Quick Guide - ZEISS CALLISTO eye 3.6 matching the reference image

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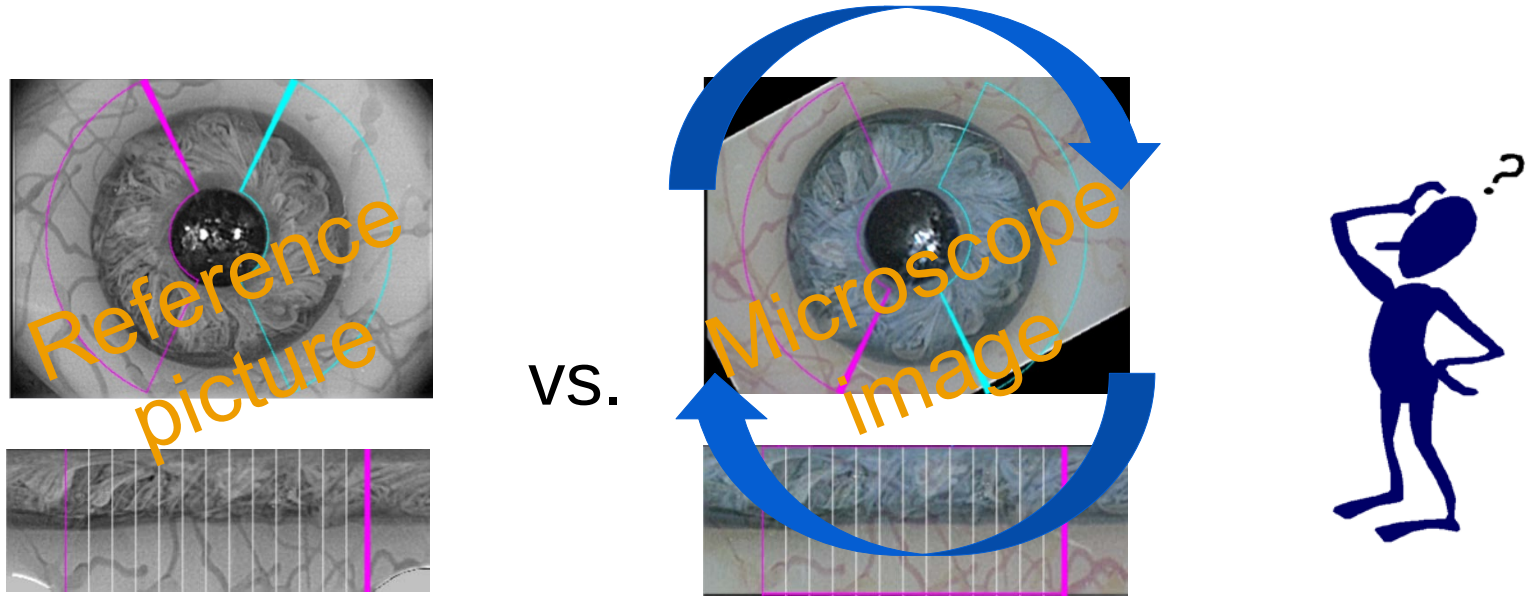
EN_39_150_0025I

Quick Guide - ZEISS CALLISTO eye 3.6 matching the reference image
Introduction - Algorithm



- ZEISS CALLISTO eye® aligns the microscope image (colored picture) according to the reference picture (black & white, captured by the ZEISS IOLMaster®) regarding the position of the scleral blood vessels. Fine adjustment has to be done by the user after successful matching to ensure reliable assistant functions.

- **The good quality of the reference picture is the starting point of a successful toric IOL alignment. If the reference picture is not in good quality, repeat the ZEISS IOLMaster measurement!**

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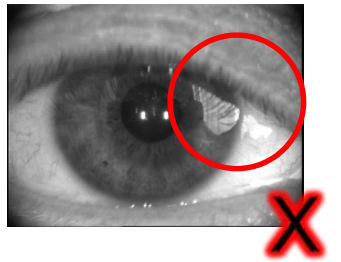
Capture the IOLMaster reference picture

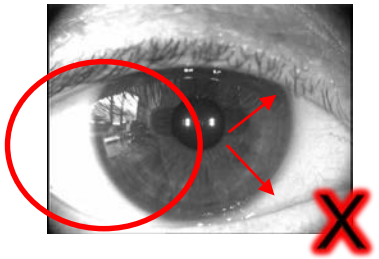
- Use the side covers on the ZEISS IOLMaster headrest or put a black rag over the patients head to avoid disturbing light reflections on the sclera

- Advise the patient to blink once before starting the measurement to ensure a proper tearfilm → keratometric values of anterior corneal surface is measured again while capturing the reference picture. Use artificial drops if patient has tearfilm of bad quality

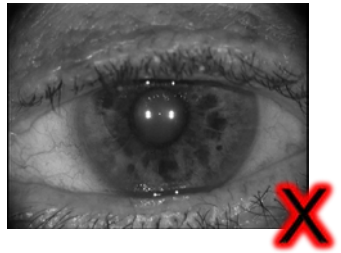
- Eyes opened widely – if patient cannot open the eyes widely by his own (e.g. due to Ptosis), lift the upper lid by using a Q-tip. Be carefull to not squeeze on the cornea while lifting the upper lid, otherwise keratometric values will be falsified



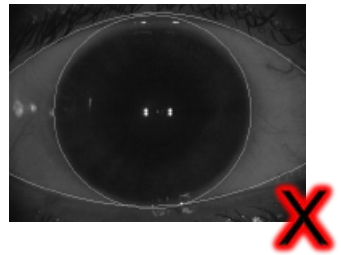
- Lids too close
- Defocussed
- Nasally disturbing light



- Lids too close
- Defocussed
- Nasally disturbing light – scleral blood vessels not visible at all!



- Lids too close



- Too dark

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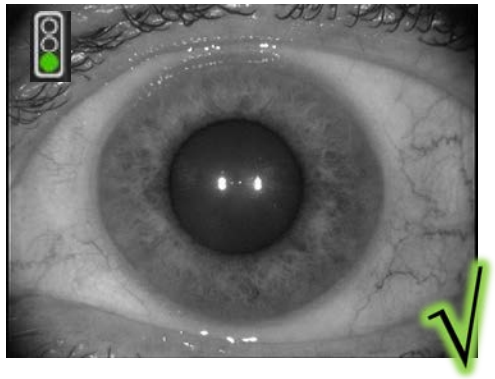
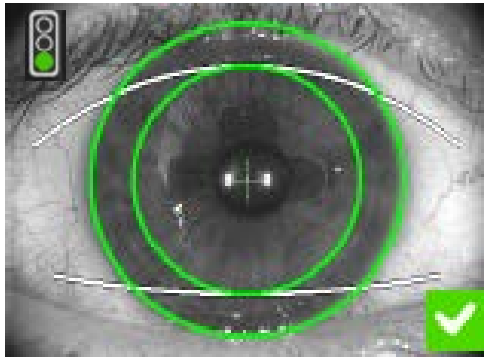
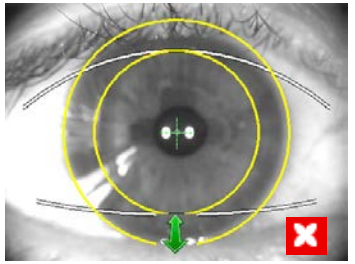
Capture the IOLMaster reference picture

