M22 Wheel Nuts, Conical and Ball Seat Dimensions

M22 Wheel Nuts, Conical and Ball Seat dimensions to Trade series (wheel nut): width across flats (spanner size) 32 mm, nut height 32 mm, coarse thread pitch 2.5 mm. Tighten to approximately 573 Nm at property class 8.8 in a dry, as-supplied condition.

Width across flats (spanner size)

32 mm

Nut height

32 mm

Coarse thread pitch

2.5 mm

Tightening torque (class 8.8)

573 Nm

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



M22 Wheel Nuts, Conical and Ball Seat are manufactured to Trade series (wheel nut). This page lists the controlling dimensions for the M22 size together with the drive and the installation notes for this type.

> *Values are taken from the governing standard rather than from a general machine-thread table, because this type is not selected on one.*

M22 Dimensional Row (Trade series (wheel nut))

Thread size	Pitch (mm)	Seat type	Width across flats s (mm)	Total height m (mm)
M22	1.5	Conical 60°	32	32

Spanner & Drive for M22 Wheel Nuts, Conical and Ball Seat

Drive geometry for M22 Wheel Nuts, Conical and Ball Seat is given by the row above; match the tool to the listed values.

Tightening Torque for M22

Class 8.8 (dry, ~μ 0.125)	≈ 629 Nm
Class 10.9 (dry, ~μ 0.125)	≈ 895 Nm
Class 12.9 (dry, ~μ 0.125)	≈ 1048 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 M22

Nuts are graded to ISO 898-2 by the proof load the nut itself will hold (classes 04, 05, 5, 6, 8, 10 and 12), not by the 8.8 / 10.9 / 12.9 scale used for bolts. A class-8 nut is the correct mate for a class-8.8 bolt, and the joint is designed on the bolt, so no bolt-tension

figure is quoted here.

Installation Tips for M22 Wheel Nuts, Conical and Ball Seat

- At M22 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 M22

Pair M22 with the matching M22 bolt or screw, plus a M22 flat washer where required to distribute load on softer materials.

Custom manufacturing · Made to drawing

Need wheel nuts, conical and ball seat in a size this table does not list?

This page covers M22 wheel nuts, conical and ball seat. Thread, height, across-flats, property class, locking feature and flange form can all be varied, including thread sizes the standard series does not run to. Made by cold heading or tapping.

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

Custom nut manufacturing (https://engineeringhardware.com/custom/nuts/)

Send a drawing (https://engineeringhardware.com/custom/nuts/#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 M22 Wheel Nuts, Conical and Ball Seat to Trade series (wheel nut). Side view and top view, drawn to the dimensions in the table below and redrawn for any size selected.

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 (Trade series (wheel nut))

Thread size	Pitch (mm)	Seat type	Width across flats s (mm)	Total height m (m
M12	1.25	Conical 60°	17	20
M12	1.5	Conical 60°	19	20
M12	1.5	Ball / radius R13	19	20
M14	1.5	Conical 60°	19	24
M14	1.5	Ball / radius R14	21	24
M22	1.5	Conical 60°	32	32

Product catalog

Related Wheel & Lug Nuts products



(https://engineeringhardware.com/product/7075-aluminum-rays-lug-nuts-wheel-hub-bolts-9-16-18-wheel-lug-nuts/)

Wheel, Lug, Hub & Track Bolts

7075 Aluminum Rays Lug Nuts Wheel Hub Bolts 9/16-18 Wheel Lug Nuts (https://engineeringhardware.com/product/7075-aluminum-rays-lug-nuts-wheel-hub-bolts-9-16-18-wheel-lug-nuts/)

Hexagon Head · DIN, ANSI, GB, JIS, GOST, BSW

US$0.12 – 1.20MOQ 10 pieces



(https://engineeringhardware.com/product/car-automotive-automobile-truck-wheel-hub-bolt-with-nut/)

Wheel, Lug, Hub & Track Bolts

Car Automotive Automobile Truck Wheel Hub Bolt with Nut

(https://engineeringhardware.com/product/car-automotive-automobile-truck-wheel-

hub-bolt-with-nut/)

Hexagon Head · DIN, ANSI, GB, JIS, BSW, GOST

US$0.60 – 12.00 MOQ 1 kilogram



(https://engineeringhardware.com/product/durable-grade-10-9-m12x1-5-wheel-bolt-stud-knurled-heat-treated-alloy-steel-stud/)

