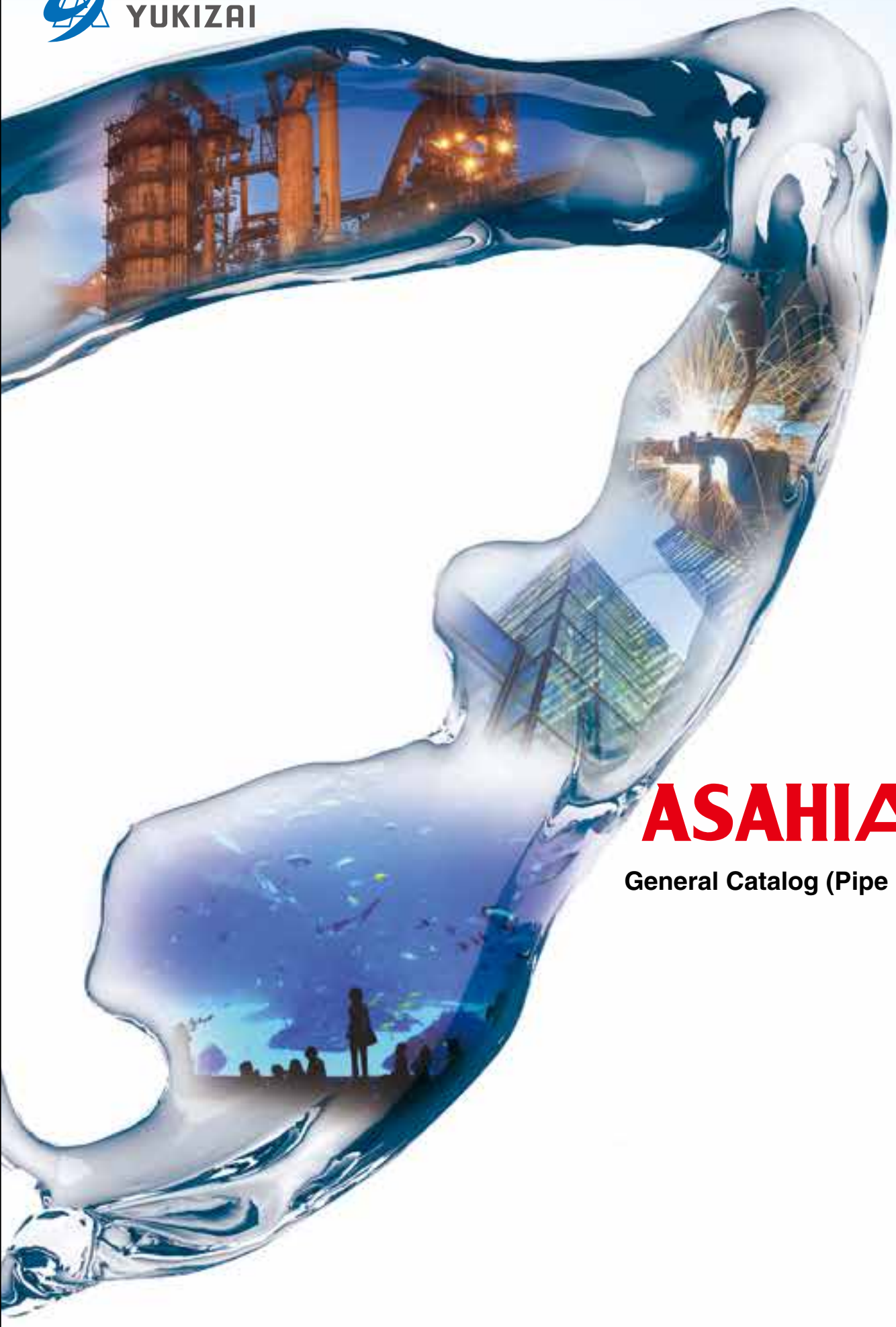
ASAHI YUKIZAI



ASAHI AV

General Catalog (Pipe & Fittings)

ASAHI AV **will not change.**

—— What we have maintained since the establishment of the company in 1945. It is a "sincere attitude toward customers". We have contributed to our customers and thereby to the society by developing products that meet customers' demands for performance, including corrosion, chemical, abrasion and thermal resistances and durability, and by providing various suggestions and thorough after-sales services.

We will not stop moving forward. We will continue to respond to the trust placed in us by customers.

ASAHI AV will offer full support to our customers in the future as well.

ASAHI AV **will change.**

—— The technologies we have developed, the products we have produced and the trust we have gained from our customers are the sources of our pride.

However, we are not satisfied with these developments. We will be sensitive to market changes and technology advances to produce better products and thereby further contribute to the society.

As the pioneer of the industry, ASAHI AV will evolve so that we continue to be trusted and chosen by customers all over the world.

ASAHI AV

INDEX

ASAHIA

PVC Pipe & Fittings

P.011

For General/Tap Water/Agricultural Water Service (U-PVC, HI-PVC)

JIS / JWWA / JPPFA / AV

Pipe made of vinyl chloride with excellent corrosion resistance

General

C-PVC Pipe & Fittings

P.065

(Heat-Resistant C-PVC)

JIS / AV Pipe made of thermal-resistant vinyl chloride having excellent resistance to corrosion and high temperatures

Heat-Resistant

ASAH

Pipe & Fittings

High Purity Pipe & Fittings

P.085

(High Purity U-PVC)

Pipe made of vinyl chloride with excellent corrosion resistance suitable for high purity water line facilities

Precision

AV Pipe & Fittings

P.111

(PVC+FRP Double Laminated Fittings, PP+FRP Double Laminated Fittings)

Applicable for high temperature and high pressure conditions by reinforcing vinyl chloride pipe or polypropylene pipe with FRP

Strong

Material	Characteristics
U-PVC	The most standard PVC with excellent chemical and physical characteristics.
HI-PVC	A material still maintaining the excellent characteristics of PVC with improved impact-resistance. A material originally made as a countermeasure against the water hammer pressure for tap water piping materials.
C-PVC	A material still maintaining the excellent characteristics of PVC with improved heat-resistance to 90˚C.
PP	Has a small specific gravity and excellent water-resistance, electric insulation capability and dynamic/mechanical characteristics in high temperatures. Cannot be bonded as PVC but has an excellent chemical-resistant balance.
PVDF	Highly strong and impact-resistant. Although usage is limited to alkali and some solvents, the chemical-resistance against other chemicals exceeds PVC and PP. Used in the temperature between -40 and 120˚C and has an excellent wear-resistance and electrostatic property. Gas-barrier is superior than PTFE.

IAV

Lineup

Chemical

Chemical Pipe P.107

(U-PVC)

Pipe with excellent chemical-resistance, high pressure-resistance and long-term durability

Double Contained Pipe & Fittings P.123

(U-PVC, HI-PVC)

Safeguard

Detects leakage point and prevents fluid from scattering to outside

PP Pipe & Fittings P.141

(PP)

DIN Environment-friendly clean material (generates no dioxin when burnt) with excellent corrosion- and heat-resistance

Ecology

Related Products P.175

Related product

Usage	Product Name	Material	Connection	Type	Maximum Working Temperature	Maximum Working Pressure *2	13	16 (15) 1/2	20 3/4
General Use General Use PVC Pipe	Unplasticized Polyvinyl Chloride Pipe	U-PVC	Straight Pipe	VP	60°C	1.0MPa	6741	6741	6741
				VU	60°C	0.6MPa			
			Bonding Socket	VP	60°C	1.0MPa			
				VU	60°C	0.6MPa			
			Rubber Ring Socket	VP	Normal Temperature *1	1.0MPa			
				VM	Normal Temperature *1	0.8MPa			
				VU	Normal Temperature *1	0.6MPa			
		HI-PVC	Straight Pipe	HIVP	60°C	1.0MPa	6741	6741	6741
	Agricultural Water Service Wall-Thickness Unplasticized Polyvinyl Chloride Pipe	U-PVC	Rubber Ring Socket	VH	Normal Temperature *1	1.25MPa			
	Tap Water Unplasticized Polyvinyl Chloride Pipe	U-PVC	Straight Pipe	VP	Normal Temperature *1	0.75MPa	6742	6742	6742
			Rubber Ring Socket	VP	Normal Temperature *1	0.75MPa			
		HI-PVC	Straight Pipe	HIVP	Normal Temperature *1	0.75MPa	6742	6742	6742
			Rubber Ring Socket	HIVP	Normal Temperature *1	0.75MPa			
	High Purity Resistance Polyvinyl Chloride Pipe (HP-PVC)	U-PVC (High Purity PVC)	Straight Pipe	VP	50°C	1.0MPa			
	Perforated Pipe	U-PVC	Bonding Socket	VP	Normal Temperature *1	—			
				VU	Normal Temperature *1	—			
	Air-Conditioning Drain Pipe	U-PVC	Straight Pipe	VP	Normal Temperature *1	—			
				(VU)	Normal Temperature *1	—			
Heat-Resistant PVC Pipe	C-PVC Pipe	C-PVC	Straight Pipe	HT	90°C	1.0MPa	6776	6776	6776
Strong FRP Double Laminated Fitting	AV Pipe	U-PVC (FRP Reinforcement)	Straight Pipe or Bonding Socket	SU type	90°C				
				High Purity Type	95°C				
				GU Type	95°C				
				GU-N Type	95°C				
		PP (FRP Reinforcement)		PP Type	100°C				
Ecology Corrosion- and Heat-Resistant Polypropylene	PP Pipe	PP	Straight Pipe	PP-Socket	90°C	1.0MPa		PN10	PN10
				PP-Spigot	90°C	1.0MPa		PN10	PN10
Chemical Resistant PVC Pipe	Chemical Pipe	U-PVC (Chemical)	Straight Pipe	VP	60°C	1.0MPa			
Safeguard Chemical Scattering Prevention	Double Contained Pipe	Inner Pipe (Reference) Outer Pipe (Reference)	Straight Pipe (Inside/Outside)	Inner Pipe (VP) Outer Pipe (VU)				Inner Pipe × Outer Pipe 16×65	20×65

6741 : JIS K6741 Unplasticized Polyvinyl Chloride Pipe
6742 : JIS K6742 Tap Water Unplasticized Polyvinyl Chloride Pipe
6776 : JIS K6776 Heat-Resistant Unplasticized Polyvinyl Chloride Pipe
K127 : JWWA K127 Tap Water Rubber Ring Unplasticized Polyvinyl Chloride Pipe
K129 : JWWA K129 Tap Water Rubber Ring Impact-Resistant Unplasticized Polyvinyl Chloride Pipe
AS13 : JPPFA AS13 Perforated Unplasticized Polyvinyl Chloride Pipe
AS20 : JPPFA AS20 Tap Water Unplasticized Polyvinyl Chloride Pipe
AS33 : JPPFA AS33 Tap Water Rubber Ring Unplasticized Polyvinyl Chloride Pipe
AS60 : JPPFA AS60 Agricultural Water Service Wall-Thickness Unplasticized Polyvinyl Chloride Pipe

Size (mm/inch)																	
	25	30	40	50	65	75 (80)	100	125	150	200	250	300	350	400	450	500	600
	1		1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
	6741	6741	6741	6741	6741	6741	6741	6741	6741	6741	6741	6741					
			6741	6741	6741	6741	6741	6741	6741	6741	6741	6741	6741	6741	6741	6741	
						6741	6741	6741	6741	6741	6741	6741					
						6741	6741	6741	6741	6741	6741	6741	6741	6741	6741	6741	6741
				6741		6741	6741	6741	6741	6741	6741	6741					
													6741	6741	6741	6741	
						6741	6741	6741	6741	6741	6741	6741	6741	6741	6741	6741	6741
	6741	6741	6741	6741	6741	6741	6741	6741	6741								
				AS60		AS60	AS60		AS60								
	6742	6742	6742	6742	AS20	6742	6742	AS20	6742	AS20	AS20	AS20					
				K129		K129	K129	AS33	K129	AS33	AS33	AS33					
	6742	6742	6742	6742	AS20	6742	6742	AS20	6742	AS20	AS20	AS20					
				K129		K129	K129	AS33	K129	AS33	AS33	AS33					
				AS13	AS13	AS13	AS13	AS13	AS13	AS13	AS13	AS13					
				AS13	AS13	AS13	AS13	AS13	AS13	AS13	AS13	AS13	AS13	AS13	AS13	AS13	
	6776	6776	6776	6776													
	PN10	PN10	PN10	PN10	PN10	PN10	PN10	PN10 PN4	PN10 PN4	PN10 PN4							
	PN10	PN10	PN10	PN10	PN10	PN10	PN10	PN10	PN10	PN10							
	25×75		40×75	50×100	65×125	75×150	100×200	125×250	150×250								

*1 Normal temperature is 20±15°C.
*2 Maximum working pressure is a value at 20°C.

Our Product Lineup: Products without a standard number conform to the AV standard (manufacturers' standard products).

PVC Pipe & Fittings

1. Excellent corrosion resistance and no need to worry about corrosion.
2. Great mechanical strength with its elasticity.
3. Excellent weather resistance and suffers less from alterations such as deformation, discoloration and deterioration.
4. Flow resistance and friction coefficient are low.
5. No need to worry about electric leakage as it is insulated.
6. Hygienic because of unplasticized polyvinyl chloride.
7. No self-combustion ability with excellent self-extinguishing ability.
8. Easy to handle because of the weight being 1/6 of iron and 1/2 of aluminum and can be easily connected by the TS method.
9. Price and installation cost are low and it is economical due to the semipermanent characteristic.

Usage		
	Chemical Piping	▸ Chemical/iron-making/nonferrous refining/power generating facilities, various facilities
	Water Supply/Discharge/Waste Water Piping	▸ Buildings, plants, public facilities
	Industrial Water Piping	▸ Plants, various facilities
	Sea/Fresh Water Piping	▸ Aquariums, culture farms, sea/fresh water facilities
	Agricultural Water Service Piping	▸ Public pipelines, facilities
	Air-Conditioning Piping	▸ Plants, public facilities

AV Pipe & Fittings

1. Excellent chemical resistance and applicable to various plants.
2. Compression strength is increased by reinforcing the perimeter with FRP and it has great impact-resistance.
3. Can be used in high heat for a long period of time.
4. Can be used under a corrosive environment. No need to worry about corrosion as it is fully insulated.
5. Linear expansion coefficient is small as U-PVC and FRP are strongly bonded together by a special technology.
6. Far more lighter than metal pipes so piping at a high place is easy. The joint part is FRP lamination so that connection is easy by the TS method.

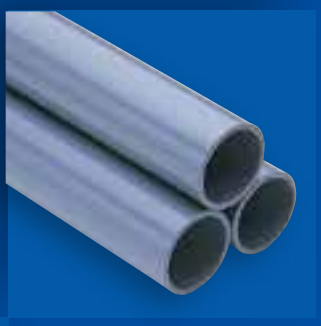
Usage		
	Chemical Piping	▸ Alkali lines for electrolysis plants, acid washing lines for iron-making plants
	Exhaust Gas Piping (Duct)	▸ Exhaust gas lines for chemical/pharmaceutical plants
	Pure Water Piping	▸ Pure water lines for semiconductor/liquid crystal plants
	Sea/Fresh Water Piping	▸ Sea water facilities, desalination devices
	Warm Water Piping	▸ Spa/various facilities

AV Pipe Structure

Unplasticized Polyvinyl Chloride Pipe (Special Product)	Surface Treatment Part	Special Primer	FRP Layer (Fiber Reinforcement Plastics)	Surface Finishing Layer
Residual stress inside pipe is uniquely removed.	A special surface treatment to enhance the adhesion effect of primer.	Unplasticized polyvinyl chloride pipe and FRP layer are bonded.	A reinforcement layer laminated by glass layers impregnated with polyester resin.	Finished with corrosion-resistant polyester resin.

ASAHIAV

PVC Pipe & Fittings



General

PRODUCT MODEL CODE LIST

Type	Field	Material	Standard/Wall Thickness	Standard	Type	Size	Length
P	N	*	**	*	*	***	**
P Pipe	N Standard	U U-PVC I HI-PVC	PP Straight Pipe VP UP Straight Pipe VU P5 Bonding Socket VP U5 Bonding Socket VU P7 Rubber Ring Socket VP M1 Rubber Ring Socket VM U1 Rubber Ring Socket VU WP Tap Water Straight Pipe W7 Tap Water Rubber Ring Socket H7 Rubber Ring Socket VH P6 Perforated Pipe VP U6 Perforated Pipe VU	J JIS V AV	N Standard U Perforated Pipe	013 13 mm I 500 500 mm	04 4m 05 5m

Straight Pipe

Abbreviation: VP VU HIVP Unplasticized Polyvinyl Chloride Pipe (JIS K 6741)

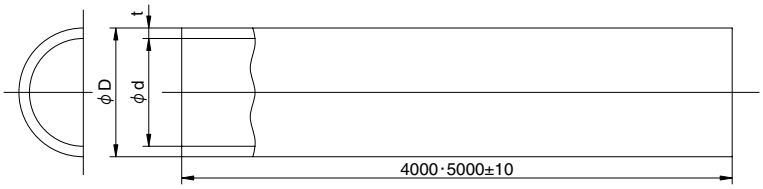
PRODUCT MODEL CODE

VP	P	N	U	PP	J	N	Size	Length
VU	P	N	U	UP	J	N	Size	Length
HIVP	P	N	I	PP	V	N	Size	Length

Maximum Working Pressure (Normal Temperature)	
VP	1.0MPa
VU	0.6MPa
HIVP	1.0MPa

VP,VU
U-PVC

HIVP
HI-PVC



Dimensions Table

(Unit: mm)

Size	VP	VU	HI VP	VP • HIVP								VU					
				D (Outer Diameter)			t (Thickness)		d	Weight per 1m (Reference) (kg)		D (Outer Diameter)		t (Thickness)		d	Weight per 1m (Reference) (kg)
				Basic Dimension	Max/Min. Outer Dimensional Tolerance	Average Outer Dimensional Tolerance	Min Dimension	Tolerance	Approximate Inner Diameter	VP	HI-VP	Basic Dimension	Average Outer Dimensional Tolerance	Min Dimension	Tolerance	Approximate Inner Diameter	
40	○	○	—	48	±0.3	±0.2	3.6	+0.8	40	0.791	—	48	±0.2	1.8	+0.4	44	0.413
50	○	○	—	60	±0.4	±0.2	4.1	+0.8	51	1.122	—	60	±0.2	1.8	+0.4	56	0.521
65	○	○	—	76	±0.5	±0.3	4.1	+0.8	67	1.445	—	76	±0.3	2.2	+0.6	71	0.825
75	○	○	—	89	±0.5	±0.3	5.5	+0.8	77	2.202	—	89	±0.3	2.7	+0.6	83	1.159
100	○	○	—	114	±0.6	±0.4	6.6	+1.0	100	3.409	—	114	±0.4	3.1	+0.8	107	1.737
125	○	○	—	140	±0.8	±0.5	7.0	+1.0	125	4.464	—	140	±0.5	4.1	+0.8	131	2.739
150	○	○	—	165	±1.0	±0.5	8.9	+1.4	146	6.701	—	165	±0.5	5.1	+0.8	154	3.941
200	○	○	□	216	±1.3	±0.7	10.3	+1.4	194	10.129	9.913	216	±0.7	6.5	+1.0	202	6.572
250	○	○	□	267	±1.6	±0.9	12.7	+1.8	240	15.481	15.052	267	±0.9	7.8	+1.2	250	9.758
300	○	○	□	318	±1.9	±1.0	15.1	+2.2	286	21.962	21.252	318	±1.0	9.2	+1.4	298	13.701
350	—	○	—	—	—	—	—	—	—	—	—	370	±1.2	10.5	+1.4	348	18.051
400	—	○	—	—	—	—	—	—	—	—	—	420	±1.3	11.8	+1.6	395	23.059
450	—	○	—	—	—	—	—	—	—	—	—	470	±1.5	13.2	+1.8	442	28.875
500	—	○	—	—	—	—	—	—	—	—		520	±1.6	14.6	+2.0	489	35.346

(Note) 1. ○ are accordance with JIS K 6741. 2. □ conform to the AV standard.

Bonding Socket Single-Side Straight Pipe

Abbreviation: VP VU

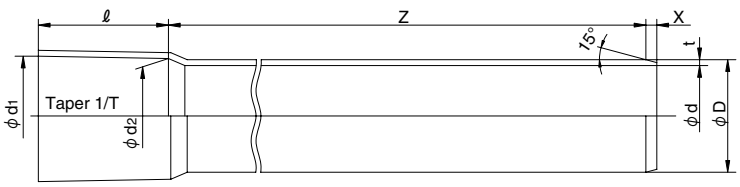
Unplasticized Polyvinyl Chloride Pipe (JIS K 6741)

PRODUCT MODEL CODE

VP	P	N	U	P5	J	N	Size	Length
VU	P	N	U	U5	J	N	Size	Length

VP,VU

U-PVC



Maximum Working Pressure (Normal Temperature)	
VP	1.0MPa
VU	0.6MPa

Dimensions Table

(Unit: mm)

Size	Common						VP			VU		
	d1	d2	ℓ	Taper 1/T	D	Z	d	t	X (Reference)	d	t	X (Reference)
○ 40	48.7 ±0.3	47.21	$55^{+4}_{-0.5}$	1/37	48 ±0.2	4000 ±15	40	3.6 +0.8	8	—	—	—
○ 50	60.8 ±0.3	59.10	$63^{+4}_{-0.5}$	1/37	60 ±0.2	4000 ±15	51	4.1 +0.8	9	56	1.8 +0.4	4
○ 65	76.6 ±0.3	75.33	$61^{+4}_{-0.5}$	1/48	76 ±0.3	4000 ±15	67	4.1 +0.8	9	71	2.2 +0.6	5
75	89.6 ±0.3	88.3 ±0.3	64^{+5}_{0}	1/49	89 ±0.3	4000 ±15	77	5.5 +0.8	12	83	2.7 +0.6	6
100	114.7 ±0.3	113.2 ±0.3	84^{+5}_{0}	1/56	114 ±0.4	4000 ±15	100	6.6 +1.0	14	107	3.1 +0.8	7
125	140.9 ±0.4	139.1 ±0.4	104^{+5}_{0}	1/58	140 ±0.5	4000 ±15	125	7.0 +1.0	15	131	4.1 +0.8	9
150	166.0 ±0.5	163.9 ±0.5	132^{+5}_{0}	1/63	165 ±0.5	4000 ±15	146	8.9 +1.4	19	154	5.1 +0.8	11
200	217.9 ±0.8	213.9 ±0.8	200^{+10}_{0}	1/50	216 ±0.7	4000 ±15	194	10.3 +1.4	22	202	6.5 +1.0	14
250	269.3 ±0.9	264.3 ±0.9	250^{+10}_{0}	1/50	267 ±0.9	4000 ±15	240	12.7 +1.8	27	250	7.8 +1.2	17
300	320.7 ±1.0	314.7 ±1.0	300^{+10}_{0}	1/50	318 ±1.0	4000 ±15	286	15.1 +2.2	32	298	9.2 +1.4	20
350	373.1 ±1.0	366.1 ±1.0	350^{+10}_{0}	1/50	370 ±1.2	4000 ±15	—	—	—	348	10.5 +1.4	22
400	423.6 ±1.2	415.6 ±1.2	400^{+10}_{0}	1/50	420 ±1.3	4000 ±15	—	—	—	395	11.8 +1.6	25
450	474.0 ±1.2	465.0 ±1.2	450^{+10}_{0}	1/50	470 ±1.5	4000 ±15	—	—	—	442	13.2 +1.8	28
500	524.5 ±1.3	514.5 ±1.3	500^{+10}_{0}	1/50	520 ±1.6	4000 ±15	—	—	—	489	14.6 +2.0	31

Notes: 1. Taper 1/T for 75 to 500 mm are reference value. 2. d2 dimension for 40 to 65 mm are reference value.
3. ○ are accordance with JIS K 6741.

