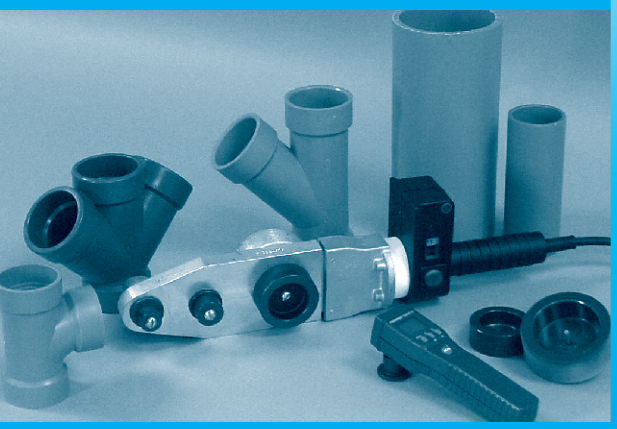

ACID WASTE SYSTEMS

Polypropylene
and PVDF
Materials

www.orionfittings.com

ORION®

ORION

Table of Contents

Acid Waste Piping Systems

All data, information, formulas, recommendations and suggestions provided in this manual concerning the use of our products are based upon tests and data believed to be reliable. However, it is the user's responsibility to determine the suitability for his own use of the products described herein, based on the actual conditions of use. Since the actual use by others is beyond our control, no guarantee, expressed or implied, is made by Orion Fittings as to the results to be obtained or to the effects of such use, nor does ORION FITTINGS assume any liability arising out of the use of the information herein. The information contained herein cannot be construed to be absolutely complete since additional information may be necessary or desirable when exceptional or particular circumstances or conditions exist or because of applicable laws or government regulations.

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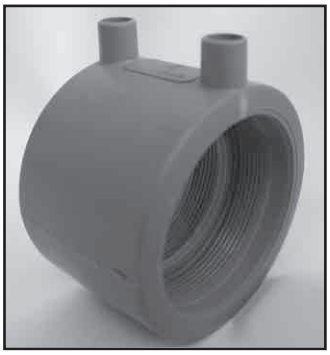
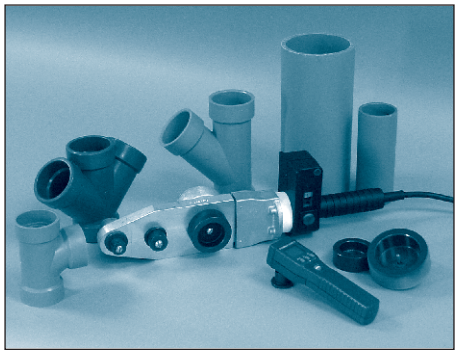
No Hub Fittings

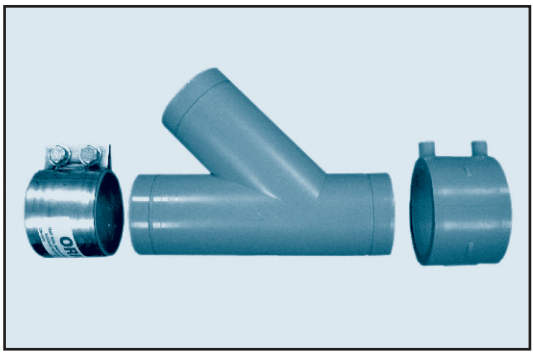


Rionfuse CF (clamp-free)

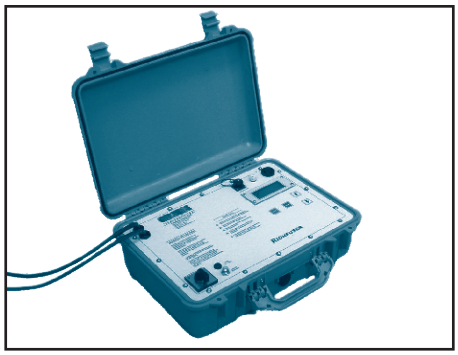


Socket Fusion Systems

Floor Drains and Cleanouts



No-Hub Systems



Electrofusion Equipment

Socket Fusion, No-Hub, and Rionfuse Clamp Free® electrofusion acid waste piping systems are in two primary material types*, flame retardant Blueline polypropylene and for extreme applications or where fire is an issue, Plenum Plus PVDF (Polyvinylidene Fluoride).

This acid waste piping system also has all the accessories necessary to offer a truly complete plumbing system including finished floor cleanouts, floor drains, sinks, neutralization tanks and monitors.

When it's time to install a corrosion resistant drainage system, look to the company that can handle all your needs, from the sink to the final hook-up and everything in between. Look to Orion.

Resins

- Flame-retardant polypropylene (proxylene)
- Polyvinylidene fluoride (PVDF)

Joining Systems

With the broadest range of joining systems in the industry, whatever your needs are, you can count on Orion to provide the exact system you need to meet your requirements.

- No Hub (Mechanical joint)
- Rionfuse Clamp Free® electrofusion
- Socket Fusion

Pipe

- Standard: Schedule 40 (optional: Schedule 80)
- 1½"–12" sizes available
- Blueline flame-retardant; non-flame retardant brownline; Polyvinylidene Fluoride PVDF

Fittings

- Schedule 40
- Blueline flame-retardant; chemically resistant
- Wide variety of fittings
- 1½"– 6" molded sizes available
- 8"–12" fabricated sizes available
- Sizes above 12" can be fabricated

Accessories

To complete your corrosion resistant drainage system, Orion offers a complete line of laboratory accessories, including: sinks, tanks, drains and other accessories. Information on these accessories can be found in Orion's tank and accessories catalogs.

Monitors

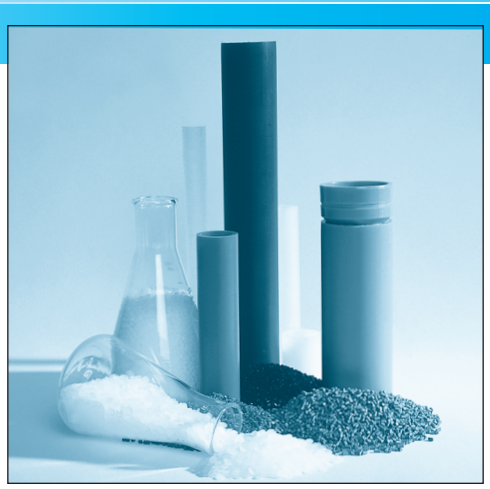
Floor drains & cleanouts

Laboratory sinks

Tanks

ORION

Materials



Polypropylene

Blueline

All Orion piping systems are available molded from proxylene blueline resin. Proxylene (an Orion trade name) is a fire retardant, thermoplastic material with excellent resistance to most common organic and mineral acids, their salts, strong and weak alkalis and most organic chemicals.

Proxylene is compounded of polypropylene Type II copolymer with fire retardant additives. Polypropylene is a thermoplastic material characterized by a stable and highly ordered stereoregular molecular chain. This structure produces a rigid material with good strength and aging properties.

Proxylene qualifies for Underwriters Laboratory certification of V-2 when tested under UL Subject 94 in thickness of .150 and over. Based on parameter of ASTM D635, Proxylene also meets established industry criteria for self-extinguishing. Proxylene qualifies under ASTM D2843 smoke chamber test with a maximum value of less than 50. It also does not contain toxic gases.

Brownline

Brownline pipe offers all the advantages of Blueline Proxylene in installations where non-fire retardant materials are acceptable.

Kynar® brand Polyvinylidene Fluoride (PVDF)

PVDF offers superior chemical resistance to many solvents, acids, bases and halogens. It is designed for extra tough applications where plastic may not have been considered before.

It has been certified to meet ASTM E-84 and UL 723 standards for flame spread and smoke generation. The certification means that for the first time PVDF piping systems, when approved, can be used safely in areas such as air plenums where typically local codes have prohibited use of plastic pipe due to fear of fire.

PVDF is able to maintain much of its strength and chemical resistance within a broad temperature range of –40°F to 285°F.

Sizes from 1½" to 12" are offered. Single wall and double wall configurations are available. Molded drainage pattern fittings are also offered.

ORION

No-Hub/Plain End Joining Systems

Orion No-Hub/Plain End Joining System

The Drainage System Engineers and Contractors Choose.

Orion is recognized as an industry leader in the manufacture of economical, easy-to-install No-Hub drainage systems.

Our exclusive No-Hub coupling greatly simplifies installation by eliminating the need for expensive tools such as torque wrenches, power packs and special tightening tools. One easy-to-use, inexpensive pipe grooving tool and standard tool box hand tools are all that are needed to produce tight, leak-free joints every time. Thus, significant savings can be realized by specifying and installing Orion Polypropylene or PVDF drainage systems assembled with a mechanical joining system.

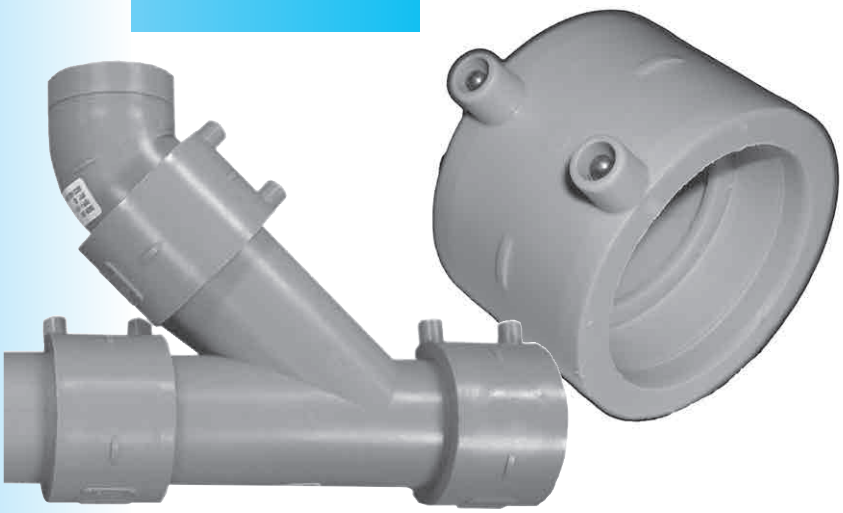
Check the many other features of the No-Hub drainage system. You'll see why it has become a favorite of engineers and contractors in hundreds of installations in the United States, Canada and Puerto Rico.

Features

- Fast and easy installation means lower labor cost
- All fittings pre-grooved at factory
- 10' length standard (20' sections available) All pipe factory grooved
- No heat or hot water required
- Easily assembled with ordinary hand tools
- Easy to clean out and maintain (made with maintenance people in mind)
- Reusable and easy to move and change. Ideal when systems modifications are called for in remodeling projects. Mechanical Joint systems are adaptable for use with other materials, including PVDF.
- Stainless steel outer coupling
- No metal in joint
- Suitable for below ground applications
- Easy fabrication of complex sub-assemblies

ORION

Rionfuse CF® (Clamp-Free) Electrofusion System



Orion's state-of-the-art joining system for polypropylene provides unsurpassed ease of installation and joint strength.

