GE Healthcare
Vivid Club

Application News

JB26932XX

GE imagination at work

TomTec®

RV Volume analysis

Version 2

on

Vivid™ E95

and associated

EchoPAC™ Software only

Content

NOTE

This hand out is a summary and is not comprehensive.

For more detailed information please refer to the user manual and/or reference manual.

TomTec RV Volume

TomTec RV Volume version 2.x is an optional Software package available for Vivid E95 and associated EchoPAC Software.

General

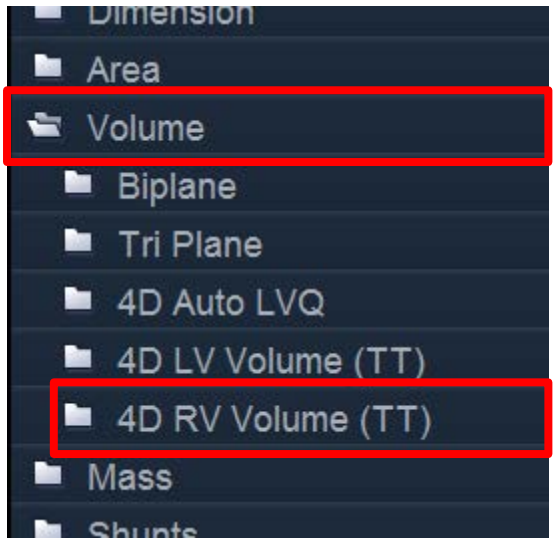
This step by step description is only showing the main operation that needs to be performed by the operator. Please refer to the TomTec user manual for more detailed information.

Data acquisition

Images for the RV analysis will be acquired with 4V-D Transthoracic probe.
A Frame rate of at least 10 fps is recommended.

Starting the analysis

Recall the 4D dataset that should be analyzed.
Open the measurement package
Select the folder for **Volume** and click on **4D RV-Volume (TT)**



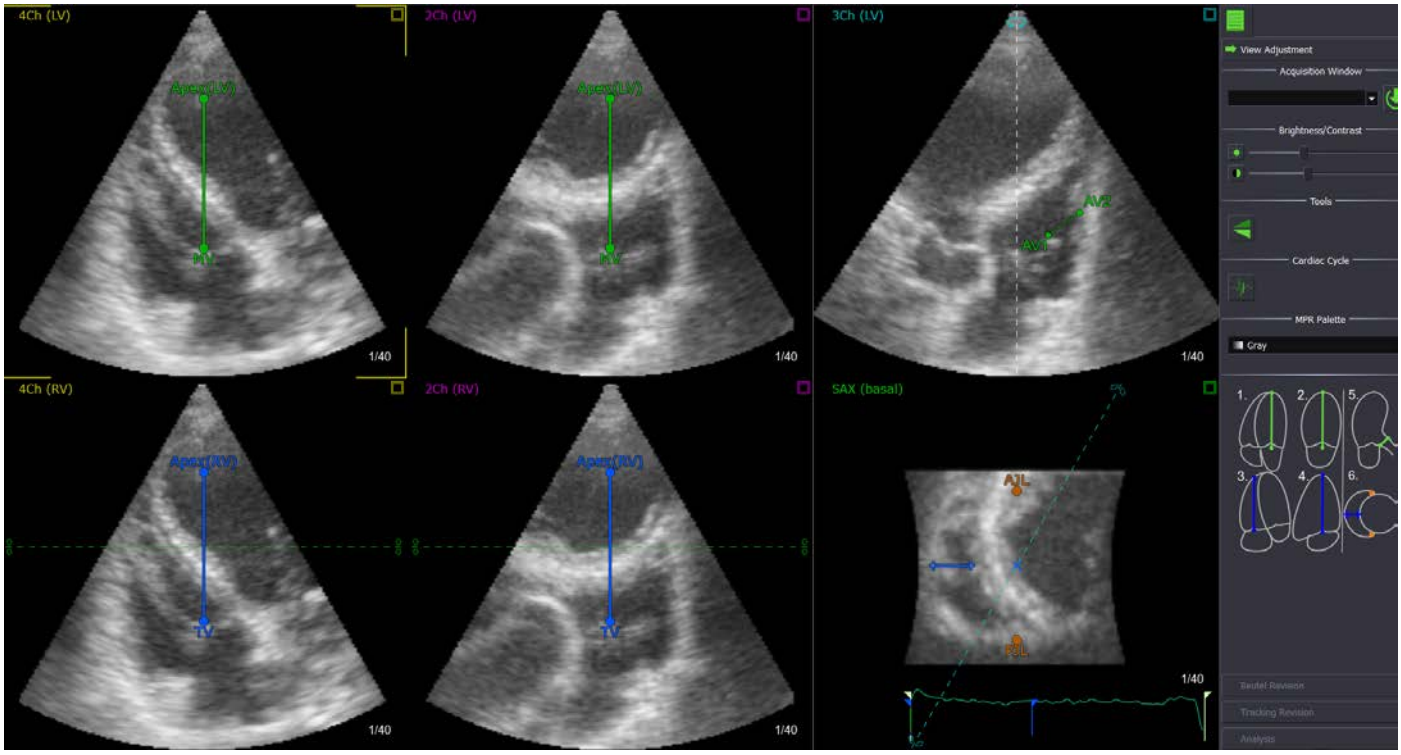
The TomTec RV Volume plug in starts.

