

# M18 Hex Bolt Dimensions

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M18 Hex Bolt dimensions to GB/T 5783 / ISO 4017: width across flats (spanner size) 27 mm, head height 11.5 mm, coarse thread pitch 2.5 mm, clearance hole (ISO 273 medium) 20 mm. Tighten to approximately 297 Nm at property class 8.8 in a dry, as-supplied condition.

Width across flats (spanner size)

**27 mm**

Head height

**11.5 mm**

Coarse thread pitch

**2.5 mm**

Clearance hole (ISO 273 medium)

**20 mm**

Tightening torque (class 8.8)

**297 Nm**

Figures are nominal values from the governing standard. Confirm against the tolerance class for your application before machining or ordering.



The M18 size of Hex Bolt is dimensioned by GB/T 5783 / ISO 4017. The tables below give the dimensional row from the standard, the drill and spanner sizes that go with it, and the assembly torque per property class. The technical drawing on this page redraws to the exact values selected.

## M18 Dimensional Row (GB/T 5783 / ISO 4017)

| Size | Pitch (mm) | Nominal diameter d (mm) | Length L (mm) | Width across flats s (mm) |
|------|------------|-------------------------|---------------|---------------------------|
| M18  | 2.5        | 18                      | 100           | 27.0                      |

# Spanner & Drive for M18 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010)

M18 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010) have a width across flats of 27.0 mm — fit a 27.0 mm open-ended spanner or socket. Prefer a 6-point socket over a 12-point: it loads the corners of the 27.0 mm hex far less, which matters on plated heads and on anything that will be re-used. Set preload with a torque wrench rather than by arm.

## Hole Sizes for M18

|                                           |         |
|-------------------------------------------|---------|
| Coarse-thread pitch (ISO 724)             | 2.5 mm  |
| Through-hole / clearance (ISO 273 medium) | 20 mm   |
| Tapping drill, coarse thread              | 15.5 mm |

## Tightening Torque for M18

|                                   |                  |
|-----------------------------------|------------------|
| Class 8.8 (dry, $\sim\mu$ 0.125)  | $\approx$ 297 Nm |
| Class 10.9 (dry, $\sim\mu$ 0.125) | $\approx$ 423 Nm |
| Class 12.9 (dry, $\sim\mu$ 0.125) | $\approx$ 495 Nm |

*Indicative dry-joint values. Lubrication can lower the required torque by 15–25%.*

*Always confirm against the joint design, especially when going up a strength class.*

## Proof Load & Strength for M18

|                                              |                     |
|----------------------------------------------|---------------------|
| <b>Tensile stress area As (ISO 724)</b>      | 192 mm <sup>2</sup> |
| <b>Proof load, class 8.8</b>                 | 115 kN              |
| <b>Proof load, class 10.9</b>                | 160 kN              |
| <b>Proof load, class 12.9</b>                | 187 kN              |
| <b>Min. ultimate tensile load, class 8.8</b> | 160 kN              |

*Proof load = tensile stress area × the proof stress  $S_p$  of the class, per ISO 898-1 —  $S_p$  is a lower figure than the yield stress  $R_{p0.2}$  and the two are not interchangeable. The stress area is computed from this size's own diameter and pitch, so a fine-pitch designation gives the fine-pitch figure. Design the joint so the working preload stays below the proof load of the class selected.*

## M18 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010) Weight

A steel M18 hex bolt at the listed 100 mm length weighs approximately 257 g each — about 257 kg per 1,000 pieces. Stainless A2/A4 weighs roughly the same (density 7.9–8.0 g/cm<sup>3</sup>).

*Actual weight varies slightly with head form, thread and finish; use this figure for freight estimation only.*

## Installation Tips for M18 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010)

- Use a 6-point socket where access allows — 12-point sockets are more prone to rounding the corners on smaller sizes.
- A flanged head is its own washer. Adding a flat one under it lifts the serrations clear of the surface they are meant to bite, which is the whole locking mechanism gone.
- At M18 the stretch in the bolt becomes the controlling factor — for critical joints, use angle-controlled or stretch-controlled tightening instead of pure torque.

## Mating Parts for M18

For M18, pair with a M18 hex nut (ISO 4032 / DIN 934) and, where used, a M18 flat washer (ISO 7089 / DIN 125A) under the head and under the nut.

