



Standard Accessories



CATALOG NO.	ITEM	LIST
M ELFA-714	3 Phase Bus connection 39 inches (1000 mm)	\$101.00
M ELFA-085	Protective Cap for Finger Safe	\$ 1.70
M ELFA-760	Bus Bar End Cap	\$ 2.30
M ELFA-947	Terminal for Bus Bar	\$ 4.00
M ELFA-940	Lock Out for 1, 2, 3, pole	\$ 14.00
M ELFA-80904	Enclosure for up to 4 Poles*	\$ 90.00
M ELFA-80906	Enclosure for 6 Poles*	\$ 130.00

* Includes Lid over Breaker Handle.

* Meets IP 557 dust tight, rain tight - All directions.

Discount Schedule M

6. The modular equipment program

Elfa miniature circuit breakers can be combined with residual-current trips, remote-control drives and auxiliary contacts. As variants they are also intended for direct-current systems, marine construction and railway engineering as well as for plants at increased ambient temperatures.

Your advantage

Using the complete delivery program widely different duties can be rationally and economically performed by compact equipment combinations. Supplementary elements can be fitted on later.

7. The remote-control facility

Elfa miniature circuit breakers up to 63 A current rating with remote-control drive can be switched on and off over distances by press of a button.

Your Advantage

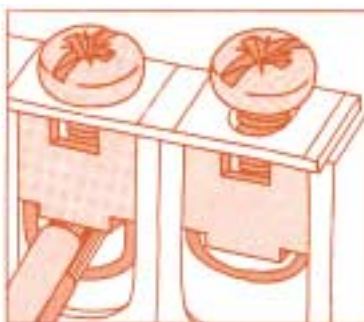
Elfa miniature circuit breakers do not have to be mounted within hand reach.

8. The input terminal

The large-sized input box terminal permits both the connection of conductors up to 35 mm², (#2 AWG) and simultaneous busbar connection. Elfa miniature circuit breakers of more than 63 A current rating can even clamp conductors up to 70 mm², (#2/0 AWG).

Your advantage

Elfa miniature circuit breakers save supplementary terminals and reduce installation costs.



9. The output terminal

Elfa miniature circuit breakers have box terminals that are safe to the touch and open as delivered for conductor cross-sections of at least 25 mm², (# 18-4 AWG).

Your Advantage

Short installation times and simple wiring of multistrand conductors.

10. The protective cover

Elfa miniature circuit breakers rated up to 63 A are provided with protective covers on the output terminal, thus providing protection against physical



contact in accordance with the relevant standards.

11. The operating toggle

Elfa miniature circuit breakers have color coded switch position indicators. If the green marking is visible, the switch contacts are open, if the red marking is visible, the switch contacts are closed.



APPROVALS

UL (UL 1077), CSA RATINGS
277/480 VAC (0.5 TO 63A) @ 10KA
347/600 VAC (0.5 TO 32A) @ 2KA

Approvals International Type E80 and E80S
Breakers are used worldwide and meet international standards:
CE, IEC, VDE, OVE, SEV, CEPEC, KEMA, BS, DEMKO, SEMKO, NEMKO, SETI, IMQ, UNESA, LRS, BV, GL, USSR, ROS, DNV.

European Standard Ratings
240/415 VAC, 6 to 110 Volt DC

UL 1077 Standard for Supplementary Equipment. UL 1077 is used for over current protection within electrical equipment, where branch circuit protection is already provided or not required.

1 Pole

2 Pole

3 Pole

APPROVALS
UL/CSA

UL (UL 1077), CSA Ratings
277/480VAC (0.5A to 63A)
@ 6KA, 10KA

TYPE E 80S, 1, 2, 3 Pole

"B" Trip Characteristic (10 KA)				"C" Trip Characteristic (10 KA)				"D" Trip Characteristic (10 KA)			
Amps	Catalog No.	List Each	Pack Qty.	Amps	Catalog No.	List Each	Pack Qty.	Amps	Catalog No.	List Each	Pack Qty.
-	-	-	-	0.5	ME81S C0.5	\$40	10	0.5	ME81S D0.5	\$45	10
-	-	-	-	1	ME81S C1	\$40	10	1	ME81S D1	\$45	10
-	-	-	-	2	ME81S C2	\$40	10	2	ME81S D2	\$45	10
-	-	-	-	3	ME81S C3	\$40	10	3	ME81S D3	\$45	10
-	-	-	-	4	ME81S C4	\$40	10	4	ME81S D4	\$45	10
-	-	-	-	5	ME81S C5	\$40	10	5	ME81S D5	\$45	10
6	ME81S B6	-	10	6	ME81S C6	\$40	10	6	ME81S D6	\$45	10
10	ME81S B10	-	10	10	ME81S C10	\$40	10	10	ME81S D10	\$45	10
13	ME81S B13	Same List as "C" Trip	10	13	ME81S C13	\$40	10	13	ME81S D13	\$45	10
-	-	-	-	15	ME81S C15	\$40	10	15	ME81S D15	\$45	10
16	ME81S B16	-	10	16	ME81S C16	\$40	10	16	ME81S D16	\$45	10
20	ME81S B20	-	10	20	ME81S C20	\$40	10	20	ME81S D20	\$45	10
25	ME81S B25	-	10	25	ME81S C25	\$42	10	25	ME81S D25	\$47	10
-	-	-	-	30	ME81S C30	\$44	10	30	ME81S D30	\$49	10
32	ME81S B32	-	10	32	ME81S C32	\$44	10	32	ME81S D32	\$49	10
40	ME81S B40	-	10	40	ME81S C40	\$48	10	-	-	-	-
50	ME81S B50	-	10	50	ME81S C50	\$52	10	50	*ME881S D50	\$105	8
-	-	-	-	60	ME81S C60	\$68	10	-	-	-	-
63	ME81S B63	-	10	63	ME81S C63	\$68	10	63	*ME881S D63	\$105	8
80	*ME881S B80	-	8	80	*ME881S C80	\$107	8	80	*ME881S D80	\$112	8
100	*ME881S B100	-	8	100	*ME881S C100	\$113	8	100	*ME881S D100	\$118	8
125	*ME881S B125	-	8	125	*ME881S C125	\$151	8	-	-	-	-
-	-	-	-	0.5	ME82S C0.5	\$84	6	0.5	ME82S D0.5	\$94	6
-	-	-	-	1	ME82S C1	\$84	6	1	ME82S D1	\$94	6
-	-	-	-	2	ME82S C2	\$84	6	2	ME82S D2	\$94	6
-	-	-	-	3	ME82S C3	\$84	6	3	ME82S D3	\$94	6
-	-	-	-	4	ME82S C4	\$84	6	4	ME82S D4	\$94	6
-	-	-	-	5	ME82S C5	\$84	6	5	ME82S D5	\$94	6
6	ME82S B6	-	6	6	ME82S C6	\$84	6	6	ME82S D6	\$94	6
10	ME82S B10	-	6	10	ME82S C10	\$84	6	10	ME82S D10	\$94	6
13	ME82S B13	Same List as "C" Trip	6	13	ME82S C13	\$84	6	13	ME82S D13	\$94	6
-	-	-	-	15	ME82S C15	\$84	6	15	ME82S D15	\$94	6
16	ME82S B16	-	6	16	ME82S C16	\$84	6	16	ME82S D16	\$94	6
20	ME82S B20	-	6	20	ME82S C20	\$84	6	20	ME82S D20	\$94	6
25	ME82S B25	-	6	25	ME82S C25	\$90	6	25	ME82S D25	\$100	6
-	-	-	-	30	ME82S C30	\$94	6	30	ME82S D30	\$104	6
32	ME82S B32	-	6	32	ME82S C32	\$94	6	32	ME82S D32	\$104	6
40	ME82S B40	-	6	40	ME82S C40	\$102	6	-	-	-	-
50	ME82S B50	-	6	50	ME82S C50	\$110	6	50	*ME882S D50	\$266	4
-	-	-	-	60	ME82S C60	\$124	6	-	-	-	-
63	ME82S B63	-	6	63	ME82S C63	\$124	6	63	*ME882S D63	\$266	4
80	*ME882S B80	-	4	80	*ME882S C80	\$278	4	80	*ME882S D80	\$288	4
100	*ME882S B100	-	4	100	*ME882S C100	\$294	4	100	*ME882S D100	\$304	4
125	*ME882S B125	-	4	125	*ME882S C125	\$393	4	-	-	-	-
-	-	-	-	0.5	ME83S C0.5	\$146	4	0.5	ME83S D0.5	\$161	4
-	-	-	-	1	ME83S C1	\$146	4	1	ME83S D1	\$161	4
-	-	-	-	2	ME83S C2	\$146	4	2	ME83S D2	\$161	4
-	-	-	-	3	ME83S C3	\$146	4	3	ME83S D3	\$161	4
-	-	-	-	4	ME83S C4	\$146	4	4	ME83S D4	\$161	4
-	-	-	-	5	ME83S C5	\$146	4	5	ME83S D5	\$161	4
6	ME83S B6	-	4	6	ME83S C6	\$146	4	6	ME83S D6	\$161	4
10	ME83S B10	-	4	10	ME83S C10	\$146	4	10	ME83S D10	\$161	4
13	ME83S B13	Same List as "C" Trip	4	13	ME83S C13	\$146	4	13	ME83S D13	\$161	4
-	-	-	-	15	ME83S C15	\$146	4	15	ME83S D15	\$161	4
16	ME83S B16	-	4	16	ME83S C16	\$146	4	16	ME83S D16	\$161	4
20	ME83S B20	-	4	20	ME83S C20	\$146	4	20	ME83S D20	\$161	4
25	ME83S B25	-	4	25	ME83S C25	\$154	4	25	ME83S D25	\$169	4
-	-	-	-	30	ME83S C30	\$162	4	30	ME83S D30	\$177	4
32	ME83S B32	-	4	32	ME83S C32	\$162	4	32	ME83S D32	\$177	4
40	ME83S B40	-	4	40	ME83S C40	\$162	4	-	-	-	-
50	ME83S B50	-	4	50	ME83S C50	\$182	4	50	*ME883S D50	\$408	2
-	-	-	-	60	ME83S C60	\$204	4	-	-	-	-
63	ME83S B63	-	4	63	ME83S C63	\$204	4	63	*ME883S D63	\$408	2
80	*ME883S B80	-	2	80	*ME883S C80	\$416	2	80	*ME883S D80	\$431	2
100	*ME883S B100	-	2	100	*ME883S C100	\$444	2	100	*ME883S D100	\$459	2
125	*ME883S B125	-	2	125	*ME883S C125	\$589	2	-	-	-	-

*Not UL Recognized

For Technical Specifications, request EEControls catalog IC-8.

