
Bolts with hexagonal head class of accuracy A

Design and dimensions

GOST 7798-70

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INTER STATE STANDARD

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GOST
7805-70

Design and dimensions

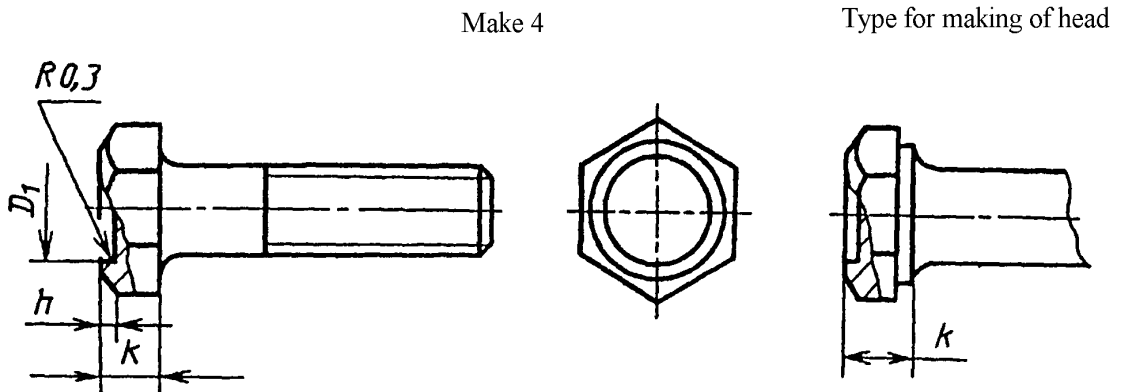
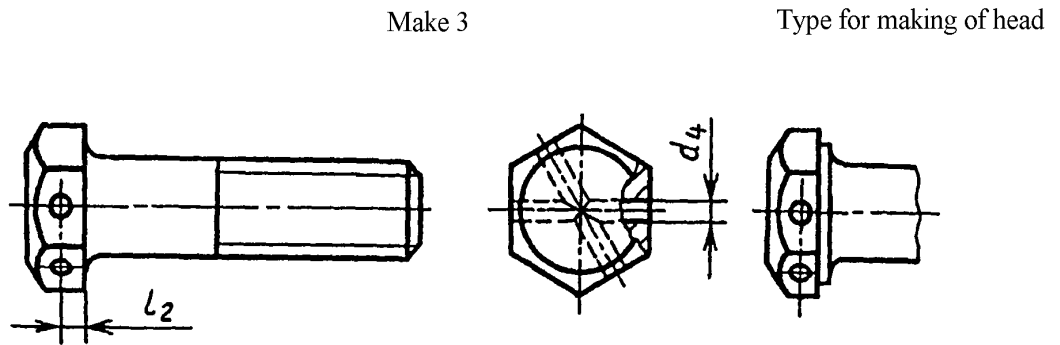
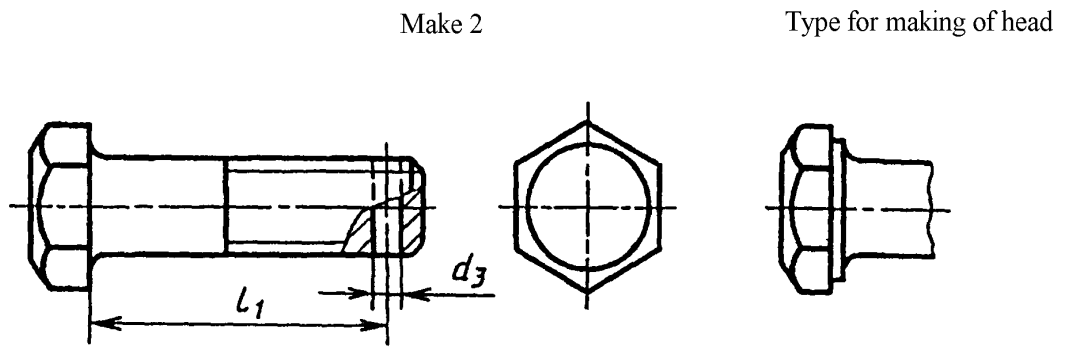
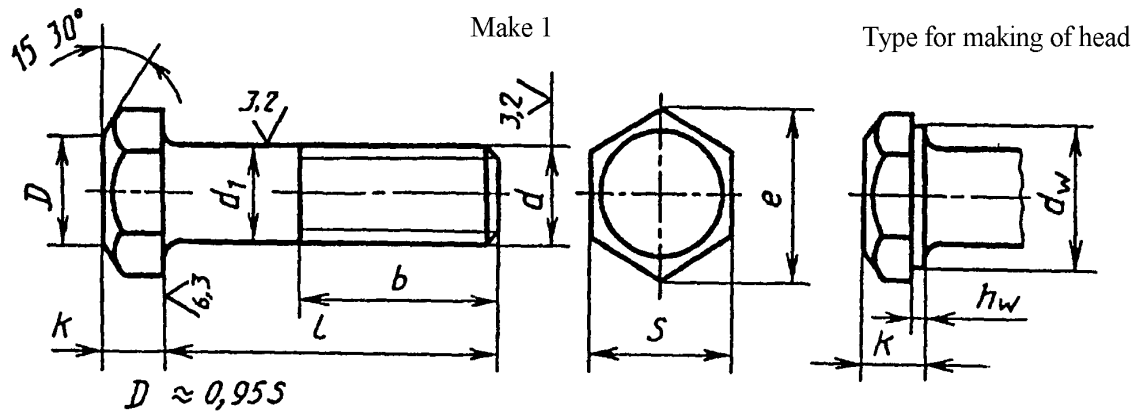
(CT CЭB 7798-62)

