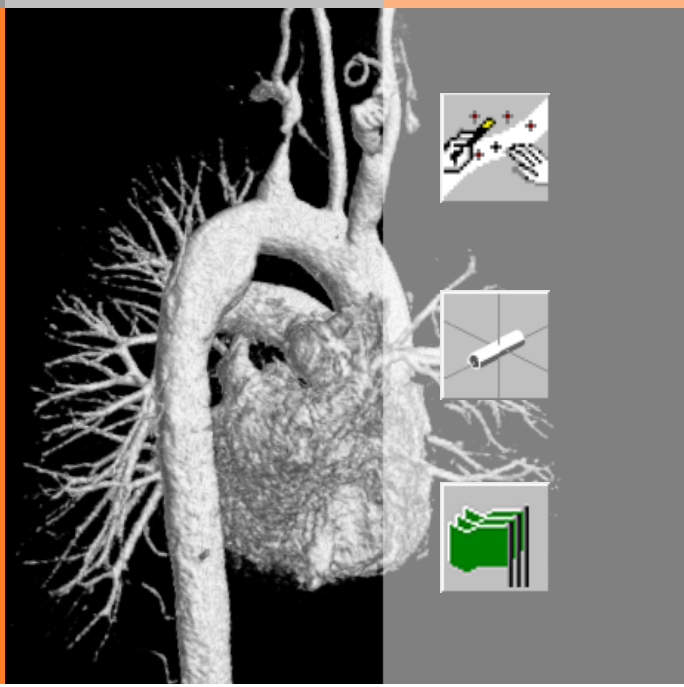

Magnetic Resonance

Vessel View

Versions syngo MR 2004V, 2005E, 2006T
Quick Guide

SIEMENS
medical

Manufacturer's note:

This product bears a CE marking in accordance with the provisions of council directive 93/42/EEC of June 14th, 1993 for medical devices.

The CE marking applies only to medico-technical products/medical products introduced in connection with the above-mentioned comprehensive EC directives.

System Information

System type: _____

Serial number: _____

Gradient configuration: _____

Connected cameras: _____

_____

Software options: _____

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Customer service phone numbers: _____

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Table of Contents

Vessel View gives you:

- ❏ 3D view in VRT or MIP mode supplemented by MPR or MIP slice images
- ❏ Common VRT gallery with 3D task card
- ❏ Clip planes and VOI tool for processing a volume
- ❏ Semi and fully automatic generation of vessel paths with segmentation
- ❏ Manual path definition and segmentation (vessel tube)
- ❏ Vessel navigator for generating and displaying a ribbon MPR for special evaluation
- ❏ MIP view in vessel navigator
- ❏ Automatic preparation of a stenosis evaluation
- ❏ Distance, curve, area, and angle measurement
- ❏ Automatic determination and measurement of vessel cross-section
- ❏ Object list for overview and management of created objects
- ❏ Automatic generation of axial vessel slice images
- ❏ Transfer of image data to graphic slice positioning (GSP)
- ❏ Recording of action sequences and rotations of the view

Introduction

We are pleased to welcome you as a user of the powerful software ***syngo MR*** used to operate Siemens MAGNETOM MR systems.

This **Quick Guide** will help you with evaluation of vessel images using **Vessel View**. It focuses on simple and fast performance of typical actions. This Quick Guide is only valid in conjunction with the system manual and the safety information contained therein.

Step-by-step instructions are given on the right. Supplementary figures and notes can be found on the left.

A full guide to using the software ***syngo MR*** is provided in the **User Manual** and in the comprehensive **Online Help**. To call up the Online Help press F1 on your keyboard or click the **Help** button in the active dialog box.

The **Vessel View Quick Guide** contains the following topics:

- ❏ Loading and viewing Images
- ❏ Defining vessels
- ❏ Evaluating vessels
- ❏ Saving and documenting evaluations
- ❏ Workflow of a Carotis examination

If you have not yet opened **Vessel View**, the application opens as soon as you load images.

Requirements

You cannot open several series simultaneously in **Vessel View**. Any series you open must meet the following requirements:

- ❏ The series must comprise at least three images.
- ❏ All images must be of *the same* patient.
- ❏ All images must be parallel and acquired along one axis.
- ❏ Each image must have a different slice position.
- ❏ The distance between two adjacent slices must not exceed 5 times the average slice distance.
- ❏ All images must have been recorded within 30 minutes.

Loading images

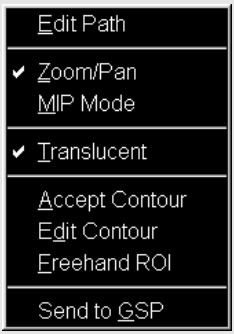
✧ Open the **Patient Browser** and select an image series.

✧ Click the **Vessel View** button on the tool bar of the **Patient Browser**.

Or

✧ Select **Applications > Vessel View** from the menu bar of the **Patient Browser**.


(1)
(2)
(3)
(4)


Edit Path
Zoom/Pan
MIP Mode
Translucent
Accept Contour
Edit Contour
Freehand ROI
Send to GSP

Layout of Vessel View task card

(1) **Slice image segments:**
MPR, MPR Thick display, MIP or MIP Thin display

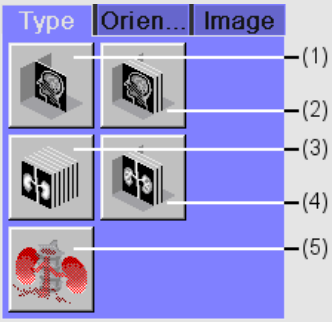
(2) **Volume image segment:**
VRT or MIP display

