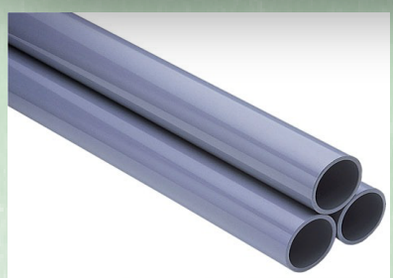
PVC PIPE

ASAHI AV



Unplasticized Polyviny Chloride Pipes
VP JIS K6742 & K6741

• VP (JIS 6742) Pipe — Unit: mm

Size	Outer Diameter			Thickness		Overall Length	Reference Weight per 1m (kg/m)
	Basic Dimension	Max. Min. Tolerance	Average Tolerance	Basic Dimension	Tolarence		
16	22.0	±0.2	±0.2	3.0	±0.3	4000	0.256
20	26.0	±0.2	±0.2	3.0	±0.3	4000	0.310
25	32.0	±0.2	±0.2	3.5	±0.3	4000	0.448
30	38.0	±0.3	±0.2	3.5	±0.3	4000	0.542
40	48.0	±0.3	±0.2	4.0	±0.3	4000	0.791
50	60.0	±0.4	±0.2	4.5	±0.4	4000	1.122
65	76.0	±0.5	±0.2	4.5	±0.4	4000	1.445
75	89.0	±0.5	±0.2	5.9	±0.4	4000	2.202
100	114.0	±0.6	±0.2	7.1	±0.5	4000	3.409
150	165.0	±1.0	±0.3	9.6	±0.6	4000	6.701

• VP (JIS 6741) Pipe — Unit: mm

Size	Outer Diameter			Thickness		Overall Length	Reference Weight per 1m (kg/m)
	Basic Dimension	Max. Min. Tolerance	Average Tolerance	Min. Dimension	Tolarence		
200	216.0	±1.3	±0.7	10.3	+1.4	4000	10.129
250	267.0	±1.6	±0.9	12.7	+1.8	4000	15.481
300	318.0	±1.9	±1.0	15.1	+2.2	4000	21.962

Notes:
1.) Excellent corrosion resistance
2.) Excellent self-extinguishing characteristic
3.) Excellent weather resistances on deformation, discoloration and deterioration.
4.) Easy to install due to light weight, 1/6 of iron and 1/2 of aluminium and can be easily connected by the TS method.
5.) The mass (kg) per unit length (m) in the table, which was calculated with specific gravity of 1.43.

Office: 5/F Henan Building, 90 Jaffe Road, Wanchai, Hong Kong
香港灣仔謝菲道 90 號豫港大廈 5 樓
Tel : 852-2528 0999 Fax : 852-2528 3113
Email : info@kembla.com.hk

Warehouse: Lot 567-D Lau Shui Heung Rd, Po Kat Tsai Village, Fan Ling, N.T.
貨倉 : 新界粉嶺流水響道布格仔村地段 D.D.85 Lot Nos. 567-D
Tel : 852-2674 7880 Fax : 852-2674 7990

Website : www.kembla.com.hk

Retail Shop: G/F 413 Shanghai Street, Yau Ma Tei, Kowloon
油麻地門市部 : 九龍油麻地上海街 413 號地下
(油麻地港鐵站 A1 出口)
Tel : 852-3428 2521 Fax : 852-3428 2575
Email: shop@kembla.com.hk

G/F 22A Swatow Street, Wanchai, Hong Kong
灣仔門市部 : 香港灣仔汕頭街 22 號 A 地下
(灣仔港鐵站 B2 出口近利東街)
Tel : 852-2528 0388 Fax : 852-2528 0189
Email: wanchai.shop@kembla.com.hk

