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मानक

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IS 204-2 (1992): Tower Bolts - Specification Part-2
Non-Ferrous Metals [CED 15: Builder Hardware]



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Bhartrhari—Nitiśatakam

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भारतीय मानक
चटखनियों की विशिष्टि

भाग 2 अलोह धातु

(पाँचवां पुनरीक्षण)

Indian Standard

TOWER BOLTS - SPECIFICATION

PART 2 NON-FERROUS METALS

(*Fifth Revision*)

Second Reprint JANUARY 2002

UDC 621.882.2 [669.2/.8]: 624.97

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BUREAU OF INDIAN STANDARDS

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**AMENDMENT NO. 1 OCTOBER 1993
TO
IS 204 (Part 2) : 1992 TOWER BOLTS —
SPECIFICATION
PART 2 NON FERROUS METALS
(Fifth Revision)**

(Page 4, clause 6.3) — Delete the clause.

**AMENDMENT NO. 3 JANUARY 2008
TO
IS 204 (PART 2) : 1992 TOWER BOLTS —
SPECIFICATION
PART 2 NON-FERROUS METALS
(Fifth Revision)**

(Page 2, Table 1; and page 3, Table 2) — Insert the following Note at the end of both the tables:

‘NOTE – The shapes given in the figures are only illustrative but the dimensions and minimum requirements, where specified are binding.’

(CED 15)

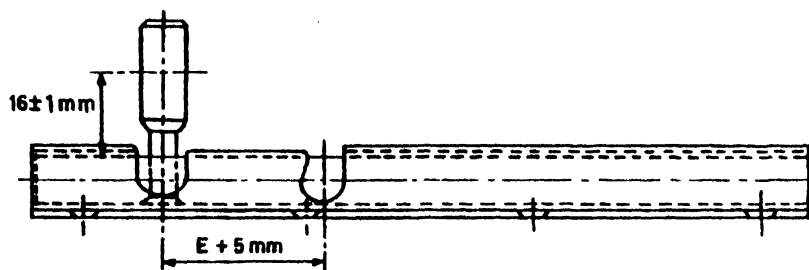
AMENDMENT NO. 2 OCTOBER 1997
TO
IS 204 (PART 2) : 1992 TOWER BOLTS —
SPECIFICATION

PART 2 NON-FERROUS METALS

(Fifth Revision)

(Page 2, Table 1, Fig.) — Substitute '16 ± 1 mm' for '16 mm'.

(Page 2, Table 1) — Insert a new figure as given below before last figure:



(CED 15)

Reprography Unit, BIS, New Delhi, India

FOREWORD

This Indian Standard (Fifth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Builders Hardware Sectional Committee had been approved by the Civil Engineering Division Council.

The specification for tower bolts was issued in 1950 and subsequently revised in 1961, 1966, 1974 and 1978. The standard was bifurcated into two parts in the fourth revision (1978); Part 1 deals with ferrous metal tower bolts and Part 2 deals with non-ferrous metal tower bolts.

For the tower bolts made of non-ferrous metals, the length of bolt has been kept equal to the length of the barrel and the size is denoted by the length of the barrel.

Also the diameter of the bore of the barrel and socket for the barrel tower bolts has been specified to suit the extrusions locally available.

This revision of the standard makes reference to the latest Indian Standards for various types of materials specified herein. Consequently, it also indicates the designations for various materials as per the latest versions of these standards.

This standard contains clauses 5.1.1, 6.3 and 7.1 which permit the purchaser to use his option for selection to suit his requirements.

In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TOWER BOLTS — SPECIFICATION

PART 2 NON-FERROUS METALS

(Fifth Revision)

1 SCOPE

1.1 The standard (Part 2) lays down requirements for tower bolts made of non-ferrous metals.

2 REFERENCES

2.1 The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 TYPES

3.1 Tower bolts shall be of the following types (see Tables 1 and 2):

Type	Description	Table
a) <i>Barrel Tower Bolts</i>		
1	Brass barrel tower bolts with cast brass barrel and rolled or cast brass bolts	1
2	Brass barrel tower bolts with barrel of extruded sections of brass and rolled or down brass	1
3	Brass barrel tower bolts with brass sheet barrel and rolled or drawn brass bolt	1
4	Aluminium barrel tower bolts with barrel and bolt of extruded sections of aluminium alloys	1
5	Zinc barrel tower bolts with barrel and bolt of die-cast zinc alloy	1
b) <i>Skeleton Tower Bolts</i>		
6	Brass skeleton tower bolts with cast brass plate and staples and rolled or drawn brass bolt	2
7	Brass skeleton tower bolts with staples and plate of extruded sections of brass and rolled or drawn brass bolt	2
8	Aluminium skeleton tower bolts with plate, staples and bolt of extruded sections of aluminium alloy	2
9	Zinc skeleton tower bolts with plate staples and bolts of die-cast zinc alloy	2

