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AGARWAL

Stainless Steel Fasteners



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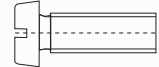
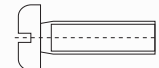
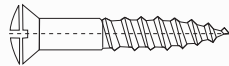
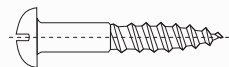
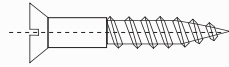
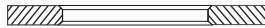
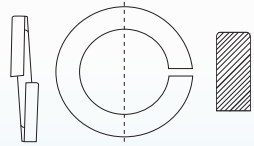
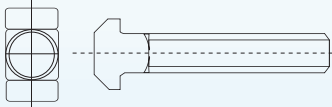
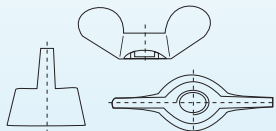
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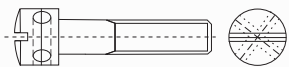
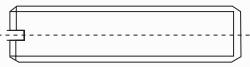
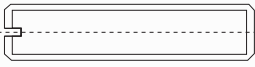
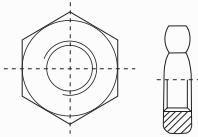
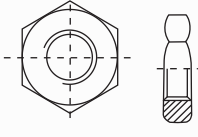
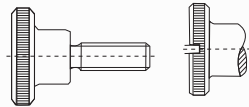
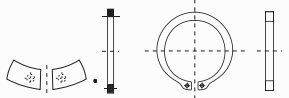
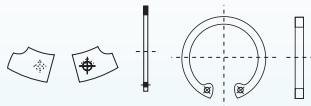
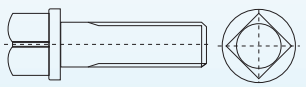
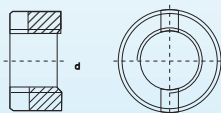
D&B Standards

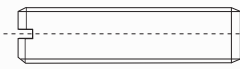

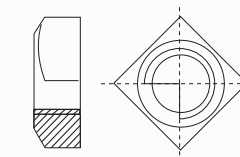
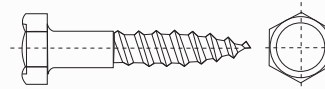
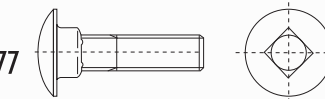


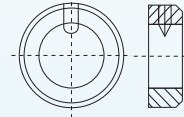
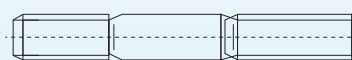

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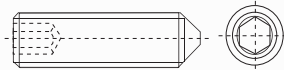
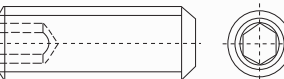
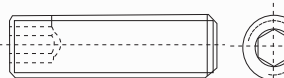
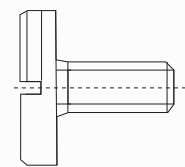
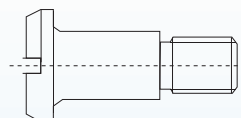
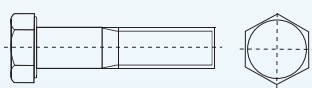
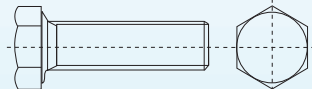
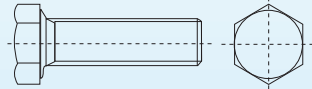


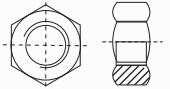
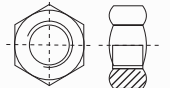
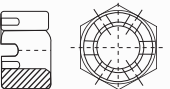
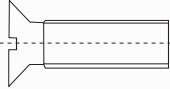
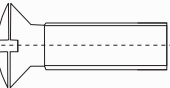
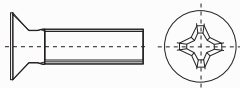
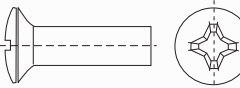
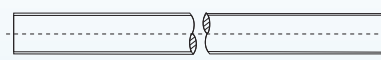
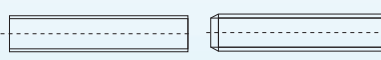
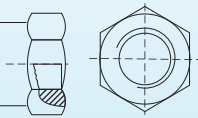
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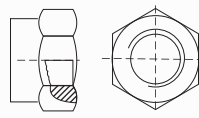
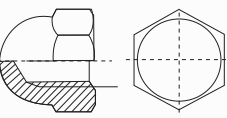
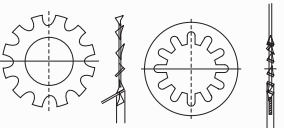
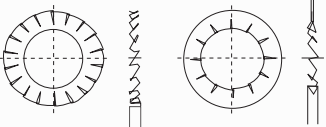
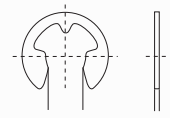
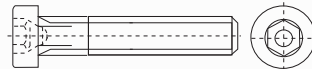
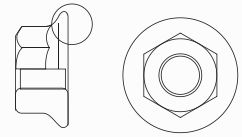
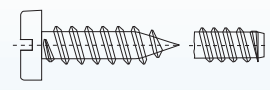
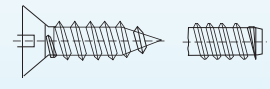
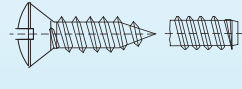
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DIN 84	1366-1982	1207		Slotted Cheese Head Screws	1
DIN 85	6101-1982	1580		Slotted Pan Head Screws	2
DIN 95	6736-1972			Slotted Raised Countersunk Head Wood Screws	3
DIN 96	6739-1972			Slotted Round Head Wood Screws	4
DIN 97	6760-1972			Slotted Countersunk Head Wood Screws	5
DIN 125	2016-1967	7089		Plain Washers	6
DIN 127	3063-1927			Spring Lock Washers	7
DIN 186	2014-1977			T-Head Bolts with Square Neck	8
DIN 315	2636-1972			Wing Nuts	9

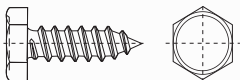
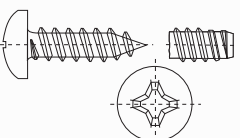
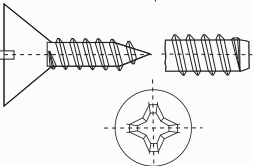
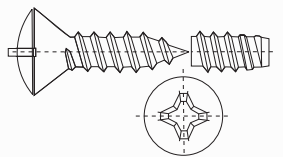
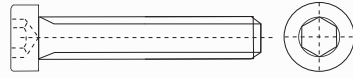
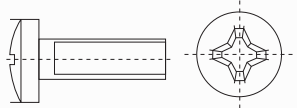

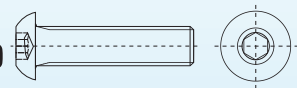
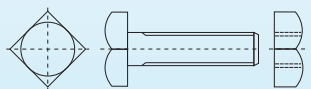
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DIN 404	8070-1976			Slotted Capstan Screws	10
DIN 417	2386-1971	7435		Slotted Set Screws with Long Dog Point	11
DIN 438	2388-1971	7436		Slotted Set Screws with Cup Point	12
DIN 439				Hexagon Thin Nuts	13
	1364-1985	4035		Hexagon Thin Nuts	14
DIN 464	3726-1972			Knurled Thumb Screws	15
DIN 471				Circlips, Retaining Rings for Shafts	16
DIN 472				Circlips, Retaining Rings for Bores	17
DIN 478				Square head bolts with collar	18
DIN 546				Slotted Round Nuts	19

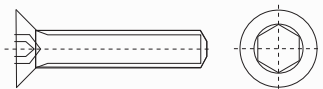
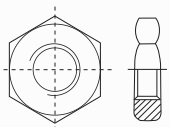
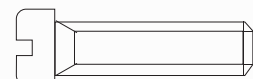

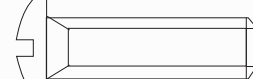
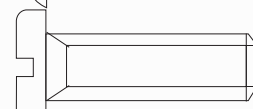
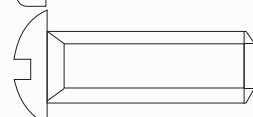
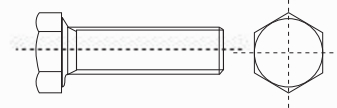
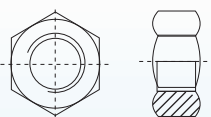
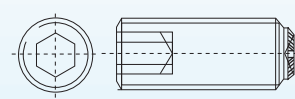
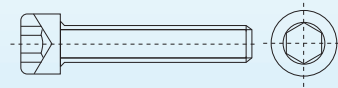
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DIN 551	2388-1971	4766		Slotted Set Screws with Flat Point	20
DIN 553	2388-1971	7434		Slotted Set Screws with Cone Point	21
DIN 557				Square Nuts	22
DIN 571	1120-1975			Hexagon Head Wood Screws	23
DIN 603	8677			Mushroom Head Square Neck Bolts	24
DIN 660	R-1051			Round Head Rivets	25
DIN 661	R-1051			Countersunk Head Rivets	26
DIN 705				Adjusting Ring	27
DIN 835				Studs Threaded End-2d	28
DIN 912	4762			Hexagon Socket Head Cap Screws	29

Din	IS	ISO	Drawing	Product Name	Pg. No.
DIN 913	6094-1981	4026		Hexagon Socket Set Screws with Flat Point	30
DIN 914	6094-1981	4027		Hexagon Socket Set Screws with Cone Point	31
DIN 915	6094-1981	4028		Hexagon Socket Screws with Dog Point	32
DIN 916	6094-1981	4029		Hexagon Socket Set Screws with Cup Point	33
DIN 921				Slotted Pan Head Screws with Large Head	34
DIN 923				Slotted Pan Head Screws with Shoulder	35
DIN 931		4014		Hexagon Head Half Thread Bolts	36
DIN 933				Hexagon Head Screws	37
	1364-1992	4017		Hexagon Head Screws	38

Din	IS	ISO	Drawing	Product Name	Pg. No.
DIN 934				Hexagon Nuts	39
	1364-2002	4032		Hexagon Nuts	40
DIN 935	2232-1967	7035		Hexagon Castle Nuts, Slotted	41
DIN 963	1365-1978	2009		Slotted Countersunk Head Screws	42
DIN 964	8911-1988	2010		Slotted Raised Countersunk Head Screws	43
DIN 965	7485-1985	7046		Cross recessed Countersunk Flat Head Screws	44
DIN 966	7486-1985	7047		Cross recessed Raised Countersunk Head Screws	45
DIN 975				Threaded Rods	46
DIN 976				Stud bolts	47
DIN 982	7002-1972	7040		Prevailing Torque Type Hexagon	48

Din	IS	ISO	Drawing	Product Name	Pg. No.
DIN 985				Prevailing Torque Type Hexagon Thin Nuts	49
DIN 1587	7790-1975			Hexagon Domed Cap Nuts	50
DIN 6797	5371-1982			Toothed Lock Washers	51
DIN 6798	5556-1970			Serrated Lock Washers	52
DIN 6799				Retaining Washer for Shaft	53
DIN 6912				Socket Head Cap Screw	54
DIN 6923				Flange Nut	55
DIN 7971	7173-1974	1481		Slotted Pan Head Tapping Screws	56
DIN 7972	7170-1974	1482		Slotted Countersunk Head Tapping Screws	57
DIN 7973	7169-1974	1483		Slotted Raised Countersunk Head Tapping Screws	58

Din	IS	ISO	Drawing	Product Name	Pg. No.
DIN7976		1479		Hexagon Head Tapping Screws	59
DIN7981		7049		Crossed Recessed Pan Head Tapping Screws	60
DIN7982		7050		Crossed Recessed Countersunk Head Tapping	61
DIN 7983		7051		Crossed Recessed Raised Countersunk	62
DIN 7984				Hexagon Socket Head Cap Screws	63
DIN 7985	7483-1985	7045		Crossed Recessed Raised Cheese Head Screws	64
DIN 7991	6761-1972			Hexagon Socket Countersunk Head Cap Screws	65
		7380		Button Head Screw	66
	2585-1968			Square Bolts Screws	67

BS	Drawing	Product Name	Pg. No.
BS 84		Socket Countersunk Head Screws	68
BS 439		Hexagon Thin Nuts	69
BS 450		Cheese Head Screws	70
BS 450		Countersunk Head Screws	71
BS 450		Mushroom Head Screws	72
BS 450		Pan Head Screws	73
BS 450		Round Head Screws	74
BS 933		Hexagon Bolts	75
BS 934		Hexagon Nuts	76
BS 2470		Socket Set Screws	77
BS 2470		Socket Head Cap Screws	78

Technical Information

Introduction of Austenitic Stainless Steel

APL specializes in manufacturing Stainless Steel Fasteners which are mainly used 300 series Austenitic Stainless Steel as raw materials. The standard chemical composition of this type of Stainless steel is 18% (Cr) and 8% (Ni) thus it is also popularly known as 18 - 8 Stainless Steel- a kind of superior metal material which conforms to environmental protection.

1. 1. Physical Properties of Austenitic Stainless steel

The Austenitic Stainless Steel possess excellent properties of corrosion resistability and cold-working ability. In low-temperature condition, it maintains the ability of extension and impact- resistability which prevent embrittlement and phase change from happening, even in high-temperature condition, the embrittlement is also seldom occurred. Besides, since the Austenitic Stainless Steel can't be hardened by heat treatment, it needs to be done through cold work to enhance its hardness and strength.

The Austenitic Stainless Steel is non magnetic under normal status, but it will turn to be slightly - magnetic after cold work.

Application Index of Stainless Steel in Different Circumstance

Corrosion Resistibility	Good ↑	20 Cb - 3	Sever Corrosion ;	
		Type 316	Chemical Corrosion ;	
	Type 304	Type 450	Medium Corrosion ;	
	Type 430	Type 431	Industrial pollution Atmosphere	
	Type 405	Type 410	Clean Atmosphere	
		Yield Strength		Good →

Designation (ISO 3506 - 1979 (E))

The steel grades and property classes are designation by a four- character Identifier consisting of a letter followed by three digits. The letter indicates the general composition groups of steels as follows :

- For austenitic steels
- For martensitic steels
- For ferritic steels

Life Cycle of SS 304 Grade

YEAR ESTIMATED FOR A PIT TO ENTER A 1 MM THICK SS SHEET	
LOCATION	SS 304
SEA	135 YRS.
INDUSTRIES	145 YRS.
HOUSEHOLD	770 YRS.

Life Cycle of SS 316 Grade

YEAR ESTIMATED FOR A PIT TO ENTER A 1 MM THICK SS SHEET	
LOCATION	SS 316
SEA	260 YRS.
INDUSTRIES	525 YRS.
HOUSEHOLD	1200 YRS.

Life Cycle of SS 430 Grade

YEAR ESTIMATED FOR A PIT TO ENTER A 1 MM THICK SS SHEET	
LOCATION	SS 430
SEA	N/A
INDUSTRIES	85 YRS.
HOUSEHOLD	250 YRS.

The first digit following the letter indicates the type of alloying elements presents for the particular group A, C or F, The last two digits indicate the property class (metallurgical condition); for example :

1) A2-70 indicates :

Austenitic steel, cold-worked, minimum 700 N/mm² tensile strength.

2) A2-80 indicates :

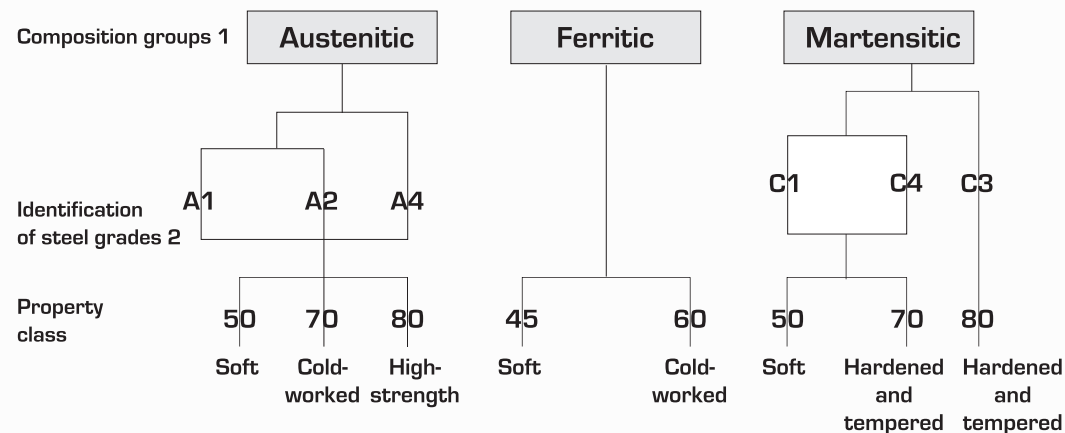
Austenitic steel, cold-worked, minimum 800 N/mm² tensile strength.

3) C4-70 indicates :

Martensitic 12 %Cr steel, hardened and tempered, minimum 700 N/mm² tensile strength.

1.2. Magnetic properties (Ref ISO 3506-1979)

All austenitic stainless steel fasteners are normally nonmagnetic; after cold working, some magnetic properties may be evident.



