VISHAL AUTOMATS

Specialists in Precision Turned Components,
Fabricated Structures and Fasteners

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THE NECESSITY
Of Fasteners

Fasteners are an essential part of modern technology, found in a wide variety of products and applications. They provide strength, stability and versatility to objects that could not be achieved without them.It is Important for screws in modern times, taking into consideration various aspects such as their design, materials and uses.

The use of fasteners has been documented throughout history, with examples being found dating back to Ancient Greece. Today's sophisticated designs have enabled mass production for consumer items such as electronics and furniture components.
With advances made in material selection and manufacturing techniques, fasteners can now be produced from a range of metals or plastics depending on the application requirements.

Our Process

- Understanding client requirements
- Preparation of manufacturing plan and dispatch schedule
- Manufacturing
- Quality Checks & Inspections
- Dispatch
- Feedback and follow ups with client

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LIST OF MACHINES

By Plant

1. **Machining Plant**
   - a. A25 P.M.T Traub — 45 Nos
   - b. A25 P.M.T Traub — 05 Nos
   - c. A25 P.M.T Traub — 02 Nos
   - d. 2" Centreless Grinding Machine — 02 Nos
   - e. Thread Rolling Machine — 02 Nos
   - f. Milling Machine — 02 Nos
2. **Fasteners Plant**
   - a. Cold Forging Header Machine — 07 Nos
   - b. Flat Dies Thread Rolling Machine — 04 Nos
   - c. Bolt Former — 02 Nos
   - d. Nut Former — 02 Nos
   - e. Automatic Tapping Machine — 01 Nos
   - f. Vibro Machine — 02 Nos
   - g. Press Machine — 05 Nos
     - 5 ton — 03 Nos
     - 10 ton — 01 Nos
     - 20 ton — 01 Nos
3. **Fabrication Plant**
   - a. Press Machine — 08 Nos
     - 20 ton — 04 Nos
     - 50 ton — 02 Nos
     - 100 ton — 02 Nos
   - b. MIG Welding Machine — 06 Nos
   - c. Arc Welding Machine — 04 Nos

FASTENER PRODUCTS

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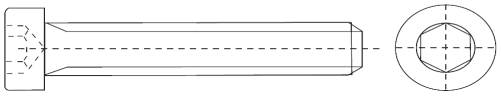
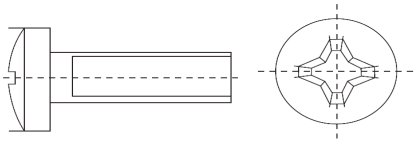
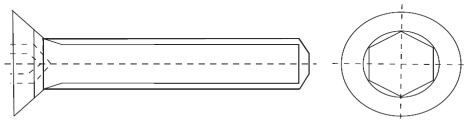
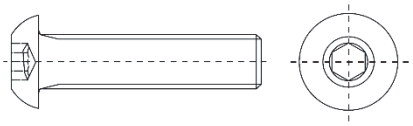
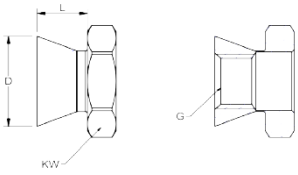
Din	IS	ISO	Drawing	Product Name	Pg. No.
DIN 7984				Hexagon Socket Head Cap Screws	27
DIN 7985	7483-1985	7045		Crossed Recessed Raised Cheese Head Screws	28
DIN 7991	6761-1972			Hexagon Socket Countersunk Head Cap Screws	29
		7380		Button Head Screw	30
AS PER DRAWING				Anti-theft Nuts	31

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Technical Information

Introduction of Austenitic Stainless Steel

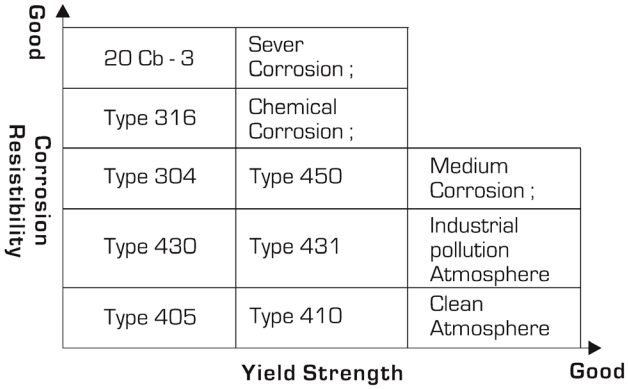
we specialize in manufacturing Stainless Steel Fasteners which are mainly used 300 series Austenitic Stainless Steel as raw material. The standard chemical composition of this type of Stainless steel is 18% [Cr] and 8% [N1] thus it is also popularly know as 18 - 8 Stainless Steel-a kind of superior metal material which conforms to environmental protection.

1. 1. Physical Properties of Austenitic Stainless steel

The Austetenitic 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-temerature 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



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.

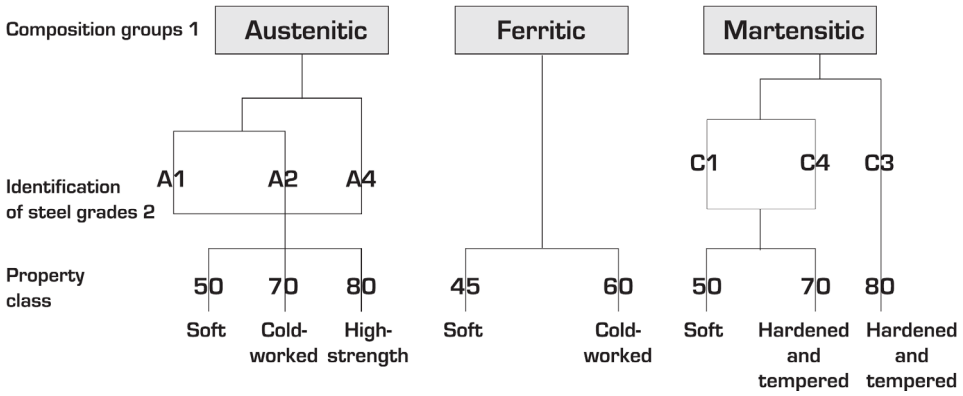
Life Cycle of SS 430 Grade	
YEAR ESTIMATED FOR A PIT TO ENTER A 1 MM THICK SS SHEET	
LOCATION	SS 430
SEA	N/A
INDUSTRIES	85 YRS.
HOUSEHOLD	250 YRS.

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 to13.0	1.00		
1	S30403	302	0.03	2.00	0.045	0.030	1.00	17.0 to 19.0	8.0 to10.0	1.00		
1	S30430	Xm7	0.10	2.00	0.045	0.030	1.00	17.0 to 19.0	8.0 to10.0	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 to14.0	–	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 to14.0	–	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 Austonitic Alloys	Ionsllo 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-annoaled.
• 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 properly 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 content is essential this must be stated at the time of ordering by the purchaser.
B. If the Chromium content is below 17%, the minium 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 Rm (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 Rm (1) N/mm^2 min.	Stores at 0.2% Permanent strain Rp 0.2 N/mm^2 min.	Extension A_L (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			
-	+ 100^0 C	+ 200^0 C	+ 300^0 C	+ 400^0 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	90 85	80 80	65 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.

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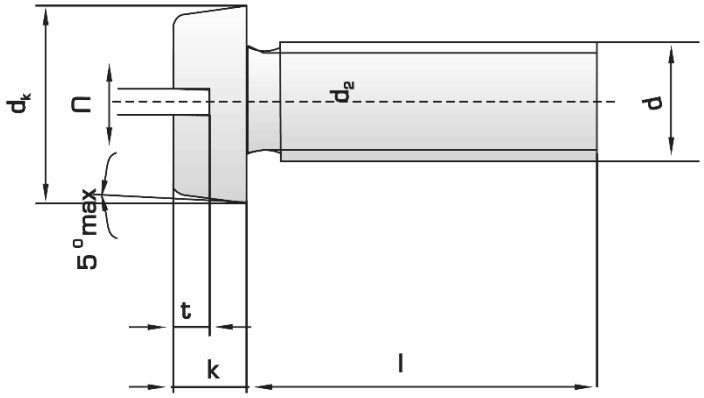
DIN 84 / IS : 1366 - 1982 / ISO 1207

