Vision ENGINEERING

www.visioneng.com

DRV

FM 557119

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

User Guide

DRV-Z1 Unique ergonomic digital stereo 3D full high definition viewer with zoom

NAVIGATION INSTRUCTIONS

The symbols in the left-hand margin of each page of the manual will enable you to carry out the following functions:

The buttons in text below do not function. They are for illustrative purposes only.

Contents Click on this button to display the Contents page.

Back one page.

Forward one page.

Back button.

Forward button.

Click this button to print some or all of the document (specific pages can be chosen).

Exit Click this button to exit the user guide.

Press the Esc key to display normal Acrobat© Controls.

PREFACE

UNPACKING

INTRODUCTION

ASSEMBLY

OPERATION AND SETUP

TROUBLE SHOOTING

TECHNICAL DATA

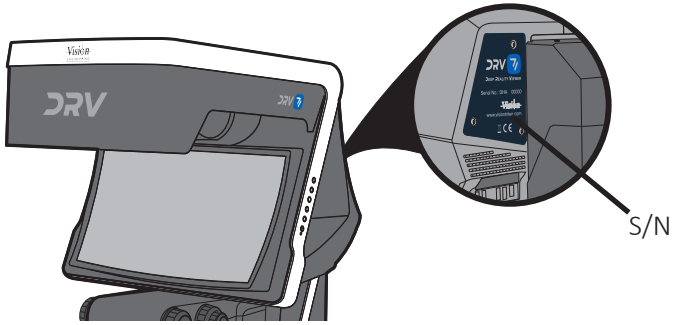
SERVICING

WARRANTY

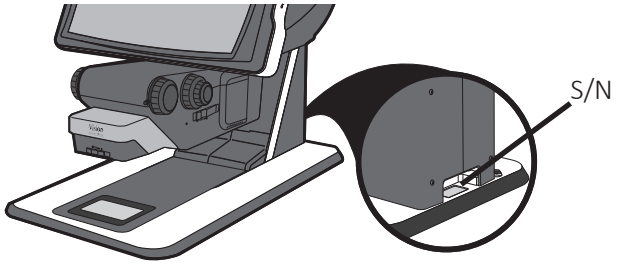
System serial numbers

Unit type	Serial number
Display head	
Zoom module	
Stand	
Substage illuminator	
Keypad	

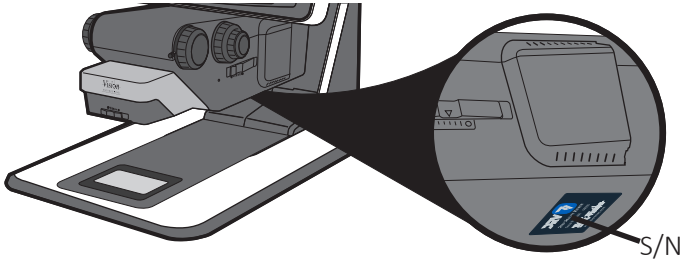
Display head



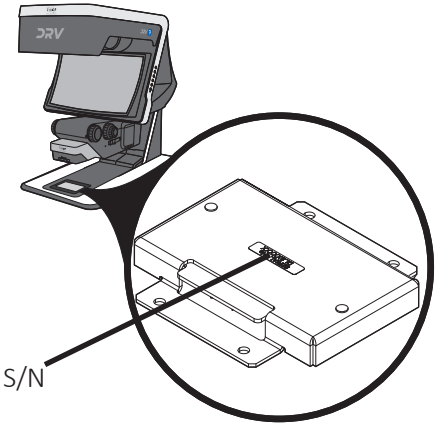
Stand



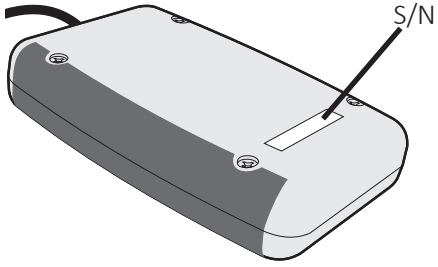
Zoom module



Substage illuminator



Keypad



Copyright

Revision 1.0, published July 2019 by:

Vision Engineering Ltd.
Galileo Drive
Send Road, Send
Woking, Surrey, GU23 7ER, UK
www.visioneng.com

Disclaimer

General

Safety

Before using your system for the first time, please read the user guide.

Ensure that:

- Your system and accessories are operated, maintained and repaired by authorised and trained personnel only.
- All operators have read, understood and observe the user manual, in particular the health and safety guidance.

Servicing

Repairs may only be carried out by Vision Engineering trained service personnel. Only original Vision Engineering spare parts may be used.

Symbols used

Warning!

A potential risk of danger exists. Failure to comply can cause i) a hazard to personnel; ii) instrument malfunction and damage. Please consult the operating instructions provided with the product.

Caution hot surface!

Warning: surfaces (sub-stage lighting module) can become hot. Do not touch. Allow to cool before removing/servicing.

Important information

This symbol indicates important information. Please carefully follow the instructions or guidelines.

Health & safety

Unauthorised alterations to the instrument or non-compliant use shall invalidate all rights to any warranty claims.

ALWAYS READ THE MANUAL BEFORE USE.

Warning!

Do not position or leave the product where direct sunlight can fall on the viewing mirror.

When not in use always cover the product and viewing mirror with the supplied dust cover and dust sheet.

Electrical safety

- Disconnect your system from the electrical source before undertaking any maintenance.
- Avoid using any form of liquid near the system.
- Do not operate your system with wet hands.

Illumination safety

- Do not look directly at the illuminated LEDs. This may cause damage to the eyesight.

Lifting the equipment

- Due to the weight and size of the display head and system, we recommend a two person lift.

Environmental considerations

- Avoid large temperature fluctuations, direct sunlight and vibrations.
- It is recommended to ensure electrical components are at least 10cm from walls and combustible materials.
- Position the system on a firm, rigid and level table.
- The equipment should be positioned so that access to the electrical input connector is always available.
- Avoid positioning your system where bright reflections may affect the image.

Operator wellbeing

- The advanced ergonomic design and construction of Vision Engineering products are intended to deliver superior ergonomic performance, reducing the exertion of the user to a minimum. Depending on the duration of uninterrupted work, appropriate measures should be taken to sustain optimal operator performance. This could include: Optimal arrangement of workplace; Variation in task activity; Training of personnel on workplace ergonomics and general health and safety principles.
- It is important to set-up and optimise your working environment correctly in order to obtain maximum benefit from the advanced ergonomic design of your system. For more information visit: www.visioneng.com/ergonomics

Cleaning

General

- Disconnect your system from the electrical source before cleaning.
- Do not use any unsuitable cleaning agents, chemicals or techniques for cleaning.
- Wipe down exterior of product with dry cloth. A weak soap solution may be used if required.

Spherical mirror, front mirror & lenses

- Keep the instrument clean using the supplied microfibre cloth. If required use supplied optical spray cleaner. Do not use any other solvents or cleaning solutions.
- Only use a specialist lens cloth to clean optical surfaces.

Compliance statements

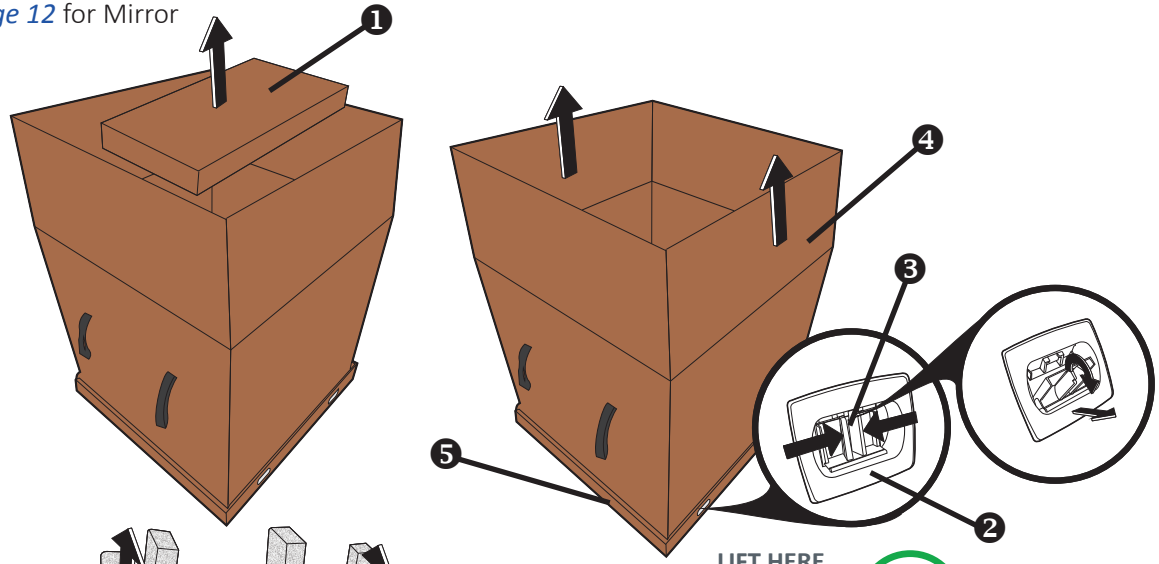
Vision Engineering and its products conforms to the requirements of the EC Directives on Waste Electrical and Electronic Equipment (WEEE) and Restriction of Hazardous Substances (RoHS).

All Vision Engineering products carry the CE mark, demonstrating that each product meets the requirements of the applicable EC directives. Where applicable, other characteristics of the CE directive are implied such as essential health and safety requirements from all the directives that apply, including low voltage directive and the EMC directive.

Display head & mirror

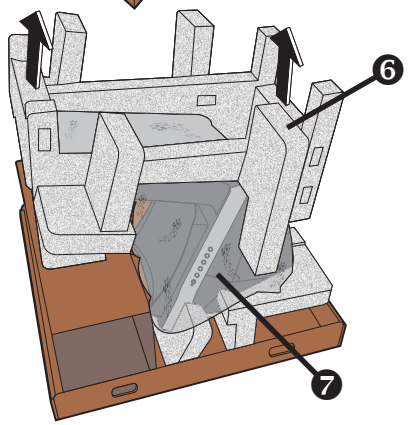
Lifting the display head and mirror box is recommended to be a two person operation.