1.3. Chemical Requirements (ref. Asim A493)

Alloy Group	UNS Designation	Alloy	Composition, % Maximum Except as Shown									
			C	Mn	P	S	Si	Cr	Ni	Cu	Mo	Others
1	S30400	304	0.08	2.00	0.045	0.030	1.00	17.0 to 20.0	8.0 to 13.0	1.00		
1	S30403	302	0.03	2.00	0.045	0.030	1.00	17.0 to 19.0	8.0 to 10.0	1.00		
1	S30430	Xm7	0.10	2.00	0.045	0.030	1.00	17.0 to 19.0	8.0 to 10.0	3.0 to 4.0		
2	S31600	316	0.08	2.00	0.045	0.030	1.00	16.0 to 18.0	10.0 to 14.0	-	2.00 to 3.00	
2	S31603	316L	0.03	2.00	0.045	0.030	1.00	16.0 to 18.0	10.0 to 14.0	-	2.00 to 3.00	

Note : Xm7 equal to 302HQ

2 Mechanical Property Requirements (Ref. ASTM F593)

Stainless Alloy Group	Condition (b)	Alloy Mechanical property Marking	Nominal Diameter In Austenitic Alloys	Tensile Strength, Ksi (d)	Yield Strength, Ksi (c, d)	Rockwell Hardness
1 (304, 304 L, Xm7 (302HQ))	CW1	F593C	1/4 to 5/8, incl.	100 to 150	65	B95 to C32
	CW2	F593D	3/4 to 1-1/2, incl.	85 to 140	45	B80 to C32
2 (316, 316L)	CW1	F593G	1/4 to 5/8, incl.	100 to 150	65	B95 to C32
	CW2	F593H	3/4 to 1-1/2, incl.	85 to 140	45	B80 to C32

Notes:

- Minimum values except where shows as maximum or as a range.
- Legend of conditions: Cw-Headed and rolled from annealed stock thus acquiring a degree of cold work; sizes 0.75 in and larger may be hot worked and solution-annealed.
- All tensile stress values are calculated and reported in terms of the nominal tensile stress area of the thread.
- The extension measurements are determined in accordance with the test procedure and are on the actual screw or bolt length and not on a prepared test piece gauge length of 5d of the test piece.
- Above M20 the higher strength property classes should have the property values specially agreed upon between user and manufacturer because at the tensile strength values given in alternative values of stress at 0.2% permanent strain may occur.
- The yield and tensile strength values for full-size products shall be computed by dividing the yield and maximum tensile load Values by the stress area for the product size and thread series determined in accordance with test methods

3. The Requirements of Chemical Composition and Mechanical Properties for items

3.1. Chemical Requirements (ref DIN en iso 3506)

Alloy Group	Grade	Chemical Composition in (mm)									Notes
		C	Si	Mn	P	S	Cr	Mo	Ni	Cu	
Austenitic	A2	0.1	1	2	0.05	0.03	15 to 20	A	8 to 19	4	B, C.
	A4	0.08	1	2	0.045	0.03	16 to 18.5	2 to 3	10 to 15	1	C, D.

- A. Molybdenum may be present at the discretion of the manufacturer. However, if for some applications limiting of the molybdenum Contents is essential this must be stated at the time of ordering by the purchaser.
- B. If the Chromium content is below 17%, the minimum nickel content should be 12%.
- C. For Austenitic Stainless Steel having a maximum carbon content of 0.03% nitrogen may be present to a maximum of 0.22%.
- D. At the discretion of the manufacturer the carbon content may be higher where required to obtain the specified mechanical Properties at larger diameters but shall not exceed 0.12% for Austenitic Steels.
- E. **May contain copper up to 4.0 per cent maximum as per IS : 1367 (Part 14) 1984**

3.2 Mechanical Properties Requirements (Ref. DIN EN ISO 3506)

Group	Grade	Property Class	Thread Diameter Range	Tensile Strength R _m (1) min N/mm	Stores at 0.2% Permanent strain Rp 0.2 (1) min N/mm	Elongation after fraction A (2) min mm
Austenitic	A2, A4	50	< M39	500	210	0.6d
		70	< M24 (3)	700	450	0.4d
		80	< M24 (3)	800	600	0.3d

1. The tensile stress is calculated on the stress area.
2. To be determined according to test methods on actual screw length and on a prepared test piece is; the nominal thread Diameter.
3. All tensile stress values are calculated and reported in terms of the nominal tensile stress area of the thread.
4. The extension measurements are determined in accordance with the test procedure and are on the actual screw or bolt length and not on a prepared test piece gauge length of 5d of the test piece.
5. Above M20 the higher strength properly classes should have the properly values specially agreed upon between user and manufacturer because at the tensile strength values given in the table alternative values of stress at 0.2% permanent strain may occur.

Group	Grade	Property Class	Diameter Range	Tensile Strength R _m (1) N/mm ² min.	Stores at 0.2% Permanent strain Rp 0.2 N/mm ² min.	Extension A ₂ (2) min.	Proof load stress S _p N/mm ²
Austenitic	A 1, A 2 and A 4	50	< M39	500	210	0.6d	500
		70	< M20 ⁽³⁾	700	450	0.4d	700
		80	< M20 ⁽³⁾	800	600	0.3d	800

3.3 Mechanical Properties Requirements (Ref. DIN EN ISO 3506)

Size Standard Pitch	Minimum Breaking Torque			Proof load on Nuts Kg/min.
	50 N - M	70 N - M	80 N - M	
M 1.6	0.15	0.20	0.27	-
M 2	0.30	0.40	0.56	150.00
M 2.5	0.60	0.90	1.20	242.86
M 3	1.10	1.60	2.10	356.77
M 4	2.70	3.80	4.90	627.93
M 5	5.50	7.80	10.00	1013.25
M 6	9.30	13.00	15.00	1434.25
M 8	23.00	32.00	37.00	2611.62
M 10	46.00	65.00	74.00	44138.63
M 12	80.00	110.00	130.00	6015.29
M 14	-	157.00	-	8214.28
M 16	210.00	290.00	330.00	11202.85
M 18				13714.29
M 20				17580.00

3.4. Mechanical properties at elevated temperature ; Applications at Low Temperature.

The values given in these tables are for guidance only. User should understand that the actual chemistry, load of the installed fasteners and the environment, may cause significant variation. If loads are fluctuating and operating at elevated Temperatures the possibility of stress corrosion is high, user should consult the manufacture

3.4.1 Influence of temperature on ReL and Rp 0.2 (Ref. DIN EN ISO 3506)

Steel grade	ReL. & Repo 2 % temperature			
	+ 100° C	+ 200° C	+ 300° C	+ 400° C
-				
A2 A4	85	80	75	70
C1	95	90	80	65
C3	90	85	80	60

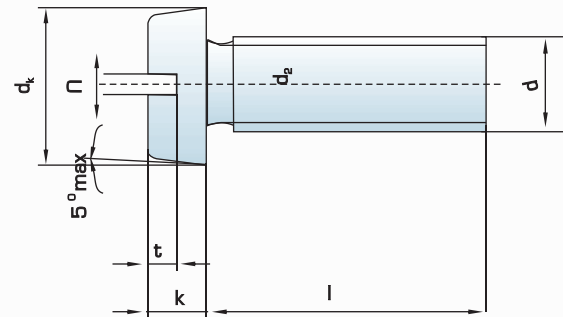
3.4.2 Application at low temperatures (Ref. DIN EN ISO 3506)

Steel grade	Lower limits of operational temp. at continuous operation			
	- 200 C			
A2				
A4	95	90	80	65
	90	85	80	60

A. In connections with the alloying element the stability of the Austenitic is reduced and the transition temperature is shifted to higher values if a high degree of deformation during manufacturing of the fastener is applied.

DIN 84 / IS : 1366 - 1982 / ISO 1207

Slotted Cheese Head Screws

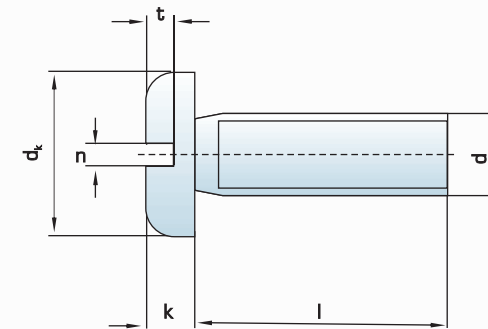


Thread size [d]	M 2	M 2.5	M 3	M 3,5	M 4	M 5	M 6	M 8	M 10
Pitch	0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5
dk	max.	3.8	4.5	5.5	6	7	8.5	10	13
	min.	3.62	4.32	5.32	5.82	6.78	8.28	9.78	12.73
k	max.	1.3	1.6	2	2.4	2.6	3.3	3.9	5
	min.	1.16	1.46	1.86	2.26	2.46	3.12	3.6	5.7
n	min.	0.5	0.6	0.8	1.0	1.2	1.2	1.6	2.5
	max.	0.7	0.8	1	1.2	1.51	1.51	1.91	2.81
t min.	0.6	0.7	0.85	1	1.1	1.3	1.6	2	2.4

* All Dimensions in mm

DIN 85 / IS : 6101 - 1982 / ISO 1580

Slotted Pan Head Screws

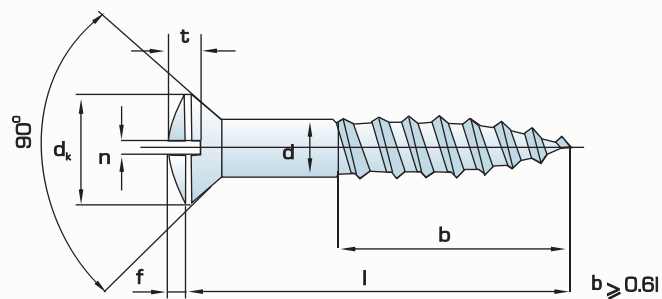


Thread size [d]	M 2	M 2.5	M 3	(M 3.5)	M 4	M 5	M 6	M 8	M 10
Pitch	0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5
dk	max.	4	5	6	7	8	10	12	20
	min.	3.7	4.7	5.7	6.64	7.64	9.64	11.57	19.48
k	max.	1.3	1.5	1.8	2.1	2.4	3	3.6	6
	min.	1.16	1.36	1.66	1.96	2.26	2.86	3.3	5.7
n	min.	0.5	0.8	0.8	1.0	1.2	1.2	1.6	2.5
	max.	0.7	1	1	1.2	1.51	1.51	1.91	2.81
t min.	0.5	0.6	0.7	0.8	1	1.2	1.4	1.9	2.4

* All Dimensions in mm

DIN 95 / IS : 6736 - 1972

Slotted Raised Countersunk Head Wood Screws

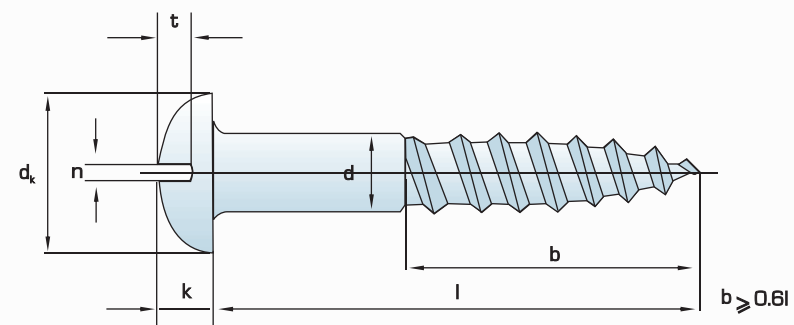


Thread size (d)	3	3.5	4	4.5	5	(5.5)	6	(8)	
d _k	max.	5.98	6.95	7.95	8.75	9.65	10.75	11.55	15.05
	min.	5.23	6.05	7.05	7.85	8.75	9.65	10.45	13.95
f	0.75	0.9	1.0	1.1	1.25	1.4	1.5	2.0	
k	max.	1.65	1.93	2.2	2.35	2.5	2.75	3.0	4.0
	min.	1.0	1.0	1.2	1.2	1.51	1.51	1.91	2.31
n	max.	1.0	1.0	1.2	1.2	1.51	1.51	1.91	2.31
	min.	0.8	0.8	1.0	1.0	1.2	1.2	1.6	2.0
t	max.	1.45	1.7	1.9	2.1	2.3	2.5	2.8	3.7
	min.	1.2	1.4	1.6	1.8	2.0	2.2	2.4	3.2

* All Dimensions in mm

DIN 96 / IS : 6739 - 1972

Slotted Round Head Wood Screws

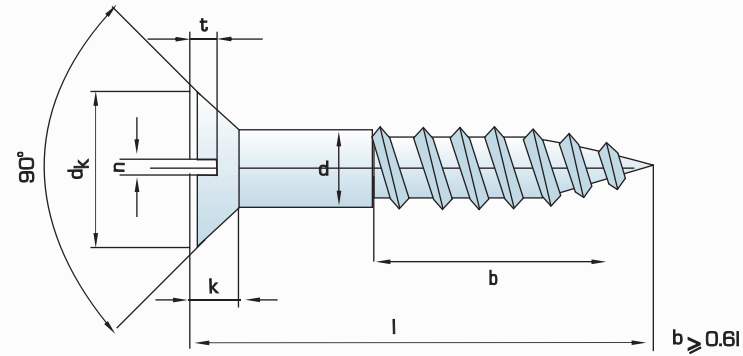


Thread size (d)	3	3.5	4	4.5	5	(5.5)	6	(8)	
d _k	max.	6.38	7.45	8.45	9.45	10.45	11.55	12.55	16.55
	min.	5.62	6.55	7.55	8.55	9.55	10.45	11.45	15.45
k	max.	2.3	2.6	3.0	3.34	3.74	4.04	4.44	5.84
	min.	1.9	2.1	2.6	2.86	3.26	3.56	3.96	5.36
n	max.	1.0	1.0	1.2	1.2	1.51	1.51	1.91	2.31
	min.	0.8	0.8	1.0	1.0	1.2	1.2	1.6	2.0
t	max.	1.35	1.6	1.8	2.0	2.3	2.5	2.7	3.6
	min.	1.05	1.2	1.4	1.55	1.75	1.9	2.1	2.8

* All Dimensions in mm

DIN 97 / IS : 6760 - 1972

Slotted Countersunk Head Wood Screws

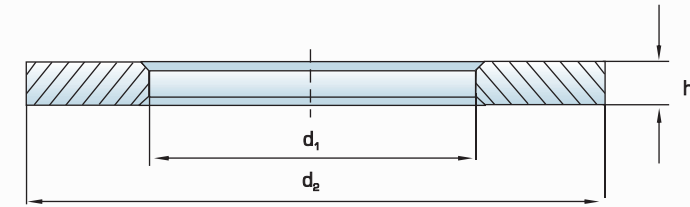


Thread size (d)	M2	(M2.5)	M3	M3.5	M4	M4.5	M5	(M5.5)	M6	(M7)	M8	M10	
dk	max.	4.18	5.08	5.98	6.95	7.95	8.75	9.65	10.75	11.55	13.05	15.05	18.55
	min.	3.43	4.33	5.23	6.05	7.05	7.85	8.75	9.65	10.45	11.95	13.95	17.45
k	max.	1.2	1.5	1.65	1.93	2.2	2.35	2.5	2.75	3	3.5	4	5
	min.	0.7	0.8	1	1	1.2	1.2	1.51	1.51	1.91	2.31	2.31	2.81
n	max.	0.56	0.66	0.86	0.86	1.06	1.06	1.26	1.26	1.66	2.06	2.06	2.56
	min.	0.6	0.7	0.85	1	1.1	1.2	1.3	1.4	1.6	1.9	2.1	2.6
t	max.	0.4	0.5	0.6	0.7	0.8	0.9	1	1.1	1.2	1.4	1.6	2
	min.	0.4	0.5	0.6	0.7	0.8	0.9	1	1.1	1.2	1.4	1.6	2

* All Dimensions in mm

DIN 125 / IS : 2016 - 1967 / ISO 7089

Plain Washers

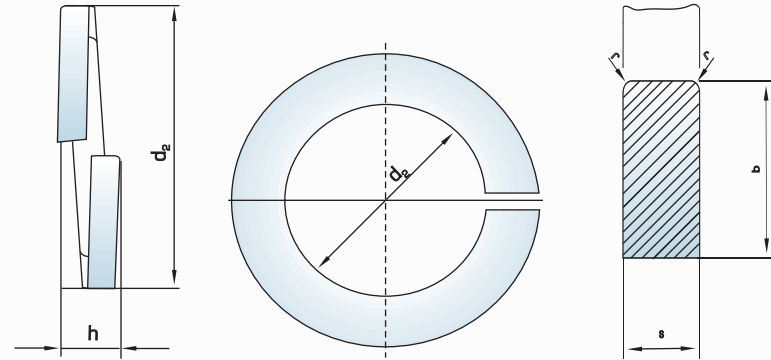


Normal size	For thread size M	d ₁		d ₂		h	
		min.	max.	min.	max.	max.	min.
1.7	1.6	1.7	1.84	4.0	3.7	0.35	0.25
1.8	1.7	1.8	1.94	4.5	4.2	0.35	0.25
2.2	2.0	2.2	2.34	5.0	4.7	0.35	0.25
2.5	2.3	2.5	2.64	6.0	5.7	0.55	0.45
2.7	2.5	2.7	2.84	6.0	5.7	0.55	0.45
2.8	2.6	2.8	2.94	7.0	6.64	0.55	0.45
3.2	3.0	3.2	3.38	7.0	6.64	0.55	0.45
3.7	3.5	3.7	3.88	8.0	7.64	0.55	0.45
4.3	4.0	4.3	4.48	9.0	8.64	0.9	0.7
5.3	5.0	5.3	5.48	10.0	9.64	1.1	0.9
6.4	6.0	6.4	6.62	12.0	11.57	1.8	1.4
7.4	7.0	7.4	7.62	14.0	13.57	1.8	1.4
8.4	8.0	8.4	8.62	16.0	15.57	1.8	1.4
10.5	10.0	10.5	10.77	20.0	19.48	2.2	1.8
13.0	12.0	13.0	13.27	24.0	23.48	2.7	2.3
15.0	14.0	15.0	15.27	28.0	27.48	2.7	2.3
17.0	16.0	17.0	17.27	30.0	29.48	3.3	2.7
19.0	18.0	19.0	19.33	34.0	33.38	3.3	2.7
21.0	20.0	21.0	21.33	37.0	36.38	3.3	2.7
23.0	22.0	23.0	23.33	39.0	38.38	3.3	2.7
25.0	24.0	25.0	25.33	44.0	43.38	4.3	3.7

* All Dimensions in mm

DIN 127 / IS : 3063 - 1927

Spring Lock Washers

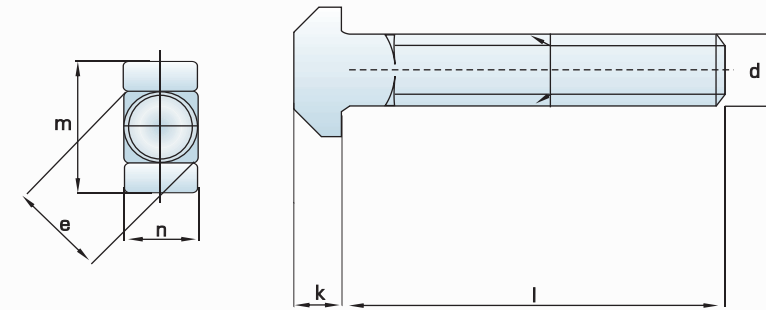


No- minal size	d ₁		d ₂	h		s		No- minal size	d ₁		d ₂	h		s	
	min.	max.	max.	min.	max.	min.	max.		min.	max.	max.	min.	max.	min.	max.
2	2.1	2.4	4.4	1.0	1.2	0.5	±0.1	8	8.1	8.5	14.8	4.0	4.7	2	±0.1
2.2	2.3	2.6	4.8	1.2	1.4	0.6	±0.1	10	10.2	10.7	18.1	4.4	5.2	2.2	±0.15
2.5	2.6	2.9	5.1	1.2	1.4	0.6	±0.1	12	12.2	12.7	21.1	5.0	5.9	2.5	±0.15
3	3.1	3.4	6.2	1.6	1.9	0.8	±0.1	14	14.2	14.7	24.1	6.0	7.1	3	±0.15
3.5	3.6	3.9	6.7	1.6	1.9	0.8	±0.1	16	16.2	17.0	27.4	7.0	8.3	3.5	±0.2
4	4.1	4.4	7.6	1.8	2.1	0.9	±0.1	18	18.2	19.0	29.4	7.0	8.3	3.5	±0.2
5	5.1	5.4	9.2	2.4	2.8	1.2	±0.1	20	20.2	21.2	33.6	8.0	9.4	4	±0.2
6	6.1	6.5	11.8	3.2	3.8	1.6	±0.1	22	22.5	23.5	35.9	8.0	9.4	4	±0.2
7	7.1	7.5	12.8	3.2	3.8	1.6	±0.1	24	24.5	25.5	40.0	10.0	11.8	5	±0.2

