SIEMENS

# Information and Instruction Guide

## K Frame
## Types KM, HN

# I-T-E® Molded Case Circuit Breakers



Bulletin IB-2.2.7-7B

# I-T-E K Frame
# Types KM, HN
# Models ET, ETI, ET-H
# 2 and 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. I-T-E Electrical Products Division of Siemens Energy & Automation, Inc. 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.

**NOTE**

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 I-T-E Circuit Protection Division of Siemens Energy & Automation, Inc. 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 Energy & Automation, Inc. The warranty contained in the contract between the parties is the sole warranty of Siemens Energy & Automation, Inc. 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 CIRCUIT BREAKERS AND SWITCHES 2 AND 3 POLE, 400-800 AMPERES

### General

K Frame circuit breakers, as shown in drawings on page 6, are for use in individual enclosures, switchboards, and in power and distribution panelboards.

They are available as thermal magnetic, with interchangeable trip units (Types KM and HN) and instantaneous magnetic trip only (Type KM ETI) and molded case switch.

Pressure wire connectors, suitable for use with aluminum or copper wire are available for all K-Frame circuit breakers. Rear connection studs or plug-in connector assemblies are also available (2 and 3 pole). The latter type of 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, auxiliary and alarm switches and undervoltage trip devices are available for internal mounting. These devices, with the exception of the bellalarm, are UL listed. The installation and/or removal of these devices are to be accomplished by qualified personnel only. Accessory catalog numbers can be found on page 30.

### Thermal Magnetic

KM, HN 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.

Catalog numbers for ordering and informational purposes can be found on pages 29-31.

### Instantaneous Trip

ETI circuit breakers (adjustable instantaneous magnetic trip only) are designed for use in welding circuits, motor circuits and combination starters where short circuit protection only 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.

ETI is available for KM Type only.

The available instantaneous adjustments are as follows:

| Breaker Ampere 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 |

### Molded Case Switch

A molded case switch is available in the KM type circuit breaker only. This device has no means of self protection, and therefore must be used with other means of overload and short circuit protection. Catalog information is located on page 29.

### Interrupting Ratings

The interrupting ratings of the KM and HN 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 |
| KM | 42,000 | 32,000 | 22,000 |
| HN | 65,000 | 65,000 | 42,000 |

### 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

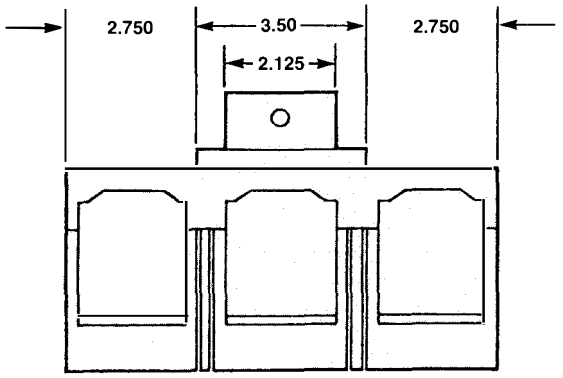
The circuit breaker should always be in the "TRIPPED" or "OFF" position; and if practical, the switchboard de-energized before inspecting, changing, installing or removing the circuit breaker. Never attempt to add internal features with the circuit breaker mounted in any panel or switchboard. If the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

### Maintenance

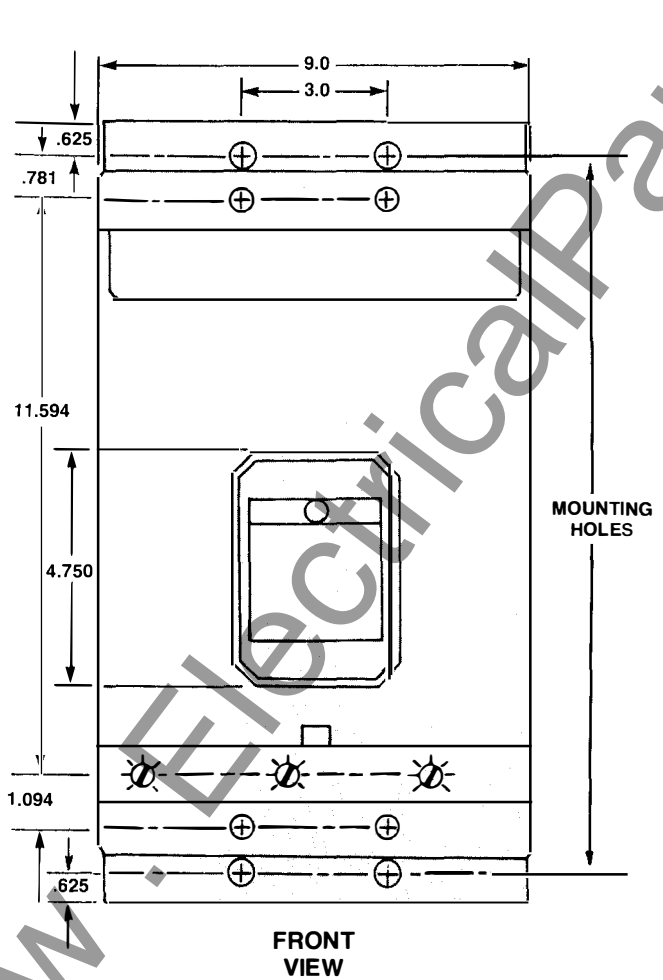
Failure to properly maintain this equipment can result in severe personal injury and product failure. The instructions contained herein should be carefully reviewed, understood and followed. The following maintenance procedure should be performed regularly:

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.

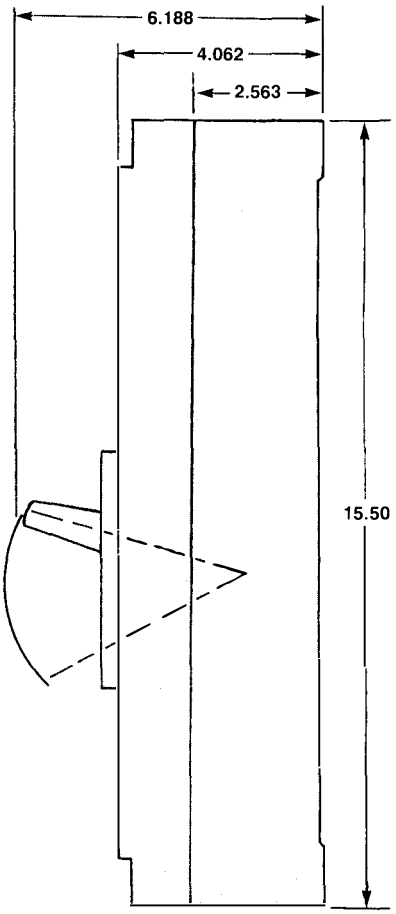
**This checklist does not purport to cover all details.**




END VIEW



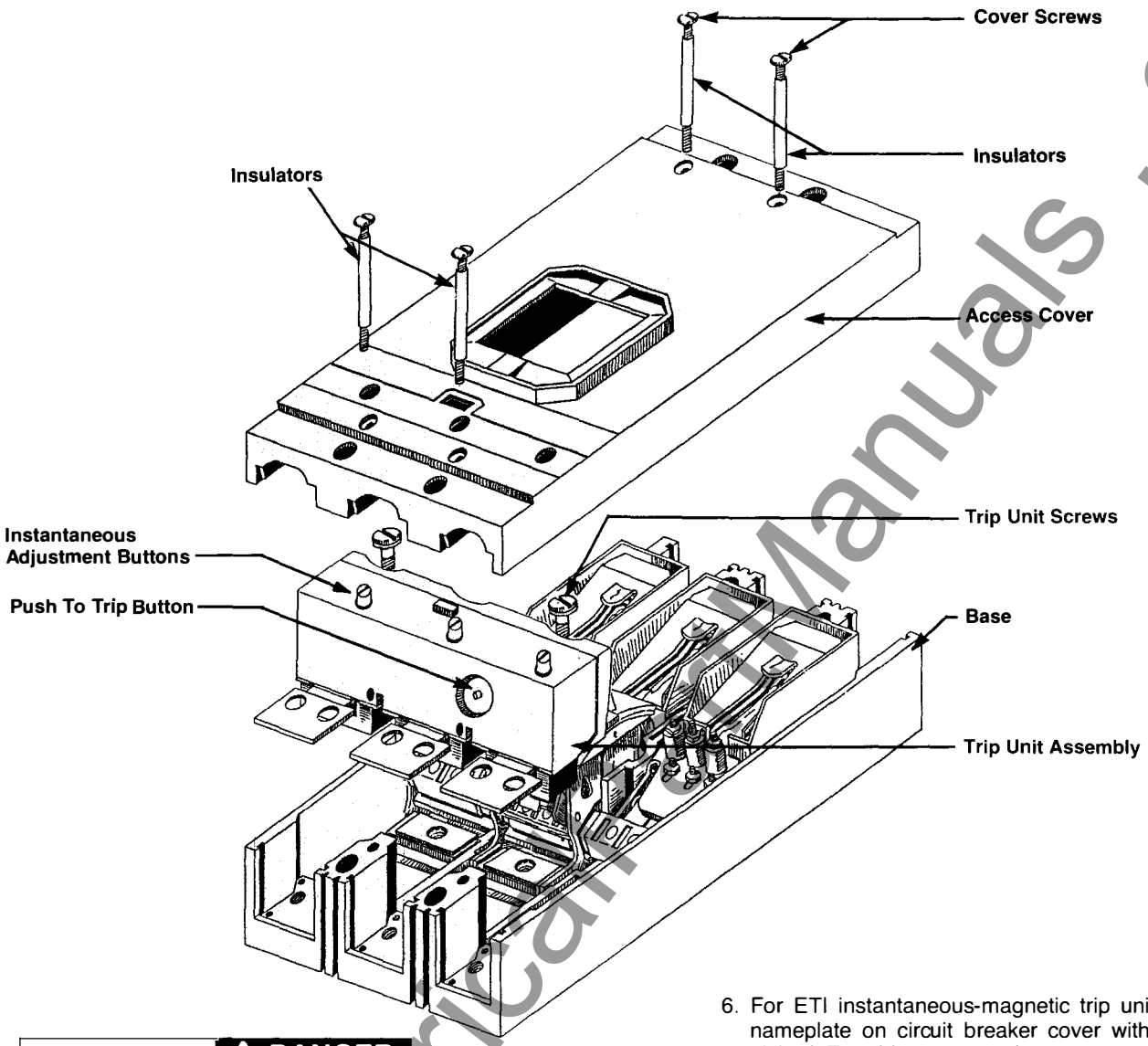

FRONT VIEW




SIDE VIEW

For a more detailed drawing, request drawing S15382 from your local Siemens-Allis, I-T-E sales office.

