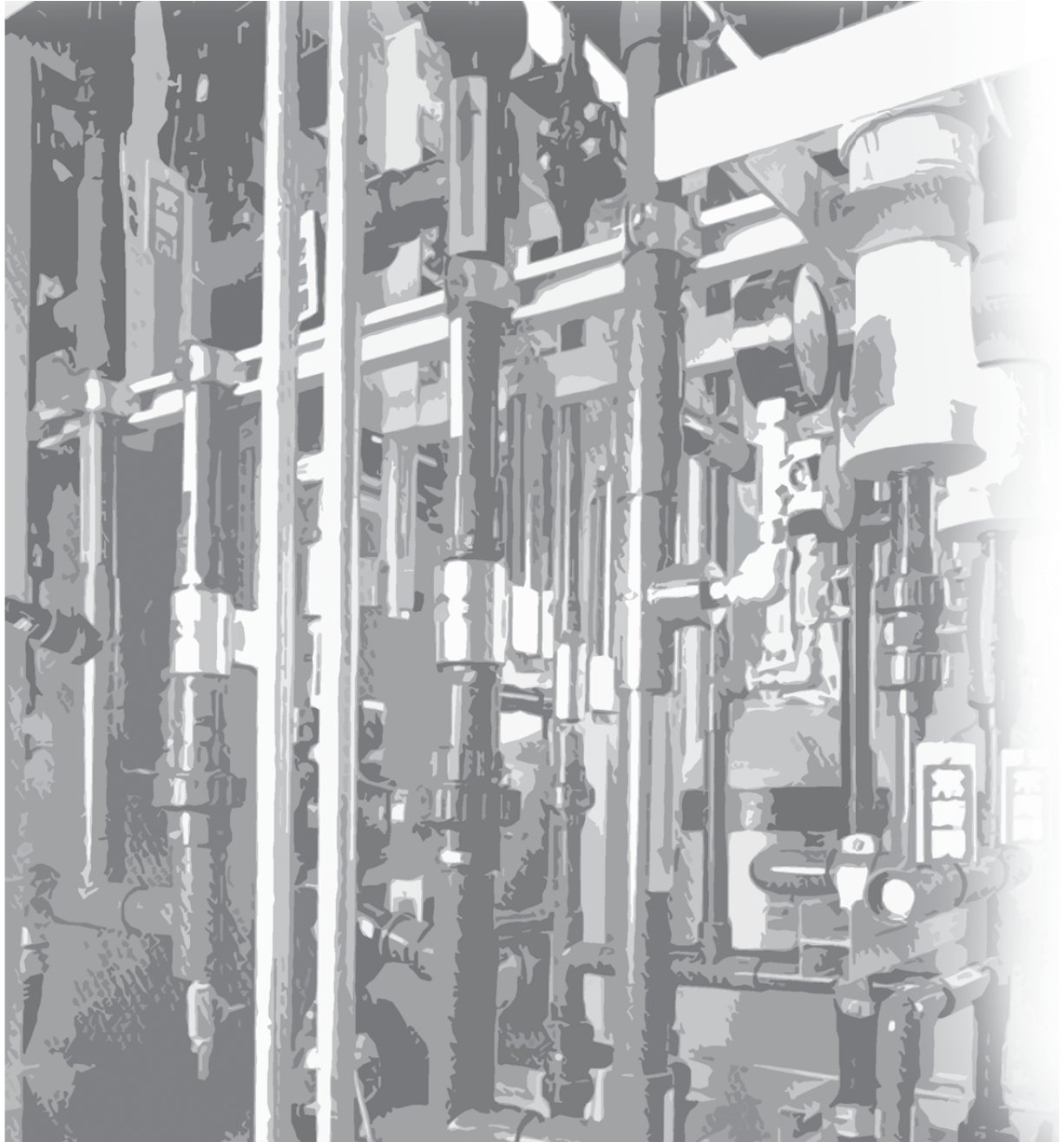


ESLON

Sch80 PVC & CPVC Piping Systems





Best Quality from Sekisui to the World

Sekisui Chemical is the leading company of plastic pipes in the world.

The brand of our plastic pipe is “Eslon”, which is well-known as high quality all over the world. Since 1953, Eslon pipe was first on the market, Sekisui Chemical has been providing a variety of plastic pipes.

Sekisui Chemical is the unique company in the various fields, who has the techniques of materials such as PVC polymerization, formulation, and CPVC denaturation of PVC resin, and the techniques of production, special long term evaluation, piping design and installation.

Our excellent technique has a high reputation not only in Japan, but also in the world.

Sekisui Chemical is proud of providing Schedule80 PVC & CPVC pipes and fittings for the world based on the best quality.

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NOTE:

Some of the information contained herein is generated by independent sources. Such information is accurate to the best of SEKISUI's knowledge, but SEKISUI disclaims any liability for the accuracy or completeness of such information or the reliance by any party on such information.

ESLON QUALITY POLICY

It is the policy of all operations of Eslon to continuously strive to meet the requirements of our customers by offering products and services which are of the highest quality. This requires that we obtain thorough leadership in quality of product, quality of service, and quality of delivery, by providing a work environment which nurtures the growth and involvement of all employees. We will maintain the most effective quality system to enable us to best meet our customers' needs.

Understanding Safety Alert Messages

There are several types of safety-alert messages which appear throughout this Technical Manual. Familiarize yourself with these types of messages and the importance of the various signal words, as explained below.



This safety alert symbol indicates important safety messages in this manual.

When you see this symbol be alert to the possibility of personal injury and carefully read and fully understand the message that follows.



DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Safety Signs identified by the signal word DANGER should be used sparingly and only for those situations presenting the most serious hazards.



WARNING: Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury. Hazards identified by the signal word WARNING present a lesser degree of risk of injury or death than those identified by the signal word DANGER.



CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

1

Advantages of Eselon Sch80 PVC and CPVC Pipe

Advantages of Eslon Sch80 PVC and CPVC Pipe

Sekisui Eslon PVC and CPVC pipe have a number of outstanding features, such as high chemical resistance, easy installation, and reasonable price, which can lead to the reduction of total construction cost. Eslon PVC and CPVC can or should replace other materials of construction in size ranges available for all sorts of piping systems.

CPVC (Chlorinated Polyvinyl Chloride) is another rigid pipe which has three highly-desirable characteristics, good mechanical strength at high temperatures and higher chemical resistance and relatively compared to metal. CPVC polymer is more chlorinated into PVC polymer. This extra chlorine is responsible for the material's high-temperature strength and other properties which are valuable for industrial piping. For pressure piping

applications, it is recommended for temperatures as high as 200°F compared with 140°F of PVC.

Eslon Sch80 PVC & CPVC Pipe ranging in sizes from 1/2" through 24", and PVC fittings and PVC valves are available for light, medium, and heavy duty use.

PVC and CPVC are environmentally friendly polymer in terms of low carbonic acid gas emission in manufacturing process

Advantages

Chemical Resistance

PVC and CPVC pipe are inert to attack by strong acids, alkalis, salt solutions, alcohols, and many other chemicals. They are dependable on corrosive applications and impart no tastes or odors to materials carried in them. They do not react with materials carried, nor act as a catalyst. All possibility of contamination, or chemical process changes, and all danger of clouding, slugging, or discoloration are eliminated.

Strength

PVC and CPVC pipe are highly resilient, tough and durable products that have high tensile and high impact strength. They will withstand surpris-

ingly high pressure for long periods.

Fire Resistance PVC and CPVC pipe products are self extinguishing and will not support combustion. They have an ASTM E-84 flame spread rate of 25 or less.

Internal Corrosion Resistance

PVC and CPVC pipe resist chemical attack by most acids, alkalis, salts, and organic media such as alcohols and aliphatic hydrocarbons, within certain limits of temperature and pressure. They provide the needed chemical resistance, while eliminating the disadvantages of special metals, lined piping, glass, wood, ceramics, or other special corrosion-resisting materials, which formerly had to be used.

External Corrosion Resistance

Industrial fumes, humidity, saltwater, weather, atmospheric, or underground conditions, regardless of type of soil or moisture encountered, cannot harm rigid PVC and CPVC plastic pipe.

Scratches or surface abrasions do not provide points which corrosive elements can attack.

Immunity to Galvanic or Electrolytic Attack PVC and CPVC pipe are inherently immune to galvanic or electrolytic action. They can be used underground, underwater, in the presence of metals, and can also be connected to metals.

Freedom from Toxicity, Odors, Tastes

PVC and CPVC piping are non-toxic, odorless, and tasteless. They have been listed by the National Sanitation Foundation for use with potable water.

Corrosion Free

With many other pipe materials, slight corrosion may occur. The corroded particles can contaminate the piped fluid, complicating further processing, or causing bad taste, odors, or discoloration. This is particularly undesirable when the piped fluid is for domestic consumption. With PVC and CPVC, there are no corrosive by-products, therefore, no contamination of the piped fluid.

Low Friction Loss

The smooth interior surfaces of PVC and CPVC pipe, compared to metal and other piping materials, assure low friction loss and high flow rates. Additionally, since PVC and CPVC pipe will not rust, pit, scale, or corrode, the high flow rates will be maintained for the life of the piping system.

Low Thermal Conductivity

PVC and CPVC pipe have a much lower thermal conductivity factor than metal pipe. Therefore, fluids being piped maintain a more constant temperature. In most cases, pipe insulation is not required.

Easy Installation and Low Installation Cost

PVC and CPVC pipe are lightweight, convenient to handle, relatively flexible, and easy to install. For example, it is approximately 1/5 to 1/6 for the weight of metal.

They have smooth, seamless interior walls. No special tools are required for cutting. They can be installed using solvent cementing, threading, flanging techniques.

These features lead to lower installed costs than conventional metal piping.

Maintenance Free

Once a PVC or CPVC piping system is properly selected, designed, and installed, it is virtually maintenance free. It will not rust, scale, pit, corrode, or promote build-up on the interior. Therefore, years of trouble-free service can be expected when using Eslon PVC and CPVC pipe.

Standard Approved

Sekisui Eslon PVC and CPVC pipe complies with the industry standards and requirements as set forth by the American Society for Testing and Materials (ASTM) and the National Sanitation Foundation (NSF International).



Eslon Sch80 PVC & CPVC Piping System

2

Eslon Sch80 PVC and CPVC Pipe and Fittings

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Physical Properties of PVC and CPVC Material

Properties of PVC & CPVC PIPE

The properties are for reference purpose only and are not guaranteed.

ITEM	Test Method	SI unit		
		unit	PVC	CPVC
GENERAL				
Cell Classification	ASTM D1784	—	12454	23447
Maximum Usable Temp.	—	°C	60	93
Specific Gravity @ 73°F(23°C)	ASTM D792	g/cc	1.42±0.02	1.55±0.02
Water Absorption % increase 24 hrs@ 73°F(23°C)	ASTM D570	%	0.04	0.04
Hardness, Rockwell	ASTM D785	—	110 - 120	115-125
Poisson's Ratio @ 73°F(23°C)	ASTM D638	—	0.38	0.36
MECHANICAL				
Tensile Strength @ 73°F(23°C)	ASTM D638	MPa	49.9	53.1
Tensile Strength @194 °F(90°C)	//	MPa	—	22.1
Tensile Modulus of Elasticity @ 73°F(23°C)	//	GPa	2.83	2.62
Tensile Modulus of Elasticity @ 194°F(90°C)	//	GPa	—	1.52
Flexural Strength @ 73°F(23°C)	ASTM D790	MPa	96.5	89.6
Flexural Modulus of Elasticity @ 73°F(23°C)	//	GPa	2.76	2.69
Compressive Strength @ 73°F(23°C) ε =10%	ASTM D695	MPa	69.0	96.5
Compressive Modulus of Elasticity @ 73°F(23°C)	//	GPa	0.76	1.00
Izod Impact, notched @ 73°F(23°C)	ASTM D256	J/m	80	160
THERMAL				
Coefficient of Linear Expansion	ASTM D696	m/m/°C	6.0-8.0x10 ⁻⁵	7.0-8.0x10 ⁻⁵
Coefficient of Thermal Conductivity	ASTM C177	Watt/m/°K	0.17	0.13
Heat Deflection Temperature Under Load (264psi, annealed)	ASTM D648	°C	74	110
Specific Heat	ASTM D2766	J/°K/g	1.1	1.1
ELECTRICAL				
Volume Resistivity	ASTM D257	ohm/cm	>1.0 x 10 ¹⁵	>1.0 x 10 ¹⁵
Dielectric Strength	ASTM D149	volt/mm	>1000	>1000
Dielectric Constant	ASTM D150	—	3	3
Power Factor	//	—	0.01-0.02	0.01-0.02
Electrical Conductivity	—	—	Non Conductor	Non Conductor
FIRE PERFORMANCE				
Flammability Rating	UL-94	—	Eguivalent to V-0	Eguivalent to V-0 5VB, 5VA
Flame Spread Index	//	—	<10	<10
Average Time of Burning	ASTM D635	sec	<5	<5
Average Extent of Burning	//	mm	<10	<10
Burning Rate	//	mm/min	Self Extinguishing	Self Extinguishing
Limiting Oxygen Index (LOI)	ASTM D2863	LOI	45	60

Properties of PVC & CPVC PIPE Fitting

The properties are for reference purpose only and are not guaranteed.

ITEM	Test Method	SI unit		
		unit	PVC	CPVC
GENERAL				
Cell Classification	ASTM D1784	—	12454	23447
Maximum Usable Temp.	—	°C	60	93
Specific Gravity @ 73°F (23°C)	ASTM D792	g/cc	1.42±0.02	1.55±0.02
Water Absorption % increase 24 hrs@ 73°F (23°C)	ASTM D570	%	0.04	0.04
Hardness, Rockwell	ASTM D785	—	110 - 120	115-125
Poisson's Ratio @ 73°F (23°C)	ASTM D638	—	0.38	0.36
MECHANICAL				
Tensile Strength @ 73°F (23°C)	ASTM D638	MPa	49.9	51.0
Tensile Strength @194 °F (90°C)	//	MPa	—	20.7
Tensile Modulus of Elasticity @ 73°F (23°C)	//	GPa	2.90	2.62
Tensile Modulus of Elasticity @ 194°F (90°C)	//	GPa	—	1.38
Flexural Strength @ 73°F (23°C)	ASTM D790	MPa	89.6	82.7
Flexural Modulus of Elasticity @ 73°F (23°C)	//	GPa	2.90	2.76
Compressive Strength @ 73°F (23°C) ε =10%	ASTM D695	MPa	69.0	103.4
Compressive Modulus of Elasticity @ 73°F(23°C)	//	GPa	0.76	1.10
Izod Impact, notched @ 73°F (23°C)	ASTM D256	J/m	66	162
THERMAL				
Coefficient of Linear Expansion	ASTM D696	m/m/°C	6.0-8.0x10 ⁻⁵	7.0-8.0x10 ⁻⁵
Coefficient of Thermal Conductivity	ASTM C177	Watt/m/°K	0.16	0.13
Heat Deflection Temperature Under Load (264psi, annealed)	ASTM D648	°C	80	102
Specific Heat	ASTM D2766	J/°K/g	1.1	1.1
ELECTRICAL				
Volume Resistivity	ASTM D257	ohm/cm	>1.0 x 10 ¹⁵	>1.0 x 10 ¹⁵
Dielectric Strength	ASTM D149	volt/mm	>1000	>1000
Dielectric Constant	ASTM D150	—	3	3
Power Factor	//	—	0.01-0.02	0.01-0.02
Electrical Conductivity	—	—	Non Conductor	Non Conductor
FIRE PERFORMANCE				
Flammability Rating	UL-94	—	Eguivalent to V-0	Equivalent to V-0, 5VB, 5VA
Flame Spread Index	//	—	<10	<10
Average Time of Burning	ASTM D635	sec	<5	<5
Average Extent of Burning	//	mm	<10	<10
Burning Rate	//	mm/min	Self Extinguishing	Self Extinguishing
Limiting Oxygen Index (LOI)	ASTM D2863	LOI	45	60

2 Schedule80 Pipe

Eslon Pipe is Manufactured to The Following Standard Specifications

Type	Material (Cell Classification)	Dimensions	Commercial Classification
PVC Schedule 80	ASTM D-1784 (12454)	ASTM D-1785	Type I ,Grade 1, PVC 1120
CPVC Schedule 80	ASTM D-1784 (23447)	ASTM F-441	Type IV ,Grade 1, CPVC 4120

*ASTM F480 Well Casing

Eslon pipe and fittings are approved by NSF International 14 and 61.

