M20 Foundation Bolts, L and J Form Dimensions

M20 Foundation Bolts, L and J Form dimensions to Trade series (cast-in holding-down bolt): coarse thread pitch 2.5 mm, clearance hole (ISO 273 medium) 22 mm, tapping drill 17.5 mm. Tighten to approximately 420 Nm at property class 8.8 in a dry, as-supplied condition.

Coarse thread pitch

2.5 mm

Clearance hole (ISO 273 medium)

22 mm

Tapping drill

17.5 mm

Tightening torque (class 8.8)

420 Nm

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



M20 Foundation Bolts, L and J Form (Trade series (cast-in holding-down bolt)) are specified by thread size, length and head dimensions. The M20 row from the standard is reproduced below, followed by the drill sizes, spanner size and torque values used when installing this size.

M20 Dimensional Row (Trade series (cast-in holding-down bolt))

Thread size	Form	Overall length L (mm)	Hook length (mm)	Thread length (mm)	P
M20	L	500	80	100	1

Hole Sizes for M20

Coarse-thread pitch (ISO 724)	2.5 mm
Through-hole / clearance (ISO 273 medium)	22 mm
Tapping drill, coarse thread	17.5 mm

Tightening Torque for M20

Class 8.8 (dry, ~μ 0.125)	≈ 420 Nm
Class 10.9 (dry, ~μ 0.125)	≈ 598 Nm
Class 12.9 (dry, ~μ 0.125)	≈ 700 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 M20

Tensile stress area As (ISO 724)	245 mm²
Proof load, class 8.8	147 kN
Proof load, class 10.9	203 kN
Proof load, class 12.9	237 kN
Min. ultimate tensile load, class 8.8	203 kN

Proof load = tensile stress area × the proof stress Sp of the class, per ISO 898-1 — Sp is a lower figure than the yield stress Rp0.2 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.

Mating Parts for M20

For M20, pair with a M20 hex nut (ISO 4032 / DIN 934) and, where used, a M20 flat washer (ISO 7089 / DIN 125A) under the head and under the nut.

When to Step Up or Down from M20

When the joint preload approaches the proof load of M20 class 8.8, step up to M24 class 8.8 (or move to M20 class 10.9). When the joint is over-specified, M16 often saves weight

and cost without losing the safety margin.

Custom manufacturing · Made to drawing

Need foundation bolts, l and j form in a size this table does not list?

This page covers M20 foundation bolts, l and j form. A non-standard bolt is quoted from the drawing; where one already exists in the catalog, the special is usually a variation on its tooling. 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 M20 Foundation Bolts, L and J Form to Trade series (cast-in holding-down bolt). 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 (cast-in holding-down bolt))

Thread size	Form	Overall length L (mm)	Hook length (mm)	Thread length (mm)	P
M12	L	300	50	60	6
M16	L	400	65	80	8
M16	J	400	80	80	8
M20	L	500	80	100	1
M20	J	500	100	100	1
M24	L	600	100	120	1
M30	L	750	120	150	1

Product catalog

Related Foundation & Anchor Bolts products



(https://engineeringhardware.com/product/underground-mining-roof-bolting-expansion-shell-anchor-bolt/)

Foundation & Anchor Bolts

Underground Mining Roof Bolting Expansion Shell Anchor Bolt (https://engineeringhardware.com/product/underground-mining-roof-bolting-expansion-shell-anchor-bolt/)

AISI, ASME, BS, ANSI, JIS, GB, ASTM, DIN · Ductile Iron, Steel

US$1.09 MOQ 100 pieces



(https://engineeringhardware.com/product/galvanized-self-drilling-hollow-anchor-bolt-r25-r32-r38-r51-grouting-rock-bolt-for/)

Foundation & Anchor Bolts

Galvanized Self Drilling Hollow Anchor Bolt R25 R32 R38 R51 Grouting Rock Bolt for Tunnel Mining

(https://engineeringhardware.com/product/galvanized-self-drilling-hollow-anchor-bolt-r25-r32-r38-r51-grouting-rock-bolt-for/)
(https://engineeringhardware.com/product/galvanized-self-drilling-hollow-anchor-bolt-r25-r32-r38-r51-grouting-rock-bolt-for/)

Steel · Customized Sizes

US$3.55 – 3.72MOQ 100 pieces



Younsion Fastening Industrial Co., Ltd.

