

Hex Key Size Chart

Which hex key (Allen wrench) fits a socket head cap screw: GB/T 70.1 head and socket width across flats plus GB/T 5356 key long and short arm lengths, M3-M24 unit weight by length, g and lb toggle.

M3–M24 · GB/T 70.1 socket head cap screws (ISO 4762 / DIN 912 series ref.) · Head dimensions + matching key across flats / arm lengths · g per piece · kg / 1000 pcs · GB/T 5356-2021 key long/short arm · carbon steel 7.85 g/cm³

M3

GB/T 70.1 · dk 5.5 · k 3 · s 2.5 mm

Nominal diameter d	3 mm
Coarse pitch P (GB/T 196 series)	0.5 mm
Head diameter dk (max)	5.5 mm
Head height k (max)	3 mm
Hexagon socket width across flats s (key size)	2.5 mm
Thread length b (partly threaded basis)	2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200 (b <= L)

Row-level standard labelling: dimensions follow GB/T 70.1-2008 Socket Head Cap Screws (the current edition, max nominal values; head diameter is the plain-head max and head height k is taken from that series) as the primary source; ISO 4762 is the equivalent ISO series, cited for series reference only - no table values are reproduced from it. Two bases have to be kept apart: the GB/T 70.1-2008 / ISO 4762 size series runs from M1.6 to M64 and does not include M18 or M22, so the M18 and M22 pages here are given on the DIN 912 basis (that German series includes M18 and M22, bracketed there as non-preferred sizes); the other eleven sizes are on the GB/T 70.1 / ISO 4762 basis (including M14, also bracketed as non-preferred there). The socket width across flats s is a nominal size; actual fit also depends on the socket tolerance and the key's manufacturing tolerance. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

Matching Hex Key Dimensions (s=2.5 mm)

Across flats s (mm)	2.5
Long arm L1 (mm)	58.5
Short arm L2 (mm)	20.5

M3 Length Series: Plain Shank, Thread and Unit Weight

Unit weights are computed from the socket head cap screw configuration: full-diameter plain shank plus a pitch-diameter threaded section plus the cylindrical head (with the hexagon socket reduction). The basis is identical to the spec_json weightCalc of the socket head cap screw SKUs in our product catalog - same parameters, same formula, fully reproducible. Thread length b follows the same partly threaded rule as the catalog in three bands (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length, i.e. fully threaded b = L when the shank is shorter).

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M3×8	8	0	1	1
M3×10	10	0	1	1
M3×12	12	0	1	1
M3×16	12	4	1	1
M3×20	12	8	1	1
M3×25	12	13	2	2
M3×30	12	18	2	2

Configuration basis (same source as the product catalog): shank = plain section pi/4 x d^2 x (L-b) plus threaded section pi/4 x d^2 x b (d2 = d - 0.6495P, ISO basic profile pitch diameter); head = pi/4 x dk^2 x k x 0.85 (0.85 is the volume reduction factor for the hexagon socket cavity and top chamfer, the same value as the catalog headFactor); multiplied by 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). Lengths listed are the common range; other lengths are made to order.

M4

GB/T 70.1 · dk 7 · k 4 · s 3 mm

Nominal diameter d	4 mm
Coarse pitch P (GB/T 196 series)	0.7 mm
Head diameter dk (max)	7 mm
Head height k (max)	4 mm
Hexagon socket width across flats s (key size)	3 mm
Thread length b (partly threaded basis)	2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200 (b <= L)

Row-level standard labelling: dimensions follow GB/T 70.1-2008 Socket Head Cap Screws (the current edition, max nominal values; head diameter is the plain-head max and head height k is taken from that series) as the primary source; ISO 4762 is the equivalent ISO series, cited for series reference only - no table values are reproduced from it. Two bases have to be kept apart: the GB/T 70.1-2008 / ISO 4762 size series runs from M1.6 to M64 and does not include M18 or M22, so the M18 and M22

pages here are given on the DIN 912 basis (that German series includes M18 and M22, bracketed there as non-preferred sizes); the other eleven sizes are on the GB/T 70.1 / ISO 4762 basis (including M14, also bracketed as non-preferred there). The socket width across flats s is a nominal size; actual fit also depends on the socket tolerance and the key's manufacturing tolerance. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

Matching Hex Key Dimensions (s=3 mm)

Across flats s (mm)	3
Long arm L1 (mm)	66
Short arm L2 (mm)	23

M4 Length Series: Plain Shank, Thread and Unit Weight

Unit weights are computed from the socket head cap screw configuration: full-diameter plain shank plus a pitch-diameter threaded section plus the cylindrical head (with the hexagon socket reduction). The basis is identical to the spec_json weightCalc of the socket head cap screw SKUs in our product catalog - same parameters, same formula, fully reproducible. Thread length b follows the same partly threaded rule as the catalog in three bands (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length, i.e. fully threaded b = L when the shank is shorter).

