

## Shoulder Screw Information

Also called stripper bolts or shoulder bolts, shoulder screws are used frequently in pulleys and linkages. They also function as precision spacers or guide screws.

### SHOULDER SCREW TYPES

Both types of shoulder screws are reusable and come in ISO metric and USS measurements.

#### Precision (Smooth Head)

Manufactured with more-exacting tolerances. Hex socket drive allows high-torque wrenching. Slotted drive permits deeper access in hard-to-reach places where a hex key can't reach. Phillips drive provides excellent torque control.

### Standard (Knurled Head)

Dimensions meet ASME standards for inch sizes and ISO standards for metric sizes. Shoulder dia. tolerances: -0.002" to -0.004". Suitable for use in machinery and other critical mechanical applications. Screws feature a hex socket drive.

### SPECIAL VARIATIONS

#### Hex Head

Allows easy tightening with an adjustable wrench.

#### Self-Locking

A nylon patch on screw threads bonds with the material being fastened to hold the screw firmly in place and prevent loosening from vibration. Not reusable.

### SHOULDER SCREW DIMENSIONS

Standard													
Shoulder Dia.	1/8"	5/32"	3/16"	1/2"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1 1/4"	1 1/2"
Thread Size	#4	#6	#8	#8	#10	1/4-20	5/16-18	3/8-16	1/2-13	5/8-11	3/4-10	7/8-9	1 1/8-7
Drive Size	5/64"	3/32"	3/32"	5/32"	3/32"	5/32"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	7/8"
Thread Length	5/32"	3/16"	3/16"	3/16"	1/4"	1/16"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 1/2"
Head Dia.	1/4"	9/32"	3/16"	5/16"	3/8"	7/16"	9/16"	3/4"	7/8"	1"	1 1/8"	1 3/4"	2 1/8"
Head Height	1/8"	1/8"	3/32"	5/32"	3/16"	1/32"	1/4"	5/16"	3/8"	1/2"	3/8"	3/4"	1"
Metric													
Shoulder Dia.	3mm	4mm	5mm	6mm	8mm	10mm	12mm	16mm	20mm	24mm			
Thread Size	M2 x .40	M3 x .50	M4 x .70	M5 x .80	M6 x 1	M8 x 1.25	M10 x 1.5	M12 x 1.75	M16 x 2	M20 x 2.5			
Drive Size	2mm	2mm	2.5mm	3mm	4mm	5mm	6mm	8mm	10mm	12mm			
Thread Length		5mm	7mm	9.5mm	11mm	13mm	16mm	18mm	22mm	27mm			
Head Dia.	5mm	6mm	9mm	10mm	13mm	16mm	18mm	24mm	30mm	36mm			
Head Height	2mm	3mm	4mm	4.5mm	5.5mm	7mm	9mm	11mm	14mm	16mm			

