











































CHARACTERISTICS

- Bolts for mechanical fixings.
- Metric thread.
- Requires pre-drilled threading or the use of a metric nut.
- Variety of sizes, heads and lengths: flexibility in installation.
- Zinc-plated coating and stainless steel.




APPLICATIONS



1. RANGE

ITEM	CODE	STANDARD	PHOTO	HEAD	RECESS	MATERIAL
1	T084	DIN 84		 Cylinder	 Slot	Steel class 4.8 UNE EN ISO 898-1. Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042
2	T963	DIN 963		 Countersunk	 Slot	Steel class 4.8 UNE EN ISO 898-1. Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042
3	T965	DIN 965		 Countersunk	 Ph	Steel class 4.8 UNE EN ISO 898-1. Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042
4	T985	DIN 7985		 Crowned	 Ph	Steel class 4.8 UNE EN ISO 898-1. Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042
5	D931	DIN 931		 Hexagonal	 Hexagonal	Steel class 8.8 UNE EN ISO 898-1. Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042
6	D933	DIN 933		 Hexagonal	 Hexagonal	Steel class 8.8 UNE EN ISO 898-1. Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042
7	D933I	DIN 933 (A2)		 Hexagonal	 Hexagonal	Stainless steel A2-70 (AISI 304)
8	D6921	DIN 6921		 Hexagonal frange	 Hexagonal	Steel class 8.8 UNE EN ISO 898-1. Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042
9	D6921I	DIN 6921 (A2)		 Hexagonal frange	 Hexagonal	Stainless steel A2-70 (AISI 304)
10	D7380	DIN 7380		 Rivet	 Allen	Steel class 10.9 UNE EN ISO 898-1. Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042
11	D912	DIN 912		 Cylinder	 Allen	Steel class 8.8 UNE EN ISO 898-1. Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042
12	D603	DIN 603		 Rivet with square neck	 Tamperproof	Steel class 4.8 UNE EN ISO 898-1. Coating: zinc-plated $\geq 5 \mu\text{m}$ s/ISO 4042
13	D603I	DIN 603 (A2)		 Rivet with square neck	 Tamperproof	Stainless steel A2-70 (AISI 304)
14	D608	DIN 608		 Countersunk	 Cylindrical	Steel class 8.8 UNE EN ISO 898-1. Coating: yellow passivated $\geq 3 \mu\text{m}$ s/ISO 4042

ITEM	CODE	STANDARD	PHOTO	HEAD	RECESS	MATERIAL
15	D934	DIN 934		 Hexagonal		Steel hardness > 140 HV. Coating: zinc-plated ≥ 5 µm s/ISO 4042
16	D934I	DIN 934 (A2)		 Hexagonal		Stainless steel A2-70 (AISI 304)
17	D985	DIN 985		 Hexagonal		Steel hardness > 140 HV. Coating: zinc-plated ≥ 5 µm s/ISO 4042
18	D985I	DIN 985 (A2)		 Hexagonal		Stainless steel A2-70 (AISI 304)
19	D1587	DIN 1587		 Hexagonal		Carbon steel Coatings: zinc-plated ≥ 5 µm s/ISO 4042
20	D6923	DIN 6923		 Hexagonal		Carbon steel Coating: zinc-plated ≥ 5 µm s/ISO 4042
21	D6923I	DIN 6923 (A2)		 Hexagonal		Stainless steel A2-70 (AISI 304)
22	TU-MA	Equivalente DIN 315		--		Stainless steel A2-70 (AISI 304)
23	D125	DIN 125		--		Steel class 6 UNE EN 20898-2. Coating: zinc-plated ≥ 5 µm s/ISO 4042
24	D125I	DIN 125 (A2)		--		Stainless steel A2-70 (AISI 304)
25	D127	DIN 127		--		Steel class 6 UNE EN 20898-2. Coating: zinc-plated ≥ 5 µm s/ISO 4042
26	D127I	DIN 127 A2		--		Stainless steel A2-70 (AISI 304)
27	D9021	DIN 9021				Carbon steel Coating. Zinc-plated ≥ 5 µm s/ISO 4042
28	D9021I	DIN 9021 (A2)				Stainless steel A2-70 (AISI 304)

ITEM	CODE	STANDARD	PHOTO	HEAD	RECESS	MATERIAL
29	D6798A	DIN 6798			--	Carbon steel Coating. Zinc-plated $\geq 5 \mu\text{m s/ISO 4042}$
30	TPMT	--			Hexagonal	Polyethylene (PE)

2. CHARACTERISTICS

2.1 DIN-84

Slotted bolt – cylindrical head



Properties



Steel



Zinc-plated coating

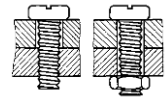


Plate fixings

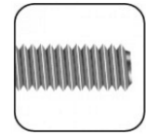
Properties



Slot

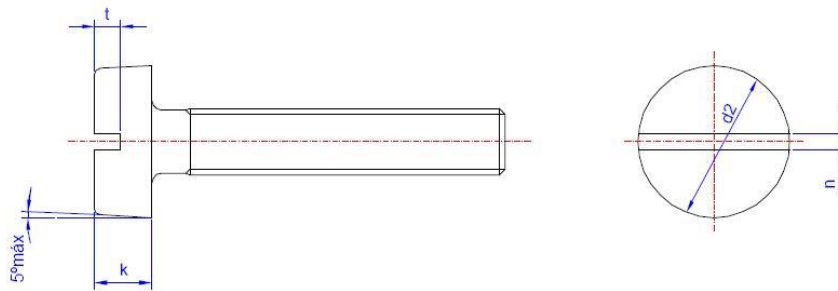


Cylindrical head



Metric

SIZES		M3	M4	M5	M6
Ød2: head diameter	[mm]	5.5	7	8.5	10
k: head thickness	[mm]	2.0	2.6	3.3	3.9
n: slot width	[mm]	1.0	1.50	1.50	1.9
t: slot depth	[mm]	1.15	1.5	1.8	2.2



