इंटरनेट मानक

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Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
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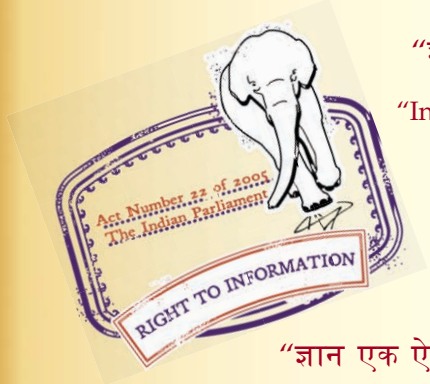
IS 8000-4 (1976): Geometrical tolerancing on technical drawings, Part IV: Practical examples of indications on drawings [PGD 24: Drawings]



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Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

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(Reaffirmed 2005)

UDC 744·43 : 003·62 : 621·753·1

IS : 8000 (Part IV) - 1976

Indian Standard

TOLERANCES OF FORM AND OF POSITION FOR ENGINEERING DRAWINGS

PART IV PRACTICAL EXAMPLES OF INDICATIONS ON DRAWINGS

Drawings Sectional Committee, EDC 20; Drawings Subcommittee, EDC 20 : 1 [Ref : Doc : EDC 20 (1954)]

1. Scope — Shows practical examples of indications on drawings of tolerance of form and of position according to IS : 8000 (Part I)-1976 'Tolerances of form and of position for engineering drawings: Part I Generalities, symbols, indications on drawings'.

1.1 The figures in this standard show only the principle of indications on drawings. The technical correctness of the drawings depends on the functional conditions which apply to the represented parts.

1.2 The drawings are not fully dimensioned; only those dimensions having some relation to the indication of the tolerances of form and of position are shown.

2. Selection of Datum System

2.1 *Datum System on a Crankshaft* (*See* Fig. 1) — The primary datum consists of two equal status diameter datums on the two most widely spaced journals. As each journal has length, form and positional errors may be present, therefore the datums [A] and [B] have been specifically located along the journals, and the remaining portions of each have been given their own form and position errors. This enables the crankshaft to be rotated with knife edged rollers at two specific points to create a common axis of rotation.

2.1.1 The secondary datum is obvious and is the functional axial location of the crankshaft.

2.1.2 The tertiary datum is the orientation or timing location. No. 1 journal was chosen for function, and where position relative to this datum has been prescribed, maximum material condition has been allowed on both primary and tertiary datums. (The secondary datum is a plane surface and therefore maximum material condition is not applicable).

2.1.3 Where rotational geometrical checks have been prescribed the primary datum has been chosen on a regardless of feature size basis because of the knife edged roller principle.

2.1.4 The collective datum principle has been used for features which may be based on three planes mutually square and perpendicular to each other for both function and manufacturing capability. These planes may be deemed to exist not on the part itself, but in the precisely made fixture which would locate the two part primary datum [A] — [B] the secondary plane datum [C] and the tertiary datum [D] under maximum material conditions where applicable.

2.1.5 All geometry prescribed has been oriented to either specific datum or the collective one according to function (and capability).