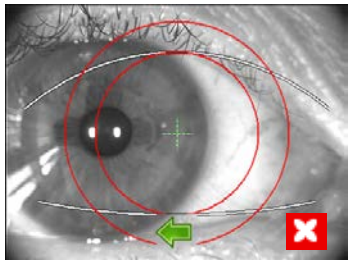
- The green arrows, the traffic light and the color code help you to find the right measurement position for focus & centration
- Check the image quality directly after the ZEISS IOLMaster measurement: focus, centration, sharpness & the amount of scleral blood vessels. Repeat the measurement if needed!
- **The good quality of the reference picture ensures your success of the matching on ZEISS CALLISTO eye!**



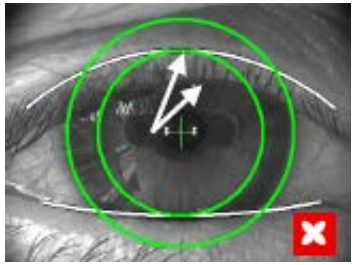




defocussed



decentered



lids too close

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Microscope requirements

a. White balance test was performed successfully on a piece of white paper

b. Microscope head is not tilted above the patients eye – 2 small black lines are coincident, if not adjust over the big black knob*

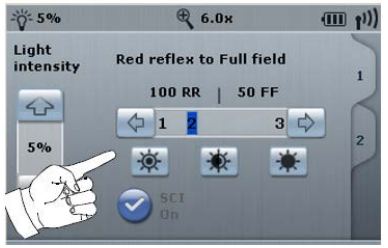
c. For an homogenous red reflex the microscope illumination should be set up: 100% coaxial illumination (SCI) : 30 – 50% full field illumination*

d. No light sources switched on next to the microscope head, which can produce dusturbing light reflections on the patients eye

e. Light filters are deactivated (e.g. yellow filter)

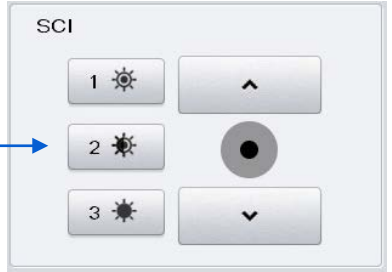
*b)

*c)



Adjust directly at the microscope, or:

SCI 100%
FF 30-50%



adjust under Lumera options at CALLISTO

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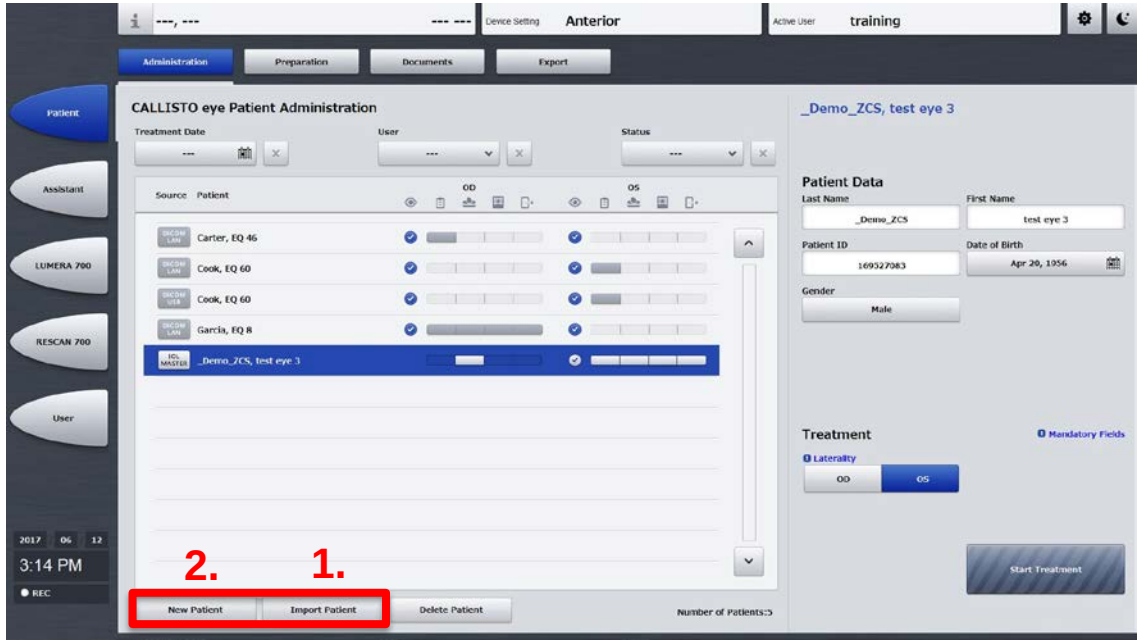
Import Patient

Import Patient



1. Import patient data*
   - FORUM (LAN)
   - IOLMaster (USB)

2. Or set up the patient directly on CALLISTO eye screen

*IOLMaster report of ZEISS IOLMaster 500 or ZEISS IOLMaster 700 including the reference picture

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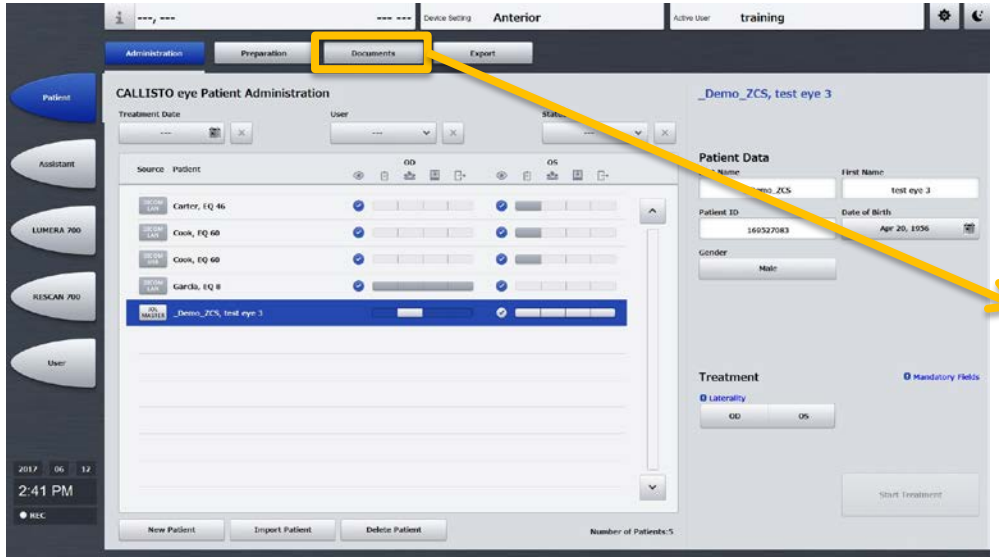
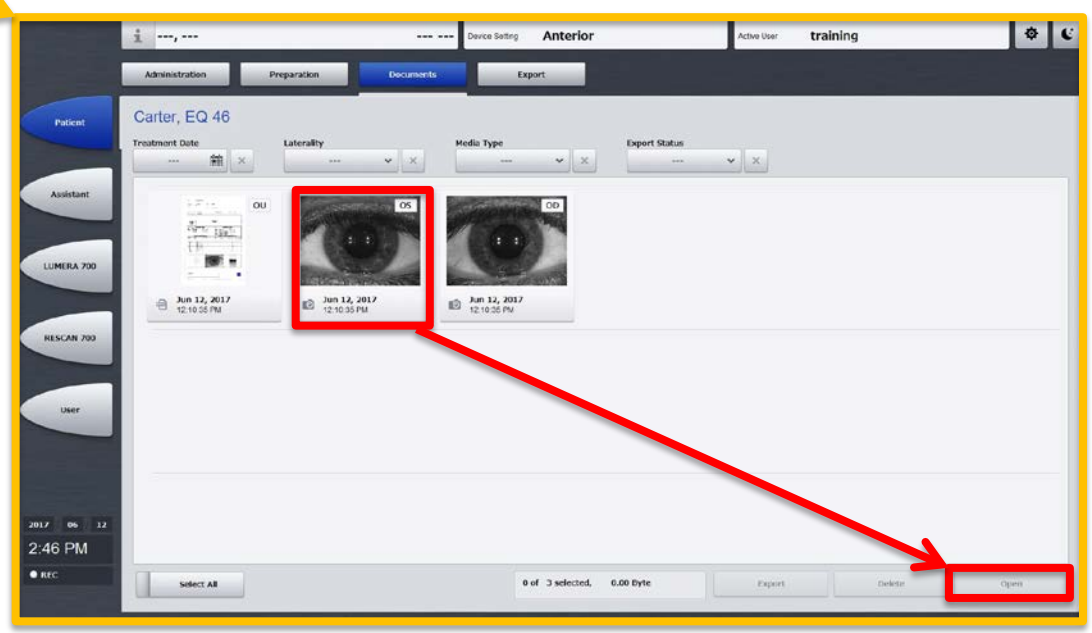
Check availability of the reference picture



