



INTEGRATED. WEAR-RESISTANT. RELIABLE.

Smart automation of part marking

Maximum process reliability and productivity thanks to the innovative **gravostar** part marking solutions for CNC machines, custom-built systems and robots

**decision for
the best** gravostar.com

MARKING. DEBURRING. AUTOMATION. PERFECTION.

Precision that speaks for itself – tool solutions that make your process smarter

When productivity, repeatability and absolute process reliability are crucial, you need solutions that don't just work – they think for themselves. We develop and sell highly specialised

tooling solutions that integrate directly into your existing production processes, thereby generating measurable added value:

Process-integrated part marking – directly on your CNC machine



With our **gravostar** technology, you can mark every workpiece automatically, with traceability and uniqueness. No extra steps.

No human error. No detours.

The result: clarity, order, security – and a production process that can be standardised 100%.

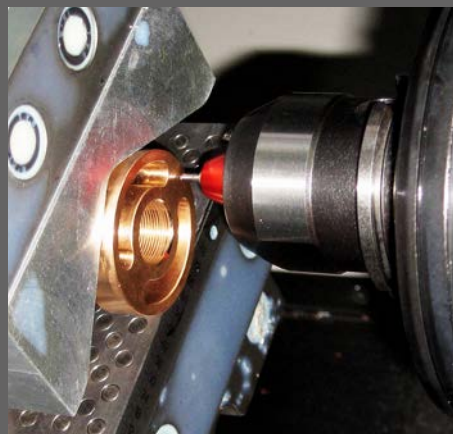
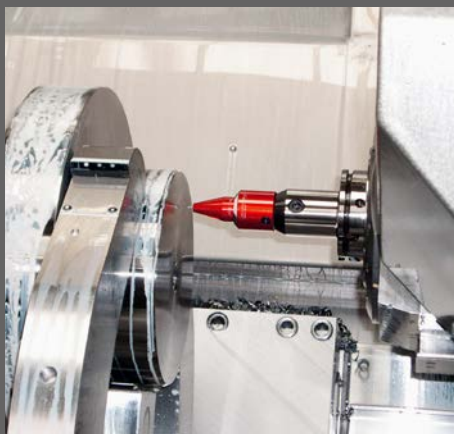
Automated deburring of undefined edges – on CNC machines or robots



Whether cast, pressed or forgings, or highly complex contours: our **engraflexx** deburring tools automatically adapt to varying geometries.

They eliminate uncertainties, improve quality and make the process more robust – even with components of varying dimensions.

This allows you to turn a recurring risk into a predictable, stable process step.



Tuning for your parts marking process

With the gravostar marking tool, parts are machined and marked in a single process step; in other words, every machined part emerges from the machine tool already provided the desired marking.

The **gravostar** is used primarily in machining centres and CNC lathes, much like a conventional machining tool, and can perform marking on virtually all machinable materials up to a hardness of approx. 62 HRC.



The benefits for you

Part marking as a separate process step



Part marking with integrated process step



Process reliability

Our solutions address one of the most critical factors in industrial decision-making: maximum process reliability.



Cost-effectiveness

The automated process eliminates one process step – ensuring a reliable method and shorter throughput times.



Error minimisation

No missing or incorrect markings due to parts being mixed up, as the part markings are an integral part of the machining program.



Any text area

Suitable for use on machined or raw surfaces, as well as straight, curved or beveled surfaces, with automatic compensation for dimensional and positional differences in the marking surface.



No material weakening

The gravostar non-cutting marking process is ideal for both thin and high-stress parts, as it does not destroy the material structure. **Needle marking is one of the few marking processes permitted in the aviation industry!**



Virtually no maintenance required

Durable and virtually maintenance-free marking tools, as well as marking needles with an extremely long service life.

AN EXCELLENT NON-MACHINING MARKING PROCESS.

Product ranges of part marking tools



quickly

Short marking time:
Feed rates of up to 5,000 mm/min
are possible.



wear-resistant

The service life of the marking needles
is measured in dozens of hours of use.



reliable

Maximum process reliability thanks
to a chip-free method combined
with in-process monitoring.



needle embossing – A high-quality method offering a wide range of possibilities

In needle embossing, depending on the type, the needle vibration is generated by feeding coolant or compressed air through the machine spindle. All functional elements of the impulse control system are integrated into the tool. Due to the high oscillation frequency, the individual marking points are placed so close together that they are no longer individually recognisable. This results in the marking outline appearing as a solid, indented line. However, needle embossing can also be used to produce individual points, which is ideal for creating a grid for a Data Matrix code.