Slotted Cheese Head Screws

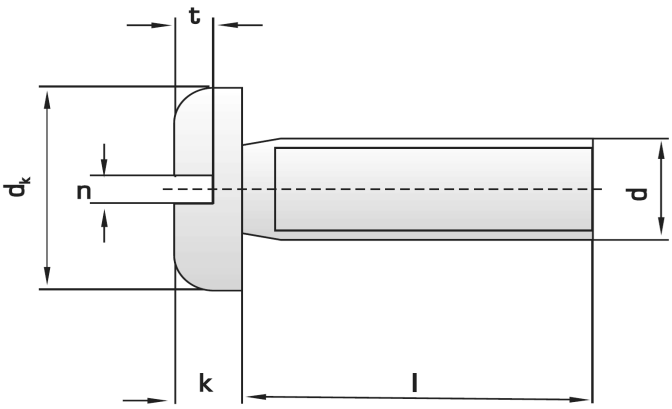


Thread size (d)		M 2	M 2.5	M 3	M 3,5	M 4	M 5	M 6	M 8	M 10
Pitch		0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5
d_k	max.	3.8	4.5	5.5	6	7	8.5	10	13	16
	min.	3.62	4 .32	5.32	5.82	6.78	8.28	9.78	12.73	15.73
k	max.	1.3	1.6	2	2.4	2.6	3.3	3.9	5	6
	min.	1.16	1.46	1.86	2.26	2.46	3.12	3.6	4.7	5.7
n	min.	0.5	0.6	0.8	1.0	1.2	1.2	1.6	2.0	2.5
	max.	0.7	0.8	1	1.2	1.51	1.51	1.91	2.31	2.81
t	min.	0.6	0.7	0.85	1	1.1	1.3	1.6	2	2.4

- All dimensions are in mm.

DIN 85 / IS : 6101 - 1982 / ISO 1580

Slotted Pan Head Screws

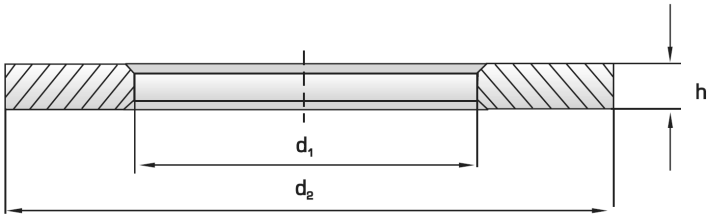


Thread size (d)		M 2	M 2.5	M 3	(M 3.5)	M 4	M 5	M 6	M 8	M 10
Pitch		0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5
d_k	max.	4	5	6	7	8	10	12	16	20
	min.	3.7	4.7	5.7	6.64	7.64	9.64	11.57	15.57	19.48
k	max.	1.3	1.5	1.8	2.1	2.4	3	3.6	4.8	6
	min.	1.16	1.36	1.66	1.96	2.26	2.86	3.3	4.5	5.7
n	min.	0.5	0.8	0.8	1.0	1.2	1.2	1.6	2.0	2.5
	max.	0.7	1	1	1.2	1.51	1.51	1.91	2.31	2.81
t	min.	0.5	0.6	0.7	0.8	1	1.2	1.4	1.9	2.4

- All dimensions are in mm.

DIN 125 /IS: 2016-1967 / ISO 7089

Plain Washers



Normal size	For thread size	d_1		d_2		h	
	M	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 are in mm.

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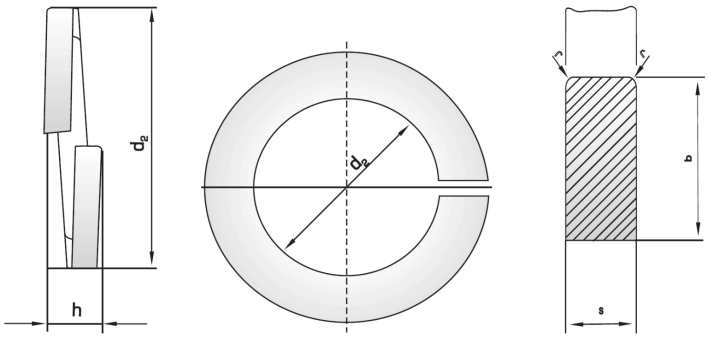
DIN 127 /IS: 3063-1927

Spring Lock Washers



Nominal size	d_1 min.	d_1 max.	d_2 max.	h min.	h max.	s min.	s max.	Nominal size	d_1 min.	d_1 max.	d_2 max.	h min.	h max.	s min.	s 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 are in mm.

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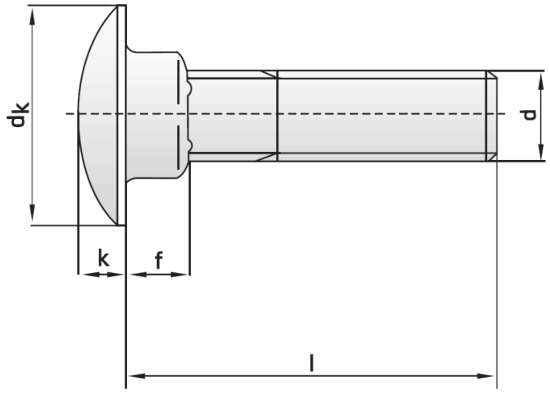
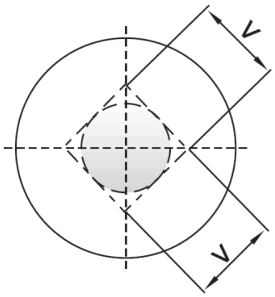
DIN 603 / ISO 8677

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 are in mm.

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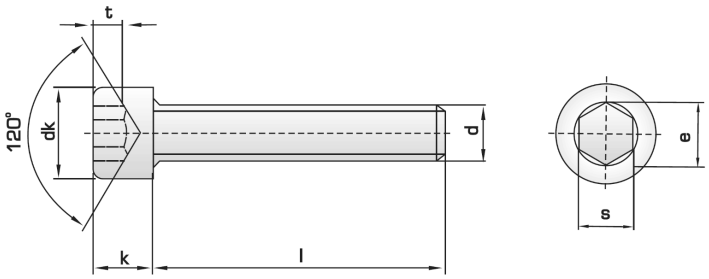
DIN 912 / ISO 4762

Hexagon Socket Head Cap Screws

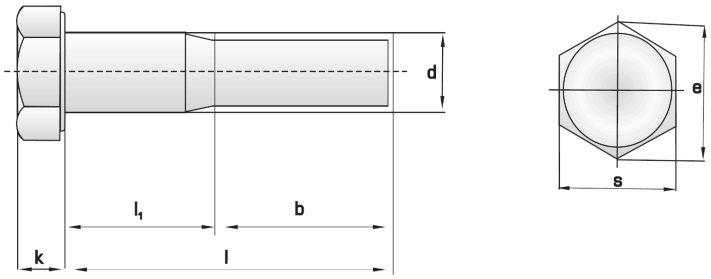


Thread size d		M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20
Pitch		0.5	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	2.5
d_K	min.	5.32	6.78	8.28	9.78	12.73	15.73	17.73	20.67	23.67	26.67	29.67
	max.	5.68	7.22	8.72	10.22	13.27	16.27	18.27	21.33	24.33	27.33	30.33
e	min.	2.87	3.44	4.58	5.72	6.86	9.15	11.43	13.72	16	16	19.44
k	max.	3	4	5	6	8	10	12	14	16	18	20
	min.	2.86	3.82	4.82	5.7	7.64	9.64	11.57	13.57	15.57	17.57	19.48
s	min	2.52	3.02	4.02	5.02	6.02	8.02	10.02	12.03	14.03	14.03	17.05
	max.	2.58	3.08	4.09	5.14	6.14	8.175	10.17	12.21	14.21	14.21	17.23
t	min	1.3	2	2.5	3	4	5	6	7	8	9	10

- All dimensions are in mm.

