

Tool Solutions and Technology Support
for **PRÄWEMA** Gear Honing



DVS TOOLING GMBH



Global automotive industry suppliers have long accepted PRÄWE-MA's gear honing technology as the leading machining method of optimising surfaces of gear components. DVS TOOLING GmbH, like PRÄWE-MA one of the members of the DVS TECHNOLOGY GROUP of companies, supplies original tool solutions and worldwide technological support of PRÄWE-MA gear honing equipment to add essential value for gearbox manufacturers.

DVS TOOLING's portfolio covers the entire range of gear honing tools. One of the core products is the PRÄWE-MA ORIGINAL honing ring and dressing tool „VarioSpeedDresser®“. „DVS LaserCut“, a finishing technology developed by DVS TOOLING with the VarioSpeedDresser in mind, sets a new pace with regard to the surface roughness and profile quality of geared parts.



PRÄWE-MA Gear Honing

DVS TECHNOLOGY GROUP



The DVS TECHNOLOGY GROUP is made up of experienced machining companies focussing on the turning, gear cutting and grinding technologies. The DVS TECHNOLOGY GROUP has more than 1,000 employees worldwide and is one of the leading system suppliers for machines, tools and production solutions for the machining of vehicle power-train components before and after hardening.

The DVS TECHNOLOGY GROUP is comprised of the following divisions:

DVS Machine Tools & Automation: Manufactures and sells high-precision machine tools, automation equipment and the associated services.

DVS Tools & Components: Develops, manufactures and sells customised machine components, tools and abrasives.

DVS Production: Series production of components for passenger cars and commercial vehicles using DVS machine tools.

DVS International Sales & Service: Local DVS Contact for Sales and Service on International Markets.



Machine Tools & Automation



Tools & Components



Production



International Sales & Service



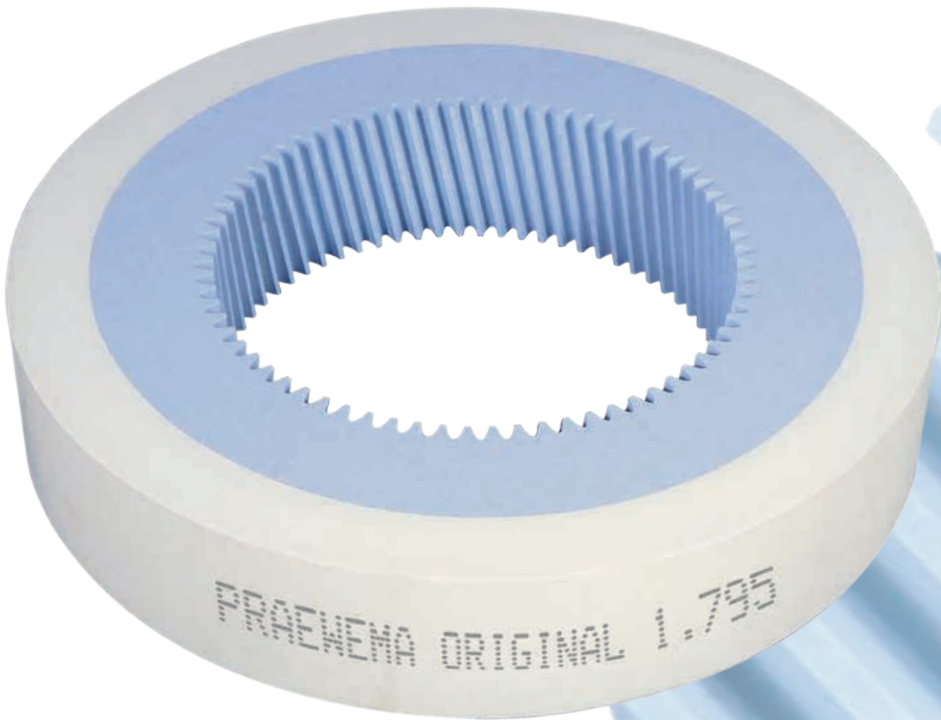
To ensure a continuously high quality of the products and services, DVS TOOLING introduced a process-oriented quality management according to DIN EN ISO 9001: 2015. For the certification and to regularly check compliance with standards, the TÜV Nord Cert GmbH was commissioned.



