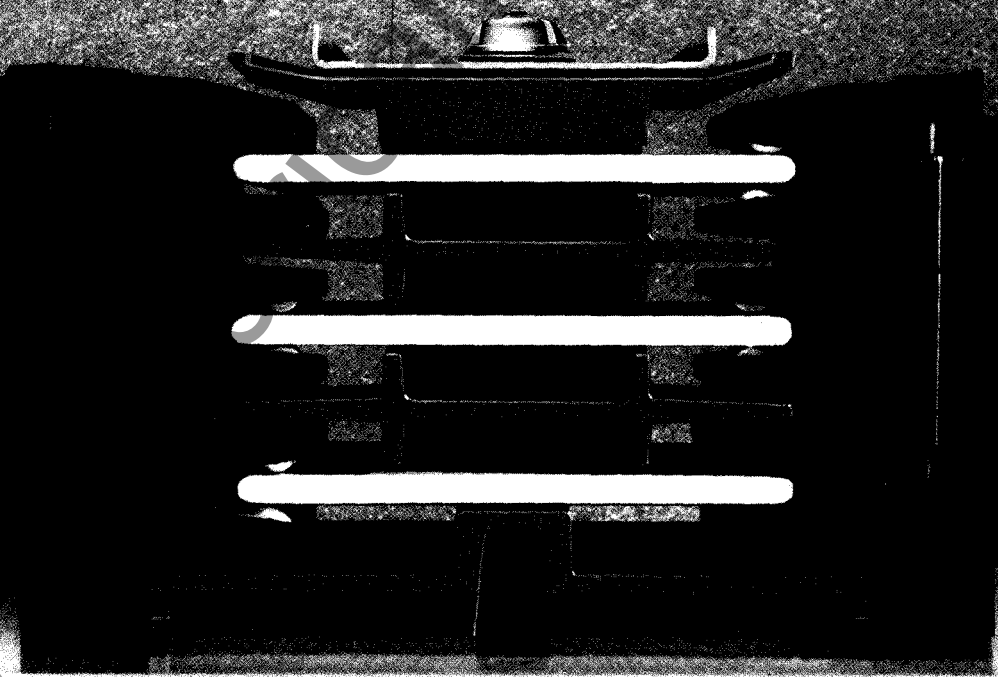


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# I-LINE<sup>®</sup> Circuit Breakers

The heart of any circuit breaker panel-board or switchboard is the circuit breaker, and we have a complete line of circuit breakers and molded case switches specifically designed for use in I-LINE panelboards and switchboards.

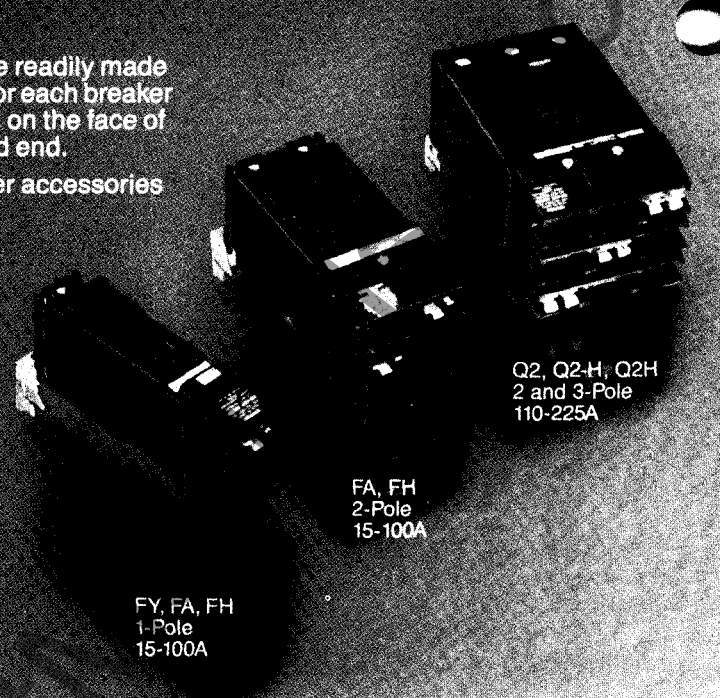
Each breaker is ready to mount, right from the factory-sealed carton, with permanently attached mounting brackets and line connections. And, each is loaded with features, including:

- Permanent trip—tamperproof and sealed at the factory.
- Interrupting ratings through 200,000 amperes.
- Common trip—prevents single-phasing of motors.
- Single magnetic adjustment—permits adjusting all poles simultaneously.

Correct connections are readily made since phase markings for each breaker pole are clearly marked on the face of each breaker at the load end.