2.2 DIN-963

Slotted bolt – countersunk head



Properties



Steel



Zinc-plated coating

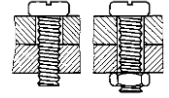


Plate fixings

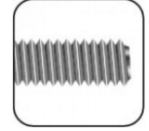
Properties



Slot

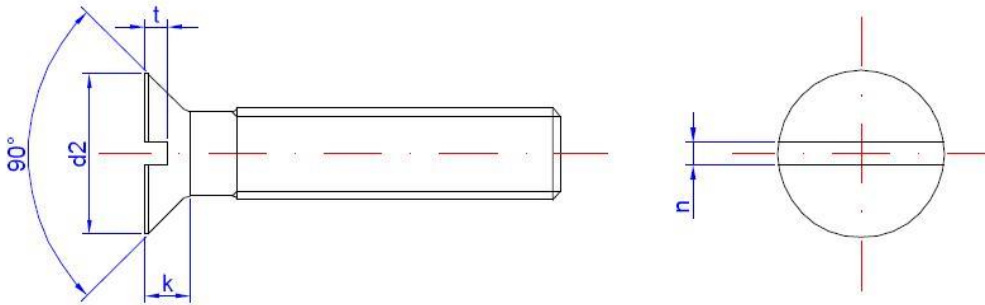


Countersunk head



Metric

SIZES		M4	M5	M6	M8
Ød2: head diameter	[mm]	7.5	9.2	11	14.5
k: head thickness	[mm]	2.2	2.5	3	4
n: slot width	[mm]	1.5	1.5	1.9	2.3
t: slot depth	[mm]	1.1	1.3	1.6	2.1



2.3 DIN-965

Bolt – countersunk head – Ph socket



Properties



Steel



Zinc-plated coating

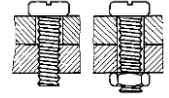


Plate fixings

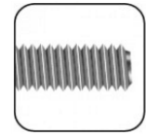
Properties



Ph

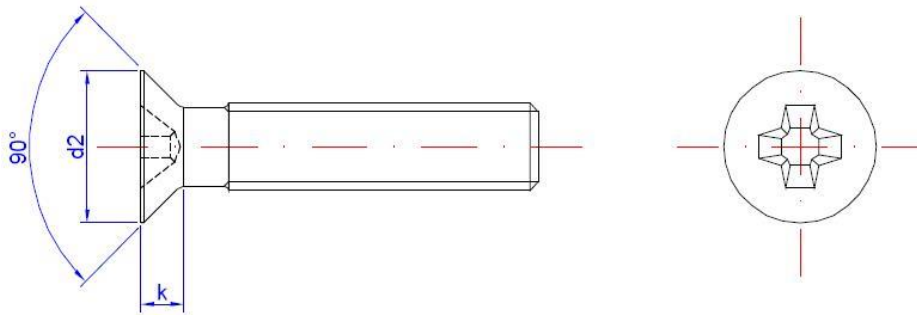


Countersunk head



Metric

SIZES		M3	M4	M5	M6
Ød2: head diameter	[mm]	5.6	7.5	9.2	11.0
k: head thickness	[mm]	1.65	2.2	2.5	3.0
Ph socket		1	2	2	3
Drill bit code		PUPHC01 PUPHL01	PUPHC02 PUPHL02	PUPHC02 PUPHL02	PUPHC03 PUPHL03



2.4 DIN-7985

Dome head bolt – Ph socket



Properties



Steel



Zinc-plated coating

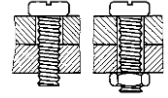
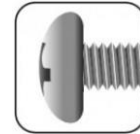


Plate fixings

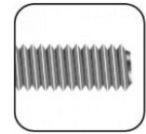
Properties



Ph

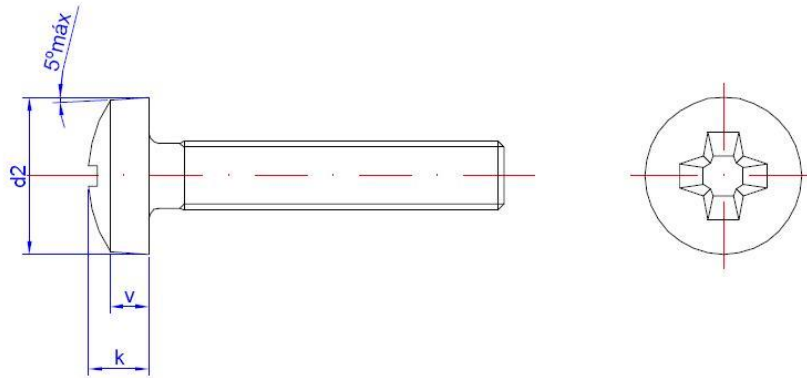


Dome head



Metric

SIZES		M3	M4	M5	M6
Ød2: head diameter	[mm]	6	8	10	12
k: head thickness	[mm]	2.4	3.1	3.8	4.6
v	[mm]	1.6	2.0	2.5	3.0
Ph socket		1	2	2	3
Drill bit code		PUPHC01 PUPHL01	PUPHC02 PUPHL002	PUPHC02 PUPHL02	PUPHC03 PUPHL03



