

ERRATA of G 3451-1987(p.2)

Page	Position		
15	Attached Fig.6		
		Outside dia. d_2	
		Wrong	Correct
	Nominal Dia. A 2100×1100	1117.2	1117.6
16	Attached Fig.6		
		Outside dia. d_2	
		Wrong	Correct
	Nominal dia. A 2900×2000	2030.4	2032.0
	Nominal dia. A 3000×2000	2030.4	2032.0
		Outside dia. D_2	
		Wrong	Correct
	Nominal dia. A 2900×1500	2946.9	2946.4
	Nominal dia. A 2900×1600	2946.9	2946.4
	Nominal dia. A 2900×1650	2946.9	2946.4
	Nominal dia. A 2900×1800	2946.9	2946.4
	Nominal dia. A 2900×1900	2946.9	2946.4
	Nominal dia. A 2900×2000	2946.9	2946.4
	Nominal dia. A 2900×2100	2946.9	2946.4
19	Attached Fig.6		
		Outside dia. d_2	
		Wrong	Correct
	Nominal dia. A 2100×1100	1117.2	1117.6
23	Attached Fig.7		
		Outside dia. D_2	
		Wrong	Correct
	Nominal dia. A 2500×1650	2540.4	2540.0
	Nominal dia. A 2500×1800	2540.4	2540.0
	Nominal dia. A 2500×1900	2540.4	2540.0
	Nominal dia. A 2500×2000	2540.4	2540.0
	Nominal dia. A 2500×2100	2540.4	2540.0
	Nominal dia. A 2500×2200	2540.4	2540.0
	Nominal dia. A 2500×2300	2540.4	2540.0
	Nominal dia. A 2500×2400	2540.4	2540.0

ERRATA of G 3451-1987(p.3)

Page	Position			
24	Attached Fig.7			
		Outside dia. D_2		
		Wrong	Correct	
		Nominal dia. A 2900×2000	2946.9	2946.4
		Nominal dia. A 2900×2100	2946.9	2946.4
		Nominal dia. A 2900×2200	2946.9	2946.4
		Nominal dia. A 2900×2300	2946.9	2946.4
		Nominal dia. A 2900×2400	2946.9	2946.4
		Nominal dia. A 2900×2500	2946.9	2946.4
		Nominal dia. A 2900×2600	2946.9	2946.4
		Nominal dia. A 2900×2700	2946.9	2946.4
		Nominal dia. A 2900×2800	2946.9	2946.4
		Outside dia. d_2		
		Wrong	Correct	
		Nominal dia. A 3000×2900	2946.9	2946.4
26	Attached Fig.9			
		Outside dia. D_2		
		Wrong	Correct	
		Nominal dia. A 2900×400	2946.9	2946.4
41	Attached Fig.12			
		Outside dia. D_2		
		Wrong	Correct	
		Nominal dia. A 2900×600	2946.9	2946.4
50	Attached Fig.13			
		Individual dim. of flange X		
		Wrong	Correct	
		Nominal dia. A 300	45	46
		Number of Bolt		
		Wrong	Correct	
		Nominal dia. A 80	5	4
		Pipe body t		
		Wrong	Correct	
		Nominal dia. A 2800	25.0	26.0
			20.0	21.0
		Pipe body t		
		Wrong	Correct	
		Nominal dia. A 3000	27.0	29.0
			22.0	22.0

ERRATA of G 3451-1987(p.4)

Page	Position		
55	Attached Fig.13		
62	Attached Fig.16	GF type in Reference	
		Wrong	Correct
		Nominal dia. A 100	60.3 6.03
		Outside dia. D ₂	
		Wrong	Correct
		Nominal dia. A 800	811.8 812.8

Remarks: This errata is for correcting the 1st edition of this Standard.
Japanese Standards Association

JIS

JAPANESE INDUSTRIAL STANDARD

**Fittings of Coated Steel Pipes
for Water Service**

JIS G 3451—1987

Translated and Published

by

Japanese Standards Association

Printed in Japan

In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

JAPANESE INDUSTRIAL STANDARD

J I S

Fittings of Coated Steel Pipes
for Water Service

G 3451-1987

1. Scope

This Japanese Industrial Standard specifies the fittings of protective coated steel pipes⁽¹⁾, hereinafter referred to as the "pipes" used for water works, sewerage, industrial water works, agricultural water, etc.

Note ⁽¹⁾ The fittings of protective coated steel pipes mean the fittings of steel pipes coated with asphalt, coal-tar enamel, polyethylene, etc.

Remarks 1. The protective coating means the painting of coating, the protective coating for which coating and protective material are used, and polyethylene covering.

2. The units and numerical values given in { } in this Standard are based on the International System of Units (SI) and are appended for informative reference.

Further, the traditional units accompanied by numerical values in this Standard shall be converted to the SI units and numerical values on Jan. 1, 1991.

2. Types and Symbol

Pipes shall be classified into five types according to the highest tolerable pressure and their symbols shall be as given in Table 1-1 or Table 1-2.

Table 1-1. Symbol of Types
(Applicable till the end of 1990)

Symbol of type	Highest tolerable pressure kgf/cm ² { MPa }
F 125	12.5 { 1.2 }
F 150	15 { 1.5 }
F 200	20 { 2.0 }
F 250	25 { 2.5 }
F 300	30 { 2.9 }

Applicable Standards: See page 63.

Table 1-2. Symbol of Types
(Applicable on and after Jan. 1, 1991)

Symbol of type		Highest tolerable pressure MPa
SI unit	Troditional unit (Informative ref.)	
F 12	F 125	1.2
F 15	F 150	1.5
F 20	F 200	2.0
F 25	F 250	2.5
F 29	F 300	2.9

3. Construction of Pipe

Pipes are constructed by applying protective coating or covering on original pipes⁽²⁾.

Note ⁽²⁾ The original pipe means the fittings before the application of protective coating.

4. Original Pipe

4.1 Manufacturing Method The manufacturing method shall be as follows.

- (1) An original pipe is manufactured by weld working⁽³⁾ with materials given as follows.

Steel pipe of 4. of JIS G 3443

Steel plate of SS 41 specified in JIS G 3101

Steel plate of SM 41 specified in JIS G 3106

Pipe flange⁽⁴⁾

Notes ⁽³⁾ The welder to be engaged in the manufacture of an original pipe shall have the technical skill conforming to JIS Z 3801 for hand welding and to JIS Z 3841 for semi-automatic welding.

- ⁽⁴⁾ The pipe flange shall be manufactured by welding or forging the materials such as SS 41 of JIS G 3101, SM 41 of JIS G 3106, SF 40 A and SF 45 A of JIS G 3201, etc. and then machining them.

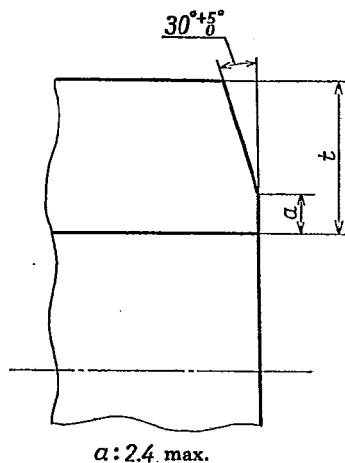
- ⁽²⁾ The end part of the original pipe shall be of a plain end, the shape⁽⁵⁾ suitable for butt weld joint, or else a flange. However, when the shapes of the pipe end other than those are required, it shall be as agreed on between the parties concerned.