KEMBLA (HK) LIMITED
金特霸(香港)有限公司
Member of Metal Manufactures Group

PRODUCT MODEL CODE LIST

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

Type
- T TS Fitting

Field
- N Standard

Material
- U U-PVC
- I HI-PVC

Model

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

Standard
- J JIS

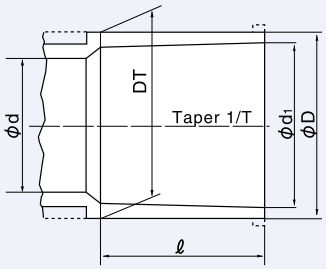
Type
- N Standard

Size
- 010 10mm – 150 150mm
- 016013 16×13mm – 150125 150×125mm

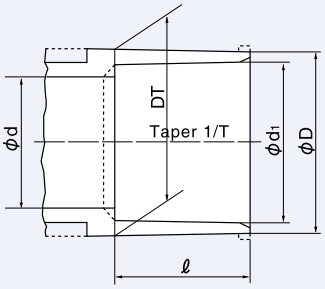
TS·HITS Fitting Common Dimensions

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

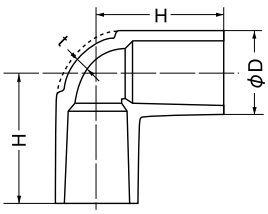
TS U-PVC

HITS HI-PVC

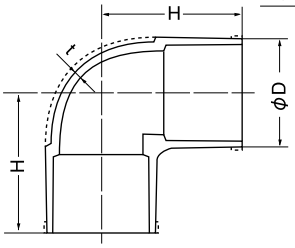
Max. Working Pressure (Hydrostatic pressure)

TS・HITS 0.75MPa

Size 13 – 50 mm



Size 65 – 150 mm



Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	H
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

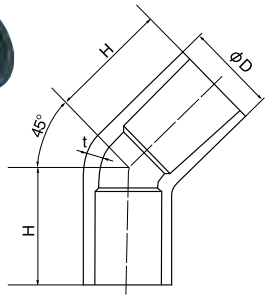
Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

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.

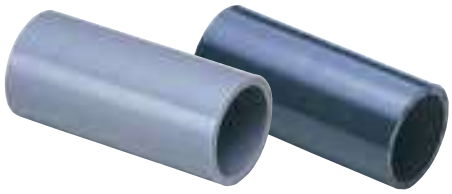
Socket

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



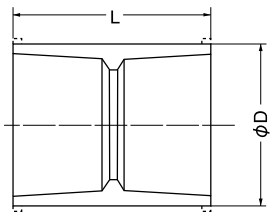
TS U-PVC

HITS HI-PVC

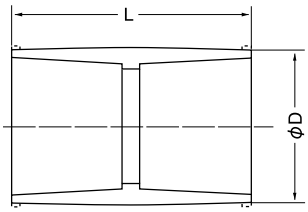
Max. Working Pressure (Hydrostatic pressure)

TS・HITS 0.75MPa

Size 13 – 50 mm



Size 65 – 150 mm



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

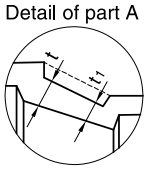
TS	T	N	U	SO	J	N	Size
HITS	T	N	I	SO	J	N	Size

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

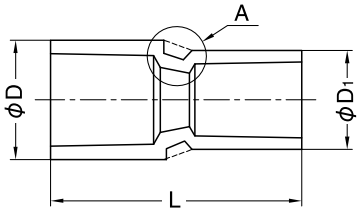
TS U-PVC

HITS HI-PVC

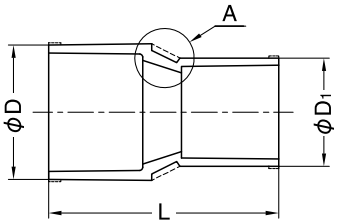
Detail of part A



Size 13 — 50 mm



Size 65 — 150 mm



Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	D_1	t_1	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	D_1	t_1	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

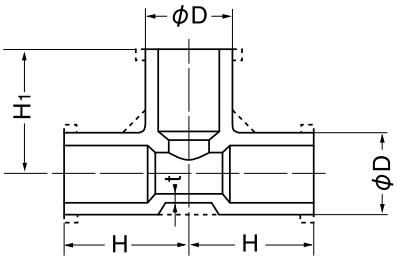
TS	T	N	U	TE	J	N	Size
HITS	T	N	I	TE	J	N	Size

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

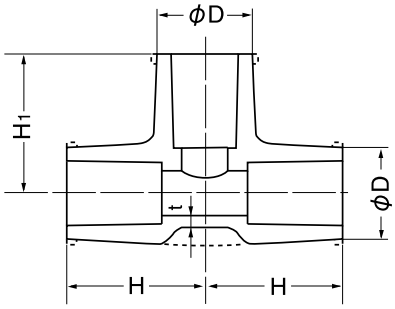
TS U-PVC

HITS HI-PVC

Size 13 — 50 mm



Size 65 — 150 mm



Dimensions Table

(Unit: mm)

