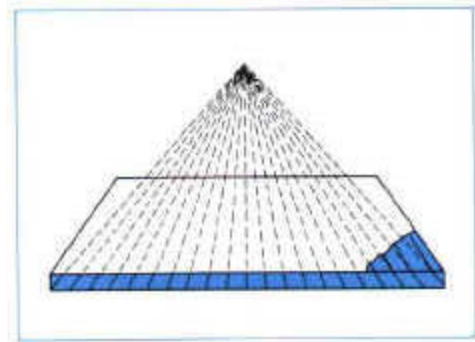


GRID LINES, RATIO, FOCAL DISTANCE

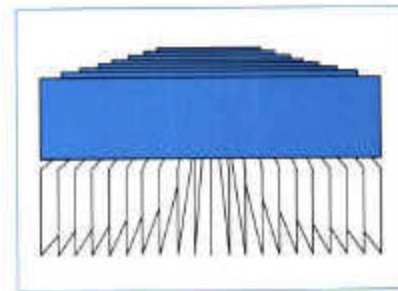
Three types of lead strip positioning:

FOCUSED: a focused grid is one in which the lead strips are tilted progressively as they move away from center. Lines through each of these strips would converge at a point known as the grid focus.



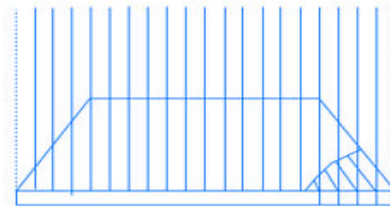
Linear Focused

CRISS-CROSS GRID: a criss-cross grid has two grids sandwiched together with the result that the strips are usually both parallel to and at right angles to the long dimension of the grid.



Criss-Cross

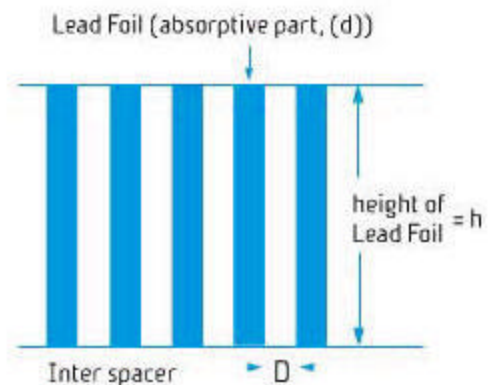
PARALLEL: in the use of a parallel grid, no matter where the tube is located, there is never a condition under which all of the strips will be aligned with the tube, since they are all vertical. Only the strips directly under the x-ray tube can be in true alignment with the primary rays. It is not recommended to use a parallel grid at any distance less than 56".



GRID RATIOS:

GRID RATIO: The ratio of a grid is defined as the relation of the height of the lead strips to the distance between them. The higher the ratio of a grid the more scattered radiation is absorbed. As grid ratio increases, the necessity of having the focused grid exactly centered and perfectly level under the x-ray tube becomes more and more important. Also becomes more necessary to use the grid at its focal distance from the tube, instead of being able to use it through a range of distances.

RATIOS AVAILABLE: 5:1, 6:1, 8:1, 10:1 & 12:1 (special order 14:1 also available)



GRID FOCAL RANGE:

FOCAL RANGE: MDM x-ray grids are available in a variable range of focal distance. With the lower ratio grids the focal range is considerable wider, with the higher ratio grid it is considerably narrower.

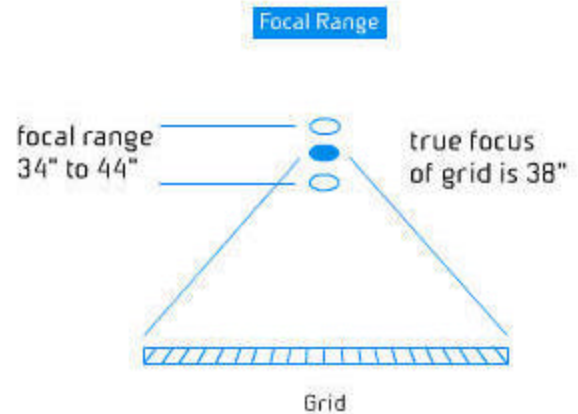
Focal distance available:

Small: 26-32"

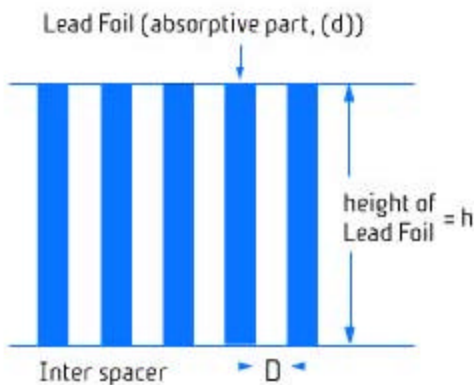
Medium: 36-40" and 34-44"

Long: 40-72", 48-72" and 60-72"

Also available in PARALLEL or "unfocussed grid" from 56" to infinity.



