INTERNATIONAL STANDARD

ISO 8116-3

Third edition
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Textile machinery and accessories — Beams for winding —

Part 3: Weaver's beams

Matériel pour l'industrie textile — Ensouples pour enroulement —

Partie 3: Ensouples de tissage

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Foreword

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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 8116-3 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 8116-3:1995), and ISO 13553, of which it constitutes a technical revision.

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 3: Weaver's beams

1 Scope

This part of ISO 8116 specifies the main dimensions, mechanical strength and permissible tolerances of form and position for weaver's beams that are used for weaving preparation as well as for weaving. The main dimensions of the profile threads for weaver's beams and the specifications for connections for automation of beam changing are also given.

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 109, *Textile machinery — Working widths of weaving machines*

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

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

Weaver's beams are divided into three types:

— Type A weaver's beams with shafts;

— Type B weaver's beams with end plates having square holes;

— Type C weaver's beams for automation of beam changing.

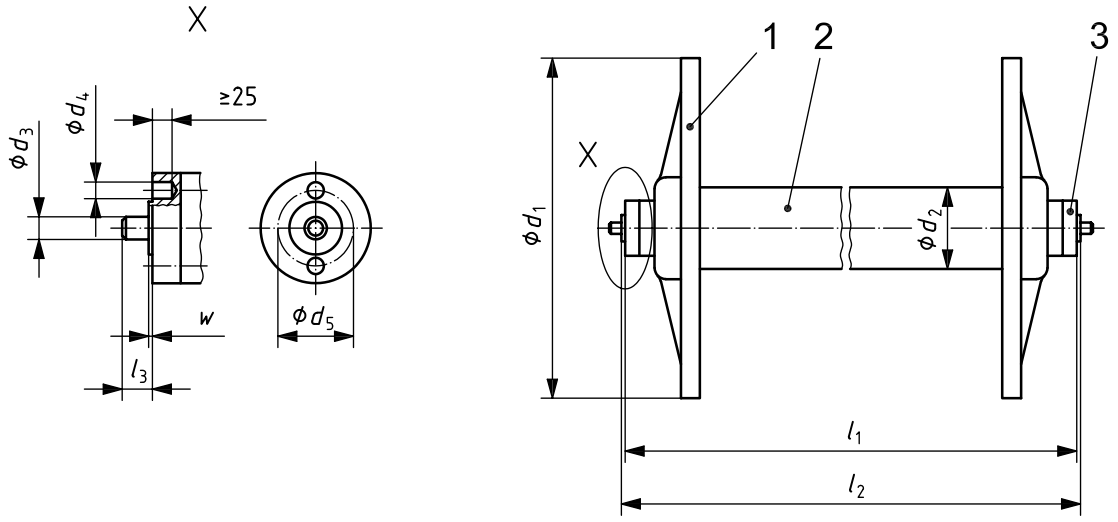
The main dimensions of weaver's beams, Type A and Type B, are given and explained in Figure 1 and Figure 2.

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

The main dimensions of weaver's beams, Type A and Type B, as given in Table 1 and Table 3, shall be met.

The main dimensions of weaver's beams, Type C, as given in Table 2 and Table 3, shall be met.

Dimensions in millimetres

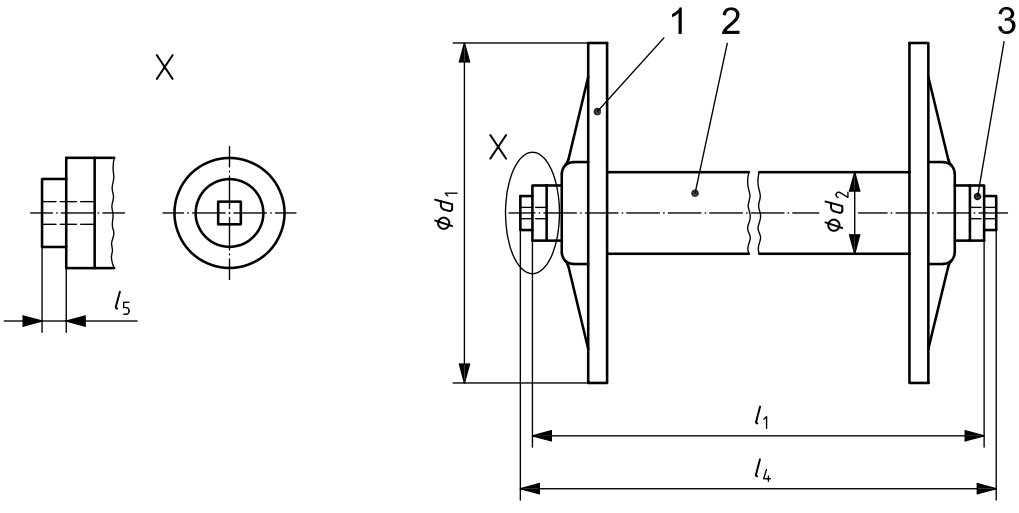


Key

1 beam flange
2 beam barrel
3 end plate

d_1 flange diameter
d_2 barrel diameter
d_3 shaft diameter
d_4 driving hole diameter
d_5 diameter between driving hole centres
l_1 barrel length, including end plates
l_2 length, including bosses
l_3 length of shaft, including boss
w width of boss

