SOMATOM Perspective

Quick Guide

syngo CT VC50

siemens-healthineers.com

SIEMENS Healthineers

SOMATOM Perspective

Quick Guide

***syngo* CT VC50**

Legend

	Indicates a hint Is used to provide information on how to avoid operating errors or information emphasizing important details
	Indicates the solution of a problem Is used to provide troubleshooting information or answers to frequently asked questions
●	Indicates a list item
✓	Indicates a prerequisite Is used for a condition that has to be fulfilled before starting a particular operation
◆	Indicates a one-step operation
1 2 3	Indicates steps within operating sequences
Italic	Is used for references and for table or figure titles
→	Is used to identify a link to related information as well as previous or next steps
Bold	Is used to identify window titles, menu items, function names, buttons, and keys, for example, the Save button
Orange	Is used to emphasize **particularly** important sections of the text
Courier	Is used for on-screen output of the system including code-related elements or commands
`Courier`	Is used to identify inputs you need to provide
Menu > Menu Item	Is used for the navigation to a certain submenu entry
<variable>	Is used to identify variables or parameters, for example, within a string
⚠ CAUTION	CAUTION Used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury or material damage. CAUTION consists of the following elements: • Information about the nature of a hazardous situation • Consequences of not avoiding a hazardous situation • Methods of avoiding a hazardous situation

Legend

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

WARNING consists of the following elements:

- Information about the nature of a hazardous situation
- Consequences of not avoiding a hazardous situation
- Methods of avoiding a hazardous situation

⚠ WARNING

Legend

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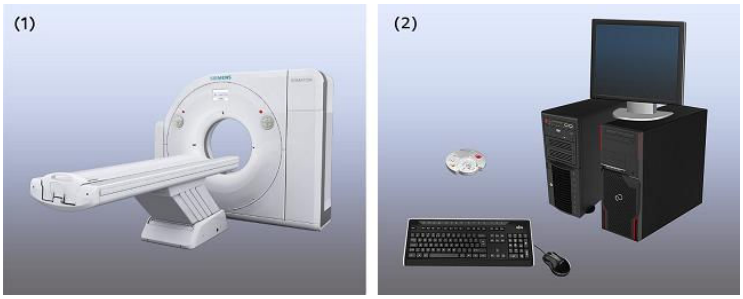
1 Introduction

The SOMATOM CT system is used to generate tomographic images of the organs of a patient for diagnostic purposes in accordance with the computed tomography procedures. The tomographic images generated with this system can be viewed on a monitor, processed, filmed, and exported.

The system consists of the following components:



(1) Acquisition system: gantry and patient table

(2) Console: computers, input units, monitor, control box, etc.

SOMATOM Perspective can be operated in the X-ray department of a hospital or doctor's office. The CT system must be operated in rooms that are designated for medical use.

- Components or software functionalities that may not be part of your system configuration are described in your user documentation. Not all the optional components and software functionalities may be marked as optional. The availability of these components or software functionalities depends on your system configuration or your purchase contract.
- The pictures of the components shown here are only examples. The appearance of your components depends on the system configuration.

1 Introduction

1.1 Intended use

SOMATOM Perspective is a computed tomography system. This computed tomography system is intended to generate and process cross-sectional images of patients by computer reconstruction of X-ray transmission data. The images delivered by the system can be used by a trained physician as an aid in diagnosis.

1.2 Indications for use

This computed tomography system is intended to generate and process cross-sectional images of patients by computer reconstruction of x-ray transmission data.

The images delivered by the system can be used by a trained physician as an aid in diagnosis.

The images delivered by the system can be used by trained staff as an aid in diagnosis and treatment preparation.

However, the images delivered by this system should not be used as an aid in radiation therapy planning.

For cardiac imaging, which is an option on the system, a reconstruction algorithm (iTRIM - Iterative Temporal Resolution Improvement Method) is used. iTRIM improves the temporal resolution of cardiac CT images compared to conventional cardiac CT image reconstruction. Actual results obtained with iTRIM can vary depending on the particular clinical situation.

This CT system can be used for low dose lung cancer screening in high risk populations.*

*As defined by professional medical societies. Please refer to clinical literature, including the results of the National Lung Screening Trial (N Engl J Med 2011; 365:395-409) and subsequent literature, for further information.

1.3 Authorized users

SOMATOM Perspective must be used by persons with the necessary specialist knowledge, for example, doctors, trained radiologists, or trained technologists, after appropriate application training.

United States Federal law restricts this device for sale by or on the order of a physician (21 CFR 801.109(b)(1)).

1.4 Patient population

No patient population restrictions are known.

1.5 Additional information on pediatric imaging

Be careful when scanning patients outside of the typical adult size range. For more details and further literature on pediatric imaging, please check the FDA's Pediatric x-ray Imaging web page:

http://www.fda.gov/radiation-emittingproducts/radiationemittingproductsandprocedures/medicalimaging/ucm298899.htm

1.6 Contraindications

There are no known specific situations that contraindicate the use of the SOMATOM CT system.

1.7 Basic safety rules

As the user, you must have the necessary qualification (for example, training in a relevant medical profession). You must also have been instructed in the use of the CT scanner.

1 Introduction

CAUTION

Operation of the system by non trained users!

Incorrect diagnosis or treatment due to misinterpretation of image information.

- The SOMATOM system must only be used by persons with the necessary specialist knowledge, for example, physicians, trained radiologists, or trained technologists, after an appropriate application training.

Read the user documentation carefully and observe the instructions. This applies especially to guidelines that deal with function tests, mechanical safety and radiation protection.

CAUTION

Not observing the Instructions for Use of the system, system options and accessories!

Injury of the patient.

- Always use the Instructions for Use in conjunction with the Instructions for Use of the particular units used.
- Follow the safety instructions.

CAUTION

Not observing the Instructions for Use of the software and its applications!

Wrong basis for diagnosis.

- Always use this Instructions for Use in conjunction with all Instructions for Use provided.
- Follow the safety instructions.

CAUTION

User is not instructed in how to operate the applications!

Wrong basis for diagnosis.

- The operator must be qualified to use the applications.

Relevant statutory stipulations must be observed during installation, operation and maintenance. Supplementary safety information is given in System Owner Manual:

- Technical specification
- Standards and statutory regulations
- Dosimetry and imaging performance report
- Location of labels

Please observe the information given in System Owner Manual.

1.8 User documentation

To make it easier for you to work with the system, the following documentation is provided:

Document	Description	Availability
Instructions for Use	Provides instructions on how to use the CT system properly and safely.	At *syngo* Workplace You can also access the Instructions for Use at www.siemens.com/MedImaging-Manuals.
Online Help	Provides detailed operating instructions on how to use CT software and hardware.	At *syngo* Workplace (by pressing **F1**)

1 Introduction

Document	Description	Availability
Quick Guide	Describes fundamental safety information and the basic steps of performing a routine CT exam.	As printed
System Owner Manual	Provides a compilation of important documents, for example, technical data, declaration of conformity, location of labels.	As printed
Release Notes	Includes the latest product information.	As printed

The following documents are only valid for the stated software version and in conjunction with the latest Release Notes:

- Instructions for Use
- Online Help
- Quick Guide
- System Owner Manual

More information can be obtained via Internet at www.medical.siemens.com.

Always store manuals in an easily accessible location in the vicinity of the system.

1.9 About the Quick Guide

The Quick Guide describes the use of the SOMATOM Perspective computed tomography system and its operating software. The description is limited to basic operating steps only.

This Quick Guide has been developed to cover important information, for example, switching the system on and off, as well as to help users who wish to familiarize themselves with the system.

Introduction 1

The Quick Guide is only valid in conjunction with the following documentation:

- SOMATOM Perspective Instructions for Use
- System Owner Manual
- Release Notes

The workflow of a routine examination is described step-by-step based on the example of an examination of the abdomen.

This Quick Guide applies to the following devices:

- SOMATOM Perspective

1.10 Safety instructions

CAUTION

Uncontrolled system movements and unintended radiation exposure!

Injury to the patient and personnel, and radiation damage.

- Always verify that the patient is correctly positioned.
- Always observe the patient during system movements.
- Press a **STOP** key in any of the following situations:
  - The patient is not positioned correctly during system movements
  - At any unintentional system movement (especially at autorange)
  - The patient table moves in a wrong direction
  - The patient table does not stop as expected
  - A key sticks or a movement does not stop immediately when a key is released
  - The **Suspend** key does not respond during a scan
- Press an **EMERGENCY OFF** key if the system does not respond to the STOP keys in any hazardous situation.
- Shut down the system immediately if system malfunctions are detected and notify the Customer Service at Siemens Healthineers.

WARNING

Unauthorized manipulation on or improper use of the system!

Electric shock

- Never open the monitor.
- Contact, and leave all repairs to, the Customer Service at Siemens Healthineers.
- Never place cups, glasses or other vessels containing liquid on or near the monitor, in case of accidental spillage.
- Make sure that no objects, for example, necklaces, paperclips, or liquids can get into the interior of the device (electric shock, short circuit).

CAUTION

The system carries line voltage!