Size	TS	HITS	D	t	H	H_1
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	H_1
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)

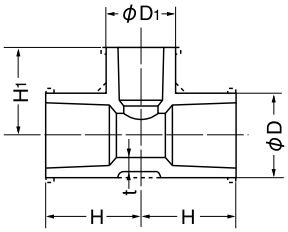
PRODUCT MODEL CODE

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

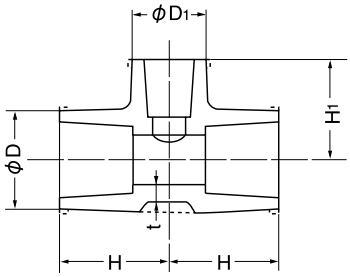
TS U-PVC

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	D_1	H_1
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	D_1	H_1
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	D_1	H_1
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	D_1	H_1
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

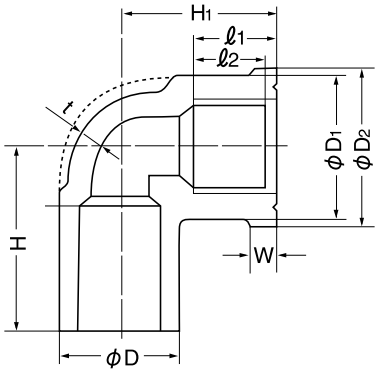
Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

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	D_1	D_2	ℓ_1	ℓ_2	W	H	H_1	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

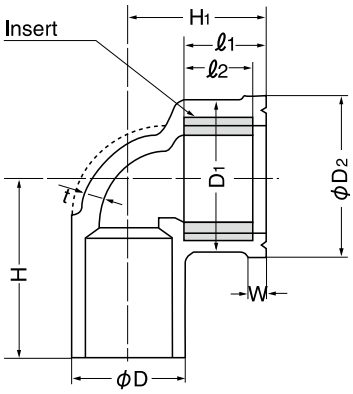
Abbreviation : **KFL** Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

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	D_1	D_2	ℓ_1	ℓ_2	W	H	H_1	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. H_1 tolerance shall be $^{+5}_{-1}$ mm. 5. ℓ_2 tolerance shall be ±1 mm. 6. ○ are accordance with JIS K6743.

Faucet Tee

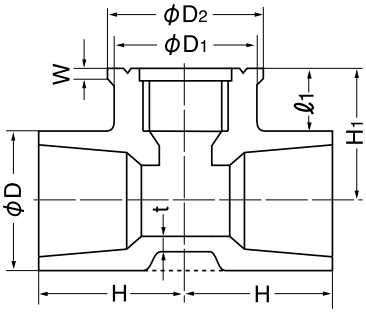
Abbreviation : **FT** Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

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	D_1	D_2	ℓ_1	W	H	H_1	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.

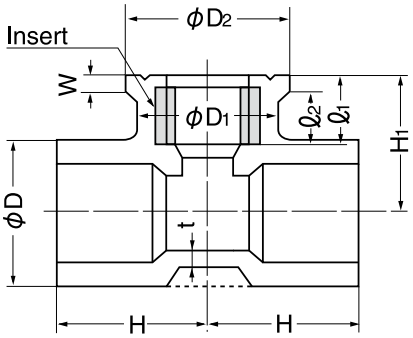
Metal-Containing Faucet Tee

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

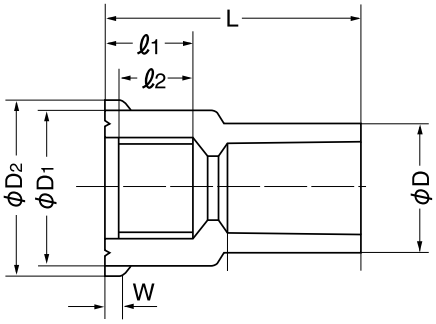
Notes: 1. Insert shall be free-cutting brass of JIS H3250 (coper and copper alloy rod). 2. Threaded end shall be parallel female thread of JIS B0203 (taper threaded end for pipes).
3. $\ell 2$ tolerance shall be ±1 mm. 4. H tolerance shall be $^{+5}_{-1}$ mm. 5. H1 tolerance shall be $^{+5}_{-2}$ mm.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

