

**AGELTECH**

**meatec**  
COMPANY GROUP



**2020-2021**

# **CATALOGUE OF EDM MACHINES +**

WIRE-CUT • DIE-SINKING MACHINES  
DRILLING • EXTRACTORS • CNC DIAMOND WIRE SAW

Authorized distributor —  
partner of DMG MORI  
and Sodick Co., Ltd

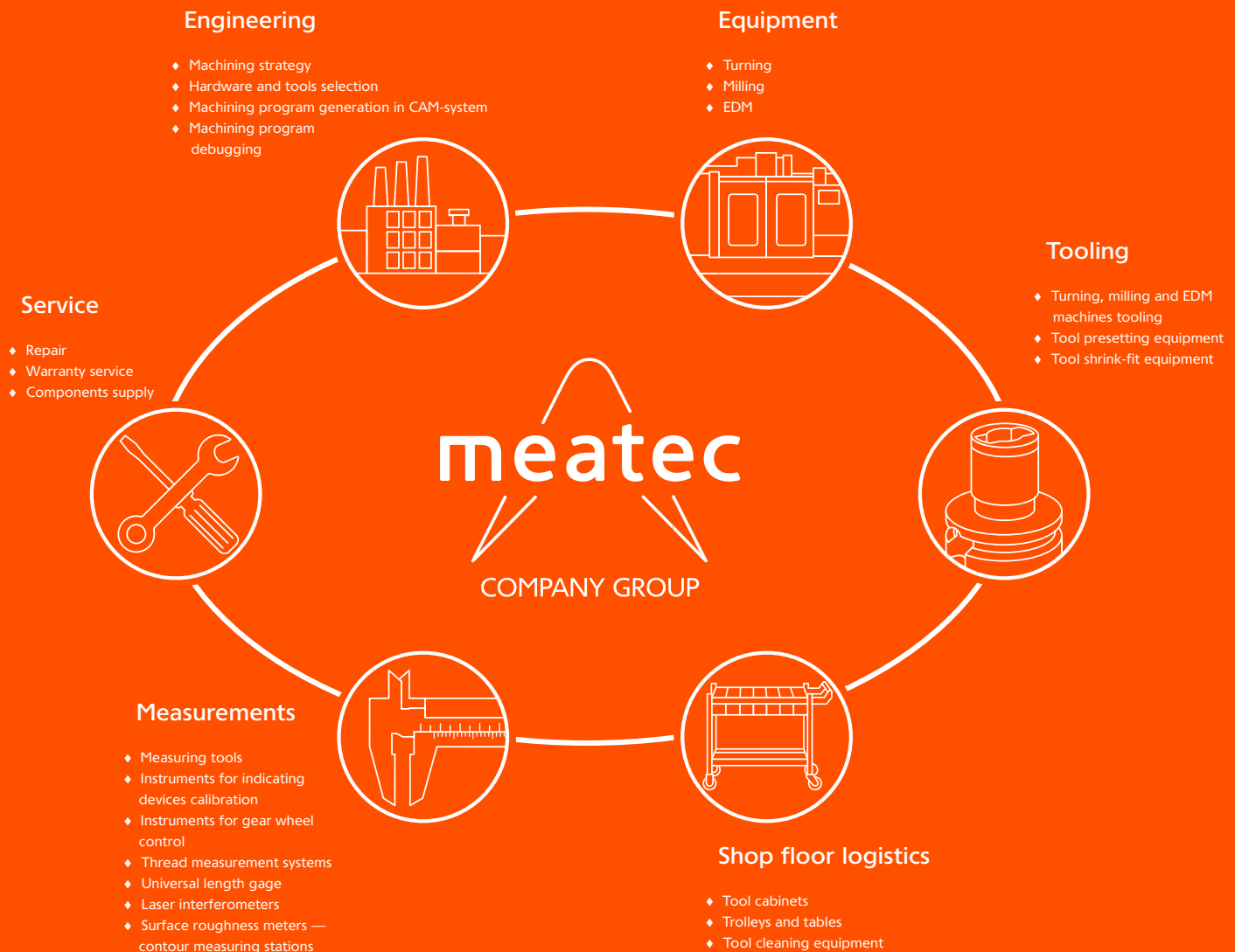
# ABOUT COMPANY

MEATEC holding company – means the full-service teamwork of following enterprises:

- ◆ SPE “MEATEC” LLC (Zelenograd, Russia) – design, manufacture and engineering support of the MEATEC electric discharge machines.
- ◆ “MEASURING TECHNOLOGIES” LLC (Dolgoprudny, Russia) — sales of the full range of metal machining equipment: SODICK, MEATEC, ARISTECH, CASTEK, MAXSEE, NEUAR, ACCUTEX, LILIAN.
- ◆ LINKS-RUSSIA, LLC (Kirov, St.Peterburg, Russia) — complete scope of measuring tools and instruments engineering support and sales
- ◆ “MEATEC” SERVICE CENTER, LLC (Zelenograd, Russia) — commissioning, repair and maintenance of electric discharge equipment of any manufacturer. Equipment retrofitting services.
- ◆ “MEATEC ENGINEERING”, LLC (Moscow, Russia) — metal working production engineering services. Authorized distributor of DMG MORI.
- ◆ “EDM MARKET”, LLC (Zelenograd, Russia) — online-trade of consumables materials, spare parts and machine hardware.
- ◆ AGELTECH SIA (Riga, Latvia) — custom cargo terminal in Riga, cargo custom clearance, sea-air-auto-train shipping service.
- ◆ AGELTECH GmbH (Weinstadt, Germany) — sales and service for the whole range of MEATEC products portfolio in the Western and Eastern Europe.

MEATEC holding company is an alliance of the first-rate global brands: DMG MORI, SODICK, MEATEC, ARISTECH, CASTEK, MAXSEE, NEUAR, ACCUTEX, LILIAN, KELCH, LINKS, CHOTEST.

When talking about the activities of our holding company,  
we mean the production cycle MEATEC:



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# Introductory remarks of MEATEC holding company CEO

Dear friends!

For over 15 years MEATEC has been specializing in the sales of electro-erosion equipment. During these years the vast experience and massive customer base were built-up. The company has established business units both to sell in-house produced equipment and to sell equipment made in China, Taiwan and Japan as separate business lines in three market price segments: low, medium and high. However, after so many years, we realized that simply selling equipment, even at the request of the customers themselves from different price segments, does not provide the advantage to our customers that we could offer, considering not competitive analogs to form an offer, but the technical task of the client and carrying out a precision technical and economic calculation of the production of the required part on different types of equipment from three segments of the available at the disposal of MEATEC.

So the decision has been made! We have combined all business lines into one unit of an integrated EDM project. At the same time, the form of our work with the customer was changed, and in addition to the project team leader and sales managers, we created an industrial engineering department. The main role of process engineers was to understand the real technological sufficiency of the equipment, which is necessary to effectively achieve the client's goal, and to calculate the production costs and working hours on various types of equipment available in order to be able to provide the buyer with a fair right to independently make a choice in favor of certain equipment. The process engineers are obliged to interact directly with the customers before, in the course and after business transaction in order to maintain the continuous process supervision. Since 2020, the mission statement of our company has become: **We do not just sell equipment at competitive prices, we offer the most effective solution to the problems of our valued customers!**

The main pillars of successful business growth of MEATEC Company Group are the firmly obeyed underlying corporate business principles:

- ◆ **EXPERTISE** — We are never engaged in something we do not know! By offering a product or service, we offer the optimal solution, based on experience and knowledge and are ready to provide customers with guarantees.
- ◆ **CLEARLY DEFINED PERSONAL RESPONSIBILITY OF EACH STAFF MEMBER.** Each employee of any enterprise of the MEATEC group of companies clearly knows the area of his responsibility, his rights and obligations, expressed in digital processes and controlled by the ERP system.
- ◆ **DECISIONS MUST BE TAKEN QUICKLY.** The business management is based on the matrix structure. The management of the Company Group enterprises is implemented in the MEATEC Holding Company organization with the following structure: CEO, Legal Department, Financial Department, Promotion Department, IT & Security Department, HR Department, Transport and Logistics Department, one member of staff in each department — its Head. Each enterprise has its own specifics, not duplicating or overlapping each other in the market. Each enterprise is responsible for one to three business projects. Each business projects has its own project manager who subordinates directly to the Holding Company. Each manager of the Holding Company has a definite list of issues assigned to him with a duty to give a conclusive answer. We do not hold regular meetings, we work in a mode of constant maximum individual dedication within the framework of approved competencies and strictly follow the plan. The execution of the plan is monitored by the ERP and is reflected in the income at the end of the period.
- ◆ **DISCIPLINED BUDGET.** All operations in our enterprises are based on the following principles:
  - Three-year strategic development programs;
  - Annual financial plan stating the income and expense items with breakdown by quarters, necessary investments and their source, personnel policy;
  - Monthly financial plan with a well-defined balance of revenue and spending budget, a description of normal and pessimistic scenarios. The enterprises cannot overstep the approved monthly plan spending limits even in the event of a budget surplus.
- ◆ **ABILITY TO TAKE FINANCIAL RISKS AT OWN RESOURCES.** The financial department of the Holding Company in cooperation with the partner banks conduct quarterly stress tests for the Group enterprises capacity to service the current and projected financial obligations with own resources. In case of exceeding the acceptable risk level we deliberately hinder the company development.
- ◆ **QUALITY PRODUCT/ SERVICE.** Regardless of which price segment a particular product or service belongs to, the stated description and set of functions and characteristics, as well as the period of their stability in terms of measurement, must be completely honest. The customer, choosing a product or service, independently makes a decision to make a deal based on an assessment of price and efficiency. For this reason, the concept of quality means for us the certainty of compliance with the declared characteristics, and not a formal comparison with a similar competitor's product.
- ◆ **CUSTOMER IS NOT A BOSS BUT A PARTNER.** Considering the fact that today MEATEC has more than 5,000 customers, we cannot afford to operate according to the principle «Customer says — MEATEC does». The corporate culture of the MEATEC Group focuses on the most complete and honest informing of all existing and potential customers about our capabilities, conditions and prices. However, to prevent consumer extremism, changing the agreed terms is a problematic issue.

- ◆ **SUPREME VALUE TO THE COMPANY** – is the health and family well-being of its employees. None of the business tasks is worth violating of this principle. Every employee knows: if he is in trouble, the company will help, no matter how much it costs.

In 2014, we established SPE MEATEC as a company engaged in the development and full-scale production of electro-erosion equipment. We purposefully spent virtually all revenues remaining at the disposal of our commercial enterprises for the development of new products and mastering own production. It was the gravest life experience. The story of overcoming the fear of failure to get a real marketable product. The story of overcoming the economic and psychological discomfort when trading companies refused to believe in the success of such investments. The story of overcoming conservative market aversion of something new. But now we are proud to say– We did it! And will continue doing! Over the 6 years of its existence, SPE MEATEC has developed and put into mass production the following products:

- ◆ **ERP-01 portable EDM broken tools extractor** (development of circuitry, software, design of mechanical assemblies, commercial production in order to replace supplies of similar equipment from China and Taiwan: our ERP-01 has a lower price and better quality).
- ◆ **ME11 control unit for EDM wire-cut flush-type machines** (development of circuitry, pulse generator control logics, software, design of mechanical assemblies, commercial production. To replace supplies of similar equipment from China. With the benefit of own production facilities we can offer our customers ME11 control unit, which has a lower price and better quality as compared with its foreign analogs).
- ◆ **MS series CNC EDM wire-cut flush-type machine.** The concept of this machine was nurtured for years and the underlying idea was to move beyond the technological limitations of M-series machines to reach a machining accuracy of 12 µm and roughness Ra0.8; at the same time to keep the price much lower than the price of submerged-type machines. Robust design of the C-type machine bed, AC servo motors with direct connection to the ball screw with increased accuracy, high-precision optical scales with servo feedback, professional grade Balt-System CNC, a special feedback unit for spark gap control developed and implemented by our company and modernization of the existing pulse generator allowed us to obtain a very capable machine with a machining accuracy of 4 microns and a better roughness Ra0.6 at a machine price of 33,000 euros.
- ◆ **MK series CNC diamond wire-saw**  
In manufacturing EDM metal cutting machines, we have received many requests from the market for cutting special materials with low conductivity or with the inclusion of dissimilar materials or materials with multilayer structure; however, we could run these tests with little success. But it gave us the idea to use diamond coated steel wire abrasive cutting technology based on the mechanical part of the EDM machine. The result is an affordable universal CNC wire cutting machine that can cut any material with a hardness slightly below the hardness of diamond with an accuracy of about 20 microns.
- ◆ **MEATEC CNC control system.** When we installed Chinese-made CNC systems on our M and MS series machines, we were always aware of our dependence on Chinese manufacturers for rising prices, poor performance of various functions, outdated operating systems and computer components. Over the past three years, we have been developing our own Linux-based multi-axis CNC system with an integrated graphics editor and converters for DWG and dxf files, as well as a wide range of functions not available in similar Chinese CNC systems. Currently, the MEATEC CNC system has been tested and accepted for production and installation on MK series machines.

**Of course, the main goal of our company is to make a profit, but in our current achievements, money has served as a simple tool. The key factor is OUR COLLEAGUES, their professionalism and willingness to do something better!**

Sincerely Yours,  
CEO of the MEATEC holding company  
Dipl.Eng. Grigory Grinenko



## MK Series — CNC DIAMOND WIRE SAW SPE MEATEC



Diamond wire cutting technology cannot be called a completely new approach, since it has existed for over 50 years. Basically, the abrasive wire cutting method was applied in the customized multi-wire straight-line cutting equipment with large production capacity. The main area of application was precision slicing of silicon carbide for electronic industry. In XXI Century the significance of such a technology has increased much more because of the development of novel carbon fibers-based materials, the special alloys with low inductance but very high hardness, the materials with sandwich-type structure, use of ceramics and various plastics and the need for mechanical treatment of various minerals as well as synthetic porous and brittle materials. We, being the manufacturers and suppliers of the electric discharge equipment, regularly received requests for test machining of various materials, which machinability is near or even beyond the limits of electric discharge machining, and, certainly, such tests brought unsuccessful results. This gave us the idea to develop a universal machine based on the principle of friction of an abrasive wire against a workpiece, but keeping the mechanical part of the DK series EDM machine practically unchanged. The control unit was upgraded for biaxial control, and for the computer numerical control, the patented MEATEC CNC system was used, adapted for cutting with abrasive wire.

**As a result, the new equipment has become versatile, inexpensive and reliable!**

### Features:

- ◆ CNC system — patented CNC system developed by MEATEC Group
- ◆ On-board CAM processor to convert dxf. and dwg. files
- ◆ Standard system of optical linear scales
- ◆ Rotary table mounting option
- ◆ Machining of any material with hardness not exceeding the diamond hardness
- ◆ Minimum cutting thickness equal to 0.33 mm allows to save the material
- ◆ Ability to produce small-sized and intricately-shaped parts
- ◆ Machining of small holes and fillets with small inner and outer radii
- ◆ Batch processing capability
- ◆ Low cost of parts manufacturing



1



2

1. Cutting of boron carbide
2. Cutting of meteorites
3. Cutting of ferrite samples
4. Cutting of granite



3



4

Specifications	Unit	MK200	MK300	MK400	MK500
Work table size	mm	335 x 495	340 x 560	410 x 710	650 x 1003
Work table travel	mm	200 x 250	300 x 360	400 x 500	500 x 630
Max. workpiece thickness	mm	200	400	500	600
Work table travel per hand wheel turn	mm	4			
Max. cutting speed	mm <sup>2</sup> /min	200			
Max. workpiece weight	kg	100	200	300	350
Abrasive wire diameter	mm	ø 0.33–0.45			
Wire drum size	mm	ø 160 x 300			
Max. length of wire on the drum	m	300	300	400	400
Min. step of work table travel	mm	0.001			
Step motor	—	90BFC06			
Wire drum motor	—	YS7124 — 750 W–1400 rpm			
Working fluid pump	—	AB25 90 W 25 l/min			
Overall dimensions	mm	1050 x 640 x 1700	1640 x 1280 x 1700	1830 x 1490 x 1700	2070 x 1770 x 1800
Machine weight	kg	600	1400	1600	2200
Power consumption	—	2 kW, 380 V AC, 50 Hz			



## EDM WIRE-CUT MACHINES

The application of EDM wire-cutting of metals acquires the crucial importance in the modern production processes. And regardless of existence of more efficient laser and water jet cutting technologies, the electric discharge method has its own exclusive area of strength for several reasons: required surface roughness  $\leq Ra2.5$ , machining accuracy  $\leq 12 \mu\text{m}$  and/or workpiece thickness of  $\geq 40 \text{ mm}$ .

The range of wire cutting machines offered by our company has historically been presented in three price categories: low, medium and high. We do not judge the offered equipment quality as poor, normal and good but instead we consider any offered machine as the high-quality machine provided with various benefit-giving qualities, technical specifications and different number of functions and capabilities.

### The comparison table of EDM wire-cut machines specifications

Specifications	MEATEC-M	MEATEC-MS	ARISTECH-CW	MAXSEE-BWS
Machine price, EUR., excl. VAT	from 13'000 EUR	from 33'000 EUR	from 54'000 EUR	from 63'000 EUR
Best positioning accuracy	10 $\mu\text{m}$	3 $\mu\text{m}$	3 $\mu\text{m}$	2 $\mu\text{m}$
Best machining accuracy	$\pm 6 \mu\text{m}$	$\pm 4 \mu\text{m}$	$\pm 3.5 \mu\text{m}$	$\pm 3 \mu\text{m}$
Best surface finish	Ra0.8	Ra0.6	Ra0.3	Ra0.6
Max. cutting speed	140 mm <sup>2</sup> /min	200 mm <sup>2</sup> /min	200 mm <sup>2</sup> /min	
Machine bed structure	X-axis is located on the machine bed and Y-axis (work table) is located on the top of X-axis.			
Work table structure	Squared steel table with supports made of acrylic glass		Stainless steel cast table, three-sided	
Max. cutting angle	$\pm 6^\circ / 80 \text{ mm}$		$\pm 21^\circ / 100 \text{ mm}$	$\pm 15^\circ / 80 \text{ mm}$
Driving system	Step motor	AC servo drive with closed loop coupling on the optical scales	AC servo drive (closed loop coupling on the optical scales -optional)	AC servo drive, XYUVZ axes with closed loop coupling on the optical scales - resolution 1 mm (flat linear motor for XY axes - optional)
Optical scales	DRO — optional for XY — 5.0 mm	XY — 1.0 mm	Optional for XYUV — 0.5 $\mu\text{m}$	XYUVZ — 1.0 mm (XY — 0.1 mm (with linear drive — optional))
CNC operational system	Windows 7	Balt-Systems	DOS	Windows CE
Min. step of movement	1 $\mu\text{m}$			
Data transmission system	Ethernet, USB			
Built-in CAD/ CAM system for 2D	Yes	No (to be developed)	No (DXF-converter — optional)	No (to be developed)
Built-in CAD/ CAM system for 3D	No	No (to be developed)		
Anti-collision function	No			
Rotary table function	To be developed		Complete control	
Country of origin	Russia		Taiwan	

All EDM machines perform the function of metal cutting but with different operating efficiency, accuracy and surface roughness of the produced parts. The main priority of our company is the ability to offer the maximum efficient technical-and-economic solution to our customers who must produce the parts with desired parameters.

We offer our current and potential customers to move from the request "Give us a quote for a similar machine" to a detailed analysis of possible equipment options that are most suitable for a specific client's task. For each model of existing equipment, we have developed special matrices of mathematical modeling based on the following parameters: service life and, accordingly, equipment wear, service life and cost of all wear parts of the machine, equipment productive capacity, rates of use and cost of consumables (wire, filters, cutting fluids), average non-productive time per one part and drawing up a machining program taking into account the actual cost of depreciation of the equipment.

