

EMO 2025

New Technologies – Internal use only



Machines at EMO 2025

1	ALC600G iG+E	New Robot SDG.ProOne and ITS-Axis HV-100
2	ALC400P iG+E	ITS-Axis MA2-i-115
3	VN600Q	ITS-Axis RSI55 with Max. 1,000 rpm
4	ALC800G iG+E	ITS-Axis MA2-400
5	AP250L with 0.03 AWT	ITS-Axis MS24
6	AL60G	With EROWA ERC80
7	AD35L	New Robot SDG.HR50
8	UX450L	
9	K3HS V-KS	ITS-Axis MA2-B-100



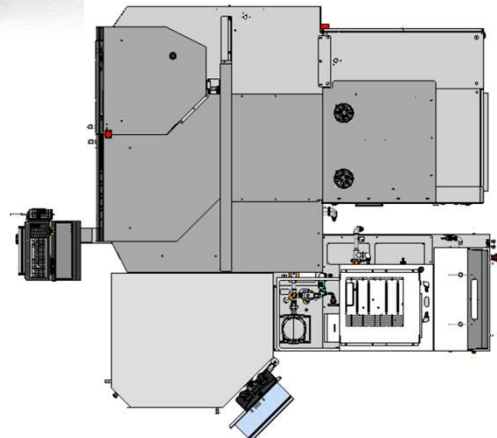
ALC600G with SDG.ProOne

World Premiere of New Automation System

SDG.ProOne



- New automation system developed only for ALC600G/ ALC600P
- Minimum foot space
- Aiming for production/ parts manufacturing sectors
- Can be operated via I/O interface or Sodick Job Management System



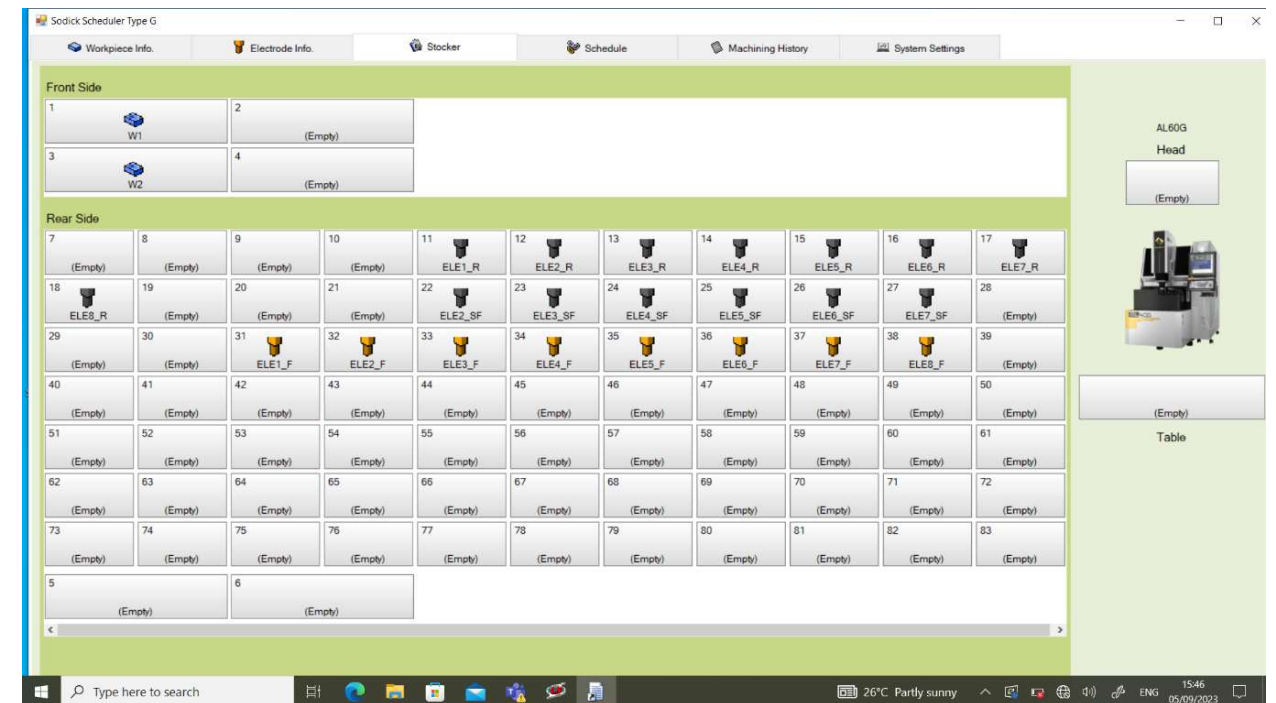
SDG.ProOne



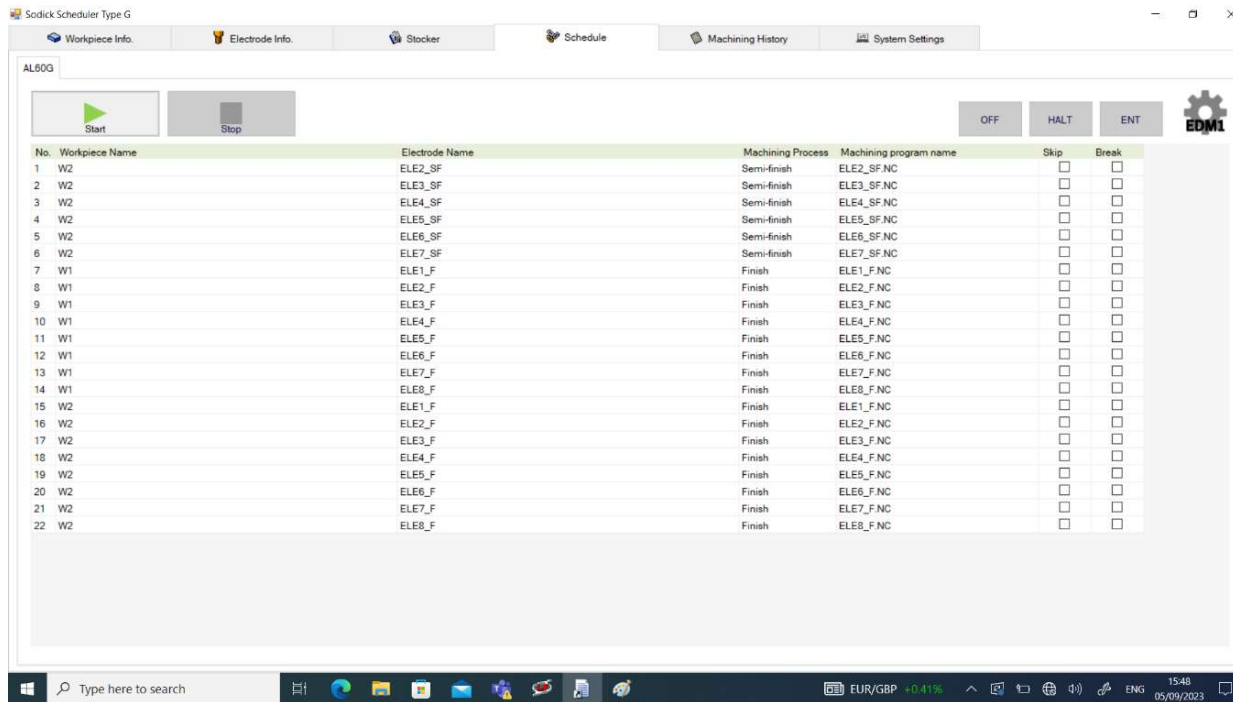
Technical Specifications	
Weight	Ca. 580 kg
Dimensions	1,210 x 1,000 x 2,070 mm
Max. work-piece positions	60
Max. work-piece dims.	150 x 80 x 150 mm (60) 150 x 150 x 150 mm (38)
Max. work-piece weight	10 kg
Magazine layout can be customized	

New Job Management System

- Simplified automation scheduler developed by Sodick (Optional, comes with a dongle. External PC required)
- Compatible with up to 2 Sodick machines (WEDM/ EDM/ EDK/ HSM) and one robot.
- The software communicates only with the machine. Then the machine sends the command to robot.
- Possible to import measurement data from CMM
- Possible to operate even without robot



New Job Management System



- Cutting programs can be imported from any CAM software or created by LN Professional (Sinker EDM)
- Possible to skip and break jobs or changing priority during actual operation
- Barcode/QR code reading function available



I Groove Plus Edition

New standard for ALC series

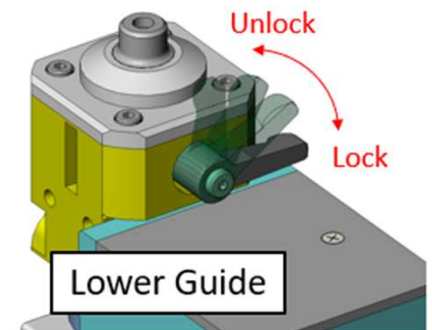
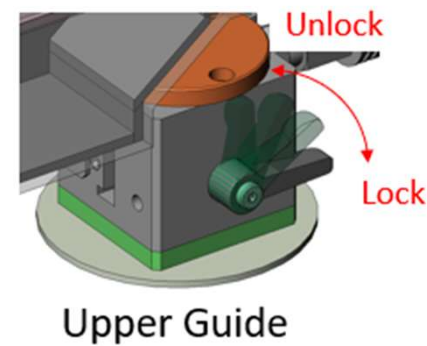
I Groove Plus Edition

- I Groove Plus Edition (IG+E) features extra benefits
- I Groove Plus editions comes with standard on all ALC series; ALC400G, ALC400P, ALC600G, ALC600P, ALC600GH, ALC800G and ALC800GH

Improved Operability

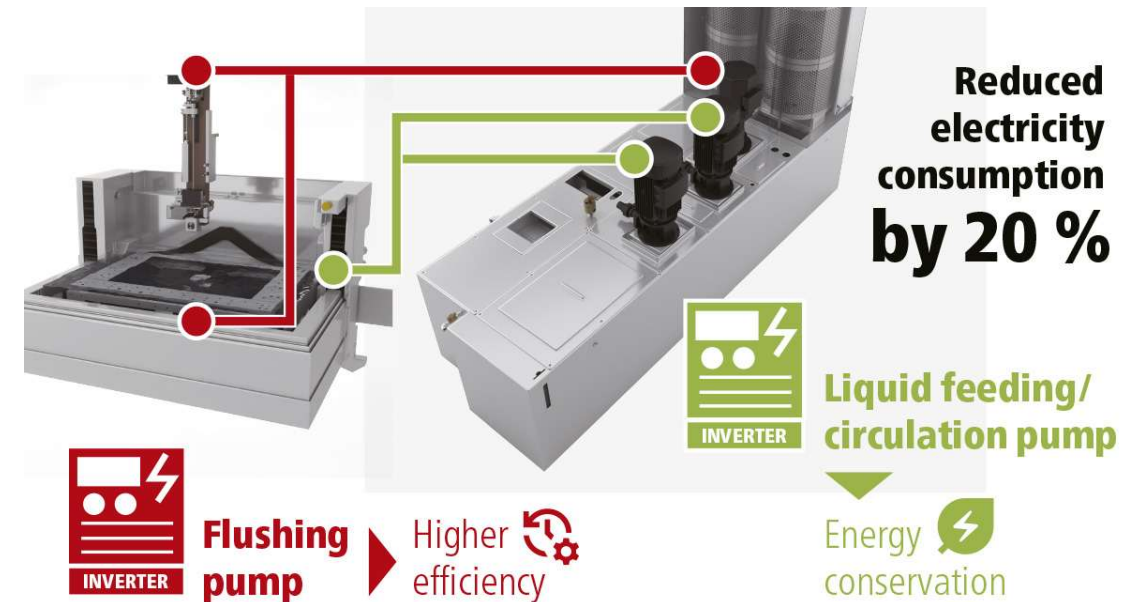


- The quick-release nut on the upper and lower guide unit enables quick and easy movement of the conductivity position

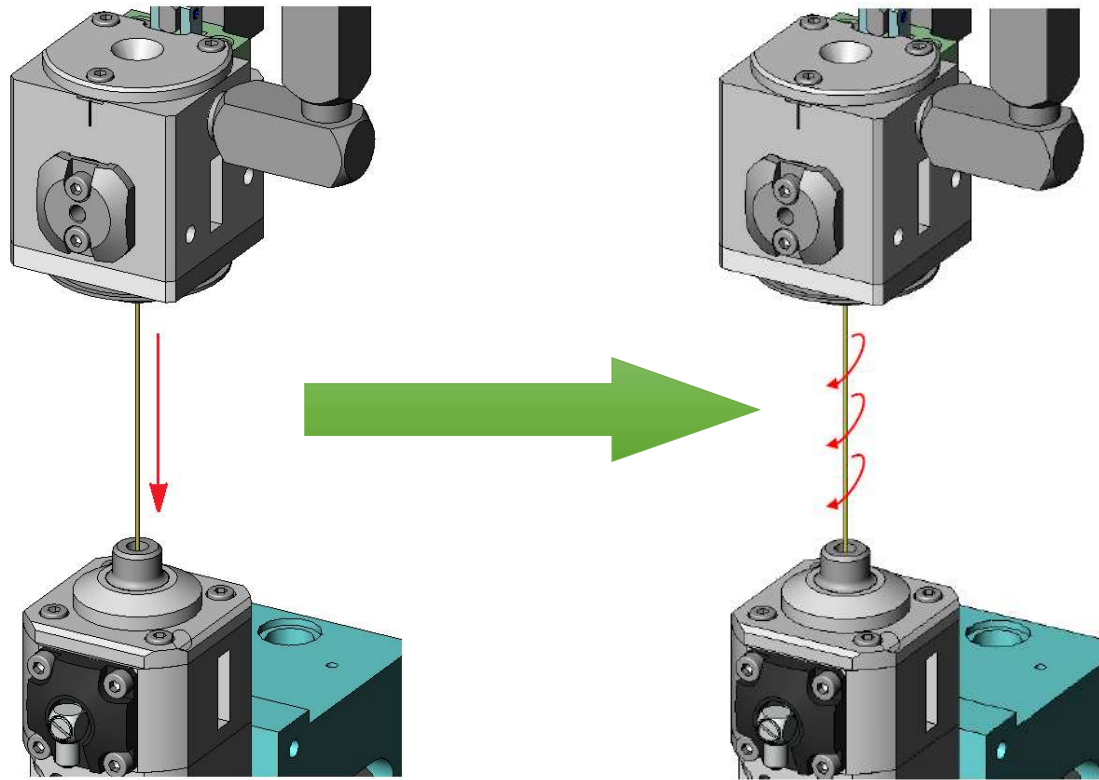


Energy Saving Pump System

- A newly developed energy-saving pump system has been integrated into the dielectric tank.
- A circuit that monitors the vertical flushing flow rate during machining comes as standard equipment. This intelligent monitoring system helps reduce the pump drive energy required for flushing. As a result, the ALC series achieves an impressive 20% reduction in power consumption, including standby, compared to the conventional models.
- It ensures cost savings and environmental benefits without compromising on performance.



