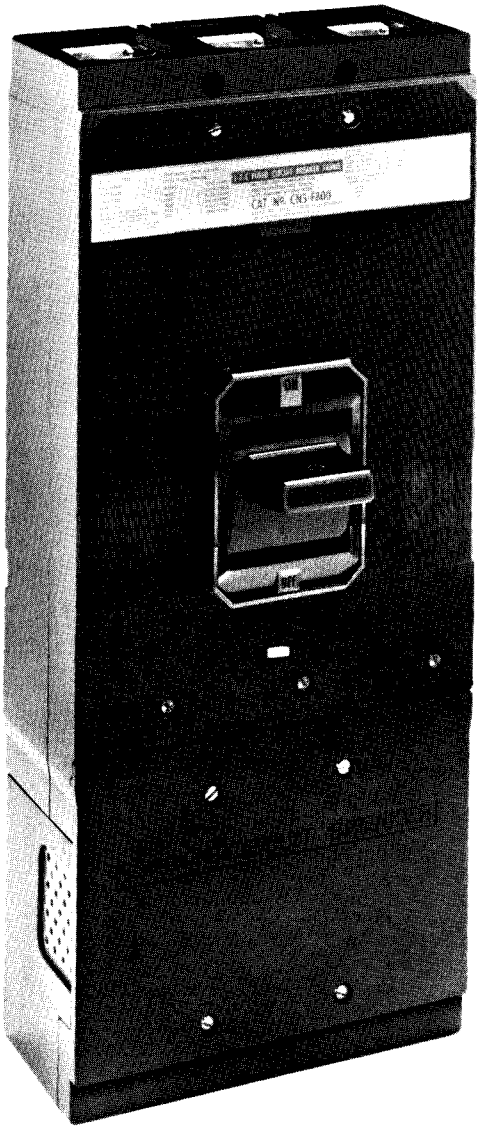
SIEMENS

Information and Instruction Guide
K Frame
Type CN Cordon®

I-T-E® Molded Case Circuit Breakers



Bulletin IB-2.4.7-9A

Information and Instruction Guide

I-T-E K Frame
Type CN Cordon®
Model ETC, ETI
3 Pole 400-800 Amperes

WARNING

Dangerous voltages are present inside the enclosures, or panels in which this circuit breaker is installed. Serious injury, electrocution, and/or equipment damage is possible unless extreme caution is used when examining this circuit breaker while it is still in service.

De-energize all incoming power if conditions exist which are contrary to those described in this instruction book or which are otherwise unusual.

Only qualified personnel should work on or around this equipment.

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IMPORTANT

The information contained herein is general in nature and is not intended for specific application purposes nor is it intended as a training manual for unqualified personnel. Refer to Note for definition of a **qualified person***. It does not relieve the user of responsibility to use sound practices in application, installation, operation and maintenance of the equipment purchased or in personnel safety precautions. Should a conflict arise between the general information contained in this publication and the contents of drawings or supplementary material or both, the latter shall take precedence. ITE Electrical Products reserves the right to make changes in specifications shown herein or add improvements at any time without notice or obligation.

NOTE

*** Authorized and qualified personnel-**
For the purpose of this manual a qualified person is one who is familiar with the installation, construction or operation of the equipment and the hazards involved. In addition, he has the following qualifications:

(a) **is trained and authorized** to de-energize, clear, ground, and tag circuits and equipment in accordance with established safety practices.

(b) **is trained** in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses or face shields, flash clothing, etc., in accordance with established safety practices.

(c) **is trained** in rendering first aid.

WARRANTY DISCLAIMER

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the local Siemens sales office.

The contents of this instruction manual shall not become part of or modify any prior or existing agreement, commitment or relationship. The sales contract contains the entire obligation of Siemens. The warranty contained in the contract between the parties is the sole warranty of Siemens. Any statements contained herein do not create new warranties or modify the existing warranty.

NEMA PROCEDURES NOTE

Dangerous voltages are present in the equipment which can cause severe personal injury and product failure. Always de-energize and ground the equipment before maintenance. Maintenance should be performed only by qualified personnel. The use of unauthorized parts in the repair of the equipment or tampering by unqualified personnel will result in dangerous conditions which can cause severe personal injury or equipment damage. Follow all safety instructions contained herein.

GENERAL INFORMATION FOR I-T-E K FRAME, TYPE CN CIRCUIT BREAKERS 3 POLE, 400-800 AMPERES

General

CN-Type CORDON® circuit breakers, as shown in drawings on page 6, are for use in individual enclosures, switchboards, and power and distribution panelboards.

CORDON circuit breakers combine the operating features of a model ET molded case circuit breaker and the high interrupting ability of Amp-trap® fuses. This means double protection is provided, both thermal-magnetic overload protection by the breaker trip unit and an interrupting capability in excess of the standard breaker ratings by the use of Amp-trap fuses. The coordination of the two allows normal circuit breaker operation for overload conditions without affecting the Amp-trap fuses. In high fault conditions, the Amp-trap fuses quickly and efficiently interrupt the fault current, which may exceed the interrupting rating of the breaker alone.

The common trip feature of the circuit breaker, which causes all poles to open simultaneously for any overcurrent or short circuit, is completely retained so that all poles of the circuit breaker open when any Amp-trap fuse operates. An interlocking arrangement prevents the circuit breaker from being closed until any spent Amp-trap fuse has been removed and replaced. Removal of the fuse housing cover automatically opens the breaker contacts and provides visual assurance that the circuit is disconnected.

Pressure wire connectors, suitable for use with aluminum or copper wire are available for all CN-Type circuit breakers. Rear connection studs or plug-in connector assemblies are also available. The plug-in arrangement permits the removal of the circuit breaker from its leads without physically coming in contact with either the line or load terminals. Special features such as a shunt trip and undervoltage trip devices and auxiliary switches are UL Listed and available for internal mounting. Alarm switches are also available, but their installation voids the UL Listing. Accessory catalog numbers can be found on page 25.

Thermal Magnetic

CN circuit breakers provide complete overload and short circuit protection by use of a time-delay thermal trip element and an instantaneous magnetic trip device. Nominal instantaneous trip values are externally adjustable with 5 trip points as shown below:

Breaker Ampere Rating	NOMINAL INSTANTANEOUS VALUES				
	Low	2	3	4	HI
400-600	1900	2300	2700	3100	3500
700-800	3200	3600	4100	5100	5600

Consult NEMA – Procedures For Verifying Performance of Molded Case Circuit Breakers – AB2 for field tests.

Circuit breakers are calibrated at the factory, under controlled temperature conditions for a 40°C (104°F) ambient. The cover on the trip unit is sealed to prevent access to the trip elements. Alterations of the calibration of these elements should not be attempted. Removal of the seals will void the Underwriters' Laboratories, Inc. listing for that specific trip unit.

See page 24 for catalog numbers.

Instantaneous Trip

Model ETI circuit breakers (adjustable instantaneous magnetic trip only) are designed for use in welding circuits, motor circuits and combination starters where short circuit protection is required. When used in combination starters, they serve in conjunction with motor protective relays to offer complete protection. The relays guard against motor overloads, the circuit breaker provides short circuit protection.

The available instantaneous adjustments are as follows:

Rating	NOMINAL INSTANTANEOUS VALUES				
	Low	2	3	4	HI
600	1900	2300	2700	3100	3500
800 (Low)	3200	3600	4100	5100	5600
800 (High)	5000	6100	6700	7400	8000

Interrupting Ratings

The interrupting ratings of the CN type circuit breakers are based on circuits adjusted to the rated short circuit (at specified voltage levels) before the insertion of the circuit breaker.

Based on UL 489 Standards Symmetrical Rms Amperes			
Breaker Type	240VAC	480VAC	600VAC
CN	150,000	150,000	150,000

Circuit Breaker Operation

With the mechanism latched and the contacts open, the operating handle will be in the "OFF" position. Moving the handle to the "ON" position closes the contacts and establishes a circuit through the breaker. Under overload or short circuit conditions sufficient to trip or open the breaker automatically, the operating handle moves to a position between "ON" and "OFF" as previously described. To relatch the circuit breaker after automatic operation, move the operating handle to the extreme "OFF" position. The circuit breaker is now ready for reclosing.

The overcenter toggle mechanism is trip free of the operating handle. The circuit breaker, therefore, cannot be held closed by means of the handle should a tripping condition exist. The handle will assume an intermediate position between "ON" and "OFF" after automatic operation, thus giving a clear indication of tripping.

Warning for Circuit Breaker Removal

The circuit breaker should always be in the "TRIPPED" or "OFF" position; and if practical, the switchboard de-energized before inspecting, changing, installing or removing the circuit breaker. Never attempt to add internal features with the circuit breaker mounted in any panel or switchboard. If the bus cannot be de-energized, use insulated hand tools, rubber gloves and a rubber floormat.

Maintenance

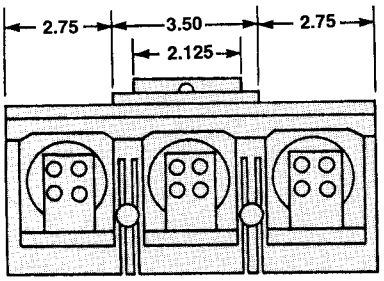
Failure to properly maintain this equipment can result in severe personal injury and product failure. The instructions contained herein should be carefully reviewed, understood and followed. The following maintenance procedure should be performed regularly:

1) Breaker should be turned "ON" and "OFF" several times to assure proper mechanical function of the contact mechanisms.
2) Assure that terminal connectors are properly secured.
3) Visually inspect circuit breaker molding for broken or cracked surfaces.
4) Assure that trip unit attachment screws are at recommended torque value.
5) For additional testing information consult NEMA PROCEDURES FOR VERIFYING PERFORMANCE OF MOLDED CASE CIRCUIT BREAKERS.

