

Discotom-100/-10

Instruction Manual



Manual No.: 16157001

Date of Release 06.03.2015



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FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Instruction Manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Pursuant to Part 15.21 of the FCC Rules, any changes or modifications to this product not expressly approved by Struers A/S could cause harmful radio interference and void the user's authority to operate the equipment.

Always state *Serial No* and *Voltage/frequency* if you have technical questions or when ordering spare parts. You will find the Serial No. and Voltage 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.

The following restrictions should be observed, as violation of the restrictions may cause cancellation of Struers legal obligations:

Instruction Manuals: Struers Instruction Manuals may only be used in connection with Struers equipment covered by the Instruction Manual.

Service Manuals: Struers Service Manuals may only be used by a trained technician authorised by Struers. The Service Manual may only be used in connection with Struers equipment covered by the Service Manual.

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Discotom-100 /-10

Safety Precaution Sheet

To be read carefully, before use

1. The operator(s) should be fully instructed in the use of the machine and its cut-off wheels according to the Instruction Manual and the instructions for the use of cut-off wheels.
2. The machine must be installed in compliance with local safety regulations.
3. The machine must be placed on a safe and stable support table. All safety functions and guards of the machine must be in working order.
4. Use only intact cut-off wheels. The cut-off wheels must be approved for use with rotational speeds between 1500 and 3000 rpm.
5. The machine is not for use with saw-blade type cut-off wheels.
6. Observe the current safety regulations for handling, mixing, filling, emptying and disposal of the additive for cooling fluid.
7. The workpiece must be securely fixed in the quick-clamping device or similar. Large or sharp workpieces must be handled in a safe way.
8. Do not work on or around cutting table when the table is repositioned using the Y-table positioning joystick.
9. To achieve maximum safety and lifetime of the machine, use only original Struers consumables.
10. The cutting arm should be lowered slowly and carefully, in order to avoid breaking the cut-off wheel.
11. Never look directly into the laser beam. (Line laser option)
12. Struers recommends the use of an exhaust system as the materials being cut may emit harmful gasses or dust.
13. The machine emits only moderate noise. However, the cutting process itself may emit noise, depending on the nature of the workpiece. In such cases, the use of hearing protection is recommended.
14. The machine must be disconnected from the mains prior to any service.
15. Use of working gloves is recommended as workpieces may be both very hot and produce sharp edges. Wearing of gloves is also recommended when flushing and cleaning the machine.
16. Struers recommends the use of safety shoes when working with heavy samples.

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- 17.** Use of safety goggles is recommended when using the flushing hose.
- 18.** If any of the cutting-chamber cover springs are damaged (at the rear of machine), they must be replaced before the machine is used again.
- 19.** When a recirculation cooling unit is used, observe the current safety regulations for handling, mixing, filling, emptying and disposal of the additive for cooling fluid.
Do not use flammable cooling fluid.
- 20.** When lifting the machine using a forklift, lift from front or rear - never lift the machine from the side.
- 21.** When lifting the machine using lifting straps, ensure that the straps are crossed and do not press on the sides of the machine.

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- 1.** Prior to any service, disconnect the machine then wait until residual potential on the capacitors is discharged.
- 2.** Do not cycle mains power more than once every three minutes.
Damage to the frequency converter will result.


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 (electromechanical, electronic, mechanical, pneumatic, etc.)



Disposal

Equipment marked with a WEEE symbol  contain electrical and electronic components and must not be disposed of as general waste.

Please contact your local authorities for information on the correct method of disposal in accordance with national legislation.

User's Guide

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1. Getting Started

Checking the Contents of the Packing Box

In the packing box you should find the following parts:

- 1 Fork spanner (24 mm) for cut-off wheel
- 1 Triangle key for safety lock release
- 1 Connector pipe for water outlet
- 1 Elbow pipe for water outlet
- 1 Outlet hose 2 m,
for connection to external cooling unit
- 1 Hose clamp, 70-90 mm
- 1 Instruction Manual set

Unpacking Discotom

- Remove the bolts from all of the transport brackets that secure the Discotom to its transport pallet.
- Remove the brackets.

Placing Discotom

Discotom should be placed on a table strong enough to support a minimum of 200 kg/ 440 lbs.
Struers recommends the use of the Table Unit, which is designed for use with Discotom machines, see "[Accessories](#)".

Space required

Discotom-100/-10 is recommended to be placed on a table unit (with a compartment for recirculation cooling unit) with the dimensions:

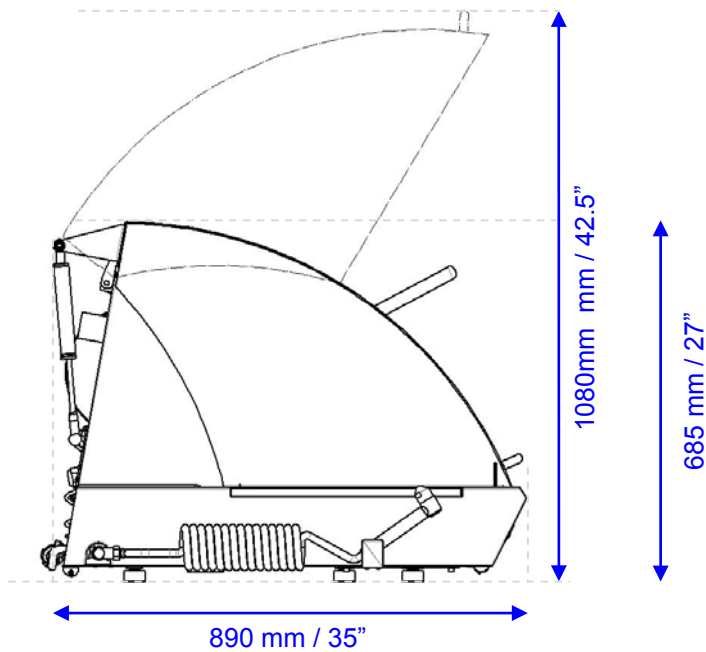
Width: 920 mm / 36.2"

Depth: 900 mm / 35.4"

Height: 800 mm / 31.5"

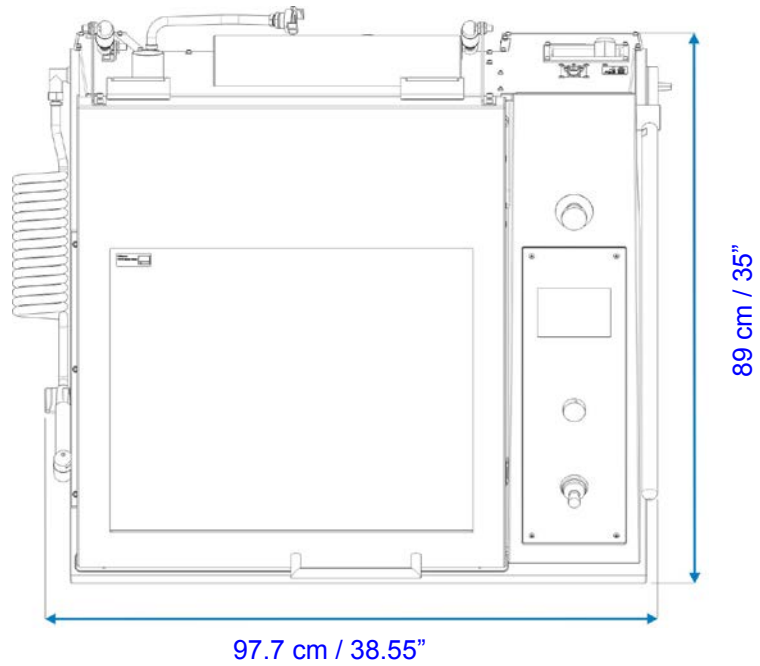
(A table unit designed for Struers' table top cut-off machines is available as an accessory Cat. No. 06266101)

Make sure there is enough room behind the table for the inlet and outlet hoses and for the cover to be opened fully (see illustration).



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Footprint:



Discotom-100/-10 may be placed against a wall.
If an external exhaust system is connected to the unit via the fitting on the rear, ca 17 cm / 7" of space is required for the hose.
Recommended space at the front: 100 cm / 40".
The recirculation cooling unit can be placed in the table unit compartment and does not require extra space.

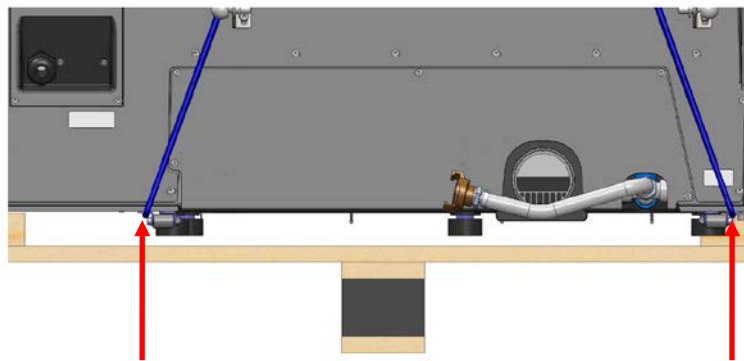
Lifting Instructions

With a crane

A crane and 2 lifting straps are required to lift Discotom-10/-100 off the shipment pallet.

Before lifting Discotom into position:

- Carefully open and remove the sides and the top of the packing crate.
- Remove the brackets securing Discotom to the pallet (a torque bit T30 key is required to remove the coach bolts that secure the transport brackets).
- Place the two lifting straps under Discotom.
 - Position the straps under Discotom, so that they are on the outer side of the feet/ rollers.

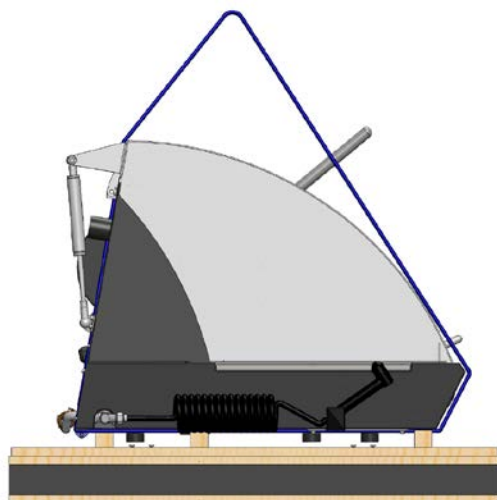


Position straps here

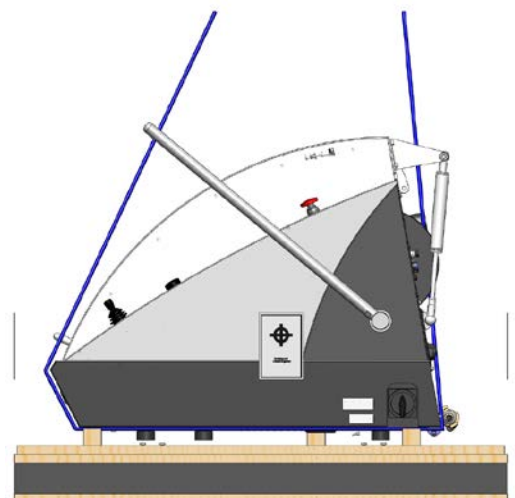
Position straps here

- Use straps which are long enough so that they do not place stress on the glass window (use straps of approx. 3-3½ m in length).

A lifting bar is recommended so that the two straps are kept apart below the lifting point.



Without lifting bar



With lifting bar

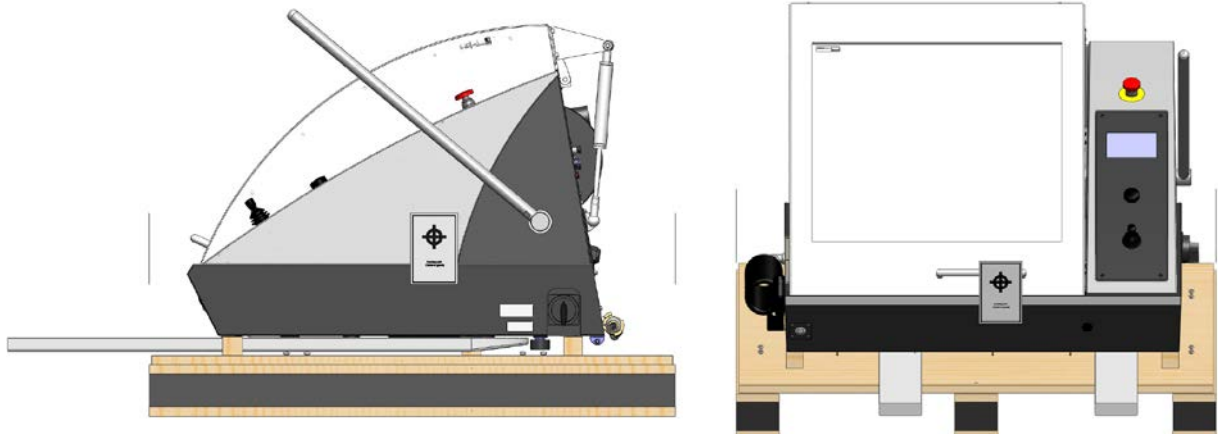
- Lift Discotom onto the table.
- Lift the front of Discotom and carefully move into place using the rollers.

With a Fork lift

A forklift truck can be used to lift Discotom off the shipment pallet.

Before lifting Discotom into position:

- Carefully open and remove the sides and the top of the packing crate.
- Remove the brackets securing Discotom to the pallet (a torque bit T30 key is required to remove the coach bolts that secure the transport brackets).Lift Discotom from the pallet using a forklift truck.
- Position the forks so that the centre of mass is between the forks – see illustrations.

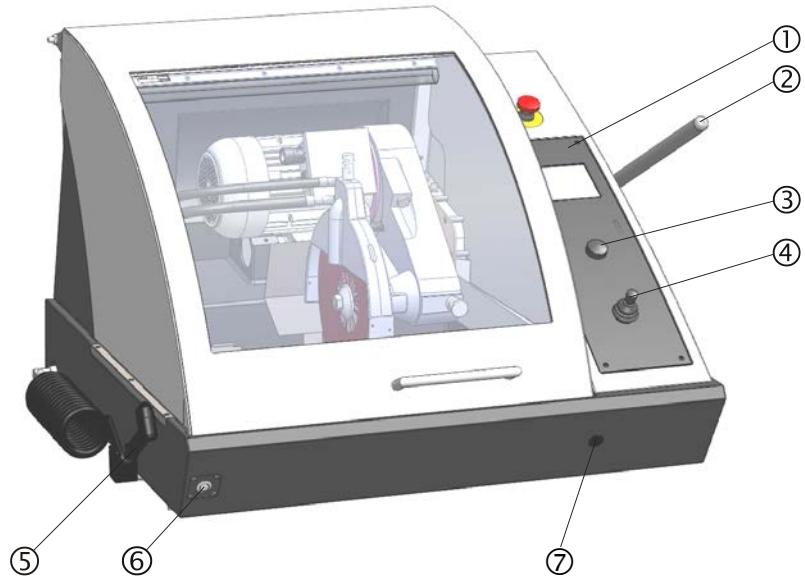


- Lift Discotom onto the table.
- Lift the front of Discotom and carefully move into place using the rollers.

Getting Acquainted with Discotom

Front View

Take a moment to familiarise yourself with the location and names of the Discotom's components.



- ① Control panel
- ② Cutting arm
- ③ Turn /Push Knob
- ④ Joystick for table movement
- ⑤ Flushing gun
- ⑥ Two-hand operation button
- ⑦ Access hole for safety lock release

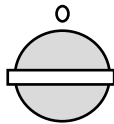
Note!

The cover on Discotom can only be opened when the machine is connected to a power supply and the main power switch is on.
To open the cover when the power is not connected, insert the triangle key through the access hole at the front to release the safety lock.
Remember to re-activate the safety lock release before operating Discotom.

