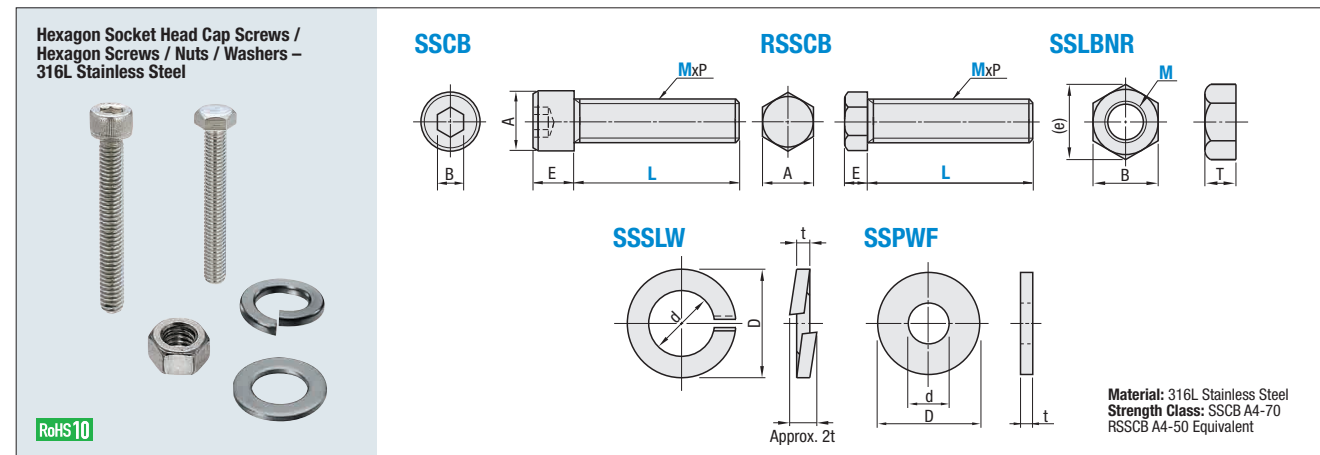


Hexagon Socket Head Cap Screws / Hexagon Screws / Nuts / Washers

316L Stainless Steel



316L Stainless Steel Hex Socket Head Cap Screws

Part Number	M - L	M x P	A	E	B			
3 - 6	3 x 0.5	5.5	3	2.5	SSCB			
8	3 x 0.5	5.5	3	2.5				
10								
12								
15								
20								
25								
4 - 8	4 x 0.7	7	4	3				
10	4 x 0.7	7	4	3				
12								
15								
20								
25								
5 - 8					5 x 0.8	8.5	5	4
10	5 x 0.8	8.5	5	4				
12								
15								
20								
25								
6 - 10					6 x 1.0	10	6	5
12	6 x 1.0	10	6	5				
15								
20								
25								
8 - 15					8 x 1.25	13	8	6
20					8 x 1.25	13	8	6
25								
30								
10 - 20	10 x 1.5	16	10	8				
25	10 x 1.5	16	10	8				
30								
35								
12 - 20					12 x 1.75	18	12	10
25					12 x 1.75	18	12	10
30								
35								
40								

316L Stainless Steel Nuts

Part Number	M	B	(e)	T
3	5.5	6.4	2.4	SSLBNR
4	7	8.1	3.2	
5	8	9.2	4	
6	10	11.5	5	
8	13	15	6.5	
10	17	19.6	8	
12	19	21.9	10	

316L Stainless Steel Spring Washers

Part Number	No.	d	D	t	
3	3	3.1	5.9	0.7	SSSLW
4	4	4.1	7.6	1.0	
5	5	5.1	9.2	1.3	
6	6	6.1	12.2	1.5	
8	8	8.2	15.4	2.0	
10	10	10.2	18.4	2.5	
12	12	12.2	21.5	3.0	

316L Stainless Steel Washers

Part Number	No.	D	d	t	
3	3	7	3.2	0.5	SSPWF
4	4	9	4.3	0.8	
5	5	10	5.3	1.0	
6	6	12.5	6.4	1.5	
8	8	17	8.4	1.5	
10	10	21	10.5	2.0	
12	12	24	13.0	2.5	

