

Press Information

Kyocera launches new cut-off solution “KGZ” for small parts machining

A newly developed unique clamp structure and new insert shape realize high efficiency and stable machining. New specialized PVD coating released at the same time.

Kyoto/Neuss, 13th June 2024. Kyocera Corporation announced that it has developed a new cut-off solution, “KGZ”, for small parts machining.

Product name	Cut-off solutions for small parts machining “KGZ”
Number of models	Insert: 129 models Toolholder Internal coolant: 24 models Standard type: 70 models For sub-spindle tooling: 18 models
Price	Please contact our sales representatives
Maximum cutting diameter	51 mm
Edge width	1.3 / 1.5 / 2.0 / 3.0 mm
Chipbreakers	Chip control oriented: PF / PM / PH Sharp edge: PG
Recommended workpieces	Carbon steel, alloy steel, stainless steel, cast iron, aluminum alloy, brass



Small parts machining involves cutting into the center of the workpiece with an insert that has a cutting width of several millimeters. Therefore, the load on the tool is large, and the generation of

chatter and breakage of the holder are major problems. In addition, there are some challenges regarding the workability of the machine, such as the need for a skilled operator to quickly and accurately replace and install inserts in a narrow space.

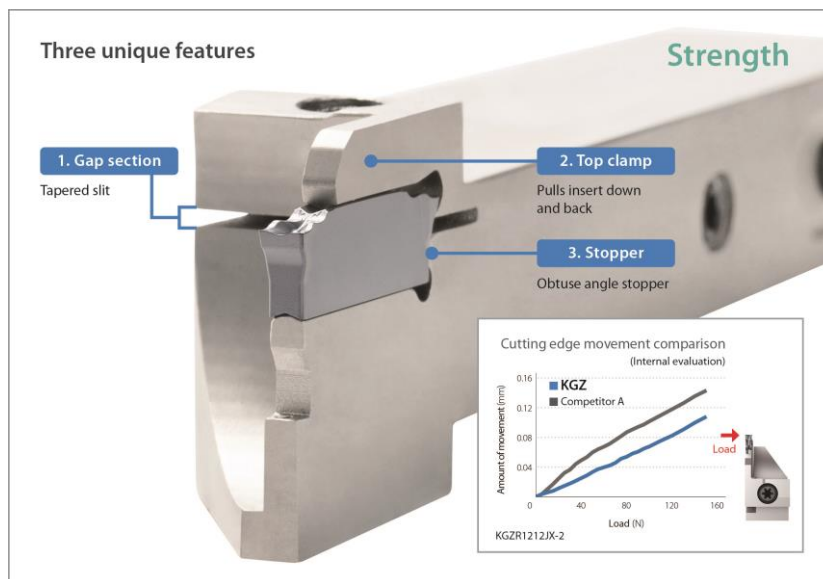
"KGZ" uses a newly developed clamp structure with three unique mechanisms to firmly lock the insert in place to suppress chatter and achieve stable machining. In addition, the constraint surface of the holder, which is easily subjected to machining load, has a shape that distributes stress, improving durability and realizing high-efficiency machining. In addition, the new insert has a redesigned V-shape groove structure on the top surface to improve restraint and workability.

Also, within the insert grades lineup, a newly developed PVD coated grade, "PR 20 series," for the KGZ was released. The new coating, "MEGACOAT^{®1} NANO EX," which is resistant to oxidation and abrasion caused by cutting heat, achieves high precision, long tool life, and stable machining of steel, stainless steel, and cast iron.

Features of "KGZ"

1. Stable and high-efficiency processing is achieved with a clamp structure equipped with three unique mechanisms.

The newly designed toolholder improves the holding force of the insert and the durability of the toolholder through three unique mechanisms: (1) Gap section, (2) Top clamp, and (3) Stopper.



¹ "MEGACOAT" is a registered trademark of Kyocera Corporation.

1. Gap section: Press down on the insert from directly above to firmly secure in place.

Generally, it is structurally difficult to fix the insert directly above with a cut-off tool. KGZ has a tapered slit with a slanted cut, so when the fastening screw is tightened, it applies a restraining force from directly above the insert, effectively securing it in place.

