



DISCO

Kiru · Kezuru · Migaku Technologies



Fully Automatic Polisher DFP8140/8160

Chemical- and slurry-free stress relief



Improved Yield

Relieve wafer stress without slurry, chemicals or water. The DFP8140/8160 effectively removes the grinding induced damage layer by utilizing a dry polishing process. This process greatly reduces wafer breakage and warpage while improving die strength. The result is superior product yield, even for today's thin wafers.

In-Line System

The DFP8140/8160's design allows it to be integrated with DISCO grinders for an in-line wafer thinning solution that grinds, dry polishes, and transports wafers safely and securely (in-line system requires optional accessories).



DFP8140/8160



LCD touch screen



Environmentally Friendly Process

Unlike chemical etching or CMP, the dry polishing process does not require costly waste treatment and disposal. Dry polishing with the DFP8140/8160 is environmentally friendly while maintaining a lower cost of ownership than other stress relief processes.

Easy Operation

The DFP8140/8160 utilizes the same operator interface and machine layout as the DISCO Fully Automatic Grinder (DFG8540/8560). This ensures reduced training time for operators familiar with DISCO equipment. For those new to the 8000 Series, the touch-screen graphical user interface with real-time process data makes both operation and maintenance tasks easy to learn and accomplish.



Handy panel

DFP8140/8160 Specifications

| | | DFP8140 | DFP8160 |
|--|---|--|-------------------------------------|
| Wafer Diameter | - | Max. $\phi 8''(\phi 203)$ | Max. $\phi 300\text{mm}(\phi 12'')$ |
| Processing Method | - | Anomalous In-feed grinding with wafer rotation | |
| Spindle | Type | Air bearing with high frequency motor | |
| | Number of axes | 1 | |
| | Output | 4.8 | 7.5 |
| | Revolution speed | min^{-1} 1,000 ~ 4,000 | 1,000 ~ 3,000 |
| | Z-axis vertical stroke | mm 100(with zero point) | 72(with zero point) |
| | Z-axis vertical grinding feed speed | mm/s 0.0001 ~ 0.08 | |
| | Z-axis vertical fast feed speed | mm/s 50 | |
| | Min. Z-axis vertical movement | μm 0.1 | |
| | Min. Z-axis vertical movement resolution | μm 0.1 | |
| Wafer Chuck Table | Chuck table type | Porous chuck table | |
| | Chuck method | Vacuum | |
| | Number of revolutions | min^{-1} 0 ~ 300 | |
| | Number of chuck tables | 1 | |
| | Chuck table cleaning | Backflushing of water and compressed air is combined with Leveling stone cleaning and brush cleaning | |
| | Wafer cleaning | Washing using an atomizing nozzle | |
| | Internal load sensor | Thin force sensor | |
| | Spark Out (chuck table revolutions setting) | 0 ~ 999 | |
| | Y-axis processing stroke | mm 420 | 510 |
| | Y-axis feed speed | mm/s 0.5 ~ 200 | |
| | Y-axis min. resolution | mm 0.002 | |
| Dry Polishing Wheel | mm | $\phi 300$ | $\phi 450$ |
| Wafer Handling Section / Wafer Cleaning Section | | | |
| | Cassette storage quantity | 2 | |
| | Cassette flow | Same flow and open flow | |
| | Spinner unit | Water washing by atomizing nozzle and drying | |
| Vacuum Unit | Discharge speed | m^3/h 29/36 50/60 Hz | |
| | Achievable pressure | kPa -90 (water supply temperature 15 °C, water supply flow rate 1 L/min) | |
| | Electric motor | kW 1.5 | |
| | Water flow rate | | |
| | When supplied water temperature is greater than 22 °C | L/min 3 | |
| | When supplied water temperature is less than 22 °C | L/min 1 | |
| Polishing Residue Collector | System | Wet cyclone system | |
| | Cylinder volume | m^3/min 4.0 | |
| | Motor | kW 1.0 | |
| | Water used | L/min 4.0 | |
| Processing Accuracy | | | |
| | Variation in removal amount | μm ± 1 or less (when removing 2 μm in average) | |

| | | DFP8140 | DFP8160 |
|------------------|---|---|-----------------------|
| Utilities | Power supply | 200 V AC $\pm 10\%$, 3-phase (50/60 Hz) For other than the above voltages, a transformer is necessary | |
| | Power consumption | | |
| | When processing | kW 4.6 (for reference) | 6.5 (for reference) |
| | During warm-up | kW 2.8 (for reference) | 5.0 (for reference) |
| | Max. power | kVA 12 | 19 |
| | Air pressure | | |
| | Main body | MPa 0.5 ~ 0.8 | |
| | Polishing residue collector | MPa 0.3 ~ 0.5 | |
| | Air flow rate | | |
| | Main body | L/min(ANR) 550 or higher | |
| | Polishing residue collector | L/min(ANR) 50 or higher | |
| | Water pressure | | |
| | Grinding and cleaning | MPa 0.3 ~ 0.4 | |
| | Cooling | MPa 0.2 ~ 0.3 | |
| | Vacuum pump | MPa 0.052 ~ 0.49 | |
| | Polishing residue collector | MPa 0.2 ~ 0.3 | |
| | Water flow rate | | |
| | Grinding and cleaning | L/min 20 or higher | |
| | Cooling | L/min 4 or higher | |
| | Vacuum pump | | |
| | When supplied water temperature is greater than 22 °C | L/min 3 | |
| | When supplied water temperature is less than 22 °C | L/min 1 | |
| | Polishing residue collector | L/min 4 or higher | |
| | Exhaust duct capacity | m^3/min 4 or higher | |
| | Machine dimensions (WxDxH) | mm 1,200 x 2,670 x 1,800 | 1,400 x 3,322 x 1,800 |
| | Machine weight | kg 1,900 | 2,400 |

A vacuum unit and polishing residue collector are installed as standard.

Environmental conditions

- Use clean, oil-free air at a dew point of -15 °C or less. (Use a residual oil: 0.1 ppm Wt/Wt. Filtration rating: 0.01 $\mu\text{m}/99.5\%$ or more).
- Keep room temperature fluctuations within ± 1 °C of the set value. (Set value should be between 20-25 °C).
- Keep self-grinding water and cleaning water 2 °C above room temperature (fluctuations within 1 °C over one hour).
- Keep spindle cooling water temperature between 20-25 °C (fluctuations within 2 °C over an hour).
- The machines should be used in an environment, free from external vibration. Do not install machine near a ventilation opening, heat generation equipment or oil mist generating parts.
- This machine uses water.

In case of water leakage, please install the machine on the floor with sufficient waterproofing and drainage treatments.

* All the pressures are described using a gauge pressure.

* The above specifications may change due to technical modifications. Please confirm when placing your order.

* For further information please contact your local sales representatives.