

Spare Parts Catalogue Part Ia

Sample Plates, Probes and Probe-Carriers

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Note: all information given in this document is subject to change without notice. This document has been compiled carefully but mistakes cannot be excluded. No guarantee can therefore be given for the accuracy of the information contained in this document.

Sample Plates

A simple categorization of sample plates is difficult. Since most sample plates can be used in more than one instrument, listing the sample plates “by instrument” would lead to duplication and render the maintenance of this document almost impossible. Therefore an attempt is made to distinguish between “standard sample plates” which fit into most instruments, and “specialty sample plates” that only fit a small range of instruments.

When choosing a sample plate always make sure that it is actually compatible with your instrument.

Standard Sample Plates

These are simple sample plates made from different materials and compatible with practically all of our instruments.

S220601-S Stainless steel sample plates (set of 5) – weight 2.2 g per plate

S2208-S Molybdenum sample plate (1 off) – weight: 2.8 g

S2209-S Tantalum sample plate (1 off) – weight: 4.6 g



S221501-S Tantalum sample plate with window (1 off)





Window size: 7x4 mm.

Sometimes the following sample plates with threaded holes can be useful. Together with molybdenum studs (R213007-S, 2.5 mm long, minimum order quantity: 4 pieces; or S2186-S, 5 mm long), molybdenum nuts (PN04156-S, set of 20) and molybdenum clamping foils (see below), a simple sample plate for clamping samples can be built.

PN04155-S Base plate of VT sample plates (set of 2)





Contains 2x S2207. Suitable for the VT AFM and VT STM instruments that work with “double decker” cooling/heating sample plates.

Suitable clamping foils: S2402-S ( approximately 3.5 x 11 mm) or S2537-S ( smaller holes, approximately 4.5 x 9 mm).

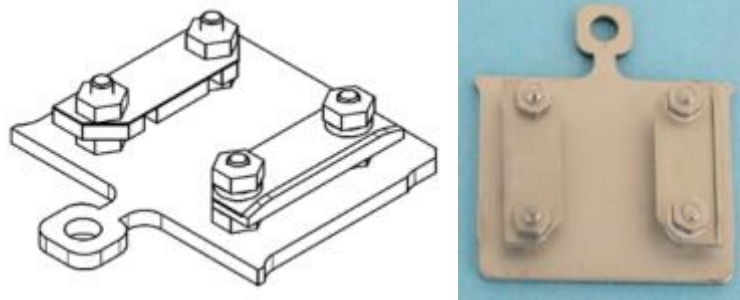
PN04169-S Base plate for direct heating sample plate (set of 2)



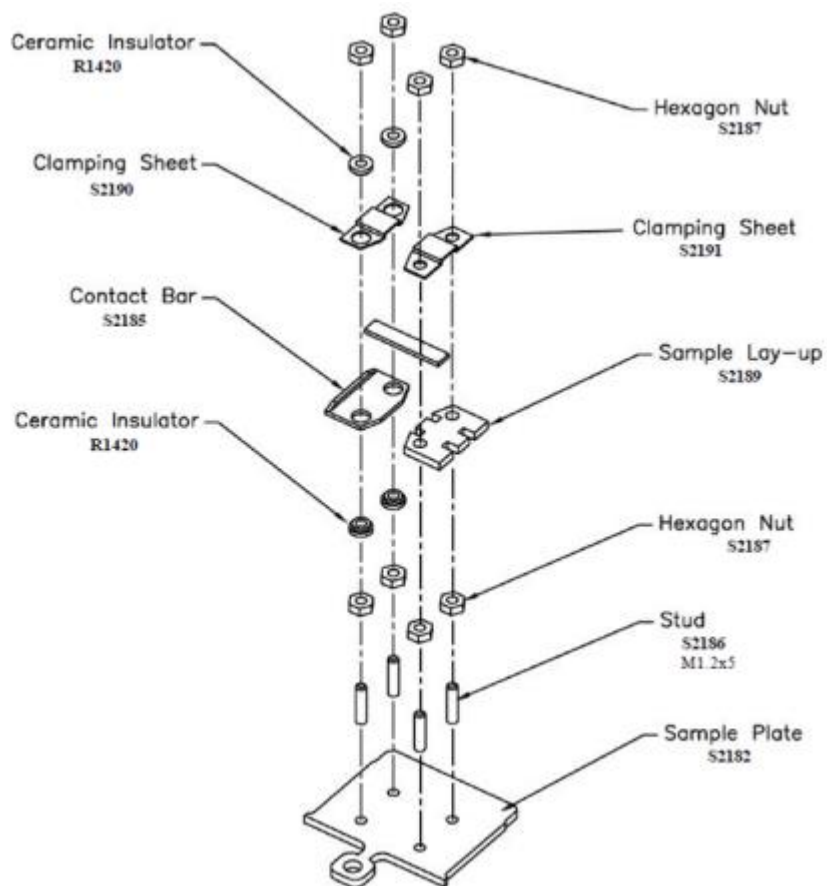
Contains 2x S2182-S. Suitable for all instruments that work with the “single decker” direct heating sample plate (AFM/STM, STM 1, LT STM, Micro STM, VT STM XA, VT AFM XA, Fermi SPM...).

Suitable clamping foils: PN04151-S (2x  small holes, approximately 4 x 12 mm and 2x  large holes, approximately 4 x 12 mm).

S218201-S Direct current heating sample plate

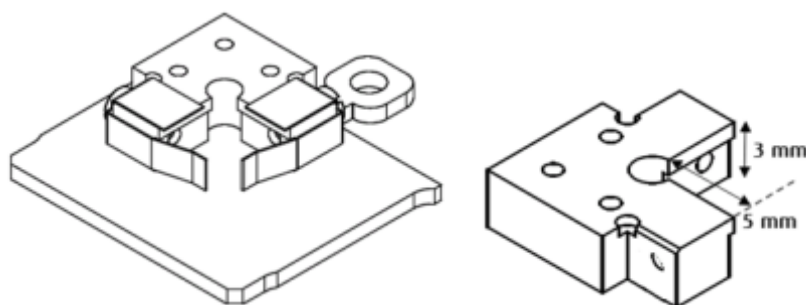


Suitable for STM 1, UHV AFM/STM, LT STM, Micro STM, VT STM XA, VT AFM XA, Fermi SPM. Not suitable for standard VT STM and VT AFM with double-decker sample plates.



Some parts are not sold individually, please refer to section Spare Kit Sets for VT Sample Plates.

PN05063-S Sample plate for NaCl crystal

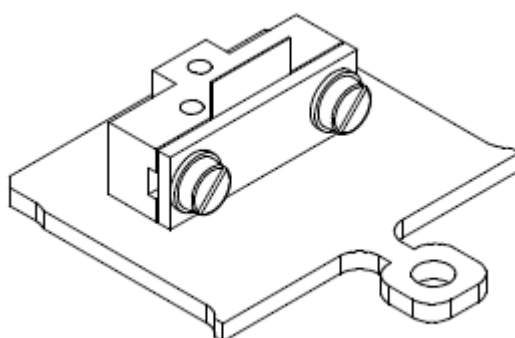


This sample holder can be used to hold salt crystals used for standard performance measurements. The crystal is held in place with side-mounted springs. Accidental dropping of the crystal into the instrument is prevented by two thin metal sheets slightly covering the surface on two sides. The total height of the sample plate is only 4.1 mm. This sample plate contains stainless steel parts and should therefore only be heated to moderate temperatures.

Ideal sample size: 5 mm x 5 mm and 3 mm in height (compare to drawing on the right).

Suitable for STM 1, UHV AFM/STM, LT STM, Micro STM, VT STM XA, VT AFM XA, Fermi SPM. Not suitable for standard VT STM and VT AFM with double-decker sample plates.

R216213-S Sample plate for Cross Sectional STM (X-STM)



This sample holder can be used to hold a sample slab for cleaving it in-UHV. In order to safely clamp the sample and especially avoid the sample falling out of the sample holder when cooled down to 77K or 5K, we suggest soldering the sample to the mini-vice with Indium (or anything similar) before inserting it into UHV.

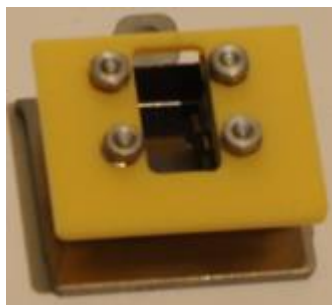
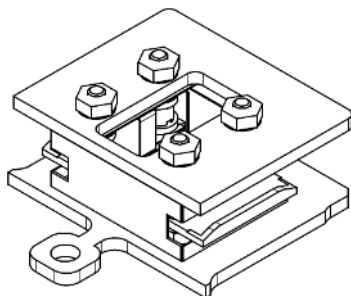
Ideal sample size: 4 mm x 9 mm and 0.1 mm in thickness.

Suitable for STM 1, UHV AFM/STM, LT STM, Micro STM, VT STM XA, VT AFM XA, Fermi SPM. Not suitable for standard VT STM and VT AFM with double-decker sample plates.

Sample Plates for Standard VT Instruments (“double decker”)

All the sample plates from the section “Standard sample plates” (page 3) can be used with the exception of the sample plate for direct current heating.

R191949-S Sample plate for direct current heating for VT



Suitable for VT AFM and VT STM accepting double decker sample plates.

B001388-S is identical to R191949-S but includes an additional metal coated ceramic plate R192031-S. The metal coated ceramic plate is used in electron spectroscopy applications to avoid a charge up of the ceramic.



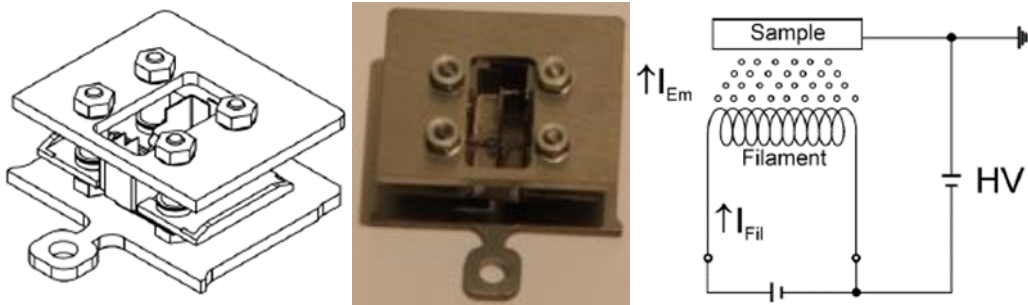
Ceramic Plate:

For spectroscopy applications we recommend metal coated plates (R192031-S).

For prolonged high temperature applications A2O3 plates are recommended (CA02109-S/ CA06702-S).

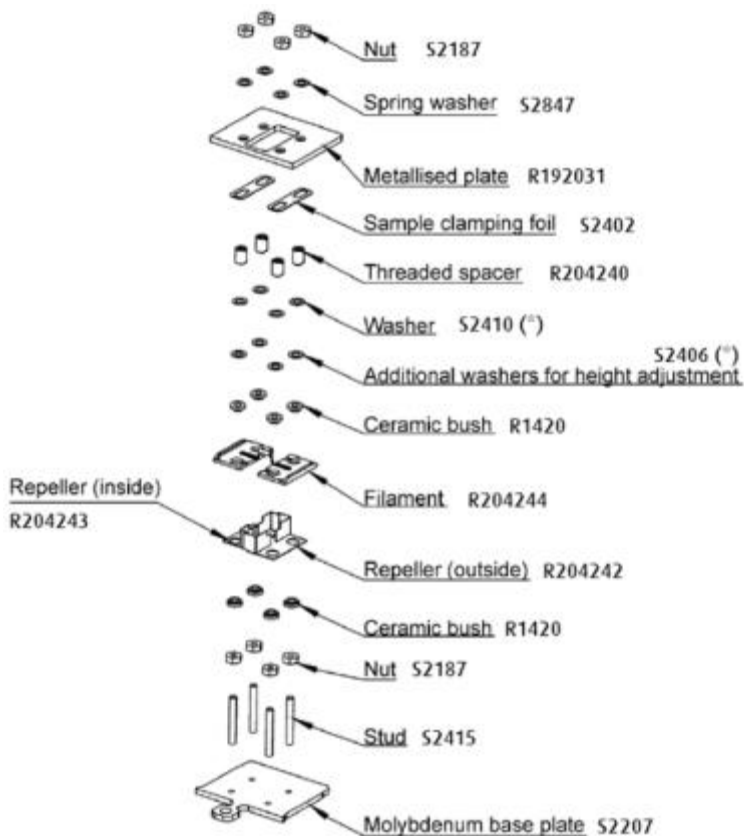
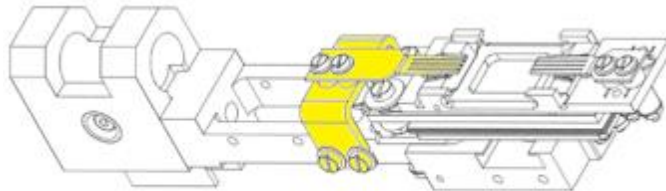
Not all parts are available individually. For spare kit sets please see section Spare Kit Sets for VT Sample Plates.

