

Jean Louis MENEGON

Représentant et Conseiller
Région Sud Ouest

Tel : 06 76 08 96 83

Email: jlouismenegon@aol.com
www.menegon-metrologie.com

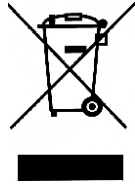


Mantis

Service Manual

Mantis Compact & Elite

Health & Safety



Vision Engineering and its products conforms to the requirements of the EC Directives on Waste Electrical and Electronic Equipment (WEEE) and Restriction of Hazardous Substances (RoHS).

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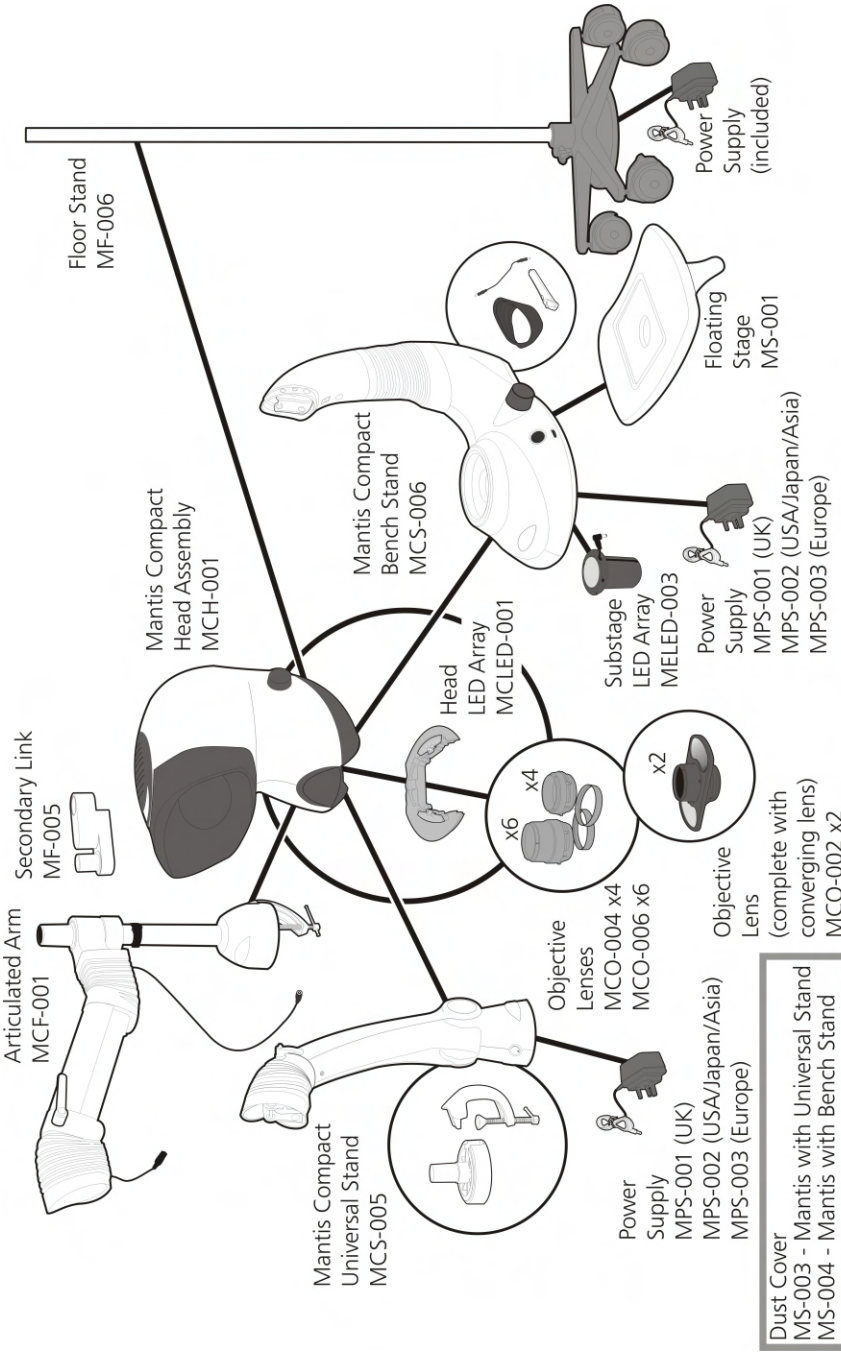
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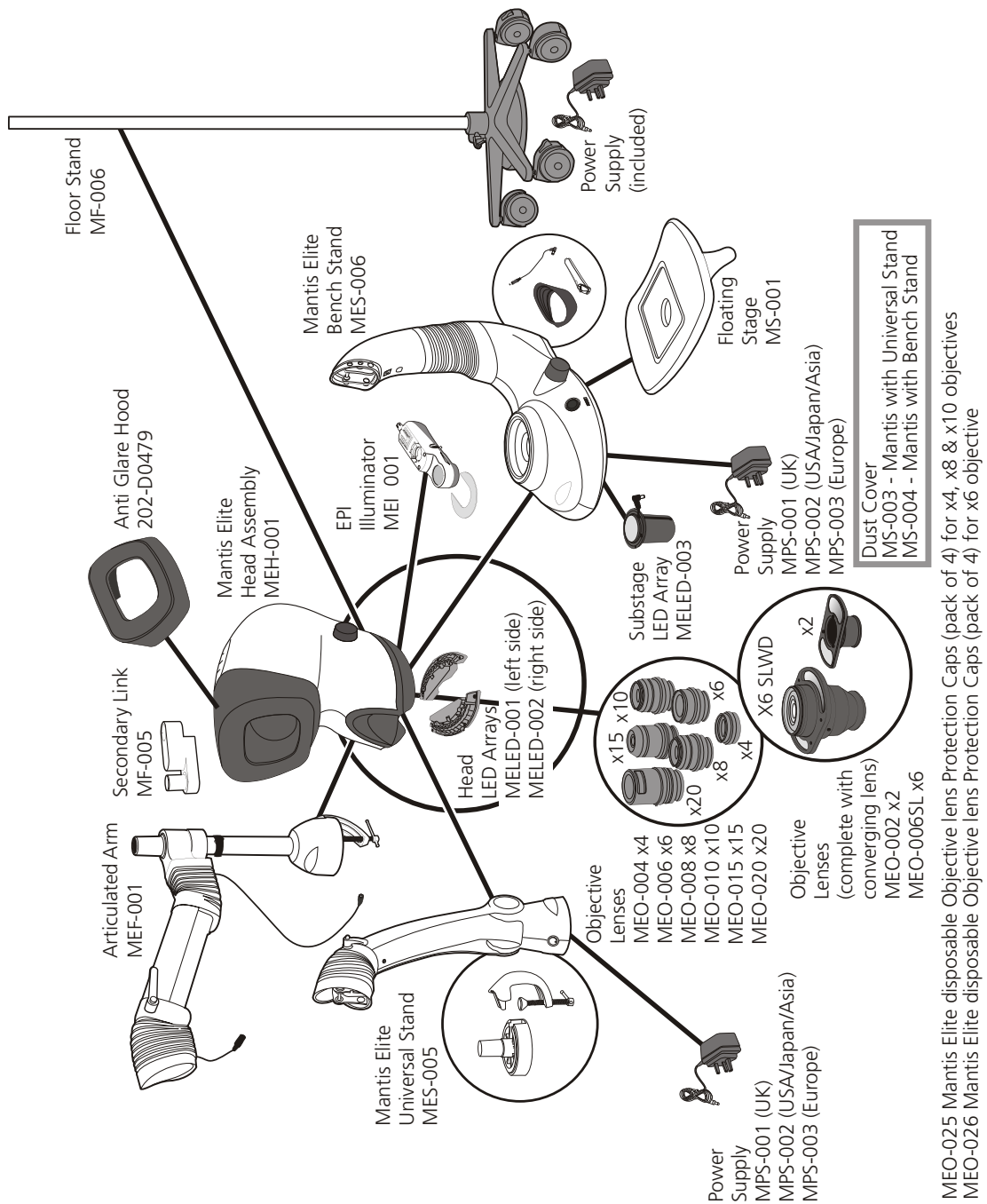
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WARRANTY

