

# ViaKit Basic

## Instruction Manual

Manual No 15727005

Date of Release: 06/2021



# ViaKit Basic

## Instruction Manual

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Always state Serial No if you have technical questions or when ordering spare parts. You will find the Serial No. on the type plate of the machine itself. We may also need the Date and Article No of the manual. This information is found on the front cover.

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## **ViaKit Basic**

### **Safety Precaution Sheet**

#### **To be read carefully before use**

1. Considerable force can be exerted by the piston of the VialInserter. Do not place fingers or other parts of the body under the piston of the VialInserter while pulling the lever down.
2. Handle the ViaHolder Single Sample with care; it can cause injury if dropped.
3. In use, the VialInserter and ViaHolder Single Sample must be placed on a flat, stable work surface that is rated to support the load, including the additional load resulting from use of the VialInserter lever.
4. Use of safety glasses or goggles is recommended when using the pointed cleaning tool. Flying resin particles can cause eye injury.

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The equipment should only be used for its intended purpose and as detailed in the Instruction Manual. The equipment is designed for use with consumables supplied by Struers. If subjected to misuse, improper installation, alteration, neglect, accident or improper repair, Struers will accept no responsibility for damage(s) to the user or the equipment.

Dismantling of any part of the equipment, during service or repair, should always be performed by a qualified technician.

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## 1. Getting Started with ViaKit Basic

### Unpacking ViaKit Basic

ViaKit Basic is supplied in a single packing box, which contains several storage boxes for protection of the precision components of ViaKit Basic. The storage boxes have handles for easy portability. Struers recommends that the user continues to store precision parts of ViaKit Basic, including the mounting rings, in the correct storage box.

- Open the packing box, taking care not to scratch the storage boxes inside with the knife used to open the packing tape seal on the top of the box.
- Remove the storage boxes and the other contents of the packing box.
- Open the storage boxes, and observe the storage positions of the Vialserter and the ViaHolder Single Sample in their respective storage boxes. This will help when returning the components to the storage boxes.

### Checking the Contents of the Packing Box

In the packing boxes you should find the following items:

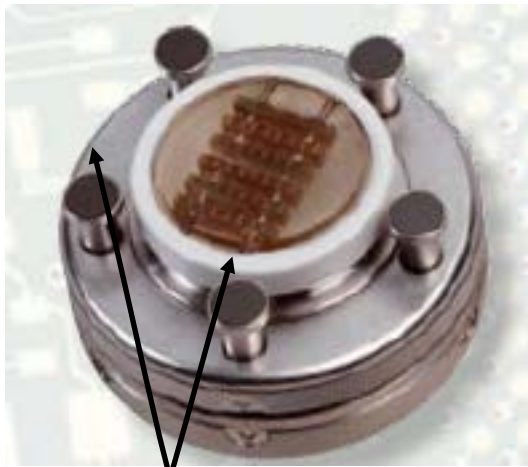
- 1 Vialserter
- 1 Staircase
- 1 ViaHolder Single Sample
- 1 Mount removal tool
- 6 ViaMount mounting rings (reusable)
- 1 Tool kit for ViaMount including:
  - 1 Pointed cleaning tool
  - 1 Half-ring cleaning tool
  - 1 Bottle Silicon oil
- 250 End covers for ViaMount
- 500 Positioning Pins
- 1 Caran D'ache wax pencil
- 1 Instruction Manual Set

**Getting Acquainted with ViaKit Basic**

ViaKit Basic is an automated coupon preparation system, which can be used to simultaneously prepare up to 6 coupons, with a system precision of  $\pm 20 \mu\text{m}$ .

Take a moment to familiarise yourself with the names of all the ViaKit Basic components:

ViaHolder Single Sample  
From Below



Diamond stops

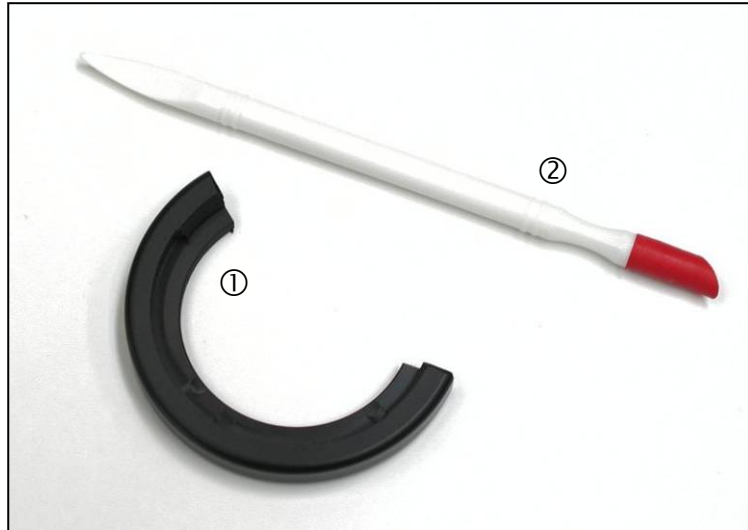
*Divisions on ViaHolder Single Sample*



Rotary movement of the lower ring of ViaHolder Single Sample causes the mounts to move vertically relative to the surface of the diamond stops. The following figures represent the vertical movement corresponding to the particular rotary movement.

Distance between divisions:	50 $\mu\text{m}$
Distance between positions A and B:	200 $\mu\text{m}$
Distance between positions B and C:	800 $\mu\text{m}$