Also available upon request E80 type (6KA IC)

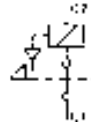
Accessories



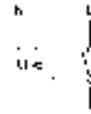
Auxiliary Contact



Shunt Trip



Undervoltage Trip



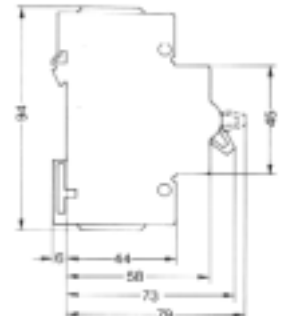
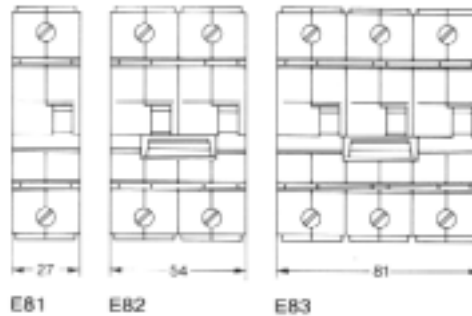
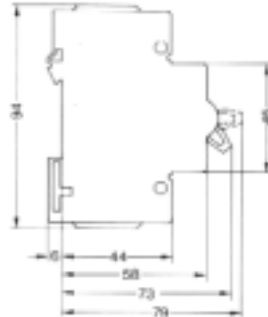
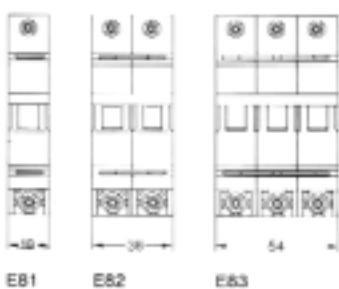
Remote Release (Shut Trip)	Catalog No.	List
24 to 48V AC/DC (F4)	#M ELFA-549	\$110
110 to 415V AC (F5)	#M ELFA-550	110
Undervoltage Trip		
UVR 120V AC	#M ELFA-XXX	125
UVR 230V AC	#M ELFA-251	125

Auxiliary Contact Kit	Catalog No.	List
"H" 1 c/o for 0.5 to 63A	#M ELFA-441	\$34
80 to 125A	#M ELFA-430	34
Fault Trip Auxiliary Contact Kit		
*S/H 1 c/o for 0.5 to 63A	#M ELFA-442	44
80 to 125A	#M ELFA-431	44
Field convertible from "S" (fault trip signal) to "H" (form C Aux contact)		
SH/HH (2 c/o) Combination Contact		
Combination auxiliary SH/HH has one fault signal "S" and one aux. contact, both form C. The "S" signal contact is field convertible to a standard "H" auxiliary.		
SH/HH (2 c/o) for 0.5 to 63A	#M ELFA-443	51

Dimensions (Approx.) mm (inch)

E81S, E82S, E83S - 0.5A TO 63A (B,C Trip)
D Trip -.5A TO 32A THEN E88 Series Dimensions

E881, E882, E883S - 80A TO 125A



Enclosures for ELFA

For ground fault, **Motor Drives**, and complete technical specifications, contact factory



M ELFA-80904

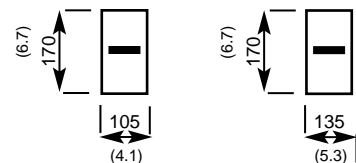


M ELFA-80906

Part Number	Description	List Each
M ELFA-80904	Enclosure for up to 4 Pole*	\$ 90.00
M ELFA-80906	Enclosure for up to 6 Pole*	\$130.00

*Includes lid over breaker handle.
Meets IP557 dust tight and rain tight from all directions.











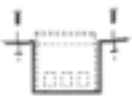


Enclosure Dimensions M ELFA-



M ELFA-80904

M ELFA-80906

For ground fault, Motor Drives, and complete technical specifications, contact factory.

Item	Catalog Number	List Each	Item	Catalog Number	List Each
Three Phase busbar block, insulated 19 x 3 connections (Approx. 39" Busbar with 10 end caps) 	M ELFA-714	\$101.00	Three Phase busbar insulated pin type = S 2 x 3 connections 4 x 3 connections 2 x 3 x Hi connections 4 x 3 x Hi connections 2 x 3 x 1 + Hi connections 3 x 3 x 1 + Hi connections 	M ELFA-931 M ELFA-932 M ELFA-933 M ELFA-934 M ELFA-935 M ELFA-936	\$ 9.00 \$16.00 \$10.00 \$17.00 \$10.00 \$17.00
Busbar End Cap 3 Phase (10 pack) 	M ELFA-760	\$2.30	Four pole busbar, insulated for type = G 2 x 4 connections 3 x 4 connections 2 x 3 x 1 + N connections L1+N,L2+N,L3+N 3 x 3 x 1 + N connections L1+N,L2+N,L3+N 	M ELFA-937 M ELFA-938 M ELFA-939 M ELFA-940	\$15.00 \$27.00 \$15.00 \$20.00
Toggle lock for series E80 (Lock out for 1,2,3 poles on A15) 	M ELFA-940	\$16.00	pin type = S 2 x 4 connections 3 x 4 connections 2 x 3 x 1 + N connections L1+N,L2+N,L3+N 3 x 3 x 1 + N connections 	M ELFA-941 M ELFA-942 M ELFA-943 M ELFA-944	\$15.00 \$27.00 \$15.00 \$27.00
Contact-guard cover E80 	M ELFA-085	\$1.70	Infeel terminals fork type 25mm ² 	M ELFA-946	\$ 4.00
Sealing slide 	M ELFA-084	\$1.20	pin type 25mm ² 	M ELFA-947	\$ 4.00
Front Mount Bracket for up to 3 poles 	M ELFA-3FM	\$30.00	pin type long 25mm ² 	M ELFA-948	\$ 5.00
			For fork and pin type 35mm ² <i>alignable</i> 	M ELFA-949	\$ 9.00

SERIES GB-H INTERNATIONAL CIRCUIT BREAKER

HIGH SHORT CIRCUIT INTERRUPTION CAPACITY

- 100 Amp Frame
42 KA (480V) GB-H103
65kA Option GB-L103
 - 250 Amp Frame
42 KA (480V) GB-H203
65kA Option GB-L203
- 12 Amp to 250 Amp
600 Volt**

SERIES GB MOTOR CIRCUIT PROTECTORS



LG Industrial Systems

MULTIPLE LOAD RATINGS LOAD SWITCHING

- Inductive
- General Purpose
 - Motors
 - Panels
- Adjustable Thermal Trip Setting
- Adjustable Instantaneous Trip Setting

ELECTRICAL & ELECTRONIC
CONTROLS, INC.
7 WEST CROSS ST
HAWTHORNE, NY 10532
914-769-5000 FAX 914-769-3641
E-MAIL: eec@eecontrols.com

EE CONTROLS, LTD
17 STEWART COURT
ORANGEVILLE, ONTARIO
CANADA L9W 3Z9
519-941-6845 FAX 519-940-0514
E-Mail: info@eecontrols.on.ca



GB103

GB203

ADJUSTABLE
MATCH THE LOAD



THE SOLUTION FOR BETTER SYSTEM PROTECTION & PRODUCTIVITY



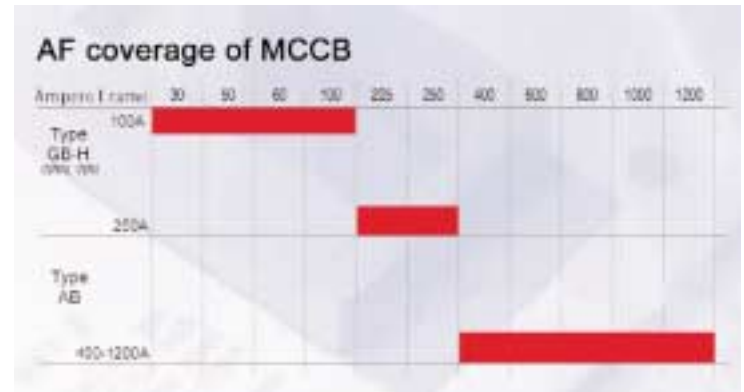
ADJUST TRIP POINT TO MATCH LOAD
WITH SHORT CIRCUIT PROTECTION &
ADJUSTABLE THERMAL PROTECTION



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SERIES GB H - 42kA	Page
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High performance and multi-functional MCCB to meet each customer's application.



This bulletin LG-GBH covers series GBH, 100Amp and 250Amp Frames. Series GBH has 42kA IC, and GBL has extra high IC capacity.

SERIES GB H 12 to 100 Amp Frame 100 to 250 Amp Frame

Manual Self Protected Control Device

Designed for the INDUSTRIAL CONTROL MARKETS, Series GB are molded case controllers that contain coordinated overload and short circuit protection.