- Place the box on a solid surface with clear access then open the top of the box and remove the Mirror Pack ❶ (see *page 12* for Mirror pack details).
- Remove all four securing clips ❷ by squeezing the two retaining bars ❸ together and pulling them forward to release the clip and then remove them.
- Lift the box wall ❹ away from its base ❺.



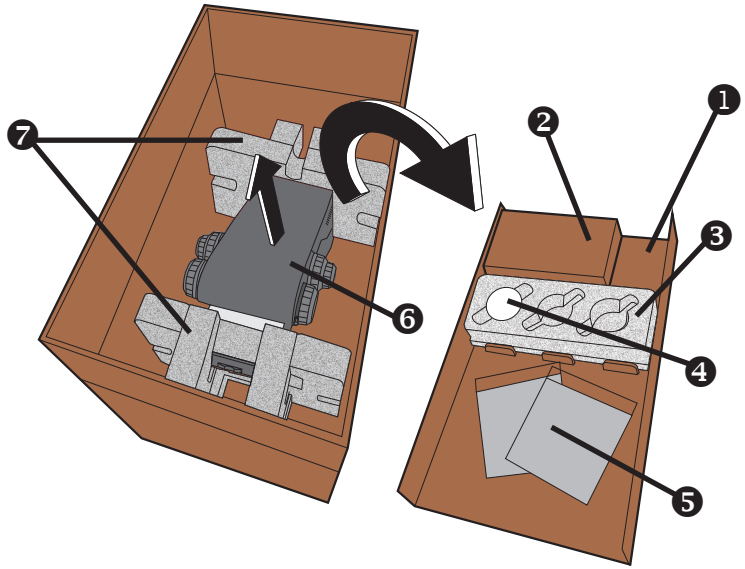
- Lift off the top foam packing ❻, lift the head ❼ out of it's bag and place securely on to a suitable bench to await assembly (see *page 12*).

Lifting the display head is recommended to be a two person operation.



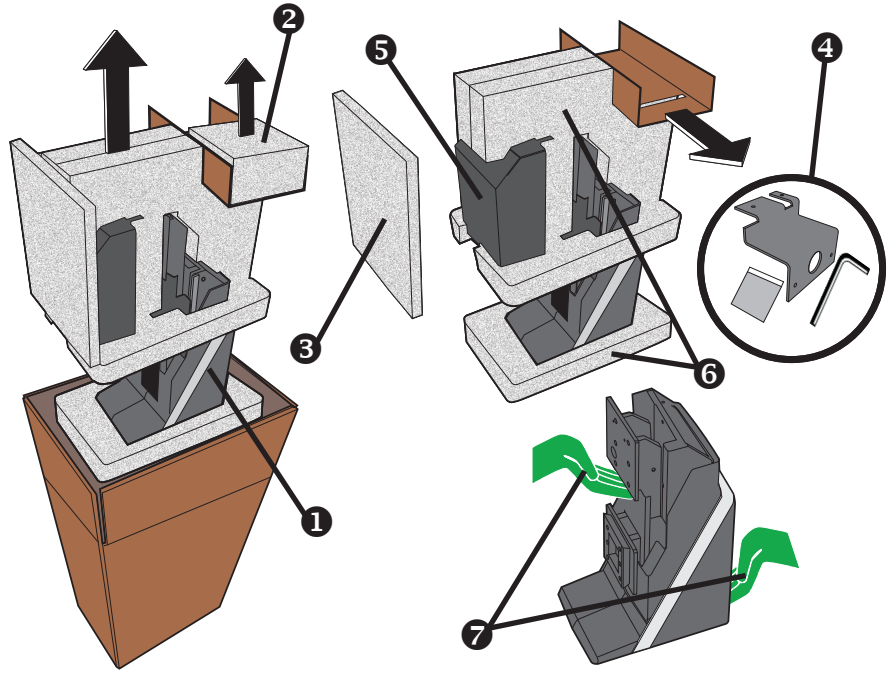
Zoom module

- Open the top of the box and remove the top tray ❶ containing the remote keypad ❷ (see *page 16* for attachment details), the foam objective lens holder ❸ (containing the objective len(s) ❹ - see *page 13* for attachment details) and the plastic bags ❺ containing the connection leads.
- Remove the zoom module ❻ from the lower part of the box, remove the foam packing ❼ and place the zoom module on a bench awaiting assembly (see *page 13*).



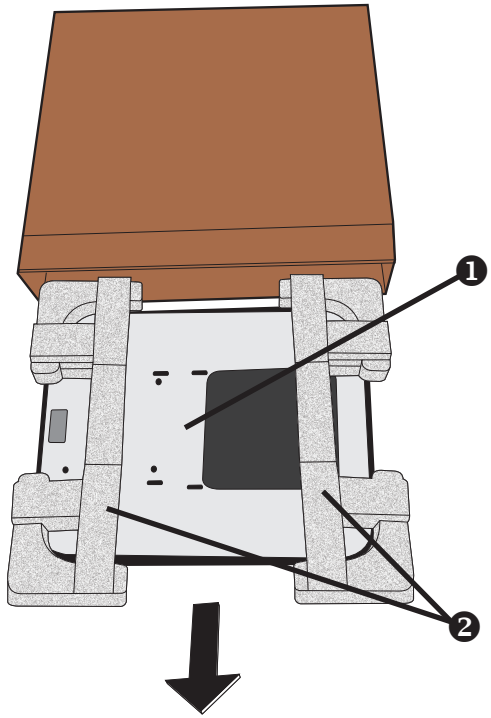
Stand

- Open the top of the box, lift the stand ❶ out complete with foam packing.
- Remove the foam packing ❷ from the cardboard tray and then remove and retain the front foam packing piece ❸ and the contents of the cardboard tray ❹ all of which will be used in the stand to base assembly procedure (see *page 11*).
- Remove the stand's protective cover ❺ then remove the remaining foam packing ❻ and, lifting the stand as shown ❼, place it on a bench awaiting assembly to the base (see *page 11*).



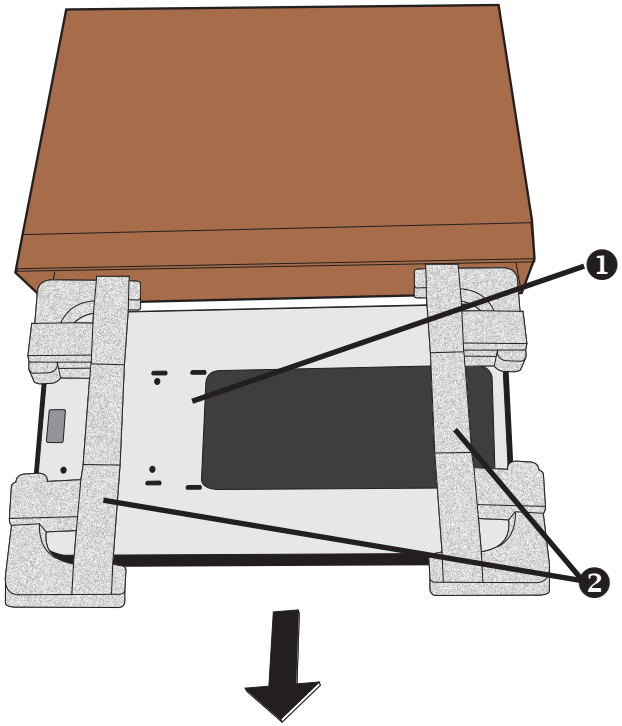
Small base

- Open the front of the box and slide out the short base ❶ and its foam packing ❷.
- Remove the foam packing and place the base on a bench ready for assembly to the stand (see *page 11*).



Large base

- Open the front of the box and slide out the large base ❶ and its foam packing ❷.
- Remove the foam packing and place the base on a bench ready for assembly to the stand (see *page 11*).

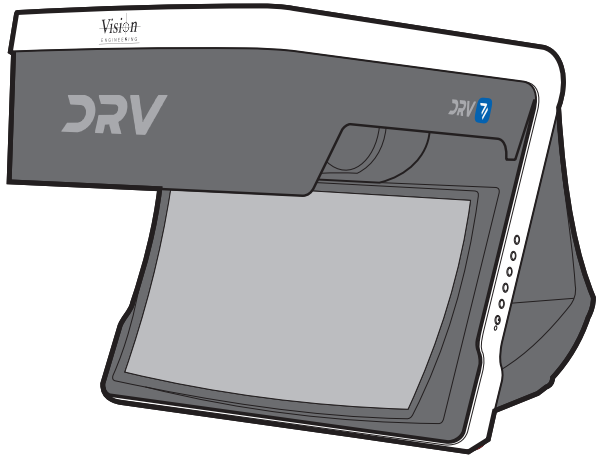


DRV-Z1

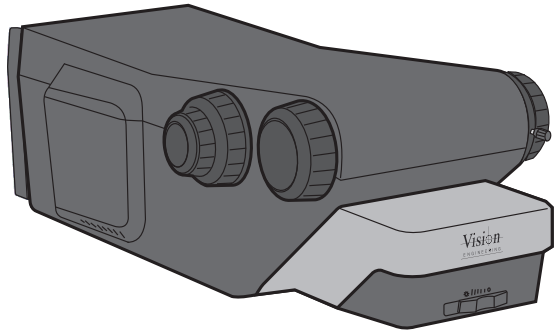
DRV is a unique, advanced, stereo image presentation system designed to provide fully interactive, real time, natural 3D visualisation with outstanding depth perception.

