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# INTERNATIONAL STANDARD



# 4247

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## Jig bushes and accessories for drilling purposes — Dimensions

*Guides de perçage et accessoires — Dimensions*

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**iteh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 4247:1977

<https://standards.iteh.ai/catalog/standards/sist/a2ec2dac-18f8-4878-abf0-2e66ea5c6df5/iso-4247-1977>

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UDC 621.951

Ref. No. ISO 4247-1977 (E)

**Descriptors :** tools, drilling jigs, dimensions, equipment specifications.

## FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 4247 was developed by Technical Committee ISO/TC 29, *Small tools*, and was circulated to the member bodies in September 1976.

It has been approved by the member bodies of the following countries :

Australia	Ireland	Spain
Austria	Italy	Sweden
Belgium	Japan	Switzerland
Brazil	Korea, Rep. of	Turkey
Czechoslovakia	Mexico	United Kingdom
France	Netherlands	U.S.A.
Germany	Poland	U.S.S.R.
Hungary	Romania	Yugoslavia
India	South Africa, Rep. of	

No member body expressed disapproval of the document.

# Jig bushes and accessories for drilling purposes — Dimensions

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the dimensions of bushes to be fitted to jigs for guiding twist drills, and of accessories for use with renewable bushes.

It deals with the following subjects :

- press-fit bushes, which may be either headed or headless;
- liners, which may be either headed or headless, the dimensions of which are taken from the press-fit range of bushes;
- renewable bushes, fixed type and slip type;
- methods of retaining renewable bushes;
- accessories (i.e. tenons, locking screws and stop pins).

NOTE — The methods of retaining bushes described in clause 6 are in general use, and member bodies will normally select one of these methods for their national standards.

If so desired, it is permitted to supply renewable bushes which can be used either as fixed type or slip type by providing the heads with the necessary features.

## 2 REFERENCE

ISO 4248, *Jig bushes — Definitions and nomenclature*.<sup>1)</sup>

## 3 TOLERANCES

The definitive tolerances to be used are still subject to discussion. In the meantime, for jig bushes used for general purposes, the following tolerances are recommended :

### 3.1 Tolerances for press fit bushes and liners

- F7 on bore diameter;
- n6 on body diameter;
- h13 on head diameter.

### 3.2 Tolerances for renewable bushes

- F7 on bore diameter;
- m6 on body diameter;
- h13 on head diameter.

### 3.3 Tolerances on stop pins

Stop pins, when required, shall be supplied with a tolerance of m6.

When this type of pin is to be used, the bush manufacturer shall provide a locating hole, with a tolerance of H7, in the head of the bush, positioned according to the dimensions shown in table 4.

### 3.4 Tolerance for jig-plate holes

Press-fit bushes and liners shall be located in holes which have an H7 tolerance.

1) At present at the stage of draft.

