

CLEANING AND HANDLING OF OPTIC PROBES

INSTRUCTIONS TO USERS

GENERAL

All probes have a probe end which is generally positioned in light contact with a tissue surface during measurement, two or more optic fibres normally contained within a pvc or nylon sleeving, the fibres terminating at an optic connector which is designed to connect to the laser Doppler monitor. The basic principle of operation is the same for all Moor Instruments laser Doppler optic probes i.e. low power laser light (typically 1 to 1.5mW) is transmitted to the tissue surface via a flexible glass optic fibre and a proportion of the light scattered from the tissue and moving red blood cells is collected by and transmitted to the laser Doppler blood flow monitor by one or more optic fibres.

Typical fibre lengths are 2m which are sleeved in either pvc, nylon or silicon rubber tubing. The fibres themselves have a silicon glass core (typical diameters 100 or 200µm), a hard cladding of thickness approximately 20µm and a plastic acrylate coating which approximately doubles the overall diameter of the fibre. The fibres are relatively robust but must be handled with due regard to the properties of the glass fibre core.

IMPORTANT: The optic probes are not implantable devices. Optic probes cannot be autoclaved.

HANDLING OF THE PROBES AND FIBRES

Caution: handle probes with care to avoid breaking the optic fibres, scratching the polished ends, or separating the probe ends or connectors from the fibres.

Optic fibre is flexible and can be bent; however minimum bending radii are recommended to avoid damage or complete breakage. A typical minimum bending radius is 20mm.

CLEANING OF PROBES

The method of cleaning and the need for sterilisation will depend on the planned measurements and the situations in which the probe will be used.

1. **LOW RISK** Non invasive

On intact skin where no infection is suspected.

- a. **A new probe as supplied by the manufacturer.** The probe head, sleeving and connectors will be wiped with an alcohol impregnated cloth prior to packing in its probe box and despatch to the customer.

It is recommended that the probe head and probe holder (if being used) is wiped with an alcohol impregnated cloth prior to use, e.g. using a Medi Wipe (manufacturer Smith & Nephew).

- b. **After use and before using on a new patient.** Visually inspect the probe head, sleeving and connectors. If it is free of particles and has no obvious soiling the probe

head and sleeving should be wiped using an alcohol impregnated cloth e.g. Medi Wipe.

If the probe is soiled or has particles attached the particles should be removed by rubbing with an alcohol impregnated cloth. If necessary the probe should be washed in running water to remove dirt and grime.

After washing excess water should be gently shaken off the probe connectors and probe end and the probe dried with a clean paper towel. When dry the probe end should be wiped with a clean alcohol impregnated cloth.

2. **LOW RISK** Invasive

In the mouth with no visible lesions and no infection suspected.

The cleaning procedures described above in 1a and 1b apply.

3. **INTERMEDIATE RISK**

Application of probes to broken/infected areas of skin or broken/infected areas in the mouth. Insertion of probes into the nasal cavity or the ear canal.

Insertion of probes via endoscopes into stomach, duodenum, colon, rectum, bronchotrachea.

Cleaning is an **essential** pre-requisite to disinfection and sterilisation.

- a. Probes should be cleaned in warm clean water with a neutral or enzymatic detergent, e.g. Neutracon, manufacturer Decon. Cleaning should be sufficiently thorough to leave the probe external surfaces visually clean and free of particles. Carefully rubbing with a clean cloth and/or clean brush may be necessary.
- b. Probes should be rinsed in cold or warm running water.
- c. All probe types can be disinfected by immersion in 2% Gluteraldehyde for 10 minutes, e.g. Cidex.

Where indicated by Moor Instruments and if preferred probes may be disinfected by using low temperature steam (LTS) at 73°C to 80°C for 10 minutes.

4. **HIGH RISK**

Insertion of probes into normally sterile sites, e.g. a joint.

Application of probe to an internal organ during an operative procedure, e.g. liver.

- a. Cleaning as described in 3a and b above.
- b. Sterilisation. This must be carried out by an approved organisation.

Either: i. Gas sterilisation using Ethylene Oxide (EO) at 37°C.
or ii. Use of a Sporicidal Disinfectant specifically Gluteraldehyde.

The cleaned probe to be sterilised by immersion in 2% Gluteraldehyde for between 10 to 12 hours.

After immersion the probe to be rinsed in sterile water. The probe to be either used immediately or packaged in a sterile polythene bag and used within 12 hours.

Durability of the Optic Probes

The sterilisation process recommended will not significantly effect the optic properties of the probes; however the frequent washing and handling will increase the likelihood of damage. With care probes can be expected to survive between 10 to 20 washing/sterilisation cycles.

Probe Integrity

After washing or sterilisation the probe should be visually inspected for damage to sleeving, connector and the probe end. The optical transmission of the fibres can be checked by illuminating one end with light from a lamp, e.g. the probe end and checking that light is transmitted to the connector ends. Where the probe end has more than 2 fibres the check should be repeated illuminating the connector end and viewing the probe end for transmitted light.

Probes with Optical Plus Temperature Measurement Functions

These probes include the letter T in their code number, e.g. DP1T, DP7/T etc.

These probes must not be heated above 50°C. These probes are not suitable for disinfecting by low temperature steam (LTS).