Shoulder Length	Item No.	Pkg. Qty.	Shoulder Length	Item No.	Pkg. Qty.
<b>1/4 in Shoulder, 10-24 Thread</b>					
1/4 in	1CA69	25	3 in	31KG89	5
3/8 in	4XY17	25	4 in	1CB52	5
1/2 in	4XY18	25	4 1/4 in	1CB54	5
5/8 in	1CA71	25	4 1/2 in	1CB56	5
3/4 in	4XY19	25	4 3/4 in	1CB58	5
7/8 in	1CA73	10	5 1/2 in	1CB62	1
1 1/4 in	1CA75	10	5 in	1CB60	5
1 1/2 in	31KG26	10	6 in	1CB64	1
2 in	1CA77	10	<b>5/8 in Shoulder, 1/2-13 Thread</b>		
2 1/4 in	1CA79	10	1 1/2 in	1CB66	1
2 1/2 in	1CA81	10	1 3/4 in	1CB68	1
3 in	1CA83	10	1 1/4 in	31KG90	5
<b>5/8 in Shoulder, 1/4-20 Thread</b>					
1/2 in	1CA85	10	2 in	1CB70	1
1 1/2 in	4XY24	10	2 1/4 in	1CB72	1
1 in	1CA89	10	2 1/2 in	1CB74	1
1 1/8 in	1CA90	5	2 3/4 in	1CB76	1
1 3/4 in	1CA92	5	3 in	1CB78	1
2 in	1CA94	5	3 1/4 in	1CB80	1
2 1/4 in	1CA96	5	3 1/2 in	1CB82	1
2 1/2 in	1CA98	5	3 3/4 in	1CB84	1
3 in	1CB10	5	4 in	1CB86	1
<b>3/4 in Shoulder, 5/16-18 Thread</b>					
1/2 in	1CB12	10	4 1/4 in	1CB88	1
3/8 in	31KG27	10	4 3/4 in	1CB90	1
1/2 in	31KG28	10	4 3/4 in	1CB92	1
5/8 in	31KG29	10	5 in	1CB94	1
3/4 in	31KG30	10	5 1/2 in	1CB96	1
7/8 in	1CB16	10	6 in	1CB98	1
1 in	31KG31	10	<b>3/4 in Shoulder, 3/8-16 Thread</b>		
1 1/4 in	31KG32	10	1/2 in	1CE10	1
1 1/2 in	31KG33	10	3/4 in	1CE12	1
1 3/4 in	31KG34	10	1 in	1CE14	1
2 1/4 in	1CB18	5	1 1/4 in	1CE16	1
2 3/4 in	1CB20	5	1 1/2 in	1CE18	1
2 1/2 in	31KG36	5	1 3/4 in	1CE20	1
2 in	31KG35	10	2 in	1CE22	1
3 in	1CB22	5	2 1/4 in	1CE24	1
3 1/4 in	1CB24	5	2 1/2 in	1CE26	1
3 1/2 in	1CB26	5	2 3/4 in	1CE28	1
3 3/4 in	1CB28	5	3 in	1CE30	1
4 in	1CB30	5	3 1/4 in	1CE32	1
4 1/2 in	1CB32	5	3 1/2 in	1CE34	1
5 in	1CB34	5	3 3/4 in	1CE36	1
6 in	1CB36	5	4 in	1CE38	1
<b>1/2 in Shoulder, 3/8-16 Thread</b>					
3/8 in	1CB38	5	4 1/4 in	5MXV9	1
1/2 in	4XY37	5	4 1/2 in	5MXW0	1
5/8 in	1CB40	5	4 3/4 in	5MXW1	1
3/4 in	31KG38	5	5 in	5MXW2	1
7/8 in	1CB42	5	5 1/2 in	5MXW3	1
1 in	31KG41	5	6 in	5MXW4	1
1 1/4 in	31KG42	5	<b>1 in Shoulder, 3/4-10 Thread</b>		
1 1/2 in	31KG43	5	1 in	31KG94	1
1 3/4 in	31KG44	5	1 1/2 in	31KG95	1
2 3/4 in	1CB44	5	2 in	31KG97	1
2 in	31KG86	5	2 1/2 in	31KG98	1
2 1/4 in	31KG87	5	3 in	31KG99	1
2 1/2 in	31KG88	5	3 1/2 in	31KH01	1
3 1/4 in	1CB46	5	4 in	31KH02	1
3 1/2 in	1CB48	5	5 in	31KH03	1
3 3/4 in	1CB50	5	6 in	31KH04	1

Shoulder Length	Item No.	Pkg. Qty.	Shoulder Length	Item No.	Pkg. Qty.			
<b>6 mm Shoulder, M5x0.80mm Thread</b>								
10 mm	6EU11	5	12 mm	6EU13	5			
16 mm	6EU15	5	20 mm	6EU17	5			
60 mm	6EU28	5	<b>8 mm Shoulder, M6x1mm Thread</b>					
12 mm	6EU30	5	16 mm	6EU31	5			
20 mm	6EU32	5	25 mm	6EU33	5			
30 mm	6EU34	5	40 mm	6EU36	5			
55 mm	6EU39	5	<b>10 mm Shoulder, M8x1.25mm Thread</b>					
16 mm	6EU43	5	20 mm	6EU44	5			
25 mm	6EU45	5	30 mm	6EU46	5			
40 mm	6EU48	5	50 mm	6EU50	5			
60 mm	6EU52	5	80 mm	6EU54	5			
<b>12 mm Shoulder, M10x1.50mm Thread</b>								
16 mm	6EU57	5	20 mm	6EU58	5			
25 mm	6EU59	5	30 mm	6EU60	5			
40 mm	6EU62	5	50 mm	6EU64	5			
60 mm	6EU66	5	70 mm	6EU67	5			
<b>16 mm Shoulder, M12x1.75mm Thread</b>								
30 mm	6EU72	5	35 mm	6EU73	5			
50 mm	6EU75	5	70 mm	31KG14	2			
80 mm	31KG15	2	<b>20 mm Shoulder, M16x2mm Thread</b>					
80 mm	31KG20	2	100 mm	31KG20	2			
<b>24 mm Shoulder, M20x2.5mm Thread</b>								
50 mm	31KG22	2	90 mm	31KG24	2			

