INTERNATIONAL STANDARD

ISO
26623-1

First edition
2008-11-15

Polygonal taper interface with flange contact surface —

Part 1:
Dimensions and designation of shanks

Interfaces à cône polygonal avec face d'appui —

Partie 1: Dimensions et désignation des queues

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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.

ISO 26623-1 was prepared by Technical Committee ISO/TC 29, *Small tools*.

ISO 26623 consists of the following parts, under the general title *Polygonal taper interface with flange contact surface*:

⎯ *Part 1: Dimensions and designation of shanks*

⎯ *Part 2: Dimensions and designation of receivers*

Introduction

The International Organization for Standardization (ISO) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning the modular taper with ball track system.

ISO takes no position concerning the evidence, validity and scope of this patent right.

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Polygonal taper interface with flange contact surface —

Part 1:
Dimensions and designation of shanks

1 Scope

This part of ISO 26623 specifies the dimensions for polygonal taper interface with flange contact surface: polygon-shanks for automatic and manual tool exchange to be applied on machine tools (e.g. turning machines, drilling machines, milling machines and turn/milling centres, as well as grinding machines). A range of shank sizes is specified.

These shanks incorporate a grooved flange to enable automatic tool exchange. The clamping can be realized by a circular groove using clamping segments or internal screw threads using centre-bolts.

The torque is transmitted by form lock (polygon).

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 965-2, *ISO general purpose metric screw threads — Tolerances — Part 2: Limits of sizes for general purpose external and internal screw threads — Medium quality*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

3 Dimensions

3.1 General

Tolerancing of linear and angular dimensions not specified shall be of tolerance class "m" in accordance with ISO 2768-1. Tolerances for threads where the tolerance is not stated shall be in accordance with ISO 965-2.
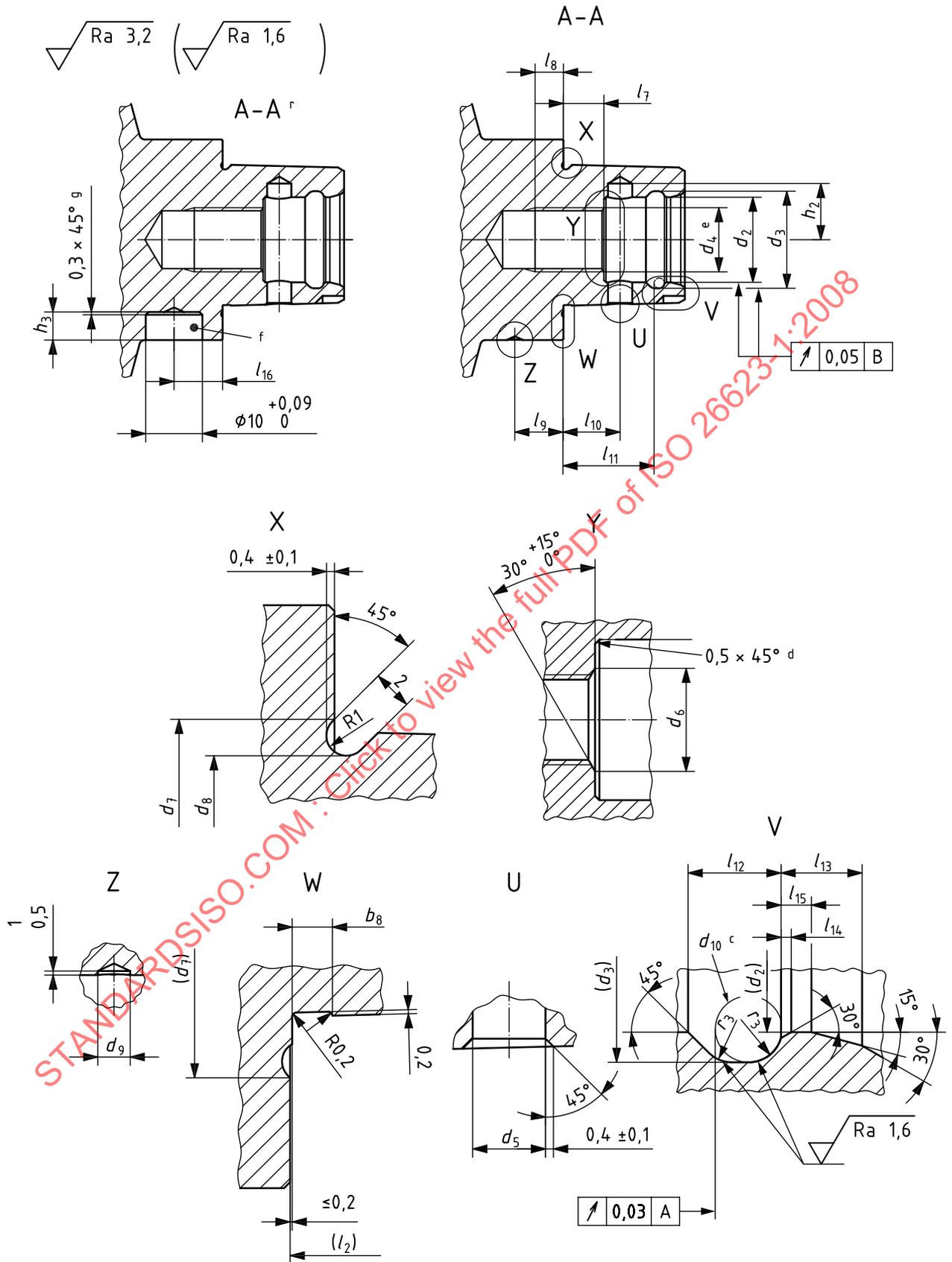
3.2   Polygon-shank