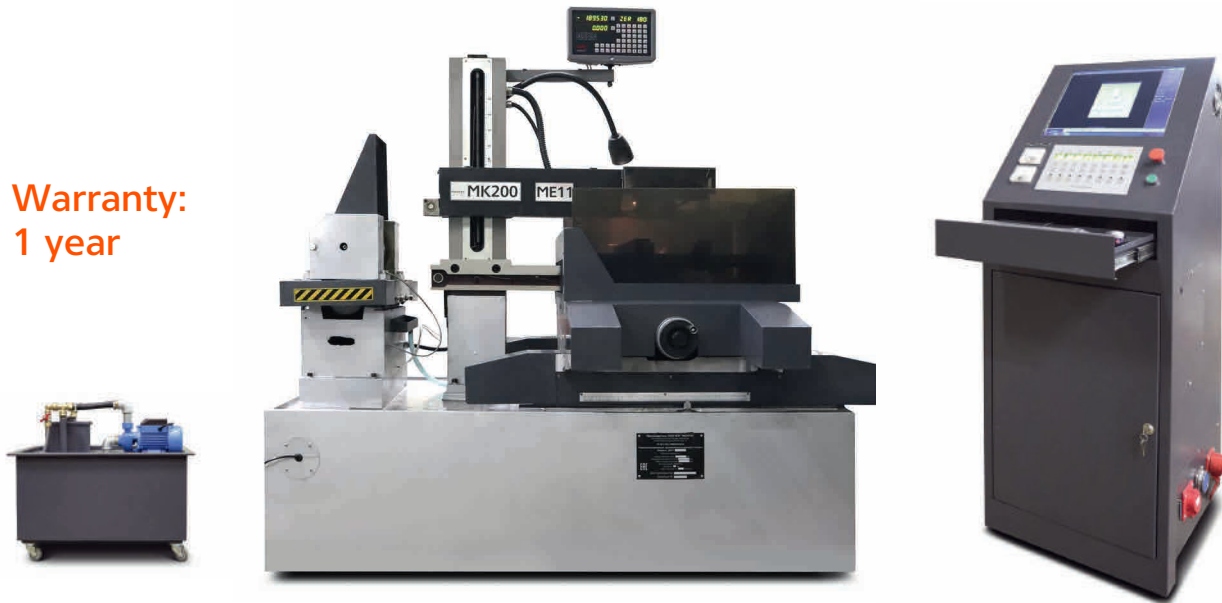
Since the equipment in our product range varies from the very simple to the most complex, we are confident that marketing a specific product is not as important as the most competent solution to a technological problem with the lowest cost of the produced part.

**To help our client form a correct understanding of the technical capabilities of our equipment in various price ranges, we are pleased to present a comparison table of equipment characteristics below.**

ACCUTEX GA/GE	ACCUTEX AL	ACCUTEX AP	SODICK VL	SODICK ALC
from 59'000 EUR	from 68'000 EUR	from 96'250 EUR	from 106'250 EUR	from 135'000 EUR
2 µm	1 µm			
±3.5 µm	±2.5 µm	±2 µm	±2.5 µm	
Ra0.35	Ra0.08		Ra0.32	Ra0.08
250 mm <sup>2</sup> /min			300 mm <sup>2</sup> /min	
Y-axis is located on the machine bed and X-axis (work table) is mounted on the top of Y-axis	T-shaped machine bed, with shorter Y-axis (work table) mounted on X-axis	Movable table (X-axis) with work tank and movable column (Y coordinate) on the machine bed		
Cast table + stainless steel table, three-sided table			Table plate and supports made of FineXCera® ceramic, three-sided table	
±15°C / 80 mm	±21°C / 100 mm	±32°C / 100 mm	±15°C / 80 mm	±36°C / 100 mm
AC servo drive, XY axes with closed loop coupling on the optical scales 0.2 mm (linear cylindrical motor for XY axes — optional)	XY - linear cylindrical motor with closed-loop coupling to optical scales, 0,1 mm, UVZ — AC servo motor	XY - linear cylindrical motor with closed-loop coupling to optical scales, 0,1 mm, UVZ — AC servo motor	XYUV axes – plane parallel linear motor with closed-loop coupling to optical scales with resolution 0.01 mm, Z axis — AC servo motor	
XY — 0.2 µm	XY — 0.1 µm	XY — 0.1 µm (0.05 — 1 mm — optional)	XYZUV — 0.01 µm	
Windows CE			Windows 7, 10	
0.1 µm				
Ethernet, USB				
No (optional, to be developed)			Yes	
No			Yes	
Yes				
Yes, complete control			Yes, indexed control	
Taiwan			Thailand	

## M series — CNC EDM Wire-Cut Machines, Flush Type SPE MEATEC (with Step Motors)

**Warranty:  
1 year**



Best machining accuracy:  $\pm 6 \mu\text{m}$   
Best surface roughness: Ra0.8

### Features:

- ◆ The M Series CNC EDM wire-cut machines, flush type, differ from the submerged-type machines in simplicity of design and low operational costs.
- ◆ SPE MEATEC ME11 multi-pass control units are characterized by high quality of performance, innovative shape and ergonomics, as well as the ability to achieve better workpiece results than comparable CNC units.
- ◆ The machines can be equipped with the following CNC systems: MEATEC and AutoCut.
- ◆ Our own production of M-series machines allows us to offer our customers high-quality equipment, extended warranty, high level of after-sales service, minimum delivery time for machines and components for their modernization.

Model	Work table size, mm	Work table travel, mm	Max. cut thickness, mm	Max. workpiece weight, kg	Standard wire angle	Machine weight, kg	Machine dimensions (LxWxD), mm
M200	320 x 450	200 x 250	200	100	$\pm 3^\circ / 80 \text{ mm}$	600	1180 x 850 x 1340
M250	385 x 600	250 x 320	300	200	$\pm 6^\circ / 80 \text{ mm}$	1200	1480 x 1170 x 1400
M300	420 x 640	300 x 360	400	200	$\pm 6^\circ / 80 \text{ mm}$	1200	1460 x 1170 x 1400
M320	440 x 700	320 x 400	400	300	$\pm 6^\circ / 80 \text{ mm}$	1200	1440 x 1170 x 1400
M350	500 x 740	350 x 450	400	300	$\pm 6^\circ / 80 \text{ mm}$	1300	1500 x 1170 x 1400
M400	475 x 755	400 x 500	400	400	$\pm 6^\circ / 80 \text{ mm}$	1500	1600 x 1240 x 1400
M450	540 x 795	450 x 550	400	400	$\pm 6^\circ / 80 \text{ mm}$	1900	1900 x 1303 x 1830
M550	650 x 1000	500 x 630	600	700	$\pm 6^\circ / 80 \text{ mm}$	2300	1720 x 1680 x 1700
M630	855 x 1310	630 x 800	600	1000	$\pm 6^\circ / 80 \text{ mm}$	3200	2100 x 1940 x 1780
M800	900 x 1500	800 x 1200	600	1500	$\pm 6^\circ / 80 \text{ mm}$	5500	2900 x 2500 x 2150
M1000	1100 x 1500	1000 x 1200	600	1500	$\pm 6^\circ / 80 \text{ mm}$	5600	2930 x 2500 x 2000
M1200	1300 x 1900	1200 x 1600	500	4000	$\pm 6^\circ / 80 \text{ mm}$	10000	4200 x 3700 x 2000

## Technical specifications of machines with various types of pulse generators

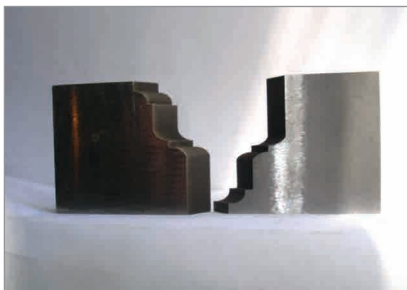
Parameters	Unit	Multi-pass
		ME11
Max. cutting speed	mm <sup>2</sup> /min	140
Average cutting speed to achieve surface roughness Ra3.4 (1 pass), workpiece thickness 40–70 mm	mm <sup>2</sup> /min	100
Best surface roughness	Ra, μm	0.8
Warranted workpiece cutting accuracy	mm	0.012
Max. cut thickness (depends on the machine size)	mm	500
Max. machining current	A	4
Generator power	kW	1.5
Type of guide ways on X,Y work tables	—	Rail-type linear guide ways
Wire drum rotation speed control	—	Yes
Centralized lubrication system (ball screws of axes X, Y, screw-nut in the carriage of the wire drum, gears of the reducer in the carriage of the wire drum)	—	Yes
X, Y guides lubrication by centralized lubrication system	—	Yes
Dielectric liquid unit and wire drum control	—	From control panel and remote control unit
Computer and monitor installed in the cabinet	—	Yes
Warranty period	Years	1

### Standard accessories:

- ◆ Machine control unit with pulse generator and CNC
- ◆ Working liquid filtering system
- ◆ Step motors of XYUV-axes
- ◆ Linear prismatic guideways
- ◆ Remote controller
- ◆ Central lubrication system
- ◆ Wire tensioner
- ◆ Adjustable clamping fixtures
- ◆ Starter kit of consumables
- ◆ Tool box for machine servicing
- ◆ Wire vertical alignment device
- ◆ Hardware kit for workpiece fastening
- ◆ Set of operational instructions in English
- ◆ Technical data sheet and geometric accuracy check record
- ◆ CE-Certificate

### Optional accessories:

- ◆ Linear guide rails
- ◆ Optical scales with digital readout system (DRO)
- ◆ Wire tension device
- ◆ Precision wire guiders 0.195 mm
- ◆ Aluminum workpiece cutting unit
- ◆ Automated central lubrication system
- ◆ Ceramic rollers (for hard alloys cutting)
- ◆ Clamping hardware



Complex profiles cutting sample



Extrusion machines guiders



Complex profiles cutting sample

**MS series** — CNC EDM Wire-Cut Machines, Flush Type  
**SPE MEATEC** (with Servo motors)



**Features:**

The key difference of this model is the built-in full-function CNC system, which allows servo systems to be controlled on the basis of a closed control circuit of optical linear scales and to use any additional peripheral equipment with setting the operating logic using a PLC.

The servo systems increase the travel speed and positioning accuracy. When compared with step motors, the rapid advance speed is much higher and positioning accuracy is also better. The set of absolute optical linear scales allows the operation started from any position due to memorized user system of coordinates without necessary reset to zero after system restart. The informative remote control has its own position indication and various modes of travel control.

**Standard accessories:**

- ◆ Control unit with high-frequency current (generator)
- ◆ Working fluid filtering system
- ◆ NC-400 Balt-System CNC
- ◆ MPG remote control
- ◆ Wire tension device
- ◆ SKBiS LIR-DA8 linear optical scales
- ◆ HIWIN, Class 3, linear guide ways
- ◆ Automatic lubrication system
- ◆ Spare parts and materials kit for equipment start-up operations
- ◆ Machine operation manual: for electric part and programming – in English
- ◆ CE-certificate

**Optional accessories:**

- ◆ Rotary table
- ◆ Aluminum cutting device
- ◆ SprutCAM EDM software with postprocessor

Machine model	Worktable size, mm	Cutting area (L x W x H), mm	Max. weight of workpiece, kg	Machine weight, kg	Dimensions
MS-320	440 x 620	320 x 400 x 280	450	1800	1700 x 1300 x 1900
MS-400	510 x 730	400 x 500 x 280	600	2000	1900 x 1450 x 1900
MS-500	630 x 880	500 x 630 x 300	1000	2800	2050 x 1850 x 2000
MS-630	850 x 1200	630 x 800 x 300	1200	3200	2250 x 2020 x 2000

## Description of NC-400 Balt-System CNC:

### Main characteristics:

- ◆ Discrete inputs/outputs: 48/32.
- ◆ Data is arranged in files (tooling tables, tool offset, starting points)
- ◆ Generation of control programs synchronously with the workpiece machining cycle execution
- ◆ Various messages (errors in program blocks, operator errors, system and machine diagnostics errors)
- ◆ Lead screw error offset and backlash compensation
- ◆ Program restrictions
- ◆ Protected areas and working area definition from the control program
- ◆ Control of speed on the profile
- ◆ Control of acceleration/ deceleration based on linear or exponential law
- ◆ Starting point setup during system configuration.
- ◆ Manual pulse generator
- ◆ Diagnostics at machine start-up and during operation
- ◆ Higher level language for logic interface programming
- ◆ Videographics

**Output channels:** FDD, RS-232, LAN, USB

### Machine control unit

- ◆ Feed rate override (F%) from 0 to 127%
- ◆ Spindle override (S%) from 0 to 127%
- ◆ Mode selection override
- ◆ Manual feed rate override (JOG).
- ◆ Start and Stop buttons
- ◆ Emergency stop button
- ◆ Hand wheel
- ◆ Programmable multilevel machine control panel, implemented using the function keys (F1-F8) and (F11-F18), allows you to control any machine mechanisms

### Remote modules

- ◆ Input module with display: 24 inputs
- ◆ Output module with relay switching and display: 16 outputs, DC 24 V/3A, AC 110V/3A.

### Keyboard

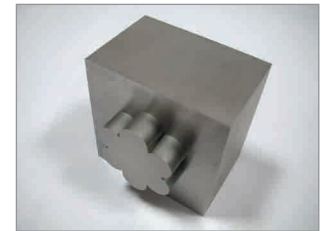
- ◆ Sealed push-button alphanumeric keyboard with tactile effect
- ◆ Sealed push-button keyboard of machine control panel with tactile effect

**Display:** color TFT

Specifications	Unit	MS-series
<b>Dimensions</b>		
Size of console with control unit, L x W x H	mm	550 x 780 x 1800
Dielectric liquid tank size, L x W x H	mm	620 x 420 x 350
<b>Specifications</b>		
Positioning accuracy	mm	0,005 / 300
Repeat accuracy	mm	±0.003
Best roughness	Ra, µm	Ra0.4
Cutting line angle	mm	±3° / 80 mm
Max. cutting speed	mm/min	200
Wire diameter	mm	0.12–0.22
<b>X / Y axes</b>		
Motor type	—	Delta ASDA/A2 Servo
Motor power	kW	0.75
Motor torque	Nm	7.16
Max. fast advance feed rate	m/min	6
Max. cutting feed rate	m/min	2
<b>U / V axes</b>		
Motor type	—	NEMA-23 Step motor
Motor power	kW	0.08
Motor torque	Nm	1.2
Max. advance feed rate	m/min	0.05
Max. feed rate	m/min	0.035
<b>Linear optical scales</b>		
Type	—	SKBiS LIR-DA8 — absolute
Accuracy	µm	±5 / 1000 mm
Positioning resolution	µm	1
Resolution of optical scales	mm	0.001
<b>CNC</b>		
CNC system	—	NC-400 Balt-System
Output channels	—	FDD, RS-232, LAN, USB
Digital input/output	—	48/32
Operating voltage, current, power consumption	—	380V/220V/ 50Hz; <2kW



## CW series — CNC EDM Wire-Cut Machines, Submerged Type ARISTECH (with Servo motors)



Gapless die cutting  
Maximum tolerance for surface profile is  $5 \mu\text{m} / 100 \text{mm}$ .  
Straightness top-down is  $2 \mu\text{m} / 100 \text{mm}$ .  
Roughness Ra 0.5

### Features:

The submerged-type machines are equipped with a semi-automatic wire-threading system and operate on brass wire with a diameter of 0.15 mm to 0.3. The highest degree of machine operation accuracy is ensured by the installed AC servo drive units directly connected with high-precision ball screws as well as the use of linear guideways along X, Y, U, V, Z axes. The precision accuracy of the machine is attained additionally by laser alignment.

The machine bed made of the hardened mechanite cast iron has the symmetric design, which ensures the high load capacity and resistance to the heat-induced deformations. The worktable is made of stainless steel and equipped with high-quality ion-exchange resin filtering system to provide the machine with the pure dielectric liquid.

### Standard accessories:

- ◆ DOS-based CNC
- ◆ Electronic wire alignment adjustment system
- ◆ Ion-exchange system of water filtration with automatic control of water conductivity
- ◆ Water cooling system
- ◆ AVR — voltage regulator, 15 kVA
- ◆ Remote control unit
- ◆ Wire guides (0.25 mm)
- ◆ Upper and bottom water jet nozzles
- ◆ Current-carrying electrodes (collectors)
- ◆ Brass wire 0.25 mm (wire spool — 5 kg)
- ◆ Ion-exchange resin
- ◆ Set of filtering elements
- ◆ Container for the spent wire
- ◆ Toolbox with tool kit

### Optional accessories:

- ◆ High-precision linear optical scales with  $0.5 \mu\text{m}$  resolution
- ◆ Roughness improvement system up to Ra0.3
- ◆ Rotary table (B axis)
- ◆ SprutCAM EDM software with postprocessor

Specifications	Unit	CW-10	CW-30	CW-50	CW-70
Machine type	—	Submerged			
Max. workpiece size	mm	680 x 420 x 150	780 x 500 x 250	1000 x 690 x 300	1200 x 790 x 300
Max. workpiece weight	kg	250	500	800	1000
X / Y travel	mm	300 x 200	400 x 300	600 x 400	800 x 500
Z travel	mm	150	250	300	300
U / V travel	mm	±30 ±30	±50 ±50	±50 ±50	±75 ±75
XY travel speed	mm/min	900			
Best surface roughness	Ra, µm	Ra0.3		Ra0.6	
Workpiece cutting accuracy	mm	±0.003			
Max. machining speed	mm <sup>2</sup> /min	200			
X / Y / U / V drives	—	AC servo drives			
Wire (brass) diameter	mm	0.25 (0,15–0.3)			
Wire feed rate	m/min	0–15			
Automatic wire tensioning	gr.-force	200–2500			
Max. taper angle	deg.	±15° / 80	±21° / 80		±30° / 80
Max. wire drum weight	kg	6	6	10	10
Machine dimensions	mm	2980 x 2270 x 2020	3250 x 2440 x 2060	3810 x 2670 x 2370	4250 x 2500 x 2300
Total machine weight	kg	2000	2700	3300	4600
<b>Dielectric liquid system</b>					
Liquid tank capacity	L	480	690	1200	
Paper filter SW-40	mm	300 x 60 x 500			
Ion-exchange resin container capacity	L	15			
<b>Generator</b>					
Output circuit	—	MOS power transistors			
Max. output current	A	25			
Max. voltage	V	140			
Number of voltage variation steps	—	10			
Selection of pulse delay	—	50			
<b>CNC system</b>					
Data input	—	USB, LAN, keyboard, RS232C			
Display type	—	15LCD-TFT			
Command system	—	32-bit uniprocessor, closed-loop servo system			
Number of controlled axes	—	XYUV+Z (4+1 axes) + rotary table (B-axis) — optional			
X, Y, U, V, Z feed step	mm	0.001			
Max. programmed value	mm	±9999.999			
Interpolation	—	Linear/ circular			
Commands system	—	Absolute / relational			
Cutting feed control	—	Servo / continuous feed			
Scaling	—	0.001–9999.999			
Automatic second cut system	—	Path repeat and automatic parametric variation			
Machining parameters storage space	—	0–9999			
Total power	kVA	13			

**BSW series** — CNC EDM Wire-Cut Machines, Submerged Type  
**MAXSEE** (with Servo motors, AWT System)



**Features:**

Technical specifications of the machines ensure the surface roughness Ra0.6 and machining accuracy  $\pm 3.0 \mu\text{m}$ . The base version has the close-loop servo drives and linear optical scales with  $1.0 \mu\text{m}$  resolution of all axes: XYUVZ. The wide T-shaped machine bed prevents buckling in the extreme points during work table travel.

The BSW series MAXSEE wire EDM machines are designed for high-precision machining of parts. These machines are mainly used in the production of dies, molds, specialized tooling, etc. The equipment is capable to cut the complex contours and profiles.

