

System Features

- Multiple target configurations — all UHV compatible
- Co-axial, Ferrofluidic rotary feedthrough
- Design provides for easy target changes
- Adaptable to various target sizes
- Water-cooled target shielding for high-temperature applications
- Automated target indexing with LabVIEW™ software control
- No silver paste required

System Options

Z-axis target motion: Adds 50 mm (or larger) stroke to the target assembly from the base of the mother-flange within the deposition chamber using a bellows-sealed stage. The overall length external to the chamber is increased by 4.5". A motor drive unit for the stage is available at an additional cost.

Internal Z-axis target height adjustment: Allows up to 25 mm of target height and water-cooled shield adjustment (adjustment made internal to chamber, or with manipulator assembly on the bench)

Water-cooled target shield with slot for laser and plume

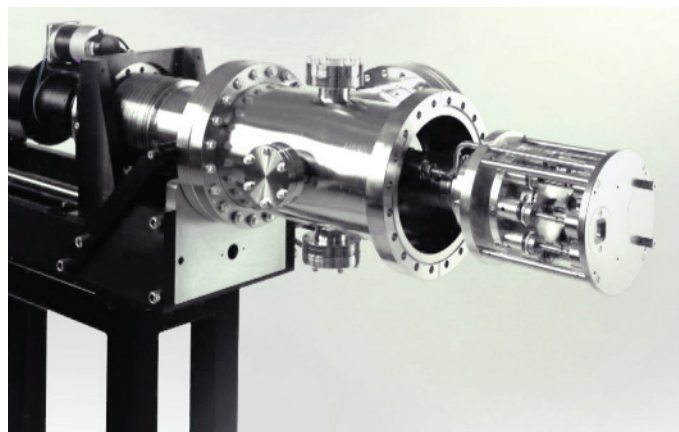
Computer-controlled motor drive for target indexing as well as excimer laser functions

Shutter assemblies

Support shafts for vertical target mounting configurations

User-specified accessory ports on main flange for shutters, bias rings, etc.

Higher target rotational speed



Custom Target Manipulator Assembly

With eight 1" diameter targets. Includes Z-stage and load lock chamber assembly.

PVD Products provides custom engineering for **UHV PLD target manipulators** to fit your deposition chamber. These manipulators are based on a single co-axial rotary Ferrofluidic rotary feedthrough. This feedthrough incorporates extended life, even at high rotational speeds or high substrate temperatures. Hollow shafts on the target assemblies reduce heat transfer to the gears and bearings and provide for longer operating times. The feedthrough does not use any rotary-bellows seals, which typically fail during continuous use due to fatigue. This manipulator requires only one penetration through the mother-flange, providing more flexibility in properly locating the target assembly within your PLD chamber. This provides multi-layer versatility at your finger tips.

Units come with smart motors coupled to supplied software. Software can index and rotate targets as well as provide target toggling if required. Water-cooled shields are available to protect both the active and inactive targets from vapor back-scattered by background gas, as well as thermal radiation from substrate heaters. Target assemblies are designed to provide easy target replacement.

PLD Target Manipulator

Specifications

Target Rotational Speeds

Variable from 5 to 50 RPM samples per customer requirement.

Electrical Requirements

100–120 VAC, 50/60Hz, 4A (software control option)

Electronic Drive Unit

19" rack mount x 3.5" high x 18" deep

Max. Bake-Out Temperature

180°C with motors removed

For Optional Water-Cooled Stage

2 lpm, 5 Barr max, filtered, 27°C

Water Requirements

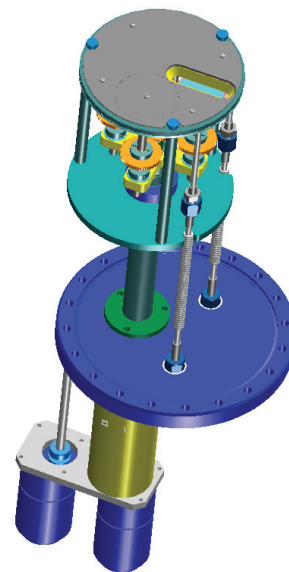
¼" Swagelok™ fittings external to the chamber

Configurations:

Custom configurations are available on request for target diameters ranging from 12 to 300 mm. Target thickness up to 12 mm can be accommodated. Assemblies can be mounted on flanges ranging in size from 2.75" (70 mm) to 16.5" (420 mm). To obtain a quote for your specific needs, please refer to the adjacent figure and provide us with the following information:

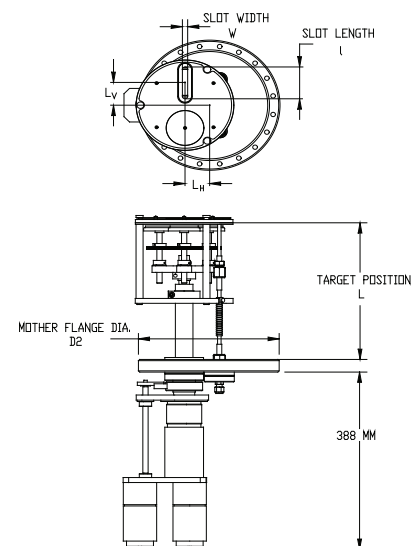
- Number, diameter, and thickness of targets (N, d, t)
- Orientation of targets within the deposition chamber
- Horizontal or vertical (H, V), or at specified angle (θ)
- Mother-flange diameter (D2)
- Distance from vacuum surface to target surface (L)
- Distances from the center of the mother-flange to the center of the active target (L_v , L_h)
- Slot length and width (l, w)
- Slot orientation
- Laser beam position

The customer is responsible for providing PVD Products with any information regarding space restrictions within the customer's chamber. Once a manipulator has been completely specified, PVD Products will provide the customer with a computer-aided 3D solid model for the customer to approve prior to fabrication.



Solid Model of a Target Manipulator

Holding four 2" diameter targets with optional water-cooled shield and computer-driven stepper motors to index the active target



Drawing of Target Manipulator Configuration

PVD Products

Fueled by creative problem-solving, our team of experienced engineers and technicians is passionate about finding the best solution to your unique deposition system demands. We provide end-to-end support, from design through installation and continuing maintenance.

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