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- Sources: (1) U.S. BLM, *Metric Handbook*, H-9102, Sect. 2.E.8. <http://www.blm.gov/nhp/efoia/wo/handbook/> (1999-12-29).  
 (2) ISO 898-1, 1999, Sections 3 through 7, and App. A.  
 (3) ISO 965-1, 1998, Sections 5.2, 7, 12.

1999-12-29, Rev. 2003-01-22.

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## Metric Bolt Strength

### 6. General Fasteners.

- a. USA industry is now using metric fasteners extensively. The remainder of the world uses ISO metric fasteners almost exclusively, due to their superiority in proportions, fatigue strength, pitch, size and specification designations, and international availability.
- b. The Thomas Register lists hundreds of firms under Metric Fasteners, Metric Screws, and Metric Bolts. The Industrial Fasteners Institute (IFI) has guides for fastener types and producers.
- c. Metric fasteners for all aerospace applications are made readily and easily available at "rock" bottom price to all NASA and contractor employees via NASA [GSFC Fastener Inventory](#).
- d. Metric fastener size designation.
  - i. **Metric fastener size designation nomenclature.** As fully explained in ISO 965-1, Sect. 5, metric fastener size designations always begin with capital M or MJ followed by fastener nominal diameter and thread pitch, both in units of millimeters (mm), separated by the symbol "x", as follows. M10 x 1.5-6g-S means metric fastener thread profile M, fastener nominal size (nominal major diameter) 10 mm, thread pitch 1.5 mm, *external* thread tolerance class 6g, and thread engagement length group S ("short"). If referring to *internal* thread tolerance, "g" would be capitalized. A fit between threaded parts is indicated by internal thread tolerance class followed by external thread tolerance class separated by a slash; e.g., M10 x 1.5-6H/6g.
  - ii. **Default metric fastener thread pitch and engagement length.** If metric thread pitch designation (e.g., "x 1.5") is omitted, it specifies coarse pitch threads. For example, M10 or M10-6g, by default, specifies M10 x 1.5. The standard metric fastener thread series for general purpose threaded components is the M thread profile and the coarse pitch thread series. If thread engagement length group designation (e.g., "-S") is omitted, it specifies thread engagement length group N meaning "normal."
  - iii. **Default metric fastener thread tolerance class.** If thread tolerance class designation (e.g., "-6g") is omitted (e.g., M10 x 1.5), it specifies "medium" thread tolerance, which is 6H/6g. The 6H/6g fit is the standard ISO tolerance class for general use.
  - iv. **Equivalent imperial thread tolerance classes.** Imperial internal and external thread tolerance class 2B/2A is essentially equivalent to ISO thread tolerance class and fit 6H/6g. Imperial tolerance class 3A is approximately equivalent to ISO tolerance class 4g6g, though class fit 3B/3A is approximately equivalent to ISO class fit 4H5H/4h6h. For full details, see ISO 965-1, Sects. 5.2, 7, and 12.
  - v. **Metric fastener thread profile compatibility.** Metric fastener thread profile M is the normal, commercially-available thread profile. Thread profile MJ designates the *external* thread has an increased root radius (shallow root relative to external M thread profile), thereby having higher fatigue strength (due to reduced stress concentrations), but requires the truncated crest height of the MJ internal thread to prevent interference at the external MJ thread root (just as the UNJ external thread profile requires the UNJ internal thread). However, M external threads are compatible with M and MJ internal threads (just as UN and UNR external threads are compatible with UN and UNJ internal threads).
- e. **ISO metric fastener material strength property classes (grades).** As given in ISO 898-1, ISO metric fastener material property classes (grades) should be used. For example, fastener material ISO property class 5.8 means nominal (minimum) tensile ultimate strength 500 MPa and nominal (minimum) tensile yield strength 0.8 times tensile ultimate strength or  $0.8(500) = 400$  MPa. (In a few cases, the actual tensile ultimate strength may be approximately 20 MPa higher than nominal tensile ultimate strength indicated via the nominal property class code. Consult Table 10, below, for exact values.) Many anchor bolts (L, J, and U bolts, and threaded rod) are made from low carbon steel grades, such as ISO classes 4.6, 4.8, and 5.8.
- f. **Preferred diameters.** Preferred nominal diameters for bolts and threaded rod are as listed below. The fourth series listed below should be limited to unusual requirements when none of the preceding series can be used. Reference individual standards prior to specification. Sizes M5 to M45 are commonly used in construction.
 

First choice:	M 2 5 3 4 5 6 8 10 12 16 20 24 30 36 42
Second choice:	M 3.5 14 18 22 27 33 39 45
Third choice:	M 15 17 25 40
Avoid:	M 7 9 11 26 28 32 35 38

- g. **Bolt versus screw definition.** The correct definition of bolt and screw is as follows. Bolts are headed fasteners having external threads that meet an exacting, uniform bolt thread specification (such as M, MJ, UN, UNR, and UNJ) such that they can accept a nontapered nut. Screws are headed, externally-threaded fasteners that do not meet the above definition of bolts. For full discussion of misdefinitions and corresponding confusion regarding these two words, see [details](#).
- h. **Handy conversion factors.** Imperial conversion factors, verified accurate to the decimal places shown via multiple, independent, credible sources, are 25.4 mm/inch (exact), 4.44822162 N/lbf, 6.8947573 MPa/ksi, 47.880259 Pa/psf, 112.98483 (N mm)/(in lbf), 157.08746 (N/m^3)/pcf, 16.0184634 (kg/m^3)/(lbm/ft^3), 27679.9047 (kg/m^3)/(lbm/in^3), 9.80665 (m/s^2)/gravity (exact). Rounding these conversion factors to a few less decimal places, we have 4.448222 N/lbf, 6.89476 MPa/ksi, 47.8803 Pa/psf, 113.0 (N mm)/(in lbf), 157.087 (N/m^3)/pcf, 16.01846 (kg/m^3)/(lbm/ft^3), 27679.9 (kg/m^3)/(lbm/in^3).
- i. **Metric system (SI).** The abbreviation for the metric system is SI, the International System of Units (from the French, *Système International d'Unités*). It evolved from the original French metric system and is currently being used virtually worldwide. Long the language universally used in science and among technically adept individuals, SI has also become the dominant language of international commerce and trade. All new USA standards (ASTM, ANSI, SAE, IEEE, ASME, etc.) are now written in metric, as the lead engineers in these organizations recognize the importance of trying to get the USA on track with technically advanced countries, in an effort

to regain lost USA competitiveness in a global economy, as there is essentially no global market for the archaic, oddball, incompatible product dimensions USA arbitrarily comes up with, while they forfeit industries and jobs to third-world countries who have no problem understanding something so simple and fulfilling the need efficiently. IEEE was intelligent enough to recognize this decades ago. Japan also was intelligent enough to recognize simple matters such as this long ago. This small country, defeated in WWII only 60 years ago, has since captured a large portion of the global economy due to their intelligent progress, and consequently has become a major global financier, while USA has become a world-class debtor to the tune of trillions due to inefficient business practices, low educational level, slackerism, and inability to solve or understand even simple problems such as metric conversion.

8. Fastener Data. Tables 9 and 10 provide much of the data available for different metric fasteners. Table 9 comes verbatim from Ref. 1, including what appear to be a few typos, marked "[sic]," below. Table 10, on the other hand, has been verified accurate per ISO 898-1 and ASTM F 568M.

Table 9

## FASTENER DATA

Basic Product	Product Type and Head Style	Available Size Range	For thread and dimension details refer to:	For mechanical property details refer to Table 10 or:
Metric Bolts	hex	M5-M100	ANSI/ASME B18.2.3.5M	ASTM F568M ASTM F468M ASTM F738M
	heavy hex	M12-M36	ANSI/ASME B18.2.3.6M	
	round head short square neck (carriage)	M8-M20	ANSI/ASME B18.5.2.1M	
	round head square neck (carriage)	M5-M24	ANSI/ASME B18.5.2.2M	
	bent	M5 and larger	IFI 528 [sic]	
	heavy hex structural	M12-M36	ANSI/ASME B18.2.3.7M	
	hex transmission tower	M16-M24	IFI 541 [sic]	
Metric Screws	hex cap	M5-M100	ANSI/ASME B18.2.3.1M	ASTM F568M ASTM F468M ASTM F738M
	formed hex	M5-M24	ANSI/ASME B18.2.3.2M	
	heavy hex	M12-M36	ANSI/ASME B18.2.3.3M	
	hex flange	M5-M16	ANSI/ASME B18.2.3.4M	
	heavy hex flange	M10-M20	ANSI/ASME B18.2.3.9M	
	hex lag	M5-M24	ANSI/ASME B18.2.3.8M	
Metric Studs	double end	M5-M100	IFI 528 [sic]	ASTM F568M
	continuous thread	M5-M100		ASTM F468M ASTM F736M
Metric Locking Screws	prevailing torque, non-metallic insert	M1.6-M36	see note 3 [sic]	IFI 524
	chemical coated	M6-M20	see note 3 [sic]	IFI 525
Metric Socket Screws	socket head cap	M1.6-M48	ANSI/ASME B18.3.1M	ASTM A574M ASTM F837M
	socket head shoulder	M6.5-M25	ANSI/ASME B18.3.3M	ASTM F835M
	socket button head cap	M3-M16	ANSI/ASME B18.3.4M	ASTM A574M
	socket countersunk head cap	M3-M20	ANSI/ASME B18.3.5M	ASTM F879M
	socket set	M1.6-M24	ANSI/ASME B18.3.6M	ASTM F912M ASTM F880M
Metric Nuts	hex, style 1	M1.6-M36	ANSI/ASME B18.2.4.1M	ASTM A563M ASTM F467M ASTM F836M ASTM A194M
	hex, style 2	M3-M36	ANSI/ASME B18.2.4.2M	
	slotted hex	M5-M36	ANSI/ASME B18.2.4.3M	
	hex flange	M5-M20	ANSI/ASME B18.2.4.4M	
	hex jam	M5-M36	ANSI/ASME B18.2.4.5M	
	heavy hex	M12-M100	ANSI/ASME B18.2.4.6M	
Metric Prevailing-Torque Nuts	hex, steel	M3-M36	ANSI/ASME B18.16.3M	ANSI/ASME B18.16.1M
	hex flange, steel	M6-M20		ANSI/ASME B18.16.2M

Notes for Table 10.

- When only the ISO property class number is shown in Table 10, below, the class is standard in both ISO 898-1 and ASTM documents. Properties specified in each are identical except for minor exceptions. Where differences exist, the ASTM F 568M values are given.
- To compute the tensile proof load, tensile yield strength, or tensile ultimate strength in kilonewtons (kN) for a bolt, screw, or stud, multiply the stress value (MPa) in Table 10 by the tensile stress area ( $\text{mm}^2$ ) of the product's screw thread as given in Table 9 or Standard Metric Bolt Shank Dimensions, then divide this result by 1000.
- In general, identification markings are located on the top of the head and preferably are raised.
- Class 5.8 products are available in lengths 150 mm and less.

e. Caution is advised when considering the use of property class 12.9 products. The capabilities of the fastener manufacturer, as well as the anticipated service environment, should be carefully considered. Some environments may cause stress corrosion cracking of nonplated, as well as electroplated, products.

Table 10

**MECHANICAL REQUIREMENTS FOR CARBON STEEL  
EXTERNALLY-THREADED METRIC FASTENERS**

Property Class Designation	Nominal Size of Product	Material and Treatment	Mechanical Requirements					Property Class Ident. Marking	
			Proof Load Stress, MPa	Tensile Yield Strength, MPa, Min.	Tensile Ultimate Strength, MPa, Min.	Prod. Hardness, Rockwell			
						Surface, Max.	Core		
4.6	M5-M100	low or medium carbon steel	225	240	400	--	B67	B95	4.6
4.8	M1.6-M16	low or medium carbon steel, fully or partially annealed	310	340	420	--	B71	B95	4.8
5.8	M5-M24	low or medium carbon steel, cold worked	380	420	520	--	B82	B95	5.8
8.8	M16-M72	medium carbon steel, quenched and tempered	600	660	830	30N56	C23	C34	8.8
A325M Type 1	M16-M36								A325M 8S
8.8	M16-M36	low carbon boron steel, quenched and tempered	600	660	830	30N56	C23	C34	<u>8.8</u>
A325M Type 2									A325M 8S
A325M Type 3	M16-M36	atmospheric corrosion resistant steel, quenched and tempered	600	660	830	30N56	C23	C34	A325M 8S3
9.8	M1.6-M16	medium carbon steel, quenched and tempered	650	720	900	30N58	C27	C36	9.8
9.8	M1.6-M16	low carbon boron steel, quenched and tempered	650	720	900	30N58	C27	C36	<u>9.8</u>
10.9	M5-M20	medium carbon steel, quenched and tempered	830	940	1040	30N59	C33	C39	10.9
10.9	M5-M100	medium carbon alloy steel, quenched and tempered	830	940	1040	30N59	C33	C39	10.9
A490M Type 1	M12-M36								A490M 10S
10.9	M5-M36	low carbon boron steel, quenched and tempered	830	940	1040	30N59	C33	C39	<u>10.9</u>
A490M Type 2	M12-M36								A490M 10S
A490M Type 3	M12-M36	atmospheric corrosion resistant steel, quenched and tempered	830	940	1040	30N59	C33	C39	A490M 10S3
12.9	M1.6-M100	alloy steel, quenched and tempered	970	1100	1220	30N63	C38	C44	12.9

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## Technical Section

### Metric Thread Pitch Table

Preference Class		Pitch		Drill Size for Tapping M Coarse	Drill Size for Tapping M Fine
1 <sup>(1)</sup>	2 <sup>(2)</sup>	Coarse	Fine		
1		.25		.75	
1.2		.25		.95	
	1.4	.3		1.1	
1.6		.35		1.25	
	1.8	.35		1.4	
2		.4		1.6	
	2.2	.45		1.7	
2.5		.45		2.0	
3		.5		2.5	
	3.5	.6		2.9	
4		.7		3.3	
5		.8		4.2	
6		1		5.0	
8		1.25	1	6.8	7
10		1.5	1.25	8.5	8.8 (9.0)
12		1.75	1.25 (1.5)	10.2	10.8 (10.5)
14	14	2	1.5	12.0	12.5
16		2	1.5	14.0	14.5
	18	2.5	1.5	15.5	16.5
20		2.5	1.5	17.5	18.5
	22	2.5	1.5	19.5	20.5
24		3	2	21.0	22.0
	27	3	2	24.0	25.0
30		3.5	2	26.5	28.0
	33	3.5	2	29.5	31.0
36		4	3	32.0	33.0
42		4.5	3	37.5	39.0
	45	4.5	3	40.5	42.0
48		5	3	43.0	45.0
	52	5	3	47.0	49.0
56		5.5	4	50.5	52.0
	60	5.5	4	54.5	56.0
64		6	4	58.0	60.0
	68	6	4	62.0	64.0
72			6		66.0
	76		6		70.0
80			6		74.0
	85		6		79.0

90	95		6		84.0
100			6		89.0
			6		94.0

\*All dimensions listed in millimeters

(1) The fastener sizes in preference class 1 are suggested to be used in all designs. The sizes in this category are generally readily available.

(2) Fasteners in preference class 2 should be chosen only if a size in preference class 1 is not feasible.

For

preference class 2 sizes, longer lead times should be expected.

To Limits for Metric (Standard) Coarse Threads (bolts)

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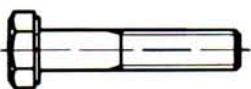
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# Hex Head Products



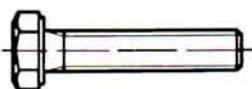
Bare-H021 Zinc-H022

**DIN 931-8.8 Part Thread**  
Bare/Zinc  
Page 1-12



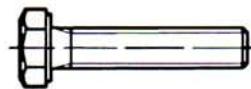
H023

**DIN 931-10.9 Part Thread**  
Bare Steel  
Page 13-18



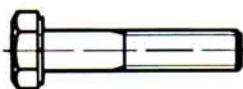
Bare-H001 Zinc-H002

**DIN 933-8.8 Full Thread**  
Bare/Zinc  
Page 1-12



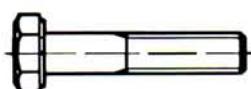
H003

**DIN 933-10.9 Full Thread**  
Bare Steel  
Page 13-18



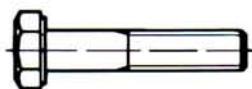
Bare-H031 Zinc-H033

**DIN 960-8.8 Part Thread**  
Bare/Zinc  
(1st Fine) Page 19-22



Bare-H032 Zinc-H034

**DIN 960-8.8 Part Thread**  
Bare/Zinc  
(2nd Fine) Page 23



H024

**DIN 960-10.9 Part Thread**  
Bare Steel  
(1st Fine) Page 24-25



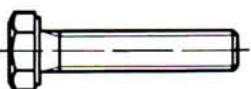
H027

**DIN 960-10.9 Part Thread**  
Bare Steel  
(2nd Fine) Page 26



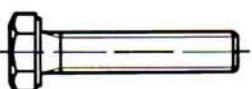
Bare-H011 Zinc-H013

**DIN 961-8.8 Full Thread**  
Bare/Zinc  
(1st Fine) Page 19-22



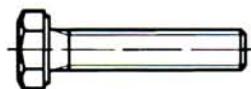
Bare-H012 Zinc-H014

**DIN 961-8.8 Full Thread**  
Bare/Zinc  
(2nd Fine) Page 23



H004

**DIN 961-10.9 Full Thread**  
Bare Steel  
(1st Fine) Page 24-25



H007

**DIN 961-10.9 Full Thread**  
Bare Steel  
(2nd Fine) Page 26



H040

**DIN 6914-10.9**  
Structural Bolt  
Page 28

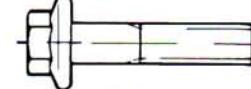


H080

**DIN 561B Hex Set Screw**  
Bare Steel  
Page 28



**Hex Flange Bolt**  
Yellow Zinc  
Page 27



H055

**DIN 6921 Hex Flange Bolt**  
Zinc Plated  
Page 28



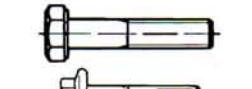
Bare-H057 Dacromet-H058

**Hex Flange Bolts Ribbed**  
Bare/Dacromet  
Page 29



H056

**Hex Flange Screws Serrated**  
Zinc Plated  
Page 29



**Hex-H050 Hex Flange-H052**  
JIS Products  
Pages 32-33



Bare-H015 Zinc-H016

**Full Thread Grade 8.8**  
Bare/Zinc  
Page 30



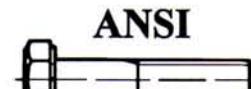
Bare-H035 Zinc-H036

**Part Thread Grade 8.8**  
Bare/Zinc  
Page 30



H017

**Full Thread Grade 10.9**  
Bare Steel  
Page 31



H037

**Part Thread Grade 10.9**  
Bare Steel  
Page 31

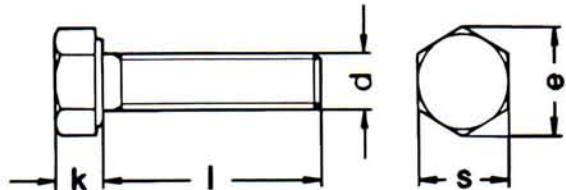
# Hex Cap Screws

8.8 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

## Fully Threaded

H001 — 933-8.8 Bare Steel  
H002 — 933-8.8 Zinc Plated



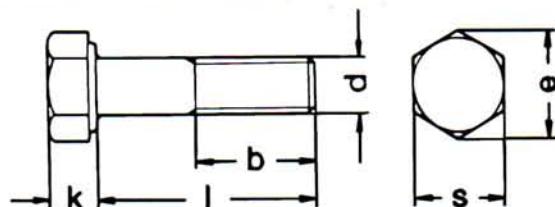
## Hex Cap Screws

8.8 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

## Partially Threaded

H021 — 931-8.8 Bare Steel  
H022 — 931-8.8 Zinc Plated



Diameter	M3				M4				M5			
k	2				2.8				3.5			
s	5.5				7				8			
e	6.01				7.66				8.79			
b up to 125	—				14				16			
Length (mm)	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread	
	Bare	Zinc										
	H001	H002	H021	H022	H001	H002	H021	H022	H001	H002	H021	H022
4	*	*										
5	*	*										
6	*	S			S	S			*	*		
8	*	S			S	S			S	S		
10	S	S			S	S			S	S		
12	S	S			S	S			S	S		
14	*	*			*	*			*	S		
16	S	S			S	S			S	S		
18	*				*	*			*	*		
20	S	S			S	S			S	S	*	
22	*				*	*	*		*	*		
25	S	S			S	S	*	*	S	S	*	*
30	*	*			S	S	S	S	S	S	S	S
35					S	S	S	S	S	S	S	S
40	*				S	S	S	S	S	S	S	S
45					*	*	S	S	*	*	S	S
50		*			*	*	S	S	*	S	S	S
55						*	*	*	*	*	S	S
60					*		S	S	*	*	S	S
65						*			*	*	S	S
70					*		*		*	*	*	S
75									*	*	S	
80							*		*	*	S	
90								*	*	*	S	
100									*	*		*
110										*		
120										*		
130										*		
140										*		

Order Number → 933-8.8 Bare 10x20 = H001-010-0020 | 933-8.8 Zinc 10x140 = H002-010-0140

S → Normally Stocked | \* → Call for Availability

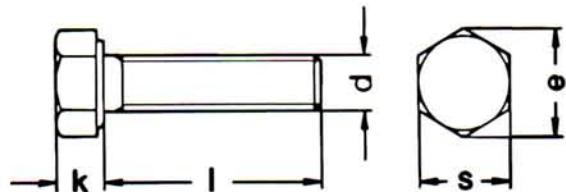
# Hex Cap Screws

8.8 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

## Fully Threaded

H001 — 933-8.8 Bare Steel  
H002 — 933-8.8 Zinc Plated



## Hex Cap Screws

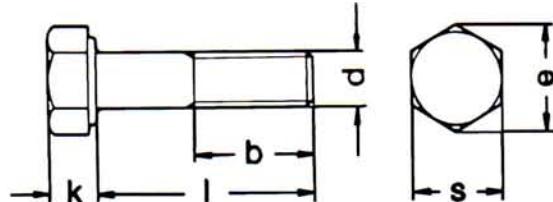
8.8 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

1

## Partially Threaded

H021 — 931-8.8 Bare Steel  
H022 — 931-8.8 Zinc Plated



Diameter	M6				M7				M8			
k	4				4.8				5.3			
s	10				11				13			
e	11.05				12.12				14.38			
b up to 125	18				20				22			
b up to 200	24				26				28			
Length (mm)	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread	
	Bare	Zinc										
H001	H002	H021	H022	H001	H002	H021	H022	H001	H002	H021	H022	
6	*	*										
8	S	S							*	*		
10	S	S			*				S	S		
12	S	S			*	S			S	S		
14	S	S			*				S	S		
16	S	S			S	S			S	S		
18	S	S			*				S	S		
20	S	S			S	S			S	S		
22	S	S			*				S	S		
25	S	S	*		S	S			S	S		
28	S	*							*			
30	S	S	S	S	S	S	*	*	S	S	*	
35	S	S	S	S	S	S	*	*	S	S	S	S
40	S	S	S	S	S	S	S	S	S	S	S	S
45	S	S	S	S	*	S	S	S	S	S	S	S
50	S	S	S	S	*	S	S	S	S	S	S	S
55	*	*	S	S			*		*	S	S	S
60	S	S	S	S			S		S	S	S	S
65	*	*	S	S			*		*	*	S	S
70	S	S	S	S			S		S	S	S	S
75	*	*	S	S			*		*	*	S	S
80	S	S	S	S			*		S	S	S	S
85		*	S	*			*		*		*	*
90	S	S	S	S			*		S	S	S	S
95		*	S	S			*		*		*	*
100	S	*	S	S			*		S	S	S	S
110	*	*	S	S			*		*	*	S	S
120	*	*	S	S			*		*	*	S	S

Order Number → 933-8.8 Bare 10x20 = H001-010-0020 | 933-8.8 Zinc 10x140 = H002-010-0140

S → Normally Stocked | \* → Call for Availability

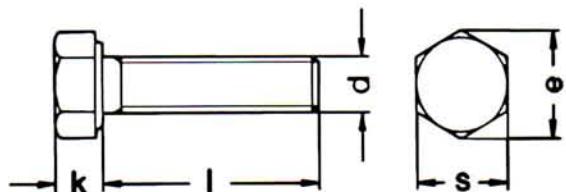
# Hex Cap Screws

8.8 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

## Fully Threaded

H001 — 933-8.8 Bare Steel  
H002 — 933-8.8 Zinc Plated



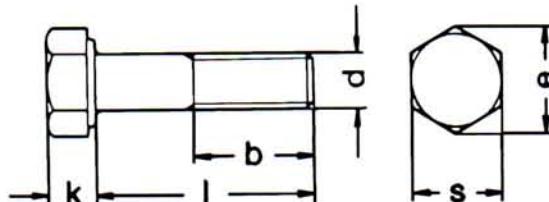
# Hex Cap Screws

8.8 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

## Partially Threaded

H021 — 931-8.8 Bare Steel  
H022 — 931-8.8 Zinc Plated



Diameter	M6				M7				M8			
k	4				4.8				5.3			
s	10				11				13			
e	11.05				12.12				14.38			
b up to 125	18				20				22			
b up to 200	24				26				28			
Length (mm)	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread	
	Bare	Zinc										
H001	H002	H021	H022	H001	H002	H021	H022	H001	H002	H021	H022	
130	*		S				*		*	*	S	S
140	*		*						*	*	S	S
150	*		*						*	*	S	*
160			*						*		S	*
170			*	*					*		*	*
180			*	*					*		S	*
190			*	*					*		*	*
200			*	*					*		S	*
210											*	
220											*	
230											*	
240											*	
250											*	
260											*	
280											*	
300											*	

Order Number → 933-8.8 Bare 10x20 = H001-010-0020 | 933-8.8 Zinc 10x140 = H002-010-0140

S → Normally Stocked | \* → Call for Availability

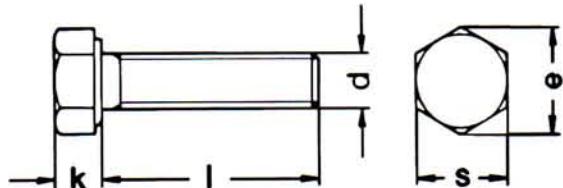
# Hex Cap Screws

8.8 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

## Fully Threaded

H001 — 933-8.8 Bare Steel  
H002 — 933-8.8 Zinc Plated



# Hex Cap Screws

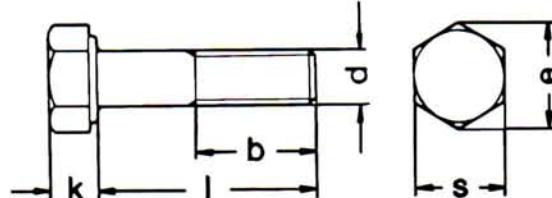
8.8 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

1

## Partially Threaded

H021 — 931-8.8 Bare Steel  
H022 — 931-8.8 Zinc Plated



Diameter	M10				M12				M14			
	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread	
Length (mm)	Bare	Zinc										
	H001	H002	H021	H022	H001	H002	H021	H022	H001	H002	H021	H022
10	*											
12	S	S			*	*						
14	*				*	*						
16	S	S			S	S			*			
18	*	*			*	*			*			
20	S	S			S	S			S	S		
22	*	*			*	*			*	*		
25	S	S			S	S			S	S		
28	*	*			*							
30	S	S			S	S			S	S		
35	S	S	*		S	S			S	S		
40	S	S	S	S	S	S	S		S	S		
45	S	S	S	S	S	S	S	S	S	S	*	
50	S	S	S	S	S	S	S	S	S	S	S	S
55	S	S	S	S	S	S	S	S	*	*	S	S
60	S	S	S	S	S	S	S	S	S	S	S	S
65	S	S	S	S	S	S	S	S	*	*	S	S
70	S	S	S	S	S	S	S	S	S	S	S	S
75	*	*	S	S	*	*	S	S	*	*	S	S
80	S	S	S	S	S	S	S	S	S	S	S	S
85	*	*	S	*	*	*	S	*	*	*	*	*
90	S	S	S	S	S	*	S	S	*	*	S	S
95	*	*	*		*	*	*		*		*	*
100	S	S	S	S	S	S	S	S	S	S	S	S
110	*	*	S	S	*	*	S	S	*	S	S	S
120	S	*	S	S	S	*	S	S	S	S	S	S
130	*	*	S	S	*	*	S	S	*	S	S	*
140	*	*	S	S	S	*	S	S	*	S	S	*

Order Number → 933-8.8 Bare 10x20 = H001-010-0020 | 933-8.8 Zinc 10x140 = H002-010-0140

S → Normally Stocked | \* → Call for Availability

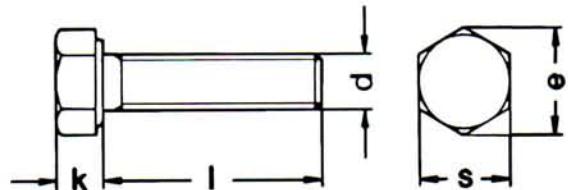
# Hex Cap Screws

## 8.8 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

### Fully Threaded

H001 — 933-8.8 Bare Steel  
H002 — 933-8.8 Zinc Plated



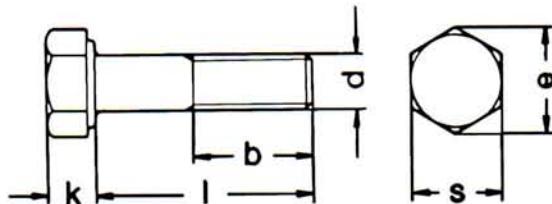
### Hex Cap Screws

## 8.8 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

### Partially Threaded

H021 — 931-8.8 Bare Steel  
H022 — 931-8.8 Zinc Plated



Diameter	M10				M12				M14			
	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread	
	Bare	Zinc										
	H001	H002	H021	H022	H001	H002	H021	H022	H001	H002	H021	H022
150	*	S	S	*	*	*	S	*	*		S	*
160	*	*	S	S	S	*	S	*	*		S	*
170	*	*	*	*	*	*	*	*	*		*	*
180	*	*	S	S	*	*	S	S	*		S	*
190	*	*	*	*	*	*	*	*			*	*
200	*	*	S	S	*	*	S	S			S	*
210			*				*				*	
220			*		*		*	*			*	*
230			*				*				*	
240			*		*		*	*			*	*
250			*				*				*	
260			*		*		*	*			*	
270			*				*				*	
280			*		*		*	*			*	
290			*				*				*	
300			*		*		*	*			*	
320			*		*		*				*	
340			*		*		*				*	
360			*		*		*				*	
380			*				*				*	
400			*				*				*	
420							*				*	
440							*				*	
460							*				*	
480							*				*	
500							*				*	

Order Number → 933-8.8 Bare 10x20 = H001-010-0020 | 933-8.8 Zinc 10x140 = H002-010-0140

S → Normally Stocked | \* → Call for Availability

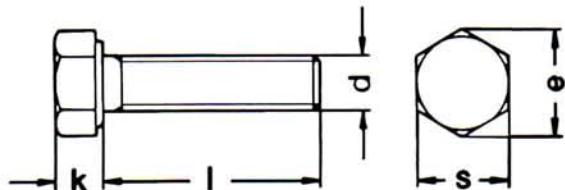
# Hex Cap Screws

8.8 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

## Fully Threaded

H001 — 933-8.8 Bare Steel  
H002 — 933-8.8 Zinc Plated



# Hex Cap Screws

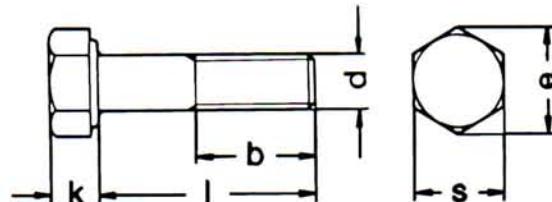
8.8 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

1

## Partially Threaded

H021 — 931-8.8 Bare Steel  
H022 — 931-8.8 Zinc Plated



Diameter	M16				M18				M20			
	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread	
	Bare	Zinc										
H001	H002	H021	H022	H001	H002	H021	H022	H001	H002	H021	H022	
16	*											
20	S	S										
25	S	S							*	*		
30	S	S			S	S			S	S		
35	S	S			S	S			S	S		
40	S	S			S	S			S	S		
45	S	S			S	S			S	S		
50	S	S	S	S	S	S			S	S		
55	S	S	S	S	S	S	S		S	S	*	
60	S	S	S	S	S	S	S	*	S	S	*	
65	S	*	S	S	*	*	S	*	S	S	S	S
70	S	S	S	S	S	S	S	S	S	S	S	S
75	S	S	S	S	*	*	S	*	*	*	S	S
80	S	S	S	S	S	*	S	S	S	S	S	S
85	*	*	*	*	*	*	*	*	*	*	*	*
90	S	S	S	S	S	*	S	S	S	*	S	S
95	*	*	*	*	*	*		*	*	*	*	
100	S	S	S	S	S	*	S	S	S	*	S	S
110	*	*	S	S	*		S	*	*	*	S	S
120	S	S	S	S	*	S	S	S	S	*	S	S
130	*	*	S	S	*		S	*	*	*	S	S
140	*	*	S	S	*	S	S	S	S	*	S	S
150	*	*	S	S	*		S	*	*	*	S	S
160	S	*	S	S	*		S	S	S	*	S	S
170	*	*	S	S	*		*	*	*	*	*	*
180	*	*	S	S	*		S	*	S	*	S	S
190	*		*	*	*		*	*	*	*	*	*

Order Number → 933-8.8 Bare 10x20 = H001-010-0020 | 933-8.8 Zinc 10x140 = H002-010-0140

S → Normally Stocked | \* → Call for Availability

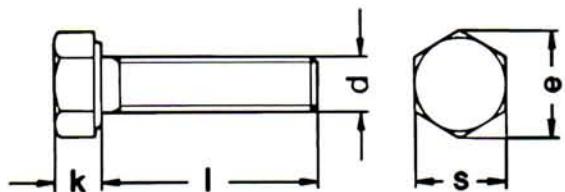
# Hex Cap Screws

8.8 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

## Fully Threaded

H001 — 933-8.8 Bare Steel  
H002 — 933-8.8 Zinc Plated



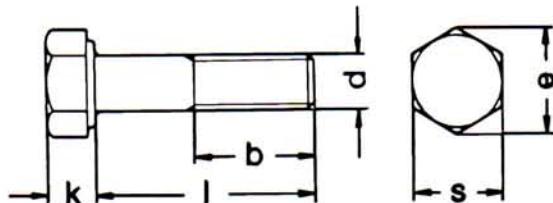
## Hex Cap Screws

8.8 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

## Partially Threaded

H021 — 931-8.8 Bare Steel  
H022 — 931-8.8 Zinc Plated



Diameter	M16				M18				M20			
	k		s		11.5		27		12.5		30	
	e	26.75	b up to 125	38	b up to 200	44	b over 200	57	30.14	42	33.53	46
Length (mm)	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread	
	Bare	Zinc	Bare	Zinc	Bare	Zinc	Bare	Zinc	Bare	Zinc	Bare	Zinc
	H001	H002	H021	H022	H001	H002	H021	H022	H001	H002	H021	H022
200	*	*	S	*	*		S	*	*	*	S	S
210	*			*			*	*	*		S	*
220	*		S	*			*	*	*	*	S	*
230	*			*			*	*	*		*	*
240	*		S	*			*	*	*	*	S	*
260	*		S	*			*	*	*	*	S	S
280	*		S	*			*	*	*	*	S	S
290			*	*			*				*	
300	*		S	*			*	*	*	*	S	*
320	*			*					*		S	*
340	*		S						*		S	*
360	*		S						*		S	
380	*		S						*		S	
400	*		S						*		S	
420	*		*						*		*	
440	*			*					*		*	
460	*			*					*		*	
480	*			*					*		*	
500	*	*		*					*		*	
520				*							*	
540				*							*	
560				*							*	
580				*							*	
600				*							*	
620				*							*	
640				*							*	
660				*							*	

Order Number → 933-8.8 Bare 10x20 = H001-010-0020 | 933-8.8 Zinc 10x140 = H002-010-0140

S → Normally Stocked | \* → Call for Availability

# Hex Cap Screws

8.8 Grade

DIN 933

ISO 4017

ANSI B18.2.3.1M

# Hex Cap Screws

8.8 Grade

DIN 931

ISO 4014

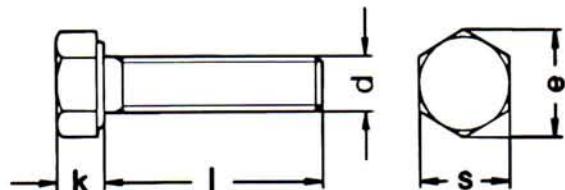
ANSI B18.2.3.1M

1

## Fully Threaded

H001 — 933-8.8 Bare Steel

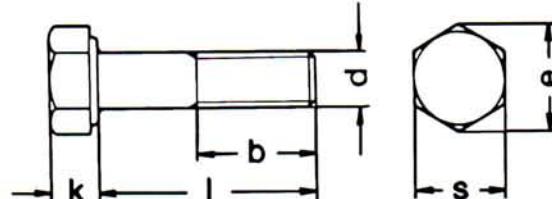
H002 — 933-8.8 Zinc Plated



## Partially Threaded

H021 — 931-8.8 Bare Steel

H022 — 931-8.8 Zinc Plated



Diameter	M22				M24				M27				
	k	14	k	15	k	17	k	19	bare	21	bare	24	
s	32	s	36	s	41	s	46	bare	48	bare	52		
e	35.72	e	39.98	e	45.2	e	50.5	b up to 125	50	b up to 125	54		
b up to 125	50	b up to 125	54	b up to 125	60	b up to 125	66	b up to 200	56	b up to 200	60		
b over 200	69	b over 200	73	b over 200	79	b over 200	85	b over 200	90	b over 200	95		
Length (mm)	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread		
	Bare	Zinc	Bare	Zinc									
H001	H002	H021	H022	H001	H002	H021	H022	H001	H002	H021	H022	H001	H002
30	*												
35	*												
40	S	S			S	*			*				
45	S	S			*	S			*				
50	S	S			S	S			*				
55	S	S			S	S			*				
60	S	S	*		S	S			S	*			
65	S	S	S		S	S	*		*				
70	S	S	S	S	S	S	S		S	S			
75	*		S		S	*	S	*	*			*	
80	S		S	S	S	*	S	S	S	*	*	*	*
85	*		*		*	*	*	*	*			*	
90	*		S		*	S	S	S	S	*	S	*	
95	*		*		*		*		*		*	*	
100	S	*	S	S	*	S	S	S	S	*	S	*	
110	*		S	S	*	*	S	S	*		S	*	
120	*		S		S	*	S	S	*	*	S	*	
130	*		S		*	*	S	S	*	*	*	*	
140	S		S		S	*	S	*	*	*	S	*	
150	*		S		*	*	S	*	*	*	*	*	
160	*		S		*	*	S	*		*	S	*	
170	*		*		*		*	*			*	*	
180	*		S		*	*	S	*		*	S	*	
190	*		*		*		*	*			*	*	
200	*		S		*	*	S	*		*	S	*	
210			*		*		*	*			*	*	
220			S		*		S	*			*	*	

Order Number → 933-8.8 Bare 10x20 = H001-010-0020 | 933-8.8 Zinc 10x140 = H002-010-0140

