

PLC Series



Programless Chamfering
and Deburring Machines



Machined part deburring and chamfering has long been an afterthought in most manufacturing environments. Today this once overlooked service is becoming an integral part of the manufacturing process as industry demands increase for high quality, quieter gears and components.

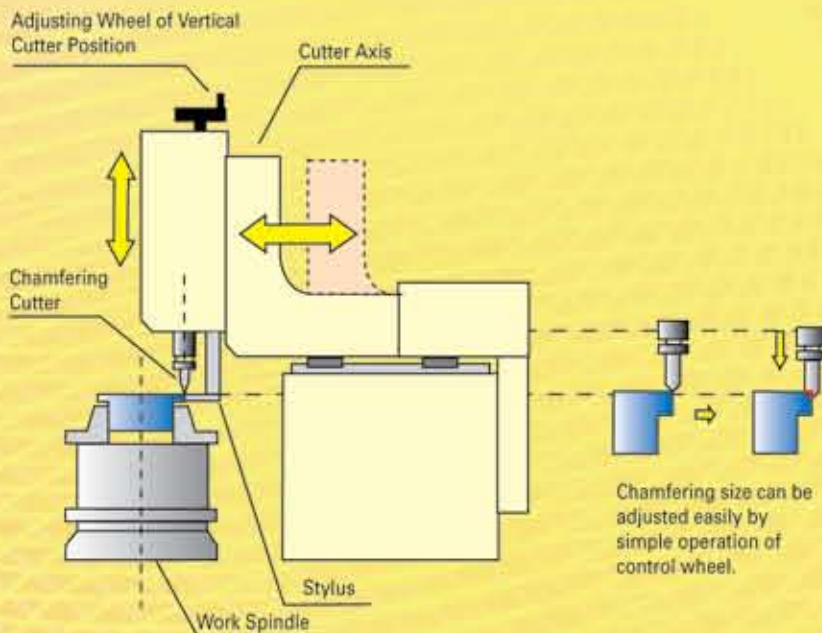
Deburring and chamfering can no longer be viewed as the lowly process that is completed in a dirty corner of the shop. Labor intensive hand deburring is not a viable option, nor are many of the rudimentary deburring machines that were for years the only available options. SENJO SEIKI's advanced technology machines are bringing this crucial process into today's automated production environment.

Why chamfer and deburr?

- In this age of high speed, high performance gearing, accurate chamfering is necessary for quieter, more efficient gears
- Burrs on gears and other critical components that are not removed can break off during operation and lead to damage of bearings or gears in gearboxes
- When subsequent part finishing is required, a hardened burr can result in significantly premature tool wear
- Sharp corner edge and burr removal reduces the risk of injury during part handling
- Burr removal can result in large cost savings by avoiding costly rework operations

SENJO SEIKI specializes in the manufacture of programless chamfering and deburring machines. Engineered and manufactured in Japan, these machines require no computer programming and minimal set-up. SENJO SEIKI offers flexible machines for chamfering and deburring many different types of parts, as well as fully-automated systems that can be completely integrated into a high-volume production line.

The unique design of SENJO SEIKI machines incorporates a patented, stylus tracing unit that eliminates the need for any computer programming. This stylus traces the inner or outer periphery of virtually any machined component, guiding the cutter axis to create a uniform, symmetrical chamfer and clean edge that requires no further finishing and is highly consistent from part to part. Plus, since the chamfer is created by an ordinary endmill, the finished quality is remarkably superior when compared with other types of chamfering and deburring machines.



Features:

- superior chamfer that is highly consistent from part to part
- no computer programming
- multiple part types can be processed with minimal adjustments
- clean operating environment with no dust
- horizontal workpiece axis for improved chip evacuation
- accurate positioning of the parts is unnecessary
- extremely easy to use, requiring very little operator training
- wet or dry processing
- maintains a clean and safe working environment

Component Types Chamfered/Deburred:

- Spur gears
- Helical gears
- Bevel gears
- Sprockets
- Internal and external gears
- Forgings
- Pinions
- Worm gears
- Parallel axis gears
- Face gears
- Castings
- Other machined components

Standard Machines

The PLC-101 Automatic Deburring Machine is designed to create highly consistent chamfers on gears and parts of all kinds. Solidly constructed from fabricated steel and high quality components, the machine incorporates an aluminum profile for the safety cover to ensure operator safety.

When setting the workpieces, precise positioning is not required. The chamfer size and spindle speed can be easily adjusted. The cutter axis moves forward and backward by simply outlining the shape of the component. The spindle speed of the cutter and work table rotary speed can be adjusted by invertors.

As long as the key attributes are similar, any component can be chamfered by the machine. However, some machine settings, such as changing the stylus, changing the vertical position of the cutter axis and so on, may be required.

