VX40

User Guide

UM30141000-ENG/v12_EN/2015-05-10/v2.2.3

VISIONIX

The Vision of the Future

Contents

1. Introduction

1.1 Overview

The VX40 is an Automatic Lensmeter which provides a very accurate measure of the refractive power of lenses and displays the spherical aberration, the cylindrical properties and the axis of the lenses.
The Automatic Lensmeter also contains the P.D. (pupillary distance) measurement. It can measure both uncut single lenses and framed glasses. Furthermore, it provides automatic detection of multi-focal lenses.

This advanced next generation lens meter comes with an intuitive user interface to enable the user to perform lens measurements simply and easily.

1.2 Scope

This manual contains information for the proper use, storage and maintenance of the VX40, as well as important safety information.

For best results, before using the device, review this manual in its entirety and become familiar with its contents.

Warning

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2. Safety

2.1 General

Luneau SAS provides sufficient information to ensure patient safety, avoid system malfunctions, and prevent incorrect readings.

Luneau SAS is not responsible for injury to patients or damage to equipment resulting from ignorance of or failure to follow its safety instructions.

The safety information appears in the form of warnings and alert messages.

Important!

- Never attempt to disassemble or reassemble the equipment.
- Do not modify the equipment in any way.
- Repairs and maintenance must be carried out only by qualified service personnel.

2.2 Electricity

Important!

- To avoid risk of electric shock or bodily injury, do not handle the electrical plugs with wet hands.
- To avoid risk of electric shock or fire, make sure the VX40's power cord is not damaged before plugging it into an electrical outlet.
- To avoid risk of electric shock, the power cord should be fully inserted in an outlet equipped with a protective ground connection.

2.3 Transport, storage and handling

Important!

- Before packing, follow 6.14. How do I pack the system? Page 41.
- Transport the VX40 in its original packaging.
- Check the good condition of the packaging.
- Do not subject the VX40 to strong vibrations. Shocks or violent movements can cause malfunctions.

2.4 Precautions during use

- Important!
- Do not place or use the VX40 in direct sunlight.
- Do not expose the VX40 to excessive dust or humidity.
- Do not place the VX40 in a hot air current (e.g. above a heater).
- Do not obstruct the ventilation vents.
- Never place the VX40 close to the following types of equipment which can interfere with the reception of commands from the remote control:
  - halogen lamp (direct or indirect),
  - flu compact lamp,
  - equipment emitting infrared radiation (e.g. autophoroptor, automatic tonometer, etc.).
- Keep the screen surface clean. Protect it from dust, fingerprints and shocks.
- When you switch off the VX40, wait at least 5 seconds before switching it on again.

2.5 Symbols

Important: consult the documents supplied with the equipment

Alternating current

The equipment must be returned to the manufacturer for scrapping

Type BF applied part

Manufacturer

Manufacturer Date

Serial Number

3. Equipment and Installation

3.1 List of Equipment Supplied

The VX40 is supplied with a securing plastic cover and a set of accessories as listed below:

- Touch screen stylus pen
- Power cable
- 2x paper rolls in the box and 1x roll already installed
- 2x 2A fuses
- Test frame (T30148012)
- 4x rubber caps
- 3x detector pin caps
- 3x long spring loaded pin caps
- Lens cleaning cloth
- Dust cover
- User manual

3.2 Equipment Parts

VX40 Front View

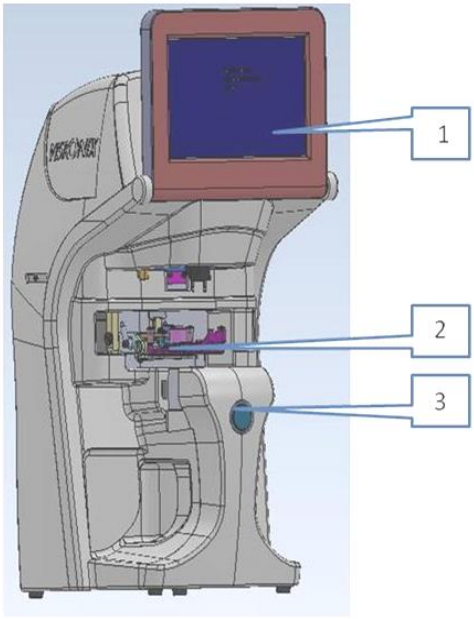


Figure 3-1: VX40 Front View

Table 3-1: VX40 Front View Components

1	LCD Touch Screen
2	Frame Holder
3	Measurement Start/Stop Button

VX40 Rear View

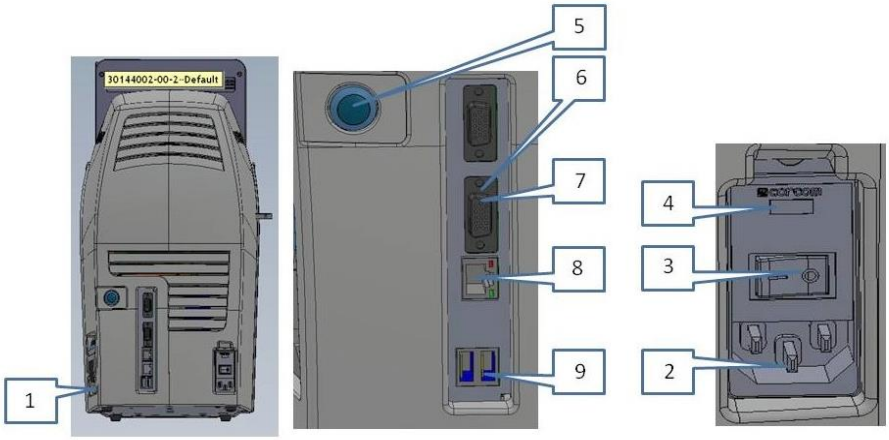


Figure 3-2: VX40 Rear View

Table 3-2: VX40 Rear View Components

1	Printer Paper Door
2	Power Inlet
3	Main Power Switch
4	Fuse Compartment
5	Power Button
6	VGA Connector
7	Serial port RS-232
8	LAN Connector
9	USB Ports (x2)

VX40 Side View

The side view illustrates the printer compartment of the device.

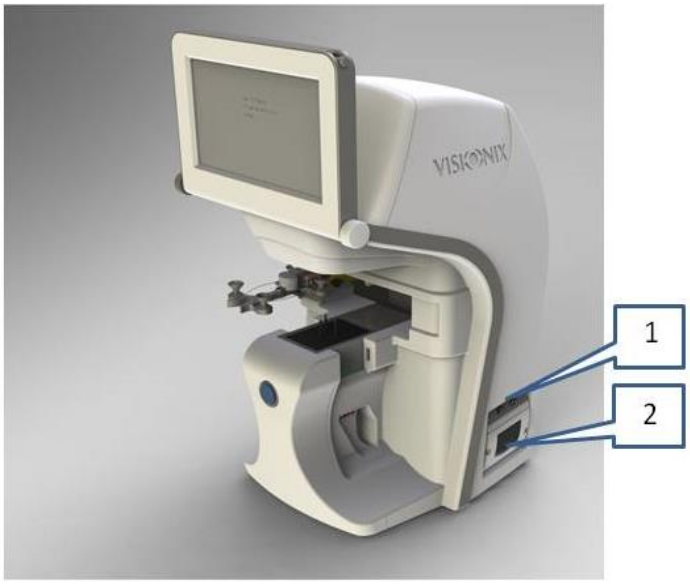


Figure 3-3: VX40 Side View

Table 3-3: VX40 Side View Components

1	Paper Door
2	Printer LED Indicator

3.3 Installation Procedures

Site Requirements

- Prepare a clear desktop close to the wall power outlet.

