EWAMATIC LINEAR

The flexible solution for all tool types

Key parameters

The EWAMATIC LINEAR is a universal tool grinding machine for indexable inserts and rotationally symmetrical tools made of carbide, cermet, ceramic or super-hard materials such as CBN and PCD. It machines indexable inserts from 3 mm inscribed circle to 50 mm circumscribed circle diameter, rotationally symmetrical tools and production parts with diameters from 0.2 mm to 200 mm.

EWAG

Ewag AG

The origins of Ewag AG date back to 1946 when the company manufactured precision tool grinding machines for the Swiss watch industry. Today the EWAG product range includes manual machines for grinding and regrinding tools as well as the production of small precision parts, CNC tool grinding machines for grinding as well as laser machines for indexable cutting inserts and rotationally symmetrical tools made from carbide.

Ewag AG is part of the UNITED GRINDING Group. Together with our sister company, Walter Maschinenbau GmbH, we consider ourselves to be a supplier of systems and solutions for the complete machining of tools and can offer a wide range of products, including grinding, rotary eroding, laser machining, measurement and software.

Our customer focus and our global sales and service network of company-owned locations and employees has been appreciated by our customers for decades.

EWAMATIC LINEAR

The EWAMATIC LINEAR with automatic clamping systems for all tool types is one of the most flexible production machines on the market. The clamping systems securely hold indexable inserts and rotationally symmetrical tools for precise complete machining in a single clamping.


Grinding


Grinding


Software

The EWAMATIC LINEAR at a glance

Application

- Production of rotationally symmetrical tools and production parts from 0.2 to 200 mm diameter
- Production of indexable inserts from 3 mm inscribed circle to 50 mm circumscribed circle diameter
- Machinable materials include HSS, carbide, cermet, ceramic, CBN, PCD

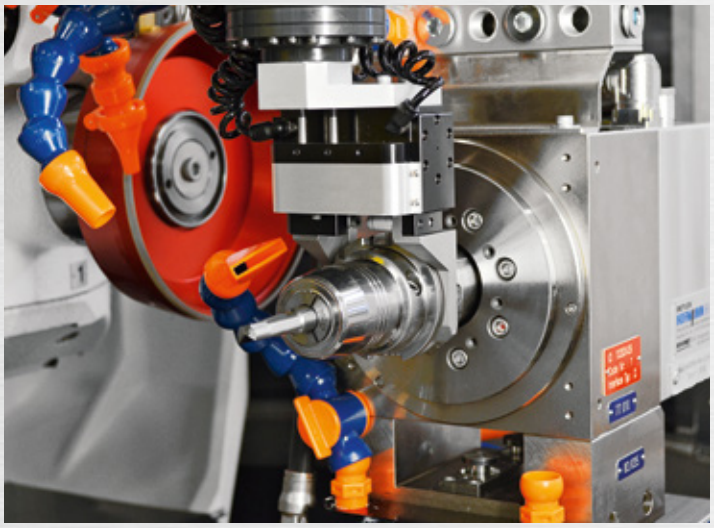
The machine

- 6-axis CNC grinding machine
- Vibration-absorbing cast machine base
- Direct drive linear axes in X, Y, Z with glass scales
- Rotary axes B, C with torque direct drives
- Star-shaped wheel changer with 6 grinding spindles
- Ultra-precise wheel changer with Hirth coupling
- Capacity: up to 12 grinding wheels
- Piezo grinding pressure control for super-hard materials
- Various automatic clamping systems (hydr./pneum.): dividing head, clamping brace
- NUM FLEXIUM control
- 6-axis FANUC robot for automatic loading

EWAMATIC LINEAR for grinding indexable inserts and rotationally symmetrical tools made of all materials, with automatic loading by FANUC robot.

Software

- ProGrind Software
- NUMROTOplus Software
- Wizard programming
- Human Machine Interface (HMI) for real-time information
- PCD grinding pressure module
- 3D simulation tool
- Increased efficiency due to numerous options



EWAMATIC LINEAR
Flexibility, precision, productivity
The CNC-controlled EWAMATIC LINEAR focuses on the tailored demands and challenges of the user. It performs a multitude of grinding operations in a single clamping. Its flexibility with regard to tool type, tool geometry and cutting material in the preset dimensional range can hardly be surpassed. Depending on the tool, the star-shaped grinding spindle holder is equipped with up to 12 grinding wheels.