ORIGINAL TOOL. ORIGINAL PERFORMANCE. PRÄWEMA ORIGINAL HONING RINGS.

PRÄWEMA ORIGINAL honing rings with preliminary gearing are delivered with a gearing quality which is significantly closer to the required series standard quality than comparable honing rings from other suppliers; a quality that is otherwise only achieved after dressing in the process.

This is due to VarioSpeedProfiling® technology, or VSP for short, which achieves an extremely high pitch precision and profile shape quality through profiling using the hobbing method, as well as ensuring consistently high quality for the entire honing ring gearing.



NEW:
PRÄWEMA ORIGINAL
HONING RINGS
with 400 mm Ø
for components with
up to 220 mm Ø.



Two zones for better damping.

During gearing honing, huge forces are used to achieve high-precision machining results. These forces, combined with component-specific influences, can lead to undesirable vibrations during machining which must be compensated in order to avoid inaccuracy. For this reason, PRÄWEMA ORIGINAL honing rings are equipped with two zones.

The geared machining zone of the PRÄWEMA ORIGINAL is enclosed by a second so-called damping zone. This second zone cushions vibrations caused by machining and ensures that they are not transferred to the honing head and the machine.

Ihre Vorteile

- Faster first-dressing thanks to precise first-gearing
- Outstanding damping behaviour for stable processes
- One tool, customised to your own honing process

Your advantages

- Thanks to shorter first-dressing times on account of the high quality of the preliminary gearing, production can be taken up again faster, consistently high gearing qualities are produced on the workpiece and your daily output quantity is increased. In addition, the service life of your honing ring is extended due to the reduction of the first-dressing amounts.

		ECODUR							PRÄWEMA Original 2-zones honing ring			
Property	Quality	636	686	725	777	793	794	795	1.636	1.725	1.794	1.795
low performance					✓							
medium performance		✓				✓						
high performance			✓					✓	✓			✓
very high performance				✓			✓			✓	✓	
reduced vibration damping												
medium vibration damping		✓		✓	✓							
high vibration damping						✓			✓	✓	✓	✓
suitable for small axis cross angles							✓				✓	
wear reducing towards dresser		✓						✓	✓			

PRECISE DRESSING with VarioSpeedDresser®

Finished with DVS LaserCut.

With the latest generation of PRÄWEMA SynchroFine® gearing honing machines, the so-called VSD technology is used for dressing the honing tools. “VSD” stands for VarioSpeedDressing®, a dressing process during which only the front cutting edge of the dressing tool engages with the honing ring.

VSD dressers, also known as VarioSpeedDressers® are manufactured at DVS TOOLING using the specially developed “DVS LaserCut” finishing method. This method produces a homogeneous structure of the cutting edge surface on the dresser. The result is an extremely high surface quality which is transferred to the honing ring during the dressing process and thus finally to the workpiece. This optimises the reproducibility and surface quality of tooth flanks again, as well as further reducing the noise level of the machined parts in the gearbox.

Compared with a dressing process using conventional diamond dressing gear wheels, the new VSD technology produces stable profile shapes and precision never achieved before.



