

# Space-saving Screws Overview

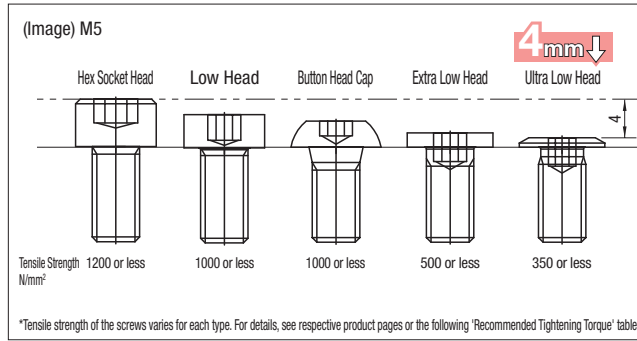
## Advantages of Space-saving Screws

- 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

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, 2.5, 3, 4, 5, 6, 8, 10, 12	1.3, 1.6, 2, 2.8, 3.5, 4, 5, 6, 7	1.3, 1.5, 1.65, 2.2, 2.75, 3.3, 4.4, 5.5	1.1 (Min.*), 1.3 (Min.*), 1.5, 1.5, 1.5, 1.5	0.5, 0.6, 0.8, 0.9, 1, 1.2, -, -

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

## Recommended Tightening Torque (Reference)

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/mm <sup>2</sup> )	1040	800	500	500(M10 400)	400	350(M2 200)	350(M2 200)
M Dia.	2, 2.5, 3, 4, 5, 6, 8, 10, 12	-	0.25, 0.42, 0.8, 1.6, 3.2, 6.5, 9.7, 28.4, 40.5	0.25, 0.82, 0.9, 1.8, 3.2, 5.2, 9.0, 16.2	0.25, 0.42, 0.8, 1.6, 3.0, 5.0, 8.6, 15.4	0.16, 0.35, 0.6, 1.1, 2.2, 5.0	0.178, -, 0.63, 1.5, 3.0, 5.2

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

## Dimensions of counter boring and screw hole

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 (1.5)	1.9 (1.8)	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 (1.5)	1.9 (1.8)	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 (1.5)	2 (1.7)	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 (1.5)	2.1 (1.8)	-	-	-	-	-	-	-	-	-	-
M10	11	16	17.5	6	6.8	11	16	17.5 (16.5)	1.5 (1.5)	2.3 (1.8)	-	-	-	-	-	-	-	-	-	-
M12	14	18	20	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note that, for some of the types shown here, order might be unable to be received by the MISUMI Thailand, Malaysia, Indonesia, and/or India offices.

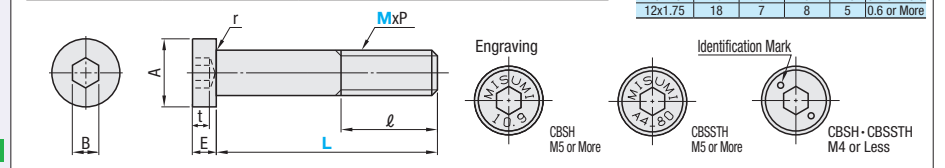
# Hex Socket Low Head Cap Screws

## 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	10.9
CBSSTH (High Strength)	SUS316L	-	-	A4-80 (8.8 Equivalent)
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



## Available in Single item

Part Number	Unit Price		
	M-L	CBS	
CBSST	2-4	-	
	5	-	
	6	-	
	2.5-4	-	
	5	-	
	6	-	
	8	-	
	10	-	
	CBSH	3-4	-
		5	-
6		-	
8		-	
10		-	
12		-	
16		-	
20		-	
CBSSTH		4-5	-
		6	-
	8	-	
	10	-	
	12	-	
	16	-	
	20	-	
	25	-	
	CBSSTH	5-5	-
		6	-
8		-	
10		-	
12		-	
16		-	
20		-	
25		-	
CBSSTH		6-8	-
		10	-
	12	-	
	16	-	
	20	-	
	25	-	
	30	-	
	CBSSTH	8-10	-
		12	-
		16	-
20		-	
25		-	
30		-	
35		-	
40		-	
45		-	
50		-	

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

## Box

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

Ordering Example: CBSST4-10

## Mechanical Properties (Reference)

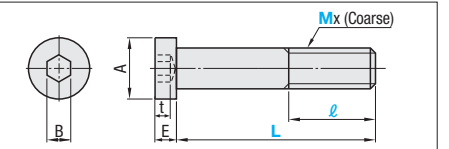
Type	Tensile Strength (N/mm <sup>2</sup> )	0.2% Proof Stress (N/mm <sup>2</sup> )	Corrosion Resistance	Nonmagnetic
CBSH	1040	900	△	×
CBS	800	640	△	×
CBSSTH	800	640	○	○
CBSST	500	210	○	○

○: 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					
									L10~50			51~L Max.		
									FCBS	FCBSM	FCBSST	FCBS	FCBSM	FCBSST
FCBS FCBSM FCBSST	4	10~50	10~40	7	2.8	2.5	2.3	-	-	-	-	-	-	-
	5	10~60	10~40	8.5	3.5	3	2.7	-	-	-	-	-	-	-
	6	10~80	10~40	10	4	4	3	-	-	-	-	-	-	-
	8	10~90	10~40	13	5	5	3.8	-	-	-	-	-	-	-

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

Ordering Example: FCBS8 - L - 38 - l