(3) **Control area**

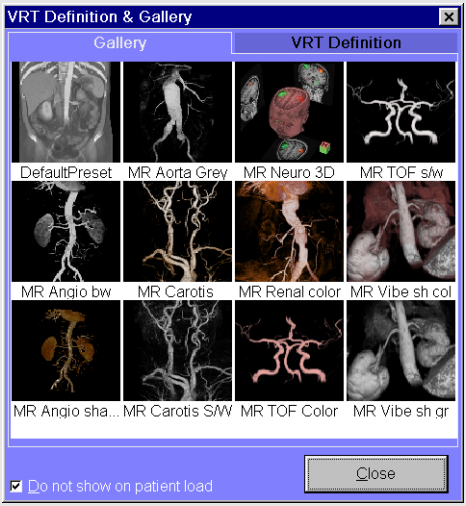
(4) **Evaluation area**

Depending on your task you can select any of the following functions from the **Vessel View** pop-up menu:

- **Edit Path** switches path editing mode for the selected path on or off.
- **Zoom/Pan** switches zoom/pan mode on or off.
- **MIP Mode** switches MIP mode for the volume image on or off.
- **Translucent** activates translucent view of segmented vessels in the volume image.
- **Accept Contour** accepts a contour suggestion in the lower slice image segment as the area measurement.
- **Edit Contour** activates or deactivates change contour mode for a contour in the lower slice image segment.
- **Freehand ROI** activates or deactivates draw mode in the lower slice image.
- **Send to GSP** transfers the image coordinates of the selected MPR segment to the **Examination** task card for graphic slice positioning.



You can set the slice thickness for MPR Thick and MIP Thin by right-clicking the button.



You can edit VRT parameters in detail on the **Definition** tab card.

Setting the image view

Switching display modes

Depending on which segments you are working on, the following display modes are available to you on the **Type** task card:

(1) **MPR**

(2) **MPR Thick**, slice thickness selectable

(3) **MIP**, projection of the full volume

(4) **MIP Thin**, slice thickness selectable

(5) **VRT** for volume image display

✧ Click the relevant button or select the mode from the **Type** menu.

Selecting a VRT parameter set for volume image

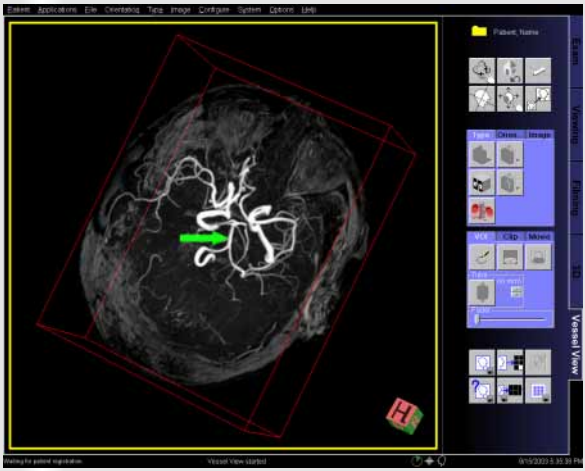
✧ Right-click the **VRT** button on the **Type** subtask card of the control area.

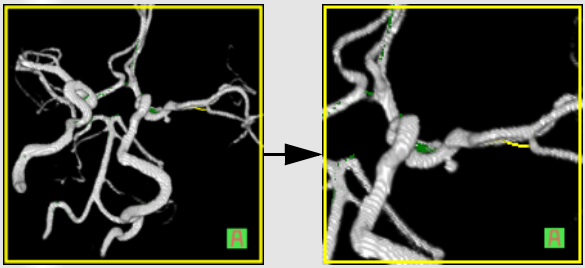
The **VRT Definition & Gallery** dialog box opens with the **VRT Gallery** subtask card. If the check box on the subtask card is deactivated, the VRT gallery is automatically displayed when you start **Vessel View**.

✧ Select a suitable VRT parameter set for your evaluation.

The VRT volume image is displayed including the respective tissue class parameters.

✧ Close the dialog box.


Patient Applications Edit Orientation Tools Image Configure System Options Help
Patient, Name
Vessel View started
Vessel View



Enlarging an image segment

✧ Select the image segment to be enlarged.

✧ Click the **Full Screen** button in the control area.

A small image segment is transferred to the center of the task card. This is how the center image segment is enlarged to full screen height and restored to its original size.

Zooming and panning

✧ Click the **Zoom/Pan** button in the control area.

Or

✧ Select **Zoom/Pan** from the pop-up menu.

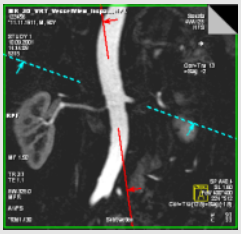
✧ To zoom, move the mouse at the image edge keeping the mouse button pressed.

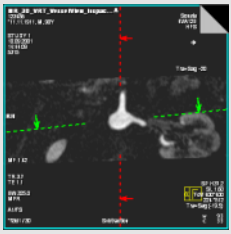
Or

✧ To pan the image, move the mouse keeping the mouse button pressed in the image center.

In vessel orthogonal orientation, the two upper slice images stacks cannot be scrolled and the reference lines cannot be moved.

With this control area button you can show or hide the reference lines.





You can put the slice image planes into a standard orientation with this button on the **Orientation** subtask card.

Scrolling through the slice image stacks

You can scroll slice by slice through an image stack with the dog ear:

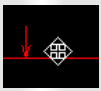
✧ Click *on* the dog ear in the image stack to scroll back.

Or

✧ Click into the empty corner in the image stack to scroll forward.

You can move the image planes steplessly with the reference lines:

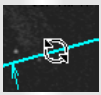
✧ Move the mouse pointer onto the reference line *near the center* of the image.



✧ Move the line to the desired clip position keeping the mouse button pressed.