R204245-S E-beam heating sample plate for VT STM and VT AFM



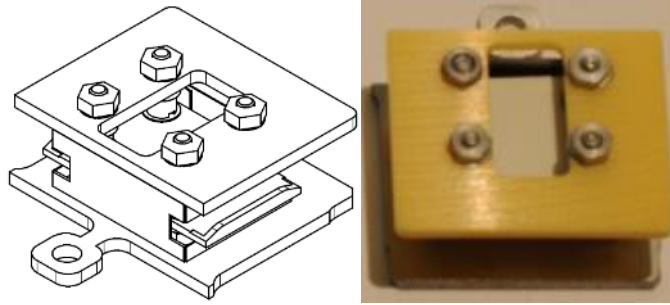
Sample plate with integrated filament for e-beam heating of samples on the system manipulator up to 1800 K for sample preparation. In the VT stage the filament can be used for radiative heating (no high voltage) of the sample up to 650 K during imaging. A dedicated power supply (B002986) is required.

Please note that in order to use this sample plate on a manipulator, the manipulator needs to be equipped with two contact brushes:



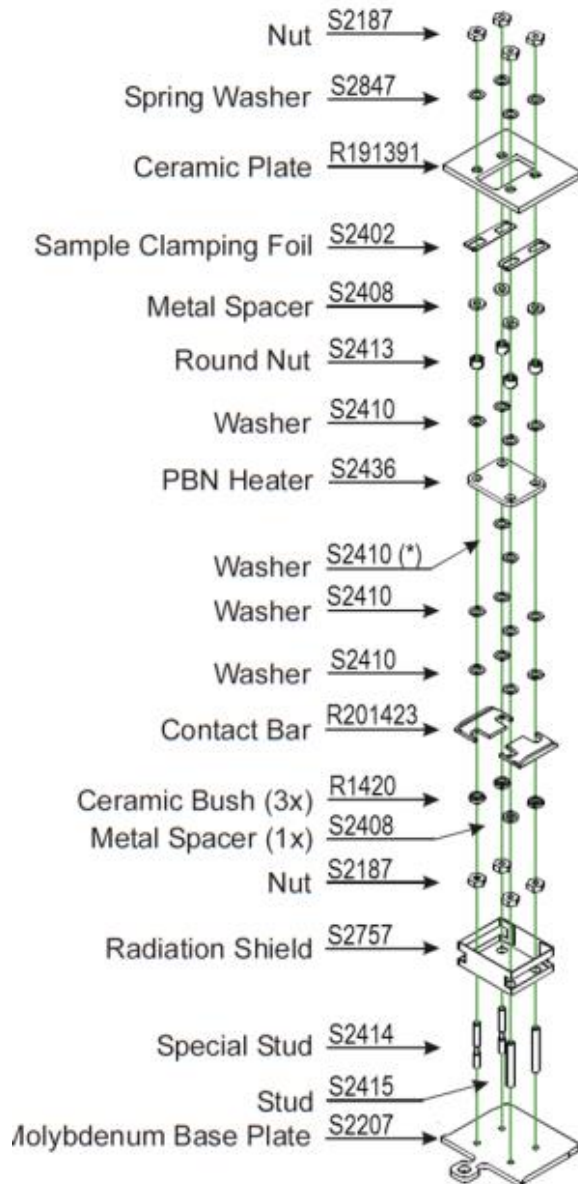
Not all parts are available individually. For spare kit sets please see section Spare Kit Sets for VT Sample Plates.

R191951-S Sample plate for radiative heating for VT



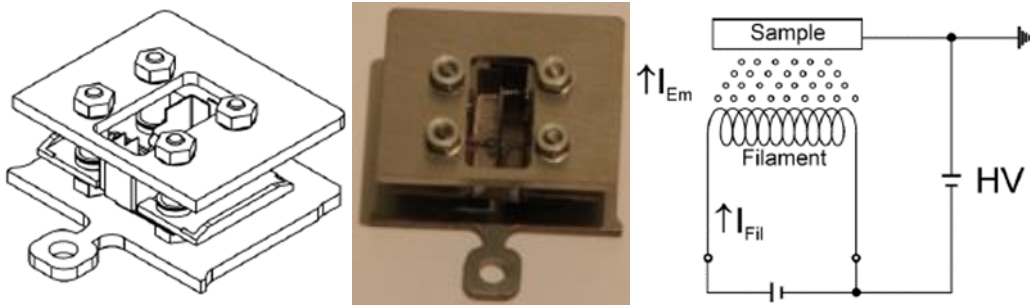
Suitable for VT AFM and VT STM accepting double decker sample plates.

B001387-S is identical to R191951-S but includes an additional metal coated ceramic plate R192031-S. The metal coated ceramic plate is used in electron spectroscopy applications to avoid a charge up of the ceramic.



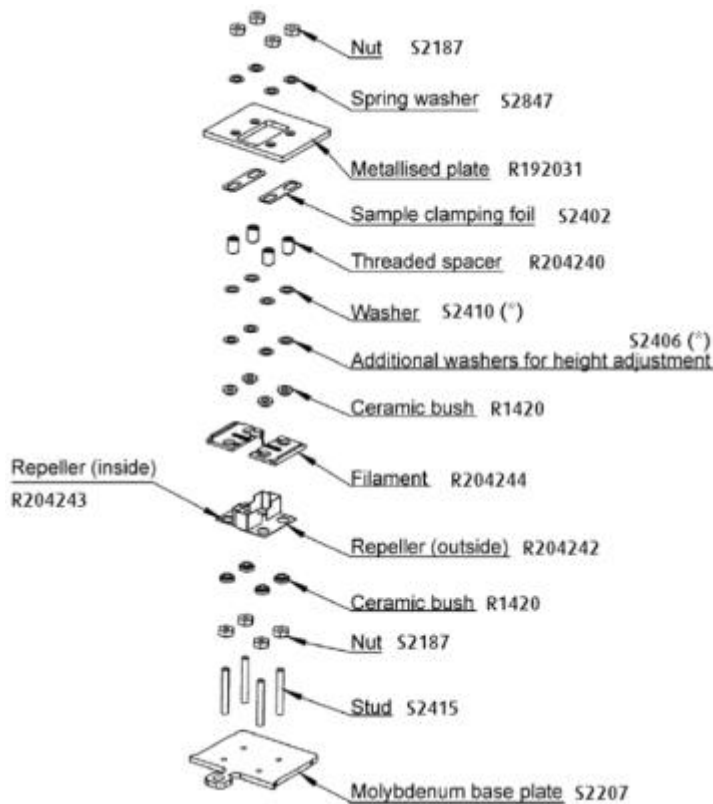
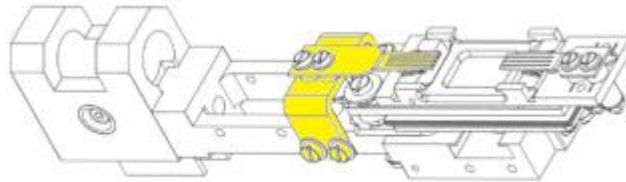
Not all parts are available individually. For spare kit sets please see section Spare Kit Sets for VT Sample Plates.

R204245-S E-beam heating sample plate for VT STM and VT AFM



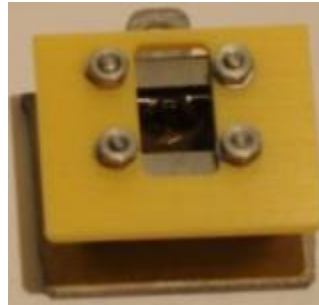
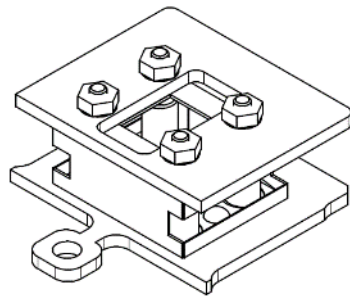
Sample plate with integrated filament for e-beam heating of samples on the system manipulator up to 1800 K for sample preparation. In the VT stage the filament can be used for radiative heating (no high voltage) of the sample up to 650 K during imaging. A dedicated power supply (B002986) is required.

Please note that in order to use this sample plate on a manipulator, the manipulator needs to be equipped with two contact brushes:



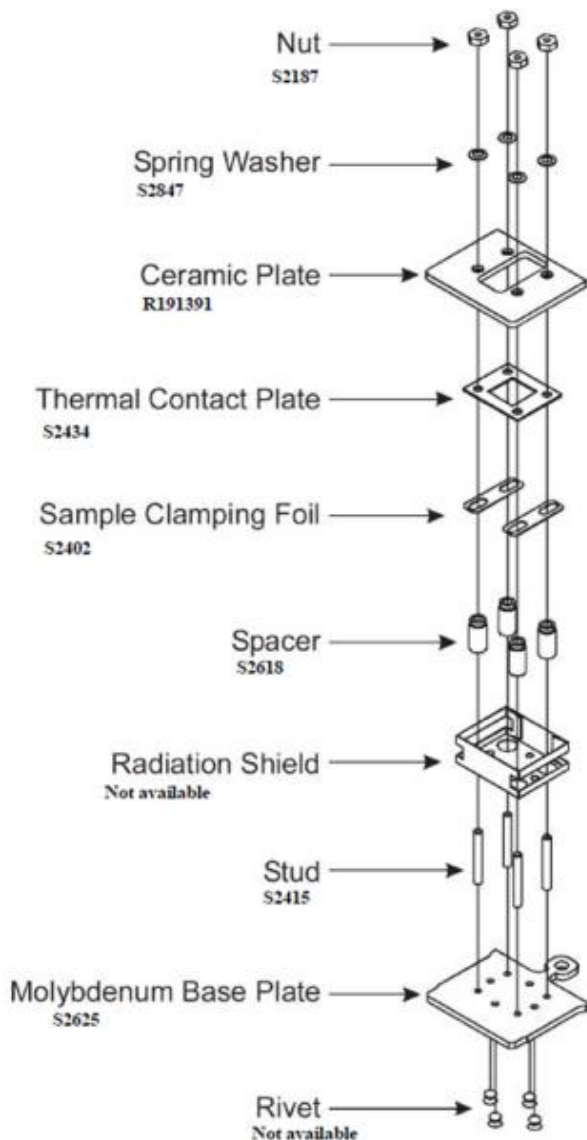
Not all parts are available individually. For spare kit sets please see section Spare Kit Sets for VT Sample Plates.

R191950-S Cooling sample plate for VT STM



Suitable for VT AFM and VT STM accepting double decker sample plates.

B001396-S is identical to R191950-S but includes an additional metal coated ceramic plate R192031-S. The metal coated ceramic plate is used in electron spectroscopy applications to avoid a charge up of the ceramic.



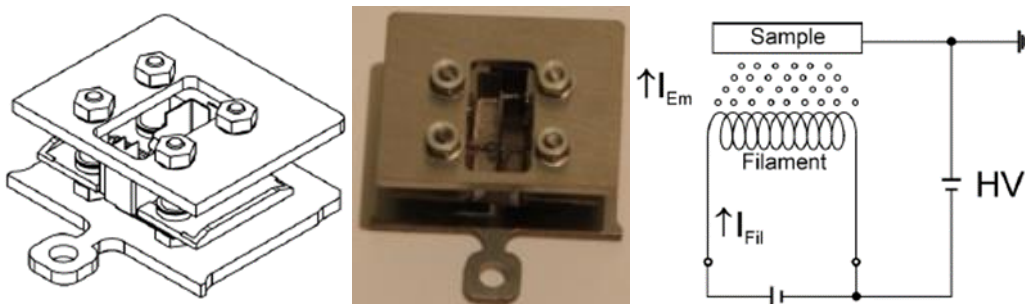
Ceramic Plate:

For spectroscopy applications we recommend metal coated plates (R192031-S).

