3.4 Main application

(product name) is a software program installed on the computer. The software guides the user step-by-step through the workflow of treatment preparation and treatment planning.

Before treatment starts, the software gives the physician anatomical and dosimetric information, which is used to determine the positioning of the radioactive sources.

The software also includes evaluation tools to help calculate the most optimal dose distribution.

The features of (product name) depends on the installed modules and licenses.

(product name) uses the (name of database) database to stores user data, patient, study and file data (frames, live plans, contour sets and treatment plans).

Each (name of database) user has a role and permissions assigned. When you are logged into Soomtbase, you can carry out operations depending on your permissions.

3.4.1 Frequently used functions

Function	Description
Patient data handling	Import XXXXX items (or patient data) for integration into the planning process and export XXXXX items (or patient data) to the patient database.
Imaging and volume handling	Handle and record 3D volumes and create 3D volumes from acquired ultrasound image series or imported image sets.
Anatomy modeling	Create an anatomical model of the patient area of interest (for example, target volumes and organs at risk) by applying various contouring techniques and optionally a sector model.
Needle placement	To simulate the treatment before inserting the real needles. Virtual needles are inserted using manual, geometrical or dosimetric based methods in relation to the anatomical model. Together with the needles, dwell positions and times are calculated according to the clinical protocol.
Dose optimization	Determine the dwell positions and dwell times of the source to obtain an optimal dose distribution that meets dose criteria related to target volumes and organs at risk.
Dose evaluation	Evaluate the dose distribution that results from the current treatment plan.

Function	Description
Needle insertion	Insertion of needles into the body of the patient as close as possible to their intended position, using ultrasound guidance.
Needle reconstruction	Reconstruction of the needles and their position in the anatomy model based on live US images.
Approval	Accept the treatment plan ready for delivery by the authorized user.

4.1 Welcome window

When you start the application, a welcome window is shown. You can see information about the application and login boxes.

You can type your user name and password. The password can be previewed with the **Invisible** icon.

When you type an incorrect user name or password, an error message shows.

4.2 Planning environment

When you start the application the overview of planning environment is shown according to the treatment modality.

- In the information about the environment, you can select these options:
  - Template
  - Needles
  - Source with afterloader
- In planning environment area you can select:
  - **Start planning**: Start the planning using the current selections.
  - **Exit**: Close the application.
  - **Protect system** (optional): Select the check box to protect the system from changes (for example, after a service).
  - **Direct start for next session**: On the next start, the application automatically applies the last environment selection and does not show the selection dialog.
- In a treatment setup area you can select:
  - **Source calibration**:@
  - **QA tool**:@
  - **Actual source strength**: @
  - **Treatment date/time**:@
- **Hardware**: shows the statues of equipment. If the equipment does not work or initialization has failed, a warning icon is shown.

4.3 User interface

General interface features:

- Orange is a color of your selection for example, orange highlights of a button or icon.
- An orange frame around the window indicates that the mouse is over the window (it is active and additional elements appear).
- When you hover the mouse over a button, icon or list, or the error, the application shows a context-sensitive help in the form of a tool-tip.
- When you hover the mouse on the border of the window or table and move (up/down, right/left), windows or tables are re-scaled according to the new position.