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M4×8	8	0	2	2
M4×10	10	0	2	2
M4×12	12	0	2	2
M4×16	14	2	2	2
M4×20	14	6	3	3
M4×25	14	11	3	3
M4×30	14	16	4	4

Configuration basis (same source as the product catalog): shank = plain section $\pi/4 \times d^2 \times (L-b)$ plus threaded section $\pi/4 \times d^2 \times b$ ($d_2 = d - 0.6495P$, ISO basic profile pitch diameter); head = $\pi/4 \times dk^2 \times k \times 0.85$ (0.85 is the volume reduction factor for the hexagon socket cavity and top chamfer, the same value as the catalog headFactor); multiplied by 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). Lengths listed are the common range; other lengths are made to order.

M5

GB/T 70.1 · dk 8.5 · k 5 · s 4 mm

Nominal diameter d	5 mm
Coarse pitch P (GB/T 196 series)	0.8 mm
Head diameter dk (max)	8.5 mm
Head height k (max)	5 mm
Hexagon socket width across flats s (key size)	4 mm
Thread length b (partly threaded basis)	2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200 (b <= L)

Row-level standard labelling: dimensions follow GB/T 70.1-2008 Socket Head Cap Screws (the current edition, max nominal values; head diameter is the plain-head max and head height k is taken from that series) as the primary source; ISO 4762 is the equivalent ISO series, cited for series reference only - no table values are reproduced from it. Two bases have to be kept apart: the GB/T 70.1-2008 / ISO 4762 size series runs from M1.6 to M64 and does not include M18 or M22, so the M18 and M22 pages here are given on the DIN 912 basis (that German series includes M18 and M22, bracketed there as non-preferred sizes); the other eleven sizes are on the GB/T 70.1 / ISO 4762 basis (including M14, also bracketed as non-preferred there). The socket width across flats s is a nominal size; actual fit also depends on the socket tolerance and the key's manufacturing tolerance. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

Matching Hex Key Dimensions (s=4 mm)

Across flats s (mm)	4
Long arm L1 (mm)	74
Short arm L2 (mm)	29

M5 Length Series: Plain Shank, Thread and Unit Weight

Unit weights are computed from the socket head cap screw configuration: full-diameter plain shank plus a pitch-diameter threaded section plus the cylindrical head (with the hexagon socket reduction). The basis is identical to the spec_json weightCalc of the socket head cap screw SKUs in our product catalog - same parameters, same formula, fully reproducible. Thread length b follows the same partly threaded rule as the catalog in three bands (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length, i.e. fully threaded b = L when the shank is shorter).

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M5×8	8	0	3	3
M5×10	10	0	3	3
M5×12	12	0	3	3
M5×16	16	0	4	4
M5×20	16	4	4	4
M5×25	16	9	5	5

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M5×30	16	14	6	6
M5×35	16	19	7	7
M5×40	16	24	8	8

Configuration basis (same source as the product catalog): shank = plain section $\pi/4 \times d^2 \times (L-b)$ plus threaded section $\pi/4 \times d^2 \times b$ ($d_2 = d - 0.6495P$, ISO basic profile pitch diameter); head = $\pi/4 \times dk^2 \times k \times 0.85$ (0.85 is the volume reduction factor for the hexagon socket cavity and top chamfer, the same value as the catalog headFactor); multiplied by 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). Lengths listed are the common range; other lengths are made to order.

M6

GB/T 70.1 · dk 10 · k 6 · s 5 mm

Nominal diameter d	6 mm
Coarse pitch P (GB/T 196 series)	1 mm
Head diameter dk (max)	10 mm
Head height k (max)	6 mm
Hexagon socket width across flats s (key size)	5 mm
Thread length b (partly threaded basis)	2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200 (b <= L)

Row-level standard labelling: dimensions follow GB/T 70.1-2008 Socket Head Cap Screws (the current edition, max nominal values; head diameter is the plain-head max and head height k is taken from that series) as the primary source; ISO 4762 is the equivalent ISO series, cited for series reference only - no table values are reproduced from it. Two bases have to be kept apart: the GB/T 70.1-2008 / ISO 4762 size series runs from M1.6 to M64 and does not include M18 or M22, so the M18 and M22 pages here are given on the DIN 912 basis (that German series includes M18 and M22, bracketed there as non-preferred sizes); the other eleven sizes are on the GB/T 70.1 / ISO 4762 basis (including M14, also bracketed as non-preferred there). The socket width across flats s is a nominal size; actual fit also depends on the socket tolerance and the key's manufacturing tolerance. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

Matching Hex Key Dimensions (s=5 mm)

Across flats s (mm)	5
Long arm L1 (mm)	85
Short arm L2 (mm)	33

M6 Length Series: Plain Shank, Thread and Unit Weight

Unit weights are computed from the socket head cap screw configuration: full-diameter plain shank plus a pitch-diameter threaded section plus the cylindrical head (with the hexagon socket reduction). The basis is identical to the spec_json weightCalc of the socket head cap screw SKUs in our product catalog - same parameters, same formula, fully reproducible. Thread length b follows the same partly threaded rule as the catalog in three bands (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length, i.e. fully threaded b = L when the shank is shorter).