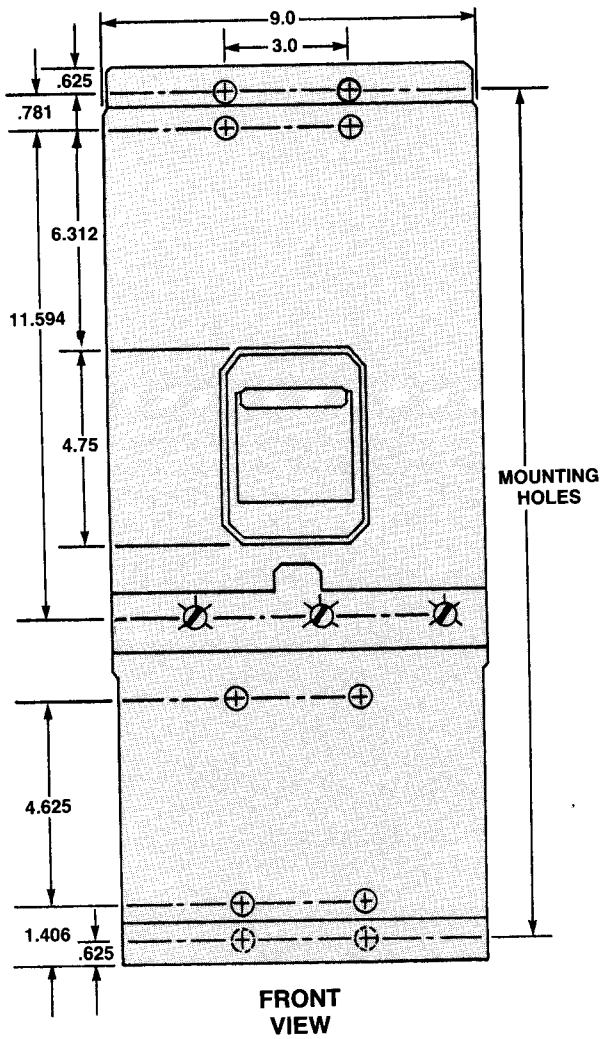
This checklist does not purport to cover all details.

Amp-Trap® is a registered trademark of the Gould Shawmut Co.

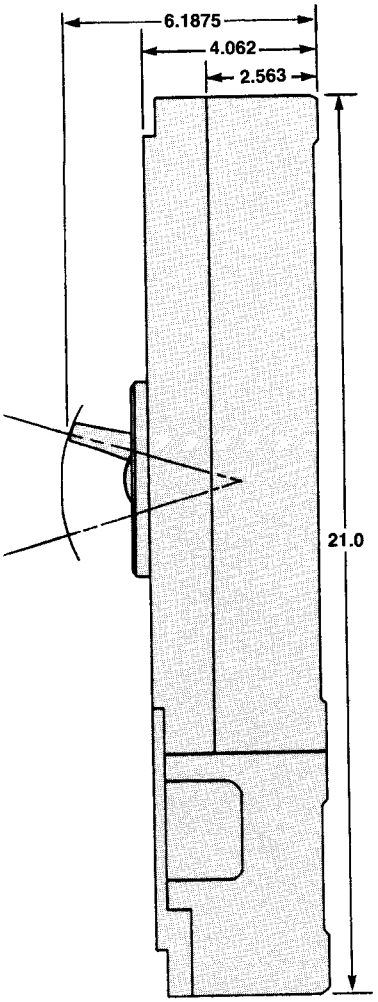
K FRAME TYPE CN OUTLINE DRAWINGS



END
VIEW

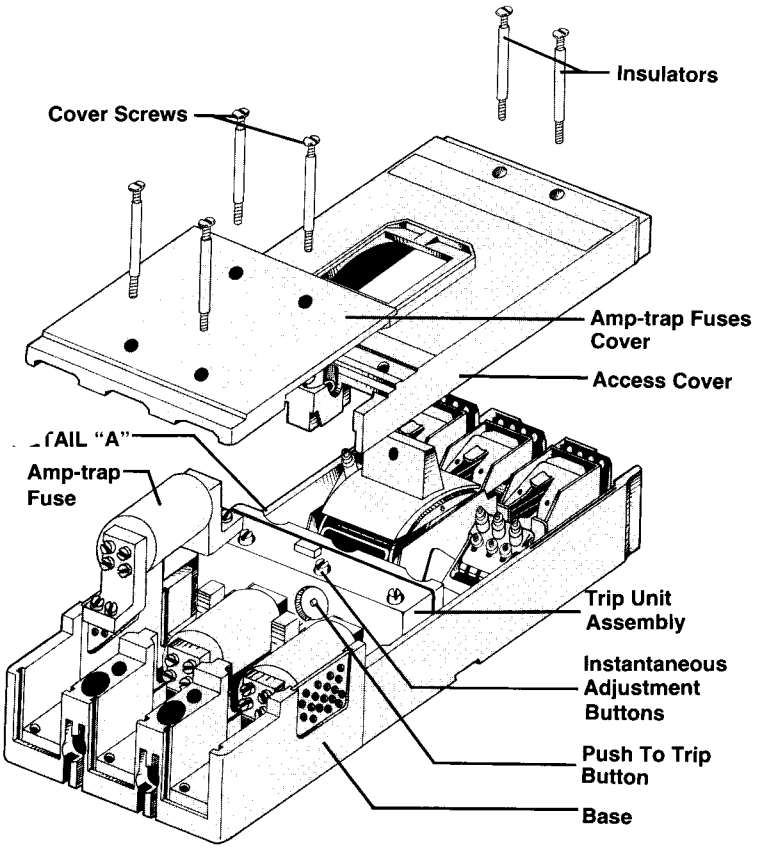


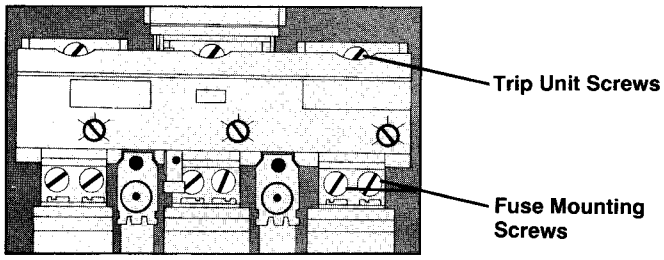
FRONT
VIEW



SIDE
VIEW

INSTRUCTIONS FOR INSTALLING I-T-E TRIP UNITS AND AMP-TRAP® FUSES





DETAIL "A"

DANGER

Hazardous Voltage. Will cause severe personal injury or death.

Turn power off supplying device before installing.

NOTE: CIRCUIT BREAKER MUST BE IN THE "OFF" OR "TRIPPED" POSITION BEFORE REMOVING ACCESS COVER.

To Add Trip Unit To Breaker Frame:

1. Remove six cover screws, the Amp-trap fuses cover and breaker cover.
2. On outside poles, remove screws with lockwashers and heater plates.
3. Hold breaker handle away from trip unit area. Lower trip unit carefully into base. Make sure that slots in trip unit latch bracket engage latch pin on mechanism.
4. Tighten trip unit anchor screw (center pole) securely to base. (Recommended torque 11 to 13 foot pounds.)
5. Replace screws, lockwashers and heater plates on outside poles and tighten securely. (Recommended torque 11 to 13 foot pounds.)
6. Install three Amp-trap fuses on load side of trip unit using slotted screws and lockwashers. (Recommended torque 10 to 12 foot pounds.)
7. Replace breaker cover and two cover screws.
8. Install Amp-trap fuses cover as detailed at right.
9. Move operating handle to extreme OFF (reset) position.

To Replace Trip Unit In Breaker Frame:

1. Remove six cover screws, the Amp-trap fuses cover and breaker cover.
2. Locate and press the metal "TRIP" button shown in the drawing above, causing the breaker mechanism to trip and the operating handle to move to "TRIPPED" position.
3. Remove the screws and lockwashers which hold the Amp-trap fuses and remove the fuses.
4. On outside poles, remove screws with lockwashers and heater plates.
5. Remove trip unit anchor screw and lockwasher in center pole.
6. Hold breaker handle away from trip unit. Lift trip unit out of breaker while holding the "TRIP" button (refer to drawing above) depressed.
7. Add new trip unit as outlined under steps 3 to 9 of "**Add Trip Unit**" instructions.

WARNING

REMOVAL OF THE AMP-TRAP COVER AUTOMATICALLY TRIPS CIRCUIT BREAKER. THE BREAKER SHOULD BE IN THE "OFF" POSITION BEFORE ATTEMPTING TO REMOVE THIS COVER.

Replacement Of Amp-trap Fuses

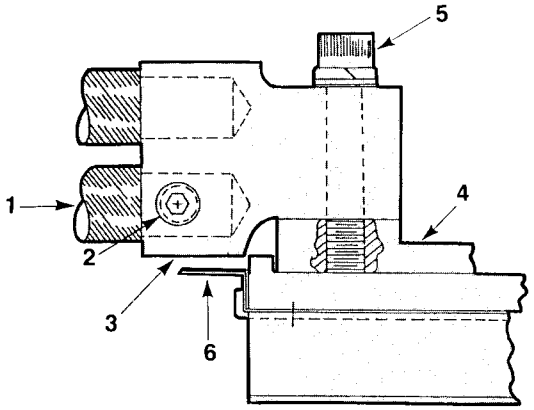
If the breaker cannot be reset after allowing it time to cool after a tripping operation, the Amp-trap fuses should be examined.

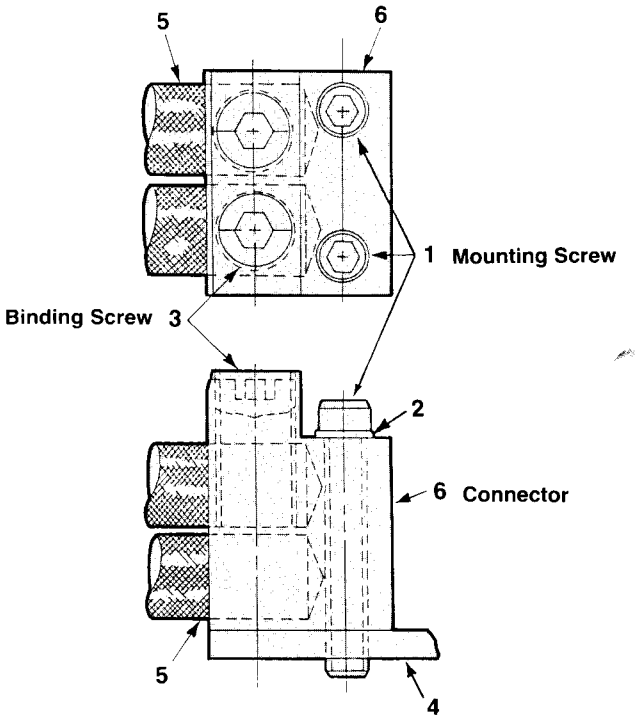
1. Remove the four cover screws and the Amp-trap fuses cover. It is not necessary to remove the circuit breaker cover to access the fuses.
2. Visually inspect the ends of the fuses closest to the trip unit to locate a blown fuse indicator button. A button protruding approximately ¼" above the mounting flange indicates that the fuse has blown.
3. Remove four fuse mounting screws and lockwashers from each fuse as required.
4. Remove the Amp-trap fuse or fuses from the breaker frame.
5. Fuses may be continually checked to confirm the indicator button status.
6. Install replacement fuses using the screws and lockwashers removed in step 1. (Recommended torque 10-12 foot pounds.)
7. Replace the circuit breaker cover, if removed, using two cover screws.