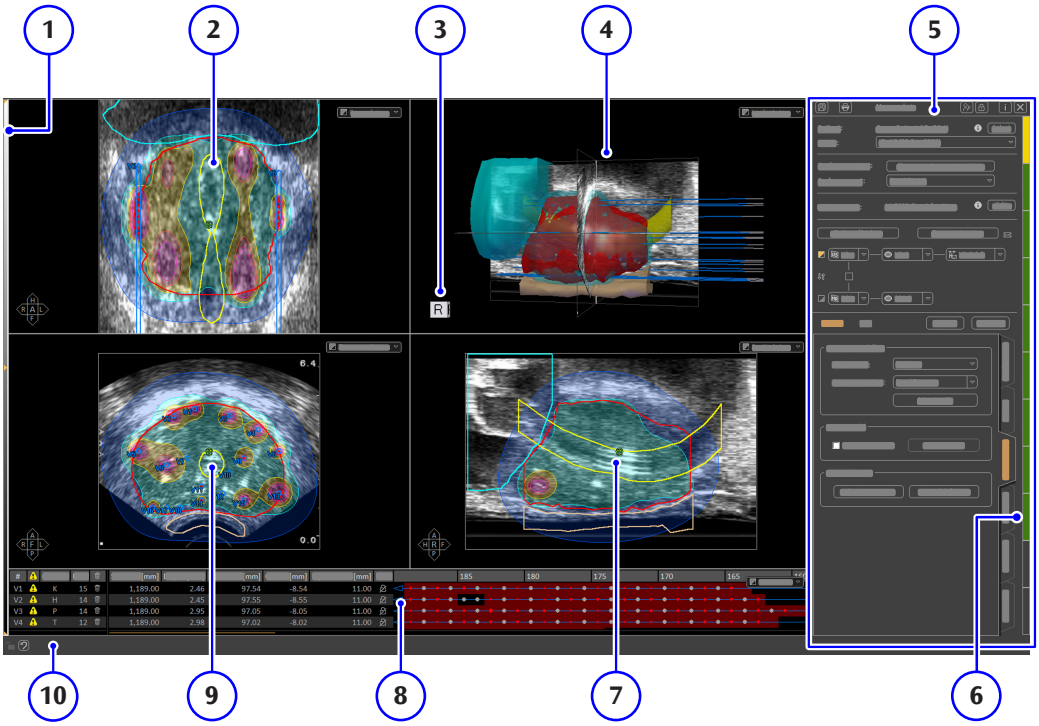


Figure 4.1 Overview of the user interface

(1)	Intensity of image data and contrast	(2)	Coronal view
(3)	Orientation of 3D view	(4)	3D view of planning data
(5)	Selection menus (@)	(6)	Traffic lights
(7)	Sagittal view	(8)	Table with various data
(9)	Transversal view	(10)	Status bar of possible actions with mouse and keyboard

4.4 Selection panel (@)

The right side of the main screen shows information about user, patient, planning data, a tap pane with flow steps, and an area with the result of the completed protocol.

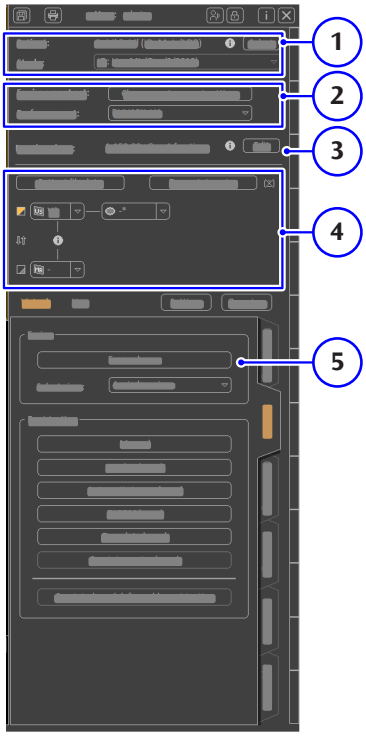


Figure 4.2 Overview of the panel

(1) Patient and study
(2) Preferences and environmental set
(3) Fraction dose
(4) Patient data file
(5) Virtual and life treatment planning

4.5 Buttons and icons

This section gives information about symbols, controls, indicators and their status.

Table 4.1 Status

Color	Status
Orange	The button or icon is active.
Gray	The button or icon is not active.
Underlined	The button or icon is focused. It can be activated with space key.

Table 4.2 General items

Item	Name	Description
	**Navigation**	• Enable/disable navigation for a selected function. • Shows the location in the volume of the cross-section of the slice (navigate through the volume).
	**Passed**	All checks passed.
	**Visible**	• In password: shows entered password string as real characters or encrypted. • Visualization: shows/hides object.
	**Invisible**	
	**Change user/Log off**	Log off the current user. A user must login to continue.
	**Lock system**	Lock the system and enter the start screen. A user must login to unlock.
	**Unlock system**	
	About Prostate Guideway	Shows details about the application.
	**Exit**	Close application or dialog. If there is unsaved data, it can be saved in the database.
	**Print**	Opens a preview of available reports. The reports are sent to a printer. **Disposition: / Status:** Print a currently selected window.?
	**Save all**	Keep all unsaved data in the database. The icon is available only if unsaved data is present.
	**Female**	Patient gender shown in patient/study tree. The symbol shows the gender.
	**Male**	
	**Other**	
	**Undo**	Undo the last operation.
	**Redo**	Redo the last undone operation.

