



The Recoil®  
Product Range



# How a Recoil Insert Works

Recoil inserts are rolled from high quality stainless steel wire with a diamond shaped cross section, wound to the shape of a spring thread. Once the insert is installed into a tapped hole, it provides a permanent and wear resistant thread in the parent material designed to be stronger than the original thread.

The inserts are greater in diameter than the corresponding tapped hole and compress as they are installed. This allows maximum surface contact area with the tapped thread, safely and permanently anchoring the inserts into place.

The insert's compensatory action shares the load over the entire bolt and hole, increasing holding or pull out strength. With a Recoil insert in place, load and stress are more evenly distributed.



## Typical thread problems:

- ✗ Poor flank contact between bolt & parent thread
- ✗ Unequal distribution of bolt load over engaged threads
- ✗ Failure of threaded components when loaded

## Recoil solutions:

- ✓ Greatly improved flank contact
- ✓ Equally distributed load over all tapped threads
- ✓ Reduced stress concentration for greater load bearing

# Where to use Recoil Inserts

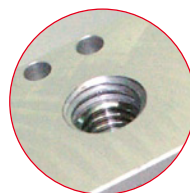
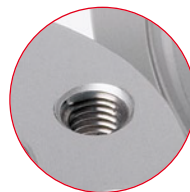
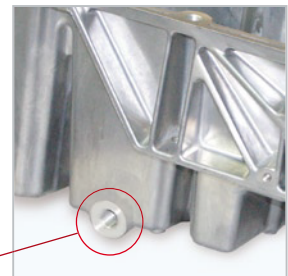
## 1 Original Equipment Manufacture

HFS offers innovative manufacturers the opportunity to design high quality products using lighter weight metals as well as standard materials.

Recoil inserts can be used in aluminium and magnesium alloys, carbon fibres and other materials to achieve stronger and more reliable threads than the parent material alone.

Recoil brand inserts are widely used by manufacturers in a variety of markets including the following:

- Automotive
- Electronic
- Aerospace
- Ship Building
- Defence
- Power Generation
- Transport
- Manufacturing Equipment

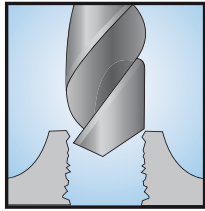


## 2 Repair

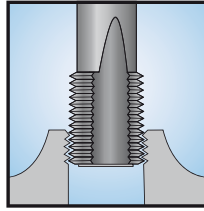
Wherever you encounter a damaged thread Recoil provides:

- The quickest and simplest method of thread repair.
- A quality thread with superior holding power.
- The most cost-effective method of repair.
- A new thread in the original size.
- A thread generally stronger than the original.

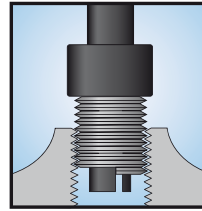
## Installation Sequence



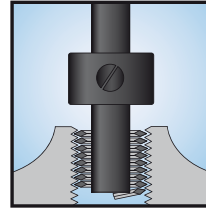
1 Drill the hole



2 Tap the hole



3 Install the insert



4 Break the tang

## Materials & Coatings

### Insert Materials

Recoil products are made in an extensive variety of the highest quality materials including:

- Stainless steel grade 304 (AS7245) austenitic corrosion resistant steel. For normal applications up to 425°C (800°F). Widely used throughout the Recoil range.
- Stainless steel grade 316 (AISI 316) austenitic corrosion resistant steel. For Marine applications up to 425°C (800°F).
- Phosphor bronze (DIN 17677 or BS2783 PB 102) (300°C). For electrical bonding joints or low permeability applications.
- Inconel X750 (AS7246) nickel alloy. For high temperature applications 425°C - 550°C (800°F - 1000°F) or where low permeability is required.
- Nimonic 90 (HR 503) for high temperature applications (650°C/1200°F).
- Nitronic 60 (UNS S21800) austenitic anti-galling alloy.
- Special purpose materials such as Inconel 625 and spring steel grade are also available to special order.

**Further options are available on consultation with your Recoil team.**



### Coatings and Finishings

The Recoil team views the selection of coatings and lubricants as vital to the design process and integral to the long term security of every bolted joint.

The ideal finish or coating for each insert depends upon the optimum coefficient of friction and the required service conditions of the assembled parts. These include temperature, chemical influences, humidity, surface coating and dust.

#### Silver Plating

Primarily used to reduce the effects of screw thread seizure in high temperature applications.

#### Coloured Dye

Red, blue and green colour dyes are available for fast and secure visual inspection and identification. These organic resin based dyes do not affect the installation or function of the inserts and normally do not need to be removed.

#### Dry Film Lubricants

Used for mildly corrosive or high temperature applications, dry film lubricants are applied as a thin film (5µm-20µm) to grease-free metal surfaces.



# Products

The Recoil system consists of precision inserts, quality high speed taps, and easy to use installation tools. The Recoil system is also available in convenient kit form for maintenance and repair applications.

## Wire Thread Inserts

Recoil has a huge range of inserts available ex-stock for every thread form including METRIC, UNC, UNF, BSC, BSW, BSP, BSF, BA, and NPT.