Adjustable MCCB (GB-Type) (100~250) Ampere Frame

- ▲ The type GB series was developed as an adjustable controller with high performance and multi-functions.
- ▲ Remarkable increased breaking capacity meets the modern application's needs in the trend of steadily increasing capacity of electrical systems.
- ▲ The rated current and instantaneous current are adjustable for close load control and stock management.
- ▲ A wide range of accessories are available for field or factory addition.

SERIES GBH WITH INTEGRATED MOTOR PROTECTION

TYPE GB-H CONTROLLER WITH ADJUSTABLE TRIPS INSTANTANEOUS AND THERMAL 600 VOLT A.C.

Description:

Series MEC type-GB H Molded Case Controllers are Modern Compact Heavy Duty Breakers, available in 2 frame sizes thru 250 Amp.

The Series GB H Controllers are designed for easy field addition of all common accessory elements including shunt trip, undervoltage trip, alarm trip aux. and extra auxiliary contacts.

Integrated Motor Protection. Type GB H Controllers include adjustable thermal and adjustable magnetic trip, both combined in one housing. The adjustable thermal trip consists of 3 BiMetallic elements, factory precision calibrated

and field adjustable to provide approved motor protection (UL 508). The 100 Amp frame is fixed magnetic trip. The 250 Amp frame has adjustable magnetic and thermal trip for more precise load protection.

Coordinated Trip Elements, Magnetic and Thermal. With both elements in the same housing, specific applications can be matched with one unit. The Type GB H then replace the old magnetic only breaker and the old separate O.L. heater block in one coordinated unit. This technique has been commonly used in throughout Europe and the rest of the world for many years and provides more precise load protection.

Type GB-H, COMPACT - MODERN DESIGN

2 Frame Sizes (100 AF, 250 AF)

100A Frame



250A Frame

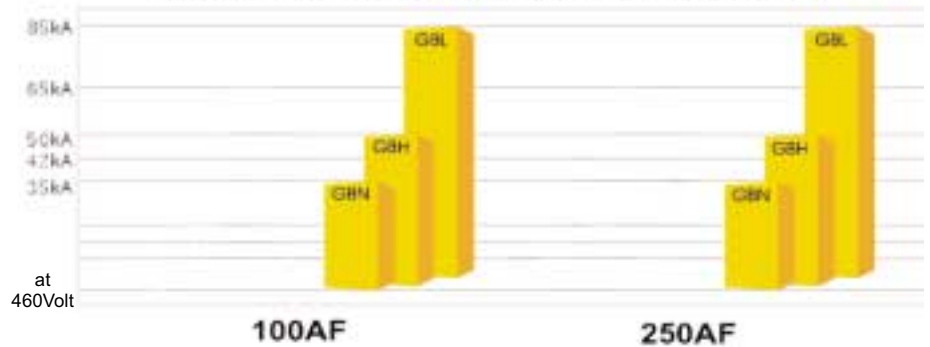


- GBN=30kA @ 480V
- GBH=42kA @ 480V
- GBL=65kA @ 480V

KEMA Test

- In the optional 'L type', the max. breaking capacity is 85 (kA) at AC 460V.

Comparing the breaking capacity +AC 460V basis

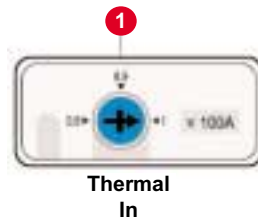


Adjustable Thermal Trip - Series GB-N, H, L

TMU type (Thermal magnetic trip unit)



100 Amp Frame



1 Rated current regulating knob, I_n

3 steps: 0.8 / 0.9 / 1.0 x I_n

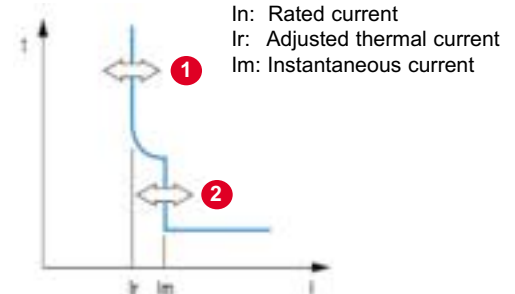
2 Instantaneous current (I_m)

• Fixed instantaneous current type (100AF)
: 10 x I_n (Min. 500A)

• Adjustable instantaneous current type (250AF)
: 5 / 6 / 7 / 8 / 9 / 10 x I_n (6 steps)



250 Amp Frame



AF (Frame)	Trip unit	100AF								250AF				
		TMU16	TMU20	TMU25	TMU32	TMU40	TMU50	TMU63	TMU80	TMU100	TMU125	TMU160	TMU200	TM250
Ranges of the I_n	0.8x I_n	13	18	20	26	32	40	50	64	80	100	128	160	200
	0.9x I_n	14	18	23	29	36	45	57	72	90	113	144	180	225
	1.0x I_n	16	20	25	32	40	50	63	80	100	125	160	200	250
Ranges of the I_m	▲ ▲	500A				10x I_n				5, 6, 7, 8, 9, 10x I_n				

▲ Thermal Current (I_n) ▲ ▲ Instantaneous Magnetic Trip (I_m)

DESIGN BENEFITS

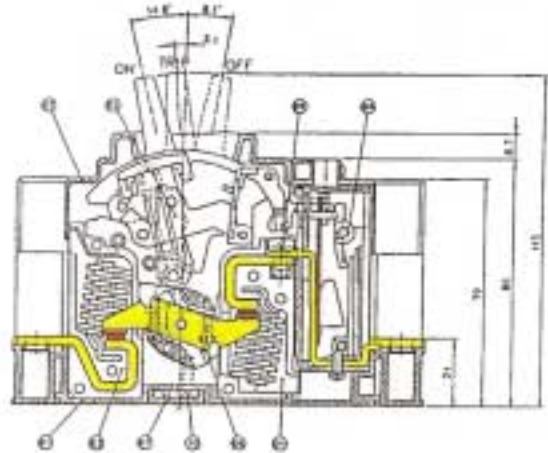
The most important design feature is the rotary contact assembly. To illustrate, note the cross section shown of the type GB H 100A Breaker and a photograph of the rotary contact switching head of the type GBH-250A. The design is state of the art, for Current Limiting Breakers.

- **THE MOMENT OF INERTIA** of a rotating bridge is significantly lower than that of a breaker with a linear motion bridge. Therefore the reaction to short circuit currents is much faster, which leads to better current limiting as well as shorter arc duration and substantially lower i^2t - values.

- **THE SINGLE AXIS OF ROTATION** provides both the fast short circuit reaction time as well as the normal switching function time.

- **BRANCH CIRCUIT DISCRIMINATION.** Since the operation is fast, Series GB are excellent branch circuit protective devices, which can be used either as manual controllers with full (adjustable) motor protection or in conjunction with a contactor. Series GB provides good discrimination from upstream circuit breakers or fuses as test oscillographs demonstrate. See page GB-13 for time/current curve.

The extra discrimination can be very helpful in **machine panel systems**.



GBH - 100A Cross Section

Easy to install accessories



- Trip Alarm Auxiliary
- Indicating Auxiliaries (On/Off)
- Shunt Trip Relay
- Undervoltage



- Easy to install and replace cassette type accessories
- Common use of the general internal accessories (AX, AL, SHT, UVT) : 100A / 250AF common use

Actual Rotating Bridge shown below



GBH - 250A Rotary Contact Mechanism



Insulator Barriers

- Supplied as "Standard" to provide additional line to line protection



Ring Connection Compatible

RING TERMINALS can be easily added to any GB Series Breaker





OLD Designs, Complex with mult parts and not thermal adjustable.

WORLD DESIGN ACCEPTANCE AN INTERNATIONAL DESIGN

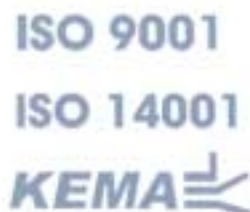
APPLICATIONS

1. **As an International Breaker**, 600 Volt Thermal Magnetic CIRCUIT BREAKER per IEC 60947-2.
2. **As a Motor Controller** for multiple group loads certified tested for **high interruption capacity circuits** by UL (UL508).
3. **As a Manual Starter/Motor Disconnect** with short circuit and overload protection. Type GB-H controllers are designed and approved for multiple full load power switching.
4. **As a Panel Main Disconnect**, with adjustable short circuit and adjustable thermal overload protection.

CERTIFICATIONS


- Standard
 - IEC 60947-2
 - KSC 8321
- Certifications and approvals
 - 
 - KEMA type test
 - ISO 9001 / 14001
 - UL 508,  Manual Controller

KEMA TEST CERTIFICATES




CERTIFIED INTERNATIONAL TEST LAB

KEMA Test Data

MAJOR Independent third party test laboratory.
Certified IEC 60947-2 and .

KEMA Test Lab is an Internationally Approved Test Laboratory recognized and accepted internationally as the premier test facility. All Series GB Breakers are also CERTIFIED by KEMA.