When ease of installation is a prime consideration, there's really only one joining system you should consider . . . the Rionfuse CF® (Clamp Free) electrofusion system.

The electrofusion coil is made of heavy gauge wire that is molded right into the Rionfuse coupling. Each coupling is manufactured using state-of-the-art robotic technology resulting in a system that is made to the highest possible standards. This system provides a joint strength that has never before been seen in this industry. Above all, unlike our competition, the Rionfuse CF joint does not require clamping devices at any time during installation. Each wire terminal is protected with shrouds, which means couplings do not arrive damaged. The embedded wire configuration and heavy gauge wire means strong durable coils that won't break.

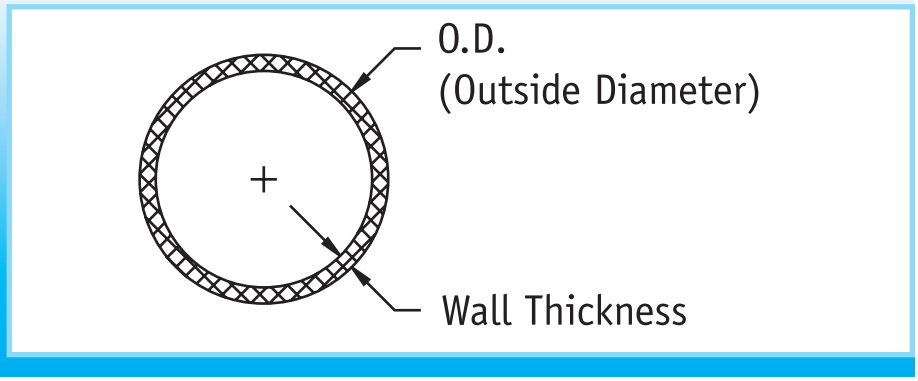
Check the many features Rionfuse CF® offers. You'll see why it quickly has become a favorite of engineers and contractors in hundreds of installations in the United States, Canada, Mexico, and around the world.

Features

- No Clamps required
- Fast and easy installation means lower cost
- Multiple joining capabilities and both sides of couplings fuse at the same time, saving labor
- Positive joints are made in just a few minutes
- Uses same plain end fittings as our No-Hub system
- 10' lengths standard (20' sections available)
- Easily assembled with ordinary hand tools & Rionfuser® electrofusion machine
- Strongest joint in the industry.
- Non-corrosive polypropylene provides excellent resistance to a wide variety of chemicals and acids
- "State-of-the-art" joining system
- Joining machine tough and reliable, joint after joint
- Available in sizes of 1½" - 12"

Available in Polypropylene or PVDF

Pipe



Schedule 40	Average OD	Wall Thickness	Weight per Stick (lbs) PP	Weight per Stick (lbs) PVDF	Sticks per Bundle PP	Sticks per Bundle PVDF
1½	1.900	0.145	4	8.8	10	10
2	2.375	0.154	6	12.5	10	5
3	3.500	0.216	10	18	5	3
4	4.500	0.237	15	28	3	1
6	6.625	0.280	24	48	1	1
8	8.625	0.322	42	N/A	1	N/A
*10	9.842	0.300	65	N/A	1	N/A
*12	12.400	0.380	91	N/A	1	N/A
*14	13.976	0.430	115	N/A	1	N/A

Schedule 80	Average OD	Wall Thickness	Weight per Stick (lbs) PP	Weight per Stick (lbs) PVDF	Sticks per Bundle PP	Sticks per Bundle PVDF
1½	1.900	0.200	6	9	10	5
2	2.375	0.218	7	12	10	5
3	3.500	0.300	13	25	5	3
4	4.500	0.337	18	34	3	1
6	6.625	0.432	29	58	1	1
**8	8.625	N/A	55	N/A	1	N/A
**10	10.750	N/A	96	N/A	1	N/A
**12	12.750	N/A	113	N/A	1	N/A

	Weight per Stick (lbs)	Sticks per Bundle

* denotes “Nominal” OD size. Actual pipe manufactured to class 45 psi metric standards

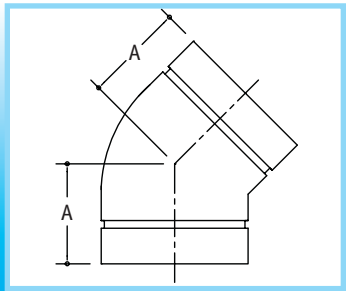
** denotes Special run required—not a standard stock item. Contact Orion for delivery times.

Dimensions are in inches unless noted otherwise. Dimensional tolerance = ±⅛"

No-Hub/Plain End Connections

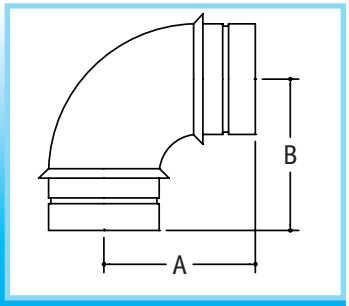
Fittings available in Polypropylene or PVDF

45E
1/8 Bend



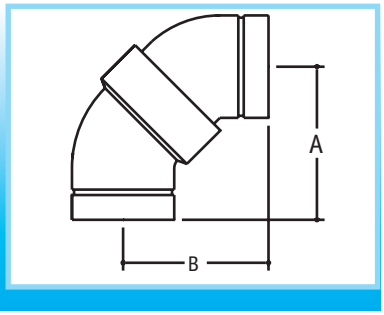
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	1½"					2.70	5.67
2	1½"					2.62	5.50
3	2⅜"					12.75	26.78
4	2¾"					19.46	40.87
6	4⅛"					30.25	63.53

90E
1/4 Bend



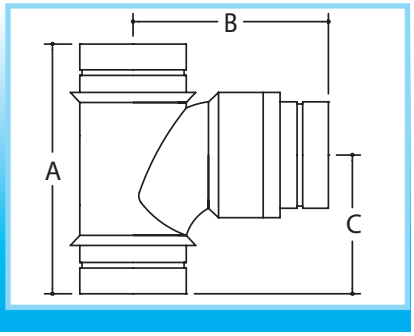
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	2⅝"	2⅝"				2.45	5.15
2	3½"	3½"				3.73	7.83
3	4¾"	4¾"				16.83	35.34
4	5⅜"	5⅜"				18.58	39.02
6	9⅞"	9⅞"				61.45	129.00

90E
Long Sweep



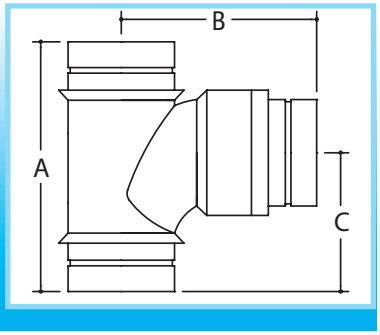
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	2⅞"	2⅞"				4.2	9.6
2	3⅜"	3⅜"				5.8	12.3
3	5"	5"				20.8	46.2
4	5⅞"	5⅞"				40.6	84.8

90T
Sanitary Tee



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	4¾"	3⅜"	2⅝"			4.30	9.03
2	5½"	4¼"	3¼"			7.68	16.13
3	7⅝"	6⅛"	4¼"			18.08	37.97
4	10¼"	7⅛"	5¾"			34.93	73.35

R90T
Reducing Sanitary Tee



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
2x1½	5⅛"	2¾"	2⅝"			4.75	10.01
3x1½	6¾"	3½"	3⅝"			10.22	22.00
3x2	6¾"	3⅝"	3⅝"			10.70	22.40
4x1½	10⅛"	8¼"	5¾"			35.18	71.60
4x2	10⅛"	6½"	5¾"			34.86	76.50
4x3	10⅛"	6¾"	5¾"			34.77	69.60

Weights are approximate, in ounces.

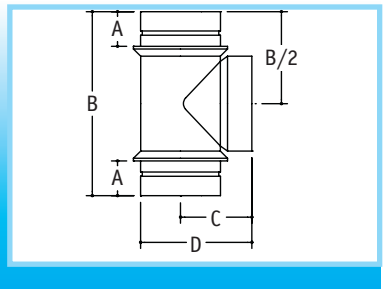
Dimensions are in inches. Dimensional tolerance = ±⅛"

No-Hub/Plain End Connections

Acid Waste Fitting Dimensions

Fittings available in Polypropylene or PVDF

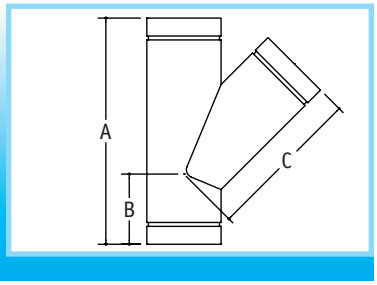
COT
Clean Out Tee



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	1"	7⅞"	2⅛"	3⅝"		4.85	10.19
2	1"	5½"	2⅛"	3½"		8.75	18.38
3	1⅜"	10¾"	2⅞"	4⅝"		22.73	47.73
4	1⅝"	12¼"	3½"	5⅞"		19.93	41.85
6	2⅛"	20¼"	9⅝"	13⅜"		68.61	144.10

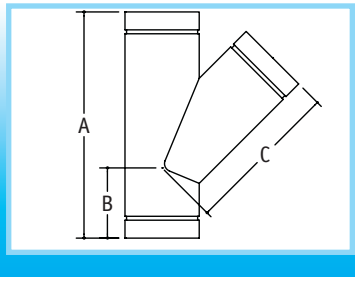
counter-sunk plug included

45Y
Single Wye



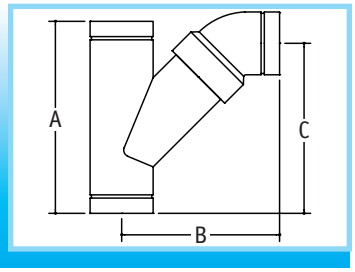
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	6⅜"	2"	4⅜"			3.74	7.85
2	7¼"	2¼"	5"			7.63	16.02
3	9⅛"	2⅝"	7½"			20.53	43.11
4	11⅛"	3⅜"	8¾"			30.80	64.68
6	19⅞"	6½"	11⅜"			99.96	209.90

R45Y
Reducing Single Wye



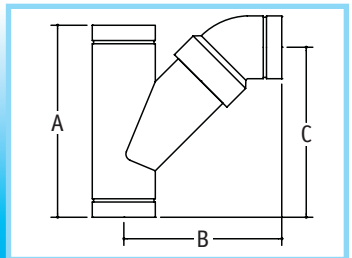
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
2x1½	7¼"	2¼"	5"		6.75	14.21	
3x1½	7¼"	1½"	5¾"			10.43	11.80
3x2	8"	2½"	6½"			17.33	35.20
4x1½	8⅜"	1⅞"	7⅝"			19.25	40.62
4x2	8½"	2⅝"	6¾"			17.88	36.80
4x3	10⅛"	2½"	7¾"			24.45	50.10
6x2	19⅞"	6⅝"	12⅝"			94.88	189.60
6x3	19⅞"	6⅝"	12⅝"			93.56	186.70
6x4	19⅞"	6⅝"	13"			94.49	189.60