There are three basic types of Recoil inserts available:

- **Standard inserts** which form a strong female thread
- **Locking inserts** with an additional locking function
- **Tangless\*** inserts without an installation tang



## Thread Repair Kits

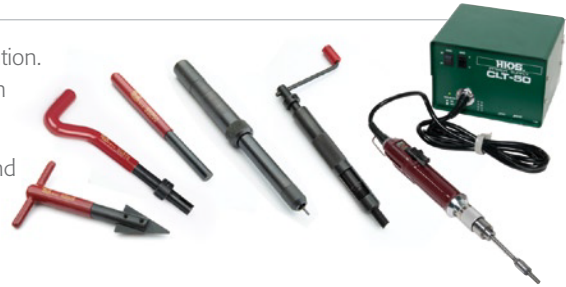
Recoil offer a full range of thread repair kits, covering the majority of sizes commonly used today. Recoil kits contain the necessary equipment to repair a damaged or stripped thread including an STI HSS tap, an installation tool, and precision stainless steel inserts. A variety of kits types are on offer to meet all of your thread repair needs.



## Installation Tooling

A range of associated tooling is available to facilitate insert installation. These include manual, spring and pneumatic operated installation tools and tang break-off tools.

Arconic Fastening Systems also offers a selection of work arms and power tooling, including high efficiency pneumatic and electric installation tools, for in-line production or repetitive maintenance situations.



## Taps and Gauges

Recoil offers a wide range of high-quality STI HSS taps and gauges. Recoil Taps and Gauges are purpose built to enable a precision fit of each insert into a tapped hole. Their unique design enables quick and easy insert installation.



## Complementary Products

Recoil also offers an alternative range of cost saving thread repair products where the use of wire thread inserts may not be appropriate.



\*Tangless is a registered trademark of KATO & Advanex Inc.

# Overview



The Recoil range of wire thread inserts and thread repair products are especially designed to enable you to produce strong threads in weaker materials and carry out fast and efficient repair of damaged threads.

Developed from decades of engineering experience, Recoil products carry a global reputation for delivering fast, reliable and cost effective means of thread strengthening and thread repair.

Howmet Fastening Systems' (HFS) Recoil manufacturing operations are located in Australia, with sales and warehouse facilities strategically placed in North America, Asia and Europe.

Recoil's product line features an extensive collection of precision inserts, high quality taps, versatile tooling and thread repair kits as well as complementary thread repair products. So whatever your thread requirements may be, Recoil will provide you with the perfect solution.

## What We Offer:

- **The most extensive range** of wire thread inserts and thread repair products in a wide variety of sizes and thread forms.
- **Ex-stock availability** on a huge variety of both standard and special products.
- **Optimum installation efficiency** achieved by the latest high precision tooling and years of development experience.
- **Comprehensive technical support** from our dedicated, multi-lingual European support team.
- **Commitment to the highest quality** products and operating systems:

AS9100, ISO9001, QS9000, TS16949:2002 accreditation. SBAC TS 157 approval. Ford Q1 status. Boeing BACI12AE qualification.



 <p>Traditionally Innovative</p>		 <p>QUALITY THREAD INSERT SYSTEMS</p>			
 <p>Extensive range of quarter-turn fasteners, tension latches, slam latches &amp; bespoke solutions.</p> <p>enquiries@hfsindustrial.com</p> 	 <p>Non-structural blind rivets available in a variety of materials &amp; complementary tooling.</p> <p>enquiries@hfsindustrial.com</p> 	 <p>A wide range of wire thread inserts, thread repair kits, complementary products and installation tooling.</p> <p>enquiries@hfsindustrial.com</p> 	 <p>High performance lockbolts, structural blind fasteners and complementary tooling.</p> <p>enquiries@hfsindustrial.com</p> 	 <p>Specialised cold forging and screw machining capabilities and a wide range of standard and special nuts.</p> <p>enquiries@hfsindustrial.com</p> 	 <p>Slotted nuts, bearing nuts &amp; special nuts made specifically to your requirements.</p> <p>enquiries@hfsindustrial.com</p> 

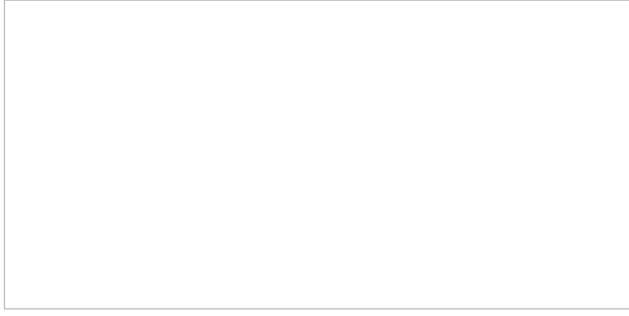
# Contact

## International Locations

**Telford Operations**  
 Unit C, Stafford Park 7,  
 Telford, Shropshire TF3 3BQ  
 United Kingdom  
 Tel: 44 1952 290011  
 Fax: 44 1952 290459

**Indianapolis Operations**  
 Howmet Fastening Systems  
 5436 West 78th Street,  
 Indianapolis, IN 46268, USA  
 Tel: 001 800 732 3470  
 Fax: 001 800 573 2645

**Melbourne Operations**  
 PO Box 144  
 Mount Waverley, Victoria, 3149  
 Australia  
 Tel: 61 3 9567 3321  
 Fax: 61 3 9563 1980



Disclaimer:  
 The information contained in this publication is only for general guidance with regard to properties of the products shown and/or the means for selecting such products, and is not intended to create any warranty, express, implied, or statutory; all warranties are contained only in HFS's written quotations, acknowledgments, and/or purchase orders. It is recommended that the user secure specific, up-to-date data and information regarding each application and/or use of such products.

HFS RA16 1008

© 2020 Howmet Aerospace Inc. and / or its subsidiaries. All rights reserved.