	600 Volt UL508	
Controller		Interruption Capacity
GB H 103 100 Amp Frame		42KA (480V)
GB H 203 250 Amp Frame		42KA (480V)
GB L 103 100 Amp Frame		65KA (480V)
GB L 203 250 Amp Frame		65KA (480V)

SERIES GB H Ratings


Thermal Trip (Amp)	Magnetic Instantaneous Trip (Amp)*	General Purpose (Amp)	600 Volt Catalog No.	42kA Interrupting Capacity 480V	Horse Power Three Phase •		
					230v	460v	600v
<i>100 Amp Frame</i>							
12-16A	500A*	16	GB H 103-16A - 42KA	42kA	3/4	2	3
16-20A	500A*	20	GB H 103-20A - 42KA	42kA	1 ^{1/2}	3	5
20-25A	500A*	25	GB H 103-25A - 42KA	42kA	2	5	7 ^{1/2}
25-32A	500A*	32	GB H 103-32A - 42KA	42kA	3	7 ^{1/2}	10
32-40A	500A*	40	GB H 103-40A - 42KA	42kA	5	10	15
40-50A	500A*	50	GB H 103-50A - 42KA	42kA	7 ^{1/2}	15	20
50-63A	630A*	63	GB H 103-63A - 42KA	42kA	7 ^{1/2}	20	25
64-80A	800A*	80	GB H 103-80A - 42KA	42kA	10	20	30
80-100A	1000A*	100	GB H 103-100A - 42KA	42kA	10	30	40
<i>250 Amp Frame Adjustable</i>							
100-125A	5x thru 10x A	125	GB H 203-125A - 42KA	42kA	15	40	50
125-160A	5x thru 10x A	160	GB H 203-160A - 42KA	42kA	20	40	60
160-200A	5x thru 10x A	200	GB H 203-200A - 42KA	42kA	25	60	75
200-250A	5x thru 10x A	250	GB H 203-250A - 42KA	42kA	30	75	100

* GB-H 103 has Fixed Magnetic Trip and adjustable thermal trip.
GB-H 203 has Adjustable Thermal Trip and adjustable magnetic trip.

• High Load Endurance

SERIES GB-H ORDER INFORMATION OPEN TYPE

**SERIES GB-H Order Part Numbers 600 Volt Rated
Breaking Capacity 42kA**

• UL 508 

Thermal Trip (Amp)	Magnetic Instantaneous Trip (Amp)	General Purpose (Amp)	Horse Power Three Phase •			42kA Interrupting Capacity 480V	Open Type Catalog No.	List Each ▲
			230v	460v	600v			
<i>100 Amp Frame</i>								
12-16A	500A	16	3/4	2	3	42kA	GB H 103-16A - 42KA	\$298
16-20A	500A	20	1 ^{1/2}	3	5	42kA	GB H 103-20A - 42KA	298
20-25A	500A	25	2	5	7 ^{1/2}	42kA	GB H 103-25A - 42KA	298
25-32A	500A	32	3	7 ^{1/2}	10	42kA	GB H 103-32A - 42KA	298
32-40A	500A	40	5	10	15	42kA	GB H 103-40A - 42KA	298
40-50A	500A	50	7 ^{1/2}	15	20	42kA	GB H 103-50A - 42KA	298
50-63A	630A	63	7 ^{1/2}	20	25	42kA	GB H 103-63A - 42KA	298
64-80A	800A	80	10	20	30	42kA	GB H 103-80A - 42KA	354
80-100A	1000A	100	10	30	40	42kA	GB H 103-100A - 42KA	354
<i>250 Amp Frame Adjustable</i>								
100-125A	5x thru 10x A	125	15	40	50	42kA	GB H 203-125A - 42KA	385
125-160A	5x thru 10x A	160	20	40	60	42kA	GB H 203-160A - 42KA	385
160-200A	5x thru 10x A	200	25	60	75	42kA	GB H 203-200A - 42KA	495
200-250A	5x thru 10x A	250	30	75	100	42kA	GB H 203-250A - 42KA	495




* GB-H 103 has Fixed Magnetic Trip and adjustable thermal trip.
GB-H 203 has Adjustable Thermal Trip and adjustable magnetic trip.

Motor Overload included is approved by UL (UL508).

600 Volt (Heavy Duty) "3 Pole"

Specifications:

- 12 - 250 Amp
- HP Rated through 100 HP
-  508 Listed Motor Circuit Protector
- Safety Door Interlock Handle (GB-VA11R Type) IP65
- Thermal and Magnetic Protection
- Padlockable Operator



SERIES GB-H ENCLOSED TYPE

**NEMA 4/12
Metal Enclosed**



Thermal Trip (Amp)	Magnetic Instantaneous Trip (Amp)	General Purpose (Amp)	Horse Power Three Phase •			42kA Interrupting Capacity 480V	Enclosed Catalog No.	Nema 1/3R List Each -3R▲	Nema 4/12 List Each -4▲	NEMA 4X Fiberglass List Each -4X▲
			230v	460v	600v					
<i>100 Amp Frame</i>										
12-16A	500A	16	3/4	2	3	42kA	GB H 103-16A - ▲	\$630	\$710	\$690
16-20A	500A	20	1 ^{1/2}	3	5	42kA	GB H 103-20A - ▲	\$630	\$710	\$690
20-25A	500A	25	2	5	7 ^{1/2}	42kA	GB H 103-25A - ▲	\$630	\$710	\$690
25-32A	500A	32	3	7 ^{1/2}	10	42kA	GB H 103-32A - ▲	\$630	\$710	\$690
32-40A	500A	40	5	10	15	42kA	GB H 103-40A - ▲	\$630	\$710	\$690
40-50A	500A	50	7 ^{1/2}	15	20	42kA	GB H 103-50A - ▲	\$630	\$710	\$690
50-63A	630A	63	7 ^{1/2}	20	25	42kA	GB H 103-63A - ▲	\$630	\$710	\$690
64-80A	800A	80	10	20	30	42kA	GB H 103-80A - ▲	\$650	\$750	\$700
80-100A	1000A	100	10	30	40	42kA	GB H 103-100A - ▲	\$650	\$750	\$700
<i>250 Amp Frame Adjustable</i>										
100-125A	5x thru 10x A	125	15	40	50	42kA	GB H 203-125A - ▲	\$900	\$1,000	\$1,200
125-160A	5x thru 10x A	160	20	40	60	42kA	GB H 203-160A - ▲	\$900	\$1,000	\$1,200
160-200A	5x thru 10x A	200	25	60	75	42kA	GB H 203-200A - ▲	\$900	\$1,000	\$1,200
200-250A	5x thru 10x A	250	30	75	100	42kA	GB H 203-250A - ▲	\$1,250	\$1,300	\$1,600

* GB-H 103 has Fixed Magnetic Trip and adjustable thermal trip.
GB-H 203 has Adjustable Thermal Trip and adjustable magnetic trip.

▲ Add enclosure type suffix per above.

• Order Example P/N; (NEMA 3R Enclosed 16 Amp)
GBH103-16A-3R List each \$630.00

ACCESSORIES - OPTIONS

Easy to Install Accessories

Fast - Simple Installation

- Easy to install and replace cassette type accessories
- General Internal Accessories: 100/250AF common use
- Screw type terminals
- One design for both 100/250AF
- Standard Options
 - AX - Auxiliary Contact
 - AL - Trip Alarm
 - SNT - Shunt Trip (Remote Control)
 - UVT - UnderVoltage Trip
 - Rear Connection Terminal Bus.



Accessory Kits
Use on 100A and 250A Frames



Easy to Install Cassette Type Accessories

- All Field Installable

ACCESSORY KITS

Auxiliary Contacts (AX)	List Each
Catalog No.	
GB-AX 1 (1NO/1NC Form C)	\$38
GB-AX 2 (2NO/2NC Form C)	\$76
GB-AX 3 (3NO/3NC Form C)	\$114
GB-AX 4 (4NO/4NC Form C)	\$152

UnderVoltage Trip (UVT)	List Each
Catalog No.	
GB-UVT-24V AC/DC	\$116
GB-UVT-48V AC/DC	\$116
GB-UVT-110V AC/DC	\$116
GB-UVT-220V AC/DC	\$116
GB-UVT-480V AC	\$116



Undervoltage Trip

Shunt Trip Kits (SNT) (For remote trip of CB)				
Catalog No.	AC	DC	AC/DC	List Each
GB-SNT-MB			12V	\$116
GB-SNT-NB			24V	\$116
GB-SNT-OB			48V	\$116
GB-SNT-UB			60V	\$116
GB-SNT-PD		100-110V		\$116
GB-SNT-AA	100-125V			\$116
GB-SNT-QD		125V		\$116
GB-SNT-RD		200-220V		\$116
GB-SNT-CA	200-240V			\$116
GB-SNT-SD		240V		\$116
GB-SNT-TB			250V	\$116
GB-SNT-DA	380-440V			\$116
GB-SNT-EA	440-480V			\$116
GB-SNT-FA	500-550V			\$116



Shunt Trip

Trip Alarm (AL)	List Each
Catalog No.	
GB-AL 1 (1NO/1NC Form C)	\$38
GB-AL 2 (2NO/2NC Form C)	\$76



All above Accessory Kits can be field installed

Internal Accessories

Location & Max. attachable No.

Accessories	Max. attachable No.			LOCATION
	Left	Right	Max.	
Aux. a/c(Ax)	2	2	4	
Alarm a/c(AL)	1	1	2	
SNT or UVT	1	-	1	

Ratings of the AX & AL

Applied MCCB	Operational voltage (V)	AC		DC		
		Max. switching current (kA) Resistive load	Max. switching current (kA) Inductive load	Max. switching current (kA) Resistive load	Max. switching current (kA) Inductive load	
GBN 100 250	125	5	3	30	4	3
GBH 100 250	250	3	2	125	0.4	0.4
GBL 100 250 (F)	250	3	2	250	0.2	0.2

Terminal Covers

Catalog No.	For Breaker Type	List Each Set
TB-13T	GBH 103	\$18
TB-23T	GBH-203	\$20
	GBL-103	



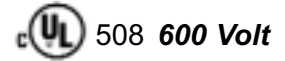
* Provides Finger Protection Line & Load side

Set includes two covers.

DESCRIPTION

Series GB L Breakers are high Interruption capacity, 65kA at 480 Volt and utilize the same frame size as GB H (4.1", 105mm wide and 6.5", 165mm high.) While cost for the Series GB L is higher, the advantage is very high 65kA (480 Volt) interruption capacity.

