भारतीय मानक

Indian Standard

IS 4296 (Part 2) : 2024

दाबन के औज़ार — पंच

भाग 2 बेलनाकार शीर्ष तथा सीधे या लघुत्तर शैंक वाले गोल पंच

(दूसरा पुनरीक्षण)

Tools for Pressing — Punches

Part 2 Punches with Cylindrical Head and Straight or Reduced Shank

(Second Revision)

ICS 25.120.10

भारतीय मानक ब्यूरो
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June 2024 **Price Group 7**

Metal Forming Machines Sectional Committee, PGD 04

FOREWORD

This Indian Standard (Part 2) (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Metal Forming Machines Sectional Committee, had been approved by the Production and General Engineering Division Council (PGDC).

This standard was first published in 2002 and subsequently revised in 2015. The second revision has been brought out to keep pace with the latest technological developments and Indian industrial practices.

In this revision, the following changes have been made:

a) Scope has been revised;
b) References have been updated;
c) Table 1 to Table 8 have been modified; and
d) Clause on material has been revised;

This standard specifies the basic dimensions and tolerances, in millimeters, of punches with cylindrical head and straight or reduced shanks. The main use of the punches specified in this Standard is for punching holes in steel sheets. They may also be used for punching in other materials.

This Standard is published in three parts. Other parts in this series are:

Part 1 Round punches with 60 degrees conical head and straight shank
Part 3 Round punches with 60 degrees conical head and reduced shank

The composition of the Committee, responsible for the formulation of this standard is given at Annex A.

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 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. 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

TOOLS FOR PRESSING — PUNCHES

PART 2 PUNCHES WITH CYLINDRICAL HEAD AND STRAIGHT OR REDUCED SHANK

(Second Revision)

1 SCOPE

This standard covers the basic dimensions and tolerances, in millimeters, of punches with cylindrical head and straight or reduced shank for normal and heavy loads. Cylindrical head punches with straight and reduced shank are standardized in round, oblong, square, rectangular, rectangular with radius and edge ground shapes. These punches are available with shank diameters, D_1, from 1 mm to 32 mm.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the edition indicated were valid. All standards are subject to revision, and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards:

IS No.	*Title*
IS 2102 (Part 1) : 1993/ ISO 2768-1 : 1989	General tolerances — Part 1 Tolerances for linear and angular dimensions without individual tolerance indications (*third revision*)
IS 15300 : 2016/ ISO 8695 : 2010	Tools for pressing — Punches — Nomenclature and terminology (*first revision*)

3 TERMINOLOGY

For the purposes of this Standard, the definitions given in IS 15300 shall apply.

4 DIMENSIONS

4.1 Perforating Punches

4.1.1 *Punches with Straight Shank Type*

The dimension of the Punches with straight shank shall be as given in Fig. 1 and Table 1.

4.1.1.1 Heavy load punches are generally used for more than 3.1 mm sheet metal thickness. The dimension of the punches with straight shank (heavy load) is $D_2 = D_1 + 5$, $T = 8\ ^{+0.25}_{0}$ mm, $r = 1^{+0.5}_{0}$ and rest of dimension shall be same as Table 1.

Table 1 Punches with Straight Shank — Type A

(*Clause* 4.1.1)

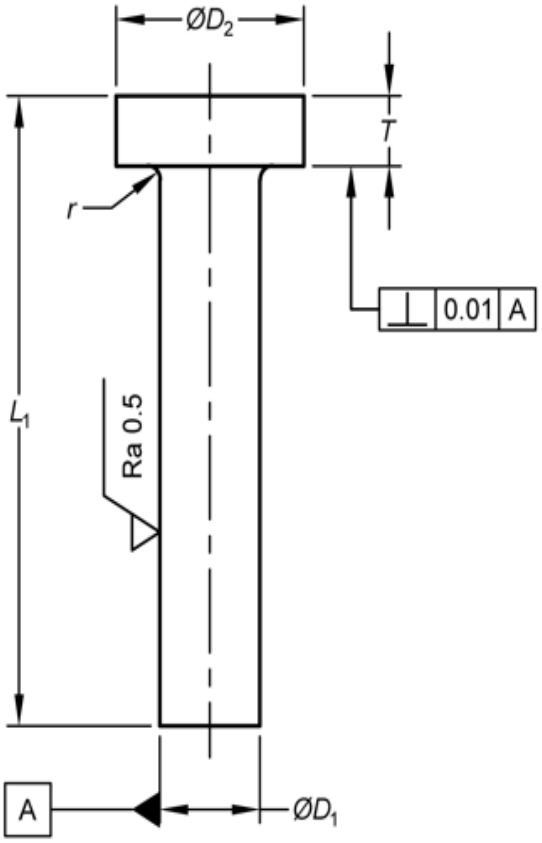

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FIG. 1 PUNCHES WITH STRAIGHT SHANK — TYPE A

