Receptacle Tension Tester
Cat. No. RTT99

Users Manual
Table of Contents

SECTION          Page
INTRODUCTION ............................................... 2
OPERATION ...................................................... 2
BATTERY REPLACEMENT .............................. 6
ACCURACY VERIFICATION ............................ 6
FACTORY CALIBRATION ................................. 7
TECHNICAL INFORMATION SECTION ........... 7
SPECIFICATIONS ............................................. 7
FOR FURTHER INFORMATION ....................... 9

List of Figures

SECTION          Page
Figure 1 Features ................................................ 4
Figure 2 Battery Replacement............................. 6
Figure 3 Accuracy Verification ............................. 8

FOR FURTHER INFORMATION

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Please be sure to visit the Leviton Web Site for information on the rest of Leviton's product line.

LIMITED ONE YEAR WARRANTY

This warranty gives you specific rights, and you may also have other rights, which vary in different states and countries. Leviton warrants the original consumer purchaser that this product is free of defects in materials and workmanship for 1 year from the purchase date. Leviton’s only obligation is to correct such defects by repair or replacement, at its option, if within such 1 year the product is returned prepaid, with proof of purchase date, and a description of the problem to the Leviton Manufacturing Co., Inc., ATTN: Quality Assurance Department, 59-25 Little Neck Pkwy., Little Neck, NY 11362-2591. This warranty does not cover labor for removal or reinstallation of the product and is void on any product installed improperly or in an improper environment, overloaded, misused, opened, abused, or altered in any manner. There are no implied warranties of any kind, but if implied warranties are required by the applicable jurisdiction, Leviton limits the duration of any implied warranty of fitness for use or merchantability to 1 year. Leviton is not liable for incidental or consequential damages, including without limitation, loss of equipment use and lost sales or profits for breach of any warranty on this product. Some jurisdictions may not allow exclusion of or limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above exclusions or limitations may not even apply to you.
INTRODUCTION

The Leviton Receptacle Tension Tester (RTT), Cat. No. RTT99, is a versatile hand held device that can measure the amount of retention force of an electrical receptacle. The retention force of a receptacle is defined as the force that the receptacle contacts exert on the blade of an inserted plug while that plug is being removed from the receptacle. This force acts in the direction directly opposite from the removal of the plug. The retention force of a receptacle is a measure of the pressure of the electrical connection. This retention force that acts against the plug withdrawal is measured by the RTT on each receptacle contact, separately. If the retention force is not adequate, the electrical connection may have a higher electrical resistance. This additional resistance may generate excess heat when current is flowing through the circuit. This excess heat, in combination with other factors, can increase the possibility of an electrical fire.

The Receptacle Tension Tester is intended for use in 15 or 20 Amp straight blade receptacles rated 125 or 250 V. The device works equally as well in non-grounding as in grounding receptacles except that there is no ground contact to test in non-grounding receptacles. The RTT quickly and accurately measures the peak retention force of the receptacle’s line contacts and the ground contact, if present. These measurements are made individually, allowing the user to determine the retention force of each electrical contact independently.

OPERATION

**WARNING:** TO BE INSTALLED AND/OR USED IN ACCORDANCE WITH APPROPRIATE ELECTRICAL CODES AND REGULATIONS.

**WARNING:** IF YOU ARE NOT SURE ABOUT ANY PART OF THESE INSTRUCTIONS, CONSULT A QUALIFIED ELECTRICIAN.
WARNING: FAILURE TO USE THIS DEVICE IN THE INTENDED MANNER MAY RESULT IN THE LOSS OF THE SHOCK HAZARD PROTECTION PROVIDED BY THIS DEVICE TO THE USER. THIS MAY RESULT IN DEATH OR SEVERE ELECTRICAL SHOCK. READ ALL INSTRUCTIONS PRIOR TO USE.

WARNING: FIRST TEST THE OUTLET WITH A BRANCH CIRCUIT ANALYZER TO ENSURE THAT THE OUTLET IS CORRECTLY WIRED AND PROPERLY GROUNDED (IF APPLICABLE). AN INCORRECTLY WIRED CIRCUIT CAN BE AN ELECTROCUTION HAZARD AND MUST FIRST BE CORRECTED.

WARNING: DO NOT USE THIS DEVICE IF THE FEMALE THREADED ADAPTER ON THE UNIT BECOMES CRACKED OR DAMAGED. IF DAMAGED, THIS FEMALE THREADED ADAPTER MAY NOT PROVIDE ELECTRICAL SHOCK PROTECTION TO THE USER AND THEREFORE MAY RESULT IN DEATH OR SEVERE ELECTRICAL SHOCK.

WARNING: LINE BLADE MAY BE ENERGIZED DURING TEST PROCEDURE. TO AVOID ELECTRICAL SHOCK, DO NOT TOUCH LINE BLADE DURING TEST. TO PROVIDE FURTHER PROTECTION FROM ELECTRIC SHOCK, IT IS RECOMMENDED TO TURN OFF POWER TO THE RECEPTACLE PRIOR TO TESTING.

