

Application News



AFI

Automated Functional Imaging

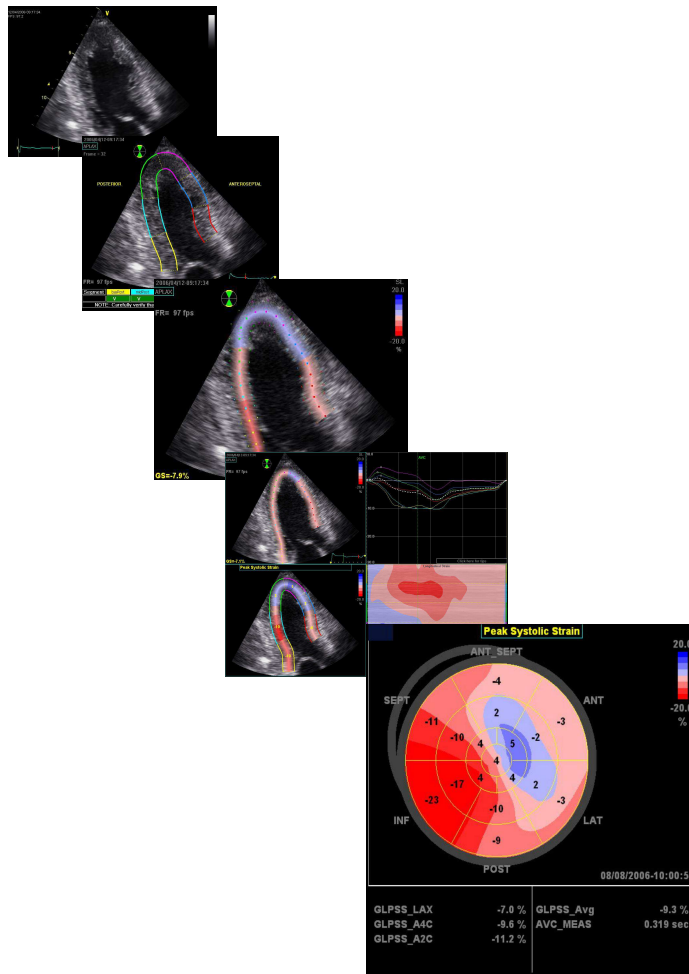


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NOTE

This hand out is additional training material.
For more information please refer to the user manual and/or reference manual.



Getting started

1. Create an exam
2. Connect the ECG
 - a. Press **Physio** and change **ECG Lead** to get the best signal
 - b. Obtain a stable ECG trace

Optimising images

1. Sector width
 - o Not too small, the myocardium must be visible during the entire cardiac cycle.
 - o Not too big, this lowers the frame rate
2. Frame rate
 - o Optimal between 40-90 fps
 - o Optimise the frame rate with the rotary knob
3. Use the dual focus if the image quality in the apex is not acceptable
 - o Check the frame rate and increase it accordingly with the rotary.
4. Store loops from all apical views
 - o Apical 4 CH
 - o Apical 2 CH
 - o Apical LAX
 - o It is recommend to acquire all three apical views sequentially in order to get comparable heart rates in all views.

Measure the AVC

From M-Mode

1. Acquire a nice M-Mode signal where the valve closure is clearly visible.
2. Press **Measure**.
3. Open the folder for **Event Timing**.
4. Select AVC.
5. **Set** the marker for the closure.

or

From Doppler

1. Acquire a nice Doppler signal; most likely including the valve clicks.
2. Press **Measure**.
3. Open the folder for **Event Timing**.
4. Select AVC.
5. **Set** the marker for the closure.

Now the measurements are stored in the worksheet and will be used for the AFI analysis.

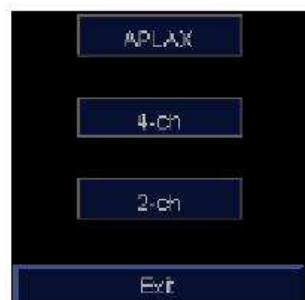
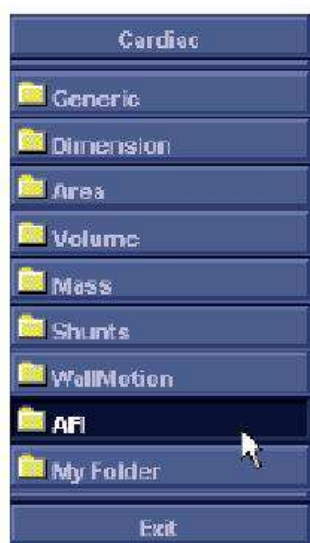


Starting the analysis

The measurement

1. Open the **APLAX** view
2. Press **MEASURE**
3. In the Measurement menu, select **AFI**.

The *View selection menu* is displayed (see Figure 2).