View Alignment

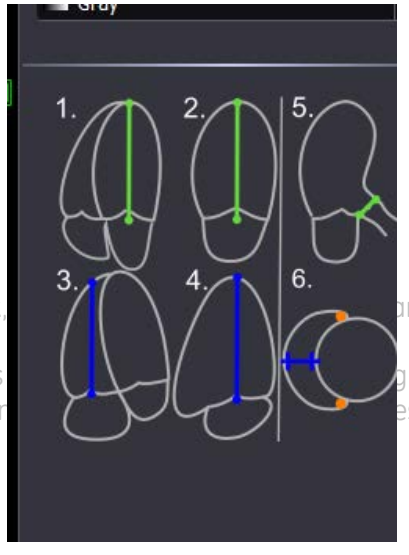
The first step is to align the image in order to have

Upper Row	4CH (**LV** focused)	2CH (**LV** focused)	3CH (**LV** focused)
Lower Row	4CH (**RV** focused)	2CH (**RV** focused)	SAX basal

Depending on your acquisition window you may not have the optimized images from the beginning as illustrated below.

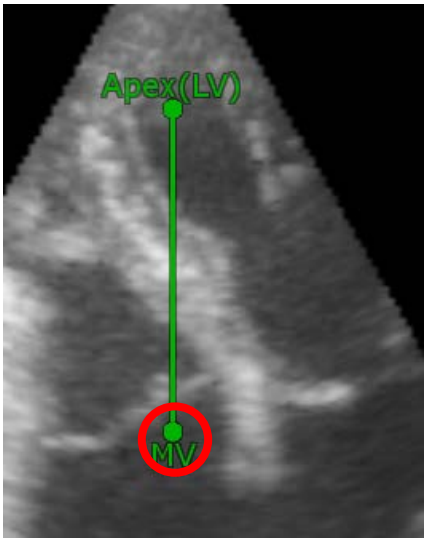


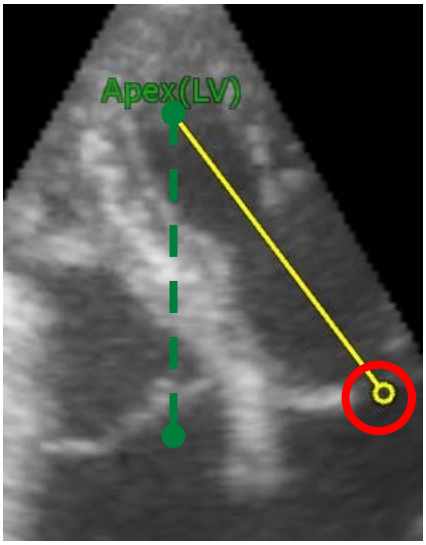
To align the images properly grab the end of the lines and move them to the correct positions.
Follow the guide on the right hand side.