S → Normally Stocked | \* → Call for Availability

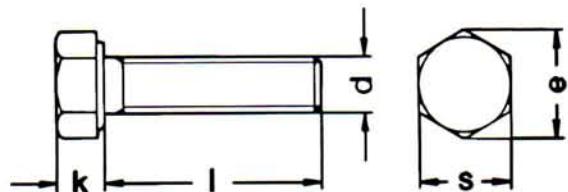
# Hex Cap Screws

## 8.8 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

### Fully Threaded

H001 — 933-8.8 Bare Steel  
H002 — 933-8.8 Zinc Plated



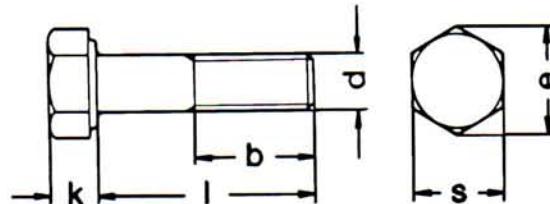
### Hex Cap Screws

## 8.8 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

### Partially Threaded

H021 — 931-8.8 Bare Steel  
H022 — 931-8.8 Zinc Plated



Diameter	M22				M24				M27			
	k	s	e	b up to 125	k	s	e	b up to 125	k	s	e	b over 200
Length (mm)	Full Thread	Part Thread										
	Bare	Zinc										
	H001	H002	H021	H022	H001	H002	H021	H022	H001	H002	H021	H022
230			*		*		*	*			*	
240			S		*		S	*			*	*
250			S		*		*	*			*	
260			S		*		S	*			*	*
270			*				*	*			*	
280			*		*		S	*			*	*
290			*				*	*			*	
300			S		*		*	*			*	*
320					*		*				*	*
340					*						*	
360					*		*				*	
380					*		*				*	
400					*		*				*	
420					*		*				*	
440			*		*		*				*	
460			*		*		*				*	
480					*		*				*	
500					*		*				*	
520							*					
540							*					
560							*					
580							*					
600							*					
620							*					
640							*					
660							*					
680							*					

Order Number → 933-8.8 Bare 10x20 = H001-010-0020 | 933-8.8 Zinc 10x140 = H002-010-0140

S → Normally Stocked | \* → Call for Availability

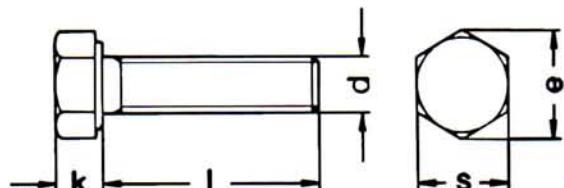
## Hex Cap Screws

8.8 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

### Fully Threaded

H001 — 933-8.8 Bare Steel  
H002 — 933-8.8 Zinc Plated



## Hex Cap Screws

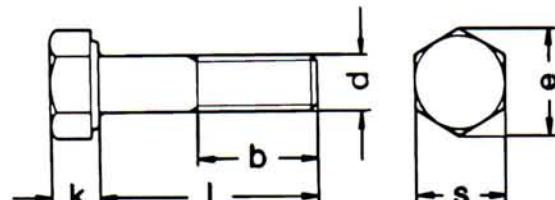
8.8 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

1

### Partially Threaded

H021 — 931-8.8 Bare Steel  
H022 — 931-8.8 Zinc Plated



Diameter	M30				M33				M36			
	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread	
	Bare	Zinc										
H001	H002	H021	H022	H001	H002	H021	H022	H001	H002	H021	H022	
40	*	*										
50	S	*										
55	*	*										
60	S	*			*				S	*		
65	*				*				*			
70	S	*			*				S	*		
75	*				*				*			
80	S	*	*		*				S	*		
85	*											
90	S											
100	S											
110	*	*	S									
120	*	*	S		*	*			*	*	S	*
130	*	*	S		*	*			*	*	S	*
140	*	*	S		*	*			*	*	S	*
150	*	*	S		*	*			*	*	*	*
160	*	*	S		*				*	S	*	*
170	*	*	*		*				*	*	*	*
180	*	*	S		*				*	*	S	*
190	*	*	*		*				*	*	*	*
200	*	*	S		*				*	*	S	*
210	*	*	*						*		*	*
220	*	*	S		*				*		*	*
230	*	*	*						*		*	*
240	*	*	S		*				*		*	*
250	*	*	S						*		*	

Lengths between 260mm - 600mm available upon request for partially threaded bolts

Order Number → 933-8.8 Bare 10x20 = H001-010-0020 | 933-8.8 Zinc 10x140 = H002-010-0140

S → Normally Stocked | \* → Call for Availability

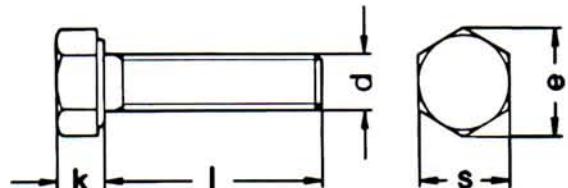
# Hex Cap Screws

8.8 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

## Fully Threaded

H001 — 933-8.8 Bare Steel  
H002 — 933-8.8 Zinc Plated



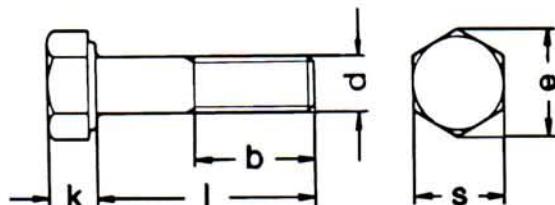
# Hex Cap Screws

8.8 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

## Partially Threaded

H021 — 931-8.8 Bare Steel  
H022 — 931-8.8 Zinc Plated



Diameter	M39				M42				M45			
	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread	
	Bare	Zinc	Bare	Zinc	Bare	Zinc	Bare	Zinc	Bare	Zinc	Bare	Zinc
H001	H002	H021	H022	H001	H002	H021	H022	H001	H002	H021	H022	
80	*				*							
90	*				*							
100	*				*				*			
110					*							
120			*		*		*		*		*	
130			*		*		*	*			*	
140			*		*		*	*			*	
150			*		*		*	*			*	
160			*		*		*	*			*	
170			Longer Lengths Normally Stocked in 10.9 grade.				*	*			*	
180			Many sizes still available in 8.8 grade.				*	*			*	
190							*	*			*	
200			*				*	*			*	
220			*				*				*	
240			*				*				*	
260			*				*				*	
280			*				*				*	
300			*				*				*	
320			*				*				*	
340			*				*				*	
360			*				*				*	
380			*				*				*	
400			*				*				*	
420							*				*	
440							*				*	
460							*				*	
Lengths between 480mm - 640mm available upon request for partially threaded bolts (M42 & M45)												

Order Number → 933-8.8 Bare 10x20 = H001-010-0020 | 933-8.8 Zinc 10x140 = H002-010-0140

S → Normally Stocked | \* → Call for Availability

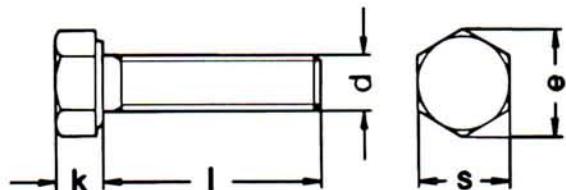
# Hex Cap Screws

8.8 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

## Fully Threaded

H001 — 933-8.8 Bare Steel  
H002 — 933-8.8 Zinc Plated



Diameter	M48			
k	30			
s	75			
e	82.6			
b up to 125	102			
b up to 200	108			
b over 200	121			
Length (mm)	Full Thread		Part Thread	
	Bare	Zinc	Bare	Zinc
H001	H002	H021	H022	
80	*	*		
90	*	*		
100	*	*		
110	*	*		
120	*	*		
130	*	*		
140	*	*	*	*
150	*	*	*	*
160			*	*
170	Longer Lengths Normally Stocked in 10.9 grade.			
180		*	*	
190		*		
200	Many sizes still available in 8.8 grade.			
220		*		
240		*		
250		*		
260		*		
280		*		
290		*		
300		*		
320		*		
340		*		
360		*		
380		*		
400		*		
500		*		

Order Number → 933-8.8 Bare 10x20=H001-010-0020

# Hex Cap Screws

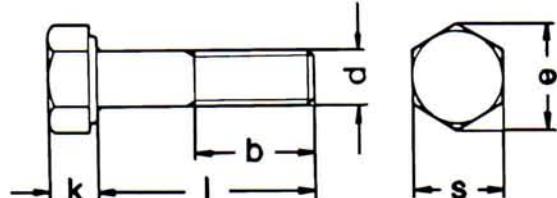
8.8 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

1

## Partially Threaded

H021 — 931-8.8 Bare Steel  
H022 — 931-8.8 Zinc Plated



DIN 931 / 933 Specifications			
d	k	s	e
M1.6	1.1	3.2	3.48
M2	1.4	4	4.38
M2.5	1.7	5	5.45
M3	2	5.5	6.01
M3.5	2.4	6	6.58
M4	2.8	7	7.66
M5	3.5	8	8.79
M6	4	10	11.05
M7	4.8	11	12.12
M8	5.3	13	14.38
M10	6.4	17	18.9
M12	7.5	19	21.1
M14	8.8	22	24.49
M16	10	24	26.75
M18	11.5	27	30.14
M20	12.5	30	33.53
M22	14	32	35.72
M24	15	36	39.98
M27	17	41	45.2
M30	18.7	46	50.85
M33	21	50	55.37
M36	22.5	55	60.79
M39	25	60	66.44
M42	26	65	71.3
M45	28	70	76.95
M48	30	75	82.6
M52	33	80	88.25
M56	35	85	93.56
M60	38	90	99.21
M64	40	95	104.86
M68	43	100	110.51
M72	45	105	116.16
M76	48	110	121.81
M80	50	115	127.46
M90	57	130	144.08

933-8.8 Zinc 10x140 = H002-010-0140

S → Normally Stocked | \* → Call for Availability

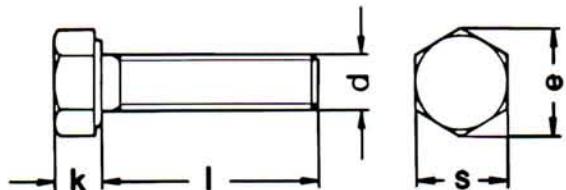
# Hex Cap Screws

10.9 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

## Fully Threaded

H003 — 933-10.9 Bare Steel



# Hex Cap Screws

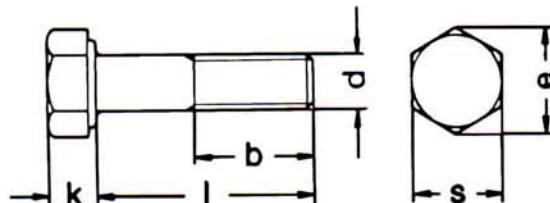
10.9 Grade

DIN 931

ISO 4014  
ANSI B18.2.3.1M

## Partially Threaded

H023 — 931-10.9 Bare Steel



Diameter	M6		M8		M10		M12		M14		M16	
k	4		5.3		6.4		7.5		8.8		10	
s	10		13		17		19		22		24	
e	11.05		14.38		18.9		21.1		24.49		26.75	
b up to 125	18		22		26		30		34		38	
b up to 200	24		28		32		36		40		44	
Length (mm)	Full	Part	Full	Part	Full	Part	Full	Part	Full	Part	Full	Part
	H003	H023	H003	H023	H003	H023	H003	H023	H003	H023	H003	H023
10	S											
12	S		S									
16	S		S		S		S					
20	S		S		S		S				*	
25	S	*	S		S		S		S		S	
30	S	S	S	*	S		S		S		S	
35	*	S	S	S	S	*	S		S		S	
40	*	S	S	S	S	S	*	S	S		S	
45	*	S	*	S	*	S	S	S	S	*	S	
50	*	S	*	S	*	S	*	S	S	S	S	*
55		S	*	S	*	S	*	S	*	S	*	S
60	S	*	S	*	S	S	S	*	S	S	S	S
65		S	S	S	*	S	*	S	*	S	*	S
70	S	*	S	*	S	*	S	*	S	S	S	S
75	S	*	S	*	S	*	S	*	S	*	*	S
80		S	*	S	*	S	*	S	*	S	*	S
85				*		*		*		*		*
90	S		S	*	S	*	S		S	*	S	
95				*		*		*		*		*
100		S		S	*	S	S	S	S	S	S	S
110			S	*	S	*	S		S	*	S	S
120				S	*	S	*	S		S	*	S
130				S	*	S	*	S		S	*	S
140				S	*	S	*	S		S	*	S
150				S	*	S	S	S	*	S	S	
160				*	*	S	*	S	S	*	S	
170				*	*	*	*	*	*	*	*	*
180		*		S	*	S	*	S	S	*	*	S
190			*	S	*	*	*	*	*	*	*	*

Order Number → 933-10.9 Bare 10x20 = H003-010-0020 | 931-10.9 Bare 10x140 = H023-010-0140

S → Normally Stocked | \* → Call for Availability

## Hex Cap Screws

10.9 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

## Hex Cap Screws

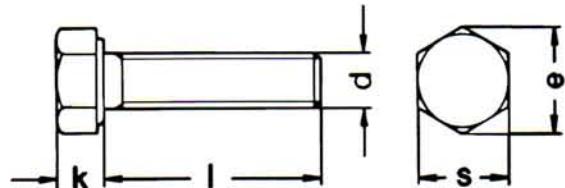
10.9 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

1

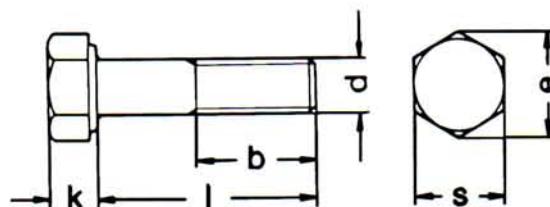
### Fully Threaded

H003 — 933-10.9 Bare Steel



### Partially Threaded

H023 — 931-10.9 Bare Steel



Diameter	M6	M8	M10	M12	M14	M16
k	4	5.3	6.4	7.5	8.8	10
s	10	13	17	19	22	24
e	11.05	14.38	18.9	21.1	24.49	26.75
b up to 125	18	22	26	30	34	38
b up to 200	24	28	32	36	40	44
b over 200	-	-	45	49	53	57
Length (mm)	Full	Part	Full	Part	Full	Part
	H003	H023	H003	H023	H003	H023
200			*	*	S	S
210					*	*
220					*	*
230					*	*
240					*	*
260					*	*
280					*	*
300					*	*
320					*	*
340						S
360						*
380						*
400						*
420						*
440						*
460						*
480						*
500						*

Order Number → 933-10.9 Bare 10x20 = H003-010-0020 | 931-10.9 Bare 10x140 = H023-010-0140

S → Normally Stocked | \* → Call for Availability

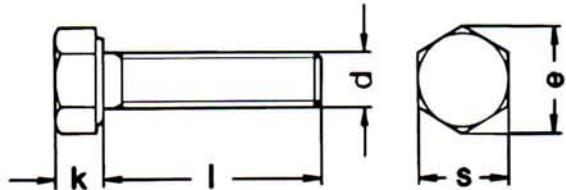
# Hex Cap Screws

10.9 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

## Fully Threaded

H003 — 933-10.9 Bare Steel



## Hex Cap Screws

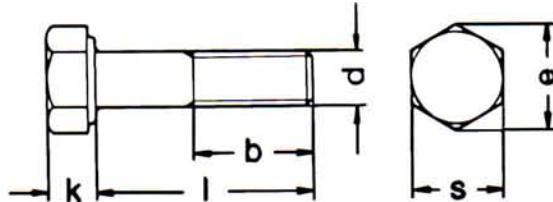
10.9 Grade

DIN 931

ISO 4014  
ANSI B18.2.3.1M

## Partially Threaded

H023 — 931-10.9 Bare Steel



Diameter	M18	M20	M22	M24	M27	M30
k	11.5	12.5	14	15	17	18.7
s	27	30	32	36	41	46
e	30.14	33.53	35.72	39.98	45.2	50.85
b up to 125	42	46	50	54	60	66
b up to 200	48	52	56	60	66	72
b over 200	61	65	69	73	79	85
Length (mm)	Full H003	Part H023	Full H003	Part H023	Full H003	Part H023
30	*		S			
35	*		S			
40	S		S		S	*
45	S		S		*	*
50	S		S		S	S
55	*	*	S	*	S	*
60	*	S	S	S	*	S
65	*	S	*	S	*	S
70	*	S	S	S	S	S
75	*	*	*	S	*	
80	*	S	S	S	S	*
85	*		*	*	*	S
90		S	*	S	S	S
95		*	*		*	*
100		S	S	S	S	S
110		S	S	S	*	*
120		S	S	S	*	S
130		*	S	S	*	*
140		S	S	S	*	S
150		*	S	*	*	*
160		S	S	S	*	S
170		*	*	*	*	*
180		S	S	S	*	S
190		*	*	*	*	*
200	S	S	S	S	*	S
210		*		*	*	*
220		*	S	S	*	S
230			S	*	*	*

Order Number → 933-10.9 Bare 10x20 = H003-010-0020 | 931-10.9 Bare 10x140 = H023-010-0140

S → Normally Stocked | \* → Call for Availability

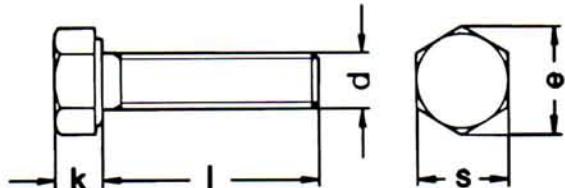
## Hex Cap Screws

10.9 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

### Fully Threaded

H003 — 933-10.9 Bare Steel



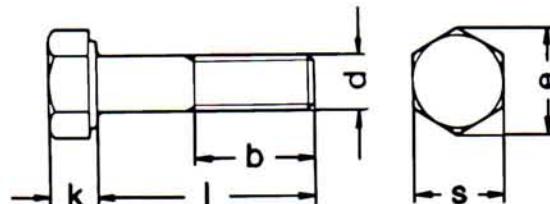
## Hex Cap Screws

10.9 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

### Partially Threaded

H023 — 931-10.9 Bare Steel



Diameter	M18		M20		M22		M24		M27		M30	
k	11.5		12.5		14		15		17		18.7	
s	27		30		32		36		41		46	
e	30.14		33.53		35.72		39.98		45.2		50.85	
b up to 125	42		46		50		54		60		66	
b up to 200	48		52		56		60		66		72	
b over 200	61		65		69		73		79		85	
Length (mm)	Full	Part	Full	Part	Full	Part	Full	Part	Full	Part	Full	Part
H003	H023	H003	H023	H003	H023	H003	H023	H003	H023	H003	H023	
240	*		S		S	*	S		*	S	S	
250			*			*		*		*	*	
260	*		S		*	*	S		*		S	
270			*			*		*		*	*	
280	*		S		S	*	S		*		S	
290			*			*		*		*	*	
300	*	S	S		*	S	S		*	S	S	
310			*			*		*				
320	*		*		*		*		*		S	
330			*			*					*	
340	*		S		*		S		*		S	
350			*			*		*			*	
360			*		*		*		*		S	
370			*			*		*				
380	*		S		*		S		*		S	
400			*		*		*		*		S	
420			*				*				*	
440			*				*				*	
460			*				*				*	
480			*				*				*	
500			*				*				*	

Order Number → 933-10.9 Bare 10x20 = H003-010-0020 | 931-10.9 Bare 10x140 = H023-010-0140

S → Normally Stocked | \* → Call for Availability

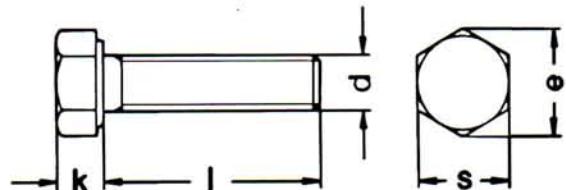
# Hex Cap Screws

10.9 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

## Fully Threaded

H003 — 933-10.9 Bare Steel



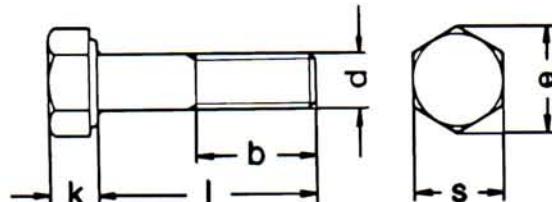
# Hex Cap Screws

10.9 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

## Partially Threaded

H023 — 931-10.9 Bare Steel



Diameter	M33		M36		M39		M42		M45		M48	
k	21		22.5		25		26		28		30	
s	50		55		60		65		70		75	
e	55.37		60.79		66.44		71.3		76.95		82.6	
b up to 125	72		78		84		90		96		102	
b up to 200	78		84		90		96		102		108	
b over 200	91		97		130		109		115		121	
Length (mm)	Full	Part	Full	Part	Full	Part	Full	Part	Full	Part	Full	Part
H003	H023	H003	H023	H003	H023	H003	H023	H003	H023	H003	H023	
60			*									
65												
70			*									
75												
80	S		*									
90			*									
100	S	*	S	*			S				S	
110		*	S	S								
120	S	*	S	S		*	S	*			S	
130		*	*	S		*		*		*		*
140		S	*	S		*	S	*		*	S	*
150	*	*	S		*		*		*	*		*
160		S	*	S		*	S	S	S	*		S
170		*	*	*		*		*		*		*
180		S	*	S		*	S			*		S
190		*	*	*		*		*		*		*
200	S	S	S	S		*	S	S	S	*		S
210			*									
220		*		S		*		S		*		*
230		*		*								
240		*		S		*		S		*		S
250			*									
260		*		S		*		S		*		S
270			*									
280		*		S		*		S		*		S
290		*		*								
300		*	S	S		*	S	S		*		S
320		*		S								*

Order Number → 933-10.9 Bare 10x20 = H003-010-0020 | 931-10.9 Bare 10x140 = H023-010-0140

S → Normally Stocked | \* → Call for Availability

## Hex Cap Screws

10.9 Grade

DIN 933  
ISO 4017  
ANSI B18.2.3.1M

## Hex Cap Screws

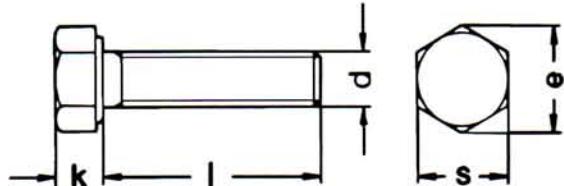
10.9 Grade

DIN 931  
ISO 4014  
ANSI B18.2.3.1M

1

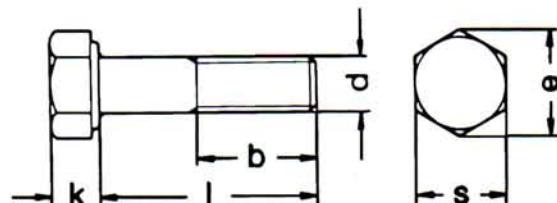
### Fully Threaded

H003 — 933-10.9 Bare Steel



### Partially Threaded

H023 — 931-10.9 Bare Steel



Diameter	M33	M36	M39	M42	M45	M48				
k	21	22.5	25	26	28	30				
s	50	55	60	65	70	75				
e	55.37	60.79	66.44	71.3	76.95	82.6				
b up to 125	72	78	84	90	96	102				
b up to 200	78	84	90	96	102	108				
b over 200	91	97	130	109	115	121				
Length (mm)	Full H003	Part H023								
340	*	S	*		*		*		*	
360	*	S	*		*		*		*	
380	*	S	*		S		*		*	
400	*	S	*		*		*		*	
420			*					S		
440			S							
460			*							
480			*							
500		S								
580		S								

Order Number → 933-10.9 Bare 10x20 = H003-010-0020 | 931-10.9 Bare 10x140 = H023-010-0140

S → Normally Stocked | \* → Call for Availability

**Hex Cap Screws**

DIN 961

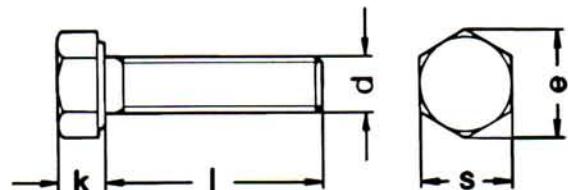
8.8 Grade

1st Choice Fine

**Fully Threaded**

H011 — 961-8.8 Bare Steel

H013 — 961-8.8 Zinc Plated

**Hex Cap Screws**

DIN 960

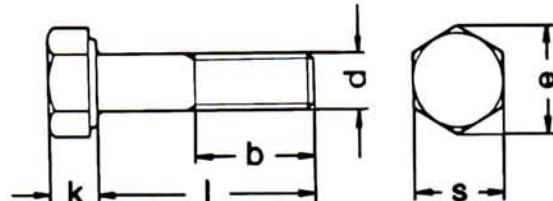
8.8 Grade

1st Choice Fine

**Partially Threaded**

H031 — 960-8.8 Bare Steel

H033 — 960-8.8 Zinc Plated



Diameter	M8 x 1				M10 x 1.25				M12 x 1.25			
k	5.3				6.4				7.5			
s	13				17				19			
e	14.38				18.9				21.1			
b up to 125	22				26				30			
b up to 150	28				32				36			
Length (mm)	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread	
	Bare	Zinc										
H011	H013	H031	H033		H011	H013	H031	H033	H011	H013	H031	H033
10	S											
12	*											
14	*											
16	S	S			S				*			
18	*				*							
20	S	S			S	S			S	S		
22	*				*				*			
25	S	S			S	S			S	S		
30	S	S	*		S	S			S	S		
35	S	S	S	S	S	S	*		S	S		
40	*		S	S	S	S	S		S	S	*	
45	*		S	S	S	S	S	S	S	S	S	S
50	*		S	S	S		S	S	*		S	S
55	*		S		*		S		*		S	
60	*		S		S		S	S	*		S	S
65	*		*		*		S		*		S	
70	*		S		*		S	S	*		S	S
75	*		*		*		*		*		*	
80	*		S		*		S	S	*		S	S
90	*		S		*		S	S	*		S	S
100	*		S		*		S	S	*		S	S
110			*				S				S	
120			S				S				S	
130			*				*				*	
140			*				S				S	
150			*				*				*	
160			*				S				S	
180							S				S	
200											S	S

Lengths between 170mm - 300mm available upon request for partially threaded bolts

Order Number → 961-8.8 Bare 10x1.25x20 = H011-010-0020 | 960-8.8 Bare 10x1.25x140 = H031-010-0140  
S → Normally Stocked | \* → Call for Availability

**Hex Cap Screws**

DIN 961

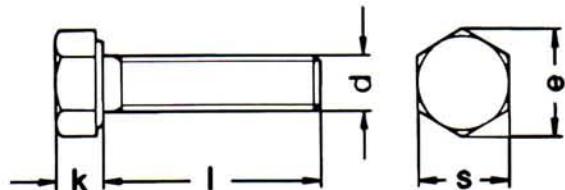
8.8 Grade

1st Choice Fine

**Fully Threaded**

H011 — 961-8.8 Bare Steel

H013 — 961-8.8 Zinc Plated

**Hex Cap Screws**

DIN 960

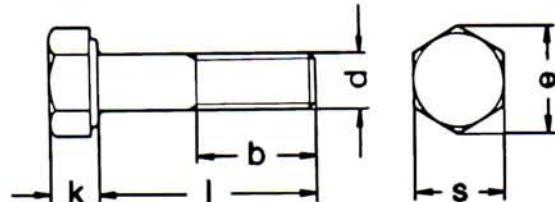
8.8 Grade

1st Choice Fine

**Partially Threaded**

H031 — 960-8.8 Bare Steel

H033 — 960-8.8 Zinc Plated



Diameter	M14 x 1.5				M16 x 1.5				M18 x 1.5			
k	8.8				10				11.5			
s	22				24				27			
e	24.49				26.75				30.14			
b up to 125	34				38				42			
b up to 200	40				44				48			
Length (mm)	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread	
	Bare	Zinc										
H011	H013	H031	H033	H011	H013	H031	H033	H011	H013	H031	H033	
16	*											
18	*											
20	S				S							
22	*				*							
25	S				S							
30	S	S			S	S			S			
35	S	S			S	S			S			
40	S	S			S	S			S	S		
45	S	S	S		S	S			S			
50	S	S	S	S	S	*	S		S			
55	*		S		*		S		S	S	*	
60	*		S	S	*		S	S	S	S	S	
65	*		S	S	*		S		*		*	
70	*		S	S	*		S	S	*		S	
75	*		*		*		S		*		*	
80	S		S		S		S		*		S	
90	*		S		*		S		*		S	
100	*		S		*		S		*		S	
110			S				S				S	
120			S				S				S	
130			*				S				*	
140			S				S				*	
150			*				*				*	
160			S				S				*	
170			*				*				*	
180			*				S				*	
190			*				*				*	
200							S					

Lengths between 200mm - 300mm available upon request for partially threaded bolts

Order Number → 961-8.8 Bare 10x1.25x20 = H011-010-0020 | 960-8.8 Bare 10x1.25x140 = H031-010-0140

S → Normally Stocked | \* → Call for Availability

**Hex Cap Screws**

DIN 961

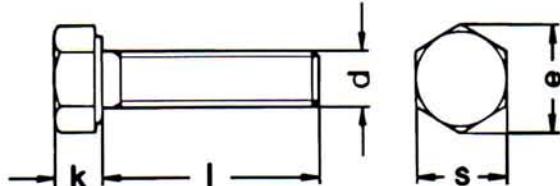
8.8 Grade

1st Choice Fine

**Fully Threaded**

H011 — 961-8.8 Bare Steel

H013 — 961-8.8 Zinc Plated

**Hex Cap Screws**

DIN 960

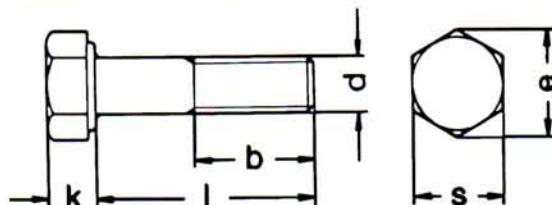
8.8 Grade

1st Choice Fine

**Partially Threaded**

H031 — 960-8.8 Bare Steel

H033 — 960-8.8 Zinc Plated



Diameter	M20 x 1.5				M22 x 1.5				M24 x 2			
k	12.5				14				15			
s	30				32				36			
e	33.53				35.72				39.98			
b up to 125	46				50				54			
b up to 200	52				56				60			
Length (mm)	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread	
	Bare	Zinc										
	H011	H013	H031	H033	H011	H013	H031	H033	H011	H013	H031	H033
30	*											
35	S											
40	S	S			*				*			
45	S				*				*			
50	S				S				S			
55	S		*		*				*			
60	S	S	S		S				S		*	
65	*		*		*				*		*	
70	*		S		*		S		*		S	
75	*		*		*				*		*	
80	*		S		*		S		*		S	
90	S	S			*				*		*	
100	*		S		*			S			S	
110			S					*			*	
120			S					*			S	
130			S					*			*	
140			S					*			S	
150			*					*			*	
160			*					*			*	
170			*					*			*	
180			*					*			*	
190			*					*			*	
200			*					*			*	
210			*					*			*	
220			*					*			*	
230			*					*			*	
240			*					*			*	

Lengths between 250mm - 300mm available upon request for partially threaded bolts

Order Number → 961-8.8 Bare 10x1.25x20 = H011-010-0020 | 960-8.8 Bare 10x1.25x140 = H031-010-0140

S → Normally Stocked | \* → Call for Availability

**Hex Cap Screws**

DIN 961

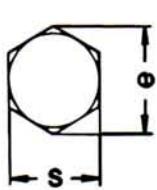
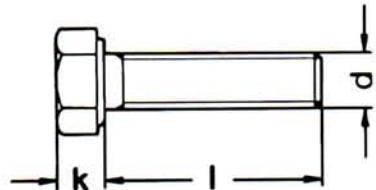
8.8 Grade

1st Choice Fine

**Fully Threaded**

H011 — 961-8.8 Bare Steel

H013 — 961-8.8 Zinc Plated

**Hex Cap Screws**

DIN 960

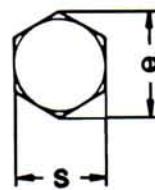
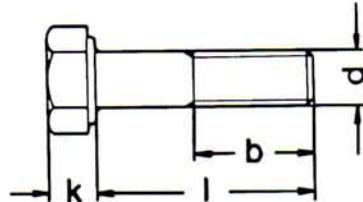
8.8 Grade

1st Choice Fine

**Partially Threaded**

H031 — 960-8.8 Bare Steel

H033 — 960-8.8 Zinc Plated



Diameter	M27x2	M30x2	M33x2	M36x3	
k	17	18.7	21	22.5	
s	41	46	50	55	
e	45.2	50.85	55.37	60.79	
b up to 125	60	66	72	78	
b up to 200	66	72	78	84	
b over 200	79	85	91	97	
Length (mm)	H011	H031	H011	H031	
50	*		*		
55	*		*		
60	*		*	*	
65	*		*	*	
70	*		*	*	
75	*		*	*	
80	*		*	*	
90	*	*	*	*	
100	S	*	S	*	
110	*	*	*	*	
120	*	*	*	*	
130	*	Larger Diameters Available Upon Request			
140	*	*	M39, M42, M45 and M48	*	*
150	*	*	*	*	*
160	*	*	*	*	*
170	*	*	*	*	*
180	*	*	*	*	*
190	*	*	*	*	*
200	S	*	S	*	*
220		*		*	*
240		*		*	*
260		*		*	*
280		*		*	*
300		*		*	*

Order Number → 961-8.8 Bare 10x1.25x20 = H011-010-0020 | 960-8.8 Bare 10x1.25x140 = H031-010-0140

S → Normally Stocked | \* → Call for Availability

**Hex Cap Screws**

DIN 961

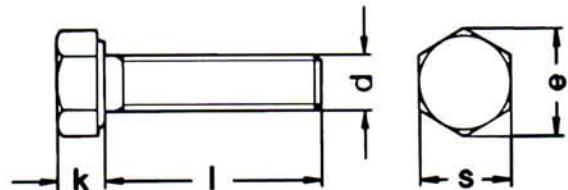
8.8 Grade

2nd Choice Fine

**Fully Threaded**

H012 — 961-8.8 Bare Steel

H014 — 961-8.8 Zinc Plated

**Hex Cap Screws**

DIN 960

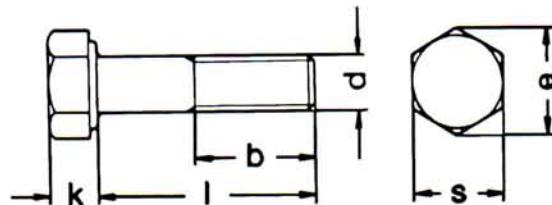
8.8 Grade

2nd Choice Fine

**Partially Threaded**

H032 — 960-8.8 Bare Steel

H034 — 960-8.8 Zinc Plated



Diameter	M10 x 1				M12 x 1.5				M20 x 2		24x1.5	
k	6.4				7.5				12.5		15	
s	17				19				30		36	
e	18.9				21.1				33.53		39.98	
b up to 125	26				30				46		54	
b up to 150	32				36				52		60	
Length (mm)	Full Thread		Part Thread		Full Thread		Part Thread		Full	Part	Full	
	Bare	Zinc	Bare	Zinc	Bare	Zinc	Bare	Zinc	H012	H032	H012	
16	*				*							
18	*				*							
20	S				S							
22	*				*							
25	S				S	S						
28	*				*							
30	S				S	S						
35	S	S	*		S	*						
40	S	S	S	S	S	*	*		S			
45	S		S		S	*	S	S				
50	*	S	S	S	S	*	S			*		*
55	*		*		*	S	S			*		*
60	*		S		*		S			*		*
65	*		*		*		S			*		
70	*		S		*		S		S	*	*	
75	*		*		*		*					
80	*		S		*		S			*		*
90	*		*		*		S					
100	*		*		*		S			*		*
110			*				S					
120			*				S					
130			*				*					
140			*				*					
150			*				*					

Order Number → 961-8.8 Bare 10x1x20 = H012-010-0020 | 960-8.8 Bare 10x1x140 = H032-010-0140

S → Normally Stocked | \* → Call for Availability

## Hex Cap Screws

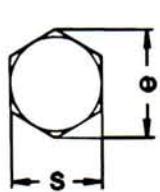
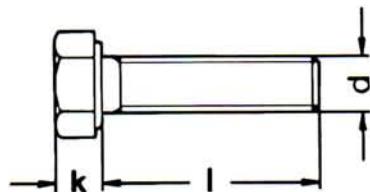
DIN 961

10.9 Grade

1st Choice Fine

### Fully Threaded

H004 — 961-10.9 Bare Steel



## Hex Cap Screws

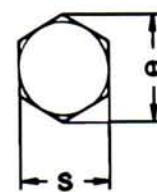
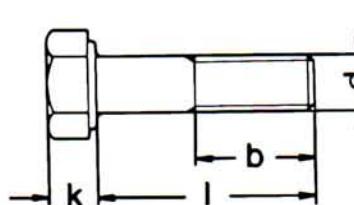
DIN 960

10.9 Grade

1st Choice Fine

### Partially Threaded

H024 — 960-10.9 Bare Steel



Diameter	M8 x 1		M10 x 1.25		M12 x 1.25		M14 x 1.5		M16 x 1.5	
k	5.3		6.4		7.5		8.8		10	
s	13		17		19		22		24	
e	14.38		18.9		21.1		24.49		26.75	
b up to 125	22		26		30		34		38	
b up to 200	28		32		36		40		44	
Length (mm)	Full	Part	Full	Part	Full	Part	Full	Part	Full	Part
	H004	H024	H004	H024	H004	H024	H004	H024	H004	H024
20	S		S		S					
22	*		*		*					
25	S		S		S		S			
28	*		*		*		*			
30	S	*	S		S		S		S	*
35	S	*	S	*	S		S			*
40	S	*	S	*	S	*	S		S	
45	*	S	*	S	*	S	*	*	S	
50	*	S	*	S	*	S	S	S	S	S
55		*	*	*	*	*	*	*	*	S
60	S	*	S	*	S	*	S	*	*	S
65	*	*	*	*	*	*	*	*	*	S
70		S	*	S	*	S	*	S	*	S
75	*	*	*	*	*	*	*	*	*	S
80	S	S	S	S	S	S	S	S	S	S
90		*		S		S		S	*	S
100	*			S		S		S	*	S
110	*		*		S		S		S	
120		*		S		S		S		S
130				*		*		S		*
140				S		S		S		S
150				*		*		S		*
160										*

Order Number → 961-10.9 Bare 10x1.25x20 = H004-010-0020 | 960-10.9 Bare 10x1.25x140 = H024-010-0140