Rotating the slice image plane

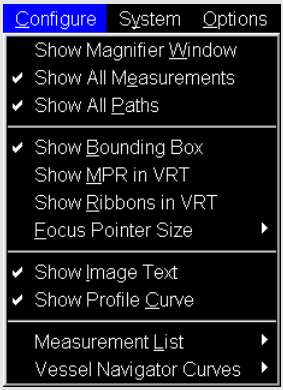
✧ Move the mouse pointer onto the reference line *at the image edge*.



✧ Rotate the line in the desired direction keeping the mouse button pressed.

If zoom/pan mode is active, deactivate it if you want to rotate the volume image manually.

Use this button to store the image sequence of a 360° rotation in the database or in an avi film file.



Rotating a volume image

✧ Rotate the volume image in the desired direction keeping the mouse button pressed.

To gain an overview, allow the volume to rotate automatically:

✧ Select the volume segment and click this button in the **Movie** subtask card.

✧ Set a rotation speed with the slider.

✧ To stop rotation, click the **Stop** button.

The image last visible is displayed again.

Orienting the volume image

✧ Click the orientation cube surface that you want to place in the foreground of your volume image.

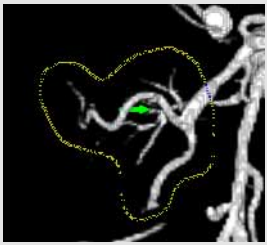
Or

✧ Double-click anywhere on the orientation cube to display the volume image both from the front and in its original size.

Setting view options

The **Configure** menu allows you to enter basic settings for working with **Vessel View**. This is where you activate (checkmark) or deactivate (no checkmark) modes or select particular settings from the submenu.

The MIP mode is especially suitable for defining VOIs.



You cannot draw VOI contours in slice image segments.

Removing unwanted parts of the image

Defining and cutting out VOIs

✧ Orient the volume image for easiest tracing.

✧ Click the **Draw Contour** button on the **VOI** subtask card.

✧ Draw round the volume area of interest keeping the mouse button pressed.

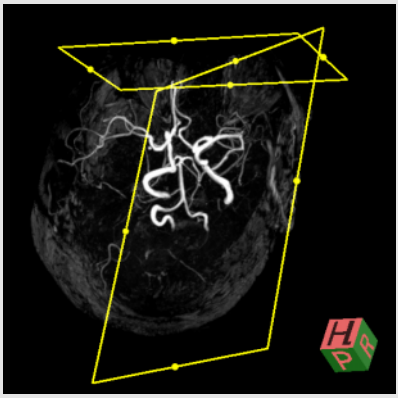
✧ Double-click to complete the contour.

✧ Click the **Include** button to expose the volume inside the contour.

Or

✧ Click the **Exclude** button to hide the volume inside the contour.

The VOI is cut and draw mode deactivated.



Hold down the **Ctrl** key to move all visible clip planes simultaneously.

Hold down the **Shift** key to move all clip planes freely.

Using clip planes

You can move the clip planes between areas of interest and hidden areas. The volume outside the clip planes is hidden.

✧ Click the clip planes that you want to use on the **Clip** subtask card.

✧ In the volume image place the mouse pointer on the clip plane and move the mouse forward or back to move the plane.

✧ Drag the edge point to tilt the plane.

✧ Click the highlighted clip planes on the cube to hide them again.

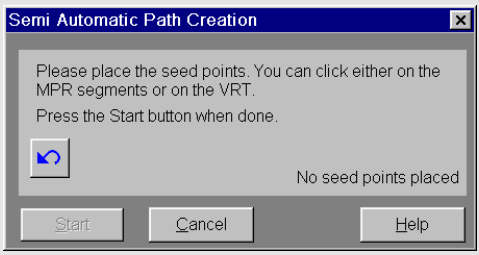
The clip planes are still active but no longer visible.

Resetting clip planes

✧ Click the button on the **Clip** subtask card.

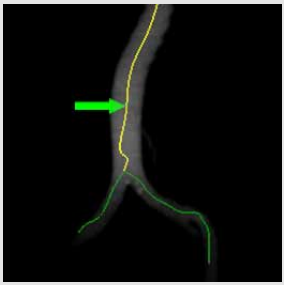
All clip planes return to their original position. The full volume is visible again.

The button for the segmentation tool you last used is offered as the default next to the arrow.



You can use all image segments for setting landmarks.

You can change the views as much as you want between setting landmarks. You can move or delete landmarks that are already set.



To activate or deactivate translucent mode manually, select or deselect the **Translucent** option in the pop-up menu.

Creating and editing paths

Semi-automatic path planning

✧ Display the **Measurements** subtask card in the evaluation area.

✧ Click the **Semi Automatic Path Creation** button.

Or

✧ Open the tool list for path planning with the arrow and select **Semi Auto Segmentation**.

The dialog box for controlling semi automatic path creation opens.

✧ Set at least two landmarks by clicking the mouse in the vessel section you want to segment: one at the beginning and one at the end of the section.

✧ Start segmentation.

The segmentation algorithm automatically finds the vessel limits and determines the vessel centerline (path).

After segmentation transparency is set to 85% (translucent mode) in the VRT settings to make the paths more visible in the volume image.

Using the **Fader** slider on subtask card **VOI** you can set the visibility of the volume parts hidden during segmentation to values between 0 (= fully hidden) and 100 (= fully visible).

✧ Move the slider to the right to increase visibility or to the left to reduce it.

Limit the volume to be evaluated to one VOI to increase the efficiency of fully automatic segmentation.
→ Page 21, *Defining and cutting out VOIs*

Repeated semi-automatic creation of paths

You can create paths semi-automatically on data sets that have already been segmented. You can use this method to define additional vessels.

The result of the new segmentation is added to the volume already defined. When you start path planning the volume parts hidden by vessel segmentation are displayed again exposing the entire volume for setting landmarks.

Fully automatic path creation

Fully automatic path creation defines the entire vessel tree.

✧ Display the **Measurements** subtask card in the evaluation area.

