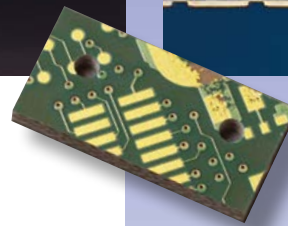
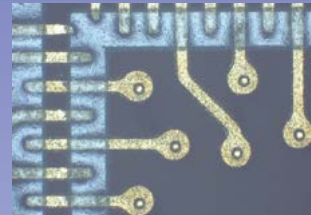


# ViaSampling System



**Automated PCB coupon  
preparation system  
for vias down to 100 µm**

**Modular, upgradeable  
system**



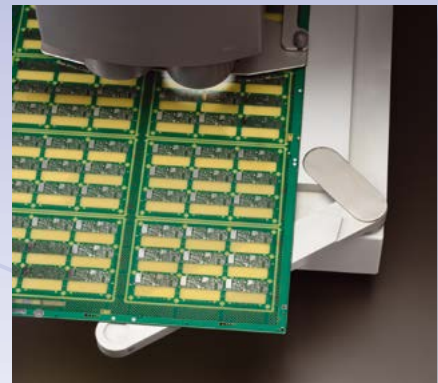
**Struers ViaSampling System takes board quality inspection to another level. Extract coupons from anywhere on production panels, more precisely and faster than ever before**

- Custom designed for the PCB Industry
- Representative samples from most board types, rigid and flex
- Guaranteed, repeatable results - no lost samples
- High-precision preparation of microvias down to 100 µm
- System precision better than  $\pm 20 \mu\text{m}$
- Reduce preparation costs to a minimum
- Continuous routing feature for highest productivity

**ViaSampler:** Fully automatic, low-impact coupon extraction from anywhere on the board

**ViaKit:** High-precision preparation of up to 36 coupons at a time

**ViaKit Basic:** Entry-level coupon preparation toolkit.



*Support arm*



*ViaHolder for precision preparation of single mounts*

*Design your own coupon format -with or without positioning holes*

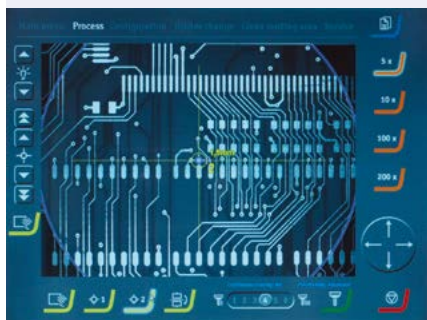
**According to leading industry standards, the quality of a PCB plated through-hole has to be inspected metallographically. For this purpose a test coupon is produced and prepared so the exact centre of the plated through-holes can be inspected in a microscope.**

**With the advent of HDI technology and microvias, board inspection has become a complex task. The coupon preparation process consists of a series of steps, each adding to the challenge of maintaining system precision.**

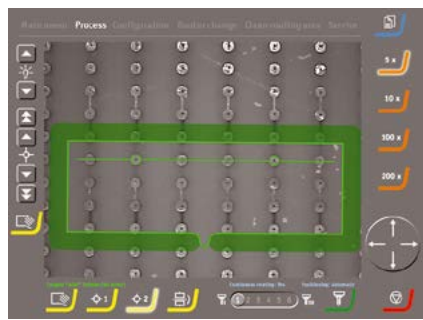
**Struers ViaSampling System takes up the challenge and will not only increase precision, but also your productivity.**

### ViaSampler - automated coupon extraction

ViaSampler is a dedicated coupon extraction station with a precision router-cutter (milling tool) for drilling two positioning holes and extracting test coupons. Drilling and routing are carried out automatically in one operation, so no tool change is necessary. With its advanced vision system, ViaSampler allows quick and accurate pin-pointing of test coupons. The large routing table allows you to extract coupons from the entire board, providing you with increased flexibility – and more representative coupons.



*Vias to be inspected are first pointed out at low magnification (5 or 10 x). Here shown in 5 x mag.*



### Application range

ViaSampler has a wide application range and can be used for both HDI and standard boards (unmounted), rigid and flex type. ViaSampler handles boards with a thickness up to 6 mm and dimensions up to 635 mm x 635 mm (25" x 25").