S → Normally Stocked | \* → Call for Availability

**Hex Cap Screws**

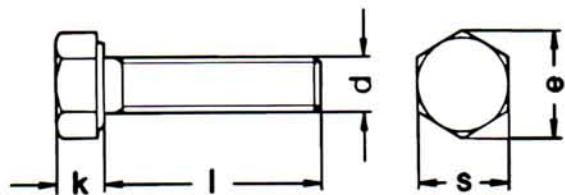
DIN 961

10.9 Grade

1st Choice Fine

**Fully Threaded**

H004 — 961-10.9 Bare Steel

**Hex Cap Screws**

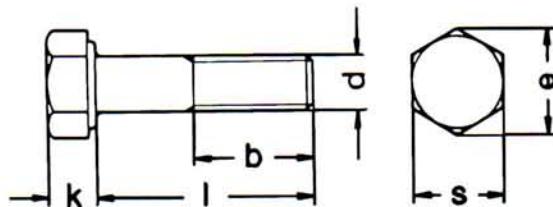
DIN 960

10.9 Grade

1st Choice Fine

**Partially Threaded**

H024 — 960-10.9 Bare Steel



Diameter	M18 x 1.5		M20 x 1.5		M22 x 1.5		M24 x 2	
k	11.5		12.5		14		15	
s	27		30		32		36	
e	30.14		33.53		35.72		39.98	
b up to 125	42		46		50		54	
b up to 200	48		52		56		60	
Length (mm)	Full	Part	Full	Part	Full	Part	Full	Part
	H004	H024	H004	H024	H004	H024	H004	H024
30	*		*					
35	*		*					
40	S		*		S		*	
45	*		S		*		*	
50	S		S		S		*	
55	S	*	S	*	S		*	
60	S	S	S	*	S		*	
65	*	*	*	*	*	*	*	
70	*	S	S	S	S	*	*	*
75	*	*	*	*	*	*	*	S
80	S	S	*	S	*	S	*	S
90	S	*	S	S	S			S
100			S	*	S			S
110			S	*	S			S
120			S	S	S			S
130			*	*	*			*
140			S	S	*			S
150		*		*	S			*
160				*				
180				*				
200				*				

Order Number → 961-10.9 Bare 10x1.25x20 = H004-010-0020

| 960-10.9 Bare 10x1.25x140 = H024-010-0140

S → Normally Stocked | \* → Call for Availability

## Hex Cap Screws

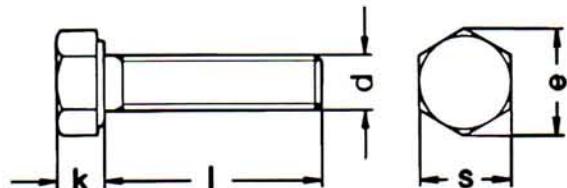
DIN 961

10.9 Grade

2nd Choice Fine

**Fully Threaded**

H007 — 961-10.9 Bare Steel



Diameter	M10 x 1		M12 x 1.5	
k	6.4		7.5	
s	17		19	
e	18.9		21.1	
b up to 125	26		30	
b up to 150	32		36	
Length (mm)	Full	Part	Full	Part
H007	H027		H007	H027
20	*		*	
22	*		*	
25	*		S	
28	*		*	
30	*		*	
35	*	*	*	
40	*	*	*	*
45	*	*	*	*
50	*	*	*	*
55	*	*	*	*
60	*	*	*	*
65	*	*	*	*
70	*	*	*	*
75	*	*	*	*
80	*	*	*	*
90		*		*
100		*		*
110		*		*
120		*		*
130		*		*
140		*		S
150		*		*

Order Number → 961-10.9 Bare 10x1x20 = H007-010-0020

## Hex Cap Screws

DIN 960

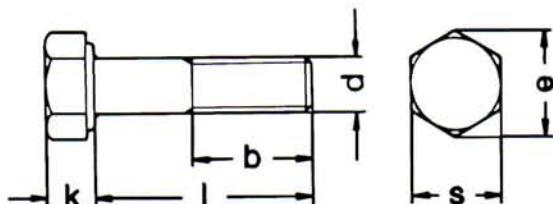
1

10.9 Grade

2nd Choice Fine

**Partially Threaded**

H027 — 960-10.9 Bare Steel



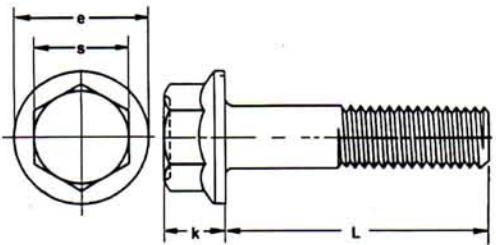
DIN 960 / 961 Specifications			
d	k	s	e
M8	5.3	13	14.38
M10	6.4	17	18.9
M12	7.5	19	21.1
M14	8.8	22	24.49
M16	10	24	26.75
M18	11.5	27	30.14
M20	12.5	30	33.53
M22	14	32	35.72
M24	15	36	39.98
M27	17	41	45.20
M30	18.7	46	50.85
M33	21	50	55.37
M36	22.5	55	60.79
M39	25	60	66.44
M42	26	65	71.3
M45	28	70	76.95
M48	30	75	82.60
M52	33	80	88.25
M56	35	85	93.56
M60	38	90	99.21
M64	40	95	104.86
M68	43	100	110.51
M72	45	105	116.16
M76	48	110	121.81
M80	50	115	127.46
M90	57	130	144.08
M100	63	145	161.03

| 960-10.9 Bare 10x1x140 = H027-010-0140

S → Normally Stocked | \* → Call for Availability

**\*Hex Flange Bolts**

10.9 Grade



H053 — Yellow Zinc Plated

Diameter	M6	M8	M10	M12	M16
k	6.6	8.1	8.6	10.4	14.1
s min.	9.64	12.57	14.57	17.57	23.16
e	14.2	18	22.3	26.6	35
<b>H053</b>					
10	S				
12	S	S			
16	S	S	S	S	
20	S	S	S	S	
25	S	S	S	S	
30	S	S	S	S	S
35	S	S	S	S	S
40	S	S	S	S	S
45	S	S	S	S	S
50	S	S	S	S	S
60	S	S	S	S	S
70		S	S	S	S
80		S	S	S	S
90		S	S	S	S
100		S	S	S	S
110		*	*	*	*
120			*	*	*
130			*	*	*
140				*	
150				*	
160				*	
170				*	

Order Number → 10x20 = H053-010-0020 | 10x120 = H053-010-0120

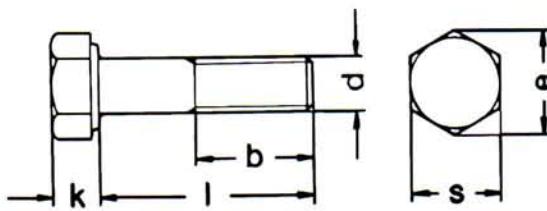
**\*In Accordance With "IFI 538 1982"**

S → Normally Stocked | \* → Call for Availability

## Hex Cap Screws

10.9 Grade

DIN 6914  
ISO 7412



### Structural

H040 — 6914-10.9 Bare Steel

d	k	s	e	b up to 100	b up to 200	Lengths (mm)
M12	8	22	23.91	21	23	30-120
M14	—	—	—	—	—	35-80
M16	10	27	29.56	26	28	35-220
M18	—	—	—	—	—	40-130
M20	13	32	35.03	31	33	40-260
M22	14	36	39.55	32	34	50-260
M24	15	41	45.2	34	37	50-260
M27	17	46	50.85	37	39	60-260
M30	19	50	55.37	40	42	70-260
M36	23	60	66.44	48	50	80-260

\*Please contact us for availability\*

## Hex Set Screws

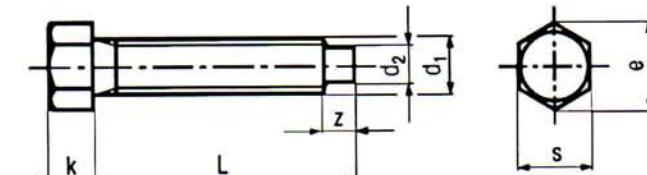
DIN 561

8.8 Grade

Form B

### With Full Dog Point

H080 — 561-8.8 Bare Steel



d <sub>1</sub>	d <sub>2</sub>	z	e min.	k	s	Proof Load (N)	Lengths (mm)
M6	4	3	8.79	5	8	11600	12-30
M8	5.5	4	11.05	6	10	21200	16-50
M10	7	5	14.38	7	13	33700	20-60
M12	8.5	6	18.9	9	16	48900	20-60
M16	12	8	21.1	11	18	91000	30-80

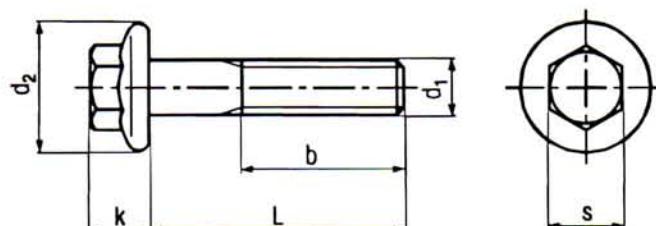
\*Please contact us for availability\*

## Hex Flange Bolts

DIN 6921

8.8 Grade

H055 — 6921-8.8 Zinc Plated



d <sub>1</sub>	b	d <sub>2</sub> max.	k max.	s	Proof Load (N)	Lengths (mm)
M6	18	14.2	6.6	10	11600	16-50
M8	22	18	8.1	13	21200	16-40
M10	26	22.3	9.2	15	33700	20-70
M12	30	26.6	11.5	16	48900	25-55

\*Please contact us for availability\*

S → Normally Stocked | \* → Call for Availability

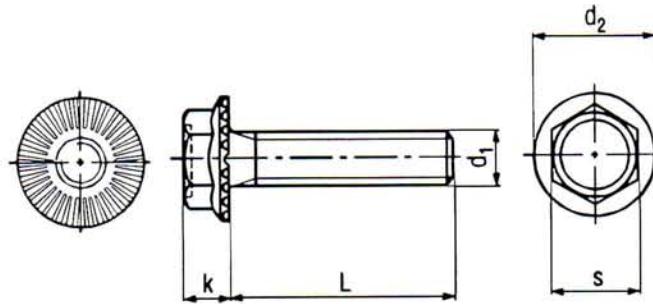
## Hex Flange Bolts

Class 100\*

### Ribbed

H057 — Bare Steel

H058 — Dacromet-500



$d_1$	$d_2$ max.	k	s	Lengths (mm)
M5	11.2	4.3	8	8-16
M6	14.2	5.5	10	8-25
M8	18.2	7	13	10-40
M10	21	8.5	15	16-30
M12	24	10	17	20-40
M16	31	14	22	25-70

\*Please contact us for availability\*

Tightening torques  $M_{A\max}$  for screws at 90% utilization of the yield point  $R_{P0.2}$

*Class	Counter-material	Tightening Torques $M_{A\max}$ [Nm]					
		M5	M6	M8	M10	M12	M16
100	Steel $R_m < 800$ [N/mm <sup>2</sup> ]	11	19	42	85	130	330
	Steel $R_m = 800-1100$ [N/mm <sup>2</sup> ]	10	18	37	80	120	310
	Grey cast iron	9	16	35	75	115	300

*Class	Preload $F_{V\max}$ [N]					
	M5	M6	M8	M10	M12	M16
100	9000	12600	23200	37000	54000	102000

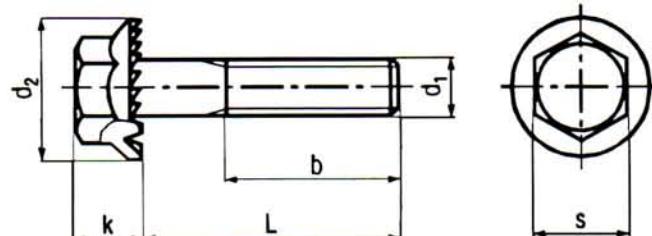
Tensile Strength 1000-1100 N/mm<sup>2</sup>

## Hex Flange Screws

8.8 Grade

### Serrated

H056 — Zinc Plated



$d_1$	$d_2$	k	s	Proof Load (N)	Lengths (mm)
M5	11	5.4	8	8230	10-16
M6	13	6	10	11600	10-30
M8	17	7	13	21200	12-30

\*Please contact us for availability\*

Tensile Strength 800 N/mm<sup>2</sup>

S → Normally Stocked | \* → Call for Availability

# Hex Cap Screws

8.8 Grade

ANSI B18.2.3.1M

# Hex Cap Screws

8.8 Grade

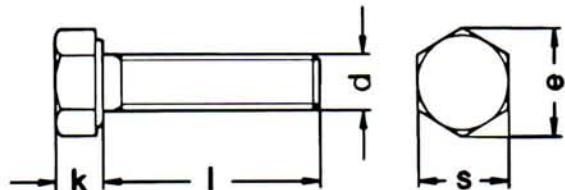
ANSI B18.2.3.1M

1

## Fully Threaded

H015 — 8.8 Bare Steel

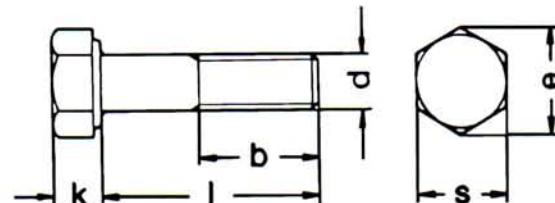
H016 — 8.8 Zinc Plated



## Partially Threaded

H035 — 8.8 Bare Steel

H036 — 8.8 Zinc Plated



Diameter	M10				M12				M14			
	Full Thread		Part Thread		Full Thread		Part Thread		Full Thread		Part Thread	
	Bare	Zinc										
	H015	H016	H035	H036	H015	H016	H035	H036	H015	H016	H035	H036
16	*	*										
20	*	*			*	*						
25	*	S			*	*			*	*		
30	*	*			*	*			*	*		
35	*	*			*	*			*	*		
40	*	*	*	*	*	*			*	*		
45			*	*	*	*	*	*	*	*		
50			*	*			*	*			*	*
55			*	*			*	*			*	*
60			*	*			*	*			*	*
65			*	*			*	*			*	*
70			*	*			*	*			*	*
75			*	*			*	*			*	*
80			*	*			*	*			*	*
90			*	*			*	*			*	*
100			*	*			*	*			*	*
110			*	*			*	*			*	*
120			*	*			*	*			*	*
130			*	*			*	*			*	*
140			*	*			*	*			*	*
150			*	*			*	*			*	*
160			*	*			*	*			*	*
170			*	*			*	*			*	*
180			*	*			*	*			*	*
190			*	*			*	*			*	*
200			*	*			*	*			*	*

Lengths between 210mm -380mm available upon request for partially threaded bolts (M10 & M14)

Order Number → Full Thread 8.8 Bare 10x20 = H015-010-0020

S → Normally Stocked | \* → Call for Availability

# Hex Cap Screws

10.9 Grade

ANSI B18.2.3.1M

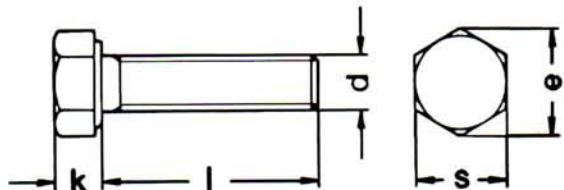
# Hex Cap Screws

10.9 Grade

ANSI B18.2.3.1M

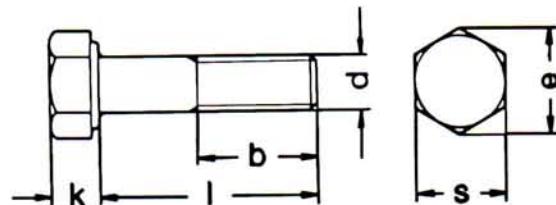
## Fully Threaded

H017 — 10.9 Bare Steel



## Partially Threaded

H037 — 10.9 Bare Steel



Diameter	M10		M12		M14	
k	6.4		7.5		8.8	
s	16		18		21	
e	18.48		20.78		24.25	
b up to 125	26		30		34	
b up to 200	32		36		40	
b over 200	45		49		53	
Length (mm)	Full Thread H017	Part Thread H037	Full Thread H017	Part Thread H037	Full Thread H017	Part Thread H037
16	*					
20	*		*			
25	*		S		*	
30	*		*		*	
35	*		*		*	
40	*	*	S		*	
45		*	*	S	*	
50		*		*		*
55		*		*		*
60		*		*		*
65		*		*		*
70		*		*		*
75		*		*		*
80		*		*		*
90		*		S		*
100		*		*		*
110		*		*		*
120		*		*		*
130		*		*		*
140		*		*		*
150		*		*		*
160		*		*		*
180		*		*		*
200		*		*		*
220		*				*
240		*				*
260		*				*

Lengths between 280mm -380mm available upon request for partially threaded bolts (M10 & M14)

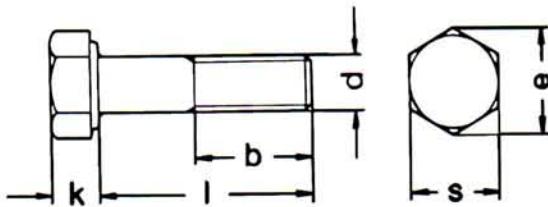
Order Number → Full Thread 10.9 Bare 10x20 = H017-010-0020

S → Normally Stocked | \* → Call for Availability

**Hex Head Bolts**

JIS B1180

8.8 Grade



H050 — JIS B1180-8.8 Zinc Plated

Diameter	M8	M10	M12
Pitch	1.25	1.25	1.25
s	12	14	17
<b>H050</b>			
12	S (F/T)		
16	S (F/T)	S (F/T)	
20	S (F/T)	S (F/T)	S (F/T)
25	S	S (F/T)	S (F/T)
30	S	S	S (F/T)
35	S	S	S
40	S	S	

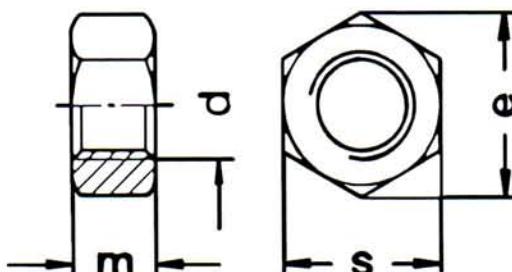
F/T = Full Thread

Order Number → Zinc Plated 10x25 = H050-010-0025

**Hex Nuts**

JIS B1181

Class 8



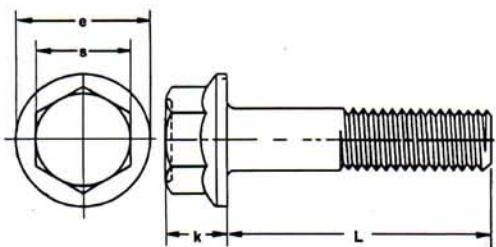
N009 — JIS B1181-8 Zinc Plated

Diameter	s	m	Stock	FMP Order #
M8	12	6	S	N009-008-0000
M10	14	7.5	S	N009-010-0000
M12	17	9	S	N009-012-0000

S → Normally Stocked | \* → Call for Availability

**Hex Flange Bolts JIS B1189**

10.9 Grade



H052 — JIS B1189-10.9 Zinc Plated

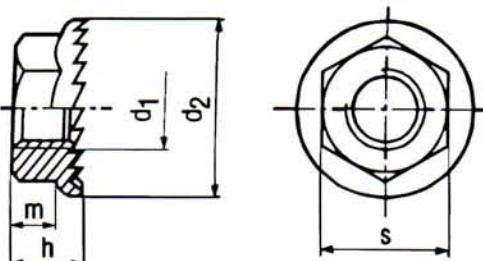
Diameter	M6	M8	M10
Pitch	1.0	1.25	1.25
k	6	8	10
s	10	12	14
e	14	17.5	21
Length (mm)	H052		
12	S (F/T)		
16	S (F/T)	S (F/T)	
20	S (F/T)	S (F/T)	
25	S	S (F/T)	S (F/T)
30	S	S	S
35	S	S	S
40	S	S	

F/T = Fully Threaded

Order Number → Zinc Plated 10x25 = H052-010-0025

**Hex Flange Nuts JIS B1190**

Class 10



N029 — JIS B1190-10 Zinc Plated

Diameter	s	h	d <sub>2</sub>	Stock	FMP Order #
M6	10	6	13	S	N029-006-0000
M8	12	7.5	17	S	N029-008-0000
M10	14	9	19	S	N029-010-0000

S → Normally Stocked | \* → Call for Availability

# Socket Head Products

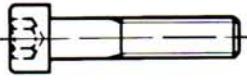
\*Please see Section 11 for Imperial Socket Products

2



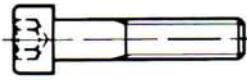
Bare-S001 Zinc-S002

\*DIN 912-8.8  
Socket Cap Screw  
Bare/Zinc Page 4-11



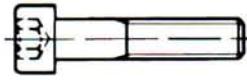
Bare-S010 Zinc-S011

\*DIN 912-12.9  
Socket Cap Screw  
Bare/Zinc Page 4-12



S004

DIN 912-8.8  
Socket Cap Screw  
Fine Thread Page 13



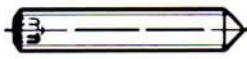
S006

DIN 912-10.9  
Socket Cap Screw  
Bare Steel Page 14



S030

DIN 913-45H  
Flat Point Set Screw  
Bare Steel Page 15-16



S031

DIN 914-45H  
Cone Point Set Screw  
Bare Steel Page 17



S032

DIN 915-45H  
Dog Point Set Screw  
Bare Steel Page 18



S033

\*DIN 916-45H  
Cup Point Set Screw  
Bare Steel Page 19-20

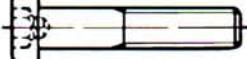


Bare-S034 Zinc-S035  
DIN 551 Slotted Set Screw  
Flat Point Chamfered  
Bare/Zinc Page 21



B040

DIN 479-8.8  
Square Head Set Screw  
Bare Steel Page 1

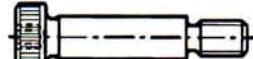


Bare-S020 Zinc-S022

DIN 6912-8.8  
Low Head Socket Cap  
Bare/Zinc Page 22-23



Bare-S021 Zinc-S023  
DIN 7984-8.8  
Low Head Socket Cap  
Bare/Zinc Page 24-25



S055

\*ISO 7379-12.9  
Shoulder Bolt Bare Steel  
Page 26



Bare-S050 Zinc-S053

\*ISO 7380-10.9  
Button Head Socket  
Bare/Zinc Page 27-28

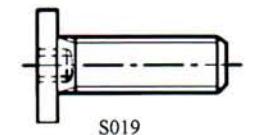


Bare-S025 Zinc-S029

\*DIN 7991-10.9  
Flat Countersunk Socket  
Bare/Zinc Page 29-31

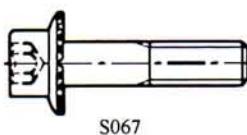


S066  
Socket Cap Screw  
With Flange  
Bare Steel Page 1



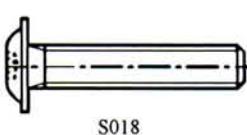
S019

Socket Cap Screw  
Special Low Head  
Bare Steel Page 25



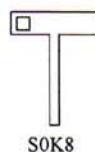
S067

Socket Cap Screw  
Locking  
Page 32

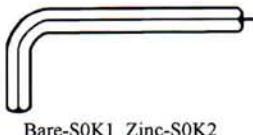


S018

Button Head Socket  
With Flange  
Bare Steel Page 32

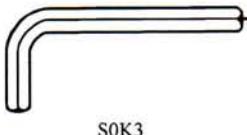


S0K8  
T-Handle  
Hexagon Key  
Page 35



Bare-SOK1 Zinc-SOK2

DIN 911  
Socket Key  
Bare/CV Page 2-3



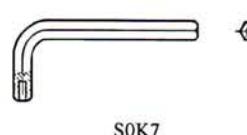
SOK3

DIN 911  
Long Arm Socket Key  
CV Page 3



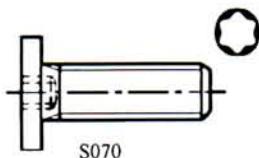
SOK5

DIN 6911  
Socket Key (Guide Point)  
Chrome Vanadium Page 21

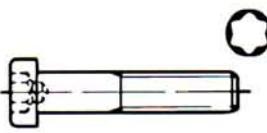


SOK7  
Socket Key  
Tamper Proof  
Zinc Plated Page 35

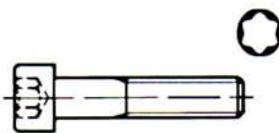
# Socket Head Products



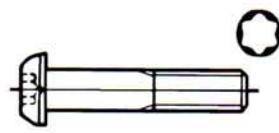
**S070**  
Socket Cap Screw  
Special Low Head Zinc  
Hexalobular Page 33



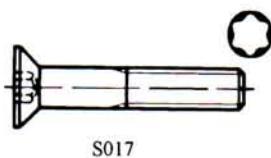
**S071**  
Socket Cap Screw  
Low Head Zinc  
Hexalobular Page 33



**S072**  
Socket Cap Screw  
With Internal Drive and Slot  
Hexalobular Page 33



**S073**  
Button Head Socket  
Hexalobular  
Zinc Plated Page 34



**S017**  
Flat Countersunk Socket  
Hexalobular  
Zinc Plated Page 34



**S0K6**  
Socket Key  
Hexalobular  
Bare Steel Page 34

Featuring premium quality YFS Brand

- Socket Cap Screws
- Flat Head Countersunk Screws
- Button Head Screws
- Shoulder Bolts

QS-9000 Certified  
(Full certification available on request)

Premium quality product at commodity price levels

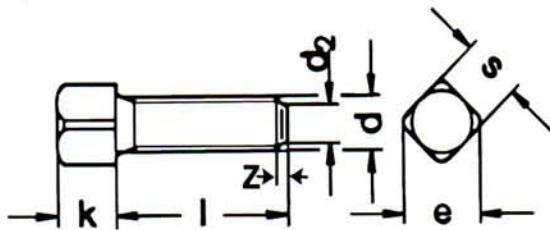
# Set Screws

DIN 479

8.8 Grade

## Square Head

B040 — 479-8.8 Bare Steel



2

Diameter	M6	M8	M10	M12	M14	M16	M20	M24
k	6	8	10	12	—	16	20	22
d <sub>2</sub>	4	5.5	7	8.5	—	12	15	18
s	6	8	10	13	—	17	22	24
e	8	10	13	17	—	22	28	32
z	1.5	1.8	2	2.5	—	3	4	5
Length (mm)	B040							
16	S	S						
20	S	S	S	S				
25	S	S	S	S				
30	S	S	S	S	S			
35	S	S	S	S	S			
40	S	S	S	S	S	S	S	
45	S	S	S	S				
50	S	S	S	S	S	S		
60	S	S	S	S		S	S	S
70		S	S	S		S	S	
80			S	S		S	S	S
90				S		S	S	
100				S		S	S	S
120				S		S	S	S
140						S	S	S
160						S	S	S

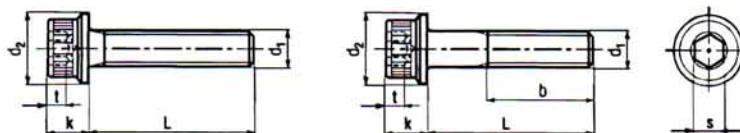
Order Number → 479-8.8 10x20 = B040-010-0020 | 479-8.8 12x120 = B040-012-0120

## Socket Cap Screws

12.9 Grade

### With Flange

S066 — Bare Steel



d <sub>1</sub>	b	d <sub>2</sub>	k	s	t min.	Lengths (mm)
M4	20	9	4	3	2.2	8-20
M5	20	11	5	4	2.5	10-35
M6	25	12.5	6	5	3	16-50
M8	30	17	8	6	4	20-70
M10	35	21	10	8	5	20-70
M12	45	24	12	10	6	30-100

\*Please contact us for availability\*

S → Normally Stocked | \* → Call for Availability

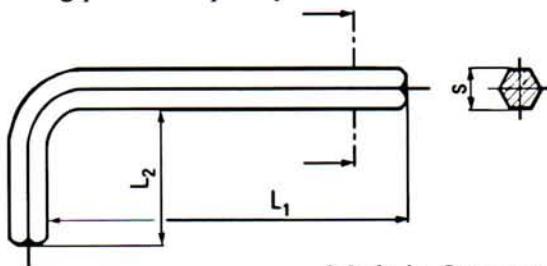
# Socket Keys

Tool Steel

2

**DIN 911**  
ISO 2936  
ANSI B18.3.2M

Featuring premium quality Gehawe & Wuro Brands



S0K1 — 911 Tool Steel

S0K2 — 911 CV-Steel Nickel Plated

Made in Germany

Key Size	For DIN 912	For DIN 913-916	For DIN 7984	For DIN 7991	L <sub>1</sub>	L <sub>2</sub>	Bare	CV
							S0K1	S0K2
0.7		M1.4-M1.7			32	6	*	*
0.9		M2-M2.3			32	10	*	*
1					—	—	*	S
1.3	M1.4	M2.5-M2.6			40	12	S	
1.5	M1.6-M2	M3			45	14	S	S
2	M2.5	M4	M3	M3	50	16	S	S
2.5	M3	M5	M4	M4	56	18	S	S
3	M4	M6	M5	M5	63	20	S	S
3.5					67	23	S	*
4	M5	M8	M6	M6	70	25	S	S
4.5					75	26	S	*
5	M6	M10	M8	M8	80	28	S	S
5.5					85	30	S	*
6	M8	M12-M14		M10	90	32	S	S
7			M10		95	34	S	*
8	M10	M16	M12	M12	100	36	S	S
9					105	38	S	S
10	M12	M18-20	M14	M14	112	40	S	S
11					118	43	S	S
12	M14-M16	M22-M24	M16-M18	M16	125	45	S	S
13					133	50	S	*
14	M18		M20-M22	M18-M20	140	56	S	S
15					147	58	S	
16					154	60	S	*
17	M20-M22		M24	M22-M24	160	63	S	S
18					170	65	S	
19	M24-M27				180	70	S	S
20					187	73	S	
21					194	77	S	*
22	M30				200	80	S	S
23					210	85	S	*
24					224	90	S	*
25					—	—	S	*
27	M36				250	100	S	*
30					280	112	S	*
32					315	125	S	*
36					355	140	S	*
42					407	157	S	*
46					444	166	S	*

Order Number → 911 1.5mm Bare Steel = S0K1-1.5-0000 | 911 10mm Bare Steel = S0K1-010-0000

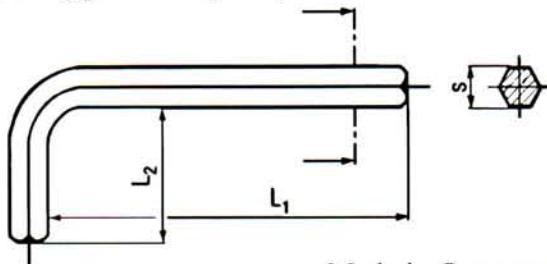
S → Normally Stocked | \* → Call for Availability

# Socket Keys

Tool Steel

**DIN 911**  
ISO 2936  
ANSI B18.3.2M

Featuring premium quality Gehawe & Wuro Brands



2

S0K1 — 911 Tool Steel

S0K2 — 911 CV-Steel Nickel Plated

Made in Germany

Key Size	For DIN 912	For DIN 913-916	For DIN 7984	For DIN 7991	$L_1$	$L_2$	Bare	CV
							S0K1	S0K2
50					474	184	S	
55					520	194	S	
60					564	208	S	
65					589	223	S	

Order Number → 911 1.5mm Bare Steel = S0K1-1.5-0000 | 911 10mm Bare Steel = S0K1-010-0000

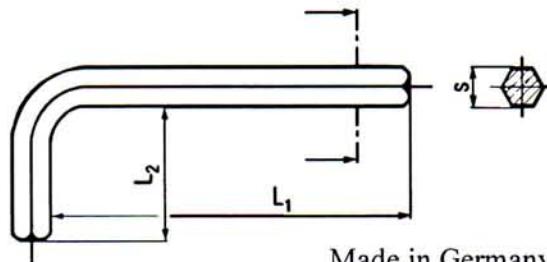
# Socket Keys

Tool Steel

**DIN 911**  
ISO 2936  
ANSI B18.3.2M

## Long Arm

S0K3 — 911 Steel Nickel Plated



Made in Germany

Key Size	For DIN 912	For DIN 913-916	For DIN 7984	For DIN 7991	$L_1$	$L_2$	Long Arm	S0K3
1.5	M1.6	M3			90	14	S	
2	M2.5	M4	M3	M3	100	16	S	
2.5	M3	M5	M4	M4	112	18	S	
3	M4	M6	M5	M5	126	20	S	
3.5					134	23	*	
4	M5	M8	M6	M6	140	25	S	
4.5					150	26	S	
5	M6	M10	M8	M8	160	28	S	
6	M8	M12-M14		M10	180	32	S	
7			M10		190	34	S	
8	M10	M16	M12	M12	200	36	S	
9					210	38	S	
10	M12	M18-M20	M14	M14	224	40	S	
11					236	43	S	
12	M14-M16	M22-M24	M16-M18	M16	250	45	S	
13					266	50	S	
14	M18		M20-M22	M18-M20	280	56	S	
16					308	60	*	
17	M20-M22		M24	M22-M24	320	63	S	
18					340	65	S	
19	M24-M27				360	70	S	
22	M30				400	80	S	
24					448	90	*	
27	M36				500	100	*	
32					630	125	*	
36					710	140	*	

Order Number → 911 1.5mm Bare Steel = S0K3-1.5-0000 | 911 10mm Bare Steel = S0K3-010-0000

S → Normally Stocked | \* → Call for Availability

# Socket Cap Screws

**DIN 912**  
ISO 4762  
ANSI B18.3.1M  
8.8 Grade

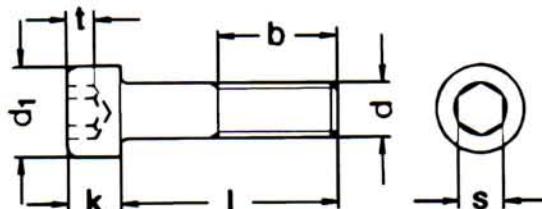
# Socket Cap Screws

**DIN 912**  
ISO 4762  
ANSI B18.3.1M  
12.9 Grade

2

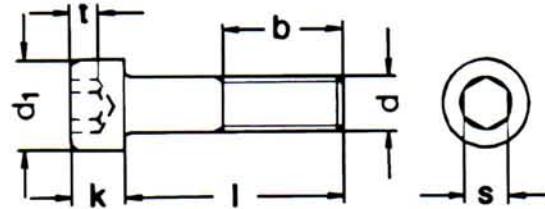
S001 — 912-8.8 Bare Steel

S002 — 912-8.8 Zinc Plated



S010 — 912-12.9 Bare Steel

S011 — 912-12.9 Zinc Plated



Diameter	M1.4				M1.6				M1.7			
b	14				15				—			
t min.	0.6				0.7				0.8			
s	1.3				1.5				1.5			
k max.	1.4				1.6				1.7			
d <sub>1</sub>	2.6				3				3.2			
Length (mm)	8.8		12.9		8.8		12.9		8.8		12.9	
	Bare	Zinc										
S001	S002	S010	S011	S001	S002	S010	S011	S001	S002	S010	S011	
3			*				*				*	
4			*				*				*	
5			*				*				*	
6			*				*				*	
8			*				*				*	

Diameter	M2				M2.3				M2.5			
b	16				—				17			
t min.	1				1.2				1.1			
s	1.5				2				2			
k max.	2				2.3				2.5			
d <sub>1</sub>	3.8				4				4.5			
Length (mm)	8.8		12.9		8.8		12.9		8.8		12.9	
	Bare	Zinc										
S001	S002	S010	S011	S001	S002	S010	S011	S001	S002	S010	S011	
3			S									
4			S	*			*				*	*
5			S	*			*				*	*
6			S	*			*				S	*
8			S	*			*				S	*
10			S	S			*				S	*
12			S				*				S	*
16			S				*				S	
20			*								S	
25											S	

Order Number → 912-8.8 Bare 10x20 = S001-010-0020 | 912-8.8 Zinc 10x140 = S002-010-0140

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

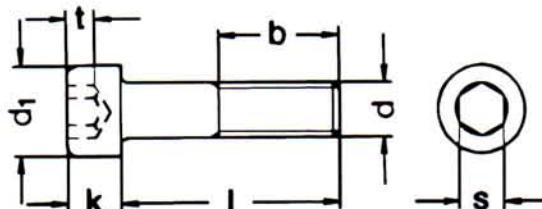
**Socket Cap Screws** DIN 912  
ISO 4762  
ANSI B18.3.1M  
8.8 Grade

**Socket Cap Screws** DIN 912  
ISO 4762  
ANSI B18.3.1M  
12.9 Grade

2

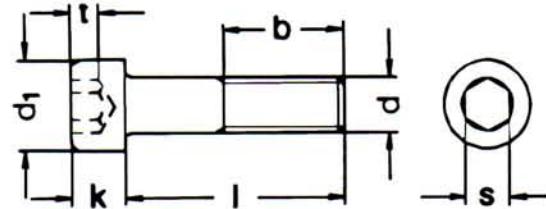
S001 — 912-8.8 Bare Steel

S002 — 912-8.8 Zinc Plated



S010 — 912-12.9 Bare Steel

S011 — 912-12.9 Zinc Plated



Diameter	M2.6				M3				M4			
b	—				18				20			
t min.	1.2				1.3				2			
s	2				2.5				3			
k max.	2.6				3				4			
d <sub>1</sub>	5				5.5				7			
Length (mm)	8.8		12.9		8.8		12.9		8.8		12.9	
	Bare	Zinc										
S001	S002	S010	S011	S001	S002	S010	S011	S001	S002	S010	S011	
4			*		*	S	S					
5			*		*	S	S	*	*	*	*	
6			*		*	*	S	S	*	S	S	
8			*		*	*	S	S	S	S	S	
10			*		*	S	S	S	S	S	S	
12			*		*	*	S	S	S	S	S	
14					*	S	S	S	S	S	S	
16			*		*	*	S	S	S	S	S	
18					*	S	S	S	S	S	S	
20					*	S	S	S	S	S	S	
22					*	S	S	*	*	S	S	
25					*	*	S	S	S	S	S	
30					S	*	S	*	S	S	S	
35					*	*	S	S	S	S	S	
40					*	*	S	S	S	S	S	
45					*	*	S	S	S	S	S	
50					S	*	S	S	S	S	S	
55					*			*	*	S		
60					*				S	S	S	
65									*	*	*	
70									*	*	S	
75										*		
80										S		
90										*		
100										*		

Order Number → 912-8.8 Bare 10x20 = S001-010-0020

| 912-8.8 Zinc 10x140 = S002-010-0140

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

# Socket Cap Screws

8.8 Grade

DIN 912  
ISO 4762  
ANSI B18.3.1M

# Socket Cap Screws

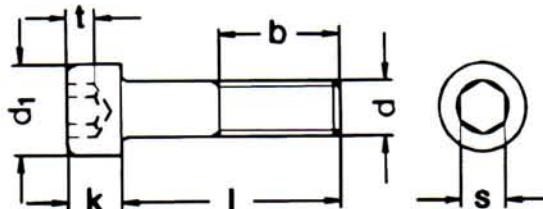
12.9 Grade

DIN 912  
ISO 4762  
ANSI B18.3.1M

2

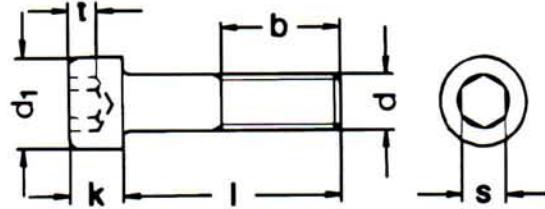
S001 — 912-8.8 Bare Steel

S002 — 912-8.8 Zinc Plated



S010 — 912-12.9 Bare Steel

S011 — 912-12.9 Zinc Plated



Diameter	M5				M6				M8			
	b	22			b	24			b	28		
t min.	2.5				3				4			
s	4				5				6			
k max.	5				6				8			
d <sub>1</sub>	8.5				10				13			
Length (mm)	8.8		12.9		8.8		12.9		8.8		12.9	
	Bare	Zinc										
S001	S002	S010	S011	S001	S002	S010	S011	S001	S002	S010	S011	
6	S	S	S		*							
8	S	S	S		S	*	S		*		S	
10	S	S	S	S	S	S	S	S	S	S	S	
12	S	S	S		S	S	S	S	S	S	S	
14	S	S	S		S	S	S	S	S	S	S	
16	S	S	S	S	S	S	S	S	S	S	S	
18	S	S	S		S	S	S		S	S	S	
20	S	S	S		S	S	S		S	S	S	
22	*	*	S		S	*	S		*	*	S	
25	S	S	S		S	S	S		S	S	S	
30	S	S	S	S	S	S	S		S	S	S	
35	S	S	S	S	S	S	S		S	S	S	
40	S	S	S		S	S	S		S	S	S	
45	S	S	S	S	S	S	S		S	S	S	
50	S	S	S		S	S	S		S	S	S	
55	S	S	S		S	S	S		S	S	S	
60	S	S	S		S	S	S		S	S	S	
65	*	*	S		S	S	S	S	S	*	S	
70	S	S	S		S	S	S		S	S	S	
75	*	*			S	S	S		S	S	S	
80	S	S	S		S	S	S		S	S	S	
85	*	*	*		*	*	*		*	S	*	
90	S	*	S		S	S	S		S	S	S	
95	*	*			*	S			*		*	
100	S	*	S		S	S	S		S	S	S	
110	*	*	S		S	*	S		S	S	S	
120	*	*	S		S	*	S		S	*	S	
130	*	*	S		*	S	S		*	*	S	

