IEC 60915

Edition 2.0 2006-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Capacitors and resistors for use in electronic equipment – Preferred dimensions of shaft ends, bushes and for the mounting of single-hole, bush-mounted, shaft-operated electronic components

Condensateurs et résistances utilisés dans les équipements électroniques – Dimensions préférentielles concernant les terminaisons des axes, les canons et le montage par le canon sur trou unique des composants électroniques munis d'un axe de commande

IEC 60915:2006

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CONTENTS

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CAPACITORS AND RESISTORS FOR USE IN ELECTRONIC EQUIPMENT – PREFERRED DIMENSIONS OF SHAFT ENDS, BUSHES AND FOR THE MOUNTING OF SINGLE-HOLE, BUSH-MOUNTED, SHAFT-OPERATED ELECTRONIC COMPONENTS

FOREWORD

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International Standard IEC 60915 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment.

This second edition cancels and replaces the first edition published in 1987 and constitutes a minor revision, related to tables, figures and references.

This bilingual version, published in 2008-07, corresponds to the English version.

The text of this standard is based on the following documents:

CDV	Report on voting
40/1654/CDV	40/1783/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

The French version of this standard has not been voted upon.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

The contents of the corrigendum of December 2008 have been included in this copy.

CAPACITORS AND RESISTORS FOR USE IN ELECTRONIC EQUIPMENT – PREFERRED DIMENSIONS OF SHAFT ENDS, BUSHES AND FOR THE MOUNTING OF SINGLE-HOLE, BUSH-MOUNTED, SHAFT-OPERATED ELECTRONIC COMPONENTS

1 Scope and object

This International Standard is applicable to variable capacitors, potentiometers and variable resistors for use in electronic equipment.

The dimensions given in this standard have been selected from IEC 60390 and IEC 60620 because the ranges of dimensions included in these standards were considered too large and contained too many variants for capacitors and resistors for electronic equipment. Consequently this standard contains preferred dimensions for shaft ends and bushes and for the mounting of single-hole, bush-mounted, shaft-operated variable capacitors, variable resistors and potentiometers. If other dimensions not listed in this standard have to be used, it is recommended to select them also from the above-mentioned standards.

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.

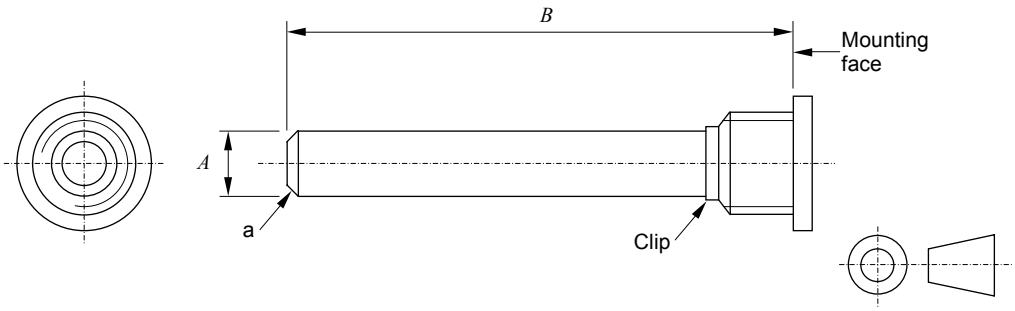
IEC 60390, *Dimensions of spindle ends for manually operated electronic components*

IEC 60620, *Dimensions for the mounting of single-hole, bush-mounted, spindle-operated electronic components*

3 Preferred dimensions of shaft ends and bushes

All dimensions are in mm.

3.1 Plain round shaft



[a] Chamfer at 40°/50° or a radius for a depth of between 5 % and 10 % of the dimension *A*

Figure 1 – Plain round shaft

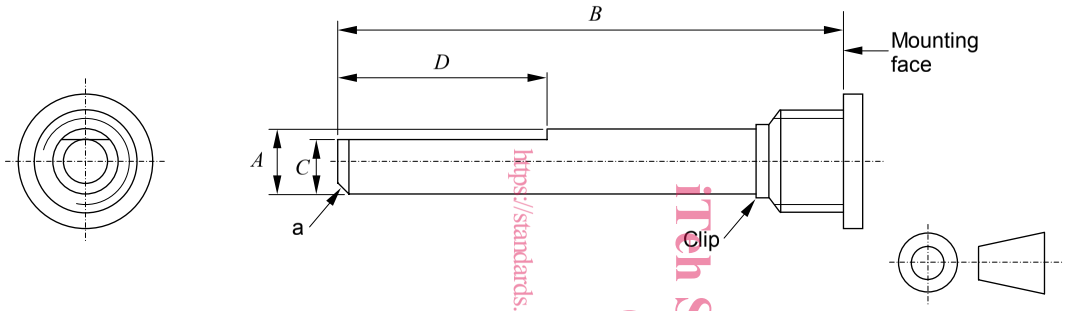
Table 1 – Preferred dimensions of plain round shaft

