

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.

2025.03 Ver.2

FUJI FW PIPE

FUJI FW PIPE

PRODUCT CATALOG



FUJIKAKO.CO.,LTD

Used in various factories and other facilities

FUJI FW PIPE

Example of use on-site



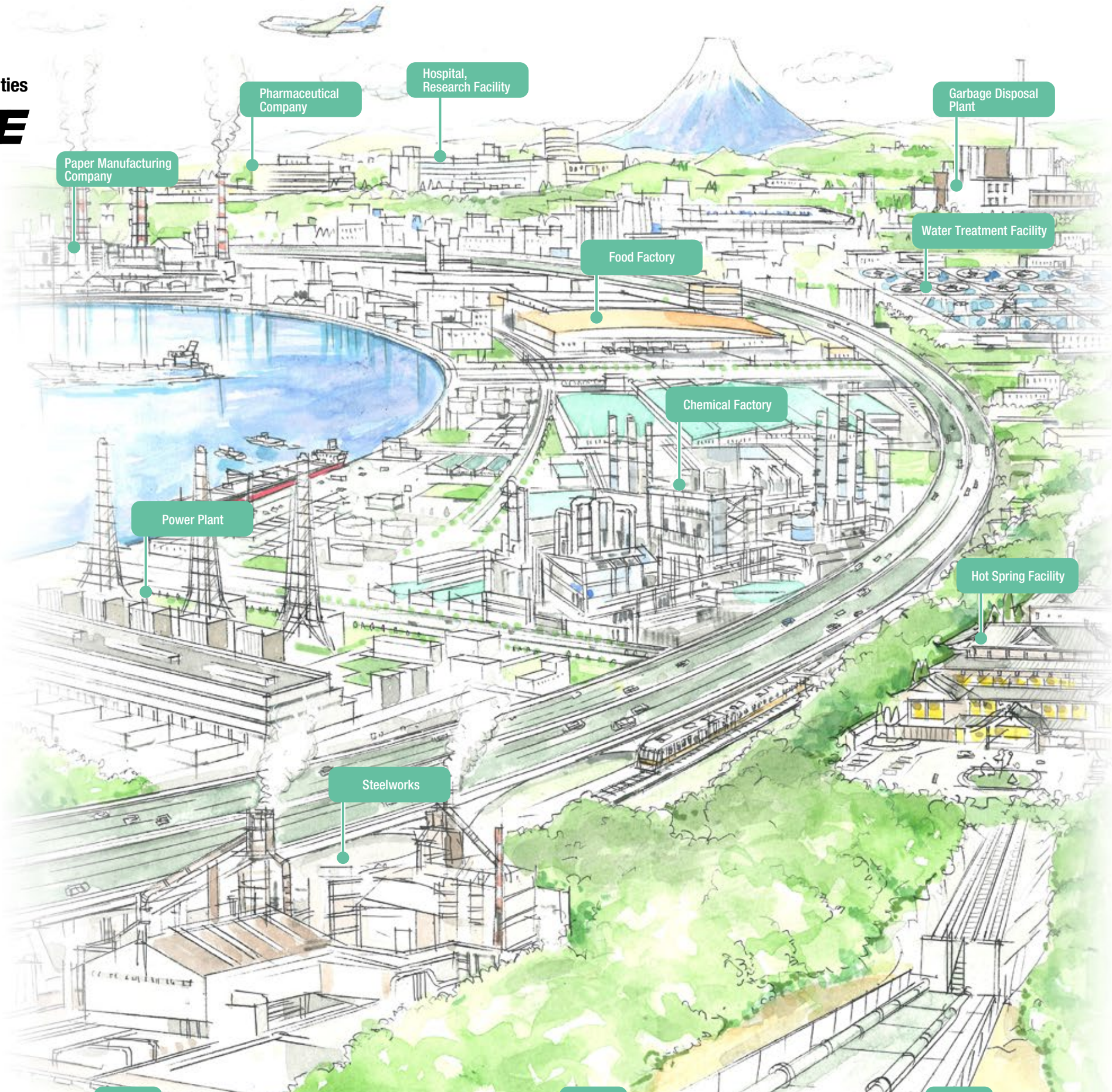
Garbage treatment facility : acid water piping



Thermal power plant : duct piping



Power plant : seawater piping



Garbage Disposal Plant : washing water piping



Water purification plant : chemical liquid piping



Chemical factory : drain pipe (buried)



Chemical factory : chemical liquid piping

FUJI FW PIPE

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FUJI FW PIPE



Fuji FW pipe is a pipe manufactured using the FW (filament winding) molding method that maximizes the strength of the glass fiber, which is a reinforcing material, among the various methods of manufacturing glass fiber reinforced plastics (FRP), **so it features light weight and excellent mechanical strength**. The main body of the pipe is made up of a 2-layer structure consisting of a reinforcing layer and a corrosion-resistant layer, and is resistant to acids, alkalies, salts, and many other corrosive chemicals and gases.



Product number	Max Operating temperature (°C)	Nominal diameter	Normal pressure, working pressure (MPa・G)	
			H (thick wall pipe)	L (thin wall pipe)
FW-5100	90	25~600	0.98	0.49

(Note) We can provide made-to-order higher pressure pipes. Please contact our sales office for details such as physical properties, standards and installation procedure.

Physical properties

Test item		Test standard	SI unit	Value	
				25A	600A
Specific gravity		JIS K 7112	—	1.58	1.86
Tensile strength	Circumferential direction	JIS K 7013	N/mm ²	102.9	195.3
	Axial direction			65.7	71.8
Tensile modulus	Circumferential direction	JIS K 7013	N/mm ²	10,584	16,128
	Axial direction			9,473	13,580
Bending strength	Circumferential direction	JIS K 7013	N/mm ²	114.3	217
	Axial direction	in-house standard		81.7	102.2
Bending elastic modulus	Circumferential direction	JIS K 7013	N/mm ²	7,943	15,200
	Axial direction	in-house standard		8,101	10,976
Compressive strength		in-house standard	N/mm ²	100	136.9
Compressive modulus		JIS K 6911	N/mm ²	8,052	11,543
Coefficient of thermal expansion		in-house standard	/°C	22.5×10 ⁻⁶	18.8×10 ⁻⁶
Charpy impact value		JIS K 6911	J/cm ²	14.7	
Water absorption		JIS K 6911	%	0.2	
Specific volume resistance		JIS K 6911	Ω・cm	5×10 ¹³	
Thermal conductivity		in-house standard	W/m・K	0.26	

(Note) 1. The above values are values at 25°C.
2. This data shows experimental values and does not guarantee the performance.

Fuji FW Pipe

Features

POINT 1

Light weight and excellent mechanical strength

It boasts outstanding strength compared to other plastic materials, and its light weight makes it easy to handle and transport, enabling labor savings in installation.

	Unit	Fuji FW Pipe	Fuji Pipe 7000	Rigid PVC pipe	High density polyethylene pipe	Stainless steel pipe	Steel pipe
Specific gravity	—	1.58~1.86	1.3~1.45	1.4	0.94~0.96	8.0	7.83
Tensile strength (circumferential)	N/mm ²	102.9~195.3	60.8~65.7	49.0~58.8	19.6~27.4	539.3	424.6
Tensile strength (axial)	N/mm ²	65.7~71.8					
Elongation at break	%	—	0.9~1.1	31	100~500	—	24.7
Bending strength(axial)	N/mm ²	81.7~102.2	98.0	—	—	—	—
Charpy impact value	J/cm ²	14.7	3.9~4.9	—	—	—	22.5

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

POINT 2

Excellent corrosion resistance

It is resistant to acids, alkalies, salts, and many other chemicals and gases, and is widely used in places where pressure resistance and chemical resistance are required.

POINT 3

Excellent impact resistance

The Charpy impact value is in the range of 14.7J/cm², which makes it more impact resistant than other plastic materials.

POINT 4

Low thermal expansion

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

	Unit	Fuji FW Pipe	Fuji Pipe 7000	Rigid PVC pipe	High density polyethylene pipe	Stainless steel pipe	Steel pipe
Coefficient of thermal expansion	×10 ⁻⁶ /°C	18.8~22.5	24	60~80	120~130	16.7~17.3	11.7~12.6

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

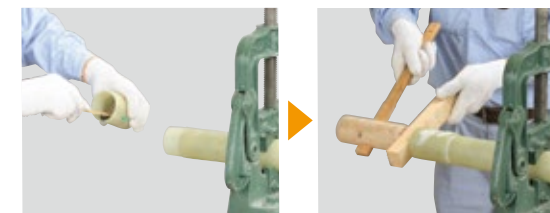
Excellent weather resistance

Weather resistance treatment is applied to prevent the material from deteriorating 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 various joints are available, quick and reliable construction is possible. Since the resin of the same material quality as the pipe is used for the bonding adhesive, it has excellent bonding reliability.



