197A BATTERY LOAD TEST SET
DESCRIPTION AND OPERATION

CONTENTS PAGE

1. GENERAL

1.01 This section describes the 197A battery load test set and its operation. The 197A battery load test set is used to test KS-21906, L4, batteries which provide battery backup power for the SLC*-96 Subscriber Loop Carrier System. Four battery packs of the KS-21906, L4, batteries rated 12 volts, 25 ampere-hour (AMP HR) may be tested at one time. The test will identify the battery pack or packs that are defective and should be replaced.

1.02 Whenever this section is reissued, the reason for reissue will be given in this paragraph.

1.03 The 197A battery load test set provides a check for the KS-21906, L4, batteries by performing a high-rate discharge test at a constant 18 AMP current for a period of 15 minutes. The battery terminal voltage is monitored constantly during discharge. The tested battery pack or packs are considered to be GOOD if the monitored terminal voltage remains above a preset value for the entire 15 minute test period.

1.04 Only one-third of the battery capacity is exhausted during tests. Therefore, the battery pack can support a significant ac power outage occurring during or immediately following the test. A 3A battery charger restores the battery pack to full capacity at the test completion by high rate charging.

1.05 The 197A battery load test set requires no internal power supply or external power cord. The power necessary to operate the test set is obtained from the batteries under test. This eliminates the possibility of finding the battery load test set with either dead batteries or the necessity for commerical ac power for operation.

> ***Note 1:*** All batteries to be tested must be fully charged to avoid false indications on the battery status liquid crystal displays (LCDs).
>
> ***Note 2:*** The battery test should be stopped only if all battery status LCDs, for all batteries under test, display REPLACE. The failed batteries should be discarded after the test.

2. DESCRIPTION

2.01 The 197A battery load test set consists of a faceplate with switches and LCDs, main printed wiring board, heat sink assembly, and fused test cord with fused test jacks assembled to a common chassis. The chassis is mounted in a blue carrying case that measures 16 inches wide, 12 inches deep, and 10 inches high. The 197A battery load test set weighs approximately 25 pounds. (See Fig. 1.) The front cover of the case is removable when in use to minimize the space required for operation. The case of the test set is vented at the front panel for heat dis-

* Trademark.

sipation. The cover of the test set should be open during periods of use and closed for protection against dust and moisture when not in use.

2.02 The LCDs indicate the status of the test set, the test time, and the test results for each battery. The location of the controls and LCDs on the front panel allow the test set to be conveniently operated while stationary on the floor. (See Fig. 2.) The LCDs are mounted in sockets for easy replacement and captivated by a plexiglass window to prevent them from vibrating free. The START/CONTINUE button and STOP button, located on the front panel, start and stop the discharging of the batteries and test set clock. A self-test function of the test set indicates proper operation. The front panel also contains a simplified set of operating instructions.

2.03 The main printed wiring board contains all necessary control and regulation circuits. The battery load test set is controlled by a BELLMAC*-4 microcomputer. All high heat dissipation components are contained on the heat sink assembly board.

* Trademark.

2.04 The connector head assembly consists of a test jack, test connector, and a 20 AMP fuse for each of four batteries being tested. All power required to operate the 197A battery load test set is obtained from the battery or batteries under test through the test cord assembly.

3. DISPLAYS

3.01 The 197A battery load test set contains a TIME display and a batteries display located on the front panel above the general OPERATING INSTRUCTIONS (Fig. 2).

