Quick reference guide

MyLab50™

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Quick reference guide

MyLab50™

Introduction

This Quick Guide describes only the basic operating procedures for the diagnostic ultrasound **MyLab50 Family**, named in the following chapters as **MyLab.**

The precautions and detailed operating procedures are described in the operator 's manuals (Getting Started, Safety & Standards, Transducers & Consumables and Advanced Operations) provided with the system. Carefully read the operator's manuals provided with the system before operating the system.

In this manual control panel keys and software keys are graphically differentiated:

Control Panel Key- Indicated directly by **BLUE CAPITAL LETTERS** or by the key icon (for instance CLIP).

Software Key- Indicated by **BLACK CAPITAL LETTERS**

The enter and context menu keys are respectively indicated as **ENTER** and **UNDO** keys in this manual.

WARNING **In this operation guide a WARNING pertains to possible injury to a patient and/or the operator.**

CAUTION **A CAUTION describes the precautions which are necessary to protect the equipment.**

The user should understand and observe each of the cautions and warnings.

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Starting an Exam

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1- Turning the **System ON**

Procedure

1. Verify that the ON/OFF button lights up. If the ON/OFF button does not light up, check the power cable and the switch on the rear of the system.
2. Press the ON/OFF button. The Exam Start page appears after a certain time.

Note

Some time is required before the Exam Start page is displayed on the monitor after the power is turned ON.

CAUTION **Do not turn the system off during the initialization phase: the hard disk could be damaged by this operation.**

Note

At power-up, the system prompts the operator to archive the last exam performed if the system was switched off without first closing the exam in progress.

Turning the System OFF

Procedure

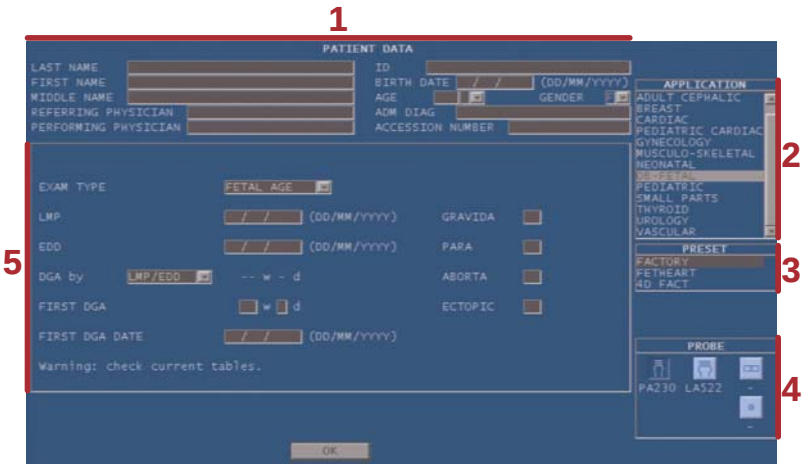
1. Press the ON/OFF button to shut down the system.

CAUTION **This is a PC based system; data loss or driver damage may occur if the system is turned off while working. It is MANDATORY that the operator interrupts any pending PC operation prior to turning the system off. Make sure that no heading archival system icon has a flashing yellow frame.**

2- **Starting** an Exam

At power-up, at the end of the initial auto-test and at the start of every new exam (**START END** key) the system shows the following screen.

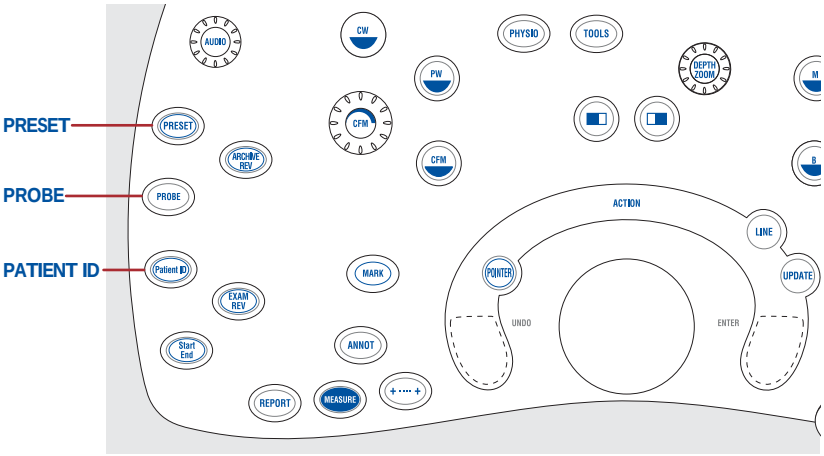
1. Patient Data
2. Application
3. Preset
4. Probe
5. Application Data



Procedure

1. Using the trackball place the cursor into the first Patient Data field and press **ENTER**.
2. Enter the patient's data using the keyboard.
3. The ← **Back Space** key is used to remove input characters.
4. To rapidly move through the different items, use the **Tab** ⇆ key.
5. Place the cursor on the desired application and press **ENTER** to confirm.
6. Place the cursor on the desired preset and press **ENTER** to confirm.
7. Place the cursor on the desired probe and press **ENTER** to confirm.
8. When required, enter the additional application data.
9. Place the cursor over OK and press **ENTER** to start the exam.

3- Changing the Settings during the Exam



Patient ID Changing Patient Data

Procedure

1. Press the **PATIENT ID** key. The Patient Data screen is displayed.
2. Modify the desired data.
3. Place the cursor on OK and press **ENTER** to confirm: the changed data are displayed on the screen.

WARNING **Do not use PATIENT ID to begin a new exam as this will update the existing patient's information with new entries. To activate a new procedure, always use the START END key.**

Changing the Preset

Procedure

1. Press the **PRESET** key. The Preset menu is displayed.
2. Move the cursor on the required Preset and press **ENTER** to select it.
3. Place the cursor on OK and press **ENTER** to confirm. The changed preset is displayed on the screen.