Side view, right

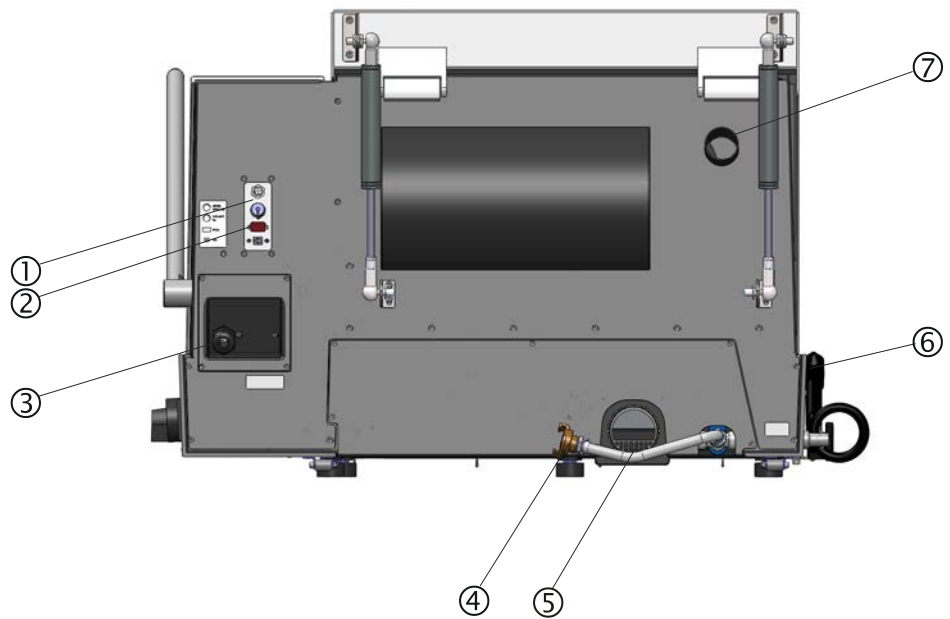


- ⑧ Emergency stop
- ⑨ Main power switch



The main switch is located on the right hand side of Discotom.
■ Turn clockwise to switch on the power.

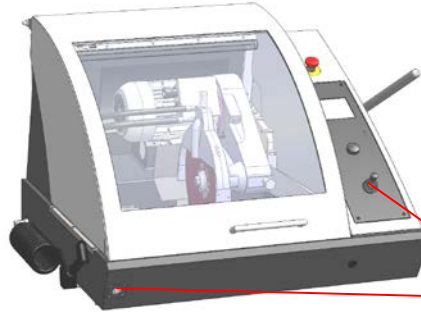
Rear View



- ① Cooli unit connection
- ② Service socket (RS232)
- ③ Power supply cable connection
- ④ Water inlet
- ⑤ Water outlet flange
- ⑥ Flushing hose
- ⑦ Exhaust connection

Two-handed Operation

When moving the cut-off wheel whilst the cover is open, the button on the front of Discotom must be pressed and held just before the joystick is operated.



Press and hold the button, then move the joystick.

Noise Level

Approx. 67 dB (A) measured at idle running, at a distance of 1.0 m/39.4" from the machine.

Power Supply

IMPORTANT
Check that the mains voltage corresponds to the voltage stated on the type plate on the side of the machine.

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- Open the electric connection box and connect a 4-lead or 5-lead cable* in the following way:
 - PE: earth
 - N: neutral (not used)
 - L1: phase
 - L2: phase
 - L3: phase

EU cable	UL cable
L1 Brown L2 Black L3 Black or grey	L1 Black L2 Red L3 Orange/ turquoise
Earth Yellow/ green Neutral Blue (Not used)	Earth Green (or Yellow/ green) Neutral White (Not used)

- The other end of the cable can be fitted with an approved plug or hard-wired into the mains, according to the electrical specifications and local regulations.

*Please see the section on [Technical Data](#) at the rear of the Instruction Manual for recommended cable specifications.

Direction of the Cut-off Wheel
(Discotom-10 only)

- Check that the cut-off wheel rotates in the direction indicated by the arrow on the cut-off wheel guard. If the direction of rotation is incorrect:

EU cable	UL cable
Switch two of the phases	Switch phases L1 and L2

Important:

For Electrical Installations with Residual Current Circuit Breakers

For Discotom-100 connected to electrical installations with residual current circuit breakers, a residual current circuit breaker, type B time delayed, 30 mA is **REQUIRED** (ref. EN 50178 / 5.2.11.1).

For Electrical Installations without Residual Current Circuit Breakers
The equipment must be protected by an insulation transformer (double-wound transformer)

Please contact a qualified electrician to verify which option is suitable for the local installation setup.

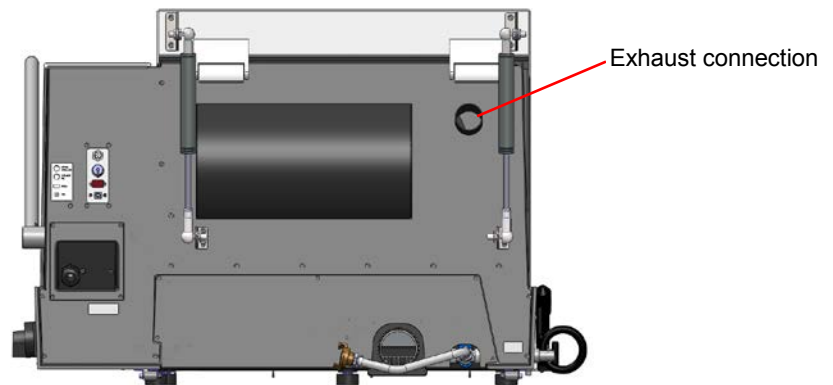
Both requirements refer to the European standard EN 50178 / 5.2.11.1. Similar standards apply in North America.

Connection to an External Exhaust System

Struers recommends the use of an exhaust system, as workpieces may emit harmful gases when cut. The exhaust system will also reduce the level of water condensation on the sides of the cover.

To connect the Discotom to an exhaust system:

- Mount an exhaust hose from your local exhaust system onto the flange (50 mm (approx. 2") dia.).



Important

If no exhaust is connected, damp air (produced by the cutting process) may escape from the cutting chamber and penetrate into other areas of the cabinet. This may cause damage to components and shorten the lifetime of the machine.

Connecting a Recirculation Cooling Unit

To ensure optimal cooling, Discotom must be fitted with a recirculation cooling unit. *Cooling System 4* is a configuration designed for use with Discotom.

Note:

Cooling System 4 includes a static filter. For intensive use, and for materials generating a lot of swarf, a bandfilter such as *Coolimat-200* is recommended.

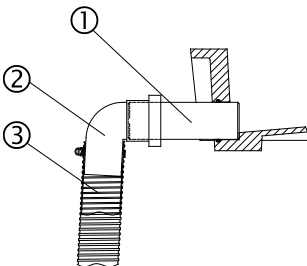
Note

Before connecting the cooling unit to the Discotom, follow the instructions in the Cooling Units Instruction Manual to prepare it for use.

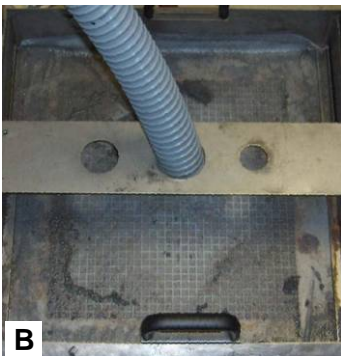


To connect the Discotom to a Recirculation Cooling Unit:

- Plug the Cooli control unit's communication cable into the Discotom's control socket.
- Connect the water inlet hose to the Cooli pump using the quick coupling (A).
- Connect the other end of the hose to the Discotom water inlet.



- Mount the 90° elbow pipe ② on the straight connector pipe ① in the water outlet on the back of Discotom. Lubricate the sealing ring with grease or soap to facilitate insertion.
- Mount the outlet hose ③ onto the elbow pipe and clamp using a hose clamp.
- Check that the outlet hose slopes downwards when connected. If necessary adjust the length of the hose.
- Insert the other end of the hose into the mounting hole in the bracket on top of the Cooli filter unit (B).
- Connect the cooling unit to the mains power supply.

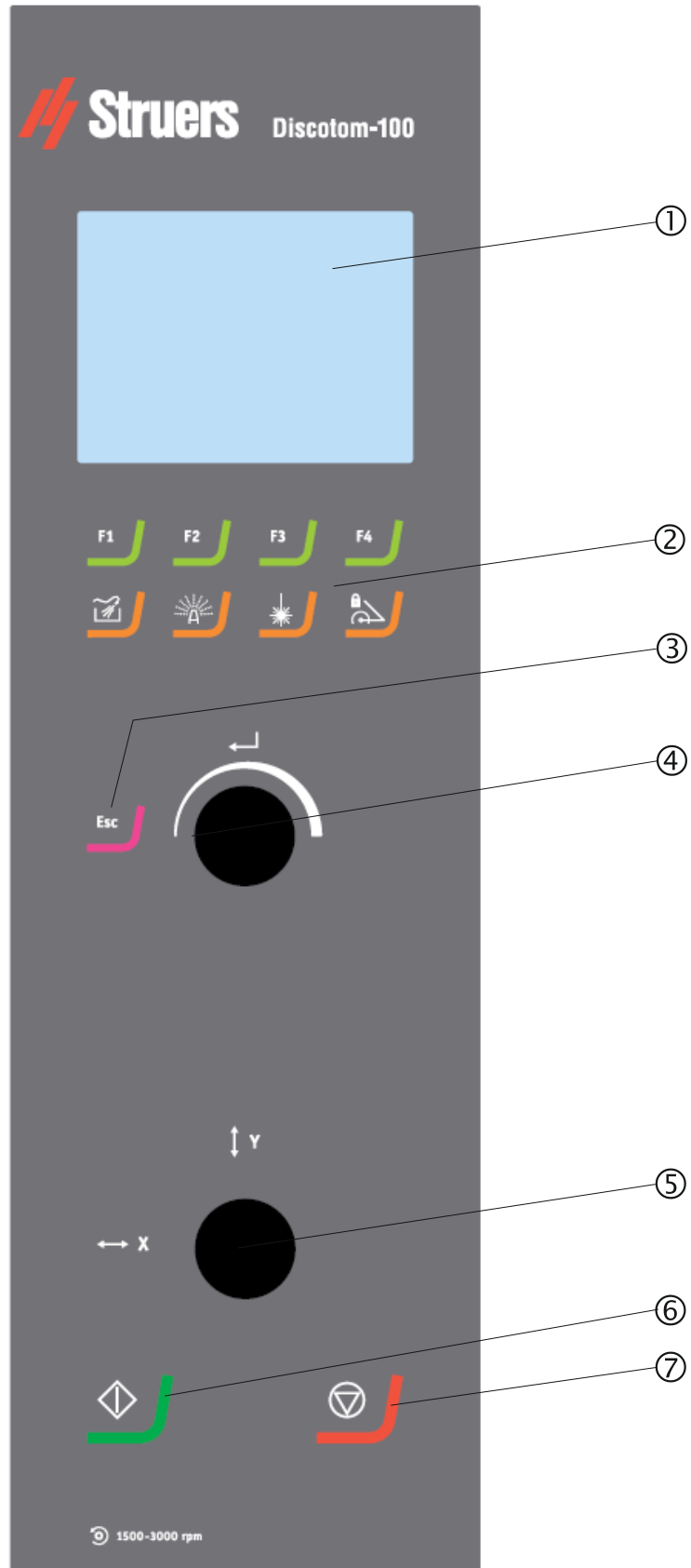


IMPORTANT

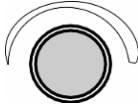








Before connecting, check that the mains voltage corresponds to the voltage stated on the type plate on the side of the machine.

2. Basic Operation

Using the Controls Front Panel Controls of Discotom



Front Panel Controls

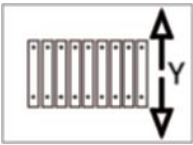
Name	Item	Function	Name	Item	Function
① DISPLAY		The Discotom display.	③ ESCAPE	Esc	Moves one step backward in menus. If modified parameters have not been stored, changes are lost.
② MENU KEY	F1 – F4	Menu dependent multi-function keys. See the bottom line of the individual screens.	④ TURN/PUSH KNOB		Multifunction knob. Push knob to select function. Turn knob to adjust settings. Push knob to store modified settings.
Flushing hose		Starts and stops the pump for flushing the cutting chamber.	⑤ JOYSTICK		Move up-or down to position the y- table. Move left or right to position the x-table (accessory)
AxioWash		Starts the AxioWash function	⑥ START		Starts the machine and recirculation unit and/or band filter.
Line laser		Activates and deactivates the line laser for precise placement of the workpiece.	⑦ STOP		Stops the machine and recirculation unit and/or band filter.
Cutting arm lock		Locks / unlocks the cutting arm	EMERGENCY STOP		Push the red button to stop. Pull the red button to release.

Flush Hose

- Press down the button on the top of the handle, to adjust the water flow.

For instructions on how to use the flushing hose when cleaning the Discotom, see "[Cleaning of Flush Hose Nozzle](#)".

Moveable Table Y-Table



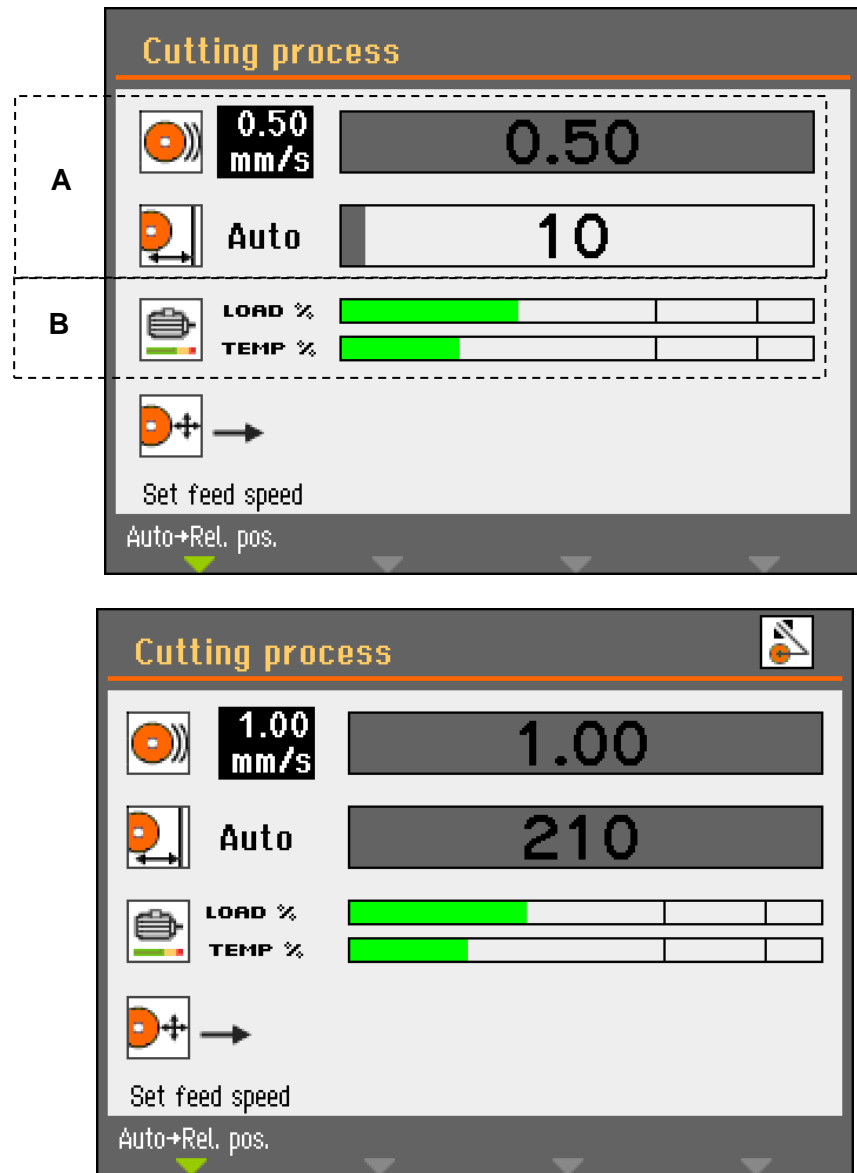
The Y-table is a motor driven, movable table. Using the joystick (see "Control Panel Functions") the table can be moved backwards and forwards. The Y-table is used when cutting automatically.

Note:

When Discotom is switched on, the cutting table will move to the front reference position.

Reading the Cutting Display

The Cutting Display displays three types of information:
A: Cutting Parameters
B: Motor Information



Cutting Parameters

In Automatic Cutting mode, the upper area of the display (A) displays information about the Cutting Parameters: Feed speed and Stop position.

The Cutting Parameters can be set both before and during cutting. The set value is displayed to the left of the bar graph. The actual value (during cutting) is displayed inside the bar graph.

Motor Information

The bottom area of the display (B) displays Motor information: Motor load and Motor temperature. The values displayed are in relative (%) values.

