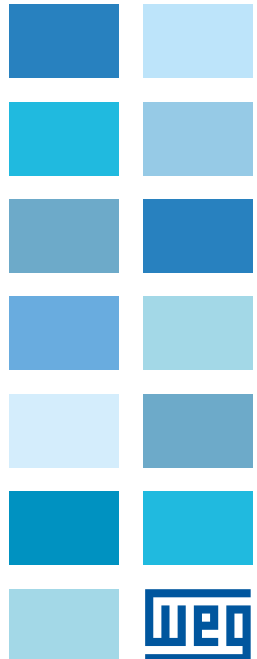
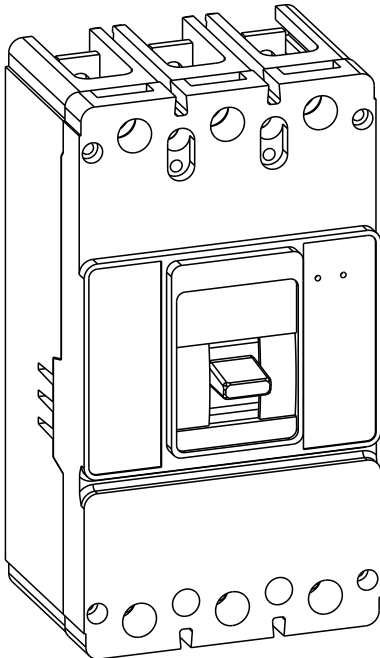


# WEG Molded Case Circuit Breakers

UBW400

## User's Manual



**WARNING**

- Do not attempt to install or perform maintenance on equipment while it is energized. Death, severe personal injury or substantial property damage can result from contact with energized equipment. Always verify that no voltage is present before proceeding with the task, and always follow generally accepted safety procedures.
- WEG is not liable for the misapplication or misinstallation of its products.

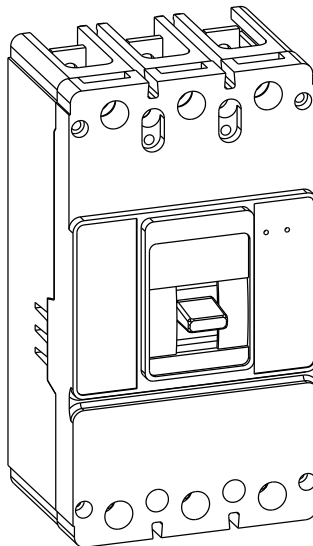
The user is cautioned to observe all recommendations, warnings and cautions relating to the safety of personnel and equipment, as well as all general and local health and safety laws, codes and procedures.

The recommendations and information contained herein are based on WEG experience and judgment, but should not be considered to be all-inclusive or covering every application or circumstance which may arise. If any questions arise, contact WEG for further information or instructions.

## 1. INTRODUCTION

### 1.1. GENERAL INFORMATION

The UBW400 circuit breaker (Figure 1) are 600 V ac maximum rated. UBW400 circuit breakers are listed in accordance with Underwriters Laboratories, Inc. Standard UL 489 and satisfy the (P1) requirements of the International Electrotechnical Commission Recommendations No. IEC 157-1.

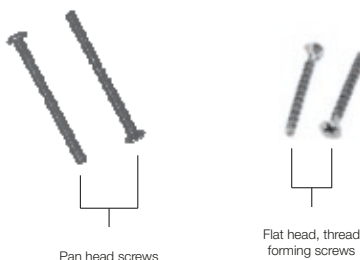


*Figure 1: UBW400 circuit breaker frame*

## 2. INSTALLATION

The installation procedure consist of inspecting the circuit breaker and, as applicable, installing the trip unit and rating plug, accessories, interphase barriers, and terminals; mounting the circuit breaker; connecting the line and load conductors; torquing terminals and attaching terminal shields. Circuit breaker frames, trip units, rating plugs, accesories, mounting hardware, and unmounted terminals may be supplied in separate packages. To install the circuit breaker, perform the following steps.

1. Make sure that the circuit breaker is suitable for the intended installation by comparing nameplate data with existing equipment ratings and system requirements. Inspect the circuit breaker for completeness, and check for damage before mounting. Uninstalled cover mounting hardware is supplied in a plastic bag with the circuit breaker frame (see Figure 2 and Table 2).



