metkon
Technology behind Specimen

ABRASIVE CUTTING

SERVOCUT 302



QUARTER CENTURY OF EXPERIENCE

metkon.com

METALLOGRAPHIC
ABRASIVE CUTTING MACHINE

SERVOCUT 302

SERVOCUT 302 is an advanced universal metallographic cutting machine 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 302 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 302 has a robust and reliable design with low noise and emission levels. The modern and sturdy design with powerful 4 kW cutting motor ensures fast and efficient cutting through the hardest and complex materials with precise motor driven axis controls.

SERVOCUT 302 has X-Y-Z triple axes cutting capability:

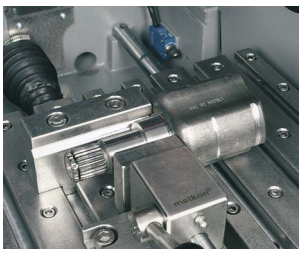
Z-axis Chop cutting
The specimen is clamped and the cut-off wheel approaches the specimen.

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 302 consists of a cast aluminium base on which the motor and the working space are provided in the from 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 302 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.

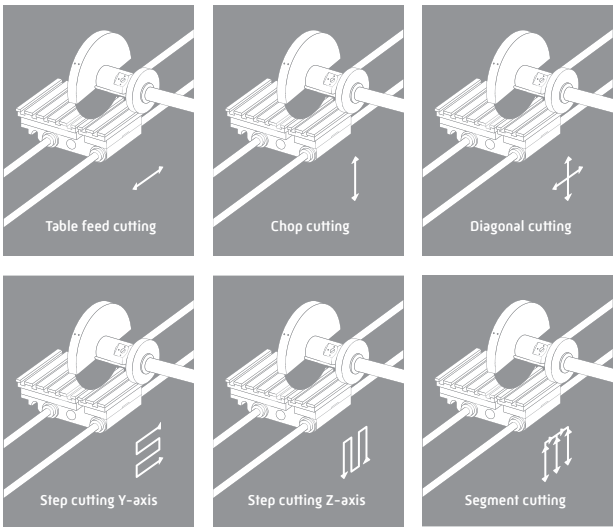


Extra large cutting chamber with easy access and handling.

Safety

SERVOCUT 302 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 302 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 ensures 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 302 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.
Combined Cut: For increasing cutting capacity.

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 600-4000 rpm.

Programmable Return Positions

SERVOCUT 302 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.

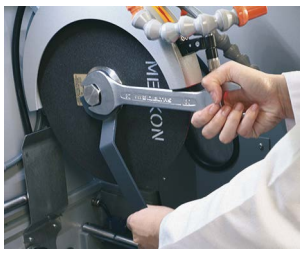
HMI touch screen controls with various cutting methods and database with cutting programs and maintenance monitoring

Database

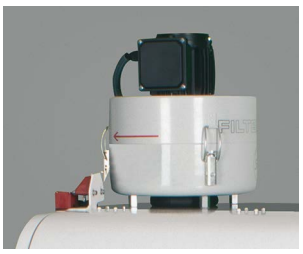
A library of 99 different cutting programs with related specimen name or number can be saved with all cutting parameters which can be recalled at any time. Data with Metkon cutting consumables is also listed for easy selection.