Mantis Compact



Mantis Elite



Mantis Compact

Objective Lenses	Part Number	Working Distance	Field of View	Depth of Field
X2	MCO-002	167mm / 6.57 "	45.0mm / 1.77 "	45.0mm
X4	MCO-004	96mm / 3.78 "	27.5mm / 1.08 "	27.5mm
X6	MCO-006	73mm / 2.87 "	19.2mm / 0.76 "	19.2mm

Mantis Elite

Objective Lenses	Part Number	Working Distance	Field of View	Depth of Field
X2	MEO-002	160mm / 6.29 "	57.0mm / 2.24 "	57.0mm
X4	MEO-004	96mm / 3.78 "	34.0mm / 1.34 "	34.0mm
X6	MEO-006	68mm / 2.68 "	23.0mm / 0.91 "	23.0mm
X8	MEO-008	59mm / 2.32 "	17.0mm / 0.67 "	17.0mm
X10	MEO-010	54mm / 2.13 "	13.5mm / 0.53 "	13.5mm
X15	MEO-015	40mm / 1.57 "	8.8mm / 0.35 "	8.8mm
X20	MEO-020	29mm / 1.14 "	6.5mm / 0.25 "	6.5mm
X6 SLWD	MEO-006SL	112mm / 4.41 "	20.0mm / 0.79 "	20.0mm

Parts table

Part Name	Part Number	Picture
Mantis Floating Stage	MS-001	
Compact X4, X6 Disposable Lens Protections Caps (4-pack)	MCO-010	
Elite Disposable Lens Protection Caps for X4, X8, X10 (4-pack)	MEO-025	
Elite Disposable Lens Protect Caps for X6 (4-pack)	MEO-026	
Dessicant, 10-pack (Blue good; Pink replace)	M006	

Mantis Compact

Replacing the desiccant (see the diagram below):

- ▶ Disconnect the power cord from the back of the head.
- ▶ Remove the screw securing the desiccant cover and remove the cover ❶.
- ▶ Replace the desiccant and reinstall the cover.
- ▶ Reconnect the power cord at the back of the head.

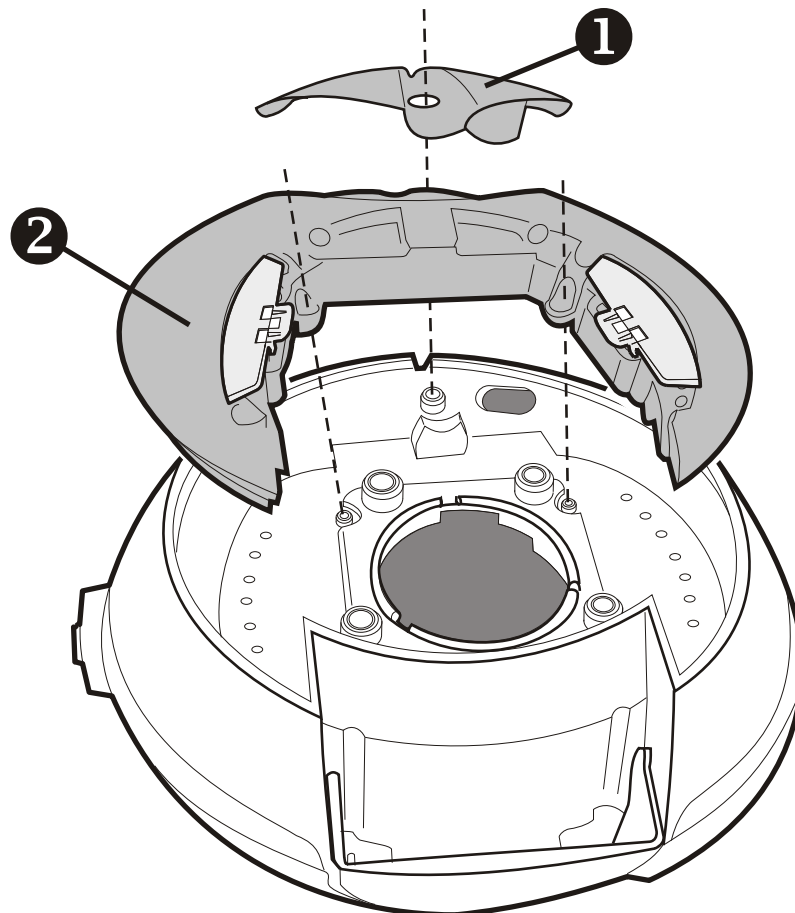
Note: *If the desiccant is pink it needs to be replaced. Useable desiccant is blue.*