Order Number → 912-8.8 Bare 10x20 = S001-010-0020 | 912-8.8 Zinc 10x140 = S002-010-0140

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

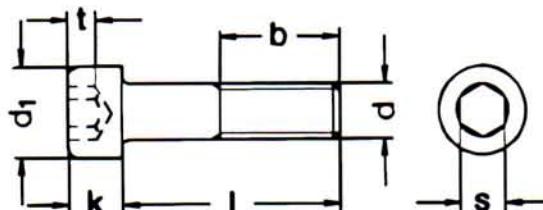
**Socket Cap Screws** DIN 912  
ISO 4762  
ANSI B18.3.1M  
8.8 Grade

**Socket Cap Screws** DIN 912  
ISO 4762  
ANSI B18.3.1M  
12.9 Grade

2

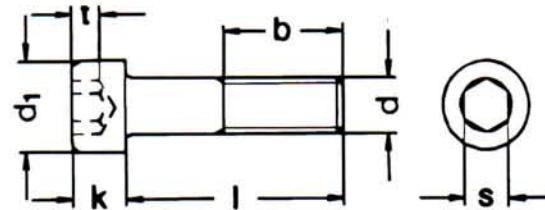
S001 — 912-8.8 Bare Steel

S002 — 912-8.8 Zinc Plated



S010 — 912-12.9 Bare Steel

S011 — 912-12.9 Zinc Plated



Diameter	M5				M6				M8			
b	22				24				28			
t min.	2.5				3				4			
s	4				5				6			
k max.	5				6				8			
d <sub>1</sub>	8.5				10				13			
Length (mm)	8.8		12.9		8.8		12.9		8.8		12.9	
	Bare	Zinc										
S001	S002	S010	S011	S001	S002	S010	S011	S001	S002	S010	S011	
140	*	*	S		*	*	S		*	*	S	
150	*	*	S		*	*	S		*	S	S	
160	*	*	*		*	*	S		*	*	S	
170	*		*		*		*		*		S	
180	*	*	*		*	*	S		*	*	S	
190			S									
200	*	*	*		*	*	S		*	*	S	
210	*				*		*		*		*	
220	*				*	*	*		*		*	
230					*		*		*		*	
240					*		*		*		*	
250					*		*		*		*	
260					*		*		*		*	
270					*		*		*		*	
280					*		*		*		*	
290					*		*		*		*	
300					*		*		*		*	

Order Number → 912-8.8 Bare 10x20 = S001-010-0020 | 912-8.8 Zinc 10x140 = S002-010-0140

Featuring premium quality YFS Brand

QS-9000 Certified  
(Full certification available on request)

Premium quality product at commodity price levels

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

## Socket Cap Screws

8.8 Grade

DIN 912  
ISO 4762  
ANSI B18.3.1M

## Socket Cap Screws

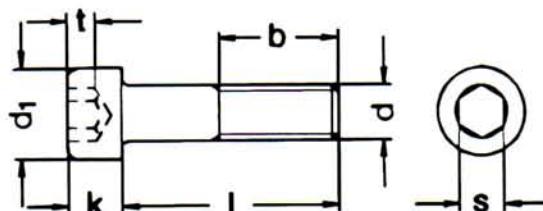
12.9 Grade

DIN 912  
ISO 4762  
ANSI B18.3.1M

2

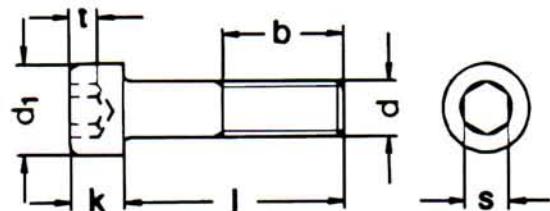
S001 — 912-8.8 Bare Steel

S002 — 912-8.8 Zinc Plated



S010 — 912-12.9 Bare Steel

S011 — 912-12.9 Zinc Plated



Diameter	M10				M12				M14			
	b	32				36				40		
t min.	5				6				7			
s	8				10				12			
k max.	10				12				14			
d <sub>1</sub>	16				18				21			
Length (mm)	8.8		12.9		8.8		12.9		8.8		12.9	
	Bare	Zinc										
S001	S002	S010	S011	S001	S002	S010	S011	S001	S002	S010	S011	
10	*		S									
12	*	*	S									
14	*	*	*									
16	S	S	S	S	*	*	S					
18	*	*	*		*	*	*					
20	S	S	S		S	S	S		*	*	*	
22	*	*	S		*	*	*				*	*
25	S	S	S	S	S	S	S		S	*	*	
30	S	S	S		S	S	S		S	*	*	
35	S	S	S		S	S	S		S	S	*	
40	S	S	S		S	S	S		S	S	*	
45	S	S	S		S	S	S		S	S	*	
50	S	S	S		S	S	S		S	*	*	
55	S	S	S		S	S	S		S	S	*	
60	S	S	S		S	S	S		S	S	*	
65	S	S	S		S	*	S		S	S	*	
70	S	S	S		S	S	S		S	S	*	
75	S	S	S		S	*	S		*	*	*	
80	S	S	S		S	S	S		S	S	S	
85	*	*	*		*		*		*			
90	S	S	S		S	S	S		S	S	S	
95	*		*		*		*		*		*	
100	S	S	S		S	S	S		S	S	S	
110	S	S	S		S	*	S		*	*	S	
120	*	S	S		*	*	S		*	*	S	
130	*	S	S		*	*	S		*	S	S	
140	*	S	S		*	*	S		*	*	S	
150	*	*	S		*	*	S		*	*	*	

Order Number → 912-8.8 Bare 10x20 = S001-010-0020

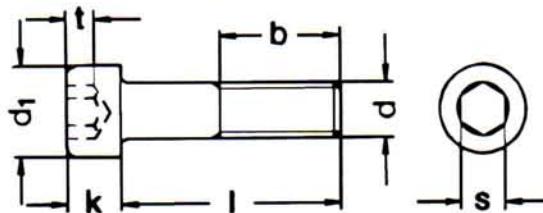
912-8.8 Zinc 10x140 = S002-010-0140

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

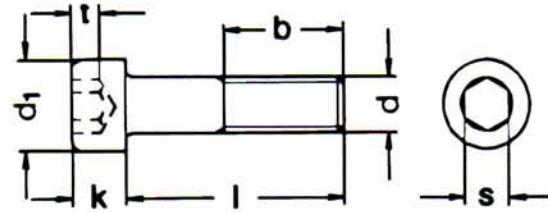
**Socket Cap Screws** DIN 912  
ISO 4762  
ANSI B18.3.1M  
8.8 Grade

S001 — 912-8.8 Bare Steel  
S002 — 912-8.8 Zinc Plated



**Socket Cap Screws** DIN 912  
ISO 4762  
ANSI B18.3.1M  
12.9 Grade

S010 — 912-12.9 Bare Steel  
S011 — 912-12.9 Zinc Plated



Diameter	M10				M12				M14			
	b	32			b	36			b	40		
t min.	5			t	6			t	7			
s	8			s	10			s	12			
k max.	10			k	12			k	14			
d <sub>1</sub>	16			d <sub>1</sub>	18			d <sub>1</sub>	21			
Length (mm)	8.8		12.9		8.8		12.9		8.8		12.9	
	Bare	Zinc	Bare	Zinc	Bare	Zinc	Bare	Zinc	Bare	Zinc	Bare	Zinc
	S001	S002	S010	S011	S001	S002	S010	S011	S001	S002	S010	S011
160	*	*	S		*	*	S		*	*	S	
170	*		S		*		*		*		*	
180	*	*	S		*	*	S		*	*	S	
190	*	*	*		*		S		*		*	
200	*	*	S		*	*	S		*	*	S	
210	*	*	*		*		*		*		*	
220	*	*	S		*		S		*		*	
230	*	*	*		*		*		*		*	
240	*	*	*		*		S		*		*	
250	*		S		*		*		*		*	
260	*	*	*		*		S		*		*	
270	*		*		*		*		*		*	
280	*	*	S		*		*		*		*	
290	*		*		*		*		*		*	
300	*	*	*		*		*		*		*	
310	*		*		*		*		*		*	
320	*		*		*		*		*		*	
330	*		*		*		*		*		*	
340	*			*	*							
360					*							
380					*							
400					*							

Order Number → 912-8.8 Bare 10x20 = S001-010-0020 | 912-8.8 Zinc 10x140 = S002-010-0140

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

# Socket Cap Screws

**DIN 912**  
ISO 4762  
ANSI B18.3.1M

8.8 Grade

# Socket Cap Screws

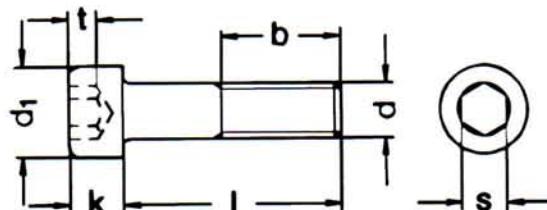
**DIN 912**  
ISO 4762  
ANSI B18.3.1M

12.9 Grade

2

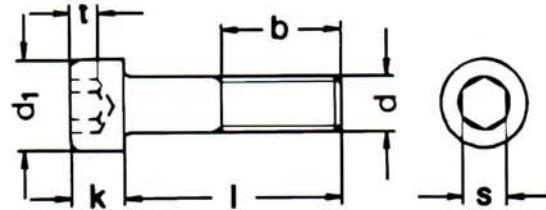
S001 — 912-8.8 Bare Steel

S002 — 912-8.8 Zinc Plated



S010 — 912-12.9 Bare Steel

S011 — 912-12.9 Zinc Plated



Diameter	M16				M18				M20				
	b	44	b	48	b	52	b		b	52	b		
t min.	8	t min.	9	t min.	10	t min.		t min.		t min. <td></td> <th>t min.<td></td></th>		t min. <td></td>	
s	14	s	14	s	14	s		s		s		s	
k max.	16	k max.	18	k max.	20	k max.		k max.		k max. <td></td> <th>k max.<td></td></th>		k max. <td></td>	
d <sub>1</sub>	24	d <sub>1</sub>	27	d <sub>1</sub>	30	d <sub>1</sub>		d <sub>1</sub>		d <sub>1</sub>		d <sub>1</sub>	
Length (mm)	8.8		12.9		8.8		12.9		8.8		12.9		
	Bare	Zinc	Bare	Zinc									
S001	S002	S010	S011	S001	S002	S010	S011	S001	S002	S010	S011		
20	S	*	S										
25	S	*	S										
30	S	S	S		*		*		S	*	*		
35	S	*	S		*		*		*	*	S		
40	S	S	S		*		S		S	S	S		
45	S	S	S		*		*		S	*	S		
50	S	*	S		*		S		S	S	S		
55	S	S	S		*		*		S	*	S		
60	S	*	S		*		S		S	*	S		
65	*	S	S		*		*		S	*	S		
70	S	S	S		*		S		*	*	S		
75	*	*	S		*		*		*	*	S		
80	S	S	S		*		S		S	*	S		
85	*		*		*				*				
90	S	S	S		*		S		S	*	S		
95	*		*								*		
100	S	*	S		*		S		S	S	S		
110	*	*	S		*		S		*	*	S		
120	*	*	S		*		S		*	*	S		
130	*	*	S		*		*		*	*	S		
140	*	*	S		*		S		*	*	S		
150	*	*	S		*		S		*	*	S		
160	*	S	S		*		S		*	*	S		
170	*	*	S		*		*		*	*	*		
180	*	*	S		*		*		*	*	S		
190	*	*	S		*		*		*	*	*		
200	*	*	S		*		*		*	*	S		
210	*	*	S		*		*		*	*	*		

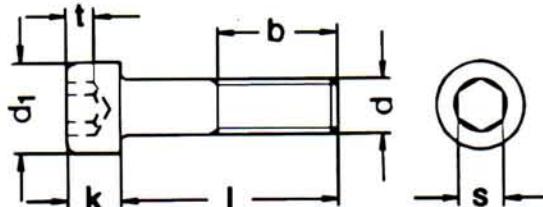
Order Number → 912-8.8 Bare 10x20 = S001-010-0020 | 912-8.8 Zinc 10x140 = S002-010-0140

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

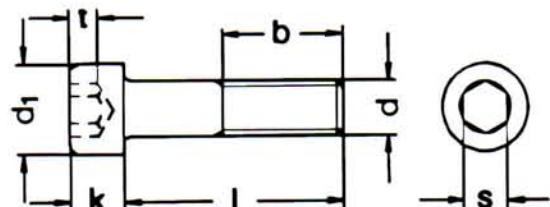
**Socket Cap Screws** DIN 912  
ISO 4762  
ANSI B18.3.1M  
8.8 Grade

S001 — 912-8.8 Bare Steel  
S002 — 912-8.8 Zinc Plated



**Socket Cap Screws** DIN 912  
ISO 4762  
ANSI B18.3.1M  
12.9 Grade

S010 — 912-12.9 Bare Steel  
S011 — 912-12.9 Zinc Plated



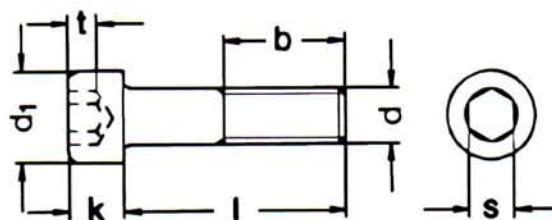
Diameter	M16				M18				M20			
b	44				48				52			
t min.	8				9				10			
s	14				14				17			
k max.	16				18				20			
d <sub>1</sub>	24				27				30			
Length (mm)	8.8		12.9		8.8		12.9		8.8		12.9	
	Bare	Zinc										
	S001	S002	S010	S011	S001	S002	S010	S011	S001	S002	S010	S011
220	*	*	S		*		*		*	*	S	
230	*	*	S		*		*		*	*	S	
240	*	*	S		*		*		*	*	S	
250	*		*		*		*		*		*	
260	*	*	S				*		*	*	S	
270	*		*						*		*	
280	*	*	S				*		*	*	S	
290	*		*						*		*	
300	*	*	S				*		*	*	S	
320	*		S						*		*	
330	*		*						*		S	
340	*		S						*		S	
350	*		*						*		*	
360	*		S						*		S	
380	*		S						*		S	
400	*		S						*		S	
420	*		*						*		*	
440	*								*		*	
460	*								*		*	
480	*								*		*	
500	*								*		*	
520	*								*			
540	*								*			
560	*								*			
580	*								*			
600	*								*			

Order Number → 912-8.8 Bare 10x20 = S001-010-0020 | 912-8.8 Zinc 10x140 = S002-010-0140

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

**Socket Cap Screws** DIN 912  
 ISO 4762  
 ANSI B18.3.1M  
 12.9 Grade



S010—912-12.9 Bare Steel

Diameter	M22	M24	M27	M30	M33	M36
<b>b</b>	56	60	66	72	78	84
<b>t min.</b>	11	12	13.5	15.5	18	19
<b>s</b>	17	19	19	22	24	27
<b>k max.</b>	22	24	27	30	33	36
<b>d<sub>1</sub></b>	33	36	40	45	50	54
Length (mm)	<b>S010</b>					
40	*	*				
45	*	S				
50	S	S	*	*		
55	*	S	*	*		
60	S	S	*	S		
65	*	S	*	*		
70	S	S	*	S	*	
75	*	S	*			
80	S	S	S	S	*	
90	S	S	*	S	*	S
100	S	S	S	S	*	S
110	S	S	*	S	*	S
120	S	S	S	S	*	S
130	S	S	*	S	*	S
140	S	S	S	S	*	S
150	*	S	M39, M42, M45 and M48	S	*	S
160	S	S	*	S	*	S
170	*	*	*	*	*	*
180	*	S	*	S	*	S
190	*	*	*	*	*	
200	S	S	*	S	*	S
210	*	*	*	*		
220	*	S	*	S	*	S
230	*	*	*	*		
240	*	S	*	S	*	S
250		S	*	S		
260	*	S	*	S	*	S
270		*		*		
280	*	S	*	S	*	S
290		*		*		
300	*	S	*	S	*	S
320		S		S		S
340		S		S		S
360		S		S		S
380		S		S		S
400		S		S		S
Lengths between 420mm - 600mm available upon request						

Order Number → 912-12.9 Bare 10x20 = S010-010-0020 | 912-12.9 Bare 10x140 = S010-010-0140

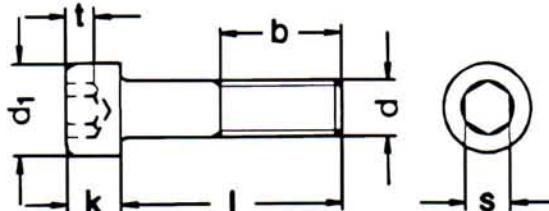
Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

# Socket Cap Screws

DIN 912  
ISO 4762  
ANSI B18.3.1M

8.8 Grade



2

## Fine Thread

S004 — 912-8.8 Bare Steel

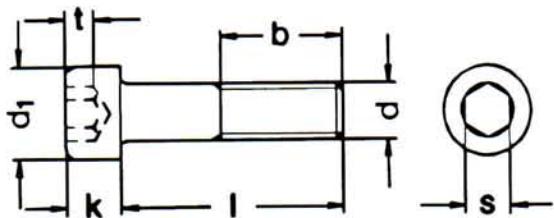
Diameter	M8x1	M10x1.25	M12x1.25	M14x1.5	M16x1.5	M18x1.5	M20x1.5	M22x1.5	M24x2
b	28	32	36	40	44	48	52	56	60
t min.	4	5	6	7	8	9	10	11	12
s	6	8	10	12	14	14	17	17	19
k max.	8	10	12	14	16	18	20	22	24
d <sub>1</sub>	13	16	18	21	24	27	30	33	36
Length (mm)	S004								
16	*	*							
18	*	*							
20	*	S	*						
22	*	*	*						
25	*	S	S		*				
30	S	S	S		*	*			
35	*	*	*		*	*			
40	*	S	S	S	S	*	*		
45	*	*	*	*	*	*	*	*	
50	*	*	S	*	S	*	*	*	*
55	*	*	*	*	*	*	*	*	*
60	*	S	S	*	S	*	*	*	*
65	*	*	*	*	*	*	*	*	*
70	*	*	*	*	*	*	*	*	*
75	*	*	*	*	*	*	*	*	*
80	*	S	*	*	*	*	*	*	*
90	*	*	*	*	*	*	*	*	*
100	*	*	*	*	*	*	*	*	*
110	*	*	*	*	*	*	*	*	*
120		*	*	*	*	*	*	*	*
130	*	*	*	*	*	*	*	*	*
140		*	*	*	*	*	*	*	*
150		*	*	*	*	*	*	*	*
160		*	*	*	*	*	*	*	*
170		*		*	*	*	*	*	*
180				*	*	*	*	*	*
190					*	*	*	*	*
200					*	*	*	*	*

Order Number → 912-8.8 Bare 10x1.25x20 = S004-010-0020 | 912-8.8 Bare 10x1.25x140 = S004-010-0140

S → Normally Stocked | \* → Call for Availability

# Socket Cap Screws DIN 912

ISO 4762  
ANSI B18.3.1M  
10.9 Grade



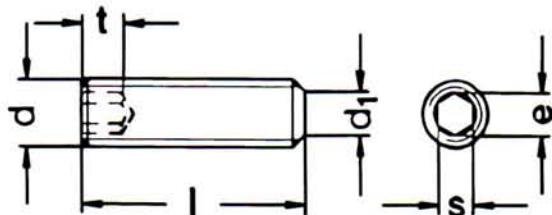
S006 — 912-10.9 Bare Steel

Diameter	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30	M36
b	18	20	22	24	28	32	36	40	44	48	52	56	60	66	72	84
t min.	1.3	2	2.5	3	4	5	6	7	8	9	10	11	12	13.5	15.5	19
s	2.5	3	4	5	6	8	10	12	14	14	14	17	17	19	22	27
k max.	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30	36
d <sub>1</sub>	5.5	7	8.5	10	13	16	18	21	24	27	30	33	36	40	45	54
Length (mm)	S006															
6	*	*	*													
8	*	*	*	*												
10	*	*	*	*	*											
12	*	*	*	*	*											
14	*	*	*	*	*											
16	*	*	*	*	*	*										
18	*	*	*	*	*	*	*									
20	*	*	*	*	*	*	*	*								
22	*	*	*	*	*	*	*									
25	*	*	*	*	*	*	*	*	*	*						
28	*	*	*	*	*	*	*			*						
30	*	*	*	*	*	*	*	*	*	*						
35	*	*	*	*	*	*	*	*	*	*	*					
40	*	*	*	*	*	*	*	*	*	*	*					
45	*	*	*	*	*	*	*	*	*	*	*					
50		*	*	*	*	*	*	*	*	*	*					*
55		*	*	*	*	*	*	*	*	*	*				*	
60		*	*	*	*	*	*	*	*	*	*				*	
65		*	*	*	*	*	*	*	*	*	*				*	
70		*	*	*	*	*	*	*	*	*	*				*	
75		*	*	*	*	*	*	*	*	*	*				*	
80		*	*	*	*	*	*	*	*	*	*				*	
85		*	*	*	*	*										
90		*	*	*	*	*	*	*	*	*	*				*	
100		*	*	*	*	*	*	*	*	*	*				*	
110		*	*	*	*	*	*	*	*	*	*				*	
120		*	*	*	*	*	*	*	*	*	*				*	
130		*	*	*	*	*	*	*	*	*	*				*	
140		*	*	*	*	*	*	*	*	*	*				*	
150			*	*	*	*	*	*	*	*	*				*	
160				*	*	*	*	*	*	*	*				*	
170					*	*	*	*	*	*	*				*	
180					*	*	*	*	*	*	*				*	
190					*	*	*	*	*	*	*				*	
200					*	*	*	*	*	*	*				*	
Lengths between 210mm - 520mm available upon request																

Order Number → 912-10.9 Bare 10x20 = S006-010-0020 | 912-10.9 Bare 10x140 = S006-010-0140

S → Normally Stocked | \* → Call for Availability

**Socket Set Screws** DIN 913  
ISO 4026  
ANSI B18.3.6M  
45H



2

**Flat Point**

S030 — 913-45H Bare Steel

Diameter	M1.4	M1.6	M1.7	M2	M2.3	M2.5	M2.6	M3	M4	M5
d <sub>1</sub> max.	0.7	0.8	—	1	—	1.5	—	2	2.5	3.5
t min.	0.6	0.7	1.6	0.8	1.7	1.2	2	1.2	1.5	2
e	0.803	0.803	—	1.003	—	1.427	—	1.73	2.3	2.87
s	0.7	0.7	0.7	0.9	0.9	1.3	1.3	1.5	2	2.5
Length (mm)	S030									
2	*	*	*	*	*	*	*			
2.5	*	*	*	*	*	*	*			
3	*	*	*	*	*	*	*	S		
4	*	*	*	*	*	*	*	S	S	*
5	*	*	*	*	*	*	*	S	S	S
6				*	*	*	*	S	S	S
8				*	*	*	*	S	S	S
10				*	*	*	*	S	S	S
12					*			S	S	S
14								*	*	*
16								S	S	S
18								*	*	*
20								S	S	S
22								*	*	*
25								*	*	*
30							*	*	*	*
35								*	*	*
40								*	*	*
45									*	
50										*

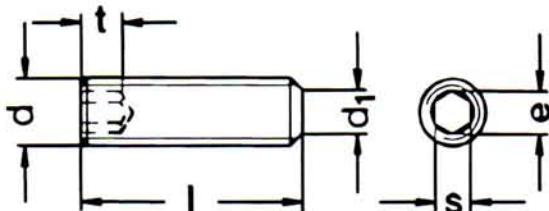
Order Number → 913-45H 10x20 = S030-010-0020 | 913-45H 10x100 = S030-010-0100

S → Normally Stocked | \* → Call for Availability

# Socket Set Screws

**45H**

DIN 913  
ISO 4026  
ANSI B18.3.6M



## Flat Point

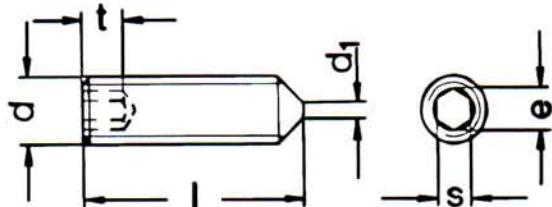
S030 — 913-45H Bare Steel

Diameter	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
d <sub>1</sub> max.	4	5.5	7	8.5	10	12	13	15	17	18
t min.	2	3	4	4.8	5.6	6.4	7.2	8	9	10
e	3.44	4.58	5.72	6.86	6.86	9.15	11.43	11.43	13.72	13.72
s	3	4	5	6	6	8	10	10	12	12
Length (mm)	S030									
5	S									
6	S	S								
8	S	S	S							
10	S	S	S	*						
12	S	S	S	S						
14	*	S	*	*	*					
16	S	S	S	S	*	*				
18	*	*	*	*	*	*	*			
20	S	S	S	S	*	S	*	*		
22	*	*	*	*	*	*	*	*		
25	S	S	S	S	*	*	*	*	*	*
30	S	S	S	S	*	*	*	*	*	*
35	S	S	*	*	*	*	*	*	*	*
40	S	*	S	S	*	*	*	*	*	*
45	*	*	*	*	*	*	*	*	*	*
50	*	*	S	S	*	*	*	*	*	*
55	*	*	*	*	*	*	*	*	*	
60	*	*	*	*	*	S	*	*	*	*
65		*	*	*	*	*	*	*		
70		*	*	*	*	*	*	*	*	*
80		*	*	*		*	*	*	*	*
90			*	*		*		*		*
100			*	*		S		*		*

Order Number → 913-45H 10x20 = S030-010-0020 | 913-45H 10x100 = S030-010-0100

**S** → Normally Stocked | \* → Call for Availability

**Socket Set Screws** DIN 914  
ISO 4027  
ANSI B18.3.6M  
45H



2

**Cone Point**

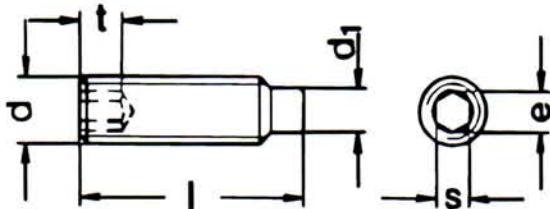
S031 — 914-45H

Diameter	M2.5	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
$d_1$ max.	—	—	—	—	1.5	2	2.5	3	4	4	5	5	6	6
t min.	1.2	1.2	1.5	2	2	3	4	4.5	5.6	6.4	7.2	8	9	10
e	1.427	1.73	2.3	2.87	3.44	4.58	5.72	6.86	6.86	9.15	11.43	11.43	13.72	13.72
s	1.3	1.5	2	2.5	3	4	5	6	6	8	10	10	12	12
Length (mm)	S031													
3	*	S												
4	*	S	S											
5	*	S	S	S	*									
6	*	*	S	S	S	*								
8	*	S	S	S	S	S	*							
10	*	S	S	S	S	S	S							
12	*	*	*	S	S	*	*	S						
14	*	*	*	*	*	*	*	*	*					
16	*	S	S	S	S	S	S	S	*	*				
18	*	*	*	*	*	*	*	*	*	*	*			
20	*	*	S	S	S	S	S	*	*	*	*	*		
22	*	*	*	*	*	*	*	*	*	*	*	*		
25	*	*	*	*	S	S	*	*	*	*	*	*	*	*
30	*	*	*	*	S	S	S	*	*	*	*	*	*	*
35	*	*	*	*	*	S	*	*	*	*	*	*	*	*
40			*	*	*	S	S	*	*	*	*	*	*	*
45				*	*	*	*	*	*	*	*	*	*	*
50				*	*	*	*	S	*	*	*	*	*	*
55					*	*	*	*	*	*	*	*		
60					*	*	*	*	*	*	*	*		
65					*	*	*	*	*	*	*	*		
70						*	*	*	*	*	*	*	*	*
80						*	*	*	*	*	*	*		
90														

Order Number → 914-45H 10x20 = S031-010-0020

**S** → Normally Stocked | \* → Call for Availability

**Socket Set Screws** DIN 915  
ISO 4028  
ANSI B18.3.6M  
45H



2

**Dog Point**

S032 — 915-45H

Diameter	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
$d_1$ max.	2	2.5	3.5	4	5.5	7	8.5	10	12	13	15	17	18
t min.	1.2	1.5	2	2	3	4	4.8	5.6	6.4	7.2	8	9	10
e	1.73	2.3	2.87	3.44	4.58	5.72	6.86	6.86	9.15	11.43	11.43	13.72	13.72
s	1.5	2	2.5	3	4	5	6	6	8	10	10	12	12
Length (mm)	S032												
3	S												
4	S	S											
5	S	S	S										
6	S	S	S	S									
8	S	S	S	S	S								
10	S	S	S	S	S	S							
12	*	*	S	S	S	S	S						
14	*	*	*	*	*	*	*	*					
16	*	*	S	S	S	S	S	*	*				
18	*	*	*	*	*	*	*	*	*				
20	*	*	*	S	S	S	S	*	S	*	*		
22	*	*	*	*	*	*	*	*	*	*	*		
25	*	*	*	*	S	S	S	*	*	*	*	*	*
30	*	*	*	*	S	*	S	*	*	*	*	*	*
35	*	*	*	*	S	S	S	*	*	*	*	*	*
40		*	*	*	S	*	S	*	*	*	*	*	*
45			*	*	*	S	S	*	S	*	*	*	*
50			*	*	*	S	*	S	*	S	*	*	*
55					*	*	*	*	*	*	*		
60				*	*	*	S	*	*	*	S	*	*
65					*	*	*	*	*	*	*		
70					*	*	*	*	*	*	S	*	*
80					*	*	S	*	*	*	S	S	*
90							S				S		*
100													*

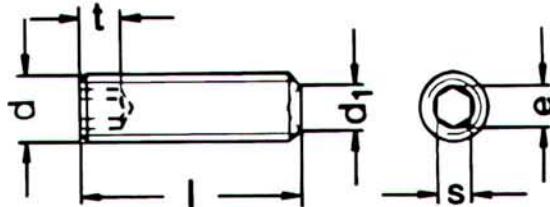
Order Number → 915-45H 10x20 = S032-010-0020 | 915-45H 24x100 = S032-024-0100

**S** → Normally Stocked | \* → Call for Availability

# Socket Set Screws

45H

DIN 916  
ISO 4029  
ANSI B18.3.6M



2

## Cup Point

S033 — 916-45H

Diameter	M1.4	M1.6	M1.7	M2	M2.3	M2.5	M2.6	M3	M4	M5
d <sub>1</sub> max.	0.7	0.8	0.8	1	1.1	1.2	1.2	1.4	2	2.5
t min.	0.6	0.7	0.7	0.8	0.9	1.2	1.3	1.2	1.5	2
e	0.803	0.803	—	1.003	—	1.427	—	1.73	2.3	2.87
s	0.7	0.7	—	0.9	—	1.3	—	1.5	2	2.5
Length (mm)	S033									
2.5	*	*	*	*	*					
3	*	*	*	S	*	S	*	S	S	
4	*	*	*	S	*	S	*	S	S	
5	*	*	*	S	*	S	*	S	S	S
6				S	*	S	*	S	S	S
8				S	*	S	*	S	S	S
10				S	*	S	*	S	S	S
12				*		*		S	S	S
14								S	S	S
16								S	S	S
18								*	*	*
20								S	S	S
22								*	*	*
25								S	S	S
30								*	S	S
35									S	S
40									*	S
45										S
50										*

Order Number → 916-45H 10x20 = S033-010-0020 | 916-45H 10x100 = S033-010-0100

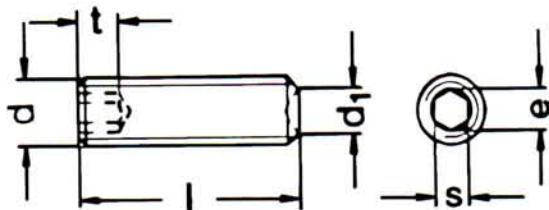
Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

# Socket Set Screws

**45H**

**DIN 916**  
ISO 4029  
ANSI B18.3.6M



**2**

## Cup Point

S033 — 916-45H

Diameter	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
d <sub>1</sub> max.	3	5	6	8	9	10	12	14	16	16
t min.	2	3	4	4.8	5.6	6.4	7.2	8	9	10
e	3.44	4.58	5.72	6.86	6.86	9.15	11.43	11.43	13.72	13.72
s	3	4	5	6	6	8	10	10	12	12
Length (mm)	S033									
5	S									
6	S	S								
8	S	S	S							
10	S	S	S	S						
12	S	S	S	S						
14	S	S	S	S	S					
15										
16	S	S	S	S	S	S				
18	S	*	*	*	*	*	*			
20	S	S	S	S	S	S	*	S		
22	*	*	*		*	*	*	*		
25	S	S	S	S	*	S	*	S	*	S
30	S	S	S	S	*	S	*	S	*	S
35	S	S	S	S	S	S	*	S	*	S
40	S	S	S	S	S	S	*	S	*	S
45	S	S	S	S	*	S	*	S	*	S
50	S	S	S	S	*	S	*	S	*	*
55	*	*	*	*	*	*	*	*	*	
60	*	S	S	S	*	S	*	S	*	*
65	*	*	*	*	*	*	*	S		
70	*	*	*	*	*	S	*	*	*	*
80		*	*	S		S		*		*
90			*	*		*		*		*
100			*	*		*		*		*

Order Number → 916-45H 10x20 = S033-010-0020 | 916-45H 10x100 = S033-010-0100

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

Featuring premium quality Gehawe & Wuro Brands

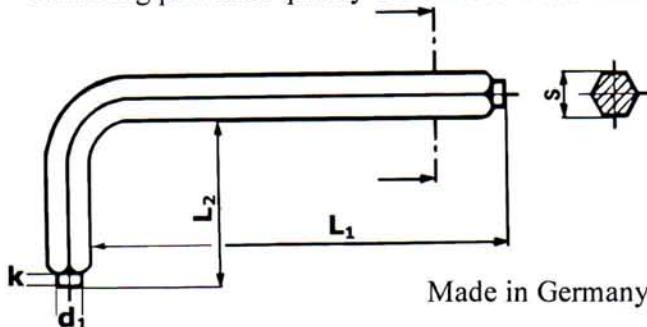
## Socket Keys

DIN 6911

Tool Steel

### With Guide Point

S0K5 — 6911 Chrome Vanadium



2

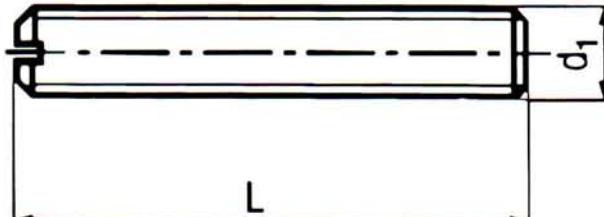
Made in Germany

Key Size	For DIN 6912	$d_1$	k	L <sub>1</sub>	L <sub>2</sub>	Guide Point	FMP Order #
						S0K5	
3	M4	2	2.8	63	20	S	S0K5-003-0000
4	M5	2.5	3.5	70	25	S	S0K5-004-0000
5	M6	3	4	80	28	S	S0K5-005-0000
6	M8	4	5	90	32	S	S0K5-006-0000
8	M10	5	6.5	100	36	S	S0K5-008-0000
10	M12	6	7.5	112	40	S	S0K5-010-0000
12	M14	7	8.5	125	45	S	S0K5-012-0000
14	M16/M18	8	10	140	56	S	S0K5-014-0000
17	M20/M22	10	12	160	63	S	S0K5-017-0000
19	—	12	14	180	70	*	S0K5-019-0000
22	—	15	17.5	200	80	*	S0K5-022-0000
24	—	—	—	224	90	*	S0K5-024-0000
27	—	—	—	250	100	*	S0K5-027-0000

### Slotted Set Screws DIN 551

ISO 4766

14H / 22H



### Flat Point Chamfered

S034 — 551 Bare Steel

S035 — 551 Zinc Plated

$d_1$	n min.	t min.	Lengths (mm)	
			Bare	Zinc
			S034	S035
M1	0.2	0.4	2-6	
M1.2	0.2	0.4	2-6	
M1.4	0.2	0.48	2-8	
M1.6	0.25	0.56	2-10	
M2	0.25	0.64		2-12
M2.5	0.4	0.72		2-12
M3	0.4	0.8		3-40
M3.5	0.5	0.96		4-12
M4	0.6	1.12		3-60
M5	0.8	1.28		4-80
M6	1	1.6		4-100
M8	1.2	2		6-100
M10	1.6	2.4		6-100
M12	2	2.8		8-100
M16	2.5	4		16-60

\*Please contact us for availability\*

S → Normally Stocked | \* → Call for Availability

# Socket Cap Screws DIN 6912

8.8 Grade

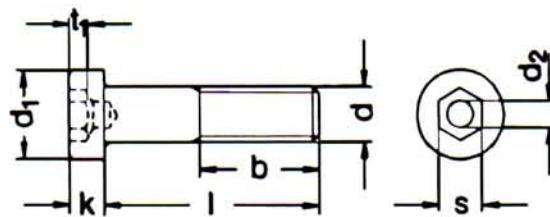
\*With Guide Point

**2**

## Low Head

S020 — 6912-8.8 Bare Steel

S022 — 6912-8.8 Zinc Plated



Diameter	M4		M5		M6		M8		M10		M12	
b	14		16		18		22		26		30	
d <sub>2</sub> min.	2		2.5		3		4		5		6	
t <sub>1</sub> min.	1.48		1.88		2.38		2.88		3.35		3.85	
s	3		4		5		6		8		10	
k max.	2.8		3.5		4		5		6.5		7.5	
d <sub>1</sub> max.	7		8.5		10		13		16		18	
Length (mm)	Bare	Zinc										
	S020	S022										
6	S		*									
8	S		*	*	*							
10	S	*	S	S	S	*	*	*				
12	S	*	S	*	S	*	S	*	*			
14	*		*		*		*					
16	S	*	S	S	S	*	S	*	*	*	*	
18	*		S		*		S		*		*	
20	S	*	S	*	S	*	S	*	S	*	S	*
22		*		*	*		*		*		*	
25	*	*	S	*	S	*	S	*	S	*	S	*
30	*	*	S	*	S	*	S	*	S	*	S	*
35	*	*	*	*	S	*	S	*	S	*	S	*
40	*	*	*	*	S	*	S	*	S	*	S	*
45		*		*	S	*	S	*	S	*	S	*
50	*	*	*	*	S	*	S	*	S	*	S	*
55			*		*		*		*		S	
60			*		*		*		*		S	
65					*		*		*		*	
70					*	*	*		*		S	*
75					*		*		*		*	
80					*		*		*		*	
90					*		*		*		*	
100					*		*		*		*	
120					*		*		*		S	
140									*		*	
160									*		*	
180									*		*	
200									*		*	

Order Number → 6912-8.8 Bare 10x20 = S020-010-0020 | 6912-8.8 Zinc 12x100 = S022-012-0100

\*There is always a short unthreaded portion to accomodate the pilot recess. If a fully threaded fastener is required please see DIN 7984 low head socket cap screws.