### Flexible positioning

With the large routing table, you are no longer limited to inspecting coupons from the edge of the board, since ViaSampler allows coupon extraction from anywhere on the board. After visual positioning of the coupon, you can flip it or slide it sideways to optimize the location. This extraordinary feature minimizes the number of damaged customer panels.

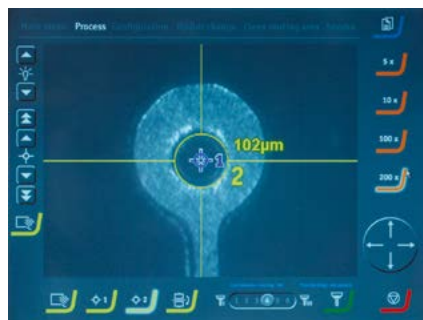
### Pin-pointing to perfection

Using the intuitive touch-screen interface, even microvias are precisely pin-pointed at an on-screen magnification of up to 200 times.

The **AutoTrack** feature allows the routing table to follow your on-screen movements and automatically track the new position. This makes it much easier and faster to pin-point accurately. Use the adjustable crosshairs to determine the actual diameter of the via to be inspected.

### Continuous routing

This feature lets you extract multiple coupons from a panel - in a single process. Minimizing the machine operations between coupons, valuable time is saved. After completing one coupon, the router



*.. and – if necessary – at very high magnification (100 or 200 x). Here shown in 200 x mag.*



keeps spinning and the safety hood stays in its lower position, while a new coupon location is identified.

### Flexible coupon size

Extract the standard 10x20 mm coupon size for automatic grinding and polishing with the ViaKit, or design the coupon according to your requirements - with or without positioning holes.

### Manual Positioning

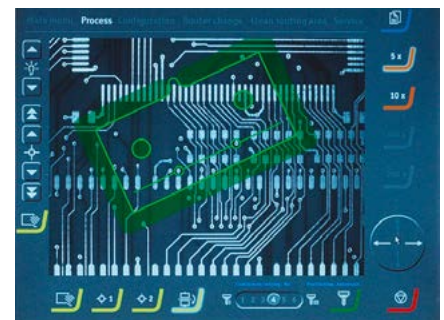
For less demanding non-microvias, use the fast Manual Positioning mode: Position the panel in relation to an on-screen crosshair, clamp and extract the coupon.

### Dust removal

During the process some milling dust is produced. ViaSampler is prepared for easy connection to an external exhaust system. Dust is efficiently removed during coupon extraction and improves the working environment.



*Manual Positioning*



*After pin-pointing the two inspection vias, an outline of the finished coupon is displayed on screen. Prior to extraction, optimize coupon location by flipping it or sliding it sideways.*

# ViaKit - Coupon preparation toolkit

Struers has developed a toolkit, ViaKit, which makes your coupon preparation process much easier.

ViaKit is designed to be used with the ViaSampler and includes all you need for pinning, mounting and preparing coupons:

## Vialserter – combined pin inserter and mount extractor

The precise positioning of the pins is essential for a good preparation result. Vialserter provides accurate positioning of up to 6 coupons on one set of pins allowing high precision preparation of up to 36 coupons at a time.

The Vialserter can also be used as a mount extractor – a dual-function that makes it easy to unmount the samples and avoid damages to the mounting ring.



Vialserter – For pin insertion and mount extraction

## ViaMount – precision mould with tear-off end cap

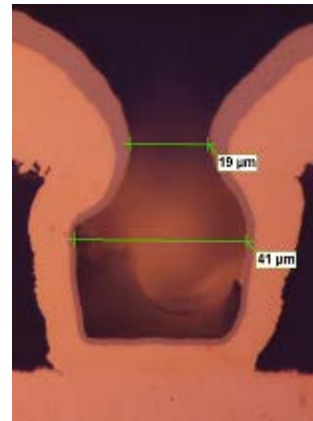
The stainless steel moulds, ViaMount, keep the sample 100% dimensionally stable during preparation. ViaMount has a special lining, for easy unmounting of the mounts. ViaMount has a tear-off end cap that is removed after curing.

