

Superior image for a wide  
range of inspection and  
rework tasks with **Mantis**



# Mantis - ergonomic stereo microscopes

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Mantis are unique ergonomic high performance stereo microscopes, offering 3D optical imaging with magnification options up to 20x.

Large fields of view and long working distances allow for a wide range of inspection, manipulation and re-working tasks, all with exceptional hand-eye coordination.

Patented optical technology allows operators freedom of head movement for superb ergonomics and hand-eye co-ordination, with the ability to wear glasses if required. All Mantis systems aid with productivity and quality improvements.

## Key Features

- ✓ 2x to 20x magnification options
- ✓ Superior ergonomics for improved productivity
- ✓ Quick change turret for flexible magnification
- ✓ Optimised for long working distance & large field of view
- ✓ Bright true colour, LED illumination
- ✓ Optional factory-integrated HD digital camera
- ✓ Inspect and document with ease (Mantis Elite-Cam HD only)
- ✓ Choice of stands and accessories to suit



# Mantis Compact

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Mantis Compact a high value stereo microscope which excels in the low magnification range for inspection or manipulation tasks where bench magnifiers have traditionally been used.

Patented optical technology allows operators freedom of head movement for superb ergonomics and hand-eye co-ordination, with the ability to wear glasses if required. All Mantis systems aid with productivity and quality improvements.

- ✓ 2x, 4x, 6x and 8x quick change objectives
- ✓ Patented eyepiece-less optics maximise head freedom providing unrivalled ergonomic performance
- ✓ Small footprint



Find out more: [www.visioneng.com/mantis-compact](http://www.visioneng.com/mantis-compact)



# Mantis Elite

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Mantis Elite has enhanced optical performance, comparing to Mantis Compact, including higher magnification, a large field of view and long working distances. Mantis Elite is a perfect alternative to traditional stereo microscopes for a wide range of inspection, preparation and manipulation tasks requiring hand-eye co-ordination.

- ✓ 2x - 20x magnification options with quick change turret allows users to switch between low and high magnification
- ✓ Superb hand-eye co-ordination for inspection and re-working tasks
- ✓ Bright true colour LED illumination provides up to 10,000 hours of shadow-free viewing



Find out more: [www.visioneng.com/mantis-elite](http://www.visioneng.com/mantis-elite)



# Mantis Elite-Cam HD

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Mantis Elite-Cam HD is a variant of the successful Mantis Elite stereo microscope, with an internally integrated USB digital camera, bringing image capture capabilities to the outstanding optical performance of Mantis.

By adding an HD camera to Mantis Elite, Vision Engineering has created a supremely capable inspection solution, providing flexibility and simplicity for any precision magnification task.

- ✓ Quickly and simply add annotations / mark-up to captured images using the ViCapture software supplied
- ✓ Video recording (.avi), ideal for training purposes



Find out more: [www.visioneng.com/mantis-elite-cam](http://www.visioneng.com/mantis-elite-cam)





# Technical details

## Optical data

Mantis Compact		
Objective lens	Working distance	Field of view
2x	167mm	45.0mm
4x	96mm	27.5mm
6x	73mm	19.2mm
8x	58.5mm	14.3mm

Mantis Elite / Elite-Cam HD		
Objective lens	Working distance	Field of view
2x	160mm	57.0mm
4x	96mm	34.0mm
6x	68mm	23.0mm
6x SLWD*	112mm	20.0mm
8x	59mm	17.0mm
10x	54mm	13.5mm
15x	40mm	8.8mm
20x	29mm	6.5mm

\*cannot be used together with 2x or 20x lens

## Options



### Floating Stage

Provides smooth and sensitive control allowing for samples to be accurately inspected. For use with bench stand only.



### Episcopic Illuminator

Through-the-lens illumination for the inspection of bore holes and complex internal/external features. Iris control for precise light positioning.



### UV Lighting

Switchable UV-white light illumination for UV inspection applications and fast and accurate fault detection.



### Secondary Link Arm

A secondary link increases total reach of articulated arm to 847.5mm and provides added flexibility and manoeuvrability.