**S** → Normally Stocked | \* → Call for Availability

# Socket Cap Screws DIN 6912

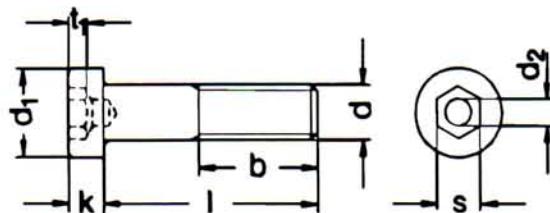
8.8 Grade

\*With Guide Point

## Low Head

S020 — 6912-8.8 Bare Steel

S022 — 6912-8.8 Zinc Plated



2

Diameter	M14		M16		M20		M24		M30	
b	34		38		46		54		66	
d <sub>2</sub> min.	7		8		10		12		15	
t <sub>1</sub> min.	4.35		5.35		6.32		6.82		8.82	
s	12		14		17		19		22	
k max.	8.5		10		12		14		17.5	
d <sub>1</sub> max.	21		24		30		36		45	
Length (mm)	Bare	Zinc								
	S020	S022								
25	*			*						
30	*			S	S	*				
35	*			S	*	*				
40	*			S	*	*	*			
45	*			S	*	*	*			
50	*			S	*	*	*	*		*
55				*		*				
60	*			S	*	*	*	*		*
65				*		*				
70	*			S	*	*	*	*		*
75	*			*		*				
80	*			S	*	*	*	*		*
90	*			S		*	*	*		*
100	*			*		*	*	*		*
110				*		*		*		*
120				*		*		*		*
130				*		*		*		*
140				*		*		*		*
150				*		*		*		
160				*		*				
180				*		*				
200				*		*				

Order Number → 6912-8.8 Bare 10x20 = S020-010-0020 | 6912-8.8 Zinc 12x100 = S022-012-0100

\*There is always a short unthreaded portion to accomodate the pilot recess. If a fully threaded fastener is required please see DIN 7984 low head socket cap screws.

S → Normally Stocked | \* → Call for Availability

# Socket Cap Screws DIN 7984

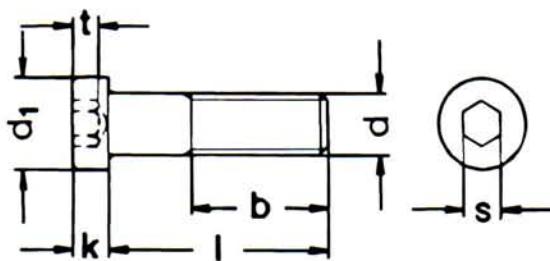
8.8 Grade

2

## Low Head

S021 — 7984-8.8 Bare Steel

S023 — 7984-8.8 Zinc Plated



Diameter	M3		M4		M5		M6		M8	
b	12		14		16		18		22	
t	1.5		2.3		2.7		3		3.8	
s	2		2.5		3		4		5	
k	2		2.8		3.5		4		5	
d <sub>1</sub>	5.5		7		8.5		10		13	
Length (mm)	Bare	Zinc								
	S021	S023								
5	*									
6	*		S		S		*			
8	*		S	*	S	*	S	*	S	
10	*		S	*	S	*	S	*	S	
12	*		S	*	S	*	S	*	S	*
14	*		*	*	*		*		*	*
16	*		S	*	S	*	S	*	S	*
18	*		*		*		*		*	
20	*		S	*	S	*	S	*	S	*
22			*		*		*		*	
25	*		S	*	S	*	S	*	S	*
30	*		S	*	S	*	S	*	*	*
35			*		*	*	S	*	S	*
40			*		S	*	S	*	S	*
45			*		*		*	*	S	*
50					*		S	*	S	*
55							*		*	*
60							*		S	*
65							*			*
70							*		*	*
75									S	
80							*		*	
90							*		*	
100							*		*	

Order Number → 7984-8.8 Bare 10x20 = S021-010-0020 | 7984-8.8 Bare 10x100 = S021-010-0100

**S** → Normally Stocked | \* → Call for Availability

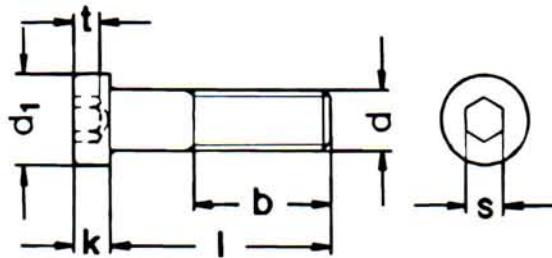
# Socket Cap Screws DIN 7984

8.8 Grade

## Low Head

S021 — 7984-8.8 Bare Steel

S023 — 7984-8.8 Zinc Plated



2

Diameter	M10		M12		M16		M20		M24	
b	26		30		38		46		54	
t	4.5		5		5.5		7.5		8	
s	7		8		12		14		17	
k	6		7		9		11		13	
d <sub>1</sub>	16		18		24		30		36	
Length (mm)	Bare	Zinc								
	S021	S023								
16	*	*								
20	S	*	S	*						
25	S	*	S	*	*					
30	S	*	S	*	S		*			
35	S	*	S	*	*		*			
40	S	*	S	*	*		*			*
45	S	*	S	*	*		*			
50	S	*	S	*	*		*			*
55	*	*	*		*		*			*
60	*	*	S	*	*		*			*
70	*	*	*	*	*		*			*
80	*	*	*	*	*		S			*
90	*		*		*		*			*
100	*		*		*		*			*
110	*		*		*		*			*
120	*		*		*		*			*
130					*					
140					*					

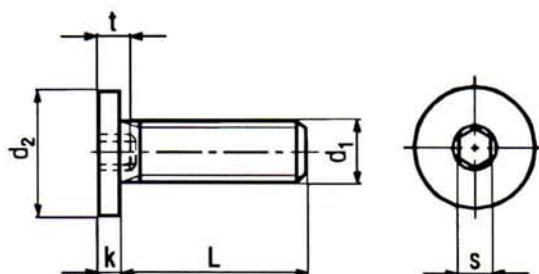
Order Number → 7984-8.8 Bare 10x20 = S021-010-0020 | 7984-8.8 Bare 10x100 = S021-010-0100

## Socket Cap Screws

≈10.9 Grade

### Special Low Head

S019 — Bare Steel



d <sub>1</sub>	d <sub>2</sub>	k	s	t max.	Lengths (mm)
M4	8	1.5	2	2.5	6-10
M5	9	1.5	3	3	6-25
M6	10	1.5	3	4	6-30
M8	13	1.5	4	5	8-40
M10	16	1.5	5	6	10-40

\*Please contact us for availability\*

S → Normally Stocked | \* → Call for Availability

# Shoulder Bolts

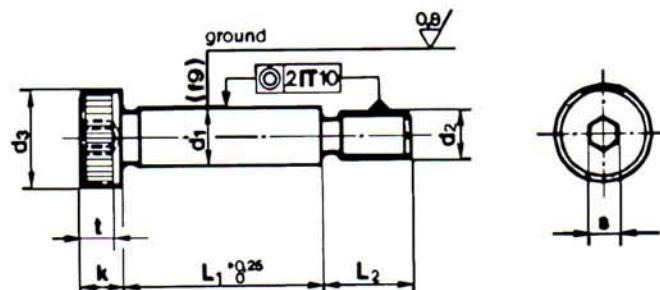
12.9 Grade

2

## Heat Treated Alloy Steel

S055 — 7379-12.9

ISO 7379  
ANSI B18.3.3M



Diameter (d <sub>1</sub> )	M6	M8	M10	M12	M16	M20	M24
max.	5.990	7.987	9.987	11.984	15.984	19.980	23.980
min.	5.960	7.951	9.951	11.941	15.941	19.928	23.928
d <sub>2</sub>	M5	M6	M8	M10	M12	M16	M20
2IT10	0.12	0.12	0.12	0.12	0.14	0.14	0.17
d <sub>3</sub>	10	13	16	18	24	30	36
k max.	4.5	5.5	7	8	10	14	16
t min.	2.4	3.3	4.2	4.9	6.6	8.8	10
L <sub>2</sub>	9.5	11	13	16	18	22	27
s	3	4	5	6	8	10	12
Length (mm)	S055						
6	S						
10	S	S					
12	S	S					
16	S	S	S	S			
20	S	S	S	S			
25	S	S	S	S			
30	S	S	S	S	S		
35	S	S	S	S	S		
40	S	S	S	S	S	S	
45	S	S	S	S	S	S	*
50	S	S	S	S	S	S	*
60		S	S	S	S	S	*
70			S	S	S	S	*
80				S	S	S	*
90					S	S	*
100					*	S	*
120						*	*

Order Number → 7379-12.9 10x20 = S055-010-0020 | 7379-12.9 12x100 = S055-012-0100

Featuring premium quality YFS Brand

QS-9000 Certified  
(Full certification available on request)

Premium quality product at commodity price levels

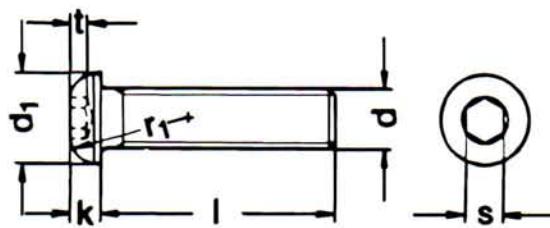
Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

# \*Button Head

ISO 7380

10.9 Grade



2

S050 — 7380-10.9 Bare Steel

S053 — 7380-10.9 Zinc Plated

Diameter	M2		M2.5		M3		M4		M5	
$r_1$	—		—		3		4.1		5.2	
t min.	0.6		0.8		1.04		1.3		1.56	
s	1.3		1.5		2		2.5		3	
k max.	1.3		1.5		1.65		2.2		2.75	
$d_1$	3.5		4.5		5.5		7.5		9.5	
Length (mm)	Bare	Zinc								
	S050	S053								
4	*		*				S	S		
5	*		S				S	S		
6	S		*		S	*	S	S	S	S
8	*		*		S	S	S	S	S	S
10	S		*		S	S	S	*	S	*
12	S		*		S	S	S	*	S	S
14					*	S	*		*	
16	*		*		S	*	S	S	S	*
20			*		S	S	S	S	S	*
25					S	S	S	S	S	*
30							S	S	S	*
35							S	S	S	
40							S	S	S	*
45										*
50										*

Order Number → 7380-10.9 Bare 10x20 = S050-010-0020

## \*NOTE

### Limited Use:

Socket button head cap screws ISO 7380 are not intended for high strength application. The purpose of producing them with a strength of the property class 10.9 is to increase the wear resistance of the sockets.

### Tightening Procedure:

Insert the key into the socket and apply the torque on the nut while holding the key. Should however, the torque be applied on the screw itself it should be reduced accordingly.

Featuring premium quality YFS Brand

QS-9000 Certified  
(Full certification available on request)

Premium quality product at commodity price levels

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

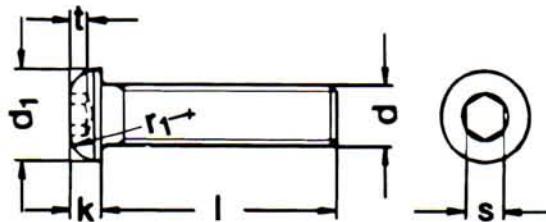
# \*Button Head

10.9 Grade

2

ISO 7380

S050 — 7380-10.9 Bare Steel  
S053 — 7380-10.9 Zinc Plated



Diameter	M6		M8		M10		M12	
r <sub>1</sub>	5.6		7.5		10		11	
t min.	2.08		2.6		3.12		4.16	
s	4		5		6		8	
k max.	3.3		4.4		5.5		6.6	
d <sub>1</sub>	10.5		14		18		21	
Length (mm)	Bare	Zinc	Bare	Zinc	Bare	Zinc	Bare	Zinc
	S050	S053	S050	S053	S050	S053	S050	S053
8	S	S						
10	S	S	S	S				
12	S	S	S	*				
14	*	S	S	S				
16	S	S	S	*	S	S		
18	S	S	S	*	S	S		
20	S	S	S	*	S	*	S	
25	S	S	S	*	S	S	S	S
30	S	S	S	S	S	S	S	S
35	S	*	S	S	S	S	S	S
40	S	S	S	*	S		S	S
45	*	S	S	*	S		S	S
50	S	*	S	*	S		S	S
55	S	*					*	
60	S	*					S	

Order Number → 7380-10.9 Bare 10x20 = S050-010-0020

### \*NOTE

#### Limited Use:

Socket button head cap screws ISO 7380 are not intended for high strength application. The purpose of producing them with a strength of the property class 10.9 is to increase the wear resistance of the sockets.

#### Tightening Procedure:

Insert the key into the socket and apply the torque on the nut while holding the key. Should however, the torque be applied on the screw itself it should be reduced accordingly.

Featuring premium quality YFS Brand

QS-9000 Certified  
(Full certification available on request)

Premium quality product at commodity price levels

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

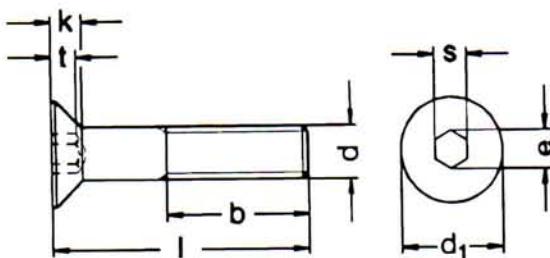
# Socket Cap Screws DIN 7991

10.9 Grade

## \*Flat Head Countersunk

S025 — 7991-10.9 Bare Steel

S029 — 7991-10.9 Zinc Plated



2

Diameter	M2	M2.5		M3		M4		M5		M6		
b up to 125	—	—		12		14		16		18		
b up to 200	—	—		—		—		—		24		
t	0.75	0.8		1.2	1.8		2.3	2.87		3.44	4.58	
e	—	—		2.3	2.5		3	3.44		4	4.58	
s	1.3	1.5		2	2.5		3	3		4	4	
k max.	1.2	1.5		1.7	2.3		2.8	2.8		3.3	3.3	
d <sub>1</sub>	4	5		6	8		10	10		12	12	
Length (mm)	Bare S025	Zinc S029										
5	S		S		S							
6	S	*	S		S	*	S	*	S			
8	S	*	S	S	S	S	S	S	S	S		
10			S		S	S	S	*	S	S	S	S
12	S		S		S	S	S	S	S	S	S	S
14					*	*	S	*	S	S	S	S
16			S		S	S	S	S	S	S	S	S
20					S	S	S	S	S	S	S	S
25					S	S	S	S	S	S	S	S
30					S	S	S	*	S	S	S	S
35						S	S	*	S	*	S	S
40						S	S	*	S	*	S	S
45							*		S		S	S
50							*		S		S	S
55								*		S		
60								*		S		S
65										S		S
70										S		S
75										S		
80										S		
110										S		

Order Number → 7991-10.9 Bare 10x20 = S025-010-0020 | 7991-10.9 Bare 10x100 = S025-010-0100

\*90° Countersink For Diameter M2 to M20 / 60° Countersink for Diameter M22 and Over

### NOTE

#### Limited Use:

Flat head countersunk socket cap screws DIN 7991 are not intended for high strength application. The purpose of producing them with a strength of the property class 10.9 is to increase the wear resistance of the sockets.

#### Tightening Procedure:

Insert the key into the socket and apply the torque on the nut while holding the key. Should however, the torque be applied on the screw itself it should be reduced accordingly.

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

# Socket Cap Screws DIN 7991

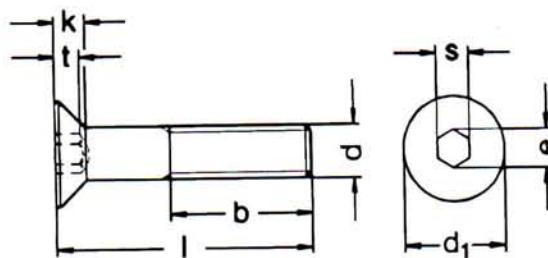
10.9 Grade

2

## \*Flat Head Countersunk

S025 — 7991-10.9 Bare Steel

S029 — 7991-10.9 Zinc Plated



Diameter	M8	M10	M12	M14	M16	M18				
b up to 125	22	26	30	34	38	42				
b up to 200	28	32	36	40	44	48				
t	3.5	4.4	4.6	4.8	5.3	5.5				
e	5.72	6.86	9.15	11.43	11.43	13.72				
s	5	6	8	10	10	10				
k max.	4.4	5.5	6.5	7	7.5	8				
d <sub>1</sub>	16	20	24	27	30	33				
Length (mm)	Bare S025	Zinc S029								
10	*	S								
12	S		*	*						
14	S		*	*						
16	S	S	S	S	*					
18	*	S	*	S	*					
20	S	S	S	S		*		S		
22	*		*		*					
25	S	S	S	S		*		*		
28	*									
30	S	S	S	S	S	S		S		
35	S	S	S	S	S	S	*	S		
40	S	S	S	S	S	S	S	S		*
45	S	S	S	S	S	*		S		*
50	S	S	S	*	S	S		S		*
55	S	S	S	S	S	*		S		*
60	S	S	S		S	S		S		S
65	*		*		*	*		*		*
70	S	S	S		S	S		S		*
75					*			*		
80	S		S		S	S		S		S
90	S		S		S	*		S		
100	S		S		S	*		S		S
110			*		*	*		*		
120			*		*			S		
130								*		
140								S		
150								*		
160								*		
180								*		
200								*		

Order Number → 7991-10.9 Bare 10x20 = S025-010-0020 | 7991-10.9 Bare 10x100 = S025-010-0100

\*90° Countersink For Diameter M2 to M20 / 60° Countersink for Diameter M22 and Over

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

# Socket Cap Screws DIN 7991

10.9 Grade

## \*Flat Head Countersunk

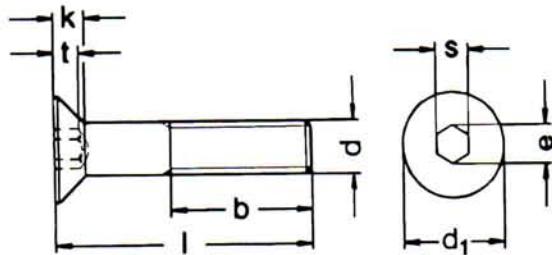
S025 — 7991-10.9 Bare Steel

S029 — 7991-10.9 Zinc Plated

Diameter	M20	M24		
b up to 125	46	54		
b up to 200	52	60		
t	5.9	10.3		
e	13.72	16		
s	12	14		
k max.	8.5	14		
d1	36	39		
Length (mm)	Bare	Zinc	Bare	Zinc
30	S			
35	S			
40	S			
45	S			
50	S	*		
55	S	*		
60	S	*		
65	*			
70	S	S		
75	*			
80	S	S		
90	S	*		
100	S	S		
110	S	S		
120	S	*		
130	*	*		
140	S	*		
150	*	S		
160	*			
180	*			
200	*			

Order Number → 7991-10.9 Bare 10x20 = S025-010-0020 | 7991-10.9 Bare 10x100 = S025-010-0100

\*90° Countersink For Diameter M2 to M20 / 60° Countersink for Diameter M22 and Over



2

DIN 7991 Specifications					
d	t	e	s	k max.	d1
M3	1.2	2.3	2	1.7	6
M4	1.8	2.87	2.5	2.3	8
M5	2.3	3.44	3	2.8	10
M6	2.5	4.58	4	3.3	12
M8	3.5	5.72	5	4.4	16
M10	4.4	6.86	6	5.5	20
M12	4.6	9.15	8	6.5	24
M14	4.8	11.43	10	7	27
M16	5.3	11.43	10	7.5	30
M18	5.5	13.72	12	8	33
M20	5.9	13.72	12	8.5	36
M22	8.8	16	14	13.1	36
M24	10.3	16	14	14	39

### \*NOTE

#### Limited Use:

Flat head countersunk socket cap screws DIN 7991 are not intended for high strength application. The purpose of producing them with a strength of the property class 10.9 is to increase the wear resistance of the sockets.

#### Tightening Procedure:

Insert the key into the socket and apply the torque on the nut while holding the key. Should however, the torque be applied on the screw itself it should be reduced accordingly.

Featuring premium quality YFS Brand

QS-9000 Certified

(Full certification available on request)

Premium quality product at commodity price levels

Please see Section 11 for Imperial Socket Products

S → Normally Stocked | \* → Call for Availability

## Socket Locking Screws

Class 100\*

S067 — Bare Steel



$d_1$	$b$	$d_2$ max.	$d_3$ max.	$k$ max.	$s$	$t$ min.	Lengths (mm)
M5	22	9	11	5	4	2.5	10-20
M6	24	11	13.5	6	5	3	10-30
M8	28	14	17	8	6	4	12-40
M10	32	17	19.5	10	8	5	16-40
M12	36	19	22.5	12	10	6	20-50

\*Please contact us for availability\*

Tightening torques  $M_{A\max}$  for screws at 90% utilization of the yield point  $R_{P0.2}$

*Class	Counter-material	Tightening Torques $M_{A\max}$ [Nm]					
		M5	M6	M8	M10	M12	M16
100	Steel $R_m < 800[\text{N/mm}^2]$	11	19	42	85	130	330
	Steel $R_m = 800-1100[\text{N/mm}^2]$	10	18	37	80	120	310
	Grey cast iron	9	16	35	75	115	300

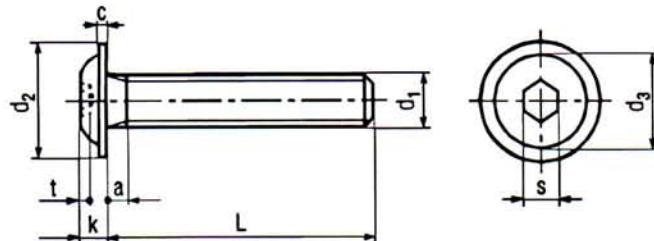
*Class	Preload $F_{V\max}$ [N]					
	M5	M6	M8	M10	M12	M16
100	9000	12600	23200	37000	54000	102000

## Button Head

≈10.9 Grade

## With Flange

S018 — Bare Steel



$d_1$	$d_2$ min.	$d_3$ max.	$k$ max.	$c \approx$	$a$ max.	$t$	$s$	Lengths (mm)
M3	6.67	5.5	1.6	0.7	1	1.05	2	6-20
M4	8.79	7.5	2.1	0.8	1.4	1.3	2.5	6-25
M5	10.8	9.5	2.7	1	1.6	1.6	3	8-30
M6	12.9	10.5	3.2	1.1	2	2.1	4	8-30
M8	16.2	14	4.3	1.5	2.5	2.6	5	10-40
M10	19.9	17.5	5.3	1.7	3	3.5	6	16-40
M12	23.6	21	6.4	2.4	3.5	4.6	8	20-50

\*Please contact us for availability\*

S → Normally Stocked | \* → Call for Availability

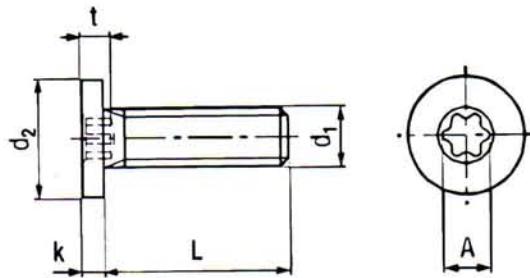
## ○ Socket Cap Screws

8.8 Grade

Hexalobular (6 lobes)

### Special Low Head

S070 — Zinc Plated



2

<b>d<sub>1</sub></b>	<b>d<sub>2</sub></b>	<b>k max.</b>	<b>t max.</b>	<b>A</b>	<b>Lengths (mm)</b>
M4	8	1.5	1.5	2.8	6-10
M5	9	1.5	1.8	3.4	6-16
M6	10	1.5	2.1	3.9	8-20
M8	13	1.5	2.4	4.5	8-20

\*Please contact us for availability\*

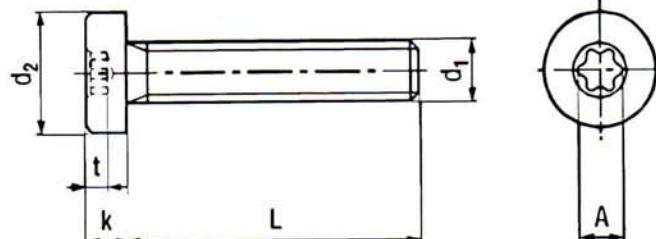
## ○ Socket Cap Screws ISO 14580

8.8 Grade

Hexalobular (6 lobes)

### Low Head

S071 — Zinc Plated



<b>d<sub>1</sub></b>	<b>d<sub>2</sub></b>	<b>k max.</b>	<b>t max.</b>	<b>A</b>	<b>Lengths (mm)</b>
M3	5.5	2.4	1.27	2.8	6-20
M4	7	3.1	1.66	3.95	6-25
M5	8.5	3.65	1.91	4.5	8-30
M6	10	4.4	2.29	5.6	8-40
M8	13	5.8	3.05	7.95	10-50

\*Please contact us for availability\*

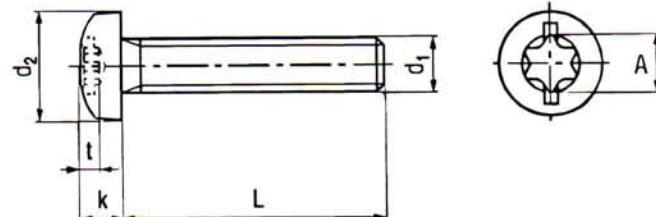
## ○ Socket Cap Screws

8.8 Grade

Hexalobular (6 lobes)

### With Internal Drive and Slot

S072 — Zinc Plated



<b>d<sub>1</sub></b>	<b>d<sub>2</sub> max.</b>	<b>k max.</b>	<b>t max.</b>	<b>A≈</b>	<b>Lengths (mm)</b>
M3	5.6	2.4	1.26	2.8	8-20
M4	8	3.1	1.6	3.9	8-20
M5	9.5	3.7	1.9	4.52	8-30
M6	12	4.6	2.3	5.6	8-30

\*Please contact us for availability\*

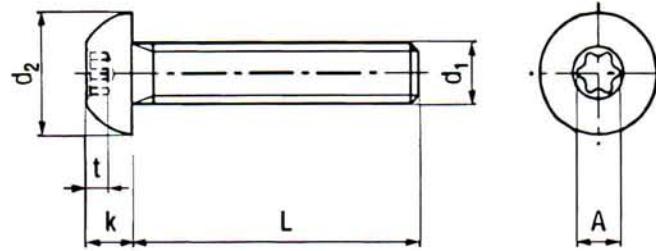
S → Normally Stocked | \* → Call for Availability

## ○ Button Head

8.8 Grade  
Hexalobular (6 lobes)

2

S073 — Zinc Plated



$d_1$	$d_2$ max.	$k$ max.	$t$ max.	$A \approx$	Lengths (mm)
M2	3.5	1.3	0.8	2	10
M3	5.7	1.65	1	2.8	6-25
M4	7.6	2.2	1.4	3.9	6-35
M5	9.5	2.75	1.6	4.5	6-40
M6	10.5	3.3	1.9	5.6	8-50
M8	14	4.4	2.3	6.8	10-50

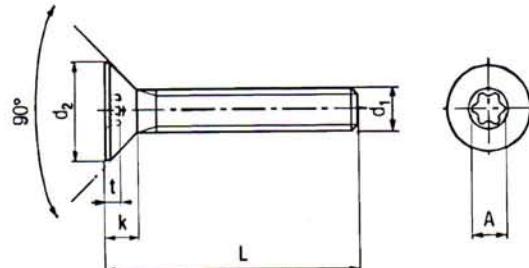
\*Please contact us for availability\*

## ○ Socket Cap Screws ISO 14581

8.8 Grade  
Hexalobular (6 lobes)

### Flat Head Countersunk

S017 — Zinc Plated



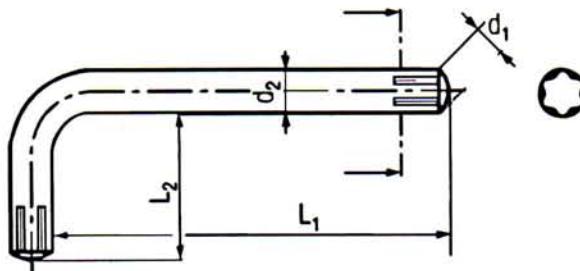
$d_1$	$d_2$ max.	$k$ max.	$t$ max.	$A \approx$	Lengths (mm)
M3	5.5	1.65	0.83	2.8	6-20
M4	8.4	2.7	1.53	3.95	6-25
M5	9.3	2.7	1.51	4.5	8-25
M6	11.3	3.3	1.78	5.6	10-30
M8	15.8	4.65	2.54	7.95	12-30

\*Please contact us for availability\*

## ○ Socket Keys

### Hexalobular (6 lobes)

S0K6 — Bare Steel



Key Size	$d_1$	$d_2$	$L_1$	$L_2$	FMP Order #
6	1.66	3	16	42	S0K6-006-0000
8	2.32	3	16	48	S0K6-008-0000
10	2.74	3	16	51	S0K6-010-0000
15	3.28	3.5	18	54	S0K6-015-0000
20	3.86	4	19	57	S0K6-020-0000
25	4.43	4.5	20	63	S0K6-025-0000
30	5.52	6	25	70	S0K6-030-0000
40	6.65	7	26	76	S0K6-040-0000
45	7.82	8	30	85	S0K6-045-0000

\*Please contact us for availability\*

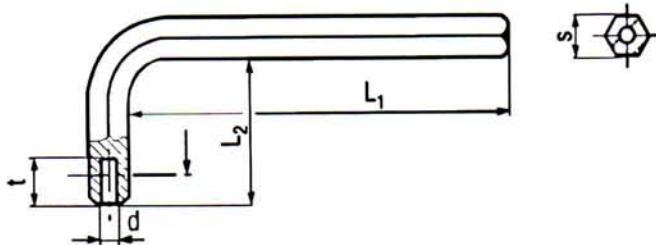
S → Normally Stocked | \* → Call for Availability

# Socket Keys

2

## For Tamper Proof Screws

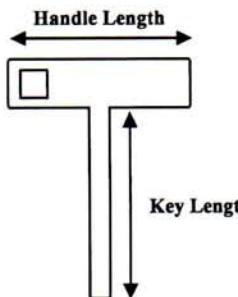
S0K7 — Zinc Plated



\*Please contact us for availability\*

# Hexagon Keys

CV Steel



## T-Handle

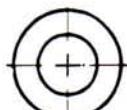
S0K8 — Hexagon Key With T-Handle

Key Size (mm)	Handle Length (mm)	Key Length (mm)					
		100		150		200	
		Stock	FMP Order #	Stock	FMP Order#	Stock	FMP Order #
1.5	70	S	S0K8-1.5-0100	*	S0K8-1.5-0150	S	S0K8-1.5-0200
2.0		S	S0K8-002-0100	*	S0K8-002-0150	S	S0K8-002-0200
2.5		S	S0K8-2.5-0100	*	S0K8-2.5-0150	S	S0K8-2.5-0200
3.0	90	S	S0K8-003-0100	*	S0K8-003-0150	S	S0K8-003-0200
3.5		S	S0K8-3.5-0100	*	S0K8-3.5-0150	S	S0K8-3.5-0200
4.0		S	S0K8-004-0100	*	S0K8-004-0150	S	S0K8-004-0200
4.5	110	S	S0K8-4.5-0100	*	S0K8-4.5-0150	S	S0K8-4.5-0200
5.0		S	S0K8-005-0100	*	S0K8-005-0150	S	S0K8-005-0200
5.5		S	S0K8-5.5-0100	*	S0K8-5.5-0150	S	S0K8-5.5-0200
6.0	110	S	S0K8-006-0100	*	S0K8-006-0150	S	S0K8-006-0200
8.0		S	S0K8-008-0100	*	S0K8-008-0150	S	S0K8-008-0200
10.0	110	S	S0K8-010-0100	*	S0K8-010-0150	S	S0K8-010-0200
12.0		S	S0K8-012-0100	*	S0K8-012-0150	S	S0K8-012-0200
14.0		S	S0K8-014-0100	*	S0K8-014-0150	S	S0K8-014-0200

S → Normally Stocked | \* → Call for Availability

# Washers

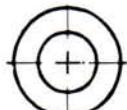
\*Please see Section 11 for Imperial Washer Products



Bare-W010 Zinc-W012  
\*DIN 125A  
Flat Washer  
Bare/Zinc Page 1



W019  
DIN 125 200HV  
Flat Washer  
Bare Steel Page 1



W013  
DIN 126  
Flat Washer  
Bare Steel Page 2



W015  
DIN 433  
Small O.D. Flat Washer  
Zinc Plated Page 3

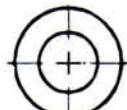
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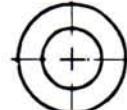
Bare-W038 Zinc-W039  
DIN 1440  
Flat Washer  
Bare/Zinc Page 4



H042  
DIN 6916HV-10  
Structural Washer  
Bare Steel Page 5



W018  
DIN 7349  
Thick Flat Washer  
Zinc Plated Page 5



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DIN 7989  
Flat Washer  
Zinc Plated Page 6



W102  
DIN 988  
Shim Washer  
Page 7



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≈DIN 988  
Shim Washer  
Page 8



W017  
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Fender Washer  
Zinc Plated Page 6



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Fender Washers  
Car Body  
Zinc Plated Page 2



Bare-W040 Zinc-W041  
\*DIN 127B  
Lock Washer  
Bare/Zinc Page 9



Bare-W042 Zinc-W043  
DIN 128A  
Spring Lock Washer  
Bare/Zinc Page 10



Bare-W065 Zinc-W067  
DIN 7980  
High Collar Lock Washer  
Bare/Zinc Page 11



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DIN 74361-C  
Spring Lock Washer  
Zinc Page 11



W052  
DIN 6797A  
External Toothed Washer  
Zinc Plated Page 12



W053  
DIN 6797J  
Internal Toothed Washer  
Zinc Plated Page 12



W055  
DIN 6798A  
Serrated External Washer  
Zinc Plated Page 13



W057  
DIN 6798J  
Serrated Internal Washer  
Zinc Plated Page 13



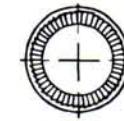
W059  
DIN 6798V  
Serrated Countersunk  
Zinc Plated Page 13



W098  
DIN 2093  
Disc Spring Washers  
Page 14-18



W096-Z  
DIN 6796  
Conical Spring Washer  
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Bare-W069 Zinc-W070  
Ribbed Lock Washer  
Bare/Zinc  
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# Washers

3



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Nordlock Washers  
Yellow Chromated  
Page 21



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DIN 137A (Curved)  
Spring Lock Washer  
Zinc Plated Page 22



W063  
DIN 137B (Crinkled)  
Spring Lock Washer  
Zinc Plated Page 22

Copper-W075 Fiber-W077



Aluminum-W078  
DIN 7603  
Sealing Washers  
Page 23



W071  
DIN 93  
Tab Washer (Long Tab)  
Zinc Plated Page 24



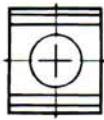
W072  
DIN 432  
External Tab Washer  
Zinc Plated Page 25



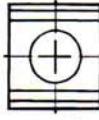
W079  
DIN 462  
Internal Tab Washer  
Zinc Page 26



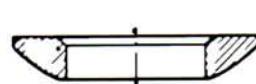
W073  
DIN 463  
Tab Washer (2 Tab)  
Zinc Plated Page 27



W021  
DIN 434  
Square Washer  
Bare Steel Page 28



W022  
DIN 435  
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DIN 6319C  
Spherical Washer  
Bare Page 29



W046  
DIN 6319D  
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W044  
Hinge Ring  
Zinc  
Page 29

# Washers by ID/OD and Thickness

Inner Diameter	Outer Diameter	Thickness	DIN	Page
1.1	2.5	0.3	433	3
1.1	3.2	0.3	125A	1
1.3	3	0.3	433	3
1.3	3.8	0.3	125A	1
1.5	3	0.3	433	3
1.5	3.8	0.3	125A	1
1.7	3.5	0.3	433	3
1.7	4	0.3	125A	1
1.8	4.5	0.3	125A	1
1.9	4	0.3	433	3
2	4.4	0.3	125A	1
2.2	4.5	0.5	433	3
2.2	5	0.3	125A	1
2.4	6	0.5	125A	1
2.5	6	0.5	125A	1
2.5	7	0.8	9021B	6
2.7	5	0.5	433	3
2.7	6.5	0.5	125A	1
2.8	7	0.5	125A	1
3	6	0.8	1440	4
3.2	6	0.5	433	3
3.2	7	0.5	125A	1
3.2	9	0.8	9021B	6
3.2	9	1	7349	5
3.7	7	0.5	433	3
3.7	8	0.5	125A	1
3.7	11	0.8	9021B	6
4	8	0.8	1440	4
4.3	8	0.5	433	3
4.3	9	0.8	125A	1
4.3	12	1	9021B	6
4.3	12	1.6	7349	5
4.8	12	1	125A	1
5	10	0.8	1440	4
5.3	9.5	1	433	3
5.3	10	1	125A	1
5.3	15	1.6	9021B	6
5.3	15	2	7349	5
5.5	10	1	126	2
6	12	1.6	1440	4
6.4	11	1.6	433	3
6.4	12.5	1.6	125A	1
6.4	17	3	7349	5
6.4	18	1.6	9021B	6
6.6	12.5	1.6	126	2
7.4	14	1.6	125A	1
7.4	22	2	9021B	6
8	16	2	1440	4
8.4	15	1.6	433	3
8.4	17	1.6	125A	1
8.4	21	4	7349	5
8.4	25	2	9021B	6
9	17	1.6	126	2
10	20	2.5	1440	4
10.5	18	1.6	433	3
10.5	21	2	125A	1
10.5	25	4	7349	5
10.5	30	2.5	9021B	6
11	21	2	126	2
11	21	8	7989A	6

Inner Diameter	Outer Diameter	Thickness	DIN	Page
12	25	3	1440	4
13	20	2	433	3
13	24	2.5	125A	1
13	24	3	6916	5
13	30	6	7349	5
13	40	3	9021B	6
14	24	2.5	126	2
14	24	8	7989A	6
15	24	2	433	3
15	28	2.5	125A	1
15	45	3	9021B	6
16	28	3	1440	4
17	27	2	433	3
17	30	3	125A	1
17	30	4	6916	5
17	40	6	7349	5
17	50	3	9021B	6
18	30	8	7989A	6
18	30	3	126	2
18	30	4	1440	4
19	30	2.5	433	3
19	34	3	125A	1
19	56	4	9021B	6
20	32	4	1440	4
21	33	2.5	433	3
21	37	3	125A	1
21	37	4	6916	5
21	60	4	9021B	6
22	34	4	1440	4
22	37	3	126	2
22	37	8	7989A	6
23	36	4	1440	4
23	39	3	125A	1
23	39	4	6916	5
24	39	8	7989A	6
25	40	4	1440	4
25	44	4	125A	1
25	44	4	6916	5
26	40	5	1440	4
26	44	4	126	2
26	44	8	7989A	6
28	42	5	1440	4
28	50	4	125A	1
28	50	5	6916	5
30	45	5	1440	4
30	50	4	126	2
30	50	8	7989A	6
31	56	4	125A	1
33	56	8	7989	6
33	56	4	126	2
34	60	5	125A	1
36	60	5	126	2
36	60	8	7989A	6
37	66	5	125A	1
39	66	5	126	2
39	66	8	7989A	6
42	72	6	126	2
45	78	7	126	2
48	85	7	126	2
52	92	8	126	2

