

Kualifikasi

B2

DAFTAR REKAMAN WAMPU

DAN BIDANG PEKERJAAN PEMBONGKARAN

Kualifikasi : B2
 Nilai Pekerjaan : Rp. 100 JUTA-200 JUTA
 Kota : MALANG

Sub Bidang Pekerjaan (Spesialisasi)

- BANGUNAN GEDUNG DAN FABRIK
- PENGAIRAN
- JALAN, JEMBATAN *
- BANGUNAN PENGOLOLAAN AIR BERSIH,
- AIR LIMBAH DAN PERPIPAAN *

- JALAN
- JEMBATAN
- BANGUNAN GEDUNG DAN FABRIK

- PENGAIRAN
- JALAN
- JEMBATAN
- BANGUNAN GEDUNG DAN FABRIK
- BANGUNAN PENGOLOLAAN AIR BERSIH,
- AIR LIMBAH DAN PERPIPAAN *

- PENGAIRAN
- BANGUNAN GEDUNG DAN FABRIK
- BANGUNAN GEDUNG DAN FABRIK
- JALAN, JEMBATAN

- PENGAIRAN
- JALAN
- JEMBATAN
- BANGUNAN GEDUNG DAN FABRIK

- BANGUNAN GEDUNG DAN FABRIK
- JALAN *, JEMBATAN *
- PENGAIRAN *

- PENGAIRAN
- JALAN *, JEMBATAN *
- BANGUNAN GEDUNG DAN FABRIK
- BANGUNAN PENGOLOLAAN AIR BERSIH,
- AIR LIMBAH DAN PERPIPAAN *

- BANGUNAN GEDUNG DAN FABRIK
- BANGUNAN PENGOLOLAAN AIR BERSIH,
- AIR LIMBAH DAN PERPIPAAN
- ELEKTRIKAL (INSTALASI PEMBANGKIT DAN LISTRIK)
- PENGAIRAN *

- PENGEBOHAN AIR TANAH

A l a m a t

JL. KERAMIN 209, TLP. 51308, MALANG.

JL. CIMANIRI 4, TLP. 41169, MALANG.

JL. CILIWUNG 12, TLP. 41244, MALANG.

JL. GUNTUR 27, TLP. 29315, MALANG.

JL. MAJER, PANGAITAN 20, TLP. 26912, MALANG.

JL. MUSA KAMBANGAN 34, TLP. 24043, MALANG.

JL. JEND. BABUKI RACHMAD 15, TLP. 22775-25181, MALANG.

JL. KALIJANG 14, MALANG.

JL. TERUN 8, MALANG.

JL. LETJEL. SUTOYO 116A, MALANG.

Nama Perusahaan

CV. BS. ASADI

PT. PSU. ASDAL

CV. ANUSRAH

CV. ABDI KARYA

CV. AA

CV. ARYANTO

PT. ARTEZ CASANG MALANG

CV. ARGO TUNGGAL

CV. EGORODUP

CV. BUKIT BARIK DR.

No. Kode Rekening

1332100010

1332100023

1332100024

1332100026

1332100030

1332100034

1332100281

1332100293

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1332100034

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NO.	KODE PERUSAHAAN	NAMA PERUSAHAAN	ALAMAT PERUSAHAAN	KETERANGAN
011	1332100066	CV. BUKIT BARISAN	JL. LETJEN SUTOYO 116A, TLP. 41833, MALANG.	- PENGAIRAN - BANGUNAN PENGOLAHAN AIR BERSIH, AIR LIMBAH DAN PERPIPAAN
012	1332100075	PT. CANDRA BAKTI KENDANA	JL. BENGAWAN SOLO 58, MALANG.	- PENGAIRAN - JALAN - JEMBATAN - BANGUNAN GEDUNG DAN FABRIK - BANGUNAN PENGOLAHAN AIR BERSIH, AIR LIMBAH DAN PERPIPAAN *
013	1332100075	CV. CENTRAL KARYA	JL. TAMAN SLAMET 18, TLP. 25029, MALANG.	- PENGAIRAN - JALAN, JEMBATAN - BANGUNAN PENGOLAHAN AIR BERSIH, AIR LIMBAH DAN PERPIPAAN *
014	1332100078	PT. DASA DIGDAYA CAPANG MALANG	JL. WELIRANG 24, MALANG.	- PENGAIRAN * - JALAN *, JEMBATAN * - BANGUNAN GEDUNG DAN FABRIK - BANGUNAN PENGOLAHAN AIR BERSIH, AIR LIMBAH DAN PERPIPAAN
015	1332100094	CV. EKO BHAKTI	JL. LETJEN. SDETOYO 64, MALANG.	- JALAN *, JEMBATAN * - BANGUNAN GEDUNG DAN FABRIK *
016	1332100095	CV. BUNA DHARMA	JL. LETJEN. SDETOYO 11/16, MALANG.	- PENGAIRAN * - JALAN *, JEMBATAN * - BANGUNAN GEDUNG DAN FABRIK *
017	1332100112	PT. HARAKO SURASATH CAPANG MALANG	JL. DIFONESSORO 7, TLP. 25447, MALANG.	- BANGUNAN GEDUNG DAN FABRIK - PENGAIRAN *
018	1332100114	PT. HARI SENTOSA	JL. SLAMET RIADI 68, MALANG.	- BANGUNAN GEDUNG DAN FABRIK - JALAN
019	1332100118	PT. INDONS TIMUR	JL. CIMULAN 57, MALANG.	- JALAN, JEMBATAN - BANGUNAN GEDUNG DAN FABRIK *
020	1332100142	CV. KARTIKA JAYA	JL. IRIAN JAYA 7, TLP. 27119, MALANG.	- PENGAIRAN - JALAN, JEMBATAN - BANGUNAN GEDUNG DAN FABRIK * - BANGUNAN PENGOLAHAN AIR BERSIH, AIR LIMBAH DAN PERPIPAAN
021	1332100150	CV. KARYATDIA	JL. JEND. SASUKI RACHMAD 43, MALANG.	- PENGAIRAN - JALAN, JEMBATAN - BANGUNAN GEDUNG DAN FABRIK - BANGUNAN PENGOLAHAN AIR BERSIH, AIR LIMBAH DAN PERPIPAAN *

DAFTAR BIDANG PEKERJAAN PEMBORONGAN

Kualifikasi : B2
 Nilai Pekerjaan : Rp. 100 JUTA-200 JUTA
 Kodya : MALANG

Sub Bidang Pekerjaan (Spesialisasi)

- JALAN, JEMBATAN
- BANGUNAN GEDUNG DAN PABRIK
- BANGUNAN PENGOLAHAN AIR BERSIH, AIR LIMBAH DAN PERSIAPAN
- ELEKTRIKAL (INSTALASI PEMBANGKIT DAN LISTRIK)

- BANGUNAN GEDUNG DAN PABRIK
- JALAN *, JEMBATAN *
- PENSAIRAN *

- BANGUNAN GEDUNG DAN PABRIK
- JALAN *, JEMBATAN *
- PENSAIRAN *

- JALAN *, JEMBATAN *, LANDASAN *
- BANGUNAN GEDUNG DAN PABRIK
- BANGUNAN PENGOLAHAN AIR BERSIH, AIR LIMBAH DAN PERSIAPAN *

- BANGUNAN GEDUNG DAN PABRIK
- JALAN, JEMBATAN *
- BANGUNAN GEDUNG DAN PABRIK

- BANGUNAN GEDUNG DAN PABRIK
- JALAN *, JEMBATAN *
- PENSAIRAN *

- BANGUNAN GEDUNG DAN PABRIK
- JALAN *, JEMBATAN *
- PENSAIRAN *

- PENSAIRAN *
- JALAN *, JEMBATAN *
- BANGUNAN GEDUNG DAN PABRIK *
- BANGUNAN PENGOLAHAN AIR BERSIH, AIR LIMBAH DAN PERSIAPAN *

- PENSAIRAN *
- JALAN *, JEMBATAN *
- BANGUNAN GEDUNG DAN PABRIK *
- BANGUNAN PENGOLAHAN AIR BERSIH, AIR LIMBAH DAN PERSIAPAN *

- BANGUNAN GEDUNG DAN PABRIK
- JALAN *, JEMBATAN *

A l a m a t

JL. SURENTO 5, MALANG.

JL. PELTU SUREJONO 4, MALANG.

JL. LETJEN. SEETOYO 63,
 TLP. 41119-51122, MALANG.

JL. MARSIL MASTADINATA 107, MALANG.

JL. BACAHA MELA 16, MALANG.

JL. JEM. A. YANI 127, LANTAI 1,
 TLP. 41177, MALANG.

JL. LETJEN. SEETOYO 89, MALANG.

JL. MLIWE 22, MALANG.

JL. KESALEN KETAN 61, MALANG.

JL. KESALEN KETAN 575, MALANG.

JL. A. S. RAJIT 10, TLP. 26710,
 MALANG.

Nama Perusahaan

CV. KUSUMA HARUM

PT. KARYA UTAMA SARANA INDAH

PT. NISMADANI

PT. KUSUMA DIHA

CV. LAH SARNA INDAH DEKATA

CV. MAHARERU ✓

CV. MASEJDI LARAH

CV. NEMASA TURUSAL

PT. MAHAYAM

CV. NGADIPURO

PT. PERSANGGIAN SUI SEE
 MALANG

No. Kode Referensi

002 1002100133

003 1002100135

004 1002100135

005 1002100139

006 1002100138

007 1002100139

008 1002100147

009 1002100138

010 1002100135

011 1002100135

012 1002100139

NO.	Kode Rekening	Name Perusahaan	A l e m a t	Sub Bidang Pekerjaan (Spesialisasi)
033	1332100287	CV. PUSPA	JL. CITANDUI 31, MALANG.	- BANGUNAN GEDUNG DAN PABRIK - JALAN *, JEMBATAN * - PENGAIRAN *
034	1332100290	CV. PILAR MAS	JL. ARGGOPURO 11, MALANG.	- BANGUNAN GEDUNG DAN PABRIK - JALAN *, JEMBATAN * - PENGAIRAN *
035	1332100291	CV. PANCA KARYA	JL. SELOREJO 4, MALANG.	- BANGUNAN GEDUNG DAN PABRIK - JALAN *, JEMBATAN * - PENGAIRAN *
036	1332100292	CV. REMAJA	JL. JEND. A. YANI 2, MALANG.	- JALAN, JEMBATAN - BANGUNAN GEDUNG DAN PABRIK
037	1332100212	CV. REJASA	JL. BELINTUNG V/2, MALANG.	- BANGUNAN GEDUNG DAN PABRIK - BANGUNAN PENGOLOM AIR BERSIH, AIR LIMBAH DAN PERPIPAAN - PENGAIRAN - JALAN, JEMBATAN
038	1332100213	CV. SARINA JAYA CABANG MALANG	JL. PEKALONSAN 15, MALANG.	- JALAN, JEMBATAN - BANGUNAN GEDUNG DAN PABRIK *
039	1332100215	CV. SINAR ABUNG	JL. BARUK 11A, MALANG.	- JALAN, JEMBATAN - BANGUNAN GEDUNG DAN PABRIK
040	1332100223	CV. SENTRAL	JL. BARENS TENGAH 56/839A, MALANG.	- ELEKTRIKAL (INSTALASI PEMANGKIT DAN LISTRIK) - JALAN *, JEMBATAN * - BANGUNAN PENGOLOM AIR BERSIH, AIR LIMBAH DAN PERPIPAAN
041	1332100232	CV. SEMBILAN	JL. LETJEN. SUTOYO 77, TLP. 41787, MALANG.	- ELEKTRIKAL (INSTALASI PEMANGKIT DAN LISTRIK)
042	1332100242	CV. SUMBER JAYA CABANG MALANG	JL. KAPURIFAN 5A, MALANG.	- JALAN, JEMBATAN - BANGUNAN GEDUNG DAN PABRIK *
043	1332100244	CV. SUMBER SARANA	JL. WIDJAJEN 7, TLP. 22707, MALANG.	- BANGUNAN GEDUNG DAN PABRIK - JALAN *, JEMBATAN * - BANGUNAN PENGOLOM AIR BERSIH, AIR LIMBAH DAN PERPIPAAN
044	1332100292	CV. SARANA UTAMA	JL. KOL. SUBIOMO 122, TLP. 51209, MALANG.	- BANGUNAN GEDUNG DAN PABRIK - JALAN *, JEMBATAN * - PENGAIRAN *
045	1332100291	PT. T. T. PEMBANGUNAN	JL. ANJASREJO 58, TLP. 24104, MALANG.	- JALAN, JEMBATAN * - PENGAIRAN *

DAFTAR BIDANG PEKERJAAN PEMBANGUNAN

Kualifikasi : SD

Nilai Pekerjaan : Rp. 100 JUTA-200 JUTA
 Kota : MALANG

Sub Bidang Pekerjaan (Spesialisasi)

alamat

Nama Perusahaan

No. Kode Rekanan

PENGSAIRAN

JL. GALUNGSIANG SI, MALANG.

