

# L45 PCD DIAMOND LASER LAPPING MACHINE

## Fine and Coarse Lapping of PCD Diamond Disks

Laps a 60 mm diameter disk down by 0.45 mm with 0.2  $\mu\text{m}$  Ra finish in just 25 minutes



## FEATURES

- Reliable fiber laser source
- Fully automatic lapping
- Online measurement and inspection
- Lapping precision, 0.01 mm
- Surface finish, <math><0.2 \mu\text{m Ra}</math>
- Surface flatness within 0.01 mm of design, perfectly matched with next grinding and polishing steps
- Easily achieves accurate PCD diamond layer thickness according to C-scan map
- Continuous unattended running
- Coherent patent-pending technology

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## Application Area – PCD Diamond Laser Lapping

The L45 PCD Diamond Precision Laser Lapping Machine developed by Coherent is a perfect replacement for EDM and diamond powder grinding tools in the lapping of PCD diamond disks used in superhard tool applications. The easy-to-run laser tool has the following advantages:

- High efficiency. One L45 can finish lapping the equivalent of seven EDM machines.
- Perfect accuracy. The removal amount can be normally controlled to 0.01 mm.
- Flexibility. Parts with different removal amounts can be loaded and processed in the same run.
- Controllable surface shape. No need to prelap to a flat surface; specified convex surfaces can be generated as required.
- Low operating cost. Virtually no maintenance or spare parts are required. Key parts can last over 10 years.
- Environmentally friendly. Dust is collected in a dry process; noise is below 75 dB

## Main Characteristics – High Quality, High Efficiency, Low Cost

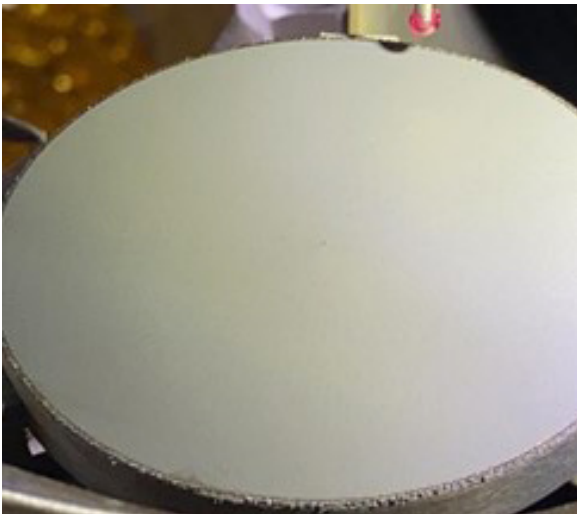
Coherent offers the best-in-class laser tool for diamond material profile lapping to achieve ideal results:

- eMicro processing software -- a powerful tool with over 10 years of use in the field.
- Closed-loop control of 4-axis coordinated motion.
- Six standard stack positions of up to 76 mm diameter with each stack height up to 25 mm. Each stack can be assigned with a specific program or lapping thickness; 25 disks of 5 mm thickness or 40 disks of 3 mm thickness in one loading.
- Fully automatic. Autoloading, auto measuring, auto lapping, auto inspection, auto unloading, auto logging.
- High efficiency. The L45 can lap 60 mm disks down to 0.45 mm with 0.2  $\mu\text{m}$  Ra finish in about 25 minutes.
- User-friendly. Easy operation, good noise control, and best-in-class exhaust system design.

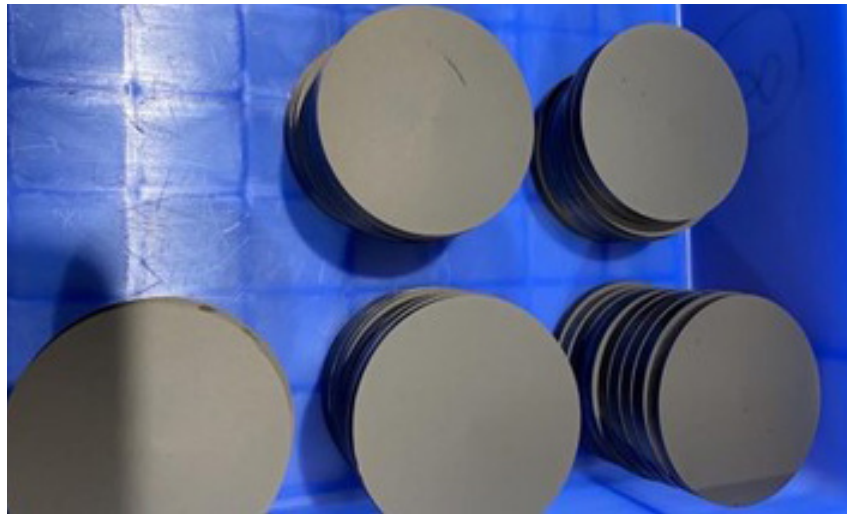
## Machine Configuration – Standard, Professional, Intelligent

The L45 laser profiling machine comes with three basic configurations to achieve best performance and cost:

- Standard version: Equipped with touch probe for pre- and post-lapping measurement and data logging.
- Professional version: In addition to touch probe, a laser proximity sensor is mounted for profile scanning.
- Intelligent version: Multiple sensors are mounted and monitored for data logging and process feedback. Fast processing is possible for specific shapes.



Laser Lapped PCD Surface



PCD Disks Lapped by L45 at Lasertech

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## Specifications

Model	L45
Laser Source	Fiber, 1070 nm
Laser Power	450 W
Stroke of Motorized X-Y Stage	300 x 300 mm, 1 $\mu$ m resolution
Max Traverse Speed	3000 mm/min
Z axis	150 mm, 1 $\mu$ m resolution
C axis	0.1 degree resolution
Supply	5 kW, 220 V; 2 x D8 compressed air 0.6 Mpa
Environment	No dust, no vibration. Operating temperature: 15°C-30°C
Dust and Fume Removal	Min 10 m <sup>3</sup> /min
Machine Size (W/D/H in mm)	940/1680/1770
Exhaustion size (W/D/H in mm) /weight	730/650/1660 (100 Kg)
Total Weight	850 Kg
<b>Processing Capability (for reference only)</b>	
Coarse Lapping Rate	60 mm Diameter x 0.1 mm thickness @4.5 min; 2 $\mu$ m Ra
Fine Lapping Rate	60 mm Diameter x 0.05 mm thickness @7 min; 0.2 $\mu$ m Ra