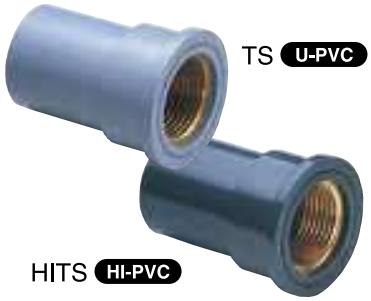
Notes: 1. Threaded end shall be parallel female thread of JIS B 0203 (taper threaded end for pipes). 2. L tolerance shall be $^{+5}_{-1}$ mm.
3. $\ell 2$ tolerance shall be ±1 mm. 4. □ conform to the AV standard.

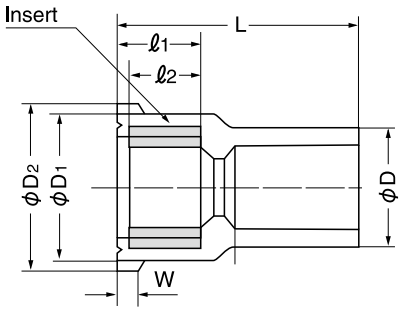
Metal-Containing Faucet Socket

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

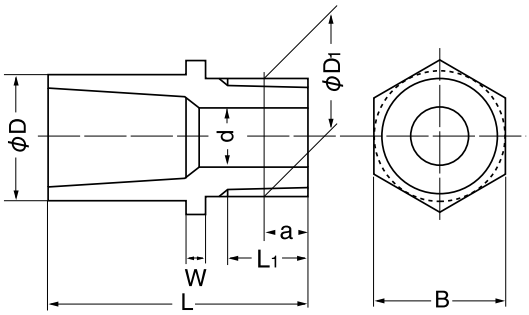
Notes: 1. Insert shall be free-cutting brass of JIS H3250 (coper and copper alloy rod). 2. Threaded end shall be parallel female thread of JIS B0203 (taper threaded end for pipes). 3. L tolerance shall be $^{+5}_{-1}$ mm. 4. ℓ_2 tolerance shall be ±1 mm. 5. ○ are accordance with JIS K6743.

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

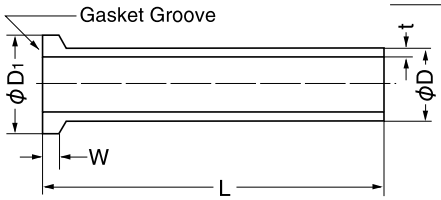
Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

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

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

TS U-PVC HITS HI-PVC



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

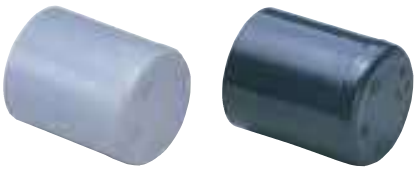
Abbreviation : C

Unplasticized Polyvinyl Chloride Pipe Fitting (JIS K6743)

PRODUCT MODEL CODE

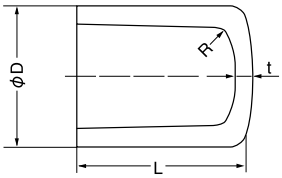
TS	T	N	U	CP	J	N	Size
HITS	T	N	I	CP	J	N	Size

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

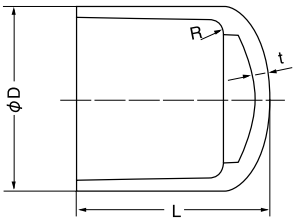


TS U-PVC HITS HI-PVC

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	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 I 300 300 mm

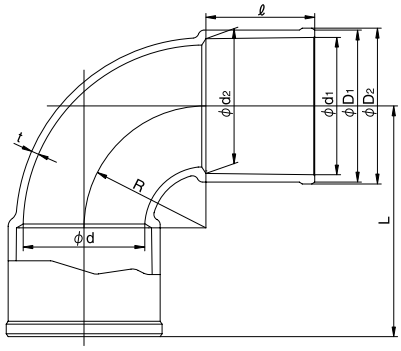
AV90° Bend

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.