Electric shock or burn from high short-circuit current.

- Never open components of the system.
- Contact, and leave all repairs to, the Customer Service at Siemens Healthineers.
- Make sure that no objects, for example, necklaces, paperclips, or liquids can get into the interior of the system (electric shock, short circuit).

1 Introduction

WARNING

Fire inside or in the vicinity of the system!

Injury of patient and personnel and damage to the property possible. Risk of gas poisoning caused by burning plastic.

- Switch off the acquisition system in the event of fire.
- Make sure that you and the patient know where the escape routes are.
- Make sure that you know where the fire extinguishers are located and familiarize yourself with the use of them.

CAUTION

Monitor failure!

Uncontrolled system.

- Do not make any more entries via the keyboard.
- Interrupt the examination.
- If necessary, press a **STOP** key or, in case of an emergency, an **EMERGENCY OFF** button.

CAUTION

Impermissible or faulty manipulations or changes of the hardware or software can cause the system to malfunction!

Injury of the patient or damage to the equipment, or both.

- Do not open or remove the cover of the equipment nor install third-party software.

2 In case of emergency

In addition to the **STOP** keys at the CT unit, **EMERGENCY OFF** keys to be provided by the customer have to be easily visible and within easy reach. Country-specific regulations must be observed.

In extreme cases, you can press an **EMERGENCY OFF** key to shut down the whole system. Radiation and system movements will be stopped.

You must only press the **EMERGENCY OFF** key:

- If the **STOP** key on the CT system does not respond.
- If situations arise that could cause injury to the patient or user or damage to the equipment (for example, liquids or particles getting into the equipment, damage of cover parts, fire).

Only after all causes of danger have been found and remedied, the unit may be switched on again by a controlled restart.

The **EMERGENCY OFF** key interrupts the power supply of the system. Data can be lost.

2.1 Restarting after emergency stop

In case the system has been switched off by pressing the emergency key in the examination room (for example, by accident), a controlled restart has to be done.

✓ All causes of danger have been found and remedied.

1 Wait for approximately 1 minute after power switch off.

2 Release the **EMERGENCY OFF** key provided by the customer.

3 Switch the system on again.

4 Perform the usual checkup procedure to calibrate the system.

2 In case of emergency

Country-specific regulations must be observed.

2.2 Restarting after power failure

If the power failure occurs, you can restart your system after power recovery.

✓ A power failure has occurred.

1 Switch the power switch off.

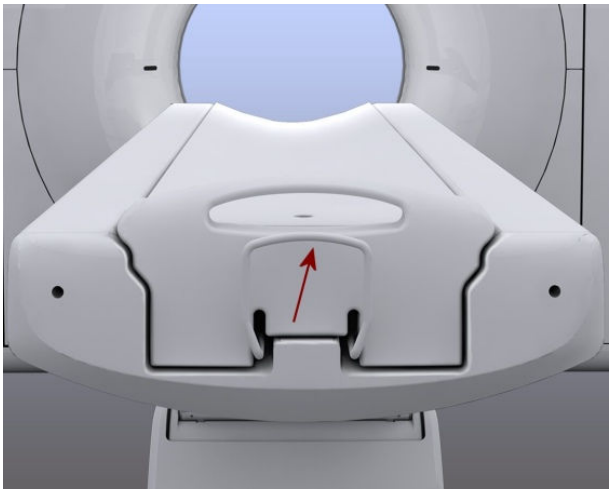
2 Wait for approximately 1 minute after power recovery.

3 Switch the system on again.

2.3 Retracting the table top in emergency

In an emergency or power failure, you can position the table top manually. You can use the handle at the end of the table to move the table top out of the gantry.

- Press the lever towards the end of the table top and pull the table top out of the gantry.



Before you continue work on the system, you must lock the table top back into its original position.

2 In case of emergency

3 Starting up the system

1 Press the power switch at the Line Connection Box (LCB).

The gantry and patient table are ready for operation.

2 Press the on/off button at the uninterruptible power supply (UPS).

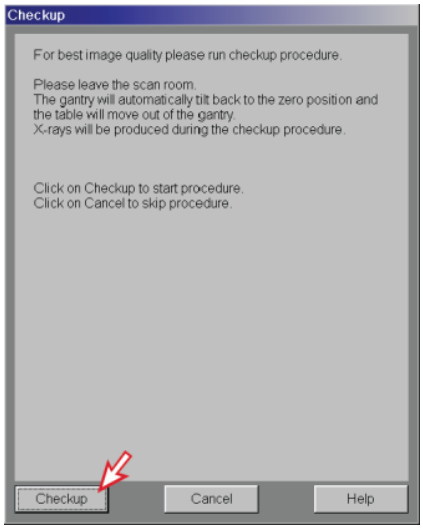
3 Starting up the system

The computer starts automatically when the UPS is switched on. Do not switch on the computer directly. Booting runs in the following phases:

- Start-up of the operating system
- Start-up of *syngo*

After starting up *syngo*, the **Examination** task card and the **Checkup** dialog box appear.

3 Click **Checkup**.



The automatic check-up procedure executes a set of functions to ensure that the CT scanner is well conditioned and is able to provide high quality images.

CAUTION

When you restart the system, the detector has not yet reached operating temperature!

Wrong diagnosis due to image artifacts.

- Calibrate the system as part of the checkup. Repeat calibration (**Setup > Calibration**) if ring artifacts occur.

4 When prompted, press the **Start** key on the CT control box.

After the checkup, the entire system is ready for operation.

- In case of emergency, you can skip the checkup procedure by clicking **Cancel**. The image quality, however, may be less than optimal. The checkup has then to be performed as soon as possible.
- For the purpose of viewing and evaluating images only, you can turn on/off a syngo Workplace computer individually.

3 Starting up the system

4 Preparing an examination

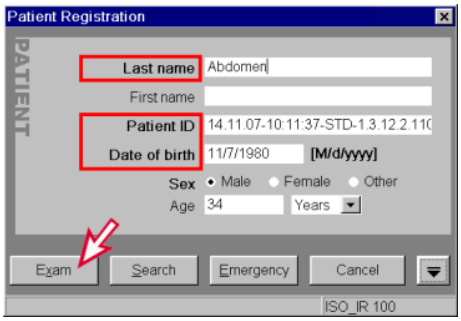
Before you can examine a patient with your CT system, you must register the patient, select a scan protocol, and position the patient on the patient table.

4.1 Registering a patient

To register a patient, you need to provide the CT system with the patient information that is necessary for the examination, such as the patient's name, patient ID, date of birth, and sex of the patient.

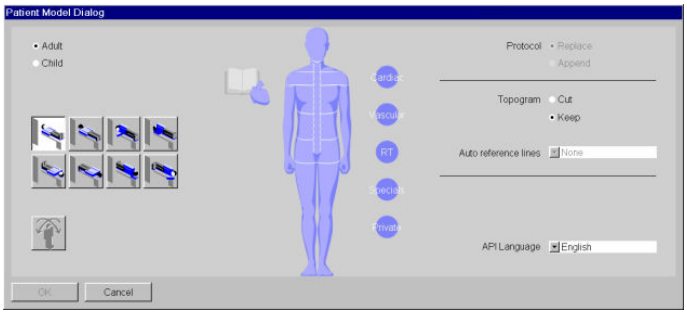
1 On the lower-left side of the **Examination** task card, click the **Patient Register** icon.

2 In the **Patient Registration** dialog box, fill in the mandatory fields shown as bold and confirm by clicking **Exam**.



In case of emergency, you can click **Emergency** instead of **Exam**. All mandatory fields will be filled automatically with dummy attributes, which must be corrected later.

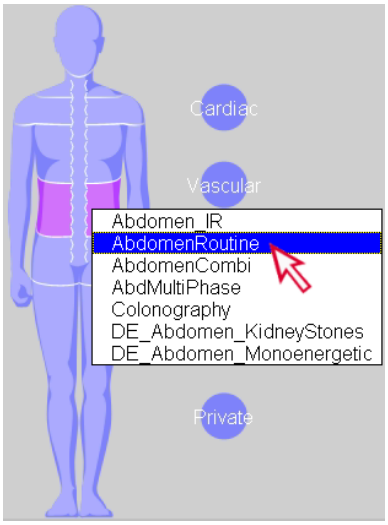
The **Patient Model Dialog** box appears, in which you can select the scan protocol for a patient.



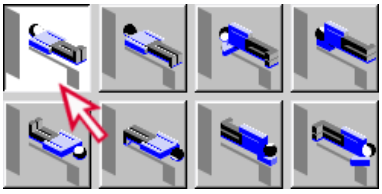
4.2 Selecting a scan protocol

A scan protocol predefines examination steps. Scan protocols are the building blocks to set up the examination procedure. Siemens Healthineers provides you with a large set of scan protocols that cover most of your routine CT examinations.

1 In the **Patient Model Dialog**, move the mouse over the desired body region (for example, AbdomenRoutine) or one of the predefined categories (for example, Cardiac protocols).

