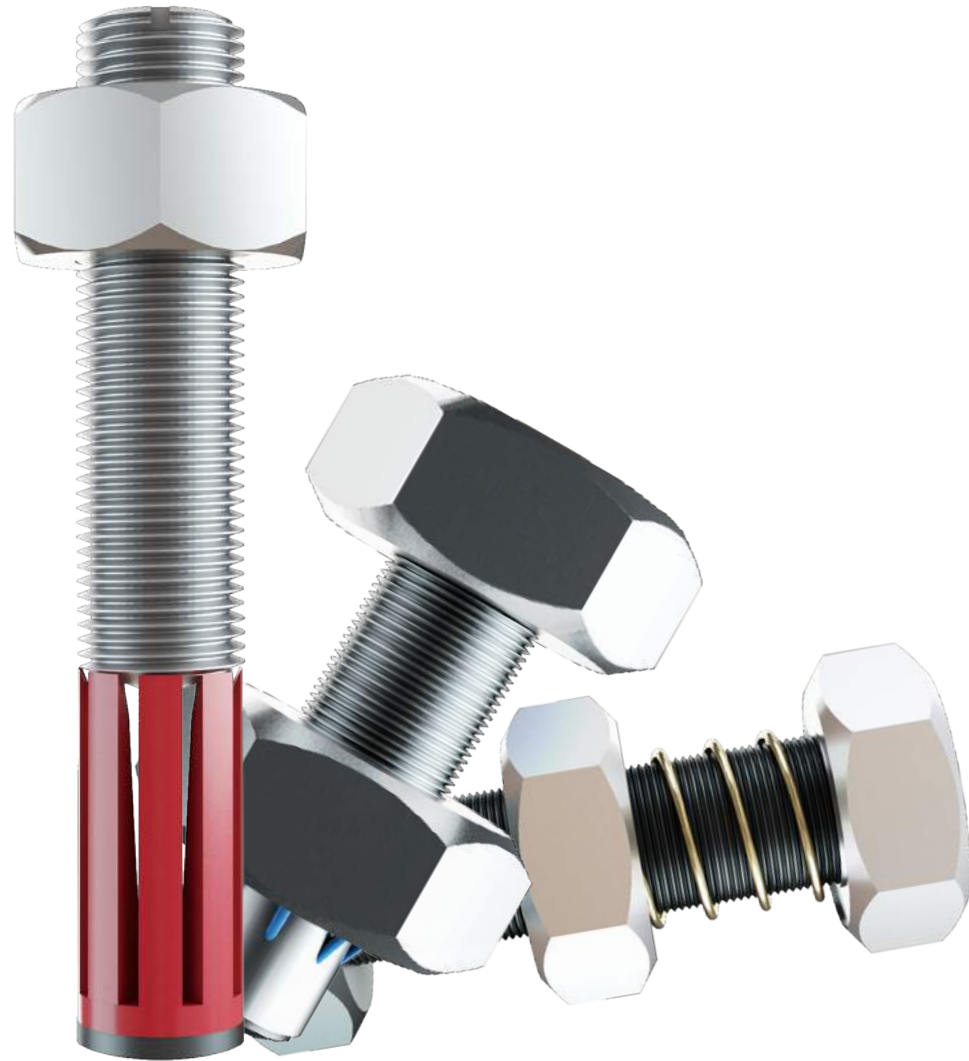


COREBOLT

www.corebolt.co.kr



CORE BOLT | CORE LOCK | SPRING LOCK

CoreBolt/CoreLock/SpringLock are inventional and functional fastener products. To commercialize and apply such innovative products in the industry, it goes through substantial efforts as well as certified procedures.

Bolts/Nuts are considered as the basis of the mechanical industry, however the general fastening method during the past century has not significantly developed due to regulation such as standardization.

Regulations in the industry should be strengthened in terms of safety; however it should be relaxed in the perspective of change and innovation. These opposite tendencies are similar to the characteristics of bolts and nuts that should be fastened, but be loosened as well.

Compared to the existing methods, we sought to improve the wall plug mounting method and solve the nuts loosening issue. We have invented the physical locking device to bolts and nuts, and would like to evaluate it as an innovative technology developed in terms of safety guarantee.

With entrepreneurship and innovative technology development, we would like to share our prosperity with all of you in the world.

Director, **Kim Young Kwon**



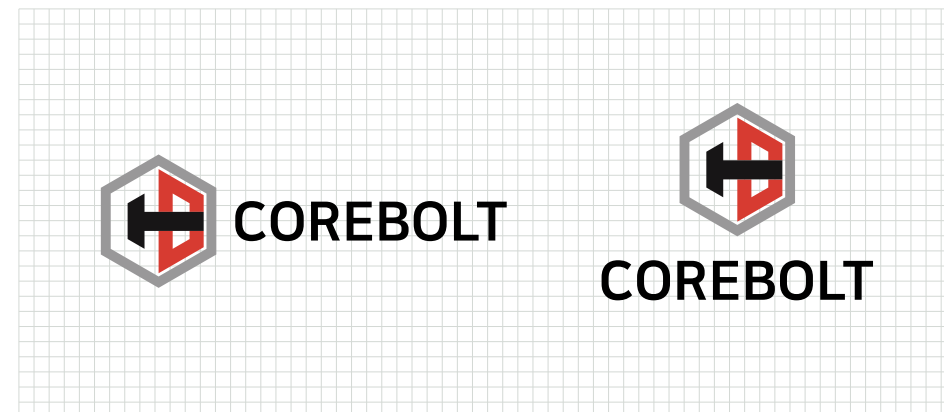
Symbol Mark

This is the element that displays symbolic features and formative expressions most brilliantly. To prevent damage of image due to abuse, please observe the regulations and principles by following the application of the symbol mark.

Logo Mark

Logo Mark is developed considering the formative features of “core bolt.” The typeface is developed based on Nanum Square ExtraBold. For effective communication, it combines with the symbol mark in principle.

Trademark application : 40-2017-0094493



RAL 7001

RAL 2002

RAL 9017

Certification and Registration



Business Registration Certificate



Membership Card of Korea International Trade Association

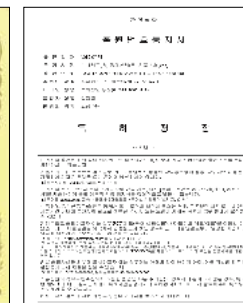
Intellectual Property (Patent/Utility Model/Design/Trademark)



Utility Model Registration (Germany)



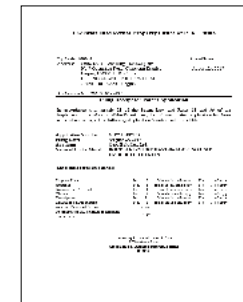
Utility Model Registration (Japan)



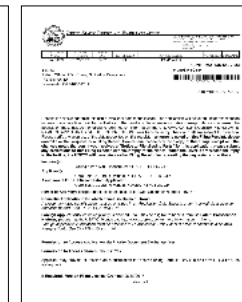
Patent Application (Core Bolt)



PCT Application (Core Bolt)



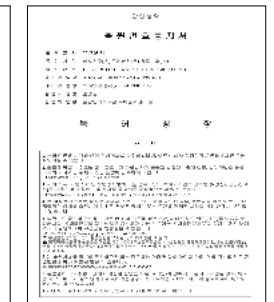
Utility Model Registration (China)



US Patent Application



Patent Application (Core Lock)



Patent Application (Spring Lock)



PCT Application (Spring Lock)



Trade Mark Application (Core Bolt)

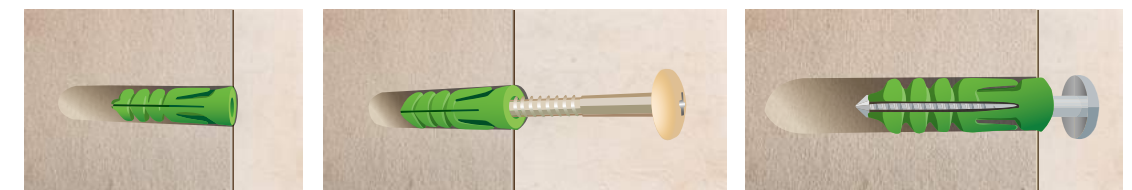


- 07 | CORE BOLT Story
- 10 | CORE BOLT Assembly
- 11 | CORE BOLT Finish Caps
- 12 | CORE BOLT Picture
- 13 | CORE BOLT Benefit
- 14 | CORE BOLT Method
- 15 | CORE BOLT Application

CoreBolt refers to one-way directional bolt structure with pressure mounted on both sides to prevent bolt loosening during small or big vibrations. Generally, bolt fastening works in a two-way direction which means bolt head and nut are pressing each other from opposite directions to create the torque - physical friction to prevent a slip-off. But at offices or houses, plastic anchors and screws are used based on friction fastening mechanism but unfortunately which can create some gap in the concrete wall due to thermal heat or an installation miss. The gap can lead to loosening of nuts, the torque value of which is never recovered after the gap. This structural weakness over the passing of time can affect integrity of hanging for objects like shelves, projector, kitchen lightening, kitchen table lightening, height-adjustable desk, kitchen upper shelves, and wall-hanging air conditioner, (heating) fan, and TV - that is if just plastic anchor and screw were used.