4 MATERIAL

4.1 The material used for tower bolts shall comply with the requirements given in Table 3.

5 MANUFACTURE

5.1 General

Tower bolts shall be well made and shall be free from defects. The bolts shall be finished to the correct shape and shall have a smooth action. All tower bolts made with sheets 1.2 mm thickness and above shall have countersunk screw holes to suit countersunk head wood screw (see IS 6760 : 1972). All sharp edges and corners shall be removed and finished smooth.

5.1.1 Tower bolts, wherever possible, shall have knob integral with the bolt. In case it is not possible to provide a single piece construction of bolt, the knob may preferably be fitted to the bolt with a pin or alternatively, screwed and riveted to the bolt and its shape may be round, half round, spherical or conical, of robust construction as specified by the purchaser.

5.2 Particulars

5.2.1 *Barrel Tower Bolts*

Barrel made from sheet shall be properly pressed to shape. Cast barrel shall be free from casting and other surface defects. Brass bolt shall be made from rolled or drawn brass rod. Extruded sections of aluminium alloy and brass shall be free from defects. Non-ferrous metal tower bolts shall each be provided with a small spring and a ball on the inside of barrel to enable smooth working (one typical illustration is shown in Table 1).

5.2.2 *Skeleton Tower Bolts*

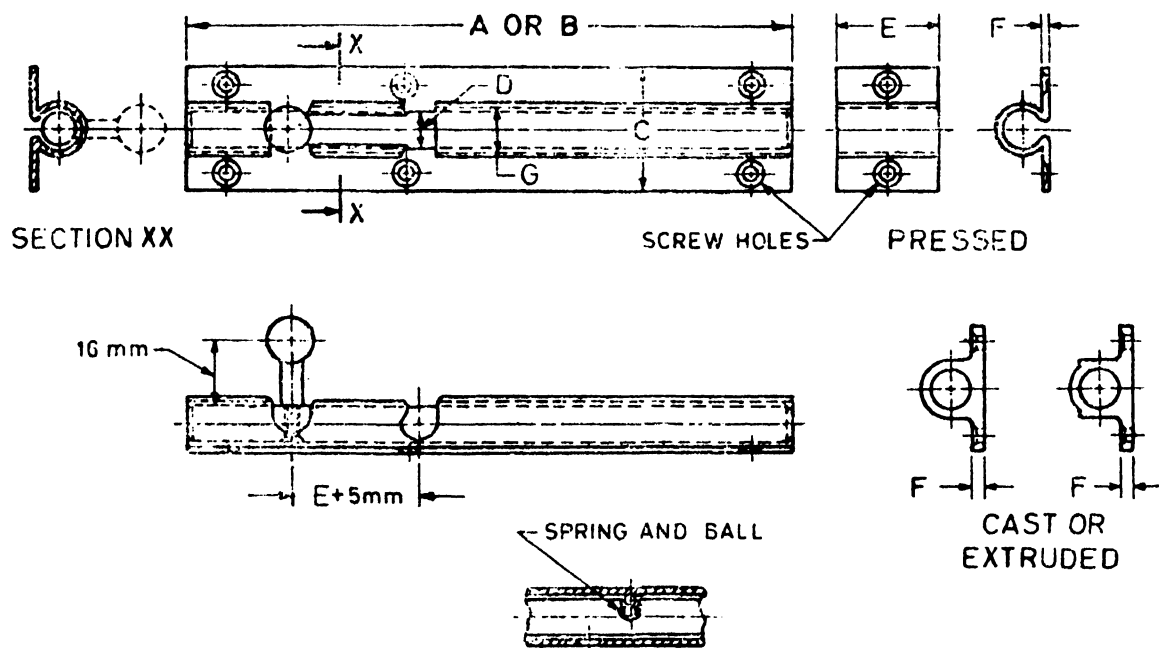
The staples and plate of non-ferrous metal shall be free from casting or other defects (one typical illustration is shown in Table 2).