Step 1-4

Align the first 4 steps, to have the axis of the Ventricles in the correct position.
Grab the end of a Line and move the indicated position

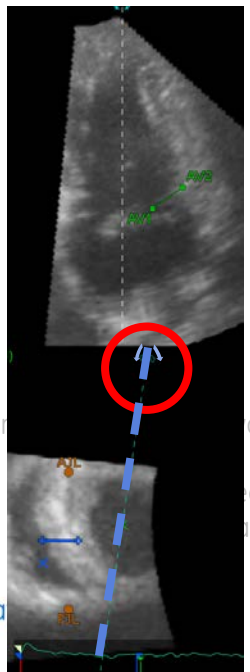


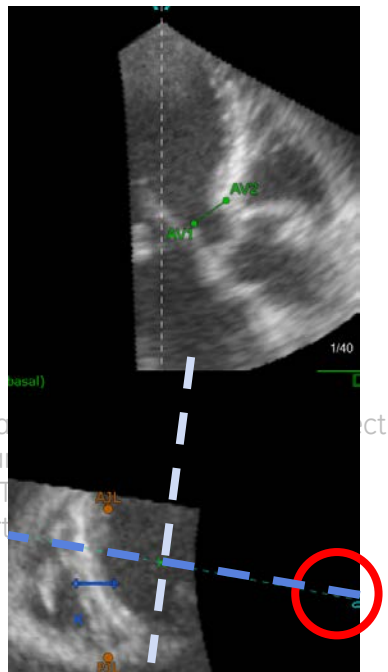


Do this for 4CH (LV) - 2CH (LV) – 4CH (LV) – 2CH (RV)

Step 5

Align the upper right image to have the AV/LVOT well visualized.
In order to adjust to the correct position, take the blue line in the SAX view and move it around until you see a nice 3Chamber view on top.





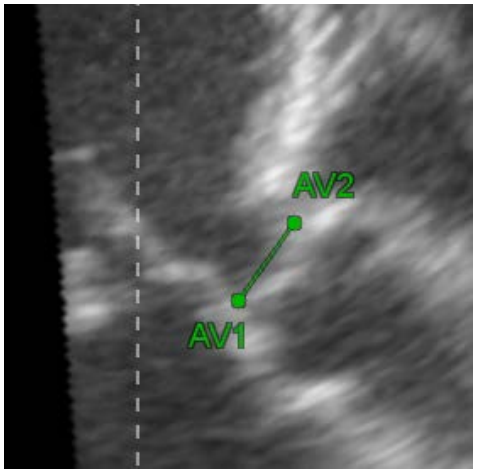
Set Aortic Valve

When the valve is closed it can be nicely visualized, where the Cusps are exactly located.
In order to set the Aortic Valve properly it's recommended to stop the loop in any diastolic frame.
The Diastolic images are still frames; therefore any of them can be used.

Select frame

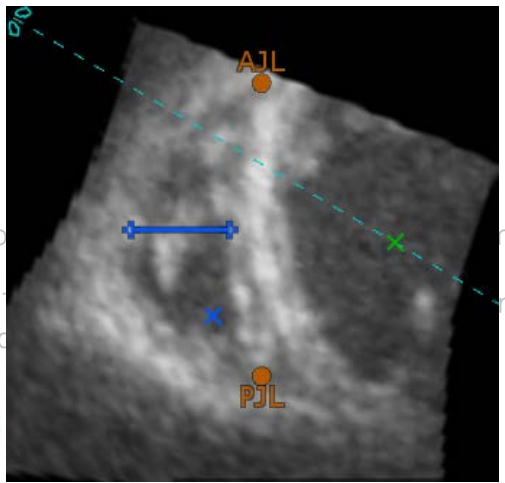
Use the Video Control buttons, to stop the loop and scroll frame by frame.