DIN 931 / ISO 4014

Hexagon Head Bolts (Half Thread), ISO – 4014

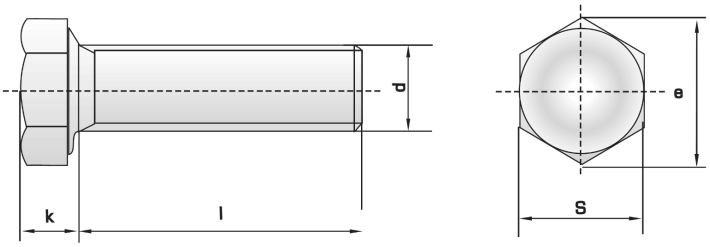


Thread size		M6	M8	M10	M12	M14	M16	M18	M20
p		1	1.25	1.5	1.75	2	2	2.5	2.5
b		18	22	26	30	34	38	42	46
e	min	11.05	14.38	18.9	21.1	24.49	26.75	30.14	33.53
k	min	3.85	5.15	6.22	7.32	8.62	9.82	11.28	12.28
	max	4.15	5.45	6.58	7.68	8.98	10.18	11.72	12.72
s	max	10	13	17	19	22	24	27	30
	min	9.78	12.73	16.73	18.67	21.67	23.67	26.67	29.67

- All dimensions are 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

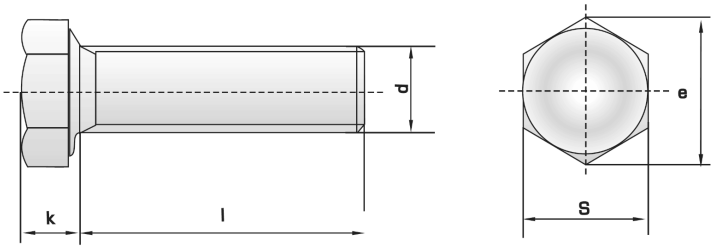
- All dimensions are in mm.

VISHAL AUTOMATS

www.vishalautomats.com

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

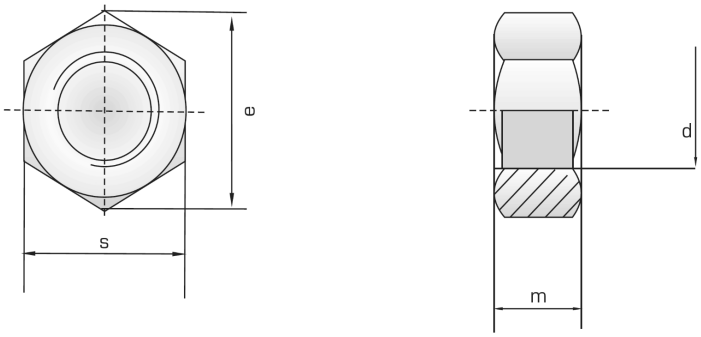
- All dimensions are in mm.

VISHAL AUTOMATS

www.vishalautomats.com

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	2.4	2.8	3.2	4	5
	min	1.05	1.35	1.75	2.15	2.55	2.9	3.7	4.7
s	max	3.2	4	5	5.5	6	7	8	10
	min	3.02	3.82	4.82	5.32	5.82	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	10	11	13	15	16	19
	min	6.14	7.64	9.64	10.3	12.3	14.3	14.9	17.7
s	max	13	17	19	22	24	27	30	36
	min	12.73	16.73	18.67	21.67	23.67	26.16	29.16	35

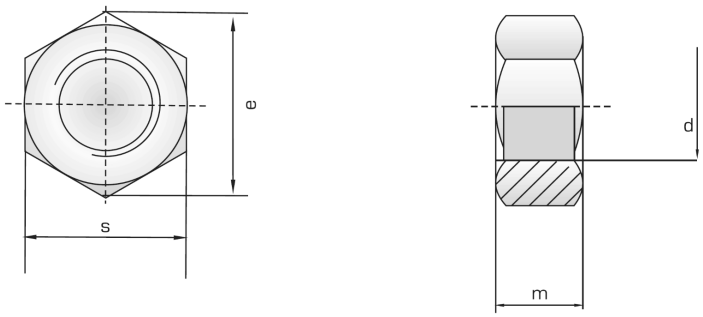
- All dimensions are in mm.

VISHAL AUTOMATS

www.vishalautomats.com

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	2.4	2.8	3.2	4.7	5.2
	min	1.05	1.35	1.75	2.15	2.55	2.9	4.4	4.9
s	max	3.2	4	5	5.5	6	7	8	10
	min	3.02	3.82	4.82	5.32	5.82	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	15.8	18	19
	min	6.14	8.04	10.37	12.1	14.1	15.1	16.9	17.7
s	max	13	16	18	21	24	27	30	36
	min	12.73	15.73	17.73	20.67	23.67	26.16	29.16	35

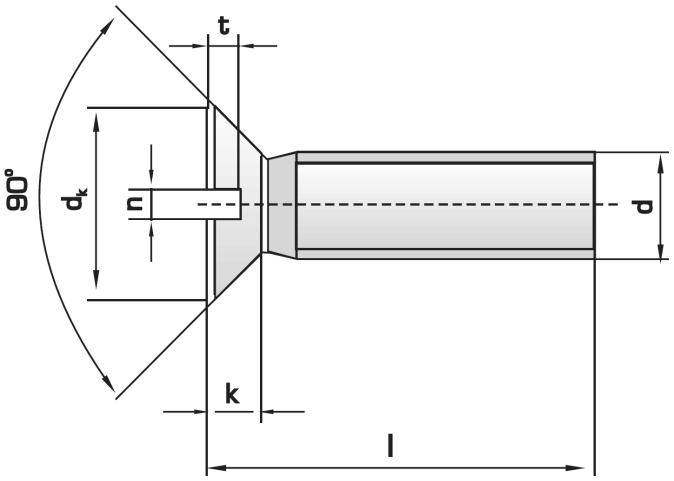
- All dimensions are in mm.

VISHAL AUTOMATS

www.vishalautomats.com

DIN 963 / IS : 1365 -1978 / ISO 2009

Slotted Countersunk Head Screws

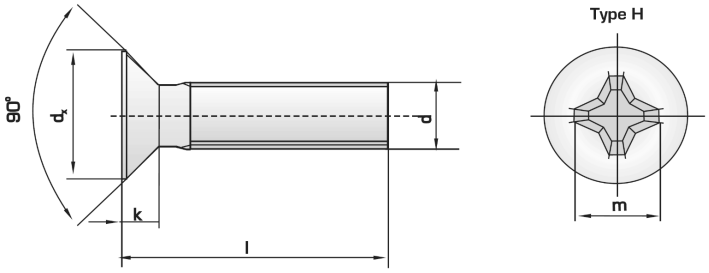


Thread size d		M 2	(M 2.5)	M 3	M 3.5	M 4	M 5	M 6	M 8	M 10	M 12	M 16
Pitch		0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5	1.75	2
d_k	max.	3.8	4.7	5.6	6.5	7.5	9.2	11	14.5	18	22	29
	min.	3.5	4.4	5.3	6.14	7.14	8.84	10.57	14.07	17.57	21.48	28.48
k	max.	1.2	1.5	1.65	1.93	2.2	2.5	3	4	5	6	8
n	min	0.5	0.6	0.8	0.8	1.0	1.2	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 are in mm.

DIN 965 / IS: 7485 - 1985 / ISO 7046

Cross recessed Countersunk Flat Head Screws

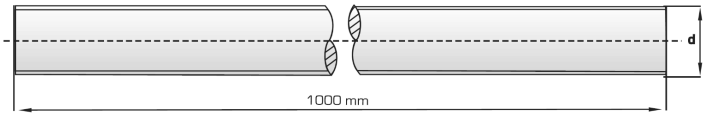


Thread size (d)		M2	M2.5	M3	(M3.5)	M4	M5	M6	M8	M10
Pitch		0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5
d_k	max	3.8	4.7	5.6	6.5	7.5	9.2	11	14.5	18
	min	3.5	4.4	5.3	6.14	7.14	8.84	10.57	14.07	17.57
k	max	1.2	1.5	1.65	1.93	2.2	2.5	3	4	5
Cross recess no.		1			2			3	4	
	m	2.35	2.7	2.9	3.9	4.4	4.6	6.6	8.7	9.6
penetration type H	min	0.95	1.25	1.5	1.4	1.9	2.1	2.8	3.9	4.8
Depth	max	1.25	1.55	1.8	1.9	2.4	2.6	3.3	4.4	5.3

- All dimensions are 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

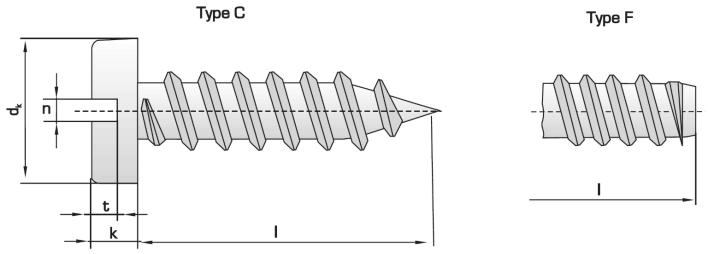
Thread size d	M6	M8	M10	M12	(M14)
Pitch	1.0	1.25	1.50	1.75	2.0

Thread size d	M16	(M18)	M20	M22	M24
Pitch	2.0	2.50	2.50	2.5	3.0

- All dimensions are in mm.

