4 BASIC STRUCTURE

1) Alignment section
2) Cutting section
3) Blade breakage detector
4) Operation panel and CRT display section

5 BASIC SPECIFICATIONS

5-1. Alignment Section

1) System
Pattern matching system based on the target patterns from the CCD camera

2) Functions
Macro/micro pattern matching

Low magnification/high magnification:
Low magnification 0.75x (pixel size: 0.01 mm)
High magnification 7.5x (pixel size: 0.001 mm)

Direct + external ring lighting

Kerf check
- Compensation on a hairline standard
- Kerf width max./min.
- Check setting of random locations
- Check setting for each cut line number

Automatic light intensity adjustment

Auto focus

Self-teach

Auto-teach

3) Microscope
Dual object - dual camera monocular microscope
Low monitor magnification : 37x
High monitor magnification : 375x

4) Product type exchange
Automatic switching between alignment conditions can be accomplished at the same time as switching between device data

5) Alignment accuracy
± 0.001 mm

6) Alignment capability
Chip size: 0.2 mm or greater

5-2. Cutting Section

1) X-axis

Slide and drive system

• Motor	AC servomotor
• Transfer mechanism	Ball screw
• Guide	Linear guide
Maximum stroke	468 mm

Cutting range

210 mm

105 mm to the left and 105 mm to the right from the spindle center

Wafer width setting range	0" to 8" (0 to 203.2 mm) Step 0.001 mm

Operating speed

• Transfer speed input range	0.1 to 450 mm/s
• Return speed	450 mm/s
Control system	Closed-loop system using AC servo motor

2) Y-axis

Slide and drive system

• Motor	Pulse motor
• Transfer mechanism	Ball screw
• Guide	Linear guide
Maximum stroke	220 mm

Cutting range

210 mm

105 mm to the front and 105 mm to the rear from the table center

Wafer width setting range	0" to 8" (0 to 203.2 mm) Step 0.001 mm

Index setting range

• Input	0.0001 to 203.2 mm (step 0.0001 mm)
• Speed	50 mm/s
Control system	Closed loop system using a linear scale
Scale resolution	0.0002 mm

3) Z-axis

Slide and drive system

• Motor	Pulse motor
• Transfer mechanism	Ball screw
• Guide	Linear guide

Maximum stroke

25 mm

Limit for the moving from the chuck table upper surface to the spindle center

Upper limit: 40 mm

Lower limit: 15 mm

Remaining amount input range	0.001 to 5.000 mm Step 0.001 mm
Moving resolution	0.00025 mm

4) θ-axis

Drive system

• Motor	Direct drive motor
• Transfer mechanism	Direct drive

Maximum rotating angle

380°

320° for CW and 60° for CCW from the initial position

Control system	Closed loop system by a rotary encoder
Motor resolution	0.66 s

5) Spindle Section

Mechanism

• Bearing	Air bearing
• Motor	DC brushless motor
Rotating speed	6,000 to 60,000 min^{-1} (rpm) (programmable)
Output	1000 W

Taper section

Large diameter 12.69 mm

Taper ratio 1/20 (equivalent)

Available for 2" diameter hub-type blade or M-type flange

5-3. Operation Section

1) Console display
   A 14" color CRT is employed to display alignment operation, cutting data, error messages, and other relevant information.
2) Keyboard
   The keyboard is used to select modes, input data, and for screen selection.
   (The keyboard is comprised of function keys, ten-key pad, cursor keys, single function keys and axis movement operation keys.)

5-4. Signal Tower

Turning on and off of the buzzer and illumination and flashing of lamps are programmable. However, the alarm setting cannot be changed. It is fixed to red flashing with buzzer sound.

1) Color: Red/yellow/green
2) Standard specification
   Green light .....The machine is operating in the full-auto mode.
   Yellow flashing.....The full-auto operation completes.
   Yellow light .....The machine is on stand-by.
   Red flashing.....An alarm (error or emergency) condition has occurred.

6 ACCURACY

1) Chuck table upper surface parallelism (when measuring at 22°C)
   0.005 mm/125 mm
   0.006 mm/150 mm
   0.008 mm/200 mm

2) Y-axis indexing accuracy
   Single error : 0.002 mm or less
   Cumulative error : 0.003 mm/210 mm or less

3) Z-axis repeatability
   0.001 mm (range)

7 UTILITIES

7-1. Power Requirements

1) Input voltage
200 VAC ± 10%, 3-phase

2) Frequency
50 to 60 Hz

3) Noise
Less than 2000 V at a pulse width of 500 ns (square wave)

4) Grounding — Be sure to ground the machine.

5) Maximum power consumption — 4 kVA

7-2. Air Supply Source

1) Supplied pressure
Range : 0.5 to 0.6 MPa·G (5.0 to 6.0 kgf/cm^2·G)
Fluctuation range : ±0.01 MPa·G (±0.1 kgf/cm^2·G)

2) Nominal filtration rating
0.00001 mm/99.5% or more

3) Residual oil
0.1 PPM Wt/Wt

4) Atmospheric dew point
-15°C or less

5) Connection port
Rc (PT) 3/8" female

6) Maximum consumption
216 ℓ/min (ANR) (200 Nℓ/min)

7-3. N_2

1) Pressure
Range : 0.5 to 0.6 MPa·G (5.0 to 6.0 kgf/cm^2·G)
Fluctuation range : ±0.01 MPa·G (±0.1 kgf/cm^2·G)

2) Connection port
Rc (PT) 3/8" female

3) Maximum consumption
162 ℓ/min (ANR) (150 Nℓ/min)

7-4. Water Used

Wheel coolant

1) Pressure
   0.3 MPa (3.0 kgf/cm^2)
   Fluctuation range ±0.01 MPa (±0.1 kgf/cm^2)

2) Water temperature
   Room temperature +2°C
   Fluctuation range within ±1°C

3) Water quality
   Consult DISCO sales representative when using other than deionized water.

4) Connection port
   Rc (PT) 3/8" female

5) Flow rate setting range
   1.0 to 6.0 ℓ/min

Spindle coolant

1) Pressure
   0.2 MPa (2.0 kgf/cm^2)
   Fluctuation range ±0.02 MPa (±0.2 kgf/cm^2)

2) Water temperature
   Same as room temperature
   Fluctuation range within ±1°C

3) Water quality
   High content of chloride (Cl), iron (Fe), copper (Cu) and sodium (Na) or high ratio of conductivity may cause corrosion of the mechanical parts or clogging of piping.

4) Connection port
   Rc (PT) 3/8" female

5) Consumption flow rate
   1.5 ℓ/min

7-5. Duct

1) Capacity
   3 m^3/min or larger
   (If the duct capacity is smaller, contact your local DISCO office.)

2) Connection port
   Duct hose I.D. 100 mm

7-6. Water Drainage

1) Connection port
   Duct hose I.D. 50 mm

7-7. Main Dimensions

Main body: 865 W x 1168 D x 1235 mm H

7-8. Machine Dry Weight

Approx. 850 kg

7-9. Paint Color

Munsell No. 2.5 GY 8.0/0.5