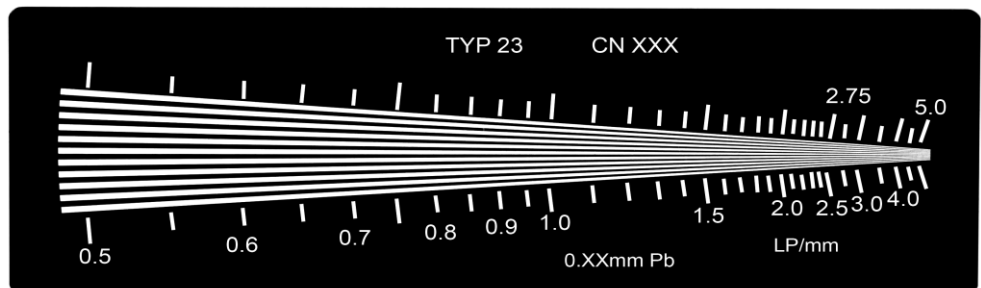
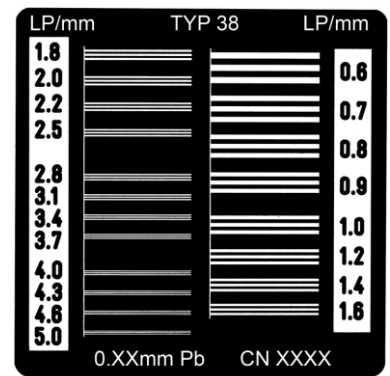
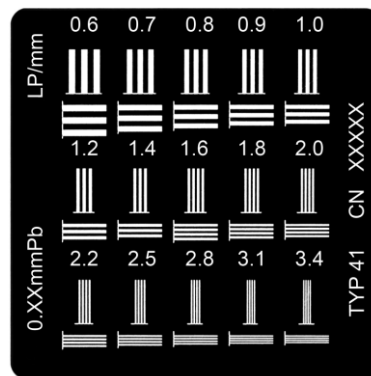
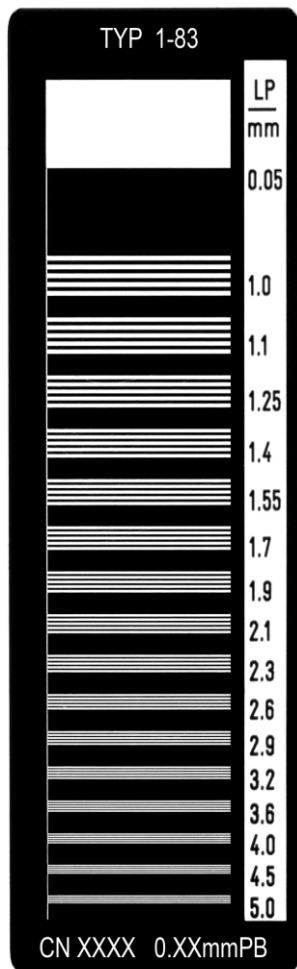


X-RAY TEST PATTERNS

ORION FRANCE
www.orion-france.com

user manual



Resolution X-ray Test Patterns

DESCRIPTION

These x-ray test patterns are used for spatial resolution measurements.

The procedure is very quick, simple and accurate.

The test patterns are used to evaluate film screen systems and magnification techniques.

The patterns consist of various lead thicknesses.

Each test pattern is enclosed in plastic.

The resolution range for each pattern is different.

The range of line pairs per mm is shown on each pattern for easy identification.

INSTRUCTIONS FOR USE

Film / screen resolution limits

1. Place the test plate on top of a test film. Do not use a grid.

2. Use a 40" focus - film distance and 50 - 60 kVp. Centre the tube over the test plate. Adjust the mAs for a gross optical density of about 1.5 on a portion of the film not covered by the test plate. (These factors give minimum geometric effects and sufficient contrast to ensure a reliable test).

3. Determine the limiting resolution by inspecting the finished radiograph with a 5 - 10 power magnifying glass. This is achieved by looking for the last bar section in which a clear distinction between line and space can be observed. Read the number corresponding to this line pair section. This represents the line pair resolution for the system.

4. Additional testing can be made by placing tissue equivalent material over the test pattern. This is carried out in order to evaluate how well the x-ray system can resolve through attenuation.

This procedure refers only to the use of test pattern type 41-010 when used with TO.FSJ (gen) to measure focal spot size in general radiography equipment.

Measure the limiting spatial resolution (LP/mm) of the test image and refer to the tables below for the corresponding focal spot size and tolerance levels.

| CONVERSION FROM LP/MM TO FOCAL SPOT SIZE | | | |
|--|-------|--------------|---------------------|
| Group | LP/mm | Diameter /mm | Focal Spot (actual) |
| 1 | 0.60 | 6.67 | 2.60 x 3.64 |
| 2 | 0.70 | 5.71 | 2.60 x 3.64 |
| 3 | 0.80 | 5.00 | 2.60 x 3.64 |
| 4 | 0.90 | 4.44 | 2.60 x 3.64 |
| 5 | 1.00 | 4.00 | 2.60 x 3.64 |
| 6 | 1.20 | 3.33 | 2.34 x 3.28 |
| 7 | 1.40 | 2.86 | 2.34 x 3.28 |
| 8 | 1.60 | 2.50 | 1.95 x 2.73 |
| 9 | 1.80 | 2.22 | 1.95 x 2.73 |
| 10 | 2.00 | 2.00 | 1.50 x 2.18 |
| 11 | 2.20 | 1.82 | 1.40 x 1.96 |
| 12 | 2.50 | 1.60 | 1.12 x 1.57 |
| 13 | 2.80 | 1.43 | 1.12 x 1.57 |
| 14 | 3.10 | 1.29 | 1.12 x 1.57 |
| 15 | 3.40 | 1.18 | 1.12 x 1.57 |

Table 1: Calculated focal spot diameters (Rao, G.U.V. (1971) 'A New Method to Determine the Focal Spot Size of X-Ray Tubes', Johns Hopkins University and Hospital, Baltimore, Maryland.)

| NOMINAL FOCAL SPOT SIZE (R=MUST BE RESOLVED) | | | | | | | |
|--|------|------|------|------|------|------|------|
| 2.00 | 1.80 | 1.50 | 1.30 | 1.00 | 0.80 | 0.70 | 0.60 |
| R | R | R | R | R | R | R | R |
| R | R | R | R | R | R | R | R |
| R | R | R | R | R | R | R | R |
| R | R | R | R | R | R | R | R |
| R | R | R | R | R | R | R | R |
| | | R | R | R | R | R | R |
| | | | R | R | R | R | R |
| | | | | R | R | R | R |
| | | | | R | R | R | R |
| | | | | | R | R | R |
| | | | | | R | R | R |
| | | | | | | R | R |
| | | | | | | | R |
| | | | | | | | |

Table 2: Minimum resolved groups for a given nominal focal spot size.



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