

WÜRTH Industrie Service

INCH

FASTENERS





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Dear Würth Industrie Service Customers!

Within the Würth Group Würth Industrie Service is responsible for supplying the industrial sector as a full service provider of C-Parts. Originally the company was founded as an independent subsidiary in the "Industriepark Würth" Bad Mergentheim in January 1999, by the outsourcing of the Industry Division of the Adolf Würth GmbH & Co. KG in Künzelsau.

A wide range of C-Parts as well as one of a kind supply concept make Würth IndustrieService the perfect supplier for C-Parts in the industry sector. Our product range focuses on the needs and demands of the industry sector for manufacturing, which includes assembly material for constructions, machines and vehicles as well as equipment for their maintenance.

Most U.S. companies that utilise inch fasteners in their assembly process, export those products or also have pro-

ductions sites in Europe. This is why it was important to us to add inch fasteners to our already wide range of C-parts.

This brochure serves to give an overview of the characteristics of these products. Furthermore, it provides additional information on the mechanical properties as well as the according standards.

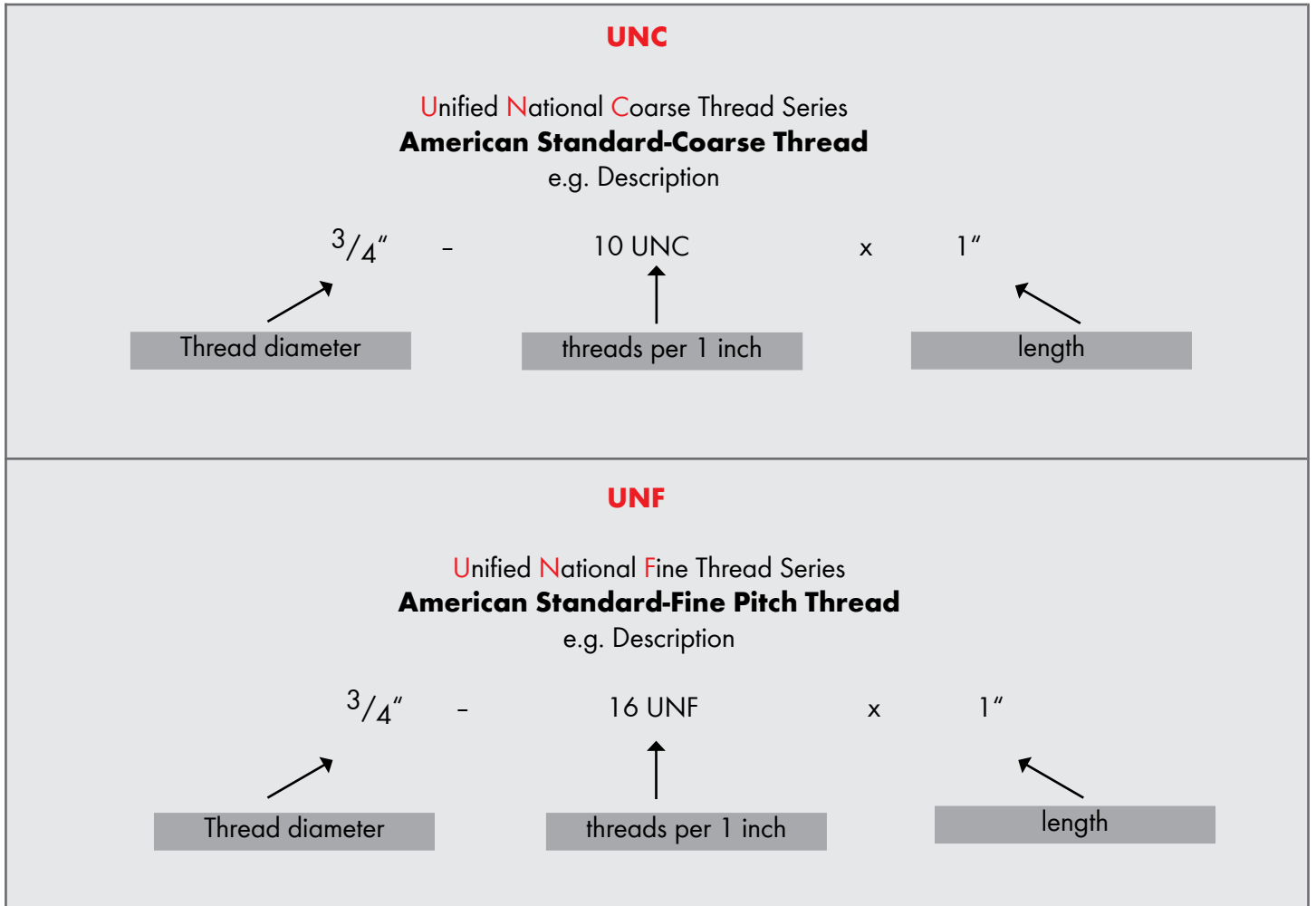
We look forward to do business with you and thank you for your trust.



