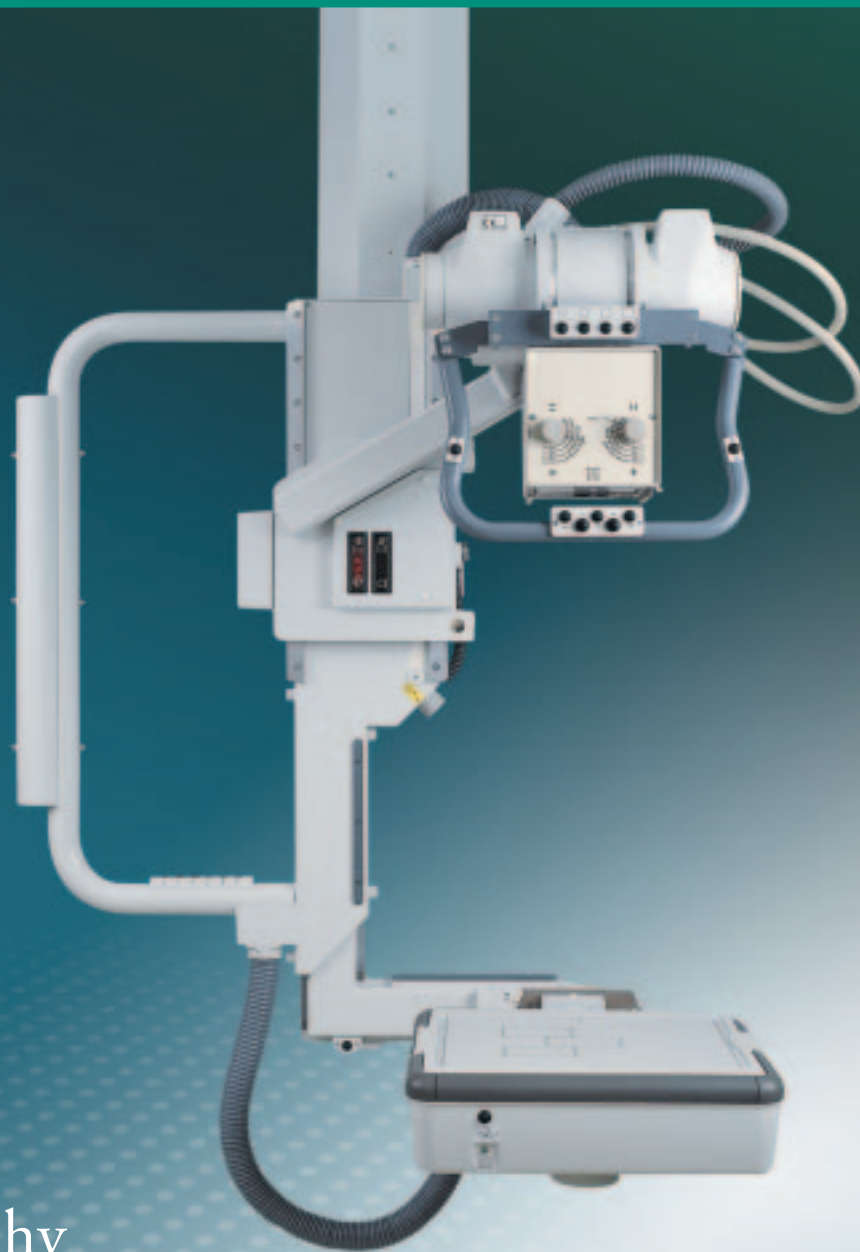


# KODAK DIRECTVIEW DR 9000 SYSTEM



Digital radiography  
for a full range of  
general and trauma  
examinations

HEALTH IMAGING  
A BETTER VIEW OF LIFE.



# KODAK DIRECTVIEW DR 9000 SYSTEM

DIGITAL RADIOGRAPHY FOR A FULL RANGE OF GENERAL AND

The versatile, high-volume KODAK DIRECTVIEW DR 9000 System is designed for a full range of head, chest, skeletal, extremity, and abdomen procedures—as well as trauma examinations. A U-arm design provides the ultimate in flexibility for patient comfort and positioning. Direct digital image capture technology and proprietary image processing produce DR images of outstanding quality.



## TRAUMA EXAMINATIONS

### MAJOR SYSTEM COMPONENTS

The DR 9000 system consists of:

- Kodak DirectView DR system operator console
- Digital image capture device
- X-ray generator
- Ceiling-mounted U-arm system that includes bucky and x-ray tube
- Optional patient support table

### THE “DIRECT” DIFFERENCE IN IMAGE QUALITY

This system uses direct digital image capture technology, which employs an amorphous selenium detector array to convert x-rays directly into electronic signals. Since light is not used in the conversion, the signal profile and resolution are highly precise, yielding excellent image quality.



