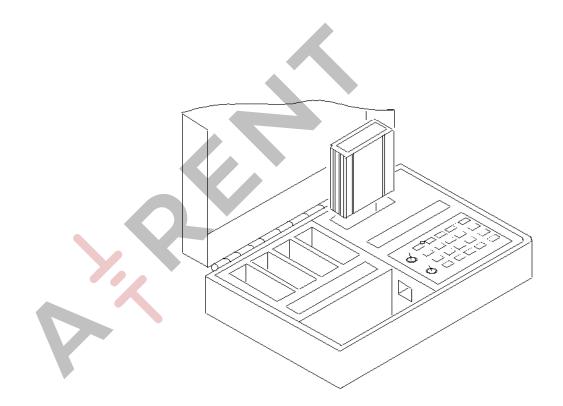
Square D UTS 3 Specs Provided by www.AAATesters.com

# **Instruction Bulletin**

48040-976-02 03/01 Cedar Rapids IA, USA K442

**Universal Test Set** 





SGUARE D Schneider Electric

### NOTICE

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of either symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

# 

**DANGER** indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.



**WARNING** indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

# 

**CAUTION** indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

## CAUTION

**CAUTION**, used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, **can result in** property damage.

NOTE: Provides additional information to clarify or simplify a procedure.

**PLEASE NOTE:** Electrical equipment should be installed, operated, serviced and maintained by qualified electrical personnel. This document is not intended as an instruction manual for untrained persons.

FCC NOTICE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### **Table of Contents**

Section 1—General Information	4
Applications	4
Terminology	5
Test Types	5
Zone Interlocks and Self-Restraint	6
POWERLOGIC System	7
Section 2—Self-Test	
Section 3—Test Circuit Breaker	10
Section 4—MICROLOGIC Series B CBTMB Test Module	
Test Setup	14
Test Setup for Full-function Circuit Breakers	
Test Setup for Standard-function Circuit Breakers	16
Main Test Menu	
Automatic Test Menu for all Circuit Breakers without	
Ground-fault Alarm	18
Automatic Test Menu for Circuit Breakers with	
Ground-fault Alarm	19
Individual Test Menu for All Full-function Circuit Breakers without	
Ground-fault Alarm	
Individual Test Menu for Full-function Circuit Breakers	
with Ground-fault Alarm	22
Individual Test Menu for All Standard-function Circuit Breakers	
Manual Test Menu For All Full-function Circuit Breakers	
without Ground-fault Alarm	26
Manual Test Menu for Full-function Circuit Breakers with	
Ground-fault Alarm	27
Manual Test Menu for All Standard-function Circuit Breakers	
Section 5—M-N-P-S CBTM4A Test Module	29
Test Setup for Full-function Circuit Breakers	
Test Setup for Standard-function Circuit Breakers	
Main Test Menu	
Automatic Test Menu for Full-function Circuit Breakers	32
Automatic Test Menu for Standard-function Circuit Breakers	33
Individual Test Menu for Full-function Circuit Breakers	34
Individual Test Menu for Standard-function Circuit Breakers	36
Manual Test Menu for Full-function Circuit Breakers	37
Manual Test Menu for Standard-function Circuit Breakers	38
Section 6—SE CBTM1 Test Module	39
Test Setup	39
Automatic Test Menu	40
Individual-function Test Menu	41
Manual Test Menu	44
Section 7—ME-NE-PE CBTM3 Test Module	
Test Setup	45
Automatic Test Menu	
Individual-function Test Menu	47
Manual Test Menu	51
Index	52

### Section 1—General Information

### APPLICATIONS

### CAUTION

#### HAZARD OF EQUIPMENT DAMAGE

Before using the test set, do the self-test to insure proper test set operation.The self-test is described in Section 2 of this manual.

Failure to follow this instruction can result in equipment damage.

The Universal Test Set is designed to perform operational tests and diagnoses of Square D electronic trip circuit breakers, circuit breaker components and tripping functions. It does not check the primary current sensing capabilities of a circuit breaker.

Check the following table to find the appropriate test set/test module for the circuit breaker.

#### Table 1: Test Set/Test Module

	(	Circuit Breaker	Circuit Breaker Series Number	Test Set	Test Module <sup>1</sup>
		LE/LX	1B	CBTU1 or UTS3	CBTMB
		ME	1 and 2	CBT78	Not Available - Primary Injection Testing Only
			3	CBTU1 or UTS3	СВТМЗ
			4 and 5	CBTU1 or UTS3	CBTM4 or CBTM4A
			5A	CBTU1 or UTS3	CBTM4A
			5B	CBTU1 or UTS3	CBTMB
		MX	4 and 5	CBTU1 or UTS3	CBTM4 or CBTM4A
			5B	CBTU1 or UTS3	CBTMB
		NE	1	CBTU1 or UTS3	CBTM3
			2 and 3	CBTU1 or UTS3	CBTM4 or CBTM4A
			ЗA	CBTU1 or UTS3	CBTM4A
			3B	CBTU1 or UTS3	CBTMB
		NX	2 and 3	CBTU1 or UTS3	CBTM4 or CBTM4A
			3B	CBTU1 or UTS3	CBTMB
		PE	1,2, and 3	CBT78	Not Available - Primary Injection Testing Only
			4	CBTU1 or UTS3	CBTM3
			5 and 6	CBTU1 or UTS3	CBTM4 or CBTM4A
			6A	CBTU1 or UTS3	CBTM4A
			6B	CBTU1 or UTS3	CBTMB
		PX	5 and 6	CBTU1 or UTS3	CBTM4 or CBTM4A
			6B	CBTU1 or UTS3	CBTMB
	SI	Ξ	1	CBTSE1	Not Available - Primary Injection Testing Only
			2	CBTU1 or UTS3	CBTM1
			3	CBTU1 or UTS3	CBTM4 or CBTM4A
			ЗА	CBTU1 or UTS3	CBTM4A
			3B	CBTU1 or UTS3	CBTMB

<sup>1</sup> A kit including the umbilical cord and rating plug adapter is available for each test module. The umbilical cord and rating plug adapter connect the test set to the circuit breaker being tested. A power cord (Part No. 48005-115-01) and an umbilical cord (Part No. 48155-055-50) are also available as replacement parts. The following terms are used in diagnosing circuit breaker functions:

LONG-TIME PICKUP. The current at which thelong-time delay timer starts.

LONG-TIME AMPERE RATING. The current carrying capacity or "handle rating" of the circuit breaker.

LONG-TIME DELAY. The time period that the long-time delay timer runs before initiating a trip signal, i.e., the length of time the circuit breaker will carry a sustained low-level overload before initiating a trip signal.

SHORT-TIME PICKUP. The current at which the short-time delay timer starts, i.e., the current at which the short-time function recognizes an overcurrent.

SHORT-TIME DELAY. The time period short- time delay timer runs before initiating trip signal, i.e., the short-time delay allows the circuit breaker to carry or withstand low-level or high-level short- circuit currents (up to the published withstand ratings) with intentional delay before tripping. There are two choices of short-time delay characteristics available:

1.1<sup>2</sup>t IN. A delay characteristic which results in an inverse-time delay that most closely parallels time-current characteristics of fuses.

2.I<sup>2</sup>t OUT. A delay characteristic which results in a constant delay that coordinates best with thermal-magnetic and electronic trip circuit breakers.

GROUND-FAULT PICKUP. The ground-fault current level at which groundfault delay timer starts, i.e., the function which allows the user to set the level of ground-fault current at which the trip system begins timing.

GROUND-FAULT DELAY. The time period the ground-fault delay timer runs before initiating trip signal, i.e., the function which determines the time the circuit breaker will wait before initiating a trip signal. There are two choices of ground-fault delay characteristics available:

1,1<sup>2</sup>t IN. A delay characteristic which results in an inverse-time delay that coordinates best with zero sequence ground-fault relays used in conjunction with thermal-magnetic circuit breakers and fusible switches.

2.I<sup>2</sup>t OUT. A delay characteristic which results in a constant delay characteristic that coordinates best with electronic trip circuit breakers with the ground-fault option.

GROUND-FAULT ALARM PICKUP. The ground-fault current level at which the trip unit initiates a signal to indicate a ground-fault condition. The circuit breaker will not trip.

The Universal Test Set provides three test options for each type of circuit breaker tested. These test types are: Automatic Test Mode, Individual-functionTest Mode, and Manual Test Mode. The information which follows explains the requirements for and the results obtained by each test.

NOTE: A small straight-blade screwdriver is required for testing circuit breakers.

TEST REQUIREMENTS: Circuit breaker, rating plug and trip unit information.

TEST RESULTS: Tests long-time, short-time, instantaneous and groundfault functions simultaneously without pauses or prompts; displays the amount of time delay before initiating the trip signal. Specifies which function failed on a pass/fail basis.

**TEST TYPES** 

Automatic Test Mode

Individual-function Test	
Mode	

**Manual Test Mode** 

manual

TEST REQUIREMENTS: Circuit breaker, rating plug and trip unit information. Selection of the specific function(s) to be tested. The Individual-function test mode is accessed from the automatic test mode.

TEST RESULTS: Displays and diagnoses functions one at a time; tests each trip unit switch function as well as the operation of the indicators. Tests calibration and tolerance to predetermined values.

TEST REQUIREMENTS: Circuit breaker, rating plug and trip unit information. A phase or ground- fault current value must be manually entered.

TEST RESULTS: Monitors and displays the trip time of the selected current applied to the trip unit.

testing unit to insure proper test set operation. The self-test is described in Section 2 of this

HAZARD OF EQUIPMENT DAMAGE

Failure to follow this instruction can result in equipment damage.

CAUTION

Before using the test set, do the self-test on the

# ZONE INTERLOCKS AND SELF-RESTRAINT

LE, ME, NE and PE Circuit Breakers

Some testing procedures require the zone interlocks or any self-restraint jumper wires to be disconnected. If the circuit breaker is wired for zone interlocking or is self-restrained by jumper wires, do the following:

Refer to table 2 and disconnect wires or jumpers from terminals 6 and 8 of the terminal block. Reconnect the wires when testing is complete.

#### Table 2: Terminal Numbering

Number	Terminal Name
5	
6	ST Restraint OUT
7	
8	GF Restraint OUT
 9	

**SE Circuit Breakers** 

Refer to table 3 and disconnect wires or jumpers from terminals 21 and 24 of the teminal block. Reconnect the wires when testing is complete.

#### **Table 3: Terminal Numbering**

Number	Terminal Name
19	
20	
21	Ground-fault Zone Interlock
22	
23	
24	Short-time Zone Interlock
25	

#### **POWERLOGIC SYSTEM**

If circuit breaker is connected to a POWERLOGIC<sup>®</sup> system, disconnect POWERLOGIC system before testing. If POWERLOGIC system is not disconnected, Universal Test Set will show "TEST FAILED" message.

Disconnect POWERLOGIC system by doing the following steps:

- 1. Mark connector (A) in figure 1 at CIM3F communications adapter (B) in figure 1 for circuit breaker before being tested.
- 2. Disconnect connector (A) from CIM3F communications adapter (B).
- 3. Reconnect connector (A) when testing is complete.

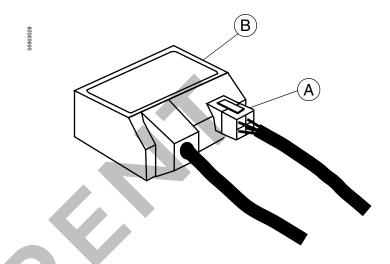


Figure 1: Communication Adapter

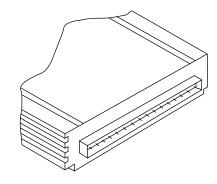
### Section 2—Self-Test

### CAUTION

#### HAZARD OF EQUIPMENT DAMAGE

DO NOT touch connector pins (Fig.2) when handling test modules. Touching pins can produce an electrostatic discharge resulting in damage to module or trip unit.

