TECHNICAL SPEC FOR Stepper

System Model:
Canon FPA 2500 i3 SN 512702

Tool has been shut down by Litho tech.
Electricity, cooling water, Vacuum and CCA are closed.
Cables between Main unit and power box are still connected, locking kit and demounting for transport to be provided by buyer.

Wafer size: 6 inch

Wafer type: Jeida flat

Chuck type: ring chuck

Reticle changer type: (Canon standard 14 reticles)

Inline right or left: Left

Particle checker (PPC): No

Touch panel type: Canon standard

Options:

Reticle size: 5 inch

Reticle alignment: see below

Wafer alignment: see below

Auto focus: see below

Auto feeder: Yes

Wafer tilt: see below

Wafer feeder:

Track interface: Yes. Stepper was used in inline mode, interface is track part

Laser: HeNe

Lens data:

Stage and U-lens at shutdown
Intensity: 250 mW/cm2
Distortion: see below
Uniformity: 1.5%

Stage vibration data:

Used for 0.35micron line and space? N

Chuck maintenance tool: No

Reticle bar code reader: Yes

Cassette bar code reader: No

SW Version:

OS:

Vintage: 1996

Missing/defective parts: none

Canon FPA-2500i3 INSTALLATION CHECK RESULT

COMPANY : Alcatel Mietec

MACHINE NUMBER	#512702
INSTALLATION DATE	22nd Feb – 26th March '96
ENGINEER	A. DAY – M. FORDHAM

CLASSIFICATION		ITEM			RESULT			STANDARD	JUDGE
1	EXPOSURE	1	OPEN FRAME		No PARTICLES				OK
		2	DISTORTION		DX		um	±0.08um or less	
			(INCLUDING MAGNIFICATION)		DY		um		
2	ILLUMINATION SYSTEM	1	ILLUMINATION INTENSITY			773	mw/cm²	550 mw/cm² or more	
			ILLUMINATION UNIFORMITY			0.5%	%	± 1% or less	
		2	L. I. CONTROL ACCURACY			0.21%	%	± 1.2% or less	
		3	MASKING BLADE ACCURACY		MAX	70	um	± 110 um or less	
3	ALIGNMENT SYSTEM	1	ROC ACCURACY		MAX	0.004	um	3 sig. 0.01 um or less	
		2	RET. ROT. ACCURACY			0.0035	um	± 0.02 um or less	
			RET. ROT. REPEATABILITY		RANGE	0.001	um	0.03 um or less	
		3	OPTICAL AXIS SYSTEM	i LINE TV	MAX	-12	mrad	± 35 mrad or less	
				He Ne/B2 TV	ka, kb MAX	-14	mrad	± 20 mrad or less	
					kc	- 2	mrad	± 7 mrad or less	
		4	TOC MEASUREMENT STABILITY	i LINE TV	MAX	0.03	um	3 sig. 0.04 um or less	
				He Ne TV	MAX	0.02	um	3 sig. 0.04 um or less	
				B2 TV	MAX	0.02	um	3 sig. 0.04 um or less	
4	AUTO FOCUS AND TILT SYSTEM	1	MEASUREMENT STABILITY	FOCUSING	3 sig	0.038	um	3 sig. 0.10 um or less	
				TILT COMP.	X	2.58	ppm	3 sig. 7 ppm or less	
					Y	2.81	ppm		
		2	REPEATABILITY	FOCUSING	3 sig	0.09	um	3 sig. 0.12 um or less	
				TILT COMP.	X	3.7	ppm	3 sig. 8 ppm or less	
					Y	3.4	ppm		
		3	GLOBAL TILT (GTOC) MEASUREMENT STABILITY		X	2.9	ppm	3 sig. 5 ppm or less	
					Y	3.0	ppm		
		4	GLOBAL TILT COMP. REPEATABILITY		X	7.9	ppm	3 sig. 10 ppm or less	
					Y	6.3	ppm		
5	TTL A/FOCUS	1	TTL A/F MEASUREMENT REP.			0.04	um	3 sig. 0.10 um or less	
6	X – Y STAGE	1	ORTHAGONALITY			0.1	ppm	± 0.5 ppm or less	
		2	SCALING (STAGE MAGNIFICATION)		X	0.2	ppm	± 0.5 ppm or less	
					Y	0.42	ppm		
		3	STEPPING ACCURACY		X	0.030	um	3 sig. 0.05 um or less	
					Y	0.038	um		
		4	STEPPING REPEATABILITY	DxD TILT OFF/ON ~~ON/OFF~~	X	0.038	um	3 sig. 0.05 um or less	
					Y	0.038	um		
				DxD TILT OFF ~~ON~~/OFF	X	0.031	um	3 sig. 0.07 um or less	
					Y	0.034	um		
7	ALIGNMENT SYSTEM	1	He Ne TV AGA (DxD TILT OFF)	MODE 2	X		um	[m] + 3 sig 0.07 um or less	
					Y		um		
		2	He Ne TV AGA (DxD TILT ON)	MODE 4	X		um	[m] + 3 sig 0.07 um or less	
					Y		um		
		3	B2 TV AGA (DxD TILT OFF)	MODE 4	X		um	[m] + 3 sig 0.07 um or less	
					Y		um		
		4	B2 TV AGA (DxD TILT ON)	MODE 2	X		um	[m] + 3 sig 0.07 um or less	
					Y		um		
		5	BASE LINE STABILITY	IL MODE 1			um	3 sig. 0.04 um or less	
				IL MODE 3			um		
8	PREALIGNMENT SYSTEM	1	MECHANICAL PREALIGNMENT ACCURACY		X	7.25	um	3 sig. 33 um or less	
					YL	8.76	um		
					YR	4.77	um		
9	THROUGHPUT	1	He Ne(mode2) AGA 160ms [inch shots]	IL MODE 1			wafers/hour	wafers/hour or more	
				IL MODE 2			wafers/hour	wafers/hour or more	
10	RELIABILITY	1	WAFER FEEDING	300 WAFERS		No TROUBLE		No trouble	
		2	RETICLE LOADING	50 TIMES		No TROUBLE		No trouble	