Replacing The Amp-trap Fuses Cover

The cover has a molded lever assembly attached which provides the common trip feature and links the fuses with the trip unit. When removing or replacing the cover, use care not to damage the lever assembly. The breaker cannot be switched to the "ON" position until the fuse cover has been replaced. Secure the cover with the four screws with lockwasher, flat washer and insulating sleeve.

INSTRUCTIONS FOR INSTALLING
I-T-E PRESSURE WIRE CONNECTORS





⚠ DANGER

Hazardous Voltage. Will cause severe personal injury or death.

Turn power off supplying device before installing.

⚠ SAFETY INSTRUCTIONS

A. Move breaker handle to "OFF" position.
B. Remove breaker cover.
C. Mount breaker securely to suitable supports.
D. Attach power cable (**1**) to cable connectors (**3**) and tighten cable set screws (**2**) as follows:

Catalog No.	Wire Range	Set Screw Torque
TA2K750	(2) 600-750MCM Cu-Al	300 in. lbs.

E. Mount cable connectors (**3**) to terminals (**4**) with mounting bolts (**5**), lockwashers and flatwashers supplied. Recommended torque for mounting bolts is **240 in. lbs.**

NOTE: Steps D & E may be completed in any convenient order.

F. Re-assemble cover on breaker with screws and lockwashers removed earlier. Tighten securely.
G. Insulation shield (**6**) is required only when breaker is used with an enclosure or base pan as shown. Insulation shield is secured with breaker mounting screws. (NOTE: Shield is furnished with I-T-E enclosures when required.)

A. Move breaker handle to "OFF" position.
B. Remove breaker cover.
C. Mount breaker securely to suitable supports.
D. Attach power cable (**5**) to cable connectors (**6**) and tighten cable set screws (**3**) as follows:

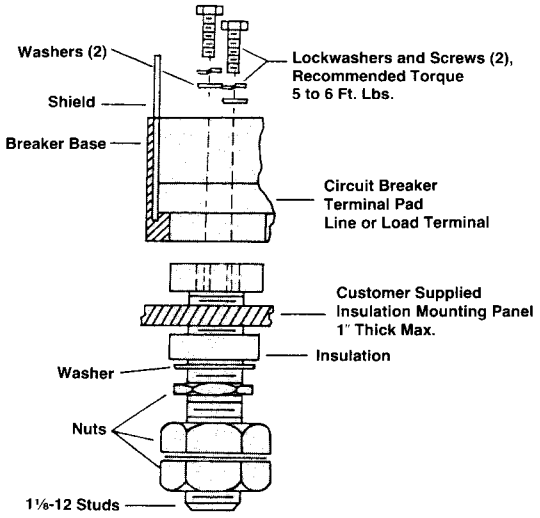
Catalog No.	Wire Range	Set Screw Torque
TA2K500	(1-2) #1-500MCM Cu-Al	375 in. lbs.
TA3K350	(1-3) 300-350MCM Cu-Al	275 in. lbs.
TA3K400	(1-4) 400MCM Cu-Al	275 in. lbs.
TC2K500	(1-2) #1-500MCM Cu	375 in. lbs.
TC3K350	(1-3) #1-350MCM Cu	275 in. lbs.

E. Mount cable connectors (**6**) to terminals (**4**) with mounting screws (**1**) and lockwashers (**2**). Recommended torque for mounting screws is **7-9 ft. lbs.**

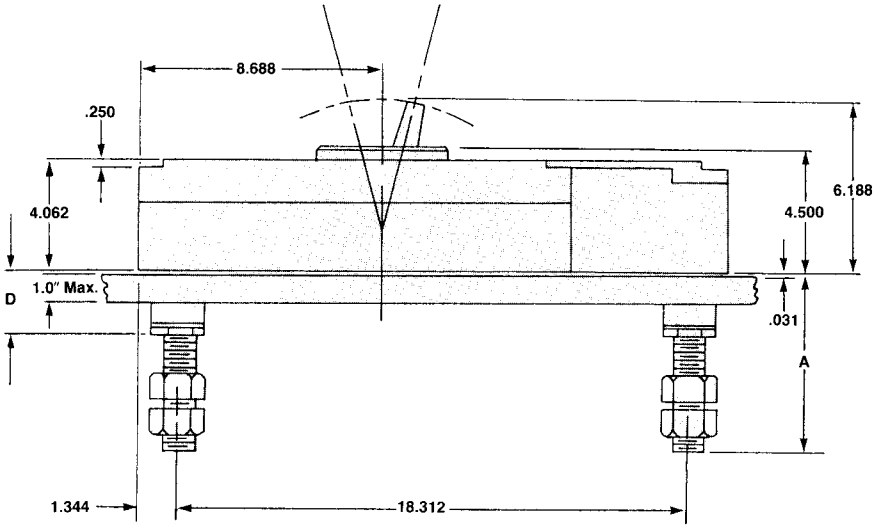
NOTE: Steps D & E may be completed in any convenient order.

F. Re-assemble cover on breaker with screws and lockwashers removed earlier. Tighten securely.

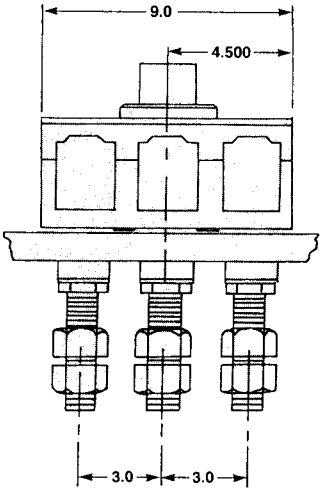
INSTRUCTIONS FOR INSTALLATION OF I-T-E REAR CONNECTING STUDS



Poles	Quantity Required Per Breaker
3	4 of RS9603 plus 2 of RS9604

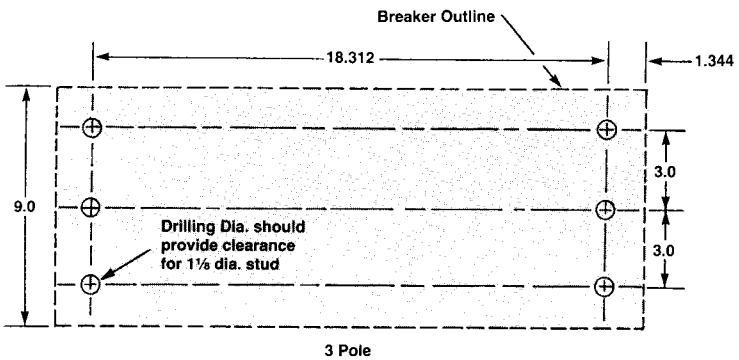


Side View



End View

Rear Connected Terminal			
Amperes	**"A"**	**Cat. No.**	**"D"**
125-800	5½	RS 9603	1 5/32 + Panel Thickness
125-800	8	RS9604	1 5/32 + Panel Thickness



3 Pole

INSTRUCTIONS FOR INSTALLATION OF I-T-E CIRCUIT BREAKER PLUG-IN ADAPTERS

DANGER

Hazardous Voltage. Will cause severe personal injury or death.

Turn power off supplying device before installing.

SAFETY INSTRUCTIONS

A complete plug-in installation requires one line end adapter assembly (consisting of mounting block, tulip connectors and associated hardware) and one load end adapter assembly. An optional switchboard mounting pan is available or customer can supply a mounting means to suit his requirements.

Application Information	No. of Poles	Line End Adapter Cat. No.	Load End Adapter Cat. No.	Switchboard Mtg. Pan Cat. No.
CN	3	PC 9608	PC 9608	PL 9697

Mounting Preparation (Figs. 1 & 2)

A. If the switchboard mounting pan (**1**) is to be used, provide drilling as shown in Fig. 1.

B. If other mounting means are to be used, provide the cutouts and drilling required to mount the adapter blocks as shown in Fig. 2.

Switchboard Mounting Plate, if used, (Fig. 3)

C. Place switchboard mounting pan (**1**) in position at location previously prepared in step A above. Secure in place with 5/16" hardware (hardware furnished by customer).

Mounting Block (Fig. 3)

D. Align mounting block (**2**) with cutouts in switchboard mounting pan (or customer's mounting means as previously prepared in Step B above) and secure in place with 3/8" flatwashers (**3**), lockwashers (**4**) and 3/8-16 hex nuts (**5**) furnished.

Breaker Preparation (Fig. 4)

E. Move breaker operating handle to "OFF" position. Remove four Amp-trap fuse cover screws (**14**) and the fuses cover (**13**). Remove four breaker cover screws (**6**) and breaker cover (**7**). Remove pressure wire connectors if present.

F. Place tulip clip assembly (**8**) on back of breaker in recess provided in base molding. Secure in place with 5/16" flatwashers (**9**), lockwashers (**10**) and 5/16-18 hex head bolts (**11**) furnished. Recommended tightening torque for these bolts is 5-6 ft. lbs. to assure a good electrical connection. Repeat this procedure for the remaining tulip clip assemblies.

G. Insert end shields (**12**) into slots provided at line and load ends of breaker.

H. Replace breaker cover (**7**) and secure four cover screws (**6**).

I. Replace Amp-trap fuses cover (**13**) and secure four cover screws (**14**).

J. Affix warning label (**15**) to top left side of breaker cover.

K. Add accessory label (**16**) to top right side of breaker cover.

Final Assembly (Fig. 5)

L. Make bus and/or cable connection to rear of mounting block studs using hex nuts (**17**) furnished to secure this connection.

M. Place shields (**21**) over tulip assemblies and align with mounting holes on breaker. Discard large and small insulation shields packed with breaker.

Caution: Make certain that breaker operating handle is in the "OFF" position before proceeding with the next step.

N. Align breaker with mounting blocks and force female tulip clips over male studs in mounting block until breaker base bottoms against mounting block. Secure breaker in place with 3/8-16 x 1½" long mounting screws (**18**), lockwashers (**19**) and flatwashers (**20**) furnished.