**Standard accessories:**

- ◆ Device for automatic adjustment of the wire verticality
- ◆ Diamond wire guides, diam. 0.25 mm
- ◆ Set of filtering elements (2 pcs.)
- ◆ Remote controller (generator)
- ◆ Package of technical documentation in English
- ◆ Toolbox with tools kit
- ◆ Brass wire, 0.25 mm (wire spool — 5 kg)
- ◆ Upper and bottom water jet nozzles
- ◆ Current-carrying electrodes (collectors)
- ◆ Workpiece clamps
- ◆ Water cooling system
- ◆ Voltage transformer 380 / 220 V + AVR — stabilizer 15 kW

**Optional accessories:**

- ◆ Rotary table, submerged type (IP68), with clamping plate, diam. 125 mm
- ◆ Parallel-plane drives of XY axes and optical scales with resolution 0.1 µm
- ◆ Device for using the wire spool, 16 kg or 25 kg (at choice)
- ◆ Spent wire chopper

Specifications	Unit	BSW325	BSW530	BSW645	BSW1270
Max. workpiece size	mm	700 x 450 x 180	850 x 500 x 240	1100 x 800 x 300	1600 x 1000 x 350
Max. workpiece weight	kg	350	350	500	1500
XYZ Travel	mm	350 x 250 x 200	500 x 300 x 250	600 x 450 x 300	1200 x 700 x 350
UV Travel	mm	50 x 50	80 x 80	100 x 100	150 x 150
Max. XY feed rate	mm /min	800			
Best surface roughness	Ra, µm	Ra0.6			
Cutting accuracy	µm	±3.0			
Max. machining speed	mm <sup>2</sup> /min	200			
XY/UV/Z drives		AC closed-loop servo motor control by optical scales			
Wire (brass) diameter	mm	Standard 0.25 (0.15–0.3 — option)			
Max. wire feed rate	mm /s	400			
Max. wire spool weight	kg	6	6	10	10
Tank capacity	l	630	770	1450	4800
Max. output current	A	30			
Operating system		Windows			
Number of synchronously controlled axes	-	4 + 1 axis: X, Y, U, V + Z			
Min. Settable step value	mm	0.001			
Total power consumption	kVA	13			
Machine footprint	mm	2800 x 2800 x 2400	2800 x 2800 x 2500	3400 x 3500 x 2500	5300 x 5000 x 2800
Total machine weight	kg	2000	2800	3800	7000



- ◆ Gear cutting, wire diam. 0.25 mm
- ◆ Steel: HRC58, 3 passes, 4 hours



- ◆ Complex contour cutting, wire diam. 0.2 mm
- ◆ Material: KH12M, 4 passes, 6 hours 40 min



- ◆ Complex contour cutting, wire diam. 0.15 mm
- ◆ Material: KH12M, 4 passes, 3 hours

## GE/GA series — CNC EDM Wire-Cut Machines, Submerged Type ACCUTEX (with Servo motors, AWT System)



### Features:

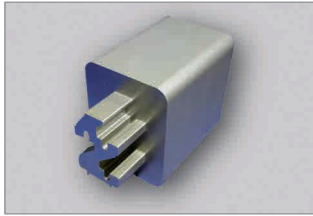
The machine frame has "Direct Force" design where Y-axis is located on the machine bed and X-axis (work table) is located on the top of Y-axis. This design provides good structural rigidity for the small-size machines. The machines feature the machining accuracy of  $\pm 3.5 \mu$ , best roughness of machining surface Ra0.35 (with S Power Module). In the standard version all axes are driven by AC servo motors connected directly to the ball screws. The motor is back coupled with X and Y linear optical scales with  $0.2 \mu$  resolution. Optionally, X and Y axes can be equipped with linear drives. GE series machine is equipped with the wing-type tank door, while GA series has the sliding-down door that requires less production floor area.

### Purpose:

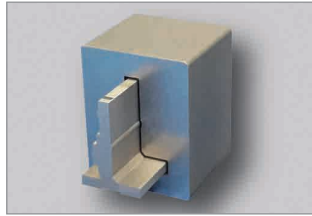
GE/GA series machines are designed for manufacture of high-precision parts: dies, automotive parts, medical instruments and other products.

### Standard accessories:

- ◆ Windows CE-based CNC system
- ◆ AWT — automatic wire thread unit
- ◆ SD-Master — extended system of automatic adaptive control
- ◆ Optical scales on XY axes with  $0.2 \mu$  resolution
- ◆ Collision prevention on Z axis
- ◆ Water cooling system
- ◆ Upper and bottom water jet nozzles
- ◆ Diamond wire guides,  $\varnothing 0.25$  mm
- ◆ Current-carrying electrode (collectors)
- ◆ Brass wire 0.25 mm (Wire Spool — 5 kg)
- ◆ Ion-exchange resin
- ◆ Container for ion-exchange resin
- ◆ Set of filtering elements
- ◆ Container for spent wire
- ◆ Wire alignment device
- ◆ Work tool for the replacement of diamond guides
- ◆ Box with tool kit and work piece clamps
- ◆ Voltage transformer 380 / 220 V + AVR — stabilizer



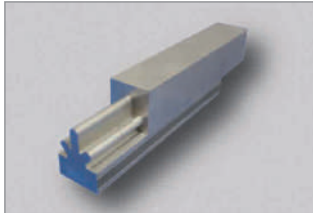
Continuous angle



Stamping the mold



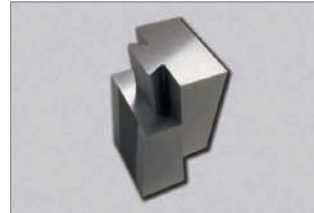
High Slenderness Ratio  
and Complex Profile Assembly Parts



Tall Assembly Parts



Lead-In / Lead-Out



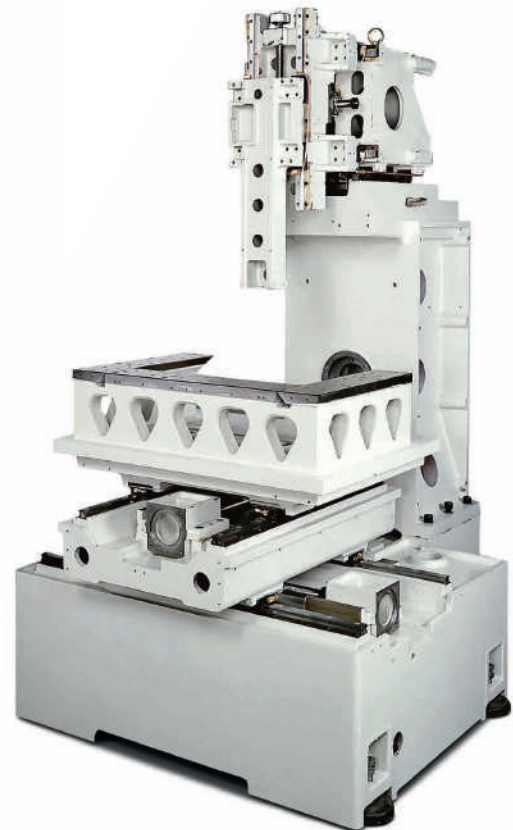
Angle Lifter

Parameters	Unit	GE-43A / GA-43	GE-53A / GA-53
Max. workpiece size	mm	830 x 630 x 215	
Max. workpiece weight	kg	400	500
XY travel	mm	400 x 300	500 x 300
Z travel	mm	220	
UV travel	mm	60 x 60	
Best surface roughness	Ra, $\mu\text{m}$	Ra0.6 (Ra0.35 — option)	
Applicable wire diameter range	mm	0,15 ~ 0,3	
Water tank	l	708	
Min. value of step setting	mm	0.1	
Machine footprint	mm	2200 x 2400 x 1990	
Total machine weight	kg	2770	2850

**Optional accessories:**

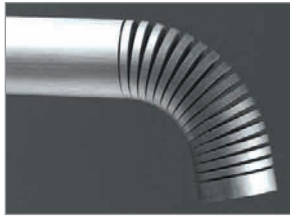
- ◆ Cylindrical linear drive
- ◆ Touch-screen
- ◆ S Power Module — for roughness improvement to Ra 0.35
- ◆ Three-color indicating lamp of machine operation status
- ◆ High Pressure Wire Threading AWT
- ◆ Water Jet (if ordered, Z travel = 200 mm)
- ◆ Rotary table, submerged type (W axis)
- ◆ Remote master — remote monitoring of machine operation status
- ◆ Alarm messenger — text alert of machine status by smartphone
- ◆ Electric lock on the tank door
- ◆ Spent wire chopper

## AL Series — CNC EDM Wire-Cut Machines, Submerged Type ACCUTEX (with Linear Drives, AWT System)

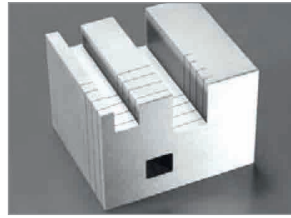


### Features:

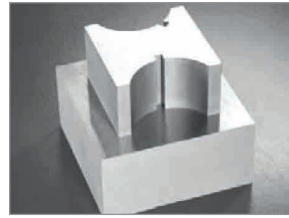
- ◆ ACCUTEX Machines AL-series are capable to reach surface roughness Ra0.35 and even Ra0.08 (optionally) and machining accuracy of  $\pm 2.5 \mu\text{m}$ . In the basic version, cylindrical linear drive units and linear optical scales with  $0.1 \mu\text{m}$  resolution ensure the full loop control over the machines.
- ◆ The fast servo response brings a higher discharge sensitivity in the spark gap thus increasing cutting speed by 8–10% when compared with the similar machines.
- ◆ The machine structure has T-shape design with a shorter Y-axis (work table) mounted over X-axis. The broad frame prevents buckling in the extreme points during work table travel.
- ◆ AL series of EDM wire-cut machines are designed to perform the challenged tasks such as high-precision gapless dies cutting.



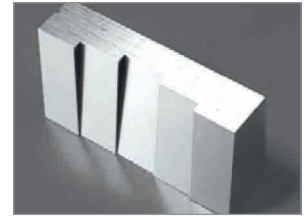
Spring-type part



Machining of workpiece with irregular thickness



Punch and die set



Tapered machining

**Standard accessories:**

- ◆ Windows CE-based CNC and touch screen AWT — automatic wire thread unit
- ◆ SD-Master — extended system of automatic adaptive control
- ◆ Cylindrical linear drives
- ◆ Optical scales on XY axes with 0.1 μm resolution
- ◆ Collision prevention system on XYUVZ axes
- ◆ Water chilling system
- ◆ Upper and bottom water jet nozzles
- ◆ Diamond wire guides, Ø 0.25 mm
- ◆ Current-carrying electrode (collectors)
- ◆ Device for diamond guides replacement
- ◆ Brass wire 0.25 mm (Wire Spool — 5 kg)
- ◆ Toolbox with tools kit
- ◆ Container for spent wire
- ◆ Container for ion-exchange resin
- ◆ Ion-exchange resin
- ◆ Set of filtering elements
- ◆ Wire alignment device
- ◆ Package of technical documentation in English
- ◆ Voltage transformer 380 / 220V + AVR — stabilizer

**Optional accessories:**

- ◆ Electric lock on the tank door
- ◆ Wire Threading by High Pressure Water Jet (if ordered, the collision prevention system on Z-axis is inactive)
- ◆ MST device for roughness improvement to Ra0.08
- ◆ Remote master — remote monitoring of machine operation status
- ◆ Alarm messenger – text alert of machine status by smartphone
- ◆ Submerged-type rotary table (W axis)
- ◆ Accessory for spools up to 45 kg
- ◆ Accessories for 0.1 mm thick wire
- ◆ Three-color lamp indicating machine operation status
- ◆ PCD-Module – special generator for graphite and polycrystalline diamond cutting
- ◆ Spent wire chopper

Specifications	Unit	AL-400SA	AL-500SA	AL-560SA	AL-600SA	AL-750SA
Max. workpiece size	mm	790 x 610 x 215	990 x 610 x 295		990 x 650 x 295	1190 x 800 x 295
Max. workpiece weight	kg	400	500		550	750
XY travel	mm	400 x 300	500 x 300	560 x 360	600 x 400	750 x 500
Z travel	mm	220	300			
UV travel	mm	100 x 100				
Best surface roughness	Ra, μm	Ra0.35 (Ra0.06 — optional)				
Applicable wire diameter range	mm	0.15 ~ 0.3 (0.1 — optional)				
Water treatment tank	l	630	900		1060	
Min. value of increment setting	mm	0.0001				
Machine footprint	mm	2051 x 2990 x 2070	2480 x 2980 x 2210		3000 x 3200 x 2250	
Total machine weight	kg	3000	3600		3700	4300

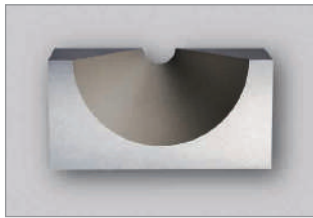


**AP Series** — CNC EDM Wire-Cut Machines, Submerged Type  
**ACCUTEX** (with Linear Drives, AWT System)

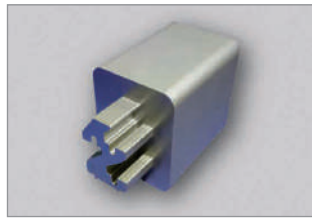


**Features:**

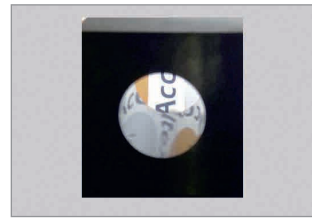
- ◆ ACCUTEX AP-series machines are capable to reach surface roughness of Ra0.35 (Ra0.06 — optionally) and machining accuracy of  $\pm 2.0 \mu\text{m}$ .
- ◆ The machine stand has compound table design with column movement along Y-axis. The center of gravity is always located between the two linear guide ways on the X-axis. The X and Y axes are independent, there is no cumulative error due to reduced deformation.
- ◆ The maximum load on the table is improved to 1,000 kg. The repeatability is less than  $2.5 \mu\text{m}$  after 5 times as measured by laser calibration.
- ◆ In the basic version, the machines are equipped with cylindrical linear drive units and linear optical scales with  $0.1 \mu\text{m}$  resolution (optionally  $0.05 \mu\text{m}$ ).
- ◆ AP Series machines allow machining with wire diameters of 0.05 and 0.07 mm (optional).
- ◆ ACCUTEX AP-Series machines are designed for the most precision EDM tasks such as dies production for microelectronics industry.



35° wide taper cutting



Continuous angle



Fine finish Ra 0.06  $\mu\text{m}$  (Option – MST II Power module)



PCD  
(Optional PCD / Graphite power)



Gear cutting  
(Rotary table – optional)



HD-reducer

**Standard accessories:**

- ◆ Machine with Windows CE-based CNC and touch screen
- ◆ AWT — automatic wire thread unit
- ◆ SD-Master — extended system of automatic adaptive control
- ◆ Cylindrical linear drives
- ◆ Optical scales on XY axes with 0.1  $\mu\text{m}$  resolution
- ◆ Collision prevention system on XYUVZ axes
- ◆ Electric lock on the tank door
- ◆ Automatic sliding down door
- ◆ Water chilling system
- ◆ Upper and bottom water jet nozzles

**Optional accessories:**

- ◆ Wire Threading by High Pressure Water Jet (if ordered, the collision prevention system on Z-axis is inactive)
- ◆ MST device for roughness improvement to Ra0.06
- ◆ Remote master – remote monitoring of machine operation status
- ◆ Submerged-type rotary table (W axis)
- ◆ Spent wire shredder.
- ◆ Diamond guides, diam. 0.25 mm
- ◆ Current-carrying electrodes (collectors)
- ◆ Device for replacement of diamond guides.
- ◆ Brass wire 0.25 mm (wire spool - 5 kg)
- ◆ Toolbox with tools kit
- ◆ Container for spent wire
- ◆ Container for ion-exchange resin
- ◆ Ion-exchange resin
- ◆ Set of filtering elements
- ◆ Wire alignment device
- ◆ Package of technical documentation in English
- ◆ Voltage transformer 380 / 220V + AVR -stabilizer
- ◆ Alarm messenger — text alert of machine status by smart-phone.
- ◆ Accessory for wire spools up to 45 kg
- ◆ Accessories for 0.05 - 0.1 mm wire.
- ◆ Three-color lamp indicating the machine operation status
- ◆ PCD-Module – special generator for graphite and polycrystalline diamond cutting

Specifications	Unit	AP-4030	AP-6040
Max. workpiece size	mm	800 x 560 x 245	1050 x 775 x 345
Max. workpiece weight	kg	800	1000
XY travel	mm	400 x 300	600 x 400
UV travel	mm	100 x 100	160 x 160
Z travel	mm	250	350
Best surface roughness	Ra, $\mu\text{m}$	Ra0.35 (Ra0.06 — optional)	
Applicable wire diameter range	mm	0.15 ~ 0.3 (0.05, 0.07 and 0.1 — optional)	
Water tank	l	600	1000
Min. step setting	mm	0.0001	
Machine footprint	mm	2150 x 2600 x 2250	2312 x 2795 x 2371
Total machine weight	kg	3200	4000

**VL series- — CNC EDM Wire-Cut Machines, Submerged Type**  
**SODICK (with Linear Drives, AWT System, built-in CAD/CAM)**



**Features:**

- ◆ SODICK VL Series machines are capable to reach surface roughness to Ra 0.32 and machining accuracy to  $\pm 2.5 \mu\text{m}$ .
- ◆ The machine is equipped with a moving table (X coordinate), a work tank, a moving column (Y coordinate) on the frame and a vertical slider on the column (Z coordinate).
- ◆ The X-axis table and Y-axis column drives are ultra-high-torque, high-precision linear motors with holding, clamped pneumo-electric holding brakes with optical ruler feedback  $0.01 \mu\text{m}$ .
- ◆ Z axis slider drive is a ball screw with AC motor and brake coupling.

**Manufacturer's warranty of positioning accuracy — 15 years**

**Standard accessories:**

- ◆ Linear motor drives (XYUV axes)
- ◆ Fixed Jet AWT — high speed automatic wire threading system
- ◆ Oil-Matic compression chiller of dielectric liquid
- ◆ AVR — voltage stabilizer (built-in;  $\pm 10\%$  max.)
- ◆ Bipolar anti- electrolytic erosion finishing system
- ◆ Power-line filter, optical IR mouse, remote control unit
- ◆ LN2 CNC-generator
- ◆ System software including Windows 7 or 10
- ◆ Heart NC Package of automated programming/design (CAM) + Auto Edit function
- ◆ Auto Wire Alignment — automatic vertical positioning device
- ◆ LAN Interface — hardware-software complex of remote control and monitoring via local network
- ◆ Standard kit of accessories for work piece clamping
- ◆ Detailed instructions for operation, maintenance and programming in English
- ◆ Starter set of consumables and materials



**Example of work piece machining (photo):**

- ◆ Material: steel SUS304.
- ◆ Workpiece thickness: 150 mm
- ◆ Surface finish: 0.36  $\mu\text{m}$  Ra
- ◆ Accuracy:  $\pm 3 \mu\text{m}$
- ◆ Wire-electrode:  $\varnothing 0.25 \text{ mm}$

**Optional accessories:**

- ◆ Taper Flex NEO — hardware and software complex for processing angular surfaces with an inclination of up to 45° (including wire guides, flush nozzles)
- ◆ Rotary table with indexing control from the machine CNC cabinet
- ◆ Jumbo feeder. The wire feeding device for spools weighing up to 50 kg
- ◆ L-Cut Wire chopper
- ◆ ANCS (anti-corrosion system). The corrosion prevention system for a workpiece submerged in a dielectric liquid
- ◆ Esprit Platinum software package, including a post-processor, for preparing control programs on a desktop computer
- ◆ Uninterrupted power supply (UPS) for the machine CNC cabinet — automatic machining restart in case of power failure up to 10 minutes
- ◆ Hardware/software system for checking workpiece inclination in XYZ plane and automatic machine axes offset for workpiece inclination angle
- ◆ Optical machining contour dimensions checkup without workpiece remounting

Specifications	Unit	VL400Q	VL600Q	VL600QH
XYZ travel	mm	400 x 300x 220	600 x 400x 270	600 x 400x 500
UV travel	mm	90 x 90		
Max. taper angle	° / mm	$\pm 15 / 120$		
Internal dimensions of the tank	mm	860 x 690	1040 x 780	
Max. workpiece size	mm	640 x 490 x 220	990 x 670 x 250	990 x 670 x 490
Max. workpiece weight	kg	500	850	850
The discreteness of the feed axis	$\mu\text{m}$	XYUV = 0.1 $\mu\text{m}$ , Z = 1 $\mu\text{m}$		
Max. feed rate (XYUV)	mm/min	5000		
Material of guide assemblies, plate and work table supports	—	ceramic with especially low thermal expansion		
Attainable precision of workpiece machining	$\mu\text{m}$	2.5 (standard Sodick cutting technology)		
Wire diam.	mm	0.1 ... 0.36		
Wire spool weight	kg	8 (50 — optional)		
Best surface roughness	Ra, $\mu\text{m}$	Ra0.32		
Water treatment system capacity	l	590	890	1320
Machine dimensions	mm	1775 x 2300 x 1990	2620 x 2605 x 2080	3020 x 2605 x 2540
Machine weight	kg	2750	3140	3450



