



Perfect mastery of surfaces



BE A CHAMPION
IN EVERY MATCH

OPS  INGERSOLL
Fly with the eagle!

Champion tactics: highly dynamic, clever, superior.

Intelligent power setup wins



Rainer Jung, Managing Director
Developer, Mastermind, Enthusiast

The advanced power setup of the G-Line means a substantial boost in speed for modern EDM technology.

A well-organised game plan will make you a superior champion! With the G-Line you will be perfectly equipped to score points as an expert with tremendous precision and intelligent automation solutions. Our demanding team training focuses on a single goal: to coach you to be a winner.

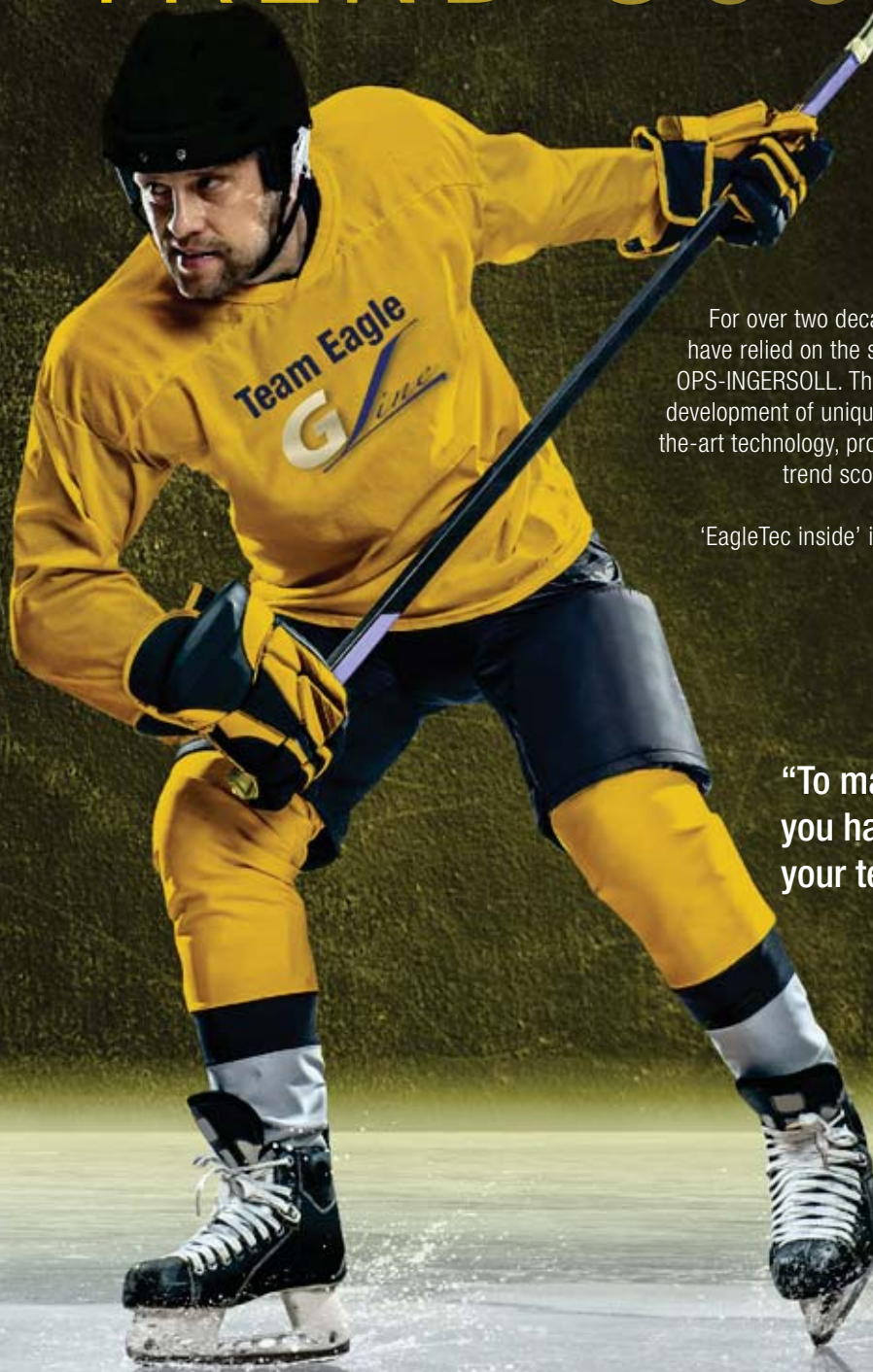
The new machine concept of the G-Line is a clever and profitable choice for the future!

Be an Eagle Team – be a champion!

“Being in the lead means: Being there even before you arrive.”

Michael Schumacher
Racing driver

DEVELOPMENT RESEARCH INNOVATION TREND SCOUTING



EagleTec inside

For over two decades now, our customers around the world have relied on the strong innovative capacity of the experts at OPS-INGERSOLL. The permanent and continuous research and development of unique performance components, with state-of-the-art technology, provides our customers with highly-profitable trend scouting and long-lasting investment security.

