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**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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 29, *Small tools*.

This second edition cancels and replaces the first edition (ISO 26623-1:2008), which has been technically revised as follows:

— addition of polygonal shanks of nominal size 100.

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*

# Polygonal taper interface with flange contact surface —

## Part 1: Dimensions and designation of shanks

### 1 Scope

This part of ISO 26623 specifies dimensions for polygonal taper interfaces 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 documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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*

ISO 2768-2, *General tolerances — Part 2: Geometrical tolerances for features without individual tolerance indications*

### 3 Dimensions

#### 3.1 General

Tolerances for linear dimensions for features without individual tolerance indications shall be of tolerance class “m” in accordance with ISO 2768-1 and geometrical tolerances for features without individual tolerance indications shall be of tolerance class “K” in accordance with ISO 2768-2.

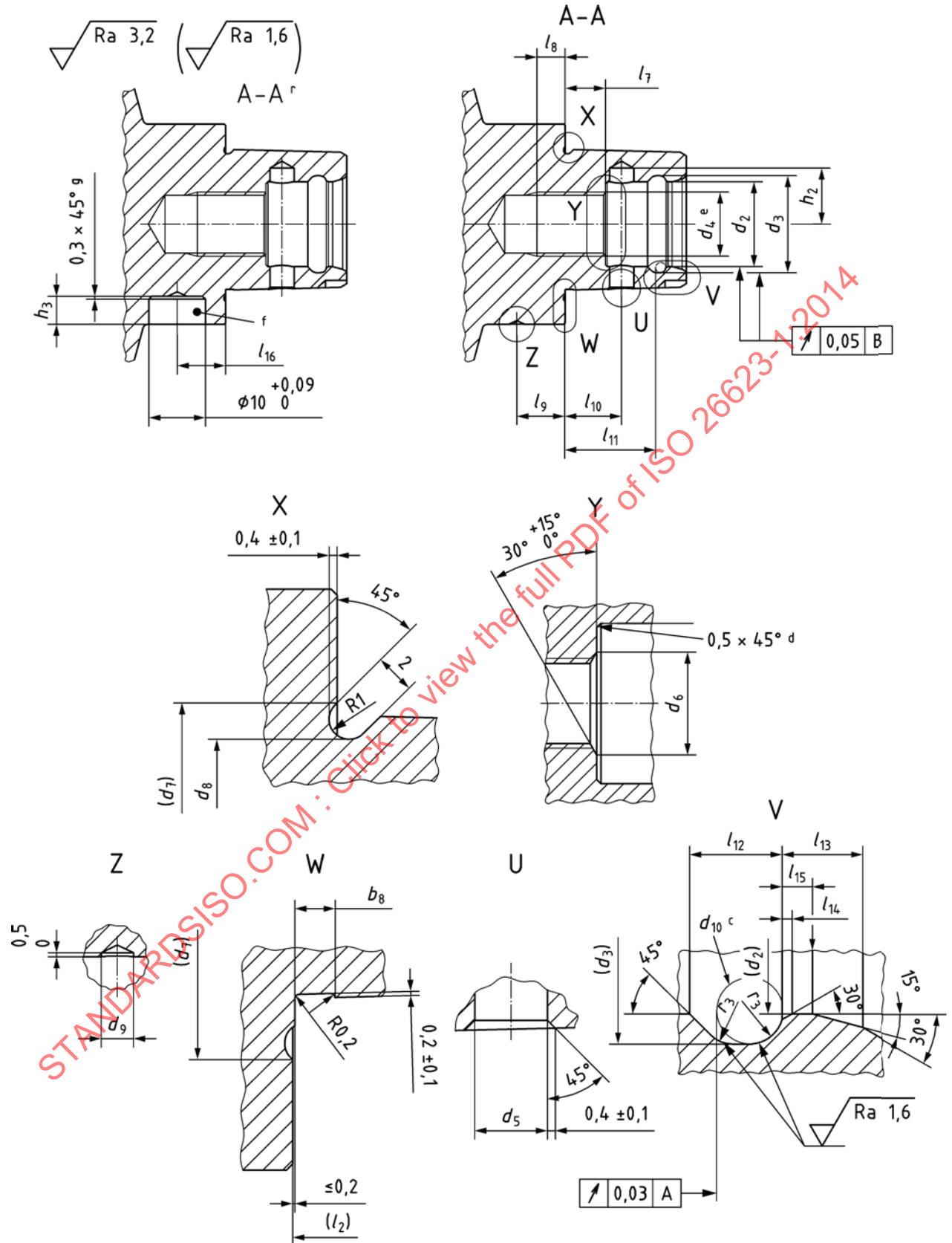
Tolerances for threads where tolerance is not stated shall be in accordance with ISO 965-2.