Rubber Ring Single-Side Socket Straight Pipe (RR Pipe)

Abbreviation: VP VM VU

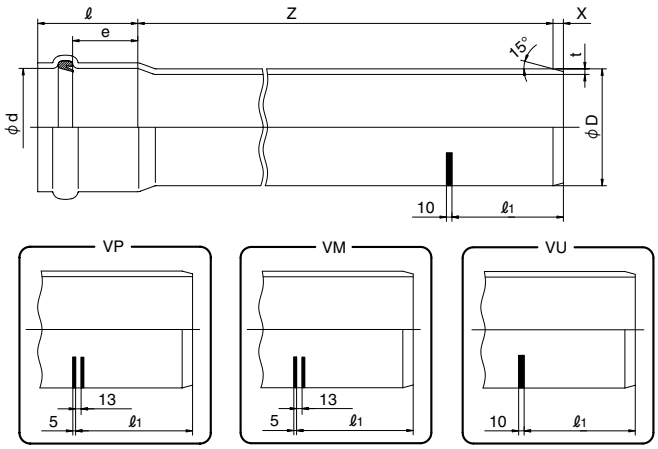
Unplasticized Polyvinyl Chloride Pipe (JIS K 6741)

PRODUCT MODEL CODE

VP	P	N	U	P7	J	N	Size	Length
VM	P	N	U	M1	J	N	Size	Length
VU	P	N	I	U1	J	N	Size	Length

VP,VM,VU

U-PVC



Maximum Working Pressure (Normal Temperature)	
VP	1.0MPa
VM	0.8MPa
VU	0.6MPa

Dimensions Table

(Unit: mm)

Size	Common				VP				VM				VU			
	d (Min.)	e (Min.)	ℓ (Max.)	D	Z	t	X (Reference)	ℓ1	Z	t	X (Reference)	ℓ1 (Reference)	Z	t	X (Reference)	ℓ1 (Reference)
50	60.3	58	115	60±0.2	5000 ±15	4.1+0.8	8	107 +5	—	—	—	—	—	—	—	—
75	89.5	61	130	89±0.3	5000 ±15	5.5+0.8	11	120 +5	—	—	—	—	4000	2.7+0.6	6	131
100	114.5	64	145	114±0.4	5000 ±15	6.6+1.0	13	132 +5	—	—	—	—	4000	3.1+0.8	7	144
125	140.6	67	150	140±0.5	5000 ±15	7.0+1.0	14	138 +5	—	—	—	—	4000	4.1+0.8	9	154
150	165.7	70	165	165±0.5	5000 ±15	8.9+1.4	18	152 +5	—	—	—	—	4000	5.1+0.8	11	167
200	216.9	76	190	216±0.7	5000 ±15	10.3+1.4	21	179 +5	—	—	—	—	4000	6.5+1.0	14	184
250	268.1	82	210	267±0.9	5000 ±15	12.7+1.8	25	197 +5	—	—	—	—	4000	7.8+1.2	17	202
300	319.3	88	235	318±1.0	5000 ±15	15.1+2.2	30	217 +5	—	—	—	—	4000	9.2+1.4	20	220
350	371.5	89	245	370±1.2	—	—	—	—	4000	14.3+2.0	27	231	4000	10.5+1.4	22	242
400	421.7	91	265	420±1.3	—	—	—	—	4000	16.2+2.2	30	244	4000	11.8+1.6	25	260
450	471.9	94	290	470±1.5	—	—	—	—	4000	18.1+2.6	34	263	4000	13.2+1.8	28	283
500	522.1	96	305	520±1.6	—	—	—	—	4000	20.0+2.8	37	276	4000	14.6+2.0	31	306

Straight Pipe

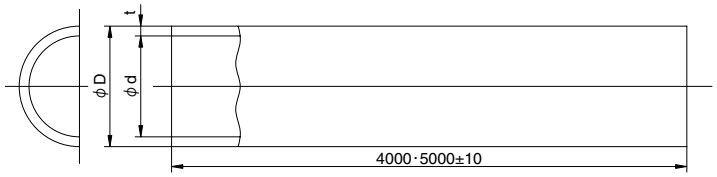
Abbreviation: VPW HIVPW Tap Water Unplasticized Polyvinyl Chloride Pipe (JIS K 6742)

PRODUCT MODEL CODE

VP	P	N	U	WP	J	N	Size	Length	
HIVPW	P	N	I	WP	J	N	Size	Length	

VPW U-PVC HIVPW HI-PVC

Maximum Working Pressure (Hydrostatic pressure)	
VPW HIVPW	0.75MPa



Dimensions Table

(Unit: mm)

Size	Outer Diameter			Thickness		Overall Length		Reference Weight per 1m (kg/m)	
	Basic Dimension	Max/Min. Tolerance	Average Tolerance	Basic Dimension	Tolerance			VPW	HIVPW
13	18.0	±0.2	±0.2	2.5	±0.2	4000	—	0.174	0.170
16	22.0	±0.2	±0.2	3.0	±0.3	4000	—	0.256	0.251
20	26.0	±0.2	±0.2	3.0	±0.3	4000	—	0.310	0.303
25	32.0	±0.2	±0.2	3.5	±0.3	4000	—	0.448	0.439
30	38.0	±0.3	±0.2	3.5	±0.3	4000	—	0.542	0.531
40	48.0	±0.3	±0.2	4.0	±0.3	4000	5000	0.791	0.774
50	60.0	±0.4	±0.2	4.5	±0.4	4000	5000	1.122	1.098
● 65	76.0	±0.5	±0.2	4.5	±0.4	4000	5000	1.445	1.415
75	89.0	±0.5	±0.2	5.9	±0.4	4000	5000	2.202	2.156
100	114.0	±0.6	±0.2	7.1	±0.5	4000	5000	3.409	3.338
●125	140.0	±0.8	±0.3	7.5	±0.5	4000	5000	4.464	4.370
150	165.0	±1.0	±0.3	9.6	±0.6	4000	5000	6.701	6.561

Notes: Maximum/minimum outer dimensional tolerance is the difference between measured maximum and minimum values (maximum/minimum outer diameter) of any sectional outer diameter and the basic dimension. 2. Average outer dimensional tolerance is the difference between the average (average outer diameter) of measured values of outer diameters in 2 directions with an equal distance and the basic dimension. 3. The mass per 1m shown as reference is calculated using the pipe dimension as the basic dimension and setting the density of material for the pipe as 1.43g/cm^3 for unplasticized polyvinyl chloride pipe and 1.40g/cm^3 for impact-resistant unplasticized polyvinyl chloride pipe. It is not part of the standard. 4. Length tolerance shall be $^{+30}_{-10}$ mm. 5. ● conform to the JPPFA standard (JPPFA AS20).

Tap Water Rubber Ring Socket Single-Side Straight Pipe (RR Pipe)

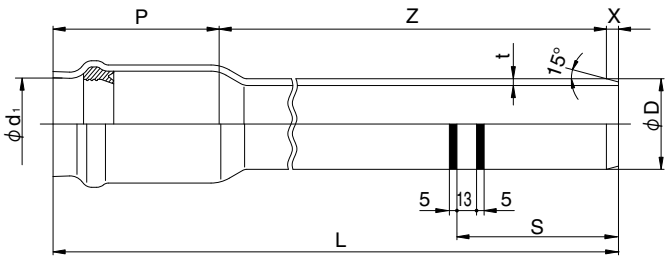
Abbreviation: VPW HIVPW Tap Water Rubber Ring Impact-Resistant Unplasticized Polyvinyl Chloride Pipe (JWWA K 129)

PRODUCT MODEL CODE

VPW	P	N	U	W7	J	N	Size	Length	
HIVPW	P	N	I	W7	J	N	Size	Length	

VPW U-PVC HIVPW HI-PVC

Maximum Working Pressure (Hydrostatic pressure)	
VPW HIVPW	0.75MPa



Dimensions Table

(Unit: mm)

Size	Port and Straight Part						Socket Part					Effective Length	Overall Length		Reference Weight (kg/piece)	
	Outer Diameter D			Thickness t	Chamfer Width	Gauge Line	Inner Diameter d1			Socket Depth P						
	Basic Dimension	Max/Min. Tolerance	Average Tolerance	(Min.)	X	S	Basic Dimension	Max/Min. Tolerance	Average Tolerance	Basic Dimension	Tolerance	Z	L	Tolerance	VP	HIVP
50	60.0	±0.4	±0.2	4.1	8	107	60.9	±0.9	±0.6	110	±5	5000	5118	$^{+30}_{-10}$	5.8	5.7
75	89.0	±0.5	±0.2	5.5	11	120	90.2	±1.2	±0.7	120	±5	5000	5131	$^{+30}_{-10}$	11.5	11.3
100	114.0	±0.6	±0.2	6.6	13	132	115.3	±1.2	±0.7	130	±5	5000	5143	$^{+30}_{-10}$	17.9	17.5
●125	140.0	±0.8	±0.3	7.0	14	138	141.4	±1.4	±0.8	135	±5	5000	5149	$^{+30}_{-10}$	23.5	23.0
150	165.0	±1.0	±0.3	9.0	18	152	166.6	±1.4	±0.8	145	±5	5000	5163	$^{+30}_{-10}$	35.2	34.5

Notes: 1. ● conform to the JPPFA standard (JPPFA AS33 standard).
2. Maximum/minimum outer dimensional tolerance is the difference between measured maximum or minimum outer diameter of any section and the basic dimension.
3. Average outer dimensional tolerance is the difference between the circumference of any section divided by the circumference ratio (3.142) or the arithmetic mean value of measured outer diameters in 2 directions with an equal distance to each other and the basic dimension.

Rubber Ring Socket Single-Side Straight Pipe (RR Pipe)

Abbreviation: VH Agricultural Water Service Wall-Thickness Unplasticized Polyvinyl Chloride Pipe (JPPFA AS60)

PRODUCT MODEL CODE

VH	P	N	U	H7	J	N	Size	Length

VH
U-PVC

Maximum Working Pressure (Normal Temperature)	
VH	1.25MPa

Dimensions Table

(Unit: mm)

Size	D			t	X	d (Min.)	ℓ	D0	ℓ 1	Z	Overall Length	Reference Weight (kg/piece)
	Basic Dimension	Max/Min. Outer Dimensional Tolerance	Average Outer Dimensional Tolerance									
50	60.0	±0.4	±0.2	$4.6^{+0.8}_{0}$	8	60.3	110±5	85	107	5000±15	5118	6.5
75	89.0	±0.5	±0.3	$6.2^{+0.8}_{0}$	11	89.5	120±5	122	120	5000±15	5131	13.0
100	114.0	±0.6	±0.4	$7.6^{+1.0}_{0}$	13	114.6	130±5	152	132	5000±15	5143	20.5
150	165.0	±1.0	±0.5	$10.5^{+1.4}_{0}$	18	165.8	145±5	210	152	5000±15	5163	41.0
200	216.0	±1.3	±0.7	$12.1^{+1.9}_{0}$	21	217.0	170±10	268	175	5000±15	5191	63.1
250	267.0	±1.6	±0.9	$15.0^{+2.3}_{0}$	25	268.1	185±10	328	194	5000±15	5210	96.8
300	318.0	±1.9	±1.0	$17.8^{+2.7}_{0}$	30	319.4	200±10	391	214	5000±15	5230	135.0

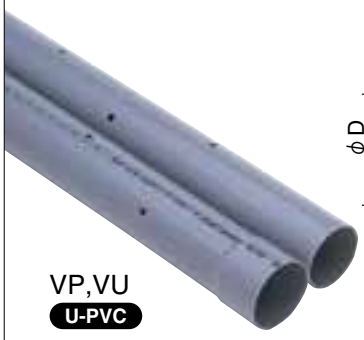
Notes: Dimensions without tolerance are reference value.

Perforated Pipe

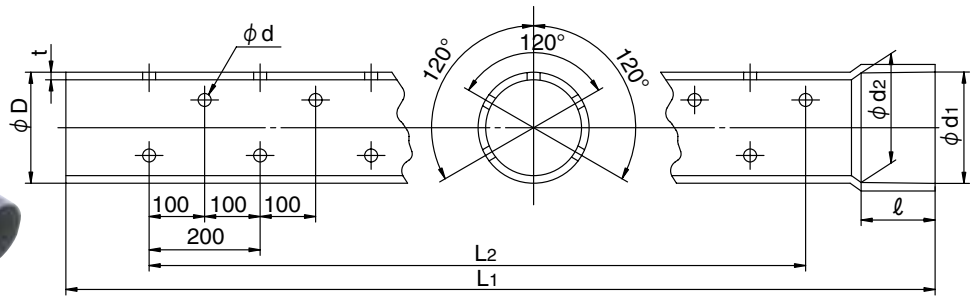
Abbreviation: VP VU Perforated Unplasticized Polyvinyl Chloride Pipe (JPPFA AS13)

PRODUCT MODEL CODE

VP	P	N	U	P6	J	U	Size	04
VU	P	N	U	U6	J	U	Size	04



VP,VU
U-PVC



Dimensions Table

(Unit: mm)

Size	d1 (Min.)	d2 (Min.)	ℓ (Min.)	D	t		d	Number of Holes	L1	L2
					VP	VU				
50	60.2	59.2	40	60±0.2	$4.1^{+0.8}$	1.8±0.4	7	95	3,950	3,700
65	76.3	75.1	40	76±0.3	$4.1^{+0.8}$	2.2±0.6	7	95	3,950	3,700
75	89.3	88.0	40	89±0.3	$5.5^{+0.8}$	2.7±0.6	12	95	3,950	3,700
100	114.4	112.8	50	114±0.4	$6.6^{+1.0}$	3.1±0.8	12	95	3,950	3,700
125	140.5	138.7	60	140±0.5	$7.0^{+1.0}$	4.1±0.8	12	95	3,950	3,700
150	165.5	163.4	75	165±0.5	$8.9^{+1.4}$	5.1±0.8	20	95	3,950	3,700
200	216.7	214.0	100	216±0.7	$10.3^{+1.4}$	6.5±1.0	20	95	3,950	3,700
250	267.9	264.8	125	267±0.9	$12.7^{+1.8}$	7.8±1.2	20	90	3,950	3,500

PRODUCT MODEL CODE LIST

Type	Field	Material	Model	Standard	Type	Size
T	N	*	**	J	N	***

T	TS Fitting

N	Standard

U	U-PVC
I	HI-PVC

9L	90° Elbow
4L	45° Elbow
SO	Socket
TE	Tee
FL	Faucet Elbow (Metal not contained)
KL	Faucet Elbow (Metal contained)
FT	Faucet Tee (Metal not contained)
KT	Faucet Tee (Metal not contained)
FS	Faucet Socket (Metal not contained)
KS	Faucet Socket (Metal contained)
VS	Valve Socket (Metal not contained)
US	Union Socket
CP	Cap

J	JIS

N	Standard

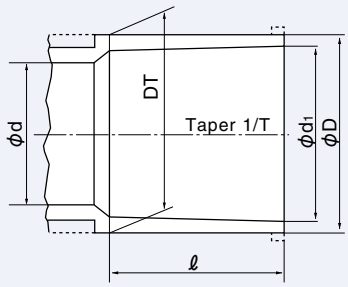
010	10mm
I	
150	150mm

016013	16×13mm
I	
150125	150×125mm

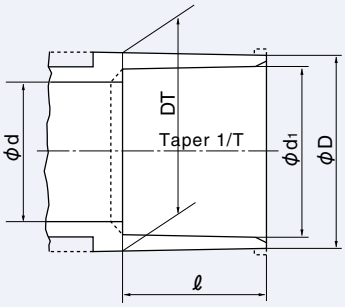
TS·HITS Fitting Common Dimensions

JISK6743
TS···Unplasticized Polyvinyl Chloride Pipe Fitting
HITS···Impact-Resistant Unplasticized Polyvinyl Chloride Pipe Fitting

Socket Common Dimensions
Size 13 — 50 mm



Socket Common Dimensions
Size 65 — 150 mm



Dimensions Table

(Unit: mm)

Size	d_1	d_1 Tolerance	ℓ	1/T	D	DT	D and DT Tolerance	d (Min.)	Applicable Pipe Outer Diameter
□ 10	15.40	±0.20	22.0	1/25	21.0	21.0	−0.5	10	15
13	18.40	±0.20	26.0	1/30	24.0	24.0	−0.6	13	18
16	22.40	±0.20	30.0	1/34	29.0	29.0	−0.7	16	22
20	26.45	±0.20	35.0	1/34	33.0	33.0	−0.8	20	26
25	32.55	±0.25	40.0	1/34	40.0	40.0	−1.0	25	32
30	38.60	±0.25	44.0	1/34	46.0	46.0	−1.0	31	38
40	48.70	±0.30	55.0	1/37	57.0	57.0	−1.2	40	48
50	60.80	±0.30	63.0	1/37	70.0	70.0	−1.5	51	60
● 65	76.60	±0.30	61.0	1/48	87.0	88.5	−1.5	67	76
75	89.60	±0.30	64.0	1/49	102.0	104.5	−1.5	77	89
100	114.70	±0.30	84.0	1/56	130.0	133.5	−1.8	100	114
●125	140.85	±0.35	104.0	1/58	157.0	161.0	−1.8	125	140
150	166.00	±0.40	132.0	1/63	186.0	190.0	−2.0	146	165

Notes: 1. ℓ tolerance shall be $^{+4}_{-0.5}$ mm.
2. D and DT tolerance and t tolerance on the plus side are not restricted.
3. □ conform to the AV standard.
4. ● conform to the JPPFA standard.

Elbow

Abbreviation: L

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

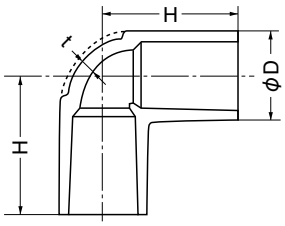
TS ▸ T N U 9L J N Size

HITS ▸ T N I 9L J N Size

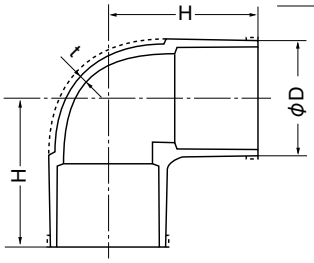
TS U-PVC

HITS HI-PVC

Size 13 – 50 mm



Size 65 – 150 mm



Max. Working Pressure (Hydrostatic pressure)

TS • HITS 0.75MPa

Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	H
13	○	○	24.0	3.0	36
16	○	○	29.0	3.5	43
20	○	○	33.0	3.5	50
25	○	○	40.0	4.0	58
30	○	○	46.0	4.0	65
40	○	○	57.0	4.5	82

Size	TS	HITS	D	t	H
50	○	○	70.0	5.0	96
65	●	●	87.0	6.6	110
75	●	●	102.0	8.0	120
100	●	●	130.0	10.0	153
125	●	●	157.0	11.0	188
150	●	●	186.0	13.0	230

Notes: 1. H tolerance shall be $^{+5}_{-1}$ mm. 2. ● conform to the JPPFA standard. 3. ○ are accordance with JIS K6743.

45° Elbow

Abbreviation: 45L

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

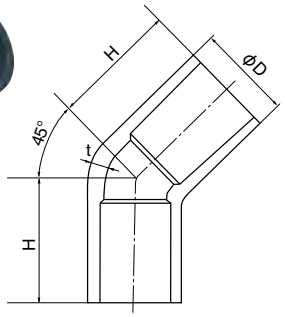
PRODUCT MODEL CODE

TS ▸ T N U 4L J N Size

HITS ▸ T N I 4L J N Size

TS U-PVC

HITS HI-PVC



Max. Working Pressure (Hydrostatic pressure)

TS • HITS 0.75MPa

Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	H
20	○	○	33.0	3.5	44
25	○	○	40.0	4.0	51

Notes: 1. H tolerance shall be $^{+5}_{-1}$ mm.
2. ○ are accordance with JIS K6743.