*Toolkit for ViaHolder Single  
Sample*

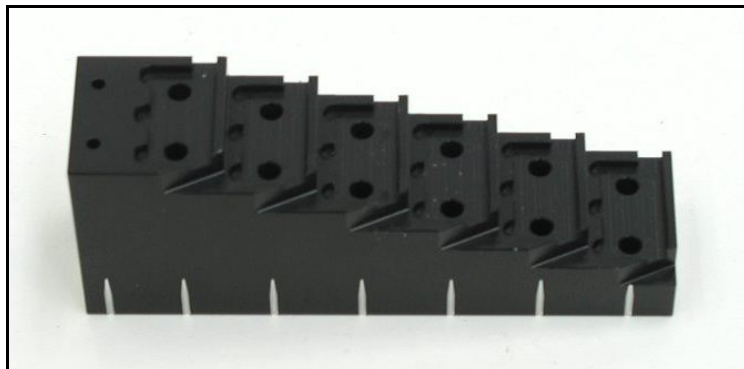


- ① Half-ring cleaning tool
- ② Pointed cleaning tool

*Mount Removal Tool*



*Staircase for VialInserter*



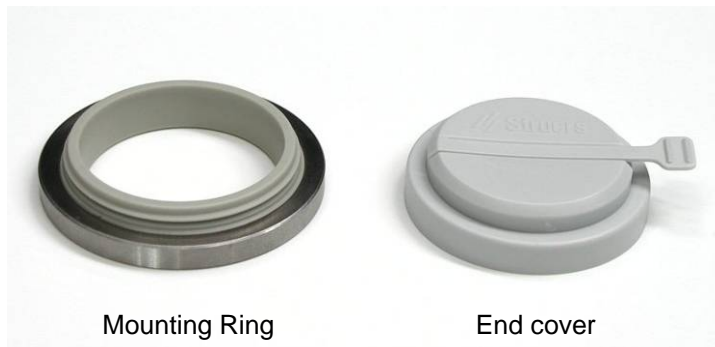


VialInserter



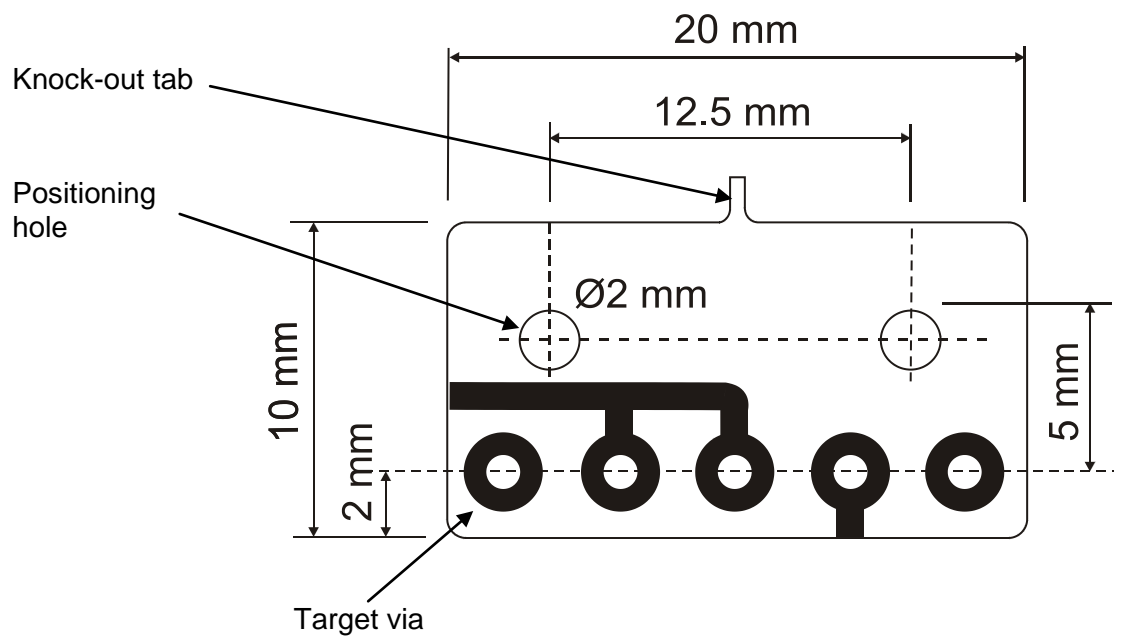
- ① Mount removal slot
- ② Handle
- ③ Piston and magnetic holder for pins
- ④ Slot for Staircase
- ⑤ Holes for (optional) affixing of VialInserter to workbench
- ⑥ Alignment notch for Staircase step

Mould for ViaKit Basic



About the Struers Coupon

The coupons mounted using ViaKit Basic must have the dimensions of the standard Struers Coupon:



Coupons routed using ViaSampler have a small knock-out tab. The tab helps with orientation of the coupon when pinning in Vialserter, and when positioning in the mould. The tab is on the edge that is most distant from the target vias, i.e. on the top edge of the coupon illustrated above.

## 2. Operating ViaKit Basic

### Sequence of Operations

The sequence of operations is as follows:

Pin the coupons with Vialserter

Clean the coupons

Clean the ViaMount mounting rings and ViaHolder Single Sample

Oil the mounting rings

Snap End Cover onto ViaMount

Mount the samples

Separate mount from ViaMount

Remove the top part of End cover

Remove the mounting rings

Place the mounts in the ViaHolder sample holder

Plane grind the mounts

Fine grind the mounts

Polish the mounts

Remove the samples from the sample holder

### Pinning the Coupons on the Positioning Pins

Coupons are mounted on the positioning pins using the Vialserter tool and the Staircase. Up to 6 coupons can be mounted on a pair of positioning pins. Coupons from different board types and thickness can be used at the same time. One pair of positioning pins is used for each mould.

- Place up to 6 coupons on the Staircase, max. one per step. The tab left on the coupon after routing fits into a corresponding notch on the step.

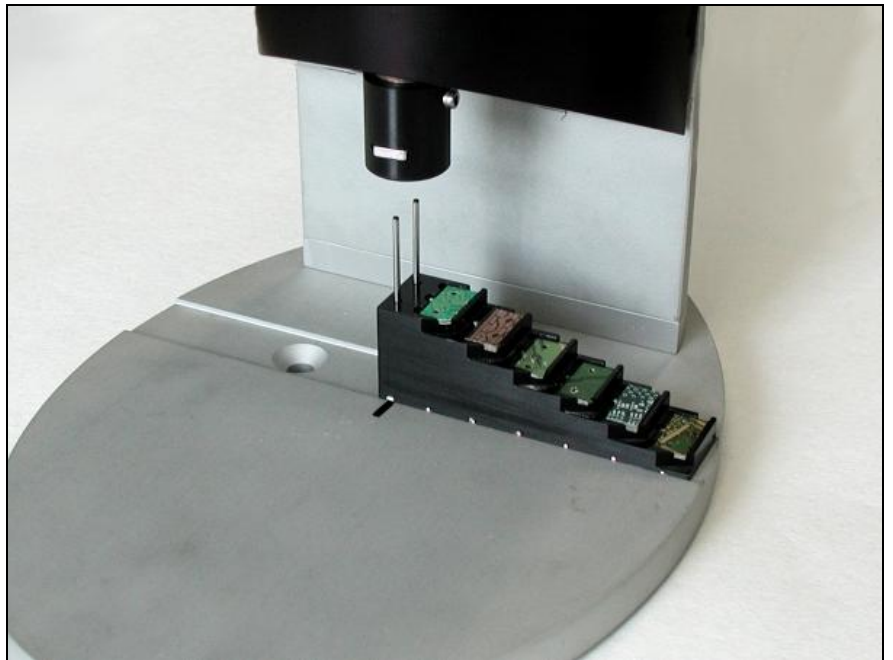
**Note:**

If less than 6 coupons are used, place the coupons in the central positions, e.g. with 3 coupons, use Staircase steps 2, 3 and 4. However if the board thickness of two adjacent coupons is 4mm or greater, a step must be skipped. See the box below.

