

भारतीय मानक

नींव-काबले — विशिष्ट

(पहला पुनरीक्षण)

Indian Standard

FOUNDATION BOLTS — SPECIFICATION

(*First Revision*)

UDC 621'882'6

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BUREAU OF INDIAN STANDARDS
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FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Bolts, Nuts and Fastener Accessories Sectional Committee had been approved by the Light Mechanical Engineering Division Council (LMDC).

This standard was originally published in 1970. This revision has been made to align the standard with the latest versions of basic standards related to fasteners.

Foundation bolts are designed for use in masonry, concrete foundation and the like. The form of the shank is optional but compliance is required for the maximum dimensions specified (space requirement dimensions). The standard specifies property class 4.6 for foundation bolts as the bolts are generally used with this property class. However, due to space constraints, it may be essential to use bolts having property class higher than 4.6 which shall be subject to agreement between the purchaser and manufacturer.

Following major changes have been made in this revision:

- a) The contents of the standard have been enditorially revised and brought in line with the new basic standards on fasteners.
- b) Shank form design G has been included in the Appendix.
- c) Black grade 'B' has been replaced with Product Grade C as given in IS 1367 (Part 2) : 1979.

In preparation of this standard assistance has been derived from DIN 529-1986 'Masonry and foundation bolts' issued by Deutsches Institut für Normung (DIN).

Indian Standard

FOUNDATION BOLTS — SPECIFICATION

(*First Revision*)

1 SCOPE

1.1 This standard covers the requirements for foundation bolts in the size range M8 to M72.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
1367 (Part 13) : 1983	Technical supply conditions for threaded steel fasteners: Part 13 Hot-dip galvanized coatings on threaded fasteners (<i>second revision</i>)	1367 (Part 18) : 1979	Technical supply conditions for threaded steel fasteners: Part 18 Marking and mode of delivery (<i>second revision</i>)
1363 (Part 3) : 1984	Hexagon head bolts, screws and nuts of product grade C: Part 3 Hexagon nuts (size range M5 to M36) (<i>second revision</i>)	1368 : 1987	Dimensions for ends of parts with external ISO metric threads (<i>third revision</i>)
1367 (Part 1) : 1980	Technical supply conditions for threaded steel fasteners: Part 1 Introduction and general information (<i>second revision</i>)	1369 : 1982	Dimensions for screw thread runouts and undercuts (<i>second revision</i>)
1367 (Part 2) : 1979	Technical supply conditions for threaded steel fasteners: Part 2 Product grades and tolerance (<i>second revision</i>)	2614 : 1969	Methods for sampling of fasteners (<i>first revision</i>)
1367 (Part 3) : 1991	Technical supply conditions for threaded steel fasteners: Part 3 Mechanical properties and test methods for bolts, screws and studs with full loadability (<i>third revision</i>)	4218 (Part 5) : 1969	ISO Metric screw threads: Part 5 Tolerances (<i>first revision</i>)
		4218 (Part 6) : 1978	ISO Metric screw threads: Part 6 Limits of sizes for commercial bolts and nuts (diameter range 1 to 52 mm) (<i>first revision</i>)

3 TECHNICAL SUPPLY CONDITIONS

Dimensions and Preferred Length-Dia Combination		Table 1
Material		Steel
	Tolerances	8g
Thread	Indian Standards	IS 4218 (Part 5) : 1979 IS 4218 (Part 6) : 1978
Mechanical Properties	Property Class	4·6
	Indian Standard	IS 1367 (Part 3) : 1991*
Tolerance	Produce Grade	C
	Indian Standard	IS 1367 (Part 2) : 1979
Finish		As produced or Hot-dip galvanized, IS 1367 (Part 13) : 1983, if agreed between supplier and purchaser.

*Materials other than those specified may be agreed to between the purchaser and the supplier.

4 SHANK FORMS

The form of shank shall be as agreed to between the purchaser and the supplier. However, some typical shank forms and their dimensions are given in Annex A.

5 DESIGNATION

The foundation bolts shall be designated by the nomenclature, thread size, length and number of this standard.

Example:

A foundation bolt of thread size M20 and length 200 mm shall be designated as:

Foundation Bolt M20×200 IS 5624

5.1 When foundation bolts are required/supplied with hexagon nuts conforming to IS 1363 (Part 3) : 1984, letter 'N' shall be added after length, in the designation.