NSF standard 14 : Plastics Piping System Components and Related Materials

NSF standard 61 : Drinking Water System Components - Health Effects

Schedule 80 PVC and CPVC Pipe Dimensions, Weights and Maximum Operating Pressure



Nominal Pipe Size		Outside Diameter		Wall Thickness		Approx. Inside Diameter	Nominal Weight (kg/m)		Product number		Maximum permissible pressure
inch	mm	mm		mm		mm	PVC	CPVC	PVC	CPVC	MPa
1/2"	15	21.34	±0.10	3.73	+0.51	13.4	0.311	0.337	P8V156	P8C156	1.25
3/4"	20	26.67	±0.10	3.91	+0.51	18.3	0.421	0.457	P8V206	P8C206	1.25
1"	25	33.40	±0.13	4.55	+0.53	23.8	0.618	0.670	P8V256	P8C256	1.25
1-1/4"	32	42.16	±0.13	4.85	+0.58	31.9	0.855	0.927	P8V326	P8C326	1.25
1-1/2"	40	48.26	±0.15	5.08	+0.61	37.5	1.037	1.124	P8V406	P8C406	1.25
2"	50	60.32	±0.15	5.54	+0.66	48.6	1.435	1.556	P8V506	P8C506	1.25
2-1/2"	65	73.02	±0.18	7.01	+0.84	58.2	2.190	2.373	P8V656	P8C656	1.25
3"	80	88.90	±0.20	7.62	+0.91	72.8	2.932	3.178	P8V806	P8C806	1.25
4"	100	114.30	±0.23	8.56	+1.02	96.2	4.288	4.648	P8V1H6	P8C1H6	1.25
5"	125	141.30	±0.25	9.53	+1.14	121.1	5.950	6.450	P8V1Q6	P8C1Q6	1.25
6"	150	168.28	±0.28	10.97	+1.32	145.0	8.186	8.873	P8V1F6	P8C1F6	1.25
8"	200	219.08	±0.38	12.70	+1.52	192.2	12.433	13.477	P8V2H6	P8C2H6	1.00
10"	250	273.05	±0.38	15.06	+1.80	241.1	18.436	19.983	P8V2F6	P8C2F6	1.00
12"	300	323.85	±0.38	17.45	+2.08	286.9	25.365	27.493	P8V3H6	P8C3H6	0.75
14"	350	355.60	±0.38	19.05	+2.29	315.2	30.430	32.983	P8V3F6	P8C3F6	0.60
16"	400	406.40	±0.48	21.41	+2.57	361.0	39.125	42.408	P8V4H6	P8C4H6	0.60
18"*	450	457.20	±0.48	23.80	+2.84	406.8	48.943	53.050	P8V4F6	P8C4F6	1.00
20"*	500	508.00	±0.58	26.19	+3.15	452.5	59.596	64.922	P8V5H6	P8C5H6	1.00
24"*	600	609.60	±0.79	30.94	+3.71	544.0	84.974	92.105	P8V6H6	P8C6H6	1.00

NOTE: Maximum Operating Pressure is applied to 23°C

For 18" or more, it is flange connection.

*For 18" or more, please contact us.

3 Schedule80 Fittings

Eslon Thermoplastic Fittings are manufactured to The Following Standard Specifications

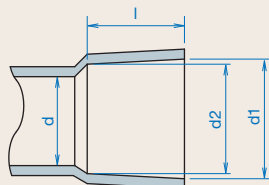
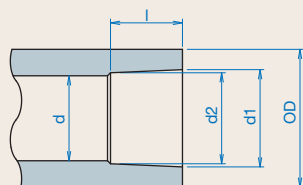
Type		Material (Cell Classification)	Dimensions	Commercial Classification
PVC Schedule 80	Socket-type	ASTM D-1784 (12454)	ASTM D-2467	Type I ,Grade 1, PVC 1120
	Threaded-type		ASTM D-2464	
CPVC Schedule 80	Socket-type	ASTM D-1784 (23447)	ASTM F-439	Type IV ,Grade 1, CPVC 4120
	Threaded-type		ASTM F-437	

Eslon pipe and fittings are approved by NSF International 14 and 61.

NSF standard 14 : Plastics Piping System Components and Related Materials

NSF standard 61 : Drinking Water System Components - Health Effects

Socket Dimensions



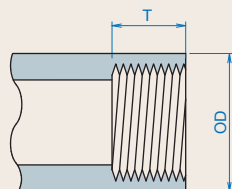
**PVC AND CPVC SCHEDULE 80
TAPER SOCKET DIMENSIONS**
(SOLVENT CEMENT STYLE)
ASTM D-2467 (PVC) F-439 (CPVC)

Nomi- nal Pipe Size	OD mm	Inside Diameter min d mm	Socket Entrance Diameter d1 mm	Socket Bottom Diameter d2 mm	Socket Length min l mm
1/2"	30	18	21.54 ±0.10	21.23 ±0.10	22.22
3/4"	35	24	26.87 ±0.10	26.57 ±0.10	25.40
1"	43	30	33.65 ±0.13	33.27 ±0.13	28.58
1-1/4"	53	37	42.42 ±0.13	42.04 ±0.13	31.75
1-1/2"	60	45	48.56 ±0.15	48.11 ±0.15	34.93
2"	73	57	60.63 ±0.15	60.17 ±0.15	38.10
2-1/2"	88	69	73.38 ±0.18	72.85 ±0.18	44.45
3"	107	85	89.31 ±0.20 (89.28) (±0.18)	88.70 ±0.20 (88.67) (±0.18)	47.63
4"	133	109	114.76 ±0.23 (114.73) (±0.20)	114.10 ±0.23 (114.04) (±0.20)	57.15
5"	162	132	141.81 ±0.25	141.00 ±0.25	66.68
6"	192	156	168.83 ±0.28	168.00 ±0.28	76.20
8"	247	202	219.84 ±0.38	218.70 ±0.38	101.60
10"	307	265	273.81 ±0.38	272.67 ±0.38	127.00
12"	363	315	324.61 ±0.38	323.47 ±0.38	152.40
14"	394	346	356.49 ±0.38	355.22 ±0.38	228.60
16"	451	396	407.54 ±0.38	405.89 ±0.38	254.00
18"	-	407	458.60 ±0.51	456.69 ±0.51	304.80
20"	-	453	509.65 ±0.64	507.49 ±0.64	304.80
24"	-	544	611.51 ±0.46	608.84 ±0.46	304.80

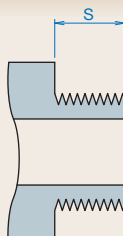
NOTE: The numeric of () indicates dimension and tolerance for CPVC.

3 Schedule80 Fittings

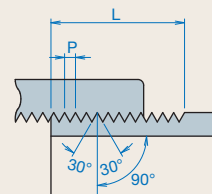
Thread Dimensions



FEMALE TAPER THREADS
ASTM D-2464 (PVC) F-437 (CPVC)
ASTM F-1496



MALE TAPER THREADS
ASTM D-2464 (PVC) F-437 (CPVC)
ASTM F-1496

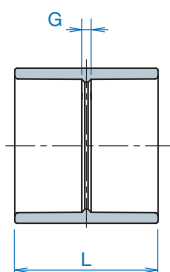


**AMERICAN NATIONAL STANDARD
TAPER PIPE THREADS (NPT)**
ASME (ANSI) B1.20.1
ASTM F-1498

Nominal Pipe Size	Pipe OD mm	Female Thread Min. Length T mm	Male Thread Min. Length S mm	Overall Pipe Thread Length L mm	Threads Per In. N per inch	Pitch of Thread P mm	Height of Thread h mm
1/2"	32.5	16.26	13.46	19.85	14.0	1.814	1.451
3/4"	38.2	16.51	13.92	20.15	14.0	1.814	1.451
1"	46.0	20.57	17.27	25.01	11.5	2.209	1.767
1-1/4"	56.0	21.59	18.03	25.62	11.5	2.209	1.767
1-1/2"	63.5	21.59	18.29	26.04	11.5	2.209	1.767
2"	77.0	22.86	19.30	26.88	11.5	2.209	1.767
2-1/2"	91.0	30.25	28.96	39.91	8.0	3.175	2.540
3"	107.0	33.02	30.48	41.50	8.0	3.175	2.540
4"	138.0	35.05	33.02	44.04	8.0	3.175	2.540

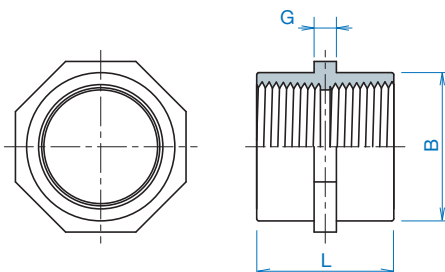
Coupling

Coupling S X S



Size	mm		Weight (kg/pc)		Product number	
	L	G	PVC	CPVC	PVC	CPVC
1/2"	50	5.6	0.027	0.030	VS15	CS15
3/4"	56	5.2	0.031	0.034	VS20	CS20
1"	63	5.8	0.060	0.065	VS25	CS25
1-1/4"	69	5.5	0.080	0.087	VS32	CS32
1-1/2"	75	5.1	0.110	0.120	VS40	CS40
2"	85	8.8	0.160	0.175	VS50	CS50
2-1/2"	96	7.1	0.255	0.278	VS65	CS65
3"	102	6.7	0.384	0.419	VS80	CS80
4"	123	8.7	0.553	0.604	VS1H	CS1H
5"	144	8.0	0.985	1.067	VS1Q	CS1Q
6"	165	10.0	1.512	1.639	VS1F	CS1F
8"	216	10.0	3.075	3.333	VS2H	CS2H
10"	295	15.0	6.170	6.688	VS2F	CS2F
12"	330	20.0	9.195	9.967	VS3H	CS3H
14"	480	19.4	14.595	16.240	VS3F	CS3F
16"	538	28.0	21.590	24.190	VS4H	CS4H

Coupling FT X FT

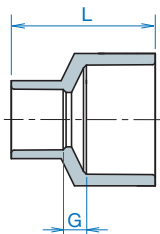


Size	mm			Weight (kg/pc)		Product number	
	L	G	B	PVC	CPVC	PVC	CPVC
1/2"	39.0	5.0	32.5	0.028	0.029	VS15T	CS15T
3/4"	39.0	5.0	38.1	0.036	0.037	VS20T	CS20T
1"	47.0	6.0	46.0	0.059	0.062	VS25T	CS25T
1-1/4"	55.0	6.0	56.0	0.092	0.097	VS32T	CS32T
1-1/2"	55.0	7.0	63.5	0.116	0.121	VS40T	CS40T
2"	60.5	9.5	77.0	0.166	0.175	VS50T	CS50T
2-1/2"	87.0	10.0	91.0	0.325	0.341	VS65T	CS65T
3"	90.0	12.0	107.0	0.412	0.433	VS80T	CS80T
4"	96.0	13.0	138.0	0.708	0.743	VS1HT	CS1HT

3 Schedule80 Fittings

Reducing Coupling

Reducing Coupling
S X S



Size	mm		Weight (kg/pc)		Weight (kg/pc)	
	L	G	PVC	CPVC	PVC	CPVC
3/4" x 1/2"	53.5	5.9	0.034	0.035	VS201	CS201
1" x 1/2"	60.0	9.2	0.049	0.053	VS252	CS252
1" x 3/4"	60.0	6.0	0.045	0.052	VS251	CS251
1-1/4" x 1/2"	68.0	14.0	0.070	0.076	VS323	CS323
1-1/4" x 3/4"	68.0	10.9	0.068	0.074	VS322	CS322
1-1/4" x 1"	68.0	7.7	0.070	0.076	VS321	CS321
1-1/2" x 1/2"	75.0	17.9	0.100	0.108	VS404	CS404
1-1/2" x 3/4"	75.0	14.7	0.080	0.110	VS403	CS403
1-1/2" x 1"	75.0	11.5	0.089	0.115	VS402	CS402
1-1/2" x 1-1/4"	75.0	8.3	0.099	0.108	VS401	CS401
2" x 1/2"	83.0	22.7	0.141	0.153	VS505	CS505
2" x 3/4"	83.0	19.5	0.129	0.140	VS504	CS504
2" x 1"	83.0	16.3	0.124	0.135	VS503	CS503
2" x 1-1/4"	83.0	13.2	0.134	0.146	VS502	CS502
2" x 1-1/2"	83.0	10.0	0.142	0.180	VS501	CS501
2-1/2" x 1-1/2"	93.0	13.6	0.205	0.224	VS652	CS652
2-1/2" x 2"	93.0	10.5	0.222	0.242	VS651	CS651
3" x 1"	106.0	29.8	0.317	0.346	VS805	CS805
3" x 1-1/2"	106.0	23.4	0.313	0.342	VS803	CS803
3" x 2"	106.0	20.3	0.335	0.360	VS802	CS802
3" x 2-1/2"	106.0	13.9	0.361	0.394	VS801	CS801

Size	mm		Weight (kg/pc)		Product number	
	L	G	PVC	CPVC	PVC	CPVC
4" x 2"	125.0	29.8	0.560	0.607	VS1H3	CS1H3
4" x 2-1/2"	125.0	23.4	0.535	0.584	VS1H2	CS1H2
4" x 3"	125.0	20.2	0.597	0.652	VS1H1	CS1H1
5" x 4"	144.0	18.9	0.860	1.014	VS1Q1	CS1Q1
6" x 3"	168.0	41.9	1.508	1.646	VS1F3	CS1F3
6" x 4"	168.0	31.8	1.413	1.542	VS1F2	CS1F2
6" x 5"	168.0	21.2	1.494	1.631	VS1F1	CS1F1
8" x 4"	218.0	57.9	3.045	3.301	VS2H3	CS2H3
8" x 6"	220.0	39.0	2.956	3.227	VS2H1	CS2H1
10" x 8"	287.0	44.0	5.622	6.137	VS2F1	CS2F1
12" x 8"	331.7	76.7	8.218	8.971	VS3H2	CS3H2
12" x 10"	328.0	26.0	8.755	9.589	VS3H1	CS3H1
14" x 12"	425.1	40.0	13.060	13.704	VS3F1	CS3F1
16" x 12"	493.0	88.0	18.400	20.520	VS4H2	CS4H2
16" x 14"	543.2	62.6	25.800	27.967	VS4H1	CS4H1

