

Translated English of Chinese Standard: HG/T20634-2009

[www.ChineseStandard.net](http://www.ChineseStandard.net)

[Sales@ChineseStandard.net](mailto:Sales@ChineseStandard.net)

Chemical Industry Standard  
of the People's Republic of China

# HG

## HG/T 20634-2009

Replacing HG 20632-1997

---

### **Bolting for use with steel pipe flanges (Class designated)**

钢制管法兰用紧固件

(Class 系列)

#### **HG/T 20634-2009 How to BUY & immediately GET a full-copy of this standard?**

1. [www.ChineseStandard.net](http://www.ChineseStandard.net);
2. Search --> Add to Cart --> Checkout (3-steps);
3. No action is required - Full-copy of this standard will be automatically & immediately delivered to your EMAIL address in 0~25 minutes.
4. Support: [Sales@ChineseStandard.net](mailto:Sales@ChineseStandard.net). Wayne, Sales manager

**Issued on: February 5, 2009**

**Implemented on: July 1, 2009**

---

**Issued by: Ministry of Industry and Information Technology of the People's Republic of China**

## Contents

1. Scope .....	3
2. Normative references .....	3
3. Types, specification and dimension of bolting .....	4
3.1 Bolting type.....	4
3.2 Hexagon head bolts .....	4
3.3 Full thread bolts .....	4
3.4 Screw nuts.....	5
4. Materials.....	7
5. Usage of bolting .....	8
6. Dimension tolerance .....	24
7. Surface treatment.....	24
8. Inspection.....	24
9. Acceptance, packaging and quality certificate .....	24
10. Labeling and marking.....	25
Appendix A (Informative Appendix) Plain Washers for Pipe Flange Bolting.....	26
Appendix B (Informative Appendix) Bolting and Insulated Members for Insulated Flanges .....	28

## 1. Scope

This standard specifies the type, dimension, material, labeling, technical requirements and application of bolting for steel pipe flanges (Class designated).

This standard is applicable to the bolting for steel pipe flanges (including: hexagon head bolt, full thread bolt and screw nut) specified in HG/T 20615, HG/T 20623.

## 2. Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this national standard. For dated reference, subsequent amendments (excluding amending error in the text) to, or revisions of, any of these publications do not apply. However, parties to agreement based on this standard are encouraged to research whether the latest editions of these references are applied or not. For undated references, the latest edition of the normative document is applicable to this national standard.

- "Fasteners-Ends of Parts with External Thread" GB/T 2
- "Fasteners--Acceptance Inspection" GB/T 90.1
- "Fasteners--Marking and Packaging" GB/T 90.2
- "General Purpose Metric Screw Threads—Basic Dimensions " GB/T 196
- "General Purpose Metric Screw Threads—Tolerance" GB/T 197
- "Double End Studs (clamping type)-Product Grade B" GB/T 901
- "Stainless Steel Bars" GB/T 1220
- "Alloy Constructional Steel" GB/T 3077
- "Mechanical Properties of Fasteners-Bolts, Screws and Studs" GB/T 3098.1
- "Mechanical Properties of Fasteners—Nuts—Coarse Thread" GB/T 3098.2
- "Mechanical Properties of Fasteners-Stainless Steel Bolts, Screws and Studs" GB/T 3098.6
- "Mechanical Properties of Fasteners—Stainless Steel Screw Nuts" GB/T 3098.15
- "Tolerances for Fasteners-Bolts, Screws, Studs and Screw Nuts" GB/T 3103.1
- "Laminated Rods" GB/T 5133—1985
- "Hexagon Head Bolt" GB/T 5782
- "I-type Hexagon Nuts" GB/T 6170
- "Fasteners-Surface Discontinuities-Bolts, Screws and Studs for General Requirements" GB/T 5779.1
- "Fasteners-Surface Discontinuities-Nuts" GB/T 5779.2
- "Fasteners-Surface Discontinuities-Bolts, Screws and Studs for Special Requirement" GB/T 5779.3
- "Steel Pipe Flanges (Class designated)" HG/T 20615
- "Large-diameter Steel Pipe Flanges (Class designated)" HG/T 20623
- "Specification for Selection of Steel Pipe Flanges, Gaskets and Bolting (Class

