



Automatic and Manual Cut-off machines for large and difficult workpieces up to 120 mm (4.7") in diameter

*The Unitom range:
Choose the model to suit
your requirements*

Unitom is the family of Struers materialographic cut-off machines sharing a platform with a 350 mm cut-off wheel and a powerful 6.4 HP cutting motor.

From the manually operated Unitom-2 to the top Unitom-50, with the unique ExciCut feature, the Unitom range will match all cutting requirements in the mid-size.

3 models

Unitom-2: Manual operation

Unitom-5: Automatic operation

Unitom-50: Automatic operation and ExciCut

Specifications

- 4.7 kW (6.4 HP) cutting power
- Cut-off wheel: Max diameter: 350 mm (13.7")
- Cutting capacity: Max cutting diameter: 120 mm (4.7")

The Unitom family is based on proven, superior cutting technology. The Unitom concept of high quality and high capacity combined with ease-of-use has been extremely successful.

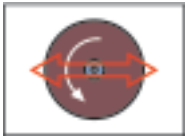
Choose the Unitom that fits your requirements:
The manually operated Unitom-2 for the limited volume or the Unitom-5 for high volume automated cutting.

If you are dealing with hardened materials, our Unitom-50 with its unique ExciCut feature, is the right choice.

Unique features

- *ExciCut:* Cutting of workpieces with ultrahigh hardness (Unitom-50)
- *Automatic Feed Reduction:* Fastest cutting without damaging sample and cut-off wheel
- *AutoStop:* Permits unattended cutting
- *Constant Feed Speed:* Patented cut-off wheel movement
- *Automatic Table:* For cutting multiple identical slices (Unitom-5)

Built-in flush hose with adjustable nozzle for convenient cleaning



ExciCut

-for cutting of the hardest materials

Unitom-50 comes standard with the unique ExciCut feature. During cutting, the cutting table moves slightly forwards and backwards. This reduces the contact area between cut-off wheel and workpiece, and enables troublefree cutting of very hard materials in very large sizes. An added benefit is better access of the coolant into the cut, eliminating the risk of thermal damage.

The ExciCut technology was invented by Struers more than a decade ago, and appears on Unitom-50 in a highly refined version.

Direct Cut

-the classic cutting mode



For cutting of less hard materials, the Direct Cut mode is ideal. This classic

cutting mode moves the cut-off wheel into the workpiece in a linear movement.

Automatic Feed Reduction

-fastest cutting without damaging sample and cut-off wheel

On an ordinary automatic cut-off machine, feed speed or force is preset and kept constant throughout cutting. Struers have proven that maintaining a constant feed speed offers far better results than constant force.

However, if the preset feed speed is too high in relation to the workpiece hardness or size, there is a risk of thermal dam-



age. To overcome this, Unitom-5 and -50 have been fitted with an ingenious feature, Automatic Feed Reduction, which will automatically reduce the feed speed and proceed to cut with the reduced speed.

In this way, cutting is performed as fast as possible, without risking damage to sample or cut-off wheel.

AutoStop

-for unattended cutting

Conduct your cutting unattended, and let Unitom-5 and -50 stop automatically.

Beyond being able to work with preset stop positions, Unitom has an AutoStop feature, where it automatically detects when the workpiece has been cut through. Thereafter the cutting motor and coolant are stopped and the cut-off wheel retracted. This allows completely unattended cutting.

Automatic Cutting Table

-for cutting of multiple, uniform slices

Unitom-5 can be equipped with a motorized table for cutting plane parallel sections. The table makes it possible to cut a number of samples without any manual operation. Programming and operation of the automatic table is an integrated part of the menu control of Unitom-5. Thickness and number of cuts can be programmed.

Manual cutting on the Unitom-2



Constant Feed Speed

-patented cut-off wheel movement

A unique, patented method of moving the cut-off wheel dramatically increases the quality of a cut. Struers has proven that this method effectively counters the extreme forces applied to a workpiece when a cut-off wheel enters and exits a workpiece.

Rapid Advance

-fast contact with the workpiece

Having started Unitom-5 or -50, the cut-off wheel can be advanced with increased speed until it contacts with the workpiece. Unitom then automatically changes to the preset speed.

Continue Function

-stop and resume as you please

If cutting has been temporarily stopped, it is possible to press

Unitom-5 is available with automatic cutting table for cutting of multiple, uniform slices





Unlimited access to
the spacious
cutting chamber

“Continue”, and the cut-off wheel will move quickly to the position where the cutting was stopped, and continue cutting at the preset feed speed.

Programmable Return Position

-automatic cut-off wheel positioning

The return position of the cut-off wheel can be set to three different positions: Unitom-5 and -50 retract the cut-off wheel to the top position, to the position where the cutting was started or let the cut-off wheel stay in the cut. In this way it is very easy to get convenient access to the workpiece or a quick turn-around when cutting many uniform workpieces.