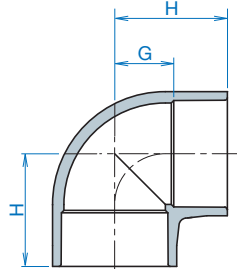
Combination Table of Coupling

+ : Coupling without Bushing +B: with one Bushing +B*2: with 2 pieces of Bushing

		Reducing Size															
		1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"
Inlet Size	1/2"	+															
	3/4"	+	+														
	1"	+	+	+													
	1-1/4"	+	+	+	+												
	1-1/2"	+	+	+	+	+											
	2"	+	+	+	+	+	+										
	2-1/2"	+B	+B	+B	+B	+	+	+									
	3"	+B	+B	+	+B	+	+	+	+								
	4"	+B	+B	+B	+B	+B	+	+	+	+							
	5"	+B*2	+B*2	+B	+B	+B	+B	+B	+B	+	+						
	6"	+B*2	+B*2	+B	+B	+B	+B	+B	+	+	+	+					
	8"	+B*2	+B*2	+B	+B	+B	+B	+B	+B	+	+B	+	+				
	10"			+B*2	+B*2	+B*2	+B*2	+B*2	+B*2	+B	+B*2	+B	+	+			
	12"			+B*2	+B*2	+B*2	+B*2	+B*2	+B*2	+B	+B*2	+B	+	+	+		
	14"								+B*2	+B*2	+B*2	+B	+B	+B	+	+	
	16"								+B*2	+B*2	+B*2	+B	+B	+B	+	+	+

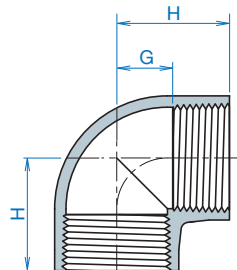
90° Elbow

90° Elbow S X S



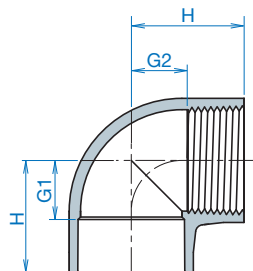
Size	mm		Weight (kg/pc)		Product number	
	G	H	PVC	CPVC	PVC	CPVC
1/2"	15.3	37.5	0.037	0.040	V9L15	C9L15
3/4"	17.1	42.5	0.045	0.049	V9L20	C9L20
1"	21.4	50.0	0.080	0.100	V9L25	C9L25
1-1/4"	26.3	58.0	0.140	0.153	V9L32	C9L32
1-1/2"	30.1	65.0	0.185	0.202	V9L40	C9L40
2"	35.9	74.0	0.270	0.295	V9L50	C9L50
2-1/2"	44.6	89.0	0.464	0.506	V9L65	C9L65
3"	53.4	101.0	0.771	0.842	V9L80	C9L80
4"	63.9	121.0	1.240	1.354	V9L1H	C9L1H
5"	77.5	150.0	2.185	2.385	V9L1Q	C9L1Q
6"	93.2	173.0	3.530	3.853	V9L1F	C9L1F
8"	120.1	225.0	7.135	7.788	V9L2H	C9L2H
10"	150.0	290.0	12.585	13.642	V9L2F	C9L2F
12"	172.1	327.1	18.835	20.417	V9L3H	C9L3H
14"	197.0	426.6	26.100	28.292	V9L3F	C9L3F
16"	235.4	492.0	40.890	44.020	V9L4H	C9L4H

90° Elbow FT X FT



Size	mm		Weight (kg/pc)		Product number	
	G	H	PVC	CPVC	PVC	CPVC
1/2"	15.0	33.0	0.047	0.054	V9L15T	C9L15T
3/4"	17.0	35.0	0.065	0.074	V9L20T	C9L20T
1"	22.0	43.0	0.100	0.132	V9L25T	C9L25T
1-1/4"	26.3	52.3	0.175	0.217	V9L32T	C9L32T
1-1/2"	30.0	56.0	0.234	0.314	V9L40T	C9L40T
2"	36.0	63.0	0.428	0.471	V9L50T	C9L50T
2-1/2"	44.5	84.5	0.716	0.788	V9L65T	C9L65T
3"	52.0	94.0	1.309	1.440	V9L80T	C9L80T
4"	63.5	108.0	2.165	2.363	V9L1HT	C9L1HT

90° Elbow S X FT

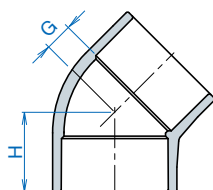


Size	mm			Weight (kg/pc)		Product number	
	G1	G2	H	PVC	CPVC	PVC	CPVC
1/2"	15.3	19.5	37.5	0.037	0.040	V9L15A	C9L15A
3/4"	17.1	24.5	42.5	0.045	0.049	V9L20A	C9L20A
1"	21.4	28.0	50.0	0.080	0.087	V9L25A	C9L25A
1-1/4"	26.3	32.0	58.0	0.140	0.153	V9L32A	C9L32A
1-1/2"	30.1	39.0	65.0	0.185	0.202	V9L40A	C9L40A
2"	35.9	47.0	74.0	0.270	0.295	V9L50A	C9L50A
2-1/2"	44.6	49.0	89.0	0.464	0.506	V9L65A	C9L65A
3"	53.4	59.0	101.0	0.771	0.842	V9L80A	C9L80A
4"	63.9	76.6	121.0	1.240	1.354	V9L1HA	C9L1HA

3 Schedule80 Fittings

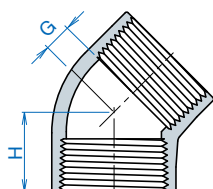
45° Elbow

45° Elbow S × S



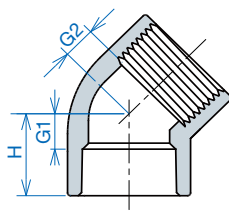
Size	mm		Weight (kg/pc)		Product number	
	G	H	PVC	CPVC	PVC	CPVC
1/2"	7	29	0.030	0.033	V4L15	C4L15
3/4"	9	34	0.040	0.044	V4L20	C4L20
1"	8	37	0.064	0.070	V4L25	C4L25
1-1/4"	11	43	0.102	0.111	V4L32	C4L32
1-1/2"	12	47	0.130	0.142	V4L40	C4L40
2"	17	55	0.221	0.235	V4L50	C4L50
2-1/2"	20	64	0.359	0.392	V4L65	C4L65
3"	24	72	0.580	0.633	V4L80	C4L80
4"	29	86	0.915	0.999	V4L1H	C4L1H
5"	36	106	1.595	1.741	V4L1Q	C4L1Q
6"	41	120	2.580	2.816	V4L1F	C4L1F
8"	50	155	4.925	5.376	V4L2H	C4L2H
10"	60	207	9.375	9.960	V4L2F	C4L2F
12"	81	235	15.330	16.618	V4L3H	C4L3H
14"	101	329	21.100	23.180	V4L3F	C4L3F
16"	107	360	28.732	32.540	V4L4H	C4L4H

45° Elbow FT × FT



Size	mm		Weight (kg/pc)		Product number	
	G	H	PVC	CPVC	PVC	CPVC
1/2"	6.8	24.8	0.040	0.044	V4L15T	C4L15T
3/4"	8.5	26.5	0.058	0.063	V4L20T	C4L20T
1"	9.5	31.5	0.094	0.103	V4L25T	C4L25T
1-1/4"	11.3	37.3	0.146	0.160	V4L32T	C4L32T
1-1/2"	12.1	38.1	0.200	0.218	V4L40T	C4L40T
2"	17.0	44.0	0.298	0.326	V4L50T	C4L50T
2-1/2"	19.5	64.0	0.537	0.591	V4L65T	C4L65T
3"	24.0	72.0	0.920	1.012	V4L80T	C4L80T
4"	28.5	86.0	1.503	1.640	V4L1HT	C4L1HT

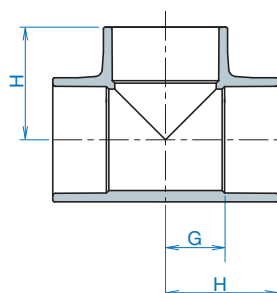
45° Elbow S × FT



Size	mm			Weight (kg/pc)		Product number	
	G1	G2	H	PVC	CPVC	PVC	CPVC
1/2"	6.8	8.5	24.0	0.030	0.033	V4L15A	C4L15A
3/4"	8.6	4.4	34.0	0.040	0.044	V4L20A	C4L20A
1"	8.4	10.4	37.0	0.064	0.070	V4L25A	C4L25A
1-1/4"	11.3	15.7	43.0	0.102	0.111	V4L32A	C4L32A
1-1/2"	12.1	16.5	47.0	0.130	0.142	V4L40A	C4L40A
2"	16.4	21.1	55.0	0.140	0.207	V4L50A	C4L50A
2-1/2"	14.6	33.8	64.0	0.354	0.342	V4L65A	C4L65A
3"	24.4	38.5	72.0	0.580	0.633	V4L80A	C4L80A
4"	28.9	50.5	86.0	0.415	0.444	V4L1HA	C4L1HA

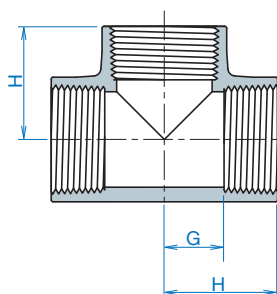
Tee

Tee S X S X S



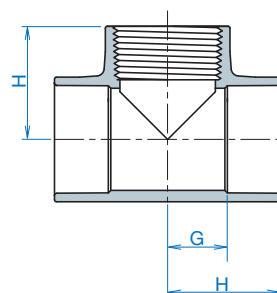
Size	mm		Weight (kg/pc)		Product number	
	G	H	PVC	CPVC	PVC	CPVC
1/2"	15.3	37.5	0.050	0.055	VT15	CT15
3/4"	17.1	42.5	0.065	0.071	VT20	CT20
1"	21.4	50.0	0.105	0.115	VT25	CT25
1-1/4"	26.3	58.0	0.184	0.201	VT32	CT32X
1-1/2"	30.1	65.0	0.235	0.257	VT40	CT40
2"	35.9	74.0	0.355	0.388	VT50	CT50
2-1/2"	44.6	89.0	0.619	0.676	VT65	CT65
3"	53.4	101.0	1.010	1.102	VT80	CT80
4"	63.9	121.0	1.581	1.726	VT1H	CT1H
5"	79.5	147.5	2.684	2.930	VT1Q	CT1Q
6"	94.6	173.0	4.325	4.721	VT1F	CT1F
8"	122.0	225.0	8.980	9.802	VT2H	CT2H
10"	150.0	290.0	16.320	16.646	VT2F	CT2F
12"	181.8	330.0	25.245	25.830	VT3H	CT3HX
14"	197.8	426.6	35.885	38.860	VT3F	CT3F
16"	236.2	492.0	54.570	58.690	VT4H	CT4H

Tee FT X FT X FT



Size	mm		Weight (kg/pc)		Product number	
	G	H	PVC	CPVC	PVC	CPVC
1/2"	16.7	33.0	0.066	0.072	VT15T	CT15T
3/4"	18.5	35.0	0.091	0.099	VT20T	CT20T
1"	22.4	43.0	0.150	0.164	VT25T	CT25T
1-1/4"	30.7	52.3	0.249	0.272	VT32T	CT32T
1-1/2"	34.4	56.0	0.334	0.365	VT40T	CT40T
2"	40.1	63.0	0.503	0.553	VT50T	CT50T
2-1/2"	58.8	89.0	0.866	0.946	VT65T	CT65T
3"	68.0	101.0	1.467	1.614	VT80T	CT80T
4"	86.0	121.0	2.336	2.550	VT1HT	CT1HT

Tee S X S X FT

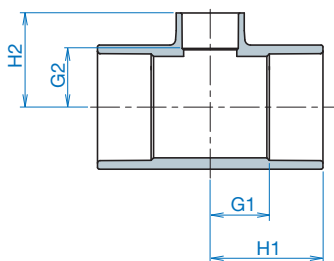


Size	mm		Weight (kg/pc)		Product number	
	G	H	PVC	CPVC	PVC	CPVC
1/2"	15.3	37.5	0.050	0.055	VT15A	CT15A
3/4"	17.1	42.5	0.065	0.071	VT20A	CT20A
1"	21.4	50.0	0.105	0.115	VT25A	CT25A
1-1/4"	26.3	58.0	0.184	0.201	VT32A	CT32A
1-1/2"	30.1	65.0	0.235	0.257	VT40A	CT40A
2"	35.9	74.0	0.355	0.388	VT50A	CT50A
2-1/2"	44.6	89.0	0.619	0.676	VT65A	CT65A
3"	53.4	101.0	1.010	1.102	VT80A	CT80A
4"	63.9	121.0	1.581	1.726	VT1HA	CT1HA

