

M6 Bolt Wrench Size: 10 mm Wrench and Socket Opening

M6 · Across flats s + nominal wrench/socket opening · GB/T 5782 / ISO 4014 basis · no interpolation for missing sizes

A M6 hex head bolt takes a 10 mm wrench or socket: its width across flats is s=10 mm on the GB/T 5782 / ISO 4014 basis, nominally 3/8" in imperial sizes. On the same basis the M6 hex nut measures 10 mm across flats.

M6

GB/T 5782 / ISO 4014 · s 10 mm

M6 Width Across Flats, Side by Side

Four rows, one size. Each row gives the value its governing standard sets and the opening it maps to. The tool opening you need is the width across flats of the part you actually turn - for a hex head bolt that is s, for a hex nut that is s, for a flange nut that is s. The carriage bolt row is different in kind: its square neck is not a hex and no wrench goes on it (it bites into the slot and stops the bolt turning), so tighten on the nut side; it is listed because it is the dimension most often asked about alongside the others for the same nominal size.

Fastener / feature	Width across flats s (mm)	Wrench / socket opening (nominal)	Standard (row-level source)
Hex head bolt	10 mm	10 mm (3/8")	GB/T 5782 / ISO 4014
Hex nut	10 mm	10 mm (3/8")	GB/T 6170 / ISO 4032
Flange nut	10 mm	10 mm (3/8")	GB/T 6177.1-2016 (type 2)
Carriage bolt square neck	6.3 mm	not a wrench opening - tighten on the nut side	GB/T 12-2013

A dash means this chart has no value for that combination: the flange nut data behind this page covers M6, M8, M10, M12, M16 and M20, and the carriage bolt data covers M6-M20 except M18. A missing size is not interpolated or extrapolated - ask us for the drawing-level figure. Widths across flats here are nominal; the real fit also depends on the fastener tolerance and on the tool's own tolerance band.

All Sizes: M6-M36 Wrench and Socket Openings

The same four columns across the whole range, one row per size. The wrench/socket column is the hex bolt width across flats with its nearest imperial fraction in brackets (a nominal label, not a conversion - see the notes under the table). Use it to find the tool for a bolt you already have, or to compare what a nut, a flange nut or a carriage bolt of the same size will need.

Size	Hex bolt s (mm)	Wrench / socket (nominal)	Hex nut s (mm)	Flange nut s (mm)	Carriage bolt neck s (mm)
M6	10 mm	10 mm (3/8")	10 mm	10 mm	6.3 mm
M8	13 mm	13 mm (1/2")	13 mm	13 mm	8.36 mm
M10	16 mm	16 mm (5/8")	16 mm	15 mm	10.36 mm
M12	18 mm	18 mm (11/16")	18 mm	18 mm	12.43 mm
M14	21 mm	21 mm (13/16")	21 mm	—	14.43 mm
M16	24 mm	24 mm (15/16")	24 mm	24 mm	16.43 mm
M18	27 mm	27 mm (1 1/16")	27 mm	—	—
M20	30 mm	30 mm (1 3/16")	30 mm	30 mm	20.52 mm
M22	32 mm	32 mm (1 1/4")	34 mm	—	—
M24	36 mm	36 mm (1 7/16")	36 mm	—	—
M27	41 mm	41 mm (1 5/8")	41 mm	—	—
M30	46 mm	46 mm (1 13/16")	46 mm	—	—
M33	50 mm	50 mm (1 15/16")	50 mm	—	—
M36	55 mm	55 mm (2 3/16")	55 mm	—	—

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Heavy Hex and Other Series: Why Charts Give Different Numbers

Heavy hex fasteners (the heavy series in the ASME B18.2.1 / B18.2.6 family, and the high-strength structural series) use a larger width across flats than the regular hex series at the same nominal diameter. If you measure a head or nut that has been called "M12" and get a noticeably larger opening than the value in the table above, that is the tell. A wrench that fits the regular hex series will not fit the heavy hex series, and the two are not interchangeable in the same joint. This chart does not tabulate heavy hex: the governing tables are copyrighted and are not reproduced here, and the ISO/GB series this chart is built on has no heavy hex column. Order those items against the drawing or the standard the buyer names.

The second reason shop charts disagree is the size series. Two bases are in circulation for the same nominal diameter: the reduced across-flats series used here (ISO 4014 / GB/T 5782 for bolts, ISO 4032 / GB/T 6170 for nuts - M10 16 mm, M12 18 mm, M14 21 mm) and the withdrawn German DIN 933 / DIN 934 series, which is one step larger at exactly those three sizes (17 / 19 / 22 mm). The widely repeated line "an M12 bolt takes a 19 mm wrench" is the DIN basis; on the ISO/GB basis used

throughout this page an M12 bolt takes an 18 mm wrench. Each is correct for its own basis, and what decides is which one your drawing or contract names - so check the basis before you buy a tool or a box of fasteners.

Data Basis and Assumptions Disclosed

Every value on this page is derived at render time from fastenerCalc, the same library that drives the calculators and the weight charts on this site - no second table and no copied figures. The bolt row reads SIZES[].hexHead.s (ISO 4014 / GB/T 5782), the nut row SIZES[].hexNut.s (ISO 4032 / GB/T 6170), the flange nut row FN_DIMS (GB/T 6177.1-2016 type 2) and the carriage bolt row CB_DIMS (GB/T 12-2013); the row-level standards are named in the table itself. No table values are reproduced from any copyrighted standard (for example ASME B18.2.1 / B18.2.6), and no heavy hex column is published. Imperial fractions are nominal nearest-sixteenth labels, not imperial size equivalents.

Boundary: (1) widths across flats are nominal values, actual parts vary within tolerance and the fit also depends on the tool tolerance - this page is not an acceptance basis; (2) imperial fractions are the nearest sixteenth by rounding and are there to help you find a close tool, not as a conversion (13 mm is not 1/2 in); (3) combinations shown as a dash have no value in this chart's data and are deliberately not interpolated; (4) everything here is on the ISO/GB series, which differs from the withdrawn DIN 933 / DIN 934 series at M10, M12 and M14 - confirm the basis on your drawing before ordering tools or fasteners.

References

- GB/T 5782-2016 Hexagon head bolts (National Public Service Platform for Standards Information, China; the across-flats series used for the bolt row) — https://openstd.samr.gov.cn/bzgk/gb/std?std_no=GB%2FT%205782-2016
- GB/T 6170-2015 Style 1 hexagon nuts (National Public Service Platform for Standards Information, China; across-flats series identical to ISO 4032, used for the nut row) — https://openstd.samr.gov.cn/bzgk/gb/std?std_no=GB%2FT%206170-2015
- GB/T 6177.1-2016 Hexagon nuts with flange, type 2 (National Public Service Platform for Standards Information, China; used for the flange nut row, which covers six sizes in this chart) — https://openstd.samr.gov.cn/bzgk/gb/std?std_no=GB%2FT%206177.1-2016
- GB/T 12-2013 Round head square neck bolts (carriage bolts) (National Public Service Platform for Standards Information, China; used for the square neck row) — https://openstd.samr.gov.cn/bzgk/gb/std?std_no=GB%2FT%2012-2013
- ISO 4014 / ISO 4032 - equivalent ISO series for hexagon head bolts and style 1 hexagon nuts, cited for series reference only; no table values are reproduced from them

Disclaimer: This table is engineering reference data for tool selection, ordering and fit checking only, not a design basis or acceptance standard.

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