CV. MARGO SRIKANTO

046 1332100300

JALAN, JEMBATAN
 BANGUNAN GEDUNG DAN PABRIK
 BANGUNAN PENGOLAHAN AIR BERSIH,
 AIR LIMBAH DAN PERPIPAAN

JALAN, JEMBATAN, LANDASAN
 BANGUNAN GEDUNG DAN PABRIK

JL. KH. ZAINAL ARIFFIEN 14,
 MALANG.

CV. SINGHASARI

047 1332100301

PENGSAIRAN
 JALAN, JEMBATAN, LANDASAN
 BANGUNAN GEDUNG DAN PABRIK
 BANGUNAN PENGOLAHAN AIR BERSIH,
 AIR LIMBAH DAN PERPIPAAN

JL. MELIRANS 24, MALANG.

PT. PRAVITA SARANA RAYA
 (CASANG)

048 1332100302

BANGUNAN GEDUNG DAN PABRIK

JL. MAJEM. HARYONO 159,
 TLP. 51151, MALANG.

PT. SOEHARSO UTAMA & CO

049 1332100303

PENGSAIRAN
 BANGUNAN GEDUNG DAN PABRIK

JL. LETJEN. SUPARMAN 131, MALANG.

CV. TUNGGAL JAYA (CASANG)

050 1332100304

PENGSAIRAN
 JALAN, JEMBATAN, LANDASAN
 BANGUNAN GEDUNG DAN PABRIK
 BANGUNAN PENGOLAHAN AIR BERSIH,
 AIR LIMBAH DAN PERPIPAAN

JL. KOL. SUEJONO IIIB/116,
 MALANG.

CV. TIMEUL JAYA

051 1332100305

PENGSAIRAN
 JALAN, JEMBATAN, LANDASAN
 BANGUNAN GEDUNG DAN PABRIK

JL. URIF SUMOHARJO 565, MALANG.

PT. PRADA KARTIKA

052 1332100306

PENGSAIRAN
 JALAN, JEMBATAN, LANDASAN
 BANGUNAN PENGOLAHAN AIR BERSIH,
 AIR LIMBAH DAN PERPIPAAN

JL. SIMPANG IJEN MEMARA AIR 25,
 MALANG.

PT. WIRA SANTINA KARTIKA

053 1332100307

PENGSAIRAN
 JALAN, JEMBATAN, LANDASAN
 BANGUNAN PENGOLAHAN AIR BERSIH,
 AIR LIMBAH DAN PERPIPAAN

JL. NBANTANS 46, MALANG.

PT. TRIMERU (CASANG) ✓

054 1332100309



REKAMAN NINDIA

1988

DIANGLISAAN PERKAMPUNAN

KOTAMADYA
MALANG

REKAMAN NINDIA

DIRM BIDANG PERJARAN PEMBORONGAN

Kualifikasi : B2
Nilai Pekerjaan : Rp.100 JUTA-200 JUTA
Kabupaten : MALANG

No.	Kode Rekanan	Nama Perusahaan	Alamat	Sub Bidang Pekerjaan (Spesialisasi)
001	1307190048	CV. MARYU NENJAN	JL. RAYA 99, SINGSARI, MALANG.	- PENSAIRAN * - JALAN * - JEMBATAN * - BANGUNAN SEDUNG DAN FABRIK *

Carbon Steel Pipes for Ordinary Piping

1. Scope

This Japanese Industrial Standard specifies the carbon steel pipes, hereinafter referred to as the "pipe", used for piping for steam, water, oil, gas, air, etc. at comparatively low working pressure.

Remark: The units and numerical values given in () in this standard are in accordance with the International System of Units (SI), and are appended for reference.

2. Grade and Designation

The pipe shall be classified into one grade and its letter symbol shall be as given in Table 1, and subdivided into black pipes and galvanized ones according to whether zinc-coated layer is exist or not.

Table 1. Letter Symbol of Grade

Letter symbol of grade	Division	Remark
SGP	Black pipe	Pipe without zinc coating
	Galvanized pipe	Pipe with zinc coating

Remark: Where it is necessary to identify the galvanized pipe by its letter symbol on the drawing and other documents, "-ZN" shall be suffixed to the letter symbol of the grade. This notation, however, shall not be applied to the product itself.

3. Method of Manufacture

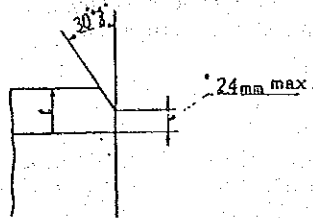
3.1 The pipe shall be manufactured by the butt welding or the electric-resistance welding process.

3.2 The pipe shall be as manufactured. However, the cold-finished pipe shall be annealed after pipe manufacturing.

3.3 The both ends of the pipe whose nominal size is 300 A and under shall be threaded or plain ended and those for 350 A and over shall be plain ended. When required by the purchaser, the pipe may be furnished with bevel ends⁽¹⁾.

Note (1) Unless otherwise specified, the shape of the bevel end shall be as shown in Fig. 1.

Fig. 1. Shape of Bevel End



t : thickness

3.4 For the threaded pipe, both ends shall be provided with taper threads⁽²⁾ in accordance with JIS B 0203, and a socket in accordance with JIS B 2302 or JIS B 2301 shall be screwed into one end of the threads. The other end with no socket shall be provided with a thread protecting ring, but for smaller pipes this part may be protected by other suitable means. When specified by the purchaser, however, the threaded pipe may be without such socket.

Note (2) The inspection of taper threads shall comply with JIS B 0253.

3.5 For the galvanized pipe, the pipe and the socket shall be galvanized before threading. In this case, the black pipe and the socket that have passed inspection shall be thoroughly cleaned by sand blasting, pickling, etc. and then galvanized by the hot-dipped galvanizing process.

3.6 The zinc used for galvanizing shall be at least equal to the distilled zinc metal Class 1 specified in JIS H 2107.

4. Chemical Composition

The chemical composition of the pipe shall be determined by the ladle analysis, and the values obtained shall conform to Table 2.

Table 2. Chemical Composition

Letter symbol of grade	Chemical composition %	
	P	S
SGP	0.040 max.	0.040 max.

5. Mechanical Properties

5.1 The tensile strength and the elongation of the black pipe shall be as given in Table 3.

Table 3. Mechanical Properties

Letter symbol of grade	Tensile test		
	Tensile strength kgf/mm ² (N/mm ²)	Elongation %	
		No. 11 or No. 12 test piece	No. 5 test piece
		Longitudinal	Transverse
SGP	30(294) min.	30 min.	25 min.

- Remarks 1. When the tensile test is carried out for No. 12 or No. 5 test piece for the pipe up to 8 mm in wall thickness, the minimum value of elongation shall be calculated by subtracting 1.5 % from the values of elongation given in Table 3 for every 1 mm decrease in wall thickness from 8 mm, and rounded off to an integer in compliance with JIS Z 8401. Examples obtained by calculation are given in Reference Table.
2. The value of elongation given in Table 3 shall not be applied to the pipe whose nominal size is 32 A or smaller one. However, the value of elongation shall be recorded.
3. In the case where the tensile test piece is taken, No. 12 or No. 5 test piece shall be taken from the portion which does not involve welded seam.

Reference Table. Example of Calculated Elongation Values Applied to No. 12 Test Piece (Longitudinal) and No. 5 One (Transverse) for the Pipe up to 8 mm in Wall Thickness

Shape of test piece	Elongation value relating to wall thickness %				
	Over 7 mm, up to 8 mm	Over 6 mm, up to and incl. 7 mm	Over 5 mm, up to and incl. 6 mm	Over 4 mm, up to and incl. 5 mm	Over 3 mm, up to and incl. 4 mm
No. 12 test piece	30	28	27	26	24
No. 5 test piece	25	24	22	20	19

5.2 The black pipe shall be flattened by compression to the height of 2/3 of the outside diameter thereof, and shall be free from the occurrence of flaws or cracks on its wall surface.

5.3 For the black pipe whose nominal size is 50 A or smaller one, the purchaser may specify the bend test instead of the flattening test. In this case, the pipe shall be free from the occurrence of flaws or cracks on its wall surface, when the pipe is bent through 90° around an inside diameter that is 6 times of its outside diameter.

6. Uniformity of Zinc Coating

The number of dips in the uniformity test for the galvanized pipe shall comply with Table 4. In this case, the pipe shall not show a fixed deposit of zinc after the number of successive dipping operations given in Table 4.

Table 4. Uniformity Test

Letter symbol of grade	Number of dips (One minute per dip)
SGP	5

7. The black pipe shall be tested according to either one among 7.1 and 7.2. The preference for any one of those shall be in accordance with the designation made by the purchaser, otherwise left to the discretion of the manufacturer.

7.1 When a hydrostatic pressure of 25 kgf/cm² (25 bar) ⁽³⁾ is applied, the black pipe shall withstand without leakage.

— G 3452 —

7.2 A non-destructive examination either ultrasonic examination or eddy current one shall be made on the black pipe, and there shall be no signal higher than those produced by the artificial defects of the reference test block which is the division UE of the working sensitivity specified in JIS G 0582 or the division EZ of the working sensitivity specified in JIS G 0583.

Note (3) 1 bar = 10^5 Pa

8. Appearance

8.1 The pipe shall be practically straight, and the both ends thereof shall be at a right angle to its axis.

8.2 The inside and outside surfaces of the pipe shall be well furnished, and free from defects that are detrimental to practical use. Especially, the inside and outside surfaces of the galvanized pipe shall be practically smooth.

9. dimensions, Weight and Dimensional Tolerances

9.1 The dimensions, weight and dimensional tolerances of the black pipe shall be as specified in Table 5.

Table 5. Dimensions, Weights and Dimensional Tolerances

Nominal diameter		Outside diameter mm	Tolerance on outside diameter		Wall thickness mm	Tolerance on wall thickness	Weight excluding socket kg/m
A	B		Pipes to be threaded with taper thread	Other pipes			
6	1.8	10.5	± 0.5mm	± 0.5mm	2.0		0.419
8	1.7	13.8	± 0.5mm	± 0.5mm	2.3		0.652
10	3.8	17.3	± 0.5mm	± 0.5mm	2.3		0.851
15	1.2	21.7	± 0.5mm	± 0.5mm	2.8		1.31
20	3.4	27.2	± 0.5mm	± 0.5mm	2.8		1.68
25	1	34.0	± 0.5mm	± 0.5mm	3.2		2.43
32	1 1.4	42.7	± 0.5mm	± 0.5mm	3.5		3.38
40	1 1.2	48.6	± 0.5mm	± 0.5mm	3.5		3.89
50	2	60.5	± 0.5mm	± 1%	3.8		5.31
65	2 1.2	76.3	± 0.7mm	± 1%	4.2		7.47
80	3	89.1	± 0.8mm	± 1%	4.2	+ Not specified	8.79
90	3 1.2	101.6	± 0.8mm	± 1%	4.2		10.1
100	4	114.3	± 0.8mm	± 1%	4.5	- 12.5%	12.2
125	5	139.8	± 0.8mm	± 1%	4.5		15.0
150	6	165.2	± 0.8mm	± 1.6mm	5.0		19.8
175	7	190.7	± 0.9mm	± 1.6mm	5.3		24.2
200	8	216.3	± 1.0mm	± 0.8%	5.8		30.1
225	9	241.8	± 1.2mm	± 0.8%	6.2		36.0
250	10	267.4	± 1.3mm	± 0.8%	6.6		42.4
300	12	318.5	± 1.5mm	± 0.6%	6.9		53.0
350	14	355.0	-	± 0.8%	7.9		67.7
400	16	406.4	-	± 0.8%	7.9		77.6
450	18	457.2	-	± 0.8%	7.9		87.5
500	20	508.0	-	± 0.8%	7.9		97.4

Remarks 1. For the nominal size, either A or B shall be used, and letter symbol A or B shall be suffixed to the figures of nominal size in the case of A or B series, respectively for identification.