# INSTRUCTIONS FOR INSTALLING
# I-T-E TRIP UNITS




**⚠ 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.

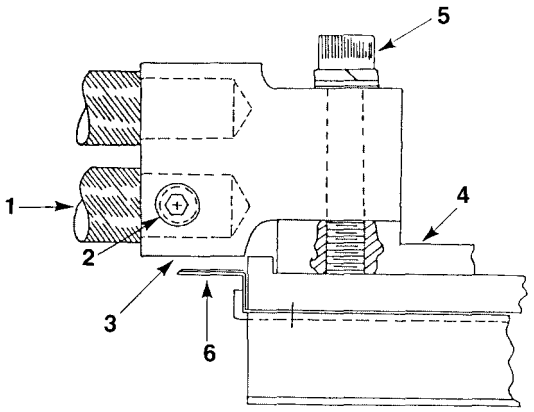
**To Add Trip Unit To Breaker Frame:**

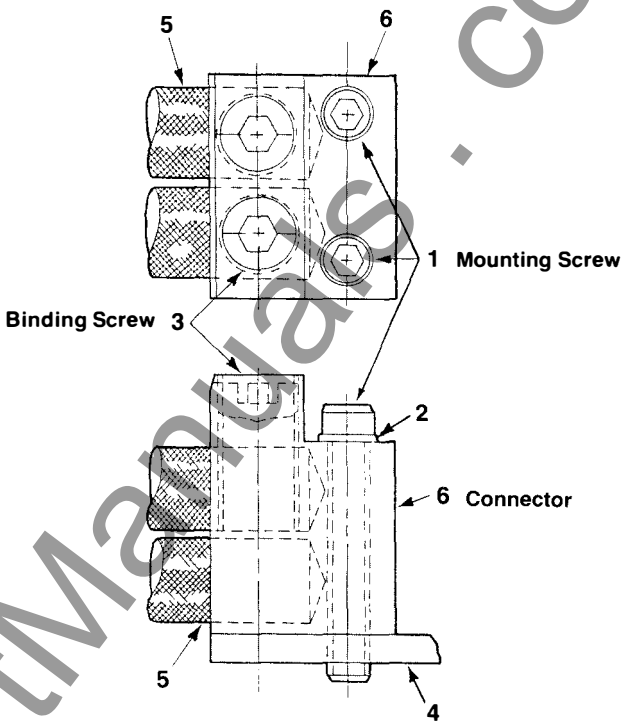
1. Remove cover screws and breaker cover.
2. On outside poles, remove trip unit screws with lockwashers and heater plates, which hold mechanism braid terminals to base. (Factory installed in frame for shipment purposes.)
3. Hold breaker handle away from trip unit area. Lower trip unit carefully into 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 trip unit screws, lockwashers and heater plates on outside poles and tighten securely. (Recommended torque 11 to 13 foot pounds.)
6. For ETI instantaneous-magnetic trip units only: replace nameplate on circuit breaker cover with nameplate furnished. To add new nameplate:
   A. Type pertinent information in blocks provided.
   B. Remove celophane backing and press nameplate in position on clean surface.
   C. Place instantaneous range label on breaker cover.
7. Replace cover and cover screws.
8. Move operating handle to extreme OFF (reset) position.

**To Replace Trip Unit In Breaker Frame:**

1. Remove cover screws and breaker cover.
2. Locate and press the metal "TRIP" button in the recess on the load side of the trip unit between the center and right poles (refer to drawing above). This will trip the breaker mechanism. The operating handle will move to "TRIPPED" position.
3. On outside poles, remove trip unit screws with lockwashers and heater plates, which are holding trip unit terminals to mechanism terminals.
4. Remove trip unit anchor screw and lockwasher in center pole.
5. Hold breaker handle away from trip unit. Lift trip unit out of breaker while holding the "TRIP" button (see step 3 above) depressed.
6. Add new trip unit as outlined under steps 3 to 8 of "**Add Trip Unit**" instructions.

# 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. |

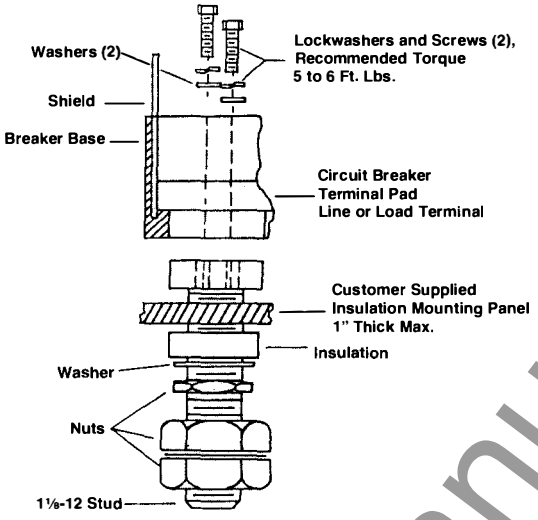
E. Mount cable connectors (**3**) to terminals (**4**) with mounting bolts (**5**) and lockwashers and flatwashers supplied. Recommended torque for mounting bolts is **240 in. lbs.**
NOTE: Steps D & E may be completed in any convenient order.
F. Re-assemble cover on breaker with screws and lockwashers 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:

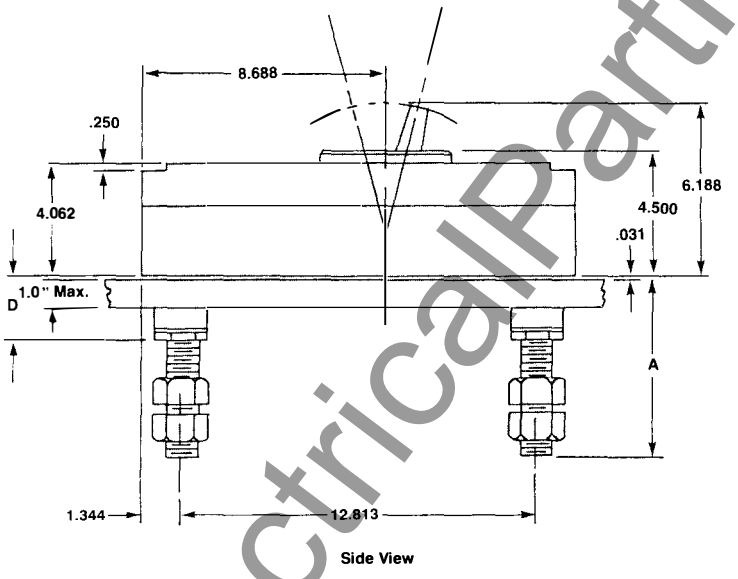
| Catalog No. | Wire Range | Set Screw Torque |
|---|---|---|
| TA2K500 | (1-2) #1-500MCM Cu-Al | 375 in. lbs. |
| TA3K350 | (1-3) 300-350MCM Cu-Al | 275 in. lbs. |
| TA3K400 | (1-4) 400MCM Cu-Al | 275 in. lbs. |
| TC2K500 | (1-2) #1-500MCM Cu | 375 in. lbs. |
| TC3K350 | (1-3) #1-350MCM Cu | 275 in.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

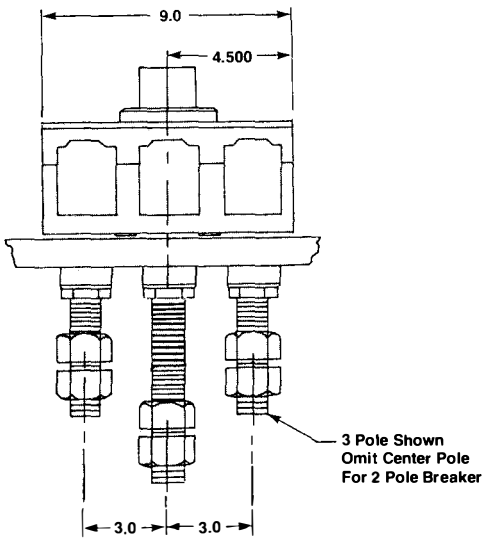
# INSTRUCTIONS FOR INSTALLATION OF I-T-E REAR CONNECTING STUDS




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

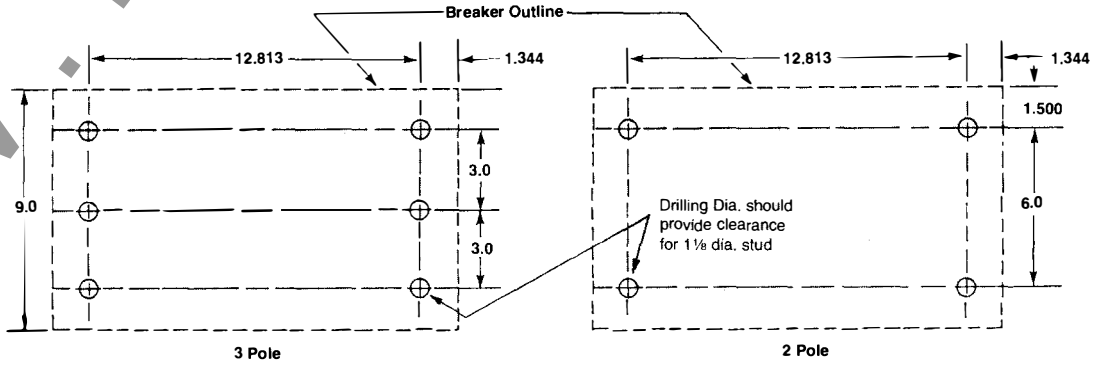



Side View




End View

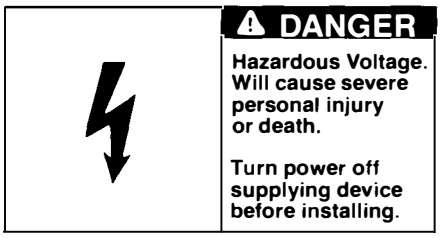
| Rear Connected Terminal | | | |
|---|---|---|---|
| Amperes | "A" | Cat. No. | "D" |
| 125-800 | 5½ | RS 9603 | 1 5/32 + Panel thickness |
| 125-800 | 8 | RS 9604 | 1 5/32 + Panel thickness |




3 Pole

2 Pole

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




## SAFETY INSTRUCTIONS

A complete plug-in installation requires one line end adapter assembly (consisting of mounting block, tulip connectors and associated hardware), 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. |
|---|---|---|---|---|
| | 2 | PC 9606 | PC 9606 | PL 9698 |
| | 3 | PC 9607 | PC 9607 | PL 9698 |

**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 1 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 2 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. Remove four breaker cover screws (**6**) and breaker cover (**7**). Remove pressure wire connectors from breaker 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. Affix warning label (**13**) to top left side of breaker cover.

J. Add accessory label (**14**) to top right side of breaker cover.

**Final Assembly** (Fig. 5)

K. Make bus and/or cable connection to rear of mounting block studs using hex nuts (**15**) furnished to secure this connection.

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

L. 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 1/4-20 x 1 1/2 long mounting screws (**16**), lockwashers (**17**) and flatwashers (**18**) furnished.

