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Diesel engines — Fuel injection pumps — Tapers for shaft ends and hubs

Moteurs diesels — Pompes d'injection de combustible — Cônes pour bouts d'arbre et moyeux

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Foreword

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This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 34, *Propulsion, powertrain and powertrain fluids*.

This fifth edition cancels and replaces the fourth edition (ISO 6519:2015), which has been technically revised.

The main changes are as follows:

— a specification of shaft end was added;

— technical description errors were corrected.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

To install the fuel injection pump or the high-pressure supply pump to the engine it is recommended to use one of the pump shaft ends and hubs described in this document.

Diesel engines — Fuel injection pumps — Tapers for shaft ends and hubs

1 Scope

This document specifies the dimensions of tapered shaft ends and hubs of fuel injection pumps and high-pressure supply pumps for diesel (compression-ignition) engines. The specified shaft ends and hubs can be used with or without keys.

NOTE The specified shaft ends and hubs can also be used for other applications where no specific standards exist.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Dimensions and tolerances

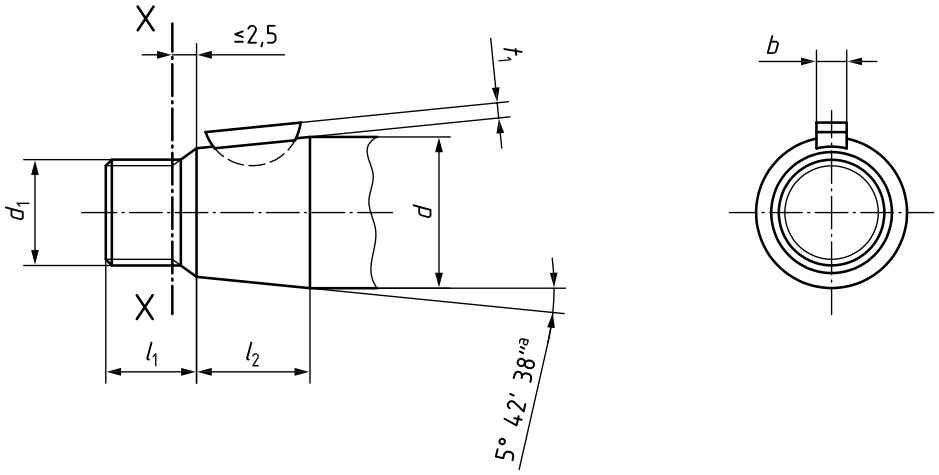
4.1 General

To ensure satisfactory operation of the taper drive, it is necessary for manufacturers to provide such cone angle tolerances that the contact between the cones of driven shaft and that of drive hub commences at the major diameter.

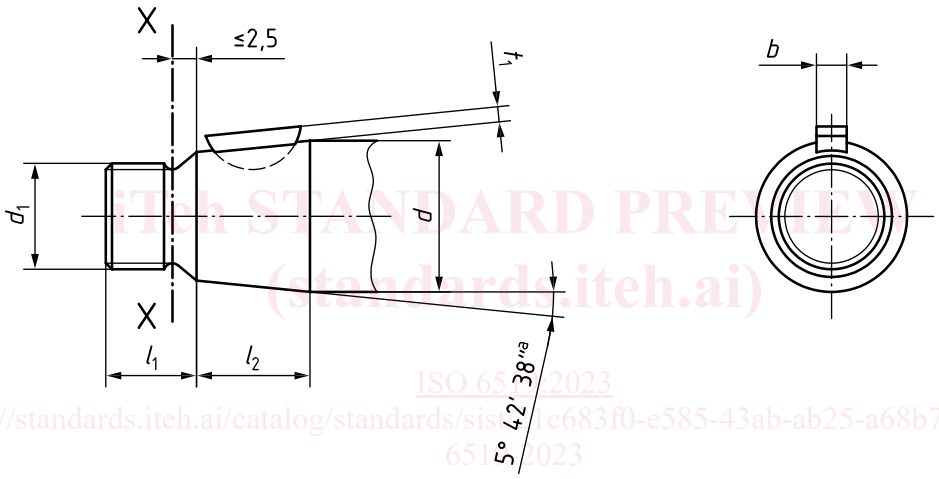
4.2 Shaft ends with taper

Shaft ends shall be as shown in Figure 1 and Table 1 or Figure 2 and Table 2. The shaft ends taper and thread (Figure 1) may be made optionally according to type 1 or 2. However, it shall be possible to screw the go-gauge for the thread up to the XX line for both these types.

Dimensions in millimetres



a) Type 1



b) Type 2

[a] Nominal.