Attention – in case of poor image quality, matching can fail!*



Check again the quality of the reference picture under documents of the activated patient:

- Focus on scleral blood vessels
- Eye open, lids not covering
- No disturbing light reflections on the sclera

*Check for example the valid CALLISTO eye user manual or the quick guide of ZEISS IOLMaster 500: *QUG IOLMaster 500 option reference image.pdf*

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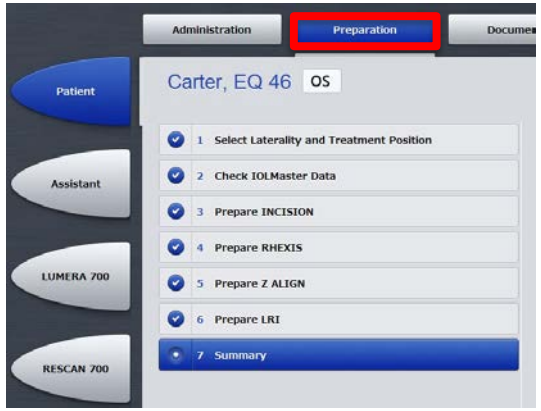
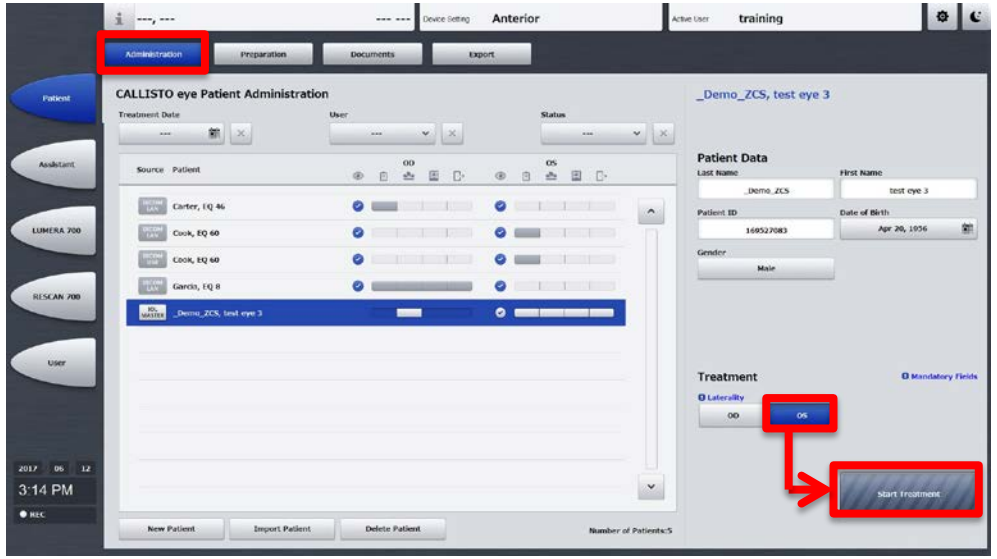
Preparation Phase



2.

3.



1. Select the patient

2. Prepare the treatment (2)
   - Treatment position
   - Apply ZEISS IOLMaster data
   - Incisions & paracentesis: size & position
   - Rhexis size
   - Z ALIGN: axis for toric IOL alignment
   - LRIs: size & position

3. Start the treatment (3) for selected patient under patient administration to enable video record function & markerbased or markerless referencing

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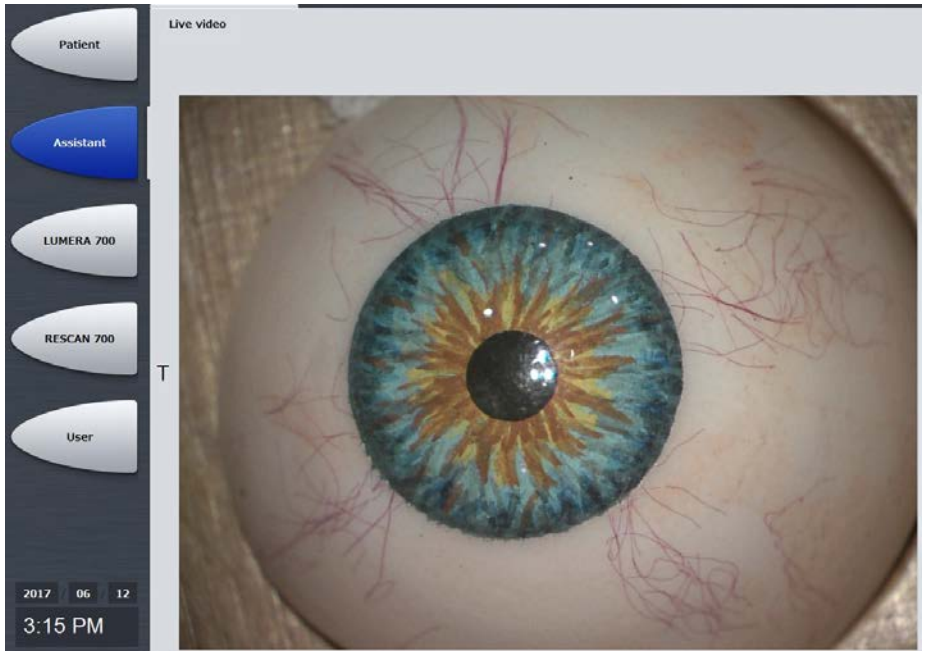
Parfocality

Parfocality: Live video & camera image are in the same focus



1. Microscope head is in default position
2. Move the microscope head above the patients eye until it is sharp on the video screen
3. **Maximum magnification**
4. Adjust the **focus** on the cornea **on the video screen**
5. **Adjust the microscope**
   - Pupil distance
   - Eye cups (turn out if not wearing spectacles)
   - Diopters (use far correction if needed)
6. Reduce the **magnification** and center the eye

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Requirements before the referencing

Additionally pay attention to:

- No surgical instruments around the eye
- Incisions are not performed
- Limbus is completely visible on the video screen*
- Sclera is 360° visible around the limbus without occlusion of speculum, lids or lashes
- No accumulation of liquids in the eye

Attention -
Referencing can fail in case of Chemosis or bleeding!