Opening the Box

- Open the carton with care.
- Lift the protective top cover to uncover the accessories shipped as listed in the packing list.

Figure 3-4: Top Cover Removed

- Remove the accessories to uncover the VX40, which is packed in a protective plastic bag.

Figure 3-5: Accessories Released

- Take the VX40 out of the box and put it on the desk.
- Lift the protective plastic bag to uncover the device.

The Frame Holder is secured by a protective foam.

- Remove the protective foam to release the Frame Holder.

- Important!
- Do not grab or hold the monitor or the Frame Holder when extracting the device from the box.

The accessories shipped with the device are packed in a plastic bag as illustrated below.

Figure 3-6: Accessories Bag

Electrical connection

- Check that the power supply voltage corresponds to that required by the equipment (see the identification label on the back of the unit).
- Insert the connector of the cord into the power receptacle of the device.
- Connect the power plague into the main wall outlet.

3.4 Starting and shutting down the device

Starting

- Set the Main Power Switch to ON (Position 1).
- Press the power button located at the rear of the VX40.
- Wait until the software starts.

Shut Down

- Press the power button located at the rear of the VX40.
- Wait until the software shuts down.
- Set the Main Power Switch to OFF (Position 0).

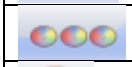
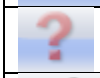
4. Using the VX40

4.1 General

The device is operated by the application, which the user accesses by touching the touch screen.

The upper toolbar allows to access to the different interfaces.

Table 4-1: Upper Toolbar

Icon	Designation	Description
	Frame Interface	Initiates measurement of frame
	Analyze Interface	Initiates analysis of the lens properties at any given point of a preselected lens
	Lens Interface	Initiates a measurement of lens without frame (cut or uncut lens)
	Compare Interface	Initiates comparison of measurements of several lenses
	Help	Not applicable in this version
	Tools Icon	Opens the settings or maintenance screen as applicable

4.2  Frame Interface

This interface is used to measure a frame.

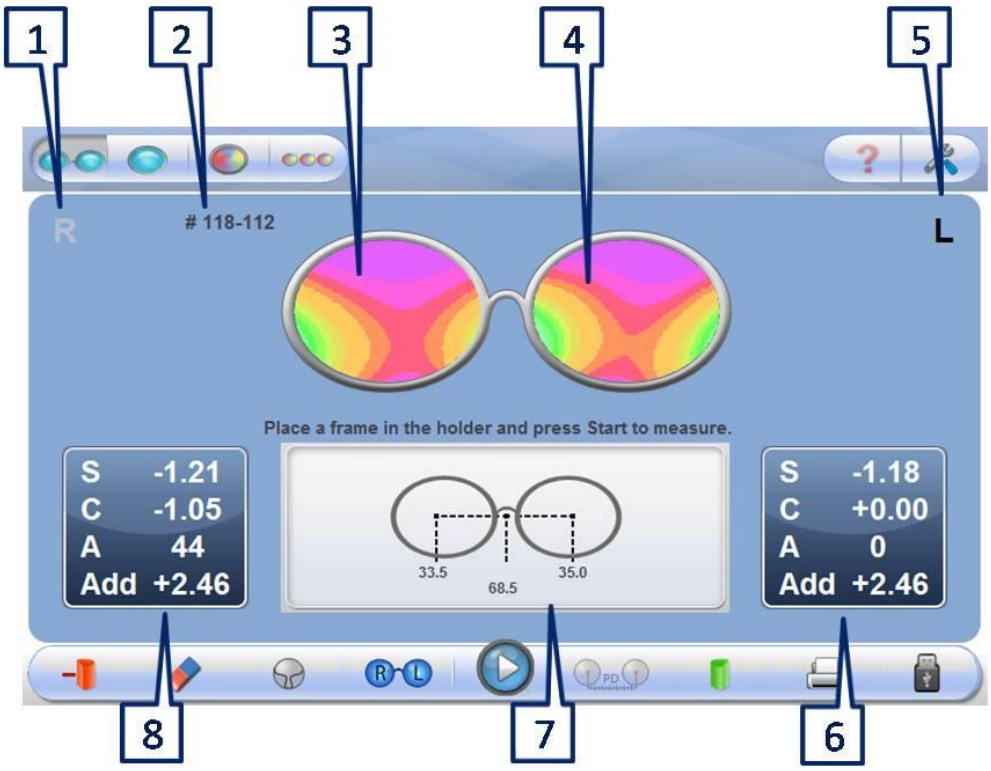


Figure 4-1: Frame Interface – Results Screen

Table 4-2: Screen Elements

No	Description	Notes
1	Right side indication	
2	Job number	
3	Lens map - right	
4	Lens map - left	
5	Left side indication	
6	Measurement readout - left	Readout is printable: S: sphere C: cylinder A: Axis Add: add power between far and near vision
7	P.D. readout	See Chapter on Pupil Distance Measurements.
8	Measurement readout - right	Readout is printable: S: sphere C: cylinder A: Axis Add: add power between far and near vision

Table 4-3: Frame Interface Toolbar

Icon	Designation	Description
	Cylinder Convention	Selects Plus or Minus
	Clear	Erases the result from the screen
	Lens Type	 Reading Lens Multi-focal B-Focal Single Vision
	Right / Left	 Selects the right or left lens, or both
	Play / Stop	Starts or stops measurement
	Prism calculation	Manipulate the P.D. measurements.
	Map type display	 Sphere Cylinder Prism
	Save results	 Saves the measurement to enable comparison with another measurement. If there is a saved measurement, the memory icon will be yellow.
	Print command	Generates printout of result as a ticket
	Data Export	 Send data to a phoropter or a computer.  Send data to a USB or a network.

Pupil Distance Measurements

This interface displays the different P.D. measurements.

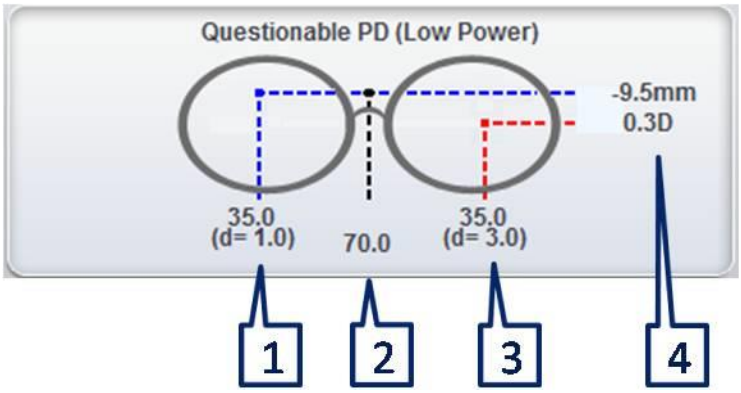


Figure 4-2: P.D. Mesurements Interface

Table 4-4: P.D. Measurements

1	Right P.D.
2	Total P.D.
3	Left P.D.
4	Net Vertical Prism (the difference in height between the left and right optical centers.)