M. 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

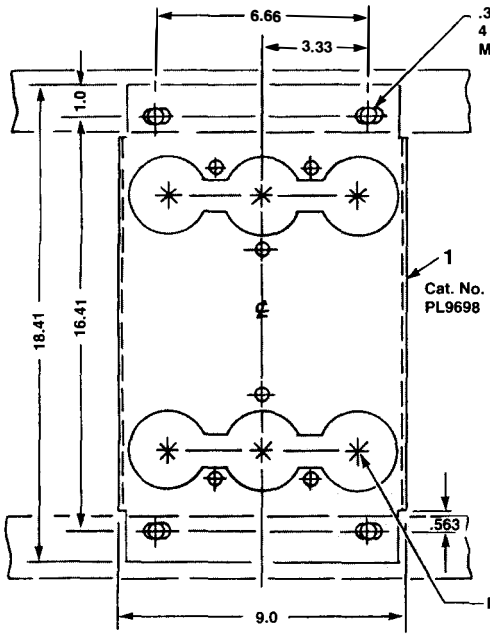



Fig. 1

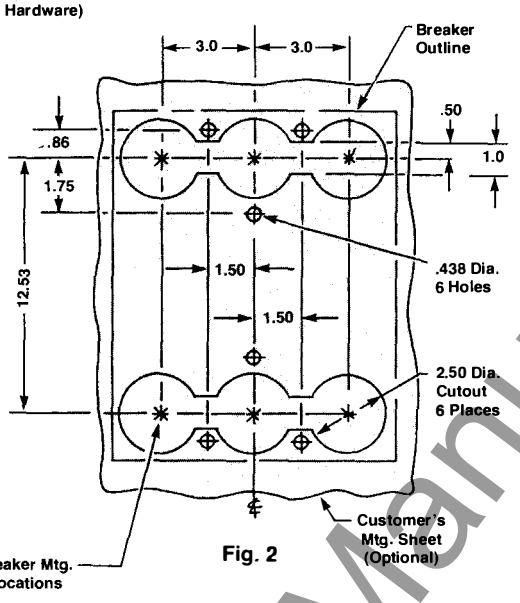



Fig. 2

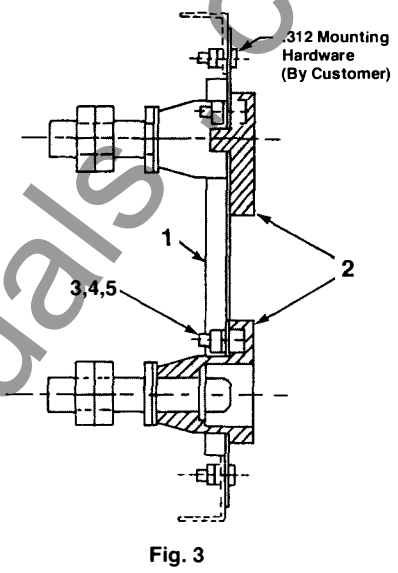



Fig. 3

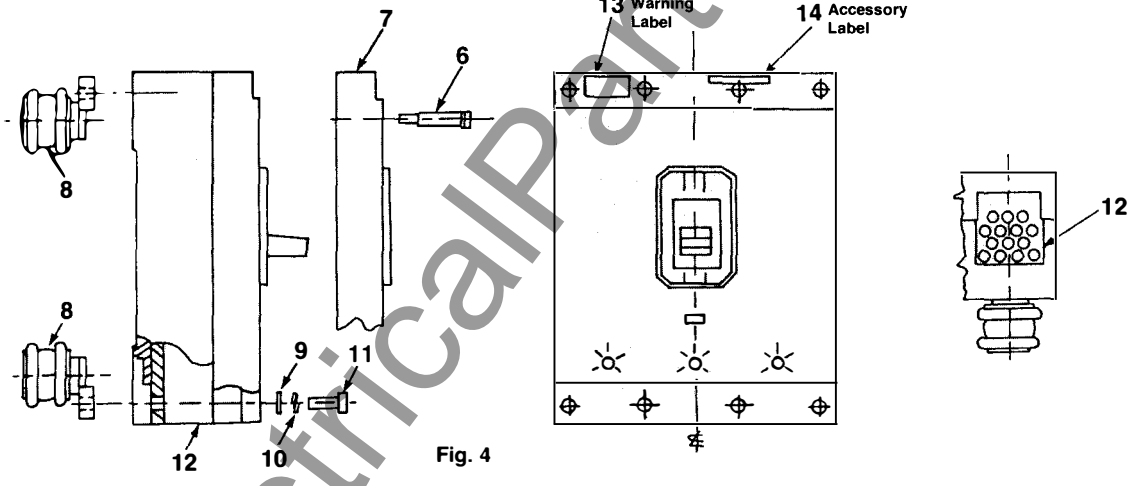



Fig. 4

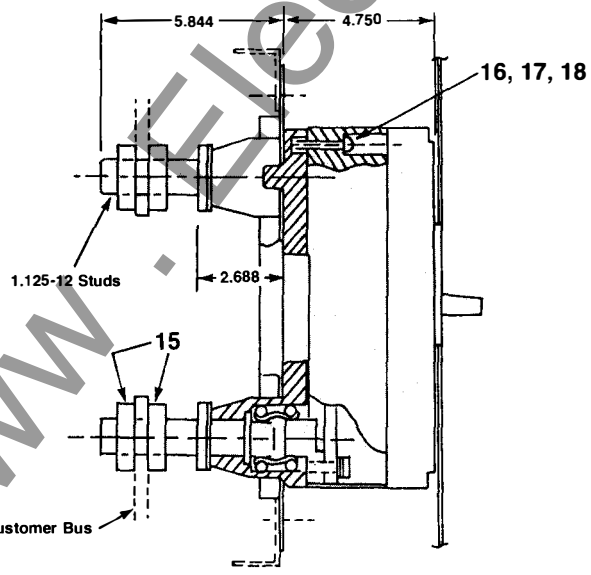



Fig. 5

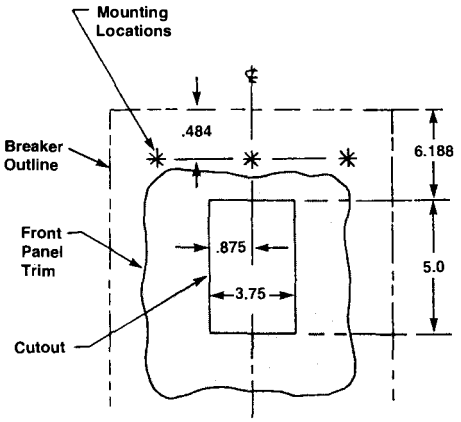



Fig. 6

# 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.

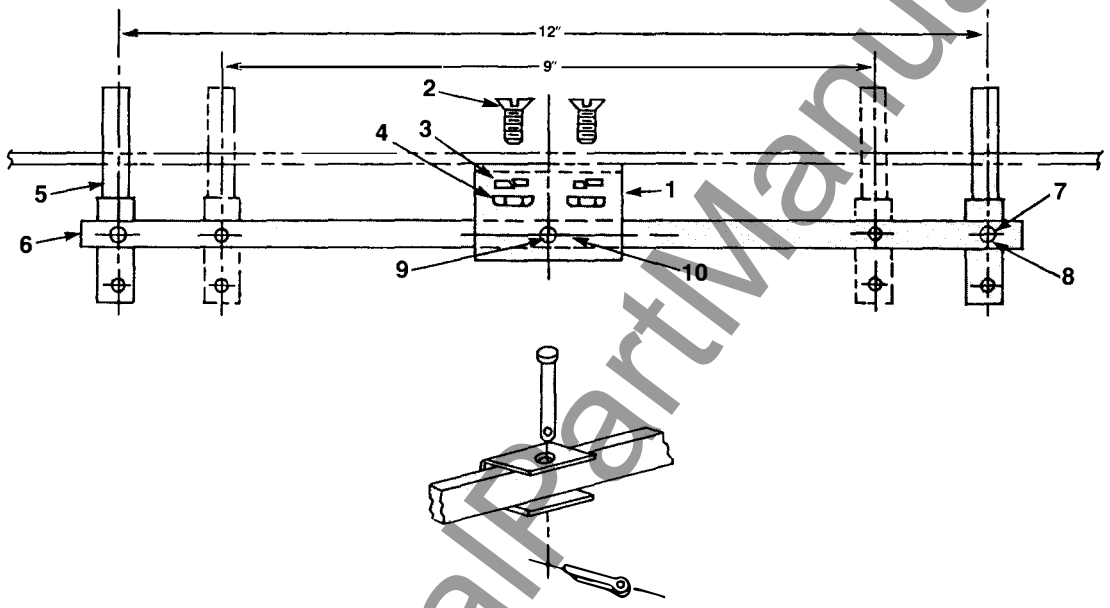



Fig. 1

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

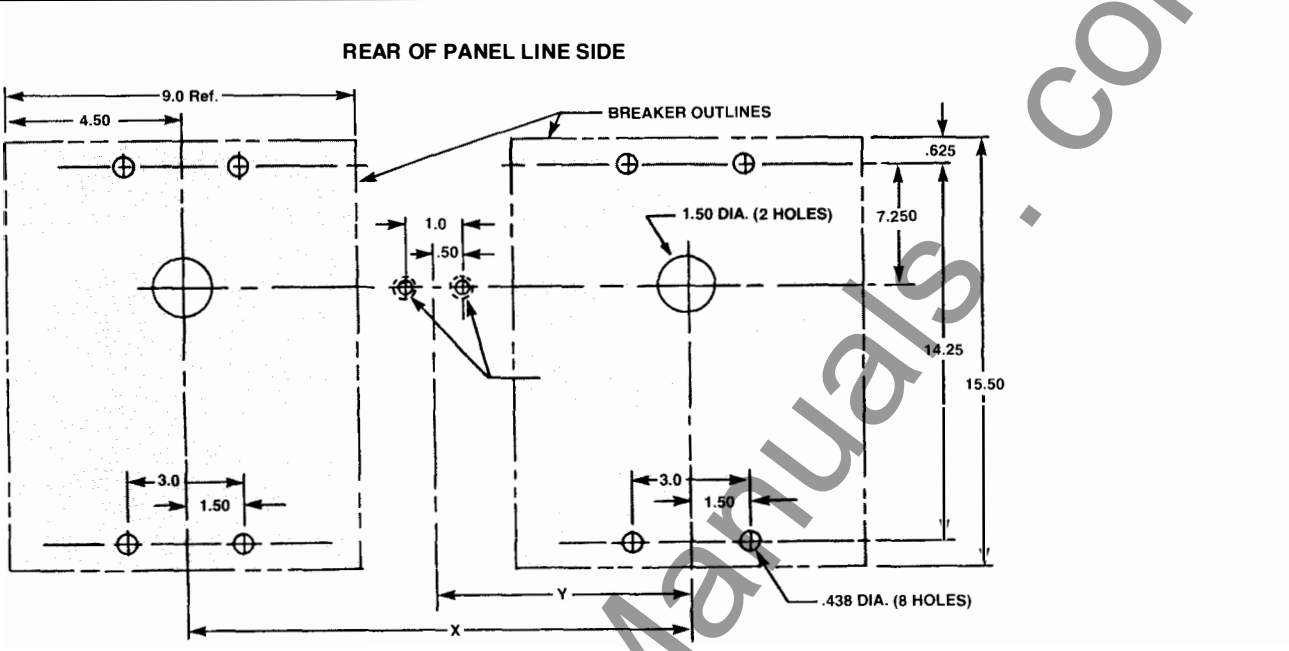



Fig. 2

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

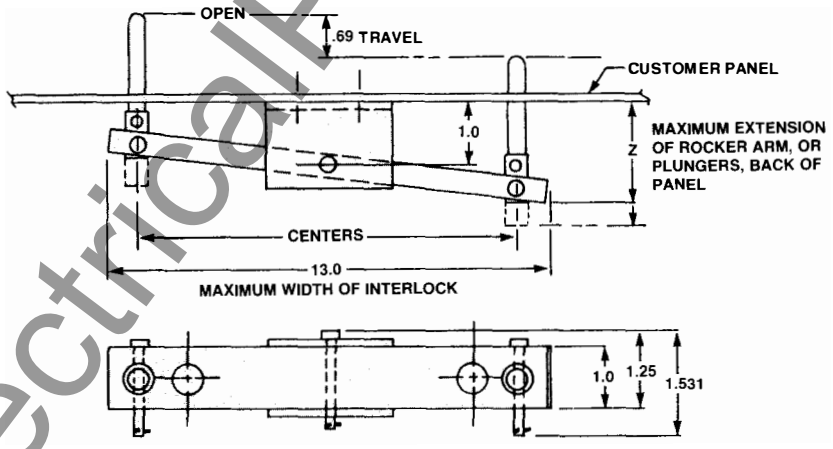



Fig. 3

# 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.

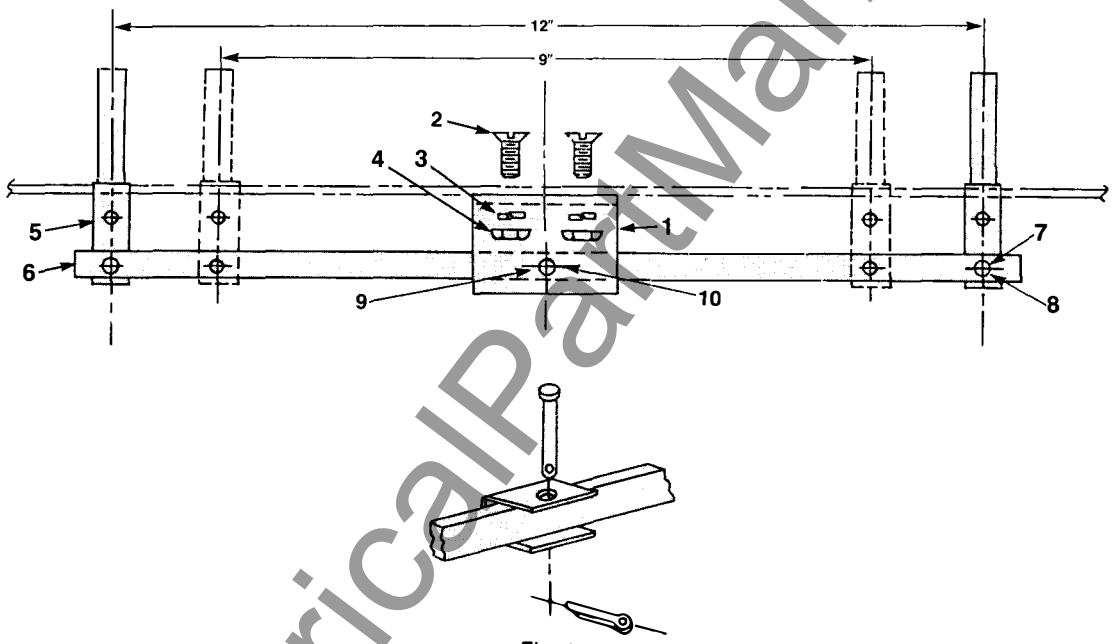



Fig. 1

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

**DRILLING PLAN**
**FOR PLUG-IN CONNECTOR ASSEMBLIES**

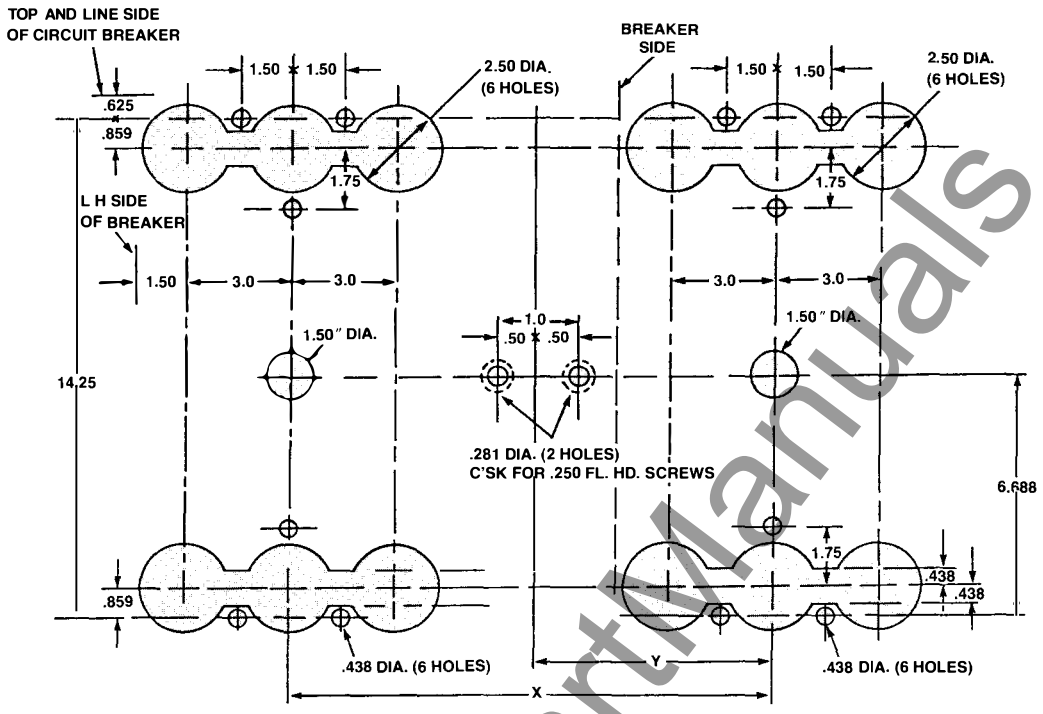



Fig. 2

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

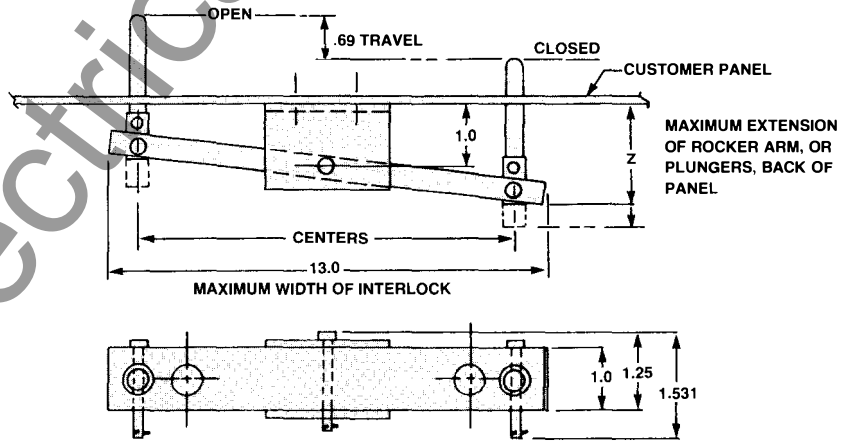



Fig. 3

