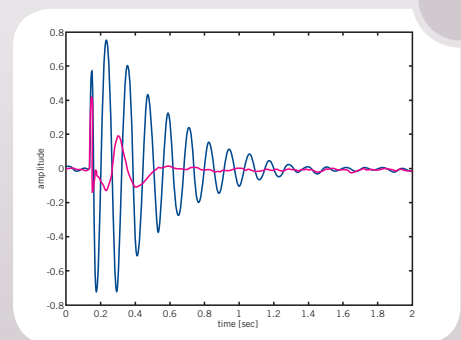


Ergonomic Desks with Active Vibration Isolation – Microscopy Workstation Series

Compact, ergonomic and cost-effective – Halcyonics' Microscopy Workstation is the ultimate solution for users of Scanning Probe Microscopes. The systems consist of a stable work desk with a fully integrated active vibration isolation unit.

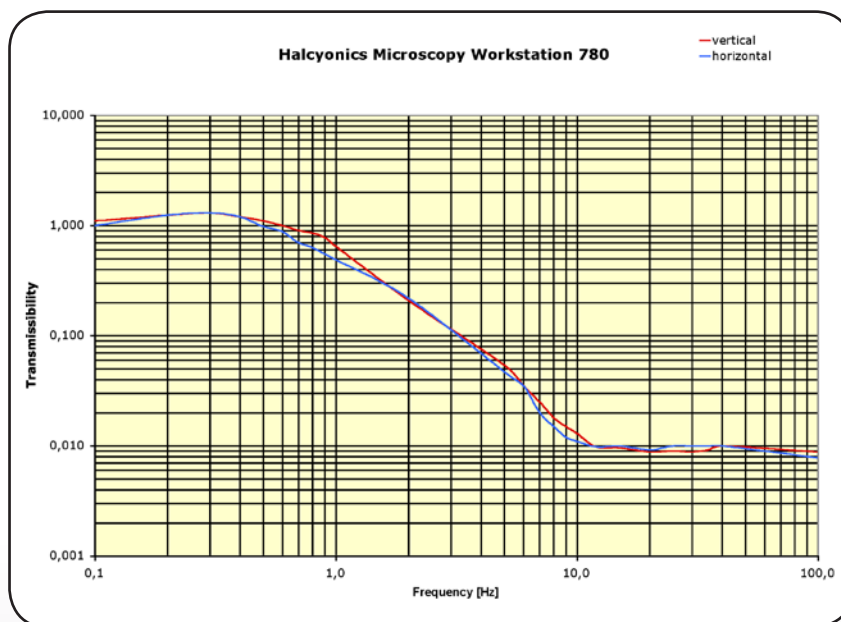


Microscopy Workstation – the ideal workplace for SPMs

Halcyonics has expanded its range of laboratory tables with active isolation technology by introducing two new models. Our new models serve as ultimate laboratory tables for microscope users: a smarter concept than a single benchtop isolator, cheaper than any other workstation with active vibration isolation! Halcyonics' Microscopy Workstation continues

the development of the Active Workstation concept which we invented two years ago. It now offers a compact active isolated surface especially for microscopes, surrounded by a conventional non-isolated laboratory desk surface. On the non-isolated surface users can place other equipment, can handle test samples or can simply write things down.

Important for users in Life Sciences: the size of the active isolated surface is big enough to carry large inverted research microscopes. And, for those users who need acoustic isolation as well: the Microscopy Workstations can be used together with Halcyonics' acoustic enclosures.



▲ Fig. 1: Transmission graph of Microscopy Workstation 780 - measured at a velocity of 100 $\mu\text{m/s}$ with a payload of 50 kg (110 lbs)

Features and benefits

- Fully automated auto-levelling
- AC power from an electrical outlet is sufficient; no compressed air supply is needed
- Provides better vibration isolation (> 99.0% isolation above 10 Hz) than is normally possible with complicated, large, optical tables
- No natural low-frequency resonance; as a result, excellent vibration characteristics also in frequency ranges below 5 Hz
- Active isolation in all six degrees of freedom
- USB 1.1 port and evaluation software for Microsoft Windows PCs

Combination with Acoustic Enclosure, e.g. for Life Science AFMs

More and more users of Life Science AFMs tend to completely isolate their equipment against building vibration and acoustic noise. Halcyonics manufactures acoustic enclosures for both Microscopy Workstation versions. Due to the shape of these enclosures, users can work ergonomically in front of their microscope. The generous opening of the enclosure offers excellent access to the inside equipment. Microscopy Workstation 1000 plus our Acoustic Enclosure 1000 are the optimum choice for

