

MODEL 2020

## Advanced Tomography Holder

Allows room temperature  
data collection over wide tilt  
and translation ranges



**FISCHIONE**  
INSTRUMENTS







# MODEL 2020

## Advanced Tomography Holder

A revolutionary holder that allows room temperature data collection over wide tilt and translation ranges, even in restrictive pole-piece-gap geometries.

- **Ideal for room temperature electron tomography**
- **High tilt angles**
- **Maximized field of view**
- **Optimized specimen clamping**
- **Easy, accurate specimen loading and centering**

### PLASMA CLEANING

Fischione recommends that you clean the specimen and specimen holder with the Fischione Model 1020 Plasma Cleaner or Model 1070 NanoClean before insertion into the TEM.

During collection of tomographic data, the electron beam will be on the same area of the specimen for an extended time. As a result, organic contamination may build up on the specimen. A plasma cleaning time of 10 seconds to 2 minutes removes the contamination. Longer cleaning times can remove contamination spots caused by previous TEM viewing of non-plasma cleaned specimens.

When not in use, the holders should be stored under vacuum in Fischione Model 9010 Vacuum Storage Containers or the Model 9020 Vacuum Pumping Station.

### Three-dimensional information

Advances in microstructural characterization require the ability to analyze structure and chemistry in three dimensions. However, most TEM techniques are limited to producing two-dimensional information. Tomography, on the other hand, combines two-dimensional data sets taken at various tilt angles to produce three-dimensional information.

Biological research has benefited from the use of electron tomography for many years; however, the physical sciences have been limited by the inability to tilt the specimen to high angles

### Eliminates the shadowing associated with most holders at high-tilt angles

within the confines of the narrow-gap pole pieces necessary for atomic resolution imaging. In addition, there was an increasing desire to use high

angle annular dark field scanning transmission electron microscopy (HAADF-STEM) to reduce diffraction contrast in physical science applications. Now, Fischione's advanced specimen holder technology enables room temperature tomography for both the life and the physical sciences.

### Maximized field of view at tilt angles above 70° with no shadowing

The Fischione Model 2020 Advanced Tomography Holder for transmission electron microscopes (TEMs) features high tilt and extended field of view. The revolutionary holder allows room temperature data collection over wide tilt and translation ranges even in restrictive pole-piece-geometries.

The Advanced Tomography Holder is for life sciences and physical sciences, as well as any other applications requiring high specimen tilt and simultaneous large field of view. The Advance Tomography Holder's streamlined specimen

clamping mechanism eliminates the shadowing associated with most holders at high-tilt angles.

### Accepts wide range of specimen thicknesses

The Advance Tomography Holder's clamping mechanism accepts specimen grids, standard 3 mm diam TEM specimens, or focused ion beam (FIB) lamella. The Advance Tomography Holder accommodates specimen thicknesses up to 250  $\mu\text{m}$ .

### Evenly distributed force from fully retractable clamp

Specimens are secured with two clamps that produce an evenly distributed force on opposing edges of the specimen. For convenience during loading and unloading, the clamps are spring-loaded to lift them off the specimen surface. Then, they can be fully retracted.

Positioning the clamps is done without contacting the specimen, eliminating the possibility of specimen damage. This is far superior to typical clamping mechanisms that limit the specimen size or interfere with viewing at high-tilt angles.

### Easy, accurate, self-centering positioning

The tapered self-centering specimen receptacle guides the specimen into position. The fully retractable clamps make it easy to rotate the specimen manually for a dual-axis tilt series.

### Touch protection

Fischione's Advanced Tomography Holders are compatible with the TEM's touch-alarm that stops goniometer movement in the event that a pole touch occurs. Always be aware of the TEM's pole piece configuration and follow the microscope manufacturer's recommendation for operating the goniometer at high-tilt angles.

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### Ordering information

All Fischione Advanced Tomography Holders come with a dedicated loading station for secure specimen handling, tools to assist in specimen clamping, and a Fischione Model 9010 Vacuum Storage Container for storing the holder in a clean, vacuum environment.



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