metkon
Technology behind Specimen

ABRASIVE CUTTING

SERVOCUT 402

QUARTER CENTURY OF EXPERIENCE

metkon.com

METALLOGRAPHIC
ABRASIVE CUTTING MACHINE

SERVOCUT 402

SERVOCUT 402 is an advanced universal metallographic cutting machine with high cutting capacity that used to cut a very wide range of materials.

- Modern and sturdy design
- Extraordinary access for easy handling
- X-Y-Z three axes cutting capability
- Advanced cutting features for difficult workpieces
- Programmable with colored HMI touch screen controls
- Ergonomic Joystick control offers excellent application versatility
- Most versatile metallographic cutting machine in its class

DESIGN

Specimen integrity begins with high quality cutting. Perfectly cut surfaces reduce the number of subsequent preparation stages and shorten the total sample preparation time to the minimum. SERVOCUT 402 offers the advantage of combining different cutting techniques and methods into the same machine to obtain superior cut surfaces for a broad range of heavy duty cutting applications. Automatic cutting guarantees the highest level of reproducibility through automatic processing of the specimen.

SERVOCUT 402 has a robust and reliable design with low noise and emission levels. The modern and sturdy design with powerful 7.5 kW cutting motor ensures fast and efficient cutting through the hardest and complex materials with precise motor driven axis controls.

SERVOCUT 402 has X-Y-Z triple axes cutting capability:

Z-axis Chop cutting
The specimen is clamped and the cut-off wheel approaches the specimen.

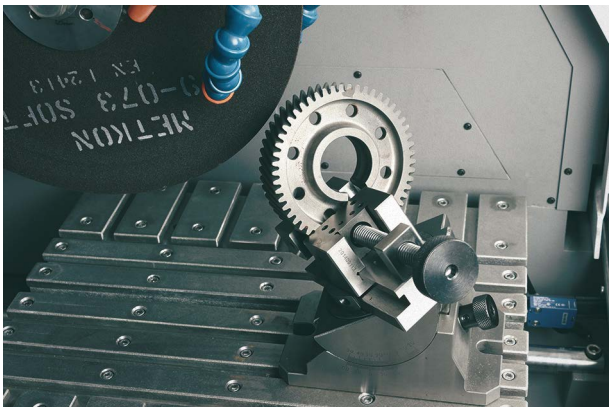
Y-axis Table-feed cutting
Feeding the clamped specimen into a rotating cut-off wheel using a T-slotted feed table.

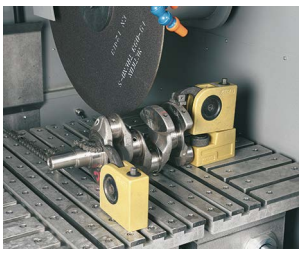
X-axis Parallel Cutting (optional)
Parallel serial sectioning in the x-axis with optional movable x-table.

SERVOCUT 402 consists of a cast aluminium base on which the motor and the working space are provided in the form of two separate housings.

A large, T-slotted feed table located in the cutter's generous work area can accommodate a variety of different clamping devices which need to be selected. The feed table provides a long travel depth making the SERVOCUT 402 ideal for cutting long or deep samples in a single pass. Stainless small parts tray to catch small specimens is supplied with the cutting table as standard.

The front sliding door and side cover can be completely opened for easy access and handling to all sides. Side access ports make it possible to make transverse sections on long specimens. A large window of Lexan and a sealed LED lamp in the cutting chamber allow precise observation of the cutting process at an optimum degree of safety.