2.5 DIN-931

Metric thread bolt – hexagonal head



Properties



Steel



Zinc-plated coating

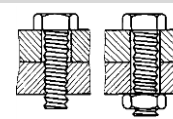


Plate fixings

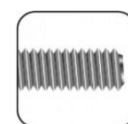
Properties



Hexagonal

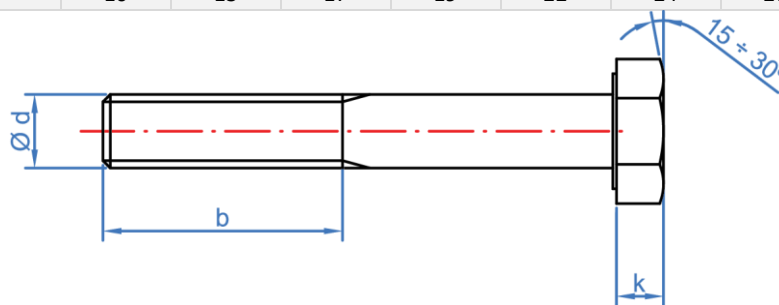
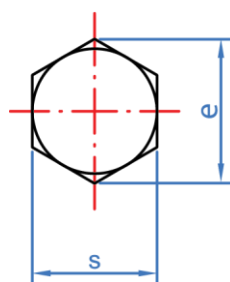


Hexagonal head



Metric

SIZES		M6	M8	M10	M12	M14	M16	M18	M20
s: distance between faces	[mm]	10	13	17	19	22	24	27	30
k: head thickness	[mm]	4	5,3	6,4	7,5	8,8	10	11,5	12,5
e: distance between apices	[mm]	10,89	14,20	18,72	20,88	23,91	26,17	29,56	32,95
b(min): thread length $l \leq 120$ mm	[mm]	18	22	26	30	34	38	42	46
b(min): thread length $l > 120$ mm	[mm]	--	28	32	36	40	44	48	52
Torque wrench		10	13	17	19	22	24	27	30



2.6 DIN-933

Metric thread bolt – hexagonal head



Properties



Steel



Zinc-plated coating

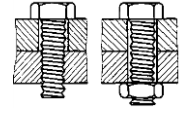


Plate fixings

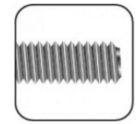
Properties



Hexagonal

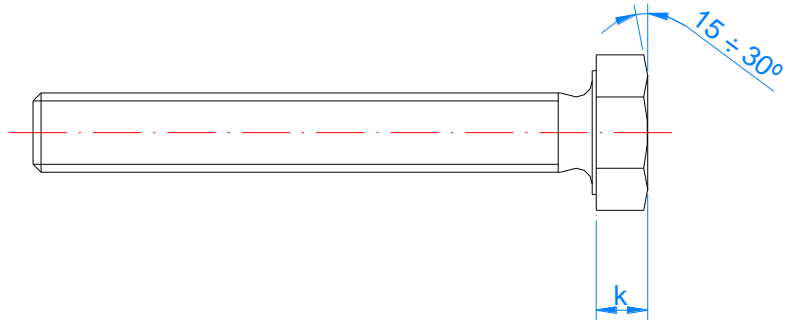
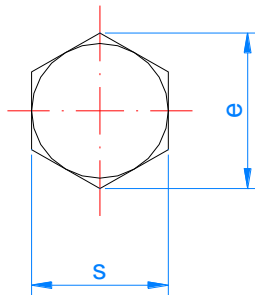


Hexagonal head



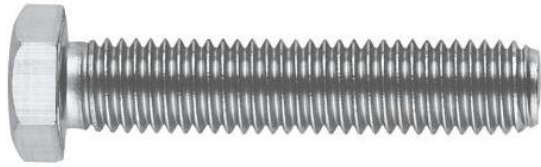
Metric

SIZES		M4	M5	M6	M8	M10	M12	M14	M16	M18	M20
s: distance between faces	[mm]	7	8	10	13	17	19	22	24	27	30
k: head thickness	[mm]	3	3,5	4	5,3	6,4	7,5	8,8	10	11,5	12,5
e: distance between apexes	[mm]	7,50	8,63	10,89	14,20	18,72	20,88	23,91	26,17	29,56	32,95
Torque wrench		7	8	10	13	17	19	22	24	27	30

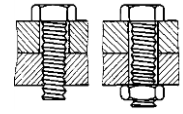


2.7 DIN-933 A2

Stainless Steel metric thread bolt – hexagonal head



Properties

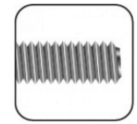


Steel

Stainless steel A2 (AISI 304)

Plate fixings

Properties

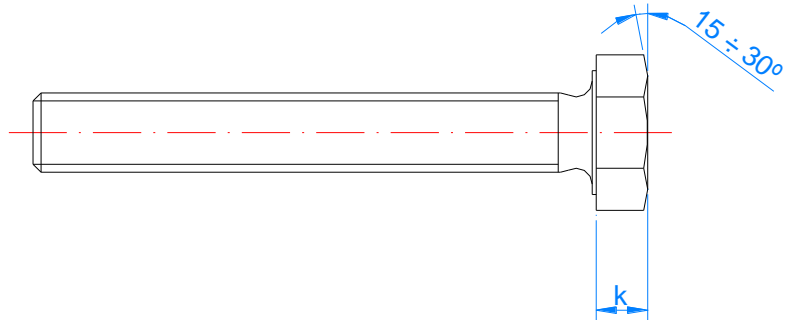
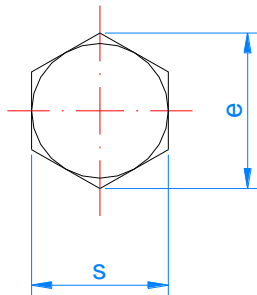


Hexagonal

Hexagonal head

Metric

SIZES		M4	M5	M6	M8	M10	M12	M14	M16	M18
s: distance between faces	[mm]	7	8	10	13	17	19	22	24	27
k: head thickness	[mm]	3	3,5	4	5,3	6,4	7,5	8,8	10	11,5
e: distance between apexes	[mm]	7,50	8,63	10,89	14,20	18,72	20,88	23,91	26,17	29,56
Torque wrench		7	8	10	13	17	19	22	24	27



