


Shoulder Bolts

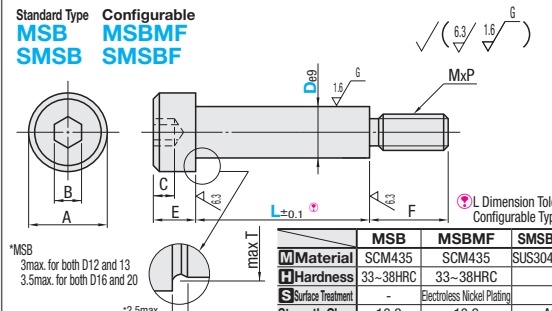
Shaft Dia. Tolerance e9

Shoulder Bolts
- Shaft Dia. Tolerance e9



Standard Type
MSB
SMSB

Configurable
MSBMF
SMSBF



RoHS10

Des	A	B	C	E	MxP	T	
4	6.5	2.5	1.6	3	2.5x0.45	4.5	
4.5	-0.020	7	3	3.5	3x0.5	5	
5	-0.050	8	4	4	4x0.7	6	
5.5		9	3	2.2	4	4x0.7	6.5
6		10	4	2.5	5	5x0.8	7
6.5	-0.025	13	5	3	6	6x1.0	8.7
8	-0.061	16	6	4	8	8x1.25	10.8
10		17	8	5	10	10x1.5	12.8
12	-0.032	18	8	5	10	10x1.5	14
13	-0.075	24	10	7	14	12x1.75	17
16		27	14	9	18	16x2.0	21
20	-0.040 -0.092						

Material	MSB	MSBMF	SMSB, SMSBF
M	SCM435	SCM435	SUS304 Equivalent
H	33-38HRC	33-38HRC	-
S	-	Electroless Nickel Plating	-
Strength Class	10.9	10.9	A2-50

Standard Type

Part Number Type	D	L (SMSB is applicable only to sizes marked with *)	F	Unit Price	
				MSB	SMSB
4	*10	*15 *20 *25 *30 *35 *40	5		
4.5	*10	*15 *20 *25 *30 *35 *40	6		
5	*10	*15 *20 *25 *30 *35 *40	6		
5.5	*10	*15 *20 *25 *30 *35 *40	6		
6	*10	*15 *20 *25 *30 *35 *40	7		
6.5	*10	*15 *20 *25 *30 *35 *40	9		
8	*10	*15 *20 *25 *30 *35 *40 *45	9		
10	*10	*15 *20 *25 *30 *35 *40 *45 *50 *55	12		
12	10	15 20 25 30 35 40 45 50 55	12		
13	10	15 20 25 30 35 40 45 50 55 60 65 70	16		
16	10	15 20 25 30 35 40 45 50 55 60 65 70 75 80 85	18		
20		40 50 60 70 80 90 100 110 120 130 140 150	24		

Configurable

Part Number Type	De9	L 0.1mm Increment	F 0.5mm Increment	A	B	C	E	T	L:F Machining Conditions	Unit Price	
										MSBMF	SMSBF
4		10-40	M≤F≤Mx3	7	2.5	1.6	3	4.5	L+F≤46		
4.5	-0.020	10-40		9	3	2.2	4	5.5	L+F≤47		
5	-0.050	10-40		10	4	2.5	5	6.5	L+F≤59		
5.5		10-40		13	5	3	6	8.7	L+F≤70		
6		10-50		16	6	4	8	10.8	L+F≤72		
6.5	-0.025	10-50									
8	-0.061	10-60									
10		10-60									

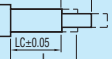
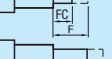

Configurable Type may have different part dimensions from the Standard Type.

Alterations

Part Number: MSB10 LC50.1 F10 FC10 LKC

Example: MSB10 - LC50.1 - F10 - FC10 - LKC


No Low Quantity Surcharge is necessary for alterations orders. For orders of 1 ~ 19 pc(s), the Unit Price is applied.

Alterations	Code	Spec.
	LC	Changes L dimension (machining) O.A.L. (LC) tolerance is ±0.05. Lmin≤L≤Lmax Specified in 0.1mm * This alteration does not change the F dimension. To change the F dimension, combine FC alteration with it. * Applicable to MSB only.
	FC	Changes the thread part length. M≤FC≤Mx3 0.5mm Increment * 3≤FC≤7.5 only when D=4 * Applicable only when MSB and altered LC is combined.
	LKC	Changes L Dimension Tolerance L dimension tolerance is from ±0.05 to 0.1. * Applicable to MSBMF and SMSBF only.