Dr. Uwe Hasselmann
Head of Technical Department

In this brochure we want to introduce two types of threads to you. These are the **American Standard-Coarse Thread UNC** and the **Standard-Fine Pitch Thread UNF**. Both of these threads are part of the new standard assortment of Würth Industrie Service.

The difference between the metric and the american thread is that the metric range shows the lead of the thread (e.g. M8 x 1,25 mm) and the american range shows the threads per one inch (25,4 mm).



Besides the threads there are other differences between inch and metric items. Inch fasteners are not just used in the U.S. but for instance also in Great Britain. The difference between an American thread and an English thread is the thread angle as shown below:

Difference between thread angle UNC (America) and BSW (Great Britain)

UNC = American Standard-Coarse Thread, 60° thread angle

BSW = British Standard-Coarse Thread, 55° thread angle

1 Inch = 25,4 mm

Inch	mm Ø	UNC	UNF
No. 0	1,524		80
No. 1	1,854	64	72
No. 2	2,184	56	64
No. 3	2,515	48	56
No. 4	2,845	40	48
No. 5	3,175	40	44
No. 6	3,505	32	40
No. 8	4,166	32	36
No.10	4,826	24	32
No. 12	5,486	24	28
1/4"	6,350	20	28
5/16"	7,938	18	24
3/8"	9,525	16	24
7/16"	11,112	14	20
1/2"	12,700	13	20
9/16"	14,288	12	18
5/8"	15,875	11	18
11/16"	17,462		
3/4"	19,050	10	16
13/16"	20,638		
7/8"	22,225	9	14
15/16"	23,812		
1"	25,400	8	12 (14 UNS)
1 1/8"	28,575	7	12
1 1/4"	31,750	7	12
1 3/8"	34,925	6	12
1 1/2"	38,100	6	12
1 9/16"	39,688		
1 5/8"	41,275		
1 3/4"	44,450	5	
2"	50,800	4 1/2	
2 1/4"	57,150	4 1/2	
2 1/2"	63,500	4	

Screws		
Standard	German Description	English Description
ANSI B 18.2.1	Sechskantschraube Voll- und Teilgewinde	Hex Bolts
ANSI B 18.2.1	Sechskantschraube Voll- und Teilgewinde	Hex Cap Screws
ANSI B 18.2.3.1M	Sechskantschraube Voll- und Teilgewinde Metrisch	Hex Cap Screws
ANSI B 18.2.3.2M	Sechskantschraube Metrisch	Formed Hex Screws metric
ANSI B 18.2.3.3M	Sechskantschraube, schwere Ausführung Metrisch	Heavy Hex Screws metric
ANSI B 18.2.3.4M	Flanschkopf-Sechskantschraube Metrisch	Hex Flange Screws metric
ANSI B 18.2.3.5M	Sechskantschraube Metrisch	Hex Bolts metric
ANSI B 18.2.3.6M	Sechskantschraube, schwere Ausführung Metrisch	Heavy Hex Bolts metric
ANSI B 18.2.3.7M	Sechskantschraube, schwere Ausführung Metrisch	Heavy Hex Structural Bolts metric
ANSI B 18.2.3.8M	Sechskantschraube Metrisch	Hex Lag Screws metric
ANSI B 18.2.3.9M	Flanschkopf-Sechskantschraube, schwere Ausführung Metrisch	Heavy Hex Flange Screws metric
ANSI B 18.3	Zylinderkopfschraube, Passschulter-schraube und Gewindestifte	Socket Cap, Shoulder and Set Screws
ANSI B 18.3.1M	Innensechskant-Schraube Metrisch	Socket Head Cap Screws metric
ANSI B 18.5	Zylinderkopfschraube	Round Head Bolts
ANSI B 18.5.2.2M	Hammerschraube Metrisch	Round Head Square Neck Bolts metric
ANSI B 18.6.2	Schlitzkopfschraube, Vierkantkopfschraube, Senkkopfschraube	Slotted Head Cap Screws, Square Head Set Screws, Flat Countersunk Screws
ANSI B 18.6.2	Schlitzkopfschraube, Vierkantkopfschraube, Zylinderkopfschraube	Slotted Head Cap Screws, Square Head Set Screws, Round Head Cap Screws
ANSI B 18.6.2	Schlitzkopfschraube, Vierkantkopfschraube, Linsenkopfschraube	Slotted Head Cap Screws, Square Head Set Screws, Fillister Head Cap Screws
ANSI B 18.6.3	Senkkopfschraube	Machine Screws, Flat Head
ANSI B 18.6.7M	Senkkopfschraube Metrisch	Machine Screws, Flat Head metric
ANSI B 18.6.7M	Schraube mit ovalem Kopf Metrisch	Machine Screws, Oval Head metric
ANSI B 18.6.7M	Flachkopfschraube Metrisch	Machine Screws, Pan Head metric
ANSI B 18.6.7M	Sechskantschraube Metrisch	Metric Screws, Hex Head metric
ANSI B 18.6.7M	Sechskantschraube m. Flansch Metrisch	Metric Machine Screws, Hex Flange Head metric
ANSI B 18.17	Flügelmutter, Flügelmutterschraube	Wing Nuts, Thumb Screws and Wing Screws
ANSI B 18.6.4	Blechschrabe m. Sechskantkopf	Thread Forming, Hex Head
ANSI B 18.6.4	Blechschrabe m. Sechskantkopf und angepresster Scheibe	Thread Forming, Hex Washer Head
ANSI B 18.6.5M	Blechschrabe m. Senkkopf Metrisch	Thread Forming, Flat Head metric
ANSI B 18.6.5M	Blechschrabe m. Rundkopf Metrisch	Thread Forming, Oval Head metric
ANSI B 18.6.5M	Blechschrabe m. Flachkopf Metrisch	Thread Forming, Pan Head metric
ANSI B 18.6.5M	Blechschrabe m. Sechskantkopf Metrisch	Thread Forming, Hex Head metric
ANSI B 18.6.5M	Blechschrabe m. Sechskantflanschkopf Metrisch	Thread Forming, Hex Flange Head metric