SERIES GB-L Order Part Numbers 65kA (480V)



Adjustable Thermal Trip (Amp)	Magnetic Instantaneous Trip (Amp)	General Purpose (Amp)	Open Type Catalog No.	List Each ▲
<i>250 Amp Frame</i>				
12-16A	500A	16	GB L 103-16A - 65KA	\$440
16-20A	500A	20	GB L 103-20A - 65KA	440
20-25A	500A	25	GB L 103-25A - 65KA	440
25-32A	500A	32	GB L 103-32A - 65KA	440
32-40A	500A	40	GB L 103-40A - 65KA	440
40-50A	500A	50	GB L 103-50A - 65KA	440
50-63A	630A	63	GB L 103-63A - 65KA	440
64-80A	800A	80	GB L 103-80A - 65KA	530
80-100A	1000A	100	GB L 103-100A - 65KA	530
<i>250 Amp Frame Adjustable</i>				
100-125A	5x thru 10x A	125	GB L 203-125A - 65KA	570
125-160A	5x thru 10x A	160	GB L 203-160A - 65KA	570
160-200A	5x thru 10x A	200	GB L 203-200A - 65KA	740
200-250A	5x thru 10x A	250	GB L 203-250A - 65KA	740

Accessories:

Series GB L use the same accessories and accessory kits as Series GB H.

These include:

- Alarm Trip Contacts
- Shunt Trip
- Undervoltage Trip

See page GB-7 for accessories, catalog numbers and prices.

Dimensions: The Series GB L dimensions are identical to Series GB H - 200 Series.



LG - GBL & GBH Breakers include 6 lug terminals

See page GB-6 for Series GB H (42kA) pricing and catalog numbers.

▲ Terminals are included with 100 Amp and 250 Amp frame breakers per page GB-6



VA11-Type

• Extended rotary handle (VA-type)

- Externally operate the MCCB and can be applied to enclosures of varying depths 8"^{1/4} shaft supplied as standard
- NEMA 1, 3R, 12, IP65

IP65 Dust Tight - Hose Test Water Tight

- Protected against dust
- Protected against low pressure jets from all directions



Dust Protection Water Jet Protection

Minimum depth 8"^{1/4} from back plate to inside cover.

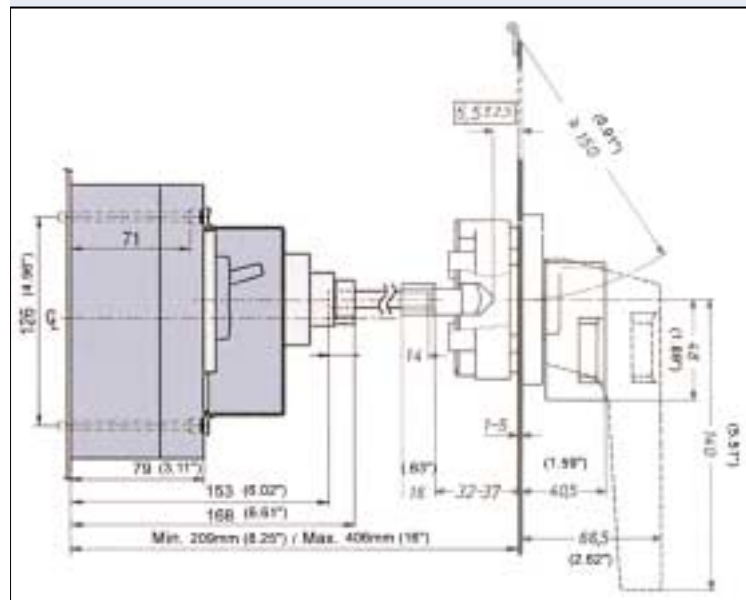
Maximum depth with "standard" shaft (16") 406mm.

Type	Cat. No.	List Each	MCCB
VA11 Type	GB-VA11-R-30S	\$88	use with GB H 103 Frame
	GB-VA11-B-30S		
	GB-VA11-R-60S	\$88	GB H 203 Frame
	GB-VA11-B-60S		

"R" = Red / Yellow, "B" = Black / Grey

SERIES VA-11 OPERATOR HANDLES

Dimensions mm (inches) Operating Handle



* All dimensions are approximate millimeter & (inches).

Extended rotary handle (E-type)

- Externally operate the MCCB and can be applied to enclosures of varying depths
- According to IP54 (NEMA 1,12,3R)

Max. enclosure depth 355mm (14") with standard shaft



E-Type

Direct rotary handle (D-type)

- Converts toggle type operation to rotary type.
- Padlockable Lockout feature
- Direct mount to MCCB (no interlock)



D-Type

Part Numbers of the operators

IP54 - Dust Tight and Water Spray all directions

Type	List Each	Applied MCCB
E-Type	GBE-30S	\$88 use with GB-H103 Frame
	GBE-60S	\$88 GB-H203 Frame GB-L103 Frame GB-L203 Frame
D-Type	GBD-30S	\$45 GB-H103 Frame
	GBD-60S	\$45 GB-H203 Frame GB-L103 Frame GB-L203 Frame

Extended rotary handle (E-type)

Kit Includes

- Rotary drive converter
- Extension shaft 9.5" (241mm)
- External padlockable operator with defeatable feature **IP54**

Enclosure Min/Max Interior Dimension Depth 180-355mm (7.09-14") with standard shaft



E-Type

E-Type

Also available for horizontal mounted Breakers*; consult factory

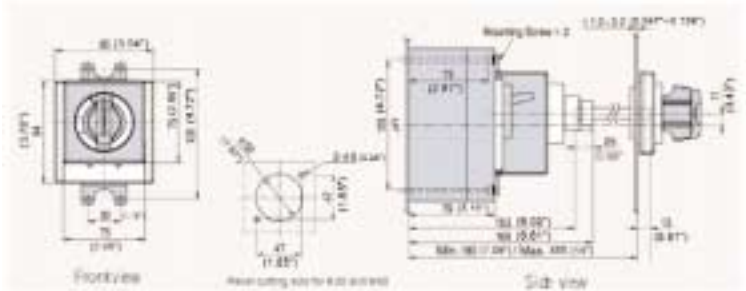
Assembled to Breaker

Shown as kit

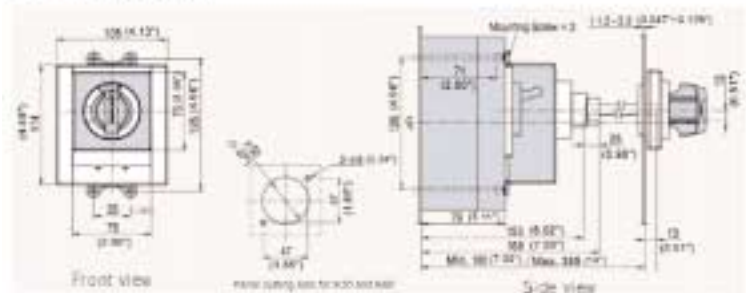
* The breaker is mounted sideways, however, the ON/OFF external handle remains vertical.

Dimensions of E-type operating handle

E-30S, (E-type)



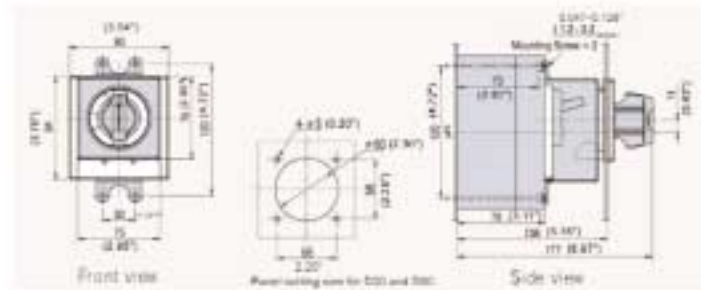
E-60S, (E-type)



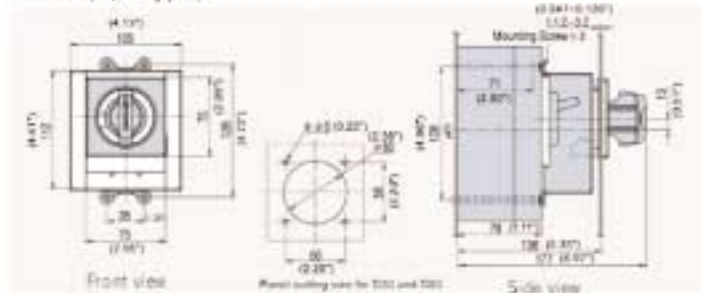
* All dimensions are approximate millimeters & (inches).

Dimensions of D-type operating handle

D-30S, (D-type)



D-60S, (D-type)



* Padlocking is possible when the MCCB is ON or OFF condition.

* Panel door does not open when the MCCB is "On" or "Trip" condition. Use the release screw to bypass.

* All dimensions are approximate millimeter & (inches).

