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Binder *Labortechnik*

Pumping Station & Plasmacleaner

Pumping Stations TS 716

The Binder TS 716 pumping station (drying station) for TEM sample holders is based on a state-of-the-art, air-cooled, oil-free turbomolecular pumping unit. It can be equipped with up to six chambers for your TEM specimen holders. The pumping station can be upgraded with a Bake-Out Unit and a Cryo-Kit to evacuate your cryo TEM-holders (all optional).

- **1 main- and up to 5 sub-chambers**
- **Touchscreen interface with intuitive menu navigation**
- **Visual display for monitoring process status**
- **State-of-the-art, air-cooled, turbomolecular pumping station with electronic control**
- **Standard equipped with oil-free turbomolecular and membrane pump**
- **Adapter for FEI, Zeiss, Jeol, and Hitachi specimen holder (additional adapter types on request)**

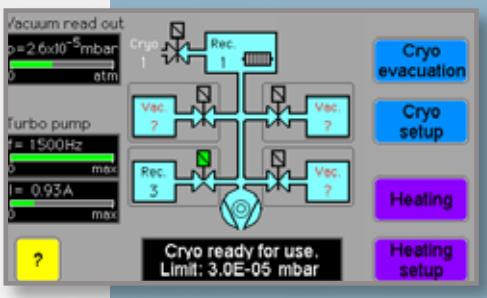
The TS 716 is available with one main- and up to five sub-chambers. The main-chamber is directly connected to the turbo-molecular pump. Sub-chambers can be evacuated and vented independently.

The combination of a turbo-molecular pump and a membrane pump, together with the integrated pumping control, generates an oil-free vacuum with short cycle times. The ultimate vacuum pressure achievable is 8 x 10^{-6} mbar. The electromagnetic venting valve enables fully automated chamber venting via an external N_2 connection.

The sub-chambers have a volume of 2cm^3. Thus, they can be evacuated quickly. In order to maintain the vacuum and cleanliness of the sub-chambers, all sub-chambers are isolated from the main-chamber by a control valve during bake-out or cryo pumping processes. After completion of a process, the isolated chambers are reset to their former status.

Sub-chambers can be vented and evacuated separately and independently without interrupting the operating vacuum. The chambers are software controlled via the menu navigation on the touchscreen interface.

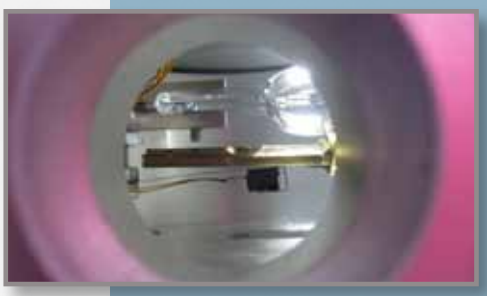
The visual display reports the real-time status of ongoing applications. All information about the vacuum, current consumption and speed of the turbomolecular pump are reported by bar graphs. Bar graphs and displays change color according to their current status. The status color switches to green when the final values are reached.



Status Monitor and Controls

Additional options:

A **Bake-Out Unit** provides an effective removal of surface contamination (e.g. adsorbed water) at the main-chamber. The bake-out temperature, vacuum and time duration can be conveniently programmed via touchscreen.

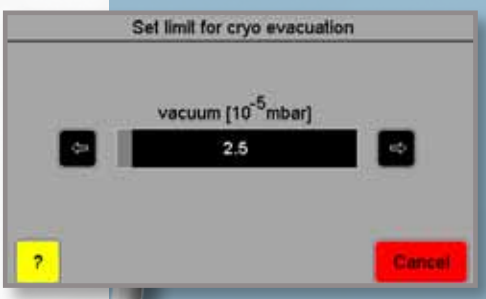

Bake-Out Unit

A **Cryo-Kit** is available to evacuate the insulation vacuum of cryo-TEM holders. It consists of an additional controllable valve, an adapter to connect the insulation vacuum and a software extension pack. An audible alarm indicates when the preselected vacuum is reached.

Bake-Out Setup

Advantages of the TS716 over previous models

- Larger vacuum connections allow faster and better pumping of the sample holders
- Easy to remove holder adapters allow simple cleaning of contaminated adapters
- Smaller chamber volume for quick evacuation



Cryo Setup

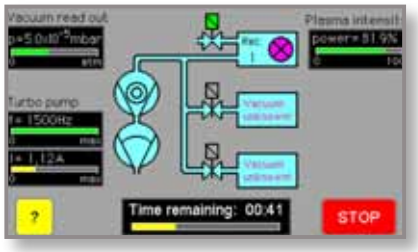
The devices are of a modular design and can be adjusted to your requirements as necessary.

