

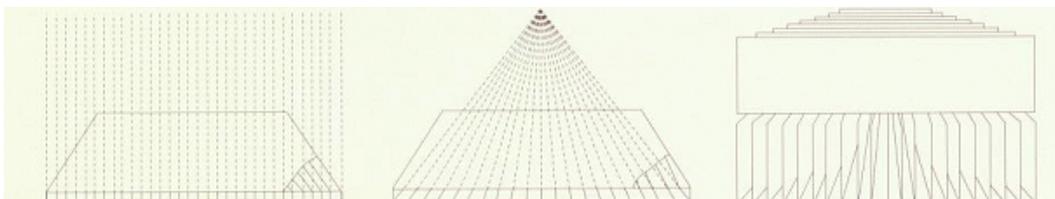
♣ Instruction Manual for X-ray Grid

1. SPECIFICATIONS OF SOYEE X-RAY GRIDS

Grid Composition Part	Density		Interspacer			X-Ray absorbing part	
	103 L/Inch(40L/cm)		0.20m/m Aluminum			0.05m/m Lead	
	150 L/Inch(60L/cm)		0.12m/m Aluminum			0.05m/m Lead	
	178 L/Inch(70L/cm)		0.10m/m Aluminum			0.05m/m Lead	
	200 L/Inch(80L/cm)		0.08m/m Aluminum			0.03m/m Lead	
Thickness of Line/Inch(Line/cm)	Ratio	6:1	8:1	10:1	12:1	15:1	
103 L/Inch(40L/cm)		1.6mm(1.2)	2.0mm(1.6)	2.4mm(2.0)	2.8mm(2.4)	3.2mm(2.8)	
150 L/Inch(60L/cm)		1.02mm(0.72)	1.26mm(0.96)	1.5mm(1.2)	1.74mm(1.44)	2.1mm(1.8)	
178 L/Inch(70L/cm)			1.04mm(0.96)	1.24mm(1.0)	1.44mm(1.20)	1.74mm(1.50)	
200 L/Inch(80L/cm)			0.94mm(0.64)	1.04mm(0.8)	1.20mm(0.96)	1.44mm(1.20)	

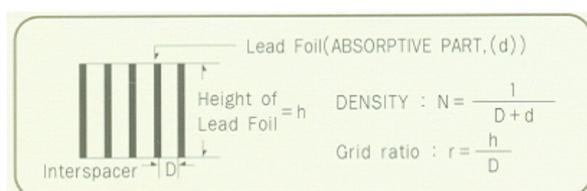
MARKING : SIZE, TUBE SIDE, CENTER LINE, RATIO, DENSITY FOCAL DISTANCE, SERIAL NO. ETC.

2. THREE TYPES OF LEAD STRIP POSITIONING



GRID IEC60627

3. RATIO : Available from 6:1 to 15:1 DENSITY : AVAILABLE IN FIVE TYPES



- 103 lines/inch (40Lines/cm)
- 150 lines/inch (60Lines/cm)
- 178 lines/inch (70Lines/cm)
- 200 lines/inch (80Lines/cm)

4. FOCAL RANGE

Short, Medium & Long from 26 inch to infinity

Focal Range		Ratio	Type
Inch	Metric(cm)		
28-48, 48-72	71-122, 122-183	5:1	Focused
48 to infinity	122-infinity	5:1	Parallel
28-48, 48-72	71-122, 122-183	6:1	Focused
48 to infinity	122-infinity	6:1	Parallel
26-32, 34-44, 48-72	66-81, 86-122, 122-183	8:1	Focused
36-40, 60-72	91-102, 152-183	10:1	Focused
36-40, 60-72	91-102, 152-183	12:1	Focused

Standard focal ranges available: Short(26°-32°), Medium (34°-44°), Long(40°-72°, 48°-72°, or 60°-72°) and infinity (parallel). Special focal ranges may be accommodated per your specifications.



