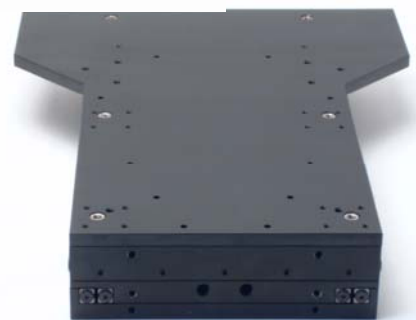




Scientifica

Universal Motorised Stage (UMS)



Packing list

The Scientifica UMS is a piece of scientific equipment and as such requires care when handling. If the outside of the shipping packaging is damaged, notify your shipping department immediately. The shipping department may wish to notify the carrier at this point.

If the shipping carton is not damaged, carefully remove and identify all of the components as listed below.

The Motorized X-Y system includes:

- Motorized X-Y stage
- Stage / Microscope interface plate
- Stage protective membrane
- Ultra Low Noise Controller rack
- Joystick Module
- Axis Control Cube (optional)
- Operating Manual
- Controller to Stage Cable
- Mains Cable
- Mounting screws
- Configuration software

If any of these items are missing, contact, Scientifica Ltd. Please retain the packaging for future storage or transportation of the system.

System Components

Motorized X-Y Stage

The Scientifica UMS is a highly stable positioning system designed for ultra precise translation of upright microscopes. The stage utilizes high precision stepper motors and anti-backlash lead screws to achieve ultimate control. The stage allows 50mm travel in X and Y axes.

Ultra-low noise controller rack

The Ultra-low noise controller rack provides a sophisticated means of driving the Scientifica range of stepper motor actuated products.

Joystick Module

The joystick provides a convenient method of positioning the stage. Special function buttons provide programmable position setting.

Optional Axis Control Cube (ACC)

The ACC provides an alternative method of controlling the position of the stage.

Optional Z focus drive.

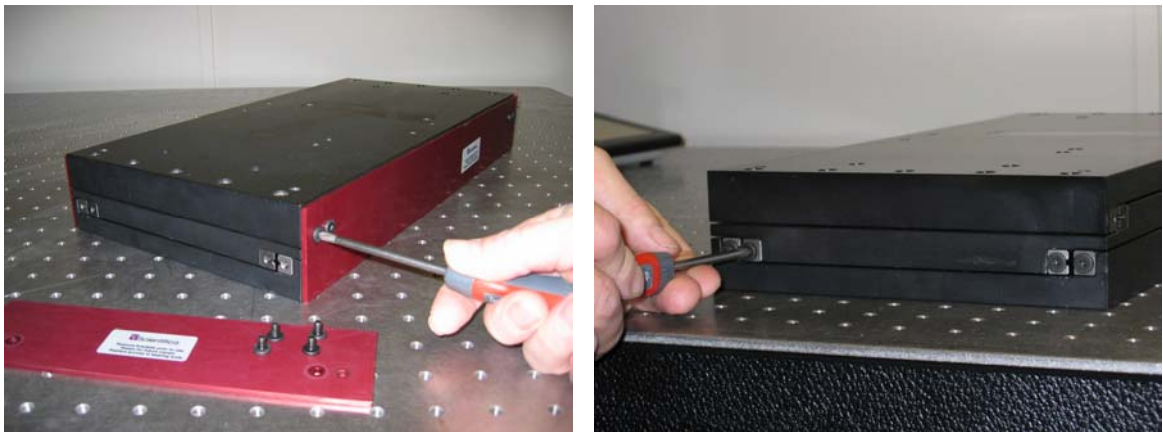
The Z focus drive provides motorized control for the Z focus axis of most popular upright microscopes.



Setting Up

Removing the shipping brackets.

There are four shipping brackets bolted to the X-Y stage to prevent damage during transit. These must be removed before attempting to move the stage. Undo the 16 Phillips screws and brackets. **The Phillips screws MUST be replaced into the ends of the crossed roller bearing ways prior to use.** The brackets should be stored for use if further shipment is required.



Initial Test

Caution:

Never plug or unplug either end of the stage cable or joystick module to a rack controller with the power switched on.