4 PRESS-FIT BUSHES AND LINERS

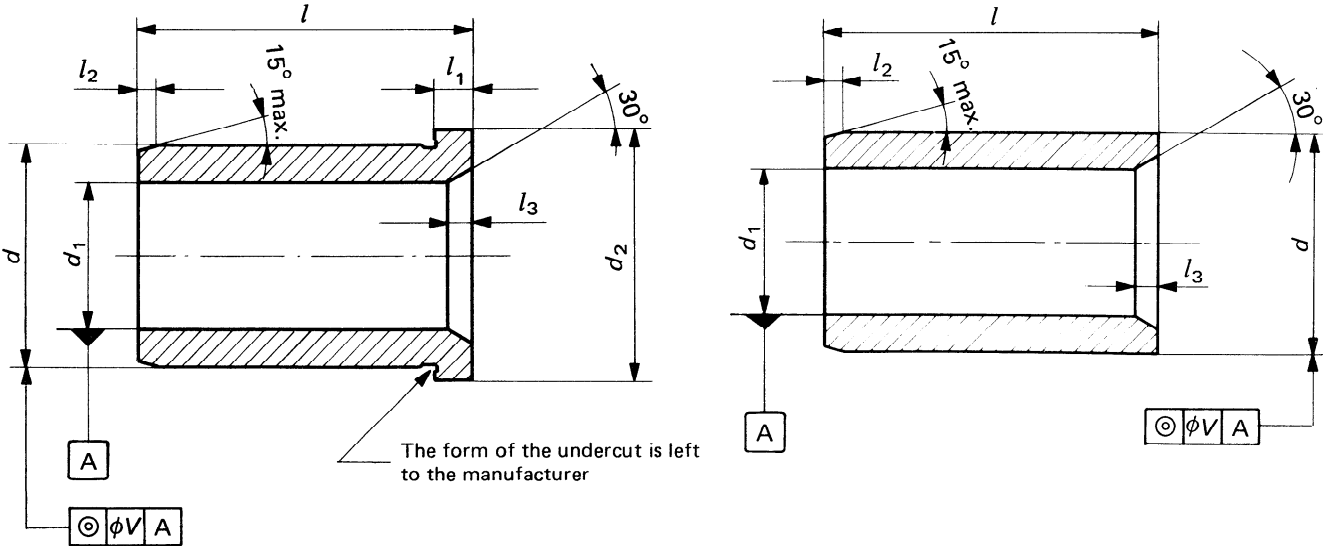


FIGURE 1 — Press-fit bush or liner — Headed type

FIGURE 2 — Press-fit bush or liner — Headless type

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ISO 4247:1977  
TABLE 1 — Dimensions of liners  
<https://standards.itech.ai/catalog/standards/sist/a2ec2dac-18f8-4878-abf0-2e66ea5c6df5/iso-4247-1977>

Values in millimetres

Diameter of bore  <i>d</i> <sub>1</sub> (F7)	Diameter of body  <i>d</i> (n6)	Head		Length <i>l</i>			Lead on outside diameter  <i>l</i> <sub>2</sub> max.	Entry chamfer <sup>1)</sup>  <i>l</i> <sub>3</sub> max.	Concen- tricity (F.I.M.)  <i>V</i>	
		diameter <i>d</i> <sub>2</sub> (h13)	thickness <i>l</i> <sub>1</sub>	short	long	extra- long				
8	12	15	3	10	16	—	1,25	1,5	0,02	
10	15	18		4	12	20	25	1,5		2
12	18	22			16	28	36			
15	22	26	5		20	36	45			
18	26	30		25	45	56				
22	30	34		6	30	56	67	3,0	3,5	
26	35	39			35	67	78			4
30	42	46			40	78	105			
35	48	52	45		89	112				
42	55	59								
48	62	66								
55	70	74								
62	78	82								
70	85	90								
78	95	100								
85	105	110								
95	115	120								
105	125	130								

1) As an alternative, a radius may be used

TABLE 2 – Dimensions of press-fit bushes

Values in millimetres

Diameter of bore $d_1$ (F7)		Diameter of body $d$ (n6)	Head		Length $l$			Lead on outside diameter $l_2$ max.	Entry chamfer <sup>1)</sup> $l_3$ max.	Concen- tricity (F.I.M.) $V$
over	up to and including		diameter $d_2$ (h13)	thickness $l_1$	short	long	extra- long			
—	1	3	6	2	6	9	—	1	1	0,01
1	1,8	4	7							
1,8	2,6	5	8							
2,6	3,3	6	9							
3,3	4	7	10	2,5	8	12	16	1	1	0,01
4	5	8	11							
5	6	10	13							
6	8	12	15							
8	10	15	18	3	10	16	20	1,25	1,5	0,02
10	12	18	22							
12	15	22	26							
15	18	26	30							
18	22	30	34	4	12	20	25	1,5	2	0,02
22	26	35	39							
26	30	42	46							
30	35	48	52							
35	42	55	59	5	16	28	36	2,5	3	0,02
42	48	62	66							
48	55	70	74							
55	63	78	82							
63	70	85	90	6	20	36	45	3	4	0,04
70	78	95	100							
78	85	105	110							
85	95	115	120							
95	105	125	130	6	25	45	56	3	4	0,04
				6	30	56	67	3	4	0,04
				6	35	67	78	3	4	0,04
				6	40	78	105	3	4	0,04
				6	45	89	112	3	4	0,04

1) As an alternative, a radius may be used.