Socket

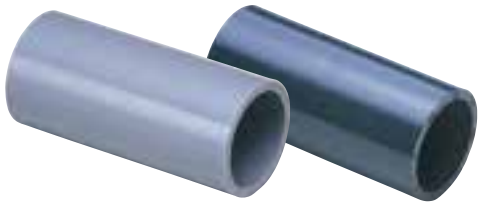
Abbreviation: S

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

TS ▸ T N U SO J N Size

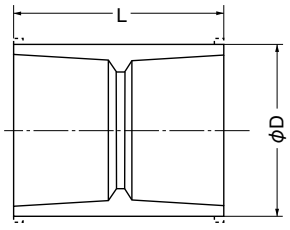
HITS ▸ T N I SO J N Size



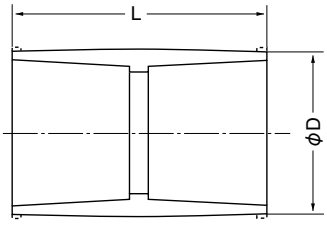
TS U-PVC

HITS HI-PVC

Size 13 – 50 mm



Size 65 – 150 mm



Max. Working Pressure (Hydrostatic pressure)

TS • HITS 0.75MPa

Dimensions Table

(Unit: mm)

Size	TS	HITS	D	L
13	○	○	24.0	57
16	○	○	29.0	67
20	○	○	33.0	77
25	○	○	40.0	87
30	○	○	46.0	95
40	○	○	57.0	117

Size	TS	HITS	D	L
50	○	○	70.0	133
65	●	●	87.0	145
75	○	○	102.0	155
100	○	○	130.0	200
125	●	●	157.0	240
150	○	○	186.0	300

Notes: 1. L tolerance shall be ±4.0 mm. 2. ● conform to the JPPFA standard. 3. ○ are accordance with JIS K6743.

Reducing Socket

Abbreviation: RS

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

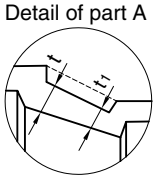
TS ▸ T N U SO J N Size

HITS ▸ T N I SO J N Size

TS U-PVC

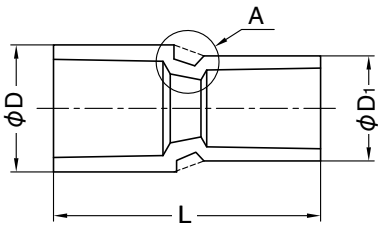
HITS HI-PVC

Detail of part A

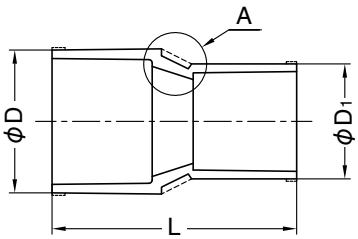


Maximum Working Pressure (Hydrostatic pressure)	
TS • HITS	0.75MPa

Size 13 – 50 mm



Size 65 – 150 mm



Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	D1	t1	L
16× 13	○	○	29.0	3.5	24.0	3.0	61
20× 13	○	○	33.0	3.5	24.0	3.0	68
20× 16	○	○	33.0	3.5	29.0	3.5	71
25× 13	○	○	40.0	4.0	24.0	3.0	86
25× 16	○	○	40.0	4.0	29.0	3.5	85
25× 20	○	○	40.0	4.0	33.0	3.5	84
30× 20	○	○	46.0	4.0	33.0	3.5	93
30× 25	○	○	46.0	4.0	40.0	4.0	93
40× 20	●	●	57.0	4.5	33.0	3.5	113
40× 25	○	○	57.0	4.5	40.0	4.0	114
40× 30	○	○	57.0	4.5	46.0	4.0	114

Size	TS	HITS	D	t	D1	t1	L
50× 20	●	●	70.0	5.0	33.0	3.5	116
50× 25	●	●	70.0	5.0	40.0	4.0	140
50× 30	○	○	70.0	5.0	46.0	4.0	136
50× 40	○	○	70.0	5.0	57.0	4.5	136
▲ 65× 40	□	□	87.0	6.6	57.0	4.5	145
65× 50	●	●	87.0	6.6	70.0	5.0	149
▲ 75× 40	□	□	102.0	8.0	57.0	4.5	153
75× 50	○	○	102.0	8.0	70.0	5.0	165
75× 65	●	●	102.0	8.0	87.0	6.6	159
100× 75	○	○	130.0	10.0	102.0	8.0	190
125×100	●	●	157.0	11.0	130.0	10.0	229
▲150×100	○	○	186.0	13.0	130.0	10.0	295
150×125	○	○	186.0	13.0	157.0	11.0	272

Notes: 1. L tolerance shall be ±4.0 mm. 2. ● conform to the JPPFA standard. 3. □ conform to the AV standard.
4. ▲ are stock products. 5. ○ are accordance with JIS K6743.

Tee

Abbreviation: T

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

TS ▸ T N U TE J N Size

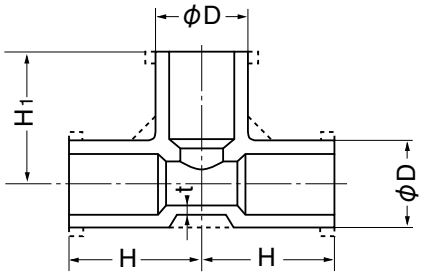
HITS ▸ T N I TE J N Size

TS U-PVC

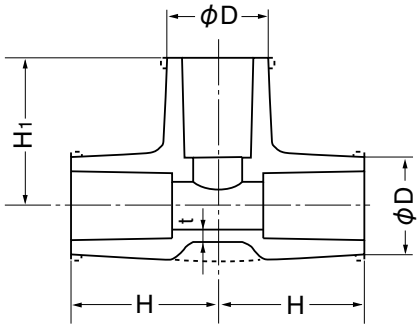
HITS HI-PVC

Maximum Working Pressure (Hydrostatic pressure)	
TS • HITS	0.75MPa

Size 13 – 50 mm



Size 65 – 150 mm



Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	H	H1
13	○	○	24.0	3.0	36	36
16	○	○	29.0	3.5	43	43
20	○	○	33.0	3.5	50	50
25	○	○	40.0	4.0	58	58
30	○	○	46.0	4.0	65	65
40	○	○	57.0	4.5	82	82

Size	TS	HITS	D	t	H	H1
50	○	○	70.0	5.0	96	96
65	●	●	87.0	6.6	110	110
75	○	○	102.0	8.0	120	120
100	○	○	130.0	10.0	152	152
125	●	●	157.0	11.0	187	187
150	○	○	186.0	13.0	230	230

Notes: 1. H tolerance shall be $^{+5}_{-1}$ mm. 2. ● conform to the JPPFA standard. 3. ○ are accordance with JIS K6743.

Reducing Tee

Abbreviation: T

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

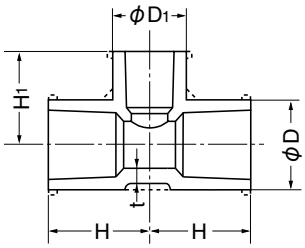
TS ▸ T N U TE J N Size

HITS ▸ T N I TE J N Size

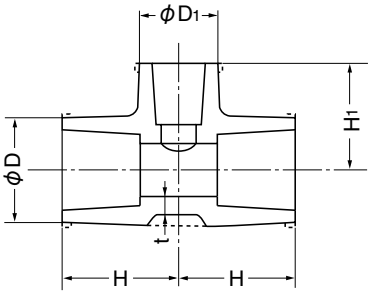
TS U-PVC

HITS HI-PVC

Size 13 – 50 mm



Size 65 – 150 mm



Maximum Working Pressure (Hydrostatic pressure)

TS • HITS 0.75MPa

Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	H	D1	H1
16×13	○	○	29.0	3.5	41	24.0	38
20×13	○	○	33.0	3.5	46	24.0	40
20×16	○	○	33.0	3.5	48	29.0	45
25×13	○	○	40.0	4.0	51	24.0	43
25×16	○	○	40.0	4.0	53	29.0	48
25×20	○	○	40.0	4.0	55	33.0	53
▲ 30×13	○	○	46.0	4.0	55	24.0	46
30×16	○	○	46.0	4.0	57	29.0	51
30×20	○	○	46.0	4.0	59	33.0	56
30×25	○	○	46.0	4.0	62	40.0	61

Size	TS	HITS	D	t	H	D1	H1
40×13	○	○	57.0	4.5	66	24.0	52
▲ 40×16	○	○	57.0	4.5	68	29.0	57
40×20	○	○	57.0	4.5	70	33.0	62
40×25	○	○	57.0	4.5	73	40.0	67
40×30	○	○	57.0	4.5	76	46.0	71
50×13	○	○	70.0	5.0	74	24.0	58
50×16	○	○	70.0	5.0	76	29.0	63
50×20	○	○	70.0	5.0	78	33.0	68
50×25	○	○	70.0	5.0	81	40.0	73
50×30	○	○	70.0	5.0	84	46.0	77
50×40	○	○	70.0	5.0	90	57.0	88

Size	TS	HITS	D	t	H	D1	H1
65× 40	●	●	87.0	6.6	100	57.0	95
65× 50	●	●	87.0	6.6	101	70.0	104
75× 25	○	○	102.0	8.0	93	40.0	88
75× 40	○	○	102.0	8.0	100	57.0	102
75× 50	○	○	102.0	8.0	105	70.0	110
▲ 75× 65	●	●	102.0	8.0	113	87.0	117

Size	TS	HITS	D	t	H	D1	H1
100× 50	○	○	130.0	10.0	125	70.0	122
100× 75	○	○	130.0	10.0	140	102.0	132
125× 75	●	●	157.0	11.0	160	102.0	147
125×100	●	●	157.0	11.0	173	130.0	167
150× 75	○	○	186.0	13.0	195	102.0	158
150×100	○	○	186.0	13.0	208	130.0	182
150×125	●	●	186.0	13.0	217	157.0	201

Notes: 1. H and H1 tolerance shall be $^{+5}_{-1}$ mm. 2. ● conform to the JPPFA standard.
3. ▲ are stock products. (PVC (30×13) are our products.) 4. ○ are accordance with JIS K6743.

Faucet Elbow

Abbreviation: FL

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

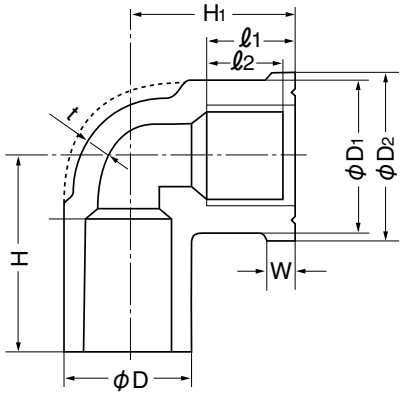
PRODUCT MODEL CODE

TS ▸ T N U FL J N Size

HITS ▸ T N I FL J N Size

TS U-PVC

HITS HI-PVC



Maximum Working Pressure (Hydrostatic pressure)

TS • HITS 0.75MPa

<Use Precautions>

* Use both seal tape and gasket for connection of threaded ends.
* Do not use them for connecting steel pipe and PVC pipe.
* Fix the area around an elbow using a retainer.

Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	D1	D2	ℓ1	ℓ2	W	H	H1	Female Thread Size
13	□	□	24.0	3.0	30	34	17	14	4	38	29	Rp1/2
16	□	□	29.0	3.5	30	34	17	14	4	43	32	Rp1/2
20	□	□	33.0	3.5	37	42	19	16	4	51	36	Rp3/4
25	□	□	40.0	4.0	46	52	21	18	5	59	40	Rp1

Notes: 1. Threaded end shall be parallel female thread of JIS B 0203 (taper threaded end for pipes). 2. H tolerance shall be $^{+5}_{-1}$ mm.
3. H1 tolerance shall be $^{+5}_{-2}$ mm. 4. □ conform to the AV standard. 5. ℓ_2 tolerance shall be ±1 mm.

Metal-Containing Faucet Elbow

Abbreviation: KFL — Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

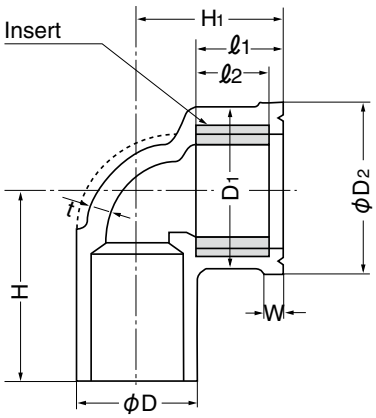
PRODUCT MODEL CODE

TS ▸ T N U KL J N Size

HITS ▸ T N I KL J N Size

TS U-PVC

HITS HI-PVC



Maximum Working Pressure (Hydrostatic pressure)

TS・HITS 0.75MPa

<Use Precautions>

* Use both seal tape and gasket for connection of threaded ends.
* Do not use them for connecting faucet with a taper threaded end and steel pipe.
* Fix the area around an elbow using a retainer.

Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	D1	D2	ℓ1	ℓ2	W	H	H1	Female Thread Size
13	○	○	24.0	3.0	30	34	17	14	4	38	29	Rp1/2
16×13	○	○	29.0	3.0	30	34	17	14	4	43	32	Rp1/2
20	○	○	33.0	3.5	37	42	19	16	4	51	36	Rp3/4
25	○	○	40.0	4.0	46	52	21	18	5	59	40	Rp1
20×13	○	○	33.0	3.5	30	34	17	14	4	47	33	Rp1/2

Notes: 1. Insert shall be free-cutting brass of JIS H3250 (coper and copper alloy rod). 2. Threaded end shall be parallel female thread of JIS B0203 (taper threaded end for pipes).
3. H tolerance shall be $^{+5}_{-1}$ mm. 4. H1 tolerance shall be $^{+5}_{-1}$ mm. 5. ℓ2 tolerance shall be ±1 mm. 6. ○ are accordance with JIS K6743.

Faucet Tee

Abbreviation: FT — Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

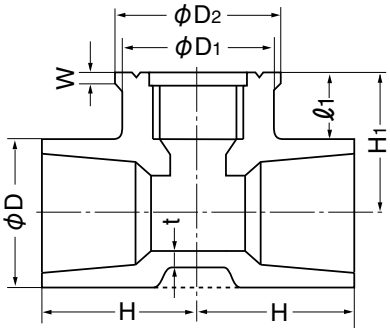
PRODUCT MODEL CODE

TS ▸ T N U FT J N Size

HITS ▸ T N I FT J N Size

TS U-PVC

HITS HI-PVC



Maximum Working Pressure (Hydrostatic pressure)

TS・HITS 0.75MPa

<Use Precautions>

* Use both seal tape and gasket for connection of threaded ends.
* Do not use them for connecting steel pipe and PVC pipe.
* Fix the area around a tee using a retainer.

Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	D1	D2	ℓ1	W	H	H1	Female Thread Size
▲ 13	□	□	24.0	3.0	28	34	17	4	38	29	Rp1/2
20	□	□	33.0	3.5	37	42	19	4	51	36	Rp3/4
25	□	□	40.0	4.0	46	52	21	5	59	42	Rp1
▲16×13	□	□	29.0	3.5	28	34	17	4	43	32	Rp1/2
20×13	□	□	33.0	3.5	30	34	17	4	47	34	Rp1/2
25×13	□	□	40.0	4.0	30	34	17	4	52	38	Rp1/2
25×20	□	□	40.0	4.0	37	42	19	4	56	40	Rp3/4

Notes: 1. Threaded end shall be parallel female thread of JIS B 0203 (taper threaded end for pipes). 2. H tolerance shall be $^{+5}_{-1}$ mm.
3. H1 tolerance shall be $^{+5}_{-2}$ mm. 4. □ conform to the AV standard. 5. ▲ are stock products.

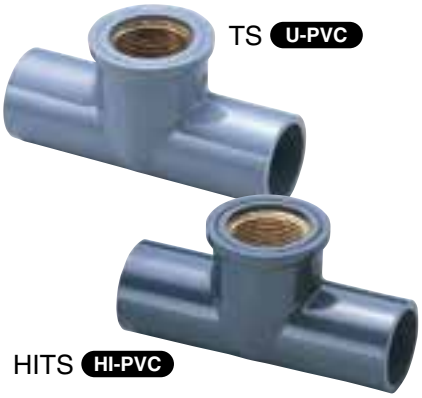
Metal-Containing Faucet Tee

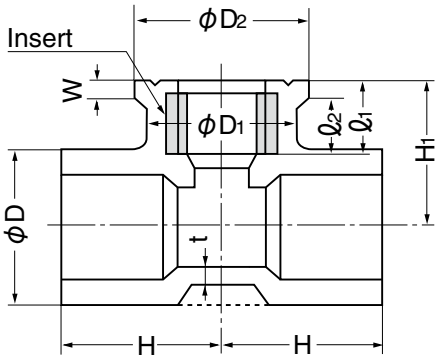
Abbreviation: KFT

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

TS	T	N	U	KT	J	N	Size
HITS	T	N	I	KT	J	N	Size





Maximum Working Pressure (Hydrostatic pressure)	
TS • HITS	0.75MPa

<Use Precautions>

* Use both seal tape and gasket for connection of threaded ends.
* Do not use them for connecting faucet with a taper threaded end and steel pipe.
* Fix the area around a tee using a retainer.

Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	D_1	D_2	ℓ_1	ℓ_2	W	H	H_1	Female Thread Size
20	○	○	33.0	3.5	37	42	19	16	4	51	36	Rp3/4
25	○	○	40.0	4.0	46	52	21	18	5	59	42	Rp1
20×13	○	○	33.0	3.5	30	34	17	14	4	47	34	Rp1/2
25×13	○	○	40.0	4.0	30	34	17	14	4	52	38	Rp1/2
25×20	○	○	40.0	4.0	37	42	19	16	4	56	40	Rp3/4

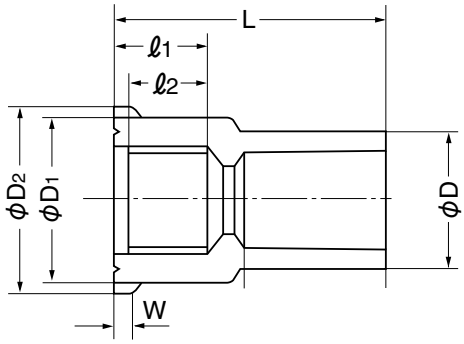
Notes: 1. Insert shall be free-cutting brass of JIS H3250 (coper and copper alloy rod). 2. Threaded end shall be parallel female thread of JIS B0203 (taper threaded end for pipes).
3. $\ell 2$ tolerance shall be ±1 mm. 4. H tolerance shall be $^{+5}_{-1}$ mm. 5. H1 tolerance shall be $^{+5}_{-2}$ mm. 6. ○ are accordance with JIS K6743.

Faucet Socket

Abbreviation: FS

PRODUCT MODEL CODE

TS	T	N	U	FS	J	N	Size
HITS	T	N	I	FS	J	N	Size



Maximum Working Pressure (Hydrostatic pressure)	
TS • HITS	0.75MPa

<Use Precautions>

* Use both seal tape and gasket for connection of threaded ends.
* Do not use them for connecting steel pipe and PVC pipe.

Dimensions Table

(Unit: mm)

Size	TS	HITS	D	D_1	D_2	ℓ_1	ℓ_2	W	L	Female Thread Size
13	□	□	24.0	30	34	17	14	4	47	Rp1/2
16	□	□	29.0	30	34	17	14	4	52	Rp1/2
20	□	□	33.0	37	42	19	16	4	59	Rp3/4
25	□	□	40.0	46	52	21	18	5	68	Rp1

Notes: 1. Threaded end shall be parallel female thread of JIS B 0203 (taper threaded end for pipes). 2. L tolerance shall be $^{+5}_{-1}$ mm.
3. $\ell 2$ tolerance shall be ±1 mm. 4. □ conform to the AV standard.

Metal-Containing Faucet Socket

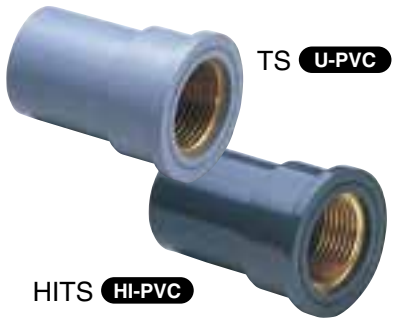
Abbreviation: KFS

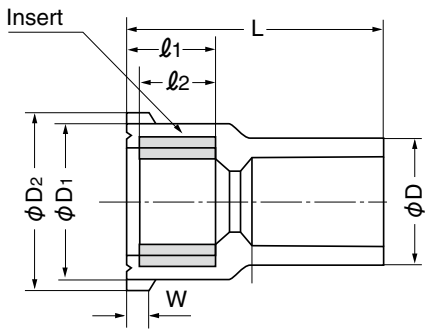
Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

TS ▸ T N U KS J N Size

HITS ▸ T N I KS J N Size





Maximum Working Pressure (Hydrostatic pressure)

TS・HITS 0.75MPa

<Use Precautions>

* Use both seal tape and gasket for connection of threaded ends.
* Do not use them for connecting faucet with a taper threaded end and steel pipe.

Dimensions Table

(Unit: mm)

Size	TS	HITS	D	D_1	D_2	ℓ_1	ℓ_2	W	L	Female Thread Size
13	○	○	24.0	30	34	17	14	4	47	Rp1/2
16×13	○	○	29.0	30	34	17	14	4	52	Rp1/2
20	○	○	33.0	37	42	19	16	4	59	Rp3/4
25	○	○	40.0	46	52	21	18	5	68	Rp1
20×13	○	○	33.0	30	34	17	14	4	57	Rp1/2

Notes: 1. Insert shall be free-cutting brass of JIS H3250 (coper and copper alloy rod). 2. Threaded end shall be parallel female thread of JIS B0203 (taper threaded end for pipes).
3. L tolerance shall be $^{+5}_{-1}$ mm. 4. ℓ_2 tolerance shall be ±1 mm. 5. ○ are accordance with JIS K6743.

Valve Socket

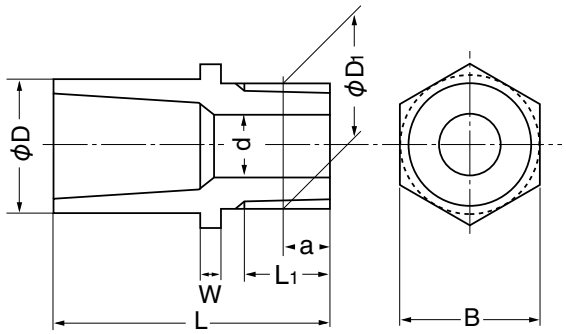
Abbreviation: VS

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

TS ▸ T N U VS J N Size

HITS ▸ T N I VS J N Size



Maximum Working Pressure (Hydrostatic pressure)

TS・HITS 0.75MPa

<Use Precautions>

* Avoid screwing in and removing repeatedly.
* Connect threaded parts using seal tape.
* Do not use them for connecting with steel pipe.
* Do not use them for buried pipe.
* Do not use them for the area where an external force such as bending and vibration is applied.

