

What Are All-Metal Lock Nuts Used For?

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Nuts · ISO 7042 · DIN 980 · Application guide

Typical applications, the industries that specify all-metal lock nuts, and how to choose the right size, material and finish for the joint.

All-Metal Lock Nuts are used for the clamped counter-face of a bolted joint. They are manufactured to ISO 7042 / DIN 980, and the choice of size, property class and finish is driven by the load in the joint and the environment it sits in.

Primary duty

The clamped counter-face of a bolted joint

Governing standard

ISO 7042 / DIN 980

Thread size range

M5 to M36

Category

Nuts

Application notes are general engineering guidance. Verify the property class and any approval requirement against your own design calculation.



Application guide for All-Metal Lock Nuts to ISO 7042 / DIN 980. The core duty of the type is the clamped counter-face of a bolted joint. The typical industries, the how-to-specify checklist, assembly practice and the exclusion cases are set out below. Stocked across roughly M5 to M36, they cover general to heavy-duty work.

Typical Applications for All-Metal Lock Nuts

The most common settings where these are specified:

- **Maintenance & repair (MRO):** a stocked size for servicing existing plant where the original fastener spec must be matched.
- **Fabrication & metalwork:** bench and on-site assembly of steel frames, enclosures and weldments.
- **Bolted joints:** the clamping counter-face on studs and bolts across every assembly type.
- **Vibration-prone equipment:** where a locking or flanged style resists loosening.
- **Frames & weldments:** captive or welded options for repeatable assembly.

How to Specify All-Metal Lock Nuts for Your Application

- **Size:** Match the nominal size to the mating thread or hole. This product spans M5-M36; check the full table below for the exact dimensions of each size.

- **Locking & grade:** Match the strength grade to the bolt, and choose a locking style (nyloc, all-metal, serrated flange) if the joint sees vibration.
- **Environment:** For damp, coastal or chemical exposure prefer A4/316 stainless or a suitable coating; indoors, plated steel or A2 is usually sufficient.
- **Standard:** This product is supplied to ISO 7042 / DIN 980. Quoting the standard on your order guarantees interchangeable dimensions between suppliers.

Installation & Assembly Practice

- Run the nut down by hand before applying the wrench to catch cross-threading early.
- Tighten the nut rather than the bolt head where access allows — the torque-to-preload relation is more consistent.
- For locking styles, note that nyloc inserts are single-use in critical joints and lose grip above roughly 120 °C.

Common Selection Mistakes with All-Metal Lock Nuts

- Pairing a high-class bolt with a lower-class nut — the nut strips before the bolt reaches proof load; the nut class must meet or exceed the bolt class.
- Using a plain nut with a spring washer in severe vibration instead of a prevailing-torque locking nut.
- Re-using nyloc nuts in critical joints.

Where All-Metal Lock Nuts Are Not the Right Choice

Not on their own — they need a matching bolt or stud — and a plain nut is not a substitute for a locking type under heavy vibration.

Technical Drawing

Customize the parameters below — every spec field is editable, and the drawing redraws to match the values you choose. Changing the size will snap the other fields to that size's standard values; you can then override any individual value.

Sends the selected values to the quote form below.

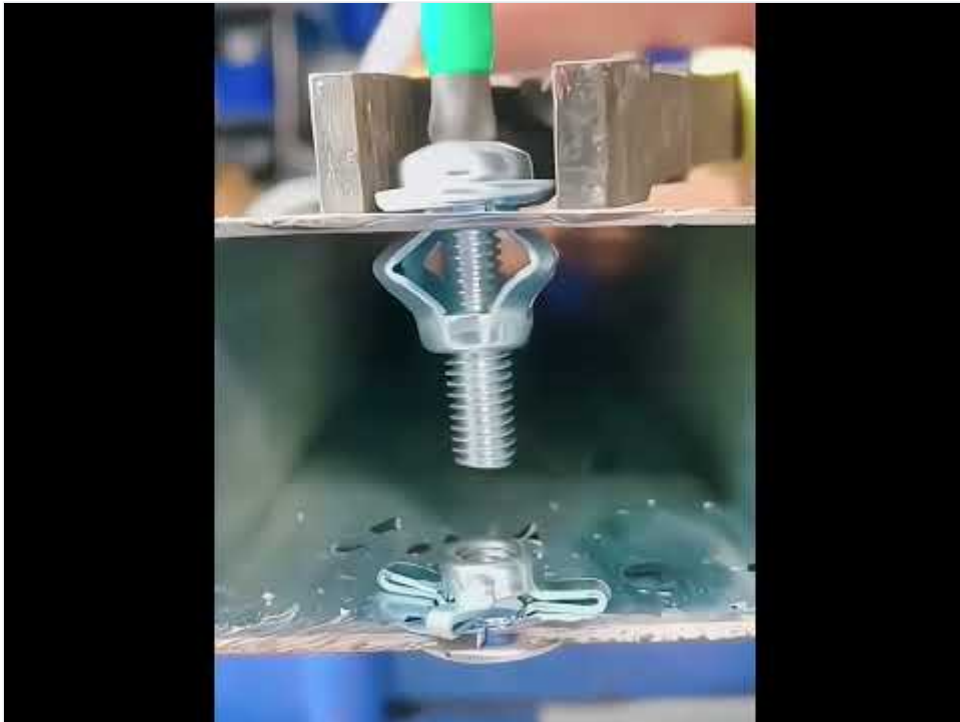
Request a Quote

The form below follows the current technical drawing configuration. Change the drawing values above and the request details update automatically.