Canon

Serial No. #406560

AMI ID : **Stepper 11**

Acceptance Results for FPA-2500i3
AMI Semiconductor

UNIT	ITEM	SPEC	RESULT	JUDGE
1. ILLUMINATOR	Intensity (Normal illumination)	≥550mW	821	OK
	Uniformity (Normal Illumination)	Within +/-1.2%	0.9	OK
	Dose Control Accuracy	≤1.2%	0.54	OK
	Masking Blade Accuracy	≤+/–100um	-75	OK
2. AUTO FOCUS SYSTEM	Focus Repeatability	≤0.12um	0.077	OK
	Die by Die levelling Repeatability - X (3S)	≤10ppm	2.95	OK
	Die by Die levelling Repeatability - Y (3S)	≤10ppm	2.70	OK
	Global Levelling Repeatability - X (3s)	≤10ppm	2.23	OK
	Global Levelling Repeatability - Y (3s)	≤10ppm	2.17	OK
3. AUTO ALIGNMENT SYSTEM	Reticle Rotation Accuracy	≤ +/-0.02um	0.007	OK
	Reticle Rotation Repeatability (Range)	≤ +/-0.03um	0.015	OK
	AGA Accuracy Mode 1 - X	≤0.07um (M+3s)	0.063	OK
	AGA Accuracy Mode 1 - Y		0.044	OK
	AGA Accuracy Mode 4 - X		0.066	OK
	AGA Accuracy Mode 4 - Y		0.052	OK
	Total Overlay Mode 1 (to AMI ref wafer) - X	≤0.14um (M+3s)	0.076	OK
	Total Overlay Mode 1 (to AMI ref wafer) - Y		0.085	OK
	Total Overlay Mode 4 (to AMI ref wafer) - X		0.061	OK
	Total Overlay Mode 4 (to AMI ref wafer) - Y		0.103	OK
4. XY STAGE PERFORMANCE	Scaling (Reference Wafer, X or Y)	≤ +/-1.0ppm	0.06	OK
	Orthogonality (Reference Wafer)	≤ +/-1.0ppm	-0.16	OK
	Stepping Accuracy - X-X (3s)	≤0.060um	0.016	OK
	Stepping Accuracy - Y-Y (3s)	≤0.060um	0.026	OK
5. PREALIGNMENT	Mechanical Prealignment Accuracy	≤ +/-40um 3s	23.4	OK
6. THROUGHPUT	HeNe Mode1, 45 shots 20mm Tilt ON	57wph	58.7	OK
	Expo 0.16 secs, Sub 4 Main 8. Tilt OFF	62wph	62.4	OK
7. RELIABILITY	Wafer Feeding : 500 wafers cycled (AGA)	500	511	OK
	75 times reticle handling	50	50	OK
8. LENS PERFORMANCE	Resolution (Normal Illumination - 0.40um L&S)	0.40um or better	0.40	OK
	CD Depth of Focus (Normal Illumination - 0.40um L&S)	≥1.0um Range	1.47	OK
	Image Field Deviation (Normal Illumination - 0.40um L&S)	≤0.50um	0.13	OK
	Distortion (Norm II Ex Mag) - Max	Within +/-0.070um	-0.034	OK
	Intrafield (Norm II Ex Mag - Si Ref Wafer) - Max	Within +/-0.070um	0.037	OK

