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**Aerospace — Bolts, large bihexagonal head, normal shank, short or medium length MJ threads, metallic material, coated or uncoated, strength classes 1 250 MPa to 1 800 MPa — Dimensions**

*Aéronautique et espace — Vis à tête bihexagonale large, avec tige normale et filetages MJ courts ou de longueur moyenne, en matériau métallique, revêtues ou non revêtues, des classes de résistance 1 250 MPa à 1 800 MPa — Dimensions*



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Published in Switzerland

## Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 3186 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 4, *Aerospace fastener systems*.

This second edition cancels and replaces the first edition (ISO 3186:1994), which has been technically revised.

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# Aerospace — Bolts, large bihexagonal head, normal shank, short or medium length MJ threads, metallic material, coated or uncoated, strength classes 1 250 MPa to 1 800 MPa — Dimensions

## 1 Scope

This International Standard specifies the dimensions of large bihexagonal head bolts, with close or large tolerance normal shank and short or medium length MJ threads, in metallic material, coated or uncoated, with strength classes 1 250 MPa to 1 800 MPa.

This International Standard is applicable to the compilation of aerospace product standards.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 286-2, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts*

ISO 3353-1, *Aerospace — Lead and runout threads — Part 1: Rolled external threads*

ISO 4095, *Aerospace — Bihexagonal drives — Wrenching configuration — Metric series*

ISO 5855-2, *Aerospace — MJ threads — Part 2: Limit dimensions for bolts and nuts*

ISO 7913, *Aerospace — Bolts and screws, metric — Tolerances of form and position*

## 3 Configuration and dimensions

See Figure 1 and Table 1.

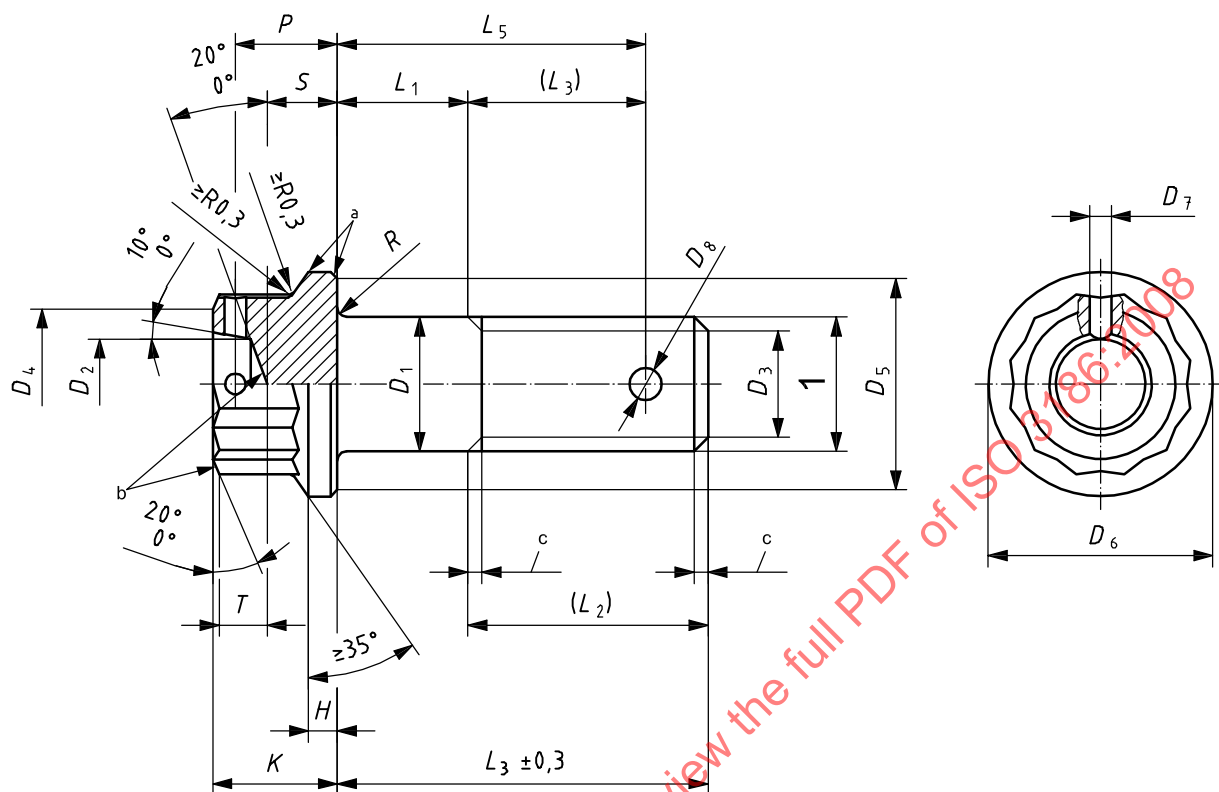
Dimensions and tolerances are expressed in millimetres. They are applicable after any coating (tolerance on shank diameter before coating is also specified for heat cured matrix coatings), but before the application of any lubricant.

