IS 5980 (1978): Bench Centres [PGD 25: Engineering Metrology]

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Indian Standard (Reaffirmed 2005)

SPECIFICATION FOR BENCH CENTRES

(First Revision)

Engineering Metrology Sectional Committee, EDC 43; Precision Measuring Equipment, Subcommittee, EDC 43:2 [Ref: Doc: EDC 43 (2375) f1]

1. Scope — Covers requirements of bench centres used for checking eccentricity of rotary components between centres with heights of centres 125, 160, 200, 250 and 300 mm.

2. Dimensions — Shall be as given in Fig. 1 and Table 1.

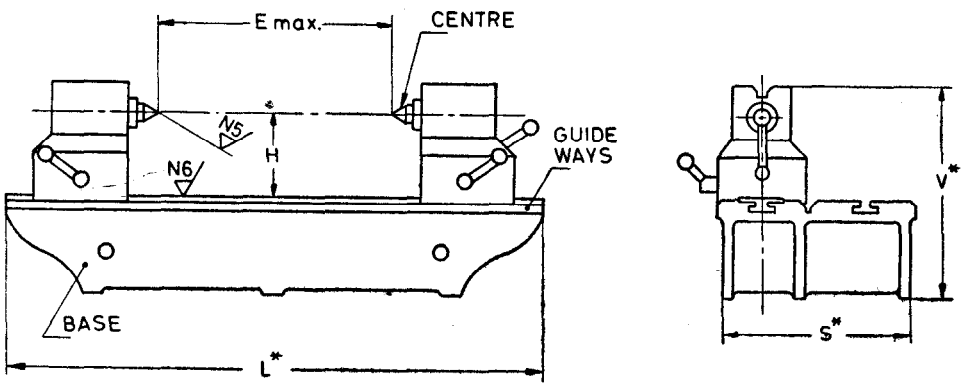

FIG. 1 BENCH CENTRE

*Dimensions *L*, *S* and *V* are left to the discretion of manufacturer.

TABLE 1 DIMENSIONS OF BENCH CENTRES

All dimensions in millimetres.

H	125	160	200	250	300
Emax	500	500	500	750	750
	750	750	1 000	1 000	1 000
	1 000	1 200	1 500	1 500	1 500

3. Permissible Deviations — Shall be in accordance with Table 2. Recommended methods of testing are given in Appendix A.

TABLE 2 PERMISSIBLE DEVIATIONS

H mm	Parallelism of the Axis of Centres with Respect to Guideways	Co-axiality of Centres
125 and 160	0·01 mm/300 mm leaning towards the free end of the mandrel	0·01 mm over any length of 300 mm. Total error of 0·015 mm for Emax up to 500 mm. Total error of 0·02 mm for Emax greater than 500 mm
200 to 300	0·015 mm/300 mm leaning towards the free end of the mandrel	0·015 mm over any length of 300 mm. Total error of 0·02 mm for Emax up to 500 mm. Total error of 0·04 mm for Emax above 500 mm

Adopted 12 September 1978

Gr 2

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4. General Requirements

4.1 *Material*

4.1.1 *Base* — Shall be made from close grained cast iron conforming to Grade 20 of IS : 210-1970 ' Specification for grey iron castings (*second revision*) ', and shall have a minimum hardness of 180 *HB*. It shall be free from distortion, porosity and other defects of casting.

4.1.1.1 After being cast and rough machined, the base of bench centres shall be given a suitable heat treatment to relieve internal stresses before being finish machined.

4.1.2 *Centres* — Shall be made from steel recommended in IS : 2289-1976 ' 60° Dead centres for lathes ' and suitably heat treated to have a hardness of 750 *HV Min* [*see* IS : 1501-1968 Method for Vickers hardness test for steel (*first revision*)].

4.2 *Finish*

4.2.1 The surface of main parts shall be finished by hand scraping or machining. Where machined, the values of surface roughness shall be as indicated in Fig. 1.

4.2.2 All unmachined surfaces shall be suitably protected by painting.

4.3 T-slots shall comply with IS : 2013-1974 ' Dimensions for T-slots '.

4.4 One of the centres may be spring loaded for easy loading and unloading of a batch of items in one setting.

4.5 If required by the purchaser, the manufacturer shall specify the maximum permissible safe loading.

5. Designation — Bench centres shall be designated by height, ' *H* ' in mm and Emax in mm and the number of this standard.