4.0.4 Continued

Grade	Chemical composition (Standard number)	Heat treatment system	Specification	Mechanical property			HB
				$\sigma_b$	$\sigma_s$	$\delta_5(\%) \geq$	
				(MPa) $\geq$			
0Cr18Ni9	GB/T 1220	Solid solution	—	515	205	40	$\leq 187$
0Cr17Ni12M02	GB/T 1220	Solid solution	—	515	205	40	$\leq 187$
A193, B8-2	ASTM A193	Solid solution + strain hardening	$\leq M20$	860	690	12	$\leq 321$
			$>M20 \sim M24$	795	550	15	
			$>M24 \sim M30$	725	450	20	
			$>M30 \sim M36$	690	345	28	
A193, B8M-2	ASTM A193	Solid solution + strain hardening	$\leq M20$	760	665	15	$\leq 321$
			$>M20 \sim M24$	690	550	20	
			$>M24 \sim M30$	655	450	25	
			$>M30 \sim M36$	620	345	30	
A320, L7 <sup>b</sup>	ASTM A320	Slack quenching (tempering $\geq 620^\circ\text{C}$ )	$\leq M65$	860/690	725/550	1618	$\leq 235$
A453, 660	ASTM A453	Solid solution + strain hardening	—	895	585	15	$\geq 99$

a Low temperature notch impact test shall be carried out for 35CrM0 which is used at lower than  $-20^\circ\text{C}$ , and the average value of its three impact energy Akv shall not be lower than 27J, which shall be indicated at ordering.

b When it is used at above  $-100^\circ\text{C}$ , the minimum impact energy of the low-temperature impact test shall be 27J.

4.0.5 The mechanical property test shall be carried out for the roughcast of full thread bolt batch by batch. The hardness test shall be carried out for the roughcast of special screw nuts batch by batch.

## 5. Usage of bolting

5.0.1 The usage of commercial grade hexagon head bolts and I type hexagon nuts shall be in accordance with the following requirements:

- 1 Nominal pressure grade is less than or equal to Class150.
- 2 Be used in non-toxic, non-combustible medium as well as non-severe cyclic occasions;
- 3 Be matched with nonmetallic flat gaskets.

5.0.2 In addition to Article 5.0.1, special-grade full thread bolts and special screw nuts shall be selected.

5.0.3 The working pressure and temperature range of bolting shall meet the provisions of Table 5.0.3 of this standard.

**Table 5.0.4 Match of Hexagon Head Bolt and Screw Nuts**

Hexagon head bolts, studs		Nuts	
Type (Standard number)	Performance rate or material trademark	Type and production grade (Standard number)	Performance rate or material trademark
Hexagon head bolt GB/T 5782 Grade A and Grade B	5.6	I type hexagon nut GB/T 6170, Grade A and Grade B	68
	8.8		
	A2-50		A2-50
	A4-50		A4-50
	A2-70		A2-70
Full thread bolt HG/T 20634	A4-70		A4-70
	35CrM0	Screw nuts for pipe flanges HG/T 20634	35CrM0
	25Cr2M0V		30CrM0
	42CrM0		
	0Cr18Ni9		0Cr18Ni9
	0Cr17Ni12M02		0Cr17Ni12M02
	A193, B8 C1.2		
	A193, B8M C1.2		A194, 8A194, 8M
	A453, 660		
A320, L7	A194, 7		

**5.0.5** The selection of bolting, flanges and gaskets shall meet the provisions of HG/T 20635.

**5.0.6** The length and mass of hexagon head bolts or studs are given in Table 5.0.6-1~Table 5.0.6-18. Users may also choose other bolt length so as to satisfy the connection requirements. The bolting length in the table excludes the thickness of cushion ring.