4.10 Ultrasound image window

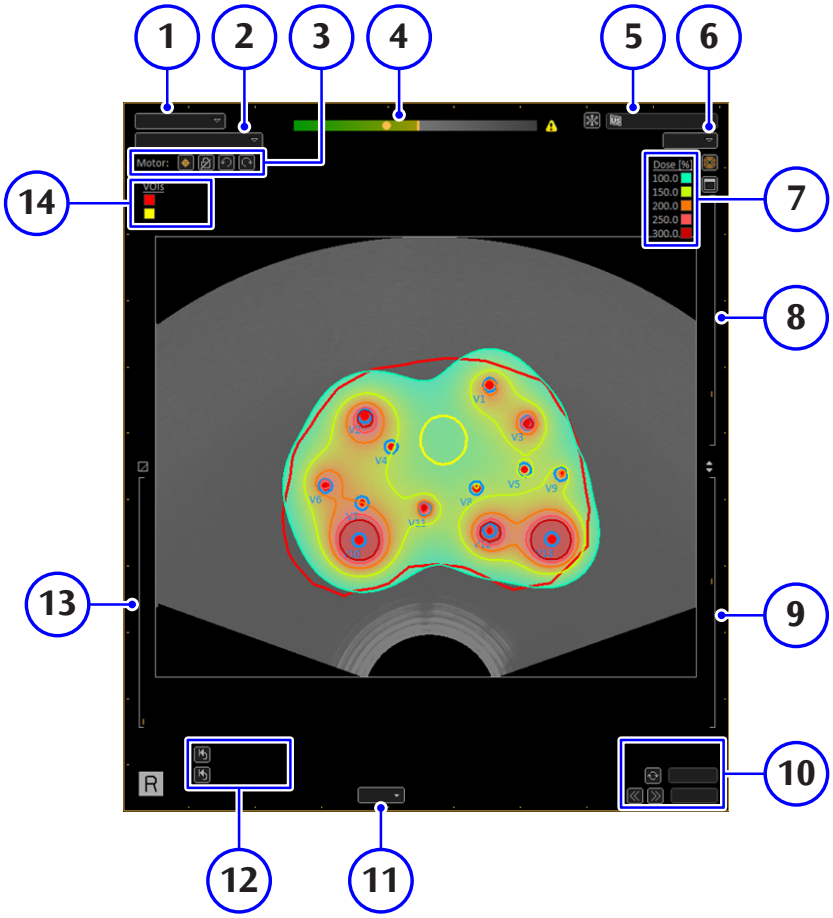


Figure 4.10 Ultrasound image window

(1)	Window mode	(2)	Functions of the window mode
(3)	Additional items of the selected functions	(4)	Speedometer
(5)	Content and view options (window content)	(6)	Display options in the window (window overlay)
(7)	Dose distribution and legend with defined color of dose values	(8)	Change size of the window
(9)	Slider or use the mouse wheel: change position	(10)	Probe array name, depth, and functionality, frames per second (FPS)
(11)	Distance from base plane to template	(12)	Encoder position with reset functionality
(13)	Visualization of the fused image data	(14)	Outlined anatomy and legend with defined color and name