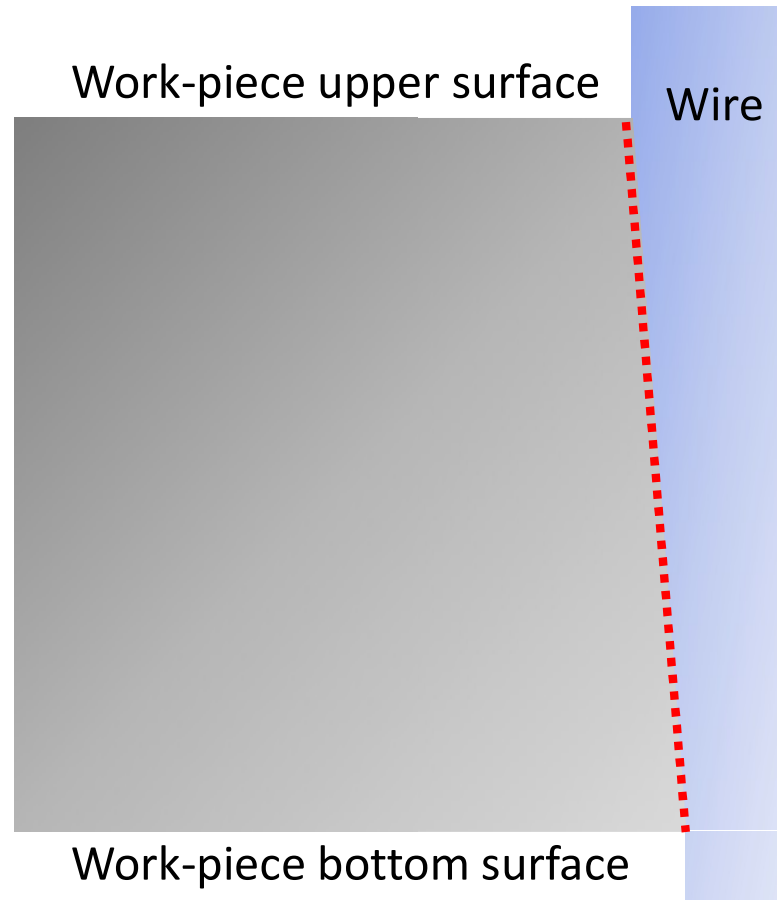
Sodick's Patented Wire Rotating Function



The wire rotation function achieves

- Less wire consumption
- Improved surface quality
- Improved geometric accuracy

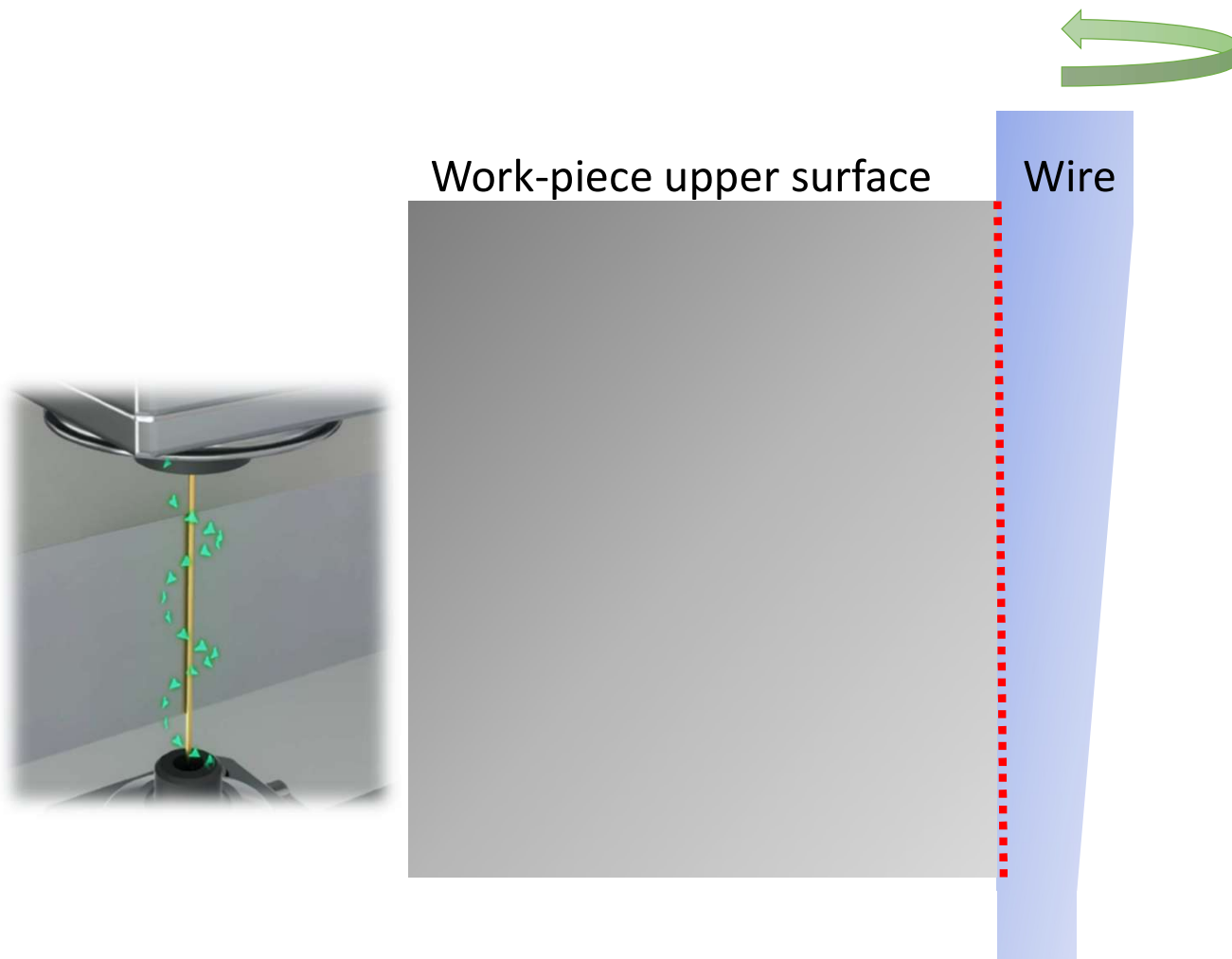
Sodick's Patented Wire Rotating Function



With the conventional machining method, wire electrode wears as it runs which creates “taper” on the surface, especially when cutting a thick work-piece.

To obtain the straight surface, taper compensation (BSA parameter) is required. Otherwise, increasing the wire feed rate would be another solution but it may cause frequent wire breakage and more wire consumption.

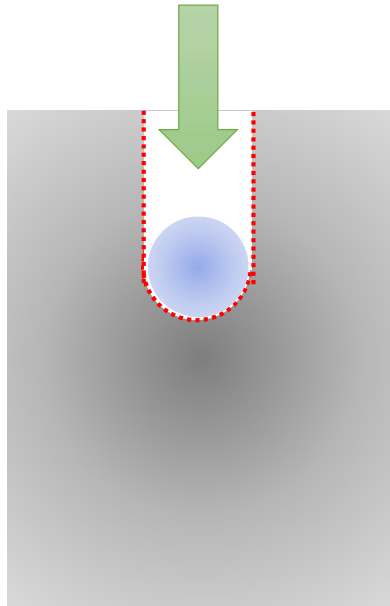
Sodick's Patented Wire Rotating Function



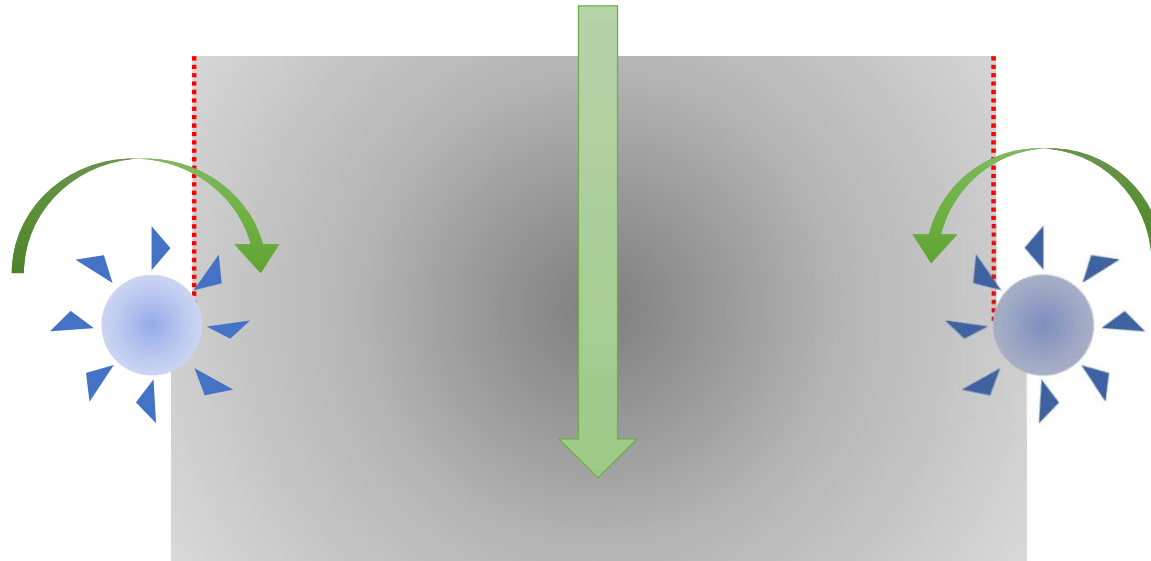
By rotating the wire electrode, work-piece is cut with unused surface of wire, improving the geometric accuracy and surface quality without having taper compensation or higher wire feed rate.

Sodick's Patented Wire Rotating Function

Rough/ Approach cut



Skim cut (2nd cut onwards)



- During the rough cut, no wire rotation is applied.
- For skim cuts, CNC automatically defines the rotation direction of the wire (clockwise or counter-clockwise) depending on the offset side, by analysing the cutting program.

Sodick's Patented Wire Rotating Function



- The pulley shifts to either the right or left-hand side and lets the wire run on the tilted surface of the pulley, which applies rotation to the wire.
- It's simple to maintain with easy access.



VN600Q

The VN Series

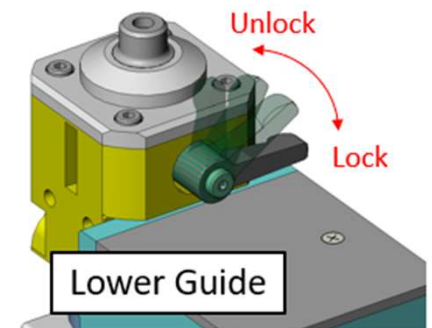
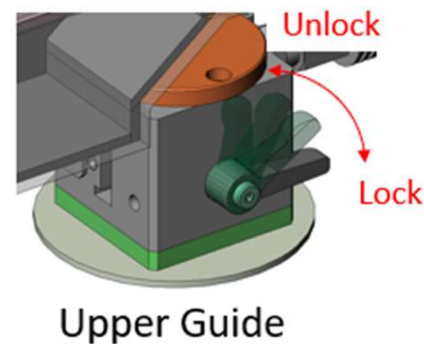
	VN400Q	VN600Q
X x Y x Z-axis stroke	400 x 300 x 230 mm	600 x 400 x 310 mm
U x V-axis stroke	90 x 90 mm	90 x 90 mm
Work-tank inner dims (W x D)	860 x 740 mm	1,150 x 840 mm
Machine floor space (W x D)	3,200 x 3,950 mm	3,675 x 4,330 mm
Machine Weight	3,200 kg	3,684 kg
Dielectric tank capacity	635 litre	970 litre
Filtration method	3 paper filters	3 paper filters



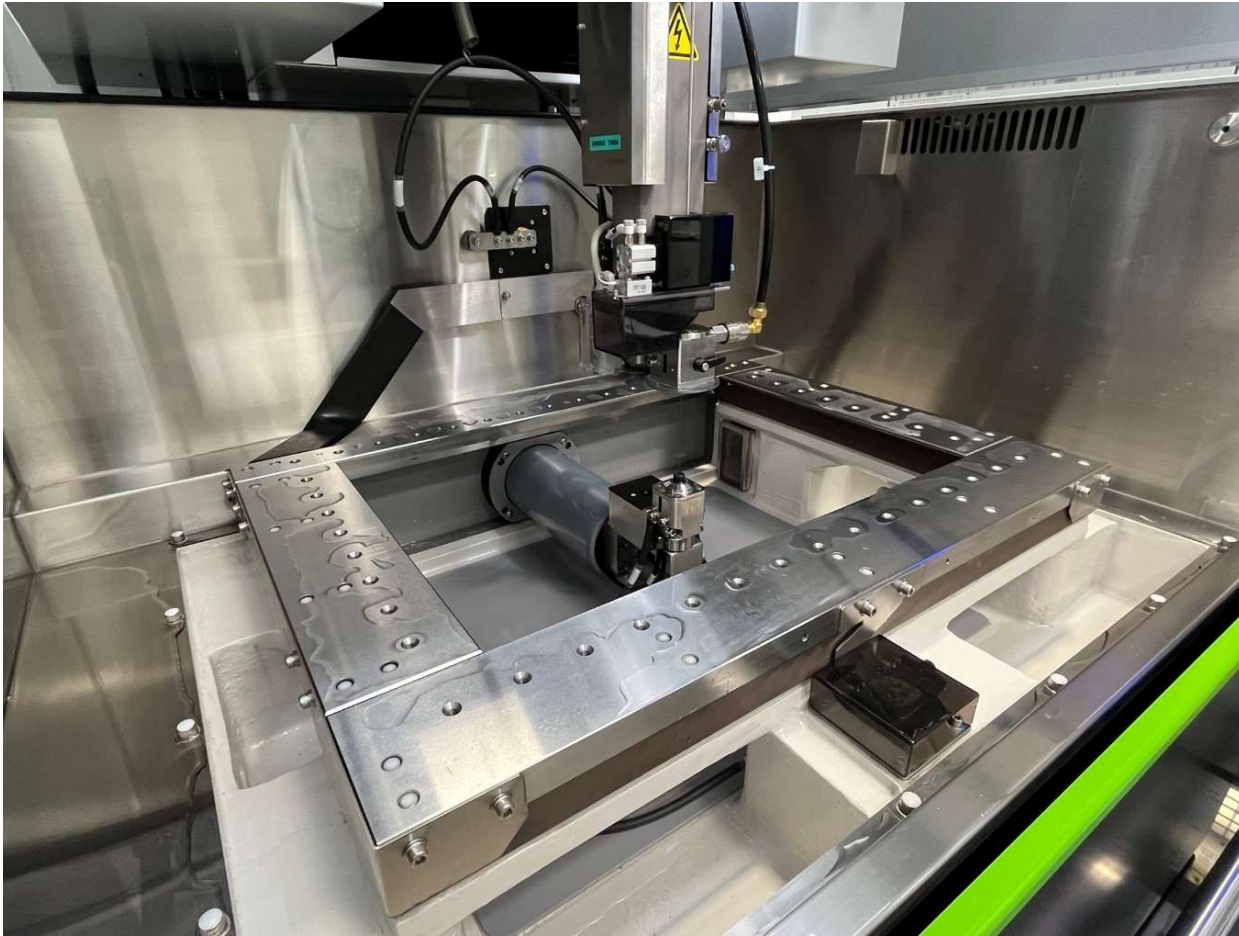
Feature: Improved Operability



- The quick release nut on upper and lower guides unit enables quick and easy movement of the conductivity position