'EagleTec inside' is a commitment and a pioneering promise for every machine that leaves our factory. For our customers and our employees. We want to inspire everyone.

**“To make the right play,
you have to know the moves
your teammates will make.”**

Big Points

Diversity of business sectors



Tool and mold construction

Stamping and metal forming

Aerospace technology

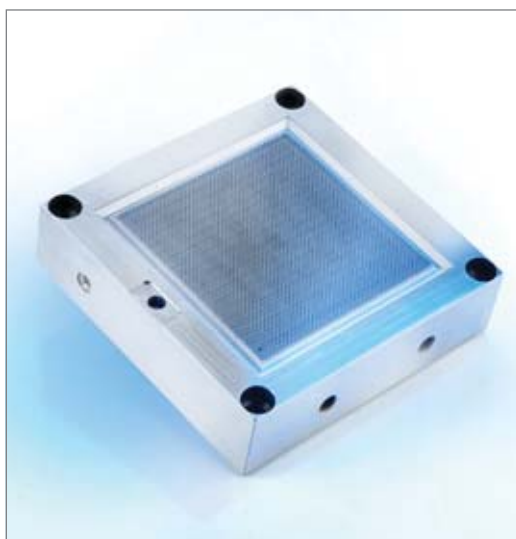
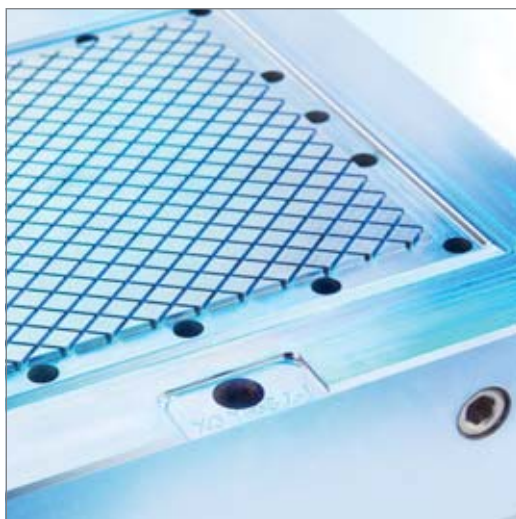
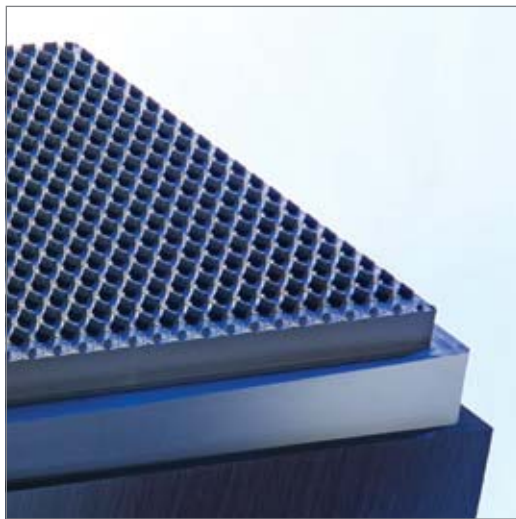
Dental and medical technology

Molds for optical components

Micro-machining

Precision part machining

OPS-INGERSOLL offers efficient solutions to boost productivity.



Increased efficiency

Power Jump!

Optimal flushing is essential for excellent electric-discharge machining results, even under the most difficult conditions. The EAGLE POWERJUMP with lifting speeds of up to 708"/min. (18 m/min.) achieves this easily. It also drastically reduces idle time and significantly shortens machining time. The movement is adapted to the prevailing conditions based on the size of the electrode and the type of application.



Precision recirculating ball screws in all axes



Unique gantry machine concept

Excellent machine design

Highly integral gantry design for optimal temperature stability

Thermo-symmetric design with unique temperature compensation

Gantry construction for maximum precision even in the case of high top loads

C-axis with extreme rigidity for use of electrodes weighing up to 110 lb.(50 kg)

