

Media Release

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DRILL 300 hole-drilling EDM machine a winning solution

A powerful generator and CNC, high flexibility in production and Automation, ease of use, and compact design make GF AgieCharmilles' new DRILL 300 hole-drilling EDM machine a winning solution for a variety of applications such as cooling holes in aerospace and aeronautics and starting holes for wire-cutting EDM in mold and die.

The DRILL 300 has a compact fixed table design with X x Y of 600 x 400 mm and Z x W travel of 450 (650 optional) x 450mm. Its generator and dielectric unit are integrated into the machine, and various Automation and additional axis options are available. In developing the new DRILL 300, GF AgieCharmilles Research and Development team took seriously customers' real world needs. That is why the DRILL 300 has so many advantages.

Powerful generator for outstanding performance

The DRILL 300 is equipped with the famous GF AgieCharmilles ISPG generator with maximum mean current 30A (60A optional) and a pulse duration down to hundreds of nanoseconds. The form of current pulse is optimized for EDM drilling, with ISPG generator for low electrode wear and an affected layer less than 10 µm was obtained.

The DRILL 300's ISPG generator offers the following process control strategies:

- **First spark detection:** the generator detects the position of the first spark, then it adapts to the entry surface of the workpiece. This strategy protects the electrode profile and hole quality at entry, an important consideration for the cooling holes application.
- **Electrode wear compensation:** The generator measures the actual wear and finally knows the position of the electrode. This strategy is helpful for preventing the electrode from getting out of guide, drilling more accurate blind holes in depth, automatically changing the electrode after calculating the remaining electrode, and managing its resources under user-defined rules.
- **Breakthrough detection:** The generator knows exactly when the hole is complete. Because this strategy guarantees the hole quality in the end and protects the workpiece from being damaged, back hit is not an issue anymore. This strategy also shortens machining time.

High flexibility for production

The DRILL 300 is designed for machining a variety of holes in different diameters and work-piece materials in mass production. It has a wide range of technologies for various electrode for workpiece materials like Inconel, titanium, steel and carbide.

The DRILL 300's travel X x Y is 600 x 400 mm and its Z x W travel is 450 (650 optional) x 450 mm with maximum eight axes (X, Y, Z, W, tilting head, A, B, C) control:

- With longer Z axis travel, a 600 mm-long electrode can be used for maximum autonomy.
- With tilting head $\pm 45^\circ$, the holes which are not vertical to X, Y plane can be done easily.
- With five-axis configuration the machine is suitable for making cooling holes on blades and vanes.
- With index table, holes in a circular pattern can be executed.

The DRILL 300's Human Machine Interface (HMI) allows easy programming for single holes on one page and powerful programming for multi-pieces and multi-holes, even with different technologies and electrodes/guides.

Various levels of Automation

Electrode stabilizer is standard to shorten the time of automatic electrode changing and avoid the vibration of fine electrode during machining.

The DRILL 300 can be configured with automatic electrode changer/guide changer 16/4 or 50/8:

- 16/4 is an affordable solution for standard use.
- 50/8 is a solution with long time autonomy and for maximum productivity.

The machine can be connected to a workpiece loader and workshop management system.

Friendly, easy to use and powerful CNC

The DRILL 300 features remote control with all setup cycles, axes movement for alignment and tool changer control for preparation of electrodes/guides. The axes' movement speed reaches max. 4m/min. to save you precious time. There is a easy and intuitive programming page for single hole (one hole page): easy and fast.

The job preparation page handles the programming of multi-pieces, multi-holes with different technologies and electrodes/guides: easy and powerful.

AC CAM DRILL imports DXF/DWG/TXT/ ISO files from GF AgieCharmilles wire-cut EDM and adapts to the drilling operations, which helps the user interactively to define technology parameters, drilling sequence and selection of single or group of holes, etc.

The electrodes/guides are managed intelligently by the definition of changer type, number, electrode length and position. The guide automatically matches the electrode selected.

Floor space saving

The DRILL 300's compact design, with generator, dielectric unit and electrode changer integrated into the machine, and the fixed table design make the mechanical compact.

The machine's external dimensions (width x depth x height) are 1,400 (1,900 with tilting head) x 2,320 x 2,180 mm, and it consumes only 3.2 (4.4) m² of floor space.

DRILL 300 main specifications:

Items	Unit	DRILL 300
X, Y travel	mm	600 x 400
Z travel	mm	450 (650 optional)
W travel	mm	450
Max. workpiece dimensions	mm	1,000 x 700 x 400
Max. workpiece weight	kg	1,000
Electrode diameter	mm	0.3~3.0, optional down to 0.1 and up to 6
Dielectric type		Deionized water
Automatic electrode/guide changer		16/4 or 50/8
Machine dimensions W x D x H	mm	1,400 (1900 with tilting head) x 2,320 x 2,180
Machine weight	Kg	2,500
Max.power consumption	KVA	4.5
Main power supply	V,Hz	3 x 380 or 400 ±10%, 50/60Hz

For further information:

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Picture captions:

1. The DRILL 300 is designed for machining a variety of holes in different diameters and workpiece materials in mass production.

**Profil von GF AgieCharmilles**

GF AgieCharmilles is the world's leading provider of machines, automation solutions and services to the tool and mold making industry and to manufactures of precision components. The product range from electric discharge machines, high-speed and high-performance milling machines, including clamping and palettization systems, 3D laser surface texturing machines, services, spare parts and expendable parts, consumables and automation solutions. As a globally active Group, GF AgieCharmilles, a consortium belonging to Georg Fischer Group (Switzerland), maintains a presence on 50 sites worldwide within its own organization. Its 2'523 employees generated sales of CHF 721 million in 2010. More information can be found at www.gfac.com.