TEL Clean Track ACT-12
Machine Specifications

Machine No. : MD-E220508

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1.1 System Configuration

S/N : E220503

4-4 WEE	3-24 PHP	3-30	3-14 LHP	2-24 PHP	2-30	2-14 CWH	1-0 CRA	1-3 FOUP
	3-23 PHP	3-29	3-13 LHP	2-23 PHP	2-29	2-13 CPL		
4-0 IRA	3-22 PHP	3-28	3-12	2-22 PHP	2-28	2-12 CPL		
	3-21 PHP	3-27	3-11	2-21 PHP	2-27	2-11 CPL		1-2 FOUP
	3-20 3-19	3-26	3-10 3-9	2-19 ADH	2-26	2-9 ADH		
	3-18	3-25	2-18	SHU	2-25	2-7 ADH		
	3-17 HCP		2-17	SHU				
	3-16 TRS	3-0 PRA	3-6	2-15 ADH	2-0 PRA	2-6 TRS-R		1-1 FOUP
	3-15 HCP		3-5 HCP			2-5 TCP-R		
4-3 SBU	3-3 DEV H-NOZZLE		3-4 DEV H-NOZZLE					
4-2 SBU	3-1 DEV H-NOZZLE		3-2 DEV H-NOZZLE	2-1 COT S NOZZLE		2-2 COT S NOZZLE		
4-1 THS								

1.2 Required set up condition

- Main body

  Temperature : Set up body within ±2.0℃ from room temperature.

  Room temperature should be within 20℃ to 25℃

  Humidity : None dewy condition (Normal : 40% ± 5%)

- External cabinet

  Temperature : Set up body within ±4.0℃ from room temperature.

  Room temperature should be within 20℃ to 25℃

  Humidity : None dewy condition (Normal : 40% ± 5%)

1.3 Basic specification

Wafer

▷ Wafer size : 300

▷ Wafer material : Silicon

▷ Wafer shape : Flat Zone or Notched

Chemical

▷ Resist : To be determined

▷ Thinner : To be determined

▷ DEV. Solution : To be determined

▷ HMDS : To be determined

▷ Main body utility outlet : Rear vertical down

▷ Coat cup T&H controller : Shinwa TH-C

▷ Applicable station : 2-1, 2-2, 2-3, 2-4

2.0 Station specification

2.1 Cassette block

- ▷ Dimensions : 2020 mm(W) X 1130 mm(L) X 2290 mm(H)
- ▷ Cassette stage height : 900 mm
- ▷ Wafer transport method : Single-pincette shared transport (X, Y, Z, Th)
- ▷ Wafer indexing method : Selected either sender / receiver mode or uni-cassette mode
- ▷ Centering method : Mechanical centering using centering guides
- ▷ Sensor
  - Cassette sensor : Photo interrupter sensor monitoring cassette to be set correctly
  - Mapping sensor : Transmission-type laser beam sensor checking wafer position in cassette
- ▷ Wafer out sensor : Infrared transmission sensor detecting wafers out from the cassette
- ▷ Wafer sensor : Transmission sensor monitoring wafers on pincette
- ▷ Command switch : Lot start / stop key set on each cassette, showing cassette status by LED
- ▷ Recipe-showing LCD : Current recipe displayed for each cassette
- ▷ Loading type : Vertical IN-Out And Door Down type

2.2 Process block (Block 2, 3 specification Identity)

- ▷ Dimension : 2020 mm(W) X 1700 mm(L) X 2629 mm(H)
  2Block (Apply for 2 spinners)
  3Block (Apply for 4 spinners)
- ▷ Wafer transport method : 3-pincette shared transport method (X, Z, Th)
- ▷ Centering method : Automatic centering using centering guides
  Accuracy : ±0.3mm (excluding wafer distortion)
- ▷ Wafer sensor : Transmission type sensors
- ▷ Slide window : Smoke brown / Material : Acrylic
  (Observe section : Transparent, Acrylic)
- ▷ Chemical inner door : Transparent / Material : PVA
- ▷ Process block arm : Guide material : Polybenzimidazole resin (TF-60C)
- ▷ Cup washer : Installed; Material : PP + POM (COT)
- ▷ Fan filter unit : Fan filter unit(DOP tested) is installed