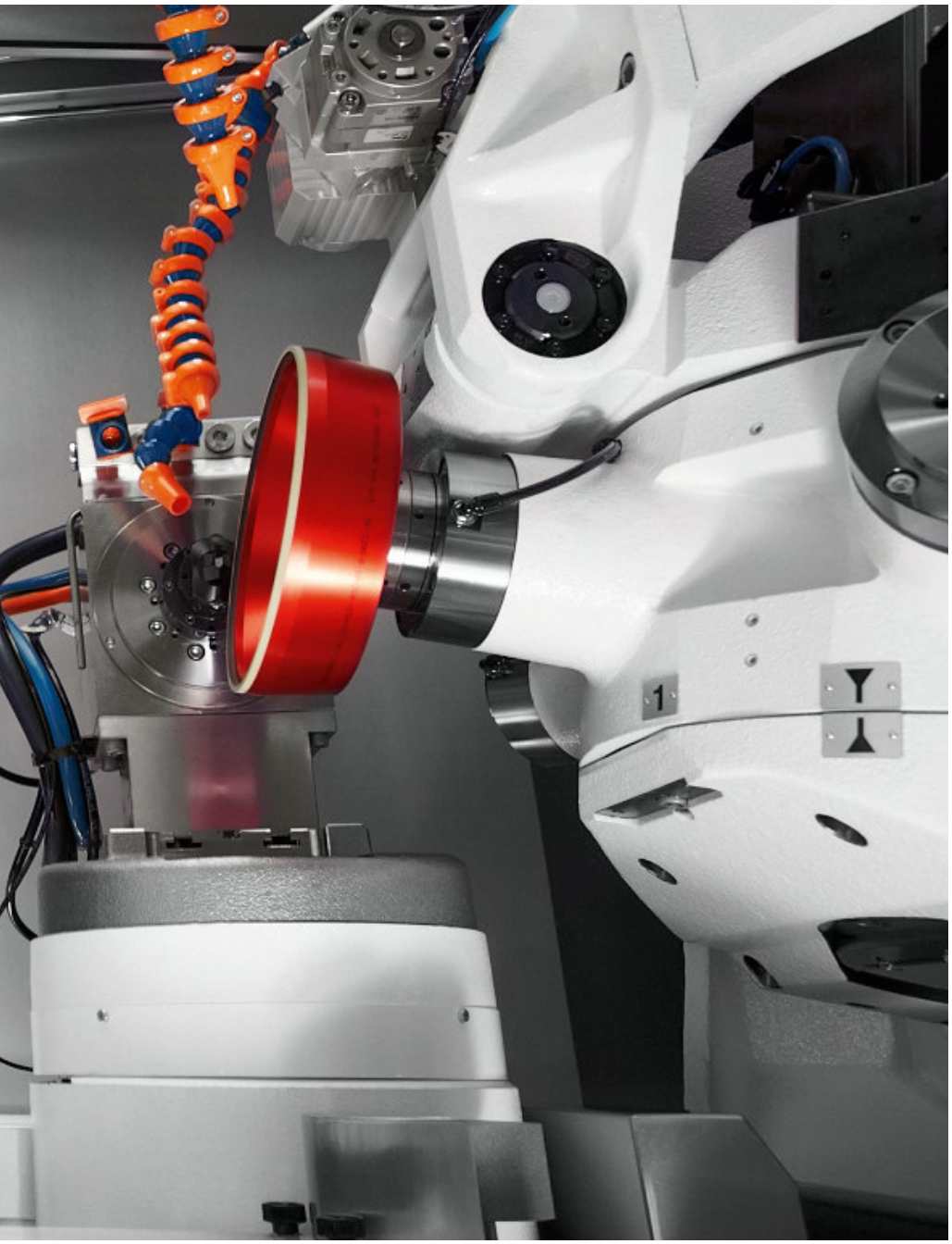
Three criteria have a decisive influence on the ability to achieve high volume performance:

- Automatic flexible loading with 6-axis robot
- Integrated dressing/regeneration of grinding wheels
- Tool measurement in the machine using 3D measuring probe

The EWAMATIC LINEAR uses ProGrind to control the entire workflow from loading to inspection.

Flexible clamping systems for all applications
Flexible grinding requires custom-optimised clamping systems which can be automatically detected and installed by the machine via plug & play. The TA 77 dividing head, for example, is used for rotationally symmetrical tools. The workhead with side clamping or the automatic clamping station are preferably used for indexable inserts. EWAG also offers a wide range of custom solutions for the EWAMATIC LINEAR.

