इंटरनेट मानक

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IS 4696-3 (2004): Dimensions for Metric Buttress Threads, Part 3: Basic Dimensions [PGD 20: Engineering Standards]

"ज्ञान से एक नये भारत का निर्माण"
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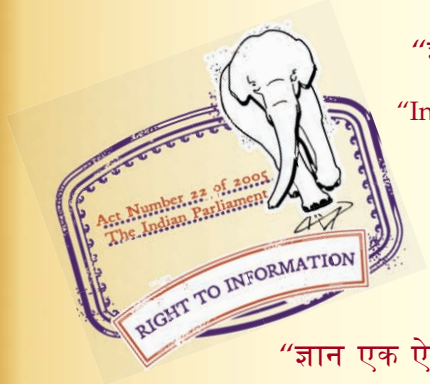

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

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भारतीय मानक

मीट्रिक बट्रैस चूड़ियों के लिए आयाम

भाग 3 आधारभूत आयाम

(दूसरा पुनरीक्षण)

Indian Standard

DIMENSIONS FOR METRIC BUTTRESS THREADS

PART 3 BASIC DIMENSIONS

(Second Revision)

ICS 21.040.10

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

September 2004

Price Group 4

FOREWORD

This Indian Standard (Part 3) (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Engineering Standards Sectional Committee had been approved by the Medical Instruments, General and Production Engineering Division Council.

This standard was first published in 1968 and subsequently revised in 1976 splitting up into four parts. The other parts in the series are:

(Part 1) : 1976 Basic and design profile

(Part 2) : 1976 Pitch diameter combination

(Part 4) : 1976 Tolerancing system

The title of the standard in general has also been modified in line with DIN 513.

The earlier edition of this Indian Standard (Part 3) was in line with pitch diameter combinations given in DIN 513, Sheet 3 — 1975. In the preparation of this revision considerable assistance has been derived from latest edition of DIN 513, Sheet 3 — 1985 'Metrisches Sägengewinde, Abmaße und Toleranzen. (Metric buttress threads, deviations and tolerances)', issued by DIN, Deutsches Institut für Normung, and has been brought in line with it.

In this revision, the dimensioning and the formula in figure has been modified and the pitch diameter of the internal threads is greater than that of the external threads by:

$$2.\cos 3° \frac{\sin 30°}{\sin 147°}.\tan 60° . a = 3.175\,82 . a$$

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 : 1960 'Rules for rounding off the 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

DIMENSIONS FOR METRIC BUTTRESS THREADS

PART 3 BASIC DIMENSIONS

(Second Revision)

1 SCOPE

This standard (Part 3) covers the basic dimensions for metric buttress threads in the diameter range of M 10 to M 640 mm.

2 FORMULAE

2.1 The values given in this standard have been calculated from the following formulae:

$$d_2 = d - H_1$$

$$D_1 = D - 2H_1$$

$$d_3 = d - 2h_3$$

$$D_2 = d - H_1 + 3.1758\ a$$

$$Aq = \frac{\pi d_3^2}{4}$$

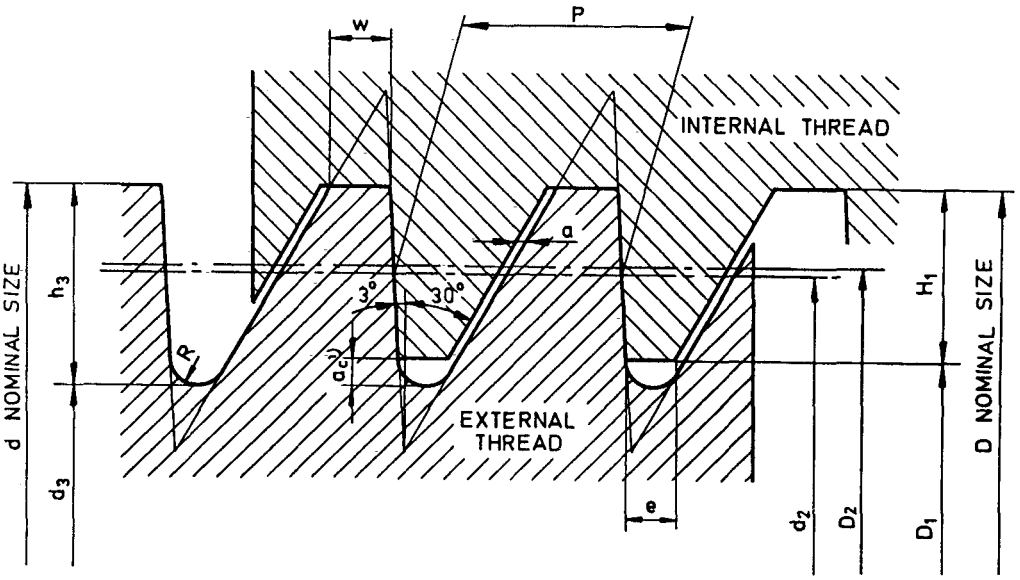
2.2 The numerical threads data for the design profile is given in Table 1.

