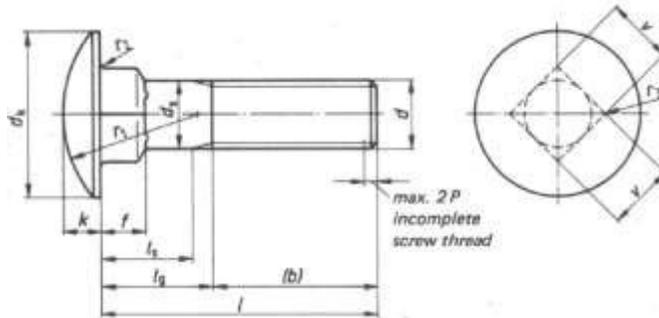


# Metric DIN 603 / ISO 8678 Mushroom Head Square Neck Carriage Bolt

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Dimensions of Metric DIN 603

Screw thread <i>d</i>		M 5	M 6	M 8	M 10	M 12	M 16	M 20
<i>P</i>	1)	0,8	1	1,25	1,5	1,75	2	2,5
	2)	16	18	22	26	30	38	46
<i>b</i>	3)	22	24	28	32	36	44	52
	4)	—	—	41	45	49	57	65
<i>dk</i>	max.	13,55	16,55	20,65	24,65	30,65	38,8	46,8
	min.	12,45	15,45	19,35	23,35	29,35	37,2	45,2
<i>ds</i> 5)	max.	5	6	8	10	12	16	20
	min.	4,52	5,52	7,42	9,42	11,3	15,3	19,16
<i>f</i>	max.	4,1	4,6	5,6	6,6	8,75	12,9	15,9
	min.	2,9	3,4	4,4	5,4	7,25	11,1	14,1
<i>k</i>	max.	3,3	3,88	4,88	5,38	6,95	8,95	11,05
	min.	2,7	3,12	4,12	4,62	6,05	8,05	9,95
<i>r1</i>	≈	10,7	12,6	16	19,2	24,1	29,3	33,9
<i>r2</i>	max.	0,5	0,5	0,5	0,5	1	1	1
<i>r3</i> 6)	max.	0,75	0,9	1,2	1,5	1,8	2,4	3
<i>v</i> 5)	max.	5,48	6,48	8,58	10,58	12,7	16,7	20,84
	min.	4,52	5,52	7,42	9,42	11,3	15,3	19,16

- 1) *P* = thread pitch
- 2) For  $l \leq 125$  mm
- 3) For  $125 < l \leq 200$  mm
- 4) For  $l > 200$  mm

All measurements are in mm

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1) Shank length of DIN 603 mushroom head square neck carriage bolts

Nominal size	$l$		Shank lengths $l_s$ and $l_g$													
	min.	max.	$l_s$ min.	$l_g$ max.	$l_s$ min.	$l_g$ max.	$l_s$ min.	$l_g$ max.	$l_s$ min.	$l_g$ max.	$l_s$ min.	$l_g$ max.	$l_s$ min.	$l_g$ max.	$l_s$ min.	$l_g$ max.
16	15,1	16,9	—	8	—	10										
20	18,95	21,05	—	8	—	10	—	12	—	14						
25	23,95	26,05	—	8	—	10	—	12	—	14						
30	28,95	31,05	—	18	—	10	—	12	—	14	—	18				
35	33,75	36,25	15	19	12	17	—	12	—	14	—	18				
40	38,75	41,25	20	24	17	22	11,75	18	—	14	—	18				
45	43,75	46,25	25	29	22	27	16,75	23	11,5	19	—	18				
50	48,75	51,25	30	34	27	32	21,75	28	16,5	24	—	18				
55	53,5	56,5	35	39	32	37	26,75	33	21,5	29	16,25	25	—	23		
60	58,5	61,5	40	44	37	42	31,75	38	26,5	34	21,25	30	—	23		
65	63,5	66,5	45	49	42	47	36,75	43	31,5	39	26,75	35	17	27		
70	68,5	71,5	50	54	47	52	41,75	48	36,5	44	31,25	40	22	32	—	28,5
80	78,5	81,5	60	64	57	62	51,75	58	46,5	54	41,25	50	32	42	21,5	34
90	88,25	91,75			67	72	61,75	68	56,5	64	51,25	60	42	52	31,5	44
100	98,25	101,75			77	82	71,75	78	66,5	74	61,25	70	52	62	41,5	54
110	108,25	111,75			87	92	81,75	88	76,5	84	71,25	80	62	72	51,5	64
120	118,25	121,75			97	102	91,75	98	86,5	94	81,25	90	72	82	61,5	74
130	128	132			101	106	95,75	102	90,5	98	85,25	94	76	86	65,5	78
140	138	142			111	116	105,75	112	108,5	108	95,25	104	86	96	75,5	88
150	148	152			121	126	115,75	122	110,5	118	105,25	114	96	106	85,5	98
160	156	164							120,5	128	115,25	124	106	116	95,5	108
180	176	184							140,5	148	135,25	144	126	136	115,5	128
200	195,4	204,6							160,5	168	155,25	164	146	156	135,5	148