System equipment

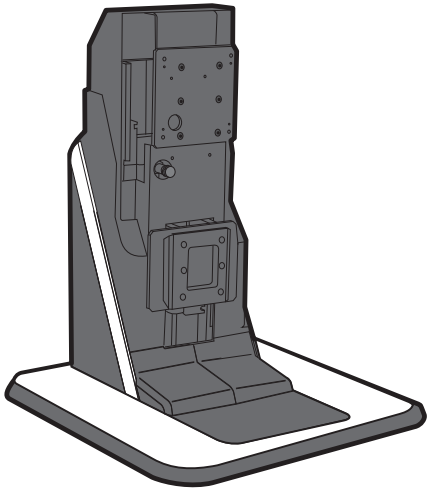
Display head



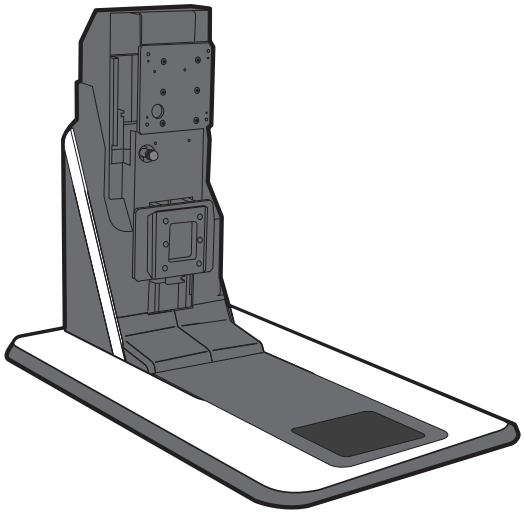
Zoom module



Short base stand

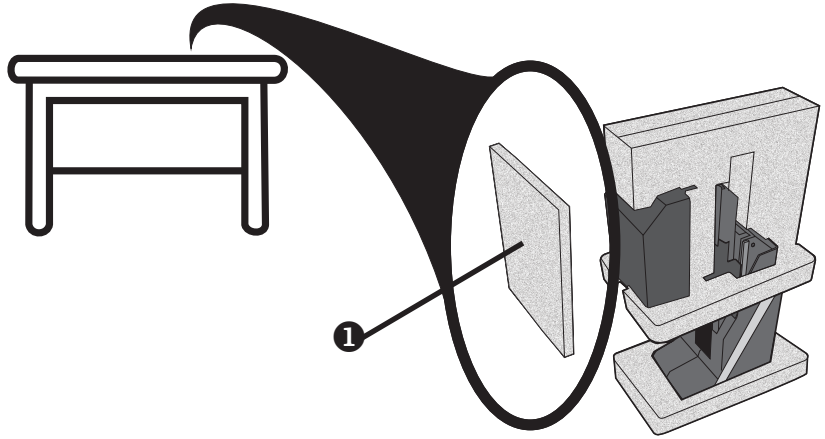


Long base stand

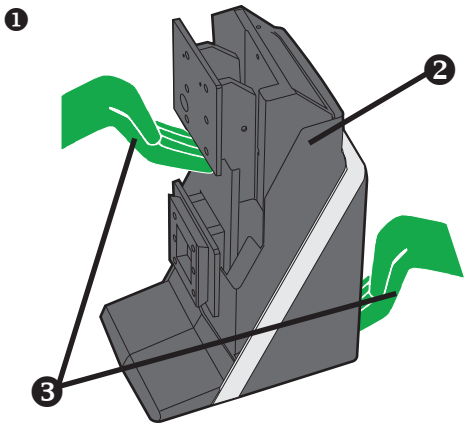


Stand to base attachment

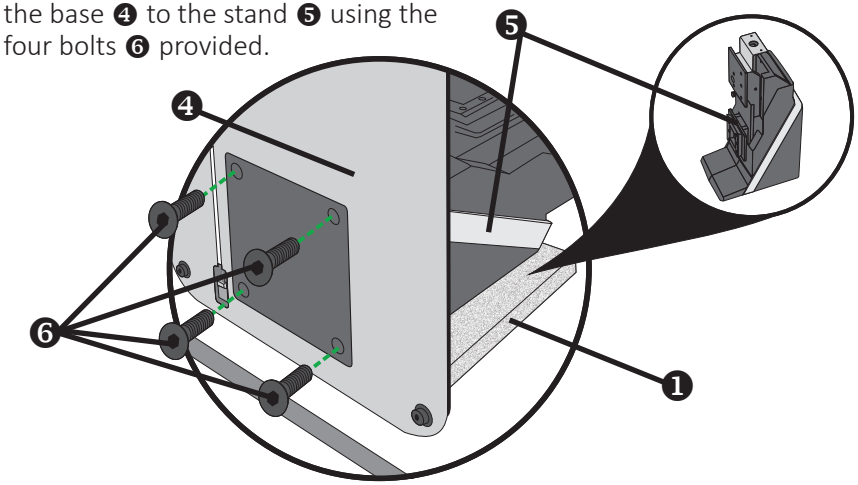
- Place the foam packing ❶ saved from the unpacking procedure on *page 7* and place it on a suitable bench.



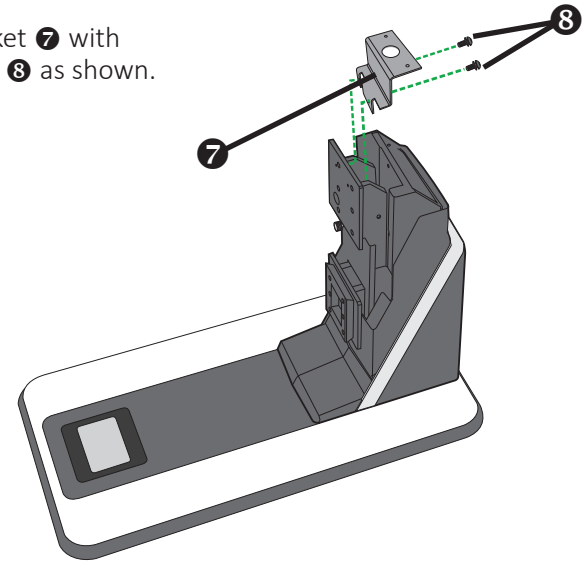
- Lift the stand ❷ as shown ❸ and place it on the foam packing ❶ saved above.



- Using the Allen key provided, attach the base ❹ to the stand ❺ using the four bolts ❻ provided.



- Attach the cover bracket ❼ with the bolts and washers ❽ as shown.

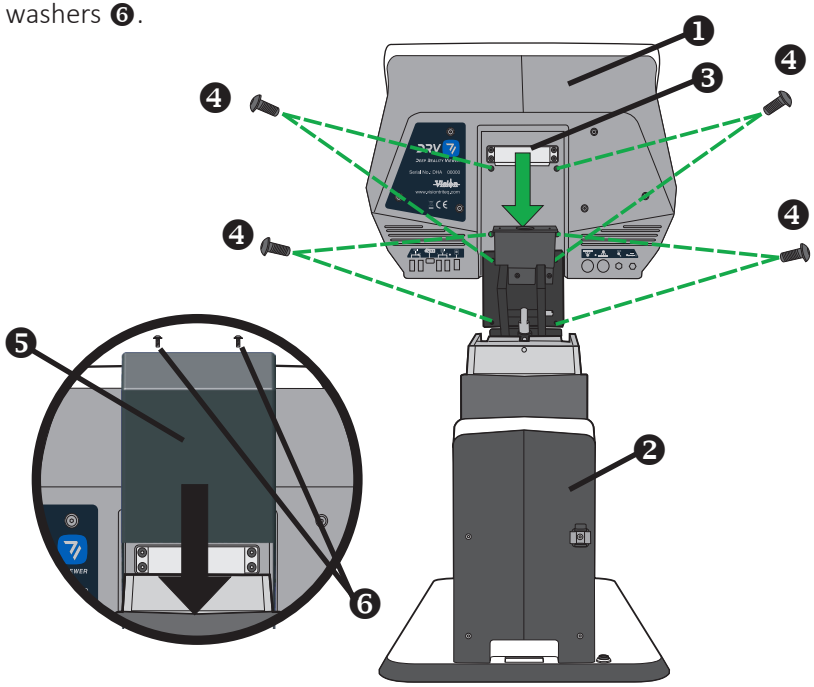


Head Attachment

- Ensure the table/bench on which the unit is to be assembled/used is suitable for the weight of the complete system.
- Position the stand so the head can be easily attached to it.

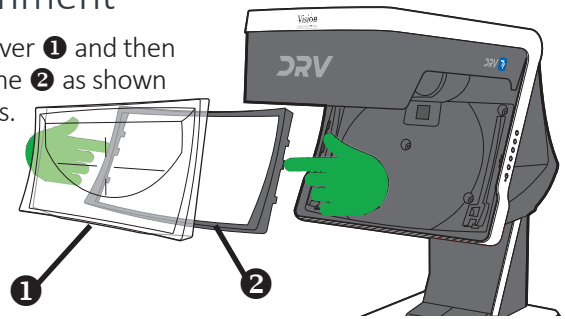
The head has to be lifted to approximately chest height. Due to the weight and size of the display head and system we recommend a two person lift.

- Lower the head ❶ on to the stand ❷ so the bracket ❸ is located accurately.
- With the stand in the uppermost position tighten the 4 securing screws ❹.
- Attach the stand's protective cover ❺ and its two securing screws and washers ❻.



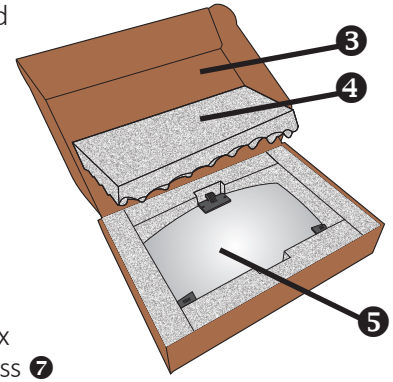
Front mirror attachment

- Remove the protective cover ❶ and then press the sides of the frame ❷ as shown to release its securing clips.



- Open the lid of the mirror box ❸ and lift off the top foam packing ❹.

Avoid touching the surface of the mirror ❺.

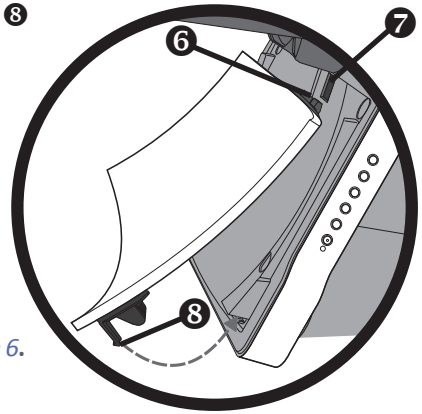


- Carefully lift the mirror ❺ from the box and place its top hook ❻ into the recess ❼ and locate the lower clips (two off) ❽ into position.
- Check the mirror is secure and replace the frame.

Replace the protective cover when the system is not in use.