*Video image section visible in the ocular

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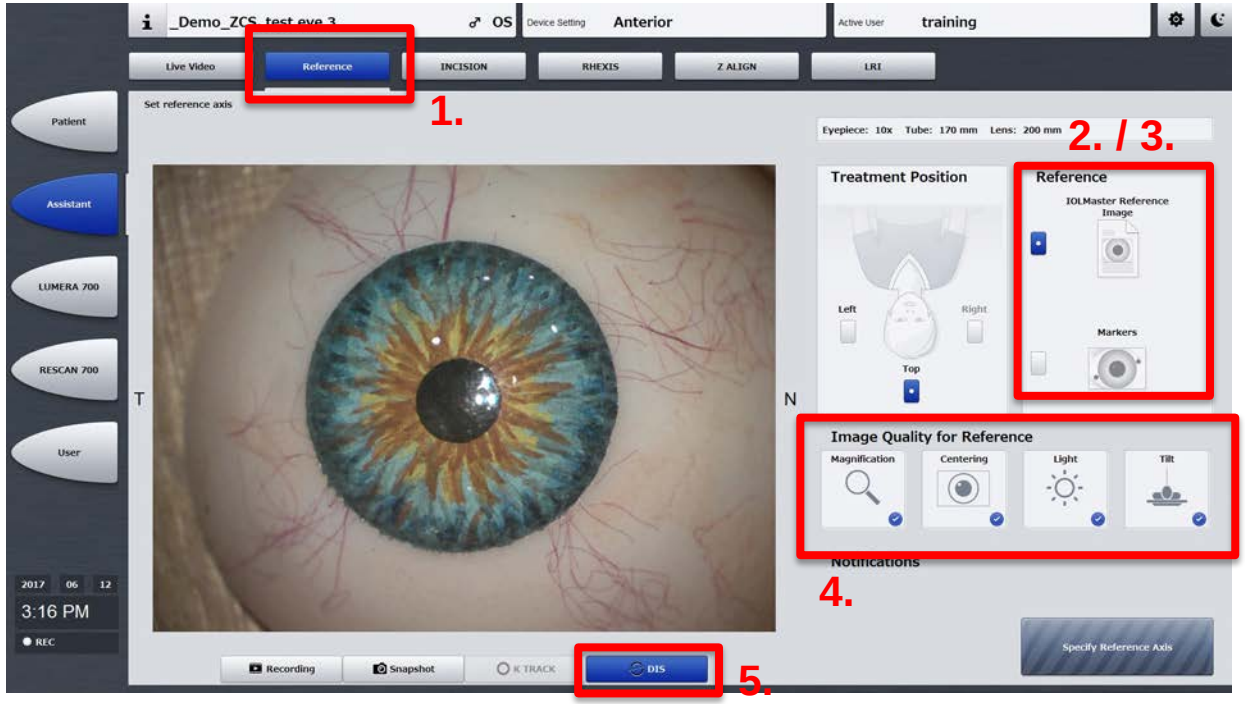
Set the reference axis - markerless

Set the Reference Axis



Markerless option:

1. Click on „Reference“ to perform the referencing
2. If reference image is available the option “IOLMaster Reference” is pre selected
3. Option “Markers” will be chosen if no reference image is available
4. Adjust “image quality for Reference” by using the guideline which is also displayed in the eye piece of the microscope if DIS (5) is activated

<u>Attention:</u> Referencing can fail if the scleral blood vessels are not clearly visible to the camera!

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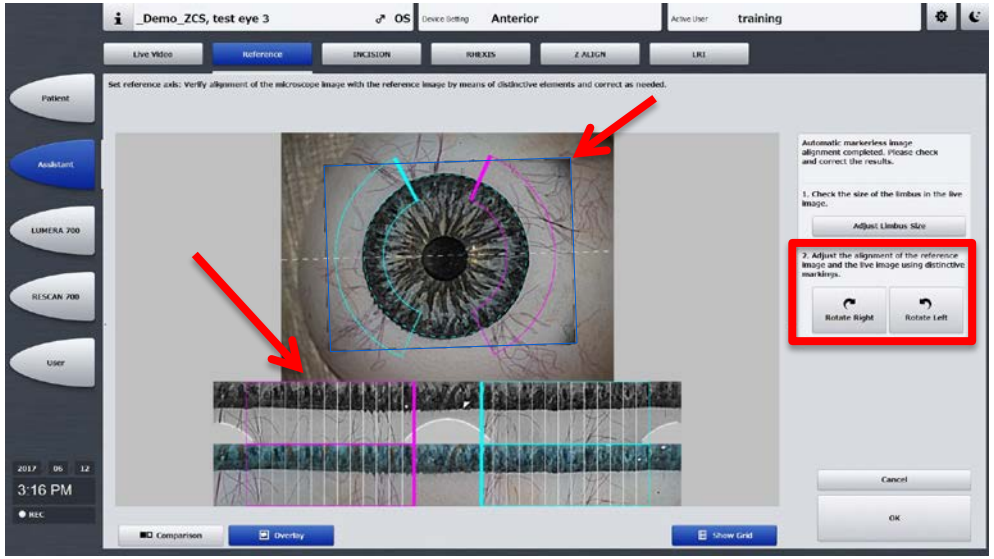
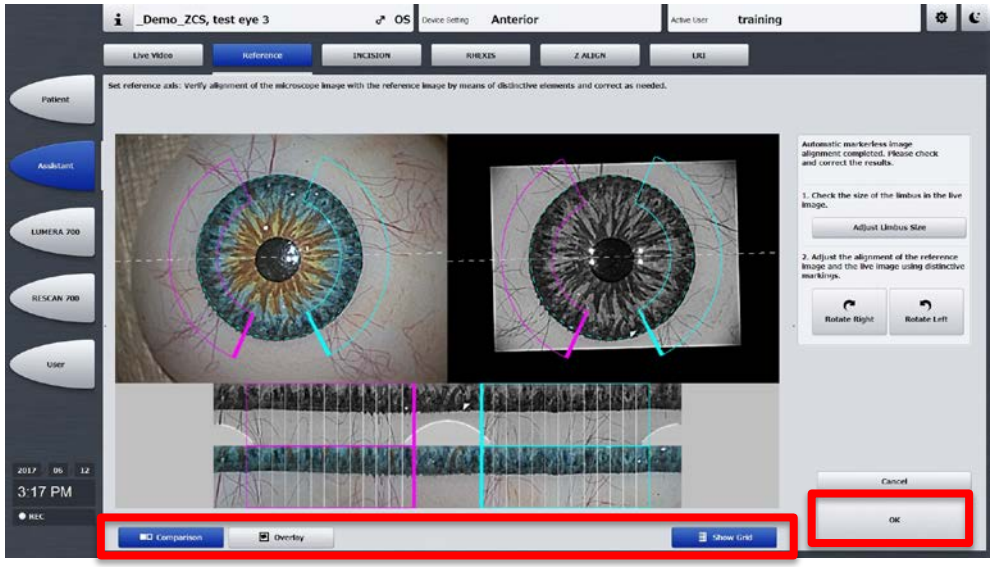
Alignment of the microscope image



Verify alignment of microscope image (colored) with the reference image (black & white) and correct the position by using the arrow buttons if needed. Use the overlay, side by side or grid option to check the position of the blood vessels.