There are many times when the screw is improperly inserted to the wall without the needed friction and even if the screw is fixed properly, its applicable load can be too little. Also, there is a high chance that fixed screw becoming loose and falling from vibrations like an earthquake - a major cause of casualty and property damage if objects or installations are falling. Not just earthquake but a thunderstorm and a cyclone can knock off store signages from the outer wall that are often thin, easily-breakable brick walls, many times corroded over time. So in severe windy condition, store signages attached to the wall bricks only by plastic anchors and screws can wreak a big havoc from falling.

CoreBolt, on the other hand, makes sure wall-hanging objects and furniture are directly connected and fastened to the CoreBolt to prevent a screw from slipping off. Pressure adjustment through expansion and contraction allows nut release without a wall damage and CoreBolt is a good fix method when installation work can be done at only one direction because of building's structure or inaccessibility.



Wall plug and Screw

Kitchen shelves, bookshelves, light and other objects attached to the wall or ceiling are vulnerable to vibrations.

High likelihood of objects falling to the ground during an earthquake can pose a grave harm to people's safety. There is something called expansion anchor that may function similarly but it can be applied only to fix the floor or heavy structures which are usually not the case of household. Also, expansion anchor cannot be applied to hollow wall but only to a concrete wall, much narrowing the scope of applicability. Unfortunately, there is very little study conducted for anti-vibration design for indoor structures whereas seismic architectural design study is quite active all around.