Note:

The net vertical prism displays the equivalent prismatic power in mm. It appears at the side with the strongest equivalent power. The blue line represents the weakest power, and red line represents the strongest power.

Prism Caluclation

This interface is used to manipulate the P.D. It displays the prism automatically at this specific distance.

Figure 4-3: Prism Calculation

Table 4-5: Prism Calculation Toolbar

Icon	Description
	Change right P.D.
	Change total P.D.
	Change left P.D.
	Select P.D. according to minimum and maximum constraints
	Cancel
	Delete
	Reject changes
	Accept changes
	Cancel changes

Note:

You can only carry out prism calculations for single vision and bifocal lenses.

Prism Calcluation Results

The following interface displays the results of a prism calculation.

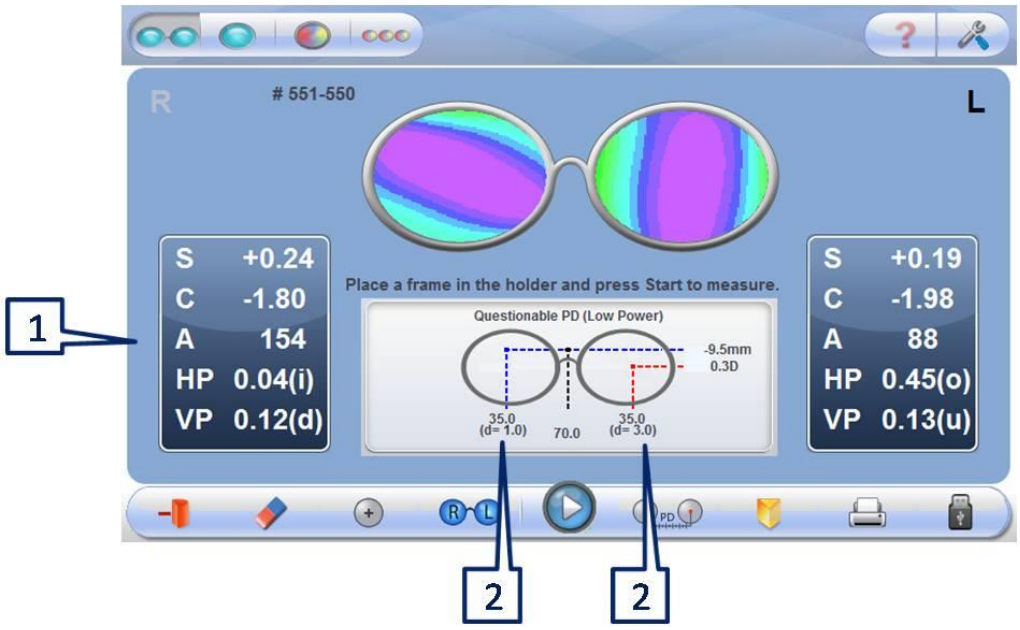


Figure 4-4: Prism Calculation Results

Table 4-6: Prism Calculation Results

No	Designation	Description
1	S, C, A, P, B	S: sphere C: cylinder A: Axis P: Prism diopters Add: (if applicable) add power between far and near vision
2	D	Decentration from optical center of the lens

4.3 Analyze Interface

This interface is used to analyze the lens properties at any given point on the lens.

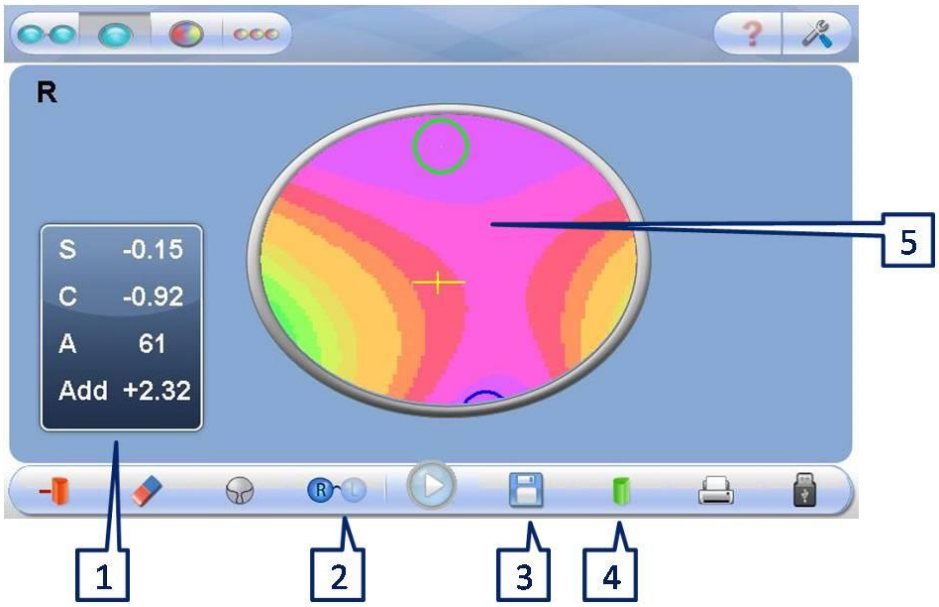


Figure 4-5: Analyze Interface

Table 4-7: Analysis Screen Elements

No	Description	Notes
1	Measurement readout	Readout is printable: S: sphere C: cylinder A: Axis Add: add power between far and near vision
2	Side selection	 Right Left
3	Save	 Save the measurements to compare lenses. When there is a saved measurement, the memory icon will appear yellow on the lower toolbar.
4	Displayed Map	Displays different map types: Sphere \ Cylinder \ Prism
5	Lens map	Displays the map of powers

In Analyze mode, in a progressive lens, the blue circle represents the near vision and the green one the far vision. The cross represents the optical center of the lens.

4.4 Lens Interface

This interface is used to initiate the measurement of lens without a frame (cut or precut lens).