See page GB-8 for Heavy Duty VA-11 Operator Handle and Shaft

INTERNATIONAL RATINGS (IEC, IEC)



Ampere Frame		AF		100AF							
Type	Thermal magnetic		N-Type			H-Type			L-Type		
	Electronic type		GBN102	GBN103	GBN104	GBH102	GBH103	GBH104	GBL102	GBL103	GBL104
Rated insulation voltage (V)	Ui	690			690			690			
Rated impulse voltage (kV)	Uimp	6			6			6			
Rated operating voltage (V)	Ue	AC Voltage	600			600			600		
		DC Voltage	250			250			250		
Number of poles		2	3	4	2	3	4	2	3	4	
Rated current (A)	In	Thermal magnetic	16,20,25,32,40,50,63,80,100			16,20,25,32,40,50,63,80,100			16,20,25,32,40,50,63,80,100		
		Electronic	-			-			100		
Adjusted current (A)	Ir	Thermal magnetic	(0.8,0.9,1.0) x In			(0.8,0.9,1.0) x In			(0.8,0.9,1.0) x In		
		Electronic	-			-			(0.5,0.6,0.7,0.8,0.9,1.0) x In		
Rated breaking capacity (kA) (sym)	Icu	AC Voltage 600V	18			25			35		
		500/550V	22			35			50		
		480V	30			42			65		
		440/460V	35			50			85		
		DC Voltage 250V	35			50			85		
		220/240V	50			85			125		
NEMA AB-1	Ics	DC Voltage 250V	35			50			85		
		125V	-			-			-		
Short time limit Instantaneous	Im	Electronic Adjustable	-			-			(2,3,4,5,6,8,10) x Ir		
		Thermal Magnetic (Note1) Fixed Type	10 x In			10 x In			10 x In		
		Electronic Fixed Type	-			-			11 x In		
Endurance		Mechanical	20,000			20,000			10,000		
		Electrical	10,000			10,000			5,000		
Dimensions (mm)	WxLxH (H=Panel cutting)	90 x 140 x 86 (A type)			90 x 140 x 86 (A type)			105 x 165 x 86 (B type)			
Weight (kg)											
Accessories	Auxiliary s/w	AX	■			■			■		
	Alarm s/w	AL	■			■			■		
	Shunt trip	SNT	■			■			■		
	Under voltage	UVT	■			■			■		
	Terminal cover		■			■			■		
	Insulation barrier		Standard			Standard			Standard		
	Rear connections		■			■			■		
	Operating handle	Direct Mount		■			■			■	
Extensible Type			■			■			■		
Certifications		KEMA test (Note 2)	▲			▲			▲		
		CE-mark	▲			▲			▲		

Note1) In the thermal-magnetic trip type MCCB, the short time limit current (Im) is the same with instantaneous current (It)

Note2) The GBH103, GBL103 are approved by the KEMA test according to IEC 60947-2 at 415V, 480V

■ Available as Field Kits.

▲ All Circuit Breaker ratings Certified by KEMA Independent Lab Report

INTERNATIONAL RATINGS $\text{C}\epsilon$, IEC



Ampere Frame

AF

250AF

Type	N-Type			H-Type			L-Type				
	GBN202	GBN203	GBN204	GBH202	GBH203	GBH204	GBL202	GBL 203	GBL204		
Thermal magnetic											
Electronic type	-	-	-	-	-	-	-	GBL203E	-		
Rated insulation voltage (V)	690			690			690				
Rated impulse voltage (kV)	6			6			6				
Rated operating voltage (V)	AC Voltage			600			600				
	DC Voltage			250			250				
Number of poles	2	3	4	2	3	4	2	3	4		
	125,160,200,250			125,160,200,250			125,160,200,250				
	-			-			250				
Rated current (A)	In	Thermal magnetic	(0.8,0.9,1.0) x In			(0.8,0.9,1.0) x In			(0.8,0.9,1.0) x In		
		Electronic	-			-			250		
Adjusted current (A)	Ir	Thermal magnetic	(0.8,0.9,1.0) x In			(0.8,0.9,1.0) x In			(0.8,0.9,1.0) x In		
		Electronic	-			-			(0.5,0.6,0.7,0.8,0.9,1.0) x In		
Rated breaking capacity (kA) (sym)	Icu	AC Voltage 600V	18			25			35		
		500/550V	22			35			50		
		480V	30			42			65		
		440/460V	35			50			85		
		DC Voltage 250V	35			50			85		
		220/240V	50			85			125		
		DC Voltage 250V	35			50			85		
125V	-			-			-				
Ics	... % x Icu	75			75			75			
Short time limit Instantaneous	Im It	Electronic Adjustable	-			-			(2,3,4,5,6,8,10) x Ir		
		Thermal Magnetic (Note 1) Adjustable	(5,6,7,8,9,10) x In			(5,6,7,8,9,10) x In			(5,6,7,8,9,10) x In		
		Electronic Fixed Type	-			-			11 x In		
Endurance	Mechanical		20,000			20,000			10,000		
	Electrical		10,000			10,000			5,000		
Dimensions (mm)	WxLxH (H=Panel cutting)		105 x 165 x 86 (A type)			105 x 165 x 86 (A type)			105 x 165 x 86 (B type)		
Weight (kg)											
Accessories	Auxiliary s/w	AX	■			■			■		
	Alarm s/w	AL	■			■			■		
	Shunt trip	SNT	■			■			■		
	Under voltage	UVT	■			■			■		
	Terminal cover		■			■			■		
	Insulation barrier		Standard			Standard			Standard		
	Rear connections		■			■			■		
	Operating handle	Direct Mount Extendable Type	■ ■			■ ■			■ ■		
Certifications	KEMA test (Note 2)		▲			▲			▲		
	CE-mark		▲			▲			▲		

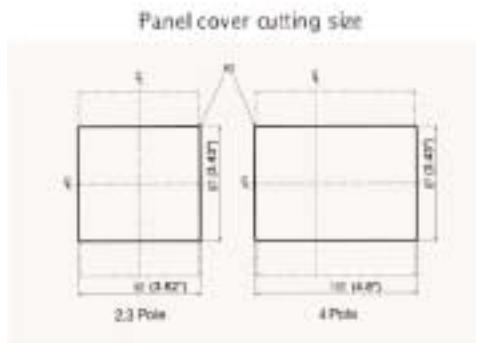
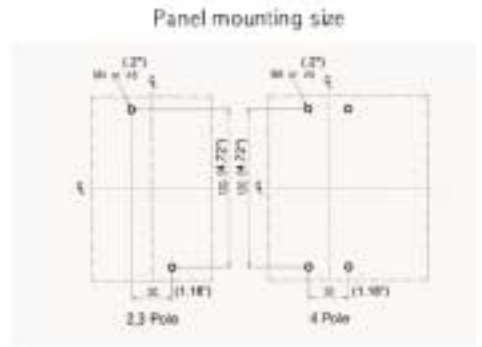
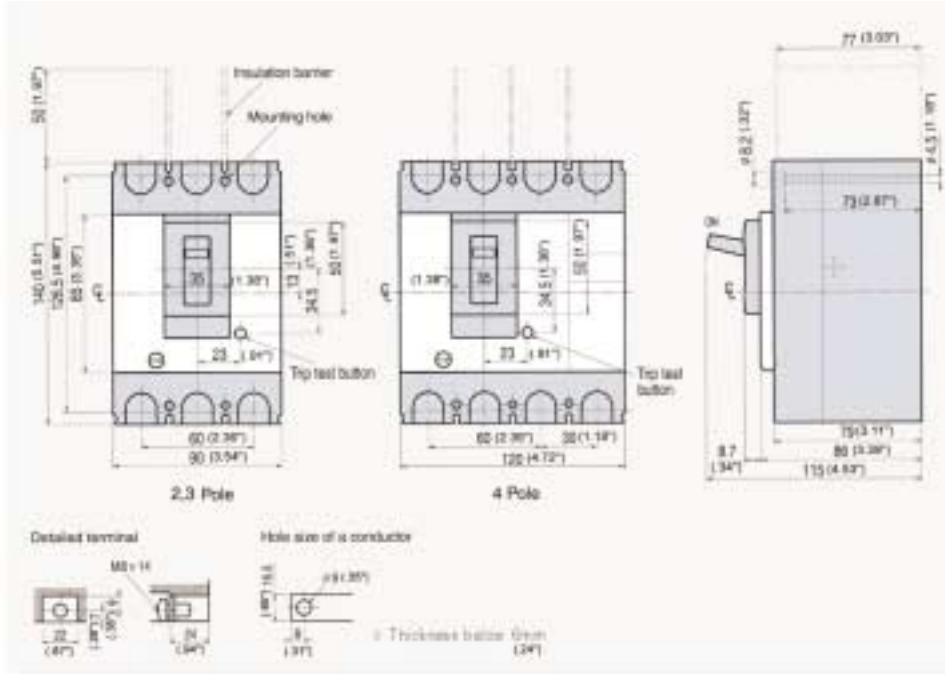
Note1) In the thermal-magnetic trip type MCCB, the short time limit current (Im) is the same with instantaneous current (It)

Note2) The GBH203, GBL203 are approved by the KEMA test according to IEC 60947-2 at 415V, 480V

■ Available as Field Kits.

