# What Are Hex Nuts Used For?

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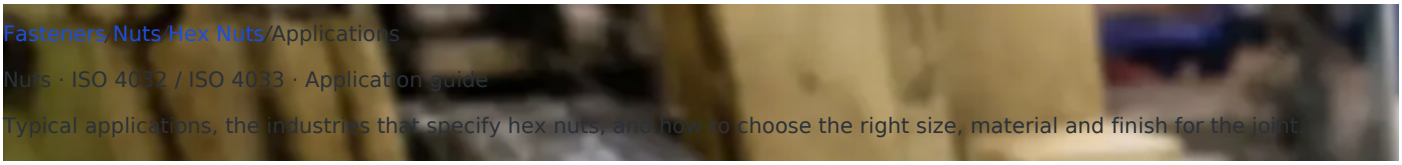



Hex Nuts are used for the clamped counter-face of a bolted joint. They are manufactured to ISO 4032 / ISO 4033, and the choice of size, property class and finish is driven by the load in the joint and the environment it sits in.

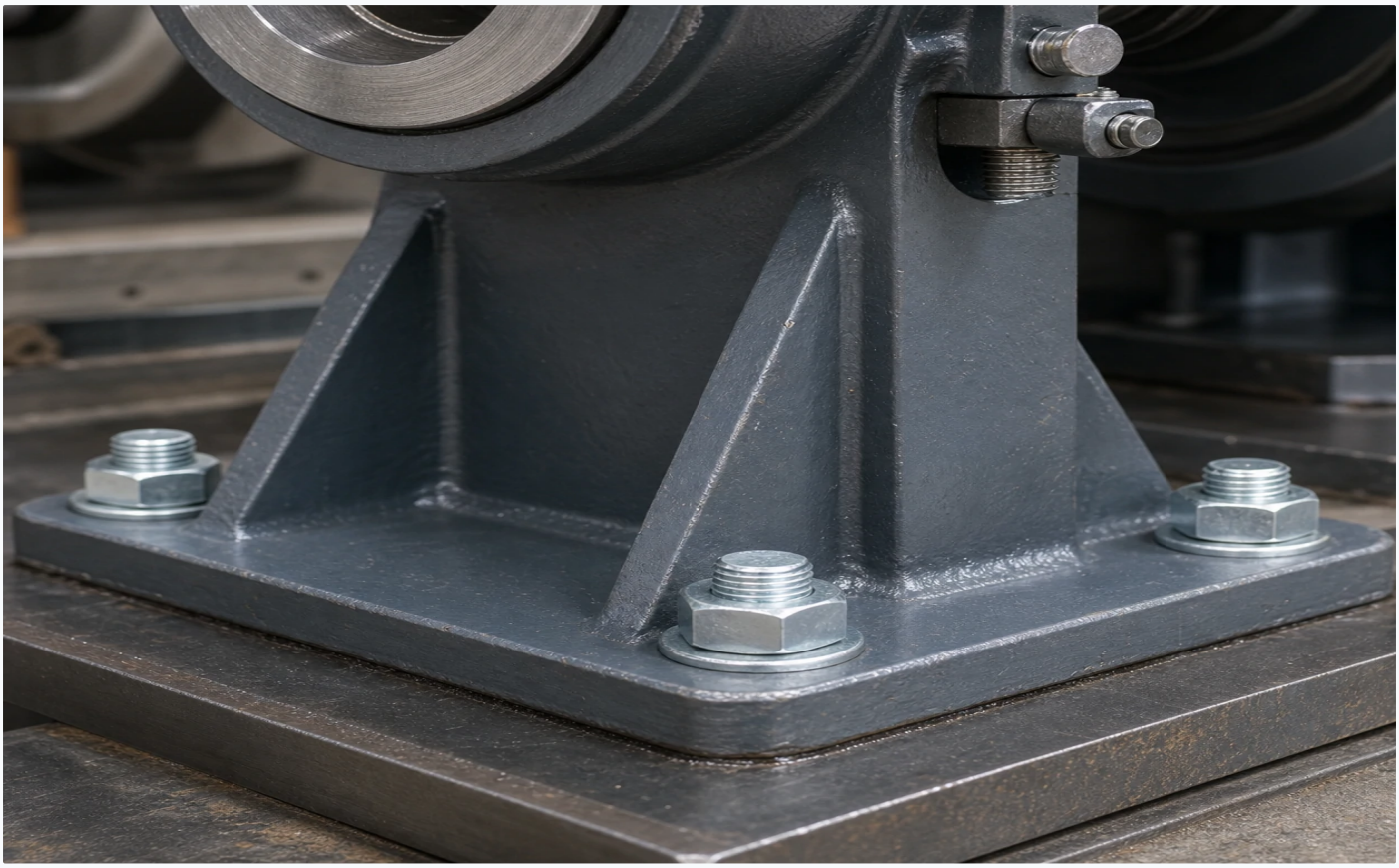
Primary duty
: The clamped counter-face of a bolted joint

Governing standard
: ISO 4032 / ISO 4033

Thread size range
: M1 to M64

Category
: Nuts

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



Hex Nuts (ISO 4032 / ISO 4033) are specified where the joint requires the clamped counter-face of a bolted joint. The sections below cover the typical end-uses by industry, the size and material decisions for each, assembly practice, and the applications this fastener type is not suited to. Stocked across roughly M1 to M64, they cover general to heavy-duty work.