One machine – countless applications

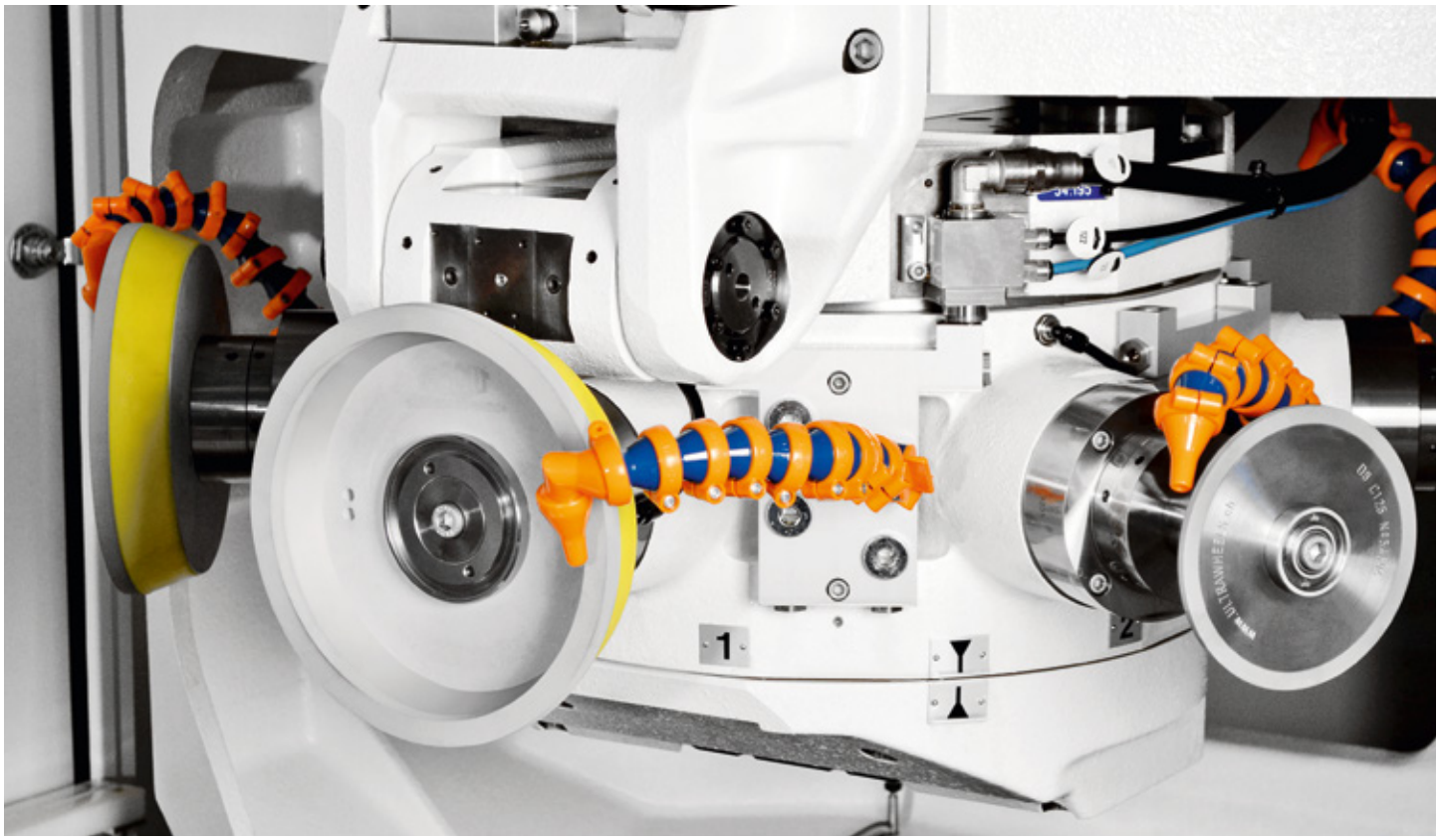


Universal tool suppliers of indexable inserts and rotationally symmetrical tools, irrespective of their geometries and materials, will find their customised production solution in the EWAMATIC LINEAR. Machine, software and peripherals are tailored to custom requirements. The customer's needs come first.

FANUC robot
The 6-axis robot from FANUC is perfectly matched to the flexibility of the EWAMATIC LINEAR. It automatically loads the grinding centre with the workpiece, thus creating the prerequisite for automatic shift operation.