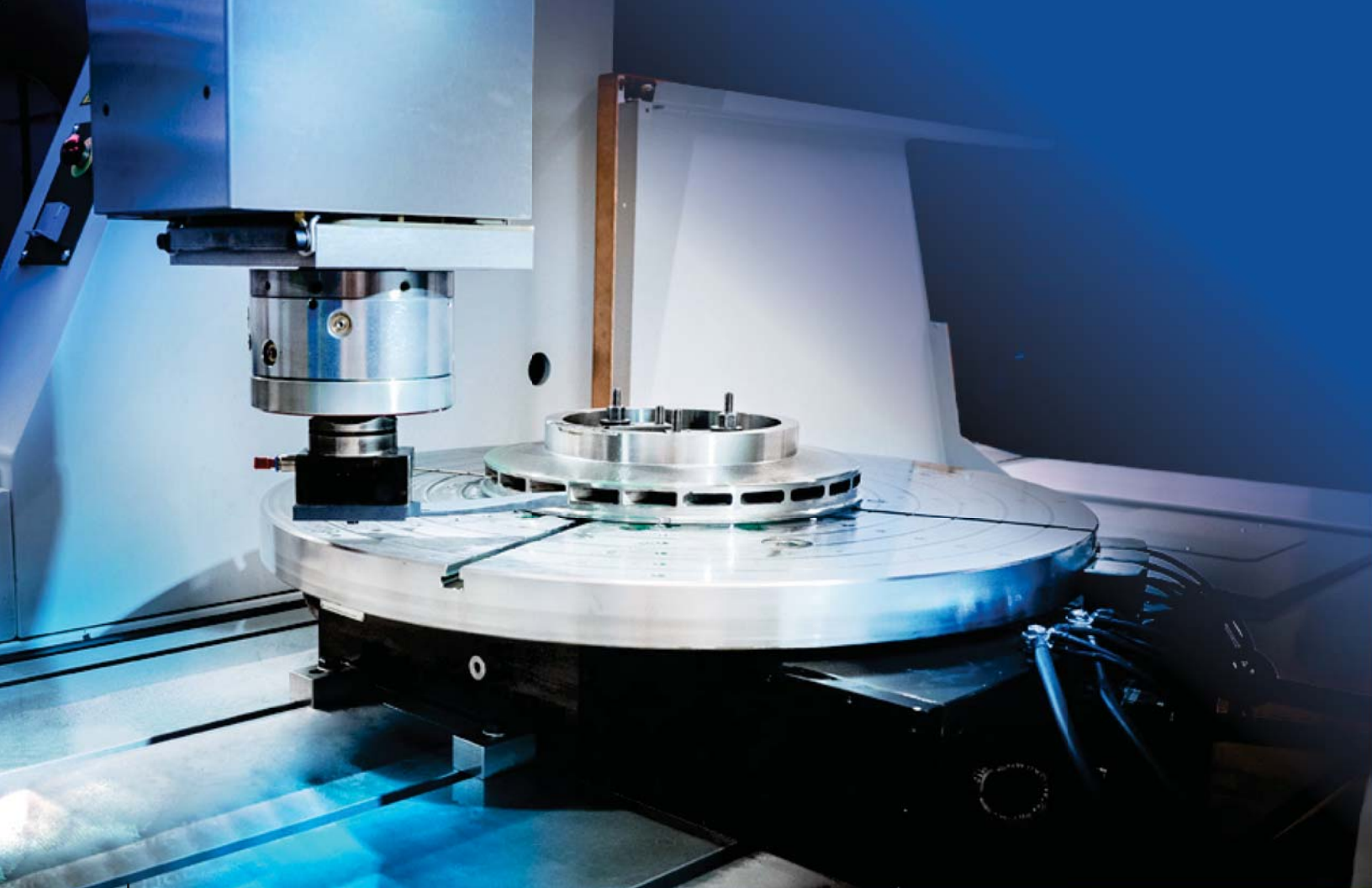
Optimal **automation** with perfect manual control



Integrated **dielectric** tank in the machine base for maximum temperature stability and flow optimised infeed

Automatic tank guidance with **precision recirculating ball screws**

Minimum **footprint** – maximum **travel**



5th axis for indexing mode

5th/6th axis

Electric-discharge machining is no longer limited to Z movement. The EAGLE POWERTEC controller can control up to six EDM axes simultaneously. Whether for indexing in production or completely integrated for complex tasks.

Indexing Mode:

Workpieces can be machined on all sides in a single clamping setup due to fully automated indexing to the next position. Elimination of manual reclamping reduces idle time and extends the unattended operating time of the machine many times over. This not only improves efficiency, but also ensures maximum precision and repeat accuracy.

