Secotom-1

Instruction Manual



Manual No.: 15707001 Date of Release 2016.06.06



Table of ContentsPage

User's Guide	1
Reference Guide	16

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.

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Secotom-1 Safety Precaution Sheet

To be read carefully before use

- 1. The operator should be fully aware of the use of the machine according to the Instruction Manual and the instructions of the cut-off wheels.
- 2. 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.
- 3. The unit must be installed in compliance with local safety regulations.
- **4.** Use only intact cut-off wheels. The cut-off wheels must be approved for min. 3.500 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. To achieve maximum safety and lifetime of the machine, use only original Struers consumables.
- 8. Struers recommends using cooling fluid when cutting as the materials being cut may emit harmful dust. Additionally an adequate exhaust system should be used.
- **9.** 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.
- **10.** Always use Safety Goggles when operating the machine.
- **11.** Use of working gloves is recommended as workpieces may be both very hot and produce sharp edges.
- 12. The machine must be disconnected from the mains prior to any service.

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 $\overset{\boxtimes}{=}$ 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

Table of Contents

Page

1. Getting Started

Checking the Contents of the Packing Box	2
Placing Secotom-1	2
Getting Acquainted with Secotom-1	3
Rear of Secotom-1	4
Supplying Power	5
Changing the voltage setting	5
Mounting the Cut-off Wheel	7
Filling the Cut-off Machine with Cutting Fluid	8
Removing the Manual Cutting Table	9
Placing the Manual Cutting Table	9
17	

2. Operation

.10
.11
.12
.12
.12
.12
.13
.13
.13

3. Routine Maintenance

Daily Service	14
Weekly Service	14
Checking the Recirculation Cooling Unit	14
Monthly Service	14
Cut-off Wheels	15
Dressing Cut-off Wheels	15
Cut-off Wheels Dressing Cut-off Wheels	15 15

1. Getting Started

Checking the Contents of the In the packing box you should find the following parts: Secotom-1 with manual cutting table Packing Box 1 2 Mains cables 1 Stop pin Spanner 17 mm 1 10 Pieces of rubber foam 1 Pair of Safety Goggles 1 Hose for connection to exhaust, 1.5 m x 32 mm dia. Hose clamp, 25-40 mm dia. 1 Cover for ventilation hole 1 1 Instruction Manual Set **Removing Secotom-1** Secotom-1 is secured to the wooden pallet with 3 screws. Remove from the Pallet these screws with a 13 mm spanner. Secotom-1 should be placed on a safe and stable support table with **Placing Secotom-1** an adequate working height. The table must be able to carry at least 50 kg. The machine must be placed close to the power supply. Cover for Ventilation Hole The ventilation pipe at the back of the cutting chamber can be replaced with the cover for the ventilation hole if Secotom-1 is not to be connected to an exhaust system.

Getting Acquainted with Secotom-1

Take a moment to familiarise yourself with the location and names of the Secotom-1 components.



- ① Protection guard
- ② Cut-off wheel
- ③ Light in cutting table
- ④ Manual cutting table
- ⑤ Guide rail
- 6 Start button
- ⑦ Stop button
- ⑧ Main switch (at the back of the machine)



- ① Ventilation Hole
- ② Water outlet
- ③ Fuses
- ④ Main switch
- ⑤ Mains connection
- 6 Type Plate

Supplying Power

Always remember to switch the power off when installing electrical equipment!



IMPORTANT

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

Changing the voltage setting

The factory setting for Secotom-1 is 240V.

If the factory setting is not the correct setting for your mains supply the setting can be changed from 240V to 220V:

- Pull out the fuse holder from the cable terminal at the back of the machine.
- Pull out the voltage switch, turn it into the correct position and reinsert it.
- Put the fuse holder back into the cable terminal.

Secotom-1 is shipped with 2 types of Mains cables:

The 2-pin (European Schuko) plug is for use on single-phase, 200-240 V connections.