Sl No.	D_1 m5	D_2 $^{0}_{-0.25}$	T $^{+0.25}_{0}$	r $^{+0.3}_{0}$	L_1 $^{+1}_{0}$												
					20	25	30	35	40	50	60	70	80	90	100	110	120
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
i)	1	2	3	0.2	x	x	x										
ii)	1.6	2.6	3		x	x	x										
iii)	2	3	3		x	x	x	x	x								
iv)	2.5	3.5	3		x	x	x	x	x	x	x						
v)	3	5	5						x	x	x	x	x	x	x		
vi)	4	7							x	x	x	x	x	x	x		
vii)	5	8							x	x	x	x	x	x	x	x	x
viii)	6	9							x	x	x	x	x	x	x	x	x
ix)	8	11							x	x	x	x	x	x	x	x	x
x)	10	13							x	x	x	x	x	x	x	x	x
xi)	13	16							x	x	x	x	x	x	x	x	x
xii)	16	19							x	x	x	x	x	x	x	x	x
xiii)	20	23							x	x	x	x	x	x	x	x	x
xiv)	25	28										x	x	x	x	x	x
xv)	32	35										x	x	x	x	x	x

4.1.2 *Punches with a Reduced Shank*

4.1.2.1 *Punches with round shape Type B*

The dimension of the Punches with a round shape shall be as given in Fig. 2 and Table 2.

Table 2 Punches with Reduced Shank with Round Shape — Type B

(*Clause* 4.1.2.1)

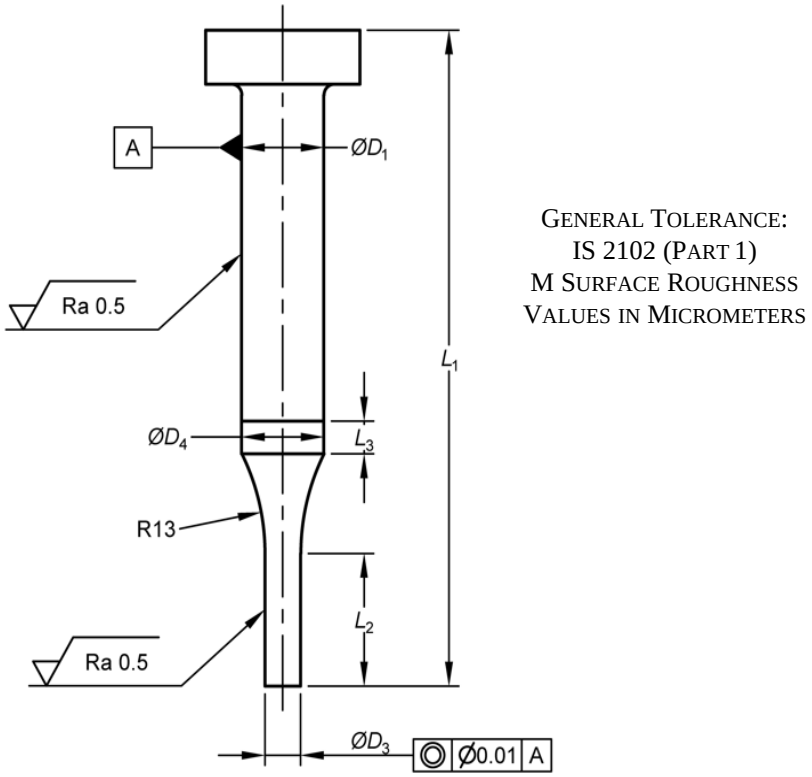

FIG.2 PUNCHES WITH REDUCED SHANK WITH ROUND SHAPE — TYPE B

Sl No.	D_1 m5	D_3 ± 0.01	$L_1{}^{+1}_{0}$								
			40	50	60	70	80	90	100	110	120
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	3	$0.8 < D_3 < 2.9$	x	x	x	x	x	x	x		
ii)	4	$1 < D_3 < 3.9$	x	x	x	x	x	x	x		
iii)	5	$1.5 < D_3 < 4.9$	x	x	x	x	x	x	x		
iv)	6	$1.6 < D_3 < 5.9$	x	x	x	x	x	x	x		
v)	8	$2.5 < D_3 < 7.9$	x	x	x	x	x	x	x	x	x
vi)	10	$4 < D_3 < 9.9$	x	x	x	x	x	x	x	x	x
vii)	13	$5 < D_3 < 12.9$	x	x	x	x	x	x	x	x	x
viii)	16	$8 < D_3 < 15.9$	x	x	x	x	x	x	x	x	x
ix)	20	$12 < D_3 < 19.9$	x	x	x	x	x	x	x	x	x
x)	25	$16.5 < D_3 < 24.9$				x	x	x	x	x	x
xi)	32	$20 < D_3 < 31.9$				x	x	x	x	x	x

NOTE — The point length L_2, diameter D_4 and length L_3 are left to the manufacturer's discretion. *see* **4.1.1** for all other dimensions (D_2, r and T). In case of heavy load punches, *see* **4.1.1.1** for dimensions (D_2, r and T).

