



**PRODUCT MANUAL FOR  
HEXAGON HEAD BOLTS (SIZE RANGE M 5 TO M 64)  
ACCORDING to IS 1363 (Part 1):2019**

*This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.*

1.	<b>Product</b>	:	<b>IS 1363 (Part 1):2019</b>
	<b>Title</b>	:	<b>Hexagon Head Bolts (Size Range M 5 to M 64)</b>
	<b>No. of Amendments</b>	:	Nil
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	-
b)	<b>Grouping guidelines</b>	:	Please refer <a href="#">ANNEX – A</a>
c)	<b>Sample Size</b>	:	Six Bolts
3.	<b>List of Test Equipment</b>	:	Please refer <a href="#">ANNEX – B</a>
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer <a href="#">ANNEX – C</a>
5.	<b>Requirements which can be tested in a day :</b>		
	i) Dimensions ( <i>Clause 3</i> ) ii) Thread, Mechanical Properties, Finish and/ or Coating and Tolerances ( <i>Clause 4</i> )		
6.	<b>Scope of the Licence :</b>		
	Licence is granted to use Standard Mark as per IS 1363 (Part 1):2019 with the following scope:		
	Name of the product	Hexagon Head Bolt	
	Type	Hexagon Head Bolt (Grade‘C’), Head Bolt size, Property Class, Finish	

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**ANNEX A**

**Grouping Guidelines**

1. IS 1363 (Part 1):2019 /ISO 4016:2011 specifies the characteristics of Hexagon Head Bolts with thread size from M5 upto and including M64 of product grade C. Also Bolts may be of different property classes as specified in IS 1363 (Part 1): 2019 / ISO 4016:2011.
2. Considering the above, following grouping guidelines for GoL/ CSoL shall be followed:
  - (a) One sample each of lowest thread size, any intermediate thread size and highest thread size of a property class shall be tested for all requirements in order to cover the complete range of thread sizes of a particular property class.
  - (b) If coated sample is tested for all requirements, corresponding uncoated thread sizes may also be covered.
3. The Scope of Licence may be restricted based on the Manufacturing and testing capabilities of the manufacturer.
4. During operation of licence, BOs shall ensure that all the property classes/ finish/thread sizes covered in the licence are tested in rotation, to the extent possible.

**ANNEX - B****List of Test Equipments**

Major test equipment required to test as per the Indian Standard

<b>Sl. No.</b>	<b>Tests used in with Clause Reference</b>	<b>Test Equipment</b>
1.	Dimensions as per <i>clause 3</i>	a) Micrometer b) Scale c) Dial Gauge
2.	Thread and Tolerances as per <i>Clause 4</i>	a) Go-No Go gauges b) Radius gauge, angle gauge c) Thread gauge
	Mechanical Properties as per <i>Clause 4</i>	a) UTM b) Hardness Tester c) Impact Tester
	Finish - Coating as per <i>Clause 4</i>	a) Coat meter

*The above list is indicative only and may not be treated as exhaustive.*

ANNEX - C

**1. LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

**1.1** The manufacturer shall prepare a calibration plan for the test equipment.

**2. TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. LABELLING AND MARKING** – As per the requirements of IS 1363 (Part 1).

**4. CONTROL UNIT** – All Head Bolts of same property class and designation manufactured in a day shall constitute a control unit.

**HEAT TREATMENT BATCH:** All the Head Bolts of same property class and designation heat treated together at the same time shall constitute a heat treatment batch.

**5. LEVELS OF CONTROL** - The tests as indicated in column 1 of [Table 1](#) and the levels of control in column 3 of [Table 1](#), shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**5.1** All the production which conforms to the Indian Standard and covered by the licence should be marked with Standard Mark.

**6. REJECTIONS** – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1

(1) Test Details			(2) Test equipment requirement	(3) Levels of Control			
Cl.	Requirement	Test Methods		R: required (or) S: Sub-contracting permitted	No. of Sample	Frequency	Remarks
		Clause	Reference				
3.	Dimensions	3	IS 1363 (Part 1)	R	As per sampling plan given in IS 1367 (Part 17)		
4	Material	Table 2	IS 1367 (Part 3) / ISO 898 (Part 1)	S	One	Each consignment	No further testing is required, if accompanied with test certificate or ISI marked
	Threads requirement		IS 4218 (Part 3) / IS 14962 (Part 1)	R	As per sampling plan given in IS 1367 (Part 17)		
	Tensile Test	9.1 to 9.5, 9.7	IS 1367 (Part 3) / ISO 898 (Part 1)	R	Two	Every 7 <sup>th</sup> control unit	In case of any failure, twice the number of sample shall be tested from the same control unit for those characteristics in which failure has occurred. In case of any further failure the control unit shall be rejected and shall not be marked with BIS standard mark. Further each control unit corresponding to the property class in which the failure had occurred shall be tested till samples from three consecutive control units pass after which the earlier frequency can be restored.
	Proof Load Test	9.6					
	Head Soundness Test	9.8					
	Torsion Test	9.13					
Impact Test	9.14						

4	Hardness Test	9.9	IS 1367 (Part 3) / ISO 898 (Part 1)	R	Three	Every Heat treatment batch	In case of any failure, twice the number of sample shall be tested from the same heat treatment batch for those characteristics in which failure has occurred. In case of any further failure the heat treatment batch shall be rejected and shall not be marked with BIS standard mark. Further twice the sample from each heat treatment batch corresponding to the property class in which the failure had occurred shall be tested till samples from three consecutive heat treatment batch pass after which the earlier frequency can be restored.	
	Decarburization Test	9.10						
	Carburization Test	9.11						
	Surface Discontinuity Inspection	9.15	IS 1367 (Part 3) / ISO 898 (Part 1)	R	Every half hour samples to be checked			
	<b>FINISH/ COATING</b>							
	Electroplating		IS 1367(Part 11)	R	As per Sampling plan given in Note 1		Different electroplating or other finish may be given as agreed between customer and supplier	
Non - Electrolytically applied zinc flake coating		ISO 10683	R					

**Sampling plan for Finish/coating test:**

Total number of head Bolts in batch	Number of test samples
Upto and including 500	3
501 upto and including 35,000	5
Over 35,000	8

**NOTE-1:** Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

**NOTE-2:** Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.