2. Top clamp: Pulls the insert inward to increase the binding force.

Designing the shape so that force is applied inward when clamping the insert suppresses the displacement of the insert in the front and rear directions.

3. Stopper: Disperses stress over a large area and improves the durability of the holder.

KGZ uses a stopper as part holder blunt to create a large surface to receive the load and impact from the insert and disperse stress on the holder. As a result, the wear amount of the stopper is reduced to about one-third² that of other companies' products. The improved durability of the holder also enables it to withstand high-efficiency processing with high processing loads.

2. Unique V-shape groove improves restraining force and ease of fitting of the insert.

The V-shape groove on the upper surface of the insert has different angles and shapes at both ends and the center, which improves the restraining force and ease of installation.

1. Insert groove end

The ends are made more acute than the central part of the groove. This design helps to reduce the play during insert installation and makes it easier for the insert and holder to fit together correctly, therefore preventing incorrect insertion and contributing to improved workability in narrow spaces.

2. Center of groove

The central part increases the angle of the groove and improves the restraint force of the insert by receiving the clamping force from the upper direction on a large surface.

² Comparison of holder damage after 100,000 cuts (comparison conducted by Kyocera).

3. Newly developed insert grades "PR20 series" uses a special nano-layered coating, "MEGACOAT® NANO EX," to enable high-precision, long-life, and stable processing of steel, stainless steel, and cast iron.

Along with KGZ, Kyocera simultaneously released a new PVD coating, "PR20 Series,"³ specialized for grooving and cut-off processing. A special nano-layered coating, "MEGACOAT® NANO EX for Grooving / Cut-off," newly developed for the PR20 Series, is born from our unique coating process. This coating offers wear resistance approximately two times⁴ better than other companies' products in steel machining comparison because it uses aluminum (Al) as the coating's main materials, which has high-temperature hardness and wear resistance characteristics. The PR20 Series achieves high precision, long tool life, and stable machining as the main insert grades for grooving and cut-off machining of steel, stainless steel, and cast iron.

Product introduction URL

Product news page: <https://www.kyocera-unimerco.com/en-global/about/news/kgz-series>

Product video: <https://www.youtube.com/watch?v=pJdU6Dmcbm0>

³ The "PR 20 Series" is a lineup of 3 grades: PR2015, PR2025, and PR2035.

⁴ Machining of S45C (comparison conducted by Kyocera).



For more information on Kyocera: uk.kyocera.com

About Kyocera

KYOCERA UNIMERCO Tooling GmbH is a subsidiary of KYOCERA UNIMERCO Tooling A/S in Denmark. They belong to KYOCERA Europe GmbH, which has been successful in Europe for over 50 years. The Kyocera Group is a leading global manufacturer of industrial tools, offering innovative tool solutions and process optimisation. Kyocera contributes to global manufacturing with innovative products and technologies.

KYOCERA Europe GmbH is a company of the KYOCERA Corporation headquartered in Kyoto/Japan, a world leader in semiconductor, industrial and automotive components as well as electronic components, printing and multifunction systems, and communications technology. The technology group is one of the world's most experienced manufacturers of smart energy systems, with more than 45 years of industry expertise. The Kyocera Group comprises 292 subsidiaries (31 March 2024). In England, Kyocera has a subsidiary in Frimley, KYOCERA Fineceramics Ltd. With around 79,200 employees, Kyocera generated net annual sales of around EUR 12.29 billion in the 2023/2024 fiscal year.

Kyocera is ranked 672 on Forbes magazine's 'Global 2000' list for 2023, and ranked as 'The 100 Most Sustainably Managed Companies in the World' according to the Wall Street Journal. For the second year in a row, Kyocera qualified for the Dow Jones Sustainability Index (Asia-Pacific). As well, Kyocera receives a Gold rating on EcoVadis Sustainability Survey for the second consecutive year and was acknowledged as a 'Top 100 Global Innovator 2023', being one of the world's leading innovators, for the eighth time by Clarivate.

The company also takes an active interest in cultural affairs. The Kyoto Prize, a prominent international award, is presented each year by the Inamori Foundation — established by Kyocera founder Dr Kazuo Inamori — to individuals worldwide who have contributed significantly to the scientific, cultural, and spiritual betterment of humankind (equivalent to approximately €596,500 per prize category).

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