

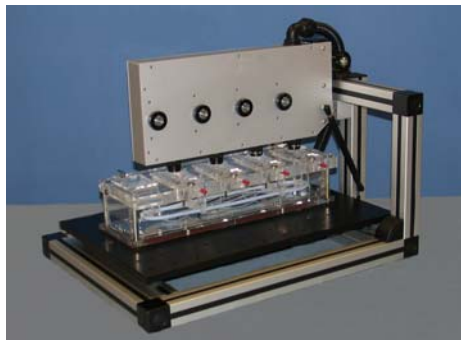


INSTRUCTION MANUAL

FOR

746

SLICE WORKSTATION



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Certificate of Conformity

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The purpose of this manual is to allow the user to achieve expertise in the use of the Instrument and to give the maintenance technician an insight into maintaining the instrument in peak operating condition. Please read and understand the information contained in this manual before using the instrument. Only competent and capable personnel should use the instrument.

This document should be retained for future reference as it contains the name and address of the manufacturer within the EC

PACKAGING

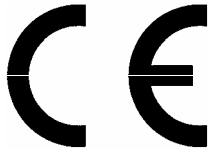
Please retain the original packaging for future use.

Instruments will not be accepted for service or repair unless the unit has been adequately and properly packaged. Additionally instruments will not be accepted without prior authorisation and have been certified as being uncontaminated with any material that may be hazardous to the health of service personnel. Returns Authorisation and Decontamination Certificate blanks can be obtained by contacting Campden Instruments.

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EC DECLARATION OF CONFORMITY



Name and address of Manufacturer:

Campden Instruments Limited
PO Box 8148
Loughborough
LE12 7XT
UK

Description of Instrument:

SLICE WORKSTATION

Model Type/Number:

746

Serial Number:

746 -.....

The instrument specified above complies with the relevant health and safety requirements of the following:

1. EC Directive(s):

The Machinery Directive 89/392/EEC as amended by
Directive 91/368/EEC
Directive 93/44/EEC

Electromagnetic Compatibility Directive 89/336/EEC
The Low Voltage Directive 73/23/EEC

2. UK Regulations:

The Supply of Machinery (Safety) Regulations 1992 (SI 1992/3073)
Electricity at Work Regulations 1989

3. European Standards

EN 50081-1: 1992 Electromagnetic compatibility generic emissions standard part 1
EN 50082-1: 1992 Electromagnetic compatibility generic immunity standard part 1

Additionally, the health and safety requirements of the following British and harmonised European Standards have been incorporated in the design of the above instrument:

BS 2771:part 1:1986 (EN 60 204:part1:1985)
BS 5304:1988

1. Introduction

The Campden Instruments' 746-SCS Slice Workstation is intended for the simultaneous evaluation or observation of either 4 or 8 slices in submerged or interface type chambers. It has been designed specifically to match Campden's range of slice chambers. Details of the slice chambers are available on request.

The unit comprises a support frame upon which is mounted an anti-vibration table and camera assembly.

The slice chamber – available separately from Campden – is mounted on the anti-vibration table under the camera assembly (two camera assemblies for the 8-slice version). The camera assembly houses 4 ccd colour cameras each of which is adjustable for focus. The camera assembly can be swung upwards away from the chamber for easy access to the chamber. In its raised position the camera assembly is supported by a gas spring strut. In its lowered position it is held in place by a locking clamp.

The cameras are connected to a suitable power supply and quad processor. Output from the quad processor is to a video monitor and/or video recorder or computer.

A typical system supplied by Campden would comprise:

Support frame and passive anti-vibration table

1 x Camera assembly

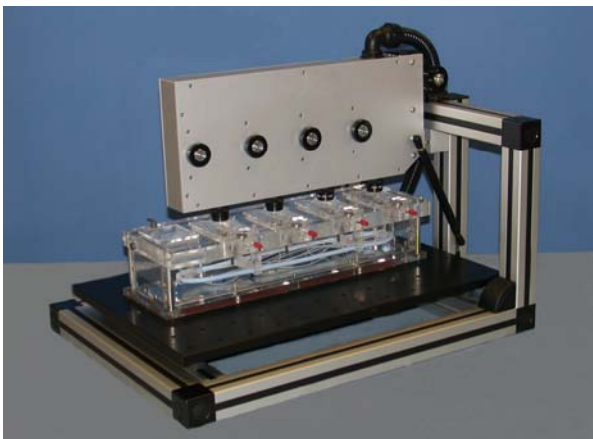
Camera power supply

Quad processor

TFT video monitor

Video signal converter and video capture software for interface to a computer.