Adopted 7 February 1976

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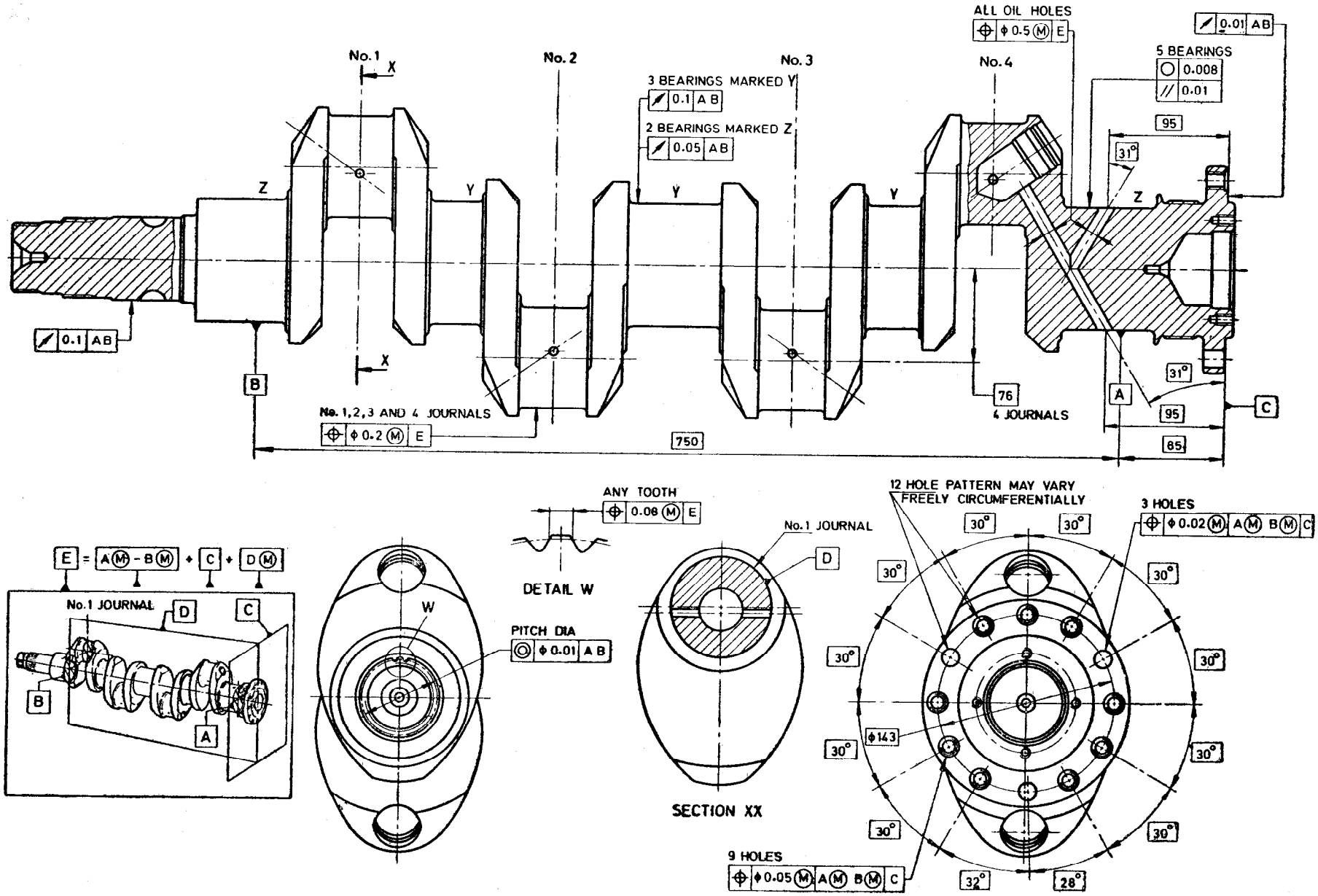

No. 1
No. 2
No. 3
No. 4
X
Y
Z
3 BEARINGS MARKED Y
0.1 A B
2 BEARINGS MARKED Z
0.05 A B
ALL OIL HOLES
φ 0.5 M E
0.01 A B
5 BEARINGS
0.008
0.01
95
31°
0.1 A B
B
No. 1, 2, 3 AND 4 JOURNALS
φ 0.2 M E
750
76
4 JOURNALS
A
C
85
E = A M - B M + C + D M
No. 1 JOURNAL
D
C
B
A
W
ANY TOOTH
0.08 M E
DETAIL W
PITCH DIA
φ 0.01 A B
No. 1 JOURNAL
D
SECTION XX
12 HOLE PATTERN MAY VARY FREELY CIRCUMFERENTIALLY
3 HOLES
φ 0.02 M A M B M C
30°
φ143
9 HOLES
φ 0.05 M A M B M C
32°
28°

