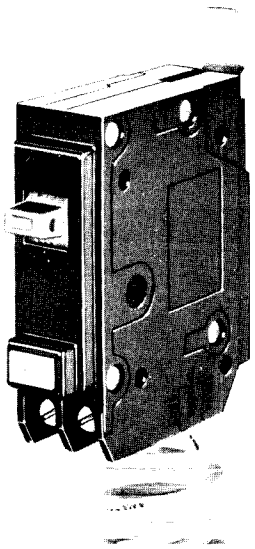
See tabulation on page 20.1.

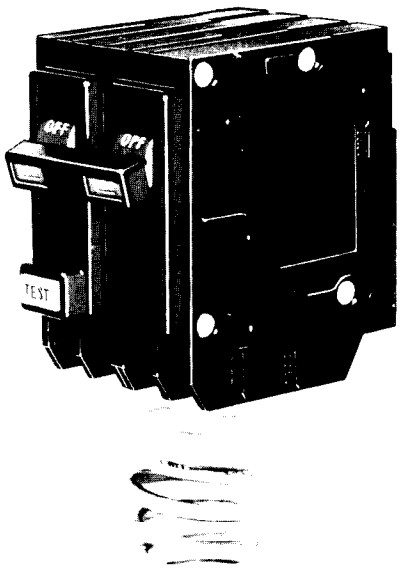
Terminals

Type P plug-in design has a female clamp-type line terminal which plugs onto the bus stab of a panelboard or loadcenter.

Type B bolt-on design has an extended tang line terminal that bolts directly to the panelboard bus connecting strap.

Load terminals are pressure-type connectors suitable for use with either copper or aluminum wire. 15 to 25 ampere breakers accept





#14-#10 Cu or #12-#8 Al, and 30 ampere breakers accept #14-#4 Cu or #8-#4 Al.

Installation

The load end of the breaker is inserted under the mounting clamp of a panelboard, and the line end is plugged onto the bus stab (or, in the case of bolt-on design, bolted to the bus connector strap).

The load end on single pole breakers has two terminals and a white "pigtail" wire. Two wires from the 120 volt load to be protected are brought into the panelboard and connected to the terminals. The black wire is connected to the terminal marked Load, and the white wire connected to the terminal marked Load Neutral. (These wires are shown passing through the monitor in Figure 1.) The "pigtail" is connected to the neutral bar in the panelboard.

Two pole breakers have three load terminals and a white pigtail. The colored hot load wires are connected to the outside load terminals. The white neutral wire (if used) is connected to the center terminal, identified by a white mark. The pigtail is connected to the panel neutral.

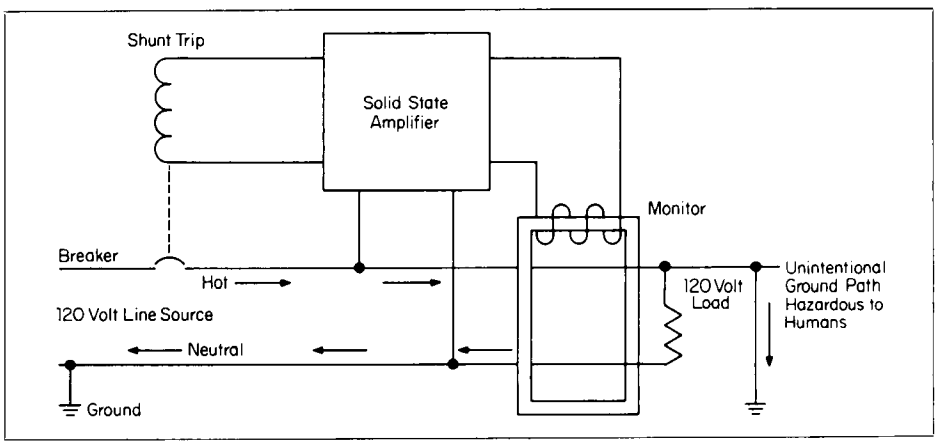


Figure 1

Operation

The Quicklag Ground Fault circuit breaker operates as any standard thermal magnetic breaker, providing protection against overloads and short circuits. The ground fault sensing circuit, Figure 1, monitors current flow in the load supply and return wires (which pass through the monitor) and opens the circuit when it senses a ground fault current of five milliamperes or greater.