Additionally a range of products for mounting micromanipulators to the anti-vibration table is available as are a range of micromanipulators, electrodes and filter amplifiers.



2. Installation and Set Up

The stand, anti-vibration table (AV table) and camera assembly is delivered part assembled in two sub-assemblies. For security of transport, the camera assembly is not assembled to the base frame.

Position the base frame on a suitable table or bench.
Refer to figure 1.

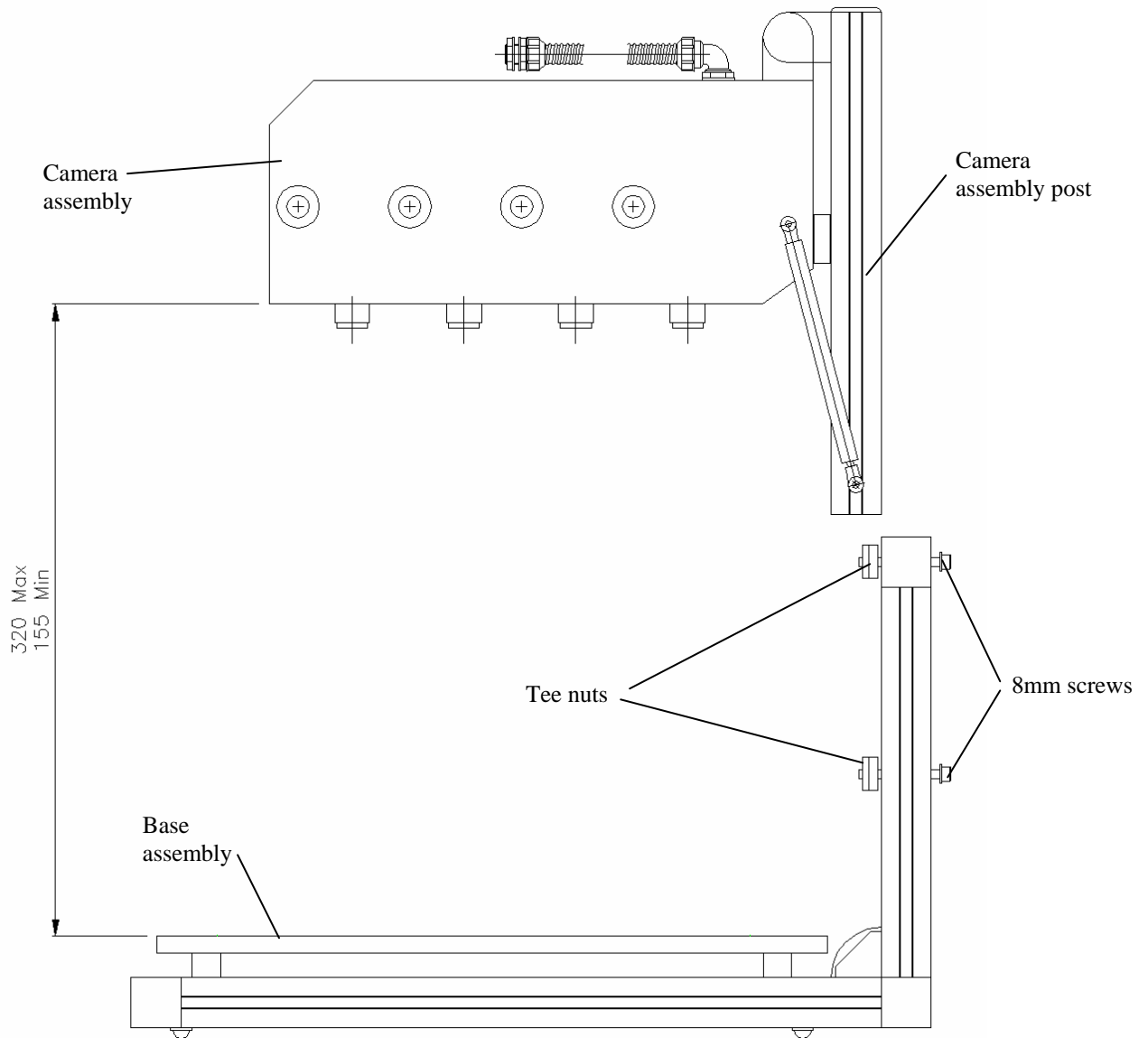


Figure 1 Assembly of camera system

Loosen two 8mm screws as shown

Align the Tee nuts so that they will enter the rear slot in the camera assembly post.

Carefully lower the camera assembly over the Tee nuts

Adjust the camera assembly so that its underside is within dimensions above the anti-vibration table as shown in figure 1 and tighten the screws to secure the post in place.