Dimensions Table

(Unit: mm)

Size	TS	HITS	D	d	Thread Nominal	Basic Diameter Outer Diameter D1	Thread Number of Threads/Inch	Basic Diameter Position a	L_1 (Min.)	W	L	B
10	□	—	21.0	10	R3/8	16.662	19	6.35	12	6	43	21
13	○	○	24.0	13	R1/2	20.955	14	8.16	13.16	6	50	24
16	○	○	29.0	13	R1/2	20.955	14	8.16	13.16	6	54	29
20	○	○	33.0	18	R3/4	26.441	14	9.53	14.53	8	64	33
25	○	○	40.0	23	R1	33.249	11	10.39	16.79	8	71	40
30	○	○	46.0	31	R1 1/4	41.910	11	12.70	19.10	10	80	46
40	○	○	57.0	37	R1 1/2	47.803	11	12.70	19.10	10	92	57
50	○	○	70.0	48	R2	59.614	11	15.88	23.38	12	106	70
65	□	□	87.0	62	R2 1/2	75.184	11	17.46	30	15	118	87
75	□	□	102.0	72	R3	87.884	11	20.64	34	16	127	102
100	□	□	130.0	96	R4	113.030	11	25.40	40	18	157	130
125	□	—	157.0	119	R5	138.430	11	28.58	44	20	186	157
▲150	□	—	185.0	142	R6	163.830	11	28.58	44	25	220	185

Notes: 1. Threaded end shall conform to taper male threaded end of JIS B0203 (taper threaded end for pipes). 2. L tolerance shall be $^{+5}_{-2}$ mm.
3. ● conform to the JPPFA standard. 4. □ conform to the AV standard. 5. B tolerance shall conform to D tolerance.
6. Products with the threaded part containing metal are also available for the size 13 mm. 7. ▲ are stock products. 8. ○ are accordance with JIS K6743.

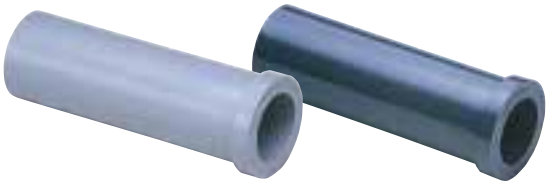
Union Socket

Abbreviation: US

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

TS	T	N	U	US	J	N	Size
HITS	T	N	I	US	J	N	Size



TS U-PVC HITS HI-PVC

Maximum Working Pressure (Hydrostatic pressure)

TS • HITS	0.75MPa

Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	D1	W	L
13	○	○	18.0	2.5	23.0	5	80
▲16	○	○	22.0	3.0	27.5	5	85
20	○	○	26.0	3.0	29.5	6	90
25	○	○	32.0	3.5	36.5	7	100

Size	TS	HITS	D	t	D1	W	L
▲30	○	○	38.0	3.5	42.0	8	110
▲40	○	○	48.0	4.0	53.0	8	120
▲50	○	○	60.0	4.5	71.0	9	130

Notes: 1. L tolerance shall be $^{+5}_{-2}$ mm. 2. ▲ are stock products. 3. ○ are accordance with JIS K6743.

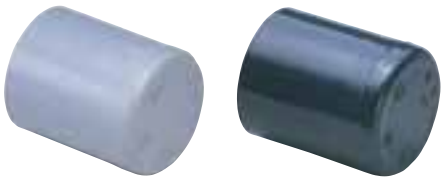
Cap

Abbreviation: C

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

TS	T	N	U	CP	J	N	Size
HITS	T	N	I	CP	J	N	Size

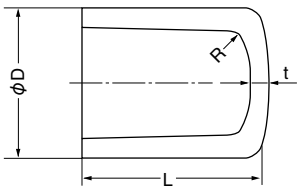


TS U-PVC HITS HI-PVC

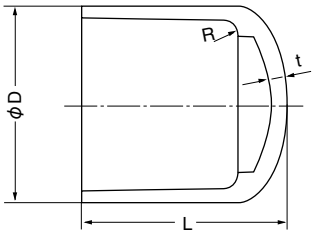
Maximum Working Pressure (Hydrostatic pressure)

TS • HITS	0.75MPa

Size 13 – 50 mm



Size 65 – 150 mm



Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	L
13	○	○	24.0	3.0	29.0
16	○	○	29.0	3.5	33.5
20	○	○	33.0	3.5	38.5
25	○	○	40.0	4.0	44.0
30	○	○	46.0	4.0	48.0
40	○	○	57.0	4.5	59.5

Size	TS	HITS	D	t	L
50	○	○	70.0	5.0	68.0
65	●	●	87.0	6.6	96.0
75	○	○	102.0	8.0	105.0
100	●	●	130.0	10.0	138.0
150	○	○	186.0	13.0	205.0

Notes: 1. L tolerance shall be $^{+5}_{0}$ mm. 2. ● conform to the AV standard and the JPPFA standard.
3. R tolerance shall be 1 to 5 mm. 4. ○ are accordance with JIS K6743.

PRODUCT MODEL CODE LIST

Type	Field	Material	Model	Standard	Type	Size
R	N	*	MF	*	*	***
R RR Fitting	N None Color	U U-PVC I HI-PVC R FRP	MF RR-MF Joint	J JIS W Waterworks	I Casted Product S Bonded Product	040 40 mm ⋮ 300 300 mm

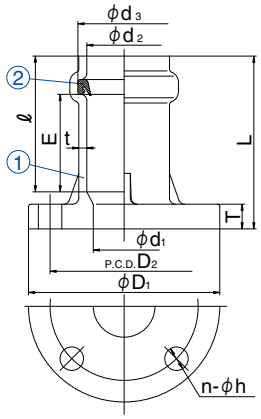
RR-MF Joint (Casted Product)

PRODUCT MODEL CODE

U-PVC	Waterworks ▸	R	N	U	MF	W	I	Size
HI-PVC	Waterworks ▸	R	N	I	MF	W	I	Size
U-PVC	10K ▸	R	N	U	MF	J	I	Size
HI-PVC	10K ▸	R	N	I	MF	J	I	Size

U-PVC

HI-PVC



No.	Description	pcs.	Material
①	MF Joint	1	U-PVC,HI-PVC
②	Rubber Ring	1	SBR

Dimensions Table

(Unit: mm)

Size	d1	JIS B 2062 Waterworks				JIS 10K				T	d2	d3	E (Min.)	ℓ	t	L
		D1	D2	n	h	D1	D2	n	h							
40	40	140	105	4	19	140	105	4	19	16	48.5	58	54	100	5	120
50	50	155	120	4	19	155	120	4	19	20	60.5	75	56	110	6.5	140
80 (75)	78	211	168	4	19	185	150	8	19	22	90.2	109	61	120	9	160
100	100	238	195	4	19	210	175	8	19	24	115.3	136	64	130	10.5	175
125	125	263	220	6	19	250	210	8	23	24	140.6	164	68	140	12	190
150	148	290	247	6	19	280	240	8	23	24	166.6	191	70	145	14	200

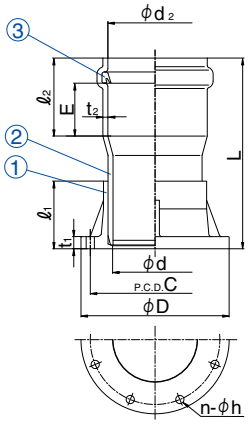
Notes: D1, D2, n and h for 40 mm and 50 mm are accordance with the JIS 10K standard.

AV RR-MF Joint (Bonded Product)

PRODUCT MODEL CODE

U-PVC	Waterworks ▸	R	N	U	MF	W	S	Size
U-PVC	10K ▸	R	N	U	MF	J	S	Size

U-PVC



No.	Description	pcs.	Material
①	TS Flange	1	U-PVC
②	RR Short Pipe	1	U-PVC
③	Rubber Ring	1	SBR

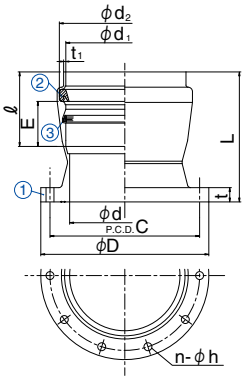
Dimensions Table

(Unit: mm)

Size	d	JIS B 2062 Waterworks				JIS 10K				t1	ℓ1	d2	E (Min.)	ℓ2	t2	L
		D	C	n	h	D	C	n	h							
200	196	342	299	8	19	330	290	12	23	28	156	218.0±1.1	76	170±5	10.3±1.4	440
250	247	410	360	8	23	400	355	12	25	30	167	269.3±1.2	82	185±5	12.7±1.8	515
300	298	464	414	10	23	445	400	16	25	30	167	320.7±1.4	88	200±5	15.1±2.2	535

FRP RR-MF Joint <Used for both VU and VM with Retainer>

PRODUCT MODEL CODE: R N R MF W I Size



Maximum Working Pressure (Normal Temperature)	
VU	0.8MPa
VM	0.6MPa

No.	Description	pcs.	Material
①	MF Joint	1	FRP
②	Rubber Ring	1	SBR
③	Ring	1	SUS

Dimensions Table

(Unit: mm)

Size	d	JIS B 2062 Waterworks				t	d_1 (Mn.)	d_2	ℓ	E (Min.)	t_1 (Min.)	L
		D	C	n	h							
350	348	530	472	10	25	45	371.5	413	235	132	6.9	410
400	395	582	524	12	25	47	421.7	470	255	153	7.9	460
450	442	652	585	12	27	49	471.9	525	280	166	8.9	512
500	489	706	639	12	27	51	522.1	586	300	175	10.0	570

PRODUCT MODEL CODE LIST

Type	Field	Material	Model	Standard	Others	Size
*	N	*	**	V	N	***
B Bend T TS Fitting	N Standard	U U-PVC I HI-PVC	90 90° Bend 45 45° Bend 9L 90° Elbow SO Socket TE Tee	V AV	N Normal Color	200 200 mm ⋮ 300 300 mm

AV90° Bend

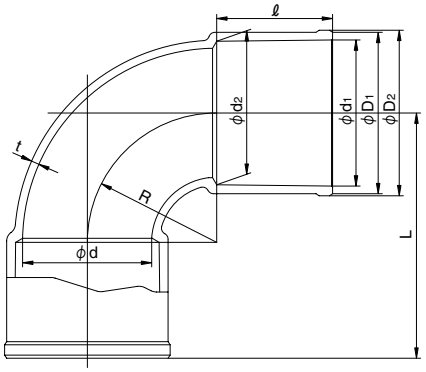
PRODUCT MODEL CODE

TS ▸ B N U 90 V N Size

HITS ▸ B N I 90 V N Size

TS **U-PVC**

HITS **HI-PVC**



Maximum Working Pressure (Normal Temperature)	
75 – 150 mm	1.0MPa
200mm	0.75MPa
U-PVC 250mm	0.6MPa
HI-PVC 250mm	0.75MPa
300mm	0.4MPa

Dimensions Table

(Unit: mm)

Size	TS	HITS	d_1	d_2	ℓ	D_1 (Min.)	D_2 (Reference)	d	t (Min.)	L	R
75	☐	–	89.80	88.13	72	101	104	78	6	137	65
100	☐	–	115.00	112.89	92	129	132	100	7.3	172	80
125	☐	–	141.20	138.72	112	156	160	125	7.7	237	125
150	☐	–	166.50	163.39	140	185	189	148	9.8	260	120
200	☐	☐	217.00	214.10	145	240	244	196	15	341	196
250	☐	☐	268.20	265.00	155	293	298	247	16	402	247
300	☐	☐	318.70	315.88	155	337	341	298	10	395	240

Notes: 1. ☐ conform to the AV standard.

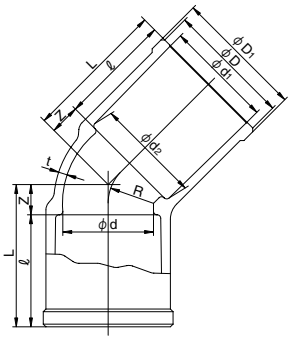
AV45° Bend

PRODUCT MODEL CODE

TS	B	N	U	45	V	N	Size
HITS	B	N	I	45	V	N	Size

TS **U-PVC**

HITS **HI-PVC**



Dimensions Table

(Unit: mm)

Size	TS	HITS	d_1	d_2	ℓ	D (Min.)	D_1 (Reference)	d	t (Min.)	Z	L	R
40	☐	☐	48.70	47.21	55	57	60	40	4.5	14	69	20
50	☐	☐	60.80	59.10	63	70	73	51	5	17	80	25.5
65	☐	☐	76.60	75.33	61	87	90	67	6.6	20	81	34
75	☐	☐	89.80	88.13	72	101	104	78	6	25	97	39
100	☐	☐	115.00	112.89	92	129	132	100	7.3	30	122	50
125	☐	☐	141.20	138.71	112	156	160	125	7.7	37	149	62.5
150	☐	☐	166.50	163.39	140	185	189	148	10	44	184	74
200	☐	☐	217.00	214.10	145	240	244	196	15	48	193	98
250	☐	☐	268.20	265.00	155	293	298	247	16	58	213	123.5
300	☐	☐	318.70	315.88	155	337	341	298	10	70	225	149

Notes: 1. ☐ conform to the AV standard.

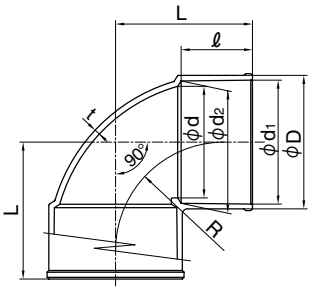
Short Elbow

PRODUCT MODEL CODE

TS	T	N	U	9L	V	N	Size
HITS	T	N	I	9L	V	N	Size

TS **U-PVC**

HITS **HI-PVC**



Dimensions Table

(Unit: mm)

Size	TS	HITS	d_1	d_2	ℓ	D	d	t	L	R
200	☐	☐	217.0	214.1	145	240	201	15	265	190
250	☐	☐	268.2	265.0	155	295	247	16	311	235
300	☐	☐	319.6	315.5	175	347	298	18	350	170

Notes: 1. ☐ conform to the AV standard.

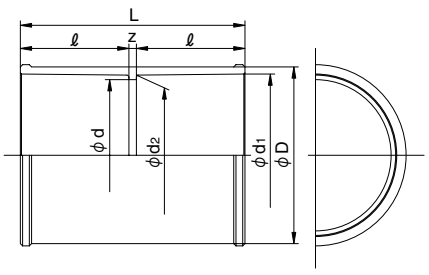
Socket

PRODUCT MODEL CODE

TS	T	N	U	SO	V	N	Size
HITS	T	N	I	SO	V	N	Size

TS **U-PVC**

HITS **HI-PVC**



Dimensions Table

(Unit: mm)

Size	TS	HITS	d_1	d_2	ℓ	D	d	Z	L
200	☐	☐	217.0	214.1	145	238	202	15	305
250	☐	☐	268.2	265.0	155	295	247	42	352
300	☐	☐	319.6	315.5	175	336	298	10	360

Notes: 1. ☐ conform to the AV standard.

Reducing Socket

PRODUCT MODEL CODE

TS ▸ T N U SO V N Size

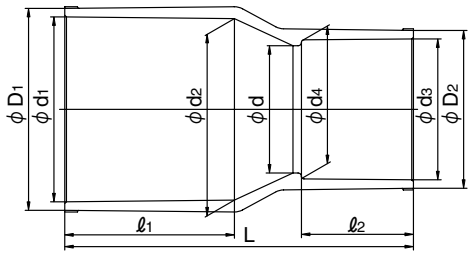
HITS ▸ T N I SO V N Size

TS

U-PVC

HITS

HI-PVC



Dimensions Table

(Unit: mm)

Size	TS	HITS	d1	d2	ℓ 1	d3	d4	ℓ 2	D1	D2	d	L
200×150	☐	☐	217.0	214.1	145	166.0	163.9	132	240	188	146	356
250×200	☐	☐	268.2	265.0	155	217.0	214.1	145	292	240	194	380
300×250	☐	☐	319.6	315.5	175	268.2	265.0	155	347	295	247	405

Notes: 1. ☐ conform to the AV standard.

Tee

PRODUCT MODEL CODE

TS ▸ T N U TE V N Size

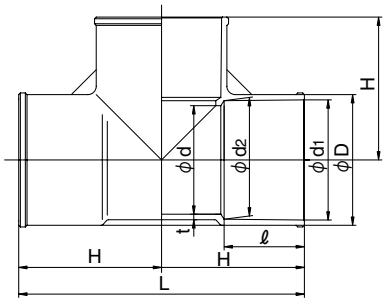
HITS ▸ T N I TE V N Size

TS

U-PVC

HITS

HI-PVC



Dimensions Table

(Unit: mm)

Size	TS	HITS	d1	d2	ℓ	D	d	t	L	H
200	☐	☐	217.0	214.1	145	240	196	15	532	266
250	☐	☐	268.2	265.0	155	295	247	16	662	331
300	☐	☐	319.6	315.5	175	337	298	10	680	340

Notes: 1. ☐ conform to the AV standard.

Reducing Tee

PRODUCT MODEL CODE

TS ▸ T N U TE V N Size

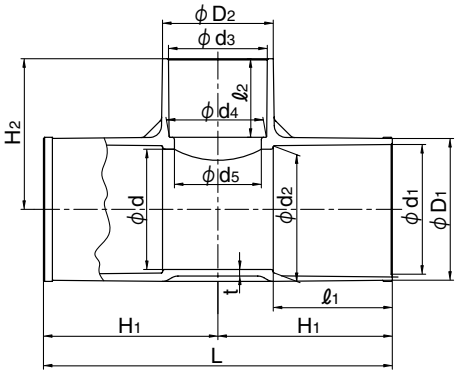
HITS ▸ T N I TE V N Size

TS

U-PVC

HITS

HI-PVC



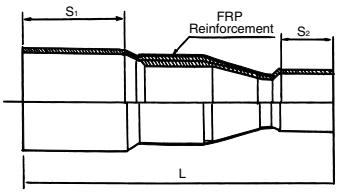
Dimensions Table

(Unit: mm)

Size	TS	HITS	d1	d2	ℓ1	d3	d4	ℓ2	D1	D2	d	d5	t	L	H1	H2
200× 75	☐	☐	217.0	214.1	145	89.6	88.29	64	240	107.2	199	77	15	402	201	180
200×100	☐	☐	217.0	214.1	145	114.7	113.20	84	240	130	199	100	15	430	215	200
200×150	☐	☐	217.0	214.1	145	166.0	163.91	132	240	188	199	146	15	476	238	253
250× 75	☐	☐	268.2	265.0	155	89.6	88.29	64	295	108	247	77	16	452	226	210
250×100	☐	☐	268.2	265.0	155	114.7	113.20	84	295	136	247	100	16	492	246	225
250×200	☐	☐	268.2	265.0	155	217.0	214.10	145	295	245	247	194	16	608	304	310
300× 75	☐	☐	320.7	314.7	300	89.60	88.29	64	343	102	298	77	17	722	361	236

Notes: 1. ☐ conform to the AV standard.

Reducing Socket (Crucial Part FRP Reinforcement Product)



Dimensions Table

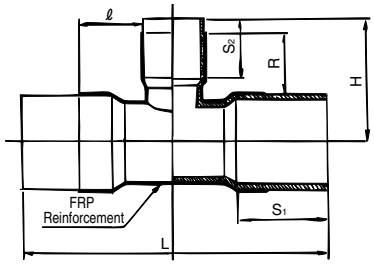
(Unit: mm)

Size	S1	S2	L	Size	S1	S2	L	Size	S1	S2	L
200×100	200	84	550	300×125	300	104	890	350×250	350	250	920
200×125	200	104	560	300×150	300	132	880	350×300	350	300	880
250×100	250	84	690	300×200	300	200	850	400×200	400	200	1100
250×125	250	104	690	300×250	300	250	790	400×250	400	250	1060
250×150	250	132	690	350×150	350	132	970	400×300	400	300	1040
300×100	300	84	890	350×200	350	200	960	400×350	400	350	980

Notes: 1. L dimension tolerance shall be ±30 mm.

2. Dimensions other than the normal dimensions above are also available. For details, please contact our nearest office.

Reducing Tee (Crucial Part FRP Reinforcement Product)



Dimensions Table

(Unit: mm)

Size	S1	S2	H	L	Size	S1	S2	H	L
200×125	200	104	270	690	350×250	350	250	515	1150
250×125	250	104	300	790	350×300	350	300	565	1200
250×150	250	132	320	810	350×350	350	350	685	1370
300×100	300	84	310	880	400× 75	400	64	340	1050
300×125	300	104	340	900	400×100	400	84	360	1070
300×150	300	132	370	940	400×125	400	104	390	1110
300×200	300	200	435	990	400×150	400	132	430	1150
300×250	300	250	485	1050	400×200	400	200	485	1200
350× 75	350	64	320	950	400×250	400	250	545	1250
350×100	350	84	330	960	400×300	400	300	595	1300
350×125	350	104	360	990	400×350	400	350	650	1350
350×150	350	132	390	1030	400×400	400	400	760	1520
350×200	350	200	455	1080					

Notes: 1. L dimension tolerance shall be ±30 mm.

2. Dimensions other than the normal dimensions above are also available. For details, please contact our nearest office.

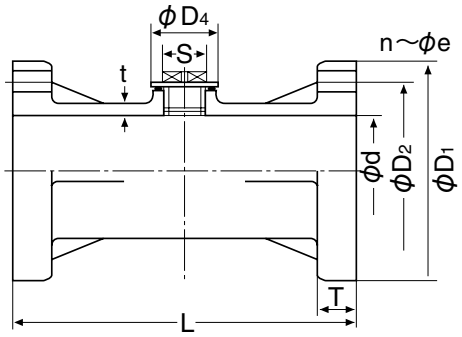
PRODUCT MODEL CODE LIST

Type	Field	Material	Model	Standard	Others	Size
B	**N**	**U**	******	*****	**N**	*******
B Bend	N None Color	U U-PVC	FT Short Flanged End FB Flanged Bend	1 JIS10K 5 JIS5K	N Normal Color	075 75 mm | 150 150 mm 100 100 mm | 200 200 mm

Short Flanged End

PRODUCT MODEL CODE: B | N | U | FT | Standard | N | Size

U-PVC



Provided G female threads (3/4 inch) offer a wide variety of usages such as installing a pressure gauge on the pump discharge side and a sample collection port, drainage, air-bleeding or thermometer at a chemical plant.