4. Select APLAX
 - o It is recommended to start with the APLAX view. This allows defining the Aortic Valve Closure (AVC).

Defining the ROI

1. Only three clicks!
2. Define the endocardial border on both basal points of the annulus and in the apex.
3. Follow the instructions on the pointer or in the status bar.
4. Correct ROI definition is crucial to get good tracking

Note:

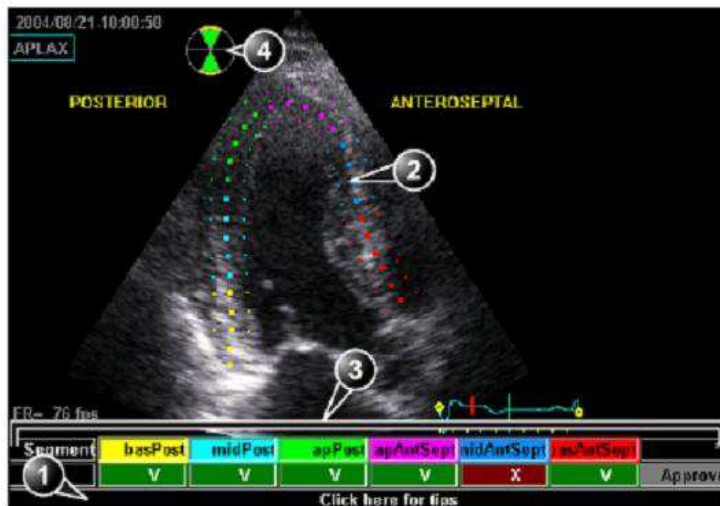
Depending on your system and SW status, the Auto EF tool can make suggestion of the position of the three points.

The 3 points will be placed around the right positions, but needs to be checked by the user and if necessary replaced.

The intention is to have less movement for the user, since the cursor is always close to the correct position.

5. After placing the three points the ROI is displayed.

6. The shape can be changed with the cursor (click on the points in the inner border and move them).
7. The processing of the whole loop starts automatically (when the cursor will not be moved any more).
8. The data is processed and the tracking validation screen is displayed.



9. Check the tracking quality and make changes on the ROI if necessary.
10. Approve the scoring table, once you can agree with it.
11. Set the AV closure

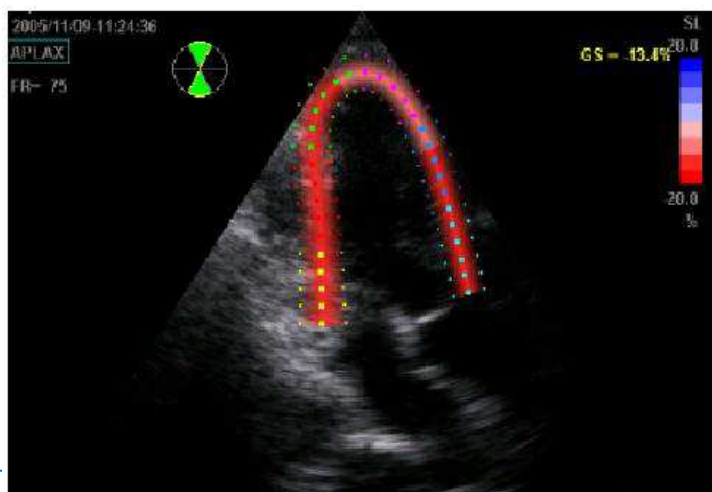
AV Closure

Three ways to define the AVC:

1. Measure the event timing before starting the AFI.
2. Default AVC selected by the system (determined by the temporal contraction of all LV segments (strain curves)).
3. From the 2D image select the first frame where the AV is closed (only visible in APLAX, therefore we start with this) and press Select.
4. Look carefully on the message and make your decision.

Once the AVC is defined this will be used for the other views as well (therefore comparable heart rates are crucial).

Now the *Parametric systolic strain APLAX* view is displayed



The quad screen

Press **quad screen** to see all information.

To change the peak marker position select it and move it to another position.

Press **Image store** to store the quad screen to the clipboard.