**Important**

The board thickness of two adjacent coupons must not exceed 4mm. This is necessary to maintain at least 1mm between boards, so that resin can enter the space during mounting.

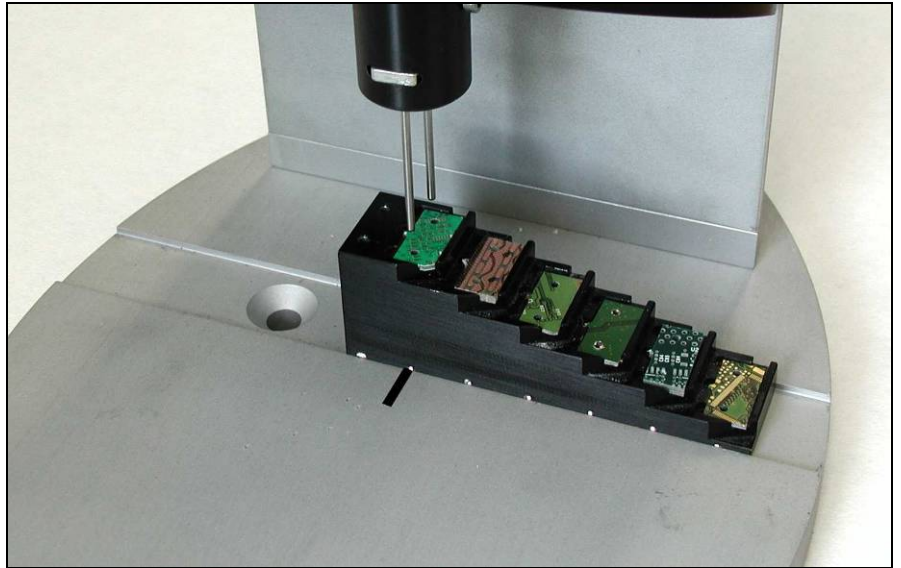
- Place two positioning pins in the holes on the top step of the Staircase.
- Place the Staircase in the groove in the base of the Vialserter, and align the reference mark under the pins with the alignment mark on the Vialserter.



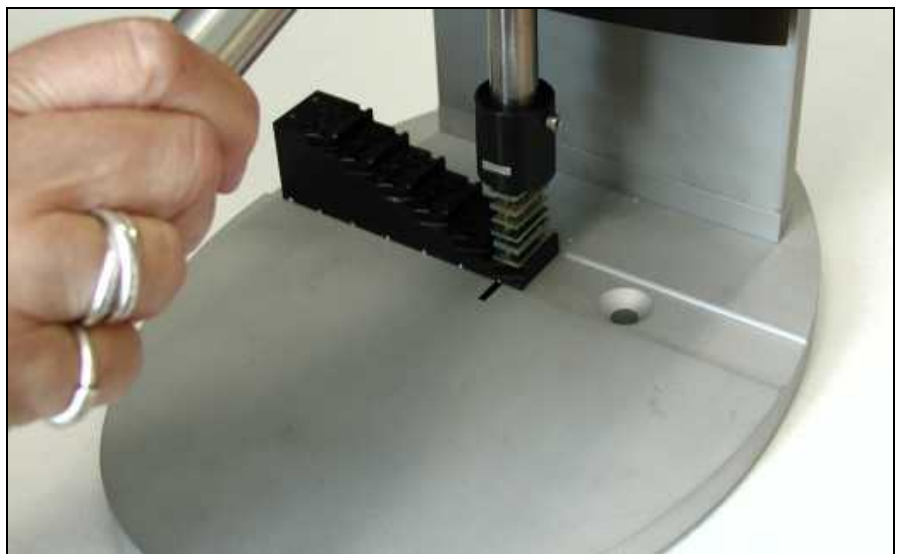
- Pull down the handle on the Vialserter until the pins click into place in the magnetic holder at the bottom of the Vialserter piston. Release the handle.



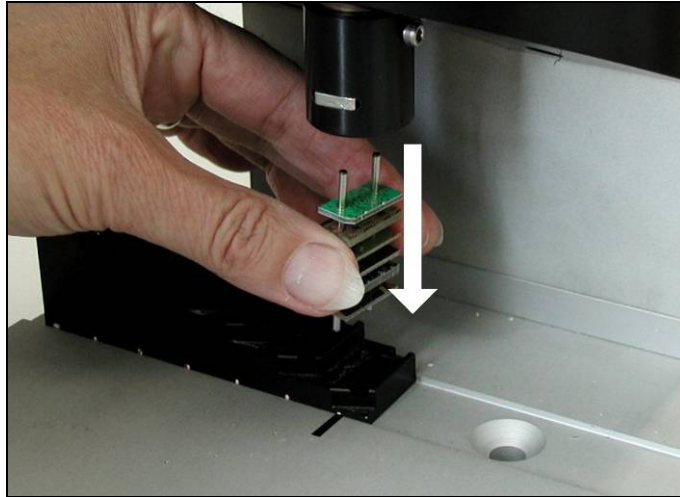
- Align the reference mark under the top coupon step of the Staircase with the alignment mark on the base of Vialserter.



- Press the handle of the Vialserter slowly downwards until the pins are just above the coupon, and make any small adjustment to the position of the Staircase in the groove necessary to align the pins precisely with the holes.
- Continue pressing the handle down until it can go no further
- Release the handle. The coupon remains on the pins.
- Align the reference mark under the next coupon with the alignment mark on the base of the Vialserter and pull the handle down.
- Move the staircase, align, pull and release the handle at each of the remaining coupons.