4.12 Active slice cut window

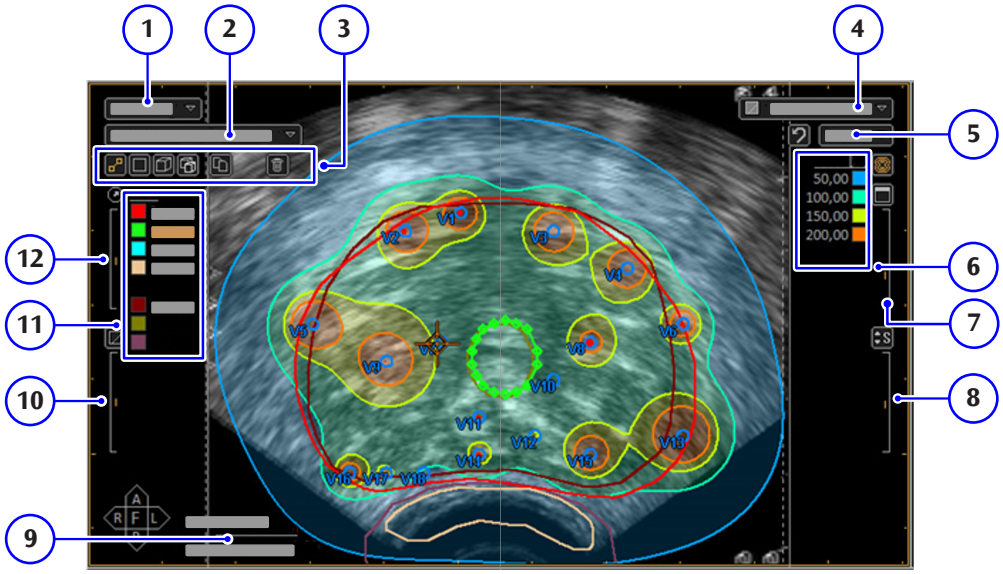


Figure 4.13 Overview of the active slice cut window

(1)	Window mode	(2)	Functions of the window mode
(3)	Additional items of the selected functions	(4)	Content and view options (window content)
(5)	Display options in the window (window overlay)	(6)	Dose distribution and legend with defined color of dose values
(7)	Change size of the window	(8)	Single and multi stepping navigation
(9)	Current navigation position	(10)	Visualization of the fused image data
(11)	Outlined anatomy and legend with defined color and name	(12)	Additional slider control depending on selected functionality

4.12.1 Functions of window mode

The available functions are shown in the active slice cut window and depend on the type of action carried out. When a function is selected, the active data in the window are filtered: only the applicable data will be shown.

From the window mode, you can select these functions:

Function	Description
Contouring	Draw a contour in several ways.
Sector selection	Used to divide prostate into segments. It can be used for a focused treatment plan by optimization or for a detailed evaluation of the plan.
Plane definition	The planes defined in the acquisition module (base, reference and apex planes) can be redefined manually.

6.1 Commissioning

Disposition: / Status:
keep or move to service documentation?

Do appropriate QA and commissioning tests, in accordance with regulations and guidelines, before you use the system clinically.

6.2 Inspections before use

Before use, inspect all the parts that you will use for the insertion, imaging, and treatment procedure.

Make sure that equipment has no:

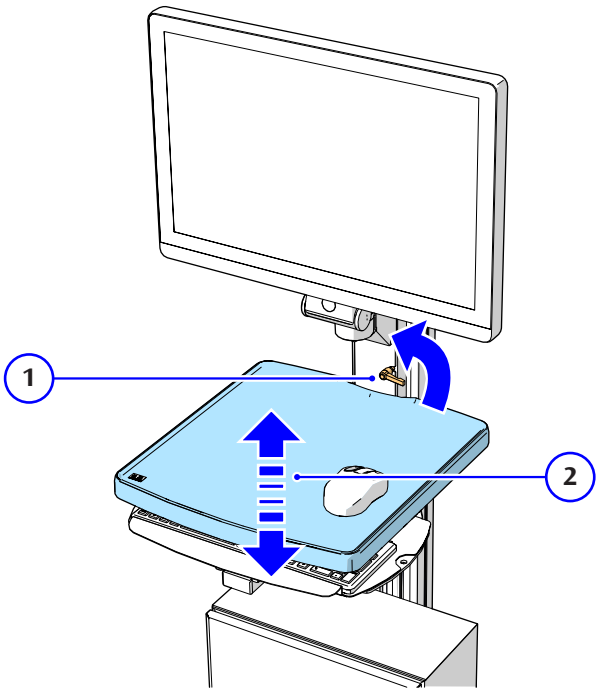
- Unacceptable weakening or bending
- Cracks
- Kinks
- Corrosion
- General deterioration (such as stains or dullness).

Remove unacceptable parts from clinical use and contact your local representative.

6.3 Preparation of the cart

This section gives you instructions to do before you start using the (product name) cart.

6.3.1 Adjusting the cart height



1 Hold the table with one hand.

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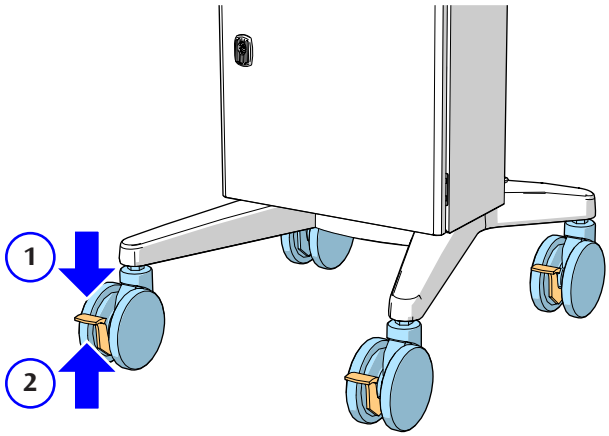
The height adjustment of the cart is balanced by a gas spring.