Figure 1 — Shaft ends type 1 and type 2

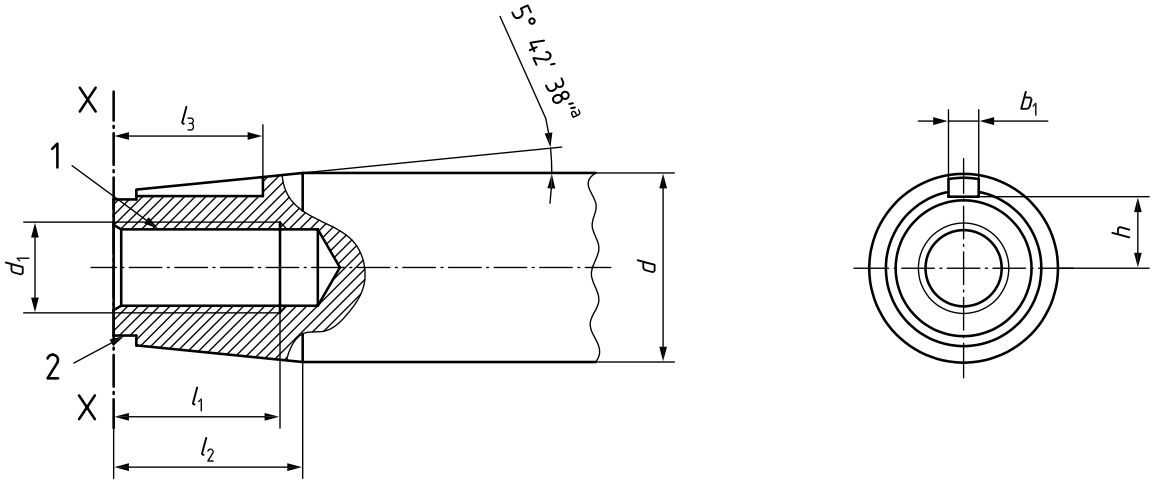
Table 1 — Shaft ends type 1 and type 2

Dimensions in millimetres

d [a] nominal	d_1	l_1 maximum	l_2 $^{0}_{-1}$	t_1 maximum	b (h9)
17	M12×1,75	14,5	18	1,6	$3\,^{0}_{-0,03}$
20	M14×1,5	12	15	2,0	$4\,^{0}_{-0,03}$
		16,5	20		
22	M14×1,5	16,5	20	2,0	$4\,^{0}_{-0,03}$
	M16×1,5 [b]	18			
23	M16×1,5	18	23	2,0	$4\,^{0}_{-0,03}$
25	M18×1,5	15	25	2,6	$5\,^{0}_{-0,03}$
		20			
30	M20×1,5	23	30	2,6	$5\,^{0}_{-0,03}$
35	M24×1,5	19	27	2,6	$5\,^{0}_{-0,03}$
		27			
		27	35		
40	M30×1,5	27	27	2,6	$5\,^{0}_{-0,03}$
			40		

[a] The tolerance for dimension d depends on the type of shaft bearing.

[b] The thread M16×1,5 is preferred for shaft ends with 22 mm diameter.



Key

1 internal thread

2 clamping collar (for manufacturing purpose only, no function at the engine)

[a] Nominal.

Figure 2 — Shaft ends type 3

Table 2 — Shaft ends type 3

Dimensions in millimetres

d [a] nominal	d_1	l_1 minimum	l_2 [b]	l_3	b_1 [b] nominal	h
25	M12×1 M12×1,75	22	25	19,75	4	9,45

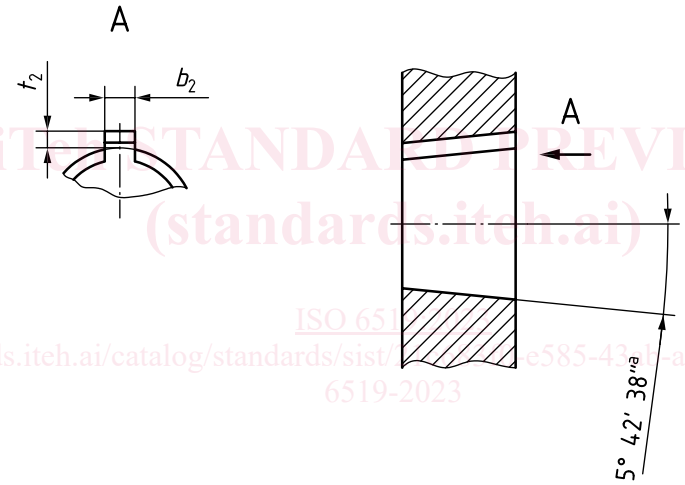
[a] The tolerance for dimension d depends on the type of shaft bearing.

[b] The tolerance for dimension l_2 and b_1 should be agreed between the parties concerned.

4.3 Keyways of hub with taper

Hub keyways shall be as shown in Figure 3 and Table 3. The length of the hub cone shall be such that, after assembling, the face at the smaller diameter of the hub cone lies so far in front of the XX line (see Figure 1 and Figure 2) that the fixing nut can be correctly screwed up.

The key type for type 3, parallel or tapered, its width tolerance, and the hub keyway shape, width and its tolerance should be agreed between the parties concerned.



[a] Nominal.

Figure 3 — Hub

Table 3 — Hub

Dimensions in millimetres

d [a] nominal	t_2 minimum	b_2 (D10)
17	1,8	$3^{+0,060}_{+0,020}$
20	2,2	$4^{+0,078}_{+0,030}$
22	2,2	$4^{+0,078}_{+0,030}$

[a] d is the nominal diameter of the shaft.