

# Accutom



## Accutom-5

Automatic precision  
cut-off machine

## Accutom-50

... and grinding machine



### Common features of Accutom-5/-50

- Positioning accuracy of 5  $\mu\text{m}$
- Pre-set, constant feed speed (0.005 to 3 mm/sec)
- Adjustable force limit
- Sample rotation or oscillation
- Variable cut-off wheel speed up to 3,000 rpm
- Menu control and digital read-out
- Built-in cut-off wheel list
- Database with user-definable cutting methods
- Built-in recirculation cooling unit
- Enclosed cutting chamber with safety switch

### Common application areas:

Precise and deformation-free cutting of:

- Metals
- Electronic components
- Ceramics
- Composites
- Crystals
- Sintered carbides
- Minerals
- Fibre reinforced materials
- Biomaterials (teeth and bones)

### Additional features of Accutom-50

- Serial cutting of slices (Multi-cut)
- Grinding of thin sections
- Target grinding in components
- Variable cut-off wheel speed up to 5,000 rpm
- Database for both cutting and grinding methods
- Improved menu control

### Additional application areas:

- Precise serial cutting of all materials
- Thin sections of minerals
- Thin sections of ceramics
- Target grinding in components



*Oscillating movement is used for cutting oblong samples, thus reducing the cutting time considerably*

Accutom-50 is based on the known and well tested technology of Accutom-5. Sample positioning within 5 µm combined with constant feed speed and sample rotation or oscillation represents the utmost in precision cutting. The addition of fully automatic serial cutting and precision grinding facilities, together with even higher wheel speeds, makes Accutom-50 the most universal tool in precision manufacturing of samples.

### Working principle

Both Accutom-5 and Accutom-50 are built on the same, precisely manufactured, cast frame. The use of step motors to control the movement of the sample in both X- and Y-directions enables very precise positioning.

### Positioning accuracy of 5 µm

The high resolution of the step motor makes it possible to position the sample with an extraordinary precision of 5 µm. The total movement of the sample in the X-direction is 60 mm.

### Pre-set, constant feed speed

The feed speed can be pre-set and controlled in the range of 0.005 to 3 mm/sec. This wide range allows even the most delicate materials to be cut. Both the pre-set and the actual speeds are shown on the display. If the preset force limit is reached, the feed speed will be reduced and the process stopped if the speed has fallen below a specified limit.

### Adjustable force limit

To protect thin cut-off wheels or fragile samples, the force limit can be set to three different levels: Low, Medium and High.

### Sample rotation or oscillation

Sample rotation or oscillation reduces the contact area between cut-off wheel and sample to a minimum. This results in a decrease in frictional heat and allows fast cutting of extremely hard materials.

### Variable cut-off wheel speed up to 3000 rpm

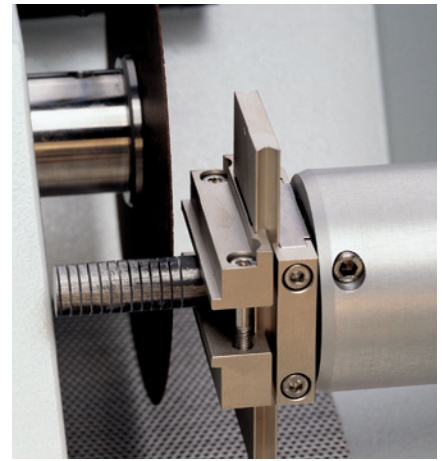
The motor of Accutom-5 has variable cut-off wheel speeds from 300 up to 3000 rpm in steps of 100 rpm. This allows both high and low speed cutting and enables a more accurate choice of wheel speed for different cut-off wheel diameters.

### Menu control and digital readout

Accutom-5 is operated from a touch pad on the ergonomically designed, slanting front. All parameters, both for positioning and cutting, are presented on the LC-Display.

### Built-in cut-off wheel list

A list of all Struers cut-off wheels is stored in an internal database together with their name, respective thickness and force limit.



*Accutom-50 can be programmed to automatically cut series of slices from the same samples*

### Database with user-definable cutting methods

After establishing a method for a specific material, all settings can be saved in a database and recalled at any time. Accutom-5 has a storage capacity of ten methods.

### Built-in recirculation cooling unit

With a capacity of four litres, and a very high through-put, the recirculation cooling unit ensures a constant low temperature during the cut, and an efficient removal of cutting debris.