2 Turn the lever (1) counterclockwise to unlock it.

3 Move the table (2) up or down to the correct sitting or standing position.

4 Turn the lever (1) clockwise to lock the height of the cart.

6.3.2 Locking and unlocking the wheel brakes



1 Press the foot pedal (1) to lock the wheel.

2 Lift the foot pedal up (2) to unlock the wheel.

6.3.3 Moving the cart

1 Make sure that all cables are disconnected and secured.

2 Adjust the height of the cart with the lever to the lowest position.

3 Unlock the wheel brakes.

4 Move the cart to the correct position.

5 Lock the wheel brakes.

7.1 Changing the user

You must log off to change the user.

1 Click the **Change user/Log off** icon.

2 In the new dialog box, enter your name and password.

When the login window is open, other actions in the application are blocked.

3 Click **Login**.

The application cannot be used without a correct user login. The **Cancel** button is not active.

7.2 Locking the system

Use this option to protect the application from unauthorized use.

1 Click the **Lock the system** icon to hide the application and return to the login window.

2 To unlock and return to the application, type your user name and password.

3 Click **Login**.

7.3 Changing the environment settings

1 Select the **Change environment settings** button.

2 In the new window, select:

- **Source calibration**, to update the source information.
- **QA tool**, to compere Prostate Guideway dose calculation with the standard tables.
- Enter **Actual source strength** to define the source strength used for the plan. **Treatment date/time** it is updated accordingly.
- Enter **Treatment date/time** to define the date/time used for the plan. Click **Set current** to apply the current date and time. **Actual source strength** it is updated accordingly.

7.4 Patient information

This section gives instructions on how to search for patient data or modify patient information.

7.4.1 Loading the patient

When you are logged in, you can use these data to select the patient:

- Patient
- ID
- Birth date.

1 In the patient and study area, click **Select**.

A list of patients opens.

2 In the new window, select:

– Patient from the list.
– Type search data in the **Patient**, **ID**, or **Birth date** boxes.

3 Click **Load** or double-click the patient.
4 Hover the mouse cursor over the information icon to see details of the loaded patient.

7.4.2 Creating a new patient

If the patient is not in the database, you can create a new patient.

1 In the patient and study area, click **Select**.
2 In a new window, select **New**.

A patient form is open.

3 Fill in the mandatory patient data.
4 If necessary, type additional information.
– Study
– Details on study
– Referring physician
5 Click **OK** to create the new patient, or click **Cancel** to cancel the procedure.

The new patient is added to the list.

7.4.3 Editing or deleting a patient

1 In the patient and study area, click **Select**.
2 In the new window, select:
– Patient from the list.
– Type search data in the **Patient**, **ID**, or **Birth date** boxes.
3 Click **Edit**, in the new window update the patient form.
4 Click **Delete**, to remove the patient from the application.

7.4.4 Changing the patient

Do these steps to change the patient:

1 In the patient and study area, click **Select**.
2 In the new window, select:
– Patient from the list.
– Type search data in the **Patient**, **ID**, or **Birth date** boxes.
3 Click **Load**.

7.8.11 Starting manual longitudinal acquisition

Before you start, make sure that:

- The probe array and depth are selected
- The position and angle encoder are reset.

1 Select a longitudinal probe array.

2 Click **Start US acquisition**.

3 Rotate the probe slowly.

The speedometer shows the speed. If the rotation is too fast, you see a warning icon on the speedometer.

4 Click **Stop US acquisition**.

The acquired frames are shown.

7.8.12 Motorized longitudinal acquisition

This procedure is only possible with a motorized stepper. Before you start, make sure that:

- The probe array and depth are selected
- The position and angle encoder are reset.

1 Select a longitudinal probe array.

2 Click **Start US acquisition**.

The motor rotates to the start position. The motor rotates slowly while frames are acquired.

3 Click **Emergency stop** or ESC to stop the acquisition immediately.

The acquisition stops automatically when the motor is in the end position. The acquired frames are shown.

7.8.13 Navigating through the frames

You can see the frames after acquisition. When the US frames are shown the live image is not visible.

1 Use the slider or SHIFT + mouse to scroll through the frames.

You see the frame number, position, and angle in the window.

7.8.14 Accept or decline an image set

Frames are shown after acquisition. They can be used to generate volume or can be rejected.

