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**Textile machinery and accessories —  
Beams for winding —**

Part 2:  
**Warper's beams**

*Matériel pour l'industrie textile — Ensembles pour enroulement —  
Partie 2: Ensembles d'ourdissiers*



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 8116-2 was prepared by Technical Committee ISO/TC 72, *Textile machinery and accessories*, Subcommittee SC 3, *Machinery for fabric manufacturing including preparatory machinery and accessories*.

This third edition cancels and replaces the second edition (ISO 8116-2:1995), which has been technically revised.

ISO 8116 consists of the following parts, under the general title *Textile machinery and accessories — Beams for winding*:

- *Part 1: General vocabulary*
- *Part 2: Warper's beams*
- *Part 3: Weaver's beams*
- *Part 4: Test methods and quality classification of flanges for weaver's beams, warper's beams and sectional beams*
- *Part 5: Sectional beams for warp knitting machines*
- *Part 6: Beams for ribbon weaving and ribbon knitting*
- *Part 7: Beams for dyeing slivers, rovings and yarns*
- *Part 8: Definitions of run-out tolerances and methods of measurement*
- *Part 9: Dyeing beams for textile fabrics*



# Textile machinery and accessories — Beams for winding —

## Part 2: Warper's beams

### 1 Scope

This part of ISO 8116 specifies the main dimensions, mechanical strength, permissible tolerances of form and position of the main elements of warper's beams, and the driving devices and designation for warper's beams with and without shafts.

### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 286-2, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts*

ISO 1940-1, *Mechanical vibration — Balance quality requirements for rotors in a constant (rigid) state — Part 1: Specification and verification of balance tolerances*

ISO 8116-4, *Textile machinery and accessories — Beams for winding — Part 4: Test methods and quality classification of flanges for weaver's beams, warper's beams and sectional beams*

ISO 8116-8, *Textile machinery and accessories — Beams for winding — Part 8: Definitions of run-out tolerances and methods of measurement*

### 3 Types and main dimensions

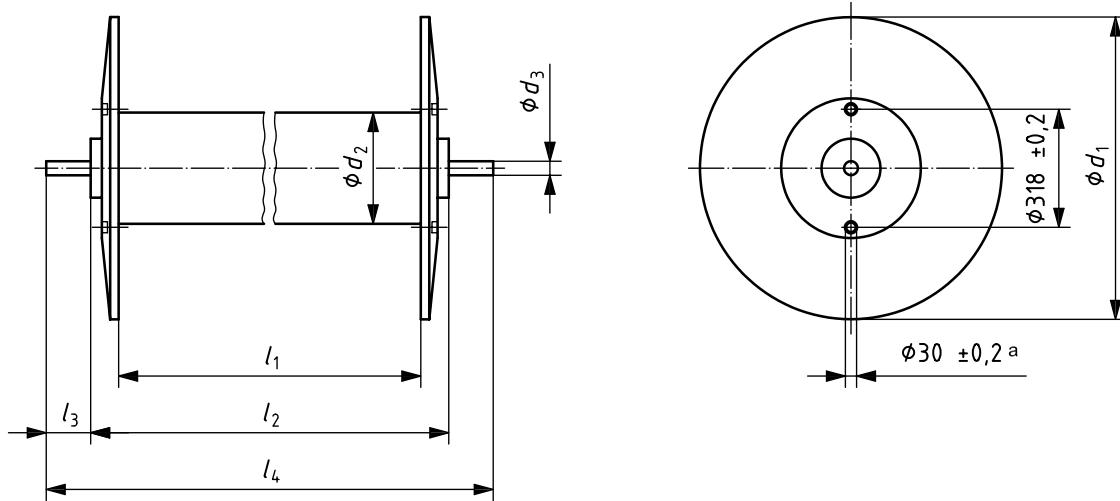
Warper's beams are divided into three main types:

- Type A warper's beams with shafts;
- Type B warper's beams with cylinder bore for centring and key seat for driving;
- Type C warper's beams with toothed cone for centring and driving:
  - Execution C1: tooth number 50 (old executions shall no be longer used)
  - Execution C2: tooth number 72
  - Execution C3: tooth number 50

The main dimensions of warper's beams of Type A and Type B are shown and explained in Figure 1 and Figure 2.