Shoulder Bolts

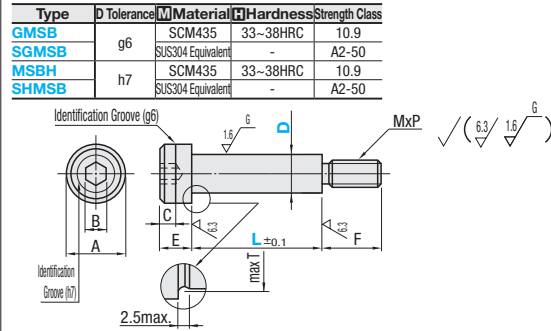
Shaft Dia. Tolerance g6/h7/e9

Shoulder Bolts: Dimension Selectable
- Shaft Dia. Tolerance g6/h7



RoHS10

Type	D Tolerance	Material	Hardness	Strength Class
GMSB	g6	SCM435	33-38HRC	10.9
SGMSB		SUS304 Equivalent	-	A2-50
MSBH	h7	SCM435	33-38HRC	10.9
SHMSB		SUS304 Equivalent	-	A2-50



D Tolerance		A	B	C	E	F	MxP	T	
D	g6	h7							
4	-0.004	0	6.5	2.5	1.6	3	5	2.5x0.45	4.5
5	-0.012	-0.012	8	3	2.2	3.5	6	3x0.5	5.5
6			9	3	2	4	7	4x0.7	6.5
8	-0.005	0	13	5	3	6	9	6x1.0	8.7
10	-0.014	-0.015	16	6	4	8	12	8x1.25	10.8

Part Number Type	D	L Dimensions in () are only available for GMSB.	Unit Price		Part Number Type	D	L	Unit Price	
			GMSB	SGMSB				MSBH	SHMSB
4	10	15 20 (25) (30)			4	10	15 20		
5	10	15 20 (25) (30)			5	10	15 20		
6	10	15 20 25 30 35 40			6	10	15 20 25		
8	10	15 20 25 30 35 40 45			8	10	15 20 25 30		
10	10	15 20 25 30 35 40 45 50 55 60			10	10	15 20 25 30 35		


Ordering Example

Part Number - L

GMSB10 - 50

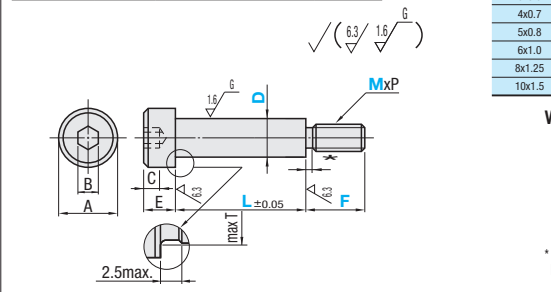
SGMSB8 - 30

Shoulder Bolts: Configurable Type
- Shaft Dia. Tolerance g6/h7

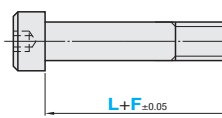


RoHS10

Type	D Tolerance	Material	Hardness	Strength Class
GDSMSB	g6	SCM435	33-38HRC	10.9
HDSMSB		SUS304 Equivalent	-	A2-50
HDSMSB	h7	SCM435	33-38HRC	10.9
HDSMSB		SUS304 Equivalent	-	A2-50



D Tolerance		A	B	C	E	T	L:F Machining Conditions	
D	g6	h7						
4			7	2.5	1.6	3	4.5	L+F≤46
4.5	-0.004	0	9	3	2.2	3.5	5.5	L+F≤47
5	-0.012	-0.012	10	4	2.5	5	6.5	L+F≤59
5.5			13	5	3	6	8.7	L+F≤70
6			16	6	4	8	10.8	L+F≤72

When M=D, 

* M=D has no groove and F is the effective thread. In Standard L, therefore, incomplete threaded portion of approximately 1 to 2 pitch long occurs.

Part Number Type	D	L 0.1mm Increment	F 0.5mm Increment	M	Unit Price			
					GDSMSB	GDSMSB	HDSMSB	HDSMSB
4		10-40	3-9	3 4				
4.5		10-40	3-9	3 4				
5		10-40	4-12	3 4 5				
5.5		10-40	4-12	3 4 5				
6		10-50	5-15	4 5 6				
6.5		10-50	5-15	4 5 6				
8		10-60	6-18	5 6 8				
10		10-60	8-24	6 8 10				


Ordering Example

Part Number - L - F - M

HDSMSB6.5 - 30 - F12 - M5

Large Head Shoulder Bolts
- Shaft Dia. Tolerance e9

MSBY



RoHS10

- M Material: S45C
- H Hardness: From 40 HRC
- S Surface Treatment: Knurled Head Black Oxide

Part Number Type	Des	L Selection	MxP	A	E	F	Unit Price
6	-0.020	15 20	4x0.7	24	7	7	
8	-0.025	25 30 35 40	6x1.0	30	8	9	
10	-0.061	25 30 35 40	8x1.25	36	10	12	

Ordering Example

Part Number - L

MSBY6 - 20

* It can be tightened by hand since A dimension is larger than that of MSB.