3 BASIC DIMENSIONS

The basic dimensions for the design profile are given in Table 2.

Table 1 Basic Numerical Threads Data for Design Profile

(*Clause* 2.2)



P	a_c 0.117 77 *P*	*a* $0.1\sqrt{P}$	*e* 0.263 84 *P* – $0.1\sqrt{P}$	h_3 0.867 77 *P*	*w* 0.263 84 *P*
(1)	(2)	(3)	(4)	(5)	(6)
2	0.236	0.141 4	0.386	1.736	0.528
3	0.353	0.173 2	0.618	2.603	0.792
4	0.471	0.2	0.855	3.471	1.055
5	0.589	0.223 6	1.096	4.339	1.319
6	0.707	0.244 9	1.338	5.207	1.583
7	0.824	0.264 6	1.582	6.074	1.847
8	0.942	0.282 8	1.828	6.942	2.111
9	1.060	0.3	2.075	7.810	2.374
10	1.178	0.316 2	2.322	8.678	2.638
12	1.413	0.346 4	2.820	10.413	3.166
14	1.649	0.374 2	3.320	12.149	3.694
16	1.884	0.4	3.821	13.884	4.221
18	2.120	0.424 3	4.325	15.620	4.749
20	2.355	0.447 2	4.830	17.355	5.276
22	2.591	0.469 0	5.335	19.091	5.804
24	2.826	0.489 9	5.842	20.826	6.332
28	3.298	0.529 2	6.858	24.298	7.388
32	3.769	0.565 7	7.877	27.769	8.443
36	4.240	0.6	8.898	31.240	9.498
40	4.711	0.632 5	9.921	34.711	10.554
44	5.182	0.663 3	10.946	38.182	11.609

Table 2 Dimensions for Metric Buttress Threads

(*Clause* 3)

Nominal Diameter $d = D$	Pitch P	Pitch Diameter		Minor Diameter		h_3 0.867 77 P	H_1 0.75 P	R 0.124 27 P	Area of Core A_s mm²
		d_2	D_2	d_3	D_1				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
10	2	8.500	8.949	6.529	7.000	1.736	1.500	0.249	33
12	2	10.500	10.949	8.529	9.000	1.736	1.500	0.249	57
12	3	9.750	10.300	6.793	7.500	2.603	2.250	0.373	36
14	2	12.500	12.949	10.529	11.000	1.736	1.500	0.249	87
14	3	11.750	12.300	8.793	9.500	2.603	2.250	0.373	61
16	2	14.500	14.949	12.529	13.000	1.736	1.500	0.249	123
16	4	13.000	13.635	9.058	10.000	3.471	3.000	0.497	64
18	2	16.500	16.949	14.529	15.000	1.736	1.500	0.249	166
18	4	15.000	15.635	11.058	12.000	3.471	3.000	0.497	96
20	2	18.500	18.949	16.529	17.000	1.736	1.500	0.249	215
20	4	17.000	17.635	13.058	14.000	3.471	3.000	0.497	134
22	3	19.750	20.300	16.793	17.500	2.603	2.250	0.373	222
22	5	18.250	18.960	13.322	14.500	4.339	3.750	0.621	139
22	8	16.000	16.898	8.116	10.000	6.942	6.000	0.994	52
24	3	21.750	22.300	18.793	19.500	2.603	2.250	0.373	278
24	5	20.250	20.960	15.322	16.500	4.339	3.750	0.621	184
24	8	18.000	18.898	10.116	12.000	6.942	6.000	0.994	80
26	3	23.750	24.300	20.793	21.500	2.603	2.250	0.373	340
26	5	22.250	22.960	17.322	18.500	4.339	3.750	0.621	236
26	8	20.000	20.898	12.116	14.000	6.942	6.000	0.994	115
28	3	25.750	26.300	22.793	23.500	2.603	2.250	0.373	408
28	5	24.250	24.960	19.322	20.500	4.339	3.750	0.621	293
28	8	22.000	22.898	14.116	16.000	6.942	6.00	0.994	157
30	3	27.750	28.300	24.793	25.500	2.603	2.250	0.373	483
30	6	25.500	26.278	19.587	21.000	5.207	4.500	0.746	301
30	10	22.500	23.504	12.645	15.000	8.678	7.500	1.243	126
32	3	29.750	30.300	26.793	27.500	2.603	2.250	0.373	564
32	6	27.500	28.278	21.587	23.000	5.207	4.500	0.746	366
32	10	24.500	25.504	14.645	17.000	8.678	7.500	1.243	169
34	3	31.750	32.300	28.793	29.500	2.603	2.250	0.373	651
34	6	29.500	30.278	23.587	25.000	5.207	4.500	0.746	437
34	10	26.500	27.504	16.645	19.000	8.678	7.500	1.243	218
36	3	33.750	34.300	30.793	31.500	2.603	2.250	0.373	745
36	6	31.500	32.278	25.587	27.000	5.207	4.500	0.746	514
36	10	28.500	29.504	18.645	21.000	8.678	7.500	1.243	273