Figure 1 — Weaver's beam with shafts — Type A



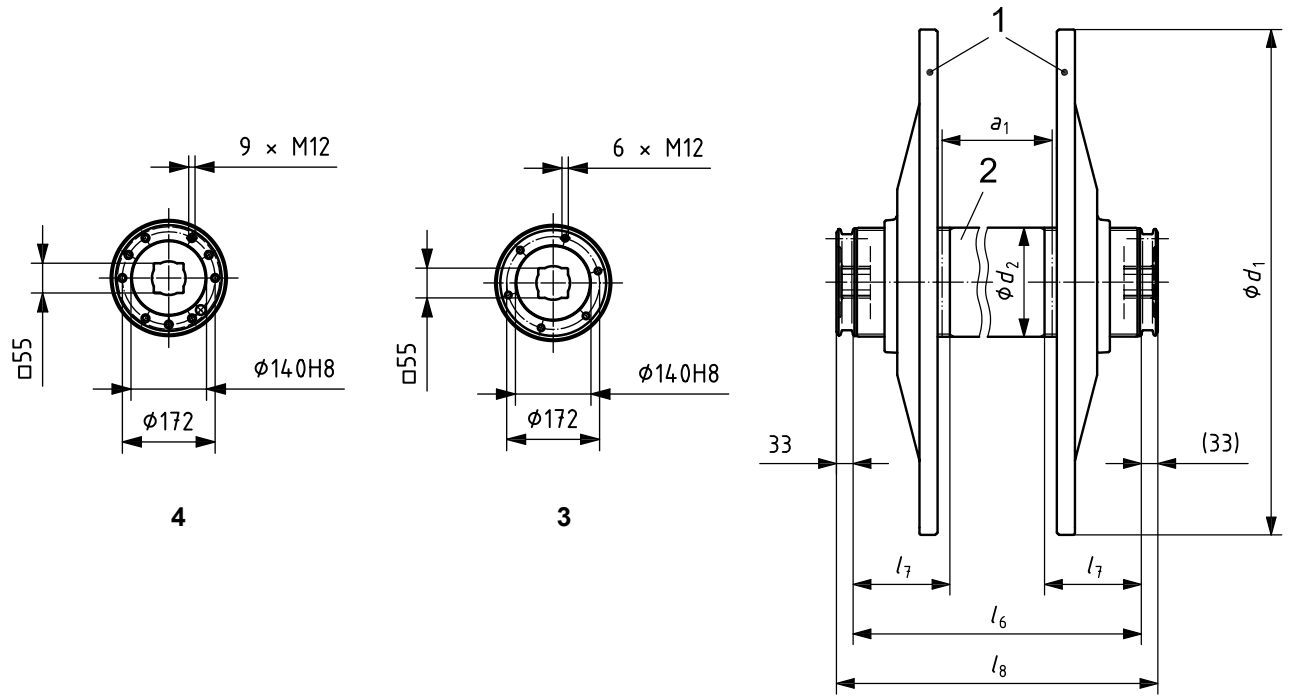
Key

1 beam flange
2 beam barrel
3 end plate

d_1 flange diameter
d_2 barrel diameter
l_1 barrel length, including end plates
l_4 length, including bosses (related to designs with end plates with square hole)
l_5 length of boss

Figure 2 — Weaver's beam with end plates having square holes — Type B

Dimensions in millimetres



Key

1 beam flange
2 beam barrel
3 execution C2
4 execution C1

a_1 maximum working width
d_1 flange diameter
d_2 barrel diameter
l_6 length of beam barrel
l_7 length of profile thread
l_8 total length

Figure 3 — Weaver's beam for automation of beam changing — Type C, executions C1 and C2

Table 1 — Main dimensions of weaver's beams — Types A and B

Dimensions in millimetres

d_2	d_3 h11 [a]	l_1	l_2 $^{0}_{-2}$	l_3	l_4	l_5	w	d_4	d_5
150	30 38 45 50	> 1 000 in steps of 100	$l_1 + 2\,w$ [b]	40	$l_1 + 2\,l_5$	32 68	5 (50) [b]	22	100
150 216 269								—	—
269	—								

NOTE For very long beam barrels, the values of the barrel diameters d_2 indicated in Table 1 are no longer sufficient. In this case it is recommended that the shaft diameter and the barrel diameter next in size to that indicated for flange diameter d_1 of the beam (see Table 3) be selected. There is no fixed relationship among the diameters of shaft, barrel and flange, and the barrel length.