Next analysis:

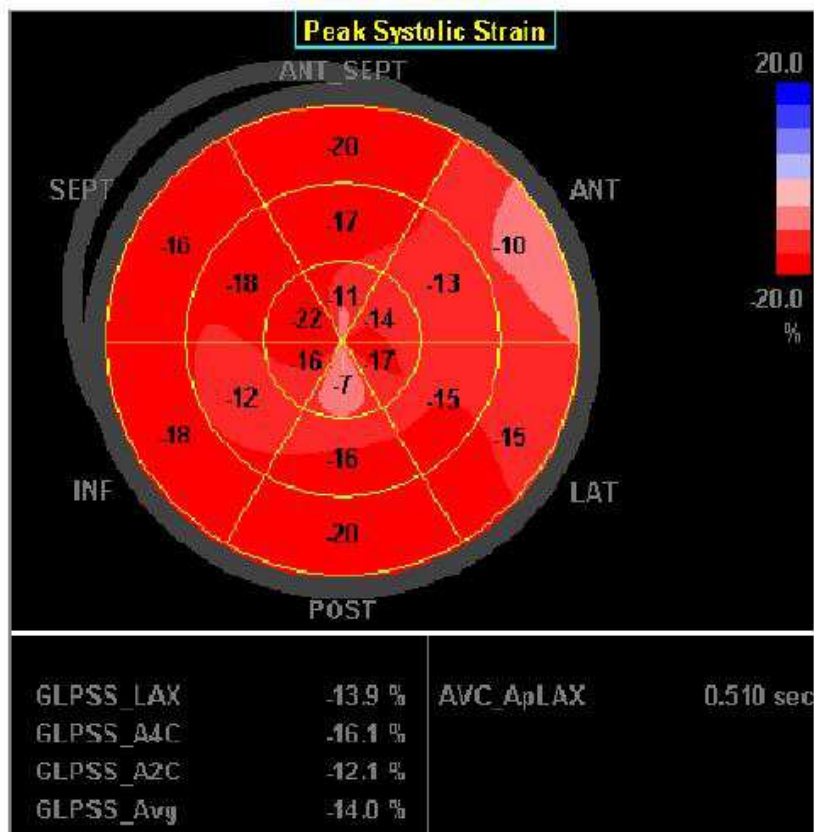
- Take the 4CH view from the clipboard and do the same analysis again:
- Take 4 CH.
- Click on 4CH in the view selection menu.
- Mark the 3 points
- Check the tracking quality and approve
- Enter the quad screen and store

At the end do the same procedure for the 2 CH view.

Once all views are analyzed the system shows the Bulls eye and the curves from all three analyzed views. The user can move the cursor over each segment in the Bulls eye and the curve of this specific segment will be highlighted in the traces screen.

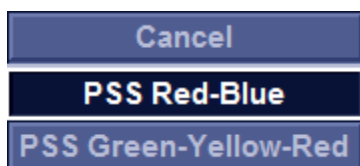
The Bull's Eye

- Press **BULL'S EYE** to see the Bulls eye only
- The Single Bull's eye screen is displayed.
- Press **IMG STORE** to save the results.
- The measurements are available in the worksheet and can be used in the report.



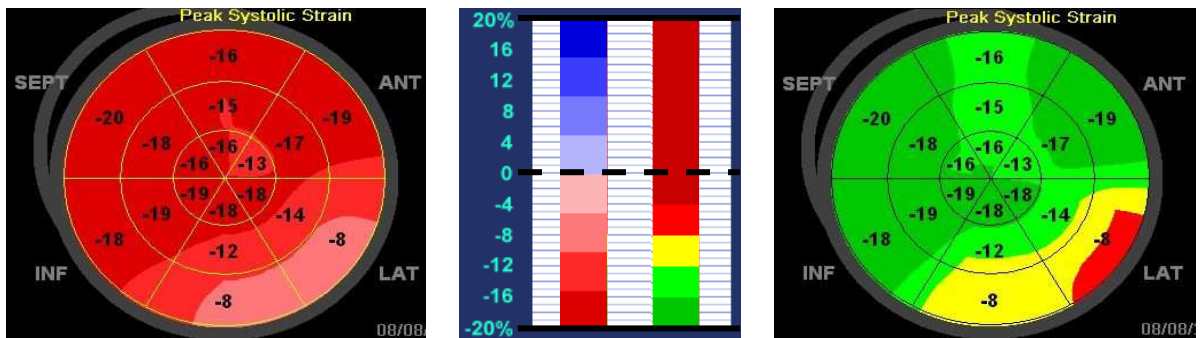
Other type of Bulls eye

With latest software on Vivid S6 and Vivid q (BT 11) a new Bulls eye map was introduced into the system. Please check on the BE map to change between
PSS red-blue
PSS green-yellow-red



The green-yellow-red map offers an alternative to the conventional Red-Blue Map. It uses the same numbers but with a different color overlay

- Focus on negative systolic strain (contraction)
- Allows better differentiation within contraction at a glance



Red-Blue Map

Green-Yellow-Red Map*

>-8% Red
-8...-12% Yellow
<-12% Green

* On EP a stored G-Y-R map is shown, but replaced by the R-B map with any AFI reprocessing