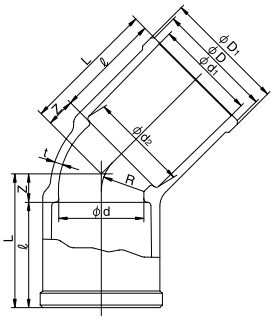
AV45° Bend

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	d1	d2	ℓ	D (Min.)	D1 (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.

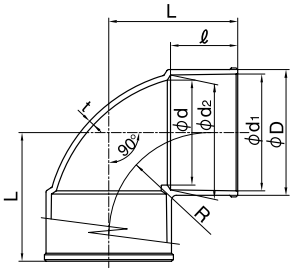
Short Elbow

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	d1	d2	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.

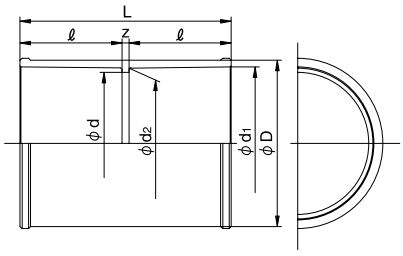
Socket

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	d1	d2	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.

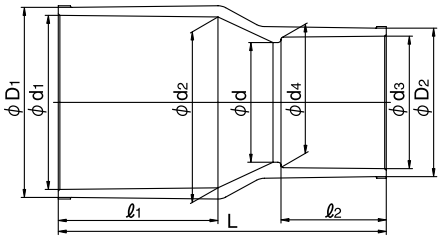
Reducing Socket

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	d_1	d_2	ℓ_1	d_3	d_4	ℓ_2	D_1	D_2	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.

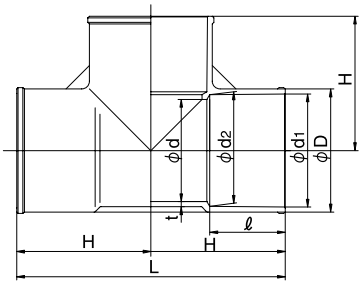
Tee

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	d_1	d_2	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.

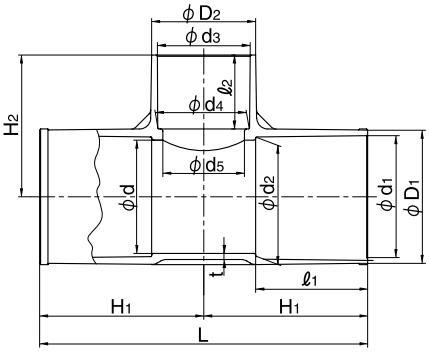
Reducing Tee

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	d_1	d_2	ℓ_1	d_3	d_4	ℓ_2	D_1	D_2	d	d_5	t	L	H_1	H_2
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.

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 I 350 350 mm

TS Flange

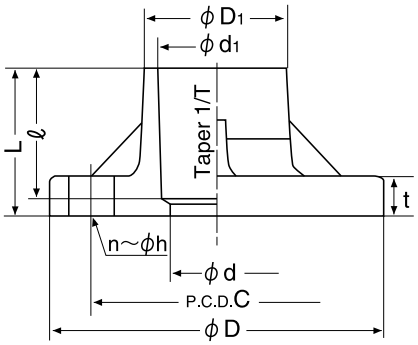
PRODUCT MODEL CODE

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.

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 I 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 I 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 I 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 I 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 I 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/m^2
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/m^2
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	–

