



PROVIDING ADVANCED TECHNOLOGY TO THE FASTENER INDUSTRY

ISSUE 1 - 2018

Advantages of Genuine TRILOBULAR® & REMFORM® Fasteners Compared to Look-Alike Copy Substitutes

Occasionally genuine TRILOBULAR® or REMFORM® fasteners are replaced with look-alike copy products, typically when an assembler believes they can save on the cost of the fasteners. Making such a substitution is fraught with potential problems, some of which are outlined below. To begin with, on average, only 15% of the total cost of an assembly is attributable to the fastener cost. Most of the assembly cost, or 85%, is typically comprised of preparing the hole, tapping, cleaning, applying locking compound, driving the screw, operator cost and overhead. Don't be misled to think cheap fasteners will necessarily cut your assembly costs.

There are distinct differences between a genuine product and a copy. All genuine TRILOBULAR® and REMFORM® fasteners are produced by authorized REMINC licensees, utilizing confidential information, not available to non-licensed producers. This proprietary information is essential in terms of fastener quality and performance. Our trademarked fasteners are produced in accordance with REMINC technical manuals, outlining all critical dimensions and specifications. REMINC licensees are privy, not only to design specifications, but to application data, allowing them to propose the best design suited for an assembly application. Keep in mind every genuine TRILOBULAR® or REMFORM® fastener is application-specific.

REMINC doesn't publish or share confidential information and technical know-how with anyone but licensees. Non-licensed manufacturers are ill prepared to approximate a genuine product. REMINC licensees procure their heading and rolling tools from authorized sources, guaranteeing all product will be made within specification. Non-licensed producers can only "reverse-engineer" and/or approximate tooling required to produce a particular fastener design. Genuine products cannot be produced without this confidential know-how. In addition, REMINC staff provide on-site technical and manufacturing support upon request. We make every effort to ensure our licensees produce fasteners that are within our dimensional and performance specifications.

Our focus on quality extends to our systematic audit of our fastener licensees. We regularly solicit and receive fastener samples from licensees' production lots. Samples are checked for all critical dimensions and hardness, then driven into nuts to check actual performance. Variations from specifications are reported and subsequent samples are required and inspected to be sure on-going production is 100% correct. Quality Conformance Certificates are sent to licensees whose samples meet all technical specifications. This procedure provides assurance that all genuine TRILOBULAR® and REMFORM® fasteners, produced by licensees globally, will be uniform in design and ensure excellent, consistent performance on the assembly line. This comprehensive process assures the end-user assembler they will attain real cost-savings by using genuine TRILOBULAR® and REMFORM® fasteners!

LICENSEE FOCUS

Commercial Steel Treating Corporation Madison Heights, MI, USA

www.commercialsteel.com

Founded in 1927, Commercial Steel Treating is one of the largest heat treating facilities in the USA, and registered to ISO9001:2015. Commercial is licensed by REMINC to provide quality selective-hardening and tempering of CORFLEX-1™ fastener sizes M8 - M14 in lengths 1 to 6 inches under head.

Barton Coldform (UK) Ltd. Droitwich Spa, Worcestershire, UK

bartoncoldform.co.uk

Barton, a unit of Optimus OE Solutions, LLC, is a well-established supplier of innovative cold-forged products to the automotive and electronic industries. Now licensed to produce the full range of TRILOBULAR® fasteners, Barton is positioned to fulfill your thread forming fastener requirements.

Lamistahl Productions GmbH Neuwied, Germany

www.ls-boesner.de/home.html

Lamistahl, successor to Boesner, has been a manufacturer of fasteners for many years, primarily furnishing customized products and TRILOBULAR® fasteners to the automotive industry. Licensed for TRILOBULAR® products, Lamistahl is equipped to meet your thread-forming fastener needs.

Industria Metalurgica Max Del Ltda. Sertaozinho, Maua' SP, Brazil

www.maxdel.ind.br

For over 31 years, Max Del, with a commitment to quality and service, has been producing screws, rivets, pins, studs and special cold-forged parts to the Brazilian industry. Max Del is licensed to manufacture & sell TRILOBULAR® fasteners and invites your inquiries.

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| Lab Technician Gabriel Pagan | Administrator Intellectual Properties Suzanne Lilly | | Director Financial Administration Beth Rondeau | Executive Assistant Kelli Russ | Associates Ralph Barton Ken Gomes Bill St. Angelo |

