

GROWERMETAL EXPANDS SAFETY WASHER PORTFOLIO

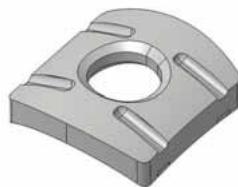
Grower Tenkeep® is the latest addition to the extensive Growermetal safety washers family. Growermetal takes *Torque Magazine* through the benefits of this new arrival and the rest of the safety washer range...

Growermetal is a worldwide specialist in the manufacturing of high-quality safety washers, offering a wide portfolio of product concepts for different applications when the safety of the bolted joint connection really matters, including:

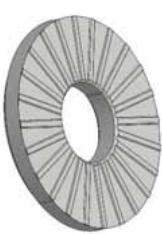


Contact and Sperrkant washers: Conical safety washers with a knurled ring on the surface in contact with the bolt's underhead to secure electrical contacts and connection in electrical cabinets and at the same time allow the transmission of the current. Growermetal's contact washers are manufactured according to NFE 25-511 and Siemens SN 70093 standards.

Electrical terminals: Small square or rectangular ribbed washers for electrical switches and other electrical components, these parts are widely used to keep electrical connections intact, retaining the electrical cables so they won't slip out from under the screw head.



Ribbed flat washers: Flat washers with radial ribs and serrations on one or both surfaces, used in several bolted joint connections in automotive applications, such as car body, engine, gear-box and other car and truck components, especially in the presence of soft bearing surfaces (i.e. aluminium and plastic).



Grower Twin-Lock® wedge-locking washers:

These safety washers offer high-power performance when working in pairs to secure bolted-joint connections in several applications where there is the presence of severe vibrations and dynamic loads, such as power generation, oil & gas, railway, machinery, construction and transportation. Grower Twin-Lock® wedge-locking washers utilise tension in order to secure bolted joints, thanks to the wedge created underneath the bolt head. The tension generated in the body of the screw makes it impossible to loosen the bolted connection unintentionally, says Growermetal. Grower Twin-Lock® wedge-locking washers are sold by Twin-Lock AB sales company.



Grower Tenkeep® safety washers:

The latest in Growermetal's safety washers family, Grower Tenkeep® is a single high-power flat washer having the two surfaces with knurls of different geometry, specially designed to ensure maximum performance against loosening of the bolted joints, even in the presence of extreme vibrations and dynamic loads. The working principle is based on friction, with higher loosening torque needed to untighten the bolt compared to the tightening one.



The side of the washer on the head of the screw side slides against the surface of the under head of the bolt when tightening the bolted joint. The advanced serration geometry of this side instead counteracts very efficiently against the loosening of the bolted joint connection.

The side of the washer which 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. These features allow three main technical advantages:

- The friction conditions are defined and uniform, not depending on the material and on the mechanical characteristics of the bearing surface.
- During tightening and untightening the Grower TenKeep® washer doesn't slip and therefore doesn't damage the bearing surface.
- The untightening torque is significantly higher (+40% minimum) than the tightening one.

Several technical solutions are available with different performances, working principals and costs, adapted to different applications and technical needs, all manufactured at Growermetal in Italy, applied with the highest levels of know-how and attention to the geometrical, mechanical and coating features. All products undergo rigorous testing to ensure they strictly perform to specifications.

The production toolings, a key factor of a safety washer's quality, are all manufactured in Growermetal's in-house tool shop, allowing its products to reach the highest possible standards of performance: "If you're experiencing a bolting issue where safety really matters, you can rely on Growermetal's expertise suggest you the most efficient and cost-effective solution."

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