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M6×10	10	0	5	5
M6×12	12	0	5	5
M6×16	16	0	6	6
M6×20	18	2	7	7
M6×25	18	7	8	8
M6×30	18	12	9	9
M6×35	18	17	10	10
M6×40	18	22	11	11
M6×45	18	27	12	12
M6×50	18	32	13	13
M6×60	18	42	16	16
M6×70	18	52	18	18

Configuration basis (same source as the product catalog): shank = plain section $\pi/4 \times d^2 \times (L-b)$ plus threaded section $\pi/4 \times d^2 \times b$ ($d_2 = d - 0.6495P$, ISO basic profile pitch diameter); head = $\pi/4 \times dk^2 \times k \times 0.85$ (0.85 is the volume reduction factor for the hexagon socket cavity and top chamfer, the same value as the catalog headFactor); multiplied by 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). Lengths listed are the common range; other lengths are made to order.

M8

GB/T 70.1 · dk 13 · k 8 · s 6 mm

Nominal diameter d	8 mm
Coarse pitch P (GB/T 196 series)	1.25 mm
Head diameter dk (max)	13 mm

Head height k (max)	8 mm
Hexagon socket width across flats s (key size)	6 mm
Thread length b (partly threaded basis)	2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200 (b <= L)

Row-level standard labelling: dimensions follow GB/T 70.1-2008 Socket Head Cap Screws (the current edition, max nominal values; head diameter is the plain-head max and head height k is taken from that series) as the primary source; ISO 4762 is the equivalent ISO series, cited for series reference only - no table values are reproduced from it. Two bases have to be kept apart: the GB/T 70.1-2008 / ISO 4762 size series runs from M1.6 to M64 and does not include M18 or M22, so the M18 and M22 pages here are given on the DIN 912 basis (that German series includes M18 and M22, bracketed there as non-preferred sizes); the other eleven sizes are on the GB/T 70.1 / ISO 4762 basis (including M14, also bracketed as non-preferred there). The socket width across flats s is a nominal size; actual fit also depends on the socket tolerance and the key's manufacturing tolerance. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

Matching Hex Key Dimensions (s=6 mm)

Across flats s (mm)	6
Long arm L1 (mm)	96
Short arm L2 (mm)	38

M8 Length Series: Plain Shank, Thread and Unit Weight

Unit weights are computed from the socket head cap screw configuration: full-diameter plain shank plus a pitch-diameter threaded section plus the cylindrical head (with the hexagon socket reduction). The basis is identical to the spec_json weightCalc of the socket head cap screw SKUs in our product catalog - same parameters, same formula, fully reproducible. Thread length b follows the same partly threaded rule as the catalog in three bands (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length, i.e. fully threaded b = L when the shank is shorter).

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M8×12	12	0	11	11
M8×16	16	0	12	12
M8×20	20	0	13	13
M8×25	22	3	15	15
M8×30	22	8	17	17
M8×35	22	13	19	19
M8×40	22	18	21	21
M8×45	22	23	23	23
M8×50	22	28	25	25
M8×60	22	38	29	29
M8×70	22	48	33	33
M8×80	22	58	37	37
M8×100	22	78	45	45

Configuration basis (same source as the product catalog): shank = plain section $\pi/4 \times d^2 \times (L-b)$ plus threaded section $\pi/4 \times d^2 \times b$ ($d_2 = d - 0.6495P$, ISO basic profile pitch diameter); head = $\pi/4 \times dk^2 \times k \times 0.85$ (0.85 is the volume reduction factor for the hexagon socket cavity and top chamfer, the same value as the catalog headFactor); multiplied by 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). Lengths listed are the common range; other lengths are made to order.

M10

GB/T 70.1 · dk 16 · k 10 · s 8 mm

Nominal diameter d	10 mm
Coarse pitch P (GB/T 196 series)	1.5 mm
Head diameter dk (max)	16 mm
Head height k (max)	10 mm
Hexagon socket width across flats s (key size)	8 mm
Thread length b (partly threaded basis)	2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200 (b <= L)

Row-level standard labelling: dimensions follow GB/T 70.1-2008 Socket Head Cap Screws (the current edition, max nominal values; head diameter is the plain-head max and head height k is taken from that series) as the primary source; ISO 4762 is the equivalent ISO series, cited for series reference only - no table values are reproduced from it. Two bases have to be kept apart: the GB/T 70.1-2008 / ISO 4762 size series runs from M1.6 to M64 and does not include M18 or M22, so the M18 and M22 pages here are given on the DIN 912 basis (that German series includes M18 and M22, bracketed there as non-preferred sizes); the other eleven sizes are on the GB/T 70.1 / ISO 4762 basis (including M14, also bracketed as non-preferred there). The socket width across flats s is a nominal size; actual fit also depends on the socket tolerance and the key's manufacturing tolerance. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