Note

The PRESET key allows the user to create, modify and save presets in real time in any application.

The **PRESET** key allows the user to save all the adjustments done in real time in the preset in any application.

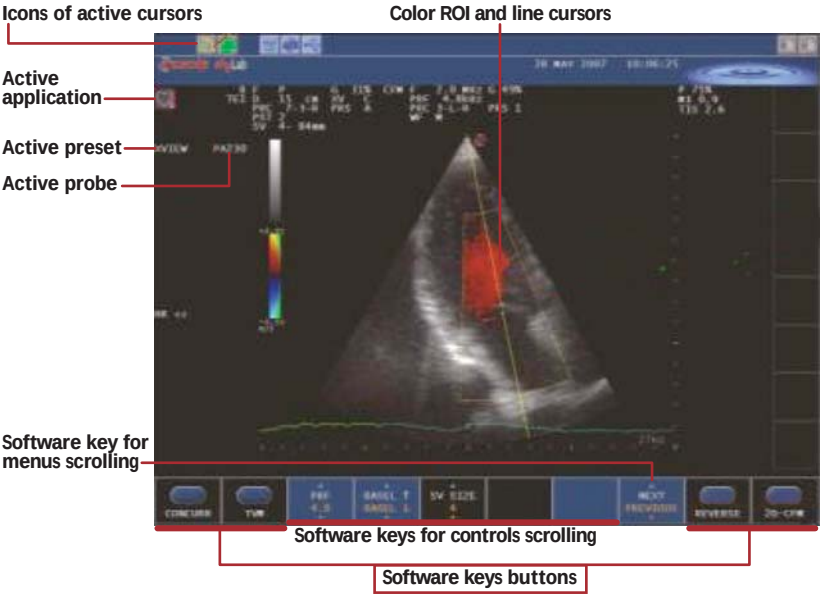
Changing the Probe

Procedure

1. Press the **PROBE** key. The Probe menu is displayed.
2. Move the cursor on the required Probe and press **ENTER** to select it.
3. Place the cursor on OK and press **ENTER** to confirm. The new active probe is displayed on the screen.

WARNING **Before beginning the exam, check that the active probe displayed on the screen matches the one selected on the Exam Start page.**

4- Screen Lay-Out



The screen is divided in three main areas:

- **Heading:** this area is used for displaying the icons of the following: trackball, archival systems, configured peripheral units; it also shows the following information: center and patient data, and the date.
- **Image Area:** the display of the image depends on various factors such as active mode, selected application, and transducer.
- **Software Keys**

5- Trackball Functions

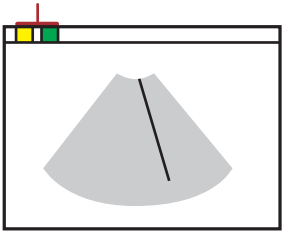
The trackball allows quickly positioning of the cursors on the screen. Each mode automatically activates the trackball cursor:

Mode	Trackball	Icon
B-Mode	Transmission focal point	
M-Mode, Doppler	LINE cursor	
CFM	CFM ROI cursor	

ACTION key

When several cursors are present on the screen, the **ACTION** key scrolls through the cursor and activates the active cursor.

Trackball Icons



Active icons are displayed in green, icons to be activated are displayed in yellow.

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Performing an Exam

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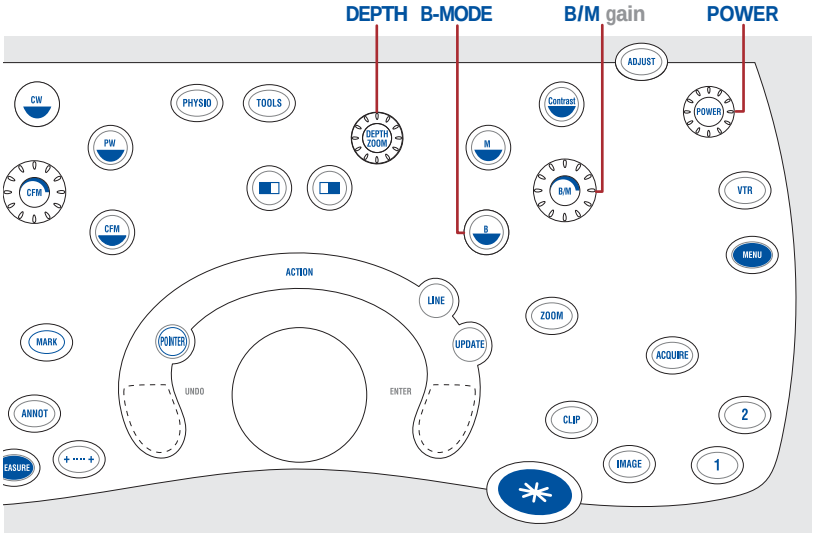
6- Working in **B-Mode**

The system switches automatically to the B-Mode format each time a new exam is started. The B-Mode format can be redisplayed from any other mode using the **B** key.



2D Format Optimization

Procedure

1. Adjust the gain (**B/M** key).
   Rotate clockwise to increase the gain.
   Rotate counterclockwise to decrease the gain.
2. Adjust the depth (**DEPTH** key).
   Rotate clockwise to increase depth (it reduces the image).
   Rotate counterclockwise to reduce depth (it enlarges the image).

3. Adjust the display format.
   Press **REVERSE** to change the right/left or left/right orientation, depending on the application.
   Press **ORIENT** to change the sector orientation (high/low).
   Press **SIZE** to change the scanning angle.

Note

To adjust gain according to depth, use the TGC slide controls on the right of the keyboard: move the cursors to the right to increase and to the left to decrease the gain.

4. Adjust the frequency (**FREQUENCY** key).
5. Press the **TEI** key to activate the TEI mode, which improves the brightness of the image by decreasing acoustic noise.
   Press **FREQUENCY** key to select the TEI frequency (**RES** value to improve resolution, **PEN** to improve penetration).
6. Adjust the focus by changing its position with the trackball.
   To change the number of active focuses, select the required option by pressing the **FOCUSES** software key.
7. Rotate **POWER** to change the transmitted power, using the minimum power compatible with a diagnostic level of the images.