O. If installation requires the use of front panel trim, provide cutout for breaker escutcheon as shown in Fig. 6.

DIAGRAMS FOR INSTALLATION OF I-T-E CIRCUIT BREAKER PLUG-IN ADAPTERS

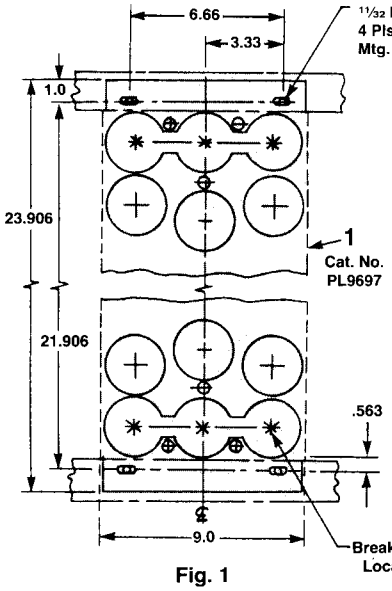


Fig. 1

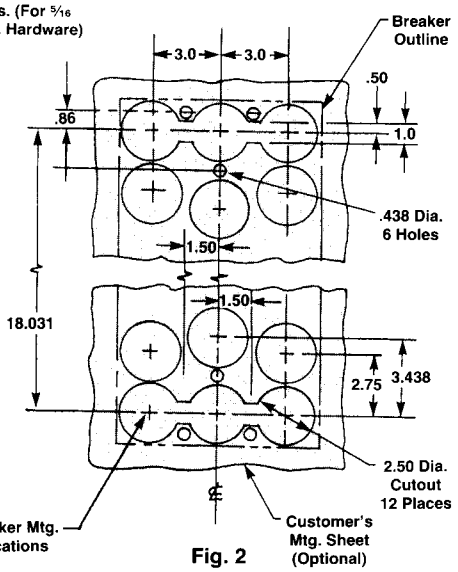


Fig. 2

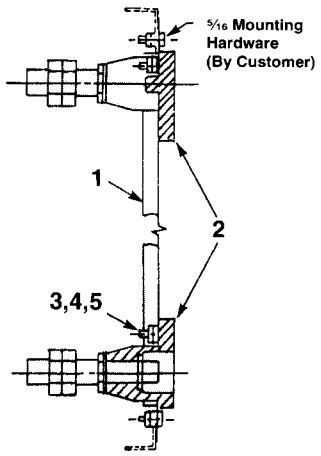


Fig. 3

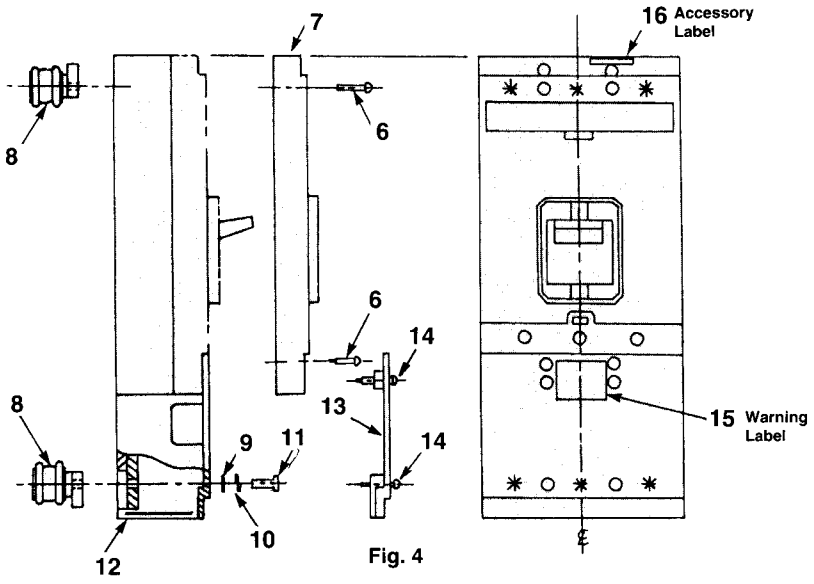


Fig. 4

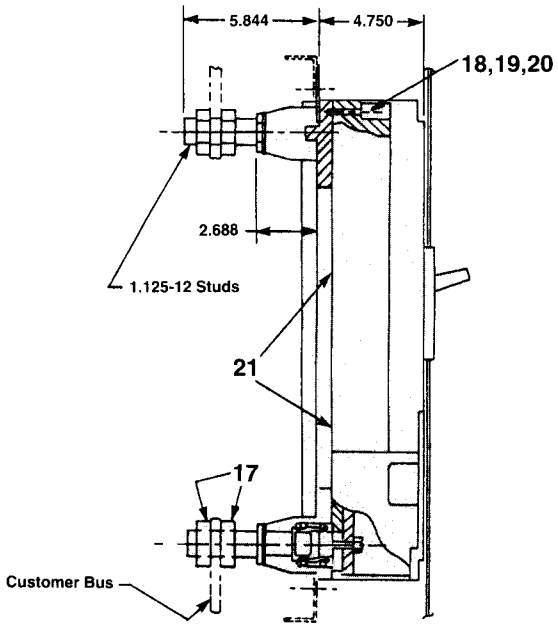


Fig. 5

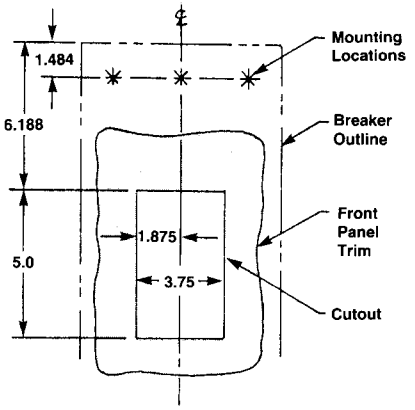


Fig. 6

INSTRUCTIONS FOR ASSEMBLING
I-T-E WALKING BEAM INTERLOCK – MI5460
PANEL MOUNTED CIRCUIT BREAKERS

A. Drill customer supplied panel as indicated in Fig. 2.
B. Assemble support (**1**) to rear of panel, with screws (**2**), lockwashers (**3**) and nuts (**4**) supplied, as shown in Fig. 1.
C. Assemble plungers (**5**) to rocker arm (**6**), insert pivot pin (**7**), through rocker arm and plunger. Insert cotter pin (**8**) into hole in pivot pin. Spread cotter pin.
D. Assemble rocker arm and plungers assembly, to rocker arm support (**1**), insert pivot pin (**9**) through support and rocker arm. Insert cotter pin (**10**) into hole in pivot pin. Spread cotter pin.

IMPORTANT: Heads of pivot pins must be on upper side, and cotter pins on lower side of assembly.)
E. Mount factory-drilled circuit breakers on panel.
F. With both circuit breakers in "OFF" position, interlock must move freely.
G. With one circuit breaker "ON," the other circuit breaker must not close.

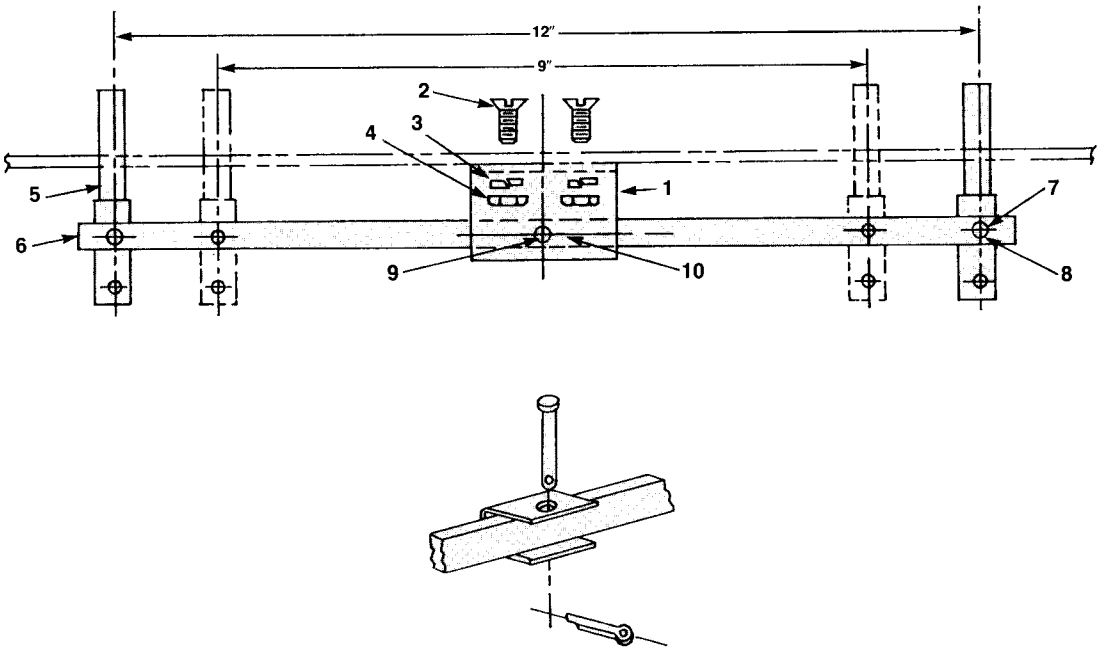


Fig. 1

SPECIAL NOTE:
Breakers required for mechanical walking beam application, must be ordered as a special.
Field drilling of breakers is not permissible.

