


## 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.

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

# WARNING !!



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

## Instructions for use

### *Before first using the PULPPEN*

Unscrew the battery cover (9) at the rear end of the PULPPEN. Check that the battery (type TR175 7V, 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!

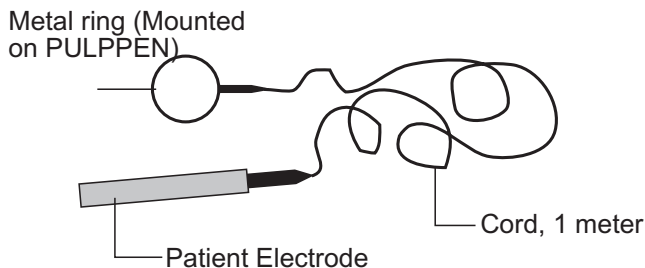
A circuit must be established from the PULPPEN's tip, through the patient, your hand, and back to the metal body of the PULPPEN. There must be a contact between your hand and the metal body of the PULPPEN at all times. Likewise, you must make sure that there is a contact between your other hand and the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

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 (hand)le, 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)



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 red indicatorlight (LED).

As soon as the patient feels a tingling sensation from the target tooth, and reacts according to an agreed hand signal, 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
Bicuspid	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 neighbouring 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 red indicatorlight (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.
- 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!**

### ⚠ Hygiene

The PULPPEN hand piece may be disinfected using disinfectant wipes or sprays. Electrodes should be steam autoclaved after each use.

Conductive rubber electrode tips should be disposed of after use and a new one used for each patient.

### ⚠ 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