Dimension *A* [a]		Dimension *B*										
General	**Precision**	**10 ±0,5**	**12,5 ±0,5**	**15 ±0,5**	**20 ±0,5**	**22 ±0,5**	**25 ±0,5**	**30 ±1,0**	**32 ±1,0**	**35 ±1,0**	**40 ±1,0**	**50 ±1,0**
$3{,}0\ ^{0}_{-0{,}06}$	$3{,}00\ ^{0}_{-0{,}025}$	X	X	X	X	X	X	X	X			
$4{,}0\ ^{0}_{-0{,}075}$	$4{,}00\ ^{0}_{-0{,}03}$	X	X	X	X	X	X	X	X	X	X	X
$6{,}0\ ^{0}_{-0{,}075}$	$6{,}00\ ^{0}_{-0{,}03}$		X	X	X	X	X [b]	X	X	X	X	X
$10{,}0\ ^{0}_{-0{,}09}$	$10{,}00\ ^{0}_{-0{,}036}$			X	X	X	X	X	X	X	X	X

[a] Dimension *A* includes finish requirements.

[b] When specifically required, this variant may have a cross-hole, with a diameter of 3,15 mm ± 0,05 mm, at 5 mm ± 0,4 mm from the end of the shaft. The centre line of the cross-hole shall not deviate from the centre line of the shaft by more than 0,1 mm.

3.2 Flatted shaft



[a] Chamfer at 40°/50°, or a radius for a depth of between 5 % and 10 % of dimension A.

Figure 2 – Flatted shaft

Table 2 – Preferred dimensions of flatted shaft

Dimension A [a]		Dimension B [b]										Dimension C [c,d]		Dimension D
General	Precision	10 ±0,5	12.5 ±0,5	15 ±0,5	20 ±0,5	22 ±0,5	25 ±0,5	30 ±1,0	32 ±1,0	35 ±1,0	40 ±1,0	50 ±1,0	Screwed knob	Push-on knob	
$3{,}00\ ^{0}_{-0{,}06}$	$3{,}00\ ^{0}_{-0{,}025}$	X	X	X	X	X	X	X	X				$2{,}5\ ^{0}_{-0{,}1}$	$2{,}0\ ^{0}_{-0{,}1}$	From 4 mm in increments of 2 mm (4,6,8,12 mm)
$4{,}00\ ^{0}_{-0{,}075}$	$4{,}00\ ^{0}_{-0{,}03}$	X	X	X	X	X	X	X	X	X	X		$3{,}5\ ^{0}_{-0{,}1}$	$3{,}0\ ^{0}_{-0{,}1}$	
$6{,}00\ ^{0}_{-0{,}75}$	$6{,}00\ ^{0}_{-0{,}03}$		X	X	X	X	X	X	X	X	X	X	$5{,}0\ ^{0}_{-0{,}2}$	$4{,}0\ ^{0}_{-0{,}1}$ $4{,}5\ ^{0}_{-0{,}2}$	Tolerance ±0,5 mm
$10{,}0\ ^{0}_{-0{,}09}$	$10{,}0\ ^{0}_{-0{,}036}$				X	X	X	X	X	X	X	X	$9{,}0\ ^{0}_{-0{,}2}$	$7{,}0\ ^{0}_{-0{,}1}$	

[a] Dimension A includes finish requirements.

[b] If additional values are required, they should preferably be chosen from the R20 series.

[c] Dimensions C and D of the flat shall be selected from the options given in Table 2 and dimension D shall be specified in the detail specification of the component in consideration of the diameter and length of shaft.

[d] The angle of flat shall be specified in steps of 22,5° ± 5° clockwise from the reference line (the position of the reference line shall be defined).