* All Dimensions in mm

DIN 186 / IS : 2014 - 1977

T - Head Bolts with Square Neck

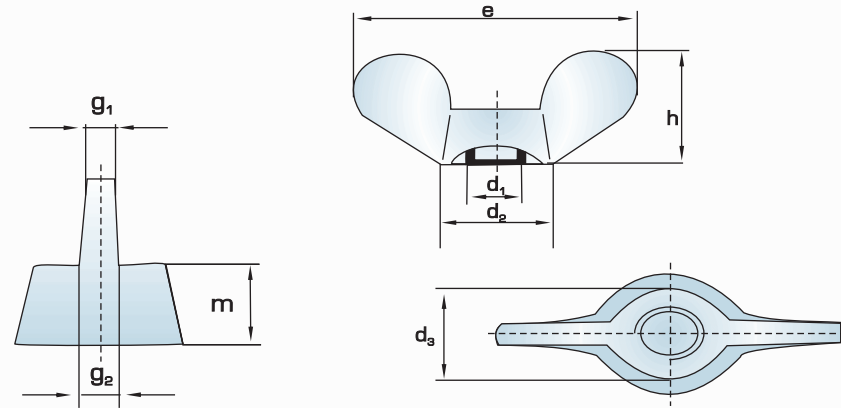


Thread size [d]	M 6	M 8	M 10	M 12	M 16	M 20	
Pitch	1.0	1.25	1.5	1.75	2.0	2.5	
e	min.	6.88	9.24	11.81	14.17	19.32	24.33
k	max.	4.9	5.9	7.5	8.75	11.4	13.9
	min.	4.1	5.1	6.5	7.25	9.6	12.1
n	max.	6.6	8.75	10.75	12.9	16.9	21.0
	min.	5.4	7.25	9.25	11.1	15.1	19.0
m	max.	16.9	18.9	22.0	27.0	31.0	37.25
	min.	15.1	17.1	20.0	25.0	29.0	34.75

* All Dimensions in mm

DIN 315 / IS : 2636 - 1972

Wing Nuts

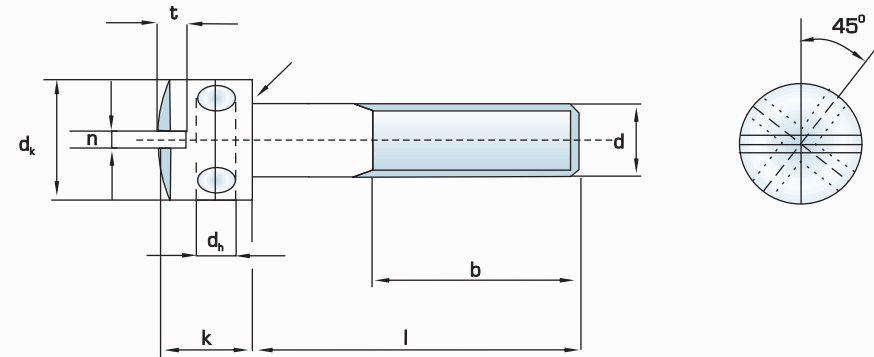


Screw Thread d_1	M4	M5	M6	M8	M10	M12	M16
Pitch	0.7	0.8	1.0	1.25	1.5	1.75	2.0
d_2	max.	8.0	11.0	13.0	16.0	20.0	23.0
	min.	6.0	8.0	10.0	13.0	17.0	20.0
d_3	max.	7.0	9.0	11.0	12.5	16.5	19.5
	min.	5.5	7.5	9.0	10.5	14.5	17.5
e	max.	20.0	26.0	33.0	39.0	51.0	65.0
	min.	18.0	24.0	30.0	36.0	48.0	62.0
g_1	max.	1.9	2.3	2.3	2.8	4.4	4.9
	min.	1.1	1.5	1.5	2.0	3.6	4.1
g_2	max.	2.3	2.8	3.3	4.4	5.4	6.4
	min.	1.7	2.3	2.7	3.6	4.6	5.6
h	max.	10.5	13.0	17.0	20.0	25.0	33.5
	min.	8.5	11.0	15.0	18.0	23.0	31.0
m	max.	4.6	6.5	8.0	10.0	12.0	17.0
	min.	3.2	4.0	5.0	6.5	8.0	13.0

* All Dimensions in mm

DIN 404 / IS : 8070 - 1976

Slotted Capstan Screws

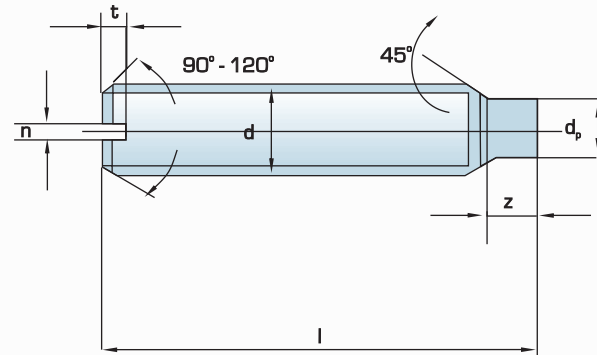


Thread size (d)	M3	M4	M5	M6	M8	M10
Pitch	0.5	0.7	0.8	1.0	1.25	1.5
d_h	min. =	1.5	2.0	2.5	3.0	4.0
	max.	1.64	2.14	2.64	3.14	4.18
d_k	max.	5.5	7.0	8.5	10.0	13.0
	min. =	5.38	6.85	8.35	9.85	12.82
k	max.	4.38	5.38	6.95	8.45	10.45
	min. =	3.62	4.62	6.05	7.55	9.55
n	min. =	0.8	1.0	1.2	1.6	2.0
	max.	1.0	1.2	1.51	1.91	2.31
t	min. =	1.0	1.4	1.7	2.2	2.7
	max.	1.25	1.7	2.0	2.6	3.2

* All Dimensions in mm

DIN 417/IS : 2386 -1971 (TYPE 'E')/ISO 7435

Slotted Set Screws With Long Dog Point

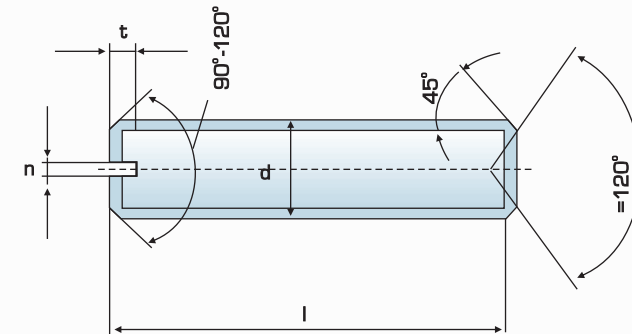


Thread size [d]	M3	M4	M5	M6	M8	M10	
Pitch	0.5	0.7	0.8	1.0	1.25	1.5	
d _p	max. =	2.0	2.5	3.5	4.0	5.5	7.0
	min.	1.75	2.25	3.2	3.7	5.2	6.64
n	min.	0.4	0.6	0.8	1.0	1.2	1.6
	max. =	0.6	0.8	1.0	1.2	1.51	1.91
t	min. =	0.8	1.12	1.28	1.6	2.0	2.4
	max.	1.05	1.42	1.63	2.0	2.5	3.0
z	min. =	1.5	2.0	2.5	3.0	4.0	5.0
	max.	1.75	2.25	2.75	3.25	4.3	5.3

* All Dimensions in mm

DIN 438/IS:2388-1971 (TYPE J)/ISO 7436

Slotted Set Screws With Cup Point

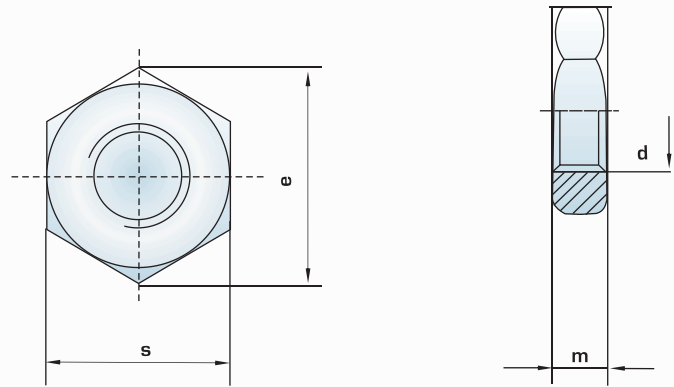


Thread size [d]	M3	M4	M5	M6	M8	M10	
Pitch	0.5	0.7	0.8	1	1.25	1.5	
n	min. =	0.4	0.6	0.8	1	1.2	1.6
	max.	0.6	0.8	1	1.2	1.51	1.91
t	min. =	0.8	1.12	1.28	1.6	2	2.4
	max.	1.05	1.42	1.63	2	2.5	3

* All Dimensions in mm

DIN 439

Hexagon Thin Nuts

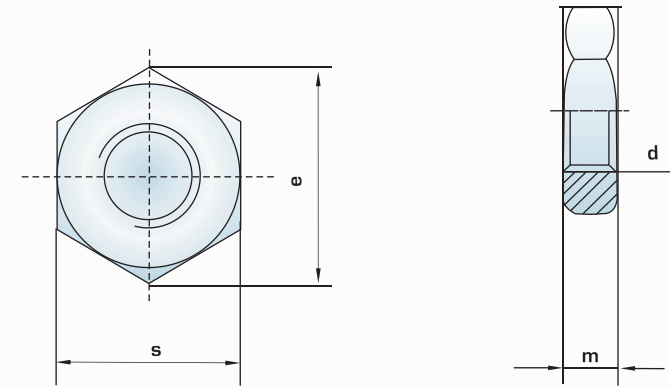


Thread size	M3	M4	M5	M6	M8	M10	M12	M(14)	M16	M20
Pitch	0.5	0.7	0.8	1.0	1.25	1.5	1.75	2.0	2.0	2.5
e min.	6.01	7.66	8.79	11.05	14.38	18.9	21.1	24.49	26.75	32.95
Max. m	1.8	2.2	2.7	3.2	4.00	5.0	6.0	7.0	8.0	10.00
min. m	1.55	1.95	2.45	2.9	3.7	4.7	5.7	6.42	7.42	9.10
max. s	5.5	7.0	8.0	10.0	13.0	17.0	19.0	22.0	24.0	30.0
min. s	5.32	6.78	7.78	9.78	12.73	16.73	18.67	21.67	23.67	29.16

* All Dimensions in mm

IS : 1364 / ISO - 4035

Hexagon Thin Nuts

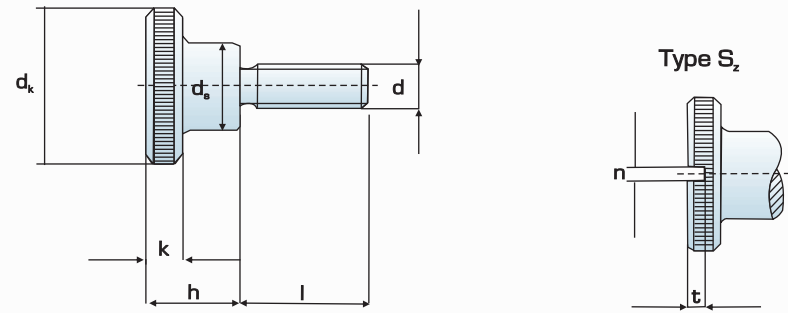


Thread size	M3	M4	M5	M6	M8	M10	M12	M(14)	M16	M20
Pitch	0.5	0.7	0.8	1.0	1.25	1.5	1.75	2.0	2.0	2.5
e min.	6.01	7.66	8.79	11.05	14.38	17.77	20.03	24.49	26.75	32.95
Max. m	1.8	2.2	2.7	3.2	4.00	5.0	6.0	7.0	8.0	10.0
min. m	1.55	1.95	2.45	2.9	3.7	4.7	5.7	6.42	7.42	9.10
max. s	5.5	7.0	8.0	10.0	13.0	16.0	18.0	22.0	24.0	30.0
min. s	5.32	6.78	7.78	9.78	12.73	15.73	17.73	21.67	23.67	29.16

* All Dimensions in mm

DIN 464/IS : 3726 - 1972

Knurled Thumb Screws

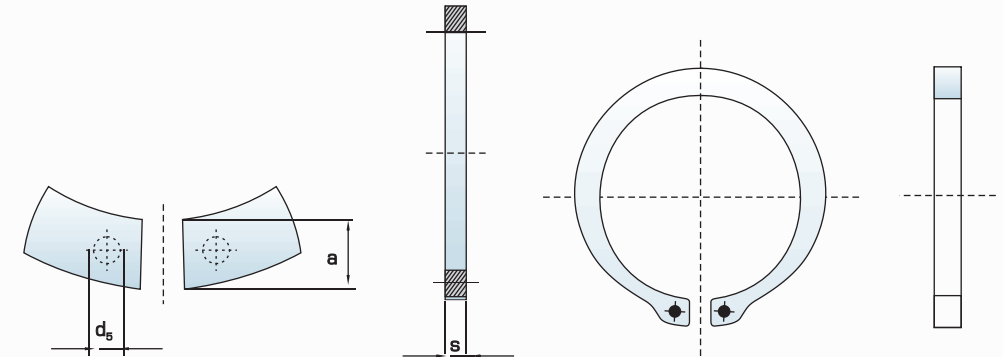


Thread size (d)	M 4	M 5	M 6	M 8	M 10	
Pitch	0.7	0.8	1.0	1.25	1.5	
dk	max.	16.35	20.42	24.42	30.42	36.5
	min.	15.65	19.58	23.58	29.58	35.5
ds	max.	8.0	10.0	12.0	16.0	20.0
	min.	7.64	9.64	11.57	15.57	19.48
h	max.	9.79	11.85	15.35	18.35	23.42
	min.	9.21	11.15	14.65	17.65	22.58
k	max.	3.5	4.0	5.0	6.0	8.0
	min.	3.2	3.7	4.7	5.7	7.64
n	min.	1.06	1.26	1.66	2.06	2.56
	max.	1.2	1.51	1.91	2.31	2.81
t	min.	2.2	2.8	3.5	4.5	6.0
	max.	2.7	3.4	4.3	5.5	7.0

* All Dimensions in mm

DIN - 471

Circlips, Retaining Rings for Shafts



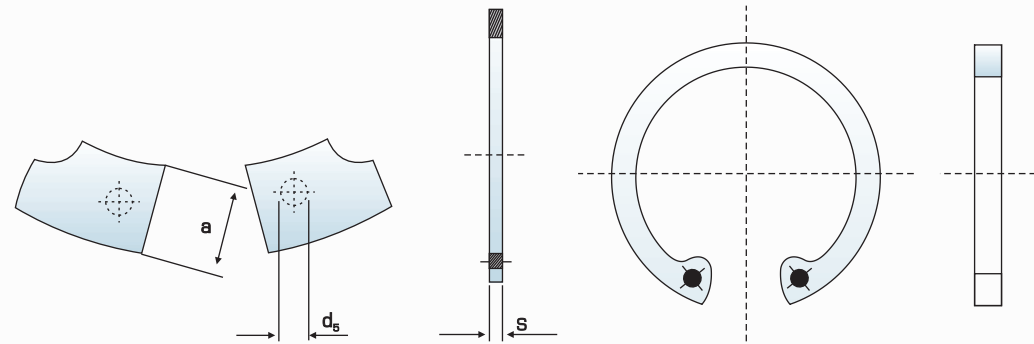
Nom. size	S	d ₃	d ₅	b	a min
3	0.4	2.7	1	0.8	1.9
4	0.4	3.7	1	0.9	2.2
5	0.6	4.7	1	1.1	2.5
6	0.7	5.6	1.2	1.3	2.7
7	0.8	6.5	1.2	1.4	3.1
8	0.8	7.4	1.2	1.5	3.2
9	1	8.4	1.2	1.7	3.3
10	1	9.3	1.5	1.8	3.3
11	1	10.2	1.5	1.8	3.3

* All Dimensions in mm

Nom. size	S	d ₃	d ₅	b	a min
12	1	11	1.7	1.8	3.3
13	1	11.9	1.7	2	3.4
14	1	12.9	1.7	2.1	3.5
15	1	13.8	1.7	2.2	3.6
16	1	14.7	1.7	2.2	3.7
17	1	15.7	1.7	2.3	3.8
18	1.2	16.5	2	2.4	3.9
19	1.2	17.5	2	2.5	3.9
20	1.2	18.5	2	2.6	4

DIN - 472

Circlips, Retaining Rings for Bores

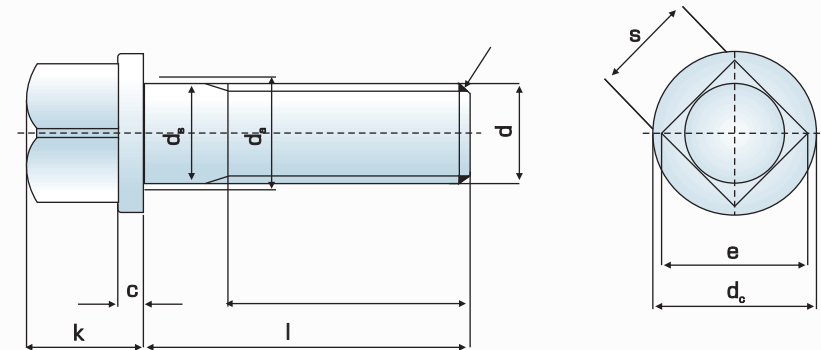


Nominal Size	s	d ₃	b ₁	d ₅	a max
8	0.8	8.7	1.1	1	2.4
9	0.8	9.8	1.3	1	2.5
10	1	10.8	1.4	1.2	3.2
11	1	11.8	1.5	1.2	3.3
12	1	13	1.7	1.5	3.4
13	1	14.1	1.8	1.5	3.6
14	1	15.1	1.9	1.7	3.7
15	1	16.2	2	1.7	3.7
16	1	17.3	2	1.7	3.8
17	1	18.3	2.1	1.7	3.9
18	1	19.5	2.2	2	4.1
19	1	20.5	2.2	2	4.1
20	1	21.5	2.3	2	4.2