Matching Hex Key Dimensions (s=8 mm)

Across flats s (mm)	8
Long arm L1 (mm)	108
Short arm L2 (mm)	44

M10 Length Series: Plain Shank, Thread and Unit Weight

Unit weights are computed from the socket head cap screw configuration: full-diameter plain shank plus a pitch-diameter threaded section plus the cylindrical head (with the hexagon socket reduction). The basis is identical to the spec_json weightCalc of the socket head cap screw SKUs in our product catalog - same parameters, same formula, fully reproducible. Thread length b follows the same partly threaded rule as the catalog in three bands (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length, i.e. fully threaded b = L when the shank is shorter).

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M10×16	16	0	21	21
M10×20	20	0	23	23
M10×25	25	0	26	26
M10×30	26	4	29	29
M10×35	26	9	32	32
M10×40	26	14	35	35
M10×45	26	19	38	38
M10×50	26	24	41	41
M10×60	26	34	47	47
M10×70	26	44	54	54
M10×80	26	54	60	60
M10×100	26	74	72	72
M10×120	26	94	84	84

Configuration basis (same source as the product catalog): shank = plain section $\pi/4 \times d^2 \times (L-b)$ plus threaded section $\pi/4 \times d^2 \times b$ ($d_2 = d - 0.6495P$, ISO basic profile pitch diameter); head = $\pi/4 \times dk^2 \times k \times 0.85$ (0.85 is the volume reduction factor for the hexagon socket cavity and top chamfer, the same value as the catalog headFactor); multiplied by 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). Lengths listed are the common range; other lengths are made to order.

M12

GB/T 70.1 · dk 18 · k 12 · s 10 mm

Nominal diameter d	12 mm
Coarse pitch P (GB/T 196 series)	1.75 mm
Head diameter dk (max)	18 mm
Head height k (max)	12 mm
Hexagon socket width across flats s (key size)	10 mm
Thread length b (partly threaded basis)	2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200 (b <= L)

Row-level standard labelling: dimensions follow GB/T 70.1-2008 Socket Head Cap Screws (the current edition, max nominal values; head diameter is the plain-head max and head height k is taken from that series) as the primary source; ISO 4762 is the equivalent ISO series, cited for series reference only - no table values are reproduced from it. Two bases have to be kept apart: the GB/T 70.1-2008 / ISO 4762 size series runs from M1.6 to M64 and does not include M18 or M22, so the M18 and M22 pages here are given on the DIN 912 basis (that German series includes M18 and M22, bracketed there as non-preferred sizes); the other eleven sizes are on the GB/T 70.1 / ISO 4762 basis (including M14, also bracketed as non-preferred there). The socket width across flats s is a nominal size; actual fit also depends on the socket tolerance and the key's manufacturing tolerance. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

Matching Hex Key Dimensions (s=10 mm)

Across flats s (mm)	10
Long arm L1 (mm)	122
Short arm L2 (mm)	50

M12 Length Series: Plain Shank, Thread and Unit Weight

Unit weights are computed from the socket head cap screw configuration: full-diameter plain shank plus a pitch-diameter threaded section plus the cylindrical head (with the hexagon socket reduction). The basis is identical to the spec_json weightCalc of the socket head cap screw SKUs in our product catalog - same parameters, same formula, fully reproducible. Thread length b follows the same partly threaded rule as the catalog in three bands (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length, i.e. fully threaded b = L when the shank is shorter).

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M12×20	20	0	35	35
M12×25	25	0	39	39
M12×30	30	0	42	42
M12×35	30	5	47	47
M12×40	30	10	51	51
M12×45	30	15	56	56

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M12×50	30	20	60	60
M12×60	30	30	69	69
M12×70	30	40	78	78
M12×80	30	50	87	87
M12×100	30	70	100	100
M12×120	30	90	120	120
M12×140	36	104	140	140

Configuration basis (same source as the product catalog): shank = plain section $\pi/4 \times d^2 \times (L-b)$ plus threaded section $\pi/4 \times d^2 \times b$ ($d_2 = d - 0.6495P$, ISO basic profile pitch diameter); head = $\pi/4 \times dk^2 \times k \times 0.85$ (0.85 is the volume reduction factor for the hexagon socket cavity and top chamfer, the same value as the catalog headFactor); multiplied by 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). Lengths listed are the common range; other lengths are made to order.

