

# CAMERA CALIBRATION CERTIFICATE

CAMERA TYPE : RC20  
LENS TYPE : 30/4 NATA-F  
LENS NO. : 17027

Calibration date: 15.11.1993

LEICA AG, HEERBRUGG

*Leica*

*Leica Heerbrugg Ltd  
CH-9435 Heerbrugg*

*Calibration Department  
Supervisor*



Aperture: 4.0  
 Filter on goniometer: VIS (400 - 700 NM)  
 Filter on camera: --  
 Principal distance for focussing distance 850 m : 303.98 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	0.0	0.1	0.2	0.1
20	-0.1	-0.2	0.5	0.0	0.0
30	-0.1	-0.3	0.9	-0.3	0.0
40	-0.6	-0.5	0.2	-0.4	-0.3
50	-0.7	-0.9	0.0	-0.5	-0.5
60	-2.0	-1.2	0.0	-0.9	-1.0
70	-1.9	-2.0	-0.9	-1.5	-1.5
80	-2.6	-1.5	-1.2	-1.4	-1.6
90	-1.7	-1.6	-1.0	-1.2	-1.3
100	-2.2	-1.3	-0.4	-0.8	-1.1
110	-0.7	-0.6	0.7	0.5	0.0
120	0.6	0.4	1.0	1.4	0.8
130	1.1	0.8	1.9	2.3	1.5
140	1.1	1.3	1.8	2.3	1.6
148	0.5	-0.3	1.1	1.0	0.5

**Photographic resolution (line pairs per millimeter)**

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

Aperture: 4.0  
 Filter: 450 NM  
 Film: KODAK TECHNICAL PAN 2415  
 Developer: KODAK HC110

Angle (deg)	0	5	10	15	20	25
Radial:	67	67	66	46	50	48
Tangential:	67	67	58	49	53	55

AWAR (Area weighted average resolution) in lp/mm: 54

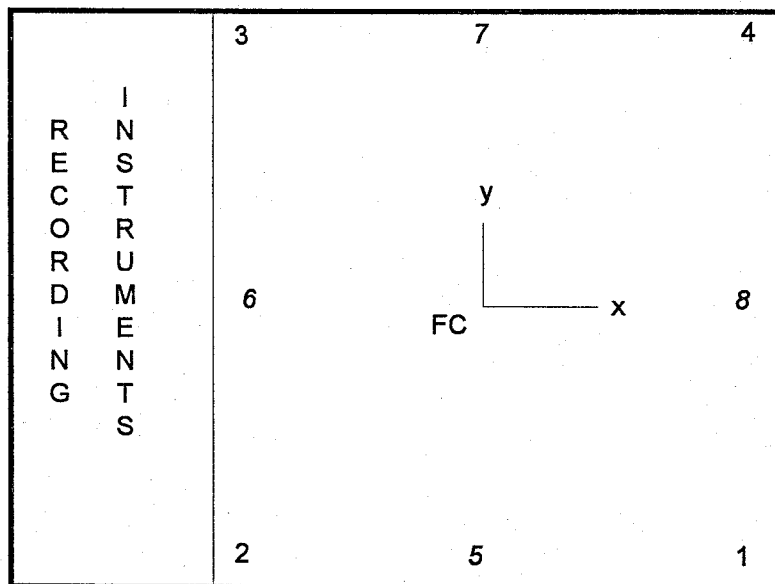


**Principal point of autocollimation (PPA) and  
principal point of symmetry (PPS)**  
referred to central cross (FC), see diagram

	x (mm)	y (mm)
PPA	-0.007	0.020
PPS	-0.014	0.000

**Fiducial marks, referred to central cross (FC)**

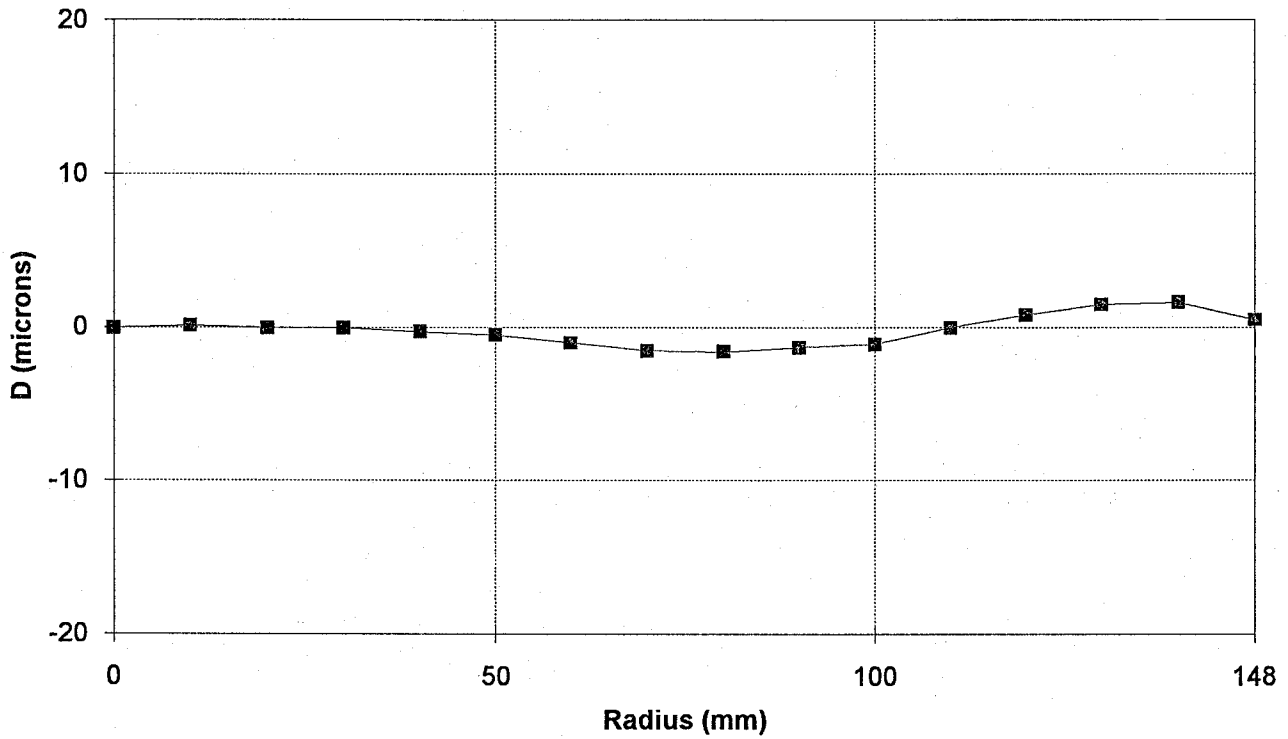
	x (mm)	y (mm)		x (mm)	y (mm)
1	105.996	-106.001	5	-0.002	-105.994
2	-105.999	-105.999	6	-109.994	-0.009
3	-105.998	106.003	7	-0.008	109.994
4	105.999	105.999	8	109.992	-0.004



as seen on focal plane frame

Aperture: 4.0  
Filter on goniometer: VIS (400 - 700 NM)  
Filter on camera: --  
Principal distance for focussing distance 850 m : 303.98 mm

### Mean radial distortion



### Radial distortion for semi-diagonals referred to PPS