If surgeon confirms the alignment of the microscope image, press “OK“ under confirmation. <u>A good alignment of both pictures is mandatory to ensure reliable assistant functions!</u>



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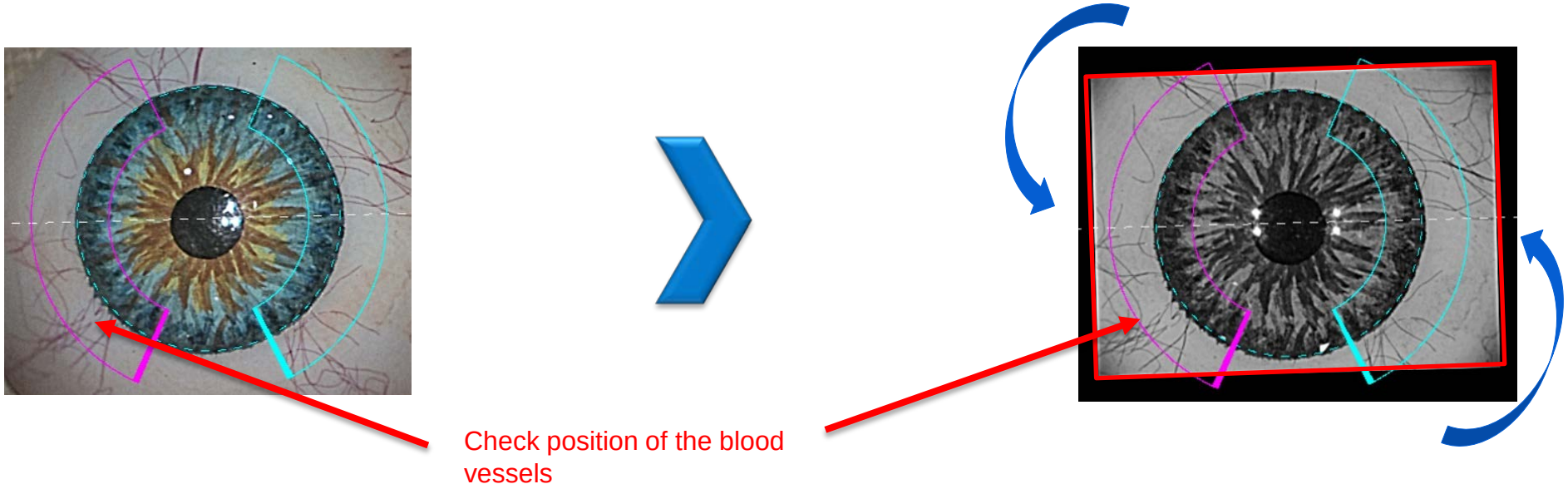
Alignment of the microscope image



- After pressing the button for the matching, the software is pre aligning the microscope image to the reference picture by rotation until the scleral blood vessels are on the same position
- The fine adjustment has to be done by the user by using the arrow buttons

The two image modes “side_by_side” and “overlay” help for the alignment

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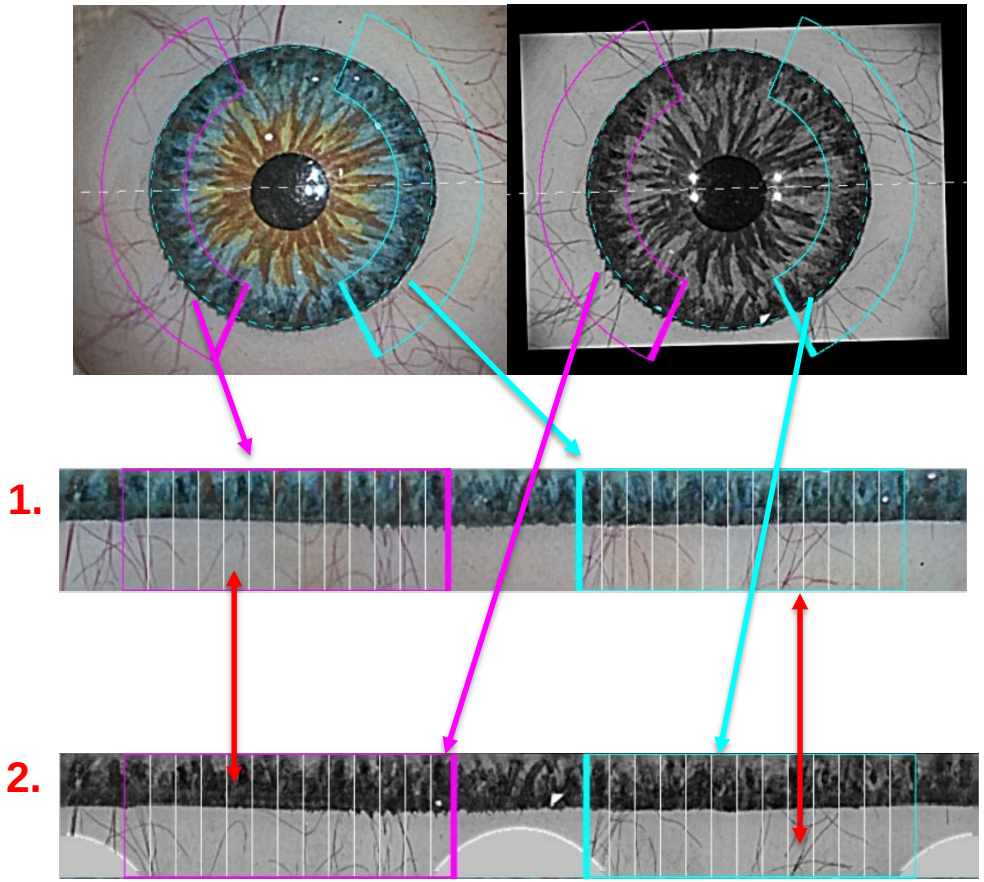
Alignment of the microscope image



- Use the unrolled pictures (1+2) of the scleral blood vessels around the limbus under the reference picture & the microscope image for easier fine adjustment of the matching

- **Complete visibility of the scleral blood vessels in the green & the pink area** is needed for stable data injection and reliable tracking during the surgery

- **Good quality of the microscope image** is also mandatory for stable data injection and reliable tracking
  - Right magnification
  - Scleral blood vessels focused
  - No liquid on the eye
  - No instruments in the picture