**5.0.7** The length of hexagon head bolts or studs for butt welding ring loose flanges shall be determined according to the following formula:

Hexagon head bolt or stud length=length of bolt for corresponding raised face flange-2×raised face height+2×butt welding ring thickness

Note: The thickness of butt welding ring shall be determined according to the requirements of users at ordering; generally, it is equal to the wall thickness of matched steel tube.

**5.0.8** The mass of screw nuts shall be as shown in Table 5.0.8.

**5.0.9** The usage of cushion ring may be in accordance with the provisions of Appendix A of this standard.

**5.0.10** The bolting for insulated flanges shall be selected according to the provisions of Appendix B of this standard.

**Table 5.0 6-1 Length Code Name of Hexagon Head Bolts or Studs for Flange Joints with the Same Pressure Rating**

Code name	Raised face	Female face/male face, tongue	Ring joint face
Length code name of hexagon head	L <sub>SR</sub>	—	—
Length code name of studs	L <sub>ZR</sub>	L <sub>ZM</sub>	L <sub>ZJ</sub>

5.0.6-3 continued

Nominal size		Screw thread	Quantity n(Pcs)	Hexagon head bolt	
DN	NPS			L <sub>SR</sub> (mm)	Mass(kg)
1150	46	M39	40	265	3164
1200	48	M39	44	275	4277
1250	50	M45	44	290	4463
1300	52	M45	44	300	4587
1350	54	M45	44	310	4711
1400	56	M45	48	315	4773
1450	58	M45	48	325	4897
1500	60	M45	52	330	4959

Note: 1 The length of bolting is excluded in the thickness of cushion ring.

2 The mass of bolting is the approximate mass of per 1000 pieces.

**Table 5.0.6-4 Length and Mass of Hexagon Head Bolts for B-series Flanges of Class150 (PN20), DN>600mm**

Nominal size		Screw thread	Quantity n(Pcs)	Hexagon head bolt	
DN	NPS			L <sub>SR</sub> (mm)	Mass(kg)
650	26	M20	36	115	366
700	28	M20	40	125	300
750	30	M20	44	125	300
800	32	M20	48	125	390
850	34	M24	40	135	644
900	36	M24	44	145	894
950	38	M27	40	150	917
1000	40	M27	44	155	940
1050	42	M27	48	160	963
1100	44	M27	52	165	1219
1150	46	M30	40	170	1247
1200	48	M30	44	175	1275
1250	50	M30	48	185	1331
1300	52	M30	52	185	1331
1350	54	M30	56	190	1359
1400	56	M30	60	195	1728
1450	58	M33	48	200	1762
1500	60	M33	52	205	1796

Note: 1 The length of bolting is excluded in the thickness of cushion ring.

2 The mass of bolting is the approximate mass of per 1000 pieces.

**Table 5.0.6-5 Length and Mass of Studs for Flanges of Class150 (PN20), DN≤600mm**

Nominal size		Screw thread	Quantity n(Pcs)	Studs			
DN	NPS			L <sub>ZR</sub> (mm)	Mass(kg)	L <sub>ZI</sub> (mm)	Mass(kg)
15	1/2	M14	4	65	78	—	—
20	3/4	M14	4	70	84	—	—
25	1	M14	4	70	84	80	96
32	1 1/4	M14	4	75	90	85	102
40	1 1/2	M14	4	80	96	90	108
50	2	M16	4	85	136	100	160
65	2 1/2	M16	4	95	152	105	168
80	3	M16	4	95	152	105	168
100	4	M16	8	95	152	105	168
125	5	M20	8	110	264	115	276
150	6	M20	8	110	264	120	288
200	8	M20	8	115	276	125	300
250	10	M24	12	130	468	140	504
300	12	M24	12	135	486	145	522
350	14	M27	12	150	690	155	713
400	16	M27	16	150	690	160	736
450	18	M30	16	165	924	175	980
500	20	M30	20	170	952	180	1008
600	24	M33	20	190	1292	200	1360

Note: 1 The length of bolting is excluded in the thickness of cushion ring.