2D Image Optimization

These software key commands are mainly “subjective” and patient-dependent. The following software keys allow:

- **X-VIEW** key: to enhance tissue margins and tissue resolution to increase diagnostic confidence, eliminating speckle and noise artefacts.
- **DYN RANGE** key: to characterize tissue structures reacting to compression echoes (higher values smooth the image).
- **SHARPNESS** key: to accentuate the edges and the small differences in tissues.
- **DENSITY** key: to optimize image quality.
- **COLORIZE** key: to select a chrominance scale.
- **PERSIST** key: to change the persistence level (higher values increase image perception and decrease the discrimination of moving structures).
- **GRAY MAP** key: to change or to modify the desired post-processing curve.

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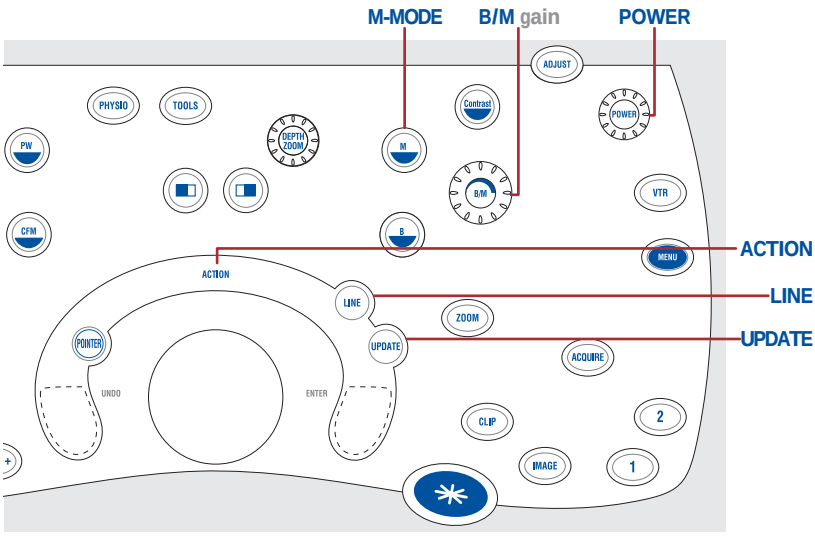
7- Working in **M-Mode**



Activating M-Mode

Procedure

1. Press **LINE** to display the M-Mode cursor.
2. Position the cursor with the trackball on the relative B-Mode line.
3. Press **M** to activate M-Mode analysis.

Note

If the M-Mode procedure is entered without having previously activated the line cursor, press the UPDATE key to activate the trace acquisition.

M-Mode Format Optimization

Procedure

1. Adjust the frequency (**FREQUENCY** key).
2. Press the **TEI** key to activate the TEI mode, which improves the brightness of the image by decreasing acoustic noise.
   Press **FREQUENCY** key to select the TEI frequency (**RES** value to improve resolution, **PEN** to improve penetration).
3. Adjust speed (**SWEEP** key).
4. Adjust the gain (**B/M** gain key).
   Rotate clockwise to increase the gain.
   Rotate counterclockwise to decrease the gain.
5. Adjust the 2D real time display (**B-FORMAT** key).
6. If necessary, press **B-REF** to view the M-Mode trace at full screen.
7. Rotate **POWER** to change the transmitted power, using the minimum power compatible with a diagnostic level of the images.

M-Mode Display Optimization

The following image parameters can be individually adjusted using the following software keys:

- **DYN RANGE** key: to characterize tissue structures reacting to the compression echoes (higher values smooth the image).
- **COLORIZE** key: to select a chrominance scale.
- **GRAY MAP** key: to change or to modify the desired post-processing curve.
- **SHARPNESS** key: to accentuate the edges and the small differences in tissues.
- **PLEX** key: to activate and update the 2D reference, maintaining the trace in real time.

Note

During the exam, UPDATE freezes the trace and leaves the 2D reference in real time, making the B-Mode format software commands available.

- **CMM** key: to activate Compass M-Mode.

Compass M-Mode

The following image parameters can be individually adjusted using the following software keys:

- **LINE** key: to freely orient the active scanning line. The **ACTION** key switch among the lines when there are two.
- **B FORMAT** key: to select Dual format for two scanning lines.
- **LINES** key: to activate the second scanning line in Dual format.
- **FREE** key: to independently orient each line.

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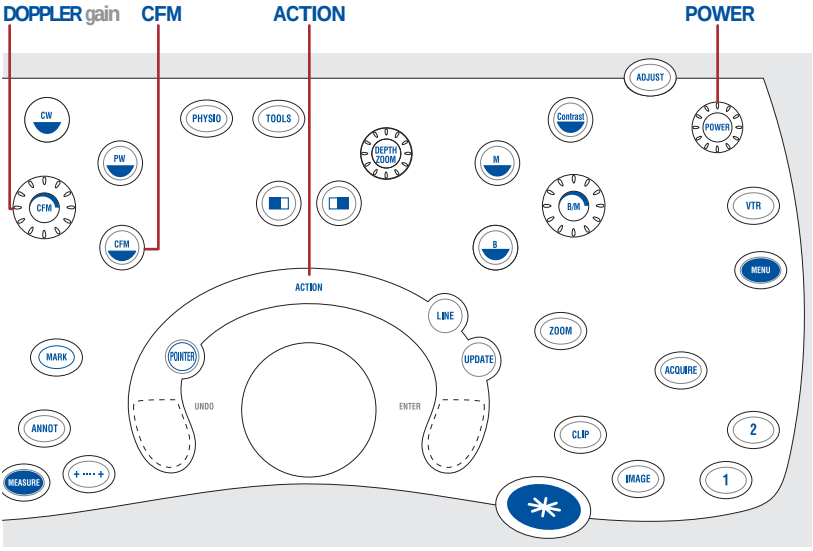
8- Working in **CFM and Power Doppler**



Activating the Color Mode

Procedure

1. Press CFM to activate Color Flow Mapping mode. Press PWR D to activate the Power Doppler mode or press TVM to activate the Tissue Velocity mapping, when available.
2. Position the CFM ROI using the trackball.