2.3 Coat process station (COT, TCT, BCT)

- ▷ Revolution rate : 0, 10 ~ 6000rpm ± 1rpm
  (set in a minimum unit of 1rpm)
- ▷ Acceleration : 100 ~ 50,000rpm/sec
  (set in a minimum of 100rpm/sec)
- ▷ Process recipes : 1,000 recipes (total spinner station)
- ▷ Recipe steps : 100 steps
- ▷ Processing time setting : 0~999.9(sec/step)X100
  (set in a minimum unit of 0.1sec)
- ▷ Dual-band alarm function : Double monitoring function for revolution-rate
  (set in recipe)
- ▷ Resist nozzle scan speed : 10~250mm/sec
- ▷ Resist nozzle changer function : Up to 8 nozzle blocks installed
- ▷ Side rinse arm mechanism : Vertical motion(up/down) by cylinder;
  Horizontal motion(in/out) by stepping motor
- ▷ Side rinse arm Velocity : 1~150mm/sec
- ▷ Chuck
  Shape, Material, Diameter : Concentric circles, PEEK + CF, 130 mm
  Chuck vacuum sensor : Pressure sensor with digital display
  (alarm band can be set)
- ▷ Spin stop switch : Using momentary switch to stop spin motor
- ▷ Number of nozzles : COT 2-1, 2 8Pump
- ▷ Nozzle temperature control : Three-layers-tube temperature control
  Accuracy : ±0.2℃ (at nozzle tips)
- ▷ Resist filter : Housing Type
  Filter number : Customer specification
- ▷ Resist pump : 2-1, 2 Nozzle All Iwaki RRC Pump
- ▷ Resist bottle : Gallon bottle
- ▷ Side rinse nozzle : Stainless steel reduced – diameter nozzle (0.3mm)
- ▷ Back rinse nozzle : 2 stainless steel reduced
- ▷ Solvent supply method : 2 Tank Auto Supply System
- ▷ Solvent filter : Disposable type
- ▷ Drain method : Plant direct drain
- ▷ Exhaust monitor(Alarm) : Digital manometer 0~100pa
- ▷ Cup material : PP (cutting)

2.4 Develop process station

- ▷ Revolution rate : 0, 10 ~ 5000rpm ± 1rpm
  (set in a minimum unit of 1rpm)
- ▷ Acceleration : 100 ~ 50,000rpm/sec
  (set in a minimum of 100rpm/sec)
- ▷ Process recipes : 1,000 recipes (total spinner station)
- ▷ Recipe steps : 100 steps
- ▷ Processing time setting : 0~999.9(sec/step)X100
  (set in a minimum unit of 0.1sec)
- ▷ Dual-band alarm function : Double monitoring function for revolution-rate
  (set in recipe)
- ▷ Nozzle scan speed : 10~250mm/sec
- ▷ Rinse Nozzle arm mechanism : Vertical motion(up/down) by cylinder;
  Horizontal motion(in/out) by stepping motor
- ▷ Rinse arm Velocity : 1~150mm/sec
- ▷ Chuck
  Shape, Material, Diameter : Concentric circles, PEEK + CF, 80mm
- ▷ Spin stop switch : Using momentary switch to stop spin motor
- ▷ Develop solution
  Number of nozzle : 2 Of H nozzle
  Nozzle temperature control : Controlling develop solution temperature
  (up to tip of nozzle)
  Accuracy : ±0.2℃ (at nozzle tips)
- ▷ Develop solution filter : Disposable type
- ▷ Develop supply method : 2Tank Auto Supply System
- ▷ Rinse nozzle : 1 Nozzle Stream Dispense
- ▷ Back rinse nozzle : 2 nozzle (1set)
- ▷ D.I Water supply method : Plant direct supply
  D.I Water filter : Disposable type
- ▷ Filter type : Customer Specification
- ▷ Drain method : Plant direct drain
- ▷ Exhaust monitor(Alarm) : Digital manometer 0~100pa
- ▷ Cup material : PP + Delrine (Cutting)