OKII 12 8200

Date of introduction 01.01.72

1. This standard pertains to the bolts with hexagonal heads with class of accuracy B with diameter of threads from 6 to 48 mm.
(Amended edition, amendment No. 4)
2. Design and dimensions of bolts should corresponds to specification on drawing and in table 1 and 2.
(Amended edition, amendment No. 2-6).
3. Thread – according to GOST 24705. Run out and under cutting of threads - according to GOST 27148. Ends of bolts – according to GOST 12414.
(Amended edition, amendment No. 5).
- 3a. Radius for head – according to GOST 24670.
- 3б. Dimensional tolerance, deviation of forms, position of surface and inspection methods- according to GOST 1759.1 are not set by this standard.
- 3B. Permissible surface defects of bolts and inspection method – according to GOST 1759.2.
- 3a – 3B. **(Introduced additionally, amendment No. 4).**
4. **(Deleted, amendment No. 4)**
5. Manufacturer sets the type of making of head.
- 5a. It is permitted to manufacture the bolts with diameter of smooth portion of shank d_1 approximately equal to the pitch diameter of threads.
(Introduced additionally, amendment No. 3).
- 5б. It is permitted to manufacture bolts of make 1 and 2, for application of marking sign with hole on end face of head with dimensions which do not decrease the strength of head.
(Introduced additionally, amendment No. 5).
6. Technical requirement – according to GOST 1759.0.
7. **(Deleted, amendment No. 2).**
8. Mass of bolts, specified in annexure 1.

12,5
√ (√)



$D_1 \leq 0,8 S$
 $h = (0,2 + 0,4) k$

Table 1

Nominal diameter of thread, d		6	8	10	12	(14)	16	(18)	20	(22)	24	(27)	30	36	42	48
Pitch of thread	Coarse	1	1,25	1,5	1,75	2		2,5			3		3,5	4	4,5	5
	Fine	—	1	1,25		1,5				2			3			
Diameter of shank d ₁		6	8	10	12	14	16	18	20	22	24	27	30	36	42	48
Width across flat S		10	13	16	18	21	24	27	30	34	36	41	46	55	65	75
Height of head k		4,0	5,3	6,4	7,5	8,8	10,0	12,0	12,5	14,0	15,0	17,0	18,7	22,5	26,0	30,0
Diameter of inscribed circle e, not less than		10,9	14,2	17,6	19,9	22,8	26,2	29,6	33,0	37,3	39,6	45,2	50,9	60,8	71,3	82,6
d _w , not less than		8,7	11,5	14,5	16,5	19,2	22,0	24,8	27,7	31,4	33,2	38,0	42,7	51,1	59,9	69,4
h _w	Not less than	0,15					0,20						0,25			
	Not more than	0,6					0,8									
Diameter of hole in shank d ₃		1,6	2,0	2,5	3,2		4,0		5,0			6,3		8,0		
Diameter of hole in head d ₄ H ₁₅		2,0	2,5		3,2		4,0						5,0			
Distance from supporting surface up to the axis of hole in head l ₂ js15		2,0	2,8	3,5	4,0	4,5	5,0	6,0	6,5	7,0	7,5	8,5	9,5	11,5	13,0	15,0

Note:

1. It is not recommended to use the dimension of bolts, which are given in bracket.
2. It is permitted to manufacture the bolts with dimensions, specified in annexure 2.