FIG. 1

3. Examples

3.1 *Packing Ring of a Pump* (*See* Fig. 2)

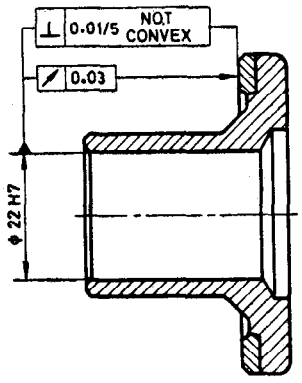


FIG. 2

3.2 *Friction Wheel* (*See* Fig. 3)

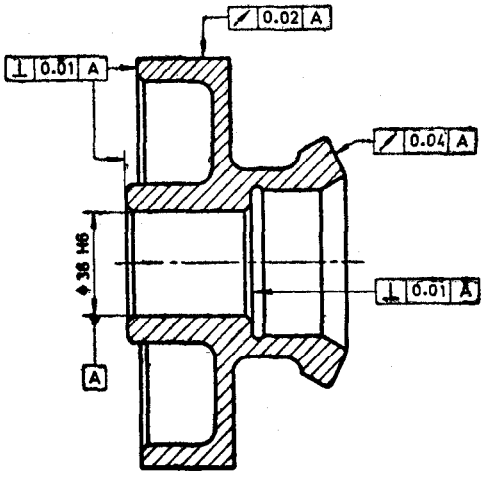


FIG. 3

3.3 *Arbor for Milling Cutter* (*See* Fig. 4)

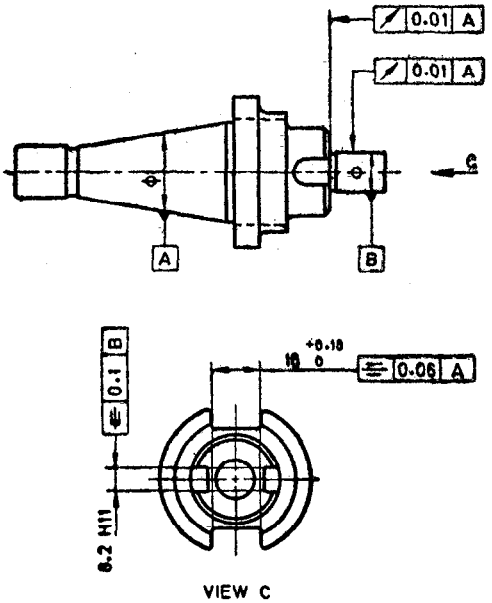


FIG. 4

3.4 *Roller* (*See* Fig. 5)

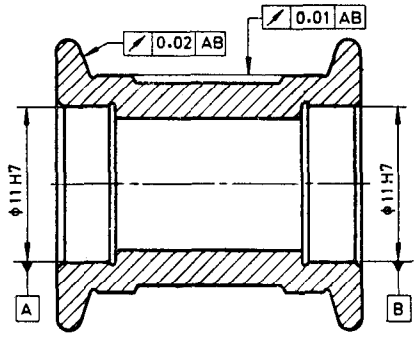


FIG. 5

3.5 *Bearing Housing* (*See* Fig. 6)