✧ Click the **Automatic Path Creation** button.

Or

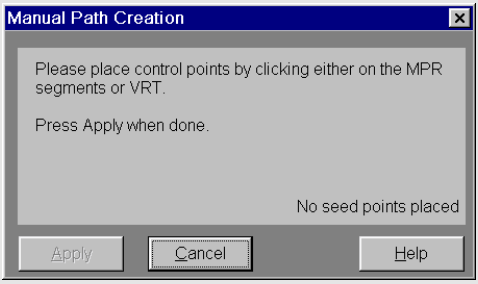
✧ Open the tool list for path planning with the arrow and select **Semi Auto Segmentation**.

Paths are created fully automatically along the vessel tree. The tissue that does not belong to the vessel tree is hidden and translucent mode is activated.

✧ Set the visibility of the hidden volume parts to the required value with the **Fader** slider on the **VOI** subtask card.

How well a manually created path represents the actual course of the blood vessel depends on the number of path points used and how accurately they are positioned.

You can use all image segments for setting path points.



Manual path planning

For manual path creation, you need to set all path points by hand. No segmentation algorithm is executed.

✧ Display the **Measurements** subtask card in the evaluation area.

✧ Click the **Automatic Path Creation** button.

Or

✧ Open the tool list for path planning with the arrow and select **Manual Path Creation**.

The dialog box for controlling manual path creation opens.

✧ Set a path point at the beginning of the vessel.

✧ Set an additional path point at the vessel center if the direction of the vessel changes.

✧ To complete path creation, click **Apply**.

✧ To make the path line in the volume image easier to see select the **Translucent** option from the pop-up menu.

You can select any radius between 0 and 50 mm for the vessel tube. The tube should fully include the vessel.

Defining vessels

You can expose vessels with a path as a tube-shaped VOI.

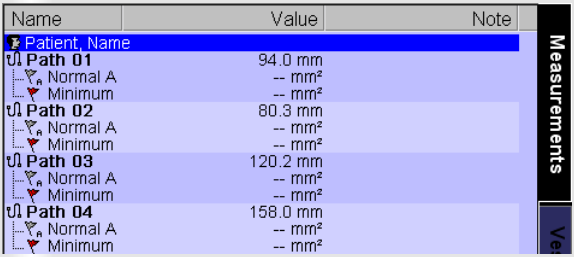
✧ Select the path of the vessel that you want to expose from the object list or in the volume image.

✧ Click the **Tube Mode** button on the **VOI** subtask card of the control area.

The vessel tube will be displayed with a transparent surface in the volume image.

✧ Set the tube radius to the required value.

✧ Click the **Include** button to expose the vessel tube.



If you want to add another path to a path that already exists you can create a new path by repeating semi-automatic segmentation.

If the two linked paths are not contiguous, the gap will be bridged by the shortest connecting line.

Managing paths

The object list on the **Measurements** subtask card shows each path with a unique name. You can change the name of a path, store notes on each path, or delete paths you no longer need.

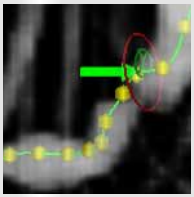
Connecting paths

You can create a new contiguous path from two individual paths using the connection tool.

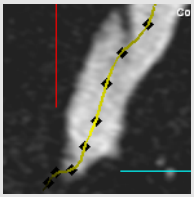
- ✧ Click the first path to be linked in the object list.
- ✧ Hold the **Ctrl** key on your keyboard pressed and click the second path to be linked.

Both paths are now marked.

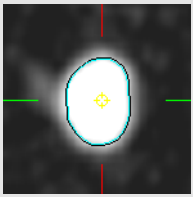
- ✧ Click the **Connect** button.



Volume image view



Slice image view not vessel orthogonal



Slice image view vessel orthogonal

In the vessel orthogonal slice image you can only move the path point of intersection with the image plane. The path is updated automatically.

Changing the course of a path

You can change the position of the path by moving, inserting, or removing path points.

✧ Select the path to be edited in the volume image or object list.

✧ Click the **Edit path** button on the **Measurements** subtask card.

Or

✧ Select the **Edit path** option from the pop-up menu for the selected path.

The path points are now visible.

✧ To select a path point, click the point.

The selected path point is highlighted with a color and the image views change to the position of the point.

✧ To delete a selected path point press the **Del** key.

✧ Click a point on the path to insert a path point.

To move a path point in the volume image:

✧ Click directly on the path point and drag it to the desired position using the mouse.

To move a path point in a slice image:

✧ Move the mouse pointer toward the path point until the shape of the mouse pointer changes.

✧ Drag the path point to the required position holding the mouse button down.

In vessel orthogonal orientation, the two upper slice images stacks cannot be scrolled and the reference lines cannot be moved.

If you have created a new path, the slice image segments are automatically set in the orthogonal vessel orientation.

Setting vessel orthogonal orientation

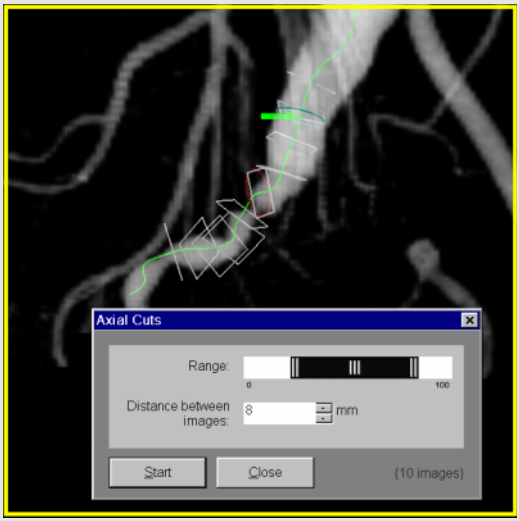
In vessel orthogonal orientation the slice image planes are automatically aligned in the vessel path. The lower slice image plane lies perpendicular to the vessel path and shows the vessel cross-section. All three image planes are perpendicular to each other.