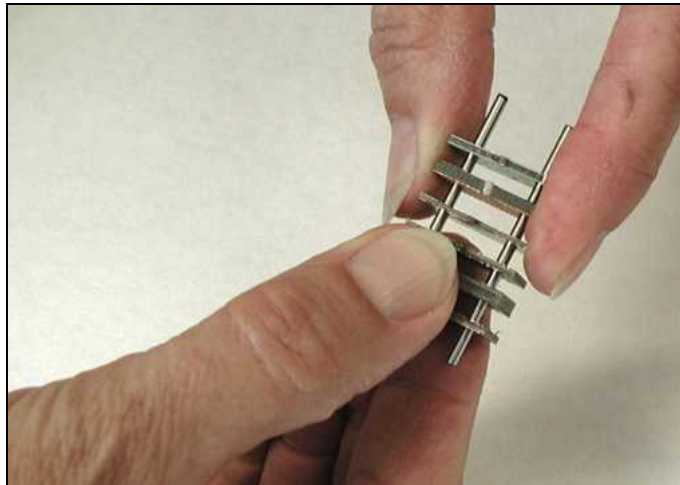


- Grip the coupons and pull gently downwards to remove the pins from the magnetic holder in the VialInserter.



#### *Checking the Fit and Spacing*

- Check that there is at least 1 mm between coupons, and grip and pull gently to check that no coupon is loose. This is a somewhat subjective assessment: what is important is that the coupons do not slide or wobble on the pins during mounting.



#### **Cleaning the Coupons**

After the coupons have been pinned on the VialInserter, they have to be cleaned and dried thoroughly, as otherwise the resin will not adhere properly. Struers recommends the use of ultrasound cleaning. To avoid gaps when the resin is poured around the coupons, thorough drying is essential.

## Cleaning the Mounting Rings

When the mounting rings are used for the first time, no cleaning is necessary. However, the rings must be very thoroughly oiled with the silicon oil. On all subsequent usage, the mounting rings must be individually cleaned as described here, and then oiled.

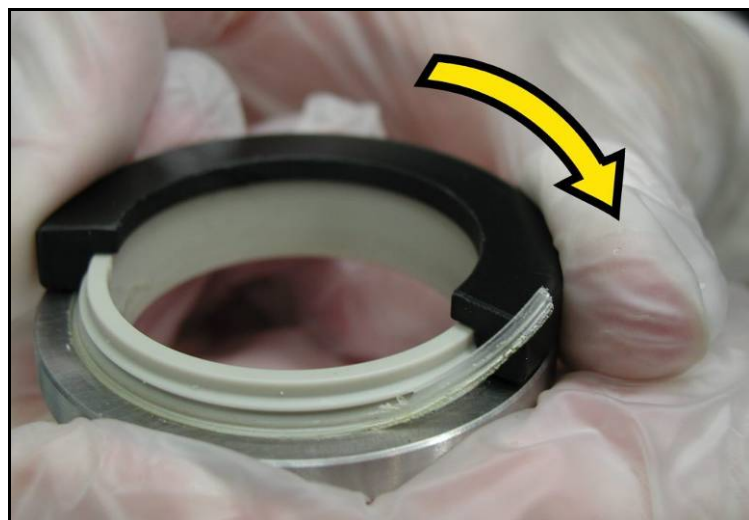
### *Using the Pointed Cleaning Tool*

- If more than half of the circumference of the threads of the mounting ring has visible resin residue from previous usage (residue that makes it difficult to clip on the half-ring cleaning tool), first clean using the pointed cleaning tool, before using the half-ring cleaning tool.  
The pointed cleaning tool is also useful for removing resin residues at the join between the metal and plastic parts of the mounting ring.



### *Using the Half-ring Cleaning Tool*

- Clip the half-ring cleaning tool onto the threads of the mounting ring.
- Hold the mounting ring in one hand and the cleaning tool in the other hand, and rotate the tool around the mounting ring. This cleans the threads and the flange of the mounting ring.





### Cleaning the ViaHolder Single Sample

- Ensure that the edges of the hole for the sample holder in the ViaHolder are clean and free from any residues. Clean with the pointed cleaning tool if necessary.
- Clean the surface of the ViaHolder using a moist cloth.

### Mounting the Sample

One mounting ring and one end cover are required for each positioning pins/coupon assembly. Silicone release agent must be used to minimize resin residues and to ensure clean removal from the mould.

- Ensure that the mounting ring is clean and free from any residues. If necessary, clean as described above.
- Oil the mounting ring with silicone oil (Cat. Nr. 40300076), both on the inside surface as illustrated, and on the grooves on the outside:

### Oiling the Mounting Ring





*Alternative Oiling Method*

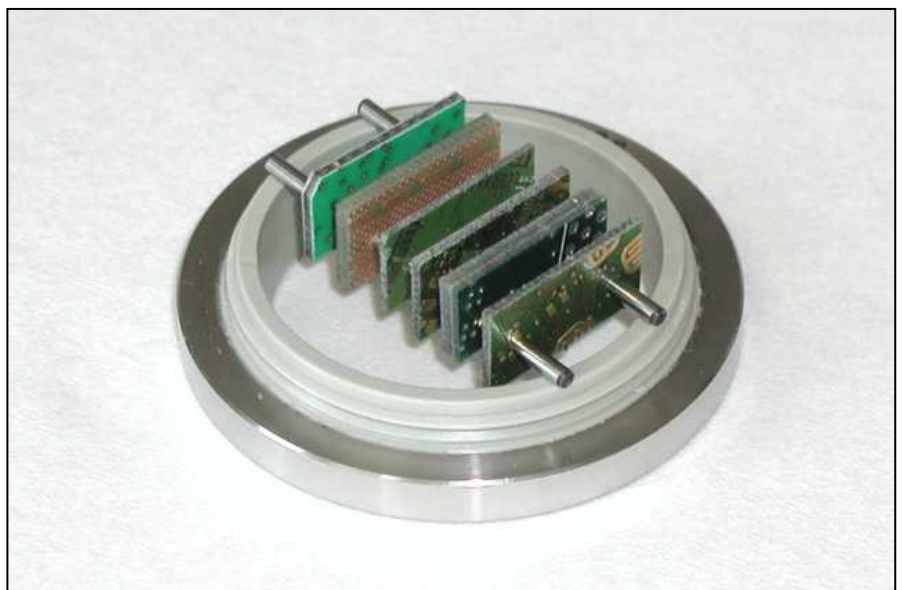
**TIP**

Instead of using the brush supplied with the silicone oil, a sponge can be used for faster application of the release agent.