Set the Points for AV1 and AV2



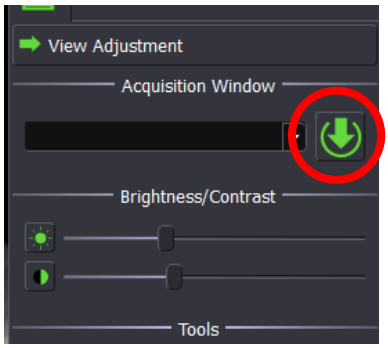
Step 6

Set the two orange points for the Junctions and adjust the distance of the RV diameter.

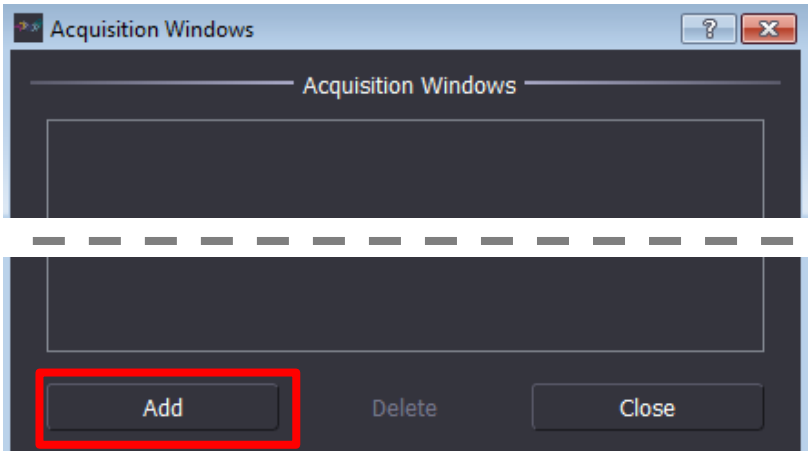


Store Alignment

If always using nearly the same acquisition window, a user setting may be created where all the alignment steps can be stored.
Align the image as descripted in Step 1-6
Click on the button right beside the Acquisition window.

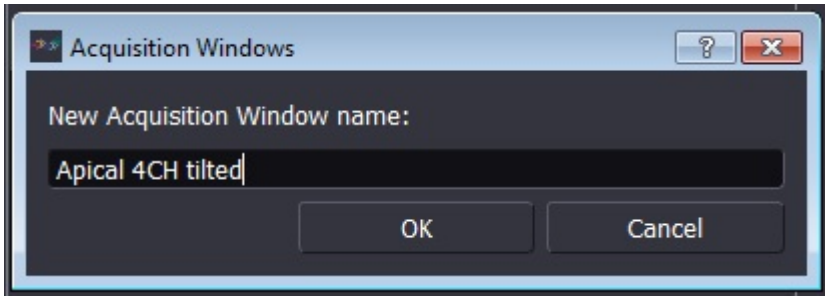


The first time an empty window will appear, later the list of already stored user settings will be displayed

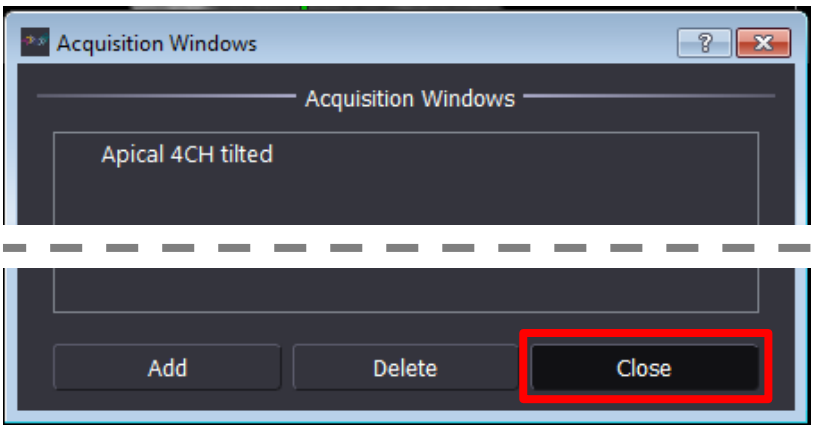


Click **Add** to store the actual settings.