2. For the pipe whose nominal size is 350 A or larger one, the tolerance on outside diameter may be applied to the value derived from measuring the length of circumference. In this case, the tolerance shall be ± 0.5 %.

When the length of circumference is used in measuring the outside diameter, either the measured value of the length of circumference or the diameter derived from the measured value may be used as the criteria. In both cases, the same value (± 0.5 %) shall be applied as the tolerance. The diameter (D) and the length of circumference (l) shall be calculated reversibly by using the following formula:

$$l = \pi \cdot D$$

where $\pi = 3.1416$

- Remarks 3. In the case where the tolerance on wall thickness in the above table is ensured, the tolerance on outside diameter in the above table shall not apply to the local part where is subjected to repairing, etc.
4. The value for weight shall be calculated from the following formula assuming 1 cm³ of steel to be 7.85 g and rounded off to 3 significant figures in compliance with JIS Z 8401.

$$W = 0.02166t(D - t)$$

where W : weight of pipe (kg/m)

t : wall thickness of pipe (mm)

D : outside diameter of pipe (mm)

5. The term "weight" used in this standard means "mass"

9.2 The length of each pipe should be, as a rule, 5500 mm and over. The purchaser, however, may specify 3600 mm and over in length, as necessary.

10. Test

10.1 Chemical Analysis

10.1.1 Chemical Analysis The general requirements for chemical analysis and sampling method of specimen for analysis shall be in accordance with the specification of 3. in JIS G 0303.

10.1.2 Analytical Method The analytical method shall comply with appropriate standard among the following ones:

JIS G 1214, JIS G 1215, JIS G 1253, JIS G 1256,
JIS G 1257

10.2 Tensile Test

10.2.1 Test Piece The test specimen shall be cut off from the pipe to be finished any one of No. 11, No. 12 A, No. 12 B, No. 12 C or No. 5 test piece according to the specification in JIS Z 2201.

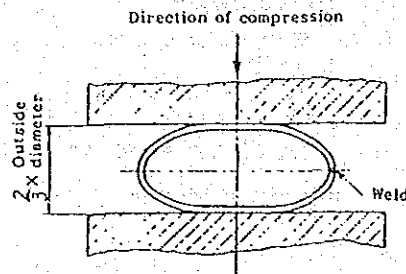
10.2.2 Test Method The test method shall comply with JIS Z 2241.

10.3 Flattening Test

10.3.1 Test Piece The test piece 50 mm and over in length shall be prepared by cutting off from the end of a pipe.

10.3.2 Test Method The test piece shall be placed between two flat plates and flattened by compression until the distance between the plates becomes the specified height given in 5.2 at ordinary temperature, and examined the occurrence of flaws and cracks on the wall surface of the test piece. In this case, the weld shall be placed at a right angle to the direction of compression as shown in Fig. 2.

Fig. 2. Flattening Test (for Full-Section Test Piece)



10.4 Bend Test

10.4.1 Test Piece The test piece with an appropriate length shall be prepared by cutting off from the end of a pipe.

10.4.2 Test Method the test piece shall be bent through the angle around a cylinder with an inside radius specified in 5.3 at ordinary temperature, and examined the occurrence of flaws or cracks on the wall surface of the test piece. In this case, the weld shall be placed at an angle of approximately 90° to the utmost outside bent portion.

10.5. Zinc Coating Test The uniformity test for zinc coating shall comply with JIS H 0401.

10.6 Hydrostatic Test or Non-Destructive Examination The hydrostatic test or non-destructive examination shall be made in accordance with either 10.6.1 or 10.6.2 respectively.

10.6.1 When the pipe is subjected to hydrostatic pressure and kept at the specified pressure, it shall be examined on withstanding the pressure without leakage.

10.6.2 The test method of non-destructive examination shall comply with either JIS G 0582 or JIS G 0583.

11. Inspection

11.1 The general requirements for inspection shall conform to JIS G 0303.

11.2 The chemical composition, mechanical properties, uniformity of zinc coating, hydrostatic test or non-destructive examination results, appearance and dimensions shall conform to the requirements specified in 4., 5., 6., 7., 8. and 9.

11.3 Either the hydrostatic test or non-destructive examination shall be performed for each pipe.

11.4 The sampling method and the number of test pieces for the tensile test, flattening test or bend test, and zinc coating test shall be as follows:

- (1) For the tensile test and flattening test or bend test, take pipes as the specimens as shown in Table 6, and take each one test piece from the test specimen.

Table 6. Sampling Method of Specimen

Division	Sampling method of specimen
Nominal size, up to and incl. 50 A	One pipe shall be taken from each 2000 pipes or its fraction of the same dimensions ⁽⁴⁾
Nominal size, 65 A and over, up to and incl. 125 A	One pipe shall be taken from each 1000 pipes or its fraction of the same dimensions
Nominal size, 150 A and over, up to and incl. 300 A	One pipe shall be taken from each 500 pipes or its fraction of the same dimensions
Nominal size, 350 A and over	One pipe shall be taken from each 300 pipes or its fraction of the same dimensions

Note ⁽⁴⁾ The term "same dimensions" means the same wall thickness as well as the same outside diameter.

- (2) In testing uniformity of zinc coating, one pipe shall be taken as the specimen from each 500 pipes or its fraction of the same dimensions, and taken one set of test pieces (two) conforming to the specification of 4. in JIS H 0401 therefrom.

12. Reinspection

The pipe may be determined whether they are acceptable or not by making a retest according to the requirements of 4.4 in JIS G 0303.

13. Marking

Each pipe having passed the inspection shall be marked the following items. However, in the case of either smaller pipes or the pipes requested by the purchaser, those may be bundled and marked for each bundle by suitable means. In both cases, the sequence of marking is not specified.

When approved by the purchaser, a part of the items may be omitted.

- (1) Letter symbol of grade
- (2) Letter symbol denoting the process of pipe-manufacturing ⁽⁵⁾
- (3) Dimensions ⁽⁶⁾
- (4) Manufacturer's name or its identifying brand

Notes ⁽⁵⁾ The letter symbol denoting the process of pipe-manufacturing shall be as follows, provided that the dash may be omitted resulting in a blank.

Electric-resistance welded steel pipe other than hot-finished or cold-finished ones: -E-G

Hot-finished electric-resistance welded steel pipe: -E-H

Cold-finished electric-resistance welded steel pipe: -E-C

Butt-welded steel pipe: -B

⁽⁶⁾ The dimensions shall be expressed by the "nominal size".

14. Report

The manufacturer shall submit the test report when previously required by the purchaser.

Carbon Steel Pipes for Pressure Service

1. Scope

This Japanese Industrial Standard specifies the carbon steel pipes, hereinafter referred to as the "pipe", used for pressure service at a temperature not exceeding approximately 350°C. The pipes for high pressure service shall be in accordance with JIS G 3455.

Remarks 1. Pertaining to the electric-resistance welded steel tubes, when previously agreed upon with the manufacturer, the purchaser may designate the supplementary quality requirements Z3 or Z4 specified in Appendix, in addition to the items specified in this text.

Appendix Z3: Ultrasonic Examination

Appendix Z4: Eddy Current Examination

2. The units and numerical values given in { } in this standard are in accordance with the International System of Units (SI), and are appended for reference.

2. Grade and Designation

The pipe shall be classified into two grades and their letter symbols shall be as given in Table 1.

Table 1. Letter Symbol of Grade

Letter symbol of grade
STPG 38
STPG 42

3. Method of Manufacture

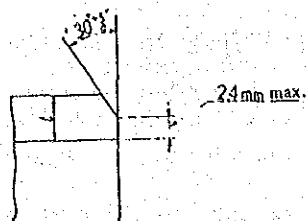
3.1 The pipe shall be manufactured by the seamless or electric-resistance welding process.

3.2 The pipe shall be as manufactured. However, the cold-finished steel pipe shall be annealed after pipe-manufacturing. The purchaser may specify heat treatment for the weld of the electric-resistance welded steel pipe of grade STPG 42, as necessary.

3.3 When required by the purchaser, the pipe may be furnished with the bevel end⁽¹⁾.

Note (1) Unless otherwise specified, the shape of the bevel end shall be as shown in Fig. 1.

Fig. 1. Shape of Bevel End



t = thickness, 22 mm max.

4. Chemical Composition

The chemical composition of the pipe shall be determined by the ladle analysis, and the values obtained shall conform to Table 2.

Table 2. Chemical Composition

Letter symbol of grade	Chemical composition %				
	C	Si	Mn	P	S
STPG 38	0.25 max.	0.35 max.	0.30 to 0.90	0.040 max.	0.040 max.
STPG 42	0.30 max.	0.35 max.	0.30 to 1.00	0.040 max.	0.040 max.

5. Mechanical Properties

5.1 The tensile strength, yield point or proof stress and elongation of the pipe shall comply with Table 3.

Table 3. Mechanical Properties

Letter symbol of grade	Tensile test					
	Tensile strength	Yield point or proof stress	Elongation %			
			No. 11 or No. 12 test piece		No. 4 test piece	
	kgf/mm ²	kgf/mm ²	Longitudinal	Transverse	Longitudinal	Transverse
{N/mm ² }	{N/mm ² }					
STPG 38	38{373} min.	22{216} min.	30 min.	25 min.	28 min.	23 min.
STPG 42	42{412} min.	25{245} min.	25 min.	20 min.	24 min.	19 min.

Remarks 1. When the tensile test is carried out for No. 12 or No. 5 test piece for the pipe up to 8 mm in wall thickness, the minimum value of elongation shall be calculated by subtracting 1.5 % from the values of elongation given in Table 3 for every 1 mm decrease in wall thickness from 8 mm, and rounded off to an integer in compliance with JIS Z 8401. Examples obtained by calculation are given in Reference Table.

2. The value of elongation given in Table 3 shall not be applied to the pipe whose nominal diameter is 25 A or smaller one. However, the value of elongation shall be recorded.

Remarks 3. In the case where the tensile test piece is taken from the electric-resistance welded steel pipe, No. 12 or No. 5 test piece shall be taken from the portion which does not involve welded seam.