Note (5) Unless otherwise specified, the shape suitable for butt weld joint shall be as given in Figure.

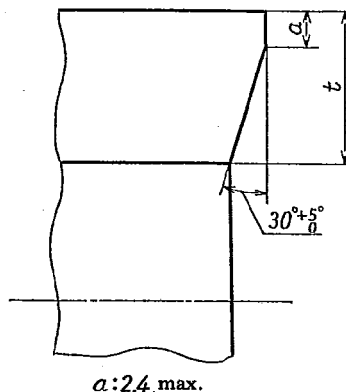
Figure. Pipe End for Butt Weld Joint

Unit: mm

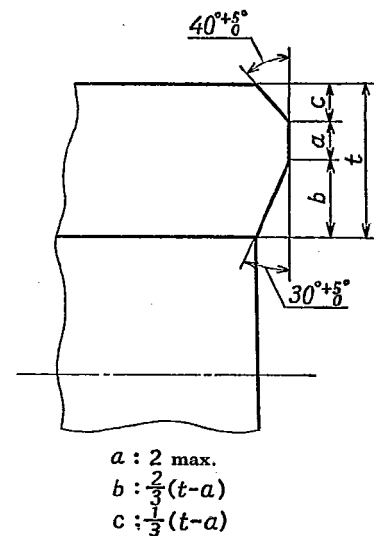
V-outside groove
(Nominal dia. 700 A max.)



V-inside groove
(Nominal dia. 800 A min.
and thickness under 16)



X-groove
(Nominal dia. 800 A min.
and thickness 16 min.)



4.2 Quality of Welded Part When the test of 4.5 is carried out, the welded part of an original pipe shall correspond to not lower than Class 3 of Type 1 and Type 2 of JIS Z 3104.

4.3 Shape, Dimensions and Tolerances on Dimensions The shape, dimensions, and tolerances on dimensions shall be as follows.

- (1) The shape and dimensions of an original pipe shall be as given in Attached Figures 1 to 16.
- (2) The tolerances on the outside diameter, thickness, and principal dimensions of the original pipe shall be as follows.
 - (a) The tolerances on the outside diameter and thickness shall be as given in Table 2.

Table 2. Tolerances on Outside Diameter and Thickness

	Tolerances	
Outside diameter	Nominal diameter 80 A or over to 200 A, excl.	$\pm 1 \%$
	Nominal diameter 200 A or over to 600 A, excl.	$\pm 0.8 \%$
	Nominal diameter 600 A or over	$\pm 0.5 \%$ measured of peripheral length
Thickness	Nominal diameter under 350 A	$+ 15 \%$ $- 12.5 \%$
	Thickness under 7.5 mm	$+ 15 \%$ $- 0.6 \text{ mm}$
	Nominal diameter 350 A min Thickness 7.5 mm or over to 12.5 mm, excl.	$+ 15 \%$ $- 8 \%$
	Thickness 12.5 mm min.	$+ 15 \%$ $- 1.0 \text{ mm}$

Remarks: The tolerance on the outside diameter of original pipe not smaller than 350 A and smaller than 600 A in nominal diameter may be determined by the measurement of by peripheral length. The tolerance in that case shall be $+ 0.5 \%$. However, the mutual conversion between the outside diameter (D) and the peripheral length (l) shall be calculated from the following formula:

$$l = \pi \cdot D$$

where $\pi = 3.1416$.

- (b) The tolerance on the thickness of a reinforced plate shall be as given in 5.1 of JIS G 3193.
- (c) The tolerance on principal dimensions shall be as given in Attached Figures 1 to 16.
- (d) The tolerance on the dimensions of pipe flange shall be as given in Table 3.
- (e) The tolerances on respective dimensions of a gasket shall be as given in Table 4.

Table 3. Tolerances on Dimensions of Pipe Flange

Unit: mm

Flange part		Classification of dimensions	Tolerance on dimensions
Outside diameter D_o		Up to and incl. 300	± 1
		Over 300, up to and incl. 600	± 1.5
		Over 600, up to and incl. 1000	± 2
		Over 1000, up to and incl. 1500	± 2.5
		Over 1500	± 3
Bolt hole	Diameter of central hole D_4	Up to and incl. 250	± 0.5
		Over 250, up to and incl. 550	± 0.6
		Over 550, up to and incl. 950	± 0.8
		Over 950, up to and incl. 1350	± 1
		Over 1350	± 1.5
	Pitch of hole	--	± 0.5
	Diameter of hole d'	--	± 1.5 0
Thickness K		Up to and incl. 20	± 1.5 0
		Over 20, up to and incl. 50	± 2 0
		Over 50, up to and incl. 100	± 3 0
Height of hub L		Up to and incl. 200	± 2 0
		Over 200, up to and incl. 300	± 3 0
		Over 300	± 4 0
Gasket groove	Inside diameter G_1	Up to and incl. 450	± 1.5 0
		Over 450, up to and incl. 1600	± 1.5
		Over 1600	± 2
	Width e	Up to and incl. 10	± 1 0
		Over 10	± 0.5 $- 1.0$
	Depth S	Up to and incl. 5	± 0.2 $- 0.5$
		Over 5, up to and incl. 10	± 0.2 $- 0.8$
		Over 10	± 0.5 $- 0.8$

Table 4. Tolerances on Dimensions of Individual Parts of Gasket

Unit: mm

Nominal diameter A	GF type gasket			RF type gasket				
	G_1', G_1'' (%)	a, a_1	b, b_1	D_1	D_3	t		
80 to 200	+ 1.0 0	± 0.3	± 0.3	+ 2.0 0	0 - 2.0	+ 0.5 - 0.3		
250 to 450				+ 3.0 0	0 - 3.0			
500 to 700	0 - 1.0			+ 4.0 0	0 - 4.0			
800 to 1000				+ 6.0 0	0 - 5.0			
1100 to 1500				+ 7.0 0	0 - 6.0			
1600 to 3000				+ 8.0 0	0 - 7.0			

4.4 Appearance The original pipe shall be practically of true circle in cross section and perpendicular to its axis at the pipe ends.

Further, the inside and outside surfaces thereof shall be finished adequately and free from injurious defects.

4.5 Tests The method for radiographic test of the welded part of original pipe shall be as specified in JIS Z 3104. However, when other test methods are to be adopted, the matter shall be as agreed on between the parties concerned.

4.6 Inspection Inspection shall be as follows.

- (1) Each unit pipe of original pipes shall be inspected as to the shape, dimensions and appearance, and the results shall conform to 4.3 and 4.4.
- (2) The welded part of original pipe shall be inspected as to each unit pipe and the results shall conform to 4.2. However, the position to be inspected shall be, as a rule, pipe ends and intersecting positions.

When the results fail to conform to 4.2 as to the welded part of original pipe, the welded part shall be allowed to be repaired for a retest by the approval of the purchaser.