Factory installed breaker accessories include:

- Shunt trip
- Undervoltage trip
- Alarm switch
- Auxiliary contacts



Q2, Q2-H, Q2H  
2 and 3-Pole  
110-225A

FA, FH  
2-Pole  
15-100A

FY, FA, FH  
1-Pole  
15-100A

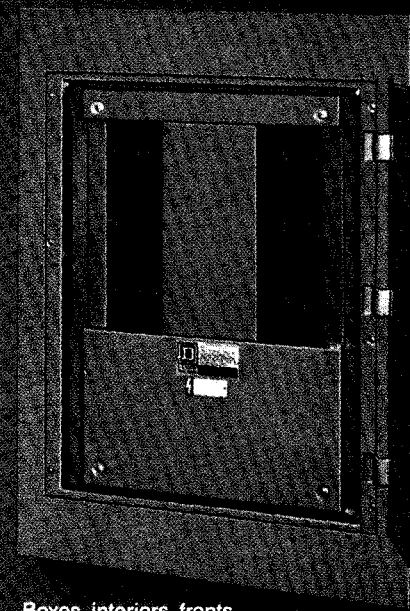
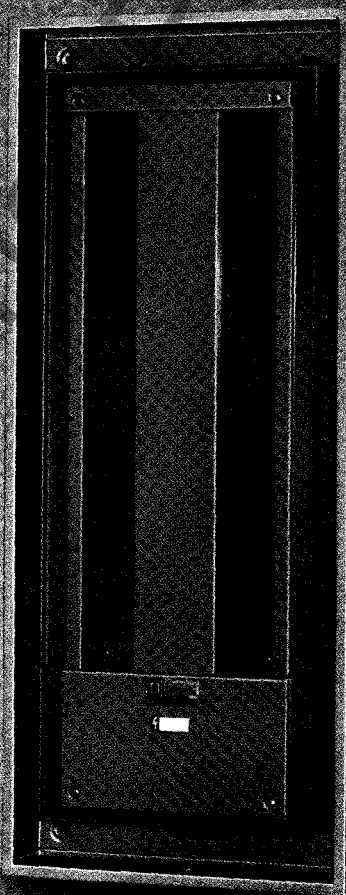
# I-LINE<sup>®</sup> Panelboards

I-LINE PANELBOARDS . . . delivery when you want it.

I-LINE panelboards are available custom assembled at the factory or as components from local distributor stock. Either way, you get the same tested design in a complete line of boxes, interiors, fronts, breakers, and accessories . . . on hand when you need them.

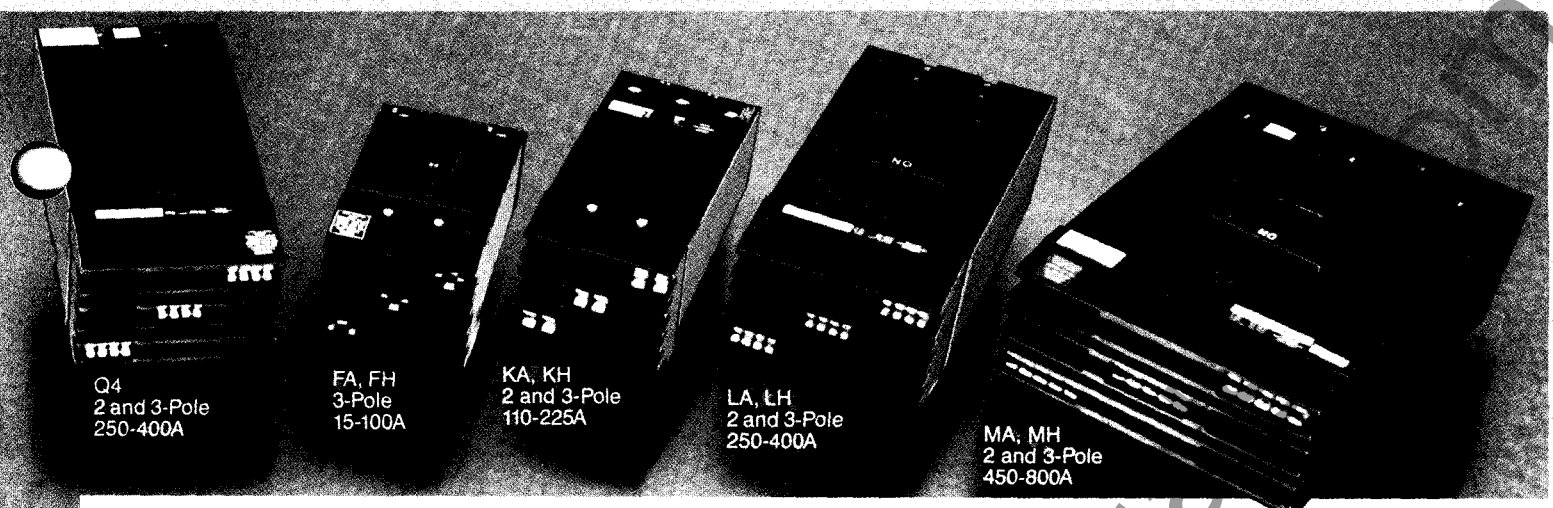
I-LINE panelboards are available with main breakers through 800 amperes and with main lugs through 1200 amperes. Main breaker and main lugs panelboards have 600 volt ac and 250 volt dc maximum ratings. In addition, each I-LINE panelboard has UL listed short circuit current ratings—indicating that they are suitable for use on systems with up to 20,000 rms symmetrical amperes at 240 or 480 volts ac when assembled with appropriately rated main or branch breakers.