Reference Table. Example of Calculated Elongation Values Applied to No. 12 Test Piece (Longitudinal) and No. 5 One (Transverse) for the Pipe up to 8 mm in Wall Thickness

Letter symbol of grade	Shape of test piece	Elongation value relating to wall thickness %						
		Over 7 mm, up to 8 mm	Over 6 mm, up to and incl. 7 mm	Over 5 mm, up to and incl. 6 mm	Over 4 mm, up to and incl. 5 mm	Over 3 mm, up to and incl. 4 mm	Over 2 mm, up to and incl. 3 mm	Over 1 mm up to and incl. 2 mm
STPG 38	No. 12 test piece	30	28	27	26	24	22	21
	No. 5 test piece	25	24	22	20	19	18	16
STPG 42	No. 12 test piece	25	24	22	20	19	18	16
	No. 5 test piece	20	18	17	16	14	12	11

5.2 The pipe shall be free from flaws and cracks on their wall surface when flattened by compression to the value of H calculated by the following formula:

In the case of seamless steel pipe:

$$H = \frac{(1 + e) l}{e + \frac{l}{D}}$$

In the case of electric-resistance welded steel pipe:

$$H \text{ for weld} = \frac{2}{3} D$$

$$H \text{ for the portion without weld} = \frac{1}{3} D$$

where H : distance between flattening plates (mm)

l : wall thickness of pipe (mm)

D : outside diameter of pipe (mm)

e : constant which varies depending on the grade of pipe,

0.08 for STPG 38,

0.07 for STPG 42

5.3 For the pipe whose nominal diameter is 40 A or smaller one, the purchaser may specify the bend test instead of the flattening test. In this case, the pipe shall be free from the occurrence of flaws or cracks on its wall surface, when the pipe is bent through 90° around an inside diameter that is 6 times of its outside diameter.

However, the purchaser may specify the bend test of which the bend angle is 180° and bending inside radius is 4 times of the outside diameter.

6. The pipe shall be tested according to either one among 6.1 and 6.2. The preference for any one of those shall be in accordance with the designation made by the purchaser, otherwise left to the discretion of the manufacturer.

6.1 When a hydrostatic pressure specified in Attached Table 1 is applied, the pipe shall withstand without leakage.

6.2 A non-destructive examination either ultrasonic examination or eddy current one shall be made on the pipe, and there shall be no signal higher than those produced by the artificial defects of the reference test block which is the division UD of the working sensitivity specified in JIS G 0582 or the division EY of the working sensitivity specified in JIS G 0583.

7. Appearance

7.1 The pipe shall be practically straight, and the both ends thereof shall be at a right angle to its axis.

7.2 The inside and outside surfaces of the pipe shall be well finished, and free from defects that are detrimental to practical use.

8. Dimensions, Weight and Dimensional Tolerances

8.1 Dimensions and Weight The outside diameter, wall thickness and weight of the pipe shall be as specified in Attached Table 2.

Remark: The term "weight" used in this standard means "mass".

8.2 Dimensional Tolerances The tolerances on outside diameter and wall thickness of the pipe shall conform to Table 4.

Table 4. Tolerances on Outside Diameter and Wall Thickness

Division	Tolerance on outside diameter	Tolerance on wall thickness
Hot-finished seamless steel pipe	Up to and incl. 40A: $\pm 0.5\text{mm}$	Up to 4 mm: $+ 0.6\text{mm}$ $- 0.5\%$
	50A and over up to and incl. 125A: $\pm 1\%$	4 mm and over: $+ 15\%$ $- 12.5\%$
	150 A: $\pm 1.6\text{mm}$	
	200 A and over: $\pm 0.8\%$	
	The outside diameter of the pipe 350 mm and over in diameter may be determined by measuring the length of circumference. In this case, the tolerance shall be $\pm 0.5\%$.	
Cold-finished seamless steel pipe, and electric- resistance welded steel pipe	Up to and incl. 25A: $\pm 0.3\text{mm}$	Up to 3 mm: $\pm 0.3\text{mm}$
	32A and over: $\pm 0.8\%$	3 mm and over: $\pm 10\%$
	The outside diameter of the pipe 350 mm and over in diameter may be determined by measuring the length of circumference. In this case, the tolerance shall be $\pm 0.5\%$.	

Remarks 1. When the length of circumference is used in measuring the outside diameter, either the measured value of the length of circumference or the diameter derived from the measured value may be used as the criteria. In both cases, the same value ($\pm 0.5\%$) shall be applied as the tolerance. The diameter (D) and the length of circumference (l) shall be calculated reversibly by using the following formula:

$$l = \pi D$$

where $\pi = 3.1416$

2. In the case where the tolerance on wall thickness in the above table is ensured, the tolerance on outside diameter in the above table shall not apply to the local part where is subjected to repairing, etc.

8.3 The length of each pipe shall be 4,000 mm and over.

9. Test

9.1 Chemical Analysis

9.1.1 Chemical Analysis The general requirements for chemical analysis and sampling method of specimen for analysis shall be in accordance with the specification of 3. in JIS G 0303.

9.1.2 Analytical Method The analytical method shall comply with appropriate standard among the following ones:

JIS G 1211, JIS G 1212, JIS G 1213, JIS G 1214,
JIS G 1215, JIS G 1253, JIS G 1256, JIS G 1257

9.2 Tensile Test

9.2.1 Test Piece The test specimen shall be cut off from the pipe to be finished any one of No. 11, No. 12 A, No. 12 B, No. 12 C, No. 4 or No. 5 test piece according to the specification in JIS Z 2201. In this case, the gauge length for No. 4 test piece shall be 50 mm.

9.2.2 Test Method The test method shall comply with JIS Z 2241.

9.3 Flattening Test

9.3.1 Test Piece The test piece 50 mm and over in length shall be prepared by cutting off from the end of a pipe.

9.3.2 Test Method The test piece shall be placed between two flat plates and flattened by compression until the distance between the plates becomes the specified height H given in 5.2 at ambient temperature, and examined the occurrence of flaws and cracks on the wall surface of the test piece. For the electric-resistance welded steel pipe, the weld shall be placed at a right angle to the direction of compression, and either the weld in the case of $H = 2/3 D$ or the portion other than the weld in the case of $H = 1/3 D$ shall be examined as shown in Fig. 2 and Fig. 3.

Fig. 2. Flattening Test of Welds

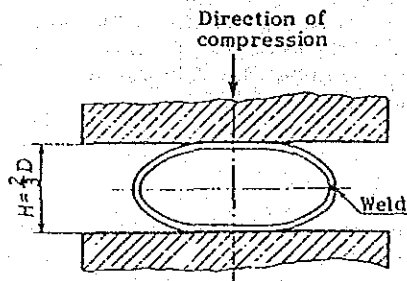
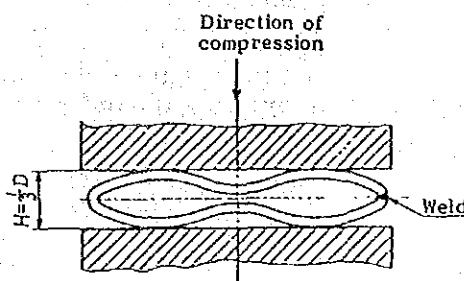


Fig. 3. Flattening Test of the Portion other than Welds



9.4 Bend Test

9.4.1 Test Piece The test piece with an appropriate length shall be prepared by cutting off from the end of a pipe.

9.4.2 Test Method The test piece shall be bent through the angle around a cylinder with an inside radius specified in 5.3 at ambient temperature, and examined the occurrence of flaws or cracks on the wall surface of the test piece. In this case, for the electric-resistance welded steel pipe, the weld shall be located at the utmost outside of the bent portion.

9.5 Hydrostatic Test or Non-Destructive Examination The hydrostatic test or non-destructive examination shall be made in accordance with either 9.5.1 or 9.5.2, respectively.

9.5.1 When the pipe is subjected to hydrostatic pressure and kept at the specified pressure, it shall be examined on withstanding the pressure without leakage.

9.5.2 The test method of non-destructive examination shall comply with either JIS G 0582 or JIS G 0583.

10. Inspection

10.1 The general requirements for inspection shall conform to JIS G 0303.

10.2 The chemical composition, mechanical properties, hydrostatic test or non-destructive examination results, appearance and dimensions shall conform to the requirements specified in 4., 5., 6., 7. and 8. However, other appropriate non-destructive examination than those specified in 9.5.2 may substitute for the said non-destructive examination when agreed upon between the purchaser and the manufacturer.

Furthermore, when the supplementary quality requirements given in Appendix are specified by agreement between the purchaser and the manufacturer, the results of inspection shall conform to the relevant designated requirements specified in Z3 or Z4.

10.3 Either the hydrostatic test or non-destructive examination shall be performed for each pipe.

10.4 For the tensile test and flattening test or bend test, take pipes as the specimens according to Table 5, and take one test piece from the test specimen.

Table 5. Sampling Method of Specimen

Division	Sampling method of specimen and number of test piece
Nominal dia., up to and incl. 50 A	One shall be taken from each 1000 pipes or its fraction of the same dimensions ⁽²⁾
Nominal dia., 65 A and over, up to and incl. 125A	One shall be taken from each 500 pipes or its fraction of the same dimensions
Nominal dia., 150 A and over, up to and incl. 300A	One shall be taken from each 250 pipes or its fraction of the same dimensions
Nominal dia., 350 A and over	One shall be taken from each 150 pipes or its fraction of the same dimensions

Note (2) The term "same dimensions" means the same wall thickness as well as the same outside diameter.

11. Reinspection

The pipe may be determined whether they are acceptable or not by making a retest according to the requirements of 4.4 in JIS G 0303.

12. Marking

Each pipe having passed the inspection shall be marked the following items. However, in the case of either smaller pipes or the pipes requested by the purchaser, those may be bundled and marked for each bundle by suitable means. In both cases, the sequence of marking is not specified.

When approved by the purchaser, a part of the items may be omitted.

- (1) Letter symbol of grade
- (2) Letter symbol denoting the process of pipe-manufacturing⁽³⁾
- (3) Dimensions⁽⁴⁾
- (4) Manufacturer's name or its identifying brand
- (5) Letter symbol denoting the supplementary quality requirement, Z

Notes (3) The letter symbol denoting the process of pipe-manufacturing shall be as follows, provided that the dash may be omitted resulting in a blank.

Hot-finished seamless steel pipe: -S-H

Cold-finished seamless steel pipe: -S-C

Electric-resistance welded steel pipe
other than hot-finished and cold-
finished ones: -E-G

Hot-finished electric-resistance welded
steel pipe: -E-H

Cold-finished electric-resistance
welded steel pipe: -E-C

(4) The dimensions shall be expressed as follows:

Nominal dia. x nominal wall thick.

Example: 50 A x Sch 40, or 2 B x Sch 40

13. Report

The manufacturer shall submit the test report when previously required by the purchaser.

Attached Table 1. Hydrostatic Test Pressure

Unit: kgf/cm² (bar)

Schedule number Sch	10	20	30	40	60	80
Hydrostatic test pressure	20 { 20 }	35 { 34 }	50 { 49 }	60 { 59 }	90 { 88 }	120 { 110 }

Remark: 1 bar = 10⁵ Pa

Attached Table 2. Dimensions and Weight for Carbon Steel Pipes for Pressure Service