Further, the inspection of the welded part may be substituted by a hydraulic test subject to agreement between the parties concerned. The test hydrostatic pressure in that case shall be the highest allowable pressure for the type of pipe and there shall be no leakage or other defects.

5. Protective Coating and Its Methods

The protective coating and its method shall be in accordance with one of the following Standards. However, when protective coatings other than those are required, the method shall be as agreed on between the parties concerned.

JIS G 3469

JIS G 3491

JIS G 3492

6. Marking

Each pipe having passed the inspection shall be clearly marked with the following items. However, with the agreement of the purchaser, part of those items may be omitted.

- (1) Manufacturer's name or mark
- (2) Symbol of type
- (3) Dimensions⁽⁶⁾
- (4) Pipe number
- (5) Year and month of manufacture

Note ⁽⁶⁾ The marking of dimensions shall be expressed as follows.

Nominal diameter x Angle or nominal diameter of
branch pipe or the like x Thickness of branch pipe
or the like.

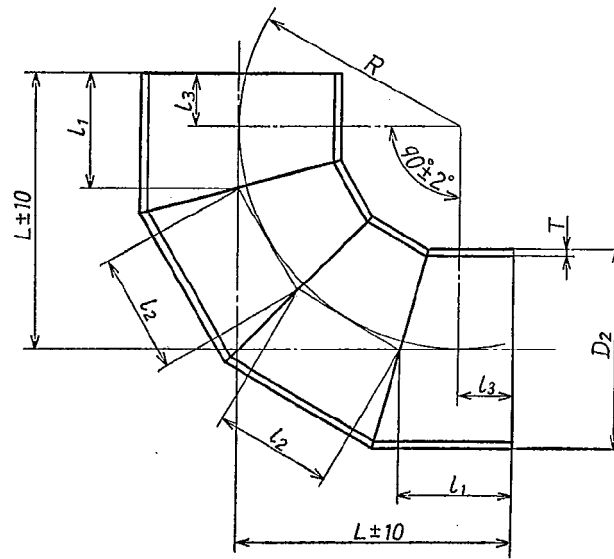
Example: for bend	600 A x 6.0 x 90°
for Tee	600 A x 6.0 x 300 A x 6.9
for reducer	600 A x 6.0 x 400 A x 6.9

7. Report

Where required by the purchaser in advance, a detailed statement containing the test results, manufacturing method, ordered dimensions, quantity, etc. shall be submitted to the purchaser by the manufacturer.

Attached Fig. 1. 90° Bend Type

Unit: mm

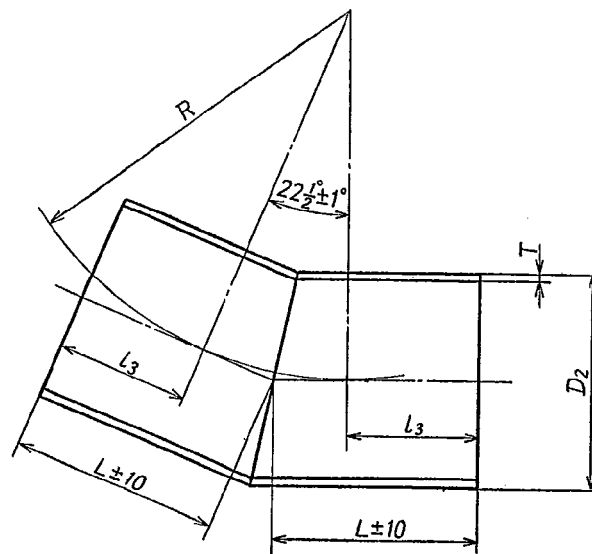


Unit: mm

Nominal dia. A	Outside dia. D ₂	F 150		F 250		F 300		Dimensions of individual portions					Reference			
		Thick- ness T	Inside dia.	Thick- ness T	Inside dia.	Thick- ness T	Inside dia.	R	l ₁	l ₂	l ₃	L	Length of center line of pipe	Mass. (kg)		
														F 150	F 250	F 300
80	89.1	4.2	80.7	—	—	4.5	80.1	230	231.6	123.2	170	400	709.6	6.24	—	6.66
100	114.3	4.5	105.3	—	—	4.9	104.5	230	231.6	123.2	170	400	709.6	8.66	—	9.37
125	139.8	4.5	130.8	—	—	5.1	129.6	230	231.6	123.2	170	400	709.6	10.6	—	12.0
150	165.2	5.0	155.2	—	—	5.5	154.2	250	267.0	134.0	200	450	802.0	15.9	—	17.4
200	216.3	5.8	204.7	—	—	6.4	203.5	310	273.1	166.2	190	500	878.6	26.4	—	29.1
250	267.4	6.6	254.2	—	—	6.4	254.6	380	286.5	193.0	190	550	959.0	40.7	—	39.5
300	318.5	6.9	304.7	—	—	6.4	305.7	410	299.9	219.8	190	600	1 039.4	55.1	—	51.2
350	355.6	—	—	—	—	6.0	343.6	460	263.3	246.6	140	600	1 019.8	—	—	52.7
400	406.4	—	—	—	—	6.0	394.4	510	276.7	273.4	140	650	1 100.2	—	—	65.1
450	457.2	—	—	—	—	6.0	445.2	530	312.0	284.0	170	700	1 192.0	—	—	79.6
500	508.0	—	—	—	—	6.0	496.0	560	290.1	300.2	140	700	1 180.6	—	—	87.7
600	609.6	—	—	—	—	6.0	597.6	660	366.8	353.6	190	850	1 440.8	—	—	129
700	711.2	—	—	6.0	699.2	7.0	697.2	790	371.7	423.4	160	950	1 590.2	—	165	194
800	812.8	—	—	7.0	798.8	8.0	796.8	790	371.7	423.4	160	950	1 590.2	—	221	253
900	914.4	—	—	7.0	900.4	8.0	898.4	860	420.4	460.8	190	1 050	1 762.4	—	277	316
1 000	1 016.0	—	—	8.0	1 000.0	9.0	998.0	910	433.8	487.6	190	1 100	1 842.8	—	367	411
1 100	1 117.6	—	—	8.0	1 101.6	10.0	1 097.6	910	433.8	487.6	190	1 100	1 842.8	—	404	503
1 200	1 219.2	—	—	9.0	1 201.2	11.0	1 197.2	970	439.9	519.8	180	1 150	1 919.4	—	516	630
1 350	1 371.6	—	—	10.0	1 351.6	12.0	1 347.6	1 020	453.3	546.6	180	1 200	1 999.8	—	672	804
1 500	1 524.0	—	—	11.0	1 502.0	14.0	1 496.0	1 070	466.7	573.4	180	1 250	2 080.2	—	853	1 080
1 600	1 625.6	—	—	12.0	1 601.6	15.0	1 595.6	1 200	471.5	643.1	150	1 350	2 229.2	—	1 060	1 330
1 650	1 676.4	—	—	12.0	1 652.4	15.0	1 646.4	1 250	484.9	669.9	150	1 400	2 309.6	—	1 140	1 420
1 800	1 828.8	—	—	13.0	1 802.8	16.0	1 796.8	1 300	498.3	696.7	150	1 450	2 390.0	—	1 390	1 710
1 900	1 930.4	—	—	14.0	1 902.4	17.0	1 896.4	1 350	511.7	723.5	150	1 500	2 470.4	—	1 640	1 980
2 000	2 032.0	—	—	15.0	2 002.0	18.0	1 996.0	1 400	525.1	750.3	150	1 550	2 550.8	—	1 900	2 280
2 100	2 133.6	—	—	16.0	2 101.6	19.0	2 095.6	1 450	538.5	777.1	150	1 600	2 631.2	—	2 200	2 610
2 200	2 235.2	—	—	16.0	2 203.2	20.0	2 195.2	1 500	551.9	803.8	150	1 650	2 711.4	—	2 380	2 960
2 300	2 336.8	—	—	17.0	2 302.8	21.0	2 294.8	1 550	565.3	830.6	150	1 700	2 791.8	—	2 720	3 350
2 400	2 438.4	—	—	18.0	2 402.4	22.0	2 394.4	1 600	578.7	857.4	150	1 750	2 872.2	—	3 080	3 770
2 500	2 540.0	—	—	18.0	2 504.0	23.0	2 494.0	1 650	592.1	884.2	150	1 800	2 952.6	—	3 300	4 220
2 600	2 641.6	—	—	19.0	2 603.6	24.0	2 593.6	1 700	605.5	911.0	150	1 850	3 033.0	—	3 730	4 700
2 700	2 743.2	—	—	20.0	2 703.2	25.0	2 693.2	1 750	618.9	937.8	150	1 900	3 113.4	—	4 180	5 220
2 800	2 844.8	—	—	21.0	2 802.8	26.0	2 792.8	1 800	632.3	964.6	150	1 950	3 193.8	—	4 670	5 770
2 900	2 946.9	—	—	21.0	2 904.9	27.0	2 892.9	1 850	645.7	991.4	150	2 000	3 274.2	—	4 960	6 360
3 000	3 048.0	—	—	22.0	3 004.0	29.0	2 990.0	1 900	659.1	1 018.2	150	2 050	3 354.6	—	5 510	7 240

