

COMPACT LINE

The versatile solution
for indexable inserts



Key parameters

The COMPACT LINE offers maximum grinding performance with the smallest possible footprint. In production and/or regrinding operations, it grinds indexable inserts made of carbide, cermet, ceramic or PCB/PCD. Depending on the clamping system, the minimum inscribed circle diameter is 4 mm for the pin clamping system and 3 mm for the indexable insert clamping system.



Grinding



Eroding



Laser



Measuring



Software



Customer Care

EWAG

The origins of EWAG date back to 1946 when the company manufactured precision tool grinding machines for the Swiss watch industry. Today the EWAG product range includes a CNC tool grinding machine for grinding inserts as well as laser machines for indexable cutting inserts and rotationally symmetrical tools made from hard and ultrahard materials such as carbide CBN or PCD.

EWAG belongs to 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.

COMPACT LINE

The COMPACT LINE with up to 6 CNC axes is the tool grinding machine for indexable inserts for grooving, milling, turning and profiling applications. A wide range of clamping systems which are docked within the machine via a plug & play interface offer total freedom in the choice of tools, their sequence and the batch size. Thanks to extremely short set-up times, even very small batches can be economically produced.



Grinding



Software

The COMPACT LINE at a glance

Application

- Production of indexable inserts
- Indexable inserts: from 3 mm inscribed circle to 50 mm circumscribed circle diameter
- 1.6 mm to 10 mm diameter, nail clamping system
- Materials include HSS, carbide, cermet, ceramic, CBN, PCD

The machine

- 6-axis CNC grinding machine
- Compact design
- Low-vibration grey cast iron machine base
- Linear axes X, Y, Z with glass scales
- Rotary axes A, B with torque direct drives
- C axis clamping brace (option)
- FANUC control, the global standard
- Various clamping systems for securely fixing tools
- "Three in One" sharpening unit for dressing, regenerating, crushing
- 6-axis FANUC robot for automatic loading
- Pallet changer with up to 8 pallets



COMPACT LINE – flexible grinding performance in the smallest footprint, with integrated 6-axis FANUC robot.

Software

- ProGrind grinding software
- Input screens with 3D graphics and easy programming
- Human machine interface (HMI) for real-time information
- CyberGrinding 3D simulation
- Pressure grinding module
- Crushing module



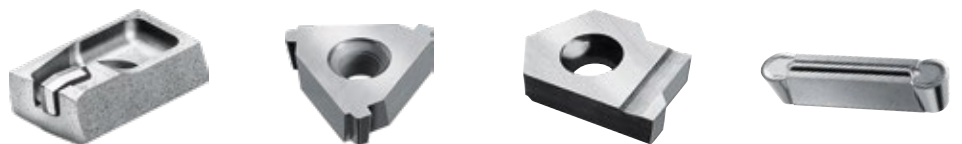
Flexible peripheral grinding, thanks to the new 6-axis kinematics

With new, high-performance technology, COMPACT LINE sets a new standard in the flexible machining of indexable inserts. As a result of the newly developed optional C axis, the machine is now also optimally equipped for flexible and efficient peripheral grinding and grinding the K-land protective chamfers.

Downtimes are practically eliminated thanks to the smart integration of the in-process measurement system. Dimensional fluctuations of the sintered insert blank can be efficiently measured and subsequently compensated for.

Ergonomics at the highest standard

1





The ergonomic concept of the COMPACT LINE instantly turns the operator into a pro for indexable inserts of varying geometry. All operating elements are ergonomically laid out within the reach of the operator.



Tool examples:
Ground on the COMPACT LINE

Modules for dynamic grinding performance

- Automatic clamping systems
- Rapid wheel change
- 3D tool measuring

1



Pin clamping system

The ideal system for complete machining. The indexable inserts are fixed using a tension pin, enabling free access from all sides.

3D tool measuring

Tools are measured in the production process using an integrated measuring probe. Impermissible tolerances are automatically compensated. The same is true of the clamping position.