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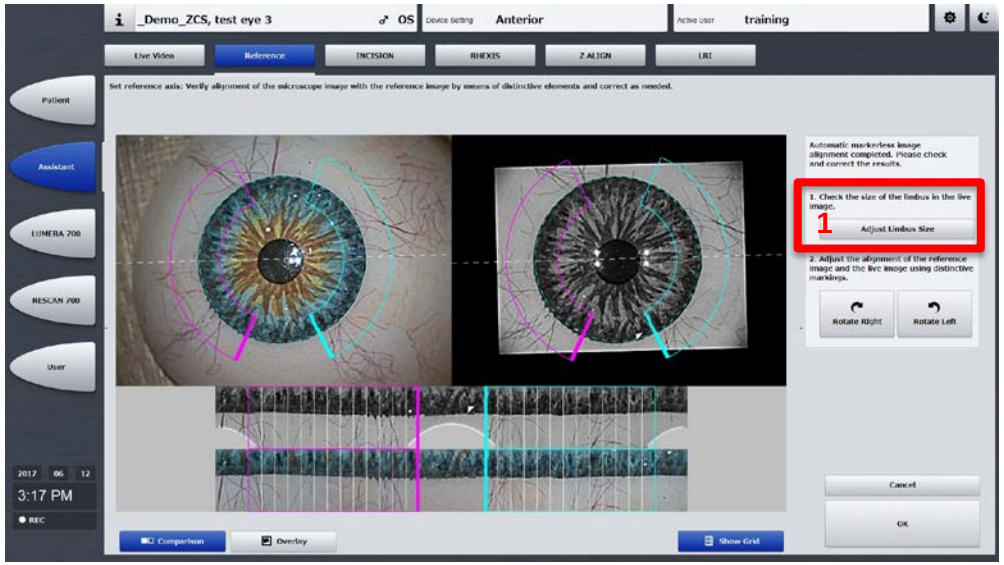
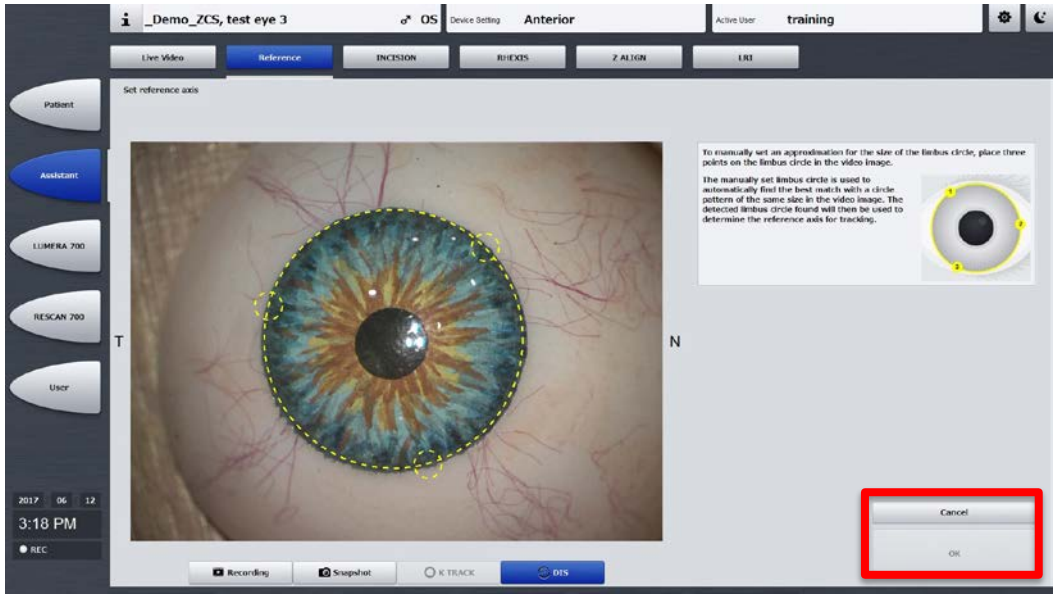
Adjust Limbus size



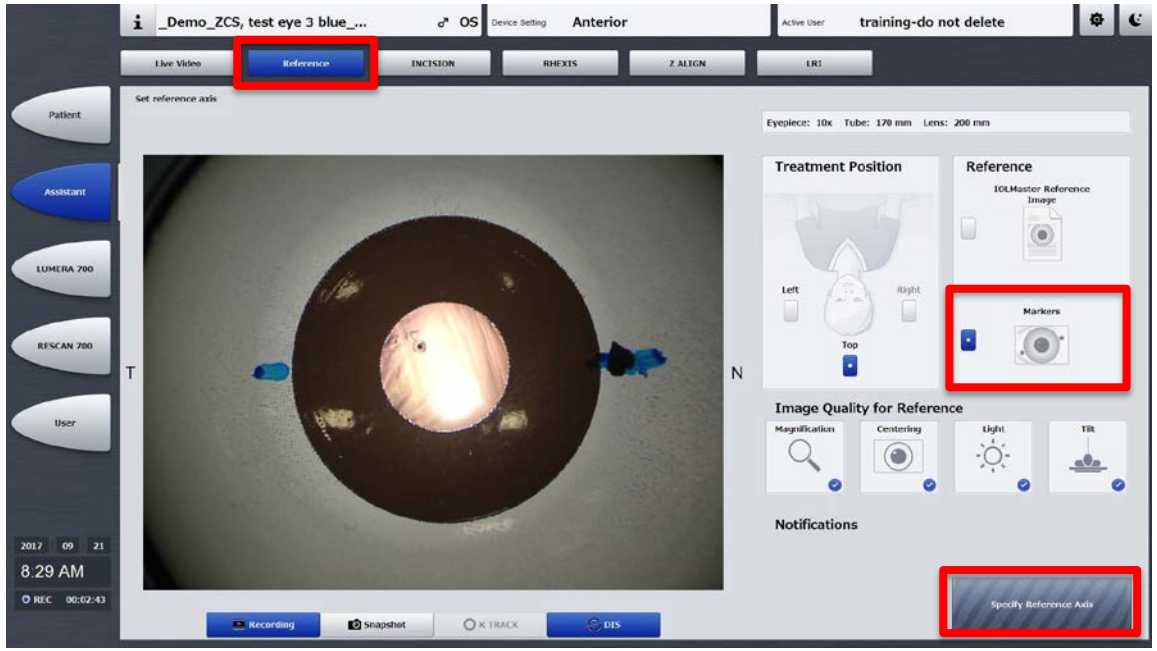
If needed you can adjust the limbus size. By pressing button 1. a new menu opens. To manually set an approximation for the size of the limbus circle, place three points on the limbus circle in the video image. Click on ok if surgeon confirms the new marking of the limbus.

Attention:
The manually set limbus circle is used to automatically find the best match with a circle pattern of the same size in the video image. The detected limbus circle found will then be used to determine the reference axis for tracking.