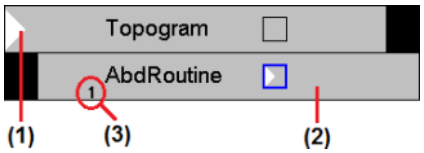


2 Click the button that represents the correct patient position (for example, **Head First - Supine**).



3 Click **OK**.

The scan protocol is loaded into Chronicle. Chronicle is a list of examination steps. It controls the entire examination procedure.



Chronicle

(1) White arrow: the examination step to be executed

(2) Selected examination step

(3) Scan step number

You can specify the API (Automatic Patient Instruction) language for an examination in the **API Language** box.

4.3 Positioning a patient

Position a patient on the patient table for a scan. For the best image quality, the body part to be examined should be as near to the gantry isocenter as possible. With the gantry operator panel, you can control the patient table movement for patient positioning.

Remove jewelry, glasses, prostheses, and so on, from the body part to be examined.

1 On the gantry operator panel, keep the **Table retraction** key pressed until the required table height is reached.

CAUTION

Lowering the patient table!

Body parts can get caught.

- Make sure that the patients body parts are above the patient table.
- Make sure that neither body parts of anybody nor any objects are below the patient table.

2 Ask the patient to lie down in an appropriate position, for example, **Head First - Supine** . Use positioning aids if necessary. Position the body part to be examined in the middle of the table top.

3 Keep the **Offset** key pressed to move the patient table into the gantry opening.

4 Turn on the laser light marker to visualize the gantry isocenter and the radiation exposure plane.

CAUTION

Looking into laser beam with optical instruments!

Loss of sight possible.

- Do not look directly into the laser beam.

5 Adjust the table height so that the body part to be examined is vertically as near to the gantry isocenter as possible.

6 Align the radiation exposure plane at the body position where you want to start a scan by fine-tuning the horizontal table position.

7 Switch off the laser light marker.

From this point on, the patient must lie still.

- Keep an eye on the patient in case of any injury while moving the table.
- Prevent crushing of infusion lines, respiratory tubes, catheters, and ECG cables while moving the table.

4 Preparing an examination

5 Performing an examination

To perform a CT examination, you scan a patient first and then you reconstruct images from the scan data.

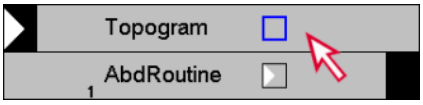
5.1 Acquiring a topogram

The first step in a CT examination is typically a topo scan, which is used as a planning basis. The resulting image (topogram) appears in the topo segment (upper-left segment) on the **Examination** task card.

✓ The patient table has been moved to the starting position of the topo scan.

1 Close the door of the scan room.

2 In Chronicle, select the **Topogram** entry and check the topogram parameters on the **Routine** sub-task card.



3 Click **Load**.

The topogram parameters are confirmed. The **Press START** message is displayed next to the **Topogram** entry.

5 Performing an examination

4 On the control box, press the **Start** key.

Radiation starts. The topogram is displayed in the upper-left segment (topo segment) of the **Examination** task card. The topogram is used to plan the ranges for scanning and reconstructing tomograms.

Subsequent examination ranges are graphically marked on the topogram:

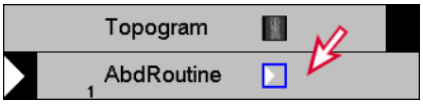
- Magenta: the active (selected) range
- White: all other (unselected) ranges
- Yellow: an invalid range

The topogram is displayed in real-time to indicate the scan progress. As soon as the desired portion of the topogram appears, you can suspend the topo scan, thereby reducing the patient's exposure to radiation.

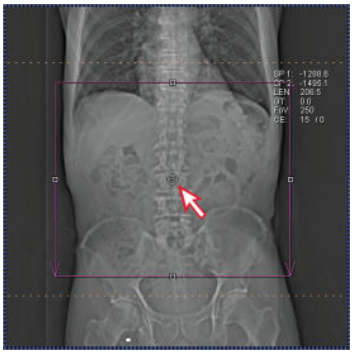
5.2 Planning the examination range

The examination range should be planned on a topogram to cover the desired anatomic region for diagnosis.

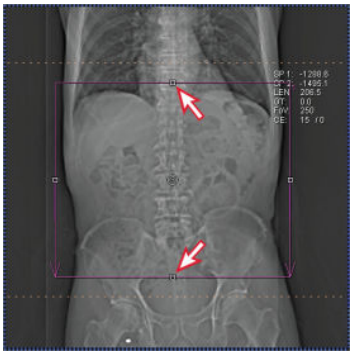
1 In Chronicle, select the desired scan step (for example, **AbdRoutine**).



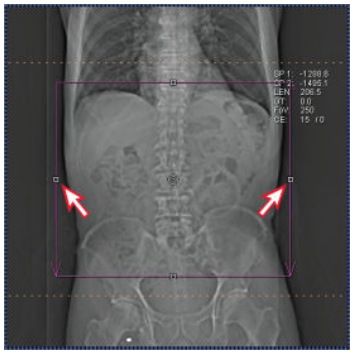
2 To move the examination range, click in the center of the range and drag the range box to the required position.



3 To change the scan length, click the upper or lower handle of the range and move the handle to the required position.



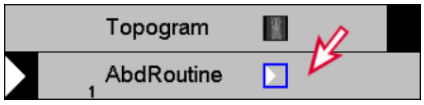
4 To change the field of view (FoV), cick the left or right handle of the range and move the handle to the required position.



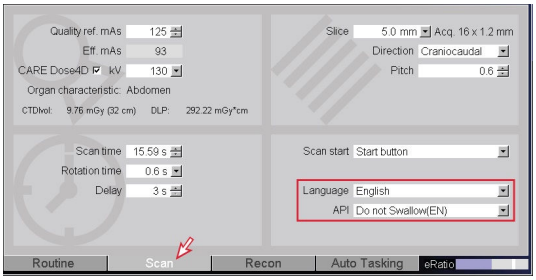
5.3 Selecting an API recording

The API (Automatic Patient Instruction) function plays recorded instructions automatically to guide a patient through an examination. Each API recording consists of two pieces of text: text A and text B. Text A, for example, **Breathe in and hold breath**, is played before a scan. Text B, for example, **Breathe again**, is played after the scan or when the scan is suspended.

1 In Chronicle, select the desired scan step ,for example, **AbdRoutine**.



2 On the **Scan** sub-task card, select the API language in the **Language** list, if necessary. In the **API** list, select the name of the API recording.



3 Make sure the API button on the lower-left side of the **Examination** task card is clicked.

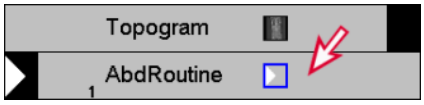
The API button controls whether your selected API recordings are played in an examination.

5.4 Acquiring tomograms

Tomograms are the cross-sectional views of a body region. Tomograms are used for diagnosis, typically in either spiral or sequence scan mode.

5 Performing an examination

1 In Chronicle, select a tomo entry (for example, **AbdRoutine**) and check corresponding examination parameters on sub-task cards.



The green eMode icon ( ) at the lower-left corner of the **Examination** task card indicates that the selected scan step is compatible with eMode, which prevents the system from unnecessary wear. If the yellow eMode icon appears ( ), click the accompanying **Adjust** button.

2 Click **Load**.

The scan parameters are confirmed. The **Press MOVE** message is displayed next to the **AbdRoutine** entry.

3 On the control box, press the **Move** key until the table stops.

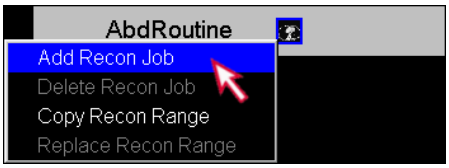
4 On the control box, press the **Start** key when a ring around the key blinks in green.

Radiation starts. Tomograms appear in the tomo segment.

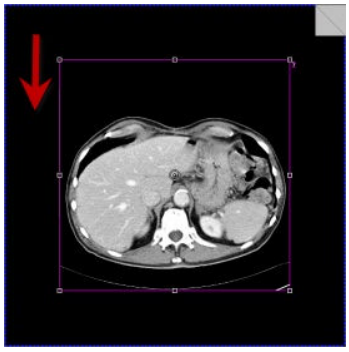
5.5 Reconstructing axial images

Image reconstruction is performed in recon jobs. Every scan comes with at least one default recon job. You can create additional recon jobs to reconstruct additional series, if necessary.

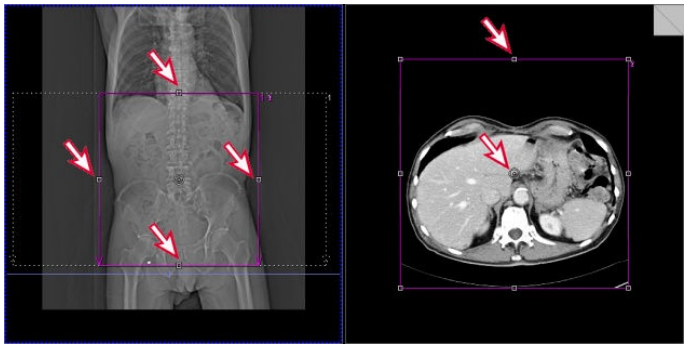
1 In Chronicle, select the performed scan step (for example, **AbdRoutine**), right-click a recon icon and choose **Add Recon Job**.