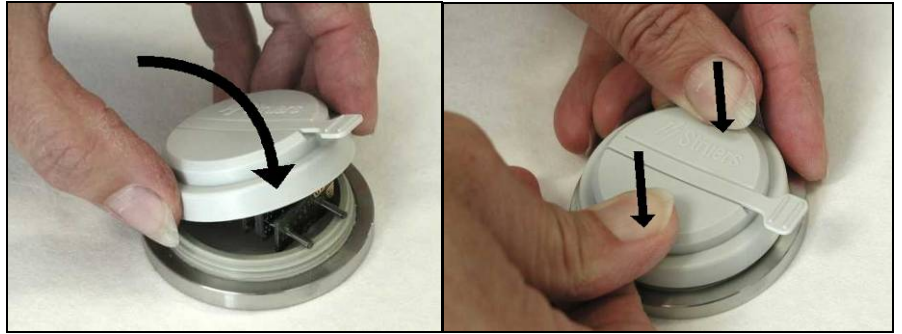
*Placing the Pinned Coupons*

- Place the pinned coupons on the mounting ring as shown, with the knock-out tabs facing downwards. This ensures that the inspection side of the coupons (target vias) is above the positioning pins.



*Placing the End Cap*

- Place an end cover on top and snap the end cover into position with a firm click.



- Double-check by squeezing at the edges.



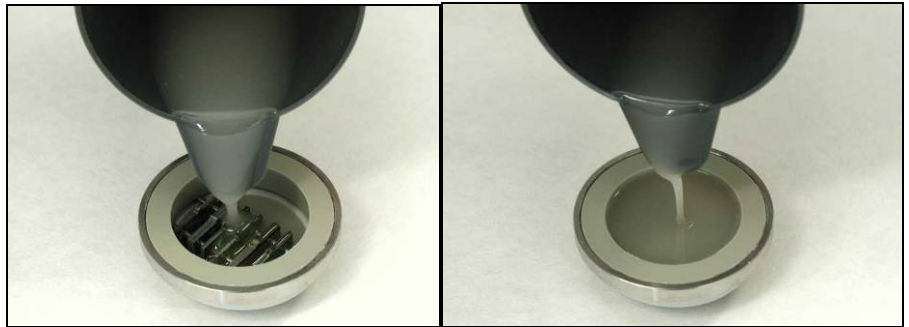
**Tip**

Use a second mounting ring to press end cap securely onto the mounting ring.

If the end cap sits too loosely, excess resin will cover the tips of the positioning pins, resulting in the target vias being overground.

*Pouring the Resin*

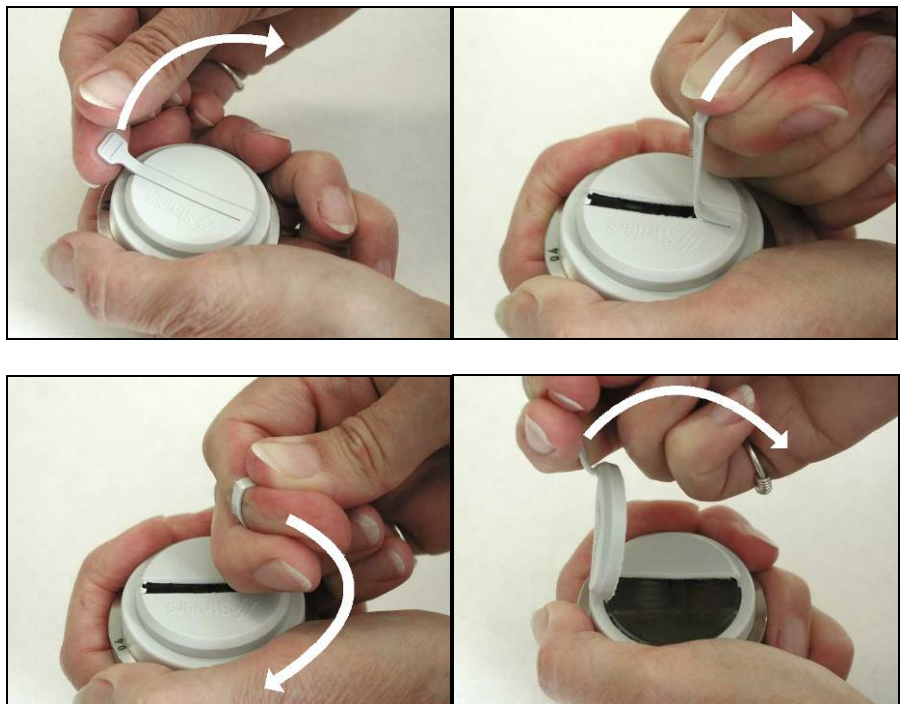
- Prepare a low-viscosity resin.
- Turn the mould over and pour the resin into the mould, completely covering the coupons, and filling the mould up to 2-3 mm below the top of the mounting ring.



- Wait until the resin has hardened.
- Turn the mounting ring over, and remove the top part of the end cover by tearing off as illustrated:

*Removing the End Cover*

**Note:**  
Take care not to pull the tab off the tear-off strip as this will make it more difficult to remove the strip.



*Removing the Mounting Ring*

- Place the mounted sample/mounting ring in the slot on top of the VialInserter, as illustrated:



- Press the lever down and release. The mount is separated from the mounting ring. The bottom part of the end cover remains on the mount.



- Remove the mount and the mounting ring

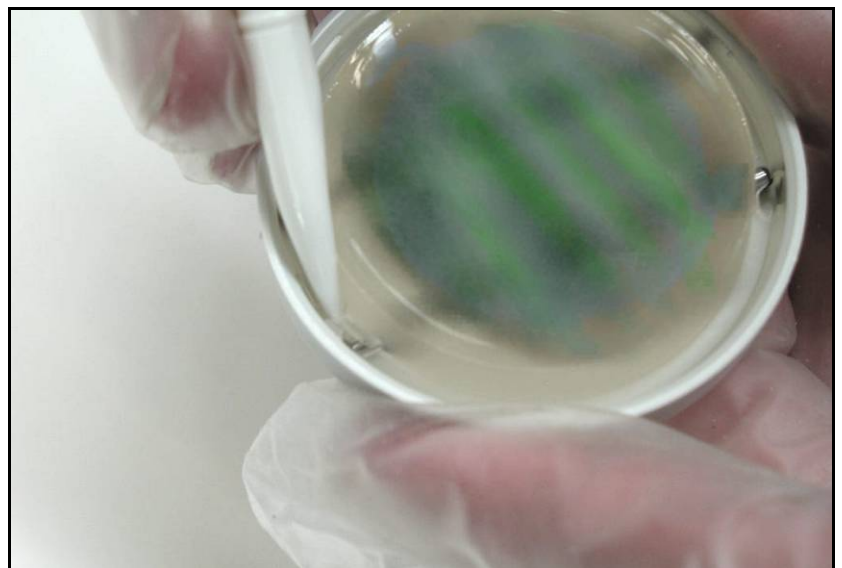
### Setting up ViaHolder Single Sample

- Place the ViaHolder upside-down (i.e. with the grinding stops up).