Nominal diameter		Out-side dia. mm	Nominal wall thickness												
			Sch. 10		Sch. 20		Sch. 30		Sch. 40		Sch. 60		Sch. 80		
			Wall thick. mm	Weight kg/m	Wall thick. mm	Weight kg/m	Wall thick. mm	Weight kg/m	Wall thick. mm	Weight kg/m	Wall thick. mm	Weight kg/m	Wall thick. mm	Weight kg/m	
A	B														
6	1/4	10.5	—	—	—	—	—	—	1.7	0.369	2.2	0.450	2.4	0.479	
8	1/4	13.8	—	—	—	—	—	—	2.2	0.629	2.4	0.675	3.0	0.799	
10	1/4	17.3	—	—	—	—	—	—	2.3	0.851	2.8	1.00	3.2	1.11	
15	1/2	21.7	—	—	—	—	—	—	2.8	1.31	3.2	1.46	3.7	1.64	
20	1/2	27.2	—	—	—	—	—	—	2.9	1.74	3.4	2.00	3.9	2.24	
25	1	34.0	—	—	—	—	—	—	3.4	2.57	3.9	2.89	4.5	3.27	
32	1 1/4	42.7	—	—	—	—	—	—	3.6	3.47	4.5	4.24	4.9	4.57	
40	1 1/2	48.6	—	—	—	—	—	—	3.7	4.10	4.5	4.89	5.1	5.47	
50	2	60.5	—	—	3.2	4.52	—	—	3.9	5.44	4.9	6.72	5.5	7.46	
65	2 1/2	76.3	—	—	4.5	7.97	—	—	5.2	9.12	6.0	10.4	7.0	12.0	
80	3	89.1	—	—	4.5	9.39	—	—	5.5	11.3	6.6	13.4	7.6	15.3	
90	3 1/2	101.6	—	—	4.5	10.8	—	—	5.7	13.5	7.0	16.3	8.1	18.7	
100	4	114.3	—	—	4.9	13.2	—	—	6.0	16.0	7.1	18.8	8.6	22.4	
125	5	139.8	—	—	5.1	16.9	—	—	6.6	21.7	8.1	26.3	9.5	30.5	
150	6	165.2	—	—	5.5	21.7	—	—	7.1	27.7	9.3	35.8	11.0	41.8	
200	8	216.3	—	—	6.4	33.1	7.0	36.1	8.2	42.1	10.3	52.3	12.7	63.8	
250	10	267.4	—	—	6.4	41.2	7.8	49.9	9.3	59.2	12.7	79.8	15.1	93.9	
300	12	318.5	—	—	6.4	49.3	8.4	64.2	10.3	78.3	14.3	107	17.4	129	
350	14	355.6	6.4	55.1	7.9	67.7	9.5	81.1	11.1	94.3	15.1	127	19.0	158	
400	16	406.4	6.4	63.1	7.9	77.6	9.5	93.0	12.7	123	16.7	160	21.4	203	
450	18	457.2	6.4	71.1	7.9	87.5	11.1	122	14.3	156	19.0	205	23.8	254	
500	20	508.0	6.4	79.2	9.5	117	12.7	155	15.1	184	20.6	248	26.2	311	
550	22	558.8	6.4	87.2	9.5	129	12.7	171	15.9	213	—	—	—	—	
600	24	609.6	6.4	95.2	9.5	141	14.3	228	—	—	—	—	—	—	
650	26	660.4	7.9	103	12.7	203	—	—	—	—	—	—	—	—	

- Remarks 1. The designation of the pipe shall be made with the nominal diameter and nominal wall thickness (schedule number: Sch). However, for the nominal diameter, either A or B shall be used, and letter symbol A or B shall be suffixed to the figures of nominal diameter in the case of A or B series, respectively for identification.
2. The value for weight shall be calculated from the following formula assuming 1 cm³ of steel to be 7.85 g and rounded off to 3 significant figures in accordance with JIS Z 8401.
- $$W = 0.02466 t (D - t)$$
- where W : weight of pipe (kg/m)
 t : wall thickness of pipe (mm)
 D : outside diameter of pipe (mm)
3. The dimensions enclosed by the bold-faced lines indicate the pipe most frequently used.

Steel Welding Pipe Flanges

1. Scope








This Japanese Industrial Standards specifies the flanges of nominal pressure 5 K to 30 K and having the basic dimensions specified in JIS B 2210, which are steel welding type flanges connecting steel pipes to be used for general pipings of steam, air, gas, water, oil, etc., hereinafter referred to as the "flange".

Remark: The units and numerical values given in () in this standard are in accordance with the conventional units and are the standard values.

2. Classification

The classification of flanges shall be as given in Table 1.

Table 1

Nominal pressure (symbol)	Shapes and nominal diameters of the flanges of slip-on welding type						Shape and nominal diameter of the flange of butt welding type
	Plate flange	Hub flange					
	Flat face	Without groove at hub side		With groove at hub side			
		Flat face	Large raised face	Type A	Type B	Type C	
							
5 K	10 to 400	450 to 1 000					
10 K	Thin type	10 to 350	400				
	Ordinary type	10 to 225	250 to 1 000				
16 K		10 to 600	650 to 1 200				
20 K				16 to 50	10 to 50	65 to 600	
30 K					10 to 50	65 to 400	15 to 400

Remark: The type C is functionally desirable for both of 20 K and 30 K in nominal pressure, however, because the welding process is difficult for the flanges of smaller bore, and because the welding work for those having small bores is difficult, type A and type B are specified for the flange of 20 K in nominal pressure and type B is specified for the flange of 30 K in nominal pressure.

3. Relation between the Condition of Fluid and the Maximum Working Pressure

The relation between the condition of fluid and the maximum working pressure shall be in accordance with JIS B 2201. Provided that the following shall be appended for the slip-on welding flanges of 10 K in nominal pressure and of 16 K in nominal pressure.

- (1) Thin type flanges of the slip-on welding type of 10 K in nominal pressure shall be used for the static stream of not more than 0.69 MPa (7 kgf/cm²) in pressure and not more than 120°C in temperature as a rule.
- (2) The flanges of not less than 650 in nominal diameter of the flange of slip-on welding type of 16 K in nominal pressure shall be used for the fluid of not more than 260°C in temperature and not more than 1.72 MPa (17.5 kgf/cm²) in pressure.

6. Quality

6.1 Pressure Resistance The flanges shall be free from breakage and other abnormalities when subjected to the test in accordance with 7.1.

6.2 Shapes and Dimensions The shapes and dimensions of the flanges shall be in accordance with the following:

Furthermore, the test method shall be in accordance with 7.2.

- (1) The shape and the dimensions of each part shall be in accordance with Attached Tables 1 to 6 and the degree of the surface finish shall be in accordance with Attached Figure. However, the dimensions of the welds of the slip-on welding type flanges of 20 K in nominal pressure and 30 K in nominal pressure and the groove of the flange of the butt welding type of 30 K in nominal pressure may be changed by the agreement between the parties concerned to the delivery. Furthermore, the tolerances for dimensions shall be in accordance with JIS B 2203.
- (2) Each axis of inserting hole and bolt hole shall be at right angles with the gasket seat of the flange to a degree tolerable in practical use.

6.3 Appearance The surface of flange shall be free from cracks and defects harmful to use when subjected to the test specified in 7.3.

6.4 Flash Weld (Limited to the flange manufactured by flash welding) The quality of the flash weld of flange shall be in accordance with the following when subjected to the test specified in 7.4 unless otherwise especially specified by the purchaser.

- (1) Appearance The weld shall be smooth in surface and be free from defects harmful to use such as the stagger of jointing surface.
- (2) Magnetic Particle Test The weld shall be free from cracks and defects such as die burn or insufficient upset likely to bring effects detrimental to the strength and the using conditions.
- (3) Tensile Strength The tensile strength of weld shall be equal to or greater than the allowable tensile strength of the base metal.
- (4) Bending The surface of the bent weld shall be free from defects exceeding 3 mm in length.

4.5 Ultrasonic Test (limited to the flange for which the forged steel has been used.) The flange shall be free from harmful defects, when subjected to the test according to 7.5.

5. Materials

The materials of flange shall be the materials of Table 2 or those equal or superior to these in chemical components and mechanical properties, and suitable for the welding and specified in JIS.

Furthermore, the test method shall be in accordance with 7.6.

Table 2

Nominal pressure (symbol)	Type of flange	Material		
		Number of standard	Name of standard	Symbol of material
5 K, 10 K	Slip-on welding type flange	JIS G 3101	Rolled Steel for General Structure	SS 41
		JIS G 3201	Carbon Steel Forgings for General Use	SF 40 A ⁽¹⁾
		JIS G 3202	Carbon Steel Forgings for Pressure Vessels	SFVC 1
16 K, 20 K	Slip-on welding type flange	JIS G 3201	Carbon Steel Forgings for General Use	SF 45 A ⁽¹⁾
		JIS G 3202	Carbon Steel Forgings for Pressure Vessels	SFVC 2 A
30 K	Slip-on welding type flange and butt welding type flange	JIS G 3201	Carbon Steel Forgings for General Use	SF 45 A ⁽¹⁾
		JIS G 3202	Carbon Steel Forgings for Pressure Vessels	SFVC 2 A
		JIS G 3203	Alloy Steel Forgings for Pressure Vessels for High-Temperature Service	SFVAF 1
		JIS G 3203	Alloy Steel Forgings for Pressure Vessels for High-Temperature Service	SFVAF 11 A

Note (1) To be those of not more than 0.35 % in carbon content.

Remark: The materials in Table 2 shall be taken as base and the material larger in tensile strength than the basic material in the standard corresponding to respective material symbols may be used.

6. Manufacturing Method

The flanges shall be manufactured by carrying out the material work required after forming it according to the following method (1).

Furthermore, the plate flange shall be manufactured according to the method (2).

- (1) To manufacture from steel ingots or semi-finished products by the hot forging.

Furthermore, the heat treatment specified in each material standard shall be applied.

- (2) To manufacture from steel plate by the flash welding* after carrying out the blanking by a press machine, the gas cutting or the bending work. Provided that where the gas cutting has been carried out, the gas cut surface of not less than 2 mm in thickness shall be removed by the machining.

Furthermore, where the flash welding has been carried out, stress relieving shall be carried out at a temperature of not less than 600°C after completion of welding.

Note * Where other welding methods is used, it shall be subjected to the agreement between the parties concerned on the delivery.

7. Test Methods

7.1 Pressure Resistance The static hydraulic test shall be carried out at the ordinary temperature in accordance with the test pressure given in Table 3 for the pressure resistance of the flange. Provided that in this case, the test pressure of 0.98 MPa (10 kgf/cm²) shall be applied to the flange of thin type of the slip-on welding flange of 10 K in nominal pressure and the test pressure of 2.45 MPa (25 kgf/cm²) shall be applied to the flange of not less than 650 in nominal diameter of the slip-on welding flange of 16 K in nominal pressure.

7.2 Shape and Dimensions The shape and dimensions of the flange shall be tested by the direct measurement, the limit gauge and other methods.

7.3 Appearance The appearance test shall be carried out by visual observation.

7.4 Test of Flash Weld The test of the flash weld of flange shall be in accordance with the following.

- (1) Appearance The appearance test shall be carried out by visual observation.

- (2) Magnetic Particle Test The magnetic particle test shall be carried out according to the adequate test method in accordance with the specifications of 8. Test Method of JIS G 0565.

Table 3

Nominal pressure (symbol)	Symbol of material	Static hydraulic test pressure MPa (kgf/cm ²)
5 K	SS 41, SF 40 A, SFVC 1	0.98 {10}
10 K		1.96 {20}
16 K	SF 45 A, SFVC 2 A	3.92 {40}
20 K		4.90 {50}
30 K	SF 45 A, SFVC 2 A, SFVAF 1, SFVAF 11 A	7.35 {75}

(3) Tensile Test Unless the orderer specifies especially, the tensile test shall be carried out in accordance with JIS Z 2241 by manufacturing the test piece No. 1 specified in 3. Test Piece of JIS Z 3121 [the width (w) shall be 25 mm regardless of the thickness of plate].

(4) Bending Test Unless the orderer specifies especially, the bending test shall be carried out in accordance with 6. Test Method by manufacturing the test piece specified in 3. Test Piece of JIS Z 3124 [t shall be the plate thickness of test piece. (where the test cannot be carried out due to the deficiency in capacity of the testing machine, the test may be carried out respectively by cutting the test piece into a required thickness by a thin bladed saw.)]

7.5 Ultrasonic Test The ultrasonic test shall be carried out by an adequate test method in accordance with the specifications of 3. Test Method of JIS Z 2344.

7.6 Material Unless the orderer specifies especially, the material test shall be carried out in accordance with the material standard given in Table 2 for the materials of flange.

8. Delivery Inspection

The items to be inspected for the delivery inspection of flange shall be as follows. In this case, the sampling inspection plan for the lot inspection shall be subjected to the agreement between the parties concerned to that delivery.

