SAE International™

SURFACE VEHICLE STANDARD

J1945	CANCELLED AUG2006
Issued 1990-01 Cancelled 2006-08 Superseding J1945 APR2000	

Cross-Tooth Companion Flanges, Type T

RATIONALE

The comparison table below reveals that SAE J1945 is equivalent to ISO 8667. The dimensional differences do not justify the need of both standards. However, the tolerance called out by SAE J1945 standard causes manufacturability issue, which makes ISO 8667 the preferred standard.

Dimension / Item	SAE J1945	ISO 8667	Comments
Latest revision	2000	1992	
Graphics quality	Good	Average	SAE cleaner and sharper
Outer diameter	D1	d1	Identical
Bolt circle diameter	D2	d2	Identical
Inner diameter	***D3***	***d3***	***ISO dimension 7 mm larger***
Tooth length			***SAE 7 mm longer, but does not affect interchangeability***
Machined back diameter	D4	d4	Identical
Flange width	G	I	Identical
Hole diameter	d1	d5	Identical
Hole chamfer	d2	none	Not specified by IS0
Other dimensions			Identical
Tolerances	***Total run-out is 0.04***	***Circular run-out is 0.12***	***Some manufacturers reported that the SAE J1945 tolerance is not feasible***
Footnotes	3	3	Identical

FOREWORD

This Standard is cancelled. Refer to the similar ISO 8667 for gearbox flanges and Complement with ISO 12667 for propeller shaft flanges.

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.

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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, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J1946 Companion Flanges, Type A (External Pilot) and Type S (Internal Pilot)

2.1.2 ISO Publication

Available from ANSI, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

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

NOTE: Companion flanges types A and S, as specified in SAE J1946, are designed for forcelocking (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_1 0 -1.0	D_2	D_3 +0.5	D_4 (1) 0 -0.2	G 0 -0.5	d_1 +0.2 0	d_2 ±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.

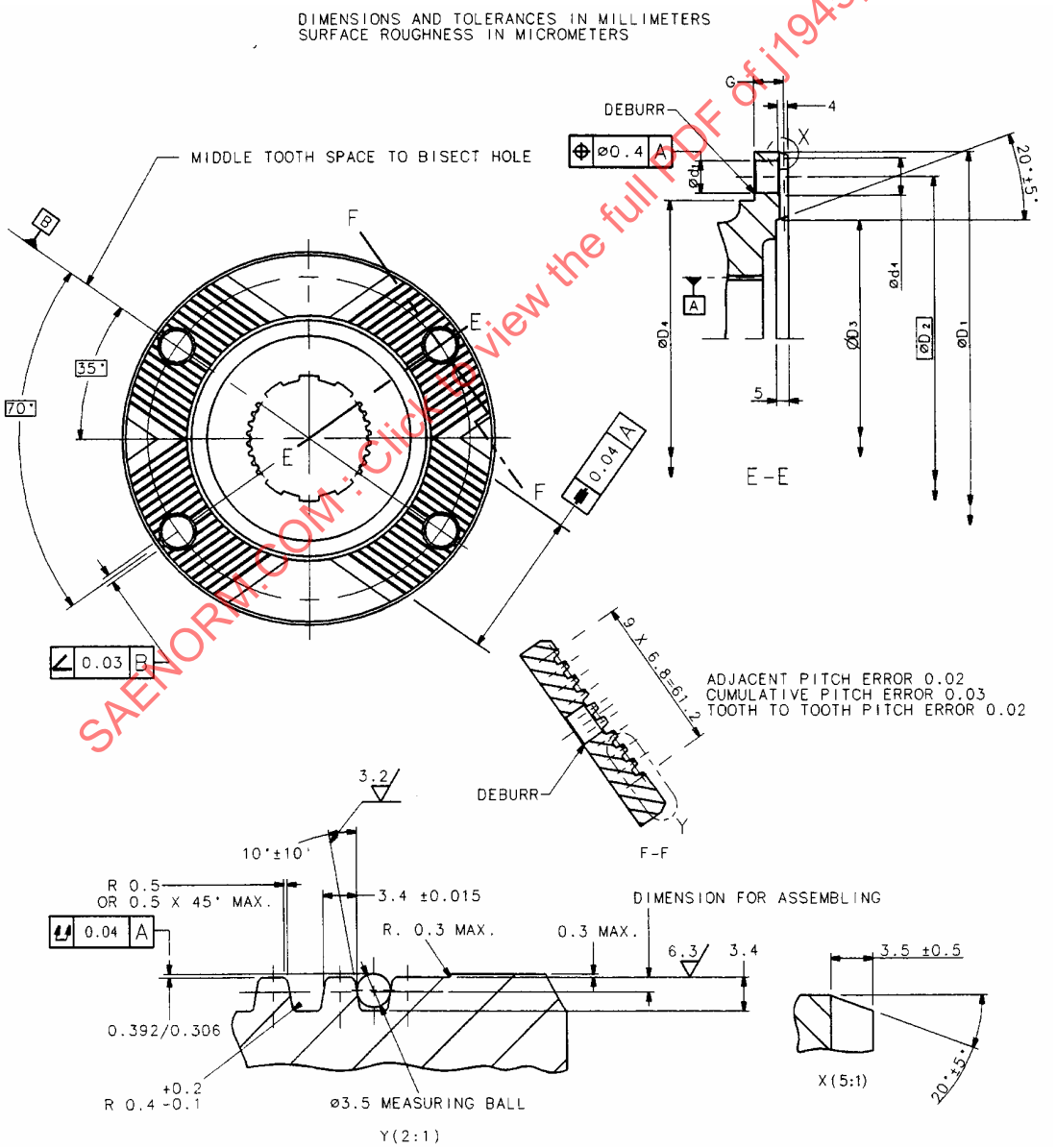

FIGURE 1 - TYPE T COMPANION FLANGE