The standard PLC-101 is manually loaded, however, the machine can be modified to incorporate load/unload devices and other types of automation.

Custom Machines

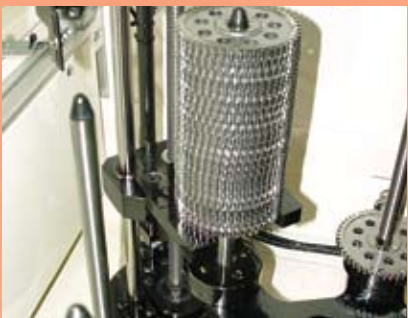
In addition to their standard machines, SENJO SEIKI's experienced engineering staff has designed and manufactured hundreds of custom PLC Chamfering and Deburring Machines to meet the exact specifications of customer applications. SENJO SEIKI works with customers to identify and engineer automation systems that will best serve the needs of an application.

These custom features can include:

- multiple chamfer cutter heads
- conveyor systems
- multi-stylus tracing units
- brush finishing units
- multiple work spindles
- pick and place automation

Custom Machine Examples

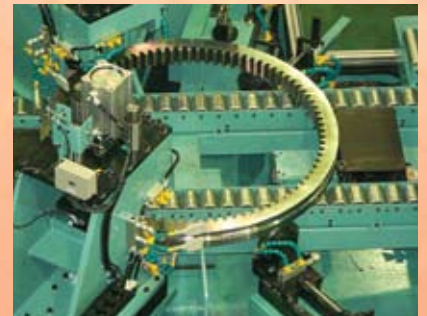
Example 1 – Dual spindle, dual cutting head with part magazine and automatic loading/unloading



Example 2 – Dual spindle, dual cutting head with conveyor and auto loading/unloading



Example 3 – Large (6 ft) gear ring 2-sided chamfering with conveyor feed system



Custom Machine Features

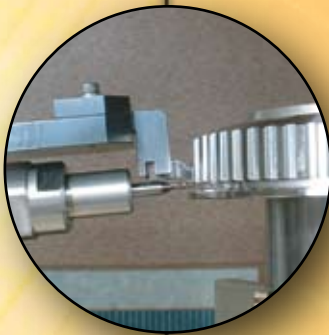
Internal Gear Chamfer



Brush Unit



Horizontal
Cutter Axis



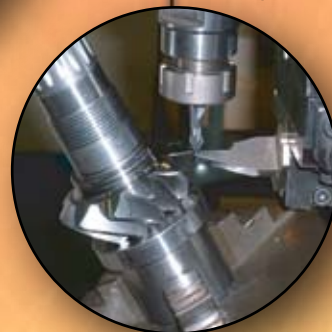
Inclined
Workpiece Axis



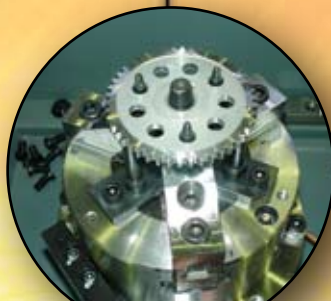
Inclined
Cutter Axis



Dual Cutter
Heads



Custom Fixturing



SENJO SEIKI

SPECIFICATIONS	PLC-101	PLC-102
Max. workpiece diameter	7.87" (200mm)	3.74-16.73" (95-425mm)
Max. workpiece height	3.94" (100mm)	
Workpiece material	Steel, cast, metal, aluminum, copper, resin, ceramic, glass, etc.	
Chamfering performance	0.0787" (0-2mm) adjustable	
Chamfering cutter rotation speed	max. 7000 rpm	
Workpiece spindle rotation speed	0.5-5 rpm	0.7-7 rpm
Chamfering cutter drive motor	0.2 kW, 2 phase, 200V	
Workpiece spindle drive motor	60 W, 3-phase motor	
Power supply	AC 200 V, 50/60 Hz	
Air requirement (min.)	0.4 MPa (4kgf/cm)	
Machine weight	640 lb (290 kg)	838 lb (380 kg)
Machine dimension (LxWxH)	21.6x40.55x65.55" (550x 970x1665mm)	21.6x54.53x65.55" (550x1385x1665mm)

* Specifications subject to change without prior notice.

SENJO SEIKI Co., Ltd. has over fifty years of experience as an integrated manufacturer of industrial machines. In 1997, SENJO SEIKI developed their first Programless Chamfering and Deburring (PLC Series) machine utilizing their patented tracing system technology. Since that time, SENJO SEIKI has sold more than 2,000 PLC chamfering machines and has established an international sales network. SENJO SEIKI is committed to providing customers around the world with the highest levels of service and support. This commitment is carried through to their agents and dealers who have all completed training for after-sales service at their factory and work closely with their in-house service team.

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