[a] Standard tolerance grades and limit deviations in accordance with ISO 286-2.

[b] In the case of special designs of end plates (for example, shaft with square shank), dimension w should be either 5 mm or 50 mm.

Table 2 — Main dimensions of weaver's beams for automation of beam changing — Type C, executions C1 and C2

Dimensions in millimetres

Barrel diameter d_2		216 269
Length of profile thread l_7	Maximum working width a_1 [a]	
	$a_1 \leqslant 1\,800$	600
	$1\,800 < a_1 \leqslant 2\,500$	885
	$a_1 > 2\,500$	1 150
Length of beam barrel l_6		a_1 + 300
Total length $l_8 \pm 1$		a_1 + 366

[a] Term in accordance with ISO 109.

Table 3 — Flange geometry for weaver's beams — Types A, B and C

Type	d_1 mm	d_2 mm
A B	500	150
	600	150
	700	150
	750	150
	800	150
C	800	216
	850	216
	900	216
	950	216
	1 000	269
	1 250	269
	1 400	269
	1 500	269

4 Mechanical strength

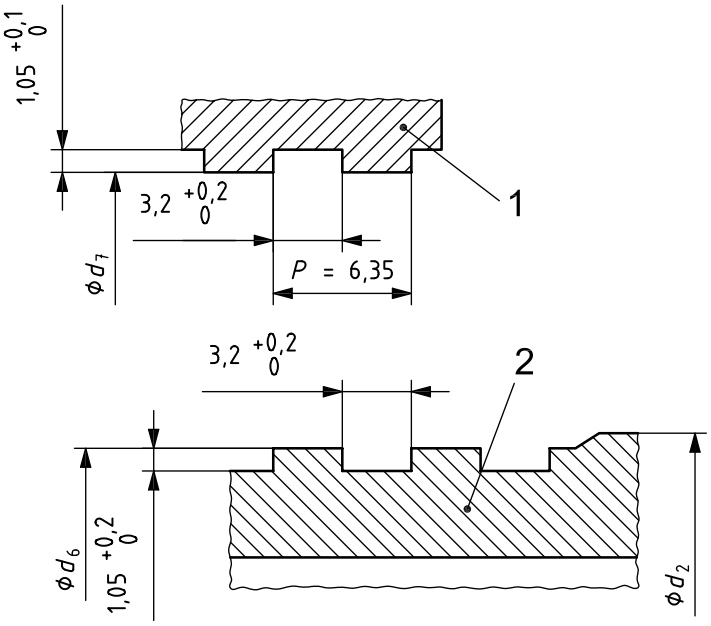
The mechanical strength of weaver's beam flanges is classified in accordance with the quality classes defined in ISO 8116-4. The mechanical strength of the weaver's beam flanges shall be verified, depending on the quality class, using the test method described in ISO 8116-4.

5 Thread profiles

The threads are divided into two main types, which are given and dimensioned in Figure 4 and Figure 5.

The dimensions given in Table 4 and Table 5 shall be met.

Dimensions in millimetres

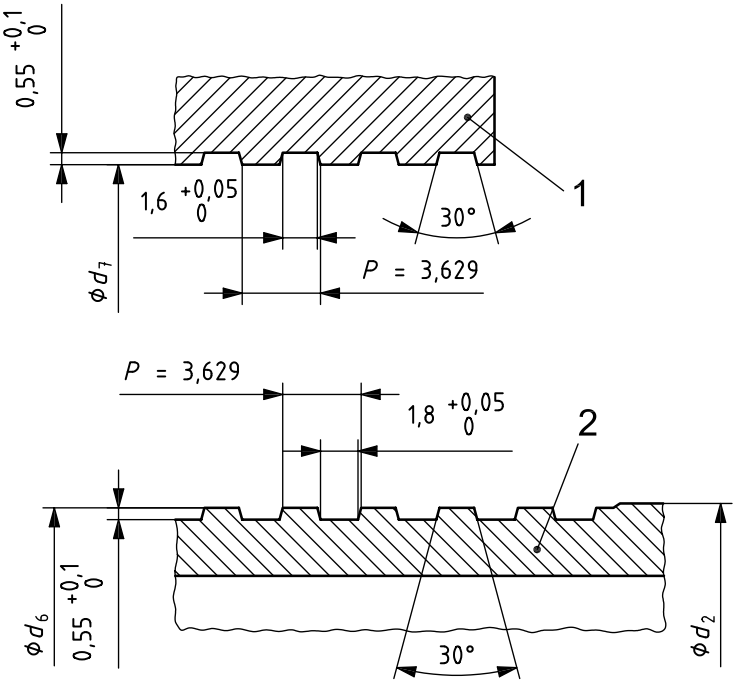


Key

1 flange
2 barrel
d_2 barrel diameter
d_6 outer diameter of barrel thread
d_7 inner diameter of flange thread
P pitch of the thread