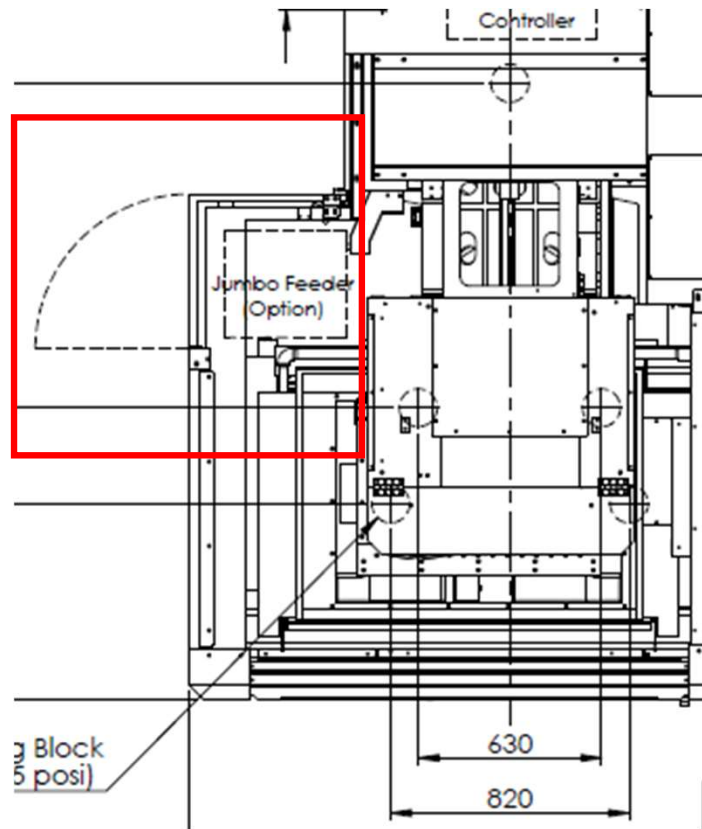


Feature: Improved Accessibility



- Improved layout of the discharge cables with minimised wiring inside the work area
- Easier access to the bottom of work-tank for collecting slugs/cleaning

Feature: Improved Accessibility



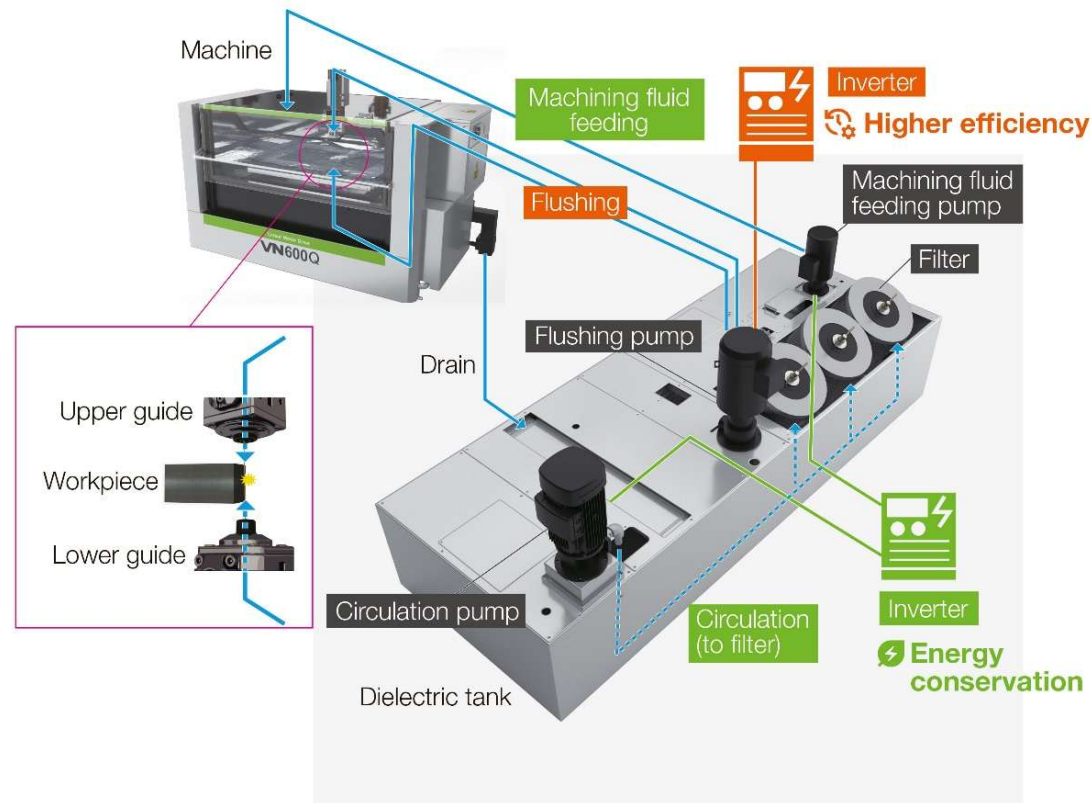
- Inside the swing door rear left side of the machine, jumbo feeder (optional) can be installed
- Service engineer has better access to the rear-side seal for its maintenance

Feature: Triple Filtration System

- Filtration units designed to purify machining fluid and accumulate sludge.
- Enhancing the number of filters to three reduces the need for frequent replacements, allowing for extended periods of uninterrupted machining.
- Enhances the cleanliness of the freshwater tank by boosting filtration capacity.

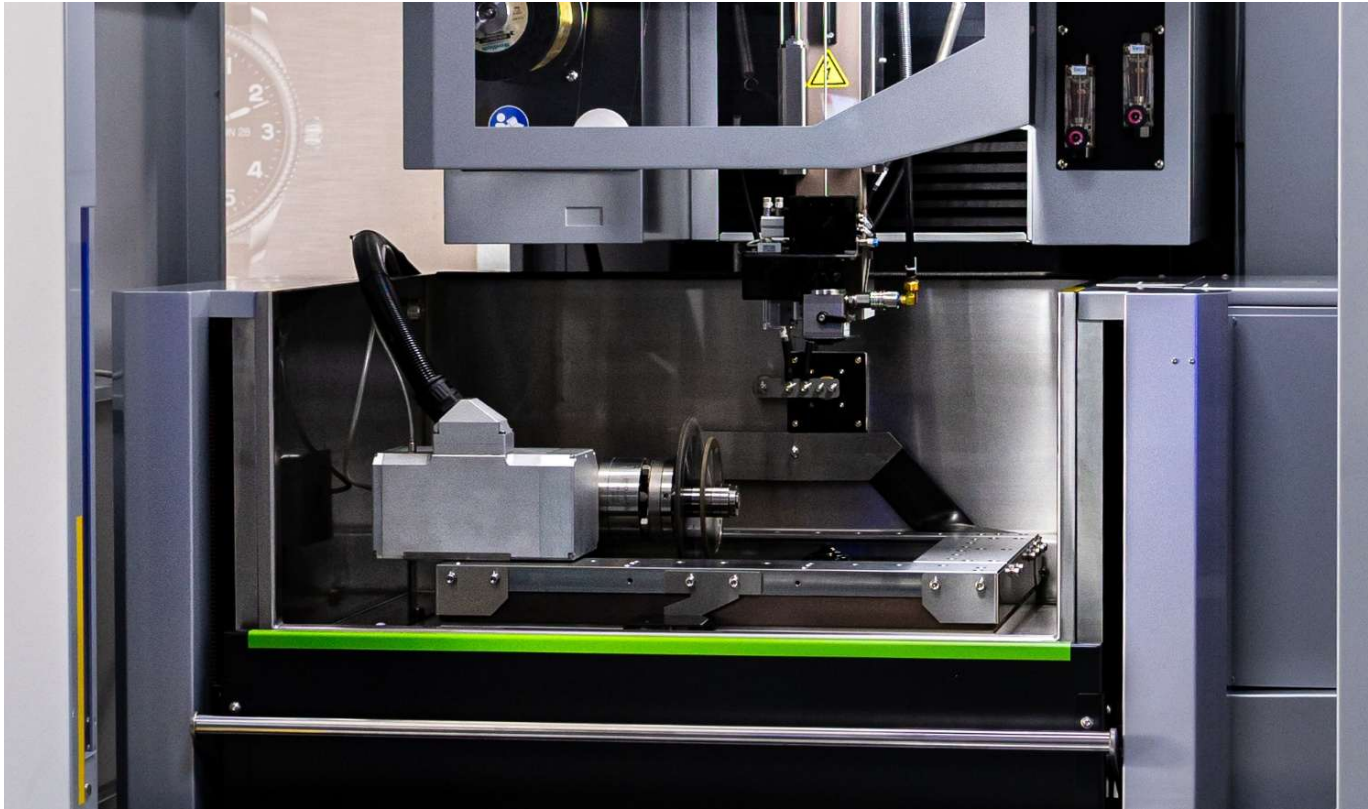


Feature: Energy-saving Pump System

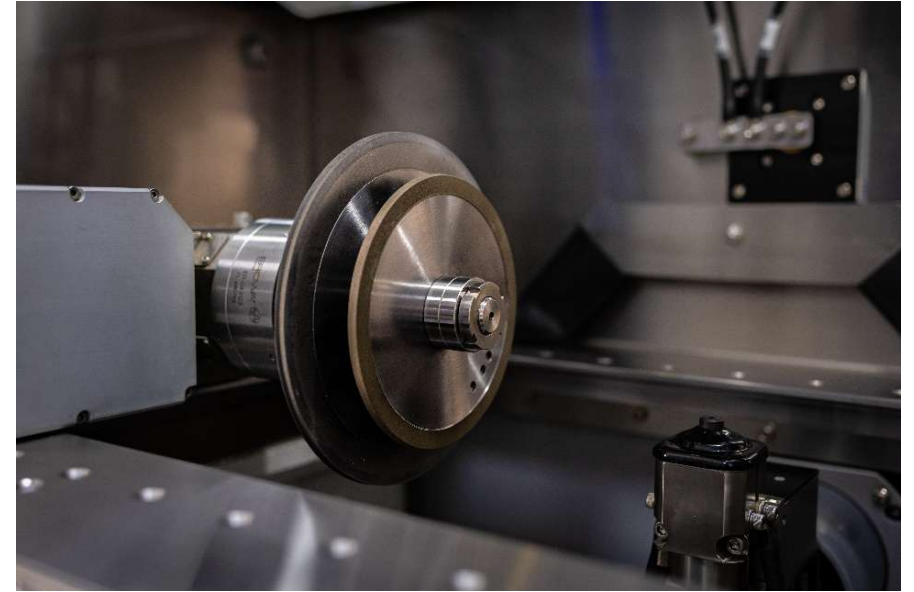


- A newly developed energy-saving pump system has been integrated into the dielectric tank.
- A circuit that monitors the vertical flushing flow rate during machining comes as standard equipment. This intelligent monitoring system helps reduce the pump drive energy required for flushing. As a result, the VN series achieves an impressive 20% reduction in power consumption, including standby, compared to the conventional models.
- It ensures cost savings and environmental benefits without compromising on performance.

EMO 2025 Demonstration on VN600Q



ITS-Axis RSI55 with Max. 1,000 rpm





AP250L SPW

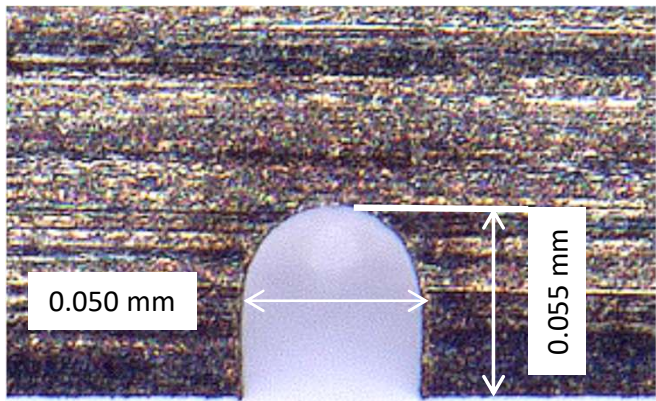
With 0.03 mm AWT Spec.