2.5 Adhesion process station

- ▷ Temperature range : 50~180℃ (set in a minimum unit of 0.1℃)
- ▷ Plant temperature accuracy : 50.0 ~ 120.0℃ R≤0.4℃
  120.1 ~ 150.0℃ R≤0.8℃
  150.1 ~ 180.0℃ R≤1.2℃
- ▷ Process recipe : 1,000 recipes (recipe total for all oven station)
- ▷ Program steps : 20 steps
- ▷ Processing time setting : 0 ~ 999.9(sec/step) X 20
  (set in a minimum unit of 0.1 sec)
- ▷ Number of dispense : 5EA
- ▷ Dual-band alarm function : Double monitoring function for temperature
  (set in recipe)
- ▷ Chamber process method : HMDS vapor processing;
- ▷ Hot-plate material : Hard anodized aluminum oxalic acid treatment on
  Aluminum surface
- ▷ Temperature display : Status displayed on a main control panel(LCD panel)
- ▷ Chamber cover interlock : When the chamber cover is removed, interlock
  mechanism is activated to stop wafer transport
- ▷ Proximity pin : Proximity method (proximity of 0.1mm)
- ▷ 3 pin material : Stainless steel + Polyimide
- ▷ Dispense method : HMDS vapor prime method
- ▷ HMDS supply method : Canister Supply System

2.6 Transition chill plate

- ▷ Process recipe : 1,000 recipes (recipe total for all oven station)
- ▷ Recipe step : 20 steps
- ▷ Processing time setting : 0~999.9sec (set in a minimum unit of 0.1sec)
- ▷ Dual-band alarm function : Double monitoring function for temperature
- ▷ Temperature control : None (depend on temperature of chilly water)
- ▷ Temperature display : Status displayed on a main control panel(LCD panel)
- ▷ Plate material : Hard anodized aluminum oxalic acid treatment on
  aluminum surface
- ▷ Proximity pins
  Processing method : Proximity method (proximity of 0.1mm)
- ▷ 3 pin material : Stainless steel + Polyimide

2.7 Chill plate process station

- ▷ Temperature range : 15 ~ 30℃ (set in a minimum unit of 0.1℃)
- ▷ Plate temperature accuracy : 15.0 ~ 30.0℃ ± 0.2℃
- ▷ Process recipe : 1,000 recipes (recipe total for all oven station)
- ▷ Recipe steps : 20 steps
- ▷ Process time setting : 0~999.9sec (set in a minimum unit of 0.1sec)
- ▷ Dual-band alarm function : Double monitoring function for temperature (set in recipe)
- ▷ Temperature control method : Temperature control using circulated thermostatic water
- ▷ Temperature display : Status displayed on a main control panel(LCD panel)
- ▷ Plate material : Hard anodized aluminum oxalic acid treatment on aluminum surface
- ▷ Proximity pins
  Processing method : Proximity method (proximity of 0.1mm)
- ▷ 3 pin material : Stainless steel + Polyimide

2.8 Low temperature hot plate process station

- ▷ Temperature range : 50~200℃ (set in a minimum unit of 0.1℃)
- ▷ Plant temperature accuracy : 50.0 ~ 90.0℃ R≤0.5℃
  90.1 ~ 120.0℃ R≤0.7℃
  120.1 ~ 150.0℃ R≤1.0℃
  150.1 ~ 200.0℃ R≤1.4℃
- ▷ Process recipe : 1,000 recipes (recipe total for all oven station)
- ▷ Program steps : 20 steps
- ▷ Processing time setting : 0 ~ 999.9sec (set in a minimum unit of 0.1 sec)
- ▷ Dual-band alarm function : Double monitoring function for temperature (set in recipe)
- ▷ Temperature control method : P.I.D. control by a platinum resistance (Temperature sensor)
- ▷ Hot-plate material : Hard anodized aluminum oxalic acid treatment on aluminum surface
- ▷ Temperature display : Status displayed on a main control panel(LCD panel)
- ▷ Oven cover material : Stainless steel insulated exhaust cover
- ▷ Cover interlock : When station cover is removed, interlock mechanism is activated to stop wafer transport
- ▷ Proximity pin
  Proximity method (proximity of 0.1mm)
- ▷ 3 pin material : Stainless steel + Polyimide

