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मानक

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IS 7478 (2011): Cross Recesses for Screws [PGD 31: Bolts, Nuts and Fasteners Accessories]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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**IS 7478 : 2011**  
**ISO 4757 : 1983**  
(Superseding IS 7479 : 1985)

भारतीय मानक  
पेंच के लिए क्रॉस खाँचे  
( दूसरा पुनरीक्षण )

*Indian Standard*  
**CROSS RECESSES FOR SCREWS**  
( *Second Revision* )

ICS 21.060.10

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**BUREAU OF INDIAN STANDARDS**  
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NEW DELHI 110002

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Price Group 5

## NATIONAL FOREWORD

This Indian Standard (Second Revision) which is identical with ISO 4757 : 1983 'Cross recesses for screws' was adopted by the Bureau of Indian Standards on the recommendation of the Bolts, Nuts and Fasteners Accessories Sectional Committee and approval of the Production and General Engineering Division Council.

This standard was originally published in 1974 and subsequently revised in 1985. This second revision has been harmonized with ISO 4757 : 1983 by adoption to make pace with the latest developments taken place at international level.

The Committee has decided that IS 7479 : 1985 'Specification for recess penetration gauges (*first revision*)' shall be withdrawn after publication of this standard as the requirements of IS 7479 are covered in this standard.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain terminology and conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker in the International Standard while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard*  
**CROSS RECESSES FOR SCREWS**  
( *Second Revision* )

## **Cross recesses for screws**

### **1 Scope and field of application**

This International Standard defines two types of cross recesses for screws:

- recess type H;
- recess type Z.

Included in this International Standard is a method of penetration gauging for both types.