AP250L with Oil



One of the best-selling models in watch industry

AP250L with 0.03 Wire



Target geometry

Model : AP250L with 0.03 AWT
Work-piece : WC with height of 20 mm
Wire : Tungsten wire with dia. of 0.03 mm

	Condition A	Condition B
Number of cuts	4	3
Cutting time	14.4 min	2.8 min
Accuracy	Slit depth: -0.7~+0. 6 μm Slit width: -0.5 ~ +2.2 μm	Slit depth: 0.0 ~ +0.7 μm Slit width: -1.1 ~ +1.1 μm



AL60G with ERC80

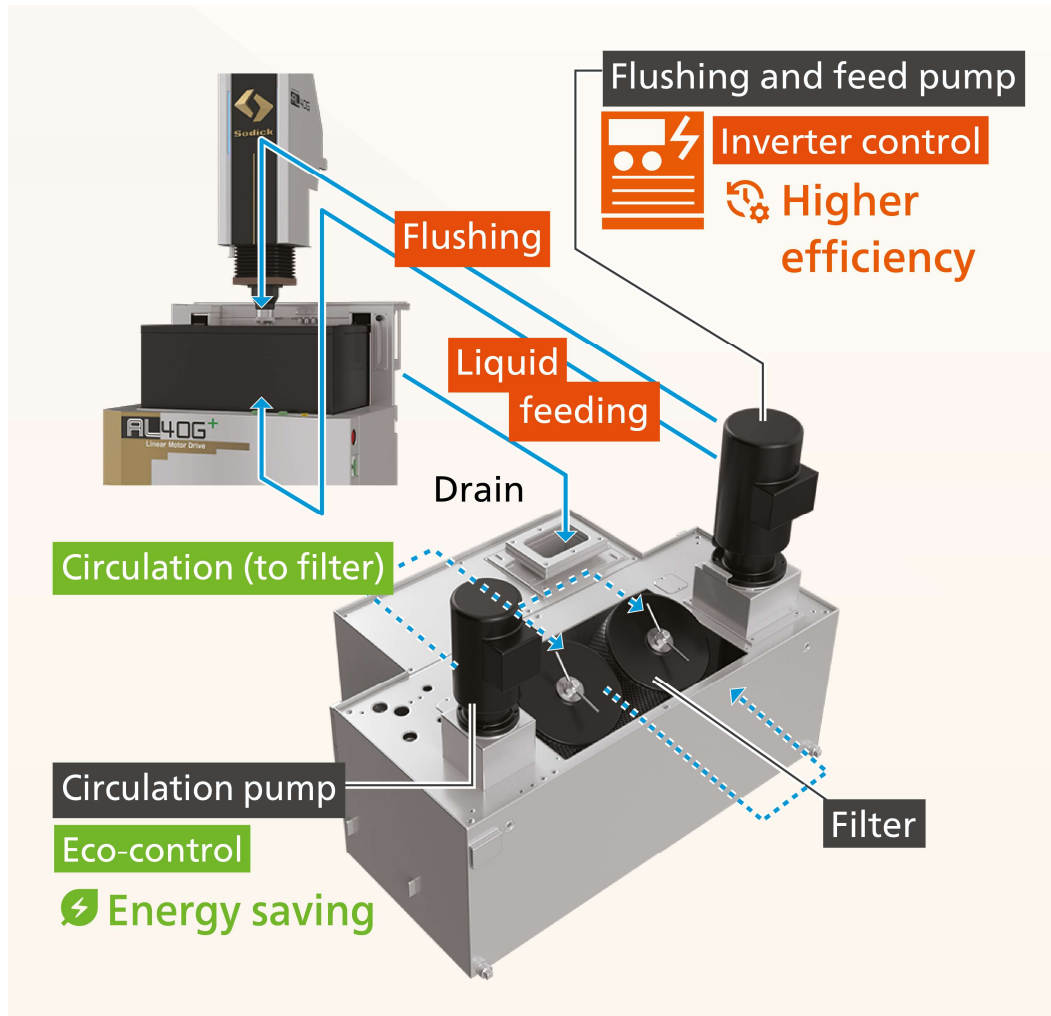
Automation Cell

Sinker EDM AL+ Series

- All the Sodick AL Sink EDM come with + Series (AL40G, AL60G, AL80G and AL100G)
- The Plus Series features energy saving pump system



The + Series: Energy-saving Pump System



- A newly developed energy-saving pump system has been integrated into the dielectric tank. This intelligent monitoring system helps reduce the pump drive energy required for flushing. As a result, the AL+ series achieves an impressive over 30% reduction in power consumption, including standby, compared to the conventional models.
- The feature comes as standard with AL+ series (AL40G+, AL60G+, AL80G+ and AL100G+)

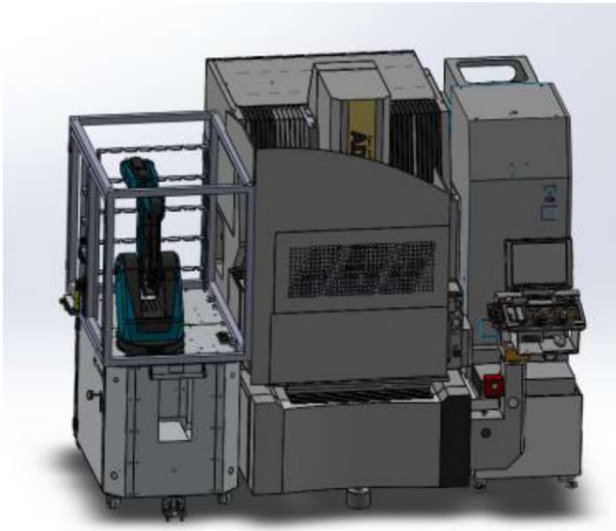


AD35L with SDG.HR50

New Automation System

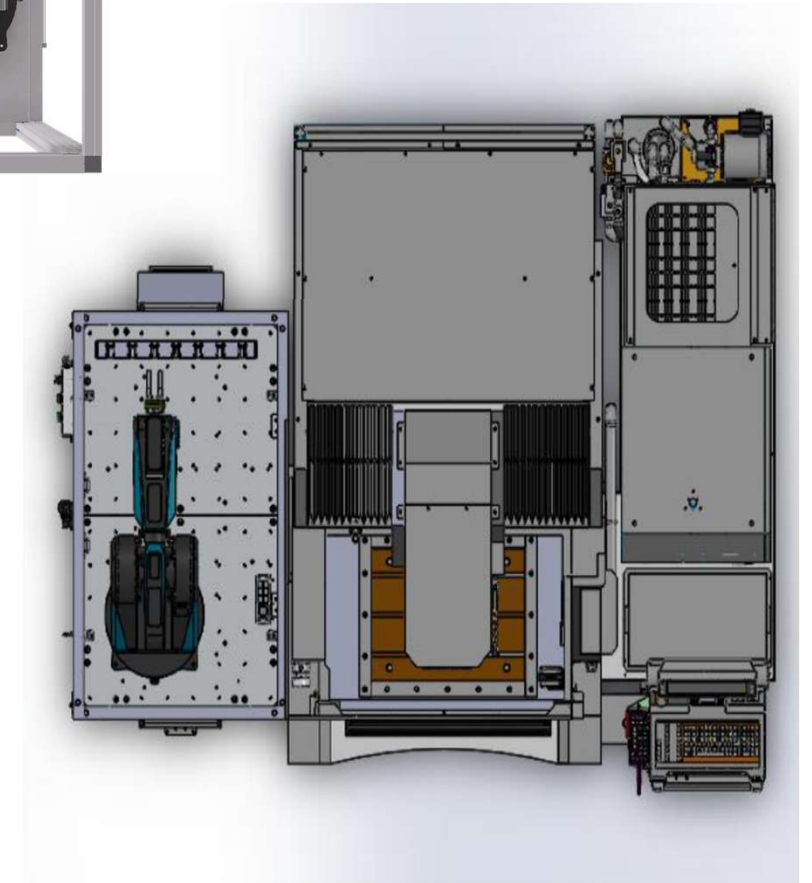
SDG.HR50 Robot

- Electrode changer with small footprint
- Possible to connect with both AD series and AL-G series
- Fully flexible with number of magazines/operation



SDG.HR50 Robot

- Floor space: 1,240 x 840 x 1,940 mm
- Weight: 428 kg
- Loading capacity: 220 kg
- Standard number of magazine station is 50, which depends on the electrode size.
- Magazine layout can be customized





UX450L LN4X

3-axis Linear High-speed Milling Machine

UX450L LN4X

- The new UX Series (UX450L & UX650L)
- Extended X-axis stroke
- Improved operability



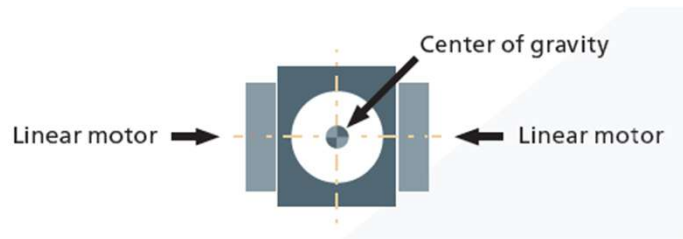
UX Series Specification

	UX450L	UX650L
X x Y x Z-axis stroke (mm)	450 x 350 x 200	650 x 550 x 300
Work table dims. (W x D, mm)	600 x 400	750 x 550
Distance from table to spindle nose (mm)	100 ~ 300 mm	150 ~ 450
Distance from floor to table surface (mm)	750	825
Spindle	E25G/ E32FPE (6,000 ~ 40,000 min ⁻¹)	E25G/ E32FPE (6,000 ~ 40,000 min ⁻¹)
Machine installation dims. (W x D, mm)	3,400 x 4,500	3,400 x 5,100
Machine tool weight (kg)	7,000	8,300
Automatic tool changer (ATC)	20 stations	20 stations



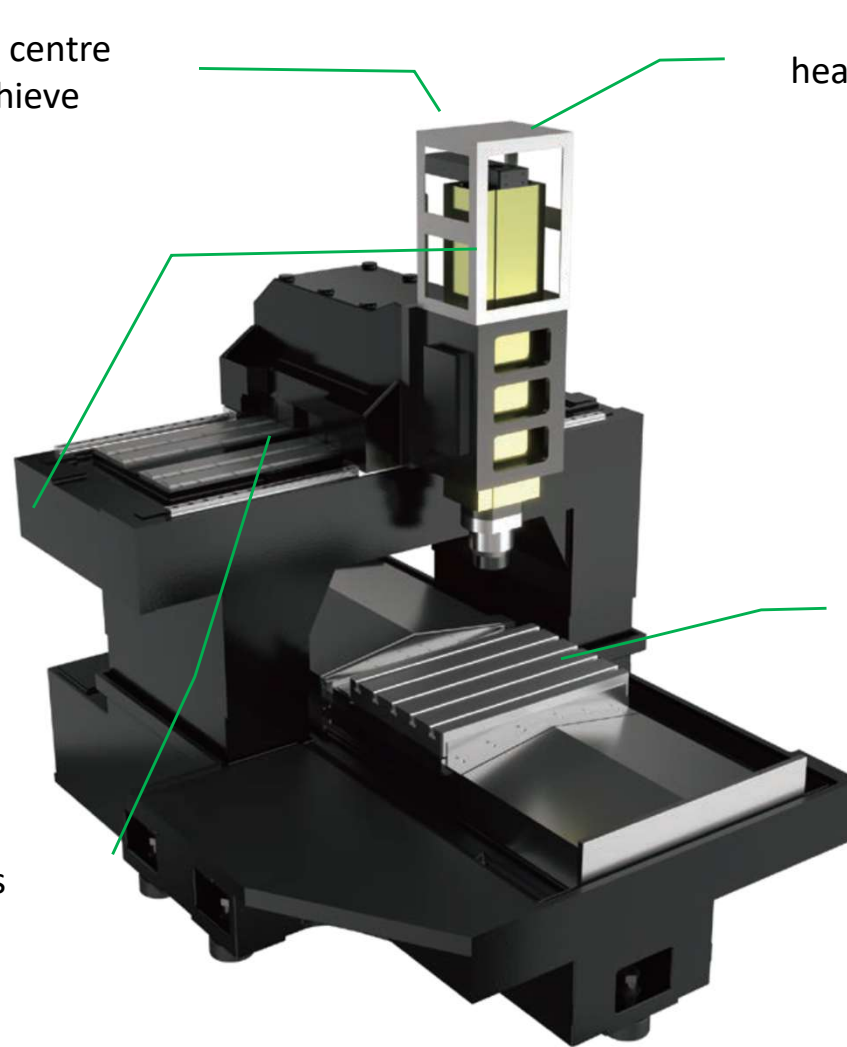
Highly Rigid Machine Structure

The machine spindle is positioned to the exact centre of the head drive with two linear motors to achieve the optimum balance of the unit



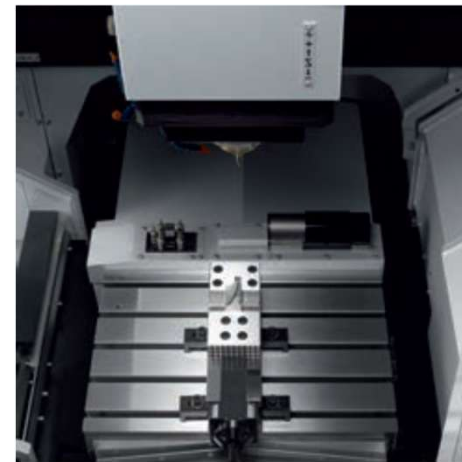
Weight reduction of the spindle head achieves both improved motion performance and high rigidity

Optimised positions of X-axis scale and linear guides



Direct heat treatment of spindle head to minimize the thermal effect

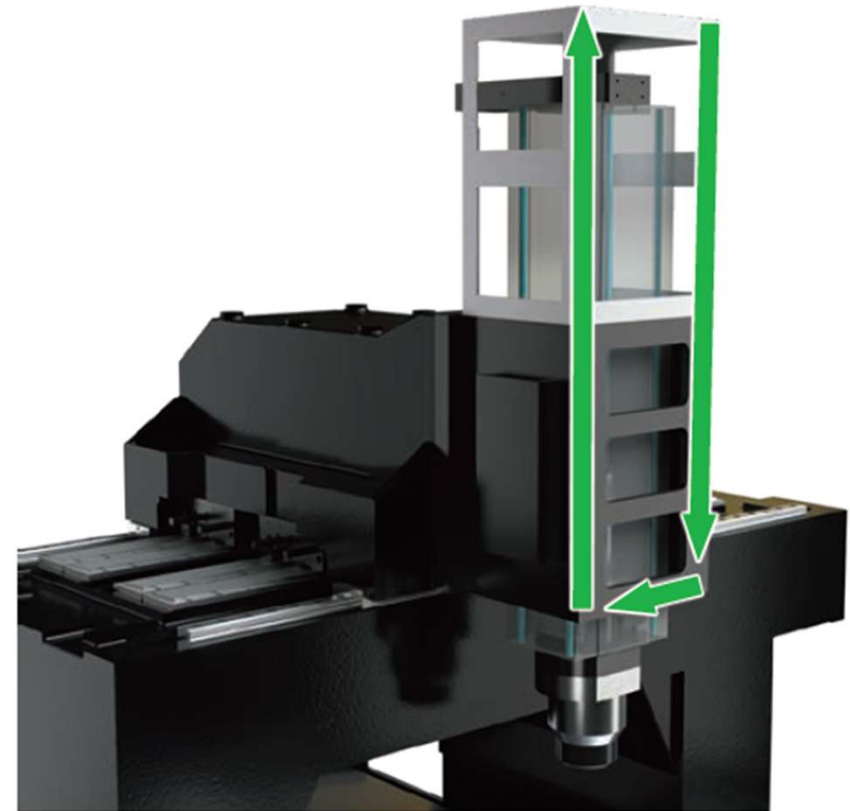
Machine table with extra work-space



Minimised Thermal Displacement

Adopting a structure of direct heat reduction for the inside of the spindle head casting.