6 DIMENSIONS

6.1 The leading dimensions of barrel tower bolts and tolerances on them shall conform to those given in Table 1.

Table 1 Barrel Tower Bolts, Types 1 to 5
(*Clauses 3.1, 5.2.1 and 6.1*)

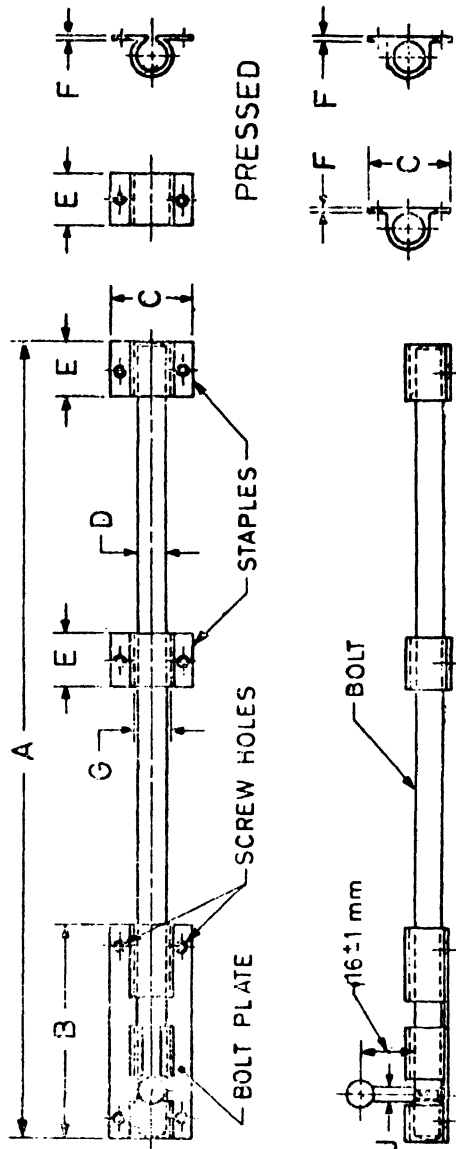
All dimensions in millimetres.



Size	Length of Bolt or Barrel (A or B)	Width of Barrel, C		Dia of Bolt D	Length of Socket E	Thickness of Metal of Barrel, F			Dia of Bore of Barrel or Socket G	Minimum No. of Equally Spaced Holes in Barrel & Socket for Wooden Screw No. 6	
		When D=10.0	When D=12.0			Brass or Zinc Alloy	Aluminium Alloy D=10.0 D=12.0	Sheet Brass			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
75	75	32	38	10.0 or 12.0	25	1.5	1.60	2.40	1 to 1.25	0.7 to 1.5 more than dia of bolt	6
100	100					1.5					6
125	125					2.0					6
150	150					2.0					8
175	175					2.0					8
200	200					2.0					8
225	225					2.0					8
250	250					2.0					10
300	300	2.0	10								
Tolerance	+3 -1	±1	±1	±0.3	±1	+0.5 -0.2	±0.25	±0.25	±0.15	—	—

Table 2 Skeleton Tower Bolts, Types 6 to 9
(Clauses 3.1, 5.2.2 and 6.2)

All dimensions in millimetres.



Size	Length of Bolt A	Length of Bolt Plate B	Width of Bolt Plate or Staple C		Dia of Bolt D	Length of Staple E		Thickness of Plate or Socket F		Dia of Bore of Plate or Staple G		Dia of Shank of Knob		No. of Staples	Minimum No. of Screw Holes for Wood Screw No. 4		
			When D=10.0	When D=12.0		When D=10.0	When D=12.0	Brass When D=10.0	Aluminium Alloy or Zinc Alloy		When D=10.0	When D=12.0	When D=10.0			When D=12.0	
									When D=10.0	When D=12.0							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
375	375	100	32.0	38.0	10.0	22.0	25.0	1.20	1.60	1.60	2.40	11.0	13.0	5.0	6.0	4	12
450	450																
600	600																
750	750																
900	900																
					or												
					12.0												
Tolerance		±1	±0.5	±0.5	±0.5	±0.5	±0.5	+0.25 -0	+0.25 -0	+0.25 -0	+0.25 -0	±0.5	±0.5	+0.5 -0	+0.5 -0	—	—

6.2 The leading dimensions of skeleton tower bolts and tolerances on them shall conform to those given in Table 2.

6.3 The tower bolts may be supplied in sizes and dimensions and shapes other than those specified in relevant tables of dimensions and where so agreed between the manufacturer and the purchaser.