For prolonged high temperature applications A2O3 plates are recommended (CA02109-S/ CA06702-S).

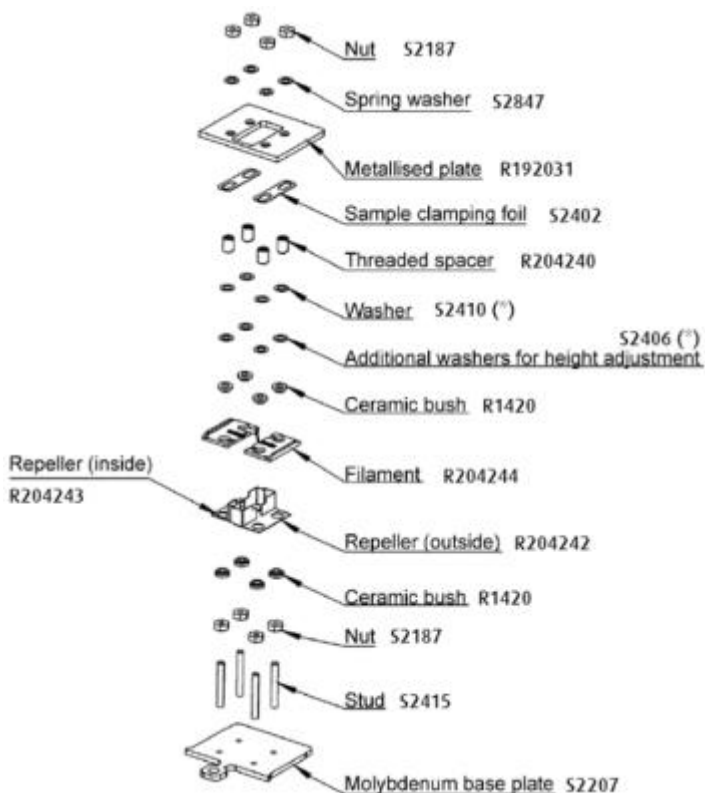
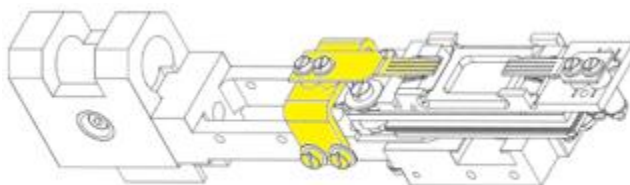
Not all parts are available individually. For spare kit sets please see section Spare Kit Sets for VT Sample Plates.

R204245-S E-beam heating sample plate for VT STM and VT AFM



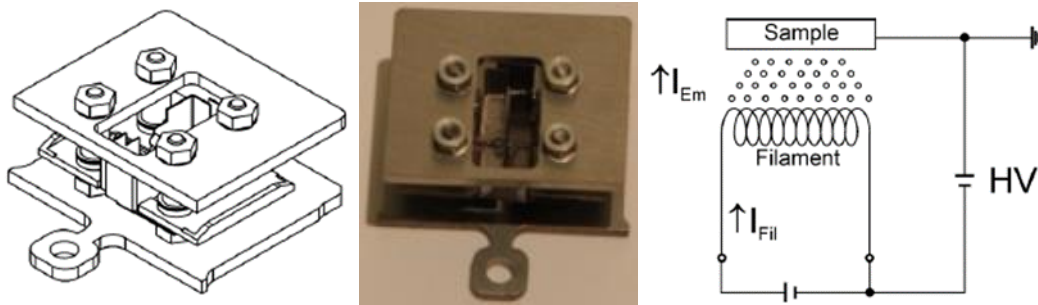
Sample plate with integrated filament for e-beam heating of samples on the system manipulator up to 1800 K for sample preparation. In the VT stage the filament can be used for radiative heating (no high voltage) of the sample up to 650 K during imaging. A dedicated power supply (B002986) is required.

Please note that in order to use this sample plate on a manipulator, the manipulator needs to be equipped with two contact brushes:



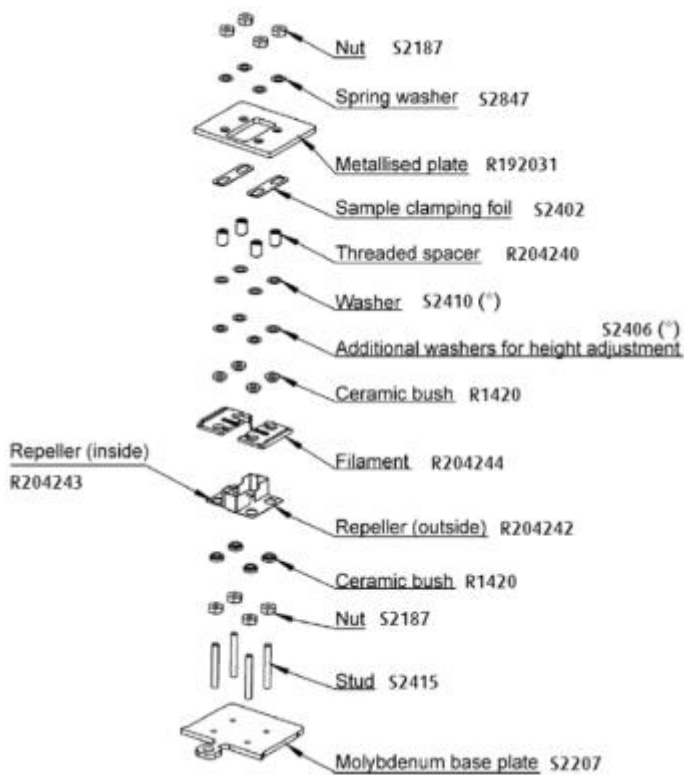
Not all parts are available individually. For spare kit sets please see section Spare Kit Sets for VT Sample Plates.

R204245-S E-beam heating sample plate for VT STM and VT AFM



Sample plate with integrated filament for e-beam heating of samples on the system manipulator up to 1800 K for sample preparation. In the VT stage the filament can be used for radiative heating (no high voltage) of the sample up to 650 K during imaging. A dedicated power supply (B002986) is required.

Please note that in order to use this sample plate on a manipulator, the manipulator needs to be equipped with two contact brushes:



Ceramic Plate:

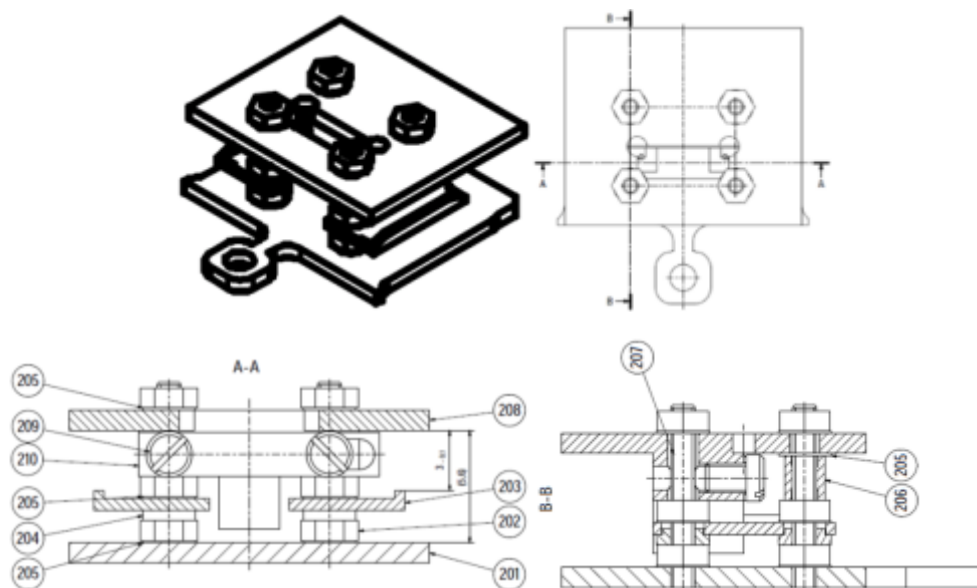
For prolonged high temperature applications A2O3 plates are recommended (CA06702-S)

(*) Washers:

For height adjustments you can use S2406 (0.5 mm) instead of S2410 (0.1 mm). They are available in a set (PN04150-S).

Not all parts are available individually. For spare kit sets please see section Spare Kit Sets for VT Sample Plates.

R193240-S Cleaving sample plate for VT STM and VT AFM

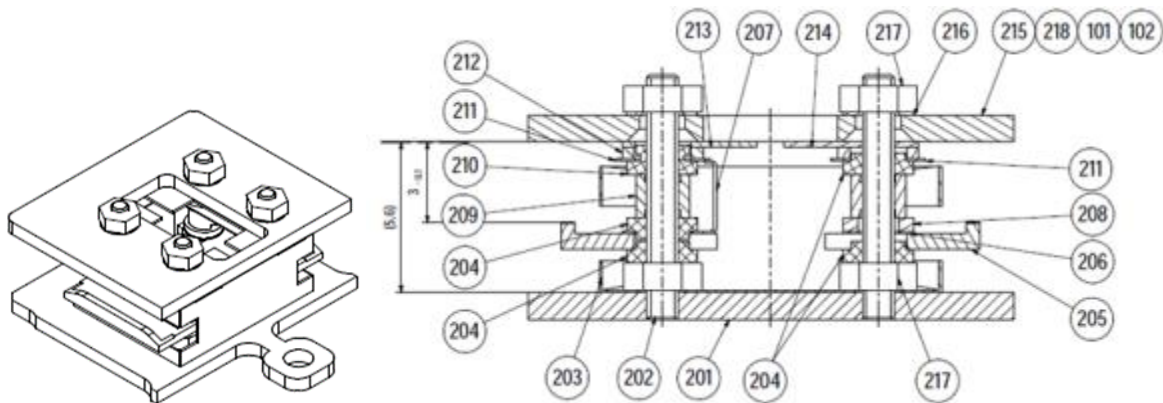


Please note that not all of the following parts may be available individually. Please refer to Spare Kit Sets for VT Sample Plates.

- 201 1x S2207 base plate
- 202 12x S2187 nut M1.2
- 203 2x R201423 contact bar
- 204 4x R1420 ceramic bush
- 205 14x S2484 washer 2.6 x 1.5 x 0.1
- 206 2x S2412 round nut
- 207 4x S2415 stud (9 mm long)
- 208 1x R201448 clamping block
- 209 2x R193242 special screw
- 210 1x R193243 clamping foil

Various washers (S2406, S2408, S2410 and S2484) are only sold as a set PN04150-S.

R193663-S BEEM sample plate for VT STM and VT AFM



Please note that not all of the following parts may be available individually. Please refer to Spare Kit Sets for VT Sample Plates.

- 201 1x S2207 base plate
- 202 4x S2415 stud (9 mm long)
- 203 1x S2757 radiation shield
- 204 8x R1420 ceramic bush
- 205 2x R201423 contact bar
- 206 2x S2484 washer 2.6 x 1.5 x 0.1
- 207 1x R1421 contact foil
- 208 2x S2408 washer 2.6 x 1.5 x 0.5
- 209 4x S2413 round nut
- 210 2x S2683 ceramic
- 211 2x S2403 clamping foil
- 212 4x S2682 ceramic 3 x 2.1 x 0.4
- 213 1x S268001 large sheet
- 214 1x S268101 small sheet
- 215 1x R191391 plate
- 216 4x S2847 spring washer
- 217 8x S2187 nut M1.2

Also used for adjustment:

S2406 washer 2.6 x 1.5 x 0.05 (available as PN04150-S)

The top plate 215 can be replaced with the following variants:

- 101 1x R201254 top plate for 2 contacts
- 102 1x R204145 top plate for thermo contacts
- 218 1x R192031 metal coated top plate

Various washers (S2406, S2408, S2410 and S2484) are only sold as a set PN04150-S.