LTY
Long Turn Wye



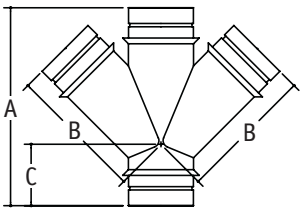
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	6⅜"	4⅞"	5½"			5.34	11.21
2	7¼"	5¾"	6½"			10.30	21.63
3	9⅛"	8⅜"	8½"			29.18	61.28
4	11⅛"	10"	9⅞"			35.78	75.14
6	19⅞"	13⅞"	16"			132.36	278.00

RLTY
Reducing Long Turn Wye



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
2x1½	7¼"	5⅝"	6⅜"			8.70	17.60
3x1½	6¼"	5⅝"	5⅝"			13.82	27.60
3x2	8"	6⅜"	7¼"			19.55	40.10
4x1½	8½"	7½"	8¼"			20.93	42.60
4x2	8⅝"	7"	7⅝"			20.70	41.80
4x3	10⅛"	9"	9"			33.10	66.80
6x2	19⅞"	11"	15⅞"			95.81	190.60
6x3	19⅞"	11"	15"			102.20	205.80
6x4	19⅞"	11⅝"	15⅜"			109.30	220.70

D45Y
Double Wye



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	6¼"	4"	2⅜"			8.60	18.06
2	8¼"	5⅜"	3"			14.87	31.23
3	8¾"	6⅛"	2⅝"			29.60	62.16
4	11¾"	8"	3¾"			37.43	78.60
6	19⅞"	11½"	6½"			147.62	310.00

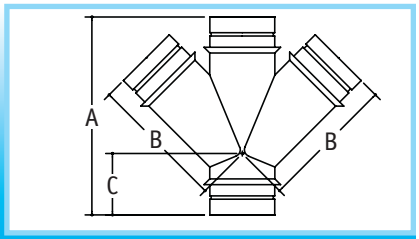
Weights are approximate, in ounces.

Dimensions are in inches. Dimensional tolerance = ±⅛"

No-Hub/Plain End Connections

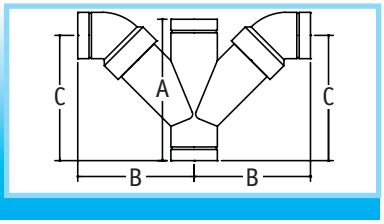
Fittings available in Polypropylene or PVDF

RD45Y
Reducing Double Wye



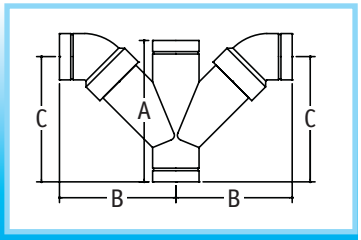
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
2x1½	8⅜"	5⅜"	3"			14.33	29.70
3x1½	6¼"	5¼"	1½"			12.18	26.30
3x2	8¾"	6⅛"	2⅞"			19.60	38.70
4x1½	8⅜"	7¾"	1⅞"			26.14	53.80
4x2	8⅜"	7⅞"	1⅞"			23.10	48.20
4x3	10⅛"	7⅜"	2¾"			30.03	60.90
6x2	19⅞"	12⅝"	6⅜"			122.90	250.60
6x3	19⅞"	12½"	6⅜"			104.36	210.70
6x4	19⅞"	12⅞"	6⅜"			106.22	215.70

DLTY
Double Long Turn Wye



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	6⅜"	4⅜"	5⅛"			10.26	21.55
2	8¼"	5"	6⅜"			16.23	34.08
3	8¾"	7⅞"	7¾"			46.90	98.49
4	11⅝"	9½"	10¼"			64.19	134.80
6	19⅞"	13⅜"	15⅝"			181.86	381.90

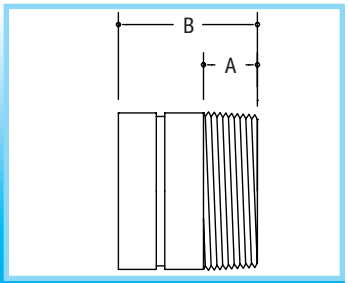
RDLTY
Reducing Double Long Turn Wye



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
2x1½	8⅜"	5¾"	7¼"			18.37	37.80
3x1½	6¼"	5¾"	5⅝"			15.80	34.60
3x2	8¾"	6⅜"	7⅜"			23.86	48.70
4x1½	8⅜"	7½"	7¾"			27.69	37.60
4x2	8⅜"	7⅝"	7¾"			29.12	83.60
4x3	10⅜"	8½"	8¾"			47.33	97.60
6x2	19⅞"	11"	15⅞"			108.86	218.00
6x3	19⅞"	12⅝"	16⅜"			113.46	230.71
6x4	19⅞"	13"	16⅜"			132.98	268.70

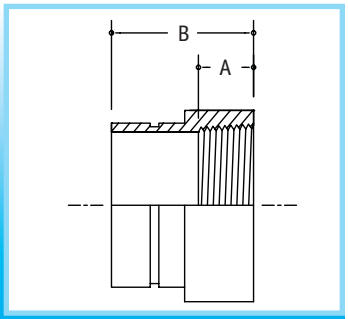
Weights are approximate, in ounces .

MA
Male Adapter



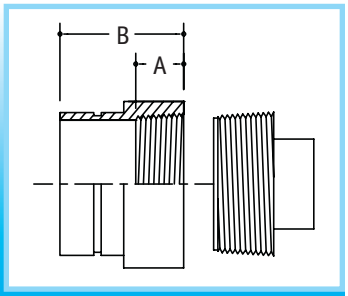
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	⅞"	2⅛"				1.12	2.35
2	¾"	2"				1.38	2.90
3	1¼"	3"				3.85	8.08
4	1¼"	3"				5.38	11.30
6	2"	4⅜"				15.30	32.13

FA
Female Adapter



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	⅞"	2⅛"				1.12	2.35
2	¾"	2"				1.90	3.99
3	1¼"	3"				4.93	10.35
4	1¼"	3"				7.78	16.34
6	2"	4⅜"				17.48	36.71

COA
Cleanout Adapter

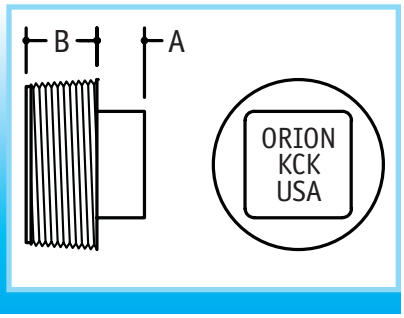


Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	⅞"	2⅛"				1.57	3.30
2	¾"	2"				2.94	6.17
3	1¼"	3"				6.76	14.20
4	1¼"	3"				11.88	24.95
6	2"	4⅜"				25.41	53.36

Dimensions are in inches. Dimensional tolerance = ±⅛"

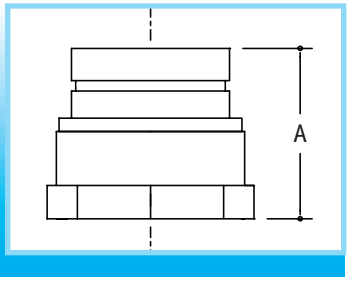
Fittings available in Polypropylene or PVDF

CPC
Cleanout Plug



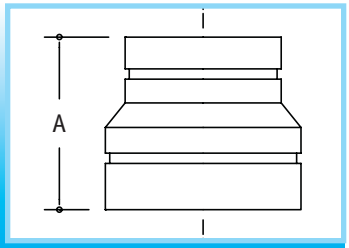
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	⅜"	1"				1.57	.95
2	¾"	1"				1.02	2.14
3	¾"	1⅛"				1.83	3.84
4	¾"	1⅛"				4.10	8.61
6	1"	1⅜"				7.93	16.65

CAP
Cap



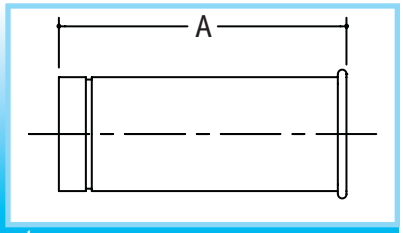
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	2¼"					2.06	4.33
2	2⅝"					3.16	6.64
3	3¼"					6.80	14.28
4	3⅜"					12.53	26.31
6	5¼"					26.55	55.76

RB
Reducing Bushing



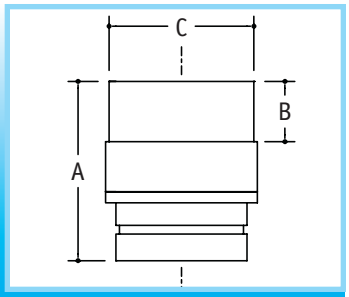
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
2x1½	2⅛"					1.52	3.19
3x1½	2½"					4.11	8.63
3x2	2½"					3.34	7.01
4x1½	4¼"					5.98	12.56
4x2	2¾"					5.03	10.56
4x3	3"					5.35	11.24
6x2	5⅜"					19.34	40.61
6x3	5½"					20.10	42.21
6x4	5¾"					20.08	42.17

DHA
Duriorn Hub X MJ Adapter



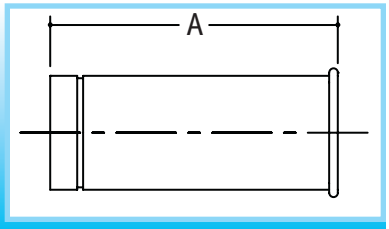
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	6"					2.73	5.73
2	6"					3.60	7.56
3	6"					7.80	16.38
4	6"					10.96	23.02
6	6"					19.60	41.16

DA
Duriorn X MJ Adapter



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	3⅛"	1⅛"	2¼"			1.96	4.12
2	3⅜"	1⅛"	2⅝"			3.60	7.56
3	4⅝"	1⅛"	3¾"			8.60	18.06
4	5⅜"	1⅛"	4¾"			13.62	28.60

CIA
Cast Iron Hub X MJ Adapter



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	6"					2.73	5.73
2	6"					3.60	7.56
3	6"					7.80	16.38
4	6"					10.96	23.02
6	6"					19.60	41.16

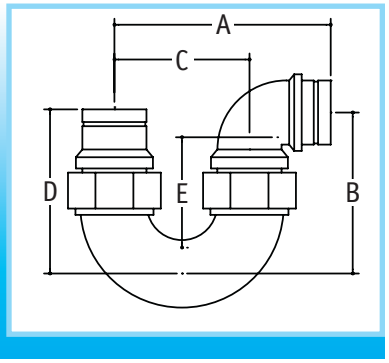
Weights are approximate, in ounces.