1. Connect the stage to the rack controller using the stage cable.
2. Connect the joystick module or ACC (axis control cube) to the rack controller.
3. Connect the power cord to the rack controller and mains power outlet.
4. Turn the instrument on using the power switch located on the front panel, the Scientifica logo should now be illuminated.
5. The stage can now be driven by deflecting the joystick whilst depressing the "Turbo" button on the top of the joystick (this drives the stage at high speed so that the motion can be seen).
6. Should your instrument fail this initial check, please contact Scientifica Ltd for further instructions.

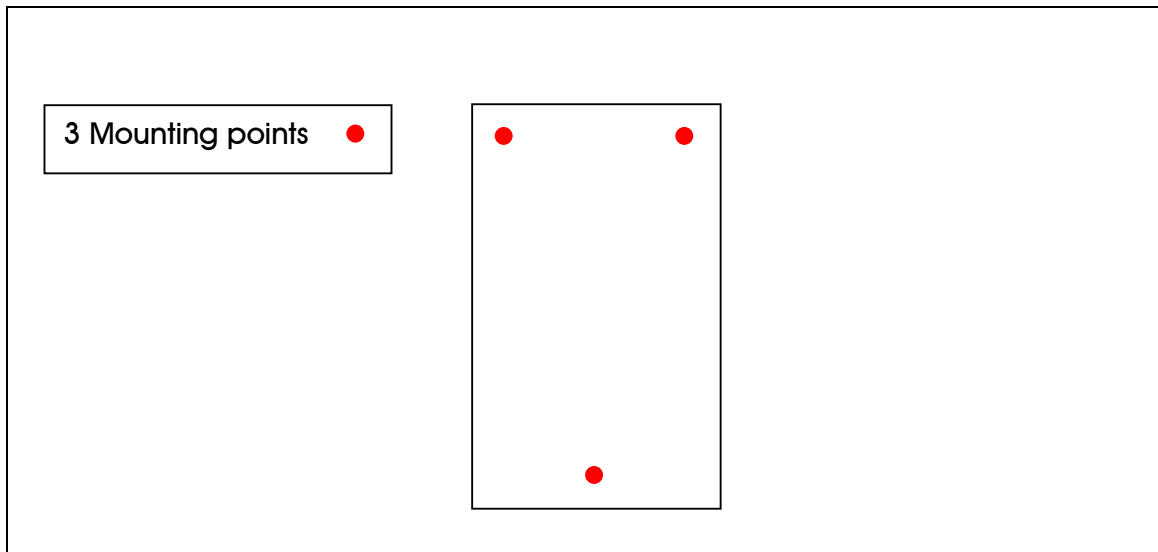
Installation

Caution:

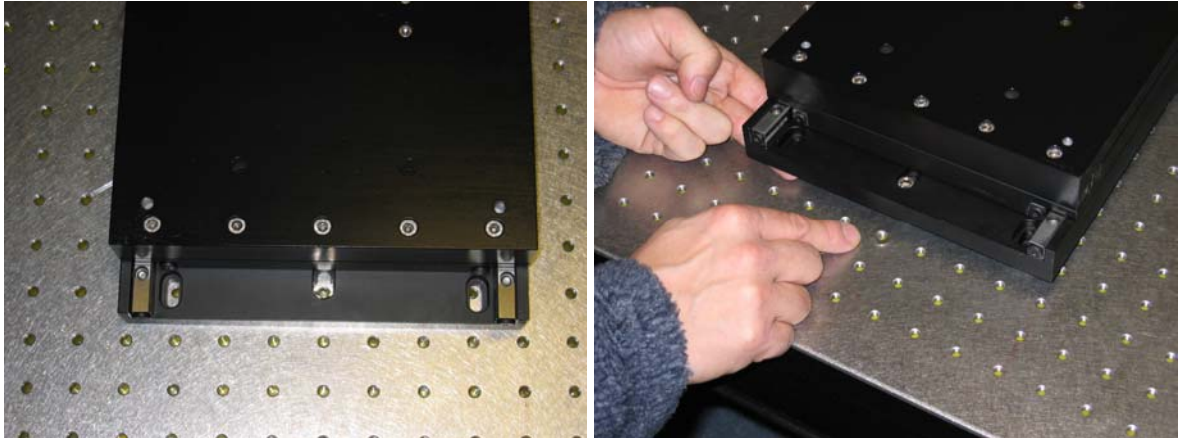
Never plug or unplug either end of the stage cable or joystick module to a rack controller with the power switched on.