2 In the tomo segment, place the mouse pointer close to the segment border, click and drag down. The FoV box appears.



3 Adapt the recon range in the topo or tomo segment by clicking and dragging the handles that are displayed around the graphic range objects.



4 Edit other parameters on the **Recon** sub-task card, if necessary.

- **Slice**: the image width
- **Kernel**: the parameter that affects image sharpness and noise
- **Window**: window values define the brightness and contrast of recon images, based on organ-specific CT values
- **Recon increment**: the distance between images

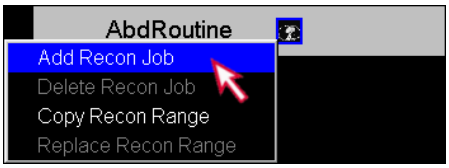
5 Click **Recon**.

Resonstruction starts. In the tomo segment, all images calculated are displayed one after the other.

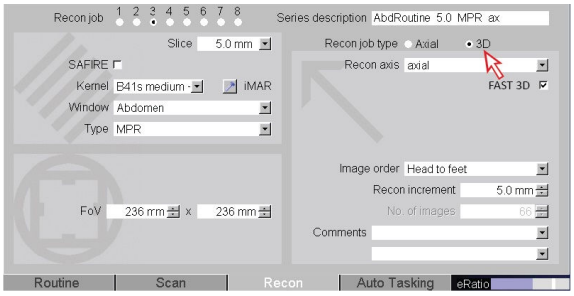
5.6 Generating 3D reconstructions

To improve workflow efficiency, you can perform 3D image reconstruction directly on the **Recon** sub-task card. This is more convenient than evaluation using the separate 3D task card.

1 In Chronicle, select the performed scan step, for example, **AbdRoutine**, and right-click a recon icon and choose **Add Recon Job**.



2 Select **3D** as the **Recon job type** on the **Recon** sub-task card.

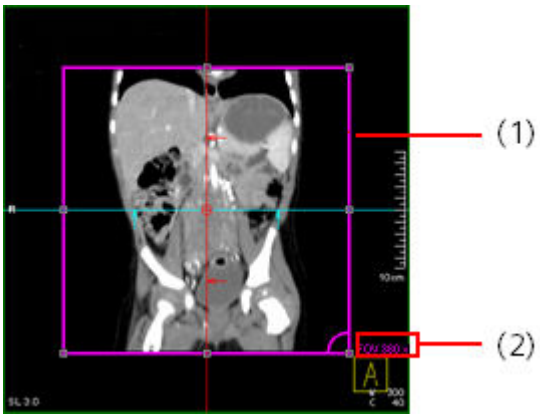


The 3D recon segments appear. Each 3D recon segment shows one plane of the scanned image volume. By default, the following views are shown from left to right:

- Coronal view
- Axial view
- Sagittal view

3 In the **Recon axis** list, select the axis for 3D recon (for example, **coronal**).

The first segment (in the coronal view) is marked as the FoV segment; coronal images will be reconstructed.

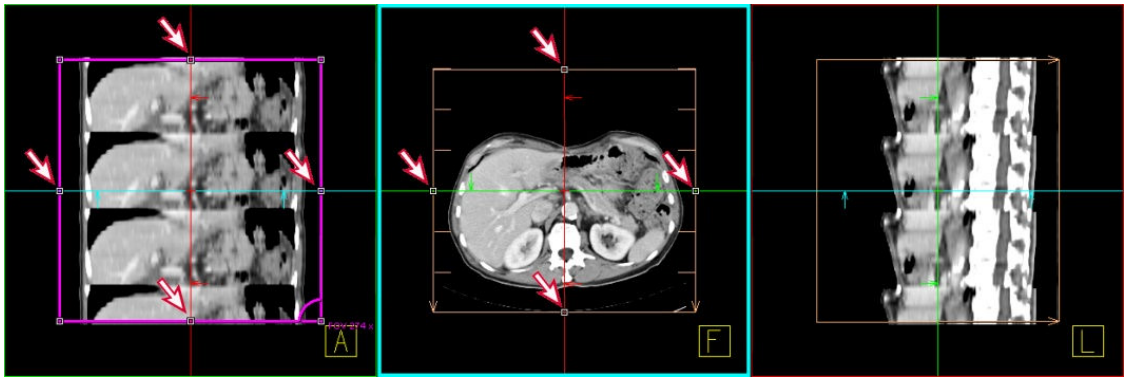


FoV segment (coronal view)

(1) FoV object

(2) FoV size

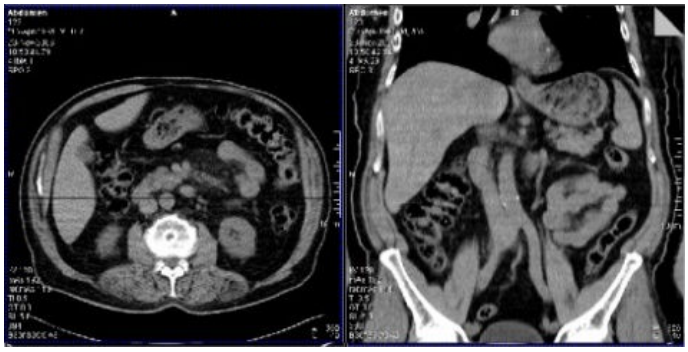
4 Adapt the recon range in the 3D recon segments by clicking and dragging the handles that are displayed around the graphic range objects.



5 Edit other parameters on the **Recon** sub-task card. For example, in the **Type** box, you can specify if MPR or MIP images will be reconstructed.

6 Click **Recon**.

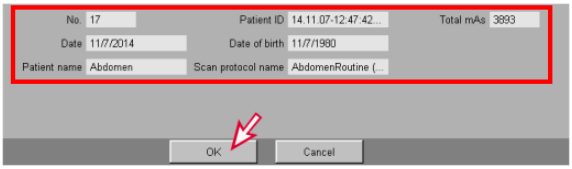
The screen returns to the two-segment layout. Reconstructed images (for example, coronal images) appear in the tomo segment.



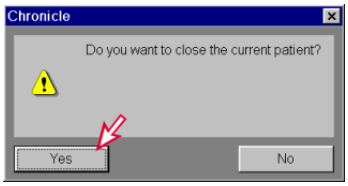
5.7 Completing a scan

1 Click the **Close current patient** icon on the lower-left side of the **Examination** task card.

2 If the E-logbook is configured, modify the examination information fields in the sub-task card area and click **OK**.



3 Click **Yes**.



All images of the patient are closed and removed from the **Examination** task card. All images are saved in the database.

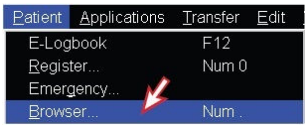
5 Performing an examination

6 Reviewing images

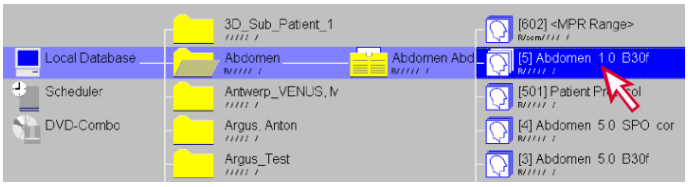
In the **Viewing** task card, you can perform basic image evaluations, such as windowing images, zooming or panning images, evaluating gray values, measuring distances, or measuring angles.

6.1 Viewing images

1 Click the **Viewing** task card and then choose **Patient** > **Browser** from the main menu.



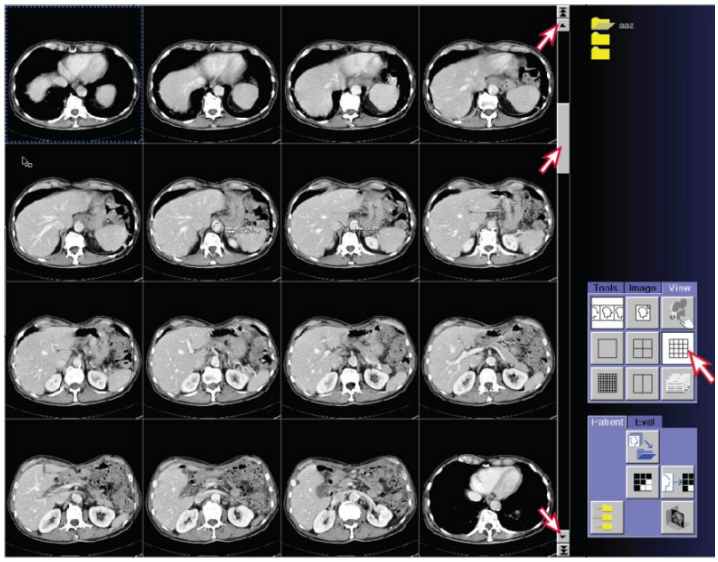
2 In Patient Browser, double-click a series of images to load them into the **Viewing** task card.



