

Shoulder Bolts

Shaft Dia. Tolerance e9

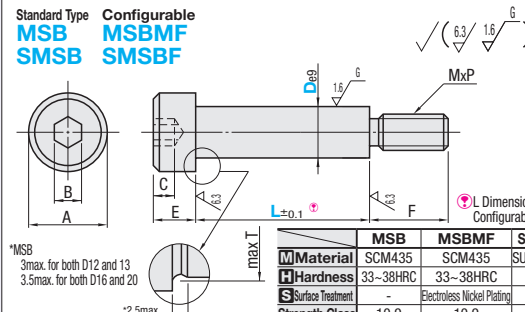
Shoulder Bolts
- Shaft Dia. Tolerance e9



RoHS10

Standard Type
MSB
SMSB

Configurable
MSBMF
SMSBF



*MSB
3max. for both D12 and 13
3.5max. for both D16 and 20

*L Dimension Tolerance of Configurable Type is ±0.05.

	MSB	MSBMF	SMSB, SMSBF
Material	SCM435	SCM435	SUS304 Equivalent
Hardness	33~38HRC	33~38HRC	-
Surface Treatment	-	Electroless Nickel Plating	-
Strength Class	10.9	10.9	A2-50

Standard Type

De9	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	3	2	4x0.7	6
5.5	9	3	2.2	4	5x0.8	7
6	-0.025	10	4	2.5	6x1.0	8.7
6.5	-0.061	13	5	3	8x1.25	10.8
8	-0.032	16	6	4	10x1.5	14
10	-0.075	18	8	5	12x1.75	17
12	-0.040	24	10	7	16x2.0	21
16	-0.092	27	14	9		
20						

Standard Type

Part Number		L (SMSB is applicable only to sizes marked with *.)												Unit Price	
Type	D													MSB	SMSB
MSB	4	*15	*20	*25	*30	*35	*40	45						5	
	4.5	*15	*20	*25	*30	*35	*40	45	50					6	
	5	*15	*20	*25	*30	*35	*40	45	50					7	
	5.5	*15	*20	*25	*30	*35	*40	45	50	55				9	
	6	*15	*20	*25	*30	*35	*40	45	50	55	60	65	70		
	6.5	*15	*20	*25	*30	*35	*40	*45	*50	55	60	65	70	75	80
	8	*15	*20	*25	*30	*35	*40	*45	*50	*55	*60	*65	*70	*75	*80
														85	90
														95	100
														110	120
SMSB	10	*15	*20	*25	*30	*35	*40	*45	*50	*55	*60	*65	*70	*75	
	*10	15	20	25	30	35	40	45	50	55	60	65	70	75	
	12	15	20	25	30	35	40	45	50	55	60	65	70	75	
	10													80	85
														90	95
														100	110
														120	130
	13	15	20	25	30	35	40	45	50	55	60	65	70	75	80
	10													85	90
	16	15	20	25	30	35	40	45	50	55	60	65	70	75	80
														90	95
	20	40	50	60	70	80	90	100	110	120	130	140	150		

Configurable

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

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

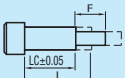
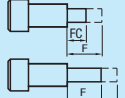
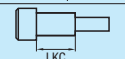


Ordering Example
Part Number - L - F
MSB10 - 50 - F10
SMSBF5.5 - L30 - F10



Alterations
Part Number - L(LC) - F - (FC, LKC)
MSB10 - LC50.1 - F10 - FC10
SMSBF8 - L30 - F10 - 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≤LC≤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

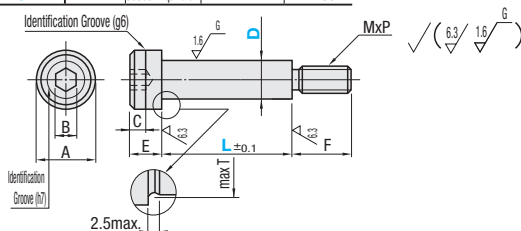
Shaft Dia. Tolerance g6/h7/e9

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			3.5	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
			GMSB	SGMSB
4	10	15 20 (25) (30)		
5	10	15 20 (25) (30)		
6	10	15 20 25 30 35 40		
8	10	15 20 25 30 35 40 45 50		
10	10	15 20 25 30 35 40 45 50 55 60		

Part Number		L				Unit Price			
Type	D					MSBH	SHMSB		
MSBH SHMSB	4	10	15	20	-				
					-				
	5	10	15	20					
	6	10	15	20	25				
	8	10	15	20	25	30			
	10	10	15	20	25	30	35	-	
								-	

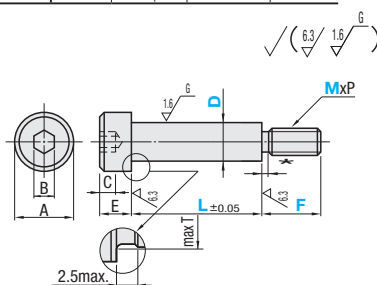
Ordering Example
Part Number - L
GMSB10 - 50
SGMSB8 - 30

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

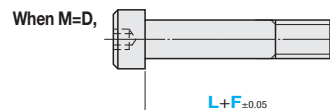


RoHS10

Type	D Tolerance	Material	Hardness	Strength Class
GDMSB	g6	SCM435	33~38HRC	10.9
GDSMSB		SUS304 Equivalent	-	A2-50
HDSMB	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	-0.004	0	7	2.5	1.6	3	4.5	L+F≤46
4.5	-0.012	-0.012	9	3	2.2	3.5	5.5	L+F≤47
5			10	4	2.5	5	6.5	L+F≤59
5.5			13	5	3	6	8.7	L+F≤70
6	-0.005	0	16	6	4	8	10.8	L+F≤72
6.5	-0.014	-0.015						
8								
8x1.25								
10x1.5								



* 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.

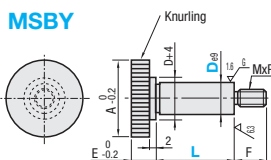
Part Number		L 0.1mm Increment	F 0.5mm Increment	M	Unit Price			
Type	D				GDMSB	GDSMSB	HDSMB	HDSMSB
GDMSB GDSMSB HDSMB HDSMSB	4	10~40	3~9	3 4				
	4.5	10~40	3~9	3 4				
	5	10~40	4~12	3 4 5				
	5.5	10~40	4~12	3 4 5				
	6	10~50	5~15	4 5 6				
	6.5	10~50	5~15	4 5 6				
	8	10~60	6~18	5 6 8				
	10	10~60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



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	-0.025	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.