

Submitted for recognition as an American National Standard

## Cross-Tooth Companion Flanges, Type T

1. **Scope**—This SAE Standard specifies the nominal dimensions and tolerances which affect interchangeability between cross-tooth companion flanges type T and mating parts. Dimensions and tolerances of the mating parts, other than those occurring at the interface of the two flanges, are left to the discretion of the manufacturer of that component. This document is equivalent to ISO 8667-1992.
2. **References**
  - 2.1 **Applicable Publications**—The following publications form a part of this specification to the extent specified herein. Unless otherwise specified, the latest issue of SAE publications shall apply.
    - 2.1.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J1946—Companion Flanges, Type A (External Pilot) and Type S (Internal Pilot)
    - 2.1.2 ISO PUBLICATION—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ISO 8667-1992—Commercial vehicles and buses—Cross-tooth gearbox flanges, type T
  3. **Dimensions and Tolerances**—Nominal dimensions and tolerances which affect the interchangeability of type T companion flanges shall be as shown in Table 1 and Figure 1. Where the flange is formed by forging, an additional groove on either side of the driving teeth is permissible. In this case, the additional grooves do not form part of the drive.
  4. **Designation**—Gearbox flanges meeting the requirements of this document shall be identified by the following details in the order specified.
    - a. Reference to this document
    - b. Type Code—T
    - c. Size— $d_1$

EXAMPLE—Designation of a type T gearbox flange with  $d_1 = 150$  mm:

Flange J1945 - T 150

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**SAE J1945 Revised APR2000**

NOTE—Companion flanges types A and S, as specified in SAE J1946, are designed for force-locking (friction) torque transmission. Their capacity for torque transmission is determined by the size of the flange and the bolts. As static or dynamic torque loads increase, however, a point is reached where these flanges are inadequate and there is a need for form-locking components.

This form-locking flange joint has been developed to avoid the need to increase the size of the flange or bolts, while achieving the required performance or to simplify assembly.

The flange joint specified in this document requires only four bolts, which are smaller than those in comparable flanges shown in SAE J1946. The driveshaft flange and the companion flange center themselves through the groups of teeth which intersect at 70 degrees. The torque is transmitted through the teeth and the resultant axial force, which must be carried by the bolts, is relatively low.

The teeth can be produced on a universal milling machine with special cutters for short production runs, while for mass production, the use of a surface broaching machine is envisaged. The simple tooth form can be measured easily, thus ensuring interchangeability between components made by different manufacturers.

**TABLE 1—DIMENSIONS AND TOLERANCES (APPLICABLE TO FIGURE 1)**  
dimensions and tolerances in mm

Size	D <sub>1</sub> 0 -1.0	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub> <sup>(1)</sup> 0 -0.2	G 0 -0.5	d <sub>1</sub> +0.2 0	d <sub>2</sub> ±0.2
0	120	100	75	83	10	11	13
1	150	130	95	111	12	13	15
2	165	140	105	121	12	13	15
3	180	150	105	128	14	15	17
4	200	165	125	143	16	15	17

1. The dimensions shall be applied when required to prevent bolts from rotating.
2. Seven grooves are optionally permitted for size 120. In this case, the width of the tooth segment shall be 7 x 6.8 = 47.6 mm instead of 9 x 6.8 = 61.2 mm.
3. For certain applications, diameters d = 122 mm and 155 mm may be required subject to agreement between manufacturer and customer.

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DIMENSIONS AND TOLERANCES IN MILLIMETERS  
SURFACE ROUGHNESS IN MICROMETERS

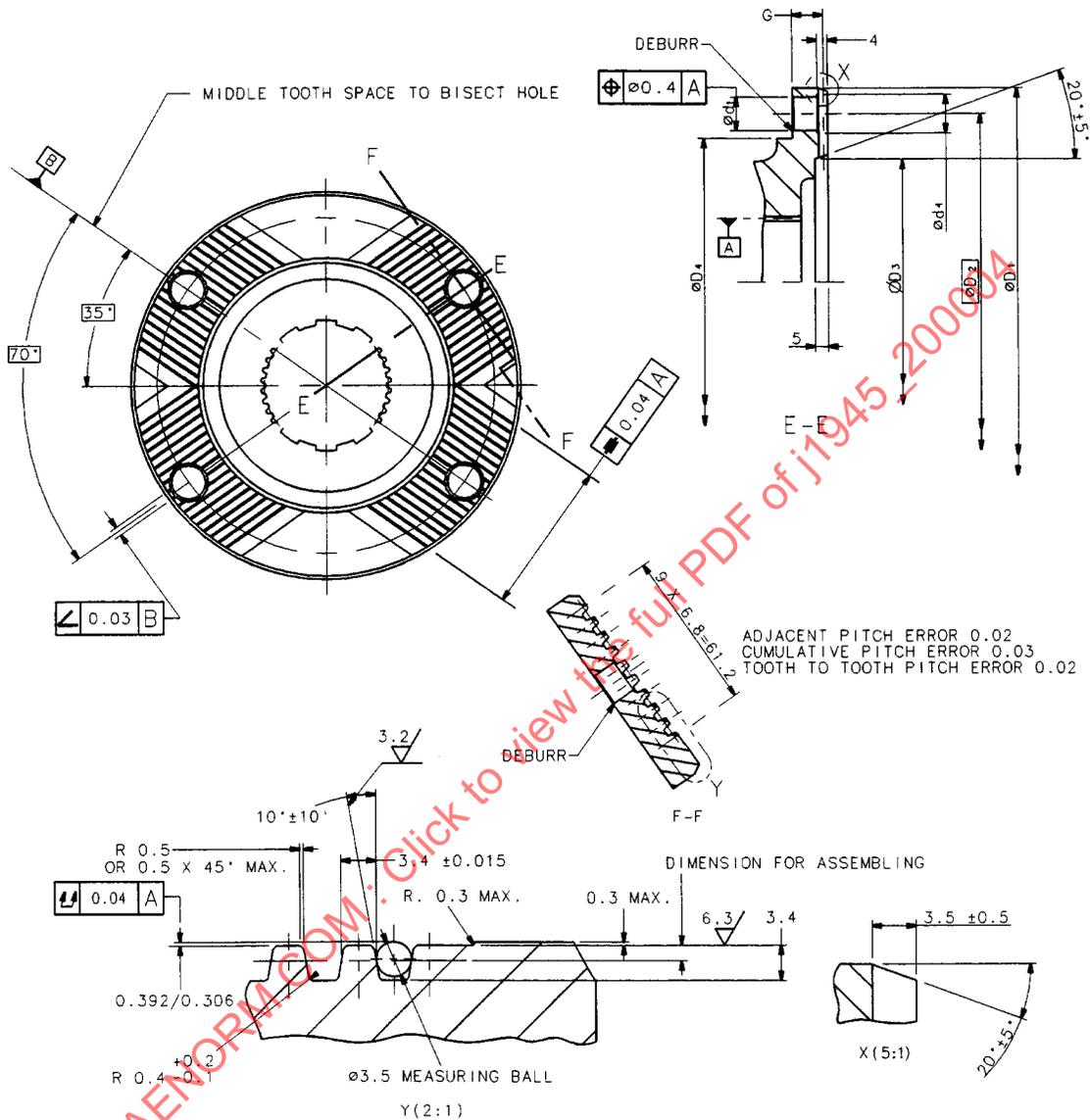


FIGURE 1—TYPE T COMPANION FLANGE

5. Notes

5.1 **Marginal Indicia**—The change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. An (R) symbol to the left of the document title indicates a complete revision of the report.

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