

Notes

- The numerical values indicating the usable range of chemical resistance and liquid pressure and temperature of our company's products listed in this catalog are given as a rough guide to help customers select our products. These values do not guarantee performance, durability, or useful life.
- Please refrain from using our company's products in conditions that deviate from the usable range described in this catalog, as this may place an unexpected load on the product.
- Even in the conditions described in this catalog, it may be necessary to take various countermeasures depending on usage conditions such as thermal expansion/contraction, external pressure, and soil pressure. Please contact our support desk for details.
- If you are thinking about using our company's products in an environment where there is a risk of personal injury or property damage, please make sure to consult with our sales office first.
- The useful life of products depends on a variety of factors. Therefore, please understand that even if you use products within the usable range described in this catalog, the useful life of products may change depending on the balance of multiple use conditions, environment, etc.
- Equipment that uses our company's products must be subject to regular inspections according to conditions of use, in order to prevent damage to the products and accidents caused by or related to the product. Consult with us regarding the period and methods of inspections.
- Please understand that this catalog may be revised without prior notice due to reasons such as product improvement, design changes, or cessation of production. For this reason, please check with us that the catalog is the latest version when selecting a product.

Scope of Warranty

The warranty period for our company's products is one year from the date of delivery. If the product is damaged during the warranty period, we will repair or replace the product at our expense. Repairs and replacements more than one year after delivery will be made at the customer's expense. However, the following cases are not covered by our warranty, and we will not pay compensation for damages caused by damage to the product or accidents caused by or related to the product.

- ① If the use conditions deviate from the usable range of the product described in this catalog.
- ② If our company's products are applied, handled, or installed by inappropriate methods not described in this catalog.
- ③ If the installation method or installation environment of the product is not recognized as normal.
- ④ If the issue is caused by fire, flood, earthquake, lightning, or some other natural disaster.



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Please note that the standards and specifications described in this catalog are subject to change without notice due to product improvement.

2023.09 Ver.1

FUJI PIPE 7000 Series

All-layer Highly Corrosion-resistant Special Laminated Pipe

FUJI PIPE 7000 SERIES
PRODUCT CATALOG



Used in various factories and other facilities

FUJI PIPE 7000 Series

All-layer Highly Corrosion-resistant Special Laminated Pipe

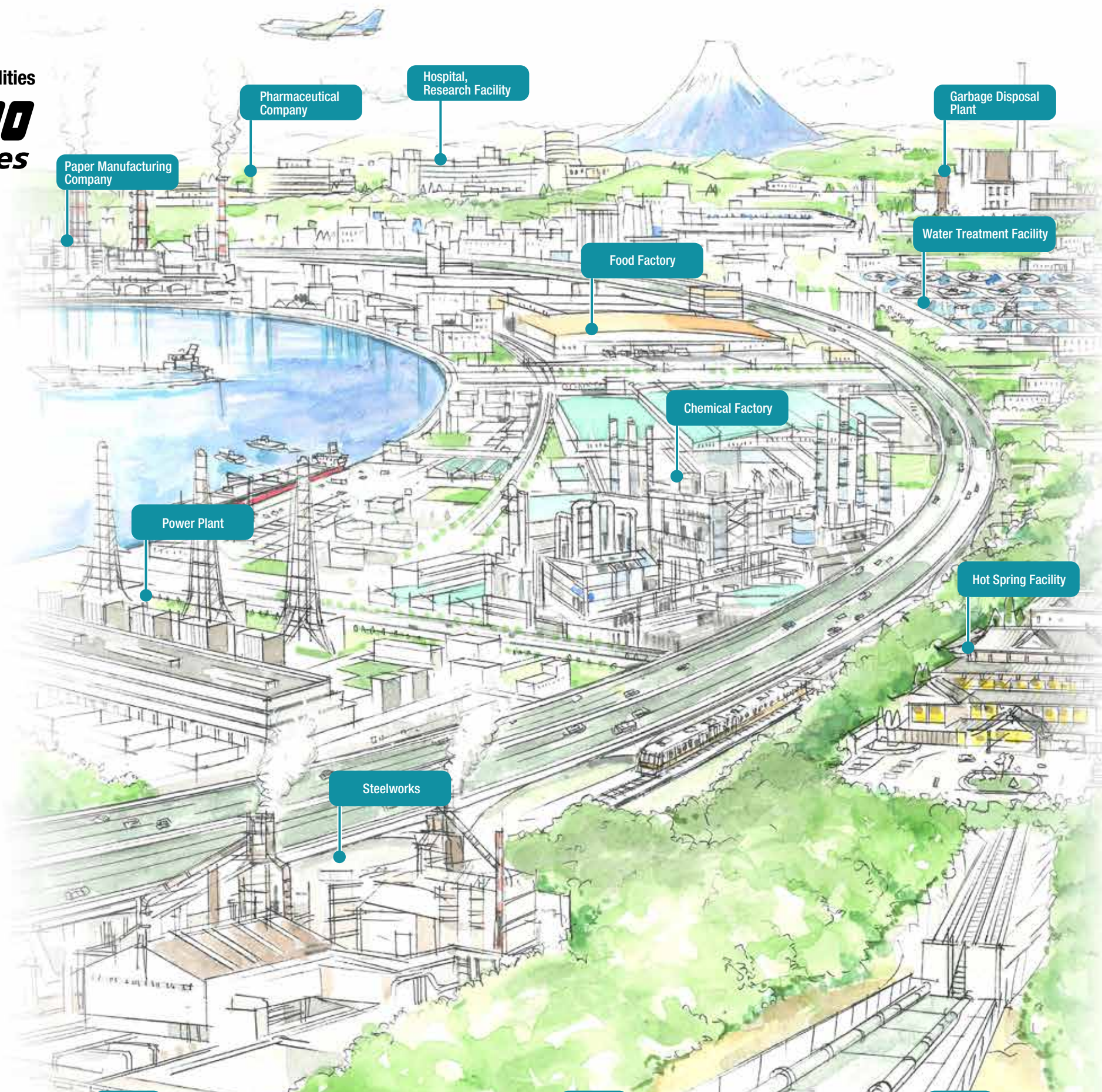
Example of use on-site



Garbage disposal plant : piping around the smoke washer



Steelworks : hydrochloric acid equipment, chemical liquid piping



Food factory : drain pipe



Chemical factory : chemical liquid piping



Hot Spring Facility : hot water pipe (with heat insulation)

7000 Series

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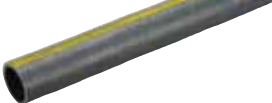
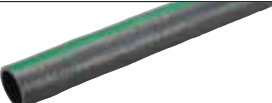
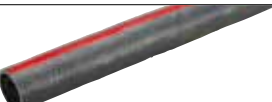
16 Required tools / Type of joining method
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19 Butt & strap joint
20 Flange joint / Curing of adhesive
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22 Repair method / Handling of products

FUJI PIPE 7000 Series

All-layer Highly Corrosion-resistant Special Laminated Pipe

The Fuji Pipe 7000 series is a glass fiber reinforced plastic (FRP) pipe that uses highly corrosion-resistant polyester resin and is reinforced with corrosion-resistant glass fiber. FRP pipes are generally made up of a corrosion-resistant layer and a reinforcing layer. The Fuji Pipe 7000 series is a **“all-layer highly corrosion-resistant special laminated pipe”** that is continuously formed with a uniform high-corrosion-resistant layer from the inner surface to the outer surface of the pipe using our unique manufacturing technology. Its main features are excellent chemical resistance and stable mechanical strength.



Type and appearance of pipe	Max Operating temperature (°C)	Max operating pressure (MPa・G)			Features
		25 - 250A _H (thick wall pipe)	150 - 300A _L (thin wall pipe)	350 - 600A _L (thin wall pipe)	
FP-7000 	100	0.784	0.490	0.392	Can be used for a wide range of chemical liquid conditions such as acids and alkalis .
FP-7100 	100	0.637	0.392	0.294	Compared to FP-7000, it is specialized in acid resistance, and is suitable for use under chemical conditions such as strong acid, organic solvent, etc., and high temperature conditions .
FP-7300 	100	0.490	0.294	0.245	Suitable for high temperature chlorine gas and hydrofluoric acid .

(Note) Please consult with us when considering to use FP-7000 at temperatures exceeding 80°C and under thermal insulation installation and buried conditions.

Physical properties

Test item	Test standard	SI unit	FP-7000		FP-7100		FP-7300	
			≤ 50A	≥ 65A	≤ 50A	≥ 65A	≤ 50A	≥ 65A
Specific gravity	JIS K 7112	—	1.3~1.45		1.3~1.45		1.3~1.45	
Tensile strength (circumference)	JIS K 7113	N/mm ²	60.8	65.7	56.9	39.2	46.1	
Tensile strength (Axial)								
Tensile elastic modulus (circumference)	JIS K 7113	N/mm ²	7,649		7,649	6,865		
Tensile elastic modulus (Axial)								
Axial bending strength	JIS K 7055	N/mm ²	98.1		88.3	88.3		
Circumference bending strength	ASTM D 2412	N/mm ²	68.6	98.1	68.6	78.5		
Bending elastic modulus	JIS K 7055	N/mm ²	6,374		6,374	5,590		
Compressive strength	In-house standard	N/mm ²	137.3		107.9	78.5		
Coefficient of thermal expansion	In-house standard	/℃	24×10 ⁻⁶		24×10 ⁻⁶	32×10 ⁻⁶		
Thermal conductivity		W/m·K	0.2		0.2	0.2		

(Note) 1. The above figures are for an operating temperature of 25°C.
2. This data shows experimental values and does not guarantee the performance.

7000 Series

Features

POINT 1

Excellent corrosion resistance

It has excellent chemical resistance and can be used as a chemical transport pipe in a wide range of temperatures. Refer to page 5 for the chemical resistance of each product type.

POINT 2

Light weight and excellent mechanical strength

	Unit	Fuji Pipe 7000	Rigid PVC pipe	High density polyethylene pipe	Stainless steel pipe	Steel pipe
Specific gravity	—	1.3~1.45	1.4	0.94~0.96	8.0	7.83
Tensile strength (circumferential)	N/mm ²	60.8~65.7	49.0~58.8	19.6~27.4	539.3	424.6
Tensile strength (axial)	N/mm ²					
Elongation at break	%	0.9~1.1	31	100~500	—	24.7
Bending strength	N/mm ²	98.0	—	—	—	—
Charpy impact value	J/cmf	3.9~4.9	—	—	—	22.5

(Note) Tensile strength (circumferential) indicates the water pressure in JISK7013.

POINT 3

Low thermal expansion

The coefficient of thermal expansion is significantly lower than that of other plastics, about 1/3 that of PVC pipes and 1/6 that of polyethylene.

	Unit	Fuji Pipe 7000	Rigid PVC pipe	High density polyethylene pipe	Stainless steel pipe	Steel pipe
Coefficient of thermal expansion	×10 ⁻⁶ /°C	24	60~80	120~130	16.7~17.3	11.7~12.6

POINT 4

Extremely light

Its specific gravity is 1/5 that of steel pipe, so it is easy to handle and transport, making it possible to reduce the labor required for construction.

POINT 5

No electrolytic corrosion

Glass fiber and polyester resin are used as raw materials, so it has excellent electrical insulation, and electrolytic corrosion will not occur.

POINT 6

Excellent weather resistance

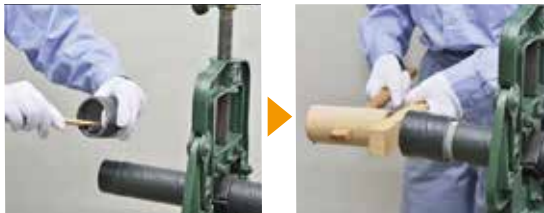
Since it has been treated for weather resistance, the material does not deteriorate due to ultraviolet light, etc., making it suitable for outdoor use.

POINT 7

Easy to install

The pipe connection method is a taper socket adhesive joint, so there is no need to do a glass tape lamination from above. Since the resin of the same material quality as the pipe is used for the bonding adhesive, it has excellent bonding reliability.

Since various joints are available, quick and reliable installation is possible.



POINT 8

Easy to repair

It can be easily repaired by laminating with glass tape and resin.