The lower part of the mould stays on the sample after curing and locks the sample onto the sample holder. This ensures precision and increases the general ease-of-use.

## ViaHolder – with calibration-free diamond stops

A special specimen holder, ViaHolder, has been designed for the grinding/polishing stage. ViaHolder can hold up to 6 samples, enabling preparation of up to 36 coupons at a time.

The factory-calibrated diamond stops ensure full control of material removal and do not wear, not even on grinding discs with diamonds, providing calibration-free preparation. The simple, pre-defined preparation process ensures well-defined removal through an easy 3-step method, to which additional steps may be added at will.



Detail of microvia

ViaHolder is equipped with the same coupling as Struers' other sample holders, providing seamless integration with Struers' ø300 mm grinder/polishers.

## Remote diagnostics and software updates

ViaSampling System can be connected to a Local Area Network and can thus be accessed via the Internet. This enables Struers service engineers to remotely check the condition of ViaSampling System and detect any errors. Possible software updates can also be carried out remotely, reducing machine downtime to an absolute minimum.



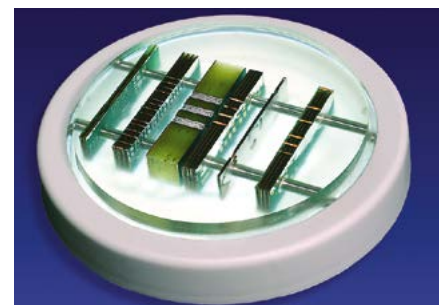
ViaHolder – Specimen holder with calibration-free diamond stops



ViaMount – Precision mould with tear-off end cap



Tegramin – Table-top grinder/polisher suitable for use with ViaKit



Mounted PCB coupons

# Using the ViaSampling System

Coupon extraction and preparation in a few, simple steps

1



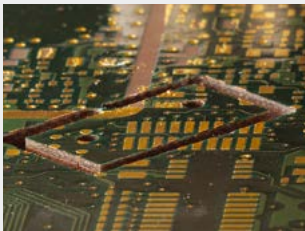
**Point out**  
ViaSampler:  
At high magnification  
pinpoint the area to  
be inspected

6



**Unmount**  
ViaKit:  
Extract the mount from  
the mould

2



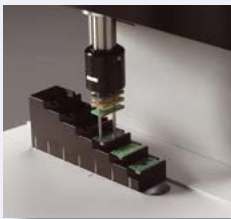
**Extract**  
ViaSampler:  
Drill holes for positioning  
pins, and extract coupon

7



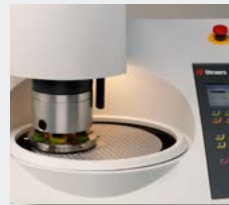
**Attach**  
ViaKit:  
Click-on the mounts to the  
base of the sample holder

3



**Pin**  
ViaKit:  
Precisely pin up to 6 coupons  
on two positioning pins

8



**Grind/polish**  
ViaKit + Grinder/Polisher:  
Use automatic grinder/polisher  
for sample preparation

4



**Mount**  
ViaKit:  
Mount pinned coupons  
in fast curing resin

9



**Inspect**  
Inspect the coupon  
under microscope

5



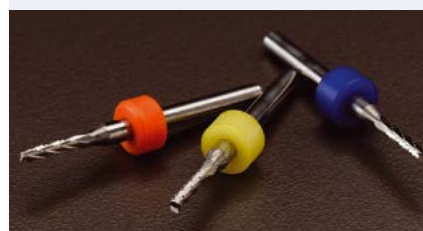
**Uncover**  
ViaKit:  
Tear off the end cap

Automatic Struers grinder/polishers  
recommended for use with the  
ViaSampling System:  
**Tegramin and AbraPol-20**  
Please refer to separate brochures  
for details.

