

CAMERA CALIBRATION CERTIFICATE

CAMERA TYPE : RC30
LENS TYPE : 15/4 UAG-S
LENS NO. : 13240

Calibration date: 28.04.1997

LEICA AG, HEERBRUGG

Leica

*Leica Heerbrugg Ltd
CH-9435 Heerbrugg*

*Calibration Department
Supervisor*

FC187

Aperture: 4.0
 Filter on goniometer: VIS (400 - 700 NM)
 Filter on camera: --
 C.F.L. : 152.63 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	-0.3	-1.0	-0.3	-0.6	-0.5
20	-0.5	-1.7	-0.6	-1.2	-1.0
30	-0.7	-2.2	-0.7	-2.2	-1.4
40	-0.7	-2.5	-0.8	-2.5	-1.6
50	-0.8	-3.2	-0.9	-2.8	-1.9
60	-1.5	-3.3	-0.4	-2.8	-2.0
70	-0.8	-3.1	-0.3	-2.0	-1.5
80	-1.0	-2.0	-0.1	-1.0	-1.0
90	0.3	-1.3	0.3	0.0	-0.1
100	0.2	-0.5	1.4	1.3	0.6
110	0.6	0.2	2.2	2.9	1.4
120	0.8	0.8	1.9	3.3	1.7
130	0.4	1.1	2.7	3.4	1.9
140	-1.6	-0.2	1.7	1.8	0.4
148	-3.0	-1.0	1.2	1.3	-0.3

Photographic resolution (line pairs per millimeter)

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

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

Angle (deg)	0	5	10	15	20	25	30	35	40	45
Radial:	117	117	115	113	123	134	128	86	80	83
Tangential:	117	130	101	109	103	96	99	79	69	52

AWAR (Area weighted average resolution) in lp/mm: 98

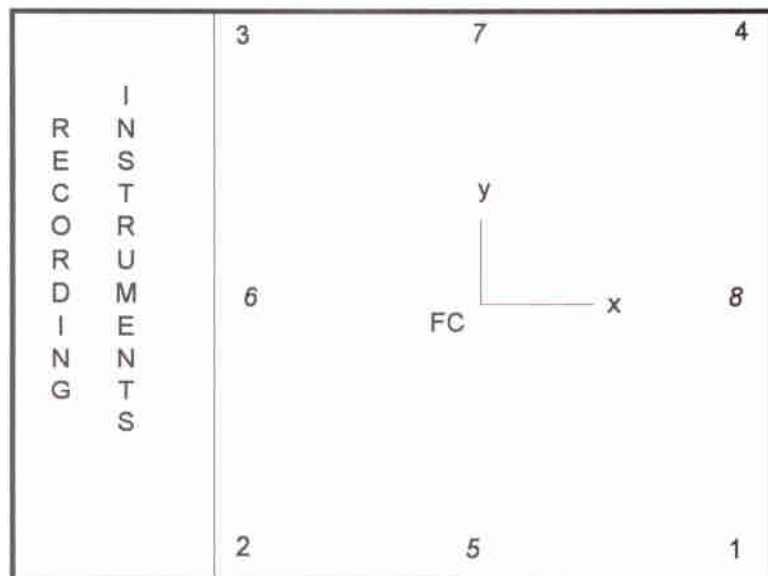


**Principal point of autocollimation (PPA) and
principal point of symmetry (PPS)**
referred to central cross (FC), see diagram

	x (mm)	y (mm)
PPA	-0.001	0.006
PPS	0.002	0.002

Fiducial marks, referred to central cross (FC)