# 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.

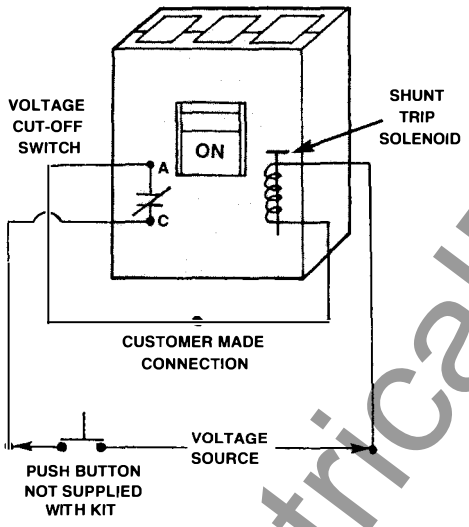
## SHUNT TRIP

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

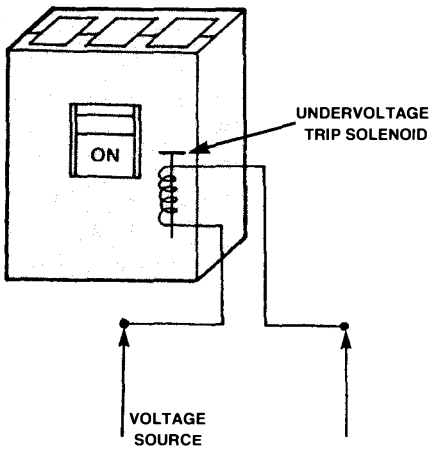
## UNDEREVOLTAGE TRIP

| 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 |

## 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

# INSTRUCTIONS FOR MOUNTING
# I-T-E INTEGRAL HANDLE OPERATING MECHANISM – OH5940

**⚠ DANGER**

**Hazardous Voltage. Will cause severe personal injury or death.**

**Turn power off supplying device before installing.**

## ⚠ SAFETY INSTRUCTIONS

**Drilling of Enclosure and Enclosure Cover**

A. Drill and tap four 3/8-16 breaker mounting holes as shown (**1**) in drilling plan.

B. Cut opening in enclosure cover and attach latch bracket (**2**) (furnished with handle).

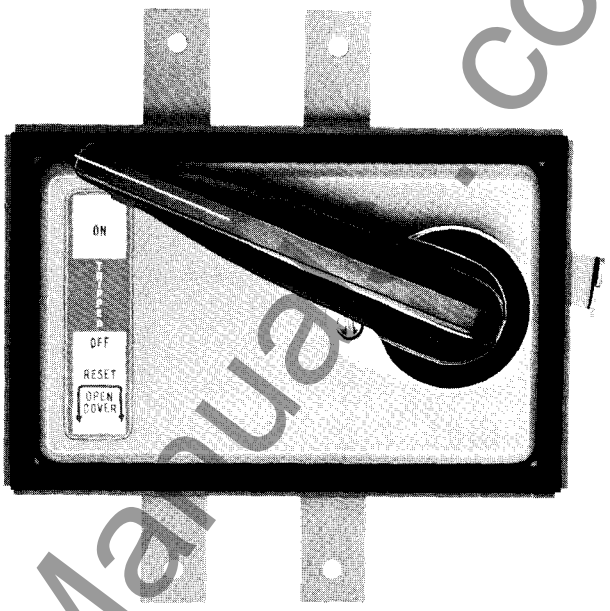
**Mounting of Breaker and Mechanism**

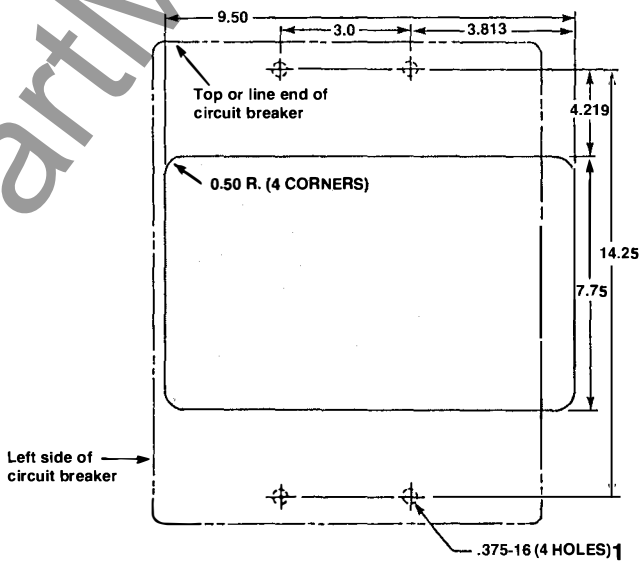
C. Mount breaker with "ON" up, using four mounting studs (**3**) supplied with mechanism. Insert end with attached washers (**4**) through cover holes and screw into plate or mounting pan.