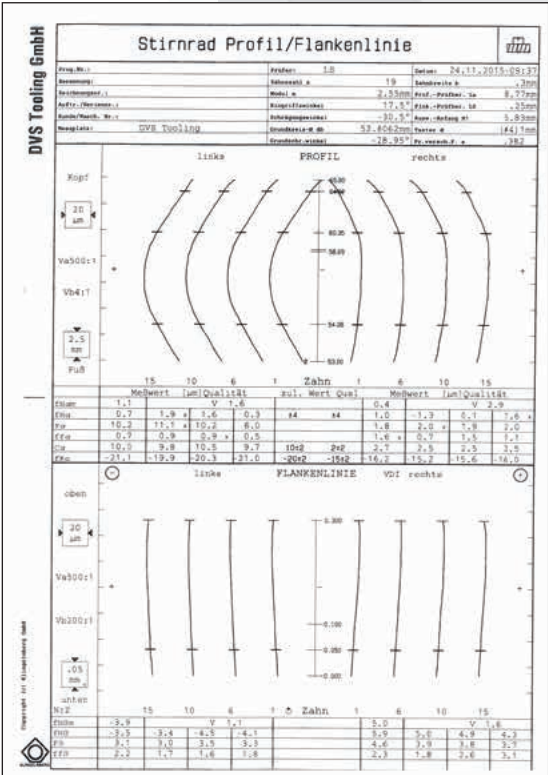
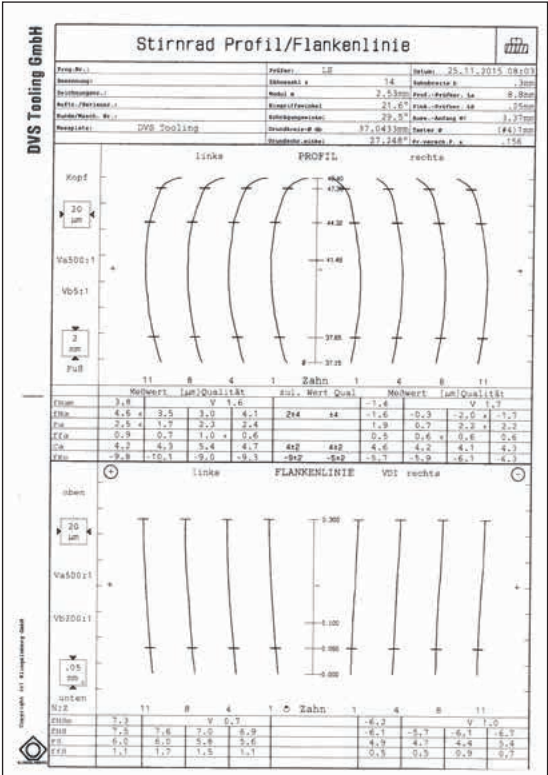
VSD sf FINE, FINER, FINE-GRINDING



Profile shapes and accuracies in previously unequalled quality

DVS TOOLING has developed the dressing wheel VSD sf for extremely fine surfaces. „sf” stands for „superfinishing” here, and designates the extremely high and further optimised surface quality which is first transferred to the honing ring by the dressing process and to the workpiece gearing by downstream honing.

In order to translate this maximum quality into reliable and constant large-volume production is to appropriately condition the relevant tools. As well as tight tolerances, the VSD sf can also achieve surface roughness of $R_z < 1 \mu\text{m}$.



Measuring logs document the extremely high surface qualities on the VSD dresser

- Your advantages
- Free definition of tooth geometry
 - Defined dressing of honing rings
 - Better reproducibility and surface quality
 - Surface roughness of $<1 \mu\text{m}$ with VSD SF

DIAMOND DRESSING GEARS FINISHED WITH DVS LASERCUT.



Optimised cutting surfaces for maximum precision during conventional dressing.

DVS TOOLING is breaking new ground in optimising cutting surfaces for users of diamond dressing gear wheels. Dressing gear wheels are finished using „DVS LaserCut“ technology for a consistently high repeat accuracy of gearing qualities.

The method creates an almost completely homogeneous surface structure beyond the diamond coating of the dressing gear wheel. The resulting more even surface finish on the honing ring guarantees constantly good and repeatable machining results on the workpiece.

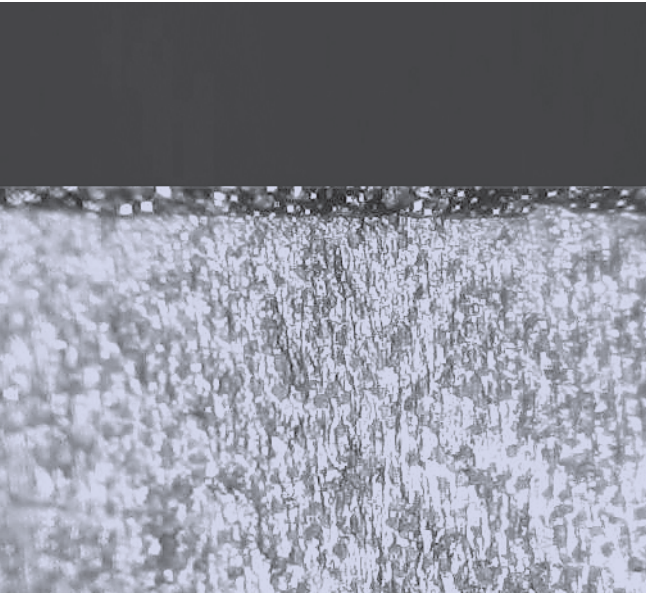
In addition, the cutting speed of the honing ring is also increased thanks to the optimised dressing wheel.