The dimensions of polygon-shanks are shown in Figures 1 and 2 and given in Table 1.

Surface roughness in micrometres
Dimensions in millimetres

Figure 1 (*continued*)

Figure 1 (*continued*)

Figure 1 — Polygon-shank
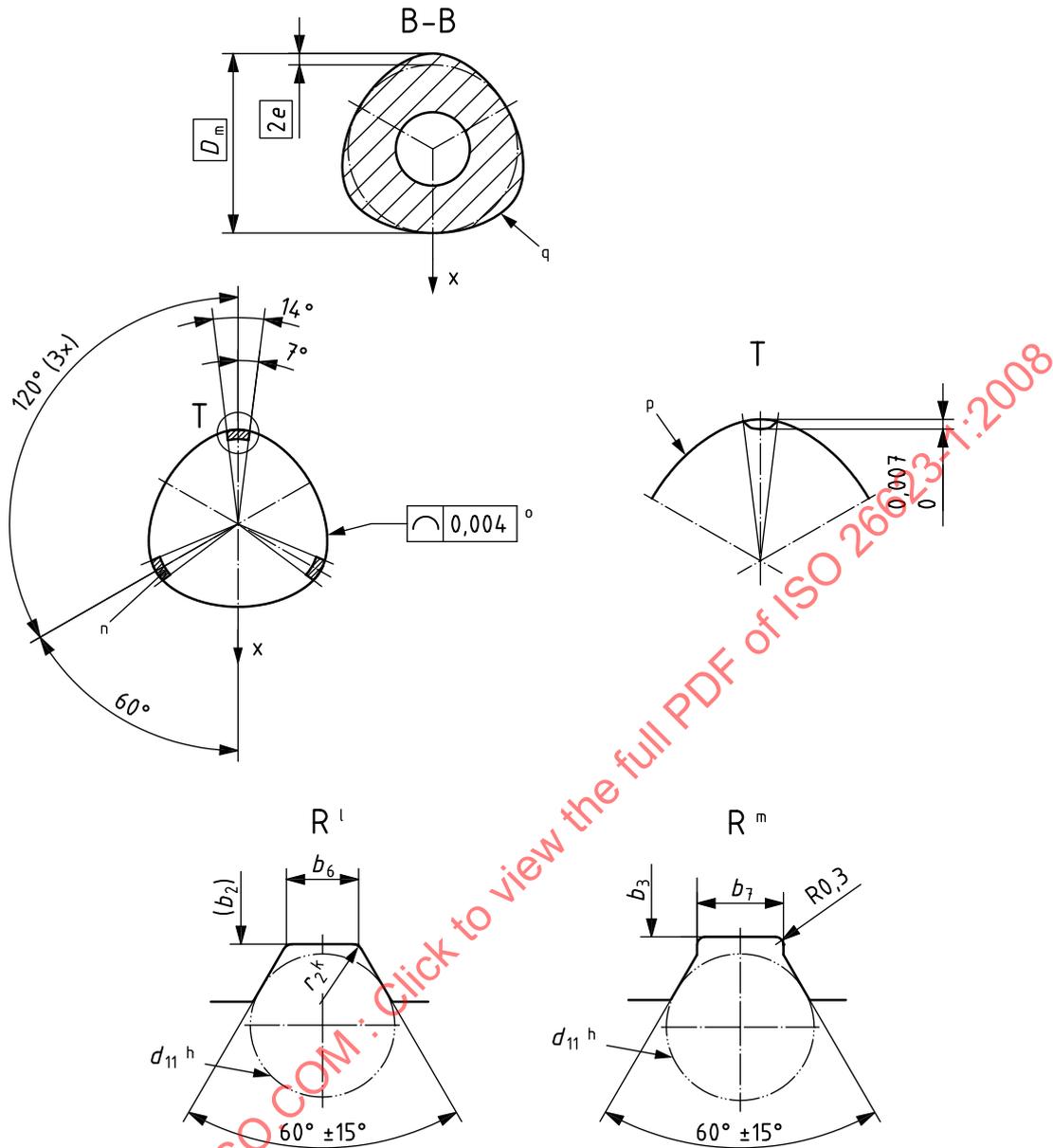
a   Gauge line.