4.1.2.2 *Punches with square (S), rectangular (R), oblong (O) shape, rectangular with radius (BRR) and edge ground shapes (BEG) — Types BS, BR, BO BRR and BEG*

The dimension of the Punches with reduced shanks with different shapes shall be as given in Fig. 3 and Table 3.

Table 3 Punches with Reduced Shank with Different Shapes — Type B

(*Clause* 4.1.2.2)

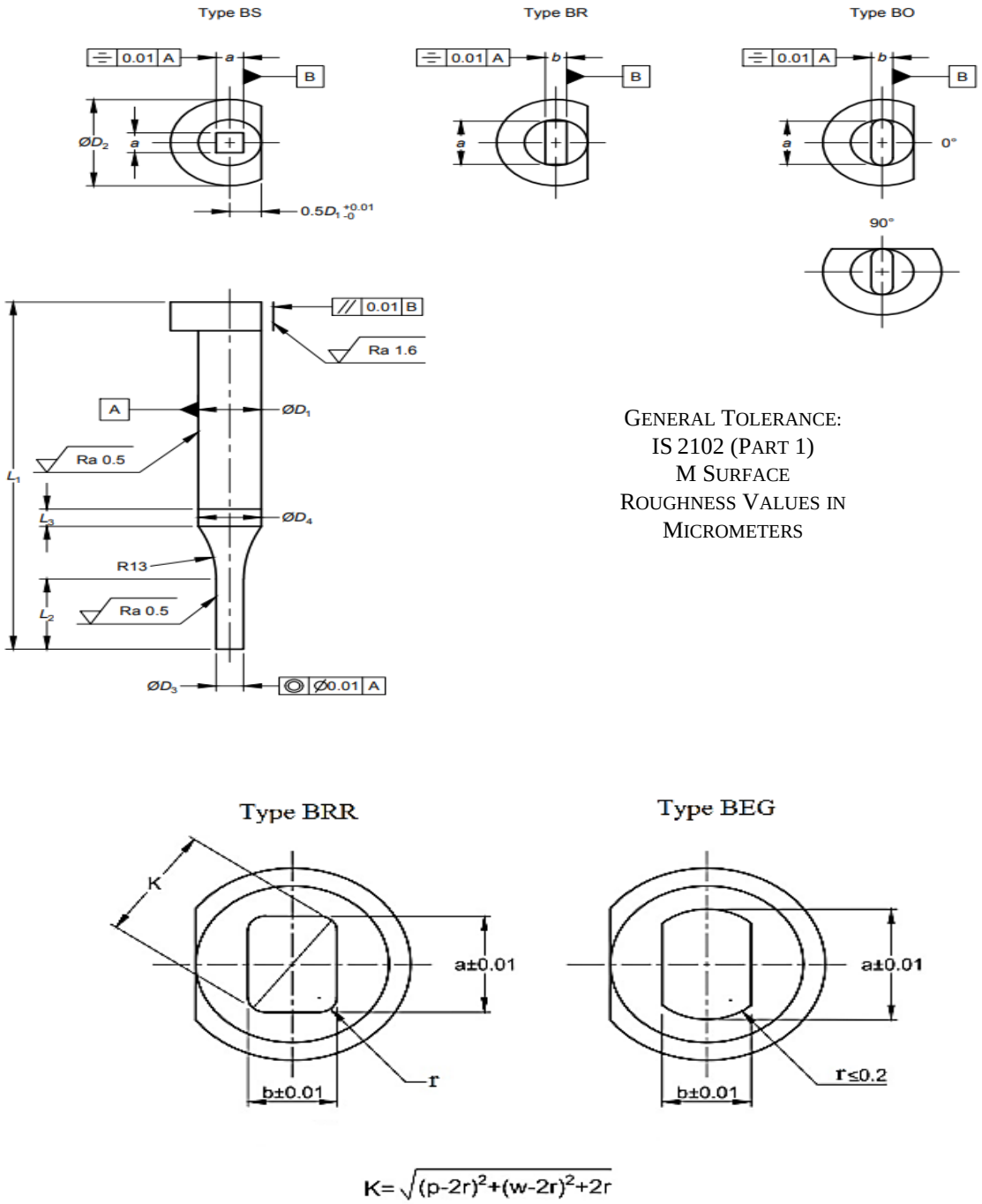

FIG. 3 PUNCHES WITH REDUCED SHANK WITH DIFFERENT SHAPES

NOTE — Standard Position of location device is 0°.

