

Introduction

The guidelines within this manual are part statutory and part advisory. They should not be used as a replacement for common sense by the user.

Information within this section is given on:

- Access to the system.
- Site requirements.
- Laser safety.
- Electrical safety.
- Sample handling.
- Moving the system.
- Disposing of the system.
- Specific information for the accessories.

This system contains no user serviceable parts and repairs should be left to a qualified Malvern representative. The maintenance section of the Operators guide and the accessory manuals cover all supervisor and operator procedures that should be routinely required for correct operation.

Systems covered by this guide

The document covers the health and safety issues of the Mastersizer 2000 optical unit and its accessories i.e.

Unit	Reference
<i>Mastersizer 2000</i>	<i>APA2000</i>
<i>Hydro 2000G</i>	<i>AWA2000</i>
<i>Hydro 2000S</i>	<i>AWA2001</i>
<i>Hydro 2000MU</i>	<i>AWM2000</i>
<i>Hydro 2000M</i>	<i>AWM2001</i>
<i>Hydro 2000SM</i>	<i>AWM2002</i>
<i>Hydro 2000μP</i>	<i>AWA2003/4</i>
<i>Autosampler 2000</i>	<i>ASA2000</i>
<i>Scirocco 2000</i>	<i>ADA2000</i>

Access to the system

Within this manual reference is made to the various people who will have access to the system. Below is a list of these people and their responsibility:

Malvern personnel.

Malvern personnel (service engineers, representatives etc.) have full access to the system and are authorised to perform all service procedures that may require the removal of the covers.

Supervisor.

The supervisor is the person responsible for the management/safety of the system and of its operation. The supervisor is responsible for the training of the operators. The supervisor can perform all user maintenance routines identified in the maintenance chapters, including changing the fuses.

The supervisor must on no circumstances remove the covers of the system.

Operator.

An operator is a person trained in the use of the system. The operator can perform all user maintenance routines identified in the maintenance chapters **except** for changing the fuses.

The operator must under no circumstances remove the covers of the system.



Warning!

Failure to follow these guidelines could result in the emission of laser radiation. Laser radiation can be harmful to the body and can cause permanent eye damage.

Naming convention

Within this manual the Mastersizer 2000 optical unit will be referred to as the "Optical Unit" or the "Instrument".

The sample dispersion accessories will be referred to in full (i.e. Hydro 2000G) or as the "accessory".

The combination of the optical unit, one or more accessories and the computer will be referred to as the "System".

Other reading

Chapter 1 of the Operators Guide (MAN0247) gives full information on where to get help.

General safety issues



Use of the system in a manner not specified by Malvern Instruments Ltd may impair the protection provided by the system.

Site requirements

The system has specific site requirements that must be enforced to ensure the safe operation of the instrument. Information on site requirements can be found in the Site requirements document (MAN 0243).



Safety may be compromised if the system is used in an environment not conforming to the site requirements.

Laser safety warnings

The Mastersizer 2000 optical unit is a Class 1 laser product, and as such, there is no exposure to laser radiation in the normal operation of the instrument. The laser passes through the cell area but this area is enclosed when the cell is fitted.

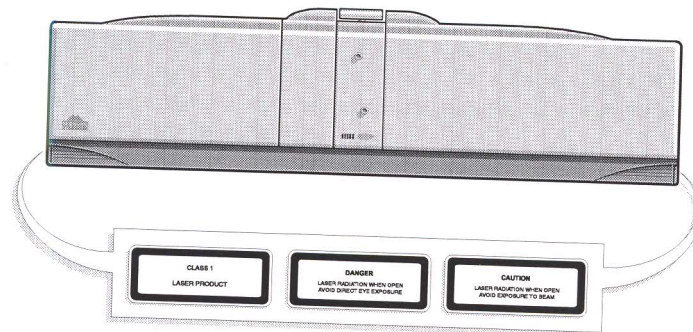
When the cell is not fitted, a mechanical laser shutter prevents exposure to laser radiation.



Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

The internal laser has a maximum output of 4mW (CW) and a beam divergence of 1.3mrad.

The diagram below shows the location of the laser warning labels.



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The Autosampler 2000 is a Class 2 laser product. Refer to the section “Specific safety issues for the Autosampler 2000” later in this chapter.

Electrical safety warnings

The Mastersizer 2000 and its accessories are mains powered and input power cables should be treated accordingly.

The metal parts of the optical unit and the accessories are earthed via a protective earth connection.

Never run the equipment without a protective earth connection.

Care should be taken when measuring samples to avoid liquid or powder spillages over the covers of the system. Conducting materials or liquids can break

down insulation and cause dangerous conditions within the system. Should such spillages occur, disconnect the power and scrupulously clean up before re-applying power to the system. If it is suspected that powder or liquid has entered the covers, then call your Malvern representative to arrange for a service call.

Do not, under any circumstances, attempt to remove the covers - always contact a Malvern representative.

Sample handling warnings

Always handle all substances in accordance with the COSHH (Control Of Substances Hazardous to Health) regulations (U.K.) or any local regulations concerning sample handling safety.

Before using any substance, check the Material Safety Data Sheets for safe handling information.

Use the instrument in a well ventilated room, or preferably within a fume cupboard, if the fumes from the sample or dispersant are toxic or noxious.

Wear personal protective equipment as recommended by the Material Safety Data Sheets if toxic or hazardous samples are being handled, particularly during sample preparation and measurement.

Wear protective gloves when handling hazardous materials, or those that cause skin infections or irritations.

Do not smoke during measurement procedures, particularly where inflammable samples are used or stored.

Do not eat or drink during measurement procedures, particularly where hazardous samples are used or stored.

Take care when handling glass (e.g. beakers). Hazardous materials may enter a wound caused by broken glass.

Always test a new sample or dispersant for chemical compatibility before use. The appendices of the Operators Guide and the accessory manuals provides a list of the materials with which sample materials can come into contact with.

After measuring hazardous samples, scrupulously clean the system (including the Accessory) to remove any contaminants before making another measurement.

Always label samples for analysis using industry standard labelling, particularly if they are handled by a number of staff or stored for long periods. Clearly mark any operator hazard and associated safety precautions that are required for the handling of dangerous materials.

Dispersant input warning

This is to warn that the dispersant being used may be hazardous. However, for the majority of applications the dispersant is typically water.

Specific safety issues for the Hydro 2000M/MU



Due to the possible risk of sonication to the blood, never place fingers into the tank when the ultrasonic probe is in operation.



Due to the possible risk of lacerations, never place fingers in to the tank when the pump/stirrer shaft is rotating.

Specific safety issues for the Hydro 2000SM



Due to the possible risk of lacerations, never place fingers in to the tank when the pump/stirrer shaft is rotating.