Table 2

MM

Length of bolt l	Length of thread b and distance from the supporting surface of the head to the axis of hole in shank l_1 with nominal diameter of thread d (sign X is marked on the bolts with thread on the entire length of shank)																													
	6		8		10		12		(14)		16		(18)		20		(22)		24		(27)		30		36		42		48	
	l_1	b	l_1	b	l_1	b	l_1	b	l_1	b	l_1	b	l_1	b	l_1	b	l_1	b	l_1	b	l_1	b	l_1	b	l_1	b	l_1	b	l_1	b
8	—	x	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10	—	x	—	x	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
12	—	x	—	x	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
14	10	x	—	x	—	x	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
16	12	x	12	x	—	x	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
(18)	14	x	14	x	14	x	—	x	—	x	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
20	16	x	16	x	16	x	15	x	—	x	—	x	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
(22)	18	18	18	x	18	x	17	x	17	x	—	x	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
25	21	18	21	x	21	x	20	x	20	x	19	x	—	x	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	
(28)	24	18	24	22	24	x	23	x	23	x	22	x	22	x	—	x	—	x	—	—	—	—	—	—	—	—	—	—	—	
30	26	18	26	22	26	x	25	x	25	x	24	x	24	x	24	x	—	x	—	—	—	—	—	—	—	—	—	—	—	
(32)	28	18	28	22	28	26	27	x	27	x	26	x	26	x	26	x	25	x	—	x	—	—	—	—	—	—	—	—	—	
35	31	18	31	22	31	26	30	30	30	x	29	x	29	x	29	x	28	x	28	x	—	x	—	—	—	—	—	—	—	
(38)	34	18	34	22	34	26	33	30	33	x	32	x	32	x	32	x	31	x	31	x	—	x	—	—	—	—	—	—	—	
40	36	18	36	22	36	26	35	30	35	34	34	x	34	x	34	x	33	x	33	x	32	x	—	x	—	—	—	—	—	
45	41	18	41	22	41	26	40	30	40	34	39	38	39	x	39	x	38	x	38	x	37	x	36	x	—	—	—	—	—	
50	46	18	46	22	46	26	45	30	45	34	44	38	44	42	44	x	43	x	43	x	42	x	41	x	40	x	—	—	—	
55	51	18	51	22	51	26	50	30	50	34	49	38	49	42	49	46	48	x	48	x	47	x	46	x	45	x	—	x	—	
60	56	18	56	22	56	26	55	30	55	34	54	38	54	42	54	46	53	50	53	x	52	x	51	x	50	x	48	x	—	
65	61	18	61	22	61	26	60	30	60	34	59	38	59	42	59	46	58	50	58	54	57	x	56	x	55	x	53	x	—	
70	66	18	66	22	66	26	65	30	65	34	64	38	64	42	64	46	63	50	63	54	62	60	61	x	60	x	58	x	58	x
75	71	18	71	22	71	26	70	30	70	34	69	38	69	42	69	46	68	50	68	54	67	60	66	66	65	x	63	x	63	x
80	76	18	76	22	76	26	75	30	75	34	74	38	74	42	74	46	73	50	73	54	72	60	71	66	70	x	68	x	68	x
(85)	81	18	81	22	81	26	80	30	80	34	79	38	79	42	79	46	78	50	78	54	77	60	76	66	75	x	73	x	73	x
90	86	18	86	22	86	26	85	30	85	34	84	38	84	42	84	46	83	50	83	54	82	60	81	66	80	78	78	x	78	x
(95)	—	—	91	22	91	26	90	30	90	34	89	38	89	42	89	46	88	50	88	54	87	60	86	66	85	78	83	x	83	x
100	—	—	96	22	96	26	95	30	95	34	94	38	94	42	94	46	93	50	93	54	92	60	91	66	90	78	88	x	88	x
(105)	—	—	—	—	101	26	100	30	100	34	99	38	99	42	99	46	98	50	98	54	97	60	96	66	95	78	93	90	93	x