Fully Integrated EDM Axis

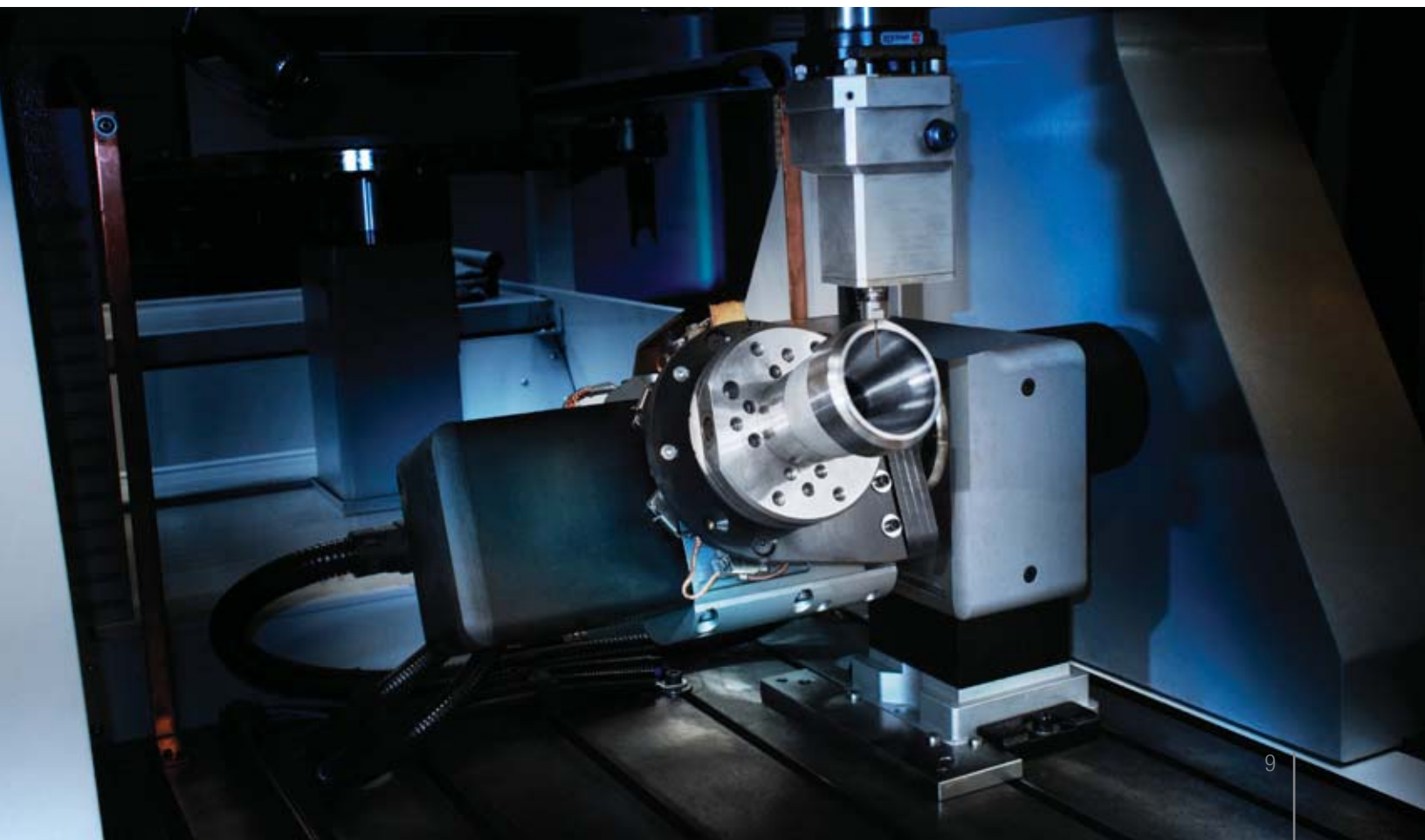
Full integration of up to six EDM axes substantially increases the application spectrum to allow the production of workpieces with much more complex geometries. In addition to the EDM tasks, it is also possible to automate the calibration of large and complex 3D components. The use of RTCP ensures that the electrode and workpiece are correctly aligned in all axes at all times.

Intelligent Measuring Software

The integration of measuring software likewise supports the setup of complex components.



5th/6th axis as a fully integrated EDM axes
for machining high-precision components of different sizes



Multi-flexible automation – all from a single source

Flexible connection of handling systems

The market is defined by requirements for shorter delivery times, diversity of production variants and constantly rising cost and competition pressure.

We offer automation solutions that will substantially reduce costs and turnaround times.

All of our machines are prepared for automation, whether as a single machine, as a cell, or line automation. OPS-INGERSOLL can supply the entire process chain, including automation, measuring machine, cleaning station and software.

New and extremely fast
MultiChange light / performance
with extremely reduced idle times



(Changing detailed electrodes
in less than one minute)

As compact as possible ...

MultiChange light / performance

GANTRY EAGLE
with MultiChange light for performance with up to
232 electrodes and 10 workpiece pallets
(variable configuration)



MultiChange light / performance

The handling system is equipped with a magazine for storage of workpieces and electrodes. Available options include a mechanism for turning the electrodes, chip detection and job management functions. Connection for up to two machines is possible.

MultiChange flexible



MultiChange flexible

Our MultiChange flexible is the universal automation solution for up to three machines. 50 racks can be configured individually. The 6-axis robot changes pallets up to a size of 19.7 x 19.7" (500 x 500 mm). The robot is controlled by our in-house OIPM part management system with Chip-Ident light, or alternatively by a fully integrated job management function.

... as big as necessary

MultiChange linear

MultiChange linear

Complex line automation solution for connecting multiple machines, for example with EROWA.



G-Line, the innovative master concept in electric discharge machining

**faster, more precise
and highly productive!**





Innovative technology for more process reliability

The solution for complex tasks



GANTRY *EAGLE* 800

Axis-travel X / Y / Z:	21.6 x 33.5 x 17.7" 550 x 850 x 450 mm
Work tank W / D / H:	31.5 x 43.3 x 18.9" 800 x 1,100 x 480 mm

- Top size / travel ratio
- Maximum dynamics
- Even higher precision

The GANTRY *EAGLE* 800 is the symbiosis of a large working area and small footprint in combination with unbelievable performance – and that is a guarantee for market success. It offers decisive competitive advantages in the machining of medium and large workpieces.

