Y8-9 Light Field and X-ray Field Alignment

The alignment of the light localizer, designed to define the outline of the X-ray field, with the X-ray field must be verified. In the plane of the image receptor, the misalignment, of the edges of the visually defined field with the edges of the X-ray field must not exceed 2% of the focal spot to image receptor distance.

Y9 X-ray Beam Collimation

(a) An evaluation of the beam limiting device must be made to ensure that the equipment is capable of aligning the centre of the X-ray field with the centre of the image reception area to within 2% of the focal spot to image receptor distance.

(b) Radiographic X-ray equipment that has a positive beam limiting system must prevent the emission of X-rays until the beam limiting device is adjusted so that

- the dimensions of the X-ray field do not exceed those of the image reception area, or the selected portion of that area, by more than 3% of the focal spot to image receptor distance, and
- the sum of the absolute values of the differences in the dimensions of the X-ray field and the image reception area, or the selected portion of that area, does not exceed 4% of the focal spot to image receptor distance.

(c) Radioscopic equipment equipped with a spot-film device must have a mechanism that, when the X-ray beam axis is perpendicular to the image reception plane, permits the perimeter of the X-ray field to be aligned with that of the selected portion of the image reception area so that

- the dimensions of the X-ray field differ from the corresponding dimensions of the image reception area by a distance that does not exceed 3% of the focal spot to image receptor distance, and
- the sum of the absolute values of the differences in the dimensions between the X-ray field size and the image reception area does not exceed 4% of the focal spot to image receptor distance.
Y8/Y9 Radiography Collimator Alignment

Field size congruency and vertical alignment can be tested with one exposure using the test set-up shown below, using film or CR cassettes or the built-in DR detector.

The vertical tube is a commercial device for checking the vertical alignment by observing the image of a hole in the centre of the top surface compared to that in the base adjacent to the cassette.

Technique

- With the x-ray tube in the vertical position and with 100 cm FFD, adjust the collimators to give a 25 x 20 cm light field, roughly in the centre of the cassette.
- Mark the edges and corners of the light field with coins or paper clips.
- Place the alignment tube exactly in the centre of the field
- Expose at about 80 kVp 1 mAs.
**Comments**

Field size: the light field and x-ray field should be within 2 cm at an FFD of 100 cm.

Vertical alignment of field centres should be within 2 cm (follow test tool instructions).

The next page gives simple test tool which can be made to give an immediate indication of alignment and congruency.

**Alignment Phantom**

**Phantom** Using coins or paper clips with a fluorescent screen involves a certain amount of guesswork, and potential radiation exposure. Here is a simple home-made alignment phantom constructed from strips of film screen 1 cm wide glued inside a 24x30 cm cassette. This gives a permanent image of the alignment which can be saved for future comparison.

**Evaluation** On film x-ray field should just cover the outside of the tapered markers as shown on this sheet. Each of the markers and gaps is 1 cm wide. If alignment is out by more than 1 cm inform service staff.