MM

Length of bolt l	Length of thread b and distance from the supporting surface of the head to the axis of hole in shank l ₁ with nominal diameter of thread d (sign X is marked on the bolts with thread on the entire length of shank)																													
	6		8		10		12		(14)		16		(18)		20		(22)		24		(27)		30		36		42		48	
	l ₁	b	l ₁	b	l ₁	b	l ₁	b	l ₁	b	l ₁	b	l ₁	b	l ₁	b	l ₁	b	l ₁	b	l ₁	b	l ₁	b	l ₁	b	l ₁	b	l ₁	b
110	—	—	—	—	106	26	105	30	105	34	104	38	104	42	104	46	103	50	103	54	102	60	101	66	100	78	98	90	98	×
(115)	—	—	—	—	111	26	110	30	110	34	109	38	109	42	109	46	108	50	108	54	107	60	106	66	105	78	103	90	103	102
120	—	—	—	—	116	26	115	30	115	34	114	38	114	42	114	46	113	50	113	54	112	60	111	66	110	78	108	90	108	102
(125)	—	—	—	—	121	26	120	30	120	34	119	38	119	42	119	46	118	50	118	54	117	60	116	66	115	78	113	90	113	102
130	—	—	—	—	126	32	125	36	125	40	124	44	124	48	124	52	123	56	123	60	122	66	121	72	120	84	118	96	118	108
140	—	—	—	—	136	32	135	36	135	40	134	44	134	48	134	52	133	56	133	60	132	66	131	72	130	84	128	96	128	108
150	—	—	—	—	146	32	145	36	145	40	144	44	144	48	144	52	143	56	143	60	142	66	141	72	140	84	138	96	138	108
160	—	—	—	—	156	32	155	36	155	40	154	44	154	48	154	52	153	56	153	60	152	66	151	72	150	84	148	96	148	108
170	—	—	—	—	166	32	165	36	165	40	164	44	164	48	164	52	163	56	163	60	162	66	161	72	160	84	158	96	158	108
180	—	—	—	—	176	32	175	36	175	40	174	44	174	48	174	52	173	56	173	60	172	66	171	72	170	84	168	96	168	108
190	—	—	—	—	186	32	185	36	185	40	184	44	184	48	184	52	183	56	183	60	182	66	181	72	180	84	178	96	178	108
200	—	—	—	—	196	32	195	36	195	40	194	44	194	48	194	52	193	56	193	60	192	66	191	72	190	84	188	96	188	108
220	—	—	—	—	—	—	215	49	215	53	214	57	214	61	214	65	213	69	213	73	212	79	211	85	210	97	208	109	208	121
240	—	—	—	—	—	—	235	49	235	53	234	57	234	61	234	65	233	69	233	73	232	79	231	85	230	97	228	109	228	121
260	—	—	—	—	—	—	255	49	255	53	254	57	254	61	254	65	253	69	253	73	252	79	251	85	250	97	248	109	248	121
280	—	—	—	—	—	—	—	—	275	53	274	57	274	61	274	65	273	69	273	73	272	79	271	85	270	97	268	109	268	121
300	—	—	—	—	—	—	—	—	295	53	294	57	294	61	294	65	293	69	293	73	292	79	291	85	290	97	288	109	288	121

Note.

1. It is not recommended to use bolts with dimensions of length, given in bracket.
2. Bolts, for which the value b placed above the broken line, is permitted to manufacture bolts with length of thread to the head

Example of conventional code of bolts of make 1 with diameter of thread d = 12 mm, with width across flat S = 18 mm, Length l = 60 mm, with coarse pitch of thread with range of tolerance 6 g, class of strength 5.8, without coating:

Bolt M12 – 6 gm X 60.58 (S18) GOST 7798-70

Also, make 2, with Width across flat S = 19 mm, with fine pitch of thread with range of tolerance 6 g, class of strength 10.9, made of steel of grade 40X, with coating 01 having thickness 6 mkm:

Bolt 2M12 x 1.25 – 6 g x 60.109.40X. 016 GOST 7798-70

Weight of steel bolts (make 1) with coarse pitch of thread

Length of Bolts l in mm	Theoretical weight of 1000 pieces of bolts in kg ≈, at nominal diameter of threads d in mm														
	6	8	10	12	14	16	18	20	22	24	27	30	36	42	48
8	4,306	8,668	—	—	—	—	—	—	—	—	—	—	—	—	—
10	4,712	9,394	16,68	—	—	—	—	—	—	—	—	—	—	—	—
12	5,118	10,120	17,82	—	—	—	—	—	—	—	—	—	—	—	—
14	5,524	10,850	18,96	27,89	—	—	—	—	—	—	—	—	—	—	—
16	5,930	11,570	20,10	29,48	43,98	—	—	—	—	—	—	—	—	—	—
18	6,336	12,300	21,23	31,12	46,21	65,54	—	—	—	—	—	—	—	—	—
20	6,742	13,020	22,37	32,76	48,45	68,49	95,81	—	—	—	—	—	—	—	—
22	7,204	13,520	23,51	34,40	50,69	71,44	99,52	—	—	—	—	—	—	—	—
25	7,871	14,840	25,22	36,86	54,05	75,87	105,10	133,3	—	—	—	—	—	—	—
28	8,537	16,330	26,92	39,32	57,40	80,29	110,60	140,2	—	—	—	—	—	—	—
30	8,981	17,120	28,52	40,96	59,64	83,24	114,30	144,8	193,0	—	—	—	—	—	—
32	9,426	17,910	29,43	42,59	61,87	86,19	118,00	149,4	198,6	237,0	—	—	—	—	—
35	10,090	19,090	31,28	45,34	65,24	90,62	123,60	156,3	207,0	246,9	340,6	—	—	—	—
38	10,760	20,280	33,18	48,00	68,59	95,04	129,20	163,2	215,4	256,9	353,3	—	—	—	—
40	11,200	21,070	34,36	49,78	71,25	97,99	132,90	167,8	221,0	263,5	361,8	474,8	—	—	—
45	12,310	23,040	37,45	54,22	77,30	105,70	142,10	179,4	235,0	280,1	373,0	500,9	—	—	—
50	13,420	25,020	40,53	58,67	83,35	113,60	152,40	190,9	249,0	296,7	404,1	526,9	834,5	—	—
55	14,530	26,990	43,62	63,11	89,39	121,50	162,40	203,7	263,1	313,3	425,3	553,0	872,1	1304	—
60	15,640	28,970	46,70	67,55	95,44	129,40	172,40	216,0	278,9	329,9	446,5	579,0	909,8	1356	—
65	16,760	30,940	49,79	71,99	101,50	137,30	182,40	228,4	293,8	348,8	467,7	605,1	947,4	1407	2009
70	17,870	32,910	52,87	76,44	107,50	145,20	192,40	240,7	308,8	366,5	491,1	631,1	985,0	1458	2076
75	18,980	34,890	55,96	80,88	113,60	153,10	202,40	253,0	323,7	384,3	513,6	659,7	1023,0	1509	2143
80	20,090	36,860	59,04	85,33	119,60	161,00	212,40	265,0	338,6	402,1	536,1	687,5	1061,0	1561	2211

Length of Bolts l in mm	Theoretical weight of 1000 pieces of bolts in kg \approx , at nominal diameter of threads d in mm														
	6	8	10	12	14	16	18	20	22	24	27	30	36	42	48
	6	8	10	12	14	16	18	20	22	24	27	30	36	42	48
85	21,200	38,840	62,13	89,77	125,70	168,90	222,40	277,7	353,6	419,8	558,6	715,2	1098,0	1612	2278
90	22,310	40,810	65,21	94,20	131,70	176,80	232,40	290,1	368,5	437,6	581,0	743,0	1141,0	1663	2345
95	—	42,790	68,30	98,64	137,80	184,70	242,40	302,4	383,4	455,4	603,5	770,8	1181,0	1715	2412
100	—	44,760	71,38	103,10	143,80	192,60	252,40	314,7	398,3	473,2	626,0	798,5	1221,0	1766	2479
105	—	—	74,47	107,50	149,90	200,50	262,40	327,1	413,3	490,9	648,5	826,3	1261,0	1826	2546
110	—	—	77,55	112,00	155,90	208,40	272,30	339,4	428,2	508,7	671,0	854,1	1301,0	1880	2614
115	—	—	80,63	116,40	162,00	216,30	282,30	351,8	443,1	526,5	693,5	881,8	1341,0	1934	2690
120	—	—	83,72	120,90	168,00	224,20	292,30	364,1	458,1	544,2	716,0	909,6	1381,0	1989	2760
125	—	—	86,80	125,30	174,00	232,10	302,30	376,4	473,0	562,0	738,5	937,4	1421,0	2043	2831
130	—	—	89,89	129,70	180,10	240,00	312,30	388,8	487,9	579,8	761,0	965,2	1461,0	2098	2903
140	—	—	96,06	138,60	192,20	255,80	332,30	413,5	517,8	615,3	806,0	1021,0	1541,0	2207	3045
150	—	—	102,18	147,50	204,30	271,60	352,30	438,1	547,6	650,8	850,1	1076,0	1621,0	2315	3187
160	—	—	108,38	156,40	216,40	287,40	372,30	462,8	577,5	686,4	895,9	1132,0	1701,0	2424	3329
170	—	—	114,58	165,30	228,50	303,20	392,30	487,5	607,4	721,9	940,9	1188,0	1780,0	2533	3471
180	—	—	120,68	174,20	240,60	319,00	412,30	512,2	637,2	757,5	985,9	1243,0	1860,0	2642	3614
190	—	—	126,88	183,10	252,70	333,80	432,30	536,9	667,1	793,0	1031,0	1299,0	1940,0	2751	3756
200	—	—	133,08	191,90	264,70	350,60	452,20	561,5	697,0	828,6	1076,0	1354,0	2020,0	2860	3898
220	—	—	—	209,70	228,90	382,20	492,20	610,9	756,7	899,6	1166,0	1465,0	2180,0	3077	4182
240	—	—	—	227,50	313,10	413,80	532,20	660,3	816,4	970,8	1256,0	1576,0	2340,0	3295	4466
260	—	—	—	245,20	337,60	445,40	572,20	709,6	876,1	1042,0	1346,0	1687,0	2500,0	3513	4751
280	—	—	—	—	361,50	476,90	612,20	759,0	935,9	1113,0	1436,0	1798,0	2660,0	3730	5035
300	—	—	—	—	385,70	508,50	652,20	808,3	995,6	1184,0	1526,0	1910,0	2820,0	3948	5319