Tool examples:
Grinding on the EWAMATIC LINEAR

Modules for dynamic grinding performance

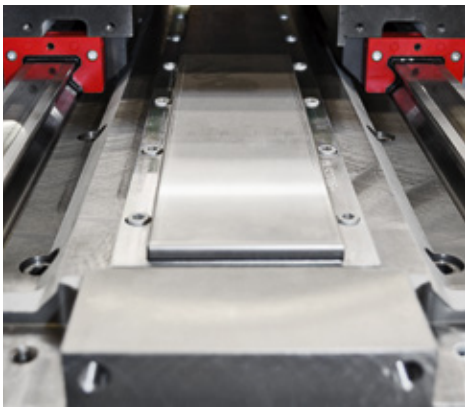


- Ultra-precise wheel changer
- Linear direct drives in X/Y/Z axis
- Torque drives in B/C axis

Star-shaped grinding spindle holder
With up to six grinding spindle holders. Two grinding wheels possible per holder. Changing the grinding wheels takes only a few seconds, with no impairment to the precision of work.

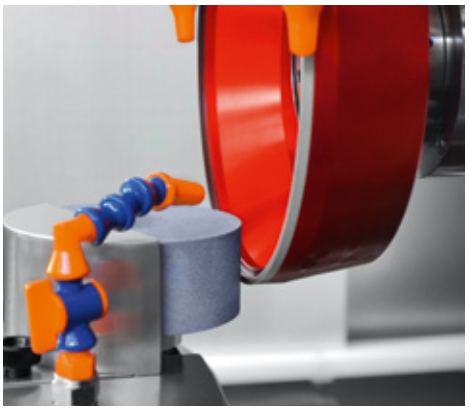
Torque drive
The B and C rotary axes are fitted with torque direct drives. Highest dynamic and true running accuracy are the result of it.

- 3D measuring station
- Linear axes with glass scales
- Automatic tool handling

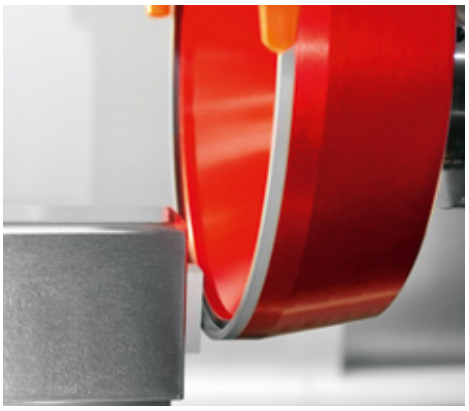


Linear direct drives
The EWAMATIC LINEAR is equipped with direct drives in X/Y/Z axis. Highest dynamics and best grinding precision are guaranteed.

3D tool measuring
Tools are measured in the production process using an integrated 3D measuring probe from Renishaw. Impermissible tolerances are automatically compensated. Preliminary measurements and tool orientation are automatically detected.



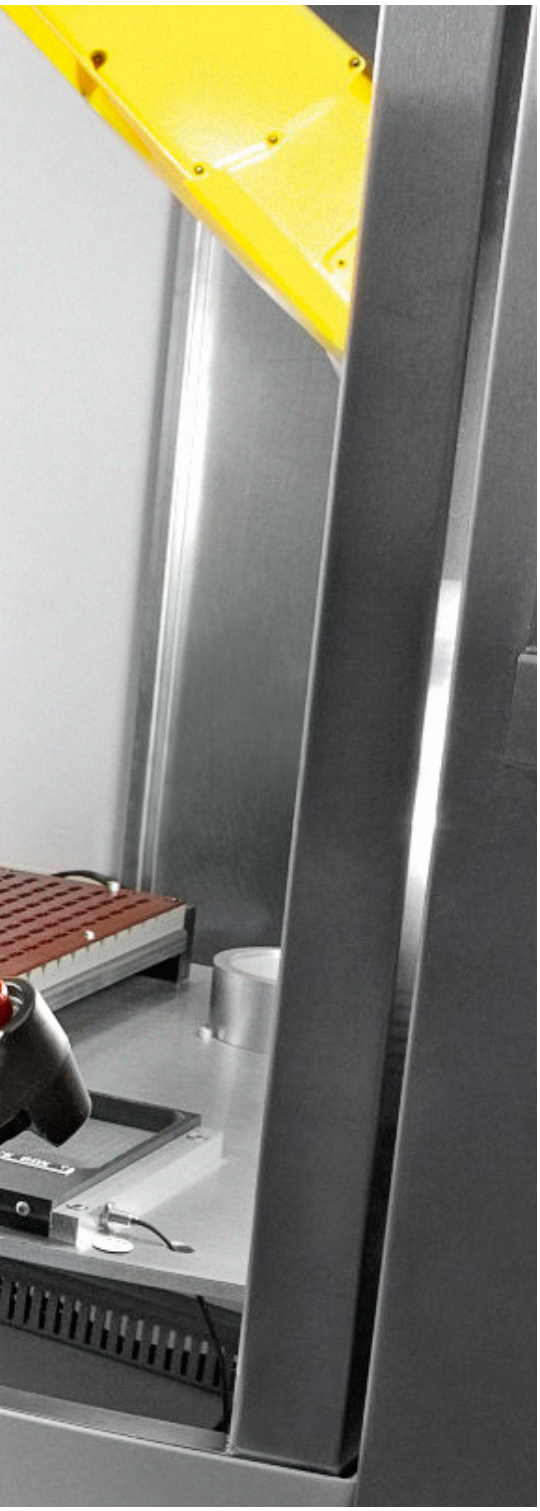
Automatic dressing system
The fully integrated dressing system enables the dressing of grinding wheels at the front and periphery of the wheel in the machine. This ensures perfect runout and the high grinding quality of the EWAMATIC LINEAR.