b   Position of cutting edge for right-hand tools with single cutting edge.

c   Gauge ball.

d $0,4 \times 45°$ or R 0,5.

e   Thread soft.

f   Data chip hole, optional.

g $0,3 \times 45°$ or R 0,3

h   Gauge pin.

k r_2 or f_1 as alternative.

l   Detail R, alternative 1.

m   Detail R, alternative 2.

n   Form of profile from actual ground curve = $^{+0}_{+0,007}$ (sectioned areas).

o   Theoretical polygon curve.

p   Actual ground curve.

q   Polygon curve according to Figure 2.

r   Section A-A with data chip hole, optional.
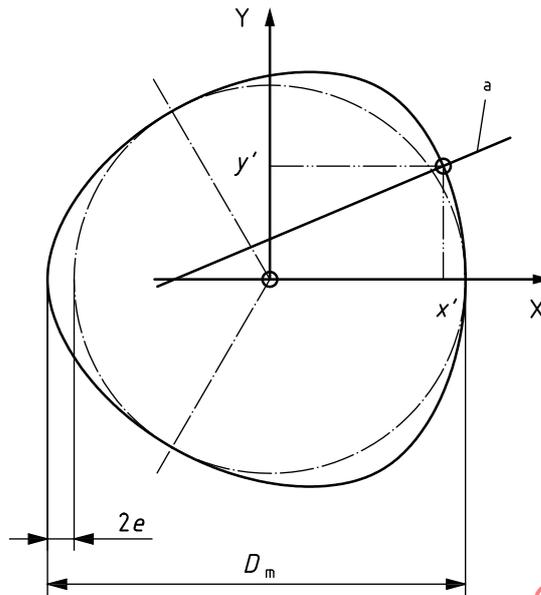
$$x' = D_m/2 \times \cos\gamma - 2 \times e \times \cos(2\gamma) + e \times \cos(4\gamma)$$

$$y' = D_m/2 \times \sin\gamma + 2 \times e \times \sin(2\gamma) + e \times \sin(4\gamma)$$

a   Normal to polygon curve.