D. With breaker in the "OFF" position, set mechanism on mounting stud shoulders and fasten with supplied flat-washers, lockwashers and nuts (**5**).

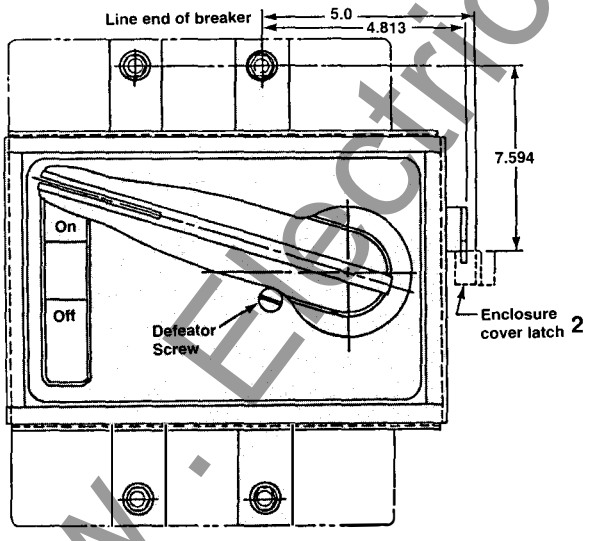
E. Close enclosure door. Latch on mechanism should engage latch bracket on cover. Mechanism will now operate breaker to any position, "ON," "OFF" or "RESET."

F. Enclosure cover may be opened when breaker is "ON" by turning defeator screw counter clockwise for a left handed mechanism. Once cover is opened, the breaker can be turned "OFF" but cannot be turned "ON" or "RESET" until the enclosure cover is closed, or the latch is raised to release interlock.

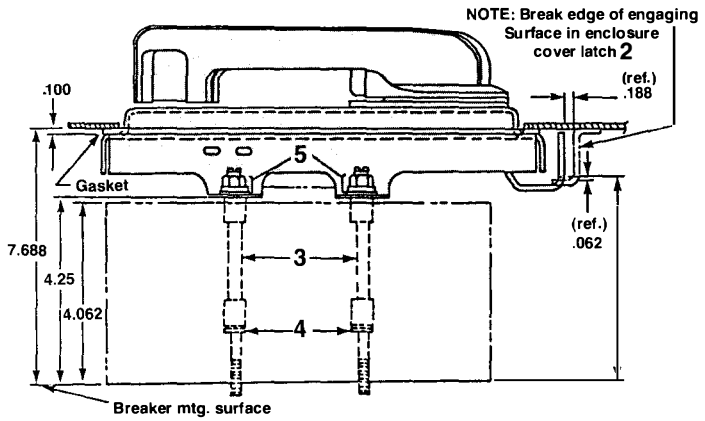



**DRILLING PLAN**




**FRONT VIEW**




**VIEW FROM LOAD END**

# 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**).

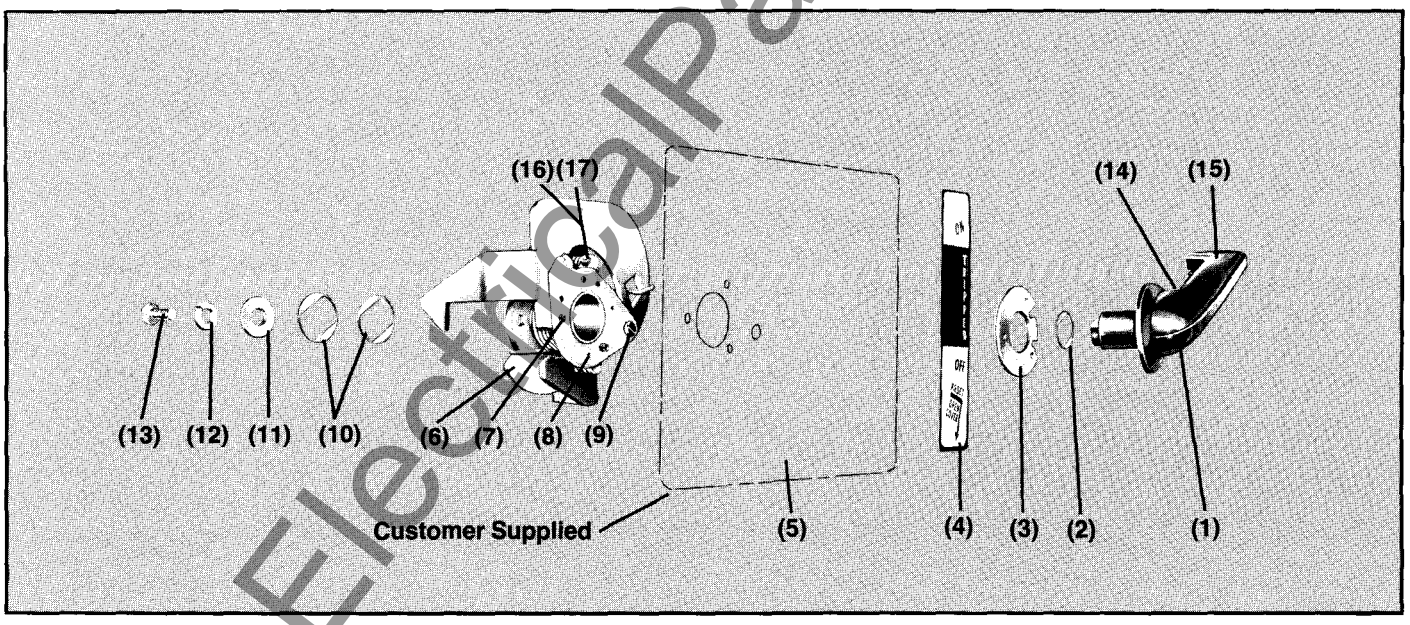
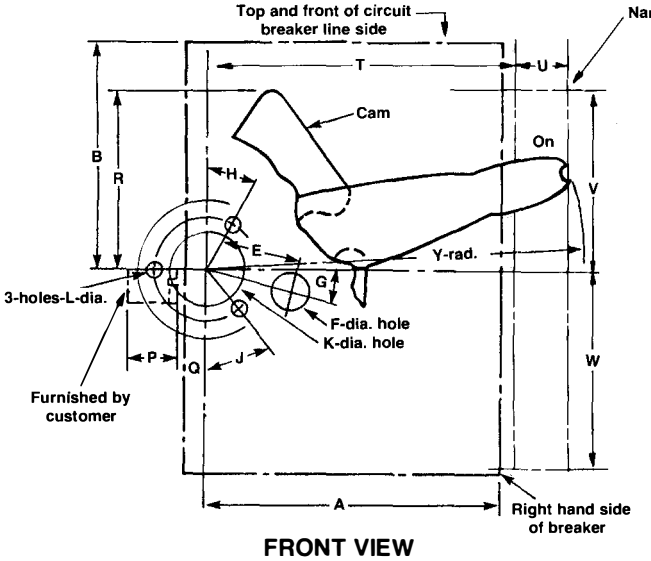



**Fig. 1**

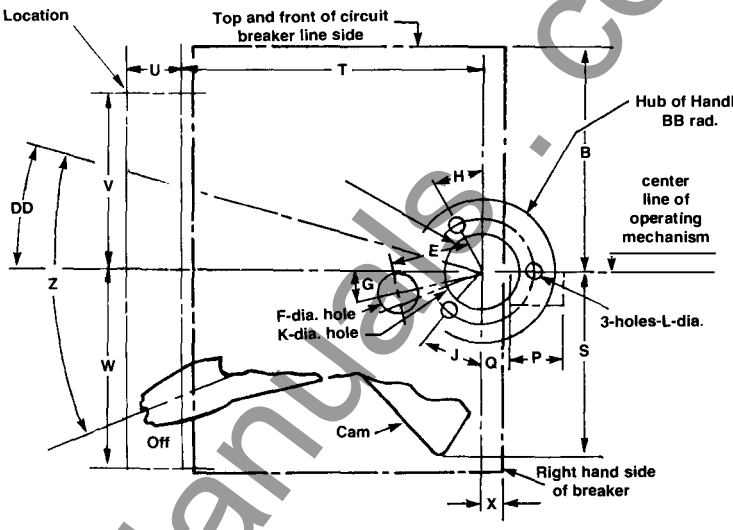
# DIMENSIONS FOR
# I-T-E STANDARD-DEPTH HORIZONTAL-HANDLE
# ENCLOSURE MECHANISMS – OH8650 & OH8651




