

Prevailing torque type wire thread inserts —

Part 1: Specification for ISO metric coarse pitch threads

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The preparation of this British Standard was entrusted by the General Mechanical Engineering Standards Policy Committee (GME/-) to Technical Committee GME/9, upon which the following bodies were represented:

- BEAMA Ltd.
- British Constructional Steelwork Association Ltd.
- British Industrial Fasteners' Federation
- British Steel Industry
- British Steel Industry (Wire Section)
- Gauge and Tool Makers' Association
- Society of Motor Manufacturers and Traders Ltd.
- Washer Manufacturers' Association of Great Britain

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Defence Manufacturers' Association
- General Municipal Boilermaker and Allied Trades Union
- Screw Thread Tool Manufacturers' Association
- Society of British Aerospace Companies Limited

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16653	31 October 2006	Changed values in Tables 2 and 3

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Foreword

This Part of BS 7751 has been prepared under the direction of the General Mechanical Engineering Standards Policy Committee.

It is a Part of a series for prevailing torque wire thread inserts.

BS 7751-2 provides a specification for ISO metric fine pitch threads.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Part of BS 7751 specifies requirements for prevailing torque wire thread inserts which, when fitted into an appropriately prepared hole, will:

- a) provide ISO metric coarse pitch female threads of tolerance class 5H or 6H in the free running coils with sizes from M2.2 to M39 inclusive;
- b) accept ISO metric male threads conforming to BS 3643-1:1981 and BS 3643-2:1981;
- c) give a frictional resistance to rotation of a male threaded component assembled with it, of such a value that the insert assembly is considered self locking;
- d) operate successfully in the temperature range $-50\text{ }^{\circ}\text{C}$ to $+300\text{ }^{\circ}\text{C}$.

NOTE ISO metric MJ threads conforming to BS 6293-1 and BS 6293-2 may be used with these inserts.

2 References

2.1 Normative references

This Part of BS 7751 incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies; any subsequent amendments to or revisions of the cited publication apply to this Part of BS 7751 only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited publication applies, together with any amendments.

2.2 Informative references

This Part of BS 7751 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Definitions

For the purposes of this Part of BS 7751, the following definitions apply.

3.1

prevailing torque type wire thread insert

a wire thread insert which, when installed in a hole tapped in accordance with BS 4377:1991, will provide a female thread containing a prevailing torque element. The frictional resistance of the prevailing torque element is of such a value that the insert is considered screw locking

3.2

prevailing torque element (locking device)

the coil(s) of the insert designed to impose friction between the insert and the installed male thread

3.3

prevailing (locking) torque

the torque to be applied to maintain rotation of the male part relative to the installed insert when the assembly is under no axial load and the thread of the male part is fully engaged with the locking element

NOTE There is no permanence of prevailing torque for indefinite reusability. The reusability should be determined by the application.

4 Dimensions

4.1 Insert wire profile

The dimensions of the insert wire profile when it is in the finished coiled state shall be in accordance with Table 1 and Figure 1.

4.2 Unfitted insert

The dimensions of an unfitted insert shall be in accordance with Table 2 and Figure 2.

The surface roughness of the insert wire in the finished coiled state shall not exceed $8\text{ }\mu\text{m}$.

NOTE 1 Minimum contact pressure is to be used when measuring the insert outside diameter to avoid distortion of the insert.

NOTE 2 Ignore any reduced leading coil if it is present when measuring the insert outside diameter.

NOTE 3 Since the relationship between the insert unfitted length and the number of coils is interdependent with coiling tension, the number of coils N is given for identification purposes only.

NOTE 4 The notch depth is to be sufficient to allow the tang to be broken off cleanly with a sharp blow after installation and then permit the through passage of a male threaded component.

4.3 Locking coils (prevailing torque element)

The coils which form the locking element shall be contained within the limits specified in Table 3 and Figure 3.

NOTE The number, shape and orientation of the locking coils, the spacing between the locking coils and the number of faces on the locking coils are the sole responsibility of the manufacturer.

Table 1 — Dimensions of insert wire profile in finished coiled state

Dimensions in millimetres

Thread size		<i>X</i>		<i>W</i>		<i>T</i>		<i>E</i>	
diameter	pitch	min.	max.	min.	max.	min.	max.	min.	max.
M2.2	0.45	0.333	0.340	0.445	0.488	0.323	0.394	0.274	0.292
M2.5	0.45	0.333	0.340	0.445	0.488	0.323	0.394	0.274	0.292
M3	0.5	0.368	0.378	0.490	0.541	0.358	0.437	0.307	0.325
M3.5	0.6	0.445	0.455	0.594	0.650	0.432	0.526	0.368	0.389
M4	0.7	0.521	0.531	0.691	0.757	0.503	0.612	0.434	0.455
M4.5	0.75	0.559	0.569	0.737	0.813	0.538	0.655	0.467	0.488
M5	0.8	0.597	0.607	0.785	0.866	0.574	0.701	0.500	0.521
M6	1	0.744	0.757	0.986	1.082	0.716	0.874	0.625	0.650
M7	1	0.744	0.757	0.986	1.082	0.716	0.874	0.625	0.650
M8	1.25	0.935	0.947	1.242	1.354	0.897	1.095	0.787	0.813
M10	1.5	1.125	1.138	1.501	1.623	1.077	1.313	0.950	0.975
M12	1.75	1.311	1.326	1.760	1.895	1.255	1.532	1.105	1.135
M14	2	1.501	1.516	2.002	2.164	1.435	1.750	1.267	1.298
M16	2	1.501	1.516	2.002	2.164	1.435	1.750	1.267	1.298
M18	2.5	1.880	1.895	2.497	2.705	1.793	2.187	1.590	1.623
M20	2.5	1.880	1.895	2.497	2.705	1.793	2.187	1.590	1.623
M22	2.5	1.880	1.895	2.497	2.705	1.793	2.187	1.590	1.623
M24	3	2.258	2.273	3.028	3.249	2.151	2.624	1.915	1.948
M27	3	2.258	2.273	3.028	3.249	2.151	2.624	1.915	1.948
M30	3.5	2.634	2.652	3.528	3.790	2.512	3.063	2.238	2.273
M33	3.5	2.634	2.652	3.528	3.790	2.512	3.063	2.238	2.273
M36	4	3.012	3.030	4.056	4.331	2.870	3.500	2.563	2.598
M39	4	3.012	3.030	4.056	4.331	2.870	3.500	2.563	2.598