Failure to follow this instruction can result in equipment damage.



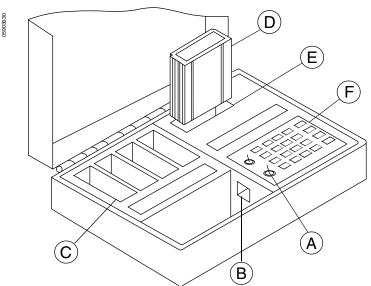
#### Figure 2: Connector pins

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- 1. Place universal test set (fig. 3) on a flat surface. Open case until cover locks into the open position.
- 2. Make sure test set power is off (O) by checking position of power switch (A, Fig. 3) on keyboard (F).
- 3. Plug one end of test set power cord into power cord receptable (B); plug other end into a grounded power source.
- Insert Self-test Module (D) into module receptacle (E) in upper right corner of test set. Make sure module label is facing keyboard (F). Never use receptacle for storing modules when test set is not in use; use only module holders (C) for storage.
- 5. Turn power switch (A) to on (I). The red light on self-test module will glow and an identifying message will appear on the display.
- 6. The module will run automatically for a short period of time to insure basic operations of test set are working correctly.

NOTE: If an error message occurs or module light fails to come on, turn power to off (O) and carefully re-seat module in receptable.

7. If tests were successful, test set can now be used for testing circuit breakers.



#### Figure 3: Universal Test Set

### CAUTION

#### HAZARD OF EQUIPMENT DAMAGE

Test results will be inaccurate if any self-test is unsuccessful. Do not use test set to test circuit breakers if any self-test, including those which follow, is unsuccessful.

Failure to follow this instruction can result in equipment damage.

- The test set will now prompt for optional manual testing of functions. These tests must be done on a periodic basis. To test functions, see steps 9 and 10. If manual tests are not being done, go to step 11.
- 9. Press keys slowly and firmly. Press SET UP key when it is flashing to return test set to the beginning of the following self-test sequence:
  - a. "TEST SYSTEM KEYBOARD?-YES/NO" checks keyboard to make sure it is accepting input correctly. If keyboard is not being tested, press NO key. To test operation of keyboard, press YES key. The display will then step through the test. If display indicates "SYSTEM KEYBOARD FAILED," see step 10A.
  - b. "TEST SYSTEM KEY LIGHTS?-YES/NO" checks the systems key backlights for proper operation. If backlights are not being tested, press NO key. To check operation of backlights, which are located behind the eight system keys (A) in Figure 4, press YES key. The display will step through the test with lights flashing in sequence down the rows. If display indicates "SYSTEM LIGHTS TEST FAILED," see step 10A.
  - c. "TEST SYSTEM L.C.D. DISPLAY?-YES/NO" checks for proper operation of LCD (liquid crystal display) characters. If LCD is not being tested, press NO key. To test LCD, press YES key. Display will then step through the test. If display indicates "SYSTEM L.C.D DISPLAY TEST FAILED," see step 10A.
- 10. Test set will now display test results:
  - a. If test sequence was not successful, display will so indicate. Press SET UP key to return test to beginning of test sequence and run tests again. If test sequence is again unsuccessful, note message and contact Square D for assistance (1-888-778-2733).
  - b. If test sequence was successful, Universal Test Set can now be used to test circuit breaker trip systems.
- 11. Turn test set power switch (B) in Figure 4 to OFF.
- 12. Remove self-test module and store it in module holder.
- 13. If no additional testing is planned, unplug test set, store power cord in storage area, and close test set case.

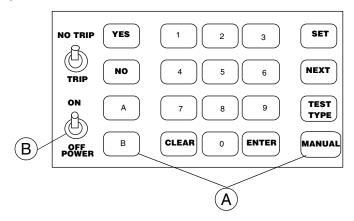


Figure 4: Test System Console

### CAUTION

#### HAZARD OF EQUIPMENT DAMAGE

Test results will be inaccurate if any self-test is unsuccessful. Do not use test set to test circuit breakers if any self-test was unsuccessful.

Failure to follow this instruction can result in equipment damage.

### Section 3—Test Circuit Breaker

### CAUTION

#### HAZARD OF EQUIPMENT DAMAGE

Damage to test set and module will occur if current is flowing through circuit breaker during testing. Disconnect all loads from circuit breaker. Do not CLOSE circuit breaker during testing unless all loads are disconnected.

Failure to follow this instruction can result in equipment damage.

When testing only SE Series 2 circuit breakers using a CBTM1 module, test set conducts ground-fault delay test using dc current. As a result, delay times are 20% shorter than circuit breaker would provide in actual operation as shown on trip curves.

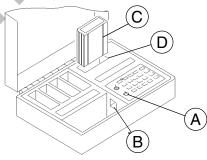
A small straight-blade screwdriver is necessary for testing circuit breakers.

NOTE: The test sequence can be stopped at any time by turning test power OFF.

1. Disconnect all loads by (1) placing circuit breaker in OPEN position or (2) disconnecting all loads downstream from circuit breaker under test.

NOTE: During test there must be no current flowing through circuit breaker. Any current flowing through circuit breaker will terminate test and could result in damage to test set. If circuit breaker is in OPEN position, trip solenoid test cannot be done. If downstream loads are disconnected, circuit breaker can be in either OPEN or CLOSED position. If circuit breaker is in CLOSED position, it will trip during functional tests depending upon position of TRIP/ NO TRIP switch. If switch is placed in NO TRIP position, test set will not signal circuit breaker to trip during functional tests. If switch is placed in TRIP position, circuit breaker will trip during functional tests.

- If circuit breaker is connected to POWERLOGIC<sup>®</sup> system, disconnect POWERLOGIC system according to instructions on page 7.
- 3. Place test set on a flat surface no more than five feet from circuit breaker to be tested. Open case fully to lock cover into the open position (fig.5).



#### Figure 5: Universal Test Set

- 4. Make sure test set power is OFF by checking position of power switch (A) on keyboard.
- 5. Plug test set power cord into test set power cord receptacle (B). Plug other end into a grounded power source.
- 6. Test the test set by doing the self-test in Section 2. If self-test is unsuccessful contact Square D for assistance (1-888-778-2733) and do not use test set to test circuit breaker. If self-test was successful, proceed with step 7.

#### Figure 6: Connector Pins

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7. See table on page 4. Select appropriate circuit breaker test module (C, fig. 5) and insert into module receptacle (D).

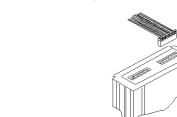
### CAUTION

#### HAZARD OF EQUIPMENT DAMAGE

Do not touch connector pins (Fig. 6) when handling test modules. Touching pins can produce an electrostatic discharge resulting in damage to module or trip unit.

Failure to follow this instruction can result in equipment damage.

8. Insert test set end of umbilical cord into slot on top of module as shown by label on module. The umbilical cord is inserted with cable toward rear of module as shown in figure 7.



#### Figure 7: Umbilical Cord

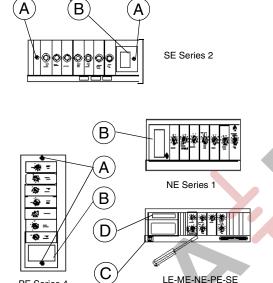
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9. Circuit breakers with screw retained trip unit cover: Use a small screwdriver to loosen trip unit cover screws (A) and remove clear plastic trip unit cover.

Circuit breakers with snap-on trip unit cover. Insert a small screwdriver under tab of clear plastic trip unit cover and snap out the cover.

10. Circuit breakers with screw retained trip unit cover: To remove any accumulated electrostatic charge, touch trip unit metal panel. Hold rating plug (B), if equipped, firmly and SLOWLY remove it from circuit breaker.

Circuit breakers with snap-on trip unit cover: If equipped with a trip indicator/ammeter (C), use a small screwdriver to carefully pry up one end and then the other, a small amount at a time, to remove the trip indicator/ammeter (C). On circuit breakers without trip indicator/ammeter, remove the black plastic cover. Remove rating plug (D) or black plastic cover.



ME Series 3

#### Figure 8: Screw Retained and Snap-On Unit Covers

with Snap-on Cover

PF Series 4

#### TRIP UNITS WITH RATING PLUGS ONLY:

11. LIGHTLY touch rating plug connector board to metal grounding surface (A, Fig. 9) next to power cord receptacle of test set to discharge any accumulated electrostatic charge.

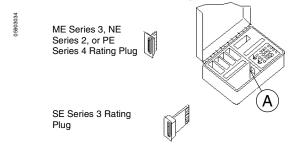
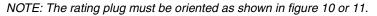
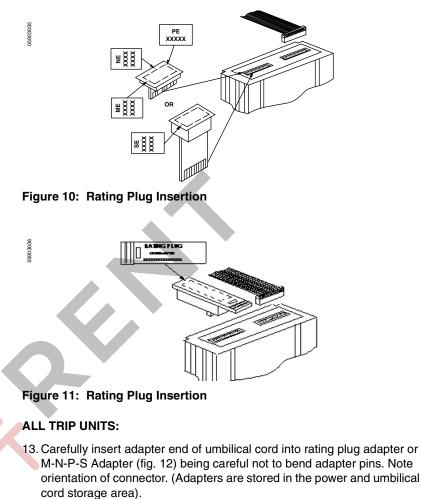
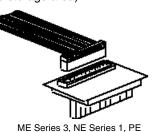


Figure 9: Trip Units with Rating Plugs

12. SLOWLY insert rating plug into connector on tip of module as shown by label.







ME Series 3, NE Series 1, Series 4 and SE Series 2

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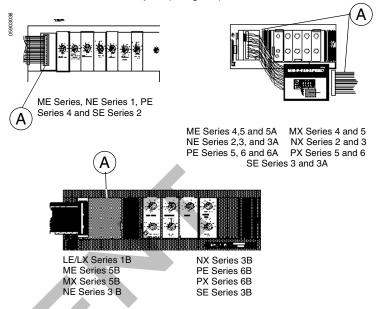
LE/LX Series 1B MESeries 5B MX Series 5B NE Series 3B NX Series 3B PE Series 6B PX Series 6B SE Series 3B



ME Series,4. 5 and 5 A MX Series 4 and 5 Ne Series 2, 3, and 3A NX series 2 and 3 PE Series 5, 6, and 6A PX Series 5 and 6 SE Series 3 and 3A

Figure 12: Rating Plug Adapter and M-N-P-S Adapter

- 14. Grasp adapter firmly and touch adapter connector board lightly against metal grounding surface (A, fig. 9) next to power cord receptacle.
- 15. Immediately install adapter SLOWLY into trip unit. Note orientation of umbilical cord and adapter (A, fig. 13).



