

M12 Carriage Bolt Size & Weight Chart

M12	under-head / overall	g per piece · kg / 1000 pcs	carbon steel 7.85 g/cm³
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M12

GB/T 12-2013 · dk 25.3 · k1 8.45 · s 12.43 mm

Nominal diameter d	12 mm
Coarse pitch P (GB/T 196 series)	1.75 mm
Head diameter dk (dome max OD)	25.3 mm
Head height k1 (dome height)	8.45 mm
Square neck width s	12.43 mm
Thread length b (partly threaded basis)	30 mm

Row-level standard labelling: dimensions follow GB/T 12-2013 Round Head Square Neck Bolts (small dome head, max nominal values) as the primary source; DIN 603 is the equivalent German series and ISO 8677 the equivalent ISO series, cited for series reference only — no table values are reproduced from them. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

M12 Length Series: Under-Head / Overall / Unit Weight

Length convention (the point this chart adds): the length L specified by GB/T 12 and DIN 603 is the under-head length — measured from the bearing face (below the square neck) to the end of the shank, excluding the dome head. Overall length including the head = L + k1. Reporting the same bolt by the wrong convention shifts the figure by one head height (8.45 mm for M12), so confirm the convention with the supplier before assembly.

Under-head L (mm)	Overall L+k1 (mm)	Thread b (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M12×20	28.45	20	44	44
M12×25	33.45	25	49	49
M12×30	38.45	30	53	53
M12×35	43.45	30	58	58
M12×40	48.45	30	62	62
M12×45	53.45	30	66	66
M12×50	58.45	30	71	71
M12×55	63.45	30	75	75
M12×60	68.45	30	80	80
M12×70	78.45	30	89	89
M12×80	88.45	30	97	97
M12×90	98.45	30	110	110
M12×100	108.45	30	120	120
M12×120	128.45	30	130	130
M12×150	158.45	30	160	160

Unit weight = geometric volume of full-diameter shank ($\pi/4 \times d^2 \times L$) + dome head ($\pi \times h/6 \times (3r^2 + h^2)$) + square neck ($s^2 \times 0.5d$), times 7.85 g/cm3 for carbon steel; rounded to avoid false precision (whole g below 100 g, 10 g steps below 1,000 g, 100 g steps above). Length series covers the catalog standard 20-80 mm plus common longer sizes made to order.

Calculation Basis and Assumptions Disclosed

Dimensions come from fastenerCalc.CB_DIMS (GB/T 12-2013 round head square neck, max nominal values, same source as the product catalog SKUs and the online weight calculator). Unit weights are all computed from geometry x density: full-diameter shank ($\pi/4 \times d^2 \times L$) + dome head ($\pi \times h/6 \times (3r^2 + h^2)$) + square neck ($s^2 \times 0.5d$), at 7.85 g/cm3 for carbon steel, base metal only, coating excluded. Thread length follows the GB/T 12 partly threaded rule $b = 2d + 6$ (full thread when the shank is shorter, $b = L$), which matches the catalog spec_json threadLenMm row by row. No table values are reproduced from any copyrighted standard (e.g. ASME B18.5).

Boundary: unit weights are theoretical geometry estimates (excluding coatings and any rolled-thread material saving) for quotation, freight and packing budgets; actual weight varies with thread accuracy, head tolerance and coating (hot-dip galvanizing roughly +4.5%), and trade settlement is against actual measurement. Head diameter dk is a max nominal value and may differ from the buyer's drawing or sample; this chart is not an acceptance basis.

References

- GB/T 12-2013 Round Head Square Neck Bolts (National Public Service Platform for Standards Information) — https://openstd.samr.gov.cn/bzgk/gb/std?std_no=GB%2FT%2012-2013
- GB/T 196-2003 General Purpose Metric Screw Threads — Basic Dimensions, coarse pitches (same table as fastenerCalc.pitchOf) — https://openstd.samr.gov.cn/bzgk/gb/std?std_no=GB%2FT%20196-2003

- Dimensions and unit weights cross-checked row by row against carriage bolt SKU spec_json in the product catalog (same source as product pages)

Disclaimer: This table is engineering estimate data for selection, quotation and freight estimation reference only, not a design basis or acceptance standard.

Material Density Conversion

Table values are for carbon steel (7.85 g/cm3); other materials convert by density ratio: weight x factor (geometry unchanged).

Material	Density (g/cm3) g/cm³	Conversion Factor
Carbon Steel	7.85	×1.000
304 Stainless Steel	7.93	×1.010
316 Stainless Steel	7.98	×1.017
Brass	8.5	×1.083

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