* All Dimensions in mm

DIN 478

Square Head Bolts with Collar

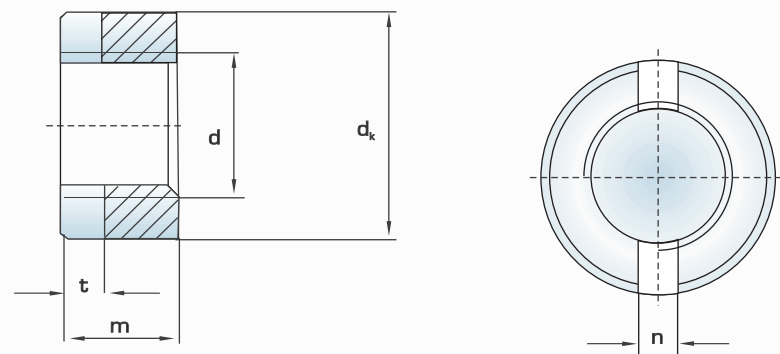


Thread size d	M5	M6	M8
Pitch	0.8	1	1.25
c	min	1.88	1.88
	max	2.12	2.12
d _c	max.	9.5	10.5
	min	8.92	9.8
e	max.	6.5	8
	min	5.92	7.42
k	min	6.82	7.82
	max	7.18	8.18
s	max.	5	6
	min	4.82	5.82

* All Dimensions in mm

DIN - 546

Slotted Round Nuts

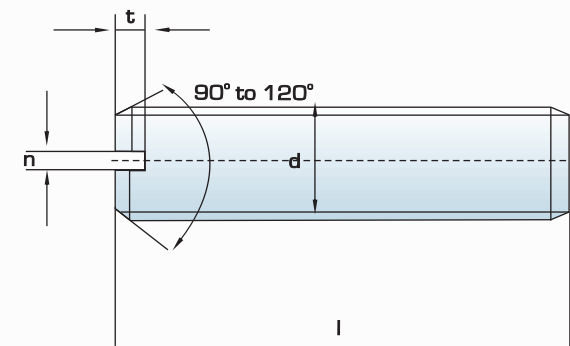


Thread size [d]	M3	M4	M5	M6	M8	M10	M12	
Pitch	0.5	0.7	0.8	1.0	1.25	1.5	1.75	
d_k	max.	6.0	8.0	9.0	11.0	14.0	18.0	21.0
	min.	5.7	7.64	8.64	10.57	13.57	17.57	20.48
m	max.	2.5	3.5	4.2	5.0	6.5	8.0	10.0
	min.	2.25	3.2	3.9	4.7	6.14	7.64	9.64
n	min.	1.26	1.46	2.06	2.56	3.06	3.57	4.07
	max.	1.51	1.71	2.31	2.81	3.31	3.87	4.37
t	min.	1.0	1.2	1.5	2.0	2.5	3.2	3.8
	max.	1.2	1.6	1.9	2.4	3.0	3.7	4.3

* All Dimensions in mm

DIN 551/IS : 2388 -1971 (Type A)/ISO 4766

Slotted Set Screws with Flat Point

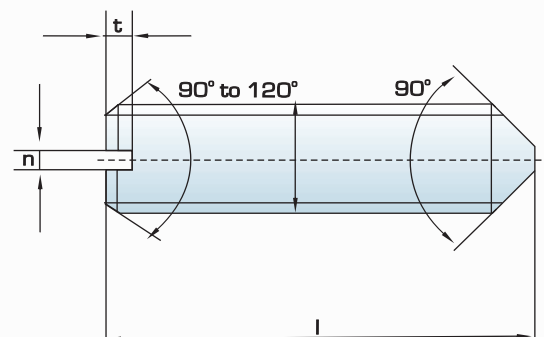


Thread size [d]	M3	M4	M5	M6	M8	M10	M12	
Pitch	0.5	0.7	0.8	1.0	1.25	1.5	1.75	
n	min.	0.46	0.66	0.86	1.06	1.26	1.66	2.06
	Max.	0.6	0.8	1.0	1.2	1.51	1.91	2.31
t	min.	0.8	1.12	1.28	1.6	2.0	2.4	2.8
	max.	1.05	1.42	1.63	2.0	2.5	3.0	3.6

* All Dimensions in mm

DIN 553/IS : 2388 - 1971 (Type C)/ISO 7434

Slotted Set Screws with Cone Point

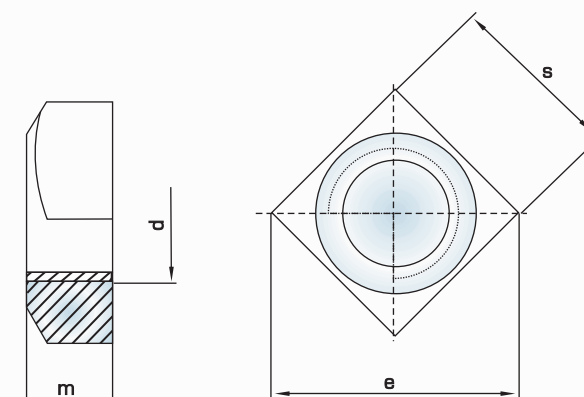


Thread size [d]	M3	M4	M5	M6	M8	M10	M12
Pitch	0.5	0.7	0.8	1.0	1.25	1.5	1.75
n	min.	0.46	0.66	0.86	1.06	1.66	2.06
	max.	0.6	0.8	1.0	1.2	1.91	2.31
t	min.	0.8	1.12	1.28	1.6	2.4	2.8
	max.	1.05	1.42	1.63	2.0	3.0	3.6

* All Dimensions in mm

DIN 557

Square Nuts

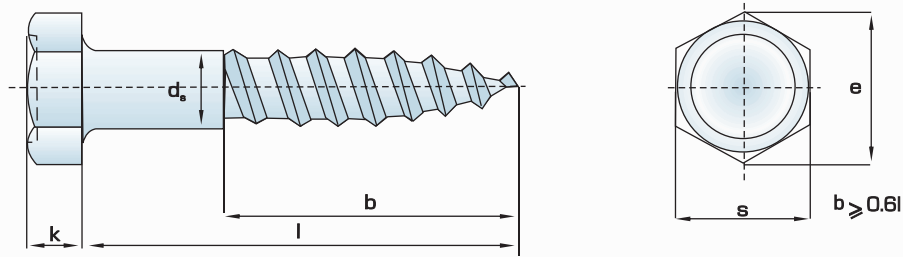


Thread size	M5	M6	M8
Pitch	0.8	1	1.25
e	≈ 11.3	14.1	18.4
m	max.	4.6	5.6
	Max.	3.4	4.4
s	Max.	8	10
	Min.	7.64	9.64

* All Dimensions in mm

DIN 571 / IS : 1120 - 1975

Hexagon Head Wood Screws (Coach SC)

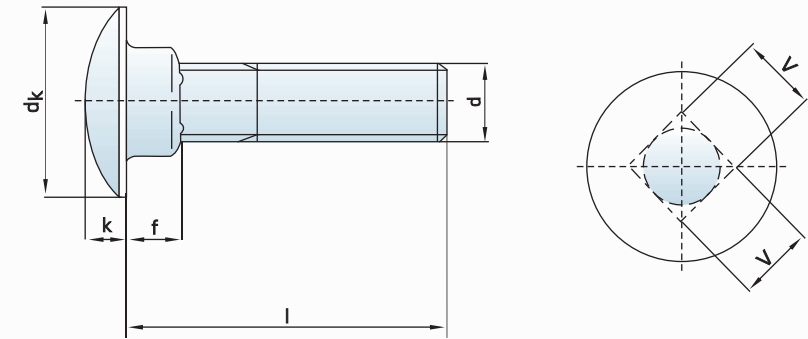


Thread size (d)	4	5	6	8	10	12	16	20	
d _s	max.	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0
	min.	3.52	4.52	5.52	7.42	9.42	11.3	15.3	19.3
k	max.	3.1	3.88	4.38	5.88	7.45	8.45	10.45	13.90
	min.	2.5	3.13	3.63	5.13	6.55	7.55	9.55	12.1
s	max.	7.0	8.0	10.0	13.0	17.0	19.0	24.0	30.0
	min.	6.64	7.64	9.64	12.57	16.57	18.48	23.16	29.16
e	min.	7.50	8.63	10.89	14.2	18.72	20.88	26.17	32.95

* All Dimensions in mm

DIN 603 / ISO 8677

Mushroom Head Square Neck Bolts

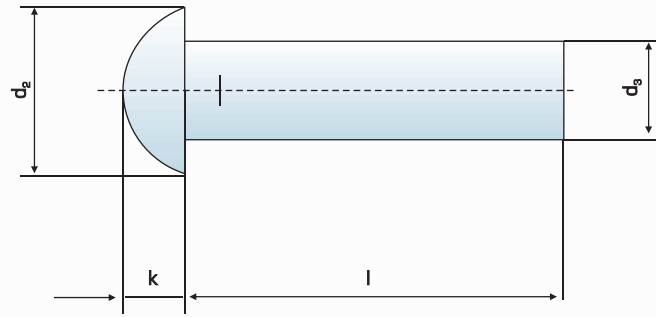


Screw Thread d	M5	M6	M8	M10	M12	
Pitch	0.8	1.0	1.25	1.5	1.75	
d _k	max.	13.55	16.55	20.65	24.65	30.65
	min.	12.45	15.45	19.35	23.35	29.35
f	max.	4.1	4.6	5.6	6.6	8.75
	min.	2.9	3.4	4.4	5.4	7.25
k	max.	3.3	3.88	4.88	5.38	6.95
	min.	2.7	3.12	4.12	4.62	6.05
v	max.	5.48	6.48	8.58	10.58	12.7
	min.	4.52	5.52	7.42	9.42	11.3

* All Dimensions in mm

DIN 660 / ISO R - 1051

Round Head Rivets

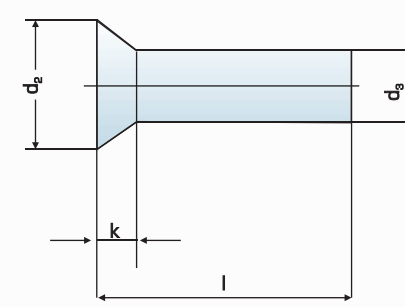


Nominal Size [d]	1.6	2	2.5	3	4	5	6	8
d_2	2.8	3.5	4.4	5.2	7	8.8	10.5	14
d_3	1.52	1.87	2.37	2.87	3.87	4.82	5.82	7.76
k	1.0	1.2	1.5	1.8	2.4	3.0	3.6	4.8

* All Dimensions in mm

DIN 661 / ISO R - 1051

Countersunk Head Rivets

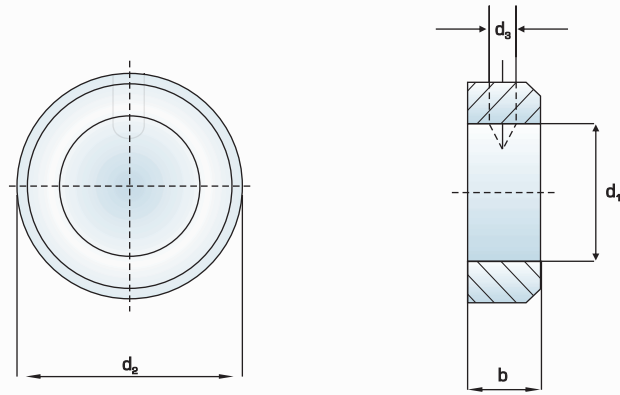


Nominal Size [d]	1.6	2	2.5	3	4	5	6	8
d_2 min	2.8	3.5	4.4	5.2	7	8.8	10.5	14
d_3	1.52	1.87	2.37	2.87	3.87	4.82	5.82	7.76
k	0.8	1	1.2	1.4	2.00	2.5	3	4

* All Dimensions in mm

DIN 705

Adjusting Ring



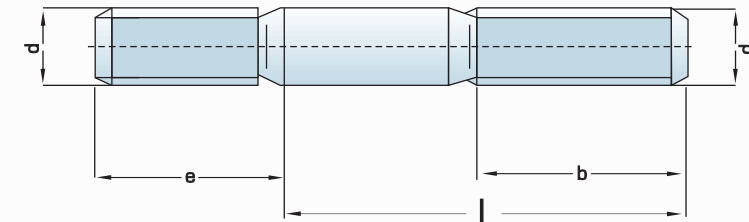
d_1	b	d_2	d_3
5	6	10	M 3
6	8	12	M 4
8	8	16	M 4
9	10	18	M 5
10	10	20	M 5
11	10	20	M 5
12	12	22	M 6
13	12	22	M 6
14	12	25	M 6
15	12	25	M 6
16	12	28	M 6
18	14	32	M 6
20	14	32	M 6
22	14	36	M 6

d_1	b	d_2	d_3
24	16	40	M 8
25	16	40	M 8
26	16	40	M 8
28	16	45	M 8
30	16	45	M 8
32	16	50	M 8
34	16	50	M 8
35	16	56	M 8
36	16	56	M 8
38	16	56	M 8
40	18	63	M 10
45	18	70	M 10
50	18	80	M 10
60	20	90	M 10

* All Dimensions in mm

DIN 835

Studs Threaded End~2d



Thread d	M 4	M 5	M 6	M 8	M 10	M 12	M (14)	M 16	M (18)	M 20	
Pitch	0.7	0.8	1.0	1.25	1.5	1.75	2	2	2.5	2.5	
b	1)	14.0	16.0	18.0	22.0	26.0	30.0	34.0	38.0	42.0	46.0
	2)	20.0	22.0	24.0	28.0	32.0	36.0	40.0	44.0	48.0	52.0
	3)	-	-	-	-	45.0	49.0	53.0	57.0	61.0	65.0
e	8	10.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	

* All Dimensions in mm

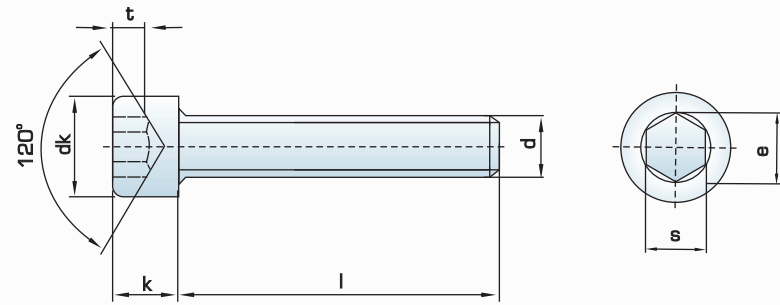
1) For lengths 1 up to 125 mm

2) For lengths above 125 to 200 mm

3) For lengths above 200 mm

DIN 912 / ISO 4762

Hexagon Socket Head Cap Screws

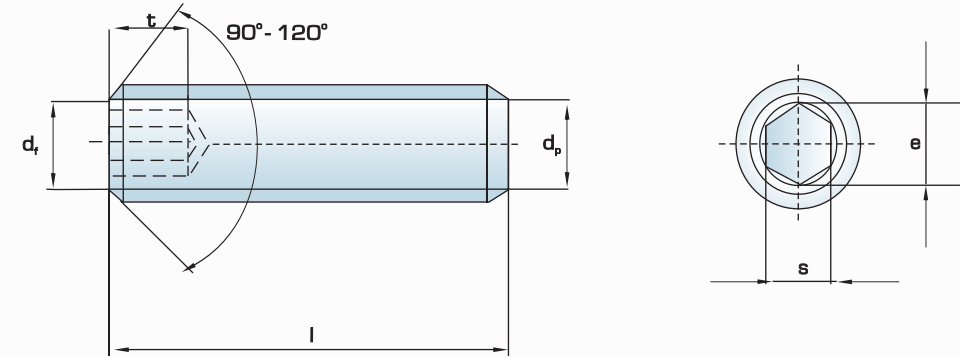


Thread size d	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20
Pitch	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	2.5
dk	min.	5.32	6.78	8.28	9.78	12.73	15.73	17.73	20.67	23.67	26.67
	max.	5.68	7.22	8.72	10.22	13.27	16.27	18.27	21.33	24.33	30.33
e	min.	2.87	3.44	4.58	5.72	6.86	9.15	11.43	13.72	16	19.44
	max.	3	4	5	6	8	10	12	14	16	20
k	min.	2.86	3.82	4.82	5.7	7.64	9.64	11.57	13.57	15.57	19.48
	max.	2.52	3.02	4.02	5.02	6.02	8.02	10.02	12.03	14.03	17.05
s	min.	2.52	3.02	4.02	5.02	6.02	8.02	10.02	12.03	14.03	17.05
	max.	2.58	3.08	4.09	5.14	6.14	8.175	10.17	12.21	14.21	17.23
t min	1.3	2	2.5	3	4	5	6	7	8	9	10

* All Dimensions in mm

DIN 913 / IS : 6094 -1981 (Type FP) / ISO 4026

Hexagon Socket Set Screws with Flat Point

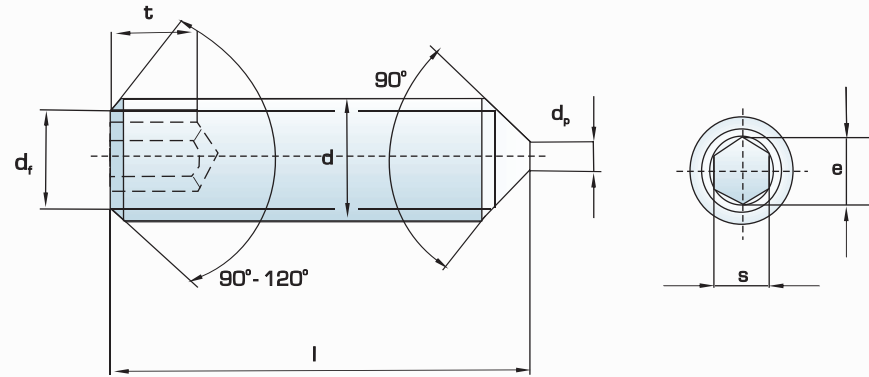


Thread size (d)	M3	M4	M5	M6	M8	M10	M12
Pitch	0.5	0.7	0.8	1.0	1.25	1.5	1.75
e min.	1.73	2.30	2.87	3.44	4.58	5.72	6.86
s	min.	1.5	2.00	2.5	3.0	4.0	5.0
	max.	1.54	2.04	2.56	3.08	4.09	5.09
t min.	1.2	1.5	2.0	2.0	3.0	4.0	4.8

