ABRASIVE CUTTING

SERVOCUT 302
**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.

**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.

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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.

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.

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.
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.
CLAMPING DEVICES

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 l/h for long continuous usage. It is environmentally friendly filtering the coolant and depositing the swarf in a separate container for easy disposal.

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.
## SPECIFICATIONS

<table>
<thead>
<tr>
<th>ORDER NO</th>
<th>15 57</th>
<th>15 57-AX</th>
<th>15 56</th>
<th>15 56-AX</th>
<th>15 56-MX</th>
<th>15 55</th>
<th>15 55-MX</th>
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### Max. Wheel Diameter
- Ø300 mm
- Ø300 mm
- Ø300 mm
- Ø300 mm
- Ø100 mm
- Ø550 mm

### Max. Cutting Capacity, Ø
- Ø110 mm
- Ø110 mm
- Ø110 mm
- Ø110 mm
- Ø110 mm
- Ø110 mm

### Max. Cutting Capacity, HxD
- #70x200 mm
- #70x200 mm
- #70x200 mm
- #70x200 mm
- #70x200 mm
- #70x200 mm

### Z-Axis Travel, (mm)
- 125
- 125
- 125
- 125
- 125
- 125
- 125

### Y-Axis Travel, (mm)
- 220
- 220
- 220
- 220
- 220
- 220
- 220

### X-Axis Travel, (mm)
- -
- 95
- 95
- 95
- 95
- -
- 95

### T-Table Dimension, (mm)
- 495x275
- 495x275
- 495x275
- 495x275
- 495x275
- 495x275
- 495x275

### T-Slot Dimension, (mm)
- 12 mm
- 12 mm
- 12 mm
- 12 mm
- 12 mm
- 12 mm
- 12 mm

### Cutting Motor Power (S1)
- 4 kW
- 4 kW
- 4 kW
- 4 kW
- 4 kW
- 4 kW
- 4 kW

### Wheel Speed, RPM
- 600-4000
- 600-4000
- 600-4000
- 600-4000
- 600-4000
- 2800
- 2800

### 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
- -
- -
- -
- -
- -

### Size WxDxH, (cm)
- 94x99x76
- 94x99x76
- 94x99x76
- 94x99x76
- 94x99x76
- 94x99x76
- 94x99x76

### Weight
- 250 kgs
- 250 kgs
- 250 kgs
- 250 kgs
- 250 kgs
- 250 kgs
- 250 kgs

### Recirculation Cooling Unit
- 80 lt
- 80 lt
- 80 lt
- 80 lt
- 80 lt
- 80 lt
- 80 lt
15 57 — SERVOCUT 302-AA
Automatic Abrasive Cutting Machine Programmable with 7" HM 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 and Y axis (X-axis for plane parallel cutting is optional), ergonomic joustick 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 up to 90/110 mm solid stock, with cut-off wheels up to ø250/300 mm, hydraulic 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" Ready for operation. Without clamping devices, without recirculating cooling unit.

Includes a standard set of cutting consumables composed of:
- An assortment of 20 cut-off wheels with 300 mm dia.
- 5 lt of Metcool cooling fluid.
- An assortment of 20 cut-off wheels with ø300 mm dia.
- 5 lt of Metcool cooling fluid.

15 57-AX — SERVOCUT 302-AA-AX
as above(15 57) and including an automatically driven X-axis table with ø300 mm travel for programmable serial plane parallel cutting.

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

15 56 — SERVOCUT 302-MA
Automatic Abrasive Cutting Machine Programmable with 7" HM 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 joustick 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 up to 90/110 mm solid stock, with cut-off wheels up to ø250/300 mm, hydraulic 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" Ready for operation. Without clamping devices, without recirculating cooling unit.

Includes a standard set of cutting consumables composed of:
- An assortment of 20 cut-off wheels with 300 mm dia.
- 5 lt of Metcool cooling fluid.
- An assortment of 20 cut-off wheels with ø300 mm dia.
- 5 lt of Metcool cooling fluid.

15 56-MX — SERVOCUT 302-MA-MX
as above(15 56) and including a manually driven X-axis table with ø300 mm travel for plane parallel cutting.

15 56-AX — SERVOCUT 302-MA-AX
as above(15 56) and including an automatically driven X-axis table with ø300 mm travel for programmable serial plane parallel cutting.

15 55 — SERVOCUT 302-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, 2850 rpm cutting speed, with electronic brake system, cutting capacity up to 90/110 mm solid stock, with cut-off wheels up to ø250/300 mm, hydraulic 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 assortment of 20 cut-off wheels with 300 mm dia.
- 5 lt of Metcool cooling fluid.

15 55-MX — SERVOCUT 302-MM-MX
as above(15 55) and including a manually driven X-axis table with ø300 mm travel for plane parallel cutting.

Cooling Systems for SERVOCUT 302
GR 1675 — Recirculation cooling tank with pump system, 80 lt tank capacity
GR 1675 10 pcs
GR 1597 — Fine filter sheets for recirculation cooling tank (GR 0717/GR 1675), 10 pcs
GR 1552 — Coolant level sensor for recirculation cooling tank, Informs operator when coolant level is insufficient. (For MA and AA models)
GR 1553 — Magnetic collector rod for recirculation cooling tank
GR 0170 — BANDCOOL Band Filter Unit for SERVOCUT 500/400/302
GR 0170 10 pcs
GR 0453 — 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, 3 phase, 50Hz
GR 0877 — Filter roll for BANDCOOL, 50 mt.

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)
GR 0013 — MBU 1011 Vertical Clamping Device with clamping shoe, clamping height up to 90 mm.
GR 0013 10 pcs
GR 0037 — MK 10 21 Height Block, 60 mm
GR 0037 10 pcs
GR 0037 — Fastener vise for longitudinal sectioning of screws, fasteners, tubes, etc. from 12 to 45 mm. in length
GR 0037 — Fastener vise for longitudinal sectioning of screws, ball joint, tubes, etc. from 60 to 100 mm. in length
GR 0037 — Angular Precision Clamping Device in 3-Axis Direction
GR 0037 — V-Block for holding parts above table slots
GR 0037 — Adjustable V-Support, Small (Height Range: 57-67 mm)
GR 0037 — Adjustable V-Support, Medium (Height Range: 65-85 mm)

Accessories for SERVOCUT 302
GR 0125 — Cabinet for floor model - SRC 500/GEOCUT 302
GR 0125 — FUMETFILTER Centrifugal Separator for SRC 502/GEOCUT 302
GR 0125 — Laser alignment unit (To be ordered simultaneously together with the machine order)
GR 0098 — Protection box for left side opening, 50 cm, for cutting long parts
GR 0098 — Manual/Auto Table drive system with electromechanical clutch(v-axis) (To be ordered simultaneously together with the machine order)
GR 0099-01 — Flange Set with larger diameter, Ø100 mm

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