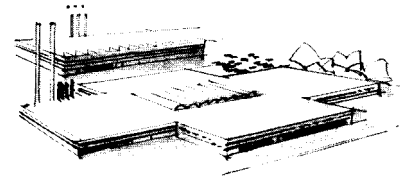
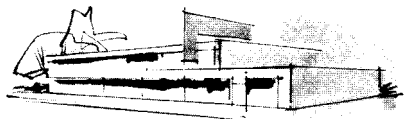


CIRCUIT BREAKER PANELBOARDS



... design leadership

What is "Panelboard Quality"?



Panelboards must be built for a long life of continuous duty. Seldom is even one circuit in a home loaded to its full rating—loads are light and usually intermittent. A commercial building presents a different situation—lights are usually left on for eight hours or more at a time. Lighting is fixed so circuits usually are loaded to capacity. An industrial plant may burn lights and operate machinery 24 hours a day, seven days a week.

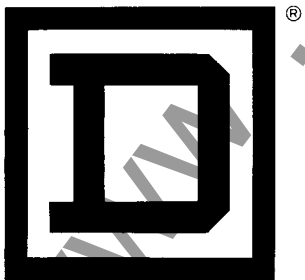
Because of this continuous duty, stores, offices, schools, hospitals, and industrial plants need high quality distribution equipment. They need devices which will stand up under adverse service conditions without nuisance outages and with maximum protection. Only panelboards—panelboards with panelboard quality protective devices—can properly do this job.

The Square D Company builds panelboards and panelboard circuit breakers to meet the service conditions found in commercial, institutional, and industrial buildings. These panelboards represent the ultimate in those features and details that comprise "Panelboard Quality."

PANELBOARD QUALITY HAS MADE **SQUARE D** THE **WORLD'S LEADING** PANELBOARD MANUFACTURER

It takes even more than trip indication, plated parts, box lugs, and the other important items to make a true panelboard. It takes little things, too—like a big $4\frac{3}{4}$ " x 6" directory card for each 21 circuits—like captive line side connection screws on lighting circuit breakers—and many other, seemingly small items. Square D panelboards have the features that make a quality panelboard—they are built to do what's expected of them.

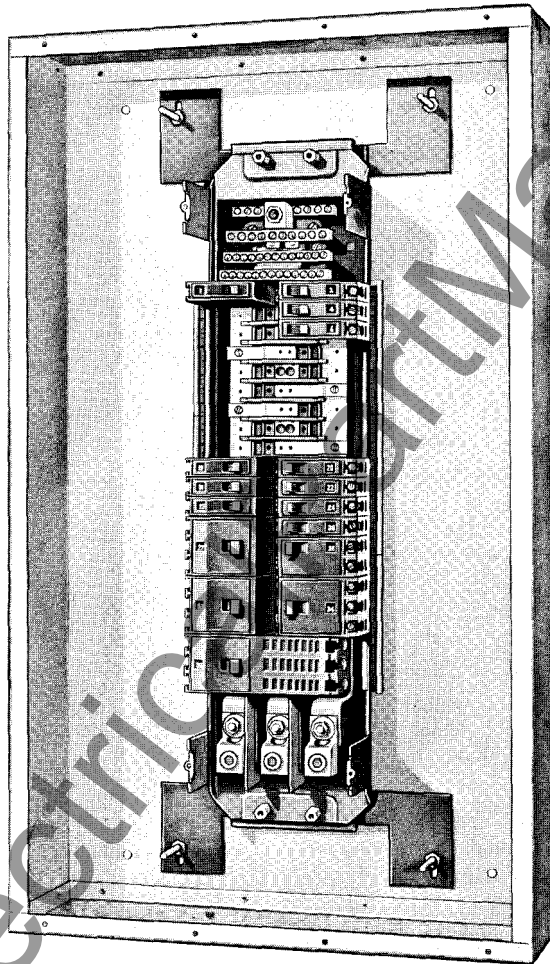
Your panelboards have a rough life ahead of them. Don't settle for less than the true panelboard quality found in all Square D panelboards . . . it costs no more.



the only truly modern line of Circuit Breakers

Consistent performance

Unnecessary outages can cause real problems. A circuit breaker that trips when it shouldn't can mean costly shutdowns, inconvenienced customers, even danger to personnel. Likewise, a breaker that doesn't trip when it should can be even more disastrous. Square D Company panelboards are built to give consistent performance. Circuit breakers are thoroughly tested and accurately calibrated. Ambient compensation prevents undamaging external heat from causing nuisance tripping. Solid connections prevent excessive internal heat.



