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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 16823.1-1997

**Stress area and bearing area for threaded fasteners
(English Translation)**

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Foreword

This Standard is equivalent to the Japanese standard JIS B 1082-1987 "Stress area and bearing area of threaded fasteners".

This Standard is part of the series of standards for the design of torsion-tension relationship of threaded fasteners. The series of standards include:

GB/T 16823.1-1997 Stress area and bearing area for threaded fasteners;

GB/T 16823.2-1997 General rules for tightening threaded fasteners;

GB/T 16823.3-1997 Method of tightening test for threaded fasteners.

This Standard was proposed by Ministry of Machinery Industry of the People's Republic of China.

This Standard shall be under the jurisdiction of National Technical Committee on Fasteners of Standardization Administration of China.

Drafting organizations of this Standard: Machinery Standardization Research Institute of the Ministry of Machinery Industry is responsible for the drafting, and Standard Parts Research Institute of Dongfeng Motor Corporation participates in the drafting.

Stress area and bearing area for threaded fasteners

1 Scope

This Standard specifies the stress area of threaded fasteners (hereinafter referred to as stress area) and the area of the load-bearing part of the bearing surface (hereinafter referred to as bearing area).

The stress area applies to the stress calculation of external threads and also to the calculation of the guaranteed load of internal threads. The thread dimensions and tolerances shall comply with GB 193, GB 196 and GB 197.

2 Normative references

The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. At the time of publication, the editions indicated are valid. All standards are subject to revision. The parties who are using this Standard shall explore the possibility of using the latest version of the following standards.

GB 8-88 Square head bolts - Product grade C

GB 67-85 Slotted pan head screws

GB 70-85 Hexagon socket cap head screws

GB 152.2-88 Fasteners - Countersinks for countersunk head screws

GB 152.3-88 Fasteners - Counterbores for hexagon socket head screws and slotted cheese head screws

GB 152.4-88 Fasteners - Counterbores for hexagon bolts and nuts

GB 193-81 General purpose screw threads - Diameters and pitches

GB 196-81 General purpose screw threads - Basic dimensions for diameter from 1 to 600 mm

GB 197-81 General purpose screw threads - Tolerances and fits for diameter from 1 to 355mm

GB 818-85 Cross recessed pan head screws

GB 3104-82 Fasteners - Widths across flats of hexagon products

GB 5276-85 Fasteners - Bolts, screws, studs and nuts - Symbols and designations of dimensions

GB 5277-85 Fasteners - Clearance holes for bolts and screws

GB 5787-86 Hexagon flange bolts - Product grade B

3.1 Calculation of stress area, see formula (1) and (2). If there is no special requirement,

take 3 significant figures.

where: A_s - stress area of thread, mm²;

d - basic dimension of major diameter of external thread, mm;

d_2 - basic dimension of pitch diameter of thread, mm;

d_3 - basic dimension of minor diameter of thread (d_1) minus $1/6$ of height of the original triangle of thread (H), i.e.: mm;

H - height of the original triangle of thread ($H = 0.866025 P$), mm;

P - pitch, mm;

π - Pi, $\pi = 3.1416$.

3.2 Stress area values

The stress area (A_s) values of coarse pitch threads M1 ~ M68 (GB 193) and fine pitch threads M8x1 ~ M130x6 (GB 193) are shown in Table 1.

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