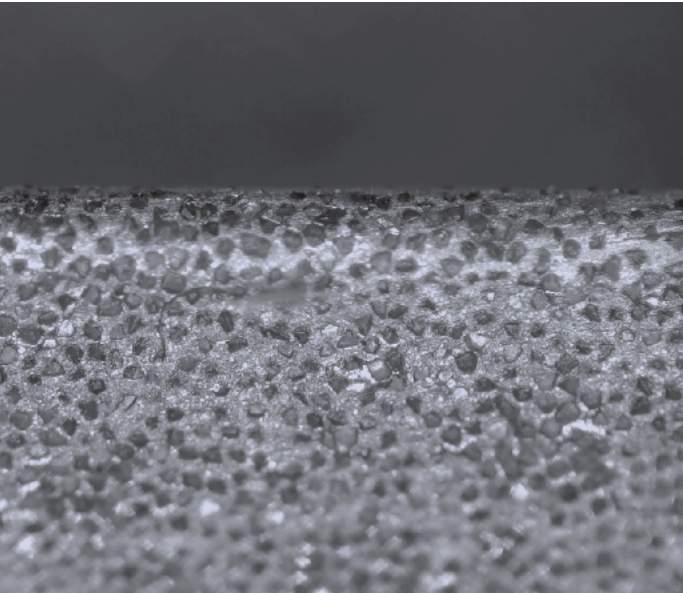
Your advantages

- Optimised cutting surfaces for constant machining results from the first dressing process
- Design customised to your gearing requirements
- Cost- and resource-saving treatment service: After the diamond coating has been worn, DVS TOOLING dressing gear wheels can be re-coated
- DVS TOOLING as a system supplier: Honing rings and dressing gear wheels from a single source

A detailed look at the surface



Homogeneous and fast-cutting – the surface structure of diamond wheels from DVS TOOLING.



The diamond wheel surface of a competitor in comparison.



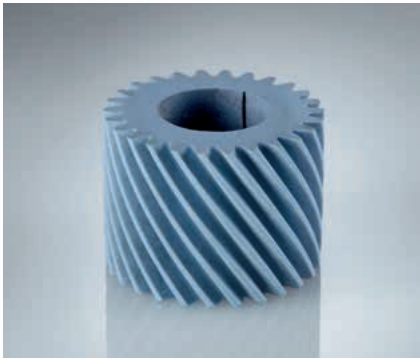
HONING WHEELS

Perfect grinding for internal gearings

Since honing wheels have a limited cutting surface due to their geometry, their quality is defined through the achievement of as long a service life as possible.

The mixture of sturdy cutting materials and innovative bonding systems that has been developed in close cooperation with the DVS grinding tool specialist NAXOS-DISKUS Schleifmittelwerke is what sets the honing wheels from DVS TOOLING apart from the rest.

This resulted in honing wheels which achieve both a long service life and high-precision machining results in PRÄWEMA machines.



Your advantages

- Innovative bonding system for long service life
- Precise machining results
- Special design for PRÄWEMA Internal Gear Honing technology

VSDi

More precise dressing when machining workpieces with internal gearing

The VSDi dressing tools with internal gearings are no less effective than their external-gear equivalent. They only engage with the front, defined cutting edge in the tool as well.

The diamond-coated cutting edge produces a homogeneous and extremely fast-cutting surface which the honing wheel uses to achieve consistently high-quality machining results at the workpiece.



Your advantages

- Defined dressing of honing wheels
- Consistently high quality of machining results
- Optimised quality for the gearing surfaces of hardened components with internal gearing



TECHNOLOGY SUPPORT. WORLDWIDE.

