

NEUROTHESIOMETER

*FROM
HORWELL*



- Assessment of vibratory threshold
- Simple Manual Control
 - digital readout
 - 10 memories
 - accurate results
 - error free reading
- Battery Operation
 - safe
 - versatile
 - compact
 - convenient

HORWELL NEUROTHESIOMETER

A rechargeable battery operated diagnostic instrument for assessing vibration sensitivity thresholds at selected sites on the surface of the body. The instrument, vibrator and battery charger are all housed in a strong, compact carrying case.

Digital display

The Neurothesiometer has a red LED digital display and a switch enabling the readout to show either volts —111 in power supplied to the vibrator.

Range expansion

Voltage applied to the vibrator is adjusted by means of a 270 degree rotary knob, the range of which may be switched between:

Normal 0 to 50 volts | 0-250 microns

Expanded 0 to 25 volts | 0-62.5 microns

On the expanded setting, voltage may be set critically, even at the bottom end of the adjustment range.



Ten memories

To minimise patient contact time and to eliminate interruptions to a series of clinical measurements while the clinician writes down each result, the Neurothesiometer has ten memories for individual results. The memorised results may be reviewed at any time by switching from Store to Review, which automatically returns the display to the result stored in Memory 1. Advance Memory scrolls through all ten in turn. When the switch is reset to Store again, it returns to Memory 1 and at each pressing of the Advance Memory switch, stores the value displayed, overwriting any previously memorised value. The memory being used at any one time is indicated by a single green LED digit (1-9 and 0) on the display.

State of charge

When the batteries begin to approach exhaustion, the decimal point after every digit illuminates.

Safety

The Horwell Neurothesiometer is manufactured under a BS 5750 Part 2 QAS 34/51 (equivalent to ISO 9002 and EN 29002) Quality System, in a facility which has official BSI registration.

It has been designed to conform to BS 5724 Pt1, Specification for general safety of medical electrical equipment (equivalent to IEC 601-1).



APPLICATIONS

The Neurothesiometer is intended for the determination of vibration sensitivity thresholds at any desired site on the body surface. Sensitivity decreases naturally with age, but a number of medical conditions can be related to abnormal deterioration. The Neurothesiometer thus has applications in:

- Monitoring the progress of peripheral neuropathy which is associated with Diabetes Observation of the reduction of vibration sensitivity in connection with other diseases.
- Routine recording of threshold sensitivity during chiropody leading to early diagnosis of disease or to susceptibility to conditions such as ulceration.
- The study of the effects of treatment on neuropathy and associated or causative conditions. Comparison of measured values with accepted norms, leading to the diagnosis of medical conditions or the effects of toxic exposure.
- Pharmacological and medical research projects which may be undertaken at reasonable cost employing the measurement of vibration sensitivity thresholds.

The Neurothesiometer has been designed to give results which correlate with similar types of instruments already in use.

DESIGN

Several instruments have been available commercially, but those which have the simplicity of operation of the Neurothesiometer are either limited by the necessity to be connected to the mains electricity supply, or fail to meet the safety requirements demanded for modern, patient connected equipment. The Horwell Neurothesiometer overcomes both these limitations.

It uses a popular, well known proprietary vibrator as its source of vibratory stimulation. Power for the vibrator is derived from a rechargeable battery operated oscillator, the frequency of which has been chosen to avoid resonances in the vibrator. Internal frequency generation also overcomes the doubts which exist over the comparability of results measured using mains driven instruments which have been operated variously on 50 Hz or 60 Hz supplies.

The rechargeable battery pack may be recharged without removal from the Neurothesiometer. Battery packs are, however, easily exchanged and may be recharged outside the instrument. Purchase of a spare battery pack eliminates the risk of being unable to use the Neurothesiometer because its batteries have been discharged inadvertently. Battery life on full vibration power is approximately 1.25 hours and recharging time is 16 hours.

Controls

Simplicity of operation has been a principal consideration in the design development of the Neurothesiometer. Controls have therefore been kept to a minimum number and some fulfil more than one function.

On/Off switch Connects the functional circuits of the instrument to the battery pack.

Review/Store Displays either value currently being measured, or memorised values. Automatically reverts to Memory 1 on operation.

Volts/Microns Selects readout units, volts applied to the vibrator or movement of the vibratory head in microns. 1 micron = 1micrometre.

Normal/Expanded Selects full scale range of adjustment knob.

Normal	0-50 volts 0-250 microns
Expanded	0-25 volts 0-62.5 microns

Advance Memory A biased switch which, when operated, advances the memory number digit by 1 and either stores the displayed result (Store) or displays the memorised result (Review).

Control knob

Adjusts the voltage value internally generated and displayed, either as a voltage (Volts) or as an equivalent vibratory movement (microns).



Specifications

- Battery pack life at 50V continuous output: 1.25 hours
- Battery pack life at 20V continuous output: 1.75 hours
- Instrument weight: 3.25kg
- Vibrator weight: 450g
- Dimensions in closed carry case: 220 x 370 x 100mm
- Vibrator cord length: 1m
- Manufactured under BS 5750 Part 2 QAS34/51 (equivalent to ISO 90002 and EN29009)
- Conforms to BS 5724 Pt1 and medical standard IEC 601-1