### Checking the Positioning Pins

- Check that the mounts are clean and have no traces of cleaning oil or other material on the positioning pins at the edge of the mount – clean if necessary, using the pointed tip tool.



***Important!***

Any residue or coating on the positioning pins where the pins touch the surface of ViaHolder will introduce a preparation error. Resin residue must be removed from this area of the pins and from the mounting holes in ViaHolder before placing mounts in ViaHolder

- Check that the surface of ViaHolder around the mounting holes is clean and free from any residue.



*Placing the Mounts in ViaHolder  
Single Sample*

- Place the mount in the ViaHolder, pressing on the remaining part of the end cover until it clicks into place:



**Tip**

The mounting ring may be used to press the Mount onto the ViaHolder Single Sample. In this fashion, uniform pressure around the perimeter of the Mount is ensured.

**Note**

It is possible to remove the mounts from ViaHolder between preparation steps (for inspection or cleaning) and return the mounts to ViaHolder with no loss of precision.

## Grinding and Polishing

**Tip**

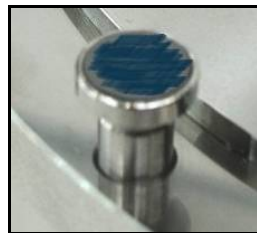
To safeguard the best possible planarity, replace the disc/platen of the grinder/polisher before using it with the ViaHolder.

### *Marking the Diamond Stops*

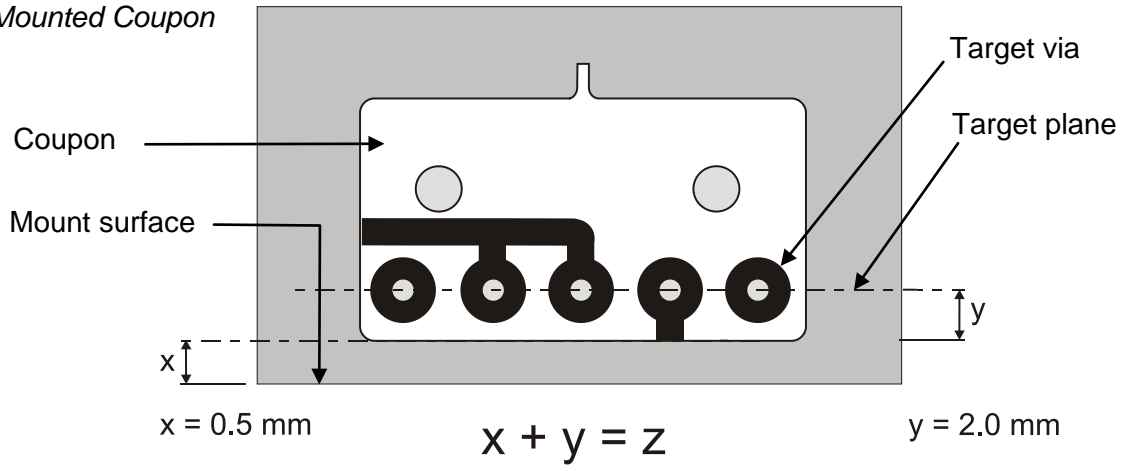
When the mounts are ground to the point where the diamond stops are reached, no more removal takes place, and the particular grinding step is complete. For this reason, it is important to verify that this point has been reached. This can be done by marking the diamond stops on ViaHolder with the wax pencil.

During the grinding process, the diamond stops are checked visually. When the marking has disappeared from all the diamond stops, the particular grinding step has been completed.

- Place the ViaHolder upside-down on the stand.
- Using a wax pencil, mark the surface of each of the diamond stops.



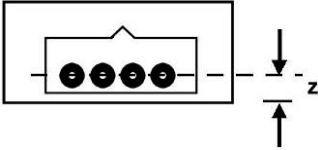
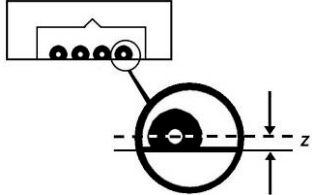
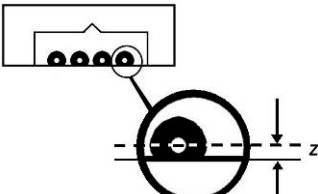
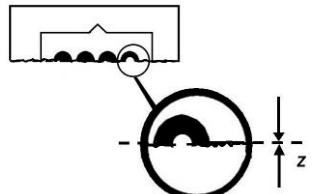
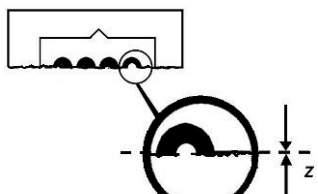
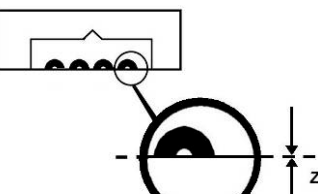
Target Plane in Mounted Coupon





*Material Removal in Grinding and Polishing Steps*

The table below shows the relation between ViaHolder Single Sample position (A-B-C) and coupon preparation steps.

Step	Position	Distance from mount surface to target plane	
		Distance at start of step	Distance at step completion
Plane grinding	A	 <p><math>z = 2500 \mu\text{m}</math></p>	 <p><math>z = 200 \mu\text{m}</math></p>
Fine grinding	B	 <p><math>z = 200 \mu\text{m}</math></p>	 <p><math>z = 0 \mu\text{m}</math> (rough target)</p>
Polishing	C	 <p><math>z = 0 \mu\text{m}</math> (rough target)</p>	 <p><math>z = 0 \mu\text{m}</math> (polished target)</p>

Plane Grinding / Position A

- Rotate the lower ring of the Via Holder to line up the reference mark with Position A



- Place an appropriate surface for the method chosen in the grinding / polishing machine.
- Place the ViaHolder on the disc of the grinding / polishing machine and hold firmly with both hands – preferably in a 5 o'clock position.
- Grind until the diamond stops touch the grinding paper. Check the progress by visual inspection of the diamond stops: when the markings have been removed from all stops, this step is complete. Depending on the number of coupons per mould and their thickness, it may be necessary to use more than one paper in the plane grinding step.