Main breaker and main lugs panelboards have 600V ac and 250V dc maximum ratings.



Boxes, interiors, fronts, breakers and accessories are available as components or custom assembled.

2



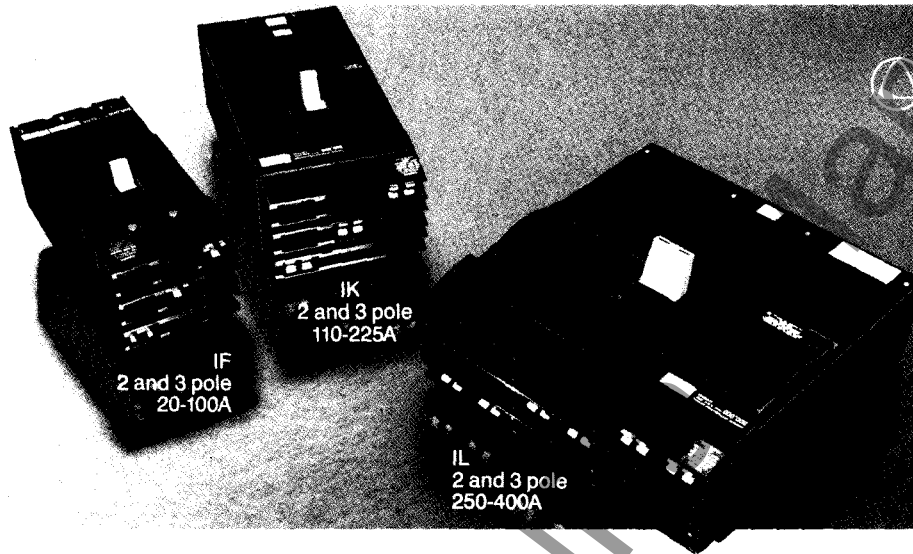
Q4  
2 and 3-Pole  
250-400A

FA, FH  
3-Pole  
15-100A

KA, KH  
2 and 3-Pole  
110-225A

LA, LH  
2 and 3-Pole  
250-400A

MA, MH  
2 and 3-Pole  
450-800A



IF  
2 and 3 pole  
20-100A

IK  
2 and 3 pole  
110-225A

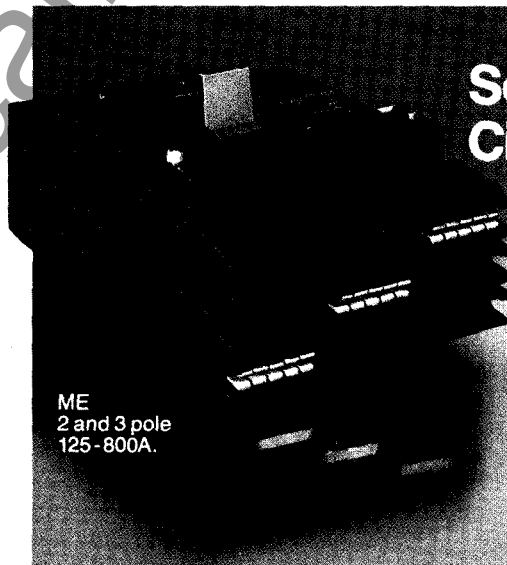
IL  
2 and 3 pole  
250-400A

## I-LIMITER™ Breakers

I-LIMITER circuit breakers combine a conventional high speed circuit breaker mechanism in series with a fuseless current limiting section. They are UL listed for use on systems capable of delivering fault currents up to 200,000 rms symmetrical amperes at 240 or 480 volts ac.

I-LIMITER circuit breakers mount in standard I-LINE® panelboards and switchboards.