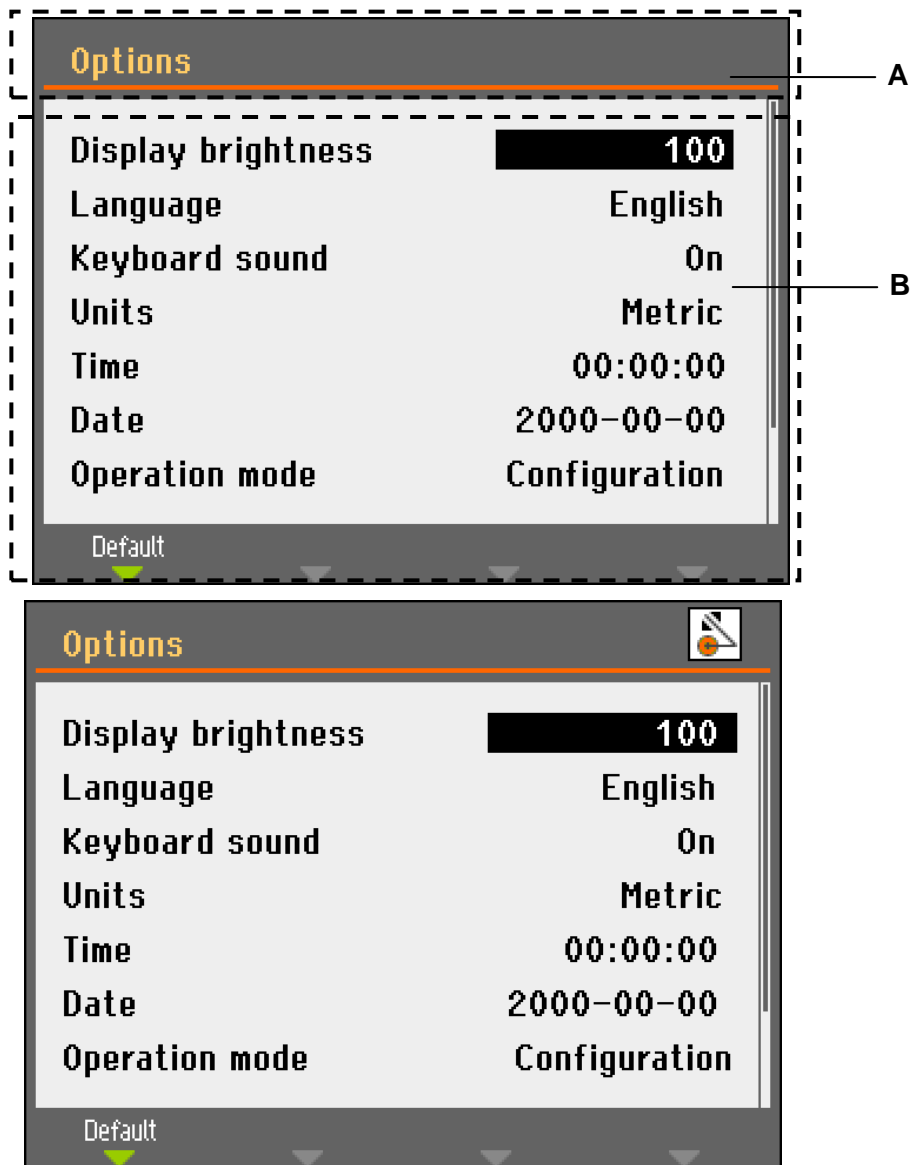
Reading the Display

The display on the front panel provides different levels of status information. For example, when the machine is switched on using the Mains switch, the display informs you about the physical configuration of the Discotom and the version of software that is installed:



When operating Discotom, this display is the user-interface to Discotom's software.

The display is primarily divided into 2 areas.
 The position of these areas and the information they contain are explained in the illustration below, which uses the Options menu as an example:



A Heading: this is a navigational aid, telling you where you are in the software's hierarchy.

An icon will indicate whether or not the handle is:

Unlocked:



or Locked



B Information fields: these will be either numerical values or text fields, providing information associated with the process shown in the heading. The inverted text shows the cursor position.

*Manoeuvring in the Menu
Structure*

To select items in the menu:



Turn knob to select a menu, method group or a parameter.



Push knob to open or activate the selection.

ESC Press Esc to return to the Main menu.

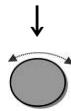
Acoustic Signals

When pressing a key, a short beep indicates that the command has been accepted, whereas a long beep indicates that the key cannot be activated at the moment.

This sound can be switched on or off in Configuration under Options.

Software Settings

When switching Discotom on for the first time, the Select language screen will appear (to change the language after this, see "[Changing the Language](#)").



Turn knob to select the language you prefer.



Push knob to accept the language.

You will now be prompted to set the time.

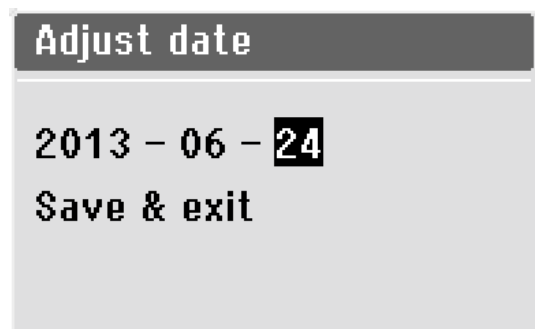


Turn knob to select and to adjust the settings.



Push knob to accept the settings.

You will now be prompted to set the date.



Turn knob to select and to adjust the settings.



Push knob to accept the settings.



When Time and Date have been set, turn knob to select Save and Exit.

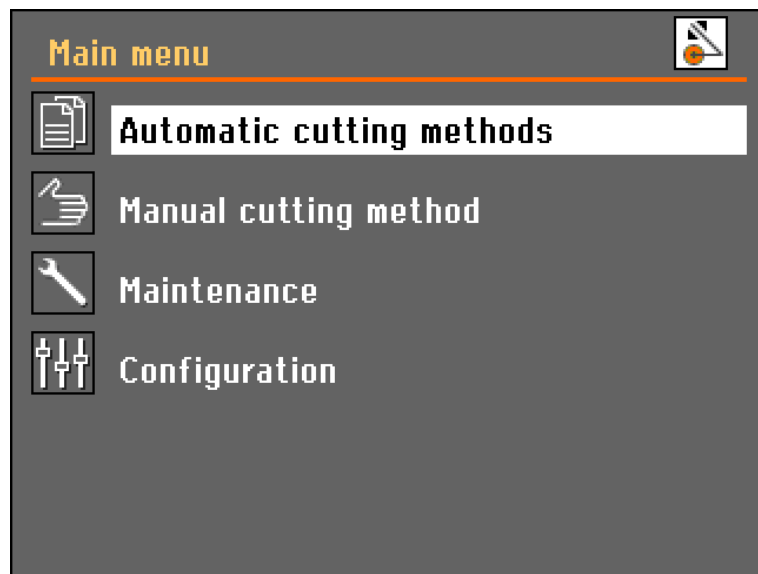


Push knob to Save and Exit (Save the settings and return to the Main menu).

The Main menu now appears in the language you have chosen.

During normal operation, immediately after start up, where the splash screen is displayed, the software goes to the screen that was used before the machine was switched off. Thus you can continue exactly where you left last time the machine was used.

To go to the Main menu, use the Esc key. The Main Menu is the highest level in the menu structure. From this menu, you can enter all the other menus.



Changing the Language



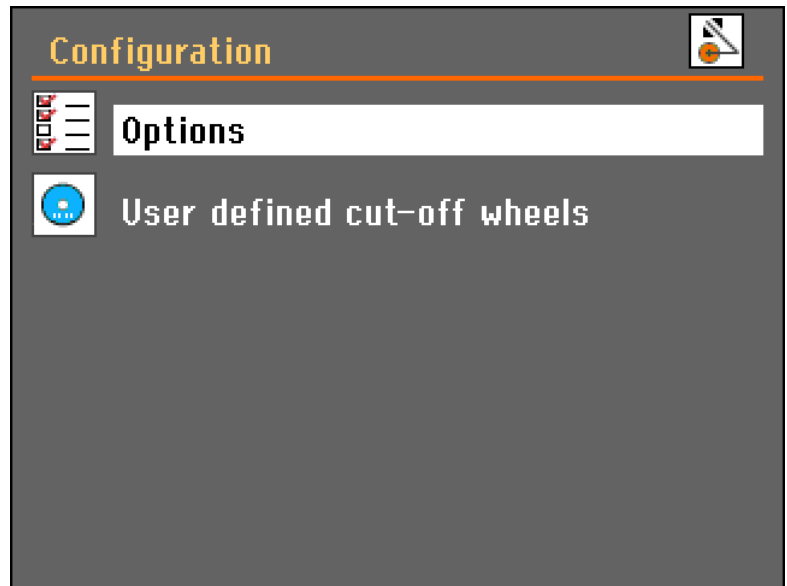
Turn the knob to select Configuration.



Push knob to activate the Configuration Menu.



Turn the knob to select Options





Push knob to activate the Options Menu.



Turn knob to select Language.






- ↓
-  Push knob to activate the Select language pop-up menu.
 -  Turn knob to select the language you prefer.

↓



- ↓
-  Push knob to accept the language.

The Configuration menu now appears in the language you have chosen.

Check if there are any other settings that need changing in the Options menu. If not, Push ESC to return to the Configuration menu.

Otherwise use the Turn/Push knob to select and change the required parameters.

Editing Numeric Values



Turn knob to select the value to be changed, e.g. Display brightness:



Push knob to edit the value.



A scroll box appears around the value.



↓ Note:
If there are only two options, the popup box is not displayed. Pressing the knob (Enter) will toggle between the 2 options.

↻ Turn knob to increase or decrease the numeric value (or to toggle between the two options).

↓
⏪ Push knob to accept the new value. (Pressing Esc, aborts the changes, preserving the original value.)

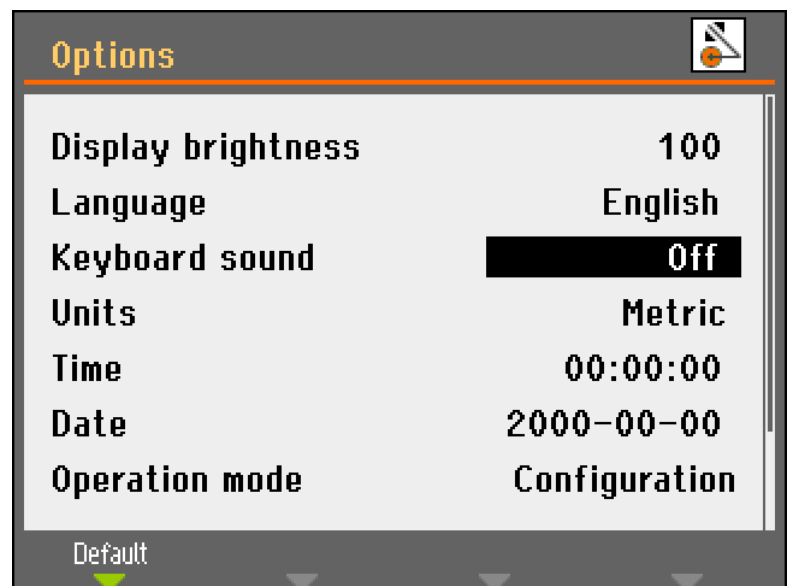
Editing Alphanumeric Values

↻ Turn knob to select the text value to be changed, e.g. Keyboard sound:

↓



Push knob to toggle between the 2 options.



Note:
If there are more than two options, a popup box is displayed. Turn knob to select the correct option.



Press Esc to accept the option and return to the previous menu
Or turn knob to select and edit other options in the menu.

Operation Mode

In Operation mode 3 different user levels can be set.


Production: Methods can be selected and viewed but no editing is possible.

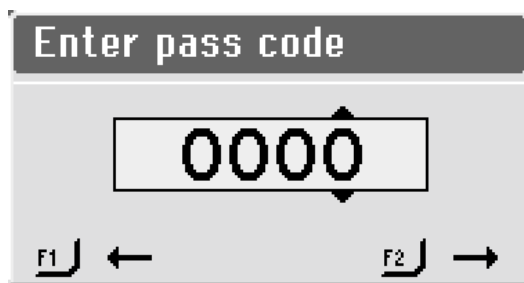
Development: Methods can be selected, viewed and edited

Configuration: Methods can be selected, viewed and edited and all functions in Configuration are accessible.

Changing Operation Mode

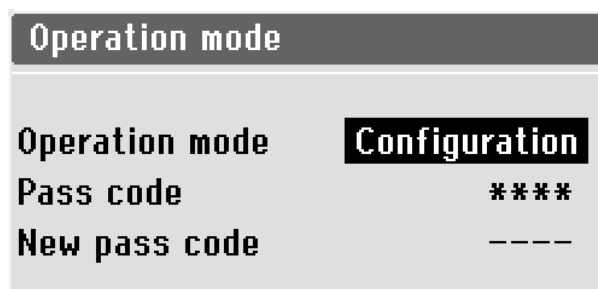
To change the operation mode, go to the Configuration menu and then the Options menu. Select Operation mode to get access to the Operation mode menu.


 Push knob to select Pass code.

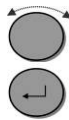


Use the F1 and F2 keys and the knob to enter the current pass code (The default pass code is '2750'.):

- Use the F1 and F2 keys to select digits (F1 moves to the left, F2 moves to the right).
- Turn knob to change the digits and press knob to enter the pass code.



 Push knob to select Configuration.



Select the desired operation mode and push knob to confirm.

New Pass Code

A New pass code can also be set in the Operation mode menu.

Please Note
When a pass code is set, the operator has 5 attempts to enter the correct pass code after which the Discotom will be locked.
Re-start Discotom using the Main Switch
then enter the correct Pass Code.

Changing Cutting Mode and Cutting Parameters

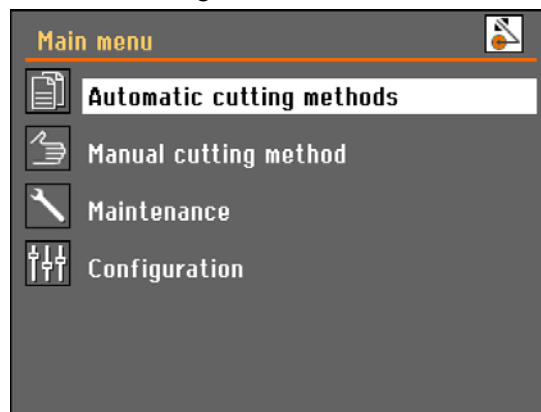
Changing Cutting Mode

Discotom has two cutting modes: Automatic and Manual.
To change between these two modes:

Press Esc to go to the Main menu.



Turn knob to select either Automatic cutting methods or Manual cutting method.

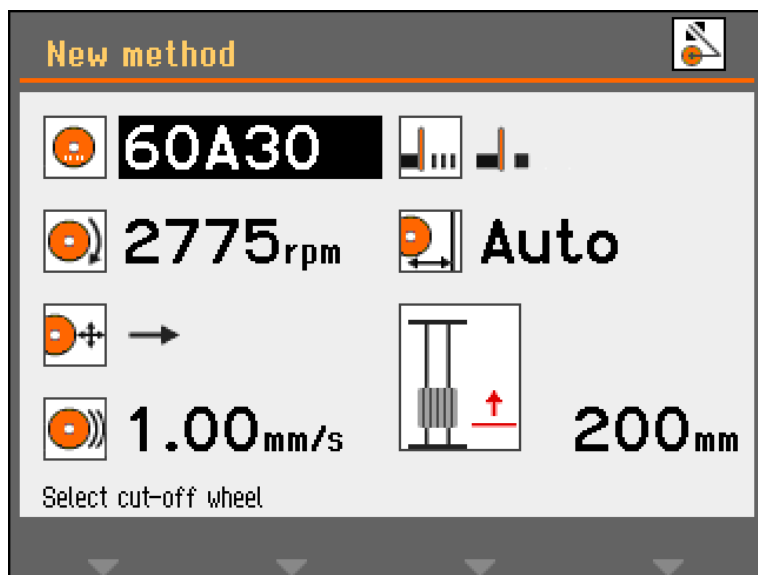


Changing Cutting Parameters

In automatic cutting mode Discotom applies the selected cutting parameter values for: Wheel type, Wheel speed (Discotom-100 only), Cutting mode, Feed speed, MultiCut (with automatic x-table only) and Stop mode.

To adjust the values of these parameters:

- Turn the knob to highlight a cutting parameter.
- Push the knob to allow editing of the highlighted parameter.
Turn the knob to change the value of the parameter.
- Push the knob to store the new value.