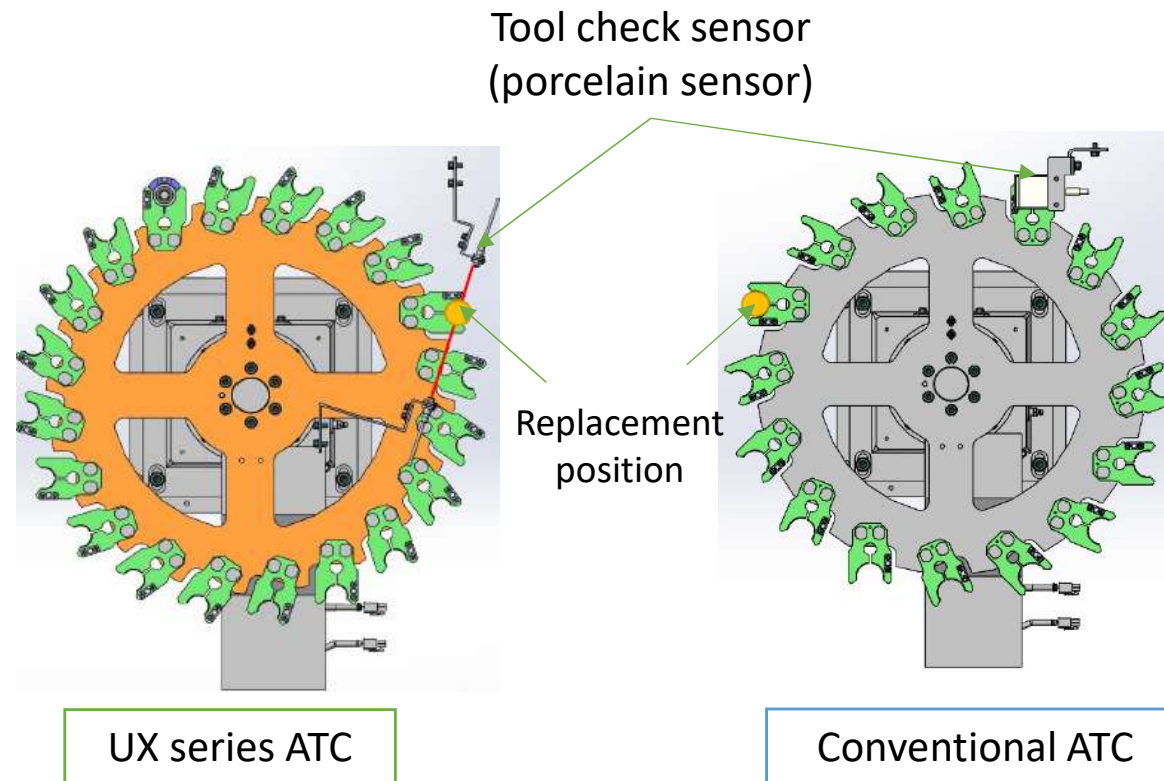
The design reduces heat generated in the spindle and thermal displacement in the Z direction due to the surrounding environment.



ATC – Automatic Tool Changer

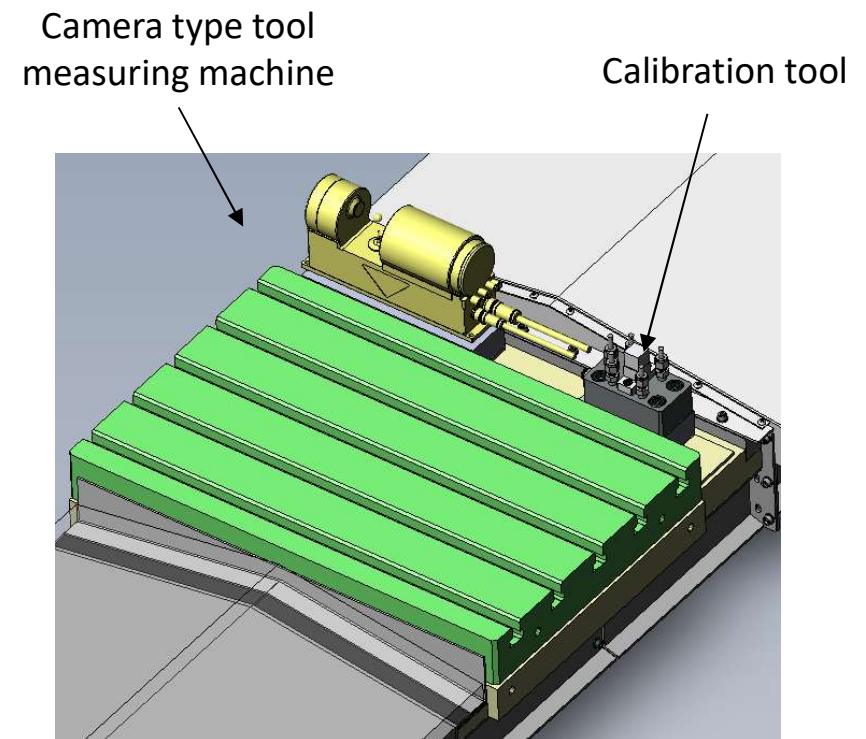
Both UX450L and UX650L come with 20-station ATC.

Thanks to redesigning of tool verification sensor position and operation sequence, it significantly reduces the tool replacement time by 50%.



Calibration and Measurement

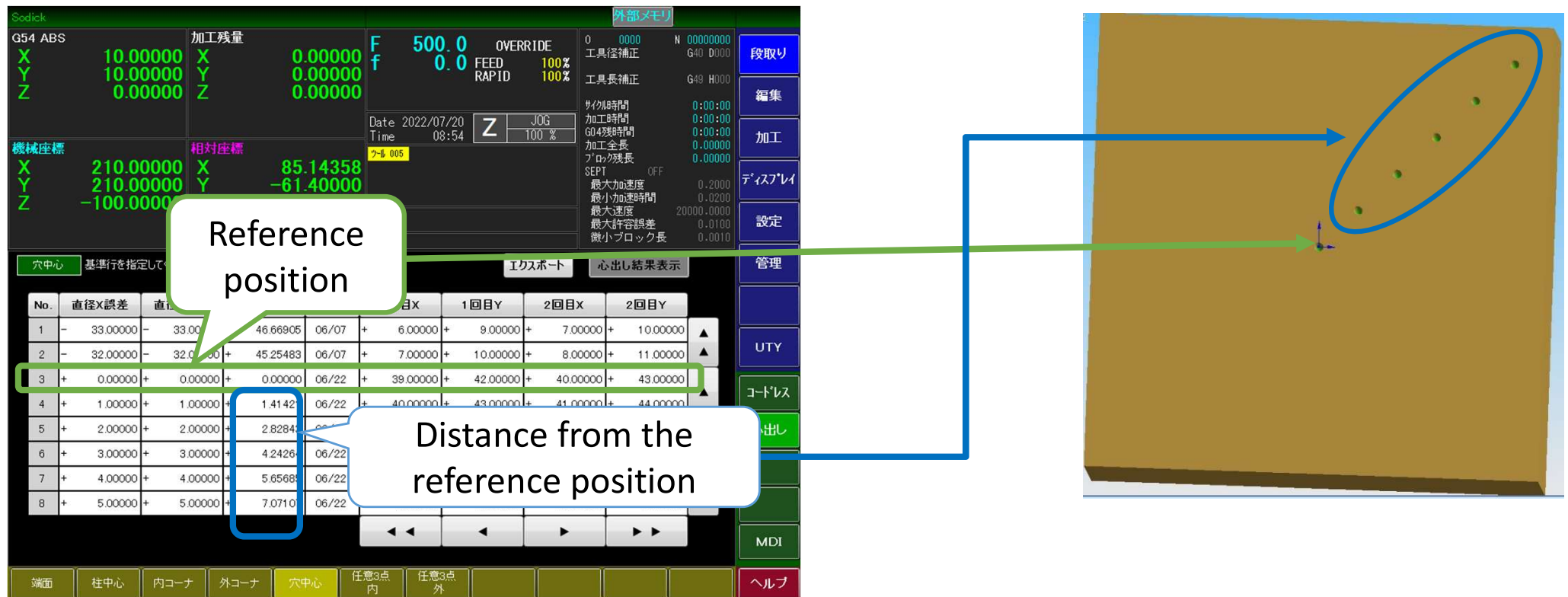
- Calibration function for touch sensor
 - Improved measurement results by calibrating before measurement.
- Optic measurements unit available as option
 - Measurement of tool length and tool diameter (run-out) during high-speed rotation (Tool diameter $\Phi 0.01 \sim 32$ mm)
 - Dynamic runout adjustable by combination with special chuck
 - Profile measurement (measuring the R-contour shape of the rotary tool)
 - Elongation measurement



New Software Feature

Centering result report display function:

Its displays the measurement results of the center of a column, inner corner, outer corner, hole center or random 3 points. The software automatically calculates the distance from the selected reference point and output the results to a CSV file.



Sleep Mode Function

As an environmental protection and energy-saving measure, automobiles already have an idling stop function, and machining centers also have a function that automatically turns off power when it is determined that the machine has not been used for a certain period of time.

- Stop conditions

- Program stop
- Axis stops
- Spindle stop (lubrication stop)
- Front door closed
- Coolant stop
- No error occurred
- Power ON
- Setting time is other than 0
- Function ON (button on basic screen)

- Easily change function ON/OFF
(Switching button and status display)

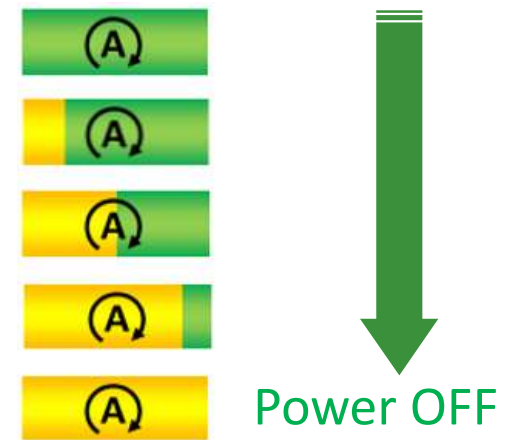
Function ON status



Function OFF status



- Visual display of elapsed time

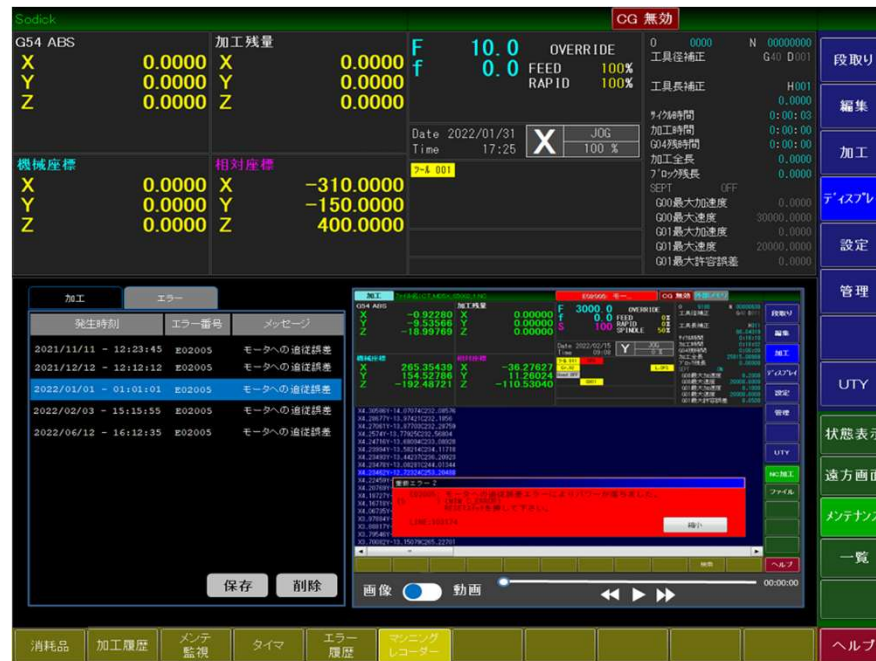


Machining Recorder (optional)

Video and images are captured during machining and when errors occur, and displayed on the NC screen

- Enables accurate assessment of the situation
- Get the information you need to investigate defects and other problems
- Can be used as documentation for internal and external use (can be saved on USB)

[Screen image]

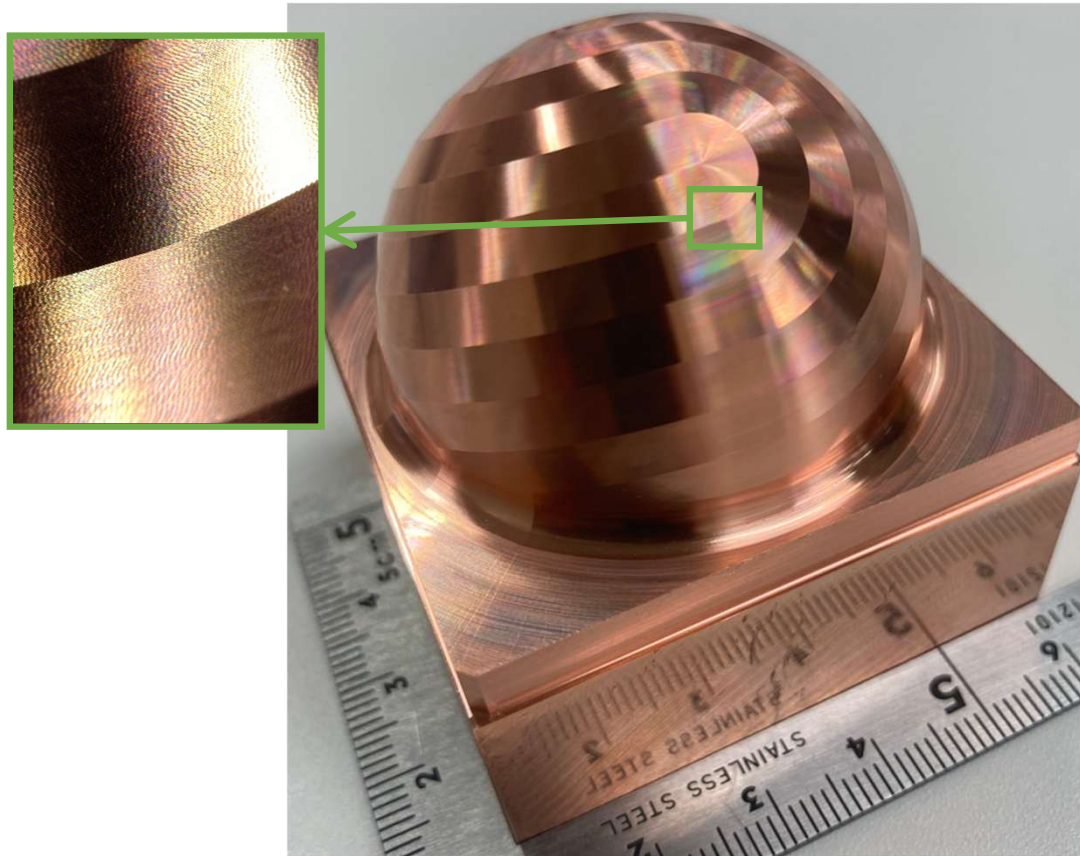


[Video image]



- When an error occurs, approximately 160 cycles are saved
- Approximately 5 hours of storage during machining