#### Figure 13: Orientation of Umbilical Cord and Adapter

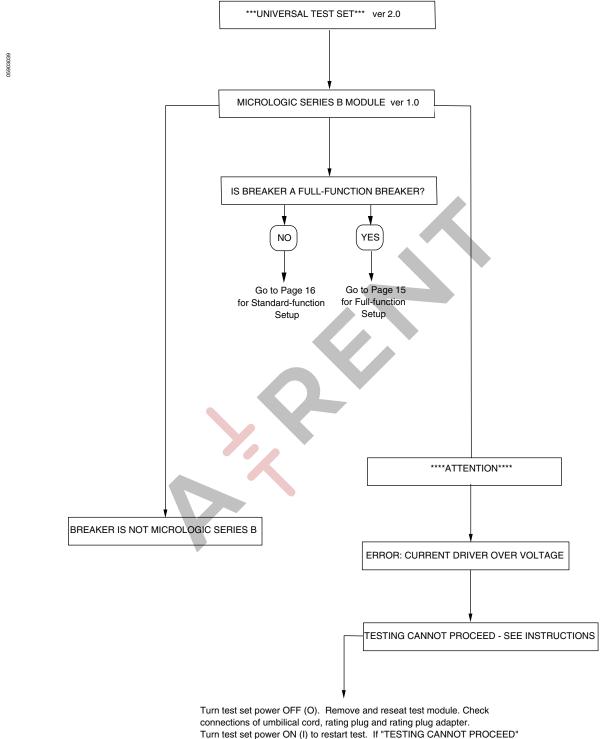
- 16. Turn test set power switch on (I). The test set will perform a self-test. After self-test, module identifier will be displayed.
- 17. Refer to test procedure for the test module being used and begin testing. The test set will request information on frame size and trip unit function.. After all information has been entered and verified, test set will ask for "TEST TYPE." See section 1 for test type. Enter test type and continue with test.

NOTE: If "TEST FAILED" message appears in the display window, check to see if circuit breaker is connected to a POWERLOGIC system. If circuit breaker is connected to POWERLOGIC system, disconnect POWERLOGIC system according to instructions on page 7 and press A to repeat test. If "TEST FAILED" appears again, call Square D (1-888-778-2733).

- 18. After test has been completed, turn test set power switch to off (O).
- 19. *Slowly* remove adapter from trip unit by holding adapter housing firmly and removing it from trip unit.
- 20. Remove adapter from umbilical cord and store in storage space.
- 21. Remove umbilical cord from module. Store umbilical cord in storage space.
- 22. Hold rating plug housing, if equipped, firmly and *slowly* remove it from the module. *Lightly* touch rating plug connector to metal grounding surface next to power cord receptacle.
- 23. *Slowly* insert rating plug and trip indicator/ammeter or black plastic covers into slots in circuit breaker.
- 24. Replace clear trip unit cover and secure trip unit cover screws, if equipped.
- 25. Remove test module and install in module holder. Do not touch connector pins. Disconnect test set, store power cord, and close cover.

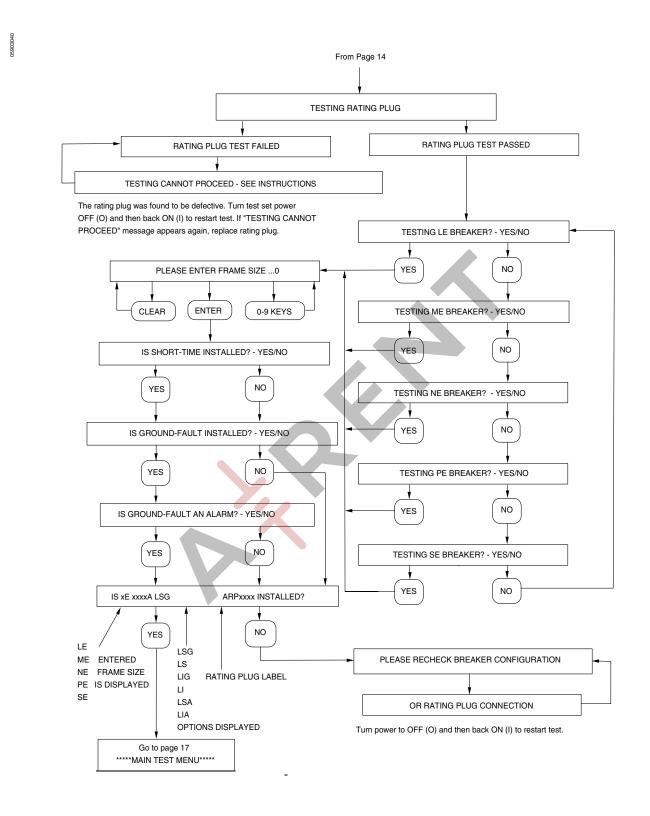
### Section 4—MICROLOGIC Series B CBTMB Test Module



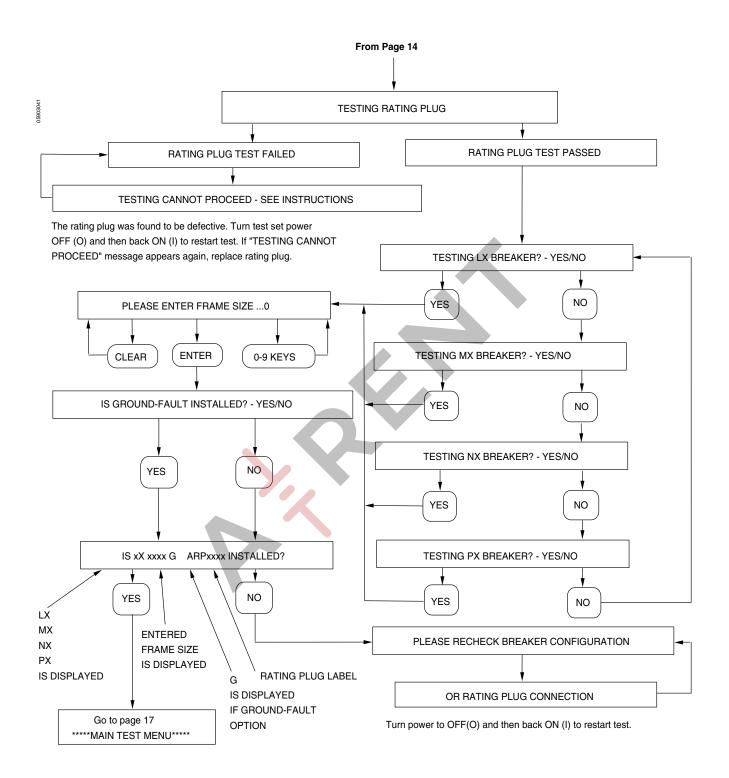


message appears again, call Square D (1-888-778-2733.)

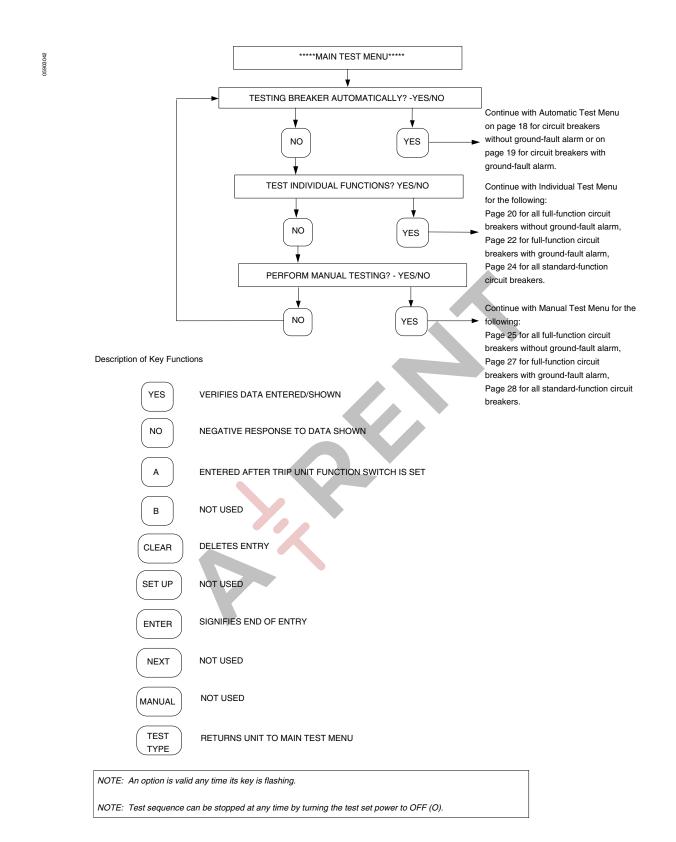
# TEST SETUP FOR FULL-FUNCTION CIRCUIT BREAKERS



### TEST SETUP FOR STANDARD-FUNCTION CIRCUIT BREAKERS

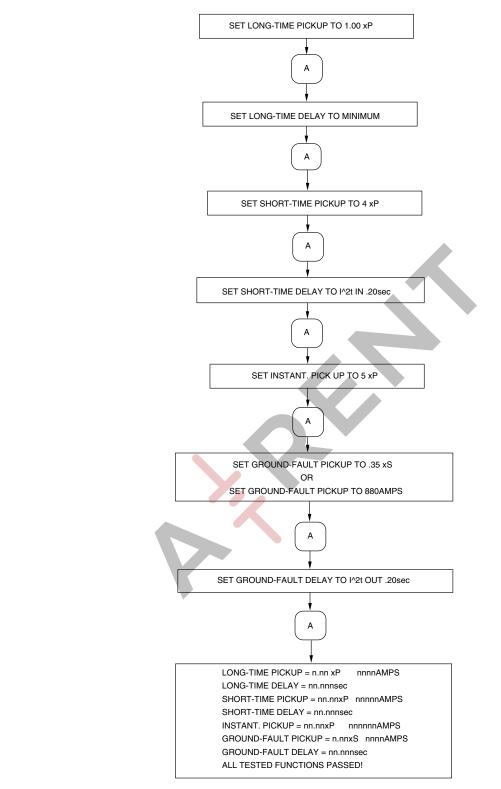


#### MAIN TEST MENU

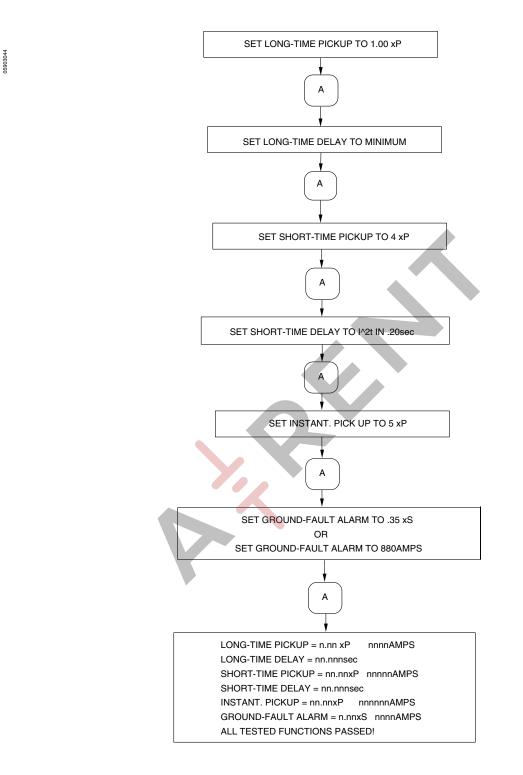


#### AUTOMATIC TEST MENU FOR ALL CIRCUIT BREAKERS WITHOUT GROUND-FAULT ALARM

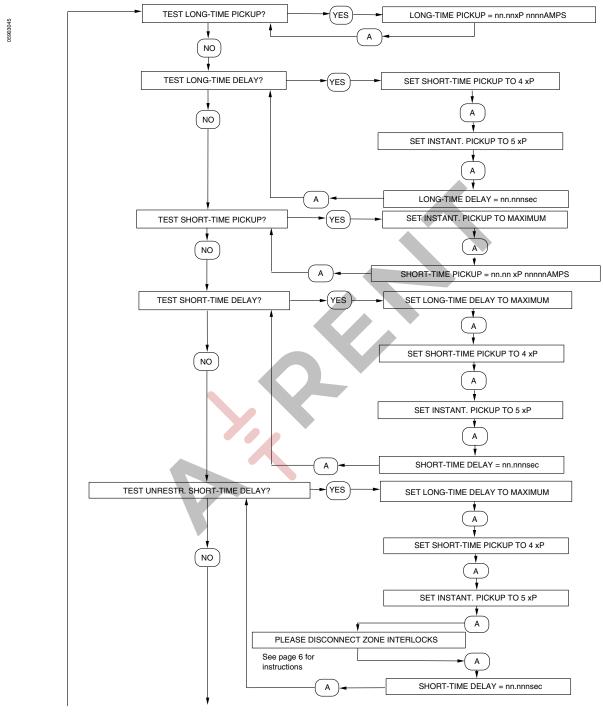
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#### AUTOMATIC TEST MENU FOR CIRCUIT BREAKERS WITH GROUND-FAULT ALARM