**FRONT VIEW**
Right hand operation

**OH8650**

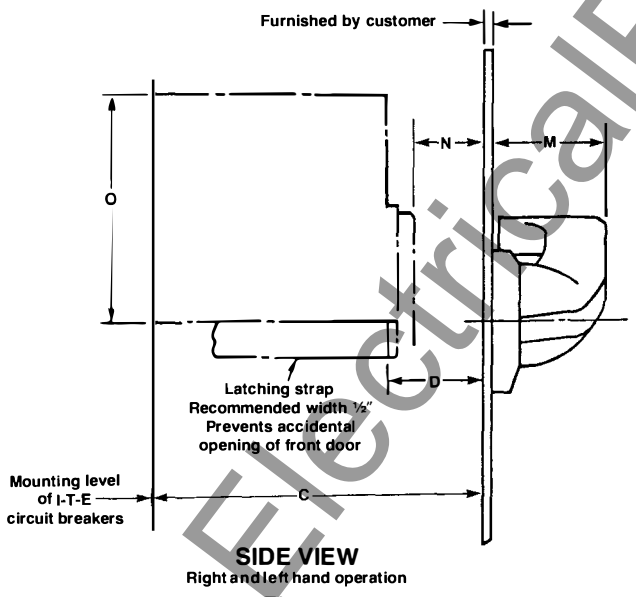
**Fig. 2**




**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 | | |

# INSTRUCTIONS FOR MOUNTING
# I-T-E TELEMAND® MOTOR OPERATOR
# CAT. NO. T06K120, T06K240

**⚠ DANGER**

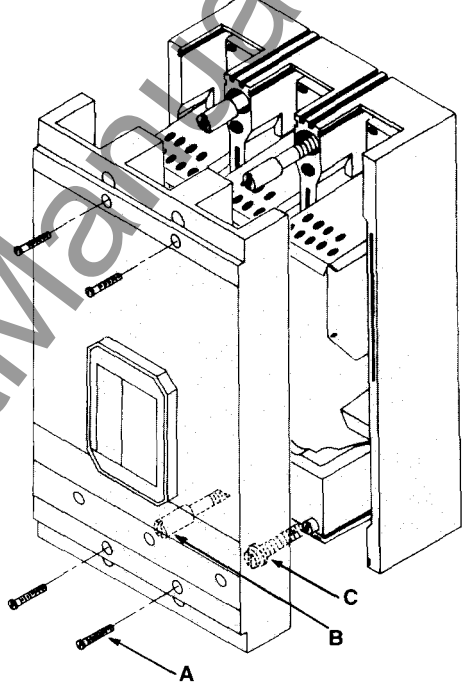
**Hazardous Voltage. Will cause severe personal injury or death.**

**Turn power off supplying device before installing.**

## ⚠ SAFETY INSTRUCTIONS

**Mounting The Circuit Breaker**

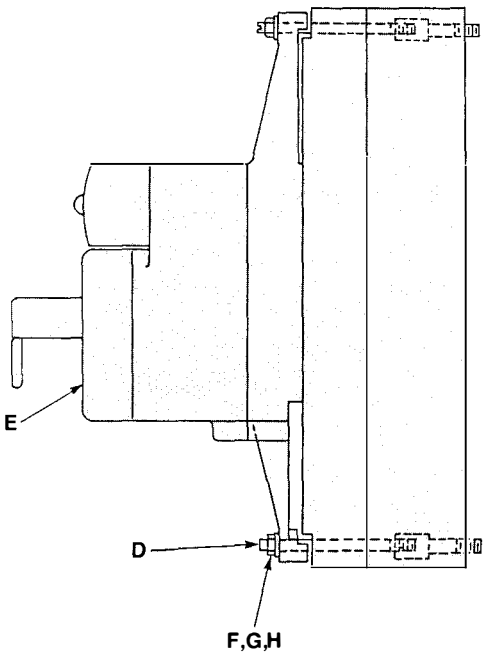
1. Remove the breaker cover (**A**) by removing the four cover screws.
2. Fasten the circuit breaker to the prepared mounting surface using three special ⅜-16 x 2½ slotted extension studs (**B**) in the lower left and both top hole positions. The ⅜-16 screw and lockwasher (**C**) are used in the bottom right hole position.
3. Confirm that the power from the supplying device has been turned off. Connect all cables to the circuit breaker at this time.
4. Replace the breaker cover.




**Mounting The Telemand® Motor Operator**

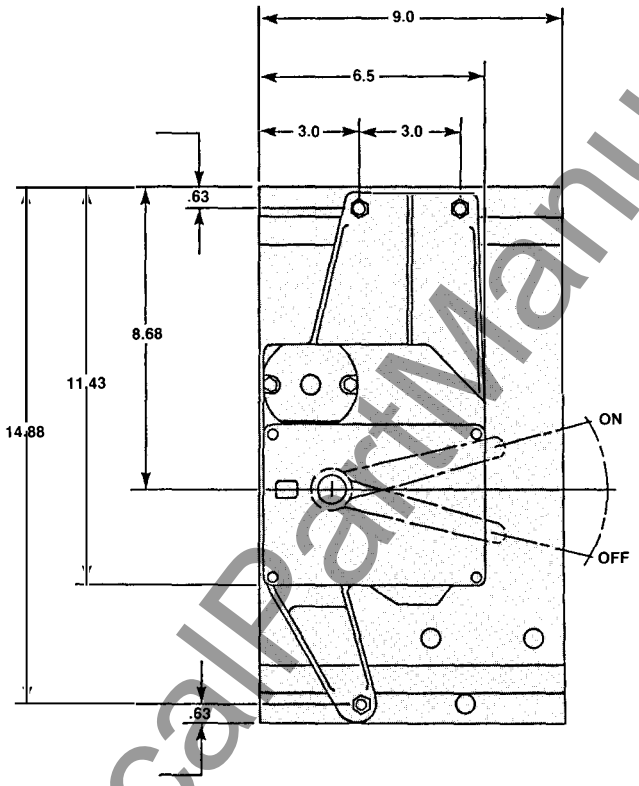
5. Insert three 5/16 slotted threaded rods (**D**) through the breaker cover and tighten into the extension studs(**B**). The slotted end of the rod must extend past the face of the breaker.
6. Move the breaker handle firmly to the OFF position to permit mounting of the TELEMAND.
7. The TELEMAND operator (**E**) must also be in its OFF position – place the manual TELEMAND operating handle over the operating shaft, depress to engage the handle and turn clockwise until it stops.
8. Position and place the TELEMAND operator over the three threaded rods (**D**). Fasten with flatwashers (**F**), lockwashers (**G**) and 5/16-18 hex nuts (**H**).
9. Remove top cover of motor mechanism. Wire TELEMAND in accordance with the diagram located on the underside of the motor cover and replace the cover.

Circuit Breaker is now ready for TELEMAND operation.

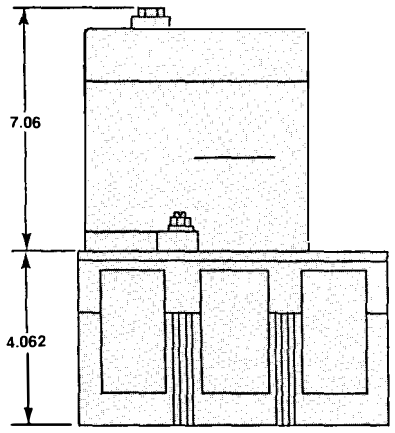


# DIMENSIONAL INFORMATION FOR I-T-E TELEMAND® MOTOR OPERATOR CAT. NO. TO6K120, TO6K240

| Control Voltage | Cat. No. |
|---|---|
| 120 VAC | TO6K120 |
| 240 VAC | TO6K240 |



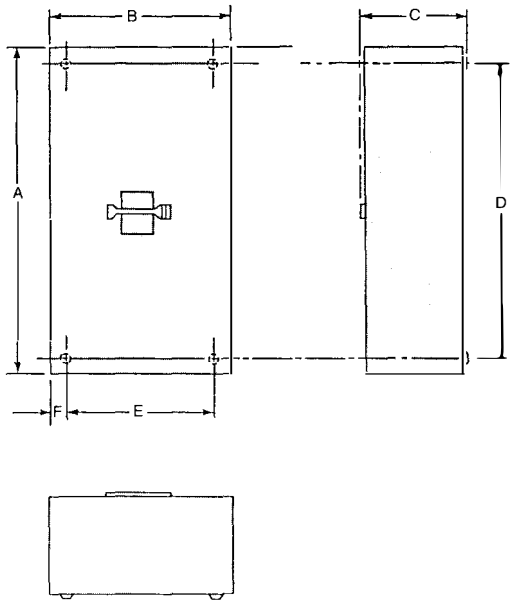

**FRONT VIEW**




**END VIEW**

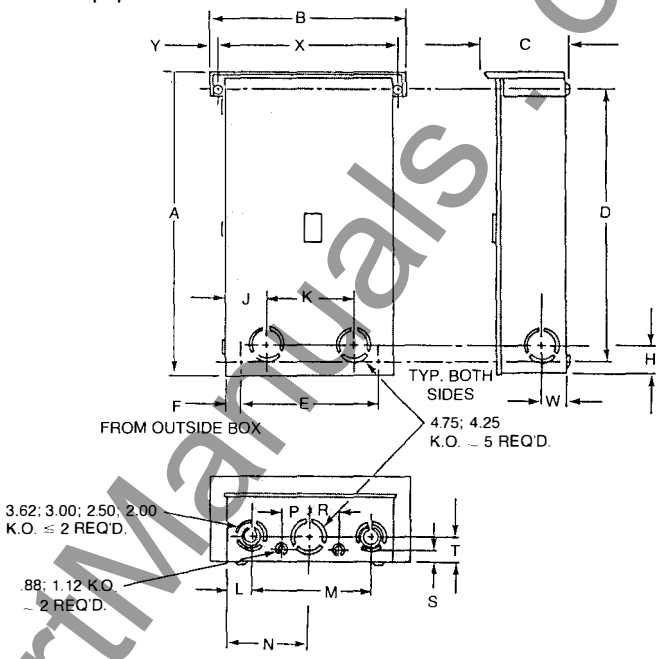
### TYPE 1 – KM1

General purpose indoor, sheet-steel enclosure for use in normal atmosphere, listed as service-entrance equipment.



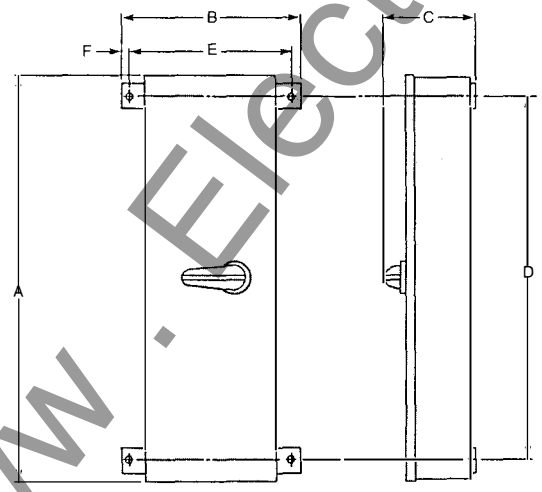

### TYPE 3R – KM3

An outdoor, sheet-steel enclosure providing protection against driving rain, sleet or snow. Listed as service-entrance equipment.