Dimensions Table

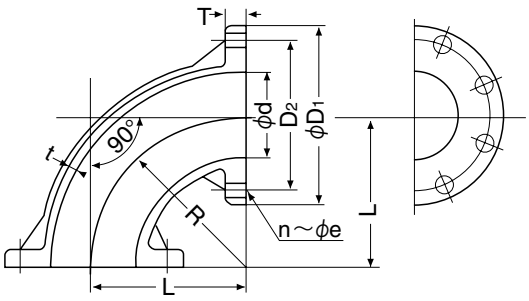
(Unit: mm)

Size	d	D_1	D_2	t	T	L	n	e	S	D_4
75	78	185	150	7.7	22	250	8	19	24	42
100	100	210	175	9.2	22	300	8	19	24	42
150	148	280	240	12.5	26	300	8	23	24	42

Flanged Bend

PRODUCT MODEL CODE: B | N | U | FB | Standard | N | Size

U-PVC



AV flanged bend is designed with an ideal "R" so that the degree of abrasion caused by fluid slurry containing is extremely low. This is also ideal for processes requiring cleaning of pipelines such as food-related, slurry-related and excreta disposal treatment-related with easy installation and removal.

Dimensions Table

(Unit: mm)

Size	d	D_1	D	T	t	n	e	L	R
100	100	210	175	22	8.5	8	19	180	180
150	148	280	240	26	11.5	8	23	250	250
200	196	330	290	30	13.2	12	23	300	300

PRODUCT MODEL CODE LIST

Type	Field	Material	Model	Standard	Others	Size
W	N	*	**	J	N	***
W Bend	N None Color	U U-PVC I HI-PVC	9P 90°TS Normal Bend 4P 45°TS Normal Bend 2P 2 1/2°TS Normal Bend 1P 1 1/4°TS Normal Bend 5P 5 5/8°TS Normal Bend	J JIS	N Normal Color	040 40 mm I 300 300 mm

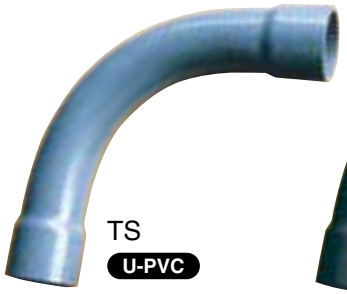
90° TS Normal Bend

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

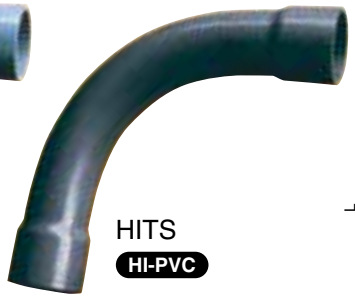
PRODUCT MODEL CODE

TS ▸ W N U 9P J N Size

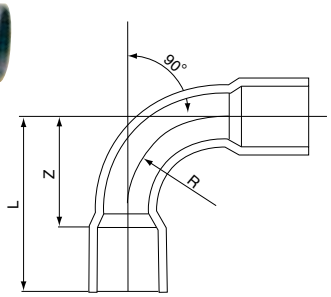
HITS ▸ W N I 9P J N Size



TS
U-PVC



HITS
HI-PVC



Maximum Working Pressure (Normal Temperature)	
40 – 150 mm	1.0MPa
200 – 300 mm	0.75MPa
350 – 400 mm	0.6MPa

Dimensions Table

(Unit: mm)

Size	TS	HITS	Classification	Z	L	R
40	○	—	VP	140	195	110
50	○	□	VP	187	250	150
65	●	—	VP	249	310	200
75	○	□	VP	306	370	250
100	○	□	VP	361	445	300
125	●	—	VP	461	565	400

Size	TS	HITS	Classification	Z	L	R
150	○	□	VP	538	670	475
200	□	—	VP	800	1000	700
250	□	—	VP	1100	1350	1000
300	□	—	VP	1300	1600	1200
350	□	—	VU	1500	1850	1400
400	□	—	VU	1900	2300	1700

Notes: 1. ● conform to the JPPFA standard. 2. □ conform to the AV standard. 3. ○ are accordance with JIS K6743.

45° TS Normal Bend

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

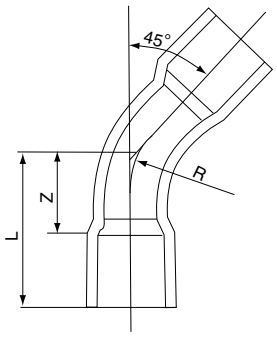
PRODUCT MODEL CODE

TS ▸ W N U 4P J N Size

HITS ▸ W N I 4P J N Size

TS
U-PVC

HITS
HI-PVC



Maximum Working Pressure (Normal Temperature)	
40 – 150 mm	1.0MPa
200 – 300 mm	0.75MPa
350 – 400 mm	0.6MPa

Dimensions Table

(Unit: mm)

Size	TS	HITS	Classification	Z	L	R
40	○	—	VP	76	131	110
50	○	○	VP	99	162	150
65	●	—	VP	132	193	200
75	○	○	VP	160	224	250
100	○	○	VP	185	269	300
125	●	—	VP	227	331	400

Size	TS	HITS	Classification	Z	L	R
150	○	○	VP	260	392	475
200	□	—	VP	400	600	700
250	□	—	VP	500	750	1000
300	□	—	VP	600	900	1200
350	□	—	VU	700	1050	1400
400	□	—	VU	800	1200	1700

Notes: 1. ● conform to the JPPFA standard. 2. □ conform to the AV standard. 3. ○ are accordance with JIS K6743.

22½° TS Normal Bend

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

TS ▸ W N U 2P J N Size

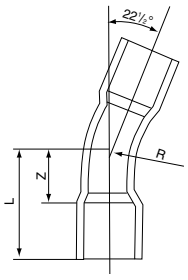
HITS ▸ W N I 2P J N Size

TS

U-PVC

HITS

HI-PVC



Maximum Working Pressure (Normal Temperature)	
40 — 150 mm	1.0MPa
200 — 300 mm	0.75MPa
350 — 400 mm	0.6MPa

Dimensions Table

(Unit: mm)

Size	TS	HITS	Classification	Z	L	R	Size	TS	HITS	Classification	Z	L	R
40	○	—	VP	52	107	110	150	○	○	VP	157	289	475
50	○	○	VP	67	130	150	200	□	—	VP	250	450	700
65	●	—	VP	89	150	200	250	□	—	VP	300	550	1000
75	○	○	VP	106	170	250	300	□	—	VP	350	650	1200
100	○	○	VP	121	205	300	350	□	—	VU	400	750	1400
125	●	—	VP	141	245	400	400	□	—	VU	450	850	1700

Notes: 1. ● conform to the JPPFA standard. 2. □ conform to the AV standard. 3. ○ are accordance with JIS K6743.

11¼° TS Normal Bend

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

TS ▸ W N U 1P J N Size

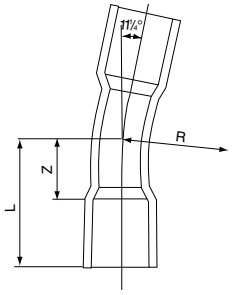
HITS ▸ W N I 1P J N Size

TS

U-PVC

HITS

HI-PVC



Maximum Working Pressure (Normal Temperature)	
40 — 150 mm	1.0MPa
200 — 300 mm	0.75MPa
350 — 400 mm	0.6MPa

Dimensions Table

(Unit: mm)

Size	TS	HITS	Classification	Z	L	R	Size	TS	HITS	Classification	Z	L	R
40	○	—	VP	41	96	110	150	○	○	VP	110	242	475
50	○	○	VP	52	115	150	200	□	—	VP	150	350	700
65	●	—	VP	67	128	200	250	□	—	VP	200	450	1000
75	○	○	VP	81	145	250	300	□	—	VP	200	500	1200
100	○	○	VP	91	175	300	350	□	—	VU	250	600	1400
125	●	—	VP	97	201	400	400	□	—	VU	300	700	1700

Notes: 1. ● conform to the JPPFA standard. 2. □ conform to the AV standard. 3. ○ are accordance with JIS K6743.

5⅝° TS Normal Bend

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

TS ▸ W N U 5P J N Size

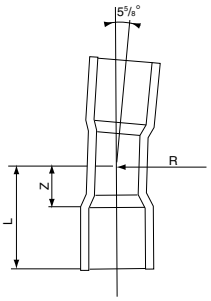
HITS ▸ W N I 5P J N Size

TS

U-PVC

HITS

HI-PVC



Maximum Working Pressure (Normal Temperature)	
40 — 150 mm	1.0MPa
200 — 300 mm	0.75MPa
350 — 400 mm	0.6MPa

Dimensions Table

(Unit: mm)

Size	TS	HITS	Classification	Z	L	R	Size	TS	HITS	Classification	Z	L	R
40	○	—	VP	35	90	110	150	○	○	VP	86	218	475
50	○	○	VP	44	107	150	200	□	—	VP	100	300	700
65	●	—	VP	59	120	200	250	□	—	VP	120	370	1000
75	○	○	VP	68	132	250	300	□	—	VP	140	440	1200
100	○	○	VP	76	160	300	350	□	—	VU	160	510	1400
125	●	—	VP	81	185	400	400	□	—	VU	230	630	1700

Notes: 1. ● conform to the JPPFA standard. 2. □ conform to the AV standard. 3. ○ are accordance with JIS K6743.

PRODUCT MODEL CODE LIST

Type	Field	Material	Model	Standard	Others	Size
R	N	*	**	J	N	***
R RR Fitting	N None Color	U U-PVC I HI-PVC	9B 90° Bend 4B 45° Bend 2B 22°1/2 Bend 1B 11-1/4° Bend 5B 5-5/8° Bend	J JIS	N Normal Color	040 40 mm I 200 200 mm

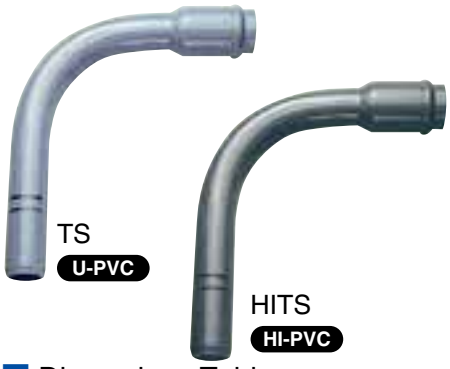
90° Bend

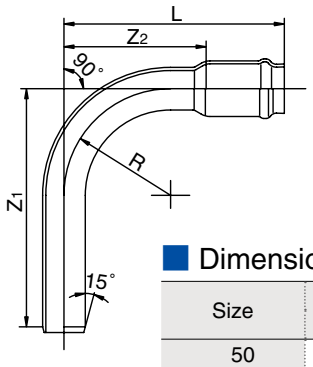
Abbreviation: 90BR (JWWA 130)

PRODUCT MODEL CODE

TS ▸ R N U 9B J N Size

HITS ▸ R N I 9B J N Size





Maximum Working Pressure (Normal Temperature)	
50 – 150 mm	1.0MPa
200mm	0.75MPa
U-PVC 250mm	0.6MPa
HI-PVC 250mm	0.75MPa
300mm	0.4MPa

Dimensions Table

(Unit: mm)

Size	TS	VH			
		Z_1	Z_2	R	L
50	□	333	200	150	310
75	□	448	305	250	425
100	□	502	360	300	490
150	□	686	530	450	675

Dimensions Table

(Unit: mm)

Size	TS	HITS	VP			
			Z_1	Z_2	R	L
50	△	△	335	200	150	310
75	△	△	450	305	250	425
100	△	△	505	360	300	490
125	●	●	615	470	400	605
150	△	△	690	530	450	675
200	□	—	925	690	600	860
250	□	—	1065	805	700	990
300	□	—	1255	960	850	1160

Notes: 1. ● conform to the JPPFA standard. 2. □ conform to the AV standard. 3. △ are accordance with the standard of Japan Water Works Association.

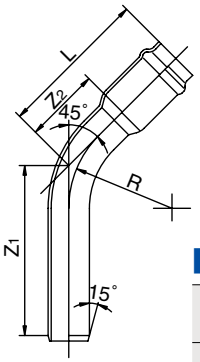
45° Bend

Abbreviation: 45BR (JWWA 130)

PRODUCT MODEL CODE

TS ▸ R N U 4B J N Size

HITS ▸ R N I 4B J N Size



Maximum Working Pressure (Normal Temperature)	
50 – 150 mm	1.0MPa
200mm	0.75MPa
U-PVC 250mm	0.6MPa
HI-PVC 250mm	0.75MPa
300mm	0.4MPa

Dimensions Table

(Unit: mm)

Size	TS	VH			
		Z_1	Z_2	R	L
50	□	245	110	150	220
75	□	302	160	250	280
100	□	326	185	300	315
150	□	422	265	450	410

Dimensions Table

(Unit: mm)

Size	TS	HITS	VP			
			Z_1	Z_2	R	L
50	△	△	247	110	150	220
75	△	△	304	160	250	280
100	△	△	329	185	300	315
125	●	●	381	235	400	370
150	△	△	426	265	450	410
200	□	—	575	340	600	510
250	□	—	655	395	700	580
300	□	—	755	460	850	660

Notes: 1. ● conform to the JPPFA standard. 2. □ conform to the AV standard. 3. △ are accordance with the standard of Japan Water Works Association.

22½° Bend

Abbreviation : 22½BR (JWWA 130)

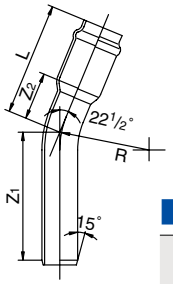
PRODUCT MODEL CODE

TS ▸ R N U 2B J N Size

HITS ▸ R N I 2B J N Size

TS
U-PVC

HITS
HI-PVC



Maximum Working Pressure (Normal Temperature)	
50 – 150 mm	1.0MPa
200mm	0.75MPa
U-PVC 250mm	0.6MPa
HI-PVC 250mm	0.75MPa
300 mm	0.4MPa

Dimensions Table

(Unit: mm)

Size	TS	VH			
		Z_1	Z_2	R	L
50	□	213	80	150	190
75	□	248	105	250	225
100	□	262	120	300	250
150	□	326	170	450	315

Dimensions Table

(Unit: mm)

Size	TS	HITS	VP			
			Z_1	Z_2	R	L
50	△	△	215	80	150	190
75	△	△	250	105	250	225
100	△	△	265	120	300	250
125	●	●	295	150	400	285
150	△	△	330	170	450	315
200	□	—	445	210	600	380
250	□	—	505	245	700	430
300	□	—	575	280	850	480

Notes: 1. ● conform to the JPPFA standard. 2. □ conform to the AV standard. 3. △ are accordance with the standard of Japan Water Works Association.

11¼° Bend

Abbreviation : 11¼BR (JWWA 130)

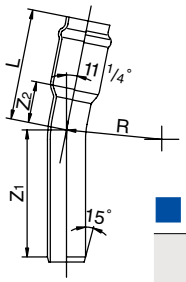
PRODUCT MODEL CODE

TS ▸ R N U 1B J N Size

HITS ▸ R N I 1B J N Size

TS
U-PVC

HITS
HI-PVC



Maximum Working Pressure (Normal Temperature)	
50 – 150 mm	1.0MPa
200mm	0.75MPa
U-PVC 250mm	0.6MPa
HI-PVC 250mm	0.75MPa
300mm	0.4MPa

Dimensions Table

(Unit: mm)

Size	TS	VH			
		Z_1	Z_2	R	L
50	□	198	65	150	175
75	□	223	80	250	200
100	□	232	90	300	220
150	□	280	125	450	270

Dimensions Table

(Unit: mm)

Size	TS	HITS	VP			
			Z_1	Z_2	R	L
50	△	△	200	65	150	175
75	△	△	225	80	250	200
100	△	△	235	90	300	220
125	●	●	254	110	400	245
150	△	△	284	125	450	270
200	□	—	385	150	600	320
250	□	—	435	175	700	360
300	□	—	485	195	850	395

Notes: 1. ● conform to the JPPFA standard. 2. □ conform to the AV standard. 3. △ are accordance with the standard of Japan Water Works Association.

5⅝° Bend

Abbreviation : 5⅝BR (JWWA 130)

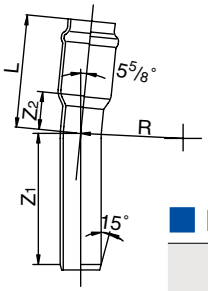
PRODUCT MODEL CODE

TS ▸ R N U 5B J N Size

HITS ▸ R N I 5B J N Size

TS
U-PVC

HITS
HI-PVC



Maximum Working Pressure (Normal Temperature)	
50 – 150mm	1.0MPa
200mm	0.75MPa
U-PVC 250mm	0.6MPa
HI-PVC 250mm	0.75MPa
300mm	0.4MPa

Dimensions Table

(Unit: mm)

Size	TS	VH			
		Z_1	Z_2	R	L
50	□	190	55	150	165
75	□	210	65	250	185
100	□	217	75	300	205
150	□	258	100	450	245

Dimensions Table

(Unit: mm)

Size	TS	HITS	VP			
			Z_1	Z_2	R	L
50	△	△	192	55	150	165
75	△	△	212	65	250	185
100	△	△	220	75	300	205
125	●	●	235	90	400	245
150	△	△	262	100	450	245
200	□	—	355	120	600	290
250	□	—	400	140	700	325
300	□	—	445	150	850	350

Notes: 1. ● conform to the JPPFA standard. 2. □ conform to the AV standard. 3. △ are accordance with the standard of Japan Water Works Association.

PRODUCT MODEL CODE LIST

Type	Field	Model	Material	Standard	Size
F	N	T	*	*	***
F Flange	N None Color	T TS Flange	U U-PVC I HI-PVC	1 JIS10K 5 JIS5K W Waterworks A ANSI	013 13 mm ⋮ 350 350 mm

TS Flange

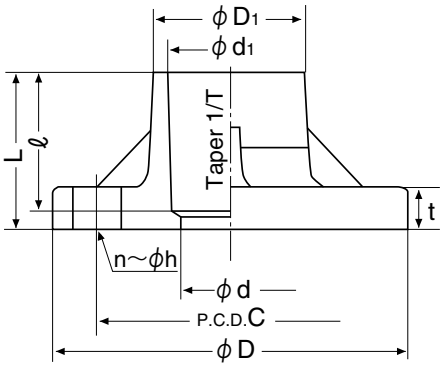
PRODUCT MODEL CODE

U-PVC	JIS 10K	F	N	T	U	1	Size
HI-PVC	JIS 10K	F	N	T	I	1	Size
U-PVC	JIS 5K	F	N	T	U	5	Size
HI-PVC	JIS 5K	F	N	T	I	5	Size

U-PVC

HI-PVC

Maximum Working Pressure (Normal Temperature)		
JIS 10K	13 – 300mm	1.0MPa
	350mm	0.6MPa
JIS 5K	13 – 350 mm	0.5MPa



U-PVC JIS 10K 13 – 350 mm, JIS 5K 13 – 350 mm
HI-PVC JIS 10K 13 – 300 mm, JIS 5K 13 – 200 mm

Dimensions Table

(Unit: mm)

Size	d		d1		Taper 1/T		ℓ		D1		C		D		pcs.		h		t		L	
	10K	5 K	10K	5 K	10K	5 K	10K	5 K	10K	5 K	10K	5 K	10K	5 K	10K	5 K	10K	5 K	10K	5 K	10K	5 K
13	13.5	15	18.40		1/30		26		25.5	24	65	55	90	75	4	4	15	12	14	9	30	30
15	16.5	18	22.40		1/34		30		31	29	70	60	95	80	4	4	15	12	14	9	35	35
20	20.5	22	26.45		1/34		35		35	33	75	65	100	85	4	4	15	12	15	10	40	40
25	25	25	32.55		1/34		40		42.5	40	90	75	125	95	4	4	19	12	15	10	46	45
32	30	30	38.60		1/34		44		48.5	46	100	90	135	115	4	4	19	15	16	12	50.5	50
40	41	41	48.70		1/37		55		60.5	59	105	95	140	120	4	4	19	15	16	12	61.5	61
50	52	52	60.80		1/37		63		73	70	120	105	155	130	4	4	19	15	20	14	71	72
65	67	67	76.60	76.80	1/48	1/41	61	69	90	86	140	130	175	155	4	4	19	15	22	14	70	76
80	78	78	89.60	89.80	1/49	1/43	64	72	105	101	150	145	185	180	8	4	19	19	22	14	73	80
100	100	100	114.70	115.00	1/56	1/44	84	92	131	129	175	165	210	200	8	8	19	19	22	16	93	105
125	125	125	140.85	141.20	1/58	1/45	104	112	158	156	210	200	250	235	8	8	23	19	24	16	114	126
150	146	146	166.00	166.50	1/63	1/45	132	140	185	185	240	230	280	265	8	8	23	19	26	18	142	150
200	196	196	217.00		1/50		145		238	238	290	280	330	320	12	8	23	23	28	28	156	156
250	247	247	268.20		1/55		155		300	300	355	345	400	385	12	12	25	23	30	30	167	167
300	298	298	318.70		1/55		155		341	341	400	390	445	430	16	12	25	23	30	30	167	167
350	348	348	371.00		1/60		230		398	398	445	435	490	480	16	12	25	23	34	34	300	300

Notes: Dimensions for C, D, n and h are accordance with the JIS 10K・5K standards. Bolt hole dimension for 5K (350 mm) is different from JIS. Use M20 for tightening bolts.