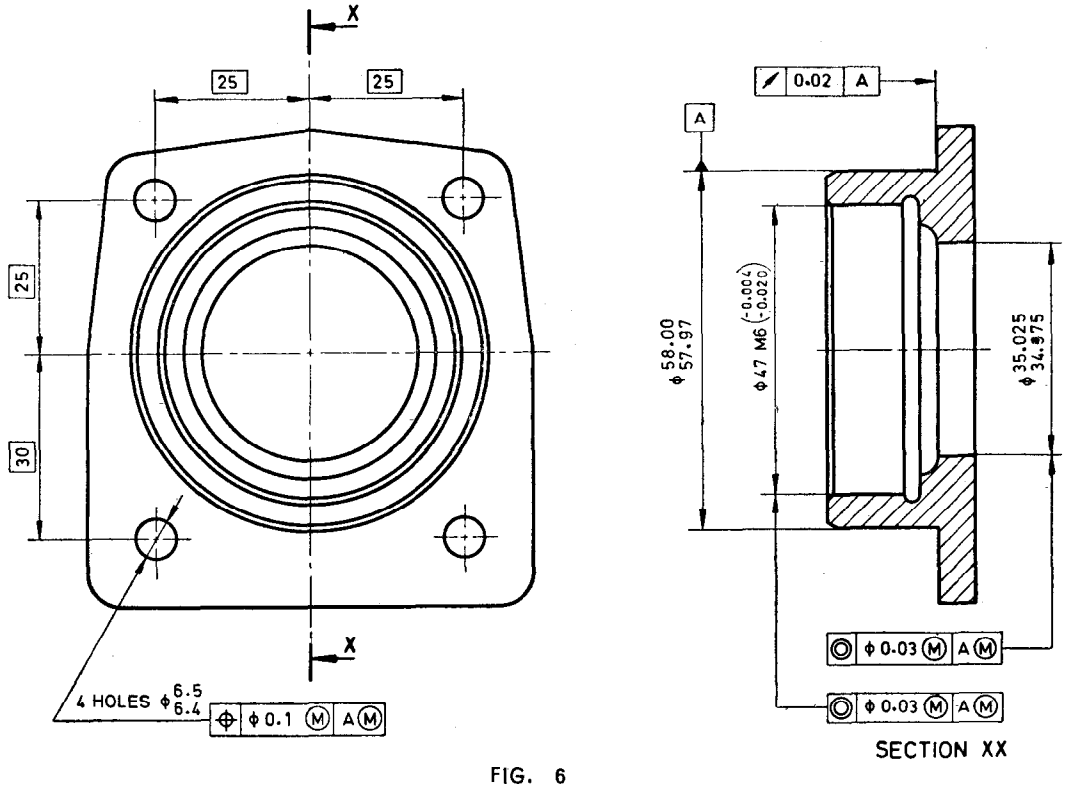


FIG. 6

3.6 *Ball Bearing Inner Ring* (*See* Fig. 7)

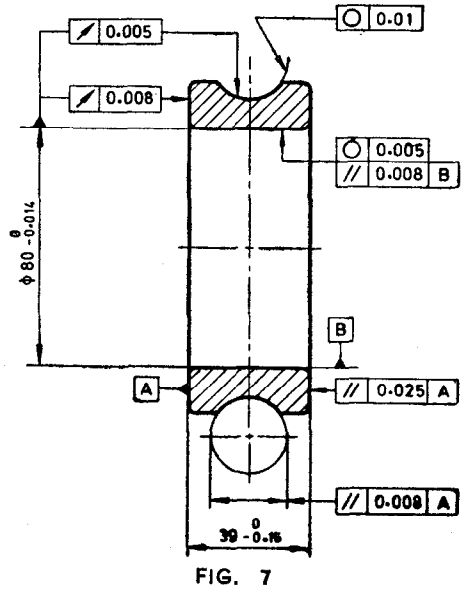


FIG. 7

3.7 *Lever* (*See* Fig. 8)