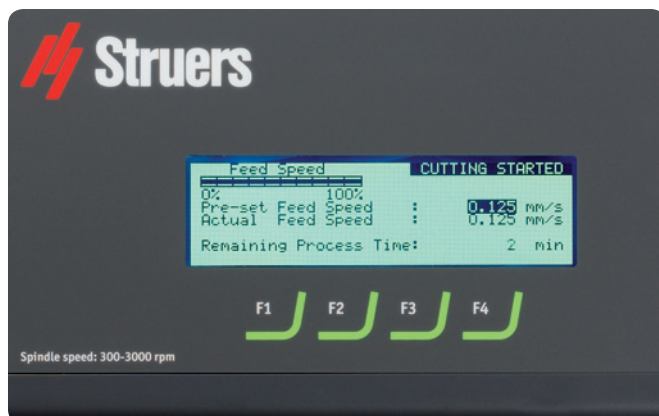
### Enclosed cutting chamber with safety switch

The fully transparent cover is equipped with a safety switch to prevent the cut-off wheel from starting whilst the cover is open. The sample can be inserted and positioned but the cut-off wheel itself can only be activated when the cover has been closed properly, thus providing maximum safety for the operator.

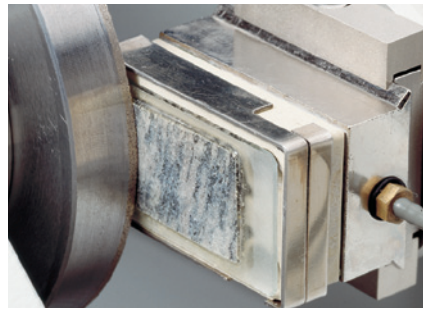
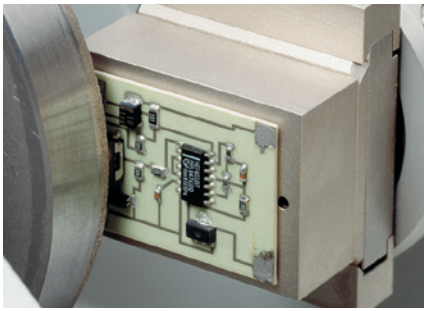
### Accutom-50 provides the following additional features:

#### Serial cutting of slices (Multi-cut)

Accutom-50 can be programmed to automatically cut series of slices from the same sample. The advanced software will also compensate for the wheel thickness and for slight drift of the cut-off wheel. This results in very precise sections with an identical thickness, as required in failure analysis or the examination of biomaterials.



*After the process has been started, the display changes and the relevant parameters are shown*



*Grinding on Accutom-50 can be carried out in two different ways: The grinding operation can be stopped at a specified position, or a well-defined amount of material can be removed*

### **Grinding of thin sections**

The thickness ground during each different operation associated with a thin section can be easily adjusted or even saved in different grinding methods. After grinding the glass plate to the precise thickness, the position of the sample holder is set to zero. Thereafter the thickness of the thin section is entered directly.

### **Target grinding in components**

When the precise position of a component within a sample is known, Accutom-50 can be programmed to grind down to precisely that position. The position can be adjusted in steps of 5 µm.

### **Variable cut-off wheel speed up to 5000 rpm**

The variable cut-off wheel speed can be adjusted from 300 up to 5000 rpm in steps of 100 rpm. This grants even higher precision as the drift of the cut-off wheel is reduced because of the higher speed. Also, the feed speed can be increased without experiencing any deterioration in the high quality of the cut surface.

### **Database for both cutting and grinding methods**

Accutom-50 is equipped with a database capable of storing 20 cutting and 10 grinding methods.

### **Improved menu control**

Subsequent menus for the selection of cutting or grinding parameters greatly facilitate the operation. Together with the larger display the new menu control improves the user-friendliness of Accutom-50.

### **Cut-off wheels**

As Accutom-50 works with programmable constant feed speeds, all types of cut-off wheels, including abrasive wheels, can be used.

Struers offer a large variety of Diamond, CBN, Al<sub>2</sub>O<sub>3</sub> and SiC cut-off wheels covering all possible applications. Also, saw blades for the cutting of very soft metals or plastics can be used on Accutom-5/50 due to the cover with the safety switch.

### **Cup wheels**

Two different types of cup wheels, resin and metal bonded, are available for grinding on Accutom-50.

### **Specimen holders**

All specimen holders for Accutom-5/50 are provided with a dovetail plate. This means that the samples can be clamped into the sample holder outside the cutting chamber, and then easily inserted into the dovetail fixture of Accutom-5/50.



