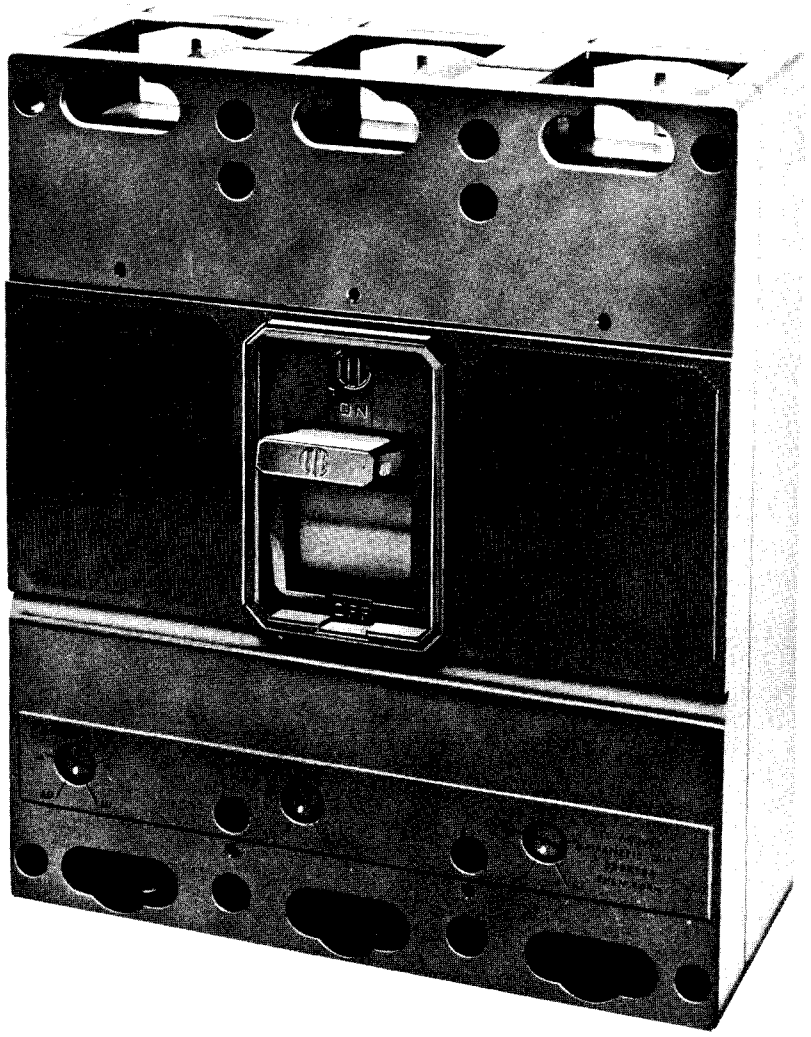
IB-2.2.7-6
ISSUE B

MOLDED-CASE CIRCUIT BREAKERS

INSTRUCTIONS

400-AMPERE
ET® JL-FRAME CIRCUIT BREAKERS
2 & 3 POLE, 70-400 AMPERES



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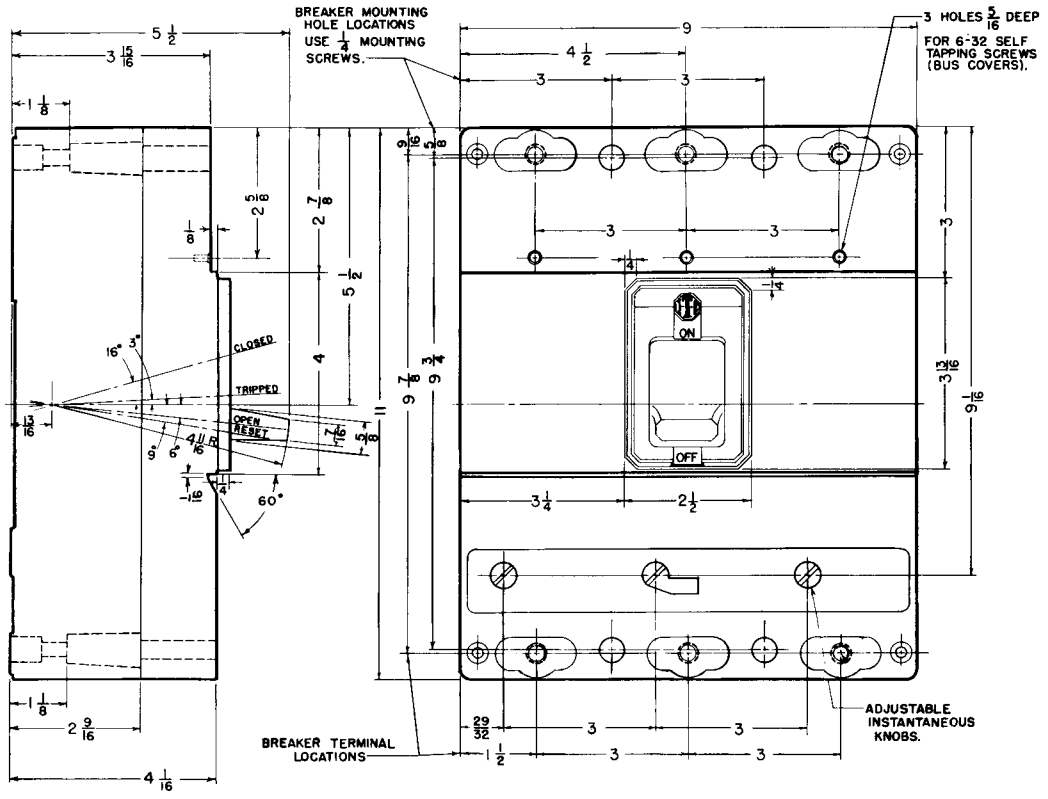