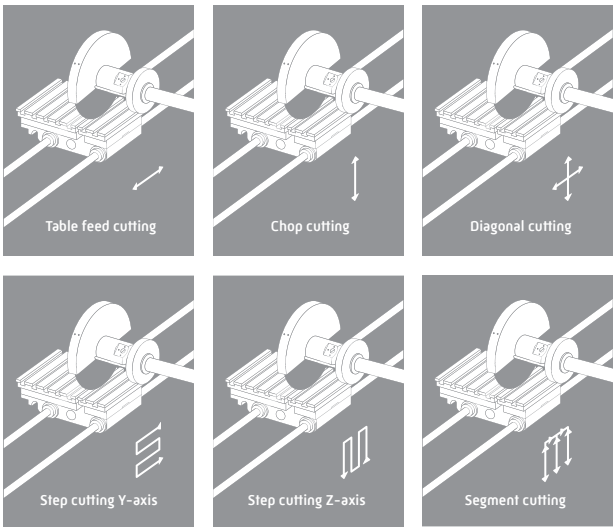


Extra large cutting chamber with easy access and handling.

Safety

SERVOCUT 402 automatic cutting machine has the highest safety standards. The interlocking safety device does not allow the motor to be started unless the sliding door or the side access ports are closed. The sliding door cannot be opened before the cutting motor is stopped. The electronic brake system, which is a standard feature, brings the cutter to a quick full stop in seconds after it has been switched off. A two-hand control feature ensures that the operator's hands are completely out during positioning and prevented from reaching into the moving components with open sliding door. An optional stack light is located on the top of the equipment to provide visual and audible indication of machine status. Easily accessed and operated E-stop button ensures immediate shut down.

AUTOMATIC OPERATION



SERVOCUT 402 automatic models have advanced techniques and software with programmable HMI touch screen controls increasing the productivity, sample consistency and minimize operator intervention. Control of X/Y/Z Axis can also be performed with the ergonomic proportional Joystick that offers smooth and precise positioning.

Cutting Methods

Chop cutting (Z-axis) and Table feed cutting (Y-axis) combined with pulse cutting is standard. New cutting methods ensure easy cutting of large and complex specimens.

Multi-Slice Cutting

The optional automatic x-table allows programmable plane parallel sectioning. Slices of equal thickness with number of slices as well as programming slices of different thickness is possible.

Optional Cutting Methods

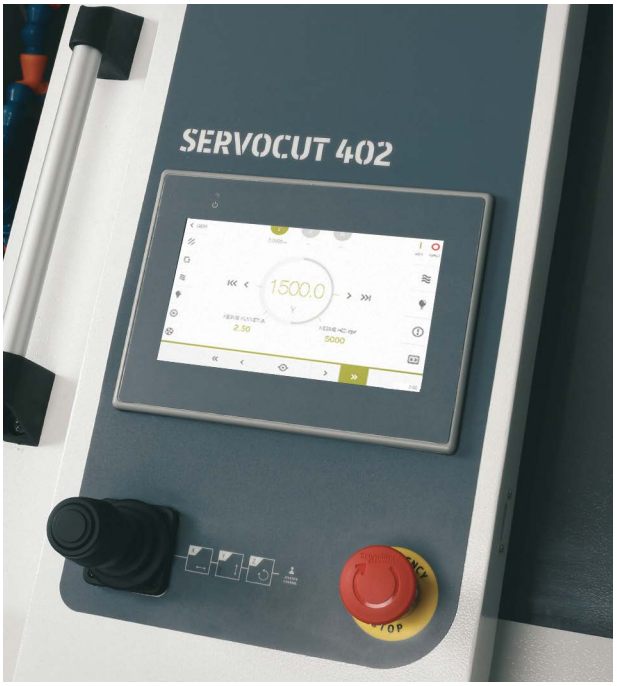
Optional cutting methods make SERVOCUT 402 perfect choice for a broad range of heavy-duty cutting applications.
Diagonal Cut: For increased cutting capacity.
Step Cut: For extra hard materials.
Segment Cut: For difficult and complex shaped materials.

Cutting Parameters

The preselection of the cutting force level as well as the setting of cutting feed rate (0,02-5mm/sec) is possible from the touch screen LCD. The feed rate is automatically adjusted, if needed reduced, resulting in perfect cuts and eliminating sample and machine damage. Pulse cutting mode is a standard feature in all automatic models for cutting extra hard specimens. Integrated speed regulating unit is available to adjust the cut-off wheel speed between 600-2400 rpm.