REGISTER

The Modern Evolution of the Automobile, by Ralph Barton

There are many conversations these days about plug-in or all-electric vehicles (EV), those powered only by rechargeable batteries, and their replacing today's automobiles powered by internal combustion engines (ICE). Many factors contribute to the theory this transition will occur more quickly than anticipated. In North America, Tesla is certainly the pioneer and leader, already selling an all-electric vehicle and developing a huge battery-building capability. The appeal of fewer environmentally-damaging emissions provides impetus behind Tesla and others like GM, Ford, BMW, VW and Volvo, who are also making huge investments in the development and production of similar vehicles. France, Britain and 8 other European countries have declared they will prohibit ICE vehicles by 2050. The European Union has passed a resolution to reduce CO₂ emissions by 30% by the year 2030. Furthermore, the recent discoveries of deliberate diesel-emission cover-ups in Europe will probably provide increased motivation for the major auto builders to move ahead with all-electric vehicles. And in China, the largest vehicle market, the government is providing new incentives to own all-electric vehicles, resulting in 578,000 EV being produced in 2016 representing 2.7% of total automobile production. The handwriting is on the wall, and all-electric vehicles will probably be the future, but the open question is how long will it take to replace ICE vehicles to a significant degree? Many challenges need to be dealt with before this conversion becomes widespread or commonplace, but surely the transition will occur in time. One huge change will be the demise of "gas stations" as we know them and the development of a charging infrastructure with thousands of charging locations, strategically located on highways, in parking lots and shopping centers, and at hotels and homes, etc. The development of wireless power transfer (WPT) would help overcome this issue, if for example, charging wires were imbedded in roadways to provide the charge; but this technology would take years to implement and huge investment. Another challenge will be increased demand on power generation to support these new charging devices and lighter, longer-lasting batteries need to be developed and commercially produced to increase the driving range and reduce charging times. Numerous other issues need resolution as well.

Witnessing these on-going discussions, my thoughts have been focused on the impact of the all-electric vehicle on our licensees and overall program. I don't know how the automobile industry will react, but I'm confident they have already given serious thought to how the transition should play out. No doubt, the internal combustion engine-transmission powertrain will completely change along with all the ICE ancillary components. A whole new industry of electric motor propulsion will develop. Body and chassis assemblies should be similar if not the same, and much of the electronics should be similar but probably more elaborate and complex. Present-day auto repair shops will need to transform

themselves as well. Suspension, brakes, tires and HVAC systems' maintenance, as examples, will be similar but more skilled technicians will be needed to deal with the more complex computerized control systems. It is also predicted that shortages of some materials may occur, such as cobalt, used in batteries, and copper, used in wiring, motors and electronics. Autonomous vehicles will also have an impact on this evolution, necessitating production of computerized equipment required to "drive" them. An overlay of Uber and Lyft-like ride-sharing services will also create changes in the demand for ICE vehicles, as well as auto-build volumes and improved vehicle life due to a better utilization of fewer vehicles, adding to the uncertainty of timing.

The question I raise, is how and when will this evolution affect the fastener industry and our position in it? The reality is major change, which will take place over many years for a variety of reasons. Keep in mind there are currently about 72 million ICE vehicles produced annually globally, with EV vehicles constituting less than 1% of the total vehicle market. It will take considerable time to develop significant EV production capability globally. Hundreds of automobile assembly plants and thousands of component supply facilities will have to retool. The conversion to all-electric will be gradual as the consumer will be slow to convert, unless pro-electric government regulations force the transition. In the US, it's likely the current \$2500-\$7500/vehicle tax credit could be eliminated, reducing affordability and adversely affecting EV sales. The production cost and selling price of EV will have to be reduced substantially to be competitive with ICE vehicles. There will also likely be some inertia in the ICE-EV transition due to a 100-year culture of ICE vehicles, as we tend to embrace technological change slowly. Furthermore, oil companies, working with automobile builders are developing lower viscosity lubricating oils to reduce friction and improve ICE performance. These factors allow time for our end-users and licensees to make necessary adaptations and continue to be significant participants in the vehicle supply chain. Some vehicle assemblies will be redesigned, others made obsolete, but many new designs will be created, all of which will provide endless opportunities for thread-forming fastener applications. Just one example will be the increased need for reliable grounding fasteners and our product portfolio offers some good options. And the construction of tens of thousands of charging stations will provide additional thread-forming applications.

I have no doubt we'll see this ICE-EV transition develop, but the time required to accomplish the many objectives and overcome numerous obstacles will allow us and our licensees to adapt and continue to be important players in the automobile industry, well into the future.

THE ORIGINAL FORD F-150 BOX BOLT-ENGINEERED FOR CHANGING DEMANDS, by Ken Gomes

In the REMINC REGISTER Issue 1-2004, the lead article was entitled "CORFLEX®-'I' TAPTITE II® Bolts Solve Costly Problems on America's Highest Volume Vehicle". In 2004 Ford Motor Co. was installing machine screws into pre-tapped floating nut members to secure the bed box to the chassis of F-Series™ pickup trucks. Even by using a floating nut to improve hole alignment, the machine screws frequently cross-threaded, resulting in rework and assembly delays and associated costs. The CORFLEX®-'I' TAPTITE II® "box-bolt" was introduced at Ford Motor Co. in the mid 1990's to solve this costly problem. Because CORFLEX®-'I' TAPTITE II® thread-rolling fasteners form their own mating internal thread upon insertion, cross-threading is totally eliminated. An additional benefit of using CORFLEX®-'I' TAPTITE II® thread forming technology is the cost-savings due to elimination of the nut tapping operation. This CORFLEX®-'I' TAPTITE II® "box-bolt" was originally designed with a special low head height to fit within the corrugated design of a high-strength steel truck bed. A special rounded-edge washer, that minimizes paint damage during insertion, was incorporated; the TORX-PLUS® recess improved drivability and the cone point helped to align the floating nut member. The CORFLEX®-'I' TAPTITE II® "box-bolt" provided a very sophisticated fastening solution, demonstrating the problem-solving and cost-savings benefits of CORFLEX®-'I' TAPTITE II® thread-rolling fasteners.