2.8 DIN-6921

Metric thread bolt – hexagonal head with washer



Properties



Steel



Zinc-plated coating

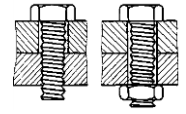


Plate fixings

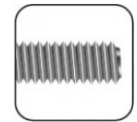
Properties



Hexagonal

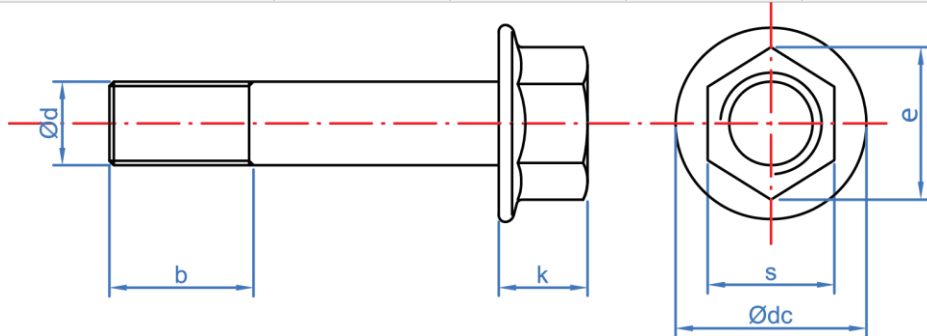


Hexagonal head



Metric

SIZES		M5	M6	M8	M10	M12
s: distance between faces	[mm]	8	10	13	17	19
k: head thickness	[mm]	5,4	6,6	8,10	9,2	11,5
e: distance between apexes	[mm]	8,71	10,95	14,26	16,50	17,62
Ødc: washer diameter	[mm]	11,8	14,2	18,0	22,3	26,6
b(min): thread length	[mm]	Full / 16 min	Full / 18 min	Full / 22 min	Full / 26 min	Full / 30 min
Torque wrench		8	10	13	17	19



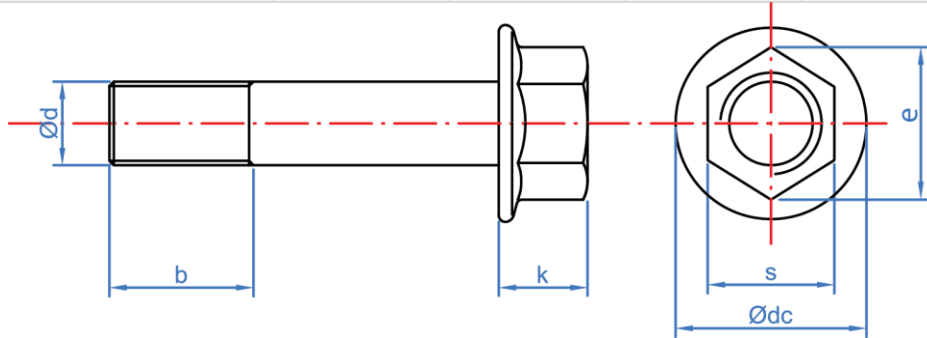
2.9 DIN-6921 A2

Stainless steel metric thread bolt – hexagonal head with washer



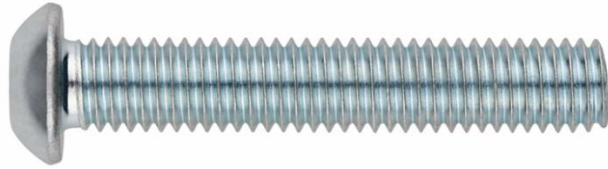
Properties		
Steel	Stainless steel A2 (AISI 304)	Plate fixings
Properties		
Hexagonal	Hexagonal head	Metric

SIZES		M5	M6	M8	M10	M12
s: distance between faces	[mm]	8	10	13	17	19
k: head thickness	[mm]	5,4	6,6	8,10	9,2	11,5
e: distance between apexes	[mm]	8,71	10,95	14,26	16,50	17,62
Ødc: washer diameter	[mm]	11,8	14,2	18,0	22,3	26,6
b(min): thread length	[mm]	Full / 16 min	Full / 18 min	Full / 22 min	Full / 26 min	Full / 30 min
Torque wrench		8	10	13	17	19



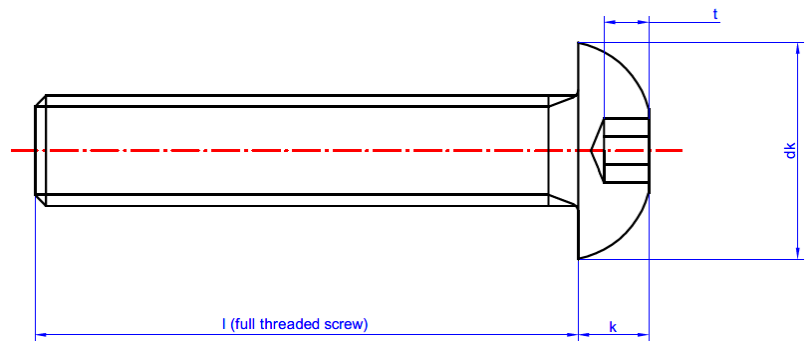
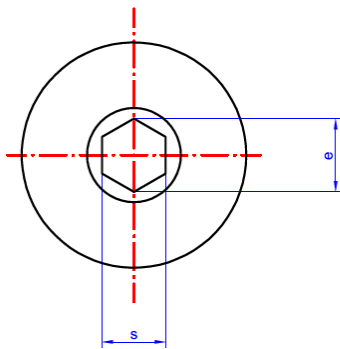
2.10 DIN-7380

ISO 7380 Allen screw with rivet head



Properties		
Steel	Zinc-plated coating	Plate fixings
Properties		
Allen	Cylindrical head	Metric

SIZES		M3	M4	M5	M6	M8	M10
Ødk: head diameter	[mm]	5,50	7,50	9,30	10,30	13,75	17,30
k: head thickness	[mm]	1,50	2,00	2,50	3,00	4,10	5,20
L: Available lengths	[mm]	12 - 20	8 - 40	10 - 50	8 - 60	10 - 60	16 - 60
Torque wrench		Allen 2	Allen 2.5	Allen 3	Allen 4	Allen 5	Allen 6