If the plug supplied on this cable is not approved in your country, then the plug must be replaced with an approved plug. The leads must be connected as follows: Yellow/green: earth Brown: line (live) Blue: neutral

The 3-pin (North American NEMA) plug is for use on 2-phase, 200-240 V power connections.

If the plug supplied on this cable is not approved in your country, then the plug must be replaced with an approved plug. The leads must be connected as follows:

Green: earth Black: line (live) White: line (live)

Both cables are on the other end equipped with an IEC 320 cable connector that has to be connected to the Secotom.

WARNING!

The output voltage from this cable is 200 – 240V and not 110V. DO NOT use this cable to connect equipment that use a 110V power supply. Failure to adhere to this may result in material damage.

Single-phase Supply



2-phase Supply



Connection to the Machine



Mounting the Cut-off Wheel

IMPORTANT

For manual cutting only diamond or CBN cut-off wheels with a metal body are allowed. Abrasive SiC or Al_2O_3 cut-off wheels or saw blades may not be used for cutting on Secotom-1.

Move the manual cutting table into the upwards position and engage the securing rod into the locking position.



Insert the stop pin into the hole of the inner flange.



Use the 17 mm spanner to loosen the flange screw.Remove the outer flange.

IMPORTANT

The tolerance between the spindle and inner flange is very small which means that the two surfaces must be absolutely clean. Never try to squeeze the cut-off wheel on as this may damage the spindle or the cut-off wheel. If there are any small burrs, remove them with grinding paper (grit size 1200).

- Mount the cut-off wheel and remount the outer flange, with the machined face towards the inner flange.
- Insert the locking pin in the hole in the inner flange. Gently fasten the flange screw using the 17 mm spanner.
- Release the securing rod and move the manual cutting table down again.



Filling the Cut-off Machine with Cutting Fluid

- Make sure that the peg is in place inside the cutting chamber.
- Place one folded piece of the wet rubber foam supplied with the machine in the holder on each side of the cut-off wheel. The cut-off wheel must protrude slightly (about 5 mm) into the rubber foam to take a sufficient amount of cooling water with it.
- Fill the cutting chamber up to where the cut-out for the wheel starts (approx. 4.5 litres of water) Use 4.37 I water and 135 ml Struers additive for cooling fluid, Corrozip.



Removing the Manual Cutting Table



Lift the manual cutting table up and engage the securing rod into the locking position.

- Turn the plug securing ring and remove the plug from the socket.
- Move the cutting table all the way to the vertical position, lift it straight up and remove.

Securing rod

Placing the Manual Cutting Table



/ Cable

- Hold the cutting table vertically and place the machined bar in the hinges.
- Move the cutting table slightly downwards to allow the securing rod to engage into the locking position.
- Place the plug in the socket at the rear wall inside the cutting chamber and secure it by turning the ring.
- Release the securing rod and move the manual cutting table all the way down.

IMPORTANT

Always make sure that the cable from the socket to the lamp housing does not bend towards the cut-off wheel so that there is no risk of cutting into the cable.

2. Operation

Using the Controls



Changing the Cut-off Wheel



Securing rod

IMPORTANT

For manual cutting only diamond or CBN cut-off wheels with a metal body are allowed. Abrasive SiC or Al_2O_3 cut-off wheels or saw blades may not be used for cutting on Secotom-1.

- Move the manual cutting table into the upwards position and engage the securing rod into the locking position.
- Insert the stop pin into the hole of the inner flange.
- Use the 17 mm spanner to loosen the flange screw.
- Remove the outer flange and the wheel.

IMPORTANT

The tolerance between the spindle and inner flange is very small which means that the two surfaces must be absolutely clean. Never try to squeeze the cut-off wheel on as this may damage the spindle or the cut-off wheel. If there are any small burrs, remove them with grinding paper (grit size 1200).

- Mount the new cut-off wheel and remount the outer flange, with the machined face towards the inner flange.
- Insert the locking pin in the hole in the inner flange. Gently fasten the flange screw using the 17 mm spanner.
- Release the securing rod and move the manual cutting table down again.

Starting the Cutting Process



• Press the button, START \diamondsuit .