Dimensions are in inches. Dimensional tolerance = ±⅛"

No-Hub/Plain End Connections

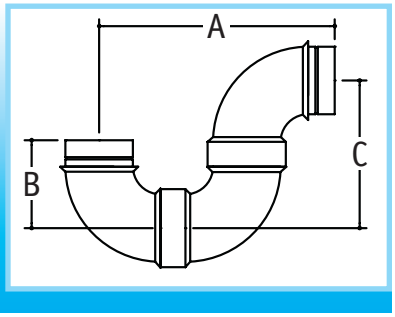
Fittings available in Polypropylene or PVDF

UTP
Full drop union P-trap



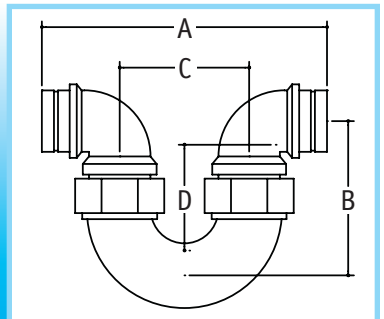
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	6½"	5⅛"	4"	5"	3½"	11.73	24.63
2	7¾"	5⅝"	5"	5½"	3⅝"	18.73	39.33

RBP
P Trap



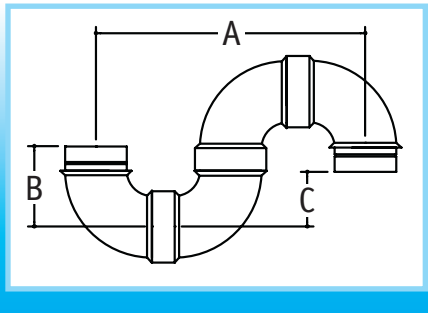
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	6⅝"	2⅝"	4"			7.01	14.72
2	9⅛"	3⅜"	5⅝"			11.76	24.70
3	12¾"	4¾"	8"			42.29	88.81
4	15"	5⅝"	9½"			58.59	123.00
6	21¼"	7⅛"	13⅜"			192.25	403.70

UTR
Running Trap



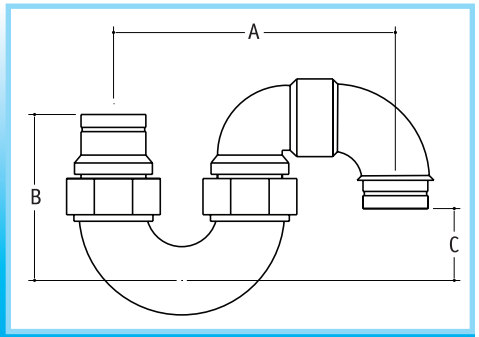
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	9"	5⅛"	4"	3½"		13.85	29.09
2	10½"	5½"	5"	3½"		19.10	40.11

RBPS
S Trap



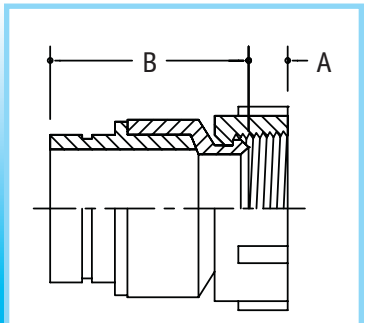
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	8¾"	2¾"	2"			9.09	19.09
2	11⅜"	3½"	2¼"			15.72	33.01
3	16⅛"	4¾"	3⅜"			55.02	115.50
4	18⅞"	5⅝"	3⅞"			77.17	162.10

UTPS
S Trap



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	8⅛"	5"	2⅝"			13.10	27.51
2	10⅛"	5½"	2¼"			22.73	47.73

RLNS
Sink Tail Piece Adapter



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	½"	2½"				2.50	5.25
2	¾"	4"				4.66	9.79

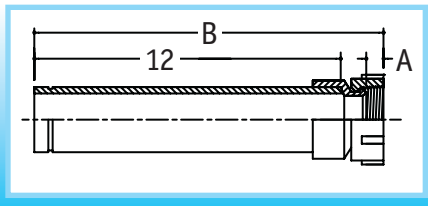
Weights are approximate, in ounces.

Dimensions are in inches. Dimensional tolerance = ±⅛"

No-Hub/Plain End Connections

Acid Waste Fitting Dimensions

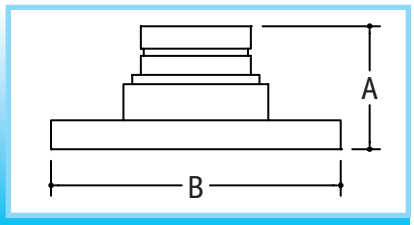
Fittings available in Polypropylene or PVDF



RLNS12

Sink Tail Piece Extension

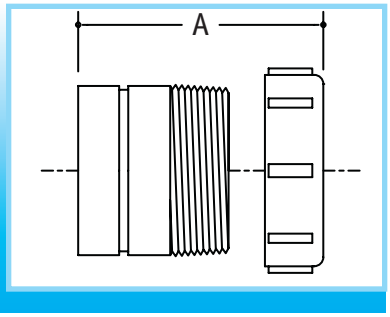
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
1½	½"	12¾"				7.33	15.39
2	¾"	13⅝"				9.80	20.58



FLG

Flange

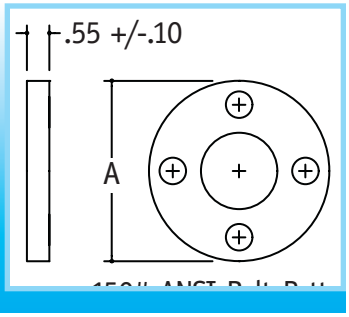
Size:	A	B	150# ANSI Pattern Holes	WEIGHT PP	WEIGHT PVDF
1½	2¼"	5"	4	6.16	12.94
2	2⅝"	6"	4	8.48	17.81
3	3¼"	7"	4	18.18	38.18
4	3¼"	9"	8	26.63	55.92
6	5⅛"	11"	8	46.86	98.41



SJ

Slip Joint Adapter

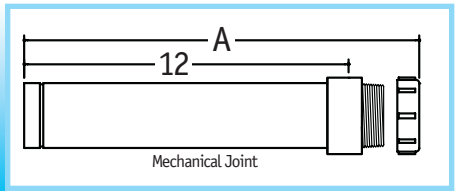
Size:	A	B	C	D	E	F	WEIGHT PP	WEIGHT PVDF
1½	2¼"						1.38	2.90
2	2½"						2.26	4.75



BACK UP

Backup Ring

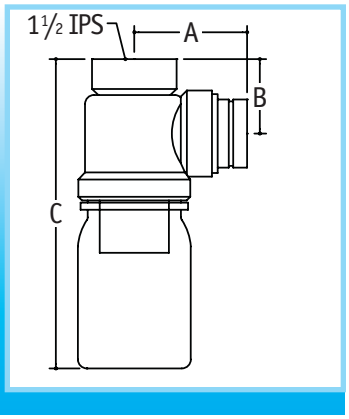
Size:	A	150# ANSI Pattern Holes
1½	5"	4
2	6"	4
3	7"	4
4	9"	8
6	11"	8



SJA12

Slip Joint Adapter X 12

Size:	A	B	C	D	E	F	WEIGHT PP	WEIGHT PVDF
1½	13⅜"						7.00	14.70
2	13⅝"						9.14	19.19



BT1

Bottle Trap w/o Bottle

Size:	A	B	C	WEIGHT PP
w/o BOTTLE	3⅛"	2⅛"		8.15
1PT			8⅝"	10.60
1QT			10¼"	11.73
2QT			11⅝"	14.00

Weights are approximate, in ounces

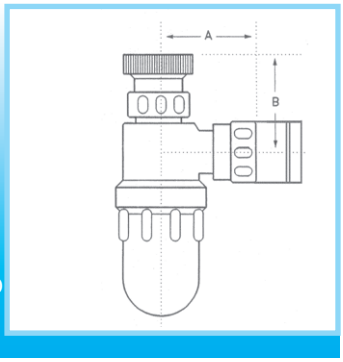
Dimensions are in inches. Dimensional tolerance = ±⅛"

No-Hub/Plain End Connections

Fittings available in Polypropylene or PVDF

BT2

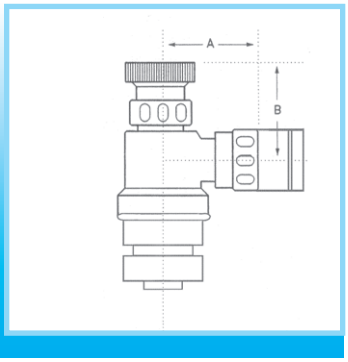
Adjustable Riser Bottle Trap
with female threads



Size:	A	B	WEIGHT PP	WEIGHT PVDF
1½"	3"	7¼"		

BT3

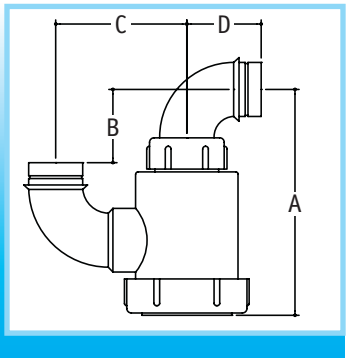
adustable Riser Bottle Trap
Without bottle for use with
glass mason Jar



Size:	A	B	WEIGHT PP	WEIGHT PVDF
1½"	3"	7¼"		

DT1

Drum Trap



Size:	A	B	C	D	WEIGHT PP	WEIGHT PVDF
1½"	9¼"	3½"	5"	3⅝"	25.20	52.92
2	10"	3⅜"	5¾"	3⅛"	27.95	58.70

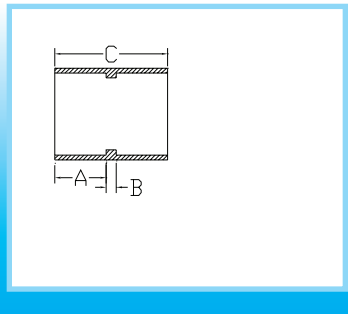
Weights are approximate and in ounces.