Guaranteed quality and flexibility

Optimal machine concept



GANTRY *EAGLE* 1200

Axis-travel X / Y / Z: 39.8 x 59.4 x 27.6"
1,010 x 1,510 x 700 mm

Work tank W / D / H: 50.0 x 69.7 x 26.8"
1,270 x 1,770 x 680 mm

- No filling / emptying times
- Complete and partial machining
- Gantry construction

The potential of the GANTRY *EAGLE* 1200 is unique. Due to a high traversing speed and *EAGLE POWER JUMP* it remains dynamic in complex workpieces, while it is designed for efficient machining in the making of large molds. Despite the different machining capabilities the GANTRY *EAGLE* 1200 operates with full precision at an impressive speed.



Innovation leader for large formats
The BIG SIZE solution



GANTRY EAGLE 1400
GANTRY EAGLE 1400plus

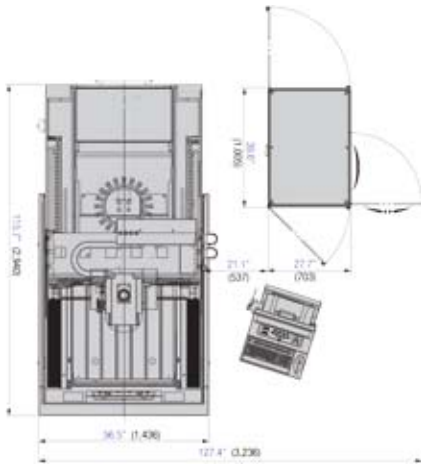
Axis-travel X / Y / Z:	49.2 x 92.5 x 27.6" 1,250 x 2,350 x 700 mm
	49.2 x 92.5 x 35.4" 1,250 x 2,350 x 900 mm
Work tank W / D / H:	59.4 x 102.0 x 31.1" 1,510 x 2,590 x 790 mm
	59.4 x 102.0 x 40.0" 1,510 x 2,590 x 1,015 mm

- **Top size/travel ratio**
- **Underground or above ground installation**
- **For large workpieces**

In expanding the Gantry series to include the GANTRY EAGLE 1400 and 1400plus, we have retained the proven combination of precision and quality. To keep up with the trend of increasingly larger molds, as in the automotive industry, the machining space of the 1400plus was increased even more in the Z direction. The GANTRY EAGLE 1400 is optimally equipped for delicate applications with small electrodes in large molds or large electrodes. The EAGLE POWERTEC technology always ensures an electric-discharge machining process with top results.