3. Activate the CFM ROI cursor by pressing the ACTION key to change the ROI size. The ROI can then be resized using the trackball.
   Move upward to reduce the ROI vertically.
   Move downward to enlarge the ROI vertically.
   Move to the right to enlarge the ROI laterally.
   Move to the left to reduce the ROI laterally.
4. Press ACTION to confirm.

Color Format Optimization

Procedure

1. Adjust the velocity range (**PRF** key).
2. Adjust the color gain (**DOPPLER** gain key).
   Rotate clockwise to increase the color gain.
   Rotate counterclockwise to decrease the color gain.
3. Adjust frequency (**FREQUENCY** key)
   Increase the frequency to show low speeds, reduce the frequency to show high speeds.
4. If necessary, adjust the Color steering (**D-STEER** key).

WARNING **When the steering is set to the maximum step, color dots could be displayed because of artifacts. Should this happen, reduce the steering of one step.**

5. If necessary, move the zero line up or down (**BASEL** key).
6. If necessary, press the **REVERSE** key to reverse the color/flow direction.
7. Adjust the 2D sector (**SIZE** key).
8. Rotate the **POWER** key to change the transmitted power, using the minimum power compatible with a diagnostic level of the images.

Color Display Optimization

The following image parameters can be individually adjusted using the following software keys:

- **CONCURR** key: to overlap the 2D and CFM sectors.
- **2D CFM** key: to activate multiple views with 2D real time image on the left side of the screen and 2D CFM real time image on the right.
- **SMOOTH** key: to make the flow representation homogeneous.
- **SENSIT** key: to optimize the color sensitivity.
- **DENSITY** key: to change the line density.
- **PERSIST** key: to change the persistence level (higher values increase the image perception and decrease the discrimination of moving structures).
- **FILTER** key: to change filters to reduce artifacts (higher values reduce artifacts).
- **COLOR MAP** key: to select different CFM maps or to adjust the scale.

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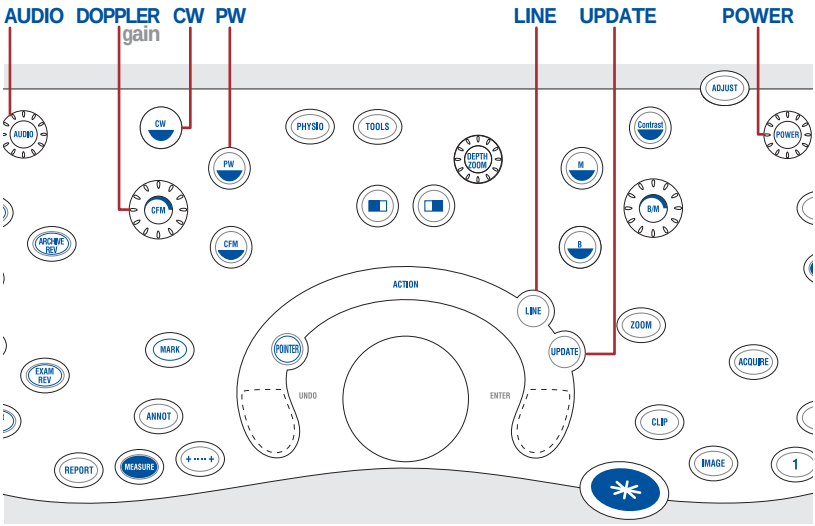
9- Working in **Doppler**



Activating Doppler Modes

Procedure

1. Press **LINE** to display the Doppler cursor.
2. Position the line (CW) or the Sample Volume (PW) with the trackball on the applicable area.
3. Press **PW** to activate PW Doppler or **CW** to activate CW Doppler.

Note

If the Doppler procedure is entered without having previously activated the line cursor, press the UPDATE key to activate the trace acquisition.

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Doppler Format Optimization

Procedure

1. When required, press **TV** to activate the Tissue Velocity Doppler, when available
2. Adjust the Doppler gain (**DOPPLER** Gain key).
   Rotate clockwise to increase the Doppler gain.
   Rotate counterclockwise to decrease the Doppler gain.
3. Adjust the velocity range (**VELOCITY** key).
4. Move the zero line up or down (**BASEL** key).
5. Adjust the frequency (**FREQUENCY** key).
6. If necessary, adjust the Doppler steer (**D-STEER** key) first activating the 2D real time (**PLEX** key).
7. If necessary, press the **Θ ANGLE** key to align the angle vector with the flow direction.
8. If necessary, change the size of the sample volume (**SV SIZE** key).
9. If necessary, press the **REVERSE** key to reverse the flow direction.
10. Adjust the 2D real time display (**B-FORMAT** key).
11. If necessary, press **B-REF** to view the Doppler trace at full screen.
12. Rotate the **POWER** key to change the transmitted power, using the minimum power compatible with a diagnostic level of the images.

Doppler Display Optimization

The following image parameters can be individually adjusted using the software keys:

- **FILTER** key: to display low flow velocities (lower filters “fill” the spectrum).
- **AUDIO** key: to adjust the Doppler volume.
- **HPRF** key: to double the sample volume (only in Cardiac applications).
- **SMART D** key: to reverse the Doppler steering with reference to the vertical line.
- **SWEEP** key: to change the speed.
- **DYN RANGE** key: to adjust the compression of the reflected echoes, increasing (higher values) or decreasing spectrum filling.
- **REJECT** key: to improve spectral curve display.
- **COLORIZE** key: to select a chrominance scale.
- **GRAY MAP** key: to change or to modify the desired post-processing curve.