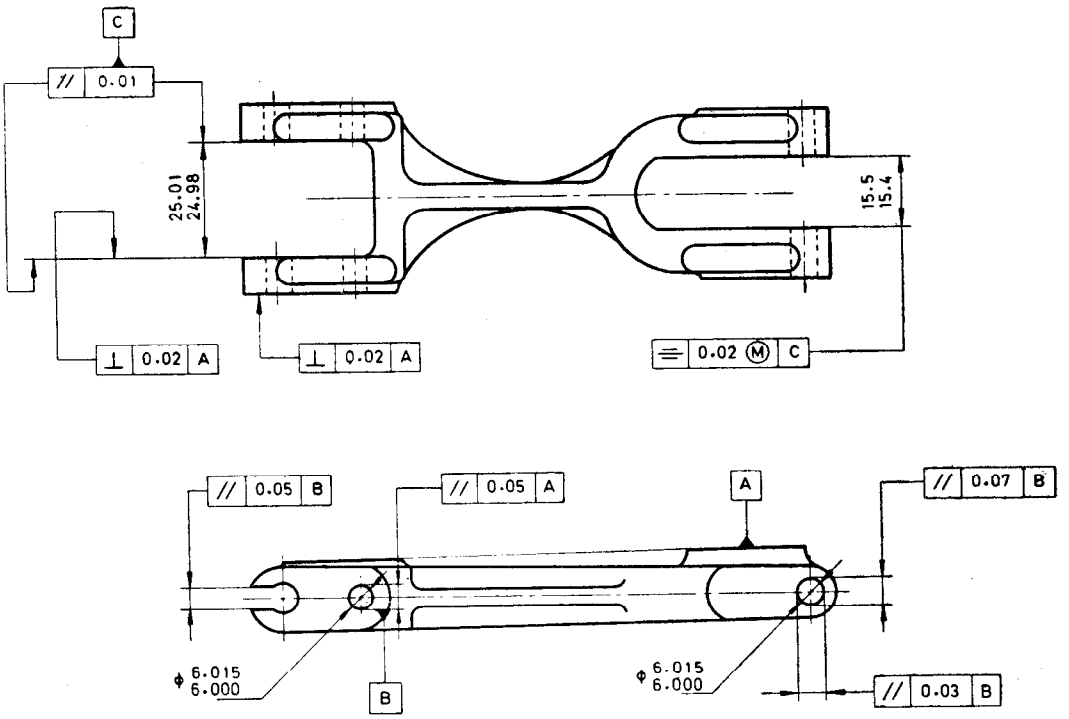


FIG. 8

3.8 *Cam* (*See* Fig. 9)

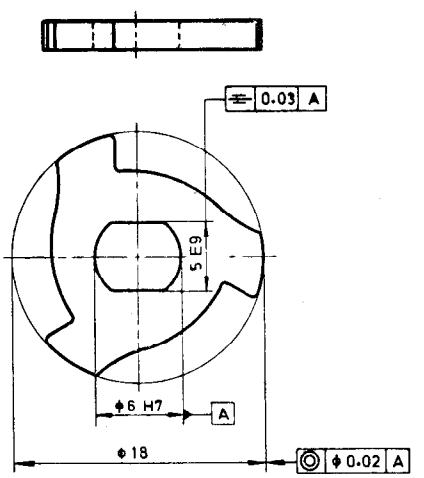


FIG. 9

3.9 *Cam Shaft* (*See* Fig. 10)