Washers		
Standard	German Description	English Description
ANSI B18.21.1	Sicherungsscheibe	Lock Washers - Helical Spring
ANSI B18.21.2M	Sicherungscheibe Metrisch	Lock Washers - Helical Spring metric
ANSI B18.21.2M	Zahnscheibe Metrisch	Lock Washers - Internal or External Tooth metric
ANSI B18.21.2M	Sicherungscheibe mit Senkung Metrisch	Lock Washers - Countersunk External metric
ANSI B18.21.2M	Zahnscheibe Metrisch	Lock Washers - External and Internal Tooth Washer metric
ANSI B18.22M	Scheibe Metrisch	Plain Washers metric
ANSI B18.22.1	Scheibe	Plain Washers

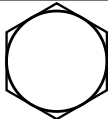





Nuts		
Standard	German Description	English Description
ANSI B18.2.2	Sechskant-Gegenmutter	Hex Jam Nuts
ANSI B18.2.4.1M	Sechskantmutter, Typ 1 Metrisch	Hex Nuts, Style 1 metric
ANSI B18.2.4.2M	Sechskantmutter, Typ 2 Metrisch	Hex Nuts, Style 2 metric
ANSI B18.2.4.3M	Schlitzmutter Metrisch	Slotted Hex Nuts metric
ANSI B18.2.4.4M	Flanschmutter Metrisch	Hex Flange Nuts metric
ANSI B18.2.4.5M	Sechskant-Gegenmutter Metrisch	Hex Jam Nuts metric
ANSI B18.2.4.6M	Sechskantmutter, schwere Ausführung Metrisch	Heavy Hex Nuts metric
ANSI B18.16.3M	Sechskant-Flansch-Torsionsmutter Metrisch	Prevailing - Torque Hex Flange Nuts metric
ANSI B18.16.3M	Sechskant-Torsionsmutter Metrisch	Prevailing - Torque Hex Nuts metric

Pins		
Standard	German Description	English Description
ANSI B18.8.1	Lastösenbolzen	Clevis Pins and Cotter Pins - Clevis Pins
ANSI B18.8.1	Lastösenbolzen	Clevis Pins and Cotter Pins - Cotter Pins
ANSI B18.8.2	Kegelstift	Taper Pins, Dowel Pins