WARNING: REFER ALL INDICATED PROBLEMS TO A QUALIFIED ELECTRICIAN FOR CORRECTIVE ACTION.

TO OPERATE:

NOTE: It is recommended to check the accuracy of this unit prior to each testing session. Refer to the "ACCURACY VERIFICATION" section for full details.

1. Screw the retention test blade [the flat blade provided with the Receptacle Tension Tester (RTT)] into the female threaded adapter (#8-32 Thread) on the front of the RTT (refer to Figure 1).

traceable standard. If the unit or the calibration tool is abused, it is recommended that the abused part be recalibrated before conducting further testing, regardless of the last calibration date.
ACCURACY VERIFICATION

NOTE: It is recommended to check the accuracy of this unit prior to each testing session as follows (refer to Figure 3):

1. Install the small threaded open hook that is supplied with the unit onto the female threaded adapter of the Receptacle Retention Tester (RTT).

2. Place the Calibration Weight (supplied with RTT) on a table, resting on its flat end and with the hook on the other end of the weight pointing upwards.

3. With the RTT oriented such that the female threaded adapter is pointing vertically downward, initialize the RTT as described in Step 2 of the OPERATION section. Once the self-calibration of the unit is completed, engage the open hook that was just installed on the RTT with the hook on the top of the calibration Weight.

NOTE: Try not to jar the RTT during this process as a false reading may occur.

4. GENTLY lift the RTT vertically upward such that it lifts the Calibration Weight from the table. Avoid lifting the unit too fast or else the force that is displayed will be higher than normal due to a shock force. It may be helpful to repeat this accuracy check several times to get the “feel” of the smooth and correct lifting action which does not subject the RTT to a shock force. The Calibration Weight was designed to have a weight of 8.0 +/- 0.2 ounces. The display of the unit should read 8.0 +/- 1.0 ounces (the combined uncertainty of 0.2 ounce for the Calibration Weight and 0.8 ounce for the lower force range of the RTT.

FACTORY CALIBRATION

During the manufacturing process, the RTT is calibrated to ensure the unit’s accuracy. It is recommended that in order to comply with ISO 9002, that the unit, along with the calibration tool, be recalibrated once every year to a NIST (National Institute for Standards and Technology)
It is important to initialize the unit **BEFORE** each insertion into the receptacle to be tested. This will insure that the unit is properly zeroed prior to testing.

3. Insert the RTT test blade fully into one of the line contact slots of the receptacle and, with a straight slow and steady motion, withdraw the RTT99 from the receptacle. Be sure to keep the RTT unit perpendicular to the receptacle face, otherwise the force displayed will be inaccurate.

4. The Display will indicate the maximum retention force of the receptacle on the test blade, in ounces, to tenths of an ounce. The measurement remains displayed until twenty (20) seconds have passed from the initialization of the unit. To shut the unit OFF prior to the twenty second time-out, press and release the Start Button. The RTT then shuts OFF and the display goes blank. In the case of a line contact slot in the shape of a ‘T’, repeat this procedure with the line blade in the perpendicular portion of the ‘T’ slot (be sure to reset the RTT by turning the unit OFF and ON again prior to further testing).

**NOTE:** The RTT force range is 0-100 ounces. However, if the force on the RTT exceeds 99.6 ounces, the display will read “OL” indicating a force over-range condition. This over-range condition does not indicate that the unit is damaged. It is simply an over-range indicator and if this occurs, simply reset the unit as previously described and repeat the measurement. Although the RTT can withstand forces much greater than its operating range without damage, it is important to note that excessive forces on the RTT should be avoided.

5. Repeat the above procedure for the remaining line contact slots of the receptacle. The RTT must be reset prior to each additional retention force measurement. To do this, press the Start Button to shut OFF the unit or simply wait for the twenty second time-out. Then, turn the unit back ON by again pressing the Start Button and allow the unit to self calibrate.

6. Following this, repeat the above procedure for the ground contact of the receptacle. First, remove the flat line blade from the female threaded spacer of the unit and install the round Ground Pin that was also provided with the unit. Repeat steps 2-5

**BATTERY REPLACEMENT**

The 9-volt alkaline battery is designed to last for about 10,000 readings. When battery replacement is necessary, the Receptacle Retention Tester (RTT) will show a “b” at the left most digit on the display after initialization (the “b” will look the same as the numeral six on the display) (refer to Figure 1). To replace the battery, shut OFF the unit (or wait for the twenty second time-out). Place the unit face down on a flat surface. Remove the four Phillips-Head screws on the rear of the instrument housing, and gently lift the rear part of the enclosure to access and replace the battery (refer to Figure 2). Please use extreme care while doing this to prevent excess stress on the internal components as well as the thin wires that run from the front to the back of the RTT’s housing. **DO NOT** attempt battery replacement while the RTT is inserted into a receptacle.

![Figure 2 - Battery Replacement](image)