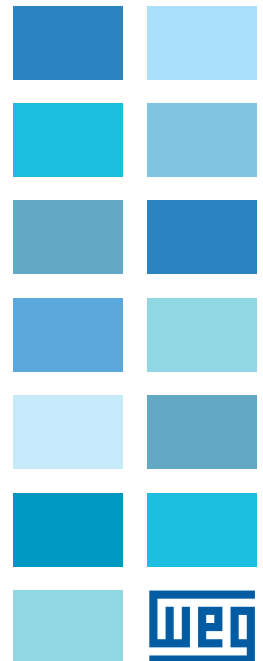
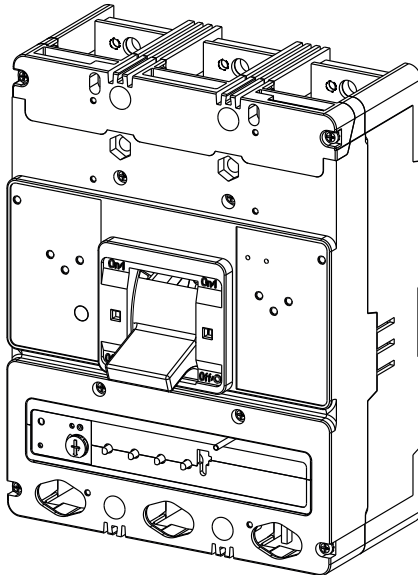


WEG Molded Case Circuit Breakers

UBW600

User's Manual



**WARNING**

- Contact with energized equipment can result in death, severe personal injury, or substantial property damage. Do not attempt to install or perform maintenance on equipment while it is energized. Always verify that no voltage is present before proceeding 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 judgement, 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 UBW600 circuit breaker (Figure 1) are 600 V ac maximum rated devices with interchangeable thermal-magnetic trip units rated 600 A maximum continuous current. UBW600 circuit breakers are listed in accordance with Underwriters Laboratories, Inc. Standard UL 489 and satisfy the requirements of the International Electrotechnical Commission Recommendations No. IEC 947-2 Model W circuit breakers satisfy the requirements of IEC 947-2.

This instruction leaflet (IL) gives procedures for installation and field testing of UBW600 circuit breakers.

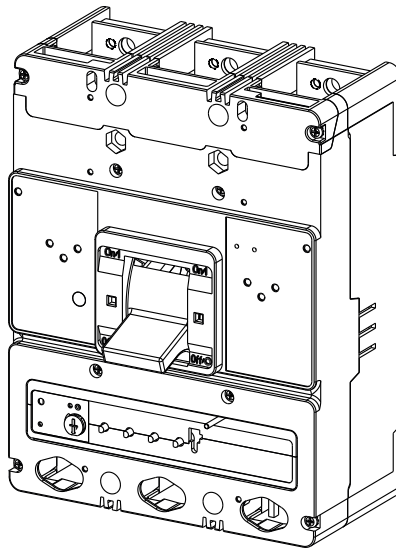


Figure 1: UBW600 circuit breaker frame

Circuit breakers type	Trip unit types						
	Thermal-magnetic Amperes I_n			Electronic (DIGITRIP RMS) Amperes I_n			
	Fixed thermal	Adjustable thermal ¹⁾	Adjustable magnetic (instantaneous) Multiples of I_n ¹⁾	Trip unit rating	Fixed rating plug	Adjustable rating plug	Adjustable short time Multiples of I_n ¹⁾
UBW600	500 600		5 to 10	600	500 600	500/600	2 to 8

Table 1: available trip unit ratings

Notes: 1) For adjustable thermal trip units, the magnetic setting is a multiple of the maximum thermal setting.

2. INSTALLATION

The installation procedure consist of inspecting the circuit breaker and, as applicable, installing the trip unit, 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, accessories, mounting hardware, and unmounted terminals may be supplied in separate packages. To install the circuit breaker, perform the following steps.

Note: UBW600 circuit breakers are factory sealed for reverse feed applications under UL 489. U L requires that internal accessories be installed at the factory in these types of circuit breakers.

Internal accessory installation in any type of circuit breaker should be done before the circuit breaker is mounted and connected. Refer to individual accessory instruction leaflets for specific installation instructions on field installable accessories.

1. Compare nameplate data with existing equipment ratings and system requirements to make sure that the circuit breaker is suitable for the intended installation. Prior to mounting, confirm that the circuit breaker has not been damaged during transit or initial handling.
2. To install trip unit and any internal accessories, remove installed cover screws and cover.

Note: 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.

Note: When required to be removed or replaced, stationary interphase barriers can only be installed removed with circuit breaker in the tripped or open position.

