

FAQs marking tools

As standard, all tool versions are equipped with a cylindrical Weldon shank of 20 mm. In principle, however, all tools can also be supplied with integrated tool holders such as HSK etc., some of which are even available from stock.

How is the marking pattern created?

The desired marking is effected by the movement of the axis control of the processing machine.

The process is essentially the same as engraving with an engraving cutter.

Exception: basically, work is carried out with a non-rotating machine spindle.

Which machine prerequisites are required?

When using the scratching and roller embossing tools, the operator merely requires the movement of the machine axes for running along the marking contour.

The use of the micro-percussion tools requires additional compressed air or coolant, which can be activated through the machine spindle during the processing cycle.

Which marking software is available for which controls?

The majority of control system manufacturers now offer corresponding marking programs for alphanumeric text markings.

For special marking tasks by means of serial numbering, transfer of real-time data etc. - as well as for the marking of Data Matrix Codes or QR Codes - we work together with corresponding partner companies.

Please get in touch with us if you require technical support!

What coolant pressure is required for the micro-percussion?

The minimum required coolant pressure is approx. 2 bar.

It is important to note that for applications below 5 bar, the WS type has to be chosen.

What pressure is required for compressed air-operated micro-percussion tools?

*Air pressure within a range of 3 – 8 bar is required for tools in the standard version.
The reinforced PP versions (for deeper markings) require a minimum pressure of 2 bar.*

What marking depth can be attained with gravostar?

Micro-percussion tools:

The depth of the marking is dependent on the available coolant pressure or air pressure and is max. approx. 0.2 mm with the standard tools. With the tool versions WSP-20 or H-20 PP it is possible to achieve marking depths up to approx. 0.4 mm.

With the tool types WSRX-20 or HRY-20 and HRY-20 PP it is possible to reduce the marking depth precisely to the required dimension.

Scratch marking tools:

Using the R-20 it is possible to achieve marking depths up to approx. 0.3 mm

With the RM-20 or RM-12L the maximum attainable depth is 0.1 – 0.2 mm

Roller embossing tools:

With these types of tools the marking depth is usually less than 0.1 mm. Due to the change in the surface structure the markings are still good visible (as scratches on surfaces).

How precise marking depths can be generated?

The marking depth is always dependent on the available coolant pressure or air pressure.

With the adjustable tool types WSRX-20 or HRY-20 and HRY-20 PP it is possible to reduce the marking depth precisely to the required dimension.

How does the marking depth behave with uneven marking surfaces?

All of our marking tools are equipped with an automatic distance compensation function.

This means that the marking depth is always the same, even when marking on uneven surfaces.

What loads affect the machine spindle?

Micro-percussion tools:

Due to the pressure pulse control, the marking needle is no longer pressurised upon contact with the marking surface. Hence, the machine spindle is only subjected to a minimal axial pressure of a few N.

Scratching or roller embossing tools:

The strain depends on the available pre-tensioning pressure of the tools. In lateral direction this is a few N, in axial direction a maximum of 240 N.

What is the extent of the marking needle wear?

Scratch marking and micropercussion tools:

Due to the extreme hardness of the marking needle (92 HRC), it works virtually wear-free. Experience has shown that no wear can be detected even after several weeks with shift operation. In addition, the marking needle can be quickly and easily replaced in all tool types.

Roller embossing tools:

Due to the pivoting small carbide ball (diameter 1 mm), wear on the marking needle is significantly higher with these tools. We therefore recommend only using the roller embossing tools for applications where very high visual demands are placed on the marking.

What tool type is the right one for us?

This depends on various criteria, such as the hardness of the workpiece, the quality of the workpiece surface, the desired result of the marking (visual quality, marking depth), as well as the available machine equipment on which the tool should be used.

Please get in touch with us if you require technical support!

In our case, the marking surface is at right angles to the spindle axis of the machine – is there a solution for this without having to use an angle head?