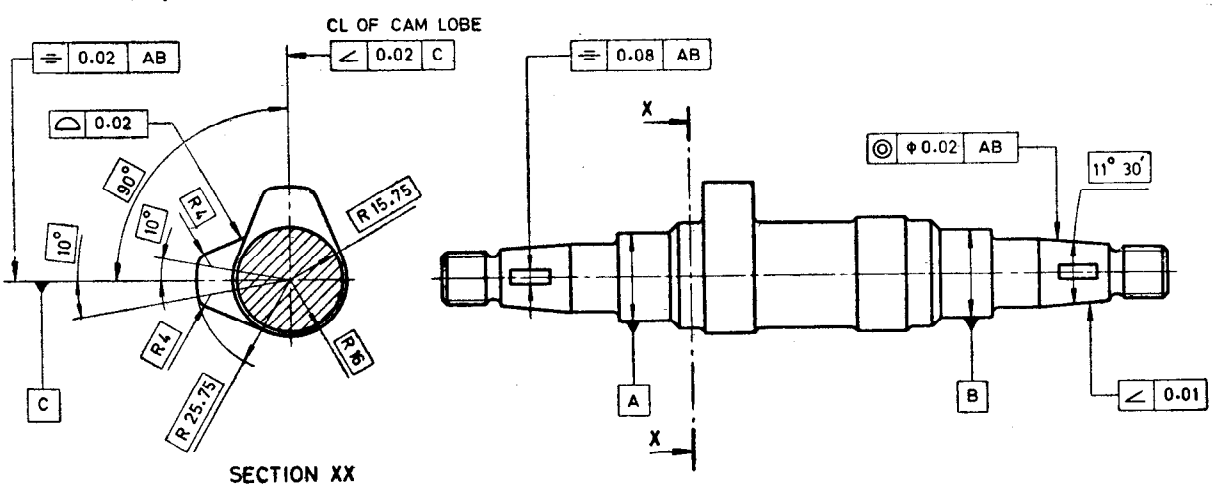


FIG. 10

3.10 *Disc* (*See* Fig. 11)

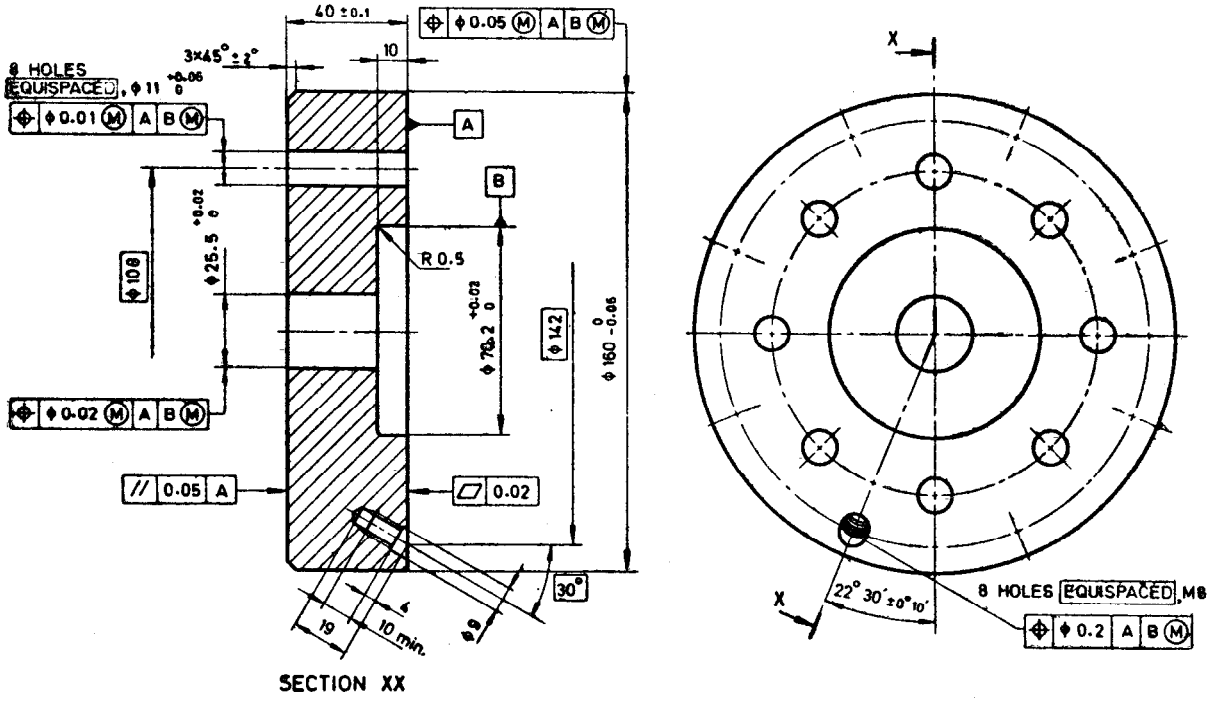


FIG. 11

3.11 *Drilling Jig* (*See* Fig. 12)