Dimensions & Specifications (ISO 7042 / DIN 980)

Size	Pitch (mm)	Width across flats s (mm)	Nut height m (mm)	Reference standard	Notes
M5	0.8	8.0	6.0	ISO 7042 / DIN 980	Deformed-top locking, high-temperature capable
M6	1.0	10.0	7.0	ISO 7042 / DIN 980	Deformed-top locking, high-temperature capable
M8	1.25	13.0	9.0	ISO 7042 / DIN 980	Deformed-top locking, high-temperature capable
M10	1.5	16.0	11.0	ISO 7042 / DIN 980	Deformed-top locking, high-temperature capable
M12	1.75	18.0	13.0	ISO 7042 / DIN 980	Deformed-top locking, high-temperature capable
M14	2.0	21.0	15.0	ISO 7042 / DIN 980	Deformed-top locking, high-temperature capable
M16	2.0	24.0	17.0	ISO 7042 / DIN 980	Deformed-top locking, high-temperature capable
M18	2.5	27.0	19.0	ISO 7042 / DIN 980	Deformed-top locking, high-temperature capable
M20	2.5	30.0	21.0	ISO 7042 / DIN 980	Deformed-top locking, high-temperature capable
M24	3.0	36.0	24.0	ISO 7042 / DIN 980	Deformed-top locking, high-temperature capable
M30	3.5	46.0	30.0	ISO 7042 / DIN 980	Deformed-top locking, high-temperature capable
M36	4.0	55.0	36.0	ISO 7042 / DIN 980	Deformed-top locking, high-temperature capable

Video: What Are All-Metal Lock Nuts Used For? in use



► Watch video: <https://www.youtube.com/watch?v=RGwclAO76Vc>

Third-party video, selected automatically for this topic. It is not produced by Engineering Hardware and is not a specification source — use the tables on this page for dimensional data.

Inside the plant

Manufactured in our own plant

This part is cold-formed, threaded, heat-treated and finished in-house. The stages below are where its class and finish are actually decided.

1.



01

Cold heading

Wire rod is drawn to size and cold-formed into blanks. Forming rather than cutting keeps the grain flow continuous around the head, which is where a bolt is most likely to fail.

Head dimensions and under-head radius checked at set-up and per shift.



2.

02

Thread rolling

Threads are rolled between hardened dies rather than cut. Rolled threads are stronger in fatigue than cut threads and hold pitch and flank angle far more consistently across a batch.

Go / no-go ring gauges to ISO 965 tolerance class 6g.

3.



03

Heat treatment

Quench-and-temper brings carbon and alloy steel to the property class ordered — 8.8, 10.9 or 12.9 — with the furnace charge tracked so a finished lot can be traced back to it.

Core hardness and tensile tested per lot to ISO 898-1.

4.



04

Surface treatment

Zinc, zinc-nickel, hot-dip galvanizing, black oxide, phosphate and Dacromet, selected against the service environment rather than against the price list.

Coating thickness and neutral salt spray hours to ISO 9227.

Frequently Asked Questions

Which industries use All-Metal Lock Nuts?

They are commonly specified in maintenance & repair (mro), fabrication & metalwork and bolted joints, among other sectors.

How do I choose the right size of All-Metal Lock Nuts?

Match the nominal size to the mating thread or hole. This product is available from M5 to M36; the full dimension table on this page lists each size.

Do All-Metal Lock Nuts need a locking feature?

If the joint sees vibration or cyclic load, use a locking style (nyloc, all-metal lock, or serrated flange) or a thread-locking adhesive.

For static joints a standard nut tightened correctly is usually sufficient.

What material should All-Metal Lock Nuts be for outdoor use?

For damp, coastal or chemical environments specify A4 (316) stainless or a suitably coated steel. For indoor or dry use, A2 (304) stainless or zinc-plated steel is normally adequate.

Can I get a quote for All-Metal Lock Nuts in the size and material I need?

Yes. Use the technical drawing and quote form on this page to set the size and options, then send the exact configuration to our team for pricing and lead time.

Related Pages

Product page: [All-Metal Lock Nuts — specifications & sizes](#)

All-Metal Lock Nuts Specification Guides

- [M5 All-Metal Lock Nuts size guide](#)
- [A4 stainless All-Metal Lock Nuts](#)

Related Fastener Applications

- [All-Metal Prevailing Torque Hex Lock Nut \(Type 1\) — GB/T 6184 / ISO 7042 \(Series 047\) applications](#)
- [Cap \(Acorn\) Nuts applications](#)
- [Castellated Hex Nut — GB/T 6180 / ISO 7036 \(Series 048\) applications](#)
- [Custom Slotted Round Nut — GB/T 812 \(Series 070\) applications](#)
- [Hex Flange Nuts applications](#)
- [Hex Nut — GB/T 41 / ISO 4034 \(Series 060\) applications](#)