## 2 Recess type H

### 2.1 Dimensions

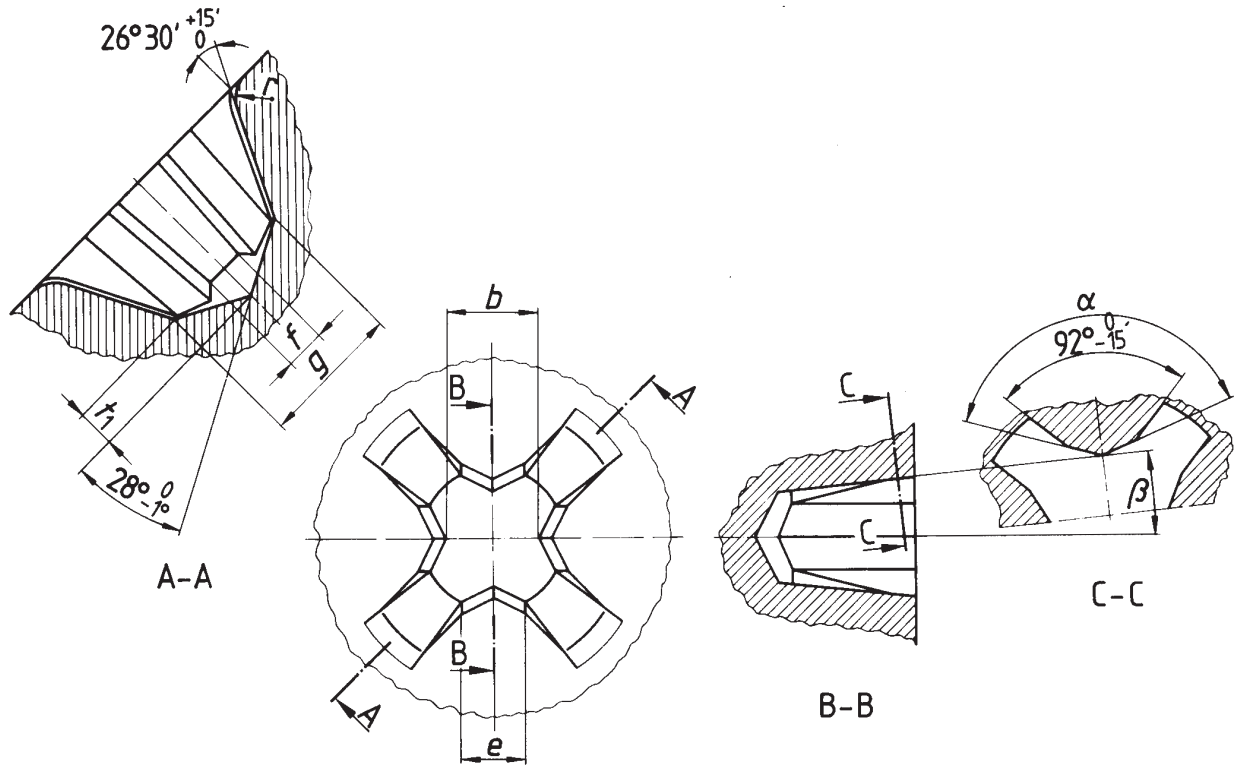


Table 1 — Recess type H

Dimensions in millimetres

Recess No.	0	1	2	3	4
$b$ $\begin{matrix} 0 \\ -0,03 \end{matrix}$	0,61	0,97	1,47	2,41	3,48
$e$	0,26 - 0,36	0,41 - 0,46	0,79 - 0,84	1,98 - 2,03	2,39 - 2,44
$g$ $\begin{matrix} +0,05 \\ 0 \end{matrix}$	0,81	1,27	2,29	3,81	5,08
$f$	0,31 - 0,36	0,51 - 0,56	0,66 - 0,74	0,79 - 0,86	1,19 - 1,27
$r$ nom.	0,3	0,5	0,6	0,8	1
$t_1$ ref.	0,22	0,34	0,61	1,01	1,35