## 5 RENEWABLE BUSHES

## 5.1 General dimensions

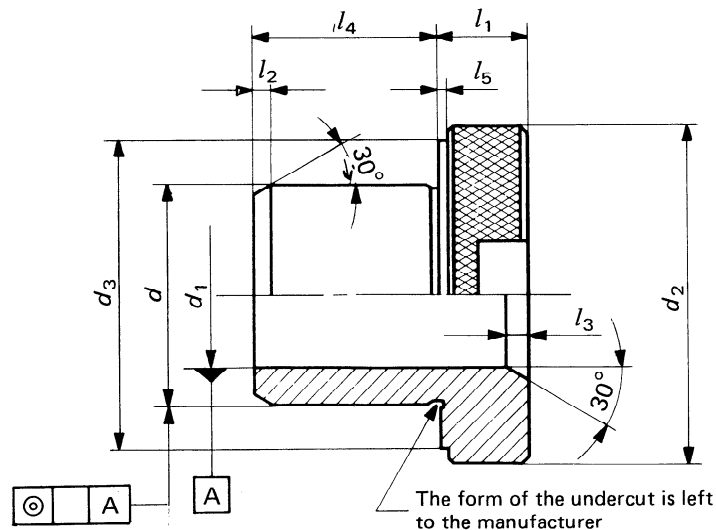


FIGURE 3 — Renewable bush

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TABLE 3 — General dimensions of renewable bushes

Values in millimetres

Diameter of bore $d_1$ (F7)		Diameter of body  $d$ (m6)	Head details				Length under head $l_4$			Lead on outside diameter  $l_2$ (max.)	Entry chamfer <sup>1)</sup>  $l_3$ (max.)	Concen- tricity (F.I.M.)  $V$			
over	up to and including		diameter  $d_2$ (h13)	thickness  $l_1$	washer details		short	long	extra- long						
					diameter $d_3$ 0 — 0,25	thickness $l_5$ 0 — 0,25									
0	4	8	15	8	12	1	10	16	—	1,25	1,0	0,02			
4	6	10	18		15		12	20	25	1,5	1,5				
6	8	12	22	10	18		16	28	36		2				
8	10	15	26		22										
10	12	18	30		26		20	36	45	2,5			3		
12	15	22	34	12	30										
15	18	26	39		35		25	45	56						
18	22	30	46		42										
22	26	35	52		46	1,5	30	56	67	3,0	3,5	0,04			
26	30	42	59		53										
30	35	48	66	16	60	2									
35	42	55	74		68	35	67	78			4				
42	48	62	82		76										
48	55	70	90		84	40	78	105							
55	62	78	100		94										
62	70	85	110		104	45	89	112							
70	78	95	120		114										
78	85	105	130		124										

1) As an alternative, a radius may be used.