For U-PVC Waterworks, HI-PVC Waterworks, U-PVC ANSI Standard

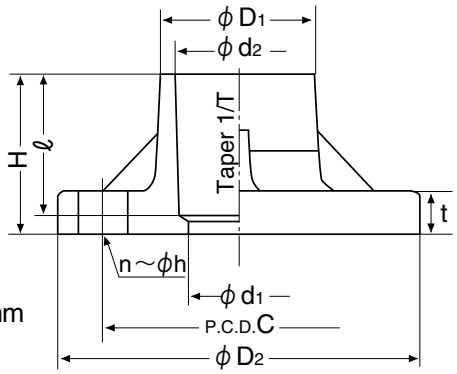
PRODUCT MODEL CODE

U-PVC	Waterworks	F	N	T	U	W	Size
HI-PVC	Waterworks	F	N	T	I	W	Size
U-PVC	For ANSI Standard	F	N	T	U	A	Size

Maximum Working Pressure (Normal Temperature)		
Waterworks	50 – 300 mm	0.75MPa
ANSI	15 – 300 mm	1.0MPa

U-PVC

HI-PVC



U-PVC Waterworks 50 – 300 mm HI-PVC Waterworks 75 – 250 mm

Dimensions Table

(Unit: mm)

Size	d_1	d_2	Taper 1/T	ℓ	D_1	C	D_2	pcs.	h	t	H
50	52	60.80	1/37	63	73	120	155	4	19	20	71
75(80)	78	89.60	1/49	64	107	168	211	4	19	22	74
100	100	114.70	1/56	84	133	195	238	4	19	24	98
125	125	140.85	1/58	104	159	220	263	6	19	24	118
150	146	166.00	1/63	132	185	247	290	6	19	24	147
200	196	217.00	1/50	145	238	299	342	8	19	28	156
250	247	268.20	1/55	155	300	360	410	8	23	30	167
300	298	318.70	1/55	155	341	414	464	10	23	30	167

Notes: 1. Dimensions for C, D_2, n and h of 75 (80) to 300 mm are accordance with the tap water gate valve of JIS B 2062.
2. C, D_2, n and h for 50 mm are accordance with the JIS 10K standard.
Use the JIS 10K standard for TS flange to connect to 65 mm gate valve.

For U-PVC ANSI Standard

Dimensions Table

(Unit: mm)

Size	d_1	d_2	Taper 1/T	ℓ	D_1	C	D_2	pcs.	h	t	H
15	18	22.40	1/34	30	31	60.5	89	4	16	12	46
20	22	26.45	1/34	35	35	70	98	4	16	13	53
25	25	32.55	1/34	40	42.5	79.5	108	4	16	15	50
32	30	38.60	1/34	44	48.5	89	117.5	4	16	16	54
40	41	48.70	1/37	55	60.5	98.5	127	4	16	18	65
50	52	60.80	1/37	63	73	120.5	152	4	19	20	74
65	67	76.80	1/41	69	90	139.5	178	4	19	23	82
80	78	89.80	1/43	72	105	152.5	190.5	4	19	24	86
100	100	115.00	1/44	92	131	190.5	229	8	19	24	107
125	125	141.20	1/45	112	158	216	254	8	22	24	130
150	146	166.50	1/45	140	185	241.5	280	8	22	26	142
200	196	217.00	1/50	145	238	298.5	343	8	22	28	156
250	247	268.20	1/55	155	300	362	406	12	25	30	167
300	298	318.70	1/55	155	341	432	483	12	25	30	167

Notes: 1. Only C, D_2, n and h are accordance with ANSI/ASME B 16.5 CLASS 150.
2. For pipe socket dimension, d_1, ℓ and taper 1/T are accordance with the JIS standard. (JIS K 6743)

PRODUCT MODEL CODE LIST

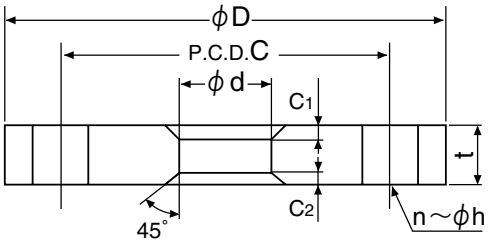
Type	Field	Model	Material	Standard	Size
F	N	*	*	*	***
F Flange	N None Color	J J Flange P P Flange Q Q Flange	U U-PVC I HI-PVC	1 JIS 10K 5 JIS 5K	013 13 mm I 300 300 mm

Welded Flange

PRODUCT MODEL CODE

U-PVC JIS 10K	F	N	J	U	1	Size
U-PVC JIS 5K	F	N	J	U	5	Size

Ⓙ U-PVC



Blind Flange

PRODUCT MODEL CODE

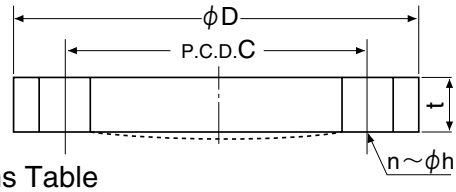
U-PVC	Ⓟ	F	N	P	U	Standard	Size
U-PVC JIS 10K	Ⓠ	F	N	Q	U	1	Size
HI-PVC JIS 10K	Ⓠ	F	N	Q	I	1	Size
U-PVC JIS 5K	Ⓠ	F	N	Q	U	5	Size

Ⓟ U-PVC

Ⓠ U-PVC

Ⓠ HI-PVC

Maximum Working Pressure (Normal Temperature)		
JIS 10K	13 – 150 mm	1.0MPa
	200 – 300 mm	0.5MPa
JIS 5K	13 – 300 mm	0.5MPa



Dimensions Table

(Unit: mm)

Size	d	C		D		pcs.		h		t		C1	C2
		10K	5 K	10K	5 K	10K	5 K	10K	5 K	10K	5 K		
13	18	65	55	90	75	4	4	15	12	12	9	3	3
15	22	70	60	95	80	4	4	15	12	12	9	3	3
20	26	75	65	100	85	4	4	15	12	14	10	3	3
25	32	90	75	125	95	4	4	19	12	14	10	3	3
32	38	100	90	135	115	4	4	19	15	16	12	3	3
40	48	105	95	140	120	4	4	19	15	16	12	3	3
50	60	120	105	155	130	4	4	19	15	16	14	3	4
65	76	140	130	175	155	4	4	19	15	18	14	3	4
80	89	150	145	185	180	8	4	19	19	18	14	3	4
100	114	175	165	210	200	8	8	19	19	18	16	3	4
125	140	210	200	250	235	8	8	23	19	20	16	4	4
150	165	240	230	280	265	8	8	23	19	22	18	4	4
200	216	290	280	330	320	12	8	23	23	22	20	4	4
250	267	355	345	400	385	12	12	25	23	24	22	4	4
300	318	400	390	445	430	16	12	25	23	24	22	4	4

Notes: Dimensions for C, D, n and h are accordance with the JIS 10K・5K standards.

PRODUCT MODEL CODE LIST

Model	Material	Rubber	Connection	Standard	Size
JEP	U	*	T	J	***
JEP Expansion Joint	U U-PVC	E EPDM V FKM F Viflon®F/FKM-F C Viflon®C/FKM-C	T Socket	J JIS	020 20 mm ⋮ 100 100 mm

Expansion Joint

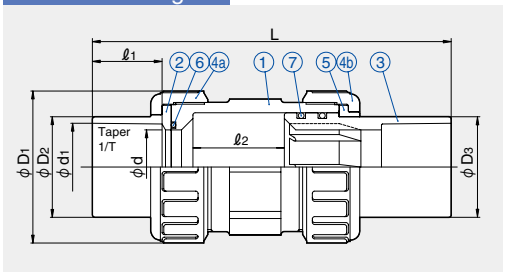
Main Specification

Material	Working Temperature	Maximum Working Pressure (Normal Temperature) MPa{kgf/cm²}	Connection Socket End
Unplasticized Polyvinyl Chloride Pipe (U-PVC)	5-60˚C	1.0{10.2}	○

Features

- Expansion/contraction absorption margin is large and the thermal stress of piping is absorbed.
- Easy removal from piping by just loosening the union nut.
- No need for a large piping space with the compact design.
- No need for installation of piping expansion U bend.
- No slipping of pipes. (Because stop ring ⑤ is provided)

Dimensions Diagram

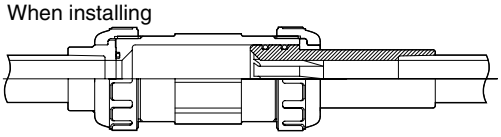


Dimensions Table

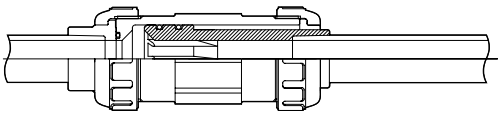
(Unit: mm)

Size mm	Size inch	d	d1	ℓ1	1/T	D2	D1	D3	L Max.	L Min.	ℓ2 Expansion/ Contraction Margin
20	3/4	20	26.13	24	1/34	35	60	35	243	163	80
25	1	25	32.16	27	1/34	43	70	39	250	170	80
30	1 1/4	31	38.19	30	1/34	50	82	47	258	178	80
40	1 1/2	40	48.21	37	1/37	59	100	59	272	192	80
50	2	51	60.25	42	1/37	72	106	72	285	205	80
65	2 1/2	65	76.60	61	1/48	88	133	88	314	234	80
75	3	78	89.60	64	1/49	105	152	105	330	250	80
100	4	100	114.70	84	1/56	132	210	132	422	322	100

When installing



When piping is expanded by heat



Parts Table

No.	Description	pcs.	Material
①	Body	1	U-PVC
②	End Connector (A)	1	U-PVC
③	End Connector (B)	1	U-PVC
④a	Union Nut (A)	–	U-PVC
④b	Union Nut (B)1)	1	U-PVC
⑤	Stop Ring	1	U-PVC
⑥	O-Ring (A)	1	EPDM, FKM, Viflon®F (FKM-F), Viflon®C (FKM-C)
⑦	O-Ring (B)	2	EPDM, FKM, Viflon®F (FKM-F), Viflon®C (FKM-C)

1) Use for 65 to 100 mm.

Pipe Heat Expansion Table

(Unit: mm)

Piping Length L / Temperature Difference	5m	10m	20m	30m	40m	50m	60m	70m	80m
10˚C	4	7	14	21	28	35	42	49	56
20˚C	7	14	28	42	56	70	84	98	112
30˚C	11	21	42	63	84	105	126	147	168
40˚C	14	28	56	84	112	140	168	196	224
50˚C	18	35	70	105	140	175	210	245	280
60˚C	21	42	84	126	168	210	252	294	336
70˚C	25	49	98	147	196	245	294	343	392
80˚C	28	56	112	168	224	280	336	392	448

<Example> How often (every XX m) shall expansion joints be inserted when the size is 75 mm and temperature difference is 20℃?

Calculation Formula $L = \frac{\triangle \ell}{\alpha \triangle t}$ ..... (1)

L: Length of piping that the expansion joint absorbs (mm)

$\triangle \ell$: Piping expansion/contraction length Expansion/contraction margin for 75 mm from the dimensions table ℓ_2=80 mm

Give margins on both ends 5 mm×2=10 mm $\triangle \ell$:=(80−10) mm

α: Heat expansion coefficient of hard polyvinyl chloride pipe 7×10^{-5} (/℃)

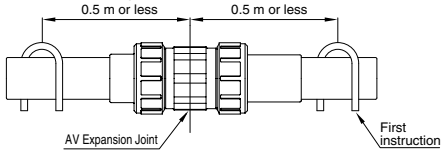
$\triangle t$: Temperature difference 20 (℃)

When the value above is assigned to (1) $L = \frac{80-10}{7\times10^{-5}\times20} = 50000$ mm

∴ One piece per 50 m.

<Use Precautions>

- Make sure to provide the first support (loose support) at 0.5 m or less of an expansion joint on both sides.
- Sufficiently consider the expansion and contraction amounts of piping. (When piping expands: Use the expansion joint being extended to a certain degree.) (When piping contracts: Use the expansion joint being shrunk to a certain degree.)



PRODUCT MODEL CODE LIST

Model	Material	Rubber	Connection	Standard	Size
JPF	U	*	*	J	***
JPF Prefab Joint	U U-PVC	E EPDM V FKM F Viflon®F/FKM-F C Viflon®C/FKM-C	T Socket N Threaded	J JIS	013 13 mm ⋮ 100 100 mm

Prefab Joint

Features

- Installation is extremely simple and it can be done quickly and certainly. (Especially necessary for sleeve bonding/screw-in piping)
- Installable on piping where suitable and easy cleaning inside pipes.
- After installing piping, the valve parts can be removed by just loosening the union nut. It is suitable for pipelines requiring regular removals such as temporary piping and slurry piping.

Body Material	Connection Method	13	16	20	25	30	40	50	65	75	100
U-PVC	Socket end	○	○	○	○	○	○	○	○	○	○
	Threaded end	○	○	○	○	○	○	○	–	–	–

Parts Table

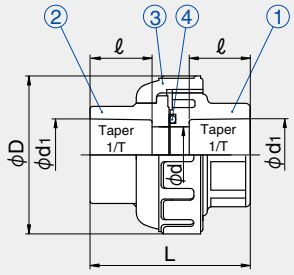
No.	Description	pcs.	Material
①	Body	1	U-PVC
②	End Connector	1	U-PVC
③	Union Nut	1	U-PVC
④	O-Ring	1	EPDM, FKM, Viflon®F (FKM-F), Viflon®C (FKM-C)

Main Specification

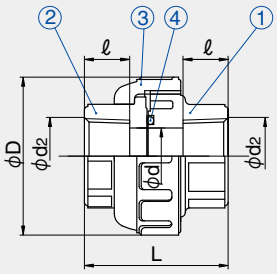
Material	Made of Unplasticized Polyvinyl Chloride (U-PVC)
Working Temperature	0-50˚C
Maximum Working Pressure	1.0MPa{10.2kg/㎠}

Dimensions Diagram

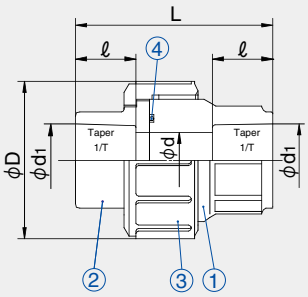
Socket End (13 – 50 mm)



Threaded End (13 – 50 mm)



Socket End (65 – 100 mm)



Dimensions Table

(Unit: mm)

Size	d	Socket End				Threaded end			D
		d_1	ℓ	1/T	L	d_2	ℓ	L	
13	13	18.13	18	1/30	46	Rc3/8	15	43	48
16	15	22.11	20	1/34	46	Rc1/2	15	43	48
20	20	26.13	24	1/34	61	Rc3/4	17	57	60
25	25	32.16	27	1/34	70	Rc1	20	63	70
30	31	38.19	30	1/34	77	Rc1 1/4	22	71	82
40	40	48.21	37	1/37	95	Rc1 1/2	25	82	100
50	51	60.25	42	1/37	107	Rc2	28	96	106
65	65	76.60	61	1/48	164	—	—	—	133
75	77	89.60	64	1/49	189.5	—	—	—	152
100	100	114.70	84	1/56	245	—	—	—	210

PRODUCT MODEL CODE LIST

■ Threaded End TYPE L 20 – 30 mm

Type/Field	Material	Model 1	Model 2	Standard	Size of Special Connection Parts	Size
WM	U	*	*	*	*	***
WM Multi J	U U-PVC	1 Threaded Welding 2 Threaded Bonding	L TYPE L T TYPE T	R RC Threaded End N NPT Threaded End	2 1/4 3 3/8	020 20 mm ⋮ 030 30 mm

■ Threaded End TYPE L 40 – 200 mm

Type/Field	Material	Model 1	Model 2	Standard	Size of Special Connection Parts	Size
WM	U	*	L	*	*	***
WM Multi J	U U-PVC	N Threaded Cast Product 2 Threaded Bonding 4 Bonding FRP Reinforcement	L TYPE L	R RC Threaded End N NPT Threaded End	2 1/4 3 3/8 4 1/2 6 3/4	040 40 mm ⋮ 150 150 mm 200 200 mm

200 mm is processed product.

■ Threaded End TYPE T 20 – 30 mm

Type/Field	Material	Model 1	Model 2	Standard	Size of Special Connection Parts	Size
WM	U	*	*	*	*	***
WM Multi J	U U-PVC	1 Threaded Welding 2 Threaded Bonding	L TYPE L T TYPE T	R RC Threaded End N NPT Threaded End	2 1/4 3 3/8	020 20 mm ⋮ 030 30 mm

■ Threaded End TYPE T 40 – 200 mm

Type/Field	Material	Model 1	Model 2	Standard	Size of Special Connection Parts	Size
WM	U	*	T	*	*	***
WM Multi J	U U-PVC	1 Welding 2 Threaded Bonding 3 Welding FRP Reinforcement 4 Bonding FRP Reinforcement	T TYPE T	R RC Threaded End N NPT Threaded End	2 1/4 3 3/8 4 1/2 6 3/4	040 40 mm ⋮ 200 200 mm

Welding FRP reinforcement and bonding reinforcement are only available with 200 mm.

■ TS-Style TYPE L TYPE T 40 – 200 mm

Type/Field	Material	Model 1	Model 2	Standard	Size of Special Connection Parts	Size
WM	U	*	*	T	*	***
WM Multi J	U U-PVC	1 Welding 2 Bonding 3 Welding FRP Reinforcement 4 Bonding FRP Reinforcement	T TYPE T L TYPE L	T TS-Style	A 016 B 020 C 025 D 040 E 050 F 065 G 075 H 100 I 125	040 40 mm ⋮ 200 200 mm

Welding FRP reinforcement and bonding reinforcement are only available with 200 mm.

Multi-Joint

Main Specification

Material	Made of Unplasticized Polyvinyl Chloride (U-PVC)
Working Temperature	0-50˚C

Use Example

Installation of various sensors such as pressure gauge and thermometer.

Installation of valves and cocks for sampling and draining.

Compact pipeline with reduced diameter.

Technical Data

1. General Properties

U-PVC
(General)
at:23°C

Characteristics	Standard Value	Value	Unit
Specific Gravity	1.40 – 1.45	1.43	–
Water Absorption (24 hr)	0.07 – 0.2	0.07 – 0.1	%
Tensile Yield Stress	45 or more	48 – 62	MPa
Extension Ratio	–	80 or more	%
Impact Value (Izod)	–	3 – 5	kJ/m²
Compression Strength	83 or more	90	MPa
Bending Strength	98 or more	108	MPa
Rockwell Hardness (R scale)	114 – 116	115	–
Linear Expansion Coefficient	6 – 8	7	10^{-5}/°C
Heat Deformation Temperature	70 or more	75	°C
Flame Resistance	–	Self-Extinguishing	–
Permittivity	2.8 – 3.1	2.8 – 3.0	10^{6} cycles
Sunlight Resistance	–	Favorable	–

U-PVC
(For tap water)
at:23°C

Characteristics	Standard Value	Value	Unit
Specific Gravity	1.40 – 1.45	1.43	–
Water Absorption (24 hr)	0.07 – 0.2	0.07 – 0.1	%
Tensile Yield Stress	45 or more	54 – 56	MPa
Extension Ratio	–	80 or more	%
Impact Value (Izod)	–	3 – 4	kJ/m²
Compression Strength	83 or more	88	MPa
Bending Strength	98 or more	103	MPa
Rockwell Hardness (R scale)	114 – 116	115	–
Linear Expansion Coefficient	6 – 8	7	10^{-5}/°C
Heat Deformation Temp.	70 or more	73	°C
Flame Resistance	–	Self-Extinguishing	–
Permittivity	2.8 – 3.1	2.8 – 3.0	10^{6} cycles
Sunlight Resistance	–	Favorable	–

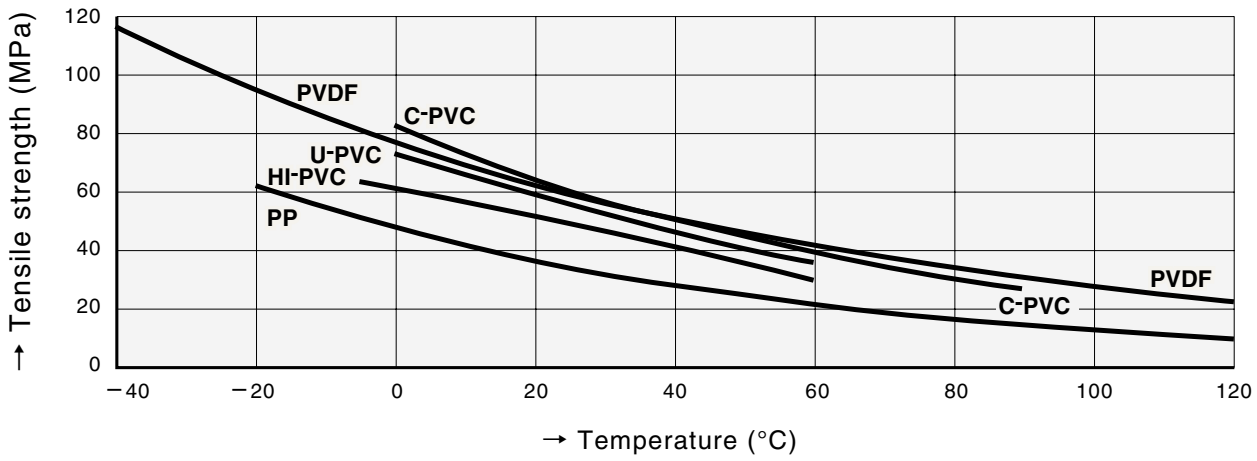
HI-PVC
at:23°C

Characteristics	Standard Value	Value	Unit
Specific Gravity	1.40 – 1.45	1.43	–
Tensile Yield Stress	40 or more	40 – 56	MPa
Extension Ratio	80 or more	80 or more	%
Impact Value (Charpy)	18 or more	19 – 24	kJ/m²
Compression Strength	59 or more	59 – 78	MPa
Bending Strength	78 or more	78 – 88	MPa
Rockwell Hardness (R scale)	112 – 116	114	–
Linear Expansion Coefficient	7 – 8	7 – 8	10^{-5}/°C
Vicat Softening Temperature Test	76 or more	80 – 82	°C
Flame Resistance	–	Self-Extinguishing	–
Sunlight Resistance	–	Favorable	–

2. Short-Term Strength Test

Tensile Strength and Temperature Dependency

Relationship of Tensile Strength and Temperature between U-PVC and Other Plastics



Notes: Tension speed.....10 mm/min

3. Short-Term Burst Pressure Test

a. Genera Pipe (VP) JIS K 6741-1995 Temperature Condition: 20°C

Size (mm)	Short-Term Burst Pressure MPa {kgf/cm²}	Maximum Working Pressure* MPa {kgf/cm²}
13	13.1 { 133.6}	1.0 { 10.2}
16	13.2 { 134.2}	1.0 { 10.2}
20	10.9 { 111.2}	1.0 { 10.2}
25	10.1 { 102.9}	1.0 { 10.2}
30	8.3 { 85.2}	1.0 { 10.2}
40	7.6 { 77.8}	1.0 { 10.2}
50	6.9 { 70.4}	1.0 { 10.2}
65	5.4 { 54.7}	1.0 { 10.2}
75	6.2 { 63.2}	1.0 { 10.2}
100	5.8 { 58.9}	1.0 { 10.2}
125	4.9 { 50.5}	1.0 { 10.2}
150	5.4 { 54.7}	1.0 { 10.2}
200	4.7 { 48.0}	1.0 { 10.2}
250	4.7 { 47.9}	1.0 { 10.2}
300	4.7 { 47.8}	1.0 { 10.2}

b. Genera Pipe (VU) JIS K-6741-1995 Temperature Condition: 20°C

Size (mm)	Short-Term Burst Pressure MPa {kgf/cm²}	Maximum Working Pressure* MPa {kgf/cm²}
40	3.7 {37.4}	0.6 {6.1}
50	2.9 {29.7}	0.6 {6.1}
65	2.8 {28.6}	0.6 {6.1}
75	2.9 {30.0}	0.6 {6.1}
100	2.6 {26.8}	0.6 {6.1}
125	2.8 {28.9}	0.6 {6.1}
150	3.0 {30.6}	0.6 {6.1}
200	2.9 {29.8}	0.6 {6.1}
250	2.8 {28.9}	0.6 {6.1}
300	2.8 {28.6}	0.6 {6.1}
350	2.7 {28.0}	0.6 {6.1}
400	2.7 {27.7}	0.6 {6.1}
450	2.7 {27.7}	0.6 {6.1}
500	2.7 {27.7}	0.6 {6.1}

c. Genera Pipe (VM) JIS K6741 Temperature Condition: 20°C

Size (mm)	Short-Term Burst Pressure MPa {kgf/cm²}	Maximum Working Pressure MPa {kgf/cm²}
350	3.8 { 38.6}	0.8 { 8.2}

Notes: 1. Burst pressure value is calculated with the tensile strength specified in the quality section of JIS K 6741 (minimum value 47 N/mm² {480kgf/cm²} at 20°C during test). Therefore, this value is the minimum value and the actual value would be much higher.

