

Space-saving Screws Overview

Hex Socket Low Head Cap Screws

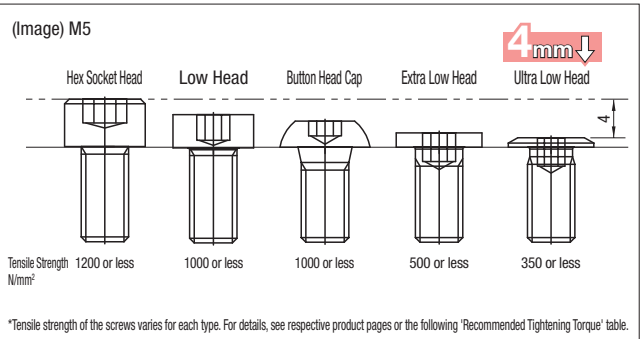
Advantages of Space-saving Screws

- Total weight of the machine is reduced due to space saved in joining parts.
- Provides shock-absorption for screw head after the design.

(Image)When changing from Hex Socket Head Cap Screws to Ultra Low Head screws, in case of M5, height of the head becomes 1mm from 5mm and thus, saves 4mm (80%) of the space.

Disadvantages of Space-saving Screws

- Reduces strength due to reduction in height of the head part.



Height of the head part (Standard E) comparison table

(in mm)

Product lineup	Hex Socket Head Cap Screws	Low Head Cap Screws	Button Head Cap Screws	Extra Low Head Cap Screws	Ultra Low Head Cap Screws
Photo of outer appearance					
Page	P.172, 174, 175	P.194	P.185	P.195	P.196
M Dia.	2	2	1.3	1.3	1.1 (Min.*)
	2.5	2.5	1.6	1.5	1.3 (Min.*)
	3	3	2	1.65	1.5
	4	4	2.8	2.2	1.5
	5	5	3.5	2.75	1.5
	6	6	4	3.3	1.5
	8	8	5	4.4	1.5
M Dia.	10	10	6	5.5	1.5
	12	12	7	-	-

* Height of the head part vary as per the material.

Recommended Tightening Torque (Reference)

Unit: N · m

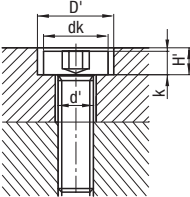
Product lineup	Low Head Cap Screws			Extra Low Head Cap Screws		Ultra Low Head Cap Screws	
	Steel (High Strength)	SUS (High Strength)	SUS	Steel	SUS	Hex Sockets	Hexalobular
Strength Class	10.9	8.8-A4-80	A2-50	5.8(M10 4.8)	-	-	-
Tensile Strength (N/mm²)	1040	800	500	500(M10 400)	400	350(M2 200)	350(M2 200)
M Dia.	2	-	-	0.25	0.25	0.16	0.178
	2.5	-	-	0.42	0.42	0.35	-
	3	1.1	0.9	0.8	0.9	0.6	0.63
	4	4.0	1.8	1.6	1.8	1.1	1.5
	5	6.1	3.6	3.2	3.2	2.2	3.0
	6	10.5	7.2	6.5	5.2	5.0	5.2
	8	18.4	10.8	9.7	9.0	8.6	-
M Dia.	10	-	31.5	28.4	16.2	15.4	-
	12	-	45.0	40.5	-	-	-

These values are for reference. Suitable tightening torque vary according to the environment of usage.

Dimensions of counter boring and screw hole

(in mm)

	Thread (d)	Low Head					Extra Low Head * () SUS dimensions					Low Head (Hex Sockets)					Ultra Low Head (Hexalobular)				
		d'	dk	D'	k	H'	d'	dk	D'	k	H'	d'	dk	D'	k	H'	d'	dk	D'	k	H'
	M2	2.5	3.8	5	1.3	1.5	2.5	4	5	1.1 (1.5)	1.3 (1.7)	2.5	4	5	0.5	0.7	2.5	4	5	0.5	0.7
	M2.5	3	4.5	5.5	1.6	1.8	3	5	6	1.3 (1.5)	1.5 (1.7)	3	5	6	0.6	0.8	-	-	-	-	-
	M3	3.5	5.5	6.5	2	2.3	3.5	6	7	1.3 (1.5)	1.6 (1.8)	3.5	6	7	0.8	1.1	3.5	7	8	0.8	1.1
	M4	4.5	7	8	2.8	3.2	4.5	8	9	1.5	1.9	4.5	8	9	0.9	1.3	4.5	8	9	0.9	1.3
	M5	5.5	8.5	9.5	3.5	3.9	5.5	9	10	1.5	1.9	5.5	9	10	1	1.4	5.5	9	10	1	1.4
	M6	6.5	10	11	4	4.5	6.5	10	11	1.5	2	6.5	10	11	1.2	1.7	6.5	12	13	1.2	1.7
	M8	9	13	14	5	5.6	9	13	14	1.5	2.1	-	-	-	-	-	-	-	-	-	-
	M10	11	16	17.5	6	6.8	11	16 (15)	17.5 (16.5)	1.5	2.3	-	-	-	-	-	-	-	-	-	-
	M12	14	18	20	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Hex Socket Low Head Cap Screws