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## 2) Weights of metric DIN 603 mushroom head square neck carriage bolts

The weights listed are reference values.

Screw thread <i>d</i>	M 5	M 6	M 8	M 10	M 12	M 16	M 20
Length <i>l</i>	Weight (7,85 kg/dm <sup>3</sup> ) kg/1000 pieces ≈						
16	4,00	6,90					
20	4,50	7,60	13,8	22,7			
25	5,10	8,50	15,4	25,2			
30	5,90	9,60	17,0	27,7	45,7		
35	6,70	10,7	19,0	30,2	49,4		
40	7,50	11,8	21,0	32,7	53,1		
45	8,30	12,9	23,0	35,8	56,8		
50	9,10	14,0	25,0	38,9	61,2	119	
55	9,90	15,1	26,9	42,0	65,6	126	
60	10,7	16,2	28,9	45,1	70,0	133	
65	11,5	17,3	30,9	48,2	74,4	141	
70	12,3	18,4	32,9	51,3	78,8	149	247
80	13,9	20,6	36,8	57,5	87,0	165	272
90		22,8	40,8	63,7	96,0	181	297
100		25,0	44,8	69,9	105	197	322
110		27,2	48,8	76,1	114	213	347
120		29,4	52,8	82,3	123	229	372
130		31,6	56,8	88,5	132	245	397
140		32,8	60,8	95,0	141	261	422
150		35,0	64,8	101	150	277	447
160				107	159	293	497
180				119	177	325	547
200				131	195	357	597

Metric DIN 603 mushroom head square neck carriage bolts have a smooth domed head that prevents them from being tightened or loosened from above. The square shoulder below the head is designed to self-anchor into wood and resist turning when the nut is tightened on the threaded shaft. SuperPart Fasteners offers the following sizes for immediate delivery from stock: Diameters ranging from M5 to M20 and lengths up to 80mm. View available parts by clicking on the following link: [Metric DIN 603 mushroom head square neck carriage bolts](#)

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DIN (**D**eutsches **I**nstitut für **N**ormung - German Institute for Standardization) standards are issued for a variety of components including industrial fasteners as Metric DIN 603 mushroom head square neck carriage bolts . The DIN standards remain common in Germany, Europe and globally even though the transition to ISO standards is taking place. DIN standards continue to be used for parts which do not have ISO equivalents or for which there is no need for standardization. The ISO equivalent for DIN 603 mushroom head square neck carriage bolts is ISO 8678.

### 3) Mechanical properties of stainless steel for metric DIN 603 mushroom head square neck carriage bolts

Stainless steels can be divided into three groups of steel - austenitic, ferritic and martensitic. Austenitic steel is by far the most common type (>90% of commercial fasteners). The steel groups and strength classes are designated by a four-digit sequence of letters and numbers (eg A2-70) as shown in the following table. DIN EN ISO 3506 governs screws and nuts made from stainless steel.