POINT 8

Easy to repair

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



FUJI FW PIPE

Chemical resistance

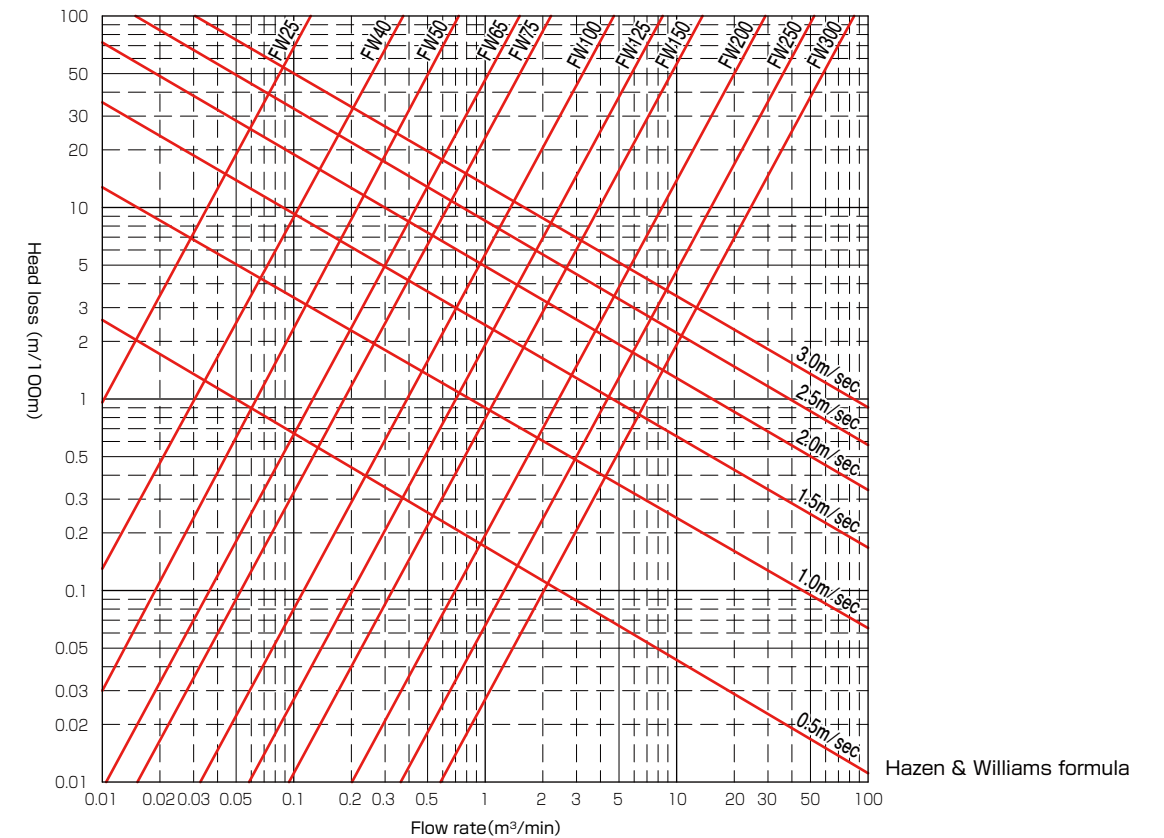
Chemical	Concentration (%)	Temperature (°C)				
		20	40	60	80	100
Acid						
Sulfuric acid	5					
	10					
	30					
	50					
Nitric acid	5					
	10					
	20					
	saturation	Unusable				
Hydrochloric acid	5					
	10					
	20					
	35					
Phosphoric acid	10					
	30					
	80					
Acetic acid	25					
	50					
Chromic acid	10					
Oxalic acid	100					
Formic acid	10					
Tartaric acid	100					
Alkali						
Sodium hydroxide (caustic soda)	10					
	20					
	50	Unusable				
Ammonia water	10					
	25					
	30					
Calcium hydroxide	100					
Gas						
Chlorine (dry / wet)	100					
Bromine (dry / wet)	100					
Hydrogen sulfide (dry / wet)	100					
Sulfur dioxide (dry / wet)	100					

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

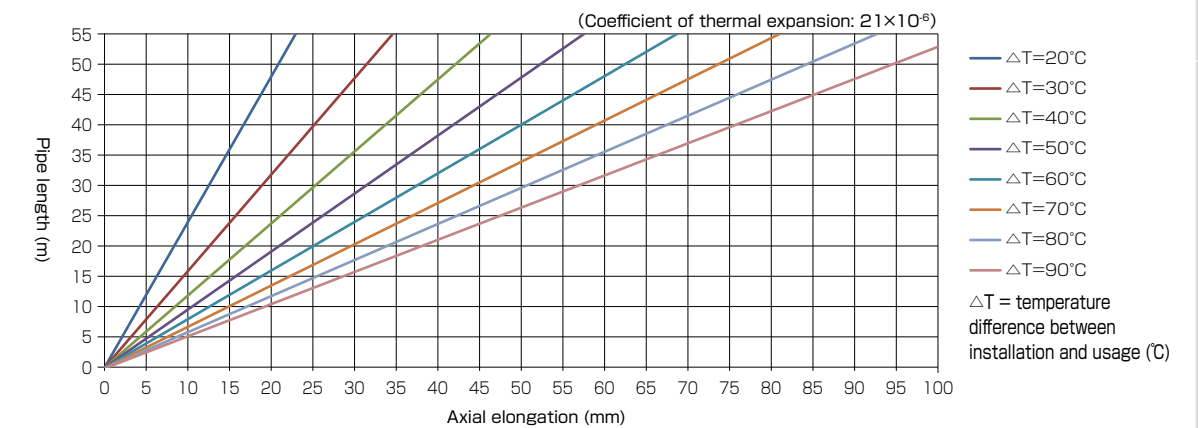
Chemical	Concent ration (%)	Temperature (°C)				
		20	40	60	80	100
Organic chemical						
Formalin	37					
Methyl Alcohol	50					
	100	Unusable				
Ethyl Alcohol	50					
	100	Unusable				
Glycerine	100					
Ethylene Glycol	100					
Gasoline						
Benzene	100	Unusable				
Toluene	100	Unusable				
Chloroform	100	Unusable				
Other						
Salt water	saturation					
Sea water	—					
Ammonium sulfate	100					
Ammonium chloride	100					
Aluminum sulfate	100					
Copper sulfate	100					
Calcium chloride	100					
Ferrous chloride	100					
Sodium carbonate	35					
Ammonium carbonate	50					
	100					
Ammonium nitrate	100					
Silver nitrate	100					
Sodium nitrate	100					
Sodium sulfite	100					
Potassium dichromate	100					
Potassium permanganate	10					
Hydrogen peroxide solution	30					
Sodium hypochlorite		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



Elongation rate



Please consider expansion and contraction measures separately based on the amount of elongation by temperature as a guide. For the expansion joints, consider the usage conditions and use commercially available products such as those made of Teflon or EPT rubber.

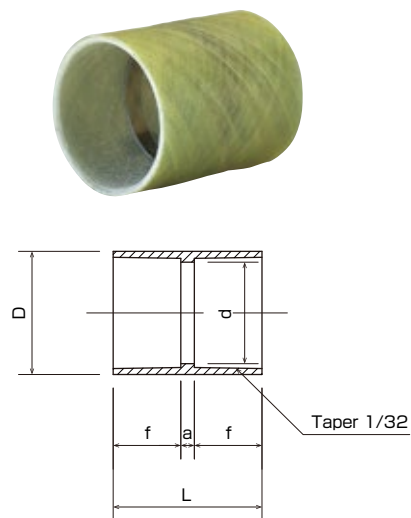
Fuji FW Pipe



Nominal diameter	d	t		f		L	Reference weight (kg/m)		Product code	
		(H)	(L)	(H)	(L)		(H)	(L)	(H)	(L)
25	25	3	—	30	—	3000	0.4	—	5432507	—
40	38	3	—	35	—	3000	0.6	—	5432515	—
50	50	3	—	35	—	3000	0.8	—	5437010	—
65	65	3	—	40	—	3000	1	—	5437028	—
75	75	4	—	50	—	3000	1.7	—	5437036	—
100	100	4	—	50	—	3000	2.2	—	5437044	—
125	125	5	4	60	60	3000	3.5	2.7	5437052	5437094
150	150	5	4	70	60	3000	4.2	3.2	5437060	5437101
200	200	6.5	4	95	70	3000	7.5	4.3	5437078	5437119
250	250	7.5	4	120	70	3000	10.9	5.3	5437086	5437127
300	300	9	5.5	145	90	3000	15.9	9.2	5437087	5437130
350	350	9.5	6	170	100	3000	19.6	11.8	5437088	5437135
400	400	11	7	195	115	3000	26.1	16	5437089	5437140
450	450	12	7	220	120	3000	32.2	18	5437090	5437145
500	500	12	7	245	150	3000	35.7	20	5437091	5437150
600	600	14	9	295	150	3000	50.2	31.3	5437092	5437155