* All Dimensions in mm

DIN 914 / IS : 6094 -1981 (Type TP) / ISO 4027

Hexagon Socket Set Screws with Cone Point

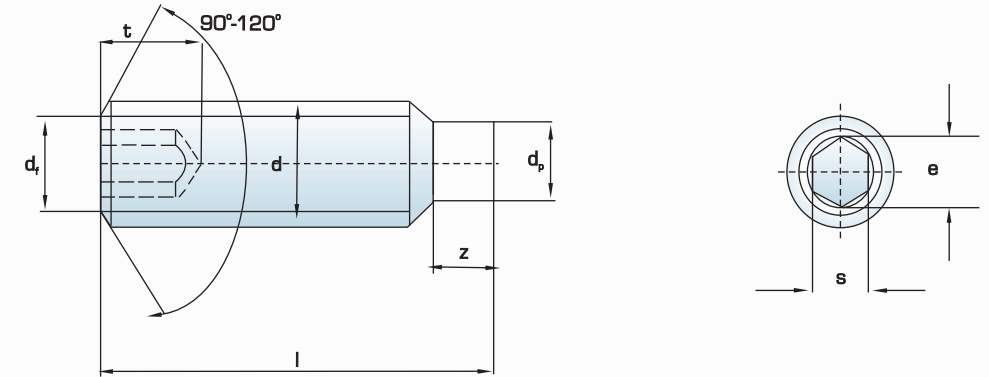


Thread size d	M3	M4	M5	M6	M8	M10	M12
Pitch	0.5	0.7	0.8	1	1.25	1.5	1.75
e min.	1.73	2.30	2.87	3.44	4.58	5.72	6.86
s	min.	1.5	2.0	2.5	3.0	5.0	6.0
	max.	1.54	2.04	2.56	3.08	4.09	5.09
t min.	1.2	1.5	2	2	3	4	4.5

* All Dimensions in mm

DIN 915 / IS : 6094 -1981 (Type DP) / ISO 4028

Hexagon Socket Screws with Dog Point

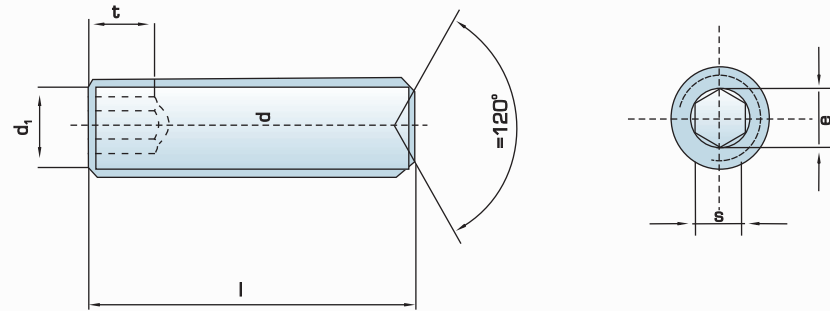


Thread size d	M3	M4	M5	M6	M8	M10	M12
Pitch	0.5	0.7	0.8	1.0	1.25	1.5	1.75
d _p	max.	2.0	2.5	3.5	4.0	5.5	8.5
	min.	1.75	2.25	3.2	3.7	5.2	8.14
e min.	1.73	2.30	2.87	3.44	4.58	5.72	6.86
s	min.	1.5	2.0	2.5	3.0	5.0	6.0
	max.	1.54	2.04	2.56	3.06	4.09	5.09
t min.	1.2	1.5	2.0	2.0	3.0	4.0	4.8
z	min.	0.75	1.0	1.25	1.5	2.5	3.0
	max.	1.0	1.25	1.5	1.75	2.25	2.75

* All Dimensions in mm

DIN 916 / IS : 6094 - 1981 (Type CP)/ISO 4029

Hexagon Socket Set Screws with Cup Point

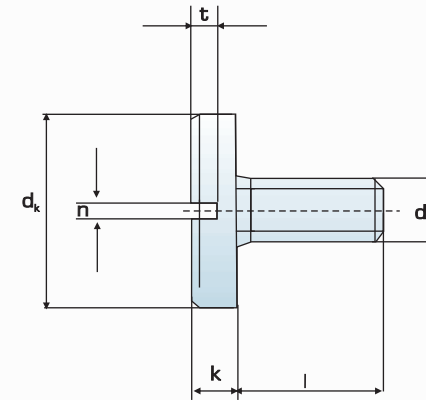


Thread size (d)	M3	M4	M5	M6	M8	M10	M12
Pitch	0.5	0.7	0.8	1	1.25	1.5	1.75
e min.	1.73	2.30	2.87	3.44	4.58	5.72	6.86
s min.	1.5	2.0	2.5	3.0	4.0	5.0	6.0
s max.	1.54	2.04	2.56	3.08	4.09	5.09	6.09
t	1.2	1.5	2	2	3	4	4.8

* All Dimensions in mm

DIN 921

Slotted Pan Head Screws with Large Head

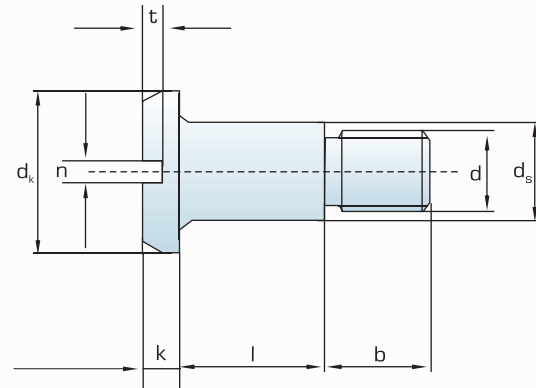


Thread size (d)	M3	M4	M5	M6	M8	M10
Pitch	0.5	0.7	0.8	1.0	1.25	1.4
dk max	8.0	12.0	16.0	20.0	25.0	30.0
dk min	7.64	11.57	15.57	19.48	24.48	29.48
k max	1.92	2.52	2.82	3.25	3.95	4.75
k min	1.68	2.28	2.58	2.95	3.65	4.45
n min	0.8	1.0	1.2	1.6	2.0	2.5
n max	1.0	1.2	1.51	1.91	2.31	2.81
t min	0.9	1.2	1.3	1.5	1.9	2.3
t max	1.15	1.5	1.6	1.9	2.4	2.8

* All Dimensions in mm

DIN 923

Slotted Pan Head Screws with Shoulder

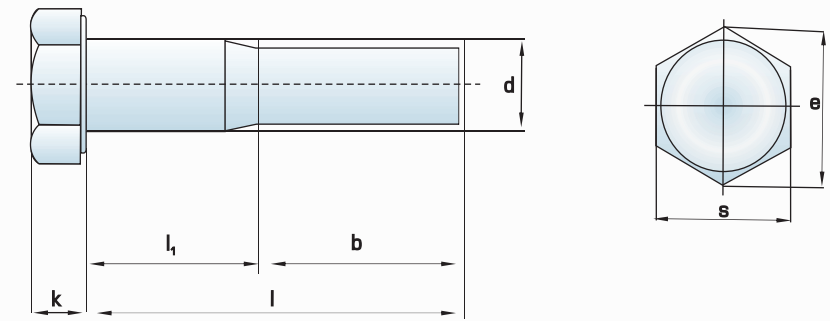


Thread Size [d]	M4	M5	M6	M8	M10
Pitch	0.70	0.80	1.00	1.25	1.50
b	6.00	7.00	9.00	11.00	13.50
dk	max.	8.50	11.00	13.00	16.00
	min.	8.28	10.73	12.73	15.73
ds	max.	5.50	7.00	8.00	10.00
	min.	5.47	6.96	7.96	9.96
k	max.	2.52	2.82	3.25	3.95
	min.	2.28	2.58	2.95	3.65
n	min.	1.00	1.20	1.60	2.00
	max.	1.20	1.51	1.91	2.31
t	min.	1.20	1.30	1.50	1.90
	max.	1.50	1.60	1.90	2.40

* All Dimensions in mm

DIN 931 / ISO 4014

Hexagon Head Bolts (Half Thread), ISO - 4014

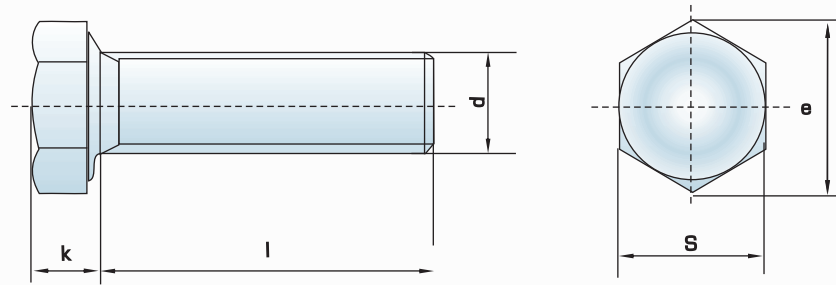


Thread size	M6	M8	M10	M12	M14	M16	M18	M20
p	1	1.25	1.5	1.75	2	2	2.5	2.5
b	18	22	26	30	34	38	42	46
e min	11.05	14.38	18.9	21.1	24.49	26.75	30.14	33.53
k	min	3.85	5.15	6.22	7.32	8.62	9.82	11.28
	max	4.15	5.45	6.58	7.68	8.98	10.18	11.72
s	max	10	13	17	19	22	24	27
	min	9.78	12.73	16.73	18.67	21.67	23.67	26.67

* All Dimensions in mm

DIN 933

Hexagon Head Screws

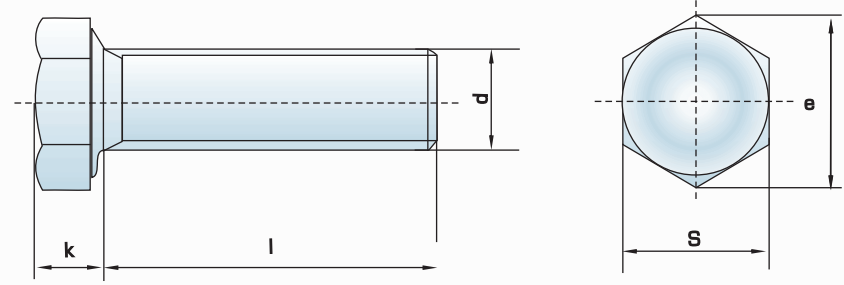


Thread size	M3	M3.5	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M24	
Pitch	0.5	0.6	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	2.5	3	
e min.	6.01	6.58	7.66	8.79	11.05	14.38	18.9	21.1	24.49	26.75	30.14	33.53	39.98	
k	min	1.88	2.28	2.68	3.35	3.85	5.15	6.22	7.32	8.62	9.82	11.28	12.28	14.78
	max	2.12	2.52	2.92	3.65	4.15	5.45	6.56	7.68	8.98	10.18	11.72	12.72	15.22
s	max	5.5	6	7	8	10	13	17	19	22	24	27	30	36
	min	5.32	5.82	6.78	7.78	9.78	12.73	16.73	18.67	21.67	23.67	26.67	29.67	35.38

* All Dimensions in mm

IS : 1364 (P2) - 1992 / ISO - 4017

Hexagon Head Screws

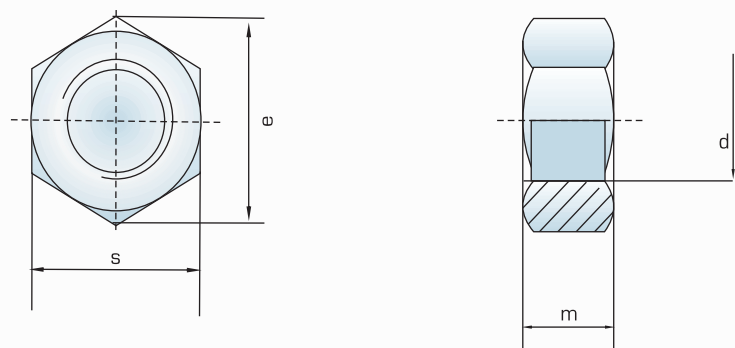


Thread size	M3	M3.5	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M24	
Pitch	0.5	0.6	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	2.5	3	
e min.	6.01	6.58	7.66	8.79	11.05	14.38	17.77	20.03	23.36	26.75	30.14	33.53	39.98	
k	min	1.88	2.28	2.68	3.35	3.85	5.15	6.22	7.32	8.62	9.82	11.28	12.28	14.78
	max	2.12	2.52	2.92	3.65	4.15	5.45	6.58	7.68	8.98	10.18	11.72	12.72	15.22
s	max	5.5	6	7	8	10	13	16	18	21	24	27	30	36
	min	5.32	5.82	6.78	7.78	9.78	12.73	15.73	17.73	20.67	23.67	26.67	29.67	35.38

* All Dimensions in mm

DIN 934

Hexagon Nuts



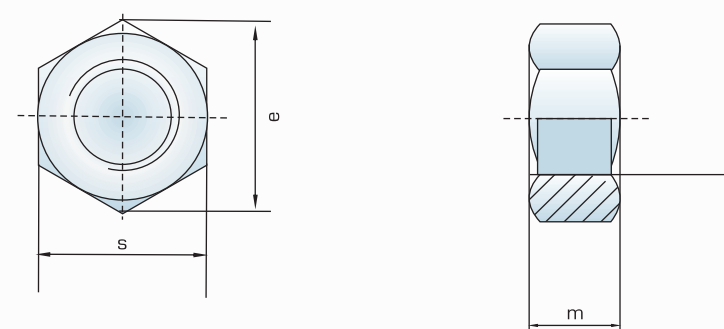
Thread size (d)	M1.6	M2	M2.5	M3	(M3.5)	M4	M5	M6
Pitch	0.35	0.4	0.45	0.5	0.6	0.7	0.8	1
e min.	3.41	4.32	5.45	6.01	6.58	7.66	8.79	11.05
m	max	1.3	1.6	2	2.8	3.2	4	5
	min	1.05	1.35	1.75	2.15	2.55	3.7	4.7
s	max	3.2	4	5	5.5	7	8	10
	min	3.02	3.82	4.82	5.32	6.78	7.78	9.78

Thread size (d)	M8	M10	M12	M14	M16	M18	M20	M24
Pitch	1.25	1.5	1.75	2	2	2.5	2.5	3
e min.	14.38	18.9	21.1	24.49	26.75	29.56	32.95	39.55
m	max	6.5	8	11	13	15	16	19
	min	6.14	7.64	9.64	10.3	12.3	14.9	17.7
s	max	13	17	22	24	27	30	36
	min	12.73	16.73	18.67	21.67	23.67	26.16	35

* All Dimensions in mm

IS : 1364 P3 - 2002 / ISO - 4032

Hexagon Nuts



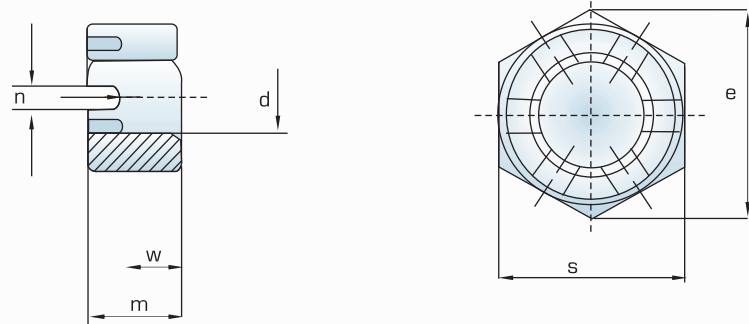
Thread size (d)	M1.6	M2	M2.5	M3	(M3.5)	M4	M5	M6
Pitch	0.35	0.4	0.45	0.5	0.6	0.7	0.8	1
e min.	3.41	4.32	5.45	6.01	6.58	7.66	8.79	11.05
m	max	1.3	1.6	2	2.8	3.2	4.7	5.2
	min	1.05	1.35	1.75	2.15	2.55	4.4	4.9
s	max	3.2	4	5	5.5	7	8	10
	min	3.02	3.82	4.82	5.32	6.78	7.78	9.78

Thread size (d)	M8	M10	M12	M14	M16	M18	M20	M24
Pitch	1.25	1.5	1.75	2	2	2.5	2.5	3
e min.	14.38	17.77	20.03	23.36	26.75	29.56	32.95	39.55
m	max	6.5	8.4	10.8	12.8	14.8	18	19
	min	6.14	8.04	10.37	12.1	14.1	16.9	17.7
s	max	13	16	18	21	24	30	36
	min	12.73	15.73	17.73	20.67	23.67	26.16	35

* All Dimensions in mm

DIN 935 / IS : 2232 - 1967 / ISO 7035

Hexagon Castle Nuts, Slotted

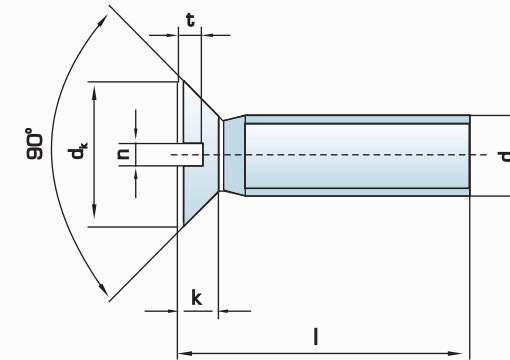


Thread size d	M4	M5	M6	M8	M10	
e min.	7.66	8.79	11.05	14.38	18.9	
m	max.	5.0	6.0	7.5	9.5	12.00
	min.	4.7	5.7	7.14	9.14	11.57
n	min.	1.2	1.4	2.0	2.5	2.8
	max.	1.45	1.65	2.25	2.75	3.05
s	max.	7.0	8.0	10.0	13.0	17
	min.	6.78	7.78	9.78	12.73	16.73
w	max.	3.2	4	5	6.5	8
	min.	2.9	3.7	4.7	6.14	7.64