### Floor Stand

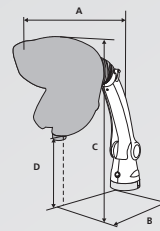
Ideal for inspection where subjects are immobile or require a standing position. For use in conjunction with articulated arm. Lift, swing, tilt and rotate capability.

### Accessories

Lens protection caps  
Dust cover  
Replacement LED array

## Stand options

### Universal Stand



#### Mantis Compact

**Dimensions:**  
A = 565mm - 775mm  
B = 335mm - 545mm  
C = 395mm - 605mm  
D = 110mm - 320mm

**Unpacked weight:**  
Head 2.1kg Stand 3.3kg

**Packed weight:**  
Head 4.1kg Stand 4.6kg

**Power:**  
9V DC external plug transformer, available in all worldwide plug configurations.

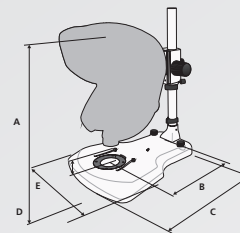
#### Mantis Elite

**Dimensions:**  
A = 593mm - 802mm  
B = 352mm - 622mm  
C = 415mm - 624mm  
D = 103mm - 312mm

**Unpacked weight:**  
Head 3.0kg Stand 3.3kg

**Packed weight:**  
Head 5.0kg Stand 4.6kg

### Bench Stand



#### Mantis Compact

**Dimensions:**  
A = 475mm - 608mm  
B = 300mm  
C = 380mm  
D = 330mm  
E = 256mm max., less working distance

**Unpacked weight:**  
Head 2.1kg Stand 5.0kg

**Packed weight:**  
Head 4.1kg Stand 8.4kg

**Power:**  
100-240VAC 50-60HZ 1.0A max., available in all worldwide plug configurations.

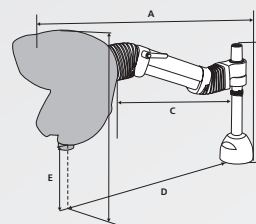
#### Mantis Elite

**Dimensions:**  
A = 487mm - 620mm  
B = 300mm  
C = 380mm  
D = 330mm  
E = 255mm max., less working distance

**Unpacked weight:**  
Head 3.0kg Stand 5.0kg

**Packed weight:**  
Head 5.0kg Stand 8.4kg

### Articulated Arm



#### Mantis Compact

**Dimensions:**  
A = 880mm  
B = 430mm  
C = 510mm  
D = 650mm  
E = 290mm

**Unpacked weight:**  
Head 2.1kg Stand 11kg

**Packed weight:**  
Head 4.1kg Stand 13.5kg

**Power:**  
9V DC external plug transformer, available in all worldwide plug configurations.

#### Mantis Elite

**Dimensions:**  
A = 880mm  
B = 430mm  
C = 510mm  
D = 650mm  
E = 290mm

**Unpacked weight:**  
Head 3.0kg Stand 11kg

**Packed weight:**  
Head 5.0kg Stand 13.5kg

\*Ask your sales manager for details about alternative stand options

## Illumination

### Mantis Compact

Lighting Data		
Light intensity measured at subject plane with colour correction filters.		
20 LEDs	9,400 LUX	Up to 10,000 hours
Substage illumination (bench stand only)		
58 LEDs	2,700 LUX	Up to 10,000 hours

### Mantis Elite

Lighting Data		
Light intensity measured at subject plane with colour correction filters.		
24 LEDs	11,000 LUX	Up to 10,000 hours
Substage illumination (bench stand only)		
58 LEDs	2,700 LUX	Up to 10,000 hours

