LICENCED SCREW THREADS

Unisteel is one of the companies with the most comprehensive fastener licenses. We offer a series of thread forming fastening solutions with superior performance in metal and plastic materials. These include both licensed and proprietary designs.

In this issue, we will focus on licensed thread forming screws such as DELTA PT® from EJOT®, TAPTITE®, REMFORM® and REMFORM® F from REMINC / CONTI.

Thread Forming for Plastics

In electronic devices, fasteners are typically used to secure the metal to metal joints. However, as the consumer market trends towards lighter devices, some metal parts have been or will be replaced by plastic parts to effectively reduce the overall weight. As a result, thread forming fasteners designed for plastic application provide the alternative solution.

DELTA PT® is designed especially for thermoplastic and thermoset materials. To avoid radial stress to the boss material, the design of the flank starts with a 30° angle with the tip being reduced to 20° angle for a complete flow of the plastic material. With this ideal flank design, optimum thread forming is achievable without any material damage.
Features & Benefits

- Small 30° thread flank angle minimizes radial stress
- High axial forces allow optimal material flow into recessed thread root
- Optimum thread pitch provides maximum resistance to self loosening and balanced load ratio between plastic and screw
- High tensile and torsional strength
- Available in shorter fasteners and/or smaller diameters

The figure below shows a comparison of boss material displacement between a typical 60° thread and DELTA PT® thread. The latter allows maximum engagement which improves the joint stability. Overall, DELTA PT® is a tough fastener that provides safety and reliability in demanding applications.

REMFORM® screw has a unique asymmetrical thread design, where the flank has a 35° angle to optimize material displacement, so as to avoid boss material crack. It is recommended for use in wide array of thermoplastics as well as some light alloy materials.

Due to its large cross sectional area and steep trailing angle, higher torsional strength and failure torque are expected. As the pitch is relatively big in REMFORM®, long engagement is always preferred.
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For a finer pitch option that is suitable for short engagement length, go for REMFORM® F.

Features & Benefits (REMFORM® F)

- Unique Radius Flank™ asymmetrical thread form features steep trailing flank, narrow tip angle and radius leading flank
- Steep trailing flank provides high resistance to internal thread stripping
- Unique thread and narrow tip angle promote efficient material displacement, requiring only minimal energy to form an internal thread
- Radius leading flank promotes efficient material displacement and material flow
- High torsional strength ensures high failure torque

TAPTITE 2000® is recommended for use in metals. Employing the unique Trilobular™ cross-sectional design and Radius Profile™ thread, these features provide excellent mechanical fastening, assembly and ergonomic benefits, and offer end-users enhanced opportunities to reduce the overall cost of assembly.

Features & Benefits

- Low axial end load to initiate thread forming
- Trilobular™ shape provides high prevailing torque
- Ergonomically-designed and assembly-friendly solution
- Excellent axial alignment
- High strip-to-drive ratio
- Excellent torque tension relationship
- Superior vibration resistance
Mobile phone photography has advanced rapidly within these few years. Depending on the photographic requirements, various demands are placed on the camera flash in order to achieve a correct exposure. A minimal subject illuminance of around 60 lux is required for low end mobile phones, and goes up to 100 lux or above for high end mobile phones. In addition, most applications require that the flash should cover a rectangular field of view (FOV), e.g. 60° x 47°. The uniformity of illuminance in the corner of the FOV should be no less than 30%.

Bare white LED can hardly meet these requirements due to its Lambertian emission pattern that prevents most of the light energy from being focused in the center of the beam. In order to provide adequate illumination for low light photography, a flash lens is required to focus the light from LED into the FOV of the camera.

Fresnel lens is suitable for compact flash modules with its thin and lightweight design. Unlike the conventional spherical lens, Fresnel lens has a flat plane with short focal length and large aperture; making it the ideal candidate for flash lens applications.

Relying on our in-house vertically integrated capability in plastic optics design and manufacturing, Unisteel, as the market leader of phone flash lens, offers a variety of customized Fresnel flash lenses, including single, duo and racetrack configurations. These lenses are specially tailored to meet the illumination requirement as well as to satisfy customer’s demand for unique ID as an essential part of the phone design style.