UX450L Cutting Demonstration - Copper Dome



Machine model: UX450L

Work-piece: Cu 50 x 50 x 50mm

Cutting time:

- Total cutting time: 4 h 32 min

Cutting condition:

- Spindle speed(S): 25,000 min⁻¹
- Feed rate (F): 150~2,000 mm/min

Cutting tool: 3

- Ball nose R3/ R2



K3HS

Premium Small Hole Drilling Machine

K3HS

- Cutting fluid: De-ionised water or V-fluid
- Extended work-table
- Minimized Y-axis slide cover
- Improved visibility of work area from operator
- Break-through detection
- Spindle with max 1,000 rpm



K3HS with V Fluid

- Standard electrode material: Copper
- Better break-through
- Faster cutting speed, less electrode wear
- Less side wear of electrode, only frontal wear
- Better cutting performance on WC materials

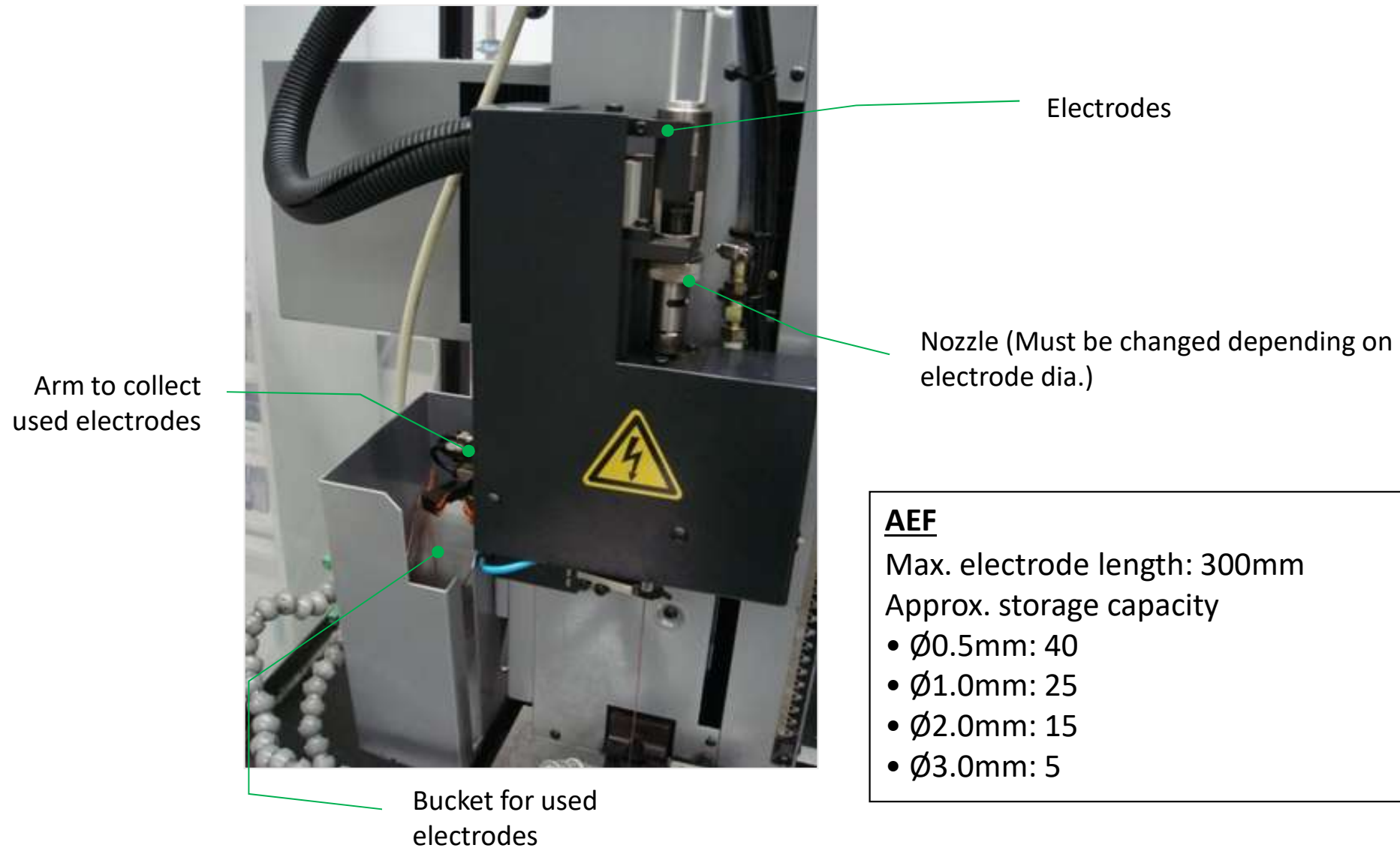
K3HS with De-ionised Water

- Standard electrode material: Brass
- Less re-cast layer on work-piece surface = better “cut-in” with wire on WEDM, especially with smaller diameter
- Better cutting accuracy
- Side wear on electrode

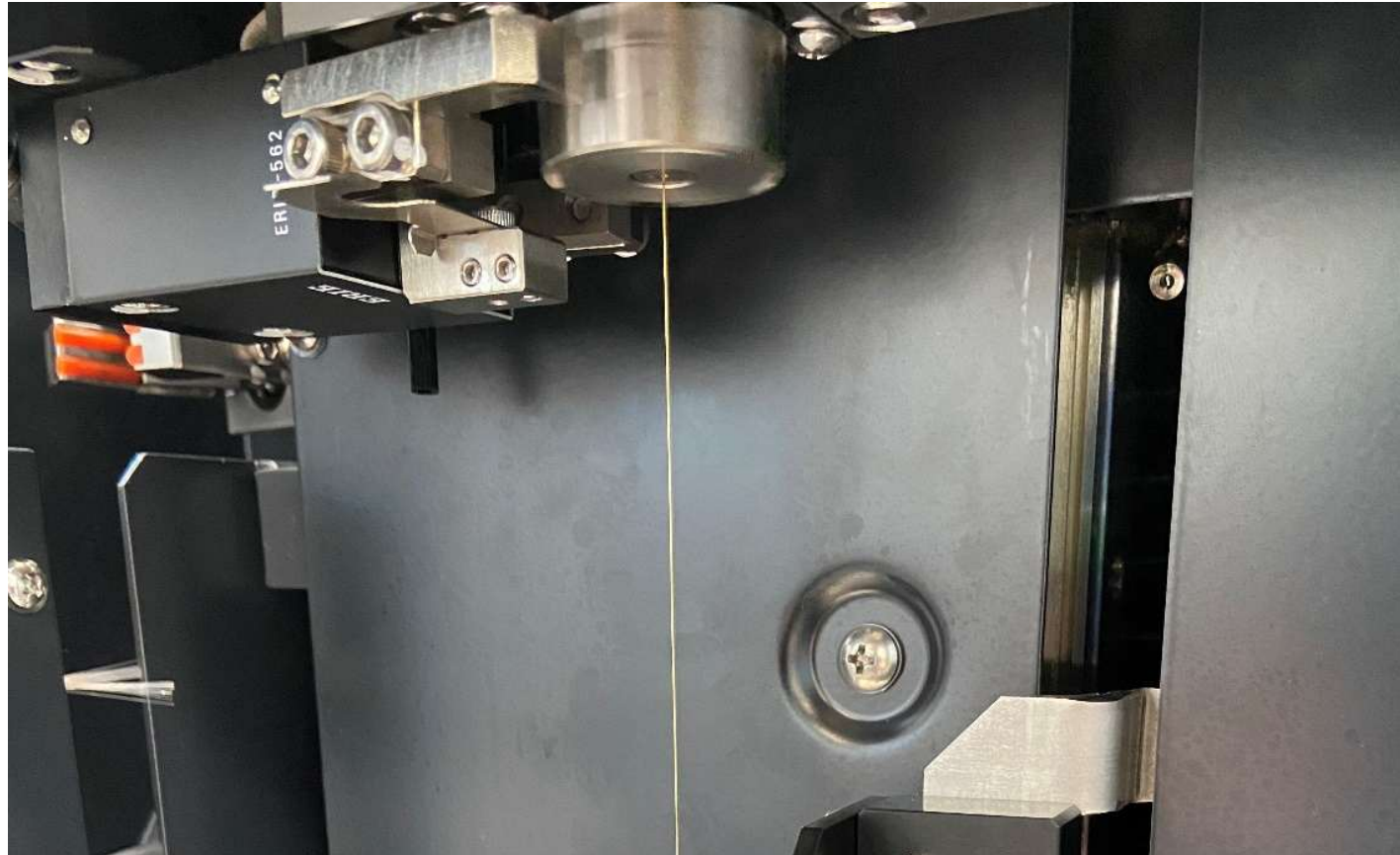


0.3mm electrode before & after cutting with de-ionised water

AEF (Automatic Electrode Feeder)



Spindle with Max. 1,000 rpm



- The K3HS features the spindle with max 1,000 rpm
- The spindle speed can be adjusted by changing cutting condition parameter

Break-through Detection Function

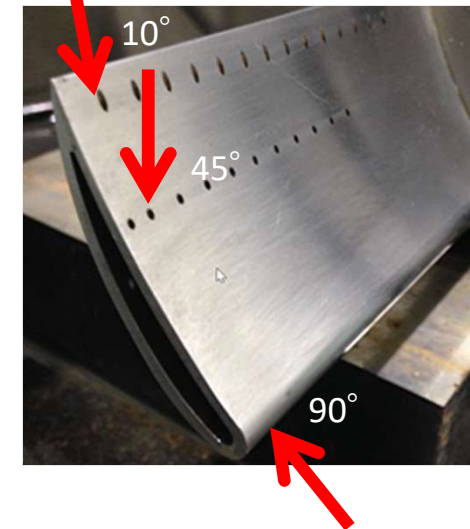
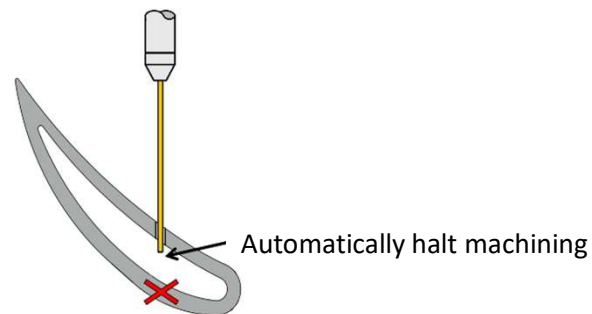
Equipped with a fast response break-through detection circuit to prevent back-striking during blade and cavity wall cutting

NC Program generated by LN Assist:

G85P1 (1 piece break-through)

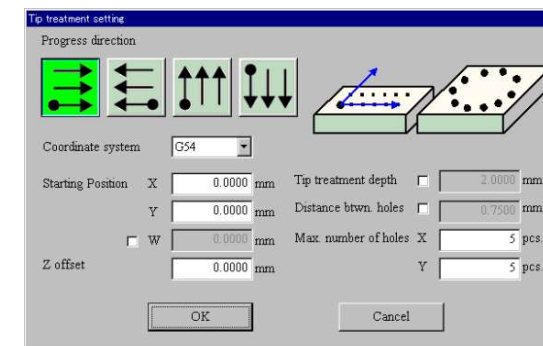
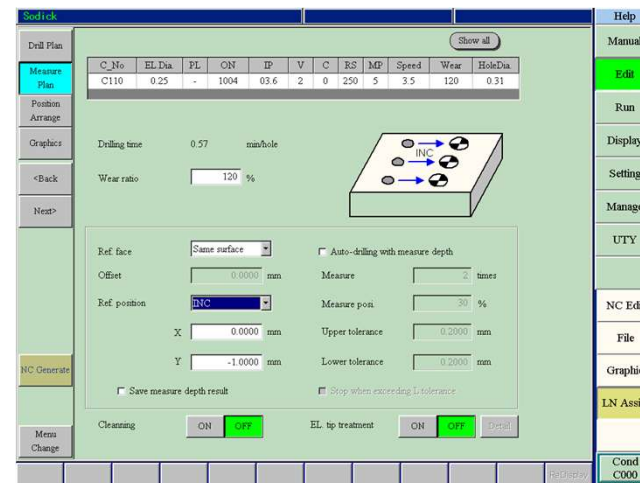
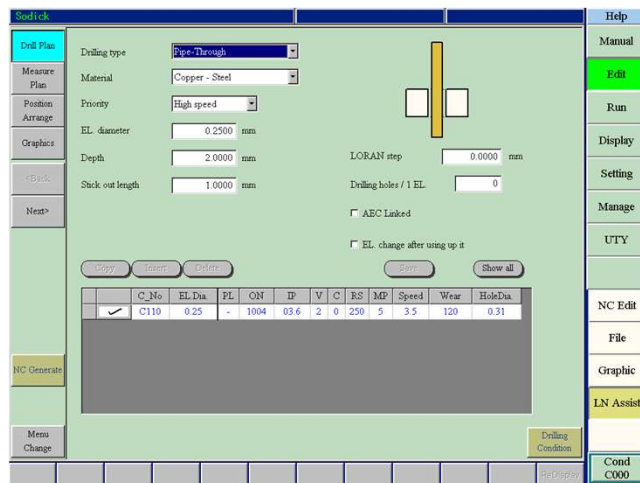
SOL1.0 (Length of pop out: 1mm)

G01Z-30. (Machining)

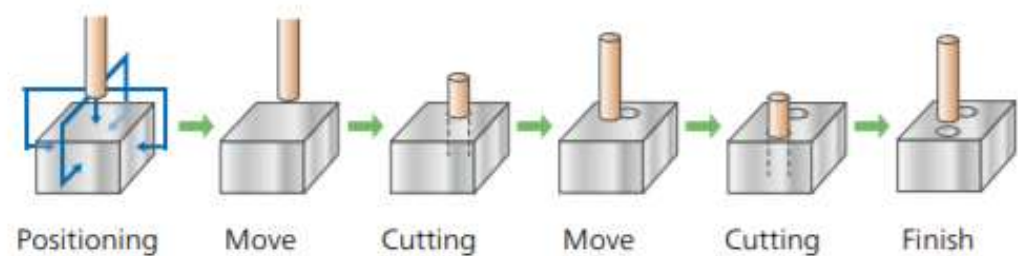


LN Assist

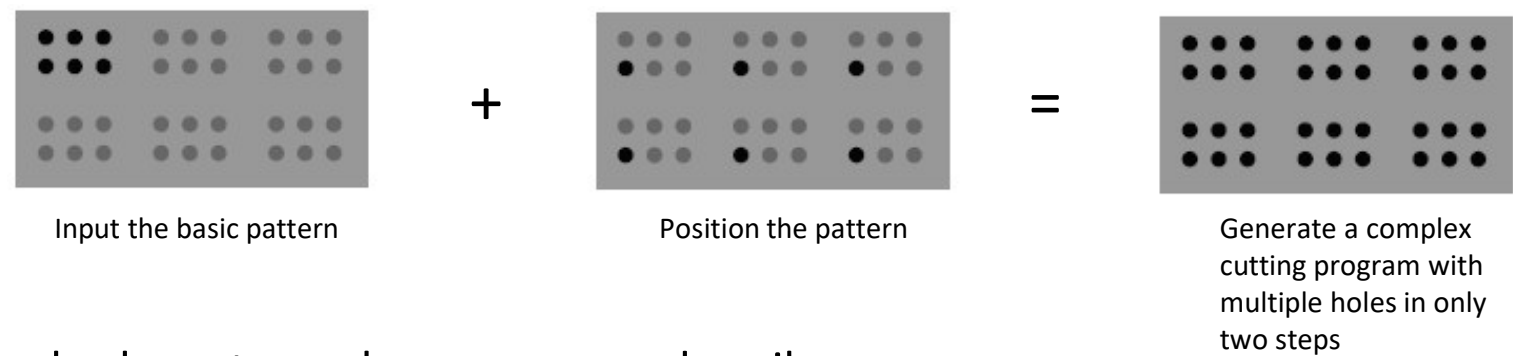
Sodick's LN Assist programming software, which comes as standard with the machine, is capable of performing numerous complex calculations and macro-functions, allowing operators to work with complex cutting layouts and programs regardless of their skill level. Regardless of the pattern or number of holes, LN Assist can perform the “heavy lifting,” minimizing user error and increasing productivity