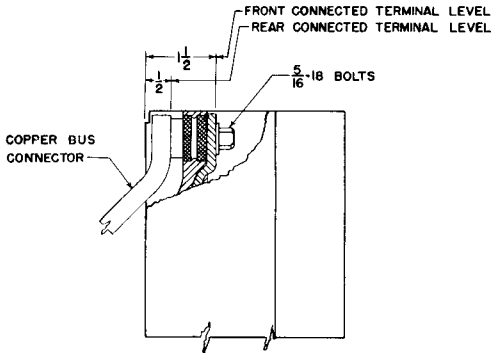
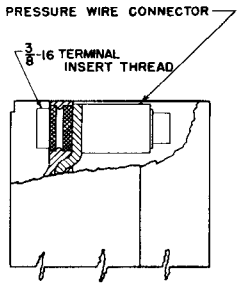
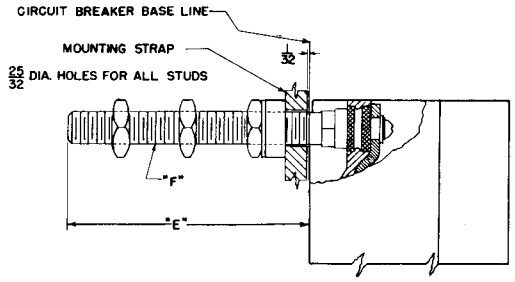


CURRENT CARRYING PARTS ARE OMITTED FROM CENTER POLE IN TWO POLE CONSTRUCTION.

