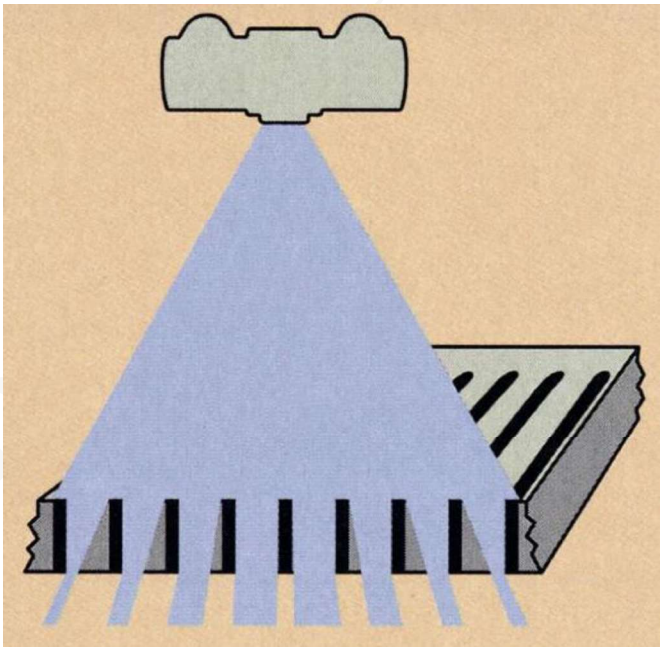
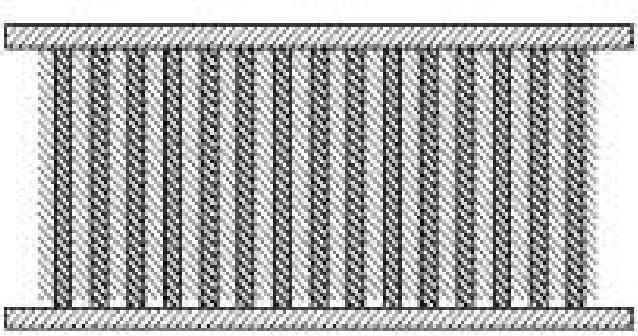
Grid Types

1. Parallel Grid

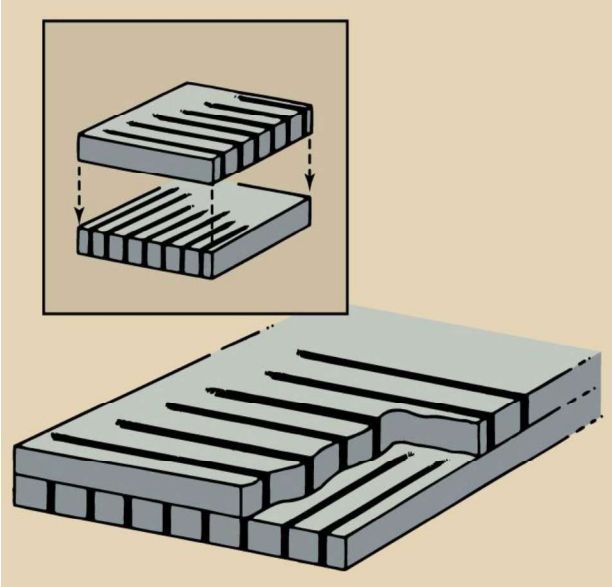
It is the simplest type, which all lead grid strips are parallel . This type is the easiest to manufacture , but it has some properties that clinically undesirable. The undesirable absorption of primary – beam x – rays in the grid is the grid cutoff, it happened especially with short SID's. Grid cutoff may be partial or complete and result in reduced optical density or total absence of film exposure. The term is derived from the fact that the useful x – rays are " cut off " from getting the film. Grid cutoff can occur with any type of grid if the grid is improperly positioned , but it is most common with linear grids. Best used with longer SID's b/c beam is straighter and more perpendicular at longer SID's.





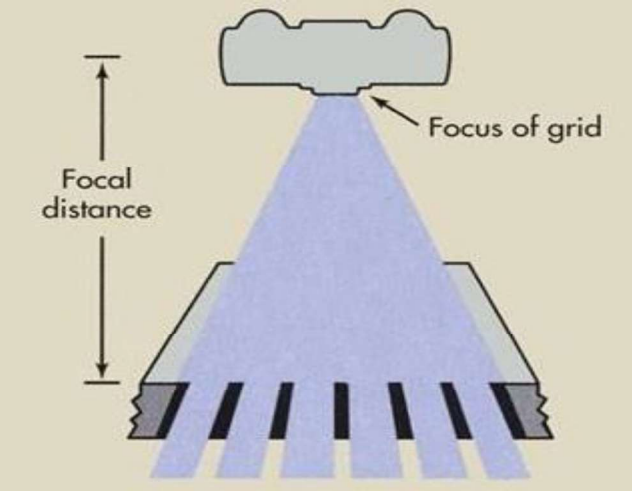
2. Crossed Grid

Crossed grids are usually constructed by placing two linear grids one over the other with the lead strips at right angles to each other. Crossed grids are much more efficient than linear grids in cleaning up scatter , a 6:1 crossed grid will clean up more scatter radiation than a 12:1 linear grid. The disadvantage of using crossed grid represent by positioning the grid is critical ; the central axis (central ray) of the x- ray beam must coincide with center of the grid, grid cut – off will occur. **Crossed Grid Have twice the grid ratio as linear grids.**



