INTERNATIONAL STANDARD ISO 2013

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Textile machinery and accessories – Sectional beams for warp knitting machines – Variations of form and position, balancing

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FOREWORD

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Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

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It has been approved by the Member Bodies of the following countries :

Belgium	India	Spain
Egypt, Arab Rep. of	Netherlands	Switzerland
France	New Zealand	Turkey
Germany	Poland	United Kingdom
Greece	Romania	U.S.S.R.

No Member Body expressed disapproval of the document.

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Textile machinery and accessories – Sectional beams for warp knitting machines – Variations of form and position, balancing

1 SCOPE AND FIELD OF APPLICATION

This International Standard complements ISO/R 1025.

It defines variations of form and position, i.e. axial run-out, non-parallelism between the flanges and total barrel run-out, and specifies the corresponding maximum tolerances, together with the methods of measurement.

For cases where a limit for the residual unbalance must be fixed, a recommendation is made for the choice of quality grade.

When ordering or supplying sectional beams for warp knitting machines, reference to this International Standard implies the manufacturer's respecting the permissible values given for the variations of form and position, and, if necessary, the recommended limit for the residual unbalance.

2 REFERENCES

ISO/R 1025, *Sectional beams for warp knitting machines – Terminology and dimensions.*

ISO 1940, *Balance quality of rotating rigid bodies.*

3 TERMINOLOGY AND DEFINITIONS

3.1 axial run-out: The difference between the greatest distance A_{max} and the smallest distance A_{min} of the inner face of a flange from a reference plane at right angles to the axis of rotation.

This difference results from readings taken, during one complete revolution of the beam, on a gauge placed between the flanges of the beam in such a way that the contact point of the measuring instrument touches the inner face of a flange about 15 mm from the outer edge of the flange. (See figure 1.)