2

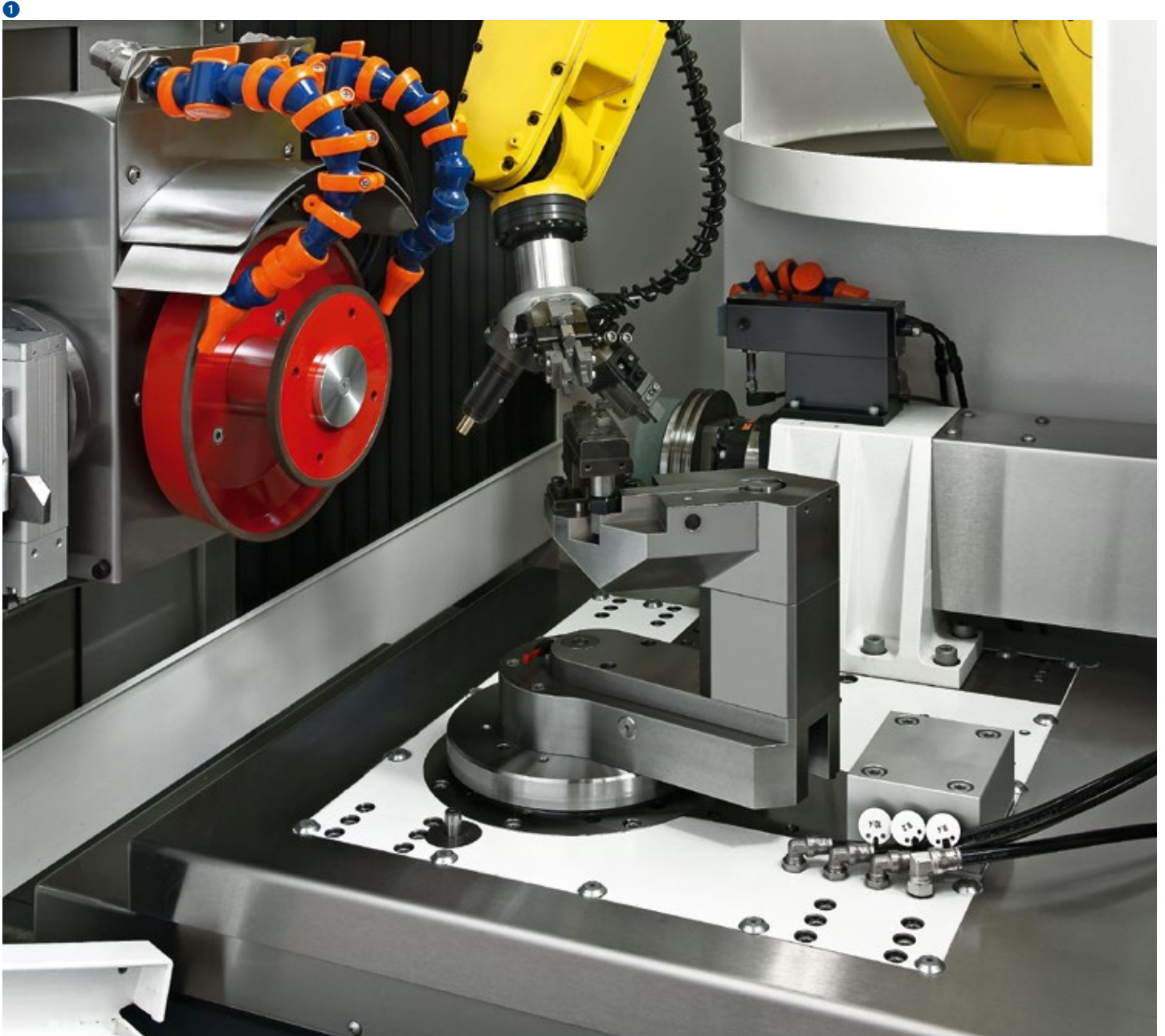


3



Grinding wheel change with HSK-E 50

The HSK-E 50 automatic grinding wheel interface clamps the wheel package with great precision. Wheel changing times are reduced to a minimum.