M14

GB/T 70.1 · dk 21 · k 14 · s 12 mm

Nominal diameter d	14 mm
Coarse pitch P (GB/T 196 series)	2 mm
Head diameter dk (max)	21 mm
Head height k (max)	14 mm
Hexagon socket width across flats s (key size)	12 mm
Thread length b (partly threaded basis)	2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200 (b <= L)

Row-level standard labelling: dimensions follow GB/T 70.1-2008 Socket Head Cap Screws (the current edition, max nominal values; head diameter is the plain-head max and head height k is taken from that series) as the primary source; ISO 4762 is the equivalent ISO series, cited for series reference only - no table values are reproduced from it. Two bases have to be kept apart: the GB/T 70.1-2008 / ISO 4762 size series runs from M1.6 to M64 and does not include M18 or M22, so the M18 and M22 pages here are given on the DIN 912 basis (that German series includes M18 and M22, bracketed there as non-preferred sizes); the other eleven sizes are on the GB/T 70.1 / ISO 4762 basis (including M14, also bracketed as non-preferred there). The socket width across flats s is a nominal size; actual fit also depends on the socket tolerance and the key's manufacturing tolerance. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

Matching Hex Key Dimensions (s=12 mm)

Across flats s (mm)	12
Long arm L1 (mm)	137
Short arm L2 (mm)	57

M14 Length Series: Plain Shank, Thread and Unit Weight

Unit weights are computed from the socket head cap screw configuration: full-diameter plain shank plus a pitch-diameter threaded section plus the cylindrical head (with the hexagon socket reduction). The basis is identical to the spec_json weightCalc of the socket head cap screw SKUs in our product catalog - same parameters, same formula, fully reproducible. Thread length b follows the same partly threaded rule as the catalog in three bands (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length, i.e. fully threaded b = L when the shank is shorter).

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M14×20	20	0	52	52
M14×25	25	0	57	57
M14×30	30	0	62	62
M14×35	34	1	67	67
M14×40	34	6	73	73
M14×45	34	11	79	79
M14×50	34	16	86	86
M14×60	34	26	98	98
M14×70	34	36	110	110
M14×80	34	46	120	120
M14×100	34	66	150	150
M14×120	34	86	170	170
M14×140	40	100	190	190

Configuration basis (same source as the product catalog): shank = plain section $\pi/4 \times d^2 \times (L-b)$ plus threaded section $\pi/4 \times d^2 \times b$ ($d_2 = d - 0.6495P$, ISO basic profile pitch diameter); head = $\pi/4 \times dk^2 \times k \times 0.85$ (0.85 is the volume reduction factor for the hexagon socket cavity and top chamfer, the same value as the catalog

headFactor); multiplied by 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). Lengths listed are the common range; other lengths are made to order.

M16

GB/T 70.1 · dk 24 · k 16 · s 14 mm

Nominal diameter d	16 mm
Coarse pitch P (GB/T 196 series)	2 mm
Head diameter dk (max)	24 mm
Head height k (max)	16 mm
Hexagon socket width across flats s (key size)	14 mm
Thread length b (partly threaded basis)	2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200 (b <= L)

Row-level standard labelling: dimensions follow GB/T 70.1-2008 Socket Head Cap Screws (the current edition, max nominal values; head diameter is the plain-head max and head height k is taken from that series) as the primary source; ISO 4762 is the equivalent ISO series, cited for series reference only - no table values are reproduced from it. Two bases have to be kept apart: the GB/T 70.1-2008 / ISO 4762 size series runs from M1.6 to M64 and does not include M18 or M22, so the M18 and M22 pages here are given on the DIN 912 basis (that German series includes M18 and M22, bracketed there as non-preferred sizes); the other eleven sizes are on the GB/T 70.1 / ISO 4762 basis (including M14, also bracketed as non-preferred there). The socket width across flats s is a nominal size; actual fit also depends on the socket tolerance and the key's manufacturing tolerance. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

Matching Hex Key Dimensions (s=14 mm)

Across flats s (mm)	14
Long arm L1 (mm)	154
Short arm L2 (mm)	70

M16 Length Series: Plain Shank, Thread and Unit Weight

Unit weights are computed from the socket head cap screw configuration: full-diameter plain shank plus a pitch-diameter threaded section plus the cylindrical head (with the hexagon socket reduction). The basis is identical to the spec_json weightCalc of the socket head cap screw SKUs in our product catalog - same parameters, same formula, fully reproducible. Thread length b follows the same partly threaded rule as the catalog in three bands (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length, i.e. fully threaded b = L when the shank is shorter).

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M16×25	25	0	82	82
M16×30	30	0	88	88
M16×35	35	0	95	95
M16×40	38	2	100	100
M16×45	38	7	110	110
M16×50	38	12	120	120
M16×60	38	22	130	130
M16×70	38	32	150	150
M16×80	38	42	170	170
M16×100	38	62	200	200
M16×120	38	82	230	230
M16×140	44	96	260	260
M16×160	44	116	290	290

Configuration basis (same source as the product catalog): shank = plain section pi/4 x d^2 x (L-b) plus threaded section pi/4 x d2^2 x b (d2 = d - 0.6495P, ISO basic profile pitch diameter); head = pi/4 x dk^2 x k x 0.85 (0.85 is the volume reduction factor for the hexagon socket cavity and top chamfer, the same value as the catalog headFactor); multiplied by 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). Lengths listed are the common range; other lengths are made to order.