Replacing the LED array (see the diagram below):

- ▶ Disconnect the power cord from the back of the head.
- ▶ Remove the desiccant cover ❶ (see **Replacing the desiccant** above).
- ▶ Remove the two screws that secure the array to remove the array ❷ complete with the filters.
- ▶ Install the new array using the reverse of this procedure.

Note: *Do not over tighten.*

- ▶ Reconnect the power cord at the back of the head.



Mantis Elite

Replacing the desiccant (see the diagram below):

- ▶ Disconnect the power cord from the back of the head.
- ▶ Remove the grommet **1** covering the desiccant and remove the desiccant.
- ▶ Install fresh desiccant and replace the grommet.
- ▶ Reconnect the power cord at the back of the head.

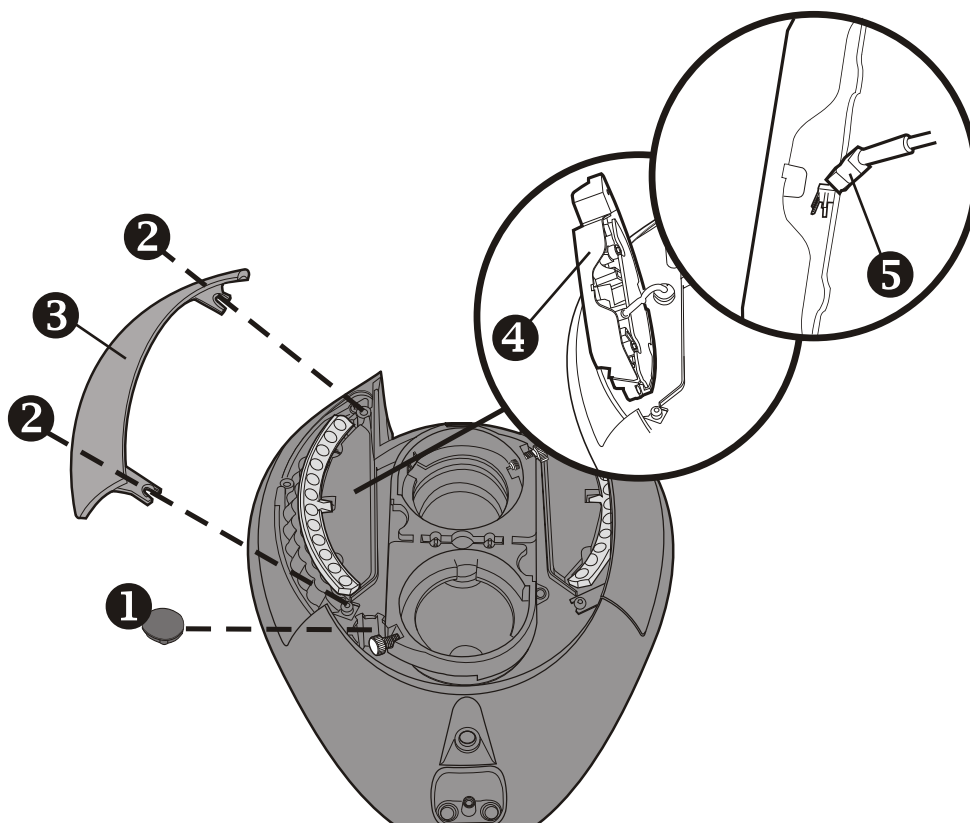
Note: *If the desiccant is pink it needs to be replaced. Useable desiccant is blue.*

Replacing the LED array (see the diagram below):

- ▶ Disconnect the power cord from the back of the head.
- ▶ Loosen the two screws **2** that hold the filter/array cover **3** and remove the cover.
- ▶ Lift out the LED array **4** complete with filter and disconnect the array connector **5**.
- ▶ Install the new array using the reverse of this procedure.