4. After the trip unit and any internal accessories are installed, and with the circuit breaker in the tripped position, make sure that stationary interphase barriers are properly installed in base. Install cover and secure with pan-head screws. Eight screws are used for two and three pole circuit breakers. Ten screws are used for four pole circuit breakers. Torque to 20-22 lb-in (2.26-2.49 N.m.).
5. If not already installed, mount wire connecting terminals as shown in Figure 2. Secure the terminals to the circuit breaker using two pan-head slotted screws and lock washers. Torque to 6 to 8 lb-ft (8.14 to 10.85 N.m). With the circuit breaker mounted and before the conductors are installed and conductor clamping screws inserted, the terminal mounting screws may be checked for correct torque.

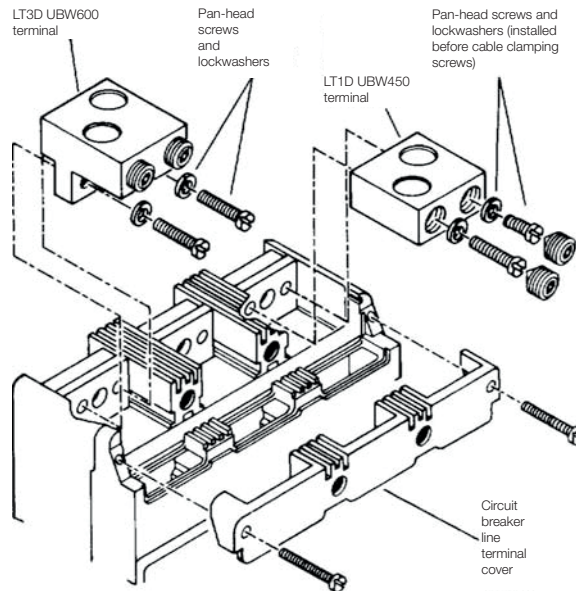


Figure 2: terminal installation



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.

Note: 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 motor 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 3. For panel board mounting, only load end support mounting holes are required. For dead front cover applications, cut out cover to correct escutcheon dimensions, see Figure 4.
 - b. If circuit breaker includes factory or field installed internal accessories, make sure accessory wiring is accessible when the circuit breaker is mounted.

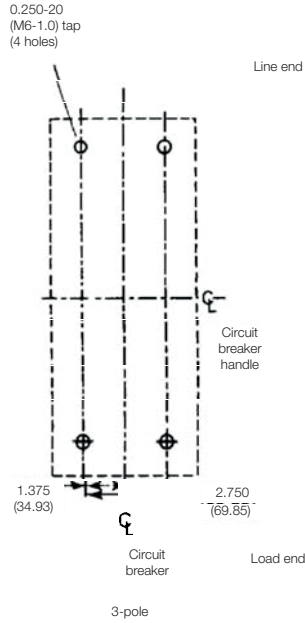


Figure 3: 3-pole circuit breaker mounting bolt drilling plans

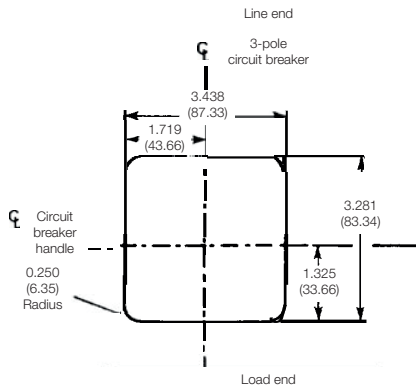


Figure 4: circuit breaker escutcheon cutout dimensions for 3-pole circuit breakers

Note: Dimensions in inches (millimeters).

Labels with accessory connection schematic diagrams are provided on the side of the circuit breaker.

- c. Position circuit breaker on mounting surface.
- d. Install circuit breaker mounting screws and washers. Tighten screws firmly, but do not exceed 28 lb-in (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.

7. Connect line and load conductors and accessory.
8. 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 2 and on the circuit breaker nameplate.
9. Install line terminal cover on circuit breaker cover with mounting screws provided. Torque to 20-22 lb-in (2.26-2.49 N.m).

Terminal Cat. No. @	Terminal material body	Screw head type	AWG wire range	Metric wire range (mm ²)	Wire type	Torque value lb-in (N.m)
LT3 UBW400 ¹⁾	Aluminum	Socket	400-500 (2)	185-240	Cu/Al	275 (31.1)

Table 2: terminal types

Notes: 1) Sold in 3-poles kits only.

10. When step-type terminals (Cat. No. LT3D UBW600 or LT3D UBW400) are used, terminal shields (supplied with terminals) must be installed on the circuit breaker (Figure 5) and secured using retainer and screws included with the terminal shield kit. Warning label supplied with the kit must be attached to the circuit breaker cover.