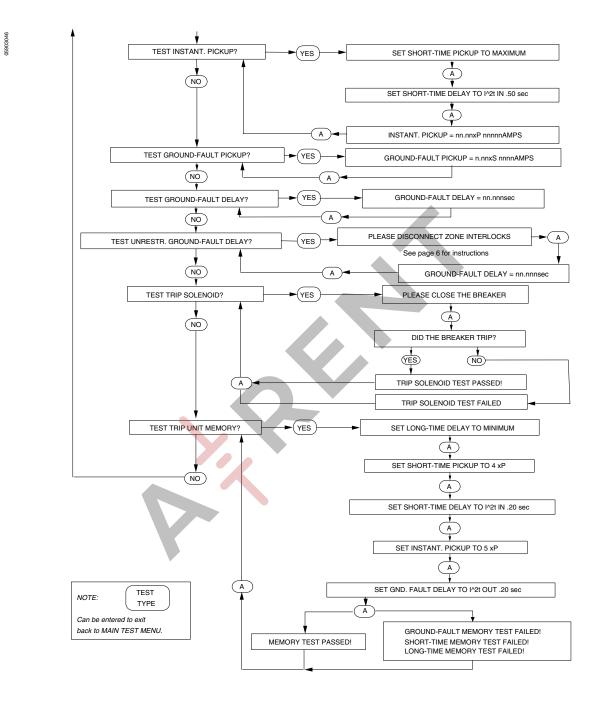


#### INDIVIDUAL TEST MENU FOR ALL FULL-FUNCTION CIRCUIT BREAKERS WITHOUT GROUND-FAULT ALARM

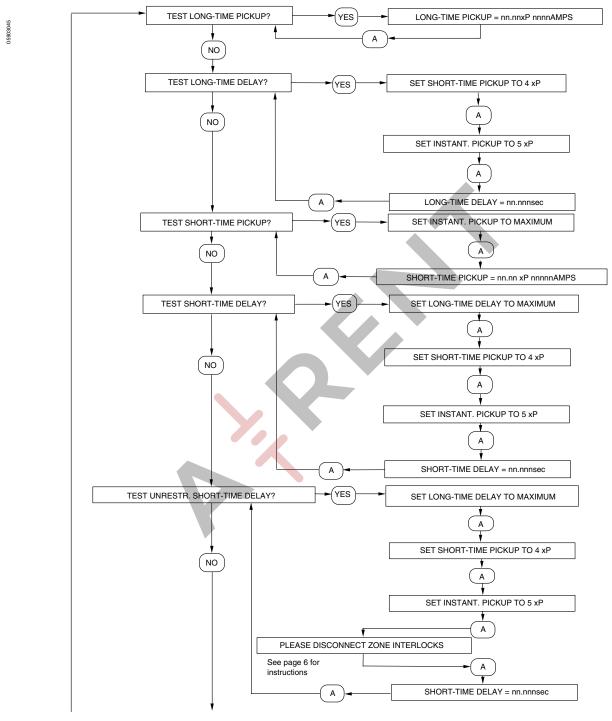


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#### INDIVIDUAL TEST MENU FOR ALL FULL-FUNCTION CIRCUIT BREAKERS WITHOUT GROUND-FAULT ALARMS (-Continued)

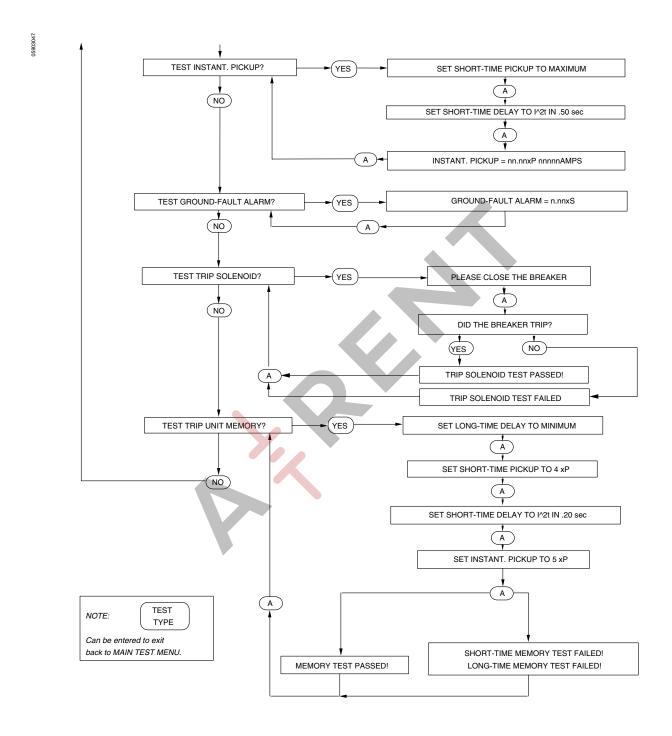


#### INDIVIDUAL TEST MENU FOR FULL-FUNCTION CIRCUIT BREAKERS WITH GROUND-FAULT ALARM

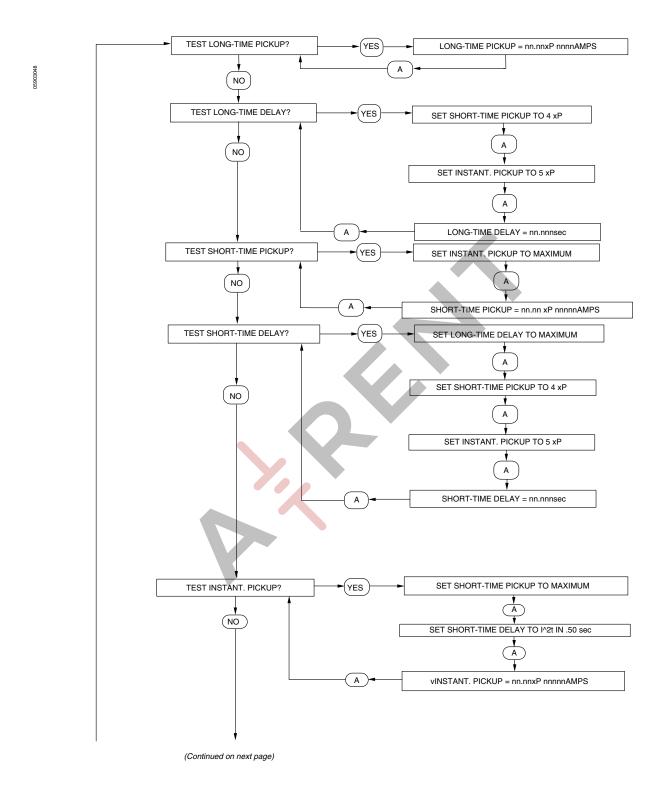


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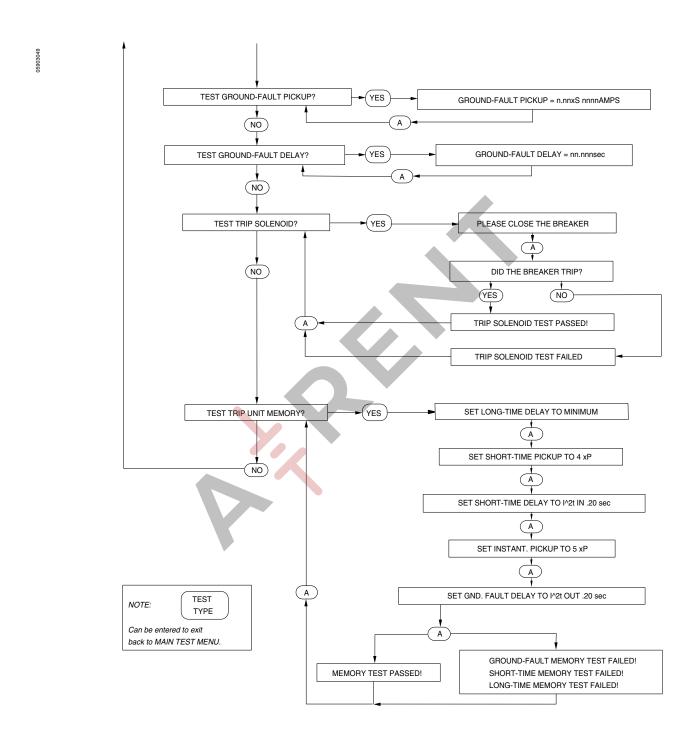
#### INDIVIDUAL TEST MENU FOR FULL-FUNCTION CIRCUIT BREAKERS WITH GROUND-FAULT ALARM (-Continued)



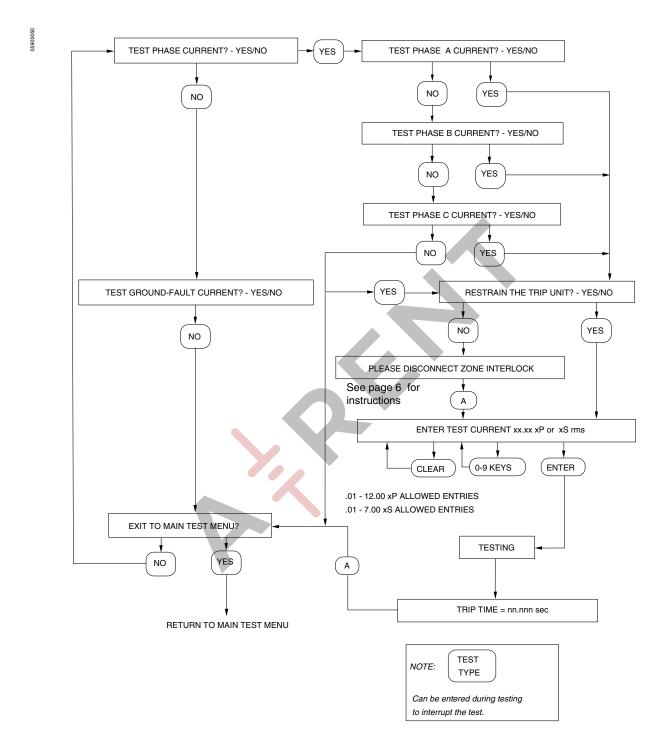
#### INDIVIDUAL TEST MENU FOR ALL STANDARD-FUNCTION CIRCUIT BREAKERS



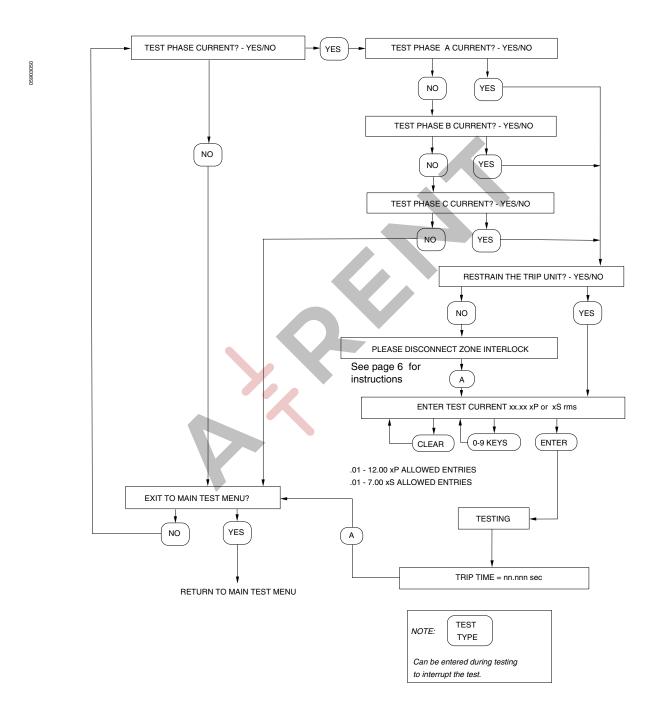
#### INDIVIDUAL TEST MENU FOR ALL STANDARD-FUNCTION CIRCUIT BREAKERS -Continued