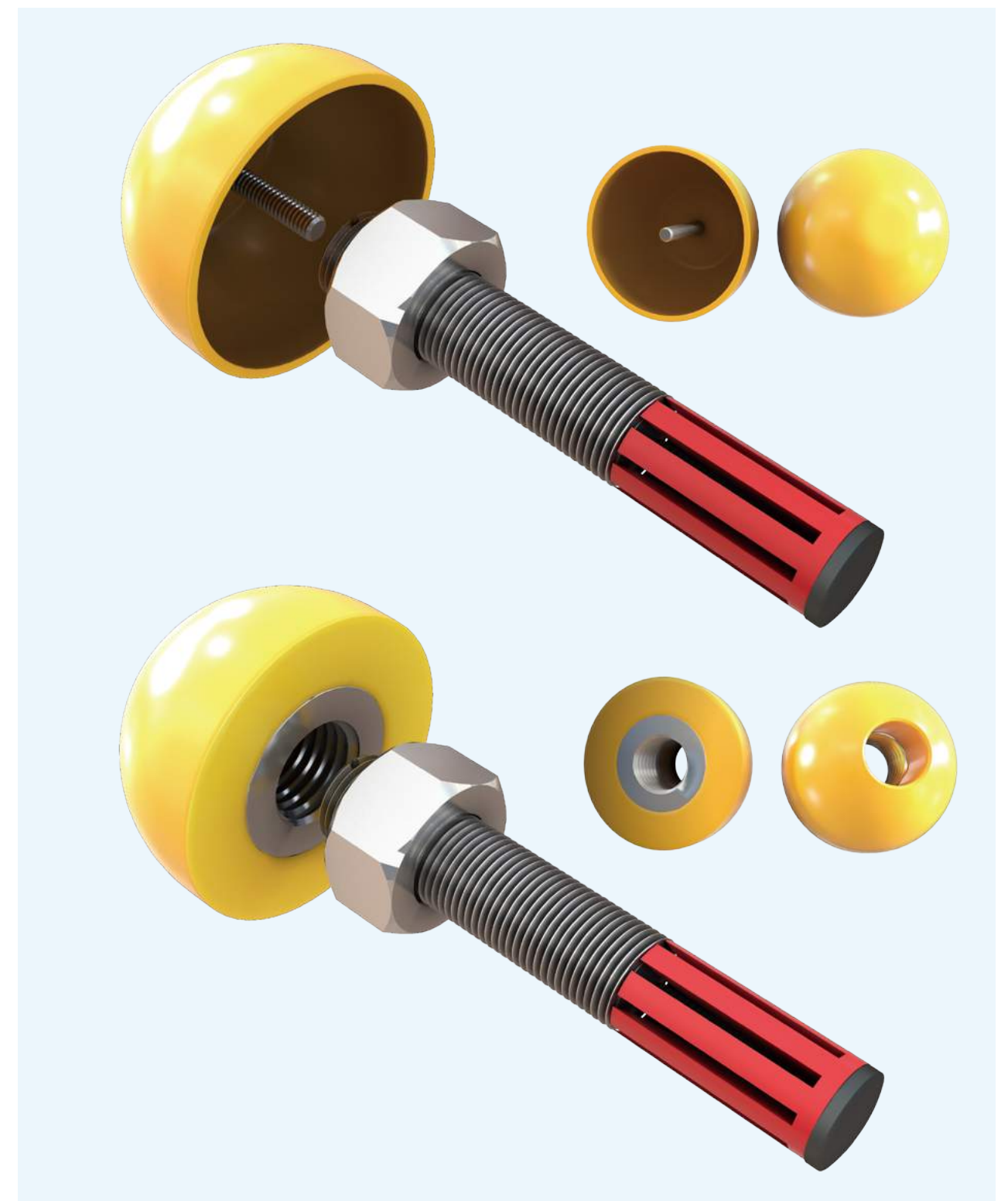
Indoor Damage from Earthquakes 해

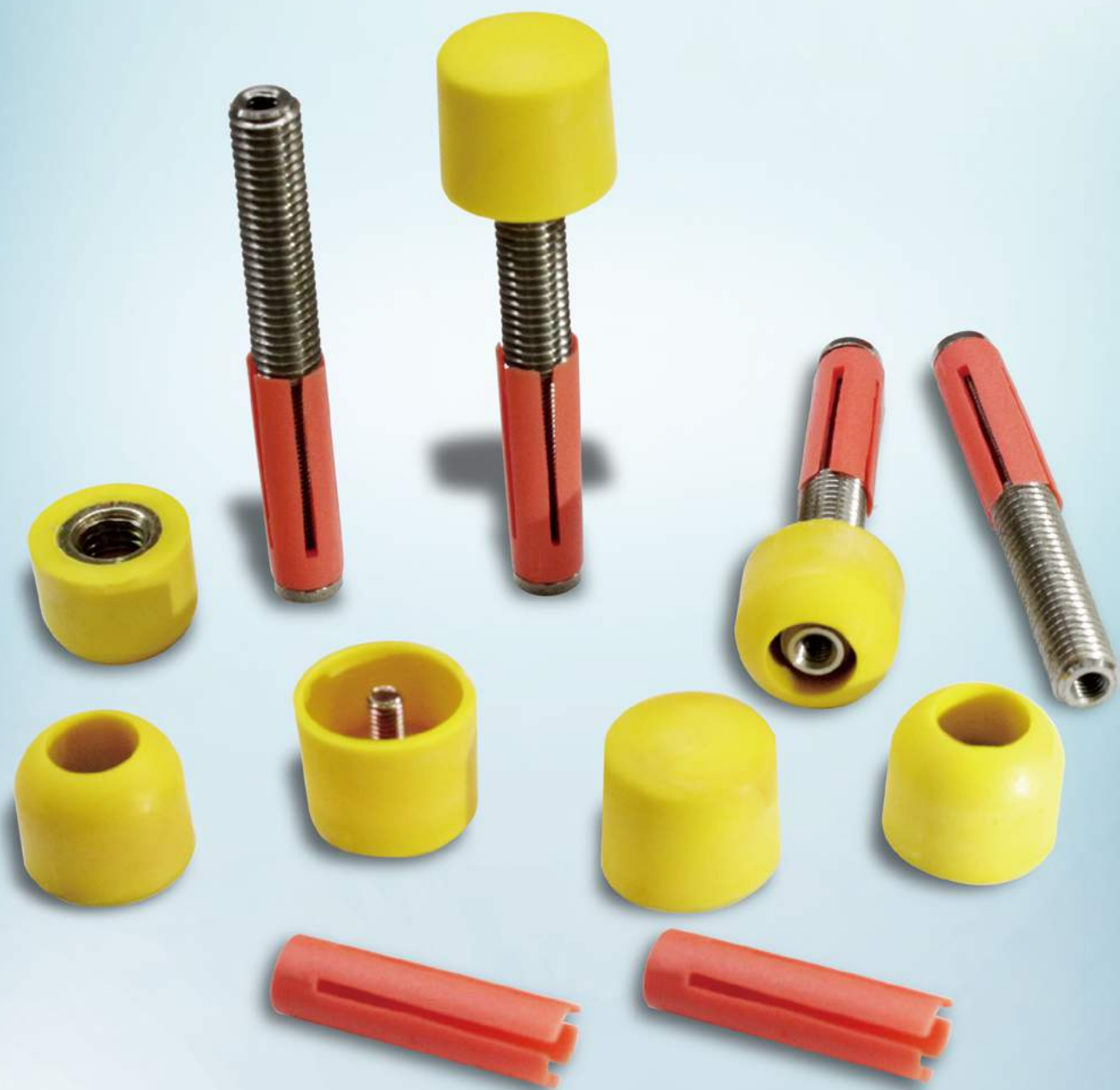


Sign board collapsed by Typhoon



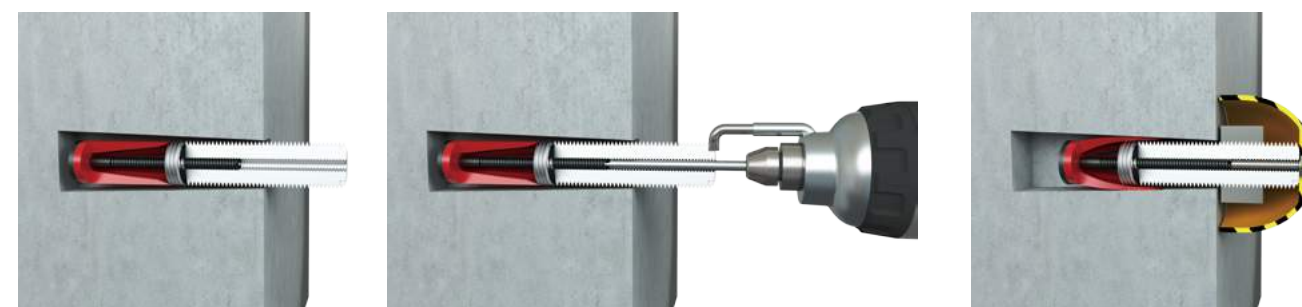
CORE BOLT Assembly





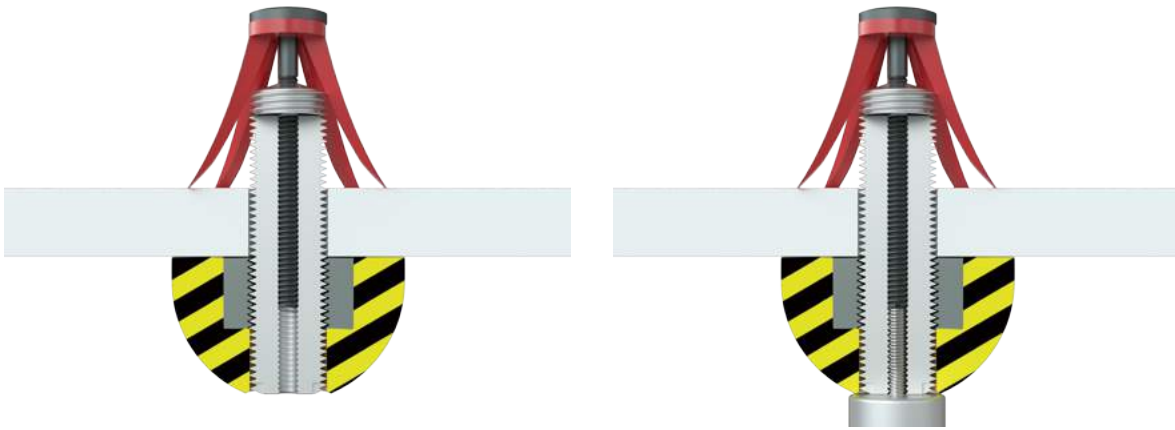
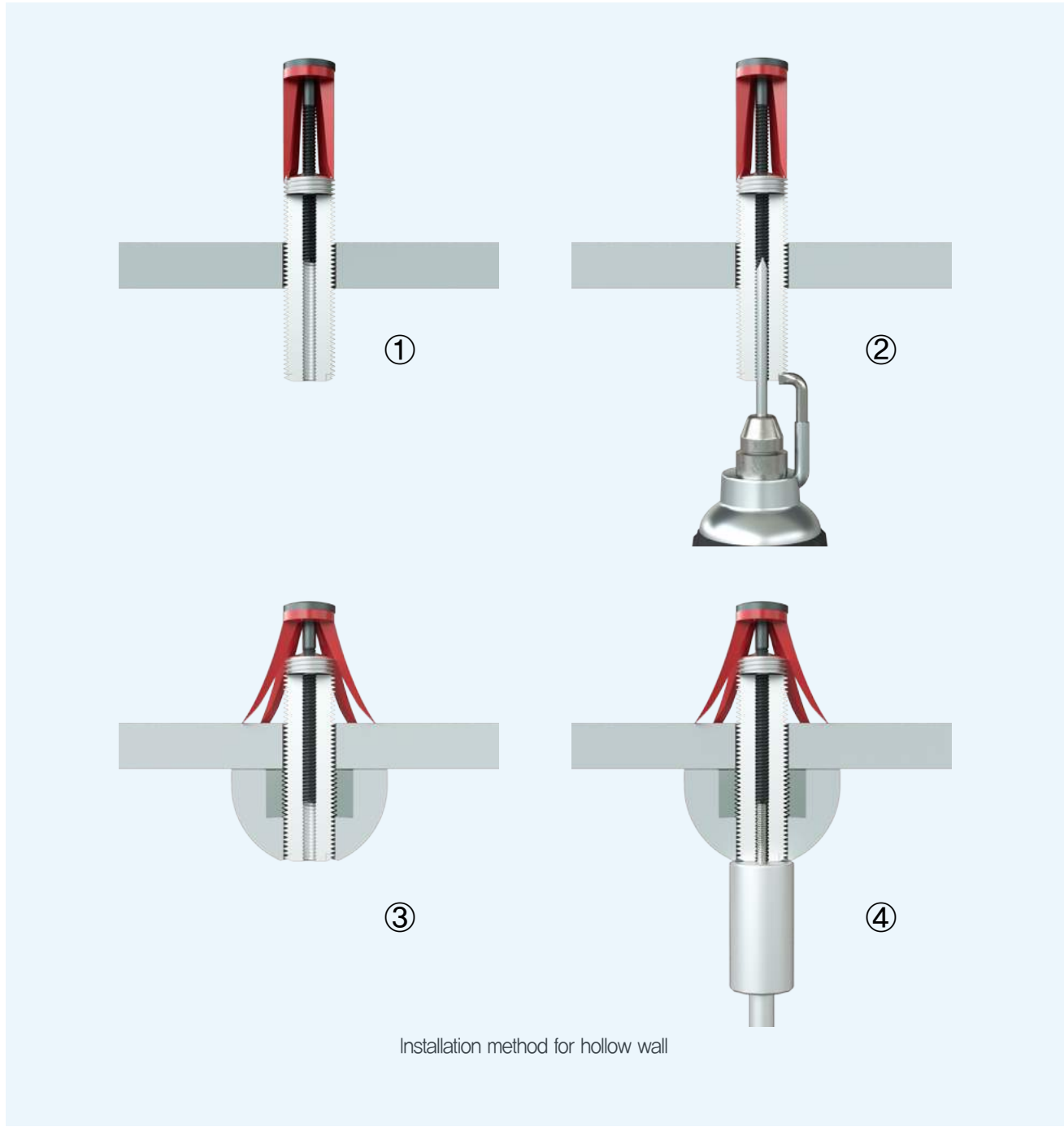
CORE BOLT Picture

Safety	<ul style="list-style-type: none"> ■ Increase pressure by additional fastening when gaps in hole occurs. ■ Anti vibration feature (bi-directional torque) ■ Secure high safety with increase of object load
Cost Saving	<ul style="list-style-type: none"> ■ Cost Saving Effects to consumer products using corebolt by eliminating brackets for wall mounting(direct screw joint into base bolt without bracket) ■ Applicable for both hollow wall and concrete wall ■ Easy dismantle without being destroyed and reuse(replace the locking unit only)
Aesthetics	<ul style="list-style-type: none"> ■ Applying the end caps, bolt and nuts are not exposed to outside and excellent finish for interior.