Programmable Return Positions

SERVOCUT 402 has 3 different stop modes:
Stay at the end of cutting: Stops when the specimen has been cut through.
Back to starting point: Stops when it has returned to its starting point.
Back to reference point: Stops when the ultimate reset point in all axes has been reached.



HMI touch screen controls with various cutting methods and database with cutting programs and maintenance monitoring

Database

A library of 99 different cutting programs with related specimen name or number can be saved with all cutting parameters which can be recalled at any time. Data with Metkon cutting consumables is also listed for easy selection.

Ergonomic Joystick Control

Two Hand Control For Safety Operation

Easy Exchange of Cut Off Wheel

FUMEFILTER, Fume and Mist Removing Unit

NEW CUTTING FEATURES

Instafeed

Optimizes the feedrate according to the specimen hardness and the preset cutting force. It increases the cut off wheel life and ensures optimum cutting without overloading.

Table Oscillation

During chop cutting the table makes an oscillation movement to minimize the contact and area to reduce the risk of specimen damage.

Rapid Pulse

Reduces contact time and ensures maximum cooling of specimen.

Combined Cut

For cutting larger specimens that cannot be cut in one cycle. Y and Z axis are combined for additional cutting capacity. First the cutting is performed with Z-axis chop cutting, subsequently the specimen is cut with Y-axis Table-feed.

Fast cutting with efficient cooling

CLAMPING DEVICES

Quick Acting Clamping Vise Assembly

GR 0029
GR 0030

Serial Clamping Device for clamping multiple specimens from 1 to 3

GR 0609

Angular Precision Clamping Device in 3-Axis Direction

GR 0612

Vertical Clamping Device with clamping shoe

15 02

Height Block

15 04

Chain spanner set with anchor block

GR 0033

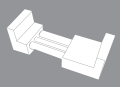
V-Block for holding parts above table slots

15 00

Adjustable V-Support

GR 0615
GR 0616
GR 0617
GR 0618

Fastener Vise for Longitudinal Sectioning of Ball Joints, Screws, Tubes etc.



GR 0310
GR 0312

Many sample preparation applications require the sectioning of a specimen from a small or irregularly shaped sample or component part. The small size or irregular sample shape can create positioning and clamping difficulties for the operator. To overcome these difficulties,

METKON offers a number of special clamping devices for use with SERVOCUT abrasive cutters. METKON cut-off machines are equipped with stainless T - slot clamping tables. All clamping devices are made of stainless steel and can be attached to the cutters T - slot beds in seconds for fast and positive clamping of parts having virtually any configuration.

ACCESSORIES

Manual/Automatic Table Drive System

T-table can be controlled both automatically and manually with a hand-wheel.

FUMEFILTER

An advanced fume and mist removing unit that is optionally available for SERVOCUT 402. Removes coolant mist for better illumination and viewing with centrifugal separator.

Laser Alignment Unit

For rapid and accurate positioning of the cut-off wheel and helps to define the exact cutting line.

3-Lights Warning Beacon with Audible Signal

Informs operator about machine status from the long distance.

Cooling System

A closed loop recirculating cooling unit is a standard part of the machine. The cutting surface is cooled by spray nozzles whose water jets hit both the cutting wheel and the specimen. This provides an efficient cooling of the sample and prevents the overheating of the surface structure.

BANDCOOL

It is optionally available for cutting materials which generate a lot of swarf or for higher volume usage. Band filter conveyor for the automatic collection and disposal of swarf with large capacity of 115 lt. for long continuous usage. It is environmentally friendly filtering the coolant and depositing the swarf in a separate container for easy disposal.

Recirculating Cooling Unit

Magnetic Collector Rod

Coolant Level Sensor

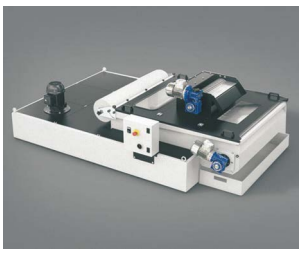
Informs operator when coolant level is insufficient.