Quick Guide - ZEISS CALLISTO eye 3.6 matching the reference image

Matching the reference image - markerbased



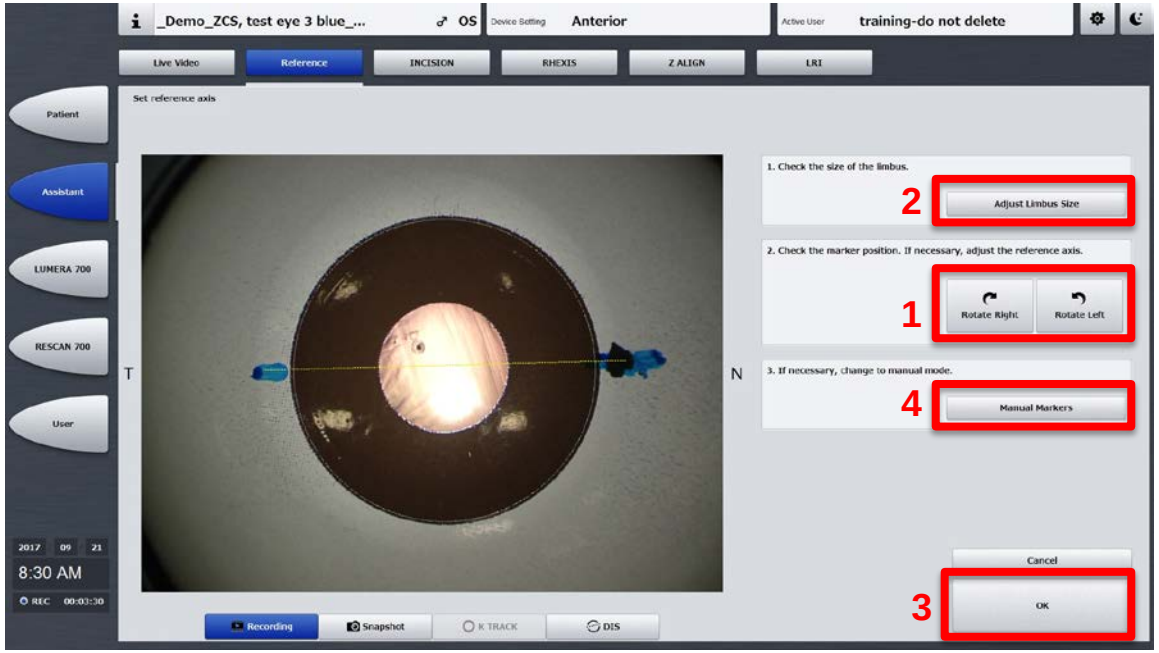
Markerbased option:

1. Only 2 blue markings are visible on the sclera
2. If not already preselected mark treatment position of the surgeon and choose option markers
3. Specify the references axis if image quality for reference is good

Attention –
Manual marking of the reference axis works on CALLISTO eye only if the eye of the patient was previously marked with blue ink!

Quick Guide - ZEISS CALLISTO eye 3.6 matching the reference image

Matching the reference image - markerbased

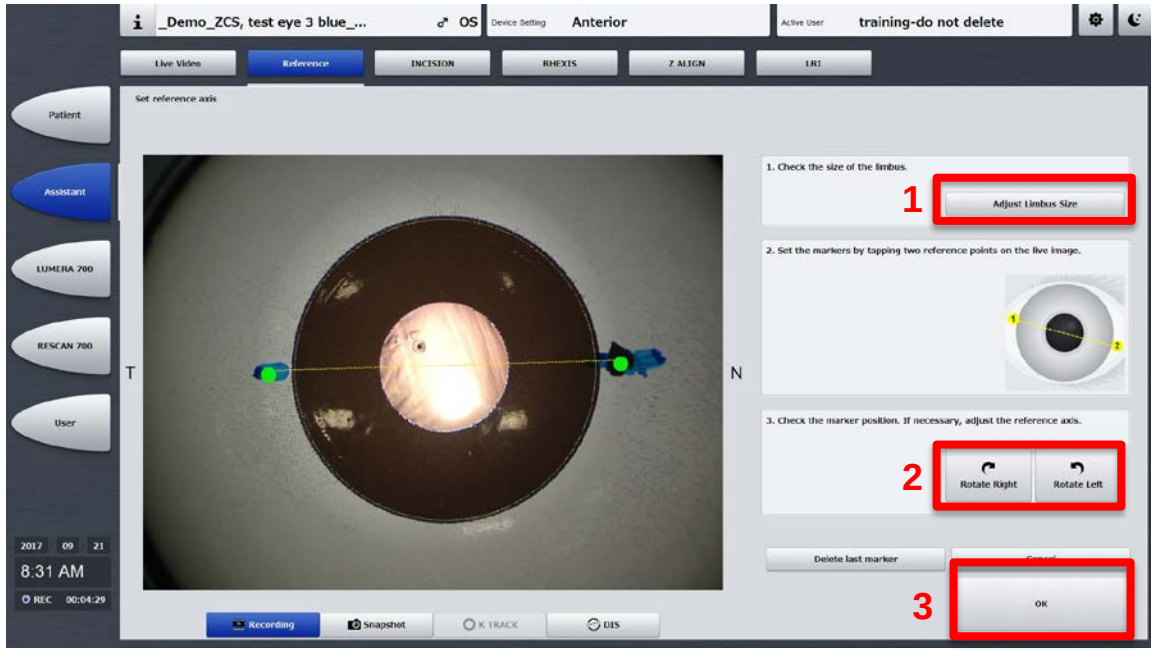


Markerbased option

4. Reference axis will be set automatically
5. If needed realign the position of the reference axis with the arrow buttons (1)
6. If necessary adjust the limbus size (2)
7. If surgeon confirms the position of the reference axis press ok (3)
8. Change to manual mode in case reference axis will not be set automatically (4)

Quick Guide - ZEISS CALLISTO eye 3.6 matching the reference image

Matching the reference image - markerbased



Markerbased option

9. In case you changed to manual mode a further menu opens

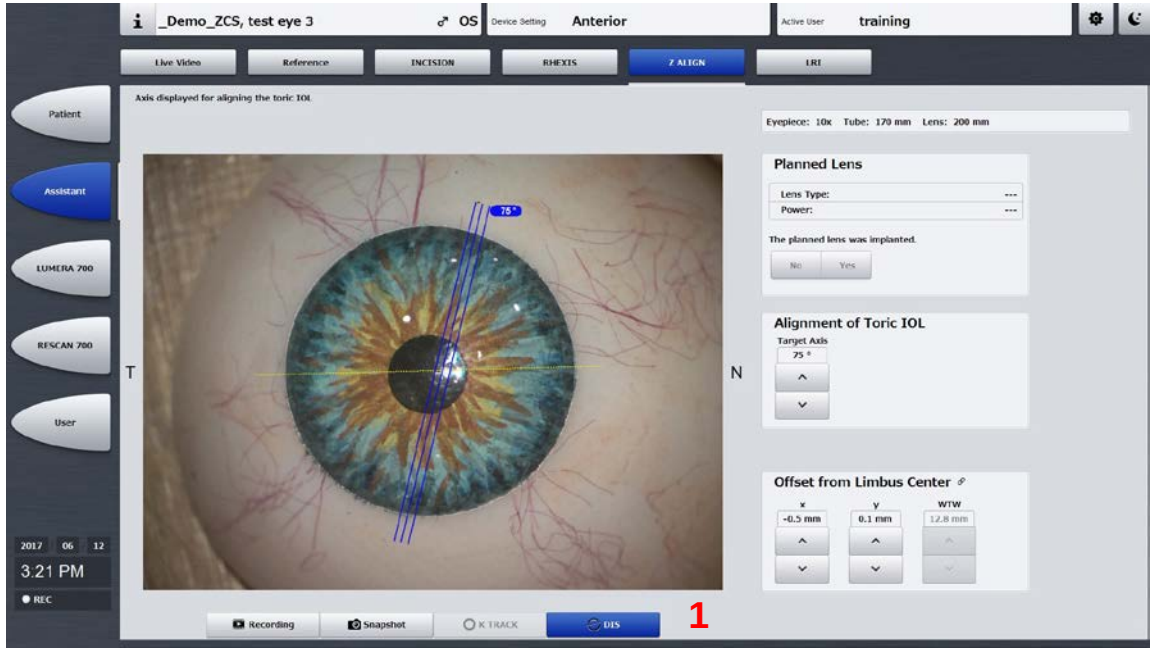
10. Set the markers by tapping two reference points on the live image on the position of the blue ink marks on the cornea