3. Focused Grid

Lead strips are tilted/aligned progressively as they move away from center to correspond with the divergence of the X-ray beam. **Designed to minimize grid cutoff**. Each focused grid must be identified with the appropriate SID.



The arrows lines drawn through each of these strips converge at a point somewhere above the grid; this point is known as the grid focus. This is where the X-ray tube should be located for perfect alignment of the primary ray with each of the strips.Every focused grid will be marked with its intended focal distance. If radiographs are made at distances other than those intended, grid cutoff will occur.

4. Moving Grids

All stationary grids will give you grid lines on your radiograph. Thinner Pb strips will give you less noticeable lines. However, thinner strips have less Pb content, and not "cleaning up" as well. Grid Lines are made when primary x-rays are absorbed in the grid strips. The grid is placed in a holding mechanism that begins moving at the x-ray exposure and continues moving after the exposure ends. **Focused grids are usually used as moving grids.**

There are three basic types of moving grid mechanism:

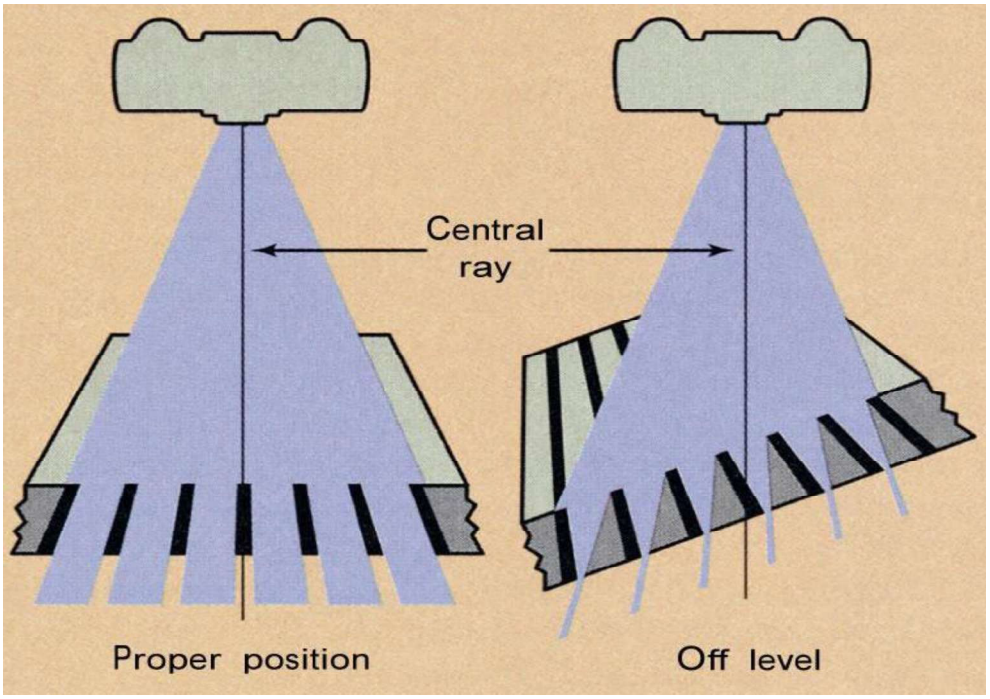
➥ *single – stroke grid:* The single – stroke grid mechanism causes the grid to move continuously across the film while the x – ray exposure is being made, usually it is spring loaded which designed for the shortest possible exposure times because long exposure times are accommodated by damping the mechanism so that it moves more slowly. The total grid movement is usually about 2 to 3 cm.

➥ Reciprocating =moves several times about 2cm back and forth during the exposure.
➥ Oscillating = A powerful electromagnet pulls the grid to one side and release it at the beginning of the exposure. thereafter the grid oscillates in circular fashion around the grid frame. The main difference between reciprocating & oscillating grid is their pattern of motion, the motion of the reciprocating grid is to and fro, whereas that of an oscillating grid is circular.