Notes: *Do not over tighten screws.*

The Mantis Elite uses 2 LED arrays; one for the right and one for the left. There are also 2 different versions of these arrays; serial number up to and including MEH-10756 use array version "none". From MEH-10757 and on, use version 2 of the array.



Elite turret replacement

Required Tools: #1 Phillips screwdriver

- ▶ Remove any objective lenses that may be installed in the turret.



- ▶ Uninstall the Mantis Head from the stand.



- ▶ Rest the viewing head upside down (objective turret facing up). Be sure to secure the head so that it does not roll off of the work bench (a small, empty cardboard box works well).



- ▶ Ensure the objective lens securing screws ❶ are fully screwed in (but not too tightly).



- ▶ Rotate the turret so that you can see all three of the mounting screws ❷.



MAINTENANCE & SPARE PARTS

- ▶ Remove all three screws on the inside of the turret.

Note: *the front screw has a washer.*



- ▶ Remove the old turret and replace with the new turret.



- ▶ Replace all three screws.

Note: *do not over tighten.*



- ▶ Reinstall the head to the stand.



- ▶ Reinstall the objective lenses.



- ▶ Verify that the new turret rotates smoothly.



Jean Louis MENEGON - Votre représentant et Conseiller

tél : 06 76 08 96 83

Email: jlouismenegon@aol.com - web: www.menegon-metrologie.com

Elite pivot retrofit

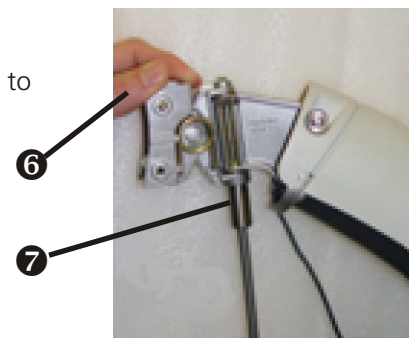
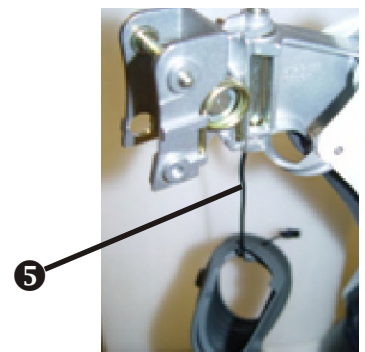
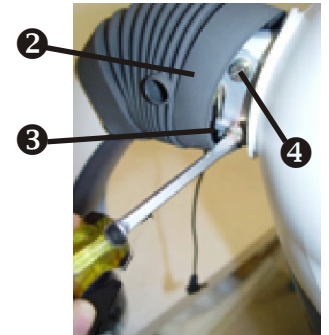
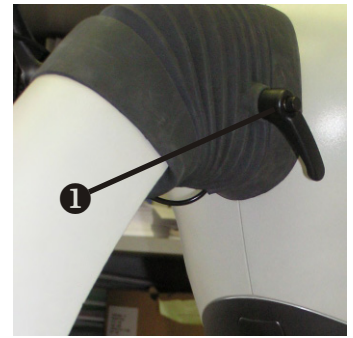
Note: *Read all the following instructions before commencing work.*

- ▶ Isolate the Mantis from mains power.
- ▶ Unscrew the left-hand side handle ❶ and discard.

- ▶ Release the rubber gaiter ❷ from the groove in the head unit and peel back to expose the head mounting screws.
- ▶ Using a flat-bladed screwdriver, remove the lower head mounting screw ❸ completely.
- ▶ Whilst holding the head, back off the upper head mounting screw ❹ by exactly 2 complete revolutions. Remove the head by lifting it upwards and outwards.
- ▶ Remove the right-hand side handle and retain it for later reinstallation.
- ▶ Peel of the rubber gaitor and let it hang by the plug cable ❺.

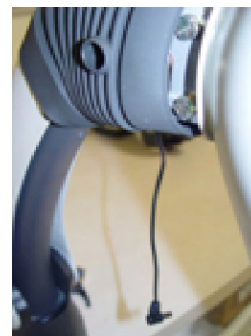
- ▶ Gently push down on the arm ❻ to expose the head pivot bolt and washer. Noting the approximate right to left tension, use a 10mm socket/nutdriver ❼ to remove the bolt and washer.