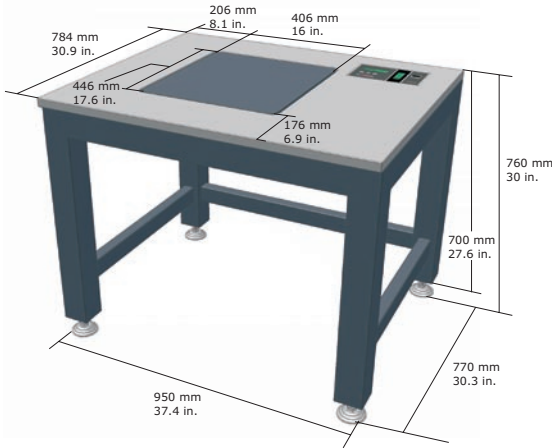
large inverted research microscopes. The dimensions were optimized for the Carl Zeiss Axiovert 200/Axio Observer, but shall be also applicable for Olympus IX 70/71/81, Nikon TE 300/2000, Leica DMI 3000/4000/6000 and others.

The smaller version Microscopy Workstation 780 plus Acoustic Enclosure 780 is ideal for smaller AFMs without a light microscope. For further information on the acoustic enclosures refer to the data sheet "Acoustic Enclosure".

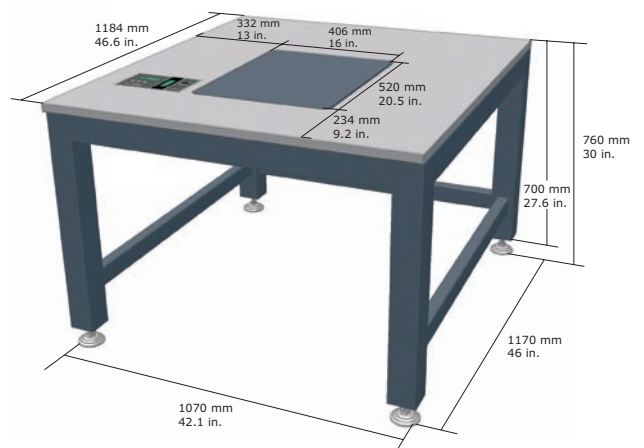
▶
Life Science AFM isolated by Microscopy Workstation with Acoustic Enclosure.



Microscopy Workstation 780



Microscopy Workstation 1000



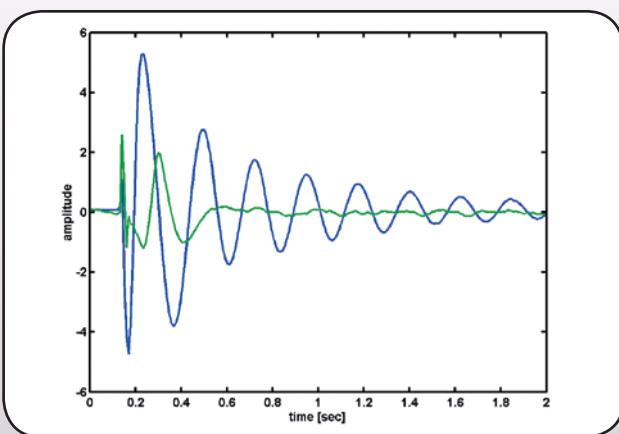
▲ Fig. 2: Dimensions of Microscopy Workstation systems

High-performance Microscopy Workstation – the ultimate solution!

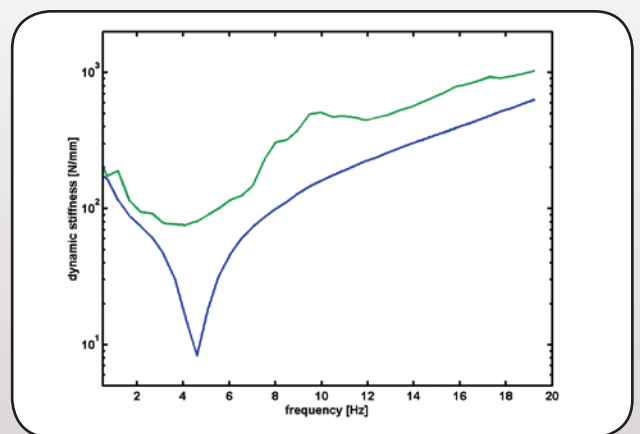
Thanks to Halcyonics VarioControl technology, active vibration isolation takes effect right at 0.6 Hz and considerably increases from this frequency upward. Above 10 Hz, Halcyonics Micro systems achieve an isolation of 40 dB – that means that 99.0% of the vibration is effectively isolated. In addition to their high isolation from floor vibration through AVI (active vibration isolation), Micro systems also dampen application-generated vibration by AVC (active vibration control), e.g., vibration caused