Rivets		
Standard	German Description	English Description
ANSI B18.1.1	Niete klein mit Flachkopf	Small Solid Rivets, Flat Head
ANSI B18.1.1	Niete klein mit Senkkopf	Small Solid Rivets, Countersunk Head
ANSI B18.1.1	Niete klein mit Halbrundkopf	Small Solid Rivets, Button Head
ANSI B18.1.2	Niete groß mit Halbrundkopf	Large Rivets, Button Head
ANSI B18.1.2	Niete groß mit Senkkopf	Large Rivets, Countersunk Head
ANSI B18.1.3M	Flachkopfniete, klein Metrisch	Small Solid Rivet, Flat Head metric
ANSI B18.1.3M	Halbrundniete, klein Metrisch	Small Solid Rivet, Round Head metric
ANSI B18.1.3M	Senkkopfniete, klein Metrisch	Small Solid Rivet, Countersunk Head metric

Retaining Rings		
Standard	German Description	English Description
ANSI B27.7M	Sprengring - Außen Metrisch	Cross Section Retaining Rings - Basic External metric
ANSI B27.7M	Sprengring - Innen Metrisch	Cross Section Retaining Rings - Basic Internal metric
ANSI B27.7M	Sprengring - E-Ring Außen Metrisch	Cross Section Retaining Rings - E-Ring External metric

Alongside the ANSI- (American National Standards Institute) standards **with inch threads**, are the according ANSI-Standards for **metric parts ("M")**.





















	Steel Screws				Stainless Steel	
Head Marking						
Product Specification	Grade 2	Grade 5	Grade 8	Socket Cap Screw	Stainless Steel (18-8)	Stainless Steel
Nominal Size Range	1/4 - 3/4 (>3/4 - 1 1/2)	1/4 - 1 (>1-1 1/2)	1/4 - 1 1/2	<1/2 (>1/2 - 2)	1/4 - 1 1/2	1/4 - 1 1/2
Material	Low/Med. Carbon Steel	Medium Carb. Steel Heat Treated	Medium Carb. Steel Heat Treated	Alloy Steel Heat Treated	SS 302, 303, 304, 305	SS 316
Tensile Strength Min. PSI	74.000 (60.000)	120.000 (105.000)	150.000	180.000 (170.000)	85.000	85.000
Yield Strength Min. PSI	57.000 (36.000)	91.000 (81.000)	130.000	162.000 (153.000)	45.000	45.000
Proof Load PSI	55.000 (33.000)	85.000 (74.000)	120.000	140.000 (135.000)	-	-
Hardness Min. Max.	HRB-70 HRB-95	HRC-19 HRC-34	HRC-33 HRC-39	HRC-38 HRC-45	HRB-80	HRB-80
matching Nut	Mild Steel	Grade 5	Grade 8	-	304 (18-8)	316

145 PSI = 1 MPA

Mechanical Properties		
Standard	German Description	English Description
SAE J429	Mechanische Eigenschaften von Verbindungselementen	Mechanical and Material Requirements for Mechanical Fasteners
ASTM A574	Mechanische Eigenschaften für hochfeste Innensechskant-Schrauben	Alloy Steel Socket Head Cap Screws
ANSI B27.7M	Sprengtring - E-Ring Außen Metrisch	Cross Section Retaining Rings - E-Ring External metric

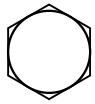
Metric and Inch Class Comparison

The classes and grades are **not** equal, they are just similar!

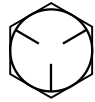
INCH Fasteners		METRIC Fasteners			
	Pounds per Inch ² (psi)	(MPa)	Megapascal		
	Grade 2 (over 3/4")	58.015	≈ 400	class 4.6	
		60.000	≈ 414		
		60.916	≈ 420	class 4.8	
	Grade 2 (up to 3/4")	74.000	≈ 510		
		72.519	≈ 500	class 5.6	
		75.420	≈ 520	class 5.8	
		87.023	≈ 600	class 6.8	
	Grade 5 (over 1")	105.000	≈ 724		
	Grade 5 (up to 1")	120.000	≈ 827		
		120.381	≈ 830	class 8.8	 
		130.534	≈ 900	class 9.8	
	Grade 7	133.000	≈ 916		
	Grade 8	150.000	≈ 1034		
		150.839	≈ 1040	class 10.9	 
	ASTM A574 ≤ 1/2" - 180,000 psi > 1/2" - 170,000 psi	176.946	≈ 1220	class 12.9	 
	L 9® (Grade 9) (Proprietary product)	180.000	≈ 1240	class 12.9	



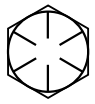
Screw & Bolt Heads



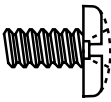
Grade 2 Hex



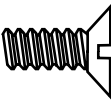
Grade 5 Hex



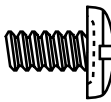
Grade 8 Hex



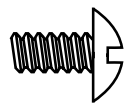
Pan



Flat



Slotted Round



Round



Square Shoulder



Fillister



Oval



Indented Hex

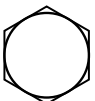


Binding

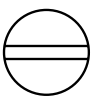


Trimmed Hex

Screw Head Drives



Hexagon (External Drive)