Current flowing through a wire generates a magnetic field around the wire. Normally, at any one instant, the current flowing through the load supply and return wires are equal, and their magnetic fields cancel each other. Since there is no current imbalance, no current flows in the secondary winding of the monitor.

However, should an unintentional grounding of the load supply conductor occur, then an alternate path to the system ground would be established. The amount of fault current flowing depends upon the impedance (resistance) of the ground path. The resulting magnetic field, caused by the load supply current exceeding the load return current through the monitor, generates a voltage in the monitor causing current to flow in the secondary winding. This current imbalance is amplified and fed to the shunt trip, which trips the circuit breaker, opening the circuit to the load. After the ground fault condition has been corrected, the breaker is reset in the normal manner.

Ground Fault Characteristics

The 5 milliamp sensitivity rating offers adequate protection for human life, and minimizes unnecessary operation on small electrical impulses or leakage currents not dangerous to human life. The key to safety appears to be the amount of current an individual can withstand and yet be able to "let go". The 5 milliamp rating is below the known average "let go" current for both women and men.

The Westinghouse Quicklag Ground Fault circuit breaker is UL listed under Standard 943 as a class A, ground fault circuit interrupter, which is defined as a device that will trip when the fault current to ground is within the range of 5 through 264 milliamps. An inverse trip time which varies between 7.26 seconds at 5 MA and .024 seconds at 264 MA is specified.

Inspection and Maintenance

Good maintenance procedure calls for periodic inspection of electrical apparatus. Underwriters' Laboratories, Inc. suggests that the device be checked monthly, and a test record card is provided for this purpose.

Use caution when inspecting or removing the breaker from the circuit, the breaker should be in the Off position and if practical, the circuit should be deenergized.

A test button provides for a check of the electrical system of the ground fault sensing circuit, and the mechanical operations of the breaker.

Terminal lugs must be tight to prevent overheating. Due to the inherent wiping action built into the moving contacts of all Westinghouse circuit breakers, operating the breaker several times under load will remove any high resistance film that may have formed.

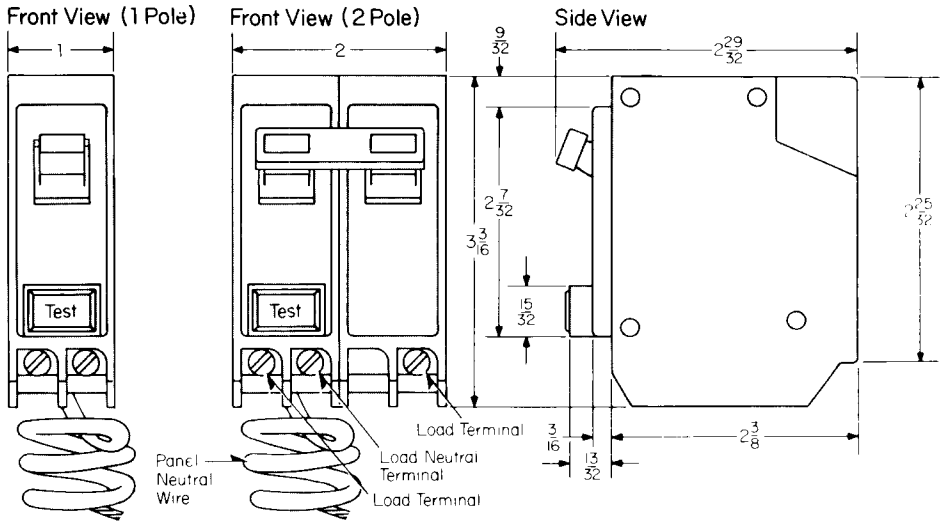
Further Information

Prices: Price List 29-020 P WE A
Ordering Data: Tech Data 29-120 T WE A
Dimensions: Dimension Sheet 29-170