2.11 DIN-912

Allen bolt



Properties



Steel



Zinc-plated coating

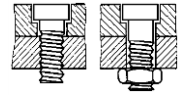
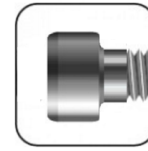


Plate fixings

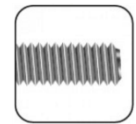
Properties



Allen

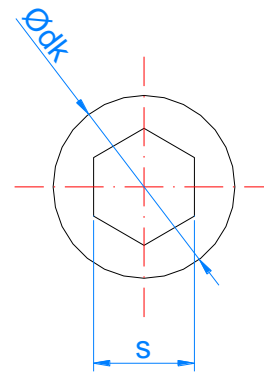
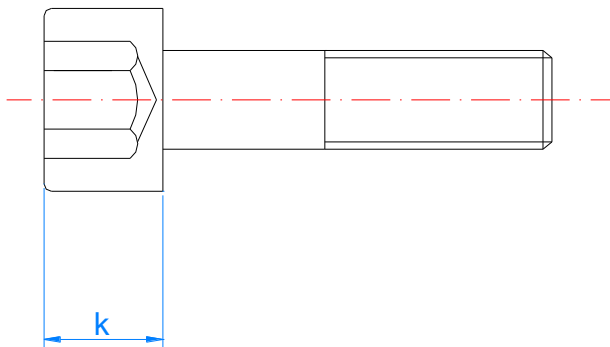


Cylindrical head



Metric

SIZES		M4	M5	M6	M8	M10	M12
Ødk: head diameter	[mm]	7	8,5	10	13	16	18
s: distance between faces	[mm]	3	4	5	6	8	10
k: head thickness	[mm]	4	5	6	8	10	12
Torque wrench		Allen 3	Allen 4	Allen 5	Allen 6	Allen 8	Allen 10



2.12 DIN-603

DIN-603 bolt and DIN-934 nut



Properties



Steel



Zinc-plated coating

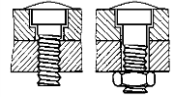
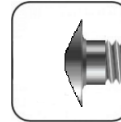
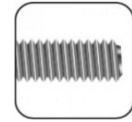


Plate fixings

Properties

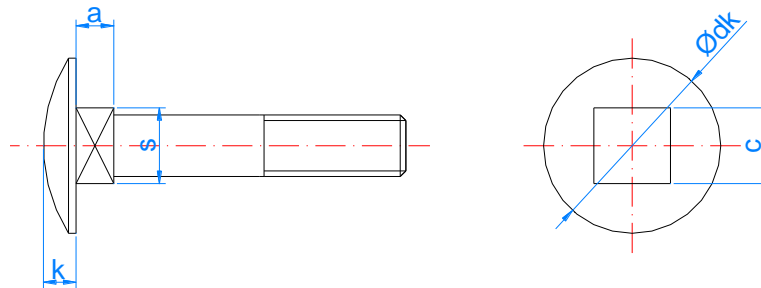


Round head square neck



Metric

SIZES		M5	M6	M8	M10	M12
Ødk: head diameter	[mm]	13	16	20	24	30
k: head thickness	[mm]	3	3,5	4,5	5	6,5
a: square thickness	[mm]	3,5	4	5	6	8
s	[mm]	5	6,2	7,8	9,85	11,6
c	[mm]	5	6	8	10	12



2.13 DIN-603 A2

Stainless steel DIN-603 bolt



Properties



Steel



Stainless steel A2 (AISI 304)

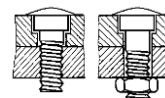
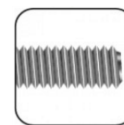


Plate fixings

Properties

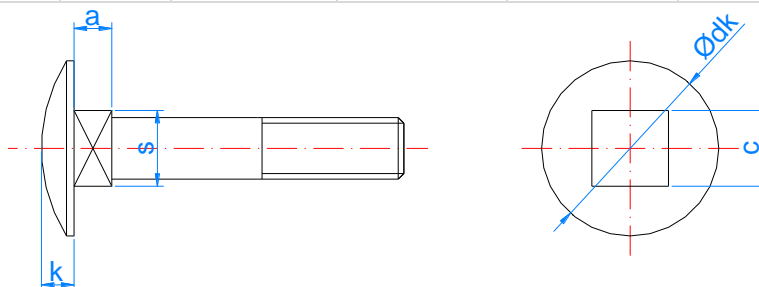


Round head square neck



Metric

SIZES		M5	M6	M8	M10	M12
Ødk: head diameter	[mm]	13	16	20	24	30
k: head thickness	[mm]	3	3,5	4,5	5	6,5
a: square thickness	[mm]	3,5	4	5	6	8
s	[mm]	5	6,2	7,8	9,85	11,6
c	[mm]	5	6	8	10	12



2.14 DIN-608

DIN-608 bolt and DIN-934 nut



Properties



Steel



Yellow passivated

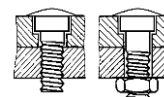
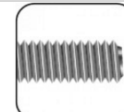