Always remove the frame ❷ before cleaning the mirror

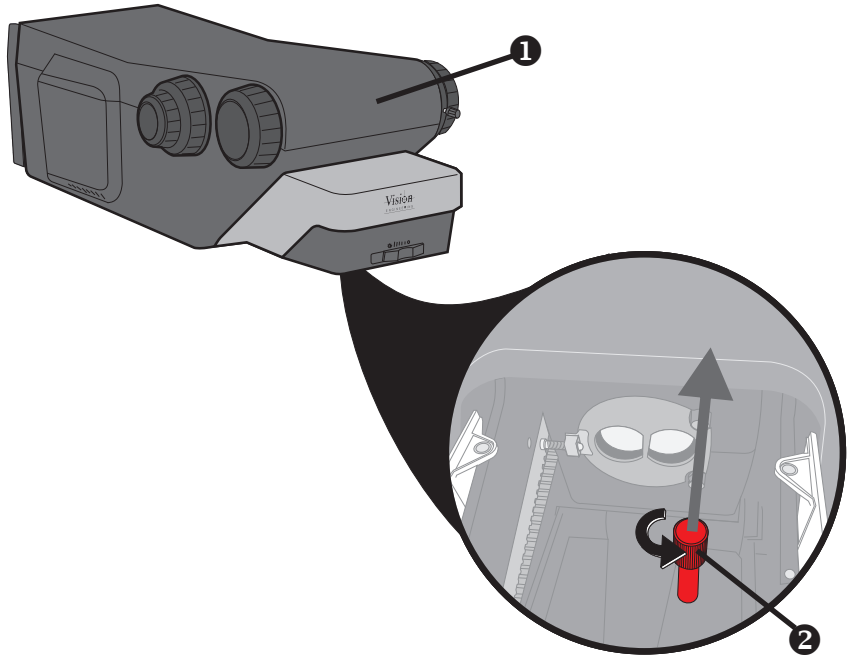
For cleaning instructions see *page 6*.



Zoom module attachment

Transit bolt removal

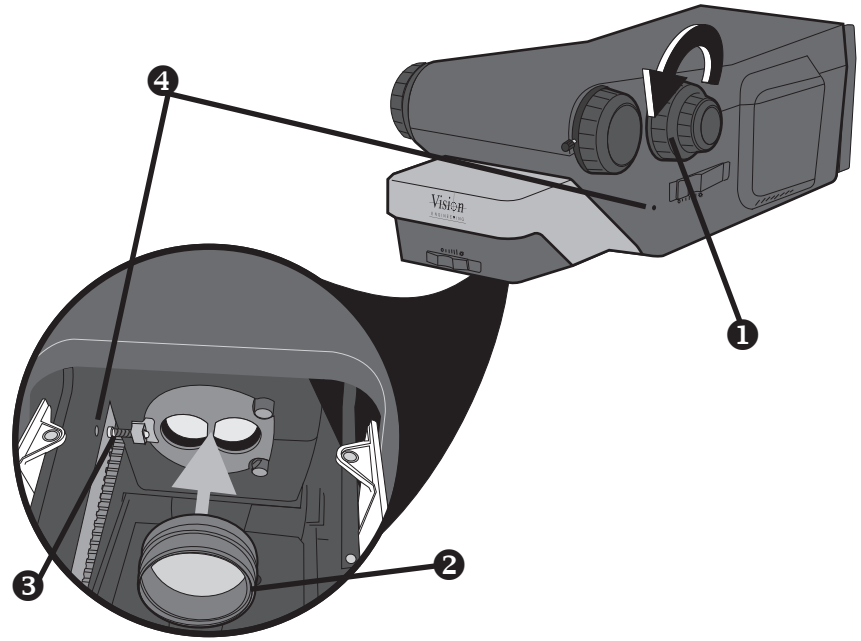
- Carefully turn the Zoom Module ❶ over, taking care not to touch the mirror.
- Unscrew and remove the transit bolt ❷.



Attaching the objective

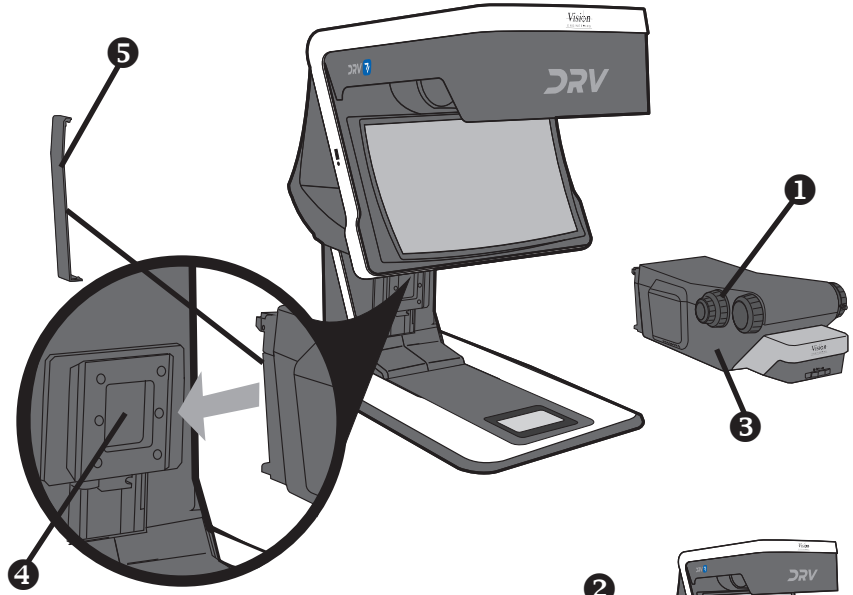
- Wind the coarse focus control ❶ to the back end-stop in order to line up the access holes for the Allen key.
- Locate the objective ❷ in position and lightly tighten the securing screw ❸ using the access hole ❹.

DO NOT OVER TIGHTEN.

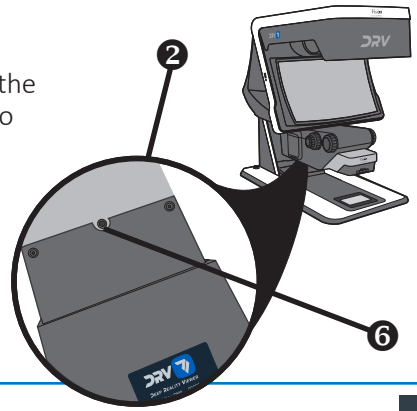


Attaching the zoom module

- If required wind the focus control ❶ to expose the dovetail and fixing screw head ❷.
- Slide the zoom module ❸ over the stand's mounting plate ❹ to the stop position.
- Attach the protective covers ❺ to the zoom module (one each side).

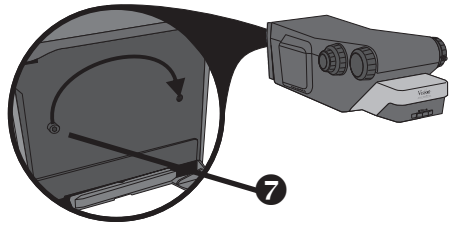


- Tighten the central screw ❻ on the underside of the zoom module to secure it using the 4mm Allen key provided.



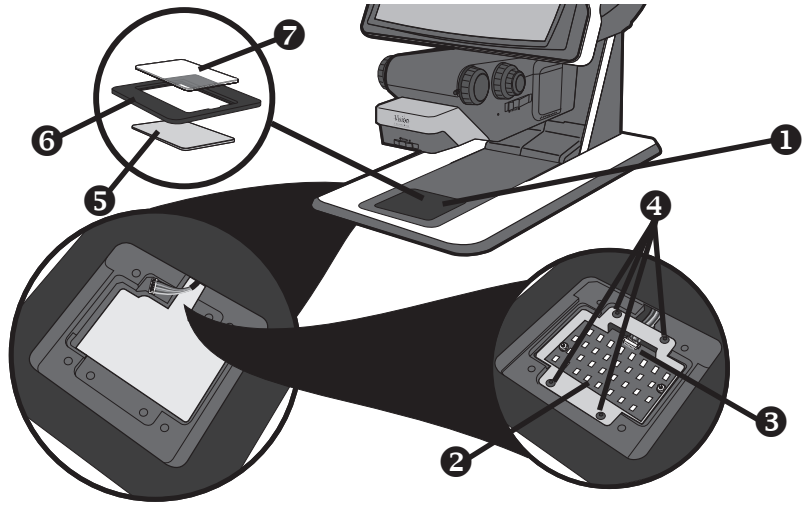
Support the front of the zoom module during tightening.

- If the location of the unit requires the zoom module to be attached from the opposite side of the stand, move the screw ❼ on the back of the zoom module as shown.

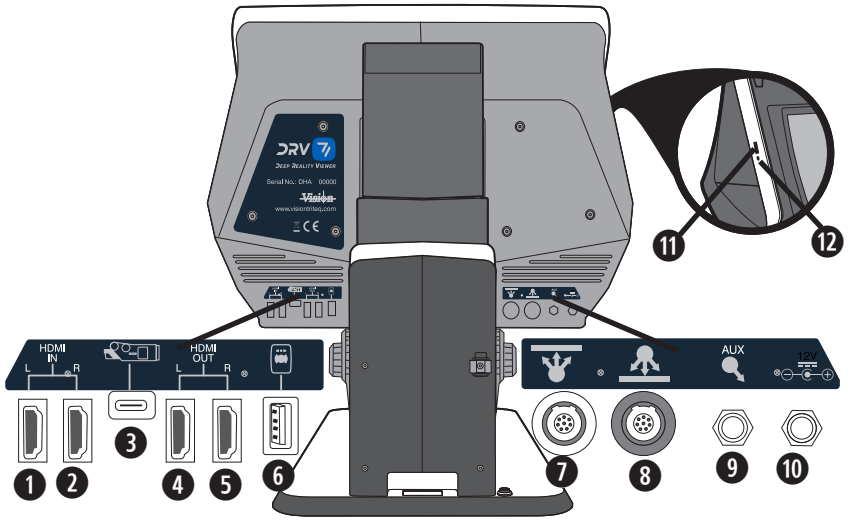


Substage illuminator attachment (optional, long base stand only)

- Remove the reversible plate ❶.
- Locate the substage circuit board ❷ into position and connect its cable ❸.
- Secure it in place with the four screws ❹ provided.
- Assemble the diffuser ❺ plate ❻ and glass ❼.