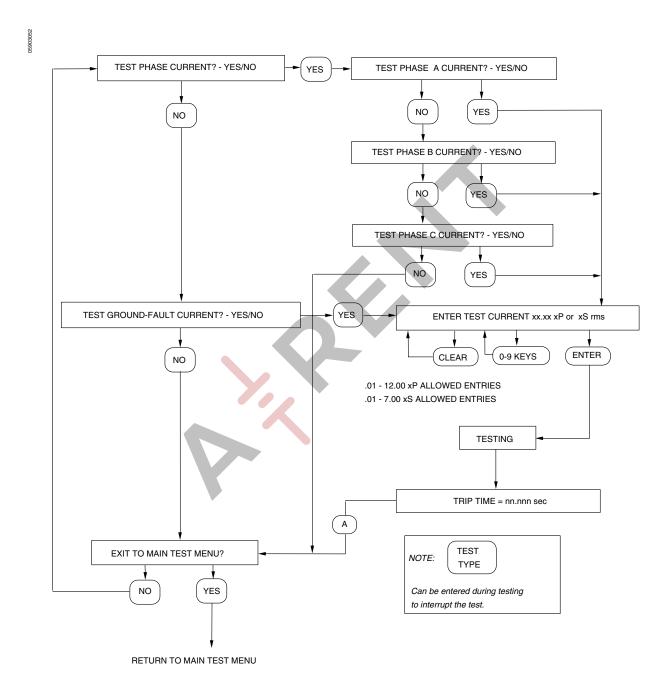
#### MANUAL TEST MENU FOR ALL FULL-FUNCTION CIRCUIT BREAKERS WITHOUT GROUND-FAULT ALARM



#### MANUAL TEST MENU FOR FULL-FUNCTION CIRCUIT BREAKERS WITH GROUND-FAULT ALARM

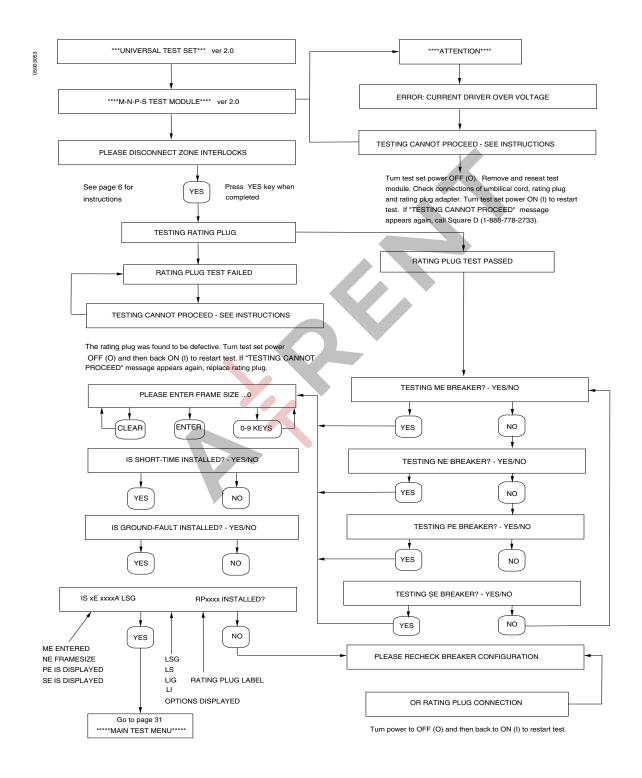


#### MANUAL TEST MENU FOR ALL STANDARD-FUNCTION CIRCUIT BREAKERS

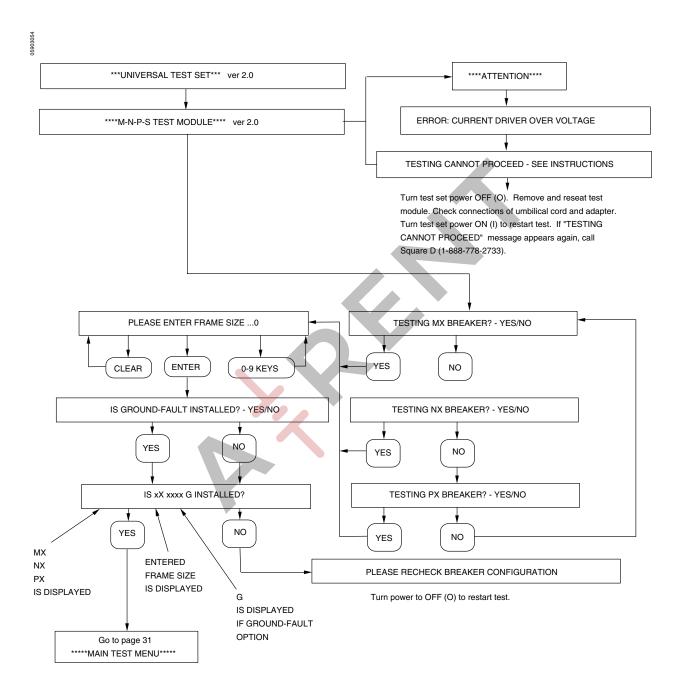


### Section 5—M-N-P-S CBTM4A Test Module

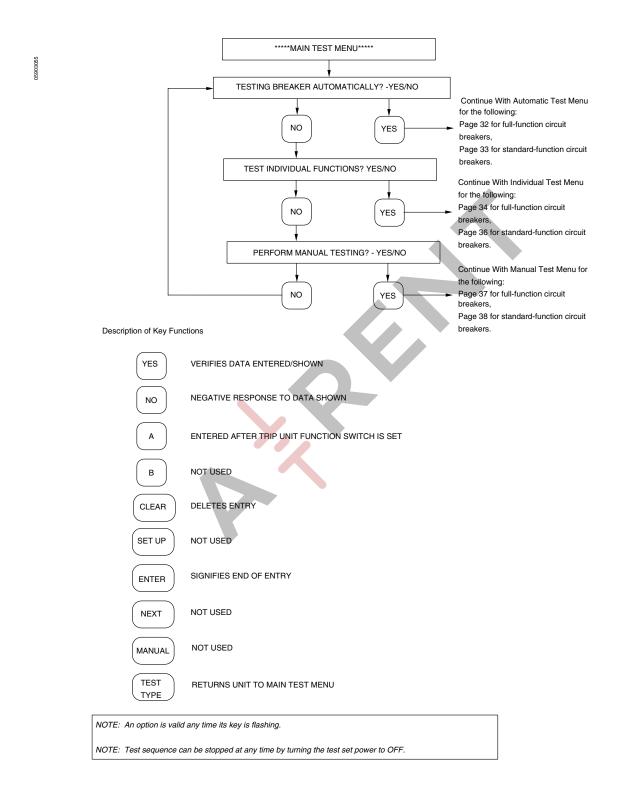
#### TEST SETUP FOR FULL-FUNCTION CIRCUIT BREAKERS



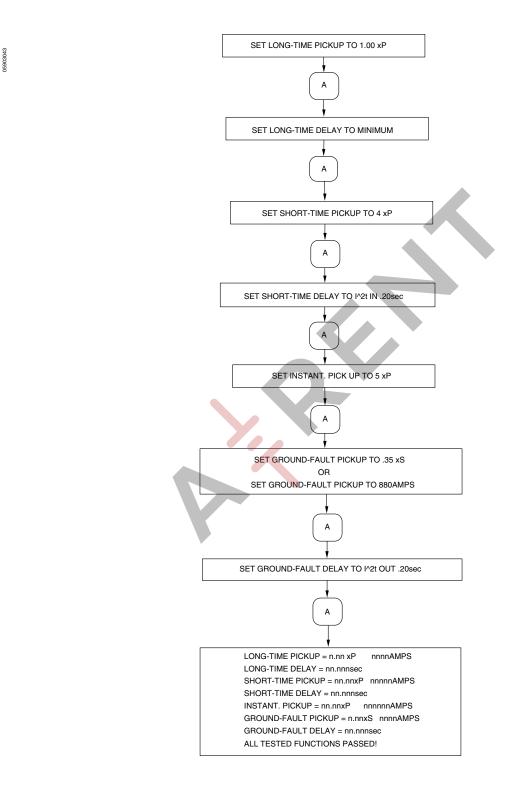
#### TEST SETUP FOR STANDARD-FUNCTION CIRCUIT BREAKERS



#### MAIN TEST MENU

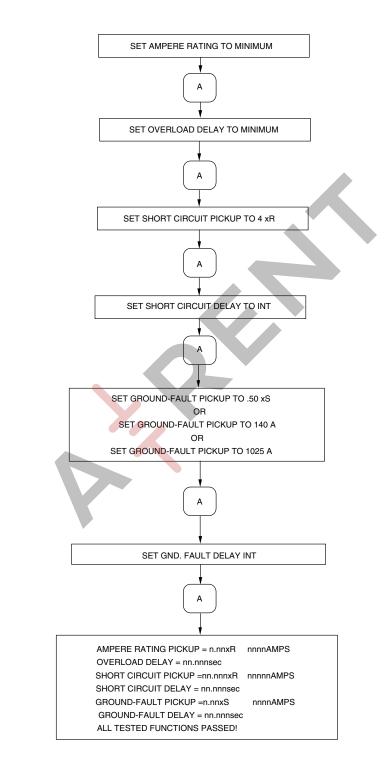


#### AUTOMATIC TEST MENU FOR FULL-FUNCTION CIRCUIT BREAKERS



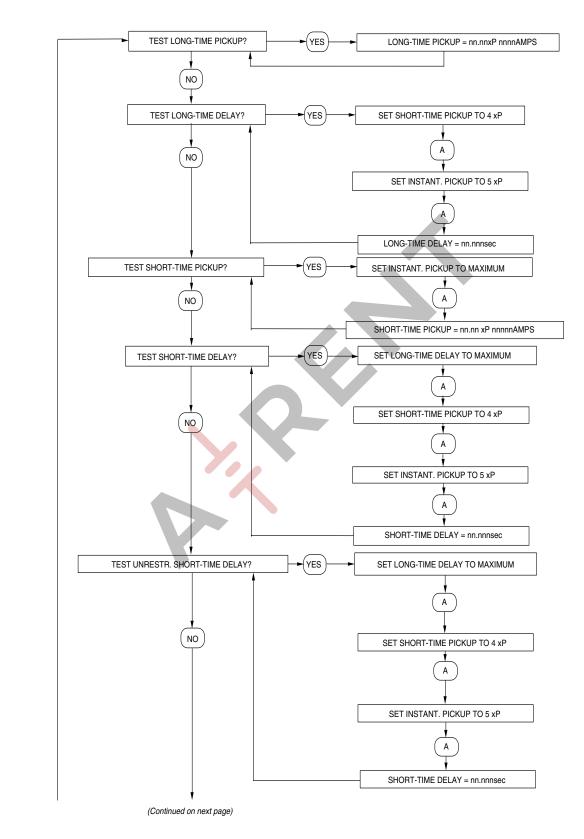
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#### AUTOMATIC TEST MENU FOR STANDARD-FUNCTION CIRCUIT BREAKERS