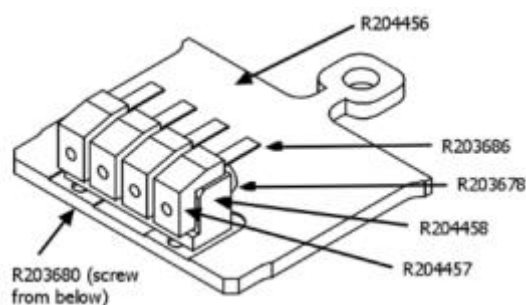
Sample Plates for VT XA Instruments

Please refer to the section Sample Plates for Standard VT Instruments (“double decker”) for sample plates for the standard VT instruments.

All the sample plates from the section Standard Sample Plates can be used including the sample plate for direct current heating.

In addition, the following plates are also available:

B002835-S VT XA sample plate for 4 electrical contacts



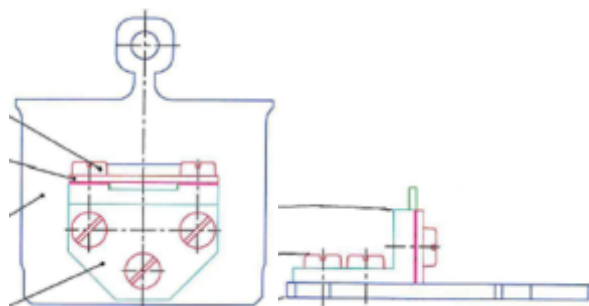
This sample plate is made from molybdenum, tantalum, and a special ceramic. It is possible to heat this sample.

The following spare parts are available:

- R204458-S Ceramic block for VT XA 4 contact sample plate
- R204457-S Contact bracket for VT XA 4 contact sample plate (minimum order quantity: 2)
- R203686-S Tantalum contact (minimum order quantity: 10)
- R203678-S Molybdenum cylinder screw M1x3.5 (minimum order quantity: 6)
- R203680-S Molybdenum countersunk screw M1.2x2 (minimum order quantity: 2)

The baseplate R204456 is not offered separately.

CA09778-S Cleaving sample plate for VT XA (special/prototype)



The sample can be about 5 mm wide and 6 mm high. To these 6 mm please add the part of the sample that will be cleaved off. The typical sample thickness is 0.5 mm with the groove holding the sample being 0.4 mm deep.

Spare Kit Sets for VT Sample Plates

Some parts are not sold individually, for example:

- For clamping foils S2190 and S2191 please choose the set PN04151-S
- For nuts S2187 please choose the set PN04156-S
- For the base plate S2282 please choose the set PN04169-S
- For the base plate S2207 please choose the set PN04155-S.
- For ceramic bushes R1420 please choose the sets R191413-S or PN04157-S
- For washers S2406, S2408, S2410 and S2484 please choose the set PN04150-S.
- For spring washers S2847 please choose the set PN04154-S.
- For studs S2415 please choose the set PN04153-S.

R191410-S *Spares kit type 1*

- 4 x S2186 stud, 5 mm long
- 8 x S2187 nut
- 4 x R1420 ceramic bush

PN04169-S *Base-plates for DH sample plates (set of 2)*

- 2 x S2182 base plate

PN04151-S *Set of clamping-foils for DH-sample-plates*

- 2 x S2190 Sample clamping foil
- 2 x S2191 Sample clamping foil

PN04156-S *Nuts for Omicron-sample-plates*

- 20 x S2187 Nuts

R191413-S *Spares kit type 4*

- 8 x R1420 ceramic bush

PN04157-S *Ceramics for Omicron-sample-plates*

- 20 x R1420 ceramic bush

PN04147-S *Set of accessories for VT-sample-plates:*

- 10 x S2406 Washer (t =0.05mm)
- 10 x S2187 Nut
- 10 x R1420 Ceramic bush
- 4 x S2402 Clamping foil
- 4 x S2403 Clamping foil
- 2 x R1421 Contact foil
- 50 x S2847 Spring washer

PN04149-S *Set of accessories for VT-RH-sample plates:*

- 1 x S2436 PBN heater
- 1 x S2757 Radiation shield
- 2 x S2414 Special stud

PN04150-S **Set of washers for VT-sample-plates:**

- 8 x S2406 Washer Mo (t =0.05 mm)
- 16 x S2408 Washer Mo (t = 0.5 mm)
- 16 x S2410 Washer Ta (t = 0.1 mm)
- 16 x S2484 Washer Mo (t =0.1 mm)

PN04153-S **Studs for VT-sample-plates (set of 8):**

- 8 x S2415 Stud (9 mm long)

PN04154-S **Spring washers for VT-sample-plates (set of 50):**

- 50 x S2847 Spring washer

PN04155-S **Base-plates for RH/DH-sample-plates (set of 2):**

- 2 x S2207 Base plate

PN04156-S **Nuts for Omicron-sample-plates:**

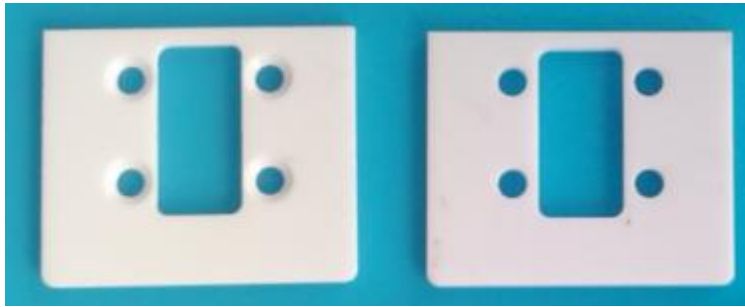
- 20 x S2187 Nut

R191413-S **Spares kit type 4:**

- 8 x R1420 Ceramic bush

PN04157-S **Ceramics for Omicron-sample-plates:**

- 20 x S1420 Ceramic bush

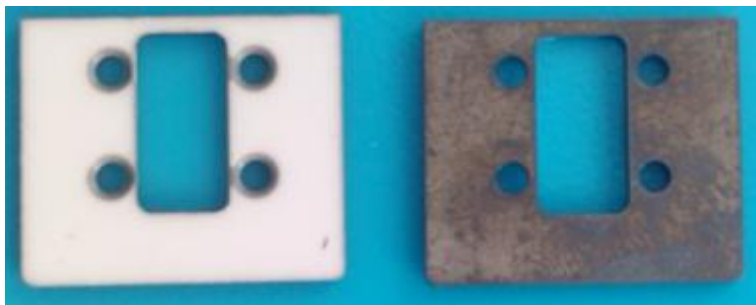
CA02109-S Alumina top plate for VT sample plates

(Back and front side)

The standard ceramic top plates R191391-S (metal coated version: R192031-S) may turn conductive after prolonged exposure to high temperatures particularly in direct current heating sample plates where the sample is heated for many hours.

If you run into this effect during your experiments you should try these alumina plates instead. A metal coated version is available for spectroscopy applications to avoid charging effects.

Please keep in mind that the drift stability, as well as the highest and lowest achievable temperature inside the VT instrument may be influenced by the different thermal properties of the top plates.

CA06702-S Alumina top plate for VT sample plates (metal coated)

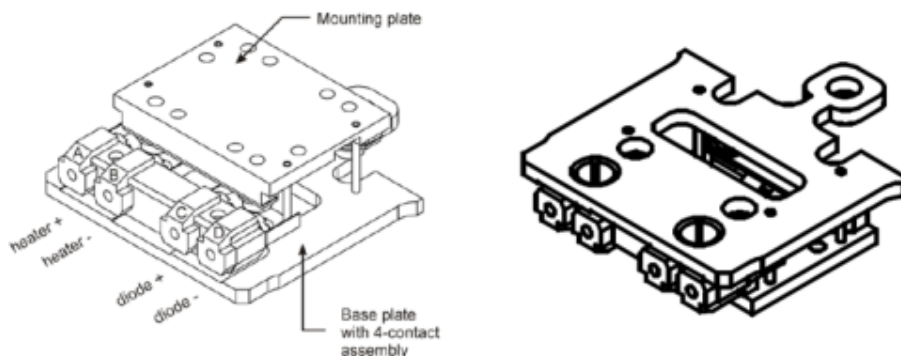
(Back and front side)

Please refer to CA02109-S (above) for details. The metal coating may appear nonuniform after prolonged exposure to air without affecting its effectiveness in avoiding charging effects.

Sample Plates for LT STM



All the sample plates from the section Standard Sample Plates can be used including the sample plate for direct current heating. In addition, the following plates are also available:

R209803-S Sample Plate for Fast Temperature Variation (FTV) for LT STM



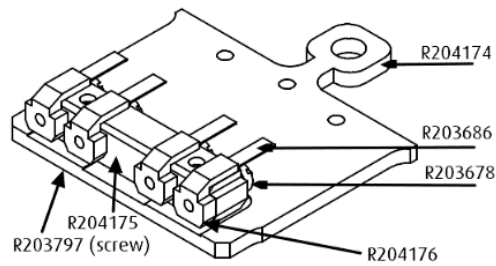
This option allows for atomic resolution measurements from 6K- 400K with fast temperature variation and quick thermal stabilization. The sample is thermally isolated from the microscope stage and locally heated by a compact solid state heater element mounted close to the sample. A Si diode mounted at the sample plate provides direct temperature measurement. The temperature can be continuously varied from base temperature of up to 300K, using LHe or LN2 as cryogenic liquid with corresponding base temperatures. Please note: for the FTV sample plate, the LT STM must be equipped with the option “4 electrical sample contacts” and a temperature controller are required. The whole sample plate is compatible with temperatures between 3K and 420K. The maximum temperature (150°C) is limited by the maximum temperature of the Si diode.

The sample mounting plate is made from stainless steel and is equipped with 10x M1.2 threads (8 of which with 2 mm depth, 2 of which with 1 mm depth) for easier sample mounting.

To clamp a sample using the outer holes you could use molybdenum studs (R213007 S, 2.5 mm long, minimum order quantity: 4 pieces), molybdenum nuts (PN04156-S) and molybdenum clamping foils PN04151-S (2x  small holes, approximately 4 x 12 mm and 2x  large holes, approximately 4 x 12 mm).

Currently no spare parts have been defined for this sample plate because of the difficulties involved in changing parts.

R204177-S LT STM sample plate with 4 electrical contacts



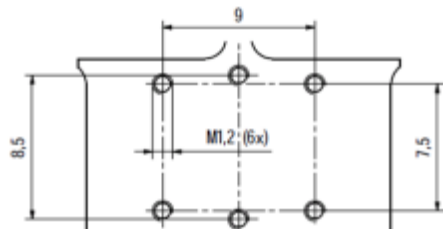
This sample plate is made from molybdenum, tantalum, and a special ceramic. It is possible to heat this sample.

The base plate is equipped with 6x M1.2 threads for attaching samples:

The following spare parts are available:

- R204175-S Ceramic block for LT STM 4 contact sample plate
- R204176-S Contact bracket for LT STM 4 contact sample plate (min. order quantity: 2)
- R203686-S Tantalum contact (minimum order quantity: 10)
- R203678-S Molybdenum cylinder screw M1x3.5 (minimum order quantity: 6)
- R203797-S Molybdenum countersunk screw M1.2x3 (minimum order quantity: 2)

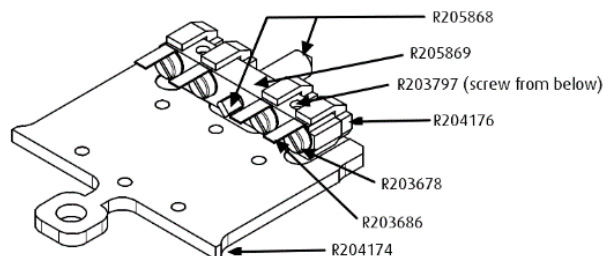
The baseplate R204174 is not offered separately.



You could use molybdenum studs (R213007-S, 2.5 mm long, minimum order quantity: 4 pieces), molybdenum nuts (PN04156-S) and molybdenum clamping foils S2402-S (approximately 3.5 x 11 mm, may have to be slightly modified to fit) to clamp a sample using the four outer holes.

R204177-S replaces R200902-S which is not available any more.