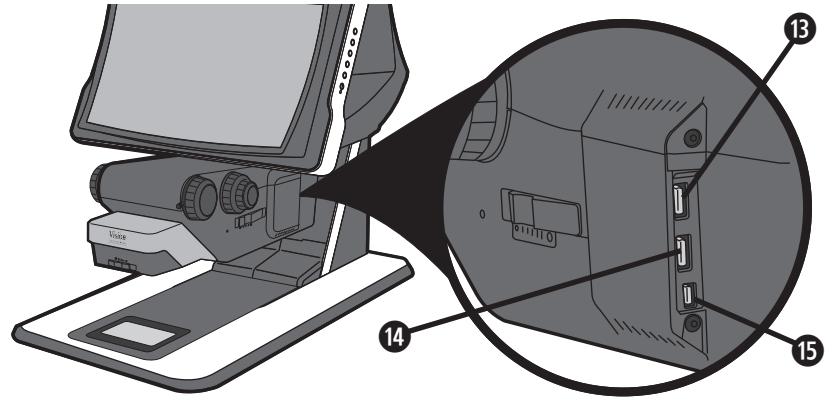


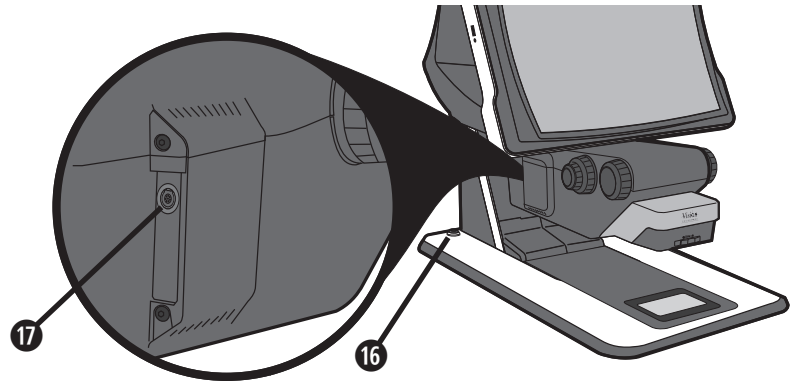
Display head connections



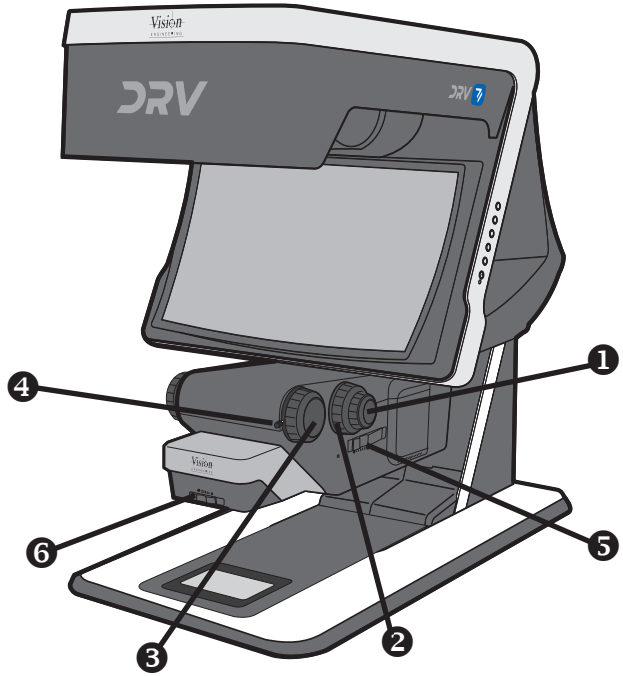
Display Head		Zoom Module / other
❶ HDMI IN Left	↔	⓭ HDMI Left
❷ HDMI IN Right	↔	⓮ HDMI Right
❸ Zoom Module power and control (USB-C)	↔	⓯ Power and control (USB-C)
❹ HDMI OUT Left	↔	Slave Display Head ❶ HDMI IN Left or external monitor
❺ HDMI OUT Right	↔	Slave Display Head ❷ HDMI IN Right or external monitor
❻ Remote Keypad / USB	↔	Remote Keypad / Memory Stick
❼ Substage illuminator	↔	⓰ Substage illuminator
❽ Ringlight illuminator	↔	⓱ Ringlight illuminator
❾ Auxiliary lighting output	↔	-
❿ Power in	↔	External power supply
⓫ USB port	↔	Memory stick / Remote Keypad
⓬ Headphone/speaker connection	↔	Headphones or external speakers

Zoom module connections



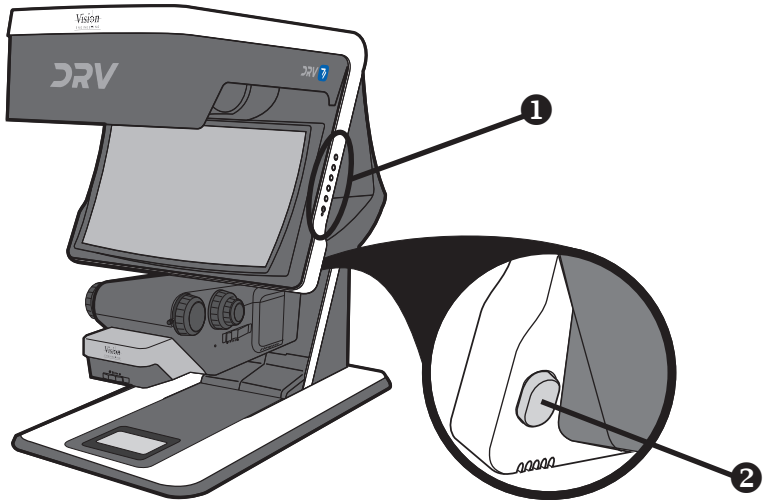


Zoom module controls

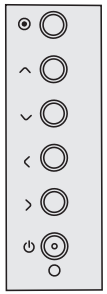


- ❶ Fine focus
- ❷ Coarse focus
- ❸ Zoom
- ❹ Zoom detent
- ❺ Iris control
- ❻ Diffuser

Display head controls



The user controls ❶ are to interact with the on-screen menu (see *page 17*) and adjust the system height:



- Select ⊙
- Up ^
- Down v
- Left <
- Right >
- Power on/off ⏻
- Status indicator LED indicates which state the system is currently in:
  Red if the system is in standby mode
  Green if the system is active
  Orange when initialising
- ❷ Head height control (depress the button and then raise or

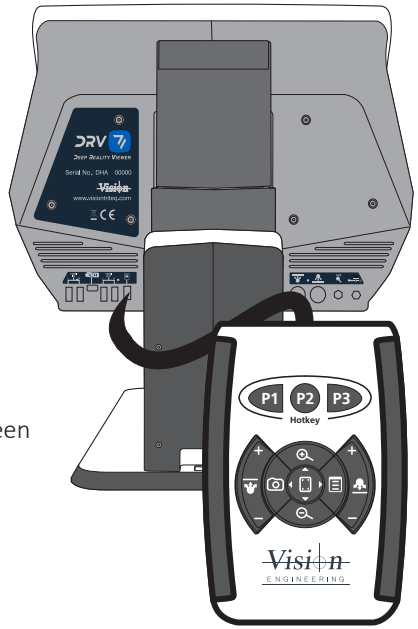
lower the head as required).

Remote keypad

- Connect the remote keypad as shown below:

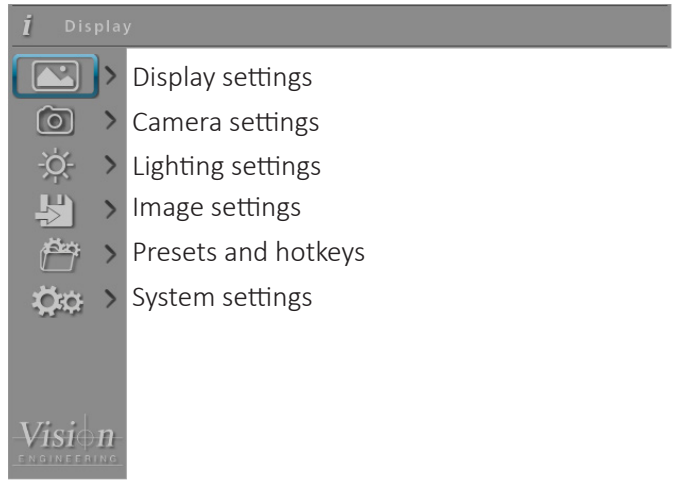
For details regarding Hotkeys and Presets, see *page 23*).

- The keypad controls are as follows:
  - Hotkey 1 P1 short or long press
  - Hotkey 2 P2 short or long press
  - Hotkey 3 P3 short or long press
  - Open menu or select
  - Up when the on-screen menu is open
  - Down when the on-screen menu is open
  - Save image or Left when the on-screen menu is open
  - Menu select or Right the on-screen menu is open
  - Substage illumination control
  - Ringlight illumination control



Main menu options

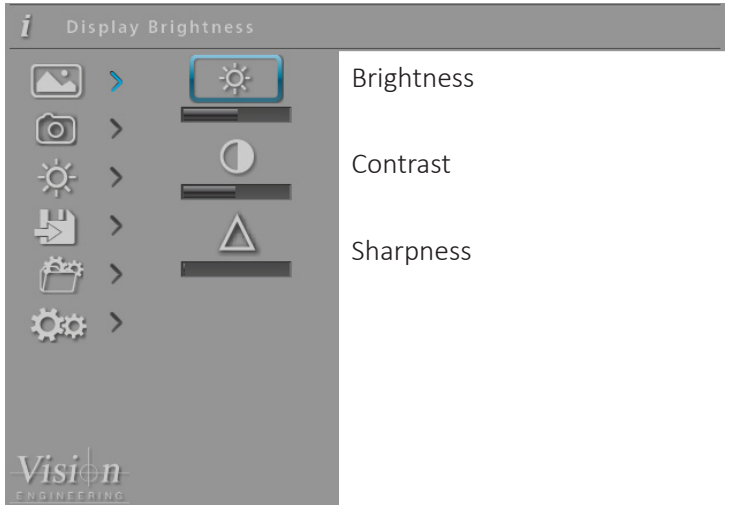
Both the Display head controls and the remote keypad can be used to access and navigate the menu



- To access the Main Menu press the › button.
- Use the ‹, ›, ^, and ˅ buttons on the display head to navigate the menu, and the ⊙ button on the display head to make a selection.
- To Exit a menu simply press the ‹ button until it is no longer displayed.
- Use the ˅ and ^ buttons to select the option required and then press › to display the relevant sub-menu.