Cutting Large Workpieces

If the user wants to cut large or protruding workpieces, it is possible to replace one or both of the side walls on the machine with optional rubber curtains.

User-Friendly Design

Extra large windows and fully, indirect lightning, give an excellent, non-glare view of the cutting chamber.

A balanced mechanism ensures effortless opening and closing of the protection guard.

Corrosion-protected Cutting Chamber

All metal parts in the cutting chamber are made of either stainless steel or surface protected materials, practically eliminating corrosion. The top



Unitom on optional LABUN table

surface of the cutting table is exchangeable and made of stainless steel. A powerful lamp lights up the cutting chamber, and a flush hose with adjustable flow takes care of fast and efficient daily cleaning.

Simple Installation

Installation and levelling of the machine are made simple, by virtue of four height adjustable vibration dampers.



Simple operation via large display

Safety Features

Unitom complies with international safety standards, and safety features include emergency stop and cut-off switch for cutting motor and all machine functions. The protection guard cannot be opened before the cut-off wheel has stopped. The windows of the protection guard are made of impact resistant material. Unitom is prepared for connection to an exhaust system, as some cutting materials may emit harmful gases or irritating fumes.

Special Table Unit Available

An optional strong table unit, matching the look of Unitom, has been specially designed to hold the recirculation cooling unit, and to position the machine at the right working height.



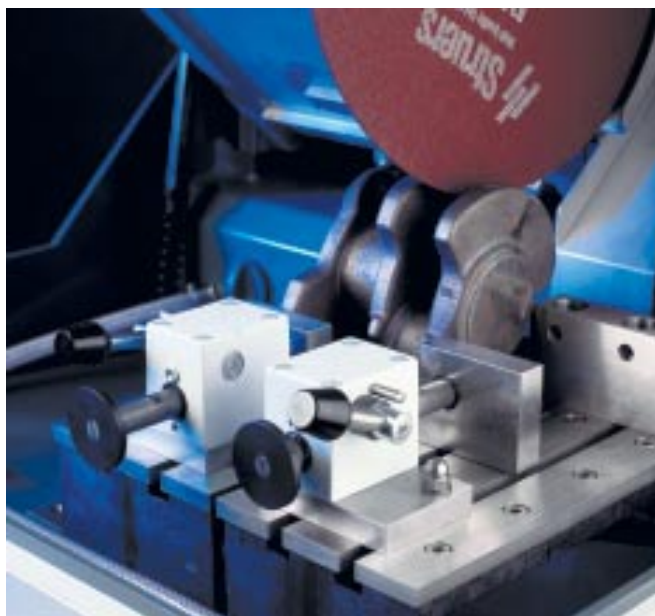
Cutting of very long, protruding workpieces using optional rubber curtains

A Sturdy Workhorse

Unitom will enable the user to cut a large number of samples, hour after hour. All parts of the machine subject to stress have been put through a careful life-time test. The rotating parts of the machine have been dynamically balanced to ensure stability and to maximize the working life of your Unitom.

Accessories

The Unitom family comes with an extensive range of accessories. A combined table and cabinet is available for bringing the cut-off machine into an ideal working height. Quick-clamping devices and vertical clamping devices ensure full flexibility in mounting. Please refer to complete list in this brochure.



Even very bulky workpieces can be cut - here using quick-clamping devices (optional)

Cut-off Wheels

Unitom is designed for cut-off wheels of 300 and 350 mm diameter. For normal use, the 300 mm wheels (with a thickness of 2 mm) are recommended. For large workpieces, the 350 mm wheels (with a thickness of 2.5 mm) are used, allowing Unitom to cut samples up to 120 mm diameter. Unitom-50 with its unique ExciCut, will cut through even large workpieces with 350 mm cut-off wheels.