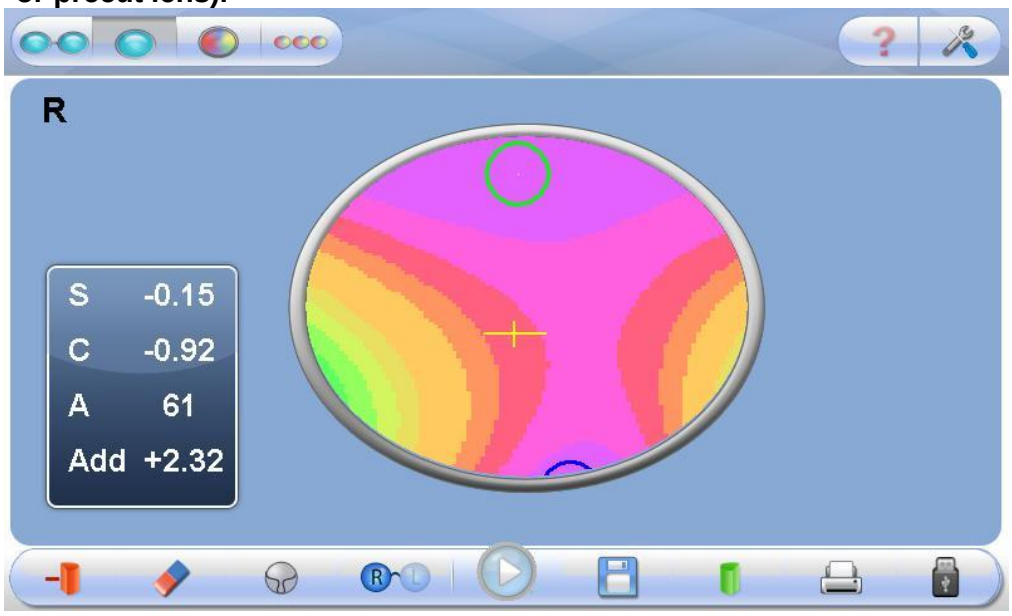


Figure 4-6: Lens Interface

The functions are the same as in analyze interface (see 4.3).

4.4 Compare Interface

This interface is used to compare the measurements of several lenses. All three maps are available for viewing, the spherical map, the cylinder map, and the prism map. This is a very useful tool for comparing lens quality.

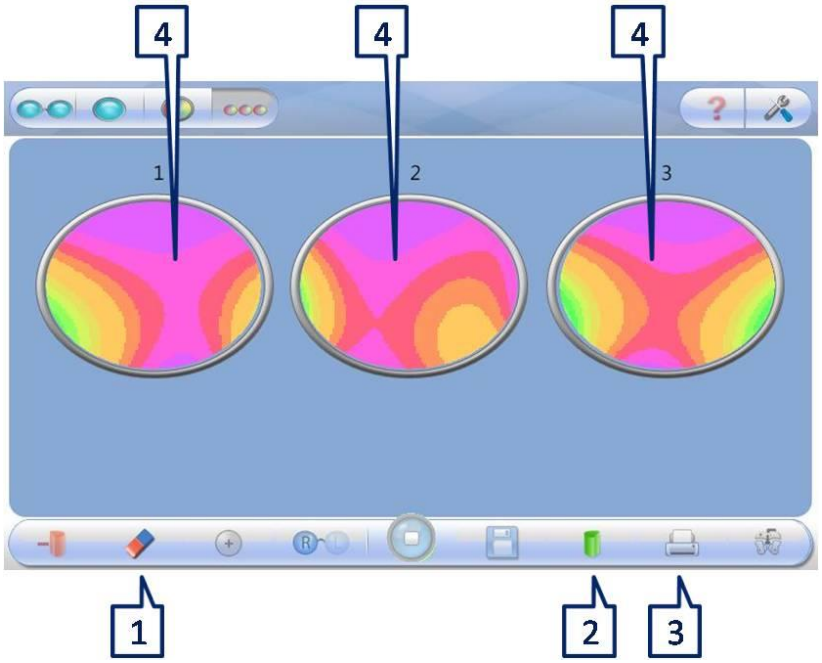


Figure 4-7: Analysis Screen

Table 4-8: Compare Screen Key Elements

No	Description	Notes
1	Clear	Erase measurement 3 Erase measurement 2 Erase measurement 1
2	Frame Chart Type Displayed	Sphere \ Cylinder \ Prism
3	Print	Printout of Tickets
4	Maps	Displays the Frame Chart

5. Configuring the VX40

5.1 Configuration Access

- Click on **Tools** button  .

5.2 User Settings

- Click on **User Settings** button 

5-1: User Settings Screen

Table 5-1: User Setting Elements Key

Operation Name	Operation Description
Software Version	Current software version
Serial Number	The serial number of the product
Rounding	Show results with an accuracy of 0.01/0.06/0.12/0.25
Cylinder Convention	Minus / Plus
Prism Convention	Polar (Amp & Angle) / Cartesian (X,Y)
Pupil Distance	Display the distance of each pupil to the center.
Log File	Save the data in a file or create a new file.
New	Create new log file (delete data).
Export	Export log file to a USB.
Language	Change the language.
Test Calibration	Test if the instrument requires calibration, using the supplied test frame.
Color Scale	Map Scale – indicates map values
ISO Lines	Iso lines (contours) select to display lines on multifocal, cylinder maps

5.3 Advanced Settings

➢ Click on the **Advanced Settings** button 

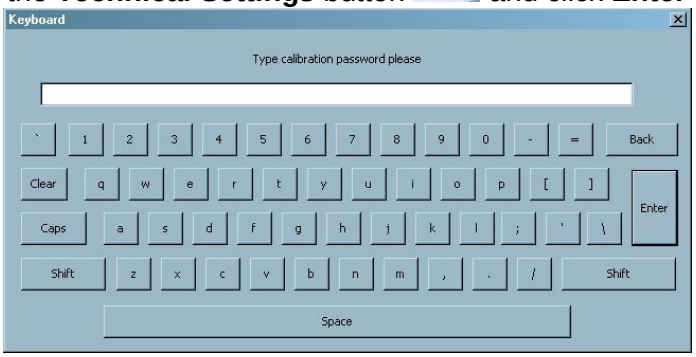
5-2: Advanced Settings Screen

Table 5-2: Advanced Settings Screen Elements

Operation Name	Operation Description
Software Version	Current software version
Serial Number	The serial number of the product
Data Transfer (via RS-232)	Transfer the data to PC or phoropter etc.
Printer – Manual/Auto	Print automatically or manually
Printer – Title	Modifies the title of the print ticket
Printer – Internal/External	Print a screenshot of the Main screen from the VX40 or an external printer
Date/Time	Modify the date and the time
Data Record (USB/Network)	Export the data to a network or a USB
Data Record Format	Export a screenshot, an image or both
Directory	Select the directory where you want to store the data
Refresh	Optical refresh
Software Upgrade	Upgrade the software
Camera	View the camera image
Remote Control	Initiate remote diagnostics and opens TeamViewer
Pack	Prepare the instrument prior to packing it