3.02 The duration of the test is displayed in minutes and seconds on a 4-digit, 7-segment, LCD.

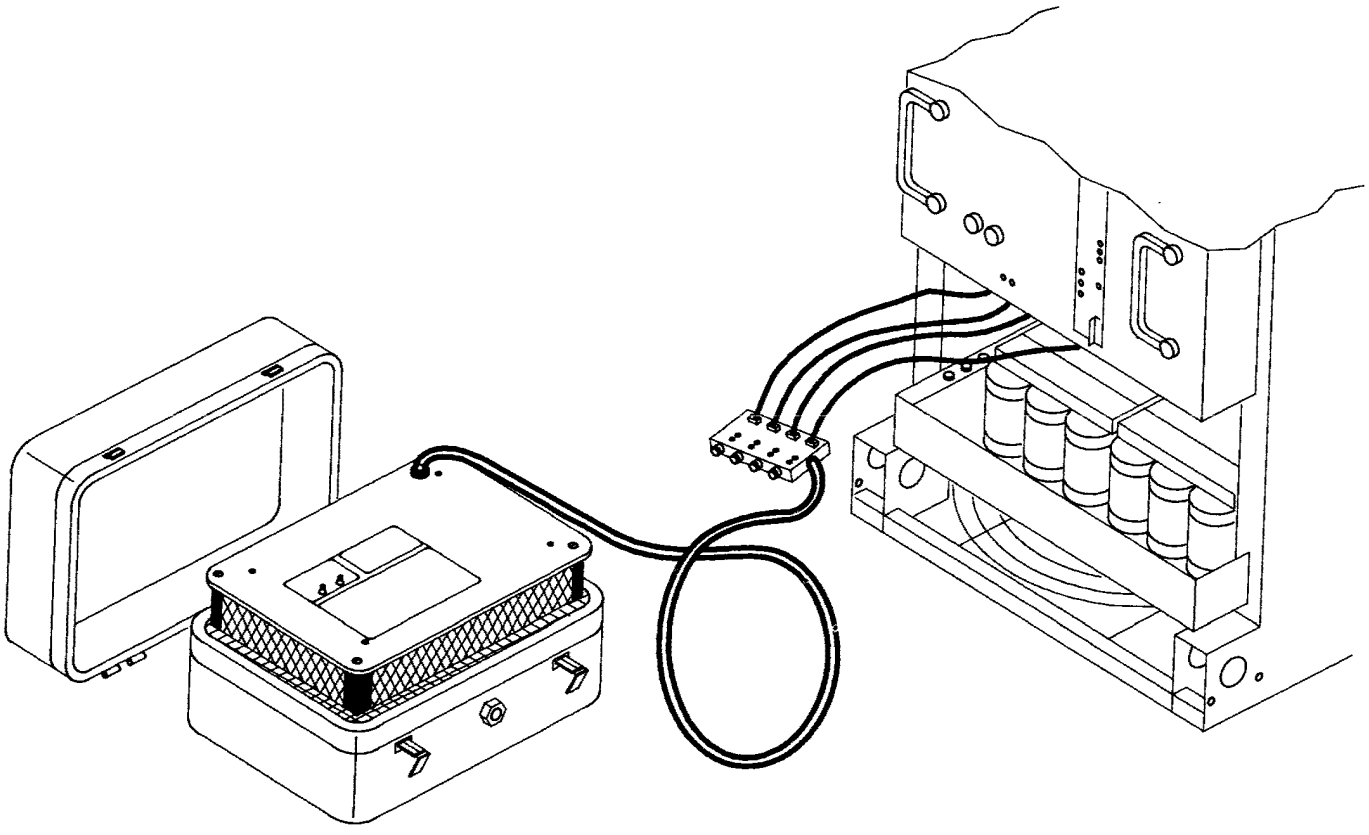

Fig. 1—197A Battery Load Test Set

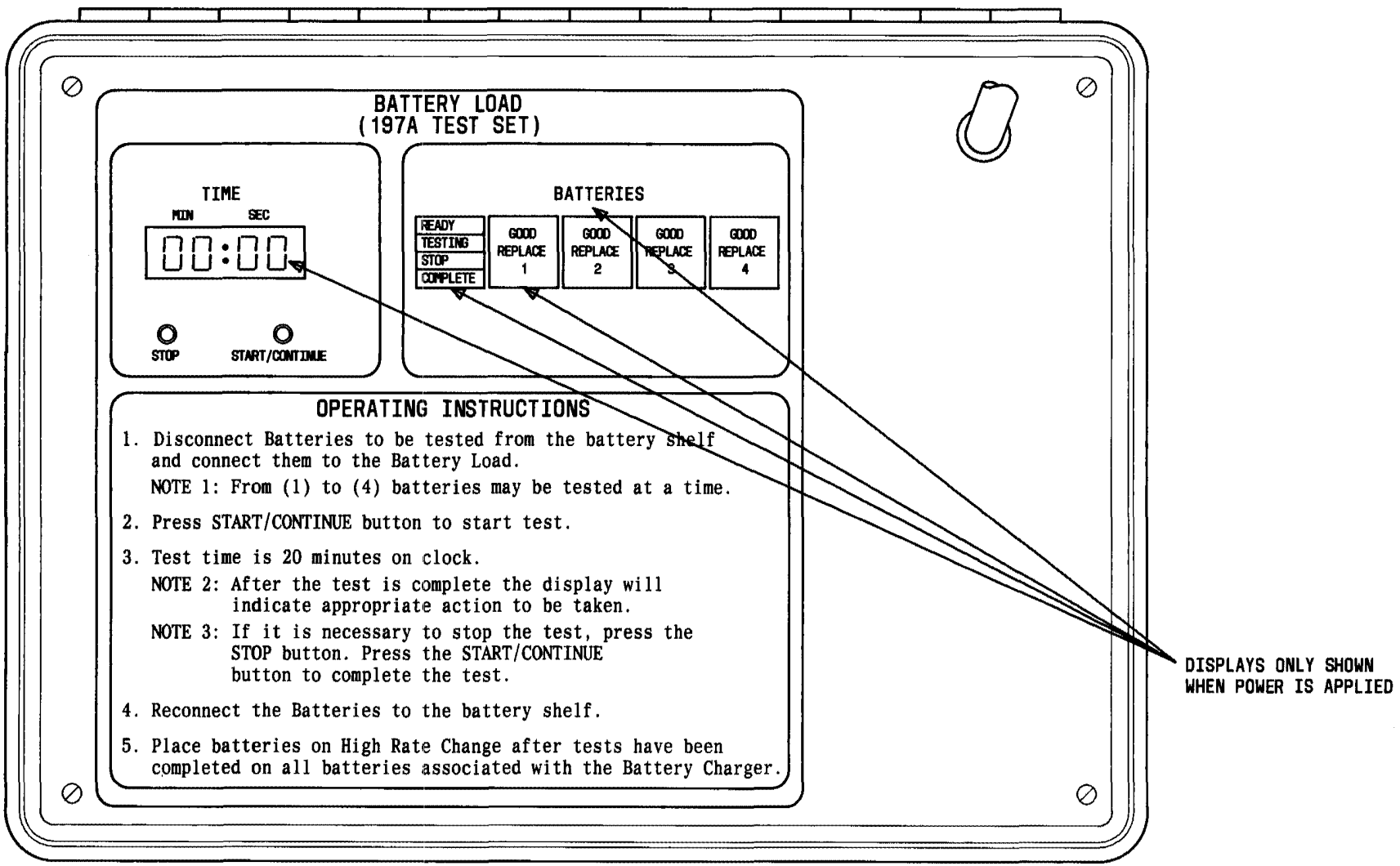

Fig. 2—197A Battery Load Test Set Front Panel

The START/CONTINUE button is provided for starting the battery test and initiating the timing circuit. The STOP button is used to stop the test in case of an emergency situation where commercial power failed and the batteries are needed to operate the equipment. When the STOP button is pressed, the timing circuit will also stop with the displayed time. Each time power is applied to the 197A battery load test set, the timing circuit is set to 00 minutes and 00 seconds. The timing circuit cannot be reset after the test has been started unless the test is stopped and the batteries are disconnected, then reconnected to the connector head. This software design prevents the operator from inadvertantly testing a group of batteries beyond the allotted 15 minute total test time.

3.03 The batteries liquid crystal display (Fig. 2) displays the status of the 197A battery load test set as READY, TESTING, STOP, and COMPLETE. The results of the test on each battery are displayed as GOOD or REPLACE. When the STOP button is pressed to stop the test before completion, the STOP display lights.

3.04 The software of the 197A battery load test set operates the READY indicator after performing the test set hardware check. After the START button has been pushed, the software program operates the TESTING indicator. Upon completion of the test, the program operates the COMPLETE indicator. The GOOD and REPLACE indicators are operated when the batteries are connected and indicate which batteries are bad according to the test results.

3.05 The START/CONTINUE and STOP switches are the only controls accessable to the operator. All other controls are factory adjusted and should not be adjusted in the field. The START/CONTINUE switch starts the test when depressed and continues the test if it has been stopped. The STOP button will stop the test at any time when depressed.

4. CONNECTIONS

4.01 The 197A battery load test set has a test cord with a connector head assembly which terminates into four test plugs, four fuses, and four test jacks as shown in Fig. 3. The test plugs on the test cord match with the KS-21906, L4, battery plugs.