Final vertical positioning of the camera assembly can be carried out after the slice chamber is fitted to the table.

Each camera is adjustable for focus by a knob on the side of the camera assembly enclosure. Retract each camera fully into the enclosure. Slacken the clamping lever shown in figure 2 and swing the camera head enclosure upwards.

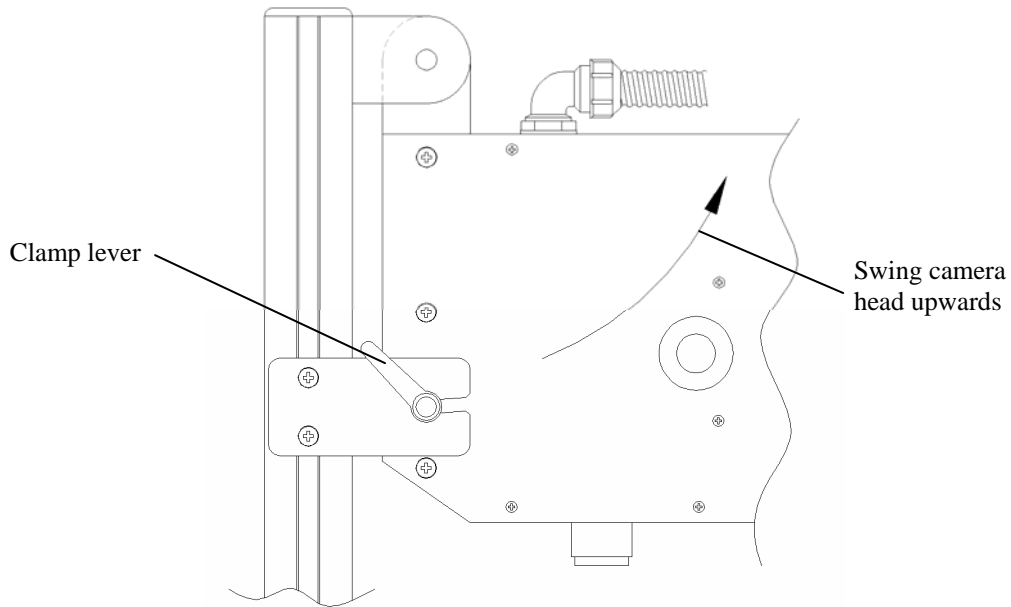


Figure 2 Camera head clamp

The gas spring strut will assist in raising the enclosure and will also hold it in its raised position. Place the slice chamber assembly on the AV table and lightly clamp it down using two clamp blocks. Note that the clamp blocks should only be used on the end flanges of the chamber. Do not clamp the chamber by its side flanges or serious damage to the chamber will occur – see figure 3.