Custom manufacturing · Made to drawing

### Need hex bolt in a size this table does not list?

This page covers M18 hex bolt. Lengths and thread lengths outside the standard table are the commonest request, followed by a drive the standard does not offer and a head marked with your own part number. Made by cold heading or hot forging.

Minimum order from 2,000 pieces; samples within 7 days of drawing approval.

### Custom bolt manufacturing

(<https://engineeringhardware.com/custom/bolts/>)

**Send a drawing** (<https://engineeringhardware.com/custom/bolts/#rfq>)

## 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.



Dimensioned line drawing of M18 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010) to GB/T 5783 / ISO 4017. Side view and top view, drawn to the dimensions in the table below and redrawn for any size selected.

Opens a short step to confirm the exact specification before you enter contact details.

### Request a Quote

Click “Request this configuration” under the drawing to confirm the exact specification, then add your contact details. You can also send the request without a specification — but only an accurate selection gets an accurate quote.

## Dimensions & Specifications (GB/T 5783 / ISO 4017)

| Size | Pitch (mm) | Nominal diameter d (mm) | Length L (mm) | Width across flats s (mm) |
|------|------------|-------------------------|---------------|---------------------------|
| M3   | 0.5        | 3                       | 20            | 5.5                       |
| M4   | 0.7        | 4                       | 25            | 7.0                       |
| M5   | 0.8        | 5                       | 30            | 8.0                       |
| M6   | 1.0        | 6                       | 40            | 10.0                      |
| M8   | 1.25       | 8                       | 50            | 13.0                      |
| M10  | 1.5        | 10                      | 60            | 16.0                      |
| M12  | 1.75       | 12                      | 80            | 18.0                      |
| M14  | 2.0        | 14                      | 80            | 21.0                      |
| M16  | 2.0        | 16                      | 100           | 24.0                      |
| M18  | 2.5        | 18                      | 100           | 27.0                      |
| M20  | 2.5        | 20                      | 120           | 30.0                      |
| M24  | 3.0        | 24                      | 150           | 36.0                      |
| M30  | 3.5        | 30                      | 180           | 46.0                      |
| M36  | 4.0        | 36                      | 200           | 55.0                      |
|      |            |                         |               |                           |
|      |            |                         |               |                           |

## Materials & Grades

Select a material class to see the grades we supply it in. Each designation is listed with its ISO/EN, AISI/SAE, JIS and GB equivalents.

