

GROWER REACTION®

REACTIONLESS SAFE BOLTING



With every action there is an equal and opposite reaction.

TECHNOLOGY

When tightening a bolted joint connection with an electric, hydraulic or pneumatic tool there is always a reaction torque, as the drive rotates in one direction and the tool housing in the opposite.

Therefore, a reaction arm and a pinch-point are typically needed on the tool to generate the desired bolt preload.

Grower Reaction® washer is part of a fastening system that provides a fully concentric dispersion of the reaction torque around and underneath the nut or bolt head to be tightened or loosened, eliminating the need of a reaction arm to generate the desired bolt preload.

HOW IT WORKS

Grower Reaction® washer utilizes the downward forces of the nut or bolt head to be tightened, to bite with its bottom serrations into the bearing surface. In this way the friction between the washer and the bearing surface is always higher than the friction in the tightened or loosened thread, thus the reaction torque is successfully transferred onto the bearing surface underneath the nut or bolt head.

Thanks to its design, it is possible to use this product with traditional, high capacity style torque tools.

SYSTEM

Grower Reaction® works in combination with Grower Tenkeep® as a backup washer, using a compatible tightening tool. When used as a system, Grower Reaction® provides speed and accuracy on every bolting job.

The washer design is manufactured fully in accordance with the ASTM F3394 standard for hardened steel reaction and backup washers.

The images used on this flyer are for reference only. These images have the sole purpose to represent the concept of Grower Reaction washers and do not reflect the real configuration of the product, its features and specifications.



SAFETY

The distinctive design of the Grower Reaction® washer eliminates the need for reaction arms and pinch-points, which are the most common cause of hand injury. In this way, it minimizes operator risks and maximizes safety, guaranteeing optimal conditions. With hands-free operational capabilities, the Grower Reaction® requires less personnel than traditional bolting practices.

APPLICATIONS

Grower Reaction® fastening system can be widely used in:

ACCURACY

Grower Reaction® removes side load distortion, improves bolt axial alignment and reduces bolt load scatter, enhancing overall bolting installation accuracy.

The unique design of the fastening system allows the dual socket driver of the tool to react on the washer, while turning the nut or the bolt head.

SPEED

As no reaction arms and backup wrenches are necessary, the washer reduces the weight of the fastening tool and cuts the time required by the installation, making the application efficient and simple, even in areas that are hard to reach.

- Heavy - duty industrial applications
- Oil & Gas
- Power generation and windpower
- Petro - Chemical
- Mining
- Steel construction
- Earth moving

**STANDARD NUT
RUNNER TOOL
AND SOCKET**

NUT

BOLT



**GROWER
REACTION®**
REACTION
WASHER

**GROWER
TENKEEP®**
BACKUP
WASHER

