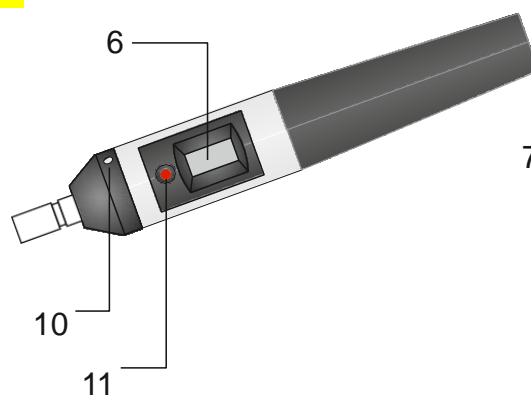
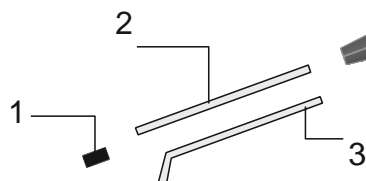


User Manual download at
www.denlux.com

1. Conductive rubber tip.
2. Straight electrode
3. Angled electrode
4. Front cover
5. O-ring
6. LCD Display



7. Battery
8. Spring
9. Battery cover
10. Sensor button
11. Indicator light (LED)

Introduction

The PULPPEN DP2000 is a highly accurate instrument destined for daily clinical use.

Denlux has successfully incorporated the latest available technology in the PULPPEN, to provide you with a compact, lightweight, hand-held instrument, capable of providing accurate, scientific readings.

After carefully reading the 'User's Manual', you may want to refer to the 'Technical Manual' for additional information on the theory of operation defining the function of the PULPPEN and other types of pulp vitality testers.

WARNING !!



NOT to be used by or on persons using a pacemaker (concerns user and patient)



In the following, please observe carefully the sections marked with the sign shown here. These sections contain important information.

Instructions for use

Before first using the PULPPEN

Unscrew the battery cover (9) at the rear end of the PULPPEN. Check that the battery, (Denlux part no. 15101) is provided and insert the positive end (+) first. Hereafter remount the battery cover.

Next, insert a straight or angled electrode (2 or 3). Push the electrode into place until it reaches the bottom. Make sure a conductive rubber tip (1) is placed on the tip of the electrode.

The PULPPEN is now ready for use!

Using the PULPPEN

To switch ON the PULPPEN DP2000, place your index finger on the sensor button (10) while holding the metal body surrounding the display at the same time.

The LCD display will light up. The PULPPEN will stay on for as long as you maintain this grip. When you remove your index finger, the LCD will store the last reading taken for approximately 30 seconds and then switch itself OFF automatically.

Before taking a reading, dry the tooth that is to be diagnosed. The tooth should always be kept dry to avoid leakage current which could give false readings!

A circuit must be established from the PULPPEN's tip, through the patient, your hand, and back to the metal body of the PULPPEN. There must be a contact between your hand and the metal body of the PULPPEN at all times. Likewise, you must make sure that there is a contact between your other hand and the patient in order to complete the circuit.

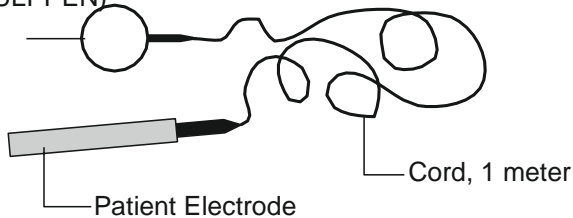
If wearing latex examination gloves, an electrical circuit must be established between the patient and the PULPPEN.

This can be done by using the Contact-Kit (Extra accessory - shown below; Denlux part Number 15110): one end, a metal electrode (handle), is given to the patient to hold; the other, a metal ring, is fixed to the metal body of the PULPPEN.

Contact-Kit for PULPPEN

(Extra accessory)

Metal ring (Mounted on PULPPEN)



Place the PULPPEN tip on to the dried target tooth's surface. While maintaining contact with the tooth, touch the sensor button (10) with your index finger. The PULPPEN will emit electronic pulses through the tooth at a regularly increasing amplitude, as indicated by the pulsating orange indicator light (LED).

As soon as the patient feels a tingling sensation from the target tooth, and reacts according to an agreed hand signal, lift the index finger from the sensor button, remove the PULPPEN's tip from the tooth and read the response level indicator on the LCD Display.

The LCD will display the stimulus level and will automatically reset itself at zero before taking a new measurement.

Response levels DP2000

Normal tooth sensitivity levels are (Display readings):

Incisors	5 - 10
Bicuspids	10 - 15
Molars	15 - 20

Response Levels

Response levels outside these ranges do not systematically indicate an abnormal condition. Individual cases can vary greatly

If no reaction from the patient is observed additional examination will be necessary. A perfectly healthy tooth might due to moist on its surface, alloy fillings or calcification give a false negative response.

On the other hand leak currents may cause the patient to feel a stimulus even though the nerve tissue is dead - in this case the stimulus is felt in a neighboring tooth.

In case of no response

If the patient do not react to the stimuli provided by the PULPPEN the following should be thoroughly checked:

- 1 That the orange indicator light (LED) (11) is flashing, indicating correct function of the PULPPEN.
- 2 That there is a correctly established connection between tooth and PULPPEN as well as between dentist and patient or with contact kit.
- 3 That the LCD Display show non-flashing digits - flashing digits indicate low battery power.

If all the above matters are checked and possible reasons for malfunction are removed, a new reading can be taken.

Battery power level

The LCD Display functions as a battery power indicator. In case of flashing digits, the battery must be changed. Normal battery life span is 1 - 2 years by regular use.

Always use the same type of battery (Denlux part number 15101) as supplied with the PULPPEN. Use of other types of batteries can cause malfunction and/or incorrect readings.

Servicing / Repair

If a malfunction occurs, the PULPPEN should be returned to the distributor for repair by a qualified service engineer.

DO NOT attempt to repair the PULPPEN yourself!

Cleaning and sterilization

Do not autoclave the PULPPEN handpiece but disinfect by using normal disinfectant wipes. It is not a water proof device, so be careful with excessive use of disinfectant fluids (concern LCD display).

Electrodes and rubber tips shall be sterilized prior to use. Before autoclaving, disassembly the rubber tip from electrode and remove debris from both by rinsing under running water. The disassembled electrodes and rubber tips should be steam autoclaved at 134 degree C for 4 minutes and with a drying time of 10 minutes. Rubber tips will withstand 3-5 times autoclaving after which they shall disposed of.

Storing

DO NOT place the PULPPEN on metal surfaces or surfaces containing carbon. The PULPPEN could switch itself on resulting in loss of battery power. Always remove the battery if the PULPPEN is not to be used for extended periods of time; this improves battery longevity substantially.