Plate fixings

Properties

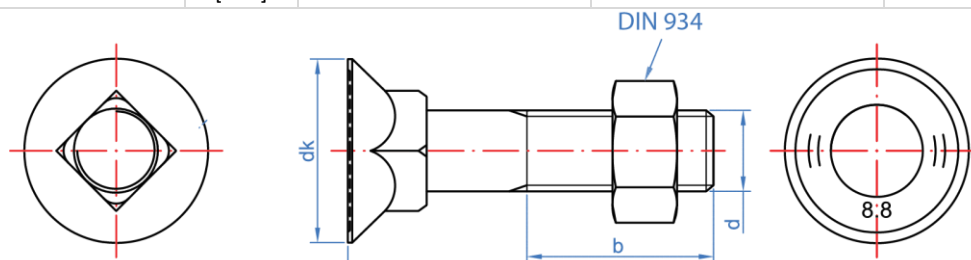


Countersunk head



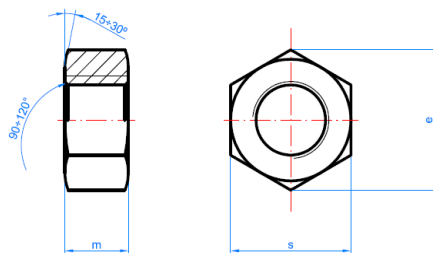
Metric

SIZE		M10	M10	M12
Ødk: head diameter	[mm]	19,5	21,5	23,5
b: thread length	[mm]	25	27	28,5
d: metric	[mm]	10	11	12



2.15 DIN-934

Hexagonal nut



Properties



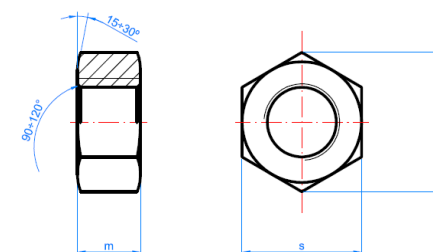
Steel

Zinc-plated coating

M	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30	M33	M36
s	5,5	7	8	10	13	17	19	22	24	27	30	32	36	41	46	50	55
e	6,0	7,7	8,8	11,1	14,4	18,9	21,1	24,5	26,8	29,6	32,9	35,0	39,6	45,2	50,9	55,4	60,8
m	2,4	3,2	4	5	6,5	8	10	11	13	15	16	18	19	22	24	26	29
Wrench	5,5	7	8	10	13	17	19	22	24	27	30	32	36	41	46	50	55

2.16 DIN-934 A2

Stainless Steel A2 hexagonal nut



Properties



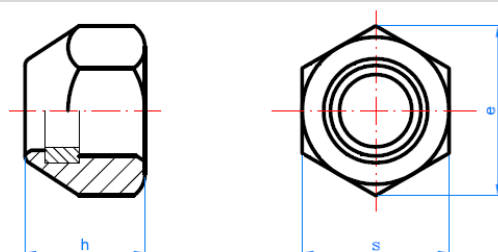
Steel

Stainless Steel A2 (AINSI 304)

M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
s	7	8	10	13	17	19	22	24	27	30	32	36
e	7,7	8,8	11,1	14,4	18,9	21,1	24,5	26,8	29,6	32,9	35,0	39,6
m	3,2	4	5	6,5	8	10	11	13	15	16	18	19
Wrench	7	8	10	13	17	19	22	24	27	30	32	36

2.17 DIN-985

Self-locking nut



Properties



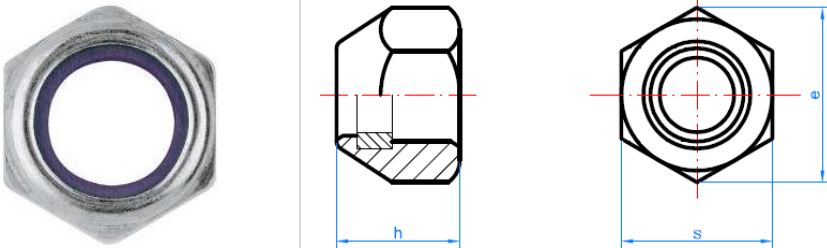


Steel

Zinc-plated coating

M	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30
s	5,5	7	8	10	13	17	19	22	24	27	30	32	36	41	46
e	6,0	7,7	8,8	11,1	14,4	18,9	21,1	24,5	26,8	29,6	32,9	35,0	38,6	45,2	50,9
h	4	5	5	6	8	10	12	14	16	18,5	20	22	24	27	30
Wrench	5,5	7	8	10	13	17	19	22	24	27	30	32	36	41	46

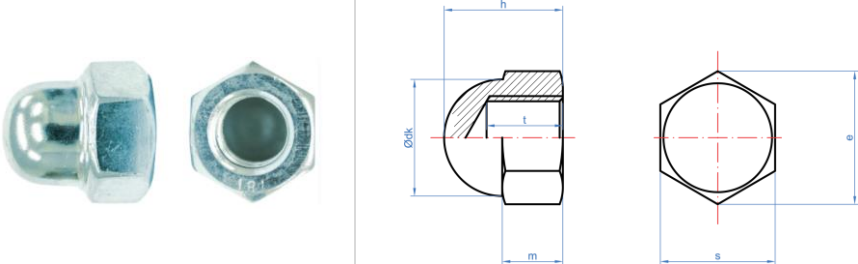


2.18 DIN-985 A2

Stainless Steel A2 self-locking nut

									<p>Properties</p>  			
									Steel		Stainless Steel A2 (AISI 304)	
M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
s	7	8	10	13	17	19	22	24	27	30	32	36
e	7,7	8,8	11,1	14,4	18,9	21,1	24,5	26,8	29,6	32,9	35,0	38,6
h	5	5	6	8	10	12	14	16	18,5	20	22	24
Wrench	7	8	10	13	17	19	22	24	27	30	32	36


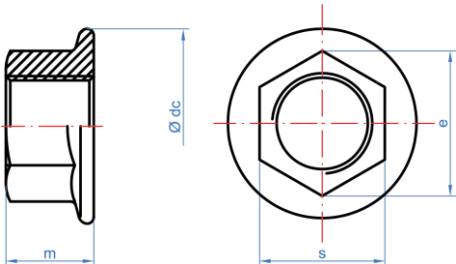


2.19 DIN-1587

Cup nut

						<p>Properties</p>  		
						Steel		Zinc-plated coating
M	M4	M5	M6	M8	M10	M12	M14	M16
s	7	8	10	13	17	19	22	24
e	7,7	8,8	11,1	14,4	18,9	21,1	24,5	26,8
h	8	10	12	15	18	22	25	28
m	3	4	5	6,5	8	10	11	13
t	5,5	7,5	8	11	13	16	18	21
ødk	6,5	7,5	9,5	12,5	16	18	21	23
Wrench	7	8	10	13	17	19	22	24


