

## Distortion-Free High-Performance FPD Ensures Even Slight Shadows Are Rendered Properly for More Precise Gastric Screening



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### ■ Long history of conducting medical checkups

This health care center was established in 1969 by the Toyama City Medical Association and is used by about 20,000 people per year, of which about 15,000 are examined via mass screening buses. The center moved to the new facility built in its current location in 2005, where it continues to strive to increase patient satisfaction from medical checkups. Currently the center is operating at full capacity, examining about 100 people a day, of which about 80 are examined using four X-ray fluoroscopic systems.



### ■ Shimadzu R/F systems are trusted due to their long track proven records

With current advances in digital technology, we are faced with having to shift to digital technology for R/F systems, for various reasons, such as lower exposure levels from using pulsed fluoroscopy and high-sensitivity FPDs, lower costs, such as for film, and lower environmental impact due to less liquid waste. We have been using Shimadzu brand R/F systems for many years. The systems being replaced were extremely good system that had been operating for 20 years without any major problems. Therefore, with confidence that we could trust Shimadzu systems, we simultaneously switched three of the systems to FLEXAVISION F3 Package systems ("F3" below).

### ■ FPD with wide distortion-free field-of-view

We also considered an I.I.-DR system, but that would have resulted in a rounded and narrower field of view. In contrast, the FPD system provides a wide field-of-view that is distortion-free all the way to the edges, which allows performing examinations with confidence. Therefore, we decided on the FPD system without hesitation.

The basic field-of-view size during double contrast examinations is 9 inches. In the frontal standing position, the wide field-of-view is used to capture a single barium-filled image. However, if a 12-inch field-of-view is not sufficient to capture the entire area, a 14-inch field-of-view is used for the examination. This means that in a single shot we are able to obtain an image that is clean from edge to edge and extends beyond the range possible with an I.I. system, which in some cases allows us to notice points of interest other than the gastric region.

### ■ Detachable FPD is a great feature for the future

The ability to detach the large-for-its-class FPD for use in general radiography is a benefit not available with other systems. We have not tried using it detached yet, but I think it will be very useful for doctors who normally work at clinics that do not have an X-ray system and will use it at a facility to be shared with the Toyama City Medical Association in the future. I think the ability to lay the FPD on the R/F table for obtaining images of the extremities placed directly to the detector or extend the X-ray tube 1.5 meters for chest radiography is extremely beneficial features.



### ■ Compact and brightly colored main unit makes a good impression

One feature that we liked better than other FPD systems was the compact design and fewer number of cabinets. In addition, the pastel coloring is beautiful and makes a good impression on people being examined. The bedside controller in front of the R/F table and the electric shoulder support are also noteworthy features.

**High quality images are helpful for diagnoses**

The most important feature considered when evaluating this system is the high image quality. Compared to existing FPD systems from other companies, it offers lower noise, sharper edges, and better contrast images. Even in the phantom images taken each morning, the difference between Shimadzu systems and systems from other companies is very clear. Also, I felt that the biggest difference from previous analog systems is how clearly it renders areas with large differences in barium concentration, without dark underexposed areas or white overexposed areas, such as where images in supine or supine right anterior oblique positions overlap with the lungs. I got the impression that it has extremely wide latitude for rendering superior images. The greater curvature side of supine double-contrast images includes many reliefs, making it easy to overlook lesions. Previously, changing the angle would cause dark underexposed areas, but now with better contrast, images are easy to see. Due to the large amounts of air from poor barium adhesion in the fornix area above the stomach, previous systems often produced images with excessive contrast that were difficult to view. However, the new system now clearly renders even mucous membranes.

**Pulsed fluoroscopy and bedside controller that are friendly to examinees**

Another big benefit is the reduced exposure to examinees, using pulsed fluoroscopy. Given a choice to use regular fluoroscopy, I would definitely choose pulsed fluoroscopy. In addition, the bedside controller is very easy to operate and makes it much easier to tilt the table while supporting examinees. Consequently, X-ray technologists can stand next to examinees to talk to them while technologists operate the system, which is especially reassuring for older people. It also avoids the cost of having to purchase a local console separately.

**Electric shoulder support permits adjusting height smoothly**

We are using the electric shoulder support to perform examinations in the trendelenburg position with confidence. Attaching the shoulder support makes the R/F table narrower, but the F3 features beveled corners to minimize people being examined feeling cramped and the supports rotate smoothly as well. Previously, adjusting the shoulder support height involved the X-ray technologist getting in and adjusting the height manually. However, the new system eliminates that process, which permits examining more people each day. Also, previous systems required moving around to the opposite side to adjust both shoulder supports, but the electric shoulder support on the F3 permits moving the left and right sides independently, which makes the system very easy to use. This is especially helpful for people with different left and right shoulder heights.

Note: The electric shoulder support is an option available for Japan only.



Bedside Controller (indicated with arrow) and Electric Shoulder Support

**Compact design provides extra work space**

With fewer cabinets, the room is now more spacious. This reduces any cramped feelings and improves the room appearance. Also, a larger number of cabinets generates more heat, which decreases the effectiveness of air conditioning. The main unit is now also more compact, without changing the movable range of the imaging units. Consequently, there is more work space when supporting people being examined or performing maintenance. Also, any barium that is dripped can be cleaned up easily by going around to the opposite side.

**Film usage reduced and storage period extended to 10 years**

From about four years ago, we have been successively switching to digital technology, such as for general radiography systems. Considering the cost of film, the required storage space, the trouble of storage, searching for previous images, and so on, switching to digital has been well worth the effort. In the past, we were using medical record storage facilities and rental warehouses to store five years worth of film, but without the need for additional storage space, we have now extended the storage period to ten years. This is because the system records not only the last examination results, but also the type of examination performed and the process of how the results were interpreted.

**Advice to Doctors Considering Introducing This System**

Firstly, the image quality is very high. The system also offers excellent value for the price, with a large FPD for its class that provides an ample field-of-view size. This is especially beneficial if the system is being considered for applications other than gastrointestinal series. The fact that the detachable FPD can be used for direct-contact radiography or that the X-ray tube can be extended 1.5 meters for use as a backup general radiography system also expand the potential utility of the system.