Enter a name for the Settings and press **OK**.

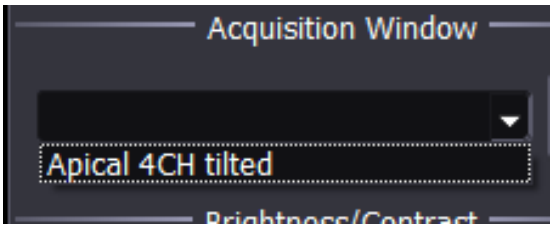


Now you are back in the first Window with the new Acquisition Window displayed in the List.
To close this window click on the **Close** button.



Recall Alignment

The next time an analysis is done the user settings with the stored alignment can be chosen from the Acquisition Window list.
Use the Arrow to open the Drop down list and select the setting.

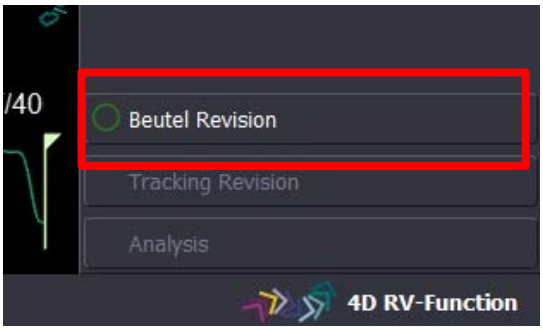


Be aware

Only the alignment Steps 1-4 are stored in the user setting.
Step 5-6 (Placement of AV, AJL, PJL, RV diameter) still need to be set again by the user, since these parameters are changing from one patient to the other according to the size and geometry of the heart.

Beutel revision

Start the Beutel Revision, by using the next workflow step in the lower right corner.