DIAGRAMS FOR ASSEMBLING
I-T-E WALKING BEAM INTERLOCK – MI5460
PANEL MOUNTED CIRCUIT BREAKERS

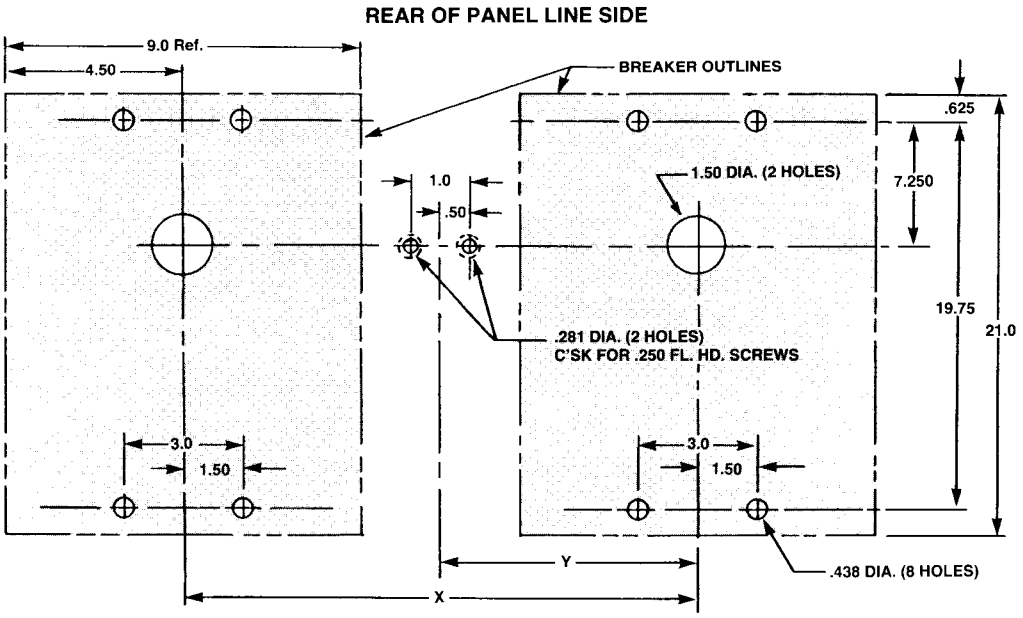


Fig. 2

INTERLOCK ON	X	Y	Z
9″ CENTERS	9.0	4.5	2.34
12″ CENTERS	12.0	6.0	2.50

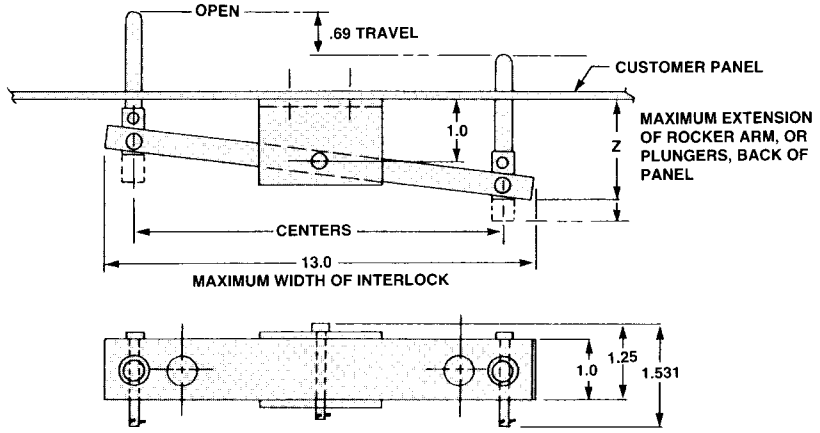


Fig. 3

INSTRUCTIONS FOR ASSEMBLING
I-T-E WALKING BEAM INTERLOCK – MI5460
PLUG-IN MOUNTED CIRCUIT BREAKERS

A. Drill customer supplied panel as indicated in Fig. 2.
B. Mount Plug-In Mounting Assemblies (purchased separately) on panel in accordance with instructions furnished with those assemblies.
C. Assemble support (**1**) to rear of panel, with screws (**2**), lockwashers (**3**) and nuts (**4**) supplied, as shown in Fig. 1.
D. Assemble plungers (**5**) to rocker arm (**6**), insert pivot pin (**7**), through rocker arm and plunger. Insert cotter pin (**8**) into hole in pivot pin. Spread cotter pin.
E. Assemble rocker arm and plungers assembly, to rocker arm support (**1**), insert pivot pin (**9**) through support and rocker arm. Insert cotter pin (**10**) into hole in pivot pin. Spread cotter pin.

IMPORTANT: Heads of pivot pins must be on upper side, and cotter pins on lower side of assembly.)
F. Mount factory-drilled circuit breakers onto Plug-In Assembly mounting blocks.
G. With both circuit breakers in "OFF" position, interlock must move freely.
H. With one circuit breaker "ON," the other circuit breaker must not close.

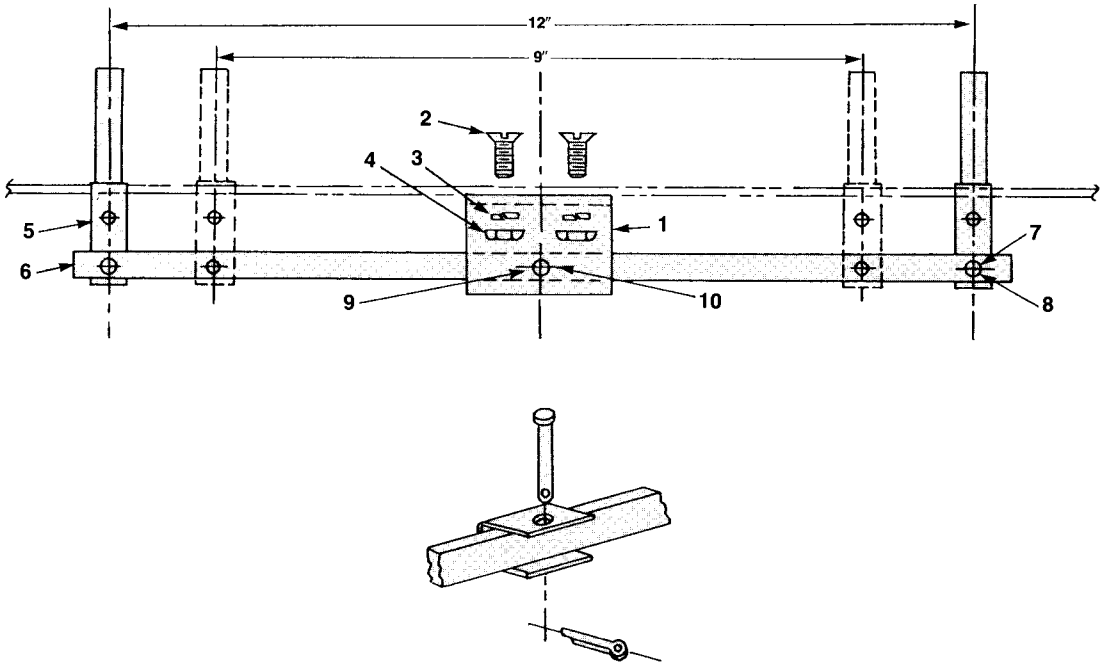


Fig. 1

SPECIAL NOTE:
Breakers required for mechanical walking beam application, must be ordered as a special.
Field drilling of breakers is not permissible.

DIAGRAMS FOR ASSEMBLING
I-T-E WALKING BEAM INTERLOCK – MI5460
PLUG-IN MOUNTED CIRCUIT BREAKERS

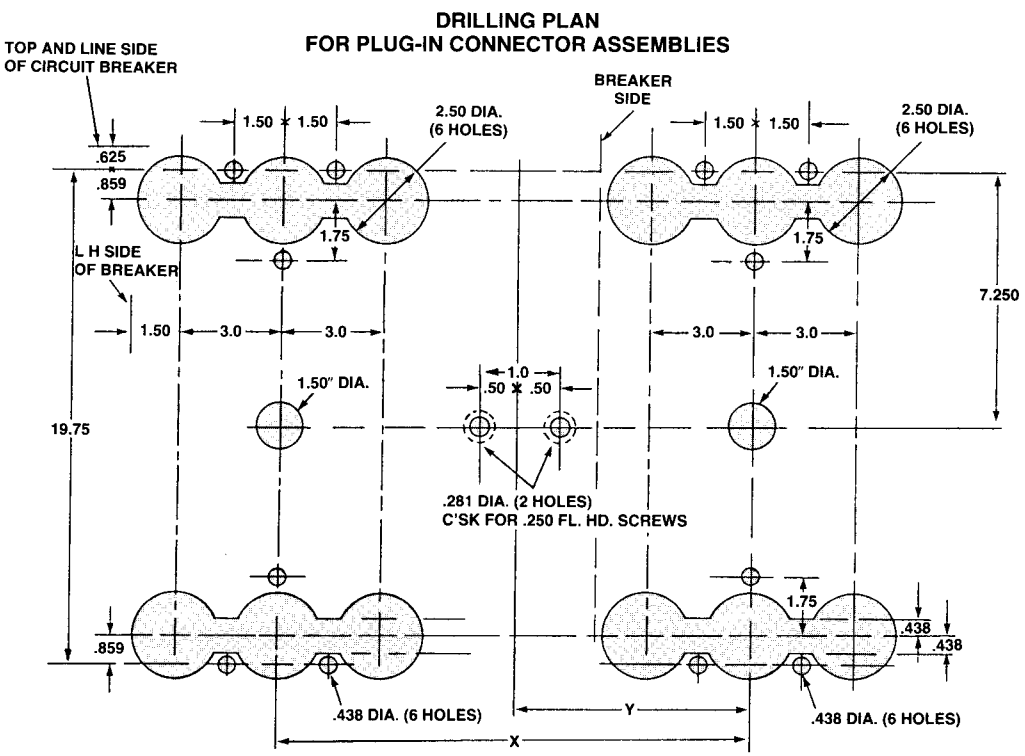


Fig. 2

INTERLOCK ON	X	Y	Z
9" CENTERS	9.0	4.5	1.75
12" CENTERS	12.0	6.0	1.62

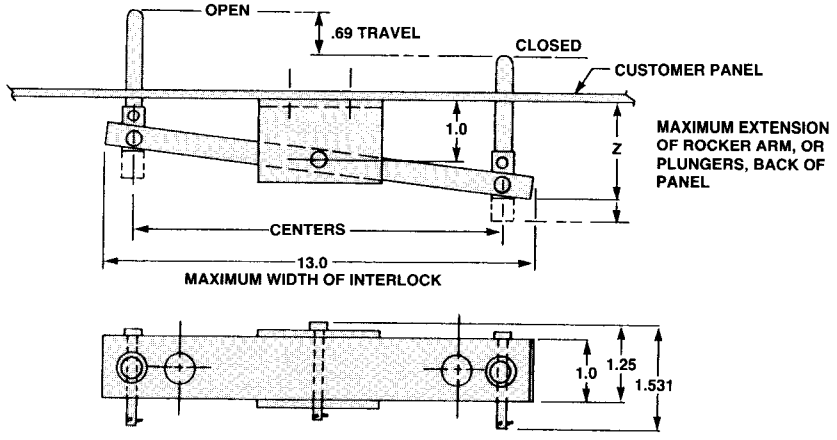


Fig. 3

ACCESSORY INFORMATION FOR I-T-E SHUNT TRIP AND UNDERVOLTAGE TRIP DEVICES

The following is for INFORMATION PURPOSES ONLY. These devices are to be installed only by the factory or specific authorized personnel.