Steel group	Steel grade	Strength class	Screws, Nuts and Bolts			
			Tensile strength N/mm <sup>2</sup>	Tensile strength PSI	Dia range	Nut Load N/mm <sup>2</sup>
Austenitic	A2 and A4	50	500	70,000	<=M39	500
		70	700	100,000	<=M20	700
		80	800	118,000	<=M20	800

The tensile stress is calculated with reference to the tensile stress area (see DIN EN ISO 3506-1979). Nuts to be paired with same grade of stainless steel screws

Steel group	Property Strength class	Made From	Characteristics
Austenitic	50	A1, A2	Soft; cold worked, turned and soft pressed fasteners
	70	A2, A4	Cold worked, normal strength formed fasteners
	80	A2, A4	Extreme cold worked, high strength, special applications fasteners

fasteners  
 70,000  
 <=M39  
 500

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4) Chemical composition of stainless steel metric DIN 603 mushroom head square neck carriage bolts

Grade	USA Grade	Material designation	Material no.	C %	Si ≤ %	Mn ≤ %	Cr %	Mo %	Ni %
<b>A 2</b>	<b>304</b>	X 5Cr Ni 1810	1.4301	≤ 0.07	1.0	2.0	17.5 to 19.5	-	8.0 to 10.5
		X 2 Cr Ni 1811	1.4306	≤ 0.03	1.0	2.0	18.0 to 20.0	-	10 to 12.0
		X 8 Cr Ni 19/10	1.4303	≤ 0.07	1.0	2.0	17.0 to 19.0	-	11.0 to 13.0
<b>A 4</b>	<b>316</b>	X 5 Cr Ni Mo 1712	1.4401	≤ 0.07	1.0	2.0	16.5 to 18.5	2.0 to 2.5	10.0 to 13.0
		X 2 Cr Ni Mo 1712	1.4404	≤ 0.03	1.0	2.0	16.5 to 18.5	2.0 to 2.5	10 to 13

5) Chemical composition of steel metric DIN 603 mushroom head square neck carriage bolts

PROPERTY CLASS	MATERIAL AND TREATMENT	CHEMICAL COMPOSITION LIMITS %				TEMPERING TEMP °C MIN.
		C		P	S	
		min.	max.	max.	max.	
4.6, 4.8, 5.8, 6.8	Low or medium carbon steel	-	0.55	0.05	0.06	-
8.8	Medium carbon steel quenched, tempered	0.25	0.55	0.04	0.05	425
9.8	Medium carbon steel quenched, tempered	0.25	0.55	0.04	0.05	425
10.9	Medium carbon steel additives e.g. boron, Mn, Cr or Alloy steel - quenched, tempered	0.20	0.55	0.04	0.05	425
12.9	Alloy steel - quenched, tempered	0.20	0.50	0.035	0.035	380

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**6) Mechanical properties of steel for metric DIN 603 mushroom head square neck carriage bolts**

MECHANICAL PROPERTY		PROPERTY CLASS									
		4.8	5.6	5.8	6.8	8.8		9.8	10.9	12.9	
						Up to M 16	Over M 16				
Tensile Strength (Rm, N/mm <sup>2</sup> )	nom.	400	500		600	800		900	1000	1200	
	min.	420	500	520	600	800	830	900	1040	1220	
Vickers Hardness	min.	130	155	160	190	250	255	290	320	385	
	max.	250				320	336	360	380	435	
Brinell Hardness	min.	124	147	152	181	319	242	266	295	353	
	max.	238				385	319	342	363	412	
Rockwell Hardness	min. HR	71	79	82	89	-					
	HRC	-	-	-	-	20	23	28	32	39	
	HR	95				99	-				
	max. HRC	-	-	-	-	32	34	37	39	44	
Yield Stress ReL. N/mm <sup>2</sup>	nom.	320	300	400	480	-					
	min.	340	300	420	480	-					
Stress at permanent set limit N/mm <sup>2</sup>	nom.	-				640		720	900	1080	
	min.	-				640	660	720	940	1100	

**7) Metric DIN 603 mushroom head square neck carriage bolts available at SuperPart Fasteners**

(click to view available sizes and prices)



**Stainless Steel**



**Steel**

**Disclaimer**

Dimensional data and technical information for Metric **DIN 603 mushroom head square neck carriage bolts** was obtained from publicly available sources and not acquired through standards agencies. It has been completed and compiled for reference purposes only; where discrepancies are found they are subject to change without notice. SuperPart Fasteners makes no warranties or representations regarding the accuracy and validity of the compiled information and data. Contact the relevant standards authorities for accurate and detailed information.

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