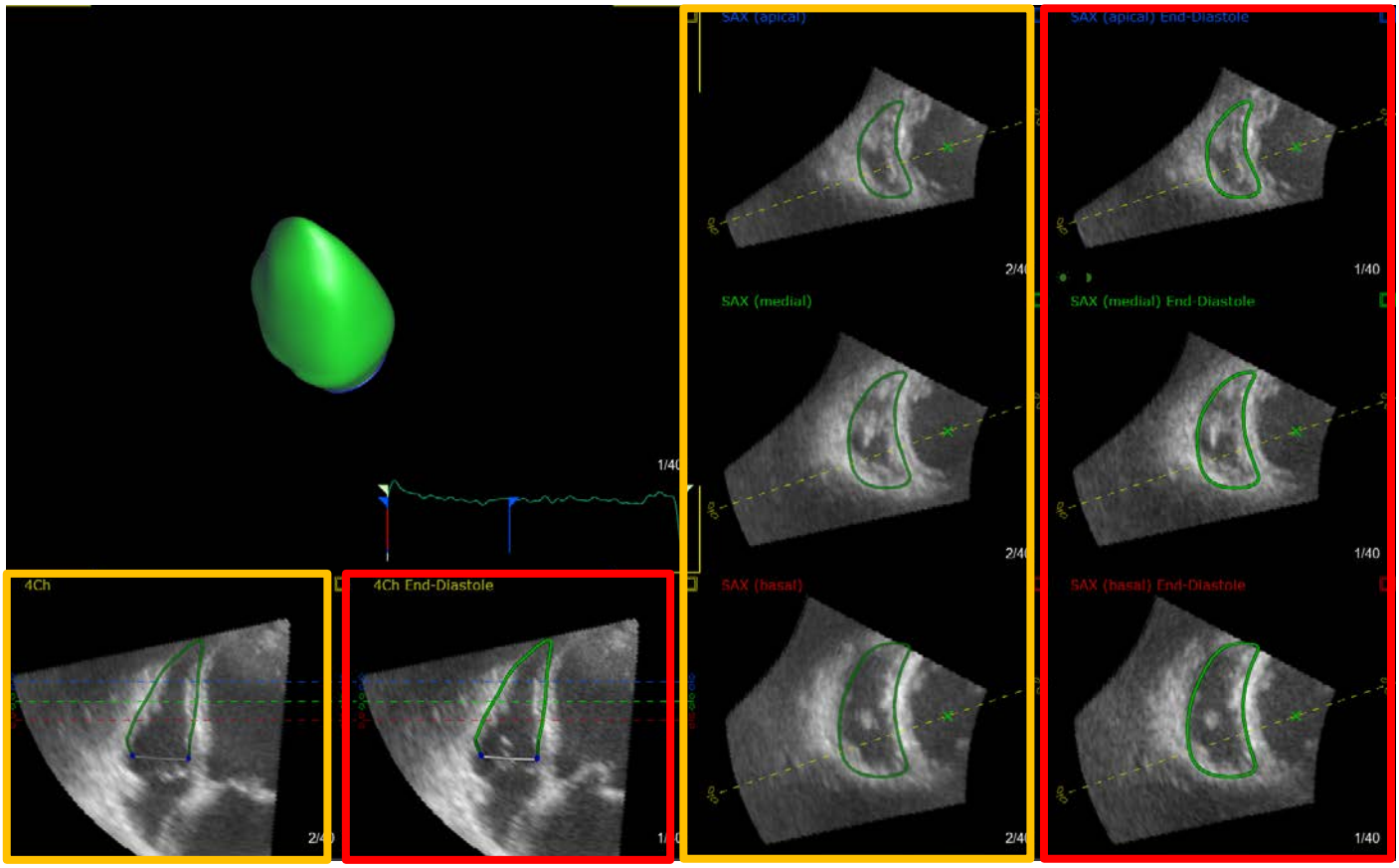


The Software detects the entire RV contours for the End-Diastolic frame.
Review the contours carefully and adjust if needed.

Beutel from End-Diastolic frame

Loops SAX
Contours visible when in end-diastole

Still frames SAX
Contours to be adjusted



Loop 4CH
Contours visible when

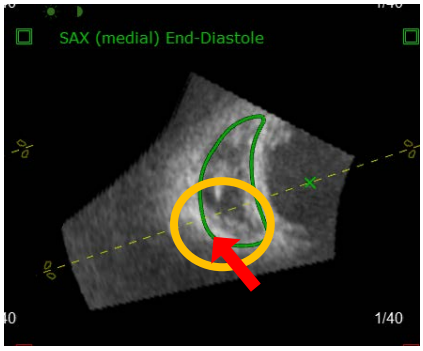
Still frame 4CH
Contours to be adjusted

in end-diastole

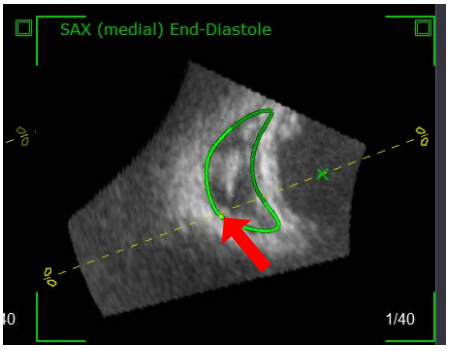
Adjust contour

To adjust any of the contours grab the green line and move it to the correct position.
While you grab the contour the color changes to a lighter green to indicate the part of the contour that will be change now.