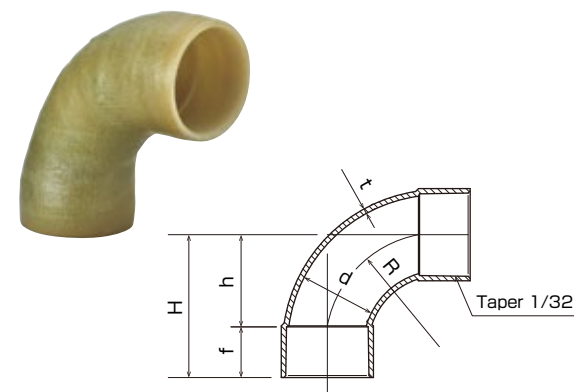
(Note) 1. The standard length is 3 m, but we can accommodate requests for 6 m for 50mm to 600mm.
2. H: thick wall pipe, L: thin wall pipe

Taper Socket (TS)



Nominal diameter	d	D		L		f		a	Reference weight (kg)		Product code	
		(H)	(L)	(H)	(L)	(H)	(L)		(H)	(L)	(H)	(L)
25	25	37	—	70	—	30	—	10	0.05	—	5432789	—
40	38	50	—	80	—	35	—	10	0.08	—	5432797	—
50	50	62	—	80	—	35	—	10	0.12	—	5432804	—
65	65	77	—	90	—	40	—	10	0.18	—	5432812	—
75	75	91	—	110	—	50	—	10	0.25	—	5432820	—
100	100	116	—	110	—	50	—	10	0.36	—	5432838	—
125	125	145	141	130	130	60	60	10	0.71	0.55	5432846	5432953
150	150	170	166	150	130	70	60	10	0.98	0.59	5432854	5432961
200	200	226	216	200	150	95	70	10	2.4	0.91	5432862	5432979
250	250	280	266	250	150	120	70	10	4.4	1.2	5432870	5432987
300	300	336	322	300	190	145	90	10	7	2.6	5432888	5432995
350	350	388	374	350	210	170	100	10	10	3.7	5432896	5433000
400	400	445	428	400	240	195	115	10	15.5	5.6	5432903	5433018
450	450	499	478	450	250	220	120	10	21.3	6.6	5432911	5433026
500	500	550	528	500	310	245	150	10	27.1	9.2	5432929	5433042
600	600	659	636	600	310	295	150	10	45.9	13.9	5432937	5433050

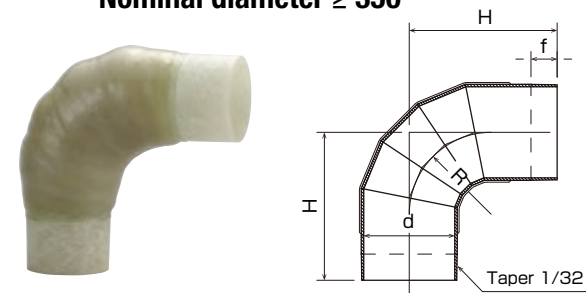
90° elbow (smooth)



Nominal diameter	d	f		H		h	R	Reference weight (kg)		Product code	
		(H)	(L)	(H)	(L)			(H)	(L)	(H)	(L)
25	25	30	—	57	—	27	37.5	0.1	—	5435858	—
40	38	35	—	79	—	44	60	0.16	—	5435866	—
50	50	35	—	94	—	59	75	0.25	—	5435874	—
65	65	40	—	119	—	79	97.5	0.43	—	5435882	—
75	75	50	—	141	—	91	112.5	0.75	—	5435890	—
100	100	50	—	181	—	131	150	1.1	—	5435907	—
125	125	60	60	222	222	162	187.5	1.6	1.6	5435915	5436020
150	150	70	60	268	258	198	225	2.7	2.2	5435923	5436038
200	200	95	70	360	335	265	300	5.5	3.7	5435931	5436046
250	250	120	70	442	392	322	375	9.7	5.5	5435949	5436054
300	300	145	90	533	478	388	450	14.9	9.5	5435957	5436062

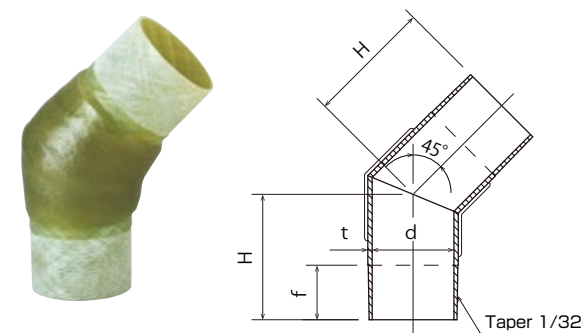
90° elbow (miter)

- Nominal diameter ≥ 350



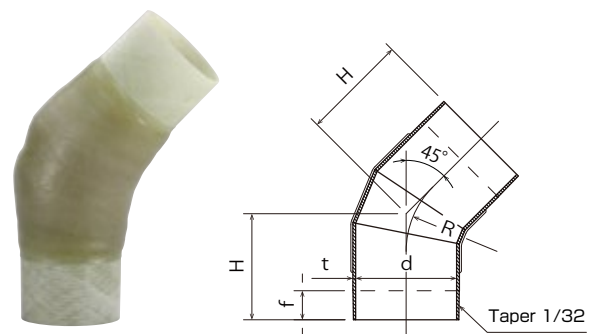
Nominal diameter	d	f		H		R	Reference weight (kg)		Product code	
		(H)	(L)	(H)	(L)		(H)	(L)	(H)	(L)
350	350	170	100	670	610	315	38.7	17.9	5435965	5436070
400	400	195	115	760	650	360	55.8	26.9	5435973	5436088
450	450	220	120	860	800	405	78.5	36.5	5435981	5436096
500	500	245	150	950	910	450	101.8	45.1	5435999	5436103
600	600	295	150	1145	1120	540	171.1	87	5436004	5436111

45° elbow (miter)



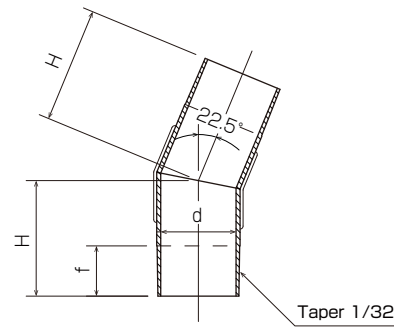
Nominal diameter	d	H	f		Reference weight (kg)		Product code	
			(H)	(L)	(H)	(L)	(H)	(L)
25	25	59	30	—	0.07	—	5433349	—
40	38	71	35	—	0.12	—	5433357	—
50	50	83	35	—	0.2	—	5433365	—
65	65	90	40	—	0.35	—	5433373	—
75	75	113	50	—	0.59	—	5433381	—
100	100	147	50	—	0.92	—	5433399	—
125	125	172	60	60	1.6	1.2	5433406	5433513
150	150	205	70	60	2.2	1.6	5433414	5433521
200	200	275	95	70	5.3	2.9	5433422	5433539
250	250	344	120	70	9.2	4.5	5433430	5433547

- Nominal diameter ≥ 300



Nominal diameter	d	H		R	f		Reference weight (kg)		Product code	
		(H)	(L)		(H)	(L)	(H)	(L)	(H)	(L)
300	300	420	320	270	145	90	18.4	8.1	5433448	5433555
350	350	485	365	315	170	100	25.8	11.3	5433456	5433563
400	400	550	420	360	195	115	39	17.2	5433464	5433571
450	450	625	480	405	220	120	52.9	22.1	5433472	5433589
500	500	690	560	450	245	150	67.3	27.8	5433480	5433597
600	600	820	695	540	295	150	112.2	52.2	5433498	5433604

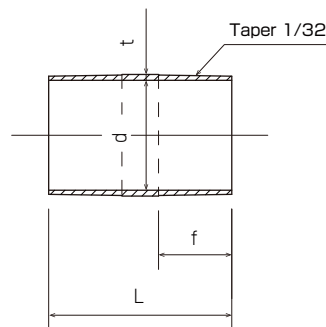
22.5° elbow (miter)



(mm)