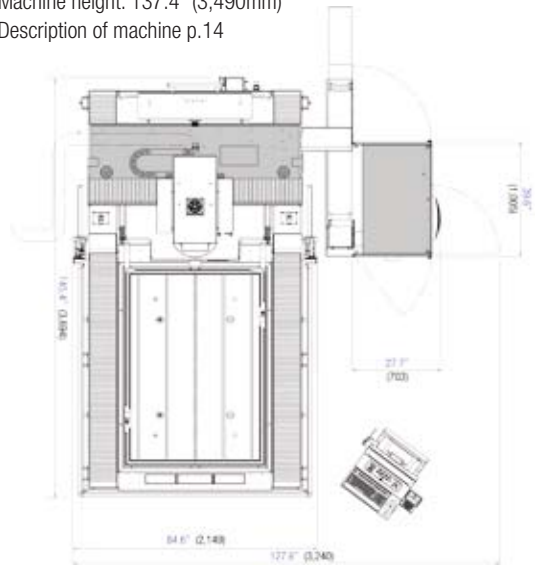
GANTRY EAGLE 800

Machine height: 107.5" (2,730mm)
Description of machine p.13



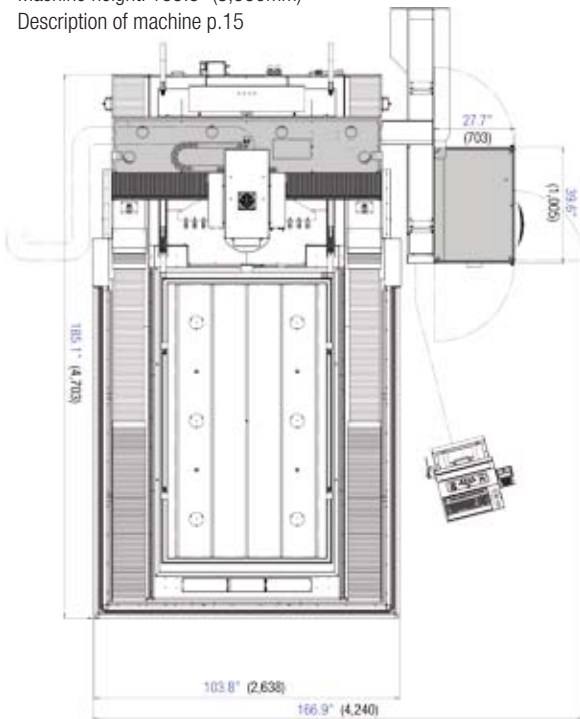
GANTRY EAGLE 1200

Machine height: 137.4" (3,490mm)
Description of machine p.14



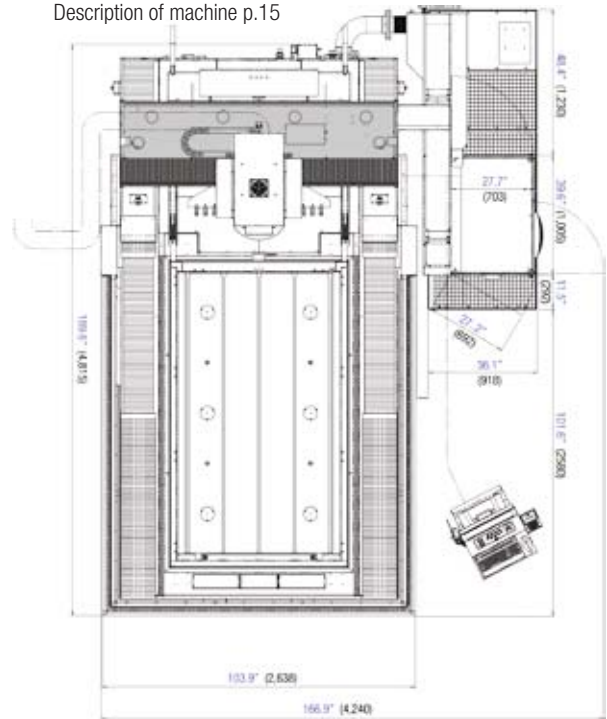
GANTRY EAGLE 1400

Machine height: 155.5" (3,950mm)
Description of machine p.15



GANTRY EAGLE 1400plus

Machine height: 172.9" (4,392mm)
Description of machine p.15



Setup – Technical data

**GANTRY EAGLE
800**

**GANTRY EAGLE
1200**

**GANTRY EAGLE
1200plus**

**GANTRY EAGLE
1400**

**GANTRY EAGLE
1400plus**

MACHINE						
Machine weight	lb. (kg)	13,670 (6,200)	26,455 (12,000)	26,455 (12,000)	47,400 (21,500)	47,400 (21,500)
Generator weight	lb. (kg)	1,411 (640)	1,411 (640)	1,411 (640)	1,411 (640)	1,411 (640)
Power input	kVA	16	18	18	23	23
Fuse protection	A	32	32	32	40	40
Voltage / Frequency	V/Hz	400/60	400/60	400/60	400/60	400/60

WORK TANK						
Type		Rise and fall tank – filled movable	Rise and fall tank – filled movable	Rise and fall tank – filled movable	Rise and fall tank – filled movable	Rise and fall tank – filled movable
Clear dimensions (L x W x H)	in (mm)	31.5 x 43.3 x 18.9 (800 x 1,100 x 480)	50.0 x 69.9 x 26.8 (1,270 x 1,770 x 680)	44.9 x 64.6 x 40.9 (1,140 x 1,640 x 1,040)	59.4 X 102.0 X 31.1 (1,510 x 2,590 x 790)	59.4 X 102.0 X 40.0 (1,510 x 2,590 x 1,015)
Dielectric fluid level max. programmable/automatic	in (mm)	17.7 (450)	25.6 (650)	39.4 (1,000)	29.5 (750)	38.4 (975)

WORK HEAD						
Max. head load	lb. (kg)	440 (200)	660 (300)	660 (300)	660 (300)	660 (300)
Distance electrode-clamping chuck to work table min./max.	in (mm)	5.3/23.0* (135/585*)	3.9/31.5* (100/800*)	17.3/44.9 (440/1,140)	9.0/36.6* (230/930*)	11.8/47.2* (300/1,200*)

INTEGRATED C-AXIS						
Speed (adjustable)	RPM	1 – 20	1 – 20	1 – 20	1 – 20	1 – 20
Angle positioning	degree	0.001	0.001	0.001	0.001	0.001
Load capacity for manual electrode change	lb. (kg)	110* (50*)	110* (50*)	110* (50*)	110* (50*)	110* (50*)
Load capacity for automatic electrode change	lb. (kg)	33* (15*)	55* (25*)	55* (25*)	55* (25*)	55* (25*)
Movement of inertia, max.	kg/m ²	0.4*	0.4*	0.4*	0.4*	0.4*
Torque	ft.lb. (Nm)	88.5 (120)	88.5 (120)	88.5 (120)	88.5 (120)	88.5 (120)

WORK TABLE						
Surface (L x W)	in (mm)	29.9 X 39.4 (760 x 1,000)	44.9 X 64.6 (1,140 x 1,640)	43.7 X 63.4 (1,110 x 1,610)	54.3 X 93.7 (1,380 x 2,380)	54.3 X 93.7 (1,380 x 2,380)
Load capacity [option]	lb. (kg)	4400 (2,000)	16,535 (7,500)	16,535 (7,500)	22,045 (10,000) [44,090 (20,000)]	22,045 (10,000) [44,090 (20,000)]