3 Schedule80 Fittings

Reducing Tee

Reducing Tee S X S



Size	mm				Weight (kg/pc)		Product number	
	G1	G2	H1	H2	PVC	CPVC	PVC	CPVC
3/4" x 1/2"	17.1	17.5	42.5	40.0	0.060	0.067	VT201	CT201
1" x 1/2"	21.4	21.5	50.0	44.0	0.096	0.107	VT252	CT252
1" x 3/4"	21.4	21.5	50.0	46.0	0.098	0.109	VT251	CT251
1-1/4" x 1/2"	26.3	26.5	58.0	48.0	0.152	0.170	VT323	CT323
1-1/4" x 3/4"	26.3	26.5	58.0	52.0	0.154	0.172	VT322	CT322
1-1/4" x 1"	26.3	26.5	58.0	54.0	0.159	0.178	VT321	CT321
1-1/2" x 1/2"	30.1	30.0	65.0	52.0	0.200	0.223	VT404	CT404
1-1/2" x 3/4"	30.1	30.0	65.0	55.0	0.210	0.226	VT403	CT403
1-1/2" x 1"	30.1	30.0	65.0	58.0	0.235	0.255	VT402	CT402
1-1/2" x 1-1/4"	30.1	30.0	65.0	62.0	0.246	0.267	VT401	CT401
2" x 1/2"	35.9	36.5	74.0	58.0	0.281	0.314	VT505	CT505
2" x 3/4"	35.9	36.5	74.0	61.0	0.300	0.316	VT504	CT504
2" x 1"	35.9	36.5	74.0	66.0	0.330	0.358	VT503	CT503
2" x 1-1/4"	35.9	36.5	74.0	68.0	0.340	0.369	VT502	CT502
2" x 1-1/2"	35.9	36.5	74.0	71.0	0.350	0.379	VT501	CT501
2-1/2" x 1-1/2"	44.6	44.0	89.0	77.0	0.534	0.596	VT652	CT652
2-1/2" x 2"	44.6	44.0	89.0	82.0	0.552	0.595	VT651	CT651X
3" x 1-1/2"	53.4	53.5	101.0	85.0	0.860	0.909	VT803	CT803
3" x 2"	53.4	53.5	101.0	90.0	0.880	0.935	VT802	CT802
3" x 2-1/2"	53.4	53.5	101.0	97.0	0.925	0.970	VT801	CT801
4" x 2"	63.9	66.5	121.0	101.0	1.328	1.483	VT1H3	CT1H3
4" x 2-1/2"	63.9	66.5	121.0	108.0	1.410	1.481	VT1H2	CT1H2
4" x 3"	63.9	66.5	121.0	115.5	1.490	1.541	VT1H1	CT1H1
5" x 4"	79.5	81.0	147.5	136.0	2.605	2.790	VT1Q1	CT1Q1
6" x 3"	94.8	96.0	173.0	143.0	3.980	4.240	VT1F3	CT1F3
6" x 4"	94.8	96.0	173.0	152.0	4.015	4.320	VT1F2	CT1F2
6" x 5"	94.6	96.0	173.0	165.0	4.180	4.510	VT1F1	CT1F1
8" x 3"	122.0	123.5	225.0	170.0	8.290	8.420	VT2H4	CT2H4
8" x 4"	122.0	123.5	225.0	180.0	8.190	8.550	VT2H3	CT2H3
8" x 6"	122.0	123.5	225.0	202.6	8.545	8.915	VT2H1	CT2H1
10" x 4"	150.0	153.5	290.0	210.0	13.435	14.285	VT2F4	CT2F4
10" x 8"	150.0	153.5	290.0	261.0	14.645	15.440	VT2F1	CT2F1
12" x 4"	175.0	181.5	330.0	240.5	20.965	21.940	VT3H5	CT3H5
12" x 8"	175.0	181.5	330.0	286.0	21.600	22.550	VT3H2	CT3H2
12" x 10"	175.0	181.5	330.0	331.2	23.120	24.475	VT3H1	CT3H1
14" x 12"	198.0	197.0	426.6	359.5	32.950	38.530	VT3F1	CT3F1
16" x 12"	238.0	225.5	492.0	418.4	49.000	53.100	VT4H2	CT4H2
16" x 14"	238.0	225.5	492.0	492.0	50.835	56.110	VT4H1	CT4H1

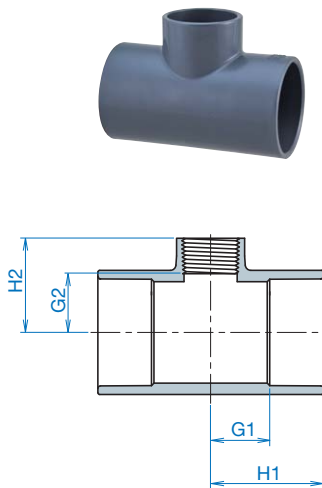
Combination Table of Tee

+: Tee without Bushing +B: with one Bushing +B*2: with 2 pieces of Bushing

		Branch Size															
		1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"
Main Size	1/2"	+															
	3/4"	+	+														
	1"	+	+	+													
	1-1/4"	+	+	+	+												
	1-1/2"	+	+	+	+	+											
	2"	+	+	+	+	+	+										
	2-1/2"	+B	+B	+B	+B	+	+	+									
	3"	+B	+B	+B	+B	+	+	+	+								
	4"	+B	+B	+B	+B	+B	+	+	+	+							
	5"	+B*2	+B*2	+B	+B	+B	+B	+B	+B	+	+						
	6"	+B*2	+B*2	+B	+B	+B	+B	+B	+	+	+	+					
	8"	+B*2	+B*2	+B	+B	+B	+B	+B	+	+	+B	+	+				
	10"	+B*2	+B*2	+B	+B	+B	+B	+B	+B	+	+B*2	+B	+	+			
	12"	+B*2	+B*2	+B	+B	+B	+B	+B	+B	+	+B*2	+B	+	+	+		
	14"								+B*2	+B*2	+B*2	+B	+B	+B	+	+	
	16"								+B*2	+B*2	+B*2	+B	+B	+B	+	+	+

Reducing Tee

Reducing Tee S X S X FT

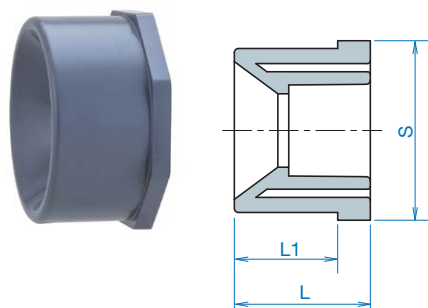


Size	mm				Weight (kg/pc)		Product number	
	G1	G2	H1	H2	PVC	CPVC	PVC	CPVC
3/4" x 1/2"	17.10	17.78	42.5	40.0	0.060	0.067	VT201A	CT201A
1" x 1/2"	21.42	21.78	50.0	44.0	0.096	0.107	VT252A	CT252A
1" x 3/4"	21.42	20.60	50.0	46.0	0.098	0.109	VT251A	CT251A
1-1/4" x 1/2"	26.25	25.78	58.0	48.0	0.152	0.170	VT323A	CT323A
1-1/4" x 3/4"	26.25	26.60	58.0	52.0	0.154	0.172	VT322A	CT322A
1-1/4" x 1"	26.25	25.42	58.0	54.0	0.159	0.178	VT321A	CT321A
1-1/2" x 1/2"	30.07	29.78	65.0	52.0	0.200	0.223	VT404A	CT404A
1-1/2" x 3/4"	30.07	29.60	65.0	55.0	0.202	0.226	VT403A	CT403A
1-1/2" x 1"	30.07	29.42	65.0	58.0	0.207	0.231	VT402A	CT402A
1-1/2" x 1-1/4"	30.07	30.25	65.0	62.0	0.216	0.241	VT401A	CT401A
2" x 1/2"	35.90	35.78	74.0	58.0	0.281	0.314	VT505A	CT505A
2" x 3/4"	35.90	35.60	74.0	61.0	0.283	0.316	VT504A	CT504A
2" x 1"	35.90	37.42	74.0	66.0	0.292	0.326	VT503A	CT503A
2" x 1-1/4"	35.90	36.25	74.0	68.0	0.303	0.338	VT502A	CT502A
2" x 1-1/2"	35.90	36.07	74.0	71.0	0.312	0.349	VT501A	CT501A
2-1/2" x 1-1/2"	44.45	42.07	89.0	77.0	0.534	0.596	VT652A	CT652A
2-1/2" x 2"	44.45	43.90	89.0	82.0	0.552	0.617	VT651A	CT651A
3" x 1-1/2"	53.37	50.07	101.0	85.0	0.711	0.794	VT803A	CT803A
3" x 2"	53.37	51.90	101.0	90.0	0.733	0.819	VT802A	CT802A
3" x 2-1/2"	53.37	52.55	101.0	97.0	0.768	0.858	VT801A	CT801A
4" x 2"	63.85	62.90	121.0	101.0	1.328	1.483	VT1H3A	CT1H3A
4" x 2-1/2"	63.85	63.55	121.0	108.0	1.326	1.481	VT1H2A	CT1H2A
4" x 3"	63.85	64.37	121.0	112.0	1.380	1.541	VT1H1A	CT1H1A
5" x 4"	79.50	78.85	147.5	136.0	1.984	2.216	VT1Q1A	CT1Q1A
6" x 3"	95.00	95.37	173.0	143.0	3.350	3.742	VT1F3A	CT1F3A
6" x 4"	95.00	94.85	173.0	152.0	3.328	3.717	VT1F2A	CT1F2A
8" x 3"	122.00	122.37	225.0	170.0	7.720	8.623	VT2H4A	CT2H4A
8" x 4"	122.00	122.85	225.0	180.0	7.860	8.780	VT2H3A	CT2H3A
10" x 4"	150.00	152.85	290.0	210.0	14.010	15.649	VT2F4A	CT2F4A
12" x 4"	175.00	183.00	330.0	240.5	21.900	24.090	VT3H5A	CT3H5A

3 Schedule80 Fittings

Reducing Bushing

Reducing Bushing
S X S



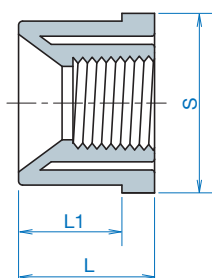
Size	mm			Weight (kg/pc)		Product number	
	L	L1	S	PVC	CPVC	PVC	CPVC
3/4" x 1/2"	33	25	30	0.014	0.023	VB201	CB201
1" x 1/2"	36	29	38	0.027	0.030	VB252	CB252
1" x 3/4"	36	29	38	0.019	0.021	VB251	CB251
1-1/4" x 1/2"	41	32	47	0.057	0.057	VB323	CB323
1-1/4" x 3/4"	41	32	47	0.048	0.054	VB322	CB322
1-1/4" x 1"	41	32	47	0.032	0.040	VB321	CB321
1-1/2" x 1/2"	44	35	53	0.067	0.075	VB404	CB404
1-1/2" x 3/4"	44	35	53	0.068	0.076	VB403	CB403
1-1/2" x 1"	44	35	53	0.058	0.065	VB402	CB402
1-1/2" x 1-1/4"	44	35	53	0.034	0.038	VB401	CB401
2" x 1/2"	50	38	66	0.114	0.127	VB505	CB505
2" x 3/4"	50	38	66	0.114	0.127	VB504	CB504
2" x 1"	50	38	66	0.116	0.130	VB503	CB503
2" x 1-1/4"	50	38	66	0.103	0.115	VB502	CB502
2" x 1-1/2"	50	38	66	0.085	0.095	VB501	CB501
2-1/2" x 1-1/2"	55	44	78	0.160	0.179	VB652	CB652
2-1/2" x 2"	55	44	78	0.118	0.132	VB651	CB651
3" x 1"	58	48	94	0.244	0.273	VB805	CB805
3" x 1-1/2"	58	48	94	0.258	0.288	VB803	CB803
3" x 2"	58	48	94	0.245	0.274	VB802	CB802
3" x 2-1/2"	58	48	94	0.200	0.245	VB801	CB801
4" x 1"	70	57	120	0.540	0.603	VB1H6	CB1H6
4" x 1-1/4"	70	57	120	0.541	0.575	VB1H5	CB1H5
4" x 1-1/2"	70	57	120	0.515	0.542	VB1H4	CB1H4
4" x 2"	70	57	120	0.528	0.573	VB1H3	CB1H3
4" x 2-1/2"	70	57	120	0.492	0.520	VB1H2	CB1H2
4" x 3"	70	57	120	0.427	0.463	VB1H1	CB1H1
5" x 4"	82	67	150	0.635	0.731	VB1Q1	CB1Q1
6" x 3"	92	78	175	1.241	1.254	VB1F3	CB1F3
6" x 4"	92	78	175	1.250	1.396	VB1F2	CB1F2
6" x 5"	92	78	175	0.945	0.953	VB1F1	CB1F1
8" x 4"	120	102	230	2.700	2.892	VB2H3	CB2H3
8" x 6"	120	102	230	2.458	2.746	VB2H1	CB2H1
10" x 6"	158	138	285	4.915	5.296	VB2F2	CB2F2
10" x 8"	158	138	285	4.648	5.113	VB2F1	CB2F1
12" x 6"	174	154	340	7.271	7.880	VB3H3	CB3H3
12" x 8"	174	154	340	7.585	7.974	VB3H2	CB3H2
12" x 10"	174	154	340	6.624	7.180	VB3H1	CB3H1

Combination Table for Reducing Bushing

+:Bushing +B: with an additional Bushing +B*2: with two additional Bushing

		Bushing													
		1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"
Bushing	1/2"														
	3/4"	+													
	1"	+	+												
	1-1/4"	+	+	+											
	1-1/2"	+	+	+	+										
	2"	+	+	+	+	+									
	2-1/2"	+B	+B	+B	+B	+	+								
	3"	+B	+B	+	+B	+	+	+							
	4"	+B	+B	+	+	+	+	+	+						
	5"	+B*2	+B*2	+B	+B	+B	+B	+B	+B	+					
	6"	+B*2	+B*2	+B	+B	+B	+B	+B	+	+	+				
	8"	+B*2	+B*2	+B	+B	+B	+B	+B	+B	+	+B	+			
	10"	-	-	+B*2	+B*2	+B*2	+B*2	+B*2	+B*2	+B	+B	+	+		
	12"	-	-	+B*2	+B*2	+B*2	+B*2	+B*2	+B*2	+B	+B	+	+	+	

Reducing Bushing S X FT

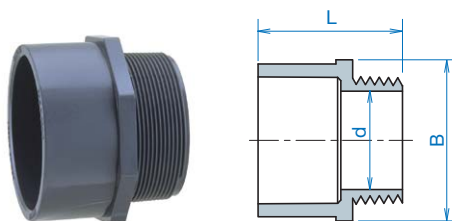


Size	mm			Weight (kg/pc)		Product number	
	L	L1	S	PVC	CPVC	PVC	CPVC
3/4" x 1/2"	33	25	30	0.014	0.021	VB201T	CB201T
1" x 1/2"	36	29	38	0.030	0.035	VB252T	CB252T
1" x 3/4"	36	29	38	0.030	0.027	VB251T	CB251T
1-1/4" x 1/2"	41	32	47	0.060	0.060	VB323T	CB323T
1-1/4" x 3/4"	41	32	47	0.054	0.056	VB322T	CB322T
1-1/4" x 1"	41	32	47	0.042	0.047	VB321T	CB321T
1-1/2" x 1/2"	44	35	53	0.075	0.080	VB404T	CB404T
1-1/2" x 3/4"	44	35	53	0.061	0.076	VB403T	CB403T
1-1/2" x 1"	44	35	53	0.070	0.076	VB402T	CB402T
1-1/2" x 1-1/4"	44	35	53	0.045	0.040	VB401T	CB401T
2" x 1/2"	50	38	66	0.114	0.136	VB505T	CB505T
2" x 3/4"	50	38	66	0.114	0.134	VB504T	CB504T
2" x 1"	50	38	66	0.130	0.140	VB503T	CB503T
2" x 1-1/4"	50	38	66	0.120	0.120	VB502T	CB502T
2" x 1-1/2"	50	38	66	0.105	0.106	VB501T	CB501T
2-1/2" x 1-1/2"	55	44	78	0.190	0.231	VB652T	CB652T
2-1/2" x 2"	55	44	78	0.140	0.140	VB651T	CB651T
3" x 1"	58	48	94	0.244	0.346	VB805T	CB805T
3" x 1-1/2"	58	48	94	0.290	0.342	VB803T	CB803T
3" x 2"	58	48	94	0.285	0.287	VB802T	CB802T
3" x 2-1/2"	58	48	94	0.225	0.224	VB801T	CB801T
4" x 1"	70	57	120	0.540	0.610	VB1H6T	CB1H6T
4" x 1-1/2"	70	57	120	0.597	0.733	VB1H5T	CB1H5T
4" x 2"	70	57	120	0.550	0.550	VB1H4T	CB1H4T
4" x 2-1/2"	70	57	120	0.520	0.500	VB1H3T	CB1H3T
4" x 3"	70	57	120	0.395	0.436	VB1H2T	CB1H2T
5" x 4"	82	67	150	0.474	0.746	VB1H1T	CB1H1T
6" x 3"	92	78	175	1.271	1.254	VB1Q1T	CB1Q1T
6" x 4"	92	78	175	1.250	1.171	VB1F2T	CB1F2T
8" x 4"	120	102	230	2.430	4.364	VB2H3T	CB2H3T