## 5.2 Head details

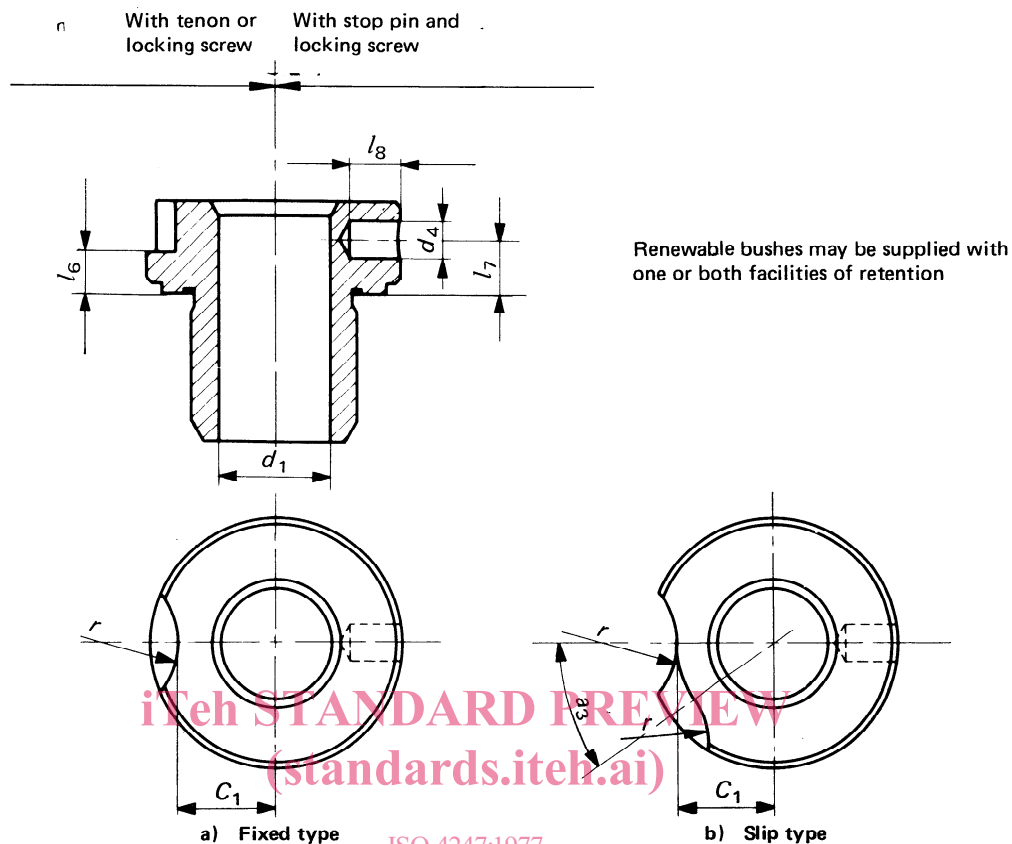


FIGURE 4 – Renewable bush head

TABLE 4 – Head details

Values in millimetres

Diameter of bore $d_1$		With tenon or locking screw				With stop pin		
over	up to and including	$l_6$	$C_1$ max.	Radius $r$	$a_3$ degrees	$l_7$	$d_4$ H7	$l_8$
0	4	3	4,5	7,0	65	4,25	2,5	4
4	6	3	6	7,0	65			
6	8	4	7,5	8,5	60	6	3	
8	10	4	9,5	8,5	50			6
10	12	4	11,5	8,5	50			6
12	15	5,5	13	10,5	35	7	5	7
15	18	5,5	15,5	10,5	35			8
18	22	5,5	19	10,5	30			6,5
22	26	5,5	22	10,5	30	10		
26	30	5,5	25,5	10,5	30	9	12	
30	35	7	28,5	12,5	30			
35	42	7	32,5	12,5	25			8
42	48	7	36,5	12,5	25			
48	55	7	40,5	12,5	25			
55	62	7	45,5	12,5	25			
62	70	7	50,5	12,5	20			
70	78	7	55,5	12,5	20	16		
78	85	7	60,5	12,5	20			

6 METHODS OF RETAINING RENEWABLE BUSHES

(see note to clause 1)