Automatic regenerating system
An automatic system comprising hardware and software to regenerate grinding wheels. Grinding pressure control prevents overloads on the grinding wheel, increasing the durability and safeguarding final accuracy.

Flexible and efficient automation

FANUC robot
The 6-axis robot is design for fully automatic loading. It can be freely programmed, thus enabling maximum loading flexibility.



1

2

Multiple shift operation is assured at all times with up to 100 HSK 63 positions or by using indexable insert pallets.

Cleaning stations, presence checks, as well as a vision system and integrated laser marking are just some of the customised automation solutions it offers. Flexibility is our speciality.

1 TA 77 loading

2 Cleaning station for HSK 63 interface

EWAG ProGrind grinding software with NUMROTO*plus* plug-in

ProGrind – more than just software!
Innovation demands innovative software. As customer-centric software from EWAG, ProGrind meets all your exacting demands. Programs can be created quickly and easily on all EWAG CNC machines with ProGrind. The input screens feature 3D graphics. The machines can be integrated within your company network via Ethernet. At the same time, our specialists have access for diagnostic and maintenance purposes.

EWAG standard application framework

- Human Machine Interface (HMI)
- Wheels administration
- Production
- CNC programming
- Hardware
- Job management

EWAMATIC LINEAR
ProGrind grinding software with NUMROTO*plus* plug-in

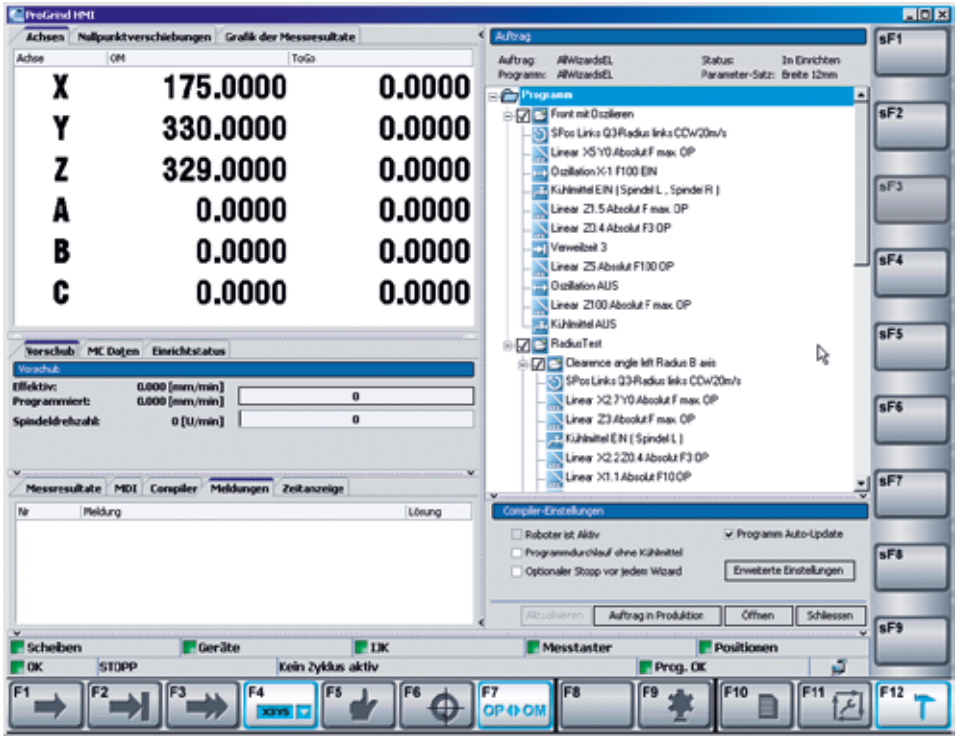
PROFILE LINE
ProGrind grinding software with HELITRONIC TOOL STUDIO plug-in

