



NEWARK
ENGINEERS PVT LTD

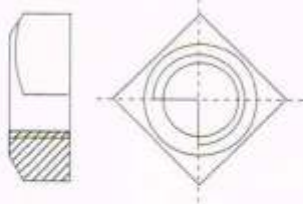
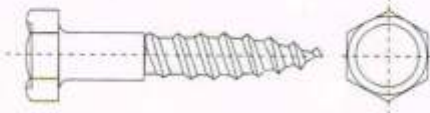
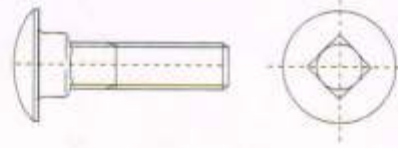
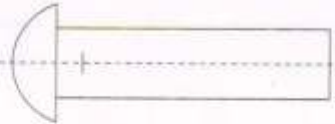
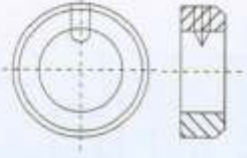
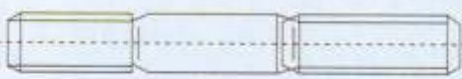
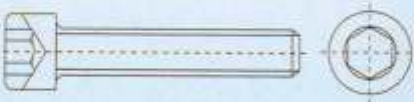
Market Leaders In Fastening Technologies

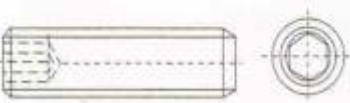
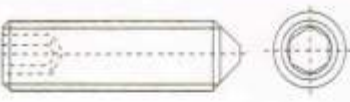
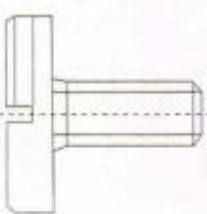
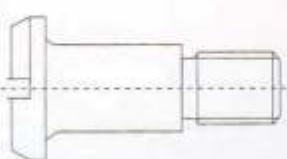
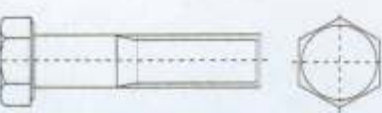
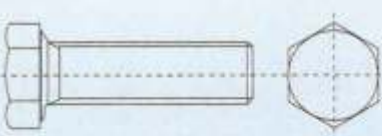
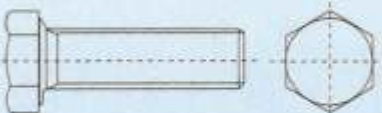
AN ISO 9001 : 2008 COMPANY

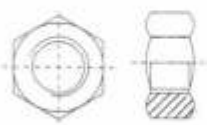
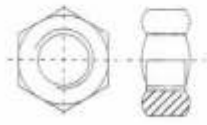
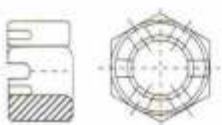
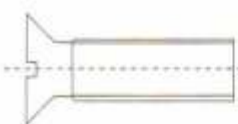
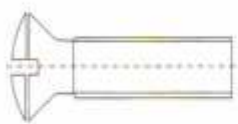
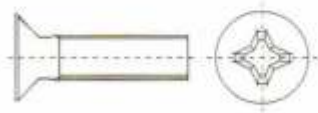
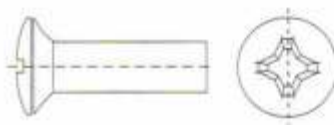
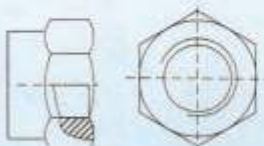


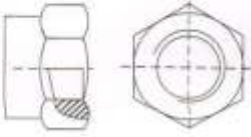
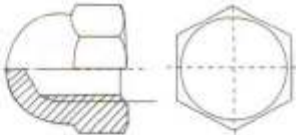
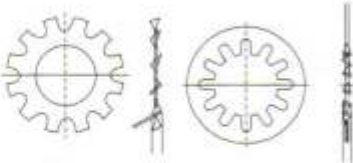
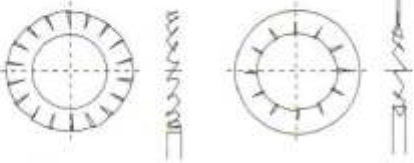
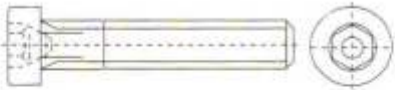
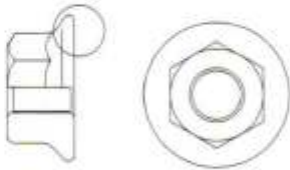
www.newarkengineers.in

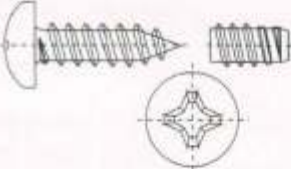
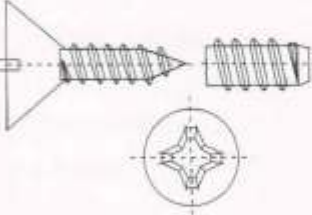
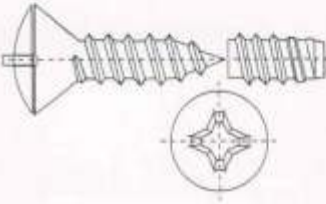
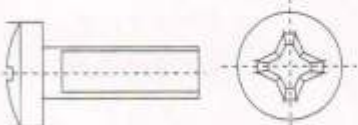
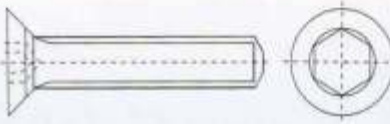
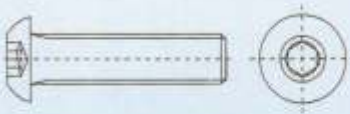
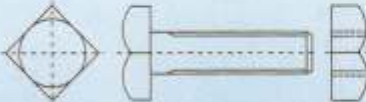