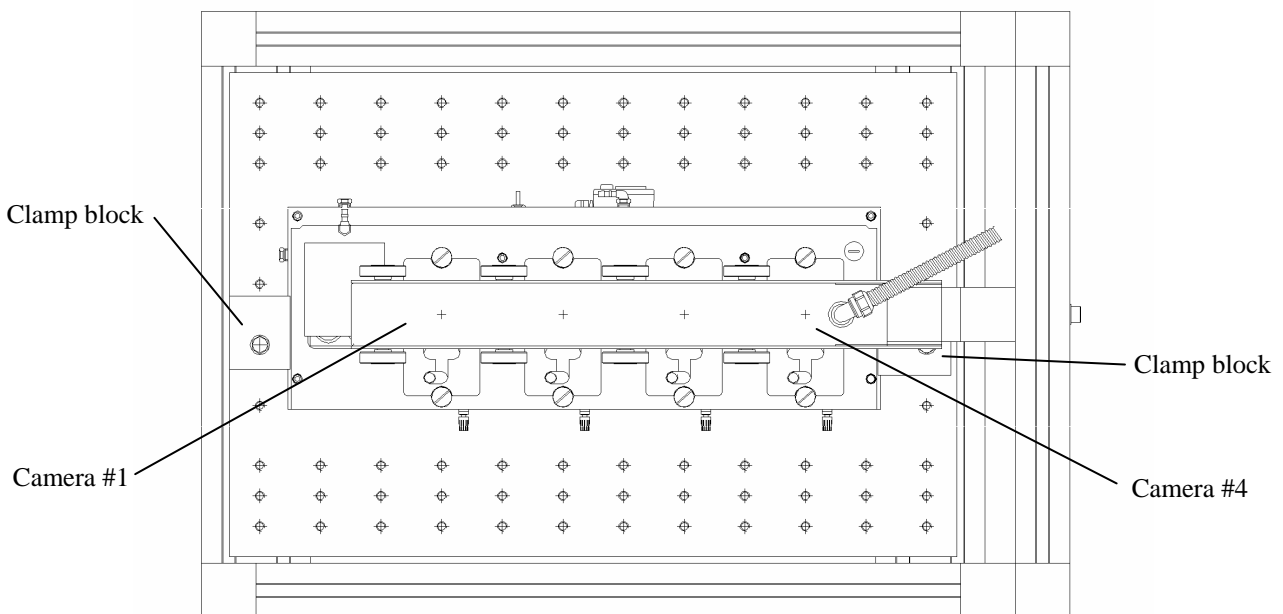


Figure 3

Place a suitable visual target in each slice chamber – a small piece of graph paper or photograph will suffice.

Lower the camera enclosure and pull it down until it reaches the lower stop and tighten the clamp lever.

The cameras are numbered 1 – 4, counting from the front of the enclosure (left to right as shown in figure 1). The enclosure is fitted with approximately 2 – 2.5 metres of flexible trunking containing the camera cables.

Figure 4 shows a typical connection diagram for a representative assembly.

The camera assembly has a pair of wires for power to the cameras and each camera has one video cable with a BNC connector. Identify each video camera and connect them to the quad processor. The video output of the quad processor should be connected to a video monitor and/or an adapter for capturing images on computer.

If it is intended to record or save images on computer the video acquisition hardware should be connected and the software installed on the computer. Please follow the manufacturer's instructions.

Connect the camera power supply cable to the power supply provided.
Connect the quad processor to its power supply.
Connect the video monitor to its power supply.

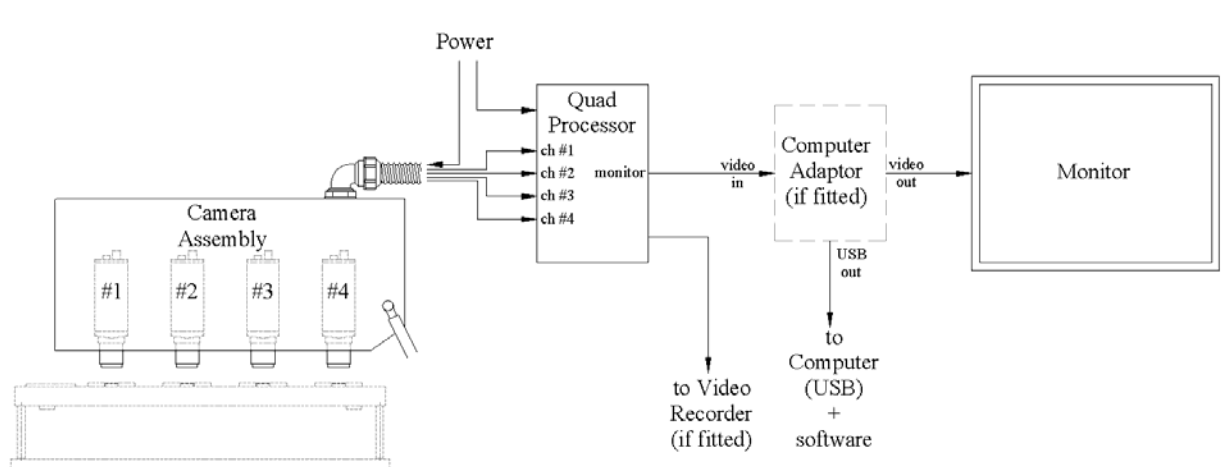


Figure 4 Typical connection diagram

Switch on all power supplies.
Switch the quad processor to display all four images simultaneously.
Adjust the focus of camera 1 until the target is in focus. Repeat for the other 3 cameras.

Adjust the position of the slice chamber on the AV table until each image is correctly positioned under its camera. Tighten the clamp blocks just sufficiently to hold the chamber in place. Do not over-tighten the clamp screws.

More accurate focusing of the cameras may be achieved by using the quad processor to display each image individually on the monitor.

If using micromanipulators, these may now be fitted to the AV table and positioned as required.

The slice chamber can now be brought into operation – refer to the Campden Instruments product booklet for instructions.

Magnification

The camera system is delivered set up to give a nominal 50x magnification when used with the 15" TFT display monitor 746-D. The magnification is a combination of lens focal length, the length of spacers between the lens

and the camera and the size of the display monitor. The magnification also affects the working distance of the lens (specimen to lens distance).

Table 1 shows a number of magnifications when used with the monitor 746-D.

Table 1 should be used in conjunction with figure 5.