The main dimensions of warper's beams of Type C are shown and explained in Figure 3.

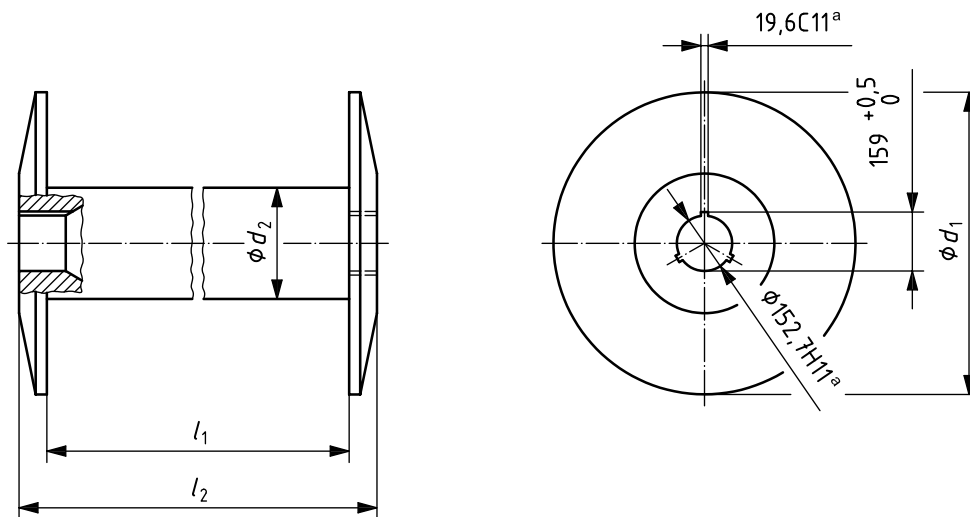
The main dimensions of warper's beams of Type A and Type B, as given in Table 1, shall be met. The main dimensions of warper's beams of Type C, as given in Table 2, shall be met.



**Key**

- |                                       |                                       |
|---------------------------------------|---------------------------------------|
| $d_1$ flange diameter                 | $l_1$ distance between the flanges    |
| $d_2$ barrel diameter                 | $l_2$ overall length (without shafts) |
| $d_3$ shaft diameter                  | $l_3$ length or extension of shaft    |
| <sup>a</sup> Two pegs for drive pins. | $l_4$ total length (with shafts)      |

**Figure 1 — Warper's beams with shafts — Type A**



**Key**

- |                       |                                       |
|-----------------------|---------------------------------------|
| $d_1$ flange diameter | $l_1$ distance between the flanges    |
| $d_2$ barrel diameter | $l_2$ overall length (without shafts) |

<sup>a</sup> Standard tolerance grades and limit deviations in accordance with ISO 286-2.