Mounting the Stage

The stage is attached to the vibration isolation table using 3 screws. These can either be $\frac{1}{4} \times 20$ or M6 screws depending on the thread size of the table that you are mounting the stage to. The rear of the stage is identified by the two 7 pin motor connectors. Scientifica advise using 3 stainless steel washers (provided within the screw kit) between the underside of the stage and the table. These act as a kinematic (3 point) mount and provide an air gap for protection should there be minor solution spillages.



To attach the stage to the table the mounting holes must first be revealed. This is achieved by connecting the cables as mentioned in **Initial Test** and driving the stage in the long axis (Y) direction by deflecting the joystick toward the back whilst depressing the turbo button on top of the joystick. This should reveal the front mounting hole. Once the mounting hole has been located, position the stage on the table with a washer between the stage and the table and screw it down loosely at first.

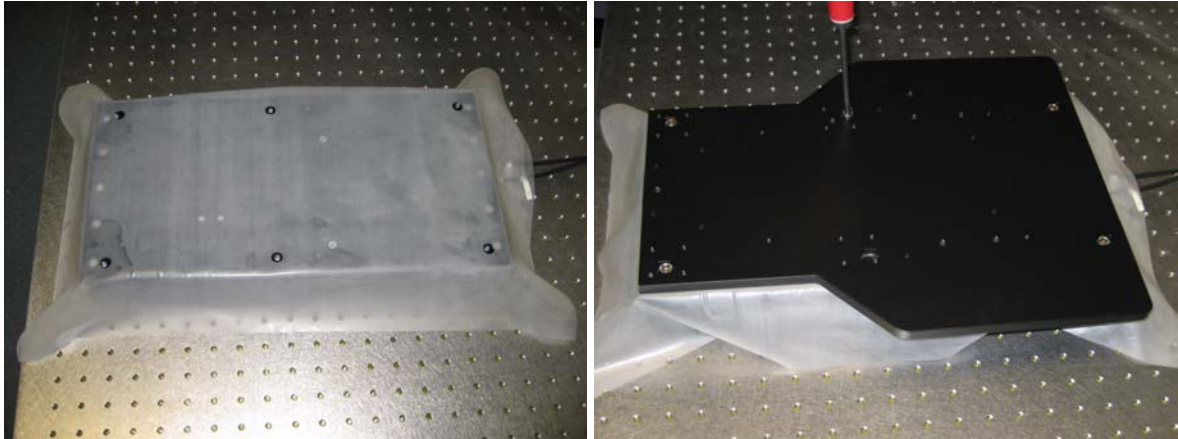


Now drive the stage in the opposite direction to reveal the mounting holes at the rear of the stage and again, screw down, and fully tighten. Now drive the stage in the opposite direction to return to the first screw and fully tighten.



Mounting the interface plate, rubber membrane and microscope.

The Stage / Microscope interface plate must now be fixed to the X-Y stage. Scientifica recommend the use of the rubber membrane “skirt” to help protect the stage from solution spills. Please note the membrane mounting holes are offset and should be aligned with the interface plate mounting holes to ensure an even overlap around the stage.



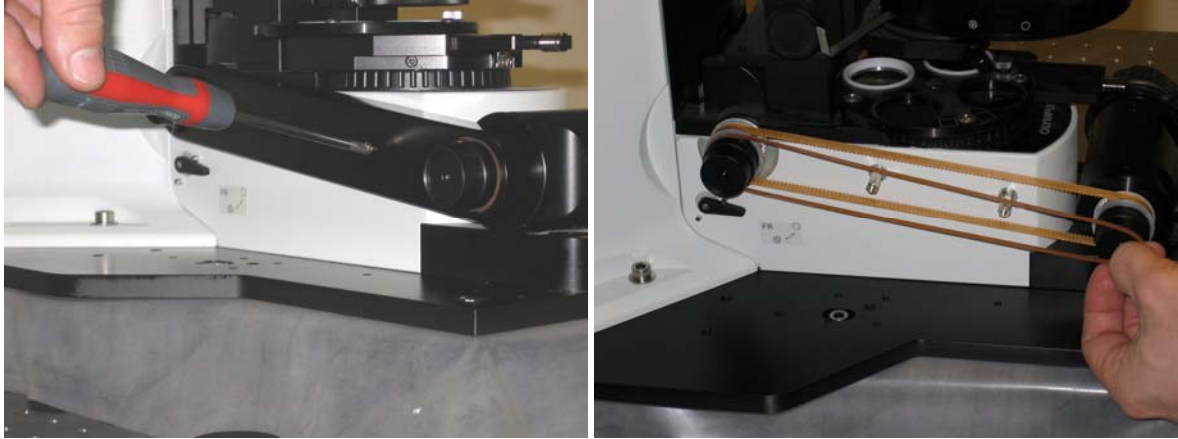
The rubber membrane is placed over the UMS as shown above. The interface plate is then attached using the 6 x M6 x 16mm screws as supplied. The plate must be mounted with the widest part located at the rear of the stage. Once attached, the microscope can now be mounted to the Stage / Microscope interface plate. This is achieved by using 3 M6 screws and washers, two at the rear and one centrally at the front. Example as below.