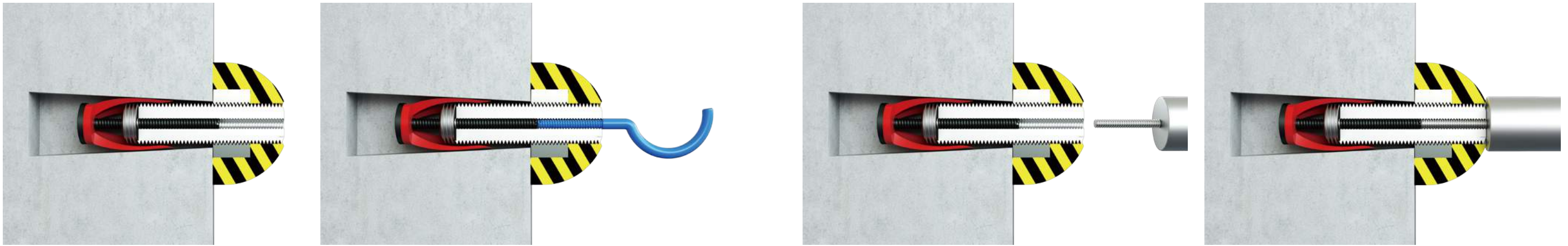


installation method in concrete wall

Application	“by using Corebolt to install the kitchen light, point light, rail light having wire connection to the ceiling(hollow wall), no bracket required as direct screw joint into the base bolt.
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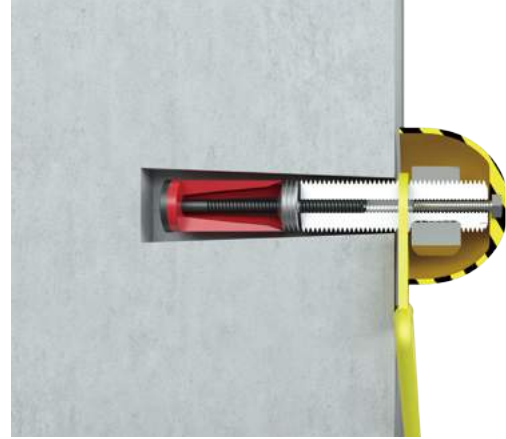
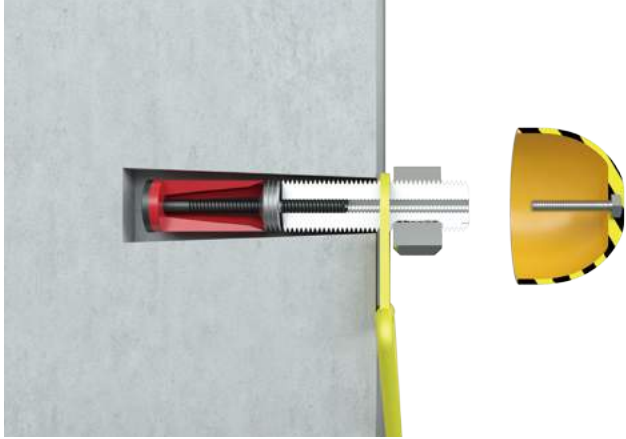
Application (Kitchen Light)



Application (Bikeport)

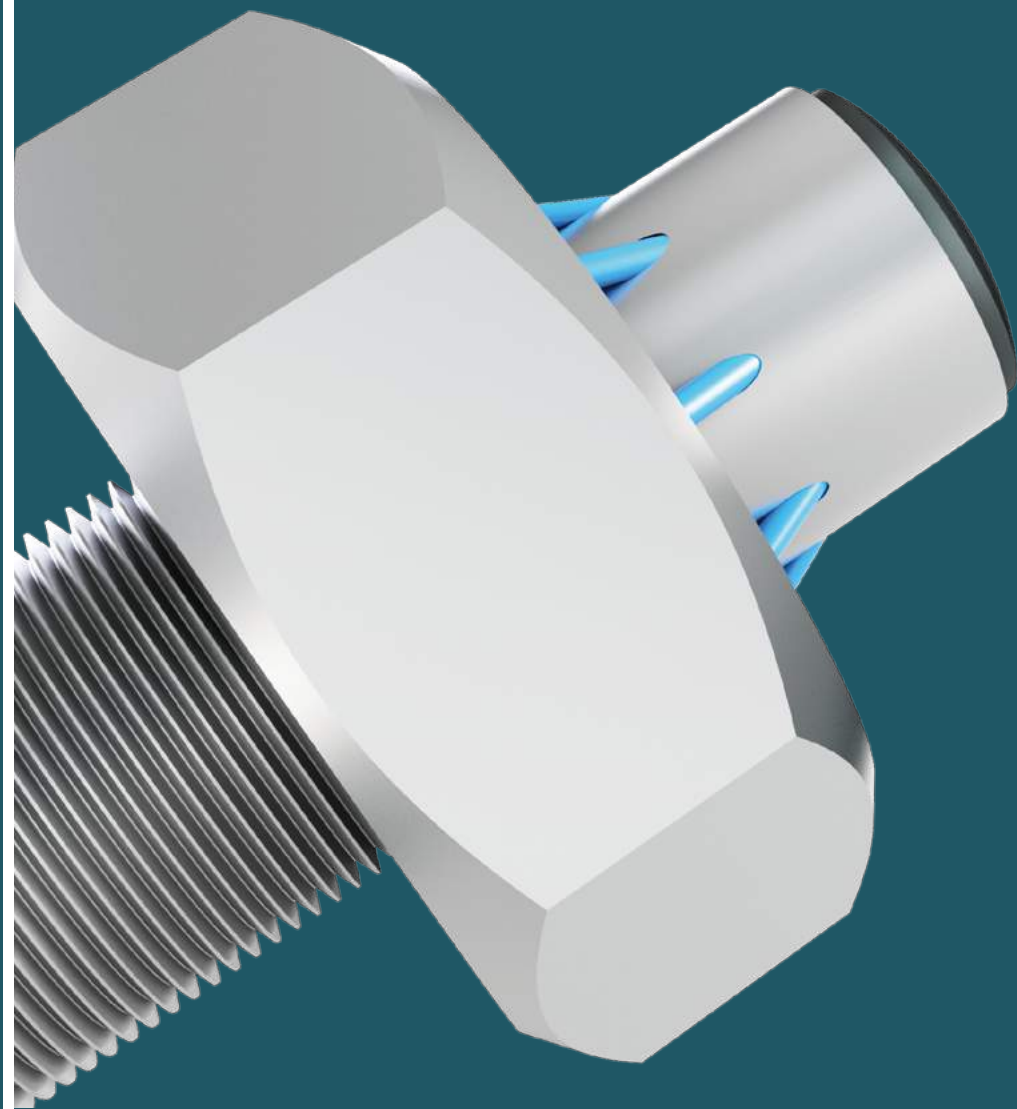


Application (Curtain Rod)



Application (Frame Hanger)

Application (Frame Hanger)



21 | CORE LOCK Story

23 | CORE LOCK Application

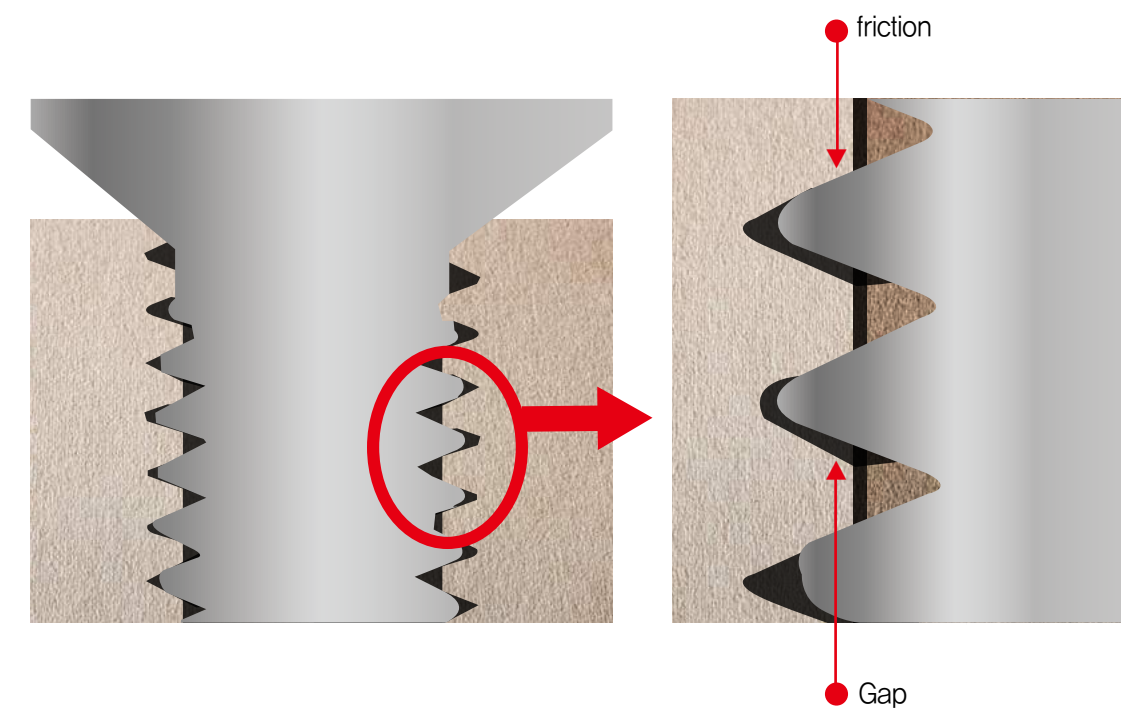
25 | CORE LOCK Method

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Bolts should be fastened but at times it should be also loosened for the release. Bolt and Nut works by two opposite principles, one side of screw thread generates the friction to be fastened while the other side makes a gap to be released

by this gap mentioned on the other side of screw thread, the fastened bolt may be loosened in a vibrant environment and it causes the fatal accident especially derailment and therefore many techniques of anti-loosening and of increasing torque resistance have been developed.