**Figure 2 — Warper's beams with cylinder bore for centring and keyseat for driving — Type B**

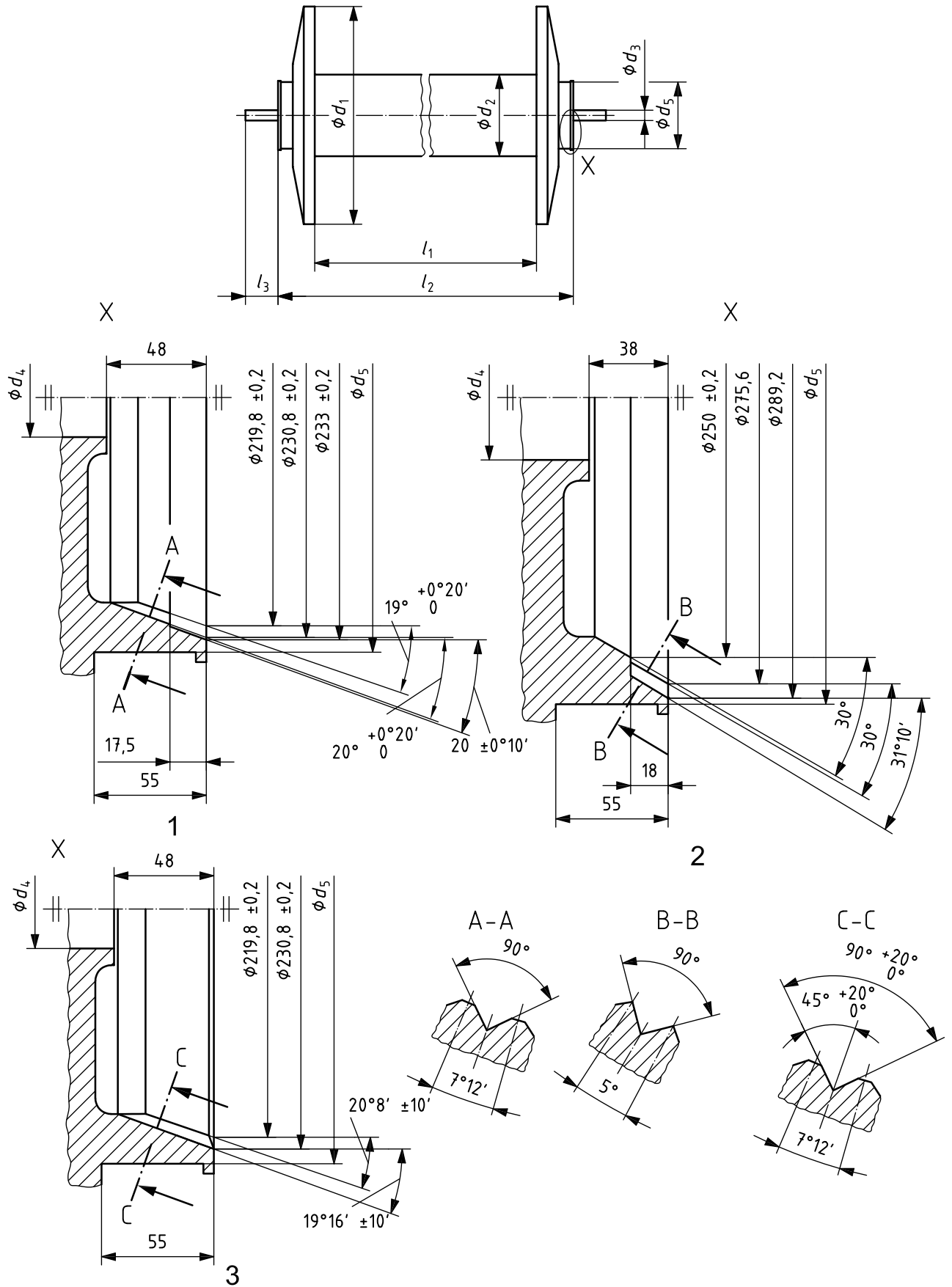


Figure 3 (continued)

**Key**

- |                                 |                                       |
|---------------------------------|---------------------------------------|
| 1 execution C1: tooth number 50 | $d_4$ bore diameter for shaft         |
| 2 execution C2: tooth number 72 | $d_5$ ruffle diameter                 |
| 3 execution C3: tooth number 50 | $l_1$ distance between the flanges    |
| $d_1$ flange diameter           | $l_2$ overall length (without shafts) |
| $d_2$ barrel diameter           | $l_3$ length or extension of shaft    |
| $d_3$ shaft diameter            |                                       |

**Figure 3 — Warper’s beams with toothed cone for centring and driving — Type C**

**Table 1 — Warper’s beams main dimensions — Types A and B**

Dimensions in millimetres

$d_1$ $\pm 1,5$	$d_2$ $\pm 5$	$d_3$ h11 <sup>b</sup>	$l_1$ <sup>a</sup> $+1,5$ 0	$l_2$ 0 -2	$l_3$	$l_4$
815	300 (320)	38	1 378 1 524 1 800 2 000	$l_1 + 150$	120	$l_2 + 2 l_3$
915		50				
1 015		50				
1 250						
NOTE The dimensions in parentheses should be avoided whenever possible.						
<sup>a</sup> If distances of more than 2 000 mm between flanges are necessary, increments of 200 mm shall be selected.						
<sup>b</sup> Standard tolerance grades and limit deviations in accordance with ISO 286-2.						