Sl No.	D_1 m5	Type BS $a \pm 0.01$	Types BR, BO , BRR and BEG a and $b \pm 0.01$	$L_1{}^{+1}_{0}$								
				40	50	60	70	80	90	100	110	120
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
i)	4	$1 \le a \le 3.97$	$1 < (a, b) \le 3.9$	x	x	x	x	x	x	x		
ii)	5	$1 \le a \le 3.5$	$1 < (a, b) \le 4.9$	x	x	x	x	x	x	x		
iii)	6	$1.6 \le a \le 4.2$	$1.6 < (a, b) \le 5.9$	x	x	x	x	x	x	x		
iv)	8	$2 \le a \le 5.6$	$2 < (a, b) \le 7.9$	x	x	x	x	x	x	x	x	x
v)	10	$3.5 \le a \le 7$	$3.5 < (a, b) \le 9.9$	x	x	x	x	x	x	x	x	x
vi)	13	$4.5 \le a \le 9.1$	$4.5 < (a, b) \le 12.9$	x	x	x	x	x	x	x	x	x
vii)	16	$6 \le a \le 11.2$	$6 < (a, b) \le 15.9$	x	x	x	x	x	x	x	x	x
viii)	20	$8 \le a \le 14.1$	$8 < (a, b) \le 19.9$	x	x	x	x	x	x	x	x	x
ix)	25	$10 \le a \le 17.6$	$10 < (a, b) \le 24.9$	x	x	x	x	x	x	x	x	x
x)	32	$10 \le a \le 22.5$	$10 < (a, b) \le 31.9$	x	x	x	x	x	x	x	x	x

NOTE — The point length L_2 diameter D_4 and length L_3 are left to the manufacturer's discretion. *see* 4.1.1 for all other dimensions (D_2 , r and T) In the case of heavy load punches, *see* 4.1.1.1 for dimensions (D_2, r and T).and In case of Type BRR($0.15 \le r \le b/2$).

4.2 Pilot Punches

4.2.1 *Pilot Punches Type C*

The dimension of pilot punches shall be as given in Fig. 4 and Table 4.

Table 4 Punches of Pilot Punches — Type C

(*Clause* 4.2.1)

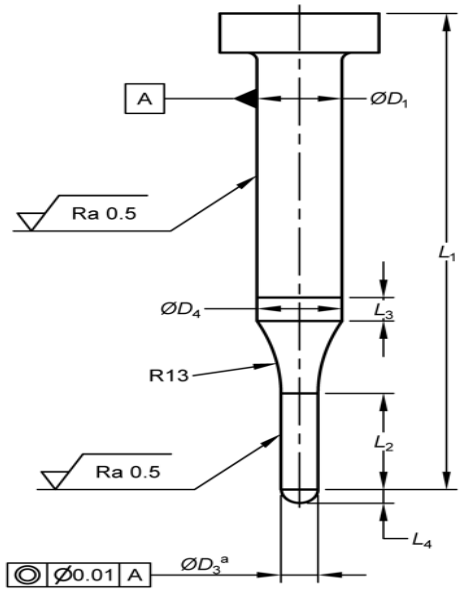

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FIG. 4 PILOT PUNCHES — TYPE C

a) The diameter D3 of the pilot shall be smaller than the diameter of the equivalent punch.

Sl No.	D_1 m5	$D_3 \pm 0.01$	$L_1 + L_4{}^{+1}_{0}$							
			50	60	70	80	90	100	110	120
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
i)	3	$0.8 \leq D3 \leq 2.9$	x	x	x	x	x	x		
ii)	4	$1 \leq D3 \leq 3.9$	x	x	x	x	x	x		
iii)	5	$1 \leq D_3 \leq 4.9$	x	x	x	x	x	x		
iv)	6	$1.6 \leq D_3 \leq 5.9$	x	x	x	x	x	x		
v)	8	$2.5 \leq D_3 \leq 7.9$	x	x	x	x	x	x	x	x
vi)	10	$4 \leq D_3 \leq 9.9$	x	x	x	x	x	x	x	x
vii)	13	$5 \leq D_3 \leq 12.9$	x	x	x	x	x	x	x	x
viii)	16	$8 \leq D_3 \leq 15.9$	x	x	x	x	x	x	x	x
ix)	20	$12 \leq D_3 \leq 19.9$	x	x	x	x	x	x	x	x
x)	25	$16.5 \leq D_3 \leq 24.9$			x	x	x	x	x	x
xi)	32	$20 \leq D_3 \leq 31.9$			x	x	x	x	x	x

NOTE — The point length L1, L_2 and L_4, diameter D_4, length L_3 and point shape are left to the manufacturer's discretion. *see* 4.1.1 for all other dimensions (D_2, r and T). In case of heavy load punches, *see* 4.1.1.1 for dimensions (D_2, r and T).

4.2.2 *Positive Pilot Punches — Type D*

The dimension of pilot punches shall be as given in Fig. 5 and Table 5.

