INTERNATIONAL STANDARD

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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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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 22, *Road vehicles*, Subcommittee SC 34, *Propulsion, powertrain, and powertrain fluids*.

This fourth edition cancels and replaces the third edition (ISO 6519:2004), which has been technically revised.

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

1 Scope

This International Standard specifies the dimensions of tapered shaft ends and hubs of fuel injection pumps and common-rail high pressure pumps for diesel (compression-ignition) engines.

The specified shaft ends and hubs may be used with or without Woodruff keys.

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

2 Dimensions and tolerances

2.1 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 male and female cones commences at the major diameter.

2.2 Shaft ends with taper

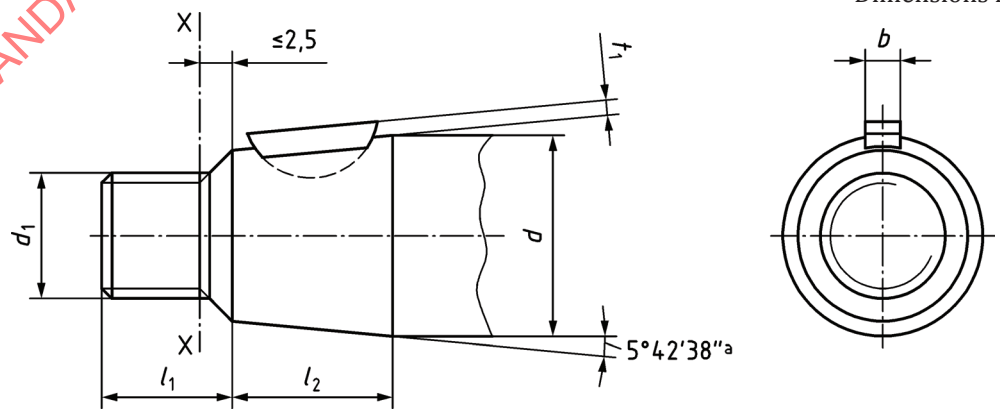
Shaft ends shall be as shown in Figure 1 and Table 1 or Figure 2 and Table 2. The shaft ends taper and thread (Figure 1) may be made optionally according to type 1 or 2. However, it shall be possible to screw the go-gauge for the thread up to the XX line for both these types.

Type 3 is a configuration with the thread inside of the taper. This configuration saves space and avoids the critical interface between the taper and the thread of the configuration type 1 or 2.

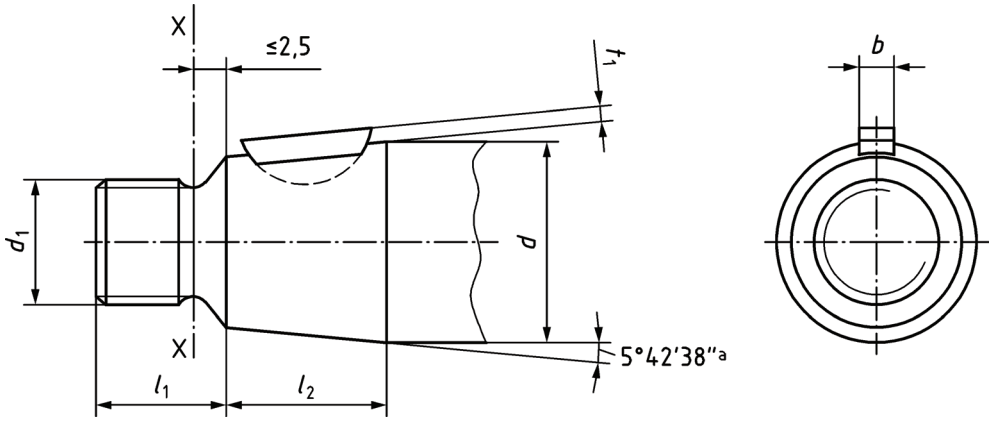
2.3 Keyways of hub with taper

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.

