



FASTENERS

Leading fasteners
manufacturer in India



40 YEARS OF CREATING
#infinitepossibilities

Skipper Limited is the largest Transmission Tower manufacturing company in India and also among the top 10 largest tower manufacturers in the world. Skipper is also the one and only integrated T&D company in the world to be present across the entire value chain - Angle Rolling, Tower and Monopole manufacturing, Load Testing and EPC line construction.

SKIPPER FACTS:



Incorporation:

Established in 1981, Skipper has emerged as a prominent and competitive global manufacturer of electrical Transmission Towers and Poles



Location:

Headquartered in Kolkata (West Bengal, India). Skipper is present both in national and international markets exporting to more than 40 countries



Facilities & Capacity:

Three of the Company's manufacturing facilities are located in Kolkata and two units in Guwahati (Assam) with a total manufacturing capacity of 300000 MTPA



R&D:

In-house Research & Development Center recognized by the Department of Scientific and Industrial Research (DSIR), Govt. of India, backed by world's Largest Tower Testing Station



Award:

Recognised as the largest tower supplier for the third consecutive year by PGCIL

FASTENERS

Skipper has a specialised division for manufacturing of all kinds of Fastener Products. The company boasts of state of the art plants and machineries for manufacturing of flawless product categories. Each and every product at Skipper goes through a series of stringent quality checks to ensure global standards. We are not only a national powerhouse brand, but also export to multiple countries. With an experience of more than 4 decades, Skipper aims to make India the preferred sourcing hub for Global Infrastructure needs.



PROPERTY CLASS

BOLTS

	Hex Bolt M12 - M52 Grade: 4.6/4.8 5.6/5.8/6.8/8.8 10.9/ASTM T-1		Carriage Bolt M12 - M16 Grade: 5.6/6.8 8.8
U Bolt M10 - M48 Grade: 5.6/5.8 6.8/8.8		Hex Screw M12 - M52 Grade: 4.6/4.8 5.6/5.8/6.8/8.8 10.9/ASTM A-325M/T-1	
	Anti Theft Bolt M12 - M24 Grade: 5.6/5.8 6.8/8.8		Heavy Hex Bolt M12 - M36 Grade: 8.8s/10.9s A-325M/T-1
T Bolt M12 - M24 Grade: 5.6/5.8 8.8		Anchor Bolt M12 - M56 Grade: 4.6/5.6	
	Slotted Bolt M12 - M24 Grade: 5.6/5.8 8.8		