2. Short-term burst pressure will be derived from the following Naday formula.

$$P = \frac{2\times\sigma}{(D/t-1)}$$

P: Working pressure (MPa) {kgf/cm²}
σ: Design stress (N/mm²) {kgf/cm²}
D: Outer diameter (mm)
t: Thickness (mm)

3. For general pressure-transporting pipes, pipes with different sizes are often used in a single conduit. Therefore, the maximum working pressure would be 1.0 MPa {10.2kgf/cm²} for VP, 0.6MPa {6.1kgf/cm²} for VU and 0.8 MPa {8.2kgf/cm²} for VM.

Notes: Maximum Working Pressure is the pressure including the water hammer pressure.
Do not use them exceeding the maximum working pressure.

4. Relationship between Maximum Working Pressure and Temperature

Unplasticized Polyvinyl Chloride Pipe

VP

Unit: MPa {kgf/cm²}

Size (mm) \ Temperature	0 to 20°C	Up to 30°C	Up to 40°C	Up to 50°C	Up to 60°C
13 to 300	1.0 {10.2}	0.9 {9.2}	0.7 {7.1}	0.3 {3.1}	0.1 {1.0}

VU

Unit: MPa {kgf/cm²}

Size (mm) \ Temperature	0 to 20°C	Up to 30°C	Up to 40°C	Up to 50°C	Up to 60°C
40 to 500	0.6 {6.1}	0.5 {5.1}	0.4 {4.1}	0.2 {2.0}	0.06 {0.6}

Notes: Maximum Working Pressure is the pressure including the water hammer pressure. Do not use them exceeding the maximum working pressure.

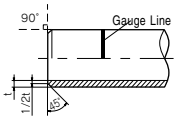
Installation of TS Connection

1 Pipe Cutting

Use wide thick paper or tape for the pipe cutting area, put a cutting gauge line with a permanent marker on the entire circumference, and cut perpendicular to the pipe shaft.

2 Chamfer

Lightly chamfer the entire inner/outer perimeters using a tool such as file or chamfer. When a pipe is cut, especially, finish the pipe end surface without burrs and warping.



Notes: Not properly performing chamfering could cause installation failure so please make sure to chamfer.

3 Entry of Gauge Line

For the pipe insertion gauge line of the sizes 13 to 40 mm, measure the fitting socket length ℓ from the pipe end and mark on the pipe body with a marker. For the pipe insertion gauge line for the sizes 50 to 150 mm, it shall be at a position of the zero point plus the bonding margin length in Table 2. Mark the gauge line on the pipe body with a permanent marker.

Table 1. TS Fitting Socket Normal Length — Unit: mm

Size	13	16	20	25	30	40	50	65	75	100	125	150
Fitting Socket Length	26	30	35	40	44	55	63	61	64	84	104	132

[Reference] Table 2. Bonding Margin Length — Unit: mm

Size	13	16	20	25	30	40	50	65	75	100	125	150
Bonding Margin Length	10	10	15	15	15	20	20	20	25	30	35	45

* Refer to [Explanation] 2.

4 Rinsing

Wipe and clean the inner face of fitting socket and the outer face of pipe insertion port with a cloth. In particular, when oil or water is on the connection part, clean by using a small amount of acetone and alcohol.

Notes: Not properly performing rinsing could cause installation failure so please make sure to rinse.

5 Adhesive Application

Use a special adhesive compatible to the type of pipe and apply it evenly in the order of on the inner face of fitting and the outer face of pipe. In particular, apply thinly and evenly to the inner face of fitting. The reference ratio of adhesive application is 7 to 3 for pipe and fitting.

Table 3. Usage of Adhesive per Connection Part (Reference)

Size (mm)	13	16 (15)	20	25	30 (32)	40	50	65	75	100	125	150
Usage (g)	0.9	1.2	1.7	2.0	3.1	5.0	7.1	9.9	12	20	30	44

* Refer to [Explanation] 4.

6 Insertion

After applying adhesive, insert pipe into fitting straight without turning the pipe immediately at once and press it in that condition. Refer to Table 4 for this normal press time.

* Use an inserter for large diameters.

Table 4. Normal Press Time of TS Connection

Size (mm)	50 or less	65 or more
Normal Press Time (Sec.)	30 or more	60 or more

Notes: Due to the relationship of pipe and fitting dimension tolerance, it may not be inserted all the way to the end. In this case, do not insert it forcibly by hammering and such. Inserting forcibly may place a large burden on the fitting and cause damage.

7 Adhesive Treatment

After connection, wipe the protruded adhesive immediately and do not apply forcible stress on the connection part.

8 Removal of Solvent Content

Adhesive contains organic solvent, and the solvent steam needs to be removed after connection. During curing after piping, open both ends of pipe without enclosing and remove the solvent steam. During curing, the steam can be removed more effectively by ventilating inside piping using a ventilator (low-pressure specification) or washing inside piping by filling the water after the adhesive is hardened.

* Refer to [Explanation] 4.

[Explanation]

1 TS connection utilizes the swelling and elasticity of PVC by making the fitting socket tapered and using adhesive. Applying adhesive to the pipe and fitting would create a swelling layer of approximately 0.1 mm thickness on its surface as shown (Figure 1), and this layer makes the insertion of the pipe fluidly. After insertion, respective swelling layers of the pipe and fitting would interact each other, and the bonding surface would be unified.

Figure 1. Installation of TS Connection

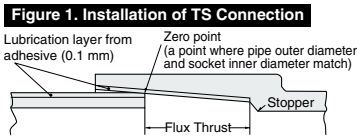
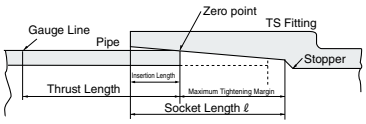


Figure 2. Zero Point and Tightening Margin



2 Based on a result of testing the relationship between the bonding margin length and pressure-resistant strength, it has been confirmed that practically acceptable water pressure strength can be secured by inserting approximately 1/3 of the fitting socket [ℓ] in addition to the insertion length without applying adhesive (zero point).

In regards to insertion margin in TS connection, it is ideal to insert TS fitting to the length of TS fitting gasket (stopper), but considering the tolerance of pipe and fitting dimensions, the length from zero point plus the bonding margin length shown in Table 2 to the stopper in Table 1 is sufficient enough, and inserting to the stopper of the fitting is not necessarily required.

However, if it cannot be inserted due to the adhesive being dried,etc., cut the connection part and reconnect again by using a new socket.

3 Inserting the pipe into the fitting before applying adhesive is to check the zero point. In this case, a combination of pipe and fitting that provide the insertion length of 1/3 to 2/3 ℓ from the pipe end surface (refer to Figure 2) is standard.

4 Be cautious of excessive adhesive (it may cause solvent cracking and damage). Caution is needed in low-temperature installation because solvent steam does not evaporate easily and tends to remain (it may cause solvent cracking and damage). During curing after piping, open both ends of pipe without enclosing and remove the solvent steam. During curing, the steam can be removed more effectively by ventilating inside piping using a ventilator (low-pressure specification) or washing inside piping by filling the water fully after the adhesive is hardened.

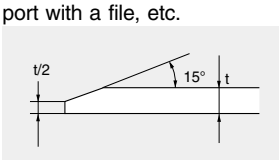
Installation of Rubber Ring Connection

1 Pipe Cutting

Wrap marking tape perpendicular to the pipe shaft, put a cutting section surface on the entire circumference with a permanent marker and cut using a manual saw by avoiding misalignment.

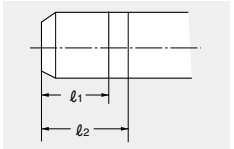
2 Chamfering of Insertion Port

Chamfer the end surface of insertion port with a file, etc.



3 Entry of Gauge Line (Insertion Length)

Mark a gauge line on the insertion port pipe.



Size	ℓ_1	ℓ_2
50	94	107
75	107	120
100	119	132
125	125	138
150	139	152

4 Cleaning of Socket Inner Face

Wipe off the soil and sand attached on the rubber ring and groove and the socket inner face with a cloth.

5 Rubber Ring Installation Method

If the rubber ring is removed for cleaning, put it into the groove by squeezing into a heart shape. Check for twisting and misalignment.

6 Cleaning of Insertion Outer Face

Wipe off the soil and sand attached on the insertion port outer side with a cloth.

7 AV Lubricant Application

Apply AV lubricant to inner face of rubber ring and insertion port (especially the chamfered tip area) evenly. (Never use oil, grease, soap, etc.)

Normal Application Amount g/location

Size (mm)	50	75	100	125	150
Application Amount	4	5	10	15	20

8 Connection

Insert to between 2 gauge lines. Make sure to avoid the shaft center misalignment and never hammer in by using a hammer.

9 Insertion Depth Check

After connection, check the entire circumference using a check gauge to see if the rubber ring is in a proper condition.

Piping Precautions

① Do not throw around when loading/unloading. Be cautious especially in Winter.

② Store away from direct sunlight and avoid unevenness on the pipe platform. Do not use a transparent sheet because it has no effect and gives a negative influence.

③ Do not hammer in when connecting pipes.

④ For rubber ring connection, make sure to check the rubber fitting and inspect for twisting and direction. Be cautious of attachment of soil/sand, muddy water, etc.

⑤ Do not clean the rubber ring groove with a slippery item such as lubricant.

⑥ If you notice spring water before backfilling, drain, put sand in a couple of layers and tamper sufficiently.

⑦ Sufficiently fill the area around pipes to avoid any cavity.

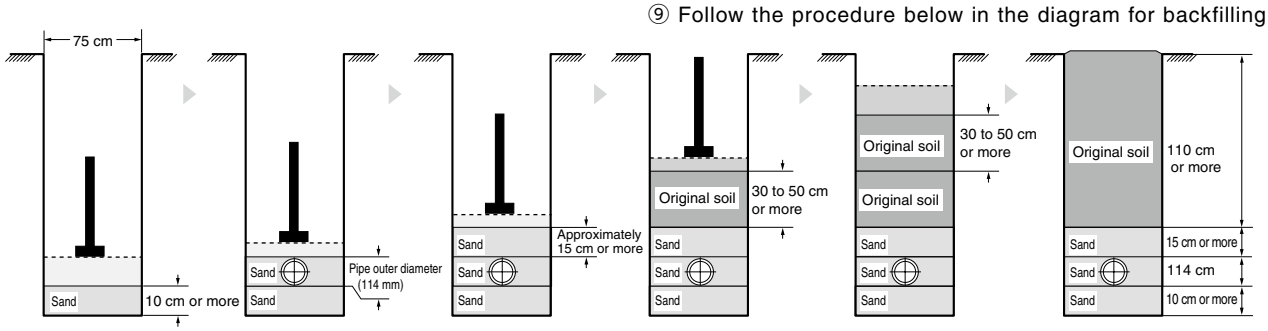
⑧ The groove bottom shall be sand, in principle. For weak ground, additionally lay crushed stones underneath or improve the soil quality. Do not have stones and bedrock hit pipes directly.

⑨ Follow the procedure below in the diagram for backfilling.

<Example> In the case of the size 100

Notes: 1. Dotted line shows the position immediately after inserting soil and sand.

Notes: 2. Solid line shows the position after tampering the soil and sand.



TS Fitting

Elbow [L]

Size (mm)	Packing: pcs.
13	170 / 680
16	100 / 400
20	60 / 240
25	35 / 140
30	25 / 100
40	30 / 60
50	15 / 30
65	20
75	15
100	7
125	5
150	3

45° Elbow [45L]

Size (mm)	Packing: pcs.
20	65 / 260
25	40 / 160

Tee [T]

Size (mm)	Packing: pcs.
13	110 / 440
16	60 / 240
20	40 / 160
25	20 / 80
30	15 / 60
40	15 / 30
50	10 / 20
65	14
75	10
100	4
125	3
150	2
16×13	80 / 320
20×13	50 / 200
20×16	50 / 200
25×13	35 / 140
25×16	30 / 120
25×20	25 / 100
30×13	25 / 100
30×16	20 / 80
30×20	20 / 80
30×25	18 / 72
40×13	30 / 60
40×16	28 / 56
40×20	25 / 50
40×25	23 / 46
40×30	23 / 46
50×13	20 / 40
50×16	20 / 40
50×20	17 / 34
50×25	15 / 30
50×30	13 / 26
50×40	11 / 22
65× 40	18
65× 50	18
75× 25	18
75× 40	14
75× 50	12
75× 65	10
100× 50	6
100× 75	5
125× 75	4
125×100	3
150× 75	3
150×100	2
150×125	2

Faucet Elbow [FL]

Size (mm)	Packing: pcs.
13	150 / 600
16	110 / 440
20	70 / 280
25	40 / 160

Metal-Containing Faucet Elbow [KFL]

Size (mm)	Packing: pcs.
13	150 / 300
16	100 / 200
20	60 / 120
25	35 / 70
20×13	80 / 160

Faucet Socket [FS]

Size (mm)	Packing: pcs.
13	200 / 800
16	150 / 600
20	90 / 360
25	50 / 200

Metal-Containing Faucet Socket [KFS]

Size (mm)	Packing: pcs.
13	170 / 340
16	130 / 260
20	90 / 180
25	45 / 90
20×13	90 / 180

Faucet Tee [FT]

Size (mm)	Packing: pcs.
13	100 / 400
20	40 / 160
25	20 / 80
16×13	65 / 260
20×13	50 / 200
25×13	30 / 120
25×20	25 / 100

Metal-Containing Faucet Tee [KFT]

Size (mm)	Packing: pcs.
20	40 / 80
25	20 / 40
20×13	50 / 100
25×13	35 / 70
25×20	30 / 60

Valve Socket [VS]

Size (mm)	Packing: pcs.
10	400 / 1,600
13	250 / 1,000
16	180 / 720
20	110 / 440
25	60 / 240
30	40 / 160
40	50 / 100
50	30 / 60
65	60
75	36
100	18
125	12
150	4

Union Socket [US]

Size (mm)	Packing: pcs.
13	225 / 900
16	150 / 600
20	100 / 400
25	60 / 240
30	40 / 160
40	50 / 100
50	25 / 50

Socket [S]

Size (mm)	Packing: pcs.
13	210 / 840
16	130 / 520
20	85 / 340
25	50 / 200
30	35 / 140
40	40 / 80
50	24 / 48
65	30
75	22
100	10
125	8
150	4
16×13	160 / 640
20×13	120 / 480
20×16	100 / 400
25×13	70 / 280
25×16	65 / 260
25×20	60 / 240
30×20	40 / 160
30× 25	40 / 160
40× 20	50 / 100
40× 25	50 / 100
40× 30	45 / 90
50× 20	40 / 80
50× 25	25 / 50
50× 30	25 / 50
50× 40	25 / 50
65× 40	40
65× 50	40
75× 40	30
75× 50	30
75× 65	30
100× 75	15
125×100	12
150×100	4
150×125	4

Cap [C]

Size (mm)	Packing: pcs.
13	420 / 1,680
16	250 / 1,000
20	170 / 680
25	100 / 400
30	70 / 280
40	80 / 160
50	40 / 80
65	60
75	36
100	18
150	6

Metal-Containing Valve Socket [KVS]

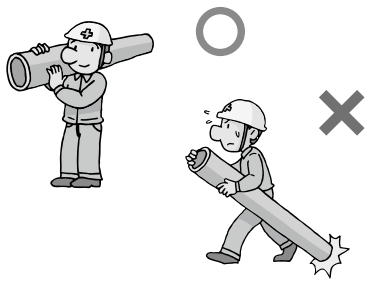
Size (mm)	Packing: pcs.
13	100 / 200

Piping Design Precautions

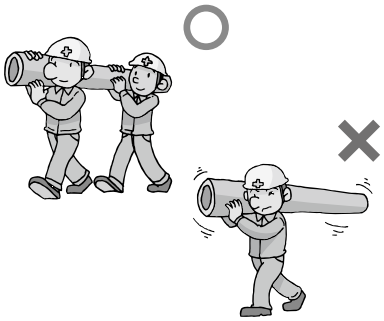
- Select an appropriate material in consideration of use conditions (fluid type, temperature, pressure, etc.) For details, please consult our nearest office in advance.
- Maximum working pressure is the pressure including the water hammer pressure. Do not use them exceeding the maximum working pressure.
- As maximum working pressure differs by size and temperature, design and use within the allowable range.
- Since they are made from plastic, heat expansion/contraction against temperature change is large compared to metals and heat stress is also generated. Therefore, perform piping support or expansion/construction treatment applicable to the use conditions and installation place.
- In the case of using under the positive-pressure gas, a dangerous condition is expected due to the particular reaction force of compressive fluid even when the the value is the same as the water pressure. Therefore, implement a safety measure such as covering pipes with a protection material, etc. to protect the surrounding area before use.
- Do not joint with solvent adhesive or welding connection on differential plastic materials (It may cause damage)

Transportation Precautions

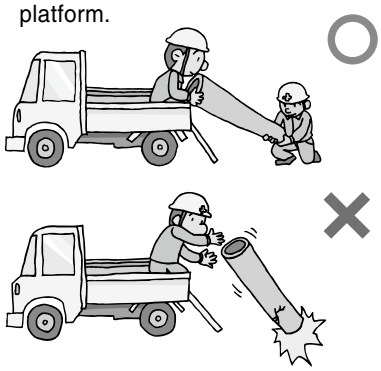
- Do not drag them as it could scratch pipes. Do not drag them as both ends of pipes are easily damaged.



- Two people should handle a pipe with the size of 150 mm or more.

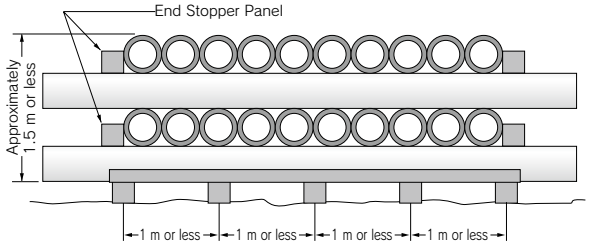


- Do not throw pipes from the truck platform.

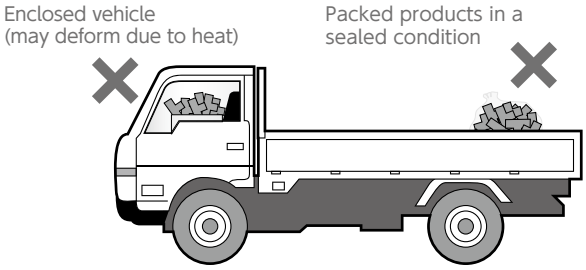


Storage Precautions

- When storing pipes and fittings outside, avoid direct sunlight and implement a measure such as placing a sheet in a way of avoiding heat accumulation.



- Do not leave fittings in an enclosed condition (inside a vehicle in summer, in an enclosed plastic bag, etc.) under a high temperature atmosphere.



Installation

- Follow our installation procedure to fully exert the work safety and piping performance for installation.
- Make sure to use the specified AV cement for bonding AV PVC pipes.
- Be cautious of excessive adhesive (it may cause solvent cracking and damage). Caution is needed in low-temperature installation because solvent steam does not evaporate easily and tends to remain (it may cause solvent cracking and damage). During curing after piping, open both ends of pipe without enclosing and remove the solvent steam. During curing, it can be removed more effectively by ventilating inside piping using a ventilator (low-pressure specification) or washing inside piping by filling the water fully after the adhesive is hardened.
- Make sure to perform a completion inspection under water pressure. Do not perform an airtightness test by using air (compressed air or positive-pressure gas) as it is extremely dangerous.

Solvent Cracking (SC) Measure

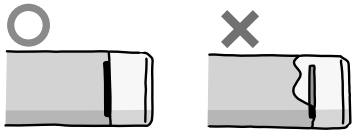
SC (Solvent Cracking) is a type of stress cracking and specifically distinguishes the cracking phenomenon that occurs when solvent gives an impact inside PVC pipe. SC is caused by the existence of solvent (adhesive, preservative, etc.)

It tends to occur more easily due to stress (heat stress, stress of TS connection part, bending, other external stress) and installation during low-temperature like in winter (solvent tends to remain). When piping, implement an SC measure as explained as follows.

