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**Assembly tools for screws and nuts —  
Screwdrivers for cross-recessed head  
screws —**

**Part 1:  
Driver tips**

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*Outils de manœuvre pour vis et écrous — Tournevis pour vis à  
empreinte cruciforme —*

*Partie 1: Extrémités de tournevis*

ISO 8764-1:2004

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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 8764-1 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 10, *Assembly tools for screws and nuts, pliers and nippers*.

This third edition cancels and replaces the second edition (ISO 8764-1:1999), which has been technically revised as follows:

- a designation has been added;
- in the English version, the term “point” becomes “tip” and “type” becomes “form”;
- in the French version, the term “type” becomes “forme”.

ISO 8764 consists of the following parts, under the general title *Assembly tools for screws and nuts — Screwdrivers for cross-recessed head screws*:

- *Part 1: Driver tips*
- *Part 2: General requirements, lengths of blades and marking of hand-operated screwdrivers*

# Assembly tools for screws and nuts — Screwdrivers for cross-recessed head screws —

## Part 1: Driver tips

### 1 Scope

This part of ISO 8764 specifies the shapes and dimensions, technical requirements and torque test methods for the tips of hand drivers and of machine-operated bits for cross-recessed head screws.

It specifies two forms of driver tips:

- form PH for form H recesses;
- form PZ for form Z recesses.

H and Z form recesses are specified in ISO 4757.

General requirements, lengths of blades and marking of hand-operated screwdrivers are given in ISO 8764-2.

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### 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 4757, *Cross recesses for screws*

ISO 8764-2, *Assembly tools for screws and nuts — Screwdrivers for cross-recessed head screws — Part 2: General requirements, lengths of blades and marking of hand-operated screwdrivers*