Ratios: Available from 5:1 to 15:1



$$\text{Density : } N = \frac{1}{D + d}$$

$$\text{Grid ratio : } r = \frac{h}{D}$$

Density: Available in 6 types

60 lines / inch (23 lines / cm)

72 lines / inch (28 lines / cm)

85 lines / inch (34 lines / cm)

103 lines / inch (40 lines / cm)

130 lines / inch (51 lines / cm)

150 lines / inch (60 lines / cm)

| Grid Composition Part | Density | | Inter spacer | | X-Ray absorbing part | |
|--|------------------|---------------|------------------|---------------|----------------------|---------------|
| Thickness of Lead Strip and Thickness of Aluminum Inter spacer | 60LPI (23 L/cm) | | 0.35m/m Aluminum | | 0.060m/m Lead | |
| | 70LPI (28 L/cm) | | 0.30m/m Aluminum | | 0.055m/m Lead | |
| | 85LPI (34 L/cm) | | 0.25m/m Aluminum | | 0.050m/m Lead | |
| | 103LPI (40 L/cm) | | 0.20m/m Aluminum | | 0.050m/m Lead | |
| | 150LPI 960 L/cm) | | 0.12m/m Aluminum | | 0.050m/m Lead | |
| Thickness w/o Cover \ Ratio | 5:1 | 6:1 | 8:1 | 10:1 | 12:1 | 15:1 |
| 60LPI (23 L/cm) | 2.15mm (1.75) | 2.50mm (2.10) | 3.20mm (2.80) | 3.90mm (3.50) | | |
| 70LPI (28 L/cm) | 1.90mm (1.50) | 2.20mm (1.80) | 2.80mm (2.40) | 3.40mm (3.00) | 4.00mm (3.60) | |
| 85LPI (34 L/cm) | 1.65mm (1.25) | 1.90mm (1.50) | 2.40mm (2.00) | 2.90mm (2.50) | 3.40mm (3.00) | 3.90mm (3.50) |
| 103LPI (40 L/cm) | | 1.60mm (1.20) | 2.00mm (1.60) | 2.40mm (2.00) | 2.80mm (2.40) | 3.20mm (2.80) |
| 150LPI (60 L/cm) | | | 1.26mm (0.96) | 1.50mm (1.20) | 1.74mm (1.44) | 2.10mm (1.80) |

| Type | Grid Density | Ratio | Focal Range (F1 to F2) of standard focal distance (for) by IEC standards for a grid 388mmx464mm in size | | | |
|-------------------------------------|---------------------------------|--|---|------------|------------|------------|
| Focused | 60 lines/cm (152 lines/inch) | 8:1 | any distance available over 65cm | F1-F2 (cm) | F1-F2 (cm) | F1-F2 (cm) |
| | | 10:1 | | 70-100 | 80-130 | 110-200 |
| | | 12:1 | | 70-90 | 80-120 | 120-200 |
| | | 15:1 | | 70-90 | 90-120 | 120-200 |
| | 40 lines/cm (103 lines/inch) | 6:1 | any distance available over 65cm | 70-81 | 90-101 | 147-153 |
| | | 8:1 | | 65-100 | 75-150 | 100-200 |
| | | 10:1 | | 70-100 | 80-130 | 110-200 |
| | | 12:1 | | 70-90 | 90-120 | 120-200 |
| | | 15:1 | | 70-90 | 90-120 | 120-200 |
| 34 lines/cm (85 lines/inch) | 5:1 | any distance available over 65cm | 70-81 | 90-101 | 147-153 | |
| | 6:1 | | 60-120 | 70-170 | 100-200 | |
| | 8:1 | | 65-100 | 75-150 | 100-200 | |
| | 10:1 | | 70-100 | 80-130 | 110-200 | |
| | 12:1 | | 70-90 | 90-120 | 120-190 | |
| | 15:1 | | 70-90 | 90-120 | 120-200 | |
| Parallel | 40 lines/cm (103 lines/inch) | 6:1 | 165 to infinity | | | |
| | 34 lines/cm (85 lines/inch) | 5:1 6:1 | 150 to infinity 165 to infinity | | | |
| Crossed (Focused or Parallel) | 40 lines/cm (103 lines/inch) | 6:1 | refer to the above 5:1 or 6:1 ratio grid in focused or parallel section | | | |
| | 34 lines/cm (85 lines/inch) | 5:1 6:1 | | | | |