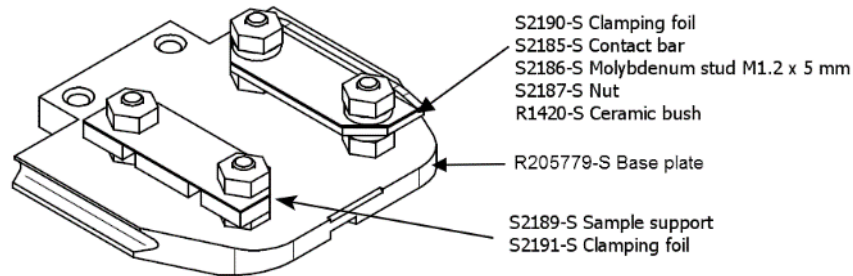
R205870-S LT STM sample plate with 4 electrical contacts (special)



This sample plate was used for project 082504 (Prof. Ishigami). The pin allows to ground all connections during sample transfer and storage (special provisions are needed). For available spare parts see R204177-S LT STM sample plate with 4 electrical contacts.

Sample Plates for Cryogenic STM

R205780-S Direct-current-heating sample plate for Cryogenic STM



The following spare parts are available:

R191410-S Spares kit type 1

- 4 x S2186 stud, 5 mm long
- 8 x S2187 nut
- 4 x R1420 ceramic bush

PN04151-S Set of clamping-foils for DH-sample-plates

- 2 x S2190 Sample clamping foil
- 2 x S2191 Sample clamping foil

PN04156-S Nuts for Omicron-sample-plates

- 20 x S2187 Nuts

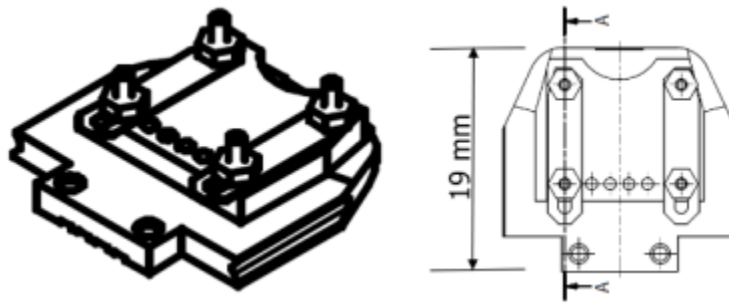
R191413-S Spares kit type 4

- 8 x R1420 ceramic bush

PN04157-S Ceramics for Omicron-sample-plates

- 20 x R1420 ceramic bush

R205460-S Cryogenic STM sample plate with 4 contacts



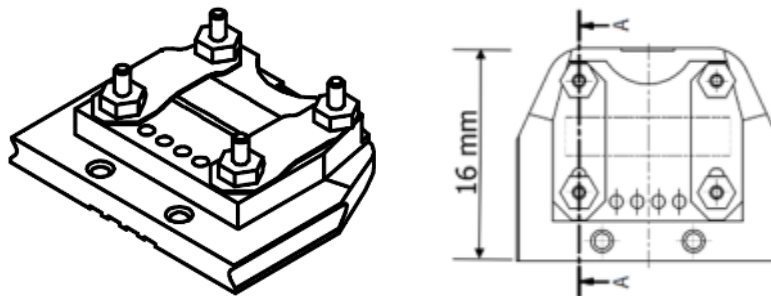
The following Spare parts are available:

PN04857-S Spare kit for 4-contact sample plate (Cryo STM, TESLA SPM)

- 2x R206323 sample clamping foil (3 mm wide)
- 4x R194480 stud M1
- 4x R194481 nut M1

History:

There used to be an old (discontinued) version R200327-S of this sample plate:

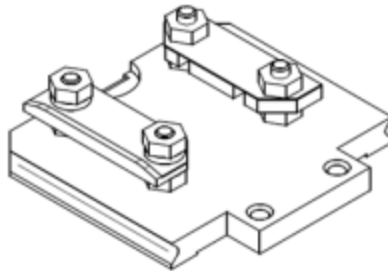


R200327-S has been replaced by R205460-S. The new version is compatible, but it is 3 mm longer. Please confirm that it will work with your particular sample transfer system.

PN04804-S was the spare kit part for R200327-S. The difference to PN04857-S is that the included clamping foils are 1 mm wider. PN04804-S also is no longer available. Please use PN04857-S instead.

Sample Plates for Cryogenic SFM

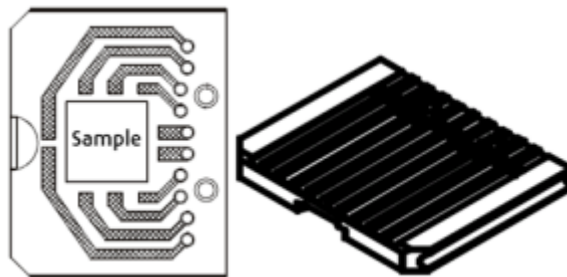
R193460-S Cryogenic SFM direct current heating sample plate



Molybdenum sample plate for direct current heating of semiconductor samples.

There's also an earlier version of above sample plate that includes a small ball helping to define a clear 3-point support. It was found that the ball wasn't really necessary and the sample plate was simplified (reference: R193538).

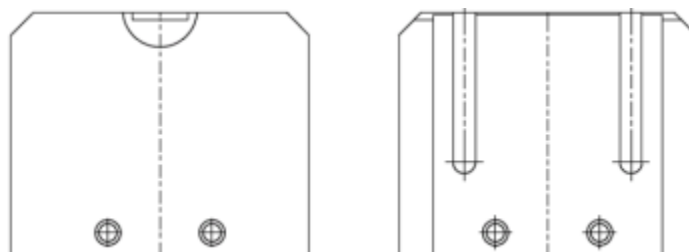
R193369-S Cryogenic SFM sample plate with 10 contacts



Ceramic sample plate providing 10 electrical contacts. The contact pads can be used for wire bonding techniques.

There is also an earlier version of above sample plate that includes a small ball helping to define a clear 3-point support. It was found that the ball wasn't really necessary and the sample plate was simplified (reference: R192611).

R193451-S Cryogenic SFM titanium sample plate



Titanium sample plate for Cryogenic SFM.

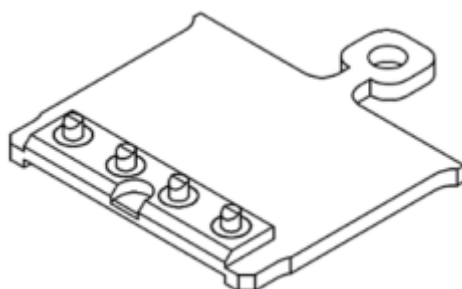
There's also an earlier version of above sample plate that includes a small ball helping to define a clear 3-point support. It was found that the ball wasn't really necessary and the sample plate was simplified (reference: R192667).

Sample Plates for Fermi SPM

For the Fermi SPM all sample plates from the section Standard Sample Plates can be used including the sample plate for direct current heating.

In addition to the sample plates shown here, some from the section Sample Plates for LT Nanoprobe are also compatible. Please note that the height of 4 mm for all LT Nanoprobe sample plates limits the maximum allowable sample height to well below 1 mm.

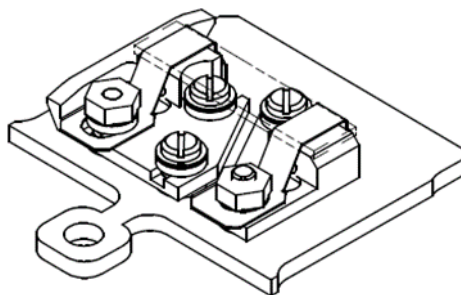
R211296-S Sample plate with 4 electrical contacts for Fermi SPM (stainless steel)



Height without sample	LT Nanoprobe with 4 contacts	LT Nanoprobe with magnetic coil	Fermi SPM	VT SPM XA	LT STM
1 mm	Not compatible	Not compatible	Compatible (standard)	Limited functionality	Limited functionality

Sample Plates for LT Nanoprobe

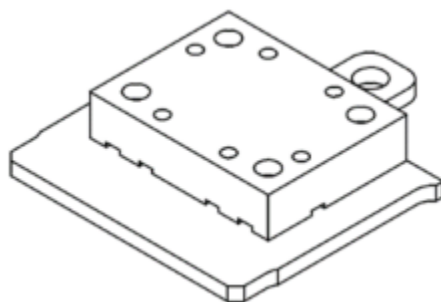
R211207-S Direct heating sample plate for LT Nanoprobe



For direct current heating on the manipulator.

Height without sample	LT Nanoprobe with 4 contacts	LT Nanoprobe with magnetic coil	Fermi SPM	VT SPM XA	LT STM
4 mm	Compatible	Not compatible	Compatible (non-standard)	Compatible (non-standard)	Compatible (non-standard)

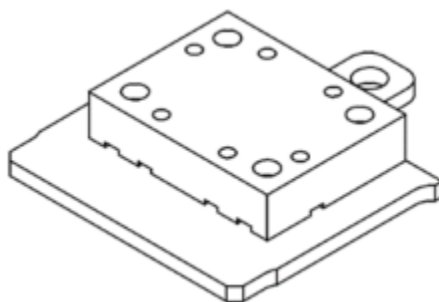
R211211-S Sample plate for LT Nanoprobe (stainless steel)



The block has a height of 3 mm and comes with six M1.2 threads for attaching the sample. This sample cannot be heated to high temperatures because the block is made from stainless steel. For better thermal contact the base plate itself is made from molybdenum.

Height without sample	LT Nanoprobe with 4 contacts	LT Nanoprobe with magnetic coil	Fermi SPM	VT SPM XA	LT STM
4 mm	Compatible	Not compatible	Compatible (non-standard)	Compatible (non-standard)	Compatible (non-standard)

R211218-S Sample plate for LT Nanoprobe (molybdenum)

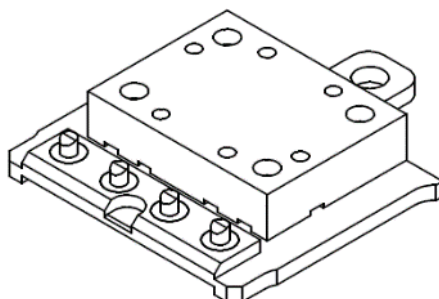


The block has a height of 3 mm and comes with six M1.2 threads for attaching the sample. It is OK to heat this sample plate to high temperatures since it is entirely made from molybdenum.

Suitable screws for fixing the sample: R207933-S (Slotted cheese head screw made from molybdenum M1.2 x 2, minimum order quantity: 4 pieces).

Height without sample	LT Nanoprobe with 4 contacts	LT Nanoprobe with magnetic coil	Fermi SPM	VT SPM XA	LT STM
4 mm	Compatible	Not compatible	Compatible (non-standard)	Compatible (non-standard)	Compatible (non-standard)

R212730-S Sample plate with 4 electrical contacts for LT Nanoprobe (partly molybdenum)

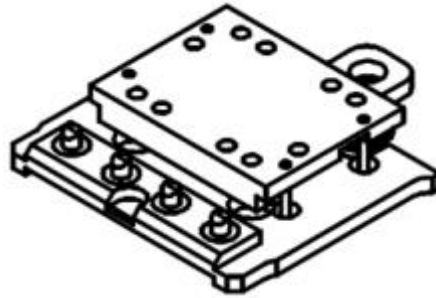


The block has a height of 3 mm and comes with six M1.2 threads for attaching the sample (maximum allowable length of screw: 3 mm). The block is made from molybdenum, but the base plate and the pins are made from stainless steel. The sample plate is heatable up to 550°C. The sample may be electrically connected by wire bonding.

Suitable screws for fixing the sample: R207933-S (Slotted cheese head screw made from molybdenum M1.2 x 2, minimum order quantity: 4 pieces).

Height without sample	LT Nanoprobe with 4 contacts	LT Nanoprobe with magnetic coil	Fermi SPM	VT SPM XA	LT STM
4 mm	Compatible	Not compatible	Compatible (non-standard)	Limited functionality	Limited functionality

R211524-S Sample plate for fast temperature variation (FTV) for LT Nanoprobe



This sample plate allows varying the sample temperature with a small built-in heater. The temperature can be measured with an integrated silicon diode. The base plate and sample mounting plate are made from stainless steel.