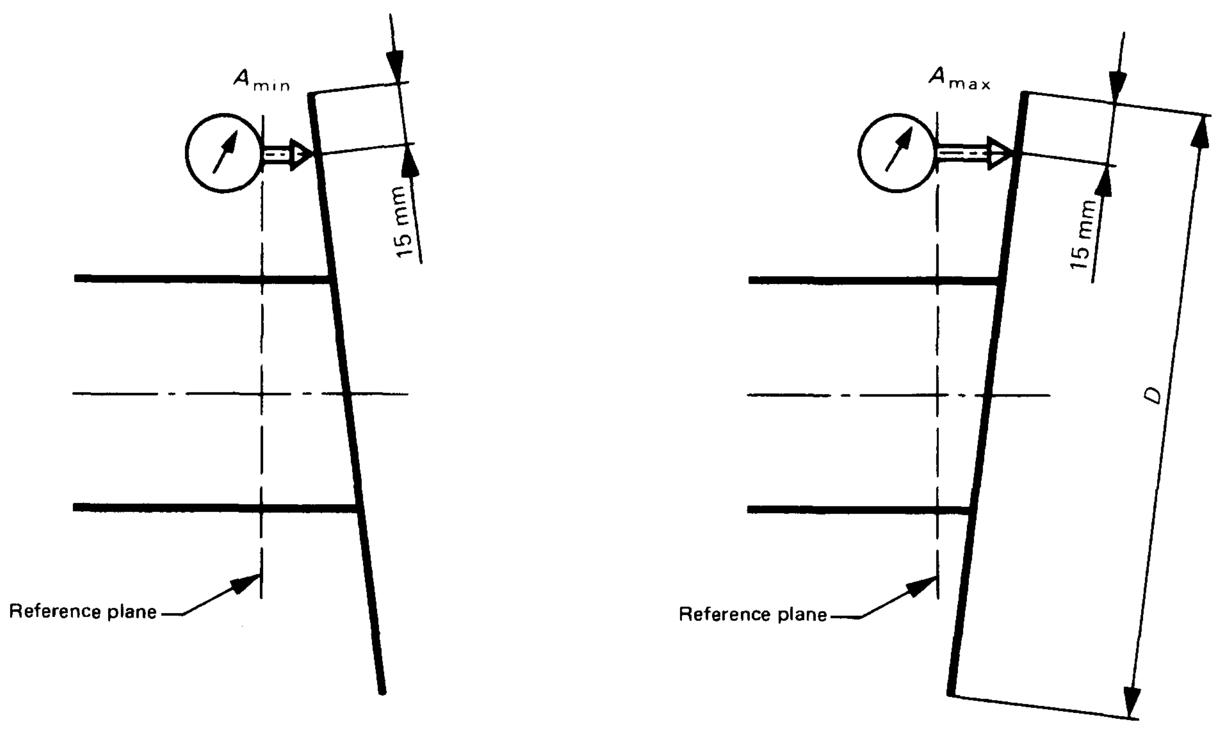

FIGURE 1 – **Axial run-out**

3.2 non-parallelism between the flanges : The difference between the greatest and the smallest distances between the inner faces of the flanges during one complete revolution of the beam, in a plane parallel to the axis of rotation of the beam and situated approximately 15 mm from the outer edges of the flanges. (See figure 2.)

NOTE — In practice, it is often considered sufficient to determine the axial run-out of the flanges; the maximum non-parallelism cannot exceed the sum of the absolute values of axial run-out of each flange (see annex).

3.3 total barrel run-out : The sum of all run-outs of the barrel, mainly caused by

a) the crookedness of the barrel;

b) the unroundness of the barrel;

c) the radial run-out of the beam with reference to the bore diameter of the flanges.

It is determined by the readings of three gauges, placed on the surface of the barrel, the outer two at a distance of 100 mm from the inner face of each flange, and the third in the centre between the flanges. (See figure 3.)

The greatest of the three readings is taken as the value of the total barrel run-out. It shall not exceed an agreed maximum value (see clause 4).

NOTES

1 The total barrel run-out is also influenced by the tolerance between the bore diameter of the flange and the outside mandrel (or shaft) diameter. This tolerance, however, cannot be determined by the method of measurement as described above.

2 The tolerance for the bore diameter D_2 is stated in ISO/R 1025.

4 TOLERANCES

4.1 Axial run-out *Ta* (see 3.1)

Values in millimetres

Flange diameter *D*	Tolerance *Ta*
355	0,20
535	0,35
765	0,50
815	0,50

4.2 Non-parallelism between the flanges *NP* (see 3.2)

Permissible value $NP \leqslant 2\ Ta$ (see also the annex)

4.3 Total barrel run-out (see 3.3)

Values in millimetres

Barrel diameter D_1	Maximum value of the total barrel run-out
110	0,10
185	0,25
250	0,40

5 RESIDUAL UNBALANCE

Depending on the circumstances, it is sometimes necessary to fix a value for the residual unbalance of sectional beams. In general a quality grade G 6.3* will be appropriate unless special conditions call for another quality grade.

* See ISO 1940.