## Solid State Trip Circuit Breakers

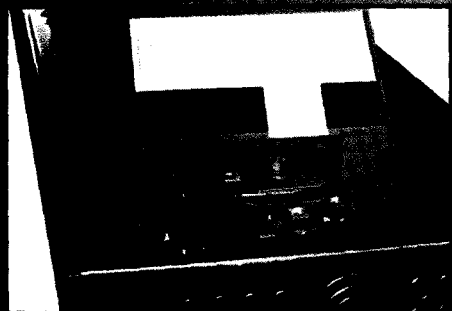


ME  
2 and 3 pole  
125-800A.

Solid state trip circuit breakers combine proven Square D molded case circuit breaker construction and features with advanced electronic technology. Tripping characteristics of solid state trip circuit breakers may be accurately adjusted to specific system requirements. Built-in slide switches provide adjustment of the AMPERE SETTING, the SHORT TIME PICKUP setting, and the GROUND FAULT TRIP DELAY time setting of the optional ground fault protection feature.

I-Line panelboards are suitable for systems with up to 200,000 rms symmetrical amperes at 240V or 480V ac.

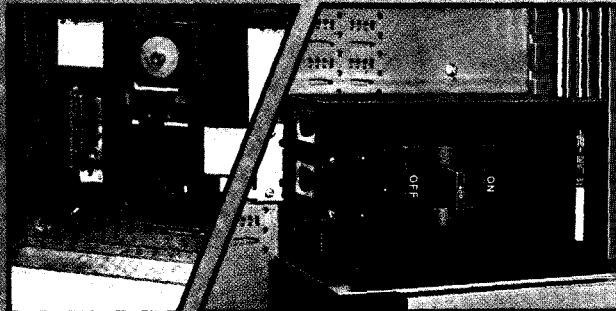
# Features and Accessories



## Main Lugs

Main lugs are located in a separate compartment which is completely isolated from the branch breaker section. A hinged cover permits access to this compartment. Lugs are front removable for ease of wiring. All connections are "straight-in" with Al/Cu lugs as standard.

All incoming main cables are the same length since the panelboard solid neutral is mounted adjacent to the main lugs in the same compartment. Side gutters and the end opposite the mains are open to facilitate branch wiring.



## Main Breakers

Factory installed main breakers in I-LINE<sup>®</sup> panelboards are mounted vertically. Main breakers are clearly identified and barriered. Main breakers are installed so that their operating handle is down when OFF and up when ON.

Main lugs interiors may be connected to main breaker interiors by simply back feeding a branch main breaker. All I-LINE circuit breakers are UL listed for use in any mounting position with either end as "line" or "load".

## Branch Breakers

I-LINE branch breakers mount on both sides of the vertical bus stack. Each breaker is individually mounted. Conventional panelboard design requires branch breakers to be mounted in pairs of the same frame size opposite each other. Modular I-LINE panelboard and switchboard construction permits branches to be mounted anywhere on the bus stack without restriction. You save waste space.

## Breaker Connections

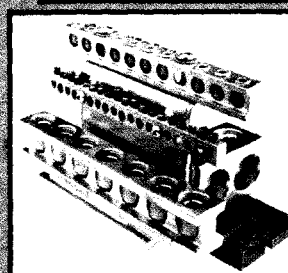
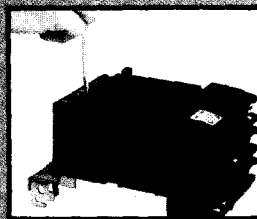
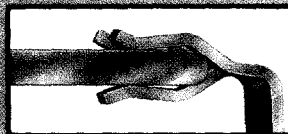
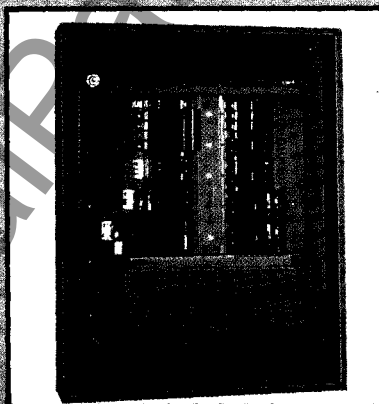
Breaker connections are "blow-on" type. Under high level fault conditions, the magnetic forces developed tend to clamp the jaws together, gripping the bus bar more firmly. Heavy connectors are plated for good conductivity at the contact.

## Push-To-Trip

A trip button is provided on the cover for mechanically tripping the circuit breaker. This allows maintenance checks of the breaker, control circuits, alarm devices and other associated equipment and exercises the trip mechanism.