Note: All of the threaded holes in the interface plate are metric.

Optional Z focus module.

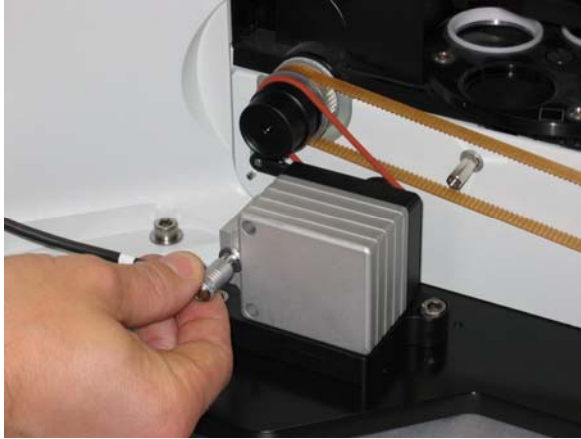
To install the Z focus module the Olympus drive belt cover and fine focus band must first be removed.



The Z focus module can now be attached to the Stage / Microscope interface plate using 2 x M6 x 12mm screws. Ensure that the groove from the z focus module and the groove in the Olympus fine focus knob are aligned before tightening the 2 M6 screws. Once tightened, attach the drive band supplied with the Z focus module.



The Z axis electrical connector can now be attached to the Z focus module. The Z focus motion is controlled using the rotary knob on top of the joystick as shown below. As with the other axis; turbo motion can be achieved through depressing the button on top of the joystick whilst applying a deflection.



Driving the Stage

To move the stage you must first deflect the joystick in the direction of travel required. The joysticks used are proportional, so the speed varies with the amount of deflection applied. Left and right motion is achieved by deflecting the joystick to the left or right, back and forth, by deflecting the joystick backwards or forwards and focussing is achieved by rotating the knurled top of the joystick. If you wish to move at high speed press the Turbo button on top of the joystick while deflecting the joystick. As soon as the button is released; the motion will revert to fine control.

Memory and Step



The **MEMORY** key stores the current position of the stage. Pressing the **STEP** key changes the position of the stage to the stored memory points in a cyclic fashion. Therefore, if three different memory points were stored: A, B, and C using the **MEMORY** key, pressing **STEP** would drive the stage to position A, the next press of the step key would drive the stage to B, the next to C, and then the next would go back to A etc.

General Specifications

Number of axes	2 (3 with optional Z focus)
Travel	50mm
Step size	<50nm
Speed	(minimum) 4 μ m per second (maximum) 4 mm persecond
Mechanical Resolution	<2 μ m
Load Capacity	>30Kg
Temperature range	Operation 15 to +40°C Storage 0 to +60°C

WARRANTY

The Universal Motorised Stage is warranted against defects in material and workmanship for a period of two years after date of delivery. During the warranty period, Scientifica Ltd will repair or, at its option, replace parts which prove defective when the instrument is returned to Scientifica Ltd in the UK or your local representative.

Before return of an instrument, please obtain a returns authorisation number (RA) from your local representative or Scientifica Ltd in the UK. The warranty will not apply if the instrument has been damaged by accident, misuse, or as a result of modification by persons other than Scientifica Ltd personnel.

The liability of Scientifica Ltd in the UK, (except as to title) arising out of supplying of the said product, or its use, whether under the foregoing warranty, a claim of negligence, or otherwise, shall not in any case exceed the cost of correcting defects in the products as herein provided. Upon expiration of the warranty period specified herein, all liability shall terminate. The foregoing shall constitute the sole remedy of the buyer. In no event shall the seller be liable for consequential or special damages.

For any warranty queries please contact your local distributor or Scientifica direct at the following address:

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