Note

During the exam, UPDATE freezes the trace and leaves the 2D reference in real time, making the B-Mode format software commands available.

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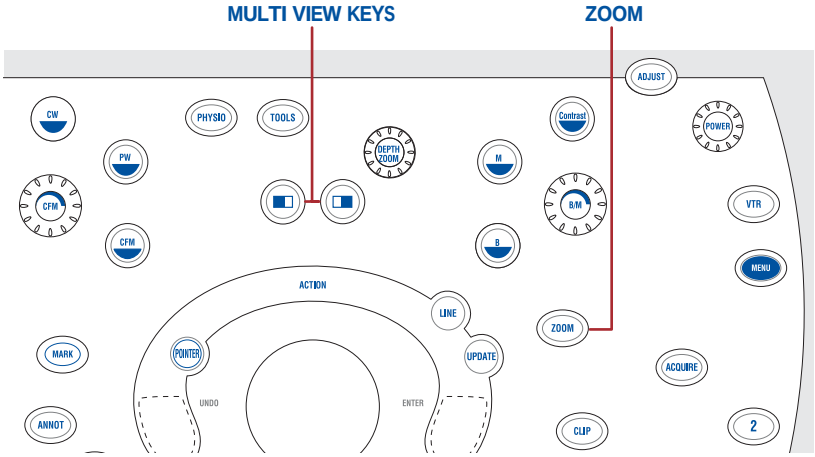
10- Multi View and Zoom

ZOOM

Multi-View format are available for two (dual) or four (quad) 2D and 2D-CFM images. Zoom is available both in real time and in Freeze.

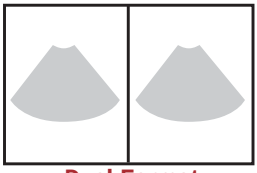


Multi View

Procedure

1. Press ▣ (or ▣) to activate a multi view presentation: the image is displayed on the right (left) side.
2. Press ▣ (or ▣) to freeze the image on the right (left). The real time image is displayed on the other side.
3. Use ▣ (or ▣) to switch between the right and left images.

To quit the multi view presentation, press the **B** key.



Dual Format

Display Optimization

The following image parameters can be individually adjusted using the software keys:

- **DUAL** key: to display two image format.
- **QUAD** key: to display four image format
- **SIMULT** key: to activate the simultaneous display.

Zoom

Procedure

1. Press **ZOOM** to activate the ROI.
2. Press the **DEPTH** key to change the zoom factor.
3. Press **ZOOM** to activate the zoom.
4. Move the image by using the trackball.

To quit the zoom function, press **ZOOM** again. The image returns to its original size.

11- Frozen Images

Procedure

1. Press the **FREEZE** key. Move the trackball to scroll images.
2. Press **FREEZE** to activate real-time.

The system displays the scroll bar of the memories, where the images acquired prior to freezing are temporarily saved.

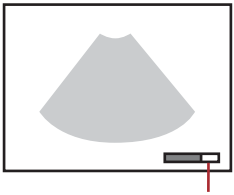
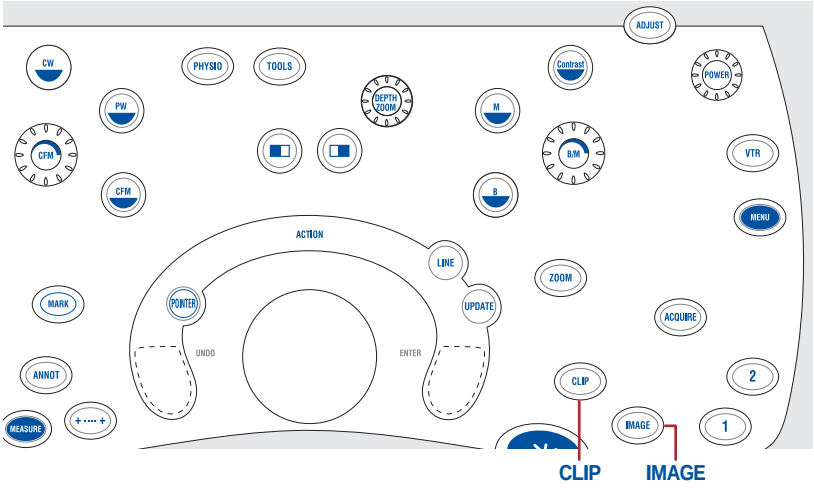


IMAGE CLIP 12- Saving Images and Clips during the Exam

Images and clips can be saved both in real time and in Freeze.



Saving Images and Clips

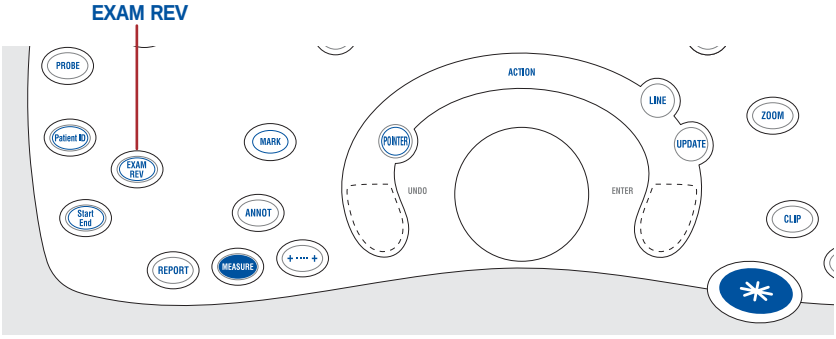
Procedure

1. Press **IMAGE** to store a single frame.
2. Press **CLIP** to store sequences.

Note

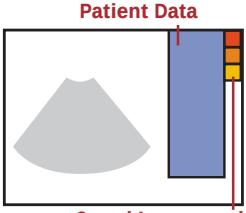
The CLIP DUR key changes the clip duration in real-time.