* All Dimensions in mm

DIN 963 / IS : 1365 -1978 / ISO 2009

Slotted Countersunk Head Screws

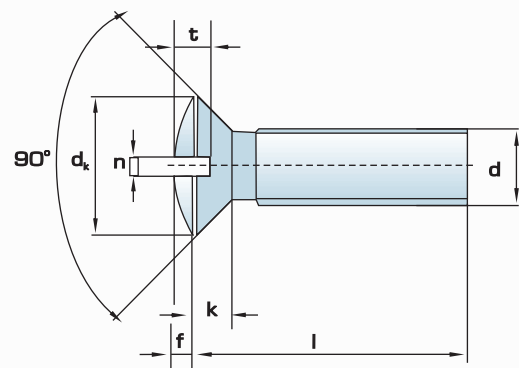


Thread size d	M 2	(M 2.5)	M 3	M 3.5	M 4	M 5	M 6	M 8	M 10	M 12	M 16	
Pitch	0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5	1.75	2	
d _k	max.	3.8	4.7	5.6	6.5	7.5	9.2	11	14.5	18	22	29
	min.	3.5	4.4	5.3	6.14	7.14	8.84	10.57	14.07	17.57	21.48	28.48
k max.	1.2	1.5	1.65	1.93	2.2	2.5	3	4	5	6	8	
n	min	0.5	0.6	0.8	0.8	1.0	1.2	1.6	2.0	2.5	3.0	4.0
	max	0.7	0.8	1	1	1.2	1.51	1.91	2.31	2.81	3.31	4.37
t	min	0.4	0.5	0.6	0.7	0.8	1	1.2	1.6	2	2.4	3.2
	max	0.6	0.7	0.85	1	1.1	1.3	1.6	2.1	2.6	3	4

* All Dimensions in mm

DIN 964 / IS : 8911 -1988 / ISO 2010

Slotted Raised Countersunk Head Screws

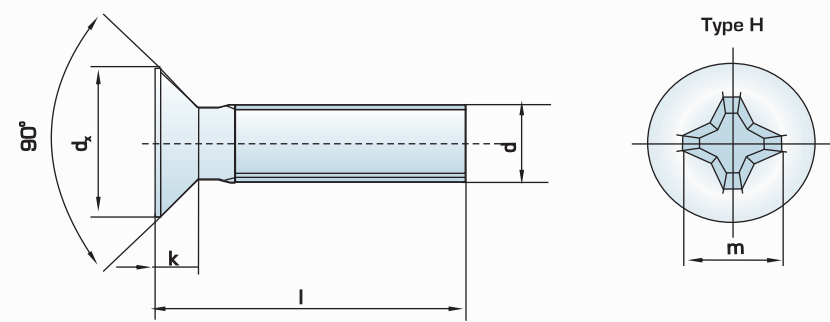


Thread size (d)	M2	M2.5	M3	(M3.5)	M4	M5	M6	M8	M10	M12
Pitch	0.4	0.45	0.5	0.6	0.7	0.8	1.0	1.25	1.5	1.75
d _k	max	3.8	4.7	5.6	6.5	7.5	9.2	11.0	14.5	18.0
	min	3.5	4.4	5.3	6.14	7.14	8.84	10.57	14.07	17.5
f	0.5	0.6	0.75	0.9	1.0	1.25	1.5	2.0	2.5	3.00
k	max	1.2	1.5	1.65	1.93	2.2	2.5	3.0	4.0	5.0
	min	0.56	0.66	0.86	0.86	1.06	1.26	1.66	2.06	2.56
n	max	0.7	0.8	1.0	1.0	1.2	1.51	1.91	2.31	3.31
	min	0.8	1.0	1.2	1.4	1.6	2.0	2.4	3.2	4.8
t	min	0.8	1.0	1.2	1.4	1.6	2.0	2.4	3.2	4.8
	max	1.0	1.2	1.45	1.7	1.9	2.3	2.8	3.7	4.5

* All Dimensions in mm

DIN 965 / IS : 7485 - 1985 / ISO 7046

Cross recessed Countersunk Flat Head Screws

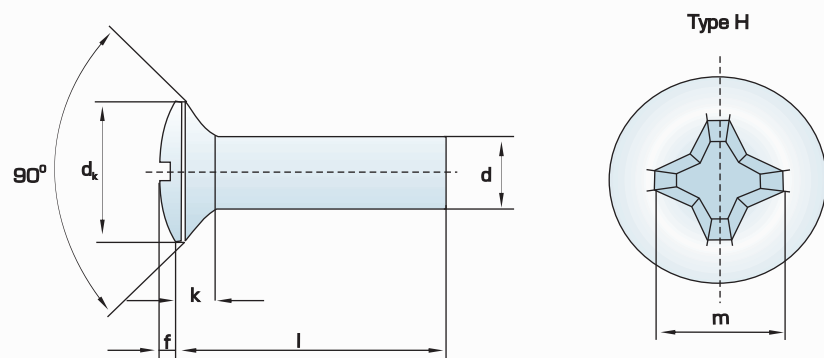


Thread size (d)	M2	M2.5	M3	(M3.5)	M4	M5	M6	M8	M10
Pitch	0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5
d _k	max	3.8	4.7	5.6	6.5	7.5	9.2	11	14.5
	min	3.5	4.4	5.3	6.14	7.14	8.84	10.57	14.07
k	max	1.2	1.5	1.65	1.93	2.2	2.5	3	4
	min	0.56	0.66	0.86	0.86	1.06	1.26	1.66	2.06
Cross recess no.	1			2			3	4	
	m	2.35	2.7	2.9	3.9	4.4	4.6	6.6	8.7
penetration type H	min	0.95	1.25	1.5	1.4	1.9	2.1	2.8	3.9
	Depth max	1.25	1.55	1.8	1.9	2.4	2.6	3.3	4.4

* All Dimensions in mm

DIN 966 / IS : 7486 - 1985 / ISO 7047

Cross Recessed Raised Countersunk Head Screws

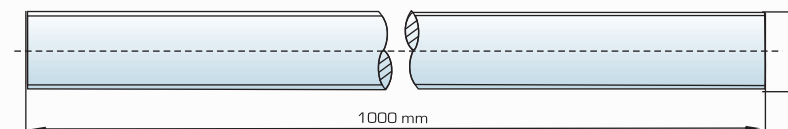


Thread size [d]	M2	M2.5	M3	[M3.5]	M4	M5	M6	M8	M10	
Pitch	0.4	0.45	0.5	0.6	0.7	0.8	1.0	1.25	1.5	
dk	max	3.8	4.7	5.6	6.5	7.5	9.2	11.0	14.5	18.0
	min	3.5	4.4	5.3	6.14	7.14	8.84	10.57	14.07	17.57
f	0.5	0.6	0.75	0.9	1.0	1.25	1.5	2.0	2.5	
k	max	1.2	1.5	1.65	1.93	2.2	2.5	3.0	4.0	5.0
	Cross recess no.	1			2			3	4	
m	2.5	2.7	3.1	4.2	4.5	5.3	6.8	9.0	10.0	
penetration type H Depth	min	1.1	1.3	1.7	1.74	2.04	2.77	3.03	4.18	5.38
	max	1.4	1.6	2.0	2.24	2.54	3.27	3.53	4.68	5.88

* All Dimensions in mm

DIN 975

Threaded Rods



Thread size d	M2	M2.5	M3	M4	M5
Pitch	0.4	0.45	0.5	0.7	0.8

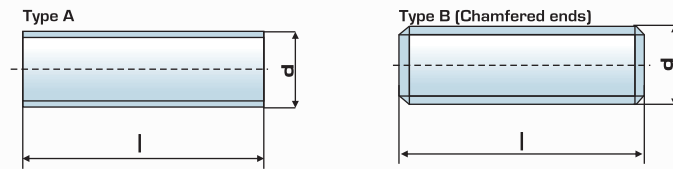
Thread size d	M6	M8	M10	M12	[M14]
Pitch	1.0	1.25	1.50	1.75	2.0

Thread size d	M16	[M18]	M20	M22	M24
Pitch	2.0	2.50	2.50	2.5	3.0

* All Dimensions in mm

DIN 976

Stud Bolts



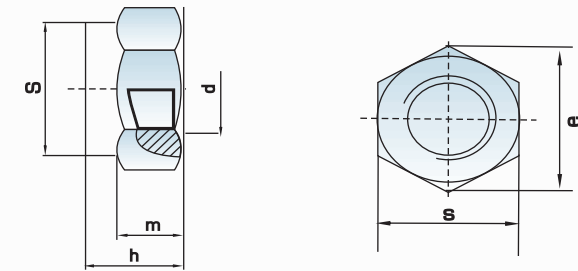
Thread Size d	M2	M2.5	M3	M4	M5	M6
Pitch	0.4	0.45	0.5	0.7	0.8	1.0

Thread Size d	M8	M10	M12	M16	M20	M24
Pitch	1.25	1.50	1.75	2	2.5	3

* All Dimensions in mm

DIN 982 / IS : 7002 - 1972 / ISO 7040

**Prevailing Torque Type Hexagon
Nonmetallic Insert (Nylock Nut)**

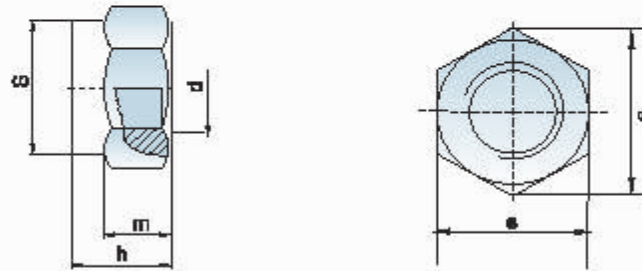


Thread size [d]	M5	M6	M8	M10	M12	M14	M16	M 20	
Pitch	0.8	1	1.25	1.5	1.75	2	2	2.5	
h	max.	6.3	8	9.5	11.5	14	16	18	12
	min.	6	7.7	9.14	11.14	13.64	15.3	17.3	20.7
s	max.	8	10	13	17	19	22	24	30
	min.	7.78	9.78	12.73	16.73	18.67	21.67	23.67	29.16
m	min.	4.4	4.9	6.44	8.04	10.37	12.1	14.1	16.9
e	min.	8.79	11.05	14.38	18.9	21.1	24.49	26.75	32.95

* All Dimensions in mm

DIN 985

Prevailing Torque Type Hexagon Thin Nuts with Nonmetallic Insert (Thin Nylock Nut)

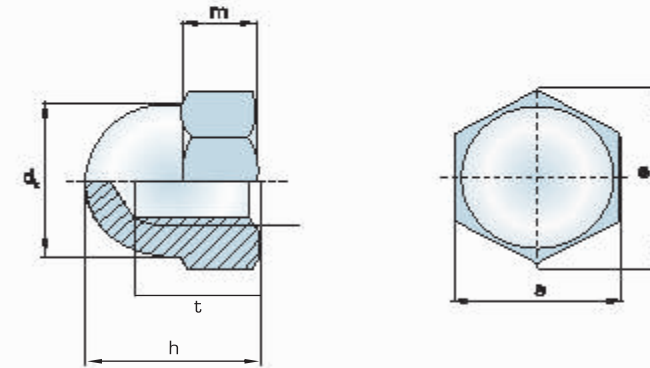


Thread size (d)	M3	M4	M5	M6	M8	M10	M12	M14	M16	M20
	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5
e	6.01	7.66	8.79	11.05	14.38	18.9	21.1	24.49	26.75	32.95
h	4	5	5	6	8	10	12	14	16	20
	3.7	4.7	4.7	5.7	7.64	9.64	11.57	13.3	15.3	18.7
s	5.5	7	8	10	13	17	19	22	24	30
	5.32	6.78	7.78	9.78	12.73	16.73	18.67	21.67	23.67	29.16
m	2.4	2.9	3.2	4	5.5	6.5	8	9.5	10.5	14

* All Dimensions in mm

DIN 1587 / IS : 7790 - 1975

Hexagon Domed Cap Nuts



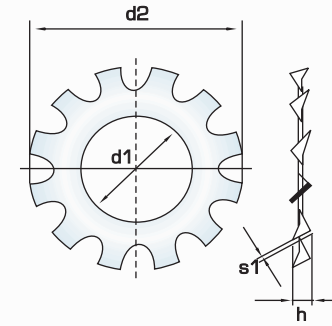
Thread size (d)	M4	M5	M6	M8	M10	M12	M16	
Pitch	0.7	0.8	1.0	1.25	1.5	1.75	2.0	
h	max.	8.0	10.0	12.0	15.0	18.0	22.0	28.0
m	max.	3.2	4.0	5.0	6.5	8.0	10.0	13.0
	min.	2.9	3.7	4.7	6.14	7.64	9.64	12.3
s	max.	7.0	8.0	10.0	13.0	17	19	24.0
d _k	max.	6.5	7.5	9.5	12.5	16	18	23.0
t	min.	5.26	7.21	7.71	10.65	12.65	15.65	20.58
	max.	5.74	7.79	8.29	11.35	13.35	16.35	21.42

* All Dimensions in mm

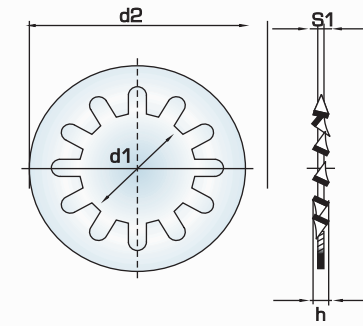
DIN 6797/IS : 5371 - 1982

Toothed Lock Washers

Type A, with external teeth



Type J, with external teeth

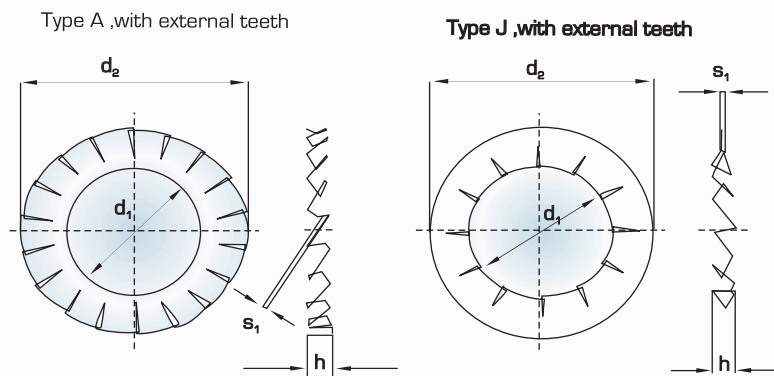


Nominal size	For nom. diameter	d ₁		d ₂		S ₁	Min. No. Of teeth
		min	max	max	min		
4.3	4	4.3	4.48	8	7.64	0.5	8
5.3	5	5.3	5.48	10	9.64	0.6	8
6.4	6	6.4	6.62	11.0	10.57	0.7	8
8.4	8	8.4	8.62	15.0	14.57	0.8	8
10.5	10	10.5	10.77	18.0	17.57	0.9	9
13.0	12	13	13.27	20.5	19.98	1.0	10
15.0	14	15	15.27	24.0	23.48	1.0	10
17.0	16	17	17.27	26.0	25.48	1.2	12

* All Dimensions in mm

DIN 6798/ IS : 5556 - 1970

Serrated Lock Washers

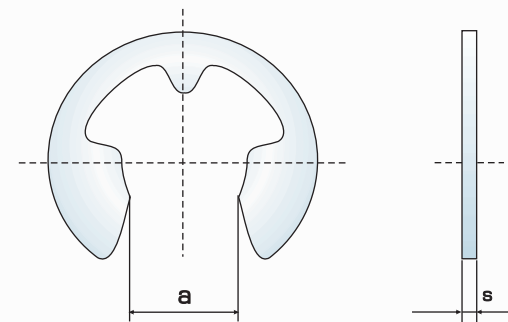


Nominal size	For thread dia.	d ₁		d ₂		No. Of Teeth	
		min	max	max	min	A Type	J Type
1.7	1.6	1.7	1.84	3.6	3.3	9.0	7.0
2.2	2.0	2.2	2.34	4.5	4.2	9.0	7.0
2.7	2.5	2.7	2.84	5.5	5.2	9.0	7.0
3.2	3.0	3.2	3.38	6.0	5.7	9.0	7.0
3.7	3.5	3.7	3.88	7.0	6.64	10.0	8.0
4.3	4.0	4.3	4.48	8.0	7.64	11.0	8.0
5.3	5.0	5.3	5.48	10.0	9.64	11.0	8.0
6.4	6.0	6.4	6.62	11.0	10.57	12.0	9.0
8.4	8.0	8.4	8.62	15.0	14.57	14.0	10.0
10.5	10.0	10.5	10.77	18.0	17.57	16.0	12.0
13.0	12.0	13.0	13.27	20.5	19.98	16.0	12.0
15.0	14.0	15.0	15.27	24.0	23.48	18.0	14.0
17.0	16.0	17.0	17.27	26.0	25.48	18.0	14.0
19.0	18.0	19.0	19.33	30.0	29.48	18.0	14.0
21.0	20.0	21	21.33	33.0	32.38	20.0	16.0

* All Dimensions in mm

DIN 6799

Retaining Washer For Shaft (E-Clip)

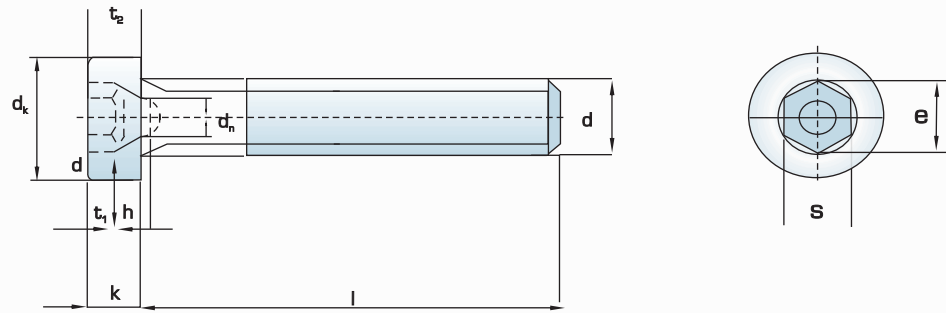


Nominal size	s	Lock Washers a
3.2	0.6	2.70
4	0.7	3.34
5	0.7	4.11
6	0.7	5.26
7	0.9	5.84
8	1.0	6.52
9	1.1	7.63
10	1.2	8.32
12	1.3	10.45
15	1.5	12.61

* All Dimensions in mm

DIN 6912

Socket Head Cap Screw, Low Head - Pilot Recess

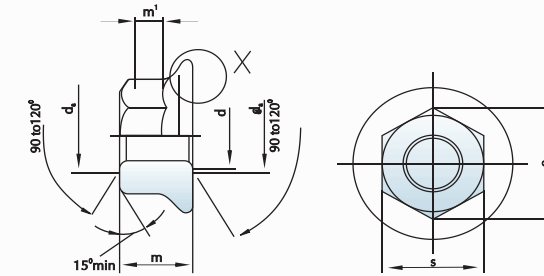


Thread size d	M4	M5	M6	M8	M10	M12	M16	M20
Pitch	0.7	0.8	1	1.25	1.5	1.75	2	2.5
dk	max	7	8.5	10	13	16	24	30
	min	6.78	8.28	9.78	12.73	15.73	23.67	29.67
dn	max	2	2.5	3	4	5	8	10
e	max	3.44	4.58	5.72	6.86	9.15	11.43	19.44
	min	2.8	3.5	4	5	6.5	7.5	12
k	max	2.8	3.5	4	5	6.5	7.5	10
	min	2.66	3.32	3.82	4.82	6.28	7.28	9.78
s	min	3.0	4.0	5.0	6.0	8.0	10.0	14.0
	max	3.10	4.12	5.14	6.14	8.175	10.175	14.212
t1	min	1.48	1.88	2.38	2.88	3.35	5.35	6.32
	max	1.72	2.12	2.62	3.12	3.65	4.15	6.68
t2	min	3.3	4	5	6.5	7.5	9	11.5
	max	3.6	4.3	5.3	6.86	7.86	9.36	11.93