TECHNICAL DATA	
<b>ViaSampling System</b>	
System precision	Better than $\pm 20 \mu\text{m}$ at 20°C / 68°F $\pm 3^\circ\text{C}$ / 5.4°F
<i>Routing table</i>	
Width	600 mm / 23.6"
Depth	575 mm / 22.6"
<i>Board capacity</i>	
Max.	635 x 635 mm / 25 x 25"
Min.*	80 x 80 mm / 3.1 x 3.1"
Thickness*	0.5-6 mm / 0.0197"-0.2755"
*Smaller formats may require support and/or lamination	
<i>Routing tool</i>	
Type	Up-cut chipbreaker with fishtail
Size	$\varnothing 1.96 / \varnothing 1.97 / \varnothing 1.98 \text{ mm} / 0.0771" / 0.0775" / 0.0779"$ +5 $\mu\text{m}$ / -0 $\mu\text{m}$
Shaft diameter	$\varnothing 3.175 \text{ mm} / 0.125"$
Speed	16,000 rpm.
<i>PC platform, Software and controls</i>	
Dedicated PC	Industrial PC (delivered with the ViaSampling System)
Software	Microsoft® Windows® Embedded Standard
Controls	Touchscreen and/or mouse
Display	15" Touchscreen
Options	Struers Remote Service
<i>Supply</i>	
Voltage /frequency	200-240V / 50-60Hz
Power inlet	1-phase (N+L+PE) or 2-phase (L1+L2+PE) The electrical installation must comply with "Installation Category II"
Power, nominal load	180 W (excl. PC)
Power, idle	28 W (excl. PC)
Current, nominal	0.9 A (excl. PC)
Current, maximum	1.3 A (excl. PC)
Power outlet	Switched 200-240V / 50-60Hz (Same as input) Max. 4A
Air extraction	$\varnothing 32 \text{ mm} / 1\frac{1}{4}"$
Air extraction, min airflow	130 m <sup>3</sup> / 4591 ft <sup>3</sup> per hour
<i>Noise levels</i>	
Routing 1.6 mm / 0.06" PCB, at distance 1.0 m / 39.4" from machine with vacuum	81 dB (A)
<i>Working environment</i>	
Temperature	5-40° C / 41-104° F. Must be calibrated at a temperature close to daily use temperature. Max. difference $\pm 3^\circ\text{C}$ / 5.4°F
Humidity	0-95% RH
<i>Dimensions and weight</i>	
Width ( $\pm$ monitor)	600 / 882 mm / 23.6/34.7"
Depth	750 mm / 29.5"
Height	710 mm / 28"
Weight	136 kg / 300 lbs

Struers' equipment is in conformity with the provisions of the applicable International Directives and their appurtenant Standards.  
(Please contact your local supplier for details).

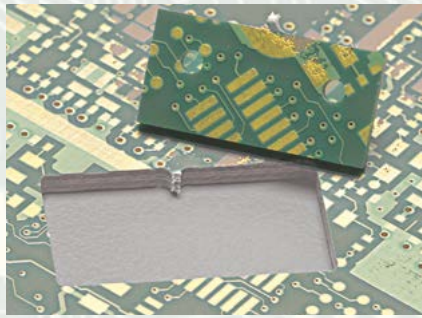
SPECIFICATIONS no.	Cat.
<b>ViaSampler</b> Routing station for extraction of PCB test coupons. Industrial PC with video capture card and 3 router-cutters included.	05716128
<b>Router-Cutter</b> Router-cutter tool for ViaSampler, 1.98 mm dia. Router-cutter tool for ViaSampler, 1.96 mm dia. Router-cutter tool for ViaSampler, 1.97 mm dia.	40300077 40300078 40300079
<b>ViaKit</b> Toolkit for preparation of PCB coupons, complete with pin inserter (05726901), specimen holder (05726903), mounting rings (40300055), end caps (40300056), positioning pins (40300057), silicone oil (40300076), and cleaning tool (40300075)	05726101
<b>ViaKit Basic</b> Toolkit for preparation of PCB coupons, complete with ViaHolder Single Sample specimen holder (05726905), Pin inserter (05726901), Mounting rings (40300055), End caps (40300056), Positioning pins (40300057), Silicone oil (40300076), and Cleaning tool (40300075).	05726103
<b>ViaInserter</b> For insertion of two positioning pins in up to 6 coupons	05726901
<b>ViaHolder</b> Adjustable precision specimen holder with diamond stops. For up to 6 x 6 PCB coupons.	05726903
<b>ViaHolder Single Sample</b> Adjustable precision specimen holder with diamond stops. For up to 6 coupons in a single mount.	05726905
<b>ViaKit Mounting Rings</b> Stainless steel precision mould with non-stick lining. For use with ViaKit End Caps (40300056). 6 pcs.	40300055
<b>ViaKit End Cap</b> End caps for use ViaKit Mounting Rings (40300055). 250 pcs.	40300056
<b>ViaKit Positioning Pins</b> Positioning pins, 1.98 mm dia., length 43 mm. 500 pcs.	40300057
<b>ViaKit Cleaning Tool</b> Cleaning tool for ViaKit Mounting Rings (40300055)	40300075
<b>Silicone oil</b> Silicone release agent	40300076