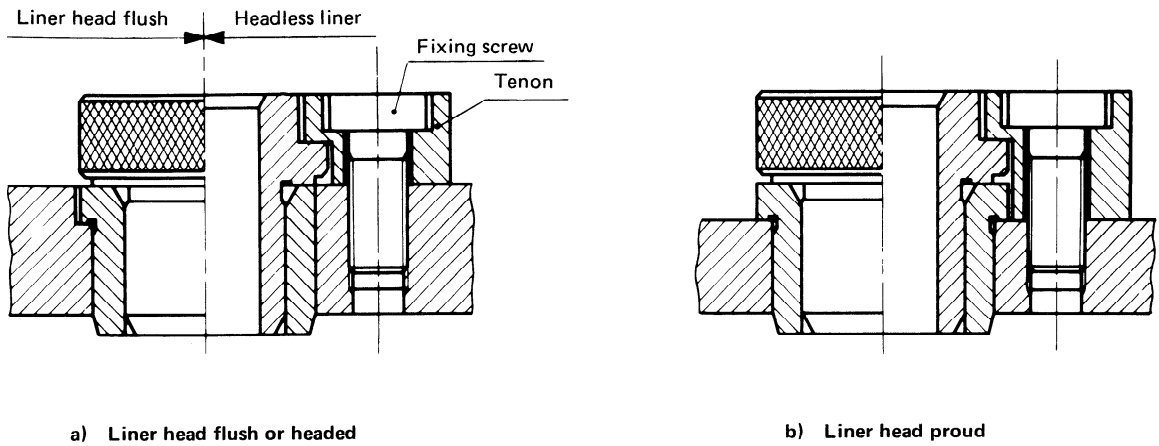


FIGURE 5 — Renewable bush used with retaining tenon

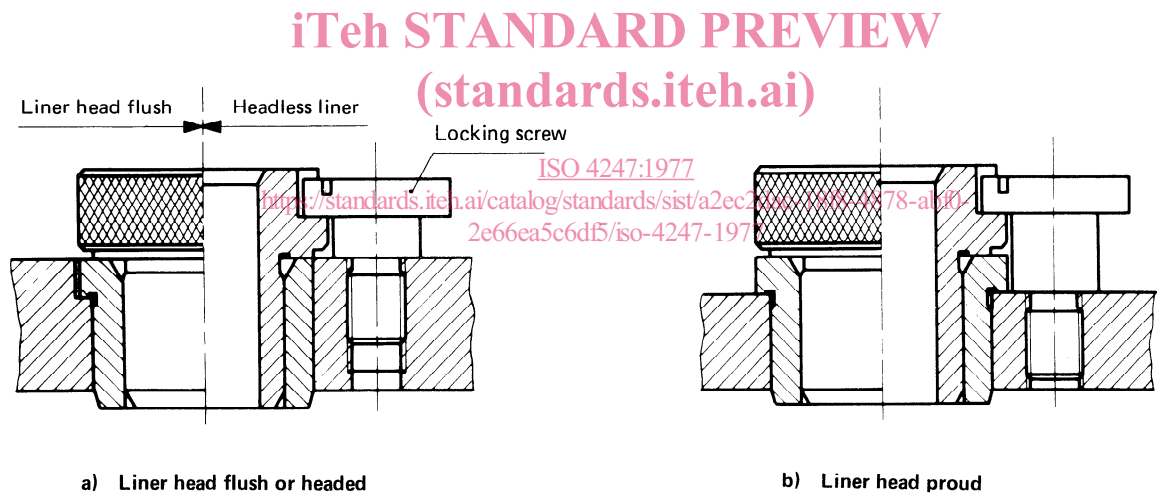


FIGURE 6 — Renewable bush with locking screw

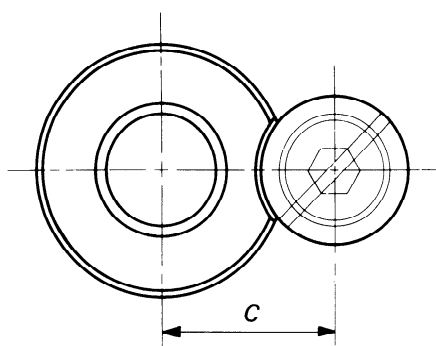


FIGURE 7 — Renewable bush — Fixed type with tenon or locking screw

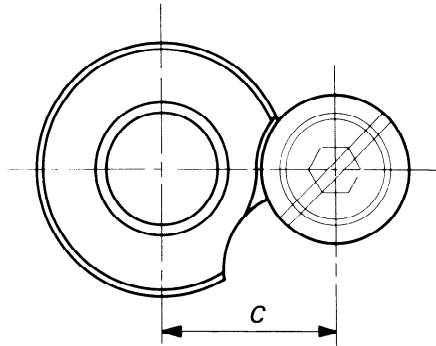
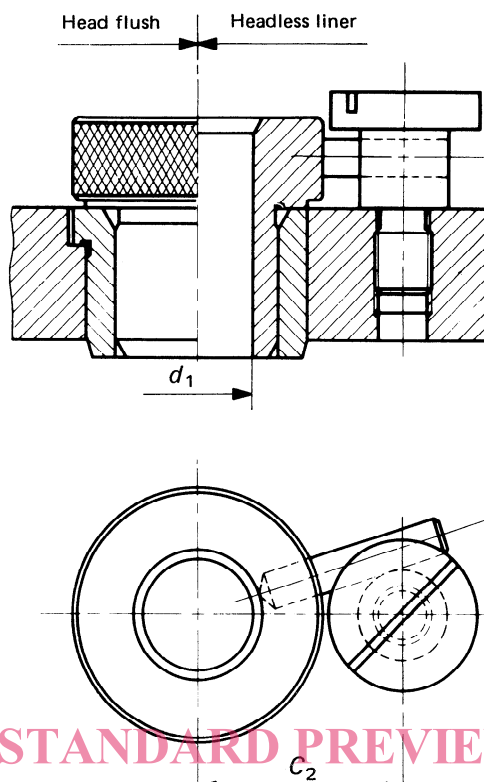


FIGURE 8 — Renewable bush — Slip type with tenon or locking screw





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Liner may be headed (flush) or headless

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<https://standards.iteh.ai/catalog/standards/sist/a2ec2dac-18f8-4878-abf0-2042471977>

FIGURE 9 — Renewable bush —  
Slip type with stop pin and locking screw

TABLE 5 — Mounting dimensions

Values in millimetres

$d_1$ (F7)	over up to and including	—	4	6	8	10	12	15	18	22	26	30	35	42	48	55	62	70	78
		4	6	8	10	12	15	18	22	26	30	35	42	48	55	62	70	78	85
$C_2$		15	17	20	22	24	28	31	35	37	41	47	51	55	59	63	68	74	79
$C$ min.		11,5	13	16	18	20	23,5	26	29,5	32,5	36	41	45	49	53	58	63	68	73