## Camera

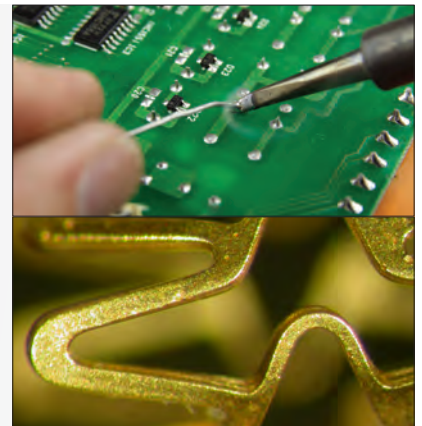
### Mantis Elite-Cam HD

Camera Data	
Sensor type	CMOS
Resolution (H x W)	1600 x 1200 pixels
Sensor size	1/3"
Pixel size	2.8µm
Colour depth	8-bit
Refresh rate (fps)	17 fps max.
Interface	USB2.0
File formats	BMP, JPEG, PNG
Power supply	USB powered
Supplied software	Pylon 6

# Typical applications\*

## Electronics

Mantis stereo microscopes are ideally suited for electronics PCB inspection and rework. The patented optical viewing head provides an unrivalled 3D view with ergonomic advantages of simple hand-eye co-ordination and fatigue-free soldering / inspection work.

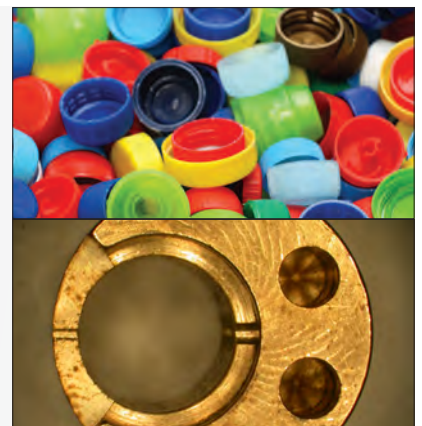


## Medical devices

From stents to catheters, medical device components require 100% inspection to ensure every product sent out meets the exacting product specifications. Mantis is excellent for critical manual inspection because of its excellent image contrast.

## Plastics and rubber

Rubber seals, packaging, caps and closures are designed and precision manufactured to make them work effectively. Inspection for quality is essential. Rework, such as the removal of flash from the injection mould process may also be required, meaning Mantis' long working distance is essential.

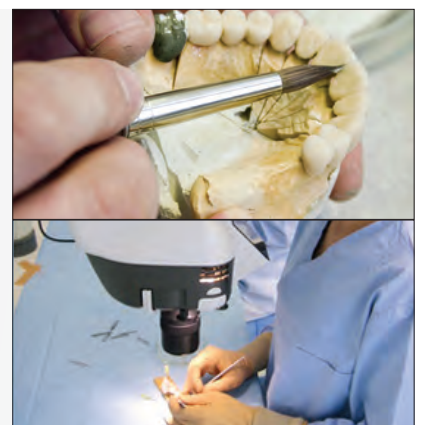


## Precision engineering

Precision engineered components are often critical components and utilised in industries such as aerospace and automotive. Mantis' clear view and superior ergonomics are ideal for critical inspection for defects as they aid visual accuracy and minimise errors caused by user fatigue.

## Dental

Dental prosthetics are medical devices that need to be tailored for each individual. The manufacturing process often requires magnification from inspecting the initial moulds, to colour matching the final product.



## Hair restoration

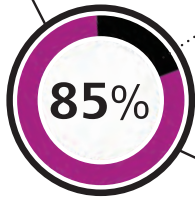
Mantis is a popular solution for use with hair restoration. The detailed and time limited work of splitting hair follicles requires the operator to be able to maintain high levels of concentration and visual accuracy.

\*There are many other applications where Mantis is used, including agriculture, education, restoration of antiques, engraving, forensics, and much more...

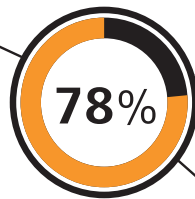
# Improving microscopy ergonomics...



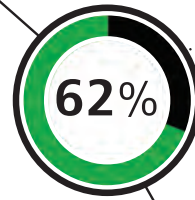
**Around 94%** of microscope users **REPORTED VISUAL PROBLEMS<sup>2</sup>** or a combination, of eye discomfort including headache and dry eye. With many subjects complaining of eye fatigue during microscope use.