SHIPPING WEIGHT	2 POLE	3 POLE
FRAME	15 1/2	17
TRIP UNIT	2 1/2	3 1/2
COMPLETE BREAKER	18	20 1/2







FRONT CONNECTED TERMINAL

AMPERE RATING	CABLE RANGE	CATALOG NO
70-225	CU - #4 TO 300 MCM AL - #2 TO 300 MCM	TA1-J300
250-300	CU - 250 TO 500 MCM AL - 350 TO 500 MCM	TA1-J500
350-400	CU - (2) 3/0 TO 250 MCM AL - (2) 4/0 TO 250 MCM	TA2-J250

REAR CONNECTED TERMINAL

AMPERE RATING	LENGTH B.O.B. "E"	CATALOG NO.	"F"
400	3 1/4	RS5770	3/4-16
400	5 1/2	RS5771	3/4-16
400	8	RS5772	3/4-16
400	10 1/2	RS5773	3/4-16

400-Ampere JL-Frame Circuit Breaker Dimensional Drawings

COVER - PHOTO G42706-A

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INSTRUCTIONS FOR 400-AMPERE JL-FRAME CIRCUIT BREAKERS 2 & 3 POLE, 70-400 AMPERES

GENERAL

JL-frame circuit breakers, as shown on page 2, are for use in individual enclosures, in switchboards, and in power and distribution panelboards.

Complete JL-frame circuit breakers, as listed, can be furnished with pressure wire connectors suitable for use with aluminum or copper wire for front connection or with rear connecting studs for switchboard applications. The circuit breakers can also be furnished with plug-in connector assemblies for both 2 and 3 pole types. The plug-in arrangement permits removal of the circuit breaker from its leads without physically coming in contact with the line or load terminals.

NOTE: 2 and 3 pole breakers are the same physical size; in the 2 pole breakers the current carrying parts are omitted from the center pole.

JL-frame 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 five (5) trip points as shown below:

Breaker Ampere Rating	Nominal Instantaneous Values				
	LO	2	3	4	HI
70-175	750	960	1175	1400	1600
200-225	960	1200	1450	1800	2000
250-300	1050	1350	1650	1950	2250
350-400	1900	2300	2700	3100	3500
225 ETI	960	1200	1450	1800	2000
400 ETI	1900	2300	2700	3100	3500
400 ETI	3200	3600	4100	5100	5600

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.

The circuit breakers operate on a common trip principle so that an overcurrent or short circuit on any pole will simultaneously open all poles.

Trip units are carefully calibrated and adjusted at the factory in a temperature controlled room. Trip unit covers are sealed in place and any alteration of the calibration of the unit should not be attempted. Removing the trip unit cover will void the Underwriters' Laboratories, Inc. listing for that particular unit. All trip units of the same number of poles in this frame size are interchangeable regardless of capacity.

ETI circuit breakers (adjustable instantaneous magnetic trip only) can be furnished and 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.

Special features such as shunt trip, auxiliary and alarm switches and undervoltage trip devices are available and are mounted internally. Information concerning these special devices is available upon request.

INTERRUPTING RATINGS

The interrupting ratings of the JL-frame circuit breakers are based on circuits adjusted to the rated short circuit current (at specified voltage) before the insertion of the circuit breaker.

Based on UL and NEMA Test Procedures		
Volts	Amperes	
	Asymmetrical	Symmetrical
240 ac	50,000	42,000
480 ac	35,000	30,000
600 ac	25,000	22,000
250 dc	20,000	

70-, 90- and 100-ampere breakers have interrupting ratings of 30,000 amperes asymmetrical, 25,000 amperes symmetrical at 240 volts ac; 25,000 amperes asymmetrical, 22,000 amperes symmetrical at 480 and 600 volts ac; 10,000 amperes at 250 volts dc.

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.