NUT



Hex Nut

M12 - M24
Grade: 4/5/6/8
10



Heavy Hex Nut

M12 - M24
Grade: 8s/10s

Anti Theft Nut

M16 - M20
Grade: 5/8



WASHERS



Plain Washers

M12 - M56
Grade: MS/HT
F-436



Spring Washers

M12 - M24
Grade: ISO/ASTM

Electroplated Spring Washer



STUD



Stud Bolts

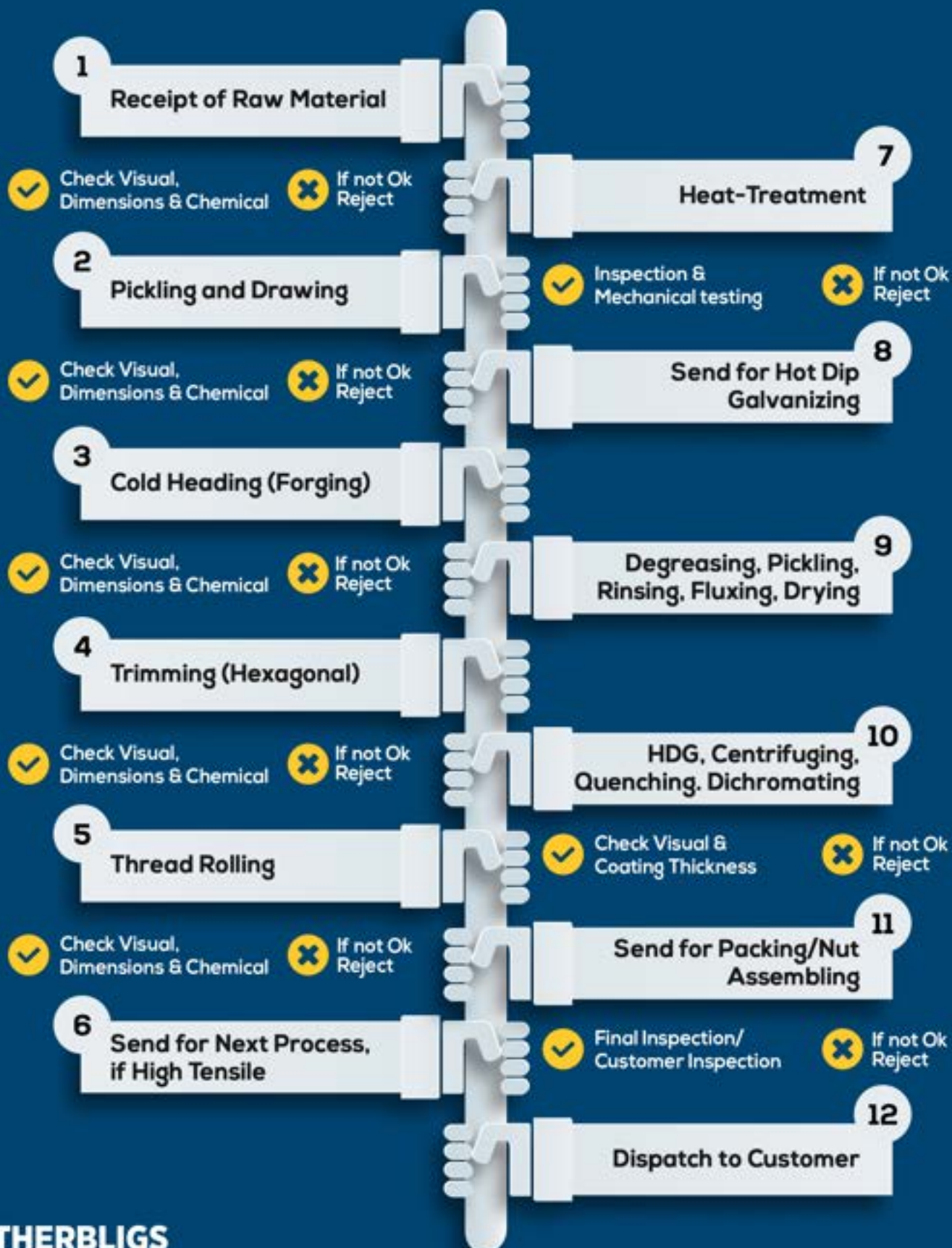
M12 - M52
Grade: 5.8/5.8
6.8/8.8



Fully Threaded Rod & Stud

M12 - M52
Grade: 5.8/5.8
6.8/8.8

MANUFACTURING PROCESS FLOW CHART OF BOLTS



THERBLIGS

Process ➔ Inspection & Testing ➔ Rejection

PROCESS FLOW CHART OF HEAT TREATMENT PROCESS



01

Material
Loading Point



02

Hardening
Zone



03

Quenching
Zone



04

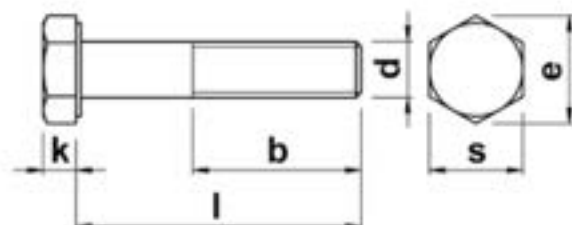
Tempering
Zone



05

Material
Unloading Point

DIMENSIONAL STANDARD FOR BOLTS, NUTS & WASHERS

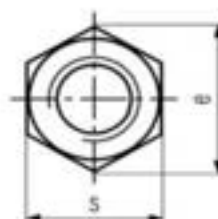
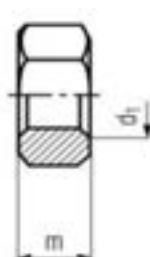