Attached Fig. 3. $22 \frac{1}{2}^\circ$ Bend

Unit: mm

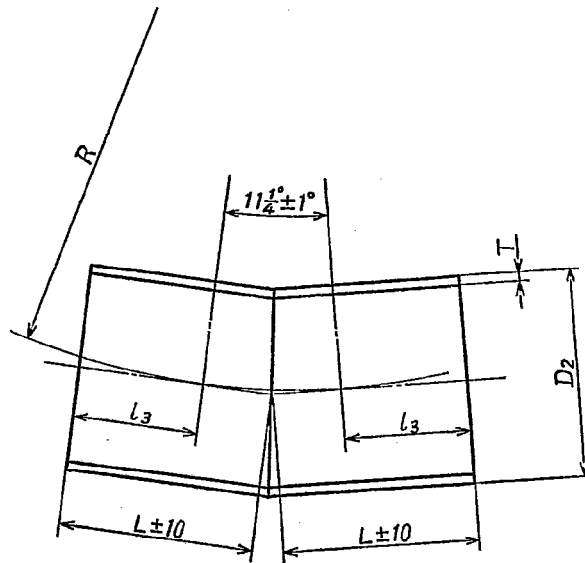


Unit: mm

Nominal dia. A	Outside dia. D ₂	F 150		F 250		F 300		Dimensions of Individual portions			Reference			
		Thick- ness T	Inside dia.	Thick- ness T	Inside dia.	Thick- ness T	Inside dia.	R	l ₃	L	Length of center line of pipe	Mass (kg)		
												F 150	F 250	F 300
80	89.1	4.2	80.7	—	—	4.5	80.1	380	124.4	200	400	3.52	—	3.76
100	114.3	4.5	105.3	—	—	4.9	104.5	380	124.4	200	400	4.88	—	5.28
125	139.8	4.5	130.8	—	—	5.1	129.6	380	124.4	200	400	6.00	—	6.76
150	165.2	5.0	155.2	—	—	5.5	154.2	380	124.4	200	400	7.92	—	8.68
200	216.3	5.8	204.7	—	—	6.4	203.5	510	148.6	250	500	15.1	—	16.5
250	267.4	6.6	254.2	—	—	6.4	254.6	510	148.6	250	500	21.2	—	20.6
300	318.5	6.9	304.7	—	—	6.4	305.7	640	122.7	250	500	26.5	—	24.6
350	355.6	—	—	—	—	6.0	343.6	640	372.7	500	1 000	—	—	51.7
400	406.4	—	—	—	—	6.0	394.4	770	346.8	500	1 000	—	—	59.2
450	457.2	—	—	—	—	6.0	445.2	770	346.8	500	1 000	—	—	66.8
500	508.0	—	—	—	—	6.0	496.0	890	323.0	500	1 000	—	—	74.3
600	609.6	—	—	—	—	6.0	597.6	1 020	547.1	750	1 500	—	—	134
700	711.2	—	—	6.0	699.2	7.0	697.2	1 150	521.3	750	1 500	—	156	183
800	812.8	—	—	7.0	798.8	8.0	796.8	1 150	771.3	1 000	2 000	—	278	318
900	914.4	—	—	7.0	900.4	8.0	898.4	1 280	745.4	1 000	2 000	—	314	358
1 000	1 016.0	—	—	8.0	1 000.0	9.0	998.0	1 410	719.5	1 000	2 000	—	398	446
1 100	1 117.6	—	—	8.0	1 101.6	10.0	1 097.6	1 410	719.5	1 000	2 000	—	438	546
1 200	1 219.2	—	—	9.0	1 201.2	11.0	1 197.2	1 410	719.5	1 000	2 000	—	538	656
1 350	1 371.6	—	—	10.0	1 351.6	12.0	1 347.6	1 530	695.7	1 000	2 000	—	672	804
1 500	1 524.0	—	—	11.0	1 502.0	14.0	1 496.0	1 530	695.7	1 000	2 000	—	820	1 040
1 600	1 625.6	—	—	12.0	1 601.6	15.0	1 595.6	1 750	651.9	1 000	2 000	—	954	1 190
1 650	1 676.4	—	—	12.0	1 652.4	15.0	1 646.4	1 750	651.9	1 000	2 000	—	986	1 230
1 800	1 828.8	—	—	13.0	1 802.8	16.0	1 796.8	1 750	651.9	1 000	2 000	—	1 160	1 430
1 900	1 930.4	—	—	14.0	1 902.4	17.0	1 896.4	1 750	651.9	1 000	2 000	—	1 320	1 600
2 000	2 032.0	—	—	15.0	2 002.0	18.0	1 996.0	1 750	651.9	1 000	2 000	—	1 490	1 790
2 100	2 133.6	—	—	16.0	2 101.6	19.0	2 095.6	1 950	612.1	1 000	2 000	—	1 670	1 980
2 200	2 235.2	—	—	16.0	2 203.2	20.0	2 195.2	1 950	612.1	1 000	2 000	—	1 750	2 190
2 300	2 336.8	—	—	17.0	2 302.8	21.0	2 294.8	1 950	612.1	1 000	2 000	—	1 950	2 400
2 400	2 438.4	—	—	18.0	2 402.4	22.0	2 394.4	1 950	612.1	1 000	2 000	—	2 150	2 620
2 500	2 540.0	—	—	18.0	2 504.0	23.0	2 494.0	1 950	612.1	1 000	2 000	—	2 240	2 860
2 600	2 641.6	—	—	19.0	2 603.6	24.0	2 593.6	2 150	572.3	1 000	2 000	—	2 460	3 100
2 700	2 743.2	—	—	20.0	2 703.2	25.0	2 693.2	2 150	572.3	1 000	2 000	—	2 690	3 350
2 800	2 844.8	—	—	21.0	2 802.8	26.0	2 792.8	2 150	572.3	1 000	2 000	—	2 920	3 610
2 900	2 946.9	—	—	21.0	2 904.9	27.0	2 892.8	2 150	572.3	1 000	2 000	—	3 030	3 890
3 000	3 048.0	—	—	22.0	3 004.0	29.0	2 990.0	2 150	572.3	1 000	2 000	—	3 280	4 320