- Position the specimen correctly in front of the cut-off wheel. When cutting PCB's the light in the cutting table can be used to adjust and align the PCB.
- Adjust the guide rail.
- Move the specimen slowly along the guide rail towards the cutoff wheel.

IMPORTANT Always adjust the protection guard to a distance of about 3 mm above the specimen to be cut.

Guide rail

Stopping the Cutting Process

Removing the Protection Guard



Replacing the Protection Guard

The machine can be stopped at any time during the cutting process by pressing the STOP button \bigcirc .

When cutting very large PCB's or other samples it might be necessary to remove the protection guard to be able to cut through the entire length of a sample in one operation.

- Move the manual cutting table into the top position and engage the securing rod into the locking position.
- Remove the two screws holding the protection guard using a 4 mm Allen key. Keep the protection guard together with the two screws in a safe place.
- Release the securing rod and move the manual cutting table all the way down.
- Move the manual cutting table into the top position and engage the securing rod into the locking position.
- Place the protection guard in position and secure it with the 2 screws using a 4 mm Allen key.
- Release the securing rod and move the manual cutting table all the way down.

IMPORTANT Always put the protection guard back on again after cutting large samples. Always use safety goggles when cutting.

Removing the Guide Rail



When cutting very large PCB's or other samples it might be necessary to remove the guide rail to be able to cut through the sample in the correct position.

Remove the two screws holding the guide rail using a 3 mm Allen key. Keep the guide rail together with the two screws in a safe place.

Replacing the Guide Rail

Changing the Cooling Fluid

- Place the guide rail in position and secure it with the 2 screws using a 3 mm Allen key.
- Hang the outlet tube from the back of the machine into a bucket.
- Move the manual cutting table into the upwards position and make sure it is secured with the securing rod.
- Remove the peg from inside the cutting chamber and allow all cooling fluid to run into the bucket.
- Use a soft brush and clean water to clean the inside of the cutting chamber.
- Empty the cutting chamber of water and reinsert the peg.
- Fill the cutting chamber with water and additive as described in the section on:
 - Filling the Cut-off Machine with Cutting Fluid.
- Release the securing rod and move the manual cutting table down again.
- Remove the bucket and dispose of the water according to the local regulations.

3. Routine Maintenance

Daily Service	 Clean the cutting chamber, especially the cutting table and the T-slots. To ensure a longer lifetime for your Secotom, Struers strongly recommends daily cleaning of the cutting chamber:
Weekly Service	 Clean the cutting chamber thoroughly. Oil the spindle/bushing where the cut-off wheel is mounted (e.g. with universal household oil).
Checking the Recirculation Cooling Unit	 Check the level of the cooling water after 8 hours use or at least every week. Refill if necessary. Replace the cooling fluid if it appears dirty (build up of cutting debris). Remember to add Struers additive, Corrozip. To check the concentration of additive, use a refractometer. Please see the instructions for use on the label. It is recommended to change the cooling water at least once a month to prevent the growth of microorganisms.
Monthly Service	If necessary, ■ Oil the hinges of the cutting table (e.g. with universal household

oil).

Cut-off Wheels Abrasive Cut-off Wheels	Store the dry cut-off wheels in a horizontal position on a plane surface, preferably under light pressure.	
Diamond and CBN Cut-off Wheels	A clean and dry cut-off wheel does not corrode. Therefore clean and dry the cut-off wheel before it is put away. Use ordinary household detergents.	
Dressing Cut-off Wheels	A newly dressed cut-off wheel will give an optimum cut. A badly maintained and dressed cut-off wheel demands a higher cutting pressure that will result in more frictional heat. The wheel may also bend and cause a skew cut. A combination of both factors may result in damage to the cut-off wheel. It is a fact that a badly dressed cut-off wheel is the most frequent reason for damage to the wheel.	
	 To dress the cut-off wheel, use the aluminium oxide dressing stick supplied with the cut-off wheel. Mount the dressing stick like a workpiece. Do not dress manually. Cut through the dressing stick using a moderate cutting pressure and plenty of cooling fluid. Repeat the treatment if the cut-off wheel does not cut satisfactorily. <i>NB</i> Do not perform more dressing than necessary as this will cause needless wear on the wheel. 	