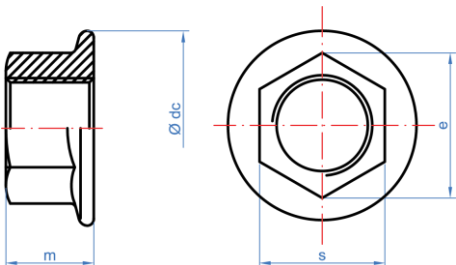


2.20 DIN-6923

Hexagonal flange nut with serration

						Properties			
						 Steel	 Zinc-plated coating		
M	M4	M5	M6	M8	M10	M12	M14	M16	
s	7	8	10	13	15	18	21	24	
e	7,7	8,8	11,1	14,4	18,9	21,1	24,5	26,8	
m	4,5	5	6	8	10	12	14	16	
ØdC	10	11,8	14,2	17,9	21,8	26	29,9	34,5	
Wrench	7	8	10	13	17	19	22	24	


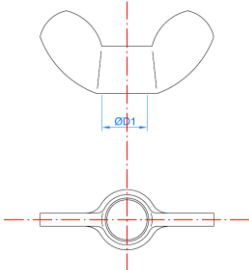


2.21 DIN-6923 A2

Stainless steel hexagonal flange nut with serration

						Properties			
						 Steel	 Stainless Steel A2 (AINSI 304)		
M	M4	M5	M6	M8	M10	M12	M14	M16	
s	7	8	10	13	15	18	21	24	
e	7,7	8,8	11,1	14,4	18,9	21,1	24,5	26,8	
m	4,5	5	6	8	10	12	14	16	
ØdC	10	11,8	14,2	17,9	21,8	26	29,9	34,5	
Wrench	7	8	10	13	17	19	22	24	

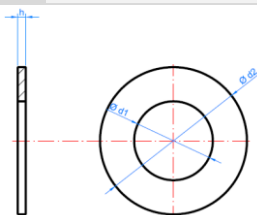
2.22 TU-MA

Wing nut

							Properties			
							 Steel	 Zinc-plated coating		
M	M3	M4	M5	M6	M8	M10	M12	M14	M16	
ØD1: interior diameter	M3	M4	M5	M6	M8	M10	M12	M14	M16	

2.23 DIN-125

Flat washer



Properties



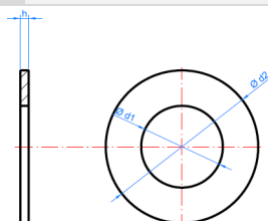
Steel

Zinc-plated coating

M	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30	M33	M36
Ød1: interior diameter	3,3	4,3	5,3	6,4	8,4	10,5	13,0	15,0	17,0	19,0	21,0	23,0	25,0	28,0	31,0	34,0	37,0
Ød2: exterior diameter	7	9	10	12	16	20	24	28	30	34	37	39	44	50	56	60	66
h: thickness	0,8	0,8	1	1,6	1,6	2	2,5	2,5	3	3	3	3	4	4	4	5	5

2.24 DIN-125 A2

Stainless Steel A2 flat washer



Properties



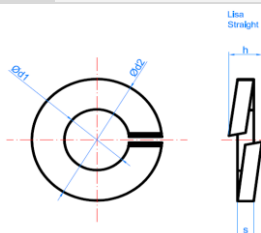
Steel

Stainless Steel A2 (AINSI 304)

M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
Ød1: interior diameter	4,3	5,3	6,4	8,4	10,5	13,0	15,0	17,0	19,0	21,0	23,0	25,0
Ød2: exterior diameter	9	10	12	16	20	24	28	30	34	37	39	44
h: thickness	0,8	1	1,6	1,6	2	2,5	2,5	3	3	3	3	4

2.25 DIN-127

Grower spring washer



Properties



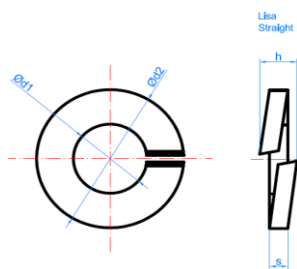
Steel

Zinc-plated coating

M	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30	M36
Ød1: interior diameter	3,1	4,1	5,1	6,1	8,1	10,2	12,2	14,2	16,2	18,2	20,2	22,5	24,5	27,5	30,5	36,5
Ød2: exterior diameter	6,2	7,6	9,2	11,8	14,8	18,1	21,1	24,1	27,4	29,4	33,6	35,9	40	43	48,2	58,2
h: smooth width	1,8	2	2,6	3,3	4,3	4,8	5,4	6,5	7,6	7,7	8,7	8,7	10,9	10,9	13,1	13,1
s: thickness	0,8	0,9	1,2	1,6	2	2,2	2,5	3	3,5	3,5	4	4	5	5	6	6

2.26 DIN-127 A2

Stainless steel grower spring washer



Properties



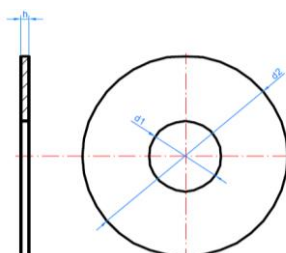
Steel

Stainless Steel A2
(AISI 304)

M	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30	M36
$\varnothing d1$: interior diameter	3,1	4,1	5,1	6,1	8,1	10,2	12,2	14,2	16,2	18,2	20,2	22,5	24,5	27,5	30,5	36,5
$\varnothing d2$: exterior diameter	6,2	7,6	9,2	11,8	14,8	18,1	21,1	24,1	27,4	29,4	33,6	35,9	40	43	48,2	58,2
h: smooth width	1,8	2	2,6	3,3	4,3	4,8	5,4	6,5	7,6	7,7	8,7	8,7	10,9	10,9	13,1	13,1
s: thickness	0,8	0,9	1,2	1,6	2	2,2	2,5	3	3,5	3,5	4	4	5	5	6	6