Table 5 Positive Pilot Punches — Type D

(*Clause* 4.2.2)

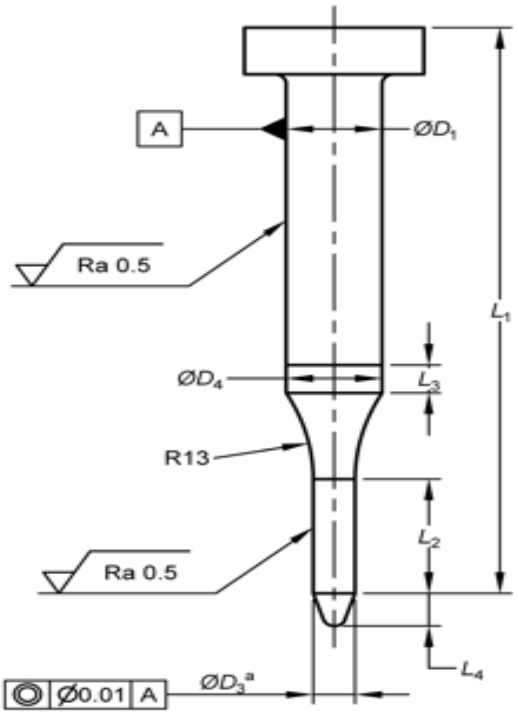

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FIG. 5 POSITIVE PILOT PUNCHES — TYPE D

[a]) The diameter D_3 of the pilot shall be smaller than the diameter of the equivalent punch.

Sl No.	D_1 m5	D_3 ± 0.01	$L_1 + L_4{}^{+1}_{0}$							
			50	60	70	80	90	100	110	120
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
i)	3	$0.8 \le D_3 \le 2.9$	x	x	x	x	x	x		
ii)	4	$1 \le D_3 \le 3.9$	x	x	x	x	x	x		
iii)	5	$1 \le D_3 \le 4.9$	x	x	x	x	x	x		
iv)	6	$1.6 \le D_3 \le 5.9$	x	x	x	x	x	x		
v)	8	$2.5 \le D_3 \le 7.9$	x	x	x	x	x	x	x	x
vi)	10	$4 \le D_3 \le 9.9$	x	x	x	x	x	x	x	x
vii)	13	$5 \le D_3 \le 12.9$	x	x	x	x	x	x	x	x
viii)	16	$8 \le D_3 \le 15.9$	x	x	x	x	x	x	x	x
ix)	20	$12 \le D_3 \le 19.9$	x	x	x	x	x	x	x	x
x)	25	$16.5 \le D_3 \le 24.9$			x	x	x	x	x	x
xi)	32	$20 \le D_3 \le 31.9$			x	x	x	x	x	x
NOTE — The point length L1, L_2 and L_4, diameter D_4, length L_3 and point shape are left to the manufacturer's discretion. *see* 4.1.1 for all other dimensions (D_2, r and T). In case of heavy load punches, *see* 4.1.1.1 for dimensions (D_2, r and T).										

4.3 Punches with Ejector

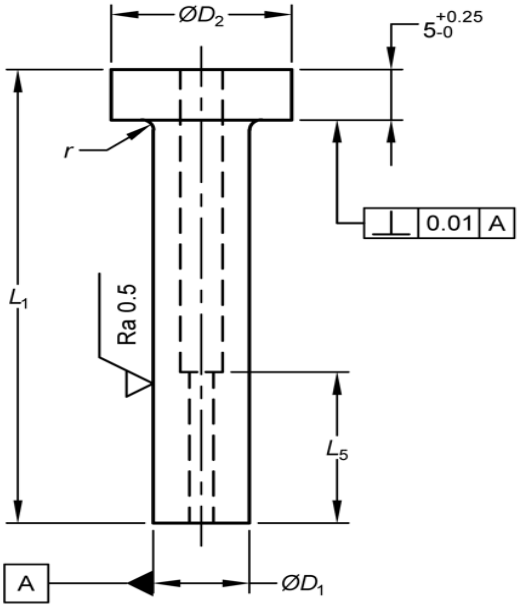
4.3.1 *Punches with Ejector with Straight Shank — Type E*

The dimension of the Punches with ejector straight shank shall be as given in Fig. 6 and Table 6.

4.3.1.1 The dimension of the Punches with ejector straight shank (heavy load) is $D_2 = D_1 + 5$, $T = 8+^{0.25}_{0}$ mm, $r = 1+^{0.5}_{0}$ and rest of dimension shall be same as given in Table 6.

Table 6 Punches with Ejector with Straight Shank — Type E

(*Clause* 4.3.1)



GENERAL TOLERANCE:
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FIG. 6 PUNCHES WITH EJECTOR WITH STRAIGHT SHANK — TYPE E

Sl No.	D_1 m5	D_2 0 − 0.25	T + 0.25 0	R + 0.30	$L_1{}^{+1}_{0}$												
					20	25	30	35	40	50	60	70	80	90	100	110	120
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
i)	1	2	3	0.2	x	x	x										
ii)	1.6	2.6	3		x	x	x										
iii)	2	3	3		x	x	x	x	x								
iv)	2.5	3.5	3		x	x	x	x	x	x	x						
v)	3	5	5						x	x	x	x	x	x	x		
vi)	4	7							x	x	x	x	x	x	x		
vii)	5	8							x	x	x	x	x	x	x	x	x
viii)	6	9							x	x	x	x	x	x	x	x	x
ix)	8	11							x	x	x	x	x	x	x	x	x
x)	10	13							x	x	x	x	x	x	x	x	x
xi)	13	16							x	x	x	x	x	x	x	x	x
xii)	16	19							x	x	x	x	x	x	x	x	x
xiii)	20	23							x	x	x	x	x	x	x	x	x
xiv)	25	28										x	x	x	x	x	x
xv)	32	35										x	x	x	x	x	x

NOTE — The length L_5, the ejector components and the locking hole are left to the manufacturer's discretion.