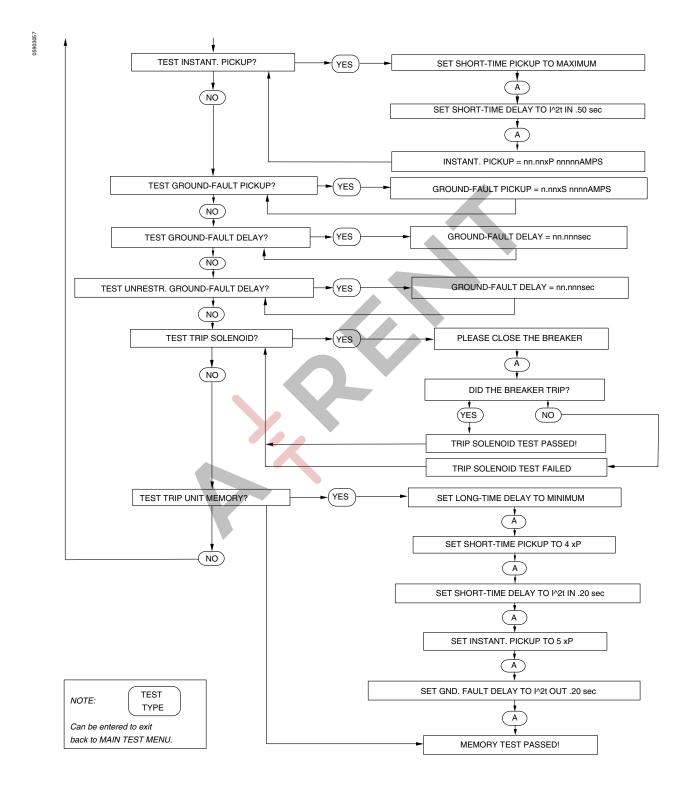
#### INDIVIDUAL TEST MENU FOR FULL-FUNCTION CIRCUIT BREAKERS

5903075

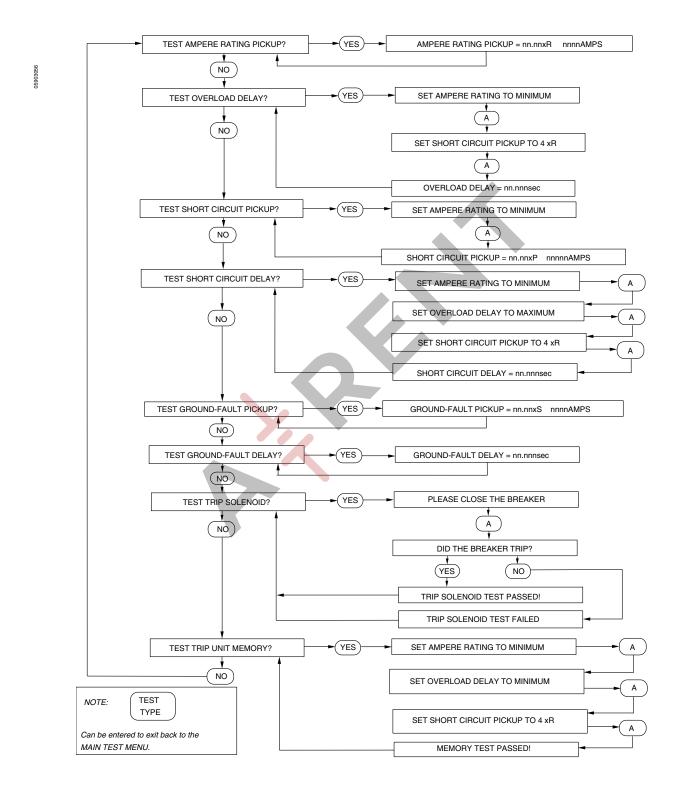


### INDIVIDUAL TEST MENU FOR FULL-FUNCTION CIRCUIT BREAKERS-

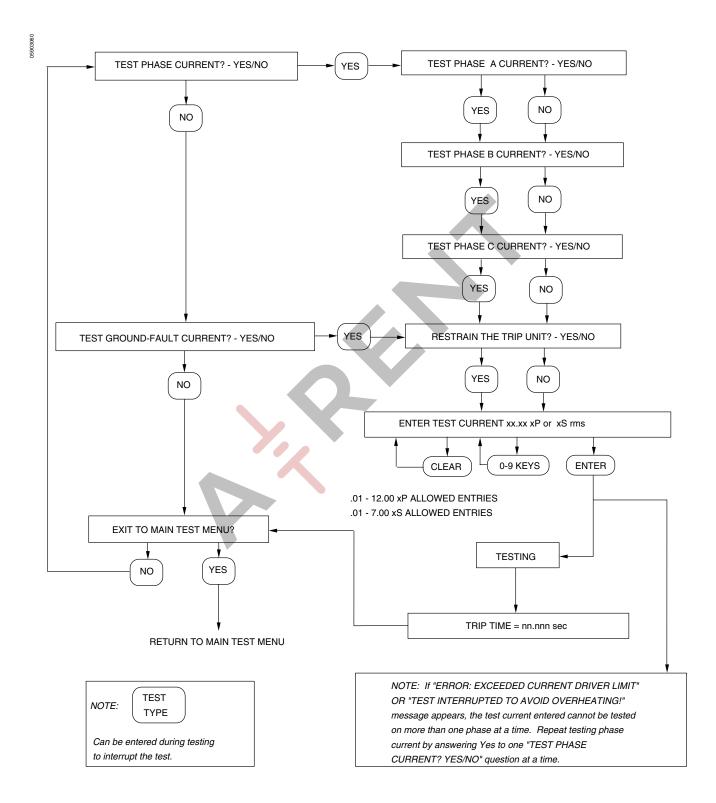
-Continued



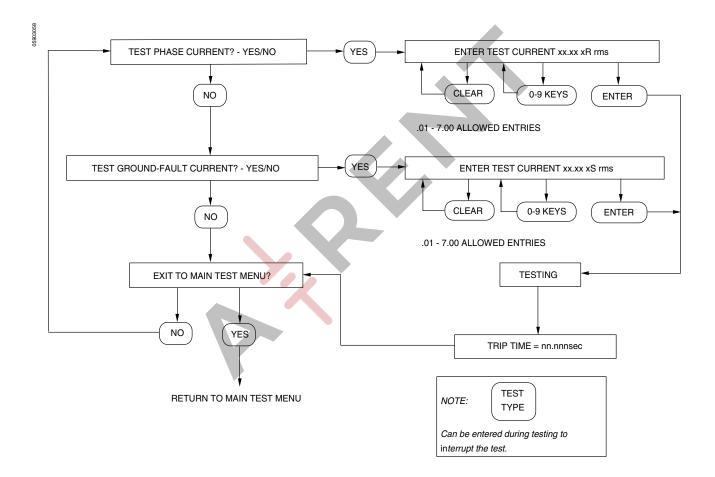
#### INDIVIDUAL TEST MENU FOR STANDARD-FUNCTION CIRCUIT BREAKERS