## ALC Series — CNC EDM Wire-Cut Machines, Submerged Type SODICK (with Linear Drives, AWT System, built-in CAD/CAM)



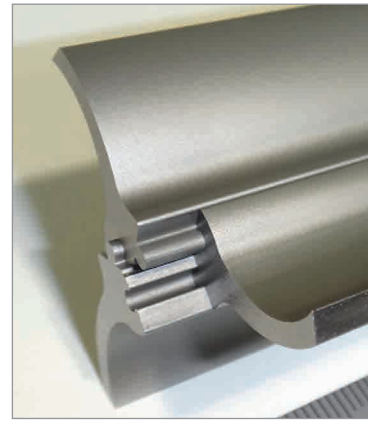
### Features:

- ◆ SODICK ALC Series machines are capable to reach surface roughness of Ra0.06 and machining accuracy  $\pm 2.5 \mu\text{m}$ .
- ◆ The machine is equipped with a moving table (X coordinate), a work tank, a moving column (Y coordinate) on the machine stand and a vertical slider on the column (Z coordinate)
- ◆ The X-axis table and Y-axis column drives are ultra-high-torque, high-precision linear motors with holding, clamped pneumo-electric holding brakes with optical ruler feedback  $0.01 \mu\text{m}$
- ◆ Z axis slider drive is a ball screw with AC motor and brake coupling

**Manufacturer's warranty of positioning accuracy — 15 years**

### Standard accessories:

- ◆ Linear motor drives (XYUV axes)
- ◆ Fixed Jet AWT — high speed automatic wire threading system
- ◆ High-speed CNC-generator
- ◆ Max. average current: 40 A
- ◆ Preinstalled software packages: system software including Windows, 2D- and 3D-automated design packages
- ◆ Heart NC — 2D-system of automated control program generation
- ◆ "Intelligent Q3vic" — 3D-system of automated control program generation
- ◆ Super BS: Bipolar anti-electrolytic erosion finishing system
- ◆ Auto Wire Alignment — automatic wire alignment device
- ◆ AVR voltage stabilizer (built-in;  $\pm 10\%$  max.)
- ◆ Oil-Matic compression chiller of dielectric liquid
- ◆ LAN Interface — hardware-software complex of remote control and monitoring via local network
- ◆ Digital PIKA-W Plus — device for surface finish improvement to Ra0.05
- ◆ Standard tools: tool box, spare parts and accessories
- ◆ Starting set of consumables and materials
- ◆ Detailed instructions for operation, maintenance and programming in English



Punch, 100 mm

- ◆ Workpiece: steel, 100 mm
- ◆ Accuracy:  $\pm 3 \mu\text{m}$
- ◆ Finish:  $0.207 \mu\text{m Ra}$  ( $2.10 \mu\text{m Rz}$ )
- ◆ Electrode:  $\varnothing 0.20 \text{ mm}$



**Optional accessories:**

- ◆ Taper Flex Neo — hardware and software complex for processing angular surfaces with an inclination of up to  $45^\circ$
- ◆ 3D Calculation — 3DC-determination of 3D-swiveling of workpiece
- ◆ Increase of max/ average current to 60 A
- ◆ Rotary table
- ◆ UPS — Uninterrupted power supply (UPS) for CNC cabinet — automatic machining restart after power failure for up to 10 minutes
- ◆ Jumbo feeder — the wire feeding device for spools up to 50 kg
- ◆ L-Cut — wire chopper
- ◆ ANCS (anti-corrosion system) — the corrosion prevention system for a workpiece submerged in a dielectric liquid
- ◆ Esprit Platinum software package, including a post-processor, for preparing control programs on a desktop computer
- ◆ System of automatic machine status reporting by SMS messages to a mobile phone (GMS, etc.)

Specifications	Unit	ALC400G	ALC600G	ALC800G
XYZ travel	mm	400 x 300 x 250	600 x 400 x 350	800 x 600 x 500 (800)
UV travel of taper mechanism	mm	150 x 150		200 x 200
Max. taper angle	$^\circ / \text{mm}$	$\pm 36 / t = 100 \text{ mm}$		
Work tank dimensions	mm	850 x 610	1050 x 710	1250 x 1020
Max. workpiece weight	kg	500	1000	3000
Advance discreteness of the feed axis	$\mu\text{m}$	XYUV = $0.1 \mu\text{m}$ , Z = $1 \mu\text{m}$		
Max. feed rate (XYUV)	mm/min	5000		
Material of guide assemblies, plate and work table supports	—	Extra low thermal expansion ceramic		
Attainable machining precision	$\mu\text{m}$	2.5 (standard Sodick cutting technology)		
Applicable wire diam.	mm	0.1 ~ 0.3 mm (0.05 / 0.07 mm = optional)		
Wire spool weight	kg	20		
Best surface roughness	Ra, $\mu\text{m}$	Ra0.05		
Water treatment system capacity	l	600	800	1500
Machine dimensions	mm	2115 x 2500 x 2230	2495 x 2895 x 2345	3395 x 3640 x 2780
Machine weight	kg	3400	4600	6000



## EDM DIE-SINKING MACHINES

The technology of EDM volumetric material removal, expressed in the method of EDM copying of the electrode surface in the body of the workpiece, or in the method of EDM milling with a cylindrical electrode, or in the method of EDM threading with a tap-electrode, is represented by a wide range of die-sinking machines, either with NC or CNC systems.

With the external visual similarity of equipment from different manufacturers and fundamentally using the same technology of electrical discharge volumetric material removal, the machines have cardinal differences.

### The comparison table of die-sinking machines specifications

Specifications	Unit.	D71	ARISTECH LS-series	ARISTECH CNC-series
Machine price, Euro, excl. VAT		from 12'500 EUR	from 29'000 EUR	from 32'000 EUR
Best surface roughness	Ra, $\mu\text{m}$	0.80	0.30	0.30
Max. cutting capacity	$\text{mm}^3/\text{min}$	700	700	
Z travel speed	m/min	0.8		5
Drive system	—	AC servo drive with closed-loop coupling to optical scales		
Work tank design	—	Standard wing door		Standard wing door with slide-down door (manual or hydraulic drive)
Worktable material	—	Steel		
Min. electrode wear	%	$\leq 0.3$		
X, Y travel speed	m/min	Manual control		1
Positioning step X, Y, Z	$\mu\text{m}$	5		1
Optical scales resolution	$\mu\text{m}$	5		1
Max. machining current (optional)	A	100	100	120
Electronic system of fast shining finish	—	No		
Electrode wear-reducing technology for graphite or copper	—	No		
Machining parameters optimization depending on the change of electrode geometry during the processing	—	No	Yes	
Operating system	—	DOS		
Data input	—	Keyboard, control panel		
Expert system of generator mode selection	—	No	Yes	
Linear automatic changer	—	No	Optional (4 or 6 stations)	
Measuring system with 3D-probe for Erowa or System 3R clamping holders	—	No	Optional	
Standard C-axis	—	No	Optional	
Max. weight of electrode in the holder	kg	200	50	50–200
C-axis rotation speed	rpm	No		0–20
High-speed rotational axis rotation speed	rpm	No		
Voltage stabilizer	—	Optional		
Dielectric liquid chiller	—	Optional		
Country of origin	—	Russia	Taiwan	

The task of our technologists is to work out in detail the technical specifications of customers, carry out calculations for the processing technology, select the clamping equipment (3R, EROWA, CGM, A-ONE and others) to reduce unproductive time, conduct test works confirming the correct choice of technology and equipment before signing the sales contract.

The machines are indispensable for manufacturing three-dimensional components: stamps, molds, blank dies, tooling components made of high-duty, hardened, stainless steel, high-strength conductive composite alloys, titanium, graphite, etc.

The machines are designed for drilling blind-end, cut-through, angled grooves with intricate form, parts tagging, three-dimensional copying, finish machining of components and tools, burning of internal thread in the poorly machinable material and in the hard-to-reach areas.

**To facilitate the understanding of die-sinking equipment technical capabilities, we think helpful to provide a comparison table below:**

NEU-AR, CNC-Series	MAXSEE, RTA-Series	MAXSEE, P400	SODICK, AD Series	SODICK, AG Series
from 35'000 EUR	from 77'500 EUR	from 57'000 EUR	from 106'250 EUR	from 106'250 EUR
0.08	0.10		0.06	
770			> 600	
14	5		36	
AC servo drive with closed-loop coupling to optical scales			Plane parallel linear motor with closed-loop coupling to XY optical scales, twin linear servo drive on Z-axis, with closed-loop coupling to optical scales	
Standard, with wing door, H-series with slide-down door (manual or hydraulic drive)	Three-side lifting door of work tank	Slide-down O-shaped work tank	Standard, with wing door	Lifting three-side door of work tank
Steel			Table plate made of FineXCera® ceramic	
≤ 0,1			≤ 0,06	
3	1,5		5	
1			0.1	
1			0.01	
100			40	120
No			Yes	
No			Yes	
Yes	No		Yes	
Windows Embedded	Windows CE		Windows 7, 10	
LCD touch-screen 15" monitor, mouse, keyboard and remote control unit				
Yes			Yes	
Optional (4, 6, 20 stations)			4-7 stations in standard configuration	
Optional			Optional	
Optional			Included in standard configuration	
50			50	
0-20				
No			0-2000	
Included in standard configuration	Optional		Included in standard configuration	
Included in standard configuration	Optional		Included in standard configuration	
Taiwan			Thailand	



## D71 Series — NC EDM Single-Axis Die-Sinking Machines



"maple-leaf" die mold



### Features:

- ◆ D71 Series are affordable, dependable and easy to operate die-sinking machines. The CNC system of these machines controls one axis Z. X and Y axes have optical scales with 0.005 mm resolution.
- ◆ The machines are equipped with three types of generators of 40, 80 and 100 A.

### Purpose:

- ◆ These machines are applied for machining blind-end, cut-through, angled grooves with intricate form, burning of internal thread in the poorly machinable materials and in the hard-to-reach areas.
- ◆ The machine is indispensable for manufacturing stamps, molds, grids and other similar products.

### Standard accessories:

- ◆ Standard chuck for electrodes clamping
- ◆ Dielectric oil filtration system with paper filter
- ◆ System of Z axis programmed control with 3-axes indication
- ◆ Optical scales, 5 μm, of XYZ axes
- ◆ Z axis servo drive
- ◆ Automatic fire extinguisher
- ◆ Toolbox with tool kit

- ◆ Work light
- ◆ Operating instruction in English

### Optional accessories:

- ◆ Generator current increasing to 80 or 100 A
- ◆ Voltage stabilizer
- ◆ Dielectric oil chilling system
- ◆ Tooling of 3R, EROWA and other manufacturers

D7125 40ZNC	Work tank dimensions (L x W x H), mm	X/Y/Z travel, mm	Max. electrode weight, kg	Max. workpiece weight, kg	Dielectric load, L	Machine weight, kg	Machine dimensions (L x W x H), mm
D713080ZNC	800 x 500 x 280	250 / 200 / 200	30	200	540	940	1400 x 1200 x 2100
D7135 80ZNC	850 x 550 x 320	300 / 200 / 250	50	300	540	1000	1400 x 1200 x 2100
D7145 80ZNC	900 x 550 x 380	350 / 250 / 370	50	500	600	1150	1450 x 1200 x 2100
D7150 80ZNC	1200 x 700 x 450	450 / 350 / 350	75	700	600	1600	1500 x 1600 x 2100
D7170 100ZNC	1350 x 800 x 530	500 / 400 / 420	100	1000	780	1900	1600 x 1700 x 2100
Д7170 100ZN	2000 x 1100 x 600	700 / 600 / 570	200	2000	1000	3800	1855 x 1650 x 2550

# LS-150 — NC EDM Compact Single-Axis Die-Sinking Machine

ARISTECH



## Purpose:

ARISTECH LS-150 is designed for the manufacture of small die molds, stamping dies.

## Features:

The stand of LS-150 machine is made of high-duty fine grained cast iron, the column, work tables and components – of mechanite cast iron to provide the equipment stability and long-lasting service life. The compact design of the frame and the pulse generator unit saves up to 60% of the production area. The machine adopts the simple manual control.

The microprocessor-based safety control system includes the following components: a dielectric liquid temperature sensor and level detector, the system for prevention electrode collision with the workpiece, detection of edge and center and an infrared sensor of flame detector.

The machine adopts AC servomotor with a single-step encoder to control Z-axis (burning depth) and a digital flush control to increase the burning speed and erosion products removal.

Specifications	Unit	LS-150
Work tank dimensions (W x L x H)	mm	300 x 240 x 190
Work table size	mm	180 x 100
Work table (X Y) travel, manual	mm	150x100
Electrode Z travel	mm	170
Distance from the electrode plate to the work table	mm	50–220
Max. electrode weight	kg	1
Max. workpiece weight	kg	20
External dimensions (W x L x H)	mm	780 x 600 x 1500
Weight	kg	230
Filtration system		
Dielectric tank capacity	L	55
Filter paper/Pumps	pc.	1 / 1
Dimensions (W x L x H)	mm	530 x 360 x 300
Weight (empty)	kg	40
Pulse generator		
Nominal current	A	10
Total power consumption	kVA	1.5
Max efficiency	mm <sup>3</sup> /min	60
Min electrode wearing rate	%	0.3
Best roughness	Ra, μm	0.3
Weight	kg	30

## Standard accessories:

- ◆ Standard chuck for electrodes clamping
- ◆ Dielectric oil filtration system with paper filter
- ◆ Multi-functional three-axial digital read-out display (DRO)
- ◆ XY axes optical scales
- ◆ Z axis servo drive
- ◆ Magnetic table
- ◆ Toolbox with tool kit
- ◆ Work light
- ◆ Operating instruction in English

## Optional accessories:

- ◆ Electric rotating spindle with ER16 chuck
- ◆ Tooling from 3R, EROWA and other manufacturers

# LS ZNC series — CNC EDM Die-Sinking Machines

## ARISTECH (with Auto Editing function)



Sample of coinage stamping

### Features:

- ◆ X and Y axes are provided with precision ball screws and linear guides on Z-axis. The machine adopts 3-axes linear scales and digital readout function
- ◆ Depending on the maximum permitted electrode overall dimensions and machining surface area, LS ZNC machines have installed generators with max. machining current of 30, 50, 75 and 100 A

### Standard accessories:

- ◆ Electric discharge die-sinking machine
- ◆ Control module with pulse generator and industrial computer.
- ◆ Dielectric oil filtration system with paper filter
- ◆ XYZ axes ball screws and linear guides ways
- ◆ XYZ axes optical scales with 5 μm resolution
- ◆ Standard electrode holder
- ◆ Work light
- ◆ Remote controller
- ◆ Tool box with tools and clamping kits
- ◆ Fire detection system (IR sensor)
- ◆ Automatic fire extinguisher
- ◆ Operation manual in English

### Options:

- ◆ Increase of pulse generator current to 50, 75 or 100 A
- ◆ C-box — pulse correction system for hard alloys cutting
- ◆ Voltage stabilizer
- ◆ Dielectric oil chiller
- ◆ Tool holders from 3R, EROWA and other manufacturers

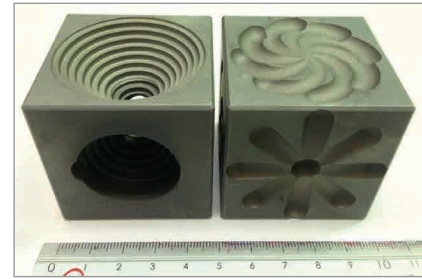
### Machine Specifications:

Specifications	Unit	LS-250	LS-350	LS-450	LS-550
Work tank inner size (WxDxH)	mm	790 x 530 x 340	950 x 600 x 370	1240 x 710 x 400	1290 x 750 x 500
Work table size (XxY)	mm	600 x 300	650 x 350	750 x 450	800 x 500
Work table travel (XxY), manual	mm	300 x 200	400 x 300	500 x 400	600 x 500
Ram travel (Z2-axis)	mm	230	270	280	330
Electrode travel (Z1-axis)	mm	180	200	200	250
Distance from the electrode to the table surface (min/max.)	mm	0–380	30–500	180–660	0–540
Max. electrode weight	kg	50	70	120	200
Max. workpiece weight	kg	300	400	500	600
External dimensions (W x D x H)	mm	1200 x 1200 x 2240	1300 x 1170 x 1980	1500 x 1400 x 2040	1650 x 1500 x 2100
Machine weight	kg	1050	1200	1600	1850
Dielectric tank capacity	L	300	350	360	400
Paper filters/pumps	pc.	2 / 1		4 / 1	
Dielectric tank dimensions (W x D x H)	mm	Built-in	760 x 1100 x 500	960 x 1200 x 500	940 x 1500 x 500
Dielectric tank weight (empty)	kg	Built-in	100	120	220

### Pulse generator:

Specifications	Unit	30A	50A	75A	100A
Nominal current	A	30	50	75	100
Total power consumption	kVA	3	4,5	6	10
Max. cutting capacity	mm <sup>2</sup> /min	180	360	560	700
Min. electrode wear	%	< 0.3			
Best surface roughness	Ra, μm	0.27			
External dimensions (W x D x H)	mm	600 x 700 x 1750			
Weight	kg	200			

## CNC Series — CNC EDM three-axis die-sinking machines ARISTECH with Auto Editing function



Examples of machining using orbital electrode movements

### Features:

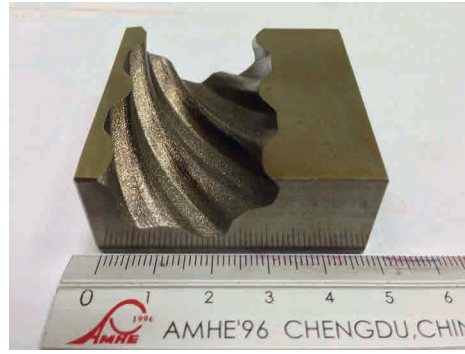
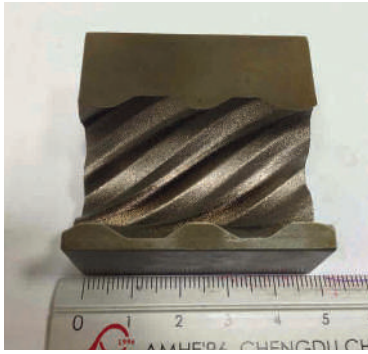
- ◆ CNC-series EDM die-sinking machines ensure high machining stability and accuracy over long years of service life and so they are must-have equipment in various industries for handling the most complex technological tasks.
- ◆ The CNC of the machine allows you to implement various motion options - macros (E-codes): circle, square, sector, cone, inner and outer sphere, at 45 °, 3-linear, 2-axis along an arc, 3-axis spatial, 4-axis contouring with optional C-axis, offset movements. Also, the CNC works with G-codes and has many automatic cycles for locating the electrode. Processing is carried out on all conductive materials, including stainless steels, titanium, alloyed and high-speed steels, including hardened, hard alloys, etc.
- ◆ The machine can be equipped with pulse generators for 60, 120, 300 A.