# Flat Washers

DIN 125A  
ISO 7089 / 7090

Steel

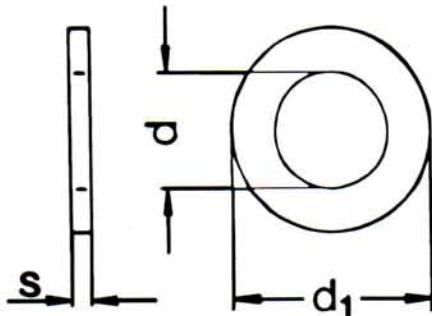
3

## Without Chamfer

W010 — 125A Bare Steel

W012 — 125A Zinc Plated

W019 — 125A 200HV Hardened



For Screw	d (ID)	d <sub>1</sub> (OD)	s	Bare	Zinc	200HV
				W010	W012	W019
M1	1.1	3.2	0.3		*	
M1.2	1.3	3.8	0.3		*	
M1.4	1.5	3.8	0.3		*	
M1.6	1.7	4	0.3	*	S	
M1.7	1.8	4.5	0.3		*	
M1.8	2	4.4	0.3		*	
M2	2.2	5	0.3	*	S	
M2.2	2.4	6	0.5		*	
M2.3	2.5	6	0.5		*	
M2.5	2.7	6	0.5	*	S	
M2.6	2.8	7	0.5		S	
M3	3.2	7	0.5	*	S	*
M3.5	3.7	8	0.5	*	S	
M4	4.3	9	0.8	S	S	S
M4.5	4.8	12	1		*	
M5	5.3	10	1	S	S	S
M6	6.4	12	1.6	S	S	S
M7	7.4	14	1.6	S	S	
M8	8.4	16	1.6	S	S	S
M10	10.5	20	2	S	S	S
M12	13	24	2.5	S	S	S
M14	15	28	2.5	S	S	S
M16	17	30	3	S	S	S
M18	19	34	3	S	S	S
M20	21	37	3	S	S	S
M22	23	39	3	S	S	*
M24	25	44	4	S	S	S
M27	28	50	4	S	*	*
M30	31	56	4	S	S	*
M33	34	60	5	S	*	
M36	37	66	5	S	S	
M39	40	72	6	S	*	
M42	43	78	7	S	*	
M45	46	85	7	S		
M48	50	92	8	S	*	
M52	54	98	8	*		
M56	58	105	9	S		
M60	62	110	9	S		

Order Number → 125A Bare M10 = W010-010-0000

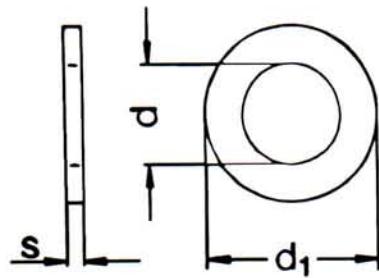
Please see Section 11 for Imperial Washer Products

S → Normally Stocked | \* → Call for Availability

# Flat Washers

DIN 126

Steel



3

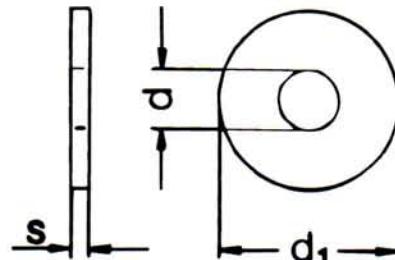
## Coarse Without Chamfer

W013 — Flat Washer Bare Steel

For Screw	d	d <sub>1</sub>	s	Stock	FMP Order #
M5	5.5	10	1	*	W013-005-0000
M6	6.6	12	1.6	*	W013-006-0000
M7	7.6	14	1.6	*	W013-007-0000
M8	9	16	1.6	S	W013-008-0000
M10	11	20	2	*	W013-010-0000
M12	13.5	24	2.5	*	W013-012-0000
M14	15.5	28	2.5	*	W013-014-0000
M16	17.5	30	3	S	W013-016-0000
M20	22	37	3	S	W013-020-0000
M24	26	44	4	S	W013-024-0000
M27	30	50	4	*	W013-027-0000
M30	33	56	4	S	W013-030-0000
M33	36	60	5	*	W013-033-0000
M36	39	66	5	*	W013-036-0000
M39	42	72	6	*	W013-039-0000
M42	45	78	7	*	W013-042-0000
M45	48	85	7	*	W013-045-0000
M48	52	92	8	*	W013-048-0000

# Fender Washers

Steel



## Car Body

W037 — Zinc Plated

Size	d	d <sub>1</sub>	s	Stock	FMP Order #
4x15	4.3	15		S	W037-004-0015
4x20	4.3	20		S	W037-004-0020
4x25	4.3	25	1.5	S	W037-004-0025
5x20	5.3	20		S	W037-005-0020
5x25	5.3	25	1.5	S	W037-005-0025
5x30	5.3	30	1.5	S	W037-005-0030
6x15	6.4	15		S	W037-006-0015
6x20	6.4	20		S	W037-006-0020
6x25	6.4	25	1.5	S	W037-006-0025
6x30	6.4	30	1.5	S	W037-006-0030
8x20	8.4	20		S	W037-008-0020
8x25	8.4	25	1.5	S	W037-008-0025
8x30	8.4	30		S	W037-008-0030
8x35	8.4	35	2	S	W037-008-0035
10x30	10.5	30	1.5	*	W037-010-0030
10x35	10.5	35	2	S	W037-010-0035

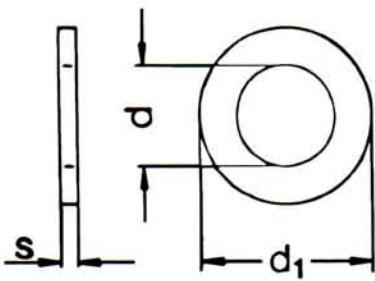
\*Please contact us for availability\*

S → Normally Stocked | \* → Call for Availability

# Flat Washers

DIN 433  
ISO 7092

Steel



## \*Small O.D.

W015 — 433 Zinc Plated

3

For Screw	d	$d_1$	s	Stock	FMP Order #
M1	1.1	2.5	0.3	*	W015-001-0000
M1.2	1.3	3	0.3	*	W015-1.2-0000
M1.4	1.5	3	0.3	*	W015-1.4-0000
M1.6	1.7	3.5	0.3	*	W015-1.6-0000
M1.8	2	4	0.3	*	W015-1.8-0000
M2	2.2	4.5	0.3	*	W015-002-0000
M2.5	2.7	5	0.5	S	W015-2.5-0000
M3	3.2	6	0.5	S	W015-003-0000
M3.5	3.7	7	0.5	*	W015-3.5-0000
M4	4.3	8	0.5	S	W015-004-0000
M5	5.3	9	1	S	W015-005-0000
M6	6.4	11	1.6	S	W015-006-0000
M8	8.4	15	1.6	S	W015-008-0000
M10	10.5	18	1.6	S	W015-010-0000
M12	13	20	2	S	W015-012-0000
M14	15	24	2.5	S	W015-014-0000
M16	17	28	2.5	S	W015-016-0000
M18	19	30	2.5	*	W015-018-0000
M20	21	34	3	S	W015-020-0000

\*Specifications according to the latest DIN standard.

S → Normally Stocked | \* → Call for Availability

# Flat Washers

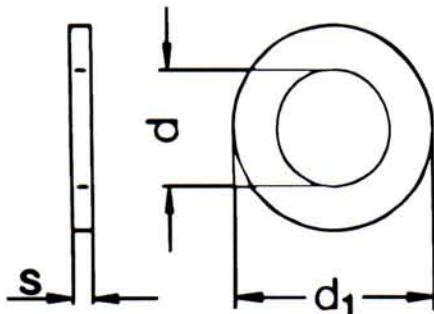
DIN 1440

Steel

## \*For Clevis Pins

W038 — 1440 Bare Steel

W039 — 1440 Zinc Plated



3

d (ID)	d <sub>1</sub> (OD)	s	Bare		Zinc	
			W038	FMP Order #	W039	FMP Order #
3	6	0.8	S	W038-003-0000		
4	8	0.8	S	W038-004-0000	*	W039-004-0000
5	10	0.8	S	W038-005-0000	S	W039-005-0000
6	12	1.6	S	W038-006-0000	S	W039-006-0000
7	14	1.6	*	W038-007-0000	*	W039-007-0000
8	16	2	S	W038-008-0000	S	W039-008-0000
10	20	2.5	S	W038-010-0000	*	W039-010-0000
12	25	3	S	W038-012-0000	S	W039-012-0000
13	25	3	*	W038-013-0000	*	W039-013-0000
14	28	3	*	W038-014-0000	*	W039-014-0000
16	28	3	S	W038-016-0000	S	W039-016-0000
18	30	4	*	W038-018-0000	*	W039-018-0000
20	32	4	S	W038-020-0000	S	W039-020-0000
22	34	4	*	W038-022-0000	*	W039-022-0000
23	36	4			*	W039-023-0000
24	—	—	S	W038-024-0000		
25	40	4	*	W038-025-0000	*	W039-025-0000
26	40	5	*	W038-026-0000	*	W039-026-0000
28	42	5	*	W038-028-0000	*	W039-028-0000
30	45	5	S	W038-030-0000	*	W039-030-0000
32	50	5	*	W038-032-0000	*	W039-032-0000
33	50	5			*	W039-033-0000
35	52	6	*	W038-035-0000	*	W039-035-0000
36	52	6			*	W039-036-0000
40	58	6	S	W038-040-0000	*	W039-040-0000
45	62	7			*	W039-045-0000
50	68	8	S	W038-050-0000	*	W039-050-0000

\*Specifications according to the latest DIN standard.

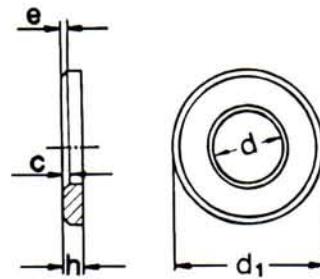
S → Normally Stocked | \* → Call for Availability

# Structural Washer DIN 6916

C45 Material

## Class 10

H042 — 6916HV-C45



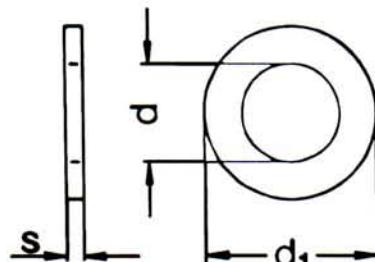
**3**

d	For Screw	d <sub>1</sub>	h	c	e ≈	Stock	FMP Order #
13	M12	24	3	1.6	0.5	S	H042-012-0000
15	M14	28	4	1.6	0.5	S	H042-014-0000
17	M16	30	4	1.6	1	S	H042-016-0000
19	M18	34	4	1.6	1	S	H042-018-0000
21	M20	37	4	2	1	S	H042-020-0000
23	M22	39	4	2	1	S	H042-022-0000
25	M24	44	4	2	1	S	H042-024-0000
28	M27	50	5	2.5	1	S	H042-027-0000
31	M30	56	5	2.5	1	S	H042-030-0000
34	M33	60	5	2.5	1.5	S	H042-033-0000
37	M36	66	6	3	1.5	S	H042-036-0000
40	M39	72	6	3	1.5	S	H042-039-0000
43	M42	78	6	3	1.5	S	H042-042-0000

# Thick Flat Washers DIN 7349

Steel

W018 — 7349 Zinc Plated



For Screw	d (ID)	d1 (OD)	s	Stock	FMP Order #
M3	3.2	9	1	S	W018-003-0000
M4	4.3	12	1.6	S	W018-004-0000
M5	5.3	15	2	S	W018-005-0000
M6	6.4	17	3	S	W018-006-0000
M8	8.4	21	4	S	W018-008-0000
M10	10.5	25	4	S	W018-010-0000
M12	13	30	6	S	W018-012-0000
M14	15	36	6	*	W018-014-0000
M16	17	40	6	S	W018-016-0000
M20	21	44	8	S	W018-020-0000
M22	23	50	8	*	W018-022-0000
M24	25	50	10	S	W018-024-0000
M30	31	68	10	*	W018-030-0000

S → Normally Stocked | \* → Call for Availability

## Flat Washers

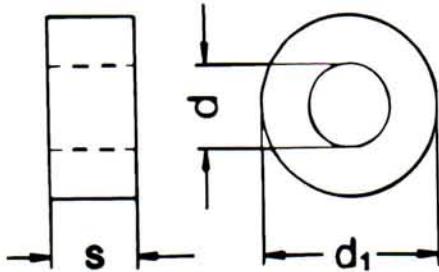
DIN 7989

Steel

Extra Thick

### For Steel Construction

W066 — 7989 Zinc Plated



**3**

For Screw	d	d <sub>1</sub>	s	Stock	FMP Order #
M10	11	21	8	S	W066-010-0000
M12	14	24	8	S	W066-012-0000
M16	18	30	8	S	W066-016-0000
M20	22	37	8	S	W066-020-0000
M22	24	39	8	S	W066-022-0000
M24	26	44	8	S	W066-024-0000
M27	30	50	8	*	W066-027-0000
M30	33	56	8	*	W066-030-0000
M33	36	60	8	*	W066-033-0000
M36	39	66	8	*	W066-036-0000

## Fender Washers

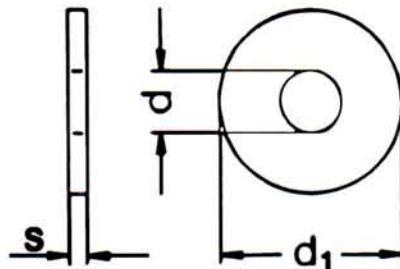
DIN 9021B

ISO 7093

Steel

### O.D. = 3x For Screw Diameter

W017 — 9021B Zinc Plated



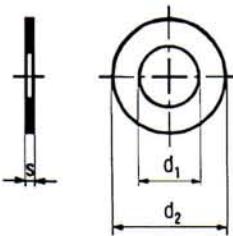
For Screw	d (ID)	d <sub>1</sub> (OD)	s	Stock	FMP Order #
M2.3	2.5	7	0.8	*	W017-2.3-0000
M2.5	2.7	8	0.8	*	W017-2.5-0000
M3	3.2	9	0.8	S	W017-003-0000
M3.5	3.7	11	0.8	*	W017-3.5-0000
M4	4.3	12	1	S	W017-004-0000
M5	5.3	15	1.2	S	W017-005-0000
M6	6.4	18	1.6	S	W017-006-0000
M7	7.4	22	2	S	W017-007-0000
M8	8.4	24	2	S	W017-008-0000
M10	10.5	30	2.5	S	W017-010-0000
M12	13	37	3	S	W017-012-0000
M14	15	44	3	S	W017-014-0000
M16	17	50	3	S	W017-016-0000
M18	20	56	4	*	W017-018-0000
M20	22	60	4	*	W017-020-0000

S → Normally Stocked | \* → Call for Availability

# Shim Rings

Steel

DIN 988



W102 — Bare Steel

**3**

$d_1$ Tol D 12	$d_2$ Tol. d 12	s 0.1	s 0.2	s 0.3	s 0.5	s 1
		+0 -0.03	+0 -0.04	+0 -0.05	+0 -0.05	+0 -0.05
3	6	*	*	*	*	*
4	8	*	*	*	*	*
5	10	*	*	*	*	*
6	12	*	*	*	*	*
8	14	*	*	*	*	*
10	16	*	*	*	*	*
12	18	*	*	*	*	*
14	20	*	*	*	*	*
15	21	*	*	*	*	*
18	25	*	*	*	*	*
20	28	*	*	*	*	*
22	32	*	*	*	*	*
25	35	*	*	*	*	*
30	42	*	*	*	*	*
35	45	*	*	*	*	*
40	50	*	*	*	*	*
42	52	*	*	*	*	*
45	55	*	*	*	*	*
50	62	*	*	*	*	*

\*Please contact us for availability\*

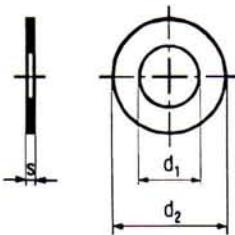
S → Normally Stocked | \* → Call for Availability

# Shim Rings

≈DIN 988

Spring Steel

W102 — Bare Steel



**3**

<b>d<sub>1</sub> Tol D 12</b>	<b>d<sub>2</sub> Tol. d 12</b>	<b>s 0.1 ±0.01</b>	<b>s 0.2 ±0.015</b>	<b>s 0.3 ±0.02</b>	<b>s 0.5 ±0.025</b>
3	15	*	*	*	*
4	16	*	*	*	*
5	17	*	*	*	*
6	18	*	*	*	*
8	20	*	*	*	*
10	22	*	*	*	*
12	24	*	*	*	*
14	26	*	*	*	*
16	28	*	*	*	*
18	30	*	*	*	*
20	32	*	*	*	*
22	34	*	*	*	*
24	36	*	*	*	*
26	38	*	*	*	*
28	40	*	*	*	*
30	42	*	*	*	*
32	44	*	*	*	*
34	46	*	*	*	*
36	48	*	*	*	*
38	50	*	*	*	*
40	52	*	*	*	*
45	57		*	*	*
50	62		*	*	*
55	67		*	*	*
60	72		*	*	*
65	77		*	*	*
70	82		*	*	*
75	87		*	*	*
80	92		*	*	*

\*Please contact us for availability\*

**S** → Normally Stocked | \* → Call for Availability

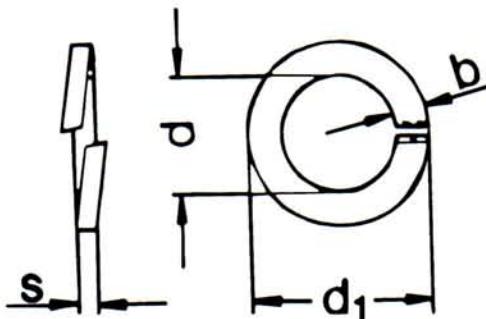
**Lock Washers**  
Spring Steel

DIN 127B

**Form "B" (Square Ends)**

W040 — 127B Bare Steel

W041 — 127B Zinc Plated



3

For Screw	d (ID)	d <sub>1</sub> (OD)	b	s	Bare	Zinc
					W040	W041
M2	2.1	4.4	0.9	0.5	*	S
M2.3	2.4	4.9	—	0.6		*
M2.5	2.6	5.1	1	0.6	S	S
M2.6	2.7	5.1	—	0.6	S	S
M3	3.1	6.2	1.3	0.8	*	S
M3.5	3.6	6.7	1.3	0.8	*	S
M4	4.1	7.6	1.5	0.9	S	S
M5	5.1	9.2	1.8	1.2	S	S
M6	6.1	11.8	2.5	1.6	S	S
M7	7.1	12.8	2.5	1.6	S	S
M8	8.1	14.8	3	2	S	S
M10	10.2	18.1	3.5	2.2	S	S
M12	12.2	21.1	4	2.5	S	S
M14	14.2	24.1	4.5	3	S	S
M16	16.2	27.4	5	3.5	S	S
M18	18.2	29.4	5	3.5	S	S
M20	20.2	33.6	6	4	S	S
M22	22.5	35.9	6	4	S	S
M24	24.5	40.0	7	5	S	S
M27	27.5	43.0	7	5	S	S
M30	30.5	48.2	8	6	S	S
M33	33.5	55.2	10	6	S	*
M36	36.5	58.2	10	6	S	S
M39	39.5	61.2	10	6	S	*
M42	42.5	68.2	12	7	S	*
M45	45.5	71.2	12	7	S	*
M48	49	75.0	12	7	S	*
M52	53	83.0	14	8	*	*

Order Number → 127B Bare M10 = W040-010-0000

Please see Section 11 for Imperial Washer Products

S → Normally Stocked | \* → Call for Availability

# Lock Washers

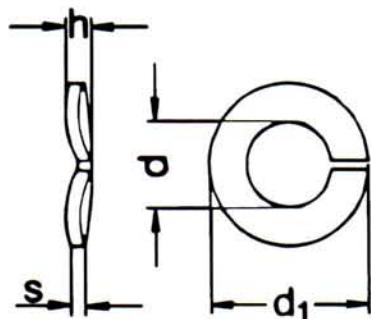
DIN 128A

Spring Steel

## Spring Form "A" (Curved)

W042 — 128A Bare Steel

W043 — 128A Zinc Plated



3

For Screw	d (ID)	d <sub>1</sub> (OD)	s	h		Bare	Zinc
				min.	max.	W042	W043
M2	2.1	4.4	0.5	0.7	0.9	*	*
M2.3	2.4	4.9	0.6	—	—	*	*
M2.5	2.6	5.1	0.6	0.9	1.1	*	*
M3	3.1	6.2	0.7	1.1	1.3	*	*
M3.5	3.6	6.7	0.7	1.1	1.3	*	*
M4	4.1	7.6	0.8	1.2	1.4	*	S
M5	5.1	9.2	1	1.5	1.7	*	S
M6	6.1	11.8	1.3	2	2.2	*	S
M8	8.1	14.8	1.6	2.45	2.75	*	S
M10	10.2	18.1	1.8	2.85	3.15	*	S
M12	12.2	21.1	2.1	3.35	3.65	*	S
M14	14.2	24.1	2.4	3.9	4.3	*	S
M16	16.2	27.4	2.8	4.5	5.1	*	S
M18	18.2	29.4	2.8	4.5	5.1	*	S
M20	20.2	33.6	3.2	5.1	5.9	*	S
M22	22.5	35.9	3.2	5.1	5.9	*	*
M24	24.5	40	4	6.5	7.5	*	S
M30	30.5	48.2	6	9.5	10.5	*	*

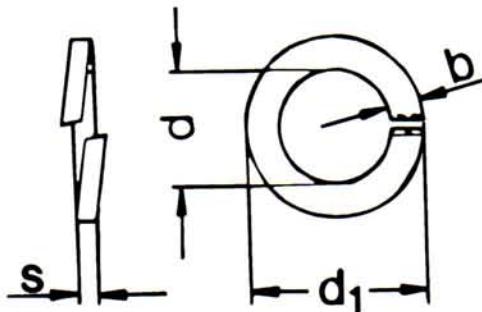
Order Number → 128A Bare M10 = W042-010-0000

S → Normally Stocked | \* → Call for Availability

# Lock Washers

Spring Steel

DIN 7980



3

## \*High Collar

W065 — 7980 Spring Steel

W067 — 7980 Zinc Plated & Baked

For Screw	d	*d <sub>1</sub>	s	Bare		Zinc	
				W065	FMP Order #	W067	FMP Order #
M3	3.1	5.6	1	S	W065-003-0000	*	W067-003-0000
M4	4.1	7	1.2	S	W065-004-0000	S	W067-004-0000
M5	5.1	8.8	1.6	S	W065-005-0000	S	W067-005-0000
M6	6.1	9.9	1.6	S	W065-006-0000	S	W067-006-0000
M8	8.1	12.7	2	S	W065-008-0000	S	W067-008-0000
M10	10.2	16	2.5	S	W065-010-0000	S	W067-010-0000
M12	12.2	18	2.5	S	W065-012-0000	S	W067-012-0000
M14	14.2	21.1	3	S	W065-014-0000	S	W067-014-0000
M16	16.2	24.4	3.5	S	W065-016-0000	S	W067-016-0000
M18	18.2	26.4	3.5	S	W065-018-0000	*	W067-018-0000
M20	20.2	30.6	4.5	S	W065-020-0000	*	W067-020-0000
M22	22.5	32.9	4.5	S	W065-022-0000	*	W067-022-0000
M24	24.5	35.9	5	S	W065-024-0000	*	W067-024-0000
M27	27.5	38.9	5	*	W065-027-0000	*	W067-027-0000
M30	30.5	44.1	6	S	W065-030-0000	*	W067-030-0000
M36	36.5	52.2	7	S	W065-036-0000	*	W067-036-0000

\*NOTE: Outer diameter (d<sub>1</sub>) is suitable for countersinking DIN 912 socket head cap screws.

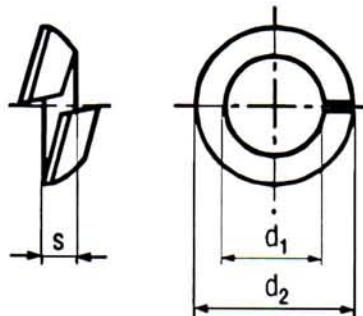
# Lock Washers

Spring Steel

DIN 74361-C

## For Disc Wheels

W105 — Zinc Plated



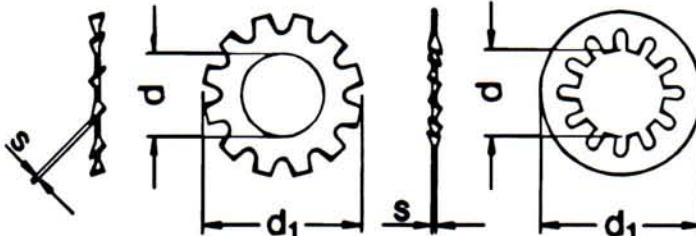
d <sub>1</sub> +0.5	For Screw	d <sub>2</sub>	s	FMP Order #
12.5	M12x1.5	23	5	W105-012-0000
14.5	M14x1.5	26	6	W105-014-0000
16.5	M16x1.5	27	7	W105-016-0000
18.5	M18x1.5	29	7	W105-018-0000
20.5	M20x1.5	34	8	W105-020-0000
22.5	M22x1.5	34	8	W105-022-0000

\*Please contact us for availability\*

S → Normally Stocked | \* → Call for Availability

**Toothed Washers** DIN 6797A  
Spring Steel

**External Form "A"**  
W052 — 6797A Zinc Plated



**Toothed Washers** DIN 6797J  
Spring Steel

**Internal Form "J"**  
W053 — 6797J Zinc Plated

3

For Screw	d	d <sub>1</sub>	s	External		Internal	
				W052	FMP Order #	W053	FMP Order #
M2	2.2	4.5	0.3	S	W052-002-0000	*	W053-002-0000
M2.3	2.5	5	0.4	S	W052-2.3-0000	*	W053-2.3-0000
M2.5	2.7	5.5	0.4	S	W052-2.5-0000	*	W053-2.5-0000
M2.6	2.8	5.5	0.4	*	W052-2.6-0000	*	W053-2.6-0000
M3	3.2	6	0.4	S	W052-003-0000	S	W053-003-0000
M3.5	3.7	7	0.5	*	W052-3.5-0000	*	W053-3.5-0000
M4	4.3	8	0.5	S	W052-004-0000	S	W053-004-0000
M5	5.3	10	0.6	S	W052-005-0000	S	W053-005-0000
M6	6.4	11	0.7	S	W052-006-0000	S	W053-006-0000
M8	8.4	15	0.8	S	W052-008-0000	S	W053-008-0000
M10	10.5	18	0.9	S	W052-010-0000	S	W053-010-0000
M12	13	20.5	1	S	W052-012-0000	*	W053-012-0000
M14	15	24	1	S	W052-014-0000	*	W053-014-0000
M16	17	26	1.2	S	W052-016-0000	*	W053-016-0000
M18	19	30	1.4	*	W052-018-0000	*	W053-018-0000
M20	21	33	1.4	S	W052-020-0000	*	W053-020-0000
M22	23	36	1.5	S	W052-022-0000	*	
M24	25	38	1.5	S	W052-024-0000	*	W053-024-0000
M30	31	48	1.6	S	W052-030-0000		

S → Normally Stocked | \* → Call for Availability

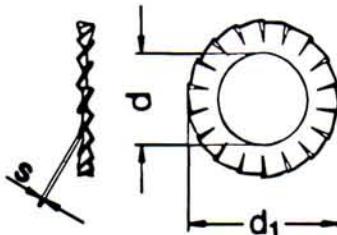
## Serrated Washers DIN 6798A

Spring Steel

3

### External Form "A"

W055 — 6798A Zinc Plated

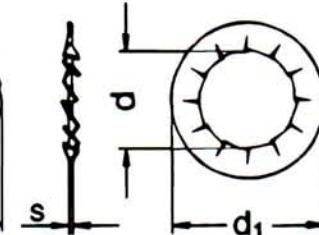


## Serrated Washers DIN 6798J

Spring Steel

### Internal Form "J"

W057 — 6798J Zinc Plated



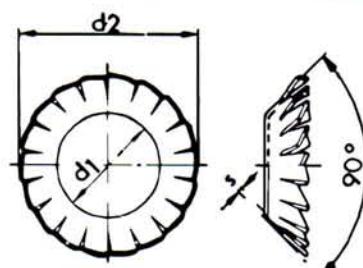
For Screw	$d$	$d_1$	$s$	External		Internal	
				W055	FMP Order #	W057	FMP Order #
M2	2.2	4.5	0.3	S	W055-002-0000	S	W057-002-0000
M2.3	2.5	5	0.4	*	W055-2.3-0000	*	W057-2.3-0000
M2.5	2.7	5.5	0.4	S	W055-2.5-0000	S	W057-2.5-0000
M2.6	2.8	5.5	0.4	S	W055-2.6-0000	*	W057-2.6-0000
M3	3.2	6	0.4	S	W055-003-0000	S	W057-003-0000
M3.5	3.7	7	0.5	*	W055-3.5-0000	*	W057-3.5-0000
M4	4.3	8	0.5	S	W055-004-0000	S	W057-004-0000
M5	5.3	10	0.6	S	W055-005-0000	S	W057-005-0000
M6	6.4	11	0.7	S	W055-006-0000	S	W057-006-0000
M7	7.4	12.5	0.8	S	W055-007-0000	S	W057-007-0000
M8	8.4	15	0.8	S	W055-008-0000	S	W057-008-0000
M10	10.5	18	0.9	S	W055-010-0000	S	W057-010-0000
M12	13	20.5	1	S	W055-012-0000	S	W057-012-0000
M14	15	24	1	S	W055-014-0000	S	W057-014-0000
M16	17	26	1.2	S	W055-016-0000	S	W057-016-0000
M18	19	30	1.4	*	W055-018-0000	*	W057-018-0000
M20	21	33	1.4	S	W055-020-0000	S	W057-020-0000
M22	23	36	1.5	*	W055-022-0000	*	W057-022-0000
M24	25	38	1.5	*	W055-024-0000	*	W057-024-0000

## Serrated Washers DIN 6798V

Spring Steel

### Countersunk Form "V"

W059 — 6798V Zinc Plated



For Screw	$d_1\text{ min}$	$d_2\text{ max}$	$s$	Stock	FMP Order #
M3	3.2	6	0.2	*	W059-003-0000
M3.5	3.7	7	0.25	*	W059-3.5-0000
M4	4.3	8	0.25	*	W059-004-0000
M5	5.3	9.8	0.3	*	W059-005-0000
M6	6.4	11.8	0.4	*	W059-006-0000
M8	8.4	15.3	0.4	*	W059-008-0000
M10	10.5	19	0.5	*	W059-010-0000
M12	13	23	0.5	*	W059-012-0000
M16	17	30.2	0.6	*	W059-016-0000

S → Normally Stocked | \* → Call for Availability

# Disc Spring Washers

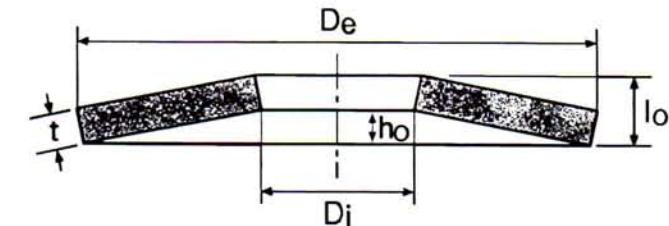
DIN 2093

- 50CrV4 (Chrome Vanadium)
- CS 70 (Carbon Steel)



W098 — Steel

F = Force in Newtons at deflection S.



3

OD(De)	ID(Di)	Thickness(t)	lo	F @ S = 75% ho	Material	Series	Stock
6.0	3.2	.3	—	—	○	—	S
6.4	3.2	.33	—	—	○	—	S
8.0	3.2	.20	.40	26	○	B	S
8.0	3.2	.30	.55	104	○	B	S
8.0	3.2	.40	.60	185	○	A	S
8.0	3.2	.50	.70	358	○	A	S
8.0	4.2	.20	.45	39	○	C	S
8.0	4.2	.30	.55	118	○	B	S
8.0	4.2	.40	.60	210	○	A	S
10.0	3.2	.30	.65	98	○	C	S
10.0	3.2	.50	.75	278	○	A	S
10.0	4.2	.40	.70	189	○	B	S
10.0	4.2	.50	.75	295	○	A	S
10.0	4.2	.60	.85	504	○	A	S
10.0	5.2	.25	.55	58	○	C	S
10.0	5.2	.40	.70	210	○	B	S
10.0	5.2	.50	.75	326	○	A	S
12.0	4.2	.40	.80	179	○	B	S
12.0	4.2	.50	.85	284	○	B	S
12.0	5.2	.40	.80	188	○	B	S
12.0	5.2	.50	.90	350	○	B	S
12.0	5.2	.60	.95	506	○	B	S
12.0	5.2	.80	1.10	998	○	A	S
12.0	6.2	.50	.85	326	○	B	S
12.0	6.2	.60	.95	551	○	B	S
12.0	6.2	.80	1.10	1090	○	A	S
12.5	6.2	.35	.80	151	○	C	S
12.5	6.2	.50	.85	293	○	B	S
12.5	6.2	.70	1.00	660	○	A	S
14.0	6.2	.90	1.25	1228	○	A	S
14.0	7.2	.35	.80	123	○	C	S
14.0	7.2	.50	.90	280	○	B	S
14.0	7.2	.80	1.10	796	○	A	S
15.0	5.2	.40	.95	176	○	C	S
15.0	5.2	.70	1.10	555	○	B	S
15.0	6.2	.50	1.00	290	○	B	S
15.0	6.2	.60	1.05	423	○	B	S
15.0	6.2	.70	1.10	578	○	B	S
15.0	8.2	.70	1.10	666	○	B	S
15.0	8.2	.80	1.20	983	○	A	S
16.0	8.2	.40	.90	154	○	C	S

Order Number → Disc Spring 10.0x3.2x0.3 = W098-100-032-030

S → Normally Stocked | \* → Call for Availability

# Disc Spring Washers

DIN 2093

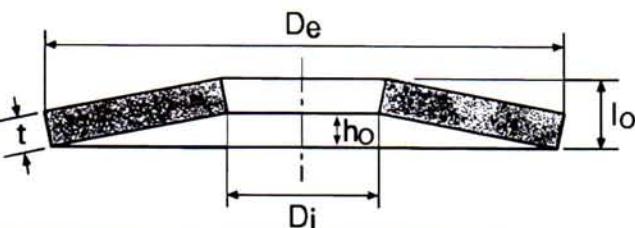
- 50CrV4 (Chrome Vanadium)
- CS 70 (Carbon Steel)



W098 — Steel

F = Force in Newtons at deflection S.

3



OD(De)	ID(Di)	Thickness(t)	lo	F @ S = 75% ho	Material	Series	Stock
16.0	8.2	.60	1.05	410	○	B	S
16.0	8.2	.90	1.25	1013	○	A	S
18.0	6.2	.40	1.00	140	○	C	S
18.0	6.2	.50	1.10	245	○	C	S
18.0	6.2	.60	1.20	401	○	B	S
18.0	6.2	.70	1.25	553	○	B	S
18.0	6.2	.80	1.30	726	○	B	S
18.0	8.2	.70	1.25	596	○	B	S
18.0	8.2	.80	1.30	932	○	B	S
18.0	8.2	1.00	1.50	1501	○	A	S
18.0	9.2	.45	1.05	213	○	C	S
18.0	9.2	.70	1.20	566	○	B	S
18.0	9.2	1.00	1.40	1253	○	A	S
20.0	8.2	.60	1.30	412	○	C	S
20.0	8.2	.70	1.35	569	○	B	S
20.0	8.2	.80	1.40	750	○	B	S
20.0	8.2	.90	1.45	959	○	B	S
20.0	10.2	.50	1.15	254	○	C	S
20.0	10.2	.80	1.35	749	○	B	S
20.0	10.2	.90	1.45	1049	○	B	S
20.0	10.2	1.00	1.55	1424	○	B	S
20.0	10.2	1.10	1.55	1520	○	A	S
20.0	10.2	1.25	1.75	2476	○□	A	S
22.0	10.2	1.22	1.82	2197	○□	A	S
22.5	11.2	.60	1.40	425	○	C	S
22.5	11.2	.80	1.45	707	○	B	S
22.5	11.2	1.25	1.75	1930	○□	A	S
23.0	8.2	.70	1.50	543	○	C	S
23.0	8.2	.80	1.55	719	○	B	S
23.0	8.2	.90	1.60	920	○	B	S
23.0	8.2	1.00	1.70	1243	○	B	S
23.0	10.2	.90	1.65	1062	○	B	S
23.0	10.2	1.00	1.70	1315	○	B	S
23.0	12.2	1.25	1.85	2331	○□	A	S
23.0	12.2	1.50	2.11	4056	○□	A	S
25.0	12.2	.70	1.60	598	○	C	S
25.0	12.2	.90	1.60	862	○	B	S
25.0	12.2	1.00	1.80	1358	○	B	S
25.0	12.2	1.25	1.95	2211	○□	B	S
25.0	12.2	1.50	2.05	2926	○□	A	S
28.0	10.2	.80	1.75	662	○	C	S

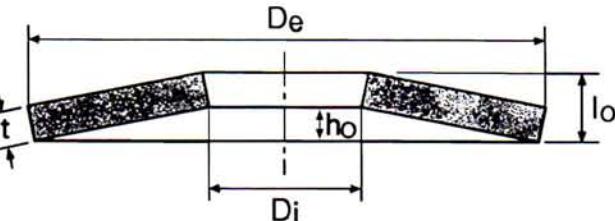
Order Number → Disc Spring 10.0x3.2x0.3 = W098-100-032-030

S → Normally Stocked | \* → Call for Availability

# Disc Spring Washers

DIN 2093

- 50CrV4 (Chrome Vanadium)
- CS 70 (Carbon Steel)



W098 — Steel

F = Force in Newtons at deflection S.