## Solid Neutral

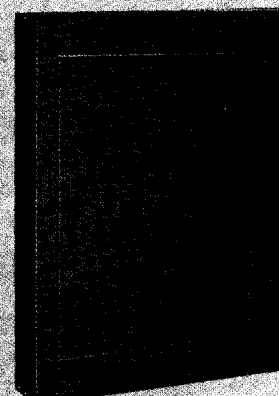
The solid neutral assembly mounts in the main lug or main breaker compartment. All incoming cables are the same length. Branch neutral connections are provided for a wide variety of breaker combinations and suitable for copper or aluminum wires. The solid neutral is insulated but can be bonded to the enclosure with a full capacity bonding strap for service entrance requirements.



## Cabinets

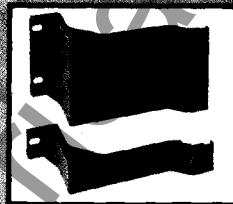
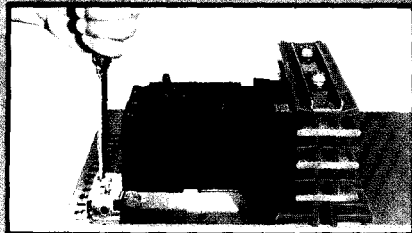
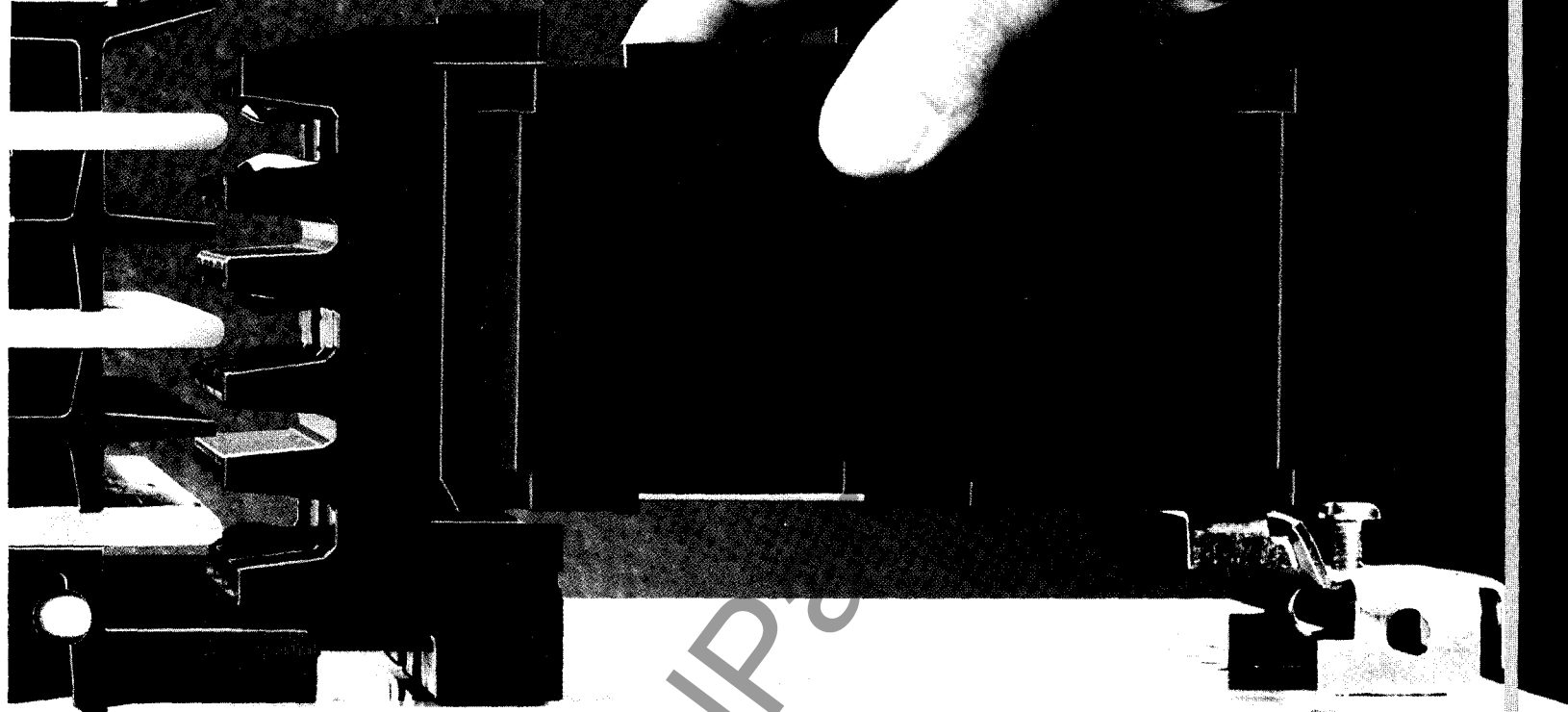
Panelboard boxes are constructed of code gauge steel with wiring cutters in accordance with UL and NEMA standards. 26" wide boxes are galvanized steel with a variety of knockouts. 32" and 42" wide boxes are finished in gray baked enamel and are supplied without knockouts. All sizes have removable endwalls.

