



Hobson Engineering

Volume 35

Engineering

Fake Allthread

From the desk of Peter Hobson

I have written a number of articles on the extremely poor quality allthread that some importers distribute in our market. Unfortunately, allthread is seen as a commodity and quality is not important. Like many other fasteners, this is the stance until a failure occurs resulting in property damage, or far worse, human injury.

A brief history of threaded rod in Australia

As told by my father, after the war, Mr Brooker travelled to the USA and saw the huge potential and market of threaded rod. He started manufacturing the product in Australia. At this time, Hobson Engineering was a small Company manufacturing a number of basic fasteners such as U bolts. Brooker Engineering then started manufacturing some products in opposition to Hobson Engineering and my father decided to manufacture threaded rod. My fathers' brilliance in manufacturing innovation soon

prevailed, and Brooker Engineering failed.

Allthread was never a product that was imported in Australia until the late 90's. Hobson Engineering had a manufacturing facility unmatched in the world, drawing steel in house and thread rolling at extremely high speeds. The success of threaded rod in the market resulted in a lack of capacity of galvanising and zinc plating facilities in Australia capable of coating 3 metre lengths. Strict environmental laws and subsequent costs, proved too restrictive, and many facilities closed. Coinciding with this was China, becoming a viable supply source.

There were few quality issues in Australia related to threaded rod when product was manufactured in Australia. As allthread is a very low added "oncost" product, basically selling for the price of steel, there is always pressure to cut corners to save on the amount of steel used in the product.

The initial process was to reduce the rolling diameter of the steel used to manufacture the product. This resulted in the major thread dimension being undersize. It was and still is, a relatively easy short cut to pick up.

- Lighter unit weight
- Loose nuts
- Basic vernier measurement of major diameter

As with all innovation, those willing to cut corners and produce "fake product" came up with a much more

Continued ...

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sophisticated method that is not easy to detect. This is to alter the thread flank angles, in the case of a metric and UNC threadforms, below 60 degrees. This enables the major diameter to remain correct and hence not easily discovered by most of the above methods. It results in a saving of 10-15% on the cost of the product. This quality may be picked up only via:

- Lighter unit weight
- Thread profile projection.
- In most cases, via tensile tests where the product cannot meet the requirements due to the reduced thread profile.

As can be seen from *Figures 1 and 2*, the blue line is the correct thread profile of 60 degrees, and the product in *Figure 2* is clearly not adhering to the requirements of the thread profile.

So when you are next purchasing threaded rod, perhaps just consider

what you are buying. All Hobson Grade 5, Grade 8, Class 8.8 and Class 10.9 allthread is batch tested via tensile tests, and the ILAC (NATA) reports are available through our website on EVERY BATCH. We also carry out random thread

profile inspections on all allthread products and random tensile tests on Class 4.6 product. Threaded rod is NOT threaded rod, saving a few extra cents could result in SEVERE repercussions if you are receiving product in *Figure 2*!



Figure 1: Thread projection of Hobson Mild Steel Allthread carried out in our NATA accredited laboratory.



Figure 2: Thread Projection of "FAKE" allthread being sold in Australia.



DID YOU KNOW?

about our... **TX-CON[®] ANCHOR SCREWS**



Swedish Engineering



NORD-LOCK GROUP



Steel construction washers (SC-washers)

Based on the leading Nord-Lock® wedge-locking technology, the Nord-Lock® SC-washers are specially designed for steel construction applications and to fit EN 14399: 2005 K2 8.8 HR Structural Assemblies.

No loosening in steel structures

Nord-Lock® SC-washers are designed to directly replace standard washers according to EN 14399. The torque requirements have to be adjusted accordingly to specific torque guidelines for HR bolts.

For more info on the torque guidelines for your application refer www.hobson.com.au/nord-lock-sc-washers

Specifications

Material	Steel 1.7182 or equivalent
Hardness	HV1 > 465 HV through hardened
Surface coating	Delta Protekt®
Available range	M12 – M36 (NL12SC – NL36SC)

Superbolt™ multi-jackbolt tensioners (MJTs) from the Nord-Lock group offer an innovative technology for tightening bolts & studs

The multi-jackbolt tensioners offer you simple and cost effective tightening for large size bolts.



SUPERBOLT™

Superbolt™ tensioners are designed as direct replacements for conventional nuts and bolts. These devices can be threaded onto a new or existing bolt, stud, threaded rod or shaft. The main thread serves to position the tensioner on the bolt or stud against the hardened washer and the load bearing surface. Once it is positioned, actual tensioning of the bolt or stud is accomplished with simple hand tools by torquing the jackbolts which encircle the main thread. The jackbolts transfer the preload evenly into the main thread and, consequently, onto the joint. The main thread is tightened in pure tension.