Magnetic Collector Rod

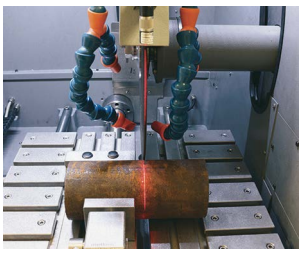
Collects the finest magnetic particles from the cooling liquid and keep it clean.

AutoClean

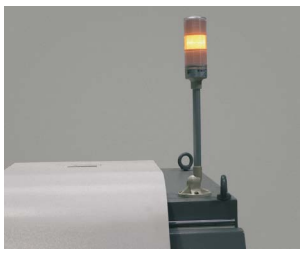
Cleaning & Maintenance is an important job and can be time-consuming. The AutoClean function provides a thorough cleaning of the entire cutting chamber. The AutoClean function reduces operator effort, saves time and lowers maintenance while improving overall operation and accuracy of the instrument. The cleaning gun which is mounted externally for easy access can be used for cleaning the remained residual on horizontal surfaces.



BANDCOOL, Band Filter Unit



Laser Alignment Unit



3-Lights Warning Beacon

Auto Clean Function

SPECIFICATIONS

ORDER NO	15 67	15 67-AX	15 66	15 66-AX	15 66-MX	15 65	15 65-MX
MODEL NO	402-AA	402-AA-AX	402-MA	402-MA-AX	402-MA-MX	402-MM	402-MM-MX
Max. Wheel Diameter	Ø400 mm	Ø400 mm	Ø400 mm	Ø400 mm	Ø400 mm	Ø400 mm	Ø400 mm
Max. Cutting Capacity, Ø	Ø150 mm	Ø150 mm	Ø150 mm	Ø150 mm	Ø150 mm	Ø150 mm	Ø150 mm
Max. Cutting Capacity, HxD	#85x350 mm	#85x350 mm	#85x350 mm	#85x350 mm	#85x350 mm	#85x350 mm	#85x350 mm
Z-Axis Travel, (mm)	255	255	255	255	255	255	255
Y-Axis Travel, (mm)	300	300	300	300	300	300	300
X-Axis Travel, (mm)	-	150	-	150	150	-	150
T-Table Dimension, (mm)	550x484	(446+150)x484	550x484	(446+150)x484	(446+150)x484	550x484	(446+150)x484
T-Slot Dimension, (mm)	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm
Cutting Motor Power (S1)	7.5 kW	7.5 kW	7.5 kW	7.5 kW	7.5 kW	7.5 kW	7.5 kW
Wheel Speed, RPM	600-2400	600-2400	600-2400	600-2400	600-2400	2200	2200
Cutting Feedrate, (µm/s)	20-5000	20-5000	20-5000	20-5000	20-5000	-	-
HMI Touch Screen	7 inch	7 inch	7 inch	7 inch	7 inch	-	-
Chop Cutting, Z- Axis	Auto	Auto	Manual	Manual	Manual	Manual	Manual
Table Feed Cutting, Y-Axis	Auto	Auto	Auto	Auto	Auto	Manual	Manual
Parallel Cutting, X-Axis	-	Auto	-	Auto	Manual	-	Manual
Table Oscillating Cutting	Standard	Standard	-	-	-	-	-
Rapid Pulse Cutting	Standard	Standard	Standard	Standard	Standard	-	-
Smart Feed Control	Standard	Standard	Standard	Standard	Standard	-	-
StepCut; SegmentCut; DiagonalCut	Optional	Optional	-	-	-	-	-
Automatic Cleaning System	Optional	Optional	Optional	Optional	Optional	-	-
Size WxDxH, (cm)	114x112x169	114x112x169	114x112x169	114x112x169	114x112x169	114x112x169	114x112x169
Weight	600 kgs	600 kgs	600 kgs	600 kgs	600 kgs	600 kgs	600 kgs
Recirculation Cooling Unit	135 lt	135 lt	135 lt	135 lt	135 lt	135 lt	135 lt