Table 2 (*Continued*)

Nominal Diameter $d = D$	Pitch P	Pitch Diameter		Minor Diameter		h_3 0.867 77 P	H_1 0.75 P	R R 0.124 27 P	Area of Core A_s mm²
		d_2	D_2	d_3	D_1				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
38	3	35.750	36.300	32.793	33.500	2.603	2.250	0.373	845
38	7	32.750	33.590	25.851	27. 500	6.074	5.250	0.870	525
38	10	30.500	31.504	20.645	23. 000	8.678	7.500	1.243	335
40	3	37.750	38.300	34.793	35. 500	2.603	2.250	0.373	951
40	7	34.750	35.590	27.851	29. 500	6.074	5.250	0.870	609
40	10	32.500	33.504	22.645	25. 000	8.678	7.500	1.243	403
42	3	39.750	40.300	36.793	37. 500	2.603	2.250	0.373	1 064
42	7	36.750	37.590	29.851	31. 500	6.074	5.250	0.870	700
42	10	34.500	35.504	24.645	27. 000	8.678	7.500	1.243	477
44	3	41.750	42.300	38.793	39. 500	2.603	2.250	0.373	1 18 2
44	7	38.750	39.590	31.851	33. 500	6.074	5.250	0.870	797
44	12	35.000	36.100	23.174	26. 000	10.413	9.000	1.491	422
46	3	43.750	44.300	40.793	41. 500	2.603	2.250	0.373	1 308
46	8	40.000	40.898	32.116	34. 000	6.942	6.000	0.994	810
46	12	37.000	38.100	25.174	28. 000	10.413	9.000	1.491	498
48	3	45.750	46.300	42.793	43. 500	2.603	2.250	0.373	1 439
48	8	42.000	42.898	34.116	36. 000	6.942	6.000	0.994	914
48	12	39.000	40.100	27.174	30. 000	10.413	9.000	1.491	580
50	3	47.750	48.300	44.793	45. 500	2.603	2.250	0.373	1 576
50	8	44.000	44.898	36.116	38. 000	6.942	6.000	0.994	1 025
50	12	41.000	42.100	29.174	32. 000	10.413	9.000	1.491	669
52	3	49.750	50.300	46.793	47. 500	2.603	2.250	0.373	1 720
52	8	46.000	46.898	38.116	40. 000	6.942	6.000	0.994	1 141
52	12	43.000	44.100	31.174	34. 000	10.413	9.000	1.491	764
55	3	52.750	53.300	49.793	50. 500	2.603	2.250	0.373	1 948
55	9	48.250	49.203	39.380	41. 500	7.810	6.750	1.118	1 218
55	14	44.500	45.688	30.702	34.000	12,149	10.500	1.740	741
60	3	57.750	58.300	54.793	55. 500	2.603	2.250	0.373	2 359
60	9	53.250	54.203	44.380	46. 500	7.810	6.750	1.118	1 548
60	14	49.500	50.688	35.702	39. 000	12.149	10.500	1.740	1 002
65	4	62.000	62.635	58.058	59. 000	3.471	3.000	0.497	2 648
65	10	57.500	58.504	47.645	50. 000	8.678	7.500	1.243	1 784
65	16	53.000	54.270	37.231	41. 000	13.884	12.000	1.988	1 089
70	4	67.000	67.635	63.058	64. 000	3.471	3.000	0.497	3 124
70	10	62.500	63.504	52.645	55. 000	8.678	7.500	1.243	2 178
70	16	58.000	59.270	42.231	46. 000	13.884	12.000	1.988	1 401

