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New finished goods

Linear motor drive ultra-precision wire-cut EDM that contributes to the manufacturing of precision molds for the mobility industry and mobile electronic equipment industry
Announcement of development and sales of "AX350L"

Sodick Co., Ltd. has developed and will begin selling "AX350L," a linear motor drive ultra-precision wire-cut EDM with oil dielectric specifications, as new finished goods that meet the demands for long-term stable machining and labor saving in precision mold manufacturing.

Sodick's oil dielectric type wire-cut EDM has been used by customers around the world in a wide range of fields, such as automobiles, watches, medical care, and semiconductors, for more than 40 years since it was first sold in 1981. In recent years, in these industries, there is an increasing demand for labor-saving, such as the convenience and maintainability of work, as well as the ability to efficiently produce continuous processing over several days.

The newly developed "AX350L" incorporates the concept of overall temperature control, adopts a highly rigid portal structure and an environmental diagnosis function, and is capable of stable mold plate machining over a long period of time. Equipped with a 3-sided fully automatic up/down type, this machine is highly compatible with a workpiece exchange system using a robot, and can build continuous automatic operation. The processing tank has a structure that can be stored to the bottom of the work stand, making it easy to access and the cores that have been cut off can be easily checked. Customers who have issues with precision machining of complex-shaped workpieces previously used in wire-cut EDM can use "AX 350L" to realize labor-saving benefits, such as improved productivity and maintainability by reducing setup work.

In addition, by installing the software S-Viewer which receives machine operation status data as standard, downtime reduction and machine availability improvements can be achieved. Data connection to the production system by the international standard MT Connect/OPC-UA supports smart manufacturing in the era of digital transformation (DX) together with the customer's skills and know-how. In addition, an energy-saving function for dielectric is provided as standard equipment. Equipped with the "eco collections" gadget function that switches the automatic power shutdown on and off with a single touch and displays the running cost status in real time, the new eco-friendly finished goods also help customers reduce their CO_2 emissions and power consumption.

AX350L will be exhibited at "JIMTOF2022" (November 8 to 13: Tokyo Big Sight).

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■ **Appearance of "AX350L"**

■ Planned sales price and target production volume

Standard price: 33.5 million yen ~ (excluding tax)
Target production volume: 10 units/year

■ Markets/fields

Mobility industry	Manufacture of press molds for motor cores that are directly linked to the performance of running motors for EVs (electric vehicles)
Semiconductor industry	Mold fabrication for lead frame manufacturing of semiconductor packages

■ Main specifications of "AX350L"

● Main unit

Movement distance of each axis (X axis × Y axis × Z axis)	350×350×220* mm
Max. workpiece size (W × D × H)	750×700×100 mm
Max. workpiece weight	300 kg
Wire electrode diameter	ϕ0.05～ϕ0.25mm
Max. taper angle (thickness: 100 mm)	±15°
Machine tool dimensions (W × D × H)	2705×2490×2185 mm
Machine tool weight	4500 kg
Total power capacity	13 kVA

* 120 mm (Z axis) during processing

● Power supply unit

Power requirement	200/220 V 50/60 Hz
NC unit	Multi-tasking OS, K-SMC-LINK method
No. of simultaneous control axes	Max. 4 axes (option: max. 8 axes)

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[Main features]

■ Long-term stable processing

Plate machining of precision press molds can take up to 150 hours (approximately one week), and these processes can be continuously automated.

- ✓ 4-axis (XYUV-axis) linear motor drive (excellent positioning performance and repeatability)
- ✓ Highly rigid portal structure
- ✓ Overall temperature control (dielectric temperature control, accurate thermal displacement correction function, environmental temperature diagnosis)
- ✓ Arm suspension structure (the lower arm does not penetrate the processing tank, so there is no sliding resistance during axis movement)
- ✓ Standard use of ceramic structural members that achieve stable fine discharge (surface plate, work stand)
- ✓ Oil machining dielectric specification (fine machining with stable discharge gap)

■ Work setup performance

Excellent accessibility makes it easy to replace, install, and position workpieces in all machining areas.

- ✓ The processing tank is lowered to the bottom of the work stand (easily remove cut-off parts with high plate thickness)
- ✓ Improved visibility from the top surface of the workpiece (Z axis travel 220 mm (machining up to 120 mm))
- ✓ Easy loading and unloading of workpieces (designed to secure space for hand lifter use)

■ High-performance functions and ultra-precision machining performance

- ✓ High-speed automatic wire threader FJ-AWT (wire annealing function, flushing hole search function)
- ✓ Best-in-class pitch and shape accuracy of ±1 μm
- ✓ Surface roughness Ra 0.02μm　Rz 0.18 μm

■ Maintainability

- ✓ Tool-less wire guides for regular replacement parts
- ✓ Suction-type wire ejection mechanism (reduces the number of parts to be regularly replaced by eliminating belts)

■ Fully automated labor saving

- ✓ It is possible to construct a workpiece exchange system using a robot.
- ✓ Various convenient functions, such as pitch machining correction function and idling function

■ Environmentally friendly finished goods that realize sustainable production

- ✓ Eco collections gadget function (running cost display, etc.)
- ✓ Dielectric energy saving function
- ✓ Reduced wire consumption by wire rotation mechanism “i groove”

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