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New Product Release**Realized High-speed Machining by Oil Machining Specification
in Fine Precision Range****Sodick Releases Linear Motor Drive High Precision Wire-cut EDM "AP350L (Oil)"**

Sodick Co., Ltd. is launching an "AP350L (Oil)" as a new "AP Series" of the oil machining specification linear motor drive high precision wire-cut EDM.

Along with the downsizing and densification of precision electronic components, Sodick has been providing a diverse range of machining performances and know how in oil machining specification wire-cut EDMs for more than 30 years, in order to realize ultimate machining accuracy and high machined surface quality in the fine precision range required for semiconductor package molds. The latest high-speed machining performance in the finishing range (surface roughness Rz 1 μ m or less) has been receiving high evaluations.

In recent years, in addition to motor drive systems installed in electric vehicles and hybrid vehicles, etc., the demand for installing small and medium size motors used as an actuator of automatic control by sensing has also been increasing. The same as with semiconductors, a high level of machining needs is also required for motor core molds.

Based on such manufacturing conditions, we developed the new product AP350L (Oil), and realized an axial configuration which provides a square machining area that supports motor core molds by equalizing the travels of the X-axis and Y-axis.

By adding the new AP350L to the lineup of the oil machining specification linear motor drive high precision Wire-cut EDM "AP Series AP250L, AP450L and AP650L," Sodick provides solutions in the fine precision range which supports various machining needs, such as for motor core molds and press molds for lead frame of diodes, transistors, and LSI.

■ Features of New Product AP350L (Oil)

1. 4-axis linear motor drive & highly-rigid machine structure

This model adopted highly rigid and low waving linear guides equipped with high speed & dynamic response linear motor drives developed and manufactured in-house for the X, Y, U and V axes. The adoption of a highly-rigid machine structure (low center of gravity gantry column), minimized machine displacement by shifting weight which realizes high-accuracy positioning and excellent machining accuracy. In addition to the catenary structure of the upper/lower arms, complete separation of the heat sources including the power supply, machining fluid cooling unit and pump, etc. from the machine, enables prolonged automatic operation while maintaining stable accuracy.

2. Super finish circuit "Super PIKA Oil"

The discharge gap is smaller in oil machining where the insulation resistance value is higher and constant compared with water machining, which allows for precision machining in micro electrical conditions. Therefore, this is excellent in repeatability, and super fine surface finishing can be acquired. The standardly equipped super finish circuit "Super PIKA Oil" provides excellent surface roughness, which reduces the polishing processes of molds and precision components. A surface roughness of Rs 0.4 μ m was achieved in the machining of cemented carbide material with a thickness of 80 mm.

3. New "High-speed Eco-Cut O-Plus"

Oil based wire-EDMs realize high-speed finish machining with fine surface quality. Water machining is mainly used for common wire-cut EDMs which demonstrates excellent high-speed machining. However, in fine precision machining targeting Rz 1.0 μ m (Ra 0.15 μ m) or less, the advantage of high-speed cannot be demonstrated efficiently in water machining. The new product AP350L (Oil) equipped with the new oil based high-speed Eco-Cut O-Plus, enables a "reduction of the machining time" and "greatly reduces the number of cuts" in the fine precision range.

4. Improved machining performance by high accuracy "FJ Guide" and high-speed automatic wire threading unit "FJ-AWT"

The adoption of the high accuracy "FJ Guide" and the high-speed automatic wire threading unit "FJ-AWT" which achieves a high wire threading rate irrespective of it being submerged or not submerged, realizes repeatable and stable machining, and improves the life of the power feed contacts and maintainability, in addition to prolonged automatic continuous operation.

5. Standardly equipped with ceramics which realize stable micro-electrical discharge

The adoption of the independently developed ceramics with insulatability which is important for electrical processing machinery as well as providing features, such as hard, lightweight, heat resistant and wear resistant for the main parts of the machine, realized a lightweight and highly rigid machine structure. Work can be continued with the same setup to fine finish machining without tools for insulating. This is Sodick's unique predominant technology which applies ceramics effectively, and this insulatability improves stability in the fine finish machining range.

6. New NC unit "SPW power supply" and latest man-machine interface

This model is equipped with a horizontal 19-inch large size display, and new NC unit "SPW power supply" in pursuit of visibility and ease of use. The adopted high-speed processor realizes high processing speed and operability.

The Sodick-IoT "S-Viewer" enables centralized remote control of the operating status of the NC unit, which supports improvement in the machine operation rate.

7. Eco, energy saving, security and safety

This model was developed in consideration of "energy-saving, recycle/reuse, people-friendly, waste reduction and maintenance free" as an eco-friendly machine tool. Revision of all the component parts used for the machine and power supply, etc. greatly reduced the number of components. Sodick developed this model while also paying careful attention to the environment for the consumables, giving priority to recyclable and reusable components.

■ Main Specifications of AP350L (Oil)

Maximum workpiece dimensions (W x D x H)	540 x 500 x 100 mm
Maximum workpiece weight	100 kg
Each axis travel (X-axis x Y-axis x Z-axis)	350 x 350 x 120 mm
Auxiliary axis (U-axis x V-axis)	35 x 35 mm
Maximum taper angle (thickness 100 mm)	±7°
Diameter of wire electrode	φ0.05 - φ0.25 mm
Machine dimensions (W x D x H)	1985 x 2095 x 2160 mm
Machine weight (machine only)	4650 kg
Total electric capacity	13 kVA

■ External View



■ Estimated sales price (Tax excluded) and target production quantity

- AP350L standard price	from 30.5 million yen (tax excluded)
- AP350L target production quantity	15 units/year
- Sales started	from October 1, 2019

■ Inquiries

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