Slotted



Hexagon (Internal Drive)



Torx



Acorn



Phillips Plus Drive

Screw Thread Points

Type A



Thin sheet metal applications

Type B



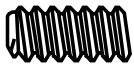
Shallow holes in composite material

Type AB



Heavier sheet metal applications

Type C



Heavy sheet metal & die castings

Type F



Heavy gage sheet metal, die castings etc

Type 1



General machine screw thread fastener

Type 17



Self-drilling in thin metals

Type 23



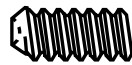
Soft metal castings

Type 25



Plastic & composites

Cup Point



Against hardened shafts

Drill Point



Self drilling applications

Round Point



Where end friction without cutting action is desirable

Half Dog Point



For permanent locations

Needle Point



Self piercing point used in light metals

Nail Point



For locking against soft material

Full or partial thread

Extract from the standard ASME B18.2.1

Maximum distance from surface to first full thread pitch (lg)

and minimum length of shaft (ls)

No- minal diame- ter	1/4		5/16		3/8		7/16		1/2		9/16	
	lg	ls	lg	ls	lg	ls	lg	ls	lg	ls	lg	ls
1 1/4	0.50	0.25										
1 3/8	0.63	0.38	0.50	0.22								
1 1/2	0.75	0.50	0.62	0.35	0.50	0.19						
1 5/8	0.88	0.62	0.75	0.47	0.62	0.31						
1 3/4	1.00	0.75	0.88	0.60	0.75	0.44	0.63	0.27				
1 7/8	1.12	0.88	1.00	0.72	0.88	0.56	0.75	0.39	0.63	0.24		
2	1.25	1.00	1.12	0.85	1.00	0.59	0.88	0.52	0.75	0.38		
2 1/8	1.38	1.12	1.25	0.97	1.12	0.81	1.00	0.64	0.88	0.49	0.75	0.33
2 1/4	1.50	1.25	1.38	1.10	1.25	0.94	1.12	0.77	1.00	0.52	0.88	0.46
2 3/8	1.62	1.38	1.50	1.22	1.38	1.06	1.25	0.89	1.12	0.74	1.00	0.58
2 1/2	1.75	1.50	1.62	1.35	1.50	1.19	1.38	1.02	1.25	0.86	1.12	0.75
2 5/8	1.88	1.62	1.75	1.47	1.62	1.31	1.50	1.14	1.38	0.99	1.25	0.83
2 3/4	2.00	1.75	1.88	1.60	1.75	1.44	1.62	1.27	1.50	1.12	1.38	0.96
2 7/8	2.12	1.88	2.00	1.72	1.88	1.56	1.75	1.39	1.62	1.24	1.50	1.08
3	2.25	2.00	2.12	1.85	2.00	1.69	1.88	1.52	1.75	1.36	1.62	1.21
3 1/4	2.50	2.25	2.38	2.10	2.25	1.94	2.12	1.77	2.00	1.62	1.88	1.46
3 1/2	2.75	2.50	2.62	2.35	2.50	2.19	2.38	2.02	2.25	1.86	2.12	1.71
3 3/4	3.00	2.75	2.88	2.60	2.75	2.44	2.62	2.27	2.50	2.12	2.38	1.96
4	3.25	3.00	3.12	2.85	3.00	2.69	2.88	2.52	2.75	2.36	2.62	2.21
4 1/4	3.50	3.25	3.38	3.10	3.25	2.94	3.12	2.77	3.00	2.62	2.88	2.46
4 1/2	3.75	3.50	3.62	3.35	3.50	3.19	3.38	3.02	3.25	2.86	3.12	2.71
4 3/4	4.00	3.75	3.88	3.60	3.75	3.44	3.62	3.27	3.50	3.12	3.38	2.96
5	4.25	4.00	4.12	3.85	4.00	3.69	3.88	3.52	3.75	3.36	3.62	3.21
5 1/4	4.50	4.25	4.38	4.10	4.25	3.94	4.12	3.77	4.00	3.62	3.88	3.46
5 1/2	4.75	4.50	4.62	4.35	4.50	4.19	4.38	4.02	4.25	3.87	4.12	3.71
5 3/4	5.00	4.75	4.88	4.60	4.75	4.44	4.63	4.27	4.50	4.12	4.38	3.96
6	5.25	5.00	5.12	4.85	5.00	4.69	4.88	4.52	4.75	4.36	4.62	4.21
6 1/4	5.25	5.00	5.12	4.85	5.00	4.69	4.88	4.52	4.75	4.36	4.62	4.21
6 1/2	5.50	5.25	5.38	5.10	5.25	4.94	5.12	4.77	5.00	4.62	4.88	4.46
6 3/4	5.75	5.50	5.62	5.35	5.50	5.19	5.38	5.02	5.25	4.86	5.12	4.71
7	6.00	5.75	5.88	5.80	5.75	5.44	5.62	5.27	5.50	5.12	5.38	4.96
7 1/4	6.25	6.00	6.12	5.85	6.00	5.69	5.88	5.52	5.75	5.36	5.62	5.20
7 1/2	6.50	6.25	6.38	6.10	6.25	5.94	6.12	5.77	6.00	5.62	5.88	5.46
7 3/4	6.75	6.50	6.62	6.35	6.50	6.19	6.38	6.02	6.25	5.87	6.12	5.71
8	7.00	6.75	6.88	6.60	6.75	6.44	6.62	6.27	6.50	6.12	6.38	5.96
8 1/4	7.25	7.00	7.12	6.85	7.00	6.69	6.88	6.52	6.75	6.36	6.62	6.21
8 1/2	7.50	7.25	7.38	7.10	7.25	6.94	7.12	6.77	7.00	6.62	6.88	6.46
8 3/4	7.75	7.50	7.62	7.35	7.50	7.19	7.38	7.02	7.25	6.86	7.12	6.71
9	8.00	7.75	7.88	7.60	7.75	7.44	7.62	7.27	7.50	7.12	7.38	6.96
9 1/4	8.25	8.00	8.12	7.85	8.00	7.69	7.88	7.52	7.75	7.36	7.62	7.21
9 1/2	8.50	8.25	8.38	8.10	8.25	7.94	8.12	7.77	8.00	7.62	7.88	7.46
9 3/4	8.75	8.50	8.62	8.35	8.50	8.19	8.38	8.02	8.25	7.86	8.12	7.71
10	9.00	8.75	8.88	8.60	8.75	8.44	8.62	8.27	8.50	8.12	8.38	7.96