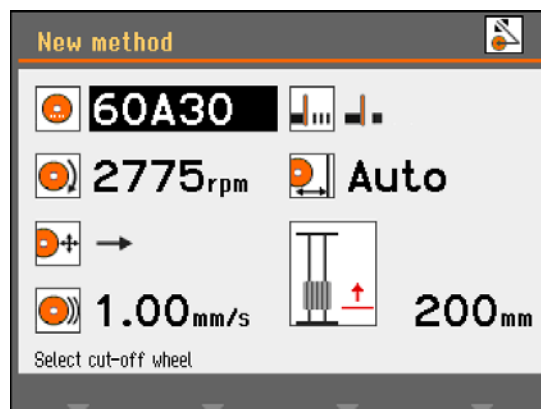


Selecting a Cut-off Wheel



To select or change the cut-off wheel type:

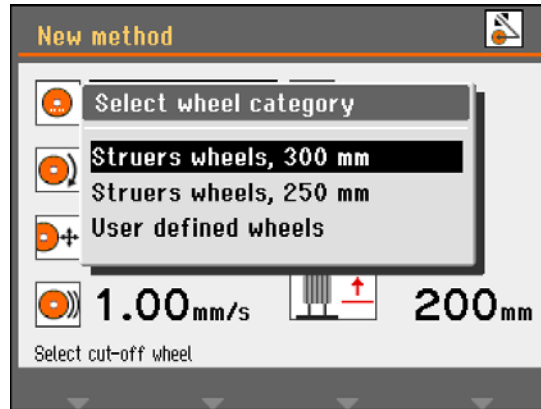
- Turn knob to highlight the cut-off wheel parameter.



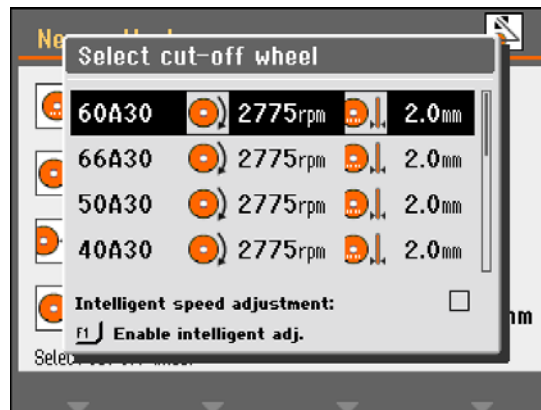
- Push knob to display the available cut-off wheels.



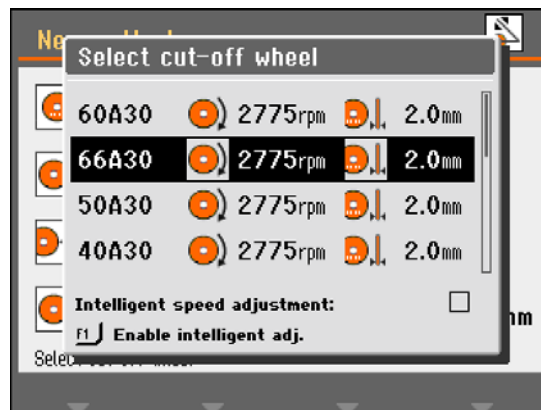
- Turn knob to highlight the category of wheel to be used (300 mm wheels are only available on Discotom-100).



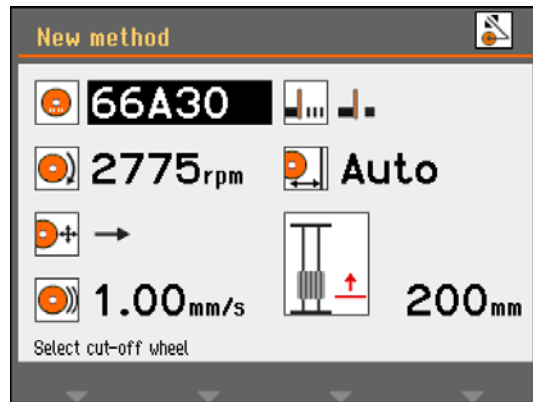
- Push knob to display the cut-off wheels available.



- Turn knob to select the correct cut-off wheel.



- Push knob to store the selected cut-off wheel.

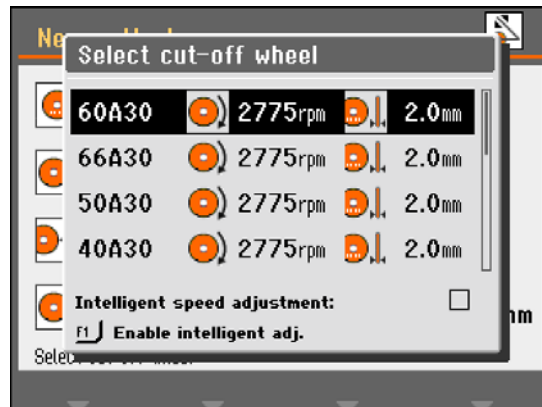


↓ The selected cut-off wheel is now displayed, and at the same time the rotational speed of the wheel is inserted.

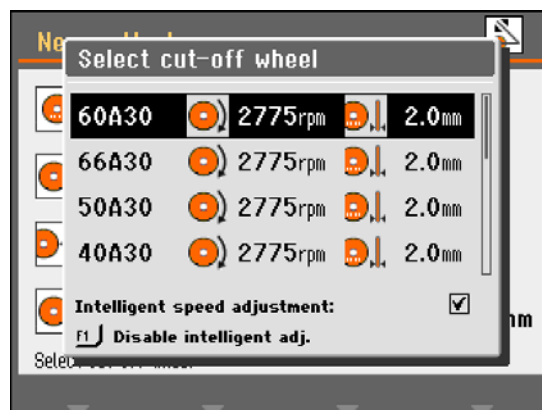
Intelligent speed adjustment
(Discotom-100 only)

To use the intelligent speed adjustment:


Having selected a cut-off wheel as shown in: [Selecting a cut-off wheel](#).

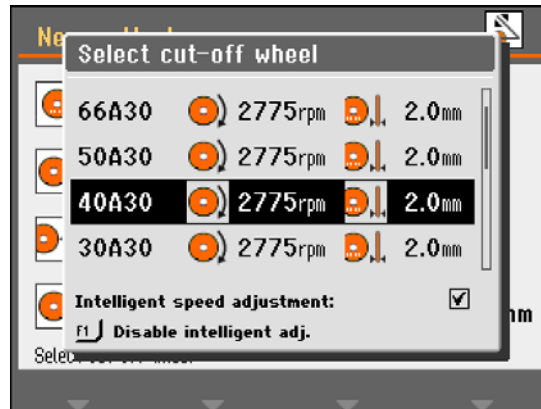



↓
F1 Press F1 to enable the intelligent adjustment.

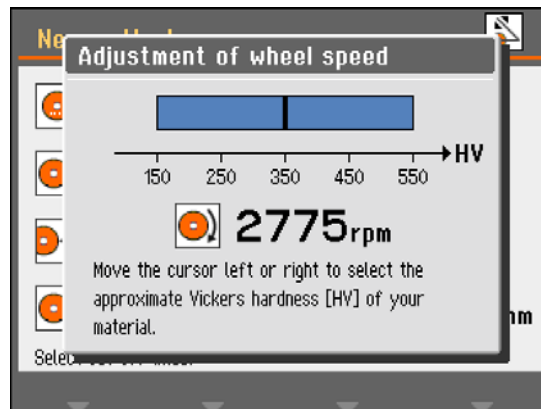



↓

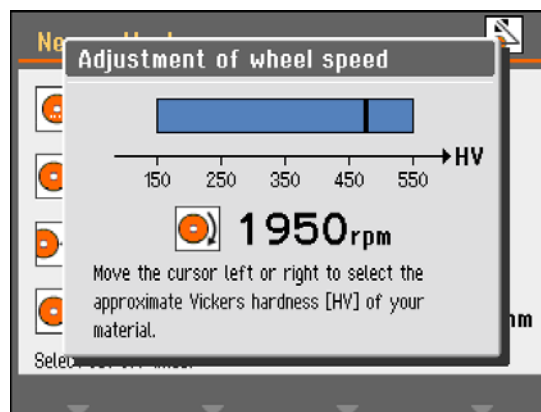
 Turn knob to select the correct cut-off wheel.



↓
 Push knob to activate the intelligent adjustment.



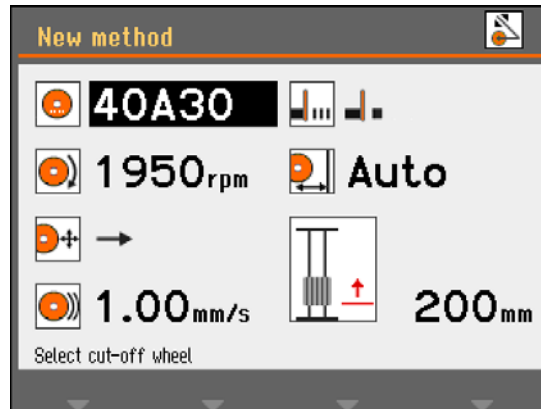
↓
 Turn the knob left or right to select the Vickers hardness of the material you want to cut. The rpm setting for the cut-off wheel is changed accordingly.



↓



Push knob to store the changed speed.



Both the correct cut-off wheel and the adjusted wheel speed are saved to the cutting method.

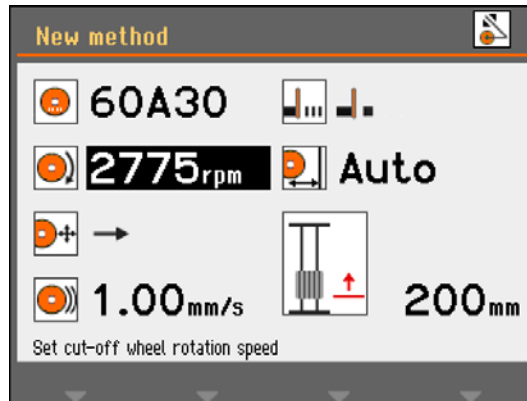
Changing the Wheel Speed
(Discotom-100 only)



To change the cut-off wheel speed:



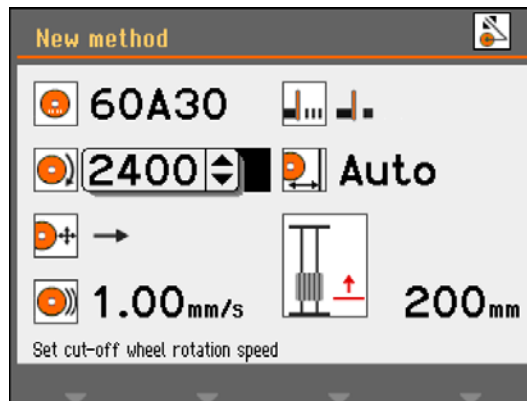
Turn knob to highlight the speed parameter.



Push knob to edit the wheel speed.



Turn knob to change the wheel speed (1500 to 3000 rpm)



Push knob to store the selected wheel speed.

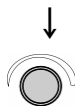
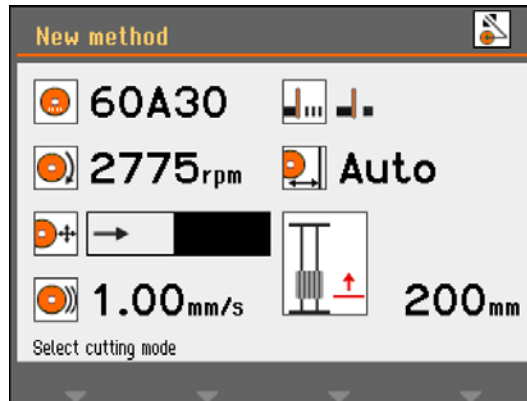
Selecting the Cutting Mode



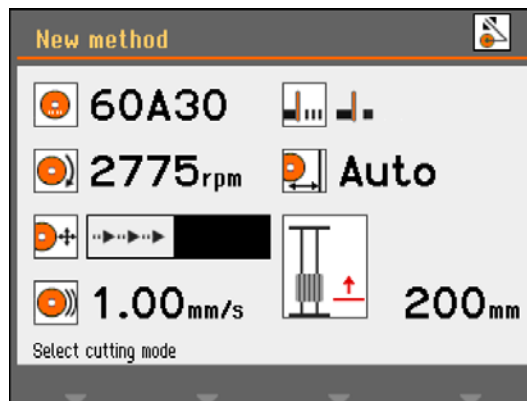
To change the cutting mode:



Turn knob to highlight the cutting mode parameter.



Push knob to toggle the cutting mode.



Push knob to store the selected cutting mode.

Direct cutting



Direct cut is the normal and most economic cutting mode that should be used for most cutting operations.

Impact cutting



Impact cutting can be used when it is not possible to find the correct cut-off wheel for a specific material and the abraded material clogs the wheel or the wheel is not wearing enough.


Impact cutting will frequently accelerate the cutting table and thus move the workpiece at higher speed against the cut-off wheel. This will break down the wheel and release fresh and sharp abrasive grains that can work properly.

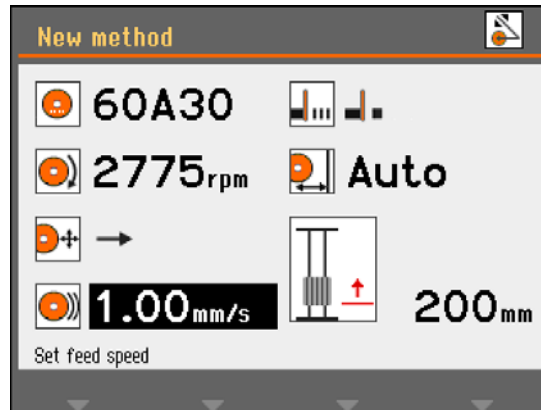
Impact cutting can result in higher wheel wear, but will reduce the risk of overheating the workpiece that otherwise could take place with an inaccurate wheel / material combination.


Setting the Feed Speed




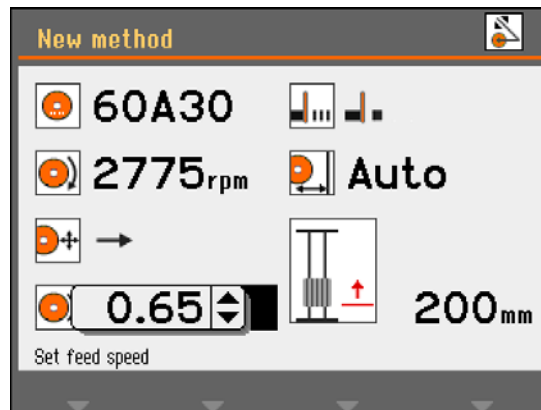
To set the Feed speed:


 Turn knob to highlight the feed speed parameter.



↓
 Push knob to edit the feed speed.

↓
 Turn knob to change the feed speed.




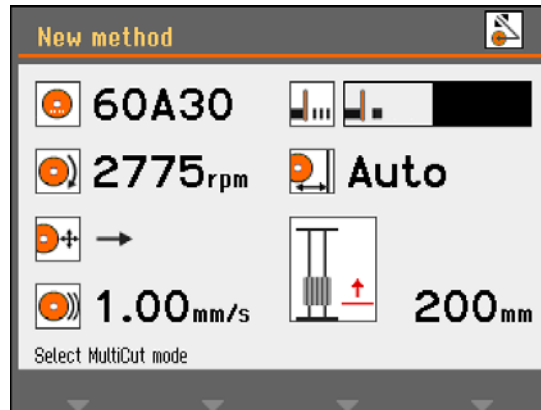
↓
 Push knob to store the new Feed speed value.


Selecting MultiCut
(Discotom with automatic x-table
only)




To select the correct MultiCut mode:

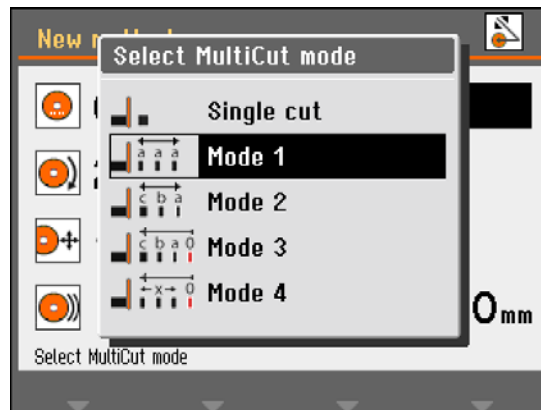
 Turn knob to highlight the MultiCut parameter.









 Push knob to open the MultiCut menu.



 Turn knob to select the required MultiCut mode.



 Push knob to activate the selected MultiCut mode.