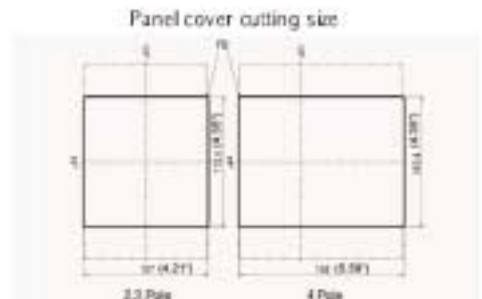
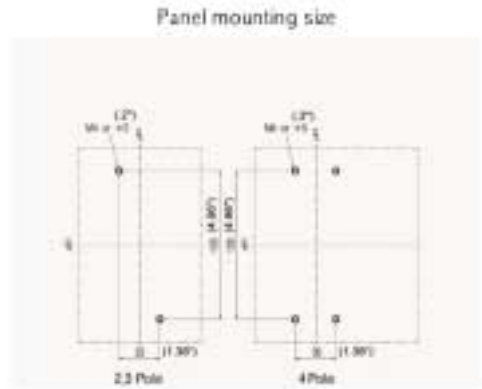
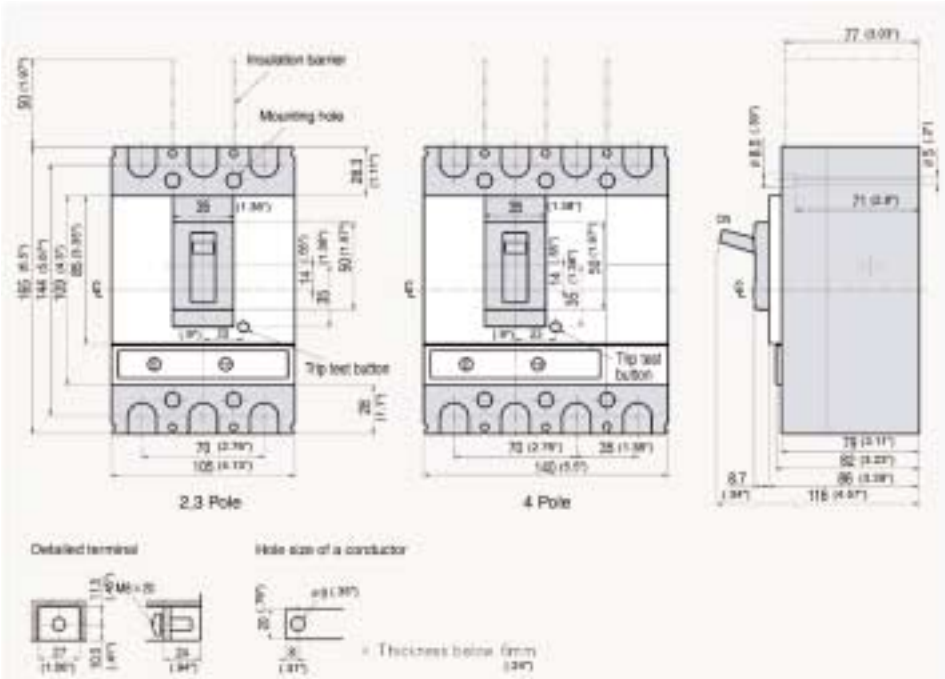
 ▲ All Circuit Breaker ratings Certified by **KEMA** Independent Lab Report

GBN 103 / GBH 103 (100 Amp Frame)

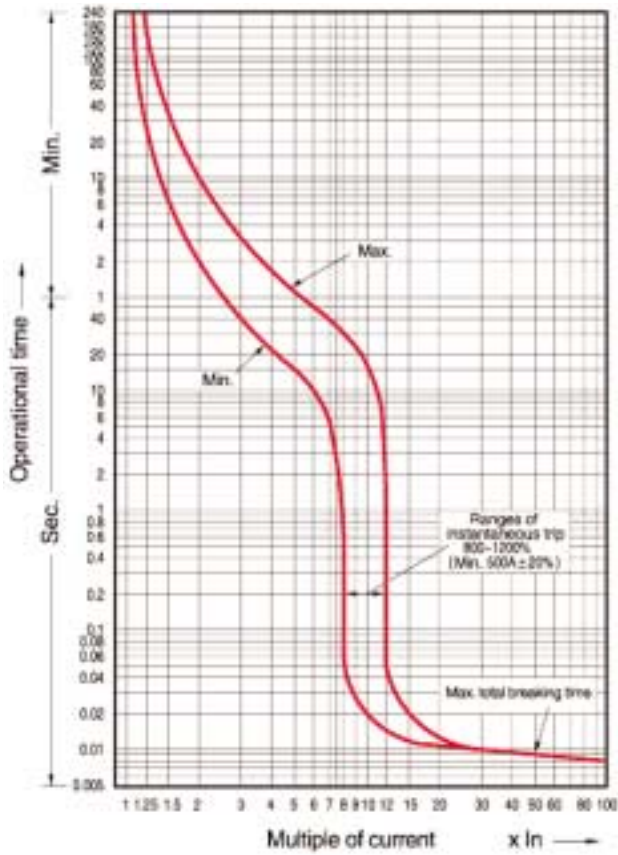


All dimensions are approximate millimeters, (inches)

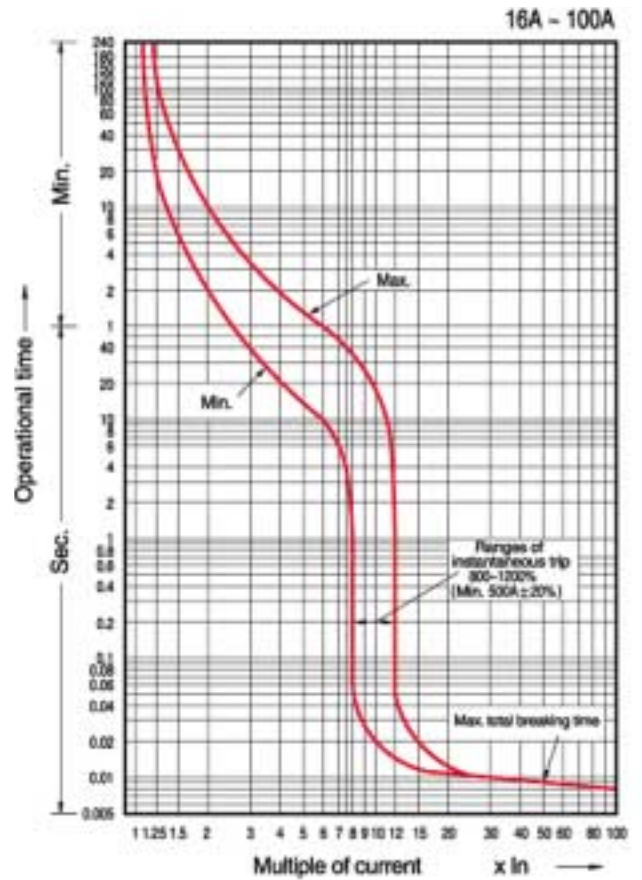
GBN 203 / GBH 203 / GBL 103, 203 (250 Amp Frame)



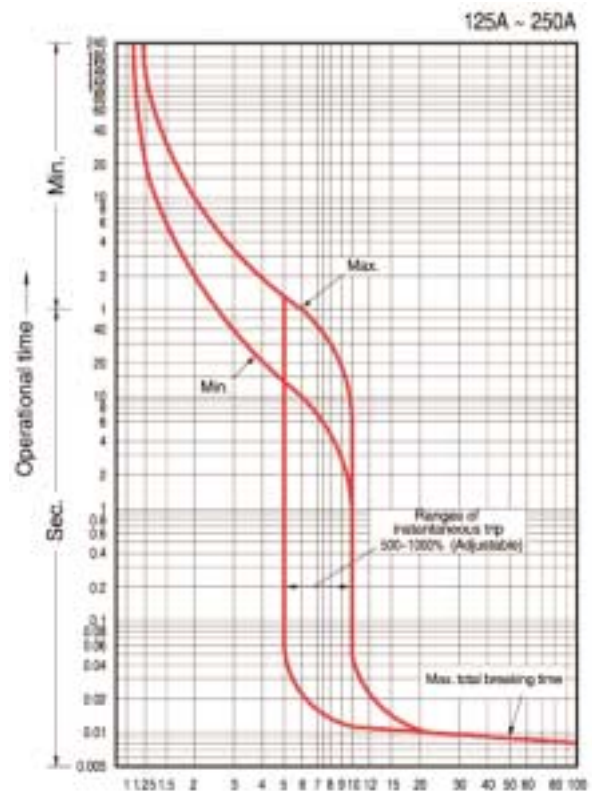
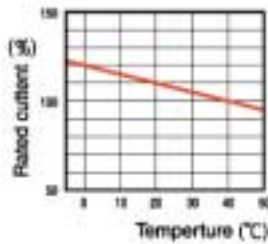
Thermal Magnetic Type GBN 100 / GBH 100



GBN 250 / GBH 250 / GBL 100, 250

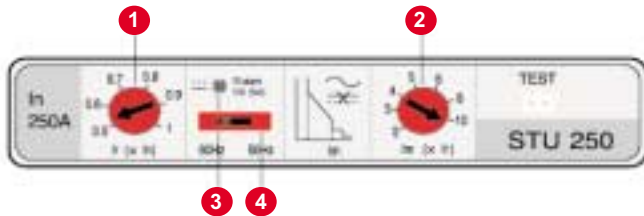


Graphs of the temperature compensation



STU type (Electronic trip unit)

- 1** Rated current (I_n) regulating knob
6 steps: 0.5 / 0.6 / 0.7 / 0.8 / 0.9 / 1.0 x I_n
- 2** Short time-limit current (I_m) regualting knob
7 steps: 2 / 3 / 4 / 5 / 6 / 8 / 10 x I_r
- 3** Pre-alarm LED (PAL)
 - 70~110% x I_r : LED on & off
 - Over 110%: LED on
- 4** Frequency selection s/w
 - 50 or 60Hz (Default is 60Hz)



General Description

Series GB L-E Breakers with Electronic Trip are in same frame size as GB H (4.1", 105mm wide and 6.5", 165mm high.)

While cost for the electronic trip is higher, the advantage is adjustable short time trip through 7 steps down to 2 times the set continuous current. The interruption capacity (IC) ia also extremely high or 125kA at 240Volt and 85kA at 460Volt.

Accessories: Series GB L-E use the same accessories and accessory kits as Series GB H.

These include:

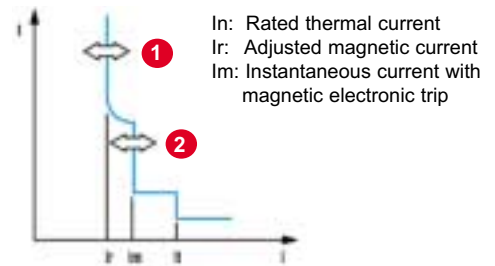
- Extra Auxiliary Interlocks
- Alarm Trip Contacts
- Shunt Trip
- Undervoltage Trip

See page GB-7 for accessory catalog numbers and prices.