2 The mass of bolting is the approximate mass of per 1000 pieces.

**Table 5.0.6- 7 Length and Mass of Studs for Flanges of Class600 (PN110), DN≤600mm**

Nominal size		Screw thread	Quantity n(Pcs)	Studs					
DN	NPS			L <sub>ZR</sub> (mm)	Mass(kg) ( )(kg)	L <sub>ZM</sub> (m m)	Mass(kg)	L <sub>ZI</sub> (mm )	Mass(kg)
15	½	M14	4	85	102	80	96	85	102
20	¾	M16	4	95	152	90	144	95	152
25	1	M16	4	95	152	90	144	95	152
32	1¼	M16	4	105	168	100	160	105	168
40	1½	M20	4	120	288	115	276	115	276
50	2	M16	8	115	184	110	176	115	184
65	2½	M20	8	130	312	125	300	135	324
80	3	M20	8	135	324	130	312	140	336
100	4	M24	8	160	576	155	558	165	594
125	5	M27	8	180	828	175	805	185	851
150	6	M27	12	185	851	180	828	190	874
200	8	M30	12	210	1176	205	1148	215	1204
250	10	M33	16	235	1598	230	1564	235	1598
300	12	M33	20	240	1632	235	1598	245	1666
350	14	M36	20	250	2000	245	1960	255	2040
400	16	M39	20	270	2538	265	2491	270	2538
450	18	M42	20	290	3132	285	3078	290	3132
500	20	M42	24	305	3294	300	3240	310	3348
600	24	M48	24	345	4899	340	4828	350	4970

Note: 1 The length of bolting is excluded in the thickness of cushion ring.

2 The mass of bolting is the approximate mass of per 1000 pieces.



Table 5.0.6- 9 Length and Mass of Studs for Flanges of Class1500 (PN260), DN≤600mm

Nominal size		Screw thread	Quantity n(Pcs)	Studs					
DN	NPS			L <sub>ZR</sub> (mm)	Mass(kg)	L <sub>ZM</sub> (mm)	Mass (kg)	L <sub>ZI</sub> (mm)	Mass(kg)
15	1/2	M20	4	120	288	115	276	120	288
20	3/4	M20	4	125	300	120	288	125	300
25	1	M24	4	140	504	135	486	140	504
32	1 1/4	M24	4	140	504	135	486	140	504
40	1 1/2	M27	4	155	713	150	690	155	713
50	2	M24	8	160	576	155	558	160	576
65	2 1/2	M27	8	175	805	170	782	175	805
80	3	M30	8	195	1092	190	1064	195	1092
100	4	M33	8	215	1462	210	1428	215	1462
125	5	M39	8	265	2491	260	2444	265	2491
150	6	M36	12	275	2200	270	2160	280	2240
200	8	M42	12	310	3348	305	3294	315	3402
250	10	M48	12	350	4970	345	4899	360	5112
300	12	M52	16	390	6474	385	6391	405	6723
350	14	M56	16	420	8148	415	8051	435	8439
400	16	M64	16	460	11592	455	11466	480	12096
450	18	M70	16	505	15302	500	15150	525	15908
500	20	M76	16	550	19580	545	19402	575	20470
600	24	M90	16	630	31500	625	31250	660	33000

Note: 1 The length of bolting is excluded in the thickness of cushion ring.