Long Life—The heavy duty required of panelboards will mean trouble if electrical connections aren't made to stay tight. Square D panelboards utilize lock washers or spring loaded washers on all bolted connections. Simplified mounting design reduces the number of bolted connections required for each breaker. The positive pressure provided on plug-in connections is equal to that obtained with bolted connections. Box lugs for all cable connections insure tightness here, too.

Corrosion can also mean shortened panelboard life. Square D panelboard current carrying parts are all plated for corrosion resistance as well as cool operation. Painted steel parts have a rust inhibiting finish tested under severe conditions for maximum corrosion resistance. Unpainted steel parts are all protected by plating.

Flexibility—Changes in circuits are frequently required in panelboards. Although Square D's non-interchangeability system makes it difficult for unqualified personnel to make unsafe changes, qualified personnel can make circuit additions and arrangements quickly and surely. No loose parts are involved; mistakes can be corrected easily.

Compactness—Space costs money. Excessively large panelboards take valuable working area, take more time to install. Square D panelboards are the most compact on the market—thanks to design leadership that gives more, in less space, with even higher quality. Compactness also makes Square D panelboard interiors ideal for renovations using existing boxes.

Versatility—Panelboards are mounted in many places—structural columns, in high temperature areas, in low temperature areas. Without proper design, these installations can impose severe limitations on the application of panelboards. These unusual installations cause no problems with Square D panelboards. Column type panelboards for mounting in structural columns have distributed phase bussing—three pole breakers can be mounted anywhere. Breakers are all ambient compensated—high or low temperatures do not affect operation.

Economy

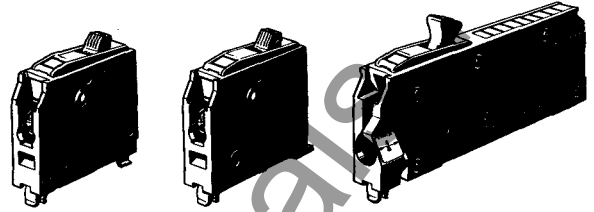
Square D panelboards, because of all the built-in quality features, save money in the long run. These features add up to fewer replacements, less down time, and surer protection for valuable equipment. Installation costs are reduced, too. Box lugs plus plenty of gutter space for all connections reduce wiring time. New, thoroughly tested compatible lugs permit the savings resulting from the use of aluminum cable.

BOARD BUILDER

Breaker Panelboards

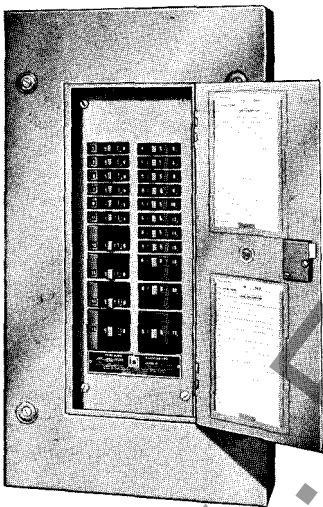
Combination Lighting Panelboards - 250 volts

WITH
PANELBOARD
QUALITY
CIRCUIT
BREAKERS



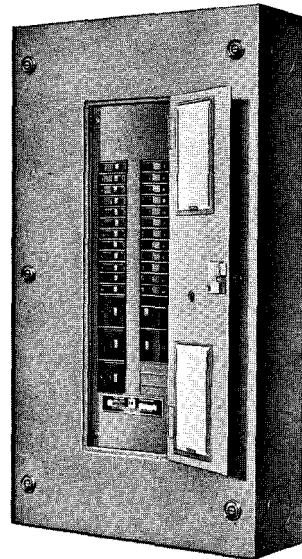
Square D Company offers the finest line of circuit breakers available for the control and protection of lighting and distribution loads. These breakers, built specifically for the heavy duty requirements of panelboards, feature quick make and break, trip free toggle operation, trip indication, box lugs on all ratings . . . plus exclusive features that reflect the design leadership which has made Square D the world's leading manufacturer of panelboards.