Utilising a unique multifunctional design

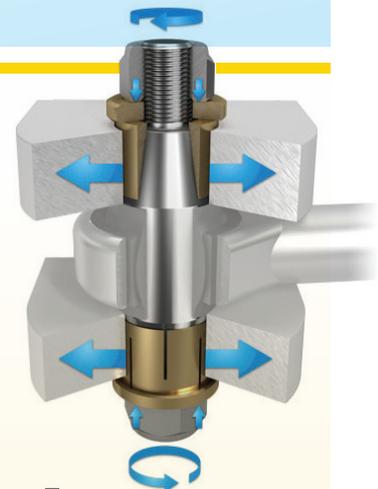


Nord-Lock



Nord-Lock X-series™ washers offer the highest security against both spontaneous bolt loosening and slackening. Combining Nord-Lock's unrivaled wedge-effect solution (to prevent spontaneous loosening) with an exceptional spring effect (to compensate for loss of preload due to slackening), Nord-Lock X-series™ washers give you a total security option for those situations in which there can be no compromise.

A permanent solution for pivot wear



Expander®

An Expander System pivot pin consists of an assembly that includes: an axle which is tapered at both ends, two expansion sleeves, two tension washers and two fasteners. When the fasteners are torqued, the tension washers push the expansion sleeves up the tapered part of the pin, thereby locking the system into the lug ears and eliminating movement that causes pivot wear.

The double-sided locking mechanism provides increased stability, security and a backlash-free joint. Installation can be easily done in the field, reducing downtime and cost.



hobson.com.au **QUALITY FASTENERS SINCE 1935**

Bolt Tension | Anti-Vibration | Corrosion Resistance | Product Reliability | Traceability

Concrete Anchoring – Mechanical Anchors vs Chemical Anchors

GABRIEL TERS *B.Eng (Structural) UTS*

One of the main criteria in a structural design between steel and concrete involves the choice of which type of anchoring system an engineer will choose. The system he chooses has to satisfy at least some, if not all the following; load transfer (static, cyclic, fatigue), ease and speed of installation, cost, durability (including corrosion protection), aesthetics (including finish), fire resistance etc.

Structures are becoming more complex and demand new ways to anchor. Historically, a myriad of different types of mechanical anchors have been used which are still useful

today. But since the 1970's, there has been an increase in the types and numbers of chemical anchors produced in the market. Chemical anchors have been developed to cater for use in both non-cracked and cracked concrete. In simple terms, cracked concrete refers to cross-sections of concrete that are subjected to tensile stresses whereas areas subjected to compression zones are generally non-cracked. Although not actually true, it would be safe to assume that most zones in a suspended slab are cracked.

Stronger adhesives have been

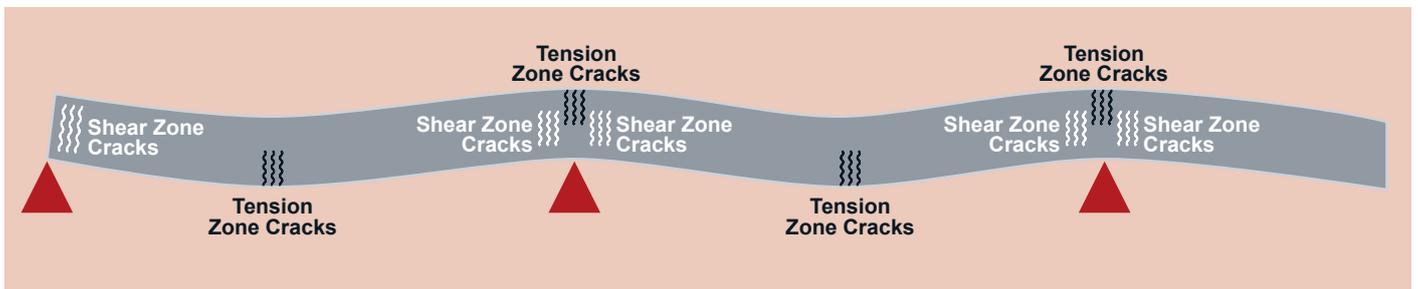
developed and can be used to cater for more sophisticated anchor requirements.

Below is a table showing general comparison of different anchor types and some of their suitability. A more rigorous method is to use software, like Mungo Design*, to assist the designer in the most appropriate and efficient choice of anchor to use in the design process.

REFERENCES

1. AEFAC Technical Note, "CRACKED VERSUS NON-CRACKED CONCRETE", www.aefac.org.au

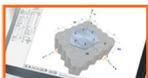
Typical Crack Zones



Cracked concrete refers to concrete that may experience cracking passing through the plane of the anchor at some time after installation of the system. Cracked concrete does not refer to the state of the

concrete at the time of installation and post-installed anchors are not currently designed for installation in existing cracks.