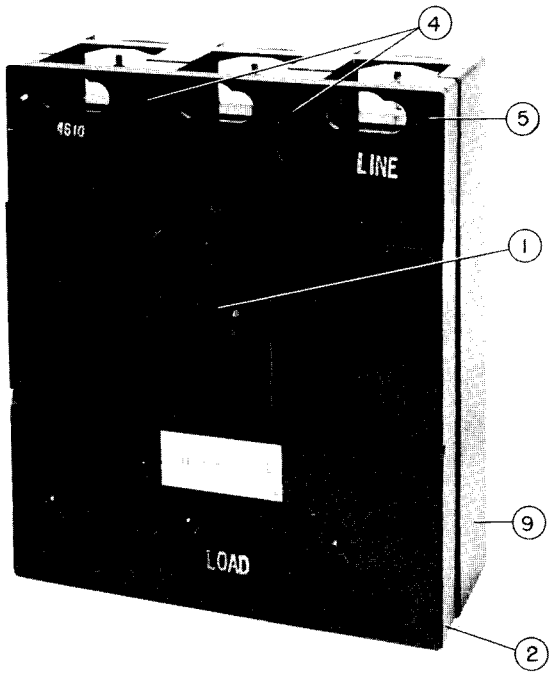


Fig. 1 — Front View of Circuit Breaker

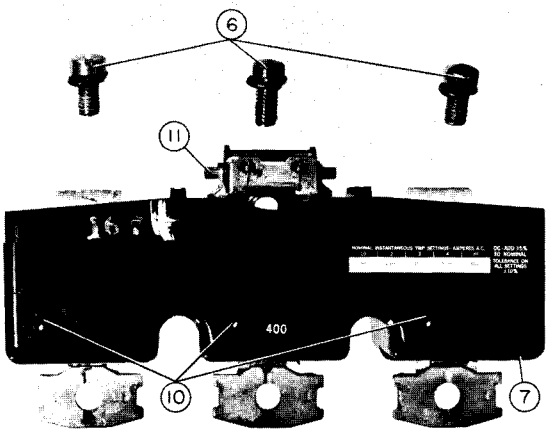


Fig. 2 — 3 Pole Trip Unit

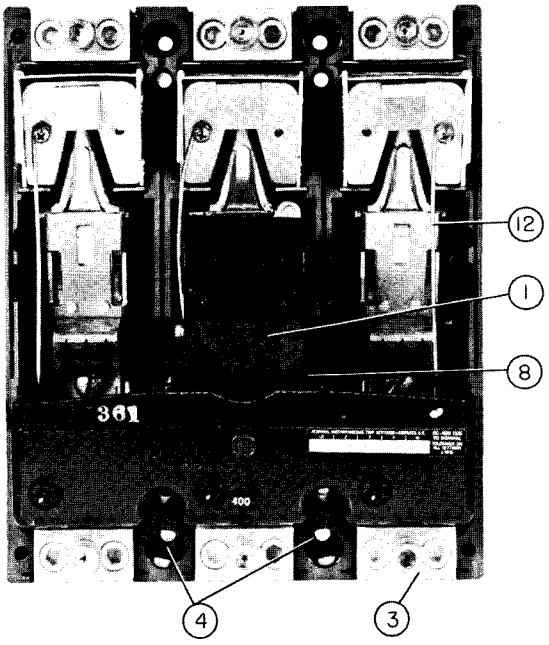


Fig. 3 — Front View of Circuit Breaker Cover Removed

1. OPERATING HANDLE
2. BREAKER COVER
3. TERMINAL LUG SCREWS
4. BREAKER MOUNTING SCREWS
5. COVER SCREWS
6. TRIP UNIT ANCHOR SCREWS AND LOCKWASHERS
7. TRIP UNIT
8. SLOTS IN MECHANISM HOUSING
9. CIRCUIT BREAKER BASE
10. ADJUSTABLE INSTANTANEOUS TRIP BUTTONS
11. LATCH PIN
12. ARC CONDUCTOR WIRES

FIG. 1 - PHOTO E39589-B
FIG. 2 - PHOTO C37555-A

FIG. 3 - PHOTO E39589-A

WARNING FOR CIRCUIT BREAKER REMOVAL

THE CIRCUIT BREAKER SHOULD BE IN THE "OFF" POSITION AND, IF PRACTICABLE, THE SWITCHBOARD DE-ENERGIZED BEFORE INSPECTING, CHANGING, INSTALLING OR REMOVING THE CIRCUIT BREAKER OR TRIP UNITS. IF THE BUS CANNOT BE DE-ENERGIZED, USE INSULATED HANDLE TOOLS, RUBBER GLOVES AND A RUBBER FLOORMAT.