1 Click **Accept sequence** the system.

– Generate a volume

– Deletes the frames

– Shows two windows with the live US image and the corresponding volume plane.

2 Click **Reject sequence** to discard the frames.

The frames are deleted.

7.9.1 Creating VOIs

Create a unique name for each VOI, for example the organ name, and use a specific color. You can create a maximum of 15 VOIs.

1 In the **Transversal view** window, select window mode **Contouring > Add VOI**.

2 In the **Properties of new VOI** window:

   a Type the unique name of the VOI.

   b Select a color, class, type.

3 Click **OK** to confirm or **Cancel** to stop.

7.9.2 Creating VOI with a margin

Use one of the created VOI.

1 You can create a VOI with a margin in two ways:

   – In the **Contouring** tab, select **Margin VOI** from the list or

   – In the **Transversal view** window, select window mode **Contouring > VOI > Margin**.

2 In the new window:

   – Type the VOI name.

   – Select a color.

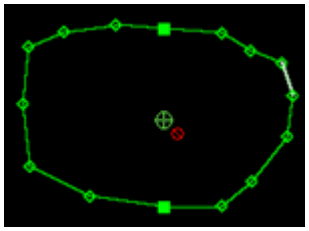
   – Define a dimensions.

   – Set the VOI attributes.

   – Select **Avoid critical structures**.

3 Click **OK** to confirm or **Cancel** to stop.

7.9.3 Creating VOI with an envelope



Use one of the created contour.

1 You can create a VOI with an envelope in two ways:

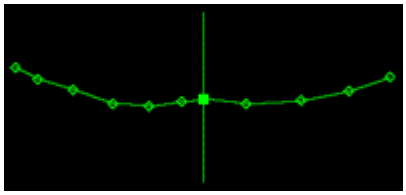
   – In the **Contouring** tab, select **Drawing method > 3D envelope contouring** from the list.

   – In the **Transversal view** window, select window mode **Contouring > VOI > 3D envelope contouring**.

2 In the **Sagittal view** and **Coronal view** windows, define the envelop contours (open diamond points) extending the base contour (solid square points).

3 Click **Apply** to confirm or **Reject** to cancel.

7.9.4 Creating VOI with a path



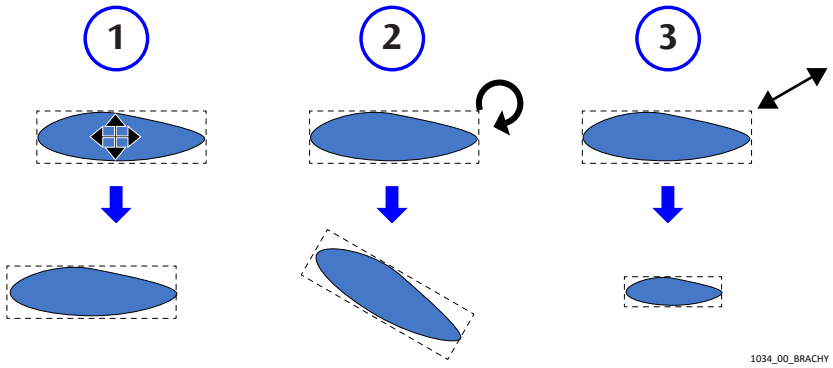
Use one of the created contours.

1 You can create the VOI with a path in two ways:
   – In the **Contouring** tab, select **Drawing method > Path contouring** from the list.
   – In the **Transversal view** window, select window mode **Contouring > VOI > Path contouring**.
2 In the **Sagittal view** and **Coronal view** window, define the path contours (open diamond points) extending the base contour (solid square points).
3 Click **Apply** to confirm or **Reject** to cancel.

7.9.5 Modifying VOIs

You can edit a single VOI or all VOIs together by changing the VOI boundaries. Use one of the created contours.

1 Click the icons **Modify VOI** or **Modify all VOIs**.
2 Do these action to change VOI:



   a To move: Move the cursor inside of the boundary area and drag the VOI (1).
   b To rotate: Move the cursor outside of the boundary area and drag the VOI (2).
   c To scale: Click and drag any of the VOI control points (3).
3 Click **Delete** to remove the VOIs.

7.9.6 Manually creating contours

1 You can manually create contours in two ways:
   – In the **Contouring** tab, select **Current VOI** from the list and **Drawing method** from the list or
   – In the **Transversal view** window, select window mode **Contouring > VOI > Drawing > (method)**.