Height without sample	LT Nanoprobe with 4 contacts	LT Nanoprobe with magnetic coil	Fermi SPM	VT SPM XA	LT STM
4 mm	Compatible	Not compatible	Compatible (non-standard)	Limited functionality	Limited functionality

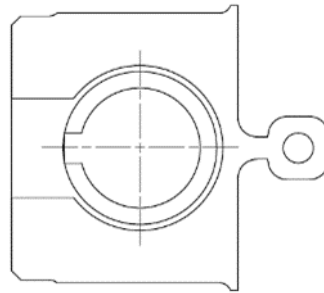
Sample Plates for PEEM

Type A: Open sample area: 5 mm



Stainless Steel

Type B: Open sample area: 8 mm

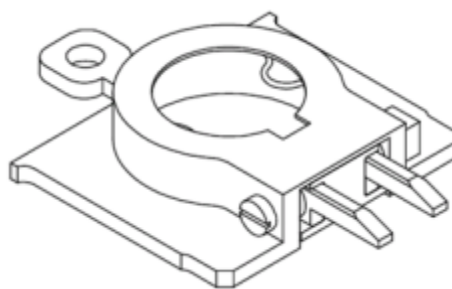


- D2012-S** Sample plate for PEEM, type A (stainless steel)
- B002775-S** Set of 5 sample plates for IS-PEEM, type A (stainless steel)
- D201201-S** Sample plate for PEEM, type B (stainless steel)
- B002776-S** Set of 5 sample plates for IS-PEEM, type B (stainless steel)

Molybdenum

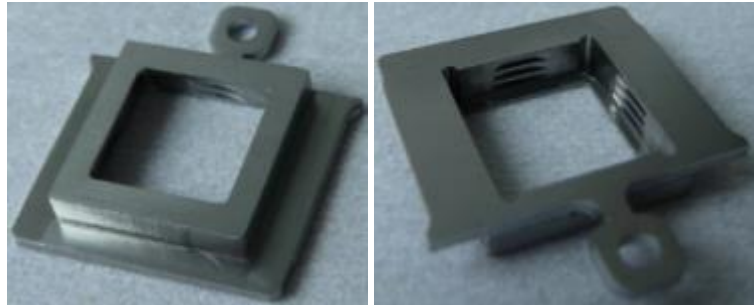
- D2011-S** Sample plate for PEEM, type A (molybdenum)
- B002773-S** Set of 5 sample plates for IS-PEEM, type A (molybdenum)
- D201101-S** Sample plate for PEEM, type B (molybdenum)
- B002774-S** Set of 5 sample plates for IS-PEEM, type B (molybdenum)

- CA00681-S** Sample plate with TC readout PEEM (molybdenum)



The sample stage of the PEEM must be equipped with additional contacts to use this version.

CA10726-S Sample plate for PEEM, square (stainless steel, open sample area: 9x9 mm)



This sample plate is only available after verification through the headquarters. It is not compatible with all STM instruments.

CA12452-S Set of 5x CA10726-S

CA10727-S Sample plate for PEEM, square (molybdenum, open sample area: 9x9 mm)



This sample plate is only available after verification through the headquarters. It is not compatible with all STM instruments.

Sample Plates for ESCA+

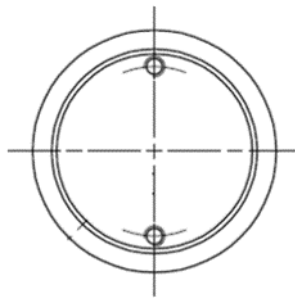
PN01123-S 1" sample holder with springs (stainless steel)



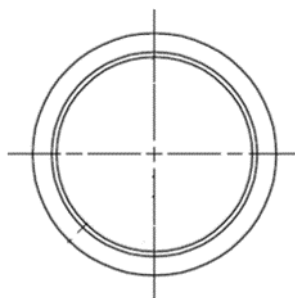
The following spare parts are available

- PN04948-S Sample clips for ESCA sample holder (set of 12) (12 x PN04331)
- PN04949-S Slotted screw for ESCA sample holder (M2x4, set of 6) (6 x PN04332)

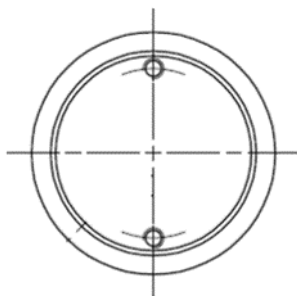
PN03808-S 1" sample holder with threads (stainless steel)



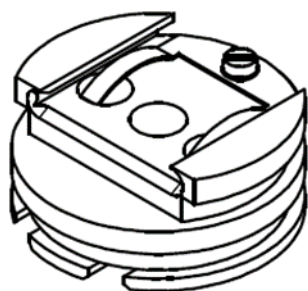
PN03275-S 1" sample holder without threads (stainless steel)



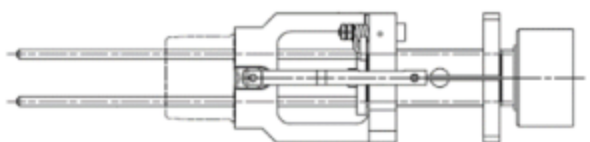
PN01124-S 1" sample holder with threads (molybdenum)



R211698-S 1" adapter for standard Omicron sample plates



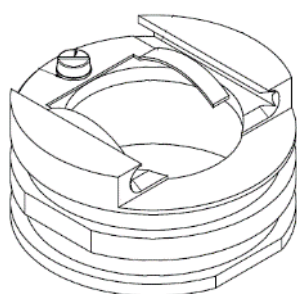
(for use with



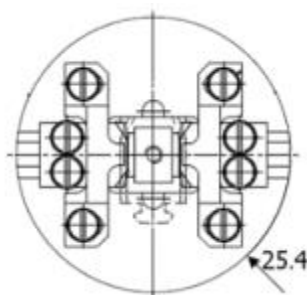
)

This version has two cut-outs at the bottom for accepting the hard metal rods of the transfer head. This version replaces E2204, which is identical except for the missing cut-outs.

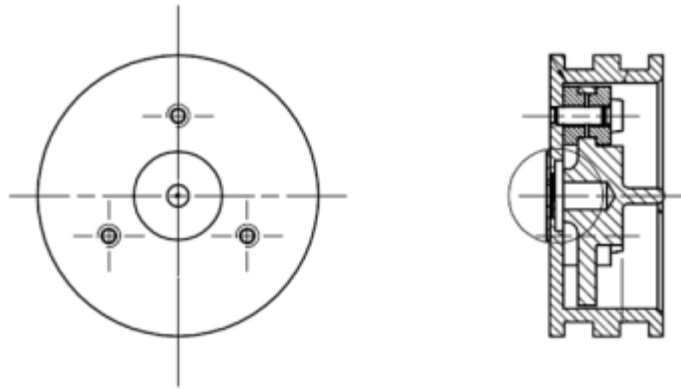
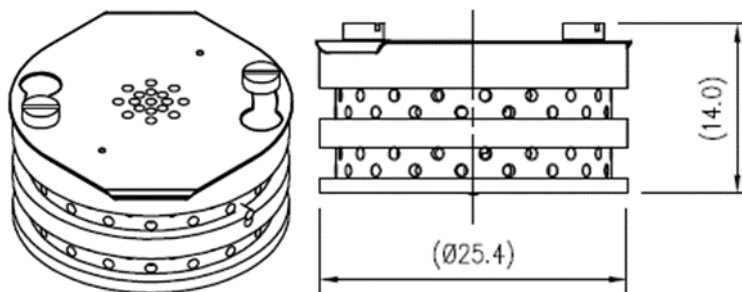
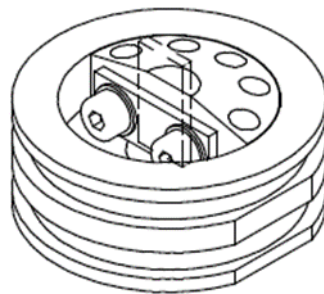
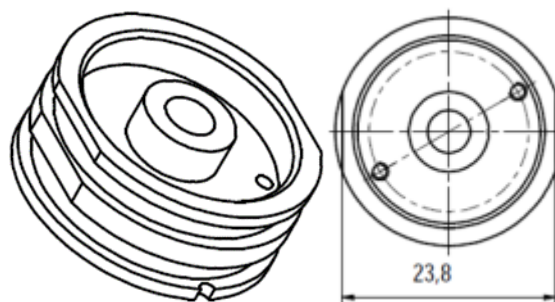
R205858-S 1" adapter for standard Omicron sample plates w. directional index



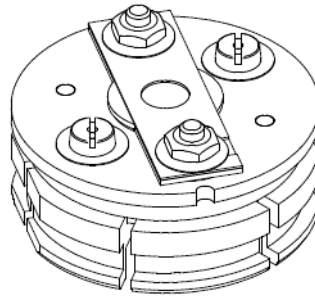
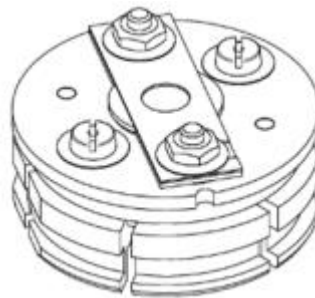
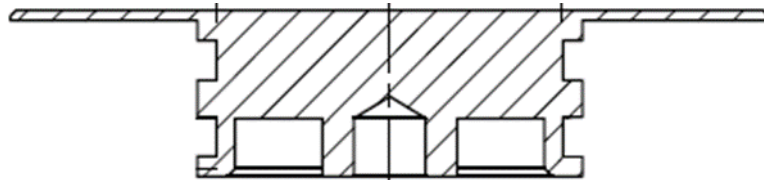
R210141-S 1" adapter for miniature Omicron sample plates



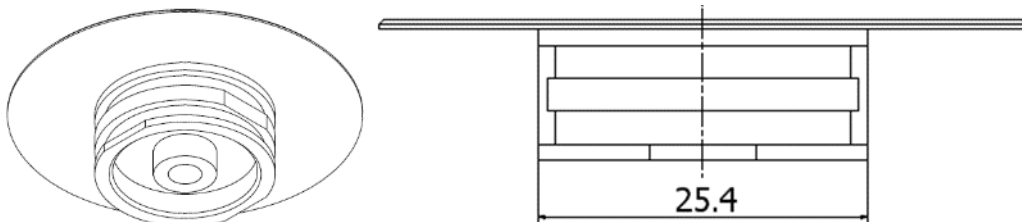
This type is used in combination with some catalysis cells.

PN03598-S 1" sample holder with Faraday cup**PN03890-S 1" high temperature sample holder (1000°C)****R207005-S 1" sample holder for sample cleaving****R207330-S 1" sample holder with directional index (stainless steel)**

This type is used in some instruments where the orientation of the sample is important.

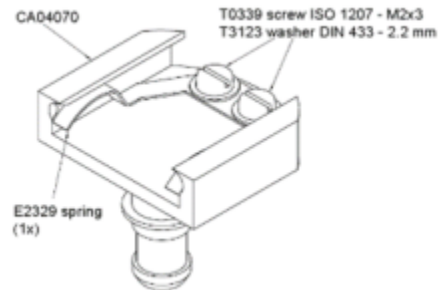
R207131-S 1" sample holder with integrated e-beam heater**R208206-S 1" sample holder with integrated e-beam heater and thermo element type K****<undefined> 2" sample holder (stainless or molybdenum)**

Part numbers will be assigned upon request.

R206018-S 2" sample holder with directional index (stainless)

Adapter Plates for 3rd Party Systems

CA04069-S VG stub adaptor plate for standard Omicron sample plates



Only the spring E2329-S is available as spare part.

Test Samples

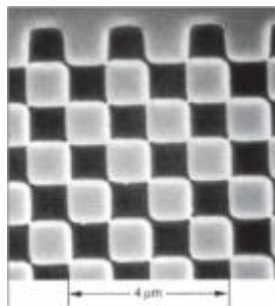
- S3163-S** Test sample Au on Si
S3164-S Test sample graphite (HOPG)
S3165-S Test sample mica



All three samples above are approximately 1x1 cm mounted on standard stainless steel sample plates. The picture here shows the HOPG version.