2 The mass of bolting is the approximate mass of per 1000 pieces.

**Table 5.0.6-10 Length and Mass of Studs for Flanges of Class2500 (PN420), DN≤600mm**

Nominal size		Screw thread	Quantity n(Pcs)	Studs					
DN	NPS			L <sub>ZR</sub> (mm)	Mass (kg)	L <sub>ZM</sub> (mm)	Mass (kg)	L <sub>ZI</sub> (mm)	Mass(kg)
15	1/2	M20	4	135	324	130	312	135	324
20	3/4	M20	4	135	324	130	312	135	324
25	1	M24	4	155	558	150	540	155	558
32	1 1/4	M27	4	170	782	165	759	170	782
40	1 1/2	M30	4	190	1064	185	1036	190	1064
50	2	M27	8	195	897	190	874	195	897
65	2 1/2	M30	8	215	1204	210	1176	220	1232
80	3	M33	8	240	1632	235	1598	245	1666
100	4	M39	8	270	2538	265	2491	280	2632
125	5	M45	8	315	3906	310	3844	325	4030
150	6	M52	8	360	5976	355	5893	370	6142
200	8	M52	12	400	6640	395	6557	415	6889
250	10	M64	12	500	12600	495	12474	520	13104
300	12	M70	12	550	16665	545	16514	570	17271

Note: 1 The length of bolting is excluded in the thickness of cushion ring.  
 2 The mass of bolting is the approximate mass of per 1000 pieces.

**Table 5.0.6-12 Length and Mass of Studs for A-series Flanges of Class300 (PN50), DN>600mm**

Nominal size		Screw thread	Quantity n(Pcs)	Studs	
DN	NPS			L <sub>ZR</sub> (mm)	Mass(kg)
650	26	M42	28	275	2970
700	28	M42	28	285	3078
750	30	M45	28	305	3782
800	32	M48	28	325	4615
850	34	M48	28	330	4686
900	36	M52	32	345	5727
950	38	M39	32	325	3055
1000	40	M42	32	345	3726
1050	42	M42	32	355	3834
1100	44	M45	32	370	4588
1150	46	M48	28	385	5467
1200	48	M48	32	395	5609
1250	50	M52	32	415	6889
1300	52	M52	32	425	7055
1350	54	M56	28	450	8730
1400	56	M56	28	450	8730
1450	58	M56	32	460	8924
1500	60	M56	32	470	9118

Note: 1 The length of bolting is excluded in the thickness of cushion ring.

2 The mass of bolting is the approximate mass of per 1000 pieces.

**Table 5.0.6- 13 Length and Mass of Studs for A-series Flanges of Class600 (PN110), DN>600mm**

Nominal size		Screw thread	Quantity n(Pcs)	Studs	
DN	NPS			L <sub>ZR</sub> (mm)	Mass(kg)
650	26	M48	28	355	5041
700	28	M52	28	370	6142
750	30	M52	28	375	6225
800	32	M56	28	390	7566
850	34	M56	28	395	7663
900	36	M64	28	420	10584
950	38	M56	28	460	8924
1000	40	M56	32	475	9215
1050	42	M64	28	510	12852
1100	44	M64	32	520	13104
1150	46	M64	32	530	13356
1200	48	M70	32	565	17120
1250	50	M76	28	590	21004
1300	52	M76	32	605	21538
1350	54	M76	32	615	21894
1400	56	M82	32	645	26943
1450	58	M82	32	655	27360
1500	60	M90	28	690	34500

Note: 1 The length of bolting is excluded in the thickness of cushion ring.

2 The mass of bolting is the approximate mass of per 1000 pieces.

**Table 5.0.6-14 Length and Mass of Studs for A-series Flanges of Class900 (PN1500), DN>600mm**

Nominal size		Screw thread	Quantity n(Pcs)	Studs	
DN	NPS			L <sub>ZR</sub> (mm)	Mass(kg)
650	26	M70	20	465	14090
700	28	M76	20	480	17088
750	30	M76	20	495	17622
800	32	M82	20	525	21930
850	34	M90	20	555	27750
900	36	M90	20	565	28250
950	38	M90	20	605	30250
1000	40	M90	24	620	31000

Note: 1 The length of bolting is excluded in the thickness of cushion ring.