3.3 Slotted shaft

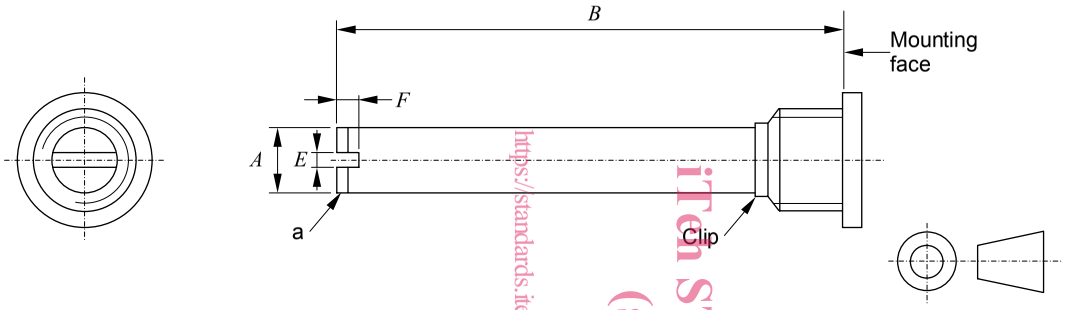


Figure 3 – Slotted shaft

Table 3 – Preferred dimensions of slotted shaft

Dimension *A* [a]		Dimension *B* [b]										Dimension *E*	Dimension *F*
General	Precision	10 ±0,5	12,5 ±0,5	15 ±0,5	20 ±0,5	22 ±0,5	25 ±0,5	30 ±1,0	32 ±1,0	35 ±1,0	40 ±1,0	50 ±1,0		
$3{,}00\ ^{0}_{-0{,}06}$	$3{,}00\ ^{0}_{-0{,}025}$	X	X	X	X	X	X	X	X				0,6 ± 0,1 1,0 ± 0,1	1,0 ± 0,1 1,2 ± 0,2
$4{,}00\ ^{0}_{-0{,}075}$	$4{,}00\ ^{0}_{-0{,}03}$		X	X	X	X	X	X	X	X	X		0,8 ± 0,1 1,0 ± 0,1	1,2 ± 0,2 1,5 ± 0,2
$6{,}00\ ^{0}_{-0{,}075}$	$6{,}00\ ^{0}_{-0{,}03}$			X	X	X	X	X	X	X	X	X	1,0 ± 0,1	1,6 ± 0,2 2,0 ± 0,2
$10{,}0\ ^{0}_{-0{,}09}$	$10{,}00\ ^{0}_{-0{,}036}$				X	X	X	X	X	X	X	X	2,0 ± 0,1	3,0 ± 0,2

[a] Dimension A includes finish requirements.

[b] If additional values are required they should preferably be chosen from the R20 series.

