

CAMERA CALIBRATION CERTIFICATE

CAMERA TYPE : RC20
LENS TYPE : 21/4 NAGA-F
LENS NO. : 7171

Calibration date: 18.11.1998

SwissOptic AG, Heerbrugg

 **swissoptic**
SwissOptic AG
Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Schweiz


50187

RC20

21/4 NAGA-F

No. 7171

18.11.1998

Aperture: 4.0
Filter on goniometer: 450 NM
Filter on camera: --
Principal distance for focussing distance 900 m : 213.550 mm

Radial distortion (micrometers) referred to principal point of symmetry (PPS)
(Positive values denote image displacement away from center)

Radius mm	Half - Sides				Mean
	1	3	2	4	
10	0.0	-0.4	-0.3	-0.1	-0.2
20	-0.3	-1.4	-0.4	-0.7	-0.7
30	-0.3	-0.7	-0.1	-0.9	-0.5
40	0.5	0.5	0.3	0.3	0.4
50	0.7	0.3	0.3	0.6	0.4
60	-1.1	0.0	-0.4	-0.3	-0.4
70	-1.8	-1.0	-1.8	-0.9	-1.3
80	-2.6	-0.9	-2.1	-1.2	-1.7
90	-1.5	-1.5	-2.1	-1.8	-1.7
100	-2.1	-1.5	-1.8	-1.7	-1.7
110	-1.5	-1.9	-1.0	-1.6	-1.5
120	-0.3	-0.9	-1.1	-1.1	-0.8
130	0.9	0.3	0.7	1.0	0.7
140	2.0	2.3	2.2	2.2	2.1
148	3.5	3.2	3.6	2.9	3.3

Photographic resolution (line pairs per millimeter)

International 3-line test-chart, contrast (log) : 2.0

Aperture: 4.0
Filter: 450 NMN
Film: KODAK PANATOMIC X 2412
Developer: KODAK HC110

Angle (deg)	0	5	10	15	20	25	30	35
Radial:	75	94	93	91	50	34	33	43
Tangential:	75	83	82	63	74	62	50	45

AWAR (Area weighted average resolution) in lp/mm: 57



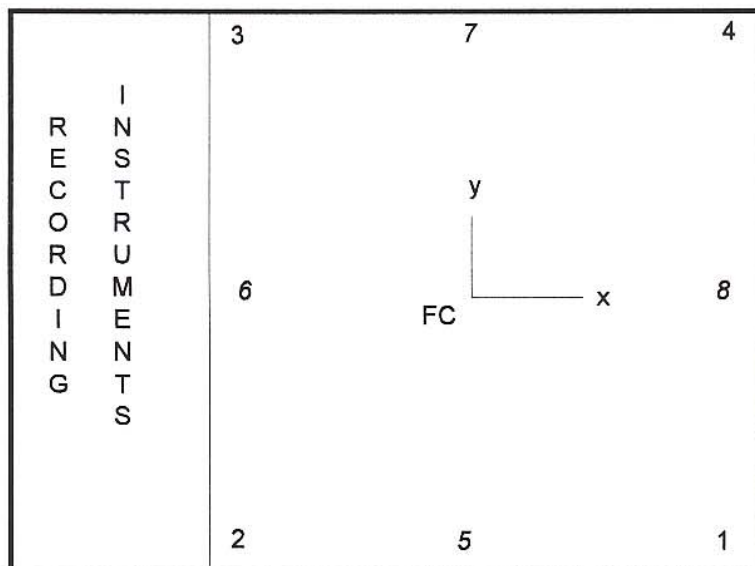
**Principal point of autocollimation (PPA) and
principal point of symmetry (PPS)**

referred to central cross (FC), see diagram

	x (mm)	y (mm)
PPA	-0.003	0.008
PPS	-0.001	0.007

Fiducial marks, referred to central cross (FC)

	x (mm)	y (mm)		x (mm)	y (mm)
1	106.002	-106.003	5	0.000	-109.997
2	-106.001	-106.000	6	-110.003	0.001
3	-106.002	106.003	7	0.001	110.001
4	106.002	106.002	8	110.003	0.004