Ford Motor Co. highlighted this application in an advertising campaign for their newly-designed 2004 model year pickup truck, as just one example of the engineering that goes into producing America's highest volume vehicle, the Ford F-150™ truck. The editors of Motor Trend and Road & Track magazines featured these advertisements in their Fall 2003 issues. The Ford 2017 & 2018 F-150™ trucks have undergone significant changes since 2004. In addition to styling changes, and the addition of technological features, the truck is manufactured from high-grade military-grade aluminum alloy. The "box bolt" is now our TAPTITE 2000® design. An additional aluminum washer has been added to minimize corrosion. Several CORFLEX®-'N' TAPTITE 2000® bolts are used in standard applications on the new Ford F-150™ truck. The nut members are large aluminum, multi-blow extrusions. The TAPTITE 2000® "box bolt" is a good example of a well-engineered application that can adapt to changes and withstand the test of time!

2004 Ford F-150®



2018 Ford F-150®



SPOTLIGHT ON GABRIEL PAGAN



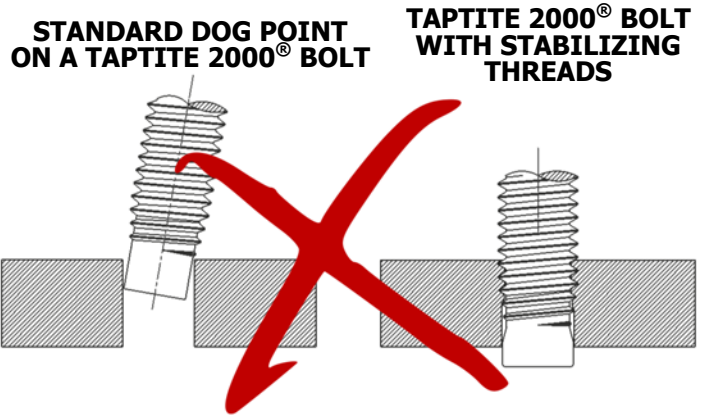
Gabriel joined the REMINC staff in 2017 as a laboratory technician. REMINC takes pride in our ability to provide quick comprehensive fastener testing for our licensees and end-users. With an ever-increasing demand for application assessment and product recommendation, Gabriel will allow us to continue to provide the same level of service you have come to expect.

COMING SOON!!

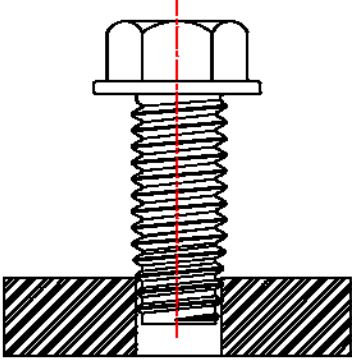


Correction to Ergonomic and Design Advantage of TAPTITE 2000® Bolts

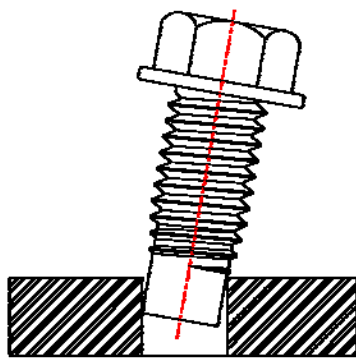
In Issue 2, 2017, in the article of "Ergonomic and Design Advantage of TAPTITE 2000® Bolts", the drawings shown were incorrect on some of the REMINC Register and CONTI Courier publications.



TAPTITE 2000® BOLT WITH STABILIZING THREADS



STANDARD DOG POINT ON A TAPTITE 2000® BOLT



The correct drawing shows the benefit of the stabilizing threads on TAPTITE 2000® bolts and the inefficiency of a standard dog point when used on a TAPTITE 2000® bolt.

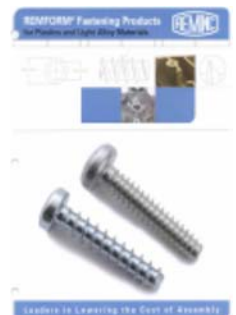
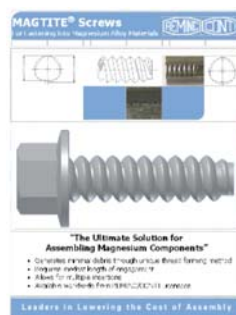
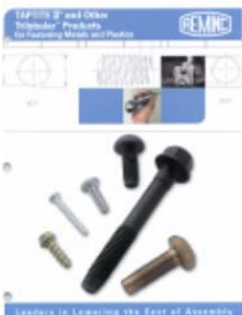
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1958 - 2018
Celebrating 60 Years
Lowering the Cost of Assembly



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