✧ Select the path of the vessel from the object list or the volume image.

✧ Click the **Vessel Orthogonal** button on the **Orientation** subtask card.

If you want to be able to move the slice image planes again, deactivate vessel orthogonal orientation again:

✧ Unclick the **Vessel Orthogonal** button.



The starting and end position are defined in millimeters from the beginning of the path.

If you want to change the starting and end position by the same amount, move the slider using the middle handle.

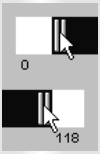
Generating axial vessel section images

You can document a defined vessel with a series of axial vessel section images in MPR format.

✧ Select the path of the vessel from the object list or the volume image.

✧ Click on the **Axial Cuts** button in the lower part of the control area.

The **Axial Cuts** dialog box is opened with default settings. A symbolic preview of the section image series is shown in the volume image.



✧ Drag the left slider handle to the required start position.

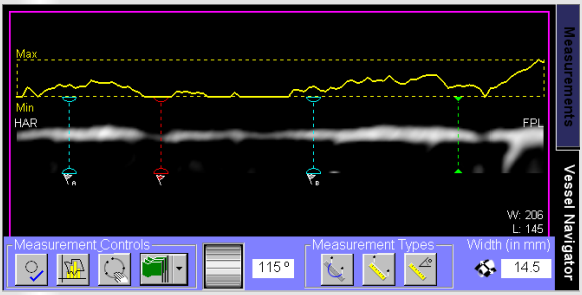
✧ Drag the right slider handle to the required end position.

✧ Type the interval between images.

The graphic display of the section image planes in the volume image is updated.

✧ Click **Start**.

The axial MPR section images are calculated and stored in the database as a series. The number of images automatically results from the distance between the starting and end position and the image interval.



In MPR mode the image plane rotates in 5° steps, in MIP mode, in 45° steps.

You can start automatic rotation and store the image sequence on the **Movie** subtask card.

You can set the slice thickness for MIP Thin as for other image segments by right-clicking the button.

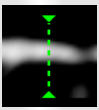
You can window the view in the Vessel Navigator identical to the views in the slice image segments.

Evaluation in the vessel navigator

The vessel navigator calculates a longitudinal section through a vessel along the path (flat ribbon) and displays the associated MPR or MIP image. Additional information is provided by the stenosis curve.

Setting the image view

- ✧ Select the path of the vessel from the object list or the volume image.
- ✧ Display the **Vessel Navigator** subtask card in the evaluation area.



- ✧ Place the focus pointer on the point of interest by mouse click or drag it there keeping the mouse button pressed.

- ✧ Use the **Angle** slider to rotate the image plane to the required position.

If you want to display an MIP image of the vessel switch to display mode:

- ✧ Click the **MIP Thin** button on the **Type** subtask card of the control area.

If the image contains too much or too little of the area surrounding the vessel, decrease or increase the width of the flat ribbon:

- ✧ Overwrite the default width with your preferred value and confirm with the **Enter** key.

Use this button to store the image sequence of a 360° rotation in the database or in an avi film file.

At stenoses the area curve is extremely low, at aneurysms extremely high.

The less the three diameter curves differ at a point along the vessel, the more the vessel cross-section resembles a circle.

The equivalent diameter is the diameter of a circle having the same area as the vessel cross-section.

Automatically rotating the vessel navigator view

✧ Click this button on the **Movie** subtask card.

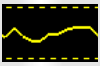
✧ Set a rotation speed with the slider.

✧ To stop rotation, click the **Stop** button.

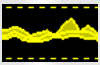
The image last visible is displayed again.

Defining a stenosis curve

The stenosis curve above the vessel image gives you an overview of the cross-section of the vessel and helps you locate medically relevant vessel points. You can choose one of two different representations.



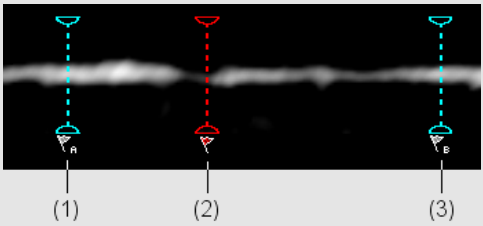
Area representation (1 curve):
The curve represents the cross-sectional area along the vessel.



Diameter representation (3 curves):

❏ Curve of the diameter maxima (above)
❏ Curve of the equivalent diameter (center)
❏ Curve of the diameter minima (below)

✧ Select the **Vessel Navigator Curves** option from the **Configure** menu and the required setting from the submenu.

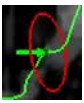


Select whether you want to use one or two normal flags or work without flags with this button.

Contour suggestions are only shown if vessel orthogonal orientation is active.

If you are not satisfied with the contour, either edit it or redraw it.

If a flag is not in the correct position drag it to the location you wish to evaluate using the mouse. To move a flag in the volume image click directly on the flag ring and move it to the required position with the mouse.



Stenosis evaluation with flags

The vessel navigator automatically suggests a point on the vessel for stenosis evaluation. The suspected stenosis and points for comparison measurements are marked by flags:

(1) Flag A before stenosis (normal A)
(2) Minimum flag

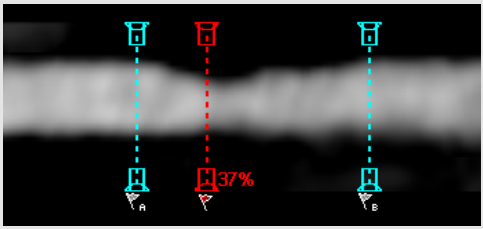
Only when three flags are activated:
(3) Flag B after stenosis (normal B)

As soon as you have created a path, a contour suggestion is made for the vessel cross-section in the lower slice image segment at the position of the minimum flag.