5.4 Technical Settings

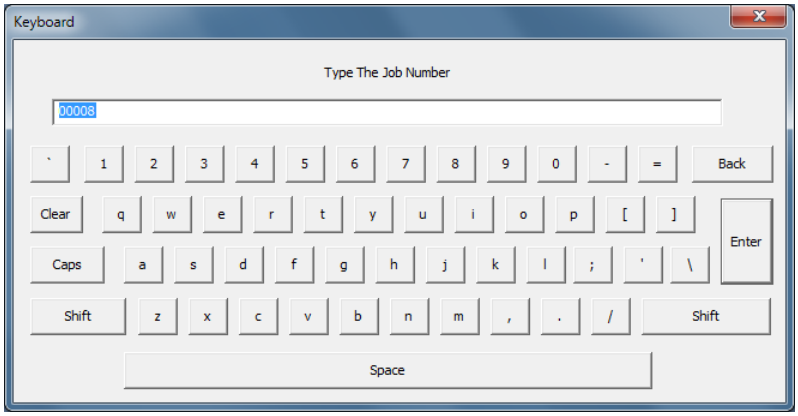
➢ Click on the **Technical Settings** button  and click **Enter**



5-3: Technical Settings Screen

Table 5-3: Technical Settings Screen Elements

Operation Name	Operation Description
Software Version	Current software version
Serial Number	The serial number of the product
P.D. Calibration	Calibrate pupil distance
Export	Save system parameters
Job # ON	The job count will continue after next restart of the VX40
Job # OFF	The job count will reset to 0 after next restart of the VX40

Set Job #	Allows you to set the current job count 

When the instrument is shut down forcefully, the job count is not saved.

6. How to?

6.1 How do I measure a frame?

Go to frame interface

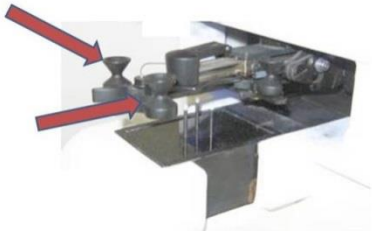
If the frame interface is not displayed:

- Click on  (frame interface button).

The frame holder moves to the center of the device.

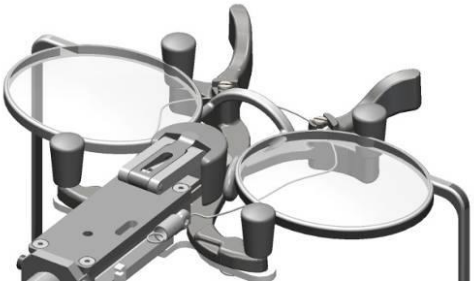
Place the frame

- Position your fingers on either side of the Frame Holder.
- Push the sides of the Frame Holder in the direction of the arrows until you hear a “click”.



- Place the frame in the holder by pushing the knob in the direction of the arrow.

- Verify that the bridge of the frame is not higher than the level of the nose pad of the Frame Holder.

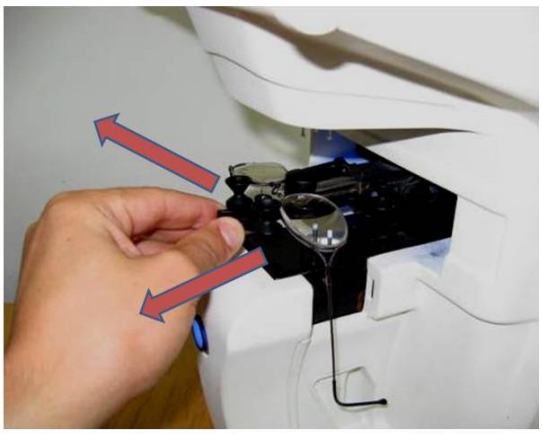


Good

No good

Figure6-1: Placing the Frame Holder

- Release the holder in the direction of the arrows until you hear a “click”.



Select the option of measurement

- Select the lens(es) you want to measure (right, left or both).

Start the measurement

- Start the measurements:
  - Click on GO (),
  - Or press the measurement start/stop button.

The measurement is performed completely automatically.

Abort the measurement

To abort the measurement:

- Stop the measurement.
  - Click on STOP ()
  - Or press the measurement start/stop button.
- Choose OK to skip the current measurement and go to the main interface.

Extract the frame

- Release the holder until you hear a “click”.
- Extract the frame.

6.2 How do I measure a lens (without a frame)?

Select lens interface

If the lens interface is not displayed:

- Click on  (lens interface button).

The frame holder moves to the left of the device.

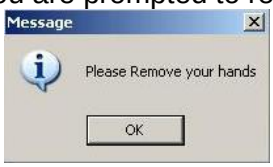
Place the lens

- Place the lens verifying that the lens orientation is like the frame orientation (the bottom of the lens on the device side).

Start the measurement

- Start the measurements:
  - Click on GO (),
  - Or press the measurement start/stop button.
- Press the **Play** button to move blocker (3 pins) downward to secure the lens against the 3 static pins of the detector.

In the following message you are prompted to remove your hands:



- Remove your hands and press OK.

The measurement has been taken and the lens is still fixed by the blocker.

Abort the measurement

To abort the measurement:

- Stop the measurement.
  - Click on STOP ()
  - Or press the measurement start/stop button.
- Choose OK to skip the current measurement and go to the main interface.

Release the lens

- Press the **Play** button (the Go/Stop button) again.

6.3 How do I change the cylinder convention?

In the settings screen

- Click on Tools button 
- Click on **Settings** button 
- Change the cylinder convention (see also 5.2).

Note:

The convention you choose in the settings is the default convention when you start the device. You can change the convention in other screens.

On the main screens

- Click on Cylinder convention button 

6.4 How do I change the map type?

Measured lenses can be displayed with different maps: sphere, cylinder and prism. By default, the prisms map is displayed for single vision lenses and the cylinders map for progressives.

To change the type of map:

- Press the button  .
- Select the map you want to display.

6.5 How do I change lens type?

The VX40 detects the lens type automatically.

In case you need to change the lens type manually:

- Click on Lens Type tool 

The following popup menu is displayed:
- Single Vision
- B-focal
- Multi-focal
- Reading lens

Note:
If lens type is not detected automatically by the device; you have can select lens type manually.

6.6 How do I clear data?

In compare interface

- Click on Clear button 
- Select the data you want to clear.

In other interfaces

- Click on Clear button 

6.7 How do I analyze a lens?

Go to analyze interface

- Click on icon ().
- Or double-click on the desired side of the frame.

See local values

- Click on the area to display the local values.