NQO



NQO panelboards utilize plug-in AC only QO and Q1 circuit breakers rated up to 100 amperes. These panelboards are available either factory assembled or as unassembled components from local distributor stock. NQO panelboards are ideal for installations in industrial plants where flexibility of circuitry is extremely important. Breakers can be removed or added in seconds. Extremely compact interiors mean extra circuits in existing boxes. The shallow box can be flush mounted in partition walls.

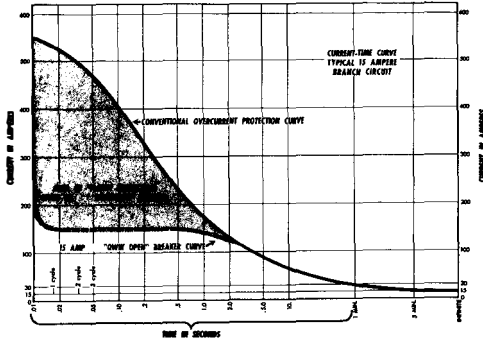
NQOB



NQOB panelboards also utilize AC only breakers rated up to 100 amperes. QOB and Q1B Breakers, with bolted line side connection, offer all the features of the QO and Q1. Standard boxes provide extra large side and end gutters. Side gutters are large enough to permit taps from 500 MCM thru-feed cables. When required, A1B E frame breakers can be combined in NQOB panelboards without special connectors, bus bar drilling, or sub-feeds.

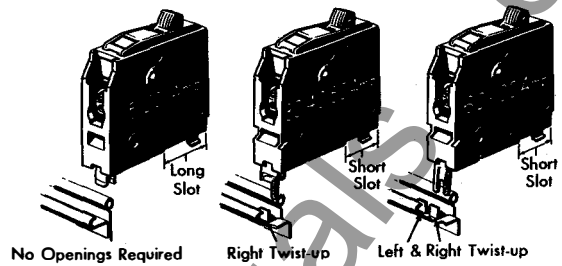
the only truly modern line of

FLASH PROTECTION



FLASH PROTECTION is standard on all lighting circuit breakers—including the A1B E frame. A frayed flexible cord can cause an arcing short circuit. Very little current (only 200 or 250 amperes) can produce a dangerous arc. Conventional overcurrent protection will clear this type of short circuit in 3 or 4 cycles—plenty of time for repeated flashing to start a fire. Flash protection, on the other hand, means that these faults will be safely cleared in less than one cycle—the breaker opens on the first flash.

CLASS NI



CLASS NI—All 250 volt, 100 ampere maximum panelboard breakers are Underwriters' Laboratories approved Class NI. All use the same simple non-interchangeable system to meet the requirements of Article 240-25 (g) of the 1959 National Electrical Code. Completely visible, this system is not only foolproof but also the easiest to work with of any method yet devised. There is no extra work with 15 and 20 ampere branches (80% of the circuits), no loose parts, and no restrictions on changing breakers in the same class. All of these features are provided as standard at no extra cost.

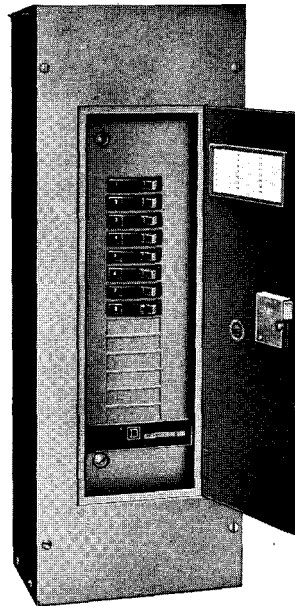
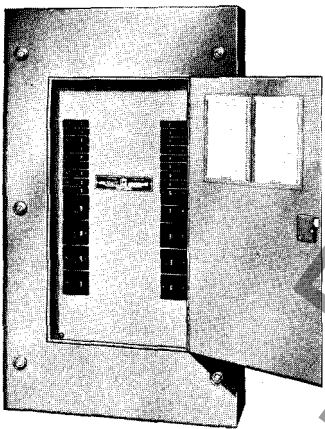
AMBIENT TEMPERATURE COMPENSATION is provided on all circuit breaker types at no extra cost. The breaker automatically compensates for changes in outside temperature permitting it to carry full NEC loading (80% of rating) in ambient room temperatures as high as 120° F.