### TYPE 12 – KM12

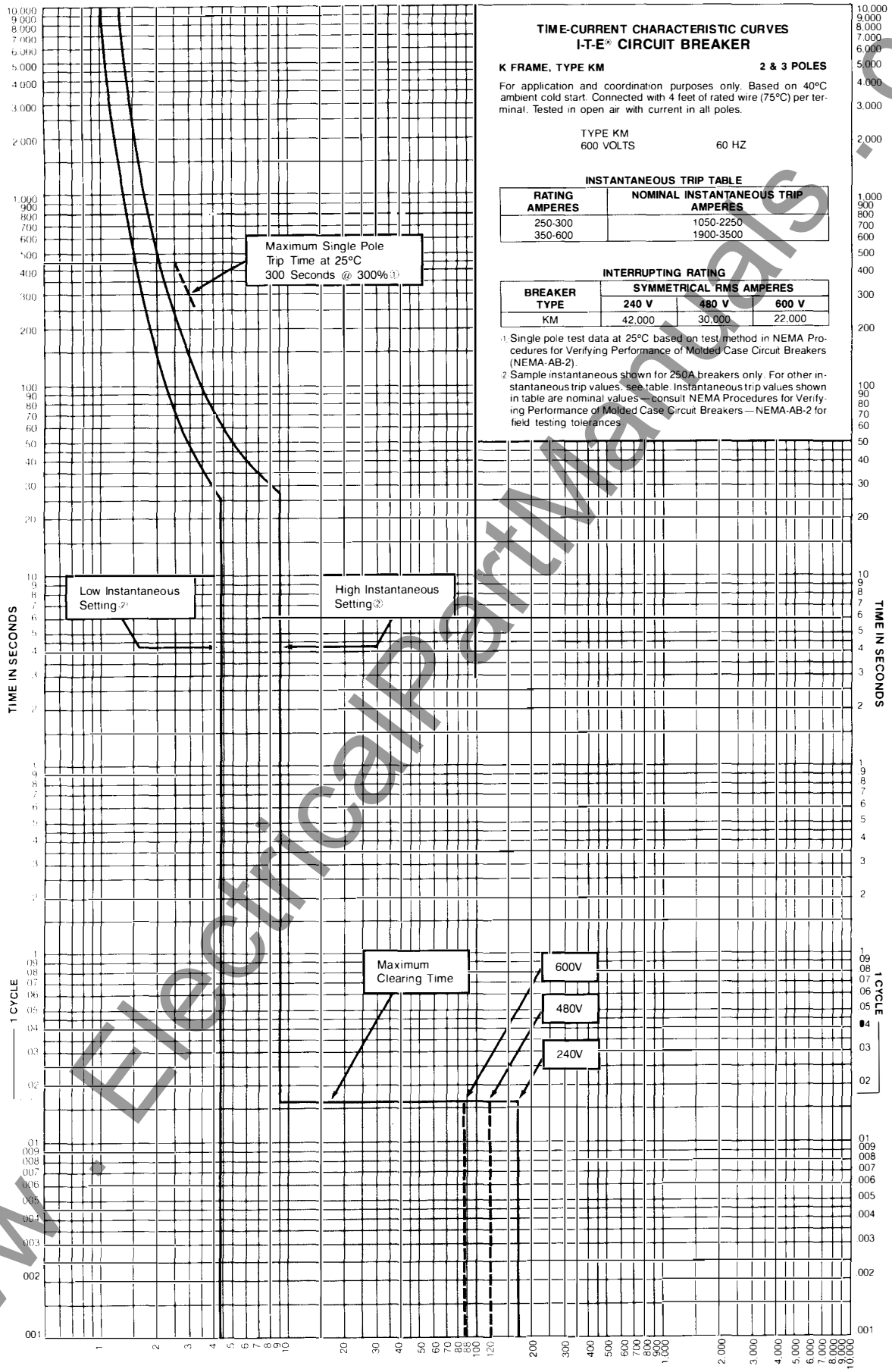
A special-industry, sheet-steel enclosure for indoor use in atmosphere containing particles of lint, dust, dirt, sawdust and other foreign matter.



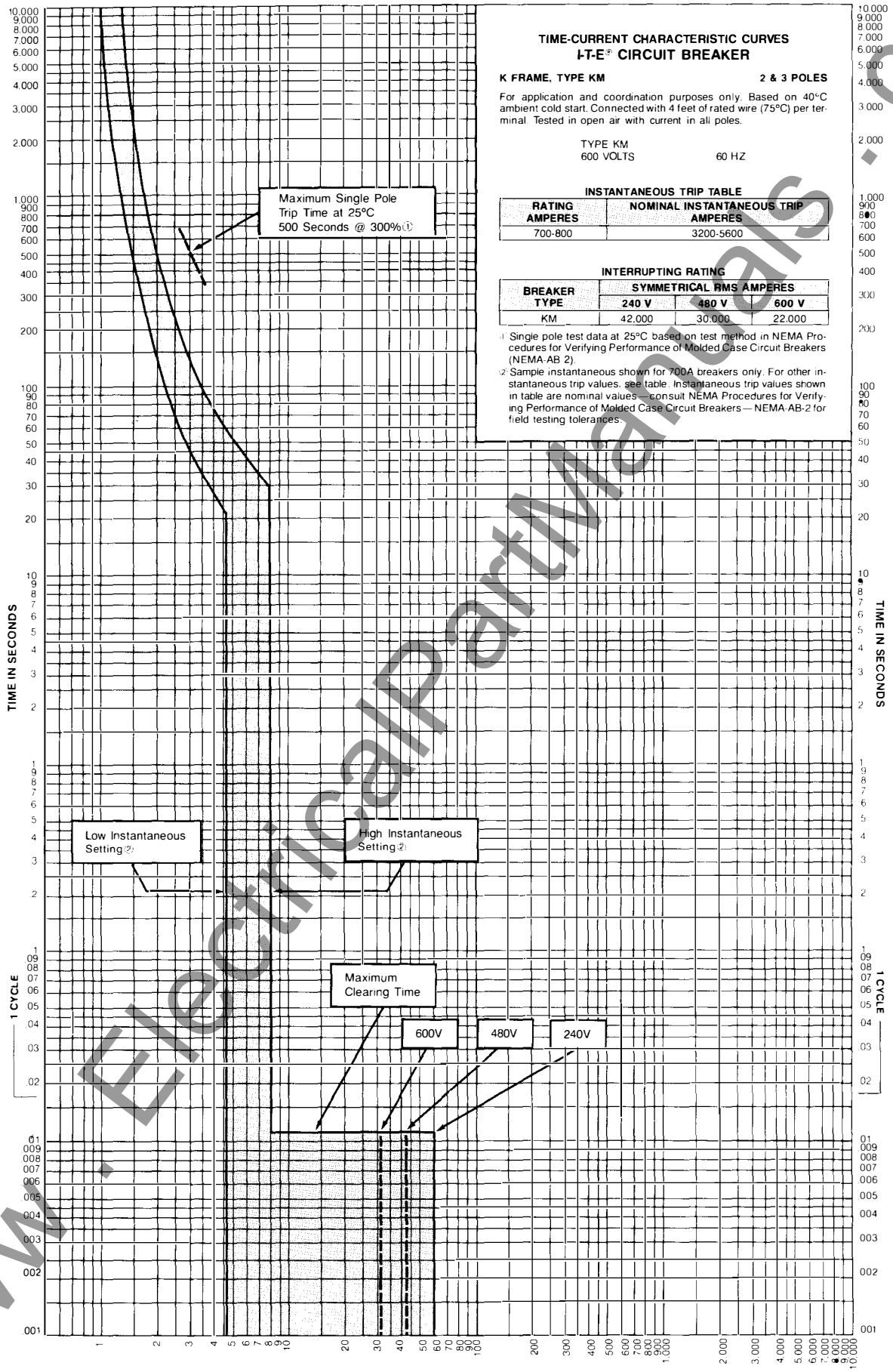

### ENCLOSURE DIMENSIONS – INCHES

| REF. | CAT. NO. | | |
|---|---|---|---|
| | KM1 | KM3 | KM12 |
| A | 54.2 | 55.2 | 54.7 |
| B | 22.5 | 26.8 | 25.7 |
| C | 10.7 | 11.7 | 11.6 |
| D | 50.0 | 51.5 | 50.0 |
| E | 18.25 | 18.25 | 24.27 |
| F | 2.09 | 2.12 | 0.62 |
| H | — | 3.9 | — |
| J | — | 6.1 | — |
| K | — | 10 | — |
| L | — | 4.5 | — |
| M | — | 13.5 | — |
| N | — | 11.2 | — |
| P | — | 3.4 | — |
| R | — | 3.4 | — |
| S | — | 1.5 | — |
| T | — | 3.5 | — |
| W | — | 3.4 | — |
| X | — | 24.25 | — |
| Y | — | 1.12 | — |

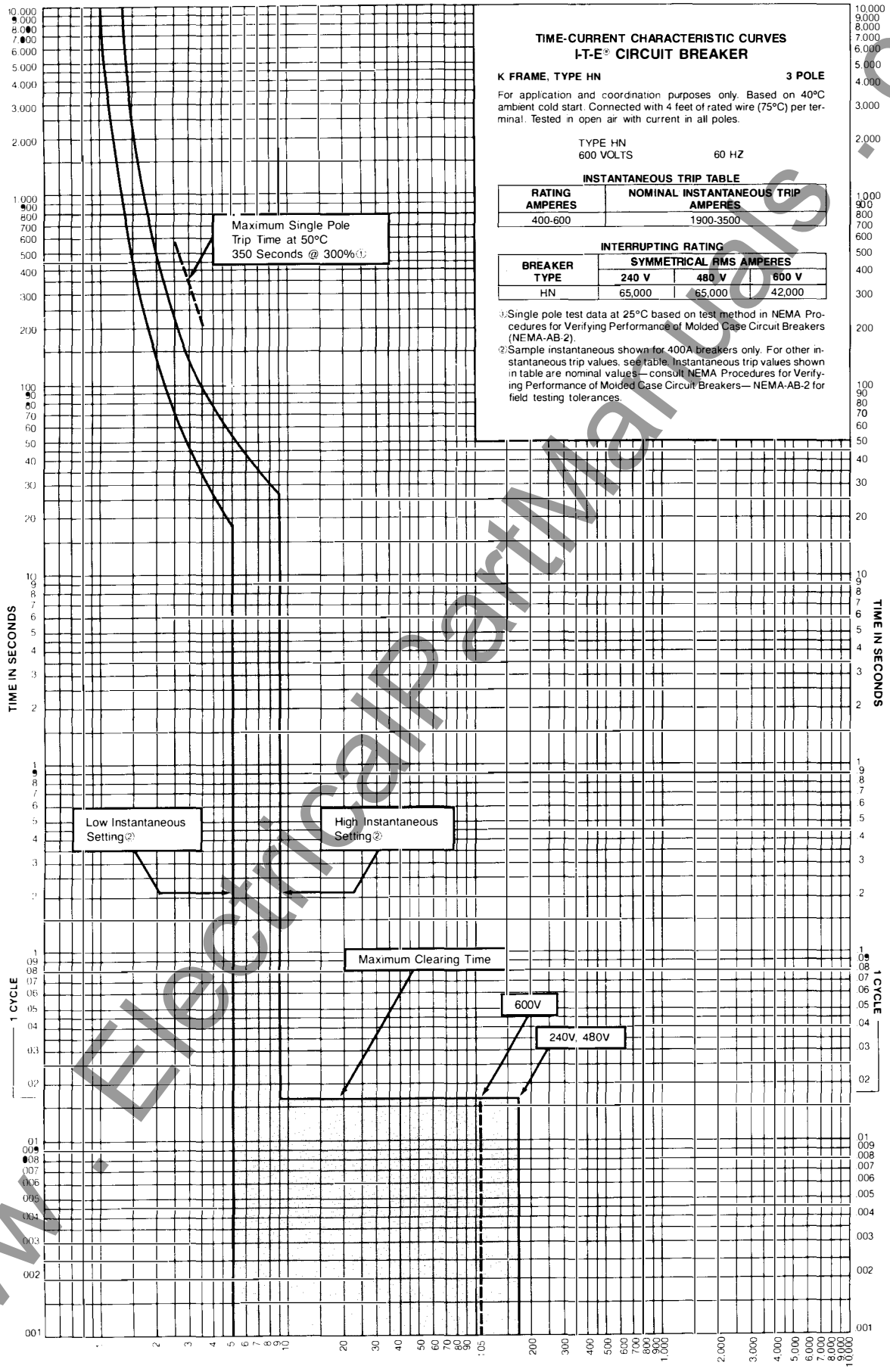
# I-T-E TIME/CURRENT CURVES K FRAME
# 600 VOLTS, 60 HZ, 250-600 AMPERES