* All Dimensions in mm

DIN 6923

Hexagon Nuts Flange Nut

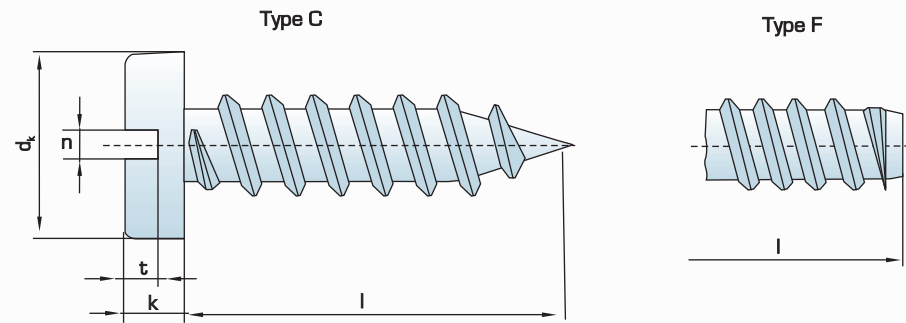


Thread size d	M5	M6	M8	M10	M12	M14	M16	M20
Pitch	0.8	1	1.25	1.5	1.75	2	2	2.5
da	min	5	6	8	10	12	16	20
	max	5.75	6.75	8.75	10.8	13	17.3	21.6
e	min	8.79	11.05	14.38	16.64	20.03	23.36	32.95
	max	5	6	8	10	12	16	20
m	min	4.7	5.7	7.6	9.6	11.6	15.3	18.9
	max	2.2	3.1	4.5	5.5	6.7	7.8	11.1
s	max	8	10	13	15	18	24	30
	min	7.78	9.78	12.73	14.73	17.73	20.67	29.67

* All Dimensions in mm

DIN 7971/IS : 7173-1974/ISO 1481

Slotted Pan Head Tapping Screws

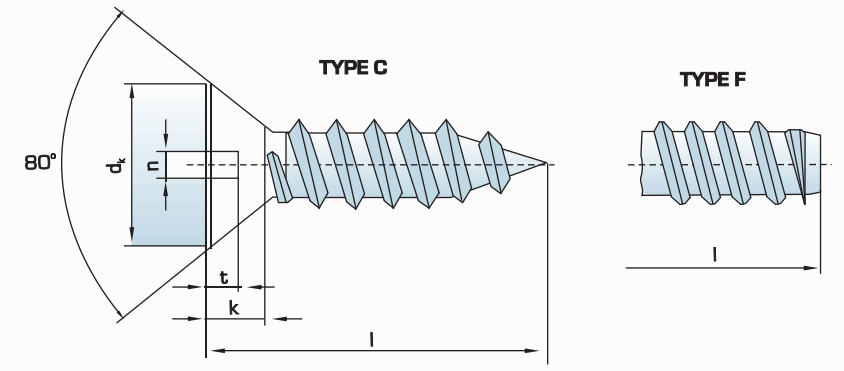


Thread size	ST 2.2	ST 2.9	ST 3.5	ST 4.2	ST 4.8	ST 5.5	ST 6.3
No	#4	#5	#6	#8	#10	#12	#14
Pitch	0.8	1.1	1.3	1.4	1.6	1.8	1.8
dk	max	4.2	5.6	6.9	8.2	9.5	10.8
	min	3.9	5.3	6.54	7.84	9.14	10.37
k	max	1.35	1.75	2.1	2.45	2.8	3.2
	min	1.15	1.5	1.85	2.15	2.5	2.85
n	min	0.6	0.8	1.0	1.2	1.2	1.6
	max	0.8	1	1.2	1.51	1.51	1.91
t	min	0.55	0.75	0.95	1.15	1.35	1.8
	max	0.8	1	1.25	1.5	1.7	1.95

* All Dimensions in mm

DIN 7972/IS : 7170 - 1974/ISO 1482

Slotted Countersunk Head Tapping Screws

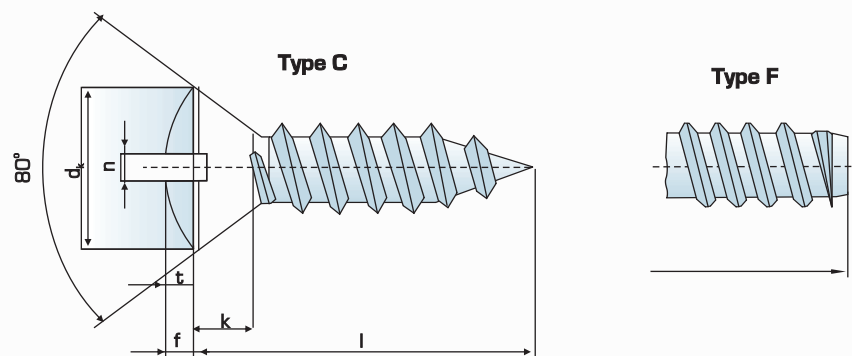


Thread size	ST 2.2	ST 2.9	ST 3.5	ST 4.2	ST 4.8	ST 5.5	ST 6.3
No	#4	#5	#6	#8	#10	#12	#14
Pitch	0.8	1.1	1.3	1.4	1.6	1.8	1.8
dk	max	4.3	5.5	6.8	8.1	9.5	10.8
	min	4	5.2	6.44	7.74	9.14	10.37
k	1.3	1.7	2.1	2.5	3	3.4	3.8
n	min	0.6	0.8	1.0	1.2	1.2	1.6
	max	0.8	1	1.2	1.51	1.51	1.91
t	min	0.4	0.5	0.6	0.75	0.85	1
	max	0.6	0.75	0.95	1.15	1.35	1.75

* All Dimensions in mm

DIN 7973/IS : 7169-1974/ISO 1483

Slotted Raised Countersunk Head Tapping Screws

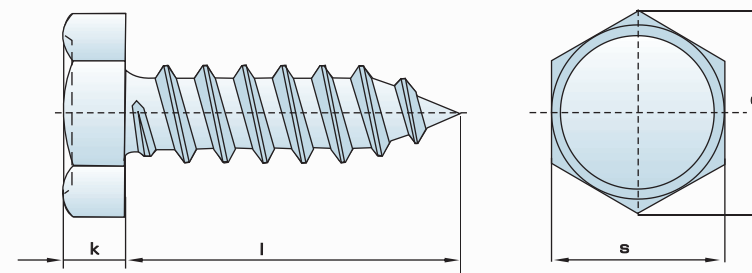


Thread size (d)	ST 2.2	ST 2.9	ST 3.5	ST 4.2	ST 4.8	ST 5.5	ST 6.3
No	#4	#5	#6	#8	#10	#12	#14
Pitch	0.8	1.1	1.3	1.4	1.6	1.8	1.8
d _k	max	4.3	5.5	6.8	8.1	9.5	10.8
	min	4	5.2	6.44	7.74	9.14	10.37
k	1.3	1.7	2.1	2.5	3.0	3.4	3.8
f	0.7	0.9	1.2	1.4	1.5	1.7	2.0
n	min	0.6	0.8	1.0	1.2	1.2	1.6
	max	0.8	1	1.2	1.51	1.51	1.91
t	min	0.95	1.25	1.55	1.85	2.15	2.45
	max	1.15	1.5	1.9	2.25	2.6	2.95

* All Dimensions in mm

DIN 7976

Hexagon Head Tapping Screws, ISO - 1479

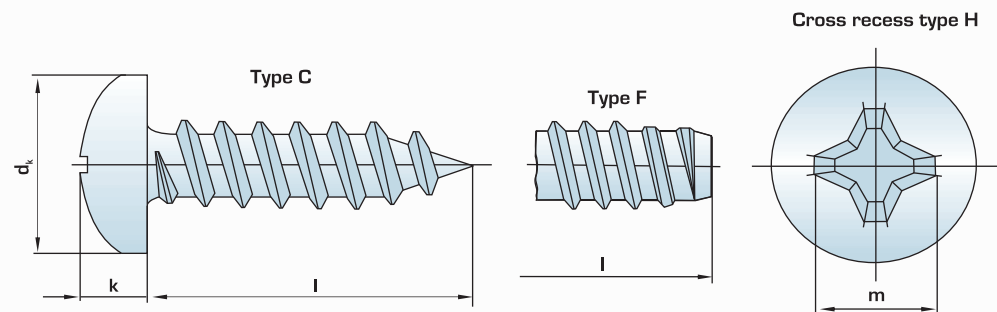


Thread size (d)	ST 2.9	ST 3.5	ST 4.2	ST 4.8	ST 5.5	ST 6.3
No	#5	#6	#8	#10	#12	#14
Pitch	1.1	1.3	1.4	1.6	1.8	1.8
e min	5.4	5.96	7.59	8.71	8.71	10.95
k	min	1.38	2.18	2.68	2.88	3.85
	max	1.62	2.42	2.92	3.12	4.15
s	max	5.0	5.5	7.0	8.0	10
	min	4.82	5.32	6.78	7.78	7.78

* All Dimensions in mm

DIN 7981 / ISO 7049

Cross Recessed Pan Head Tapping Screws

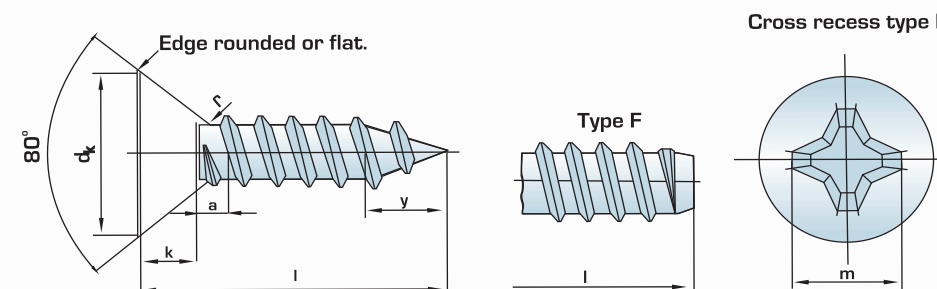


Thread size d	ST 2.2	ST 2.9	ST 3.5	ST 4.2	ST 4.8	ST 5.5	ST 6.3
No	#4	#5	#6	#8	#10	#12	#14
Pitch	0.8	1.1	1.3	1.4	1.6	1.8	1.8
dk	max	4.2	5.6	6.9	8.2	9.5	12.5
	min	3.9	5.3	6.54	7.84	9.14	12.07
k	max	1.8	2.2	2.6	3.05	3.55	4.55
	min	1.55	1.95	2.35	2.75	3.25	4.25
Cross recess No.	1		2				3
M~	2.6	3	4.2	4.6	5	6.5	7.1
Penetration min	0.86	1.35	1.4	1.8	2.26	2.49	3
Type H depth max	1.32	1.8	2.03	2.46	2.87	3.15	3.66

* All Dimensions in mm

DIN 7982 / ISO 7050

Cross Recessed Countersunk Head Tapping

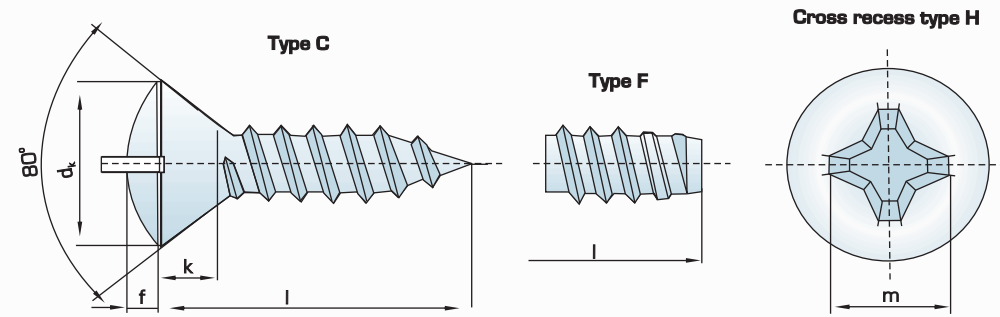


Thread size d	ST 2.2	ST 2.9	ST 3.5	ST 4.2	ST 4.8	ST 5.5	ST 6.3
No	#4	#5	#6	#8	#10	#12	#14
Pitch	0.8	1.1	1.3	1.4	1.6	1.8	1.8
dk	max	4.3	5.5	6.8	8.1	9.5	12.4
	min	4	5.2	6.44	7.74	9.14	11.97
k	1.3	1.7	2.1	2.5	3	3.4	3.8
Cross recess No.	1		2			3	
M~	2.5	3	4.2	4.7	5.1	6.8	7.1
Penetration min	1.02	1.4	1.62	2.11	2.59	2.95	3.33
Type H depth max	1.32	1.7	2.12	2.62	3.1	3.53	3.91

* All Dimensions in mm

DIN 7983 / ISO 7051

Cross Recessed Raised Countersunk head tapping Screws

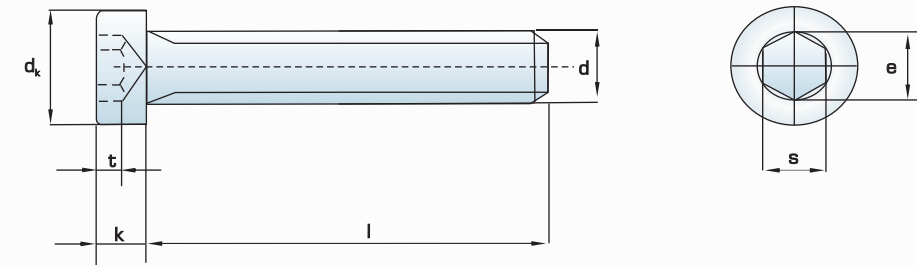


Thread size	ST 2.2	ST 2.9	ST 3.5	ST 4.2	ST 4.8	ST 5.5	ST 6.3
No	#4	#5	#6	#8	#10	#12	#14
Pitch	0.8	1.1	1.3	1.4	1.6	1.8	1.8
d_k	max	4.3	5.5	6.8	8.1	9.5	10.8
	min	4.0	5.2	6.44	7.74	9.14	10.37
f	0.7	0.9	1.2	1.4	1.5	1.7	2.0
k	1.3	1.7	2.1	2.5	3.0	3.4	3.8
Cross recess No.	1		2			3	
$M \sim$	2.8	3.4	4.6	4.9	5.4	7	7.4
Penetration min	1.17	1.81	1.89	2.24	2.7	3.02	3.46
Type H depth max	1.57	2.21	2.39	2.74	3.2	3.53	3.96

* All Dimensions in mm

DIN 7984

Hexagon Socket Head Cap Screws with Low Head

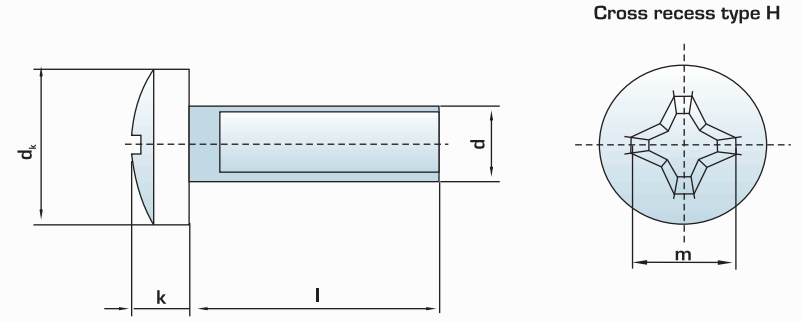


Thread size d	M3	M4	M5	M6	M8	M10	M12	M16	M20
Pitch	0.5	0.7	0.8	1.0	1.25	1.5	1.75	2.0	2.5
d_k	max	5.5	7.0	8.5	10.0	13.0	16	24.0	30.0
	min	5.32	6.78	8.28	9.78	12.73	15.73	17.73	23.67
e min	2.3	2.87	3.44	4.58	5.72	8.01	9.15	13.72	16.0
k	max	2.0	2.8	3.5	4.0	5.0	6.0	7.0	9.0
	min	1.86	2.66	3.32	3.82	4.82	5.82	6.78	8.78
s	min	2.0	2.5	3.0	4.0	5.0	7.0	8.0	12.0
	max	2.10	2.60	3.10	4.12	5.14	7.175	8.175	12.212
t	min	1.38	2.18	2.58	2.88	3.65	4.35	4.85	5.35
	max	1.62	2.42	2.82	3.12	3.95	4.65	5.15	5.65

* All Dimensions in mm

DIN 7985/IS : 7483 -1985/ISO 7045

**Cross Recessed Raised Cheese Head Screws
(PAN Philip Screw)**

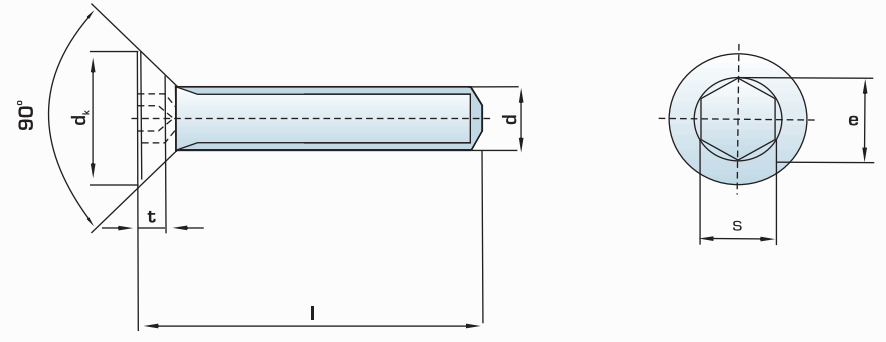


Thread size d	M1.6	M2	M2.5	M 3	M3.5	M4	M5	M6	M8	M10	
Pitch	0.35	0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5	
d _k	max	3.2	4	5	6	7	8	10	12	16	20
	min	2.9	3.7	4.7	5.7	6.64	7.64	9.64	11.57	15.57	19.48
k	max	1.42	1.72	2.12	2.52	2.82	3.25	3.95	4.75	6.15	7.68
	min	1.18	1.48	1.88	2.28	2.58	2.95	3.65	4.45	5.85	7.32
Cross recess No.	0	1		2			3	4			
M	1.8	2.5	2.7	3.1	4.2	4.6	5.3	6.8	9	10.2	
Penetration min	0.72	1.1	1.3	1.7	1.74	2.04	2.77	3.03	4.18	5.38	
Type H depth max	1.02	1.4	1.6	2	2.24	2.54	3.27	3.53	4.68	5.88	