Spring Washer, Nord Lock Washer, Torque Shear Bolt and chemical injection bolt are good options to take. But with an exception of chemical injection bolt - injecting chemical to fix the nut but which has to be destroyed to release the nut during a repair job - all other options that work on mechanism of increasing torque value can still fall short: being loosened from a series of strong vibration or stolen by outsiders. CoreLock was developed to address the problem: a strongly fastened bolt with a lock function to prevent being stolen.



Theft Prevention Function

Bolt and nut conjunction can be easily installed and released with a spanner bought at the market. However, CoreLock bolt and nut cannot be easily disassembled without the proper tool or knowledge to release. There are many cases of stealing road signs in underdeveloped countries so CoreLock added to other bolts can be a strong theft-preventive strategy.

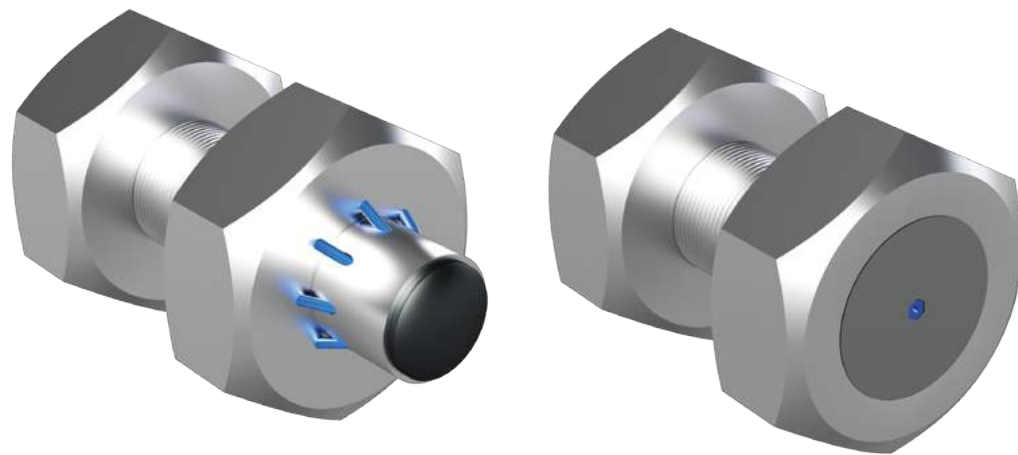


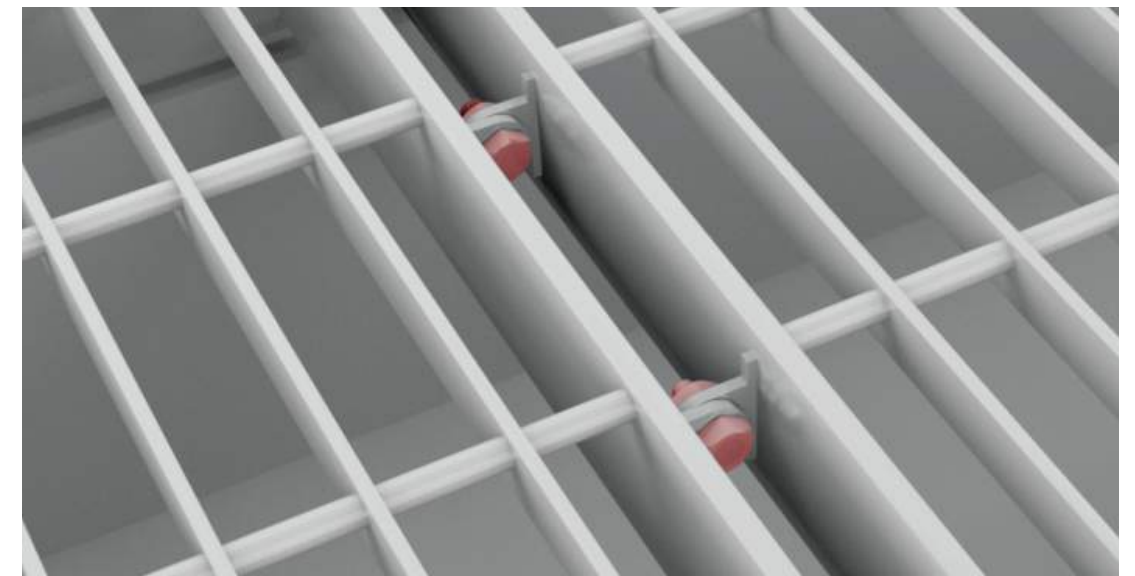
Figure of Core Lock

Anti-loosening Function

While other nut and bolt's anti-loosening relies on increasing fastening torque value, CoreLock locks the nuts permanently unless released by a specific tool. All nuts, in theory, can be loosened during vibrations due to limited friction on the thread of screw and the resulting gap. Spring washer is there to increase friction area but a continuous vibration can still shake off the tight grip - which makes CoreBolt more attractive for vibration-continuous structures

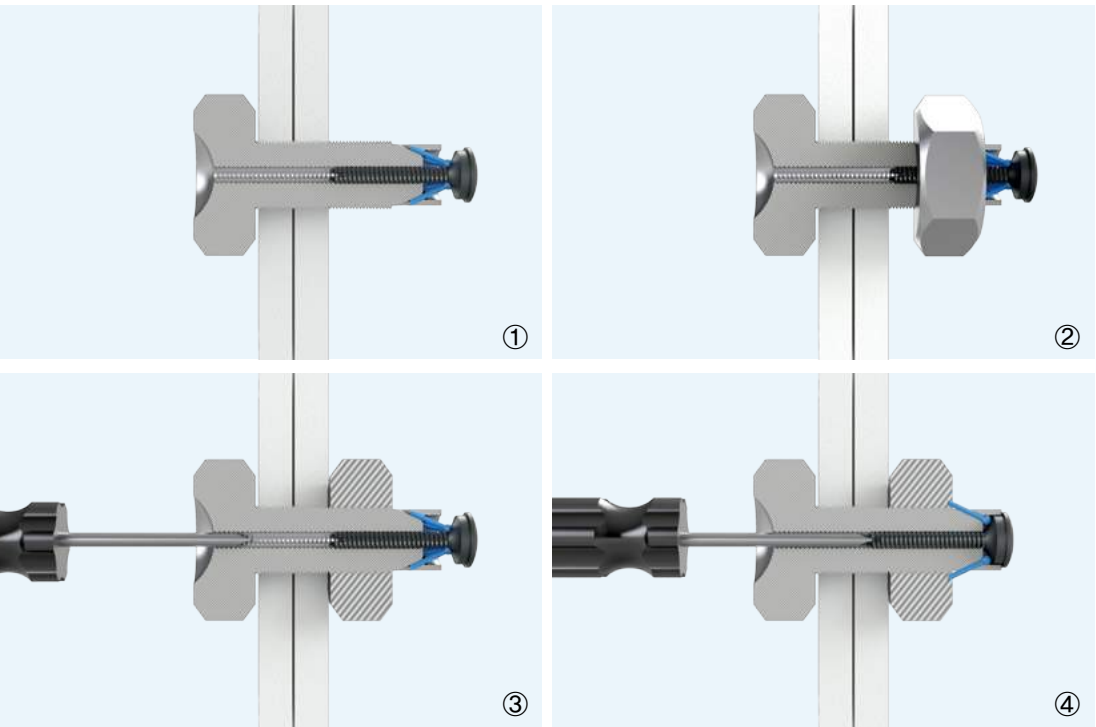
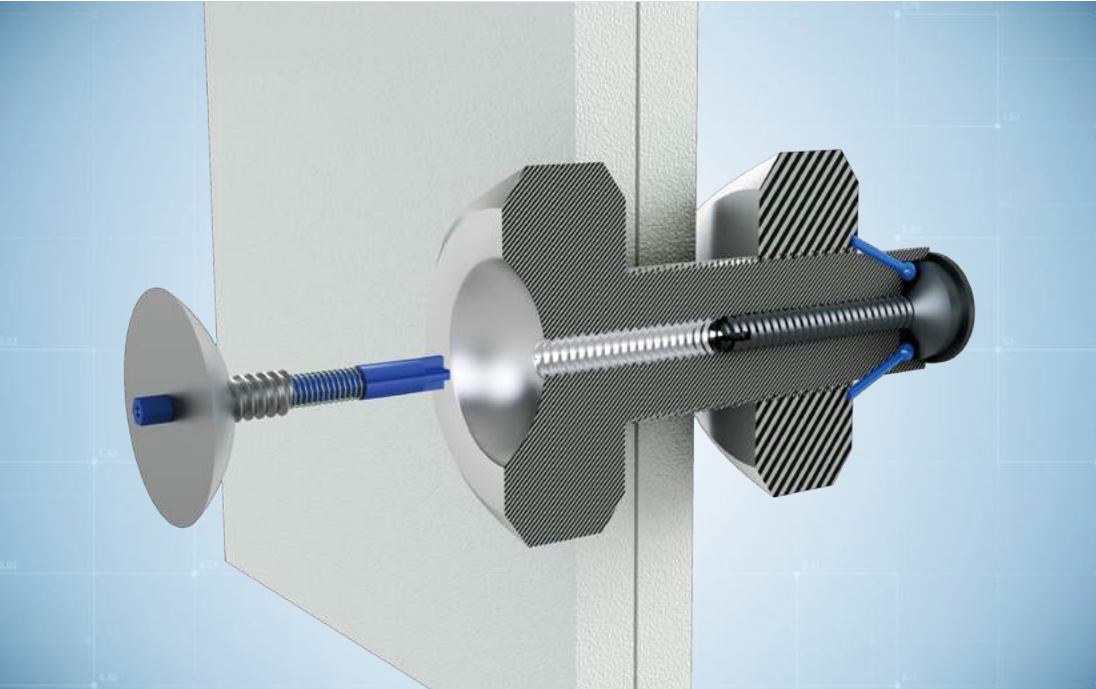
With CoreLock, a permanent lock-in of nuts is possible even for vibration-constant bridges, bridge piers, and railroads without having to damage the nut for a release. It can also drive down the repair and maintenance cost. Also, at a nuclear power plant or a chemical plant where even a small mishap can be fatal, nuts are prevented from loosened or stolen with a lock system.