as seen on focal plane frame



RC20

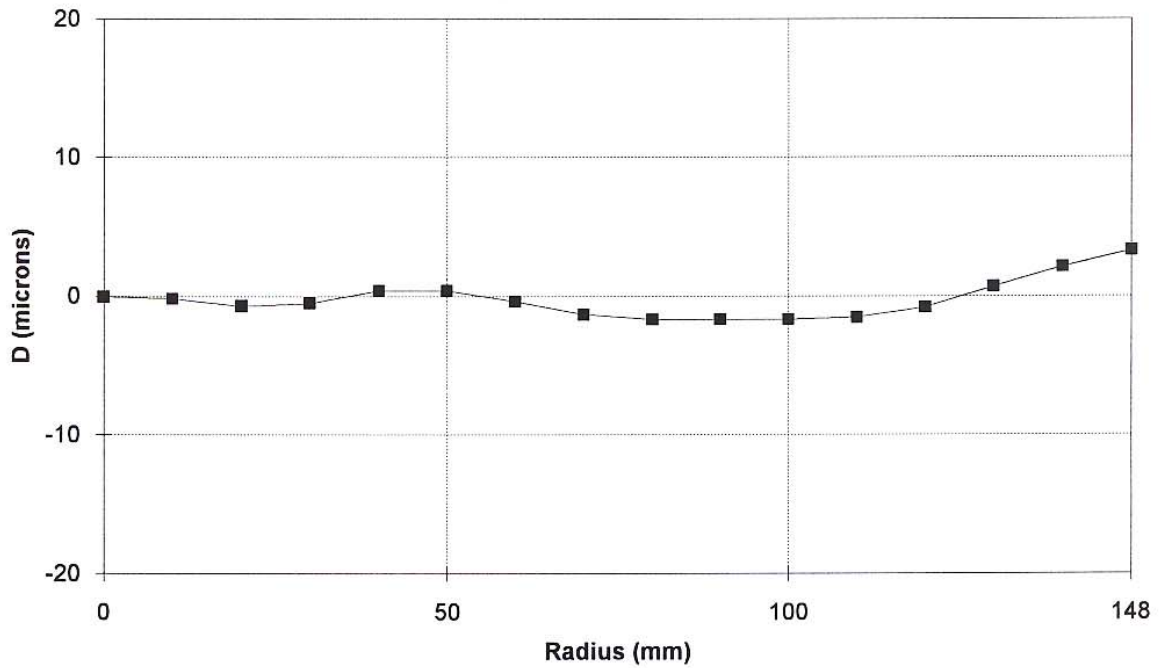
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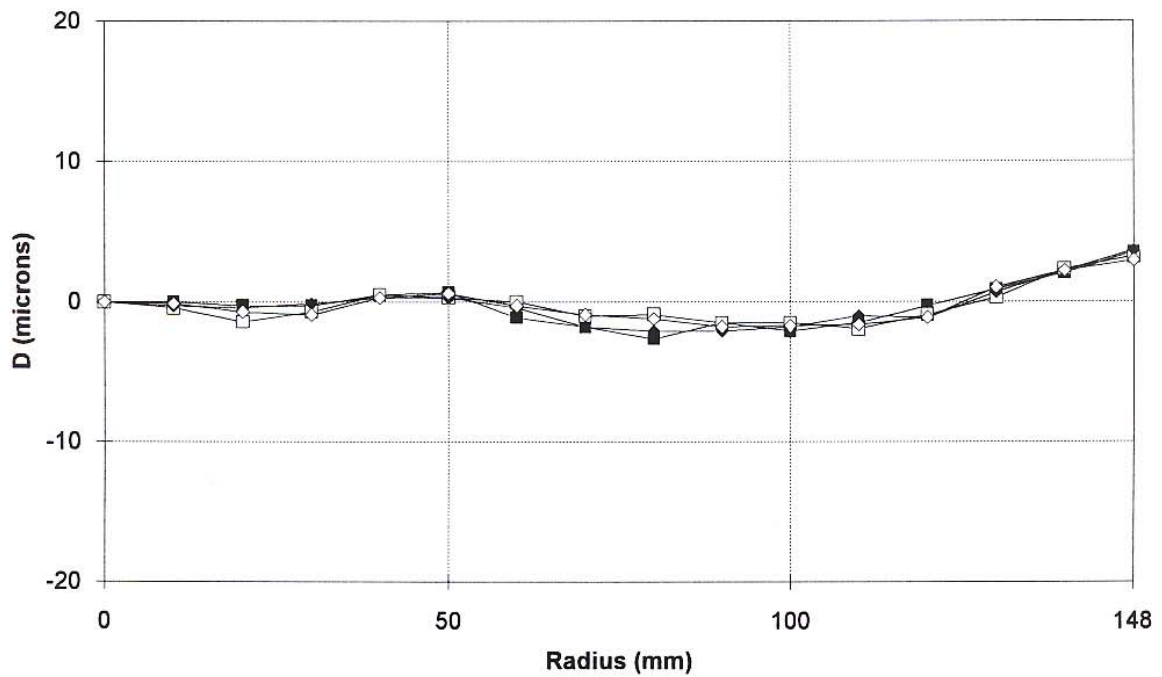
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Mean radial distortion



Radial distortion for semi-diagonals referred to PPS



—■— 1 —□— 3 —◆— 2 —◇— 4

FC187