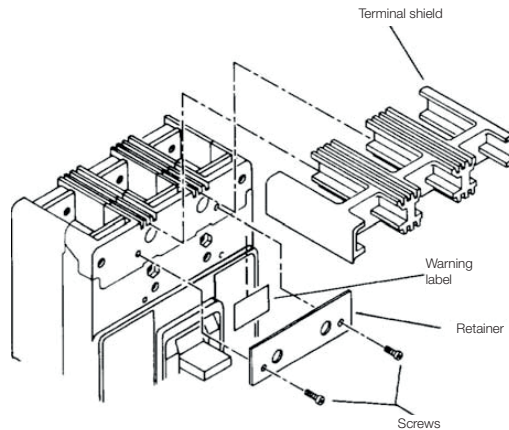


Figure 5: installation of terminal shields and warning label



WARNING

- Hazardous voltage conditions can cause death or severe personal injury. Maintain original electrical clearance and creepage spacings at terminations.

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 handle, 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 6).

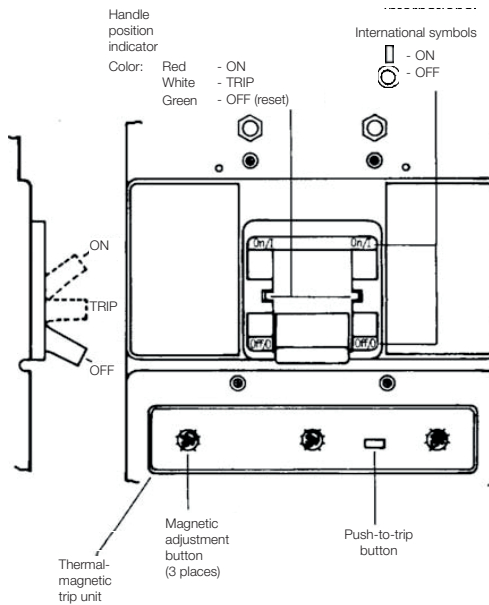


Figure 6: circuit breaker manual controls

3.2. CIRCUIT BREAKER RESET

After a trip operation, the circuit breaker is reset by moving the circuit breaker handle to the Reset (extreme OFF) position.

Notes: In the event of a thermal (overload) trip the circuit breaker cannot be reset immediately. In a breaker with a thermal-magnetic type trip unit the thermal element needs to cool (up to approximately five minutes) before it can be reset. 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 operates the circuit breaker tripping function and may be used to periodically exercise the operating mechanism. In thermal-magnetic trip units, the button is designed to be operated by a small screw driver.

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 screw driver. The buttons have several settings as indicated on the nameplate with values in multiples of the trip unit ampere rating (I_n) as shown in Figure 7. To adjust the setting, rotate each button clockwise until arrow on button points to desired setting.

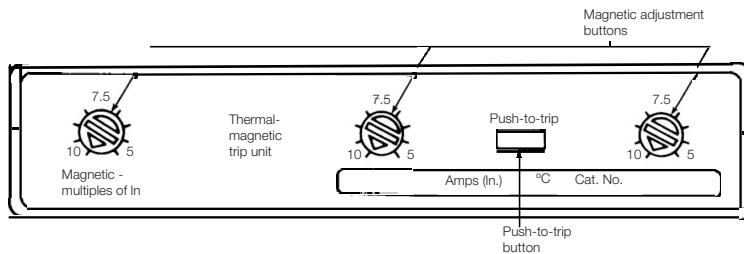


Figure 7: trip unit magnetic adjustment buttons

4. INSPECTION AND FIELD TESTING

UBW600 molded case circuit breakers are designed to provide years of almost maintenance-free operation. The following procedure describes how to do a limited amount of field inspection and testing of a circuit breaker.

4.1. INSPECTION

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 severe personal injury or death. Before inspecting the circuit breaker in an electrical system, make sure the circuit breaker is switched to the off position and that there is no voltage present where work is to be performed. Special attention should be 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 operate freely and do not bind. If mechanical linkages do not operate freely, 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, operating handle, and handle barrier for cracks, chipping, and discoloration. Circuit breakers should be replaced if cracks or severe discoloration is found.
5. Check wire connecting terminals and other type busbar 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 over heating 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 originally installed condition.
6. Check circuit breaker mounting hardware, and tighten if necessary.
7. Exposure to certain types of chemical scan cause deterioration of electrical connections. Check area where circuit breaker is installed for any safety hazards, including personal safety and fire hazards and take required precautionary actions.

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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