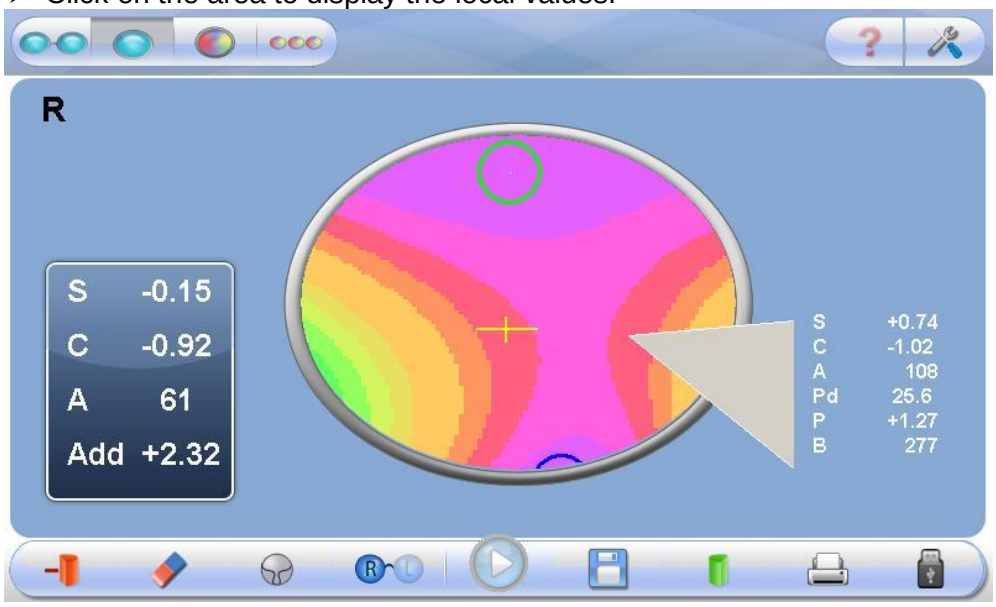


Figure 6-2: Measurement readout for a single point

6.8 How do I print out results?

Click Print **button**  **.**

Visionix Lens-Mapper
Date: 04/26/15
Time: 16:11:15

	Right	Left
S	-2.00	-1.50
C	+0.00	+0.00
A	0	0
PD	+31.0	+30.0
PD(T)		+61.0
NVP	+1.0mm (0.3D)	

Job # 00004

Single Ticket Printout (no PD manipulation)

Visionix Lens-Mapper
Date: 04/26/15
Time: 16:08:24

	Right	Left
S	-3.75	-3.63
C	+0.00	+0.00
A	0	0
Add	+0.75	+0.75
PD	+32.5	+32.5
PD(T)		+65.0

Job # 00002

Multi-focal (progressive) Ticket Printout

Visionix Lens-Mapper

	Right	Left
S	-11.25	-9.75
C	+1.25	+1.25
A	114	110
HP	2.50(o)	7.50(o)
VP	0.00(u)	0.50(d)
PD	+40.0	+40.0
OC	+37.5	+31.5
Dec	+2.5	+8.5
NVP	+0.0mm (0.0D)	

Single Ticket Printout (after PD manipulation)

Visionix Lens-Mapper

	Right	Left
S	-10.25	-9.25
C	+2.00	+1.00
A	150	151
Add	+2.25	+2.25
PD	+29.5	+33.5
NVP	+0.5mm (0.3D)	

Job # 665-664

Bifocal Ticket Printout

Figure 6-3: Ticket Printout Sample

6.9 How do I send data?

Preparation

Note:

The preparation should be done by a technician.

Connection

- Connect the VX40 to the target device (phoropter, computer) using a serial cable connection or via a wireless connection like:
  - RS-232 cable.
  - Bluetooth connection via RS232.

Settings

- Click the **Advanced Settings** button  .
- Select a **Data Transfer** option (manual or auto).
- Select a device from the combo box.

Figure6-4: Data Transfer Screen

Send the data

- Do your measurement.
- Click on the **Data Transfer** button  .

Note:

*Depending on the setup configuration, you may be required to click the **Data Export** button  before selecting the **Data Transfer** button.*

After the “handshake” between the two devices occurs and data transfer begins, a beep will be emitted.

6.10How do I export data?

Connection

- If you are using a USB, connect it to the back of the VX40. See figure 3-2.

Settings

- Click the **Advanced Settings** button  .
- Select a **Data Record** option (manual or auto).
- Select the **Data Record** type (screenshot, images or both).
- Click the **Directory** button to select where you want to store the data.

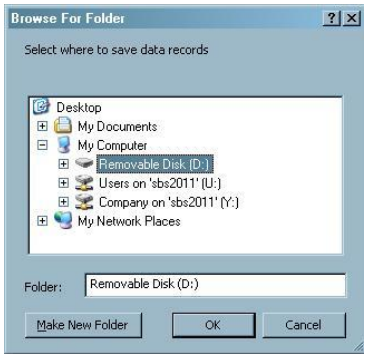


Figure6-5: Browse For Folder Screen

Send the data

- Do your measurement.
- Click the **Data Export** button  followed by the **Data Record** button  .

Note:

*Depending on the setup configuration you may be required to click the **Data Export** button  before selecting the **Data Record** button.*

6.11How do I compare lenses?

Save the data

- Click on Save button 

The measurements can be saved both in Analyze mode and in Single Lens mode.

You can save and compare up to three lenses.

Go to analyze interface

- Click on **Compare** button ().

The saved results are displayed.

6.12How do I upgrade the software?

- Download the new version to a disk-on-key.
- Insert the disk on key into the USB port of the device.
- Click on **Tools** button 
- Click on Technical maintenance button 
- Click on **Software Upgrade** button

The software download procedure starts.

6.13How do I refresh the system?

Notes:

The system needs to be reset only if there are problems of measurements.

- Verify that the detector is clean.
- Verify that the Frame Holder is empty and is in the open state (home position).
- Click on **Tools** button  .
- Click on Technical maintenance button  .
- Click on **Refesh** button.

The system resets.

6.14How do I pack the system?

- Click on **Tools** button  .
- Click on Technical maintenance button  .
- Select the "Pack" button and follow the on-screen instructions.
- Place the protective foam of the holder.

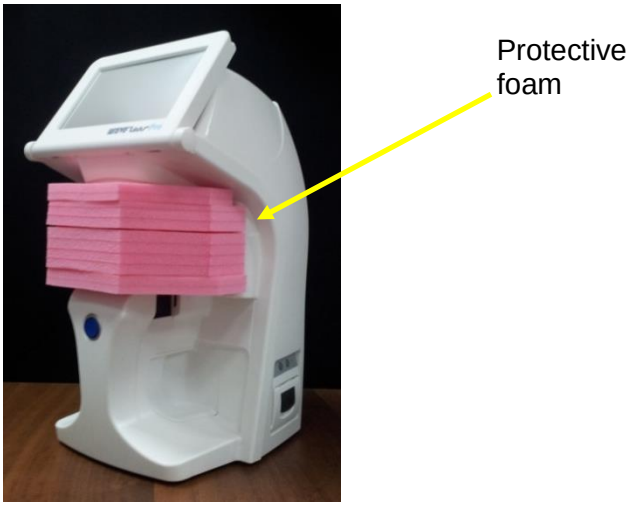


Figure 6-5: Accessories released

- Cover the VX40 with the protective plastic bag.
- Place the VX40 in its package.
- Important!
- Do not grab or hold the monitor or the frame holder when inserting the device from the box.
- Place the accessories cover on top of the VX40 as illustrated below.

Figure 6-6: Top Cover Removed

7. What should I do if … ?

7.1 There is a warning message

The warning messages listed below advice the user of a failure and point to a specific action that can be taken to clear the failure condition.