Non-cracked concrete is concrete that has been demonstrated via stress analysis to remain crack-free in the vicinity of the anchor throughout the design life under all design load considerations.



***FREE** Design software download: hobson.com.au/mungo-software

Engineering

Mechanical Anchors

Expansion

Throughbolts, stud anchors, shield anchors, sleeve anchors, drop in anchors

TY9aBolt®



CLAWBOLT



Friction, Shear Resistance

Nylon frame plugs

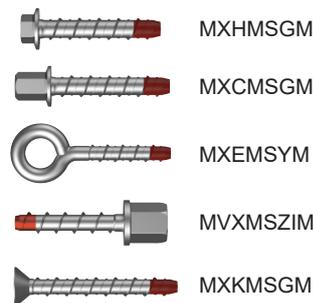


Non-Expansion

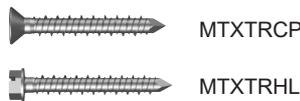
Undercut anchor, self-tapping screws, concrete screws

Keying – Bearing, Undercut, Triaxle stresses

XBolt



TX-CON



Chemical Anchors

Capsule (Glass or foil capsule system) and Injection (Vinylester Urethane, Pure Epoxy, Polyester, Epoxy-Acrylate)

Adhesion, Shear Resistance and Triaxle stresses after curing.



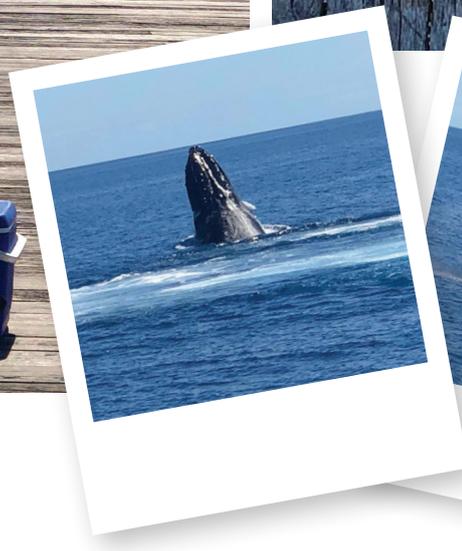
Advantage	Disadvantage	Advantage	Disadvantage	Advantage	Disadvantage
Cheap, Fast Installation	Weaker then chemical anchors	Cheap, Fast Installation	Weaker then chemical anchors	Stronger then mechanical anchors	Expensive
Suitable for temporary and short term applications	Induce compression stresses	Suitable for temporary and short term applications		Does not induce compression stresses during installation	Requires setting equipment
Effective for concrete installation (within minimum edge distance)	Not suitable for hollow wall/block applications	Effective for concrete installation (within minimum edge distance)	Not suitable for hollow wall/block applications	Can bond with irregularly shaped drill holes and can transfer loads along the full length of the bond	Requires more installation time
Easy installation and less sensitive to poor installation methods		Easy installation and less sensitive to poor installation methods		Stronger anchorage in masonry materials	Sensitive to poor hole cleaning (although spin type capsules are less sensitive because the resin mixes with remaining dust)
Can be immediately loaded		Can be immediately loaded		Can be used for restrictive sections of concrete	Time required for curing and can be atmospherically temperature dependant
Throughbolts and sleeve anchors can be fixed through clearance holes in the fixture		Low stresses induced during installation		Can be used in cracked and non-cracked concrete	Overhead installation can be difficult
Suitable for overhead installations		Easily removed and can sometimes be re-used if they have wear indicators gauging their suitability		Suitable for hollow wall/block applications with a sleeve	Require larger clearance holes in fixtures

On Location

Urangan Pier

HERVEY BAY, QLD

Hobson Engineering were the top choice for fasteners when the Urangan Pier in Hervey Bay was restored to its former glory.



On Location

Crown Towers

PERTH, WA

Spotted them again...
The luxurious Crown Towers in the heart of Perth has chosen Hobson Quality Fasteners.



Taronga Zoo

MOSMAN, NSW



The new Tiger Enclosure at the iconic Taronga Zoo is full of Hobson Engineering screws and bolts.





MIT-Hybrid

Mortar for highest performance in concrete



Complies to
AS 5216 : 2018



AEFAC
Australian Engineered
Fasteners and Anchors Council
FOUNDING MEMBER



European Technical Approval Option 1 for cracked and non-cracked concrete with anchor rod and with Rebar used as anchor



Fire resistance test certification
F30-F240 (Rebar)



VOC FREE according to Swiss legislation and certified A+ according to DEVL 1101903D / DEVL 1104875A



The anchor may also be used under **seismic** influence for performance **category C1 + C2 (M12-M30)**



Fast curing - Full cure time at 20°C dry concrete 30 minutes



ONLINE

FREE Design software download:

hobson.com.au/mungo-software

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