(Amendment edition, amendment No. 5)

Additional requirement, which are used in national economy

Dimension in mm

Nominal diameter of threads d		10	12	14	22	Nominal diameter of threads d		10	12	14	22
Width across flat S		17	19	22	32	Width across flat S		17	19	22	32
Dimension of circumscribed circle e, not less than.		18.7	20.9	23.9	35.0	Dimension of circumscribed circle e, not less than		18.7	20.9	23.9	35.0
d _w , not less than.		15.5	17.2	20.1	29.5	d _w , not less than		15.5	17.2	20.1	29.5
Length of bolt l	10	18,10	—	—	—	Length of bolt l	85	63,55	91,63	128,20	341,2
	12	19,24	—	—	—		90	66,63	96,06	134,20	356,1
	14	20,38	29,75	—	—		95	69,72	100,50	140,30	371,0
	16	21,52	31,34	46,52	—		100	72,80	105,00	146,30	385,9
	18	22,65	32,98	48,75	—		105	75,89	109,40	152,40	400,9
	20	23,79	34,62	50,09	—		110	78,97	113,90	158,40	415,8
	22	24,93	36,26	53,23	—		115	82,05	118,30	164,50	430,7
	25	26,64	38,72	56,59	—		120	85,14	122,80	170,50	445,7
	28	28,34	41,18	59,94	—		125	88,22	127,20	176,50	460,6
	30	29,48	42,82	62,18	180,6		130	91,31	131,60	182,60	475,5
	32	30,85	44,45	64,41	186,2		140	97,48	140,50	194,70	505,4
	35	32,70	47,20	67,78	194,6		150	103,60	149,40	206,80	535,2
	38	34,55	49,86	71,13	203,0		160	109,80	158,30	218,90	565,1
	40	35,78	51,64	73,79	208,6		170	116,00	167,20	231,00	595,0
	45	38,87	56,08	79,84	222,6		180	122,10	176,10	243,10	624,8
	50	41,95	60,53	85,89	236,6		190	128,30	185,00	255,20	654,7
	55	45,04	64,97	91,93	250,7		200	134,50	193,80	267,20	684,6
	60	48,12	69,41	97,98	266,5		220	—	211,60	291,40	744,3
65	51,21	73,85	104,00	281,4	240	—	229,40	315,60	804,0		
70	54,29	78,30	110,00	296,4	260	—	247,10	339,80	863,7		
75	57,38	82,74	116,10	311,3	280	—	—	364,00	923,5		
80	60,46	87,19	122,10	326,2	300	—	—	388,20	983,2		

ANNEXURE 2. (Introduced additionally, amendment No. 5);

(Amended edition, amendment No. 6)