In case of 8:1 ratio grid has been made with a true focus of 38", it can be used satisfactorily from 34" to 44". With lower ratio grids focal range is considerably wider, with higher ratio grids it is considerably narrower. In case of 12:1 ratio grid it would have a range of only 36" to 40".

* maximum deviation of grid $\triangle 5$

5. PARALLEL GRID

Parallel grids are used for operational research and traumatology since exact centering is impossible in this case. The scattered radiation absorbing strips are vertical and parallel to the grid surface. The strips, generally, run parallel to the long dimension of the grid. In order to get a vivid radiograph, focal distance of parallel grids must be 150cm–infinity since the scattered radiation absorbing strips are not exactly parallel to the diverging radiation.

6. FOCUSED GRID

Type	Grid Density	Ratio	Focal Distance (fo)	Focal Range (f1 to f2) of standard focal distance (fo) By IEC standards for a grid		
				short (fo=80cm)	medium (fo=100cm)	long (fo=150cm)
Focused	40 lines/cm (103 lines/inch)	6:1	any distances available over 65cm	65 to 100	75 to 150	100 to 200
		8:1		70 to 100	80 to 130	110 to 200
		10:1		70 to 90	80 to 120	120 to 200
		12:1		70 to 90	90 to 120	120 to 200
		15:1		79 to 81	99 to 101	147 to 153
	60 lines/cm (152 lines/inch)	6:1	any distances available over 65cm	65 to 100	75 to 150	100 to 200
		8:1		70 to 100	80 to 130	110 to 200
		10:1		70 to 90	90 to 120	120 to 200
		12:1		70 to 90	90 to 120	120 to 200
		15:1		79 to 81	99 to 101	147 to 153
	70 lines/cm (178 lines/inch)	8:1	any distances available over 70cm	70 to 100	80 to 130	110 to 200
		10:1		70 to 90	90 to 120	120 to 190
		12:1		70 to 90	90 to 120	120 to 200
		15:1		75 to 90	90 to 110	130 to 200
	80 lines/cm (200 lines/inch)	8:1	any distances available over 70-cm	70 to 100	80 to 130	110 to 200
		10:1		70 to 90	90 to 120	120 to 190
12:1		70 to 90		90 to 120	120 to 200	
15:1		75 to 90		90 to 110	130 to 200	

Parallel	40 lines/cm (103 lines/inch)	6:1	165 to infinity
Crossed (Focused or Parallel)	40 lines/cm (103 lines/inch)	6:1	refer to the above 6:1 ratio grid in focused or parallel section.

7. STANDARD SIZE OF SOYEE X-RAY GRIDS

GRIDS			REMARKS
13 X 18cm		8 x 10"	*General grid sizes are Film sizes. Overall dimensions are 2.54cm(1inch) larger than film sizes in each direction except standard bucky grids size 17-1/4 x 18-7/8". *Any size of grids is available upon request in both inch and metric sizes.
18 x 24cm		10 x 12"	
24 x 30cm		11 x 14"	
30 x 40cm	Cir. 25cm	14 x 14"	
35 x 35cm	Cir. 24.2cm	14 x 17"	
35 x 43cm	Cir. 22.8cm	17 x 17"	
44 x 46cm	Cir. 19.4cm	17-1/4 x 18-7/8"	
44 x 48cm		18 x 18"	
20 x 80cm		14 x 36"	
30 x 90cm		14 x 51"	
35 x 91cm			
30 x 120cm			

8. SELECTION OF HIGH PRECISION MATERIALS

To obtain the most effective X-Ray transmission and absorption, as well as grid density uniformity and precise geometric arrangement for strip focussing, **soyee** employs the finest precision materials, such as aluminum strips with a purity of 99.99% and a thickness of $\pm 0.02\text{mm}$, and lead strips with a purity of 99.85% and a thickness tolerance of $\pm 0.001\text{mm}$.

9. DURABILITY & INSPECTION

Each Grid strip is laminated and baked after the gluing procedure. This ensures absolute rigidity between the strips, as well as heat and moisture resistance, and completely prevents warping and cracking over the course of

time. Each grids is subjected to radiographic testing prior to shipment, and only those Grids which have passed the test for perfect strip alignment are delivered to our customers.