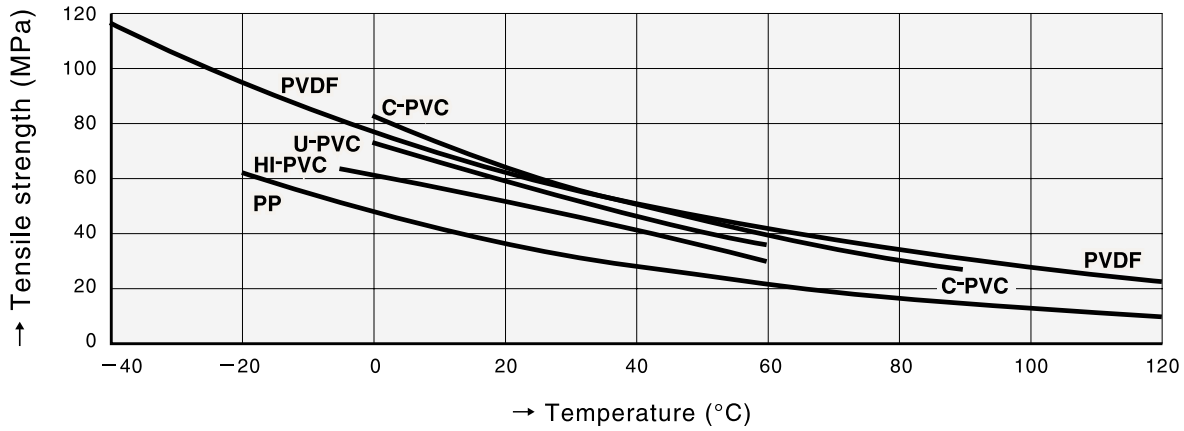
HI-PVC at:23°C

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/m^2
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.

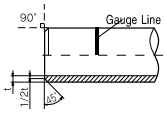
Installation of TS Connection

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 Gause 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

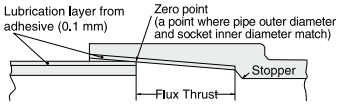
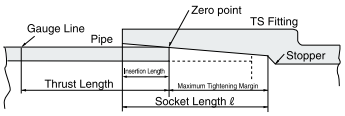


Figure 2. Zero Point and Tightening Margin



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.

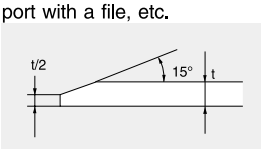
Installation of Rubber Ring Connection

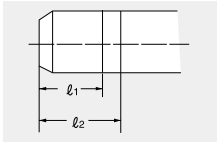
1 Pipe Cutting

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.

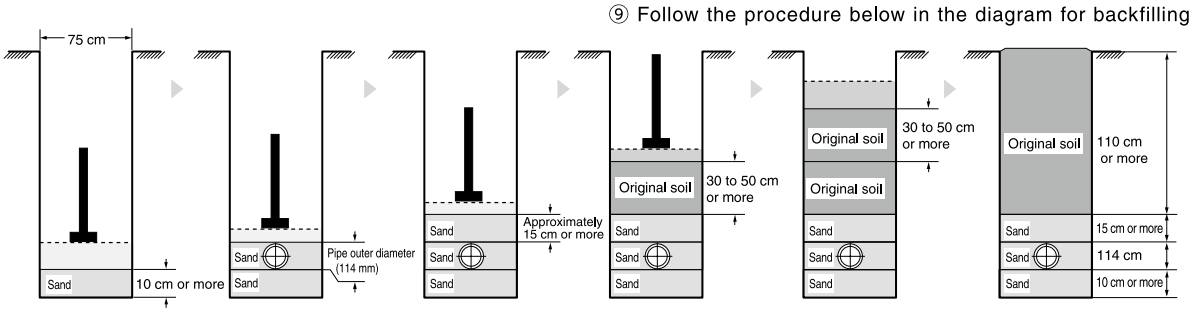
⑧ The groove bottom shall be sand, in principle. For weak ground, additionally lay crushed stones underneath or improve the soil quality. Do not have stones and bedrock hit pipes directly.

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

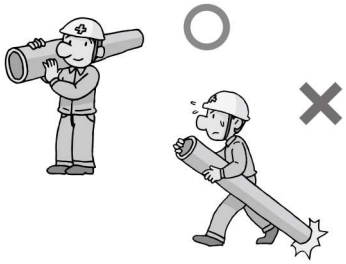
Size (mm)	Packing: pcs.
13	100 / 200

Piping Design Precautions

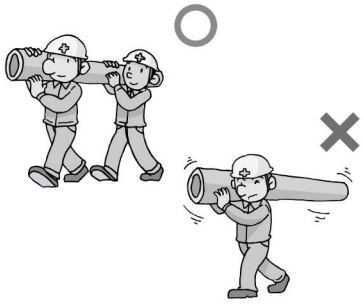
- Select an appropriate material in consideration of use conditions (fluid type, temperature, pressure, etc.) For details, please consult our nearest office in advance.
- Maximum working pressure is the pressure including the water hammer pressure. Do not use them exceeding the maximum working pressure.
- 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

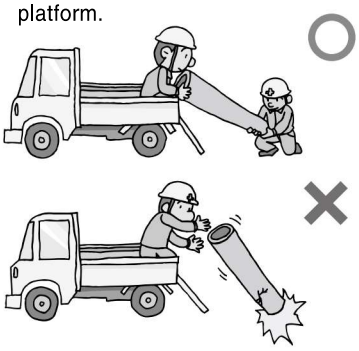
- Do not drag them as it could scratch pipes. Do not drag them as both ends of pipes are easily damaged.