Reference Guide

Tal	ble of Contents	Page
1.	Consumables	17
2.	Trouble-Shooting	18
3. Re	Maintenance placing the Bulb in the Cutting Table	19 19
4.	Technical Data	20

1. 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.

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

Specification	Cat No:
Corrozip	
Additive for Cooling Fluid. To protect the machine from corrosion and to improve cutting and cooling qualities. For Recirculation Cooling Unit.	
1 I 5 I	449900045 449900046
Corrozip-Cu	
Additive for Cooling Fluid. To protect the machine from corrosion and to improve cutting and cooling qualities. For Recirculation Cooling Unit. For machines which mainly cut copper and copper alloys.	
1 I 5 I	49900058 49900059
Dressing stick Aluminium oxide stick, 1 pc	40800044

Cut-off Wheels

Other consumables

2. Trouble-Shooting

Error	Cause	Action
Vibrations	The diamond layer is worn down to the level of the metal disc	Replace with a new cut-off wheel
	The workpiece forces the cut-off wheel to the side when cutting. Heavy friction causes vibrations	Cut more slowly
No coolant during cutting	The level of cooling fluid is too low The rubber foam is dry	Refill to the recommended level Wet the rubber foam before placing it into the holder, the capillary action will then keep the moisture level constant
Cutting chamber shows signs of corrosion	The workpiece is made of Copper/ Copper Alloy.	Use Corrozip-Cu.

3. Maintenance

Replacing the Bulb in the Cutting Table





- Move the manual cutting table into the top position and engage the securing rod into the locking position.
- Remove the 2 screws securing the shield around the bulb using a 3 mm Allen key.
- Replace the defective bulb with a new 12 V 20 W halogen bulb. (Do not touch the glass with your fingers).
- Secure the shield again with the 2 screws.
- Release the securing rod and move the manual cutting table down again.

4. Technical Data

Subject		Specification	S	
Cutting	Motor		800 W	
	Voltage/frequency		Nom. load	
	1/3 x 220 - 240 V / 50-60 H	Ηz	3.1 A	
	Cut-off wheels		203 mm (8") dia.	
	Output axle		Rotational speed	2.800 rpm at 50 Hz 3.400 rpm at 60 Hz
			Diameter:	12.7/22 mm dia. (0.5 / 0.86" dia.)
Safety standards	Please refer to the Declaration of Conformity			
Noise level	Approx. 56 dB (A) measured at idle running, at a distance of 1.0 m/39.4" from the machine.			
Dimensions	Width: 575 mm / 22.6" Depth: 735 mm / 28.9" Height: 335 mm / 13.2" Weight: 46 kg / 101 lb			
Operating	Surrounding temperatur	re	5-40°C/41-104°F	
environment	Humidity		0-95% RH non condensing	



English	Declaration of Conformity		
Manufacturer	Struers ApS Pederstrupvej 84 DK-2750 Ballerup, Denmark Telephone +45 44 600 800		
Herewith declares that	Name:Secotom-1Cat. No.:05706127Function:Precision cut-off machineType No.:570		
fulfils all the relevant provision	s of the		
Machinery Directive 2006/42/EC	according to the following standard(s): EN ISO 12100:2010, EN 60204-1:2006/AC:2010, EN ISO 14120	D:2015.	
and is in conformity with the:			
EMC Directive 2014/30/EU	according to the following standard(s): EN 61000-6-1:2007, EN 61000-6-3:2007/A1:2011.		
RoHS Directive 2011/65/EU	according to the following standard(s): EN 50581:2012.		
Supplementary Information	The equipment complies with the following standards: NFPA70:2014, NFPA79:2012, FCC 47 CFR part 15.		
The above has been declared according to the global approach, module A.			
Authorized to compile the Technical File:			
Alevs Trensl			
Klavs Tvenge Director of Business Development	-		
Struers ApS Pederstrupvej 84			
DK-2750 Ballerup, Denmark		Date of Issue: 2017.10.05	