The test film supplied with all our Grids is your assurance of quality.

10. COMPONENTS

Lead foil : to be used in order to absorb the scattered radiation.

Interspacer : material between the Lead foils, which absorbs the X-ray less.

Aluminum is used as an interspacer which makes easy to supply & demand and to manufacture the products.

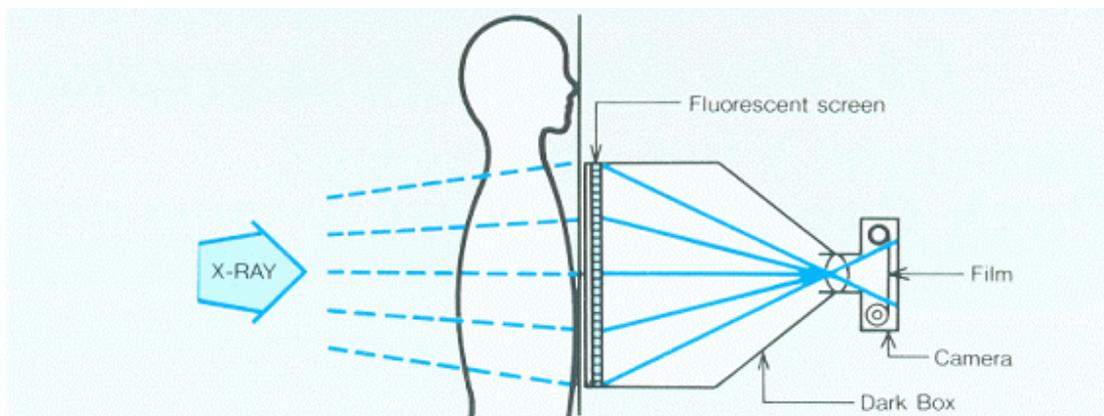
Aluminum (Al), Paper (Pa), Wood (Wo), Polyester (P1),
Carbon Fiber-Reinforced Plastics (Cfrp), etc. are in use.

Mark on the Grid

- a) Item Name
- b) Manufacturer
- c) Manufacturer's license Nr. (In case if domestic market)
- d) dimension, density, ratio, center line, focal distance, interspaced material (code), observing X-ray

11. HOW TO USE

It should be behind of the subject, fitted in the X-ray machine.



12. CAUTION IN USE

- . When taking X-ray, the operator can get a good image at optimal F.D. moving the tube up and down.
- . The operator should be careful not to drop the grid, when move it.
- . Should be operated this grid by educated operator only.
- . Storing condition : 40°C ~ -25°C
- . Operating condition : normal room temperature
- . Please pay attention to the sudden injury to the patient or operator by dropping this item when in use

due to its heavy weight.

Ambient temperature range

-operation : 5~40°C

-storing & transport : -25 ~40°C

Relative Humidity range

-operation : 20~80%

-storage & transport : 5~90%

13. TECHNICAL GUIDE

KV	filtration mm Al Equivalent
60-75	2
100-125	4

14. GRID PHOTO



15. REMARKS

Unless somebody gives physical damage on it, it never be transformed and therefore, this product can be used 12 months as consumable. It should be kept away from the external physical power. When it is fitted in an X-ray machine, it may be safe unless somebody change it at his discretion.

<p>Manufacturer SOYEE PRODUCT INC. 1909-2 KWTC 159-1 Samsungdong, Kangnamku, Seoul, Korea Tel : 82 2 551 5631 Fax : 82 2 551 5636 E-mail : shk@soyee.co.kr</p>	<table border="1"><tr><td>EC</td><td>REP</td></tr></table> <p>PHYSIA GMBH POSTFACH/POB 14 55/ D-63234 NEU-ISENBURG HANS BOCKLER-STR.11/ D-63263 NEU-ISENBURG GERMANY Tel : 49 6102 79770 Fax : 49 6102 797788 E-mail : info@physia.de</p>	EC	REP
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