Nominal diameter	d	H		f		Reference weight (kg)		Product code	
		(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)
25	25	59	—	30	—	0.07	—	5433620	—
40	38	71	—	35	—	0.12	—	5433638	—
50	50	83	—	35	—	0.2	—	5433646	—
65	65	90	—	40	—	0.35	—	5433654	—
75	75	113	—	50	—	0.59	—	5433662	—
100	100	147	—	50	—	0.92	—	5433670	—
125	125	157	157	60	60	1.5	1.1	5433688	5433795
150	150	194	194	70	60	2.1	1.6	5433696	5433802
200	200	259	259	95	70	5	2.7	5433703	5433810
250	250	323	323	120	70	8.7	4.2	5433711	5433828
300	300	360	325	145	90	13.5	6.3	5433729	5433836
350	350	415	330	170	100	19.1	8.9	5433737	5433844
400	400	470	380	195	115	28.5	13.7	5433745	5433852
450	450	535	410	220	120	39.1	16.7	5433753	5433860
500	500	600	500	245	150	49.7	21.9	5433761	5433878
600	600	705	630	295	150	82	43	5433779	5433886

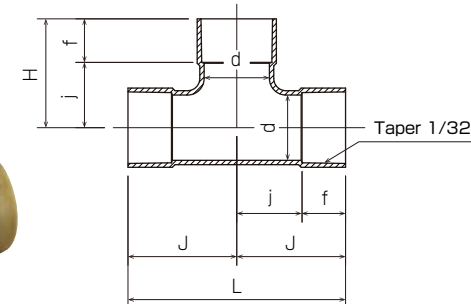
Nipple (NPL)



(mm)

Nominal diameter	d	L		f		Reference weight (kg)		Product code	
		(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)
25	25	85	—	30	—	0.03	—	5433068	—
40	38	95	—	35	—	0.05	—	5433076	—
50	50	95	—	35	—	0.07	—	5433084	—
65	65	105	—	40	—	0.10	—	5433092	—
75	75	125	—	50	—	0.18	—	5433109	—
100	100	125	—	50	—	0.23	—	5433117	—
125	125	145	145	60	60	0.42	0.33	5433125	5433232
150	150	185	145	70	60	0.64	0.39	5433133	5433240
200	200	235	185	95	70	1.50	0.66	5433141	5433258
250	250	275	185	120	70	2.40	0.82	5433159	5433266
300	300	335	225	145	90	4.30	1.80	5433167	5433274
350	350	385	245	170	100	6.00	2.40	5433175	5433282
400	400	435	275	195	115	9.00	3.60	5433183	5433290
450	450	485	285	220	120	12.40	4.10	5433191	5433307
500	500	535	345	245	150	14.80	5.30	5433208	5433315
600	600	635	345	295	150	24.60	8.80	5433216	5433323

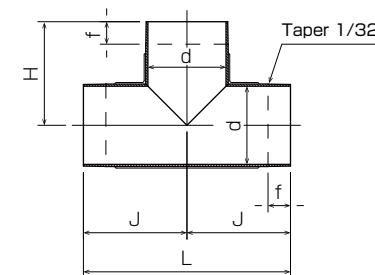
Tee (T)



(mm)

Nominal diameter	d	L		J		H		j	f		Reference weight (kg)		Product code	
		(H)	(L)	(H)	(L)	(H)	(L)		(H)	(L)	(H)	(L)	(H)	(L)
25	25	150	—	75	—	75	—	45	30	—	0.26	—	5433901	—
40	38	180	—	90	—	90	—	55	35	—	0.45	—	5433919	—
50	50	200	—	100	—	100	—	65	35	—	0.65	—	5433927	—
65	65	210	—	105	—	105	—	65	40	—	0.8	—	5433935	—
75	75	250	—	125	—	125	—	75	50	—	1.1	—	5433943	—
100	100	300	—	150	—	150	—	100	50	—	1.7	—	5433951	—
125	125	370	370	185	185	185	185	125	60	60	2.8	2.1	5433969	5434074
150	150	440	420	220	210	220	210	150	70	60	4.3	3	5433977	5434082
200	200	550	500	275	250	275	250	180	95	70	8.8	5.9	5433985	5434090
250	250	690	590	345	295	345	295	225	120	70	16.5	10.5	5433993	5434107
300	300	830	720	415	360	415	360	270	145	90	26.4	15.6	5434008	5434115

• Nominal diameter ≥ 350

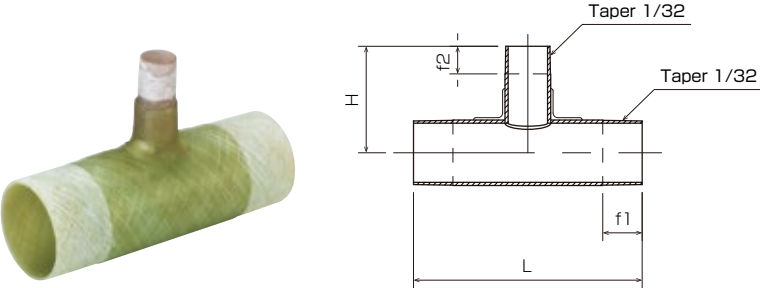


(mm)

Nominal diameter	d	L	J	H	f	Reference weight (kg)	Product code
350	350	950	475	475	100	25.1	5434123
400	400	1060	530	530	115	36.8	5434131
450	450	1130	565	565	120	51.7	5434149
500	500	1300	650	650	150	63.5	5434157
600	600	1400	700	700	150	117.8	5434165

(Note) L pipes only

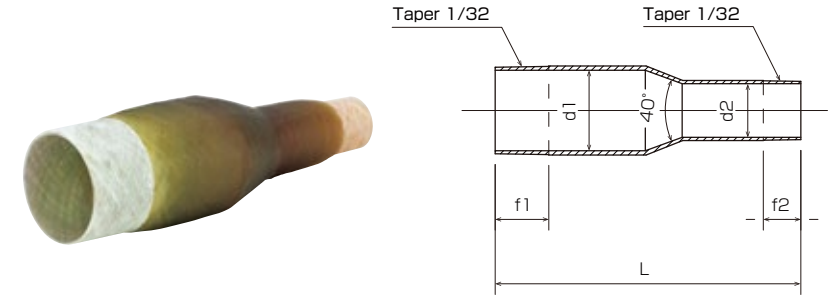
Reducing Tee (RT)



Nominal diameter	L		H		f1		f2		Reference weight (kg)		Product Code	
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)
40x 25	195	—	95	—	35	—	30	—	0.17	—	5434181	—
50x 25	200	—	115	—	35	—	30	—	0.26	—	5434199	—
50x 40	230	—	120	—	35	—	35	—	0.35	—	5434206	—
65x 25	210	—	100	—	40	—	30	—	0.27	—	5434214	—
65x 40	230	—	110	—	40	—	35	—	0.35	—	5434222	—
65x 50	245	—	125	—	40	—	35	—	0.48	—	5434230	—
75x 25	240	—	120	—	50	—	30	—	0.43	—	5434248	—
75x 40	270	—	130	—	50	—	35	—	0.56	—	5434256	—
75x 50	290	—	135	—	50	—	35	—	0.68	—	5434264	—
75x 65	295	—	145	—	50	—	40	—	0.85	—	5434272	—
100x 25	300	—	140	—	50	—	30	—	0.76	—	5434280	—
100x 40	310	—	145	—	50	—	35	—	0.81	—	5434298	—
100x 50	310	—	150	—	50	—	35	—	0.9	—	5434305	—
100x 65	330	—	160	—	50	—	40	—	1.1	—	5434313	—
100x 75	345	—	165	—	50	—	50	—	1.4	—	5434321	—
125x 50	330	330	155	155	60	60	35	35	1.3	1	5434339	5434496
125x 65	355	355	160	160	60	60	40	40	1.5	1.2	5434347	5434503
125x 75	365	365	180	180	60	60	50	50	1.5	1.3	5434355	5434511
125x100	410	410	210	210	60	60	50	50	2.2	1.7	5434363	5434529
150x 75	385	365	210	210	70	60	50	50	2.3	1.7	5434371	5434537
150x100	410	390	210	210	70	60	50	50	2.5	2	5434389	5434545
150x125	455	435	230	230	70	60	60	60	2.6	2.5	5434397	5434553
200x100	460	410	240	240	95	70	50	50	4.1	2.5	5434404	5434561
200x125	565	515	290	290	95	70	60	60	5.7	3.8	5434412	5434579
200x150	610	540	310	290	95	70	70	60	7.2	3.9	5434420	5434587
250x125	615	515	315	310	120	70	60	60	7.9	3.9	5434438	5434595
250x150	660	540	335	310	120	70	70	60	9.4	4.6	5434446	5434602
250x200	765	610	385	330	120	70	95	70	13.8	6.3	5434454	5434610
300x150	710	590	360	340	145	90	70	60	13.1	7	5434462	5434628
300x200	815	660	410	360	145	90	95	70	18	9	5434470	5434636
300x250	975	770	490	390	145	90	120	70	25.5	12.1	5434488	5434644

(Note) Please contact our sales office if you require a size other than the above.