2 The mass of bolting is the approximate mass of per 1000 pieces.

**5.0.6-16 continued**

Nominal size		Screw thread	Quantity <i>n</i> (Pcs)	Studs	
DN	NPS			<i>L<sub>ZR</sub></i> (mm)	Mass(kg)
1350	54	M48	48	420	5964
1400	56	M56	36	450	8730
1450	58	M56	40	450	8730
1500	60	M56	40	445	8633

Note: 1 The length of bolting is excluded in the thickness of cushion ring.

2 The mass of bolting is the approximate mass of per 1000 pieces.

**Table 5.0.6- 17 Length and Mass of Studs for B-series Flanges of Class600 (PN110), DN>600mm**

Nominal size		Screw thread	Quantity <i>n</i> (Pcs)	Studs	
DN	NPS			<i>L<sub>ZR</sub></i> (mm)	Mass(kg)
650	26	M42	28	350	3780
700	28	M45	28	365	4526
750	30	M48	28	390	5538
800	32	M52	28	410	6896
850	34	M56	24	440	8536
900	36	M56	28	450	8730

Note: 1 The length of bolting is excluded in the thickness of cushion ring.

2 The mass of bolting is the approximate mass of per 1000 pieces.

**Table 5.0.6- 17 Length and Mass of Studs for B-series Flanges of Class900 (PN1500), DN>600mm**

Nominal size		Screw thread	Quantity <i>n</i> (Pcs)	Studs	
DN	NPS			<i>L<sub>ZR</sub></i> (mm)	Mass(kg)
650	26	M64	20	440	11088
700	28	MT0	20	480	14544
750	30	M76	20	510	18156
800	32	M76	20	520	18512
850	34	M82	20	550	22974
900	36	M76	24	545	19402

Note: 1 The length of bolting is excluded in the thickness of cushion ring.

2 The mass of bolting is the approximate mass of per 1000 pieces.

**Table 5.0.8 Approximate Mass of Screw Nuts**

(kg)

Specification	M14	M16	M20	M24	M27	M30	M33
I type hexagon nut	18.89	29.0	51.55	88.8	132.4	184.4	242.8
Screw nuts for pipe flanges	35	50	101	177	251	322	429
Specification	M36×3	M39×3	M42×3	M45×3	M48×3	M52×4	
Screw nuts for pipe flanges	558	598	687	862	1064	1267	
Specification	M56×4	M64×3	M70×3	M76×3	M82×3	M90×3	
Screw nuts for pipe flanges	1530	2122	2613	3529	4093	5379	

Note: The mass of bolting is the approximate mass of per 1000 pieces.

## 6. Dimension tolerance

**6.0.1** The dimension tolerance, surface defect of commercial-grade bolting shall meet the requirements of relevant national standards on bolting.

### 6.0.2 Special grade bolting

1 The dimension tolerance of full thread bolts shall meet the provisions of GB/T 3103.1; the dimension tolerance of threads shall meet the 6g provisions of GB/T 197 while the surface defect shall meet the relevant requirements of GB/T 5779.1 and GB/T 5779.3.

1 The dimension tolerance of screw nuts for pipe flanges shall meet the provisions of GB/T 3103.1; the dimension tolerance of threads shall meet the 6H provisions of GB/T 197 while the surface defect shall meet the relevant requirements of GB/T 5779.2.

## 7. Surface treatment

Bluing shall be carried out for the alloy steel bolting.

## 8. Inspection

**8.0.1** The delivery inspection of commercial grade bolting shall be carried out according to the requirements of corresponding national standard.

**8.0.2** The delivery inspection for special grade bolting shall be conducted in batch. The maximum number of studs per batch is 3000, while that of screw nuts is 5000.

Note: one batch refers to the products with the same furnace number, the same type, the same specification and the same production process. The bolts whose length is less than or equal to 100mm and length difference is 25mm can be regarded as one batch; the studs whose length is less than or equal to 100mm and length difference is 50mm can be regarded as one batch.