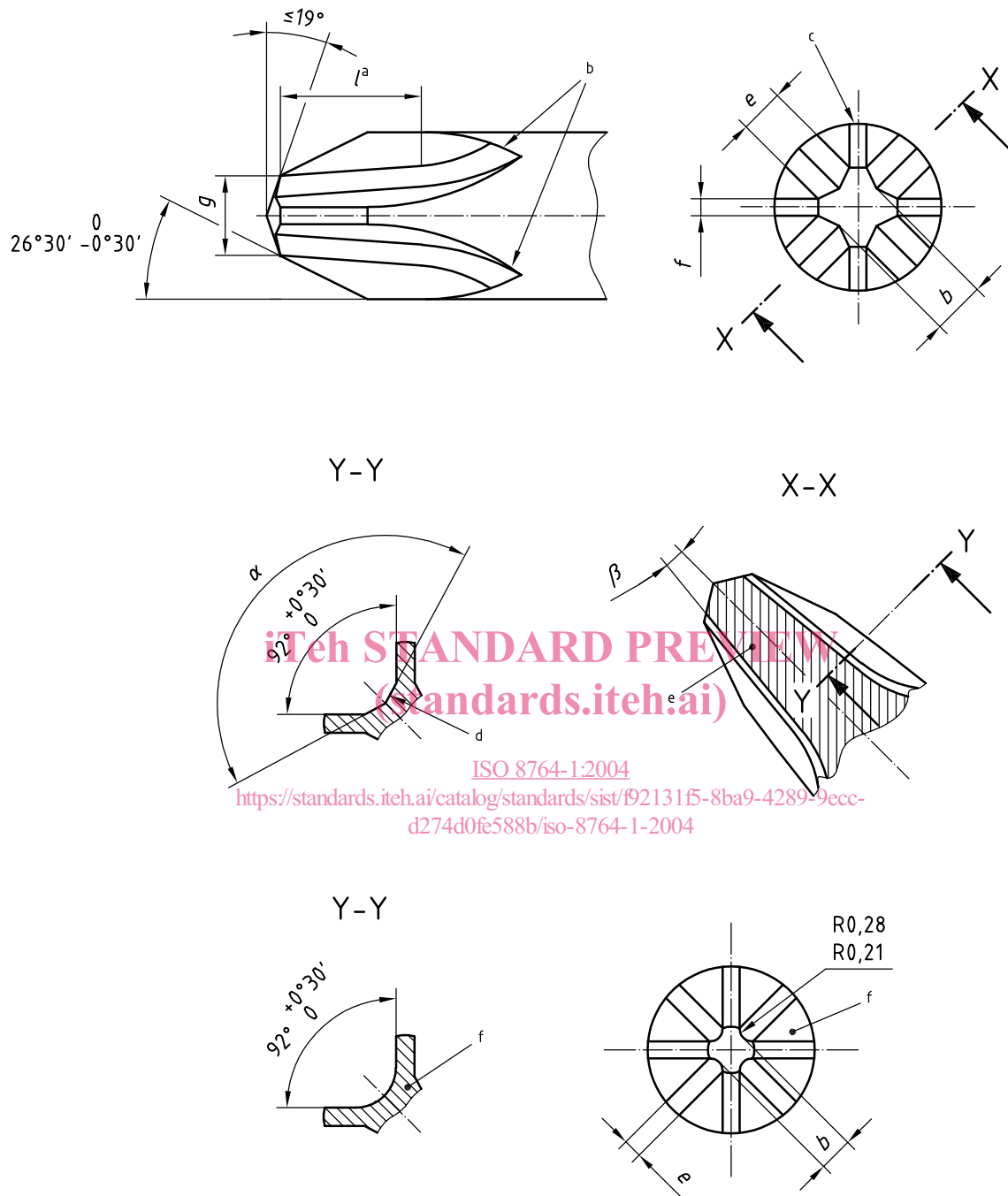
### 3 Shapes and dimensions

The shapes and dimensions of the tips shall be in accordance with Figure 1 and Table 1 for form PH, and with Figure 2 and Table 2 for form PZ.

The axis of the tip shall be concentric with the axis of the tool.

When a plated finish is used, the dimensions shall be met after plating.

Dimensions in millimetres



- a Length of straight part.
- b Blending of flutes dependent on method of manufacture.
- c Flutes equally spaced at  $90^\circ$ .
- d For tip No. 0, see detail below ( $f$ ).
- e Section Y-Y: true flute angle measured at right angles to straight part of length  $l$ .
- f Tip No. 0.