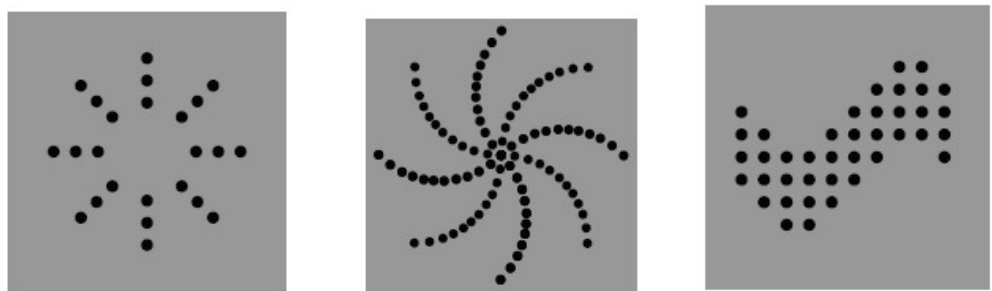
Eliminate Difficult Set-ups and Calculations



As the LN Professional is also capable of a series of calculations and macro-functions, operators can easily work with any kind of complex cutting layouts and programmes. A customised function is available where operators can register their own programs as a utility.

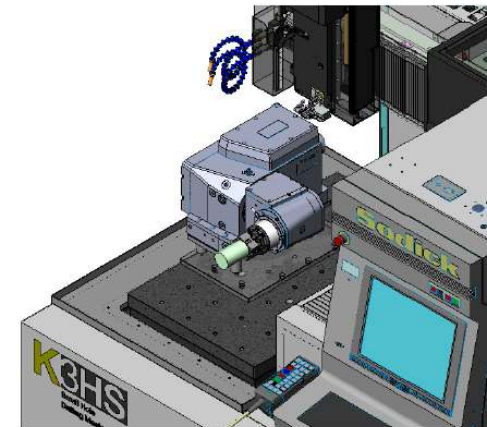


Even complex layouts can be programmed easily



K3HS Available Options

- LK20 Controller (requires export approval)
- Single Axis Rotary table
- 2-axis Rotary table (LK20 controller required)
- W-axis digital
- Column up 100 mm/ 200 mm
- Intermediate Guide



Machine with 2-axis rotary table

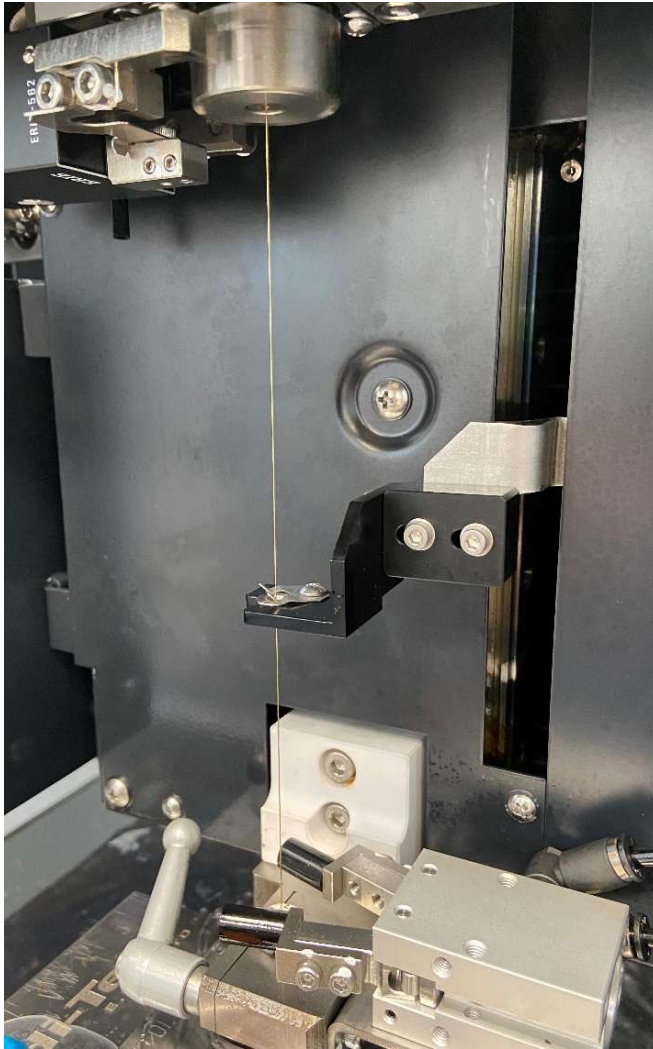
Option: W-axis Digital

W-axis with CNC control is available as a factory option

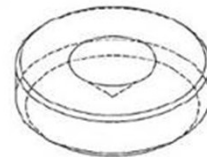


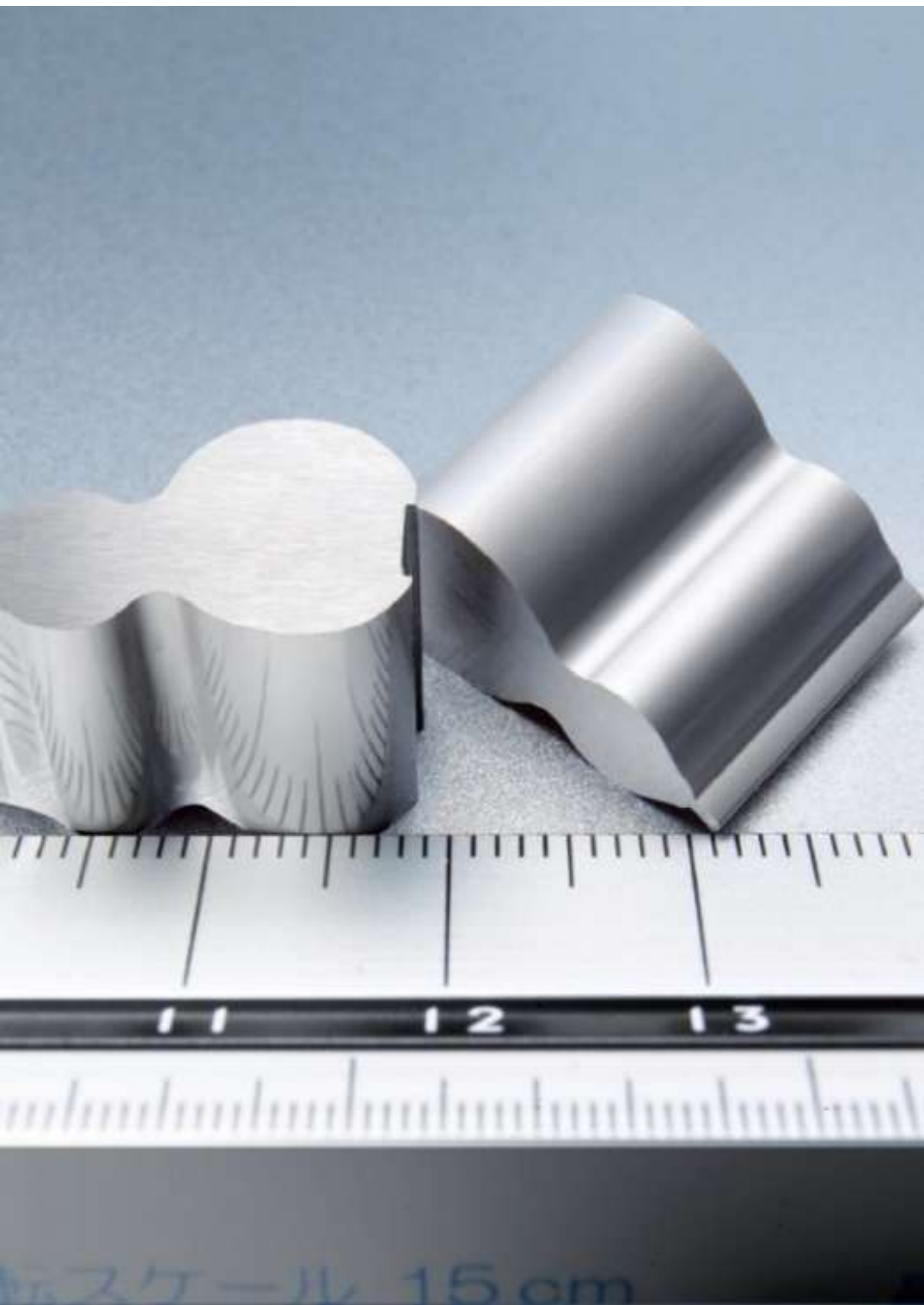
W-axis with manual control (standard)

Option: Intermediate Guide



- Recommended when using electrodes with diameter less than 0.8mm
- Both O-shaped guide and V-shaped guide available





EMO 2025 Samples

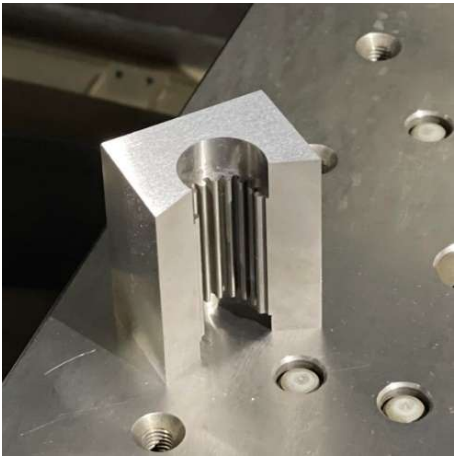
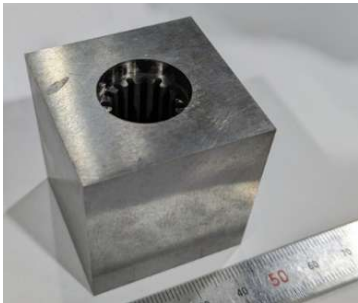
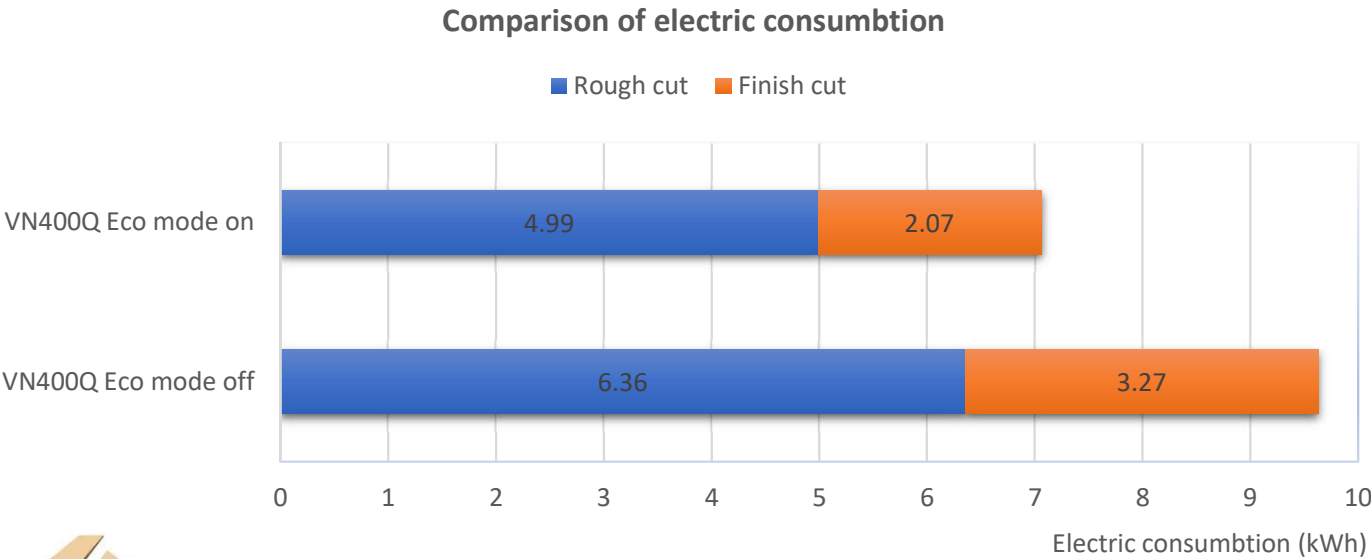
Cutting Samples

Double Floating Gear Shape

Machine : VN400Q
Work-piece : Steel, 35 mm
Wire : Brass $\varnothing 0.25$ mm
Number of cuts : 4
Accuracy : +/- 5 μ m
Open cut : 5 mm upper/ 10 mm lower guide