- ▶ Remove the old tilt assembly and attach the new one (using the same hardware and tool) to the same tension as previously noted.
- ▶ Remove large handle from the new tilt assembly and carefully fit the rubber gaiter back into place on the stand whilst lining up both handle bolts and pulling the slack out of the head power cable (moving the arm up and down will help).
- ▶ Reinstall the small handle on to the right-hand side.

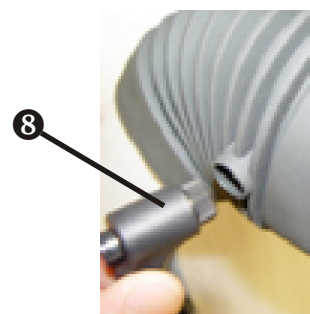


MAINTENANCE & SPARE PARTS

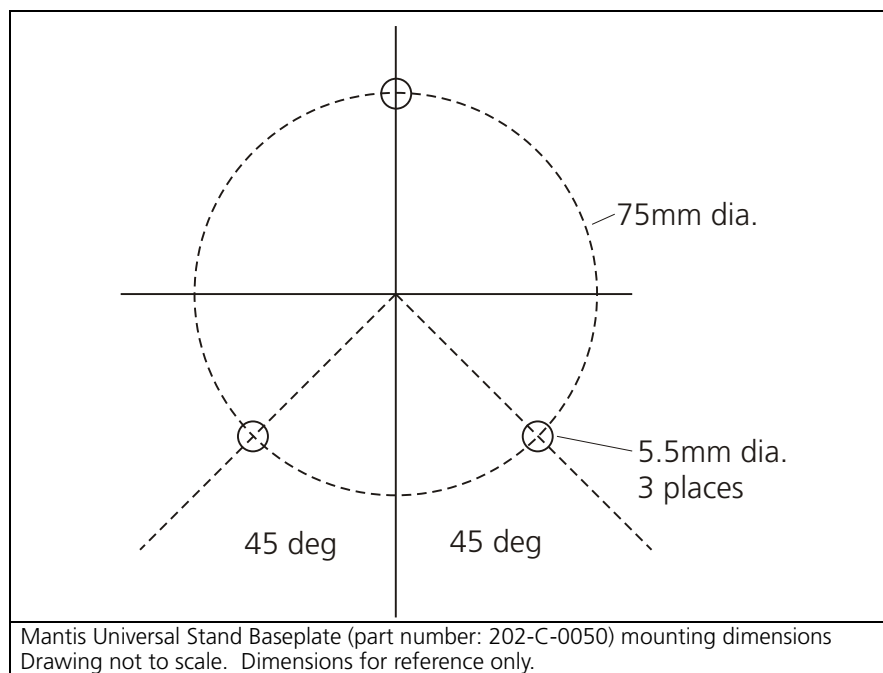
- ▶ Remove the lower head mounting bolt and then, ensuring the upper bolt is tight, back it off 2 complete revolutions.
- ▶ Hang the head and tighten both head mounting bolts.
- ▶ Seat the rubber gaiter back into the groove in the head.



- ▶ Thread on the large handle **8** and screw it in.
- ▶ Plug the mains adapter into the mains supply and connect the head power cable into the head.
- ▶ The Mantis is now ready for use.



Mantis universal arm baseplate mounting dimensions



Spare parts

202-A0073	Mantis Arm Clamp Assembly (with G-clamp)
202-B0248	Mantis Bench Stand stage glass
202-B0316	Mantis Elite Anti-Glare Shield.
202-D0479	Elite viewing mask to shield ambient light from the viewing lens.
202-C0050	New Mantis - Bench Mount
202-C007	Compact Head Top Cover Assembly
202-B0298	Compact Rubber Gaiter
202-B0290	Compact Stand to Head Cable
202-B0299	Elite Rubber Gaiter
202-B0291	Elite Stand to Head Cable
202-A0132	2x bolts used to mount the microscope head to the stand.
MCLED-001	Replacement LED Array; Mantis Compact
MELED-001	Replacement LED Array; Mantis Elite, Left Side (version "none")
MELED-001V2	Replacement LED Array; Mantis Elite, Left Side (version 2)
MELED-002	Replacement LED Array; Mantis Elite, Right Side (version "none")
MELED-002V2	Replacement LED Array; Mantis Elite, Right Side (version 2)
MELED-003	Replacement LED Array; Bench Stand
202-B0445	Mantis Elite rotary turret
MPS-001	Power Supply Unit, 220V UK
MPS-002	Power Supply Unit, 115 V (USA/Japan)
MPS-003	Power Supply Unit, 220V Europe
MS-003	Replacement Dust Cover; Universal Stand system
MS-004	Replacement Dust Cover; Bench Stand system
202-A0642	Objective thumbscrews (turret)
202-A0459	Objective bolts (turret)