Reducer (RE)



H pipe

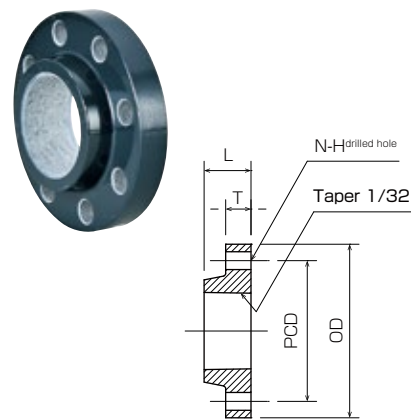
Nominal diameter	L	d1	d2	f1	f2	Reference weight (kg)	Product code
40x 25	230	38	25	35	30	0.18	5434652
50x 25	245	50	25	35	30	0.23	5434660
50x 40	235	50	38	35	35	0.25	5434678
65x 25	275	65	25	40	30	0.34	5434686
65x 40	265	65	38	40	35	0.35	5434694
65x 50	250	65	50	40	35	0.36	5434701
75x 40	300	75	38	50	35	0.53	5434719
75x 50	285	75	50	50	35	0.53	5434727
75x 65	270	75	65	50	40	0.52	5434735
100x 40	330	100	38	50	35	0.74	5434743
100x 50	315	100	50	50	35	0.74	5434751
100x 65	305	100	65	50	40	0.74	5434769
100x 75	315	100	75	50	50	0.8	5434777
125x 40	385	125	38	60	35	1.2	5434785
125x 50	370	125	50	60	35	1.2	5434793
125x 65	360	125	65	60	40	1.4	5434800
125x 75	365	125	75	60	50	1.6	5434818
125x100	335	125	100	60	50	1.3	5434826
150x 40	460	150	38	70	35	1.9	5434834
150x 50	445	150	50	70	35	1.9	5434842
150x 65	435	150	65	70	40	1.9	5434850
150x 75	440	150	75	70	50	2	5434868
150x100	405	150	100	70	50	1.9	5434876
150x125	395	150	125	70	60	2	5434884
200x 65	555	200	65	95	40	4	5434892
200x 75	560	200	75	95	50	4.1	5434909
200x100	525	200	100	95	50	4	5434917
200x125	510	200	125	95	60	4	5434925
200x150	515	200	150	95	70	4.1	5434933
250x 65	670	250	65	120	40	7.2	5434941
250x 75	675	250	75	120	50	7.2	5434959
250x100	640	250	100	120	50	7.1	5434967
250x125	630	250	125	120	60	7	5434975
250x150	635	250	150	120	70	7.1	5434983
250x200	615	250	200	120	95	7.3	5434991
300x100	765	300	100	145	50	11.1	5435006
300x125	750	300	125	145	60	11	5435014
300x150	755	300	150	145	70	11.2	5435022
300x200	735	300	200	145	95	11.3	5435030
300x250	720	300	250	145	120	11.3	5435048

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

L pipe

Nominal diameter	L	d1	d2	f1	f2	Reference weight (kg)	Product code
125x 40	385	125	38	60	35	0.9	5435056
125x 50	370	125	50	60	35	0.9	5435064
125x 65	360	125	65	60	40	1	5435072
125x 75	365	125	75	60	50	1.1	5435080
125x100	335	125	100	60	50	1	5435098
150x 40	440	150	38	60	35	1.2	5435105
150x 50	425	150	50	60	35	1.3	5435113
150x 65	415	150	65	60	40	1.3	5435121
150x 75	420	150	75	60	50	1.3	5435139
150x100	385	150	100	60	50	1.3	5435147
150x125	375	150	125	60	60	1.4	5435155
200x 65	505	200	65	70	40	2.6	5435163
200x 75	510	200	75	70	50	2.7	5435171
200x100	475	200	100	70	50	2.7	5435189
200x125	460	200	125	70	60	2.6	5435197
200x150	445	200	150	70	60	2.7	5435204
250x 65	570	250	65	70	40	3.3	5435212
250x 75	575	250	75	70	50	3.5	5435220
250x100	540	250	100	70	50	3.3	5435238
250x125	525	250	125	70	60	3.3	5435246
250x150	515	250	150	70	60	3.3	5435254
250x200	465	250	200	70	70	3.3	5435262
300x100	655	300	100	90	50	5.3	5435270
300x125	640	300	125	90	60	5.3	5435288
300x150	625	300	150	90	60	5.3	5435296
300x200	575	300	200	90	70	5.3	5435303
300x250	510	300	250	90	70	5.3	5435311
350x125	730	350	125	100	60	8.1	5435329
350x150	715	350	150	100	60	8.1	5435337
350x200	665	350	200	100	70	7.7	5435345
350x250	600	350	250	100	70	7.3	5435353
350x300	565	350	300	100	90	7.3	5435361
400x200	765	400	200	115	70	11.1	5435379
400x250	695	400	250	115	70	10.5	5435387
400x300	665	400	300	115	90	10.5	5435395
400x350	615	400	350	115	100	10	5435402
450x250	775	450	250	120	70	13.8	5435410
450x300	745	450	300	120	90	13.7	5435428
450x350	695	450	350	120	100	14.7	5435436
450x400	655	450	400	120	115	12.7	5435444
500x300	875	500	300	150	90	23.7	5435452
500x350	825	500	350	150	100	17.9	5435460
500x400	785	500	400	150	115	17.4	5435478
500x450	725	500	450	150	120	16	5435486
600x350	960	600	350	150	100	30.5	5435494
600x400	925	600	400	150	115	30	5435501
600x450	865	600	450	150	120	28.1	5435519
600x500	855	600	500	150	150	28.9	5435527

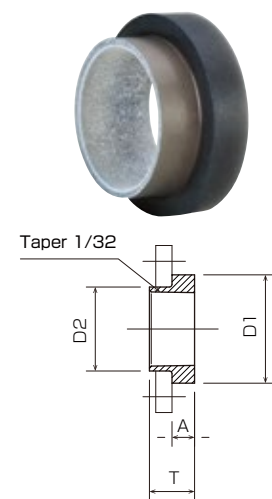
Socket Flange (SF)



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	—	5436351	—
40	140	105	4-19	35	—	22	—	0.6	—	5436369	—
50	155	120	4-19	35	—	23	—	0.75	—	5436377	—
65	175	140	4-19	40	—	26	—	1	—	5436385	—
75	185	150	8-19	50	—	27	—	1.2	—	5436393	—
100	210	175	8-19	50	—	30	—	1.6	—	5436400	—
125	250	210	8-23	60	60	37	26	2.8	—	5436418	5436468
150	280	240	8-23	70	60	39	28	3.7	2.9	5436426	5436476
200	330	290	12-23	95	70	44	31	5.7	4.1	5436434	5436484
250	400	355	12-25	120	70	49	35	10	6.4	5436442	5436492
300	445	400	16-25	145	90	53	38	12	8.3	5436450	5436509

(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 - 300A.
 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 recommend using a gasket with a seal ring for stable performance under low tightening pressure. Apply gasket paste when using PTFE-coated gaskets.
 5. JIS 5K standard is for made-to-order products.

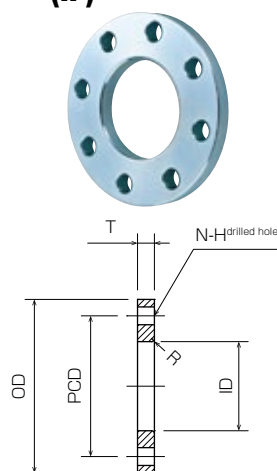
Core Ring (CR)



Nominal diameter	T		A		D1		D2		Reference weight (kg)		Product code	
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)
25	30	—	15	15	55	—	41	—	0.05	—	5435577	—
40	35	—	17.5	17.5	70	—	54	—	0.08	—	5435585	—
50	35	—	17.5	17.5	85	—	66	—	0.11	—	5435593	—
65	40	—	20	20	100	—	81	—	0.16	—	5435600	—
75	50	—	25	25	120	—	93	—	0.26	—	5435618	—
100	50	—	25	25	140	—	118	—	0.3	—	5435626	—
125	60	60	30	30.0	175	175	145	143	0.56	0.51	5435634	5435741
150	70	60	35	30.0	205	205	170	168	0.82	0.71	5435642	5435759
200	95	70	47.5	35.0	251	251	223	218	1.4	1	5435650	5435767
250	120	70	60	35.0	316	316	275	268	2.8	1.6	5435668	5435775
300	145	90	72.5	45.0	361	361	328	321	3.3	2.1	5435676	5435783
350	170	100	85	50.0	404	404	379	372	3.9	2.3	5435684	5435791
400	195	115	97.5	57.5	468	464	432	424	6.3	3.7	5435692	5435808
450	220	120	110	60.0	530	524	484	474	9.4	5.1	5435709	5435816
500	245	150	122.5	75.0	585	574	539	528	13.1	6.7	5435717	5435824
600	295	150	147.5	75.0	694	682	642	628	20.1	8.9	5435725	5435832

(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.
 3. Apply gasket paste when using PTFE-coated gaskets.