- The single-piece x-ray detector is 14 x 17 inches (35 x 43 cm) for full-field imaging.
- Images are processed automatically with Kodak DirectView PTS software, which is based on a proprietary technique known as perceptual tone scaling. PTS image processing software analyzes the image data and creates a look-up table (LUT) uniquely derived to optimize grayscale for both hard- and softcopy images.

It also applies examination-specific nonlinear edge enhancement. This robust image processing method minimizes the need to reprocess images, allowing radiographers and radiologists to spend less time adjusting images.

- Optional Kodak DirectView EVP software takes image quality and diagnostic confidence to an even higher level. This technological breakthrough extends image latitude without loss of detail contrast. All original image data are used and retained during image processing and enhancement.

### ULTIMATE EXAMINATION FLEXIBILITY

A ceiling-mounted U-arm supports both tube and detector, and provides multiplanar motion and variable source-to-image detector (SID) distance—for a full range of general radiographic and trauma exams.

- There is no need to separately position the tube and detector.
- Tube and bucky may be rotated independently of each other.
- Range of motion is 180° vertically and horizontally.
- Variable SID distances (40–72 in./102–183 cm) accommodate a wide variety of exams.

Take your choice of optional patient support tables recommended for general radiography. More information is available from your Kodak representative or in publication no. M1-427. A PDF of this brochure can be downloaded at [www.kodak.com/go/dr](http://www.kodak.com/go/dr). Click on “Kodak DirectView DR 9000 system,” and then “table options.”

## PRODUCTIVITY AND CONVENIENCE GO HAND IN HAND

Productivity features include streamlined examination procedures and the capability for rapid image and information access and distribution. The ability to connect with PACS for softcopy review, and with archives for storage, helps to control costs and enables efficiencies for clinicians.



- This system delivers images quickly, providing an opportunity for faster diagnoses. A preview image for QC is available in 10 seconds or less. Images can be routed automatically to multiple destinations.
- A single operator console improves workflow by controlling the x-ray generator and detector, HIS/RIS access to patient and exam data, and output to the imaging network.
- Design of the user interface for all Kodak DR systems is consistent with that of Kodak DirectView CR systems. This touch-screen-based interface greatly simplifies crosstraining and use, reduces keyboard dependence, and saves time.
- Capability to toggle between multiple examinations helps minimize the number of times patients must be repositioned.
- The console includes Exam Tutor software for displaying examination views and tracking their completion.



- Automatic exposure control automatically terminates exposure, simplifying operations and providing more consistent images.
- Standard DICOM 3.0 compliance for print and store facilitates image routing and reduces costs.
- Optional Kodak DICOM work list management software enables easy integration with HIS/RIS systems.
- The system is HIPAA privacy-enabled.

## MULTIPLE-BAY APPLICATION

The DR 9000 system can be configured and installed to serve multiple patient bays, significantly improving workflow and reducing capital costs. This unique application of the DR 9000 system delivers a product that creates a flexible and efficient setting for all applications in a trauma environment.

- Extended ceiling rails increase the reach of the ceiling-mounted U-arm that supports both tube and detector.
- One system can be used for examining more than one patient.
- This configuration can be particularly useful for emergency room applications.

The specifications for this option are site specific. Representatives of Kodak's professional services organization can help you plan an installation to optimize versatility at your site.

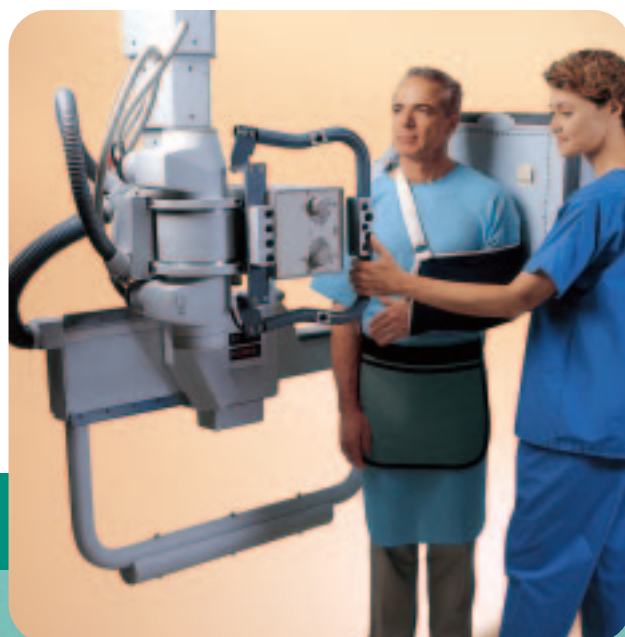
## SPACE-SAVING DESIGN AIDS SITING AND INSTALLATION

The DR 9000 system includes space-saving features to help you locate and install this system in your facility.

- Single-console control eliminates the need (and space requirements) for a second console.
- Ambient room air cooling requires no additional space, a benefit over DR systems that use other cooling methods.