Icon	Mode	
	Off	Single cut.
	MultiCut 1	Cut up to 10 slices of equal thickness
	MultiCut 2	Cut up to 10 slices of varying thickness
	MultiCut 3	Cut up to 10 slices of varying thickness counted from a common 0-position
	MultiCut 4	The thickness of the cuts are set by moving the joystick then pressing Enter to set the position of the cut

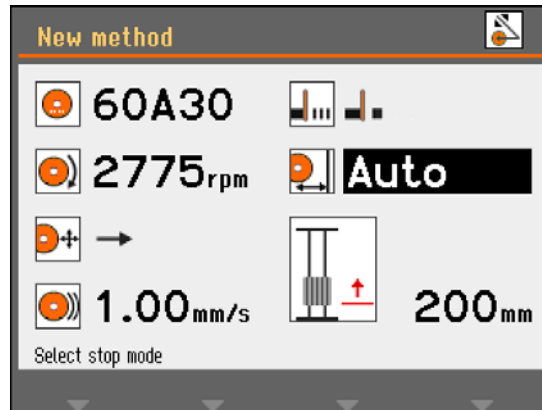
For a detailed description of the [MultiCut option](#) and how it can be used, see the Reference Guide section of the Instruction Manual.


Selecting a Stop Mode




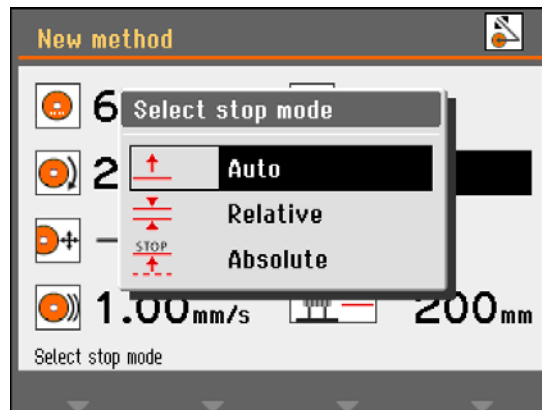
To select Stop mode:


 Turn knob to highlight the stop mode parameter.



↓
 Push knob to display available modes.

↓
 Turn knob to highlight the mode to be used.



↓
 Push knob to select highlighted mode.

Stop Modes

Discotom has 3 different stop modes:

Auto

Relative

Absolute



Auto

When Auto stop mode is selected, the machine automatically stops when the workpiece has been cut through. For normal cutting, Auto stop is recommended.

Note:

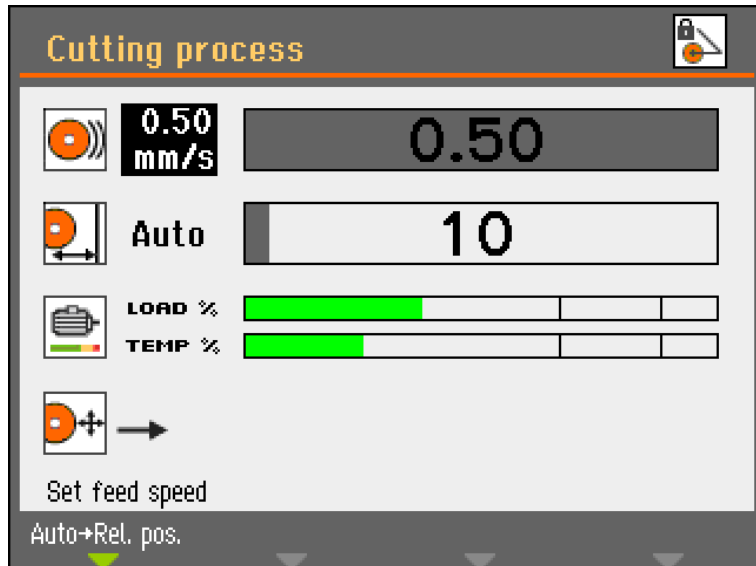
When cutting tubes or other workpieces which are not solid, Automatic stop is not recommended. Use either Relative or Absolute stop instead.

Auto Explained:

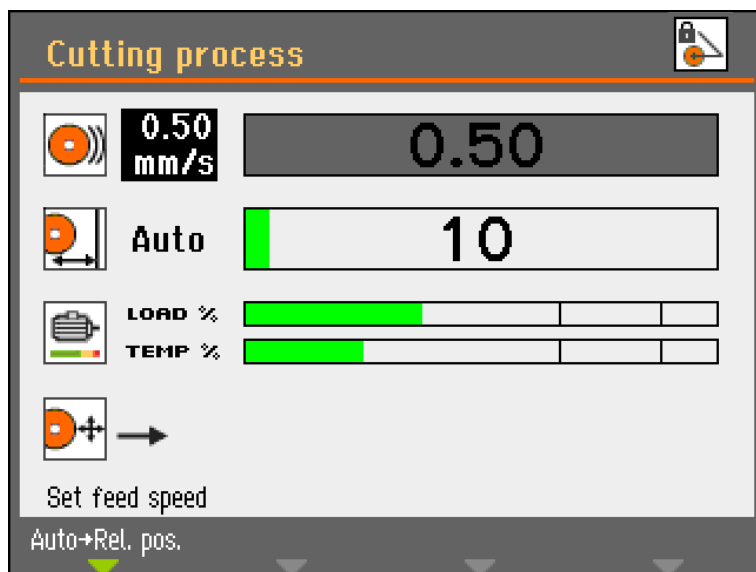
The automatic stop function is based on monitoring the electrical current used by the cut-off wheel motor. For automatic stop to function properly, two criteria have to be met:

- The current used at the start of a cutting operation has to exceed a minimum value. If it does not, Automatic stop will not be enabled.
- The current used during the cutting operation has to remain above a minimum value. When it falls beneath this value, cutting will stop.

In some samples, for example tubes, the current may fall beneath the minimum value when the wall of the tube has been cut through and the centre (hollow part) of the tube is reached during the cutting operation. If this happens, cutting will stop even though the sample has not been fully cut through.



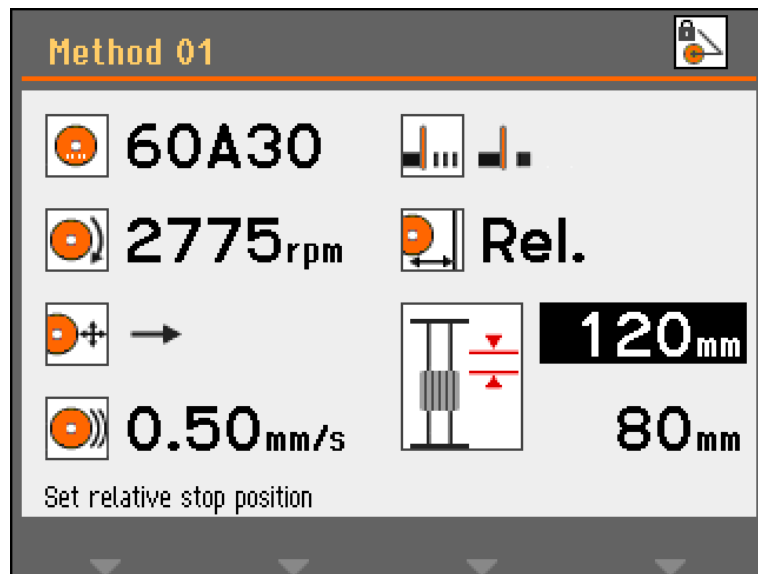
When cutting is started, the bar indicating the travel of the cutting table is grey, until the motor current exceeds the required value. The bar then changes to green to signal that Auto mode is enabled.



When the motor current then falls below the specified minimum value, the bar colour changes back to grey and the cutting stops. If only a very small cross section is left at the end, cutting can stop before the workpiece is completely cut through. Here it is possible to specify an Additional cutting distance in Configuration / Options to make sure that the workpiece is cut completely through. This is especially useful when using MultiCut.

Relative Stop Position

The Y-table is set to stop in a position relative to where cutting starts. After entering the stop position (approximate sample size + wheel wear) the cutting process will be stopped as soon as the specified position has been reached. The positioning range (table travel) is 0-200 mm.

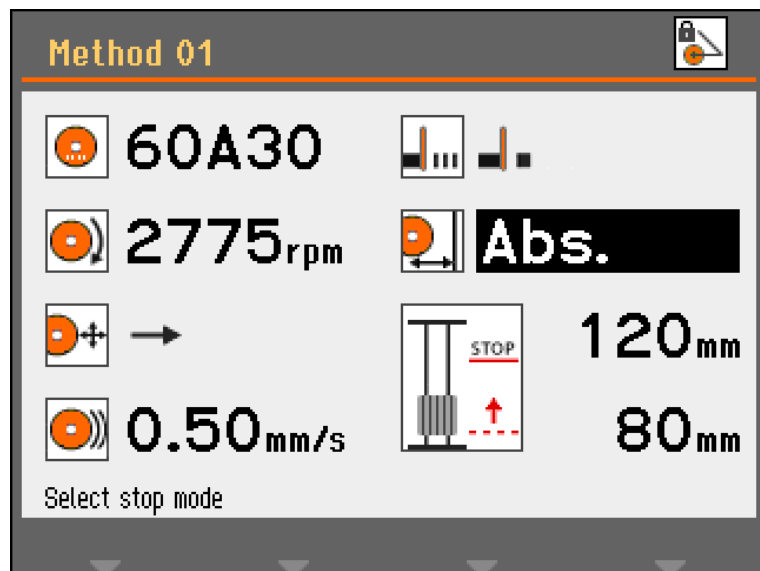
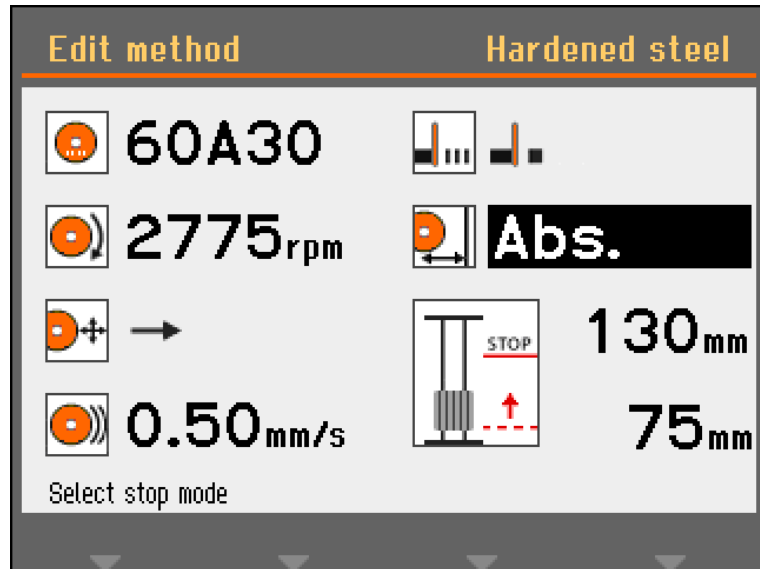


Insufficient Y-Table Travel

If the relative stop position is set to a value exceeding the possible table travel, the value displayed is reduced automatically to the maximum possible when Enter is pressed. Moving the Y-table towards the front of the cutting chamber increases the amount of travel and this automatically updates the relative stop data.

Absolute Stop Position

The Y-table is set to stop in a fixed position measured from the zero position where the cutting table is at the very front of the cutting chamber. The positioning range is 0-200 mm.



*Using Motor Load and
Temperature Display*

The motor load and temperature values displayed are relative percentage (%) values.

Manual Cutting Mode

Motor load and temperature displays indicate how much force is being applied to the workpiece and how hot the motor is. As more force is applied, motor load is increased resulting in a higher temperature. A heavy force applied for an extended period of time, can result in the motor's temperature becoming greater than the safe working limit. Discotom will then automatically stop cutting to prevent damage to the motor.

Applying heavy force for a long period of time may also shorten the life of the cut-off wheel.

Automatic Cutting Mode

Feed speed is automatically reduced on overload by the OptiFeed feature.

OptiFeed

This feature protects the Discotom from damage due to continuous overloading of the motor.

If the feed speed is set too high and the motor is overloaded:

- The feed speed is reduced by 20%.
- If the motor load is still too high, the feed speed is again reduced by 20%.
- This is done up to 4 times until the feed speed is only 20% of the pre-set value.
- If the motor is still overloaded the cutting process is stopped.
- If the motor is running with normal load again, the feed speed is gradually increased, in steps of 10% of the original feed speed, until the pre-set feed speed is reached without the motor being overloaded.

Fitting or Changing the Cut-off Wheel

IMPORTANT

The spindle of the Discotom is a left-hand thread.

- Use the cutting arm to move the cut-off wheel into the top position and activate the cutting arm brake.
- Press and hold down the spindle locking knob on the right-hand side of the cut-off wheel, turning the cut-off wheel until the spindle lock engages.
- Remove the nut with a fork spanner. Remove the flange, cardboard washers and the old cut-off wheel.
- Mount the new cut-off wheel.

IMPORTANT

Conventional cut-off wheels based on Al₂O₃/SiC abrasives should be placed between two cardboard washers, to protect the cut-off wheel and flanges.

For maximum precision with diamond or CBN cut-off wheels, do not use cardboard washers.

- Mount the flange and the nut. Tighten carefully and release the locking knob.
- Release the cutting arm brake.

Clamping the Workpiece

- Clamp the workpiece with the clamping device of your choice, for example, a quick clamping device. Place the workpiece between the clamp and the back stop.
- Push the clamp towards the workpiece and lock the clamp on the quick-clamping device.

Generally, it is recommended to clamp the workpiece as far back on the cutting table as possible.

IMPORTANT

Prior to cutting, ensure that the workpiece is held firmly in place by a clamping device.

Positioning the Cutting Table

Prior to cutting, the cutting table is positioned using the joystick.

Starting/Stopping the Cutting Process

Automatic cutting	the cut-off wheel is stationary and the cutting table moves.
Manual cutting	the cutting table is stationary and the operator moves the cut-off wheel.

Automatic Cutting

- Clamp the workpiece.
- Release the cutting arm brake.
- Lower the cut-off wheel by pulling the cutting arm downwards until the cut-off wheel is positioned ready to cut the workpiece. Activate the cutting arm brake.
- Press the Y-table joystick upwards to position the cutting table and the workpiece just in front of the cut-off wheel.
- Close the cover.
- Select Automatic cutting methods and the correct method
- Press the start key \diamond ; the cut-off wheel starts rotating and the cooling water starts to flow. The cutting table moves towards the cut-off wheel at the preset feed speed.
- When the workpiece is cut through or the set stop position has been reached the cut-off wheel automatically stops.
- Depending on the return position setting, the Y-table will return to where the cutting started (Start) or it will stay where it is (Stay).

Note

During cutting, it is possible to move the sample away from the cut-off wheel by pressing the Y-table joystick downwards.

Manual Cutting

- Clamp the workpiece.
- Release the cutting arm brake.
- Position the cutting table and the workpiece under the cut-off wheel with the Y-table joystick.

Note

The workpiece should be positioned slightly in front of the cut-off wheel center.

- Close the cover.
- Ensure that a Manual cutting method is selected and the correct parameters are set.
- Press the start button \diamond to start the machine. The cut-off wheel starts rotating and the cooling water is turned on.
- Pull down the cutting arm and let the cut-off wheel work itself into the workpiece. Increase the force and begin cutting.
- When the cut-off wheel has almost cut through the workpiece reduce the force.
- When the cut-off wheel has cut through the workpiece push the cutting arm back to its top position.
- Press the stop button \odot to stop the machine.

IMPORTANT

When cutting manually, the motor load information should be used to monitor the force on the workpiece.

Combining Manual and Automatic Operation

- Manual and Automatic cutting modes may be used in combination.
- Cut into the workpiece in Manual cutting mode.
 - Stop the machine
 - Activate the cutting arm brake to secure the arm in this position, select an automatic cutting method and continue in Automatic mode; the workpiece will move towards the cut-off wheel.

3. Routine Maintenance

Accumulated dirt and swarf can restrict or cause damage to the movement of the cutting table.

To ensure a longer lifetime for your Discotom Struers strongly recommends daily cleaning of the cutting chamber.