Wheel, Lug, Hub & Track Bolts

Durable Grade 10.9 M12X1.5 Wheel Bolt Stud Knurled Heat Treated Alloy Steel Stud Corrosion Resistant Zinc Plated Knurl Studs Wheel Stud (https://engineeringhardware.com/product/durable-grade-10-9-m12x1-5-wheel-bolt-stud-knurled-heat-treated-alloy-steel-stud/)

Wheel Studs · Steel

US$0.36 – 0.38 MOQ 20,000 pieces



(https://engineeringhardware.com/product/asme-b18-10-m27-dome-head-excavator-track-roller-shoe-bolt-oval-neck-track-bolts/)

(https://engineeringhardware.com/product/asme-b18-10-m27-dome-head-excavator-track-roller-shoe-bolt-oval-neck-track-bolts/)

Wheel, Lug, Hub & Track Bolts

ASME B18.10 M27 Dome Head Excavator Track Roller Shoe Bolt Oval Neck Track Bolts (https://engineeringhardware.com/product/asme-b18-10-m27-dome-head-excavator-track-roller-shoe-bolt-oval-neck-track-bolts/)

Round Head · DIN, ANSI, GB, JIS, BSW, GOST

US$0.11 – 0.14MOQ 3,000 pieces



(https://engineeringhardware.com/product/mitsubishi-auto-parts-accessories-truck-wheel-bolt/)

Wheel, Lug, Hub & Track Bolts

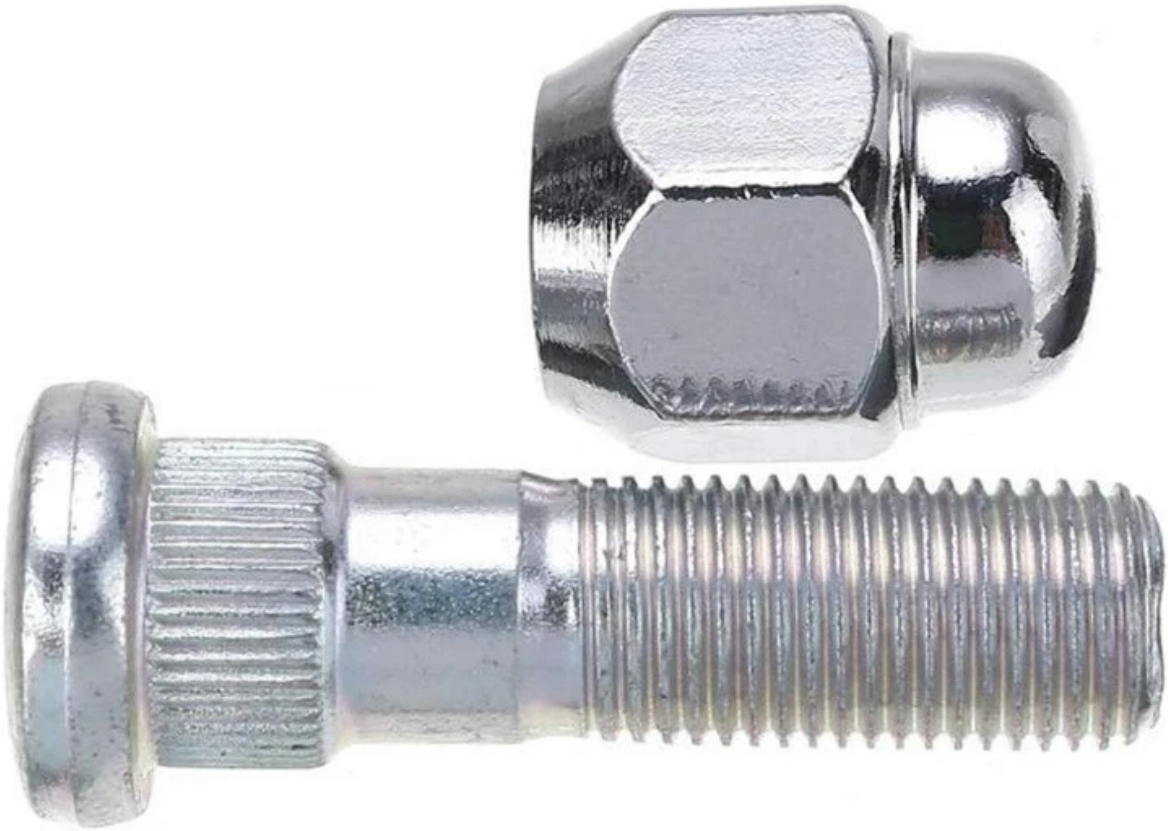
Mitsubishi Auto Parts Accessories Truck Wheel Bolt