Dimensions: The Series GB L-E dimensions are identical to Series GB L.

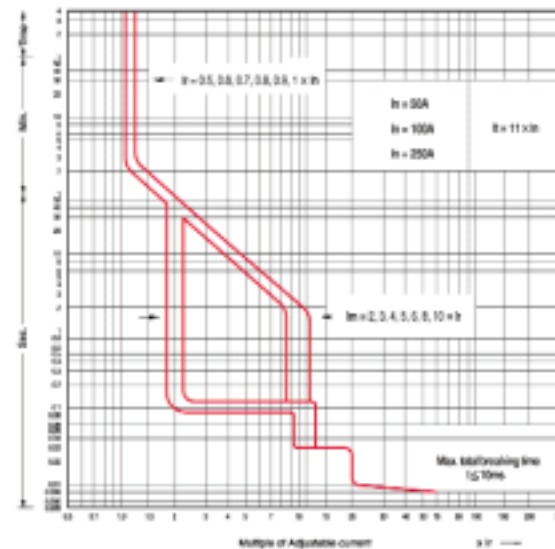


Trip unit	STU50	STU100	STU250
Ranges of the I_n	0.5 x I_n	0.5	125
	0.6 x I_n	60	150
	0.7 x I_n	70	175
	0.8 x I_n	80	200
	0.9 x I_n	90	225
	1.0 x I_n	100	250
Ranges of the I_m	2,3,4,5,6,8,10 x I_r		
Ranges of the I_t	11 x I_n		



* Default settings of the rated current and instantaneous current are Max. value

Electronic Trip Unit GBL 50E, 100E, 250E



Check with factory for additional data on the electronic trip breaker.

Note) I_n : Rated current, I_r : Adjusted current, I_m : Short time limit current, I_t : Instantaneous current

INTERNATIONAL SPECIFICATIONS

The 400 AF (Amp Frame), 800 AF and 1200 AF, have not been submitted to UL (6/2001).
(For additional information, check with EECONTROLS Main Office)

Description - 400Amp - 800Amp

Dimension

400Amp H 257mm x W 140mm x D145mm
800Amp H 275mm x W 210mm x D145mm

Trip Free Mechanism

Compact & Economic Type

ABE, ABS series: 25kA, 35kA and 50kA at 415Vac

Tripping Devices

Thermal-magnetic
Hydraulic-magnetic

Full range of 4 pole MCCB

Built with early make late break
Neutral contact

International Standard

Conforming to IEC 947-2
CE marking

ISO9001 Quality Assurance



Hinged front cover flap
makes it easier to mount internal accessories; Alarm Switch, Auxiliary Switch, Shunt trip and UVT

Rating Plug
Thermal currents are field interchangeable between
250-300A
350-400A
500-600A
700-800A



Description - For MCCB 400Amp to 800Amp

Easy to mount optional accessories

Hinged front cover flap makes it easier to mount internal accessories like Auxiliary contact, Alarm contact, shunt trip unit and Under voltage trip unit.

Trip Free Mechanism

Compact design with High breaking capacity

25,35,50,65kA@415Vac

Tripping Devices

Fixed thermal / Interchangeable thermal
Fixed or adjustable magnetic

Dual-current rating

Thermal currents are field interchangeable by replacing rating plug between
250A and 300A, 350A and 400A
500A and 600A, 700A and 800A

International Standard

Conforming to IEC 947-2
CE marking

Check with factory for additional data on high current "AB" power breakers



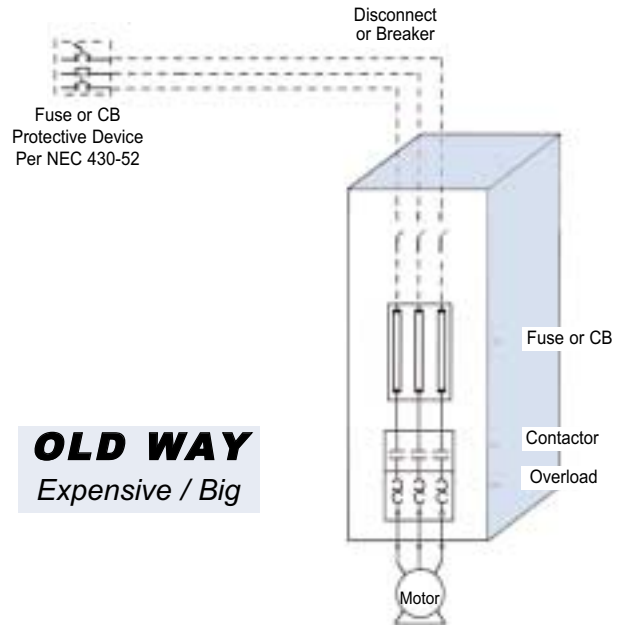
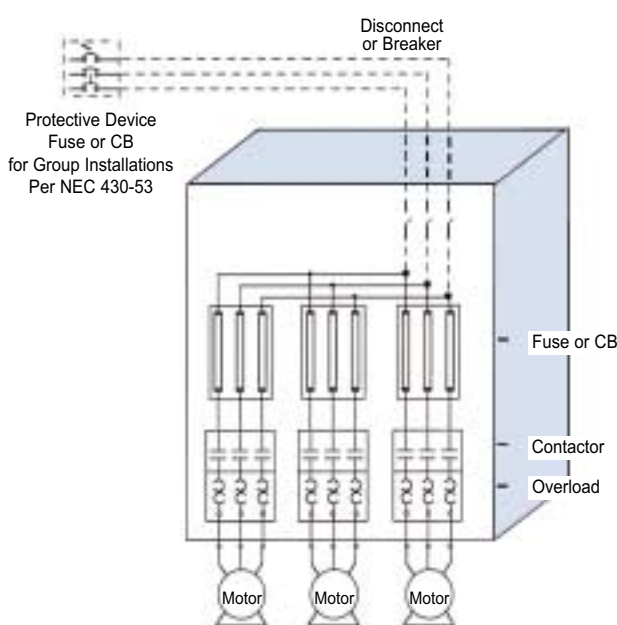
MCP'S Extended to 250Amp
PROVIDE BETTER SYSTEM PROTECTION!

Set Type GBH are designed to match the specific load:

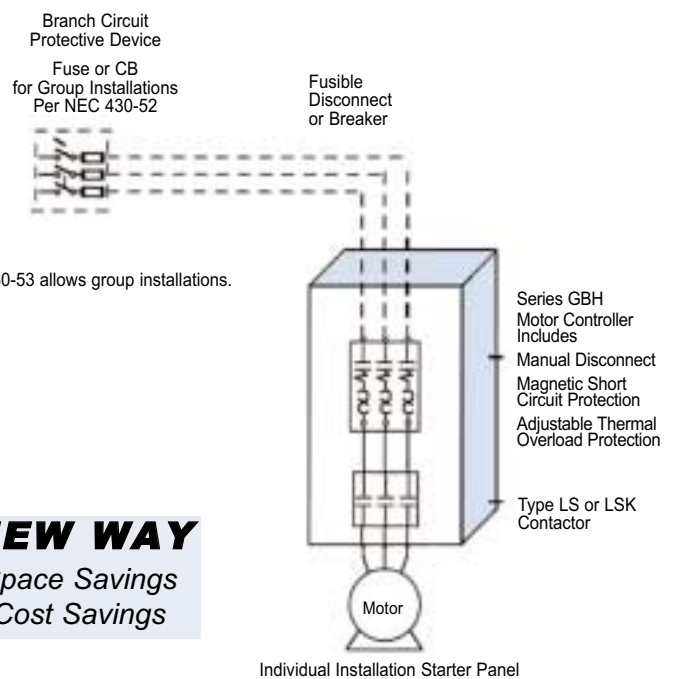
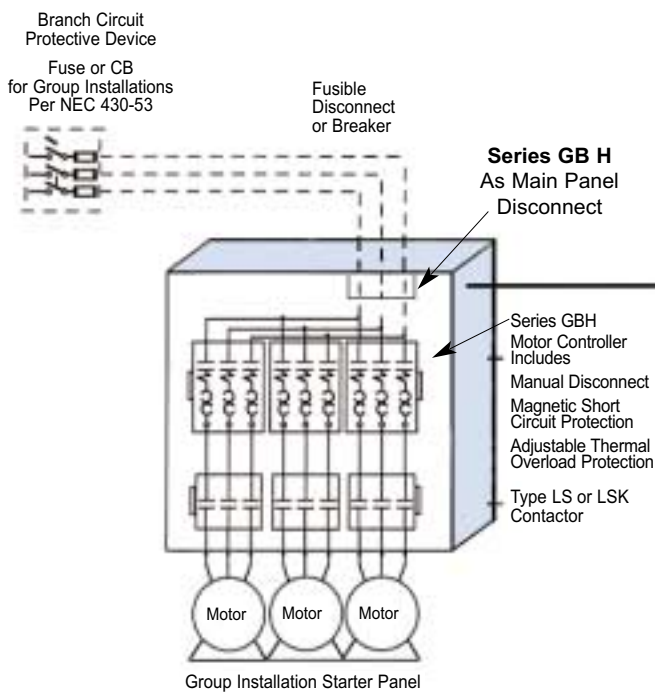
1. Adjust Magnetic Instantaneous Trip to match load.
(Current Limiting Design)
2. Adjust Thermal Trip to match specific load.

BENEFITS

- ▲ **SMALLER SIZE**
- ▲ **LOWER COST**
- ▲ **HIGHER INTERRUPTION CAPACITY**



OLD WAY
Expensive / Big



NEW WAY
Space Savings
Cost Savings