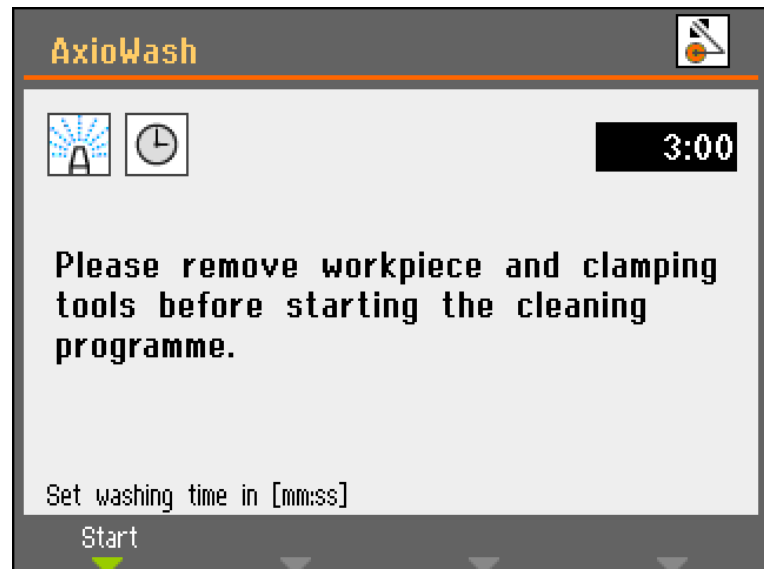
Clean the cutting chamber thoroughly if the Discotom is not to be used for a longer period of time.

Note:

For more detailed service and maintenance instructions relevant to the cooling unit, read the Cooling Units Instruction Manual.

AxioWash

The AxioWash cleaning program is an efficient way to automatically clean the cutting chamber.



Time

Can be set to values between 1 - 30 min, in steps of 30sec.
Default value: 3 minutes

Daily Service

Cleaning the Cutting Chamber

- Clean the cutting chamber both automatically (using AxioWash) and then manually (using the flushing gun).

Automatic Cleaning: AxioWash

To start the AxioWash function:

- Remove the workpiece and tools from the cutting chamber.
- Close the adjustable cleaning nozzles.
- Close the cover.
- Press the AxioWash key on the Control Panel to activate the AxioWash PopUp.
- Press the **F1** key to start cleaning.
The AxioWash program will then run for the preset time.

Manual Cleaning

When AxioWash is finished:

- Press the Flush key on the control panel to activate the recirculation pump.
- Lift the flushing gun from its holder.
- Point the flushing gun towards the bottom of the cutting chamber.
- Turn on the water by pressing the rear of the nozzle.
- Clean the cutting chamber thoroughly.
- Turn off the water by pressing the Flush key again. Return the flushing gun to its holder.

Warning!

Do not clean the cover directly with the flushing gun as this may result in dripping water when the cover is open.

AVOID CORROSION!

After cutting, leave the cover open to let the cutting chamber dry completely.

Cleaning of Flush Hose Nozzle

The flush hose nozzle may collect swarf, inhibiting the flow of cooling fluid.

To clean:

- Unscrew nozzle head and rinse under clean water.

Weekly Maintenance

- Remove the clamping device
- Clean the cutting chamber thoroughly:
Move the cutting table forwards and backwards to access the whole of the cutting chamber.
 - Clean along the length of the guide shafts with the flushing gun and a brush to remove accumulated swarf.
 - Clean under the cutting table with the flushing gun and a brush to remove accumulated swarf.
- Wipe the gutter on the inside of the cutting-chamber cover and remove accumulated swarf.

Cooling Unit

- Check the level of the cooling water after 8 hours use or at least every week.

Monthly Maintenance

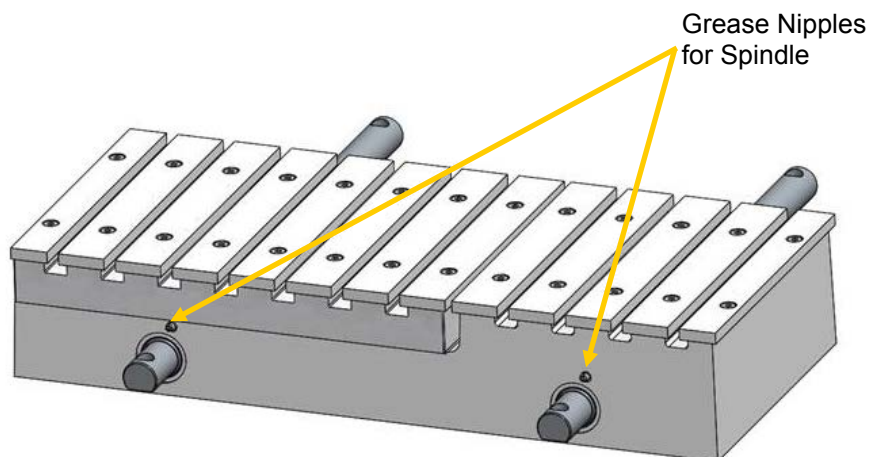
Replacing the Cooling Water

- Replace the cooling water in the Recirculation Cooling Unit at least once a month.

Lubricating the Cutting Table

To maintain the optimum performance of Discotom-100/ -10, lubricate the cutting table at regular intervals (approx every 100 hours).

- Move the cutting table to its rear position using the joystick.
- Place the grease gun on the nipple in front of the spindle for the cutting table and push twice to grease the spindle.



Yearly Service
Inspection of Cover

- Visually inspect the cover and the glass for signs of wear or damage.

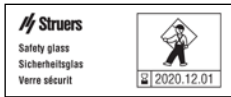
Important

Carry out inspection at more regular intervals if Discotom is used for more than one 7 hour shift a day.

Struers recommends that the PETG glass in the cover is replaced after 5 years of routine operation.

The cover should be replaced immediately if it has been weakened by collision with projectile objects or if there are visible signs of deterioration as a result of using a cooling fluid other than those produced by Struers.

A label on the cover indicates when the cover glass is due to be replaced.

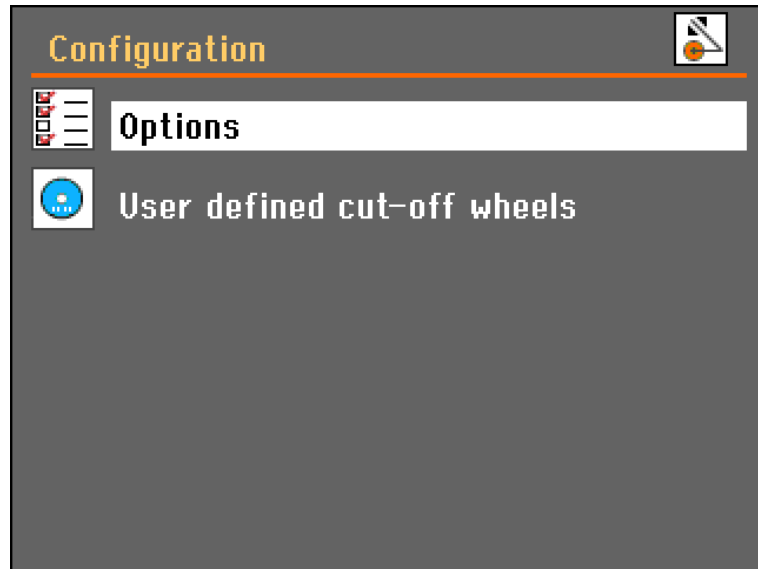


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1. Advanced Operations

Configuration Menu



Selecting and Using the Configuration Menu



From the Main menu select Configuration and push the knob to activate the Configuration menu



Select Options and push the knob to activate the Options menu.

Turn knob to highlight parameters in the Options menu.

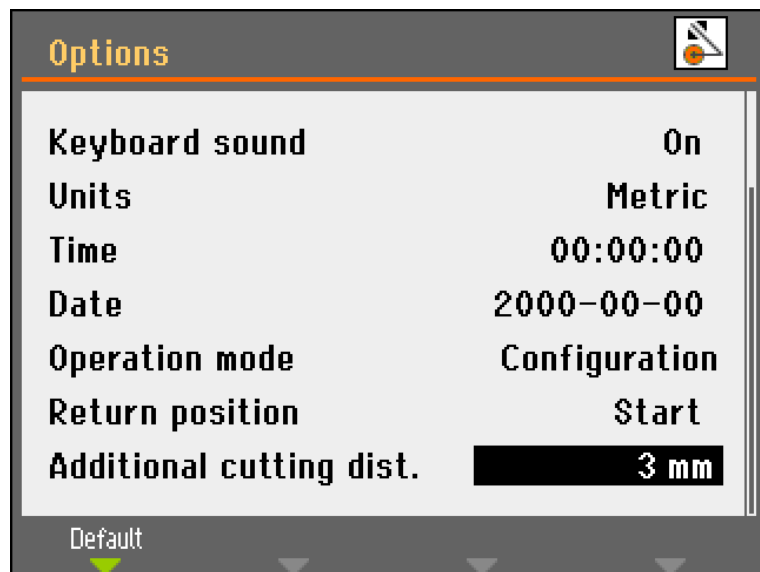
Push knob to allow editing of the highlighted parameter.

Turn knob to adjust the setting.



Push knob to enter the new setting.



Press Esc to move out of the Options / Configuration menu back to the Main menu.



Configuration Parameters

Display brightness:	The contrast settings of the display can be adjusted to suit individual preferences (range 0-100).
Language:	The language can be set to English (default), German, French, Spanish, Japanese, Chinese, Italian, Russian or Korean.
Keyboard sound:	The keyboard sound can be set to On or Off. Default: On.
Units:	The Feed and Stop values in the display panel can be set to be displayed in either mm (default) or inches.
Time:	The time is set to get correct readings from the log files.
Date:	The date is set to get correct readings from the log files.
Operation mode:	It is possible to set three different operation modes. Different operation modes provide different levels of access to parameters as follows: Configuration: Full functionality, access to all parameters. Development: Limited access to parameters in the Options menu Production: No access to parameters except: Display brightness, keyboard sound and additional cutting distance.
Return position:	After cutting or after pressing the stop button  , the return movement of the cut-off wheel can be set to two different modes: Start: Discotom automatically retracts the Y-table to the original position at the time Start  was pressed. Stay: Discotom does not move the Y-table after cutting.
Important Use the Stay function for bakelite bonded diamond or CBN cut-off wheels, as retraction might destroy the rim of the cut-off wheel.	
Additional cutting distance:	When the Auto stop mode is used, cutting is stopped when the motor current is decreasing below a certain level. When workpieces with a small cross section are cut, Auto stop might stop the cutting process too early due to a very low motor current. In this case an additional cutting distance can be specified to make sure that the workpiece really is cut completely. The additional cutting distance can be specified between 0 – 25 mm.

User defined cut-off wheels



From the Main menu select Configuration and push the knob to activate the Configuration menu

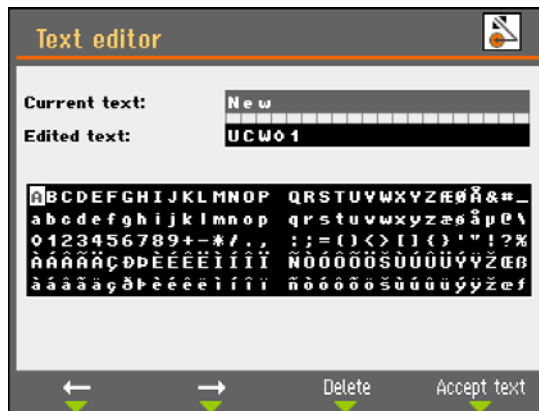


Select User defined cut-off wheels and push the knob to activate the User defined cut-off wheels menu.

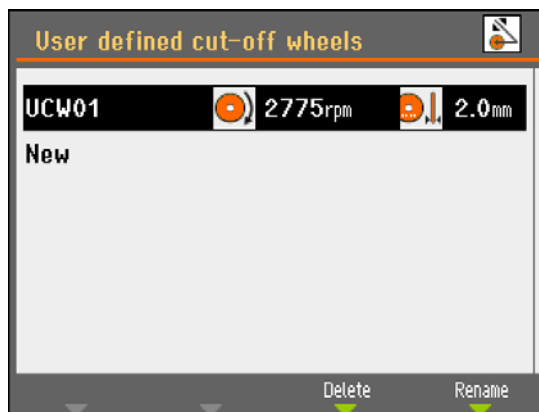
To specify a user defined cut-off wheel:



Push knob to create a new cut-off wheel.



Insert a name for the cut-off wheel or press F4 to accept the suggestion.
UCW = (Userdefined Cut-off Wheel)

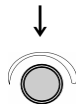
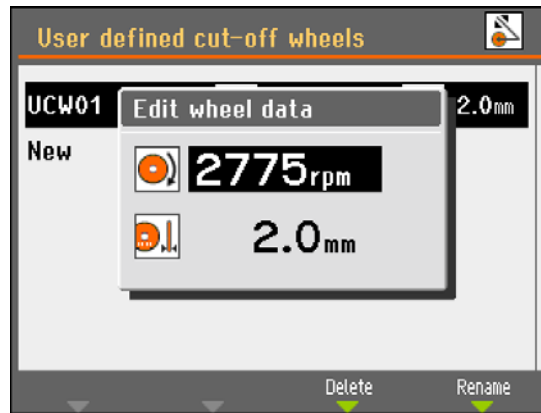


You have now created a new cut-off wheel. To edit the wheel parameters:



Push knob to open edit the wheel data.





Push knob to save the new cut-off wheel.

MultiCut 1 (option)

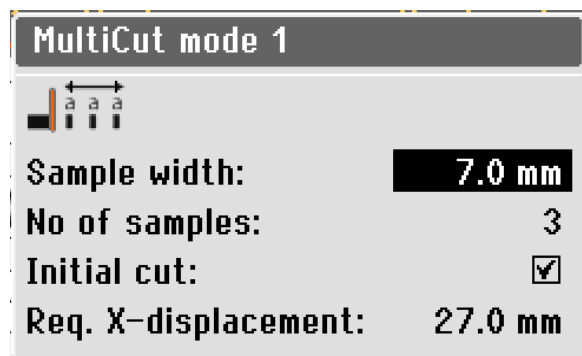


Select MultiCut1

The MultiCut 1 mode permits the cutting of up to 10 samples of equal width.

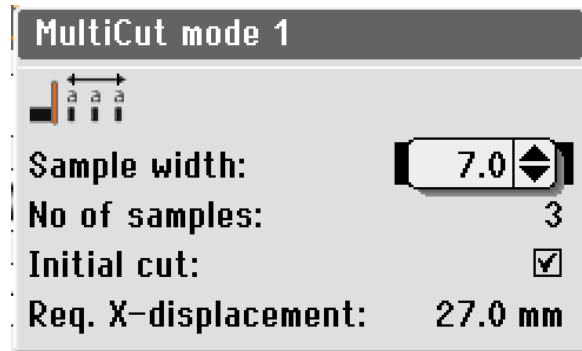
To set up cutting using MultiCut 1 mode:

- Select a cutting method and turn the knob until the MultiCut icon is highlighted, push the knob to display the Select MultiCut mode menu.
- Turn the knob to highlight Mode 1, push the knob to select it.
- The MultiCut mode 1 menu will appear.



Setting the parameters

- Turn the knob to select a parameter. Press the knob to edit the parameter.



Sample width

This parameter sets the width of the samples that will be cut.

No. of samples

This parameter sets the number of samples that will be cut.

Initial cut

Select this parameter if you need to make an initial cut, before you start cutting the samples that you need. This cuts a scrap sample, which you will not use. For example, if the workpiece has an uneven edge that would make it unsuitable as a first sample.

Required X-displacement

This parameter is calculated by the Discotom to tell you the required movement of the x-table needed to cut your samples, based on the parameter settings.

MultiCut 2 (option)

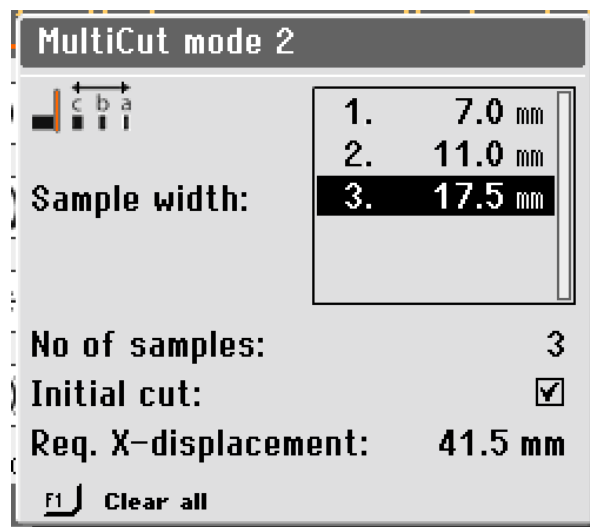


Select MultiCut 2

The MultiCut 2 mode permits the cutting of up to 10 samples of different widths.