3 Schedule80 Fittings

Male Adapter

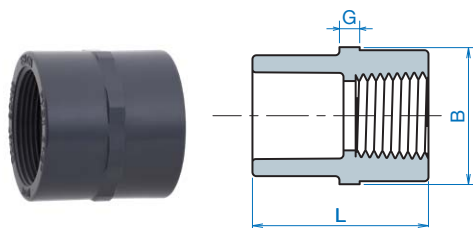
Male Adapter
Mpt X S



Size	mm			Weight (kg/pc)		Product number	
	L	d	B	PVC	CPVC	PVC	CPVC
1/2"	46	13	33	0.020	0.020	VMA15	CMA15
3/4"	50	18	39	0.025	0.028	VMA20	CMA20
1"	56	24	47	0.040	0.045	VMA25	CMA25
1-1/4"	63	32	58	0.064	0.071	VMA32	CMA32
1-1/2"	66	37	64	0.090	0.101	VMA40	CMA40
2"	73	49	77	0.120	0.134	VMA50	CMA50
2-1/2"	93	58	94	0.245	0.246	VMA65	CMA65
3"	98	72	111	0.300	0.335	VMA80	CMA80
4"	112	96	139	0.510	0.570	VMA1H	CMA1H

Female Adapter

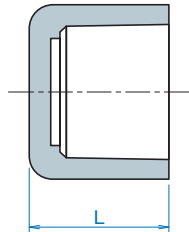
Female Adapter
S X FT



Size	mm			Weight (kg/pc)		Product number	
	L	G	B	PVC	CPVC	PVC	CPVC
1/2"	44	5	33	0.025	0.029	VFA15	CFA15
3/4"	47	5	38	0.035	0.035	VFA20	CFA20
1"	54	6	46	0.055	0.042	VFA25	CFA25
1-1/4"	60	6	56	0.085	0.113	VFA32	CFA32
1-1/2"	65	7	64	0.110	0.110	VFA40	CFA40
2"	70	10	77	0.165	0.183	VFA50	CFA50
2-1/2"	92	10	91	0.292	0.318	VFA65	CFA65
3"	96	12	107	0.400	0.357	VFA80	CFA80
4"	108	13	138	0.650	0.700	VFA1H	CFA1H

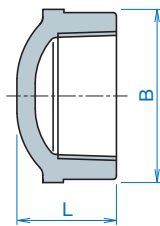
Cap

Socket Cap



Size	mm		Weight (kg/pc)		Product number	
	L		PVC	CPVC	PVC	CPVC
1/2"	30.0		0.016	0.018	VCP15	CCP15
3/4"	36.0		0.027	0.029	VCP20	CCP20
1"	41.0		0.043	0.047	VCP25	CCP25
1-1/4"	47.0		0.058	0.060	VCP32	CCP32
1-1/2"	52.0		0.105	0.115	VCP40	CCP40
2"	59.0		0.164	0.178	VCP50	CCP50
2-1/2"	67.0		0.245	0.266	VCP65	CCP65
3"	77.0		0.435	0.460	VCP80	CCP80
4"	92.0		0.635	0.687	VCP1H	CCP1H
5"	107.0		0.915	0.980	VCP1Q	CCP1Q
6"	124.0		1.196	1.296	VCP1F	CCP1F
8"	165.0		2.832	3.070	VCP2H	CCP2H
10"	191.0		5.133	5.310	VCP2F	CCP2F
12"	215.0		7.918	8.155	VCP3H	CCP3H

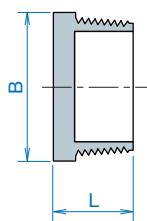
Threaded Cap



Size	mm		Weight (kg/pc)		Product number	
	L	B	PVC	CPVC	PVC	CPVC
1/2"	28.0	32.5	0.020	0.022	VC15T	CC15T
3/4"	31.0	38.1	0.029	0.032	VC20T	CC20T
1"	37.0	46.0	0.046	0.050	VC25T	CC25T
1-1/4"	41.0	56.0	0.073	0.080	VC32T	CC32T
1-1/2"	42.0	63.5	0.110	0.120	VC40T	CC40T
2"	46.0	77.0	0.149	0.163	VC50T	CC50T
2-1/2"	65.5	91.0	0.257	0.281	VC65T	CC65T
3"	73.0	107.0	0.431	0.471	VC80T	CC80T
4"	84.5	138.0	0.592	0.646	VC1HT	CC1HT

Plug

Cap and Plug Mpt Plug



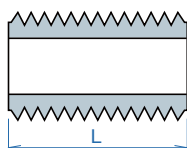
Size	mm		Weight (kg/pc)		Product number	
	L	B	PVC	CPVC	PVC	CPVC
1/2"	24.5	24	0.008	0.009	VPG15	CPG15
3/4"	25.0	30	0.012	0.013	VPG20	CPG20
1"	28.0	38	0.026	0.028	VPG25	CPG25
1-1/4"	32.5	47	0.034	0.037	VPG32	CPG32
1-1/2"	33.0	53	0.045	0.049	VPG40	CPG40
2"	36.5	65	0.085	0.093	VPG50	CPG50
2-1/2"	50.0	79	0.128	0.140	VPG65	CPG65
3"	52.0	95	0.193	0.211	VPG80	CPG80
4"	54.5	120	0.347	0.379	VPG1H	CPG1H

3 Schedule80 Fittings

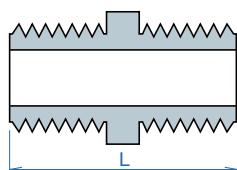
Nipple



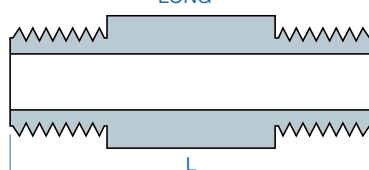
CLOSE



SHORT



LONG



CLOSE TYPE

Size	mm	Weight (kg/pc)		Product number	
	L	PVC	CPVC	PVC	CPVC
1/2"	37	—	—	VNA15	CNA15
3/4"	37	—	—	VNA20	CNA20
1"	42	—	—	VNA25	CNA25
1-1/4"	49	—	—	VNA32	CNA32
1-1/2"	49	—	—	VNA40	CNA40
2"	54	—	—	VNA50	CNA50
2-1/2"	80	—	—	VNA65	CNA65
3"	84	—	—	VNA80	CNA80
4"	89	—	—	VNA1H	CNA1H

SHORT TYPE

Size	inch	Weight (kg/pc)		Product number	
	L	PVC	CPVC	PVC	CPVC
1/2"	1-3/4"	—	—	VNB151	CNB151
1/2"	2"	—	—	VNB152	CNB152
1/2"	3"	—	—	VNB153	CNB153
1/2"	4"	—	—	VNB154	CNB154
3/4"	1-3/4"	—	—	VNB201	CNB201
3/4"	2"	—	—	VNB202	CNB202
3/4"	3"	—	—	VNB203	CNB203
3/4"	4"	—	—	VNB204	CNB204
1"	2"	—	—	VNB252	CNB252
1"	3"	—	—	VNB253	CNB253
1"	4"	—	—	VNB254	CNB254
1-1/4"	2"	—	—	VNB322	CNB322
1-1/4"	3"	—	—	VNB323	CNB323
1-1/4"	4"	—	—	VNB324	CNB324
1-1/2"	2"	—	—	VNB402	CNB402
1-1/2"	3"	—	—	VNB403	CNB403
1-1/2"	4"	—	—	VNB404	CNB404
2"	3"	—	—	VNB503	CNB503
2"	4"	—	—	VNB504	CNB504
2-1/2"	4"	—	—	VNB654	CNB654
3"	4"	—	—	VNB804	CNB804
4"	4"	—	—	VNB1H4	CNB1H4

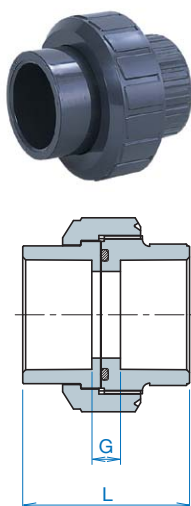
LONG TYPE

Size	inch	Weight (kg/pc)		Product number	
	L	PVC	CPVC	PVC	CPVC
1/2"	5"	—	—	VNC151	CNC151
1/2"	6"	—	—	VNC152	CNC152
1/2"	8"	—	—	VNC153	CNC153
1/2"	10"	—	—	VNC154	CNC154
1/2"	12"	—	—	VNC155	CNC155
3/4"	5"	—	—	VNC201	CNC201
3/4"	6"	—	—	VNC202	CNC202
3/4"	8"	—	—	VNC203	CNC203
3/4"	10"	—	—	VNC204	CNC204
3/4"	12"	—	—	VNC205	CNC205
1"	5"	—	—	VNC251	CNC251
1"	6"	—	—	VNC252	CNC252
1"	8"	—	—	VNC253	CNC253
1"	10"	—	—	VNC254	CNC254
1"	12"	—	—	VNC255	CNC255
1-1/4"	5"	—	—	VNC321	CNC321
1-1/4"	6"	—	—	VNC322	CNC322
1-1/4"	8"	—	—	VNC323	CNC323
1-1/4"	10"	—	—	VNC324	CNC324
1-1/4"	12"	—	—	VNC325	CNC325
1-1/2"	5"	—	—	VNC401	CNC401
1-1/2"	6"	—	—	VNC402	CNC402
1-1/2"	8"	—	—	VNC403	CNC403
1-1/2"	10"	—	—	VNC404	CNC404
1-1/2"	12"	—	—	VNC405	CNC405
2"	5"	—	—	VNC501	CNC501
2"	6"	—	—	VNC502	CNC502
2"	8"	—	—	VNC503	CNC503
2"	10"	—	—	VNC504	CNC504
2"	12"	—	—	VNC505	CNC505
2-1/2"	5"	—	—	VNC651	CNC651
2-1/2"	6"	—	—	VNC652	CNC652
2-1/2"	8"	—	—	VNC653	CNC653
2-1/2"	10"	—	—	VNC654	CNC654
2-1/2"	12"	—	—	VNC655	CNC655
3"	5"	—	—	VNC801	CNC801
3"	6"	—	—	VNC802	CNC802
3"	8"	—	—	VNC803	CNC803
3"	10"	—	—	VNC804	CNC804
3"	12"	—	—	VNC805	CNC805
4"	5"	—	—	VNC1H1	CNC1H1
4"	6"	—	—	VNC1H2	CNC1H2
4"	8"	—	—	VNC1H3	CNC1H3
4"	10"	—	—	VNC1H4	CNC1H4
4"	12"	—	—	VNC1H5	CNC1H5

4 True Union

Union (O-Ring Seat)

Union (O-Ring Seat) S X S

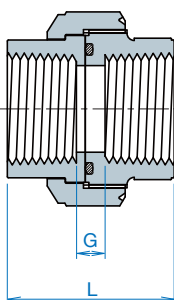


Size	mm		Weight (kg/pc)		Product number			
	L	G	PVC	CPVC	EPDM		FKM	
1/2"	52	6.5	0.047	0.050	UN15SU	UNT15SU	UN15SUV	TU15SUV
3/4"	59	7.5	0.073	0.080	UN20SU	UNT20SU	UN20SUV	TU20SUV
1"	67	8.0	0.132	0.140	UN25SU	UNT25SU	UN25SUV	TU25SUV
1-1/4"	76	12.5	0.208	0.217	UN32SU	UNT32SU	UN32SUV	TU32SUV
1-1/2"	82	10.5	0.271	0.295	UN40SU	UNT40SU	UN40SUV	TU40SUV
2"	92	14.0	0.433	0.475	UN50SU	UNT50SU	UN50SUV	TU50SUV
2-1/2"	108	19.0	0.667	0.775	UN65SU	UNT65SU	UN65SUV	TU65SUV
3"	120	25.0	1.093	1.180	UN80SU	UNT80SU	UN80SUV	TU80SUV
4"	152	37.0	1.873	2.050	UN1HSU	UNT1HSU	UN1HSUV	TU1HSUV

Union (O-Ring Seat) FT X FT



O-ring: EPDM. FKM

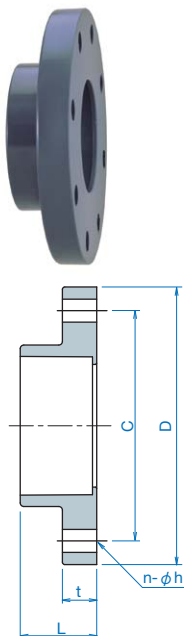


Size	mm		Weight (kg/pc)		Product number			
	L	G	PVC	CPVC	EPDM		FKM	
1/2"	52	7.6	0.046	0.050	UN15NU	UNT15NU	UN15NUV	UNT15NUV
3/4"	59	8.2	0.073	0.079	UN20NU	UNT20NU	UN20NUV	UNT20NUV
1"	67	7.2	0.130	0.143	UN25NU	UNT25NU	UN25NUV	UNT25NUV
1-1/4"	76	9.2	0.204	0.223	UN32NU	UNT32NU	UN32NUV	UNT32NUV
1-1/2"	82	8.5	0.269	0.294	UN40NU	UNT40NU	UN40NUV	UNT40NUV
2"	92	12.0	0.426	0.468	UN50NU	UNT50NU	UN50NUV	UNT50NUV
2-1/2"	108	19.1	0.656	0.719	UN65NU	UNT65NU	UN65NUV	UNT65NUV
3"	120	24.7	1.076	1.159	UN80NU	UNT80NU	UN80NUV	UNT80NUV
4"	152	37.7	1.862	2.031	UN1HNU	UNT1HNU	UN1HNUV	UNT1HNUV

5 Flange

One Piece Flange

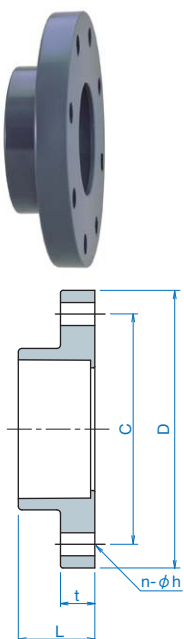
Flange (ANSI) - Socket (ASTM)



Size	mm						Weight (kg/pc)		Product number	
	L	t	C	D	n	h	PVC	CPVC	PVC	CPVC
1/2"	25.0	11.5	60.5	89.0	4	15.7	0.100	0.105	VF15	CF15
3/4"	29.5	13.0	70.0	98.8	4	15.7	0.140	0.152	VF20	CF20
1"	32.0	14.5	79.5	108.3	4	15.7	0.191	0.207	VF25	CF25
1-1/4"	38.5	17.6	89.0	118.8	4	15.7	0.255	0.276	VF32	CF32
1-1/2"	40.5	19.0	98.5	127.5	4	15.7	0.318	0.360	VF40	CF40
2"	46.6	19.5	120.5	152.0	4	19.1	0.458	0.512	VF50	CF50
2-1/2"	51.0	22.5	139.5	177.0	4	19.1	0.749	0.799	VF65	CF65
3"	55.0	27.1	152.5	192.8	4	19.1	0.880	0.983	VF80	CF80
4"	64.0	29.3	190.5	229.7	8	19.1	1.340	1.497	VF1H	CF1H
5"	82.0	28.0	216.0	254.0	8	22.4	1.648	1.841	VF1Q	CF1Q
6"	84.5	25.5	241.5	279.0	8	22.4	1.912	1.944	VF1F	CF1F
8"	116.0	29.0	298.5	343.0	8	22.4	3.400	3.798	VF2H	CF2H

NOTE: Flange bolt hole patterns meet ANSI B16.5, class 150.