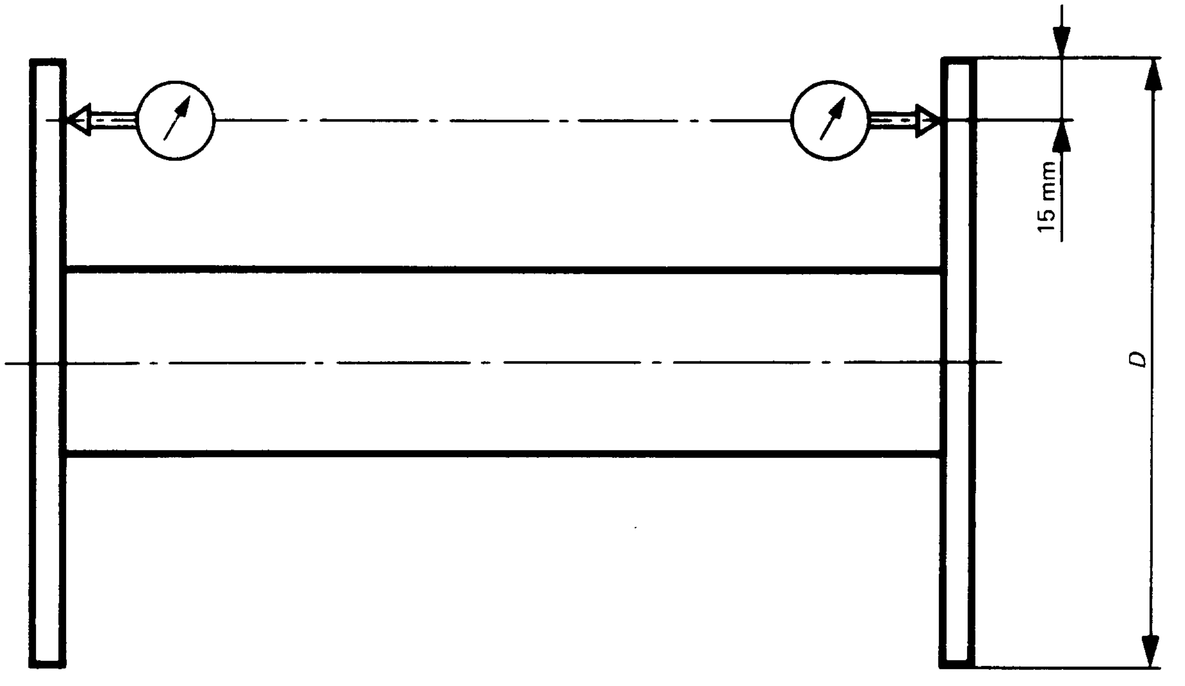

FIGURE 2 – **Non-parallelism between the flanges**

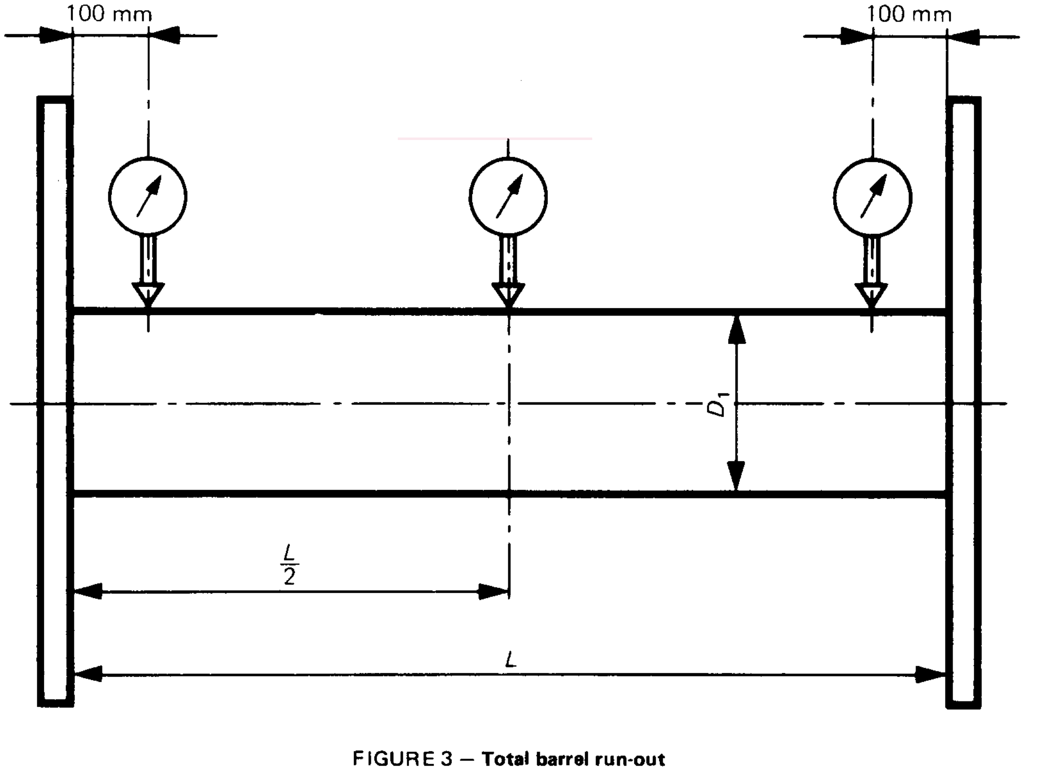

FIGURE 3 – **Total barrel run-out**

ANNEX

NON-PARALLELISM BETWEEN THE FLANGES

A.1 LIMITING VALUES

If the non-parallelism *NP* is determined as described in the Note to 3.2, its numerical value will be equal to the sum of the two greatest readings A_{max} and B_{max} for the axial run-out of each of the two flanges, taking into account the direction of the flanges' inclination at the point and at the moment of measuring as follows :

a) an inclination in the direction towards the other flange is considered as negative (−);

b) an inclination away from the other flange is considered as positive (+).