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

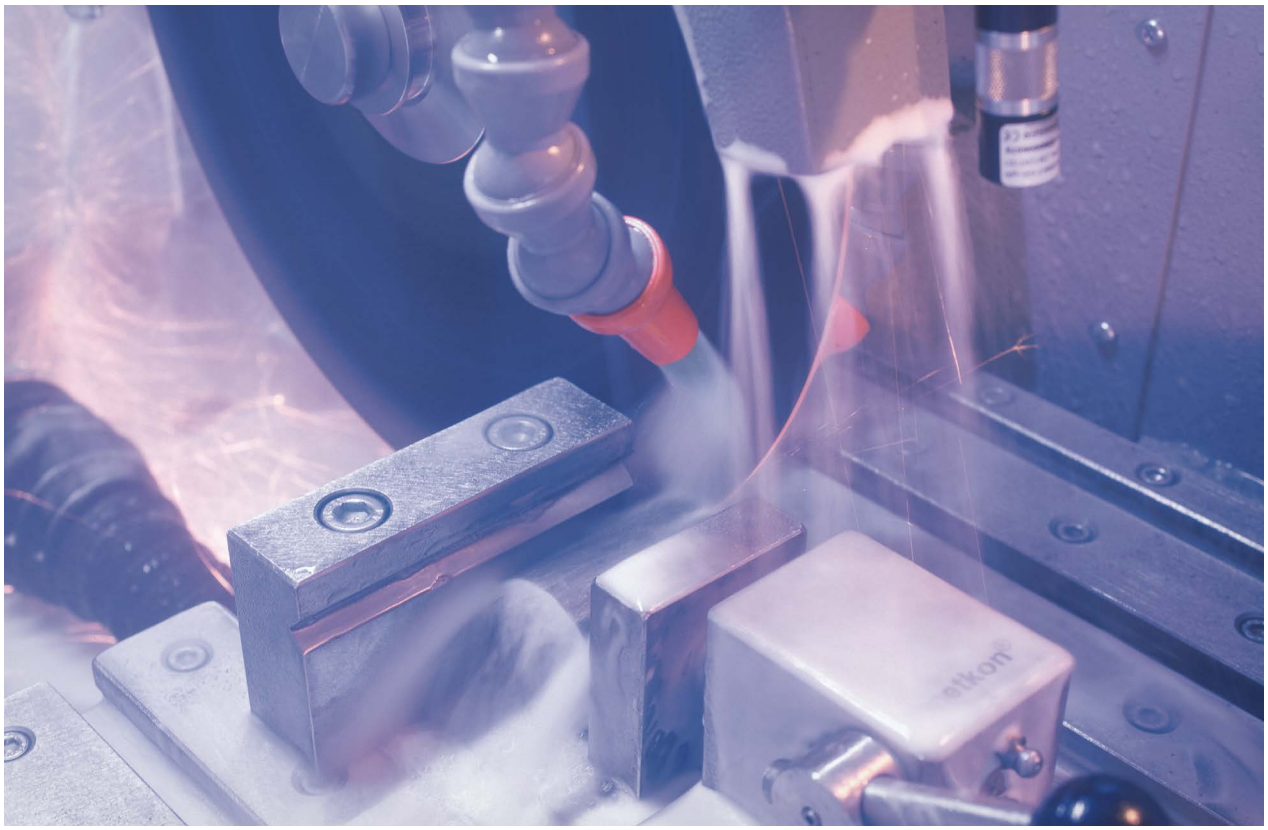
During chop cutting the table makes an oscillation movement to minimize the contact and area to reduce the risk of specimen damage.

Rapid Pulse

Reduces contact time and ensures maximum cooling of specimen.

Combined Cut (Optional)

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.



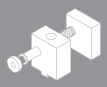
Fast cutting with efficient cooling

CLAMPING DEVICES

Quick Acting Clamping Vise Assembly

GR 0170
GR 0172

Spring Loaded Compact Vise Assembly



GR 0151

Angular Precision Clamping Device in 3-Axis Direction

GR 0612

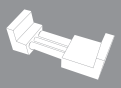
Vertical Clamping Device with clamping shoe

15 01

Height Block

15 03

Fastener Vise for Longitudinal Sectioning of Ball Joints, 60-100 mm



GR 0310

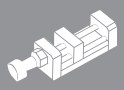
V-Block for holding parts above table slots

15 00

Adjustable V-Support

GR 0615
GR 0616

Fastener Vise for Longitudinal Sectioning of Screws



GR 0453

Many sample preparations 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 302. Removes coolant mist for better illumination and viewing with centrifugal separator.

Laser Alignment Unit

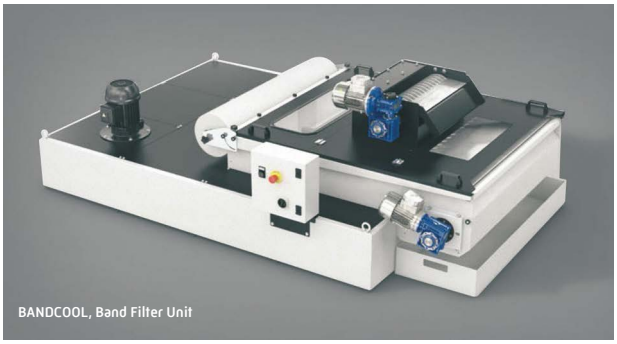
For rapid and accurate positioning of the cut-off wheel and helps to define the exact cutting line.

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.



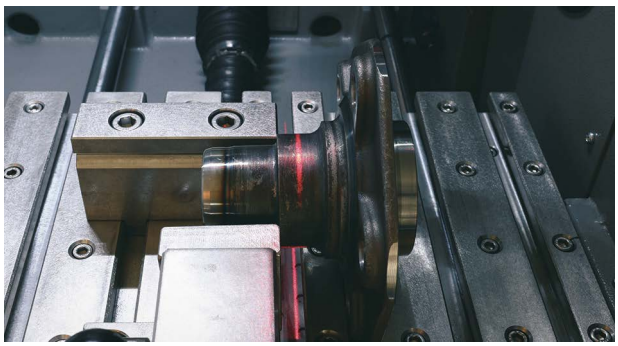
BANDCOOL, Band Filter Unit

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.