Compact interior

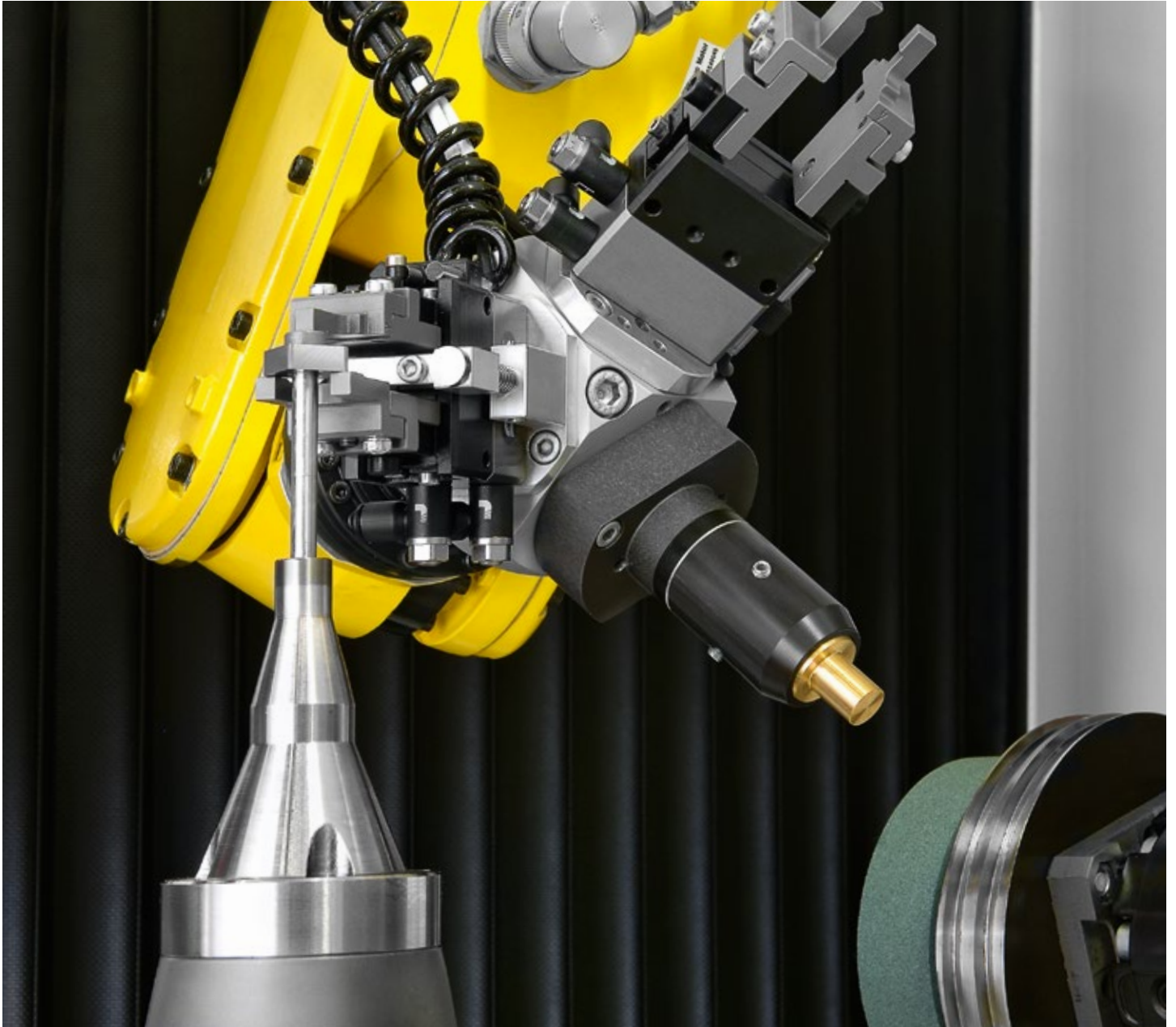
In the COMPACT LINE, all grinding movements are performed around the working axis B. Short axis paths support the high grinding precision with short interpolation travel and reduced downtimes.

Automatic clamping systems on the B axis

The Plug & Play systems are mounted in exactly the same way on the B-axis, thus enabling them to be exchanged quickly. The result is the highest level of reliability and minimal change-over times.