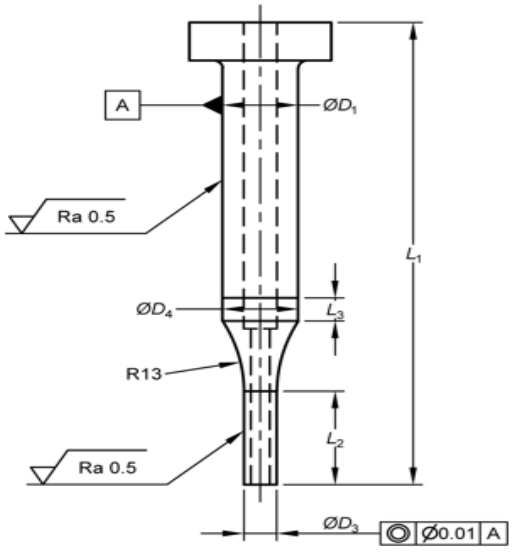
4.3.2 *Punches with Ejector with Reduces Shank*

4.3.2.1 *Punches with ejector with round shape — Type F*

The dimension of the Punches with ejector with round shape shall be as given in Fig. 7 and Table 7.

Table 7 Punches with Ejector with Round Shape — Type F

(*Clause* 4.3.2.1)



GENERAL TOLERANCE:
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VALUES IN MICROMETERS

FIG. 7 PUNCHES WITH EJECTOR WITH ROUND SHAPE — TYPE F

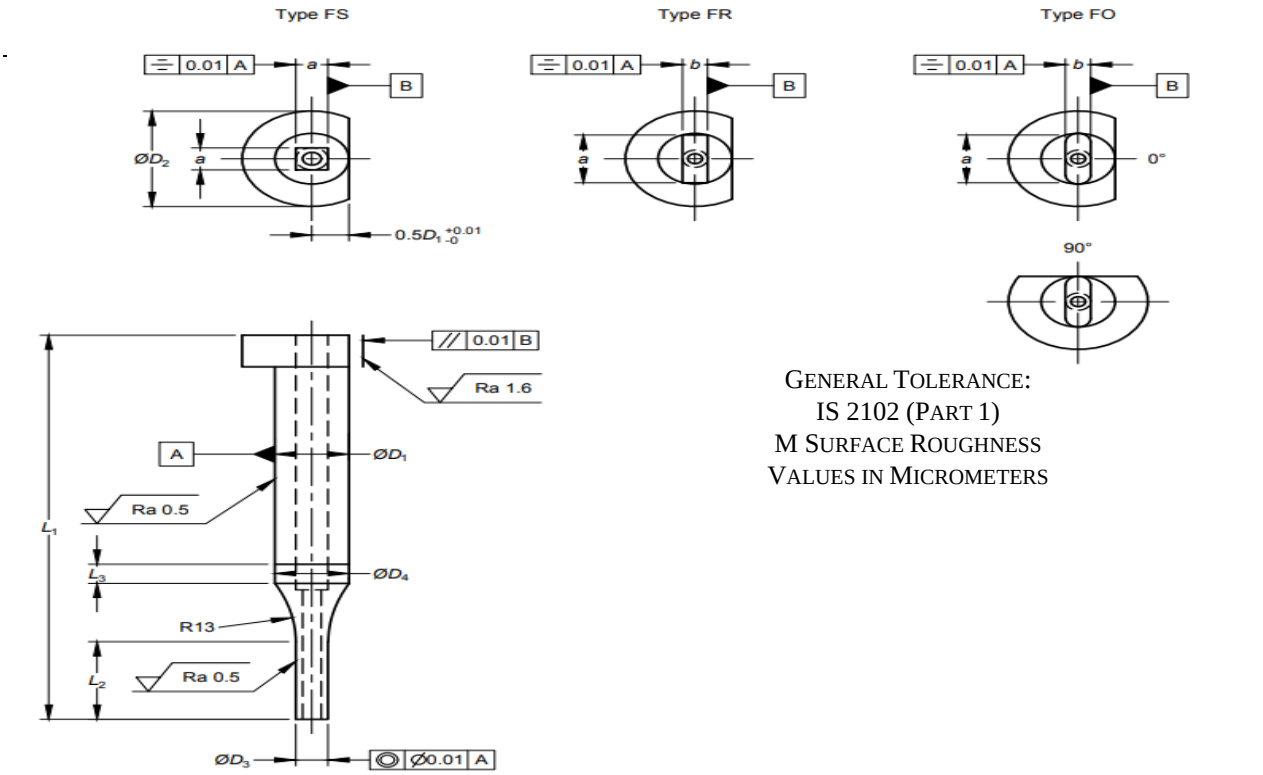
Sl No.	D_1 m5	$D3$ ± 0.01	$L_1{}^{+1}_{0}$								
			40	50	60	70	80	90	100	110	120
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	3	$0.8 < D_3 < 2.9$	x	x	x	x	x	x	x		
ii)	4	$1 < D_3 < 3.9$	x	x	x	x	x	x	x		
iii)	5	$1.5 < D_3 < 4.9$	x	x	x	x	x	x	x		
iv)	6	$1.6 < D_3 < 5.9$	x	x	x	x	x	x	x		
v)	8	$2.5 < D_3 < 7.9$	x	x	x	x	x	x	x	x	x
vi)	10	$4 < D_3 < 9.9$	x	x	x	x	x	x	x	x	x
vii)	13	$5 < D_3 < 12.9$	x	x	x	x	x	x	x	x	x
viii)	16	$8 < D_3 < 15.9$	x	x	x	x	x	x	x	x	x
ix)	20	$12 < D_3 < 19.9$	x	x	x	x	x	x	x	x	x
x)	25	$16.5 < D_3 < 24.9$				x	x	x	x	x	x
xi)	32	$20 < D_3 < 31.9$				x	x	x	x	x	X
NOTE — The point length L_2, diameter D_4, length L_3, the ejector components and the locking hole are left to the manufacturer's discretion. *see* 4.3.1 for all other dimensions (D_2, r and the head thickness). In case of heavy load punches, *see* 4.3.1.1 for dimensions (D_2, r and T).											