DIN 7971/15: 7173-1974/150 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
d_k	max	4.2	5.6	6.9	8.2	9.5	10.8	12.5
	min	3.9	5.3	6.54	7.84	9.14	10.37	12.07
k	max	1.35	1.75	2.1	2.45	2.8	3.2	3.65
	min	1.15	1.5	1.85	2.15	2.5	2.85	3.3
n	min	0.6	0.8	1.0	1.2	1.2	1.6	1.6
	max	0.8	1	1.2	1.51	1.51	1.91	1.91
t	min	0.55	0.75	0.95	1.15	1.35	1.55	1.8
	max	0.8	1	1.25	1.5	1.7	1.95	2.2

- All dimensions are in mm.

VISHAL AUTOMATS

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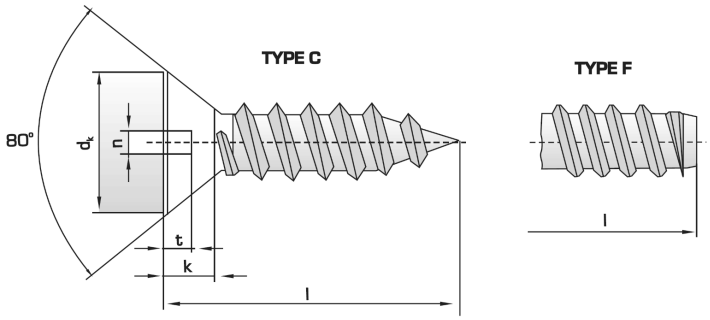
DIN 7972/15 :7170 - 1974/150 1482

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
d_k	max	4.3	5.5	6.8	8.1	9.5	10.8	12.4
	min	4	5.2	6.44	7.74	9.14	10.37	11.97
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	1.6
	max	0.8	1	1.2	1.51	1.51	1.91	1.91
t	min	0.4	0.5	0.6	0.75	0.85	1	1.20
	max	0.6	0.75	0.95	1.15	1.35	1.5	1.75

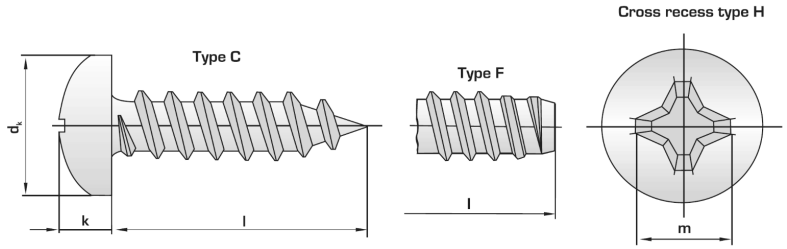
- All dimensions are in mm.

VISHAL AUTOMATS

www.vishalautomats.com

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
d_k	max	4.2	5.6	6.9	8.2	9.5	10.8	12.5
	min	3.9	5.3	6.54	7.84	9.14	10.37	12.07
k	max	1.8	2.2	2.6	3.05	3.55	3.95	4.55
	min	1.55	1.95	2.35	2.75	3.25	3.65	4.25
Cross recess No.		1		2				3
M ~		2.6	3	4.2	4.6	5	6.5	7.1
Penetration Type H depth	min	0.86	1.35	1.4	1.8	2.26	2.49	3
	max	1.32	1.8	2.03	2.46	2.87	3.15	3.66

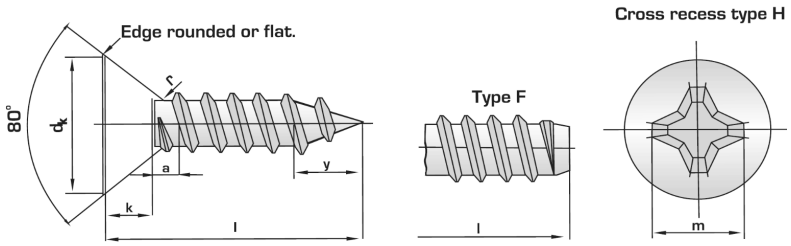
- All dimensions are in mm.

VISHAL AUTOMATS

www.vishalautomats.com

DIN 7982 / ISO 7050

Cross Recessed 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	12.4
	min	4	5.2	6.44	7.74	9.14	10.37	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
Type H	Penetration min	1.02	1.4	1.62	2.11	2.59	2.95	3.33
	depth max	1.32	1.7	2.12	2.62	3.1	3.53	3.91

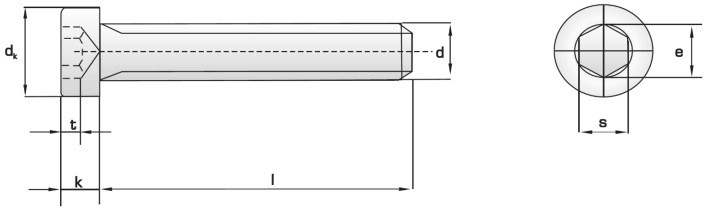
- All dimensions are in mm.

VISHAL AUTOMATS

www.vishalautomats.com

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	16.0	18	24.0	30.0
	min	5.32	6.78	8.28	9.78	12.73	15.73	17.73	23.67	29.67
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	11.0
	min	1.86	2.66	3.32	3.82	4.82	5.82	6.78	8.78	10.73
s	min	2.0	2.5	3.0	4.0	5.0	7.0	8.0	12.0	14.0
	max	2.10	2.60	3.10	4.12	5.14	7.175	8.175	12.212	14.212
t	min	1.38	2.18	2.58	2.88	3.65	4.35	4.85	5.35	7.32
	max	1.62	2.42	2.82	3.12	3.95	4.65	5.15	5.65	7.68

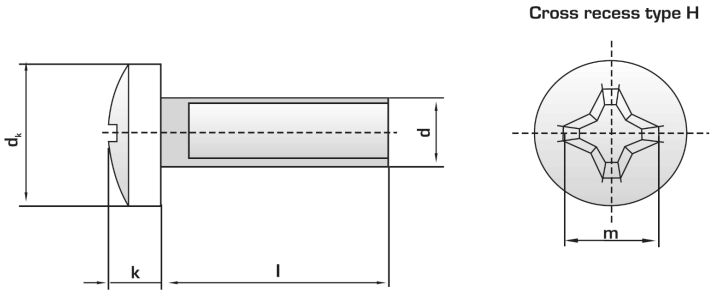
- All dimensions are in mm.

VISHAL AUTOMATS

www.vishalautomats.com

DIN 7985/IS: 7483 -1985/ISO 7045

Cross Recessed Raised Cheese Head Screws (PAN Phillips 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
Type H Penetration depth	min	0.72	1.1	1.3	1.7	1.74	2.04	2.77	3.03	4.18	5.38
	max	1.02	1.4	1.6	2	2.24	2.54	3.27	3.53	4.68	5.88

- All dimensions are in mm.

VISHAL AUTOMATS

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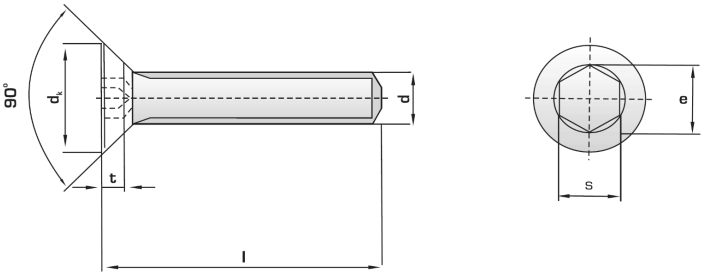
DIN 7991/IS: 6761 – 1972

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 are in mm.