3 Use the scroll bar for image navigation.

– or –

To change the viewing layout, click a layout icon (for example 16:1) on the **View** tab.

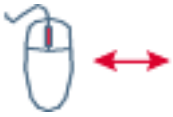


6.2 Windowing images

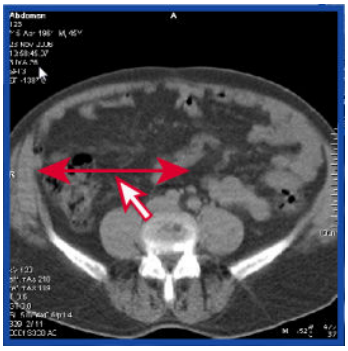
You can change both image contrast and brightness. This is called windowing. The window values are displayed in the image.

- W (window width) = contrast
- C (window center) = brightness

- Click an image with the wheel button and drag the mouse left or right.



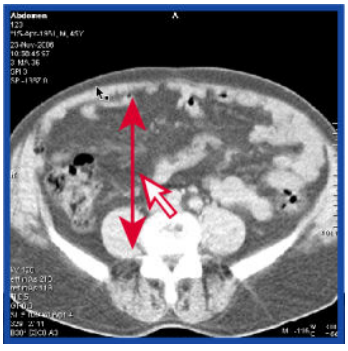
The contrast changes.



– or –

Click an image with the wheel button and drag the mouse up or down.

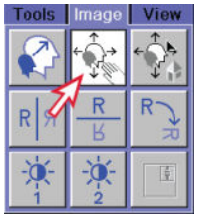
The brightness changes.



- You can apply windowing to multiple selected images. Use the **Ctrl** key to select non-consecutive images. Use the **Shift** key to select consecutive group of images.
- To restore the original window values, choose **Image** > **Home Window** from the main menu.

6.3 Zooming images in and out

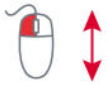
1 On the **Image** tab, click the **Zoom/Pan** icon.



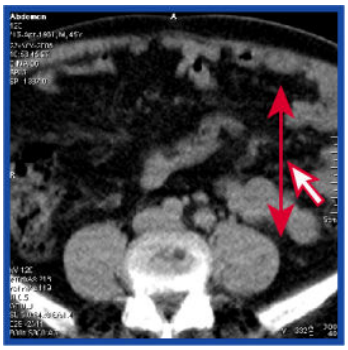
2 Place the mouse pointer close to the edge of the image.

The mouse pointer changes in shape.

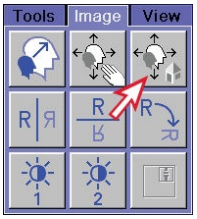
3 Click the image and drag the mouse up or down.



The image increases or reduces the size.



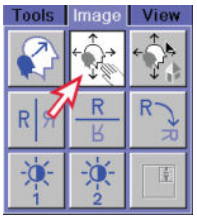
4 To restore the original display, click the **Reset Zoom/Pan** icon on the **Image** tab.



You can apply zooming to multiple selected images. Use the **Ctrl** key to select non-consecutive images. Use the **Shift** key to select consecutive group of images.

6.4 Panning images

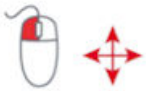
1 If parts of the zoomed images extend beyond the image segment, click the **Zoom/Pan** icon on the **Image** tab.



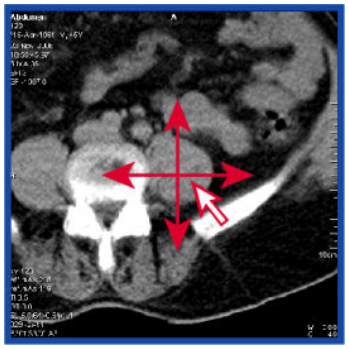
2 Place the mouse pointer in the center part of the image.

The mouse pointer changes the shape.

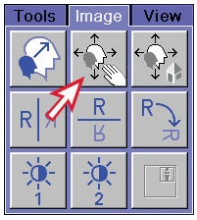
3 Click the image and drag the mouse up, down, right, or left.



The image moves accordingly.



4 To deactivate the **Zoom/Pan** function of the left mouse button, deselect the **Zoom/Pan** icon.

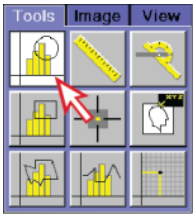


You can apply panning to multiple selected images. Use the **Ctrl** key to select non-consecutive images. Use the **Shift** key to select consecutive group of images.

6.5 Evaluating gray values

To mark anomalies in the image and evaluate gray scales statistically within special Regions of Interest (ROI), you can draw a graphic around the region.

1 On the **Tools** tab, click the **Circle** icon.



2 Click the image and drag the mouse pointer to any direction until the circle reaches the desired size.

The evaluation results are displayed in the image.

- To change the type of results, right-click the **Circle** icon to call up **Properties**.
- To delete the circle, click it and press the **Del** key.

6.6 Measuring distances

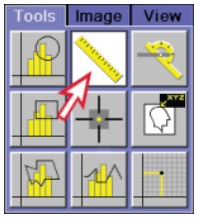
CAUTION

The evaluation of distances, angles and ROIs in 3D (VRT or SSD) and projection (plain-film X-ray or fluoroscopic) images can be inaccurate!

Wrong measurement results and wrong diagnosis.

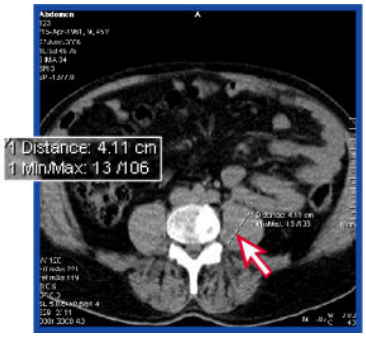
- Do not use uncalibrated projection images to make critical measurements.
- Do not assume that the image calibration is correct.

1 On the **Tools** tab, click the **Distance** icon.



2 Move the mouse pointer to the required starting point of the distance line and drag the mouse pointer to the required ending point of the distance line. Release the mouse button to finish the line.

The evaluation results are displayed in the image.



To change the type of results, right-click the **Distance** icon to call up **Properties**.

6.7 Measuring angles

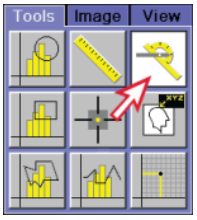
CAUTION

The evaluation of distances, angles and ROIs in 3D (VRT or SSD) and projection (plain-film X-ray or fluoroscopic) images can be inaccurate!

Wrong measurement results and wrong diagnosis.

- Do not use uncalibrated projection images to make critical measurements.
- Do not assume that the image calibration is correct.

1 On the **Tools** tab, click the **Angle** icon.



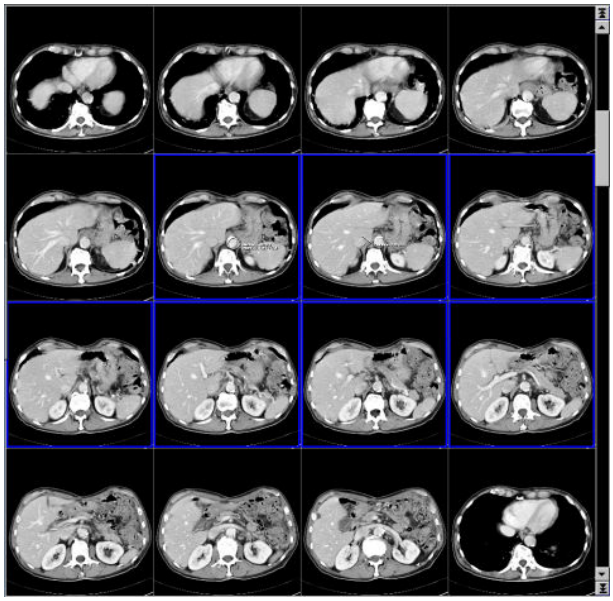
2 In the image, click the required starting point of the first ray and drag the mouse pointer to the required ending point of the first ray. A line is drawn. Draw the second ray using the same method.

An angle is displayed in degrees.

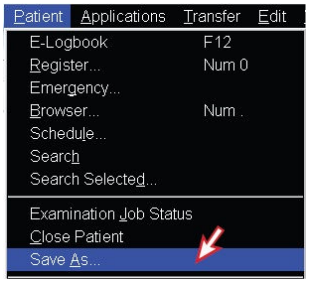
6.8 Saving images

1 In the **Viewing** task card, select the images you want to save.

To select several images, press the **Ctrl** key and click images for non-consecutive selection or press the **Shift** key to select consecutive group of images.



2 From the main menu, choose **Patient** > **Save As**.



The **Save As** dialog box opens.

3 Click **Save images in new series** and enter the new series name.

4 Click **OK**.

The selected images are saved as a new series.