3

OD(De)	ID(Di)	Thickness(t)	lo	F @ S = 75% ho	Material	Series	Stock
28.0	10.2	1.00	1.90	1130	○	B	S
28.0	10.2	1.25	2.05	1853	○□	B	S
28.0	10.2	1.50	2.20	2724	○□	A	S
28.0	12.2	1.00	1.95	1267	○	B	S
28.0	12.2	1.25	2.10	2067	○□	B	S
28.0	12.2	1.50	2.25	3062	○□	A	S
28.0	14.2	.80	1.80	802	○	C	S
28.0	14.2	1.00	1.80	1107	○	B	S
28.0	14.2	1.25	2.10	2225	○□	B	S
28.0	14.2	1.50	2.15	2840	○□	A	S
31.5	12.2	1.00	2.10	1170	○	C	S
31.5	12.2	1.50	2.23	2690	○□	B	S
31.5	16.3	.80	1.85	687	○	C	S
31.5	16.3	1.25	2.15	1913	○□	B	S
31.5	16.3	1.5	2.40	3230	○□	B	S
31.5	16.3	1.75	2.45	3872	○□	A	S
31.5	16.3	2.00	2.76	6258	○□	A	S
34.0	12.3	1.00	2.25	1174	○	C	S
34.0	12.3	1.25	2.35	1819	○□	B	S
34.0	12.3	1.50	2.50	2724	○□	B	S
34.0	14.3	1.25	2.40	1993	○□	B	S
34.0	14.3	1.50	2.55	2990	○□	B	S
34.0	16.3	1.50	2.55	3155	○□	B	S
34.0	16.3	2.00	2.85	5785	○□	A	S
35.5	18.3	.90	2.05	831	○	C	S
35.5	18.3	1.25	2.25	1698	○□	B	S
35.5	18.3	2.00	2.80	5187	○□	A	S
40.0	14.3	1.25	2.65	1780	○□	C	S
40.0	14.3	1.50	2.75	2542	○□	B	S
40.0	14.3	2.00	3.05	4771	○□	B	S
40.0	16.3	1.50	2.80	2751	○□	B	S
40.0	16.3	2.00	3.10	5166	○□	B	S
40.0	18.3	2.00	3.15	5658	○□	B	S
40.0	20.4	1.00	2.30	1016	○	C	S
40.0	20.4	1.50	2.65	2622	○□	B	S
40.0	20.4	2.00	3.10	5700	○□	B	S
40.0	20.4	2.25	3.15	6500	○□	A	S
40.0	20.4	2.50	3.45	9387	○□	A	S
45.0	22.4	1.25	2.85	1890	○□	C	S
45.0	22.4	1.75	3.05	3644	○□	B	S
45.0	22.4	2.50	3.50	7720	○□	A	S

Order Number → Disc Spring 10.0x3.2x0.3 = W098-100-032-030

S → Normally Stocked | \* → Call for Availability

# Disc Spring Washers

DIN 2093

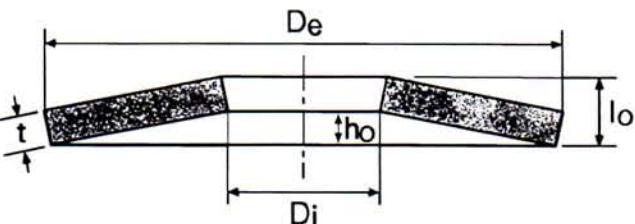
- 50CrV4 (Chrome Vanadium)
- CS 70 (Carbon Steel)



W098 — Steel

F = Force in Newtons at deflection S.

3



OD(De)	ID(Di)	Thickness(t)	lo	F @ S = 75% ho	Material	Series	Stock
45.0	24.4	2.20	3.40	6839	○□	B	S
50.0	18.4	1.50	3.30	2607	○□	C	S
50.0	18.4	2.00	3.50	4572	○□	B	*
50.0	18.4	2.50	4.10	9317	○□	B	S
50.0	20.4	2.00	3.50	4683	○□	B	S
50.0	20.4	2.50	3.85	7913	○□	B	S
50.0	22.4	2.00	3.60	5220	○□	B	S
50.0	22.4	2.50	3.90	8493	○□	B	S
50.0	25.4	1.25	2.85	1550	○□	C	S
50.0	25.4	2.00	3.40	4761	○□	B	S
50.0	25.4	2.25	3.75	7219	○□	B	S
50.0	25.4	2.50	3.90	902	○□	B	S
50.0	25.4	3.00	4.10	11977	□	A	S
56.0	28.5	1.50	3.45	2647	○□	C	S
56.0	28.5	2.00	3.60	4437	○□	B	S
56.0	28.5	3.00	4.30	11381	□	A	S
60.0	20.5	2.00	4.10	4727	○□	C	S
60.0	20.5	2.50	4.30	7296	○□	B	S
60.0	25.5	2.50	4.40	8171	○□	B	S
60.0	25.5	3.00	4.65	11778	□	B	S
60.0	30.5	2.50	4.50	9430	○□	B	S
60.0	30.5	3.00	4.70	13230	□	B	S
60.0	30.5	3.50	5.00	18150	□	A	S
63.0	31.0	1.80	4.15	4243	○□	C	S
63.0	31.0	2.50	4.25	7186	○□	B	S
63.0	31.0	3.00	4.70	11773	□	B	S
63.0	31.0	3.50	4.90	15026	□	A	S
70.0	30.5	2.50	4.90	8030	○□	B	S
70.0	30.5	3.00	5.10	11420	□	B	S
70.0	35.5	3.00	5.10	12285	□	B	S
70.0	35.5	4.00	5.80	23919	□	A	S
71.0	36.0	2.00	4.60	5140	○□	C	S
71.0	36.0	2.50	4.50	6724	○□	B	S
71.0	36.0	4.00	5.60	20538	□	A	S
80.0	41.0	2.25	5.20	6606	○□	C	S
80.0	41.0	3.00	5.30	10520	□	B	S
80.0	41.0	4.00	6.20	22859	□	B	S
80.0	41.0	5.00	6.70	33338	□	A	S
90.0	46.0	2.50	5.70	7760	○□	C	S
90.0	46.0	3.50	6.00	14143	□	B	*
90.0	46.0	5.00	7.00	31370	□	A	S

Order Number → Disc Spring 10.0x3.2x0.3 = W098-100-032-030

S → Normally Stocked | \* → Call for Availability

# Disc Spring Washers

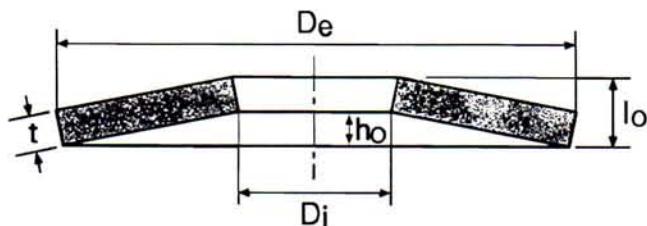
DIN 2093

- 50CrV4 (Chrome Vanadium)
- CS 70 (Carbon Steel)



W098 — Steel

F = Force in Newtons at deflection S.



3

OD(De)	ID(Di)	Thickness(t)	lo	F @ S = 75% ho	Material	Series	Stock
100.0	41.0	4.00	7.20	20239	<input type="checkbox"/>	B	S
100.0	41.0	5.00	7.75	32400	<input type="checkbox"/>	B	*
100.0	51.0	2.70	6.20	8615	<input checked="" type="checkbox"/>	C	S
100.0	51.0	3.50	6.30	13096	<input type="checkbox"/>	B	S
100.0	51.0	4.00	7.00	20666	<input type="checkbox"/>	B	*
100.0	51.0	5.00	7.80	36300	<input type="checkbox"/>	B	S
100.0	51.0	6.00	8.20	48034	<input type="checkbox"/>	A	S
112.0	57.0	3.00	6.90	10489	<input type="checkbox"/>	C	S
112.0	57.0	4.00	7.20	17753	<input type="checkbox"/>	B	*
112.0	57.0	6.00	8.50	43729	<input type="checkbox"/>	A	*
125.0	64.0	3.50	8.00	15400		C	*
125.0	64.0	5.00	8.50	30000		B	*
140.0	72.0	3.80	8.70	17200		C	*
140.0	72.0	5.00	9.00	27900		B	*
160.0	82.0	4.30	9.90	21800		C	*
160.0	82.0	6.00	10.50	41100		B	*
180.0	92.0	4.80	11.00	26400		C	*
180.0	92.0	6.00	11.10	37500		B	*
200.0	102.0	5.50	12.50	36100		C	*

Order Number → Disc Spring 10.0x3.2x0.3 = W098-100-032-030

Diameter Tolerances		
Nominal (mm)	h12 -tol	H12 + tol
3 < Nom. ≤ 6		0.12
6 < Nom. ≤ 10		0.15
10 < Nom. ≤ 18		0.18
18 < Nom. ≤ 30		0.21
30 < Nom. ≤ 50		0.25
50 < Nom. ≤ 80		0.30
80 < Nom. ≤ 120		0.35
120 < Nom. ≤ 180		0.40
180 < Nom. ≤ 250		0.46

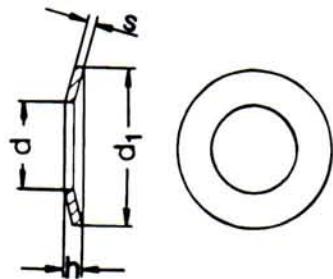
Material Specifications		
	Carbon Steel CS 70	Chrome Vanadium 50CrV4
Carbon	0.65 / 0.75	0.47 / 0.55
Manganese	0.50 / 0.90	0.70 / 1.10
Silicon	0.05 / 0.35	0.15 / 0.40
Sulphur	.045 max.	.035 max.
Phosphorous	.045 max.	.035 max.
Chrome		0.90 / 1.20
Vanadium		0.10 / 0.20

S → Normally Stocked | \* → Call for Availability

# Spring Washers

DIN 6796

Spring Steel



## Conical

W096-Z — 6796 Zinc Plated

**3**

For Screw	d	d <sub>1</sub>	s	h max.	Stock	FMP Order #
M2	2.2	5	0.4	0.6	S	W096-002-0000-Z
M2.5	2.7	6	0.5	0.72	S	W096-2.5-0000-Z
M3	3.2	7	0.6	0.85	S	W096-003-0000-Z
M3.5	3.7	8	0.8	1.06	*	W096-3.5-0000-Z
M4	4.3	9	1	1.3	S	W096-004-0000-Z
M5	5.3	11	1.2	1.55	S	W096-005-0000-Z
M6	6.4	14	1.5	2	S	W096-006-0000-Z
M7	7.4	17	1.75	2.3	*	W096-007-0000-Z
M8	8.4	18	2	2.6	S	W096-008-0000-Z
M10	10.5	23	2.5	3.2	*	W096-010-0000-Z
M12	13	29	3	3.95	*	W096-012-0000-Z
M14	15	35	3.5	4.65	*	W096-014-0000-Z
M16	17	39	4	5.25	*	W096-016-0000-Z
M18	19	42	4.5	5.8	*	W096-018-0000-Z
M20	21	45	5	6.4	*	W096-020-0000-Z
M22	23	49	5.5	7.05	*	W096-022-0000-Z
M24	25	56	6	7.75	*	W096-024-0000-Z
M27	28	60	6.5	8.35	*	W096-027-0000-Z
M30	31	70	7	9.2	*	W096-030-0000-Z

S → Normally Stocked | \* → Call for Availability

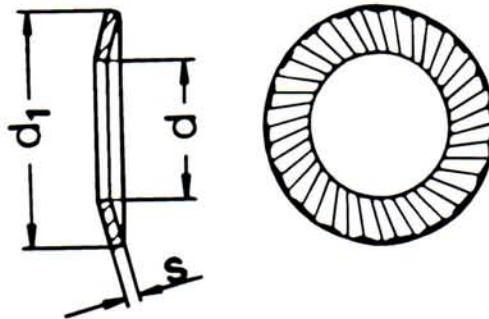
# Lock Washers

Spring Steel

## \*Ribbed Safety

W069 — Bare Steel

W070 — Zinc Plated



3

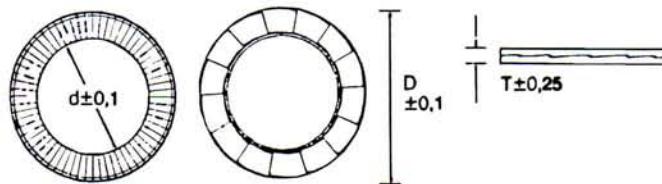
For Screw	ID(d)	*OD(d <sub>1</sub> )	s	Bare		Zinc	
				W069	FMP Order #	W070	FMP Order #
M1.6	1.7	3.2	0.35	*	W069-1.6-0000	*	W070-1.6-0000
M2	2.2	4	0.35	*	W069-002-0000	*	W070-002-0000
M2.5	2.7	4	0.45	*	W069-2.5-0000	*	W070-2.5-0000
M3	3.2	5	0.45	S	W069-003-0000	*	W070-003-0000
M3.5	3.7	6	0.45	*	W069-3.5-0000	*	W070-3.5-0000
M4	4.3	7	0.50	S	W069-004-0000	S	W070-004-0000
M5	5.3	9	0.60	S	W069-005-0000	S	W070-005-0000
M6	6.4	10	0.70	S	W069-006-0000	S	W070-006-0000
M7	7.4	12	0.70	*	W069-007-0000	*	W070-007-0000
M8	8.4	13	0.80	S	W069-008-0000	S	W070-008-0000
M10	10.5	16	1	S	W069-010-0000	S	W070-010-0000
M12	13	18	1.1	S	W069-012-0000	S	W070-012-0000
M14	15	22	1.2	S	W069-014-0000	*	W070-014-0000
M16	17	24	1.3	S	W069-016-0000	S	W070-016-0000
M18	19	27	1.5	S	W069-018-0000	*	W070-018-0000
M20	21	30	1.5	S	W069-020-0000	*	W070-020-0000
M22	23	33	1.5	S	W069-022-0000	*	W070-022-0000
M24	25.6	36	1.8	S	W069-024-0000	*	W070-024-0000
M27	28.6	39	2	*	W069-027-0000	*	W070-027-0000
M30	31.6	45	2	S	W069-030-0000	*	W070-030-0000
M36	38	54	2.5	*	W069-036-0000	*	W070-036-0000

\*NOTE: Outer diameter (d<sub>1</sub>) is suitable for countersinking DIN 912 socket head cap screws.

S → Normally Stocked | \* → Call for Availability

# Nord Lock Washers

HRC 48



W0N1 — Zinc Plated Yellow Chromated

\*Sold in pairs\*

\*Also available in Stainless Steel\*

3

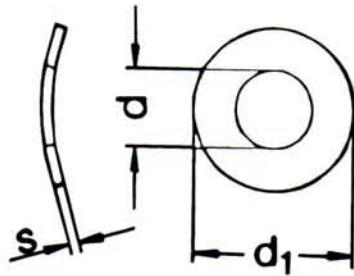
Metric	Imperial	ID(d)	OD(D)	Thickness(T)	W0N1	FMP Order #
M3	#4	3.4	7.0	1.8	S	W0N1-003-0000
M3.5	#6	3.9	9.0	1.8	*	W0N1-3.5-0000
M4	#8	4.4	9.0	1.8	S	W0N1-004-0000
M5	#10	5.4	9.0	1.8	S	W0N1-005-0000
M6		6.5	10.8	1.8	S	W0N1-006-0000
M7	1/4	7.2	11.5	1.8	*	W0N1-007-0000
M8	5/16	8.7	13.5	2.5	S	W0N1-008-0000
M9	3/8	10.3	16.6	2.5	*	W0N1-009-0000
M10		10.7	16.6	2.5	S	W0N1-010-0000
M11	7/16	11.4	18.5	2.5	S	W0N1-011-0000
M12		13.0	19.5	2.5	S	W0N1-012-0000
M13	1/2	13.5	19.5	2.5	*	W0N1-013-0000
M14	9/16	15.2	23.0	3.4	S	W0N1-014-0000
M16	5/8	17.0	25.4	3.4	S	W0N1-016-0000
M18	11/16	19.5	29.0	3.4	S	W0N1-018-0000
M19	3/4	20.0	30.7	3.4	*	W0N1-019-0000
M20		21.4	30.7	3.4	S	W0N1-020-0000
M22	7/8	23.4	34.5	3.4	S	W0N1-022-0000
M24	15/16	25.3	39.0	3.4	*	W0N1-024-0000
M25	1	27.9	39.0	3.4	S	W0N1-025-0000
M27	1-1/16	28.4	42.0	6.6	*	W0N1-027-0000
M30	1-1/8	31.4	47.0	6.6	S	W0N1-030-0000
M33	1-1/4	34.4	48.5	6.6	S	W0N1-033-0000
M36	1-3/8	37.4	55.0	6.6	S	W0N1-036-0000
M39	1-1/2	40.4	58.5	6.6	S	W0N1-039-0000
M42	1-5/16	43.2	63.0	6.6	*	W0N1-042-0000
M45	1-3/4	46.2	70.0	9.5	*	W0N1-045-0000
M48	1-7/8	49.6	75.0	9.5	*	W0N1-048-0000
M52	2	53.6	80.0	9.5	*	W0N1-052-0000
M56	2-1/4	59.1	85.0	9.5	*	W0N1-056-0000
M60	2-5/16	63.1	90.0	9.5	*	W0N1-060-0000
M64	2-1/2	67.1	95.0	9.5	*	W0N1-064-0000
M68		71.1	100.0	9.5	*	W0N1-068-0000
M72		75.1	105.0	9.5	*	W0N1-072-0000
M76		79.1	110.0	9.5	*	W0N1-076-0000
M80		83.1	115.0	9.5	*	W0N1-080-0000
M85		88.1	120.0	9.5	*	W0N1-085-0000
M90		92.4	130.0	9.5	*	W0N1-090-0000
M95		97.4	135.0	9.5	*	W0N1-095-0000
M100		103.4	145.0	9.5	*	W0N1-100-0000
M105		108.4	150.0	9.5	*	W0N1-105-0000
M110		113.4	155.0	9.5	*	W0N1-110-0000
M115		118.4	165	9.5	*	W0N1-115-0000
M120		123.4	170	9.5	*	W0N1-120-0000
M125		128.4	173	9.5	*	W0N1-125-0000
M130		133.4	178	9.5	*	W0N1-130-0000

S → Normally Stocked | \* → Call for Availability

# Spring Washers

Spring Steel

DIN 137A



## Form "A" (Curved)

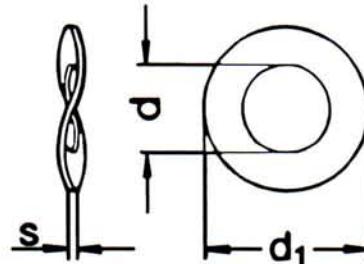
W061 — 137A Zinc Plated

For Screw	d	d <sub>1</sub>	s	Stock	FMP Order #
M1	1.1	2.5	0.2	*	W061-001-0000
M1.2	1.3	3	0.2	*	W061-1.2-0000
M1.4	1.5	3	0.25	*	W061-1.4-0000
M1.6	1.8	4	0.25	*	W061-1.6-0000
M1.7	1.8	4	0.25	*	W061-1.7-0000
M2	2.2	4.5	0.3	*	W061-002-0000
M2.3	2.5	5	0.3	*	W061-2.3-0000
M2.5	2.8	5.5	0.3	*	W061-2.5-0000
M2.6	2.8	5.5	0.3	*	W061-2.6-0000
M3	3.2	6	0.4	S	W061-003-0000
M3.5	3.7	7	0.4	S	W061-3.5-0000
M4	4.3	8	0.5	S	W061-004-0000
M5	5.3	10	0.5	S	W061-005-0000
M6	6.4	11	0.5	S	W061-006-0000
M7	7.4	12	0.5	*	W061-007-0000
M8	8.4	15	0.5	S	W061-008-0000
M10	10.5	18	0.8	S	W061-010-0000

# Spring Washers

DIN 137B

Spring Steel



## Form "B" (Crinkled)

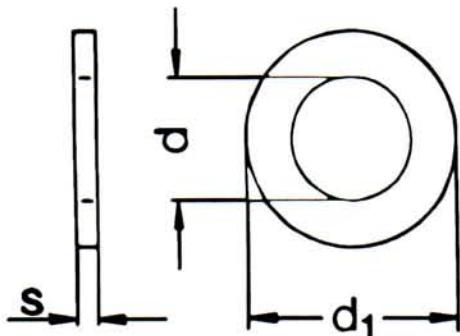
W063 — 137B Zinc Plated

For Screw	d	d <sub>1</sub>	s	Stock	FMP Order #
M3	3.2	8	0.5	S	W063-003-0000
M4	4.3	9	0.5	S	W063-004-0000
M5	5.3	11	0.5	S	W063-005-0000
M6	6.4	12	0.5	S	W063-006-0000
M7	7.4	14	0.8	S	W063-007-0000
M8	8.4	15	0.8	S	W063-008-0000
M10	10.5	21	1	S	W063-010-0000
M12	13	24	1.2	S	W063-012-0000
M14	15	28	1.6	S	W063-014-0000
M16	17	30	1.6	S	W063-016-0000
M18	19	34	1.6	*	W063-018-0000
M20	21	36	1.6	*	W063-020-0000
M22	23	40	1.8	*	W063-022-0000
M24	25	44	1.8	*	W063-024-0000
M27	28	50	2	*	W063-027-0000
M30	31	56	2.2	*	W063-030-0000
M33	34	60	2.2	*	W063-033-0000
M36	37	68	2.5	*	W063-036-0000

S → Normally Stocked | \* → Call for Availability

# Sealing Washer

DIN 7603



## For Fittings and Pipe Plugs

W075 — 7603A Copper

W077 — 7603A Fiber

W078 — 7603A Aluminium

3

d	d <sub>1</sub>	s	W075	W077	W078
M4	8	1	*		S
M5	9	1	*		S
M6	10	1	S		*
M6	12	1	S		
M6.5	9.5	1	S		
M8	11	1	S		S
M8	11.5	1	*		S
M8	12	1	S		S
M8	14	1	S		S
M8	14	1.5	*		S
M8	15	1.5			*
M8	22	1.5		S	
M10	13	1			S
M10	14	1	S		S
M10	14	1.5	*		S
M10	16	1	S		S
M10	16	1.5	S		
M12	16	1	S		
M12	16	1.5	S		S
M12	18	1.5	S		S
M12	24	2		S	
M14	18	1.5	S		S
M14	20	1.5	S		S
M14	22	1.5	*		S
M14	22	2	*		S
M16	20	1.5	S		S
M16	22	1.5	S		S
M17	21	1.5	S		
M18	22	1.5	S		S
M18	24	1.5	S		S
M19	26	2	S		
M20	24	1.5	S		S
M20	26	1.5	S		S
M22	27	1.5	S		S
M22	29	1.5	S		*
M23	28	2	S		
M24	29	2	S		
M24	32	2	S		*
M25	35	2		S	
M27	32	2	*		
M27	35	2	*		
M28	34	2	S		
M30	36	2	S		*
M30	36	2.5	S		
M48	55	2	S		

S → Normally Stocked | \* → Call for Availability

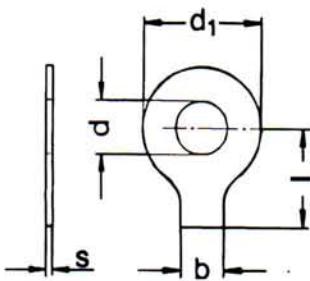
# Tab Washers

DIN 93

Steel

## With Long Tab

W071 — 93 Zinc Plated



3

For Screw	d	d <sub>1</sub>	b	s	l	Stock	FMP Order #
M3	3.2	12	4	0.38	13	*	W071-003-0000
M3.5	3.7	12	4	0.38	13	*	W071-3.5-0000
M4	4.3	14	5	0.38	14	*	W071-004-0000
M5	5.3	17	6	0.5	16	*	W071-005-0000
M6	6.4	19	7	0.5	18	S	W071-006-0000
M8	8.4	22	8	0.75	20	S	W071-008-0000
M10	10.5	26	10	0.75	22	S	W071-010-0000
M12	13	30	12	1	28	S	W071-012-0000
M14	15	33	12	1	28	*	W071-014-0000
M16	17	36	15	1	32	S	W071-016-0000
M18	19	40	18	1	36	S	W071-018-0000
M20	21	42	18	1	36	S	W071-020-0000
M22	23	50	20	1	42	S	W071-022-0000
M24	25	50	20	1	42	*	W071-024-0000
M27	28	58	23	1.6	48	*	W071-027-0000
M30	31	63	26	1.6	52	*	W071-030-0000
M33	34	68	28	1.6	56	*	W071-033-0000
M36	37	75	30	1.6	60	*	W071-036-0000
M39	40	82	32	1.6	64	*	W071-039-0000
M42	43	88	35	1.6	70	*	W071-042-0000
M48	50	100	40	1.6	80	*	W071-048-0000
M52	54	105	44	1.6	85	*	W071-052-0000

S → Normally Stocked | \* → Call for Availability

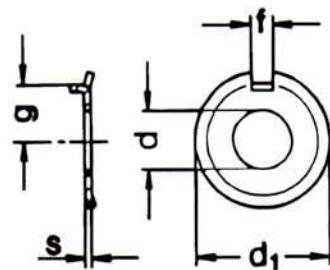
# Tab Washers

DIN 432

Steel

## With External Tab

W072 — 432 Zinc Plated



3

For Screw	d	d <sub>1</sub>	s	f	g	Stock	FMP Order #
M3	3.2	12	0.4	2.5	4.5	*	W072-003-0000
M4	4.3	14	0.4	2.5	5.5	*	W072-004-0000
M5	5.3	17	0.75	3.5	7	*	W072-005-0000
M6	6.4	19	0.75	3.5	7.5	*	W072-006-0000
M8	8.4	22	1	3.5	8.5	*	W072-008-0000
M10	10.5	26	1	4.5	10	*	W072-010-0000
M12	13	30	1.2	4.5	12	*	W072-012-0000
M14	15	33	1.2	4.5	13	*	W072-014-0000
M16	17	36	1.2	5.5	15	S	W072-016-0000
M18	19	40	1.2	6.5	18	*	W072-018-0000
M20	21	42	1.6	6.5	18	S	W072-020-0000
M22	23	50	1.6	7.5	20	*	W072-022-0000
M24	25	50	1.6	7.5	21	*	W072-024-0000
M27	28	58	1.6	8.5	23	*	W072-027-0000
M30	31	63	1.6	8.5	25	S	W072-030-0000
M33	34	68	1.6	9.5	28	*	W072-033-0000
M36	37	75	2	11	31	S	W072-036-0000
M39	40	82	2	11	33	*	W072-039-0000
M42	43	88	2	11	36	*	W072-042-0000
M45	46	95	2	13	38	*	W072-045-0000
M48	50	100	2	13	40	*	W072-048-0000
M52	54	105	2	13	42	*	W072-052-0000

S → Normally Stocked | \* → Call for Availability

# Tab Washers

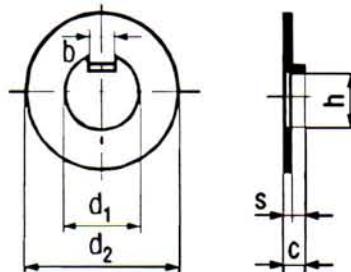
DIN 462

Steel

Internal

## For Slotted Round Nuts

W079 — Zinc Plated



**3**

d <sub>1</sub> H11	d <sub>2</sub> h11	b c11	s	h H11	c	FMP Order #
8	20	3		5.9	2.5	W079-008-0000
10	25	4		7.4		W079-010-0000
12	28			9.3		W079-012-0000
14	30			11.4		W079-014-0000
16	32			13.5		W079-016-0000
18	34			15.4		W079-018-0000
20	36			17.5		W079-020-0000
22	40			19.5		W079-022-0000
24	42			21.6		W079-024-0000
26	45			23.5		W079-026-0000
28	50			25.5		W079-028-0000
30	50			27.5		W079-030-0000
32	52			29.6		W079-032-0000
35	55			32.6		W079-035-0000
38	58			35.3		W079-038-0000
40	62			37.3		W079-040-0000
42	62			39.3		W079-042-0000
45	68			42.4		W079-045-0000
48	75			45.4		W079-048-0000
50	75			47.4		W079-050-0000

\*Please contact us for availability\*

S → Normally Stocked | \* → Call for Availability

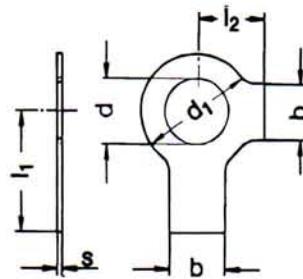
# Tab Washers

DIN 463

Steel

## With 1 Short and 1 Long Tab

W073 — 463 Zinc Plated



3

For Screw	d	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	b	s	Stock	FMP Order #
M3	3.2	7	13	5	4	0.38	*	W073-003-0000
M4	4.3	9	14	6.5	5	0.38	*	W073-004-0000
M5	5.3	10	16	8	6	0.5	*	W073-005-0000
M6	6.4	12.5	18	9	7	0.5	S	W073-006-0000
M8	8.4	17	20	11	8	0.75	S	W073-008-0000
M10	10.5	21	22	13	10	0.75	S	W073-010-0000
M12	13	24	28	15	12	1	S	W073-012-0000
M14	15	28	28	16	12	1	*	W073-014-0000
M16	17	30	32	18	15	1	S	W073-016-0000
M18	19	34	36	20	18	1	*	W073-018-0000
M20	21	37	36	21	18	1	S	W073-020-0000
M22	23	39	42	23	20	1	*	W073-022-0000
M24	25	44	42	25	20	1	S	W073-024-0000
M27	28	50	48	29	23	1.6	*	W073-027-0000
M30	31	56	52	32	26	1.6	S	W073-030-0000
M33	34	60	56	34	28	1.6	S	W073-033-0000
M36	37	66	60	38	30	1.6	*	W073-036-0000
M39	40	72	64	41	32	1.6	*	W073-039-0000

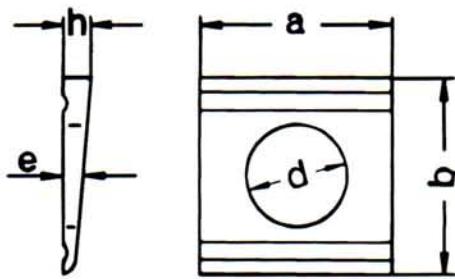
S → Normally Stocked | \* → Call for Availability

## Square Washers DIN 434

Steel

### 8% Taper (For Channels)

W021 — 434 Bare Steel



3

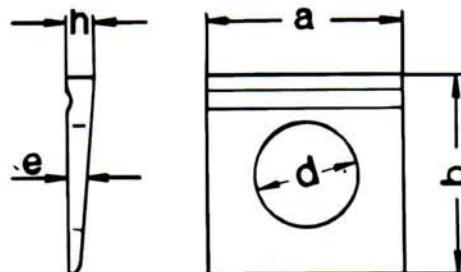
For Screw	d	a	b	e	h	Stock	FMP Order #
M8	9	22	22	2.9	3.8	*	W021-008-0000
M10	11	22	22	2.9	3.8	S	W021-010-0000
M12	14	26	30	3.7	4.9	S	W021-012-0000
M14	—	—	—	—	—	S	W021-014-0000
M16	18	32	36	4.45	5.9	*	W021-016-0000
M20	22	40	44	5.25	7	*	W021-020-0000
M22	24	44	50	6	8	*	W021-022-0000
M24	26	56	56	6.26	8.5	S	W021-024-0000
M27	30	56	56	6.26	8.5	S	W021-027-0000
M30	33	62	62	6.75	9	*	W021-030-0000

## Square Washers DIN 435

Steel

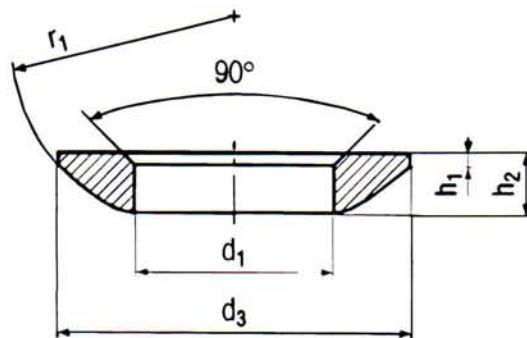
### 14% Taper (For I-Sections)

W022 — 435 Bare Steel



For Screw	d	a	b	e	h	Stock	FMP Order #
M8	9	22	22	3.05	4.6	S	W022-008-0000
M10	11	22	22	3.05	4.6	*	W022-010-0000
M12	14	26	30	4.1	6.2	*	W022-012-0000
M16	18	32	36	5.0	7.5	*	W022-016-0000
M20	22	40	44	6.1	9.2	*	W022-020-0000
M22	24	44	50	6.5	10	S	W022-022-0000
M24	26	56	56	6.9	10.8	S	W022-024-0000
M27	30	56	56	6.9	10.8	*	W022-027-0000
M30	33	62	62	7.5	11.7	*	W022-030-0000

S → Normally Stocked | \* → Call for Availability



## Spherical Washers DIN 6319

Case Hardened Steel

**3**

### Form "C"

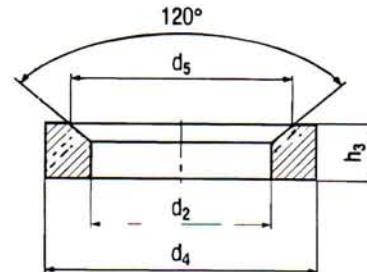
W045 — 6319C Bare Steel

For Screw	d <sub>1</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	f <sub>1</sub>	FMP Order #
M6	6.4	12	0.7	2.3	9	W045-006-0000
M8	8.4	17	0.6	3.2	12	W045-008-0000
M10	10.5	21	0.8	4	15	W045-010-0000
M12	13	24	1.1	4.6	17	W045-012-0000
M16	17	30	1.3	5.3	22	W045-016-0000

\*Please contact us for availability\*

## Conical Seats DIN 6319

Case Hardened Steel



### Form "D"

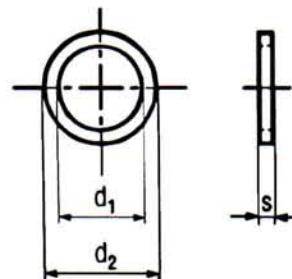
W046 — Bare Steel

For Screw	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	h <sub>3</sub>	FMP Order #
M6	7.1	12	11	2.8	W046-006-0000
M8	9.6	17	11.5	3.5	W046-008-0000
M10	12	21	18.5	4.2	W046-010-0000
M12	14.2	24	20	5	W046-012-0000
M16	19	30	26	6.2	W046-016-0000

\*Please contact us for availability\*

## Hinge Rings

Steel



W044 — Zinc Plated

d <sub>1</sub>	d <sub>2</sub> h14	s ± 0.3	FMP Order #
7	11	2	W044-007-0000
8	12	2	W044-008-0000
9	13	2	W044-009-0000
10	14	2	W044-010-0000
11	15	2	W044-011-0000
12	16	2	W044-012-0000
13	17	2	W044-013-0000
14	18	2	W044-014-0000
15	20	2	W044-015-0000
16	22	2	W044-016-0000
18	24	2	W044-018-0000

\*Please contact us for availability\*

S → Normally Stocked | \* → Call for Availability

# Nuts

\*Please see Section 11 for Imperial Nut Products



Bare-N010 Zinc-N012  
\*DIN 934-8  
Hex Nut  
Bare/Zinc Page 1-2



Class 10-N016 Class 12-N057  
DIN 934-10/12  
Hex Nut Class 10/12  
Bare Steel Page 1-2



N017  
DIN 934  
Hex Nut Left Hand Thread  
Steel Page 1-2



H041  
DIN 6915HV-10  
Structural Hex Nut  
Bare Steel Page 9

4



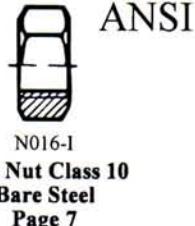
Bare-N030 Zinc-N032  
DIN 936-6  
Jam Nut  
Bare/Zinc Page 3



Bare-N047 Zinc-N048  
DIN 439  
Jam Nut  
Bare/Zinc Page 4



ANSI  
Bare-N010-I Zinc-N012-I  
Hex Nut Class 8  
Bare/Zinc  
Page 7



ANSI  
N016-I  
Hex Nut Class 10  
Bare Steel  
Page 7



N043  
ASTM A194  
2H Hex Nut  
Bare Steel Page 12



Class 8-N025 Class 10-N026  
DIN 980V-8/10  
All Metal Lock Nut  
Zinc Plated Page 5



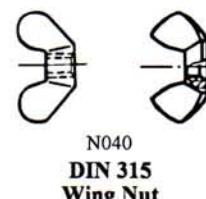
Class 8-N020 Class 10-N024  
DIN 985-6/8/10  
Nylon Insert Lock Nut  
Zinc Plated Page 6-7



N035  
DIN 1587  
Acorn Nut  
Zinc Plated Page 8



N039  
DIN 6334  
Coupling Nut  
Zinc Plated Page 9



N040  
DIN 315  
Wing Nut  
Zinc Plated Page 10



N028  
DIN 6923-8  
Hex Flange Nut  
Zinc Plated Page 10



N058  
DIN 935  
Hex Castle Nut  
Zinc Plated Page 11



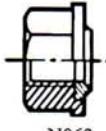
N027  
K-Lock Nuts  
Zinc Plated  
Page 12



N075  
DIN 929  
Hex Weld Nut  
Bare Steel Page 13



N065  
Hex Nut  
With Trapezoidal Thread  
Bare Steel Page 8



N063  
Self Locking Sealing Nut  
With Polyamid Insert  
Phosphated Page 13



N064  
Slotted Flat Nut 110°  
With Slotted Nut  
Zinc Plated Page 14



N066  
Slotted Cylindrical Bearing  
Nut With Nylon Insert  
Zinc Plated Page 14



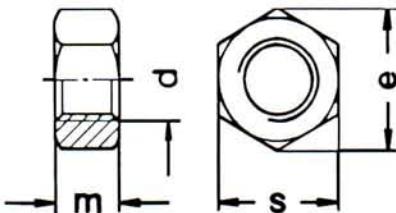
N067  
DIN 981  
Slotted Retaining Nut  
Bare Steel Page 15

# Hex Nuts

Class 6 M1-M2.6

Class 8 M3 ↑ / Class 10

**DIN 934**  
ISO 4032  
ANSI B18.2.4.1M



## Coarse Thread

N010 — 934-6/8 Bare Steel

N012 — 934-6/8 Zinc Plated

N016 — 934-10 Bare Steel

N057 — 934-12 Bare Steel

N017 — 934 Left Hand Thread

4

Coarse Thread				Bare	Zinc	Class 10	Class 12	Left Hand
d	s	e	m	N010	N012	N016	N057	N017
M1	2.5	2.71	0.8	*	S			
M1.2	3	3.28	1	*	*			
M1.4	3	3.28	1.2	*	*			
M1.6	3.2	3.41	1.3	*	*			
M1.7	3.5	3.82	1.4	*	*			
M1.8	3.5	4	1.4	*	*			
M2	4	4.32	1.6	*	S			
M2.2	4.5	—	1.8	*	*			
M2.3	4.5	4.88	1.8	*	S			
M2.5	5	5.45	2	*	S			
M2.6	5	5.45	2	*	S			
M3	5.5	6.01	2.4	S	S		*	S
M3.5	6	6.58	2.8	*	S			
M4	7	7.66	3.2	S	S		*	S
M5	8	8.79	4	S	S	S	*	S
M6	10	11.05	5	S	S	S	*	S
M7	11	12.12	5.5	S	S		*	S
M8	13	14.38	6.5	S	S	S	*	S
M10	17	18.9	8	S	S	S	*	S
M12	19	21.1	10	S	S	S	*	S
M14	22	24.49	11	S	S	S	*	S
M16	24	26.75	13	S	S	S	*	S
M18	27	29.56	15	S	S	S	*	
M20	30	32.95	16	S	S	S	*	S
M22	32	35.03	18	S	S	S	*	
M24	36	39.55	19	S	S	S	*	*
M27	41	45.2	22	S	S	S	*	
M30	46	50.85	24	S	S	S	*	
M33	50	55.37	26	S	*	S		
M36	55	60.79	29	S	S	S		
M39	60	66.44	31	S	*	*		
M42	65	71.3	34	S	*	S		*
M45	70	76.95	36	S	*	S		
M48	75	82.6	38	S	*	S		
M52	80	88.25	42	S	*	*		
M56	85	93.56	45	S	*	*		
M60	90	99.21	48	S	*	*		
M64	95	104.86	51	S	*	*		
M68	100	110.51	54	S	*			
M72	105	116.16	58	S	*	*		
M76	110	121.81	61	S	*			
M80	115	127.46	64	S	*			
M90	130	144.08	72	S	*			
M100	145	161.02	80	S	*			