### Standard accessories:

- ◆ Control module with pulse generator and industrial computer
- ◆ Dielectric oil filtration system with paper filter
- ◆ XYZ axes AC servo motors
- ◆ XYZ axes optical scales with 1 µm resolution
- ◆ Standard electrode holder with manual adjustment
- ◆ Working lamp
- ◆ Remote controller with a hand-wheel for micro-feed
- ◆ Fire detection system (IR sensor)
- ◆ Automatic fire extinguisher
- ◆ Tool box with tools and clamping kits
- ◆ Portable dielectric feed points with flexible pipes
- ◆ Operation manual in English

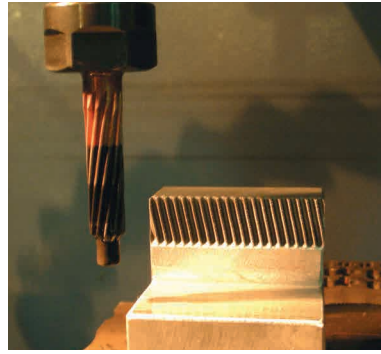
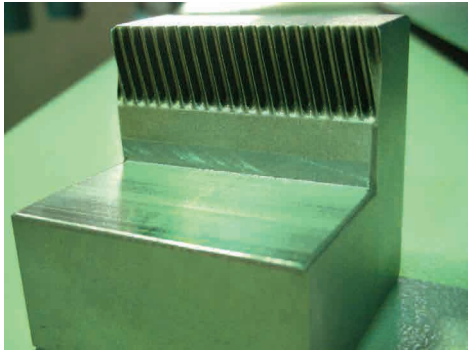
### Optional accessories:

- ◆ Automatic electrode changer with EROWA or 3R pneumatic electrode holder for 4, 5 or 6 stations
- ◆ Electrode rotation device
- ◆ Built-in C-axis with EROWA or 3R pneumatic electrode holder
- ◆ C-Box — pulse correction system for hard alloys cutting
- ◆ Manually sliding up/down tank door for CNC-460 (saving floor space around the machine)
- ◆ Hydraulically sliding up/down tank door for CNC-580, CNC-650, CNC-2010.
- ◆ Dielectric liquid chilling system
- ◆ Generator air cooling system
- ◆ Voltage stabilizer
- ◆ Rotary or tilting rotary table



Example of machining with C-axis — multiple thread cutting

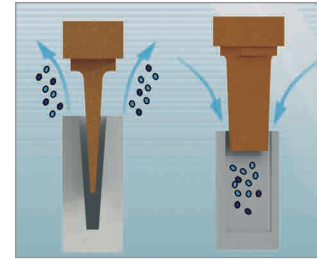
Specifications	Unit	CNC-250	CNC-430	CNC-460
Work tank inner size (WxDxH), mm	mm	750 x 500 x 340	1090 x 600 x 370	1400 x 800 x 500
Work table size	mm	600 x 300	650 x 350	900 x 600
Work table travel	mm	300 x 200	400 x 300	600 x 500
Spindle head travel	mm	200	270	—
Ram servo travel	mm	180	200	400
Distance from the electrode to the table surface (min/max.)	mm	0–380	40–510	350–750
Max. electrode weight	kg	50	120	200
Max. work piece weight	kg	300	400	1800
External dimensions (W x D x H)	mm	2700 x 1400 x 2240	3300 x 1350 x 2260	3200 x 2560 x 2500
Total weight	kg	1250	2350	3200
<b>Dielectric liquid system</b>				
Tank capacity	L	300	350	850
Filter / Pump	pc.	2 / 1	4 / 1	5 / 2
Dielectric type	—	MOL Polimet, Steelfluid 108 MP-S, IonoPlus IME-MH		
<b>Generator</b>				
Maximum output current	A	60 / 120 / 300		
Power consumption	kVA	6 / 10 / 30		
Max. cutting capacity	mm <sup>3</sup> /min	550 / 700 / 4000		
Min. electrode wear	%	< 0.3		
Best surface roughness	Ra, μm	Ra0.3		
<b>CNC system</b>				
Display	—	15" LCD-TFT		
System control method	—	Closed-loop CNC		
Controlled axes	—	X,Y,Z – standard, up to 6 axes — optional		
Min. input value	mm	0.001		
Max. input value	mm	±9999.999		
Positioning command format	—	Relative and absolute		
Manual feed range (from remote control)	—	4 feed rates		
Jog inching feed	mm	0.001		
Electrode positioning function	—	Workpiece edge, outer/inner center, outer/inner center by three points, corner point		
Machining parameters setting	—	Built-in Auto editing function for program generation with series of cutting modes depending on different pairs of materials		
Available motion paths	—	circle, square, sector, inner and outer sphere, taper, radial under 45°, spatial, arc, etc.		
Number of machining steps	—	200		
Number of pages	—	20		
Program data capacity	—	100 files		
Optical scales resolution	mm	0.001		



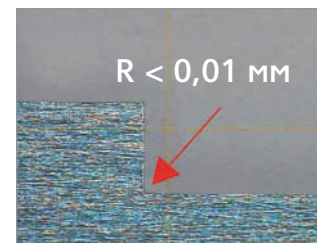
Example of machining with C-axis — helical rack gear cutting

Specifications	Unit	CNC-580	CNC-650	CNC-2010
Work tank inner size (W x D x H), mm	mm	1700 x 1050 x 700	2150 x 1150 x 700	2900 x 1500 x 700
Work table size	mm	1100 x 700	1400 x 900	2240 x 1050
Ram servo XY travel	mm	1000 x 600	1200 x 700	2000 x 1000
Z spindle travel	mm	450	450	550
Distance from the electrode to the table surface (min/max.)	mm	520–970	560–1100	600–1150
Max. electrode weight	kg	400	400	500
Max. work piece weight	kg	3000	4000	9000
Footprint (WxDxH)	mm	3580 x 3290 x 2800	4500 x 3200 x 2950	5450 x 4410 x 3250
Total weight	kg	5900	6800	13500
<b>Dielectric liquid system</b>				
Tank capacity	L	1000	2000	4200
Filter / Pump	pc.	6 / 2		
Dielectric type	—	MOL Polimet, Steefluid 108 MP-S, IonoPlus IME-MH		
<b>Generator</b>				
Maximum output current	A	60 / 120 / 300		
Power consumption	kVA	6 / 10 / 30		
Max. cutting capacity	mm <sup>3</sup> /min	550 / 700 / 4000		
Min. electrode wear	%	< 0.3		
Best surface roughness	Ra, μm	Ra 0.3		
<b>CNC system</b>				
Display	—	15" LCD-TFT		
System control method	—	Closed-loop CNC		
Controlled axes	—	X,Y,Z – standard, up to 6 axes – optional		
Min. input value	mm	0.001		
Max. input value	mm	±9999.999		
Positioning command format	—	Relative and absolute		
Manual feed range (from remote control)	—	4 feed rates		
Jog feed for single keystroke	mm	0.001		
Electrode positioning function	—	Workpiece edge, outer/inner center, outer/inner center by three points, corner point		
Machining parameters setting	—	Built-in Auto editing function for program generation with series of cutting modes depending on different pairs of materials		
Available motion paths	—	circle, square, sector, inner and outer sphere, taper, radial under 45°, spatial, arc, etc.		
Number of machining steps	—	200		
Number of pages	—	20		
Program data capacity	—	100 files		
Optical scales resolution	mm	0.001		

## CNC series — CNC EDM 3-5 axes Die-Sinking Machines NEU-AR (with Auto Editing function)



Pumping effect due to high-speed movement of Z axis = 14 m/min



Minimal radius at the corners, less than 0.01 mm



Samples of roughness Ra 0.08

### Features:

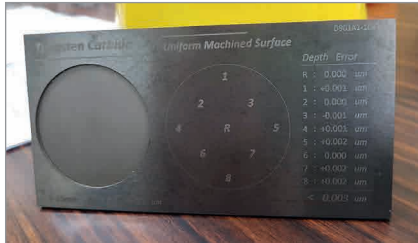
- ◆ Compact machine layout — three in one (machine, dielectric liquid tank, electric equipment), sliding work table
- ◆ HEIDENHAIN optical scales with resolution 0.001 mm are installed on machine axes (X, Y, Z)
- ◆ Z axis spindle can move with the speed up to 14 m/min
- ◆ Linear guides on X, Y axes
- ◆ High precision ball screw for X, Y, Z axes
- ◆ AC servo motors for X, Y, Z axes
- ◆ The in-house innovative engineering solutions allow NEUAR EDM die-sinking machines to achieve surface finish Ra0.08 (VDI No. 0)

A50 and A90 models can be equipped with rotary C axis and automatic electrode tool changer.

NEUAR CNC-AE2 series machines are designed for manufacturing three-dimensional components: stamps, molds, blank dies and other components. The machines are used to process holes of various shapes in parts made of structural materials, high strength, hardened, stainless steels, high strength conductive composite alloys, titanium, graphite, etc.

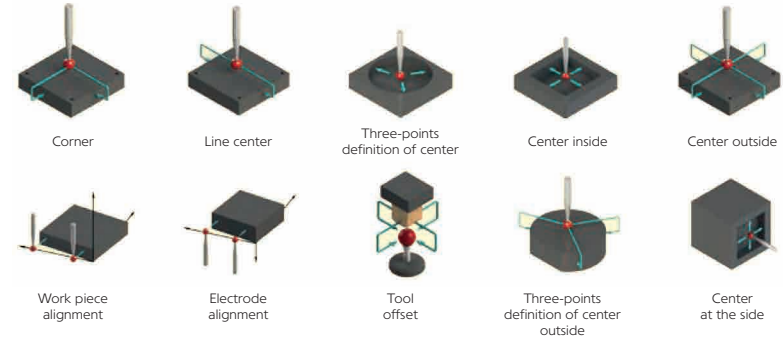


Sample of surface finish

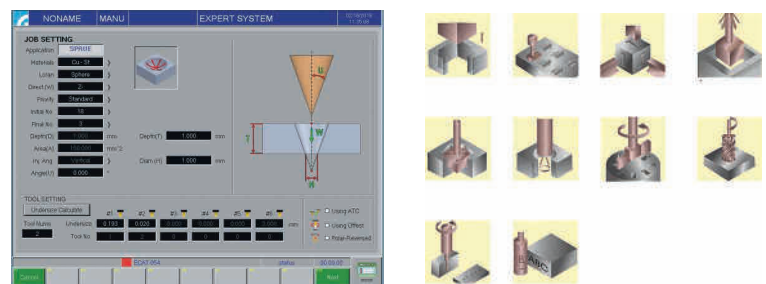


Sample of hard alloy machining

Measurement cycles:



AE2 — new user-friendly interactive system of control program generation



**Standard accessories:**

- ◆ Machine with 3R or EROWA electrode holder (selectable in the contract)
- ◆ Set of adjustable T16 clamps
- ◆ Operating manual in English
- ◆ Oil feed point with magnetic base and flexible hose.
- ◆ Rubber seal of working tank door.
- ◆ Supports for machine bed installation
- ◆ Toolbox with tool kit
- ◆ Lubricating gun
- ◆ Sample of surface finish quality achieved on the purchased machine
- ◆ Warranty and machine accuracy checklist
- ◆ Three-phase voltage stabilizer
- ◆ Electrode dielectric oil chiller

**Optional accessories:**

- ◆ Rotating C-axis
- ◆ Rotary table
- ◆ Automatic electrode changer for 4, 6 or 20 stations
- ◆ 3R or EROWA pneumatic clamping chuck
- ◆ R200 rotating axis
- ◆ Portable equipment for CCD metrology
- ◆ Remote control unit

Specifications	Unit	CNC-A30	CNC-A35	CNC-A50	CNC-A90
XYZ axis travel	mm	250 x 200 x 200	350 x 250 x 200	400 x 300 x 300	500 x 400 x 350
Work table dimensions	mm	470 x 280	630 x 360	630 x 360	800 x 450
Work tank inner size	mm	885 x 435 x 270	940 x 530 x 350	940 x 550 x 350	1240 x 700 x 435
Maximal distance from the spindle to the work table	mm	405	520	410	650
Auxiliary Z2 axis travel	mm	170	200	нет	170
Max. electrode weight	kg	30	50	50	200
Max. workpiece weight	kg	300	500	500	1350
Max. cutting capacity	mm <sup>3</sup> /min	230	420	420	480
Min. electrode wear rate	%	< 0.1			
Best surface finish	Ra, μm	< 0,08 μm (VDI No. 0)			
Max. output current	A	30	50	50	60
Power consumption	kVA	2.4	3.3	3.3	4.06
Dielectric tank capacity	L	200	300	300	600
Machine Dimensions (L x W x H)	mm	1300 x 1250 x 2120	1400x 1380 x 2200	1550 x 1400 x 2250	2050 x 1800 x 2440
Net weight	kg	1135	1405	1370	2615



## CNC series — CNC EDM 3-5 axes Die-Sinking Machines NEU-AR (with movable column and Auto Editing function)



H60Q, H100Q models



A600 ... A1400 models

### Features:

- ◆ The machine adopts a moving column, H60 and H100 models — 3 in 1 configuration (machine, dielectric liquid tank, electric equipment)
- ◆ Models with Q index are provided with a sliding door
- ◆ HEIDENHAIN optical scales are installed on the machine axes (X, Y, Z)
- ◆ The Z-axis is capable of moving the spindle at speeds up to 14 m/min
- ◆ The in-house innovative engineering solutions allow NEUAR EDM die-sinking machines to achieve surface finish Ra0.08 (VDI No. 0).

Specifications	Unit	H60 / H60Q	H100 / 100Q	A600	A800
XYZ axes travel	mm	400 x 300 x 350	500 x 400 x 350	600 x 450 x 400	800 x 600 x 500
Work table dimensions	mm	650 x 400	800 x 450	1000 x 600	1200 x 700
Internal size of a tank	mm	960 x 560 x 350	1165 x 705 x 435	1500 x 950 x 520	1720 x 110 x 615
Maximal distance from the spindle to the work table	mm	480	595	320~710	400~920
Max. electrode weight	kg	200	250	250	350
Max. workpiece weight	kg	1500	1800	1800	2500
Max. cutting capacity	mm <sup>3</sup> /min	420	480	770	1025
Min. electrode wear rate	%	< 0.1			
Best surface finish	Ra, μm	0.08		0.1	
Max. output current	A	50	60	100	120
Power consumption	kVA	3.300	4.060	9.173	10.279
Dielectric tank capacity	L	400	500	800	1300
Machine dimensions (L x W x H)	mm	1470 x 1870x 2360	1740 x 2180 x 2360	1760 x 1800 x 2610	2800 x 2600 x 3200
Net weight	kg	1850	3260	3500	4800

**Standard accessories:**

- ◆ Machine with 3R or EROWA electrode holder (selectable in the contract)
- ◆ Set of adjustable T16 clamps
- ◆ Operating manual in English
- ◆ Oil feed point with magnetic base and flexible hose
- ◆ Rubber seal of the working tank door
- ◆ Supports for the machine bed installation
- ◆ Tool kit box
- ◆ Lubricating gun
- ◆ Sample of surface finish quality achieved on the purchased machine
- ◆ Warranty and machine accuracy checklist
- ◆ Three-phase voltage stabilizer
- ◆ Dielectric oil chiller

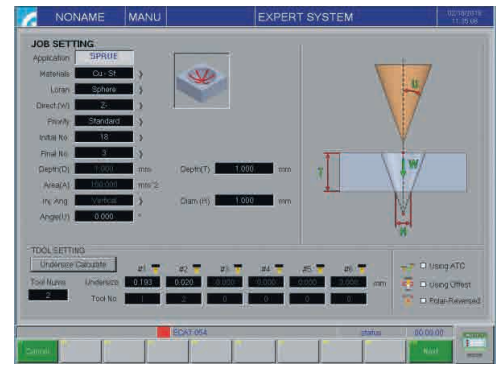
**Optional accessories:**

- ◆ Rotating C-axis
- ◆ Rotary table
- ◆ Automatic electrode changer for 4, 6 or 20 stations
- ◆ 3R or EROWA pneumatic clamping chuck
- ◆ R200 rotating axis
- ◆ Portable equipment for CCD metrology

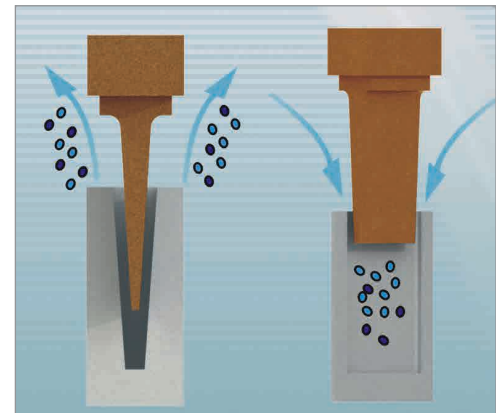
**Purpose:**

The NEU-AR CNC-H series machines are designed for the production of heavy volumetric parts: stamps, molds, punching dies and other parts. The machines are used for machining holes of various configurations in parts made of structural materials, high-strength, hardened, stainless steels, high-strength electroconductive composite alloys, titanium, graphite, etc.

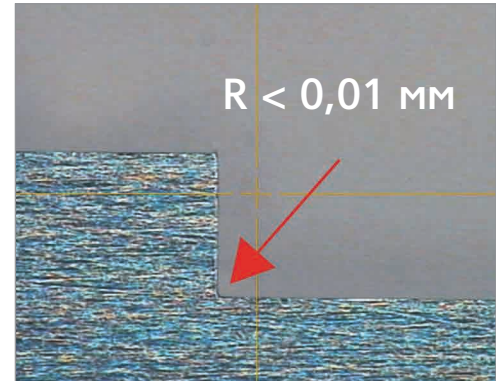
A1000	A1200	A1400
1000 x 600 x 500	1200 x 700 x 500	1400 x 700 x 500
1250 x 750	1350 x 820	1700 x 950
1880 x 1100 x 615	2120 x 1250 x 615	2200 x 1350 x 615
420~920	500~1010	520~1050
350	400	450
2750	3000	3500
	1025	
	< 0.1	
	0.12 µm	
	120	
	10.279	
1400	1800	2000
3000 x 2600 x 3200	3200 x 3100 x 3260	3400 x 3500 x 3200
5350	5800	7900



AE2 — new user-friendly interactive system of control program generation



Pumping effect due to high-speed movement of Z axis = 14 m/min



Minimal radius at the corners, less than 0.01 mm



Samples of roughness Ra 0.08



**RTA series** — CNC EDM 3-5 axes Die-Sinking Machines  
**MAXSEE** (with three-sided work tank)



**Features:**

- ◆ Optimal rigidity and stability of the bed construction is ensured by its precision design. The elevating tank with dielectric liquid has lifting equipment that facilitates the installation of the mold and makes it possible to use automatic mounting of electrodes and workpieces.
- ◆ The integrated design of the machine saves up to 10% of the production area.
- ◆ The touch display has a user-friendly and intuitive interface
- ◆ The innovative SMC EDM pulse generator technology increases efficiency by 2.5 times.
- ◆ MAXSEE takes advantage of the latest SMC EDM technology for machining hard alloys with a graphite electrode to reduce electrode wear by 30% while increasing efficiency by 2.5 times.

**Standard accessories:**

- ◆ Paper filters
- ◆ Tool kit for machine maintenance
- ◆ Standard electrode holder
- ◆ Portable jet nozzles
- ◆ Automatic fire-fighting system with the fire-extinguisher
- ◆ Operating manual in English
- ◆ Working lamp
- ◆ Machine dielectric chilling system (for RTA series)



Samples of surface finish Ra0.1

**Options:**

- ◆ EROWA or SYSTEM 3R automatic electrode changer
- ◆ Rotating C-axis EROWA or SYSTEM 3R clamping chuck
- ◆ Machine dielectric chilling system
- ◆ Voltage stabilizer

Specifications	Unit	RTA40	RTA50	RTA58
XY travel	mm	400 x 300	600 x 500	800 x 500
Z travel (spindle)	mm	400	400	400
Max. workpiece dimensions (L x W x H)	mm	800 x 600 x 400	1000 x 800 x 570	1100 x 900 x 570
Max. workpiece weight	kg	800	2000	3000
Work table dimensions	mm	740 x 390	800 x 700	900 x 800
Max. speed of XY travel	mm/min	1000		
Max. speed of Z-axis travel	mm/min	5000		
Axes drives	—	AC servo drives		
Machine weight	kg	3500	4500	5000
Machine dimensions (L x W x H)	mm	2064 x 2030 x 3200	2600 x 2900 x 3500	2700 x 3000 x 3500
<b>Fluid supply unit</b>				
Tank capacity	L	400	1000	2000
<b>Pulse generator</b>				
Max. output current	A	75		
Power consumption	kVA	9		
Max. cutting capacity	g/min	5		
Best surface finish	Ra, µm	Ra0.1		
<b>CNC system</b>				
Display	—	15 LCD-TFT		
Controlled axes	—	X,Y,Z (C-axis — optional)		
Min. input value	mm	0.001		
Optical scales resolution	mm	0.001		

**Purpose:**

The MAXSEE RTA series machines are designed for the production of three-dimensional parts: dies, molds, punching dies. The machines are used to make blind openings and depressions of complex shapes, non-geometric holes, as well as for processing holes of various configurations in parts made of structural materials, high-strength, hardened, stainless steels, high-strength electrically conductive composite alloys, titanium, graphite, etc.