7 FINISH

7.1 Unless otherwise specified the bolts shall have finish as given below:

a) Barrel Tower Bolts

- 1) *Brass tower bolts (Types 1 to 3)* — Bolt and barrel polished or plated as specified by the purchaser.
- 2) *Aluminium alloy tower bolts (Type 4)* — Bolts and barrel anodized. The anodic film may be either transparent or dyed as specified by the purchaser. The quality of anodized finish shall not be less than Grade AC 10 of IS 1868 : 1982.
- 3) *Zinc alloy tower bolts (Type 5)* — Bolt and barrel oxidized, bronzed or plated as specified by the purchaser.

b) Skeleton Tower Bolts

- 1) *Brass skeleton tower bolts (Types 6 and 7)* — Bolt, plate and staples bright finished.
- 2) *Aluminium alloy skeleton tower bolts (Type 8)* — Bolt, plate and staples anodized. The anodic film may be either transparent or dyed as specified by the purchaser. The quality of anodised finish shall not be less than Grade AC 10 of IS 1868 : 1982.
- 3) *Zinc alloy skeleton tower bolts (Type 9)* — Bolt, plate and staples oxidized, bronzed or plated as specified by the purchaser.

8 PACKING

8.1 Barrel tower bolts shall be suitably packed in cartons. Each carton shall bear a label showing the name of the manufacturer or trade-mark, type size and quantity of bolts. Aluminium tower bolts shall be individually wrapped with tissue paper or polythene film.

8.2 Skeleton tower bolts of non-ferrous metal shall be suitably packed and the aluminium alloy bolts shall be individually wrapped with tissue paper or polythene film. Each packet or carton shall bear a label showing the name of the manufacturer or trade-mark, type, size and quantity of tower bolts.

9 SCALE OF SAMPLING AND CRITERIA FOR CONFORMITY

9.1 Lot

In any consignment, all the tower bolts, of the same type and manufactured at the same time, shall be grouped together to constitute a lot.

9.2 Sample Size

The number of tower bolts, to be selected from a lot, shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 4.

9.2.1 These tower bolts shall be selected at random from at least 10 percent of the packets subject to a minimum of three, equal number of tower bolts being selected from each such packet.

9.3 Tests

All the tower bolts selected as in 9.2 shall be checked for dimensional requirements (see 6) and for finish (see 7). Any tower bolt which fails to satisfy the requirements of dimensions or finish or both shall be considered as a defective bolt.

Table 3 Requirements for Materials for Tower Bolts
(Clauses 4.1 and 9.5)

Sl No.	Material	Suitable Grade in Indian Standards
(1)	(2)	(3)
i)	Aluminium alloy tubes	Designation 63400 WP or 63400 P of IS 1285 : 1975
ii)	Aluminium alloy extruded rods	Designation 65032 WP of IS 733 : 1983
iii)	Brass sheets	Alloy designation CuZn 40 Condition HB of IS 410 : 1977
iv)	Cast brass	Grade CB-2 of IS 292 : 1983
v)	Extruded brass	Type II, Half hard condition of IS 319 : 1974
vi)	Zinc base alloy die casting	Alloy Zn Al4, Die casting of IS 742 : 1981

9.4 Criteria for Conformity

A lot shall be considered as conforming to the requirements of this standard if the number of defective bolts among those inspected does not exceed the corresponding number given in col 3 of Table 4; otherwise it shall be considered as not conforming to the requirements of this standard.

9.5 For conformity to the requirements of the materials the manufacturer shall provide a certificate of compliance to the requirements of corresponding Indian Standard (see col 4 in Table 3).

10 MARKING

10.1 Each tower bolt shall be clearly marked with the name of manufacturer or trade-mark.

10.1.1 The tower bolt may also be marked with the Standard Mark.

Table 4 Scale of Sampling and Criterion for Conformity

(Clauses 9.2 and 9.4)

Lot Size	Sample Size	Permissible Number of Defective Tower Bolts
(1)	(2)	(3)
Up to 200	15	0
201 to 300	20	1
301 to 500	30	2
501 to 800	40	2
801 and above	55	3

ANNEX A

(Clause 2.1)

LIST OF REFERRED STANDARDS

IS No.	Title	IS No.	Title
292 : 1983	Lead brass ingots and castings (<i>second revision</i>)	742 : 1981	Zinc base alloy die castings (<i>second revision</i>)
319 : 1974	Free-cutting brass, bars, rods and sections (<i>third revision</i>)	1285 : 1975	Wrought aluminium and aluminium alloy, extruded round tube and hollow sections (for general engineering purposes) (<i>second revision</i>)
410 : 1981	Cold rolled brass sheet, strip and foil (<i>third revision</i>)		
733 : 1983	Wrought aluminium and aluminium alloy bars, rods, and sections (for general engineering purposes) (<i>third revision</i>)	1868 : 1982	Anodic coatings on aluminium and its alloy (<i>second revision</i>)
		6760 : 1972	Slotted countersunk head wood screws

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Amendments Issued Since Publication

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