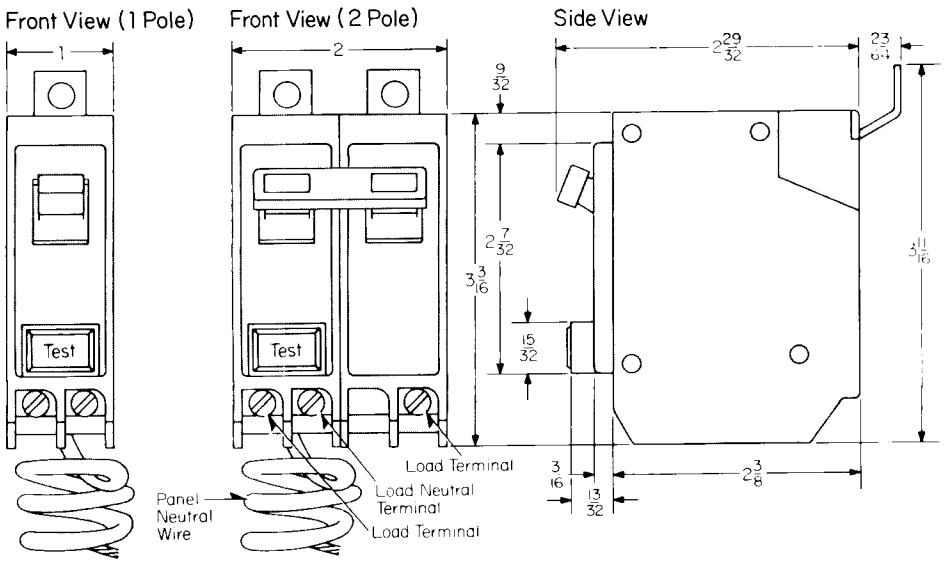
Dimensions, Inches.

Not to be used for construction purposes. See Dimension Sheet 29-170 for detailed dimensions.

Plug-In Breakers



Bolt-on Breakers



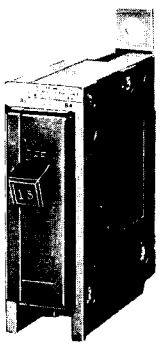
Printed in U.S.A.

September, 1976
Supersedes Application Data
29-160 all previous issues.
Mailed to: E, D, C/29-100A, 31-400A, 31-500A

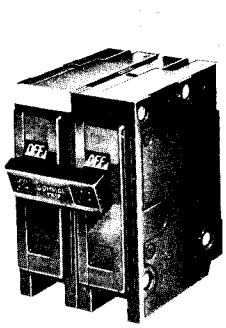
Standard Types BA, BAB and Quicklag® Type QBH, and MARK 75® Type HBA
10-125 Amperes, 120/240, 240, 277 Volts Ac
1, 2, 3 Poles

AB DE-ION® Circuit Breakers

1 Pole Type BA (277 Volt)

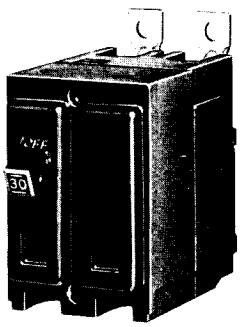


1 Pole Type BAB

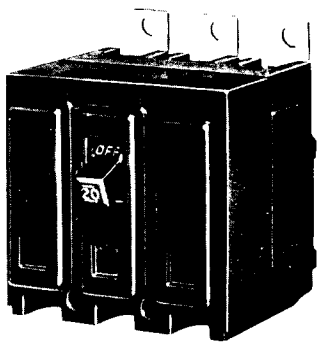


2 Pole Type BAB 120/240 Volt

1 Pole Type HBA, Type QBH



2 Pole Type BA, (240 Volt) Type HBA, Type QBH



3 Pole Type BA, Type HBA, Type QBH

Note: MARK 75 Cases Are of Gray Molded Material.