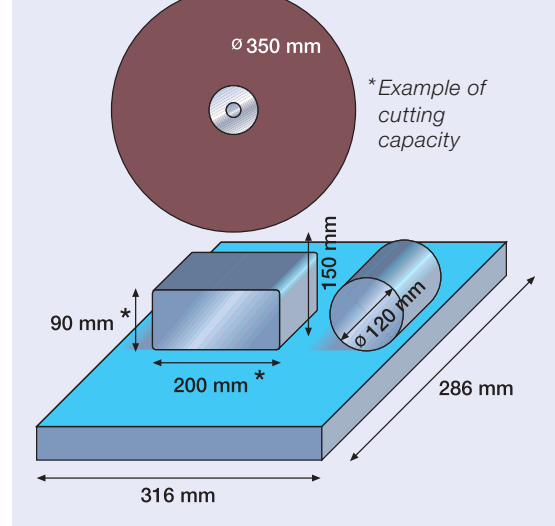
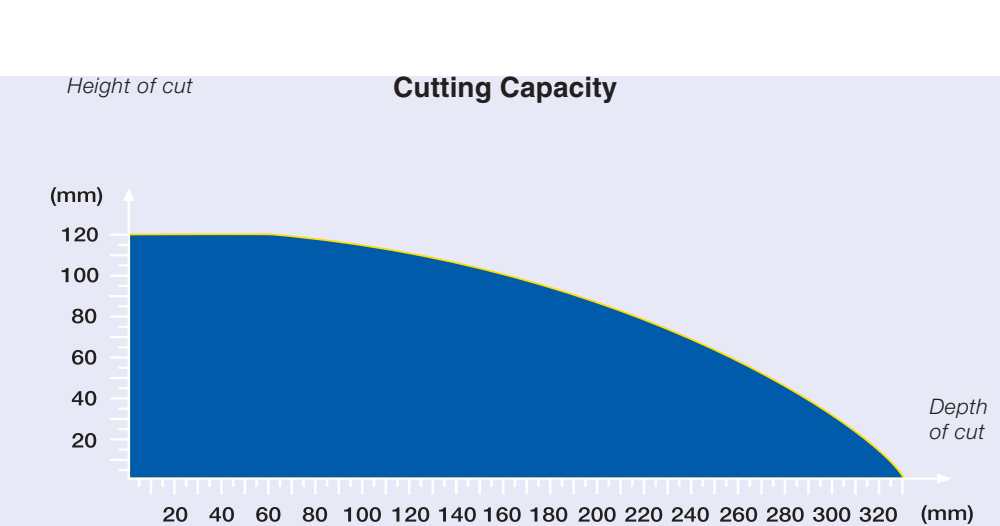
A range of Struers cut-off wheels is available for cutting any material.

Please refer to table (right).

Cut-off wheels

A range of cut-off wheels for all ferrous and non-ferrous metals has been specially developed for Struers cut-off machines. Diamond cut-off wheels are available for cutting of ceramic and mineralogical materials and sintered carbides.

Application	Dimensions	Grinding agent	Code
For ExciCut and direct cutting of extremely hard steels (HV 350-800)	300 x 2 x 32 mm 350 x 2.5 x 32 mm	Al ₂ O ₃ Al ₂ O ₃	51UNI 81EXO
For ExciCut and direct cutting of steels (< 500 HV). Extremely hard (white cast iron) or ductile (18/8 or St60) steel types are cut with ExciCut. Ensures good wheel economy	300 x 2 x 32 mm 350 x 2.5 x 32 mm	Al ₂ O ₃ Al ₂ O ₃	53UNI 83EXO
Universal cut off-wheel for steel-alloys (< 700 HV). For ExciCut only	350 x 2.5 x 32 mm	Al ₂ O ₃	8UEXO
For ExciCut and direct cutting of steels (< 500 HV). Ensures very good wheel economy	300 x 2 x 32 mm 350 x 2.5 x 32 mm	Al ₂ O ₃ Al ₂ O ₃	54UNI 84EXO
For ExciCut and direct cutting of non-ferrous metals (< 300 HV). Primarily for ExciCut	300 x 2 x 32 mm 350 x 2.5 x 32 mm	SiC SiC	56UNI 86EXO
For direct cutting of titanium and its alloys, as well as other non-ferrous metals (< 400 HV)	300 x 2 x 32 mm 350 x 2.5 x 32 mm	SiC SiC	56UNI 90EXO
For direct cutting of sintered carbides and ceramics	305 x 1.8 x 32 mm 350 x 1.8 x 32 mm	Diamond Diamond	25EXO 26EXO