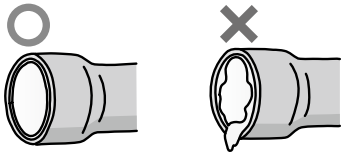
Item	Measure
Adhesive Usage	Apply adhesive compatible to the type of pipe thinly and evenly. Do not apply adhesive extending out from the insertion length on the pipe outer face. In particular, apply thinly and evenly to the inner face of fitting. The reference ratio of adhesive application is 7 to 3 for pipe and fitting.
Wiping of Adhesive	After bonding, make sure to wipe off the protruded adhesive with a cloth after inserting. During application, remove the adhesive spilled on the groove floor.
Opening of pipe on both ends	Fully open valve, air valve, blind flange, etc. for better ventilation and remove the solvent steam (do not enclose).
Utilization of Prefab Method	Prefabricate 2 to 4 pipes in advance, remove the solvent steam by natural ventilation and then connect the pipes.
Ventilation inside Piping	During curing after piping, open both ends of pipe without enclosing and remove the solvent steam (do not enclose). During curing, the steam can be removed more effectively by ventilating inside piping using a ventilator (low-pressure specification).
Washing inside Piping	During curing after piping, open both ends of pipe without enclosing and remove the solvent steam. It is more effective if you fill water all the way and wash after the adhesive is hardened (do not apply the water pressure at this time). • Immediately perform this after leaving 30 minutes for the size of 50 mm or less and approximately 1 hour for the size of 65 mm or more.
Expansion Measure	Implement an expansion/contraction treatment to prevent the heat stress from rising due to temperature differences.
Support	When fixing piping, try to avoid using U-bolts as much as possible and use fixation bands with a wider width. In the case of using U-bolts, provide a cushion such as rubber to prevent piping from touching U-bolts. Be fully cautious not to tighten the fixation bands and U-bolts too much.

Adhesive Usage

Do not apply adhesive extending out from the gauge line.

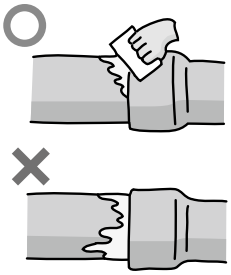


Apply thinly and evenly to the inner face of TS fitting gasket.



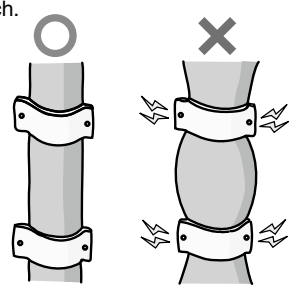
Wiping of Adhesive

Wipe off the protruded adhesive with a cloth after inserting.



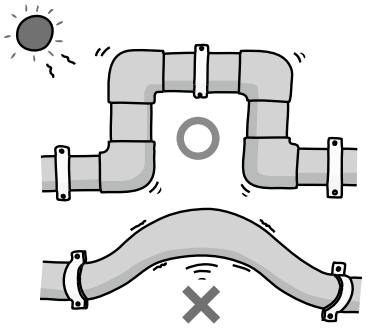
Support

Be cautious not to tighten saddle bands, U-bolts and U-bands too much.



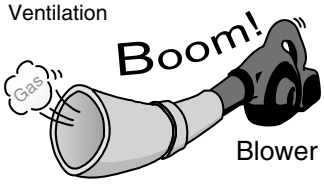
Expansion Measure

Provide expansion/contraction treatment to lower the heat stress.

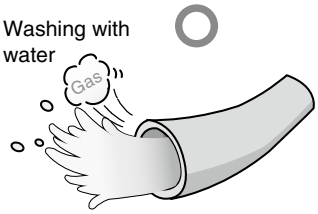


Removal of Solvent and Opening of Pipe on Both Ends

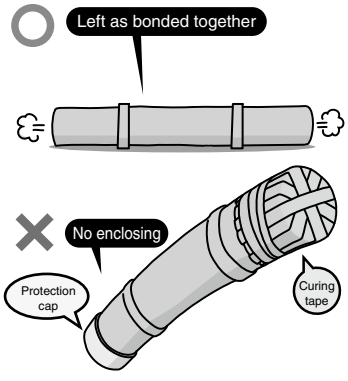
Ventilation



Washing with water

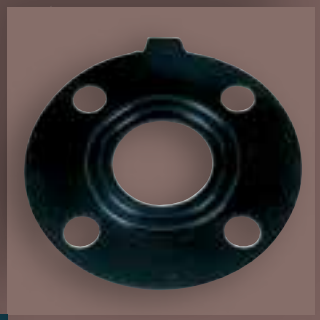


Opening of pipe on both ends



ASAHIAV

Related Products



Related product

PRODUCT MODEL CODE LIST

Type	Model	Brush	Weight
C	*	*	***
C AV Cement	3 AV Cement 32	1 With brush	001 100g
	5 AV Cement 52	0 Without brush	003 250g
	6 AV Cement 62		005 500g
	8 AV Cement 88		010 1kg
	9 AV Cement 90		
	1 AV Cement 100		
	2 AV Cement 102		

AV Cement

Adhesives in the following table are available depending on types of pipes & fittings.

			AV Cement 32	AV Cement 52	AV Cement 62	AV Cement 88	AV Cement 90	AV Cement 100	AV Cement 102
			 Japan Water Works Association (JWWA-S101)	 Japan Water Works Association (JWWA-S101)			 Japan Water Works Association (JWWA-S101)	 Japan Water Works Association (JWWA-S101)	
Classification			Low Viscosity Quick Dry	High Viscosity Quick Dry	High Viscosity Slow Dry	Low Viscosity Quick Dry	Low Viscosity Quick Dry	Low Viscosity Quick Dry	High Viscosity Slow Dry
Adhesive Color			Transparent	Transparent	Transparent	Transparent	Transparent	White	White
Applicable Pipe Type	①	General Pipe (VP, VU)	◎	◎	◎	○	○	◎	◎
	①	High Purity Resistance Polyvinyl Chloride Pipe (HP-PVC)	◎	◎	◎	○	○	◎	◎
	②	HI Pipe	×	×	×	○	◎	◎	◎
	③	C-PVC Pipe	×	×	×	◎	×	×	×
Packaging			100g・500g・1kg can with brush	500g can with brush	1kg can with brush	250g・500g can with brush	500g・1kg can with brush	1kg can with brush	1kg can without brush (wide mouth)
Container Color			Blue	Red	Yellow	Brown	Dark Blue	Light Blue	Dark Green

Notes: 1. ◎ is recommended, × is not usable. 2. ○ is usable.

3. Select an adhesive with higher resolution (higher number circled in the table above) when connecting different materials.
   Resolution C-PVC > HI-PVC > U-PVC
   (Example: In the case of connecting C-PVC Pipe and High Purity Pipe...Use AV Cement 88)
4. Products marked as "Japan Water Works Association (JWWA S101)" in the table above are accordance with materials, manufacturing methods and compositions specified in the "JWWA S101 Tap Water Hard Polyvinyl Chloride Pipe Adhesive", and its quality has been confirmed by passing our standard testing.

AV Cement

AV Cement Standard Table

Product Name	Classification	Symbol	Container Color	Viscosity (CP)	Loss on Drying (%)	Bonding Power (MPa)	
						After 15 minutes	After 2 hours
AV Cement 32	Low Viscosity Quick Dry	A	Blue	100 – 250	30 – 50	1.25 or more	2.5 or more
AV Cement 52	High Viscosity Quick Dry	B	Red	800 – 1500	30 – 50	1.25 or more	2.5 or more
AV Cement 62	High Viscosity Slow Dry	—	Yellow	500 – 1500	10 – 30	—	1.5 or more
AV Cement 88	Low Viscosity Quick Dry	—	Brown	200 – 700	—	1.25 or more	2.5 or more
AV Cement 90	Low Viscosity Quick Dry	A	Dark Blue	500 – 800	30 – 50	1.25 or more	2.5 or more
AV Cement 100 (White)	Low Viscosity Quick Dry	A	Light Blue	500 – 800	30 – 50	1.25 or more	2.5 or more
AV Cement 102 (White)	High Viscosity Slow Dry	—	Dark Green	400 – 1000	10 – 30	—	1.5 or more

⚠ <Use Precautions>

* AV cement is applicable to Class 1 petroleums, Class 4 hazardous materials of Article 2 of the Fire Services Act. Be cautious of storage.
* Read "Use Precautions" stipulated on the can carefully and follow the instructions when using.

Relationship Between Leave Time and Bonding Strength in the Case of Using AV Cement for TS Fitting

Maximum pulling load with the size of 13 mm at 20°C Bonding power inside ( )

Product Name	1 minute	3 minutes	5 minutes	10 minutes	15 minutes	30 minutes	1 hour	2 hours	3 hours	6 hours	12 hours	24 hours
◎ AV Cement 32	540 (0.4)	1,320 (1.0)	1,570 (1.2)	2,010 (1.5)	2,260 (1.7)	2,840 (2.1)	3,330 (2.5)	3,730 (2.7)	4,020 (2.9)	4,560 (3.3)	Cracked	—
◎ AV Cement 52	1,260 (0.9)	1,770 (1.3)	2,160 (1.6)	2,510 (1.9)	2,790 (2.1)	3,330 (2.5)	3,730 (2.7)	4,120 (3.0)	4,360 (3.2)	4,810 (3.5)	Cracked	—
◎ AV Cement 62	—	—	—	410 (0.3)	800 (0.6)	1,320 (1.0)	2,150 (1.6)	2,750 (2.1)	3,040 (2.3)	3,880 (2.8)	4,460 (3.3)	Cracked
◎ AV Cement 88	—	—	—	—	1,670 (2.3)	2,260 (2.8)	3,040 (3.6)	3,240 (4.2)	3,630 (4.7)	4,410 (5.7)	5,300 (6.9)	6,180 (8.2)

Standard Table of Adhesive Necessary for TS Fitting Connection

Size (mm)	13	16	20	25	30	40	50	65	75	100	125	150	200	250	300	350	400	450	500
Application Amount (g/location)	0.9	1.2	1.7	2.0	3.1	5.0	7.1	9.9	12	20	30	44	59	78	104	244	318	400	490
Applicable Adhesive	◎ AV Cement 32 or ◎ AV Cement 52 or ◎ AV Cement 90 or ◎ AV Cement 100 (White)												◎ AV Cement 62 or ◎ AV Cement 102 (White)						

Notes: Applicable adhesives above are described from how quick or slow to dry by type and this will not be applied depending on the work environmental conditions.

PRODUCT MODEL CODE LIST

Type	Model	Material Use	Weight
Q	0	0	010
Q Lubricant	0 Lubricant	0 Lubricant	010 100g

AV Lubricant

Net Weight: 1 kg

Use AV lubricant for rubber ring connection. Do not use other soap water, grease, etc.

Normal application amount per rubber ring connection

Size (mm)	50	75	100	125	150	200	250	300	350	400	450	500
Application Amount (g)	4	5	10	15	20	25	35	50	65	90	115	140

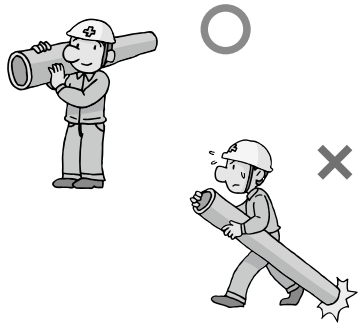
Notes: Read "Use Precautions" stipulated on the product carefully when using.

Piping Design Precautions

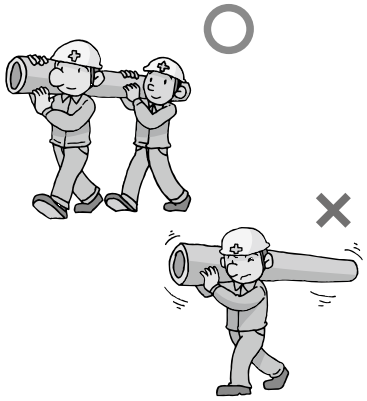
- Select an appropriate material in consideration of use conditions (fluid type, temperature, pressure, etc.) For details, please consult our nearest office in advance.
- Maximum working pressure is the pressure including the water hammer pressure. Do not use them exceeding the maximum working pressure.
- As maximum working pressure differs by size and temperature, design and use within the allowable range.
- Since they are made from plastic, heat expansion/contraction against temperature change is large compared to metals and heat stress is also generated. Therefore, perform piping support or expansion/construction treatment applicable to the use conditions and installation place.
- In the case of using under the positive-pressure gas, a dangerous condition is expected due to the particular reaction force of compressive fluid even when the the value is the same as the water pressure. Therefore, implement a safety measure such as covering pipes with a protection material, etc. to protect the surrounding area before use.
- Do not joint with solvent adhesive or welding connection on differential plastic materials (It may cause damage)

Transportation Precautions

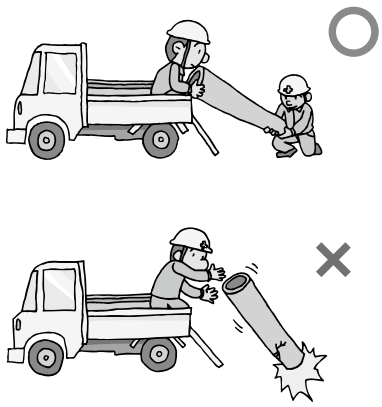
- Do not drag them as it could scratch pipes. Do not drag them as both ends of pipes are easily damaged.



- Two people should handle a pipe with the size of 150 mm or more.



- Do not throw pipes from the truck platform.



Storage Precautions

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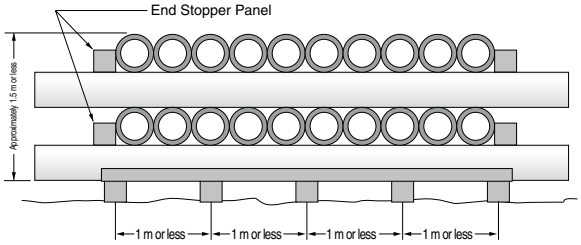
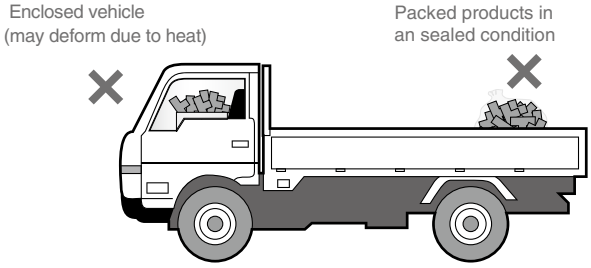


- Do not leave fittings in an enclosed condition (inside a vehicle in Summer, in an enclosed plastic bag, etc.) under a high temperature atmosphere.



Installation

- Follow our installation procedure to fully exert the work safety and piping performance for installation.
- Make sure to use the specified AV cement for bonding AV PVC pipes.
- Be cautious of excessive adhesive (it may cause solvent cracking and damage).
  Caution is needed in low-temperature installation because solvent steam does not evaporate easily and tends to remain (it may cause solvent cracking and damage). During curing after piping, open both ends of pipe without enclosing and remove the solvent steam. During curing, it can be removed more effectively by ventilating inside piping using a ventilator (low-pressure specification) or washing inside piping by filling the water fully after the adhesive is hardened.
- Make sure to perform a completion inspection under water pressure. Do not perform an airtightness test by using air (compressed air or positive-pressure gas) as it is extremely dangerous.

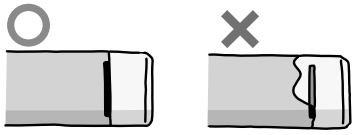
Solvent Cracking (SC) Measure

SC (Solvent Cracking) is a type of stress cracking and specifically distinguished from the cracking phenomenon that occurs when solvent gives an impact inside PVC pipe. SC is caused by the existence of solvent (adhesive, preservative, etc.) It tends to occur more easily due to stress (heat stress, stress of TS connection part, bending, other external stress) and installation during low-temperature like in Winter (solvent tends to remain). When piping, implement a SC measure as explained as follows.

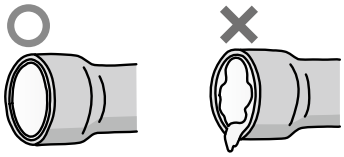
Item	Measure
Adhesive Usage	Apply adhesive compatible to the type of pipe thinly and evenly. Do not apply adhesive extending out from the insertion length on the pipe outer face. In particular, apply thinly and evenly to the inner face of fitting. The reference ratio of adhesive application is 7 to 3 for pipe and fitting.
Wiping of Adhesive	After bonding, make sure to wipe off the protruded adhesive with a cloth after inserting. During application, remove the adhesive spilled on the groove floor.
Opening of pipe on both ends	Fully open valve, air valve, blind flange, etc. for better ventilation and remove the solvent stream (do not enclose).
Utilization of Prefab Method	Prefabricate 2 to 4 pipes in advance, remove the solvent steam by natural ventilation and then connect the pipes.
Ventilation inside Piping	During curing after piping, open both ends of pipe without enclosing and remove the solvent steam (do not enclose). During curing, the steam can be removed more effectively by ventilating inside piping using a ventilator (low-pressure specification).
Washing inside Piping	During curing after piping, open both ends of pipe without enclosing and remove the solvent steam. It is more effective if you fill water all the way and wash after the adhesive is hardened (do not apply the water pressure at this time). Immediately perform this after leaving 30 minutes for the size of 50 mm or less and approximately 1 hour for the size of 65 mm or more.
Expansion Measure	Implement an expansion/contraction treatment to prevent the heat stress from rising due to temperature differences.
Support	When fixing piping, try to avoid using U-bolts as much as possible and use fixation bands with a wider width. In the case of using U-bolts, provide a cushion such as rubber to prevent piping from touching U-bolts. Be fully cautious not to tighten the fixation bands and U-bolts too much.

Adhesive Usage

Do not apply adhesive extending out from the gauge line.

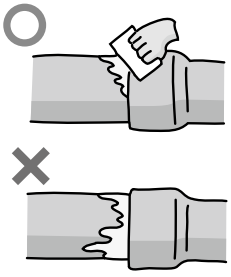


Apply thinly and evenly to the inner face of TS fitting gasket.



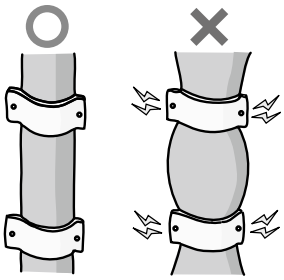
Wiping of Adhesive

Wipe off the protruded adhesive with a cloth after inserting.



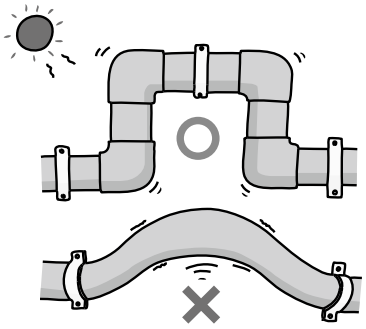
Support

Be cautious not to tighten saddle bands, U-bolts and U-bands too much.



Expansion Measure

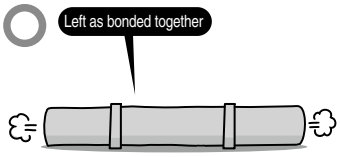
Provide expansion/contraction treatment to lower the heat stress.



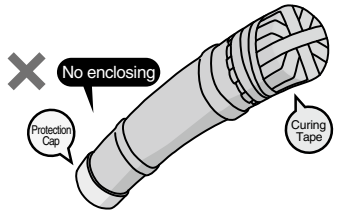
Removal of Solvent and Opening of Pipe on Both Ends

Ventilation

Opening of pipe on both ends



Washing with water




ASAHIAV

⚠ Be sure to read the following description of our product warranty

- Always observe the specifications of and the precautions and instructions on using our product.
- We always strive to improve the quality and reliability, but cannot guarantee perfection. Therefore, should you intend to use this product with any equipment or machinery that may pose the risk of serious or even fatal injury, or property damage, ensure an appropriate safety design or take other measures with sufficient consideration given to possible problems. We shall assume no responsibility for any inconvenience stemming from any action on your part without our written consent in the form of specifications or other documented approval.
- The related technical documents, operation manuals, and/or other documentation prescribe precautions on selecting, constructing, installing, operating, maintaining, and servicing our products. For details, consult with our nearest distributor or agent.
- Our product warranty extends for one and a half years after the product is shipped from our factory or one year after the product is installed, whichever comes first. Any product abnormality that occurs during the warranty period or which is reported to us will be investigated immediately to identify its cause. Should our product be deemed defective, we shall assume the responsibility to repair or replace it free of charge.
- Any repair or replacement needed after the warranty period ends shall be charged to the customer.
- The warranty does not cover the following inconveniences by:
  (1) Using our product under any condition not covered by our defined scope of warranty.
  (2) Failure to observe our defined precautions or instructions regarding the construction, installation, handling, maintenance, or servicing of our product.
  (3) Any product other than ours.
  (4) Remodeling, or otherwise modifying our product by anyone other than us.
  (5) Using any part of our product for anything other than the intended use of the product.

  In no event shall we be responsible or liable for any special, indirect, incidental or consequential damages arising in any way in connection with any products.

[Precautions]

* Our product warranty shall not apply in case of using a positive-pressure gas with our plastic piping. Using a positive-pressure gas with our plastic piping may pose a dangerous condition due to the repellent force peculiar to compressed fluids, even when the gas is under the same pressure as water. Therefore, be sure to take the necessary safety precautions such as covering the piping with protective material. For inquiries, please contact us.
  For conducting a leak test on newly installed piping, be sure to check for leaks under water pressure.
* Wrap the threaded joints on our plastic piping with sealing tape.
* Using a liquid sealing agent or liquid gasket may cause stress cracks (environmental stress cracking). Our product warranty shall not apply in case of said use, even when said use is unavoidable.

Export Control

In an effort to remain compliant with international agreements on security, many countries have instituted export controls for advanced goods and technologies which may be used for the proliferation of weapons of mass destruction.
Even in Japan we are sanctioned by the International Export Control Regime and the Chemical Weapons Convention to meet current regulations at home and in countries where we sell our goods and technologies.
In meeting this social and legal obligation, we are asking for your cooperation in providing us information relating to the intended use of our products. Information such as copies of agreements, company organization chart and affidavits of end-use may be required for export permission.
Your cooperation in this endeavor is greatly appreciated and our sales or Asahi distributor people are committed to working with you to continue to provide the best products and services Asahi has to offer.