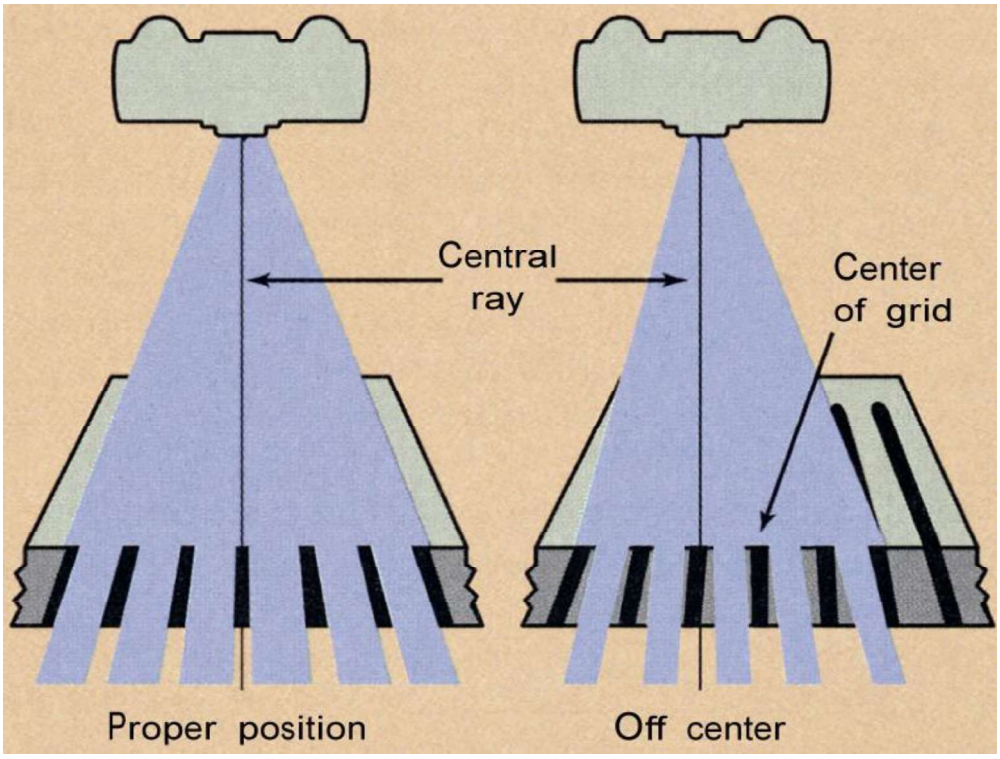
Grid Problems

1. The biggest problem with grids is misalignment**, especially with moving grids.**

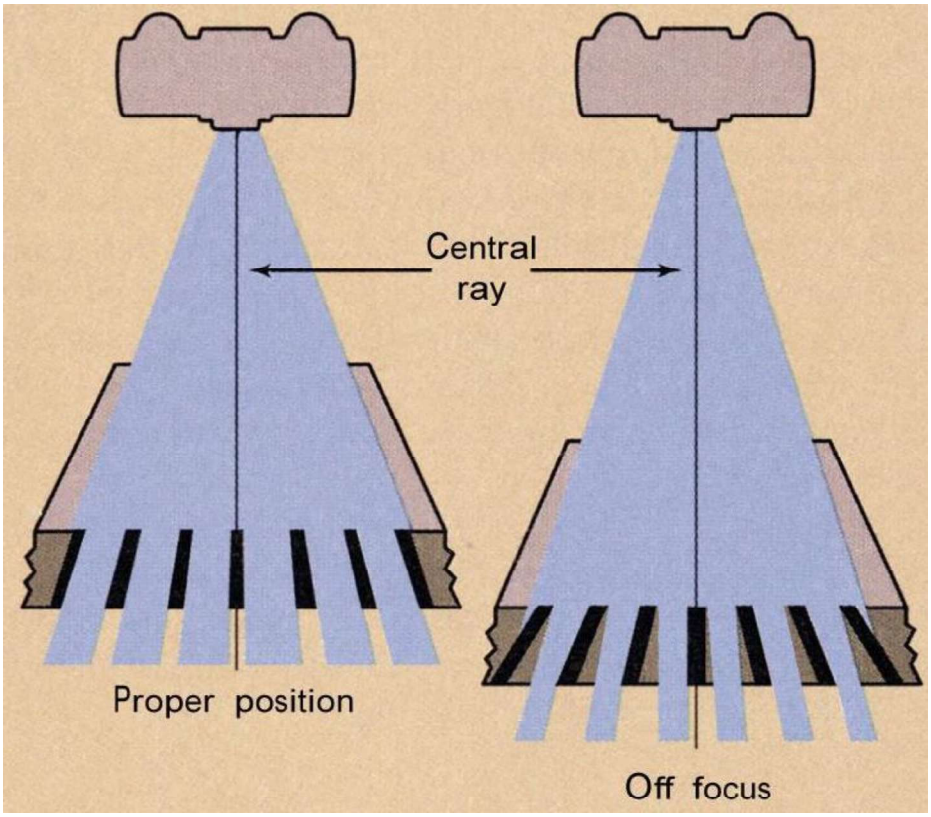
2. Off Level



3. Off Center A problem with focused & crossed grids.



4. Off Focus (wrong SID)



5. Upside-Down . A problem with focused & crossed grids