- (1) Pressure resistance inspection (in the case of the orderer's request)
- (2) Shape and dimension inspection
- (3) Appearance inspection

- (4) Inspection of the flash weld (limited to the flange produced by the flash welding)
 - (a) Appearance
 - (b) Magnetic particle test (in the case of the orderer's request)
 - (c) Tensile test (in the case of the orderer's request)
 - (d) Bending test (in the case of the orderer's request)
- (5) Inspection of the ultrasonic test (limited to the flange made of forged steel, in the case of the orderer's request)
- (6) Material inspection

9. Designation of Product

The flange shall be designated by the number of standard, nominal pressure, nominal diameter and material symbol. Provided that the name of standard may be used instead of the number of standard. The symbol W shall be appended to the rear of material symbol for the flange manufactured by the flash welding. Furthermore, the following items shall be appended to the flanges of nominal pressure 10 K, 20 K and 30 K.

- (1) Flanges of Nominal Pressure 10 K Distinction of thin type and ordinary type (those of 400 or under in nominal diameter).
- (2) Flanges of Nominal Pressure 20 K Distinction of type A and type B (those of 50 or under in nominal diameter)
- (3) Flange of Nominal Pressure 30 K Distinction of slip-on type and butt type (those of 15 to 400 in nominal diameter)

Example 1: JIS B 2220-5 K·10·SS 41
or steel welding type flange 5 K·10·SS 41·W

Example 2: JIS B 2220-10 K·400·SS 41 thin type
or steel welding type flange 10 K·400·SS 41 thin type

Example 3: JIS B 2220-10 K·250·SS 41 ordinary type·plate flange
or steel welding type flange 10 K·250·SS 41 ordinary
type·plate flange

Example 4: JIS B 2220-20 K·50·SF 45 A·type A
or steel welding type 20 K·50·SF 45 A·type A

Example 5: JIS B 2220-30 K·15·SF 45 A slip-on type
or steel slip-on welding type flange 30 K·15·SF 45 A

Example 6: JIS B 2220-30 K·65·SF 45 A butt type
or steel butt welding type flange 30 K·65·SF 45 A

10. Marking

The following items shall be marked with the following information on their outer peripheral face by the carved seal.

Furthermore, the order of marking shall be that of the items.

- (1) Nominal pressure, nominal diameter and symbol of material.

Furthermore, the symbol W shall be appended to the rear of the material symbol for the flange manufactured by the flash welding and the following items shall be appended to the nominal pressure 10 K flange and nominal pressure 20 K flange.

- (a) Nominal pressure 10 K flange of thin type: Symbol L
(b) Nominal pressure 20 K flange: Distinction of type A and type B
(Those of nominal diameter 50 or under)

Example 1: 5 K-10-SS 41-W

Example 2: 10 K-L-10-SS 41

Example 3: 16 K-200-SF 45 A

Example 4: 20K-A-50-SF 45 A

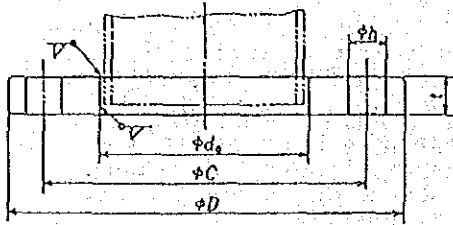
Example 5: 30 K-65-SF 45 A

Example 6: 30 K-100-SF 45 A

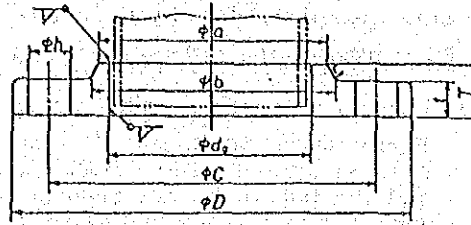
- (2) Lot number
(3) Manufacturer's name or mark

Attached Table 1. Nominal Pressure 5 K Slip-on Welding Type Flange

Nominal Diameter 10 to 400



Nominal Diameter 450 to 1000



Unit: mm

Nominal diameter	Outside diameter of steel pipe to be applied	Diameter of hole to be inserted d_1	Dimensions of each part of flange						Bolt hole			Nominal designation of screw thread of bolt	Approximately calculated mass (kg)
			Outside diameter D	t	T	Diameter of hub a b		r	Diameter of central circle C	Number	Diameter h		
10	17.3	17.8	75	9	--	--	--	--	55	4	12	M 10	0.27
15	21.7	22.2	80	9	--	--	--	--	60	4	12	M 10	0.30
20	27.2	27.7	85	10	--	--	--	--	65	4	12	M 10	0.37
25	34.0	34.5	95	10	--	--	--	--	75	4	12	M 10	0.45
32	42.7	43.2	115	12	--	--	--	--	90	4	15	M 12	0.78
40	48.6	49.1	120	12	--	--	--	--	95	4	15	M 12	0.83
50	59.5	61.1	130	14	--	--	--	--	105	4	15	M 12	1.07
65	76.3	77.1	155	14	--	--	--	--	130	4	15	M 12	1.49
80	89.1	90.0	180	14	--	--	--	--	145	4	19	M 16	1.99
(90)	101.6	102.6	190	14	--	--	--	--	155	4	19	M 16	2.09
100	114.3	115.4	200	16	--	--	--	--	165	8	19	M 16	2.39
125	139.8	141.2	235	16	--	--	--	--	200	8	19	M 16	3.23
150	165.2	166.6	265	18	--	--	--	--	230	8	19	M 16	4.41
(175)	190.7	192.1	300	18	--	--	--	--	260	8	23	M 20	5.51
200	216.3	218.0	320	20	--	--	--	--	280	8	23	M 20	6.33
(225)	241.8	243.7	345	20	--	--	--	--	305	12	23	M 20	6.61
250	267.4	269.5	385	22	--	--	--	--	345	12	23	M 20	9.45
300	318.5	321.0	430	22	--	--	--	--	390	12	23	M 20	10.3
350	355.6	358.1	480	24	--	--	--	--	435	12	25	M 22	14.0
400	406.4	409.0	540	24	--	--	--	--	495	16	25	M 22	16.9
450	457.2	460	605	24	40	295	500	5	555	16	25	M 22	21.8
500	508.0	511	655	24	40	546	552	5	605	20	25	M 22	26.9
(550)	558.8	562	720	26	42	597	603	5	665	20	27	M 24	34.1
600	609.6	613	770	26	44	648	654	5	715	20	27	M 24	37.5
(650)	660.4	664	825	26	48	702	708	5	770	24	27	M 24	42.8
700	711.2	715	875	26	48	751	758	5	820	24	27	M 24	45.4
(750)	762.0	766	945	28	52	802	810	5	880	24	33	M 30	57.4
800	812.8	817	995	28	52	854	862	5	930	24	33	M 30	60.8
(850)	863.6	868	1045	28	54	904	912	5	990	24	33	M 30	63.5
900	914.4	919	1095	30	56	956	964	5	1030	24	33	M 30	75.3
1000	1016.0	1021	1195	32	60	1058	1066	5	1130	28	33	M 30	88.5

Remarks 1. Those of nominal diameters given in parenthesis should not be used (preferably as far as possible).

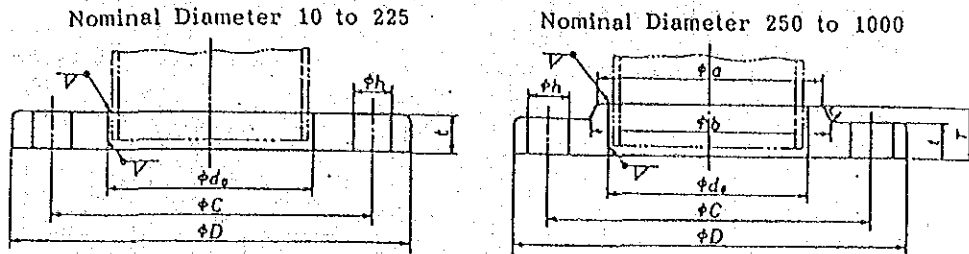
2. The bolt hole diameters (h) shall be in accordance with Grade 3 of JIS B 1001 in the case where the nominal designation of screw thread of the bolt is M 16 or under, and be in accordance with Grade 2 of JIS B 1001 in the case where the nominal designation of screw threads of the bolt is M 30. Furthermore, in the case where the nominal designations of screw thread of the bolt is M 20 or over, the ordinary bolts of the Appendix of JIS B 1180 shall be particularly used for the pumps of general use. When the bolt hole diameters (h) in the table are not applicable, the Grade 3 of JIS B 1001 may be used as agreed upon between the parties concerned to the delivery.

3. The gasket facings of flanges shall be in accordance with JIS B 2202.

4. The mass has been calculated assuming the density of steel as 7.85 g/cm³.

Reference: Regarding materials and shapes of bolts and nuts, refer to Reference 2 of JIS B 2210.

Attached Table 2-1. Nominal Pressure 10 K Slip-on Welding Type Flange (Ordinary Type Flange).



Unit: mm

Nominal diameter	Outside diameter of steel pipe to be applied	Diameter of hole to be inserted d_o	Dimensions of each part of flange						Bolt hole			Nominal designation of screw thread of bolt	Approximately calculated mass (kg)
			Outside diameter D	t	T	Diameter of hub		r	Diameter of central circle C	Number	Diameter h		
						a	b						
10	17.3	17.8	90	12	—	—	—	—	65	4	15	M 12	0.52
15	21.7	22.3	95	12	—	—	—	—	70	4	15	M 12	0.57
20	27.2	27.7	100	14	—	—	—	—	75	4	15	M 12	0.73
25	34.0	34.5	125	14	—	—	—	—	90	4	19	M 16	1.13
32	42.7	43.2	135	16	—	—	—	—	100	4	19	M 16	1.33
40	48.6	49.1	140	16	—	—	—	—	105	4	19	M 16	1.55
50	60.5	61.1	155	16	—	—	—	—	120	4	19	M 16	1.88
65	76.3	77.1	175	18	—	—	—	—	140	4	19	M 16	2.49
80	89.1	90.0	185	18	—	—	—	—	150	8	19	M 16	2.51
(90)	101.6	102.6	195	18	—	—	—	—	160	8	19	M 16	2.76
100	114.3	115.4	210	18	—	—	—	—	175	8	19	M 16	3.11
125	139.8	141.2	250	20	—	—	—	—	210	8	23	M 20	4.77
150	165.2	166.6	280	22	—	—	—	—	240	8	23	M 20	6.34
(175)	190.7	192.1	305	22	—	—	—	—	265	12	23	M 20	6.82
200	216.3	218.0	330	22	—	—	—	—	290	12	23	M 20	7.53
(225)	241.8	243.7	350	22	—	—	—	—	310	12	23	M 20	7.74
250	267.4	269.5	400	24	36	288	292	6	355	12	25	M 22	12.7
300	318.5	321.0	445	24	38	340	346	6	400	16	25	M 22	13.8
350	355.6	358.1	490	26	42	380	385	6	445	16	25	M 22	18.2
400	405.4	409	560	28	44	436	442	6	510	16	27	M 24	25.7
450	457.2	460	620	30	48	496	502	6	565	20	27	M 24	33.0
500	508.0	511	675	30	48	548	554	6	620	20	27	M 24	37.6
(550)	558.8	562	745	32	52	604	610	6	680	20	33	M 30	49.1
600	609.6	613	795	32	52	656	662	6	730	24	33	M 30	52.6
(650)	660.4	664	845	34	56	706	712	6	780	24	33	M 30	60.6
700	711.2	715	905	34	58	762	770	6	840	24	33	M 30	70.6
(750)	762.0	766	970	36	62	816	824	6	900	24	33	M 30	85.8
800	812.8	817	1 020	36	64	868	876	6	950	28	33	M 30	91.7
(850)	863.6	868	1 070	36	66	920	928	6	1 000	28	33	M 30	96.6
900	914.4	919	1 120	38	70	971	979	6	1 050	28	33	M 30	109
1 000	1 016.0	1 021	1 235	40	74	1 073	1 081	6	1 160	28	39	M 36	133

- Remarks 1. Those of nominal diameters given in parentheses should not be used preferably as far as possible.
2. The bolt hole diameters (h) shall be in accordance with Grade 3 of JIS B 1001 in the case where the nominal designation of screw thread of the bolt are M 16 or under, and shall be in accordance with Grade 2 of JIS B 1001 in the case where the nominal designation of screw thread of the bolt are M 30 or over. Furthermore, in the case where the nominal designations of screw thread of the bolt are M 20 or over, the ordinary bolts of the Appendix of JIS B 1180 shall be particularly used for the pumps of general use. When the bolt hole diameters (h) in the table are not applicable, Grade 3 of JIS B 1001 may be used as agreed upon between the parties concerned to the delivery.
3. The gasket facings of flanges shall be in accordance with JIS B 2202.
4. The masses have been calculated assuming the density of steel as 7.85 g/cm³.