Grab the contour



and move to the new position

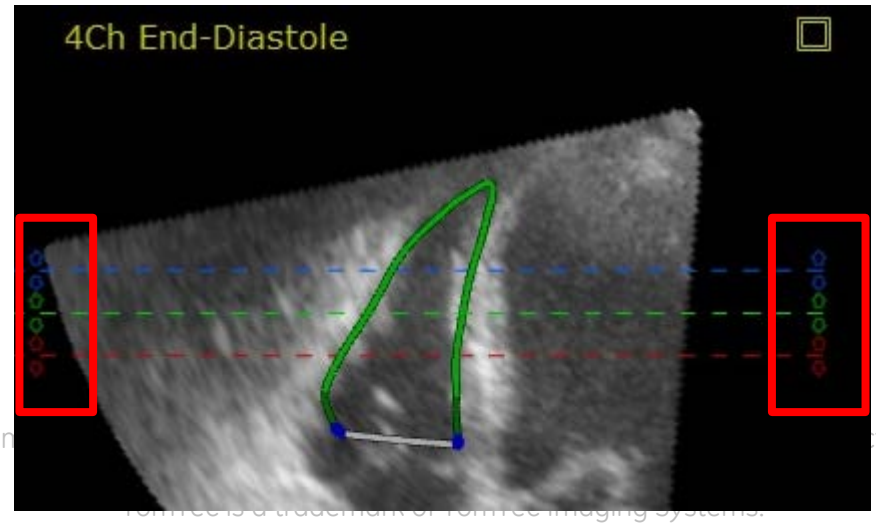


Pen Size

In order to adjust a smaller or a bigger region, when moving the contours, two Pen sizes are available.
Select the size in the menu on the right hand side.

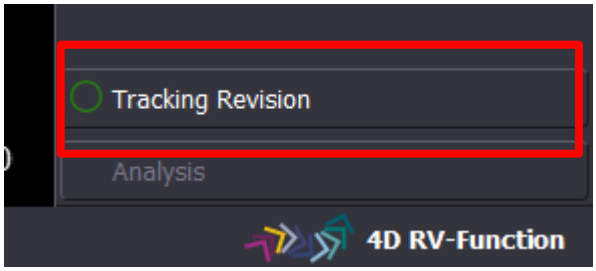
Change SAX planes

In the 4CH view 3 lines are visible.
These lines indicate the position of the 3 SAX views on the right hand side.
It might be needed to check the contour also in other regions than the 3 default positions.
Any of the lines can be moved, by simply using the arrows on one of the side and move the plane up/down.
The Sax views change according to the new position and further contour enhancement can be done.



Tracking Revision

Start the Tracking Revision, by using the next workflow step in the lower right corner.



The system has now analyzed the entire heart cycle and shows the tracking for all frames.

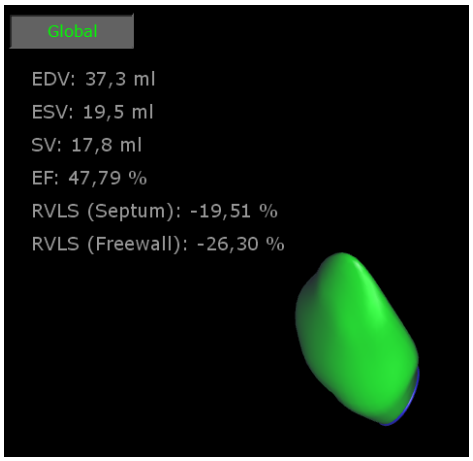
Adjust contour

Adjustments still can be done, this time in the end-systolic frame.

Same principles apply as for the Beutel Revision

Measurements

Since now the entire RV is tracked the system shows the first measurement results in the upper left corner.