Full or partial thread

Extract from the standard ASME B18.2.1

Maximum distance from surface to first full thread pitch (lg)
and minimum length of shaft (ls)

No- minal diame- ter	5/8		3/4		7/8		1		1 1/8		1 1/4	
	lg	ls	lg	ls	lg	ls	lg	ls	lg	ls	lg	ls
1 1/4												
1 3/8												
1 1/2												
1 5/8												
1 3/4												
1 7/8												
2												
2 1/8												
2 1/4	0.75	0.30										
2 3/8	0.88	0.42										
2 1/2	1.00	0.55										
2 5/8	1.12	0.67	0.88	0.38								
2 3/4	1.25	0.80	1.00	0.50								
2 7/8	1.38	0.92	1.12	0.62	0.88	0.32						
3	1.50	1.05	1.25	0.75	1.00	0.44						
3 1/4	1.75	1.30	1.50	1.00	1.25	0.69	1.00	0.38				
3 1/2	2.00	1.55	1.75	1.25	1.50	0.94	1.25	0.62				
3 3/4	2.25	1.80	2.00	1.50	1.75	1.19	1.50	0.88	1.25	0.54		
4	2.50	2.05	2.25	1.75	2.00	1.44	1.75	1.12	1.50	0.79	1.25	0.54
4 1/4	2.75	2.30	2.50	2.00	2.25	1.69	2.00	1.38	1.75	1.04	1.50	0.79
4 1/2	3.00	2.55	2.75	2.25	2.50	1.94	2.25	1.62	2.00	1.29	1.75	1.04
4 3/4	3.25	2.80	3.00	2.50	2.75	2.19	2.50	1.88	2.25	1.54	2.00	1.29
5	3.50	3.05	3.25	2.50	3.00	2.44	2.75	2.12	2.50	1.79	2.25	1.54
5 1/4	3.75	3.30	3.50	3.00	3.25	2.69	3.00	2.38	2.75	2.04	2.50	1.79
5 1/2	4.00	3.55	3.75	3.25	3.50	2.94	3.25	2.62	3.00	2.29	2.75	2.04
5 3/4	4.25	3.80	4.00	3.50	3.75	3.19	3.50	2.88	3.25	2.54	3.00	2.29
6	4.50	4.05	4.25	3.75	4.00	3.44	3.75	3.12	3.50	2.79	3.25	2.54
6 1/4	4.50	4.05	4.25	3.75	4.00	3.44	3.75	3.12	3.50	2.79	3.25	2.54
6 1/2	4.75	4.30	4.50	4.00	4.25	3.69	4.00	3.38	3.75	3.04	3.50	2.79
6 3/4	5.00	4.55	4.75	4.25	4.50	3.94	4.25	3.63	4.00	3.29	3.75	3.04
7	5.25	4.80	5.00	4.50	4.75	4.19	4.50	3.88	4.25	3.54	4.00	3.29
7 1/4	5.50	5.05	5.25	4.75	5.00	4.44	4.75	4.12	4.50	3.79	4.25	3.54
7 1/2	5.75	5.30	5.50	5.00	5.25	4.69	5.00	4.38	4.75	4.04	4.50	3.79
7 3/4	6.00	5.55	5.75	5.25	5.50	4.94	5.25	4.62	5.00	4.29	4.75	4.04
8	6.25	5.80	6.00	5.50	5.75	5.19	5.50	4.88	5.25	4.54	5.00	4.29
8 1/4	6.50	6.05	6.25	5.75	6.00	5.44	5.75	5.12	5.50	4.79	5.25	4.54
8 1/2	6.75	6.30	6.50	6.00	6.25	5.69	6.00	5.38	5.75	5.04	5.50	4.79
8 3/4	7.00	6.55	6.75	6.25	6.50	5.94	6.25	5.62	6.00	5.29	5.75	5.04
9	7.25	6.80	7.00	6.50	6.75	6.19	6.50	5.88	6.25	5.54	6.00	5.29
9 1/4	7.50	7.05	7.25	6.75	7.00	6.44	6.75	6.12	6.50	5.79	6.25	5.54
9 1/2	7.75	7.30	7.50	7.00	7.25	6.89	7.00	6.38	6.75	6.04	6.50	5.79
9 3/4	8.00	7.55	7.75	7.25	7.50	6.94	7.25	6.62	7.00	6.29	6.75	6.04
10	8.25	7.80	8.00	7.50	7.75	7.19	7.50	6.88	7.25	6.54	7.00	6.29