Continuous Ampere Ratings and Interrupting Capacities
Underwriters' Laboratories, Inc. Listed

Types BAB, BA
10,000 Amperes Sym. or Asym. I.C.①
1 Pole, 120/240 Volts Ac: 10 to 70 Amperes
2 Poles, 120/240 Volts Ac: 10 to 125 Amperes
2 Poles, 240 Volts Ac: 15 to 50 Amperes
3 Poles, 240 Volts Ac: 15 to 100 Amperes
1 Pole, 277 Volts Ac: 15 to 30 Amperes

Quicklag Type QBH
22,000 Amperes Sym., 25,000 Amperes Asym. I.C.
1 Pole, 120/240 Volts Ac: 15 to 70 Amperes
2 Poles, 120/240 Volts Ac: 15 to 100 Amperes
2 Poles, 240 Volts Ac: 15 to 50 Amperes
3 Poles, 240 Volts Ac: 15 to 100 Amperes

Mark 75 Type HBA
65,000 Amperes Sym., 75,000 Amperes Asym. I.C.
1 Pole, 120/240 Volts Ac: 15-30
2 Pole, 120/240 Volts Ac: 15-30
3 Pole, 240 Volts Ac: 15-20

Application
These circuit breakers are used primarily in panelboards where a bolted line terminal connection is required. Listed by Underwriters' Laboratories, Inc. On all three phase Delta, grounded B phase applications, refer to Westinghouse.

① Panelboards using these 10,000 I.C. breakers as branch breakers in series with CAH or QBH 22,000 amp I.C. main breakers can be listed for application at 22,000 amps.

Construction
Features of the Type BA, BAB & Quicklag QBH Breakers include arc quencher, quick-make, quick-break trip free mechanism, silver alloy contacts, electrically welded connections, and a molded case. The MARK 75 Type HBA has all the standard features, plus a higher grade molded case (identified by light gray color) for higher interrupting capacity. Two and three-pole breakers are common trip to insure simultaneous manual or automatic opening of all poles. Ferrous parts are chemically plated to insure corrosion resistance.

Federal Specification W-C-375b
See tabulation on page 20.1.

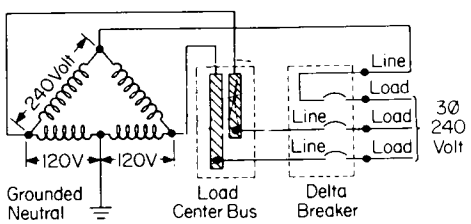
Terminals
Line terminals are provided in the form of an extended tang which bolts directly to the panelboard bus connecting strap.
Load terminals are as follows:

Type BA 277 volt: Pressure Type.
Type BA, HBA, Quicklag QBH:
Binding head screw up to 30 amp and pressure type on higher ratings.
Type BAB: Pressure Type

Thermal Magnetic Trip
These breakers are equipped with a thermal magnetic trip. On temporary overloads, the breaker will not trip. On sustained overloads beyond safe limits for wire, the bimetal will deflect, causing the breaker to trip. Instantaneous tripping is provided by a magnetic element under short circuit conditions. Trip elements are non-adjustable and non-interchangeable. These breakers are calibrated at 40°C as standard. Breakers applied in ambients higher than 40°C should be derated.

Switching Neutral Breakers
Type BA 10,000 Amps. I.C. Only
Switching neutral breaker is available in 2-pole, 15 and 20 ampere ratings. Its application is gasoline station dispensing pump circuits. Meets the requirements of NEC (Article 514-5); "Each circuit leading to or through a dispensing pump or island shall be provided with a switch or other acceptable means to disconnect simultaneously from the source of supply all conductors of the circuit including the grounded neutral, if any".

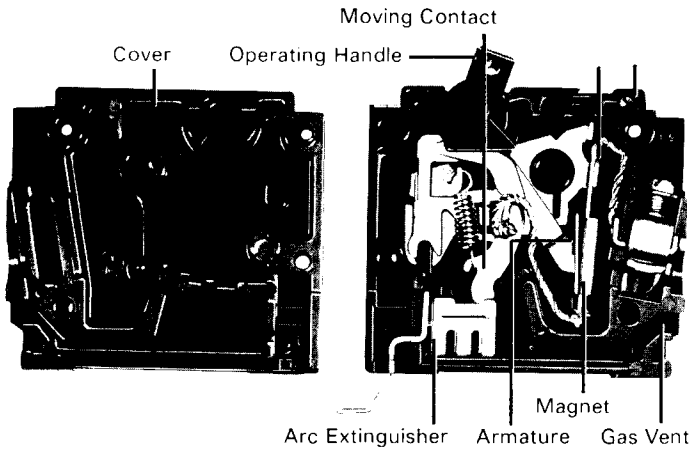
Delta Breakers
Type BA 10,000 Amps. I.C. Only