Please contact us if you need any further information.


Head of the TS 716

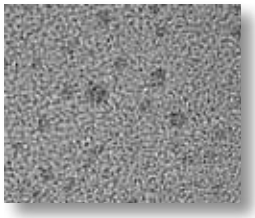
Plasmacleaner TPS 316

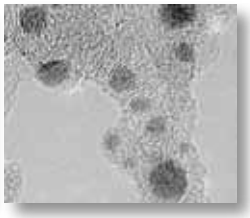
The TPS 316 is optimized for gentle cleaning of your specimen and TEM-holders. The plasma source is designed to minimize thermal and sputter effects. This way it is possible to clean even samples which are supported by carbon film coated grids. e-beam-induced contamination in later high-res imaging is prevented. An optional SEM-Kit is available for the cleaning of samples with max. 30mm in diameter and a maximum height of 15mm.



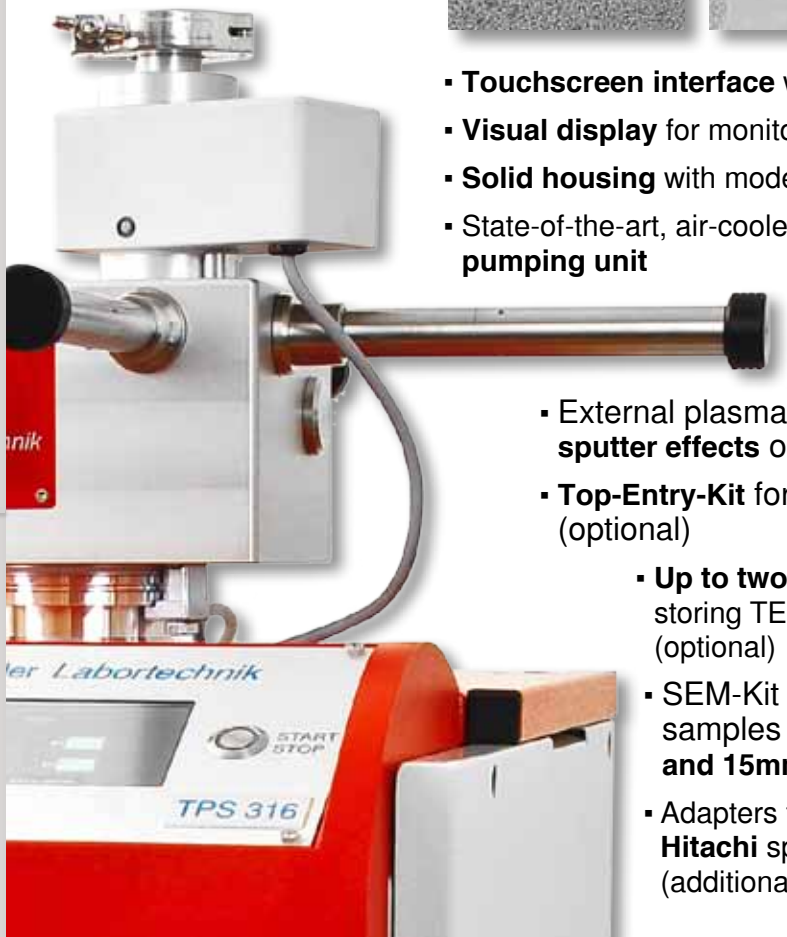
Status monitor during plasma operation

Time setting plasma operation





Effect of cleaning and thinning of the carbon support film for HRTEM-characterisation of Gold-Nanoclusters (Courtesy of Prof. Mayer, Ernst Ruska-Center for Microscopy, Juelich)



- **Touchscreen interface** with intuitive menu navigation
- **Visual display** for monitoring process status
- **Solid housing** with modern design
- State-of-the-art, air-cooled, oil-free **turbo-molecular pumping unit**
- External plasma source for **minimal sputter effects** on specimen and holders
- **Top-Entry-Kit** for through holder cleaning (optional)
  - **Up to two sub-chambers** for drying and storing TEM-holders of different types (optional)
- SEM-Kit for sample cleaning of samples with **max. 30mm diameter and 15mm height** (optional)
- Adapters for **FEI, Zeiss, Jeol, and Hitachi** specimen holders (additional adapter types on request)

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