Laser Alignment Unit

SPECIFICATIONS

ORDER NO	15 57	15 57-AX	15 56	15 56-AX
MODEL NO	302-AA	302-AA-AX	302-MA	302-MA-AX
Max. Wheel Diameter	Ø300 mm	Ø300 mm	Ø300 mm	Ø300 mm
Max. Cutting Capacity, Ø	Ø110 mm	Ø110 mm	Ø110 mm	Ø110 mm
Max. Cutting Capacity, HxD	#70x200 mm	#70x200 mm	#70x200 mm	#70x200 mm
Z-Axis Travel, (mm)	125	125	125	125
Y-Axis Travel, (mm)	220	220	220	220
X-Axis Travel, (mm)	-	95	-	95
T-Table Dimension, (mm)	444x275	(395+95)x275	444x275	(395+95)x275
T-Slot Dimension, (mm)	12 mm	12 mm	12 mm	12 mm
Cutting Motor Power (S1)	4 kW	4 kW	4 kW	4 kW
Wheel Speed, RPM	600-4000	600-4000	600-4000	600-4000
Cutting Feedrate, (µm/s)	20-5000	20-5000	20-5000	20-5000
HMI Touch Screen	7 inch	7 inch	7 inch	7 inch
Chop Cutting, Z- Axis	Auto	Auto	Manual	Manual
Table Feed Cutting, Y-Axis	Auto	Auto	Auto	Auto
Parallel Cutting, X-Axis	-	Auto	-	Auto
Table Oscillating Cutting	Standard	Standard	-	-
Rapid Pulse Cutting	Standard	Standard	Standard	Standard
Smart Feed Control	Standard	Standard	Standard	Standard
StepCut; SegmentCut; DiagonalCut ,Combined Cut	Optional	Optional	-	-
Size WxDxH, (cm)	94x91x76	94x91x76	94x91x76	94x91x76
Weight	250 kgs	250 kgs	250 kgs	250 kgs
Recirculation Cooling Unit	80 lt	80 lt	80 lt	80 lt

15 57 — **SERVOCUT 302-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 600-4000 rpm, with electronic brake system, cutting capacity upto 90/110 mm solid stock, with cut-off wheels upto ø250/300mm, 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, Joystick 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 300 mm dia.
- 5 lt of Metcool cooling fluid.

400 V, 3 phase, 50/60 Hz.

15 57-AX — **SERVOCUT 302-AA-AX**

as above(15 57) and including an automatically driven X-axis table with 95 mm travel for programmable serial plane parallel cutting.

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

15 56 — **SERVOCUT 302-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 600-4000 rpm, with electronic brake system, cutting capacity upto 90/110 mm solid stock, with cut-off wheels upto ø250/300mm, 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, Manual Chop Cutting, Automatic Table Feed Cutting, Joystick 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 300 mm dia.
- 5 lt of Metcool cooling fluid.

400 V, 3 phase, 50/60 Hz.

15 56-AX — **SERVOCUT 302-MA-AX**

as above(15 56) and including an automatically driven X-axis table with 95 mm travel for programmable serial plane parallel cutting.

Cooling Systems for SERVOCUT 302

GR 1675 — Recirculation Cooling Tank, 80 lt, for SERVOCUT 302

YM 8813 — Fine filter sheets for recirculation cooling tank (GR 0018/0019/1675/1945/1988), 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 1561 — BANDCOOL Band Filter Unit for SERVOCUT 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 8878 — Filter roll for BANDCOOL, 50 m, SRC 302/402/502

Clamping Devices for SERVOCUT 302

GR 0170 — Quick Acting Clamping Vise Assembly, Left, for SRC 302 (Stainless Steel)

GR 0172 — Quick Acting Clamping Vise Assembly, Right, for SRC 302 (Stainless Steel)

GR 0151 — Compact Vise Assembly, Spring Loaded, for MTC 302/SRC 302 (Stainless Steel)

15 01 — MBU 1011 Vertical Clamping Device with clamping shoe, clamping height upto 90 mm.

15 03 — MK 10 21 Height Block, 60 mm

GR 0453 — Fastener vise for longitudinal sectioning of screws,fasteners tubes, etc. from 12 to 45 mm. in length

GR 0310 — Fastener vise for longitudinal sectioning of screws,ball joint, tubes, etc. from 60 to 100 mm. in length

GR 0612 — Angular Precision Clamping Device in 3-Axis Direction

— 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)

Accessories for SERVOCUT 302

GR 1681 — Cabinet for floor model - SRC 302/GEOCUT 302-S

GR 1682 — FUMEFILTER Centrifugal Separator for SRC 302/402/GEOCUT 302-S Removes coolant mist for better illumination and viewing (To be ordered simultaneously together with the machine order)

YM 8833 — Spare Filter Kit for FUMEFILTER (GR 1682)

GR 0105 — Laser alignment unit for SERVOCUT 302/GEOCUT 302-S (To be ordered simultaneously together with the machine order)

GR 1680 — Manual/Auto Table drive system with electromagnetic clutch(y-axis) (To be ordered simultaneously together with the machine order)

15 00

GR 0991-01 — Flange Set with larger diameter, Ø100 mm

GR 0998 — Extension Box for cutting long specimens from the left hand side opening, 50 cm length, for SERVOCUT 302

Spare Part Kit for SERVOCUT 302/GEOCUT 302-S

GR 1963 — Recommended Set of Spare Parts, SERVOCUT 302

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

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