Figure 1 — Form PH tips

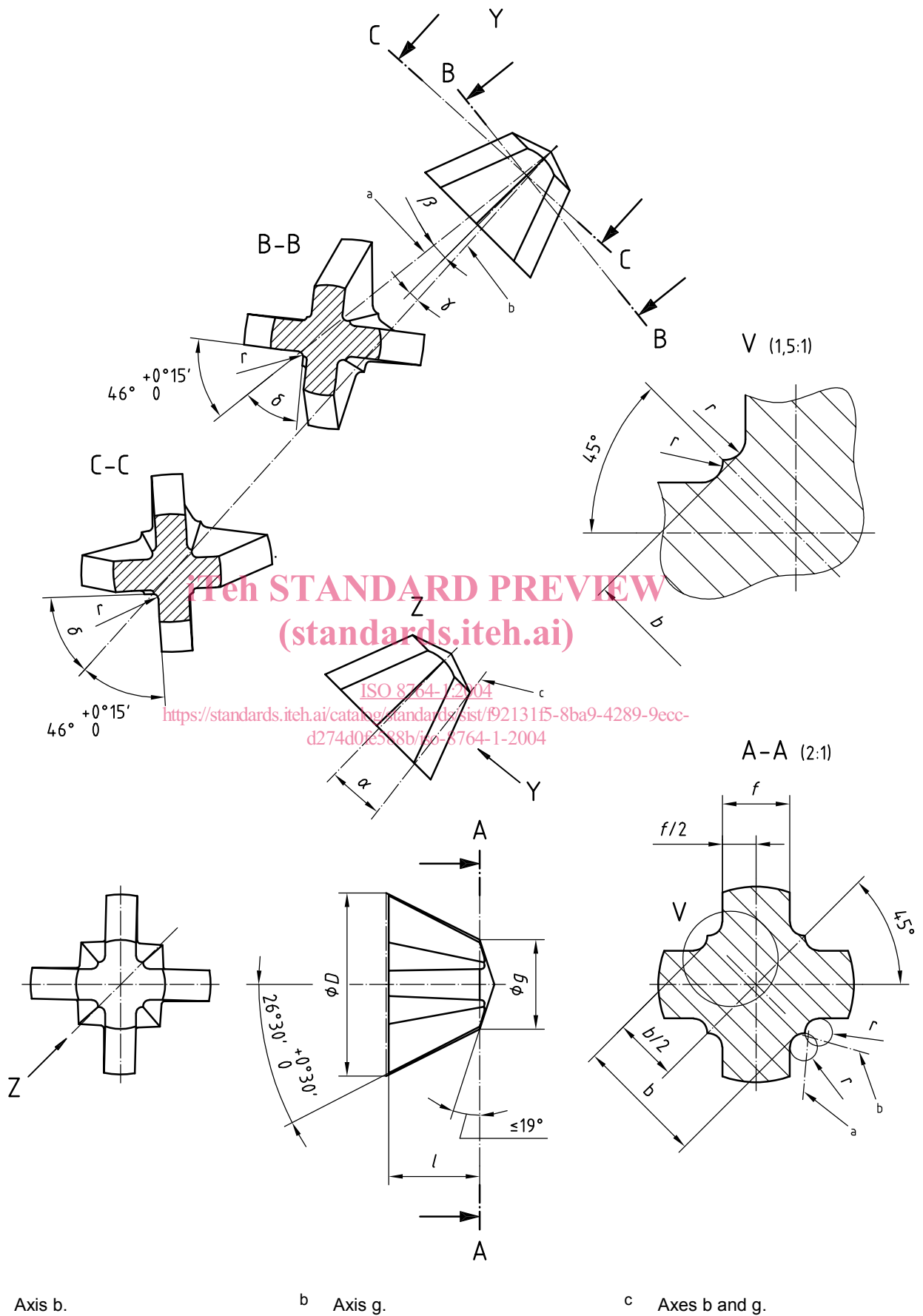


Figure 2 — Form PZ tips

Table 1 — Dimensions of form PH tips

Tip	Nominal blade diameter	<i>b</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>l</i> min.	$\alpha$	$\beta$
	mm	mm	mm	mm	mm	mm		
0	3	0,61	0,38	0,31	0,84	2,78	See Figure 1	7° 00'
		0,56	0,29	0,26	0,79			6° 30'
1	4,5	1,03	0,54	0,53	1,30	2,78	138° 30'	7° 00'
		0,98	0,49	0,48	1,25		138° 00'	6° 30'
2	6	1,56	1,13	0,64	2,31	4,37	140° 30'	5° 45'
		1,51	1,08	0,59	2,26		140° 00'	5° 15'
3	8	2,52	2,12	0,81	3,84	6,74	146° 30'	5° 45'
		2,47	2,07	0,73	3,79		146° 00'	5° 15'
4	10	3,60	2,76	1,12	5,11	8,34	153° 30'	7° 00'
		3,55	2,71	1,04	5,06		153° 00'	6° 30'

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Table 2 — Dimensions of form PZ tips

Tip	Nominal blade diameter	<i>b</i>	<i>f</i>	<i>g</i>	<i>l</i> min.	<i>r</i>	$\alpha$	$\beta$	$\gamma$	$\delta$
	mm	mm	mm	mm	mm	mm				
0	3	0,78 0,70	0,45 0,42	0,92 0,89	1,54	0,10 0,07	7° 00'	8° 15'	4° 53'	46° 15' 46° 00'
1	4,5	1,19 1,11	0,71 0,68	1,40 1,37	2,02	0,13 0,10	6° 30'	7° 45'	4° 23'	
2	6	1,78 1,70	1,00 0,95	2,44 2,39	3,17	0,30 0,15	5° 45'	6° 50'	3° 30'	
3	8	2,65 2,55	1,38 1,33	3,96 3,91	4	0,36 0,20	5° 15'	6° 20'	3° 00'	
4	10	4,02 3,92	2,10 2,05	5,18 5,13	5,4	0,51 0,36	7° 00' 6° 30'	8° 15' 7° 45'	4° 53' 4° 23'	56° 15'



## 4 Technical requirements

### 4.1 Material

Components shall be manufactured from steel which, when suitably heat-treated, satisfies the mechanical requirements and torque tests specified in 4.2 and Clause 6 respectively.