### **Stainless Steel**

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**Carbon Steel**66

**Alloy Steel**41

**Bearing Steel**5

**Spring Steel**25

**Aluminum and Aluminum Alloys**21

**Brass**17

**Bronze**11

**Copper**8

**Titanium and Titanium Alloys**18

**Nickel and Nickel Alloys**22

**Iron-Nickel and High-Temperature Alloys**10

**Tool Steel and Specialty Hardened Steel**9

**Structural and Construction Steel**9

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## Stainless Steel

### Austenitic Stainless Steel

#### A1

AISI 303 · SAE 303 · SUS303 · EN 1.4305 · X8CrNiS18-9

#### A2

AISI 304 · SAE 304 · SUS304 · EN 1.4301 · X5CrNi18-10 · 06Cr19Ni10

#### 304L

AISI 304L · SUS304L · EN 1.4307 · X2CrNi18-9 · 022Cr19Ni10

#### 302

AISI 302 · SUS302 · EN 1.4310

#### 305

AISI 305 · SUS305 · EN 1.4303

#### A4

AISI 316 · SAE 316 · SUS316 · EN 1.4401 · X5CrNiMo17-12-2 · 06Cr17Ni12Mo2

#### 316L

AISI 316L · SUS316L · EN 1.4404 · X2CrNiMo17-12-2 · 022Cr17Ni12Mo2

#### 321

AISI 321 · SUS321 · EN 1.4541 · X6CrNiTi18-10

#### 310 / 310S

AISI 310 · AISI 310S · SUS310S · EN 1.4845

#### 302HQ

AISI 302HQ

#### A3

#### A5

#### 347

AISI 347 · SUS347 · EN 1.4550 · X6CrNiNb18-10

#### 309 / 309S

AISI 309 · AISI 309S · SUS309S

## Martensitic Stainless Steel

### AISI 410

SUS410 · EN 1.4006 · X12Cr13 · 12Cr13

### AISI 420

SUS420J1 · SUS420J2 · EN 1.4021 · EN 1.4028 · 20Cr13 · 30Cr13

### AISI 431

SUS431 · EN 1.4057 · X17CrNi16-2

### C1

### C3

### C4

### AISI 440A

### AISI 440B

### AISI 440C

SUS440C · EN 1.4125

## Ferritic Stainless Steel

### AISI 430

SUS430 · EN 1.4016 · X6Cr17 · 10Cr17

### F1

### AISI 434

### AISI 444

## Precipitation-Hardening Stainless Steel

### 17-4 PH

AISI 630 · UNS S17400 · SUS630 · EN 1.4542 · X5CrNiCuNb16-4

### 15-5 PH

UNS S15500

### 17-7 PH

UNS S17700

## Duplex and Super Duplex Stainless Steel

### Duplex 2205

UNS S31803 · UNS S32205 · EN 1.4462

### Super Duplex 2507

UNS S32750 · EN 1.4410

D2

D4

D6

D8

### Lean Duplex 2101

UNS S32101

### Super Duplex S32760

UNS S32760 · EN 1.4501

## Carbon Steel

### Low-Carbon Steel

SAE 1006

SAE 1008

SAE 1010

SAE 1018

SAE 1020

Q195

Q235

SAE 1012

SAE 1015

Q215

ML08

**ML08AI****ML10****ML15****ML20****SWRCH6A****SWRCH8A****SWRCH10A****SWRCH12A****SWRCH15A****SWRCH18A****Medium-Carbon Steel****SAE 1035****SAE 1045****S45C****C45****SAE 1030****SAE 1040****SAE 1050****30****35****40****45****50****S35C****S40C****S50C****C35**

**C40****High-Carbon Steel****SAE 1060****SAE 1070****65Mn****SAE 1065****SAE 1075****SAE 1080****SAE 1085****SAE 1090****SAE 1095****60****65****70****75****80****85****Cold-Heading Steel****SWRCH22A****10B21****SWRCH22K****SWRCH25K****SWRCH30K****SWRCH35K****SWRCH40K**

**ML20Mn****ML25****ML30****ML35****ML40****15B25**

## Alloy Steel

### Chromium Steel

**40Cr****45Cr****AISI 5140****SAE 5140****AISI 5120****SAE 5120****SCr420****SCr440**

### Chromium-Molybdenum Steel

**35CrMo****42CrMo****AISI 4140****SCM435****SCM440****42CrMo4****30CrMo**

**AISI 4130****SAE 4130****SAE 4140****AISI 4142****AISI 4145****SCM415****SCM420****SCM445****EN 1.7220****EN 1.7225****25CrMo4****34CrMo4**