SPECIFICATIONS

15 67 — **SERVOCUT 402-AA**

Automatic Abrasive Cutting Machine Programmable with 7" HMI touch screen control, with Siemens PLC control unit, with automatic chop cutting and automatic table-feed cutting systems, with various cutting methods, programmable with coloured LCD display of cutting parameters, accurate and motorized positioning of the specimen in X - Y and Z axis (X-axis for plane parallel cutting is optional), ergonomic joystick with adjustable speed control, integrated feed path control, power dependent adjustable feed rate, variable cutting force, pulse cutting mode, bar graph overload display, compact cutting motor, with variable cutting speed 600-2400 rpm, with electronic brake system, cutting capacity upto 130/150 mm solid stock, with cut-off wheels upto ø350/400mm, twin T-slotted table(Y-direction only) made of stainless steel, bottom part as rugged alloy base casting, extraordinary access for easy handling with sliding door and side openings, with extra advanced cutting methods: "Rapid Pulse Cutting, Table Oscillation Cutting, Instafeed Cutting, Automatic Chop Cutting, Automatic Table Feed Cutting, Combined Cutting" Ready for operation. Without clamping devices, without recirculating cooling unit.

Includes a standard set of cutting consumables composed of;
- An assortement of 20 cut-off wheels with 400 mm dia.
- 5 lt of Metcool cooling fluid.

400 V, 3 phase, 50/60 Hz.

15 77-AX — **SERVOCUT 402-AA-AX**

as above(15 67) and including an automatically driven X-axis table with 150 mm travel for programmable serial plane parallel cutting.

GR 0578-00 — Transformer kit for 200-240 VAC, 3 phase, 50/60 Hz mains voltage.

GR 0925 — Software package for optional cutting methods;
- Diagonal Cut
- Step Cut
- Segment Cut

15 66 — **SERVOCUT 402-MA**

Automatic Abrasive Cutting Machine Programmable with 7" HMI touch screen control, with Siemens PLC control unit, with handwheel driven chop cutting and automatic driven table-feed cutting systems, with various cutting methods, programmable with coloured LCD display of cutting parameters, accurate and motorized positioning of the specimen in X and Y axis (X-axis for plane parallel cutting is optional), ergonomic joystick with adjustable speed control, integrated feed path control, power dependent adjustable feed rate, variable cutting force, pulse cutting mode, bar graph overload display, compact cutting motor, with variable cutting speed 600-2400 rpm, with electronic brake system, cutting capacity upto 130/150 mm solid stock, with cut-off wheels upto ø350/400mm, twin T-slotted table(Y-direction only) made of stainless steel, bottom part as rugged alloy base casting, extraordinary access for easy handling with sliding door and side openings, with extra advanced cutting methods: "Rapid Pulse Cutting, Instafeed Cutting, Automatic Chop Cutting, Automatic Table Feed Cutting" Ready for operation. Without clamping devices, without recirculating cooling unit.

Includes a standard set of cutting consumables composed of;
- An assortement of 20 cut-off wheels with 400 mm dia.
- 5 lt of Metcool cooling fluid.

400 V, 3 phase, 50/60 Hz.

15 66-MX — **SERVOCUT 402-MA-MX**

as above(15 66) and including a manually driven X-axis table with 150 mm travel for plane parallel cutting.

15 66-AX — **SERVOCUT 402-MA-AX**

as above(15 66) and including an automatically driven X-axis table with 150 mm travel for programmable serial plane parallel cutting.

GR 0578-00 — Transformer kit for 200-240 VAC, 3 phase, 50/60 Hz mains voltage.