Focal length of lens mm	Spacer length mm	Mount adjustment mm	Magnification factor	Approximate distance of lens primary plane to specimen* mm
16	5	-0.3	20	72
16	5	0.8	25	60
16	5	2.0	30	53
16	5	3.2	35	48
16	10	-0.6	40	44
16	10	0.5	45	41
16	10	1.7	50	38

All values are nominal

* This value is not the distance of the front of the lens to the specimen (as shown in figure 5 below), this value will be dependent upon the actual lens used.

The magnification can be adjusted as follows.

Decide what magnification you require.

Refer to figure 5.

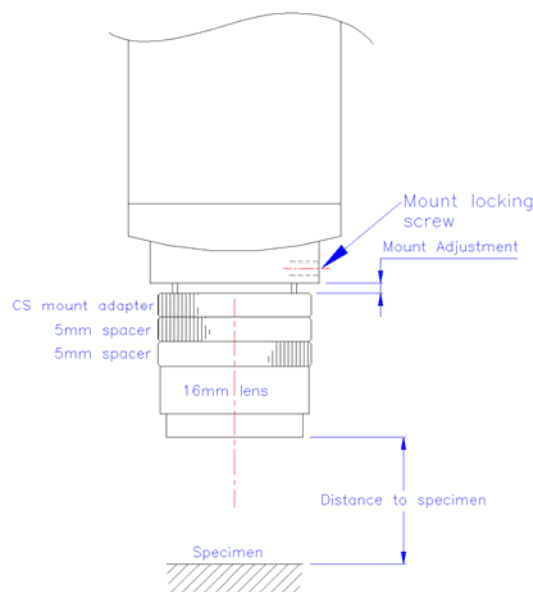


Figure 5 Camera adjustments

Using the camera focus knob, lower the camera as far as it will travel, exposing the mount locking screw.

Unscrew and remove the lens.

Add or remove the correct number of spacers. Note that the CS mount adapter **MUST NOT BE REMOVED**.

Refit the lens.

Slacken the mount locking screw.

Repeat for the other cameras.

Using the camera focus knobs position each camera to approximately mid-travel.

Place an object of known size in front of the lens

Slacken the two screws securing the camera head (see figure 1) and adjust the position of the camera head so that the object is close to sharp focus.

Arrange the display so that the output from camera 1 fills the display monitor.

Focus the camera so that the object is sharp.

Measure the object as seen on the display and compare with the actual object size.

Rotate the CS mount adapter to achieve the correct magnification.

Repeat the procedure for each camera.

Finally, lower each camera and tighten the mount locking screw.

3 Cleaning and Maintenance

The unit requires no maintenance other than occasional cleaning. The majority of parts used in the construction are made from aluminium. Abrasive cleaners should not be used. Cleaning fluids should be limited to warm soapy water.

4 Specifications

Weight: 4 channel system – 26Kg (frame, table & camera assembly)

Camera system: 4 x colour camera 1/3" CCD sensor, 320K pixel PAL, Video output: 1.0V p-p Composite video/ 75Ohms BNC. 12V DC.

Camera pitch: 100mm nominal

Lens: C/CS mount 16mm with 2 x 5mm spacers
Field of view: dependent on magnification factor

Magnification: See table 1

AV Table size: 600mm x 400mm
96 holes M8 on 50mm x 50mm pitch
2 rows of 12 additional holes (M8) on 25mm x 50mm pitch

5 Spare parts, Accessories and order Codes

Spare parts are available from your local agent or direct from Campden Instruments.

746-SCS	4 Camera system for slice chambers with focus adjusters, quad processor, anti-vibration base plate (500x600mm) and mounting frame.
746-D	15" TFT VDE display for camera system
746-600	Base plate 500mm x 600mm with anti-vibration feet
746-700	Base plate 500mm x 600mm with anti-vibration and mounting frame
746-PP4	'Smoothflow' Peristaltic pump 4 channel
746-PP8	'Smoothflow' Peristaltic pump 8 channel
746-MM-LH	Micromanipulator, left hand
746-MM-RH	Micromanipulator, right hand

6 Packing list

1. 4 channel system

- 1 x Frame, camera assembly and table – part assembled
- 1 x operator's manual
- 1 x camera power supply

The following will be supplied only if ordered:

- 1 x Quad processor and power supply
- 1 x video converter and image acquisition software
- 1 x video monitor

2. 8 Channel system

- 1 x Frame, dual camera assembly and table – part assembled
- 1 x operator's manual
- 2 x camera power supply

The following will be supplied only if ordered:

- 2 x Quad processor and power supply
- 2 x video converter and image acquisition software
- 2 x video monitor