13-Reviewing Saved Exam **Images and Clips**



Procedure

1. Press the **EXAM REV** key.
2. Place the cursor on the desired thumbnail and press **ENTER** to display the image at full screen.
3. Rotate the **SCROLL** key to scroll through the thumbnails; press the **PAGE** key to scroll to the next eight thumbnails.
4. Press the **PLAY** key to display the sequence in cine mode. The **BEGIN/END** key automatically positions the scroll bar at the start or end of the sequence.
5. Press the **CINE MODE** key to display the whole memory content or seconds intervals.
6. Press the **SPEED** key to view the sequence at different speeds.



Your Notes

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Measurements, Annotations **and Printing**

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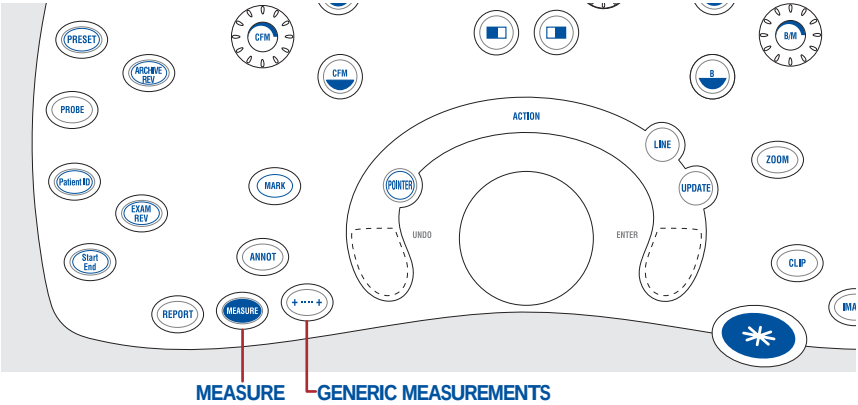
14- Measurements

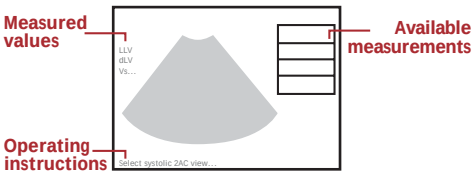
Measurements can be taken on frozen, stored and archived images. The performed measures are collected in the report (**REPORT** key).



Starting a Measurement

Procedure

1. Press the key to activate the Generic Measurements menu.
2. Press the **MEASURE** key to display the Application Measurements menu.



Note

Generic measurements are not included in the report, while advanced measurements are included.

Basic Operations for Generic Measurements

Procedure

1. Press **FREEZE** to freeze the image.
2. Press (+ ···· +) to display the measurements menu.
3. Select the desired measurement using the trackball (or by pressing the **MEASURE** key) and press **ENTER** to confirm.
4. Follow the instructions to perform the measurement: the value of measured parameters are displayed on the left of the screen.

The **UNDO** key can be used to interrupt a measurement before it has been confirmed.

Basic Operations for Application Measurements

Procedure

1. Press **FREEZE** to freeze the image.
2. Press **MEASURE** to display the measurements menu.

Note

Measurements can be organized in groups (symbol), which correspond to specific anatomic structures. To display the measurements included in a group, activate the group and press EXPAND.

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3. Select the single parameter or the group to be measured by using the trackball (or by rotating the **MEASURE** key) and press **ENTER** to confirm.
4. Follow the instructions to perform the measurement: the value of measured parameters are displayed on the left of the screen.

The **UNDO** key can be used to interrupt a single measurement before it has been confirmed; the **ACTION** key interrupts the measurement sequence and exits from the measurement session.

The measurements already performed are marked with the ✓ symbol.

Selective Clearing of Measurements

Procedure

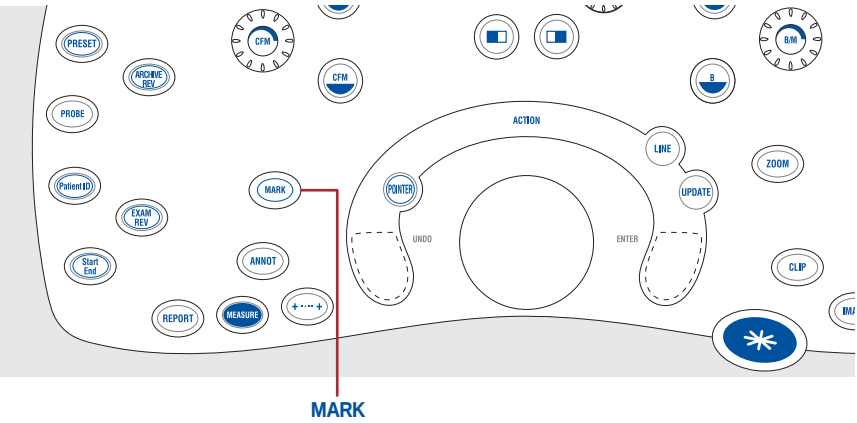
1. Activate the trackball as a pointer by pressing the **POINTER** key.
2. Position the pointer on the measurement to be cleared (the measurement is displayed in yellow).
3. Press the **CLEAR** key to clear the measurement.
4. Press **POINTER** again to return to the measurements menu.

The **CLEAR ALL** key deletes all measurement cursors and the values displayed in the measurements field from the screen.

Your Notes

MARK 15- Body Marks

Body marks can be activated both in real time, in Exam Review and in Archive Review.



Activating the Body Mark

Procedure

1. Press the MARK key.
2. The list of the marks available with the application is displayed on the right while the default mark is shown at the bottom left of the screen.
3. Press the MARK key to scroll the body marks list displayed on the right side; the active mark keeps being displayed while the list is scrolled.
4. The trackball moves the arrow on the mark, the **ARROW** key rotates it.
5. Press the ENTER to confirm the arrow position.

Once the icon has been selected and the arrow positioned, press the key to activate the session.