Type	Material	Hardness	Surface Treatment	Strength Class
CBSH (High Strength)	SCM435	32~39HRC	Black Oxide	10.9
CBS	S45C(M3~8·M12) SCM435(M10)	22~32HRC	Black Oxide	8.8
CBSSTH (High Strength)	SUS316L	-	-	A4-80 (8.8 Equivalent)
CBSST BOX-CBSST	SUS304 Equivalent	-	-	A2-50

MxP	A	E	B	t max.	r
2x0.4	3.8	1.3	1.3	1	0.1 or More
2.5x0.45	4.5	1.6	1.5	1.3	0.1 or More
3x0.5	5.5	2	2	1.5	0.1 or More
4x0.7	7	2.8	2.5	2.3	0.2 or More
5x0.8	8.5	3.5	3	2.7	0.2 or More
6x1.0	10	4	4	3	0.25 or More
8x1.25	13	5	5	3.8	0.4 or More
10x1.5	16	6	6	4.5	0.4 or More
12x1.75	18	7	8	5	0.6 or More

Engraving: CBSH M5 or More, CBSSTH M5 or More, CBSH · CBSSTH M4 or Less

Available in Single item

Part Number	Type	M-L	Unit Price
CBSST	CBSH	2-4	-
	CBS	5	-
	CBSSTH	6	-
	CBSST	2.5-4	-
	CBS	5	-
	CBSSTH	6	-
	CBSST	10	-
CBSH CBS CBSSTH CBSST	CBSH	3-4	-
	CBS	5	-
	CBSSTH	6	-
	CBSST	8	-
	CBSH	10	-
	CBS	12	-
	CBSSTH	16	-
	CBSST	20	-
	CBSH	4-5	-
	CBS	6	-
CBSH CBS CBSSTH CBSST	CBSH	8	-
	CBS	10	-
	CBSSTH	12	-
	CBSST	16	-
	CBSH	20	-
	CBS	25	-
	CBSSTH	30	-
	CBSST	36	-
	CBSH	5-5	-
	CBS	6	-
CBSH CBS CBSSTH CBSST	CBSH	8	-
	CBS	10	-
	CBSSTH	12	-
	CBSST	16	-
	CBSH	20	-
	CBS	25	-
	CBSSTH	30	-
	CBSST	36	-
	CBSH	8-10	-
	CBS	12	-
CBSH CBS CBSSTH CBSST	CBSH	16	-
	CBS	20	-
	CBSSTH	25	-
	CBSST	30	-
	CBSH	30	-
	CBS	36	-
	CBSSTH	42	-
	CBSST	48	-
	CBSH	22	-
	CBS	30	-

Part Number	Type	M-L	Unit Price
CBS CBSST	CBS	10-16	-
	CBSST	20	-
	CBS	25	-
	CBSST	30	-
	CBS	35	-
	CBSST	40	-
	CBS	45	-
CBS CBSST	CBS	12-20	-
	CBSST	25	-
	CBS	30	-
	CBSST	35	-
	CBS	40	-
	CBSST	45	-
	CBS	50	-

Part Number	Type	M-L	Unit Price	Pcs./Box.
CBS CBSST	CBS	3-6	-	-
	CBSST	8	-	-
	CBS	10	-	-
	CBSST	12	-	-
	CBS	16	-	-
	CBSST	20	-	-
	CBS	25	-	-
CBS CBSST	CBS	4-6	-	-
	CBSST	8	-	-
	CBS	10	-	-
	CBSST	12	-	-
	CBS	16	-	-
	CBSST	20	-	-
	CBS	25	-	-
CBS CBSST	CBS	5-8	-	-
	CBSST	10	-	-
	CBS	12	-	-
	CBSST	16	-	-
	CBS	20	-	-
	CBSST	25	-	-
	CBS	30	-	-
CBS CBSST	CBS	8-10	-	-
	CBSST	12	-	-
	CBS	16	-	-
	CBSST	20	-	-
	CBS	25	-	-
	CBSST	30	-	-
	CBS	36	-	-

Ordering Example: CBSST4-10

Mechanical Properties (Reference)

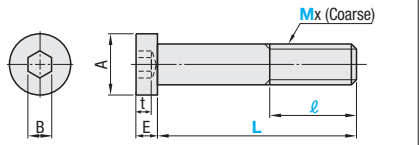
Type	Tensile Strength (N/mm²)	0.2% Proof Stress (N/mm²)	Corrosion Resistance	Nonmagnetic
CBSH	1040	900	△	×
CBS	800	640	△	×
CBSSTH	800	640	○	○
CBSST	500	210	○	○

○: Excellent △: Good △: Questionable ×: Inferior

Length Configurable Hex Socket Low Head Cap Screws



Type	Material	Surface Treatment	Strength Class
FCBS	S45C	Black Oxide	8.8
FCBSM	-	Electroless Nickel Plating	-
FCBSST	SUS304 Equivalent	-	A2-50



Part Number	Type	M (Coarse)	L 1mm Increment	l 1mm Increment	A	E	B	t max.	Unit Price
FCBS FCBSM FCBSST	FCBS	4	10~50	10~40	7	2.8	2.5	2.3	L10~50
	FCBSM	5	10~60	10~40	8.5	3.5	3	2.7	51~L Max.
	FCBSST	6	10~80	10~40	10	4	4	3	FCBS
	FCBSST	8	10~90	10~40	13	5	5	3.8	FCBSM

When $l=L$, there will be incomplete threads (2 pitches Max.) below the screw head

Ordering Example: FCBS8 - L - l