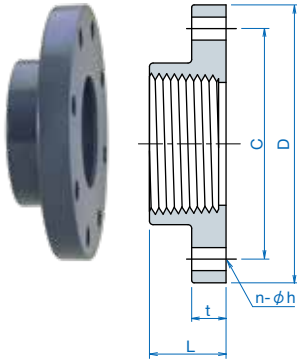
Flange (JIS) - Socket (ASTM)



Size	mm						Weight (kg/pc)		Product number	
	L	t	C	D	n	h	PVC	CPVC	PVC	CPVC
1/2"	25.0	14.0	70	95	4	15	0.130	0.150	VF15J	CF15J
3/4"	29.5	14.0	75	100	4	15	0.140	0.165	VF20J	CF20J
1"	32.0	14.0	90	125	4	19	0.240	0.265	VF25J	CF25J
1-1/4"	38.5	16.0	100	135	4	19	0.327	0.355	VF32J	CF32J
1-1/2"	40.5	16.0	105	140	4	19	0.320	0.358	VF40J	CF40J
2"	45.0	20.0	120	155	4	19	0.473	0.528	VF50J	CF50J
2-1/2"	51.0	22.0	140	175	4	19	0.664	0.720	VF65J	CF65J
3"	55.0	22.0	150	185	8	19	0.700	0.752	VF80J	CF80J
4"	64.0	22.0	175	210	8	19	0.900	0.984	VF1HJ	CF1HJ
5"	82.0	24.0	210	250	8	23	1.410	1.508	VF1QJ	CF1QJ
6"	84.5	25.5	240	280	8	23	1.800	1.956	VF1FJ	CF1FJ
8"	116.0	28.0	290	330	12	23	2.900	3.358	VF2HJ	CF2HJ

NOTE: Flange bolt hole patterns meet JIS B2220.

Flange (ANSI) - Threaded

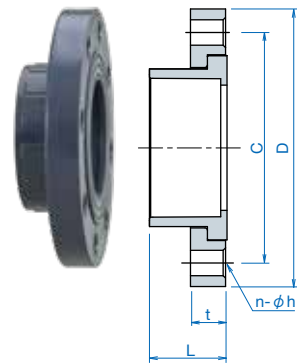


Size	mm						Weight (kg/pc)		Product number	
	L	t	C	D	n	h	PVC	CPVC	PVC	CPVC
1/2"	25.0	11.5	60.5	89.0	4	16	0.094	0.105	VF15T	CF15T
3/4"	29.5	13.0	70.0	98.8	4	16	0.120	0.134	VF20T	CF20T
1"	32.0	14.5	79.5	108.3	4	16	0.190	0.212	VF25T	CF25T
1-1/4"	38.5	18.3	89.0	118.5	4	16	0.240	0.268	VF32T	CF32T
1-1/2"	40.5	17.5	98.5	127.5	4	16	0.310	0.346	VF40T	CF40T
2"	45.0	19.5	120.5	152.0	4	19	0.458	0.512	VF50T	CF50T
2-1/2"	51.0	22.5	139.5	177.0	4	19	0.715	0.799	VF65T	CF65T
3"	55.0	24.0	152.5	191.0	4	20	0.880	0.983	VF80T	CF80T
4"	64.0	24.0	190.5	229.7	8	19	1.340	1.497	VF1HT	CF1HT

NOTE: Flange bolt hole patterns meet ANSI B16.5, class 150.

Van Stone Flange

Flange (ANSI) - Socket (ASTM)



Size	Pressure MPa	mm						Weight (kg/pc)		Product number	
		L	t	C	D	n	h	PVC	CPVC	PVC	CPVC
1/2"	1.0	25.0	11.2	60.5	88.9	4	15.9	0.100	0.100	VF15	CVF15
3/4"	1.0	29.5	12.7	70.0	98.6	4	15.9	0.160	0.160	VF20	CVF20
1"	1.0	32.0	14.5	79.5	108.0	4	15.9	0.180	0.180	VF25	CVF25
1 1/4"	1.0	38.5	15.7	89.0	117.4	4	15.9	0.240	0.240	VF32	CVF32
1 1/2"	1.0	40.5	17.5	98.5	127.0	4	15.9	0.290	0.290	VF40	CVF40
2"	1.0	43.0	20.0	120.5	152.0	4	19.1	0.390	0.429	VF50	CVF50
2 1/2"	1.0	51.0	24.5	139.5	178.0	4	19.1	0.595	0.655	VF65	CVF65
3"	1.0	55.0	27.0	152.5	191.0	4	19.1	0.734	0.807	VF80	CVF80
4"	1.0	64.0	28.0	190.5	229.0	8	19.1	1.066	1.173	VF1H	CVF1H
5"	1.0	82.0	28.0	216.0	254.0	8	22.4	1.423	1.565	VF1Q	CVF1Q
6"	1.0	85.0	32.0	241.5	283.2	8	22.4	1.820	2.002	VF1F	CVF1F
8"	1.0	120.5	36.0	298.5	343.0	8	22.4	2.870	3.157	VF2H	CVF2H
10"	1.0	150.0	42.0	362.0	406.0	12	25.4	4.923	5.415	VF2F	CVF2F
12"	1.0	190.0	42.0	432.0	483.0	12	25.4	8.800	9.680	VF3H	CVF3H
14"	1.0	203.0	51.0	476.0	533.0	12	28.4	11.778	12.329	VF3F	CVF3F
16"	1.0	225.0	60.0	540.0	597.0	16	28.4	16.620	17.460	VF4H	CVF4H
18" *	1.0	248.0	60.0	578.0	635.0	16	31.8	19.315	21.599	VF4F	CVF4F
20" *	0.6	280.0	17.5	635.0	699.0	20	31.8	33.030	35.805	VF5HS	CVF5HS
	1.0		29.0					47.751	49.554	VF5HS1	CVF5HS1
24" *	0.6	344.0	19.0	749.0	813.0	20	35.1	—	—	VF6HS	CVF6HS
	1.0		32.0					—	—	—	—

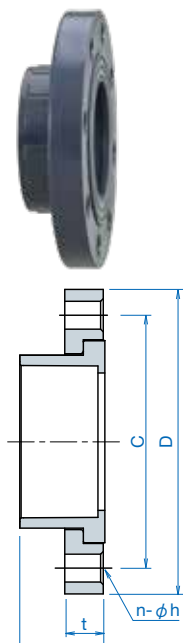
NOTE: Flange bolt hole patterns meet ANSI B16.5, class 150.

*For 18" or more, please contact us.

5 Flange

Van Stone Flange

Flange (JIS) - Socket (ASTM)



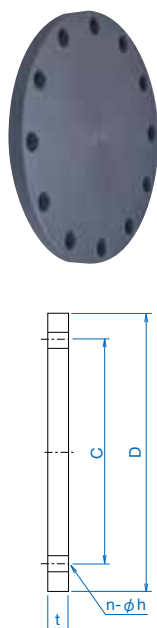
Size	mm						Weight (kg/pc)		Product number	
	L	t	C	D	n	h	PVC	CPVC	PVC	CPVC
2"	43.0	20.0	120.0	153.0	4	20.0	0.415	0.446	VVF50J	CVF50J
2-1/2"	51.0	24.5	140.0	178.3	4	20.0	0.630	0.683	VVF65J	CVF65J
3"	55.0	27.0	150.0	185.0	8	19.0	0.775	0.840	VVF80J	CVF80J
4"	64.0	28.0	175.0	210.0	8	19.0	0.930	0.990	VVF1HJ	CVF1HJ
5"	82.0	28.0	210.0	250.0	8	23.0	1.365	1.480	VVF1QJ	CVF1QJ
6"	85.0	32.0	240.0	283.4	8	23.0	1.930	2.124	VVF1FJ	CVF1FJ
8"	120.5	36.0	290.0	330.0	12	23.0	3.040	3.927	VVF2HJ	CVF2HJ
10"	150.0	42.0	355.0	400.0	12	25.0	4.923	5.686	VVF2FJ	CVF2FJ
14"	203.0	14.0	445.0	490.0	16	25.0	12.670	13.365	VVF4HJS	CVF3FJS
16"	225.0	14.0	510.0	560.0	16	27.0	17.990	18.850	VVF4HJ	CVF4HJ
18"*	248.0	14.0	565.0	620.0	20	27.0	23.170	25.277	VVF4FJS	CVF4FJ
20"*	280.0	15.0	620.0	675.0	20	27.0	34.300	36.103	VVF5HJS	CVF5HJS

NOTE: Flange bolt hole patterns meet JIS B2220.

*For 18" or more, please contact us.

Blind Flange

Flange (ANSI)



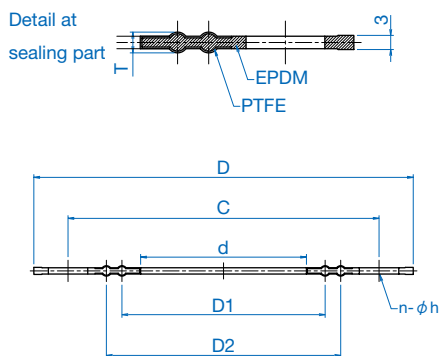
Size	mm					Weight (kg/pc)		Product number	
	t	C	D	n	h	PVC	CPVC	PVC	CPVC
1/2"	12	60.5	89	4	16	0.108	0.117	VBF15	CBF15
3/4"	13	70.0	98	4	16	0.148	0.160	VBF20	CBF20
1"	15	79.5	108	4	16	0.176	0.190	VBF25	CBF25
1-1/4"	16	89.0	117	4	16	0.220	0.238	VBF32	CBF32
1-1/2"	18	98.5	127	4	16	0.295	0.329	VBF40	CBF40
2"	18	120.5	152	4	19	0.463	0.518	VBF50	CBF50
2-1/2"	22	139.5	178	4	19	0.740	0.843	VBF65	CBF65
3"	24	152.5	191	4	19	0.928	1.006	VBF80	CBF80
4"	24	190.5	229	8	19	1.501	1.627	VBF1H	CBF1H
5"	26	216.0	254	8	22	1.746	1.950	VBF1Q	CBF1Q
6"	26	241.5	282	8	22	2.229	2.489	VBF1F	CBF1F
8"	28	298.5	343	8	22	3.410	3.809	VBF2H	CBF2H
10"	28	362.0	406	12	25	4.842		VBF2F	
12"	28	432.0	483	12	25	7.010		VBF3H	
14" *	45	476.0	535	12	29	14.905		VBF3F	
16" *	45	540.0	595	16	29	16.843		VBF4H	

NOTE: Flange bolt hole patterns meet ANSI B16.5 class 150.

*For 14" or more, please contact us.

Eslon PTFE Gasket

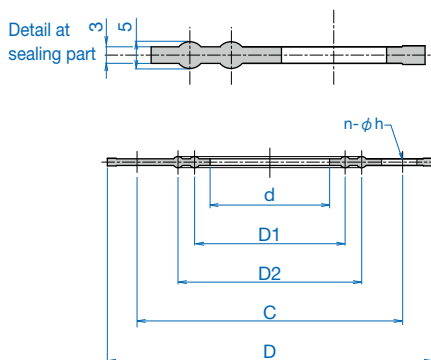
Eslon PTFE Gasket ANSI B16.5



Size	mm							Weight (kg/pc)	N-m{kgf-cm}	Product number
	d	D1	D2	C	D	n-φh	T			
1/2"	18	30	-	60.5	85	4-16	5	0.022	16{160}	PP15U
3/4"	22	32	44	70.0	95	4-16	5	0.029	16{160}	PP20U
1"	29	38	50	79.5	103	4-16	5	0.034	35{350}	PP25U
1-1/4"	39	47	59	89.0	111	4-16	5	0.039	35{350}	PP30U
1-1/2"	44	53	68	98.5	121	4-16	5	0.044	35{350}	PP40U
2"	55	65	83	120.5	146	4-19	5	0.065	35{350}	PP50U
2-1/2"	70	81	101	139.5	173	4-19	5	0.084	52{520}	PP65U
3"	81	94	112	152.5	186	4-19	5	0.098	52{520}	PP80U
4"	103	124	148	190.5	223	8-19	5	0.137	52{520}	PP1HU
5"	128	150	174	216.0	249	8-22	5	0.153	63{630}	PP1QU
6"	152	172	196	241.5	274	8-22	5	0.182	63{630}	PP1FU
8"	200	222	246	298.5	337	8-22	5	0.258	68{680}	PP2HU
10"	251	276	300	362.0	401	12-25	6	0.348	102{1020}	PP2FU
12"	302	335	365	432.0	477	12-25	6	0.484	136{1360}	PP3HU

Eslon EPDM Gasket

Eslon EPDM Gasket ANSI B16.5



Size	mm						Weight (kg/pc)	N-m{kgf-cm}	Product number
	d	D1	D2	C	D	n-φh			
1/2"	18	25	38	60.5	86	4-16	0.017	14{140}	PE15CU
3/4"	23	33	48	70.0	97	4-16	0.021	14{140}	PE20CU
1"	30	38	53	79.5	107	4-16	0.025	20{200}	PE25CU
1-1/4"	38	51	66	89.0	114	4-16	0.029	20{200}	PE30CU
1-1/2"	43	53	69	98.5	124	4-16	0.034	20{200}	PE40CU
2"	53	69	84	120.5	150	4-19	0.049	34{340}	PE50CU
2-1/2"	69	86	102	139.5	175	4-19	0.066	34{340}	PE65CU
3"	81	99	112	152.5	188	4-19	0.074	41{410}	PE80CU
4"	102	119	137	190.5	226	8-19	0.101	41{410}	PE1HCU
5"	127	145	165	216.0	251	8-22	0.117	55{550}	PE1QCU
6"	149	168	191	241.5	277	8-22	0.134	68{680}	PE1FCU
8"	198	216	246	298.5	340	8-22	0.192	68{680}	PE2HCU
10"	249	269	307	362.0	404	12-25	0.246	89{890}	PE2FCU
12"	300	325	353	432.0	480	12-25	0.356	102{1020}	PE3HCU



Eslon Sch80 PVC & CPVC Piping System

3

Installation

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1 Storage and Handling

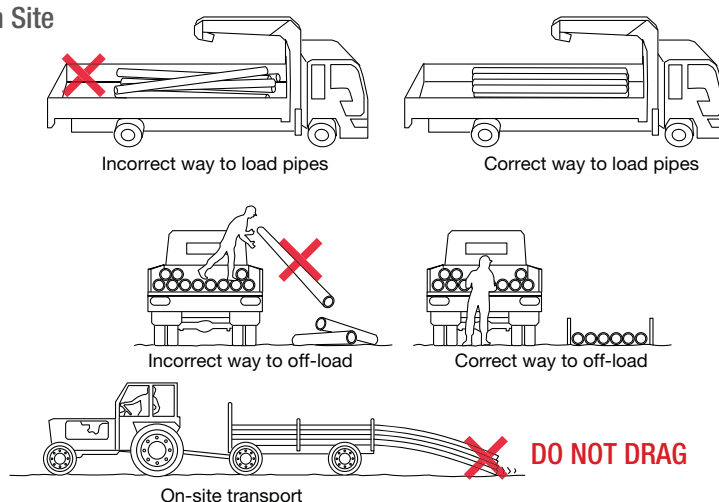
Buyer's Acceptance of Materials

The person responsible for receiving the pipe should always carefully inspect as much of the pipe as possible before unloading. The receiver should look for transportation damage such as a shift in the load, tie-down straps overtightened, or signs of rough treatment. LTL (less than truckload) pipe shipments that arrive in a closed trailer should be checked as soon as the trailer is opened. Make sure that the pipe has not been toploaded with metallic piping, crates, machinery or any other objects that might crush or impact the plastic pipe. The ends of the pipe should be visually inspected for cracks, cuts, gouges, or heavy deformations. In some cases, especially for large diameter pipe 4" and above, it would be advisable to inspect the bore of the pipes for internal cracks or splits that may have occurred as a result of loading or transportation. The use of a strong flashlight may be necessary to inspect the inside diameter beyond the ends of the pipe. Any and all damages should be witnessed by the truck driver and clearly noted on the transportation documentation with a copy retained by the receiver. The carrier and Eslon should be immediately notified of any damages or missing pipe, or items incorrectly shipped.

