

## SONIALVISION 100 Digital Table

## New Functions Support a Variety of Examinations (Part 1 of 3)

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### 1. Introduction

We outlined the new SONIALVISION digital table in the Technical Report in the previous issue (No. 46). Starting in this issue, we present the first of a 3-part series on the range of advanced technologies incorporated into SONIALVISION.

The first part introduces new functions applicable to a variety of examinations, in particular the revolutionary functions that far surpass the concept of the conventional DR system.

### 2. Digital, Linear Tomographic Imaging Achieved

#### Sophisticated, multi-axis mechanical control technology

At a glance, the SONIALVISION resembles any previous R/F table but the totally new mechanism achieves previously unimaginable movements. The column supporting the X-ray tube is unconnected to the I.I. and other imaging unit. Three-axis simultaneous control permits independent control of the X-ray tube and I.I. positions and also provides independent control of the X-ray tube rotation angle. In addition to synchronized sliding of the X-ray tube and I.I. in the same direction, this system allows positioning of the X-ray tube and I.I. on opposing sides of the table at the head and leg ends to take inclined tomographic images with a constant irradiation field. The extremely precise control of these movements achieves high-speed movement of the heavy X-ray tube and I.I., and offers accurate imaging capacity superior to that of mechanical linkages.

The parallel plane system maintains the X-ray tube path parallel to the cutting plane, even when the X-ray tube swing angle changes, which ensures sharp tomographic images with a constant magnification at the cutting plane.

This system achieves a speed of  $40^\circ/1.5s$  at four plane angles ( $8^\circ$ ,  $20^\circ$ ,  $30^\circ$ , and  $40^\circ$ ), which is a specification worthy of a dedicated tomographic imaging device. The table tilting function allows tomographic imaging of the patient in a standing posture. (Fig. 1)



Fig. 1

#### High-speed digital image processing technology

Digital tomographic imaging involves taking digital images while changing the X-ray incidence angle at the cutting plane and using high-speed image processing to create a tomographic image that is displayed on the monitor.

During tomographic imaging, the DR high-speed image-processing functions create accurate, real-time images from the huge number of images taken with slight changes to the X-ray angle of incidence. (Fig. 2)

Naturally, the SONIALVISION is also compatible with cassette CR and film tomographic imaging (up to 14" x 17").



Fig. 2

### **3. Powerful Emergency Examination Imaging Features**

The SONIALVISION offers powerful features for the initial imaging to determine the condition of emergency patients transported by stretcher.

#### **Fully flat tabletop with elevation function**

The table features an elevation function to adjust the tabletop to the same height as the stretcher to facilitate transfer of the patient from the stretcher to the table. The world's first completely flat carbon tabletop completely eliminates all surface irregularities to ensure smooth patient transfer. Good access is provided around the table to facilitate patient care.

#### **Stretcher imaging**

The versatile SONIALVISION X-ray tube support mechanism allows the table to be positioned vertically with the X-ray tube pointing to the floor, such that X rays can be directed to a patient on a stretcher. (Fig. 3)

The X-ray tube orientation is easily controlled with a switch next to the X-ray tube and a slide switch in the same position rapidly adjusts the vertical height, providing efficient operation for emergency patients battling against time.

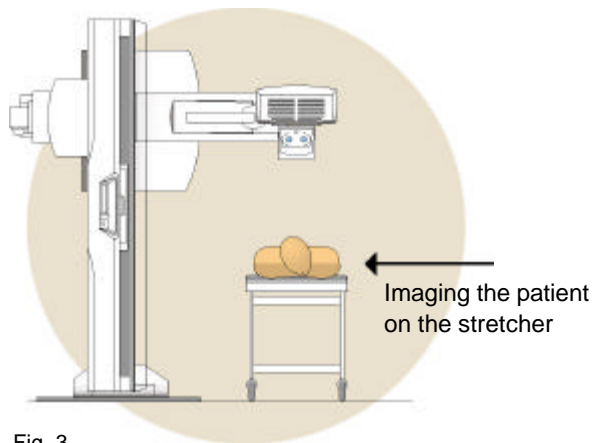


Fig. 3

### **4. Comprehensive Functions Assist Both Orthopedic and General Imaging**

#### **Incidence angle of 40° is effective for orthopedic images**

Orthopedic imaging is predominantly the imaging of joints and bones and involves X-ray irradiation from a variety of orientations for many imaging techniques on all parts of the body. This wide range of orientations is easy to achieve with a general-purpose X-ray system but the mechanical limitations of a system with an I.I. R/F mechanism restrict the X-ray angle of incidence to about 30°.

The independent X-ray tube and I.I. support mechanisms of the SONIALVISION achieve a deep, 40° X-ray incidence angle at both the head and leg ends. (Fig. 4)

The wider incidence angles permit pelvic imaging and the imaging of patients complaining of joint pains without forcing the patient into uncomfortable postures.

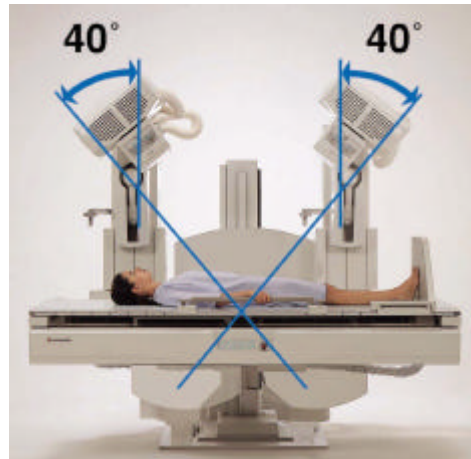


Fig. 4

#### **Cassette imaging**

This DR system also handles cassettes to offer the commonly used CR imaging. The system can handle cassette sizes up to 14" x 17" and the cassette size is automatically recognized by a sensor.

#### **Low-magnification imaging at SID=1.5m**

The column supporting the X-ray tube can be extended to the SID=1.5m position to obtain high-quality X-ray images with little deterioration in image quality due to image magnification.

#### **Using the X-ray tube with standing posture type stand**

The X-ray tube can be reversed 180° with respect to the tabletop while the table is in the vertical position, allowing application of the SONIALVISION X-ray tube with a wall-mounted stand in the examination room.

Enhanced general radiographic imaging functions from those available previously, including the world-first 4-field photo-timer function with independent pickup areas for the abdomen and thorax, make this the SONIALVISION digital table fully applicable to general imaging.