

USER MANUAL

RaySafe Pro-Stand



ABOUT THE PRO-STAND

This adjustable stand, is designed to make focal spot measurement procedures easy to perform, as well as ensuring accurate results. It can be used with our pinholes and slit camera (not included). It can also be used for manual HVL measurements. The RaySafe Pro-stand is available in Basic and Full verions.

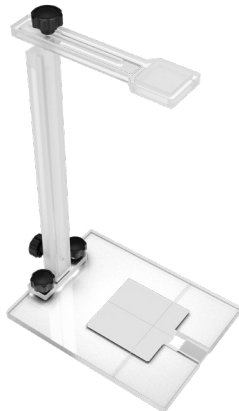


Figure 1. RaySafe Pro-Stand Basic Version



Figure 2. RaySafe Pro-Stand Full Version

SPECIFICATIONS (CAN BE MODIFIED TO CUSTOMER REQUIREMENTS)

Height	Adjustable height from 350-600 mm (11.8-23.6 in.), providing a wide magnification range
Positioning	Adjustable horizontal position. Possibility to tilt with an angle of 10 degrees (Full version) for easier positioning on mammography systems. The Full version also includes a position tool for easy setup.
Standards	Complies with the following standards: <ul style="list-style-type: none">• IEC 60336:2005• IEC 61223-3-1, 2, 4:1999

TEST PROCEDURE FOR STAND ALIGNMENT

This is an example. Be sure to comply with your local regulations.

1. Remove objects between the focal spot and the table, e.g., compression device, diaphragms, cones, etc.
2. Make sure the X-ray machine film or digital detector is in place.
3. Place the stand on the X-ray machine imaging table or other surface enabling it to be positioned perpendicular to the beam axis.
4. Place the 2-piece alignment device at the top and bottom of the Pro-Stand (Figure 3).

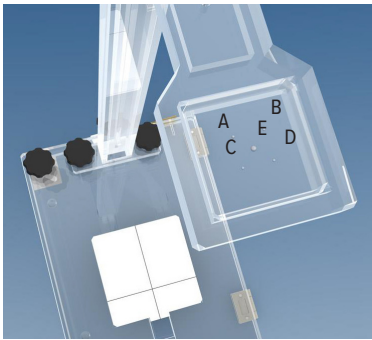


Figure 3. Pro-stand alignment

5. Rough alignment can be carried out using the collimator light with the room lights off. Make sure the shadow of the middle bead (E) is in the centre of the cross at the foot of the stand. For mammography machines, please adjust the angle by tilting the stand using the side screw.
6. Adjust the stand height (y) so the minimum enlargement in the table below is achieved (use Equation 1): From geometry rules we get $(x+y)/x = L_2/L_1$, which means $1+y/x = (L_2/L_1)$, $y/x = L_2/L_1 - 1$. This is the same as the enlargement factor E which consequently can be calculated in two ways:

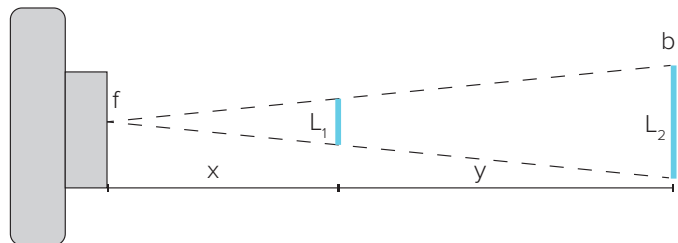
Equation 1: $E = y/x$, and

Equation 2: $E = (L_2/L_1) - 1$

y=Object to detector distance, x=Object to focal spot distance

L1=Object length, L2=Measured object length in image

Minimum Enlargement	
Nominal Focal Spot Size (F, mm)	Enlargement
F<0.4	>3
0.4<F<2.5	>2
F>2.5	>1



7. Make sure the A-B, C-D, A-C, or B-D beads are aligned/parallel with the X-ray tube anode-cathode axis.

8. Make an exposure choosing the appropriate X-ray machine parameters to achieve the best contrast. E.g. 28 kVp, 50 mA, and 2 s for mammographic units, and 75 kVp, 50 mA and 2 s for R/F units.
9. If necessary adjust the stand to assure the middle bead (E) still is in the centre of the cross.
10. To confirm the stand height is correct, use Equation 2 on the previous page to calculate the enlargement factor (E). The physical distance between the outside beads in the alignment device is 10 mm. By measuring the corresponding distance in the image (A-B, C-D, A-C, or B-D – or an average of the four), the enlargement factor can be calculated as $E = (L_2/L_1) - 1 = (L_2/10) - 1$. The calculated value should fulfill requirements in the table on the previous page. If not, adjust the height according to Equation 1, and repeat the procedure.

WARRANTY

Unfors RaySafe warrants to the original product purchaser that each product it manufactures will be free from defects in material and workmanship under normal use and service. The warranty period is 12 months and begins on the date of delivery.