Message	Action
Creating Default Machine Parameters	Call technical support.
Please Calibrate The Machine	Call technical support.
Grabber Error	Restart. If this doesn't help, call technical support.
Communication Error	Make sure you have selected the correct protocol (see 6.9)
Failed To Analyze	Happens when the device fails to measure a lens. Start again the measurement. If this doesn't help, start a measurement without lenses and start again with the lenses. If this doesn't help, restart the device. If this doesn't help, call technical support.
I/O Controller Error	Restart. If this doesn't help, call technical support.
COM Port Error	Restart. If this doesn't help, call technical support.
Shutter Error	Restart. If this doesn't help, call technical support.
Lamp Error	Restart. If this doesn't help, call technical support.
Blocker Error	Restart. If this doesn't help, call technical support.
Backlight Error	Restart. If this doesn't help, call technical support.
Application Internal Error	Restart. If this doesn't help, call technical support.
Motors Controller Error	Restart. If this doesn't help, call technical support.
Failed to Move	Restart. If this doesn't help, call technical support.
Cannot Load File	Call technical support
Failed to Initialize. Please Restart.	Restart. If this doesn't help, call technical support.
Cannot Save File	Restart. If this doesn't help, call technical support.
To maintain maximum accuracy, periodical calibration recommended, please remove the frame and press OK.	Follow the instructions as the device performs an automatic recalibration.
The new Reset image differs strongly from previous Reset. Do you want to save the new Reset?	Make sure no frame is in the Frame Holder, clean the detector and retry. If this error still displays, accept.
Not an optimal reset. Please use Clean Wizard, and if problem repeats, replace window. Accept Anyway?	Clean, repeat and accept.
Measurement Failed	Happens when the instrument fails to measure a lens. If this happens constantly even on different spectacle frames, restart. If this doesn't help call technical support.
Calibration Failed.	Clean, repeat and accept.
Grabber Error	Restart. If this doesn't help, call technical support.
The upgrade version not found. #Ensure the 'Disk on key' is correctly inserted into USB port and press 'Retry'.	Make sure you have setup.exe in the root of your disk on key.
No Reset	Check out the reset flow (see 6.13).
Unsupported Lens Type	The required lens type is not supported.
Murky Image (Window Covered?)	Restart. If this doesn't help, call technical support.

The shutter limit sensors may be defective.	Restart. If this doesn't help, call technical support.
Failed to initialize the Camera. #You should call technical support. Would you like to go Offline?	Restart. If this doesn't help, call technical support.
Failed to initialize the Vx Controller. #You should call technical support. #Would you like to go Offline?	Restart. If this doesn't help, call technical support.
Failed to analyze lens type	Retry.
Severe Error. Call technical Support	Call technical support
Questionable P.D. (Low Power)	Low power lens. The pupil distance measurement may not be reliable.

7.2 The technician needs remote diagnostics

The remote diagnostics allow the technician to connect the device at distance for some technical operations (for example: software update).

To enable remote control:

- Connect the device to internet
- Click on **Tools** button 
- Click on Technical maintenance button 
- Click on **Remote control** button
- Type the password using the popup keyboard

The TeamViewer application starts.

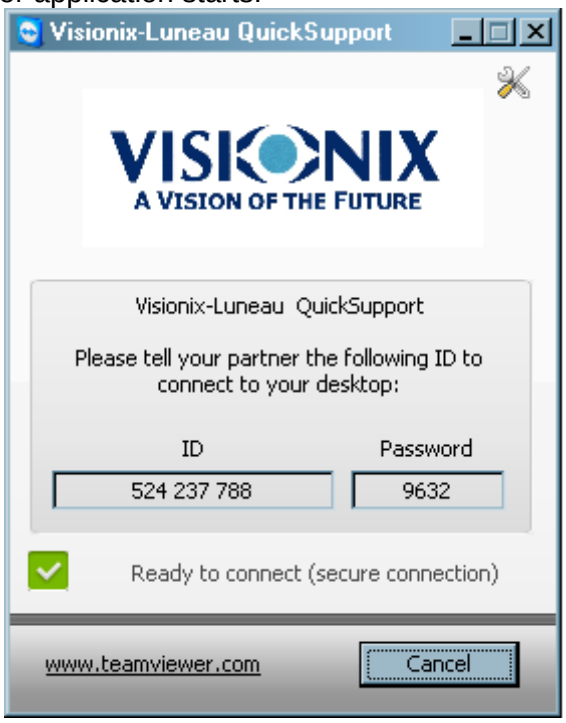


Figure7-1: TeamViewer Screen

- Provide the ID and password to the technician.

7.3 The system stops, or if malfunctions are observed

- Reset the system (see 6.13).

7.4 The nose of the frame holder is blocked

If the nose of the Frame Holder blocks:

- Lift the nose gently and pull it toward the front.

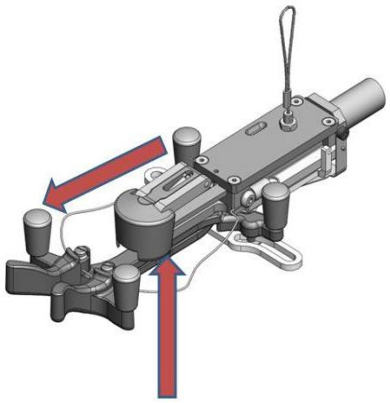


Figure7-2: Frame Holder Nose

7.5 I got a wrong measurement on trial lenses

- Verify that the flattest surface is on the top.

If this doesn't help,

- Reset the system (see 6.13) and restart the measurement.

Note:

Verify the Power Mapping Specifications listed in Table 9-3 match your requirements.

7.6 I get wrong measurements

- Go into settings mode (see 5.2).
- Select the "Test Calibration" button.
- Place the test frame in the holder and follow the on-screen instructions.

8. Maintenance

8.1 General

Important!

Switch off and unplug the VX40 before cleaning.

8.2 Cleaning

Clean the VX40 daily using a clean cloth before turning it on.

Clean the optical detector and the collimation lens as well. The collimation lens is installed above the blocker.

8.3 Printer paper replacement

The printer is mounted on the side of the VX40. If the paper roll is used up, the Printer LED indicator blinks.

To change the paper roll:

- Pull the lever until the cover is released from its locking position. To avoid damaging the lever, do not use excessive force.
- Open the cover.
- Extract the used-up paper roll.
- Insert a new paper roll.
- Pull the paper towards the tear bar from one side to the other.
- Close the cover. Press on both sides of the cover simultaneously.
- Verify that the Printer LED indicator light is steady.

Figure 8-1: Printer – Top View

8.4 Fuse Replacement

The fuse holder is mounted above the power switch at the rear of the VX40.

In the fuse holder are two fuses of 2 Amperes.

To replace the fuses:

- Open the fuse holder by means of a screwdriver.
- Extract the fuse holder.
- Change both fuses.
- Insert the fuse holder into position and press it carefully.

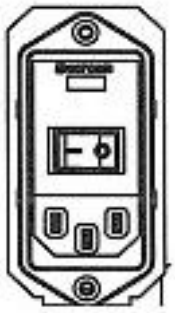


Figure 8-2: Fuse Holder

8.5 Cap Replacement

Protective caps are installed on three components near the Frame Holder as well on the bottom of the device. These components are used to secure the frames (or lens) during the measurement.