Pederstrupvej 84 DK-2750 Ballerup Denmark

Struers

Manual No.: 15707001 Date of Release 2016.07.22

Secotom-1

Spare Parts and Diagrams



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

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Spare Parts and Diagrams

Table of contents

Drawing

Secotom-1

Drawings	
Secotom-1, complete15700	002B
Lamp 15700	010D
Cutting table15700)020F
Front plate	030E
Bottom, complete15700	051B
Cabinet	070G

Diagrams

0		
Wiring Diagram	(2 pages)	 15703451D

Some of the drawings may contain position numbers not used in connection with this manual.

Spare Part List for Secotom-1

Drawing	Pos.	Spare Part	Cat no.
15700002	0120	Secotom-1, complete	2FU14400
	0195	Power cable Euro norm	2WC04668
		Power cable US norm	2WC09003
	0230 0240	Suction pipe O-ring for suction pipe	15030844 2IO26215
	02.0		
15700010	0050	Lamp	
	0050	Hose for power supply cable (1 m)	2HW00314 2NILI31112
	0140	Hose clamping	2NM10200
15700020		Cutting table	
10100020		Securing rod	15702901
	0060	Angle for cutting table	15700340
	0210	Spring	2GF11082
	0230	Finger screw	2GH00210
	0240	Screen	15700360
	0260	Rod	15700895
	0300	Finger screw	2GH00211
15700030		Front panel	
	0030	Contact element	2SB10059
	0040	Coupling	2SA41632
	0050	Button	2SA40021
	0060	Cover for button, red	2SA41306
	0070	Cover for button, green	25A41510
15700051		Bottom plate	
	0070	Plug	15700055
	0400	O-ring for plug	21016010
	0190	Flange, back	15030101
	0200	Ring for 622 disc	10030102
	0210	Flange, nonc	15030753
	0230	Holder	15700805
	0235	Foam plate	15700845
	0240	Crinkle washer M4	2ZI20403
	0270	ON/OFF switch	2SS00007
15700070		Cabinet	
	0090	Hood for plug	2XM00001
	0100	Gasket for plug	2XM00002
		Miscellaneous	
		Counter holder	14940701
		Sponge for cut-off wheel	15700845

Secotom-1 Spare Parts and Diagrams

Spare Part List for Secotom-1

Drawing	Pos.	Spare Part	Cat no.
15700002		Secotom-1, complete	
	0120	10.0A T Fuse glass tube	2FU14400
	0195	Power cable Euro norm	2WC04668
	0000	Power cable US norm	2000003
	0230	Suction pipe	15030844
	0240	O-mig for succion pipe	21020215
15700010	0050	Lamp	
	0050	Halogen bulb	2HW00314
	0130	Hose for power supply cable (1 m)	2NU31112
	0140	Hose clamping	2110110200
15700020		Cutting table	45700004
	0060	Securing rod	15702901
	0060	Angle for cutting table	15700340
	0210	Spring Finder screw	2GF11002 2GH00210
	0230	Screen	15700360
	0240	Rod	15700895
	0300	Finger screw	2GH00211
15700030		Front panel	
	0030	Contact element	2SB10059
	0040	Coupling	2SA41632
	0050	Button	2SA40021
	0060	Cover for button, red	2SA41306
	0070	Cover for button, green	2SA41510
15700051		Bottom plate	
	0070	Plug	15700055
	0.400	O-ring for plug	21016010
	0190	Flange, back	15030101
	0200	Ring for Ø22 disc	15030102
	0210	Flange, front	14940531
	0220	Holder	15700805
	0230	Foam plate	15700845
	0240	Crinkle washer M4	27120403
	0270	ON/OFF switch	2SS00007
15700070		Cabinet	
	0090	Hood for plug	2XM00001
	0100	Gasket for plug	2XM00002
		Miscellaneous	
		Counter holder	14940701
		Sponge for cut-off wheel	15700845



















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