#### **Nickel-Chromium-Molybdenum Steel**

**AISI 4340****SAE 4340****40CrNiMo****SNCM439****EN 1.6511****36CrNiMo4**

#### **Boron Alloy Steel**

**10B22****10B21****15B21****15B25****20MnTiB****20Mn2B**

**35VB****40MnB**

## Bearing Steel

### Bearing Steel

**GCr15****AISI 52100****SAE 52100 · UNS G52986****SUJ2****100Cr6****EN 1.3505****GCr15SiMn**

## Spring Steel

### Carbon Spring Steel

**SAE 1065****SAE 1070****SAE 1075****SAE 1080****SAE 1095****65****70****75****80****65Mn**

### Silicon-Manganese Spring Steel

**60Si2Mn****60Si2MnA****SUP6****SUP7**

### Chromium-Vanadium Spring Steel

**50CrVA****SAE 6150****AISI 6150****SUP10**

### Stainless Spring Steel

**AISI 301****SUS301****EN 1.4310****AISI 302****AISI 304****AISI 316****17-7 PH**

## Aluminum and Aluminum Alloys

### Commercially Pure Aluminum

**1050****1060****1070****1100**

## 2xxx Series Aluminum

**2024****2011****2014****2017**

## 5xxx Series Aluminum

**5052****5083****5754**

## 6xxx Series Aluminum

**6061****6061-T6****6063****6082****6082-T6**

## 7xxx Series Aluminum

**7075****7075-T6****7005****7050****7075-T73**

## Brass

### Free-Cutting Brass

C36000

H62

HPb59-1

C3601

C3602

C3604

CuZn36Pb3

CuZn39Pb3

EN CW614N

EN CW617N

H65

### Lead-Free Brass

C69300

C27450

CW510L

CW511L

### Naval Brass

C46400

CuZn39Sn1

## Bronze

### Silicon Bronze

**C65500****C65100****C65600**

### Phosphor Bronze

**C51000****C52100****CuSn6****CuSn8**

### Aluminum Bronze

**C95400****C95500****C63000****CuAl10Ni5Fe4**

## Copper

### Copper

**C11000****T2****C10100****C10200****C12200****T1**

**TU1****TU2**

## Titanium and Titanium Alloys

### Commercially Pure Titanium

**Grade 2****Grade 1****Grade 3****Grade 4****TA1****TA2****TA3**

### Alpha-Beta Titanium Alloys

**Grade 5****Ti-6Al-4V****TC4****UNS R56400**

### Low-Interstitial Grade

**Grade 23****Ti-6Al-4V ELI****UNS R56407**

### Other Titanium Fastener Alloys

**Ti-6Al-6V-2Sn****Ti-6Al-2Sn-4Zr-2Mo**

**Beta-C titanium****Ti-10V-2Fe-3Al**

## Nickel and Nickel Alloys

### Commercially Pure Nickel

**Nickel 200****UNS N02200****Nickel 201****UNS N02201**

### Inconel Alloys

**Inconel 625****UNS N06625****Inconel 718****UNS N07718****Inconel 600****UNS N06600****Inconel 601****UNS N06601****Inconel 686****UNS N06686****Inconel X-750****UNS N07750**

### Monel Alloys

**Monel 400****UNS N04400****Monel K-500****UNS N05500**

## Hastelloy Alloys

**Hastelloy C-276**

**UNS N10276**

**Hastelloy C-22**

**UNS N06022**

**Hastelloy B-2**

**UNS N10665**

**Hastelloy B-3**

**UNS N10675**

**Hastelloy X**

**UNS N06002**

## Other Nickel Alloys

**Alloy 20**

**UNS N08020**

**Alloy 625**

**Alloy 718**

**Alloy 825**

**UNS N08825**

**Alloy 925**

**UNS N09925**

## Iron-Nickel and High-Temperature Alloys

### A286

**A-286**

**UNS S66286**

**EN 1.4980**

## Invar

**Invar 36**

**Alloy 36**

**UNS K93600**

**FeNi36**

## Alloy 42

**Alloy 42**

**UNS K94100**

**FeNi42**

## Tool Steel and Specialty Hardened Steel

### Tool Steel and Specialty Hardened Steel

**AISI D2**

**AISI H13**

**SKD11**

**Cr12MoV**

**AISI O1**

**AISI A2**

**AISI S7**

**SKD61**

**9CrSi**

## Structural and Construction Steel

### Structural and Construction Steel

**ASTM A36**

**Q235B****Q355B****S355JR****Q235C****Q355C****S235JR****S275JR****S355J2**

## Applications & Industries for M18 Hex Bolt

**What Hex Bolt are specified for, industry by industry. Stocked from M3 to M36.**

Industries that specify Hex Bolt

Machine building & OEM **The default fastener on production equipment: covers, brackets, motor mounts and sub-assemblies tightened to a specified torque.**

Automotive & transport **Chassis, driveline and body fixings that see vibration and are assembled to a controlled preload.**

Steel fabrication **Bolted connections in frames, enclosures, walkways and weldments, on the bench and on site.**

Energy & infrastructure **Tower, pipework, switchgear and plant fixings specified for long service life and inspectable joints.**

Maintenance & MRO **Stocked replacements matched to an existing property class, thread and finish.**

Food, pharma & cleanroom **Stainless assemblies that are washed down, where the finish matters as much as the strength.**

Typical applications

- **assemblies that are dismantled for service and re-torqued**
- **joints where the property class is stated on the drawing**
- **clamping two machined faces to a calculated preload**
- **bolting brackets, motors and gearboxes to a frame**