Reference: Regarding materials and shapes of bolts and nuts, refer to Reference 2 of JIS B 2210.

Gray Cast Iron Valves

1. Scope

This Japanese Industrial Standard specifies the gray cast iron valves (hereinafter referred to as the "valves") to be used for general mechanical apparatuses and the like.

Remark: The units and numerical values given in | | in this standard are in accordance with the conventional units and the standard values.

2. Definitions

For the purposes of this standard, the definitions given in JIS B 0100 apply.

3. Classes

The classes of valves shall be as shown in Table 1 depending on the combination of nominal pressure, valve class and nominal diameter.

Table 1. Class

Nominal pressure (symbol)	Valve classification	Nominal diameter									
		40	50	65	80	100	125	150	200	250	300
5 K	Flanged-end outside screw sluice valve	—	○	○	○	○	○	○	○	○	—
10 K	Flanged-end globe valve	○	○	○	○	○	○	○	○	—	—
10 K	Flanged-end angle valve	○	○	○	○	○	○	○	○	—	—
10 K	Flanged-end inside screw sluice valve	—	○	○	○	○	○	○	○	○	○
10 K	Flanged-end outside screw sluice valve	—	○	○	○	○	○	○	○	○	○
10 K	Flanged-end swing check valve	—	○	○	○	○	○	○	○	○	—

4. Relation between State of Fluid and Maximum Allowable Pressure

The relation between state of fluid and maximum allowable pressure shall be as shown in Table 2.

Table 2. Relation between State of Fluid and Maximum Allowable Pressure

State of fluid	Maximum allowable pressure	
	Nominal pressure 5K valve	Nominal pressure 10K valve
Oil at not more than 120°C, pulsating water and air	0.49 5	0.98 10
Saturated Vapour	0.20 2	0.69 7 (Screwed valve seat) ⁽¹⁾ 0.20 2 (Pressed valve seat)
Gas at not more than 120°C ⁽²⁾	0.20 2	0.20 2
Calnly flowing water at not more than 120°C	0.69 7	1.37 14

Notes (1) 0.20 MPa | 2kgf/cm² | in the case of the flanged-end inside screw sluice valve at nominal pressure 10K of the screwed valve seat.

(2) The poisonous gas and inflammable gas which have been specified in the High Pressure Gas Control Law shall be excluded.

5. Quality

5.1 Performance The performance of valve shall be as follows:

- (1) Pressure Resistance of Valve Casing Each part of valve casing shall be free from defects when tested in accordance with 9.1.
- (2) Leakage of Valve Seat The leakage of valve seat shall comply with the requirements of Table 3 when tested in accordance with 9.2.

Table 3. Leakage of Valve Seat

Valve classification	Rate	Cases by hydraulic pressure	Cases by pneumatic pressure
Globe valve and angle valve	3	To be free from leakage	To be free from leakage
	2 ⁽¹⁾	The amount of leakage shall not exceed 0.01mm ³ /S x nominal diameter	The amount of leakage shall not exceed 0.3mm ³ /S x nominal diameter at the atmospheric pressure
Sluice valve	3	To be free from leakage	To be free from leakage
	1 ⁽¹⁾	The amount of leakage shall not exceed 0.1mm ³ /S x nominal diameter	The amount of leakage shall not exceed 30mm ³ /S x nominal diameter at the atmospheric pressure
Swing check valve	1	The amount of leakage shall not exceed 0.1mm ³ /S x nominal diameter	The amount of leakage shall not exceed 30mm ³ /S x nominal diameter at the atmospheric pressure

Note (1) This applies to the case free from hindrance for the use.

Remark: The rate of Table 3 shall give the division of the amount of leakage of valve seat specified in JIS B 2003.

- (3) Working In testing the valve in accordance with 9.3, each moving part shall work smoothly so as to be suited to the opening and closing operation of the valve. Further, the valve body of swing check valve shall return to the closing place by the tare.

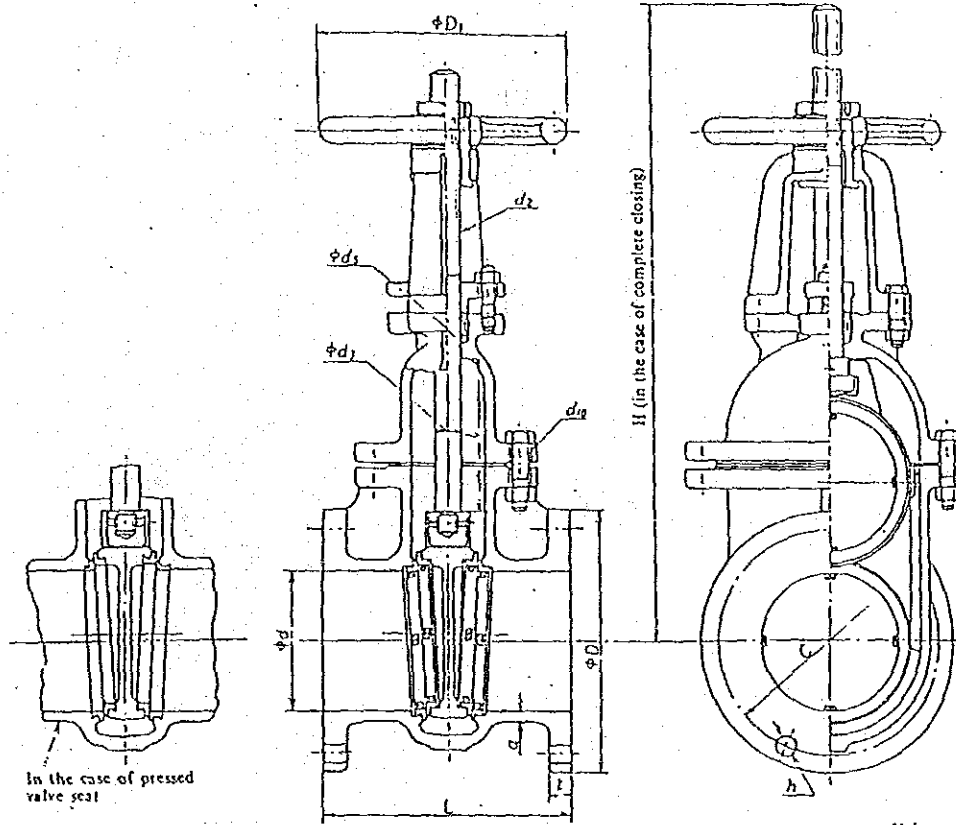
5.2 Construction, Shape and Dimensions

5.2.1 Common Items The common items of the construction, shape and dimensions shall be as follows:

- (1) The principal dimensions of valve are shown in (1) of Attached Tables 1 to 4.

Attached Table 1. Outside Screw Sluice Valve of 5K in Nominal Pressure

(1) Construction, Shape and Dimensions



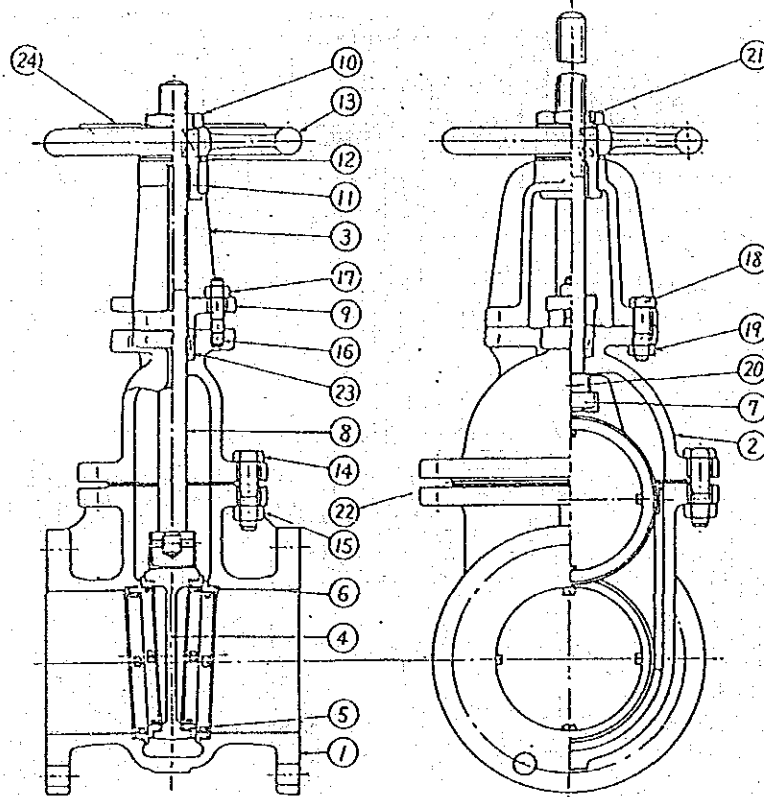
Unit: mm

Nominal diameter	Caliber <i>d</i>	Face to face dimensions		Flange						<i>H</i> (Reference)	<i>l</i> (Reference)	<i>D</i> ₁ (Reference)	Valve casing			Valve stem		<i>d</i> ₃ (Reference)
		<i>L</i>	<i>D</i>	Bolt hole				<i>a</i>	Bolt (reference)				<i>d</i> ₁	Nominal designation of screw thread	<i>d</i> ₂			
				Outside diameter	Di- meter of center circle <i>C</i>	Number	Di- a- meter <i>h</i>		Nominal des- ignation of screw thread <i>l</i>							Thick- ness <i>t</i>	<i>a</i>	
50	50	160	130	105	4	15	M 12	16	340	55	160	6	M 12	6	18	Tr (TW) 18	31	
65	65	170	155	130	4	15	M 12	18	405	70	180	6	M 12	6	20	Tr (TW) 20	33	
80	80	180	180	145	4	19	M 16	18	465	86	180	6	M 12	6	20	Tr (TW) 20	33	
100	100	200	200	165	8	19	M 16	20	550	108	224	8	M 16	6	24	Tr (TW) 24	37	
125	125	220	235	200	8	19	M 16	20	650	137	224	9	M 16	8	24	Tr (TW) 24	37	
150	150	240	265	230	8	19	M 16	22	755	163	250	10	M 16	8	26	Tr (TW) 26	39	
200	200	260	320	280	8	23	M 20	24	955	214	280	12	M 16	12	28	Tr (TW) 28	41	
250	250	300	385	345	12	23	M 20	26	1160	265	355	15	M 20	12	32	Tr (TW) 32	48	

- Remarks:
1. The flange shall be in accordance with JIS B 2210.
 2. The bolt holes of flange shall be distributed around the central line.
 3. *d*₁ shall be in accordance with JIS B 0216. However, *d*₁ may be in accordance with JIS B 0222, but it should be preferable not to use it for the newly designed valve.
 4. (Reference) shows the reference dimension.