Dimensions are in inches. Dimensional tolerance = ±⅛"

Acid Waste Fitting Dimensions

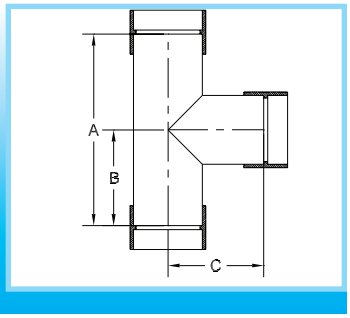
Available in Polypropylene

CLS
COUPLING



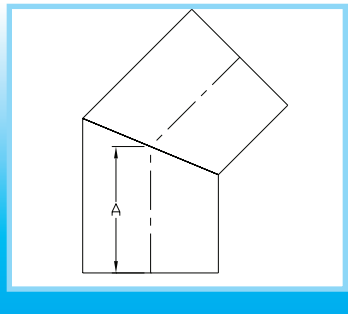
Size:	A	B	C	WEIGHT PP
8	2½	½	5½	
10	2½	½	5½	
12	2½	½	5½	

90T
90 TEE



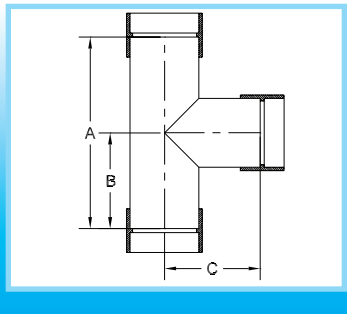
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
8	24	12	12				
10	24	12	12				
12	24	12	12				

45E
⅛ BEND



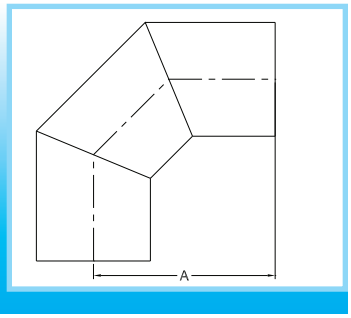
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
8	8 1/16						
10	8½						
12	8⅞						

R90T
REDUCING 90 TEE



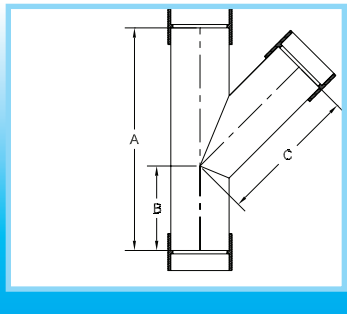
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
8x6	24	12	12				
8x6	24	12	12				
10x6	24	12	12				
10x8	24	12	12				
12x8	24	12	12				
12x10	24	12	12				

90E
¼ BEND



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
8	13¾						
10	14 13/16						
12	15 13/16						

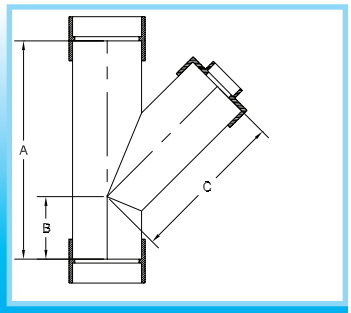
45Y
SINGLE WYE



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
8	27 3/16	7 13/16	17⅝				
10	30 7/16	8¼	20				
12	33 7/16	8⅝	22 3/16				

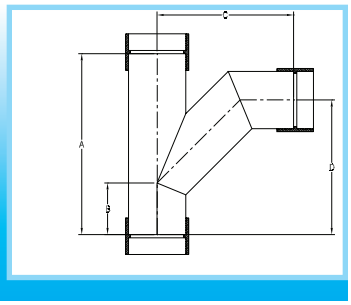
Available in Polypropylene

R45Y
Reducing Single Wye



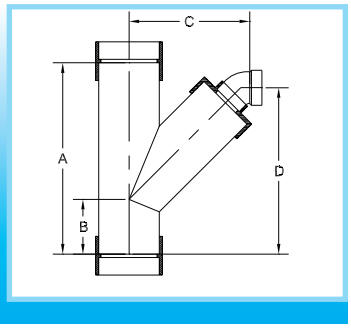
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
8x6	7 3/16	7 13/16	19 7/16				
8x6	7 3/16	7 13/16	19 7/16				
10x6	30 7/16	8 1/4	22 1/4				
10x8	30 7/16	8 1/4	22 1/4				
12x8	33 7/16	8 5/8	24 13/16				
12x10	33 7/16	8 5/8	24 13/16				

LTY
Long Turn Wye



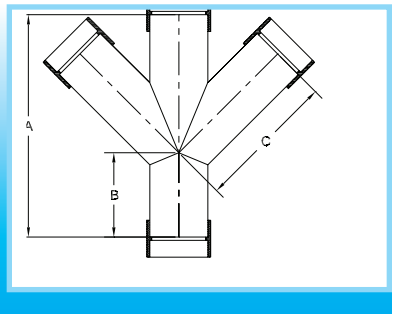
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
8	27 3/16	7 13/16	20 1/2	20 1/4			
10	30 7/16	8 1/4	22 5/8	22 3/8			
12	33 7/16	8 5/8	24 9/16	24 5/16			

RLTY
Reducing Long Turn Wye



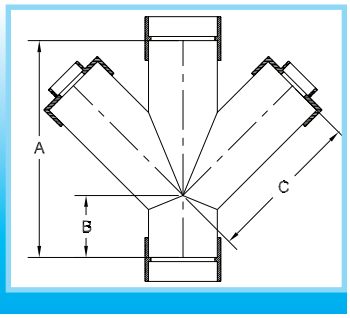
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
8x6	7 3/16	7 13/16	18 15/16	23 11/16			
8x6	7 3/16	7 13/16	20 1/2	24 9/16			
10x6	30 7/16	8 1/4	22 13/16	27 3/8			
10x8	30 7/16	8 1/4	27 7/8	28 1/16			
12x8	33 7/16	8 5/8	29 11/16	30 1/4			
12x10	33 7/16	8 5/8	30 7/16	30 7/16			

D45Y
Double Wye



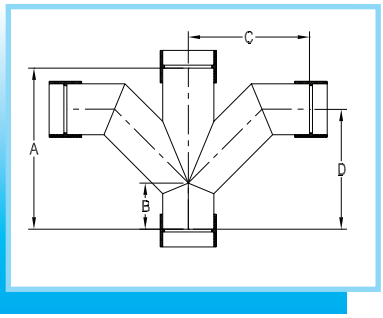
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
8	27 3/16	7 13/16	17 5/8				
10	30 7/16	8 1/4	20				
12	33 7/16	8 5/8	22 3/16				

RD45Y
Reducing Double Wye



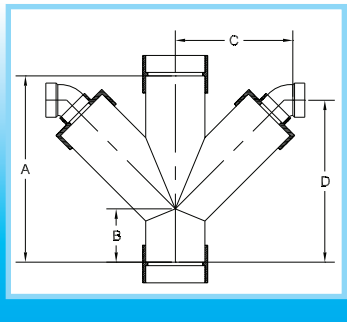
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
8x6	7 3/16	7 13/16	18 15/16	23 11/16			
8x6	7 3/16	7 13/16	20 1/2	24 9/16			
10x6	30 7/16	8 1/4	22 13/16	27 3/8			
10x8	30 7/16	8 1/4	27 7/8	28 1/16			
12x8	33 7/16	8 5/8	29 11/16	30 1/4			
12x10	33 7/16	8 5/8	30 7/16	30 7/16			

DLTY
Double Long Turn Wye



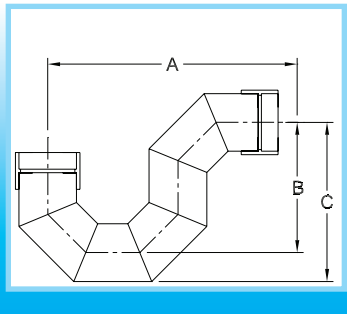
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
8	27 3/16	7 13/16	20 1/2	20			
10	30 7/16	8 1/4	22 5/8	22 3/8			
12	33 7/16	8 5/8	24 9/16	24 5/16			

RDLTY
Reducing Double Long Turn Wye



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
8x6	7 3/16	7 13/16	18 15/16	23 11/16			
8x6	7 3/16	7 13/16	20 1/2	24 9/16			
10x6	30 7/16	8 1/4	22 13/16	27 3/8			
10x8	30 7/16	8 1/4	27 7/8	28 1/16			
12x8	33 7/16	8 5/8	29 11/16	30 1/4			
12x10	33 7/16	8 5/8	30 7/16	30 7/16			

PTRAP
P Trap



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
8	37 1/4	19 1/2	23 3/4				
10	40 1/2	21 5/8	27				
12	49	22	28				

Complete with Grate and Plug

Floor Drain AWFDSTD

Accessories Available

- Sediment Bucket
- Flashing Clamp
- ½" Trap Primer
- Solid Cover
- Funnel
- Vandal Proofing

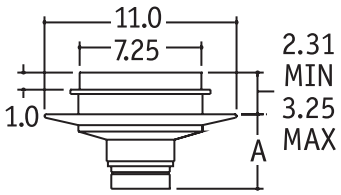
Recommended Specification: ORION AWFDSTD Corrosion Resistant Floor Drain manufactured from fire retardant polypropylene material conforming to ASTM D4101. Grate, plug, and covers are to be made from fiber-filled polypropylene for strength and durability.

Recommended Specification: ORION AWFDSTD Corrosion Resistant Floor Drain manufactured from PVDF material conforming to ASTM D3222. Grate, plug, and covers are to be made from fiber-filled PVDF for strength and durability.

Note:

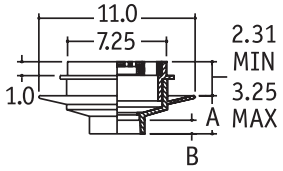
Funnel replaces plug in AWFDSTD grate.

AWFDSTD
No-Hub/Plain End



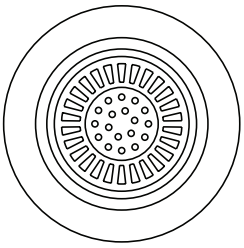
Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
2	4.54					45.57	95.178
3	4.60					42.43	89.04
4	4.87					50.18	105.77
6	3.65					85.28	179.99

AWFDSTD
Socket Fusion



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
2	4.16	.88				46.50	94.66
3	2.94	1.13				43.30	90.77
4	2.94	1.36				44.10	91.84
6	3.50	1.98				80.26	165.44
2 FIP	5.12	.80				47.20	95.60
3 FIP	3.00	1.40				45.80	91.84
4 FIP	2.94	1.50				50.98	108.71
6 FIP	3.50	1.99				90.84	186.34

AWFDSTD
Top View



(Side Outlet) Complete with Grate and Plug

Floor Drain AWFDSO

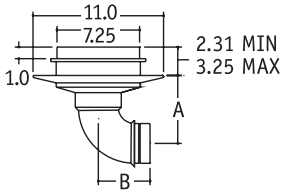
Accessories Available

- Sediment Bucket
- Flashing Clamp
- 1½" Trap Primer
- Solid Cover
- Funnel
- Vandal Proofing

Recommended Specification: ORION AWFDSO Corrosion Resistant Floor Drain manufactured from Fire Retardant Polypropylene material conforming to ASTM D4101. Grate, plug, and covers are to be made from fiber-filled polypropylene for strength and durability.

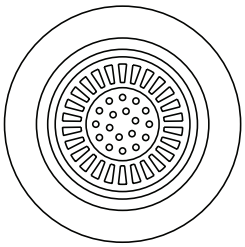
Recommended Specification: ORION AWFDSO Corrosion Resistant Floor Drain manufactured from PVDF material conforming to ASTM D3222. Grate, plug, and covers are to be made from fiber-filled PVDF for strength and durability.