2.9 High temperature hot plate process station

- ▷ Temperature range : 50~350℃ (set in a minimum unit of 0.1℃)
- ▷ Plant temperature accuracy : 50.0 ~ 120.0℃ R≤1.0℃
  120.1 ~ 150.0℃ R≤1.5℃
  150.1 ~ 200.0℃ R≤2.0℃
  200.1 ~ 300.0℃ R≤3.0℃
  300.1 ~ 350.0℃ R≤5.0℃
- ▷ Prevention of excessive temperature rise : Independent thermo-switch for hot-plate overheating protection (Hardware interlock)
- ▷ Process recipe : 1,000 recipes (recipe total for all oven station)
- ▷ Program steps : 20 steps
- ▷ Processing time setting : 0 ~ 999.9sec (set in a minimum unit of 0.1 sec)
- ▷ Dual-band alarm function : Double monitoring function for temperature (set in recipe)
- ▷ Temperature control method : P.I.D. control by a platinum resistance (Temperature sensor)
- ▷ Hot-plate material : Hard anodized aluminum oxalic acid treatment on aluminum surface
- ▷ Temperature display : Status displayed on a main control panel(LCD panel)
- ▷ Oven cover material : Stainless steel insulated exhaust cover
- ▷ Cover interlock : When station cover is removed, interlock mechanism is activated to stop wafer transport
- ▷ Processing method
  Proximity method (proximity of 0.1mm)
- ▷ 3 pin material : Stainless steel + Polyimide

2.10 High precision hot plate process station

- ▷ Temperature range : 50~250℃ 0.1℃ Increment
- ▷ Plant temperature accuracy : 50.0 ~ 120.0℃ R≤0.2℃
  120.1 ~ 150.0℃ R≤0.3℃
  150.1 ~ 200.0℃ R≤0.5℃
  200.1 ~ 250.0℃ R≤0.65℃
- ▷ Process recipe : 1,000 recipes (recipe total for all oven station)
- ▷ Program steps : 20 steps
- ▷ Processing time setting : 0 ~ 999.9(sec/step) X 20 0.1(s) Increment
- ▷ Dual-band alarm function : Double monitoring function for temperature

(set in recipe)

- ▷ Temperature control method : P.I.D. control by the thermocouple
  (Temperature sensor)
- ▷ Hot-plate material : Hard anodized aluminum oxalic acid treatment on aluminum surface
- ▷ Temperature display : Status displayed on a main control panel(LCD panel)
- ▷ Oven cover material : SUS thermal insulated cover
- ▷ Cover interlock : When station cover is removed, interlock is triggered to stop wafer transport
- ▷ Cooling ability : Cooling a wafer temperature from 120.0℃ down to 40.0℃ in less than 20 sec
- ▷ Conditions : Chilly water flow rate = 2 liter/min
  (Chilly water temperature 15 ~ 25℃)
- ▷ Cooling method : Chilly water circulation in plate
  (Flow meter is installed to the chilly water line to monitor the flow rate)
- ▷ Cooling plate method : Aluminum with non-electrolyzed nickel treatment on surface
- ▷ Leak sensor : 1 sensor per 1 process station
- ▷ Proximity pins processing method : Proximity (proximity of 0.1mm)
- ▷ 3 pin material : Ceramics
- ▷ Purge function : Air sending by pump
  Flow rate of 3 liter/min X 1 pump per 4 station

2.11 Interface block

- ▷ Dimension : 2020 mm(W) X 580 mm(L) X 2590 mm(H)
- ▷ Stepper : Local
- ▷ Wafer transport method : Single-pincette shared transport (X, Y, Z, Th)
  All stepping motor driving vacuum-free wafer
  Supported by contact-minimizing pincettes
- ▷ Centering method : Mechanical centering using centering guides
- ▷ Wafer out sensor : Infrared transmission type sensors detecting wafers
  Sliding out from the cassette
- ▷ Buffer cassette : 1 set (holding 25 wafers)

2.12 WEE

- ▷ Exposure method : A wafer is attracted to the spin chuck by the vacuum pressure, and the position of wafer orientation flat is checked by the CCD sensor. The wafer is rotated and exposed for the specified width according to the TH-axis rotation (driven by the stepping motor) and the X-axis movement.
- ▷ Exposure mode : Outer area & Linear