Changing and Deleting the Body Mark

Selection Icon

Choose a different group of marks, select the selection icon using the **MARK** key and pressing the **ENTER** key. At the right of the image the system displays the list of available groups: with the **MARK** key scroll the list and press **ENTER** to confirm the selection.

Exit Icon

Select the Exit icon or press the **UNDO** key to exit without displaying any body mark.

ANNOT 16- Entering **Annotations**

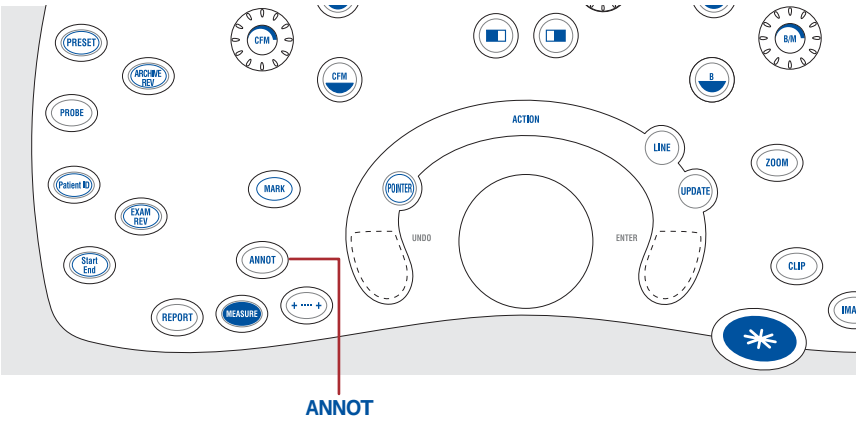
Free Text

Procedure

1. Press any alphanumeric key to activate text input.
2. Use the trackball to position the text.
3. Press **ENTER** to confirm the position.

The procedure can be repeated several times.

Annotation Mode



Entering Annotations

The key **WRD/SENT** toggles from the By Word to the By Sentence glossary associated to the application.

By Word Glossary

Procedure

1. Press the **ANNOT** key: the system displays the list of available words on the right of the screen.
2. Select the By Word glossary.

3. Scroll the list through the trackball and select the desired word (highlighted in yellow).
4. Press **ENTER** to confirm. The selected word will be displayed on the screen. The word can be edited by pressing the **ACTION** key.
5. Place the word using the trackball.
6. Press **ENTER** again to confirm.

The procedure can be repeated several times.

By Sentence Glossary

The sentence is composed of four words. The list of the available words for the first term of the sentence is displayed on the right of the image. The four sentence words are displayed on the softkeys menu, one softkey for each word: scroll them for composing the sentence.

Procedure

1. Press the **ANNOT** key: the system displays the list of available words on the right of the screen.
2. Select the By Sent glossary.
3. Scroll the lists through softkeys and select the desired words (highlighted in yellow). The sentence is automatically updated as the lists are scrolled. The sentence can be edited by pressing the **ACTION** key.
4. Place the sentence using the trackball.
5. Press **ENTER** to confirm.

Correcting Text

Procedure

1. Press the **POINTER** key: a cursor is displayed
2. Move the cursor near the text to be corrected. Press **ENTER** to activate the text: the text color turns to yellow.
3. Enter the corrections by using the keyboard.
4. Press **ENTER** to confirm.

Deleting Text

Procedure

1. Press the **POINTER** key: a cursor is displayed
2. Move the cursor near the text to be corrected. Press **ENTER** to activate the text: the text color turns to yellow.
3. Press the **CLEAR** key: the selected text is deleted.

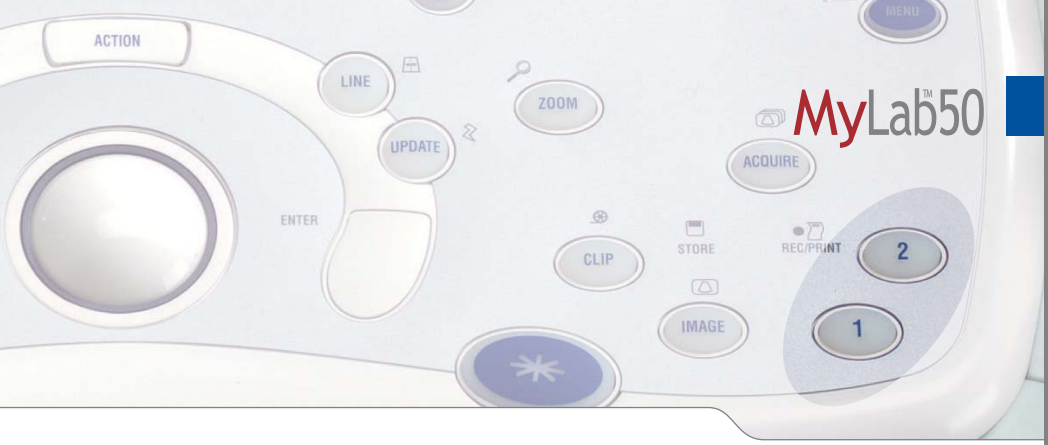
The **CLEAR ALL** key deletes the text and exits from the annotation session. The **DEL LAST** key deletes the last inserted word or sentence.

Arrow Positioning

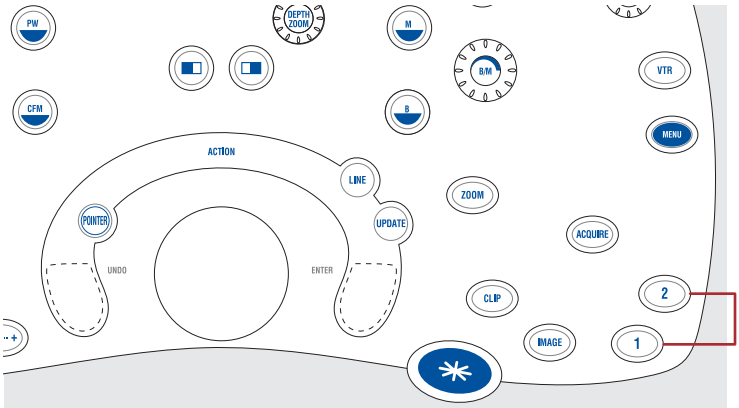
Procedure

1. Press the **ARROW** key: an arrow is displayed on the screen.
2. Place the arrow using the trackball.
3. If necessary, rotate the arrow by pressing the **ARROW** key.
4. Press **ENTER** to confirm.