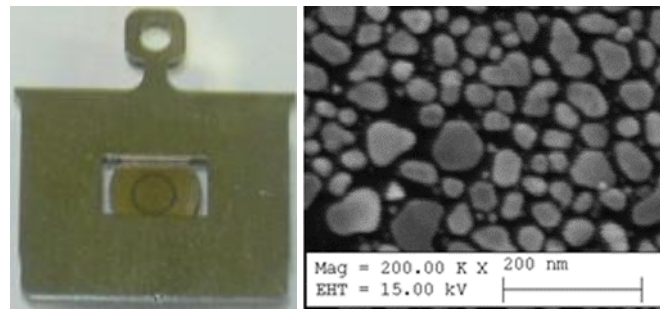
CA10032-S Si test sample, Ag coated, mounted for PEEM (10 μm squares)

PN00061-S Chessy sample plate



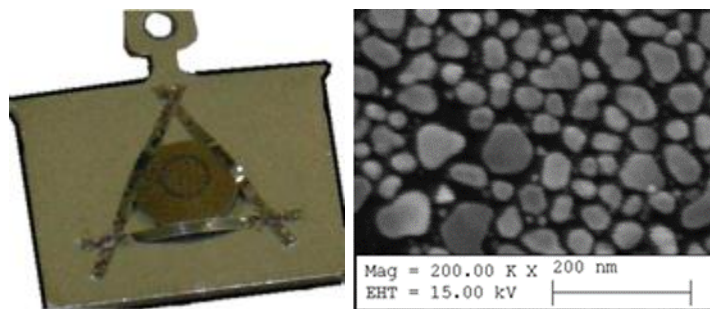
Sample with chessboard structure: gold squares on a silicon substrate. The smallest squares are 1 μm large and create a 10x10 μm chessboard. These chessboards in turn are arranged to form a 100x100 μm chessboard, and these in turn form a 1x1 mm large board. In total 5x5 mm of the sample are filled with squares. The total sample size is around 10x10 mm.

This is only the test sample without sample plate.

PN01700-S SEM high resolution test sample Au on C (for VT stages)

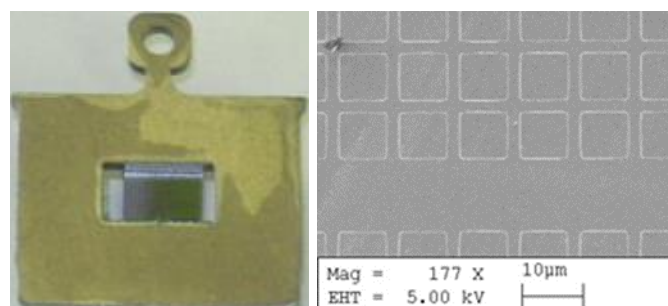
Gold on Carbon, particle size 5 to 150 nm, larger particles in the centre of each grid and smaller particles in the edges.

The sample is mounted behind the sample plate to simulate the work distance of the standard double decker sample plates in the VT stage.

PN01701-S SEM high resolution test sample Au on C (for room temperature stages)

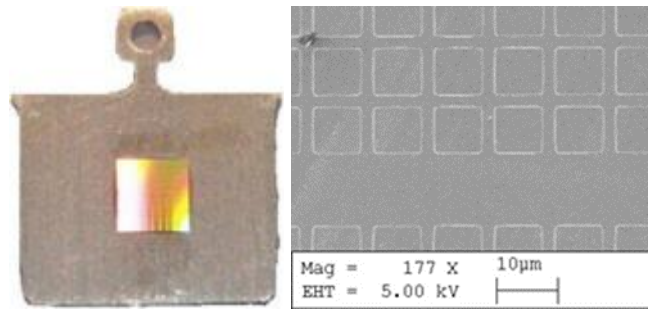
Gold on Carbon, particle size 5 to 150 nm, larger particles in the centre of each grid and smaller particles in the edges.

The sample is mounted on top of the sample plate.

PN01703-S SEM calibration test sample (for VT stages)

Silicon single crystal 5 mm x 5 mm, squares with a periodicity of 10.00 μm +/- 0.05 μm , width of split-line, appr. 2.0 μm , marker lines with 500 μm distance.

The sample is mounted behind the sample plate to simulate the work distance of the standard double decker sample plates in the VT stage.

PN01704-S SEM calibration test sample (for room temperature stages)

Silicon single crystal 5 mm x 5 mm, squares with a periodicity of 10.00 μm ± 0.05 μm, width of split-line, appr. 2.0 μm, marker lines with 500 μm distance.

The sample is mounted on top of the sample plate.

Tools for Sample Handling

S249601-S Molybdenum wrench M1.2 for sample mounting

We recommend the use of this molybdenum M1.2 wrench for slackening/tightening the M1.2 molybdenum nuts on our sample plates to avoid contamination from stainless steel tools.



R193947-S Special tool for threaded spacers on VT sample plates

Useful for the threaded spacer used in some of the double decker VT sample plates.



R1691-S Load lock loading tool

This tool (left picture) is used to transfer samples onto the transfer head (right picture) in the fast entry lock.



for



Probes and Probe-Carriers

AFM/STM und STM 1

S202001-S Tip holders for UHV STM1 and UHV AFM/STM (set of 25)



S3157-S STM-tips mounted for UHV STM1 and UHV AFM/STM (set of 10)



10 tip holders with pre-mounted chemically etched tungsten tips.

S308301-S AFM cantilever carrier 15° for AFM (set of 25) (AFM/STM)



S3154-S AFM cantilever for contact mode (10 off) (AFM/STM)**S3290-S AFM cantilevers for non-contact mode (10 off) (AFM/STM)****S217202-S Tip transfer plate (AFM/STM and STM 1)**

VT STM and LT STM

S2701-S STM tip holders (set of 25) for VT STM and LT STM (silver tip carriers)



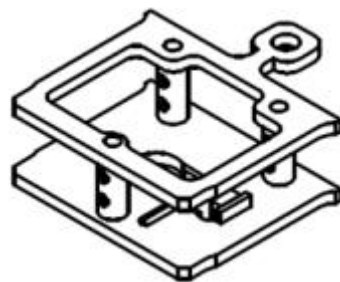
Inner diameter of tip acceptor: 0.4 mm

S2664-S Tunneling tips mounted for VT STM and LT STM (10 off) (silver tip carriers)

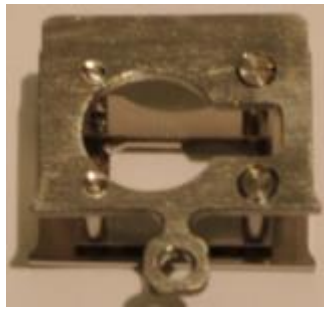


10 tip holders with premounted chemically etched tungsten tips

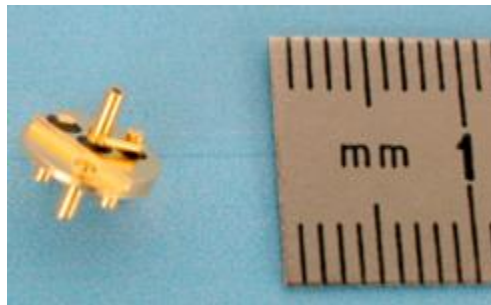
R201789-S Tip carrier plate for VT STM and LT STM (silver tip carriers)



This carrier plate replaces the older versions S286309-S (VT STM only) and R194578-S (LT STM only).

R201869-S Tip transfer plate for VT STM (golden 3-legged holders)

diameter of big keyhole 7 mm.

S2832-S STM tip holders for VT STM and LT STM (set of 25) (golden 3-legged holders)

Inner diameter of tip acceptor: 0.5 mm; outer diameter of golden plate 7 mm.

S2833-S Tunneling tips mounted for VT STM and LT STM (10 off) (golden 3-legged holders)

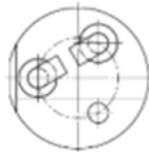
10 tip holders with premounted chemically etched tungsten tips; outer diameter of golden plate 7 mm.

PN05931-S QPLUS Sensor, 33 kHz, mounted tip for VT- & LT-STM (off 5)

Set of 5 QPlus NC-AFM sensors with mounted QPlus sensor and tungsten tip. The spring constant is $k = 1800 \text{ N/m}$ and the resonance frequency $f_0 = 33 \text{ kHz}$ (without a mounted tip). Only compatible with the VT STM and LT STM QPlus AFM.

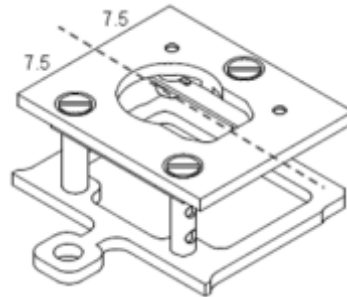
QPLUS is a registered trademark Nr. 77788740 with U.S. Patent and Trademark Office (USPTO).

PN05010-S Carriers for self-assembling QPlus sensors (10 off)



Outer diameter of golden plate 7mm.

R210586-S Tip transfer plate QPlus (LT)



In this version the keyhole is centered on the top plate; diameter of big keyhole 7 mm.

This is the more modern version which was redesigned to simplify tip transfer. It is to be preferred unless a tip preparation tool is present on the system. In that case the same transfer plates as already present in the system must be used to preserve the alignment with the tip preparation tool.

VT AFM

R192945-S Tip holder for VT AFM (25 off)



outer diameter of golden plate 9 mm.

R192130-S Tunneling tips mounted for VT AFM (10 off)



10 tip holders with pre-mounted chemically etched tungsten tips; outer diameter of golden plate 9 mm.

R192946-S Cantilever holder for VT AFM (25 off)



diameter of golden plate 9 mm

PN00621-S Cantilever holder for VT AFM (10 off)

The same as R192946-S but with only 10 holders instead of 25.

R194336-S Contact-mode cantilever for VT AFM (10 off)

diameter of golden plate 9 mm

R194337-S Non-contact-mode cantilever for VT AFM (10 off)

diameter of golden plate 9 mm

R206963-S Tip/cantilever transfer plate for VT AFM

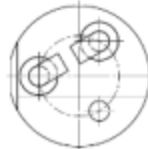
Diameter of big keyhole 9 mm

R191776-S Empty transport box for tip- and cantilever-holders (VT-AFM)

PN05930-S QPLUS Sensor, 33 kHz, mounted tip for VT AFM (off 5)

Set of 5 QPlus NC-AFM sensors with mounted QPlus sensor and tungsten tip. The sensor features a separate tip electrode for combined STM/NC-AFM operation. The spring constant is $k = 1800$ N/m and the resonance frequency $f_0 = 33$ kHz (without a mounted tip). Only compatible with the VT AFM.

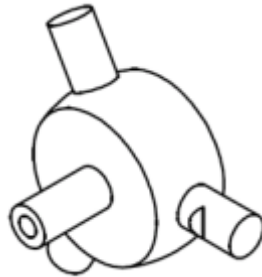
QPLUS is a registered trademark Nr. 77788740 with U.S. Patent and Trademark Office (USPTO).

PN05011-S Carriers for self-assembling QPlus sensors (10 off)

diameter of golden plate 9 mm

Fermi SPM

PN05134-S Tip holder for Fermi SPM (25 off)

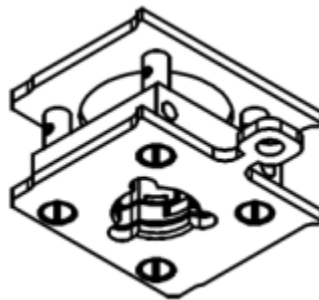


The leg marked with a notch is connected to the tip.

CA12539-S Tunneling tips, mounted, for Fermi SPM (5 off)

5 tip holders with pre-mounted chemically etched tungsten tip.

R216115-S Tip transfer plate for Fermi SPM



Discontinued part number: R211267-S

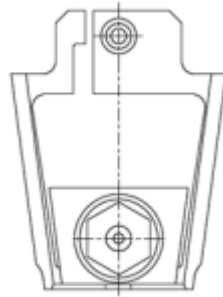
PN05932-S QPLUS Sensor, 33 kHz, mounted tip for Fermi SPM (off 5)

Set of 5 QPlus NC-AFM sensors with mounted QPlus sensor and tungsten tip. The spring constant is $k = 1800 \text{ N/m}$ and the resonance frequency $f_0 = 33 \text{ kHz}$ (without a mounted tip). Only compatible with the Fermi SPM.