Attached Table 1 (Continued)

(2) Material



Part's number	Name of part	Material	Part's number	Name of part	Material
1	Valve casing	To be in accordance with Text 7.1(1)	14	Cover bolt	SS41 of JIS G 3101
2	Cover		15	Nut for the cover bolt	
3	Yoke	FC20 of JIS G 5501	16	Packing gland bolt	
4	Valve body	To be in accordance with Text 7.1(1)	17	Nut for the packing gland bolt	
5	Valve seat with the valve body fitted	To be in accordance with Text 7.1(2)	18	Cover yoke bolt	
6	Valve seat with the valve casing fitted		19	Nut for the cover yoke bolt	
7	Dowel	BC6 of JIS H 5111	20	Taper pin	SS50 of JIS G 3101
8	Valve stem	To be in accordance with Text 7.1(3)	21	Set screw	SS41 of JIS G 3101
9	Packing gland	FC20 of JIS G 5501	22	Gasket	Select according to the purpose of the use
10	Handle retaining nut	SS41 of JIS G 3101	23	Packing	
11	Yoke sleeve	BC6 of JIS H 5111	24	Identification plate	A1050P of JIS H 4000
12	Washer				
13	Handwheel	FC20 of JIS G 5501			

Malleable Iron 10K Screwed Valves

1. Scope

This Japanese Industrial Standard specifies the malleable iron screwed valves (hereinafter referred to as valves) to be used for general mechanical apparatus.

- Remarks:
1. In this standard, the units and numerical values give in () are in accordance with the conventional unit system and are the standard value.
 2. The nominal diameters given in () in this standard are B designation.

2. Definitions

For the purposes of this standard, the definitions given in JIS B 0100 apply.

3. Classification

The classification of valves shall be as shown in Table 1 according to the combination of nominal pressure, valve class and nominal diameter.

Table 1. Classification

Nominal pressure (symbol)	Classification of valve		Nominal diameter					
			A					
			15	20	25	32	40	50
10 K		Screwed type	B					
			1/2	3/4	1	1 1/4	1 1/2	2
	Globe valve	Metal seat	○	○	○	○	○	○
		Soft seat	○	○	○	○	○	○
	Sluice valve	Metal seat	○	○	○	○	○	○
	Lift check valve	Metal seat	○	○	○	○	○	○
		Soft seat	○	○	○	○	○	○
	Swing check valve	Metal seat	○	○	○	○	○	○
		Soft seat	○	○	○	○	○	○

4. Relation Between State of Fluid and Maximum Allowable Pressure

The relation between the state of fluid and the maximum allowable pressure shall be as shown in Table 2.

Table 2. Relation Between State of Fluid and Maximum Allowable Pressure

State of fluid	Maximum allowable pressure MPa (kgf/cm)
Oils, gases, air, steam and pulsating water at 220°C or under	0.98 [10]
Non shock flowing water at 120°C or under	1.37 [14]

Remark: Take 183°C in place of 220°C for the soft seat using ethylen tetra fluoride resin without filler.

5. Quality

5.1 Performance The performance of the valve shall be as follows.

- (1) Pressure Resistance of Valve Casing In testing the pressure resistant part of a valve casing and the like in accordance with 9.1, each part of valve casing shall be free from defects.
- (2) Leakage of Valve Seat The leakage of valve seat shall comply with the requirements of Table 3 in testing it in accordance with 9.3.
- (3) Working In testing each moving part of a valve in accordance with 9.3, each part shall work smoothly so as to fit for the opening and closing operation of valve.
Furthermore, the valve bodies of lift check valve and swing check valve shall be able to return to the place of closing by the tare.

5.2 Construction, Shape and Dimensions

5.2.1 Common Items The common items of the construction, shape and dimensions of valve shall be as follows:

- (1) An example of construction and shape is shown in (1) of Attached Tables 1 to 4.
- (2) The counter clockwise revolution of the handwheel shall be taken as "opening" of valve, and the clockwise revolution shall be taken as "closing" of valve.

Table 3 Leakage of Valve Seat

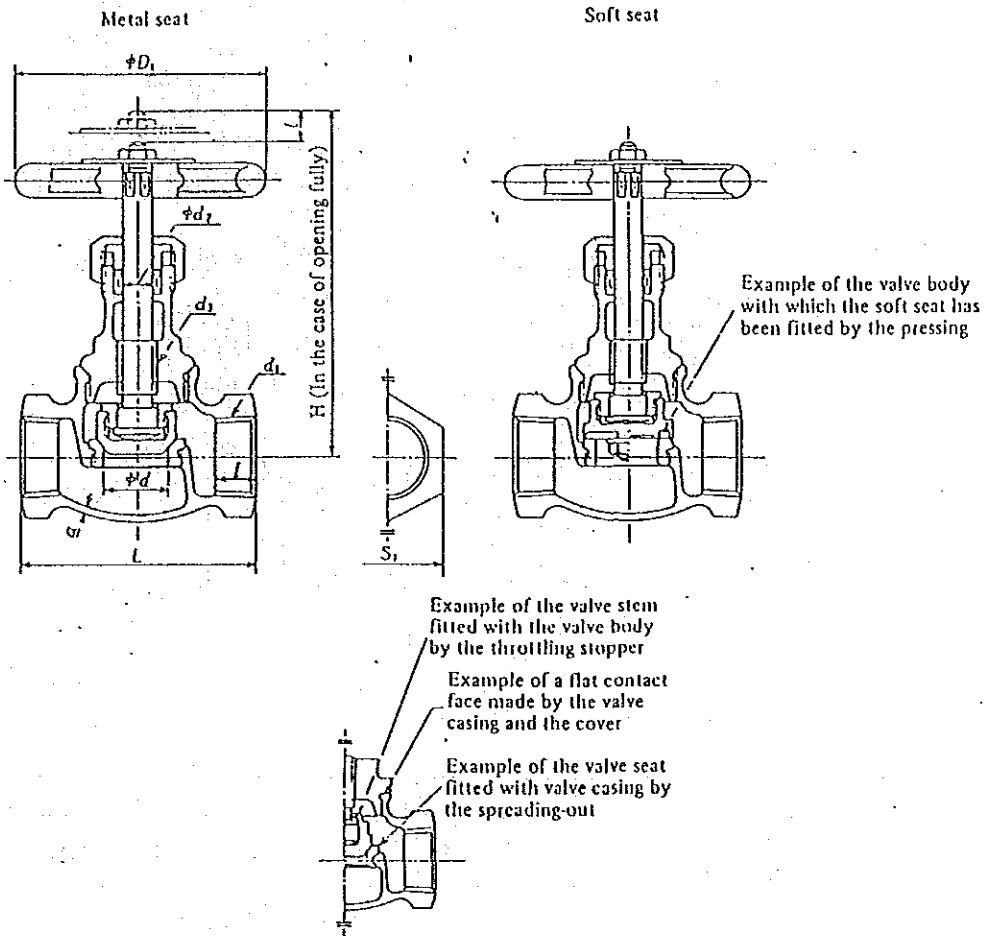
Classification of valves		Rate	Case due to the hydraulic pressure	Case due to air pressure
Globe valve	Metallic seat	3	To be free from leakage	To be free from leakage
		2 ⁽¹⁾	The leakage quantity shall not exceed 0.01 m ³ /sec x nominal diameter	The leakage quantity shall not exceed 0.3mm ³ /s x nominal diameter at the atmospheric pressure.
	Soft seat	3	To be free from leakage	To be free from leakage
Sluice valve	Metallic seat	3	To be free from leakage	To be free from leakage
		1 ⁽¹⁾	The leakage quantity is 0.1mm ³ /s x nominal diameter (provided that where the nominal diameter is not more than 25(1), it shall not exceed 2.5mm ³ /s).	The leakage quantity shall not exceed 30mm ³ /s x nominal diameter at the atmospheric pressure
Lift check valve and swing check valve	Metal seat	1	The leakage quantity is 0.1mm ³ /s x nominal diameter (provided that where the nominal diameter is not more than 25(1), it shall not exceed 2.5mm ³ /s).	The leakage quantity shall not exceed 30mm ³ /s x nominal diameter at the atmospheric pressure
		3	To be free from leakage	To be free from leakage
	Soft seat	2 ⁽¹⁾	The leakage quantity is 0.01mm ³ /s x nominal diameter (provided that where the nominal diameter is not more than 25(1), it shall not exceed 2.5mm ³ /s).	The leakage quantity shall not exceed 0.3mm ³ /s x nominal diameter at the atmospheric pressure

Note⁽¹⁾: This applies to the case where there is no difficulty in using it.

- Remarks:
- 1. The rate of Table 3 shows the division of the leakage quantity of valve seat specified in JIS B 2003.
 - 2. The nominal diameter used for the calculation in Table 3 shall be designation A.

Attached Table 1 Globe Valve

(1) Construction, Shape and Dimensions



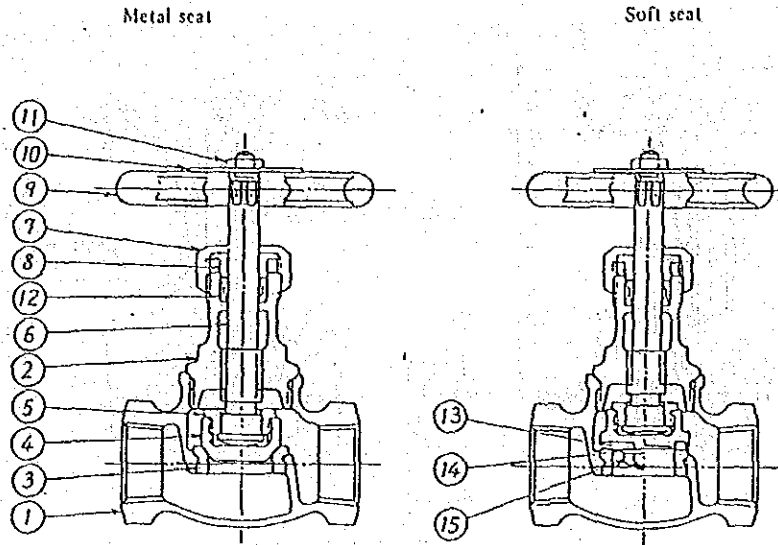
Unit: mm

Nominal diameter		Bore of valve seat d	Face to face dimension L	Both end screw threads		Wall thickness of valve casing		Valve stem		S_1 (Reference)	l (Reference)	H (Reference)	D_1 (Reference)
A	B			Nominal designation of screw threads d_1	l	a	d_1	Nominal designation of screw thread d_1					
15	1/2	15	60	Re 1/2	11	2.5	8.5	Tr(TW)12	28	20	150	63	
20	3/4	20	70	Re 3/4	13	2.5	8.5	Tr(TW)12	34	25	175	80	
25	1	25	75	Re 1	15	2.5	10	Tr(TW)14	42	30	205	100	
32	1 1/4	32	85	Re 1 1/4	17	3	11	Tr(TW)16	52	37	245	125	
40	1 1/2	40	95	Re 1 1/2	18	3.5	11	Tr(TW)16	58	46	275	125	
50	2	50	105	Re 2	20	4	13	Tr(TW)18	72	56	325	140	

- Remarks:
1. d_1 shall be in accordance with JIS B 0203.
 2. d_1 shall be in accordance with JIS B 0216. Provided that it may be in accordance with JIS B 0222 but it should be preferable not to use for the newly-designed valve.
 3. (Reference) shows the informative reference division.

Attached Table 1 (continued)

(2) Materials



Number of part	Name of part	Material
1	Valve casing	To be in accordance with the text 7.(1)
2	Cover	
3	Valve seal fitted with valve casing	To be in accordance with the text 7.(2)
4	Valve body	
5	Valve guard	To be in accordance with the text 7.(3)
6	Valve stem	
7	Packing gland nut	FCMB35 of JIS G 5702 or SS41 of JIS G 3101
8	Packing gland ring	SUS403 or SUS420J2 of JIS G 4303
9	Handwheel	FC20 of JIS G 5501 or SPCC of JIS G 3141
10	Identification plate	A1050P of JIS H 4000
11	Handle holding nut	SS41 of JIS G 3101
12	Packing	To select according to the use
13	Soft seat	To be in accordance with the text 7.(4)
14	Seat holder	SUS403 of JIS G 4303 or SS41 of JIS G 3101
15	Seat holding nut	SUS403 of JIS G 4303 of SS41 of JIS G 3101

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