I-LINE panelboard fronts are finished with gray baked enamel electrodeposited over cleaned phosphatized steel. Completely assembled trip devices are featured.



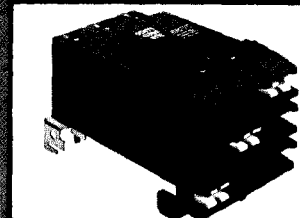
## Bussing

The I-LINE® panelboard gets its name from its unique single vertical main bus stack. Plated bus bars are supported continuously by molded polyester glass insulators. A large base insulator of the same material aligns with and supports branch breakers. The bus bar stack is held together securely between continuous steel channels with hardened steel bolts jacketed in high dielectric strength impact resistant polycarbonate.



## Blanks

Blanks are required to fill unused circuit breaker mounting space in panelboards or switchboards.

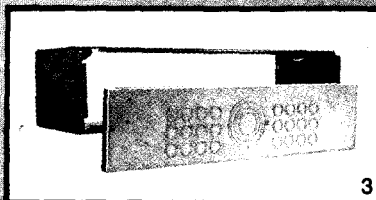
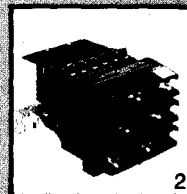
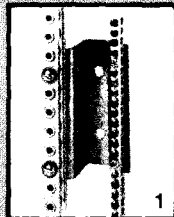


## Sub-Feed Lugs

Sub-feed lugs through 800 amperes plug-on in the same manner as a branch breaker.

## Breaker Mounting

Each breaker is all that's required to be inserted through 400 ampere busbar circuit breakers. The breaker is pushed firmly onto the busbar. A torque retaining screw is then inserted into the mounting slot. A 1/2 inch open end wrench is used to tighten 500 ampere frame breakers.



## Accessories

A wide variety of accessories and kits is available for field or factory addition to I-LINE panelboards.

1. Equipment ground bar kits are for termination of equipment grounding conductors.
2. Specifically designed QO® distribution panels mount in I-LINE panelboards the same as branch circuit breakers. This permits less expensive QO 15 through 30 ampere breakers to be installed to feed lighting or receptacle circuits from I-LINE panelboards installed on 240 volt systems.
3. UL listed box extension kits provide additional end gutter and facilitate feeding the rear of an I-LINE panelboard.

## POWER-STYLE® Switchboards

The innovative I-LINE concept is also featured in POWER-STYLE switchboards, of either single or double row construction. The I-LINE design offers complete flexibility for mounting branch circuit breakers of different frame sizes opposite each other or side by side.

I-LINE double row construction is designed for circuit breakers to be mounted on both sides of the bus assembly, thereby offering the maximum circuit breaker mounting space. Single row construction offers provisions for circuit breakers to be mounted on one side of the I-LINE bus assembly and requires less section width.

To meet UL requirements, each I-LINE section has been tested and has an approved short circuit current rating. This comprehensive rating is the maximum short circuit current rating of the entire switchboard, including busing, structure and circuit breakers, and is equal to the lowest interrupting capacity of any of the circuit breakers installed in the panel.

Ample conduit areas located in the top or bottom of the switchboard permit easy installation. Generous wireways for branch cables are located behind hinged covers on each side of the I-LINE panel. This feature makes the switchboard completely front accessible for easier installation and maintenance.

Whether used individually, as service or distribution sections, or in multi-section line-ups, I-LINE switchboards have the versatility to meet your needs.

## SPEED-D® Switchboards

The flexibility of the I-LINE design is also featured in SPEED-D switchboards. These merchandised switchboards are all UL listed and available from distributor or warehouse stock.

### Speed-D Multi-Section Switchboards

Merchandised SPEED-D multi-section switchboards provide main sections which contain either a main molded case circuit breaker or a main BOLT-LOC® fusible switch. These main sections can be furnished with or without ground fault protection and can be used for service entrance applications.

An I-LINE distribution section is available in the SPEED-D multi-section line to provide circuit breaker distribution in conjunction with the main section. I-LINE distribution sections provide a double row panel with 117" of branch circuit breaker mounting space.