#### MANUAL TEST MENU FOR FULL-FUNCTION CIRCUIT BREAKERS

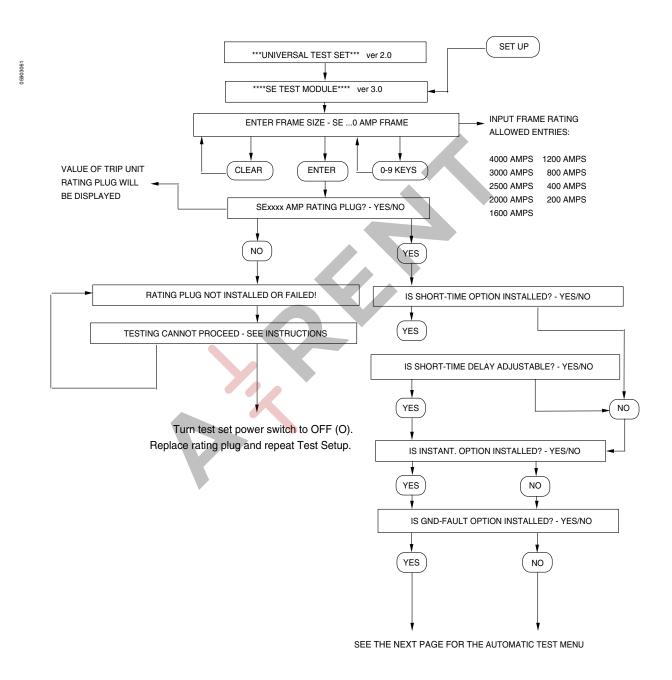


## MANUAL TEST MENU FOR STANDARD-FUNCTION CIRCUIT BREAKERS

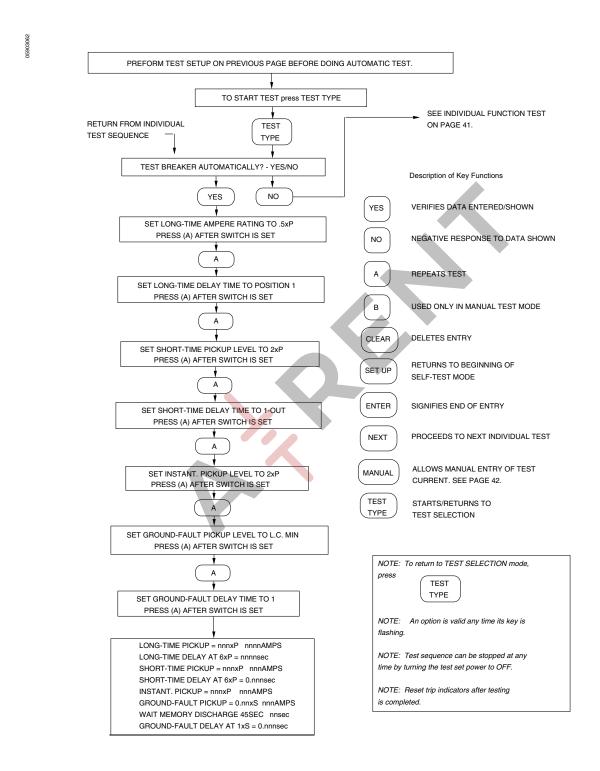


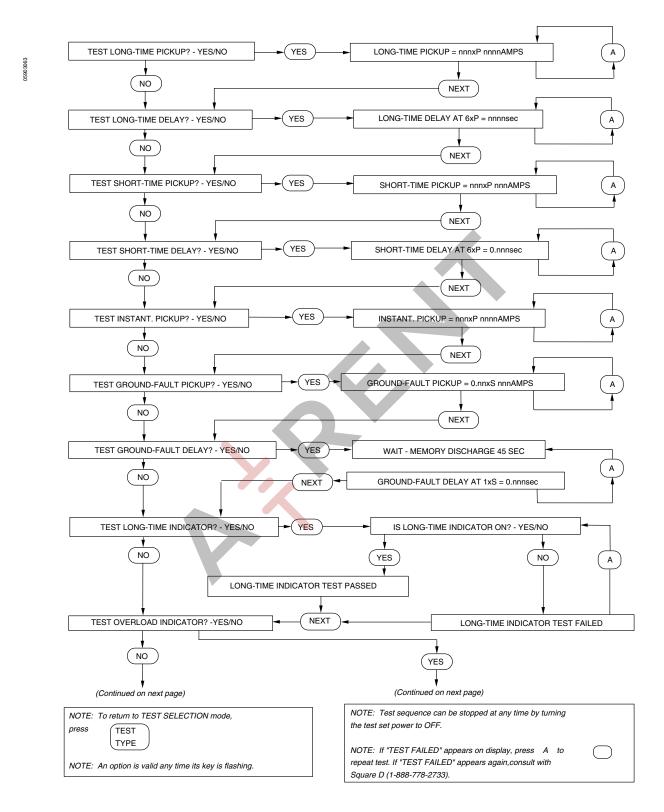
## Section 6—SE CBTM1 Test Module

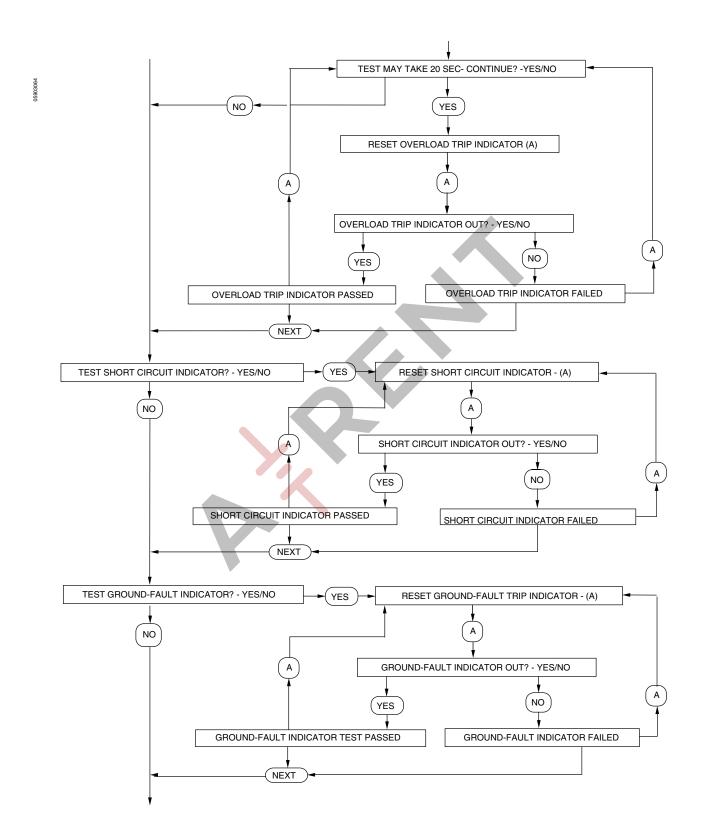
#### **TEST SETUP**

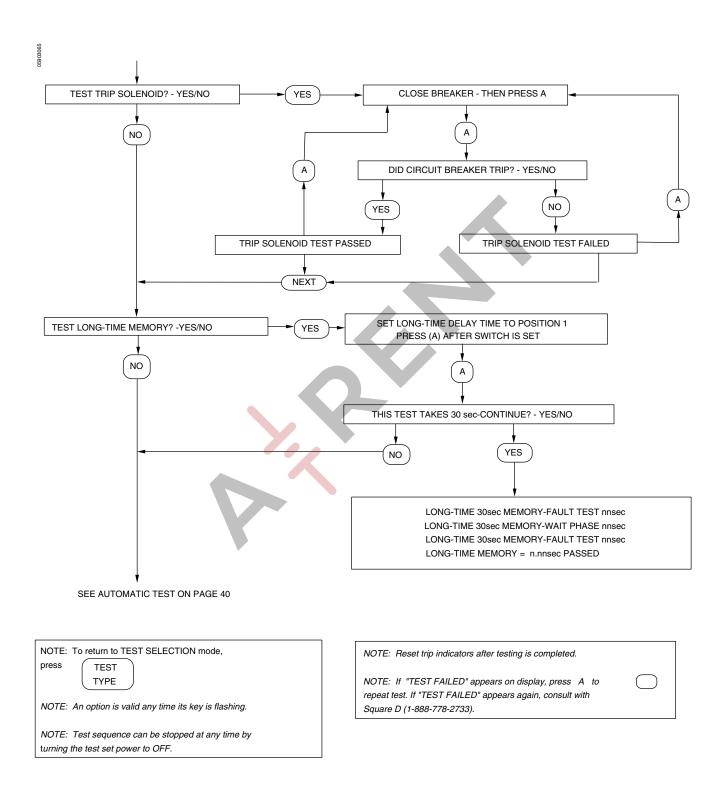


### AUTOMATIC TEST MENU

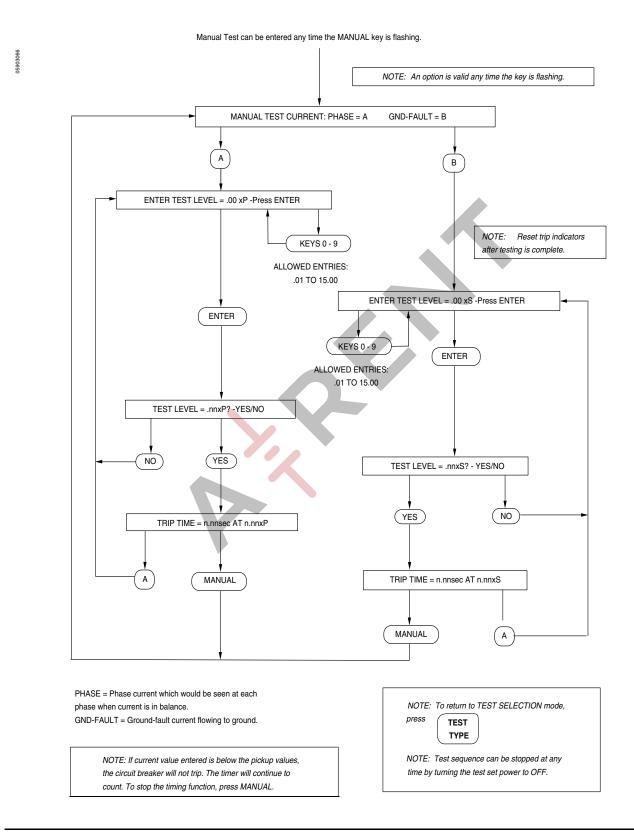






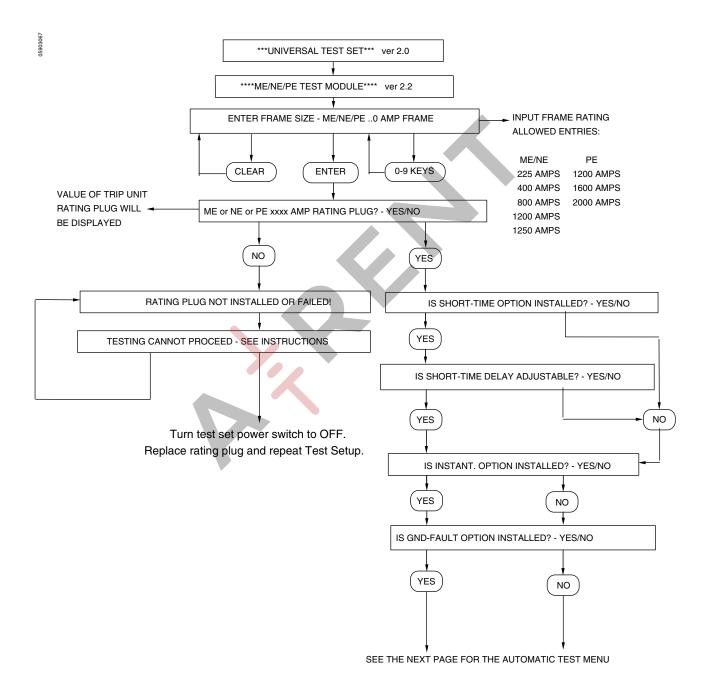


### MANUAL TEST MENU



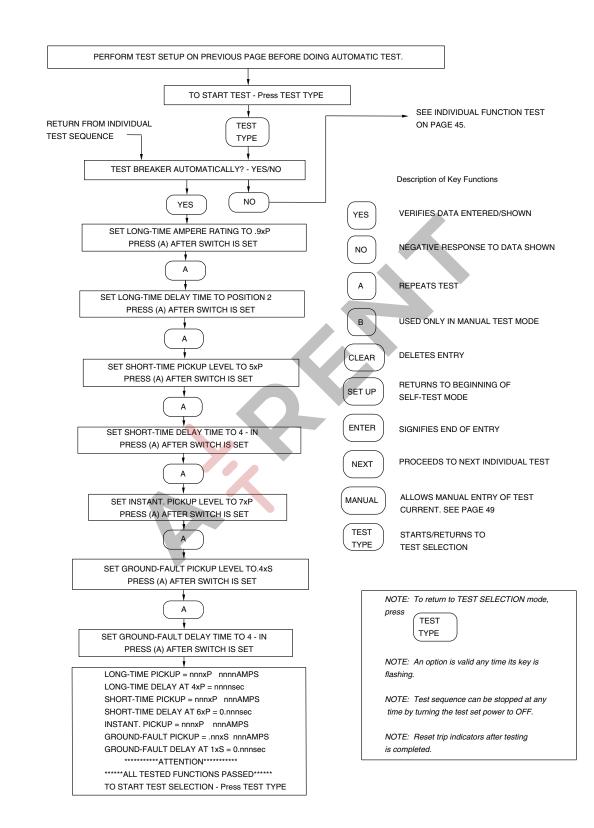
## Section 7—ME-NE-PE CBTM3 Test Module

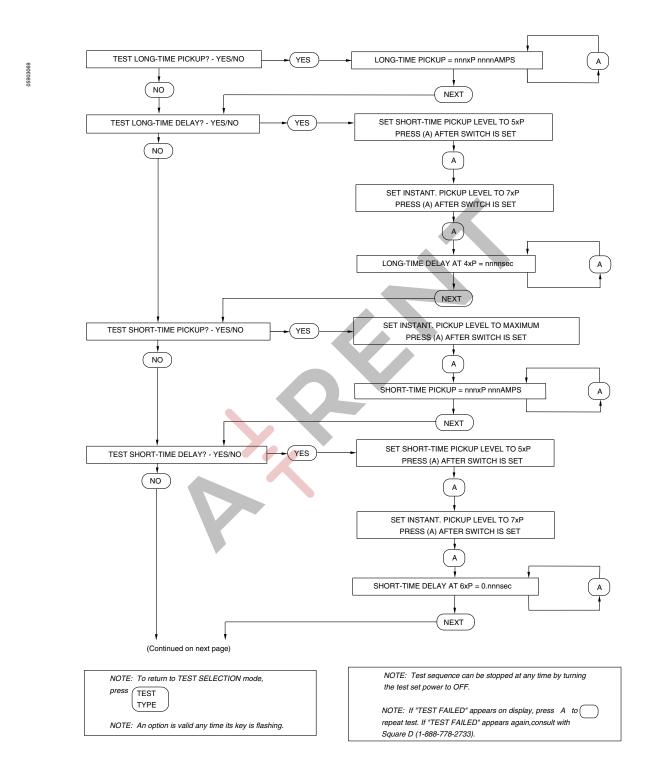
#### **TEST SETUP**

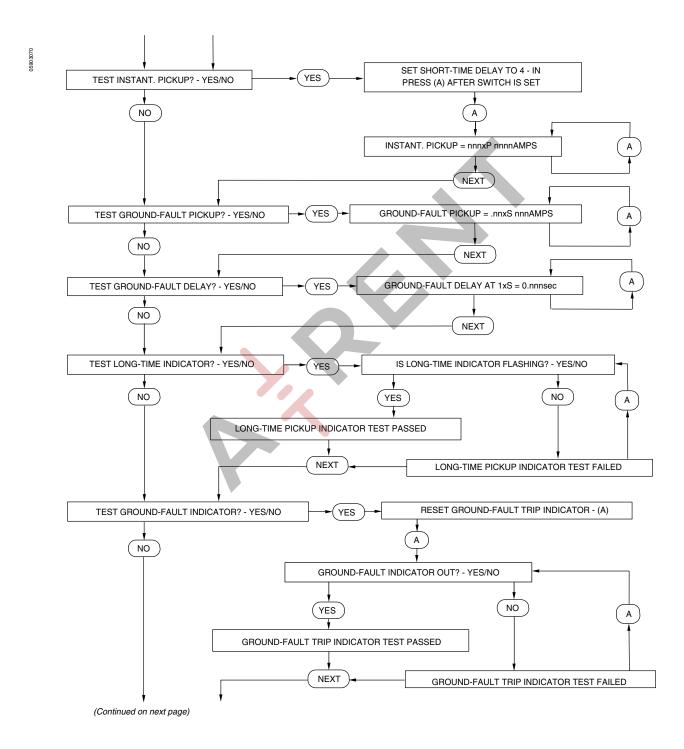


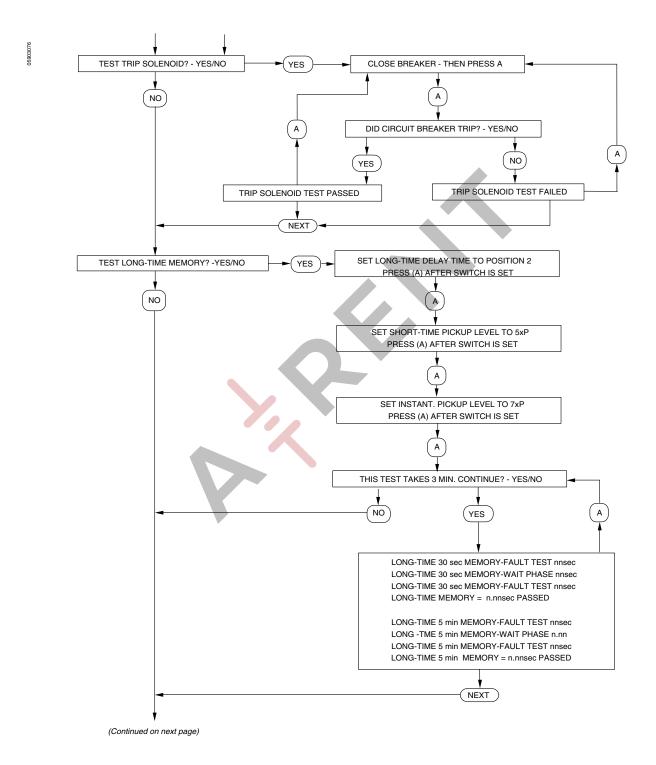
## AUTOMATIC TEST MENU

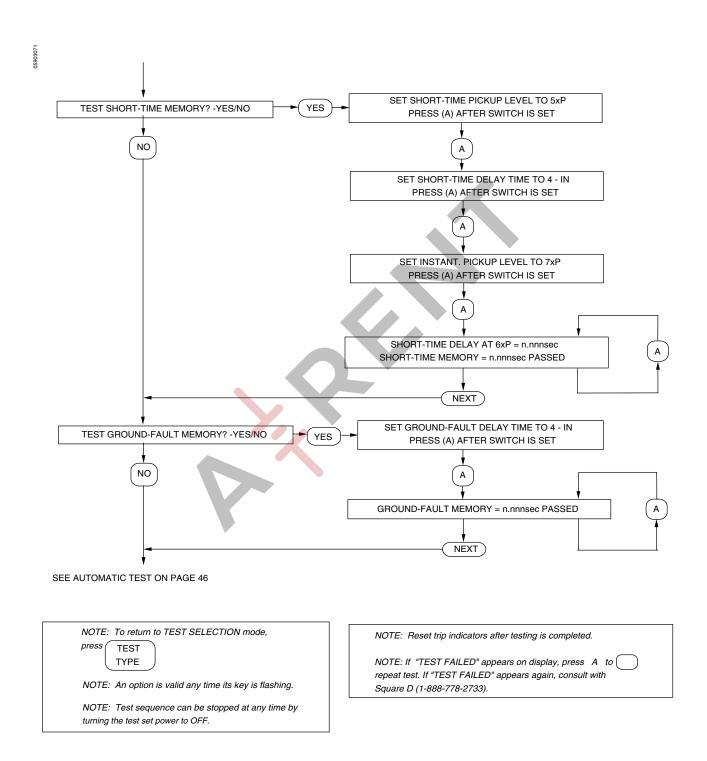
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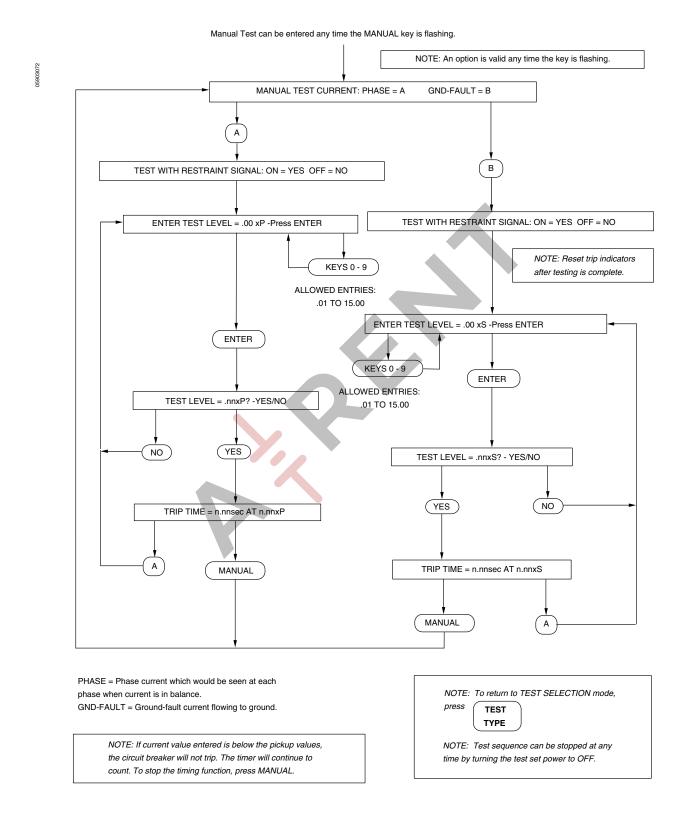








## MANUAL TEST MENU



## Index

## Α

Adapter, rating plug12
Applications4
Automatic test menu
CBTM1 test module40
CBTM3 test module46
CBTM4A test module
full-function circuit breakers
standard-function circuit breakers33
CBTMB test module
circuit breakers with ground-fault alarm 19
circuit breakers without ground-fault
alarm18
Automatic test mode5

## С

CBTM1 test module	
CBTM3 test module	45
CBTM4A test module	29
CBTMB test module	

## F

Full-	function trip unit
	CBTM4A test module
	test setup29
	CBTMB test module
	test setup15
G	

General information	4
Ground-fault alarm	5
Ground-fault delay	5
Ground-fault pickup	5

## I

Individual test menu
CBTM4A test module
full-function circuit breakers
standard-function circuit breakers
CBTMB test module
full-function circuit breakers with
ground-fault alarm22
full-function circuit breakers without
ground-fault alarm20
standard-function circuit breakers24
Individual-function test menu
CBTM1 test module41
CBTM3 test module47
Individual-function test mode6
Interlocking, zone6

## Κ

Key light tests9
Keyboard tests9

## L

Liquid crystal display test9	
Long-time ampere rating5	
Long-time delay5	
Long-time pickup5	

## Μ

101
Main test menu
CBTM4A test module31
CBTMB test module17
Manual test menu
CBTM1 test module44
CBTM3 test module51
CBTM4A test module
full-function circuit breakers
standard-function circuit breakers
CBTMB test module
full-function circuit breakers with
ground-fault alarm27
full-function circuit breakers without
ground-fault alarm26
standard-function circuit breakers28
Manual test mode6
ME-NE-PE CBTM3 test module
automatic test menu46