Attached Fig. 4. 11 $\frac{1}{4}$ ° Bend

Unit: mm

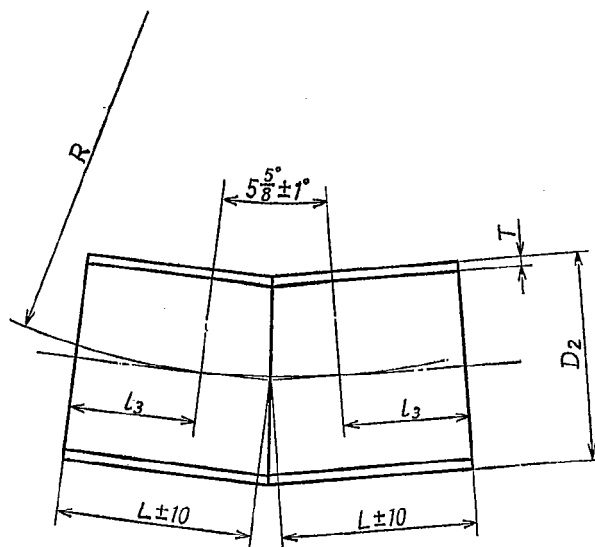


Unit: mm

Nominal dia. A	Outside dia. D ₂	F 150		F 250		F 300		Dimensions of Individual portions			Reference			
		Thick- ness T	Inside dia.	Thick- ness T	Inside dia.	Thick- ness T	Inside dia.	R	l ₃	L	Length of center line of pipe	Mass (kg)		
												F 150	F 250	F 300
80	89.1	4.2	80.7	—	—	4.5	80.1	770	124.2	200	400	3.52	—	3.76
100	114.3	4.5	105.3	—	—	4.9	104.5	770	124.2	200	400	4.88	—	5.28
125	139.8	4.5	130.8	—	—	5.1	129.6	770	124.2	200	400	6.00	—	6.76
150	165.2	5.0	155.2	—	—	5.5	154.2	770	124.2	200	400	7.92	—	8.68
200	216.3	5.8	204.7	—	—	6.4	203.5	1 030	148.6	250	500	15.1	—	16.5
250	267.4	6.6	254.2	—	—	6.4	254.6	1 030	148.6	250	500	21.2	—	20.6
300	318.5	6.9	304.7	—	—	6.4	305.7	1 290	122.9	250	500	26.5	—	24.6
350	355.6	—	—	—	—	6.0	343.6	1 290	372.9	500	1 000	—	—	51.7
400	406.4	—	—	—	—	6.0	394.4	1 550	347.3	500	1 000	—	—	59.2
450	457.2	—	—	—	—	6.0	445.2	1 550	347.3	500	1 000	—	—	66.8
500	508.0	—	—	—	—	6.0	496.0	1 810	321.7	500	1 000	—	—	74.3
600	609.6	—	—	—	—	6.0	597.6	2 060	547.1	750	1 500	—	—	134
700	711.2	—	—	6.0	699.2	7.0	697.2	2 320	521.5	750	1 500	—	156	183
800	812.8	—	—	7.0	798.8	8.0	796.8	2 320	771.5	1 000	2 000	—	278	318
900	914.4	—	—	7.0	900.4	8.0	898.4	2 580	745.9	1 000	2 000	—	314	358
1 000	1 016.0	—	—	8.0	1 000.0	9.0	998.0	2 840	720.3	1 000	2 000	—	398	446
1 100	1 117.6	—	—	8.0	1 101.6	10.0	1 097.6	2 840	720.3	1 000	2 000	—	438	546
1 200	1 219.2	—	—	9.0	1 201.2	11.0	1 197.2	2 840	720.3	1 000	2 000	—	538	656
1 350	1 371.6	—	—	10.0	1 351.6	12.0	1 347.6	3 100	694.7	1 000	2 000	—	672	804
1 500	1 524.0	—	—	11.0	1 502.0	14.0	1 496.0	3 100	694.7	1 000	2 000	—	820	1 040
1 600	1 625.6	—	—	12.0	1 601.6	15.0	1 595.6	3 530	652.3	1 000	2 000	—	954	1 190
1 650	1 676.4	—	—	12.0	1 652.4	15.0	1 646.4	3 530	652.3	1 000	2 000	—	986	1 230
1 800	1 828.8	—	—	13.0	1 802.8	16.0	1 796.8	3 530	652.3	1 000	2 000	—	1 160	1 430
1 900	1 930.4	—	—	14.0	1 902.4	17.0	1 896.4	3 530	652.3	1 000	2 000	—	1 320	1 600
2 000	2 032.0	—	—	15.0	2 002.0	18.0	1 996.0	3 530	652.3	1 000	2 000	—	1 490	1 790
2 100	2 133.6	—	—	16.0	2 101.6	19.0	2 095.6	3 950	611.0	1 000	2 000	—	1 670	1 980
2 200	2 235.2	—	—	16.0	2 203.2	20.0	2 195.2	3 950	611.0	1 000	2 000	—	1 750	2 190
2 300	2 336.8	—	—	17.0	2 302.8	21.0	2 294.8	3 950	611.0	1 000	2 000	—	1 950	2 400
2 400	2 438.4	—	—	18.0	2 402.4	22.0	2 394.4	3 950	611.0	1 000	2 000	—	2 150	2 620
2 500	2 540.0	—	—	18.0	2 504.0	23.0	2 494.0	3 950	611.0	1 000	2 000	—	2 240	2 860
2 600	2 641.6	—	—	19.0	2 603.6	24.0	2 593.6	4 400	566.6	1 000	2 000	—	2 460	3 100
2 700	2 743.2	—	—	20.0	2 703.2	25.0	2 693.2	4 400	566.6	1 000	2 000	—	2 690	3 350
2 800	2 844.8	—	—	21.0	2 802.8	26.0	2 792.8	4 400	566.6	1 000	2 000	—	2 920	3 610
2 900	2 946.9	—	—	21.0	2 904.9	27.0	2 892.8	4 400	566.6	1 000	2 000	—	3 030	3 890
3 000	3 048.0	—	—	22.0	3 004.0	29.0	2 990.0	4 400	566.6	1 000	2 000	—	3 280	4 320