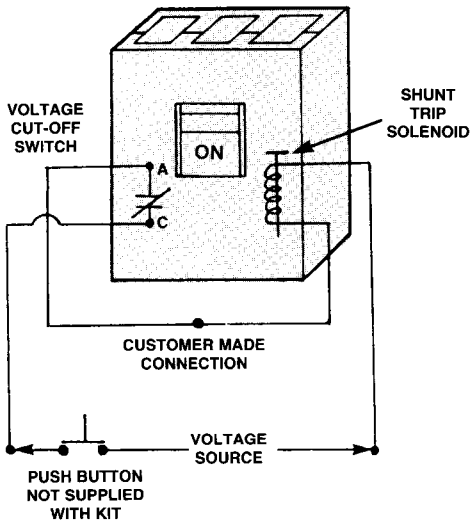
SHUNT TRIP

Control Voltage		1 Shunt Trip
AC	DC	Cat. No.
120		S01KM0R0
240		S02KM4R0
480		S02KM4R0
	24	S07KM0R0
	48	S09KM0R0
	125	S10KM2R0

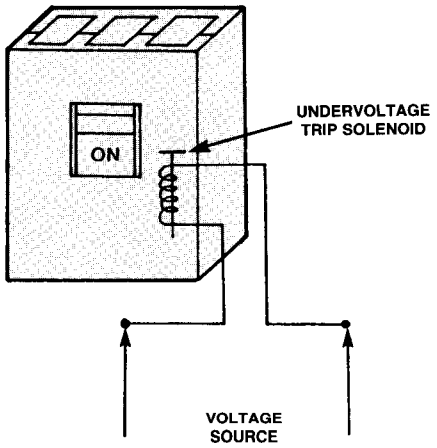
UNDERVOLTAGE TRIP

Control Voltage		1 Undervoltage Trip
AC	DC	Cat. No.
120		U01KM0R0
240		U03KM0R0
480		U04KM0R0
	12	U15KM0R0
	24	U13KM0R0
	48	U14KM0R0
	125	U09KM0R0
	250	U11KM0R0

LINE END



LINE END



SHUNT TRIP ACCESSORY

1. Place circuit breaker into the "ON" position.
2. Attach test circuit to accessory leads. (Be sure that the supplied and installed voltage cutoff switch is wired in series with the solenoid coil). Shunt trip device must trip the circuit breaker at a value of at least 55% of the marked coil voltage rating.
3. With the circuit breaker in the "TRIPPED" or "OFF" position, check to make sure coil circuit is open.

UNDERVOLTAGE TRIP ACCESSORY

1. With circuit breaker in "TRIPPED" position, connect test circuit to accessory leads. Energize undervoltage device at 85% of the marked coil voltage. Reset breaker to "OFF" position, then move breaker handle to "ON".
2. Raise voltage to full rated voltage level.
3. Lower voltage to 70% of rated voltage. Breaker must not trip.
4. Continue to lower voltage – undervoltage device must trip the breaker at a level of 35% to 70% of the rated coil voltage.

ELECTRICAL DATA FOR SHUNT TRIP

Source Voltage	Inrush Current At Rated Voltage (Amperes)	Cat. No.
60 CYCLES AC		
120	5.6	S01KM0R0
240	2.2	S02KM0R0
480	4.4	S02KM0R0
DC		
24	7.1	S07KM0R0
48	4.6	S09KM0R0
125	0.66	S10KM2R0

ELECTRICAL DATA FOR UNDERVOLTAGE TRIP

Source Voltage	Sealed-In Current At Rated Voltage (Amperes)	Cat. No.
60 CYCLES AC		
120	0.054	U01KM0R0
240	0.034	U03KM0R0
480	0.013	U04KM0R0
DC		
12	0.125	U15KM0R0
24	0.106	U13KM0R0
48	0.061	U14KM0R0
125	0.027	U09KM0R0
250	0.022	U11KM0R0

I-T-E AUXILIARY SWITCH INFORMATION

AUXILIARY SWITCH KITS

Cat. No.	Number Of Switches	Ampere Rating of Switch		
		AC Voltage	DC Voltage	
		480 V	125 V	250 V
A01KM0L0	1	15	0.50	0.25
A02KM0L0	2	15	0.50	0.25
A01KM0R0	1	15	0.50	0.25
A02KM0R0	2	15	0.50	0.25

ALL SWITCHES HAVE THREE LEADS AND ARE IDENTIFIED AS FOLLOWS:

Wire Markings	Wire Color	Switch Terminals or Contacts
C or C1	White	C – Common Terminal
A or A1	Black	A – Contact open when breaker is open, closed when breaker is closed.
B or B1	Red	B – Contact closed when breaker is open, open when breaker is closed.

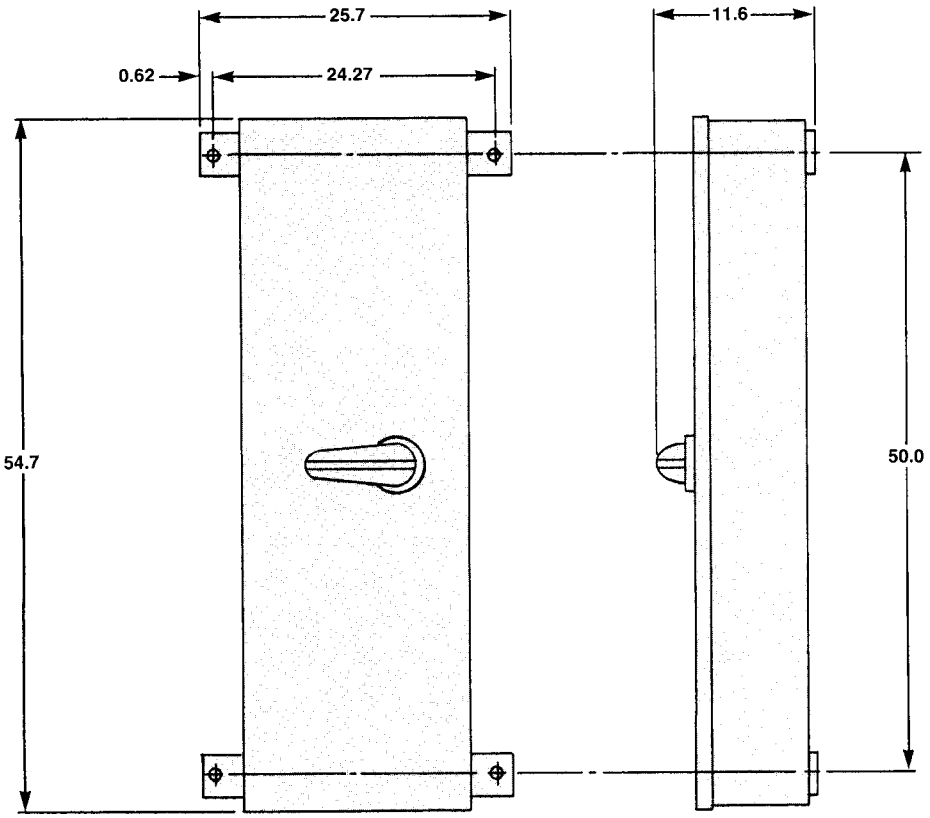
MECHANICAL/ELECTRICAL CHECK

1. Use a buzzer or light attached to switch leads A and C. With breaker in "ON" position, a light or buzz should be observed.
2. Move handle to "OFF" position. Indicator light or buzzer should turn off.
3. Attach test to leads B and C. Light or buzzer should turn on.
4. Move handle to "ON" position. Indicator light or buzzer should turn off.

SHOULD THE INDICATOR NOT FUNCTION PROPERLY DURING CHECK PROCEDURE, CHECK FOR INCORRECT INSTALLATION OR WIRING.

MAXIMUM ACCESSORY COMBINATIONS THAT CAN BE INSTALLED

ONE SHUNT TRIP + ONE EXTRA AUXILIARY SWITCH (Example – S01KM0R0 + A02KM0R0)
ONE UNDERVOLTAGE + 2 AUXILIARY SWITCHES
ONE AUXILIARY SWITCH + 1 BELLALARM SWITCH + 1 UNDERVOLTAGE
THREE AUXILIARY SWITCHES + 1 BELLALARM
ONE SHUNT TRIP + 1 BELLALARM



TYPE 12 – CN 12

A special-industry, sheet-steel enclosure for indoor use in atmosphere containing particles of lint, dust, dirt, sawdust and other foreign matter.

INSTRUCTIONS FOR
I-T-E STANDARD-DEPTH HORIZONTAL-HANDLE
ENCLOSURE MECHANISMS – OH8650 & OH8651

DANGER

Hazardous Voltage. Will cause severe personal injury or death.

Turn power off supplying device before installing.

SAFETY INSTRUCTIONS

A. Drill customer supplied front panel (**5**) in accordance with applicable figures shown in Fig. 2 and Fig. 3.
B. Add nameplate (**4**) to front of panel by pressing firmly in place. Refer to dimensions in Fig. 2 and Fig. 3 for proper location.
C. Mount mechanism assembly (**6**) on rear of panel (breaker side) with screws (**7**) protruding through front of panel – place top plate (**3**) on front and fasten securely with screws (**7**). (Screws (**8**) should not extend beyond surface of latch plate.)
D. Add spacer washer (**2**) over handle shaft. Insert handle (**1**) through bushing from front of panel. (Handle grip should cover screw (**9**) protruding through front panel.)
   NOTE: Washers fit over shaft and inside bushing and should be added until approximately .015″ exists between top plate (**3**) and handle flange, with handle fully inserted and mechanism assembly held firmly in place.
E. Add spacer washers (**10**) until handle shaft is below the surface of the cam.
   NOTE: Washers (**2**) and (**10**) are identical. As more are added in step D, fewer will be required here. Proper number will make cam secure on handle shaft.
F. Add flatwasher (**11**), lockwasher (**12**), and screw (**13**).
G. Tighten securely.
H. Remove mechanism holding screws (**8**) and discard.
   NOTE: Handle assembly, if properly spaced, should return to the "ON" position when released.
I. To lock enclosure operating handle with handle in either "ON" or "OFF" position, press slide (**14**) toward hub and insert lock in slot (**15**).
J. As received, screw (**16**) is against spring post to give normal latch movement – To increase latch movement, turn adjustment screw counter-clockwise. When desired position is reached, lock screw with nut (**17**).