## Alloy Steel Shoulder Screws

- Hex socket drive
- Knurled head
- Thread class: 3A standard, 5g6g metric
- Tensile strength: 140,000 psi standard, 159,500 psi metric
- Shear strength (metric): 95,700 psi
- Shoulder length tolerance: ±0.005" standard, +0.25mm metric

Metric sizes meet ISO 7379.

Notes: Additional dimensional information, self-locking screws with nylon patch, and additional sizes are available on Grainger.com; search for "shoulder screws."

Metric are 12.9 alloy steel; due to undercut between shoulder and thread, be sure to lower the tightening torque normally used for Class 12.9 screws.

Shoulder Length	Item No.	Pkg. Qty.	Shoulder Length	Item No.	Pkg. Qty.
<b>1/4" Shoulder, 10-24 Thread</b>					
2 3/4 in	5YPH1	25	3 in	5YPH2	25
3 1/4 in	5YPH3	25	3 1/2 in	5YPH4	25
3 3/4 in	5YPH5	25	4 1/2 in	5YPH8	10
4 1/2 in	5YPH6	25	4 in	5YPH7	25
4 1/4 in	5YPH9	10	5 in	5YPJ0	10
<b>5/8" Shoulder, 1/2-13 Thread</b>					
1/2 in	5YPD7	25	1 1/4 in	5YPI1	25
3/4 in	5YPD8	25	1 1/2 in	5YPI2	25
1 1/8 in	5YPD9	25	1 3/4 in	5YPI3	25
1 1/4 in	5YPD2	25	2 in	5YPI4	25
1 1/2 in	5YPD3	25	2 1/4 in	5YPI5	25
1 3/4 in	5YPD4	25	2 1/2 in	5YPI6	25
2 in	5YPD5	25	2 3/4 in	5YPI7	25
<b>3/4" Shoulder, 3/8-16 Thread</b>					
3/8 in	5YPE0	25	3 1/4 in	5YPI8	10
1/2 in	5YPE1	25	3 1/2 in	5YPI9	10
5/8 in	5YPE2	25	4 in	5YPI0	10
3/4 in	5YPE3	25	4 1/4 in	5YPI1	10
1 in	5YPE4	25	4 1/2 in	5YPI2	10
1 1/4 in	5YPE5	25	4 3/4 in	5YPI3	10
1 1/2 in	5YPE6	25	5 in	5YPI4	10
1 3/4 in	5YPE7	25	5 1/4 in	5YPI5	10
2 in	5YPE8	25	5 1/2 in	5YPI6	10
2 1/4 in	5YPE9	25	<b>3/4" Shoulder, 5/8-11 Thread</b>		
2 1/2 in	5YPE0	25	1 1/2 in	5YPK9	10
3 in	5YPE1	25	1 3/4 in	5YPL0	10
3 1/4 in	5YPE2	25	2 in	5YPL1	10
3 1/2 in	5YPE3	25	2 1/4 in	5YPL2	10
3 3/4 in	5YPE4	25	2 1/2 in	5YPL3	10
4 in	5YPE5	25	2 3/4 in	5YPL4	10
4 1/4 in	5YPE6	25	3 in	5YPL5	10
4 1/2 in	5YPE7	25	3 1/4 in	5YPL6	10
4 3/4 in	5YPE8	25	3 1/2 in	5YPL7	10
5 in	5YPE9	25	3 3/4 in	5YPL8	10
5 1/4 in	5YPE0	25	4 in	5YPL9	10
5 1/2 in	5YPE1	25	4 1/4 in	5YPN0	10
5 3/4 in	5YPE2	25	4 1/2 in	5YPN1	10
6 in	5YPE3	25	4 3/4 in	5YPN2	10
6 1/4 in	5YPE4	25	5 in	5YPN3	10
6 1/2 in	5YPE5	25	5 1/4 in	5YPN4	10
6 3/4 in	5YPE6	25			
7 in	5YPE7	25			
7 1/4 in	5YPE8	25			
7 1/2 in	5YPE9	25			
7 3/4 in	5YPE0	25			
8 in	5YPE1	25			