Figure 2 — Polygon curve

Table 1 — Polygon-shank dimensions

Dimensions in millimetres

Nominal size		32	40	50	63	80	80X
b_1	$\pm 0,1$	39	46	59,3	70,7	86	110
b_2		28,3	35,3	44,4	55,8	71,1	88,7
b_3	$\pm 0,1$	27,9	34,9	44	55,4	70,7	88,3
b_4		4,2	5,2	6,5	8,5	9,6	9,6
b_5		4,5	5,5	7	9	10,1	10,1
b_6		2,5	2,5	3,5	3,5	3,5	5
b_7		2,6	2,6	4,1	4,1	4,1	6,1
b_8		1,5	1,5	2	2	2	2
d_1	$\pm 0,1$	32	40	50	63	80	100
d_2	$^{+0,1}_{-0,05}$	15	18	21	28	32	32
d_3	$\pm 0,05$	16,5	20	24	32	38	38
d_4		M12 × 1,5	M14 × 1,5	M16 × 1,5	M20 × 2	M20 × 2	M20 × 2
d_5	$\pm 0,1$	3,6	4,6	6,1	8,1	9,1	9,1
d_6	$\pm 0,2$	12,3	14,3	16,5	20,5	20,5	20,5
d_7		25,2	31,6	39,1	48,5	60,8	87
d_8	$\pm 0,1$	21,6	28	35,5	44,9	57,2	57,2
d_9	$\pm 0,3$	4	4	4	4	4	4
d_{10}		1,5	2	3	4	6	6
d_{11}		5	5	7	7	7	10
D_m		22	28	35	44	55	55
e		0,7	0,9	1,12	1,4	2	2
f_1		0,3 × 45°	0,3 × 45°	0,5 × 45°	0,5 × 45°	0,5 × 45°	0,5 × 45°
h_1	$\pm 0,1$	9	11	14	18	—	—
h_1	$\pm 0,2$	—	—	—	—	22,2	22,2
h_2		—	11	14	17,5	22	22
h_3	$^{+0,2}_{0}$	5,4	5,2	5,1	5	4,9	4,9
l_1		2,5	2,5	3	3	3	3
l_2	$\pm 0,1$	19	24	30	38	48	48
l_3	min	15	20	20	22	30	32
l_4		1	1,5	1,5	1,5	1,5	1,5
l_5		$3,2^{+0,3}_{0}$	$4^{+0,4}_{0}$	$5,3^{+0,5}_{0}$	$6,2^{+0,5}_{0}$	$8^{+0,5}_{0}$	$8^{+0,5}_{0}$

Table 1 (*continued*)

Dimensions in millimetres

Nominal size	32	40	50	63	80	80X
l_6 ±0,15	6	8	10	12	12	16
l_7 ±0,15	6	9	10	11	20	20
l_8 min	6	6	7	9	0	0
l_9	9	12	12	12	12	12
l_{10} ±0,2	8	11,5	14	15,5	25	25
l_{11} ±0,1	13,5	17,5	22	26	34	34
l_{12} ±0,15	2,8	3,4	4,6	5,8	8,5	8,5
l_{13}	3,6	3,5	4	6,5	6,5	6,5
l_{14}	0,3	0,4	0,5	0,6	0,6	0,6
l_{15}	2	1,4	1,5	1,6	1,6	1,6
l_{16}	9	12	12	12	12	12
r_1 $^{+2}_{0}$	3	3	4	5	6	6
r_2	0,3	0,3	0,5	0,5	0,5	0,5
r_3 $^{0}_{-0,1}$	0,75	1	1,5	2	3	3

4 Clamping force

The clamping system shall provide sufficient clamping force to ensure contact of the shank flange with the face of the receiver.

A guide to clamping forces for polygon-shanks is given in Annex A.

5 Designation

A polygon-shank in accordance with this part of ISO 26623 shall be designated as follows:

a) "Polygon-shank";

b) reference to this part of ISO 26623 (i.e. "ISO 26623-1");

c) designation symbol "PSC";

d) nominal size, in millimetres.

EXAMPLE   Designation of a polygon-shank of nominal size 32 mm:

   Polygon-shank ISO 26623-1 - PSC 32