TO REMOVE A REAR-CONNECTED CIRCUIT BREAKER FROM ITS MOUNTING

See WARNING FOR CIRCUIT BREAKER REMOVAL.

1. Remove rear connection stud terminal screws, lockwashers and flatwashers.
2. Pull circuit breaker forward or away from the rear connection studs.

TO REMOVE A FRONT-CONNECTED CIRCUIT BREAKER FROM ITS MOUNTING

See WARNING FOR CIRCUIT BREAKER REMOVAL.

1. Loosen terminal lug screws (3, Fig. 3) and pull cable out of lugs. Bend cables clear of the circuit breaker.
2. Remove four breaker mounting screws (4, Figs. 1 and 3); breaker is now free of its mounting.

TO REMOVE A CIRCUIT BREAKER EQUIPPED WITH PLUG-IN CONNECTOR ASSEMBLIES FROM ITS MOUNTING

See WARNING FOR CIRCUIT BREAKER REMOVAL.

1. Loosen four breaker mounting screws (4, Fig. 1) and pull circuit breaker forward or away from the mounting surface.

ADDING A TRIP UNIT TO A BREAKER FRAME

See WARNING FOR CIRCUIT BREAKER REMOVAL.

1. Remove circuit breaker cover screws and cover.
2. On outside poles, remove screws and lockwashers (6, Fig. 2) from circuit breaker frame.
3. Hold mechanism handle toward line end of breaker frame and carefully lower trip unit into base. Make sure that latch pin in center pole (11, Fig. 2) engages slots (8, Fig. 3) in mechanism housing.
4. Tighten trip unit anchor screw (6, Fig. 2), retained in trip unit housing, securely to base. (Recommended torque 10 to 12 ft. lbs.)
5. Replace screws and lockwashers (6, Fig. 2) previously removed and tighten securely. (Recommended torque 10 to 12 ft. lbs.)
6. For all instantaneous-magnetic ETI 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 cellophane backing and press nameplate in position on clean surface. Moisten plate to facilitate cellophane removal.
7. Replace cover and cover screws.
8. Move operating handle to extreme "OFF" position (reset). Circuit breaker is now ready for use.

TRIP UNIT REPLACEMENT

See WARNING FOR CIRCUIT BREAKER REMOVAL.

1. Remove circuit breaker cover screws and cover.
2. If circuit breaker is not in the tripped position, insert pin in .067 diameter hole in trip unit base to rotate tripper bar and trip breaker.