Details of form not stated are left to the manufacturer's discretion.

Tolerances of form and position shall be as specified in ISO 7913 if not otherwise stated on product standard.

Dimensions in millimetres

Break sharp edges 0,1 to 0,4



### Key

- 1 thread
- a Rounded or chamfered in this area.
- b Shape optional.
- c In accordance with ISO 3353-1.

### Figure 1

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Table 1

| Diameter<br>code | Thread <sup>a</sup> | D <sub>1</sub> |                                |                  |                  |                   |                  | D <sub>2</sub>   | D <sub>3</sub>   | D <sub>4</sub> | D <sub>5</sub> | D <sub>6</sub> | D <sub>7</sub><br>Four<br>holes<br>equi-<br>distant<br>optional<br><br>H13 <sup>c</sup> | D <sub>8</sub><br>One<br>hole,<br>optional<br><br>H13 <sup>c</sup> |
|------------------|---------------------|----------------|--------------------------------|------------------|------------------|-------------------|------------------|------------------|------------------|----------------|----------------|----------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------|
|                  |                     | nom.           | Coated bolts                   |                  |                  | Uncoated<br>bolts |                  |                  |                  |                |                |                |                                                                                         |                                                                    |
|                  |                     |                | Tol.                           |                  |                  | Tol.              |                  |                  |                  |                |                |                |                                                                                         |                                                                    |
|                  |                     |                | before<br>coating <sup>b</sup> | close            | large            | close             | large            |                  |                  |                |                |                |                                                                                         |                                                                    |
| 050              | MJ5<br>× 0,8-4h6h   | 5              | -0,030<br>-0,045               | -0,010<br>-0,035 | h12 <sup>c</sup> | f7 <sup>c</sup>   | h12 <sup>c</sup> | 2,5              | 3,4              | 6,8            | 9,5            | 10,3           | 1                                                                                       | 1,5                                                                |
| 060              | MJ6 × 1-4h6h        | 6              | -0,033<br>-0,048               | -0,013<br>-0,038 |                  |                   |                  | 3,2              | 4,2              | 7,8            | 11             | 11,8           | 1,4                                                                                     | 1,9                                                                |
| 070              | MJ7 × 1-4h6h        | 7              |                                |                  |                  |                   |                  | 3,9              | 5,2              | 8,8            | 12,5           | 13,3           |                                                                                         |                                                                    |
| 080              | MJ8 × 1-4h6h        | 8              |                                |                  |                  |                   |                  | 4,5              | 6,2              | 9,8            | 14             | 14,8           |                                                                                         |                                                                    |
| 100              | MJ10<br>× 1,25-4h6h | 10             | -0,036<br>-0,051               | -0,016<br>-0,041 |                  |                   |                  | 6,1              | 7,9              | 11,8           | 17,3           | 18,3           | 1,6                                                                                     | 2,4                                                                |
| 120              | MJ12<br>× 1,25-4h6h | 12             |                                |                  |                  |                   |                  | 7,7              | 9,8              | 13,7           | 20,9           | 22             |                                                                                         |                                                                    |
| 140              | MJ14<br>× 1,5-4h6h  | 14             |                                |                  |                  |                   |                  | 10,3             | 11,5             | 16,7           | 23,9           | 25             |                                                                                         | 3                                                                  |
| 160              | MJ16<br>× 1,5-4h6h  | 16             |                                |                  |                  |                   |                  | 11,9             | 13,5             | 18,6           | 27,4           | 28,5           |                                                                                         |                                                                    |
| 180              | MJ18<br>× 1,5-4h6h  | 18             |                                |                  |                  |                   |                  | 14,5             | 15,5             | 21,6           | 30,4           | 31,5           |                                                                                         |                                                                    |
| 200              | MJ20<br>× 1,5-4h6h  | 20             |                                |                  |                  |                   |                  | -0,040<br>-0,055 | -0,020<br>-0,045 | 16             | 17,5           | 23,6           |                                                                                         | 33,4                                                               |
| 220              | MJ22<br>× 1,5-4h6h  | 22             | 18,6                           | 19,5             |                  |                   |                  |                  |                  | 26,6           | 36,4           | 37,5           |                                                                                         |                                                                    |
| 240              | MJ24 × 2-4h6h       | 24             | 21,2                           | 20,9             | 29,6             | 39,4              | 40,5             |                  |                  |                |                |                |                                                                                         |                                                                    |