* All Dimensions in mm

DIN 7991/IS : 6761 - 1972

Hexagon Socket Countersunk Head Cap Screws

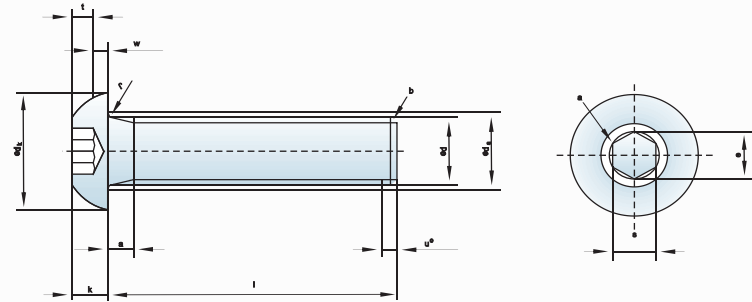


Thread size d	M3	M4	M 5	M6	M8	M10	M12	M14	M16	
Pitch	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2	
d _k	max	6	8	10	12	16	20	24	27	30
	min	5.7	7.64	9.64	11.57	15.57	19.48	23.48	26.48	29.48
e	min	2.3	2.87	3.44	4.58	5.72	6.86	9.15	11.43	11.43
s	min	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	10.0
	max	2.10	2.60	3.10	4.12	5.14	6.14	8.175	10.175	10.175
t	max	1.2	1.8	2.3	2.5	3.5	4.4	4.6	4.8	5.3
	min	0.95	1.55	2.05	2.25	3.2	4.1	4.3	4.5	5

* All Dimensions in mm

ISO : 7380

Hexagon Socket Button Head Screw

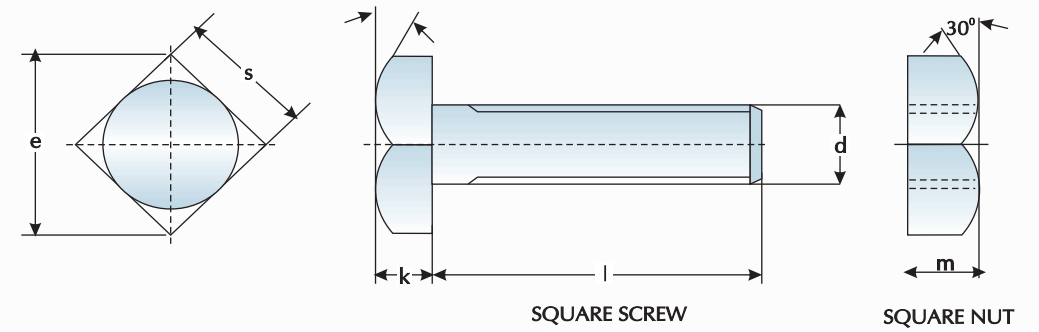


Thread size d	M3	M4	M5	M6	M8	M10	M12	M16
Pitch	0.5	0.7	0.8	1	1.25	1.5	1.75	2
a	max	1.0	1.4	1.6	2	2.50	3.0	4
	min	0.5	0.7	0.8	1	1.25	1.75	2
d _b	max	3.6	4.7	5.7	6.8	9.2	11.2	18.2
	min	5.7	7.60	9.50	10.50	14.00	17.50	28.00
d _k	max	5.4	7.24	9.14	10.07	13.57	17.07	20.48
	min	2.303	2.873	3.443	4.583	5.723	6.863	9.149
e ^{bc}	min	1.65	2.20	2.75	3.3	4.4	5.5	6.60
	min	1.40	1.95	2.50	3.0	4.1	5.2	6.24
k	min	0.1	0.2	0.2	0.25	0.4	0.4	0.6
	min	2.080	2.58	3.080	4.095	5.140	6.140	8.175
s ^c	min	2.020	2.52	3.020	4.020	5.020	6.020	8.025
	min	1.04	1.3	1.56	2.08	2.6	3.12	4.16
w	min	0.2	0.3	0.38	0.74	1.05	1.45	2.25

* All Dimensions in mm

IS : 2585 - 1968

Square Bolts, Screws



Thread size d	M6	M8	M10	M12	M14	M16	M18
S	max	10.00	13.00	17.00	19.00	22.00	27.00
	min	9.64	12.57	16.57	18.48	21.16	26.16
e	min	12.53	16.34	21.54	24.02	27.51	30.11
	min	4.38	5.88	7.45	8.45	9.45	10.45
k	max	3.62	5.12	6.55	7.55	8.55	9.00
	max	5.38	6.95	8.45	10.45	11.55	13.55
m	min	4.62	6.05	7.55	9.55	10.45	12.45
	min	14.45	18.45	23.45	27.45	32.45	37.45

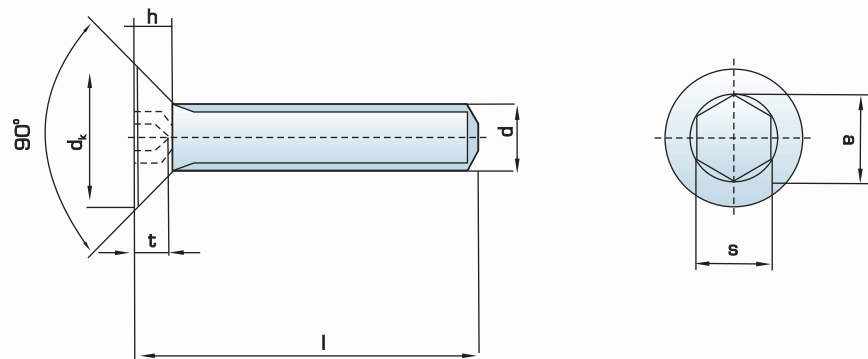
* All Dimensions in mm



Specification for British Standard (BS)

BS 84

Socket Countersunk Head Screws

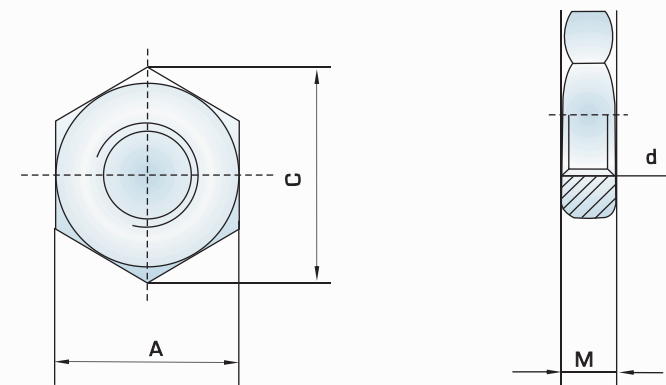


Thread size BSW	3/16	1/4	5/16
T.P.I.	24	20	18
dk Max.	0.356	0.475	0.594
t. Min.	0.065	0.085	0.105
h. Min	0.085	0.113	0.142
S	3/32	5/32	3/16

* All Dimensions in inch

BS 439

Hexagon Thin Nuts

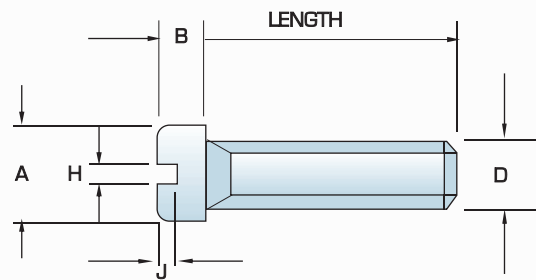


Nom. Size D	Number of Threads per Inch		Width			Thickness	
			Across Flats A		Across Flats C	Lock H	
	B.S.W.	B.S.F.	Max.	Min.	Max.	Max.	Min.
1/4	20	26	0.445	0.438	0.51	0.185	0.180
5/16	18	22	0.525	0.518	0.61	0.210	0.200
3/8	16	20	0.600	0.592	0.69	0.260	0.250
7/16	14	18	0.710	0.702	0.82	0.275	0.265
1/2	12	16	0.820	0.812	0.95	0.300	0.290
5/8	11	14	1.010	1.000	1.17	0.375	0.365
3/4	10	12	1.200	1.190	1.39	0.458	0.448

* All Dimensions in inch

BS 450 / 1958

Cheese Head Screws

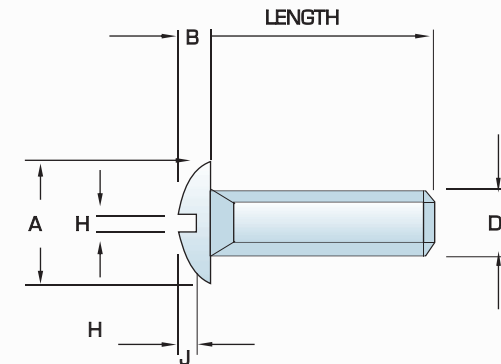


Nom. Size of Screw	D	Threads per Inch B.S.W.	A		B		H		J.
			Max.	Min.	Max.	Min.	Max.	Min.	
1/8	0.1250	40	0.188	0.180	0.087	0.082	0.039	0.032	0.039
3/16	0.1875	24	0.281	0.270	0.131	0.124	0.050	0.042	0.059
1/4	0.2500	20	0.375	0.360	0.175	0.165	0.061	0.051	0.079
5/16	0.3125	18	0.469	0.450	0.219	0.207	0.071	0.061	0.098
3/8	0.3750	16	0.562	0.540	0.262	0.249	0.082	0.072	0.118

* All Dimensions in inch

BS 450 / 1958

Mushroom Head Screws

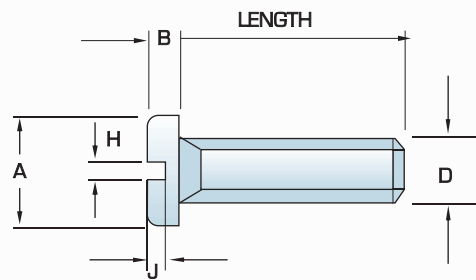


Nom. Size of Screw	Basic Diam. D	Threads per Inch B.S.W.	A		B		H		Depth of Slot J.
			Max.	Min.	Max.	Min.	Max.	Min.	
1/8	0.1250	40	0.289	0.272	0.078	0.066	0.043	0.035	0.040
3/16	0.1875	24	0.448	0.425	0.118	0.103	0.060	0.050	0.061
1/4	0.2500	20	0.573	0.546	0.150	0.133	0.075	0.064	0.079
5/16	0.3125	18	0.698	0.666	0.183	0.162	0.084	0.072	0.096
3/8	0.3750	16	0.823	0.787	0.215	0.191	0.094	0.081	0.112

* All Dimensions in inch

BS 450 / 1958

Pan Head Screws

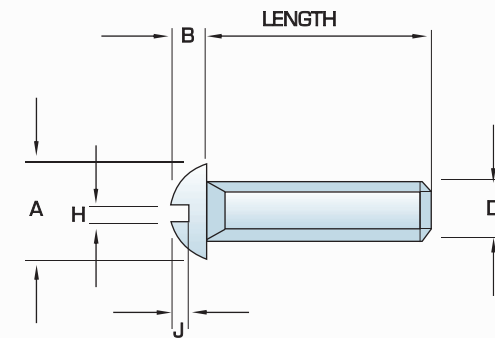


Nom. Size of Screw	Basic Diam. D	Threads per Inch B.S.W.	A		B		H		Depth of Slot J.
			Max.	Min.	Max.	Min.	Max.	Min.	
1/8	0.1250	40	0.245	0.231	0.075	0.005	0.039	0.032	0.040
3/16	0.1875	24	0.373	0.375	0.110	0.099	0.050	0.042	0.061
1/4	0.2500	20	0.492	0.473	0.144	0.130	0.061	0.051	0.078
5/16	0.3125	18	0.615	0.594	0.178	0.162	0.071	0.061	0.095
3/8	0.3750	16	0.740	0.716	0.212	0.195	0.082	0.072	0.112

* All Dimensions in inch

BS 450 / 1958

Round Head Screws

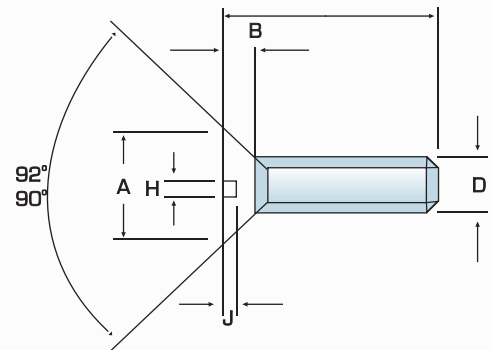


Nom. Size of Screw	D	Threads per Inch B.S.W.	A		B		H		J.
			Max.	Min.	Max.	Min.	Max.	Min.	
1/8	0.1250	40	0.219	0.206	0.087	0.082	0.039	0.032	0.048
3/16	0.1875	24	0.328	0.312	0.131	0.124	0.050	0.042	0.072
1/4	0.2500	20	0.438	0.417	0.175	0.165	0.061	0.051	0.096
5/16	0.3125	18	0.547	0.524	0.219	0.207	0.071	0.061	0.120
3/8	0.3750	16	0.656	0.629	0.262	0.249	0.082	0.072	0.144

* All Dimensions in inch

BS 450 / 1958

Countersunk Head Screws

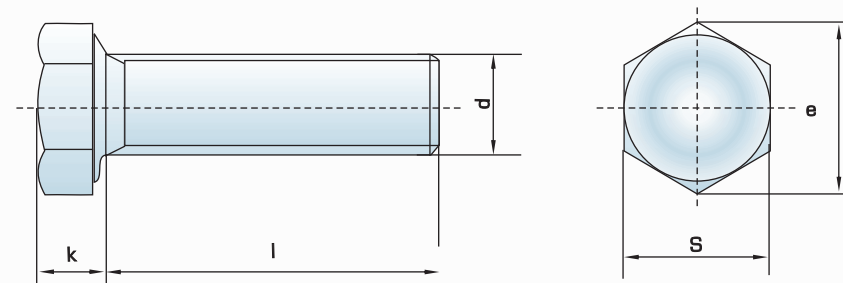


Nom. Size of Screw	Basic Diam. D	Threads per Inch B.S.W.	A		B	H		Depth of Slot J.
			Max.	Min.		Max.	Min.	
1/8	0.1250	40	0.219	0.201	0.056	0.039	0.032	0.027
3/16	0.1875	24	0.328	0.307	0.084	0.050	0.042	0.041
7/32	0.2188	..	0.383	0.366	0.098	0.055	0.046	0.048
1/4	0.2500	20	0.438	0.412	0.113	0.061	0.051	0.055
5/16	0.3125	18	0.547	0.518	0.141	0.071	0.061	0.069
3/8	0.3750	16	0.656	0.624	0.169	0.082	0.072	0.083

* All Dimensions in inch

BS 1083 / 1965

Precision Hexagon Bolts

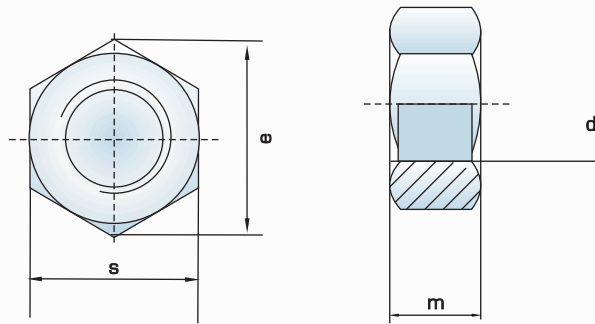


Nom. Size D	Number of Threads per Inch		Width			Thickness F	
			Across Flats A		Across Flats C	Max.	Min.
	B.S.W.	B.S.F.	Max.	Min.	Max.		
1/4	20	26	0.445	0.438	0.51	0.176	0.166
5/16	18	22	0.525	0.518	0.61	0.218	0.208
3/8	16	20	0.600	0.592	0.69	0.260	0.250
7/16	14	18	0.710	0.702	0.82	0.302	0.292
1/2	12	16	0.820	0.812	0.95	0.343	0.333
5/8	11	14	1.010	1.000	1.17	0.417	0.407
3/4	10	12	1.200	1.190	1.39	0.500	0.480

* All Dimensions in inch

BS 1083 / 1965

Hexagon Nuts

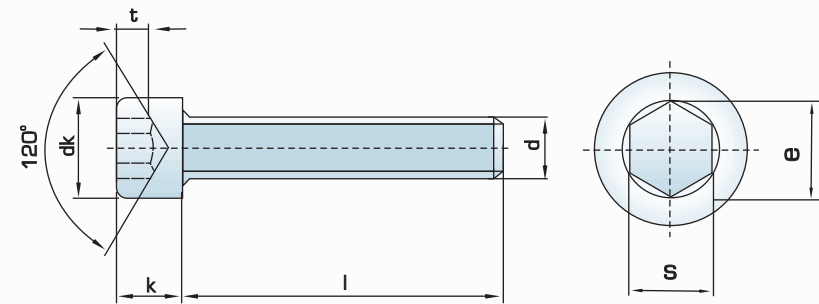


Nom. Size D	Number of Threads per Inch		Width			Thickness	
			Across Flats s		Across Flats e	Ordinary m	
	B.S.W.	B.S.F.	Max.	Min.	Max.	Max.	Min.
1/4	20	26	0.445	0.438	0.51	0.200	0.190
5/16	18	22	0.525	0.518	0.61	0.250	0.240
3/8	16	20	0.600	0.592	0.69	0.312	0.302
7/16	14	18	0.710	0.702	0.82	0.375	0.365
1/2	12	16	0.820	0.812	0.95	0.437	0.427
5/8	11	14	1.010	1.000	1.17	0.562	0.552
3/4	10	12	1.200	1.190	1.39	0.687	0.677

* All Dimensions in inch

BS 2470

Socket Head Cap Screws



Thread size	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4
Type	BSW	BSW	BSW	BSW	BSW	BSW	BSW	BSW
T.P.I.	24	20	18	16	14	12	11	10
dk max.	0.312	0.375	0.437	0.562	0.625	0.750	0.875	1.000
t.min.	0.089	0.120	0.151	0.182	0.213	0.245	0.307	0.370
k min	0.187	0.250	0.312	0.375	0.437	0.500	0.625	0.750
s nom.	5/32	3/16	7/32	5/16	5/16	3/8	1/2	9/16

* All Dimensions in inch

