



Silicon Carbide Optical
Mirror



Rotary Table Surface Grinding System

Business Case - Silicon Carbide for
Aerospace Mirror

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Rotating Surface Grinding for Engineered Ceramics

Rotating Surface Grinding Process for Silicon Carbide for Aerospace Mirror

Engineered ceramics used in the aerospace and defence industry must be able to withstand harsh environments and extreme conditions. Our long-term client has been supplying engineered ceramics to the aerospace and defence industry for many applications, including aerospace, armor, and optical components. For years, they have been using our rotary table surface grinders, vertical model V1000 and horizontal model H600, to guarantee their grinding quality.

Our client first purchased our grinders in 2020 to machine silicon carbide and ceramic mirror systems for aerospace imaging and sensing systems. Silicon carbide's high stiffness, low mass, and thermal stability were critically important material properties for the optic systems' performance. After achieving enhanced quality from the silicon carbide and ceramic optic components, processed by V1000 and H600 models in 2020, our client increased their purchase of our grinding machines by 5x in the following year.



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For our client, one of the greatest advantages of working with us is that we offer **many options for grinding wheels, spindle drive horsepower, and custom jigs** such that the resulting grinder is tailored to the client's specific needs. In terms of machine performance, our client continues to choose our surface grinders for its precise movement of the X-Axis carriage and the Z-Axis spindle head controlled by a servo-linear system.

According to the client, our structural design sets our surface grinders apart from others; the structure design has **sustained precise flatness and parallelism of the rotating surface table over multiple years**. Our table slides use metal rings instead of thrust roller bearings, which are used in most other machines. Our design delivers nearly 0mm table surface rigidity against vibration with sustained performance for an extended period. Furthermore, the box way is processed with scraping technique to achieve superior parallelism and flatness of table surface.



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Vertical Spindle Rotary Table Surface Grinder System Models and Specifications

Classification / Model	DB-V600	DB-V800	DB-V1000
Chuck Diameter (mm)	φ600	φ800	φ1000
Grinding Wheel Diameter (mm)	φ360	φ480	φ600
Vertical Range Under New Wheel (mm)	450	450	450
Chuck Speed (RPM)	0~60	0~50	0~40
Grinding Wheel Speed (RPM)	1400	940	730
Vertical Downfeed (mm/time)	0.02~	0.02~	0.02~
Grinding Wheel Size (mm)	φ360	φ480	φ600
Spindle Motor	7.5kW/6P 11kW/6P	15kW/6P	19kW/6P
Table Motor (kW)	2.2/4P	2.2/4P	3.7/6P
Z-Axis Motor (kW)	0.75 Servo	1 Servo	1.5 Servo
X-Axis Motor (Rotary Table Movement; Optional) (kW)	0.6 Servo	1 Servo	1 Servo
Electrics	15KVA	20KVA	25KVA
Approximate Machine Weight (kg)	5000	6500	9500



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Vertical Spindle Rotary Table Surface Grinder System Models and Specifications

For larger chucks and grinding wheel diameters we offer models V1200, V1500, and V1800.

Classification / Model	DB-V1200	DB-V1500	DB-V1800
Chuck Diameter (mm)	φ1200	φ1500	φ1800
Grinding Wheel Diameter (mm)	φ720	φ900	φ1080
Vertical Range Under New Wheel (mm)	450	450	450
Chuck Speed (RPM)	0~30	0~22	0~22
Grinding Wheel Speed (RPM)	650	580	505
Vertical Downfeed (mm/time)	0.02~	0.02~	0.02~
Grinding Wheel Size (mm)	φ720	φ900	φ1080
Spindle Motor	22 kW/8P	37 kW/8P	45 kW/8P
Table Motor (kW)	3.7/6P	5.5/6P	5.5/6P
Z-Axis Motor (kW)	1.5 Servo	2 Servo	2.5 Servo
X-Axis Motor (Rotary Table Movement; Optional) (kW)	1.5 Servo	1.5 Servo	2 Servo
Electrics	28KVA	45KVA	53KVA
Approximate Machine Weight (kg)	12000	17000	20000



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