NA1B

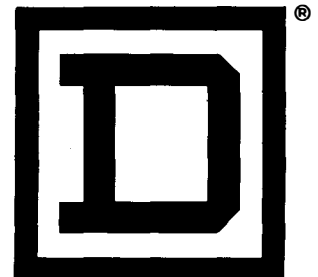
NA1B panelboards—the only truly modern E frame panelboards—offer the finest in panelboard protection. Rated for AC or DC systems, the NA1B also offers additional AC interrupting capacity—over and above that of AC only panelboards—ideal for high capacity systems found in large buildings. A1B E frame breakers offer flash protection and ambient compensation—features never before available on E frame breakers—in addition to the complete ratings generally associated with E frame breakers.

COLUMN WIDTH

Industrial plants need centralized panelboard locations for economical power distribution. In many cases, panelboards must be mounted on structural "I" or "H" beams. Square D offers two box sizes for NQO and NQOB panelboards to fit either 8" WF or 10" WF structural columns. NA1B panelboards are available for mounting in 10" WF columns. All column type panelboards have distributed phase bussing permitting three pole breakers to be mounted anywhere.



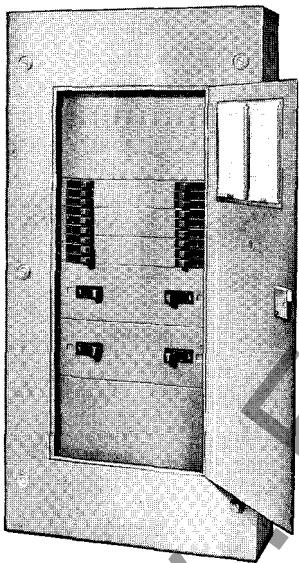
Circuit Breaker Panelboards



POWER PANELBOARDS 480 or 600 VOLTS

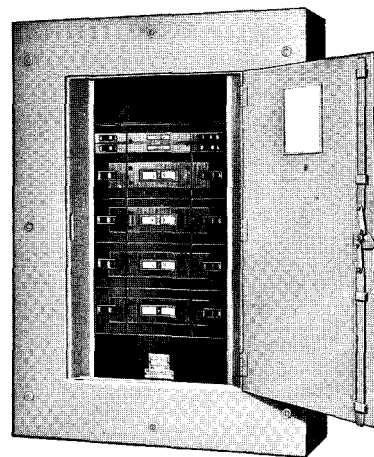
Square D power panelboards provide the finest in protection for all 480 and 600 volt power loads as well as larger 240 volt loads. A complete line of compact, fully rated, circuit breakers insures proper breaker selection for any type of load. Branch circuit breakers are available in continuous current ratings up to 1000 amperes and interrupting capacities up to 50,000 amperes at 240 volts. Circuit breakers are furnished with non-interchangeable trip units in ratings up to 225 amperes. Breakers rated over 225 amperes are provided with interchangeable trip units. Square D power panelboards are also designed to permit the combination of 120 volt or 277 volt lighting circuits with power circuits.

Maximum flexibility plus the ultimate in reliable protection is inherent in this line.



NY1B

NY1B panelboards are designed for the protection and distribution of 277 volt lighting circuits and 480 volt power circuits. Any combination of circuits up to 100 amperes can be easily accommodated. Boxes only 20" wide by 5 $\frac{3}{4}$ " permit considerable space savings over the larger power panelboards formerly required for two and three pole 480 volt circuit breakers rated up to 100 amperes. NY1B panelboards with single pole circuits are also available in column type construction to fit 10" WF structural columns.



ML

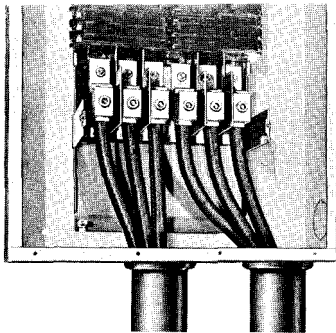
ML panelboards provide the capacity for controlling large amounts of power at any voltage up to 600 volts AC or 250 volts DC. Heavy duty construction is featured throughout every detail of these panelboards. Lugs for copper or aluminum conductors are provided. Uniform bus drillings and simplified mounting provide the flexibility necessary for industrial applications.