User training

How is the gearing geometry of a honing ring adapted? What has to be considered during the dressing process? How much optimisation potential can be expected from VarioSpeedDressing® technology for a concrete application?

These and other questions are addressed and answered during user training by DVS TOOLING on your premises. Experienced application engineers share important specialist knowledge which is tailor-made to your application. To ensure machine operators can implement what they have learned more easily in their day-to-day work, practical exercises at the machine are a central component of the training.



Technology seminars

During a DVS TOOLING technology seminar, project engineers, production planners and plant managers discover what influence the VarioSpeedDressing® technology has on the optimisation of gearing surfaces and what opportunities for the development of vehicle gearboxes result from this. Decisive aspects for the optimisation and advanced development of gearing are highlighted.



Process design

As a member of the DVS TECHNOLOGY GROUP und thus affiliated with PRÄWEMA Antriebstechnik GmbH, the application engineers at DVS TOOLING have machine, tool and process know-how at their disposal. They have an ideal combination of knowledge available to optimise existing processes or design new processes with state-of-the-art methods.



Your advantages

- Application-specific specialist knowledge transfer direct from the manufacturer
- Independent recognition and implementation of potential
- Customised seminar on your premises and at your machine



PRÄWEMA SynchroFine®
Gear Honing machine

Mitglieder der DVS TECHNOLOGY GROUP

Members of the DVS TECHNOLOGY GROUP

DVS MACHINE TOOLS & AUTOMATION



BUDERUS Schleiftechnik GmbH | www.buderus-schleiftechnik.de
Innenrundscheifen – Außenrundscheifen – Gewindescheifen – Bohrungshonen – Hartdrehen
I.D. grinding – O.D. grinding – Thread grinding – Bore honing – Hard turning



DISKUS WERKE Schleiftechnik GmbH | www.diskus-werke.de
Planseiten-Scheifen – Doppel-Planseiten-Scheifen – Sonderbearbeitung
Face grinding – Double face grinding – Special machining



DVS Universal Grinding GmbH | www.dvs-universal-grinding.de
Kombinierte Hartfeinbearbeitung für Klein- und Mittelserien
Combined Hardfine Machining for small and medium size batches



PITTLER T&S GmbH | www.pittler.de
Vertikal-Drehbearbeitungszentren & Pick-up-Systeme – Verzahnungszentren
Vertical turning centers and Pick-up systems – Gear cutting centers



PRÄWEMA Antriebstechnik GmbH | www.praewema.de
Verzahnungshonen/-scheifen – Verzahnungsfräsen – Anspitz-/Hinterlegungsfräsen
Internal and External Gear honing – Gear grinding – Hobbing/Fly-cutting – Chamfering



WMS Werkzeugmaschinenbau Sinsheim GmbH | www.wms-sinsheim.de
Service-Dienstleistungen – Generalüberholungen – Reparatur von Baugruppen
Maintenance – Machine Retrofit – Repairs



WMZ Werkzeugmaschinenbau Ziegenhain GmbH | www.wmz-gmbh.de
Dreh- & Kombinationsbearbeitung wellenförmiger Bauteile – Motorspindeln
Turning & Combined machining of shafts – Motor spindles

DVS TOOLS & COMPONENTS



DVS TOOLING GmbH | www.dvs-tooling.de
Werkzeuflösungen und Technologiesupport für das PRÄWEMA Verzahnungshonen
Tool solutions and technology support for PRÄWEMA gear honing



NAXOS-DISKUS Schleifmittelwerke GmbH | www.naxos-diskus.de
Konventionelle Schleifwerkzeuge – CBN & Diamantwerkzeuge
Conventional grinding tools – CBN & Diamond tools

DVS PRODUCTION



DVS Production GmbH | www.dvs-production.de
DVS Technologien in der Serienfertigung für PKW-Komponenten
DVS Technologies in mass production for passenger car components



DVS Production South GmbH | www.dvs-production-south.de
DVS Technologien in der Serienfertigung für Nutzfahrzeug-Komponenten
DVS Technologies in mass production for commercial vehicle components

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DVS Sales & Service in China



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