✧ Check the contour suggestion and click the **Accept Contour** button in the vessel navigator.

The contour is evaluated and the measured values for the minimum flag entered in the object list. Now the focus pointer automatically moves to the comparison flag.

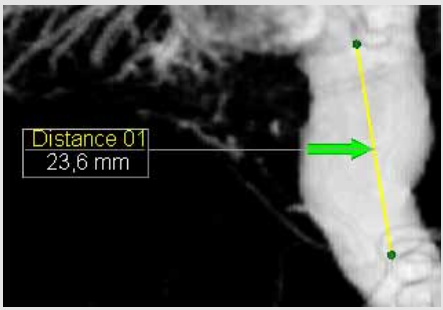
✧ Repeat flag acceptance for flag Normal A and possibly Normal B.



If you use two normal flags the degree of stenosis is calculated using the mean value of the two comparison measurements.

The degree of stenosis is calculated (degree of stenosis = 1 – measured value stenosis flag / measured value normal flag) and displayed in the object list in percent. It can accept values between 0% (no stenosis of vessel) and 100% (vessel completely blocked).

Evaluated flags cannot be moved until the current stenosis evaluation is complete. As soon as all flags are evaluated they are enabled again and can be used to evaluate other vessel stenoses.


Distance 01
23,6 mm

Performing measurements

Distance measurement in the image segments

- ✧ Click the **Distance measurement** button on the **Measurements** subtask card.
- ✧ Drag out the line to be measured in the slice image.

Or

- ✧ In the volume image, click the starting point and then the end point of the measurement.

Distance measurement in the vessel navigator

In the vessel navigator you always measure distances that are perpendicular to the vessel axis, e. g. vessel diameter.

- ✧ Set the required view in the vessel navigator.

- ✧ Click the **Distance Measurement** button.
- ✧ Drag out the line to be measured.

Post-processing a distance measurement

- ✧ Select the measurement from the object list.

The measurement is highlighted in the image segments.

- ✧ Move the measurement points to be corrected to the required position with the mouse.

The measurement is updated.

The total length of a path and therefore the associated vessel is given in the object list.

You can continue curved distance measurement by setting further measuring points on the path. The path line between the most recent point and the end point of the last measurement is measured and entered as a new curved measurement in the object list.

To end curved distance measurement, unclick the **Curved Distance Measurement** button.

If necessary, you can edit a curved distance measurement by selecting the measurement and moving the measurement points you wish to correct.

Curved distance measurement in the vessel navigator

With a curved distance measurement you can determine the length of a vessel section along the path.

✧ Select a path and call up the vessel navigator.

✧ Click the **Measure curved distance** button.

✧ Drag a line from the starting point to the end point of the measurement keeping the mouse button pressed.

The curved distance measurement is transferred to the object list.

Curved distance measurement in the image segments

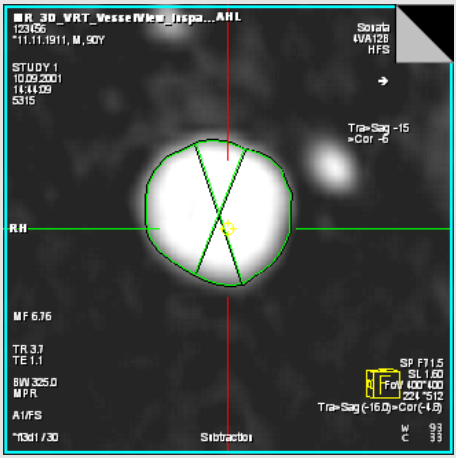
✧ Call up the **Measurements** function card and select the required path in the object list.

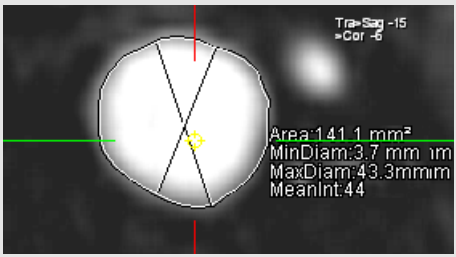
✧ Click the **Measure curved distance** button.

✧ Click the starting point of the curved distance measurement in the volume image.

✧ Click the end point of the curved distance measurement.

The shortest distance between the two points is calculated with the path line and entered in the object list as the curved distance measurement.


R_3D_VRT_VesselView_Inspa...AHL
123456
*11.11.1911, M, 90Y
STUDY 1
10.09.2001
14:44:09
5315
Sonata
4VA128
HFS
Tra>Sag -15
>Cor -6
R-H
MF 6.76
TR 3.7
TE 1.1
BW 325.0
MPR
A1/FS
*t3d1 / 30
Subtraction
SP F11.5
SL 1.60
FoV 400*400
224 *512
Tra>Sag (-16.0)>Cor(-4.8)
W 93
C 33


Tra>Sag -15
>Cor -6
Area:141.1 mm²
MinDiam:3.7 mm
MaxDiam:43.3mm
MeanInt:44

Measuring vessel cross-section

One vessel contour is always drawn in the axial slice image segment in vessel orthogonal orientation. You can apply this automatically generated contour to area measurements in the vessel navigator.

✧ Switch to orthogonal vessel orientation, if not already active.

✧ Move the focus pointer to the point to be measured on the vessel.

The axial slice image with the vessel contour is updated.

✧ Click the **Accept Contour** button in the vessel navigator.

Or, if the contour suggestion is not suitable:

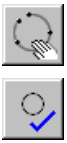
✧ Draw a new contour in the axial slice image (→ Page 55, *Measuring an area*).

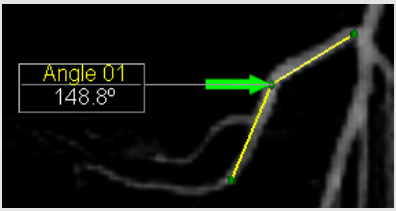
Or

✧ Switch to contour editing mode, move the contour line to the correct position, and then accept the contour.