Note: *MELED-001V2 & MELED-002V2 started with serial number: MEH-10757.*

COMPACT & ELITE

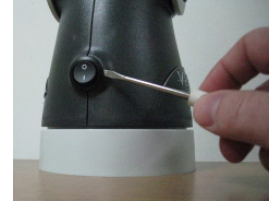
Problem	Possible Solution
LEDs not lit.	<ul style="list-style-type: none"> * Verify power supply is plugged into the stand and into the power outlet (utility power). * Verify On/Off switch on stand is turned On. * Verify that the power cord in the back of the head is plugged in. * Verify that the power supply is functioning correctly. (Use a multimeter to measure the output voltage or try using a spare power supply.) * Verify that the power outlet that the power supply is plugged into is functioning properly. (Try plugging in another device to the same outlet and verify that the outlet is functioning correctly.) * If the LED arrays were recently replaced, verify that the arrays are properly installed. (Check all electrical connections to the array.) * Verify that the On/Off switch is connected inside the Universal Stand (see separate procedure to check electrical connections).
Poor image quality.	<ul style="list-style-type: none"> * Verify that the Interpupillary Distance adjustment is correct for the particular user. * Verify that the front viewing lens is clean. (Use a lens cleaning cloth.) * Verify that the objective lens is clean. (Use a lens cleaning cloth.) * For the Mantis Elite, verify that the objective lenses are installed flush in the rotary turret.
Head not secure on stand.	<ul style="list-style-type: none"> * Verify that the head mounting bolts are tight. <p>If using the Bench stand, verify that the rear brace is properly installed and tight.</p>

Checking the universal stand on/off switch connections

- ▶ Shown to the right, is the On/Off switch installed in the Universal Stand.



- ▶ Using a small flat blade screwdriver, gently pry the switch out.



- ▶ Once the switch is loose, pull it out using your fingers.



- ▶ Verify that both wires are properly connected (the switch shown has one wire disconnected).



- ▶ With both wires connected, reinstall the switch by gently pressing it back into place.



- ▶ The switch should look as shown when properly reinstalled.



Address



Serial number locations

Location of Mantis Head serial number label.



Location of Mantis Universal Stand serial number label.



Location of Mantis Bench Stand serial number label.





WARRANTY

This product is warranted to be free from defects in material and workmanship for a period of one year from the date of invoice to the original purchaser.

If during the warranty period the product is found to be defective, it will be repaired or replaced at facilities of Vision Engineering or elsewhere, all at the option of Vision Engineering. However, Vision Engineering reserves the right to refund the purchase price if it is unable to provide replacement, and repair is not commercially practicable or cannot be timely made. Parts not of Vision Engineering manufacture carry only the warranty of their manufacturer. Expendable components such as fuses carry no warranty.

This warranty does not cover damage in transit, damage caused by misuse, neglect, or carelessness, or damage resulting from either improper servicing or modification by other than Vision Engineering approved service personnel. Further, this warranty does not cover any routine maintenance work on the product described in the user guide or any minor maintenance work which is reasonably expected to be performed by the purchaser.

No responsibility is assumed for unsatisfactory operating performance due to environmental conditions such as humidity, dust, corrosive chemicals, deposition of oil or other foreign matter, spillage, or other conditions beyond the control of Vision Engineering.

Except as stated herein, Vision Engineering makes no other warranties, express or implied by law, whether for resale, fitness for a particular purpose or otherwise. Further, Vision Engineering shall not under any circumstances be liable for incidental, consequential or other damages.

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