AXIS TRAVELS						
X / Y / Z inside the work tank	in (mm)	21.6 X 33.5 X 17.7 (550 x 850 x 450)	39.8 X 59.4 X 27.6 (1,010 x 1,510 x 700)	34.6 X 53.5 X 27.6 (880 x 1,360 x 700)	49.2 X 92.5 X 27.6 (1,250 x 2,350 x 700)	49.2 X 92.5 X 35.4 (1,250 x 2,350 x 900)
Y (by electrode changing position)	in (mm)	46.4 (1,180)	77.0 (1,955)	77.0 (1,955)	112.6 (2,860)	112.6 (2,860)

CONTROL						
PC-NC-dialog		2 x 32 bit	2 x 32 bit	2 x 32 bit	2 x 32 bit	2 x 32 bit
Type of drive		digital AC-servo-drive	digital AC-servo-drive	digital AC-servo-drive	digital AC-servo-drive	digital AC-servo-drive
Max. X, Y, Z rapid traverse	in (mm)/min.	197 (5,000)	197 (5,000)	197 (5,000)	197 (5,000)	197 (5,000)
High Speed Jump Z max.	in (mm)/min.	708 (18,000)	708 (18,000)	708 (18,000)	708 (18,000)	708 (18,000)

DIELECTRIC SUPPLY						
Filter system		Cartridge (integrated)	Cartridge (integrated)	Cartridge (integrated)	Cartridge (integrated)	Cartridge (integrated)
Filter surface area	ft. ² (m ²)	345 (32)	345 (32)	345 (32)	345 (32)	345 (32)
Dielectric fluid , total volume	gal (ltr.)	211 (800)	634 (2,400)	1,268 (4,800)	1,320 (5,000)	1,664 (6,300)

ELECTRODE CHANGER						
Type [option]		Pick-up rotary disc	Pick-up linear magazine [rotary disc]	Pick-up linear magazine [rotary disc]	Pick-up linear magazine [rotary disc]	Pick-up linear magazine [rotary disc]
Positions [option]		20 [30]	13 [30/48]	11 [30/48]	15 [30/48]	15 [30/48]
Combi-magazine positions optional			2/18	2/18	2/18; 4/18	2/18; 4/18
Electrode weight						
– Single electrode	lb. (kg)	33* (15*)	55* (25*)	55 (25*)	55 (25*)	55 (25*)
– Total changer load [option]	lb. (kg)	132 (60*)	330 (150*) [440 (200*)]	330 (150*) [440 (200*)]	330 (150*) [440 (200*)]	330 (150*) [440 (200*)]

GENERATOR						
Type		Adaptive current	Adaptive current	Adaptive current	Adaptive current	Adaptive current
Machining power, max. (option)	A	60 (110)	60 (110)	60 (110)	60 (110)	60 (110)

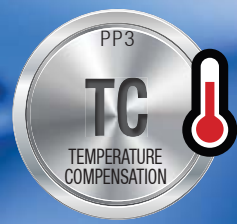
ADDITIONAL FEATURES						
Automatic lubrication		Standard	Standard	Standard	Standard	Standard
Chiller, cooling power	kW	3.9	3.9	3.9	8.3	8.3
CO ₂ -fire extinguisher, DIN 14497, size	lb. (kg)	18 (8)	35 (16)	35 (16)	66 (30)	66 (30)

* Note: The indicated values are maximum values, which may vary according to the clamping system used.

Technical modifications reserved.

High speed symbiosis

A perfect match



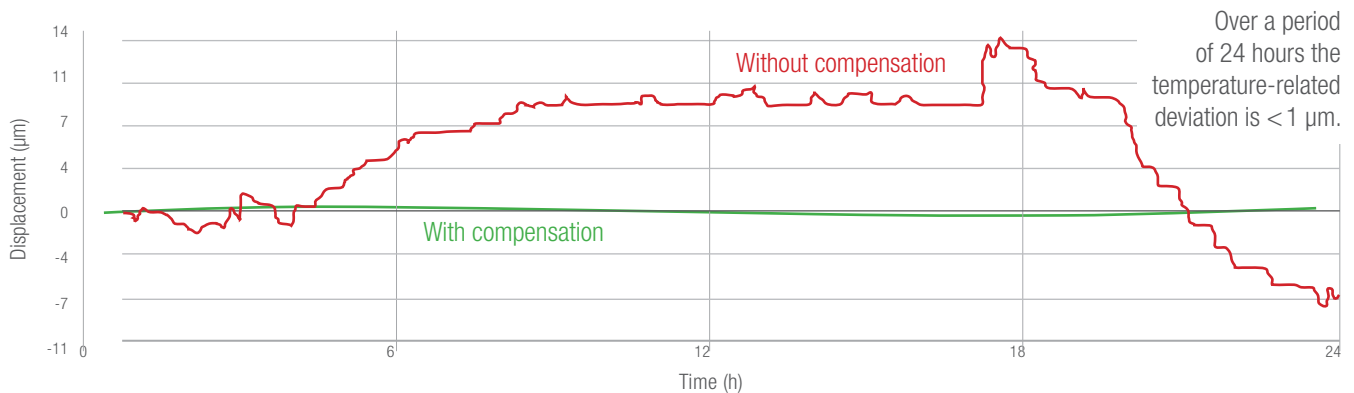
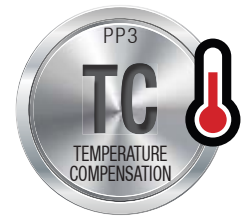
Generator

EAGLE POWERTEC is the only generator in the world that features adaptation of the discharge spark to the constantly changing gap conditions. Every impulse generates the maximum removal rate while simultaneously causing the least amount of wear. High removal rates are achieved even in the case of undersized dimensions, with higher accuracy of reproduction. At the same time, the high quality of the process monitoring ensures optimal gap conditions despite the increased removal rate. The drastically reduced wear ensures sharp edges and accurate geometry. This saves time and electrodes and therefore reduces costs.