Canon FPA-2500i3 Standard Specifications

[1] Function Features

Item	Specifications	Remarks
1. Reticle		
1) Size	□ 6", 0.25"t	□ 5", 0.09"t (Option)
2) Material	Quartz	
3) Film	2-layerd Cr, or 3-layerd Cr	
4)Pellicle Frame	Pattern side attachable Frame height Max. 6.3 mm (Pattern side)	
2. Wafer		
1) Size	6", 8"	SEMI standard. (JEIDA ; 6") 4"and 5" ; Option
3. Projection Optics		
1) Magnification	x 1/5	
2) NA	0.60 – 0.45	3 pre-set positions, Switchable from Console.
3) Image Field Size	a) 6" Reticle ϕ 28.28 mm (□ 20 mm to 26.0(V) x 11.1 (H) mm) b) 5" Reticle	
	□ 20.0 mm to 22.5(V) x 17.1(H) mm	Without pellicle
	□ 20.0 mm to 20.6(V) x 19.4(H) mm	With pellicle
4) Exposure Light	i-line	
5) Lens Magnification auto compensation range	Nominal Pressure ±30 mb	
4. Illuminator		
1) Light Source	1.5KW super high pressure Hg Lamp	
2) Coherent Factor	0.3 – 0.7	
2) Exposure time control	Light Integrator	
3) Masking Function	Variable with 4 independent blade	
4) Illumination mode	Normal	
	SIA (Super Illumination Type A)	Option
	SIB (Super Illumination Type B)	Option
5. Reticle Auto Alignment		
1) Light Source	i-line	
2) Method	i-line Illumination TV image processing	
6. Wafer Auto Alignment		
1) Light Source	a) HeNe Laser b) Broad Band (Halogen Lamp)	
2) Method	TTL Off Axis Auto Alignment	
3) Mode	AGA	

Item	Specifications	Remarks
7. Auto Focus		
1)Method	Optical Auto Focus Method (CCD OPTF)	
8. Wafer Leveling	a) Die by Die Leveling b) Global Leveling	
9. Mechanical Prealignment	Non edge contact method.	
10. TV Prealignment	TV Image processing method.	
11. Wafer Feeding		
1) Method	Non edge contact, back side holding Wafer In-Out method.	Type-IV AF
2) Carrier	Double cassetes.	
12. Reticle Changer		
1) Type	6" Reticle changer	5" R/C ; Option
2) Capacity	14 reticles	
	(+15 reticles using optional library)	6" R/C only.