Main and Distribution Section Rating:  
1200, 1600 or 2000 amperes  
Voltage: 240, 480 or 600 volts ac  
Dimensions: 91½" high, 24" deep and 48" wide

### Speed-D Service Section Switchboards

SPEED-D service section switchboards combine a hot sequence power company metering compartment, a main molded case circuit breaker and an I-LINE branch distribution panel in one single section. Each section can be used for service entrance requirements. A rainproof enclosure is also available for outdoor applications.

Mains Rating: 400, 600 and 800 amperes  
Voltage: 240 to 600 volts ac  
Systems: 1 $\phi$  3W, 3 $\phi$  3W or 3 $\phi$  4W  
Dimensions: 90" high, 14" deep and 24" or 30" wide

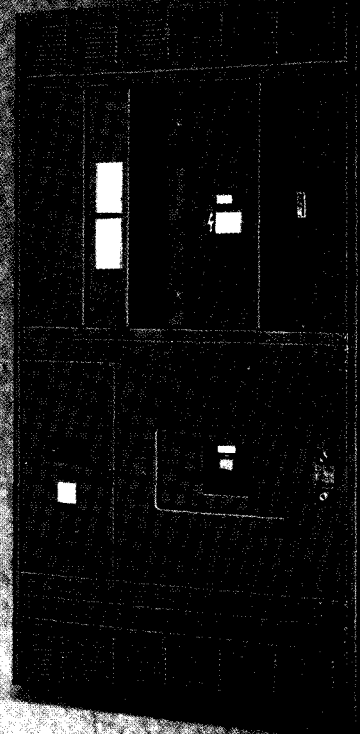
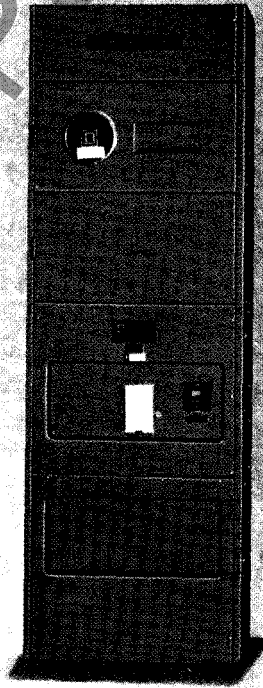
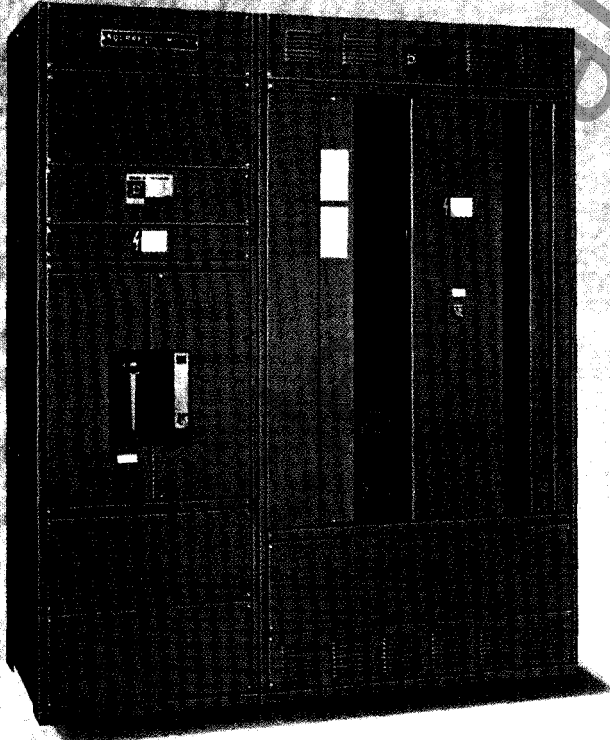
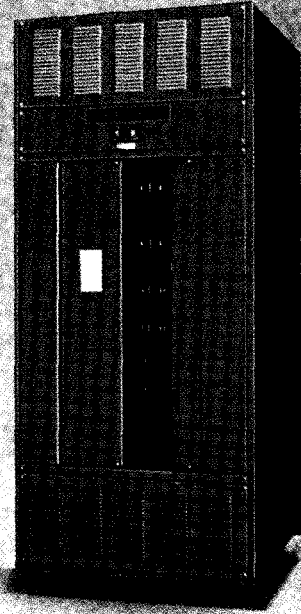
### Speed-D Service Distribution Switchboards

SPEED-D service distribution switchboards contain a main circuit breaker with a 31½" double row I-LINE panel which provides up to 43" of I-LINE branch circuit breaker mounting space. Each section can be used for service entrance applications. These switchboards are available with or without ground fault protection and are available for alternate cabinet feed applications.