4.02 The 197A battery load test set can test from one to four KS-21906, L4, batteries at a time.

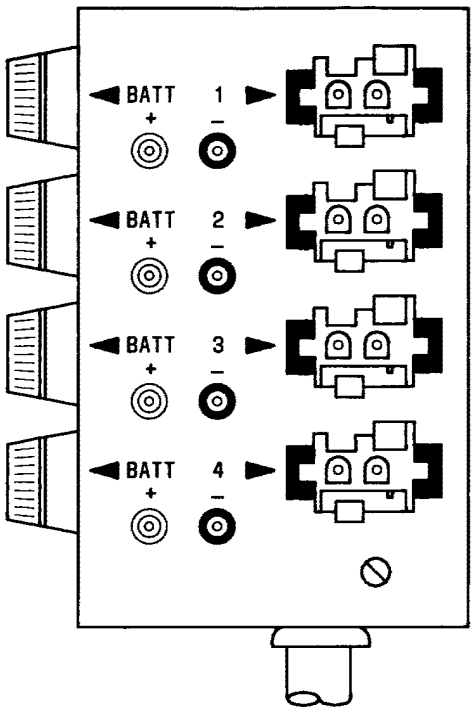

Fig. 3—197A Battery Load Test Set Connector Head

To connect the batteries to the test set, proceed as follows:

(1) Remove the battery load test set cover and set out of the way.

(2) Locate the 197A battery load test set near the batteries to be tested so that the test cord is not in any stress when connected to the batteries.

Note 1: The test set assumes that the batteries are fully charged before testing. If the batteries are only partially charged, a false indication could occur. Do not test the batteries while they are under a high rate charge. If the charge of the batteries is unknown, place the batteries on high rate charge and do not test until completion of the charge cycle.

Note 2: If the batteries to be tested are used in a SLC-96 Subscriber Loop Carrier System or other equipment that when disconnected will cause an alarm at the central office, the appropriate personnel should be notified of the test.

(3) After determining that the batteries are fully charged, disconnect them from the battery shelf.

(4) Connect one battery to the test jack marked BATT 1.

Note: The first battery connected to the test cord will power the battery load test set and reset the timing circuit. The software program performs a hardware check on the test set.

Requirement 1: The TIME display indicates 00 minutes and 00 seconds. (Fig. 2.)

Requirement 2: The status display indicates which battery was connected, status of the battery, and displays READY.

Requirement 3: The battery load test set fan operates.

Note 1: If the TIME display "blinks", the battery load is defective.

Note 2: If the battery load test set does not power-up, a problem could exist within the test set battery test jack in the connector head or fuse. Check the fuse in the connector head. If the fuse is not defective, remove the battery connection from test jack BATT 1 and connect to another test jack position on the test set connector head, then repeat Step (4).

(5) Continue connecting each battery to the battery load test jacks until all batteries to be tested are connected

Requirement: Each battery display shows battery status as well as battery number.

5. OPERATION

5.01 A set of operating instructions are located on the front panel of the unit. To operate the test set, proceed as follows:

Note: All batteries to be tested must be fully charged to avoid false indications on the battery status LCDs.

(1) Connect the batteries to be tested per Part 4.

(2) Verify TIME display indicates 00 minutes and 00 seconds and batteries display indicates either REPLACE or GOOD.

(3) Verify that the READY indicator is operated.

(4) ***Warning: If the 197A battery load test set fan is not operating and all batteries connected to the load are fully charged, the test set should not be operated.*** Verify the test set fan is operating by listening to the fan motor.

(5) Press the START/CONTINUE button on the faceplate of the test set.

Requirement: The TESTING indicator operates, the READY indicator goes off, and the TIME display starts counting time.

Note 1: The test must run a full 15 minutes for a valid completion.

Note 2: Pressing the STOP button interrupts the test and stops the clock. The battery status becomes BLANK and the STOP indicator operates. To restart the test, press the START/CONTINUE button.

Note 3: The battery test should be stopped only if all battery status LCDs, for all batteries under test, display REPLACE. The failed batteries should be removed and discarded after the test.

(6) After the 15 minute test has expired, the COMPLETE indicator will operate.

(7) Verify which batteries are indicated GOOD and which are indicated REPLACE.

(8) ***Warning: Do not place tested batteries on a high rate of charge to restore them to full charge capacity until all batteries connected to the battery charger have been tested.*** Disconnect the good batteries one at a time and reconnect them to the battery shelf.

(9) Disconnect the failed batteries and discard per local requirements.

(10) Replace defective batteries with good batteries.

(11) The test is completed. Coil the test cord and replace cover.

(12) Store the 197A battery load test set per local requirements.

6. TROUBLE LOCATING AND ADJUSTMENTS

6.01 The 197A battery load test set requires no calibration or adjustment in the field. The test set is factory adjusted and should be returned to the regional service center if additional adjustments or repairs are needed.

6.02 If a battery known to be good has been connected to the connector head and no indication of the battery condition is present on the test set, the fuse at the connector head should be checked and replaced if necessary.

6.03 The 197A battery load test set should be sent to the regional service center for all repairs other than fuse replacement.