M18

GB/T 70.1 · dk 27 · k 18 · s 14 mm

Nominal diameter d	18 mm
Coarse pitch P (GB/T 196 series)	2.5 mm
Head diameter dk (max)	27 mm
Head height k (max)	18 mm
Hexagon socket width across flats s (key size)	14 mm
Thread length b (partly threaded basis)	2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200 (b <= L)

Row-level standard labelling: dimensions follow GB/T 70.1-2008 Socket Head Cap Screws (the current edition, max nominal values; head diameter is the plain-head max and head height k is taken from that series) as the primary source; ISO 4762 is the equivalent ISO series, cited for series reference only - no table values are reproduced from it. Two bases have to be kept apart: the GB/T 70.1-2008 / ISO 4762 size series runs from M1.6 to M64 and does not include M18 or M22, so the M18 and M22 pages here are given on the DIN 912 basis (that German series includes M18 and M22, bracketed there as non-preferred sizes); the other eleven sizes are on the GB/T

70.1 / ISO 4762 basis (including M14, also bracketed as non-preferred there). The socket width across flats s is a nominal size; actual fit also depends on the socket tolerance and the key's manufacturing tolerance. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

Basis note: M18 is not part of the GB/T 70.1-2008 / ISO 4762 size series (which covers M1.6 to M64 and does not include M18 or M22), so the table above is given on the DIN 912 basis - where M18 and M22 are themselves bracketed, non-preferred sizes. Order against a drawing or the standard the buyer names.

Matching Hex Key Dimensions (s=14 mm)

Across flats s (mm)	14
Long arm L1 (mm)	154
Short arm L2 (mm)	70

M18 Length Series: Plain Shank, Thread and Unit Weight

Unit weights are computed from the socket head cap screw configuration: full-diameter plain shank plus a pitch-diameter threaded section plus the cylindrical head (with the hexagon socket reduction). The basis is identical to the spec_json weightCalc of the socket head cap screw SKUs in our product catalog - same parameters, same formula, fully reproducible. Thread length b follows the same partly threaded rule as the catalog in three bands (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length, i.e. fully threaded b = L when the shank is shorter).

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M18×25	25	0	110	110
M18×30	30	0	120	120
M18×35	35	0	130	130
M18×40	40	0	130	130
M18×45	42	3	140	140
M18×50	42	8	150	150
M18×60	42	18	170	170
M18×70	42	28	190	190
M18×80	42	38	210	210
M18×100	42	58	250	250
M18×120	42	78	290	290
M18×140	48	92	330	330
M18×160	48	112	370	370

Configuration basis (same source as the product catalog): shank = plain section $\pi/4 \times d^2 \times (L-b)$ plus threaded section $\pi/4 \times d^2 \times b$ ($d_2 = d - 0.6495P$, ISO basic profile pitch diameter); head = $\pi/4 \times dk^2 \times k \times 0.85$ (0.85 is the volume reduction factor for the hexagon socket cavity and top chamfer, the same value as the catalog headFactor); multiplied by 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). Lengths listed are the common range; other lengths are made to order.

M20

GB/T 70.1 · dk 30 · k 20 · s 17 mm

Nominal diameter d	20 mm
Coarse pitch P (GB/T 196 series)	2.5 mm
Head diameter dk (max)	30 mm
Head height k (max)	20 mm
Hexagon socket width across flats s (key size)	17 mm
Thread length b (partly threaded basis)	2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200 (b <= L)

Row-level standard labelling: dimensions follow GB/T 70.1-2008 Socket Head Cap Screws (the current edition, max nominal values; head diameter is the plain-head max and head height k is taken from that series) as the primary source; ISO 4762 is the equivalent ISO series, cited for series reference only - no table values are reproduced from it. Two bases have to be kept apart: the GB/T 70.1-2008 / ISO 4762 size series runs from M1.6 to M64 and does not include M18 or M22, so the M18 and M22 pages here are given on the DIN 912 basis (that German series includes M18 and M22, bracketed there as non-preferred sizes); the other eleven sizes are on the GB/T 70.1 / ISO 4762 basis (including M14, also bracketed as non-preferred there). The socket width across flats s is a nominal size; actual fit also depends on the socket tolerance and the key's manufacturing tolerance. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

Matching Hex Key Dimensions (s=17 mm)

Across flats s (mm)	17
Long arm L1 (mm)	177
Short arm L2 (mm)	80

M20 Length Series: Plain Shank, Thread and Unit Weight

Unit weights are computed from the socket head cap screw configuration: full-diameter plain shank plus a pitch-diameter threaded section plus the cylindrical head (with the hexagon socket reduction). The basis is identical to the spec_json weightCalc of the socket head cap screw SKUs in our product catalog - same parameters, same formula, fully reproducible. Thread length b follows the same partly threaded rule as the catalog in three bands (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length, i.e. fully threaded b = L when the shank is shorter).