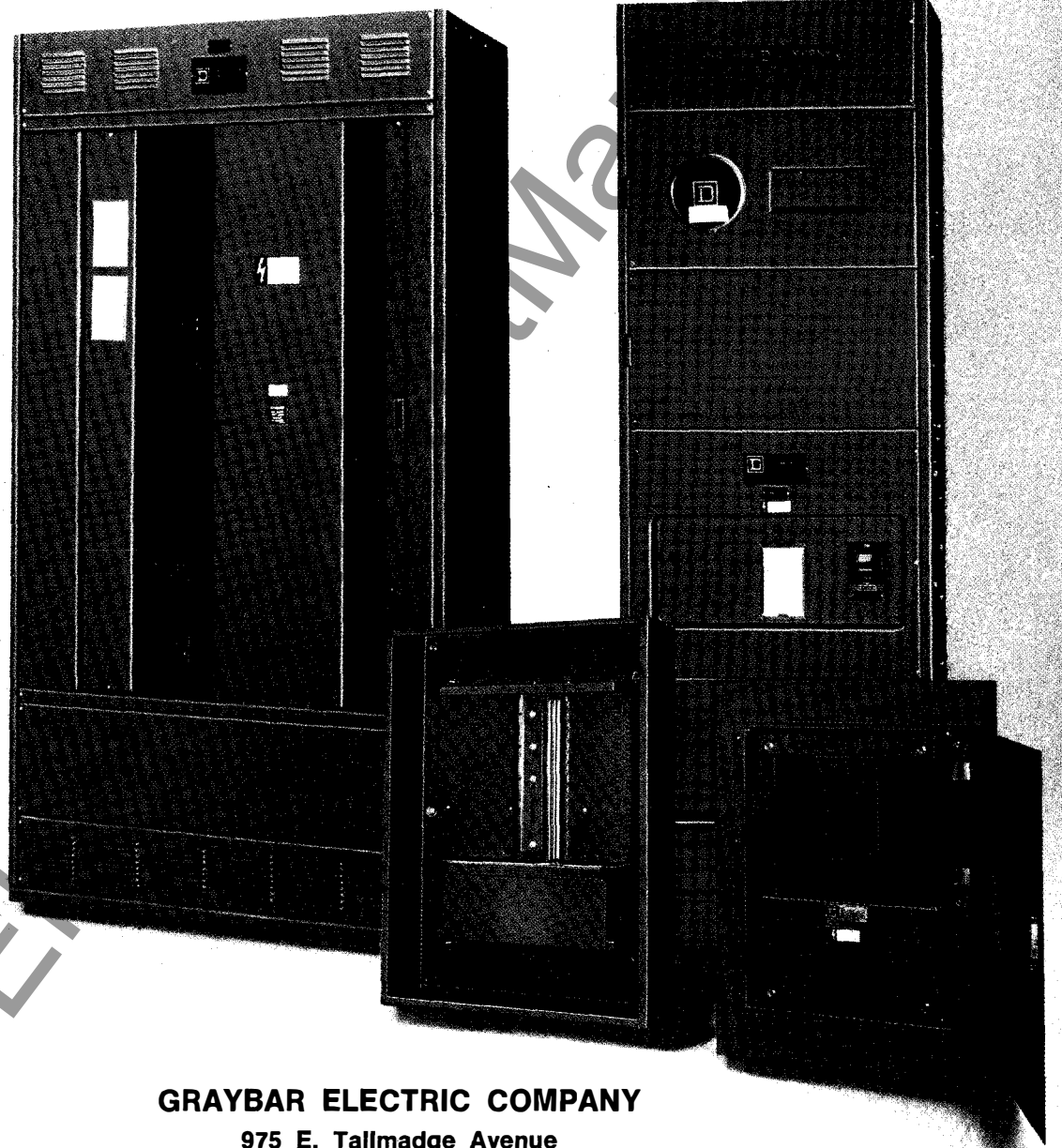
Mains Rating: 1000 or 1200 amperes  
Voltage: 240 or 480 volts ac  
Systems: 3 $\phi$  3W or 3 $\phi$  4W  
Dimensions: 90" high, 24" deep and 48" wide

**Switchboard Features**

- 4-1/2" Circuit Breakers
- Rated from 15 to 900 amp
- Panel Ratings 600V, 750V
- Panel Height 60" or 72"
- 2" or single row bus
- Voltage drop to 1000'
- 3000 lbs. weight
- 1000' max. cable length



Standard service/distribution  
switchboards contain a main  
circuit breaker and up to 63"  
of surrounding space.



**GRAYBAR ELECTRIC COMPANY**

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** SQUARE D COMPANY**