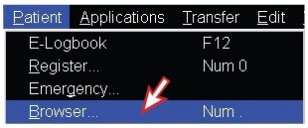
6 Reviewing images

7 3D postprocessing

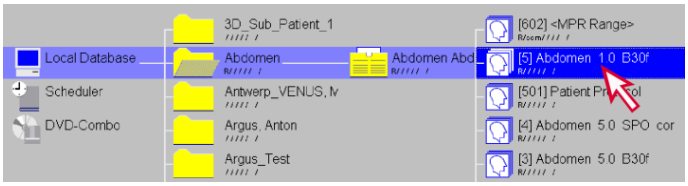
syngo 3D performs 3D editing and rendering of medical images on the **3D** task card. The result of a tomographic examination is a sequence of images through a solid volume. By combining 2D images, it is possible to obtain a 3D display of the ROI.

7.1 Loading images

1 Click the **3D** task card and choose **Patient** > **Browser** from the main menu.

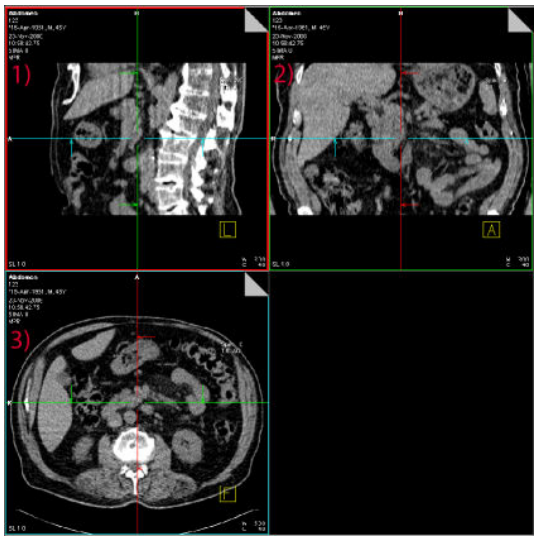


2 In the **Patient Browser**, double-click a series of images to load them into the **3D** task card.



The images are displayed as multiplanar reconstructions (MPR) on the **3D** task card:

7 3D postprocessing



3D segments

(1) Sagittal view

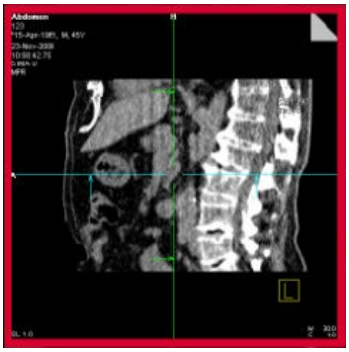
(2) Coronal view

(3) Axial view

Colored reference lines in the image indicate the position of the other two slice planes.

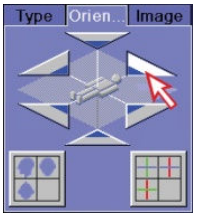
7.2 Optimizing the image orientation

1 Click one of the three segments (for example, the upper-left segment in the sagittal view).



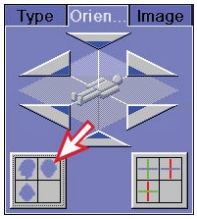
The selected segment is marked with a thicker border.

2 On the **Orientation** tab, click the desired orientation (for example, Head to Feet).



The corresponding anatomical view is updated (changed from sagittal to axial view).

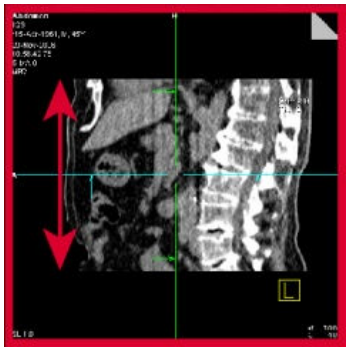
3 To return to the standard view, click the **Default Orientation** icon.



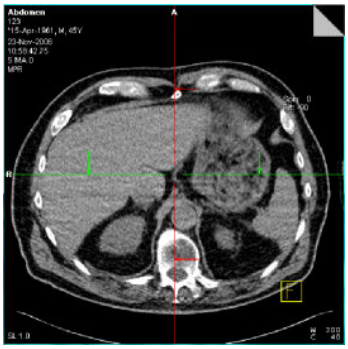
7.3 Viewing the slice of interest

By moving through the views, you can find the slice of interest.

- Select a reference line and drag it to the desired position. In the following example, drag the axial reference line in the sagittal view.

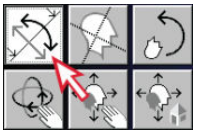


The corresponding slice plane (for example, the axial view) is updated.



7.4 Creating oblique views

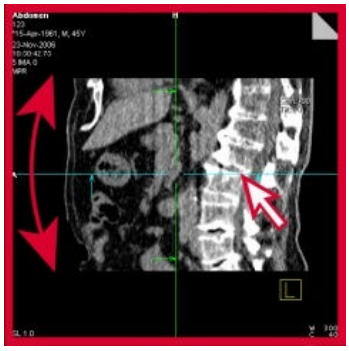
1 Click the **Free Mode** icon.



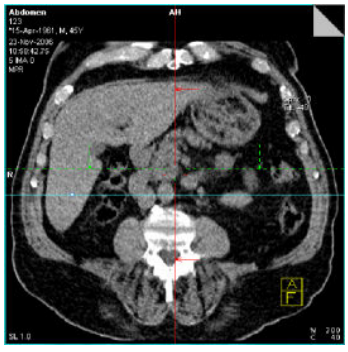
2 Place the mouse pointer close to the end of a reference line.

The mouse pointer changes the shape.

3 Rotate the line around the center point. In the following example, rotate the axial reference line in the sagittal view.

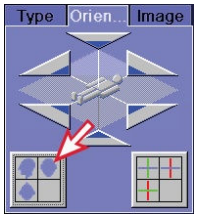


The corresponding slice plane (for example, the axial view) is updated.



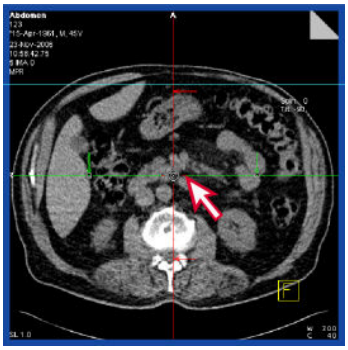
Dashed lines indicate planes that are not perpendicular to the view that is displayed.

4 To return to a perpendicular view, click the **Default Orientation** icon on the **Orientation** tab.



7.5 Generating a series of parallel images

1 Click a reference line (for example, coronal reference line).

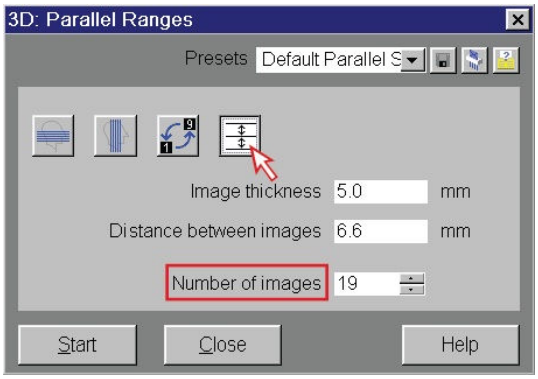


2 In the **Settings** tab, click the **Parallel Ranges** icon.

The **3D Parallel Ranges** dialog box opens. The following is displayed on the screen:

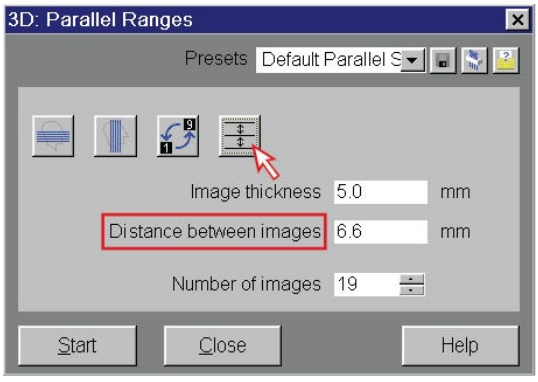
- In the reference image: horizontal range (yellow)
- In the lower-right segment: center image of the range

3 To adapt the distance between the images while keeping the number of images unchanged, click the **Constant Number of Images** icon in the **3D Parallel Ranges** dialog box. Specify the number of images.

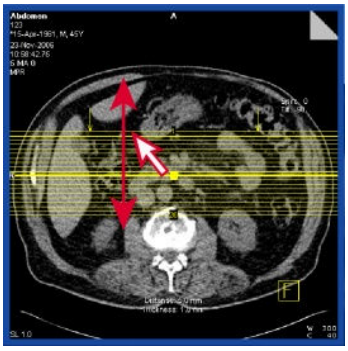


– or –

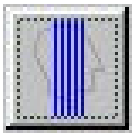
To adapt the number of the images while keeping the distance of the images unchanged, deselect the **Constant Number of Images** icon in the **3D Parallel Ranges** dialog box. Specify the distance between the images.