Nominal lengths above the grey line are thread to head!

SURVEY INCH FASTENERS

YOUR individual poster for separating - fast and easy!

NUTS										
2H	2 WAY LOCK	ACORN	ALLEN	CASTLE	COUPLING	FIBER LOCK	FINISHED HEX	FLANGE	FLEXILOC	FORGED WING
FORMED WING	HEAVY HEX	HEX	HEX JAM	HEX SLOTTED	KEPS	METAL LOCK	NE NYLON INSERT	NTE NYLON INSERT	PAL	REGULAR SQUARE
RIV	SLAB WELD	SQUARE	STRUX	TEE	U NUT	UNTORJIE LOCK	WELD	WHEEL	WHIZ LOCK FLANGE	WIRE

POINTS					HEADS					PROTECTIVE FINISHES			
TYPE A	TYPE B	TYPE AB	TYPE C	TYPE F	GRADE 2 HEX	GRADE 5 HEX	GRADE 8 HEX	ACORN	BINDING	Finish	Finish Color	Corrosion Resistance	Suggested Material
TYPE U	TYPE 1	TYPE 17	TYPE 23	TYPE 25	FILLISTER	FLAT	HEX	INDENT. HEX	OVAL	Black Zinc	Black	Very Good	All
CONE	CUPPED	DIE	HALF DOG	NAIL	PAN	PHIL. PLUS DRIVE	PHIL. FIN WASH.	ROUND	SLOTTED DRIVE	Brass	Brass	Fair	Steel
PINCH	ROLLED	ROUND	SELF DRILLING	SELF PIERCING	SOCKET DRIVE	SQ. SHOULDER	TORX DRIVE	TRIMMED HEX	TRUSS	Bronze	Varied	Fair	Steel
										Cadmium	Silver Gray	Very Good	Steel
										Copper	Copper	Fair	Steel
										Iridite	Olive, Green, Black, Red, Blue, Bronze	Good	Ferrous Metals
										Nickel	Silver	Very Good	Steel
										Oxide (Black)	Lustre Black	Fair	All
										Painted	Any	Good	All
										Parkerized	Dull Gray, Black	Fair	Steel
										Phos & Oil	Black	Very Good	Steel
										Stalgard	Dull Silver	Excellent	All
										Tinning (electro)	Silver, Gray	Good	Steel
										Trivalent Zinc	Varied	Good	Steel
										Zinc (electrogalvanized)	Gray	Good	Steel