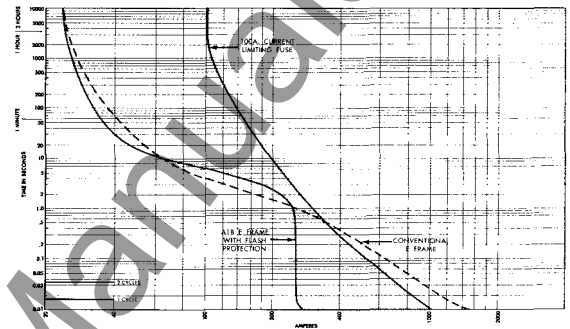
the only truly modern line

UNUSUAL APPLICATION?

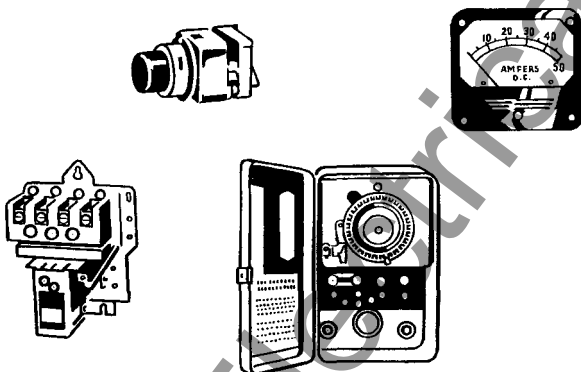
Square D panelboards are readily adaptable for use in a variety of applications. Modern design has eliminated the need for "factory specials" in many cases. Completely standard components may be used when sub-feeds, thru-feeds, extra gutters and other features are required. For unusual applications, custom tailored panelboards are readily available from strategically located Regional Assembly Plants.



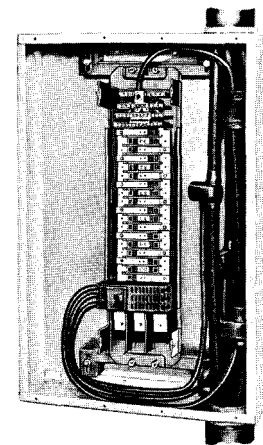
Sub-Feeds: The use of sub-feed lugs permits one feeder to supply two adjacent panelboards. Kits for field assembly of the lugs are available for use on 100 or 225 ampere NQO, NQOB, NA1B panelboards. Standard 400 ampere NQO, NQOB, NA1B, and NY1B panelboards are provided with lugs for parallel cables—#00 to 500 MCM. When feeding with one 500 MCM cable, the second lugs on each phase can be used for sub-feeding.



High-Fault Currents: The instantaneous magnetic trip point used to provide flash protection permits coordination of lighting breakers with lower amperage current limiting fuses without nuisance fuse blowing. There is no need to use oversize fuses. Your Square D field engineer has complete details. For larger circuits, high interrupting capacity and current limiting circuit breakers can be supplied in type ML panelboards.

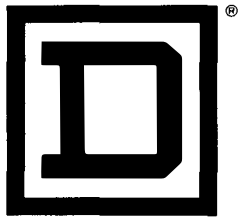


Special Combinations: Square D has had years of experience in the manufacture of panelboards with special features. With this experience and volume, Square D is able to provide custom tailored panelboards of any description, quickly and professionally. Whether it be contactors, push buttons, time clocks, or other items, call on Square D for the very best in quality construction and professional appearance.



Thru-Feeds: When two or more panelboards are located on different floors of a building, it is usually economical to utilize "thru-feed" risers to supply them. The panelboards are fed from the risers by means of gutter taps. Since these taps are made in the panelboard gutters, extra space is required. Standard NQOB and optional standard NQO are furnished with 6½" gutters suitable for tapping risers up to 500 MCM. Other panelboard types can also be furnished with extra gutters to accommodate these thru-feed risers.