11. If necessary you can also adjust limbus size (1) or adjust the position of the reference axis by using the arrow buttons (2)

12. If surgeon confirms press OK (3)

Quick Guide - ZEISS CALLISTO eye 3.6 matching the reference image

Microscope requirements



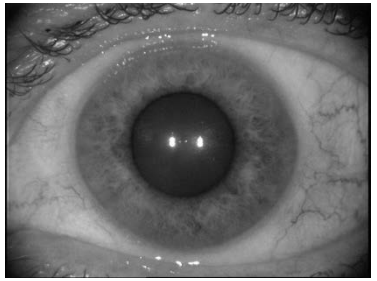
The reference axis is set according to the alignment.

The overlays for incisions / LRI, Rhexis and Z ALIGN are now visible, if the data injection (DIS) is activated (1).

Quick Guide - ZEISS CALLISTO eye 3.6 matching the reference image

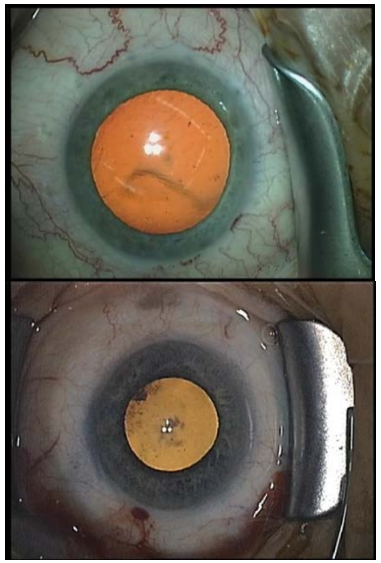
Do’s & Don’ts

Do’s



Reference picture:

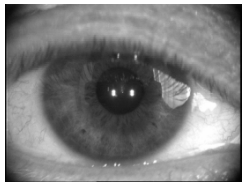
- Eye wide open
- Homogeneous illumination
- Focus on scleral blood vessels



Live image:

- Focus on scleral blood vessels
- Limbus centered & ⅔ of screen height

Don’ts

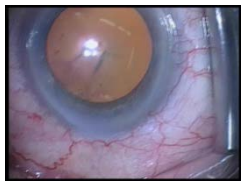


Reference picture:

- Eye lids too narrow
- Scleral blood vessels defocused
- Nasal disturbing light reflections

Live image:

1) Focus on eye lids – scleral blood vessels blurred & limbus decentered



2) Magnification too high & limbus decentered

3) Lids & eye lashes covering the scleral blood vessels, too much liquid in the eye

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FAQs

The quality of my reference picture is not good. What can I do?

- Repeat the ZEISS IOLMaster measurement and export it again. Use the side covers on the ZEISS IOLMaster headrest or put a black rag over the patients head to avoid disturbing light reflections on the sclera. The green arrows and the traffic light help you to find the right measurement position for focus & centration:  .

  Advise the patient to blink once before starting the measurement and to open the eye widely. Check the image quality directly after the ZEISS IOLMaster measurement and repeat the measurement if needed.

The IOLMaster did not export the reference picture on the USB stick

- *Always use the empty USB stick that was delivered with the device for the export*
- ZEISS IOLMaster 700: Click on  to open the settings. Go to “Advanced settings” → “Export” and choose “File” for DICOM export. Clicking on “Export” after performing the measurement safes the printout and the reference picture now to the USB stick.
- ZEISS IOLMaster 500: Click on 

button after measuring the reference picture to export the image & the ZEISS IOLMaster report to the stick. Do not use the USB stick symbol from the tool bar

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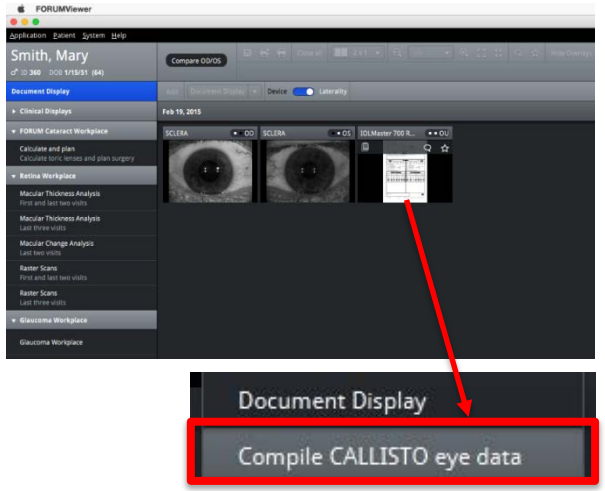
FAQs

Which button do I have to press to import the patient data from USB stick or from Forum?

- Before patient data is available from FORUM to import on CALLISTO eye, you have to compile CALLISTO eye data first in FORUM:

- Right click on ZEISS IOLMaster report in FORUM opens a submenu. Click on “compile CALLISTO eye data” before creating automatic order to CALLISTO eye



- Click on “Import patient” in the patient administration screen. A menu opens:

Imports patients from Forum

Imports patients from the USB stick

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FAQs

Overlays are not visible on the screen and in the oculars after successful matching of the reference picture

- Confirm the alignment of the microscope image always by pressing the “OK” button. Make sure that the data injection system is activated: 

Export of patient data from FORUM to ZEISS CALLISTO eye is not possible

- Make sure that you only marked the ZEISS IOLMaster report you want to export to ZEISS CALLISTO eye

Quick Guide - ZEISS CALLISTO eye 3.6 matching the reference image
Documents

1. **User manual for ZEISS CALLISTO eye version 3.6**

For more information see instruction for use for “CALLISTO eye Software add-on for assistant functions software version 3.6(G-30 2006-en - 1.0 - 2017-09-06)”:

- Chapter 6.3: Prepare for treatment, page 27
- Chapter 6.4: Treatments with support of assistance functions, page 37 following
- Chapter 7: Troubleshooting, page 63
- Chapter 8: Annex – recommendations for the best results when using assistant functions (clinical guideline), page 65

2. **Quick guide ZEISS IOLMaster 500 – option reference image**: QUG IOLMaster 500 option reference image.pdf (000000-1865-713-KurzGA01-GB-040713)

3. **ZEISS IOLMaster 700 - quick guide** (000000-1692-983-KurzGA01-DE-191012)

4. **Quick guide – CALLISTO eye 3.5 matching the reference picture** (#EN_32_012_0009I)

Seeing beyond