AWFDSO
No-Hub/Plain End



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
2	6.69	3.41				50.23	105.29
3	7.84	4.56				60.13	121.99
4	6.97	5.60				62.58	125.12

AWFDSO
Top View



Complete with Grate and Plug

Floor Drain AWFDPT

Floor Drain with Trap complete with grate and plug

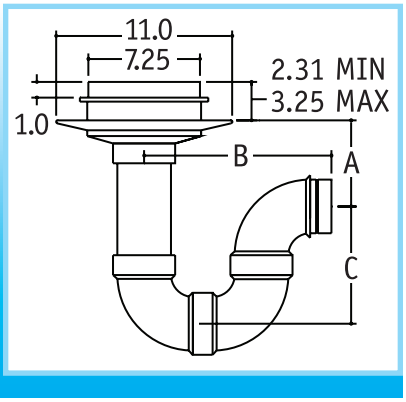
Accessories Available

- Sediment Bucket
- Flashing Clamp
- 1½" Trap Primer
- Solid Cover
- Funnel
- Vandal Proofing

Recommended Specification: ORION AWFDPT (integral trap) Corrosion Resistant Floor Drain manufactured from Fire Retardant Polypropylene material conforming to ASTM D4101. Grate, plug, and covers are to be made from fiber-filled polypropylene for strength and durability.

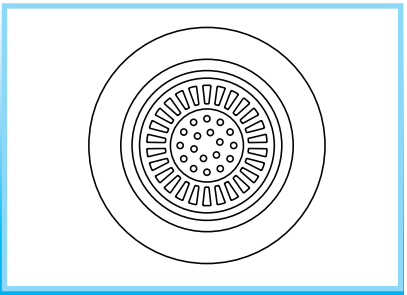
Recommended Specification: ORION AWFDPT (integral trap) Corrosion Resistant Floor Drain manufactured from PVDF material conforming to ASTM D3222. Grate, plug, and covers are to be made from fiber-filled PVDF for strength and durability.

AWFDPT
No-Hub/Plain End



Size:	A	B	C	D	E	WEIGHT PP	WEIGHT PVDF
2	5.87	9.33	5.92			58.26	118.22
3	6.57	12.31	7.71			85.59	175.32
4	6.04	15.24	9.64			102.69	205.77

AWFDPT
Top View

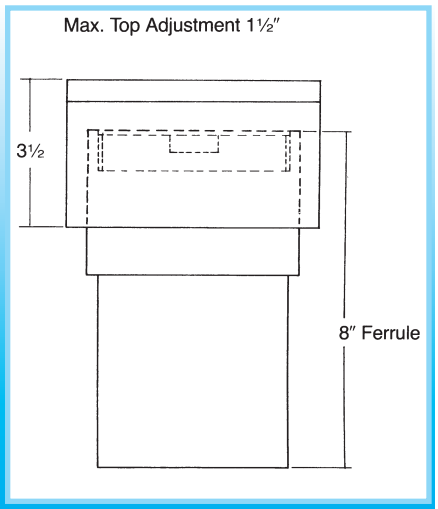


Corrosion Resistant Finished Floor Cleanout

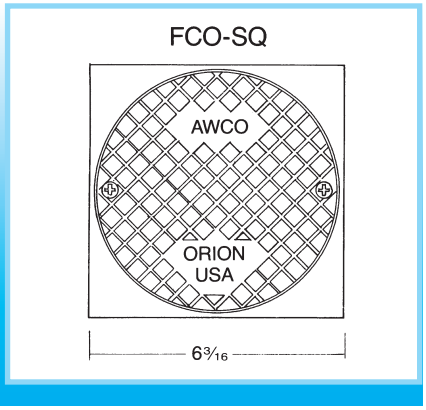
In applications where a cleanout is required in a finished floor, Orion offers either a nickel bronze or brushed bronze cover. The letters AWCO (Acid Waste Cleanout) are cast in the cover to help prevent confusion with a sanitary sewer cleanout if maintenance is required.

Both styles of covers are supplied with a ferrule with a countersunk plug and adjustable top to facilitate easy installation when the floor is poured.

FCO
Side View

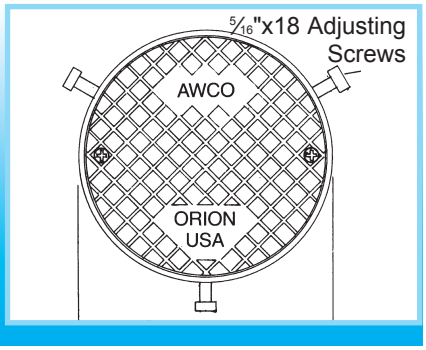


FCO-SQ
Top View



Model & Size	Finish Available
3" FCO Square	Nickel Bronze; Brushed Bronze
4" FCO Square	Nickel Bronze; Brushed Bronze

FCO-RD
Top View



Model & Size	Finish Available		
3" FCO Round	Nickel Bronze, Brushed Bronze	PP	PVDF
4" FCO Round	Nickel Bronze; Brushed Bronze	PP	PVDF

Recommended Specification: ORION FCO corrosion resistant finished floor cleanout. Manufactured from fire retardant polypropylene material conforming to ASTM D 4101, ferrule supplied with countersunk plug and adjustable top with round (square) nickel bronze (brushed bronze) cover, with AWCO (Acid Waste Cleanout) cast in cover.

Recommended Specification: ORION FCO corrosion resistant finished floor cleanout. Manufactured from PVDF material conforming to ASTM D 3222, ferrule supplied with countersunk plug and adjustable top with round (square) nickel bronze (brushed bronze) cover, with AWCO (Acid Waste Cleanout) cast in cover.

FLAME RETARDANT POLYPROPYLENE

Property	Unit	Value	Test Method
Nominal Melt Flow (at 230° C / 2.16 kg)	g/10 min	0.75	ASTM D1238
Density (at 73° F)	g/cm^3	0.901	ASTM D792
Tensile Strength (at Yield)	psi	3400	ASTM D638
Elongation at Yield	%	15	ASTM D638
Modulus of Elasticity	psi	150,000	ASTM D790A
Izod Impact, notched (at 73° F – 1/8" bar)	ft-lb/in	13	ASTM D256
Rockwell Hardness	R scale	77	ASTM D785
Melting Point	° F	324	Aristech
	° C	162	Aristech
Specific Gravity	—	.905	ASTM D792
Water absorption (24hrs @73°)F	%	.02	ASTM D570
	Flammability		
Rate of Burning	cm/min	1.25	ASTM D635
Smoke Density Rating	%	48	ASTM D2843
Burning Class	—	V-2	UL 94
Limiting Oxygen Index	%	17	ASTM D2863
Polypropylene Material	Cell Class	PP0348	ASTM D4101
Corrosive Waste Drainage System		Complies	ASTM F1412

NON-FLAME RETARDANT POLYPROPYLENE

Property	Unit	Value	Test Method
Nominal Melt Flow (at 230° C / 2.16 kg)	g/10 min	0.75	ASTM D1238
Density (at 73° F)	g/cm^3	0.901	ASTM D792
Tensile Strength at Yield	psi	3400	ASTM D638
Elongation at Yield	%	15	ASTM D638
Modulus of Elasticity	psi	150,000	ASTM D790A
Izod Impact, notched at 73° F – 1/8" bar	ft-lb/in	13	ASTM D256
Rockwell Hardness	R scale	77	ASTM D785
Melting Point	° F	324	Aristech
	° C	162	Aristech
Specific Gravity		.905	ASTM D792
Water absorption 24hrs @73° F	%	.02	ASTM D570
Polypropylene Material	Cell Class	PP 0348	ASTM D4101
Corrosive Waste Drainage System		Complies	ASTM F1412

PVDF

Property	Unit	Value	Test Method
Specific Gravity		1.76	ASTM D-792
Water Absorption 24 Hrs.@ 73ºF	%	.03	ASTM D-570
Tensile Strength psi @ 73º F	psi	6,000	ASTM D-638
Modulus of Elasticity @73ºF	psi	210,000	ASTM D-638
Flexural Modulus psi	psi	9,700	ASTM D-790
Izod Impact Strength @ 73ºF (Notched)	Ft-Lb/In	3.8	ASTM D-256
Hardness	Shore D	78	ASTM D-2240
Melting Point	ºF	330	ASTM D-3418
Coefficient of Thermal Expansion	In/InºF x 10^{-5}	7.4	ASTM D-696
Thermal Conductivity	BTU-in/HR/Sq.Ft./ºF	1.18	ASTM D-433
Heat Distortion Temp. @ 66psi	psi	251	ASTM D-648
Heat Distortion Temp. @ 264psi	psi	221	ASTM D-648
Resistance to Heat at Continuous Drainage	ºF	230	
Limiting Oxygen Index (%)	%	44	ASTM D-2836
Flame Spread		0-5	ASTM E-84
Smoke Developed		35	ASTM E84
Underwriters Lab Rating (sub. 94)		V-0	UL. 94
PVDF Material	Class	Type I, Grade II	ASTM D3222
Corrosive Drainage Waste System		Complies	ASTM F1673

Installing Drainage Systems

Proper installation of Orion drainage systems is extremely important in assuring that installations perform flawlessly for years.

Supporting a Drainage System

Since Polypropylene has a higher expansion rate than that of other materials, it cannot be anchored to restrict movement from thermal expansion incurred from chemical reactions or the inadvertent dumping of hot water into the acid waste system.

Orion recommends the use of clevis or loop type pipe hangers. If split-ring or other hanger types are used the hanger should be a size larger than the pipe being supported so the polypropylene pipe is free to move. (For example, if supporting 2" pipe, use 3" hangers, or when supporting 3" pipe, use 4" hangers, etc.)

NOTICE

- The use of uni-strut type hangers or any hanger which relies on clamp tightness for support voids manufacturers warranty.
- Do not clamp a polypropylene pipe system tightly. It must be free to move.

Recommended Hanger Spacing for Orion Polypropylene Drainage Systems Schedule 40 & Schedule 80*

Pipe size, inches	Hanger Spacing, feet
1½	4
2	4
3	5
4	6
6	6
8	6
10	7
12	7

*Or per code.

Recommended Hanger Spacing for Orion PVDF Drainage Systems*

Pipe, size, inches	Hanger spacing, feet
1½	4.5
2	5
3	5.5
4	6
6	7

*Or per code.

Underground Installation of Orion Acid Waste Systems

The trench as excavated for the pipe installation must be free of loose stones, building materials or outcroppings, and must provide minimum clearance around pipe of half the pipe diameter on each side (horizontally) and one pipe diameter above and below (vertically). The trench shall be backfilled over the unexcavated base to a depth of one pipe diameter with clean backfill. The backfill material shall be free of stones and foreign matter and shall be capable of passing a No. 10 screen.