High precision Router-cutter for ViaSampler

# ViaKit Basic

## Entry-level coupon preparation toolkit



Struers also offers ViaKit Basic, which is designed for preparation of fewer coupons - and still provides all the advantages of ViaKit.

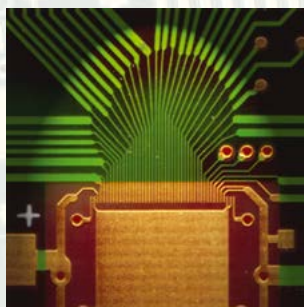
ViaKit Basic is centered around ViaHolder Single Sample with 5 diamond stops. The stops accurately control material removal in steps of 50 µm.

Both versions of the ViaHolder use the following methodology: The coupons are prepared in 3 simple steps - A, B and C, plane grinding, fine grinding and polishing. Intermediate steps can be added at will.

Using ViaInserter, up to 6 coupons are pinned at a time, mounted in Struers' Mounting Rings, and precision polished in ViaHolder Single Sample.



Controlled removal in steps of 50 µm



**Struers ApS**  
Pederstrupvej 84  
DK-2750 Ballerup, Denmark  
Phone +45 44 600 800  
Fax +45 44 600 801  
struers@struers.dk  
www.struers.com

**AUSTRALIA & NEW ZEALAND**  
**Struers Australia**  
27 Mayneview Street  
Milton QLD 4064  
Australia  
Phone +61 7 3512 9600  
Fax +61 7 3369 8200  
info.au@struers.dk

**BELGIQUE (Wallonie)**  
**Struers S.A.S.**  
370, rue du Marché Rollay  
F-94507 Champigny  
sur Marne Cedex  
Téléphone +33 1 5509 1430  
Télécopie +33 1 5509 1449  
struers@struers.fr

**BELGIUM (Flanders)**  
**Struers GmbH Nederland**  
Zomerdijk 34 A  
3143 CT Maassluis  
Telefoon +31 (10) 599 7209  
Fax +31 (10) 5997201  
netherlands@struers.de

**CANADA**  
**Struers Ltd.**  
7275 West Credit Avenue  
Mississauga, Ontario L5N 5M9  
Phone +1 905-814-8855  
Fax +1 905-814-1440  
info@struers.com

**CHINA**  
**Struers Ltd.**  
No. 1696 Zhang Heng Road  
Zhang Jiang Hi-Tech Park  
Shanghai 201203, P.R. China  
Phone +86 (21) 6035 3900  
Fax +86 (21) 6035 3999  
struers@struers.cn

**CZECH REPUBLIC & SLOVAKIA**  
**Struers GmbH Organizační složka**  
vědeckotechnický park  
Přílepská 1920,  
CZ-252 63 Roztoky u Prahy  
Phone +420 233 312 625  
Fax +420 233 312 640  
czechrepublic@struers.de  
slovakia@struers.de

**DEUTSCHLAND**  
**Struers GmbH**  
Carl-Friedrich-Benz-Straße 5  
D-47877 Willich  
Telefon +49 (0) 2154 486-0  
Fax +49 (0) 2154 486-222  
verkauf@struers.de