*A wide range of specimen holders can be used on Accutom machines*



## Technical data

| Cutting                    | Accutom-5  | Accutom-50   |
|----------------------------|--|--|
|                            | Cutting speed: 300-3000 rpm<br>(adjustable in steps of 100 rpm)<br>Feed speed: 0.005-3.000 mm/s<br>(adjustable in steps of 0.005 mm/s)<br>Max.pos.speed: Y=13 mm/s X=10 mm/s<br>Force limits: low: approx. 20 N<br>medium: approx. 40 N;<br>high: approx. 60 N | Cutting speed: 300-5000 rpm<br>(adjustable in steps of 100 rpm)<br>Feed speed: 0.005-3.000 mm/s<br>(adjustable in steps of 0.005 mm/s)<br>Max.pos.speed: Y=13 mm/s X=10 mm/s<br>Force limits: low: approx. 20 N<br>medium: approx. 40 N;<br>high: approx. 60 N |
| Pos. range                 | Y direction:<br>X direction:   | 105 mm (precision 0.1 mm),<br>60 mm (precision 0.005 mm)   |
| Sample size                | Max length of cut-off sample:<br>Max length of sample to be clamped:<br>Max sample cross section:<br>ø127 mm cut-off wheel and<br>ø42 mm flange:<br>ø152 mm cut-off wheel and<br>ø42 mm flange:  | 30 mm, 140 mm at ø20 mm<br>225 mm<br>ø40 mm (without rotation)<br>ø80 mm (with rotation)<br>ø50 mm (without rotation)<br>ø100 mm (with rotation)   |
| Recirculation cooling unit | Contents: 4 l<br>Flow: 800 ml/min  | Contents: 4 l<br>Flow: 800 ml/min  |
| Motor                      | 370 W at 3000 rpm  | 550 W at 5000 rpm  |
| Software and electronics   | Display: 4 x 40 characters<br>Controls: touch pad<br>Database: 10 cutting methods  | Display: 4 x 40 characters<br>Controls: touch pad<br>Database: 20 cutting and 10 grinding methods  |
| Power supply               | 1-3 x 200-240 V / 50/60 Hz   |  |
| Dimensions and weight      | Width: 510 mm / 20", Depth: 700 mm / 27.6", Height: 270 mm / 10.6",<br>Weight: 45 kg / 99 lbs  |  |

## Specifications

|  | Cat. no.   |
|--|--|
| <b>Accutom-5</b><br>Precision cut-off machine with variable speed. Automatic feeding with electronic control of feed speed. Motorised positioning system and digital read-out, with built-in sample rotation and oscillation. Complete with recirculation cooling unit, flange sets 42 mm dia. and specimen holder (04946903). Cut-off wheels, additive for cooling fluid and additional specimen holders are ordered separately.  | 04946227   |
| <b>Accutom-5</b><br>Precision cut-off machine with variable speed. Automatic feeding with electronic control of feed speed. Motorised positioning system and digital read-out. Complete with recirculation cooling unit, flange sets 42 mm dia. and specimen holder (04946903). Without built-in sample rotation and oscillation. Cut-off wheels, additive for cooling fluid and additional specimen holders are ordered separately.   | 04946127   |
| <b>Accutom-50</b><br>Precision cut-off and grinding machine with variable speed. Equipped with Multi-cut feature. Automatic feeding with electronic control of feed speed. Motorised positioning system and digital read-out, with built-in sample rotation and oscillation. Complete with recirculation cooling unit, flange sets 42 mm dia. and specimen holder (04946903). Cut-off wheels, additive for cooling fluid, cup wheels, additional specimen holders, and the flange set for cup-wheels are ordered separately. | 05016227   |
| <b>Accessories</b>   |  |
| <b>Specimen holders</b><br>Three jaw-chuck<br>For general use. Vice type with max. opening 60 mm<br>For round or square specimens. Teardrop type with max. opening ø 40 mm / ø 1½"<br>For irregular specimens, with 7 screws. Max. width 40 mm / 1½"<br>With goniometer<br>For adhering specimens<br>With ceramic vacuum chuck for thin sections<br>For small specimens. Vice type<br>For long specimens. With double parallel vice<br>For cylindrical specimens, max. dia. 40 mm  | 05036919<br>04946903<br>04946904<br>04946905<br>04276911<br>04276912<br>04276913<br>04276915<br>04946909<br>04946907 |
| <b>Joints to be mounted between the dovetail and the specimen holder</b><br>Tilting joint with max. angle ±10°<br>Angling joint with max. angle +30/-90°   | 04946906<br>04946908   |
| <b>Base Plate</b><br>With dovetail. For mounting of other types of specimen holders  | 04276914   |
| <b>Flange Sets</b><br>For cut-off wheels, 65 mm dia., to achieve highest precision<br>For cup wheels, only to be used on Accutom-50  | 04946902<br>05016901   |
| <b>Additive for Cooling Fluid</b><br>For Recirculation Cooling Unit. To protect the machine from corrosion, and to improve cutting and cooling qualities   | 1 l 49900045<br>5 l 49900046   |
| See special brochure for more information about cut-off wheels.  |  |

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

Struers' products are subject to constant product development. Therefore, we reserve the right to introduce changes in our products without notice.



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