

GROWERMETAL: INNOVATING INTO THE FUTURE



Growermetal is an experienced manufacturer of washers in Europe, based in Calco (Northern Italy). The production range covers more than 4000 items produced according to the most common international standards like ISO,

ASME or DIN. The number of customized products according to drawing, currently about 2000 items, is continuously increasing thanks to the technical know-how acquired through the last 70 years.

The company is present not only on the Italian market but also in Europe and in other regions such as America, Middle East, China and other countries of the Far East.

Growermetal's sales are approximately 40% to distributors, most in the fastener business and 60% to first or second tier end users, who assemble the washer on their products to sell directly to end users.

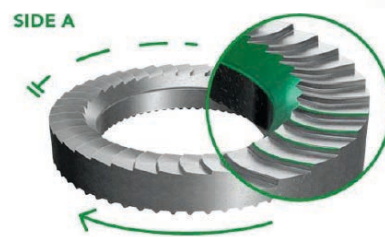
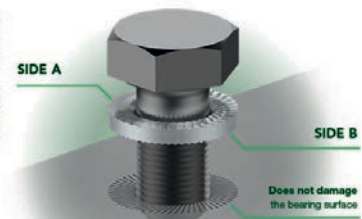
Last year the R&D department of Growermetal started a new project and studied more than 400 types of geometry by using of simulation software and numerous laboratory tests. The goal of all involved technicians was to create a safety washer with innovative features for outstanding performances, which nowadays is a real challenge considering the huge, existing market for fixing components worldwide.

At the Fastener Fair Stuttgart 2019 (Germany), which is the most important showcase for fastener and fixing technology in Europe, the company launched its new safety washer brand Grower TenKeep® and won the 3rd place in the Route to Fastener Innovation Competition.

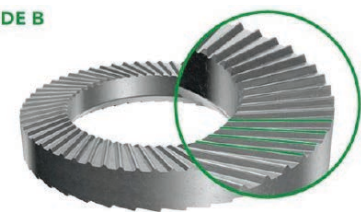
The innovation compared to other safety washers on the market is that Grower TenKeep® safety washers have

**GROWER
TENKEEP®**

During tightening and untightening of the bolted joint, the **Grower TenKeep® washer does not damage the bearing surface**, even on galvanised, painted or soft surfaces.



SIDE B

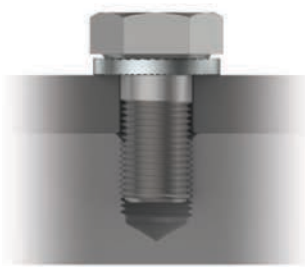


the two surfaces with knurls of different geometry, specially designed to ensure maximum performance against

unscrewing of the bolted joints even in the presence of extreme vibrations and dynamic loads.

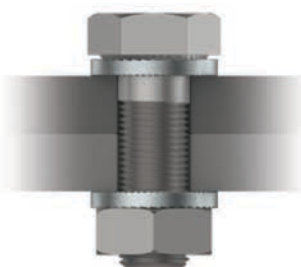
Side A of the washer on the head of the screw/nut side slides against the surface of the underhead of the screw/nut when tightening the bolted joint. The advanced serration geometry of this side instead counteracts very efficiently the loosening of the bolted joint connection. The hole on side A has a chamfer on the hole, which provides the dual function of avoiding any interference with the radius under the screw head and allowing the user to orientate the washer correctly.

STANDARD APPLICATIONS

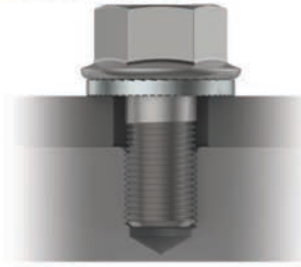


GROWER TENKEEP® | M

With threaded hole and hexagonal head screw.

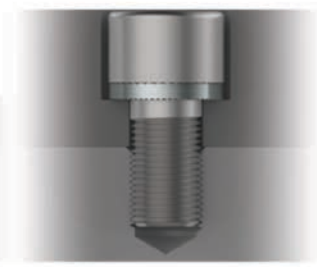


With through-hole and hexagonal head bolt.



GROWER TENKEEP® | L

With wide holes and flanged head screw.



GROWER TENKEEP® | C

With bored hole and cylindrical head screw.

Side B of the washer that is in contact with the bearing surface becomes immediately solid to the bearing surface when the bolted joint is tightened, thanks to the exceptional grip of its knurling. The washer then remains permanently solid to the bearing surface without damaging it, even on galvanised or painted surfaces.

Grower TenKeep® safety washers are manufactured by Growermetal in 3 different versions and can be used with bolts of all strength classes up to 12.9:

▫ **Grower TenKeep® M** - Medium Series, ideal for hexagonal head bolts, from M3 to M30.


▫ **Grower TenKeep® L** - Large series, ideal for flange-headed bolts and for bearing surfaces made of soft materials (aluminium, plastics, etc...), from M5 to M20.

▫ **Grower TenKeep® C** - Cylindrical series, ideal for cylindrical head bolts, from M4 to M20.

Grower TenKeep® safety washers work on the friction principle. The friction conditions are defined and uniform, not depending on the material and on the mechanical characteristics of the bearing surface. As a consequence the tightening torque to be applied in order to achieve the desired screw preload is always the same. On the other hand, the untightening torque is significantly higher (+40% minimum) than the tightening torque.

The hole geometry has been specially designed in order to ensure that there is no geometric interference with the underhead radius of all screws according to ISO and DIN standards.

In order to resist the most demanding application environments, the Grower TenKeep® washers are

supplied with high-performing zinc flake coating, Delta Protokt® KL120, with a corrosion resistance of at least 1000 hours according to neutral salt spray tests in compliance with ISO 9227. 



THE HOLE GEOMETRY OF ALL GROWER TENKEEP® WASHERS HAS BEEN SPECIALLY DESIGNED IN ORDER TO ENSURE THAT THERE IS NO GEOMETRIC INTERFERENCE WITH THE UNDER HEAD RADIUS OF ALL SCREWS ACCORDING TO ISO AND DIN STANDARDS.



GROWER TENKEEP® WON THE 3RD PLACE IN THE ROUTE TO FASTENER INNOVATION COMPETITION 2019 (GERMANY).