$\alpha$ $\begin{matrix} 0 \\ -15' \end{matrix}$	1)	138°	140°	146°	153°
$\beta$ $\begin{matrix} +15' \\ 0 \end{matrix}$	7°	7°	5° 45'	5° 45'	7°

1) This will be replaced by  $r$  min. 0,25 mm;  $r$  max. 0,36 mm.

Dimensions shown are theoretical values.

## 2.2 Recess penetration gauging and gauge dimensions for recess type H

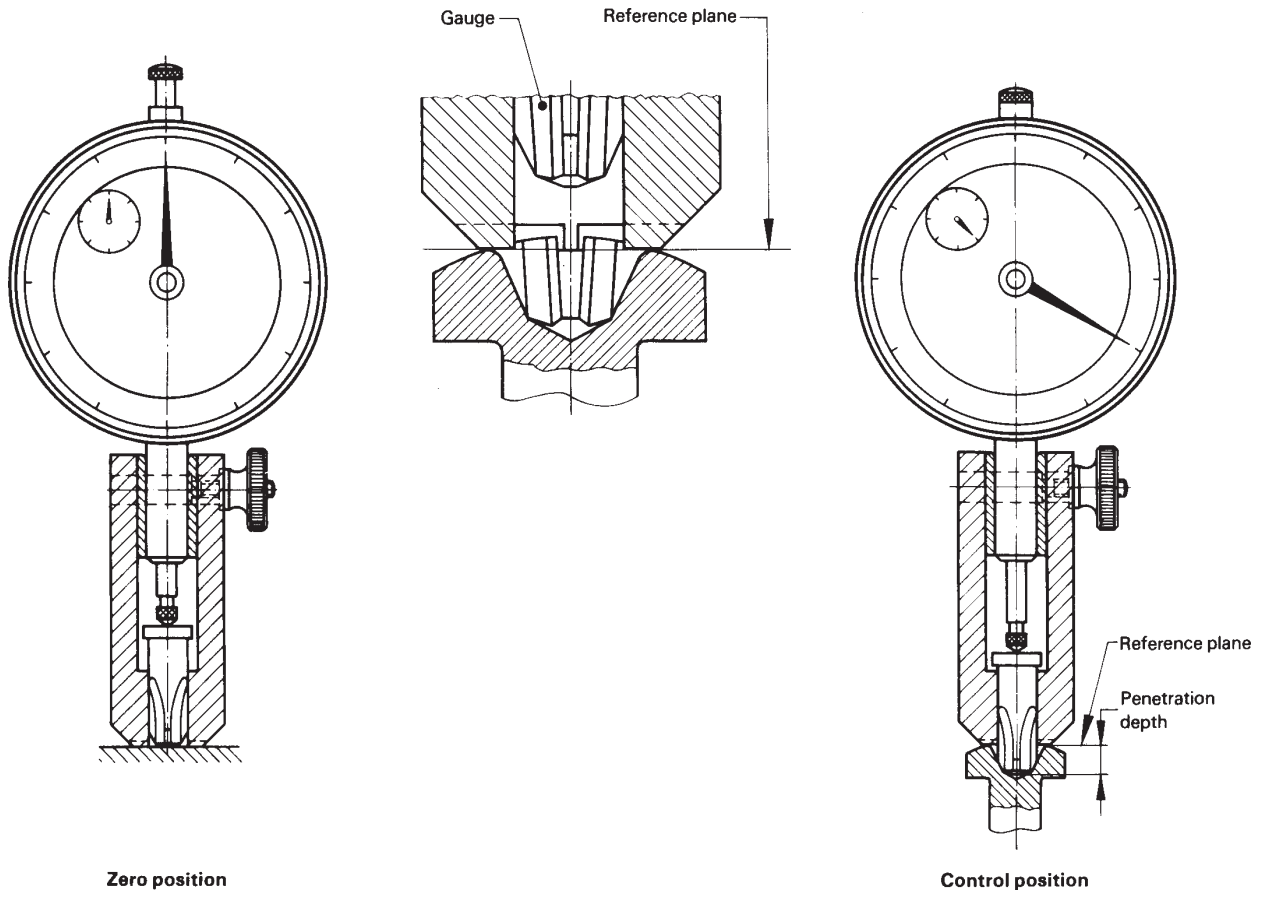
The penetration depth of the depth gauge (minimum dimension) is indicated in the different product standards. It is the test dimension for the usability of the cross recess.