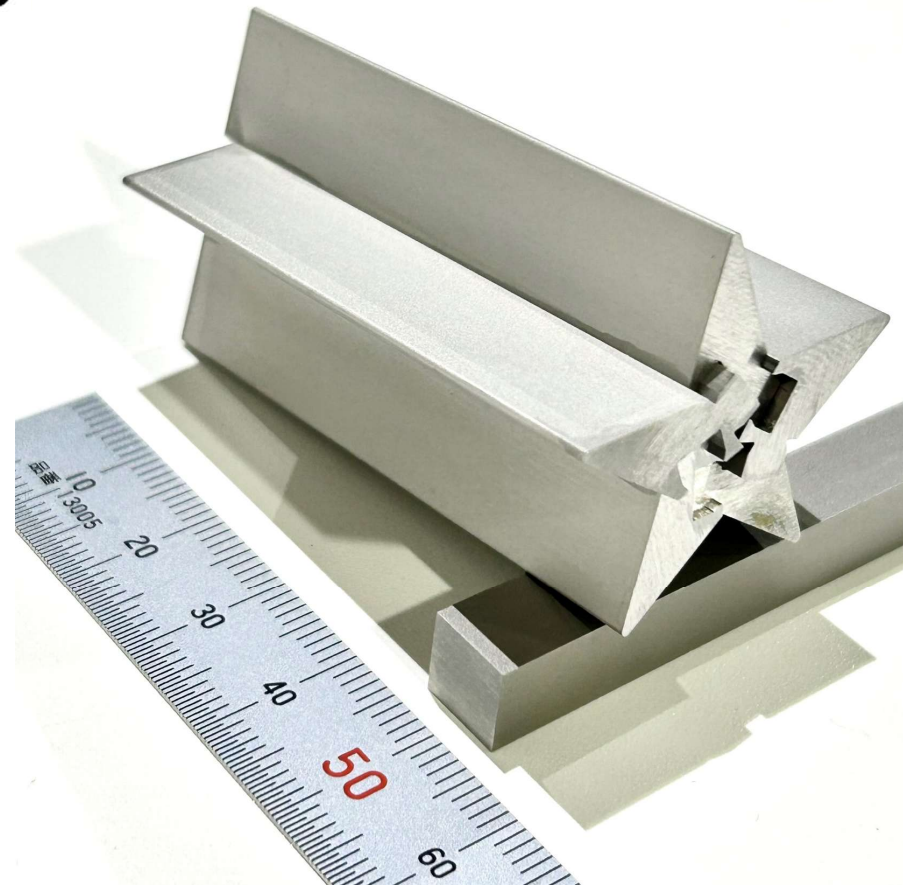
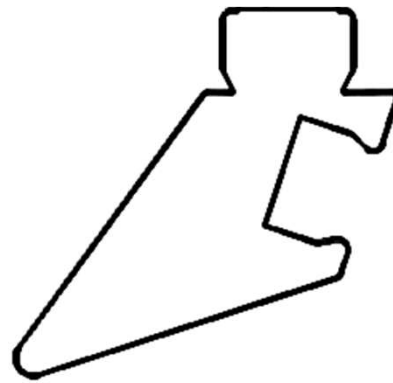
[Electric consumption]		
	Nozzle dia.4	Nozzle dia.6
ECO Mode	ON	OFF
Rough	4.99kWh	6.36kWh
Finish	2.07kWh	3.27kWh
Total	7.06kWh	9.63kWh
Energy saving	27%	

[Cutting time]	
Nozzle dia.4	Nozzle dia.6
ON	OFF
53m 17s	59m 47s
65m 32s	67m 23s
118m 49s	127m 10s
6.6%	



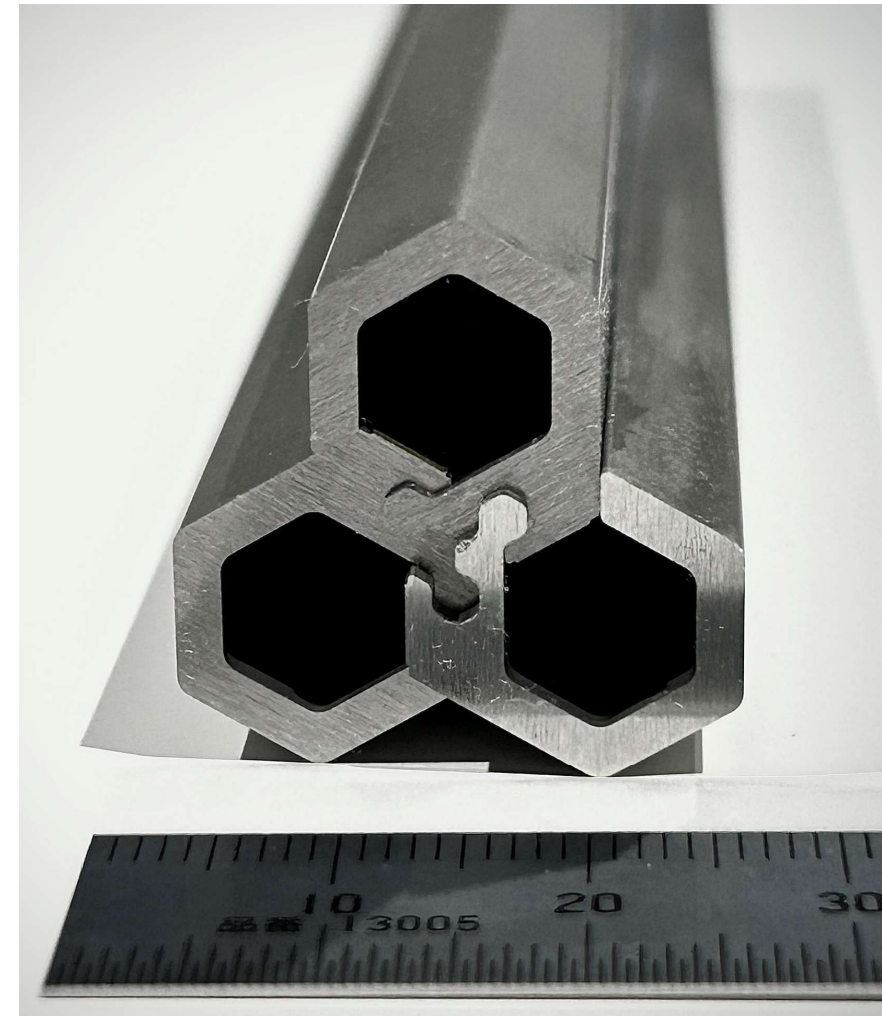
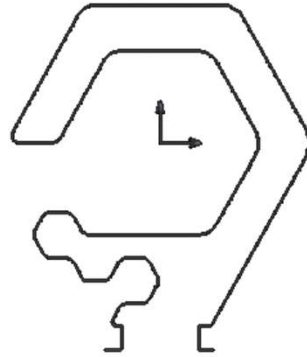
5-piece Interlock

Machine	: VN600Q
Work-piece	: Steel, 60mm
Wire	: Brass, $\varnothing 0.20\text{mm}$
Number of cuts	: 4
Accuracy	: $-0.002 \sim -0.001 \text{ mm}$
Cutting Time	: 1h 28min per piece (total 7h 25min)
Surface	: $0.4158 \mu\text{mRa}$



150mm Interlock

Machine	: ALC400G
Work-piece	: Steel, 150 mm
Wire	: Brass, Ø0.20mm
Number of cuts	: 6
Accuracy	: -0.007 ~ -0.005 mm
Cutting Time	: 10h 20min per piece (total 31 h)
Surface	: 0.4288 µmRa



Mirror Finish



Machine model: UX450L

Work-piece: Stavax 50 x 50 x 30 mm

Cutting time:

- Total cutting time: 33 h 56 min

Cutting condition:

- Spindle speed(S): 16,000~40,000 min⁻¹
- Feed rate (F): 500~960 mm/min

Cutting tool: 3

- WC Ball nose R1.5 x 10
- CBN Ball nose R1 x 5
- PCD Ball nose R 1 x 5

Surface Finish: 0.006 µmRa

Ribs and Pin

Machine model: UX450L

Work-piece: Stavax 25 x 25 mm

Ribs of 0.1 x 11 mm, pin of $\varnothing 0.1$ x 9 mm

Cutting time:

- Total cutting time: 3 h 32 min

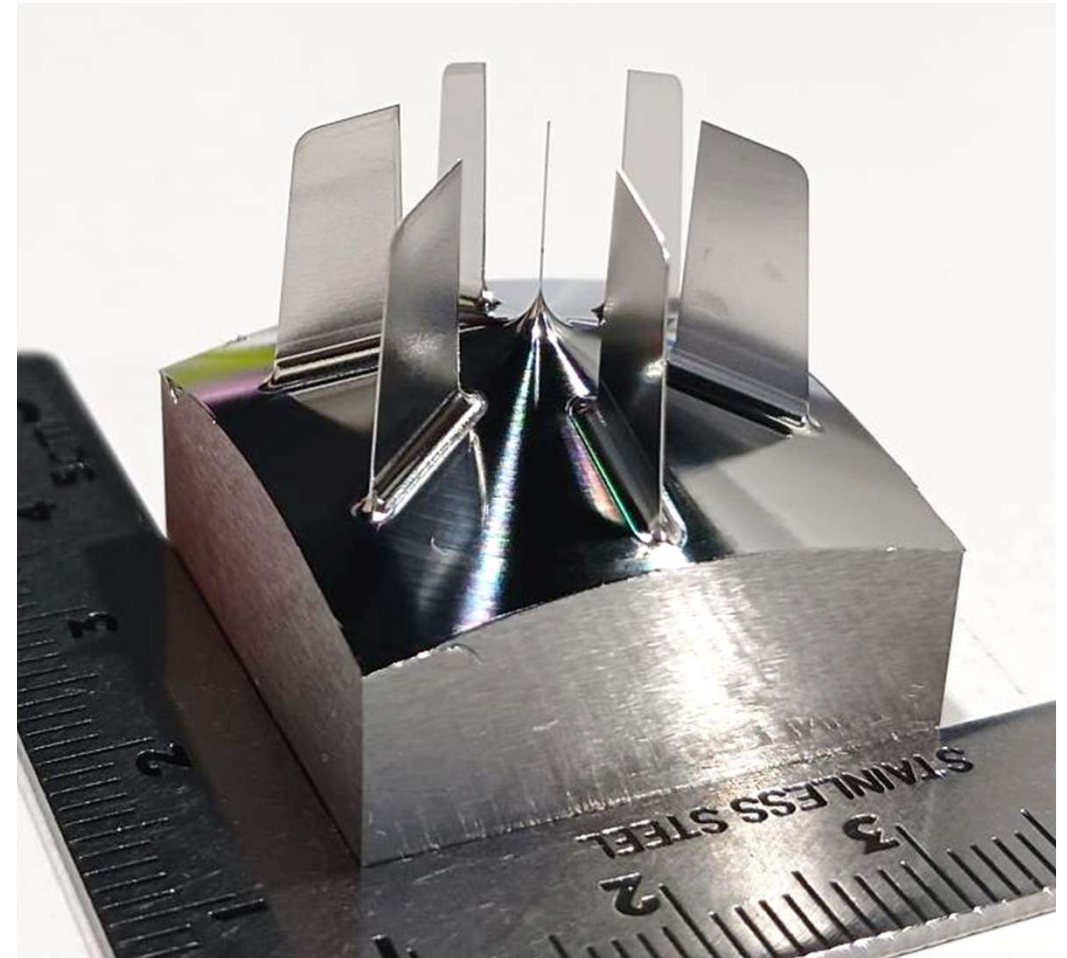
Cutting condition:

- Spindle speed(S): 12,500~23,000 min⁻¹
- Feed rate (F): 300~2,000 mm/min

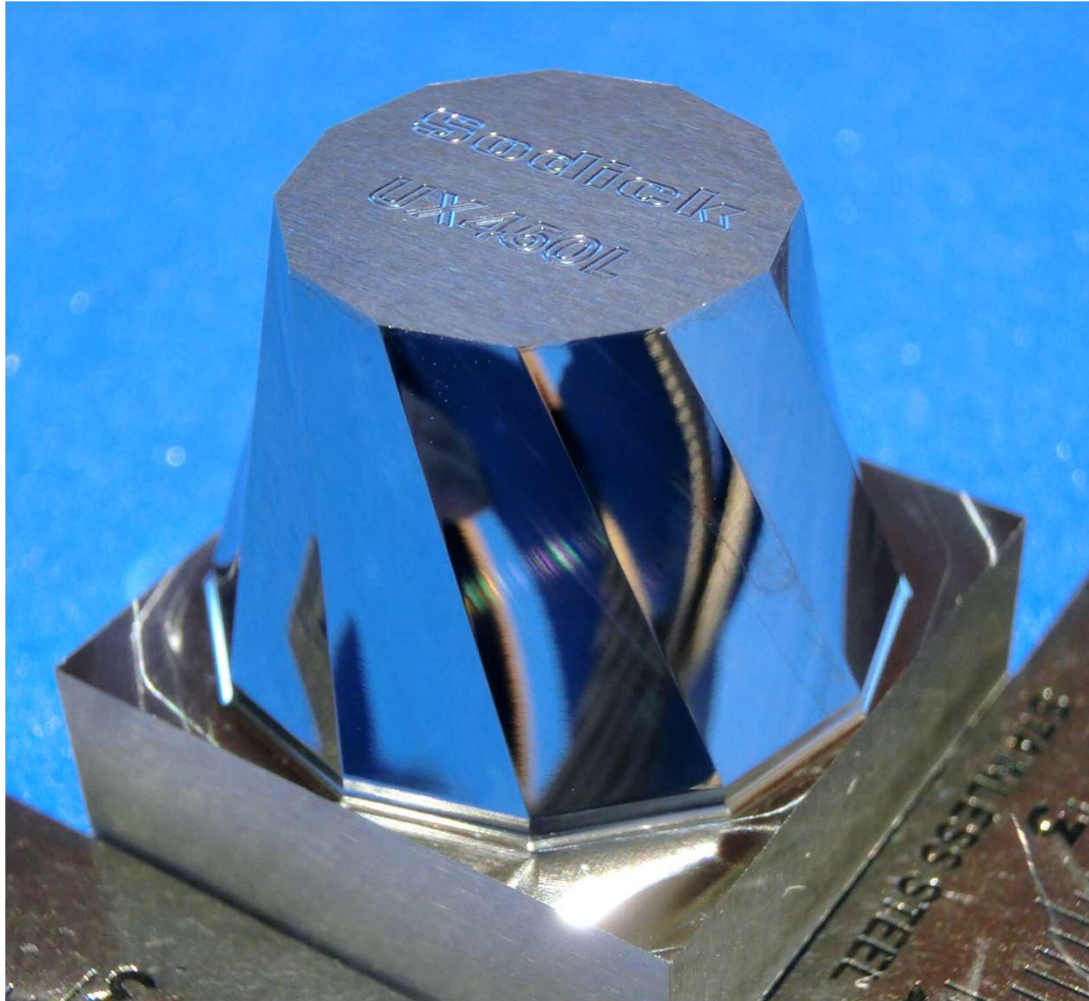
Cutting tool: 2

- Ball nose R1.5
- Ball nose R1.0

Surface Finish: 0.006 μmRa



Twisted Dodecagon



Machine model: UX450L

Work-piece: Stavax 25 x 25 x 25 mm

Cutting height: 16 mm

Cutting time:

- Total cutting time: 9 h 25 min

Cutting condition:

- Spindle speed(S): 10,000~40,000 min⁻¹
- Feed rate (F): 600~3,000 mm/min

Cutting tool: 4

- 3 x Ball nose R1~1.5
- 1 x Ball nose radius D6 x R0.5

Surface Finish: 0.005 μmRa

50 Years Anniversary

- In 2026, Sodick is celebrating 50 years anniversary