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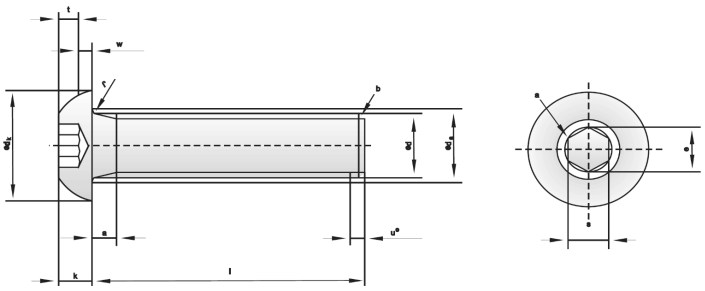
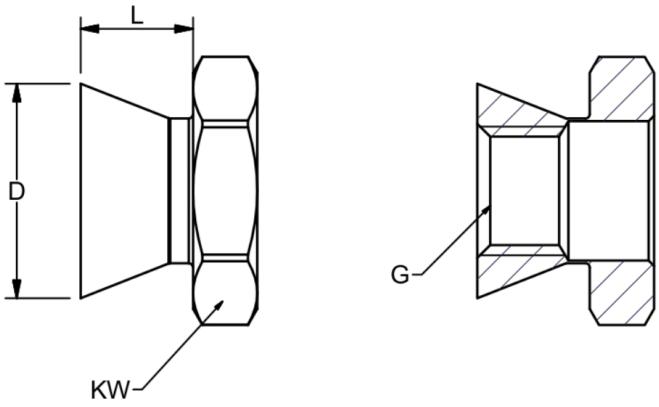
Hexagon Socket Button Head Screw



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	3.50	4
	min	0.5	0.7	0.8	1	1.25	1.5	1.75	2
d_a	max	3.6	4.7	5.7	6.8	9.2	11.2	14.2	18.2
d_k	max	5.7	7.60	9.50	10.50	14.00	17.50	21.00	28.00
	min	5.4	7.24	9.14	10.07	13.57	17.07	20.48	27.48
$e^{b,c}$	min	2,303	2.873	3.443	4.583	5.723	6.863	9.149	11.429
k	max	1.65	2.20	2.75	3.3	4.4	5.5	6.60	8.80
	min	1.40	1.95	2.50	3.0	4.1	5.2	6.24	8.44
f	min	0.1	0.2	0.2	0.25	0.4	0.4	0.6	0.6
s^c	max	2.080	2.58	3.080	4.095	5.140	6.140	8.175	10.175
	min	2.020	2.52	3.020	4.020	5.020	6.020	8.025	10.025
t	min	1.04	1.3	1.56	2.08	2.6	3.12	4.16	5.2
w	min	0.2	0.3	0.38	0.74	1.05	1.45	1.63	2.25

- All dimensions are in mm.

Anti-theft Nut



SIZE	DIN	IS	ISO		
M6-M14	AS PER DRAWING				

Technical Information

IS 2062 : 2011

GRADES

There shall be nine grades of steel as given in Tables 1 and 2. For grades E 250 to E 410, there shall be four sub-qualities (A, BR, B0 and C) and for grades E 450 to E 650, there shall be two sub-qualities (A and BR). Sub-qualities A, BR, B0 and C indicate requirement of impact test and mode of de-oxidation as indicated below:
A : Impact test not required, semi-killed/killed
BR : Impact test optional; if required at room temperature; semi-killed/killed
B0 : Impact test mandatory at 0°C, semi-killed/killed
C : Impact test mandatory at –20°C, killed
While placing the order, the steel should be designated by 'Grade Designation' and 'quality'.

FREEDOM FROM DEFECTS

All finished steel shall be well and cleanly rolled to the dimensions, sections and masses specified. The finished material shall be reasonably free from surface flaws; laminations; rough/jagged and imperfect edges and all other harmful defects.
Minor surface defects may be removed by the manufacturer/supplier by grinding provided the thickness is not reduced locally by more than 4 percent below the minimum specified thickness. Reduction in thickness by grinding greater than 4 percent but not exceeding 7 percent may be made subject to mutual agreement between the purchaser and the manufacturer/supplier.
Subject to agreement with the purchaser, surface defects which cannot be dealt with as in may be repaired by chipping or grinding followed by welding and inspection by a mutually agreed procedure such that,
a) after complete removal of the defects and before welding, the thickness of the item is in no place reduced by more than 20 percent;
b) welding is carried out by approved procedure by competent operators with approved electrodes and that the welding is ground smooth to the correct nominal thickness; and
c) subsequent to the finish grinding, the item may be required to be normalized or otherwise heat-treated at the purchaser's discretion.
Welding is not permissible for grade designation E 250C, E 275C, E 300 to E 650 material.

FABRICATED PRODUCTS

Table 1 Chemical Composition

(*Clauses* 5, 8.1 *and* 8.2)

Grade Designation	Quality	Ladle Analysis, Percent, *Max*					Carbon Equivalent (CE), *Max*	Mode of Deoxidation
		C	Mn	S	P	Si		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
E 250	A	0.23	1.50	0.045	0.045	0.40	0.42	Semi-killed/killed
	BR B0	0.22	1.50	0.045	0.045	0.40	0.41	Semi-killed/killed
	C	0.20	1.50	0.040	0.040	0.40	0.39	Killed
E 275	A	0.23	1.50	0.045	0.045	0.40	0.43	Semi-killed/killed
	BR B0	0.22	1.50	0.045	0.045	0.40	0.42	Semi-killed/killed
	C	0.20	1.50	0.040	0.040	0.40	0.41	Killed
E 300	A BR B0	0.20	1.50	0.045	0.045	0.45	0.44	Semi-killed/killed
	C	0.20	1.50	0.040	0.040	0.45	0.44	Killed
E 350	A BR B0	0.20	1.55	0.045	0.045	0.45	0.47	Semi-killed/killed
	C	0.20	1.55	0.040	0.040	0.45	0.45	Killed
E 410	A BR B0	0.20	1.60	0.045	0.045	0.45	0.50	Semi-killed/killed
	C	0.20	1.60	0.040	0.040	0.45	0.50	Killed
E 450	A BR	0.22	1.65	0.045	0.045	0.45	0.52	Semi-killed/killed
E 550	A BR	0.22	1.65	0.020	0.025	0.50	0.54	Semi-killed/killed
E 600	A BR	0.22	1.70	0.020	0.025	0.50	0.54	Semi-killed/killed
E 650	A BR	0.22	1.70	0.015	0.025	0.50	0.55	Semi-killed/killed

NOTES

1 New grade designation system based on minimum yield stress has been adopted.

2 For semi-killed steel, silicon shall be less than 0.10 percent. For killed steel, when the steel is killed by aluminium alone, the total aluminium content shall not be less than 0.02 percent. When the steel is killed by silicon alone, the silicon content shall not be less than 0.10 percent. When the steel is silicon-aluminium killed, the silicon content shall not be less than 0.03 percent and total aluminium content shall not be less than 0.01 percent.

3 Steels of qualities A, BR, B0 and C are generally suitable for welding processes. The weldability increases from quality A to C for grade designation E 250 and E 275.

4 Carbon equivalent (CE) would be calculated based on ladle analysis, only.

$$CE = C + \frac{Mn}{6} + \frac{(Cr + Mo + V)}{5} + \frac{(Ni + Cu)}{15}$$

5 Micro-alloying elements like Nb, V and Ti may be added singly or in combination. Total micro-alloying elements shall not be more than 0.25 percent.

6 Alloying elements such as Cr, Ni, Mo and B may be added under agreement between the purchaser and the manufacturer. In case of E 600 and E 650 the limit of Cr and Ni, either singly or in combination, shall not exceed 0.50 percent and 0.60 percent respectively.

7 Copper may be present between 0.20 to 0.35 percent as mutually agreed to between the purchaser and the manufacturer. The copper bearing quality shall be designated with a suffix Cu, for example E 250 Cu. In case of product analysis the copper content shall be between 0.17 and 0.38 percent.

8 Incidental element — Elements not quoted in Table 1 shall not be intentionally added to steel without the agreement of the purchaser, other than for the purpose of finishing the heat. All reasonable precautions shall be taken to prevent the addition from scrap or other materials used in manufacture of such elements which affect the hardenability, mechanical properties and applicability.

9 Nitrogen content of steel shall not exceed 0.012 percent which shall be ensured by the manufacturer by occasional check analysis.
10 The steel, if required, may be treated with calcium based compound or rare earth element for better formability.
11 Lower limits for carbon equivalent and closer limits for other elements may be mutually agreed to between the purchaser and the manufacturer.