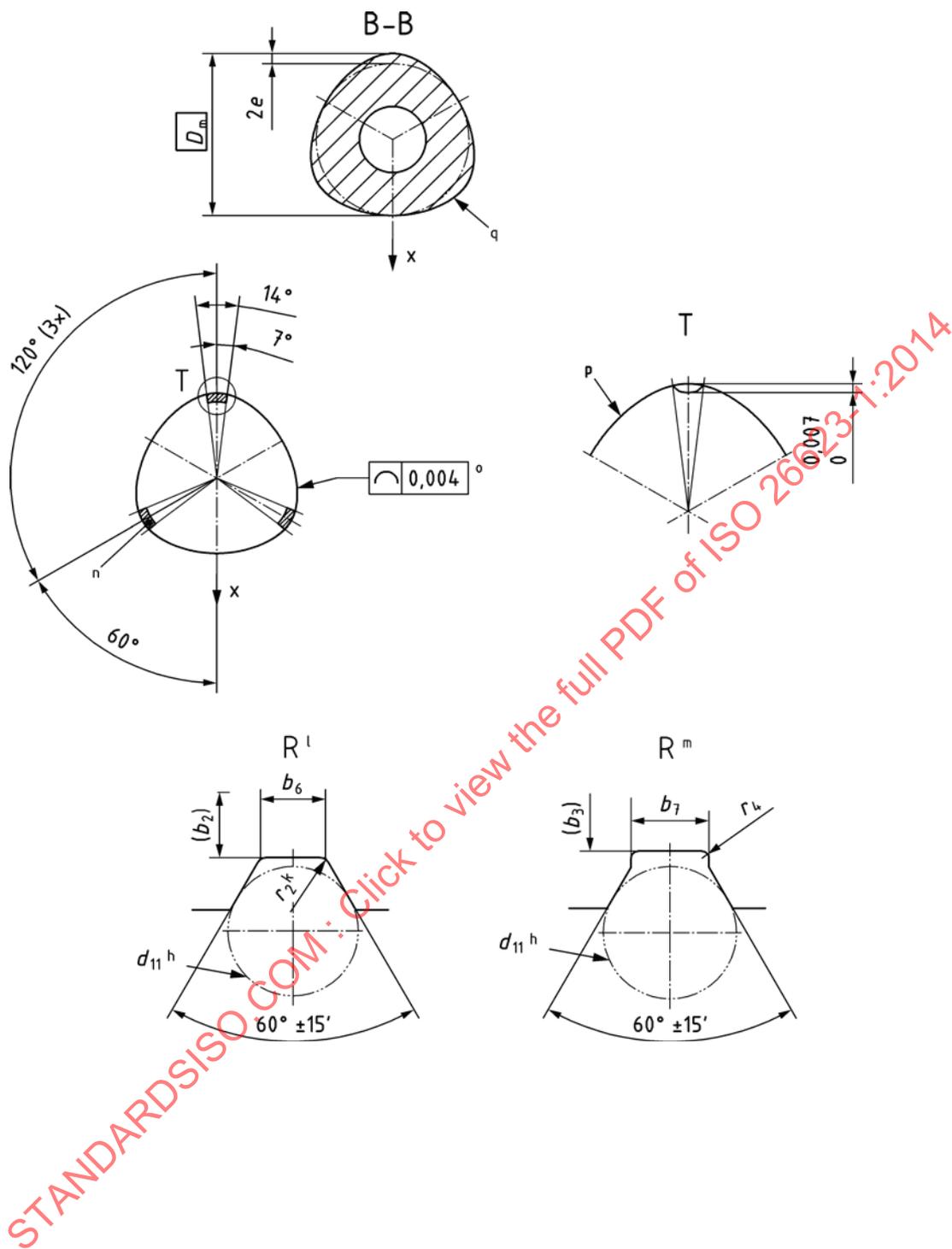
#### 3.2 Polygon-shanks

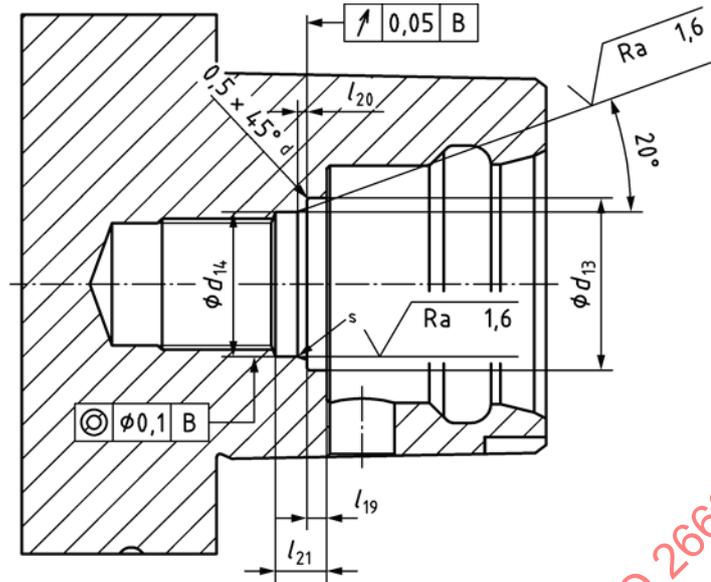
The dimensions of polygon-shanks shall be as specified in [Figure 1](#) and [Figure 2](#) and in [Table 1](#).