when the user touches the equipment. A major advantage of active Halcyonics systems is that they do not have any natural low-frequency resonance, which is responsible for problems encountered with passive vibration isolation systems in low-frequency ranges below 5 Hz. Microscopy Workstation units isolate vertical and horizontal vibration as well as vibration generated around the vertical axis of rotation as well as both horizontal axes of inclination. The degree of freedom of the active isolation system

is thus six. The inherent stiffness of Halcyonics systems is typically 20 – 30 times higher than that of a 1 Hz passive isolator. For this reason, the Halcyonics active isolation technology provides much better position stability than with any passive system; which is a great advantage at many applications. Thanks to automatic load adjustment, Microscopy Workstations allow a wide load range with just one version – this offers comfort and good flexibility also for future applications.



▲ Fig. 3: Settling time of a Halcyonics Microscopy Workstation 780 (green) compared to a conventional air-damped vibration isolation system (blue), made by one of the major manufacturers of optical tables and vibration isolated laboratory desks. Halcyonics active vibration isolation systems provide quick and effective compensation of disturbing vibrations.



▲ Fig. 4: Dynamic isolator stiffness (green) of Halcyonics Microscopy Workstation systems compared to a commercially available passive air damped isolation system (blue). Due to their higher dynamic stiffness, Halcyonics systems are less sensitive to direct forces that affect the isolated platform. As a result, Halcyonics active vibration isolation systems offer excellent position stability.

Technical Specifications

Available Standard Versions

Microscopy Workstation 780

Microscopy Workstation 1000

Performance Specifications

Isolation technology:	Halcyonics VarioControl technology based on piezoelectric type acceleration pickup, fast signal processing and electro-dynamic type force transducers.
Control electronics:	Easy-to-navigate menu for all settings, second graphics display for vibration levels
Force directions:	Active compensation in all six degrees of freedom
Isolation performance:	> 5 Hz = 25 dB (94.4%); >10 Hz = 40 dB (99.0%)
Active bandwidth:	0.6 – 200 Hz*
Setting time:	300 ms
Max. Correction forces:	Vertical ± 8 N; Horizontal ± 4 N
Load capacity:	0 – 100 kg (0 – 200 lbs)

Other Specifications

Dimensions:	See figure 2
Weight:	Microscopy Workstation 780: 122 kg (269 lbs) Microscopy Workstation 1000: 165 kg (365 lbs)
Table top material:	Active isolated surface: powder coated aluminium Surrounding surface: melamine-phenolic resin
Top plate surface flatness:	± 0.1 mm over complete surface
Maximum compensation level:	500 μ m/s at 6Hz and 60 kg (132 lbs) **
Repeatability of load adjustment:	120 μ m
Interface:	USB 1.1 standard
Software: (for Microsoft Windows based PCs)	<ul style="list-style-type: none"> - Activate/deactivate active vibration isolation by remote control - Monitor function – display sensor signals - Spectrum analyser function – guidance to locate disturbing vibration sources - Location finder – guidance to find the ideal installation location in the lab

Environmental and Operational Requirements

Electrical voltage:	100 – 250 V / 47 – 63 Hz
Power consumption:	40 – max. 55 W
Operating temperature:	10 – 40 °C (50 – 104 F)
Relative humidity:	0 – 60%
Operating altitude:	< 2500 m (8100 ft)

Certification

Electrical Safety:	CE certificated according to directive 89/336/EC
EMC:	CE certificated according to directive 73/23/EEC

* Floating table top is supported by steel springs; low-pass characteristics of spring-mass combination dominate the dynamic behavior above 200 Hz.

** The maximum compensation level depends on several conditions, such as payload, frequency, load distribution and height of the payload. For that reason this value should be considered to be an approximation.

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