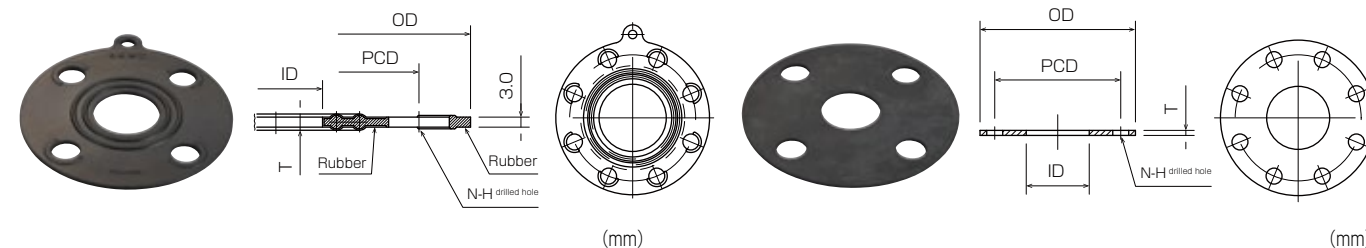
Loose iron flange (IF)



(mm)													
Nominal diameter	ID		OD	PCD	T	M-H	R	Reference weight (kg)		Product code			
	(H)	(L)						(H)	(L)	SS+Zn		SUS-304	
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	3.0	—	1170115	—	1170215	—
125	147	145	250	210	20	8-23	3	4.5	4.6	1170117	1170143	1170217	1170243
150	173	171	280	240	22	8-23	3	6.0	6.1	1170137	1170145	1170237	1170245
200	226	221	330	290	22	12-23	4	7.0	7.3	1170139	1170147	1170239	1170247
250	278	271	400	355	24	12-25	4	11.1	11.7	1170141	1170149	1170241	1170249
300	331	324	445	400	24	16-25	4	11.6	12.3	1170125	1170151	1170225	1170251
350	382	375	490	445	26	16-25	4	13.5	14.3	1170127	1170153	—	—
400	435	427	560	510	28	16-27	5	19.5	20.7	1170129	1170155	—	—
450	487	477	620	565	30	20-27	5	24.5	26.3	1170131	1170157	—	—
500	542	531	675	620	30	20-27	5	27.2	29.4	1170133	1170159	—	—
600	645	631	795	730	32	24-33	5	37.5	41.0	1170135	1170161	—	—

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

Gasket (G)



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.
 4. Apply gasket paste when using PTFE-coated gaskets.

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.
 3. Apply gasket paste when using PTFE-coated gaskets.

Bolt nut 2 washers (BN.2W)



						(mm)
Nominal diameter	d	Combination length (L)				Number of bolts (pcs)
		For CR+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	140	110	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	230	180	160	130	16
350	M22	260	190	180	140	16
400	M24	300	220	200	160	16
450	M24	320	220	210	160	20
500	M24	350	250	230	180	20
600	M30	410	260	260	190	24

						(mm)
Nominal diameter	d	Combination length (L)				Number of bolts (pcs)
		For SF+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	85	90	80	8
150	M20	110	90	95	85	8
200	M20	120	95	100	85	12
250	M22	140	110	110	95	12
300	M22	140	110	110	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: Accelerator
Catalyst (curing agent)
Filler (thixotropic agent)



FBA-02
1kg set
5kg set
15kg set

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

Glass tape



Width (W) × Length (m)	Product Code
75W×150m	0157414
100W×150m	0157422

Roving cloth



Width (W) × Length (m)	Product Code
100W×50m	159314
150W×50m	159315
200W×50m	159316
250W×50m	159313
300W×50m	159317
350W×50m	159310
400W×50m	159318
500W×50m	159319
600W×50m	159320

Glass mat



Width (W) × Length (m)	Product Code
100W×79m	159265
150W×79m	159267
200W×79m	159269
250W×79m	159271
300W×79m	159273

Tapering tools (for lease/sale)

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 pallets 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.
4. The pallet size is for reference.

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

- Hacksaw
- High speed cutting machine
- Grinder

② Tapering tools

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

③ Surface grinding tools

- File
- Sandpaper (#40 - 50)
- Grinder

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

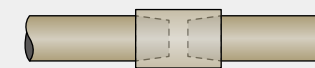
Etc.

Type of joining method

Taper socket adhesive joint

P17

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



① Preparation

② Cutting

③ Tapering

④ Beveling

⑤ Adhesive preparation

⑥ Adhesive application

⑦ Insertion

⑧ Driving

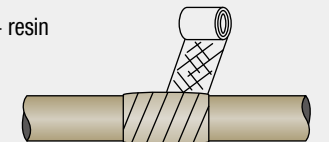
⑨ Finishing

Butt & strap joint

P19

Main materials: glass substrate + resin

- glass mat,
- roving cloth,
- glass tape



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

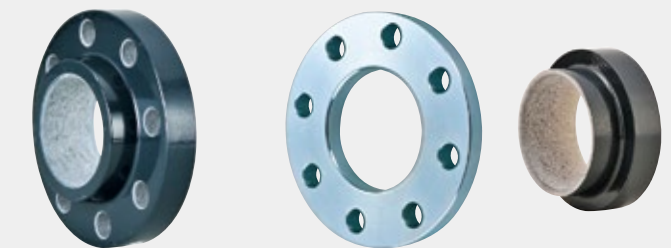
⑥ Glass substrate lamination

⑦ Finishing

Flange joint

P20

Main materials: Socket flange or core ring/steel flange
Specifications: Bolt and nut tightening



INSTALLATION PROCEDURE

Taper socket 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 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. After tapering, check that the driving allowance is secured.

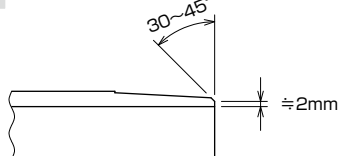


Standard driving allowance

H pipe (thick wall pipe)				L pipe (thin wall pipe)			
Nominal diameter	Taper length (mm)	Standard driving allowance (mm)	Socket flange	Nominal diameter	Taper length (mm)	Standard driving allowance (mm)	Socket flange
25	30	7 ±2	7 +2 -0	125	60	12 +3 -2	8 ±2
40	35	7 ±2	7 +2 -0	150	60	15 +3 -2	9 ±2
50	35	8 ±2	8 ±2	200	70	17 +3 -2	9 ±2
65	40	10 ±2	8 ±2	250	70	18 +4 -2	12 ±2
75	50	10 +3 -2	8 ±2	300	90	22 ±4	15 ±5
100	50	12 +3 -2	9 ±2	350	100	22 ±4	—
125	60	12 +3 -2	9 ±2	400	115	22 ±4	—
150	70	15 +3 -2	12 ±2	450	120	22 ±4	—
200	95	17 +3 -2	12 ±2	500	150	22 ±4	—
250	120	18 +4 -2	13 ±2	600	150	22 ±4	—
300	145	22 ±4	15 ±5				
350	170	22 ±4	15 ±5				
400	195	22 ±4	15 ±5				
450	220	22 ±4	15 ±5				
500	245	22 ±4	15 ±5				
600	295	22 ±4	15 ±5				

(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.

④ Use a lathe or grinder to bevel the cut surface of the reinforcing layer.



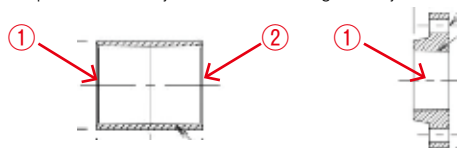
⑤ Weigh the required amount of resin and put it into the container for adhesive preparation.



Approximate amount of adhesive used

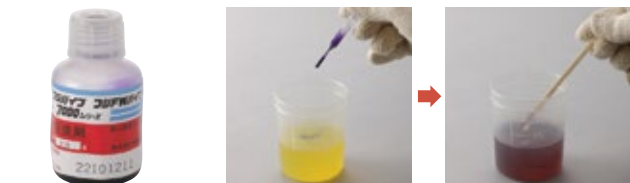
H pipe (thick wall pipe)			L pipe (thin pipe)		
Nominal diameter	Number of joints per kg of adhesive	Amount of resin used per joint (g)	Nominal diameter	Number of joints per kg of adhesive	Amount of resin used per joint (g)
25	200	5	125	40	25
40	180	6	150	35	29
50	150	7	200	25	40
65	110	9	250	18	56
75	70	14	300	10	100
100	60	17	350	8	125
125	40	25	400	6	167
150	30	33	450	5	200
200	20	50	500	4	250
250	10	100	600	3	333
300	6	167			
350	4	250			
400	4	250			
450	3	333			
500	2	500			
600	2	500			

(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. Taper sockets : count joints as two Socket flange : count joints as 1



Taper socket (90° smooth, etc.) Socket flange and core ring

Add the accelerator to adhesive resin and stir well.