The procedure can be repeated several times.

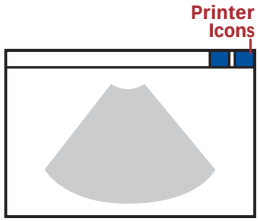


1 2 17- Printing Images



The icons of the set peripherals are displayed at the right bottom of the screen.

Icon	Printer
	B/W Printer
	RGB Printer
	PC Printer
D	DICOM Printer
	No Peripheral



Press **1** to print on the printer shown on the left icon, **2** on the printer shown on the right.

Your Notes

Your Notes

Your Notes

MyLab50

Ending and Archiving an Exam

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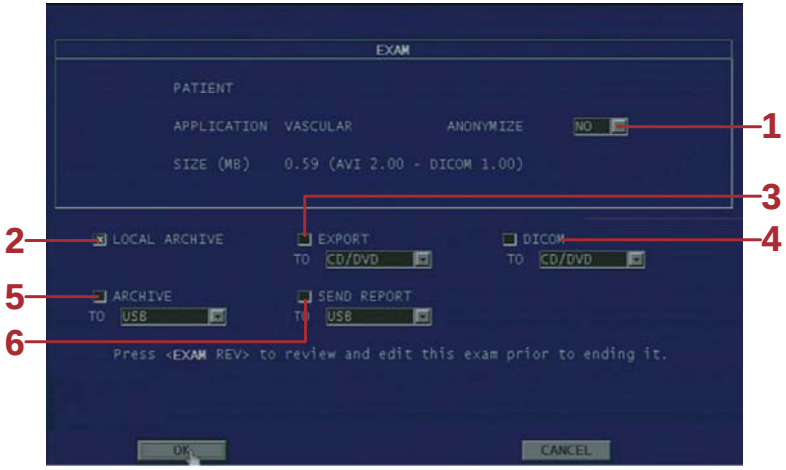
18- Ending the Exam



1. Anonimize
2. Internal DB
3. Export
4. DICOM
5. External DB
6. Report

During an exam, the images/clips are temporarily stored on the system's hard disk.

As soon as the **START END** key is pressed the system shows the end exam window. This window shows the patient's name, the type of activated application and the size of the exam data. The operator is enabled to simultaneously save the exam to different supports in different formats:

Procedure

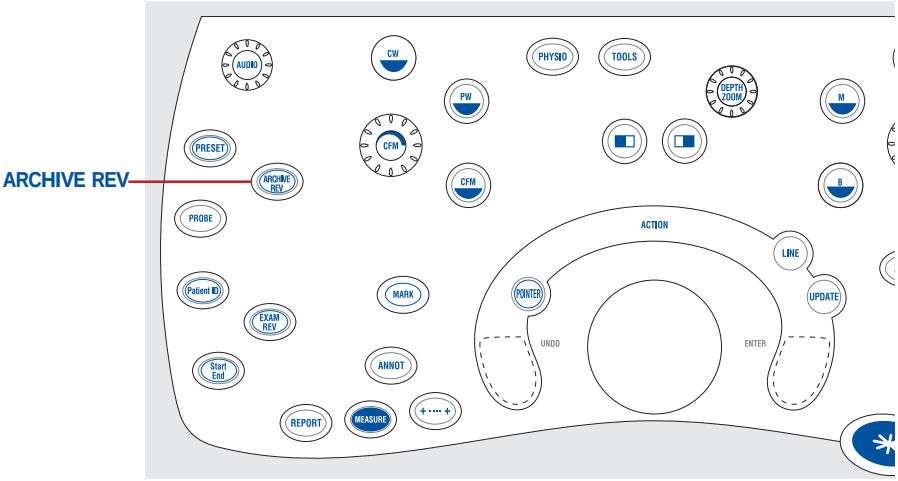
1. Press the **START/END** key to end the exam.
2. Set whether patient data have to be made anonymous (“Anonymize” field)
3. Select how to save data and the destination support.
4. Place the cursor on OK and press **ENTER**. Data are saved.

If no option is selected, all stored data will be deleted.

Option	Format	Destination support
Local archive	Native	- Internal database
Export	BMP or AVI	- CD (R and RW) - DVD (+R,-R, single-layer) - USB Memory Drive - Network directory
Archive	Native	
Send report	XML	
Dicom	DICOM	- CD (R and RW) - DVD (+R,-R, single-layer) - USB Memory Drive - Network directory - Dicom Storage Server

ARCHIVE REV 19- Reviewing the Archive

Images and Clips can be reloaded for each patient and a specific exam can be reviewed. Specific measurements can be taken and saved on the reloaded images.



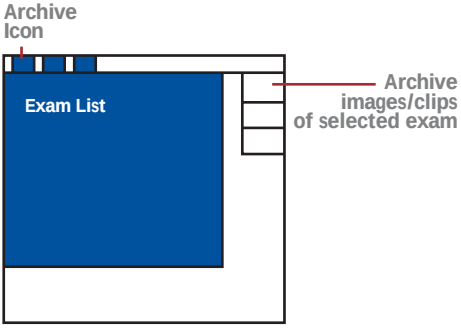
Reviewing an Exam

Procedure

Archive Display Icon

1. Scroll the exam list by using the trackball or by pressing the **SCROLL** key. The thumbnails of the highlighted exam are shown at the bottom of the screen.

2. Press **ENTER** twice to display the highlighted exam images at full screen or place the cursor on the archive display icon and press **ENTER**.



Your Notes

Your Notes

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