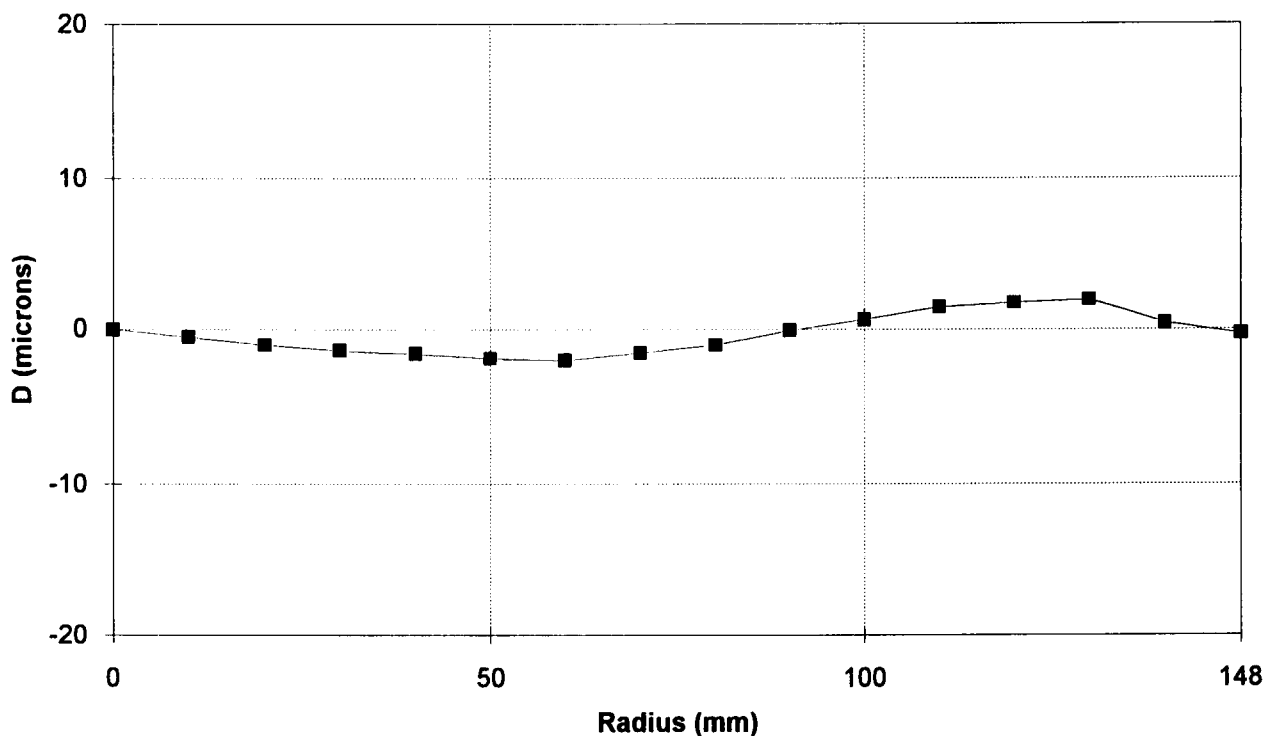
	x (mm)	y (mm)		x (mm)	y (mm)
1	106.000	-105.999	5	-0.002	-111.997
2	-106.002	-106.003	6	-112.003	0.000
3	-106.001	106.000	7	0.002	111.995
4	106.001	106.002	8	111.993	0.001



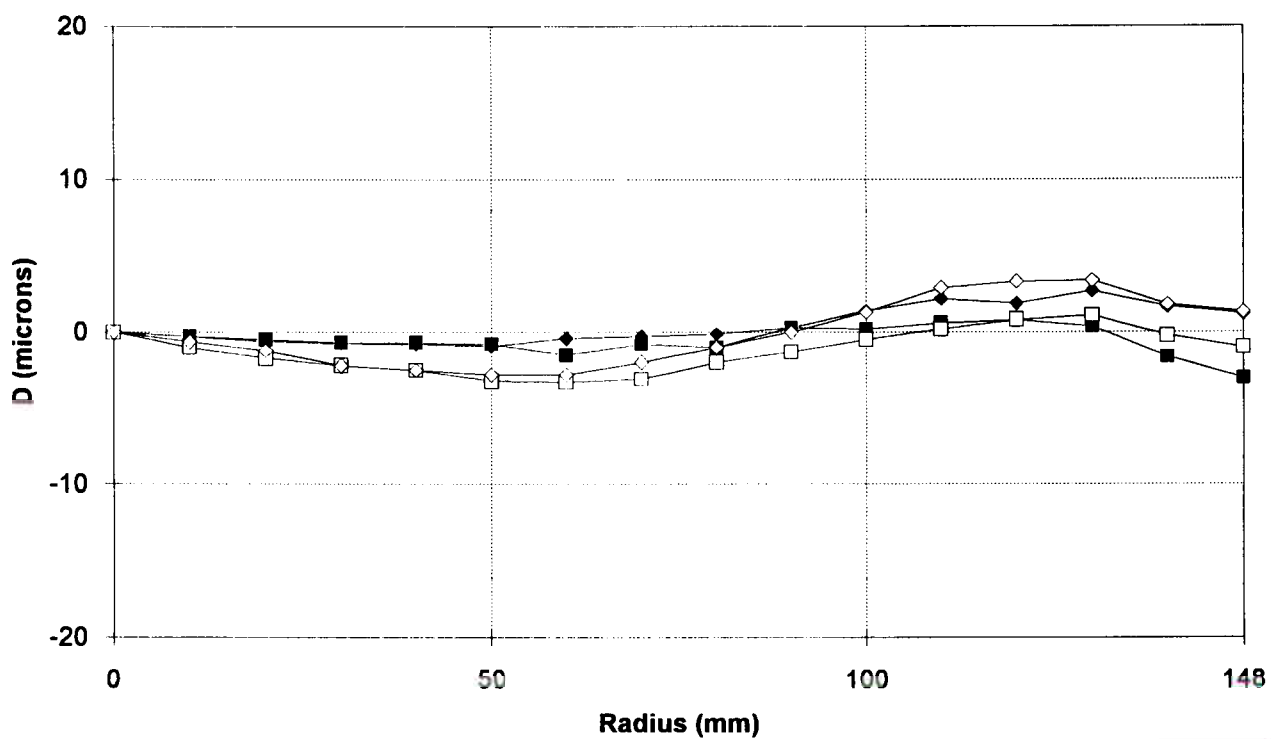
as seen on focal plane frame

Aperture: 4.0
Filter on goniometer: VIS (400 - 700 NM)
Filter on camera: --
C.F.L. : 152.63 mm

Mean radial distortion



Radial distortion for semi-diagonals referred to PPS



■ 1 □ 3 ◆ 2 ◇ 4

50/87