Table 2 Mechanical Properties

(*Clauses* 5, 10.3, 10.3.1, 11.3.1, 12.2 *and* 12.4)

Grade Designation	Quality	Tensile Strength R_m, *Min* MPa[1] (*See* Note 1)	Yield Stress R_{eH}, *Min* MPa[1]			Percentage Elongation *A*, *Min* at Gauge Length, L_o=5.65	Internal Bend Diameter *Min* (*See* Note 2)		Charpy Impact Test (*See* Note 3)	
			<20	20-40	>40		≤ 25	>25	Temp °C	*Min* J
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
E 250	A	410	250	240	230	23	2*t*	3*t*	—	—
	BR								RT	27
	B0								0	27
	C								(–) 20	27
E 275	A	430	275	265	255	22	2*t*	3*t*	—	—
	BR								RT	27
	B0								0	27
	C								(–) 20	27
E 300	A	440	300	290	280	22	2*t*	—	—	—
	BR								RT	27
	B0								0	27
	C								(–) 20	27
E 350	A	490	350	330	320	22	2*t*	—	—	—
	BR								RT	27
	B0								0	27
	C								(–) 20	27
E 410	A	540	410	390	380	20	2*t*	—	—	—
	BR								RT	25
	B0								0	25
	C								(–) 20	25
E 450	A	570	450	430	420	20	2.5*t*	—	—	—
	BR								RT	20
E 550	A	650	550	530	520	12	3*t*	—	—	—
	BR								RT	15
E 600	A	730	600	580	570	12	3.5*t*	—	—	—
	BR								RT	15
E 650	A	780	650	630	620	12	4*t*	—	—	—
	BR								RT	15

NOTES

1) In case of product thickness/diameter more than 100 mm, lower minimum limit of tensile strength may be mutually agreed to between the purchaser and the manufacturer/supplier.
2) Bend test not required for thickness > 25 mm for grades E 300 to E 650. 't' is the thickness of the test piece.
3) For sub-quality BR, impact test is optional; if required, at room temperature (25 ± 2°C).
4) 1MPa = 1N/mm 2 = 1MN/m 2 = 0.102 kgf/mm 2 = 144.4 psi.

Product Analysis

The product analysis shall be carried out on the finished product from the standard position. Permissible limits of variation in case of product analysis from the limits specified in Table 1 shall be as given in Table 3.

Table 3 Permissible Variation for Product Analysis
(*Clauses* 5 *and* 8.2)

Sl No.	Constituent	Permissible Variation Over the Specified Limit, Percent, *Max*
(1)	(2)	(3)
i)	a) Carbon <0.20	0.02
	b) Carbon >0.20	0.03
ii)	Manganese	0.05
iii)	Silicon	0.03
iv)	Copper	0.03
v)	Sulphur	0.005
vi)	Phosphorus	0.005

HOT-DIP ZINC COATINGS ON STRUCTURAL STEEL AND OTHER ALLIED PRODUCTS — SPECIFICATION

GENERAL REQUIREMENTS

Quality of Zinc

Zinc used for galvanizing shall conform to any Of the grades specified in IS 209 : 1992 'Zinc ingot' or IS 13229 : 1991 'Zinc for Galvanizing'.

Galvanizing Bath

The molten metal in the galvanizing bath shall contain not less than 98.5 percent by mass of zinc, but where there is a special user requirement, levels or addition of impurities in the bath or in the coating may be specified by the purchaser.

Galvanizing

The steel products may, as far as practicable,be galvanized in accordance with IS 2629 :1985.

COATING REQUIREMENTS

Mass of Zinc Coating

Requirements for the mass of the coating for different classes of materials are given in Table 1.

Table 1 Mass of Zinc Coating
(*Clause* 6.1)

Sl No.	Product	Minimum Value or Average Mass of Coating (g/m^2)
(1)	(2)	(3)
i)	Castings-grey iron, malleable iron	610
ii)	Fabricated steel articles:	
	a) 5 mm thick and over	610
	b) Under 5 mm, but not less 2 mm	460
	c) Under 2 mm, but not less than 1.2 mm	340
iii)	Threaded work other than tubes and tube fittings:	
	a) 10 mm dia and over	300
	b) Under 10 mm dia	270

NOTES

1) The requirements for the minimum mass of coating are for normal or rural atmosphere. In case of special atmosphere like marine and industrial atmosphere, the minimum mass of coating shall be increased as agreed to between the galvanizer and the purchaser.

2) In case of fabricated steel structures, plates, etc, the coating mass is defined in terms of grams per square meter of the total surface area.

Freedom from Defects

The zinc coating shall be uniform, adherent, reasonably smooth and free from such imperfections as flux, ash bare patches, black spots, pimples, lumpiness, runs, rust stains, bulky white deposits and blisters.

Steel Embrittlement

The design of the products and the selection of the steel for its suitability to withstand normal galvanizing operations without embrittlement or the method of fabrication shall be the responsibility of the fabricator.

NOTE — Recommended precautions to properly design, fabricate and prepare the material for galvanizing to prevent embrittlement are given in IS 6158 : 1984.

POST-TREATMENT

Most galvanized products do not require any post-treatment. Wherever required by the purchaser, treatment such as chromating or phosphating may be applied to reduce the risk of wet storage staining or assist subsequent painting respectively.

SAMPLING AND CRITERIA FOR CONFORMITY

Unless otherwise agreed to, the following sampling plan shall be followed for ascertaining the conformity of galvanized coating on structural steel and other allied products.

Sampling Lot

All the material of the same type in a coating bath having uniform coating characteristics shall be grouped together to constitute a lot.

Each lot shall be tested separately for the various requirements of the specification. The number of units to be selected from each lot for this purpose shall be as given in Table 2.

Table 2 Scale of Sampling

No. of Units in the Lot	No. of Units to be Selected in a Sample	Acceptance No.
(1)	(2)	(3)
Up to 25	3	0
26-100	5	0
101-150	8	1
151-500	13	1
501-1 000	20	2
1 001-10 000	32	3
10 001 and above	50	5

NOTES

1 The units shall be selected at random. For this purpose, reference may be made to IS 4905 : 1968.

2 For details of acceptance number reference may be made to IS 2500 (Part 1) : 1992.

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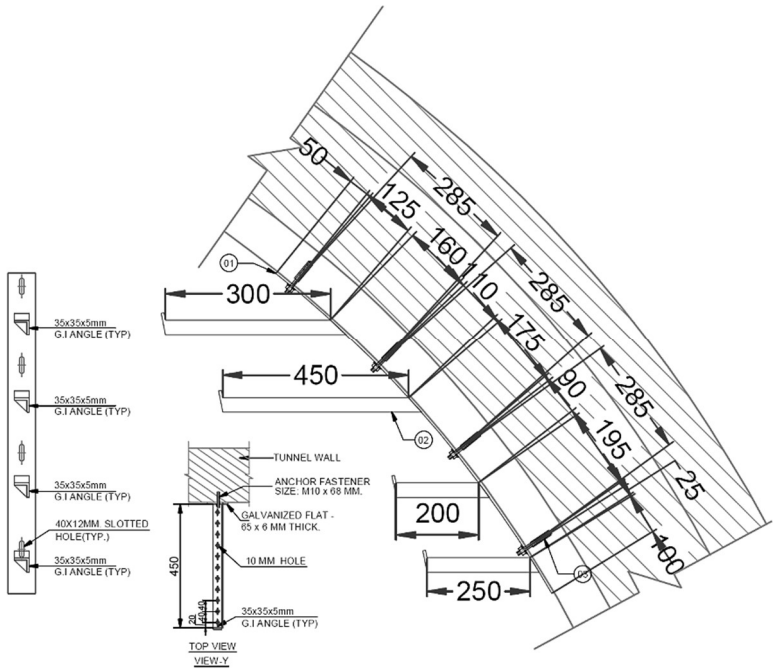
Cable Tray Mounting Brackets

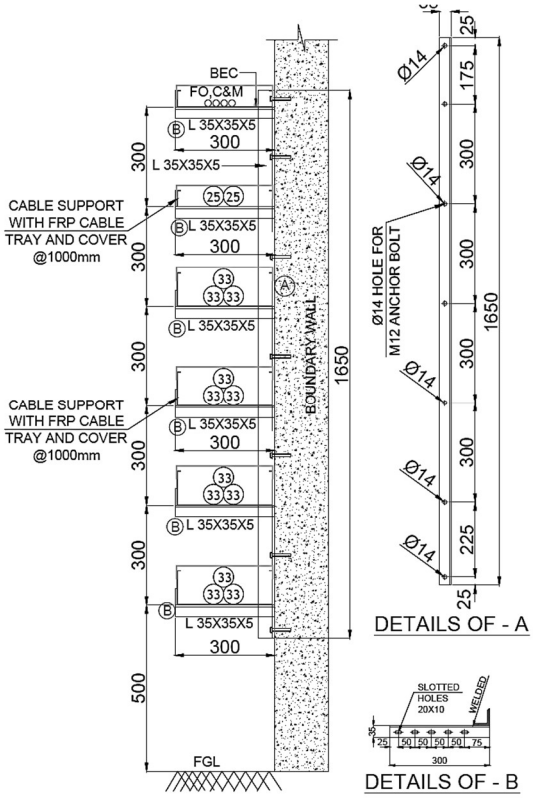
Tunnel Brackets



Typical brackets for mounting cables on tunnel walls for reference only

Product Details:	
Type	Tunnel Bracket (Fabricated)
Number of Mounting Arms for Cables	1 Arm to 6 Arms
Material	IS 2062 E 250 Grade A Angle: As per site requirements Flat: As per site requirements
Shape	Arc or Curve As per site requirements
Product Finish	Hot Dip Galvanized
Length	2000mm or As per site requirements
No. of Mounting Holes	As per site requirements