2.27 DIN-9021

Wide flat washer



Properties




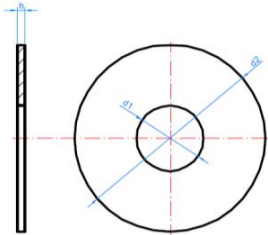


Steel

Zinc-plated coating

M	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
$\varnothing d1$: interior diameter	3,2	4,3	5,3	6,4	8,4	10,5	13,0	15,0	17,0	20,0	22,0	24,0	26,0
$\varnothing d2$: exterior diameter	9	12	15	18	24	30	37	44	50	56	60	66	72
h: thickness	0,8	1	1,2	1,6	2	2,5	3	3	3	4	4	5	5


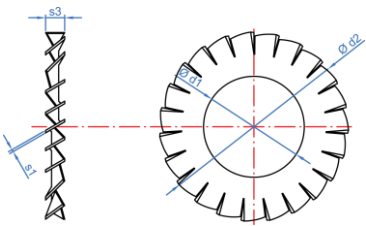


2.28 DIN-9021 A2

Stainless Steel wide flat washer

				Properties								
												
		Steel			Stainless Steel A2 (AISI 304)							
M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
$\phi d1$: interior diameter	4,3	5,3	6,4	8,4	10,5	13,0	15,0	17,0	20,0	22,0	24,0	26,0
$\phi d2$: exterior diameter	12	15	18	24	30	37	44	50	56	60	66	72
h: thickness	1	1,2	1,6	2	2,5	3	3	3	4	4	5	5


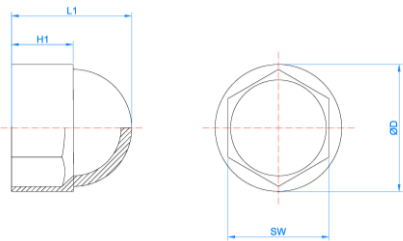

2.29 DIN-6798

Serrated lock washer external teeth

				Properties					
									
		Steel			Zinc-plated coating				
M	M3	M4	M5	M6	M8	M10	M12	M14	M16
$\phi d1$: interior diameter	3,2	4,3	5,3	6,4	8,4	10,5	13	15	17
$\phi d2$: exterior diameter	6	8	10	11	15	18	20,5	24	26
s1: thickness	0,4	0,5	0,6	0,7	0,8	0,9	1	1	1,2
s3: width	~3*s1								

2.30 TP-MT

Plastic cap for hexagonal head

				Properties	
					
		Polyethylene			
M	M6	M8	M10	M12	M16
SW	10	13	17	19	24
ϕD	12,5	15,5	20,5	23,5	29,5
H1	8,5	9,0	11,5	11,5	14,0
L1	14	15,5	20,5	21,5	27,0

3. TORQUE FOR BOLTS

For steel bolts and nuts the standard UNE 17-108-81 establishes specific parameters for correct installation.

This standard is aimed to indicate the torque value needed in order to install, with dynamometric tools that don't produce any vibrations nor impacts, the standard steel bolt range, on rigid supports and only demanded by axial with constant value.

For joints between zinc plated materials, the coefficient of friction established by this standard is $\mu=0,14$. Torque moments for each size are specified in the table below.

TORQUE [da N·m] (con $\mu=0,14$)

ITEM	SIZES										
	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20
T084	0,063	0,14	0,29	0,49	1,2	2,4	4,1	6,5	10	14	19,5
T963											
T965											
T985											
D603											
D931	0,12	0,27	0,54	0,93	2,2	4,5	7,7	12,5	19	27	38
D933											
D6921											
D912											
D933 (A2)*	0,10	0,17	0,34	0,59	1,45	3,00	5,00	7,90	12,10	17,40	22,40
D603 (A2)*											
D6921 (A2)*											

*Values according to DIN EN ISO 3506 for stainless steel A2-70 and coefficient of friction $\mu_{total}=0.10$. These values are indicative and will always depend on the nut and screw having adequate lubrication.

4. RESISTANCES

The standard ISO-898-1 “Mechanical properties of fasteners made of carbon steel and alloy steel” establishes the values for minimum ultimate tensile loads.

According to table 6 of the mentioned standard the values shown below correspond to the previous bolts of the datasheet.

The shear values are the same as 50% of the tensile values..

MINIMUM ULTIMATE TENSILE LOAD [kN] ($A_s, nom \times R_m, min$)

ITEM	SIZES										
	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20
T084	2,11	3,69	5,96	8,44	15,40	24,40	35,40	48,30	65,90	80,60	103,00
T963											
T965											
T985											
D603											
D608	4,02	7,02	11,35	16,1	29,2	46,4	67,4	92,00	125,00	159,00	203,00
D931											
D933											
D6921											
D912											
D933 (A2)	3,52	6,15	9,94	14,07	20,23	25,62	40,60	59,01	80,50	109,90	134,40
D603 (A2)											
D6921 (A2)											

MINIMUM ULTIMATE SHEAR LOAD [kN] ($A_s, nom \times R_m, min \times 0,5$)

ITEM	SIZES										
	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20
T084	1,06	1,85	2,98	4,22	7,70	12,20	17,70	24,15	32,95	40,30	51,50
T963											
T965											
T985											
D603											
D608	2,01	3,51	5,68	8,05	14,60	23,20	33,70	46,00	62,50	79,50	101,50
D931											
D933											
D6921											
D912											
D933 (A2)	1,76	3,07	4,97	7,04	10,12	12,81	20,30	29,51	40,25	54,95	67,20
D603 (A2)											
D6921 (A2)											