Scratch marking – The simple way to mark

Because the marking needle is spring-loaded, the scratch marking process does not require an active needle drive. As soon as the needle tip is pressed against the workpiece, it penetrates the surface of the material with a defined preload pressure.



Roller embossing – Delicate markings for the highest visual standards

What makes this method unique is the marking needle, which is axially spring-loaded and fitted with a freely rotating solid carbide ball. The marking pattern is created by the compaction of the material caused by the rolling carbide ball on the surface of the material.



Tamping – Deep marking with integrated distance compensation

The ability to mark raw castings or other deviating surfaces, combined with a large marking depth of up to 0.8 mm, makes this method unique. This technology opens up entirely new applications for subsequent painting or for use in abrasive environments.

Scratch marking

Automated ‘in-process marking’ of workpieces

Parts are machined and marked in a single process step, meaning that each machined part emerges from the machine tool already providing the required marking.

Tools that are very easy to use

The tools in the **gravostar** R series are very easy to use in virtually any cutting machine.

Customised markings can be permanently applied to both flat and uneven surfaces. No tool spindle speed is required, and very high feed rates of over 5,000 mm/min are possible.

The process is the same as for engraving

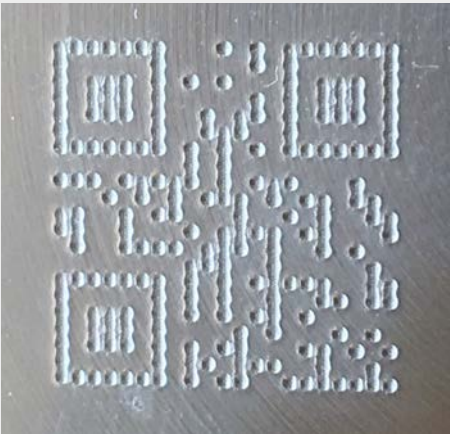
The part marking is created when the spring-loaded carbide needle leaves a fine indentation in the material at the points it passes over. This automatically compensates for unevenness of several millimetres.

The **gravostar** is clamped into the tool holder and the engraving path is traced by the machine axes, just as in engraving.

Modell	R-20	RM-20	RM-12L
			
Application	rather fine markings with a regular or uneven surface	Compact, short design for relatively fine markings on surfaces that are either smooth or have an uneven surface	Very compact design (Weldon Ø12 mm) for relatively fine markings with a smooth or uneven surface
Length / Diameter	152 mm / Ø40 mm	102 mm / Ø20 mm	53 mm / Ø12 mm
Automatic distance compensation	up to approx. 6 mm	up to approx. 5 mm	up to approx. 3 mm
Adjust the tool	Adjust the marking depth using the individually adjustable setting sleeve ❶	2 different adjustable marking depths ❷	Marking depth can be individually adjusted using the adjustment screw
Note: ❶ with a scale for repeatable adjustment of the preload pressure ❷ Preload force of the marking needle: 30 N or 80 N			



Marking of text, logos, etc. on flat or unfinished surfaces using needle embossing.



Marking of Data Matrix codes or QR codes on any surface using needle embossing.



Marking of outer surfaces on a turning machine using needle embossing.

Virtually unlimited applications

There is hardly a sector within the manufacturing industry where our marking solutions are not already in use. Below is a selection of typical sectors that utilise our solutions.

Automotive



Chassis & Drivetrains



Aerospace



Plant & Mechanical Engineering



Defence industry



Energy & Water



Dental and Medical Technology



Watch industry



The most important wear and spare parts

Although gravostar marking tools are designed to be **completely maintenance-free** for mass production, there are process-related wear parts that should be kept in stock to ensure smooth production operations.

- 1-2 marking needles per machine

Maintenance recommendations

- **Cleaning:** Regular removal of particles or dust.
- **Visual inspection:** Check the marking needle for wear.

Enquire without obligation

Feasibility assessment and recommendations from an applications engineer.

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