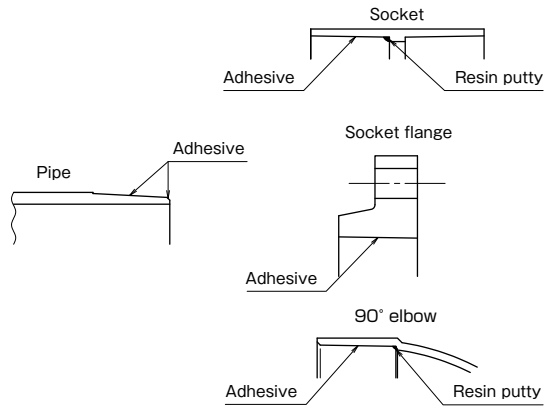
Add the filler to prevent the adhesive from flowing, and mix while checking the viscosity.



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



⑥ 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. Apply resin putty to the beveled portion. (See page 19)

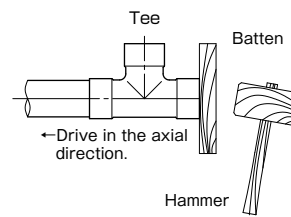
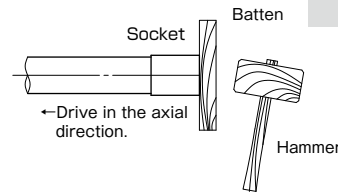
⑦ Insert the socket into the pipe while rotating it.



⑧ Driving

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

Apply a batten to the end of the pipe and drive it in along the pipe axial direction.



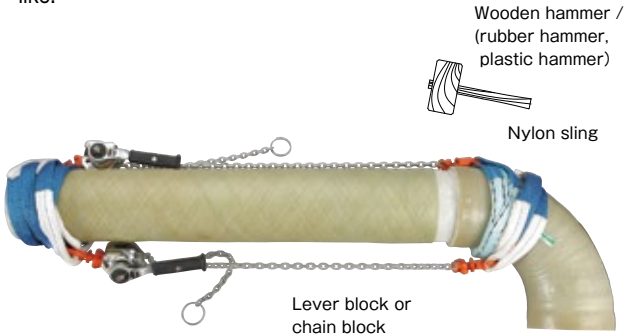
•90°, 45° smooth elbow

Use a driving jig (our product) 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.



⑨ 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 level the protruding adhesive.
•Before the adhesive cures, make sure there are no holes in any tapers you have hammered. Parts that have already been driven in may also have holes 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

TECHNICAL DATA

STANDARD

INSTALLATION PROCEDURE

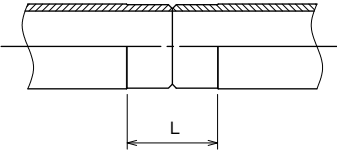
Butt & strap joint

Joining procedure

① Prepare jigs and tools necessary for joining.

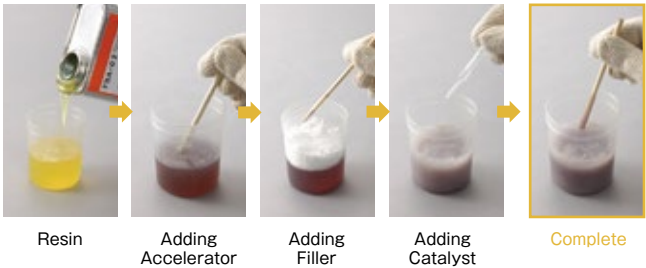


② Sand the end surface of the pipe enough that the luster of the pipe is lost. After sanding, bevel the pipe ends. After that, clean the sanded part with acetone (or denatured alcohol) so that there is no moisture, oil or dirt.

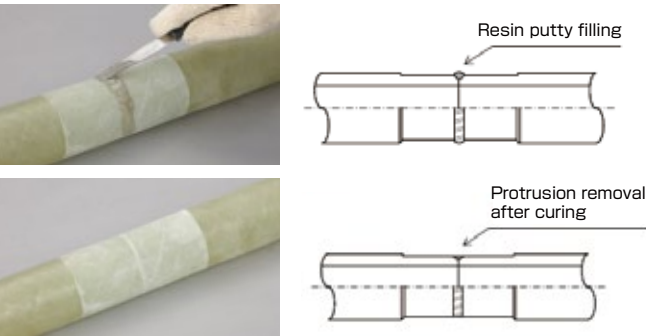


(Note) L: lamination width (see Table of Procedure ⑥) + 50 mm

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 substrate. Weigh out the required amount of resin into the adhesive mixing container, add the accelerator and mix thoroughly.

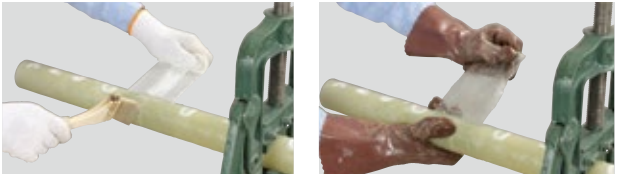


Add the catalyst (curing agent) immediately before laminating the glass substrate and stir thoroughly.

(Note) Do not mix accelerator and catalyst at the same time. *No filler is used.



⑥ Apply adhesive to the sanded surface and laminate the prepared glass tape while impregnating it with adhesive. *No filler is used.



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

Glass substrate number of laminations (H pipe)

Nominal diameter	Lamination width (mm)	GM (ply)	RC (ply)	GT (ply)	Winding length						Adhesive Weight (g)
					Width (W)	Length (L)	Width (W)	Length (L)	Width (W)	Length (L)	
25	75	—	—	10	—	—	—	—	75	1.1	10
40	100	—	—	15	—	—	—	—	100	2.4	30
50	100	—	—	20	—	—	—	—	100	4.1	50
65	100	—	—	25	—	—	—	—	100	6.4	80
75	100	—	—	28	—	—	—	—	100	8.2	100
100	150	2	3	4	100	0.8	150	1.2	100	2.3	200
125	150	2	4	4	100	1	150	1.9	100	2.9	280
150	150	2	6	4	100	1.1	150	3.4	100	3.3	410
200	200	2	8	4	100	1.5	200	5.8	100	5.4	810
250	250	2	10	4	100	1.8	250	9	100	7.8	1,440
300	300	2	12	4	150	2.2	300	13	100	12.9	2,490
350	350	2	14	4	150	2.6	350	17.6	100	16.6	3,780
400	400	2	17	6	150	2.9	400	24.4	100	36.1	5,940
450	450	2	19	6	200	3.2	450	30.2	100	46.7	8,250
500	500	2	21	6	200	3.6	500	37	100	56.4	11,000
600	600	2	26	8	300	4.3	600	55	100	118	19,840

Glass substrate number of laminations (L pipe)

Nominal diameter	Lamination width (mm)	GM (ply)	RC (ply)	GT (ply)	Winding length						Adhesive Weight (g)
					Width (W)	Length (L)	Width (W)	Length (L)	Width (W)	Length (L)	
125	150	2	3	4	100	0.9	150	1.4	100	2.7	230
150	150	2	3	4	100	1.1	150	1.7	100	3.3	280
200	150	2	4	4	100	1.4	150	2.8	100	4.2	400
250	150	2	5	4	100	1.8	150	4.3	100	5.2	570
300	200	2	7	4	100	2.1	200	7.3	100	7.6	1,050
350	200	2	8	4	100	2.5	200	9.6	100	8.9	1,340
400	300	2	8	4	150	2.8	300	11	100	16.4	2,310
450	300	2	9	4	150	3.1	300	13.9	100	18.3	2,820
500	350	2	10	4	150	3.4	350	17	100	22.6	3,840
600	350	2	13	4	150	4.1	350	26.4	100	27	5,720

(Note) 1. GM...Glass mat RC...Roving cloth GT...Glass tape
2. Add the appropriate amount of accelerator and catalyst for the required resin.
3. For the order of lamination of the glass substrate, please refer to the installation manual.

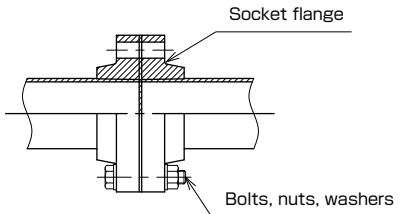
⑦ If you want to improve the weather resistance, apply top coat resin after curing the resin. Check the installation manual for the top coat resin materials and compounding methods. Perform the second lamination after confirming that the resin in the first lamination has been cured.

Flange joint

Type	Socket flange	Core ring + Loose 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

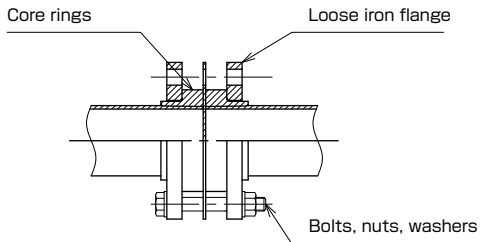
Tighten with bolts and nuts using a socket flange.