**8.0.3** The special grade bolting shall be inspected by sampling after the heat treatment; the inspection shall meet the requirements of Table 4.0.4 of this standard.

**8.0.4** As for full thread bolts whose nominal pressure is greater than Class600 (PN110), the magnetic particle inspection shall be conducted one by one according to JB/T 4730 and the requirements of level II .

## 9. Acceptance, packaging and quality certificate

**9.0.1** The dimension, appearance, performance inspection, acceptance and packaging for bolting shall meet the provisions of GB/T 90.1 and GB/T 90.2.

**9.0.2** The quality certificate for both special grade bolting and commercial grade bolting shall be given according to the batch.

## 10. Labeling and marking

### 10.1 Marking Illustration

Illustration 1: For the hexagon head bolt whose thread specification: M16, nominal length L=80mm, performance rate: 5.6, it is marked as:

Hexagonal head bolt GB/T 5782 M16×80 Level 5.6

Illustration 2: The full threads bolt whose thread specification: M36×3, nominal length L=160mm, material trademark: 35CrM0, it is marked as:

Full thread bolt HG/T 20634 M16×3×160 35CrM0

Illustration 3: For the full thread bolt whose thread specification: M24, nominal length L=120mm, material trademark: 25Cr2M0V, it is marked as:

Full thread bolt HG/T 20634 M24×120 25Cr2M0V

Illustration 4: for hexagon nut whose thread specification: M12, performance rate: level 6, it is marked as:

Screw nut GE/T 6170 M12 Level 6

Illustration 5: for the screw nuts for pipe flanges whose thread specification: M56×3, material trademark: 30CrM0, it is marked as:

Screw nut HG/T 20634 M56×3 30CrM0

### 10.2 Steel seal marking

**10.2.1** Adopt steel seal or other methods to marking the performance rate code of the hexagon head bolt at its top surface of head, stud top and side of screw nut.

**10.2.2** The performance rate code shall meet the provisions of Table 10.2.2-1 and Table 10.2.2-2.

**Table 10.2.2-1 Code Name of the Performance Rate**

Performance rate	5.6	8.8	A2-50	A2-70	A4-50	A4-70	6	8
Code name	5.6	8.8	A2-50	A2-70	A4-50	A4-70	6	8

**Table 10.2.2-2 Code Name of the Material Trademark**

Material trademark	30CrM0	35CrM0	42CrM0	25Cr2M0V	0Cr18Ni9	0Cr17Ni12M02
Code name	30CM	35CM	42CM	25CMV	304	316
Material trademark	A193, B8-2	A193, B8M-2	A320, L7	A453, 660	A194, 8	A194, 8M
Code name	B8	B8M	L7	660	8	8M

**Table A.0.2 Dimension tolerance of Plain Washers**

(mm)

Item	Size range	Dimension tolerance
Thickness $h$	$1 < h \leq 2.5$	$\pm 0.2$
	$2.5 < h \leq 4$	$\pm 0.3$
	$4 < h \leq 6$	$\pm 0.6$
	$6 < h \leq 10$	$\pm 1$
	$10 < h \leq 20$	$\pm 1.2$
Inside diameter $d_1$	$10 < d_1 \leq 18$	+0.27 0
	$18 < d_1 \leq 30$	+0.33 0
	$30 < d_1 \leq 50$	+0.62 0
	$50 < d_1 \leq 80$	+0.74 0
	$80 < d_1 \leq 120$	+0.87 0
Outside diameter $d_2$	$10 < d_2 \leq 18$	0 -0.43
	$18 < d_2 \leq 30$	0 -0.52
	$30 < d_2 \leq 50$	0 -1
	$50 < d_2 \leq 80$	0 -1.2
	$80 < d_2 \leq 120$	0 -1.4

**Table A.0.3 Match between Plain Washers and Bolting**

Bolting material		
High strength	Medium strength	Low strength
GB/T 3098.1, 8.8	GB/T 3098.6, A2-70	GB/T 1220, 0Cr17Ni2M02(316)
GB/T 3077, 35CrM0	A4-70	0Cr18Ni9(304)
25Cr2M0V	ASTM A193, B8-2	GB/T 3098.1, 5.6
DL/T 439, 42CrM0	B8M-2	GB/T 3098.6, A4-50
ASTM A320, L7	ASTM A453, 660	A2-50
Grade A plain washer (GB/T 97.2)		
300HV	200HV	



atmosphere.