Straight Brackets (Flat Wall Mounting)



Typical brackets for mounting cables on walls for reference only

Product Details:	
Type	Straight/Flat Bracket (Fabricated)
Number of Mounting Arms for Cables	1 Arm to 6 Arms
Material	IS 2062 E 250 Grade A Angle: As per site requirements Flat: As per site requirements
Shape	Straight or Flat
Product Finish	Hot Dip Galvanized
Length	2000mm or As per site requirements
No. of Mounting Holes	As per site requirements

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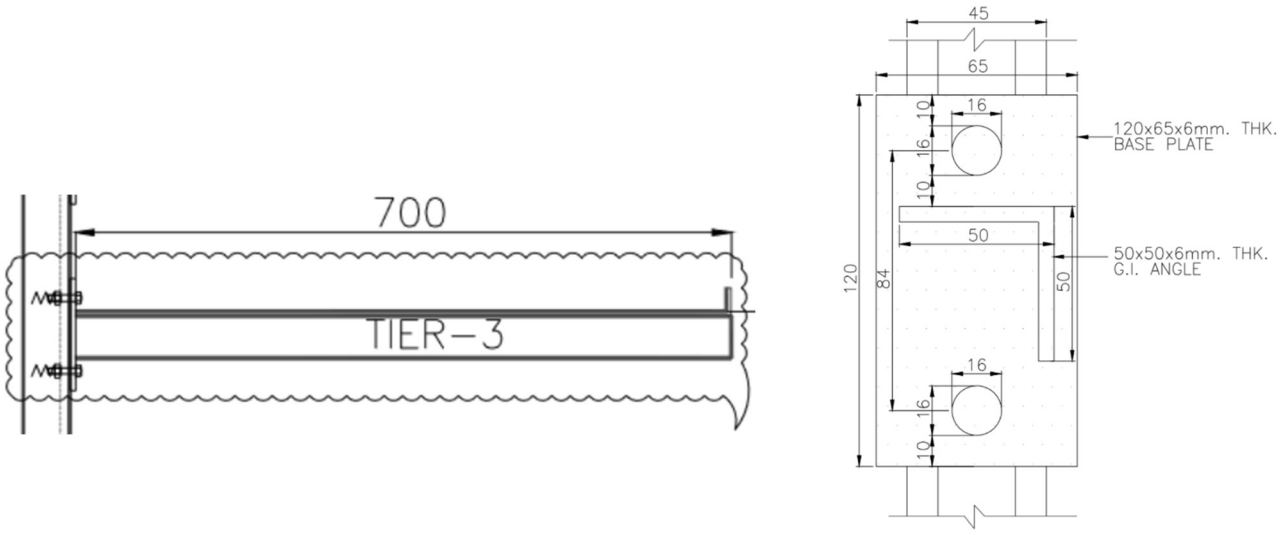
Cantilever Arm Brackets



Typical cantilever bracket details for mounting cables on walls for reference only

Product Details:	
Type	Cantilever Bracket (Fabricated)
Number of Mounting Arms for Cables	1 Arm only
Material	IS 2062 E 250 Grade A Angle: As per site requirements Flat: As per site requirements
Shape	Straight or Flat
Product Finish	Hot Dip Galvanized
Length	1000mm or As per site requirements
No. of Mounting Holes	As per site requirements

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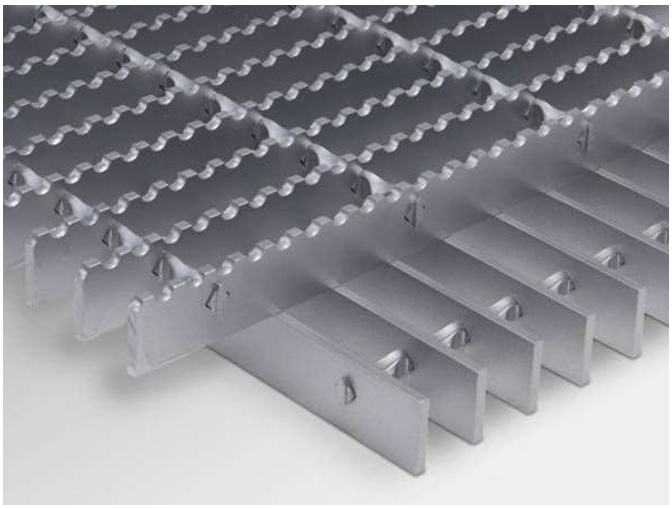
Gratings

Welded Grating



Swage Locked Grating

Size (W X L)	1220mm X 3660mm Or As per site requirements
Surface Finish	Galvanized
Grating Type	Welded or Swage Locked
Usage/Applications	Walkways
Load Capacity	Medium Duty
Material	Mild Steel

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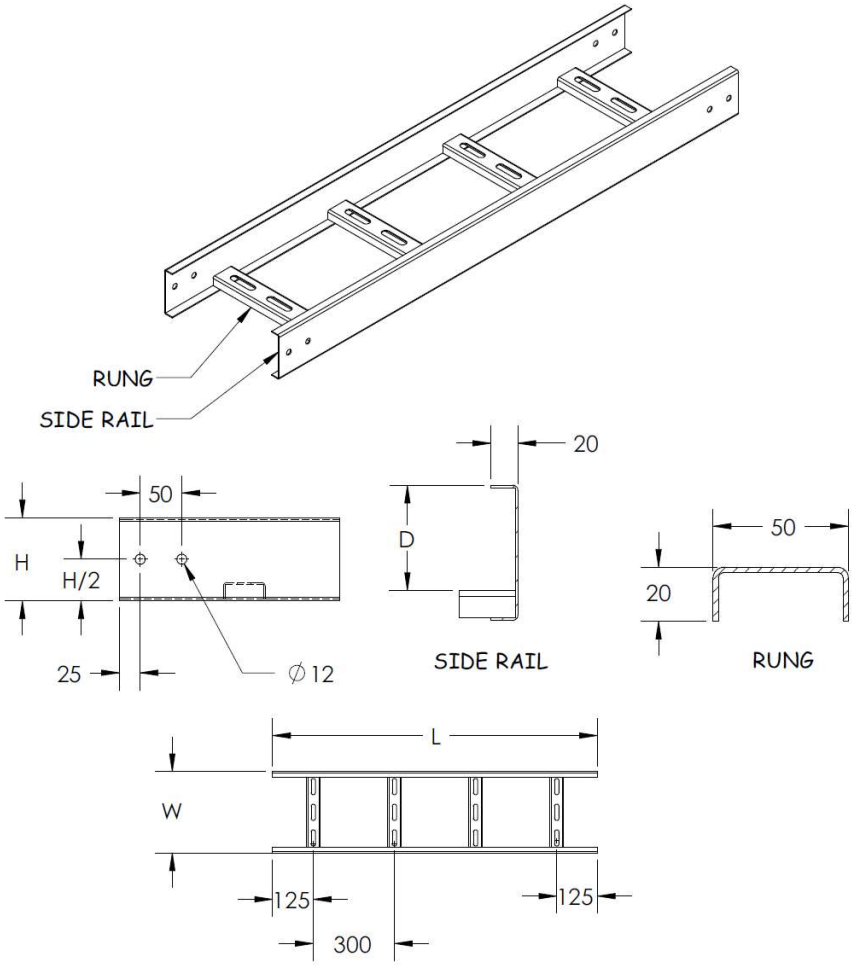
Cable Trays

Ladder Type



Product Details:	
Type	Ladder Type Cable Tray
Width	From 100 mm to 1000 mm
Length	3000mm
Product Finish	Hot Dip Galvanized
Material	Mild Steel, Stainless Steel or Aluminum