NOMINAL SIZE & THREAD / INCH SERIES DESIGNATION					
Size	Basic	Thread	Size	Basic	Thread
0.80	0.0600	UNF	7/16-20	0.4375	UNF
1-64	0.0730	UNC	1/2-13	0.5000	UNC
1-72	0.0730	UNF	1/2-20	0.5000	UNF
2-56	0.0860	UNC	9/16-12	0.5625	UNC
2-64	0.0860	UNF	9/16-18	0.5625	UNF
3-48	0.0990	UNC	5/8-11	0.6250	UNC
3-56	0.0990	UNF	5/8-18	0.6250	UNF
4-40	0.1120	UNC	3/4-10	0.7500	UNC
4-48	0.1120	UNF	3/4-16	0.7500	UNF
5-40	0.1250	UNC	7/8-9	0.8750	UNC
5-44	0.1250	UNF	7/8-14	0.8750	UNF
6-32	0.1380	UNC	1-8	1.0000	UNC
6-40	0.1380	UNF	1-12	1.0000	UNF
8-32	0.1640	UNC	1-14	1.0000	UNS
8-36	0.1640	UNF	1 1/8-7	1.1250	UNC
10-24	0.1900	UNC	1 1/8-8	1.1250	8 SERIES
10-32	0.1900	UNF	1 1/8-12	1.1250	UNF
12-24	0.2160	UNC	1 1/4-7	1.2500	UNC
12-28	0.2160	UNF	1 1/4-8	1.2500	8 SERIES
1/4-20	0.2500	UNC	1 1/4-12	1.2500	UNF
1/4-28	0.2500	UNF	1 3/8-6	1.3750	UNC
5/16-18	0.3125	UNC	1 3/8-8	1.3750	8 SERIES
5/16-24	0.3125	UNF	1 3/8-12	1.3750	UNF
3/8-16	0.3750	UNC	1 1/2-6	1.5000	UNC
3/8-24	0.3750	UNF	1 1/2-8	1.5000	8 SERIES
7/16-14	0.4375	UNC	1 1/2-12	1.5000	UNF

HOW TO SPECIFY					
1/4 - 20 x 4 Hex Head Cap Screw Grade 8 with Zinc & Yellow					
Grade 8 (steel) Hex Head				Zinc & Yellow (plated finish)	
Made from Steel				20 Threads per Inch	
				4"	
				1/4"	

Step	Action	Example	Step	Action	Example
1	Nominal Size	1/4"	5	Material	Grade 8
2	Threads per Inch	20	6	Protective Finish	Zinc & Yellow
3	Product Length	4"			
4	Product Name	Hex Head Cap Screw			

CONVERSION							
Inch		Metric		Inch		Metric	
Fraction	Decimal	MM	Fraction	Decimal	MM	Fraction	MM
1/16	0.0625	1.58750	31/64	0.484375	12.303125		
1/8	0.1250	3.17500	1/2	0.500000	12.700000		
3/16	0.1875	4.76250	3/4	0.750000	19.048750		
1/4	0.2500	6.35000	7/8	0.875000	22.225000		
5/16	0.3125	7.93750	1	1.000000	25.400000		
3/8	0.3750	9.52500					
7/16	0.4375	11.11250					
1/2	0.5000	12.70000					
9/16	0.5625	14.28750					
5/8	0.6250	15.87500					
11/16	0.6875	17.46250					
3/4	0.7500	19.05000					
13/16	0.8125	20.63750					
7/8	0.8750	22.22500					
15/16	0.9375	23.81250					
1	1.0000	25.40000					

WASHERS					
BEARING LOCK	BELLEVILLE	EXT. TOOTH LOCK	FENDER		
FLAT	HEX	INT. TOOTH LOCK	LOAD INDICATOR		
ROUND MALLEABLE	SPLIT LOCK	SQUARE BEVEL	T-SLOT		

HEAD MARKINGS		TENSILE STRENGTH		YIELD STRENGTH	
Property Class (Metric)	Strength Grade (Inch)	Megapascal	Pounds per Inch ²	Megapascal	Pounds per Inch ²
5.8	Grade 2	520	75,420 (PC 5.8)	420	55,114 (PC 5.8) 55,000 Grade 2
8.8	Grade 5	830	120,381 (PC 8.8) 120,000 Grade 5	660	87,023 (PC 8.8) 85,000 Grade 5
10.9	Grade 8	1,040	150,839 (PC 10.9) 150,000 Grade 8	940	120,381 (PC 10.9) 120,000 Grade 8
12.9	ASTM A574 Socket Head Cap Screw	1,220	176,946 (PC 12.9) 180,000 A574	1,110	159,541 (PC 12.9) 162,000 A574

INCH FASTENERS

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