An area measurement is created and linked to the path.

Contour editing mode allows you to change the shape of an existing contour and then apply it. The associated measurement values are recalculated automatically.





Measuring an area

You can also perform area measurement independently of a path.

- ✧ Set a view suitable for the intended area measurement in the axial slice image segment.

- ✧ Click the **Draw Contour** button in the vessel navigator.
- ✧ Draw the contour in the axial slice image using the mouse.
- ✧ Double-click to complete the contour.

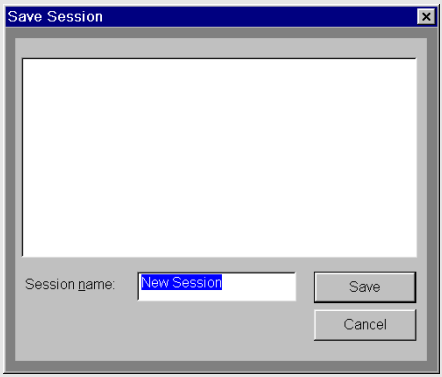
The contour is evaluated and the area measurement is entered in the object list.

Measuring angles

Set three measurement points in the image segments for angle measurement: the apex and one point for each leg of the angle.

- ✧ Click the **Measure Angle** button on the **Measurements** subtask card.
- ✧ Click the end point for the first side.
- ✧ Click the apex.
- ✧ Click the end point for the second side.

The angle is calculated and the angle measurement is put in the object list.



Session data are restored only by loading the corresponding image series.

You can delete sessions you no longer need from the series in the **Patient Browser**.

Saving and loading a session

You can save the current version of your work on an image series.

Saving the session

✧ Select **File > Save Session** from the main menu.

The **Session Management** dialog box opens.

✧ Enter a name for the session in the **Session Name** input field.

Save

✧ Click **Save**.

The session data for the image series will be stored in the database.

Restoring a session

✧ Enter the image series for the session.

✧ Select **File > Load Session** from the main menu.

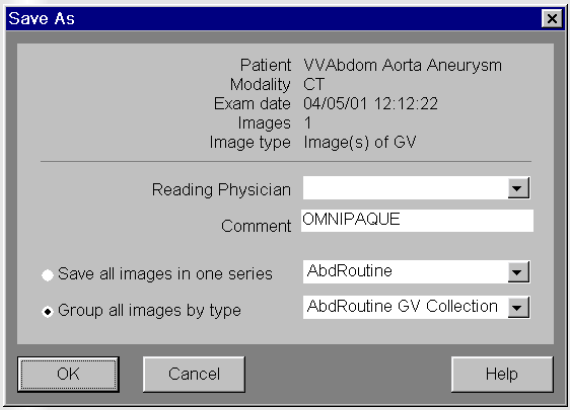
The dialog box for loading a session opens.

✧ Select the session that you want to restore from the list of existing session data.

Load

✧ Click **Load**.

Vessel View returns to the status when the session was saved.



If you do not want to change the storage settings click this button to save.

Now the settings that you last made in the **Save As** dialog box apply.

Saving images

To check the storage settings before each save and make any necessary changes, proceed as follows:

- ✧ Select the image segment you want to save.

- ✧ Click the **Save As** button in the control area.

The **Save As** dialog box opens.

- ✧ Activate the relevant option to specify whether you want to create one series for all images or a separate series for each image type.
- ✧ Enter the name of the new series in the combo box next to the activated option.

In addition to the basic storage settings you can provide additional information about the series:

- ✧ Enter the name of the reporting physician or select a name from the selection list.
- ✧ Enter a comment about the images.

- ✧ Click **OK** to save the image.

You can load the tables into the **Viewing** task card via the **Patient Browser** or transfer them to the **Filming** task card for printing.

Creating evaluation tables

The report generator generates two tables:

- ❏ **Measurements:** Measurements sorted by type.
- ❏ **Component description:** Created paths and measurements with remarks.

✧ Click the **Output Table** button in the control area.

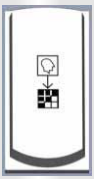
The tables are stored in the local database as a new series.

Filming images

✧ Select the image segment view you want to transfer to the film sheet.

✧ Click this button in the control area.

Or



✧ Press the **Copy to Film Sheet** key on the symbol keybpad.

Depending on the film layout selected, the images are transferred directly to the camera or to the printer. Or they remain on the **Filming** task card for processing until you manually send the images to the camera or printer.

It is only possible to transfer coordinates of MPR images to GSP.

Transferring images to the Viewing task card

After **Vessel View**, you can transfer images to the **Viewer** for 2D-processing or evaluation.

✧ Select the image segment whose view you want to transfer to the **Viewer**.

✧ Click this button in the control area.

The image is stored and transferred to the **Viewer** task card.

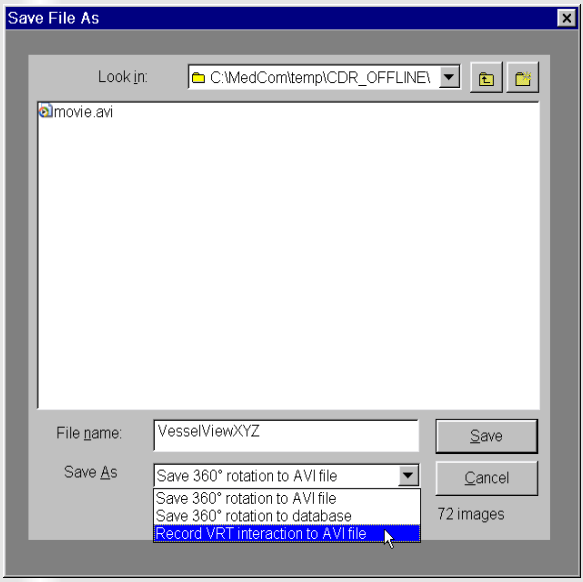
Sending image data for graphic slice positioning (GSP)

The coordinates transferred to GSP on the **Examination** task card are automatically used to measure the new slice.