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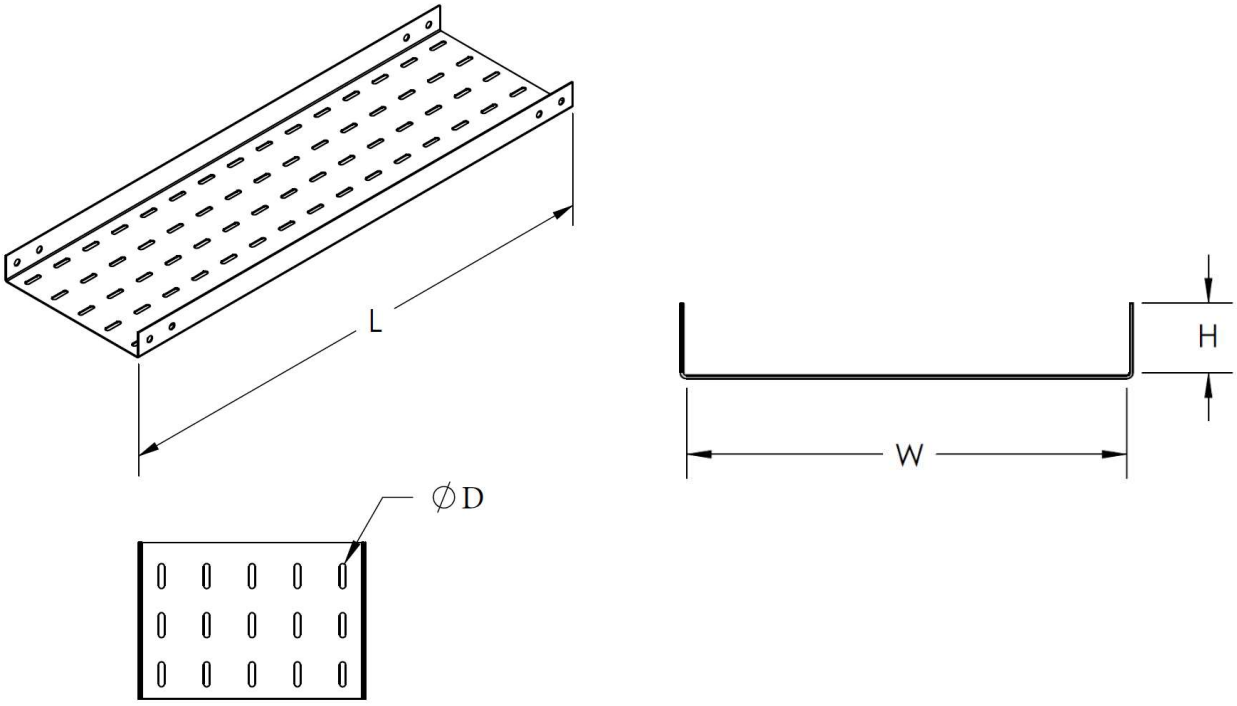
Cable Trays

Perforated Sheet Type



Product Details:	
Type	Perforated Sheet Cable Tray
Height	50mm or 100mm
Width	From 100 mm to 1000 mm
Length	3000mm
Product Finish	Hot Dip Galvanized
Material	Mild Steel, Stainless Steel or Aluminum

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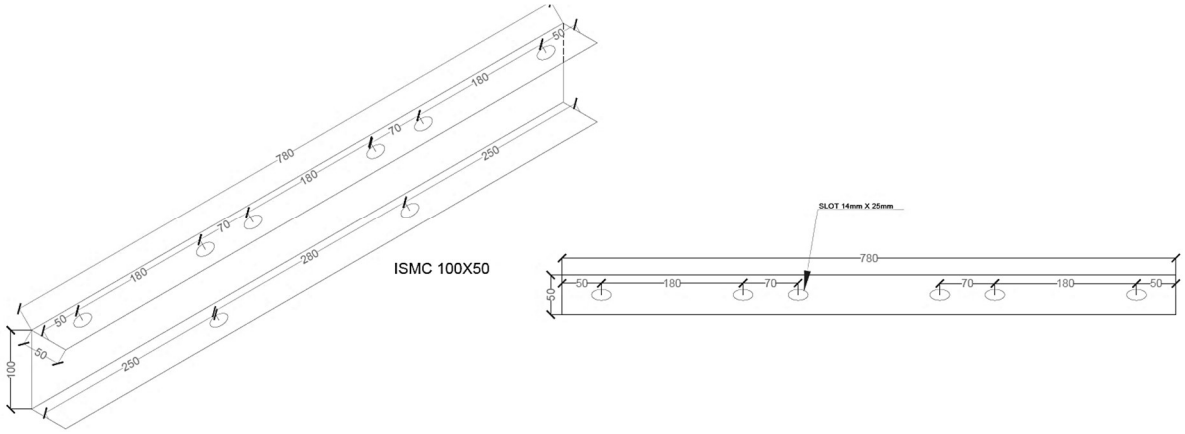
Support Structures

C- Channels



Product Details:	
Type	C Channel Support (Fabricated)
Material	IS 2062 E 250 Grade A MS Flat 200X200X6, MS C Channel
Dimension	As per site requirements
Product Finish	Hot Dip Galvanized
Length	100mm to 9000mm or As per site requirements

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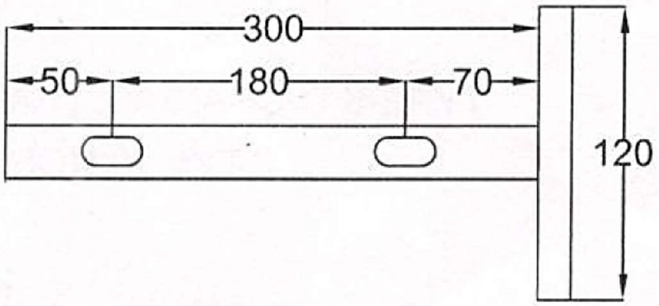
Support Structure

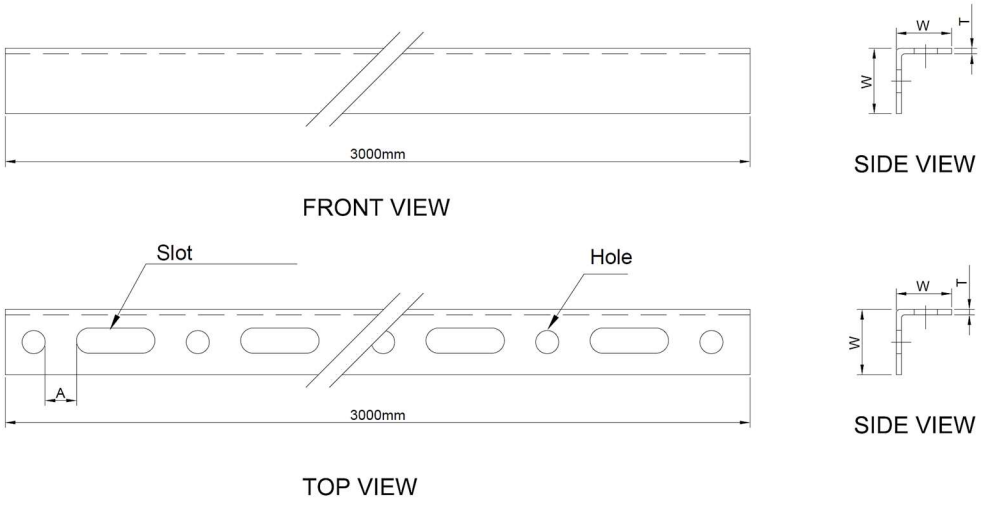
Frames



Product Details:	
Type	C Channel Frames (Fabricated)
Material	IS 2062 E 250 Grade A MS Flat, MS C Channel
Dimensions	As per site requirements
Product Finish	Hot Dip Galvanized
Length	100mm to 9000mm or As per site requirements

Support Structure

Slotted Angles



Product Details:	
Type	Slotted Angles (Fabricated)
Material	IS 2062 E 250 Grade A MS Angle
Shape	As per site requirements
Product Finish	Hot Dip Galvanized
Length	3000mm or As per site requirements

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GI Sheet

Ducting

Product Details:	
Grade	10G to 26G
Material	Galvanized Iron
Thickness	0.5mm to 3mm
Product Finish	Hot Dip Galvanized
Dimensions	1250MMX2500MM

Earthing

Plates

Product Details:	
Type	Plates
Material	Galvanized Iron
Thickness	0.5mm to 4mm
Product Finish	Hot Dip Galvanized
Shape	Square

Strip or Bar

Product Details:	
Type	Earthing Strip
Material	Galvanized Iron
Dimension	25x3mm,50x6mm,75x10mm
Product Finish	Hot Dip Galvanized
Length	5 meters

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Wire Rope

Product Details:	
Type	7X7
Material	Galvanized Iron, Stainless Steel
Dimension	1mm to 75mm
Product Finish	Hot Dip Galvanized
Length	500meters to 2500 meters

Vishal Automats

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