HD -- Head Dia
S -- Across Flats
e -- Across Corner
K -- Head Thickness
b -- Thread Length
C -- Washer Thickness

ds -- Shank Dia
dw -- Washer Dia
MD -- Major Dia
PCD -- Pitch Circle Dia

Table 1 Dimensional Parameters for Bolts

Bolt Size	Dimensions (mm)																	
	HD		S		e	K		b		C	ds		dw	PCD		MD		Thread
	Min	Max	Min	Max		Min	Max	Min	Max		Min	Max	Min	Max	Min	Max		
M12	22.00	22.50	17.57	18.00	19.85	7.55	8.45	20.50	23.00	0.50	11.30	12.70	16.10	10.65	10.82	11.57	11.96	1.75 P
M16	28.50	29.50	23.16	24.00	26.17	9.25	10.75	23.00	-	0.80	15.30	16.70	22.00	14.41	14.66	15.51	15.96	2.00 P
M20	-	-	29.16	30.00	32.95	12.10	13.90	26.00	28.50	0.80	19.30	20.84	28.30	18.10	18.33	19.57	19.96	2.50 P
M24	-	-	35.00	36.00	39.55	14.10	15.90	30.00	33.00	0.80	23.30	24.70	33.30	21.75	22.00	23.57	23.96	3.00 P



S -- Across Flats
e -- Across Corner
m -- Head Height

D -- Outer Dia
d -- Inner Dia

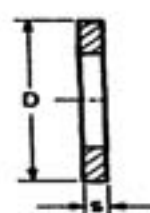
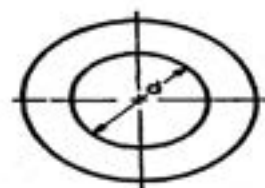
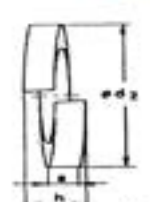


Table 2 Dimensional Parameters for Nuts

Nut Size	Dimensions (mm)					Thread Pitch Over Tap
	S		e	m		
	Min	Max		Min	Max	
M12	17.57	18.00	19.85	10.37	10.80	1.75
M16	23.16	24.00	26.17	14.90	15.50	2.00
M20	29.16	30.00	32.95	16.90	18.00	2.50
M24	35.00	36.00	39.55	20.20	21.50	3.00

Table 3 Dimensional Parameters Pack Washers

Pack Washer	Dimensions (mm)			
	D		d	
	Min	Max	Min	Max
M16	28.70	30.00	18.00	18.52
M20	36.20	37.00	22.00	22.70
M24	43.20	44.00	26.00	26.70



d2 -- Outer Dia
d1 -- Inner Dia
s -- Thickness
b -- Width
h -- Height

TYPE B (RIGHT HAND)

Table 4 Dimensional Parameters for Spring Washers

Spring Washer	Dimensions (mm)								
	d2	d1		s		b		h	
		Min	Max	Min	Max	Min	Max	Min	Max
M16	27.40	16.20	17.00	3.30	3.70	4.80	5.20	7.00	8.30

TOWER ACCESSORIES

We are one of the leading manufacturers and suppliers of a wide range of Transmission Line Tower Accessories such as Hangers, Extension Links, D-Shackle, Bird Guards, etc. Manufactured using supreme grade raw materials as per the set industry standards, these accessories are available in various specifications as per the specific needs of the clients. These are widely acknowledged for features like corrosion resistant finish, dimensional accuracy, high strength, robust construction and durable finish standards

	Hangers M16 - M27 Grade: 5.6/8.8		D-Shackles M16 - M45 Grade: 5.6/8.8
Bird Guards		Anti Climbing Devices M10 - M25 Grade: 4.6/5.6 8.8	
	Step Bolts M12 - M24 Grade: 5.6/4.6 5.8/8.8/6.8		Foundation Bolts M12 - M56 Grade: 5.6/4.6



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