(https://engineeringhardware.com/product/high-quality-stainless-steel-l-shaped-7-shaped-anchor-bolt/)

Foundation & Anchor Bolts

High Quality Stainless Steel L-Shaped 7-Shaped Anchor Bolt

(https://engineeringhardware.com/product/high-quality-stainless-steel-l-shaped-7-shaped-anchor-bolt/)

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

US$0.012 – 6.00MOQ 10,000 pieces



(https://engineeringhardware.com/product/mechanical-zinc-plated-anchor-bolt/)

Foundation & Anchor Bolts

Mechanical Zinc Plated Anchor Bolt

(https://engineeringhardware.com/product/mechanical-zinc-plated-anchor-bolt/)
(https://engineeringhardware.com/product/mechanical-zinc-plated-anchor-bolt/)

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

US$0.012 MOQ 1,000 pieces



(https://engineeringhardware.com/product/high-strength-j-l-u-v-bolts-grade-4-8-8-8-anchor-bolt-galvanized-foundation-bolt/)

Foundation & Anchor Bolts

High Strength J/L/U/V Bolts Grade 4.8/8.8 Anchor Bolt Galvanized Foundation Bolt (https://engineeringhardware.com/product/high-strength-j-l-u-v-bolts-grade-4-8-8-8-anchor-bolt-galvanized-foundation-bolt/)

Foundation Bolt · DIN, ANSI, GB, JIS, BSW, GOST

US$0.06 – 0.13 MOQ 1,000 pieces



(https://engineeringhardware.com/product/thread-rod-threaed-bolt-stud-bolt-anchor-bolt-with-nut/)

Foundation & Anchor Bolts

Thread Rod/Threaed Bolt/Stud Bolt/Anchor Bolt with Nut
(https://engineeringhardware.com/product/thread-rod-threaed-bolt-stud-bolt-anchor-bolt-with-nut/)(https://engineeringhardware.com/product/thread-rod-threaed-bolt-stud-bolt-anchor-bolt-with-nut/)

Carbon Steel · A

US$0.60 MOQ 1 piece

View all Foundation & Anchor Bolts →
(https://engineeringhardware.com/fastener-products/anchors-construction-fixings/foundation-anchor-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 M20 Foundation Bolts

The sectors that buy Foundation Bolts, and the duty each one buys them for. Stocked from M12 to M30.

Industries that specify Foundation Bolts

Machine installation **Presses, pumps, compressors and conveyors held down to a concrete base.**

Structural columns **Column base plates cast into or grouted into the slab.**

Energy & infrastructure **Masts, gantries and equipment plinths.**

Plant & machine installation **Anchoring and levelling machines onto bases and frames.**

Steel fabrication **Hanger rods, tie rods and made-to-length threaded assemblies.**

Building services **Threaded rod suspension for tray, duct and pipework.**

Typical applications

- **cast into a concrete pour before the machine arrives**
- **grouted into a formed pocket and aligned to a template**
- **holding down plant that transmits vibration into the floor**
- **clamping a joint from both ends where a headed bolt will not fit**
- **suspending services from a soffit on threaded rod**
- **made-to-length assemblies cut and threaded on site**

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.

Exterior structural

Hot-dip galvanised options for external steelwork; allow for the thicker coating in the mating thread.

Where to use something else

- **Not retrofittable — for an existing slab use a mechanical or chemical anchor instead.**
- **Not for a joint that must be tightened from one side only — there is no head to hold.**

Full application guide: where Foundation Bolts are used, how to specify them, and the cases they are wrong for (https://engineeringhardware.com/applications/foundation-bolts-l-j/)

Video: M20 Foundation Bolts, L and J Form Dimensions



https://www.youtube.com/watch?v=jLS-

► Watch video: https://www.youtube.com/watch?v=ij-S-9lHcsM (https://www.youtube.com/watch?v=ij-S-9lHcsM)

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 M20?

Use a 22 mm clearance hole (ISO 273 medium) for through-fixing, or a 17.5 mm tapping drill for a coarse M20 thread.

Should M20 Foundation Bolts, L and J Form be tightened by torque or by angle?

For critical structural joints at M20, 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 M20 structural bolts?

Grip ranges are highly application-dependent at M20. 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 coarse-thread pitch of M20 for Foundation Bolts, L and J Form?

For M20 the standard coarse pitch is 2.5 mm — this is the value used for Foundation Bolts, L and J Form.

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 Foundation Bolts, L and J Form page (https://engineeringhardware.com/fastener/foundation-bolts-l-j/)

More Foundation Bolts, L and J Form Guides

- **M12 Foundation Bolts, L and J Form (https://engineeringhardware.com/guide/size/m12-foundation-bolts-l-j/)**
- **M16 Foundation Bolts, L and J Form (https://engineeringhardware.com/guide/size/m16-foundation-bolts-l-j/)**
- **M24 Foundation Bolts, L and J Form (https://engineeringhardware.com/guide/size/m24-foundation-bolts-l-j/)**
- **M30 Foundation Bolts, L and J Form (https://engineeringhardware.com/guide/size/m30-foundation-bolts-l-j/)**