Example:

A bench centre of height *H* = 125 mm and Emax = 500 mm shall be designated as:

Bench Centre 125 × 500 IS : 5980.

6. Packing — During storage and transit, all finished surfaces shall be protected against climatic conditions by being covered with a suitable corrosion preventive preparation. Bench centres shall be packed according to the best trade practice.

7. Marking — Bench centres shall be legibly and permanently marked with dimensions of *H*, Emax (*see* Table 1), and manufacturer's name or trade-mark. Bench centres may also be marked with the ISI Certification Mark.

7.1 *ISI Certification Marking* — Details available with the Indian Standards Institution.

APPENDIX A

(Clause 3)

METHOD OF TESTING OF BENCH CENTRES

A-1. Parallelism of Axis of Centres with Respect to Guideways — A cylindrical test mandrel of 300 mm length with taper shank is inserted into the taper bore (IS : 2063-1962 Code for testing machine tools). A suitable dial indicator is mounted on the base of bench centre as shown in Fig. 2. Readings are taken in two planes ' a ' and ' b ' and at two positions *A* and *B*. The difference in readings shall not exceed the permissible value. This is repeated for the other centre bore and at different positions along the length of base.

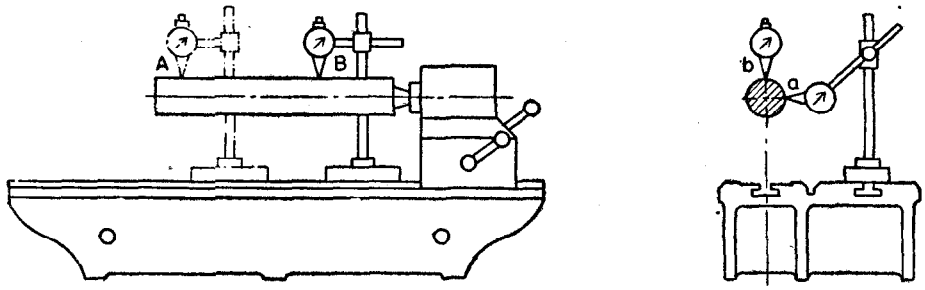

FIG. 2 CHECKING OF PARALLELISM OF AXIS OF CENTRE WITH BASE

A-2. Coaxiality of Centres — A cylindrical test mandrel (IS : 2063-1962) is held between the centres. A suitable dial indicator is mounted on the slide. The slide is moved and the readings are taken at two positions *A* and *B* in two planes '*a*' and '*b*' close to the ends of the mandrel and also at intervals of 300 mm. The length of the mandrel shall be nearly equal to Emax. The difference in values shall not exceed the values given in Table 2 (*see* Fig. 3).

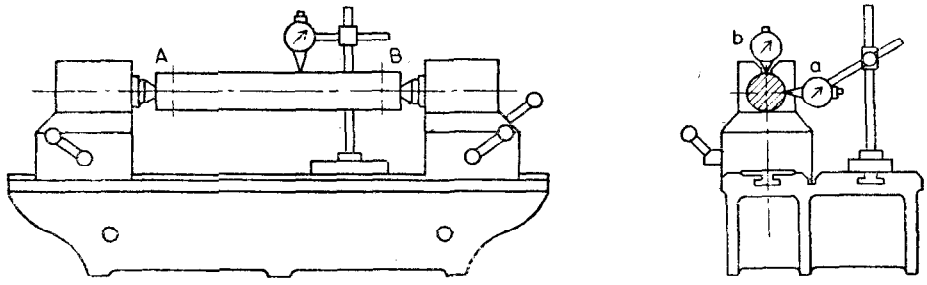

FIG. 3 CHECKING OF COAXIALITY OF CENTRES

A-3. Refer to IS : 2063-1962 for the above two tests.

EXPLANATORY NOTE

The bench centre consists of a rigid cast iron base provided with suitable T-slots for the attachment of the centre holders. The centre holders are provided with locking attachments so that they may be locked at any desired position along with the T-slots. Both male and female centres may be provided which are adjustable and can be locked in position along the ground vees of the centre holder.

This standard was first published in 1970. In this revision details coverd in Amendment No. 1, the additional sizes of bench centres with heights of centres 250 and 300 mm and the permissible deviation for sizes above 200 mm have been incorporated. In the preparation of this standard assistance has been derived from CSN 244193 ' Bench centres for inspection '.

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