TECHNICAL DATA

Chemical resistance

Hardly affected (recommended range of use) Partially affected (can be used conditionally)

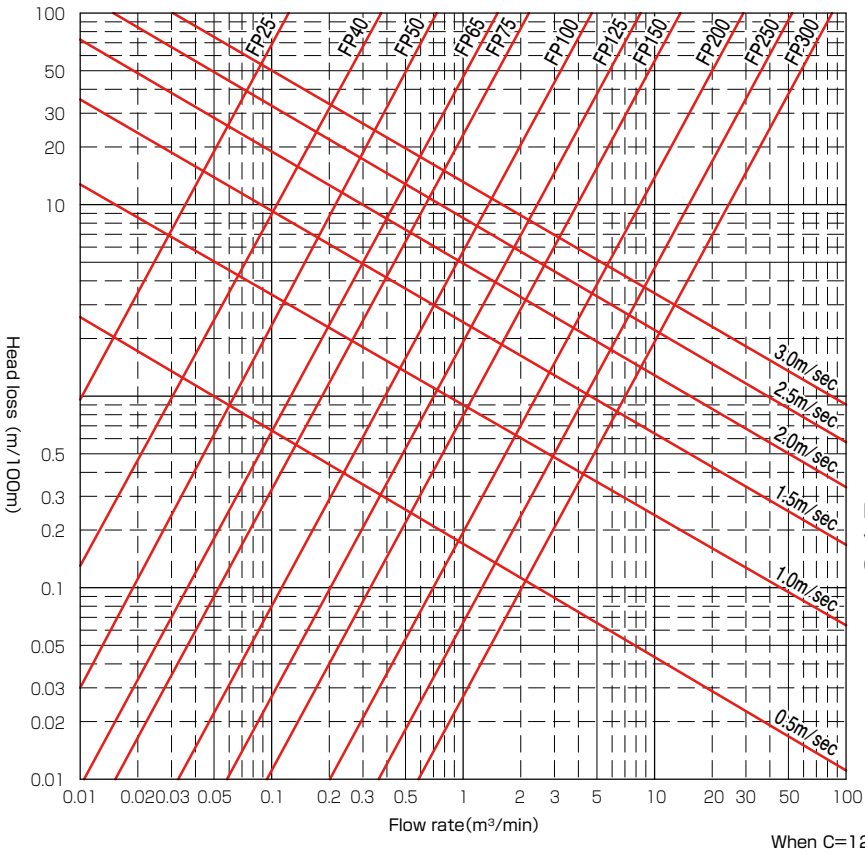
Chemical	Concentr ation (%)	Pipe type	Temperature (°C)				
			20	40	60	80	100
Acid							
Sulfuric acid	5	7000					
		7100					
		7300					
	10	7000					
		7100					
		7300					
	30	7000					
		7100					
		7300					
	50	7000					
		7100					
		7300					
Nitric acid	5	7000					
		7100					
		7300					
	10	7000					
		7100					
		7300					
	20	7000					
		7100					
		7300					
	saturation	7000					
		7100	Unusable				
		7300	Unusable				
Hydrochloric acid	5	7000					
		7100					
		7300					
	10	7000					
		7100					
		7300					
	20	7000					
		7100					
		7300					
	saturation	7000					
		7100					
		7300					
Phosphoric acid	saturation	7000					
		7100					
Acetic acid	25	7000					
		7100					
		7300					
	50	7000					
		7100					
		7300					
Chromic acid	10	7000					
		7100					
Oxalic acid	100	7000					
		7100					
Formic acid	10	7000					
		7100					
Tartaric acid	100	7000					
		7100					
Hydrofluoric acid	5	7000	Unusable				
		7100	Unusable				
		7300					
	10	7000	Unusable				
		7100	Unusable				
		7300					

Chemical	Concentr ation (%)	Pipe type	Temperature (°C)					
			20	40	60	80	100	
Alkali								
Sodium hydroxide (caustic soda)	5	7000						
		7100						
		7300	Unusable					
	10	7000						
		7100						
		7300	Unusable					
	50	7000						
		7100						
		7300	Unusable					
	Ammonia water	10	7000					
			7100					
			7300					
25		7000						
		7100						
		7300						
saturation	7000							
	7100							
	7300							
Calcium hydroxide	100	7000						
		7100						
		7300						
Gas								
Chlorine (dry / wet)	100	7000						
		7100						
		7300						
Bromine (dry / wet)	100	7000						
		7100						
		7300						
Hydrogen sulfide (dry / wet)	100	7000						
		7100						
		7300						
Hydrogen chloride (dry / wet)	100	7000						
		7100						
		7300						
Sulfur dioxide (dry / wet)	100	7000						
		7100						
		7300						
Organic chemical								
Formalin	37	7000						
		7100						
		7300						
Methyl Alcohol	50	7000						
		7100						
	100	7000	Unusable					
		7100						
Ethyl Alcohol	50	7000						
		7100						
	100	7000	Unusable					
		7100						
Glycerine	100	7000						
		7100						
		7300						
		7300						
Ethylene Glycol	100	7000						
		7100						
		7300						
		7300						
Gasoline	100	7000						
		7100						
		7300						

Chemical	Concentr ation (%)	Pipe type	Temperature (°C)				
			20	40	60	80	100
Benzene	100	7000	Unusable				
		7100					
		7300					
Toluene	100	7000	Unusable				
		7100					
		7300					
Chloroform	100	7000	Unusable				
		7100					
		7300					
Other							
Salt water	saturation	7000					
		7100					
		7300					
Sea water	—	7000					
		7100					
		7300					
Ammonium sulfate	100	7000					
		7100					
		7300					
Ammonium chloride	100	7000					
		7100					
		7300					
Aluminum sulfate	100	7000					
		7100					
		7300					
Copper sulfate	100	7000					
		7100					
		7300					
Calcium chloride	100	7000					
		7100					
		7300					
Ferrous chloride	100	7000					
		7100					
		7300					
Sodium carbonate	35	7000					
		7100					
		7300					
Ammonium carbonate	100	7000					
		7100					
		7300					
Ammonium nitrate	100	7000					
		7100					
		7300					
Silver nitrate	100	7000					
		7100					
		7300					
Sodium nitrate	100	7000					
		7100					
		7300					
Sodium sulfite	100	7000					
		7100					
		7300					
Potassium dichromate	100	7000					
		7100					
		7300					
Potassium permanganate	10	7000					
		7100					
		7300					
Hydrogen peroxide solution	30	7000					
		7100					
		7300					
Sodium hypochlorite	10	7000	Please contact us since the values vary depending on the concentration, humidity, PH, flowing state, etc.				
		7100	Please contact us since the values vary depending on the concentration, humidity, PH, flowing state, etc.				
		7300	Please contact us since the values vary depending on the concentration, humidity, PH, flowing state, etc.				

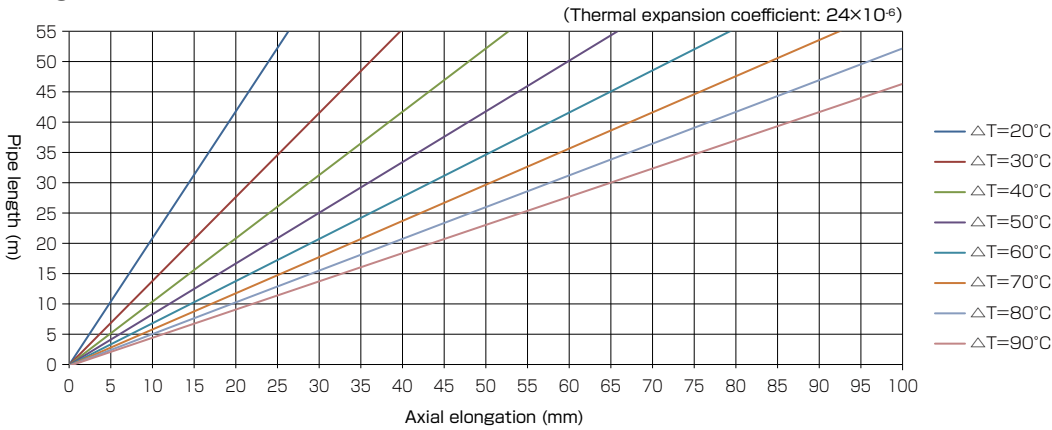
(Note) The chemical resistance in this table is based on the result of an immersion test using a test piece under no-pressure conditions, as well as our delivery record. It is displayed as a guideline for use. If you have any questions, please contact our sales office.

Head loss

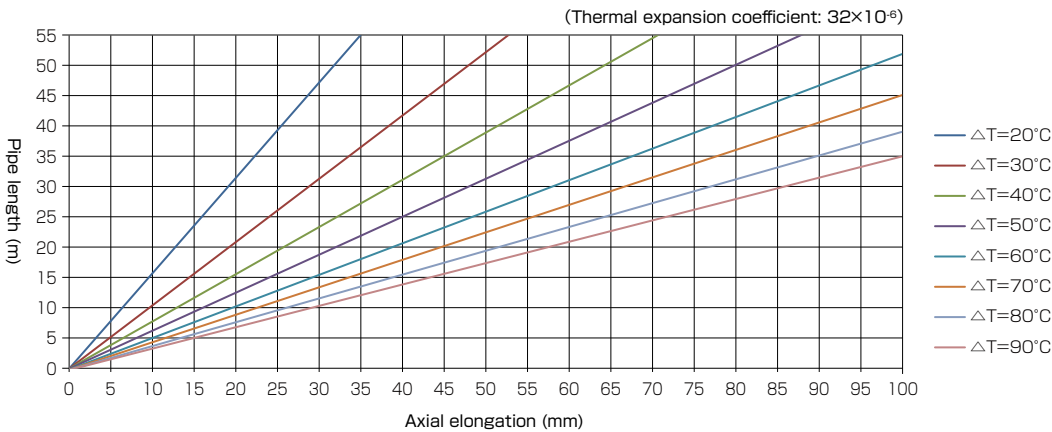


Amount of elongation

FP-7000
FP-7100

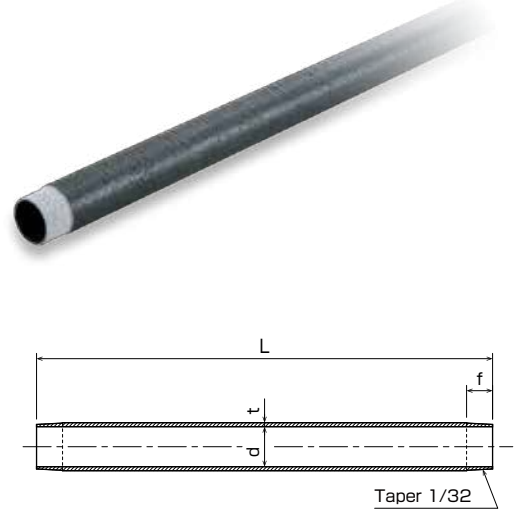


FP-7300



STANDARD

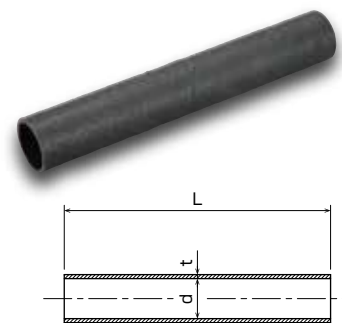
Fuji Pipe (P)



Nominal diameter	d	t		f		L	Reference weight (kg/m)		Product code	
		(H)	(L)	(H)	(L)		(H)	(L)	(H)	(L)
25	25	4.0	—	30	—	3000	0.54	—	4130001	—
40	38	4.0	—	35	—	3000	0.80	—	4130002	—
50	50	4.0	—	35	—	3000	1.00	—	4130003	—
65	65	4.0	—	40	—	3000	1.30	—	4130004	—
75	75	4.0	—	50	—	3000	1.47	—	4130005	—
100	100	5.0	—	50	—	3000	2.47	—	4130006	—
125	125	6.0	—	60	—	3000	3.70	—	4130007	—
150	150	7.0	5.0	70	60	3000	5.17	3.64	4130009	4130010
200	200	9.5	6.5	95	70	3000	9.37	6.30	4130011	4130012
250	250	12.0	7.5	120	70	3000	14.80	9.07	4130013	4130014
300	300	—	9.0	—	90	3000	—	13.1	—	4130015
350	350	—	9.5	—	100	3000	—	16.07	—	4130016
400	400	—	11.0	—	115	3000	—	21.27	—	4130017
450	450	—	12.0	—	120	3000	—	26.1	—	4130018
500	500	—	12.0	—	150	3000	—	28.94	—	4130019
600	600	—	14.0	—	150	3000	—	40.47	—	4130020

(Note) 1. The standard length is 3 m, but we can accommodate requests for 6 m for 150 to 600A.