**Table 2 — Warper’s beams main dimensions — Type C**

Dimensions in millimetres

$d_1$ $\pm 1,5$	$d_2$ $\pm 5$	$d_3$ h11 <sup>b</sup>	$d_4$ E9 <sup>b</sup>	$d_5$ Execution			$l_1$ <sup>a</sup> $+1,5$ 0	$l_2$ 0 -2	$l_3$
				C1	C2	C3			
800	300 (320)	38	38	245	295	245	(1 374) 1 400 (1 524) 1 600 1 800 2 000	$l_1 + 270$	120 150
(900)		50	50						
1 000		50	50						
(1 100)	360	60	60	260	260	260	260	$l_1 + 320$	120 150
1 250	400								
1 400	450								
NOTE The dimensions in parentheses should be avoided whenever possible.									
<sup>a</sup> If distances of more than 2 000 mm between flanges are necessary, increments of 200 mm shall be selected.									
<sup>b</sup> Standard tolerance grades and limit deviations in accordance with ISO 286-2.									



#### 4 Mechanical strength

The mechanical strength of warper's beam flanges is classified in accordance with the quality classes defined in ISO 8116-4. The mechanical strength of warper's beam flanges shall be verified, depending on the quality class, using the test method described in ISO 8116-4.

#### 5 Circular axial run-out tolerance, $T_a$ , of flanges

The permissible circular axial run-out tolerances,  $T_a$ , of flanges, as given in Table 3, shall be met.

The run-out tolerances shall be measured in accordance with ISO 8116-8.

**Table 3 — Permissible circular axial run-out tolerance of flanges**

$d_1$ mm	$T_a$ mm
$d_1 \leq 915$	0,5
$d_1 > 915$	0,75

#### 6 Total run-out tolerance, $T_r$ , of the barrel

The permissible total run-out tolerances,  $T_r$ , of the barrel shall be derived using the formulae given in Table 4.

The run-out tolerances shall be measured in accordance with ISO 8116-8.

**Table 4 — Total barrel run-out tolerances**

Yarn to be wound	$T_r$ mm
Filament yarn	$\frac{0,25 l_1}{1000}$
Spun yarn	$\frac{0,4 l_1}{1000}$

#### 7 Residual imbalance

Depending on the circumstances, it may be necessary to fix a value for the residual imbalance of warper's beams. In general, a quality grade G 6,3 in accordance with ISO 1940-1 will be appropriate. If special conditions call for another grade, this shall be specified.

## 8 Designation

The designation of a warper's beam in accordance with this part of ISO 8116 shall include the following information in the order given:

- a) "Warper's beam";
- b) reference to this part of ISO 8116, i.e. ISO 8116-2;
- c) Type A or B or C1 or C2 or C3 of warper's beam for the form of centring and driving;
- d) flange diameter,  $d_1$ , in millimetres;
- e) shaft diameter,  $d_3$ , in millimetres (only for types A and B);
- f) distance between flanges,  $l_1$ , in millimetres;
- g) length or extension of shaft,  $l_3$ , in millimetres (only for types C1, C2 or C3);
- h) quality class Q1, Q2, Q3 or Q4 in accordance with ISO 8116-4.

EXAMPLE 1 A warper's beam, type A, with a flange diameter  $d_1$  of 915 mm, shaft diameter  $d_3$  of 50 mm and distance between flanges  $l_1$  of 1 800 mm with the quality class Q2 in accordance with ISO 8116-4 shall be designated as follows:

**Warper's beam ISO 8116-2 - A-915 × 50 × 1 800-Q2**

EXAMPLE 2 A warper's beam, type C3, with a flange diameter  $d_1$  of 1 250 mm, distance between flanges  $l_1$  of 1 800 mm and  $l_3$  of 150 mm with the quality class Q2 in accordance with ISO 8116-4 shall be designated as follows:

**Warper's beam ISO 8116-2 - C3-1 250 × 1 800 × 150-Q2**

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