Table 2 (*Continued*)

Nominal Diameter $d = D$	Pitch P	Pitch Diameter		Minor Diameter		h_3 0.867 77 P	H_1 0.75 P	R R 0.124 27 P	Area of Core A_s mm²
		d_2	D_2	d_3	D_1				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
75	4	72.000	72.635	68.058	69.000	3.471	3.000	0.497	3 639
75	10	67.500	68.504	57.645	60.000	8.678	7.500	1.243	2 611
75	16	63.000	64.270	47.231	51.000	13.884	12.000	1.988	1 753
80	4	77.000	77.635	73.058	74.000	3.471	3.000	0.497	4 194
80	10	72.500	73.504	62.645	65.000	8.678	7.500	1.243	3 083
80	16	68.000	69.270	52.231	56.000	13.884	12.000	1.988	2 144
85	4	82.000	82.635	78.058	79.000	3.471	3.000	0.497	4 787
85	12	76.000	77.100	64.174	67.000	10.413	9.000	1.491	3 236
85	18	71.500	72.847	53.760	58.000	15.620	13.500	2.237	2 271
90	4	87.000	87.635	83.058	84.000	3.471	3.000	0.497	5 420
90	12	81.000	82.100	69.174	72.000	10.413	9.000	1.491	3 760
90	18	76.500	77.847	58.760	63.000	15.620	13.500	2.237	2 713
95	4	92.000	92.635	88.058	89.000	3.471	3.000	0.497	6 093
95	12	86.000	87.100	74.174	77.000	10.413	9.000	1.491	4 323
95	18	81.500	82.847	63.760	68.000	15.620	13.500	2.237	3 194
100	4	97.000	97.635	93.058	94.000	3.471	3.000	0.497	6 804
100	12	91. 000	92.100	79.174	82.000	10.413	9.000	1.491	4 925
100	20	85. 000	86.420	65.289	70.000	17.355	15.000	2.485	3 349
105	4	102.000	102.635	98.058	99.000	3.471	3.000	0.497	7 555
105	12	96. 000	91.100	84.174	87.000	10.413	9.000	1.491	5 567
105	20	90. 000	91.420	70.289	75.000	17.355	15.000	2.485	3 882
110	4	107.000	107.635	103.058	104.000	3.471	3.000	0.497	8 345
110	12	101.000	102.100	89.174	92.000	10.413	9.000	1.491	6 248
110	20	95. 000	96.420	75.289	80.000	17.355	15.000	2.485	4 454
115	6	110.500	111.278	104.587	106.000	5.207	4.500	0.746	8 594
115	14	104.500	105.688	90.702	94.000	12.149	10.500	1.740	6 464
115	22	98. 500	99.990	76.818	82.000	19.091	16.500	2.734	4 637
120	6	115.500	116.278	109.587	111.000	5.207	4. 500	0.746	9 436
120	14	109.500	110.688	95.702	99.000	12.149	10.500	1.740	7 196
120	22	103.500	104.990	81.818	87.000	19.091	16.500	2.734	5 260
125	6	120.500	121.278	114.587	116.000	5.207	4. 500	0.746	10 317
125	14	114.500	115.688	100.702	104.000	12.149	10.500	1.740	7 968
125	22	108.500	109.990	86.818	92.000	19.091	16.500	2.734	5 922
130	6	125.500	126.278	119.587	121.000	5.207	4. 500	0.746	11 236
130	14	119.500	120.688	105.702	109.000	12.149	10.500	1.740	8 779
130	22	113.500	114.990	91.818	97.000	19.091	16.500	2.734	6 624

Table 2 (*Continued*)

