

CAMERA CALIBRATION CERTIFICATE

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

Calibration date: 07.12.2005

LEICA AG, HEERBRUGG

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



Aperture: 4.0
 Filter on goniometer: VIS (400-700 NM)
 Filter on camera: --
 Principal distance for focussing distance 900 m : 213.55 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	0.5	-0.3	0.1	-0.1	0.0
20	0.5	-0.3	0.3	0.1	0.1
30	0.3	-0.2	0.5	-0.2	0.1
40	0.8	0.6	0.7	0.6	0.6
50	0.5	0.2	0.4	0.5	0.4
60	-0.2	-0.1	0.2	0.0	0.0
70	-0.4	-0.7	-0.9	-0.3	-0.5
80	-1.2	-0.7	-1.5	-0.6	-1.0
90	-0.6	-0.7	-2.1	-0.8	-1.0
100	-1.7	-0.9	-1.5	-1.0	-1.2
110	-1.8	-1.2	-1.8	-0.3	-1.2
120	-1.4	-1.1	0.2	-0.1	-0.6
130	-0.5	0.1	-0.5	0.0	-0.2
140	1.0	1.2	1.3	0.7	1.0
148	3.3	1.5	3.3	1.5	2.4

Photographic resolution (line pairs per millimeter)

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

Aperture: 4.0
 Filter: VIS (400-700 NM)
 Film: KODAKPANATOMIC X 2412
 Developer: KODAK HC110

Angle (deg)	0	5	10	15	20	25	30	35
Radial:	84	94	93	91	50	34	33	49
Tangential:	94	74	82	70	66	69	52	45

AWAR (Area weighted average resolution) in lp/mm: 58

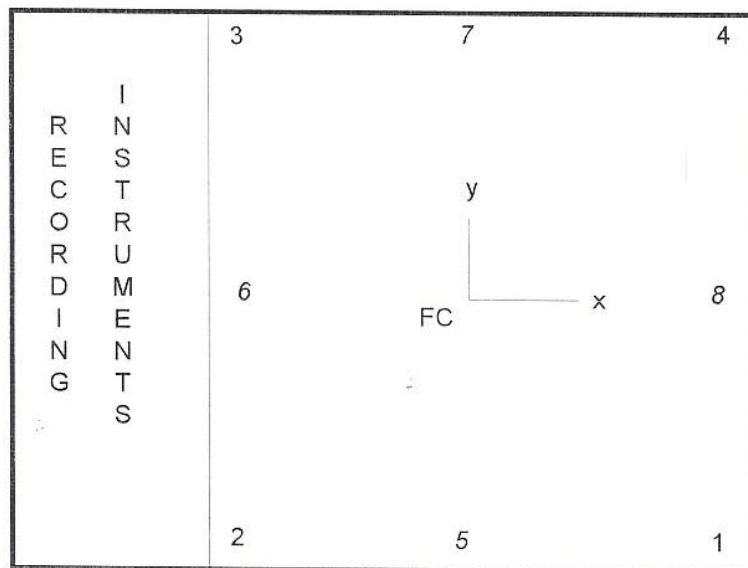


**Principal point of autocollimation (PPA) and
principal point of symmetry (PPS)**
referred to central cross (FC), see diagram

	x (mm)	y (mm)
PPA	-0.007	0.009
PPS	-0.004	0.008

Fiducial marks, referred to central cross (FC)

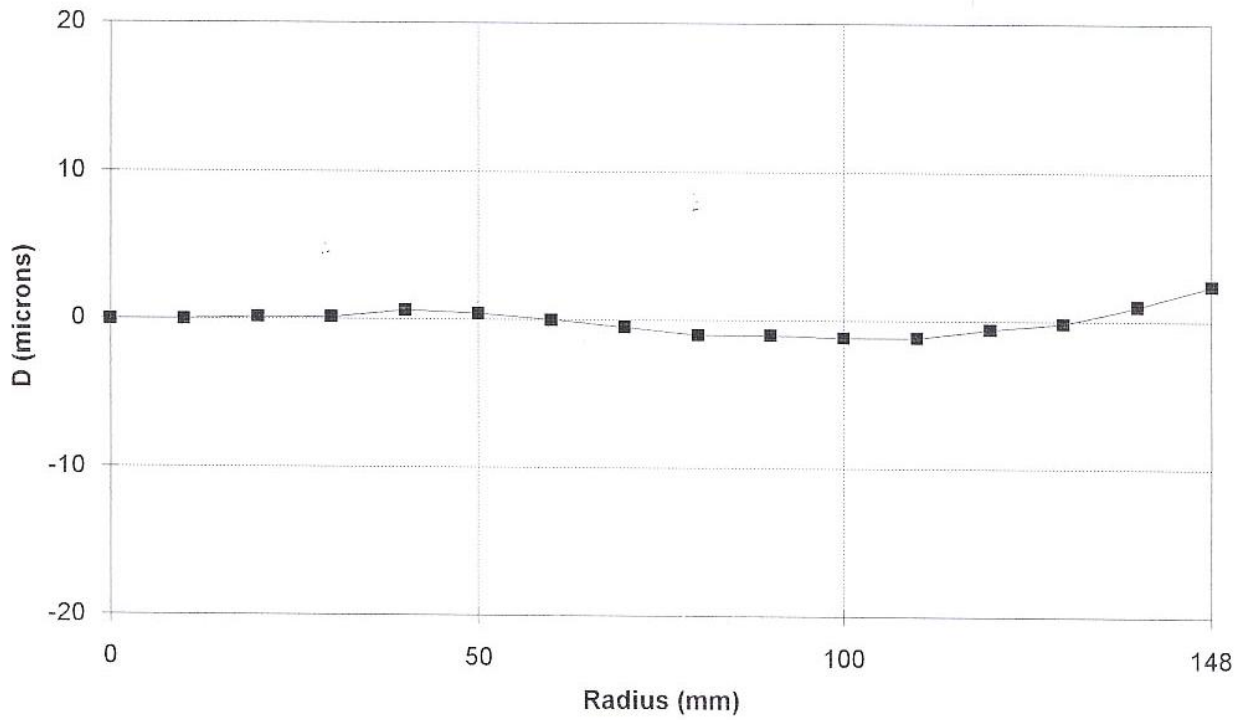
	x (mm)	y (mm)		x (mm)	y (mm)
1	106.001	-106.000	5	0.001	-109.998
2	-106.001	-105.998	6	-110.000	0.003
3	-106.004	106.003	7	-0.001	110.007
4	106.001	105.998	8	110.004	0.004



as seen on focal plane frame

Aperture: 4.0
Filter on goniometer: VIS (400-700 NM)
Filter on camera: --
Principal distance for focussing distance 900 m : 213.55 mm

Mean radial distortion



Radial distortion for semi-diagonals referred to PPS