4 To resize the range, click and drag the outermost line of the range.

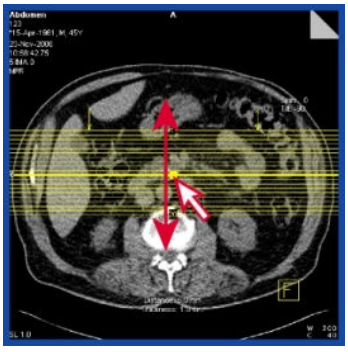


To change to a vertical orientation, click the **Vertical Ranges** icon in the **3D Parallel Ranges** dialog box.



5 To move the range, place the mouse pointer on the center point of the range. The mouse pointer changes the shape.

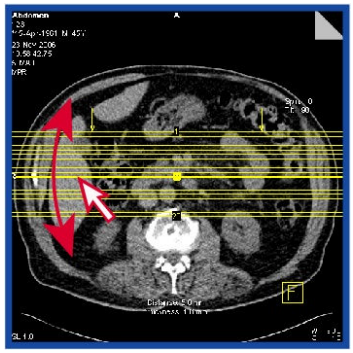
Click the center point of the range and drag it to the new position.



– or –

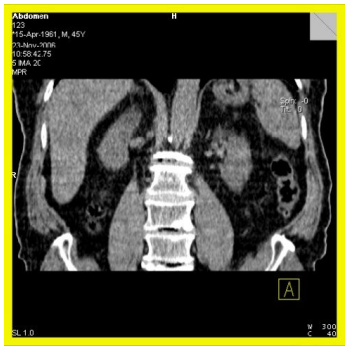
To tilt the range, place the mouse pointer on the center line of the range (*not* the center point). The mouse pointer changes the shape.

Click the line and drag the mouse pointer up or down to rotate the line around the center point.

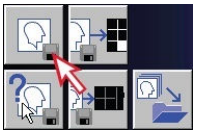


6 To generate the image series, click **Start**.

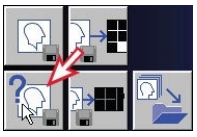
The 3D range is displayed as an image stack in the lower-right segment.



7 To save the image series, click **Save**. You can also click **Close** on the **3D Parallel Ranges** dialog box. You will be prompted to save the image series.



To assign a specific name to the reconstructed image series, click **Save As**.



The image series is stored to the database.

7 3D postprocessing

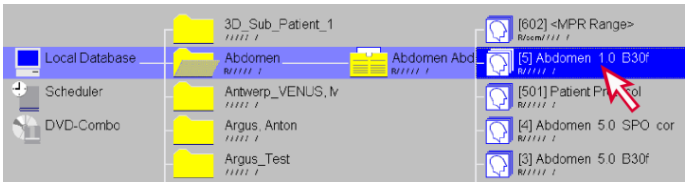
8 Documenting and reporting

You can film images on a camera connected to your CT system. You can also store the examination data (patient info, scan protocols, and CT images) on DVD discs, USB devices, or a storage server in the hospital network. After the examination data is reported and archived, you may delete the data in the Patient Browser.

8.1 Filming

1 Click the **Filming** task card and then choose **Patient** > **Browser** from the main menu.

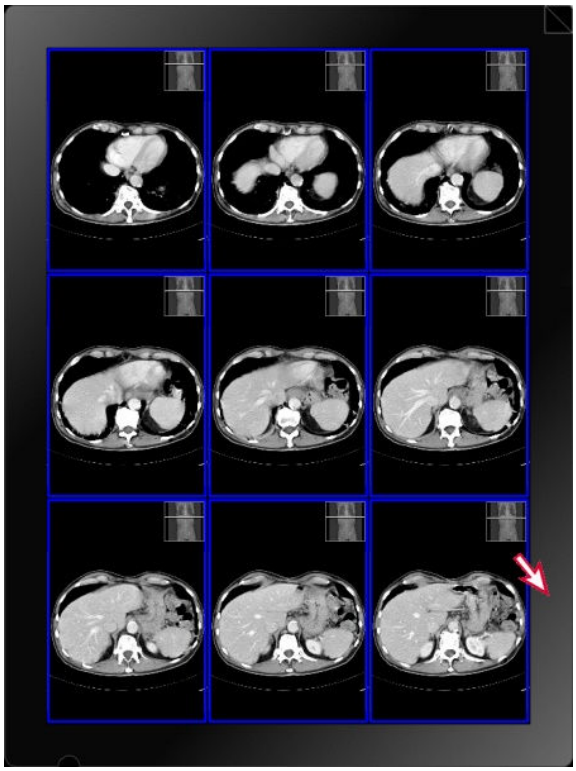
2 In **Patient Browser**, double-click a series of images to load them into the **Filming** task card.



3 Click the border of one film sheet to select all the images it contains.

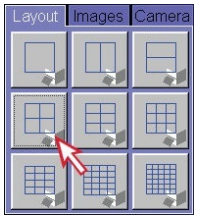
– or –

Double-click the border and select all the film sheets with all images of one film job.



To deselect all images, click outside the film sheet.

4 On the **Layout** tab, click the desired sheet layout (example: 2x2).

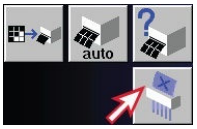


– or –

From the **Layouts** list, select the sheet layout.

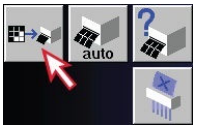
The layout of selected film sheets changes.

5 To delete an image, select the image and click the **Delete** icon.



The selected image is deleted from the film sheet but not from the database). If the **Film** > **Repack** check box is selected, the subsequent images move up so that no empty segments are left behind.

6 To transfer all film sheets to the camera, click the **Expose Film Task** icon.



All film sheets are transferred to the camera.

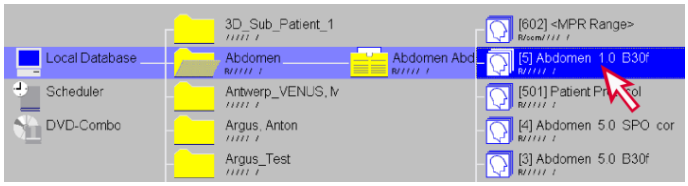
8.2 Storing data on DVD

You can store your data to approved media, such as CD or DVD.

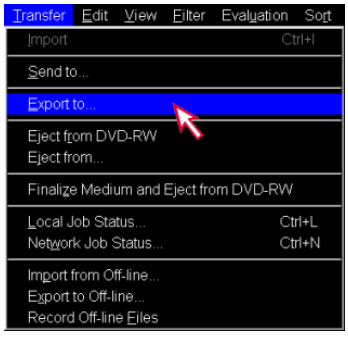
1 Insert the DVD into the drive.

8 Documenting and reporting

2 In **Patient Browser**, select a series of data you want to store.

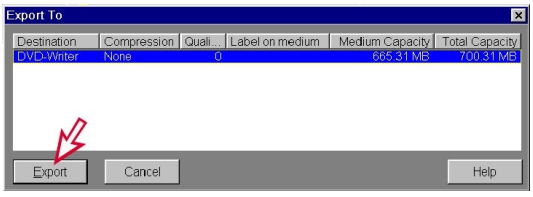


3 From the menu, choose **Transfer** > **Export to**.

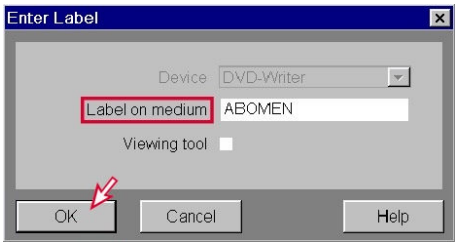


The **Export To** dialog box opens.

4 Select **DVD-Writer** from the list, and click **Export**.



5 In the **Enter Label** dialog box, enter a label for the DVD and click **OK**.



The series is stored to DVD.

6 In **Patient Browser**, click **Finalize Medium and Eject from DVD-Writer** (selectable only if data transfer is completed).

The DVD is ejected.

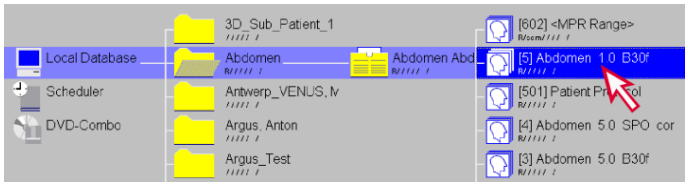
- CDs and DVDs are not suitable for long-term storage.
- Only use medical grade CDs and DVDs. Medical grade CDs and DVDs are available through your Siemens Healthineers Representative.

8.3 Transferring data via USB device

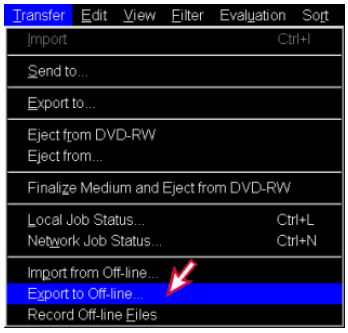
You can use an external USB device for easy data transfer between two systems.