NOTE Additional dimensions as in use for stationary tools are given in [Annex A](#). Additional recommendations for use and application, (i.e. balancing with a particular design for size 100), are given in [Annex B](#).





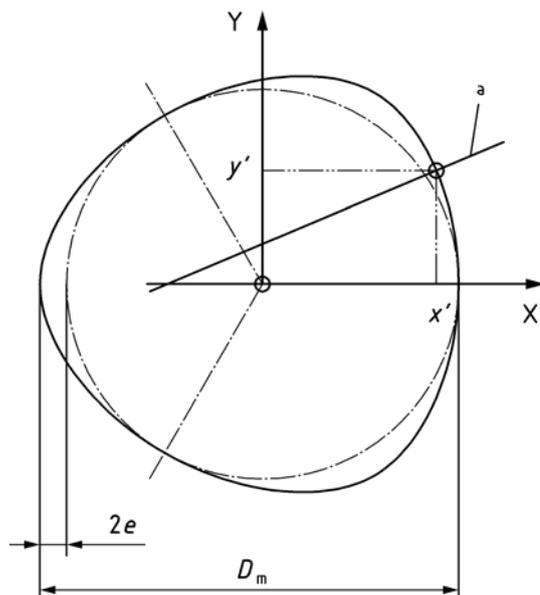




Size 100 polygon shanks

- |   |   |   |  |
|---|---|---|--|
| a | Gauge line.   | k | $r_2$ or $f_1$ as alternative.   |
| b | Position of the cutting edge for right hand tools with l single cutting edge. | l | Detail R alternative 1.  |
| c | Gauge ball.   | m | Detail R alternative 2.  |
| d | 0,5 × 45° or R 0,4.   | n | Form of profile from actual ground curve = $\begin{matrix} +0 \\ -0,007 \end{matrix}$ (sectioned areas). |
| e | Thread soft.  | o | Theoretical polygon curve.   |
| f | Data chip hole, optional.   | p | Actual ground curve.   |
| g | 0,3 × 45° or R 0,3.   | q | Polygon curve according to <a href="#">Figure 2</a> .  |
| h | Gauge pin.  | r | Section A-A with data chip hole, optional.   |
|   |   | s | Rounded.   |
|   |   | x | X-axis for theoretical polygon curve according to <a href="#">Figure 2</a> .                             |

Figure 1 — Polygon shanks



$$x' = D_m/2 \times \cos \gamma - 2 \times e \times \cos(2\gamma) + e \times \cos(4\gamma)$$

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

a Normal to polygon curve.

Figure 2 — Polygon curve

Table 1 — Polygon shanks — Dimensions

Dimensions in millimetres

Nominal size	32	40	50	63	80	80X	100
$b_1 \pm 0,1$	39	46	59,3	70,7	86	110	110
$b_2$	28,3	35,3	44,4	55,8	71,1	88,7	88,7
$b_3 \pm 0,1$	27,9	34,9	44	55,4	70,7	88,3	88,3
$b_4$	4,2	5,2	6,5	8,5	9,6	9,6	12,4
$b_5$	4,5	5,5	7	9	10,1	10,1	13,2
$b_6$	2,5	2,5	3,5	3,5	3,5	5	5
$b_7$	2,6	2,6	4,1	4,1	4,1	6,1	6,1
$b_8$	1,5	1,5	2	2	2	2	2
$d_1 \pm 0,1$	32	40	50	63	80	100	100
$d_2 \begin{smallmatrix} +0,1 \\ -0,05 \end{smallmatrix}$	15	18	21	28	32	32	43
$d_3 \pm 0,05$	16,5	20	24	32	38	38	50,5
$d_4$	M12 × 1,5	M14 × 1,5	M16 × 1,5	M20 × 2	M20 × 2	M20 × 2	M24 × 2
$d_5 \pm 0,1$	3,6	4,6	6,1	8,1	9,1	9,1	12

NOTE For dimensions  $d_{12}$  and  $l_{17}$ , see Annex A.

a Valid only if balancing is needed.

b For stationary tools, dimensions see Annex B.