Service conditions to specify against

Marine and coastal

**Available in A4 (316) stainless for chloride exposure — coastal structures, pool halls, water treatment and deck hardware, where A2 will eventually pit.**

High load

**Supplied in ISO 898-1 property classes, so the joint can be designed to a stated proof load and tightened to a calculated torque rather than by feel.**

Torque and preload

**The joint is designed around bolt tension, so lubrication, coating and the friction coefficient all change the torque figure — state them together.**

Where to use something else

- **Do not use a machine thread into unthreaded sheet or timber; use a tapping screw, rivet nut or insert made for that parent material.**

**Full application guide: where Hex Bolt are used, how to specify them, and the cases they are wrong for (<https://engineeringhardware.com/applications/cad-svg-010-hexbolt/>)**

## Video: M18 Hex Bolt Dimensions

| BOLT AND WRENCH SIZE CHART                                                               |                                                                                     |      |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| BOLT (METRIC)                                                                            | WRENCH (SPANNER)                                                                    |      |
|  5mm  |  | 8mm  |
|  6mm  |  | 10mm |
|  8mm  |  | 13mm |
|  10mm |  | 17mm |
|  12mm |  | 19mm |
|  14mm |  | 22mm |
|  16mm |  | 24mm |
|  18mm |  | 27mm |

Engineering\_school\_9

<https://www.youtube.com/watch?v=KBGbsjFo3IQ> (<https://www.youtube.com/watch?v=KBGbsjFo3IQ>)

► Watch video: <https://www.youtube.com/watch?v=KBGbsjFo3IQ> (<https://www.youtube.com/watch?v=KBGbsjFo3IQ>)

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.



## 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.

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



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.

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



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.

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



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.

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Coating thickness and neutral salt spray hours to ISO 9227.

## Frequently Asked Questions

**What is the coarse-thread pitch of M18 for Hex Bolt — GB/T 5783 / ISO 4017 (Series 010)?**

For M18 the standard coarse pitch is 2.5 mm — this is the value used for Hex Bolt — GB/T 5783 / ISO 4017 (Series 010).

### **What torque do M18 class 8.8 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010) take?**

A dry M18 class 8.8 joint takes about 297 Nm ( $\approx$  423 Nm for 10.9,  $\approx$  495 Nm for 12.9). Confirm against your joint design; lubrication reduces these values.

### **What clearance and tapping drill suit M18?**

Use a 20 mm clearance hole (ISO 273 medium) for through-fixing, or a 15.5 mm tapping drill for a coarse M18 thread.

### **Should M18 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010) be tightened by torque or by angle?**

For critical structural joints at M18, angle-controlled or stretch-controlled tightening is more repeatable than pure torque — the friction scatter at large diameters can dominate the torque signal.

### **How do I request a quotation?**

Use the technical drawing on this page to pick the exact configuration, then submit it with the quote form. We respond within one business day.

## Related Pages

**[View the full Hex Bolt — GB/T 5783 / ISO 4017 \(Series 010\) page](https://engineeringhardware.com/fastener/cad-svg-010-hexbolt/)**

**(<https://engineeringhardware.com/fastener/cad-svg-010-hexbolt/>)**

## More Hex Bolt — GB/T 5783 / ISO 4017 (Series 010) Guides

- **M3 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010)** (<https://engineeringhardware.com/guide/size/m3-cad-svg-010-hexbolt/>)
- **M4 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010)** (<https://engineeringhardware.com/guide/size/m4-cad-svg-011-hexbolt/>)
- **M5 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010)** (<https://engineeringhardware.com/guide/size/m5-cad-svg-010-hexbolt/>)
- **M6 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010)** (<https://engineeringhardware.com/guide/size/m6-cad-svg-012-hexbolt/>)
- **M8 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010)** (<https://engineeringhardware.com/guide/size/m8-cad-svg-011-hexbolt/>)
- **M10 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010)** (<https://engineeringhardware.com/guide/size/m10-cad-svg-010-hexbolt/>)
- **M12 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010)** (<https://engineeringhardware.com/guide/size/m12-cad-svg-010-hexbolt/>)
- **M14 Hex Bolt — GB/T 5783 / ISO 4017 (Series 010)** (<https://engineeringhardware.com/guide/size/m14-cad-svg-010-hexbolt/>)