Example:

A foundation bolt of thread size M20, length 200 mm supplied with hexagon nut shall be designated as:

Foundation Bolt M20×200 N IS 5624

5.2 If foundation bolts are to be hot dip galvanized the word 'GALV' shall be added at the end of the designation.

Example:

A foundation bolt of thread size M20, length 200 mm and hot dip galvanized shall be designated as:

Foundation Bolt M20×200 IS 5624 GALV

5.3 In addition, type of the shank form required may also be indicated with the designation. However, if no shank form is specified in the designation it shall be at the discretion of the manufacturer.

6 GENERAL REQUIREMENTS

6.1 In respect of requirements not covered in this standard, the nuts shall conform to IS 1367 (Part 1) : 1980.

7 SAMPLING

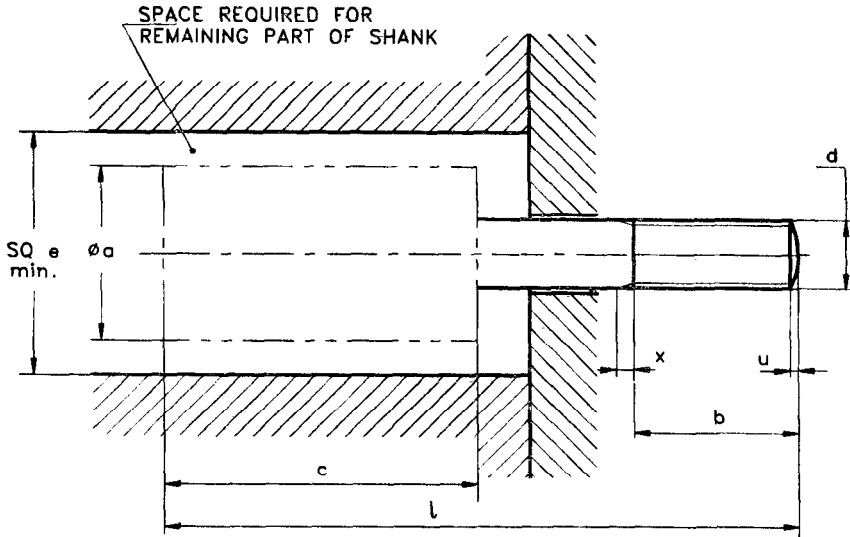
7.1 Sampling and criteria for acceptance shall be in accordance with IS 2614 : 1969.

8 MARKING AND MODE OF DELIVERY

8.1 The marking of bolts and mode of delivery shall be in accordance with IS 1367 (Part 3) : 1991 and IS 1367 (Part 18) : 1978 respectively.

Table 1 Dimensions and Preferred Length Dia Combinations
(Clause 3)

All dimensions in millimetres.



d	M8	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M72 x 6
b	20	25	30	40	50	60	75	90	105	120	140	160	180
a Max	25	32	40	55	65	80	100	120	140	160	185	210	250
c Max	45	55	70	90	110	130	160	190	230	260	290	340	370
e	35	45	55	70	85	100	120	140	160	180	210	250	290

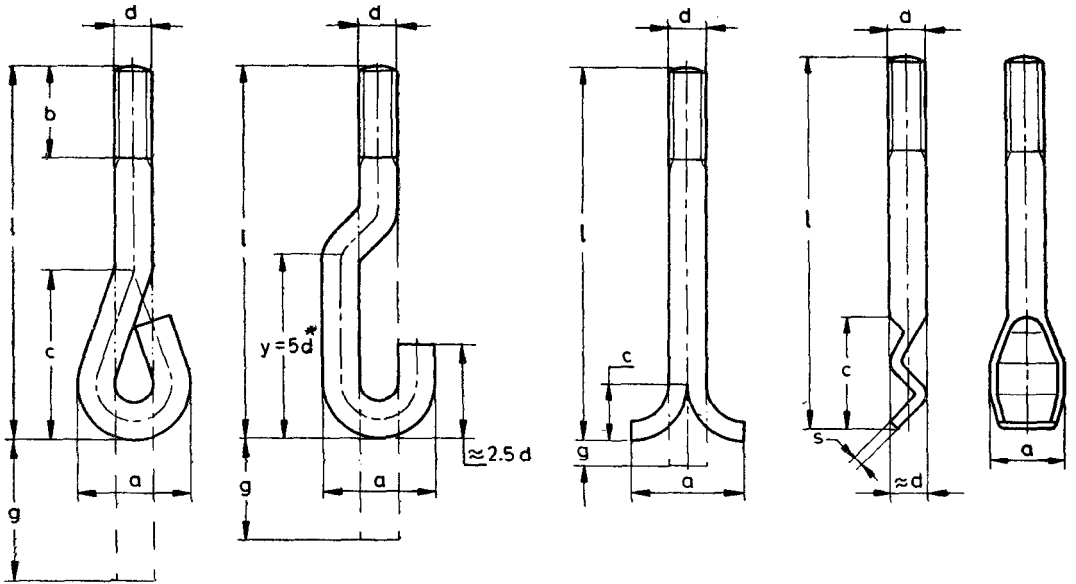
LENGTH l	M8	M10	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M72 x 6
80													
100													
125													
160													
200													
250													
320													
400													
500													
630													
800													
1000													
1250													
1600													
2000													
2500													
3200													