Attached Fig. 5. $5\frac{5}{8}^\circ$ Bend

Unit: mm

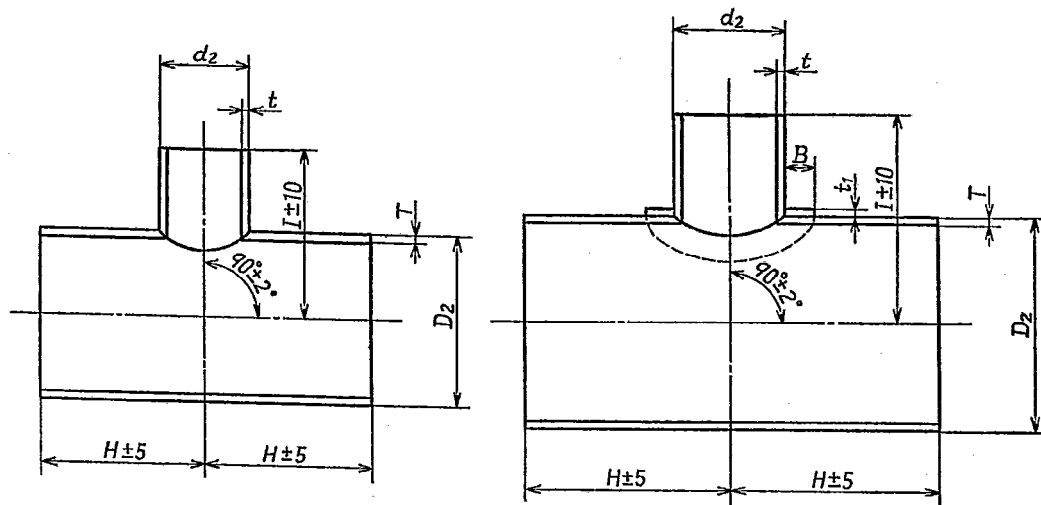


Unit: mm

Nominal dia. A	Outside dia. D ₂	F 150		F 250		F 300		Dimensions of individual portions			Length of center line of pipe	Reference		
		Thick- ness T	Inside dia.	Thick- ness T	Inside dia.	Thick- ness T	Inside dia.	R	l ₃	L		Mass (kg)		
												F 150	F 250	F 300
1 000	1 016.0	—	—	8.0	1 000.0	9.0	998.0	5 690	720.5	1 000	2 000	—	398	446
1 100	1 117.6	—	—	8.0	1 101.6	10.0	1 097.6	5 690	720.5	1 000	2 000	—	438	546
1 200	1 219.2	—	—	9.0	1 201.2	11.0	1 197.2	5 690	720.5	1 000	2 000	—	538	656
1 350	1 371.6	—	—	10.0	1 351.6	12.0	1 347.6	6 210	694.9	1 000	2 000	—	672	804
1 500	1 524.0	—	—	11.0	1 502.0	14.0	1 496.0	6 210	694.9	1 000	2 000	—	820	1 040
1 600	1 625.6	—	—	12.0	1 601.6	15.0	1 595.6	7 080	652.2	1 000	2 000	—	954	1 190
1 650	1 676.4	—	—	12.0	1 652.4	15.0	1 646.4	7 080	652.2	1 000	2 000	—	986	1 230
1 800	1 828.8	—	—	13.0	1 802.8	16.0	1 796.8	7 080	652.2	1 000	2 000	—	1 160	1 430
1 900	1 930.4	—	—	14.0	1 902.4	17.0	1 896.4	7 080	652.2	1 000	2 000	—	1 320	1 600
2 000	2 032.0	—	—	15.0	2 002.0	18.0	1 996.0	7 080	652.2	1 000	2 000	—	1 490	1 790
2 100	2 133.6	—	—	16.0	2 101.6	19.0	2 095.6	7 920	610.9	1 000	2 000	—	1 670	1 980
2 200	2 235.2	—	—	16.0	2 203.2	20.0	2 195.2	7 920	610.9	1 000	2 000	—	1 750	2 190
2 300	2 236.8	—	—	17.0	2 302.8	21.0	2 294.8	7 920	610.9	1 000	2 000	—	1 950	2 400
2 400	2 438.4	—	—	18.0	2 402.4	22.0	2 394.4	7 920	610.9	1 000	2 000	—	2 150	2 610
2 500	2 540.0	—	—	18.0	2 504.0	23.0	2 494.0	7 920	610.9	1 000	2 000	—	2 240	2 860
2 600	2 641.6	—	—	19.0	2 603.6	24.0	2 593.6	8 820	566.7	1 000	2 000	—	2 460	3 100
2 700	2 743.2	—	—	20.0	2 703.2	25.0	2 693.2	8 820	566.7	1 000	2 000	—	2 690	3 350
2 800	2 844.8	—	—	21.0	2 802.8	26.0	2 792.8	8 820	566.7	1 000	2 000	—	2 920	3 610
2 900	2 946.9	—	—	21.0	2 904.9	27.0	2 892.9	8 820	566.7	1 000	2 000	—	3 030	3 890
3 000	3 048.0	—	—	22.0	3 004.0	29.0	2 990.0	8 820	566.7	1 000	2 000	—	3 280	4 320

Attached Fig. 6. Tee F 125

Unit: mm



Unit: mm

Nominal dia. A	Outside dia.		Thickness		Reinforcing plate		Pipe length		Reference
	D_2	d_2	T	t	t_1	B	H	I	Mass (kg)
80×80	89.1	89.1	4.2	4.2	—	—	250	250	6.18
100×80	114.3	89.1	4.5	4.2	—	—	250	250	7.73
100×100	114.3	114.3	4.5	4.5	—	—	250	250	8.35
125×80	139.8	89.1	4.5	4.2	—	—	250	250	9.00
125×100	139.8	114.3	4.5	4.5	—	—	250	250	9.56
125×125	139.8	139.8	4.5	4.5	—	—	250	250	10.0
150×80	165.2	89.1	5.0	4.2	—	—	300	300	13.7
150×100	165.2	114.3	5.0	4.5	—	—	300	300	14.3
150×125	165.2	139.8	5.0	4.5	—	—	300	300	14.8
150×150	165.2	165.2	5.0	5.0	—	—	300	300	15.8
200×100	216.3	114.3	5.8	4.5	—	—	350	350	23.8
200×125	216.3	139.8	5.8	4.5	—	—	350	350	24.2
200×150	216.3	165.2	5.8	5.0	—	—	350	350	25.3
200×200	216.3	216.3	5.8	5.8	—	—	350	350	27.6
250×100	267.4	114.3	6.6	4.5	—	—	400	400	36.9
250×125	267.4	139.8	6.6	4.5	—	—	400	400	37.4
250×150	267.4	165.2	6.6	5.0	—	—	400	400	38.4
250×200	267.4	216.3	6.6	5.8	—	—	400	400	40.8
250×250	267.4	267.4	6.6	6.6	—	—	400	400	43.9
300×100	318.5	114.3	6.9	4.5	—	—	400	400	44.9
300×125	318.5	139.8	6.9	4.5	—	—	400	400	45.4
300×150	318.5	165.2	6.9	5.0	—	—	400	400	46.3
300×200	318.5	216.3	6.9	5.8	—	—	400	400	48.4
300×250	318.5	267.4	6.9	6.6	—	—	400	400	50.9
300×300	318.5	318.5	6.9	6.9	—	—	400	400	53.1
350×150	355.6	165.2	6.0	5.0	—	—	500	500	57.5
350×200	355.6	216.3	6.0	5.8	—	—	500	500	60.4
350×250	355.6	267.4	6.0	6.6	—	—	500	500	64.1
350×300	355.6	318.5	6.0	6.9	—	—	500	500	67.3
350×350	355.6	355.6	6.0	6.0	—	—	500	500	66.1
400×150	406.4	165.2	6.0	5.0	—	—	500	500	64.4
400×200	406.4	216.3	6.0	5.8	—	—	500	500	67.1
400×250	406.4	267.4	6.0	6.6	—	—	500	500	70.4
400×300	406.4	318.5	6.0	6.9	—	—	500	500	73.1
400×350	406.4	355.6	6.0	6.0	—	—	500	500	71.9
400×400	406.4	406.4	6.0	6.0	—	—	500	500	73.7