Mechanical Couplings

Part	Material	Type	Standard	Size,"	Galvanic Reaction
Outer band	Stainless steel	AISI 304-2B	ASTM A240	—	—
Bolt bar	Stainless steel	AISI 304-2B	ASTM A240	—	—
Bolt*	Carbon steel	Cadmium plated with dichromate coating	Grade 8	5/16-18x1/4	—
Nut*	Carbon steel	Cadmium plated with dichromate coating	—	5/16-18	—
Washers*	Carbon steel	Cadmium plated with dichromate coating	—	5/16	—
Welding	Stainless steel	Automatic MIG with Tri-Mix	—	—	Basically nil

Coupling body: Made from thermoplastic resin. This material has similar chemical resistant properties as the pipe and fittings manufactured by Orion. It has been selected because of its excellent ability to be used as a gasket.

		ASTM		
Density	.914	D792Tensile	2100	D1238
Low temp. brittleness	(-76(F)	D746		
Vical softness point	185(F (85(C)	D1525		
Flexural stiffness	12,700 psi	D747		
Torsional stiffness	14,900 psi	D1043		

*Bolt, nut, washer are plated to meet 100 hour salt spray test per ASTM D117.

The piping shall be installed over this material and tested in accordance with applicable plumbing codes.

After testing, initial backfilling must be carefully accomplished, still using No. 10 screen material until fill surrounds the pipe. When the selected backfill meets a depth of one diameter over the pipe, then backfilling can proceed with normal fill until complete. Fill shall be compacted using hand held compacting equipment when fill is midway up the pipe, and again when the fill is over one diameter over the pipe. Heavy-duty compacting equipment can be used after the initial backfill is completed.

Testing Procedures

Fully inspect the installed piping for evidence of mechanical abuse and suspect joints.

Split the system into convenient test sections, not exceeding 1000 ft. The piping should be capped off with an expandable plug at the end of the pipesection to be tested.

We suggest that straight lengths of pipe should be backfilled between the fittings being tested, prior to testing.

Slowly fill the pipe section with water, taking care to remove all trapped air in the piping. Use air release valves in any high spots in the system. Do not pressurize at this stage.

Leave the pipe for at least one hour, to allow an equilibrium temperature to be achieved.

Visually check the system for leaks. If clear, check for and remove any remaining air from the system.

Pressurize the system to a suggested maximum of 10 feet head by means of a standard 10 foot standing water test using a 10-foot vertical riser, or a low pressure hand pump.

Leave the line at 10 feet of head pressure for a period of up to 8 hours, during which time the water level should not change, (standing water test) or the pressure gauge reading should not change (hand pump test).

If there is a significant drop in pressure, or extended times are required to achieve the desired pressure, either joint leakage has occurred or air is still trapped in the line. In this event, inspect for joint leaks. If none are found, check for trapped air - this air must be removed prior to continuing the test.

If joints are found to be leaking, the system must be fully drained and the joints repaired. Dry or marginal Rionfuse joints can be easily re-fused by following the procedures detailed in this catalog. Leaking joints can be backwelded if necessary. It should not be necessary to cut out joints, unless the joint has previously been overheated, contaminated, fractured or very badly made in the first place. Where joints have to be cut out and replaced, the procedures for field cuts and joint installation detailed in this manual should be followed.

Repeat the 10 feet head test after repairing any leaking joints, following the procedure described above.

NOTICE

Tanks should not be pressure tested.

Pressure:

This system was designed for acid waste of a gravity nature. Some low-pressure applications are possible, but should be checked with factory engineering department before specification or installation. Do not use compressed air or other compressed gases for testing or use.

The manufacturer DOES NOT RECOMMEND No-Hub/Plain End couplings for use in systems used for dumping hot water appliances (autoclaves, dishwashers, sterilizers, etc). For these systems, Orion socket fusion is recommended on main stacks carrying hot water and all runs within 75 feet of appliance.

Thermal Expansion Table

Polypropylene

	ΔT	ΔT	ΔT	ΔT	ΔT	ΔT	ΔT
Length	40ºF	50ºF	60ºF	70ºF	80ºF	90ºF	100ºF
20 ft	.57	.70	.85	.99	1.13	1.27	1.42
40 ft	1.13	1.42	1.67	1.98	2.27	2.55	2.83
60 ft	1.70	2.12	2.55	2.97	3.40	3.82	4.25
80 ft	2.27	2.83	3.40	3.97	4.53	5.10	5.66
100 ft	2.83	3.54	4.25	4.96	5.66	6.37	7.08

PVDF

	ΔT	ΔT	ΔT	ΔT	ΔT	ΔT	ΔT
Length	40ºF	50ºF	60ºF	70ºF	80ºF	90ºF	100ºF
20	.72	.90	1.08	1.26	1.44	1.62	1.80
40	1.44	1.80	2.16	2.52	2.88	3.24	3.60
60	2.16	2.70	3.24	3.78	4.32	4.86	5.40
80	2.88	3.60	4.32	5.04	5.76	6.48	7.20
100	3.60	4.50	5.40	6.30	7.20	8.10	9.00

To calculate thermal expansion, use the formula: $^3L=12eL^3T$

e= coefficient of thermal expansion

e = 5.9 x 10^{-5} in/in ºF (.000059") for Polypropylene
e = 7.5 x 10^{-5} in/in ºF (.000075") for PVDF

Polypropylene Example:

Highest temperature expected: 100ºF

Lowest temperature expected: 50ºF

Total variation: Δ T: 50ºF

Length of run: 20 ft.

Change in T: 50ºF

Change in L: .708"

Where: Change in L = change in length from thermal expansion or contraction (inches)

ΔT = difference between highest and lowest temperature expected (0ºF)

e = coefficient of thermal expansion

L = length of pipe run (feet)

Example:

L = 20ft

ΔT = 50(F

ΔL = 12 x .000059 x 50 x 20

ΔL = .708"

Pipe Dimension Data—ASTM F1412

Nom Size inches	Average O.D.	Schedule 40 wall thickness	Schedule 80 wall thickness
1½	1.900	.145	.200
2	2.375	.154	.218
3	3.500	.216	.300
4	4.500	.237	.337
6	6.625	.280	.432
8	8.625	.322	.500
10	10.750	.365	.593
12	12.750	.406	.687

All Orion Drainage Pipe Dimensions Meets ASTM F1412 Specifications

Pitch

Orion drainage systems are designed to allow for 1/4" pitch per foot. Installation should be planned to allow for full usage of this pitch.

Recommended Pipe Support Schedule For Above Ground Installations.

- Data based on Orion pipe supported on uniform centers, carrying liquids having specific gravities up to 1.30, without major load concentration.
- These recommendations are for uninsulated lines. If pipe is insulated, the spans should be reduced by 35% to accommodate the weight of insulation.
- Never support pipe in tight clamps; lines must be free to move axially.
- Do not use compressed air or other compressed gases for testing of or use in any Orion system. Use of compressed air or gases voids any and all warranties.

Polypropylene* High Purity Pipe (maximum span, feet).

Schedule 40
Temperature, ºF

Pipe Size	70	120	150
½"	4	3	continuous
¾"	4	3	continuous
1"	4.5	3	continuous
1½"	5	3.5	continuous
2"	5	3.5	2
3"	6	3.5	2.5
4"	6	4.5	3

Schedule 80
Temperature, ºF

Pipe Size	70	120	150
½"	5	3.5	continuous
¾"	5	3.5	continuous
1"	5.5	4	continuous
1½"	5.5	4	2.5
2"	6	4.5	2.5
3"	7	5	3
4"	7.5	5	3.5

*Whiteline or Standardline

PVDF High Purity Pipe (maximum span, feet).

Schedule 40
Temperature, ºF

Pipe Size	70	120	150
½"	4	3	continuous
¾"	4.5	3	continuous
1"	4.5	3.5	continuous
1½"	5.5	4	continuous
2"	5.75	4	2
3"	6.5	4.5	2.5
4"	7.5	5	3

Schedule 80
Temperature, ºF

Pipe Size	70 Deg F	120	150
½"	5	3.5	continuous
¾"	5.5	3.5	continuous
1"	5.5	4	continuous
1½"	6	4	2.5
2"	6.5	4.5	2.5
3"	7	5	3
4"	8	5	3.5

Maximum Service Temperatures

As with all plastics, Polypropylene and PVDF have minimum and maximum service temperatures. Exposure to certain chemicals may effect the maximum service temperatures of plastics and therefore our chemical compatibility charts should be considered when determining the maximum working temperatures of our piping systems. The joining method will also effect the maximum temperature of any plastic piping system.

The below information can be used as a guide for determining the maximum service temperatures for polypropylene and PVDF based on water as the medium.

Polypropylene

Socket Fusion

- 200ºF - Constant or Intermittent Flow

Rionfuse CF

- 210ºF - Constant Flow
- 210ºF - Intermittent Flow

PVDF

Socket Fusion/Rionfuse CF

- 285ºF - Constant or Intermittent Flow

No Hub/Mechanical Joint

- 180°F - Intermittent Flow
- 160ºF - Constant Flow

Assembly

Joint Assembly

Many of the questions you may have about assembling Orion No-Hub/Plain End, socket fusion and electrofusion systems are answered in this section. However, if after reading this section, you still have questions, please call our technical department at (913) 342-1653, 8:00 am – 4:30 pm, Monday-Friday, Central Time.

Cold Weather Assembly

As with all types of plastic piping systems, installation in cold weather can be difficult and therefore is not recommended at temperatures below 40°F unless proper precautions are taken.

In cold weather installations, the area being installed must be shielded from the wind and other outside elements and the joints must be covered with heating blankets, prior to being installed.

If joints are installed in cold weather, they may be difficult to seal. In addition, if above ground systems are installed in cold temperatures and the area is later heated, the system will expand possibly causing undue stress on the entire system. In view of this, special care must be taken when designing and installing any plastic piping system in cold weather. The above information applies to SocketFusion, Electrofusion and No-Hub/Plain End systems.

Assembly instructions are supplied as separate brochures. Please contact Orion.

Pipe:

Flame Retardant Blueline® Schedule 40

Orion's Blueline acid waste pipe will be manufactured to the dimensions and tolerances of ASTM F1412 from fire retardant material in 10' lengths. Pipe will be cylindrical and straight. Pipe will be supplied with factory grooves. The polypropylene material will conform to ASTM D4101.

Non Flame Retardant Brownline® Schedule 40

Orion's Brownline acid waste pipe will be manufactured to the dimensions and tolerances of ASTM F1412 from non-flame retardant material in 10' lengths. Pipe will be cylindrical and straight. Pipe will be factory grooved. The polypropylene material will conform to ASTM D4101.

Fittings

Orion Blueline acid waste fittings will be manufactured to schedule 40 dimensions per ASTM F1412 and will be made of fire retardant polypropylene. Fitting layouts will conform to ASTM D3311 and F1412. The polypropylene material will conform to ASTM D4101.