Unloading and Handling

After the pipe has been thoroughly inspected and inventoried, it should be unloaded with reasonable care and effort. The person receiving the pipe must decide the means by which the pipe is unloaded and is responsible for any damages that occur during the unloading process. Never push or drag a palletized load of pipe from a truck bed. Pipe should not come into severe contact with sharp objects such as corners of truck beds, loading docks and buildings, forks on forklift trucks, and rocks or other objects on the ground. Forklift forks must never be inserted into the ends of the pipe as a means of lifting or moving.

Handling and Storing on Site

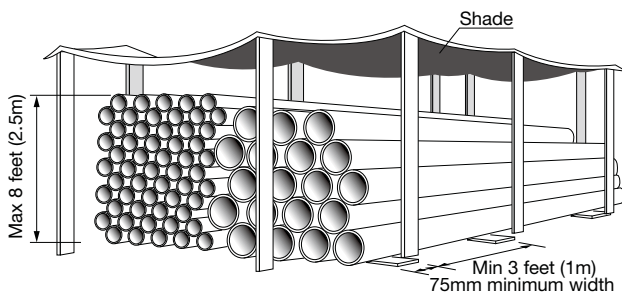


NOTE: The impact resistance and flexibility of PVC and especially CPVC pipe are reduced by lower temperature conditions. The impact strength for both types of piping materials will decrease as temperatures approach 32°F (0°C) and below. Extreme care should be taken when unloading and handling pipe in cold weather. Dropping pipe from a truck or forklift can cause damage. Methods and techniques normally used in warm weather may not be acceptable at the lower temperature range.

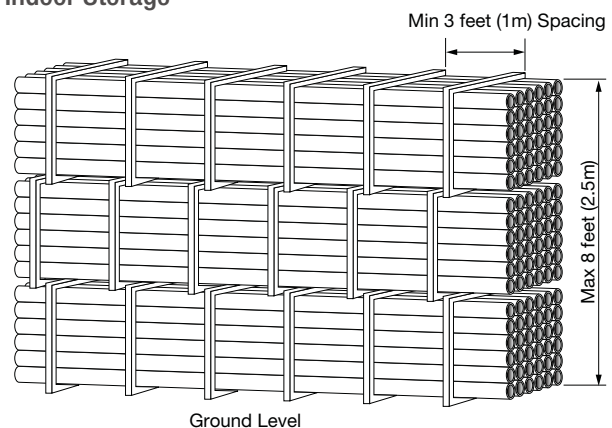
Pipe Storage

Indoor storage of pipe is recommended but may not always be convenient. Therefore, when storing pipe outdoors, choose a flat, dry location that will minimize dirt and foreign matter accumulation in the bore and belled end. Palletized pipe should be stacked with wooden pallet bracings touching each other. Stack height will depend on the pipe diameter, the slope of the terrain, and the weather conditions. As a general precaution, palletized pipe should not be stacked higher than eight feet. This should be determined and approved by the site engineer or responsible management official. Loose pipe lengths should be stored in racks or dunnage that will evenly support the pipe to prevent longitudinal sag. If pipe is not well supported, especially in warmer weather, it will become permanently bowed and will be difficult to install. The pipe must be protected from the sun and extreme heat. Protect the pipe by covering it with an opaque tarp, leaving the ends open to allow for air circulation through and around the pipe. When pipe is not protected from the sun, extended exposure to ultraviolet rays will cause discoloration. The amount of time in years necessary to cause this will vary with the geographic location and the orientation of the pipe to the sun.

Outdoor Storage



Indoor Storage



Fitting Storage

The person responsible for receiving the fittings should take an accurate count of the incoming order and report any discrepancies to Esilon and the carrier. Fittings packaged in damaged boxes should be closely inspected. Store fittings in their original packaging. If they must be removed from their boxes, separate them by material type (PVC vs. CPVC), geometric configuration, and diameter size. Never combine your plastic fitting inventory with metallic materials. Avoid storing fittings near an open flame or source of extreme heat.

2 General Recommendations

WARNING

Failure to follow the safety precautions below may result in misapplication or improper installation and testing which can cause severe personal injury and/or property damage.

1. Solvent Cement Welding

This method of joining is very simple and reliable if it is followed correctly, but any deviations from the recommended basic steps may reduce the strength and integrity of the joint. The procedures for preparation, insertion, and curing should be followed very carefully.

2. Expansion and Contraction

The coefficient of linear expansion of PVC and CPVC pipe is greater than that of metallic piping; therefore, take this factor into consideration when designing and installing a PVC or CPVC piping system.

3. Hanging and Supporting

The modulus of elasticity of PVC and CPVC pipe is smaller than that of metal pipes. Maximum working temperature and room temperature should be considered when determining the required support spacing.

4. Outdoor exposed piping

For outdoor exposed pipes, take measures such as painting the pipes or installing a protective cover to reduce the deterioration of the pipes due to ultra-violet rays.

Regarding painting of the pipes, painting with oil-based paint may significantly reduce the physical properties of plastic pipes, such as impact resistance, depending on some components. Please use water-based paint.

5. Trench Preparation

When laying PVC and CPVC pipe below the ground, care should be taken to remove all rocks, boards, empty primer and cement cans, brushes, bottles and other debris from the trench. Smaller diameters

of pipe should be “snaked” in the trench to allow for expansion and contraction. If solvent cement welding is used for the method of joining, snaking, pressure testing, and pipe movement should not be done until after the joints have been given sufficient time to dry.

6. Avoid Bending Pipe

Pipe should not be bent in trenches or in above ground installations. Pipe and joints that are stressed can reduce pressure rating and cause failures.

7. Protect Plastic Pipe from Contact with Hard and Pointed Objects.

Impact resistance is lower than for metals.

WARNING

NEVER use compressed air or gas in PVC/CPVC pipe and fittings.

NEVER test PVC/CPVC pipe and fittings with compressed air or gas, or air-over-water boosters.

ONLY use PVC/CPVC pipe for water and approved chemicals.

Use of compressed air or gas in PVC/CPVC pipe and fittings can result in explosive failures and cause severe injury or death.

8. Testing

8.1 NEVER use compressed air, gas or air-over-water boosters to pressure test PVC or CPVC piping systems. ONLY hydrostatic pressure testing is to be conducted on PVC and CPVC piping systems. Compressed air or gases can surge to high pressures and cause explosive failures that could seriously injure personnel.

8.2 Carefully follow all instructions for hydrostatic pressure testing. Failure to follow these instructions can result in a system failure.

8.3 Before water-testing a system, always bleed all entrapped air from system. Entrapped air is a major cause of surge and burst failure in plastic piping systems.

3 Rules and Guidelines

Solvent Cement Welding Joints

Joining Equipment and Material

- **Cutting Tool**
Saw & Miter Box or Pipe Cutter (Ratchet Type, Wheel Type)
- **Pipe deburring & beveling tool, file or knife**
- **Solvent Cement**
PVC : 711[to 12"],719[to 24"] : IPS Corp.
CPVC : 714[to 12"],729[to 24"] : IPS Corp.
- **Primer P-70** : IPS Corp.
- **Cleaner**
- **Cotton Rag**
- **Square**
- **Scale**
- **Felt-tip Pen**
- **Tape Measure**
- **Brush**
- **Insertion Tool (6" and above)**
- **Container (Metal Cans to Hold Cement or Primer)**

1. Cutting ①②③

Pipe ends must be cut square.

Check the pipe end with a square to make sure it has been cut squarely.

Note: A diagonal cut reduces bonding area in the most effective and critical part of the joint.

Wheel type cutters are not generally recommended for large diameters since they tend to raise flare at the pipe end.

This flare must be removed with a file or deburring tool, as it will scrape the cement away when pipe is inserted into the fitting.



2. Deburring ④⑤

All burrs, chips, filings, etc., should be removed from both around the pipe before joining.

Use a knife, deburring tool or a half-round coarse file.

All pipe ends should be beveled from 45 degrees.

Note: Failure to chamfer the edge of the pipe may remove cement from the fitting socket, causing the joint to leak.



3 Rules and Guidelines

3. Inspection, Cleaning ⑥⑦

Visually inspect the inside of the pipe and fitting sockets and remove all dirt, grease or moisture with a clean dry rag.

Check pipes and fittings possible damage such as splits or cracks and replace if necessary.



4. Test Dry Fit of the Joint

Check pipe and fittings for dry fit before cementing. The pipe should be inserted to the fitting easily about 1/3 to 2/3 of the socket depth.

5. Depth-Of-Entry Mark ⑧⑨

Measure the socket depth of the fitting and mark this distance on the pipe O.D.

This reference mark can be used when joining to ensure the pipe is completely bottomed into the fitting during assembly. In addition, draw the line for a guide outside the reference line.



6. Priming ⑩⑪

This process is necessary to penetrate and soften both pipe and fitting socket surfaces for cementing process.

Apply primer to the surface of the pipe and fitting socket.

Move quickly without hesitation to the cementing procedure while surfaces are still wet with primer.



7. Application of Solvent Cement ⑫⑬

Apply the solvent cement evenly and quickly around the outside of the pipe at a width a little greater than the depth of the fitting socket while the primer is still wet.

Apply a light coat of cement evenly around the inside of the fitting socket. Avoid puddling.

Apply a second coat of cement to the pipe end.

NOTE: Read all warnings on primer and cement cans.



8. Joint Assembly ⑭⑮

Work quickly, insert the pipe into the fitting socket bottom with a one-quarter turn to evenly distribute the cement.

Do not continue to rotate the pipe after it has reached the bottom of the fitting socket.

A good joint will have sufficient cement to make a bead all the way around the outside of the fitting hub.

Hold the pipe and fitting together for a minimum of 30 seconds to make sure the pipe does not move or push out of the socket.



9. Cleanup ⑯

Remove all excess cement from around the pipe and fitting with a dry cotton rag while the cement is still soft.



3 Rules and Guidelines

10. Initial Set Time

Initial set time is the necessary time to allow before the joint can be carefully handled.

Initial Set Schedule

Temperature Range	Pipe Sizes 1/2" to 1-1/4"	Pipe Sizes 1-1/2" to 2"	Pipe Sizes 2-1/2" to 8"	Pipe Sizes 10" to 15"	Pipe Sizes 15"+
60 to 100°F	2 min	5 min	30 min	2 hrs	4 hrs
40 to 60°F	5 min	10 min	2 hrs	8 hrs	16 hrs
0 to 40°F	10 min	15 min	12 hrs	24 hrs	48 hrs

Note: In damp or humid weather allow 50% more set time.

11. Joint cure time

Joint cure time is the necessary time to allow before pressurizing system.

Joint Cure Schedule

inch-lb Unit

Temperature range during assembly and cure periods	Pipe Sizes 1/2" to 1-1/4" up to 150psi	Pipe Sizes 1-1/2" to 2" up to 150psi	Pipe Sizes 2-1/2" to 8" up to 150psi	Pipe Sizes 10" to 15" up to 100psi	Pipe Sizes 15"+ up to 100psi
60 to 100°F	1 hour	2 hours	6 hours	48 hours	72 hrs
40 to 60°F	2 hours	4hours	12 hours	96 hours	6 days
20 to 40°F	8 hours	16 hours	72 hours	8 days	14 days

S I Unit

Temperature range during assembly and cure periods	Pipe Sizes 1/2" to 1-1/4" up to 1MPa	Pipe Sizes 1-1/2" to 2" up to 1MPa	Pipe Sizes 2-1/2" to 8" up to 1MPa	Pipe Sizes 10" to 15" up to 0.7MPa	Pipe Sizes 15"+ up to 0.7MPa
15 to 40°C	1 hour	2 hours	6 hours	48 hours	72 hrs
5 to 15°C	2 hours	4hours	12 hours	96 hours	6 days
- 5 to 5°C	8 hours	16 hours	72 hours	8 days	14 days

Note: In damp or humid weather allow 50% more cure time.

Helpful Hints

1. Work quickly and carefully.
2. Use liberal amounts of fresh cement.
3. Do not attempt cementing in the rain or in the presence of moisture.
4. Do not cement when the temperature is below 40°F or above 90°F under direct sunlight.
5. Do not take shortcuts or bypass recommended steps.
6. Consult your cement manufacturer for specific questions or problems

Applicable Specification for Solvent Welding

ASTM D-2564 : Solvent cements for PVC plastic pipe and fitting

ASTM D-2855 : Marking solvent cemented joist with PVC pipe and fitting

ASTM F-493 : Solvent cements for CPVC plastic pipe and fitting

ASTM F-656 : Primers for use in solvent cement joints of PVC plastic pipe and fitting

Hydrostatic Pressure Testing

 WARNING	
	Failure to follow the safety precautions below may result in misapplication or improper installation and testing which can cause severe personal injury and/or property damage.