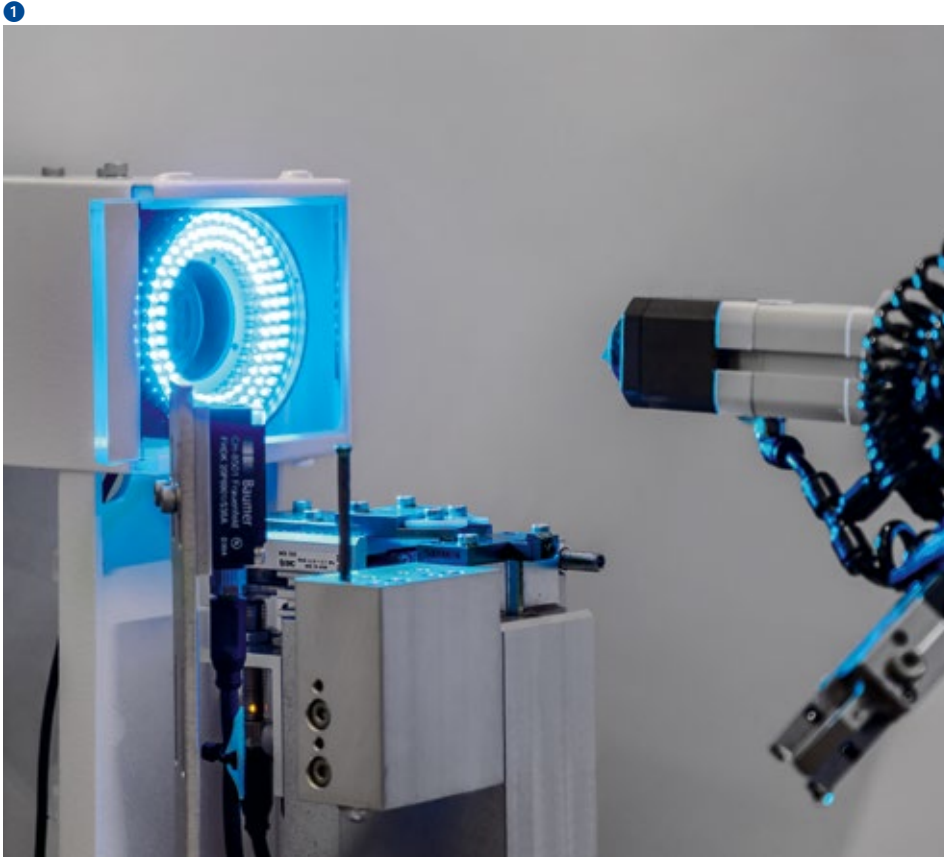
Precision and productivity in multi-shift operation

1



Flexible automation

An integrated 6-axis FANUC robot considerably accelerates the machining cycle with automatic loading and unloading of tools. In this process, the indexable insert is directly transferred from the robot gripper to the automatic clamping system. The indexable insert is guided into the borehole of the clamping system using the pin, resulting in the precise guiding and alignment of the tool for the most economical grinding process.



Vision System CCD-HD

The highly efficient vision system enables loading from grid pallets using a magnetic gripper. The system is used for perfect part alignment and for detecting the smallest of sintering imperfections. The result is a consistently uniform loading into the loading prism and thus a further enhancement of process reliability.

- Highly efficient Vision system
- “Three in One” sharpening unit
- 6-axis robot
- Pallet changer



“Three in One” – dressing, regenerating and crushing

The “Three in One” sharpening unit ensures consistently perfect grinding wheels: Dressing, regenerating or crushing is carried out automatically, depending on the grinding application. Of significance to profile wheels here is the crushing process, in which the target profile is imprinted on the grinding wheel with a profiled steel roll (crushing roll). One module in the ProGrind grinding software controls the axis feed rate by evaluating the current force between the crushing roll and the grinding wheel, and matches this to the machine feed rate. The maximum load of the machine axes is monitored throughout the process, and the highest form quality applied to the grinding wheel. This results in a major boost to the precision and economy for efficiently grinding profile inserts.



Pallet changer

A sufficiently large tool magazine is essential for minimally-manned multi-shift operation. Two standard pallets can be held in the robot cell, increasing to eight with the pallet loader option which ensures the greatest autonomy in the COMPACT LINE.