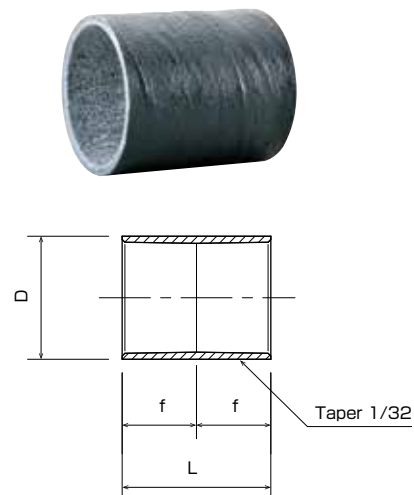
JUST pipe (short pipe) * 7000/7100 only



Nominal diameter	d	t		L	Reference weight (kg)									
		(H)	(L)		500mm		1000mm		1500mm		2000mm		2500mm	
25	25	4.0	—	See notes	0.28	—	0.55	—	0.82	—	1.10	—	1.37	—
40	38	4.0	—		0.40	—	0.79	—	1.19	—	1.58	—	1.98	—
50	50	4.0	—		0.51	—	1.02	—	1.53	—	2.04	—	2.55	—
65	65	4.0	—		0.65	—	1.30	—	1.95	—	2.60	—	3.25	—
75	75	4.0	—		0.75	—	1.49	—	2.24	—	2.98	—	3.73	—
100	100	5.0	—		1.24	—	2.48	—	3.71	—	4.95	—	6.19	—
125	125	6.0	—		1.86	—	3.71	—	5.56	—	7.41	—	9.26	—
150	150	7.0	5.0		2.59	1.83	5.18	3.65	7.77	5.48	10.36	7.30	12.95	9.13
200	200	9.5	6.5		4.69	3.17	9.38	6.33	14.06	9.49	18.75	12.65	23.44	15.81
250	250	12.0	7.5		7.41	4.55	14.81	9.10	22.21	13.65	29.62	18.20	37.02	22.75
300	300	—	9.0		—	6.55	—	13.10	—	19.65	—	26.20	—	32.75

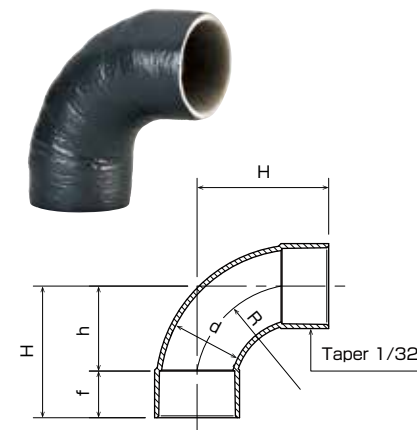
(Note) 1. Standard dimensions are 500 mm / 1000 mm / 1500 mm / 2000 mm / 2500 mm.
We can manufacture products with dimensions other than those listed above.
2. Standard specifications are plain ends (no taper) on both ends. We also respond to requests for taper on both ends and taper on one side.

Taper Socket (TS)



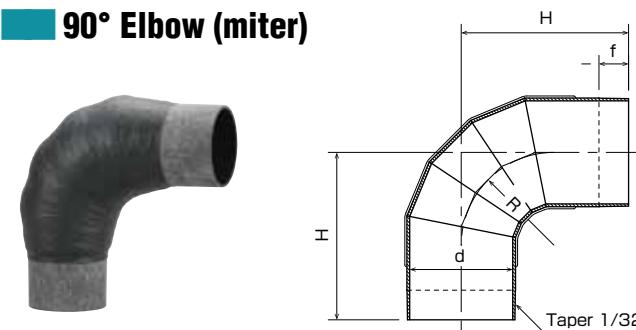
Nominal diameter	D		L		f		Reference weight (kg)		Product code	
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)
25	41	—	70	—	35	—	0.06	—	4130161	—
40	54	—	80	—	40	—	0.09	—	4130162	—
50	66	—	80	—	40	—	0.11	—	4130163	—
65	81	—	90	—	45	—	0.16	—	4130164	—
75	91	—	110	—	55	—	0.22	—	4130165	—
100	120	—	110	—	55	—	0.36	—	4130166	—
125	149	—	130	—	65	—	0.63	—	4130167	—
150	178	170	150	130	75	65	1.0	0.62	4130169	4130170
200	238	226	200	150	100	75	2.3	1.2	4130171	4130172
250	298	280	250	150	125	75	4.6	1.6	4130173	4130174
300	—	336	—	190	—	95	—	3.0	—	4130175
350	—	388	—	210	—	105	—	4.1	—	4130176
400	—	444	—	240	—	120	—	6.2	—	4130177
450	—	498	—	250	—	125	—	7.9	—	4130178
500	—	548	—	310	—	155	—	11.0	—	4130179
600	—	656	—	310	—	155	—	15.1	—	4130180

90° Elbow (smooth)



Nominal diameter	d	H		f		h	R	Reference weight (kg)		Product code	
		(H)	(L)	(H)	(L)			(H)	(L)	(H)	(L)
25	25	57	—	30	—	27	37.5	0.09	—	4130251	—
40	38	79	—	35	—	44	60.0	0.19	—	4130252	—
50	50	94	—	35	—	59	75.0	0.29	—	4130253	—
65	65	119	—	40	—	79	97.5	0.50	—	4130254	—
75	75	141	—	50	—	91	112.5	0.97	—	4130255	—
100	100	181	—	50	—	131	150.0	1.5	—	4130256	—
125	125	222	—	60	—	162	187.5	2.6	—	4130257	—
150	150	268	258	70	60	198	225.0	3.9	3.0	4130259	4130260
200	200	360	335	95	70	265	300.0	7.1	6.1	4130261	4130262
250	250	442	392	120	70	322	375.0	14.3	9.0	4130263	4130264
300	300	—	478	—	90	388	450.0	—	12.7	—	4130265

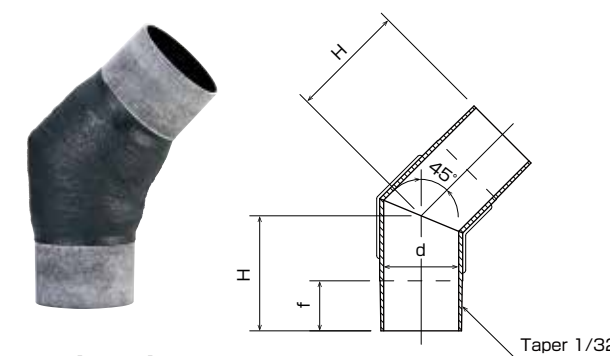
90° Elbow (miter)



Nominal diameter	d	H	R	f	Reference weight (kg)	Product code
350	350	610	315	100	30.6	4130266
400	400	650	360	115	42.9	4130267
450	450	800	405	120	62.6	4130268
500	500	910	450	150	81.1	4130269
600	600	1120	540	150	137.0	4130270

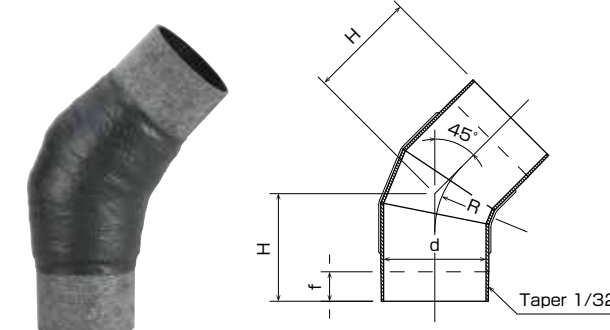
(Note) Thin wall pipe (L) only

45° Elbow (miter)



Nominal diameter	d	H	f		Reference weight (kg)		Product code	
			(H)	(L)	(H)	(L)	(H)	(L)
25	25	60	30	—	0.10	—	4130331	—
40	38	70	35	—	0.17	—	4130332	—
50	50	85	35	—	0.25	—	4130333	—
65	65	90	40	—	0.41	—	4130334	—
75	75	115	50	—	0.58	—	4130335	—
100	100	150	50	—	1.2	—	4130336	—
125	125	175	60	—	2.1	—	4130337	—
150	150	205	70	60	3.6	2.1	4130339	4130340
200	200	275	95	70	8.2	4.8	4130341	4130342
250	250	345	120	70	15.2	8.5	4130343	4130344

• Nominal diameter ≥ 300

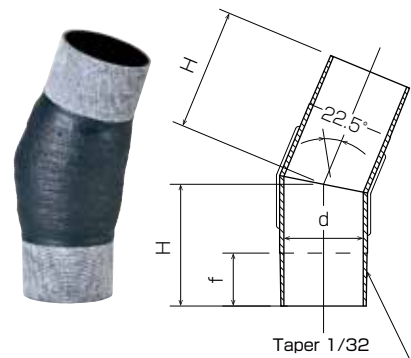


Nominal diameter	d	H	R	f	Reference weight (kg)	Product code
300	300	320	270	90	11.3	4130345
350	350	365	315	100	15.4	4130346
400	400	420	360	115	23.4	4130347
450	450	480	405	120	32.1	4130348
500	500	560	450	150	41.0	4130349
600	600	695	540	150	70.3	4130350

(Note) Thin wall pipe (L) only

STANDARD

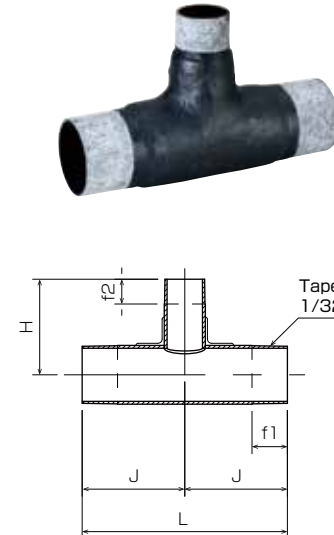
22.5° Elbow (miter)



(mm)

Nominal diameter	d	H		f		Reference weight (kg)		Product code	
		(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)
25	25	60	—	30	—	0.10	—	4130411	—
40	38	70	—	35	—	0.17	—	4130412	—
50	50	85	—	35	—	0.25	—	4130413	—
65	65	90	—	40	—	0.41	—	4130414	—
75	75	115	—	50	—	0.57	—	4130415	—
100	100	150	—	50	—	1.2	—	4130416	—
125	125	160	—	60	—	2.0	—	4130417	—
150	150	195	195	70	60	3.5	2.0	4130419	4130420
200	200	260	260	95	70	7.8	4.6	4130421	4130422
250	250	325	325	120	70	14.6	8.2	4130423	4130424
300	300	—	325	—	90	—	11.4	—	4130425
350	350	—	330	—	100	—	14.4	—	4130426
400	400	—	380	—	115	—	21.9	—	4130427
450	450	—	410	—	120	—	28.7	—	4130428
500	500	—	500	—	150	—	37.8	—	4130429
600	600	—	630	—	150	—	65.4	—	4130430

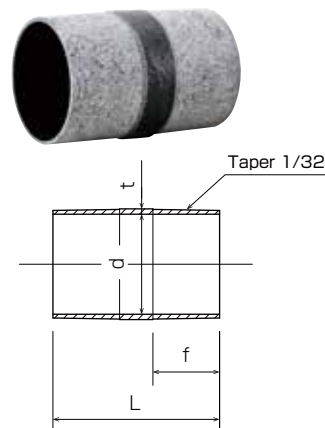
Reducing Tee (RT)