The caps have to be replaced when they are worn out; otherwise the lens may be scratched.

The location of the three components near the Frame Holder is illustrated below.

You can release the caps by hand or by means of long-nose pliers.

Before the replacement

Verify that the device is ON and operational.

Verify that the holder is empty.

Holder Caps Replacement

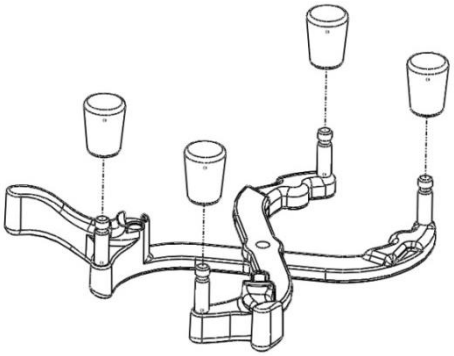


Figure8-3: Holder Caps

Remove the worn-out caps from the holder.

Replace them with new ones.

Blocker Caps Replacement

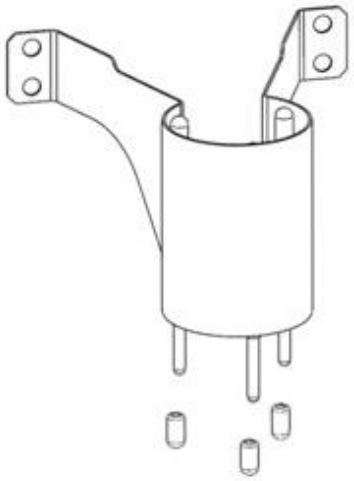


Figure8-4: Blocker Pins and Caps

The blocker is located above the holder and moves downward when measurement procedures start.

- Move the holder leftward and close the arms of the holder.
- Remove the worn-out caps from the pins by hand.
- Put the new caps on the pins by hand.
- Ensure that the pins do not move upward (you may use long-nose pliers to secure the pins).
- Verify that the caps are properly installed.
- Return the holder to its normal position.

Detector Caps Replacement

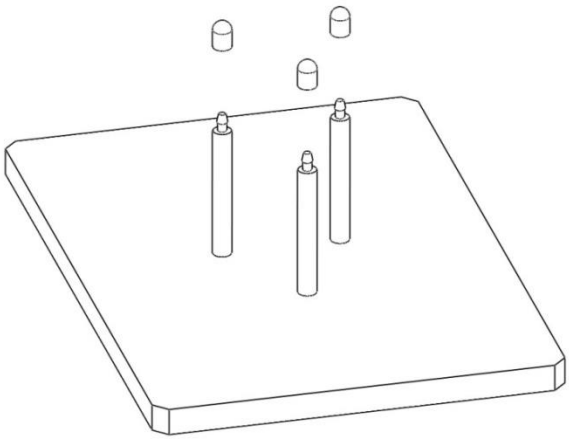


Figure8-5: Detector Pins and Caps

The static detector is located below the holder to secure the frame or the lens.

- Remove the worn-out caps from the pins by hand.
- Put the new caps on the pins by hand.
- Verify that the caps are properly installed.

Base Caps Replacement

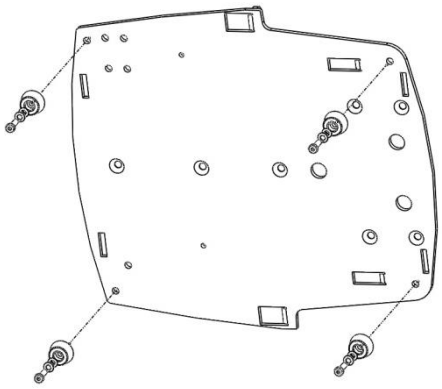


Figure8-6: Base Caps Replacement

The base of the device is protected by rubber caps.

- Turn the main power switch OFF and disconnect the device from the main wall outlet.
- Use an LN key: 2.5 millimeter to release the fastening nuts.
- Turn the device on its side.
- Unscrew the nuts and release the washers fastening the caps.
- Place the new caps in position.
- Insert the nuts and washers to fasten the caps.
- Fasten the nuts with an LN key: 2.5 millimeter.

9. Appendices

9.1 Specifications

Table 9-1: Device Specifications

Height	455mm (17.9 inches)
Length	240mm (9.4 inches)
Width	220mm (8.6 inches)
Weight	9.1Kg (20 lbs.)
Power Source/Consumption	100/230V – 50/60 Hz 0.7 Ampere max.
Operating Conditions	+10°C (50°F) to +45°C (113°F); Max Relative Humidity 85%
Storage Conditions	-5°C (23°F) to +55°C (131°F); Max Relative Humidity 93%

Table 9-2: General Specifications

Display Touch Screen	(800 x 480)
Color LCD	LCD/16M, 7''
Printer	Built-in BW - External color available
Operating System	Windows XP

Table 9-3: Power Mapping (Wave Front) Specifications

Spherical Power Range	-15..+10 D (step 0.01, 0.06, 0.125, 0.25 D)
Cylinder Power Range	0..10± xx D (step 0.01, 0.06, 0.125, 0.25 D)
Axis	0~180° (step 1 degree)
Addition power	0~± 3.5 D (step 0.01, 0.06, 0.125, 0.25 D)
Prism power	0~± 10 Δ (step 0.01d, … Δ)

9.2 Conformity with International Standards

Directives and standards

CE

2006/95/EC Directive

2004/108/EC Directive

Manufacturer

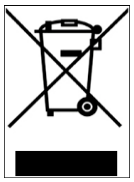
LUNEAU SAS

1, Avenue de Malaguet

28360 PRUNAY LE GILLON

France

Waste Electrical and Electronic Equipment (WEEE) Directive



This symbol is located on the VX40 and indicates that the equipment consists of electronic assemblies and other components that may be subject to the WEEE Directives, which advises that electrical and electronic devices must not be disposed of as normal domestic waste. In order to prevent environmental risks or endangerments by non-professional disposal, the disposal of this product, including any accessories, must comply with valid practices as outlined in the WEEE Directive for EU member countries and local regulations for other countries. For further information on disposal of this product, please contact your local dealer or the manufacturer.

9.3 Glossary of Terms

Term	Explanation
Pupillary Distance	Pupillary Distance (P.D.) or interpupillary distance (I.P.D.) is the distance (the industry standard is to measure in millimeters) between the centers of the pupils in each eye. This measurement is used when preparing to make prescription eyeglasses. Positioning lenses correctly in relation to the center of the pupils is especially important for higher powered lenses due to the location of the optical center of the lenses. It can also be relevant to binoculars: they must be adjusted to suit the user's I.P.D.; and the minimum allowed by some binoculars is still too great for people with a small I.P.D.
Spherical Aberration	An aberration that can occur in optical systems when rays are traced after reflection.
Cylindrical Lens	A lens with one face a portion of the curved surface of a cylinder
Reflection	The process occurring when light strikes the surface of separation of two different media such that some is thrown back into the original media.

9.4 Contact information

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