### 4.2 Heat treatment and hardness

The screwdriver tips shall have a minimum hardness of

- 54 HRC for hand-operated screwdrivers,
- 58 HRC for machine-operated screwdrivers,

for a minimum length of three times the nominal blade diameter measured from the driving end.

The remainder of the tool shall be hardened and tempered to a minimum of 50 HRC.

All hardness measurements shall be taken on ground flats, parallel with the axis and of sufficient area to give an accurate reading.

### 4.3 Finish

Components shall be free from cracks, blemishes and other deleterious defects.

## 5 Inspection of dimensions

### 5.1 General

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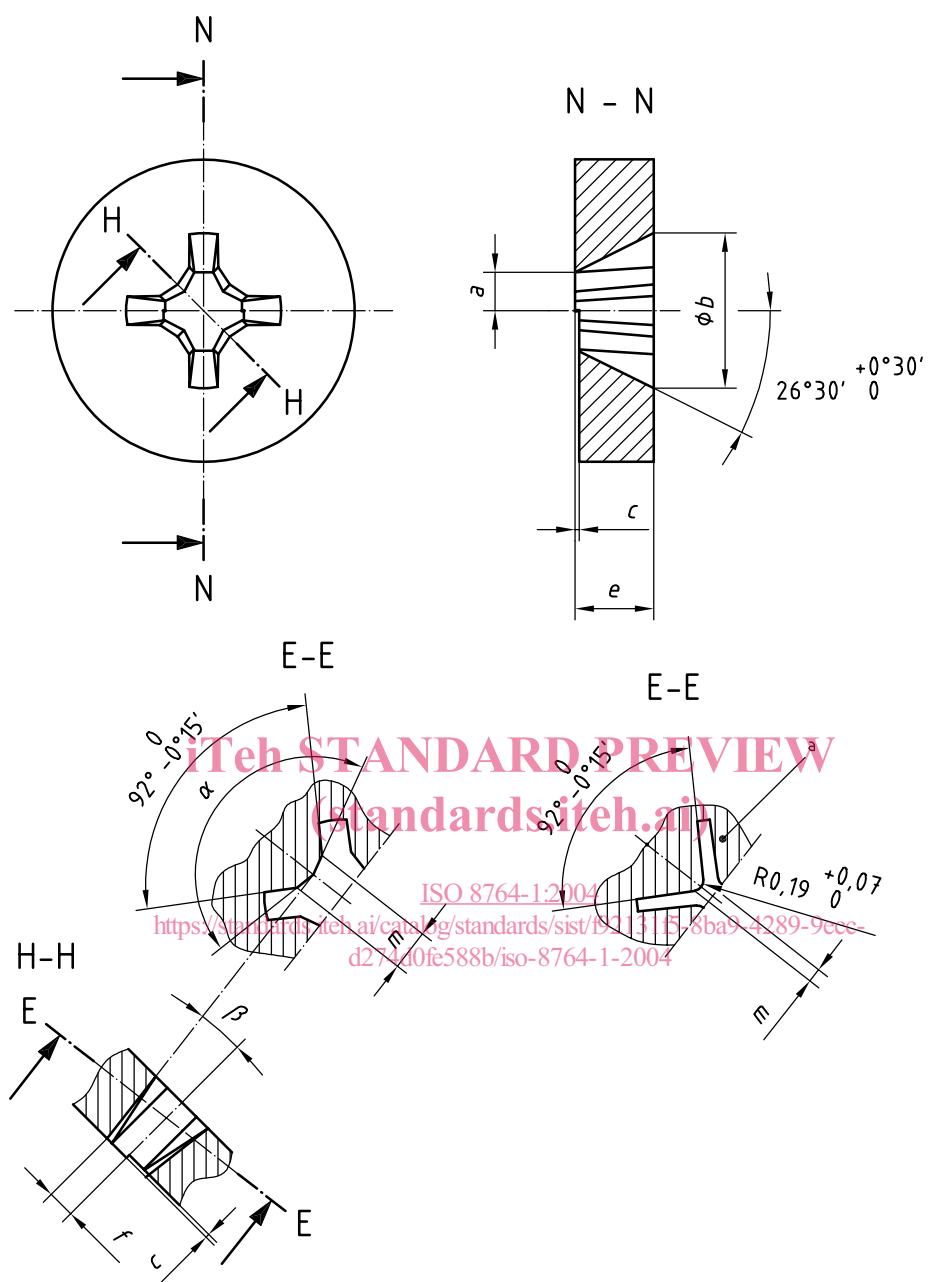
Conformance with the dimensions as specified in Clause 3 shall be determined either by direct measurement or by the use of suitable inspection gauges as defined in 5.2 and 5.3.