(mm)															
Nominal diameter	L		J		H		f1		f2		Reference weight (kg)		Product code		
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	
40x25	195	—	97.5	—	95	—	35	—	30	—	0.21	—	4130571	—	
50x25	200	—	100	—	115	—	35	—	30	—	0.31	—	4130572	—	
50x40	230	—	115	—	120	—	35	—	35	—	0.45	—	4130573	—	
65x25	210	—	105	—	115	—	40	—	30	—	0.39	—	4130574	—	
65x40	230	—	115	—	125	—	40	—	35	—	0.49	—	4130575	—	
65x50	245	—	122.5	—	125	—	40	—	35	—	0.71	—	4130576	—	
75x25	240	—	120	—	120	—	50	—	30	—	0.41	—	4130577	—	
75x40	270	—	135	—	130	—	50	—	35	—	0.66	—	4130578	—	
75x50	290	—	145	—	135	—	50	—	35	—	0.72	—	4130579	—	
75x65	295	—	147.5	—	145	—	50	—	40	—	0.91	—	4130580	—	
100x 25	300	—	150	—	140	—	50	—	30	—	0.82	—	4130581	—	
100x 40	310	—	155	—	145	—	50	—	35	—	0.98	—	4130582	—	
100x 50	310	—	155	—	150	—	50	—	35	—	1	—	4130583	—	
100x 65	330	—	165	—	160	—	50	—	40	—	1.3	—	4130584	—	
100x 75	345	—	172.5	—	165	—	50	—	50	—	1.6	—	4130585	—	
125x 25	310	—	155	—	145	—	60	—	30	—	1.2	—	4130586	—	
125x 40	310	—	155	—	155	—	60	—	35	—	1.3	—	4130588	—	
125x 50	330	—	165	—	155	—	60	—	35	—	1.5	—	4130590	—	
125x 65	355	—	177.5	—	160	—	60	—	40	—	1.8	—	4130592	—	
125x 75	365	—	182.5	—	180	—	60	—	50	—	2	—	4130594	—	
125x100	410	—	205	—	210	—	60	—	50	—	2.1	—	4130596	—	
150x 25	340	310	170	155	160	160	70	60	30	30	1.5	1.2	4130598	4130599	
150x 40	340	310	170	155	170	170	70	60	35	35	1.9	1.3	4130600	4130601	
150x 50	340	330	170	165	170	170	70	60	35	35	2	1.4	4130602	4130603	
150x 65	360	360	180	180	180	180	70	60	40	40	2.4	1.6	4130604	4130605	
150x 75	385	365	192.5	182.5	210	210	70	60	50	50	2.7	1.8	4130606	4130607	
150x100	410	390	205	195	210	210	70	60	50	50	3.2	2.3	4130608	4130609	
150x125	455	435	227.5	217.5	230	230	70	60	60	60	4.4	3	4130611	4130612	
200x100	460	410	230	205	240	240	95	70	50	50	5.5	3.5	4130623	4130624	
200x125	565	515	282.5	257.5	290	290	95	70	60	60	7.4	4.1	4130625	4130626	
200x150	610	540	305	270	310	310	95	70	70	60	7.9	5.5	4130627	4130628	
250x100	560	400	280	200	255	255	120	70	50	50	9.3	4.5	4130639	4130640	
250x125	615	515	307.5	257.5	315	315	120	70	60	60	11.3	6.7	4130641	4130642	
250x150	660	540	330	270	335	335	120	70	70	60	13.1	6.8	4130643	4130644	
250x200	765	610	382.5	305	385	385	120	70	95	70	13.5	13.1	4130645	4130646	
300x100	—	500	—	250	—	285	—	90	—	50	—	7.5	—	4130652	—
300x125	—	500	—	250	—	305	—	90	—	60	—	7.9	—	4130653	—
300x150	—	590	—	295	—	340	—	90	—	60	—	9.6	—	4130654	—
300x200	—	660	—	330	—	360	—	90	—	70	—	12.4	—	4130655	—
300x250	—	770	—	385	—	390	—	90	—	70	—	17.6	—	4130656	—
350x100	—	520	—	260	—	310	—	100	—	50	—	9.3	—	4130662	—
350x125	—	520	—	260	—	330	—	100	—	60	—	9.7	—	4130663	—
350x150	—	600	—	300	—	340	—	100	—	60	—	11.5	—	4130664	—
350x200	—	700	—	350	—	360	—	100	—	70	—	14.9	—	4130665	—
350x250	—	850	—	425	—	390	—	100	—	70	—	20.6	—	4130666	—
350x300	—	850	—	425	—	400	—	100	—	90	—	24.3	—	4130667	—
400x200	—	700	—	350	—	380	—	115	—	70	—	18.5	—	4130676	—
400x250	—	850	—	425	—	390	—	115	—	70	—	24.5	—	4130677	—
400x300	—	850	—	425	—	420	—	115	—	90	—	28.4	—	4130678	—
400x350	—	950	—	475	—	475	—	115	—	100	—	36.3	—	4130679	—
450x200	—	700	—	350	—	410	—	120	—	70	—	22.8	—	4130680	—
450x250	—	850	—	425	—	410	—	120	—	70	—	28.5	—	4130681	—
450x300	—	850	—	425	—	450	—	120	—	90	—	32.3	—	4130690	—
450x350	—	980	—	490	—	475	—	120	—	100	—	40.5	—	4130691	—
450x400	—	1070	—	535	—	530	—	120	—	115	—	51.2	—	4130692	—
500x250	—	850	—	425	—	440	—	150	—	70	—	30.9	—	4130702	—
500x300	—	1000	—	500	—	480	—	150	—	90	—	39.1	—	4130703	—
500x350	—	1000	—	500	—	500	—	150	—	100	—	43.6	—	4130704	—
500x400	—	1250	—	625	—	530	—	150	—	115	—	58.2	—	4130705	—
500x450	—	1250	—	625	—	565	—	150	—	120	—	63.2	—	4130706	—
600x350	—	1000	—	500	—	550	—	150	—	100	—	55	—	4130718	—
600x400	—	1250	—	625	—	590	—	150	—	115	—	72.6	—	4130719	—
600x450	—	1250	—	625	—	590	—	150	—	120	—	81.2	—	4130720	—
600x500	—	1300	—	650	—	650	—	150	—	150	—	94.2	—	4130721	—

(Note) Please contact us if you require a size other than the above.

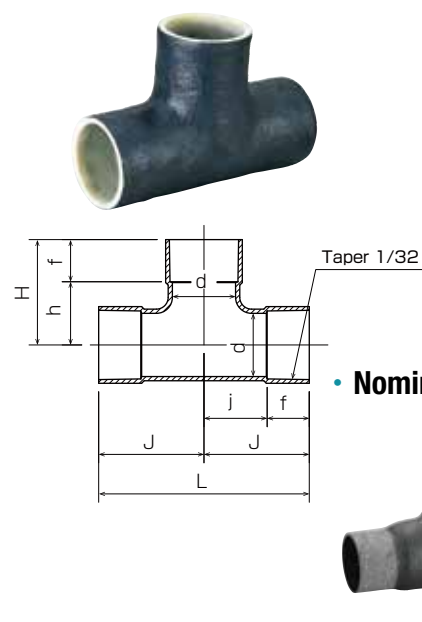
Nipple (NPL)



(mm)

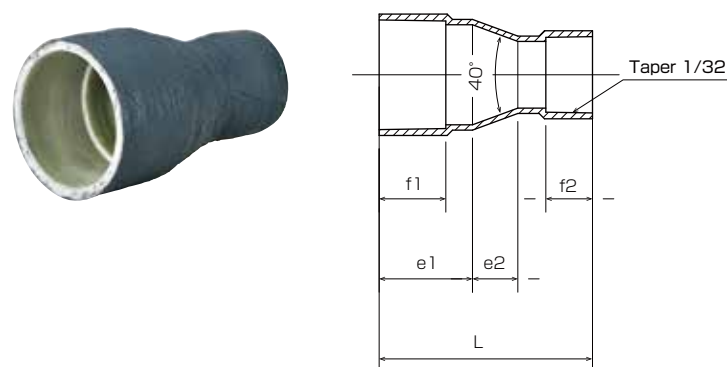
Nominal diameter	d	t		L		f		Reference weight (kg)		Product code	
		(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)
25	25	4.0	—	85	—	30	—	0.05	—	4131421	—
40	38	4.0	—	95	—	35	—	0.08	—	4131422	—
50	50	4.0	—	95	—	35	—	0.10	—	4131423	—
65	65	4.0	—	105	—	40	—	0.14	—	4131424	—
75	75	4.0	—	125	—	50	—	0.19	—	4131425	—
100	100	5.0	—	125	—	50	—	0.31	—	4131426	—
125	125	6.0	—	145	—	60	—	0.54	—	4131427	—
150	150	7.0	5.0	185	145	70	60	0.96	0.53	4131429	4131430
200	200	9.5	6.5	235	185	95	70	2.2	1.1	4131431	4131432
250	250	12.0	7.5	275	185	120	70	4.0	1.6	4131433	4131434
300	300	—	9.0	—	225	—	90	—	2.9	—	4131435
350	350	—	9.5	—	245	—	100	—	3.9	—	4131436
400	400	—	11.0	—	275	—	115	—	5.8	—	4131437
450	450	—	12.0	—	285	—	120	—	7.4	—	4131438
500	500	—	12.0	—	345	—	150	—	9.9	—	4131439
600	600	—	14.0	—	345	—	150	—	13.9	—	4131440

Tee (T)



STANDARD

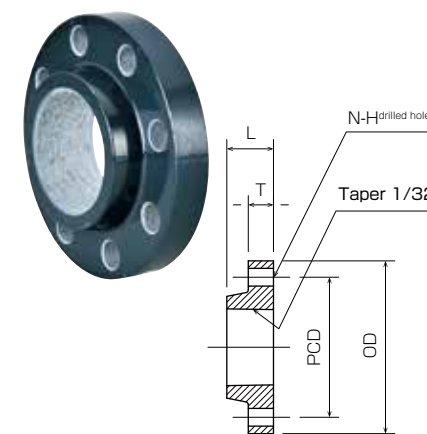
Reducer (RE)



Nominal diameter	L		e1		e2		f1		f2		Reference weight (kg)		Product code		
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	
40x25	125	—	55	—	19	—	35	—	30	—	0.18	—	4131221	—	
50x25	140	—	55	—	34	—	35	—	30	—	0.22	—	4131222	—	
50x40	125	—	55	—	17	—	35	—	35	—	0.24	—	4131223	—	
65x25	165	—	60	—	55	—	40	—	30	—	0.28	—	4131224	—	
65x40	150	—	60	—	37	—	40	—	35	—	0.3	—	4131225	—	
65x50	135	—	60	—	21	—	40	—	35	—	0.32	—	4131226	—	
75x40	175	—	70	—	51	—	50	—	35	—	0.38	—	4131227	—	
75x50	160	—	70	—	34	—	50	—	35	—	0.4	—	4131228	—	
75x65	145	—	70	—	14	—	50	—	40	—	0.42	—	4131229	—	
100x 40	210	—	70	—	85	—	50	—	35	—	0.61	—	4131230	—	
100x 50	195	—	70	—	69	—	50	—	35	—	0.63	—	4131231	—	
100x 65	180	—	70	—	48	—	50	—	40	—	0.65	—	4131232	—	
100x 75	175	—	70	—	34	—	50	—	50	—	0.68	—	4131233	—	
125x 50	240	—	80	—	103	—	60	—	35	—	1	—	4131234	—	
125x 65	220	—	80	—	82	—	60	—	40	—	1	—	4131236	—	
125x 75	220	—	80	—	69	—	60	—	50	—	1	—	4131238	—	
125x100	185	—	80	—	34	—	60	—	50	—	1.1	—	4131240	—	
150x 65	265	255	90	80	117	117	70	60	40	40	1.5	1	4131242	4131243	
150x 75	265	255	90	80	103	103	70	60	50	50	1.5	1	4131244	4131245	
150x100	230	220	90	80	69	69	70	60	50	50	1.6	1.1	4131246	4131247	
150x125	205	195	90	80	34	34	70	60	60	60	1.7	1.2	4131248	4131249	
200x100	320	295	115	90	137	137	95	70	50	50	3.4	2	4131250	4131251	
200x125	300	275	115	90	103	103	95	70	60	60	3.5	2.1	4131252	4131253	
200x150	275	250	115	90	69	69	95	70	70	60	3.7	2.1	4131254	4131255	
250x100	415	365	140	90	206	206	120	70	50	50	6.2	3	4131256	4131257	
250x125	390	340	140	90	172	172	120	70	60	60	6.2	3.1	4131258	4131259	
250x150	365	315	140	90	137	137	120	70	70	60	6.5	3	4131260	4131261	
250x200	325	275	140	90	69	69	120	70	95	70	7.4	3.3	4131262	4131263	
300x125	—	430	—	110	—	240	—	90	—	60	—	4.9	—	4131264	—
300x150	—	395	—	110	—	206	—	90	—	60	—	4.8	—	4131265	—
300x200	—	335	—	110	—	137	—	90	—	70	—	5.1	—	4131266	—
300x250	—	270	—	110	—	69	—	90	—	70	—	5.3	—	4131267	—

(Note) If you require a reducer (including eccentric reducers) other than the above, please contact us.