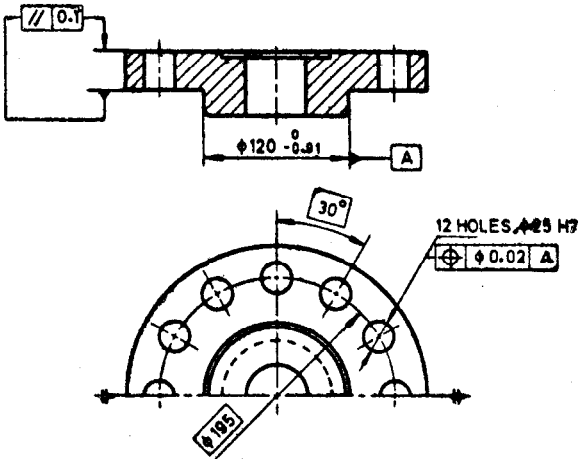
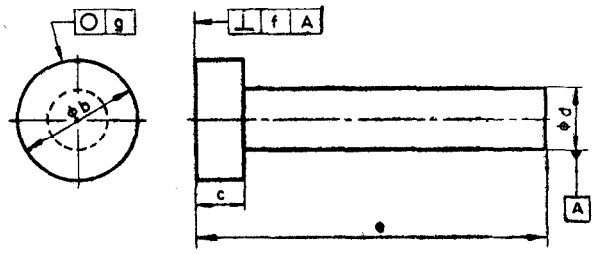


FIG. 12

3.12 *Drawing in Which Dimensions are Shown in Tabular Form* (*See* Fig. 13)



Part Number	Dimensions				Tolerances	
	b	*c*	*d*	*e*	*f*	*g*
1	15	7	8h8	47	0·05	0·005
2	20	8	10h8	58	0·01	0·008
3	30	10	15h9	70	0·02	0·01
4	50	12	25h9	112	0·05	0·015

FIG. 13

3.12.1 In drawings in which dimensions are shown in tabular form, the tolerances of form and of position should be designated by lower case letters in the second compartment of the tolerance frame. The tolerance values should be indicated in the table.

EXPLANATORY NOTE

A section on tolerances of form and of position was included in IS : 696-1960 ' Code of practice for general engineering drawings (*first revision*) ' which was based on the work in progress at that time by ISO/TC 10 Technical drawings. The relevant documents have now been published by ISO as Recommendations. In view of the detailed text and comprehensive scope of these recommendations, the Sectional Committee decided to exclude this subject from the second revision of IS : 696 published in 1972 and to be covered fully in separate Indian Standards. Accordingly, this Indian Standard is based on and is in conformity with ISO/R 1661-1971 ' Technical drawings — Tolerances of form and of position — Part IV Practical examples of indications on drawings', issued by the International Organization for Standardization. Other standards in this series are:

IS : 8000 (Part I)-1976 Tolerances of form and of position for engineering drawings: Part I Generalities, symbols, indications on drawings

IS : 8000 (Part II)-1976 Tolerances of form and of position for engineering drawings: Part II Maximum material principle

IS : 8000 (Part III)-1976 Tolerances of form and of position for engineering drawings: Part III Dimensioning and tolerancing of profile

SP : 13-1976 Guide to the principles of geometrical tolerancing

SP : 13 as mentioned above covers the main principles for the indication of tolerances of form and of position in a simplified form which have been extracted from IS : 8000 (Parts I and II). It is intended to serve as a ready guide for day to day working in drawing offices and shop floors.

Assistance has also been derived from BS 308 ' Engineering drawings practice, Part 3 : 1972 Geometrical tolerancing ', issued by the British Standards Institution.

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TO

IS : 8000 (Part IV) - 1976 TOLERANCES OF FORM AND OF POSITION FOR ENGINEERING DRAWINGS

PART IV PRACTICAL EXAMPLES OF INDICATIONS ON DRAWINGS

(*Page* 1, *title*) — Substitute the following for the existing title:

Indian Standard

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PART IV PRACTICAL EXAMPLES OF INDICATIONS ON DRAWINGS

(EDC 20)

Printed at New India Printing Press, Khurja, India