Display settings

The following display setting options are available:



- Use the ⌄ and ⌃ buttons to highlight the icon and press › to show the Display options.

Brightness

This function enables the brightness of both displays to be adjusted.

- Use the ⌄ and ⌃ buttons to highlight the icon and press ⊙ to enable the brightness value to be altered.
- Use the ‹ and › buttons to decrease or increase the value (between 0-100) as required.
- With the required value set, press ⊙ to store it and then press ‹ to return to the display options menu.

Contrast

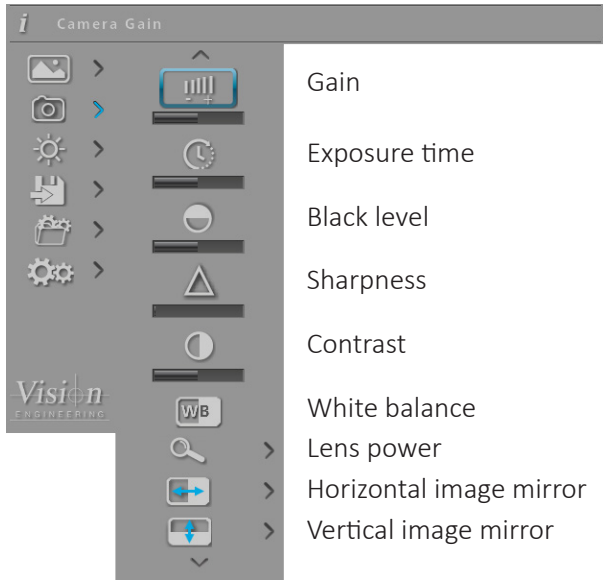
- This function enables the contrast of both displays to be adjusted.
- Use the ⌄ and ⌃ buttons to highlight the icon and press ⊙ to enable the contrast value to be altered.
- Use the ‹ and › buttons to decrease or increase the value (between 0-100) as required.
- With the required value set, press ⊙ to store it and then press ‹ to return to the display options menu.

Sharpness

- This function enables the sharpness of both displays to be adjusted.
- Use the ⌄ and ⌃ buttons to highlight the icon and press ⊙ to enable the sharpness value to be altered.
- Use the ‹ and › buttons to decrease or increase the value (between 0-5) as required.
- With the required value set, press ⊙ to store it and then press ‹ to return to the display options menu.

Camera settings

The following camera setting options are available:



- Use the ∨ and ∧ buttons to highlight the camera icon and press > to display the Camera options.

Gain

This function enables the gain setting of the camera to be adjusted.

- Use the ∨ and ∧ buttons to highlight the gain icon and press ⊙ to enable the gain value to be altered.
- Use the < and > buttons to decrease or increase the value as required.
- With the required value set, press ⊙ to store it and then press < to return to the camera options menu.

Exposure time

This function enables the shutter speed of the camera to be adjusted.

- Use the ∨ and ∧ buttons to highlight the clock icon and press ⊙ to enable the exposure time value to be altered.
- Use the < and > buttons to decrease or increase the value as required.
- With the required value set, press ⊙ to store it and then press < to return to the camera options menu.

Black level

This function enables the black level of the camera to be adjusted.

- Use the ∨ and ∧ buttons to highlight the black level icon and press ⊙ to enable the black level value to be altered.
- Use the < and > buttons to decrease or increase the value as required.
- With the required value set, press ⊙ to store it and then press < to return to the camera options menu.

Sharpness

This function enables the sharpness of the camera to be adjusted.

- Use the ∨ and ∧ buttons to highlight the sharpness icon and press ⊙ to enable the sharpness value to be altered.
- Use the < and > buttons to decrease or increase the value as required.
- With the required value set, press ⊙ to store it and then press < to return to the camera options menu.

Contrast

This function enables the contrast of the camera to be adjusted.

- Use the ⌄ and ⌃ buttons to highlight the icon and press ⊙ to enable the contrast value to be altered.
- Use the 〈 and 〉 buttons to decrease or increase the value as required.
- With the required value set, press ⊙ to store it and then press 〈 to return to the camera options menu.

White balance

This function enables the white balance of the camera to be set.

- Use the ⌄ and ⌃ buttons to highlight the WB icon and press ⊙ and then follow the on-screen prompts to set the white balance.
- Press 〈 to return to the camera options menu.

Lens power

This function adjusts the image colour (to aid chromatic correction) according to the objective lens fitted (unit default is set to 'None').

- Use the ⌄ and ⌃ buttons to highlight the icon and press ⊙ to enable the lens power value to be altered.
- Use the 〈 and 〉 buttons to select None, 0.33x, 0.4x or 0.5x as required.
- With the required value set, press ⊙ to store it and then press 〈 to return to the camera options menu.

Horizontal image mirror

This function mirrors the output image from the cameras horizontally.

- Use the ⌄ and ⌃ buttons to highlight the icon and press ⊙ to enable the horizontal mirror image to be set on or off.
- Use the ⌄ and ⌃ buttons to select either on or off as required.
- With the required state set, press ⊙ to store it and then press 〈 to return to the camera options menu.

When using the DRV Zoom module the horizontal image mirror should be set to 'ON' by default.

Vertical image mirror

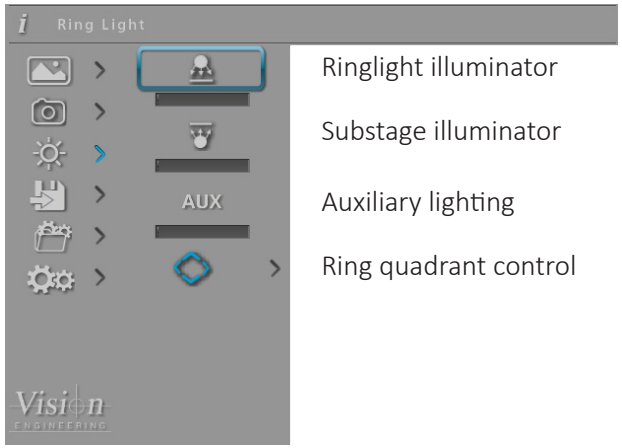
This function mirrors the output image from the cameras vertically.

- Use the ⌄ and ⌃ buttons to highlight the icon and press ⊙ to enable vertical mirror image to be set on or off.
- Use the ⌄ and ⌃ buttons to select either on or off as required.
- With the required state is set, press ⊙ to store it and then press 〈 to return to the camera options menu.

When using the DRV Zoom module the vertical image mirror should be set to 'OFF' by default.

Lighting settings

The following lighting setting options are available:



Ringlight illuminator

Substage illuminator

Auxiliary lighting

Ring quadrant control

- Use the ∨ and ∧ buttons to highlight the icon and press > to display the Lighting options.

Ringlight illumination

This function enables the intensity of the ringlight to be adjusted.

- Use the ∨ and ∧ buttons to highlight the icon and press ⊙ to enable the ringlight illumination value (0-25) to be altered.
- Use the < and > buttons to decrease or increase the value as required.
- With the required value set, press ⊙ to store it and then press < to return to the lighting options menu.

Substage illumination

This function enables the intensity of the substage to be adjusted.

- Use the ∨ and ∧ buttons to highlight the icon and press ⊙ to enable the substage illumination value (0-25) to be altered.
- Use the < and > buttons to decrease or increase the value as required.
- With the required value set, press ⊙ to store it and then press < to return to the lighting options menu.

Auxiliary lighting

This function enables the intensity of the Auxiliary light to be adjusted.

- Use the ∨ and ∧ buttons to highlight the AUX icon and press ⊙ to enable the Auxiliary light illumination value (0-25) to be altered.
- Use the < and > buttons to decrease or increase the value as required.
- With the required value set, press ⊙ to store it and then press < to return to the lighting options menu.

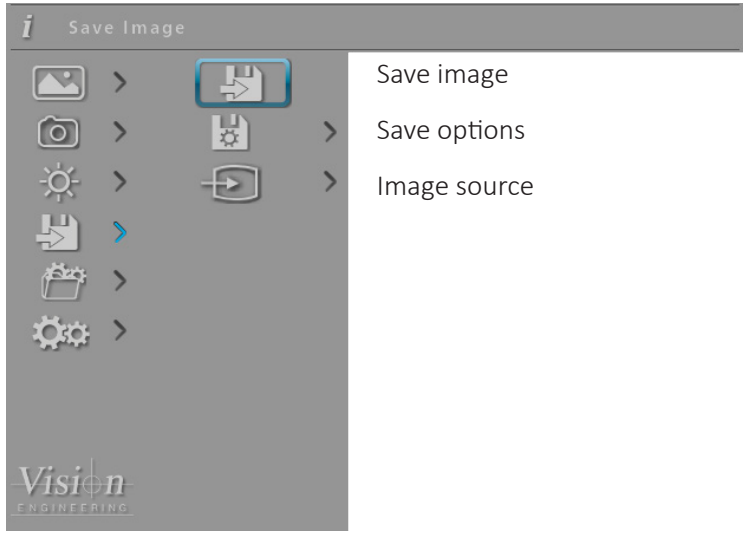
Ring quadrant control

This function enables the segments of the ring quadrant light to be turned on or off.

- Use the ∨ and ∧ buttons to highlight the icon and press > to enable the selection of the appropriate quadrant to turn on or off.
- Use the ∨ and ∧ buttons to select the required quadrant icon.
- With the required quadrant selected, press > and then use the ∨ and ∧ buttons select either on or off as required.
- Press ⊙ to set the required state and then < to return to the lighting options menu.

Image saving and source settings

The following image setting options are available:



- Use the ⌄ and ⌃ buttons to highlight the icon and press › to display the Image saving and source settings options.

Save image

- This function saves images from both displays to a memory stick.
- Use the ⌄ and ⌃ buttons to highlight the icon and press ⊙ to save the images to the memory stick connected to the USB port.

Save options

This function saves the image either as separate PNG files with left and right (L&R) denotation or as a single extended PNG file.

- Use the ⌄ and ⌃ buttons to highlight the icon and press › to display the **L&R** and **Extended** options.
- Use the ⌄ and ⌃ buttons to the highlight required option, press ⊙ to set it and then press ‹ to return to the image save options menu.

Image source

This function can either send live image from HDMI input to displays or stills from USB to the displays (each png file name on memory stick will be displayed).