Yes, as there is no need for a rotating machine spindle for non-cutting part marking, this is possible without any problems. Gravostar offers various tool versions with which part marking can be carried out at right angles or also at an angle to the axis of the machine spindle.

Please get in touch with us if you require technical support!

How does the marking affect the stability of the workpieces?

No material is removed during micro-percussion unlike engraving or laser marking. This means no damage to the material fibres and, as a result, there is virtually no reduction in the stability.

Because with micro-percussion only one fine dot is placed after the other, also very thin workpieces can be marked without any deformations.

What are the advantages compared to engraving?

Shorter marking time

In contrast to engraving, gravostar operates at very high feed rates of more than 5'000 rpm. (material-dependent). The infeed or piercing speed can also be as fast as desired with the tools.

Insignificant tool wear

There is no risk of tool breakage due to wear or a too high feed rate. Furthermore, the marking remains practically unchanged even if the needle is slightly worn (no burr formation). The advance and plunge speed can also be set as quickly as required with the tools.

Maximum process reliability

In comparison to engraving, quality and process reliability when marking with gravostar are considerably higher.

Automatic distance adjustment function

Due to the automatic distance compensation (between the workpiece and the needle) workpieces with an uneven surface or larger dimensional tolerances (e.g. raw cast parts or round shapes) can also be marked without any problems.

The automated parts-marking prolongs the machine running time – does this make sense?

It is correct that the processing time of the “expensive” production machine is extended by several seconds. It is therefore impossible to provide a general response to this question and it must be individually assessed with every task.

An alternative is post-marking, which however requires an additional working sequence. In doing so however, it is necessary to consider the following points:

- *The total processing time of the parts production is increased*
- *Marking, or the associated handling usually involves additional costs and/or manual working time*
- *Process reliability suffers (parts may be forgotten or incorrectly marked)*

As an overall result, this means that: despite minimum extension of machine processing time, the marking integrated in the metal cutting process is often the most economic and above all most reliable option.

Is periodic maintenance work necessary on gravostar?

No, the operation of all marking tools manufactured by us is completely maintenance-free.

The marking depth is too low

It is necessary to note in general: in contrast to engraving, with gravostar tools the marking depth is not set through the tool distance!

- Measures with micro-percussion tools:
 - Increase the coolant pressure or air pressure setting (if possible)
 - Use of tool types for deeper markings: WSXP-20 (coolant) or H-20 PP (compressed air)
- Measures with scratching and roller embossing tools:
 - Reduce the needle preload pressure on the tool

If you still have questions, please get in touch with us!

The marking is too deep

It is necessary to note in general: in contrast to engraving, with gravostar tools the marking depth is not set through the tool distance!

- Measures with micro-percussion tools:
 - Reduce the coolant pressure or air pressure setting
 - Use tool types with integrated pressure reduction equipment (gravostar WSRX-20 or gravostar HRY-20)
- Measures with scratching and roller embossing tools:
 - Reduce the needle preload pressure on the tool

If you still have questions, please get in touch with us!

We require marking in dot matrix, is there a tool solution for this?

For the efficient production of such a marking, it is necessary to use a needle embossing tool with a comparatively low oscillation frequency (generally < 20 Hz).

Using the tool type gravostar HAF-20 we have developed such a needle embossing tool, which is equipped with an integrated frequency setting.

We would like to mark our parts on a CNC machine with Data Matrix Code or QR-Code. Is this possible?

This is fundamentally straightforward using the gravostar marking tools, and a number of customers have already realised this process.

*The greatest challenge here lies in the software for generating the DMC, in order that the individual dots can be approached by the CNC machine.
However, appropriate solutions are now available from individual control system manufacturers.*

If you still have questions, please get in touch with us!

We require automatic marking of real-time data (serial number, production date, etc.) on the CNC machine. How does that work?

The respective data is generally automatically read out from the machine control system or the network.

If you still have questions, please get in touch with us!