Remark: F 200, F 250 and F 300 shall be in accordance with JIS B 2312 and JIS B 2313 or the beam stiffening system or the like.

Attached Fig. 6 (Continued) F 125

Unit: mm

Nominal dia. A	Outside dia.		Thickness		Reinforcing plate		Pipe length		Reference
	D_2	d_2	T	t	t_1	B	H	I	Mass (kg)
450× 150	457.2	165.2	6.0	5.0	—	—	500	500	71.5
450× 200	457.2	216.3	6.0	5.8	—	—	500	500	73.8
450× 250	457.2	267.4	6.0	6.6	—	—	500	500	76.7
450× 300	457.2	318.5	6.0	6.9	—	—	500	500	79.2
450× 350	457.2	355.6	6.0	6.0	—	—	500	500	78.0
450× 400	457.2	406.4	6.0	6.0	—	—	500	500	79.5
450× 450	457.2	457.2	6.0	6.0	—	—	500	500	81.0
500× 200	508.0	216.3	6.0	5.8	—	—	500	500	80.5
500× 250	508.0	267.4	6.0	6.6	—	—	500	500	83.1
500× 300	508.0	318.5	6.0	6.9	—	—	500	500	85.1
500× 350	508.0	355.6	6.0	6.0	—	—	500	500	84.1
500× 400	508.0	406.4	6.0	6.0	—	—	500	500	85.2
500× 450	508.0	457.2	6.0	6.0	—	—	500	500	86.3
500× 500	508.0	508.0	6.0	6.0	—	—	500	500	87.5
600× 200	609.6	216.3	6.0	5.8	—	—	750	500	138
600× 250	609.6	267.4	6.0	6.6	—	—	750	500	140
600× 300	609.6	318.5	6.0	6.9	—	—	750	500	142
600× 350	609.6	355.6	6.0	6.0	—	—	750	500	141
600× 400	609.6	406.4	6.0	6.0	—	—	750	500	141
600× 450	609.6	457.2	6.0	6.0	—	—	750	500	143
600× 500	609.6	508.0	6.0	6.0	—	—	750	500	142
600× 600	609.6	609.6	6.0	6.0	—	—	750	500	144
700× 250	711.2	267.4	7.0	6.6	—	—	750	600	191
700× 300	711.2	318.5	7.0	6.9	—	—	750	600	193
700× 350	711.2	355.6	7.0	6.0	—	—	750	600	191
700× 400	711.2	406.4	7.0	6.0	—	—	750	600	193
700× 450	711.2	457.2	7.0	6.0	—	—	750	600	192
700× 500	711.2	508.0	7.0	6.0	—	—	750	600	193
700× 600	711.2	609.6	7.0	6.0	—	—	750	600	194
700× 700	711.2	711.2	7.0	7.0	—	—	750	600	201
800× 300	812.8	318.5	8.0	6.9	—	—	1 000	700	330
800× 350	812.8	355.6	8.0	6.0	—	—	1 000	700	329
800× 400	812.8	406.4	8.0	6.0	—	—	1 000	700	329
800× 450	812.8	457.2	8.0	6.0	—	—	1 000	700	329
800× 500	812.8	508.0	8.0	6.0	—	—	1 000	700	330
800× 600	812.8	609.6	8.0	6.0	—	—	1 000	700	330
800× 700	812.8	711.2	8.0	7.0	—	—	1 000	700	337
800× 800	812.8	812.8	8.0	8.0	—	—	1 000	700	348
900× 300	914.4	318.5	8.0	6.9	—	—	1 000	700	367
900× 350	914.4	355.6	8.0	6.0	—	—	1 000	700	366
900× 400	914.4	406.4	8.0	6.0	—	—	1 000	700	366
900× 450	914.4	457.2	8.0	6.0	—	—	1 000	700	365
900× 500	914.4	508.0	8.0	6.0	—	—	1 000	700	366
900× 600	914.4	609.6	8.0	6.0	—	—	1 000	700	365
900× 700	914.4	711.2	8.0	7.0	—	—	1 000	700	371
900× 800	914.4	812.8	8.0	8.0	—	—	1 000	700	377
900× 900	914.4	914.4	8.0	8.0	—	—	1 000	700	379
1 000× 350	1 016.0	355.6	9.0	6.0	—	—	1 000	800	455
1 000× 400	1 016.0	406.4	9.0	6.0	—	—	1 000	800	456
1 000× 450	1 016.0	457.2	9.0	6.0	—	—	1 000	800	456
1 000× 500	1 016.0	508.0	9.0	6.0	—	—	1 000	800	455
1 000× 600	1 016.0	609.6	9.0	6.0	—	—	1 000	800	455
1 000× 700	1 016.0	711.2	9.0	7.0	—	—	1 000	800	460
1 000× 800	1 016.0	812.8	9.0	8.0	—	—	1 000	800	467
1 000× 900	1 016.0	914.4	9.0	8.0	—	—	1 000	800	468
1 100× 400	1 117.6	406.4	10.0	6.0	—	—	1 000	800	552
1 100× 450	1 117.6	457.2	10.0	6.0	—	—	1 000	800	551
1 100× 500	1 117.6	508.0	10.0	6.0	—	—	1 000	800	550
1 100× 600	1 117.6	609.6	10.0	6.0	—	—	1 000	800	548
1 100× 700	1 117.6	711.2	10.0	7.0	—	—	1 000	800	550
1 100× 800	1 117.6	812.8	10.0	8.0	—	—	1 000	800	554
1 100× 900	1 117.6	914.4	10.0	8.0	—	—	1 000	800	551
1 100× 1 000	1 117.6	1 016.0	10.0	9.0	—	—	1 000	800	559