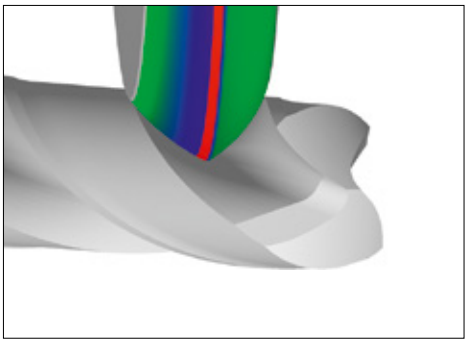
COMPACT LINE
ProGrind grinding software with CyberGrinding plug-in

INSERT LINE
ProGrind HSM grinding software with EwagInsert ISM plug-in

LASER LINE ULTRA
LASER LINE PRECISION
LaserSoft laser software with LaserPro 3D plug-in

Human machine interface (HMI)
The HMI contains all relevant data views. It supports the operator when setting up production orders, at the same time displaying production-related facts in real time.

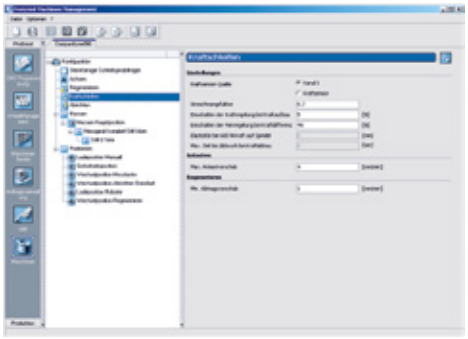




NUMROTO*plus*
The NUMROTO software is a comprehensive package for producing and regrinding diverse tools. In optional combination with ProGrind, the production of complex tools leaves practically nothing to be desired.

Crushing function
Controls the forces between the crushing roll and the profile grinding wheel and improves their durability.

- Easy programming
- Only relevant parameters visible
- Customers can design surface itself



PCD grinding pressure module
When grinding PCD tools, control of the grinding force is absolutely essential. The module controls the force via the grinding pressure and matches the machine feed rate to it. In this way, blades made of super-hard materials can be economically produced. The force control is activated in the programming wizard.

Hightech technology in tool grinding

- CNC expertise
- Safety architecture
- Great flexibility

The NUM CNC system hardware is controlled via the NUM FLEXIUM operating terminal with integrated PC. The tool grinding machine can also be directly operated near the grinding head using a small and light hand-held terminal.

Customer Care

WALTER and EWAG deliver systems and solutions worldwide for all areas of tool machining. Our claim is based on ensuring maximum availability of our machines over their entire service life. For this we have thus bundled numerous services in our customer care program.

From “Start up” through “Prevention” to “Retrofit”, our customers enjoy tailor made services for their particular machine configuration. Around the world, our customers can use helplines, which can generally solve a problem using remote service. In addition to that, you will also find a competent service team in your vicinity around the world. For our customers, this means:

- Our team is close by and can quickly be with you.
- Our team will support you to improve your productivity.
- Our team works quickly, focuses on the problem and its work is transparent.
- Our team solves every problem in the field of machining tools, in an innovative and sustainable manner.

Start up
Commissioning
Extension of the guarantee

Qualification
Training
Support for production

Prevention
Maintenance
Inspection

Service
Customer service
Customer advice
Helpline
Remote service

Material
Spare parts
Replacement parts
Accessories

Rebuild
Machine overhauling
Refurbishing of assemblies

Retrofit
Conversions
Retrofitting parts
Taking machines back

Technical data, dimensions

Axes

X axis	380 mm
Y axis	240 mm
Z axis	245 mm
Rapid traverse X, Y, Z	20 m/min
A axis, inclined axis	- 15 to + 25°
B axis, rotary axis	± 135°
C axis, rotary axis	∞