Socket flange (SF)

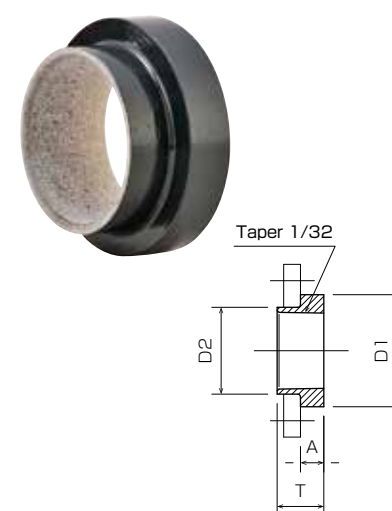


(mm)

Nominal diameter	OD	PCD	N-H	L		T		Reference weight(kg)		Product code	
				(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)
25	125	90	4-19	30	—	20	—	0.44	—	4131691	—
40	140	105	4-19	35	—	22	—	0.60	—	4131692	—
50	155	120	4-19	35	—	23	—	0.75	—	4131693	—
65	175	140	4-19	40	—	26	—	1.0	—	4131694	—
75	185	150	8-19	50	—	27	—	1.2	—	4131695	—
100	210	175	8-19	50	—	30	—	1.6	—	4131696	—
125	250	210	8-23	60	—	37	—	2.8	—	4131697	—
150	280	240	8-23	70	60	39	28	3.7	2.9	4131699	4131700
200	330	290	12-23	95	70	44	31	5.7	4.1	4131701	4131702
250	400	355	12-25	120	70	49	35	10.0	6.4	4131703	4131704
300	445	400	16-25	—	90	—	38	—	8.3	—	4131705

(Note) 1. Dimensions (OD, PCD, N-H) in the table are for JIS 10K
2. Torque value is (24.5 N-m) 2.5 Kg-m for 25 - 100A, (39.2 N-m) 4.0 Kg-m for 125A - 250A
3. Avoid contact with the RF bearing surface flange. (CR/IF) is recommended.
4. Use a rubber gasket with a JIS hardness of 55 to 70 and a thickness of 3 to 6 mm to ensure good sealing performance.
We also recommend using a gasket with a seal ring that can ensure stable sealing performance with a small tightening pressure.

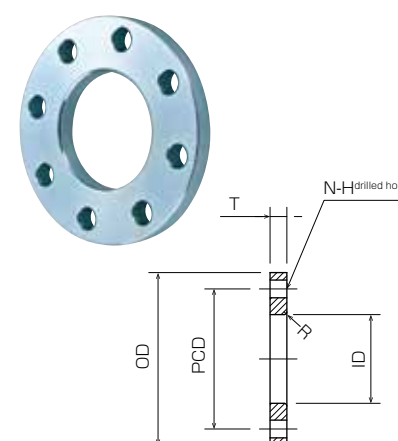
Core Ring (CR)



Nominal diameter	T		A		D1	D2	Reference weight (kg)		Product code	
	(H)	(L)	(H)	(L)			(H)	(L)	(H)	(L)
25	30	—	15	—	55	41	0.05	—	4131601	—
40	35	—	18	—	70	54	0.08	—	4131602	—
50	35	—	18	—	85	66	0.11	—	4131603	—
65	40	—	20	—	100	81	0.15	—	4131604	—
75	50	—	25	—	120	93	0.29	—	4131605	—
100	50	—	25	—	140	118	0.30	—	4131606	—
125	60	—	30	—	175	145	0.54	—	4131607	—
150	70	60	35	30	205	174	0.82	0.79	4131609	4131610
200	95	70	48	35	251	229	1.1	1.0	4131611	4131612
250	120	70	60	35	316	284	2.3	1.7	4131613	4131614
300	—	90	—	45	361	328	—	1.9	—	4131615
350	—	100	—	50	404	379	—	2.1	—	4131616
400	—	115	—	58	468	432	—	3.6	—	4131617
450	—	120	—	60	530	484	—	4.9	—	4131618
500	—	150	—	75	585	539	—	7.8	—	4131619
600	—	150	—	75	694	642	—	9.8	—	4131620

(Note) 1. The material is FRP.
2. Use a rubber gasket with a JIS hardness of 55 - 70 and a thickness of 3 - 6 mm to ensure good sealing performance.

Loose iron flange (IF)



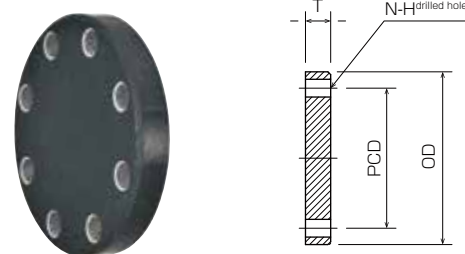
Nominal diameter	ID	OD	PCD	T	N-H	R	Reference weight (kg)	Product code	
								SS+Zn	SUS304
25	43	125	90	14	4-19	3	1.1	1170105	1170205
40	56	140	105	16	4-19	3	1.5	1170107	1170207
50	68	155	120	16	4-19	3	1.8	1170109	1170209
65	83	175	140	18	4-19	3	2.5	1170111	1170211
75	95	185	150	18	8-19	3	2.5	1170113	1170213
100	120	210	175	18	8-19	3	3	1170115	1170215
125	147	250	210	20	8-23	3	4.6	1170117	1170217
150	177	280	240	22	8-23	3	5.9	1170119	1170219
200	232	330	290	22	12-23	4	6.7	1170121	1170221
250	287	400	355	24	12-25	4	10.4	1170123	1170223
300	331	445	400	24	16-25	4	12.7	1170125	1170225
350	382	490	445	26	16-25	4	13.5	1170127	—
400	435	560	510	28	16-27	5	19.2	1170129	—
450	487	620	565	30	20-27	5	24.8	1170131	—
500	542	675	620	30	20-27	5	27.5	1170133	—
600	645	795	730	32	24-33	5	37.8	1170135	—

(Note) For core ring, the dimensions in the table (OD, PCD, N-H) are JIS10K dimension standards.

STANDARD

Blind Flange (BF)

- For socket flange

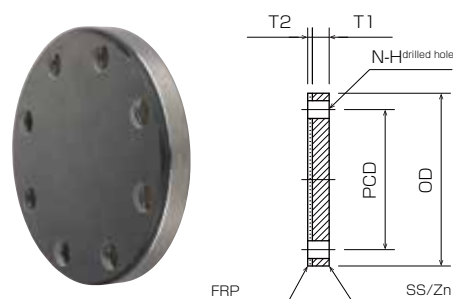


(mm)

Nominal diameter	OD	PCD	N-H	T	Reference weight (kg)	Product code
25	125	90	4-19	20	0.41	4138900
40	140	105	4-19	22	0.56	4138901
50	155	120	4-19	23	0.72	4138902
65	175	140	4-19	26	1.0	4138903
75	185	150	8-19	27	1.2	4138904
100	210	175	8-19	30	1.7	4138905
125	250	210	8-23	37	3.0	4138906
150	280	240	8-23	39	4.1	4138907
200	330	290	12-23	44	6.3	4138908
250	400	355	12-25	49	10.6	4138909
300	445	400	16-25	54	14.5	4138910

(Note) Use a rubber gasket with a JIS hardness of 55 - 70 and a thickness of 3 - 6 mm to ensure good sealing performance.

- For core ring

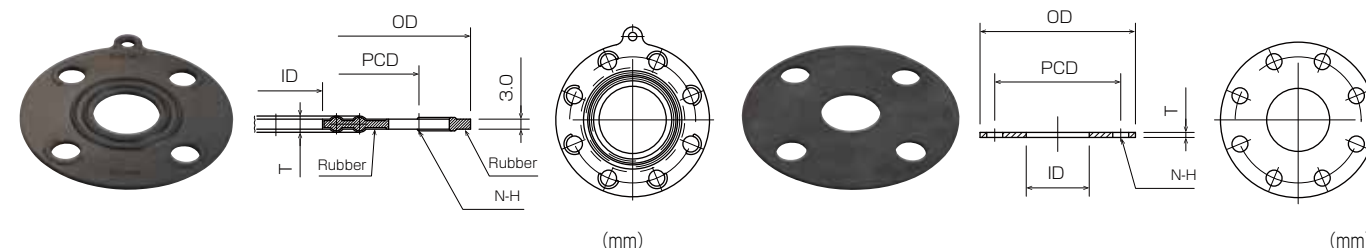


(mm)

Nominal diameter	OD	PCD	N-H	SS part Thickness T1	FRP part Thickness T2	Reference weight (kg)
25	125	90	4-19	14	5	1.25
40	140	105	4-19	16	5	1.93
50	155	120	4-19	16	5	3.45
65	175	140	4-19	18	5	3.5
75	185	150	8-19	18	5	3.71
100	210	175	8-19	18	5	4.87
125	250	210	8-23	20	5	7.7
150	280	240	8-23	22	5	10.6
200	330	290	12-23	22	5	14.7
250	400	355	12-25	24	5	23.7
300	445	400	16-25	24	5	31.9
350	490	445	16-25	26	5	38.6
400	560	510	16-27	28	5	54.4
450	620	565	20-27	30	5	71.2
500	675	620	20-27	30	5	85.0
600	795	730	24-33	32	5	124.0

(Note) 1. Use a rubber gasket with a JIS hardness of 55 - 70 and a thickness of 3 - 6 mm to ensure good sealing performance.
2. The material quality of the SS/Zn part can be changed to SUS304.

Gasket (G)



(mm)

Nominal diameter	ID	OD	PCD	T	N-H	Product code
25	30	123	90	5	4-19	1170905
40	43	138	105	5	4-19	1170907
50	54	153	120	5	4-19	1170909
65	69	173	140	5	4-19	1170911
75	80	183	150	5	8-19	1170913
100	102	208	175	5	8-19	1170915
125	127	248	210	5	8-23	1170917
150	150	278	240	5	8-23	1170919
200	198	328	290	5	12-23	1170921
250	249	398	355	5	12-25	1170923
300	300	443	400	5	16-25	1170925

(Note) 1. The gasket material is soft rubber.
2. Dimensions in the table (OD, PCD, N-H) are JIS10K dimension standards.
3. Since it is equipped with a seal, stable seal performance can be secured with small tightening pressure. It is best suited for socket flange.

(mm)

Nominal diameter	ID	OD	PCD	T	N-H	Product code
25	25	125	90	3	4-19	1170705
40	38	140	105	3	4-19	1170707
50	50	155	120	3	4-19	1170709
65	65	175	140	3	4-19	1170711
75	75	185	150	3	8-19	1170713
100	100	210	175	3	8-19	1170715
125	125	250	210	3	8-23	1170717
150	150	280	240	3	8-23	1170719
200	200	330	290	3	12-23	1170721
250	250	400	355	3	12-25	1170723
300	300	445	400	3	16-25	1170725
350	350	490	445	5	16-25	1170727
400	400	560	510	5	16-27	1170729
450	450	620	565	5	20-27	1170731
500	500	675	620	5	20-27	1170733
600	600	795	730	5	24-33	1170735

(Note) 1. Gasket material is soft rubber.
2. Dimensions in the table (OD, PCD, N-H) are JIS10K dimension standards.

Bolts, nuts (BN)



(mm)

Nominal diameter	d	Combination length (L)				Number of bolts (pcs)
		For CR		For CR+IF		
		(H)	(L)	(H)	(L)	
25	M16	90	—	75	—	4
40	M16	100	—	80	—	4
50	M16	100	—	80	—	4
65	M16	110	—	85	—	4
75	M16	120	—	90	—	8
100	M16	120	—	90	—	8
125	M20	140	—	110	—	8
150	M20	150	140	120	110	8
200	M20	180	150	130	120	12
250	M22	210	160	150	120	12
300	M22	—	180	—	130	16
350	M22	—	190	—	140	16
400	M24	—	220	—	160	16
450	M24	—	230	—	170	20
500	M24	—	260	—	180	20
600	M30	—	270	—	190	24

(mm)

Nominal diameter	d	Combination length (L)				Number of bolts (pcs)
		For SF		For SF+IF		
		(H)	(L)	(H)	(L)	
25	M16	70	—	65	—	4
40	M16	75	—	70	—	4
50	M16	75	—	70	—	4
65	M16	85	—	75	—	4
75	M16	85	—	75	—	8
100	M16	90	—	80	—	8
125	M20	110	—	90	—	8
150	M20	120	90	95	85	8
200	M20	130	100	100	90	12
250	M22	140	110	110	95	12
300	M22	—	120	—	100	16

(Note) Calculated according to the JIS10K dimension standard.