**Note**

The markings will disappear from some diamond stops before others. Continue grinding until the marking has disappeared from **all** the diamond stops.

- Remove the ViaHolder from the grinding / polishing machine and place it upside-down.
- Clean the mount, temporarily removing the mount from ViaHolder if necessary. See [Removing Mounts from](#) on page 28.
- Mark the diamond stops, using a wax pencil.

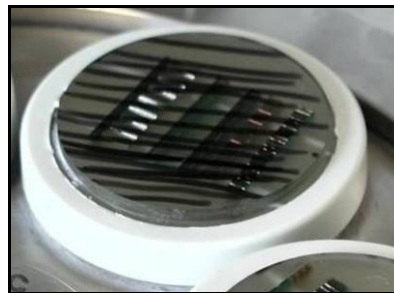
### *Fine Grinding / Position B*

- Rotate the upper ring of the ViaHolder to line up the reference mark with Position B.
- Place an appropriate surface for the method chosen in the grinding / polishing machine.
- Grind until the diamond stops are in contact with the grinding paper. When the wax has been removed from the diamond stops, this step is complete.
- Remove the ViaHolder from the grinding / polishing machine and place it upside-down.
- Clean the mounts, temporarily removing the mounts from ViaHolder if necessary. See [Removing Mounts from](#) on page 28.
- Continue the preparation by polishing in position C.

### *Optional Additional Fine Grinding*

In some cases, additional fine grinding is necessary to obtain a plane-parallel surface over the entire sample area. This can be done by fine grinding with MD-Largo in position B. The shading method is suitable for ensuring a plane-parallel surface:

- Using a dark permanent marker, mark the surface of all the mounts with a series of lines.



- Fine grind in position B.
- Examine the surface of the mounts: if the shading has been completely removed from some areas of the mounts, mark the mounts again and fine grind once more.
- Repeat until no more material is removed from the mounts by fine grinding, i.e. some shading remains over the entire surface of all the mounts.
- Continue the preparation by polishing in position C.

*Polishing / Position C*

Polishing removes very little material from the mounts, so fixed polishing times are used at this stage of the preparation process.

- Rotate the lower ring of the ViaHolder to Position C. In this position the diamond stops cannot come in contact with the polishing material, and marking the diamond stops with wax is unnecessary.
  
- Place an appropriate surface for the method chosen in the grinding / polishing machine.
- Polish according to the chosen method.
- Optional fine polishing can be done with OP-S for 20 seconds.
- Remove the ViaHolder from the grinding / polishing machine.

## **Coupon Preparation Methods**

Struers has developed three methods for coupon preparation: Standard, Advanced and Superior. Using any of these methods, it is possible to hit the exact centre of target vias as small as 100µm - on all of the coupons in the specimen holder.

All 3 methods are based on the following parameters:

- 6 mounts with 6 coupons each.
- Acrylic mounting resin.
- Ø300mm surface – Grinding/ Polishing machine.
- Co-rotation, except on the OP/Chem-step.

The following parameters should be taken into consideration when selecting a method:

- The requirements for the finished specimen
- Material properties (hardness, ductility etc.)
- Number of coupons
- Maximum turnaround time

**Note**

The mount should be cleaned between each preparation step. To do this it may be necessary to temporarily remove the mounts from ViaHolder.  
No loss of precision will occur if this is done.

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Standard Method

	Holder position	Surface	Media / Lub.		Speed	Time
Plane grinding	A	SiC	#180	Water	300 rpm	X x 2 min <sup>1</sup>
Fine grinding	B	SiC	#1200	Water	300 rpm	X x 2 min <sup>1</sup>
Polishing 1	C	MD-Dac	DiaPro Dac		150 rpm	5 min
Polishing 2	C	MD-Nap	OP-S <sup>2</sup>		150 rpm	1½ min

Advanced Method

	Holder position	Surface	Media / Lub.		Speed	Time
Plane grinding	A	SiC	#180	Water	300 rpm	X x 2 min <sup>1</sup>
Fine grinding 1	B	SiC	#1200	Water	300 rpm	X x 2 min <sup>1</sup>
Fine grinding 2	B	MD-Largo	DiaPro All./Largo		150 rpm	Y min <sup>3</sup>
Polishing 1	C	MD-Dac	DiaPro Dac		150 rpm	5 min
Polishing 2	C	MD-Nap	OP-S <sup>2</sup>		150 rpm	1½ min

- 1) Grinding until diamond stops are in contact with the grinding surface. The variable (X) depends on number of SiC-paper changes, which again depends on material properties and number of moulds/coupons. Typically X = 2
- 2) NH<sub>4</sub> or H<sub>2</sub>O<sub>2</sub> may be added
- 3) Fine grinding until the desired plane parallelism is achieved on the entire mount surface

Superior Method

	Holder position	Surface	Media / Lub.		Speed	Time
Plane grinding	A	SiC	#180	Water	300 rpm	X x 2 min <sup>1</sup>
Fine grinding 1	B	SiC	#1200	Water	300 rpm	X x 2 min <sup>1</sup>
Fine grinding 2	B	MD-Largo	DiaPro All./Largo		150 rpm	Y min <sup>3</sup>
Polishing 1	C	MD-Dac	DiaPro Dac		150 rpm	5 min
Polishing 2	C	MD-Dur	DiaPro Dur		150 rpm	2 min
Polishing 3	C	MD-Nap	OP-S <sup>2</sup>		150 rpm	1½ min

### Removing Mounts from ViaHolder Single Sample

- Place the ViaHolder Single Sample upside-down.
- Insert the mount removal tool under the rim of the mount (under the remaining part of the end cover) and lever off the mount.

**Important**

Do not press the Mount Removal Tool against the ring of the ViaHolder. Incorrect use of Mount Removal Tool may result in damage to the ViaHolder rings.

- Remove the remaining part of the end cover from the mount. The sample is now ready for examination.

**Note**

The remaining part of the end cover can be removed from the mount between preparation steps and replaced after examination or cleaning, to continue the preparation with no loss of precision.

### Repositioning Mounts After Inspection

Mounts can be repositioned in ViaHolder for additional grinding/polishing:

- Clean the edge of the mounting ring of ViaSampler and the ends of the positioning pins
- Snap the mount back on the back of ViaHolder. The ring part of the End cover mount must have a perfect fit on ViaHolder to maintain precision.