Drives

Max. grinding wheel diameter	300 mm
Peak power	7.5 kW
Grinding spindle speed	200 – 9,000 rpm

Accuracy

Linear resolution	0.0001 mm
Axial resolution	0.001°

Others

Power consumption at 400 V/50 Hz	approx. 16 kVA
Weight incl. robot cell	approx. 5,000 kg

Tool data[1)]

Automatic clamping system for indexable inserts

Min. indexable insert inscribed circle	3 mm
Max. indexable insert circumscribed circle	50 mm

Pin automatic clamping system

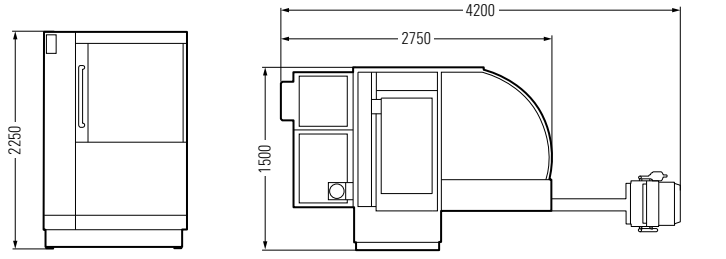
Pin, diameter	1.6 – 10 mm

Automatic clamping system for rotationally symmetrical tools

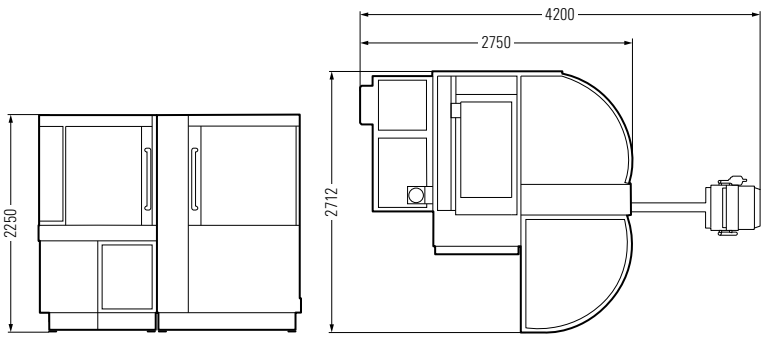
Chuck, diameter	0.5 – 32 mm
HSK 63, diameter	0.2 – 200 mm

Options

- TA 77 (C axis)
- Inclined axis (A axis)
- Grinding spindles (max. 6 pieces)
- High speed spindle up to 50,000 rpm
- Manual clamping system (for lathe tool holder)
- Auto clamping system (turning, milling, grooving inserts)
- Pin clamping system (Mandrel in C-axis)
- Pek clamping system (clamping via stamp)
- Automation with FANUC robot
- Vision system for automatic insert detection
- Automatic regeneration unit
- Crushing function
- Coolant systems
- Coolant mist extraction systems



EWAMATIC LINEAR



EWAMATIC LINEAR with robot

[1)] The maximum tool dimensions depend on the type of tool and its geometry, as well as the type of machining.

Measurements in mm. Subject to modifications due to technical progress and errors. No guarantee is provided for this information.

Creating Tool Performance

WALTER and EWAG are globally acting market-oriented technology and service companies, and are system and solution partners for all areas of tool machining. Our range of services is the basis for innovative machining solutions for practically all tool types and materials typical for the market with a high degree of added value in terms of quality, precision, durability and productivity.

Grinding – Grinding of rotationally symmetrical tools and workpieces

WALTER machines	Use	Materials	Tool dimensions [1] max. length [2] / diameter
HELITRONIC ESSENTIAL	P R	HSS TC C/C CBN	255 mm / Ø1 – 100 mm
HELITRONIC MINI POWER	P R	HSS TC C/C CBN	255 mm / Ø1 – 100 mm
HELITRONIC MINI AUTOMATION	P R	HSS TC C/C CBN	255 mm / Ø1 – 100 mm
HELITRONIC BASIC	P R	HSS TC C/C CBN	350 mm / Ø3 – 290 (320) mm
HELITRONIC POWER	P R	HSS TC C/C CBN	350 mm / Ø3 – 290 (320) mm
HELITRONIC POWER 400	P R	HSS TC C/C CBN	520 mm / Ø3 – 315 mm
HELITRONIC VISION 400	P R	HSS TC C/C CBN	370 mm / Ø3 – 315 mm
HELITRONIC VISION 400 L	P R	HSS TC C/C CBN	420 mm / Ø3 – 315 mm
HELITRONIC VISION 700 L	P R	HSS TC C/C CBN	700 mm / Ø3 – 200 mm
HELITRONIC MICRO	P	HSS TC C/C CBN	120 mm / Ø0.1 – 12.7 mm
	R	HSS TC C/C CBN	120 mm / Ø3 – 12.7 mm

