

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 296

SELF-HOLDING TAPERS FOR TOOL SHANKS

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BRIEF HISTORY

The ISO Recommendation R 296, *Self-holding Tapers for Tool Shanks*, was drawn up by Technical Committee ISO/TC 39, *Machine Tools*, the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question by the Technical Committee began in 1950, taking into account the studies which had been made by the former International Federation of the National Standardizing Associations (ISA), and led, in 1955, to the adoption of a Draft ISO Recommendation.

In July 1960, this Draft ISO Recommendation (No. 388) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Argentina	Hungary	Portugal
Belgium	India	Romania
Chile	Israel	Spain
Colombia	Italy	Sweden
Czechoslovakia	Japan	Switzerland
Denmark	Netherlands	United Kingdom
France	New Zealand	U.S.A.
Germany	Poland	U.S.S.R.

One Member Body opposed the approval of the Draft:

Australia.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in March 1963, to accept it as an ISO RECOMMENDATION.

SELF-HOLDING TAPERS FOR TOOL SHANKS

1. INTRODUCTION

Tapers for tool shanks with a small taper of about 4 to 5 per cent may be classified into three categories according to their use:

- (1) tapers for general use,
- (2) smaller tapers,
- (3) larger tapers.

For the first category, tapers recommended by ISO are No. 1 to 6 Morse tapers. Their standard sizes in millimetres are given in Table 1, pages 5–6, and the corresponding sizes in inches are given in Table 2, pages 7–8.

For smaller and larger tapers, those recommended by ISO are, on the one hand, No. 4 and 6 metric 5 per cent tapers and No. 0 Morse taper, on the other hand, No. 80 to 200 metric 5 per cent tapers. Their sizes, in millimetres only, are given for the Morse taper in Table 1, pages 5–6, and for the metric tapers, in Table 2, pages 7–8.

However, it was agreed to include, in the category of small tapers No. 1 to 3 Brown & Sharpe tapers in parallel. Their sizes, in inches only, are given in Table 2, pages 7–8.

Consequently, as shown in the table below, self-holding tapers dealt with in this ISO Recommendation include:

- (1) for general use, only No. 1 to 6 Morse tapers;
- (2) for sizes above No. 6 Morse taper, only No. 80 to 200 metric tapers (without corresponding tapers in the inch tables);
- (3) for sizes below No. 1 Morse taper, two solutions: either, No. 4 and 6 metric tapers and No. 0 Morse taper (without corresponding tapers in the inch Table 2) or, alternatively, No. 1 to 3 Brown & Sharpe tapers (without corresponding tapers in the metric Table 1).

Designation	Sizes in millimetres	Sizes in inches
Small tapers	No. 4 and 6 metric and No. 0 Morse	No. 1 to 3 Brown & Sharpe
Tapers for general use	No. 1 to 6 Morse	
Large tapers	No. 80 to 200 metric	

Lastly, this ISO Recommendation provides, for those elements which are threaded, two entirely distinct types of products, according to the type of thread, **M** or **UNC**.

In order to distinguish between these two types, it is important that the element itself be marked with the corresponding thread symbol, each national standards body being free to adopt, in its national standard, either of the two threads.

2. INTERCHANGEABILITY

- 2.1 Due to the fact that each national standards body is left free to adopt in its national standard, for small tapers below No. 1 Morse taper, either the solution “Metric tapers and No. 0 Morse taper” or the alternative “Brown & Sharpe”, in this limited field of small tapers interchangeability will be possible only between countries that have adopted the same one of those two solutions.
- 2.2 Due to the fact that each national standards body is also left free to adopt in its national standard, for external tapers with tapped holes, either the **M** thread or the **UNC** thread, interchangeability will be possible, with this type of external taper, only between countries that have adopted the same one of those two types of thread.
- 2.3 On the other hand, for all sizes other than for threads, the No. 1 to 6 Morse tapers, manufactured either to metric values or to inch values, are strictly interchangeable, though not absolutely identical. Acceptance conditions, if provided for in national standards, should therefore be such that they should allow the acceptance of either the tapers specified in metric units or the tapers specified in inch units.