Application of Core Lock

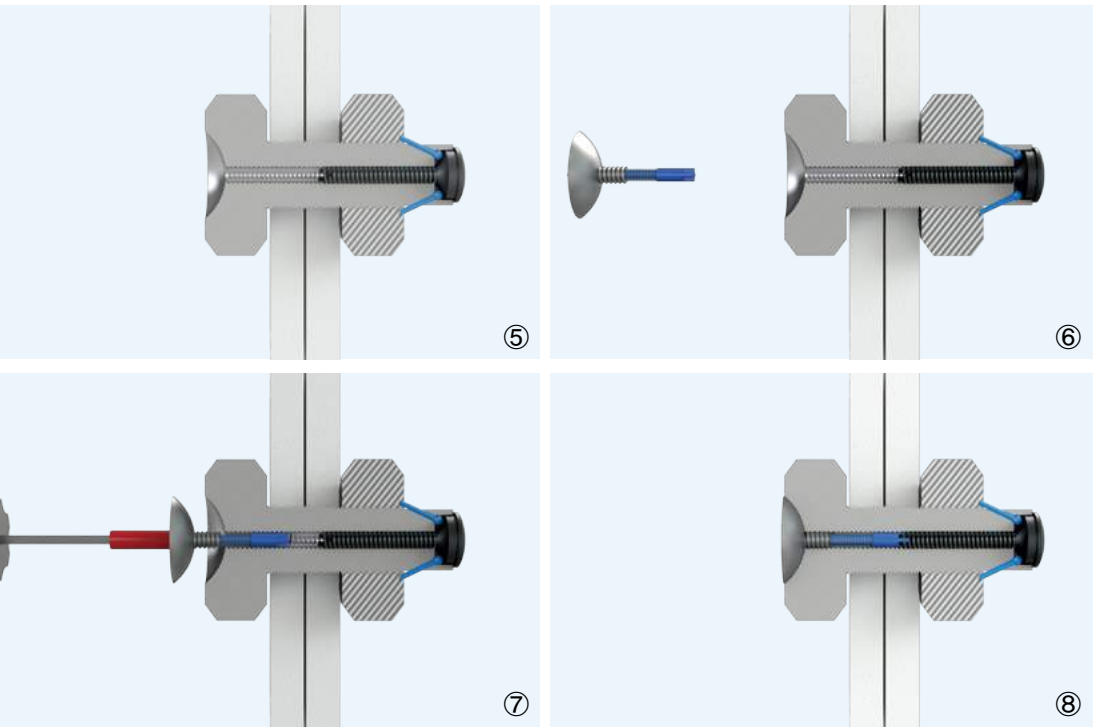
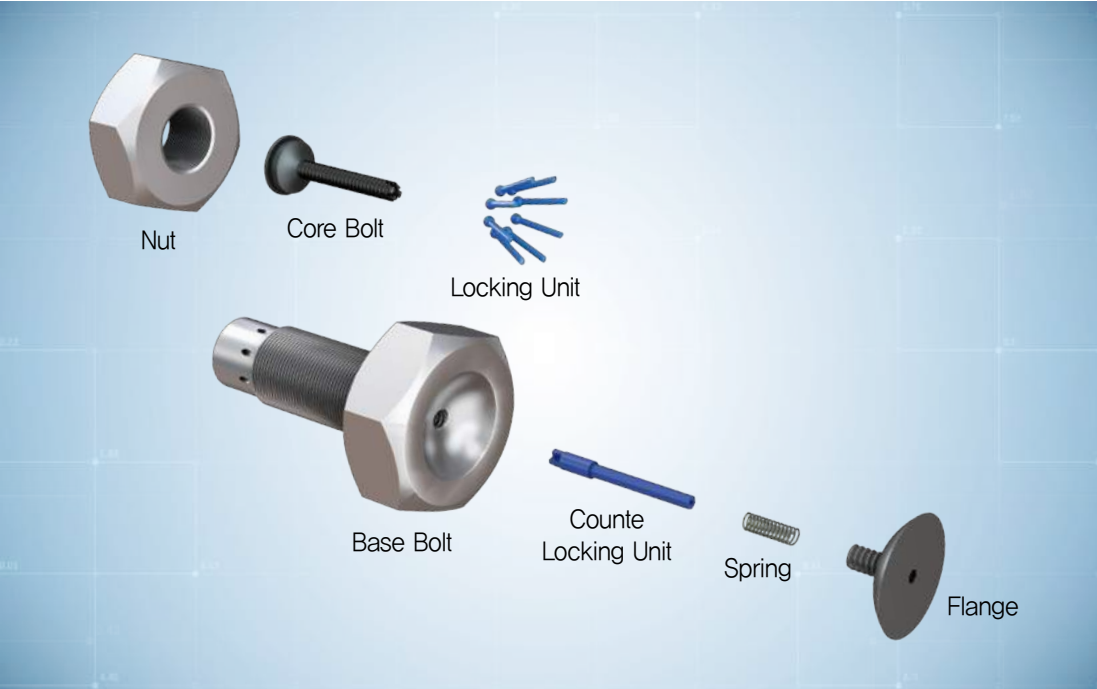