Attached Fig. 6 (Continued) F 125

Unit: mm

Nominal dia. A	Outside dia.		Thickness		Reinforcing plate		Pipe length		Reference
	D_2	d_2	T	t	t_1	B	H	I	Mass (kg)
1 200 × 400	1 219.2	406.4	11.0	6.0	—	—	1 000	900	664
1 200 × 450	1 219.2	457.2	11.0	6.0	—	—	1 000	900	663
1 200 × 500	1 219.2	508.0	11.0	6.0	—	—	1 000	900	662
1 200 × 600	1 219.2	609.6	11.0	6.0	—	—	1 000	900	660
1 200 × 700	1 219.2	711.2	11.0	7.0	—	—	1 000	900	662
1 200 × 800	1 219.2	812.8	11.0	8.0	—	—	1 000	900	667
1 200 × 900	1 219.2	914.4	11.0	8.0	—	—	1 000	900	664
1 200 × 1 000	1 219.2	1 016.0	11.0	9.0	—	—	1 000	900	671
1 200 × 1 100	1 219.2	1 117.6	11.0	10.0	—	—	1 000	900	682
1 350 × 450	1 371.6	457.2	12.0	6.0	—	—	1 250	1 000	1 010
1 350 × 500	1 371.6	508.0	12.0	6.0	—	—	1 250	1 000	1 010
1 350 × 600	1 371.6	609.6	12.0	6.0	—	—	1 250	1 000	1 010
1 350 × 700	1 371.6	711.2	12.0	7.0	—	—	1 250	1 000	1 010
1 350 × 800	1 371.6	812.8	12.0	8.0	—	—	1 250	1 000	1 020
1 350 × 900	1 371.6	914.4	12.0	8.0	—	—	1 250	1 000	1 010
1 350 × 1 000	1 371.6	1 016.0	12.0	9.0	—	—	1 250	1 000	1 020
1 350 × 1 100	1 371.6	1 117.6	12.0	10.0	—	—	1 250	1 000	1 030
1 350 × 1 200	1 371.6	1 219.2	12.0	11.0	—	—	1 250	1 000	1 040
1 500 × 500	1 524.0	508.0	14.0	6.0	—	—	1 250	1 000	1 300
1 500 × 600	1 524.0	609.6	14.0	6.0	—	—	1 250	1 000	1 290
1 500 × 700	1 524.0	711.2	14.0	7.0	—	—	1 250	1 000	1 290
1 500 × 800	1 524.0	812.8	14.0	8.0	—	—	1 250	1 000	1 290
1 500 × 900	1 524.0	914.4	14.0	8.0	—	—	1 250	1 000	1 280
1 500 × 1 000	1 524.0	1 016.0	14.0	9.0	—	—	1 250	1 000	1 280
1 500 × 1 100	1 524.0	1 117.6	14.0	10.0	—	—	1 250	1 000	1 280
1 500 × 1 200	1 524.0	1 219.2	14.0	11.0	—	—	1 250	1 000	1 290
1 500 × 1 350	1 524.0	1 371.6	14.0	12.0	—	—	1 250	1 000	1 290
1 600 × 800	1 625.6	812.8	15.0	8.0	6.0	70	1 500	1 200	1 800
1 600 × 900	1 625.6	914.4	15.0	8.0	6.0	70	1 500	1 200	1 790
1 600 × 1 000	1 625.6	1 016.0	15.0	9.0	6.0	70	1 500	1 200	1 800
1 600 × 1 100	1 625.6	1 117.6	15.0	10.0	6.0	70	1 500	1 200	1 810
1 600 × 1 200	1 625.6	1 219.2	15.0	11.0	6.0	70	1 500	1 200	1 820
1 650 × 800	1 676.4	812.8	15.0	8.0	6.0	70	1 500	1 200	1 850
1 650 × 900	1 676.4	914.4	15.0	8.0	6.0	70	1 500	1 200	1 850
1 650 × 1 000	1 676.4	1 016.0	15.0	9.0	6.0	70	1 500	1 200	1 850
1 650 × 1 100	1 676.4	1 117.6	15.0	10.0	6.0	70	1 500	1 200	1 860
1 650 × 1 200	1 676.4	1 219.2	15.0	11.0	6.0	70	1 500	1 200	1 860
1 800 × 900	1 828.8	914.4	16.0	8.0	6.0	70	1 500	1 400	2 160
1 800 × 1 000	1 828.8	1 016.0	16.0	9.0	6.0	70	1 500	1 400	2 170
1 800 × 1 100	1 828.8	1 117.6	16.0	10.0	6.0	70	1 500	1 400	2 180
1 800 × 1 200	1 828.8	1 219.2	16.0	11.0	6.0	70	1 500	1 400	2 190
1 800 × 1 350	1 828.8	1 371.6	16.0	12.0	6.0	70	1 500	1 400	2 210
1 900 × 1 000	1 930.4	1 016.0	17.0	9.0	6.0	70	1 500	1 400	2 410
1 900 × 1 100	1 930.4	1 117.6	17.0	10.0	6.0	70	1 500	1 400	2 420
1 900 × 1 200	1 930.4	1 219.2	17.0	11.0	6.0	70	1 500	1 400	2 430
1 900 × 1 350	1 930.4	1 371.6	17.0	12.0	6.0	70	1 500	1 400	2 430
2 000 × 1 000	2 032.0	1 016.0	18.0	9.0	6.0	70	1 500	1 500	2 690
2 000 × 1 100	2 032.0	1 117.6	18.0	10.0	6.0	70	1 500	1 500	2 700
2 000 × 1 200	2 032.0	1 219.2	18.0	11.0	6.0	70	1 500	1 500	2 710
2 000 × 1 350	2 032.0	1 371.6	18.0	12.0	6.0	70	1 500	1 500	2 720
2 000 × 1 500	2 032.0	1 524.0	18.0	14.0	6.0	70	1 500	1 500	2 750
2 100 × 1 100	2 133.6	1 117.2	19.0	10.0	6.0	100	1 500	1 500	2 970
2 100 × 1 200	2 133.6	1 219.2	19.0	11.0	6.0	100	1 500	1 500	2 980
2 100 × 1 350	2 133.6	1 371.6	19.0	12.0	6.0	100	1 500	1 500	2 980
2 100 × 1 500	2 133.6	1 524.0	19.0	14.0	6.0	100	1 500	1 500	3 000
2 200 × 1 100	2 235.2	1 117.6	20.0	10.0	6.0	100	1 500	1 600	3 280
2 200 × 1 200	2 235.2	1 219.2	20.0	11.0	6.0	100	1 500	1 600	3 290
2 200 × 1 350	2 235.2	1 371.6	20.0	12.0	6.0	100	1 500	1 600	3 290
2 200 × 1 500	2 235.2	1 524.0	20.0	14.0	6.0	100	1 500	1 600	3 310
2 200 × 1 600	2 235.2	1 625.6	20.0	15.0	6.0	100	1 500	1 600	3 330
2 200 × 1 650	2 235.2	1 676.4	20.0	15.0	6.0	100	1 500	1 600	3 320
2 300 × 1 200	2 336.8	1 219.2	21.0	11.0	6.0	100	1 500	1 600	3 580
2 300 × 1 350	2 336.8	1 371.6	21.0	12.0	6.0	100	1 500	1 600	3 570
2 300 × 1 500	2 336.8	1 524.0	21.0	14.0	6.0	100	1 500	1 600	3 590
2 300 × 1 600	2 336.8	1 625.6	21.0	15.0	6.0	100	1 500	1 600	3 600
2 300 × 1 650	2 336.8	1 676.4	21.0	15.0	6.0	100	1 500	1 600	3 590