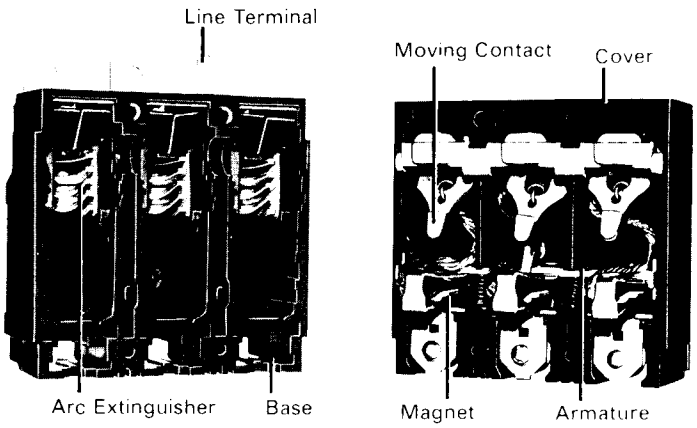
Engineered for 3-phase 4-wire 120/240 volt Ac delta applications which utilize 3-phase motor circuits, such as air conditioning and heat pump applications.

Typical Exploded View 120/240, 240 Volt Ac Breakers

1 Pole Type BAB



3 Pole Type BA



Operation
The breaker is shown in the "OFF" position. In tripping, the contacts part and the handle moves to a mid-way position. Moving handle to extreme "OFF" position resets the breaker and it can be restored to service by moving handle to "ON" position. These breakers are UL Inc. Listed for inverted mounting and reverse feed.

Mounting
The load end of the breaker is inserted under the mounting clamp of a panelboard and the line end is bolted to the bus connector strap.

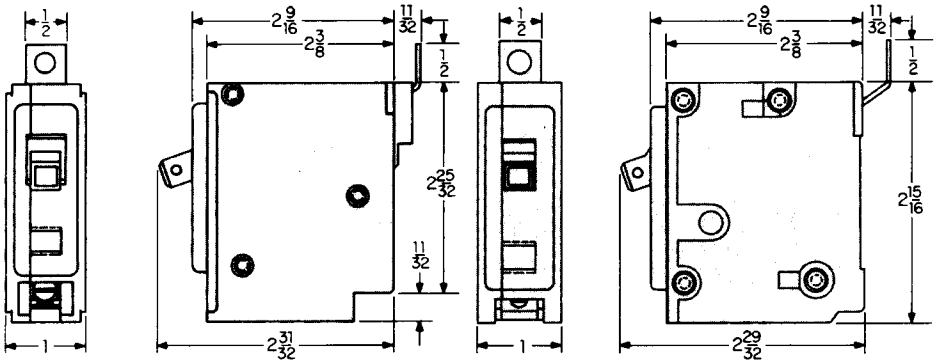
Circuit Breaker Removal
Before inspecting, installing, or removing from a circuit, the circuit breaker should be in the "OFF" position, and if practicable, the circuit should be de-energized.

Inspection and Maintenance
Good maintenance procedure calls for periodic inspection of all electrical apparatus including molded case circuit breakers. Terminal lugs must be tight to prevent overheating. Due to the inherent wiping action built into the moving contacts of all Westinghouse circuit breakers, operating the breaker several times under load will remove any high resistance film that may have formed.

Accessories and Modifications
Accessories and modifications available include: lockdog, handle locks for use with padlock, moisture and fungus treatment, and handle ties for using two single pole breakers for 120/240 volt 2 wire operation. Handle ties assure simultaneous switching, but allow either breaker to register independent trip positions.

Further Information
Prices: Price List 29-020 P WE A
Ordering Data: Tech Data 29-120 T WE A
Dimensions: Dimension Sheet 29-170
Trip Curves: Application Data 29-161 A WE A

Dimensions, Inches②
Not to be used for construction purposes. See Dimension Sheet 29-170 for detailed dimensions.



Type BA 277 Volt **Type BAB**

② 2-pole breaker is 2" wide, 3-pole is 3" wide.

Westinghouse Electric Corporation
Distribution and Control Business Unit
Electrical Components Division
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.