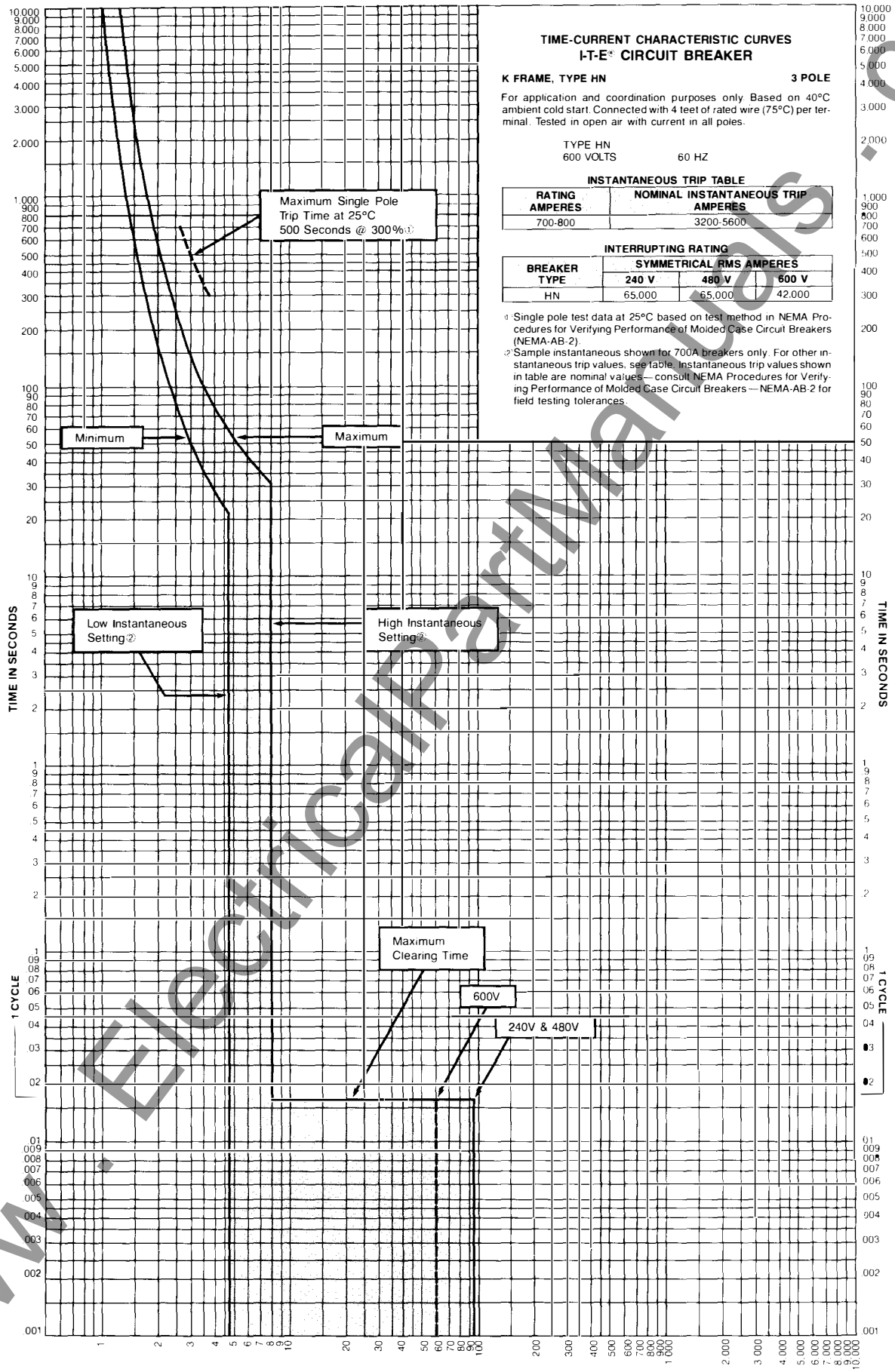
# I-T-E TIME/CURRENT CURVES K FRAME
# 600 VOLTS, 60 HZ, 700-800 AMPERES



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



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



# I-T-E ORDERING INFORMATION
# CIRCUIT BREAKER CATALOG NUMBERS

| Breaker Type | 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) VAC 120 | VAC 120/240 | VAC 240 | VAC 277 | VAC 480 | VAC 600 | VDC 125 | VDC 250 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **KM** **2 Pole** ① 600 VAC | 400 | 1900 | 3500 | KM2B400 | KM2F800 | KM2T400 | | | 42 | | 30 | 22 | | |
| | 450 | 1900 | 3500 | KM2B450 | KM2F800 | KM2T450 | | | 42 | | 30 | 22 | | |
| | 500 | 1900 | 3500 | KM2B500 | KM2F800 | KM2T500 | | | 42 | | 30 | 22 | | |
| | 600 | 1900 | 3500 | KM2B600 | KM2F800 | KM2T600 | | | 42 | | 30 | 22 | | |
| | 700 | 3200 | 5600 | KM2B700 | KM2F800 | KM2T700 | | | 42 | | 30 | 22 | | |
| | 800 | 3200 | 5600 | KM2B800 | KM2F800 | KM2T800 | | | 42 | | 30 | 22 | | |
| | 800 | Molded Case Switch | | KM2S800 | | | | | | | | | | |
| | SHIPPING: | | | | 27 lbs. each | 4 lbs. each | | | | | | | | |
| **KM** **3 Pole** 600 VAC | 400 | 1900 | 3500 | KM3B400 | KM3F800 | KM3T400 | | | 42 | | 30 | 22 | | |
| | 450 | 1900 | 3500 | KM3B450 | KM3F800 | KM3T450 | | | 42 | | 30 | 22 | | |
| | 500 | 1900 | 3500 | KM3B500 | KM3F800 | KM3T500 | | | 42 | | 30 | 22 | | |
| | 600 | 1900 | 3500 | KM3B600 | KM3F800 | KM3T600 | | | 42 | | 30 | 22 | | |
| | 700 | 3200 | 5600 | KM3B700 | KM3F800 | KM3T700 | | | 42 | | 30 | 22 | | |
| | 800 | 3200 | 5600 | KM3B800 | KM3F800 | KM3T800 | | | 42 | | 30 | 22 | | |
| | 800 | Molded Case Switch | | KM3S800 | | | | | | | | | | |
| | SHIPPING: | | | | 32.5 lbs. each | 4.5 lbs. each | | | | | | | | |
| **HN** 3 Pole 600 VAC | 400 | 1900 | 3500 | HN3B400 | HN3F800 | HN3T400 | | | 65 | | 65 | 42 | | |
| | 450 | 1900 | 3500 | HN3B450 | HN3F800 | HN3T450 | | | 65 | | 65 | 42 | | |
| | 500 | 1900 | 3500 | HN3B500 | HN3F800 | HN3T500 | | | 65 | | 65 | 42 | | |
| | 600 | 1900 | 3500 | HN3B600 | HN3F800 | HN3T600 | | | 65 | | 65 | 42 | | |
| | 700 | 3200 | 5600 | HN3B700 | HN3F800 | HN3T700 | | | 65 | | 65 | 42 | | |
| | 800 | 3200 | 5600 | HN3B800 | HN3F800 | HN3T800 | | | 65 | | 65 | 42 | | |
| | SHIPPING: | | | | 32.5 lbs. each | 5 lbs. each | | | | | | | | |

## INSTANTANEOUS ONLY CIRCUIT BREAKERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **KM** **2 Pole** ① | 600 | 1900 | 3500 | KM2A600 | N/A | N/A | Interruption ratings are established only through combination tests with properly sized overload relays and contactors. |
| | 800 | 3200 | 5600 | KM2L800 | | | |
| | 800 | 5000 | 8000 | KM2H800 | | | |
| **KM** **3 Pole** | 600 | 1900 | 3500 | KM3A600 | N/A | N/A | |
| | 800 | 3200 | 5600 | KM3L800 | | | |
| | 800 | 5000 | 8000 | KM3H800 | | | |

① Two pole available in 3 pole width 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.

## 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 | Enclosures | |
| | | Type 1 | KM1 |
| Mounting Screw | MSKM | Type 3R | KM3 |
| | | Type 12 | KM12 |
| Rear Connecting Studs | | | |
| Short Length | RS9603 | Handle Blocking Device | KML1 |
| Long Length | RS9604 | | |
| | | Mechanical Interlock | |
| Plug-In Mounting Assemblies | | Breaker panel mounted | MI5460 |
| 2 ploe (2 required per breaker) | PC9606 | Breaker Plug-In mounted | MI5460 |
| 3 pole (2 required per breaker) | PC9607 | | |
| | | Handle Operators | |
| Steel Switchboard Mounting Plate | | Integral handle operator | OH5942 |
| Used with Plug-In Mounting Assemblies | PL9698 | Standard Depth Operator | |
| | | Left Hand | OH8651 |
| Telemand® Electric Motor Operator | | Right Hand | OH8650 |
| 120 VAC | T06K120 | | |
| 240 VAC | T06K240 | | |

| I-T-E Item | UL File Number | CSA File Number |
|---|---|---|
| Breakers | E9896 | LR33845 |
| Terminal Connectors | E9896 | — |
| Plug-in Connectors | E63311 | — |
| Rear Studs | — | — |
| Internal Accessories | E57501 | — |
| Shunt Trips | E57501 | — |
| Undervoltage | E57501 | — |
| Aux. Switch | E57501 | — |
| Bellalarm | — | — |
| Molded Case Switch | E57556 | LR33844 |
| Enclosures | E10848 | — |
| Connector Straps | — | — |

Circuit Breaker Mounting Screws ⅜-16x 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

SIEMENS

**Siemens Energy**
**& Automation, Inc.**
I-T-E Circuit Protection
3333 State Bridge Road
Alpharetta, Georgia 30201

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