Part Number Example: **SSCB5-12**, **SSSLW8**

316L Stainless Steel Hexagon Screws

Part Number	M - L	M x P	A	E			
4 - 10	4 x 0.7	7	2.8	RSSCB			
12	4 x 0.7	7	2.8				
15							
20							
5 - 10					5 x 0.8	8	3.5
12					5 x 0.8	8	3.5
15							
20							
25							
6 - 10	6 x 1.0	10	4.0				
12	6 x 1.0	10	4.0				
15							
20							
25							
8 - 15				8 x 1.25	13	5.5	
20				8 x 1.25	13	5.5	
25							
30							
10 - 20	10 x 1.5	17	7.0				
25	10 x 1.5	17	7.0				
30							
35							

Properties of 316L Stainless Steel

316 Stainless Steel is composed of 304 Stainless Steel with Molybdenum added, having high corrosion resistance.

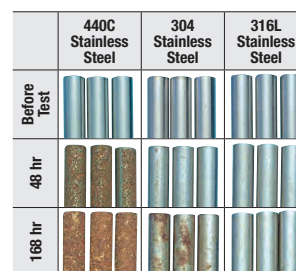
Testing Method

Conforms to the cycle test method in JIS H 8502 for a complex corrosion test.

Test Conditions

- (1) Salt Water Spray Test (5% NaCl, 35°C) 2 hours
- (2) Dry (60°C) 4 hours
- (3) Wet (95% RH, 35°C) 2 hours

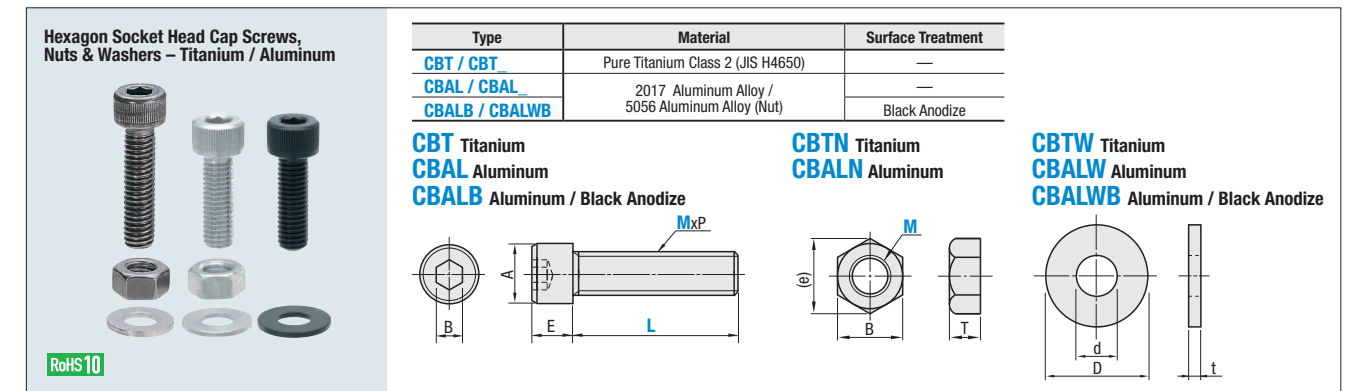
*One cycle takes eight hours



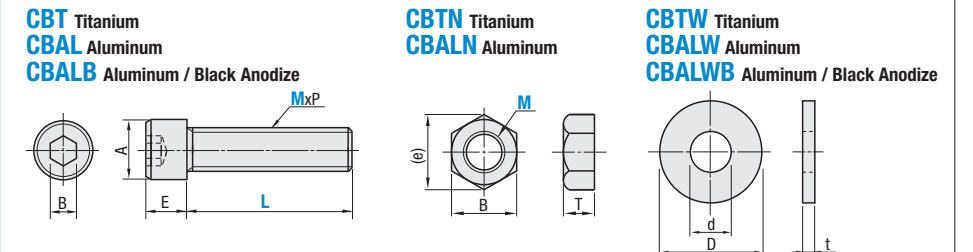
There's more on the web: misumiusa.com

Hexagon Socket Head Cap Screws / Nuts / Washers

Titanium / Aluminum



Type	Material	Surface Treatment
CBT / CBT	Pure Titanium Class 2 (JIS H4650)	—
CBAL / CBAL	2017 Aluminum Alloy / 5056 Aluminum Alloy (Nut)	—
CBALB / CBALWB		Black Anodize