Temperature compensation

The biggest enemy of precision in 24/7 automation is the occurrence of temperature deviations, which cause a one-sided shift in the coordinates. In addition to the symmetrical design of the gantry concept and the controlled cooling of all heat sources in the machine, every GANTRY EAGLE also features intelligent temperature compensation. Each machine is equipped with sensors, at relevant positions, that detect all conditions that occur in relation to the temperature change and intelligently compensate the shift to ensure high precision in every environment.



Increased machine precision and repeat accuracy

Specially developed precision packages increase the precision and repeatable accuracy of the machine. Maximum machine precision is achieved by a dielectric and machine cooling system, geometric thermal error compensation and high precision determination of axis positioning by a laser interferometer measurement in the working environment of the machine. IPR – the guarantee for maximum precision over the entire travelling distance.



Recessed table clamping system

The recessed table clamping system allows optimal utilisation of the machining space without limiting the automation capabilities. High workpieces with long electrodes can be used as in the past. Large mold plates can likewise be mounted on the table.



OPS-INGERSOLL C-axis

Integrated in the machining head, the high-performance C-axis is a standard feature of every OPS-INGERSOLL EDM machine. Run-out properties, potential inertia and positioning accuracy fulfil the most stringent standards placed on a C-axis in electric-discharge machining processes. Even heavy or protruding electrodes are held exactly in position. The highly dynamic direct drive allows multi-axis electric-discharge machining. All standard electrode clamping systems can be used.





Chip ID system

The chip ID system uses RFID technology for easy and reliable identification of workpieces and electrodes. All information is saved in a database to allow transparent management of all machining processes.

Even if electrodes and workpieces are placed in a random tool changer position, they are automatically located with no need for manual intervention. This virtually eliminates errors in location.

20, 30 or 48 pos electrode changer

An especially practical feature is the internal electrode changer. Without an external automation system, it enables the automated execution of extensive high-precision machining processes with many detailed electrodes. The chip ID system can be integrated to prevent incorrect insertion and minimise manual tasks.





RAM clamping system

Even large and heavy electrodes can be mounted on the machine head by means of a pallet system for automated changing. Electrodes can be integrated either by an internal combination electrode changer or by external automation systems.

Integrated filter system

Integrated cartridge filter system with 172 or 345 ft² (16 or 32 m²) filter surface area for a long service life. Filtering from inside out and having the quick-release connector at the top, keeps the dirt in the filter during clean, fast and economical filter changes.

Reduce basic energy consumption, conserve resources, save money. EcoTec does the thinking and regulation for you.

The intelligent design ensures that power is consumed only when it is actually needed.

It monitors and regulates optionally selectable warm-up programs, programmable wake-up functions, idle states after program end, and much more. Intelligently designed to reduce energy consumption to an absolute minimum!



Service management

North American service is provided by:

**MC MACHINERY
SYSTEMS, INC.**

a subsidiary of  Mitsubishi Corporation



Spare parts

As a guarantee of the availability of your machines, a rapid and flexible supply of spare parts is of essential importance to your economic success. Thanks to our comprehensive stock of spare parts, we can react to your requirements on short notice.

Application support

An important part of the OPS-INGERSOLL / MC Machinery Systems service spectrum is the know-how transfer of our application technology. Our team of experts consists of experienced tool and mold makers, who advise and support you in the implementation of your technical requirement.

FAST DIRECT FLEXIBLE PERFECT



Maintenance

Regular maintenance intervals reduce downtime and increase reliability while extending the service life of your machines.

Training

All North American training is done on site so we can provide you with practical training on your work to refine your expertise and operator skills. Benefit from the know-how of our experts!

The Success Factory

Outstanding customer solutions are created here. This is where passionate and experienced mechanical engineering experts live. This is our home!

Quality finale

Well thought-out, highly efficient production processes assure the high quality of all machines from design concept to delivery. This assures enthusiastic customers!





TEAM EAGLE

League champions with
perfect mastery of surfaces



The **EXPERT** Principle

Complete process
performance

The 4 success factors for profitable process organisation:

- 1 EAGLE technologies
- 2 Automation solutions
- 3 Process experts
- 4 Application know-how



**MC MACHINERY
SYSTEMS, INC.**

a subsidiary of  Mitsubishi Corporation

85 Northwest Point Blvd.
Elk Grove Village, IL. 60007
Tel: 630-616-5920
Fax 630-616-4068
www.mcmachinery.com

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