



## VarioCut 404

Handle for receiving  
various adapter blocks  
for performing  
adhesion tests



VarioCut 404 with all accessories

testing equipment for quality management



### Technical Description and Instruction

EN  
EN ISO  
ISO  
ASTM

Standardized defined  
Preparation of Samples  
for Corrosion Tests

## Safety Instructions

### Proper Use

The Model 404 is used to perform adhesion tests by scratch and cross-cut tests in accordance with international standards and for standardized defined preparation of samples for corrosion tests.

This instrument is a purely mechanical instrument.

### Risk of Injuries!

The blades and the test tips to use with the various adapters, are very sharp and therefore may cause injuries, if the instrument is not handled correctly and carefully!

### Purpose and Application

The adhesion of a coating on a base material is not only a mechanical property defining the bond between coating and substrate, but it is also of particular importance with regard to the corrosion protection, since areas of poor adhesion can easily be affected by corrosion.

In the paint and coating inspection often consists within the necessity of test series simultaneous demand for various cutting, scratching, & adhesion tests in combination with defined injurious sample preparations for corrosion tests.

It is a common procedure, to prepare coated test specimen for corrosion tests by applying various linear scratches in vertical, horizontal and crossing form, so that the resistance of the coating system can be checked against subsurface corrosion.

Used test tips as scratch tools are suitable tools for the production of defined scratch injuries on painting surfaces within accelerated corrosion tests such as humidity, gas corrosion, salt spray, immersion or alternate immersion, weathering, etc.

The new VarioCut 404 enables the user to employ a useful number of needed test tools, to have provided without every one of them with its own handle/holder and storage case. The complete retrofittable accessory takes place here!



### Design

The **VarioCut 404** is a comfortable handheld device which complies with all cross-cut standards.

The ergonomically shaped, anodized holder / aluminum grip is equipped with an **engraved anti-slip grid pattern**.



In the area of the tool holder or in the test head the handy grip has a freely-moving rotatable central axis for uniformly force application. The central axis can be locked by simply turning the black endbutton, to ensure safely the individually preferred handling of the tester of the users.

In the basic version the **VarioCut 404** is supplied with grip, chuck adapter, steel ruler and plastic case.

Optionally, a total number of five different adapters with various suitable tools are available:

- **Clamping chuck adapter** (including in the scope of supply)  
To attach test tools with shaft diameter up to 4 mm (optional), as
  - Test tip acc. to van Laar (Ø 0,5 mm)
  - Tet tip acct. to Clemen (R 1,0 mm)
  - Test tip for cross hatch cutting (30°)



**Fig. Grip with clamping chuck adapter**

By the haptic grip of VarioCut, a stable guiding of the device during the cutting procedure is guaranteed.

The traces can be applied from the bottom side horizontally up above each other, parallel to the narrow side of the sample. During the application - depending on thickness and hardness of the paint layer - more or less effort will be necessary to reach safely the ground and to achieve just a slight deformation of the metal substrate underneath the coating layer.

To achieve a clear & straight scratch, the use of the supplied ruler is recommended. The scratch speed should be about 10 cm/s.

- **Adapter block „Sikkens“ (in about 45° beveled positioning)** to attach Sikkens cutting tools for producing a cutting trace with a rectangular edged channel, for application of defined scratches for corrosion tests

- Cutting edge made of hard metal (0.5 mm)
- Cutting edge made of hard metal (1.0 mm) (included in delivery)



**Fig. Holder with adapter block „Sikkens“ and cutting edge**

The application of one or more scratches has to be made in a straight manner through the coating until the metallic substrate is visible in a complete trace. The trace positioning has to be parallel to the narrow side of the metal sheet. Depending on requirements an "Andreas" cross can be applied.

For applying defined scratches, a controlled vertical or plane-parallel positioning of the cutting edge of the scratching tool is indispensable.

The lateral levelling wheel made of polyamide ensures a correspondingly exact positioning and guiding of the scratch tool.

- **Adapter block 45°** (in about 45° leveled positioning) to attach:
  - Test tip acc. to van Laar (Ø 0.5 mm)
  - Test tip acc. to Clemen (R 1.0 mm)
  - Test tip for cross hatch cutting (30°)



**Fig. Holder with adapter block and test tip**

During the corrosion tests the specimens are scored with a scratching tool at the beginning and at periodic intervals. The scratches will be made from the bottom up horizontally above each other and parallel to the narrow side of the sample. By this mode of operation, the progressive subsurface corrosion can be observed very well.

To reach the ground safely and to achieve a slight deformation of the metal, more or less force will be required in the application, depending on the thickness and hardness of the paint layer. It is expedient to use a ruler to achieving a clear & straight scratch.

- **Cross Cutter Adapter** to attach cutters for standardized cross cutting tests with multi-cross cutters.

The longitudinally positioned freely rotating axis between handle and mounting adapter provides a very uniformly distributed spread of force onto the cutter, so that the user does not have to focus on this. On request the rotation axis can be locked by a simple rotation of the end button of the handle.