**Figure 2:** cover mounting hardware

	3-pole
No. 8 x 1.88 in, Flat-head	6
.190 - 32 x 3.125 in, Pan-head	2

**Table 2:** cover mounting hardware

2. Remove installed cover screws and cover.

**NOTICE**

- The circuit breaker handle must be in the tripped or OFF position to remove the cover. Instructions for installing the trip unit and accessories are supplied with the devices.

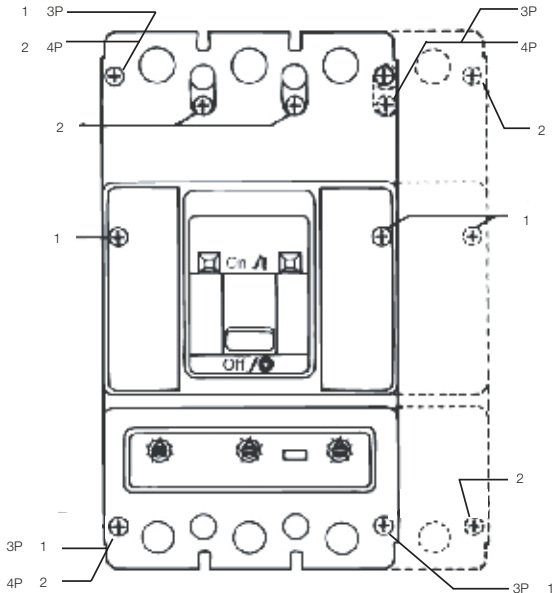
3. If not already installed, mount trip unit and accessories (if required) in circuit breaker frame.



### Caution

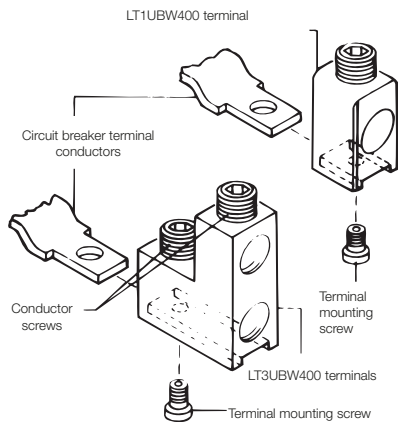
- When removed and reinstalled, thread forming screws will try to reform the threads in the base. Care should be taken every time a thread-forming screw is used to ensure the screw starts in the original threads. Damaged threads can result in improper circuit breaker cover retention.

- Replace cover and install pan-head screws followed by thread-forming screws as shown in Figure 3. Torque cover screws to 18-23 lb-in (2-2.6 N.m.).
- If not already installed, mount terminals as shown in Figure 4. Secure the terminals to the circuit breaker using a 7/32-inch socket wrench, and torque to 6-8 lb-ft (8-11 N.m). After mounting the circuit breaker and before installation of the conductors, the terminal mounting screw can be checked or retightened through the terminal when the conductor screw is removed. If warning label is supplied with terminal, place on upper portion of circuit breaker cover.



**Figure 3:** cover screw installation positions

- Screw, No. 8 x 1.88 inch, flat head, cross-recessed, thread forming.
- Screw, No. 190-32 x 3.125 inch, pan head, cross-recessed.



**Figure 4:** terminal installation



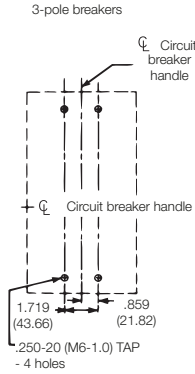
### WARNING

- The voltage in energized equipment can cause death or severe personal injury. Before mounting the circuit breaker in an electrical system, make sure there is no voltage present where work is to be performed. Special attention should be paid to reverse feed applications to ensure no voltage is present.

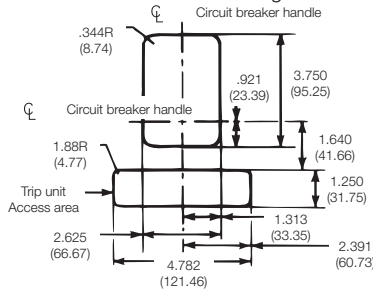
### NOTICE

- Depending on the equipment configuration, the circuit breaker can be mounted using different styles of hardware. The following steps describe how to mount the circuit breaker using standard hardware. When special hardware is needed (for example, with the electrical operator), the instruction leaflet describing the accessory also describes the special mounting arrangements.