### 5.2 Inspection gauges for form PH tips

The dimensions of the tips are in accordance with this part of ISO 8764 when they fit properly into the gauge and when the edges of the tips at which the two cones of 53° and 142° meet and lie within step *c* of the gauge (see Figure 3 and Table 3). See Annex A for an explanation of the choice of dimensions.

### 5.3 Inspection gauges for form PZ tips

See Table 4 and Figure 4.



a Size No. 0.

Figure 3 — Inspection gauge for form PH tips

Table 3 — Dimensions of inspection gauge for form PH tips

Tip	$a$ $\pm 0,005$ mm	$b$ min. mm	$c$ $\pm 0,025$ mm	$e$ max. mm	$f$ $\pm 0,005$ mm	$m$ $\begin{smallmatrix} 0 \\ -0,02 \end{smallmatrix}$ mm	$\alpha$ $\begin{smallmatrix} 0 \\ -0^\circ 15' \end{smallmatrix}$	$\beta$ $\begin{smallmatrix} +0^\circ 15' \\ 0 \end{smallmatrix}$
0	0,419	3	0,254	2,38	0,284	0,29	—	7°
1	0,648	4,5		2,38	0,493	0,49	138°	
2	1,156	6		3,97	0,769	1,08	140°	5° 45'
3	1,918	8		6,34	1,257	2,07	146°	
4	2,553	10		7,94	1,804	2,71	153°	7°

Table 4 — Dimensions of inspection gauge for form PZ tips

Tip	$b$ mm	$f_1$ mm	$f_2$ mm	$a$ mm	$i$ mm	$k$ mm	$g$ mm	$t$ mm	$r_a$ max. mm	$r$ $\begin{smallmatrix} +0,05 \\ 0 \end{smallmatrix}$ mm	$\alpha$	$\beta$	$\gamma$	$\delta$
0	1,635	0,48 0,47	0,485	2,5	1,55 1,54	1,30 1,29	0,93 0,92	0,83 0,82	0,07	0,1	7° 10'	7° 45'	4° 23'	46° 05' 45° 55'
1	2,215	0,75 0,74	0,775	3,47	2,03 2,02	1,78 1,77	1,41 1,40	1,24 1,23	0,1	0,12	7° 00'	7° 35'	4° 13'	
2	3,135	1,04 1,03	1,080	5,64	3,16 3,15	2,91 2,90	2,43 2,42	1,85 1,84			5° 55'	6° 20'	3° 00'	
3	4,255	1,42 1,41	1,49	8,02	4,01 4,00	3,76 3,75	3,95 3,94	2,68 2,67	0,15	0,15	5° 45'	6° 10'	2° 50'	56° 20' 56° 10'
4	6,565	2,14 2,13	2,195	10,67	5,41 5,40	5,16 5,15	5,17 5,16	4,05 4,04			7° 10' 7° 00'	7° 45' 7° 35'	4° 23' 4° 13'	

NOTE 1 The inspection gauge can only be used for checking the penetration depth of tool profiles. Through this the fitting precision of the tool profiles in the referring screw heads is guaranteed. The bases of this test are given in ISO 4757 (for screws) and this part of ISO 8764 (for tools).

NOTE 2 In order to make a visual test of penetration depth possible, the difference of the inspection gauge surface  $i$  and  $k$  is stated bigger than the theoretical determination of the tolerance  $g_{\min}$  and  $g_{\max}$ .