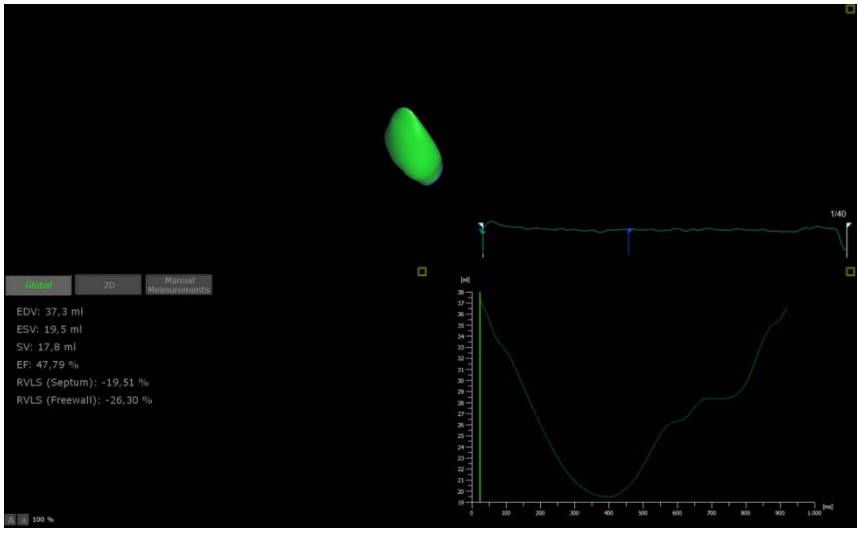


Analysis

Click on **Analysis** to the see the last workflow step.

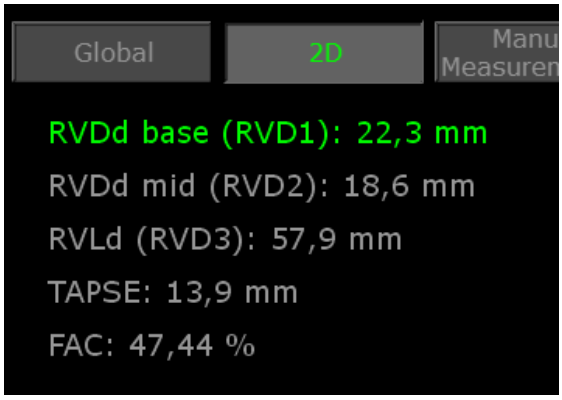
Global Measurements

Initially the Global parameters can be seen, together with the Beutel and a Volume curve.

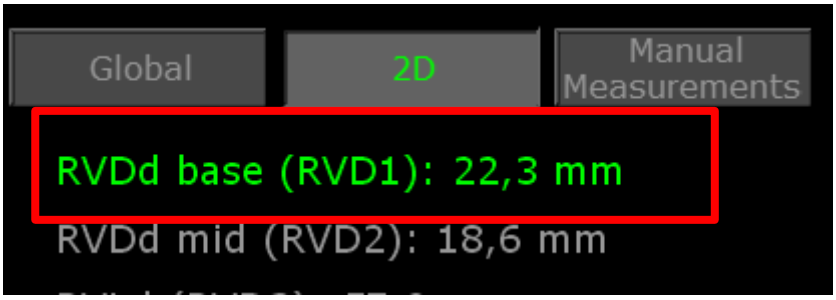


2D Measurements

By clicking on the 2D Tab, measurements acquired from 4CH 2D slice are displayed.



Click on one parameter to get the measurement done in the 2D image, highlighted in lighter green.

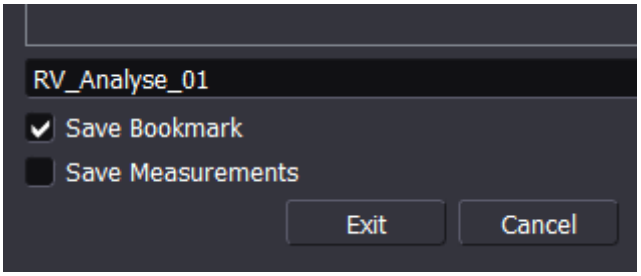


Exit the RV application

Click on the X on the upper right corner.

A new window opens with the possibility to store the analysis.
Enter a name for this analysis and checkmark:

- Bookmark - to store the complete analysis
- Measurements - to get the measurements stored in the EchoPAC worksheet



Its possible store several bookmarks for the same dataset

Reopen a stored analysis

When recalling a dataset that was previously analyzed and the results were stored the following will happen.
Open the 4D RV Volume (TT).
The following window appears.

Double click on selected image, to start a new analysis

Double click on the bookmark of interest to reopen the stored analysis for this one dataset.