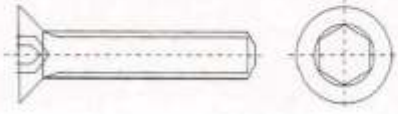
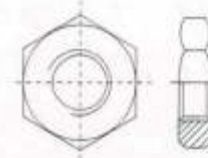
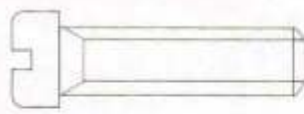
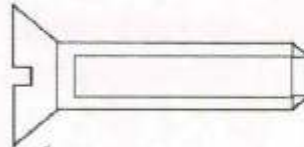
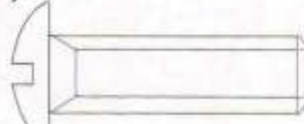
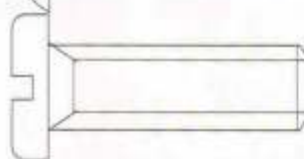
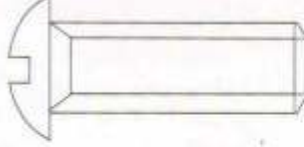
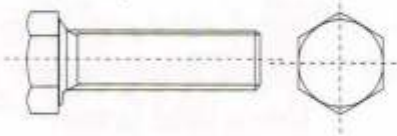
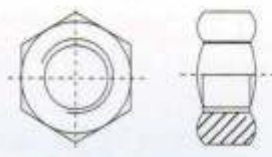
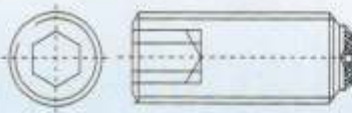
Din	IS	ISO	Drawing	Product Name
DIN 551	2388-1971	4766		Slotted Set Screws with Flat Point
DIN 553	2388-1971	7434		Slotted Set Screws with Cone Point
DIN 557				Square Nuts
DIN 571	1120-1975			Hexagon Head Wood Screws
DIN 603		8677		Mushroom Head Square Neck Bolts
DIN 660		R-1051		Round Head Rivets
DIN 661		R-1051		Countersunk Head Rivets
DIN 705				Adjusting Ring
DIN 835				Studs Threaded End-2d
DIN 912		4762		Hexagon Socket Head Cap Screws

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

Din	IS	ISO	Drawing	Product Name
DIN 934				Hexagon Nuts
	1364-2002	4032		Hexagon Nuts
DIN 935	2232-1967	7035		Hexagon Castle Nuts, Slotted
DIN 963	1365-1978	2009		Slotted Countersunk Head Screws
DIN 964	8911-1988	2010		Slotted Raised Countersunk Head Screws
DIN 965	7485-1985	7046		Cross recessed Countersunk Flat Head Screws
DIN 966	7486-1985	7047		Cross recessed Raised Countersunk Head Screws
DIN 975				Threaded Rods
DIN 976				Stud bolts
DIN 982	7002-1972	7040		Prevailing Torque Type Hexagon

Din	IS	ISO	Drawing	Product Name
DIN 985				Prevailing Torque Type Hexagon Thin Nuts
DIN 1587	7790-1975			Hexagon Domed Cap Nuts
DIN 6797	5371-1982			Toothed Lock Washers
DIN 6798	5556-1970			Serrated Lock Washers
DIN 6799				Retaining Washer for Shaft
DIN 6912				Socket Head Cap Screw
DIN 6923				Flange Nut
DIN 7971	7173-1974	1481		Slotted Pan Head Tapping Screws
DIN 7972	7170-1974	1482		Slotted Countersunk Head Tapping Screws
DIN 7973	7169-1974	1483		Slotted Raised Countersunk Head Tapping Screws

Din	IS	ISO	Drawing	Product Name
DIN7976		1479		Hexagon Head Tapping Screws
DIN7981		7049		Crossed Recessed Pan Head Tapping Screws
DIN7982		7050		Crossed Recessed Countersunk Head Tapping
DIN 7983		7051		Crossed Recessed Raised Countersunk
DIN 7984				Hexagon Socket Head Cap Screws
DIN 7985	7483-1985	7045		Crossed Recessed Raised Cheese Head Screws
DIN 7991	6761-1972			Hexagon Socket Countersunk Head Cap Screws
		7380		Button Head Screw
	2585-1968			Square Bolts Screws

BS	Drawing	Product Name
BS 84		Socket Countersunk Head Screws
BS 439		Hexagon Thin Nuts
BS 450		Cheese Head Screws
BS 450		Countersunk Head Screws
BS 450		Mushroom Head Screws
BS 450		Pan Head Screws
BS 450		Round Head Screws
BS 933		Hexagon Bolts
BS 934		Hexagon Nuts
BS 2470		Socket Set Screws
BS 2470		Socket Head Cap Screws

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.

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, X70 [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 properly 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 ²	Stores at 0.2% Permanent strain R _p 0.2 (1) min N/mm ²	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 property classes should have the property 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 R _p 0.2 N/mm ² min.	Extension A ₂ (2) min.	Proof load stress S _y N/mm ²
Austenitic	A 1, A 2 and A 4	50	< M39	500	210	0.6d	500
		70	< M20 ⁽²⁾	700	450	0.4d	700
		80	< M20 ⁽²⁾	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			
A2	- 200 C			
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.