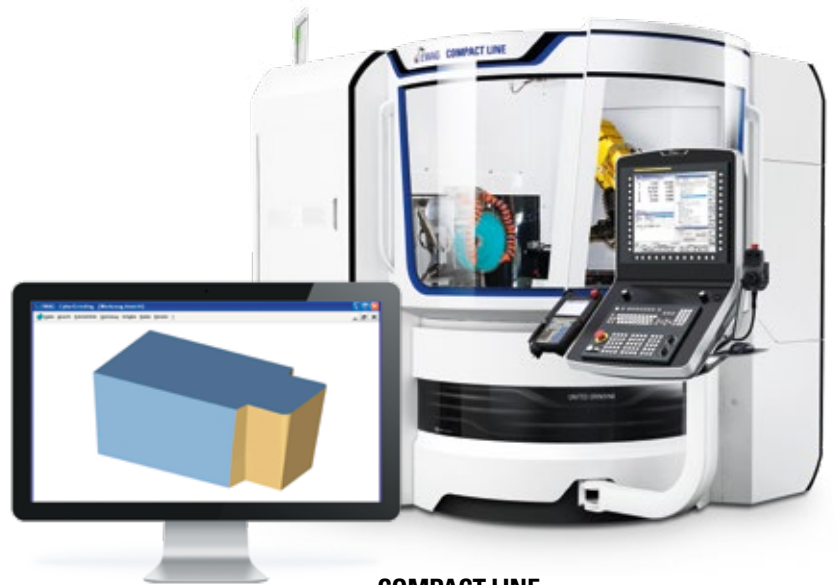
EWAG ProGrind grinding software with CyberGrinding plug-in

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



COMPACT LINE

ProGrind grinding software with CyberGrinding plug-in



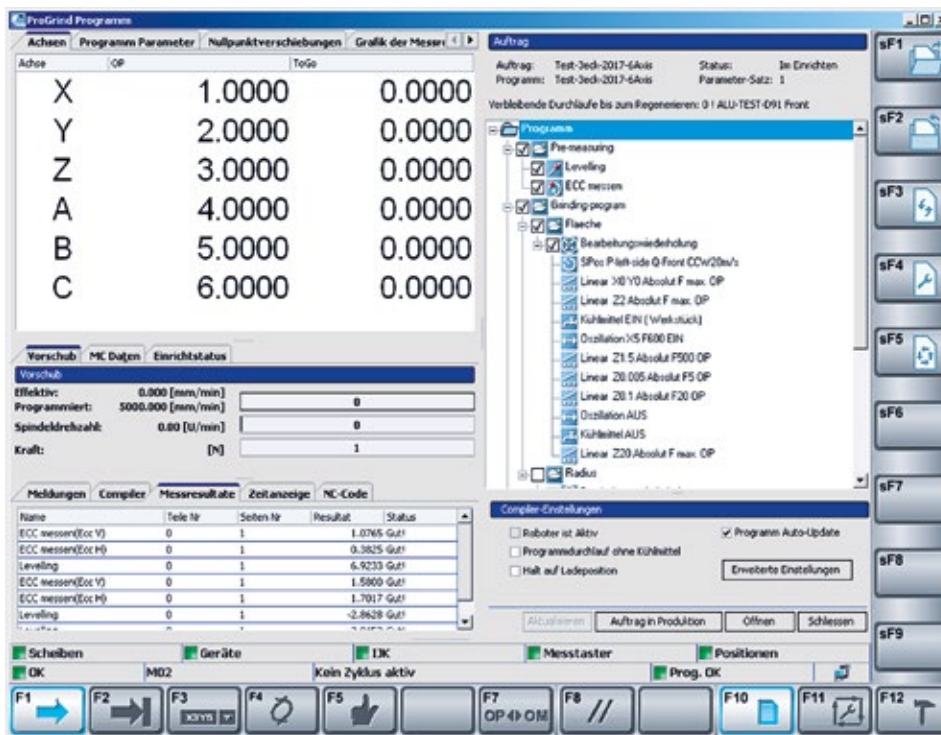
LASER LINE ULTRA

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.



3D simulation/CyberGrinding

In a 3D simulation of the indexable insert, the operator can immediately see the consequences a parameter change may have. This allows prevention of errors in advance and increases productivity.

- Flexible programming
- PCD grinding pressure module with crushing function
- 3D simulation



“Three in One” sharpening unit

Simple wizard-based programming enables easy handling of the “Three in One” sharpening unit. Grinding wheel dressing can be optimally supported with the ProGrind software.

FANUC control unit, the global standard



- Multi-processor system – high system security
- FANUC bus for digital drives – fault-free communication
- CNC and robots from a single manufacturer – no interface problems

With the FANUC control unit, EWAG relies on the global standard of control technology. For the user, this means the highest degree of reliability, availability and operating comfort.