Dimensions in millimetres



a) Type 1



b) Type 2

Figure 1 — Shaft ends type 1 and type 2

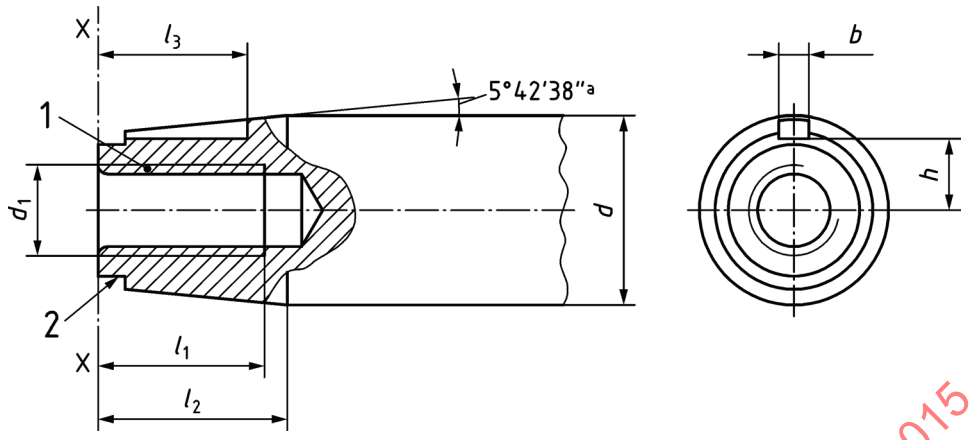
Table 1 — Shaft ends type 1 and type 2

Dimensions in millimetres

d[a] nom.	d_1	l_1 max.	l_2 0 -1	t_1 max.	b (h9)
17	M12 × 1,75	14,5	18	1,6	$3^{0}_{-0,025}$
20	M14 × 1,5	12	15	2	$4^{0}_{-0,03}$
		16,5	20		
22	M14 × 1,5	16,5	20	2	$4^{0}_{-0,03}$
	M16 × 1,5[b]	18			
23	M16 × 1,5	18	23	2	$4^{0}_{-0,03}$
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 purposes only, no function at the engine)

a Nominal.

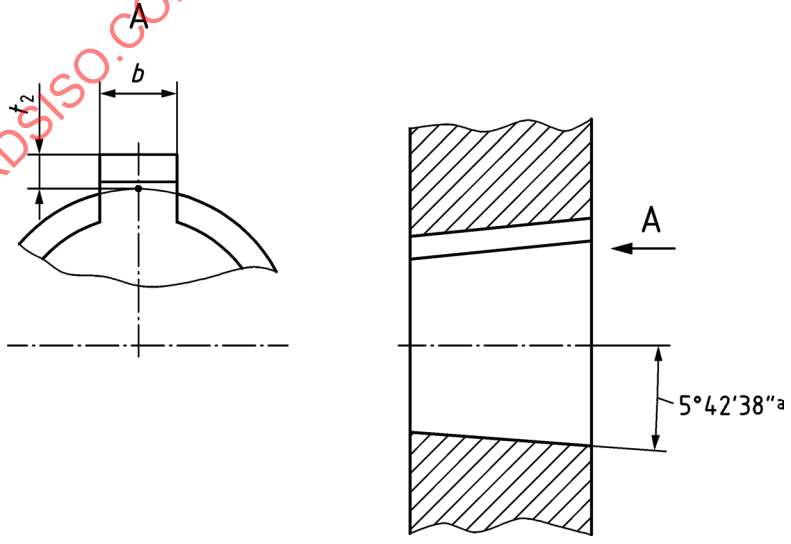
Figure 2 — Shaft end type 3

Table 2 — Shaft end type 3

Dimensions in millimetres

d^a nom.	d_1	l_1 min.	l_2 0 -1	l_3	b (h9)	h
25	M12 × 1	22	25	19,75	$4^{0}_{-0,03}$	9,45

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



a Nominal.

Figure 3 — Hub

Table 3 — Hub

Dimensions in millimetres

d^a nom.	t_2 min.	b (D10)
17	1,8	$3^{+0,06}_{+0,02}$
20	2,2	$4^{+0,078}_{+0,030}$
22	2,2	$4^{+0,078}_{+0,030}$
23	2,2	$4^{+0,078}_{+0,030}$
25	2,8	(4 or 5) $^{+0,078}_{+0,030}$
30	2,8	$5^{+0,078}_{+0,030}$
35	2,8	$5^{+0,078}_{+0,030}$
40	2,8	$5^{+0,078}_{+0,030}$

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