Nominal Diameter $d = D$	Pitch P	Pitch Diameter		Minor Diameter		h_3 0.867 77 P	H_1 0.75 P	R 0.124 27 P	Area of Core A_s mm²
		d_2	D_2	d_3	D_1				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
135	6	130.500	131.278	124.587	126.000	5.207	4.500	0.746	12 196
135	14	124.500	125.688	110.702	114.000	12.149	10.500	1.740	9 629
135	24	117.000	118.556	93.347	99.000	20.826	18.000	2.982	6 846
140	6	135.500	136.278	129.587	131.000	5.207	4.500	0.746	13 194
140	14	129.500	130.688	115.702	119.000	12.149	10.500	1.740	10 518
140	24	122.000	123.556	98.347	104.000	20.826	18.000	2.982	7 600
145	6	140.500	141.278	134.587	136.000	5.207	4.500	0.746	14 232
145	14	134.500	135.688	120.702	124.000	12.149	10.500	1.740	11 447
145	24	127.000	128.556	103.347	109.000	20.826	18.000	2.982	8 392
150	6	145.500	146.278	139.587	141.000	5.207	4.500	0.746	15 309
150	16	138.000	139.270	122.231	126.000	13.884	12.000	1.988	11 739
150	24	132.000	133.556	108.347	114.000	20.826	18.000	2.982	9 224
155	6	150.500	151.278	144.587	146.000	5.207	4.500	0.746	16 426
155	16	143.000	144.270	127.231	131.000	13.884	12.000	1.988	12 719
155	24	137.000	138.556	113.347	119.000	20.826	18.000	2.982	10 095
160	6	155.500	156.278	149.587	151.000	5.207	4.500	0.746	17 581
160	16	148.000	149.270	132.231	136.000	13.884	12.000	1.988	13 738
160	28	139.000	140.680	111.405	118.000	24.298	21.000	3.480	9 752
165	6	160.500	161.278	154.587	156.000	5.207	4.500	0.746	18 776
165	16	153.000	154.270	137.231	141.000	13.884	12.000	1.988	14 797
165	28	144.000	145.680	116.405	123.000	24.298	21.000	3.480	10 647
170	6	165.500	166.278	159.587	161.000	5.207	4.500	0.746	20 011
170	16	158.000	159.270	142.231	146.000	13.884	12.000	1.988	15 895
170	28	149.000	150.680	121.405	128.000	24.298	21.000	3.480	11 581
175	8	169.000	169.898	161.116	163.000	6.942	6.000	0.994	20 396
175	16	163.000	164.270	147.231	151.000	13.884	12.000	1.988	17 032
175	28	154.000	155.680	126.405	133.000	24.298	21.000	3.480	12 554
180	8	174.000	174.898	166.116	168.000	6.942	6.000	0.994	21 681
180	18	166.500	167.847	148.760	153.000	15.620	13.500	2.237	17 388
180	28	159.000	160.680	131.405	138.000	24.298	21.000	3.480	13 567
185	8	179.000	179.898	171.116	173.000	6.942	6.000	0.994	23 006
185	18	171.500	172.847	153.760	158.000	15.620	13.500	2.237	18 576
185	32	161.000	162.797	129.463	137.000	27.769	24.000	3.977	13 169
190	8	184.000	184.898	176.116	178.000	6.942	6.000	0.994	24 370
190	18	176.500	177.847	158.760	163.000	15.620	13.500	2.237	19 804
190	32	166.000	167.797	134.463	142.000	27.769	24.000	3.977	14 206

Table 2 (*Continued*)