Table 1 (continued)

Nominal size	32	40	50	63	80	80X	100
$d_6 \pm 0,2$	12,3	14,3	16,5	20,5	20,5	20,5	25
$d_7$	25,2	31,6	39,1	48,5	60,8	87	79,4
$d_8 \pm 0,1$	21,6	28	35,5	44,9	57,2	57,2	75,8
$d_9 \pm 0,3$	4	4	4	4	4	4	4
$d_{10}$	1,5	2	3	4	6	6	7,5
$d_{11}$	5	5	7	7	7	10	10
$d_{12}$	—						
$d_{13} \pm 0,05$	—						31
$d_{14} \text{ H9}$	—						26
$D_m$	22	28	35	44	55	55	72
$e$	0,7	0,9	1,12	1,4	2	2	2,8
$f_1$	$0,3 \times 45^\circ$	$0,3 \times 45^\circ$	$0,5 \times 45^\circ$	$0,5 \times 45^\circ$	$0,5 \times 45^\circ$	$0,5 \times 45^\circ$	$0,5 \times 45^\circ$
$h_1 \pm 0,1$	9	11	14	18	—	—	—
$h_1 \pm 0,2$	—	—	—	—	22,2	22,2	29
$h_2$	—	11	14	17,5	22	22	a
$h_3 \begin{smallmatrix} +0,2 \\ 0 \end{smallmatrix}$	5,4	5,2	5,1	5	4,9	4,9	4,9
$l_1$	2,5	2,5	3	3	3	3	3
$l_2 \pm 0,1$	19	24	30	38	48	48	60
$l_3 \text{ min}$	15	20	20	22	30	32	36
$l_4$	1	1,5	1,5	1,5	1,5	1,5	2
$l_5$	$3,2 \begin{smallmatrix} +0,3 \\ 0 \end{smallmatrix}$	$4 \begin{smallmatrix} +0,4 \\ 0 \end{smallmatrix}$	$5,3 \begin{smallmatrix} +0,5 \\ 0 \end{smallmatrix}$	$6,2 \begin{smallmatrix} +0,5 \\ 0 \end{smallmatrix}$	$8 \begin{smallmatrix} +0,5 \\ 0 \end{smallmatrix}$	$8 \begin{smallmatrix} +0,5 \\ 0 \end{smallmatrix}$	$11 \begin{smallmatrix} +0,5 \\ 0 \end{smallmatrix}$
$l_6 \pm 0,15$	6	8	10	12	12	16	16
$l_7 \pm 0,15$	6	9	10	11	20	20	20
$l_8 \text{ min}$	6	6	7	9	0	0	10
$l_9$	9	12	12	12	12	12	16
$l_{10} \pm 0,2$	8	11,5	14	15,5	25	25	26,5
$l_{11} \pm 0,1$	13,5	17,5	22	26	34	34	42,5
$l_{12}$	$2,8 \pm 0,15$	$3,4 \pm 0,15$	$4,6 \pm 0,15$	$5,8 \pm 0,15$	$8,5 \pm 0,15$	$8,5 \pm 0,15$	11
$l_{13}$	3,6	3,5	4	6,5	6,5	6,5	8
$l_{14}$	0,3	0,4	0,5	0,6	0,6	0,6	0,6
$l_{15} \pm 0,2$	2	1,4	1,5	1,6	1,6	1,6	1,9
$l_{16}$	9	12	12	12	12	12	16
$l_{17}$	—						
$l_{18}$	b						
$l_{19}$	—						3,8
$l_{20}$	—						1,5
NOTE	For dimensions $d_{12}$ and $l_{17}$ , see <a href="#">Annex A</a> .						
a	Valid only if balancing is needed.						
b	For stationary tools, dimensions see <a href="#">Annex B</a> .						

**Table 1** (continued)

Nominal size	32	40	50	63	80	80X	100
$l_{21}$	—						9,5
$r_1 \begin{smallmatrix} +2 \\ 0 \end{smallmatrix}$	3	3	4	5	6	6	7
$r_2$	0,3	0,3	0,5	0,5	0,5	0,5	0,5
$r_3 \begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$	0,75	1	1,5	2	3	3	3,75
$r_4$	0,3	0,3	0,3	0,3	0,3	0,3	0,4
NOTE	For dimensions $d_{12}$ and $l_{17}$ , see <a href="#">Annex A</a> .						
a	Valid only if balancing is needed.						
b	For stationary tools, dimensions see <a href="#">Annex B</a> .						

#### 4 Clamping forces

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-shank is given in [Annex A](#).

#### 5 Designation

A polygon-shank in accordance with this part of ISO 26623 shall be designated by the following:

- a) "POLYGON-SHANK";
- b) reference to this part of ISO 26623 (i.e. ISO 26623-1);
- c) designation symbols PSC;
- d) nominal size, in millimetres.

EXAMPLE Designation of a polygon-shank for automatic and manual tool exchange with nominal size 32:

**POLYGON-SHANK ISO 26623-1 — PSC 32**