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



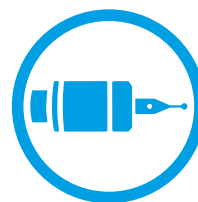
Prevention
Maintenance
Inspection



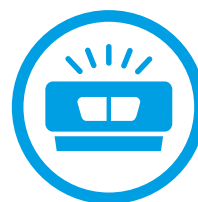
Service
Customer service
Customer advice
Helpline
Remote service



Digital Solutions
Remote Service
Service Monitor
Production Monitor



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	450 mm
Y axis	180 mm
Z axis	150 mm
Rapid traverse X	15 m/min
Rapid traverse Y, Z	10 m/min
A axis	- 15 to + 25°
B axis	∞
C axis	∞

Accuracy

Linear resolution	0.0001 mm
Rotary resolution	0.0001°

Drives

Peak power	5.5 kW
Grinding spindle speed	0 – 7,000 rpm
Max. grinding wheel diameter	250 mm

Others

Power consumption at 400 V/50 Hz	approx. 12 kVA
Weight incl. robot cell	approx. 4,000 kg

Tool data¹⁾

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 min./max.	1.6 mm/10 mm
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Options

- Manual clamping system (for lathe tool holder)
- Auto clamping system (turning, milling, grooving inserts)
- Pin clamping system (hole clamping)
- Pek clamping system (clamping via clamping ram)
- Clamping brace type clamping system (C axis)
- Automation with 6-axis FANUC robot
- Vision system for automatic insert detection
- Pallet changer (pallet loading system)
- Automatic regeneration unit
- Crushing function
- Pressure grinding
- Automatic fire-extinguishing system
- Coolant systems
- Coolant mist extraction systems

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

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 HM C/K CBN	255 mm / Ø1 – 100 mm
HELITRONIC MINI POWER	P R	HSS HM C/K CBN	255 mm / Ø1 – 100 mm
HELITRONIC MINI AUTOMATION	P R	HSS HM C/K CBN	255 mm / Ø1 – 100 mm
HELITRONIC RAPTOR	P R	HSS HM C/K CBN	280 mm / Ø3 – 320 mm
HELITRONIC POWER 400	P R	HSS HM C/K CBN	520 mm / Ø3 – 315 mm
HELITRONIC VISION 400 L	P R	HSS HM C/K CBN	420 mm / Ø3 – 315 mm
HELITRONIC VISION 700 L	P R	HSS HM C/K CBN	700 mm / Ø3 – 200 mm
HELITRONIC MICRO	P R	HSS HM C/K CBN HSS HM C/K CBN	120 mm / Ø0.1 – 12.7 mm 120 mm / Ø3 – 12.7 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 HM C/K CBN PKD	185/255 mm / Ø1 – 165 mm
HELITRONIC RAPTOR DIAMOND	P R	HSS HM C/K CBN PKD	270 mm / Ø3 – 400 mm
HELITRONIC POWER DIAMOND 400	P R	HSS HM C/K CBN PKD	520 mm / Ø3 – 380 mm
HELITRONIC VISION DIAMOND 400 L	P R	HSS HM C/K CBN PKD	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
COMPACT LINE	P R	HSS HM C/K CBN PKD	Ø3 mm / Ø50 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	HM C/K CBN PKD CVD-D MKD/ND	250 mm / Ø0.1 – 200 mm
LASER LINE PRECISION	P R	CBN PKD CVD-D MKD/ND	250 mm / Ø0.1 – 200 mm

EWAG machines	Use	Materials	Indexable inserts ¹⁾ Inscribed / circumscribed circle
LASER LINE ULTRA	P R	HM C/K CBN PKD CVD-D MKD/ND	Ø3 mm / Ø50 mm
LASER LINE PRECISION	P R	CBN PKD CVD-D MKD/ND	Ø3 mm / Ø50 mm



Measuring – Contactless measurement of tools, workpieces and grinding wheels

WALTER machines	Use	E1-Value	Tool dimensions ¹⁾ max. length / diameter
HELICHECK ADVANCED	M	(1.8 + L/300) µm	420 mm / Ø1 – 320 mm
HELICHECK PRO	M	(1.2 resp. 1.4 + L/300) µm	300 mm / Ø1 – 200 mm
HELICHECK PRO LONG	M	(1.2 resp. 1.4 + L/300) µm	730 mm / Ø1 – 200 mm
HELICHECK PLUS	M	(1.2 resp. 1.4 + L/300) µm	300 mm / Ø0.1 – 200 mm
HELICHECK PLUS LONG	M	(1.2 resp. 1.4 + L/300) µm	730 mm / Ø0.1 – 200 mm
HELICHECK 3D	M	(1.8 + L/300) µm	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.



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