of Circuit Breaker Panelboards



CIRCUIT BREAKER PANELBOARDS

PANELBOARD SELECTION TABLE

Type	Service	Maximum Mains Rating		Panelboard Mounting	Maximum Branch Ratings			Connection
		Lugs	Main Breaker		Rating	Type	Frame	
NQO	120/208 V. A.C. 120/240 V. A.C. 240 V. A.C.	600 A.	400 A.	Flush or Surface	15-100 A. 1, 2, 3 Pole	QO & Q1	Plug-In	
		225 A.	100 A.	8" WF or 10" WF Column	15-70 A. 1, 2, 3 Pole	QO		
NQOB	120/208 V. A.C. 120/240 V. A.C. 240 V. A.C.	600 A.	400 A.	Flush or Surface	15-100 A. 1, 2, 3 Pole	QOB & Q1B	Bolted	
		225 A.	100 A.	8" WF or 10" WF Column	15-70 A. 1, 2, 3 Pole	QOB		
NA1B	120/208 V. A.C. 120/240 V. A.C. 240 V. A.C. 125/250 V. D.C.	600 A.	400 A.	Flush or Surface	15-100 A. 1, 2, 3 Pole	A1B	E	Bolted
		225 A.	100 A.	8" WF or 10" WF Column	15-50 A. 1, 2, 3 Pole	A1B	E	
NY1B	277/480 V. A.C. 480 V. A.C.	400 A.	400 A.	Flush or Surface	15-100 A. 1, 2, 3 Pole	Y1B & ML-1	EH	Bolted
		225 A.	100 A.	8" WF or 10" WF Column	15-30 A. 1 Pole	Y1B	EH	
ML	125/250 V. A.C.-D.C. 250 V. A.C.-D.C. 120/208 V. A.C. 277/480 V. A.C. 480 V. A.C. 600 V. A.C.	1200 A.	1000 A.	Flush or Surface	15-100 A. 1 Pole	A1B Y1B & ML-1 ML-3	E EH F	Bolted
					15-1000 A. 2, 3 Pole	JKL LM	J JKL LM	

* Available with 2 and 3 pole type A1B, E frame branches.

CIRCUIT BREAKER SELECTION TABLE

Breaker Type	Breaker Frame Size	Ampere Ratings	INTERRUPTING CAPACITY (Based on NEMA Test Procedures)										Fed. Specs. WP 131a Breaker Class
			120 V. A.C.		240 V. A.C.		480 V. A.C.		600 V. A.C.		125/250 V. D.C.	250 V. D.C.	
			Asym.	Sym.	Asym.	Sym.	Asym.	Sym.	Asym.	Sym.			
QO Q1		15- 50 A. 70-100 A.	5,000 A. 5,000 A.	5,000 A. 5,000 A.	5,000 A. 5,000 A.	5,000 A. 5,000 A.	.....	.....	.....	.....	.....	.....	A A
QOB Q1B		15- 50 A. 70-100 A.	5,000 A. 5,000 A.	5,000 A. 5,000 A.	5,000 A. 5,000 A.	5,000 A. 5,000 A.	.....	.....	.....	.....	.....	.....	A A
A1B Y1B	E	15-100 A.	7,500 A.	7,500 A.	7,500 A.	7,500 A.	.....	.....	.....	.....	5,000 A.	.....	C
	EH	15- 30 A.	.....	.....	†10,000 A.	†10,000 A.	.....	.....	.....	.....	.....	.....	D
ML-1	EH	15-100 A.	.....	.....	15,000 A.	14,000 A.	15,000 A.	14,000 A.	.....	.....	.....	.....	D
	F	15-100 A.	.....	.....	20,000 A.	18,000 A.	15,000 A.	14,000 A.	15,000 A.	14,000 A.	.....	5,000 A.	
ML-3 JKL LM	J	125- 225 A.	.....	.....	25,000 A.	22,000 A.	20,000 A.	18,000 A.	15,000 A.	14,000 A.	.....	10,000 A.	D, E D, E D, E
	JKL	125-400 A.	.....	.....	50,000 A.	42,000 A.	35,000 A.	30,000 A.	25,000 A.	22,000 A.	.....	20,000 A.	
	LM	125-1000 A.	.....	.....	50,000 A.	42,000 A.	35,000 A.	30,000 A.	25,000 A.	22,000 A.	.....	20,000 A.	

† Rating applies to 277 V. A.C. or less.

SQUARE D COMPANY
Wherever Electricity is Distributed and Controlled