The point of the gauge is identical with the point of the respective screwdriver. A sleeve serves to guide the gauge and fix the reference plane. This plane passes through the point of intersection of the recess wings and the top surface of the screw head. It corresponds thus to the surface of a screw with flat head. In the case of crowned screw heads, it lies below the crown in the transition area from the recess wings to the surface of the head. For these screw heads, the reference plane is fixed with the help of the bearing surfaces of the gauge sleeve.

The penetration depth of the gauge is measured from the reference plane by using a dial gauge. The zero and control positions of the depth gauge can be found on a flat surface.

Due to the permissible error for the core thickness  $b$  of the gauge point, an inaccuracy of up to 0,13 mm can arise when measuring the penetration depth.





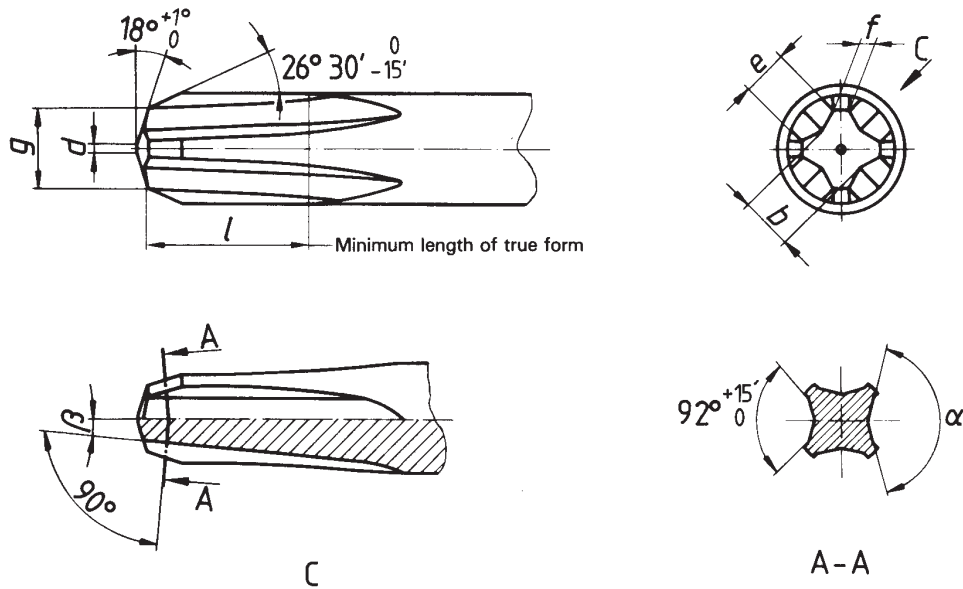


Table 2 – Gauge dimensions for recess type H

Dimensions in millimetres

Gauge No.		0	1	2	3	4
$b$	$\begin{matrix} 0 \\ -0,025 \\ 0 \end{matrix}$	0,64	1,001	1,539	2,497	3,574
$g$	$\begin{matrix} +0,025 \\ 0 \end{matrix}$	0,813	1,27	2,286	3,81	5,08
$d$	$\begin{matrix} +0,13 \\ 0 \end{matrix}$	0,25	0,38	0,38	0,38	0,38
$e$	$\begin{matrix} 0 \\ -0,025 \end{matrix}$	0,315	0,513	1,102	2,098	2,738
$f$	$\begin{matrix} 0 \\ -0,06 \end{matrix}$	0,31	0,51	0,64	0,79	1,12
$l$	min.	3,17	3,17	4,78	7,14	8,74
$\alpha$	$\begin{matrix} +15' \\ 0 \end{matrix}$	1)	138°	140°	146°	153°
$\beta$	$\begin{matrix} 0 \\ -15' \end{matrix}$	7°	7°	5° 45'	5° 45'	7°

1) This will be replaced by  $r = 0,25 \pm 0,025$  mm.