This document provides an overview of the installation process. Refer to the installation manual for details.

Adhesive bonding material

Adhesive

Set included items: Resin
Accelerator
Filler (thixotropic agent)
Catalyst (curing agent)



FBA-02 (For FP-7000)	FBA-30 (For FP-7100, 7300)
1kg set	1kg set
5kg set	5kg set
15kg set	15kg set

(Note) The resin, accelerator, filler, and catalyst can also be ordered separately.

Glass tape



Width (W) × Length (m)	Product Code
50W×150m	0157406
75W×150m	0157414
100W×150m	0157422
160W×150m	0157430

Tapering tools

Taper cutting machine

Manual taper cutting machine



Model	Nominal diameter used	Radius of gyration (mm)	*Weight (kg)	Product Code
25~50A	25-40-50	200	10	9210100
50~100A	50-65-75-100	260	18	
100~150A	100-125-150	320	37	
150~200A	150-200	440	60	
200~250A	200-250	520	65	

(Note) 25 - 50A and 50 - 100A are available for sale. Please contact us if you would like to purchase it.

Electric taper cutting machine



Model	Nominal diameter used	Dimensions (cm)	*Weight (kg)	Voltage used (V)	Product Code
50~125A	50-65-75-100-125	85×85×75	150	100	9210150
100~200A	100-125-150-200	90×90×85	190	100	
200~350A	200-250-300-350	100×100×120	280	200	
400~600A	400-450-500-600	2/110 ①110×110×150 ②95×95×110	900	200	

(Note) 1. This is the total weight of the main unit and accessories.
2. Please prepare a forklift for unloading at the time of delivery.
3. It is available for sale. Please contact us if you would like to purchase it.

Driving jig (for sale)

45°Elbow driving jig



Nominal diameter	Product Code
25	1271451
40	1271453
50	1271455
65	1271457
75	1271459
100	1271461
125	1271463
150	1271465
200	1271467
250	1271469

90°Elbow driving jig



Nominal diameter	Product Code
25	1271451
40	1271453
50	1271455
65	1271457
75	1271459
100	1271461
125	1271463
150	1271465
200	1271467
250	1271469

On-site installation tools (example)

① Cutting tools

- High speed cutting machine
- Hacksaw
- Grinder

② Tapering tools

- Manual taper cutting machine (25A - 250A) *Lease available
- Electric taper cutting machine (50A - 600A) *Lease available

③ Surface grinding tools

- File
- Sandpaper (#40 - 50)

④ Driving tools

- Wooden hammer (rubber hammer, plastic hammer)
- Lever block or chain block (≥150A)
- Driving jig
- Nylon sling

⑤ Adhesive tools

- Adhesive mixing container
- Brush for applying adhesive
- Waste cloth (cotton cloth)
- Solvent (acetone or denatured alcohol)
- Thermometer (100°C)
- Heating tools (hand heater, dryer, etc.)
- Measuring cup

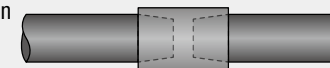
Etc.

Type of joining method

Taper adhesive joint

P17

Main materials: socket + resin
Specifications: 1/32 taper connection



① Preparation

② Cutting

③-1 Tapering

③-2 Beveling

④ Adhesive preparation

⑤ Adhesive application

⑥ Insertion

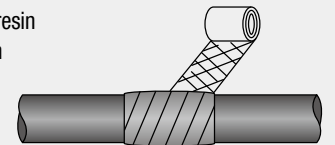
⑦ Driving

⑧ Finishing

Butt & strap joint

P19

Main materials: glass tape + resin
Specifications: FRP lamination
*For repair and line adjustment



① Preparation

② Sanding and beveling

③ Resin putty preparation

④ Resin putty application

⑤ Adhesive preparation

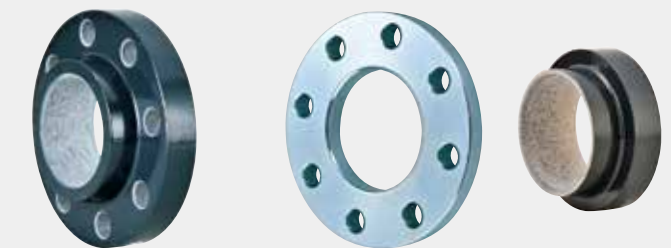
⑥ Glass tape lamination

⑦ Finishing

Flange joint

P20

Main materials: socket flange or core ring / iron flange
Specifications: Bolt and nut tightening



INSTALLATION PROCEDURE

Taper adhesive joint

Check the QR code for the video of the installation procedure.



Joining procedure

- ① Prepare jigs and tools necessary for joining.



- ② Cut the pipe to the required length using a hacksaw, high-speed cutting machine or grinder.

- ③-1. Do tapering using a lathe or taper cutting machine. For how to use the taper cutting machine, please refer to the installation manual and instruction manual.

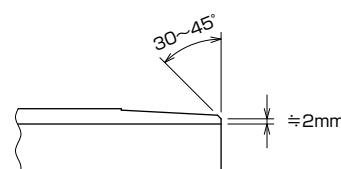


Standard driving allowance

H pipe (thick wall pipe)				L pipe (thin wall pipe)			
Nominal diameter	Taper length (mm)	Standard driving allowance (mm)		Nominal diameter	Taper length (mm)	Standard driving allowance (mm)	
		Insertion joint	Socket flange			Insertion joint	Socket flange
25	30	10 +2 -0	7 +2 -0	150	60	18 ±2	12 ±2
40	35	10 +2 -0	7 +2 -0	200	70	20 ±2	12 ±2
50	35	12 +2 -1	8 +2 -1	250	70	22 ±2	13 ±2
65	40	14 +2 -1	8 +2 -1	300	90	25 ±5	15 ±5
75	50	16 ±2	8 ±2	350	100	25 ±5	—
100	50	18 ±2	9 ±2	400	115	25 ±5	—
125	60	18 ±2	9 ±2	450	120	25 ±5	—
150	70	18 ±2	12 ±2	500	150	25 ±5	—
200	95	20 ±2	12 ±2	600	150	25 ±5	—
250	120	22 ±2	13 ±2				

(Note) If the driving allowance is wide (the taper is tight), do processing again. If the driving allowance becomes narrow (taper is loose), do not use that taper. Do taper processing again.

- ③-2. When using #7100 and #7300, use a lathe or sander to bevel the cut surface of the reinforcing layer.



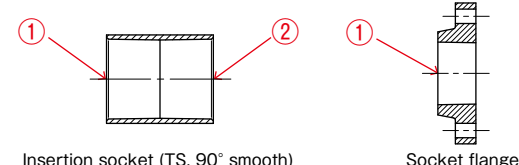
- ④ Weigh the required amount of resin and put it into the container for adhesive preparation.



Approximate amount of adhesive used

H pipe (thick wall pipe)			L pipe (thin pipe)		
Nominal diameter	Number of joints per kg of adhesive	Amount of resin used per joint (g)	Nominal diameter	Number of joints per kg of adhesive	Amount of resin used per joint (g)
25	180	6	150	30	33
40	160	6	200	20	50
50	140	7	250	10	100
65	100	10	300	6	167
75	60	17	350	4	250
100	50	20	400	4	250
125	40	25	450	4	250
150	30	33	500	2	500
200	20	50	600	2	500
250	10	100			

(Note) 1. The number of joints and the amount of resin used will vary slightly depending on the skill level of the installer and other conditions, but please do not do construction beyond the number of joints shown in this table.
2. Insert sockets: count joints as two Socket flange and core ring: count joints as 1 (See page 19 for how to mix resin putty)



Add the accelerator to adhesive resin and stir well.



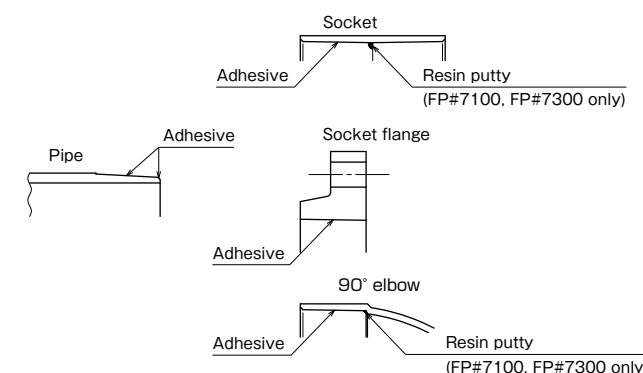
Add the filler to prevent the adhesive from flowing, and mix while checking the viscosity.



Add the catalyst (curing agent) immediately before use and mix thoroughly.



- ⑤ Apply the prepared adhesive to the tapered part of the socket, the tapered part of the pipe and the end.



(Note) 1. If there is water, oil, or dirt on the tapered part, please clean it with acetone (or denatured alcohol) before applying the adhesive.
2. When joining #7100 and #7300, in addition to adhesive, apply resin putty to the locations shown in the above figure to protect the beveled portion. (See page 19 for how to mix resin putty)

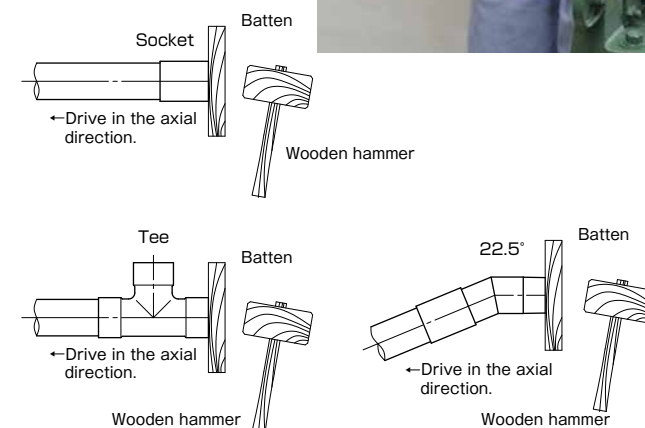
- ⑥ Insert the socket into the pipe while rotating it.



- ⑦ Driving

•Taper socket, core ring, tee, 22.5° elbow

Apply a batten to the end of the pipe and drive it in along the pipe axial direction using a wooden hammer or the like.



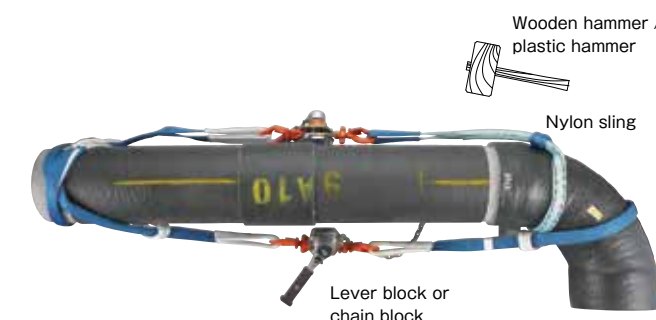
•90°, 45° smooth elbow

Use a driving jig (our product) instead of a batten, and then drive it in with a wooden hammer or the like.



•Large diameter (≥150A)

Wrap a nylon sling around the body and drive it in using a lever block (chain block) and together with a wooden hammer or the like.



- ⑧ Finishing

•After driving, check that the adhesive protrudes around the entire circumference of the joint edge. If the adhesive does not protrude at all, please try again. Use a spatula or the like to remove the protruding adhesive.
•Before the adhesive cures, make sure that none of the tapers you have hammered are coming loose. Parts that have already been driven in may also come loose due to the impact of driving other parts.
•Avoid rough handling until the adhesive has cured, and be careful not to cause the adhesive surface to shift or peel off.
•If any protrusions remain on the gasket surface, use sandpaper to smooth them out.

