

# CAMERA CALIBRATION CERTIFICATE

CAMERA TYPE : RC 30  
LENS TYPE : 30/4 NAT-S  
LENS NO. : 17111

Calibration date: 08.12.1995

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 : 302.97 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	-0.6	0.2	0.2	0.0
20	0.1	-0.8	-0.2	-0.6	-0.3
30	0.3	-0.8	0.4	-0.8	-0.2
40	0.2	0.7	0.2	0.5	0.4
50	0.2	0.6	0.1	0.6	0.3
60	-0.2	1.0	0.7	0.7	0.5
70	1.0	0.4	1.0	0.8	0.8
80	1.2	0.8	1.7	1.2	1.2
90	2.1	0.5	1.9	1.4	1.4
100	0.9	0.4	1.9	1.4	1.1
110	-0.2	-0.2	0.6	0.9	0.2
120	-1.0	-1.2	-1.3	-0.6	-1.0
130	-2.1	-1.8	-1.7	-1.0	-1.6
140	-2.2	-1.5	-1.8	-1.6	-1.7
148	0.4	0.7	0.9	0.2	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 PANATOMIC X 2412  
 Developer: KODAK HC110

Angle (deg)	0	5	10	15	20	25
Radial:	106	106	104	127	100	96
Tangential:	106	117	128	123	94	87

AWAR (Area weighted average resolution) in lp/mm: 109

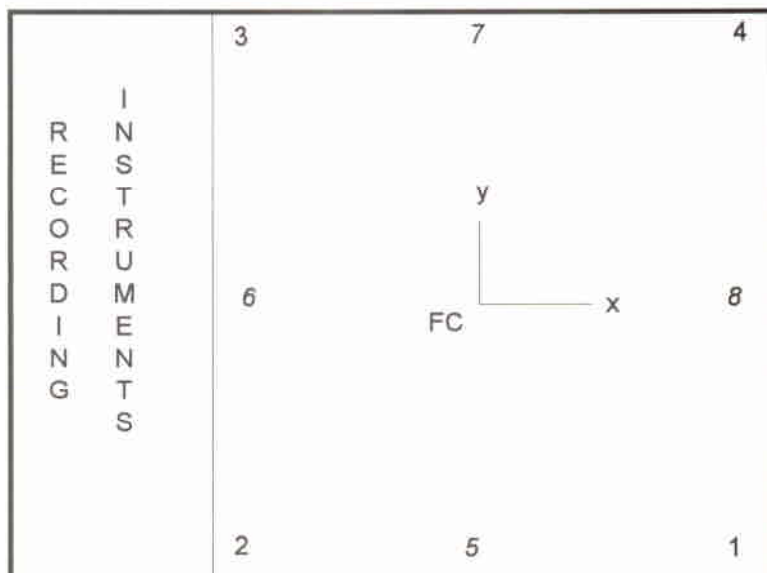


**Principal point of autocollimation (PPA) and principal point of symmetry (PPS)**  
 referred to central cross (FC), see diagram

	x (mm)	y (mm)
<b>PPA</b>	-0.006	0.030
<b>PPS</b>	-0.005	-0.013

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

	x (mm)	y (mm)		x (mm)	y (mm)
<b>1</b>	105.996	-105.993	<b>5</b>	-0.008	-111.996
<b>2</b>	-106.005	-106.002	<b>6</b>	-112.003	-0.002
<b>3</b>	-106.001	105.997	<b>7</b>	0.000	111.991
<b>4</b>	106.003	106.000	<b>8</b>	112.004	0.006

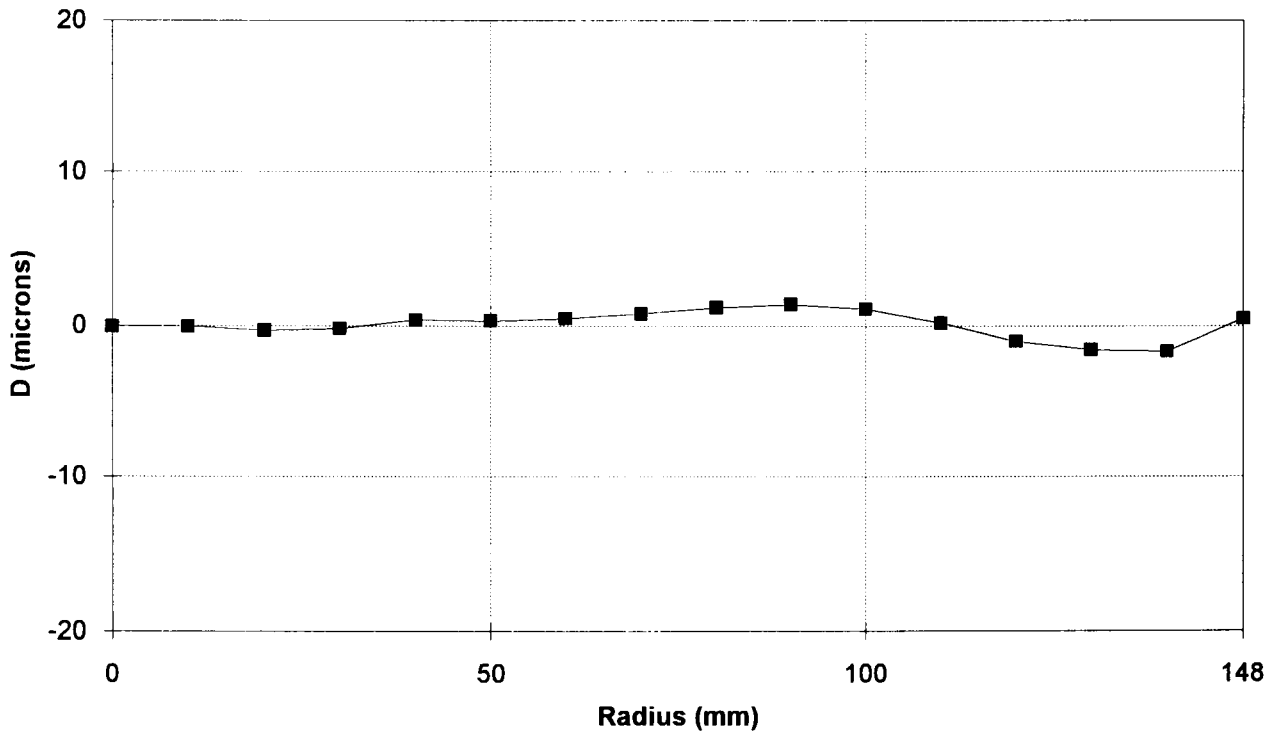


as seen on focal plane frame



Aperture: 4.0  
Filter on goniometer: VIS (400 - 700 NM)  
Filter on camera: --  
Principal distance for focussing distance 850 m : 302.97 mm

### Mean radial distortion



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