(https://engineeringhardware.com/product/mitsubishi-auto-parts-accessories-truck-

wheel-bolt/)

Hexagon Head · GB

US$0.60 – 1.80MOQ 1,000 pieces



(https://engineeringhardware.com/product/factory-sale-wheel-hub-stud-and-nut-wheel-bolt-for-s-ubaru/)

Wheel, Lug, Hub & Track Bolts

Factory Sale Wheel Hub Stud and Nut Wheel Bolt for S Ubaru
(https://engineeringhardware.com/product/factory-sale-wheel-hub-stud-and-nut-wheel-bolt-for-s-ubaru/)(https://engineeringhardware.com/product/factory-sale-wheel-hub-stud-and-nut-wheel-bolt-for-s-ubaru/)

Wheel Bolts · DIN

US$0.024 – 0.06 MOQ 1,000 pieces

View all Wheel, Lug, Hub & Track Bolts →
(https://engineeringhardware.com/fastener-products/bolts/wheel-lug-hub-track-bolts/)

Full product catalog (https://engineeringhardware.com/products/)

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

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

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
- ML08Al
- 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 M22 Wheel Nuts

Where Wheel Nuts are used, and what decides the specification in each case. Stocked from M12 to M22.

Industries that specify Wheel Nuts

Commercial vehicles & trailers **Heavy wheel fixings torqued and re-checked.**

Motorsport & modification **Aftermarket wheels with a different seat form.**

Automotive service **Road wheel mounting on cars and light commercials.**

Building services **Threaded rod, channel and suspension assemblies.**

Machine building & OEM **The clamping counter-face on studs and bolts throughout an assembly.**

Steel fabrication **Bolted structural and frame connections.**

Typical applications

- **seat form must match the wheel — conical, ball or flat**
- **fitted dry and torqued to the vehicle figure**
- **mounting a road wheel to a hub or stud**
- **locking an adjustment so it cannot drift**
- **joints re-torqued at a service interval**
- **completing a bolted joint on a stud, rod or bolt**

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.

Match the class

A nut below the bolt property class strips before the bolt reaches its own limit — pair class 8 nuts with 8.8 bolts, class 10 with 10.9.

Where to use something else

- **Never lubricate a wheel nut thread or seat: the torque figure assumes a dry joint and lubrication over-tensions the stud.**

Full application guide: where Wheel Nuts are used, how to specify them, and the cases they are wrong for (https://engineeringhardware.com/applications/wheel-nuts-conical-seat/)

Video: M22 Wheel Nuts, Conical and Ball Seat Dimensions



https://www.youtube.com/watch?v=dq5GNtH8uhg

► Watch video: https://www.youtube.com/watch?v=dg5GNtH8uhg (https://www.youtube.com/watch?v=dg5GNtH8uhg)

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.



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.



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.



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.



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 clearance and tapping drill suit M22?

Use a 24 mm clearance hole (ISO 273 medium) for through-fixing, or a 20.5 mm tapping drill for a coarse M22 thread.

Should M22 Wheel Nuts, Conical and Ball Seat be tightened by torque or by angle?

For critical structural joints at M22, angle-controlled or stretch-controlled tightening is more repeatable than pure torque — the friction scatter at large diameters can dominate the torque signal.

What grip range is typical for M22 structural bolts?

Grip ranges are highly application-dependent at M22. As a guide, choose a length that gives at least 1× the thread diameter engagement in the nut plus 2–3 thread pitches projecting.

What is the height of an M22 nut?

The nominal height of a style-1 ISO 4032 M22 nut is in the spec table on this page. Style-2 (thick) is approximately 1.1× this height; thin (ISO 4035 / DIN 439) is approximately 0.5×.

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 Wheel Nuts, Conical and Ball Seat page (https://engineeringhardware.com/fastener/wheel-nuts-conical-seat/)

More Wheel Nuts, Conical and Ball Seat Guides

- **M12 Wheel Nuts, Conical and Ball Seat (https://engineeringhardware.com/guide/size/m12-wheel-nuts-conical-seat/)**
- **M14 Wheel Nuts, Conical and Ball Seat (https://engineeringhardware.com/guide/size/m14-wheel-nuts-conical-seat/)**