4.3.2.2 *Punches with ejector with square (S), rectangular (R), oblong (O) shapes, rectangular with radius (FRR) and Rectangular with edge ground shape (FEG) — Types FS, FR, FO FRR and FEG*

The dimension of the Punches with ejector with shanks with different Shapes shall be as given in Fig. 8 and Table 8.

Table 8 Punches with Ejector with Different Shapes — Type F

(*Clause* 4.3.2.2)



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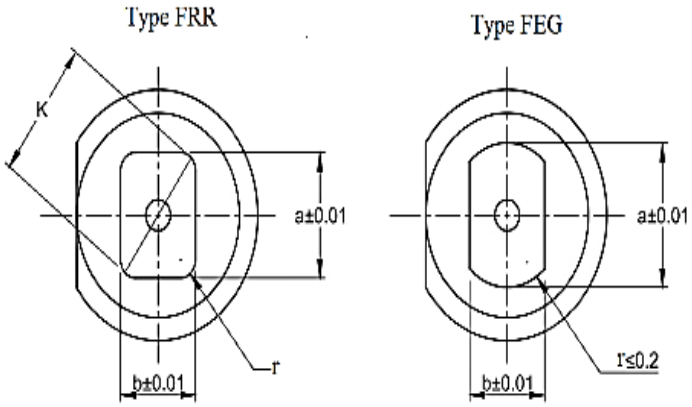

All dimensions are in millimeters.

FIG. 8 PUNCHES WITH EJECTOR WITH DIFFERENT SHAPES — TYPE F

Sl No.	D_1 m5	Type FS a ± 0,01	Types FR , FO, FRR and FEG a and b ± 0,01	$L_1{}^{+1}_{0}$								
				40	50	60	70	80	90	100	110	120
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
i)	4	$1 \le a \le 3.97$	$1 < (a, b) \le 3.9$	x	x	x	x	x	x	x		
ii)	5	$1 \le a \le 3.5$	$1 < (a, b) \le 4.9$	x	x	x	x	x	x	x		
iii)	6	$1.6 \le a \le 4.2$	$1,6 < (a, b) \le 5.9$	x	x	x	x	x	x	x		
iv)	8	$2 \le a \le 5.6$	$2 < (a, b) \le 7.9$	x	x	x	x	x	x	x	x	x
v)	10	$3.5 \le a \le 7$	$3.5 < (a, b) \le 9.9$	x	x	x	x	x	x	x	x	x
vi)	13	$4.5 \le a \le 9.1$	$4.5 < (a, b) \le 12.9$	x	x	x	x	x	x	x	x	x
vii)	16	$6 \le a \le 11.2$	$6 < (a, b) \le 15.9$	x	x	x	x	x	x	x	x	x
viii)	20	$8 \le a \le 14.1$	$8 < (a, b) \le 19.9$	x	x	x	x	x	x	x	x	x
ix)	25	$10 \le a \le 17.6$	$10 < (a, b) \le 24.9$				x	x	x	x	x	x
x)	32	$10 \le a \le 22.5$	$10 < (a, b) \le 31.9$				x	x	x	x	x	x

NOTE — The point length L_2, diameter D_4, length L_3, the ejector components and the locking hole are left to the manufacturer's discretion. *see* 4.3.1 for all other dimensions (D_2, r and the head thickness). In case of heavy load punches, *see* 4.3.1.1 for dimensions (D_2, r and T). and in case of Type FRR ($0.15 \le r \le b/2$).