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M20×30	30	0	160	160
M20×35	35	0	170	170
M20×40	40	0	180	180
M20×45	45	0	190	190
M20×50	46	4	200	200
M20×60	46	14	220	220
M20×70	46	24	250	250
M20×80	46	34	270	270
M20×100	46	54	320	320
M20×120	46	74	370	370
M20×140	52	88	420	420
M20×160	52	108	470	470
M20×200	52	148	570	570

Configuration basis (same source as the product catalog): shank = plain section $\pi/4 \times d^2 \times (L-b)$ plus threaded section $\pi/4 \times d^2 \times b$ ($d_2 = d - 0.6495P$, ISO basic profile pitch diameter); head = $\pi/4 \times dk^2 \times k \times 0.85$ (0.85 is the volume reduction factor for the hexagon socket cavity and top chamfer, the same value as the catalog headFactor); multiplied by 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). Lengths listed are the common range; other lengths are made to order.

M22

GB/T 70.1 · dk 33 · k 22 · s 17 mm

Nominal diameter d	22 mm
Coarse pitch P (GB/T 196 series)	2.5 mm
Head diameter dk (max)	33 mm
Head height k (max)	22 mm
Hexagon socket width across flats s (key size)	17 mm
Thread length b (partly threaded basis)	2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200 (b <= L)

Row-level standard labelling: dimensions follow GB/T 70.1-2008 Socket Head Cap Screws (the current edition, max nominal values; head diameter is the plain-head max and head height k is taken from that series) as the primary source; ISO 4762 is the equivalent ISO series, cited for series reference only - no table values are reproduced from it. Two bases have to be kept apart: the GB/T 70.1-2008 / ISO 4762 size series runs from M1.6 to M64 and does not include M18 or M22, so the M18 and M22 pages here are given on the DIN 912 basis (that German series includes M18 and M22, bracketed there as non-preferred sizes); the other eleven sizes are on the GB/T 70.1 / ISO 4762 basis (including M14, also bracketed as non-preferred there). The socket width across flats s is a nominal size; actual fit also depends on the socket tolerance and the key's manufacturing tolerance. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

Basis note: M22 is not part of the GB/T 70.1-2008 / ISO 4762 size series (which covers M1.6 to M64 and does not include M18 or M22), so the table above is given on the DIN 912 basis - where M18 and M22 are themselves bracketed, non-preferred sizes. Order against a drawing or the standard the buyer names.

Matching Hex Key Dimensions (s=17 mm)

Across flats s (mm)	17
Long arm L1 (mm)	177
Short arm L2 (mm)	80

M22 Length Series: Plain Shank, Thread and Unit Weight

Unit weights are computed from the socket head cap screw configuration: full-diameter plain shank plus a pitch-diameter threaded section plus the cylindrical head (with the hexagon socket reduction). The basis is identical to the spec_json weightCalc of the socket head cap screw SKUs in our product catalog - same parameters, same formula, fully reproducible. Thread length b follows the same partly threaded rule as the catalog in three bands (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length, i.e. fully threaded b = L when the shank is shorter).

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M22×30	30	0	200	200
M22×35	35	0	220	220
M22×40	40	0	230	230
M22×45	45	0	240	240
M22×50	50	0	250	250
M22×60	50	10	280	280
M22×70	50	20	310	310

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M22×80	50	30	340	340
M22×100	50	50	400	400
M22×120	50	70	460	460
M22×140	56	84	520	520
M22×160	56	104	580	580
M22×200	56	144	700	700

Configuration basis (same source as the product catalog): shank = plain section $\pi/4 \times d^2 \times (L-b)$ plus threaded section $\pi/4 \times d^2 \times b$ ($d_2 = d - 0.6495P$, ISO basic profile pitch diameter); head = $\pi/4 \times dk^2 \times k \times 0.85$ (0.85 is the volume reduction factor for the hexagon socket cavity and top chamfer, the same value as the catalog headFactor); multiplied by 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). Lengths listed are the common range; other lengths are made to order.

M24

GB/T 70.1 · dk 36 · k 24 · s 19 mm

Nominal diameter d	24 mm
Coarse pitch P (GB/T 196 series)	3 mm
Head diameter dk (max)	36 mm
Head height k (max)	24 mm
Hexagon socket width across flats s (key size)	19 mm
Thread length b (partly threaded basis)	2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200 (b <= L)

Row-level standard labelling: dimensions follow GB/T 70.1-2008 Socket Head Cap Screws (the current edition, max nominal values; head diameter is the plain-head max and head height k is taken from that series) as the primary source; ISO 4762 is the equivalent ISO series, cited for series reference only - no table values are reproduced from it. Two bases have to be kept apart: the GB/T 70.1-2008 / ISO 4762 size series runs from M1.6 to M64 and does not include M18 or M22, so the M18 and M22 pages here are given on the DIN 912 basis (that German series includes M18 and M22, bracketed there as non-preferred sizes); the other eleven sizes are on the GB/T 70.1 / ISO 4762 basis (including M14, also bracketed as non-preferred there). The socket width across flats s is a nominal size; actual fit also depends on the socket tolerance and the key's manufacturing tolerance. Tolerances, property classes and surface finish are agreed separately against the buyer's drawing or contract.