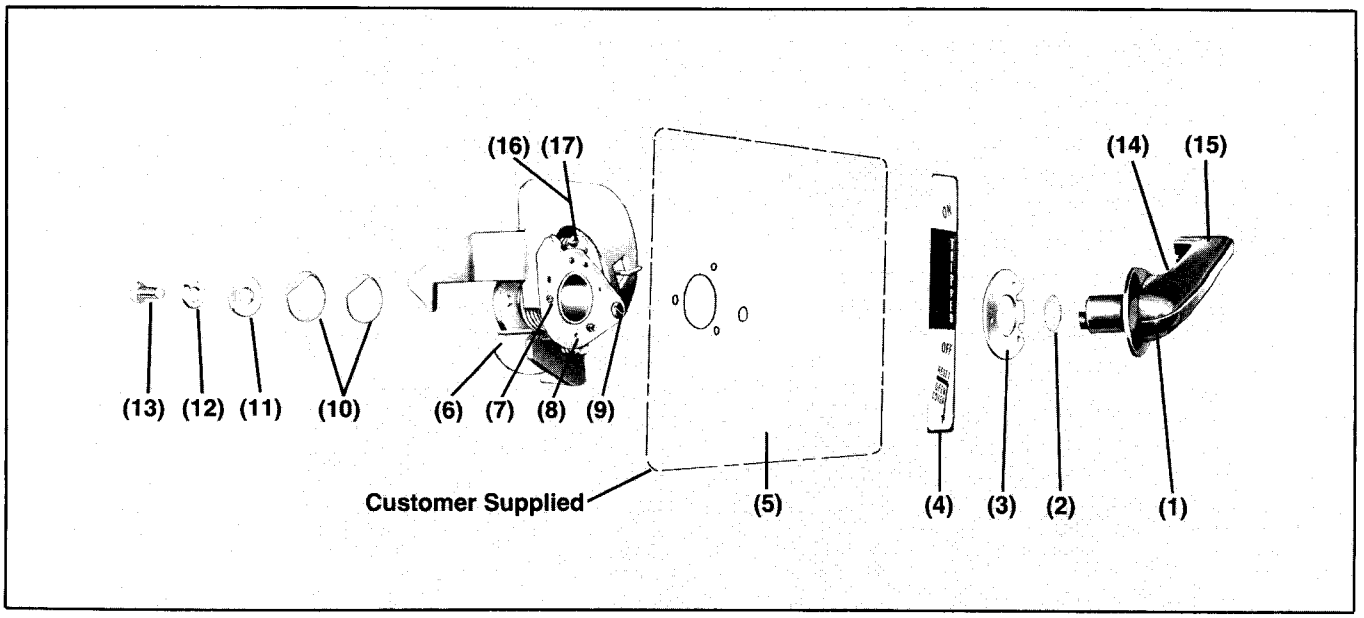
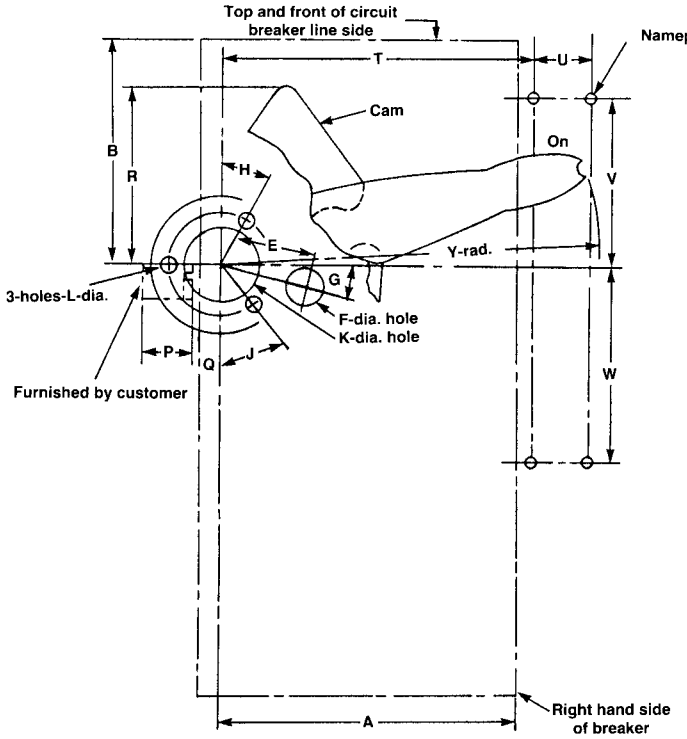
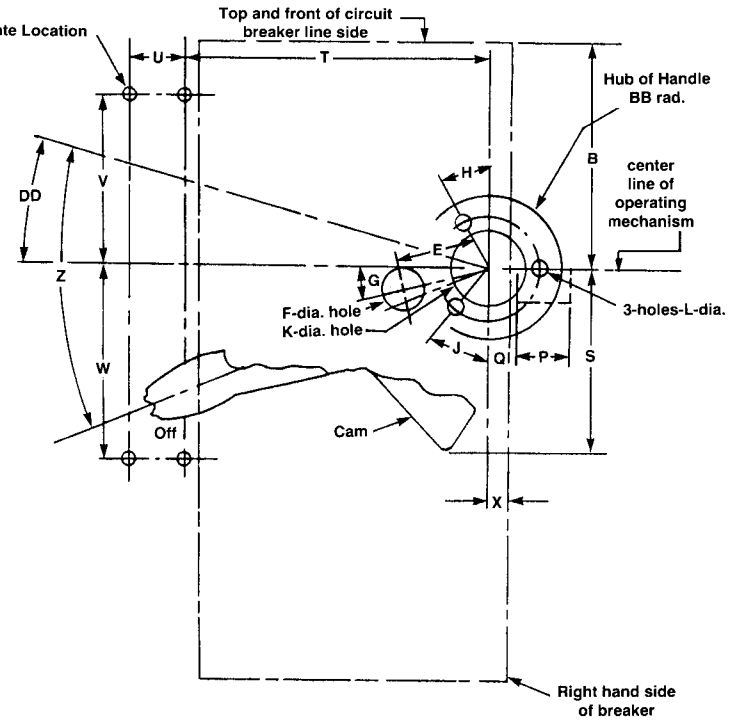


Fig. 1

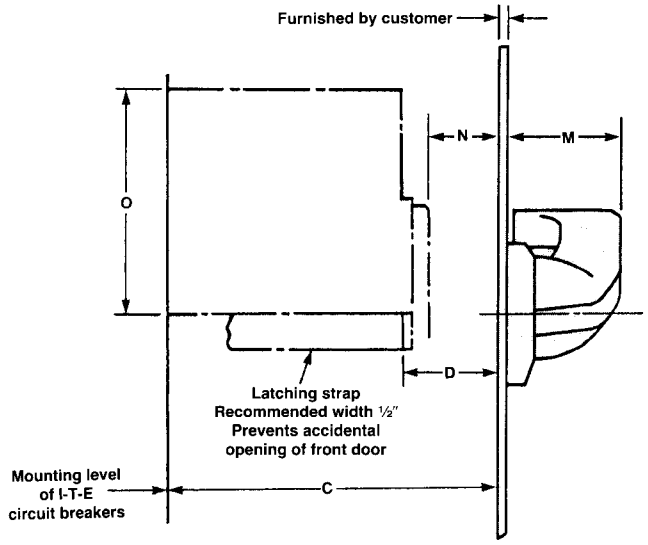
DIMENSIONS FOR
I-T-E STANDARD-DEPTH HORIZONTAL-HANDLE
ENCLOSURE MECHANISMS – OH8650 & OH8651



FRONT VIEW
Right hand operation
OH8650
Fig. 2



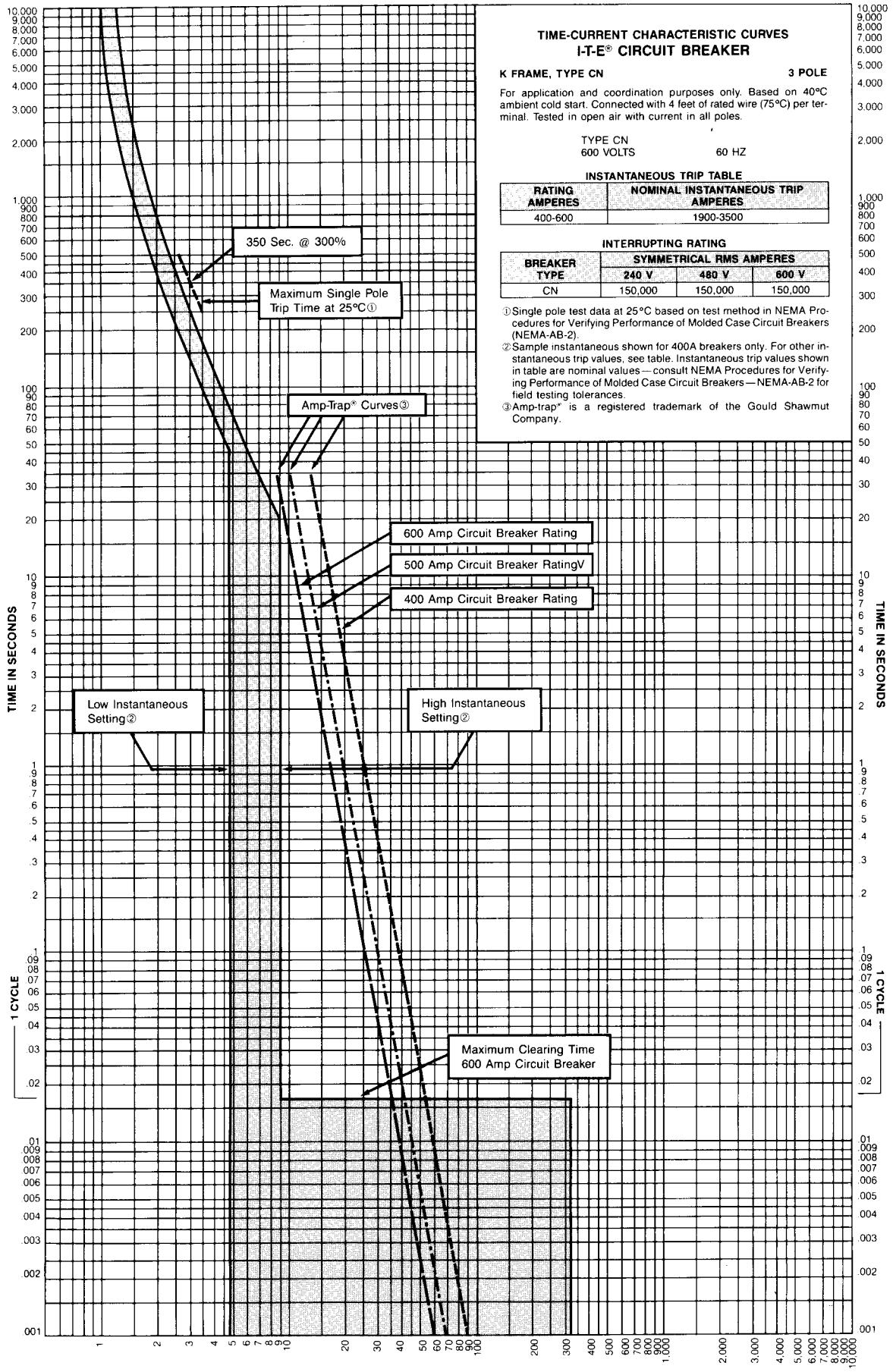
FRONT VIEW
Left hand operation
OH8651
Fig. 3