15 65 — **SERVOCUT 402-MM**

Abrasive Cutting Machine With handwheel driven chop cutting and table-feed cutting systems, manual positioning of the specimen in X and Y axis (X-axis for plane parallel cutting is optional), manual positioning of the cutting wheel in Z-axis, compact cutting motor, 2200 rpm cutting speed, with electronic brake system, cutting capacity upto 130/150 mm solid stock, with cut-off wheels upto Ø350/400mm, twin T-slotted clamping table made of stainless steel, bottom part as rugged alloy base casting, extraordinary access for easy handling with sliding door and side openings, Ready for operation. Without clamping devices, without recirculating cooling unit.

Includes a standard set of cutting consumables composed of;
- An assortement of 20 cut-off wheels with 400 mm dia.
- 5 lt of Metcool cooling fluid.

400 V, 3 phase, 50/60 Hz.

15 65-MX — **SERVOCUT 402-MM-MX**

as above(15 65) and including a manually driven X-axis table with 150 mm travel for plane parallel cutting.

GR 1224 — Transformer kit for 200-240 VAC, 3 phase, 50/60 Hz mains voltage.

SPECIFICATIONS

Cooling Systems for SERVOCUT 402

GR 1544-00	Recirculation cooling tank with pump system, 135 lt tank capacity
YM 88 15	Fine filter sheets for recirculation cooling tank (GR 1544), 10 pcs
GR 1559	Coolant level sensor for recirculation cooling tank, Informs operator when coolant level is insufficent. (for MA and AA models)
GR 1540	Magnetic collector rod for recirculation cooling tank
GR 1553	BANDCOOL Band Filter Unit for SERVOCUT 502/402/302 Band filter conveyor for the automatic collection and disposal of swarf, with capacity of 115 lt., with fluid level indicator, complete system on wheels, with connection kit. 400V, 3phase,50Hz
YM 8877	Filter roll for BANDCOOL, 50 mt.

Clamping Devices for SERVOCUT 402

GR 0029	Quick Acting Clamping Vise Assembly, Right, for SRC 402 (Stainless Steel)
GR 0030	Quick Acting Clamping Vise Assembly, Left, for SRC 402 (Stainless Steel)
GR 0154	Compact Vise Assembly, Spring Loaded, for SRC 402 (Stainless Steel)
15 02	MBU 1031 Vertical Clamping Device with clamping shoe, clamping height upto 115mm.
15 04	MK 10 22 Height Block, 70 mm
GR 0310	Fastener vise for longitudinal sectioning of screws,ball joint, tubes, etc. from 60 to 100 mm. in length
GR 0312	Fastener vise for longitudinal sectioning of screws,ball joint, tubes, etc. from 90 to 150 mm. in length
GR 0609	Serial Clamping Device for clamping multiple specimens from 1 to 3
GR 0612	Angular Precision Clamping Device in 3-Axis Direction
GR 0033	Chain spanner set with anchor block
15 00	V-Block for holding parts above table slots
GR 0615	Adjustable V-Support, Small (Height Range: 57-67mm)
GR 0616	Adjustable V-Support, Medium (Height Range: 65-85mm)
GR 0617	Adjustable V-Support, Large (Height Range: 85-115mm)
GR 0618	Adjustable V-Support, Extra Large(Height Range: 115-155mm)

Accessories for SERVOCUT 402

GR 1554	FUMEFILTER Centrifugal Seperator Removes coolant mist for better illumination and viewing (To be ordered simultaneously together with the machine order)
GR 0139	AUTOCLEAN Automatic Cleaning System for cutting chamber (To be ordered simultaneously together with the machine order)
GR 0140	3 lights warning beacon with audible signal (To be ordered simultaneously together with the machine order)
GR 0125	Laser alligment unit (To be ordered simultaneously together with the machine order)
GR 1707	Manual/Auto Table drive system with electromagnetic clutch(y-axis) (To be ordered simultaneously together with the machine order)
GR 0992-01	Flange Set with larger diameter, Ø133 mm

*** Other voltages and frequencies available upon request. Please state when ordering. All specifications are subject to change without notice.**

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