Nominal Diameter $d = D$	Pitch P	Pitch Diameter		Minor Diameter		h_3 0.867 77 P	H_1 0.75 P	R R 0.124 27 P	Area of Core A_s mm²
		d_2	D_2	d_3	D_1				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
195	8	189.000	189.898	181.116	183. 000	6.942	6.000	0.944	25 774
195	18	181.500	182.847	163.760	168. 000	15.620	13.500	2.237	21 071
195	32	171.000	172.797	139.463	147. 000	27.769	24.000	3.977	15 282
200	8	194.000	194.898	186.116	188. 000	6.942	6.000	0.994	27 216
200	18	186.500	187.847	168.760	173. 000	15.620	13.500	2.237	22 377
200	32	176.000	177.797	144.463	152. 000	27.769	24.000	3.977	16 397
210	8	204.000	204.898	196.116	198. 000	6.942	6.000	0.994	30 220
210	20	195.000	196.420	175.289	180. 000	17.355	15.000	2.485	24 142
210	36	183.000	184.905	147.521	156. 000	31.240	27.000	4.474	17 099
220	8	214.000	214.898	206.116	208. 000	6.942	6.000	0.994	33 380
220	20	205.000	206.420	185.289	190. 000	17.355	15.000	2.485	26 975
220	36	193.000	194.905	157.521	166. 000	31.240	27.000	4.474	19 496
230	8	224.000	224.898	216.116	218. 000	6.942	6.000	0.994	36 698
230	20	215.000	216.420	195.289	200. 000	17.355	15.000	2.485	29 965
230	36	203.000	204.905	167.521	176. 000	31.240	27.000	4.474	22 050
240	8	234.000	234.898	226.116	228. 000	6.942	6.000	0.994	40 172
240	22	223.500	224.990	201.818	207. 000	19.091	16.500	2.734	32 003
240	36	213.000	214.905	177.521	186. 000	31.240	27.000	4.474	24 761
250	12	241.000	242.100	229.174	232. 000	10.413	9.000	1.491	41 266
250	22	233.500	234.990	211.818	217. 000	19.091	16.500	2.734	35 253
250	40	220.000	222.009	180.578	190. 000	34.711	30.000	4.971	25 621
260	12	251.000	252.100	239.174	242. 000	10.413	9.000	1.491	44 946
260	22	243.500	244.990	221.818	227. 000	19.091	16.500	2.734	38 660
260	40	230.000	232.009	190.578	200. 000	34.711	30.000	4.971	28 537
270	12	261.000	262.100	249.174	252. 000	10.413	9.000	1.491	48 783
270	22	253.500	254.990	231.818	237. 000	19.091	16.500	2.734	42 224
270	40	240.000	242.009	200.578	210. 000	34.711	30.000	4.971	31 611
280	12	271.000	272.100	259.174	262. 000	10.413	9.000	1.491	52 777
280	24	262.000	263.556	238.347	244. 000	20.826	18.000	2.982	44 636
280	40	250.000	252.009	210.578	220. 000	34.711	30.000	4.971	34 841
290	12	281.000	282.100	269.174	272. 000	10.413	9.000	1.491	56 928
290	24	272.000	273.556	248.347	254. 000	20.826	18.000	2.982	48 460
290	44	257.000	259.107	213.636	224. 000	38.182	33.000	5.468	35 860
300	12	291.000	292.100	279.174	282. 000	10.413	9.000	1.491	61 237
300	24	282.000	283.556	258.347	264. 000	20.826	18.000	2.982	52 441
300	44	267.000	269.107	223.636	234. 000	38.182	33.000	5.468	39 296

Table 2 (*Concluded*)

Nominal Diameter $d = D$	Pitch P	Pitch Diameter		Minor Diameter		h_3 0.867 77 P	H_1 0.75 P	R R 0.124 27 P	Area of Core A_q mm²
		d_2	D_2	d_3	D_1				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
320	12	311.000	312.100	299.174	302. 000	10.413	9.000	1.491	70 325
320	44	287.000	289.107	243.636	254. 000	38.182	33.000	5.468	46 639
340	12	331.000	332.100	319.174	322. 000	10.413	9.000	1.491	80 042
340	44	307.000	309.107	263.636	274. 000	38.182	33.000	5.468	54 610
360	12	351.000	352.100	339.174	342. 000	10.413	9. 000	1.491	90 388
380	12	371. 000	372.100	359.174	362. 000	10.413	9. 000	1.491	101 362
400	12	391. 000	392.100	379.174	382. 000	10.413	9. 000	1.491	112 964
420	18	406. 500	407.847	388.760	393. 000	15.620	13.500	2.237	118 749
440	18	426. 500	427.847	408.760	413. 000	15.620	13.500	2.237	131 281
460	18	446. 500	447.847	428.760	433. 000	15.620	13.500	2.237	144 442
480	18	466. 500	467.847	448.760	453. 000	15.620	13.500	2.237	158 232
500	18	486. 500	487.847	468.760	473. 000	15.620	13.500	2.237	172 650
520	24	502. 000	503.556	478.347	484. 000	20.826	18.000	2.982	179 784
540	24	522. 000	523.556	498.347	504. 000	20.826	18.000	2.982	195 132
560	24	542. 000	543.556	518.347	524. 000	20.826	18.000	2.982	211 109
580	24	562. 000	563.556	538.347	544. 000	20.826	18.000	2.982	227 714
600	24	582. 000	583.556	558.347	564. 000	20.826	18.000	2.982	244 948
620	24	602. 000	603.556	578.347	584. 000	20.826	18.000	2.982	262 810
640	24	622. 000	623.556	598.347	604. 000	20.826	18.000	2.982	2 81 301

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *website* : www.bis.org.in

Regional Offices: Telephones

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002 — 2323 7617, 2323 3841

Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi, KOLKATA 700054 — 2337 8499, 2337 8561, 2337 8626, 2337 9120

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022 — 260 3843, 260 9285

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