individual-function test menu
manual test menu51
test setup45
MICROLOGIC Series B CBTMB test module
automatic test menu for all circuit breakers
without ground-fault alarm 18
automatic test menu for circuit breakers with
ground-fault alarm19
individual test menu for full-function circuit
breakers with ground-fault alarm22
individual test menu for full-function circuit
breakers without ground-fault alarm20
individual test menu for standard-function
circuit breakers24
main test menu17
manual test menu for full-function circuit
breakers with ground-fault alarm27
manual test menu for full-function circuit
breakers without ground-fault alarm26
manual test menu for standard-function circuit
breakers28
test module4
test setup
test setup, full-function
test setup, standard-function

M-N-P-S CBTM4A te	est module
	ot modulo

automatic test menu for full-function circuit	
breakers	.32
automatic test menu for standard-function	
circuit breakers	.33
individual test menu for full-function	
circuit breakers	.34
individual test menu for standard-function	
circuit breakers	.36
main test menu	.31
manual test menu for full-function	
circuit breakers	.37
manual test menu for standard-function	
circuit breakers.	.38
test setup for full-function circuit breakers	.29
test setup for standard-function	
circuit breakers	.30

## Ρ

Power cord	4
POWERLOGIC <sup>®</sup> system	7
Preparation	4

## R

R	
Rating plug adapters	13 <b>U</b>
Rating plugs	.12 Umi
S	Z

## S

•	
SE CBTM1 test module	
automatic test menu4	
individual-function test menu4	
manual test menu4	
test setup3	9
Self-restraint	6
Self-test	8
Series A, B	4
Series, circuit breakers	4
Short-time delay	5
Short-time pickup	5
Standard-function trip unit	
CBTM4A test module	
test setup3	9
CBTMB test module	
test setup1	4

## Т

Terminology	5
Test	
circuit breaker	10
key lights	9
keyboard	9
liquid crystal display	9
self	8
Test modes	6

Test module
application4
ME-NE-PE CBTM345
MICROLOGIC series B CBTMB14
M-N-P-S CBTM4A29
SE CBTM1
Test set4
Test setup
CBTM1 test module39
CBTM3 test module45
CBTM4A test module
full-function circuit breakers
standard-function circuit breakers
CBTMB test module
circuit breakers with ground-fault alarm16
circuit breakers without ground-fault
alarm15
Test types5
Test, self8
Trip units
covers
rating plug adapters12
rating plugs11

Umbilical cord	4
----------------	---

# Zo

Zone interlocking	
LE, ME, NE and PE circuit breakers	6
SE circuit breakers	6

**Universal Test Set** 



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