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

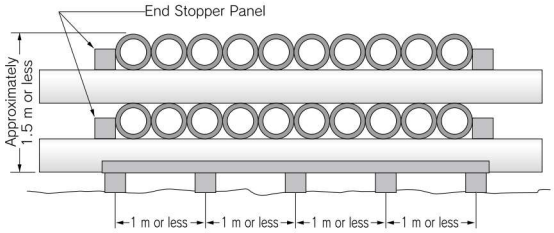


- Do not throw pipes from the truck platform.

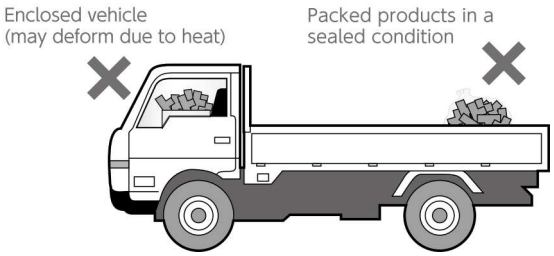


Storage Precautions

- 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

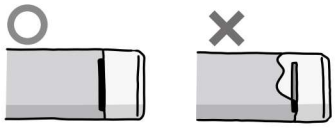
SC (Solvent Cracking) is a type of stress cracking and specifically distinguishes the cracking phenomenon that occurs when solvent gives an impact inside PVC pipe. SC is caused by the existence of solvent (adhesive, preservative, etc.)

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.

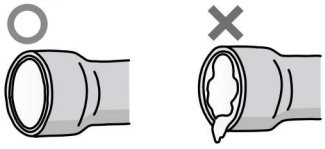
Item	Measure
Adhesive Usage	Apply adhesive compatible to the type of pipe thinly and evenly. Do not apply adhesive extending out from the insertion length on the pipe outer face. In particular, apply thinly and evenly to the inner face of fitting. The reference ratio of adhesive application is 7 to 3 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.

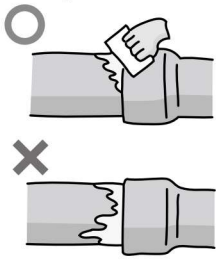


Apply thinly and evenly to the inner face of TS fitting gasket.



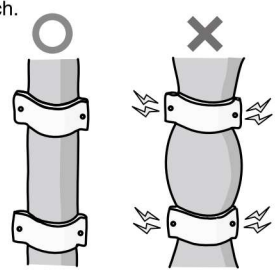
Wiping of Adhesive

Wipe off the protruded adhesive with a cloth after inserting.



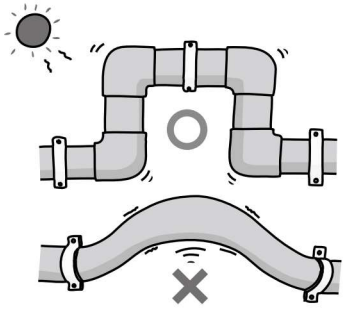
Support

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



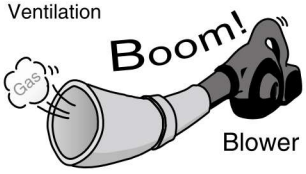
Expansion Measure

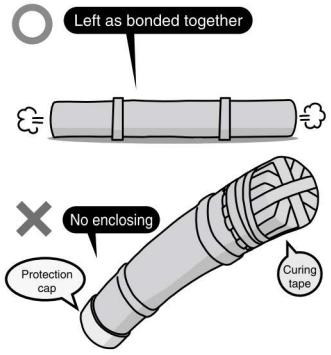
Provide expansion/contraction treatment to lower the heat stress.



Removal of Solvent and Opening of Pipe on Both Ends

Ventilation



Washing with water

Opening of pipe on both ends