1. The last assembled joint should be fully cured before filling the system with water.
2. All valves and air relief mechanisms should be opened at the ends and elevations. The system should be filled slowly, flow velocities should not exceed 1 foot per second. This will prevent surge, water hammer, and air entrapment.
3. Water flow should continue until all entrapped air is completely flushed out of every branch of the system. Maintain the 1 ft/s velocity until every valve is checked. A rapid fluctuation of gauge needle during pressure rise may be an indication that entrapped air still remains in the system. Systems should include the appropriate air relief and vacuum breaker valves to vent air during normal operation after installation. Entrapped air is major cause of surge and burst failure in plastic piping systems.
4. After filling the system, do not pressurize until the responsible engineer is present to witness the test. All personnel in the vicinity of the system should wear safety glasses and hard hats. High voltage electrical equipment should be shielded from a possible spray.
5. The piping system should be pressurized to

125% of its maximum design operating pressure. This pressure must not exceed 1.5 times the working pressure of the lowest rated component in the system, i.e. flanges, unions, thread parts, valves, etc.

6. The pressure test should not exceed 1 hour. This should provide enough time to inspect all joints for leaks. If leaks are found, pressure must be relieved to repair the leak. The system should then be recharged and retested. Consult the factory if you have any questions concerning these steps.

 CAUTION
"CAUTION" identifies hazards or unsafe practices which can result in minor injury or product or property damage if instructions, including recommended precautions, are not followed.

Applicators

Select a suitable pure bristle type paint brush. Use a proper width brush or roller to apply the primer and cement (see chart below). Speedy application of cement is important due to its fast drying characteristics.

IMPORTANT NOTE: A dauber type applicator should only be used on pipe sizes 2" and below. For larger diameter pipe, a brush, swab, or roller must be used.

3 Rules and Guidelines

2 Threaded Connection

A. Selection of Materials

Power Threading Machine

Threading Ratchet and Pipe Vise (if hand pipe stock is used)

Pipe Dies designed for plastic

Strap Wrench

Teflon* Tape or an approved Teflon Paste

Cutting and Deburring Tool

Ring Gauge (L-1)

*Trademark of the EJ DuPont Company

B. Making the Pipe Thread

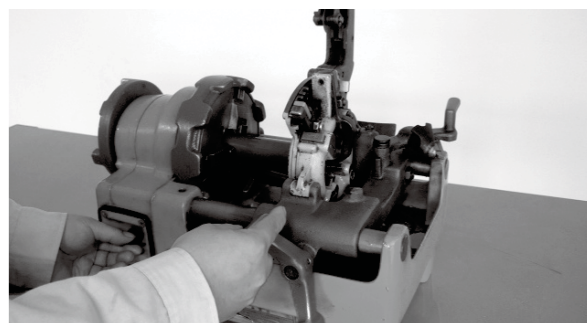
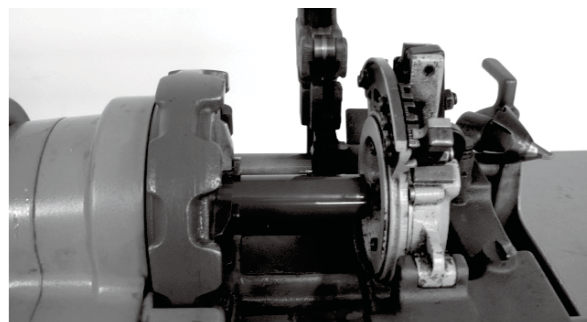
1. Cutting and Deburring

PVC or CPVC pipe should be cut square and smooth for easy and accurate threading. A miter box or similar guide should be used when sawing is done by hand. Burrs should be removed inside and out using a knife or plastic pipe deburring tool.

2. Threading

Threading Schedule 80 PVC and CPVC pipe can easily be accomplished using either a standard hand pipe stock or a power operated tool. Cutting dies should be clean and sharp. Power threading machines should be fitted with dies having a 5° negative front rake and ground especially for plastic pipe. Self-opening die heads, and a slight chamfer to lead the dies will speed the operation; however, dies should not be driven at high speeds or with heavy pressure. When using a hand held cutter, the pipe should be held in a pipe vise. To prevent crushing or scoring of the pipe by the vice jaws, some type of protective wrap such as canvas, emery paper, rubber, or light metal sleeve should be used. For hand stocks, the dies should

have a negative front rake angle of 5° to 10° PVC and CPVC is readily threaded and caution should be taken not to over-thread.



3. Preparing the Threaded Pipe

A ring gauge should be used to check the accuracy of the threads. Tolerance = $\pm 1\frac{1}{2}$ turns. The threads should then be cleaned by brushing away cuttings and ribbons.

After cleaning, apply a thread lubricant such as Teflon tape to the threaded portion of pipe. Wrap the tape around the entire length of threads beginning with number two thread from the end. The tape should slightly overlap itself going in the same direction as the threads. This will prevent the tape from unraveling when the fitting is tightened on the pipe. Overlapping in the wrong direction and the use of too much tape can affect tolerances between threads. This can generate stress in the wall of female fittings resulting in failure during operations.

4. Assembly of Threaded Joints

After applying thread lubricant, screw the threaded fitting onto the pipe. Screwed fittings should be started carefully and hand tightened. Threads must be properly cut and a good quality thread lubricant/tape must be used. If desired, the joint may be tightened with a strap wrench. IN NO CASE SHOULD A STILLSON TYPE WRENCH BE USED. The jaws of this type of wrench will scar and damage the pipe wall. Fittings should be threaded together until hand tight with an additional 1 to 1-1/2 turns more. Avoid stretching or distorting the pipe, fittings or threads by over tightening.

NOTE:

(1.) Never apply solvent cement to threaded pipe or threaded fittings. Do not allow cleaners, primers, or solvent cements to “run” or drip into the threaded portion of the fitting.

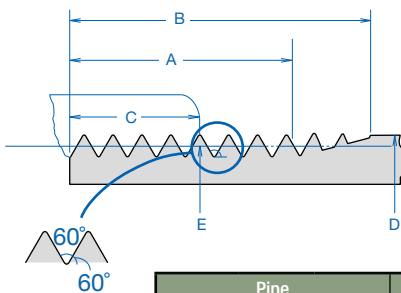
(2.) Some Teflon pastes contain chemicals that may be harmful to the pipe and fittings. You should consult the supplier or manufacturer of the paste before use.

(3.) Avoid screwing metallic male threads into plastic female threads. If connections to metal threads have to be made, the preferred method is to screw a plastic male thread into a metallic female thread. There are a variety of plastic fittings that are molded with metallic male or female NPT threaded inserts. The corrosion resistance of the metal insert will have to be taken into consideration. Consult the factory or your Eslon sales person for the availability of these metal insert fittings.

***Trademark of the E.I. DuPont Company.**



ANSI B1.20.1 Taper Pipe Thread Dimensions



Pipe			Threads										
Nominal Size	Outside Diameter D		Number of Threads Per Inch	Normal Engagement By Hand C		Length of Effective Thread A		Total Length : End of pipe to vanish point B		Pitch Diameter at end of Internal Thread E		Depth of Thread (Max.)	
	inch	mm		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
1/2"	0.840	21.34	14.0	0.320	4.48	0.5337	7.47	0.7815	10.94	0.77843	19.772	0.05714	1.451
3/4"	1.050	26.67	14.0	0.339	4.75	0.5457	7.64	0.7935	11.11	0.98887	25.117	0.05714	1.451
1"	1.315	33.40	11.5	0.400	4.60	0.6828	7.85	0.9845	11.32	1.23863	31.461	0.06957	1.767
1-1/4"	1.660	42.16	11.5	0.420	4.83	0.7068	8.13	1.0085	11.60	1.58338	40.218	0.06957	1.767
1-1/2"	1.900	48.26	11.5	0.402	4.83	0.7235	8.32	1.0252	11.79	1.82234	46.287	0.06957	1.767
2"	2.375	60.33	11.5	0.436	5.01	0.7565	8.70	1.0582	12.17	2.29627	58.325	0.06957	1.767
2-1/2"	2.875	73.03	8.0	0.682	5.46	1.1375	9.10	1.5712	12.57	2.76215	70.159	0.10000	2.540
3"	3.500	88.90	8.0	0.766	6.13	1.2000	9.60	1.6337	13.07	3.38850	86.068	0.10000	2.540
4"	4.500	114.30	8.0	0.844	6.75	1.3000	10.40	1.7337	13.87	4.38712	111.433	0.10000	2.540

3 Rules and Guidelines

3 Flange Connection

A. Selection of Materials

ESLON Gasket must be resistant to chemicals flowing through the line.

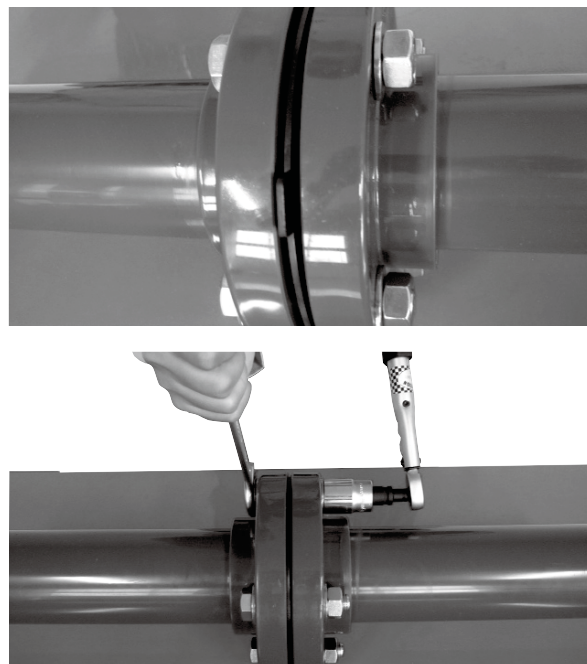
Fasteners-bolts, nuts, and washers, also resistant to the chemical environment. (Threads should be well lubricated.)

Torque Wrench-a necessity for tightening bolts in a manner that guards against excessive torque.

B. Flange Assembly

1. Join the flange to the pipe as outlined in the solvent cementing section or in the threading section depending on the joining method desired.
2. Align the flanges and gasket by inserting all of the bolts through the matching bolt holes. Proper mating of flanges and gaskets is very important for a positive seal.
3. Using a torque wrench, tighten each bolt in

a gradual sequence as outlined by the flange sketch. For final tightening of all bolts, find the recommended torque value in the chart below.

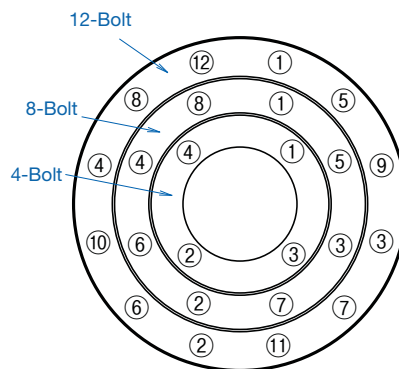


⚠ CAUTION

1. Do not over-torque flange bolts.
2. Use the proper bolt tightening sequence.
3. Make sure the system is in proper alignment.
4. Flanges should not be used to draw piping assemblies together.
5. Flat washers must be used under every nut and bolt head.

Recommended Bolt Size

Pipe Size (IPS)	No. Bolt Holes	Bolt Diameter	Approx. Bolt Length* in.
1/2	4	1/2	2 1/2
3/4	4	1/2	2 1/2
1	4	1/2	2 1/2
1 1/4	4	1/2	3
1 1/2	4	1/2	3
2	4	5/8	3 1/2
2 1/2	4	5/8	3
3	4	5/8	3 1/2
4	8	5/8	4
6	8	3/4	4
8	8	7/8	5
10	12	7/8	5
12	12	7/8	5



Bolt lengths were calculated using two Eaton flanges. Additional accessories or different mating surfaces will alter these numbers

NOTE: Flange bolt hole pattern meets ANSI B16.5

4

Safety Precautions

Safety Precautions

PVC and CPVC plastic piping systems will give excellent, maintenance-free performance over many years use, as long as the application and system design is correct and installation is properly done. It is most important to know the physical properties and limitations of PVC and CPVC plastic pipe when selecting these materials for an application and when designing the system. In every case, carefully read and follow installation procedures. It is very important to know the reputation and abilities of your installation crew or contractor. Professional engineering design of the system and close supervision of the assembly-installation procedures are highly recommended. Any questions concerning the application or installation of PVC and CPVC piping products should be directed to the supplier, manufacturer or consultant.

WARNING

Failure to follow the safety precautions below may result in misapplication or improper installation and testing which can cause severe personal injury and/or property damage.

General

1. Protect plastic pipe from contact with hard and pointed objects

Impact resistance is lower than for metals.

2. Avoid bending pipe

Pipe should not be bent in trenches or in above ground installations. Pipe and joints that are stressed reduce pressure rating and can cause failures.

3. Protect pipe from extreme heat and cold.

Extremes of heat and cold can cause failure. Allowing liquids to freeze inside PVC/CPVC and metallic piping can cause the pipe and/or the joints to crack. Freeze protection should be de-

signed into the system. Heat beyond design limits can also cause failures.

4. Protect pipe from sunlight.

PVC and CPVC pipe compounds normally do not provide extended protection from the ultraviolet rays of the sun. Therefore, unless the material has been specially formulated to provide protection, the product must be protected from sunlight or some damage may occur after years of exposure.

Application

1. NEVER use PVC and CPVC piping materials to transport compressed air or gases.

Compressed air or gases can surge to high pressures and cause explosive failures that could seriously injure personnel. PVC and CPVC pipe and fittings are excellent products in transporting water and corrosive chemicals.

2. Only use approved chemicals.

Certain chemicals, especially petroleum distillates and derivatives, can cause failure. Every chemical should be verified and approved in the manufacturer's chemical resistance chart.

System Design

1. Allow for flexibility in the design of the system.

Expansion and contraction is greater than for metals. This can cause breaks and leaking points if system design is not flexible to allow for movement. When laying smaller diameters of pipe below ground, the pipe should be "snaked" in the trench to allow for expansion and contraction. If solvent cement welding is used for the method of joining, snaking, pressure testing, and pipe movement should not be done until after the joints have been given sufficient time to dry.

2. Design safeguards into the system to prevent excessive surge pressures.

Water hammer (surge) in a PVC and CPVC system can cause pipe, fittings, and valves to burst. Liquid velocities should not exceed five feet per second maximum.

Installation

1. Carefully follow solvent cement welding instructions.

Failure to correctly follow application procedures can reduce the strength and integrity of joints and cause joint failures. By far, the majority of failures in PVC and CPVC systems are the result of shortcuts and/or improper joining techniques.

2. Remove rocks and other debris that can rupture pipe when burying pipe in trenches.

When laying PVC and CPVC pipe below the ground, care should be taken to remove all rocks, boards, empty primer and cement cans, brushes, bottles and other debris from the trench. Backfilling and top loading should be watched very carefully.

3. Follow recommended support spacing for PVC and CPVC piping systems.

The modulus of elasticity of PVC and CPVC pipe is smaller than metals. Maximum working temperature and room temperature should be considered when determining the required support spacing.

Testing

1. NEVER use compressed air or gas or air-over-water boosters to pressure test PVC or CPVC piping systems.

ONLY hydrostatic pressure testing is to be conducted on PVC and CPVC piping systems. Com-

pressed air or gases can surge to high pressures and cause explosive failures that could seriously injure personnel.

2. Carefully follow all instructions for hydrostatic pressure testing.

Failure to follow these instructions can result in a system failure.

3. Before water-testing a system, always bleed all entrapped air from system.

Entrapped air is a major cause of surge and burst failure in plastic piping systems.

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