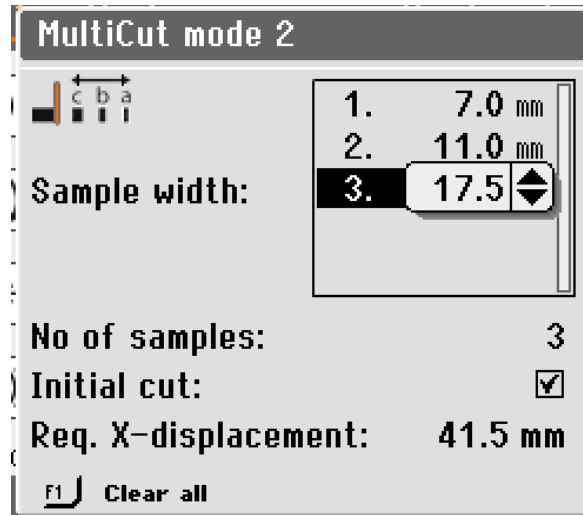
To set up cutting using MultiCut 2 mode:

- Select a cutting method and turn the knob until the MultiCut icon is highlighted, push the knob to display the Select MultiCut mode menu.
- Turn the knob to highlight Mode 2, push the knob to select it.
- The MultiCut mode 2 menu will appear.



Setting the cutting parameters

- Turn the knob to select a parameter. Press the knob to edit the parameter.



No. of samples

This parameter indicates the number of samples that will be cut.

Sample width

This parameter sets the width of the samples that will be cut.

Initial cut

Select this parameter if you need to make an initial cut, before you start cutting the samples that you need. This cuts a scrap sample, which you will not use. For example, if the workpiece has an uneven edge that would make it unsuitable as a first sample.

Note:
Pressing the F1 key in this menu will clear all of the samples and their values and return the menu to its default.

Required X-displacement

This parameter is calculated by the Discotom to tell you the required movement of the x-table needed to cut your samples, based on the parameter settings.

MultiCut 3 (option)

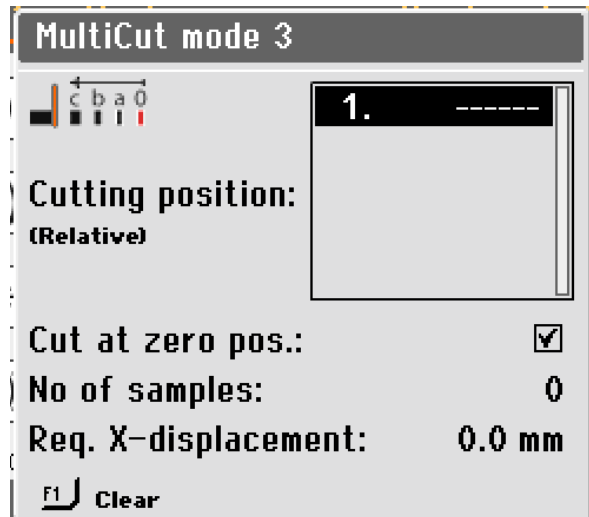


The MultiCut 3 mode allows carrying out up to 10 cuts at different relative distances from the 'zero', or starting position. The distances are manually entered into the Discotom.

To set up cutting using MultiCut 3 mode:

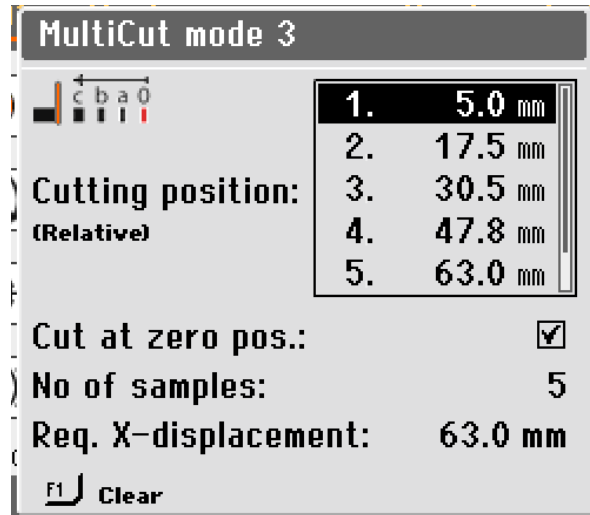
Select MultiCut 3

- Select a cutting method and turn the knob until the MultiCut icon is highlighted, push the knob to display the Select MultiCut mode menu.
- Turn the knob to highlight Mode 3, push the knob to select it.
- The MultiCut mode 3 menu will appear.



Setting the cutting parameters

- Turn the knob to select a cutting position. Press the knob to edit the position and do that for all the cutting positions required..



Cutting position (Relative)

This parameter sets the position of the cuts. The values show the relative distance to the zero position.

Cut at zero position

Select this parameter to make an initial cut at zero position. Otherwise Discotom will immediately move to the cutting position 1 and start cutting at that position.

No. of samples

This parameter indicates the number of samples that will be cut.

Note:

Pressing the F1 key in this menu will clear the highlighted cutting position. If the cursor is placed outside the cutting position box **F1** will clear all positions.

Required X-displacement

This parameter is calculated by the Discotom to tell you the required movement of the x-table needed to cut your samples, based on the parameter settings.

MultiCut 4 (option)

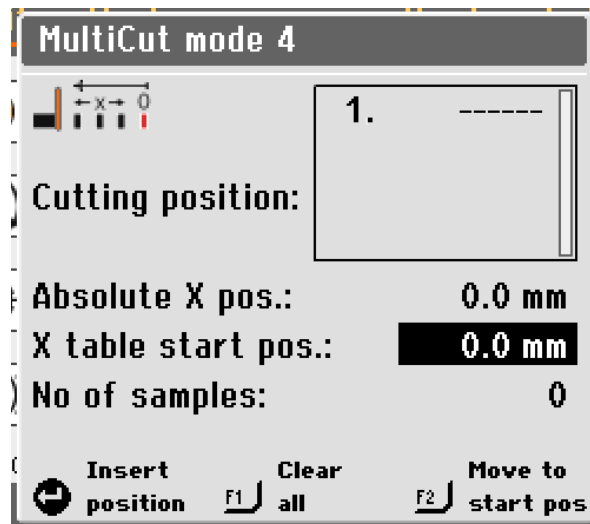


The MultiCut 4 option allows carrying out cuts at different relative distances from the 'zero', or starting position. The distances are entered into the Discotom by using the X-table to position the workpiece in front of the cut-off wheel where the sample is to be cut and then recording this position.

To set up cutting using MultiCut 4 mode:

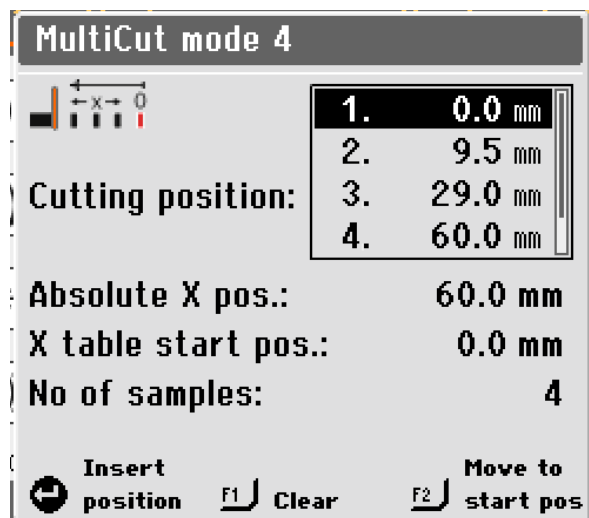
Select MultiCut 4

- Select a cutting method and turn the knob until the MultiCut icon is highlighted, push the knob to display the Select MultiCut mode menu.
- Turn the knob to highlight Mode 4, push the knob to select it.
- The MultiCut mode 4 menu will appear.



Setting the cutting parameters

- Position the workpiece relatively close to the cut-off wheel and clamp it.
- Use the joystick to move the X-table to the position where the first cut is to be made.
- Press the knob to insert the current position as the cutting position.
- Repeat the steps to insert the cutting positions for all samples.



Cutting position

The different cutting positions are defined in Cutting position.

X-table start pos.:

Allows fine tuning of the start position if the work piece is slightly misaligned during clamping.

To adjust the start position:

- Turn the knob and select X-table start pos.:
- Press the knob to edit the setting.
- Turn the knob left or right to move the X-table in the same direction.
- When the workpiece is in the correct position, press the knob to save the new position as Start position. All other cutting positions are corrected accordingly.

No. of samples

This parameter indicates the number of cuts that will be made.

Insert pos.

Pressing the knob inserts the current position as the cutting position for the sample.

F2 Move to start pos.

This key moves the X-table until the sample is in front of the cut-off wheel in the start position.

Note:

Pressing the F1 key in this menu will clear the highlighted cutting position. If the cursor is placed outside the cutting position box **F1** will clear all positions.

Clamping Irregular Workpieces Irregular workpieces (without flat clamping surfaces) must be clamped using special clamping tools, as the workpieces must not move during cutting. This could result in damage to the cut-off wheel or to the sample itself. Use the T-slots to mount the special clamping tools. Struers offers a large selection of Clamping Tools (See "[Accessories](#)").
To achieve faster cutting, position the workpiece so that the wheel will cut the smallest possible cross-section.

Optimising Cutting Results

The following table offers answers to a number of common questions about how to achieve better quality cuts:

Question	Answer	Comments
How can I avoid discoloration or burning of the sample?	Reduce rotational speed. (D-100 only).	Causes increased wheel wear.
	If reduced rotational speed fails to solve problem, change to a softer cut-off wheel*	
How can I avoid unplane cuts?	Reduce rotational speed. (D-100 only).	Causes increased wheel wear.
	Reduce feed speed	
How can I avoid smearing?	Reduce rotational speed. (D-100 only).	Causes increased wheel wear.
How can I avoid burrs?	Use a softer cut-off wheel*	Causes increased wheel wear
	Secure the workpiece on both sides of the cut-off wheel	
How can I prevent the cut-off wheel wearing out too quickly?	Increase rotational speed.	May cause sample discoloration and unplane cut.
	Use a harder cut-off wheel*	
How can I cut faster?	Place the cut-off wheel as low as possible.	
	Place the workpiece in a position that allows the cut-off wheel to cut the smallest possible cross-section.	
	Increase feed speed.	May cause sample discoloration and unplane cuts.
How can I avoid machine vibrations?	Minor vibrations: Increase feed speed in steps of 0.1 m/s.	May cause sample discoloration and unplane cuts.
	Major vibrations: Increase rotational speed by 500 rpm. (D-100 only).	May cause sample discoloration and unplane cuts.

* Please refer to the Selection Guide in the Struers Struers Cut-off Wheels brochure.

Explanation of Safety Factors

The cover has a safety switch to prevent the cut-off wheel from starting while the cover is open. Furthermore, a locking mechanism prevents the operator from opening the cover until the cut-off wheel stops spinning.

2. Accessories

Please refer to the [Discotom-100 /-10 brochure](#) for details of the range available.

Clamping Tools

Please refer to the [Struers Clamping Tools brochure](#) for details of the range available.

3. Consumables

*The use of Struers consumables is recommended.
Other products (e.g. coolants) may contain aggressive solvents,
which dissolve e.g. rubber seals. The warranty may not cover
damaged machine parts (e.g. seals and tubes), where the damage
can be directly related to the use of non-Struers consumables.*

Cut-off Wheels

Please refer to the Selection Guide in the Struers
[Struers Cut-off Wheels brochure](#).

Other Consumables

Specification	Cat. No:
<i>Corrozip</i> <i>Additive for Cooling Fluid</i> Environment friendly. To protect the machine from corrosion and to improve cutting and cooling qualities. 1 l 5 l	 49900045 49900046
Grease for maintenance/lubrication of the spindle	16080802
Oil for maintenance of cutting table	16080845

4. Trouble-Shooting

Error	Explanation	Action
Machine Problems		
Machine has stopped cutting.	The AutoStop function is active.	Switch unit off and on at Main Switch to reset AutoStop.
During cutting the cutting table stops when reaching a specific point.	The AutoStop function is active.	Switch unit off and on at Main Switch to reset AutoStop.
Chamber light does not work.	Replace the lamp.	Remove plastic cap to gain access to the fluorescent lamp. Pull out the lamp and replace it.
Water leaking.	Leak in a Recirculation Cooling Unit hose.	Check the hose and tighten the hose clamp.
	Water overflow in the cooling water tank.	Remove the excess water in the tank.
Workpieces or cutting chamber rusty.	Insufficient additive in cooling fluid.	Use Struers Additive for cooling fluid in the cooling water, at the correct concentration. Check with a refractometer. Follow the instructions in the ' Maintenance ' Section.
	The cover is left closed after use.	Leave the cover open to let the cutting chamber dry.

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Error	Explanation	Action
Cutting Problems		
Discoloration or burning of the workpiece.	The hardness of the cut-off wheel is inappropriate for the hardness / dimensions of the workpiece.	Reduce rotational speed (D-100 only) or change wheel. See " <i>Consumables</i> " section, under heading 'Cut-off Wheels'.
	Inadequate cooling.	Check that there is sufficient water in the Recirculation Cooling Unit.
Unwanted burrs.	Cut-off wheel too hard.	Reduce rotational speed (D-100 only) or change wheel. See " <i>Consumables</i> " section, 'Cut-off Wheels'.
	Feed speed too high at the end of the operation.	Reduce the feed speed near the end of the operation.
	Lack of support for the workpiece.	If possible, support the workpiece on both sides.
Cutting quality differs.	Cooling water hose clogged.	Clean the cooling water hose and the cooling tube. Check the water flow by turning the cooling valve to cleaning position.
Cut-off wheel breaks.	Incorrect mounting of the cut-off wheel.	Check that the bore/centre hole has the correct diameter. Check cardboard washer on both sides of the cut-off wheels and replace if worn. The nut must be tightened properly.
	Incorrect clamping of the workpiece.	Make sure that only the left quick-clamping device is tight. The spring clamp to the right should only press lightly. Use the vertical clamping system if the workpiece is an irregular shape.
	Cut-off wheel is too hard.	Reduce rotational speed (D-100 only) or change wheel. See " <i>Consumables</i> " section, 'Cut-off Wheels'.
	Feed speed is set too high.	Reduce the feed speed.
	Inadequate cooling.	Check that there is enough water in the cooling unit.

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Error	Explanation	Action
The cut-off wheel wears down too quickly.	The rotational speed is too low.	Increase rotational speed (D-100 only).
	The feed speed is too high.	Reduce feed speed.
	Insufficient cooling.	Check that there is enough water in the Recirculation Cooling Unit. Check the cooling water hoses.
The cut-off wheel does not cut through the workpiece.	The rotational speed is too low.	Increase rotational speed (D-100 only).
	The cut-off wheel is too soft for the task	See " Consumables " section, 'Cut-off Wheels'.
	Incorrect choice of cut-off wheel.	See " Consumables " section, 'Cut-off Wheels'.
	Cut-off wheel worn.	Replace the cut-off wheel.
The workpiece breaks when clamped.	The cut-off wheel gets caught in the workpiece.	Support the workpiece and clamp it on both sides of the cut-off wheel so that the cut stays open.
	The workpiece is brittle.	Place the workpiece between two polystyrene plates. Note! Always cut brittle workpieces very carefully.
The sample is corroded	The sample has been left in the cutting chamber for too long.	Remove the sample directly after cutting. Leave the cover open when you leave the machine.
	Insufficient additive for cooling fluid.	Use Struers Additive for cooling fluid in the cooling water at the correct concentration. Check with a refractometer. See " Maintenance " section.

Error Messages

Error messages are divided into two classes:
Messages
Errors

Messages

Messages are intended to inform the operator of the machine's progress and advise about minor operational errors.

Errors

Errors must be rectified before cutting can be continued. In some cases, cutting cannot continue before an authorised technician has rectified the error. Turn off the unit at the Main Switch immediately. Do not attempt to operate unit before a technician has rectified problem.

5. Maintenance

Service Info

Struers recommends that a regular service check be carried out after every 1500 hours of use.

Information on total operation time and servicing of the machine is displayed on the screen at start-up:



A pop-up message will appear after 1,000 hours operation time to remind the user that a service check should be scheduled.

After the 1,500 hours operation time has been exceeded the pop-up message will change to alert the user that the recommended service interval has been exceeded.

- Contact a Struers Service Technician to service the machine.

Maintenance of Cutting Table

The stainless steel bands are available as spare parts and should be replaced if they become worn or damaged.

To allow humidity to escape from the cutting table and chamber, it is recommended to leave the cover open when the machine is not in use.

Lubrication

Lubricate the cutting table at regular intervals (approx every 100 hours).

See [Lubricating the Cutting Table](#) on page 54 for details.

Maintenance of Cut-off Wheels

Storing Bakelite Bonded Al_2O_3 Cut-off Wheels

Bakelite bonded cut-off wheels are sensitive to humidity. Therefore, do not mix new, dry cut-off wheels with used damp ones. Store the cut-off wheels in a dry place, horizontally on a flat support.