- Use the ⌄ and ⌃ buttons to highlight the icon and press › to display the LIVE and USB icons.
- Use the ⌄ and ⌃ buttons to the highlight required option, press ⊙ to set it and then press ‹ to return to the image save options menu.
- When USB is selected, an on screen pop-up will be displayed showing a preview of the files on the USB drive.
- Use ⌃ and ⌄ buttons to select correct image and press ⊙ to load

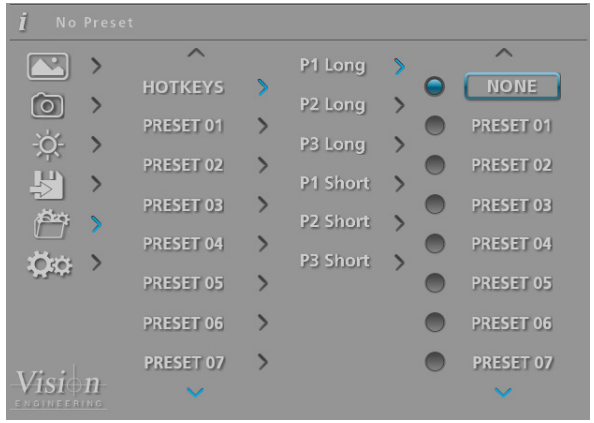
Only PNG images with _L, _R or _S at the end of their file names can be loaded

Image loading times will vary with file size

Presets and hotkeys

The following preset and hot key options are available:

- Hotkey long press
- Hotkey short press
- Presets



- Use the ∨ and ∧ buttons to highlight the icon and press > to display the Presets and hot key options.

Hot key long press

This function loads the selected preset conditions (1-10 or None) on to the required hot key which will be applied when the hot key (P1-P3) is held down for more than 2 seconds.

- Use the ∨ and ∧ buttons to highlight the **HOTKEYS** icon, press > to display the hot key menu and then use the ∨ and ∧ buttons to highlight the required P1 to P3 long icon.
- Use the ∨ and ∧ buttons to highlight the required preset (1-10 or None), press ⊙ to set it and then press < to return to the presets menu.

Hot key short press

This function loads one of the selected functions (see below) on to the required hot key which will be applied when the hot key (P1-P3) is pressed momentarily.

When loaded the functions can be changed using the ∧ and ∨ keys (and on the remote keypad)

For Lighting quadrant control ∧, ∨, < and > buttons control their respective quadrants (, , and buttons on remote keypad)

The functions that can be loaded are as follows:

- None
- Camera gain
- Camera exposure
- Lighting quadrant control
- Screen brightness
- Digital zoom
- Auto white balance (AWB)

A second short press of the hot key will deactivate the loaded function.

- Use the ∨ and ∧ buttons to highlight the **HOTKEYS** icon, press > to display the hot key menu and then use the ∨ and ∧ buttons to highlight the required P1 to P3 short icon.
- Use the ∨ and ∧ buttons to highlight the required function, press ⊙ to set it and then press < to return to the presets menu.

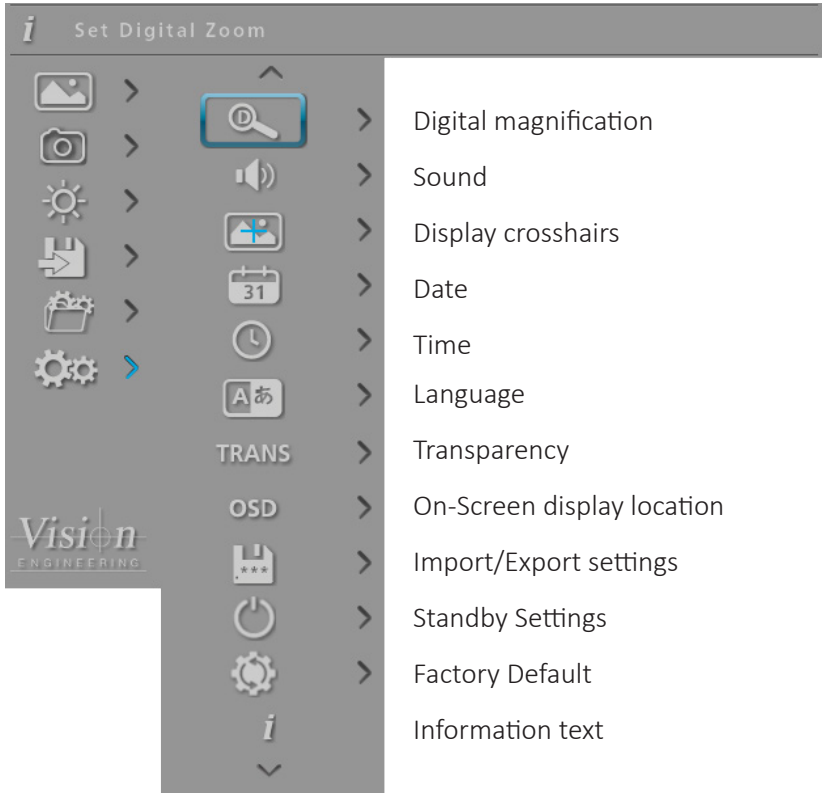
Presets

This function is used to **Save** the current settings to a preset (01-10), **Apply the saved settings to the system, Export** the current settings to a USB drive or **Import** settings from a USB drive.

- Use the ∨ and ∧ buttons to highlight required preset (01-10), press > to display the preset options and then use the ∨ and ∧ buttons to highlight the required option.
- Press ⊙ to set it and then press < to return to the presets menu.

General settings

The following preset and settings options are available:



- Use the ∨ and ∧ buttons to highlight the icon and press > to display the General settings options.

Digital magnification

This function turns digital magnification on or off.

- Use the ∨ and ∧ buttons to highlight the icon, press > to display the options then use the ∨ and ∧ buttons to highlight On or Off as required, press ⊙ to set the selection and then press < to return to the settings menu.

When digital magnification is turned on a icon will be shown in the corner of the screen

Sound

This function sets the Sound options.

- Use the ∨ and ∧ buttons to highlight the icon and press > to display the sound options.
- To mute the sound, use the ∨ and ∧ buttons to highlight the icon, press > to display the options then use the ∨ and ∧ buttons to highlight the required option.
- Press ⊙ to set the selection and then press < to return to the settings menu.
- To set the speaker volume, use the ∨ and ∧ buttons to highlight the icon, press ⊙ and then use the < and > buttons to adjust the volume to the required level (0-25).
- Press ⊙ to set the selected level and then press < to return to the settings menu.
- To set the headphone volume, use the ∨ and ∧ buttons to highlight the icon, press ⊙ and then use the < and > buttons to adjust the volume to the required level (0-25).
- Press ⊙ to set the selected level and then press < to return to the settings menu.

When headphones or external speakers are plugged in the internal speakers will mute.

Crosshair settings

This function sets the display crosshair options.

- Use the ⌄ and ⌃ buttons to highlight the  icon and press ❯ to display the crosshair options.
- To turn the crosshair on or off or set its size, use the ⌄ and ⌃ buttons to highlight the  icon, press ❯ to display the options then use the ⌄ and ⌃ buttons to highlight the required option (Off, short or long).
- Press ⊙ to set the selection and then press ❮ to return to the settings menu.
- To set the crosshair colour, use the ⌄ and ⌃ buttons to highlight the  icon, press ❯ to display the colour options then use the ⌄ and ⌃ buttons to highlight the required option.
- Press ⊙ to set the selection and then press ❮ to return to the settings menu.

Date settings

This function sets the Date options.

- Use the ⌄ and ⌃ buttons to highlight the  icon and press ❯ to display the date options.
- Use the ⌄ and ⌃ buttons to highlight the required date format, press ⊙ to select it.
- To set the current date use the ⌄ and ⌃ buttons to highlight the day of the month (DD) value, press ⊙ to enable value to be altered and use the ❮ and ❯ buttons to decrease or increase the value as required.
- Repeat the above for the month (MM) and year (YY) if necessary.
- Press ⊙ to set the selection and then press ❮ to return to the settings menu.

Time settings

This function sets the system time.

- Use the ⌄ and ⌃ buttons to highlight the  icon and press ❯ to display the time settings.
- Use the ⌄ and ⌃ buttons to highlight the required time value, hours (HR) or minutes (MIN), then press ⊙ to select it.
- Use the ⌄ and ⌃ buttons to decrease or increase the value as required.
- Press ⊙ to set the value and then press ❮ to return to the settings menu.

Language selection

This function sets the language used from the following options.

- English
- German (Deutsch)
- French (Français)
- Spanish (Español)
- Italian (Italiano)
- Portuguese (Português)
- Korean (한국의)
- Chinese (中国)
- Japanese (日本の)
- Russian (русский)

- Use the ⌄ and ⌃ buttons to highlight the  icon and press ❯ to display the language options.
- Use the ⌄ and ⌃ buttons to highlight the required language, press ⊙ to select it then press ❮ to return to the settings menu.

Transparency

This function sets the Transparency level of the on-screen menu.

- Use the ∨ and ∧ buttons to highlight the TRANS icon and press > to display the transparency value field.
- Press ⊙ to enable value to be altered and use the < and > buttons to decrease or increase to the required level (0-100).
- Press ⊙ to set the selected level and then press < to return to the settings menu.

On-screen display (OSD) position

This function sets the position for the on-screen display.

- Use the ∨ and ∧ buttons to highlight the OSD icon and press > to display the OSD position options.
- Use the ∨ and ∧ buttons to highlight the required position, press ⊙ to select it then press < to return to the settings menu.

Import/Export

This function allows the full system settings including all parameters and any saved presets to be exported to a USB memory stick or imported from a USB stick. This function is useful when setting up multiple systems with the same settings.

- Use the ∨ and ∧ buttons to highlight the  icon and press > to display the export/import options.
- Use the ∨ and ∧ buttons to highlight the required option (Export  or Import ) press ⊙ to select it then press < to return to the settings menu.

System Standby option

This control turns on or off the feature which puts the system into standby after a set time if no input is detected.

- Use the ∨ and ∧ buttons to highlight the  icon and press > to display the on and off options.
- Use the ∨, ∧ and ⊙ buttons to select and apply the desired option.

Factory Defaults

This function resets all settings back to their factory default settings. All presets and saved data will also be removed.

- Use the ∨ and ∧ buttons to highlight the  icon and press > to display the option.
- Press ⊙ to return to factory default settings.