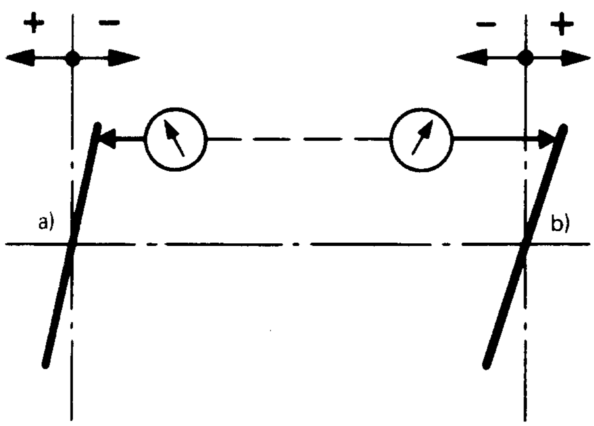

FIGURE 4 – **Direction of inclination of the flanges**

In practice the non-parallelism may have any value between the two limits described below.

A.1.1 Both flanges have the same direction of inclination

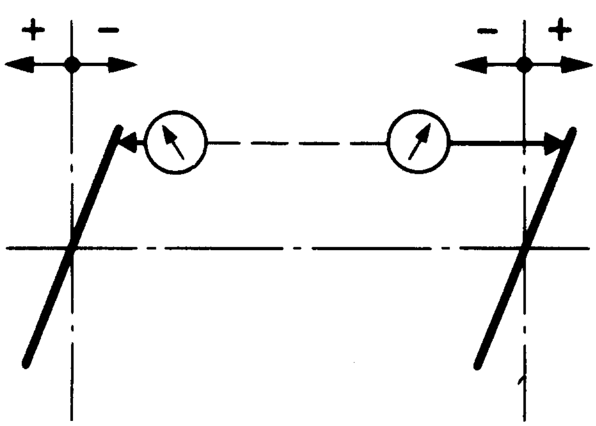

FIGURE 5 – **Flanges inclined in the same direction**

In the extreme case, the numerical value of $+A_{max}$ can be equal to $-B_{max}$ (or $-A_{max} = +B_{max}$) and the non-parallelism, therefore, is given by

$$NP = +A_{max} - B_{max} = 0$$

$$(\text{or } +B_{max} - A_{max} = 0)$$

Both flanges are parallel to one another, although they both have an axial run-out.

A.1.2 The flanges are inclined in opposite directions

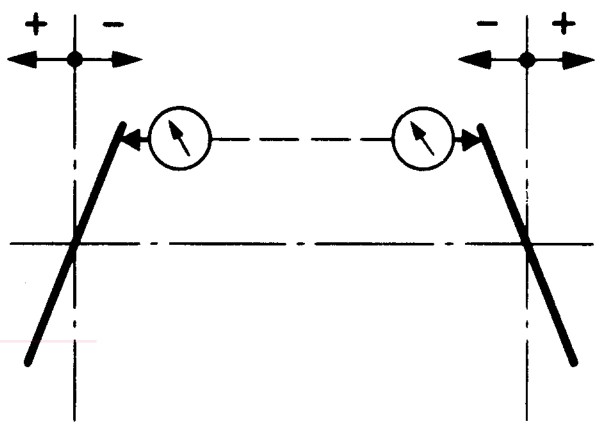

FIGURE 6 – **Flanges inclined in opposite directions**

Here, the limit is

$$+A_{max} = +B_{max}$$

$$(\text{or } -A_{max} = -B_{max})$$

and the non-parallelism

$$NP = A_{max} + B_{max}$$

$$= 2\,A_{max} = 2\,B_{max}$$

A.2 ACCEPTABLE VALUES

The non-parallelism of the flanges is a function of the axial run-out of each of the two flanges and the angle between the position of the maximum axial run-out of one of the two flanges and the corresponding point of the other flange. It cannot exceed the sum of the maximum axial run-outs of both flanges.

The non-parallelism between two flanges with an axial run-out *A* of no more than the agreed value *Ta*, therefore, cannot be larger than 2 *Ta*. This value is estimated as being permissible for the non-parallelism.