**Fig. Handle with cross cutter adapter**

Different cutters are available:

- Cutter with 1 edge
- Cutter with 2 edges and cutting distance 5 mm
- Cutter with 6 edges and cutting distance (optionally) 1 mm, 2 mm or 3 mm
- Cutter with 11 edges and cutting distance 1 mm

The chuck adapter and the adapter block 45° are suitable for attaching the test tip for cross hatch cutting. This allows the user a comfortable free work, especially on a lot of - also three-dimensional - curved or uneven surfaces.

- **Chucking adapter (rolling)**

for attaching of:

- Hardness Test Pencil, Model 318 (for the measurement of the hardness of protective coatings)



The well proven ERICHSEN Hardness Test Pencil 318 has been improved decisively years ago in the form of a parallel design, Mod. 318 S, with rolling test head.

With the chucking adapter the still available version 318 with sleeve-shaped head can be guided vertically in a controlled manner and without contact by the sleeve edge over the surface to be tested.

Three nylon wheels ensure the corresponding stability provide the vertical placement and the guidance.

This applies especially when using the ERICHSEN Hardness Test Pencil 318 C with test tip acc. to Clemen, where a controlled vertical positioning and guidance is essential.

## Order Information

Figures	Ord.-No.	Description
	0310.01.31	<p><b>Multifunctional Handle VarioCut 404</b>                      Adaptable anti-slip grip made of aluminium with engraved grid pattern, with freely rotating as well as locked axis for constant force application. incl.</p> <ul style="list-style-type: none"> <li>- clamping chuck adapter to attach the cross-cut single edge, the corrosion scratch tools acc. to van Laar and Clemen as well as many user-specific tools with shaft diameter up to 4 mm</li> <li>- flexible steel ruler</li> <li>- plastic case (<u>without test tip</u>)</li> </ul>
		<b>Necessary Accessories (at option):</b>
	0539.01.32	Test tip acc. to van Laar (Ø 0,5 mm)
	0218.02.32	Test tip acc. to Clemen (R 1,0 mm)
	0564.01.32	Test tip for cross hatch cutting (30°), additionally covered with an extremely hard layer
		<b>Additionally accessories for the VarioCut</b>
	1970.01.32	<p><b><u>Adapter block "Sikkens"</u></b>                      In about 45° beveled positioning, with lateral levelling wheel made of polyamide, for vertical or plane-parallel placement of the cutting edge of the scratch tool, to attach Sikkens cutting edges in 0.5 and 1.0 mm, for application of defined scratches for corrosion tests  <u>incl.</u> Sikkens cutting edge 1,0 mm</p>
	910926442	Sikkens cutting edge 0,5 mm (both sides usable)
	910926441	Sikkens cutting edge 1,0 mm (both sides usable) – Spare part

**Order Information**

Figures	Ord.-No.	Description
	1971.01.32	<p><b><u>Adapter block 45°</u></b>                      In about 45° beveled positioning, without lateral levelling wheel or other levelling degree for flexible working on anti-plane geometry parameters; to attach the test tip for cross hatch cutting, the corrosion test tips acc. van Laar and Clemen as well as many user-specific tools with shank diameter up to 4 mm (<u>without test tips</u>)</p>
<b>Necessary Accessories (at option):</b>		
	0539.01.32	Test tip acc. to van Laar (Ø 0,5 mm)
	0218.02.32	Test tip acc. to Clemen (R 1,0 mm)
	0564.01.32	Test tip for cross hatch cutting (30°), additionally covered with an extremely hard layer
	1974.01.32	<p><b><u>Cross Cutter Adapter</u></b>                      to attach multi cross cutter for the cross-cut test, incl. polyamide bristle brush and magnifying glass (<u>without cutter</u>)</p>
<b>Necessary Accessories (at option):</b>		
	0433.01.32	Cutter with 6 edges, cutting distance 1 mm
	0433.02.32	Cutter with 6 edges, cutting distance 2 mm

### Order Information

Figure	Ord.-No.	Description
	0433.03.32	Single Edge Cutter
	0433.04.32	Cutter with 2 edges, cutting distance 5 mm
	0433.05.32	Cutter with 11 edges, cutting distance 1 mm
	0433.07.32	Cutter with 6 edges, cutting distance 3 mm
	1972.01.32	<b>Chucking adapter (rolling)</b> for fixing and vertical guidance of the ERICHSEN hardness test pencil Model 318, in standard version as well as with test head "C" and test tip "Clemen" – <u>without</u> hardness test pencil
	0020.01.31	<u>Hardness Test Pencil, Model 318</u> incl. test tip no. 1 (acc. to Bosch; 0,75 mm Ø) and 3 springs
		<b>Further accessories for Model 318:</b>
	2109.01.32	Test head „C“ (movable/retrofit) for models 318/318 S, for clamping the Clemen test tip
	0218.01.32	Test tip acc. to Clemen (R 1.0 mm) - for clamping into the test head (Ord.-No. 2109.01.32)

Order Information		
Figure	Ord.-No.	Description
	0428.03.32	Test tip no. 2 (technically equivalent to ISO 1518-1; 1.0 mm Ø)
	00428.04.32	Test tip no. 3 (acc. to van Laar; 0.5 mm Ø)
	0428.01.32	Test tip no. 4 (acc. to Opel; 0.5 mm Ø)
	0428.05.32	Test tip (Ø 3 mm) for scratch test acc. to BMW GS 97034-8

The right of technical modifications is reserved.  
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