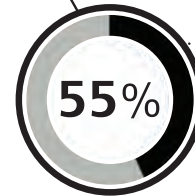
**Around 85%** of microscope users have experienced **MICROSCOPE RELATED PAIN<sup>1</sup>**



**Around 78%** of microscope operators have suffered from **NECK STRAINS<sup>3</sup>**. Slight inclines of the head, such as 30 degrees from vertical, can produce significant muscle contractions, fatigue, and pain.



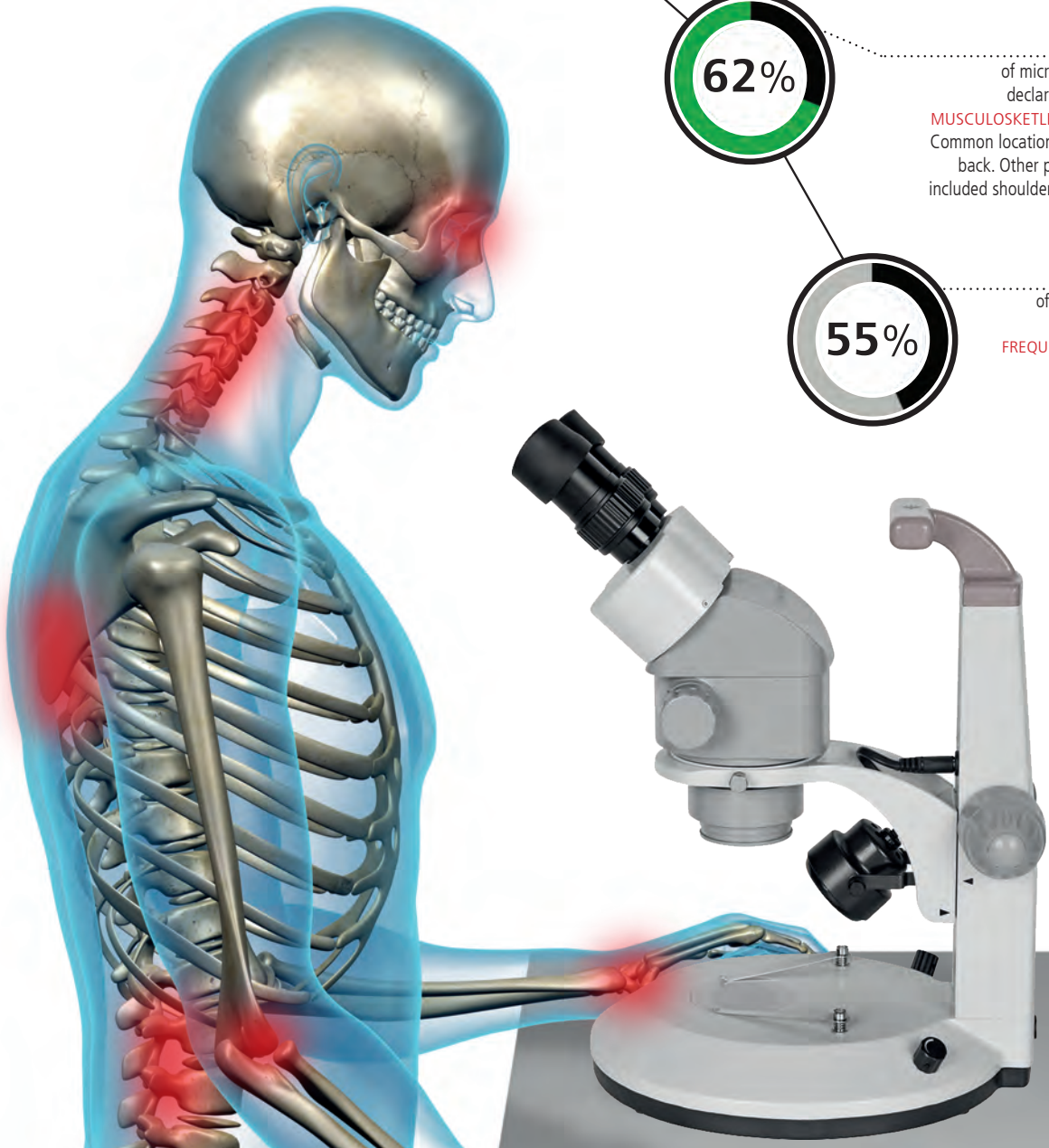
**Around 62%** of microscope operators declared suffering from **MUSCULOSKELETAL PROBLEMS<sup>2</sup>**. Common locations were neck and back. Other problematic areas included shoulder, wrist and hand.