Matching Hex Key Dimensions (s=19 mm)

Across flats s (mm)	19
Long arm L1 (mm)	199
Short arm L2 (mm)	89

M24 Length Series: Plain Shank, Thread and Unit Weight

Unit weights are computed from the socket head cap screw configuration: full-diameter plain shank plus a pitch-diameter threaded section plus the cylindrical head (with the hexagon socket reduction). The basis is identical to the spec_json weightCalc of the socket head cap screw SKUs in our product catalog - same parameters, same formula, fully reproducible. Thread length b follows the same partly threaded rule as the catalog in three bands (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length, i.e. fully threaded b = L when the shank is shorter).

Nominal length L (mm)	Thread b (mm)	Plain shank (mm)	Unit weight (g/pc) g / piece	Bulk (kg/1,000 pcs) kg / 1000 pcs
M24×40	40	0	280	280
M24×45	45	0	300	300
M24×50	50	0	310	310
M24×60	54	6	350	350
M24×70	54	16	380	380
M24×80	54	26	420	420
M24×100	54	46	490	490
M24×120	54	66	560	560
M24×140	60	80	630	630
M24×160	60	100	700	700
M24×200	60	140	840	840

Configuration basis (same source as the product catalog): shank = plain section $\pi/4 \times d^2 \times (L-b)$ plus threaded section $\pi/4 \times d^2 \times b$ ($d_2 = d - 0.6495P$, ISO basic profile pitch diameter); head = $\pi/4 \times dk^2 \times k \times 0.85$ (0.85 is the volume reduction factor for the hexagon socket cavity and top chamfer, the same value as the catalog headFactor); multiplied by 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). Lengths listed are the common range; other lengths are made to order.

Calculation Basis and Assumptions Disclosed

Dimensions come from fastenerCalc.SHCS_DIMS (GB/T 70.1 socket head cap screws, max nominal values) and fastenerCalc.HEX_KEY_DIMS (GB/T 5356-2021 hex key standard series arm lengths, ISO 2936 equivalent, max nominal values). Unit weights are computed by fastenerCalc.socketHeadWeightG with the same parameters and formula as the spec_json weightCalc (method=shcs_formula) of the socket head cap screw SKUs in our product catalog: full-diameter plain shank plus pitch-diameter threaded section ($d_2 = d - 0.6495P$) plus head $\pi/4 \times dk^2 \times k \times 0.85$, at 7.85 g/cm³ for carbon steel, base metal only, coating excluded. Thread length b follows the same rule as the catalog (2d+6 for L<=125, 2d+12 for 125<L<=200, 2d+25 for L>200, capped at the shank length). No table values are reproduced from any copyrighted standard (for example ASME B18.3).

Boundary: (1) unit weights are theoretical geometry estimates (excluding coatings and any part-to-part variation in the socket cavity and chamfer) for quotation, freight and packing budgets; trade settlement is against actual measurement; (2) head dimensions are max nominal values and actual parts vary within tolerance - this chart is not an acceptance basis; (3) the lengths listed are the common range, and unlisted lengths are made to order; (4) the socket width across flats s is nominal, and the fit varies with the socket tolerance and the key's tolerance band - where rounding risk is high, use a higher-grade key or replace a worn one.

References

- GB/T 70.1 Socket Head Cap Screws (National Public Service Platform for Standards Information) — https://openstd.samr.gov.cn/bzgk/gb/std?std_no=GB%2FT%2070.1-2008
- GB/T 5356-2021 Hexagon Socket Screw Keys (National Public Service Platform for Standards Information; issued 2021-11-26, effective 2022-06-01, replacing GB/T 5356-2008) — <https://openstd.samr.gov.cn/bzgk/std/newGbInfo?hcno=7720858B71E0141DBDA547E1DED3A8C4>
- GB/T 196 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
- DIN 912 hexagon socket head cap screw dimension table (the basis for the M18 and M22 pages, which are outside the GB/T 70.1-2008 / ISO 4762 size series; three-way cross-check across kovafasteners / fullerfasteners / fasten.it, second-level sources) — <https://www.kovafasteners.com/din-912/>
- Unit weights cross-checked row by row against socket head cap screw SKU spec_json weightCalc in the product catalog (same engine and basis as the 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). Socket head cap screws are commonly supplied in A2-70 (304) / A4-80 (316) stainless and in alloy steel.

Material	Density (g/cm3) g/cm³	Conversion Factor
Carbon Steel	7.85	×1.000
304 Stainless (A2)	7.93	×1.010
316 Stainless (A4)	7.98	×1.017
Brass	8.5	×1.083