## P400 — CNC EDM 3-5 axes Die-Sinking Machine MAXSEE (with elevating work tank)



### Features:

- ◆ P400 model was designed in accordance with Industry 4.0 requirements
- ◆ The rise-and-drop working tank is ideally suitable for automation.
- ◆ The stepless tank design shortens workpiece measurement time and improves operator comfort. The small overall dimensions allow saving up to 30% production floor space as compared to similar machines.
- ◆ The MAXSEE P400 has a control system based on the WINDOWS operating system with a user-friendly interface for operation and programming.

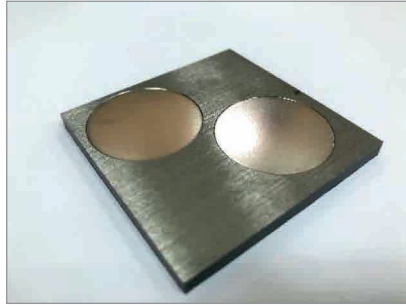
This equipment stands out among other machine tools from other manufacturers for its high rigidity of the bed, positioning accuracy, lifting capacity and a user-friendly CNC system with a large number of functions.

Working fluid filtration system and low wear of the electrode.

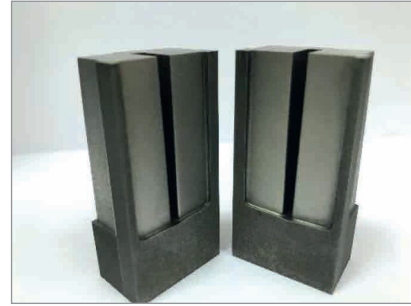
High precision and stability of EDM is provided by the working fluid filtration system.

The innovative SMC EDM pulse generator technology increases efficiency by 2.5 times.

MAXSEE takes advantage of the latest SMC EDM technology for machining hard alloys with a graphite electrode to reduce electrode wear by 30% while increasing efficiency by 2.5 times.



Samples of surface finish Ra0.2



Samples of surface finish Ra0.1

**Standard accessories:**

- ◆ Paper filters
- ◆ Tool kit for machine maintenance
- ◆ Standard electrode holder
- ◆ Portable jet nozzles
- ◆ Automatic fire-fighting system with fire-extinguisher
- ◆ Operating manual in English
- ◆ Working lamp

**Options:**

- ◆ GL-614 magnetic base (WxL/6"14")
- ◆ GL-816 magnetic base (WxL/8"x16").
- ◆ Equipment for carbide machining
- ◆ Automatic electrode changer — 4 stations
- ◆ Built-in C axis — 3R or EROWA

**Purpose:**

The electric discharge machine MAXSEE P400 is used for the manufacture of various parts: dies, molds, blank dies, machining holes of various configurations in parts made of common and difficult-to-machine materials, such as hardened stainless steel, high-strength conductive composite alloys, titanium, graphite, where it is necessary to speed up inter-stage processes by reducing the time of draining / filling the working tank.

Specifications	Unit	MAXSEE CNC P400
XY Travel	mm	400 x 300
Z travel (spindle)	mm	400
Distance from the spindle to the work table (min/max)	mm	195–595
Work table dimensions	mm	710 x 380
Max. workpiece weight	kg	250
Working tank dimensions (L x W x H)	mm	965 x 500 x 460
Max. electrode weight	mm	300
Max. level of dielectric liquid	mm	300
Tank capacity	L	320
Number of filters	pc.	2
Max. output current	A	75
Power consumption	kVA	8
Machine weight	kg	1750
Machine dimensions	mm	1950 x 2000 x 2260

**AD Series** — EDM die-sinking machines  
**SODICK** (with linear servo motors and Auto Editing function)

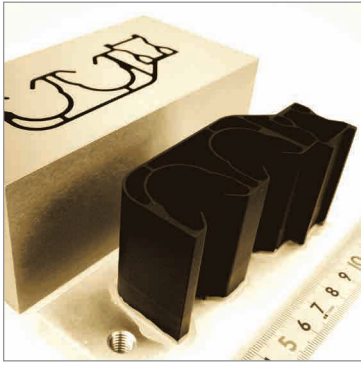


**Features:**

- ◆ The machine includes the following main structural units: a bed, in the upper part of which there is an X-axis carriage, on which a vertical Z-axis slider with a pneumatic aerobalance unit in the head is located, a working bath and a Y table on the bed.
- ◆ Z-axis drive - double, with two ultra-high torque, high precision linear motors.  
Drives X, Y - ultra-high torque, high precision linear motors with pneumatic electric brakes.

**Purpose:**

Economy class machines of the SODICK AD series are designed for the manufacture of three-dimensional parts: stamps, molds, blank stamps. The equipment is capable of processing holes of various configurations in parts made from common structural materials, high-strength, hardened stainless steels, high-strength conductive alloys, titanium, graphite, etc.



An example of electro-sparking (electroerosion) sinking machining of a deep groove cavity without flushing with a dielectric liquid (sludge removal as a result of pumping effect caused by ultra-high-speed electrode movement)



Example of tungsten carbide machining:  
 ♦ Electrodes: 3x copper-tungsten  
 ♦ Size:  $\varnothing$  524 mm, depth 15 mm  
 ♦ Surface finish: Ra0.61  $\mu$ m

#### Standard accessories:

- ♦ Standard units: power-line filter, optical IR mouse, remote control unit
- ♦ Standard accessories include toolbox with tools kit, anti-scratch paint, a starting package of spare parts and consumables
- ♦ SGF-Circuit — near-zero electrode wear ( $\leq 0.06\%$  wt. / N 20  $\mu$ Rmax)
- ♦ Shuttle ATC — automatic electrode changer (4 stations)
- ♦ Oilmatic automatic compression chiller-thermostat of dielectric liquid
- ♦ Automatic fast-acting carbon-dioxide fire extinguisher
- ♦ Step-down transformer 380 V, > 200 V, (50 / 60 Hz).
- ♦ AVR — Voltage stabilizer (built-in;  $\pm 5\%$ , max.  $\pm 10\%$ )
- ♦ SQ-circuit — electronic system of quick finishing to better than Ra0.1  $\mu$ m
- ♦ SVC — new electronic system to enhance machining capabilities and speeding up finishing
- ♦ LAN Interface — remote monitoring and control via LAN network
- ♦ SEC-10 — add-in C-axis (indexing 0,001°) + rotation spindle (up to 20 rpm)
- ♦ MF2400 — paper filters (preinstalled on the machine).
- ♦ Detailed instruction manual for operation, maintenance and programming in English

#### Optional accessories:

- ♦ Tooling hardware from EROWA or SYSTEM 3R (selected in the contract)

Specifications	Unit	AD35L	AD55L
XYZ Travel	mm	350 x 250 x 270	600 x 400 x 400
Work table size (FineXCera ceramics)	mm	600 x 400	750 x 550
Max. workpiece weight	kg	550	1000
Work tank inner dimensions	mm	975 x 555 x 350	1200 x 800 x 500
Work tank fluid level (min. to max.)	mm	170–300	170–450
Dielectric volume	L	400	800
Max. average machining current	A	40	
Best surface finish	Ra, $\mu$ m	Ra0.06	
Max. electrode weight	kg	50 (weight depends on electrode holder type)	
Resolution of XYZ linear scales	$\mu$ m	0.01 (10 nanometer)	
Positioning increment of XYZ feed	$\mu$ m	0.1	
Z-axis drive and control system	—	Linear servo drive, full closed-loop feedback (linear scale with resolution 0.01 $\mu$ m)	
Max. speed of Z-axis travel	mm/min	36000	
XY drives	—	High-torque AC pulse servo motors, semi-closed loop feedback (precision encoders)	
Max. speed of XY travel	mm/min	5000	
Offset	—	Separate for each axis; backlash and torque compensation	
Part machining accuracy	$\mu$ m	$\pm 2.5$ (standard Sodick cutting technologies)	
Max. electrode wear	—	0.06% electrode weight	
Machine dimensions	mm	2080 x 1955 x 2350	2550 x 2325 x 2720
Machine weight (incl. CNC-generator)	kg	3200	4600



**AG series** — EDM Die-Sinking Machines  
**SODICK** (with linear servo motors and Auto Editing function)



**Features:**

- ◆ The machine incorporates the following key parts: machine frame with a stationary X/Y work table and a telescopic work tank, a movable Y-axis column, movable X-axis unit (head) in the upper part of a movable column and a ceramic carriage of Z-axis vertical slider with pneumatic air balancing system in the head
- ◆ Asv
- ◆ Twin Y-axis drive

**Options:**

- ◆ Tooling hardware EROWA or SYSTEM 3R (selectable in the contract)
- ◆ SCR72P C-axis + rotating spindle up to 2000 rpm
- ◆ Current booster to 80 A, 120 A

**Purpose:**

SODICK AG Series premium class machines are designed for manufacturing components for aerospace industry, power generating units, dies and molds with extremely small tolerance and high quality surface finish.



Example of deep groove sinking without electric fluid flushing (The part was bisected to show the symmetry and quality, which are unattainable on the machines with ball screw drives).



Electric spark machining of gear (copper-steel)  
 ♦ Material: SKD61 (≈ 4X5FM15)  
 ♦ Depth of EDM scanning: 12 mm  
 ♦ Surface finish: Ra 0.45 μm

**Standard accessories:**

- ♦ Standard accessories, including a tool box with a tool kit, anti-scratch paint, starting package of spare parts and consumables
- ♦ SGF-Circuit function — near-zero electrode wear ( $\leq 0.06\%$  wt. / N 20 μRmax)
- ♦ Shuttle ATC — automatic electrode changer (4 stations)
- ♦ Oilmatic automatic compression chiller-thermostat of dielectric liquid
- ♦ Step-down transformer 380 V > 200 V, (50 / 60 Hz).
- ♦ SEC-10 — add-in C-axis (0.001° inching increment) + rotation spindle (up to 20 rpm)
- ♦ AVR — Voltage stabilizer (built-in; ±5%)
- ♦ SQ-circuit — electronic system of quick surface finishing to better than Ra0.1 μm
- ♦ SVC — electronic system of quick surface finishing to better than Ra0.1 μm
- ♦ LAN Interface — remote monitoring and control via LAN network
- ♦ MF2400 — paper filters (preinstalled at the machine)
- ♦ Detailed instruction for operation, maintenance and programming in English

Specifications	Unit	AG40L	AG60L
XYZ travel	mm	400 x 300x 270	600 x 400 x 370
Work table size (FineXCera ceramics)	mm	600 x 400	750 x 550
Dielectric tank capacity	L	330	465
Max. workpiece weight	kg	550	1500
Work tank inner dimensions	mm	750 x 620 x 350	950 x 740 x 450
Work tank fluid level (min. / max.)	mm	100–300	150–400
Angular positioning step	—	SEC-10: 0.001° (3.6") / SCR72P: 1 / 720000°	
Spindle rotation velocity	—	SEC-10: 2 — 20 rpm / SCR72P: up to 2000 rpm	
Max. electrode weight	kg	50 (weight depends on electrode holder type )	
Min. electrode wear	%	0.06% electrode weight	
Max. average machining current	A	40	
Best surface finish	Ra, μm	Ra0.06	
Resolution of XYZ linear scales	μm	0.01 (10 nanometer)	
Positioning increment of XYZ feed	μm	0.1	
Z-axis drive and control system	—	Linear servo drive, full closed loop feedback (linear scale with resolution 0.01 μm)	
Max. speed of Z-axis travel	mm/min	36000	
XY drives	—	High-torque AC pulse servo motors, semi-closed loop feedback (precision encoders)	
Max. speed of XY travel	mm/min	5000	
Compensation	—	Separate for each axis; backlash and torque compensation	
Machining accuracy	μm	±2.5 (standard Sodick cutting technologies)	
Machine dimensions	mm	1662 x 2490 x 2330	1852 x 2825 x 2570
Machine weight (incl. CNC-generator)	kg	4250	5350

## EDM DRILLING MACHINES (SUPER DRILLS)

The EDM technology is very specific. The specificity of EDM drilling lies primarily in the small size of the holes obtained from 0.03 mm to 6 mm. and sufficiently large possible drilling depths in the ratio of diameter to depth up to 1: 250. At the same time, there are many requirements and restrictions regarding the accuracy of the obtained diameters along the entire length of the hole, the roughness of the hole walls, straightness, restrictions on fixing the drilling stroke when entering the internal cavities of the part, positioning accuracy when drilling an array of holes, especially with 5-6 coordinate positioning and determining the absolute depth of each hole if blind holes are drilled, the continuity of drilling an array of holes with the ability to automatically change the electrode and calibrate it, etc.

Practice shows that EDM drilling machines for complex tasks are the most difficult equipment to choose, even if it is in stock.

### The comparison table of the Super Drill machines specifications.

Specifications	Unit	ERP-01	CASTEK PD02
Machine price, ex. VAT	—	2'800 EUR	8'500 EUR
Applicable electrode diameter	mm	1.2–6.0	0.3–1.5 (3.0)
Max. machining current	A	8	12
Maximum cutting speed for steel X12M with 1.0 mm electrode	mm/min	1	25
Min. electrode wear	%	n.a.	20
Z advance increment	µm	No	
XY optical scales resolution	µm	No	
Program-controlled axes	—	No	
M2-M8 tapping capability	—	No	
Operating system	—	No	
Data input	—	No	
Built-in system of generator mode selection	—	Yes, acc. to electrode diameter	
Automatic electrode changer	—	No	
Automatic guide way changer	—	No	
Spindle tilt	—	No	
Voltage stabilizer	—	No	
Pump type	—	Electrical	Pneumatical
Usable dielectric liquid	—	Tap water	
Filtration system	—	No	
Water treatment system	—	No	
Dielectric liquid chiller	—	No	
Country of origin	—	Russia	Taiwan

Our company also provides an opportunity to order non-standard EDM drilling machines, with the development for a specific geometric task and the selection of the necessary additional devices, non-standard electrodes and guides to them both in diameter, hole configuration and length.

Below is a table comparing the basic models of EDM drilling machines presented by our company, but it does not allow us to evaluate the variety of additional functions that radically change the functionality of some machines.

D703.1	CASTEK FD	CASTEK SD	CASTEK MD
10'000 EUR	from 15'625 EUR	from 22'500 EUR	from 27'500 EUR
0.3–3.0	0.1–6.0	0.1–6.0	0.03–1.5
30	50	25 (50 — optional)	15
30	40	60	30
40	20	20	20
5	1	1	1
5	5 (1 — optional)	5 (1 — optional)	5 (1 — optional)
1	1, 3 or 4	1 to 7	1, 3 or 4
No		Yes	No
No	Linux		
Manual	USB, LAN, touch screen		
No. The recommended electrode diameter is indicated in the operation instructions	Yes, acc. to the electrode and workpiece material		
No	Optional	Optional	No
No			
No		Manual or programmable — optional	No
No	Optional		
Electrical	Pneumatical, electrical — optional		Pneumatical
Tap water	Tap water and/or dielectric oil		Tap water and dielectric oil
No	Yes		
No	Optional		
No	Optional		No
China	Taiwan		

## ERP-01 — Portable EDM broken tools extractor

SPE MEATEC



The design of circuitry, software, mechanical assemblies of the ERP-01 portable EDM broken tools extractor was developed by SPE MEATEC — the manufacturer of this device.

### Features:

- ◆ The portable EDM broken tools extractor with the moving spindle has been designed for local removal of broken taps and drills without workpiece hole damaging and workpiece removal from the machine
- ◆ The machine unit operation is based on the electro-erosion principles
- ◆ The electrode can be made of any brass bar of the proper diameter
- ◆ The broken tool can be removed directly from the workpiece clamped in the machine without prior disassembly.
- ◆ The machine can extract the tools made of high-speed steel, hard alloy (cast iron, stainless steel, aluminum, copper, brass, etc.).
- ◆ The machine is completed with the built-in dielectric pump unit and electrode holder cooling system.
- ◆ The machine features the cutting depth control function (maximum cutting depth setting — 100 mm).
- ◆ The drive unit with the electrode can be mounted at  $\pm 45^\circ$  angle to the workpiece surface with water flush supply through the electrode holder or through the external nozzle at  $\pm 90^\circ$  angle to the work piece machining surface.
- ◆ The machine is provided with the shock-resistant and leak-proof housing, retractable handle and polyurethane wheels to ensure the safe device storage and transportation on the shop floor.

**Standard equipment:**

- ◆ Pulse generator unit
- ◆ Actuation mechanism on the magnetic base
- ◆ Water pump
- ◆ Brass electrode
- ◆ Shock-proof transportation box
- ◆ Set of operating manuals

**Examples of ERP-01 extractor application**

Removal of a broken M2 tap (material: high-speed alloy type P6M5) from titanium reinforcement for control system devices



Removing a broken tap M38 (material: high speed alloy) from the thrust bearing of a nuclear reactor pump



Drilling of service (locking) holes in the stainless steel nuts  $\varnothing$  2 mm with tungsten electrode



Specifications	Unit	ERP -01
Electrode diameter range	mm	1.2–6
Max. Z-axis travel	mm	300
Tilting angle for water flush through the external nozzle	deg.	$\pm 90$
Max. tilting angle for water flush through the electrode holder (electrode length max 50 mm)	deg.	$\pm 45$
Max. electrode stroke	mm	Up to 100
Shock-proof case weight	kg	6
Control unit dimensions (L x W x H)	mm	240 x 60 x 55
Generator weight	kg	4
Control unit weight	kg	5
Generator dimensions (L x W x H)	mm	360 x 210 x 55
Operation voltage	V	40–120
Power supply	V / Hz	220 / 50–60
Max operation current	A	Up to 8
Total power consumption	W	500
Dielectric fluid	—	Water
Electrode material	—	Brass bar
Shock-proof case dimensions (L x W x H)	mm	550 x 345 x 250
Total weight	kg	15.5

## PD02 — Portable EDM machine for starting holes drilling

CASTEK



### Purpose:

The machine is designed for drilling small deep holes with a diameter of 0.3 to 1.5 mm in conductive materials of any hardness, such as stainless steel, carbide alloys and annealed materials. This equipment is applicable for drilling start holes and high speed removal of broken tools.

The machine is convenient to use on large-sized workpieces, since it can be easily transported in the workshop.

### Standard accessories:

- ◆ Control unit with Z-axis servo drive
- ◆ Actuation mechanism with magnetic base
- ◆ Trolley for machine storage and transportation
- ◆ High-pressure pneumatic pump
- ◆ Guide way for electrode  $\varnothing$  1.0 mm
- ◆ Rubber seal  $\varnothing$  0.3–3.0 mm
- ◆ Brass electrodes  $\varnothing$  1.0 mm — 20 pcs
- ◆ Operation manual in English

### Features:

- ◆ Due to the small size of the drilling unit, it can be installed directly in the wire cut EDM machine to drill a clamped workpiece without its prior removal.
- ◆ High drilling speed: 20 mm / min with 1 mm dia. electrode and wearing rate 60%
- ◆ The machine is capable to drill holes with dia. from 0.3 mm to 2.0 mm
- ◆ Simple power supply: 1-phase, 220 V, 1200 W
- ◆ Trolley with polyurethane wheels for all parts of device transportation and storage
- ◆ Very easy operation and maintenance
- ◆ The tap water is used as cooling liquid

Specifications	Unit	PD02
Power consumption	V / H	1-phase, 220 V, 50 Hz
Max. required power	W	1200
Max. machining current	A	12
Electrode diameter	mm	0.3–2.0
Electrode length	mm	300
Z travel	mm	260
Cutting speed	mm/min	20
Dielectric liquid tank	L	10
Operating pressure in dielectric liquid system	kg/cm <sup>2</sup>	30
Weight	kg	95

## D703.1 Series — EDM single-axis high-speed drilling machine — "SuperDrill"



Spark drilling of the lock hole in the nut



Spark drilling process

### Features:

The work table travel along X/Y axis is controlled by the optical scales with 0.005 mm resolution. The machine is equipped with the function of correcting the hole depth depending on the electrode wear.

### Purpose:

The machine is designed for drilling deep holes with a diameter of 0.3 to 3 mm in metals of any hardness and carbide products while maintaining the mechanical properties of the material.