✧ In a slice image segment set the MPR image whose image data you want to transfer.

✧ Select **Send to GSP** in the pop-up menu of the selected image.

The image coordinates are transmitted.



You can use the **Pause** button to interrupt recording briefly and then resume it.

Recording a sequence of actions

You can record actions in a volume segment in an avi film file.

✧ Click the **Record** button on the **Movie** sub-task card.

The **Save As** dialog box opens.

✧ Enter a name for the movie file.

✧ Select the **Record VRT interaction to AVI file** item from the **Save As** selection list.

✧ Click **Save**.

The dialog box closes and recording starts.

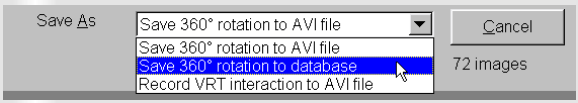
✧ Perform the actions to be recorded in the volume segment.

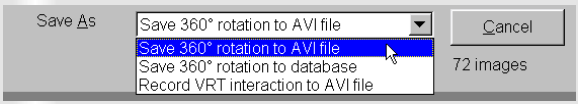
✧ Click the **Stop** button to stop recording.

An avi movie file can be replayed on other systems using any multimedia software.

The image sequence in the volume segment is obtained by rotating the volume about its vertical axis.

The image sequence in the vessel navigator is obtained by rotating the image plane (flat ribbon) about the vessel axis.





The maximum number of 72 images results in the smallest viewing angle interval of 5° between two consecutive images.

Storing rotation of the view

You can store automatic rotation of the vessel navigator view and automatic rotation of the volume as an image sequence. You can specify whether to save the images in a new series in the database or in an avi movie file in the file system.

- ✧ Select the image segment for the recording: the volume segment or the vessel navigator.
- ✧ Display the **Movie** subtask card in the control area.

- ✧ Click the **Record** button on the **Movie** subtask card.

The **Save As** dialog box opens.

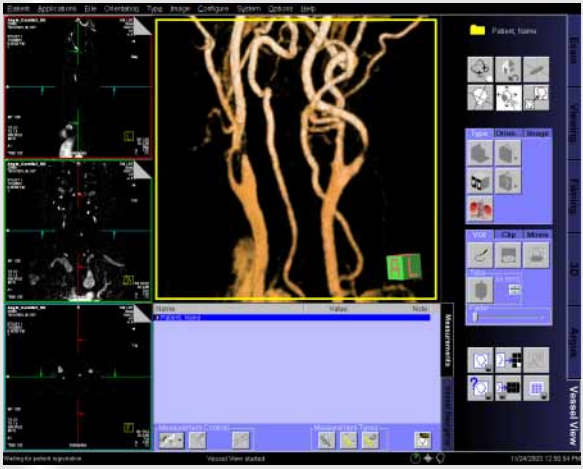
- ✧ Enter a name for the movie file.
- ✧ To save the image sequence to the database, select the **Save 360° rotation to database** item from the **Save As** selection list.

Or

- ✧ To save the image sequence to the database, select the **Save 360° Rotation to AVI File** item from the **Save As** selection list.
- ✧ Select the number of images with the slider.

- ✧ Click **Save**.

The dialog box closes and the image sequence is stored.



Workflow of a Carotis examination

(1) Loading Images

Load the image series from the **Patient Browser** into the **Vessel View** task card.
→ Page 9

(2) Optimizing the volume view

Select a suitable VRT parameter set from the **VRT Gallery** to display the vessels in the volume image clearly.
→ Page 13

If necessary, optimize the individual parameters in the **VRT Definition** dialog box.

(3) Defining and segmenting a path

Perform **semi automatic segmentation**. To mark a vessel simply set a starting point at the beginning and end of the vessel.
→ Page 25

The path is automatically defined and the segmentation algorithm performed.

(4) Editing the path

Rotate the volume, move the slice image planes, and zoom/pan to make the path clearly visible in the image views. Check whether the path runs through the center of the vessel. If necessary, activate path editing mode and correct the position of the path line.
→ Page 35

(5) Evaluating the vessel

Start the vessel navigator and rotate the image plane of the view into a suitable position.
→ Page 41

Change the flag number for stenosis evaluation from two (default setting) to three if you want to compare the stenosis with two healthy vessel locations. Check and optimize the position of the flags.

Measure the cross-sectional area of the vessel at the flag positions. Accept the automatically generated contour suggestion or draw in a new contour. The cross-sectional measurements in the stenosis (minimum flag) are used to calculate the degree of stenosis that is then displayed next to the stenosis (flag Normal A and, if necessary, flag Normal B).
→ Page 45

If necessary, perform additional stenosis evaluations and measurements in the vessel navigator, in the slice image segments, or in the volume segment. The **Measurements** and **Vessel Navigator** subtask cards provide measurement functions for distances, curves, angles, and surfaces.
→ Page 49 ff.

(6) Saving data

Using the **Create Report** function save a table containing all evaluation results as a DICOM image in the database.
→ Page 61

To represent your findings use the **Record** function on the **Movie** subtask card. Use this function to store rotation of the volume or vessel navigator view as an image sequence in the database or in an AVI movie file in the file system.
→ Page 67

Notes

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Siemens AG
Wittelsbacherplatz 2
80333 München
Germany

Contact Information:
Siemens AG, Medical Solutions
Magnetic Resonance
Henkestraße 127
91052 Erlangen
Germany

Telephone: +49 9131 84-0
www.SiemensMedical.com
DokuMR@med.siemens.de

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