IS 7478 : 2011  
ISO 4757 : 1983

### 3 Recess type Z

#### 3.1 Dimensions

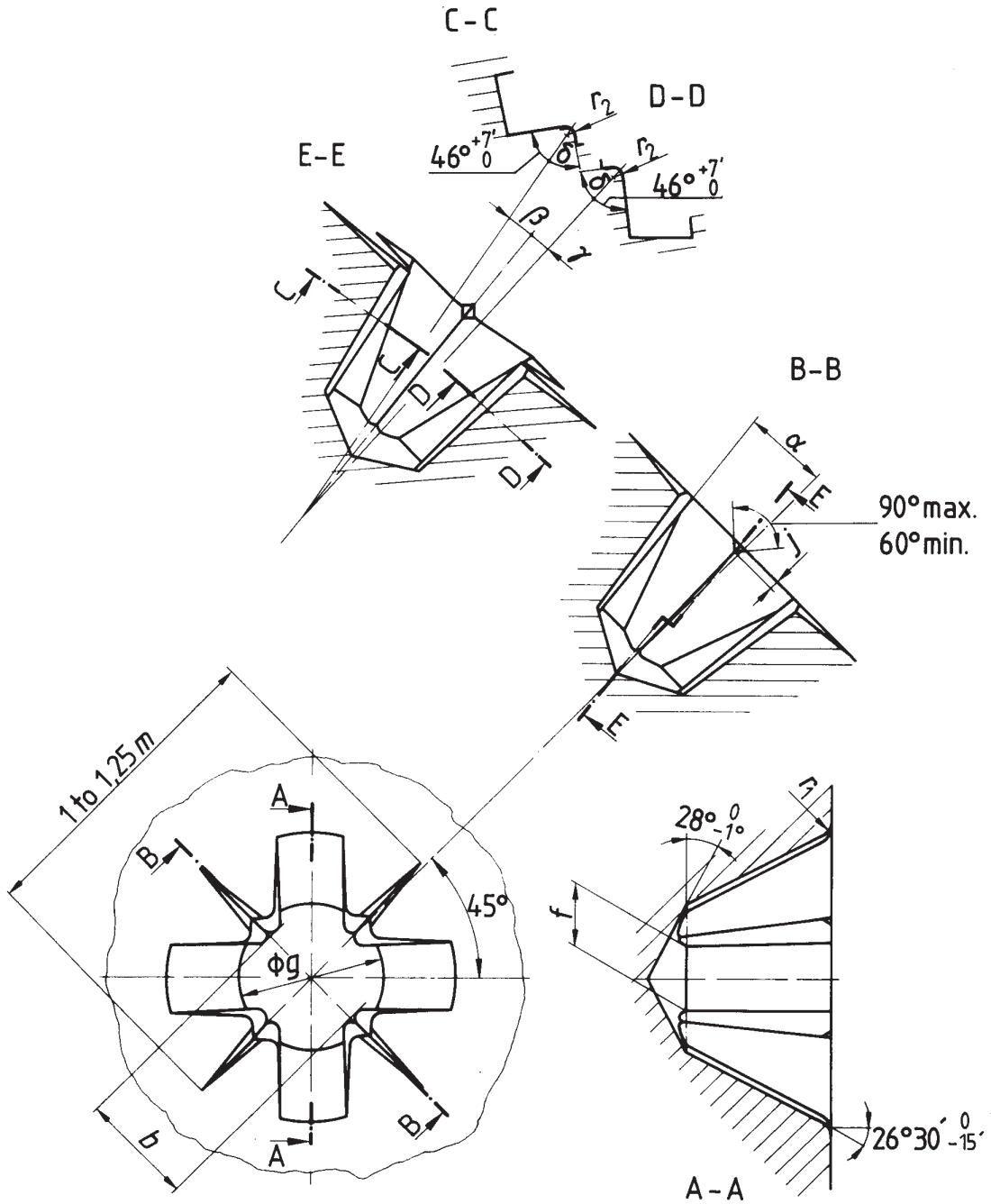


Table 3 – Recess type Z

Dimensions in millimetres

Recess No.		0	1	2	3	4
<i>b</i>	$\begin{matrix} 0 \\ -0,05 \end{matrix}$	0,76	1,27	1,83	2,72	3,96
<i>f</i>	$\begin{matrix} 0 \\ -0,025 \end{matrix}$	0,48	0,74	1,03	1,42	2,16
<i>g</i>	$\begin{matrix} 0 \\ -0,05 \end{matrix}$	0,86	1,32	2,34	3,86	5,08
<i>r</i> <sub>1</sub>	max.	0,30	0,30	0,38	0,51	0,64
<i>r</i> <sub>2</sub>	max.	0,10	0,13	0,15	0,25	0,38
<i>j</i>	max.	0,13	0,15	0,15	0,20	0,20
<i>α</i>	$\begin{matrix} +15' \\ 0 \end{matrix}$	7°	7°	5° 45'	5° 45'	7°
<i>β</i>	$\begin{matrix} 0 \\ -15' \end{matrix}$	7° 45'	7° 45'	6° 20'	6° 20'	7° 45'
<i>γ</i>	$\begin{matrix} 0 \\ -15' \end{matrix}$	4° 23'	4° 23'	3°	3°	4° 23'
<i>δ</i>	$\begin{matrix} 0 \\ -7' \end{matrix}$	46°	46°	46°	56° 15'	56° 15'