### 3. Maintenance and cleaning

#### **ViaHolder Single Sample Lubrication**

The ViaHolder assembly is pre-lubricated and sealed in the factory. No user maintenance is needed for the moving parts of the ViaHolder. The internal threaded parts are self-cleaning.

#### **Cleaning ViaHolder Single Sample**

The ViaHolder must be cleaned prior to every preparation. Clean the surface of the ViaHolder using a moist cloth.

#### **Cleaning the VialInserter and Staircase**

No lubrication is necessary.  
Clean the surfaces using a moist cloth.  
A paintbrush or vacuum cleaner can be used to remove dust and particles from the recessed areas.

#### **Cleaning Mounting Rings**

Cleaning of the mounting rings must be done every time they are used. The cleaning procedure is described in the section on [Cleaning the Mounting Rings and ViaHolder](#).



## 4. Trouble shooting

Problem	Explanation	Action
<b>Vialserter</b>		
Incorrect coupon positioning		When placed on the Vialserter staircase, make sure that the side of the coupon on which the via has been identified is pointing upwards. Marking the via(s) with a red pen before extraction is recommended.
Incorrect insertion		The positioning pins <b>MUST</b> be inserted at a straight angle. On some panels, the walls of the positioning holes are easily damaged. Push the pins into the coupons in a gentle, smooth movement. Assist the pins catching the hole by holding the coupon at a slight angle.
Positioning pins twisted	Positioning pins may become twisted if there are less than three coupons pinned at a time or if the coupons are very thin or flexible.	Always pin three or more coupons at a time. Place pinned coupons on the mounting ring to verify that the ends of both pins are in contact with the mounting ring. Dummy coupons may be used if there are insufficient sample coupons. Use rigid dummy coupons if the coupons are very thin or flexible.
Insufficient room for coupons		With very thick coupons, skip a step on the staircase to introduce additional space between the coupons.

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<b>Problem</b>	<b>Explanation</b>	<b>Action</b>
<b>ViaMount</b>		
Insufficient cleaning of ViaMount parts	Resin residue can cause misalignment of the positioning pins.	Clean the mounting rings thoroughly after each use. Use the cleaning tools provided with ViaKit. Apply silicone to the mounting rings before each use.
	Resin residue on the pin tips may result in the pinned coupons being lifted up slightly, and the coupons will be overground.	Check the tips of the positioning pins are free from resin. If necessary, use a pocket magnifier and remove any resin with a scalpel.
Insufficient cleaning of coupons	Dirt and grease residue on the coupons may lead to inaccuracy. In particular when dealing with microvias.	Clean and degrease the coupons after pinning. Immerse the pinned coupons in an ultrasonic cleaner for 2-3 minutes. Use an air gun or a hot air drier.
Damaged nylon lining	The grey nylon lining of the mounting rings may have been damaged because tools other than those supplied by Struers have been used to separate the mount.	Before clicking on the end cover, check that the two pins are resting on an undamaged part.
Off-specification end cover	The pinned coupons must fit tightly between the end cover and the mounting ring. (It should be necessary to use force to twist the pinned coupons.) If not, this could either be caused by a damaged nylon lining of ViaMount, or by the end covers not meeting specifications.	Replace the ViaMount or the End Cap if necessary.
Insufficient mounting resin	To stabilize the coupons and to prevent twisting, the coupons must be fully covered with mounting resin.	Use sufficient resin to cover the coupons.

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<b>Problem</b>	<b>Explanation</b>	<b>Action</b>
<b>ViaHolder Single Sample</b>		
Incorrect positioning of mount	It is essential that the mount is clicked securely onto the ViaHolder.	Ensure that the mount is correctly placed onto the ViaHolder
Incorrect calibration	One or more of the diamond stops are out of calibration. This can happen if ViaHolder is dropped.	Contact your Struers supplier to arrange to have the ViaHolder re-calibrated.
Insufficient number of coupons	Positioning pins may become twisted if there are less than three coupons pinned at a time.	Always pin three or more coupons at a time. Place pinned coupons on the mounting ring to verify that the ends of both pins are in contact with the mounting ring. Dummies may be used if there are insufficient sample coupons.

## 5. Consumables

Specification	Cat. Nr.
<i>Mounting Rings</i> Metal rings, which form part of the moulds used in ViaHolder. 6 pcs.	40300055
<i>End covers</i> Plastic covers (consumables, single-use), which form part of the moulds used in ViaHolder. 250 pcs.	40300056
<i>Positioning Pins</i> One pair of positioning pins (consumables, single-use) is used for each mould. 500 pcs.	40300057
<i>Cleaning Toolkit</i> Set of two tools used to clean ViaHolder and mounting rings.	40300075
<i>Silicone Oil</i> A lubricant used on mounting rings to enable easy removal of the mounted sample.	40300076

## 6. Spare Parts

1 Vialserter .....	05726901
1 Staircase .....	15720211
1 ViaHolder Single Sample .....	05726905
1 Mount removal tool.....	15720110
1 Caran D'ache wax pencil.....	2LA00001

## 7. Technical Data

Subject		Specifications
<b>ViaKit Basic</b>		
System accuracy		Better than 20 µm at 20° C / 68° F ± 2° C / 4° F
ViaHolder Single Sample	Diameter	Ø80 mm / 3.15" Use with any polisher.
	Capacity	1 x ø40 mm mounts Up to 6 coupons in one operation
	Positioning range	Distance between positions A and B: 200 µm Distance between positions B and C: 800 µm Distance between divisions: 50 µm
	Removal control	Factory calibrated diamond stops
	Weight	0.95 kg / 2 lb
ViaMount	<i>2-part precision mould:</i> ViaKit Basic mounting ring	Ø40 mm stainless steel precision mould with non-stick polymer lining
	ViaKit Basic end cover	Single-use, polymer end cover
	Weight	0.5 kg (mounting ring, set of 6), 0.75 kg (end cover, 250 pcs)
Vialserter	Capacity	Loading of 6 coupons of up to 4mm* thickness *) Reduce no. of coupons if thickness >4mm Built-in mould extractor
	Loading media	2 pcs Positioning pins, 1.98 mm dia., 43 mm length
	Weight	9.2 kg / 20.3 lb
Working environment	Ambient temperature	20° C / 68° F ± 2° C / 4° F
	Non condensing humidity	35-50% RH



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