Maintenance of Diamond and CBN Cut-off Wheels

The precision of diamond and CBN cut-off wheels (and thus the quality of the cut) depends on how carefully the following instructions are observed:

- Never expose the cut-off wheel to a heavy mechanical load, or heat.
- Store the cut-off wheel in a dry place, horizontally on a flat support, preferably under light pressure.
- A clean and dry cut-off wheel does not corrode. Therefore, clean and dry the cut-off wheel before storing. If possible, use ordinary detergents for the cleaning.
- Regular dressing of the cut-off wheel is also part of the general maintenance.

Maintenance of Clamping Devices

Important

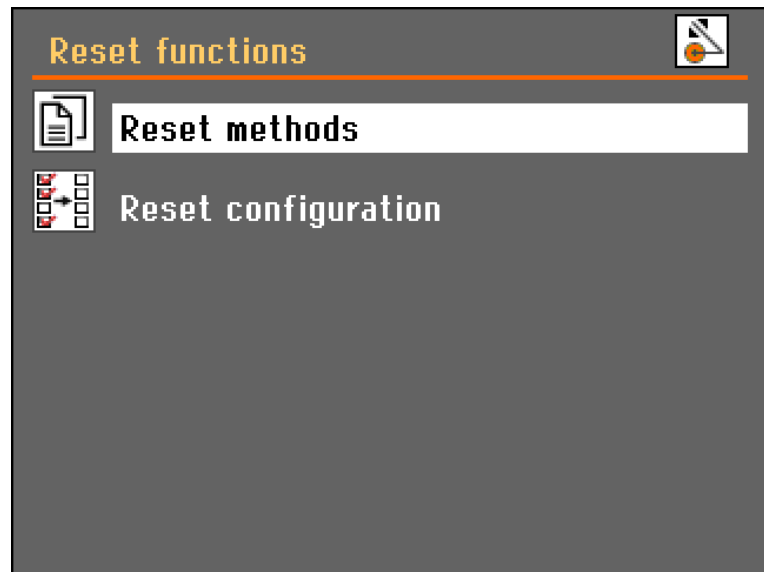
It is recommended to thoroughly clean and lubricate the Quick Clamping Device and Vertical Clamping Device at regular intervals.

Reset Functions

It can become necessary to reset certain functions to the factory settings using the Reset functions menu.

To reset methods or configuration:

- Go to the Maintenance menu and select: Reset functions.



Reset Methods

- Select Reset methods to delete all cutting methods at once.

IMPORTANT!

When the cutting methods are reset they are deleted and cannot be re-established.

Reset Configuration

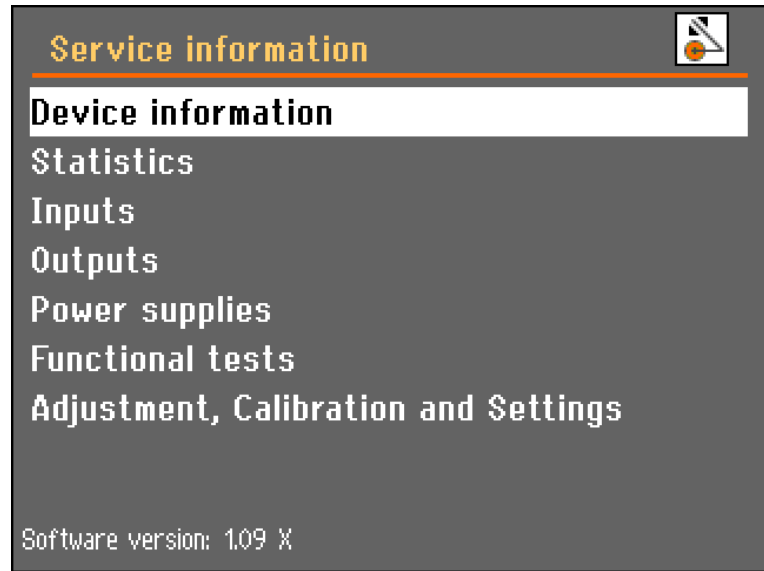
- Select Reset configuration to set all configuration parameters back to their default settings.
- Switch Discotom off, then on again and reconfigure the settings.

Service Information

Discotom offers extensive information about the conditions of all different components.

To reach this function:

- Go to the Maintenance menu and select: Service information.



Various topics can be selected for information on the condition of the different components.
Service information can also be used in cooperation with a Struers service technician for remote diagnostics of the equipment.
Service information is read-only information; machine settings cannot be changed or modified.

NOTE:

The Service Information menus are in English only.
Using the same names/ terms is useful when communicating with your local Service Technician or the Struers Customer Service department.

6. Technical Data

Subject	Specification		
		Metric/International	US
CUTTING SPECIFICATIONS			
Cutting Capacity (Max)	Discotom-100 (\varnothing 300 mm/12" cut-off wheels)	\varnothing 119 mm with 61 mm flange	\varnothing 4.68" with 2.4" flange
	Discotom-10 (\varnothing 250 mm/10" cut-off wheels)	\varnothing 94 mm with 61 mm flange	\varnothing 3.70" with 2.4" flange
PHYSICAL SPECIFICATIONS			
Cutting Motor	Discotom-100 (50-60 Hz) Cutting power, constant [S1] Cutting power, intermittent [S3] Maximum power	4 kW 4.7 kW 6.8 kW	5.4 HP 6.4 HP 9.2 HP
	Discotom-10 (50 Hz) Cutting power, constant [S1] Cutting power, intermittent [S3] Maximum power	2.5 kW 3.2 kW 4.2 kW	3.4 HP 4.3 HP 5.7 HP
	Discotom-10 (60 Hz) Cutting power, constant [S1] Cutting power, intermittent [S3] Maximum power	3 kW 3.8 kW 5.1 kW	4 HP 5.1 HP 6.9 HP
Cut-off Wheel Discotom-100	Diameter x Thickness x Centre-hole Variable speed	300 x 2 x 32 mm	12 x 0.08 x 1.26"
		1500 - 3000rpm	
Cut-off Wheel Discotom-10	Diameter x Thickness x Centre-hole Fixed speed	250 x 1.5 x 32 mm	10 x 0.06 x 1.26"
		2850 rpm	
Positioning and Feed	Positioning range (of cut-off wheel) Z:	165 mm	6.5"
	Max. height of sample underneath cut-off wheel		
	300 mm wheel 250 mm wheel	80 mm 105 mm	3.1" 4.1"
	Max. positioning speed Y:	20 mm/s	0.8"/s
	X:	10 mm/s	0.4"/s
	Feed Speed range (adjustable in steps of)	0.05 - 2.5 mm/s (0.05 mm/s)	2 - 100 mils/s (2 mils/s)
Cutting Table	Width x Depth y-table range	620 mm x 270 mm 200 mm	24.4" x 10.6" 7.9"

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Subject		Specification	
		Metric/International	US
	x-table (option) Width x Depth x-table range T-slots	282x270 mm 100 mm 10 mm	11.1 x 10.6" 3.9" 0.39"
Dimensions and Weight	Width Depth Height (closed/open cover) Weight	920 mm 890 mm 685 / 1080 mm 200 kg	36.2" 35.0" 27 / 42.5" 440 lbs
	<i>Optional table unit</i> Width Depth Height	900 mm 750 mm 800 mm	35.4" 29.5" 31.5"
Fume Extraction	Dia. for connecting tube Recommended capacity at 0mm/0" water gauge	50 mm 50m ³ /h	2" 1750ft ³ /h
Recirculation Cooling Unit	Tank volume (optional) Approx. flow	100 l 125 l/min @ 1 bar	26.4 gallons 33 g/min @ 1 bar
Dynamic Balancing	Max. admissible unbalance Upper according to ISO 1940/1, Balance Quality Grade G6.03	Upper = 2 gmm/kg = 110 gmm.	
EU Directives		Please refer to the Declaration of Conformity	
Environmental	Noise level	Approx. 67dB(A) running idle, at a distance of 1.0 m / 39.4" from the machine. Noise pressure level below 75dB (A) when cutting ø80mm aluminium, at a distance of 1.0 m / 39.4" from the machine.	

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Subject	Specification																			
ELECTRICAL DATA <i>*Important:</i> Local standards may overrule the recommendations for the main supply cable. If necessary, please contact a qualified electrician to verify which option is suitable for the local installation setup.																				
Discotom-100																				
<i>Mains Cable Specification*</i>	<table border="1"> <thead> <tr> <th rowspan="2">Voltage / frequency:</th> <th colspan="4">Main supply connection</th> </tr> <tr> <th>Min. Fuse size</th> <th>Minimum cable size @ Min. fuse</th> <th>Max. Fuse size</th> <th>Minimum cable size @ Max. fuse</th> </tr> </thead> <tbody> <tr> <td>3 x 200-240V</td> <td>30</td> <td>3x AWG12 / 2.5 mm² + PE</td> <td>50</td> <td>3x AWG10 / 4 mm² + PE</td> </tr> <tr> <td>3 x 380-480V</td> <td>15</td> <td>3x AWG14 / 1.5 mm² + PE</td> <td>50</td> <td>3x AWG10 / 4 mm² + PE</td> </tr> </tbody> </table>	Voltage / frequency:	Main supply connection				Min. Fuse size	Minimum cable size @ Min. fuse	Max. Fuse size	Minimum cable size @ Max. fuse	3 x 200-240V	30	3x AWG12 / 2.5 mm ² + PE	50	3x AWG10 / 4 mm ² + PE	3 x 380-480V	15	3x AWG14 / 1.5 mm ² + PE	50	3x AWG10 / 4 mm ² + PE
	Voltage / frequency:		Main supply connection																	
		Min. Fuse size	Minimum cable size @ Min. fuse	Max. Fuse size	Minimum cable size @ Max. fuse															
	3 x 200-240V	30	3x AWG12 / 2.5 mm ² + PE	50	3x AWG10 / 4 mm ² + PE															
3 x 380-480V	15	3x AWG14 / 1.5 mm ² + PE	50	3x AWG10 / 4 mm ² + PE																
<i>Electrical table</i>																				
	<table border="1"> <thead> <tr> <th>Voltage / frequency:</th> <th>Nom. Load</th> <th>Max. Load</th> </tr> </thead> <tbody> <tr> <td>3 x 200-240V</td> <td>16 A</td> <td>30 A</td> </tr> <tr> <td>3 x 380-480V</td> <td>8 A</td> <td>15 A</td> </tr> </tbody> </table>	Voltage / frequency:	Nom. Load	Max. Load	3 x 200-240V	16 A	30 A	3 x 380-480V	8 A	15 A										
Voltage / frequency:	Nom. Load	Max. Load																		
3 x 200-240V	16 A	30 A																		
3 x 380-480V	8 A	15 A																		
<i>Residual Current Circuit Breaker</i>	type B time-delayed, 30 mA (or better) is REQUIRED.																			

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Subject	Specification				
Discotom-10					
<i>Mains Cable Specification*</i>	Voltage / frequency:	Main supply connection			
		Min. Fuse size	Minimum cable size @ Min. fuse	Max. Fuse size	Minimum cable size @ Max. fuse
	3 x 200 V / 50 Hz	20	3x 2,5 mm ² + PE	50	3x 4 mm ² + PE
	3 x 200-210 V / 60 Hz	20	3x AWG12 + PE	50	3x AWG10 + PE
	3 x 220-230 V / 50 Hz	20	3x 2,5 mm ² + PE	50	3x 4 mm ² + PE
	3 x 220-240 V / 60 Hz	20	3x AWG12 + PE	50	3x AWG10 + PE
	3 x 380-400 V / 50 Hz	10	3x 1,5 mm ² + PE	50	3x 4 mm ² + PE
	3 x 380-415 V / 60 Hz	10	3x AWG16 + PE	50	3x AWG10 + PE
	3 x 460-480 V / 60 Hz	10	3x AWG16 + PE	50	3x AWG10 + PE
<i>Electrical table</i>	Voltage / frequency:	Nom. Load	Max. Load		
	3 x 200 V / 50 Hz	14 A	20 A		
	3 x 200-210 V / 60 Hz	15 A	23 A		
	3 x 220-230 V / 50 Hz	12 A	18 A		
	3 x 220-240 V / 60 Hz	14 A	20 A		
	3 x 380-400 V / 50 Hz	7 A	11 A		
	3 x 380-415 V / 60 Hz	8 A	12 A		
3 x 460-480 V / 60 Hz	7 A	11 A			
<i>Residual Current Circuit Breaker</i>	type A, 30 mA (or better) is recommended.				

Cutting Capacity

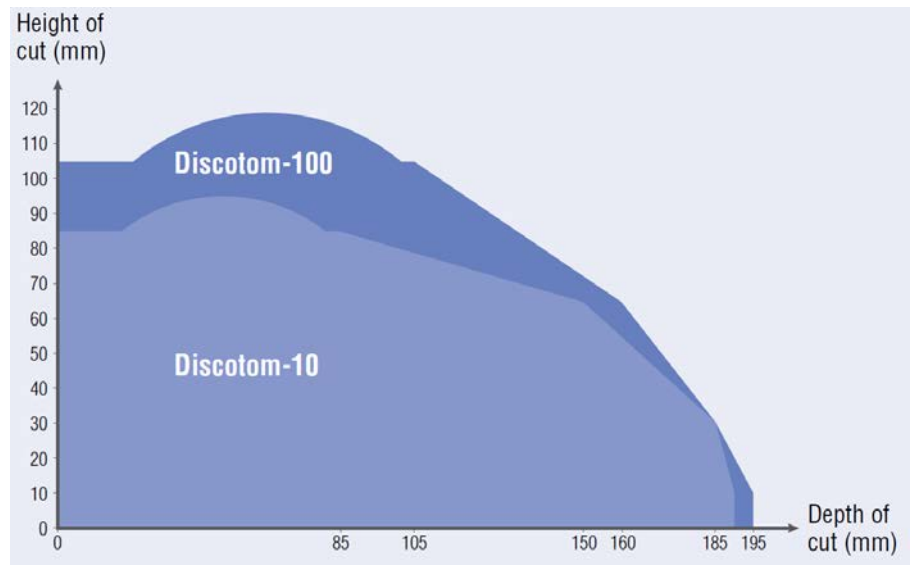
The graph shows the projected cutting capacity under the following conditions:

A new cut-off wheel.

The workpiece is laid directly on the cutting table, with overhang where appropriate.

Vertical clamping is used.

The actual cutting capacity depends on the sample material, cut-off wheel and clamping technique.



Quick Reference Guide

Clamping the Workpiece

- Secure the workpiece using the clamping device of your choice, usually the quick-clamping device. Place the workpiece between the clamp and the backstop.
- Push the clamp towards the workpiece and lock the quick-clamping device with the locking handle.

Automatic Cutting

- Clamp the workpiece.
- Position the cut-off wheel so that it can cut the sample and lock it in place by pressing the Cutting arm lock key.
- Position the cutting table with the Y-table joystick.
- Carefully close the cover.
- Select Automatic Cutting mode.
- If necessary, change the cutting parameters.
- Press the start button \diamond to begin cutting.
- After cutting, the cutting table either automatically returns to its start position or stays in the current position, depending on the settings in configuration.
- Open the cover and release the clamping device.
- Remove the workpiece.

Manual Cutting

- Disengage the lock for the cutting handle and move the cutting arm into the top position.
- Clamp the workpiece.
- Position the cutting table under the cut-off wheel.
- Carefully close the cover.
- Select Manual Cutting mode.
- Press the start button \diamond .
- Lower the cut-off wheel until it contacts the workpiece. Apply force until the sample is cut.
- Reduce force near the end of the cut.
- Open the cover and release the clamping device.
- Remove the workpiece.

Changing the Cut-off Wheel

- Move the cutting arm into the top position and engage the lock for the cutting arm to stop the cutting arm from moving.
- Press the knob for the spindle lock on the right-hand side of the cut-off wheel, whilst turning the cut-off wheel until the spindle lock clicks.
- Remove the nut with a fork spanner. Remove the flange and the old cut-off wheel.
- Mount the new cut-off wheel.
- Mount the flange and the nut. Tighten carefully.
- Release the knob for the spindle lock

Cleaning the Cutting Chamber

- Press the Flush key on the control panel to activate the recirculation pump.
- Lift the flushing gun from its holder.
- Point the flushing gun towards the bottom of the cutting chamber.
- Turn on the water by pressing the rear of the nozzle.
- Clean the cutting chamber thoroughly.
- Turn off the water by pressing the Flush key again. Return the flushing gun to its holder.
- Always leave the cover open to let the cutting chamber dry.