Technical Data

Subject	Specification		
CUTTING SPECIFICATIONS		Metric/International	US
Workpiece Dimensions (Max)	<i>Workpiece inside cutting chamber:</i>		
	Height	150 mm	5.9"
	Width	415 mm	16.3"
	Depth	630 mm	24.8"
	<i>Workpiece protruding cutting chamber:</i>		
	Height	150 mm	5.9"
Cutting Capacity*	Max. cutting diameter	120 mm	4.7"
	<i>Rectangular sample**:</i>		
	Height	90 mm	3.5"
	Depth	200 mm	7.9"
PHYSICAL SPECIFICATIONS			
Cutting Motor	Cutting power	4.7 kW	6.4 HP
	Max power (depending on voltage)	5.7 - 6.7 kW	7.6 - 9.0 HP
Cut-off Wheel	Diameter x Thickness x Centre-hole	350 x 2.5 x 32 mm	13.7 x 0.09 x 1.25"
	Rotational speed (running idle)	2775 rpm	2775 rpm
Positioning & Feed	Positioning range (of cut-off wheel)	0 – 223 mm	0 – 8.75"
	(adjustable in steps of)	1 mm	0.04"
	Max. positioning speed	30 mm/s	1.2"/s
	Feed Speed range	0.05 – 3 mm/s	0.002 – 0.118"/s
	(adjustable in steps of)	(0.05mm/s)	(0.002"/s)
Cutting table	Cutting force	Max. 350 N	Max. 88 lbf
	Width	286 mm	11.26"
	Depth	316 mm	12.44"
	T-slots	10 mm	0.39"
Dimensions and Weight	Height	660 mm	26"
	Width	700 mm	27.5"
	Depth	750 mm	29.5"
	Weight	162 kg	353 lbs
	<i>Optional Table Unit (LABUN):</i>		
	Height	795 mm	31.3"
	Width	700 mm	27.5"
	Depth	750 mm	29.5"
Recirculation Cooling Unit	Tank volume	65 l	17 gallons
	Approx. flow	12 l/min	3.2 gallons/min
ENVIRONMENTS			
	Directives	Machinery: 98/37/EEC Low Voltage: 73/23/EEC EMC: 89/336/EEC	
	Dynamic Balancing	Max. admissible unbalance U_{per} according to ISO 1940/1, Balance Quality Grade G6.03: $U_{per} = 2 \text{ gmm/kg} = 110 \text{ gmm}$.	
	Noise level	Approx. 73 dB(A) measured at idle running, at a distance of 1.0 m/39.4" from the machine.	

* Projected cutting capacity with new cut-off wheel. Actual cutting capacity depends on sample material, cut-off wheel and clamping technique

** Example of cutting capacity.
Please refer to Cutting Diagram above

Specification	Code
Unitom-2 Manual Cut-off machine. 4.7 kW (6.4 HP) motor. For 350 mm cut-off wheels. With recirculation cooling unit (capacity 65 l) and two cutting tables with 10 mm T-slots. Table unit and clamping devices are ordered separately.	UNIW2
Unitom-5 Automatic Cut-off machine. Automatic feeding with electronic control of feed speed. 4.7 kW (6.4 HP) motor. For 350 mm cut-off wheels. With recirculating cooling unit (capacity 65 l) and two cutting tables with 10 mm T-slots. Table unit and clamping devices are ordered separately.	UNIW5
Unitom-50 Automatic Cut-off machine with ExciCut. Automatic feeding with electronic control of feed speed. 4.7 kW (6.4 HP) motor. For 350 mm cut-off wheels. With recirculating cooling unit (capacity 65 l) and two cutting tables with 10 mm T-slots. Table unit and clamping devices are ordered separately.	UNIWL
Accessories	Code
Automatic Cutting Table (for Unitom-5) Motorized table for cutting plane parallel sections. Positions the workpiece at a right angle to the cut-off wheel. The table is controlled through Unitom-5	UNIEL
Table Unit For support of Unitom-machines. With compartment for recirculation cooling unit. Width: 700 mm, depth: 750 mm, height 795 mm. When recirculation cooling unit is used, an optional rolling pallet (TREJU) is ordered separately	LABUN
Rolling Pallet For Unitom recirculation cooling unit	TREJU
Cutting table for 10 mm T-slots (for Unitom-2/-5) Additional table for support of large workpieces. With exchangeable stainless steel bands. 140 x 315 mm (5.5" x 12.4")	UNIFT
Replacement Stainless Steel Bands For Cutting Table with 10 mm T-slots (UNIFT) and Automatic Cutting Table (UNIEL). Set of three	UNIBA
Quick-clamping Device for 10 mm T-slots, Left For securing the workpiece. Complete with back stop. To be mounted on a cutting table placed at the left hand side of the cut-off wheel.	UNILE
Quick-clamping Device for 10 mm T-slots, Right For securing the workpiece. Complete with back stop. To be mounted on a cutting table placed at the right hand side of the cut-off wheel.	UNIRI
Vertical Clamping System for 10 mm T-slots For clamping irregularly shaped workpieces. Clamping height adjustable up to 58 mm. Complete with operating key and one flat swivel shoe.	TREVS
Riser Block for 10 mm T-slots For elevating Vertical Clamping System (TREVS) when clamping high workpieces. To increase clamping height by 60 mm.	TREKS
Swivel Shoes for Vertical Clamping System Set of 4 multi-shaped swivel shoes for (TREVS).	TREVI
Clamping Tools for 10 mm T-slots For clamping complicated workpieces. Complete with clamps, supports and bolts.	UNIOF
Rubber Curtains To be mounted on Unitom machines for cutting of long, protruding workpieces. Set of two	UNIRU
Flange Set, 119 mm dia. Alternative to 100 mm standard flange. For use with 350 mm cut-off wheels on Unitom cut-off machines.	UNIFL

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



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