**FRANCE**  
**Struers S.A.S.**  
370, rue du Marché Rollay  
F-94507 Champigny  
sur Marne Cedex  
Téléphone +33 1 5509 1430  
Télécopie +33 1 5509 1449  
struers@struers.fr

**HUNGARY**  
**Struers GmbH**  
Magyarországi Fióktelep  
Tatal ut 53  
2821 Gyermely  
Phone +36 (34) 880546  
Fax +36 (34) 880547  
hungary@struers.de

**IRELAND**  
**Struers Ltd.**  
Unit 11 Evolution@ AMP  
Whittle Way, Catcliffe  
Rotherham S60 5BL  
Tel. +44 0845 604 6664  
Fax +44 0845 604 6651  
info@struers.co.uk

**ITALY**  
**Struers Italia**  
Via Monte Grappa 80/4  
20020 Arese (MI)  
Tel. +39-02/38236281  
Fax +39-02/38236274  
struers.it@struers.it

**JAPAN**  
**Marumoto Struers K.K.**  
Takara 3rd Building  
18-6, Higashi Ueno 1-chome  
Taio-ku, Tokyo 110-0015  
Phone +81 3 5688 2914  
Fax +81 3 5688 2927  
struers@struers.co.jp

**NETHERLANDS**  
**Struers GmbH Nederland**  
Zomerdijk 34 A  
3143 CT Maassluis  
Telefoon +31 (10) 599 7209  
Fax +31 (10) 5997201  
netherlands@struers.de

**NORWAY**  
**Struers ApS, Norge**  
Sjøskogenveien 44C  
1407 Vinterbro  
Telefon +47 970 94 285  
info@struers.no

**ÖSTERREICH**  
**Struers GmbH**  
Zweigniederlassung Österreich  
Betriebsgebiet Puch Nord 8  
5412 Puch  
Telefon +43 6245 70567  
Fax +43 6245 70567-78  
austria@struers.de

**POLAND**  
**Struers Sp. z o.o.**  
Oddział w Polsce  
ul. Jasnogórska 44  
31-358 Kraków  
Phone +48 12 661 20 60  
Fax +48 12 626 01 46  
poland@struers.de

**ROMANIA**  
**Struers GmbH, Sucursala Bucuresti**  
Str. Preciziei nr. 6R  
062203 sector 6, Bucuresti  
Phone +40 (31) 101 9548  
Fax +40 (31) 101 9549  
romania@struers.de

**SCHWEIZ**  
**Struers GmbH**  
Zweigniederlassung Schweiz  
Weissenbrunnenstraße 41  
CH-8903 Birmensdorf  
Telefon +41 44 777 63 07  
Fax +41 44 777 63 09  
switzerland@struers.de

**SINGAPORE**  
**Struers Singapore**  
627A Aljunied Road,  
#07-08 BizTech Centre  
Singapore 389842  
Phone +65 6299 2268  
Fax +65 6299 2661  
struers.sg@struers.dk

**SPAIN**  
**Struers España**  
Camino Cerro de los Gamos 1  
Building 1 - Pozuelo de Alarcón  
CP 28224 Madrid  
Teléfono +34 917 901 204  
Fax +34 917 901 112  
struers.es@struers.es

**SUOMI**  
**Struers ApS, Suomi**  
Hietalahdenranta 13  
00180 Helsinki  
Puhelin +358 (0)207 919 430  
Faksi +358 (0)207 919 431  
finland@struers.fi

**SWEDEN**  
**Struers Sverige**  
Box 20038  
161 02 Bromma  
Telefon +46 (0)8 447 53 90  
Telefax +46 (0)8 447 53 99  
info@struers.se

**UNITED KINGDOM**  
**Struers Ltd.**  
Unit 11 Evolution @ AMP  
Whittle Way, Catcliffe  
Rotherham S60 5BL  
Tel. +44 0845 604 6664  
Fax +44 0845 604 6651  
info@struers.co.uk

**USA**  
**Struers Inc.**  
24766 Detroit Road  
Westlake, OH 44145-1598  
Phone +1 440 871 0071  
Fax +1 440 871 8188  
info@struers.com