5 MATERIAL

The material is left to the manufacturer's discretion. The following hardness value are given as examples:

a) Alloyed cold work steel with 5 percent to 12 percent Cr

— point: (60 ± 2) HRC
— head: (55 ± 5) HRC

b) High-speed steel

— point: (60 ± 2) HRC
— head: (60 ± 5) HRC

6 DESIGNATION

A punch in accordance with this standard shall be designated by:

a) Punch;
b) References to this standard;
c) Type of punch (A, B, BS, BR, BO, C, D, E, F, FS, FR or FO);
d) Its shank diameter p in millimeters;
e) For types B, BS, BO, C, D, F, FS, FR and FO its point dimensions (D_3, a or a × b), in millimetres;
f) For types BS, BR, BO, FS, and FO, the angle position of location device (0°, 90°);
g) Its overall length, L_1 in millimeters; and
h) Its Material (alloyed cold work steel with 5 percent to 12 percent or high speed steel).

Example:

1) A round perforating punch (type B) or shank diameter D_1 = 5 mm, of point diameter D_3 = 2 mm and or overall length L_1 = 71 mm in alloyed work steel is designated as follows:

Punch IS 4296 (Part2) — B-5 × 2 × 71-a lloyed cold work steel.

Example:

2) A rectangular perforating punch (type BR) of shank diameter D_1 = 5 mm, of point dimensions a × b = 2 mm × 3 mm, with a location at 90° and of overall length L_1 = 90 mm in high-speed steel is designated as follows:

Punch IS 4296(Part 2) — BR-5 × 2× 3 ×90° × 90-high speed steel

7 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Metal Forming Machines Sectional Committee, PGD 04

Organization	*Representative*(*s*)
HMT Machine Tools Limited, Mumbai	SHRI NARESH GURUDASANI **(*Chairperson*)**
Autocomp Corporation Panse Private Limited, Rudrapur	SHRI S. H. REGODE SHRI JAIDEV PRAKASH (*Alternate*)
Bharat Dynamics Limited, Hyderabad	SHRI KARNATHAM BABU SHRI APPA RAO S. (*Alternate*)
Bharat Heavy Electrical Limited, New Delhi	SHRI DEEPAK MAKHIJA SHRI RAGHVENDRA (*Alternate*)
Central Institute of Plastics Engineering and Technology, Chennai	SHRI LALIT GUGLANI SHRI AVNEET KUMAR (*Alternate*)
Central Institute of Tool Design, Hyderabad	SHRI J. BRAMHESWARAIAH SHRI V. RAGURAMI REDDY (*Alternate*)
Datum Tools Private Limited, Faridabad	SHRI NIKUNJ MANGLA
Directorate General Factory Advice Service and Labour Institutes, Mumbai	SHRI UPENDRA SINGH SHRI AMIT GOLA (*Alternate*)
Engineering Staff College of India, Hyderabad	DR U. CHANDRASEKHAR SHRI D. SESHADRI (*Alternate*)
Industrial Training Institute Limited, Bengaluru	SHRI SWAMIDHAS V. SHRI RAM GOPAL M. A. (*Alternate*)
ISGEC Heavy Engineering Limited, Noida	SHRI D. K. AWASTHI
Mahindra CIE Automotive Limited, Zaheerabad	SHRI SUBODH TRIPATHI SHRI PRADEEP SHARMA (*Alternate*)
Maruti Suzuki India Limited, Gurugram	SHRI DEEPAK AGGARWAL SHRI RAMAKRISHNAN G. (*Alternate* I) SHRI PRATEEK SHRIVASTAVA (*Alternate* II)
Misumi India Private Limited, Gurugram	SHRI LIJU P. S.
National Safety Council, Navi Mumbai	SHRI A. V. HOTKAR SHRI SWAPNIL U. PUPULWAD (*Alternate*)
RITES Limited, Gurugram	SHRI RAJEEV KUMAR AHUJA JYOTI AGARWAL (*Alternate*)
Safe in India Foundation, Gurugram	SHRI SANDEEP SACHDEVA CHITRA KHANNA (*Alternate*)
Tata Motors Limited, Pune	SHRI H. J. ANAWKAR SHRI SANJEEV KRISHNA (*Alternate*)
Wheels India Limited, Chennai	SHRI S. MATHIYALAGAN SHRI S. PRAKASH (*Alternate*)
In Personal Capacity (*D-63, Seema Apartments, Plot No 7, Sector-11 Dwarka New Delhi - 110075*)	SHRI MUKESH SINHA

Organization	*Representative(s)*
BIS Directorate General	SHRI RAJIV RANJAN SINGH, SCIENTIST 'F'/SENIOR DIRECTOR AND HEAD (PRODUCTION AND GENERAL ENGINEERING DEPARTMENT)[REPRESENTING DIECTOR GENERAL (*Ex-officio*)]

Member Secretary
SHRI VIMAL KUMAR
SCIENTIST 'B'/ASSISTANT DIRECTOR
(PRODUCTION AND GENERAL ENGINEERING), BIS

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