

INSPECTION SLIP

for photogrammetric lenses

RMK A 21/23 Nr. 115 240

The lens Toparon maximum aperture $f/ 5,6$

nominal focal length 210 mm, serial no. 116 225

has been inspected in accordance with the existing regulations. The optical performance and the external construction are in accordance with our terms of delivery.

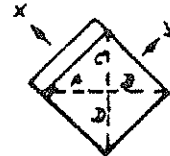
I. Focal Length

Calibrated focal length = 208,04

The probable errors of these determinations do not exceed $\pm 0,02$ mm.

II. Distortion

in \pm semi-diagonals referring to the point of autocollimation symmetry



mm	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
I	A	0	0	-2	-3	-3	-4	-6	-5	-5	-4	-3	-4	+2	-1	+1	-14
	B	0	-5	-4	-5	-7	-6	-8	-7	-7	-5	-2	-4	+2	0	0	-14
II	C	0	0	-1	-1	-3	-3	-5	-4	-6	-4	-3	-4	+2	-1	+1	-16
	D	0	-5	-6	-7	-7	-9	-11	-9	-6	-4	-3	-3	0	-1	-2	-14
Average	0	-3	-3	-4	-5	-6	-7	-6	-6	-4	-3	-4	+2	-1	0	-14	

The values of distortion base upon the calibrated focal length. They are determined for points separated by 10 mm from the axis for each of the four radii and given in microns. They indicate the displacement of the image from its distortion-free position. A positive value indicates a displacement away from the centre. Measurements were made at aperture $f/5,6$ on the goniometer by attaching the filter D (transmittance limit 550 nm) with an accuracy of $\pm 0,002$ mm.

III. Photographic Resolving Power

The photographic resolution was obtained in accordance with the recommendations of the International Society of Photogrammetry. The contrast of the 3 line test figures on dark background, as specified, was (in logarithmic scale) 1.6. The following emulsion was used as taking material:

Aviphot Pan 40 PE
with a speed of 21⁰ DIN. The developer used was
Perafin

The photographs were taken under the recommended standard illumination by using the filter B (transmittance limit 490 nm) in parallel light. The following values were obtained for the aperture ratio $f/5,6$ for radial and tangential image elements in lines/mm and reduced to the image plane. They refer to the given nominal focal length.

Image angle: $W =$ 0° 7° 14° 21° 28° 35° 42° 49° 56°

Resolution radial	46	52	51	49	46	38	-	-	-
Resolution tangential	52	46	44	40	40	35	-	-	-

IV. Principal Point of Autocollimation

The lines joining opposite pairs of fiducial marks intersect an angle of $90^{\circ} + 30$ seconds. Their intersection indicates the location of the principal point of autocollimation with an accuracy of $\pm 0,02$ mm.

V. Fiducial mark separation

x = 226.01

y = 226.00

x lies in the flight line. The values have been determined with an accuracy of + 0.02 mm.

VI. Tangential Distortion

The maximum tangential distortion, i.e., the displacement of the central image from a straight line connecting corresponding image points at equal but opposite angular separations from the axis, does not exceed 10 microns.

VII. Filters

The two surfaces of the filters

K (clear) no. : 116 641

B (yellow) no. : 116 620

D (orange) no. : 116 630

are parallel to within 5 seconds of arc.

VIII. Magazine Platen

The platen mounted in Zeiss Magazine Type FK 24/120 no. : does not depart from a true plane by more than + 0.010 mm.

C A R L Z E I S S

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According to inspection slip
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