(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.



(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.
4. Apply gasket paste when using PTFE-coated gaskets.

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)

Air temperature (°C)	FBA-02		
	Accelerator (g)	Catalyst (g)	Gelation time (分)
10	1.0	3.0	60
	1.0	2.0	90
15	1.0	2.5	30
	1.0	1.5	80
20	1.0	2.0	30
	0.5	1.5	80
25	1.0	1.5	30
	0.5	1.2	80
30	0.5	1.5	30
	0.3	1.2	70
35	0.3	1.5	30
	0.3	1.2	50
	0.1	1.2	90

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

2nd stage: Estimated time to complete secondary curing

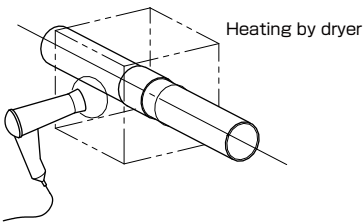
Without heating

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 ~

With heating

Heating temperature (°C)	Necessary Time
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.



TECHNICAL DATA

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INSTALLATION PROCEDURE

INSTALLATION PROCEDURE

Pipe support

Pipe support interval

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	2.0	1.8	1.4	1.0	2.0	1.8	1.4	1.0	2.5	2.2	1.8	1.3
40	H	2.3	2.1	1.6	1.2	2.2	2.0	1.6	1.1	3.0	2.7	2.1	1.6
50	H	2.5	2.3	1.8	1.3	2.4	2.2	1.7	1.2	3.4	3.1	2.4	1.8
65	H	2.7	2.4	1.9	1.4	2.6	2.3	1.8	1.3	3.9	3.5	2.8	2.0
75	H	3.0	2.8	2.2	1.6	2.9	2.7	2.1	1.5	4.2	3.8	3.0	2.2
100	H	3.3	3.0	2.4	1.7	3.2	2.9	2.3	1.7	4.8	4.4	3.5	2.5
125	H	3.7	3.4	2.7	2.0	3.6	3.3	2.6	1.9	5.4	5.0	3.9	2.9
150	L	3.5	3.2	2.5	1.8	3.4	3.1	2.4	1.8	5.4	4.9	3.9	2.8
150	H	3.9	3.6	2.8	2.1	3.8	3.4	2.7	2.0	5.9	5.4	4.3	3.1
200	L	3.7	3.4	2.6	1.9	3.5	3.2	2.5	1.8	5.9	5.4	4.2	3.1
200	H	4.6	4.2	3.3	2.4	4.4	4.0	3.2	2.3	6.9	6.3	5.0	3.6
250	L	4.0	3.6	2.9	2.1	3.8	3.5	2.7	2.0	6.8	6.2	4.9	3.6
250	H	5.0	4.6	3.6	2.6	4.8	4.4	3.5	2.5	7.7	7.1	5.6	4.1
300	L	4.2	3.8	3.0	2.2	4.0	3.7	2.9	2.1	7.6	6.9	5.5	4.0
300	H	5.6	5.1	4.0	2.9	5.3	4.9	3.9	2.8	8.5	7.8	6.1	4.5
350	L	4.9	4.4	3.5	2.6	4.7	4.3	3.4	2.5	8.4	7.7	6.1	4.4
350	H	5.9	5.4	4.2	3.1	5.7	5.2	4.1	3.0	9.2	8.4	6.6	4.8
400	L	5.2	4.7	3.7	2.7	5.0	4.6	3.6	2.6	9.1	8.3	6.6	4.8
400	H	6.3	5.8	4.6	3.3	6.1	5.6	4.4	3.2	9.8	9.0	7.1	5.2
450	L	5.6	5.1	4.1	3.0	5.4	4.9	3.9	2.8	9.7	8.9	7.0	5.1
450	H	6.7	6.1	4.8	3.5	6.4	5.9	4.6	3.4	10.4	9.5	7.5	5.5
500	L	5.8	5.3	4.2	3.1	5.6	5.1	4.0	2.9	10.3	9.4	7.4	5.4
500	H	6.9	6.3	5.0	3.6	6.6	6.0	4.8	3.5	11.0	10.0	7.9	5.8
600	L	6.0	5.4	4.3	3.1	5.7	5.2	4.1	3.0	10.9	9.9	7.8	5.7
600	H	7.5	6.9	5.4	4.0	7.2	6.6	5.2	3.8	12.1	11.0	8.7	6.4
600	L	6.7	6.1	4.8	3.5	6.4	5.9	4.6	3.4	12.0	10.9	8.6	6.3

(Note) 1. Support the pipes at intervals equal to or less than the above values.
 2. The value is set so that the amount of deflection is 10 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.

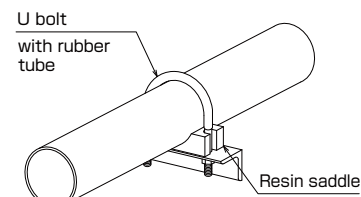
Support method

It is necessary to support or fasten the pipe as a countermeasure against vibration and thermal stress. 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.

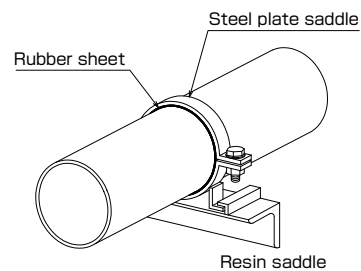
Pipe Support Saddle (fastening)

Sliding Support Saddle

FUF (25~250A)

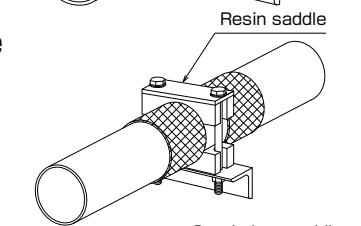


FBF (300~600A)

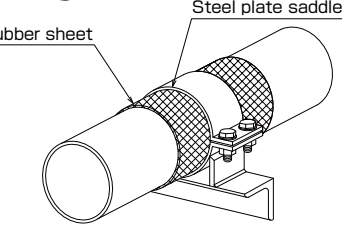


Fixed Support Saddle

FUA (25~75A)

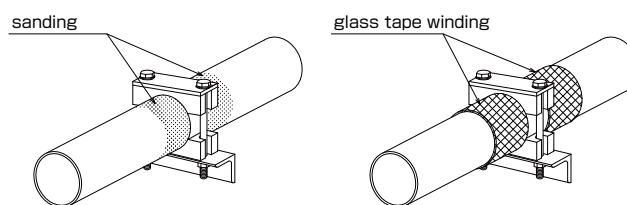


FBA (100~600A)



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, refer to page 19 for instructions and laminate the glass tape, ensuring there is no gap between the pipe and the saddle.



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

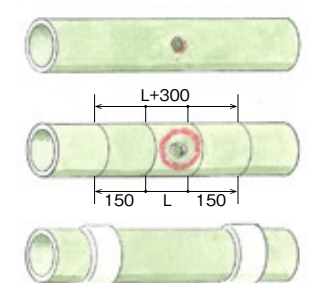
Repair method

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

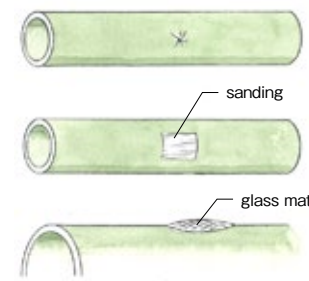
If there is a hole in the pipe



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.)

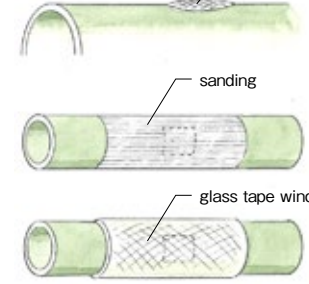
Circle the damaged area, cut the length of L + 300 mm shown in the figure, and join a new pipe with glass tape on both ends (see page 19).

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



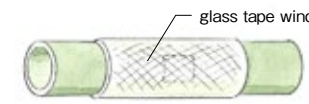
Mark the damaged area with red ink or red marker and wipe the surface once.
 (The damaged part will be marked and a trace will remain.)

Remove damaged areas by sanding and allow them to dry.



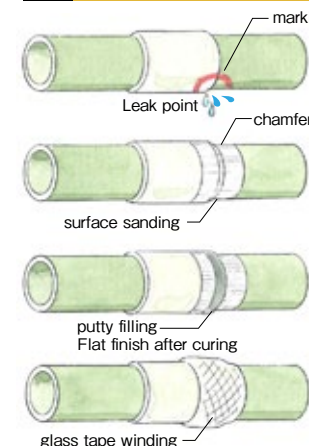
Laminate the glass mat to the original thickness on the recessed part by sanding and cure it.

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. 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.