3 The ohmic value of insulated bolting member on the insulated working surface shall be greater than or equal to 500kΩ.

**B.0.5 Dimension tolerance**

1 The dimension tolerance and manufacture requirements of insulating washer shall meet the requirements of Table A.0.2 of Appendix A of this standard. The dimension tolerance of insulating bushing length L is  $^{+3mm}_0$ .

2 The clearance between the inside diameter of bolting's insulating bushing and the outside diameter of bolt shall be as small as possible. In case that material with good elasticity is adopted, tight fit structure may be adopted.

**B.0.6** The dimension of insulated bolting member shall meet the provisions of Table B.0.6.

**Table B.0.6 Dimension of Insulated Bolting Member (Class150)**

(mm)

Nominal size of flange		Diameter of bolt hole <i>L</i>	Bolt <i>M</i>	Insulating bushing			Insulating washer		
DN	NPS			<i>L</i> <sub>1</sub>	<i>d</i> <sub>3</sub>	δ	<i>d</i> <sub>4</sub>	<i>d</i> <sub>5</sub>	<i>t</i>
15	1/2	16	M12	19.2	12.5	1.5	12.5	26	4
20	3/4	16	M12	22.4	12.5	1.5	12.5	26	4
25	1	16	M12	25.4	12.5	1.5	12.5	26	4
32	1 1/4	16	M12	28.6	12.5	1.5	12.5	26	4
40	1 1/2	16	M12	31.8	12.5	1.5	12.5	26	4
50	2	18	M14	35.0	14.5	1.5	14.5	30	4
65	2 1/2	18	M14	41.4	14.5	1.5	14.5	30	4
80	3	18	M14	44.6	14.5	1.5	14.5	30	4
100	4	18	M14	44.6	14.5	1.5	14.5	30	4
125	5	22	M16	44.6	17	2	17	32	4
150	6	22	M16	47.8	17	2	17	32	4
200	8	22	M16	54.0	17	2	17	32	4
250	10	26	M20	57.2	21	2	21	40	4
300	12	26	M20	60.4	21	2	21	40	4
350	14	30	M24	66.8	25	2	25	47	4
400	16	30	M24	70.0	25	2	25	47	4
450	18	33	M27	76.2	28	2	28	53	4
500	20	33	M27	82.6	28	2	28	53	4
600	24	36	M30	92.2	31	2	31	59	5

Notes: *L*<sub>1</sub> is the length of insulating bushing between the slip on neck flanges or weld neck flanges, the gasket thickness is 3mm in calculation.

**This is an excerpt of the PDF (Some pages are marked off intentionally)**

**Full-copy PDF can be purchased from 1 of 3 websites:**

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

3. <https://www.google.com/search?tbm=bks&q=ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Google Books -- Select your currency.
- Processed by Google (delivery, tax invoice etc.). Delivered in 9 seconds by Google.
- Tips: Download an unprotected **True-PDF** (text-editable) from Google-Books:
  1. <https://play.google.com/books> → 2. Sign in → Google account
  3. Find the **BOOK** you bought → 4. Click "3-dots" → Export
  5. Save as "\*.pdf" (Save True-PDF to your local computer for offline reading/printing)

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

Accountable person and shareholder: Wayne Zheng

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, [Sales@ChineseStandard.net](mailto:Sales@ChineseStandard.net)

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

----- The End -----