INSTALLATION PROCEDURE

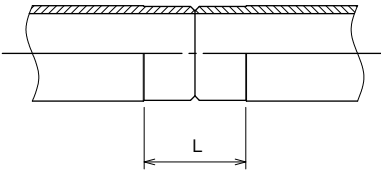
Butt & strap joint

Joining procedure

① Prepare jigs and tools necessary for joining.

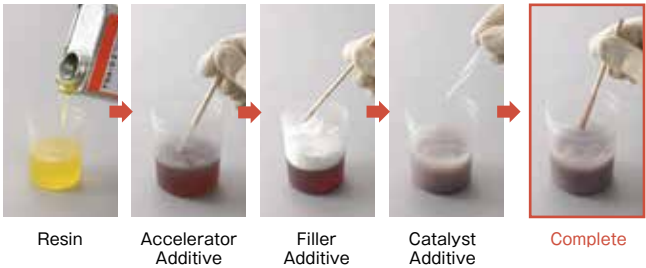


② Sand the end surface of the pipe enough that the luster of the pipe is lost. After sanding, bevel the pipe ends. After that, clean the sanded part with acetone (or denatured alcohol) so that there is no moisture, oil or dirt.

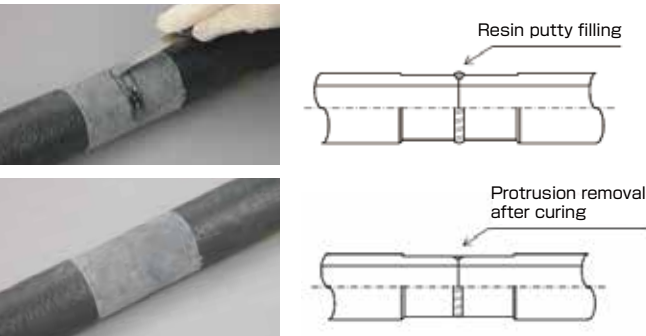


(Note) L: Layer width (see Table of Procedure ⑥) + 50 mm

③ Mix the resin putty for temporary attachment. After adding the accelerator to the resin and stirring it well, mix in the filler to adjust the hardness of the putty. Add the catalyst (curing agent) immediately before temporary attachment and stir again.



④ Align and fix the joining surfaces of both pipes to be butted together, and then evenly fill the entire circumference of the beveled portion with resin putty. After curing the resin putty, remove the protrusions of the resin putty with a sander or the like.



⑤ Prepare the adhesive used for laminating the glass tape. Weigh out the required amount of resin into the adhesive mixing container, add the accelerator and mix thoroughly.



Add the catalyst (curing agent) immediately before laminating the glass tape and stir thoroughly.

(Note) Do not mix accelerator and catalyst at the same time.



⑥ Apply adhesive to the sanded surface and laminate the prepared glass tape while impregnating it with adhesive.



(Note) If there is moisture, oil, or dirt on the sanded area, clean it with acetone (or denatured alcohol) before applying the adhesive.

Nominal diameter (mm)	Used glass tape width (mm)	Number of laminations (ply)		Tape length (m)		Lamination width (mm)		Adhesive weight (g)		Lamination Times
		H	L	H	L	H	L	H	L	
25	50	12	—	2	—	80	—	35	—	1
40	75	14	—	2.5	—	90	—	50	—	1
50	75	15	—	3.3	—	90	—	60	—	1
65	75	15	—	4.6	—	100	—	75	—	1
75	75	15	—	6.8	—	130	—	100	—	1
100	75	18	—	11	—	130	—	260	—	1
125	75	21	18	18	14	150	150	380	—	1
150	100	27	18	24	14	170	150	500	350	1
200	100	30	21	45.4	24	220	170	700	500	1
250	160	38	24	57.3	21.3	280	170	1600	900	1
300	160	—	24	—	31.5	—	210	—	1,100	1
350	160	—	30	—	52.2	—	240	—	1,700	1
400	160	—	33	—	74	—	270	—	2,000	1
450	160	—	36	—	94	—	280	—	2,600	1
500	160	—	42	—	151	—	350	—	3,700	1
600	160	—	45	—	194	—	350	—	4,400	2*

(Note) 1. Add the amount of catalyst and accelerator appropriate for the required resin (see table on page 20).
2. Lamine the second layer only after confirming that the resin in the first layer has cured.

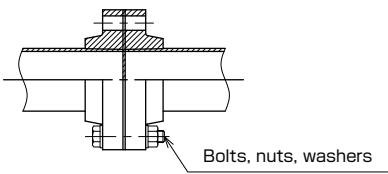
⑦ If you want to improve the weather resistance, apply top coat resin after curing the resin. Check the construction manual for the top coat resin materials and compounding methods.

Flange joint

Type	Socket flange	Core ring + iron flange
Exterior		
Nominal diameter	25~300A	25~600A
Features	·Non-corrosive ·Light weight	Easily adjusted with the adjoining part to the mating flange
Mating flange	Flat face flange	·Raised face flange ·Flat face flange

Socket flange

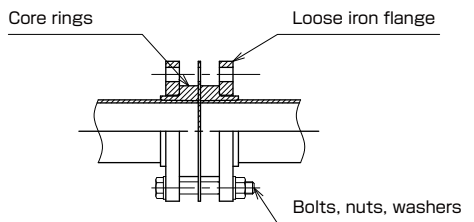
The structure has a socket flange made of the same material as the pipe and is tightened with bolts and nuts. As with taper joints, after filling the pipe end and the inside of the socket flange with adhesive, tap with a batten before driving.



(Note) 1. On joints, use a rubber gasket with a JIS hardness of 55 to 70 and a thickness of 3 to 6 mm to ensure good sealing performance. We also recommend using a gasket with a seal ring that can ensure stable sealing performance with a small tightening pressure.
2. Bolt tightening torque should be 2.5 kgf-m or less for 25 - 100A and 4.0 kgf-m or less for 125 - 300A.
3. Always use washers when tightening bolts.
4. Be careful not to tighten unevenly.

Core ring + iron flange

Tighten with bolts and nuts using core rings and iron flanges. Like the socket flange joint, it can be removed.



(Note) 1. On joints, use a rubber gasket with a JIS hardness of 55 to 70 and a thickness of 3 to 6 mm to ensure good sealing performance.
2. Be careful not to tighten unevenly.
3. Be careful not to overtighten. The bolt tightening torque varies depending on the design conditions, but usually 98 N-m (10 kg-m) is sufficient. Detailed values are calculated upon request. Please contact us for details.

Curing of adhesive

Resin curing

Adhesives vary in time to harden depending on the temperature and their compounding ratio. The hardening process is roughly divided into the following two stages.

1st stage (gelation) → 2nd stage (secondary curing)

The second stage (secondary curing) is completed, and the performance as an adhesive is exhibited for the first time.

First stage

— Compounding ratio of adhesive and gelation time (usable time) —
(per 100g of resin)

Temperature (°C)	FBA-02 (#7000)			FBA-30 (#7100, #7300)		
	Accelerator (g)	Catalyst (g)	Gelation time (min)	Accelerator (g)	Catalyst (g)	Gelation time (min)
10	1.0	3.0	60	1.0	3.0	60
	1.0	2.0	90	1.0	2.2	90
15	1.0	2.5	30	1.0	2.5	30
	1.0	2.0	50	1.0	2.0	60
20	1.0	1.5	80	0.5	2.0	100
	1.0	2.0	30	1.0	2.0	30
25	1.0	1.5	50	0.5	2.0	60
	0.5	1.5	80	0.3	2.0	90
30	1.0	1.5	30	0.5	2.0	30
	0.5	1.2	80	0.2	2.0	90
35	0.5	1.5	30	0.3	2.0	30
	0.3	1.2	70	0.1	2.0	100
35	0.3	1.5	30	0.2	2.0	30
	0.3	1.2	50	0.1	2.0	60
35	0.1	1.2	90	0.1	1.8	90

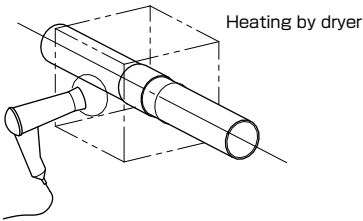
(Note) Applicable adhesive FBA-02: for Fuji Pipe 7000 FBA-30: For Fuji Pipe 7100, 7300

2nd stage: Estimated time to complete secondary curing

Air temperature (°C)	Necessary Time	
	Gelation time 40 minutes or less	Gelation time 40 minutes or more Gelation time 100 minutes or less
10	40 hours ~	60 hours ~
20	6 hours ~	24 hours ~
30	4 hours ~	24 hours ~

Heating temperature (°C)	Necessary Time	
	Gelation time 40 minutes or less	
60	60 minutes	
80	30 minutes	

(Note) 1. How to confirm completion of secondary curing: The surface of the adhesive must not be sticky even when it is wiped with acetone.
2. Heating tools: dryers, floodlights, etc.



INSTALLATION PROCEDURE

Pipe support

#7000

Nominal diameter	Type	Liquid piping								Gas piping			
		Liquid specific gravity = 1.0				Liquid specific gravity = 1.2				(Pipe weight only)			
		25°C	50°C	80°C	100°C	25°C	50°C	80°C	100°C	25°C	50°C	80°C	100°C
25	H	1.8	1.8	1.7	1.6	1.8	1.7	1.6	1.6	2.2	2.1	2.0	1.9
40	H	2.0	2.0	1.9	1.8	2.0	1.9	1.8	1.8	2.6	2.5	2.4	2.3
50	H	2.2	2.2	2.0	2.0	2.2	2.1	2.0	1.9	3.0	2.9	2.7	2.6
65	H	2.4	2.3	2.2	2.1	2.3	2.2	2.1	2.0	3.3	3.2	3.1	2.9
75	H	2.5	2.4	2.3	2.2	2.4	2.3	2.2	2.1	3.6	3.5	3.3	3.1
100	H	2.9	2.8	2.6	2.5	2.8	2.7	2.5	2.4	4.1	4.0	3.8	3.6
125	H	3.2	3.1	2.9	2.8	3.1	3.0	2.8	2.7	4.6	4.5	4.2	4.1
150	H	3.5	3.3	3.2	3.0	3.3	3.2	3.1	2.9	5.1	4.9	4.7	4.5
200	H	4.0	3.9	3.7	3.5	3.9	3.7	3.6	3.4	5.9	5.7	5.4	5.2
250	H	4.5	4.4	4.1	4.0	4.4	4.2	4.0	3.8	6.6	6.3	6.0	5.8
300	H	4.0	3.9	3.7	3.6	3.9	3.8	3.6	3.4	6.5	6.3	6.0	5.7
350	H	4.4	4.3	4.1	3.9	4.3	4.1	3.9	3.7	7.1	6.9	6.5	6.3
400	H	4.7	4.5	4.3	4.1	4.5	4.3	4.1	4.0	7.7	7.4	7.1	6.8
450	H	5.0	4.9	4.6	4.4	4.8	4.7	4.4	4.2	8.2	8.0	7.6	7.2
500	H	5.3	5.1	4.9	4.7	5.1	4.9	4.7	4.5	8.7	8.4	8.0	7.7
600	H	5.4	5.3	5.0	4.8	5.2	5.1	4.8	4.6	9.2	8.9	8.4	8.1
600	L	5.9	5.7	5.4	5.2	5.7	5.5	5.2	5.0	10.1	9.7	9.2	8.9