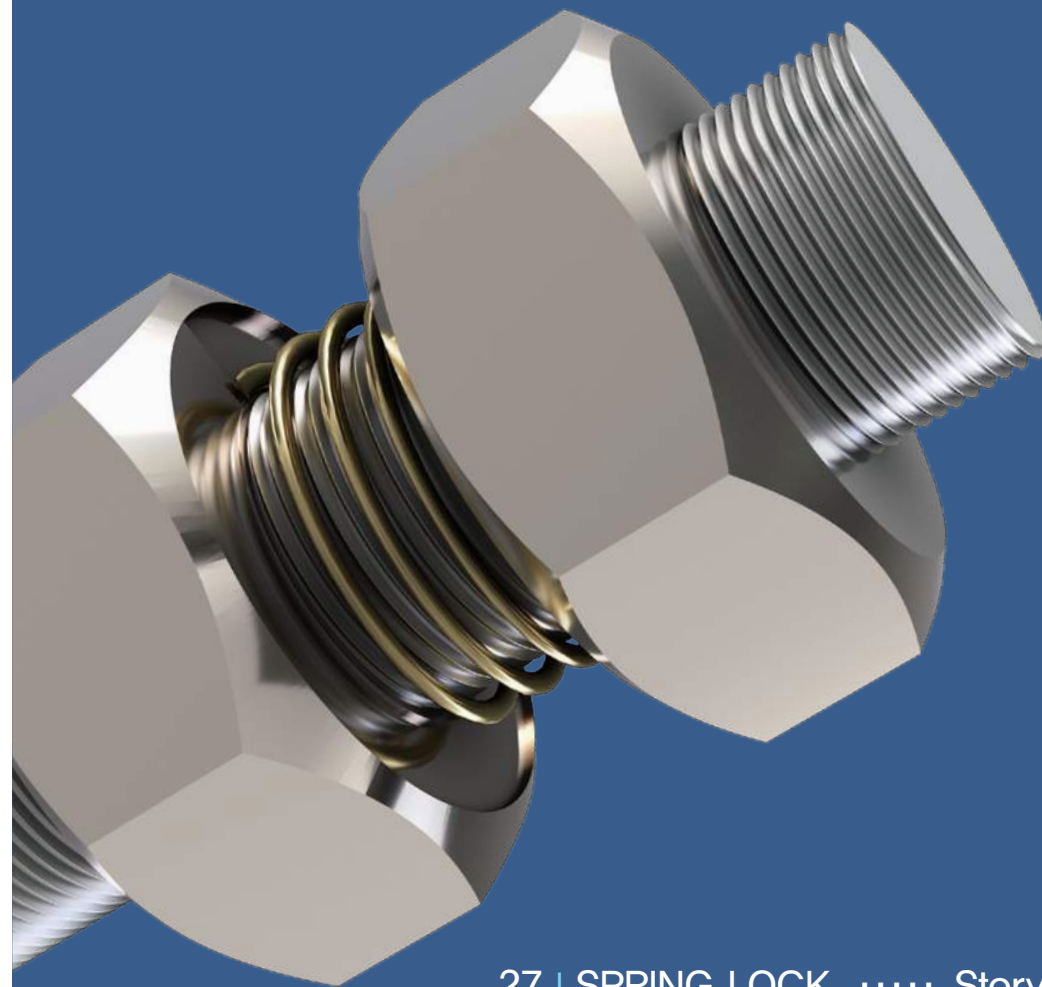
Steel gratings are most frequently stolen road installations and if a grating is fixed by many general bolts and one CoreLock, it can substantially lower the attempt or actual stealing rate.

Installation Method of Core Lock



Core Lock Assembly





27 | SPRING LOCK Story

28 | SPRING LOCK Detail

29 | SPRING LOCK Application

30 | SPRING LOCK Method

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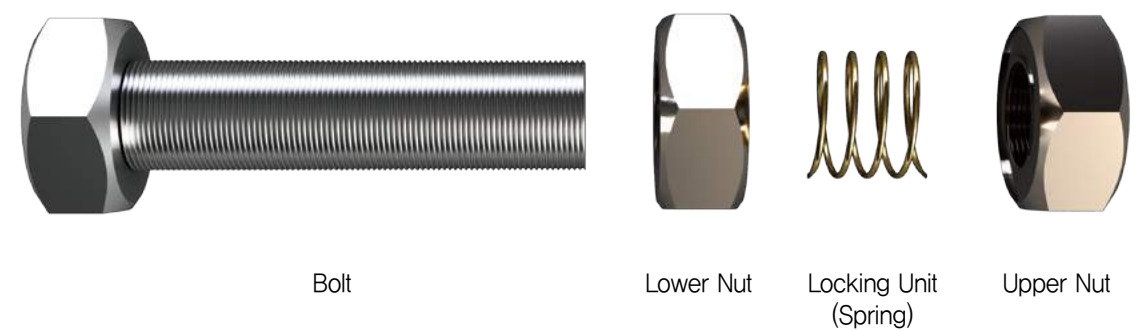
Bolt and nut are used to tightly fasten more than two pieces of components in machineries, bridges, steel towers, ships, automobiles and airplanes.

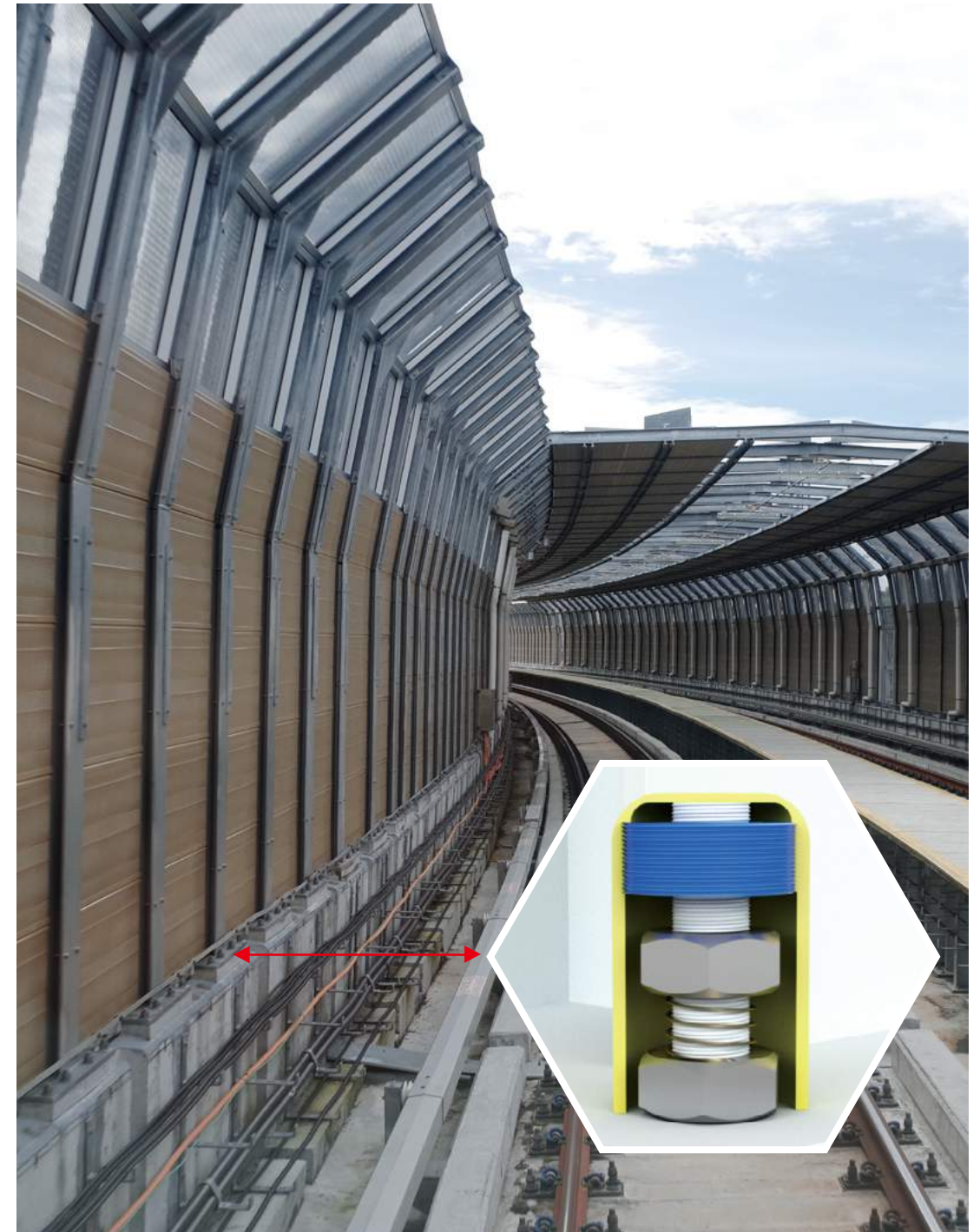
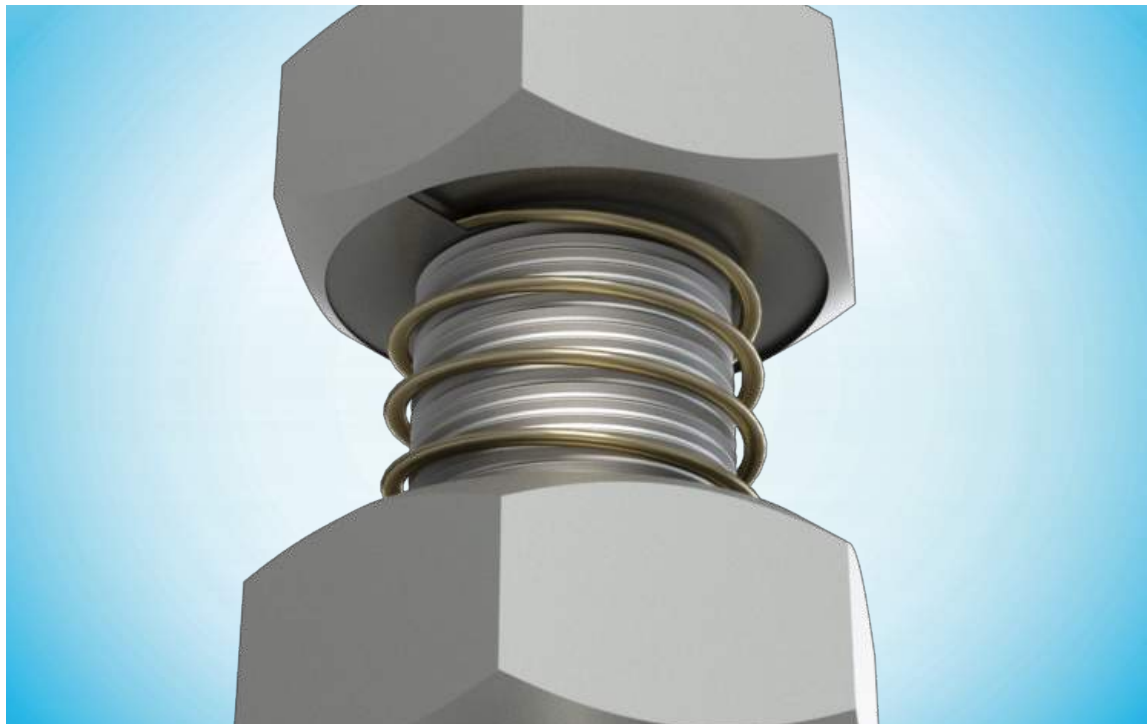
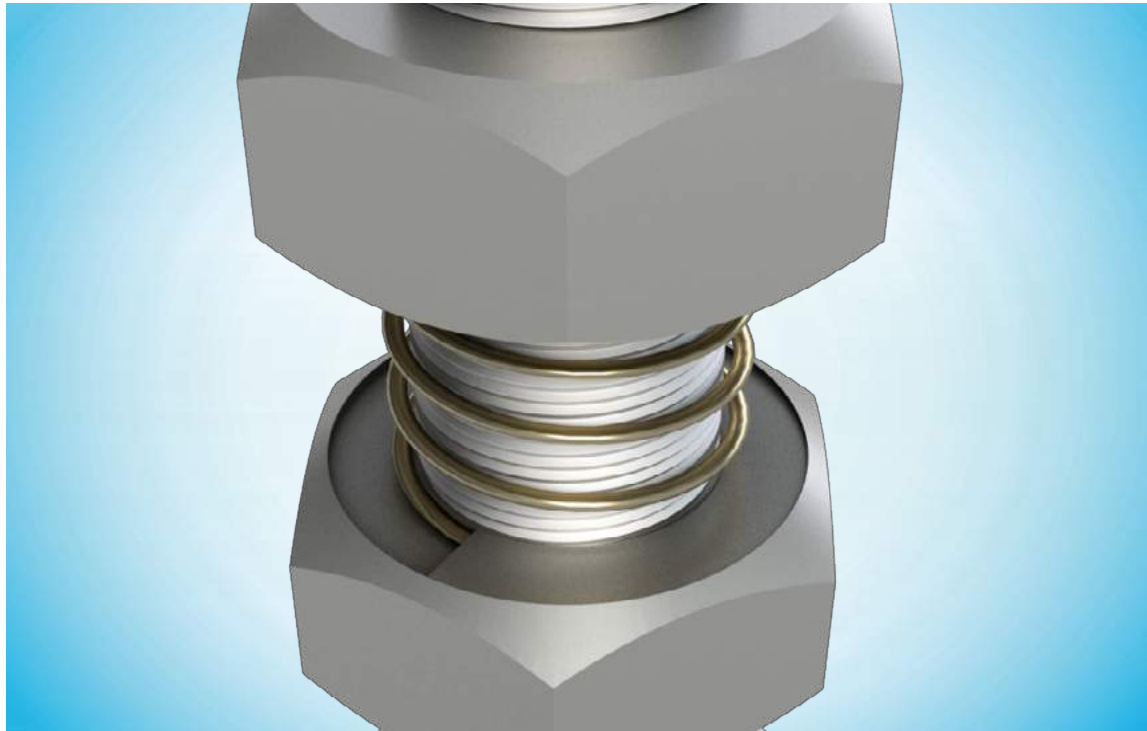
But when bolt and nut combination are under a continuous stress or vibration, slow loosening in the opposite direction can happen. For example, nuts used in the railway can go loose from a constant vibration which in turn create a gap to invite a fatal accident.