Order Number → 934-8 Zinc M10 = N012-010-0000

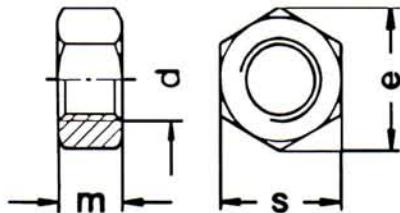
S → Normally Stocked | \* → Call for Availability

# Hex Nuts

Class 6 M1-M2.6

Class 8 M3 ↑ / Class 10

**DIN 934**  
ISO 4032  
ANSI B18.2.4.1M



## Fine Thread

N010 — 934-6/8 Bare Steel

N012 — 934-6/8 Zinc Plated

N016 — 934-10 Bare Steel

N017 — 934 Left Hand Thread

Fine Thread				Bare	Zinc	Class 10	Left Hand
d	s	e	m	N010	N012	N016	N017
M3 x .35	5.5	6.01	2.4		S		
M4 x 0.5	7	7.66	3.2		S		
M5 x 0.5	8	8.79	4		*		
M6 x 0.75	10	11.05	5		S		
M8 x 1	13	14.38	6.5	S	S	S	
M10 x 1	17	18.9	8	S	S		
M10 x 1.25	17	18.9	8	S	S	S	*
M12 x 1	19	21.1	10	S	S		
M12 x 1.25	19	21.1	10	S	S	S	*
M12 x 1.5	19	21.10	10	S	S	S	*
M14 x 1.5	22	24.49	11	S	S	S	
M16 x 1.5	24	26.75	13	S	S	S	S
M18 x 1.5	27	29.56	15	S	S	S	
M18 x 2	27	29.56	15	S			
M20 x 1.5	30	32.95	16	S	S	S	*
M20 x 2	30	32.95	16	S	*		
M22 x 1.5	32	35.03	18	S	*	S	
M22 x 2	32	35.03	18	S	*		
M24 x 1.5	36	39.55	19	S	*		
M24 x 2	36	39.55	19	S	*	S	*
M27 x 1.5	41	45.2	22	S	*	*	
M27 x 2	41	45.2	22	S	*	*	
M30 x 1.5	46	50.85	24	S	*		
M30 x 2	46	50.85	24	S	S	S	
M33 x 1.5	50	55.37	26	S	*		
M33 x 2	50	55.37	26	S	*		
M36 x 1.5	55	60.79	29	S	*		
M36 x 2	55	60.79	29	S			
M36 x 3	55	60.79	29	S	*		
M39 x 3	60	66.44	31	S	*		
M42 x 3	65	71.3	34	S	*		
M45 x 3	70	76.95	36	S			
M48 x 3	75	82.60	38	S		*	

Order Number → 934-8 Zinc M10x1.25 = N012-010-1.25

4

Please see Section 11 for Imperial Nut Products

S → Normally Stocked | \* → Call for Availability

# Jam Nuts

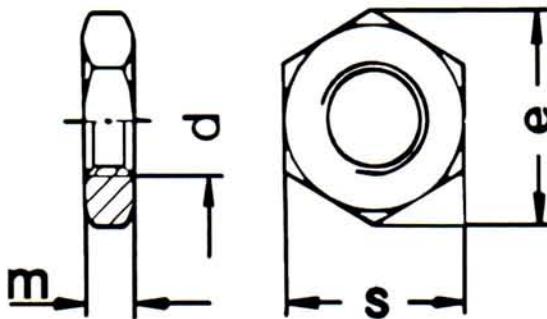
DIN 936

Class 6

## Coarse/Fine Thread

N030 — 936-6 Bare Steel

N032 — 936-6 Zinc Plated



**4**

Coarse Thread				Bare		Zinc	
d	s	e	m	N030	FMP Order #	N032	FMP Order #
M3	-	-	-			S	N032-003-0000
M4	-	-	-	S	N030-004-0000	S	N032-004-0000
M5	-	-	-	S	N030-005-0000	S	N032-005-0000
M6	-	-	-	S	N030-006-0000	S	N032-006-0000
M8	13	14.38	5	S	N030-008-0000	S	N032-008-0000
M10	17	18.90	6	S	N030-010-0000	S	N032-010-0000
M12	19	21.10	7	S	N030-012-0000	S	N032-012-0000
M14	22	24.49	8	S	N030-014-0000	S	N032-014-0000
M16	24	26.75	8	S	N030-016-0000	S	N032-016-0000
M18	27	29.56	9	S	N030-018-0000	S	N032-018-0000
M20	30	32.95	9	S	N030-020-0000	S	N032-020-0000
M22	32	35.03	10	S	N030-022-0000	*	N032-022-0000
M24	36	39.55	10	S	N030-024-0000	*	N032-024-0000
M27	41	45.20	12	S	N030-027-0000	*	N032-027-0000
M30	46	50.85	12	S	N030-030-0000	*	N032-030-0000
M36	55	60.79	14	S	N030-036-0000		
M42	65	71.3	16	S	N030-042-0000		

Fine Thread				Bare		Zinc	
d	s	e	m	N030	FMP Order #	N032	FMP Order #
M8 x 1	13	14.38	5	S	N030-008-0001	S	N032-008-0001
M10 x 1	17	18.9	6	S	N030-010-0001	S	N032-010-0001
M10 x 1.25	17	18.9	6	S	N030-010-1.25	S	N032-010-1.25
M12 x 1.25	19	21.1	7	S	N030-012-1.25	S	N032-012-1.25
M12 x 1.5	19	21.1	7	S	N030-012-01.5	*	N032-012-01.5
M14 x 1.5	22	24.49	8	S	N030-014-01.5	*	N032-014-01.5
M16 x 1.5	24	26.75	8	S	N030-016-01.5	*	N032-016-01.5
M18 x 1.5	27	29.56	9	S	N030-018-01.5	S	N032-018-01.5
M20 x 1.5	30	32.95	9	S	N030-020-01.5	*	N032-020-01.5
M20 x 2	30	32.95	9	*	N030-020-0002	*	N032-020-0002
M22 x 1.5	32	35.03	10	S	N030-022-01.5	*	N032-022-01.5
M22 x 2	32	35.03	10	*	N030-022-0002	*	N032-022-0002
M24 x 1.5	36	39.55	10	*	N030-024-01.5	*	N032-024-01.5
M24 x 2	36	39.55	10	S	N030-024-0002	*	N032-024-0002
M27 x 1.5	41	45.20	12	*	N030-027-01.5	*	N032-027-01.5
M27 x 2	41	45.20	12	*	N030-027-0002	*	N032-027-0002
M30 x 1.5	46	50.85	12	*	N030-030-01.5	*	N032-030-01.5
M42 x 1.5	65	71.3	16	S	N030-042-01.5		

S → Normally Stocked | \* → Call for Availability

# \*Jam Nuts

Class 4

**DIN 439**  
ISO 4035  
ANSI B18.2.4.5M

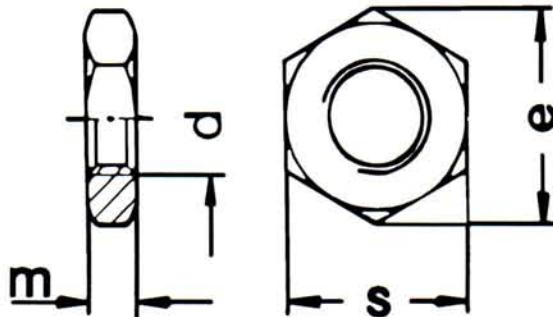
## Coarse/Fine Thread

N047 — 439-4 Bare Steel

N048 — 439-4 Zinc Plated

Coarse Thread				Bare	Zinc
d	s	e	m	N047	N048
M1.6	3.2	3.48	1		*
M1.7	3.5	3.82	1		*
M1.8	3.5	3.82	1.1		*
M2	4	4.32	1.2	*	*
M2.2	4.5	4.88	1.2		*
M2.3	4.5	4.88	1.2		*
M2.5	5	5.45	1.6	*	*
M2.6	5	5.45	1.6	*	*
M3	5.5	6.01	1.8		*
M3.5	6	6.58	2		*
M4	7	7.66	2.2	*	*
M5	8	8.79	2.7	*	*
M6	10	11.05	3.2	*	*
M7	11	11.94	3.5		*
M8	13	14.38	4	*	*
M10	17	18.9	5	*	*
M12	19	21.1	6	*	*
M14	22	24.49	7		*
M16	24	26.75	8	*	*
M18	27	29.56	9		*
M20	30	32.95	10		*
M22	32	35.03	11		*
M24	36	39.55	12	*	*
M27	41	45.2	13.5	*	*
M30	46	50.85	15		*
M33	50	55.37	16.5	*	
M36	55	60.79	18	*	*
M39	60	66.44	19.5	*	
M42	65	71.3	21	*	
M45	70	76.95	22.5	*	
M48	75	82.6	24	*	
M52	80	88.25	26	*	

Order Number → 439-4 Bare M10 = N047-010-0000



Fine Thread				Bare	Zinc
d	s	e	m	N047	N048
M8 x 1	13	14.38	4	*	*
M10 x 1	17	18.9	5	*	*
M10 x 1.25	17	18.9	5	*	*
M12 x 1.25	19	21.1	6	*	*
M12 x 1.5	19	21.1	6	*	*
M14 x 1.5	22	24.49	7	*	*
M16 x 1.5	24	26.75	8	*	*
M18 x 1.5	27	29.56	9	*	*
M18 x 2	27	29.56	9	*	
M20 x 1.5	30	32.95	10	*	*
M20 x 2	30	32.95	10	*	
M22 x 1.5	32	35.03	11	*	
M22 x 2	32	35.03	11	*	
M24 x 1.5	36	39.55	12	*	*
M24 x 2	36	39.55	12	*	
M27 x 1.5	41	45.2	13.5	*	
M27 x 2	41	45.2	13.5	*	
M30 x 1.5	46	50.85	15	*	*
M30 x 2	46	50.85	15	*	
M33 x 1.5	50	55.37	16.5	*	
M36 x 1.5	55	60.79	18	*	

Order Number → 439-4 Bare M10x1.25 = N047-010-1.25

\*See DIN 936 (page 3) for another option.

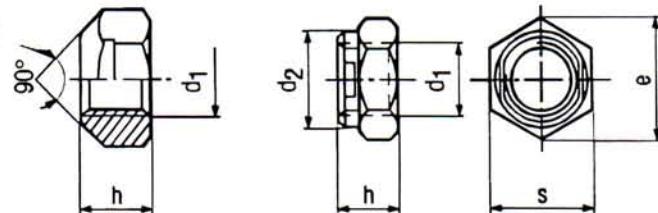
4

S → Normally Stocked | \* → Call for Availability

# Lock Nuts

Class 8/10

DIN 980  
ISO 7042  
ANSI B18.16.3M



## \*Form "V" All Metal

N025 — 980-8

N026 — 980-10

4

Coarse Thread					Class 8	Class 10
d	s	e	h	d <sub>2</sub>	N025	N026
M4	7	7.66	4.2		S	
M5	8	8.79	5.1		S	
M6	10	11.05	6		S	S
M8	13	14.38	8		S	S
M10	17	18.9	10		S	S
M12	19	21.1	12		S	S
M14	22	24.49	14		S	S
M16	24	26.75	16		S	S
M18	27	29.56	18	23	S	
M20	30	32.95	20	27.5	S	S
M22	32	35.03	22	29.5	S	S
M24	36	39.55	24	31	S	S
M27	41	45.2	27		*	
M30	46	50.85	30		S	S
M33	50	55.37	33		*	
M36	55	60.79	36		S	

Fine Thread					Class 8	Class 10
d	s	e	h	d <sub>2</sub>	N025	N026
M8 x 1	13	14.38	8		S	
M10 x 1	17	18.9	10		*	
M10 x 1.25	17	18.9	10		S	
M12 x 1.25	19	21.1	12		S	
M12 x 1.5	19	21.1	12		S	*
M14 x 1.5	22	24.49	14		S	*
M16 x 1.5	24	26.75	16		S	*
M18 x 1.5	27	29.56	18	23	*	
M20 x 1.5	30	32.95	20	27.5	S	
M20 x 2	30	32.95	20	27.5	*	
M22 x 1.5	32	35.03	22	29.5	*	
M24 x 1.5	36	39.55	24	31	*	
M24 x 2	36	39.55	24	31	*	
M30 x 2	46	50.85	30		*	

Order Number → 980-8 Zinc M10 = N025-010-0000

\*M4 - M16 volcano type, M18 and above with collar.

S → Normally Stocked | \* → Call for Availability

# Lock Nuts

Class 8/10

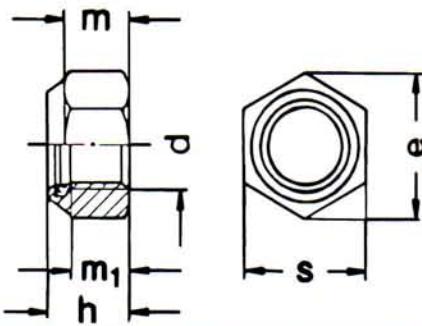
Nylon Insert

## Coarse Thread

N020—985-8

N024—985-10

DIN 985  
ANSI B18.16.3M



4

d	s	Coarse Thread				Class 8	Class 10
		e	m min.	m <sub>1</sub> min.	h	N020	N024
M2	—	—	—	—	—	*	
M2.5	5	5.51	2	—	3.8	S	
M2.6	5	5.51	2	—	3.8	*	
M3	5.5	6.01	2.4	1.65	4	S	
M3.5	6	6.64	2.6	—	4.5	*	
M4	7	7.66	2.9	2.2	5	S	
M5	8	8.79	3.2	2.75	5	S	*
M6	10	11.05	4	3.3	6	S	S
M7	11	12.12	4.7	3.85	7.5	S	
M8	13	14.38	5.5	4.4	8	S	S
M10	17	18.9	6.5	5.5	10	S	S
M12	19	21.1	8	6.6	12	S	S
M14	22	24.49	9.5	7.7	14	S	S
M16	24	26.75	10.5	8.8	16	S	S
M18	27	29.56	13	9.9	18.5	S	S
M20	30	32.95	14	11	20	S	S
M22	32	35.03	15	12.2	22	S	S
M24	36	39.55	15	13.2	24	S	S
M27	41	45.2	17	14.8	27	S	
M30	46	50.85	19	16.5	30	S	S
M33	50	55.37	22	18.2	33	S	
M36	55	60.79	25	19.8	36	S	S
M39	60	66.44	27	21.5	39	*	
M42	65	72.09	29	23.1	42	S	
M45	70	76.95	32	24.8	45	*	
M48	75	82.6	36	26.5	48	S	S

Order Number → 985-8 Zinc M10 = N020-010-0000

S → Normally Stocked | \* → Call for Availability

## Lock Nuts

Class 8/10

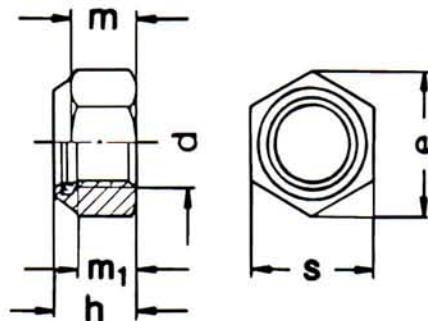
Nylon Insert

### Fine Thread

N020 — 985-8

N024 — 985-10

**DIN 985**  
ANSI B18.16.3M



4

Fine Thread						Class 8	Class 10
d	s	e	m min.	m <sub>1</sub> min.	h	N020	N024
M8 x 1	13	14.38	5.5	4.4	8	S	*
M10 x 1	17	18.9	6.5	5.5	10	S	
M10 x 1.25	17	18.9	6.5	5.5	10	S	*
M12 x 1.25	19	21.1	8	6.6	12	S	
M12 x 1.5	19	21.1	8	6.6	12	S	*
M14 x 1.5	22	24.49	9.5	7.7	14	S	S
M16 x 1.5	24	26.75	10.5	8.8	16	S	S
M18 x 1.5	27	29.56	13	9.9	18.5	S	*
M20 x 1.5	30	32.95	14	11	20	S	*
M22 x 1.5	32	35.03	15	12.2	22	S	
M24 x 1.5	36	39.55	15	13.2	24	*	*
M24 x 2	36	39.55	15	13.2	24	S	*
M27 x 2	41	45.2	17	14.8	27	*	
M30 x 2	46	50.85	19	16.5	30	*	
M36 x 3	55	60.79	25	19.8	36	*	
M42 x 3	65	72.09	29	23.1	42	S	

Order Number → 985-8 Zinc M10x1.25 = N020-010-1.25

## Hex Nuts

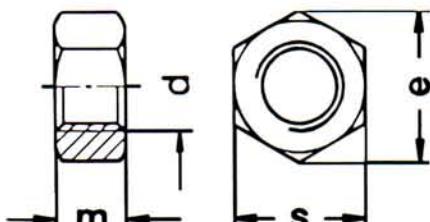
**ANSI B18.2.4.1M**

Class 8 / Class 10

### Coarse Thread

N010-I — Class 8 Bare Steel

N012-I — Class 8 Zinc Plated



N016-I — Class 10 Bare Steel

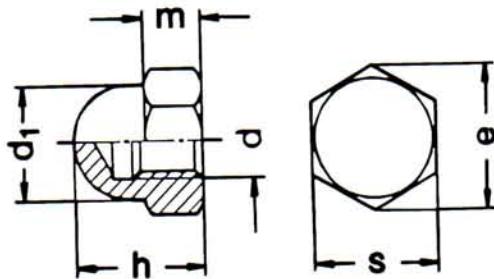
Coarse Thread				Bare	Zinc	Class 10
d	s	e	m	N010-I	N012-I	N016-I
M10	16	18.48	8	S	S	S
M12	18	20.78	10	S	S	S
M14	21	24.25	11	S	S	S

Order Number → Class 8 Zinc M10 = N012-I10-0000

S → Normally Stocked | \* → Call for Availability

## Acorn Nuts

DIN 1587



### Coarse Thread

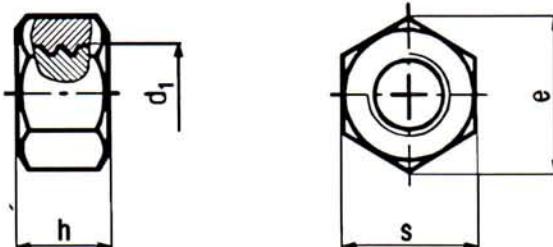
N035 — 1587 Zinc Plated

d	s	e	d <sub>1</sub> max.	m max.	h	Stock	FMP Order #
M3	5.5	6.01	5.5	2.4	7	*	N035-003-0000
M4	7	7.66	6.5	3.2	8	S	N035-004-0000
M5	8	8.79	7.5	4	10	S	N035-005-0000
M6	10	11.05	9.5	5	12	S	N035-006-0000
M8	13	14.38	12.5	6.5	15	S	N035-008-0000
M10	17	18.9	16	8	18	S	N035-010-0000
M12	19	21.1	18	10	22	S	N035-012-0000
M14	22	24.49	21	11	25	*	N035-014-0000
M16	24	26.75	23	13	28	S	N035-016-0000
M18	27	30.14	26	15	32	*	N035-018-0000
M20	30	33.53	28	16	34	S	N035-020-0000
M22	32	35.72	31	18	39	*	N035-022-0000
M24	36	39.98	34	19	42	*	N035-024-0000

4

## Hex Nuts

Class 5



### With Trapezoidal Thread

N065 — Bare Steel

d <sub>1</sub>	Pitch	s	h	FMP Order #
M10	3	17	15	N065-010-0000
M12	3	19	18	N065-012-0000
M14	4	22	21	N065-014-0000
M16	4	27	24	N065-016-0000
M18	4	27	27	N065-018-0000
M20	4	30	30	N065-020-0000
M22	5	30	33	N065-022-0000
M24	5	36	36	N065-024-0000
M26	5	36	39	N065-026-0000
M28	5	41	42	N065-028-0000
M30	6	46	45	N065-030-0000
M32	6	46	48	N065-032-0000
M36	6	55	54	N065-036-0000
M40	7	65	60	N065-040-0000

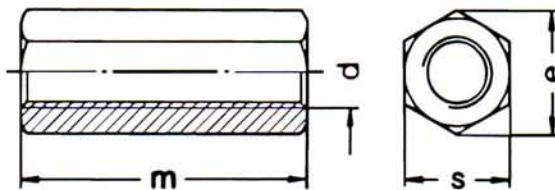
\*Please contact us for availability\*

S → Normally Stocked | \* → Call for Availability

## Coupling Nuts

DIN 6334

Length =  $3 \times d$



### Coarse Thread

N039 — 6334 Zinc Plated

**4**

d	s	e	m	Stock	FMP Order #
M6	10	11.05	18	S	N039-006-0000
M8	13	14.38	24	S	N039-008-0000
M10	17	18.9	30	S	N039-010-0000
M12	19	21.1	36	S	N039-012-0000
M14	22	24.49	42	S	N039-014-0000
M16	24	26.75	48	S	N039-016-0000
M18	27	29.56	54	S	N039-018-0000
M20	30	33.53	60	S	N039-020-0000
M22	32	35.03	66	S	N039-022-0000
M24	36	41.6	72	S	N039-024-0000
M27	41	45.2	81	S	N039-027-0000
M30	46	50.85	90	S	N039-030-0000
M36	55	60.79	108	S	N039-036-0000

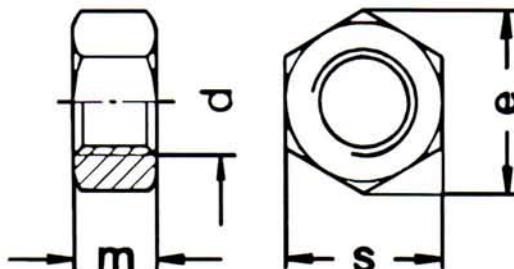
## Structural Nuts

DIN 6915

Class 10

### Coarse Thread

H041 — 6915HV-10 Bare Steel



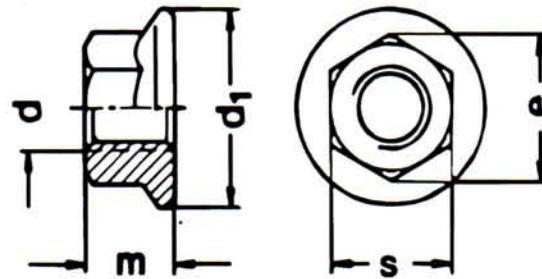
d	s	e	m	Stock	FMP Order #
M12	22	23.91	10	S	H041-012-0000
M14	—	—	—	*	H041-014-0000
M16	27	29.56	13	S	H041-016-0000
M18	—	—	—	*	H041-018-0000
M20	32	35.03	16	S	H041-020-0000
M22	36	39.55	18	S	H041-022-0000
M24	41	45.20	19	S	H041-024-0000
M27	46	50.85	22	S	H041-027-0000
M30	50	55.37	24	S	H041-030-0000
M33	—	—	—	*	H041-033-0000
M36	60	66.44	29	S	H041-036-0000

S → Normally Stocked | \* → Call for Availability

## Hex Flange Nuts

Class 8

DIN 6923  
ISO 4161  
ANSI B18.2.4.4M



### Coarse Thread

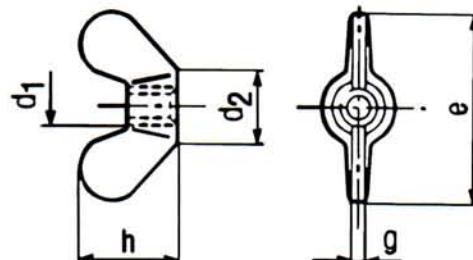
N028 — 6923-8

d	d <sub>1</sub>	s	m	e	Stock	FMP Order #
M3	-	-	-	-	S	N028-003-0000
M4	-	-	-	-	S	N028-004-0000
M5	11.8	8	5	8.79	S	N028-005-0000
M6	14.2	10	6	11.05	S	N028-006-0000
M8	17.9	13	8	14.38	S	N028-008-0000
M10	21.8	15	10	16.64	S	N028-010-0000
M12	26	18	12	20.03	S	N028-012-0000
M14	29.9	21	14	23.36	S	N028-014-0000
M16	34.5	24	16	26.75	S	N028-016-0000
M20	42.8	30	20	32.95	*	N028-020-0000

4

## Wing Nuts

DIN 315



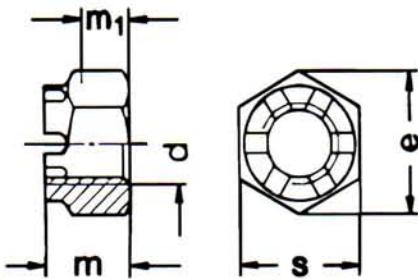
N040 — Zinc Plated

d <sub>1</sub>	d <sub>2</sub> max.	e max.	g max.	h max.	Stock	FMP Order #
M4	8	20	1.9	10.5	S	N040-004-0000
M5	11	26	2.3	13	S	N040-005-0000
M6	13	33	2.3	17	S	N040-006-0000
M8	16	39	2.8	20	S	N040-008-0000
M10	20	51	4.4	25	S	N040-010-0000
M12	23	65	4.9	33.5	S	N040-012-0000
M14	28	72	6	36	*	N040-014-0000
M16	29	73	6.4	37.5	S	N040-016-0000
M20	35	90	6.9	46.5	*	N040-020-0000
M24	44	110	9.4	56.5	*	N040-024-0000

S → Normally Stocked | \* → Call for Availability

# Hex Castle Nuts

DIN 935  
ISO R 288/1  
ANSI B18.2.4.3M



## Coarse/Fine Thread

N058 — 935-6/8 Zinc Plated

4

Coarse Thread					
d	s	e	m	m <sub>1</sub> min.	N058
M4	7	7.66	5	3.2	*
M5	8	8.79	6	4	*
M6	10	11.05	7.5	5	S
M8	13	14.38	9.5	6.5	S
M10	17	18.90	12	8	S
M12	19	20.88	15	10	S
M14	22	24.49	16	11	S
M16	24	26.17	19	13	S
M18	27	29.56	21	15	S
M20	30	32.95	22	16	S
M22	32	35.03	26	18	*
M24	36	39.55	27	19	S
M27	41	45.2	30	22	*
M30	46	50.85	33	24	*
M33	50	55.37	35	26	*
M36	55	60.79	38	29	*
M39	60	66.44	40	31	*
M42	65	71.30	46	34	*
M45	70	76.95	48	36	*
M48	75	82.60	50	38	*
M52	80	88.25	54	42	*

Order Number → 935 Zinc M10 = N058-010-0000

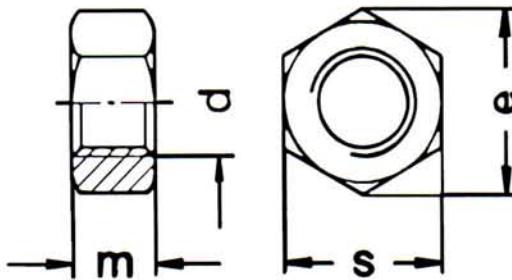
Fine Thread					
d	s	e	m	m <sub>1</sub> min.	N058
M8 x 1	13	14.38	9.5	6.5	*
M10 x 1	17	18.9	12	8	S
M10 x 1.25	17	18.9	12	8	S
M12 x 1.25	19	20.88	15	10	S
M12 x 1.5	19	20.88	15	10	S
M14 x 1.5	22	24.49	16	11	S
M16 x 1.5	24	26.17	19	13	S
M18 x 1.5	27	29.56	21	15	S
M18 x 2	27	29.56	21	15	*
M20 x 1.5	30	32.95	22	16	S
M20 x 2	30	32.95	22	16	*
M22 x 1.5	32	35.03	26	18	S
M22 x 2	32	35.03	26	18	*
M24 x 1.5	36	39.55	27	19	*
M24 x 2	36	39.55	27	19	*
M27 x 1.5	41	45.2	30	22	*
M27 x 2	41	45.2	30	22	*
M30 x 1.5	46	50.85	33	24	*
M30 x 2	46	50.85	33	24	S
M33 x 1.5	50	55.37	35	26	*
M33 x 2	50	55.37	35	26	*
M36 x 1.5	55	60.79	38	29	*
M36 x 3	55	60.79	38	29	*
M39 x 1.5	60	66.44	40	31	*
M39 x 3	60	66.44	40	31	*
M42 x 1.5	65	71.3	46	34	*
M42 x 3	65	71.3	46	34	*
M48 x 1.5	75	82.6	50	38	*
M48 x 3	75	82.6	50	38	*
M52 x 1.5	80	88.25	54	42	*
M52 x 3	80	88.25	54	42	*

Order Number → 935 Zinc M10x1.25 = N058-010-1.25

S → Normally Stocked | \* → Call for Availability

## 2H Hex Nuts

ASTM A194



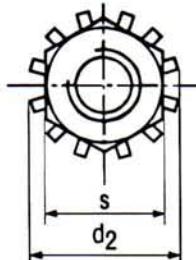
### Coarse Thread

N043 — ASTM A194 2H Bare Steel

d	e min.	s	m	N043	FMP Order #
M8	—	—	—	S	N043-008-0000
M10	18.8	17	10	S	N043-010-0000
M12	22.78	21	12	S	N043-012-0000
M14	26.17	24	14	S	N043-014-0000
M16	29.56	27	17	S	N043-016-0000
M18	32.86	30	18	S	N043-018-0000
M20	37.29	34	20	S	N043-020-0000
M22	39.55	36	23	S	N043-022-0000
M24	45.2	41	24	S	N043-024-0000
M27	50.85	45	27	S	N043-027-0000
M30	55.37	50	30	S	N043-030-0000
M33	60.79	55	33	*	N043-033-0000
M36	66.44	60	36	*	N043-036-0000
M39	71.3	65	39	*	N043-039-0000
M42	77.41	70	42	*	N043-042-0000
M45	82.6	75	45	*	N043-045-0000
M48	88.46	80	48	*	N043-048-0000
M52	93.55	85	52	*	N043-052-0000

4

## K-Lock Nuts



### Coarse Thread

N027 — K-Lock Nut

d	Width Across Flats (s)	Overall Thickness	O.D. Of Washer (d <sub>2</sub> )	Stock	FMP Order #
M3	5.5	3.2	6.3	S	N027-003-0000
M4	7.0	4.0	8.0	S	N027-004-0000
M5	8.0	5.1	9.2	S	N027-005-0000
M6	10.0	6.1	11.0	S	N027-006-0000
M8	13.0	7.9	14.9	S	N027-008-0000
M10	17.0	9.6	19.5	S	N027-010-0000
M12	19.0	12.0	21.0	*	N027-012-0000

S → Normally Stocked | \* → Call for Availability

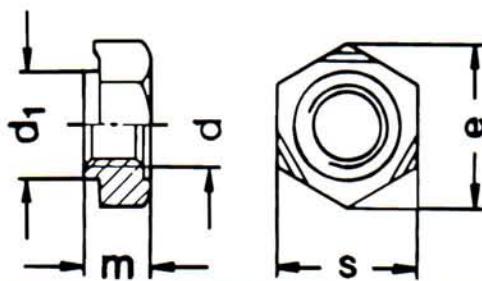
## Weld Nuts

DIN 929

Steel

### Coarse/Fine Thread

N075 — 929 Bare Steel



4

Coarse Thread						
d	s h13	e	m h14	d <sub>1</sub>	Stock	FMP Order #
M3	7.5	8.15	3	4.5	*	N075-003-0000
M4	9	9.83	3.5	6	*	N075-004-0000
M5	10	10.95	4	7	*	N075-005-0000
M6	11	12.02	5	8	S	N075-006-0000
M8	14	15.38	6.5	10.5	S	N075-008-0000
M10	17	18.74	8	12.5	S	N075-010-0000
M12	19	20.91	10	14.8	S	N075-012-0000
M14	22	24.27	11	16.8	*	N075-014-0000
M16	24	26.51	13	18.8	*	N075-016-0000
Fine Thread						
d	s h13	e	m h14	d <sub>1</sub>	Stock	FMP Order #
M14 x 1.5	22	24.27	11	16.8	*	N075-014-01.5

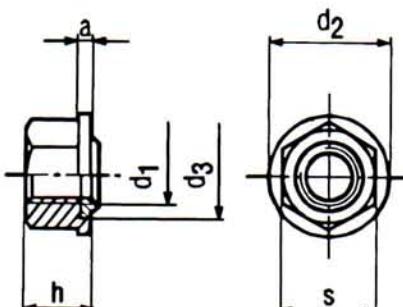
## Sealing Nuts

Class 8

Self Locking

### With Polyamid Insert

N063 — Phosphated



d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	s	a	h	FMP Order #
M6	12	9	10	1.5	7	N063-006-0000
M8	17	12	13	2	8.5	N063-008-0000
M10	21	16	17	3	9	N063-010-0000
M12	23	18	19	3	10	N063-012-0000

\*Please contact us for availability\*

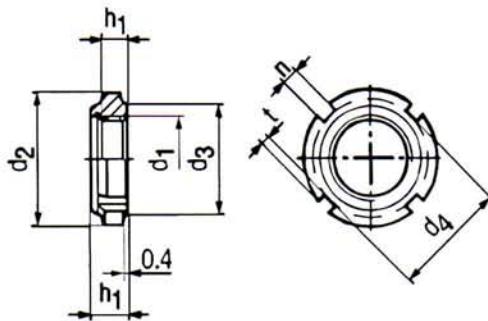
S → Normally Stocked | \* → Call for Availability

# Slotted Cylindrical Bearing Nut

Type CN

## With Nylon Insert

N066 — Zinc Plated



$d_1$	$h_1$ $\pm 0.2$	$h$	$d_2$ h13	$d_3$ j13	$d_4$ j13	$n$ H13	FMP Order #
M10 x .75	7	4.4	18	14.5	15	4	N066-010-0.75
M12 x 1	7.5	4.8	21	17	18	4	N066-012-0001
M15 x 1	7.5	4.8	25	20	21	4	N066-015-0001
M17 x 1	8.3	5.6	28	23	24	4	N066-017-0001
M20 x 1	8.3	5.6	32	26	27	4	N066-020-0001
M25 x 1.5	10	6.4	38	32	33	5	N066-025-01.5
M30 x 1.5	11	7.2	44	37	38	5	N066-030-01.5
M35 x 1.5	11	7.2	50	43	44	6	N066-035-01.5
M40 x 1.5	11	7.2	56	49	50	6	N066-040-01.5
M45 x 1.5	11.7	8	62	54	56	6	N066-045-01.5
M50 x 1.5	11.7	8	68	60	61	6	N066-050-01.5
M55 x 2	13.8	8.8	74	65	67	7	N066-055-0002
M60 x 2	13.8	8.8	81	73	74	7	N066-060-0002
M65 x 2	14.6	9.6	87	79	80	7	N066-065-0002
M70 x 2	14.6	9.6	92	83	84	8	N066-070-0002
M75 x 2	15.5	10.4	100	90	92	8	N066-075-0002
M80 x 2	15.5	10.4	105	95	97	8	N066-080-0002
M85 x 2	16.2	11.2	110	100	102	8	N066-085-0002
M90 x 2	16.2	11.2	116	106	108	10	N066-090-0002
M95 x 2	18	12.8	122	110	112	10	N066-095-0002
M100 x 2	18	12.8	128	116	118	10	N066-100-0002

\*Please contact us for availability\*

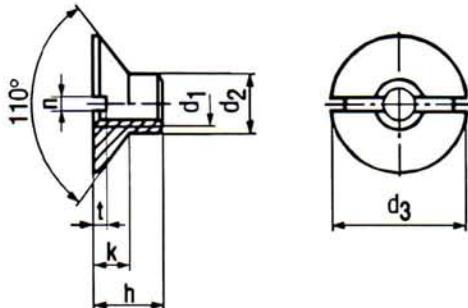
4

## Slotted Flat Nuts

110°

### With Slotted Nut

N064 — Zinc Plated



$d_1$	$d_2+0.2$	$d_3$	$h$	$n$	$t$	$k$	FMP Order #
M3	4	10	6	1	1	2.4	N064-003-0006
M4	5	12	6	1	1	2.8	N064-004-0006
M5	6	14	7	2	1.5	3.2	N064-005-0007
M6	7	16	8	2	1.5	3.6	N064-006-0008
M6	7	18	9	2	1.5	4.3	N064-006-0009
M8	9	20	10	2	1.5	4.3	N064-008-0010
M10	12	24	12	2.5	2	4.7	N064-010-0012

\*Please contact us for availability\*

S → Normally Stocked | \* → Call for Availability

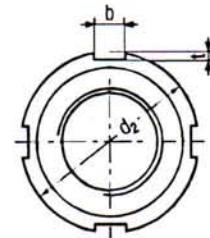
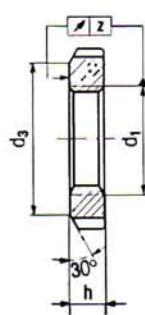
# Slotted Retaining Nut DIN 981

-ISO 2982

Steel

## Type KM

N067 — Bare Steel



**4**

KM Designation	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h	b	t	FMP Order #
0	M10 x .75	18	13.5	4	3	2	N067-010-0.75
1	M12 x 1	22	17	4	3	2	N067-012-0001
2	M15 x 1	25	21	5	4	2	N067-015-0001
3	M17 x 1	28	24	5	4	2	N067-017-0001
4	M20 x 1	32	26	6	4	2	N067-020-0001
5	M25 x 1.5	38	32	7	5	2	N067-025-01.5
6	M30 x 1.5	45	38	7	5	2	N067-030-01.5
7	M35 x 1.5	52	44	8	5	2	N067-035-01.5
8	M40 x 1.5	58	50	9	6	2.5	N067-040-01.5
9	M45 x 1.5	65	56	10	6	2.5	N067-045-01.5
10	M50 x 1.5	70	61	11	6	2.5	N067-050-01.5
11	M55 x 2	75	67	11	7	3	N067-055-0002
12	M60 x 2	80	73	11	7	3	N067-060-0002
13	M65 x 2	85	79	12	7	3	N067-065-0002
14	M70 x 2	92	85	12	8	3.5	N067-070-0002
15	M75 x 2	98	90	13	8	3.5	N067-075-0002
16	M80 x 2	105	95	15	8	3.5	N067-080-0002
17	M85 x 2	110	102	16	8	3.5	N067-085-0002
18	M90 x 2	120	108	16	10	4	N067-090-0002
19	M95 x 2	125	113	17	10	4	N067-095-0002
20	M100 x 2	130	120	18	10	4	N067-100-0002
21	M105 x 2	140	126	18	12	5	N067-105-0002
22	M110 x 2	145	133	19	12	5	N067-110-0002
23	M115 x 2	150	137	19	12	5	N067-115-0002
24	M120 x 2	155	138	20	12	5	N067-120-0002
25	M125 x 2	160	148	21	12	5	N067-125-0002
26	M130 x 2	165	149	21	12	5	N067-130-0002
27	M135 x 2	175	160	22	14	6	N067-135-0002
28	M140 x 2	180	160	22	14	6	N067-140-0002
29	M145 x 2	190	171	24	14	6	N067-145-0002
30	M150 x 2	195	171	24	14	6	N067-150-0002
31	M155 x 3	200	182	25	16	7	N067-155-0003
32	M160 x 3	210	182	25	16	7	N067-160-0003
33	M165 x 3	210	193	26	16	7	N067-165-0003
34	M170 x 3	220	193	26	16	7	N067-170-0003
36	M180 x 3	230	203	27	18	8	N067-180-0003
38	M190 x 3	240	214	28	18	8	N067-190-0003
40	M200 x 3	250	226	29	18	8	N067-200-0003

\*Please contact us for availability\*

S → Normally Stocked | \* → Call for Availability