#7100

Nominal diameter	Type	Liquid piping								Gas piping			
		Liquid specific gravity = 1.0				Liquid specific gravity = 1.2				(Pipe weight only)			
		25°C	50°C	80°C	100°C	25°C	50°C	80°C	100°C	25°C	50°C	80°C	100°C
25	H	1.8	1.8	1.7	1.6	1.8	1.7	1.7	1.6	2.2	2.1	2.0	2.0
40	H	2.0	2.0	1.9	1.9	2.0	2.0	1.9	1.8	2.6	2.5	2.4	2.4
50	H	2.2	2.2	2.1	2.0	2.2	2.1	2.0	2.0	3.0	2.9	2.8	2.7
65	H	2.4	2.3	2.3	2.2	2.3	2.3	2.2	2.1	3.3	3.3	3.1	3.0
75	H	2.5	2.4	2.3	2.3	2.4	2.4	2.3	2.2	3.6	3.5	3.4	3.2
100	H	2.9	2.8	2.7	2.6	2.8	2.7	2.6	2.5	4.1	4.0	3.9	3.7
125	H	3.2	3.1	3.0	2.9	3.1	3.0	2.9	2.8	4.6	4.5	4.3	4.2
150	H	3.5	3.4	3.2	3.1	3.3	3.2	3.1	3.0	5.1	4.9	4.8	4.6
200	H	4.0	3.9	3.8	3.6	3.9	3.8	3.6	3.5	5.9	5.7	5.5	5.3
250	H	4.5	4.4	4.2	4.1	4.4	4.2	4.1	3.9	6.6	6.4	6.2	5.9
300	H	4.0	3.9	3.8	3.7	3.9	3.8	3.6	3.5	6.5	6.3	6.1	5.9
350	H	4.4	4.3	4.2	4.0	4.3	4.2	4.0	3.9	7.1	7.0	6.7	6.5
400	H	4.7	4.6	4.4	4.2	4.5	4.4	4.2	4.1	7.7	7.5	7.2	7.0
450	H	5.0	4.9	4.7	4.5	4.8	4.7	4.5	4.4	8.2	8.0	7.7	7.4
500	H	5.3	5.2	5.0	4.8	5.1	5.0	4.8	4.6	8.7	8.5	8.2	7.9
600	H	5.4	5.3	5.1	4.9	5.2	5.1	4.9	4.7	9.2	9.0	8.6	8.3
600	L	5.9	5.8	5.6	5.4	5.7	5.5	5.3	5.1	10.1	9.8	9.4	9.1

#7300

Nominal diameter	Type	Liquid piping								Gas piping			
		Liquid specific gravity = 1.0				Liquid specific gravity = 1.2				(Pipe weight only)			
		25°C	50°C	80°C	100°C	25°C	50°C	80°C	100°C	25°C	50°C	80°C	100°C
25	H	1.8	1.7	1.7	1.6	1.7	1.7	1.6	1.6	2.1	2.0	2.0	1.9
40	H	2.0	1.9	1.9	1.8	1.9	1.9	1.8	1.8	2.5	2.5	2.4	2.3
50	H	2.2	2.1	2.0	2.0	2.1	2.0	2.0	1.9	2.9	2.8	2.7	2.6
65	H	2.3	2.3	2.2	2.1	2.3	2.2	2.1	2.0	3.2	3.2	3.0	2.9
75	H	2.4	2.4	2.3	2.2	2.3	2.3	2.2	2.1	3.5	3.4	3.2	3.1
100	H	2.8	2.7	2.6	2.5	2.7	2.6	2.5	2.4	4.0	3.9	3.7	3.6
125	H	3.1	3.0	2.9	2.8	3.0	2.9	2.8	2.7	4.5	4.4	4.2	4.0
150	H	3.3	3.3	3.1	3.0	3.2	3.1	3.0	2.9	4.9	4.8	4.6	4.4
200	H	3.1	3.0	2.9	2.8	3.0	2.9	2.8	2.7	4.9	4.7	4.6	4.4
250	H	3.9	3.8	3.6	3.5	3.8	3.7	3.5	3.4	5.7	5.5	5.3	5.1
300	H	3.6	3.5	3.3	3.2	3.4	3.3	3.2	3.1	5.6	5.5	5.3	5.1
350	H	4.4	4.3	4.1	3.9	4.2	4.1	3.9	3.8	6.3	6.2	5.9	5.7
400	H	3.9	3.8	3.7	3.5	3.8	3.7	3.5	3.4	6.3	6.1	5.9	5.7
450	H	4.3	4.2	4.0	3.9	4.1	4.0	3.9	3.7	6.9	6.7	6.5	6.2
500	H	4.5	4.4	4.2	4.1	4.4	4.2	4.1	3.9	7.5	7.3	7.0	6.7
600	H	4.9	4.7	4.6	4.4	4.7	4.5	4.4	4.2	8.0	7.8	7.5	7.2
600	L	5.1	5.0	4.8	4.6	4.9	4.8	4.6	4.4	8.5	8.2	7.9	7.6
600	L	5.3	5.1	4.9	4.8	5.1	4.9	4.7	4.6	8.9	8.7	8.3	8.0
600	L	5.7	5.6	5.4	5.2	5.5	5.4	5.2	5.0	9.8	9.5	9.1	8.8

(Note) 1. Support the pipes at intervals equal to or less than the above values.
2. This value is set so that the amount of deflection is 6.5 mm or less under the conditions of simple support at both ends and uniform load distribution.
3. Continuous beam piping can be supported at intervals 1.2 times the above value.
4. If there is vibration, please support slightly shorter than the above value.

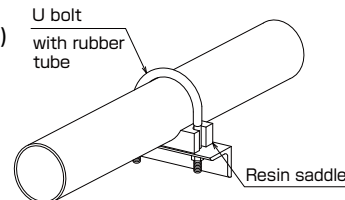
Support method

Pipes are subject to vibration and thermal stress caused by water hammers, etc., so adequate support or fixation is required as a countermeasure. As a support method, provide a saddle support of at least 120° at the bottom of the pipe, and use a cushioning material such as a rubber sheet so as not to damage the pipe

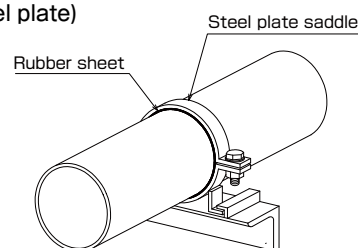
Pipe Support Saddle

Sliding Support Saddle

FUF (≤250A made of resin)

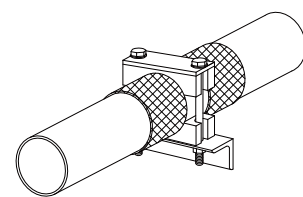


FBF (≥300A made of steel plate)

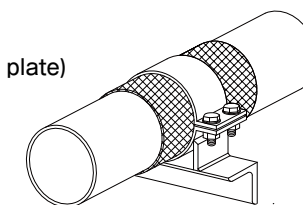


Fixed Support Saddle

FUA (≤75A made of resin)

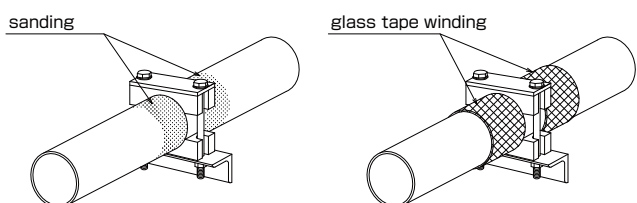


FBA (≥100A made of steel plate)



When using a fixed support saddle

- Tighten firmly with saddles from the top and bottom of the pipe.
- In order to create a flange-like protrusion that adheres to both ends of the support, sand the ends without leaving any residue, then laminate the glass tape after referring to the description on page 19.



(Note) For details of various pipe support saddles, please refer to the attached "Pipe Support Saddle (Fastening) Catalog".

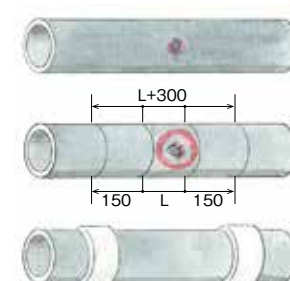
Repair method

① Surface treatment of the repaired part

- If there is water or oil on the part to be repaired, remove it with a waste cloth.
- If you use water-soluble chemicals, be sure to wash with water and then dry.
- Be sure to sand the part to be laminated.

② Damage status and repair method

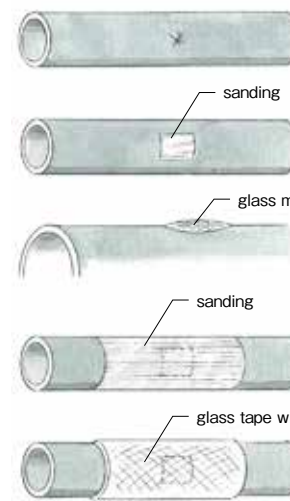
If there is a hole in the pipe



Mark the damaged area with red ink or red marker and wipe the surface once.
(The damaged part will be marked and a trace will remain.)

Circle the damaged area, cut the length of L + 300 mm shown in the figure, and join a new pipe with glass tape on both ends (see page 19).

If there is a crack or peeling (damage to the surface)



Mark the damaged area with red ink or red marker and wipe the surface once.
(The damaged part will be marked and a trace will remain.)

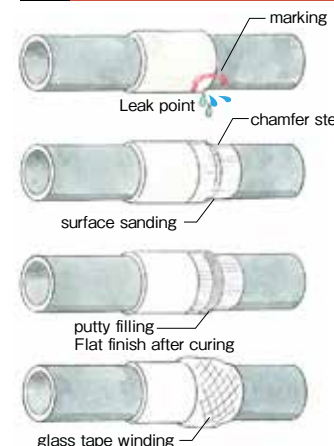
Remove damaged areas by sanding and allow them to dry.

Laminate the glass mat to the original thickness on the recessed part by sanding and cure it.

Depending on the pipe size, sand the pipe surface as shown.

After cleaning the sanding part, laminate according to the method of glass tape bonding (page 19).

If there is a leakage from adhesive joints



Mark the leaked area and let it dry.

Chamfer the steps and sand the surface.

Fill the uneven part with resin putty (see page 19), and after the resin putty hardens, sand it until it is smooth.

Laminate all around according to the method of glass tape bonding (page 19).

Handling of products

● Handling pipe materials

[Transportation]

- Do not throw, drop, roll, drag, or do other things that may damage the pipe.
- Use cushioning material as necessary during transportation to prevent damage to piping materials.
- Protect the cut surface of the pipe and the gasket surface of the flange with a plastic cap or vinyl sheet to prevent damage and dirt.
- When securing or hoisting the product, use a fiber belt such as a nylon sling, and hoist the pipe at two points that divide the length of the pipe into approximately three equal parts. When using steel wires, be sure to insert cushioning materials where they come into contact with the product.

[Storage]

- To prevent damage, store in a place where there is no risk of impact from the outside.
- Cover the product with a sheet to protect it from ultraviolet light, wind and rain, and to prevent dirt, oil, etc. from adhering to it.
- Since it is a combustible material, store it in a place where there is no danger of fire spreading.
- Store pipes and joints on sleepers or pallets, not directly on the ground. When using sleepers, be sure to provide 2 or more support points and stack them in 3 levels or less.

[Installation]

- Follow the contents of the Installation manual.
- Do not place a heavy load on the pipe, such as a construction ladder or scaffold.
- Make sure that the adhesive surface is free of water, oil, dust, and other contaminants. Clean the adhesive surface with acetone (or denatured alcohol) if it is dirty.
- After installation, avoid rough handling until the adhesive has cured, and be careful not to cause the adhesive surface to shift or peel off. (There is no problem with normal hand-held transportation.) Curing is complete when the excess resin protruding from the joint is wiped off with acetone and is no longer sticky.
- Do not put your body weight or other heavy loads on the pipes.

● Handling of adhesives

- Please use our recommended products for adhesive resins, accelerators, catalysts (curing agents), and fillers.
- Please follow the instructions in the construction manual and the instruction manual attached to the adhesive set.
- Since the adhesive is flammable, handle it with caution against fire.
- Since the catalyst (curing agent) is particularly prone to decompose, store it in a place where there is no risk of impact or fire. It is dangerous to switch to a metal container, so do not do this.
- If the accelerator and catalyst (curing agent) are mixed at the same time, they may react rapidly and possibly ignite. Add the accelerator to the resin and mix well before adding the catalyst.
- The resin, accelerator and catalyst (curing agent) are all skin irritants, so eye and skin contact should be avoided. Any adhesive that gets on your skin should be wiped off immediately with a cloth and washed with soap and plenty of water. If swallowed, immediately spit it out and seek medical attention.

● Handling of on-site installation tools

- Please use the taper cutting machine according to the contents of the instruction manual.
- When using an electric taper cutting machine, etc., be sure to power it with a grounded outlet and do not work with wet hands.

● Pressure test for piping system

- Pressure testing should be performed after confirming that the resin has completely hardened.
- As a general rule, pressure testing shall be water pressure testing only.
- Keep the test pressure within 1.5 times the normal pressure. Use clean water as the test fluid and measure the pressure inside the pipe with two or more pressure gauges. When applying pressure, be sure to bleed air sufficiently.
- If an air tightness test must be done pneumatically, the pressure should be within [0.049 MPa·G (0.5 kgf/cm²·G)].
- If this rule is not observed, there is a risk of a serious accident occurring due to an explosion that originates from a defective construction site.