6. To mount the circuit breaker, perform the following steps:
  - a. For individual surface mounting, drill mounting panel using the drilling plan shown in Figure 5. For panelboard mounting, only load end support mounting holes are required. For deadfront cover applications, cut out cover to correct escutcheon dimensions, see Figure 6.



**Figure 5:** circuit breaker mounting bolt drilling plans



**Figure 6:** circuit breaker escutcheon dimensions for 3-pole circuit breakers

- b. If circuit breaker includes factory or field installed internal accessories, make sure accessory wiring can be reached when the circuit breaker is mounted.
- c. Position circuit breaker on mounting surface.

**NOTICE**

Labels with accessory connection schematic diagrams are provided on the side of the circuit breaker. A note should be made of the diagrams if the labels cannot be seen when the circuit breaker is mounted.

- d. Install circuit breaker mounting screws, washers, and nuts. Tighten screws firmly, but do not exceed 28 pounds-inches (3 N.m).



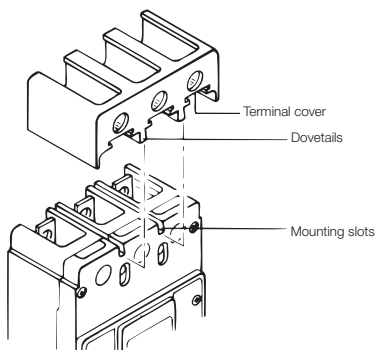
**Caution**

- When aluminum conductors are used, the application of a suitable joint compound is recommended to reduce the possibility of terminal overheating. Overheating can cause nuisance tripping and damage to the circuit breaker.

**NOTICE**

- When a dual conductor terminal (Catalog No. LT3UBW400) is installed on the circuit breaker and a single conductor is used, the conductor should be installed in the terminal opening nearest to the circuit breaker terminal mounting conductor.

7. Connect line and load conductors and accessory leads.
8. When step-type terminals (Cat. No. LT3UBW400) are used, terminal shields (supplied with the terminals) must be installed on the circuit breaker (Figure 7). Warning label supplied with the kit must be attached to the circuit breaker front cover.



**Figure 7:** terminal cover installation

9. If required, install terminal shield on circuit breaker cover with mounting screws provided.
10. After the circuit breaker is installed, check all mounting hardware and terminal connecting hardware for correct torque loading. Torque values for line/load terminals are given in Table 3 and on the circuit breaker nameplate.

Terminal cat. No.	Terminal material body	Screw head type	AWG wire range	Metric wire range	Wire type	Torque value lb-in (N.m)
LT1UBW400	Aluminum	Socket	250-500 (1)	120-240	Cu/Al	375 (42)

**Table 3:** cover mounting hardware

## 3. MANUAL OPERATION, AND THERMAL MAGNETIC TRIP UNIT ADJUSTMENT

### 3.1. MANUAL OPERATION

Manual operation of the circuit breaker is controlled by the circuit breaker handle and the PUSH-TO-TRIP button in the trip unit. The circuit breaker handle has three positions, two of which are shown on the cover with raised lettering to indicate ON and OFF. On the sliding handle barrier, ON, OFF, and trip are also shown by a color-coded strip for each circuit breaker handle position: red for ON, white for tripped, and green for OFF (see Figure 8).

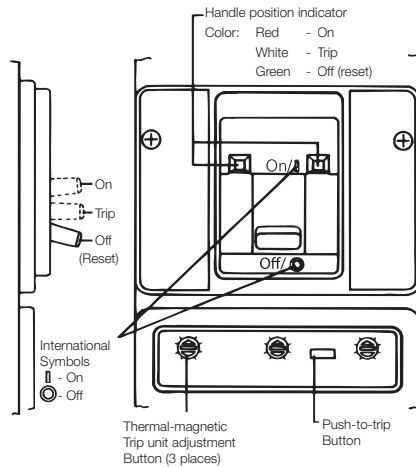


Figure 8: circuit breaker manual controls

### 3.2. CIRCUIT BREAKER RESET

After an automatic or accessory initiated trip, or a manual PUSH-TO-TRIP operation, the circuit breaker is reset by moving the circuit breaker handle to the extreme OFF position.