Hexagon Socket Head Cap Screws

Part Number	Type	M - L	M x P	A	E	B	Quantity	Compliance with Standard							
								CBT	CBAL	CBALB					
3 - 6	CBT CBAL CBALB	3 - 6	3 x 0.5	5.5	3	2.5	100	•	•	•					
8								•	•	•					
10								•	•	•					
12								•	•	•					
15								•	•	•					
20								•	•	•					
4 - 6		4 - 6	4 x 0.7	7	4	3		•	•	•					
8								•	•	•					
10								•	•	•					
12								•	•	•					
15								•	•	•					
20								•	•	•					
5 - 8	CBT CBAL CBALB	5 - 8	5 x 0.8	8.5	5	4	50	•	•	•					
10								•	•	•					
12								•	•	•					
15								•	•	•					
20								•	•	•					
25								•	•	•					
6 - 8		6 - 8	6 x 1.0	10	6	5		•	•	•					
10								•	•	•					
12								•	•	•					
15								•	•	•					
20								•	•	•					
25								•	•	•					
8 - 15	CBT CBAL CBALB	8 - 15	8 x 1.25	13	8	6	50	•	•	•					
20								•	•	•					
25								•	•	•					
30								•	•	•					
10 - 20								10 - 20	10 x 1.5	16	10	8	•	•	•
25													•	•	•
30		•	•	•											
35		•	•	•											

Characteristics of Titanium (JIS H4650 Pure Titanium Class 2)

- Strength of titanium is comparable to low-carbon steel, yet the specific gravity is 60% of steel.
- It can be used in low to high temperatures.
- It has better chemical resistance than that of stainless steel.

Typical Physical Properties of Titanium

Item	Unit	Data
Purity	%	99.5 or More
Tensile Strength	N/mm ²	340-510
Yield Stress	N/mm ²	215 or More
Operating Temp.	°C	-200-350

Chemical Resistance of Titanium

Chemical Solution	Concentration (%)	Temp. (°C)	Titanium	316 Stainless Steel
Hydrochloric Acid	10	30	Excellent	Poor
Sulfuric Acid	20	30	Good	Poor
Sodium Hydroxide	50	120	Excellent	Good

Excellent: Corrosion resistant enough for use. Good: Corrosive but usable depending on conditions. Poor: Unusable due to insufficient corrosion resistance.

Changes in Mechanical Characteristics of Titanium by Temperature

Item	Unit	Data		
		-200°C	Ambient Temp.	350°C
Tensile Strength	N/mm ²	994	421	167
Elongation	%	25.7	46	54

Nuts

Part Number	M	B	(e)	T	Quantity
3	5.5	6.4	2.4	100	
4	7	8.1	3.2		
5	8	9.2	4		
6	10	11.5	5		
8	13	15	6.5		
10	17	19.6	8		

Washers

Part Number	No.	D	d	t	Quantity
3	3	7	3.2	0.5	100
4	4	10	4.3	0.8	
5	5	12	5.5	0.8	
6	6	13	6.5	1.0	
8	8	18	8.5	1.5	
10	10	22	10.5	1.5	

Part Number Example: **CBT5-12**, **CBTN8**, **CBTW10**

Comparison By Metals

Item	Unit	Titanium	Aluminum	Steel
Specific Gravity	g/cm ³	4.5	2.7	7.9
Tensile Strength	N/mm ²	377	78	315
Thermal Conductivity	cal/cm, sec, °C	0.041	0.487	0.145
Young's Modulus	kN/mm ²	106	69	205

Mechanical Characteristics of Hex Socket Cap Screws (Reference)

Item	Tensile Breaking Load N		Torsional Breaking Torque N·m	
	Titanium	Aluminum	Titanium	Aluminum
M3	3210	1650	2.4	1.0
M4	5610	2890	4.7	2.5
M5	9080	4680	9.8	6.7
M6	12800	6630	11.3	11.0
M8	23400	12000	22.8	30.0
M10	37100	23560	61.5	48.0

- Values shown in tables are reference, and not guaranteed.
- Recommended tightening torque is 50% of torsional breaking torque.
- Use torque driver or torque wrench for tightening.
- Values of black anodized products are approx. 80% of values above.

Check out misumiusa.com for the most current pricing and lead time.