Figure 4 — Type 1 threads

Dimensions in millimetres



Key

1 flange
2 barrel
d_2 barrel diameter
d_6 outer diameter of barrel thread
d_7 inner diameter of flange thread
P pitch of the thread

Figure 5 — Type 2 threads

Table 4 — Type 1 threads

Dimensions in millimetres

d_2	d_6 0 −0,2	d_7 +0,15 0
150	149,35	147,45
216	215,35	213,45
269	268,35	266,45

Table 5 — Type 2 threads

Dimensions in millimetres

d_2	d_6 $^{0}_{-0,2}$	d_7 $^{+0,15}_{0}$
150	149,9	149,2
216	215,9	215,2
269	268,9	268,2
NOTE Threads of type 2 are primarily used as adjusted threads. Flanges are usually secured to the barrel by separate means.		

6 Circular axial run-out tolerance, T_a, of flanges

The permissible circular axial run-out tolerances, T_a, of flanges given in Table 6 shall be met. The run-out tolerances shall be measured in accordance with ISO 8116-8.

Table 6 — Permissible circular axial run-out tolerance of flanges

d_1 mm	T_a mm
$d_1 \leqslant 600$	0,5
$600 < d_1 \leqslant 800$	0,75
$800 < d_1 \leqslant 1\,000$	1
$1\,000 < d_1 \leqslant 1\,250$	1,25
$d_1 > 1\,250$	1,5

7 Total run-out tolerance, T_r, of the barrel

The permissible total run-out tolerances, T_r, of the barrel shall be measured in millimetres and calculated using Equation (1):

$$T_r = \frac{0{,}25\, l_1}{1000} \tag{1}$$

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

8 Other specifications

The following details should be specified as appropriate:

a) materials of barrel, end plates and flanges;

b) nature of material to be wound;

c) surface finish of the winding areas (inner sides of the flanges and the exterior surface of the barrel);

d) end plates with shafts on both sides as an alternative to the use of different shaft diameters;

e) fastening of the end plates on the barrel;

f) holes in the barrel for fastening the warp (care should be taken when winding highly elastic yarns, as holes for fastening the warp cause a weakening of the cross-section of the barrel);

g) designs of flanges;

h) fastening of the flanges on the barrel;

i) maximum and minimum lengths of barrel between flanges (“dress width”);

j) driving hole in the barrel;

k) use of ruffles;

l) working widths of weaving machines in accordance with ISO 109.

9 Designation

9.1 The designation of a weaver’s beam type A or B in accordance with this part of ISO 8116 shall include the following information in the order given:

a) “Weaver’s beam”;

b) reference to this part of ISO 8116, i.e. ISO 8116-3;

c) type of beam (A or B);

d) flange diameter, d_1, in millimetres;

e) shaft diameter, d_3, in millimetres;

f) barrel length, l_1, in millimetres;

g) quality class Q1, Q2, Q3 or Q4 in accordance with ISO 8116-4.

EXAMPLE A weaver’s beam, type A, with a flange diameter d_1 of 800 mm, shaft diameter d_3 of 38 mm, and barrel length l_1 of 1 800 mm with the quality class Q4 in accordance with ISO 8116-4 shall be designated as follows:

Weaver’s beam ISO 8116-3 - A-800 × 38 × 1 800-Q4

9.2 The designation of a weaver's beam type C1 or C2 in accordance with this part of ISO 8116 shall include the following information in the order given:

a) "Weaver's beam";

b) reference to this part of ISO 8116, i.e. ISO 8116-3;

c) type of beam (C1 or C2);

d) flange diameter, d_1, in millimetres;

e) maximum working width, a_1, in millimetres;

f) quality class Q1, Q2, Q3 or Q4 in accordance with ISO 8116-4.

EXAMPLE A weaver's beam, type C1, with a flange diameter d_1 of 800 mm, maximum working width a_1 of 1 900 mm, and with the quality class Q3 in accordance with ISO 8116-4 shall be designated as follows:

Weaver's beam ISO 8116-3 - C1-800 × 1 900-Q3

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