LEAD-ACID TYPE STORAGE BATTERIES

10- OR 15-AMPERE-HOUR

▶45-MINUTE◀ DISCHARGE CAPACITY TEST

1. GENERAL

1.01 This section covers a ▶45-minute◀ discharge capacity test of a single string of lead-acid type batteries using a fixed resistor and voltmeter. This method is used to test 10- or 15-ampere-hour PBX batteries, lead-acid type KS-5361 Lists 110 through 116, ▶116B, 116C, 120B, and 120C.◀ This test is intended to indicate whether the capacity has become reduced to an extent sufficient to justify replacement.

1.02 This secton is reissued to change the 15-minute discharge capacity test to a 45-minute discharge capacity test and to delete lead-acid type KS-5361 Lists 116A, 120, and 120A cells from the list of cells to be tested by the 45-minute discharge capacity test. Procedures are added for testing KS-5361 Lists 116B, 116C, 120B, and 120C. This reissue does not affect Equipment Test List.

1.03 This test is recommended for batteries of 10- or 15-ampere-hour capacity where there is any doubt as to the adequacy of the reserve capacity of the battery. It may also be desirable to apply it on a periodic basis to all batteries over 3 years old for KS-5361 Lists 110 through 116, ▶116B, and 116C◀ cells or over 5 years old for KS-5361 Lists ▶120B and 120C◀ cells. The frequency of test will depend on local experience and conditions.

1.04 After a visual inspection, the test consists of discharging a battery at a high rate for a maximum of ▶45 minutes to determine if the battery is good (see 4.04).◀

1.05 The test requirements are based on batteries sufficiently charged at the start of the test to float the white indicators and the test should only be applied where these indicators are floating. In case they are not floating, the battery should be charged in accordance with the usual procedure for the method of operation being followed.

1.06 During test, it would be ideal to have no current entering or leaving the battery except that of the test load. However, with batteries of this class, the charging current and the circuit load will usually be so nearly equal that their effect on the results would not be appreciable. Some adjustment of the charging rate to make it more nearly equal the load may be made if it is considered necessary, provided it does not involve changing permanent connections.

2. LIST OF TOOLS AND TEST APPARATUS

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
—	Flashlight
TEST APPARATUS	
K-40660	Resistor, 2-Ohm, Ward Leonard
K-40661	Resistor, 3-Ohm tapped at 2 Ohms, Ward Leonard
—	Leads, No. 18 gauge or larger, approximately 5 feet long, one with clip on one end and one with clips on each end for connecting resistor
KS-14510	Portable volt-ohm-milliammeter

Note: Equivalent may be substituted.

3. RECORDS (Form E-2544)

3.01 Record date of ▶45-minute◀ discharge test and general appearance and condition of cells before test.

3.02 Record time of starting test and both time and battery voltage at end of test.

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Note: ▶It is assumed that this test is made at cell temperatures of 65°F or above. Refer to Section 157-601-101 for information on capacity variation with temperatures.◀

4. TEST

4.01 Before making the test, examine the individual cells of the battery and correct mechanical troubles such as loose terminals, poor connections, etc. Examine for sediment touching the plates or insulators in at least one jar. If any items not correctable on the job, including high sediment, indicate that they might cause trouble before the next regular visit, the battery should be replaced.

4.02 Select the test resistor. A 3-ohm resistor is required for testing eight cells of KS-5361 Lists 110 through 116, ▶116B, and 116C.◀ A 2-ohm resistor is required for testing eight cells of KS-5361 Lists ▶120B and 120C.◀ For other combinations of cells a special resistor will be required. A special resistor for the KS-5361 Lists 110 through 116, ▶116B, and 116C◀ cells should have a resistance of 0.375 times the number of cells and a wattage rating at least nine times the number of cells. A special resistor for the KS-5361 Lists ▶120B and 120C◀ cells should have a resistance of 0.250 times the number of cells and a wattage rating at least 13.5 times the number of cells.

4.03 Connect the voltmeter across the battery, record time, and start test by connecting the resistor across the battery.

Caution: To avoid explosions, the test circuit should be closed and opened a safe distance from the battery at the resistor.

4.04 If, at any time from the start of the test to the end of the 45th minute, the battery voltage falls below 14 volts, replace the battery.

4.05 If the test runs the full 45 minutes with the battery voltage 14 volts or above, the battery capacity is considered satisfactory.

4.06 The preceding is directly applicable to 8-cell batteries. It may be applied to batteries with different numbers of cells by substituting the proper voltages. For example, 14 volts per battery is equivalent to 1.75 volts per cell. The end of test voltage is obtained by multiplying 1.75 by the number of cells.

4.07 "Replace", as used herein may mean immediate replacement, listing for prompt replacement, or merely reporting to the supervisor, depending on local practice or instructions on replacement of PBX batteries.