EWAG machines	Use	Materials	Tool dimensions [1] max. length [2] / diameter
EWAMATIC LINEAR	P R	HSS TC C/C CBN PCD	200 mm / Ø0.2 – 200 mm
PROFILE LINE	P R	HSS TC C/C CBN	255 mm / Ø1 – 100 mm
WS 11/WS 11-SP	P R M	HSS TC	– / up to Ø25 mm
RS 15	P R M	HSS TC C/C CBN PCD	– / up to Ø25 mm

Eroding – Electrical discharge machining and grinding of rotationally symmetrical tools

WALTER machines	Use	Materials	Tool dimensions [1] max. length [2] / diameter
HELITRONIC DIAMOND EVOLUTION	P R	HSS TC C/C CBN PCD	185/255 mm / Ø1 – 165 mm
HELITRONIC POWER DIAMOND	P R	HSS TC C/C CBN PCD	350 mm / Ø3 – 290 (400) mm
HELITRONIC POWER DIAMOND 400	P R	HSS TC C/C CBN PCD	520 mm / Ø3 – 380 mm
HELITRONIC VISION DIAMOND 400	P R	HSS TC C/C CBN PCD	370 mm / Ø3 – 315 mm
HELITRONIC VISION DIAMOND 400 L	P R	HSS TC C/C CBN PCD	420 mm / Ø3 – 315 mm

Software – The intelligence of tool machining and measuring for production and regrinding

Customer Care – Comprehensive range of services

Grinding – Grinding of indexable inserts

EWAG machines	Use	Materials	Indexable inserts [1] Inscribed / circumscribed circle
EWAMATIC LINEAR	P R	HSS TC C/C CBN PCD	Ø3 mm / Ø50 mm
PROFILE LINE	P R	HSS TC C/C CBN	Ø3 mm / Ø50 mm
COMPACT LINE	P R	HSS TC C/C CBN PCD	Ø3 mm / Ø50 mm
INSERT LINE	P R	HSS TC C/C CBN	Ø3 mm / Ø75 mm
RS 15	P R M	HSS TC C/C CBN PCD	– / up to Ø25 mm

Laser – Laser machining of indexable inserts and/or rotationally symmetrical tools

EWAG machines	Use	Materials	Tool dimensions [1] max. length / diameter
LASER LINE ULTRA	P R	TC C/C CBN PCD CVD-D MCD/ND	250 mm / Ø0.1 – 200 mm
LASER LINE PRECISION	P R	CBN PCD CVD-D MCD/ND	250 mm / Ø0.1 – 200 mm

EWAG machines	Use	Materials	Indexable inserts [1] Inscribed / circumscribed circle
LASER LINE ULTRA	P R	TC C/C CBN PCD CVD-D MCD/ND	Ø3 mm / Ø50 mm
LASER LINE PRECISION	P R	CBN PCD CVD-D MCD/ND	Ø3 mm / Ø50 mm

Measuring – Contactless measurement of tools, workpieces and grinding wheels

WALTER machines	Use	Tool dimensions [1] max. length / diameter
HELICHECK PRECISION	M	420 mm / Ø1 – 320 mm
HELICHECK ADVANCED	M	420 mm / Ø1 – 320 mm
HELICHECK PRO	M	300 mm / Ø1 – 200 mm
HELICHECK PRO LONG	M	730 mm / Ø1 – 200 mm
HELICHECK PLUS	M	300 mm / Ø0.1 – 200 mm
HELICHECK PLUS LONG	M	730 mm / Ø0.1 – 200 mm
HELICHECK 3D	M	420 mm / Ø3 – 80 mm
HELISET PLUS	M	400 mm / Ø1 – 350 mm
HELISET	M	400 mm / Ø1 – 350 mm

Use: P Production R Regrinding M Measuring

Materials: HSS High speed steel TC Tungsten carbide C/C Cermet/ceramics CBN Cubic boron nitride PCD Polycrystalline diamond CVD-D Chemical vapour deposition MCD/ND Monocrystalline diamond/natural diamond

[1] Maximum tool dimensions are dependent on the tool type and geometry, as well as the type of machining.
[2] From the theoretical taper diameter of the workpiece holder.

EWAG

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