NOTES:

- 1 The range of preferred length is indicated by stepped lines. No tolerances have been specified for length l. They depend on the respective shapes of the customary bolts.
- 2 The diameter of the unthreaded shank portion may be either equal to the thread diameter (normal shank) or approximately equal to the pitch diameter (reduced shank), at the manufacturer's discretion.
- 3 Short dog point or long dog point thread ends shall be according to IS 1368 : 1987, at the manufacturer's discretion.
- 4 Dimension 'u' (incomplete thread) shall not exceed 2P. P is the pitch of thread.
- 5 Dimension 'x' shall be as specified in IS 1369 : 1982.
- 6 Tolerance on 65 + 2P.

ANNEX A
(Clause 4)

TYPES AND DIMENSIONS OF TYPICAL SHANK

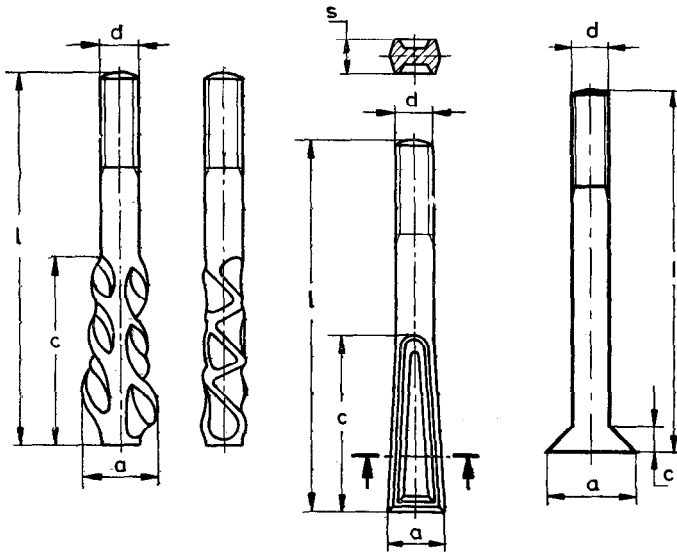


TYPE A

TYPE B
(FROM M16)

TYPE C
(HOT FORMED)

TYPE D
(UP TO M24)



TYPE E
(UP TO M48)

TYPE F
(UP TO M48)

TYPE G

•Higher value of y shall be subject to agreement.

g = Straight length.

All dimensions in millimetres.

Thread Size, <i>d</i>	M 8	M 10	M 12	M 16	M 20	M 24	M 30	M 36	M 42	M 48	M 56	M 64	M 72×6	
<i>a</i> ±3	A, B, C	24	30	36	48	60	75	95	115	135	155	180	200	240
	D	16	20	24	32	40	48	—	—	—	—	—	—	
	E	16	20	24	32	40	48	60	72	85	98	—	—	—
	F	14	16	20	25	30	35	45	55	65	75	—	—	—
	G	20	25	30	40	50	60	75	90	105	120	140	160	180
<i>c</i> ±5	A	45	55	65	85	105	125	155	190	220	250	290	335	370
	C	12	15	18	24	30	36	45	54	63	72	84	96	110
	D	24	30	36	48	60	72	—	—	—	—	—	—	—
	E	45	55	70	90	100	135	150	180	260	260	—	—	—
	F	50	50	55	85	95	120	130	190	200	220	—	—	—
	G	5	6	7	10	12	14	18	22	25	29	34	38	43
<i>g</i> ≈	A	30	38	45	60	75	90	115	135	155	180	210	235	260
	B	—	—	—	45	55	70	90	110	125	140	160	185	215
	C	5	7	8	11	14	18	24	30	34	40	45	50	60
<i>s</i> ±1.5	D	3	3.5	4	5	6	8	—	—	—	—	—	—	—
	F	6	8	10	14	18	22	26	30	36	42	—	—	—

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