**Around 55%** of microscope users have experienced **FREQUENT HEADACHES<sup>1</sup>**

Microscopy can make tough demands on an operator's eyesight and skeletal system. When operators are uncomfortable or strained, accuracy and performance is compromised.

<sup>1</sup> Thompson SK, Mason E, Dukas S. Ergonomics and cytotechnologists: reported musculoskeletal discomfort. *Diagn Cytopathol.* 2003;29:364-367.  
<sup>2</sup> Garima Jain and Pushparaja Shetty Occupational concerns associated with regular use of microscope: *International Journal of Occupational Medicine and Environmental Health* 2014;27(4):591-598  
<sup>3</sup> Fritzsche et al.; licensee BioMed Central Ltd. 2012





# Unrivalled Mantis advantage...

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Businesses choose Vision Engineering's ergonomic stereo microscopes because operators are more comfortable during inspection, so more efficient, more accurate and more productive.

## Give your stereo microscope a health check!

### Ergonomic working position

An ergonomic body position makes the Mantis more comfortable, less fatiguing and, more importantly, much easier to use. Additionally, optimal operator ergonomics minimises the risk of repetitive strain-related injuries. A happy worker is a productive worker.

### Freedom of head movement

An additional benefit of Vision Engineering's patented eyepiece-less design is that users do not need to align their eyes with eyepieces. This freedom of movement reduces associated neck and back strain associated with the fixed body position of conventional microscope eyepieces.

### A natural view of the subject

With conventional microscope eyepieces, operators must position their eyes very close to the eyepieces, blocking out ambient light. The intense light exiting the eyepieces causes the pupils to contract. Constant contraction and expansion of the pupils is the main cause of eye fatigue with microscopes.

With the patented eyepieces of Mantis, users sit back from the viewer, allowing ambient light into the eyes. Additionally, the light exiting the 'viewing lens' is spread over a larger area, proving a more natural view of the subject.

### Easy hand-eye co-ordination

Easy hand-eye co-ordination is possible with the Mantis – critical for re-work, repair, dissection and other manipulation tasks. Sitting back from the viewer provides users with much better peripheral vision, so they can co-ordinate hands in a natural manner.

### Ability to wear glasses

With Mantis, operators do not need to remove their glasses (or safety glasses) to use the microscope.



Read about our patented technology:  
[www.visioneng.com/ergonomics](http://www.visioneng.com/ergonomics)

# VISION ENGINEERING + OUR DIFFERENCE

Vision Engineering Ltd. has been designing and manufacturing high quality ergonomic microscopes, digital instruments, inspection and non-contact measuring systems for over 60 years.

## Innovation

With a philosophy of design innovation, Vision Engineering holds world patents for a number of optical / digital techniques, significantly improving viewing ergonomics and enabling customer quality and productivity improvements.

To see our focused quality, please contact your Vision Engineering branch, local authorised distributor, or visit our website: [visioneng.com](http://visioneng.com)

## Quality

Vision Engineering prides itself on quality products, electronics, mechanics and optics and is certified for the quality management system ISO 9001:2015. Quality is as important to us as it is to our customers. Our systems have proved themselves many times over and are chosen by the world's leading companies.

## Global

Vision Engineering has manufacturing and design facilities in the UK and USA, plus sales and support offices throughout Europe, the Americas, the Far East, and Asia. We support our customers with close technical and service support anywhere in the world.

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FM 557119  
Vision Engineering Ltd. has been certified for the quality management system ISO 9001:2015.

Sales Partner