Specifications	Unit	D703.1	D703.1U
Work table dimensions (L x W)	mm	400 x 600	440 x 630
Work table travel	mm	300 x 400	400 x 500
Axes travel	Z-axis	mm	400
	W-axis	mm	350
Distance from the electrode guide to the table surface	mm	85–435	235–585
Max. machining current	A	30	30
Electrode diameter	mm	0.3–3.0	0.3–3.0
Max. workpiece weight	kg	200	300
Dielectric liquid	—	Water	
Power voltage	V / H	380 V / 50 Hz	
Total power consumption	kW	3.1	3.5
External dimensions (LxWxH)	mm	1060 x 1050 x 1950	1250 x 1150 x 2100
Machine weight	kg	500	600
Digital display	—	Two axes (three digital axes — optional)	
45° — tilt function	—	Yes (optional)	

# FD22 SDN — EDM three-axis high-speed drilling machine — "Super Drill" CASTEK



### Standard accessories:

- ◆ HCD Power Generator, 50 A
- ◆ Cotton filter
- ◆ Ceramic guides for electrodes,  $\varnothing$  1.0 mm
- ◆ EH0330 electrode holder, 0.3–3.0 mm.
- ◆ Brass electrodes  $\varnothing$  1.0 mm
- ◆ LED working light
- ◆ XY optical scales with resolution 5  $\mu$ m
- ◆ Tooling hardware kit
- ◆ Toolbox with tool kit

### Optional accessories:

- ◆ Brass / copper electrodes,  $\varnothing$  0.1–6.0 mm
- ◆ Ceramic guides for electrodes,  $\varnothing$  0.1–6.0 mm
- ◆ EH0115 electrode holder, 0.1–1.5 mm
- ◆ ER11, ER16 electrode holder, 3.0–6.0 mm.
- ◆ Dielectric EDM-fluid

### Optional equipment:

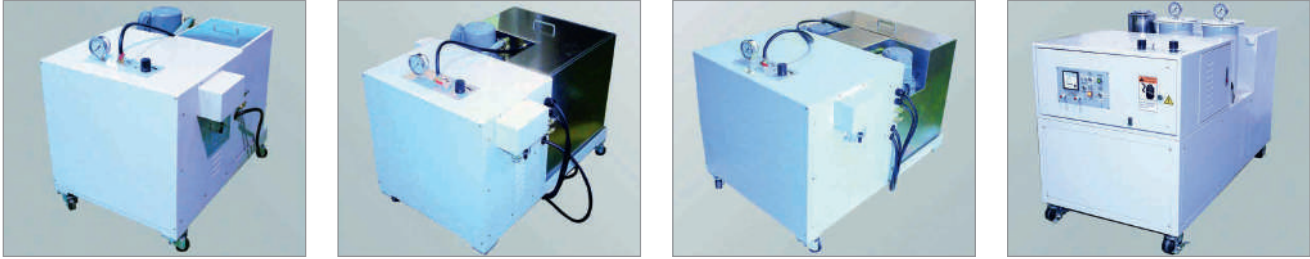
- ◆ Equipment for hard alloy drilling
- ◆ Filtering system with automatic liquid deionization
- ◆ XY optical scales with resolution 1.0  $\mu$ m
- ◆ Remote control unit

### Features:

- ◆ A professional-grade machine for drilling carbide and metal-cored steels, in particular for drilling small and deep holes that cannot be made on a conventional machine
- ◆ The steel drilling speed is two times higher comparing to the similar machines
- ◆ The machine can drill a hole using an electrode with a diameter of 0.1 to 6.0 mm
- ◆ Example: tungsten carbide (CD650), 76 mm thick, copper electrode, dia. 0.5 mm, drilling will take about 15 minutes, and the hole size in the top and bottom of the workpiece will be less than 0.58 mm
- ◆ Movable flat-bar worktable
- ◆ Can be equipped with various control systems to add the functions of electrode positioning, multiple holes drilling and connection of optional equipment
- ◆ Setting machining parameters in accordance with the workpiece material and electrode diameter

Specifications	Unit	FD22 SDN
Work table dimensions	mm	300 x 245
Work table type	—	Squared
Max. workpiece dimensions	mm	670 x 450 x 240
Work table XY travel, manual	mm	300 x 200
Spindle head Z-axis travel	mm	370
Spindle travel, manual	mm	275
Distance from the electrode guide to the table surface	mm	25–300
Max. workpiece weight	kg	250
Max. machining current	A	50
Max. power consumption	kW	6
Optical scales resolution (optional)	mm	0.005 (0.001)
Metric-inch system conversion	—	Standard function
Machine footprint	mm	1450 x 1350
Machine weight	kg	700
Dielectric liquid tank	L	45

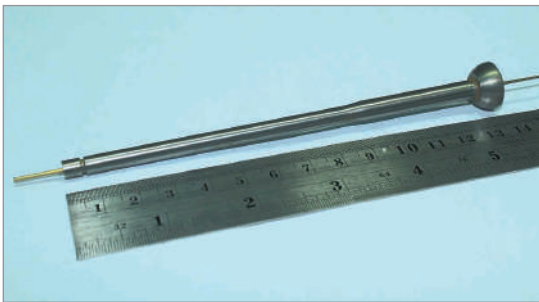
## Filtration systems



### FD22 SDN machine CNC system functions:

- ◆ Tailoring current generator parameters according to workpiece material and electrode diameter and size
- ◆ Edge search function
- ◆ Automatic depth control
- ◆ NC/ISO, DXF formats support
- ◆ Automatic cycle of multiple holes machining
- ◆ LAN, USB data communication ports
- ◆ Graphical display of machining process
- ◆ Positioning assistant
- ◆ Multilingual interface
- ◆ Touch screen 10.4-inch monitor

### Examples of machining operations



- ◆ Workpiece material: steel
- ◆ Size  $\varnothing 1.2 \times 135$  mm



- ◆ Workpiece material: steel
- ◆ Size  $\varnothing 0.5 \times 100$  mm



CNC system



Remote control unit for convenient machine control (optional)



# SDK Series — EDM high-speed drilling machines — "Super Drill"

CASTEK



### Standard accessories:

- ◆ Cotton filter
- ◆ Ceramic guides for electrodes,  $\varnothing$  1.0 mm
- ◆ EH0330 electrode holder, 0.3–3.0 mm
- ◆ Brass electrodes  $\varnothing$ 1.0 mm —10 pcs
- ◆ LED working light
- ◆ XY optical scales with resolution 5  $\mu$ m
- ◆ Tooling hardware kit
- ◆ Toolbox with tool kit
- ◆ Standard controller (XY travel with manual control)

### Optional accessories:

- ◆ Brass / copper electrodes, 0.1–6.0 mm
- ◆ Ceramic guides for electrodes,  $\varnothing$  0.1–6.0 mm
- ◆ M2-M8 tapping electrode
- ◆ M2-M8 tapping electrode guideway
- ◆ EH0115 electrode holder, 0.1–1.5 mm
- ◆ ER11, ER16 electrode holder, 3.0–6.0 mm
- ◆ Dielectric EDM-fluid

### Optional equipment:

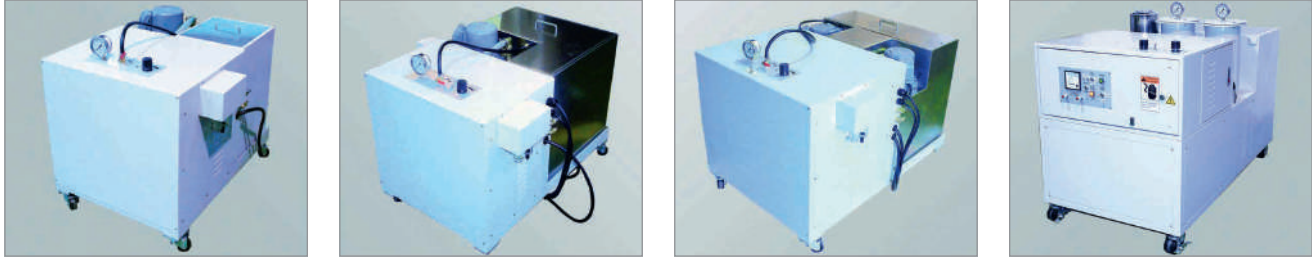
- ◆ SD Boost power generator, 50 A
- ◆ HCD power generator, 50 A
- ◆ RL generator, 50 A
- ◆ Various CNC controllers supporting up to 7 axes control
- ◆ High alloy machining equipment
- ◆ M2-M8 tapping accessory
- ◆ Automatic electrode changer with 16 stations
- ◆ Linear W-axis — programmable movement of spindle sleeve.
- ◆ Rotating or tilting/rotating work table
- ◆ Filtering system with automatic liquid deionization
- ◆ XY optical scales with resolution 1.0  $\mu$ m
- ◆ Control of electrode overrun after machining (for through-hole drilling of workpieces with different thickness)
- ◆ Automatic control of machining depth

### Features:

- ◆ Fast-speed drilling of all conductive materials including hard alloys, titanium, heat-resisting steels. Ability to drill holes in broad standard range 0.3–3.0 mm, optionally in 0.1 mm to 6.0 mm
- ◆ Low electrode wear, 30–60%
- ◆ Movable flat work table
- ◆ Can be equipped with various control systems to add the functions of electrode positioning, drilling of multiple holes and connection of optional equipment
- ◆ Setup of machining parameters depending on the workpiece material and electrode diameter

Specifications	Unit	SD16K	SD22K	SD24K
Work table dimensions	mm	440 x 225	410 x 210	450 x 260
Max. workpiece dimensions	mm	700 x 410 x 240	650 x 420 x 240	810 x 510 x 240
Work table XY travel	mm	300 x 200		400 x 250
Spindle head Z-axis travel	mm	350	370	370
Spindle travel, manual	mm	275		
Distance from the electrode guide to the table surface	mm	25–300		
Max. workpiece weight	kg	250		
Max. machining current (optional)	A	25 (50)		
Max. power consumption	kW	4 (6)		
Optical scales resolution (optional)	mm	0.005 (0.001)		
Machine footprint	mm	1450 x 1350	1450 x 1350	1450 x 1350
Machine weight	kg	820	700	750
Dielectric liquid tank	L	45 (70, 100, 180)		

## Filtration systems



## Indicative time of thread cutting

Thread size	M3	M4	M5	M6	M8
Workpiece thickness					
X12M hardened (min:sec)	09:00	16:00	17:00	27:30	30:00
G5 hard alloy 10 mm (min:sec)	09:00	20:00	24:10	34:00	36:50

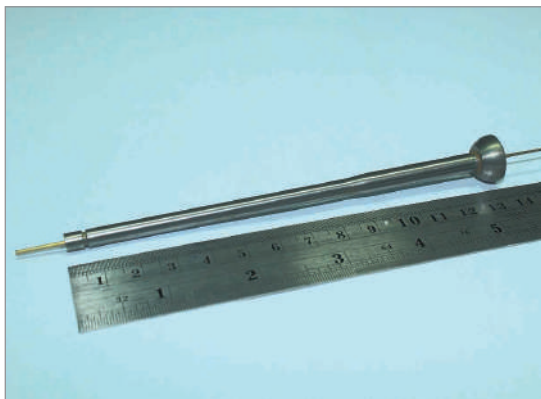
## Processing examples



- ◆ Workpiece material: tungsten carbide
- ◆ Size: M3 M4 M5 M6 M8



- ◆ Workpiece material: tungsten carbide
- ◆ Size:  $\varnothing$  1.0 mm



- ◆ Workpiece material: steel
- ◆ Size:  $\varnothing$  1.2 x 135 mm



- ◆ Workpiece material: steel
- ◆ Size:  $\varnothing$  0.5 x 100 mm

# SD series — EDM 1-7 axes high-speed drilling machines — "Super Drill"

CASTEK



### Standard accessories:

- ◆ Cotton filter
- ◆ Ceramic guides for electrodes,  $\varnothing$  1.0 mm
- ◆ EH0330 electrode holder, 0.3–3.0 mm.
- ◆ Brass electrodes  $\varnothing$  1.0 mm
- ◆ LED working light
- ◆ XY optical scales with 5  $\mu$ m resolution
- ◆ Tooling hardware kit
- ◆ Toolbox with tool kit
- ◆ Standard controller (XY travel with manual control)

### Optional accessories:

- ◆ Brass / copper electrodes, 0.1–6.0 mm
- ◆ Ceramic guides for electrodes,  $\varnothing$  0.1–6.0 mm
- ◆ M2-M8 tapping electrode
- ◆ M2-M8 tapping electrode guideway
- ◆ EH0115 electrode holder, 0.1–1.5 mm.
- ◆ ER11, ER16 electrode holder, 3.0–6.0 mm
- ◆ Dielectric EDM-fluid

### Optional equipment:

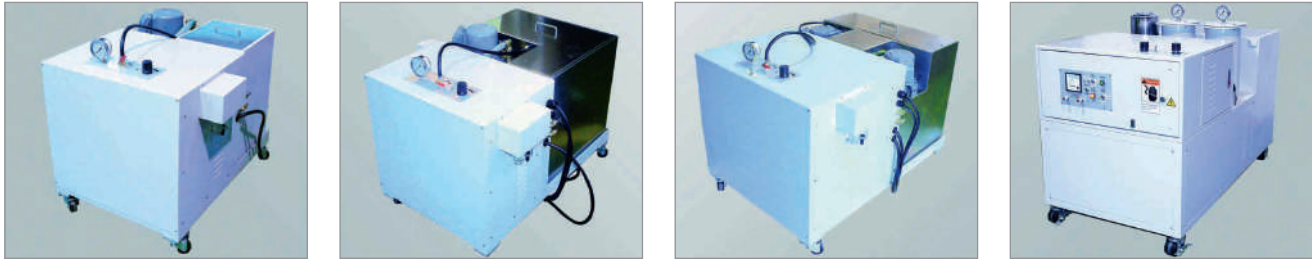
- ◆ SD Boost power generator, 50 A
- ◆ HCD power generator, 50 A.
- ◆ RL generator, 50 A.
- ◆ High alloy machining equipment
- ◆ M2-M8 tapping accessory.
- ◆ Automatic electrode changer with 16 stations
- ◆ W linear axis – programmable movement of spindle sleeve
- ◆ Rotating or tilting/rotating work table
- ◆ Filtering system with automatic deionization
- ◆ Spindle tilt angle to  $\pm 50^\circ$  in XZ plane (manual or programmable)
- ◆ XY optical scales with resolution 1.0  $\mu$ m
- ◆ Control of electrode overrun after machining (for through-hole drilling of workpieces with different thickness)
- ◆ Automatic control of machining depth

### Features:

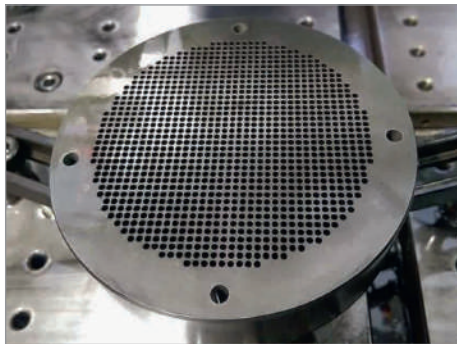
- ◆ Fast-speed drilling of all conductive materials including hard alloys, titanium, heat-resisting steels
- ◆ Ability to drill holes in broad standard range of 0.3–3.0 mm, optionally in 0.1 mm to 6.0 mm range
- ◆ Low electrode wear, 30–60%
- ◆ Fixed flat work table
- ◆ Can be equipped with various control systems to add the functions of electrode positioning, multiple holes drilling and connection of optional equipment
- ◆ Setting of machining parameters depending on the workpiece material and electrode diameter

Specifications	Unit	SD4030	SD5040	SD6040
Work table dimensions	mm	525 x 320	600 x 435	
Max. workpiece dimensions	mm	830 x 650 x 300		
Work table XY travel	mm	400 x 300	500 x 400	600 x 400
Max. electrode length	mm	400		
Servo Z-axis travel of the spindle head	mm	340		
Distance from the electrode guide to the table surface	mm	50–400		
Max. workpiece weight	kg	500		
Max. machining current (optional)	A	25 (50)		
Max. power consumption (with 50A generator)	kW	4 (6)		
Optical scales resolution (optional)	mm	0.005 (0.001)		
Number of feed rates	step	3		
Machine footprint	mm	1600 x 1650	1600 x 1750	
Machine weight	kg	1350	1450	
Dielectric filtration system capacity	L	45 (70, 100, 180)		

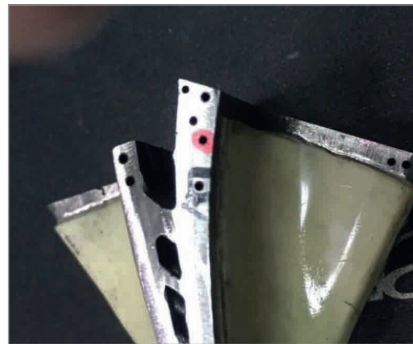
Filtration systems



Processing examples



- ◆ Workpiece material: tungsten carbide
- ◆ Holes:  $\varnothing$  1.6 mm, depth 28 mm



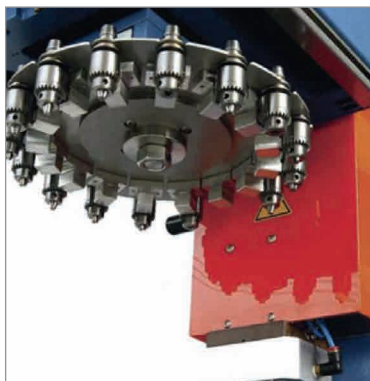
- ◆ Workpiece material inconel.
- ◆ Holes:  $\varnothing$  1.0 mm, depth 35 mm



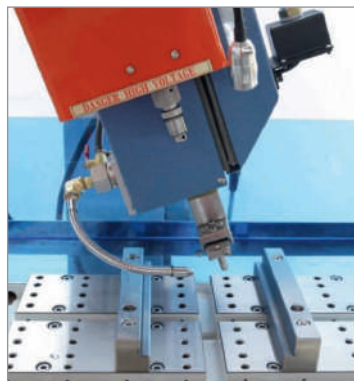
- ◆ Workpiece: reamer
- ◆ Size  $\varnothing$  1.0 mm.



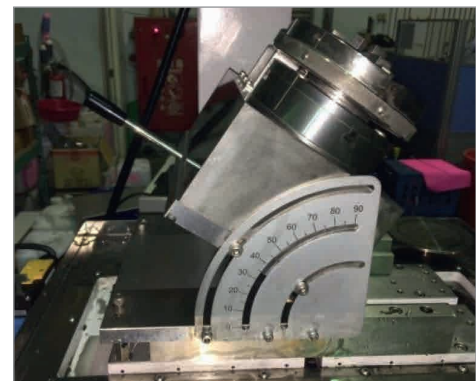
- ◆ Workpiece: cutting tool
- ◆ Size  $\varnothing$  1.2 mm



Automatic electrode changer with 16 stations



Working head tilting



Rotary table with tilting option



## MD20 — EDM micro-hole drilling machine

CASTEK



### Features:

- ◆ Desktop model, compact size
- ◆ Drilling of holes with dia. from 0.03 mm to 1.5 mm
- ◆ Movable flat work table
- ◆ Good level of performance for drilling hard alloy, free of cobalt overlay surfacing, free of micro-fissures
- ◆ High-precision ball screws, linear guides, XY optical scales
- ◆ Can be equipped with various control systems to add the functions of electrode positioning, multiple holes drilling and connection of optional equipment

### Standard accessories:

- ◆ Cotton filter
- ◆ Ceramic guides for electrode,  $\varnothing$  0.2 mm
- ◆ EH0330 electrode holder, 0.1–1.5 mm
- ◆ Brass electrodes  $\varnothing$  0.2 mm
- ◆ LED working light
- ◆ XY optical scales with resolution 5  $\mu$ m
- ◆ Tooling hardware kit
- ◆ Toolbox with tool kit
- ◆ Standard controller (XY travel with manual control)

### Optional accessories:

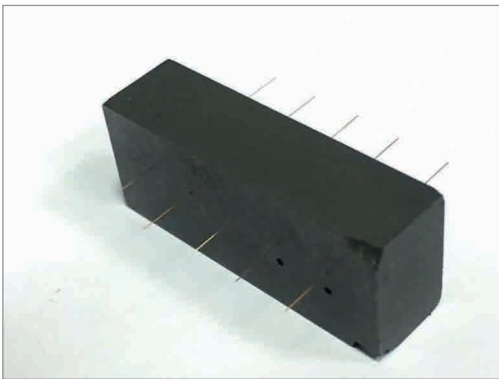
- ◆ Ceramic guides for electrodes,  $\varnothing$  0.13–1.5 mm
- ◆ Special electrodes  $\varnothing$  0.03–0.3 mm
- ◆ Special guides for electrodes,  $\varnothing$  0.03–0.1 mm
- ◆ Dielectric EDM-fluid

Specifications	Unit	MD20
Work table dimensions	mm	225 x 225
Max. workpiece dimensions	mm	300 x 300 x 150
Work table XY travel, manual	mm	200 x 200
Spindle head Z-axis travel	mm	260
Spindle travel, manual	mm	135
Distance from the electrode guide to the table surface	mm	10–145
Applicable electrode diameter	mm	0.03–1.5
Max. workpiece weight	kg	50
Max. power consumption	kW	1,5
Max. machining current	A	15
Optical scales resolution (optional)	mm	0.005 (0.001)
Machine footprint	mm	1600 x 1350
Machine weight	kg	800

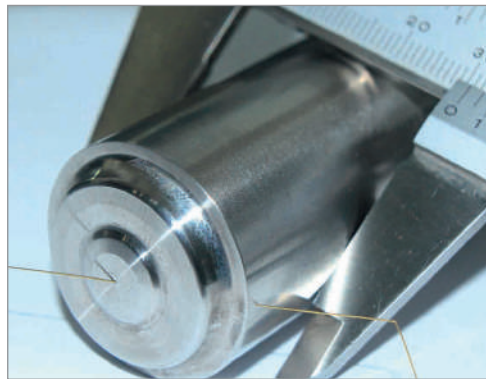
The machine has a high-speed spindle for electrode rotation and speed controller (200 / 300 / 600 / 900 / 1200 / 1500 rpm), filtration system with pneumatic pumps (200 bar) for two types of dielectric liquids: distilled water and dielectric oil.