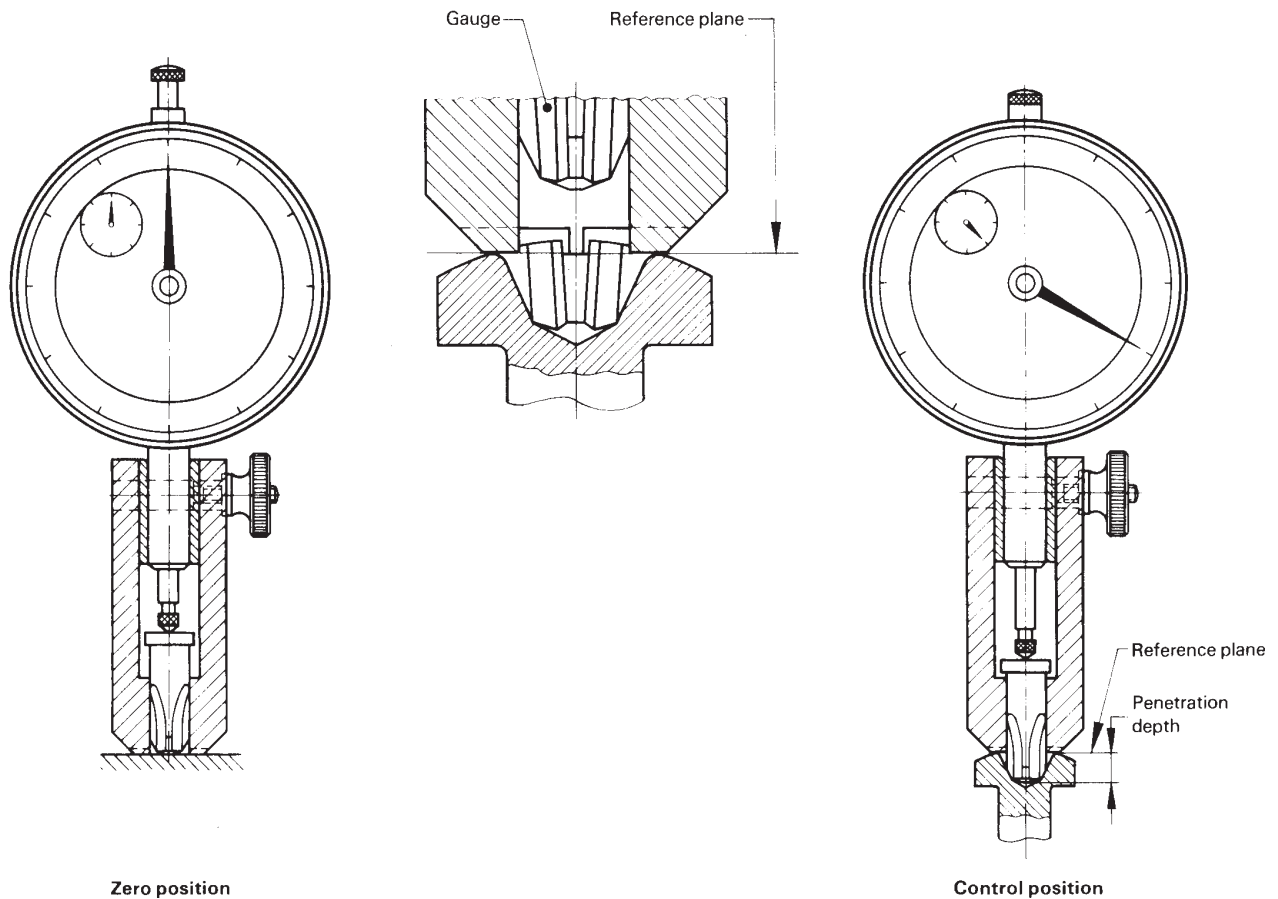
Dimensions shown are theoretical values.

### 3.2 Recess penetration gauging and gauge dimensions for recess type Z

The penetration depth of the depth gauge (minimum and maximum dimension) is indicated in the different product standards. It is the test dimension for the usability of the cross recess.

The point of the gauge is identical with the point of the respective screwdriver. A sleeve serves to guide the gauge and fix the reference plane. This plane passes through the point of intersection of the recess wings and the top surface of the screw head. It corresponds thus to the surface of a screw with flat head. In the case of crowned screw heads, it lies below the crown in the transition area from the recess wings to the surface of the head. For these screw heads, the reference plane is fixed with the help of the bearing surfaces of the gauge sleeve.

The penetration depth of the gauge is measured from the reference plane by using a dial gauge. The zero and control positions of the depth gauge can be found on a flat surface.