3.4 Concentric shafts

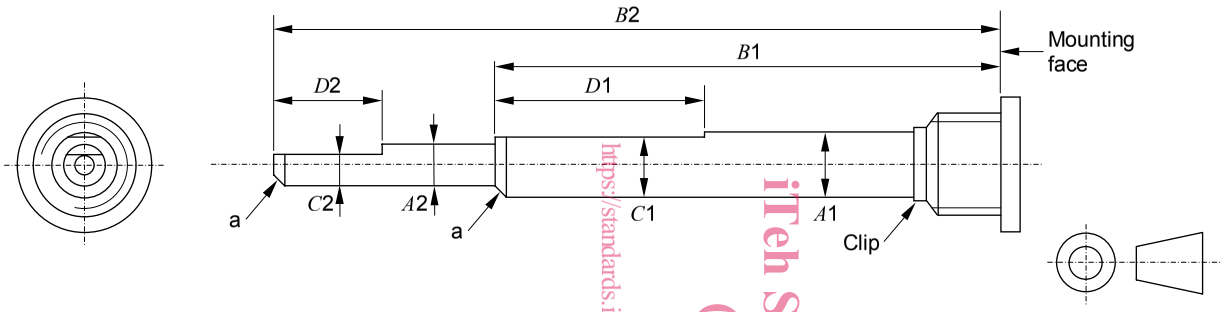


Figure 4 – Concentric shaft

Table 4 – Preferred dimensions of concentric shafts

Dimension $A1$ [a]	Dimension $A2$ [a]	Dimension $B1$ [b]											$B2$	$C1$ [d]	$C2$ [c d]		Dimensions $D1, D2$ [c]
		10 ±0,5	12,5 ±0,5	15 ±0,5	20 ±0,5	22 ±0,5	25 ±0,5	30 ±1,0	32 ±1,0	35 ±1,0	40 ±1,0	50 ±1,0			Screwed knob	Push-on knob	
$6{,}00\ ^{0}_{-0{,}07}$	$3{,}00\ ^{0}_{-0{,}06}$			X	X	X	X	X	X	X	X	X	$B1 + 10 \pm 1{,}0$	$5{,}3\ ^{0}_{-0{,}3}$	$2{,}5\ ^{0}_{-0{,}1}$	$2{,}0\ ^{0}_{-0{,}1}$	From 4 mm in increments of 2 mm Tolerance of ± 0,5 mm
$6{,}00\ ^{0}_{-0{,}07}$	$4{,}00\ ^{0}_{-0{,}075}$			X	X	X	X	X	X	X	X	X		NA	$3{,}5\ ^{0}_{-0{,}1}$	$3{,}0\ ^{0}_{-0{,}1}$	
$10{,}0\ ^{0}_{-0{,}09}$	$6{,}00\ ^{0}_{-0{,}075}$				X	X	X	X	X	X	X	X	$B1 + 12{,}5 \pm 1{,}0$	$9{,}0\ ^{0}_{-0{,}2}$	$5{,}0\ ^{0}_{-0{,}2}$	$4{,}0\ ^{0}_{-0{,}1}$	

[a] Dimension A includes finish requirements.

[b] If additional values are required, they should preferably be chosen from the R20 series.

[c] Dimensions $C2$, $D1$ and $D2$ of the flats shall be selected from the options given in Table 4.

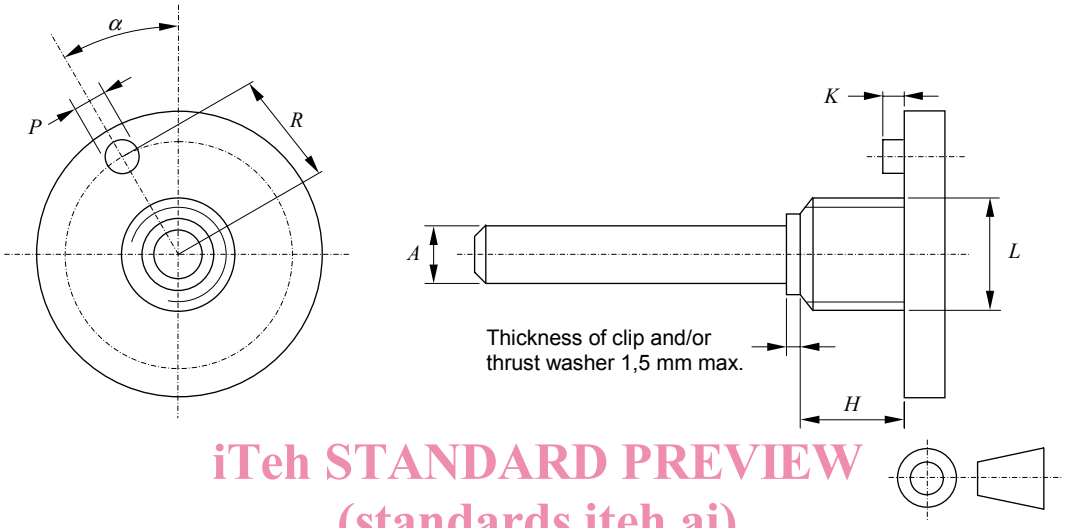
[d] The angle of flat shall be specified in steps of 22,5° ± 5° clockwise from the reference line (the position of the reference line shall be defined).

NA = Not applicable.

4 Preferred dimensions for the mounting of single-hole, bush mounted, shaft-operated electronic components

All dimensions are in mm.

4.1 Single-hole bush mounting with antirotation lug (non-turn device) on mounting face



The angular position of the lug (α) shall be specified in the relevant detail specification of the component.

The minimal panel thickness shall be specified in the relevant detail specification of the component.

NOTE 1 Two symmetrical lugs may be used.

NOTE 2 The shape of the lug is optional within dimension P.

NOTE 3 If required by the relevant detail specification, the lug may be omitted, in which case the panel cut-out would be simplified.

Figure 5 – Essential component dimensions