SIDE VIEW
Right and Left hand operation
Fig. 4

Dimensions – Inches			
A	6.875	**Q**	2.188
B	8.719	**R**	4.125
C	8.062	**S**	3.625
D	2.062	**T**	6.844
E	1.875	**U**	1.50
F	0.50	**V**	4.344
G	10°	**W**	5.344
H	30°	**X**	2.125
J	40°	**Y**	7.50
K	1.50	**Z**	64°
L	0.265	**AA**	0.086
M	1.844	**BB**	1.438
N	3.563	**CC**	2.125
O	8.688	**DD**	27°
P	1.0		

I-T-E TIME/CURRENT CURVES – K FRAME TYPE CN
600 VOLTS, 60 HZ, 400-600 AMPERES



TIME-CURRENT CHARACTERISTIC CURVES
I-T-E® CIRCUIT BREAKER

K FRAME, TYPE CN **3 POLE**

For application and coordination purposes only. Based on 40°C ambient cold start. Connected with 4 feet of rated wire (75°C) per terminal. Tested in open air with current in all poles.

TYPE CN
600 VOLTS 60 HZ

INSTANTANEOUS TRIP TABLE

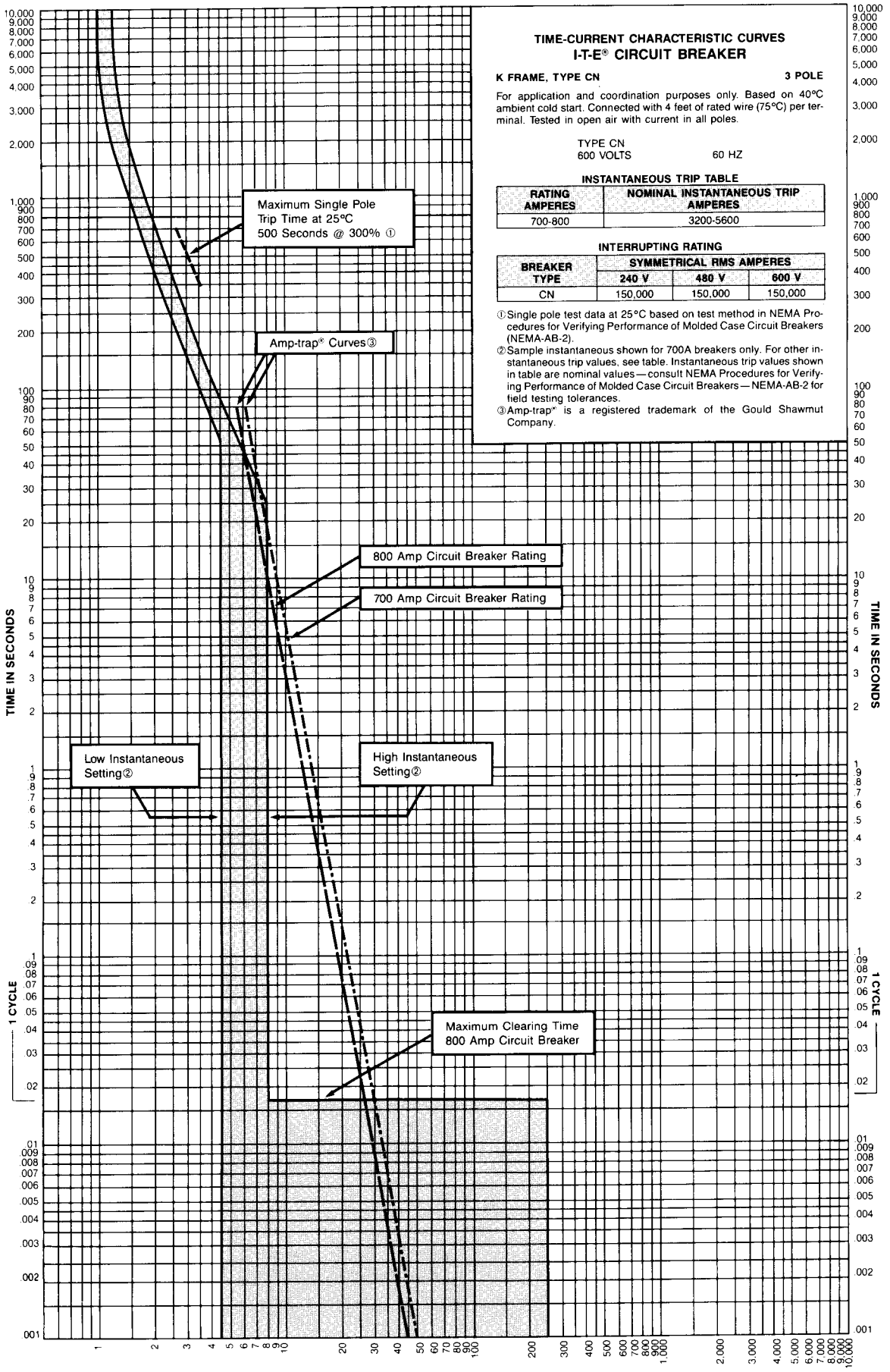
RATING AMPERES	NOMINAL INSTANTANEOUS TRIP AMPERES
400-600	1900-3500

INTERRUPTING RATING

BREAKER TYPE	SYMMETRICAL RMS AMPERES		
	240 V	480 V	600 V
CN	150,000	150,000	150,000

①Single pole test data at 25°C based on test method in NEMA Procedures for Verifying Performance of Molded Case Circuit Breakers (NEMA-AB-2).
②Sample instantaneous shown for 400A breakers only. For other instantaneous trip values, see table. Instantaneous trip values shown in table are nominal values—consult NEMA Procedures for Verifying Performance of Molded Case Circuit Breakers—NEMA-AB-2 for field testing tolerances.
③Amp-trap® is a registered trademark of the Gould Shawmut Company.

I-T-E TIME/CURRENT CURVES – K FRAME TYPE CN
600 VOLTS, 60 HZ, 700-800 AMPERES



I-T-E ORDERING INFORMATION
CIRCUIT BREAKER CATALOG NUMBERS

Breaker Frame	Ampere Rating	Instantaneous Trip Range Min.	Instantaneous Trip Range Max.	Complete Breaker Unenclosed Cat. No.	Frame Only Cat. No.	Trip Unit Only Cat. No.	UL Interrupting Ratings (kA) (RMS Symmetrical Amperes) V AC 120	V AC 120/240	V AC 240	V AC 277	V AC 480	V AC 600	V DC 125	V DC 250
CN 3 Pole 600 V AC	400	1900	3500	CN3B400	CN3F800	CN3T400			150		150	150		
	500	1900	3500	CN3B500	CN3F800	CN3T500			150		150	150		
	600	1900	3500	CN3B600	CN3F800	CN3T600			150		150	150		
	700	3200	5600	CN3B700	CN3F800	CN3T700			150		150	150		
	800	3200	5600	CN3B800	CN3F800	CN3T800			150		150	150		
	800	Fused Circuit ④ Interrupter		CN3S800										
	SHIPPING:			80 lbs. each	76 lbs. each	5 lbs. each								

INSTANTANEOUS ONLY CIRCUIT BREAKERS

CN 3 Pole	600	1900	3500	CN3A600	N/A	N/A	Interruption ratings are established only through combination tests with properly sized overload relays and contactors.
	800	3200	5600	CN3L800			
	800	5000	8000	CN3H800			

④ Short circuit protection only.

SPECIAL NOTE:

For 50°C application replace letter "B" in catalog number with the letter "M" for ordering purposes. If trip unit only is required, replace the letter "T" with the letter "W" for ordering purposes.

ORDERING INFORMATION FOR I-T-E CIRCUIT BREAKER ACCESSORIES

AUXILIARY SWITCH

Number of Switches	Pole	Cat. No.
1	Right	A01KM0R0
2	Right	A02KM0R0
1	Left	A01KM0L0
2	Left	A02KM0L0

SHUNT TRIP

Control Voltage		1 Shunt Trip
AC	DC	Cat. No.
120		S01KM0R0
240		S02KM4R0
480		S02KM4R0
	24	S07KM0R0
	48	S09KM0R0
	125	S10KM2R0

UNDERVOLTAGE TRIP

Control Voltage		1 Undervoltage Trip
AC	DC	Cat. No.
120		U01KM0R0
240		U03KM0R0
480		U04KM0R0
	12	U15KM0R0
	24	U13KM0R0
	48	U14KM0R0
	125	U09KM0R0
	250	U11KM0R0

ADDITIONAL ACCESSORIES

Item	Catalog No.	Item	Catalog No.
Extension Handle	EX9	Handle Blocking Device	KML1
Rear Connecting Studs		Mechanical Interlock	
Short Length	RS9603	Breaker panel mounted	MI5460
Long Length	RS9604	Breaker Plug-In mounted	MI5460
Plug-In Mounting Assemblies		Handle Operators	
3 pole (2 required per breaker)	PC9608	Standard Depth Operator	
		Left Hand	OH8651
Steel Switchboard Mounting Plate		Right Hand	OH8650
Used with Plug-In Mounting Assemblies	PL9697		
		Replacement Fuses	AT1CN20
Enclosures	CN12		
Type 12			

I-T-E Item	UL File Number	CSA File Number
Breaker-		
Thermal-Magnetic	E39506	LR33845
Magnetic Only	E9896	—
Terminal Connectors	E9896	—
Plug-in Connectors	—	—
Rear Studs	—	—
Internal Accessories	—	—
Shunt Trips	E57501	—
Undervoltage	E57501	—
Aux. Switch	E57501	—
Bellalarm	—	—
Molded Case Switch	—	—
Enclosures	—	—
Connector Straps	—	—

Circuit Breaker Mounting Screws 3/8-16x 1.750"

PROCEDURES FOR VERIFYING PERFORMANCE OF MOLDED CASE CIRCUIT BREAKERS — AB2

National Electrical Manufacturers Association
2101 L Street N.W. Suite 300
Washington, DC 20037

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