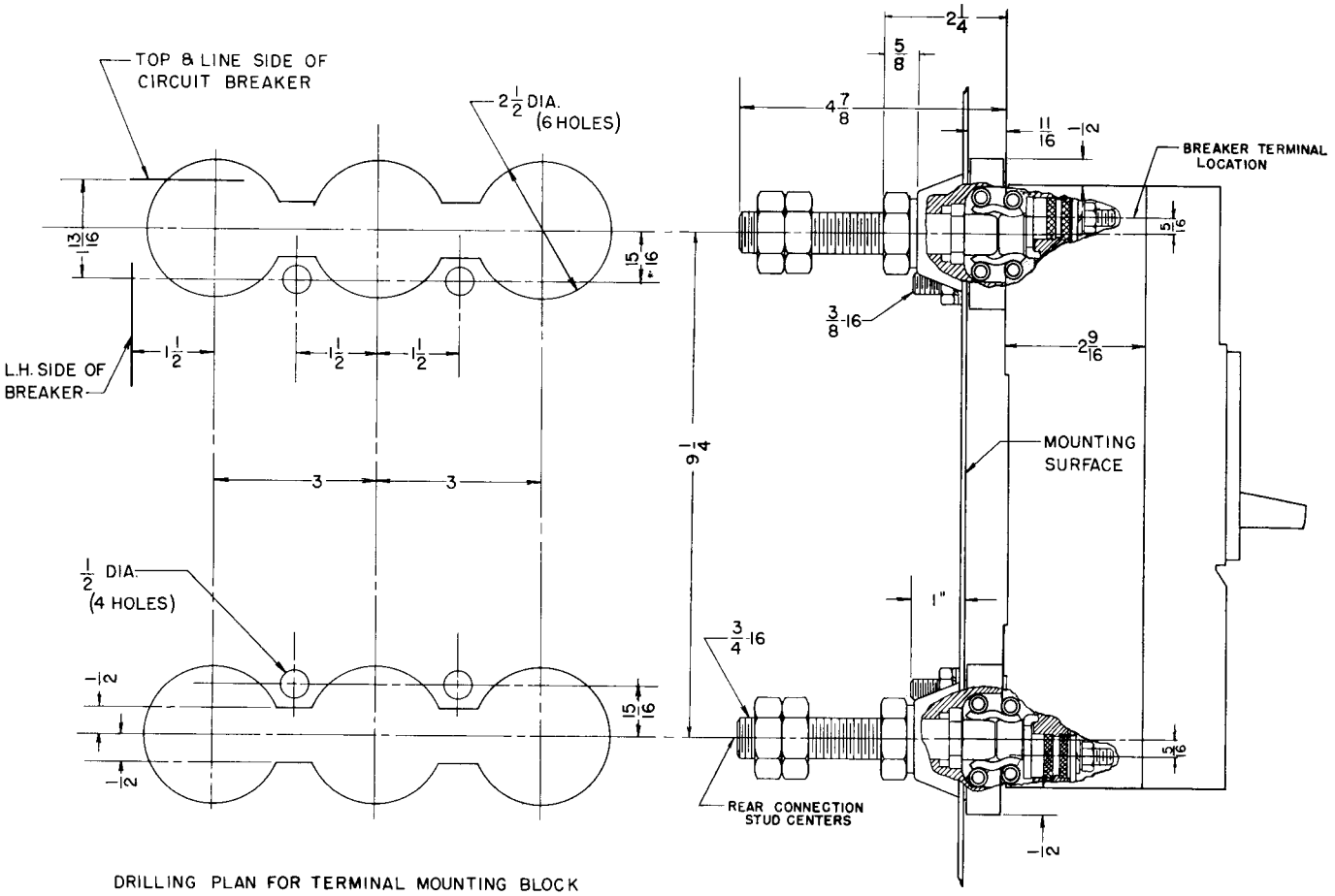
   CAUTION: Keep hands away from mechanism while tripping breaker.
3. Remove screws and lockwashers (6, Fig. 2) from outside poles. If necessary, remove solderless lugs or rear connecting studs from load side of trip unit terminals.
4. Remove trip unit anchor screw (6, Fig. 2) in center pole. Loosen enough to disengage threads but leave screw retained in trip unit housing.
5. Hold mechanism handle toward line end of circuit breaker and carefully lift out trip unit.
6. To add a new trip unit, follow steps 3 to 8 of "ADDING A TRIP UNIT TO A BREAKER FRAME".

INSPECTION AND MAINTENANCE

See WARNING FOR CIRCUIT BREAKER REMOVAL.

Should the circuit breaker appear to be overheating, inspect for any loose or otherwise defective terminal connections.

When a circuit breaker is not operated for long periods of time, a high resistance film may form on the contact surfaces which will also result in overheating. This high resistance film may be minimized, and in most cases removed, by opening and closing the circuit breaker several times under load.



Plug-In Connector Assemblies & Drilling Plan
Dimensional Drawings

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NOTES