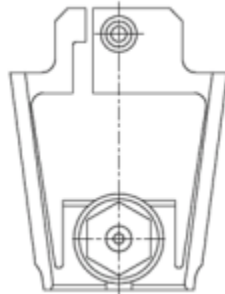
QPLUS is a registered trademark Nr. 77788740 with U.S. Patent and Trademark Office (USPTO)

Cryogenic STM

R200333-S Cryogenic STM tip carrier with 3 electrical contacts



R200334-S Cryogenic STM tip carrier with one electrical contact



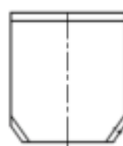
Cryogenic SFM

PN00235-S Cryogenic SFM tip holder (25 off)



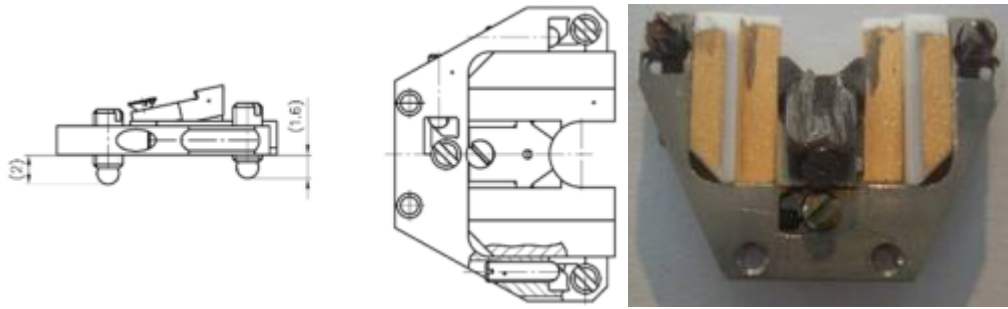
Set of 25 titanium STM tip holders.

R193000-S Cryogenic SFM cantilever holder (25 off)



Set of 25 titanium cantilever holders.

R193989-S Cryogenic SFM tip/cantilever transfer plate



Tip/Cantilever transfer plate for transfer and storage of STM tips and AFM cantilevers.

This is the standard model. To use this model the fixing aid R194548-S is required.

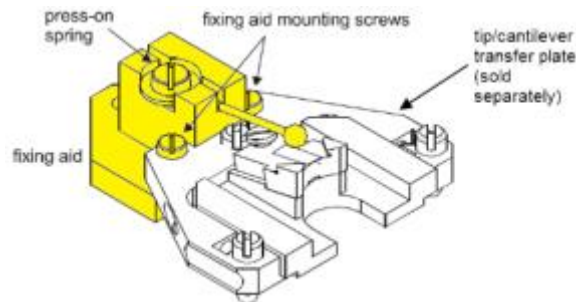
PN00298-S Cryogenic SFM Tip/cantilever transfer plate



Old version of R193989-S with integrated fixing aid.

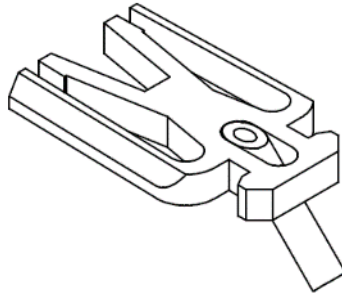
We recommend using R193989-S in combination with the fixing aid R194548-S.

R194548-S Fixing aid for mounting cantilevers

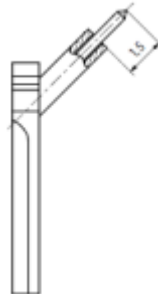


LT Nanoprobe

PN04352-S Tip holders for LT Nanoprobe (set of 25)

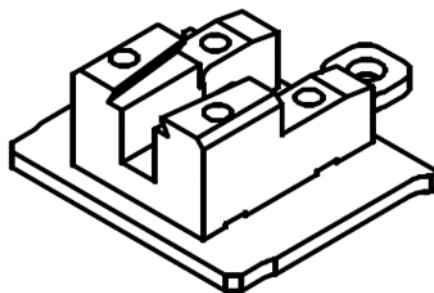


PN04746-S Tunneling tips, mounted, for LT Nanoprobe (set of 10)



10 tip holders with premounted chemically etched tungsten tips.

R206457-S Tip transfer plate for LT Nanoprobe



PN05933-S QPLUS Sensor, 33 kHz, mounted tip for LT Nanoprobe (off 5)

Set of 5 QPlus NC-AFM sensors with mounted QPlus sensor and tungsten tip. The spring constant is $k = 1800 \text{ N/m}$ and the resonance frequency $f_0 = 33 \text{ kHz}$ (without a mounted tip). Only compatible with the LT NANOPROBE.

QPLUS is a registered trademark Nr. 77788740 with U.S. Patent and Trademark Office (USPTO).

Tesla JT SPM

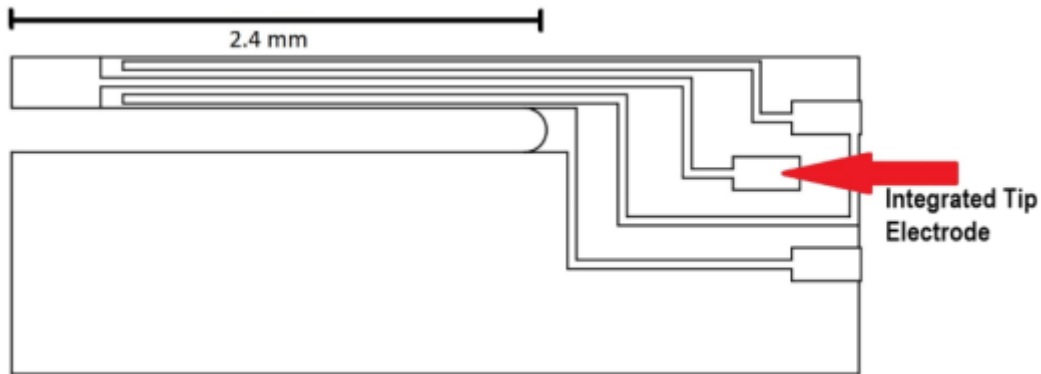
PN05934-S QPLUS Sensor, 33 kHz, mounted tip for Tesla JT SPM (off 5)

Set of 5 QPlus NC-AFM sensors with mounted QPlus sensor and tungsten tip. The spring constant is $k = 1800 \text{ N/m}$ and the resonance frequency $f_0 = 33 \text{ kHz}$ (without a mounted tip). Only compatible with the TESLA JT.

QPLUS is a registered trademark Nr. 77788740 with U.S. Patent and Trademark Office (USPTO).

QPlus Sensors

PN05631-S QPLUS®* Sensors Standard (50 off)



$k = 1800 \text{ N/m}$, $f_0 = 33 \text{ kHz}$, separate tip electrode for combined STM/AFM operation.

*QPLUS is a registered trademark Nr. 77788740 with U.S. Patent and Trademark Office (USPTO).

PN05632-S QPLUS®* Sensors L0.8 (10 off)

$k = 3500 \text{ N/m}$, $f_0 = 52 \text{ kHz}$, separate tip electrode for combined STM/AFM operation.

*QPLUS is a registered trademark Nr. 77788740 with U.S. Patent and Trademark Office (USPTO).

Document Info

Created by: Jörg Schuler, Jens Garleff, Sören Meyer

Revisions:

V0.1: 19.12.2012 Sample plates, Sample handling tools, probes/carriers

V0.2: 08.01.2013 PN04804-S replaced by PN04857-S spare parts kit: the clamping foils are 1 mm less wide.

V0.3: 01.02.2013 Added LT Nanoprobe, re-grouped sample plates into instrument groups.

V0.4: 28.02.2013 Added ESCA+ sample holders, re-arranged PEEM sample holders, added type B stainless steel PEEM sample holder (single)

V0.4: 13.03.2013 Added ESCA+ clips and screws, substituted R201789-S with S286309-S (tip carrier plate)

V0.4: 14.03.2013 Added BEEM sample plate for VT, added part numbers for cleaving sample plate (VT) and 4-contact sample plate (VT XA)

V0.4: 03.04.2013 Added VG stub adapter, Chessy sample, other Gemini calibration samples (PN01700-PN01704).

V0.4: 11.06.2013 Added tuning forks PN04998-S.

V0.5: 18.06.2013 Added QPlus (VT AFM) CA10880

V0.5: 21.06.2013 Added P04747-S and P04745-S (LT Nanoprobe), PN05009-S, PN05010-S, PN05011-S (QPlus LT STM, VT AFM)

V0.5: 26.06.2013 Added S221501-S

V0.5: 03.07.2013 Removed PN04745-S (mistake)

V0.5: 20.08.2013 CA10727: made from molybdenum, not stainless steel

V0.6 03.09.2013 CA06702, CA02109: Added alumina top plates for VT double decker sample plates

V0.6 16.12.2013 Added CA12452-S

V0.6 17.06.2014 Added CA09778-S

V0.6.1 17.07.2014 Replaced S2423 with S201423 in VT DH and RH exploded drawing

V0.6.1 29.07.2014: Added sample dimensions for CA09778-S

V0.7 27.11.2014: Added FERMI: PN005134, CA12539, R211267, added references to FERMI in sample plate section. Increased font size for "Titel", "Überschrift 1" and "Überschrift 2" by 2 pt each and doubled leading space for "Überschrift 2" for better clarity. Specified "tungsten tip" for all STM tips.

V0.7.1 06.01.2015: Added PN05063-S (NaCl sample holder).

V0.7.1 08.01.2015: Replaced R191412-S with PN04169-S (DH base plate set), removed R191411-S (Spares kit type 2 – use PN04151-S instead).

V0.7.2 15.01.2015: Removed R211209-S (Sample plate with 4 electrical contacts for LT Nanoprobe, stainless steel), added pictures for clamping foils (S2402, S2537, S2190, S2190), added moly stud with 2.5 mm length (R213007). Added reference to moly M1.2x2 screws R207933.

V0.7.3 20.01.2015: Removed PN04911-S (Spare part set for LT 4 contact sample plate) and PN04910 (2x contact bracket for LT 4 contact sample plate) – use minimum order quantity instead. Added available spare parts for B002835-S VT XA sample plate for 4 electrical contacts.

V0.7.3 21.01.2015: Added picture for CA10520-S, improved description of PN04998-S.

V0.7.3 04.02.2015: Added pictures for CA10726-S and CA10727-S.

V0.7.3 30.04.2015: Removed PN02370-S (Box for PEEM sample plates).

V0.7.3 03.08.2015: Cantilevers are not compatible with the STM 1.

V0.7.4 11.08.2015: Removed S2206-S (replaced by S220601-S); PN04150-S: 10x S2408-S & 25x S2410-S; Replaced S2207-S with PN04155-S; Replaced S2182-S with PN04169-S. Replaced R211267-S with R216115-S, renamed "FERMI STM" to "Fermi SPM", added CA12537-S, CA12538-S. Removed PN04747-S.

V0.7.5: 14.08.2015: Substituted images for VT RH and VT DH sample plates, changed PN04150-S to 8x S2406, 16x S2408, 16x S2410 and 16x S2484. 24.08.15: Explicitly mentioned that some spares are only available in sets (DH sample plate, VT sample plates).

V0.7.5: 29.09.2015: Added QPlus sensors designed by Prof. Gießibl.

V0.7.5: 03.11.2015: Corrected mistake (PN04603).

V0.7.6: 04.11.2015: Cleaned up sample plates for LT Nanoprobe and Fermi

V1.0 10.11.2015: Added R204245-S (VT e-beam heating plate), R209803-S (FTV for LT STM)

V1.0 11.11.2015: Added sample plates for Cryogenic SFM (R193460-S, R193369-S, R193451-S), added tip carriers for Cryogenic SFM (R193989-S, PN00298-S, R194548-S), added R214683-S Sample holder adapter for 3" MBE Systems (15x15mm)

V1.0 12.11.2015: Added about 20 wafer holders for MBE systems.

V1.0 13.11.2015: Added further wafer holders for MBE systems.

V1.1 13.11.2015: Split catalog into two parts (samples plates and tips/probes excluding MBE, sample plates MBE)

From December 2015 revisions by JKG

V1.1 03.12.2015: Specified diameters of tripod sockets for tip carriers LT-STM / VT-STM and for VT-AFM, and for the keyholes in the respective tip transfer plates

V1.2 22.02.2016: Complete redesign by SME.

V1.3 27.10.2016: Change of all Qplus-Sensors to Giessbl-Design by SME

V1.3 08.12.2016: Replaced R203836-S by R210586-S.

V1.3 27.01.2017: Removal of 52kHz Qplus-Sensors.

V1.4 09.03.2017: Update of several drawings.