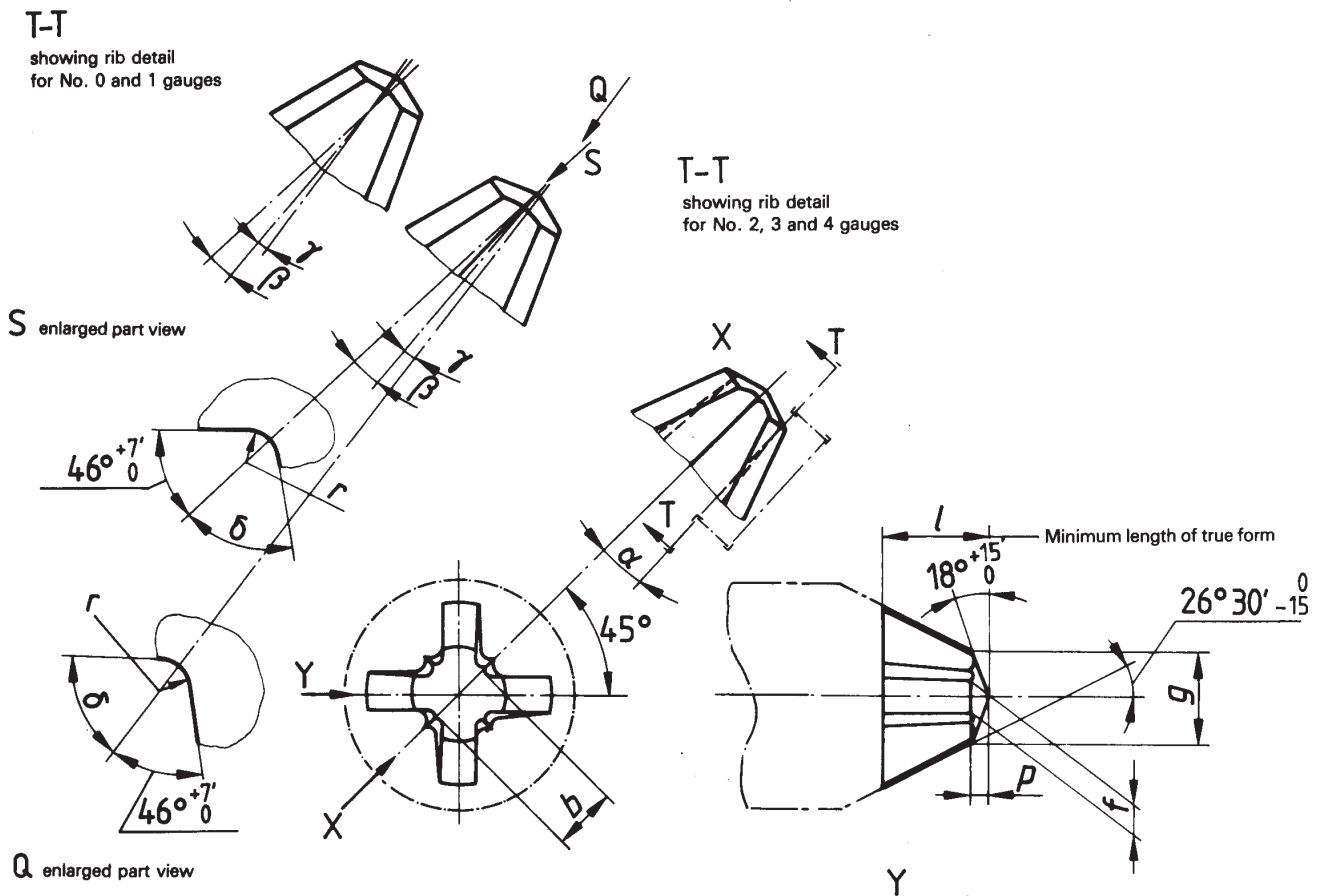


Table 4 – Gauge dimensions for recess type Z

Dimensions in millimetres

Gauge No.		0	1	2	3	4
$b$	max.	0,711	1,112	1,702	2,591	3,861
	min.	0,673	1,074	1,664	2,553	3,823
$f$	max.	0,445	0,698	0,990	1,372	2,083
	min.	0,420	0,673	0,965	1,346	2,057
$g$	max.	0,915	1,397	2,438	3,962	5,182
	min.	0,890	1,372	2,413	3,937	5,157
$l$	min.	3,17	3,17	4,78	7,14	8,74
$p$	max.	0,077	0,166	0,331	0,585	0,788
	min.	0,064	0,153	0,318	0,572	0,775
$r$	max.	0,1	0,13	0,2	0,31	0,51
	min.	0,08	0,1	0,15	0,2	0,36
$\alpha$	$\begin{smallmatrix} 0 \\ -6' \end{smallmatrix}$	$7^\circ$	$7^\circ$	$5^\circ 45'$	$5^\circ 45'$	$7^\circ$
$\beta$	$\begin{smallmatrix} +6' \\ 0 \end{smallmatrix}$	$7^\circ 45'$	$7^\circ 45'$	$6^\circ 20'$	$6^\circ 20'$	$7^\circ 45'$
$\gamma$	$\begin{smallmatrix} +6' \\ 0 \end{smallmatrix}$	$4^\circ 23'$	$4^\circ 23'$	$3^\circ$	$3^\circ$	$4^\circ 23'$
$\delta$	$\begin{smallmatrix} +7' \\ 0 \end{smallmatrix}$	$46^\circ$	$46^\circ$	$46^\circ$	$56^\circ 15'$	$56^\circ 15'$

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This Indian Standard has been developed from Doc No.: PGD 31 (1050).

### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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