

Subject: Precision Grinder Overview	Product: Motion Products	Doc#: AO.MCD.06.M64
Title: Precision Grinder		

## Precision Grinder

### Application Overview

Precision Grinders are used for cutting or shaping parts and providing the properly finished surface. An example of this would be lens grinding.

### Application Challenges:

- **Speed:** Maintain constant grinding surface speed
- **Efficiency:** Grind at optimal efficiency while doing heavy or light grinding
- **Electronic Gearing:** Follow an external encoder to synchronize conveyor with other sections of the process

### Yaskawa Products:

Product	Feature	Benefit
<b>MP2600iec w/SGDV Amplifier</b>	Machine control capabilities in single-axis controller	Reduce third-party devices by combining machine control with motion control
	EtherNet/IP communication Option	Sigma-5 with MP2600iec can act a master or slave device
	MotionWorks IEC Programming Software	IEC61131-3 based programming makes new production runs only a few mouse clicks away
	Variable ratio digital gearing	Independently driven axes can be perfectly synchronized
<b>Sigma-5 Servomotors</b>	High resolution serial encoder	Up to 20-bit resolution translates into excellent speed and torque ripple characteristics. High noise immunity if afforded by serial encoder technology utilizing error-checking algorithms.
	High torque to inertia ratio	Dynamic performance in a small space-saving design
	High IP ratings available	IP67permits both solid debris and liquid containments easing machine design requirements
	Bearings with high radial loading capacity	SGMGV motor features high radial load capacity compared to motors of similar power capacity, increasing the functional life of the motor in a grinding application
	Auto ID Encoder	Machine commissioning requires no loading of motor data into the amplifier – plug and play operation

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**Application Details:**

At slow speed, heavy cutting is done. With a constant wheel pressure on the material to be shaped, the pounds/minute of material removed, or work done, varies with the wheel speed. After the heavy cutting is complete, a polishing (light cutting) operation is performed. A high speed, lighter wheel-to-material pressure is maintained; therefore, less material in pounds/minute is removed.

For example, convex and concave shapes typical in lens grinding require servo control to maintain accuracy on the cutting axis (at minimum).