Loosened bolt and nut causing problems can be found in many different fields and equipment while there are some cases of using excessively high torque value causing a tensile fracture. On the other hand, SpringLock maintains the initially measured torque value against vibrations or stress without going overly high in torque value because the lower nut is locked in.

SpringLock is easy to make and can be applied even to a large special bolt, ultimately creating fantastic results at a competitive cost.

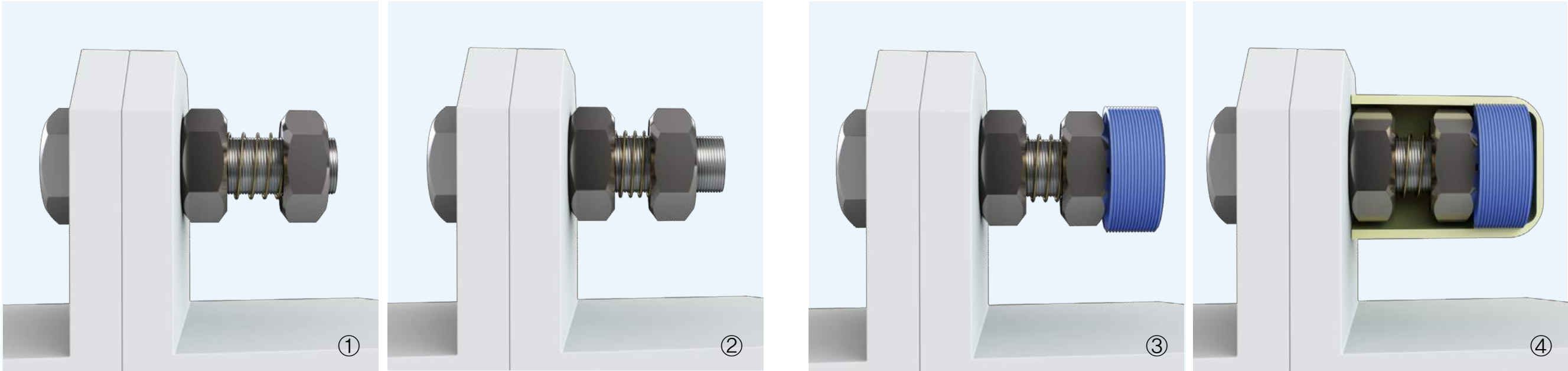
Spring Lock Assembly



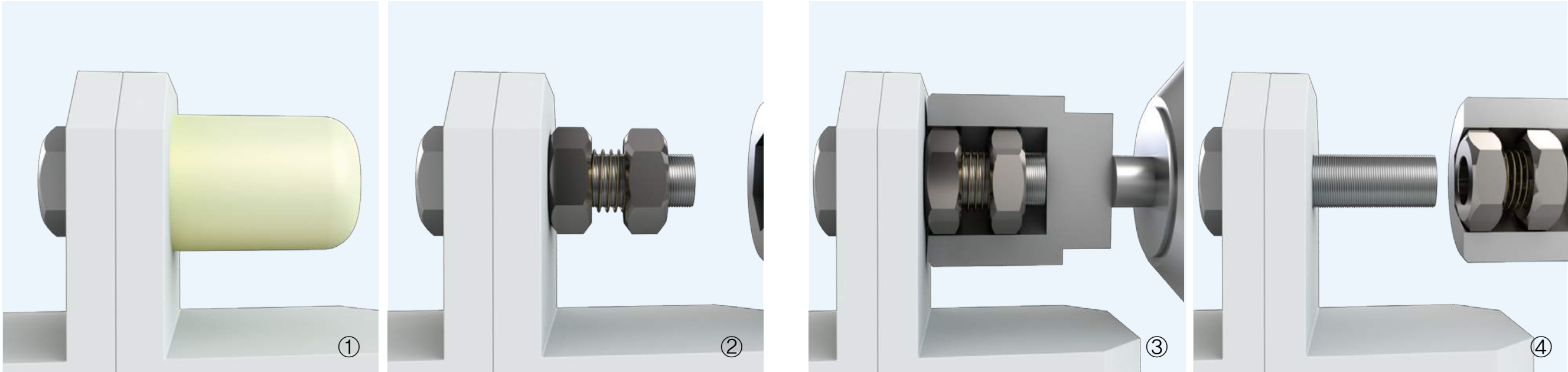


Application(the post of noise barrier)

Installation Method of Spring Lock



Release Method of Spring Lock



Release Method of Spring Lock that of lower nuts. Insert lower and upper nuts to the Impact Driver's receiving socket to rotate them at the same time.



COREBOLT

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