*Photo courtesy of St. John Medical Center, Tulsa, Oklahoma*



# SPECIFICATIONS

The following summarizes the specifications for all the components included in the Kodak DirectView DR 9000 system. In addition, optional patient support tables are available. Ask your Kodak representative for a copy of publication no. M1-427. A PDF of this brochure can be downloaded at [www.kodak.com/go/dr](http://www.kodak.com/go/dr). Click on "Kodak DirectView DR 9000 system," and then "table options."

## DIGITAL IMAGE CAPTURE DEVICE

- Full-field direct capture detector array
  - Amorphous selenium x-ray detector
  - Single-piece amorphous silicon TFT array
- 14 x 17-inch (35 x 43-cm) active image
- 2560 x 3072 detector element matrix
- 139- $\mu$ m detector element pitch
- 3.6 cy/mm detector Nyquist frequency
- MTF
  - Greater than 0.95 at 1.0 cy/mm
  - Greater than 0.83 at 2.0 cy/mm
  - Greater than 0.64 at 3.0 cy/mm

- DQE
  - Greater than 0.44 at 1.0 cy/mm
  - Greater than 0.37 at 2.0 cy/mm
  - Greater than 0.26 at 3.0 cy/mm
- Sharpness of 100-speed extremity film-screen
- Dynamic range—14-bit data captured (linearly)

## OPERATOR CONSOLE

- Controls detector array and x-ray generator
- Patient demographic and exam data can be entered via a touch screen, keyboard, or optional HIS/RIS connectivity
- Anatomical programmed radiography (APR)—operator-programmable x-ray technique for each exam
- Automatic exposure control (AEC)—operator-adjustable
- Exam Tutor software for tracking exam completion
- Preview image within 10 seconds after exposure (cycle time: 38 seconds or less)
- Kodak DirectView PTS (perceptual tone scaling) software for optimizing x-ray image display via exam-specific algorithms
- Automatic Kodak black surround/masking software

- DICOM 3.0 print and storage service class network output
  - Multiple destination routing
- 18-inch (46-cm) touch-screen, flat-screen monitor

## CEILING-MOUNTED U-ARM SYSTEM

- U-arm linked x-ray tube and detector
- Fully counterbalanced and offset U-arm
- Ceiling-suspended
- Variable SID distance; 40- to 72-inch (102- to 183-cm)
- Multiplanar motions
  - U-arm rotates  $\pm$  180 degrees on horizontal axis
  - U-arm rotates  $\pm$  180 degrees on vertical axis
  - Vertical motor drive: 41 inches (104 cm)
  - Longitudinal travel: 170 inches (432 cm)
  - Longitudinal travel with extended rail option: KODAK Professional Services can provide site-specific recommendations
  - Transverse travel: 77 inches (196 cm)
  - Electric locks



- Detector rotation for portrait and transverse orientation
- Microprocessor control
- Operator handle with push-button controls
- Duplicate push-button controls on U-arm
- Grid
  - 10:1, 70 lines per cm
  - Interspace material: aluminum
  - Reciprocating grid
  - Focal distance 40 to 72 inches (102 to 183 cm)
  - Grid frequency matched to detector to help ensure optimum image quality

## X-RAY TUBE

- 400,000 heat unit x-ray tube
  - 0.6/1.2-mm unit focal spots
  - 13.5-degree target angle
  - 9000-rpm operation, rapid acceleration starter

## X-RAY GENERATOR

- 80-kW high-frequency output
  - 800 mA at 100 kVp
  - 500 mA at 135 kVp
  - 400 mA at 150 kVp
- Digital feedback control circuitry
- 360 to 425 VAC, 50 Hz or 380 to 480 VAC, 60 Hz
- 6% line regulation
- 125 kVA

## OPTIONS

- Kodak DirectView EVP software
- Kodak DICOM work list management service class user software for HIS/RIS connectivity

## REGULATORY

FDA, CE0086, MDD, UL, CUL, CSA, and CCC



# KODAK DIRECTVIEW DR 9000 SYSTEM



## HOW CAN THE DR 9000 SYSTEM MEET YOUR NEEDS?

Contact your Kodak sales representative to learn more about the Kodak DirectView DR 9000 system—and how it can help meet your imaging requirements.

## EXPERT KODAK SERVICE AND SUPPORT

Count on Kodak to help you maximize the value of your DR 9000 system.

- Our prompt, expert maintenance and repair service is available under warranty, and post-warranty, with a choice of service agreements and other options to meet your needs.
- The Kodak professional services group combines technical expertise with a thorough understanding of medical imaging processes, goals, and challenges.
- These experts can help you install, integrate, and optimize the performance of your DR system and other digital imaging systems including CR, PACS, RAID, and laser imaging.
- Get the support you need with project management, network, integration, educational, storage and archive, clinical optimization services—and more.

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