Next-generation 600HTL Turbo Lapper®: A new standard in bevel and hypoid hard finishing

With its introduction in 1999, the Gleason 600HTL TURBO LAPPER® Hypoid Lapping Machine made a quantum leap in lapping productivity, capability, and ease of operation. Now, the next-generation 600HTL has arrived, combining speed, ergonomics, and compact size of the original with a host of new innovations to create the most productive—and reliable—lapping machine ever built. For example:

Unsurpassed productivity. The new TURBO LAPPER cuts lapping cycle times to as little as half that of a conventional lapping machine. Horizontal, direct-drive compliant spindles and a high-volume compound delivery system allow lapping speeds of 3,000 rpm or higher, while an open and highly accessible work chamber and extremely efficient user interface greatly reduce setup and other non-productive time.

Revolutionary new compound system. The 600HTL eliminates the flow and sediment problems of conventional lapping compound systems with a simple, accessible design. The industry’s first use of a Coriolis-effect flow sensor brings a much greater level of compound control to the process by accurately monitoring both flow rate and density under all temperature and slurry conditions. In addition, the new design greatly increases the space devoted to the lapping compound system and puts pump and valves in fixed accessible locations. The separate tank is equipped with a powerful mechanical mixer that eliminates sediment accumulation.

Simple, efficient user interface. While the Turbo Lapper is the most advanced CNC lapper ever built, daily operation has never been more efficient. Operators can get the most out of the machine’s capabilities with minimal keystrokes and software navigation simply by using main operator panel button pushes and “V & H diamond” mushroom buttons to execute common commands such as drive or const act over changes and manual roll checks.

Main operator panel buttons and V & H diamond mushroom buttons, shown below, minimize keystroke and software navigation.
Highly ergonomic and economic. A host of other experience-based and customer-driven improvements have been incorporated into the 600HTL to further improve day-to-day operation and maintainability. For instance:

- An enhanced nick and burr detection system provides high speed, high-resolution measurements to identify tool defects before lapping begins.
- A manually-operated hinged side door decreases cycle time, improves access and reliability and increases usable chamber size.
- A view-window in the chamber door allows the operator to verify compound application at any time. Larger maintenance access doors facilitate maintenance operations.
- A reconfigured chiller allows better maintenance and airflow.
- Handling of gaging data is now optimized for multiple summary and multiple machine installations.

Standard Equipment, cont.

- Large capacity air-driven compound pump with quick-disconnect piping
- Separate high-volume compound tank with motorized mechanical mixing
- Coriolis-effect in-line compound flow sensor
- Compound temperature control with heating
- Easy-clean magnetic compound filtration unit
- Power work chamber door
- Automatic backlash setting at multiple lapping positions
- Automatic run-out determination for both members
- High-speed spin clean
- Stack light
- Centralized automatic machine lubrication system

Optional Equipment.

- Automatic nick and burr detection
- 60-taper large bore pinion spindle
- 39-taper non-compliant gear spindle
- Workpiece seating safety check
- Torque verification
- Closed-loop lapping compound flow control

Self-contained, easily accessible lapping compound system, shown above, features powerful mechanical mixer to prevent sediment accumulation.

Industry's first Coriolis-effect flow sensor more accurately monitors lapping compound flow rate and density.
### Performance

Machine dimensions in mm.

<table>
<thead>
<tr>
<th>Description</th>
<th>Metric</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Gear Outside Diameter</td>
<td>600 mm</td>
<td>23.6 in.</td>
</tr>
<tr>
<td>Maximum Pinion Outside Diameter</td>
<td>254 mm</td>
<td>10.0 in.</td>
</tr>
<tr>
<td>- Max. Pinion Drive Speed</td>
<td>3100 rpm</td>
<td>3100 rpm</td>
</tr>
<tr>
<td>- Maximum Gear Drive Speed</td>
<td>3100 rpm</td>
<td>3100 rpm</td>
</tr>
<tr>
<td>Offset Range</td>
<td>± 76 mm</td>
<td>± 3.0 in.</td>
</tr>
<tr>
<td>Pinion Cone Range</td>
<td>165 to 343 mm</td>
<td>6.5 to 13.5 in.</td>
</tr>
<tr>
<td>Gear Cone Range</td>
<td>89 to 267 mm</td>
<td>3.5 to 10.5 in.</td>
</tr>
<tr>
<td>Lapping Torque Load*</td>
<td>2 to 24 Nm</td>
<td>15 to 17.7 ft-lbs.</td>
</tr>
<tr>
<td>H (Pinion Cone) Servo Drive Motor</td>
<td>6 Nm</td>
<td>4.4 ft-lbs.</td>
</tr>
<tr>
<td>V (Vertical Offset) Servo Drive Motor</td>
<td>12 Nm</td>
<td>8.9 ft-lbs.</td>
</tr>
<tr>
<td>G (Gear Cone) Servo Drive Motor</td>
<td>6 Nm</td>
<td>4.4 ft-lbs.</td>
</tr>
<tr>
<td>A (Pinion Spindle) Servo Drive Motor</td>
<td>14 kW</td>
<td>18.8 hp</td>
</tr>
<tr>
<td>C ( Gear Spindle) Servo Drive Motor</td>
<td>14 kW</td>
<td>18.8 hp</td>
</tr>
<tr>
<td>Floor Space</td>
<td>2100 x 2400 mm</td>
<td>83 x 93 in.</td>
</tr>
<tr>
<td>Height</td>
<td>3100 mm</td>
<td>122 in.</td>
</tr>
<tr>
<td>Weight</td>
<td>5670 kg</td>
<td>12500 lbs</td>
</tr>
</tbody>
</table>

*Up to 50 Nm (44.4 in-lb) with optional 39-taper spindle.
These specifications are approximate and subject to change.
TURBO LAPPER® is a registered trademark of The Gleason Works.

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**Gleason**

**Gleason Corporation**
1000 University Avenue
P.O. Box 22970
Rochester, NY 14692-2970, USA
Tel. +1-585-473-1000
Fax +1-585-461-4348
gleason CORPORATION@gleason.com

**The Gleason Works**
1000 University Avenue
P.O. Box 22970
Rochester, NY 14692-2970, USA
Tel. +1-585-473-1000
Fax +1-585-461-4348
gleason-works@gleason.com

**Gleason-PFAUTER**
Maschinenfabrik GmbH
Deimlerstrasse 14
D-71636 Ludwigsburg, Germany
Tel. +49-(0)714-404-0
Fax +49-(0)714-404-500
gleason-plaute@gleason.com

www.gleason.com • sales@gleason.com
For Worldwide Locations and Additional Information.

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