Information Text

This function displays the version information of the software

- Use the ∨ and ∧ buttons to highlight the  icon and press ⊙ to show the information window.

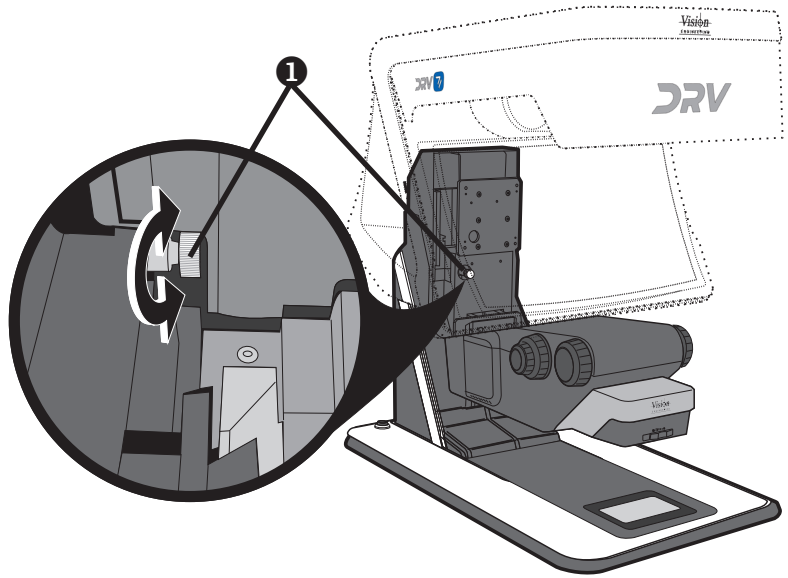
Troubleshooting

Issue	Solution
Hardware	
Brake squeaks or does not release when brake button pressed and head moved.	Brake adjusted between the head and the stand needs turning anti-clockwise (viewed from front). Try a ¼ turn at a time.
Head moves too easily up and down, perhaps without the button being pressed.	Brake adjusted between the head and the stand needs turning clockwise (viewed from front). Try a ¼ turn at a time.
Black marks appear on screen to only one eye.	Remove rear cover on opposite side to the side where the dirt can be seen and carefully wipe clean the LCD display with the supplied lens cloth.
Software	
Left and right channels are wrong way round	This sometimes happens and is easily fixed by swapping HDMI connectors over.
The image doesn't change when the camera controls on the menu are adjusted.	The USB-C cable may not be fully connected meaning it will power the camera board, but not communicate with it. Make sure it is fully inserted at both ends.
Camera Image is mirrored left to right	Adjust horizontal mirror setting in Camera settings menu. Should be on by default when using Zoom module.

Further head height adjustment

If the up and down head movement (see *page 16*) needs adjustment, proceed as follows:

- Adjust the friction control ❶ by turning it clockwise to decrease the friction or anticlockwise to increase it.



Technical data

Optical data

Objective lenses	Part Number	Optical Magnification range	Working distance	Field of View at minimum mag H/V	Field of View at maximum mag H/V
0.33x	DRV233	6.1x – 61x	182mm	65.5/36.8mm	6.5/3.7mm
0.4x	DRV240	7.4x – 74x	138mm	54.0/30.4mm	5.4/3.0mm
0.5x	DRV250	9.3x – 93x	93mm	43.2/24.3mm	4.3/2.4mm

Plus 2x digital magnification

Optical Magnification Formula

The markings on the Zoom control give the correct system magnification for the 0.4x objective lens. If using the 0.33x or 0.5x use either the table or the formula below to give the overall system optical magnification.

X0.33	6.1	8.3	12.4	16.5	20.6	24.8	28.9	33.0	37.1	41.3	45.4	49.5	53.6	57.8	61.1
X0.40	7.4	10	15	20	25	30	35	40	45	50	55	60	65	70	74
X0.50	9.3	12.5	18.8	25	31.3	37.5	43.8	50.0	56.3	62.5	68.8	75	81.3	87.5	92.5

$$\text{System Optical Magnification} = \left(\frac{\text{Zoom Control Magnification}}{0.40}\right) \times \text{Objective Lens Magnification}$$

Example using the X0.33 objective: $\left(\frac{7.4}{0.40}\right) \times 0.33 = 6.1$

System weight

DRV System	Weight
Head weight (no mirror)	17.9kg
Mirror weight	2.1kg
Stand weight	11kg
Short Base weight	4kg
Long Base weight	7kg
Zoom module weight	7.5kg
Total system	45.5kg MAX

All weights are NET.

System power

Input	Output
100-240V AC 50/60Hz	12V 5A max 60W max

This is the maximum power delivered by the unit power supply. Only use with the supplied power supply.

Service record

Service	Comments	Date of service	Date of next service	Company	Signature

Vision ENGINEERING

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.

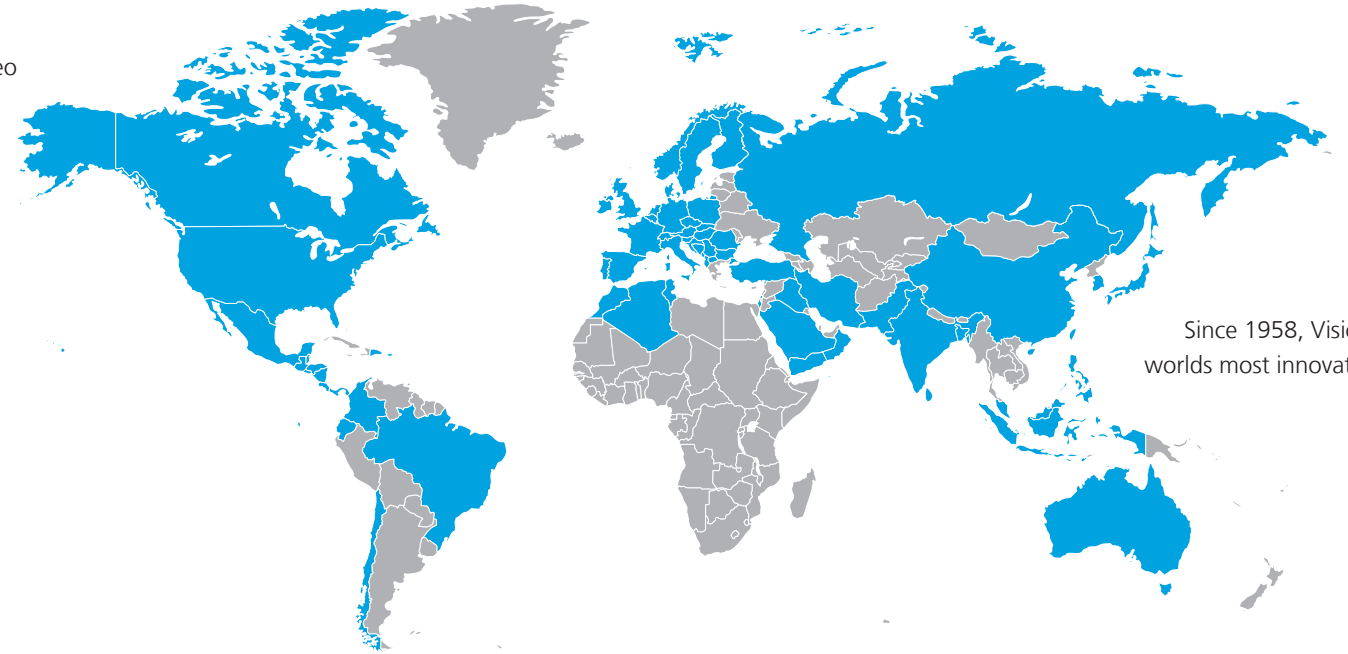
If during the warranty period the product is found to be defective, it will be repaired or replaced at facilities of Vision Engineering or elsewhere, all at the option of Vision Engineering. However, Vision Engineering reserves the right to refund the purchase price if it is unable to provide replacement, 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.

Vision Engineering is a global manufacturer of ergonomic stereo microscopes, digital inspection systems and optical and video measuring systems.



Since 1958, Vision Engineering has become one of the worlds most innovative and dynamic microscope suppliers.

For more information...

For more information, please contact your Vision Engineering branch, local authorised distributor, or visit our website.

Distributor

CE

Vision Engineering Ltd.
(UK Manufacturing & Commercial)
The Freeman Building, Galileo Drive,
Send, Surrey, GU23 7ER, UK
Tel: +44 (0) 1483 248300
Email: generalinfo@visioneng.co.uk

Vision Engineering Ltd.
(Italia)
Via G. Paisiello 106
20092 Cinisello Balsamo MI, Italia
Tel: +39 02 6129 3518
Email: info@visioneng.it

Vision Engineering
(South East Asia)
P-03A-20, Impian Meridian,
Jalan Subang 1,
USJ 1, 47600 Subang Jaya,
Selangor Darul Ehsan, Malaysia
Tel: +604-619 2622
Email: info@visioneng.asia

Vision Engineering
(Mexico)
Tel: +01 800 099 5325
Email: infomx@visioneng.com

Vision Engineering Inc.
(NA Manufacturing & Commercial)
570 Danbury Road,
New Milford, CT 06776, USA
Tel: +1 (860) 355 3776
Email: info@visioneng.com

Vision Engineering Ltd.
(France)
ZAC de la Tremblaie,
Av. de la Tremblaie
91220 Le Plessis Paté, France
Tel: +33 (0) 160 76 60 00
Email: info@visioneng.fr

Vision Engineering
(China)
Room 904B, Building B, No.970,
Nanning Road, Xuhui Vanke Center
Shanghai, 200235, P.R. China
Tel: +86 (0) 21 5036 7556
Email: info@visioneng.com.cn

Vision Engineering
(Latin America)
Email: infomx@visioneng.com

Vision Engineering Ltd.
(Central Europe)
Anton-Pendele-Str. 3,
82275 Emmering, Deutschland
Tel: +49 (0) 8141 40167-0
Email: info@visioneng.de

Nippon Vision Engineering
(Japan)
272-2 Saedo-cho, Tsuduki-ku,
Yokohama-shi, 224-0054, Japan
Tel: +81 (0) 45 935 1117
Email: info@visioneng.jp

Vision Engineering
(India)
Tel: +91 (0) 80-5555-33-60
Email: info@visioneng.co.in

Vision Engineering
(Brazil)
Email: info@visioneng.com.br

Visit our multi-lingual website:

www.visioneng.com