#### NOTICE

- In the event of a thermal trip in a thermal magnetic type trip unit, the circuit breaker cannot be reset until the thermal element in the trip unit cools. A circuit breaker with an electronic type trip unit can be reset immediately.

No circuit breaker should be reclosed until the cause of trip is known and the situation rectified.



### 3.3. PUSH-TO-TRIP BUTTON

The PUSH-TO-TRIP button checks the circuit breaker tripping function and is used to periodically exercise the operating mechanism in thermal-magnetic trip units. The button is designed to be operated by a small screwdriver.

### 3.4. THERMAL-MAGNETIC TRIP UNIT ADJUSTMENT

The magnetic element of each pole of the trip unit can be adjusted by rotating the adjustment buttons on the front face of the trip unit with a screwdriver. The buttons have several settings as indicated on the nameplate with values in multiples of the trip unit ampere rating (I<sub>n</sub>) as shown in Figure 9. To adjust the setting, rotate each button clockwise until arrow button points to desired setting.

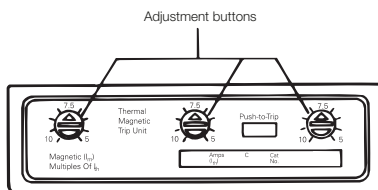


Figure 9: trip unit magnetic adjustment buttons

## 4. INSPECTION AND FIELD TESTING

UBW400 molded case circuit breakers are designed to provide years of almost maintenance-free operation. The following procedure describes how to inspect and test a circuit breaker in service.

### 4.1. INSPECTION AND FIELD TESTING

Circuit breakers in service should be inspected periodically. The inspection should include the following checks 1 through 8.



#### WARNING

- The voltages in energized equipment can cause death or severe personal injury. Before inspecting the circuit breaker in an electrical system, make sure there is no voltage present where work is to be performed. Special attention should be paid to reverse feed applications to ensure no voltage is present.



#### Caution

- Some commercial cleaning agents will damage the nameplates or molded parts. Make sure that cleaning agents or solvents used to clean the circuit breaker are suitable for the job.

1. Remove dust, dirt, soot, grease, or moisture from the surface of the circuit breaker using a lint-free dry cloth, brush, or vacuum cleaner. Do not blow debris into circuit breaker. If contamination is found, look for the source and eliminate the problem.
2. Switch circuit breaker to ON and OFF several times to be sure that the mechanical linkages are free and do not bind. If mechanical linkages are not free, replace circuit breaker.
3. With the circuit breaker in the ON position, press the PUSH-TO-TRIP button to mechanically trip the circuit breaker. Trip, reset, and switch circuit breaker ON several times. If mechanism does not reset each time the circuit breaker is tripped, replace the circuit breaker.
4. Check base, cover, and operating handle for cracks, chipping, and discoloration. Circuit breakers should be replaced if cracks or severe discoloration is found.
5. Check terminals and connectors for looseness or signs of overheating. Overheating will show as discoloration, melting, or blistering of conductor insulation, or as pitting or melting of conductor surfaces due to arcing. If there is no evidence of overheating or looseness, do not disturb or tighten the connections. If there is evidence of overheating, terminations should be cleaned or replaced. Before re-energizing the circuit breaker, all terminations and cable should be refurbished to the condition when originally installed.
6. Check circuit breaker mounting hardware, and tighten if necessary.
7. Check area where circuit breaker is installed for any safety hazards, including personal safety and fire hazards. Exposure to certain types of chemicals can cause deterioration of electrical connections.

## 4.2. FIELD TESTING

Any field testing should be done in accordance with applicable NEMA Standard. The instructions for installation, testing, maintenance, or repair herein are provided for the use of the product in general commercial applications and may not be appropriate for use in nuclear applications. Additional instructions may be available upon specific request to replace, amend, or supplement these instructions to qualify them for use with the product in safety-related applications in a nuclear facility.

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