## Typical Applications for Hex Nuts

The most common settings where these are specified:

- **General machine building:** fastening covers, brackets, motors and sub-assemblies on production equipment.
- **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.

## How to Specify Hex Nuts for Your Application

- **Size:** Match the nominal size to the mating thread or hole. This product spans M1–M64; 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 4032 / ISO 4033. 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 Hex 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 Hex 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 4032 / ISO 4033)

| Size | Pitch (mm) | Width across flats s (mm) | Width across corners e min (mm) | Nut height m style 1 (mm) | Nut height m style 2 (mm) | Reference standard |
|---|---|---|---|---|---|---|
| M1 | 0.25 | 2.5 | 2.71 | 0.8 | - | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M1.2 | 0.25 | 3.0 | 3.28 | 1.0 | - | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M1.4 | 0.3 | 3.0 | 3.28 | 1.2 | - | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M1.6 | 0.35 | 3.2 | 3.48 | 1.3 | - | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M2 | 0.4 | 4.0 | 4.32 | 1.6 | - | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M2.5 | 0.45 | 5.0 | 5.45 | 2.0 | - | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M3 | 0.5 | 5.5 | 6.01 | 2.4 | - | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M3.5 | 0.6 | 6.0 | 6.58 | 2.8 | - | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M4 | 0.7 | 7.0 | 7.66 | 3.2 | - | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M5 | 0.8 | 8.0 | 8.79 | 4.0 | 5.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M6 | 1.0 | 10.0 | 11.05 | 5.0 | 6.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M8 | 1.25 | 13.0 | 14.38 | 6.5 | 8.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M10 | 1.5 | 16.0 | 17.77 | 8.0 | 10.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M12 | 1.75 | 18.0 | 20.03 | 10.0 | 12.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |

| Size | Pitch (mm) | Width across flats s (mm) | Width across corners e min (mm) | Nut height m style 1 (mm) | Nut height m style 2 (mm) | Reference standard |
|---|---|---|---|---|---|---|
| M14 | 2.0 | 21.0 | 23.36 | 11.0 | 14.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M16 | 2.0 | 24.0 | 26.75 | 13.0 | 16.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M18 | 2.5 | 27.0 | 29.56 | 15.0 | 18.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M20 | 2.5 | 30.0 | 32.95 | 16.0 | 20.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M22 | 2.5 | 32.0 | 35.03 | 18.0 | 22.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M24 | 3.0 | 36.0 | 39.55 | 19.0 | 24.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M27 | 3.0 | 41.0 | 45.2 | 22.0 | 27.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M30 | 3.5 | 46.0 | 50.85 | 24.0 | 30.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M33 | 3.5 | 50.0 | 55.37 | 26.0 | 33.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M36 | 4.0 | 55.0 | 60.79 | 29.0 | 36.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M39 | 4.0 | 60.0 | 66.44 | 31.0 | 39.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M42 | 4.5 | 65.0 | 71.3 | 34.0 | 42.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M45 | 4.5 | 70.0 | 76.95 | 36.0 | 45.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M48 | 5.0 | 75.0 | 82.6 | 38.0 | 48.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M52 | 5.0 | 80.0 | 88.25 | 42.0 | 52.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M56 | 5.5 | 85.0 | 93.56 | 45.0 | 56.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |

| Size | Pitch (mm) | Width across flats s (mm) | Width across corners e min (mm) | Nut height m style 1 (mm) | Nut height m style 2 (mm) | Reference standard |
|---|---|---|---|---|---|---|
| M60 | 5.5 | 90.0 | 99.21 | 48.0 | 60.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |
| M64 | 6.0 | 95.0 | 104.86 | 51.0 | 64.0 | ISO 4032 (Style1) / ISO 4033 (Style2) |

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

What are Hex Nuts used for?

The clamped counter-face of a bolted joint. They are supplied to ISO 4032 / ISO 4033.

Which industries use Hex Nuts?

They are commonly specified in vibration-prone equipment, frames & weldments and general machine building, among other sectors.

How do I choose the right size of Hex Nuts?

Match the nominal size to the mating thread or hole. This product is available from M1 to M64; the full dimension table on this page lists each size.

Do Hex 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.

Can I get a quote for Hex 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: Hex Nuts — specifications & sizes

### Hex Nuts Specification Guides

- M1 Hex Nuts size guide
- A4 stainless Hex Nuts

### Related Fastener Applications

- All-Metal Lock Nuts 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