To ensure safe handling of dielectric oil, the machine is equipped with a small movable immersion tank, dielectric fluid hoses made of oil-resistant material, and a fluid ignition detection system (IR sensor).

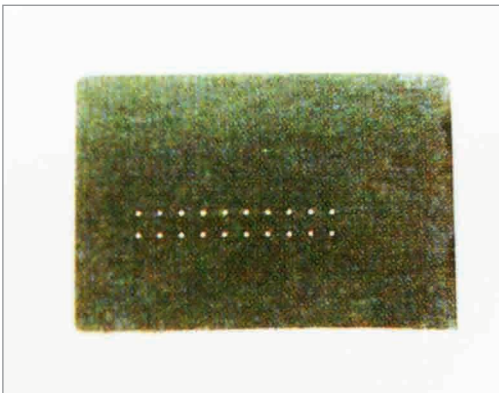
### Processing examples



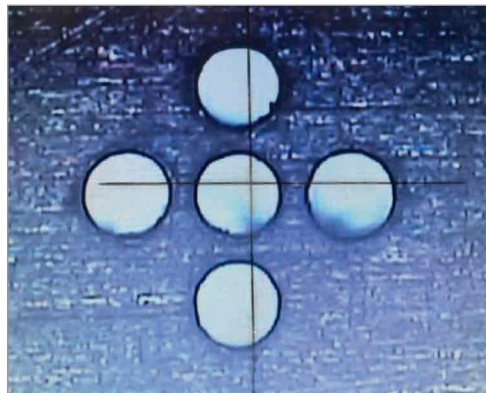
- ◆ Workpiece material: tungsten carbide
- ◆ Size  $\varnothing$  0.15 x 12 mm



- ◆ Workpiece material: HSS, SKH9, high-speed cutting steel (P2AM9K5)
- ◆ Size  $\varnothing$  0.2 x 18.25 mm



- ◆ Workpiece material: SUS304 corrosion-resistant heat-resistant (08X18H10)
- ◆ Size  $\varnothing$  0.05 x 0.5 mm



- ◆ Workpiece material: SUS304 corrosion-resistant heat-resistant (08X18H10)
- ◆ Size  $\varnothing$  0.13 x 7 mm with 0.21 step

## Optional components supplied by MEATEC Group for EDM equipment retrofitting

### The package for upgrading EDM wire-cut flush-type machines with X/Y/U/V step motors

The kit is based on the ME11 controller produced by SPE MEATEC with AUTOCUT, HF or MEATEC CNC. At the request of the customer, when upgrading the machine, a complete replacement of stepper motors, power and signal cables, the machine wiring system, including the pulse feed system to the wire, replacement of the filtration system, installation of an aluminum cutting device and a mechanical wire tension system can be carried out. For the convenience of rapid positioning, it is possible to install optical rulers with DRO on the X/Y axis. It is possible to check the condition of the ballscrew using a laser interferometer and replace it with new ones if the condition is defective. The use of this kit allows you to restore the characteristics of the equipment to a new state with a maximum cutting speed of up to 150mm<sup>2</sup>/min, the best roughness of Ra 0.8 and accuracy for the resulting part of 0.012 mm, at a cost from 6000 EUR.



### The package for upgrading EDM wire-cut flush- or submersion-type machines with X/Y/U/V step or servo motors

The kit is based on the ME12 controller manufactured by SPE MEATEC with Balt-system CNC. Modernization of electric wire-cutting machines from any manufacturers using this type of controllers involves the complete replacement of all engines, power and signal cables, wiring of the machine, adjusting the PLC to the configuration of the machine and connecting all existing options (turntable, AWT, Filtering system, etc.). Installation of optical rulers with the feedback to the servodrive. With the help of a laser interferometer, it is possible to certify the state of the machine's ballscrews with the correctors inputting into the CNC to improve accuracy. Configuring a postprocessor for Sprut CAM. Delivery of Sprut CAM-EROSION licenses at an attractive price. The use of this kit allows you to restore the characteristics of the equipment to a new state with a maximum cutting speed of up to 200 mm<sup>2</sup>/min, the best roughness of Ra 0.6 and an accuracy of 0.005 mm for the resulting part at a cost of 35000 EUR.



### AL-M aluminum cutting device

The device is used to prevent increased wear of carbide electrodes that occurs during machining of aluminum blanks and its alloys.

AL-M is composed of:

- ◆ Current-collecting unit for power supply to the wire drum. The unit is installed on the wire drum support.
- ◆ Mode switching unit. It is installed on the column of DK77 machine, connected to the electric power supply circuit, and allows machine switching from the normal operation mode to the mode of cutting workpieces made of aluminum metal and alloys.



### Working liquid filtration system

Designed for controlled supply of working fluid to the workpiece processing area, removal of waste generated during cutting and cooling of the cutting wire.

The system represents the two-sectioned metal reservoir for working liquid with stationary fine filter housing. It includes the hydraulic pump, delivery and discharge (return line) hoses, ball valves for working liquid volume and pressure control, three-stage (preliminary, primary and fine) treatment system and filtering elements (fabric preliminary filter, filtering mesh and fine filter). The filtering system tank is coated with durable powder paints, which provides the corrosion resistance, and is equipped with swivel wheels for convenient travel over shop floor.



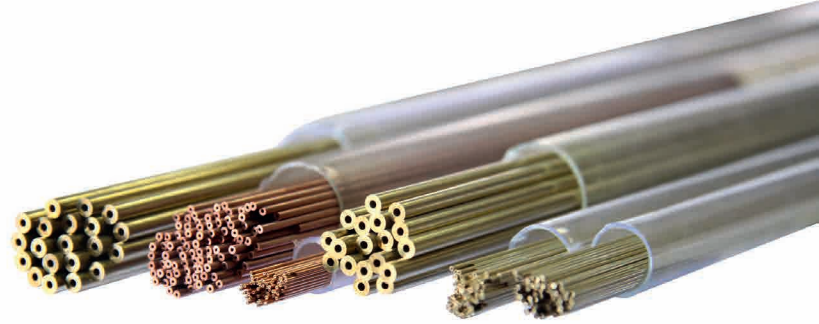
### Safety guard

It prevents the access to the working zone during machine operation. It is installed on the upper movable positioning table of the machine. It consists of metal panels coated with powder paint and polycarbonate sight holes for visual checking the machining process.



## Consumables for EDM wire-cut and "Super Drill" machines

The copper electrodes are applied for hard alloys and cast iron machining.  
Brass electrodes are applied for steel machining.  
Single-channel electrodes are applied for through holes.  
Multi-channel electrodes are applied for blind holes.



We are able to produce electrodes with a nonstandard size according to the drawings, supplied by a customer. The table below shows the variants of standard and most commonly available sizes of electrodes.

Copper electrodes	Cross-section	150 mm	300 mm	400 mm	500 mm	600–1000 mm
Thick-walled, 1-channel		0.15–25.00	0.15–25.00	0.20–25.00	0.15–25.00	0.15–25.00
Thin-walled, 1-channel		0.15–6.00	0.15–6.00	0.20–6.00	0.15–6.00	0.15–6.00
2-channel		0.40–3.00	0.40–3.00	0.40–3.00	0.40–3.00	0.40–3.00
3-channel		0.90–20.00	0.90–20.00	0.90–20.00	0.90–20.00	0.90–20.00
4-channel		1.20–4.50	1.20–4.50	1.20–4.50	1.20–4.50	1.20–4.50
3-channel with inserted rod		3.01–15.00	3.01–15.00	3.01–15.00		

Brass electrodes	Cross-section	150 mm	300 mm	400 mm	500 mm	600–1000 mm
1-channel		0.15–6.00	0.17–6.00	0.20–6.00	0.30–6.00	0.13–6.00
2-channel		0.40–3.00	0.40–3.00	0.40–3.00	0.40–3.00	0.40–3.00
3-channel		0.90–6.00	0.90–6.00	0.90–6.00	0.90–6.00	0.90–6.00
4-channel		1.20–4.00	1.20–4.00	1.20–4.00	1.20–4.00	1.20–4.00

Working liquids for electric discharge die-sinking machines.

The table below shows the specifications of main dielectric liquid grades.

Parameter	Unit	LONOPLUS-IME-MH	Mol Polimet EDM3
Appearance	—	Green color liquid	Colorless transparent liquid
Density at 15 °C	kg/m <sup>3</sup>	790	801
Kinematic viscosity at 40 °C	mm <sup>2</sup> /s	2.50	2.3
Kinematic viscosity at 20 °C	mm <sup>2</sup> /s	—	—
Closed cup flash point, min	°C	107	103
Mass fraction of aromatic carbons, max.	%	0.01	0.5
Acidity, max.	mg KOH / 100 cm <sup>2</sup> of liquid	—	0.02
Mass fraction of sulfur, max.	%	—	—
Water content	%	None	None
Mechanical impurities content	%	None	None
Coking capacity, max	%	—	—
Copper plate test	—	Passed	Passed
Iodine absorption number, max	Iodine per 100 g liquid	—	0.02

# Consumables for EDM wire-cut machines

## Wire

The wire is used as an electrode tool in EDM cutting machines for processing almost any conductive material by electric discharge cutting, manufacturing parts of complex shape, small size and diameter, and large thickness. High-quality wire increases the machining speed without the loss of accuracy.

## Molybdenum

Molybdenum wire is applied as a the cutting tool for contour machining on electric discharge high-speed wire-cut DK77 series,

Actspark FW-series machines.



Wire diameter, mm	Coil length, m	Limit strength, N/mm <sup>2</sup>	Weight, g
0.10	4500	1300–2000	360
0.11	4000	1300–2000	387
0.12	3900	1300–2000	450
0.13	3600	1300–2000	487
0.14	3500	1300–2000	450
0.15	3000	1300–2000	540
0.16	2400	1300–2000	491
0.17	2200	1300–2000	450
0.18	2000	1300–2000	518
0.20	1500	1300–2000	573
0.21	1700	1300–2000	600
0.22	1500	1300–2000	581
0.25	700	1300–2000	581

## Brass

Brass wire is applied in all modern electric discharge submersion-type wire-cut machines: Neu-ar. Maxsee, Aristech, Mitsubishi Electric, AGIECharmilles, Sodick, Fanuc, Chmer, etc. The brass wire applicable for more specific material machining has additional Zn or Cu coating.

The table below shows standard nominal sizes of brass wire.



Wire diameter, mm	Material	Diameter tolerance, mm	Limit tensile strength, N/mm <sup>2</sup>	Rupture strength, N	Relative elongation, %	Electrical conductivity, %
0.20	Cu / Zn = 65 / 35	±0.001	500 (72500)	15.7	> 15%	min 25
0.25	Cu / Zn = 65 / 35	±0.001	500 (72500)	25.0	> 15%	min 25
0.30	Cu / Zn = 65 / 35	±0.001	500 (72500)	35.3	> 15%	min 25
0.15	Cu / Zn = 65 / 35	±0.001	min 980 (142000)	17.3	< 3%	min 22
0.20	Cu / Zn = 65 / 35	±0.001	min 980 (142000)	29.4	< 3%	min 22
0.25	Cu / Zn = 65 / 35	±0.001	min 980 (142000)	48.1	< 3%	min 22
0.30	Cu / Zn = 65 / 35	±0.001	min 980(142000)	69.2	< 3%	min 22

## Dielectric liquid concentrate (JR-3A/3B/3C emulsion)

is used as a cooling liquid for electric discharge machining on DK series wire-cut machines

JR-3A/3B emulsion is applied for machining workpieces with a height of less than 500 mm, and JR-3C — for a workpiece height up to 1.000 mm.

Dielectric liquid improves the erosion products washout from the machining zone. Before use, JR-3A/3B concentrate shall be diluted with pure water in 1:40 ratio, JR-3C concentrate — 1:70.



## Spare parts for electric discharge machine and Super-Drill machines

We can supply from Moscow warehouse and deliver in the shortest time the most demanded and rapidly wearing spare parts for electric discharge machines: wire guides, sets of electrode guides for Super Drill machines, quills, rollers, bearings, holders, valves, machining tooling and many other spare parts.

Sodick Mitsubishi +GF+ Fanuc Makino Seibu Hitachi Brother  
 Japax SPM Chmer Accutex Excetec SSG DM SPK MS-EDM

### Filters for electric discharge machines



We can supply wide choice of filters with various size, single and double filtering fabric made of synthetic fiber.

Due to its technological characteristics, synthetic fiber prevents the penetration of the smallest particles into the working fluid with a filtration degree equal to from 1 to 3 microns.

Model	Filter size	Sodick	Mitsubishi	+GF+	Fanuc	Makino	Hitachi	Chmer	Accutex	MS-edim
YT-19	outer $\varnothing$ 340 mm, inner $\varnothing$ 46 mm, H=300 mm	X			X					
YT-25N	outer $\varnothing$ 340 mm, inner $\varnothing$ 46 mm, H=450 mm	X		X	X					
YT-17	outer $\varnothing$ 260 mm, inner $\varnothing$ 29 mm, H=340 mm	X	X				X			
YT-23	outer $\varnothing$ 260 mm, inner $\varnothing$ 46 mm, H=280 mm	X				X				
YT-36P dia. 20/31	outer $\varnothing$ 340 mm, inner $\varnothing$ 45 mm, H=450 mm		X		X	X	X			
YT-36Z	outer $\varnothing$ 340 mm, inner $\varnothing$ 45 mm, H=300 mm		X		X	X	X			X
YT-20 dia.20	outer $\varnothing$ 300 mm, inner $\varnothing$ 29 mm, H=500 mm		X							
YT-38	outer $\varnothing$ 300 mm, inner $\varnothing$ 59 mm, H=500 mm		X			X	X	X	X	X
YT-32	outer $\varnothing$ 150 mm, inner $\varnothing$ 33 mm, H=375 mm			X						X
YT-240	outer $\varnothing$ 340 mm, H=450 mm			X						
YT-02	outer $\varnothing$ 150 mm, inner $\varnothing$ 33 mm, H=350 mm	X								
YT-1535W-33	outer $\varnothing$ 150 mm, inner $\varnothing$ 33 mm, H=350 mm		X							
YT-1545W-33	outer $\varnothing$ 150 mm, inner $\varnothing$ 33 mm, H=450 mm		X							
YT-1545W-72	outer $\varnothing$ 150 mm, inner $\varnothing$ 72 mm, H=450 mm									
YT-3030 dia. 32	outer $\varnothing$ 300 mm, H=300 mm		X							
YT-3033 59 dia. 32	outer $\varnothing$ 300 mm, inner $\varnothing$ 59 mm, H=330 mm		X							
YT-2320-140	outer $\varnothing$ 230 mm, inner $\varnothing$ 120 mm, H=400 mm									
YT-2340-140	outer $\varnothing$ 230 mm, inner $\varnothing$ 140 mm, H=400 mm									
YT-38N dia.20	outer $\varnothing$ 300 mm, H=500 mm									X
YT-22	outer $\varnothing$ 260 mm, inner $\varnothing$ 37 mm, H=2800 mm	X					X			

**Spare parts for DK77 wire-cut machines**



Two-axial rollers



Single-axial rollers



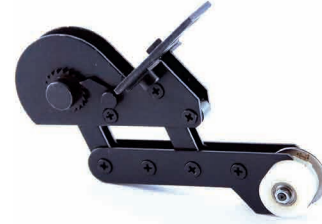
Precision guides



Bearings



Hard-alloy contacts



Wire tensioning device

**Spare parts for CW wire-cut machines**



Ceramic  
CH 601 rollers



Rollers  
MK504



Polyurethane  
CH 604 rollers



Metal  
CH 603-30 rollers



Manual valve  
CH 05



Shafts



Aspirators for wire  
cutting CH 704



Power contacts



Isolators



Bearer



Upper and lower  
holders M 111



Jet nozzle holders  
CH 851-1



Washout  
nozzles



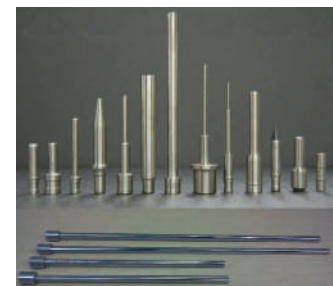
Wire guides  
CH 508

**Spare parts for Super Drill machines**

Electrode guides:

- standard and non-standard ceramic guides, dia. from 0.03 mm to 10.00 mm;
- extension and special guides developed for deep penetration into the cavities and angle elements where the high positioning accuracy is required;
- high-accuracy precision guides made of silicon nitride with the three-point contacts.

We offer to produce guides for electrodes of a special size according to the customer's drawings.



## MEATEC Service Center, LLC

Service center MEATEC LLC was founded in 2008.

The main idea of creating a service center at that time was service support for the sale of erosion equipment: pre-sale preparation of machines, commissioning, warranty and post-warranty repairs. However, with the development of our own production and the emergence of our own developments of the pulse generator, both for machines with stepper motors and more technologically complex solutions, filtration systems for working fluid, devices for cutting aluminum, as well as the availability of a wide range of spare parts in stock, the service center began to transform into an independent market player capable of performing both simple tasks in support of sales and very complex tasks associated with the repair and modernization of machines from other manufacturers and different years of release.

The inventory of professional class testing equipment allows Service Center to find fault conditions quickly and definitely. Consequently, MEATEC Service Center plays one of the key roles and provides the following services:

- ◆ Pre-sale conditioning of equipment
- ◆ Start-up and commissioning of equipment and customer's personnel training
- ◆ Warranty and post-warranty repair of equipment
- ◆ Carrying out work on the modernization of DK series machines from other manufacturers to replace the controller, restore geometric accuracy, install a new filtration system for the working fluid, devices for cutting aluminum and other useful options
- ◆ Carrying out work on the modernization of DK series machines in order to improve accuracy by replacing it with a modern CNC system (BaltSystem, MEATEC) with the installation of servo drives, optical rulers for feedback, and a new controller
- ◆ Modernization of any submersion-type machines with the replacement of all electrical components: servo motors, controllers with a new CNC system (BaltSystem or MEATEC), optical scales with a feedback coupling and checking the condition of all mechanical assemblies — ball screws, linear guides, bearings — all the services are performed, using professional class laser equipment.



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RUSSIAN MANUFACTURER  
OF METAL WORKING EQUIPMENT



[ageltech.de](http://ageltech.de)

## ELECTRICAL DISCHARGE EQUIPMENT

WIRE-CUT • DIE-SINKING MACHINES  
DRILLING • EXTRACTORS • CNC DIAMOND WIRE SAW