1 Insert the USB device into the USB port of the computer.

2 In **Patient Browser**, select the data you want to export.

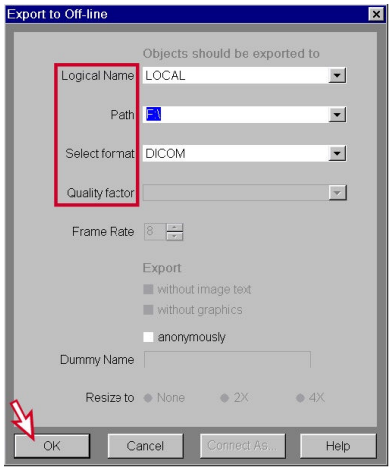


3 From the main menu, choose **Transfer** > **Export to Off-line**.



The **Export to Off-line** dialog box opens.

4 In the **Export to Off-line** dialog box, select the desired entries from the lists, and click **OK**.



The series is exported to the USB device.

Prior to removing the USB device, ensure that the series is fully exported (indicated by a message at the bottom of the task card).

5 Click the USB icon.

6 Click the displayed popup menu **Safely Eject PNP Device**.

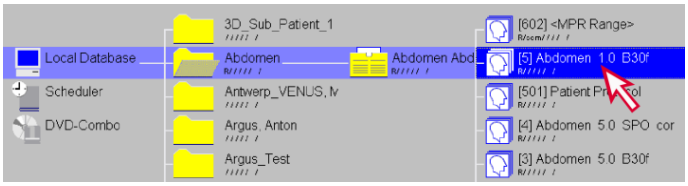
7 Remove the USB device from the USB port.

- USB storage devices are not suitable for long-term storage.
- Do not plug in or unplug USB devices during acquisition tasks or other critical processes.
- To import data from a USB device to the database, choose **Transfer** > **Import from Off-line**.

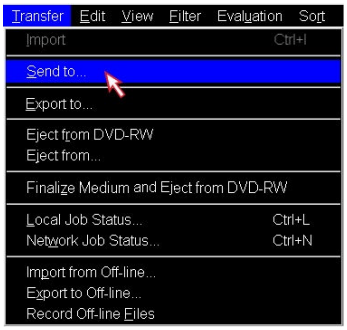
8.4 Networking

If your system is connected to a network, you can send data to other workstations via the network.

1 In **Patient Browser**, select the data you want to transfer via network.

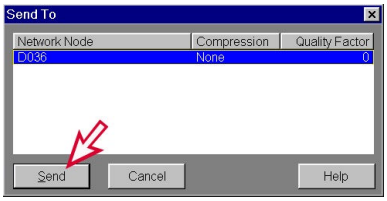


2 Click **Transfer** > **Send to**.



The **Send To** dialog box opens.

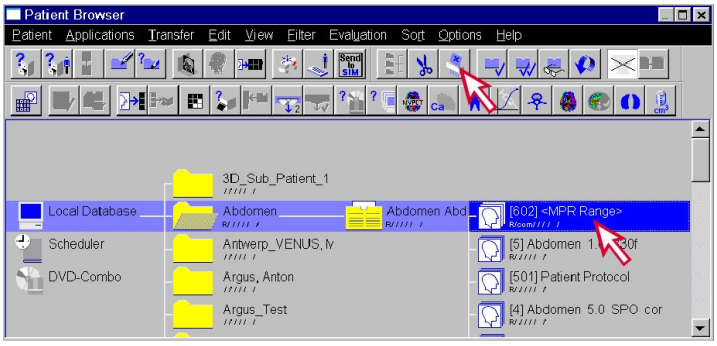
3 In the **Send To** dialog box, select the desired network node from the list and click **Send**.



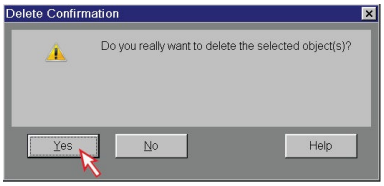
The data is sent to the selected network node.

8.5 Deleting data

1 In **Patient Browser**, select the data you want to delete, and click **Delete**.



2 In the **Delete Confirmation** dialog box, click **Yes** to confirm.



The selected series is deleted from the database.

You can only delete patient data if no other application is accessing the same data.

8 Documenting and reporting

9 Shutting down the system

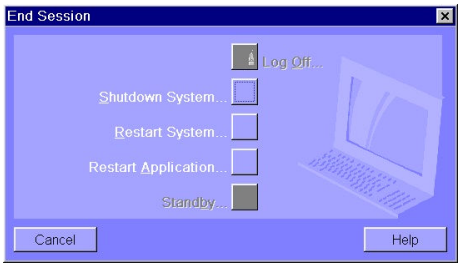
The system shuts down in three stages:

- Termination of *syngo*
- Shutdown of the operating system
- Shutdown of the scan system

✓ Before you can shut down the system, you should exit all examinations and applications.

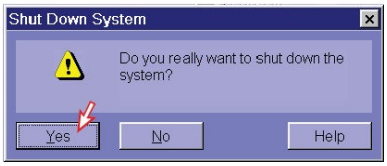
1 Fom the main menu, choose **System** > **End**.

The **End Session** dialog box is displayed.



9 Shutting down the system

2 Click **Shutdown System**, and confirm with **Yes**.



A dialog box is displayed if applications are still active. A similar dialog is displayed when a patient examination is still running. Click **Yes**.

All applications will be closed. The system will continue to shut down. If no errors occur during shutdown, the computer will be switched off.

3 Press the on/off button at the UPS for at least 3 seconds to switch off the UPS.

4 Press the power switch at the LCB.

The whole system is switched off.

- Do not switch off the system at the main switch provided by the operator of the CT system or the **EMERGENCY OFF** switch unless absolutely necessary. Otherwise you will have to calibrate the system several times when you restart it.
- If the entire system is running and you do not need the gantry any longer, you can shut down the gantry only. The rest of the system will remain in operating state.

9 Shutting down the system

10 Glossary

API Automatic Patient Instruction; enables synchronization of recorded instructions (for example, “Do not swallow”) and the scan procedure.

Checkup Automatic procedure that executes a set of functions to calibrate and check the scanning system. Ensures a well-conditioned system to provide the highest image quality.

Chronicle Area of the **Examination** task card (left-hand side); displays the scan protocol and contains control buttons (for example, **Close current patient, Recon**).

Control box Input unit at the console; includes operating elements for the measurement (for example, **Start** key), table movements (for example, **Move** key), switching the system on/off (on the rear), and so forth.

E-Logbook Tool for collecting, viewing, and archiving patient information for statistics, documentation, and research.

FoV Field of View; Scan FoV: maximum area of measurement in plane; Reconstruction FoV: area to be included in the image reconstruction, i.e., the size of the final image.

MPR Multi Planar Reconstruction; enables new images in any orientation to be reconstructed based on an image data set.

Recon job From one raw data set, it is possible to reconstruct several image sets with different parameter settings (reconstruction jobs).

Reconstruction Computation of the CT image from the measured raw data.

Reference line Imposed graphic line in an image referring to another view or anatomical point. For example, in each image segment of the **3D** task card, the position and orientation of the two other segments are indicated with color-coded reference lines.

10 Glossary

ROI Region Of Interest; region of a CT image which can be defined with respect to position, size and shape, and in which quantitative evaluations are performed.

Scan plane Plane in which the X-rays penetrate the patient's body.

Scan protocol Defines all steps of an examination and the sequence in which they are performed, for example, **Topogram**, **Tomogram**, **Pause**,**Tomogram**. The scans included are preset with specific parameter settings. Scan protocols are available for different body regions, for example, head and abdomen. Predefined scan protocols are provided by Siemens Healthineers or you can create your own.

Scan range Volume to be covered by the scan.

Segment The image area of the screen is subdivided into segments. Each segment displays an image or an image stack.

Series All images of a scan or of an image processing operation are assigned to a series.

Study Series of the same examination are combined into one study. In case of multi-study examinations (multiple examination requests sent via HIS/RIS to the CT) every requested procedure, for example, examination of abdomen and pelvis, defines a separate study.

Subtask card Smaller cards on the task cards; used for setting parameters, calling up functions and tool boxes, for example, the **Tools** subtask card.

Task card The main *syngo* applications are set up as task cards, accessible via the tabs on the right-hand side of the screen, for example, the **Viewing** task card.

Tomogram Scan of a slice perpendicular to the longitudinal axis of the patient.

Topogram Frontal or lateral survey scan, similar in appearance to a conventional X-ray exposure. Base for planning the tomogram.

Windowing Display of a selectable portion of the CT values using the optimized contrast range of the monitor.

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CE
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Manufacturer's note:

This device bears a CE mark in accordance with the provisions of Council Directive 93/42/EEC of June 14, 1993 concerning medical devices and the Council Directive 2011/65/EU of June 08, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

The CE marking applies only to Medical Devices which have been put on the market according to the above-mentioned EC Directives.

Unauthorized changes to this product are not covered by the CE mark and the related Declaration of Conformity.

Products with serial numbers between 59401 and 59519 or 77701 and 77869 may contain non RoHS complaint material.

Caution: Federal law restricts this device to sale by or on the order of a physician, dentist, or veterinarian (21 CFR 801.109(b)(1)).

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