Joining Methods:

No Hub-Mechanical Joint®

Pipe and fittings will be joined using the No-Hub method, utilizing all plain end factory-grooved fittings joined with Orion's No-Hub couplings. Each No-Hub coupling will have an outer band of 300 series stainless steel with 5/16" bolts, nuts and washers plated to meet a 100-hour salt spray test per ASTM B117. The No-Hub joint will conform to the requirements of ASTM F1412.

Rionfuse CF® (Clamp-Free) Electrofusion

The Orion Rionfuse CF System will utilize the same plain end fittings as the No Hub system, but are to be joined using the Rionfuse CF couplings. The Rionfuse machine will be used to produce a hermetically sealed joint. The joints will conform to ASTM 1290, Technique I.

Socket Fusion

All fittings are to be socket end. All joints are to be made with Orion's heat tools to produce a hermetically sealed joint. Joints and joining procedures will conform to ASTM 2657, Technique I.

ORION®

Engineer:_____

Job Name: _____ Contractor:_____

Job Location: _____ Representative:_____

Polypropylene Schedule 80

Pipe:

Flame Retardant Blueline® Schedule 80

Orion's Blueline acid waste pipe will be manufactured to the dimensions and tolerances of ASTM F1412 from fire retardant material in 10' lengths. Pipe will be cylindrical and straight. Pipe will be factory grooved. The polypropylene material will conform to ASTM D4101.

Non-Flame Retardant Brownline® Schedule 80

Orion's Brownline acid waste pipe will be manufactured to the dimensions and tolerances of ASTM F1412 from non-flame retardant material in 10' lengths. Pipe will be cylindrical and straight. Pipe will be factory grooved. The polypropylene material will conform to ASTM D4101.

Fittings

Orion's Blueline acid waste fittings will be manufactured to Schedule 40 dimensions per ASTM F1412 and will be made of fire retardant polypropylene. Fitting layouts will conform to ASTM D3311 and F1412. The polypropylene material will conform to ASTM D4101.

Joining Methods:

No-Hub Mechanical Joint®

Pipe and fittings will be joined using the No-Hub method, utilizing all plain end factory-grooved fittings joined with Orion's No-Hub couplings. Each No-Hub coupling will have an outer band of 300 series stainless steel with 5/16" bolts, nuts and washers plated to meet a 100-hour salt spray test per ASTM B117. The No-Hub joint will conform to the requirements of ASTM F1412.

Rionfuse CF® (Clamp-Free) Electrofusion

The Orion Rionfuse CF System will utilize the same plain end fittings as the No Hub system, but are to be joined using the Rionfuse CF couplings. The Rionfuse machine will be used to produce a hermetically sealed joint. The joints will conform to ASTM 1290, Technique I.

Socket Fusion

All fittings are to be socket end. All joints are to be made with Orion's heat tools to produce a hermetically sealed joint. Joints and joining procedures will conform to ASTM 2657, Technique I.

ORION®

Engineer:_____

Job Name: _____ Contractor:_____

Job Location: _____ Representative:_____

Polyvinylidene Fluoride (PVDF) Schedule 40

Pipe:

PVDF Schedule 40

Orion's Plenum Plus acid waste pipe will be manufactured to the dimensions and tolerances of ASTM F1673 from PVDF material in 10' lengths. Pipe will be cylindrical and straight. Pipe will be factory grooved. The PVDF material will conform to ASTM D3222.

Fittings

Orion's Plenum Plus fittings will be manufactured to Schedule 40 dimensions per ASTM F1673 and will be manufactured from PVDF material conforming to ASTM D3222. Fitting lay-out will conform to ASTM D3311 and F1673.

Joining Methods:

No-Hub Mechanical Joint®

Pipe and fittings will be joined using the No-Hub method, utilizing all plain end factory-grooved fittings joined with Orion's No-Hub couplings. Each No-Hub coupling will have an outer band of 300 series stainless steel with 5/16" bolts, nuts and washers plated to meet a 100-hour salt spray test per ASTM B117. The No-Hub joint will conform to the requirements of ASTM F1673.

Rionfuse CF® (Clamp-Free) Electrofusion

Pipe and fittings will be the same as the No-Hub system, but are to be joined with Orion's Rionfuse CF couplings. The Rionfuse machine will be used to produce a hermetically sealed joint. The joints will conform to ASTM 1290, Technique I.

Socket Fusion

All fittings are to be socket end. All joints are to be made with Orion's heat fusion tool to produce a hermetically sealed joint. Joints and joining procedures will conform to ASTM 2657, Technique I.

ORION®

Engineer:_____

Job Name: _____ Contractor:_____

Job Location: _____ Representative:_____

Underwriters Laboratories, Inc.
Northbrook, IL Santa Clara, CA
Melvillve, NY Research Triangle, NC
an independent, non profit organization of public safety

CERTIFICATE I

Mfr.'s Ref No. R15537
Control No. 1P91

Orion Fittings, Inc., 2850 Fairfax Trafficway, Kansas City, KS 66115 is qualified under the classification and Follow-up Services of Underwriters Laboratories Inc. to furnish molded plastic, Classified as to Surface Burning Characteristics. This manufacturer is therefore authorize to issue this Certificate for the bulk shipment of material described below as it's representation that such material is manufactured in compliance with the requirements established by Underwrites Laboratories, Inc. for this class of product. This certificate does not indicate proper application of installation of the units and does not apply to other material, which may be used at the location specified.

Trade Name: Orion "Super Blue" and "Plenum Plus®" PVDF Pipe and Fittings

Classification:

Underwriters Laboratories, Inc.
Classified
Molded Plastic
Surface Burning Characteristics
UL 723 (ASTM E-84)

Flame Spread: 5
Smoke Developed: 35

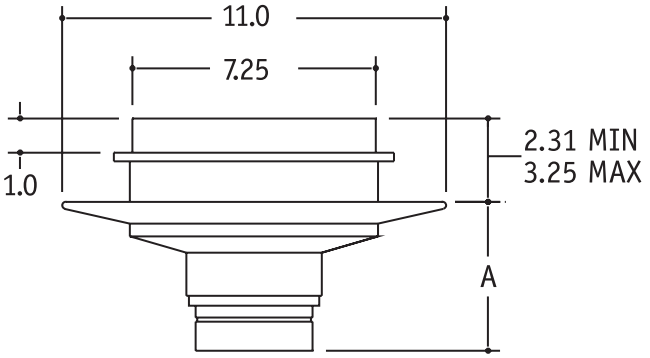
Acid Waste Floor Drain Submittal

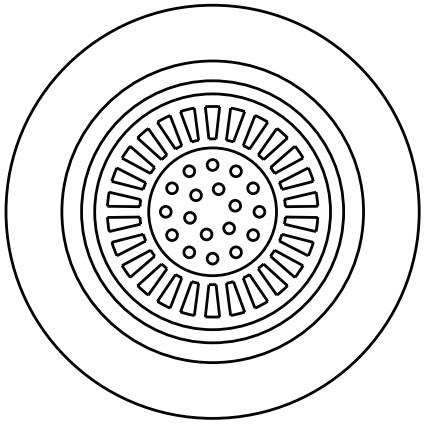
Floor Drain AWFDSTD

No-Hub/Plain End

Complete with grate and plug
Grate is designed to withstand 10,000 lbs.
Check appropriate boxes

Size:	A
☐ 2" MJ	4.54
☐ 3" MJ	4.60
☐ 4" MJ	4.87
☐ 6" MJ	3.65





☐ Funnel
☐ ½" Trap Primer FIP
☐ Sediment Bucket
☐ Flashing Clamp
☐ Solid Cover
☐ Vandal Proofing

☐ ORION AWFDSTD Corrosion Resistant Floor Drain manufactured from fire retardant polypropylene material conforming to ASTMD 4101. Grate, plug, and covers are to be made from fiber-filled polypropylene for strength and durability.

☐ ORION AWFDSTD Corrosion Resistant Floor Drain manufactured from PVDF material conforming to ASTMD 3222. Grate, plug, and covers are to be made from fiber-filled PVDF for strength and durability.

ORION®

Job Name: _____

Job Location: _____

Engineer:_____

Contractor:_____

Representative:_____

Floor Drain AWFDSO

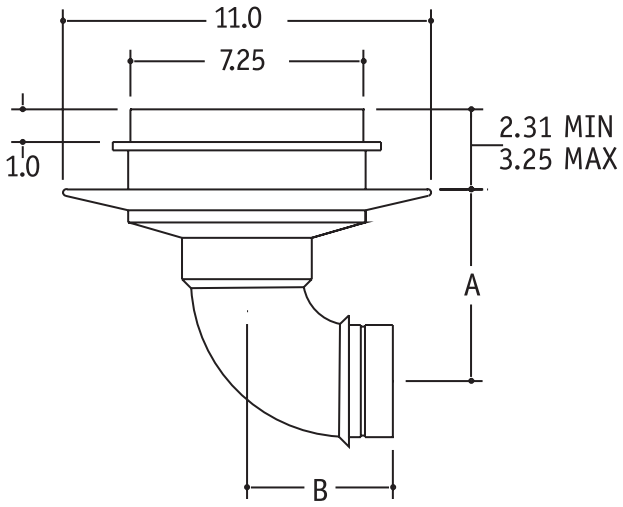
No-Hub/Plain End

Complete with grate and plug

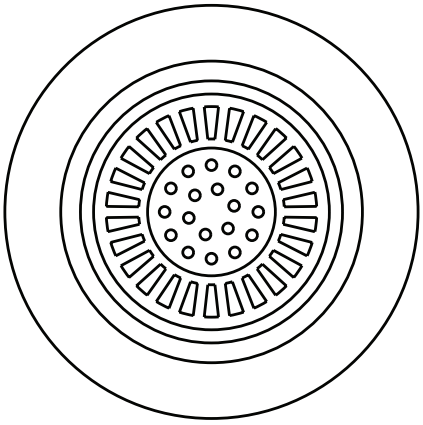
Grate is designed to withstand 10,000 lbs.

Check appropriate boxes

Size:	A	B
☐ 2" MJ	6.69	3.41
☐ 3" MJ	7.84	4.56
☐ 4" MJ	6.97	5.60



☐ Funnel
☐ ½" Trap Primer FIP
☐ Sediment Bucket
☐ Flashing Clamp
☐ Solid Cover
☐ Vandal Proofing



☐ ORION AWFDSO Corrosion Resistant Floor Drain manufactured from fire retardant polypropylene material conforming to ASTM D4101. Grate, plug, and covers are to be made from fiber-filled polypropylene for strength and durability.

☐ ORION AWFDSO Corrosion Resistant Floor Drain manufactured from PVDF material conforming to ASTM D3222. Grate, plug, and covers are to be made from fiber-filled PVDF for strength and durability.

ORION®

Engineer:_____

Job Name: _____

Contractor:_____

Job Location: _____

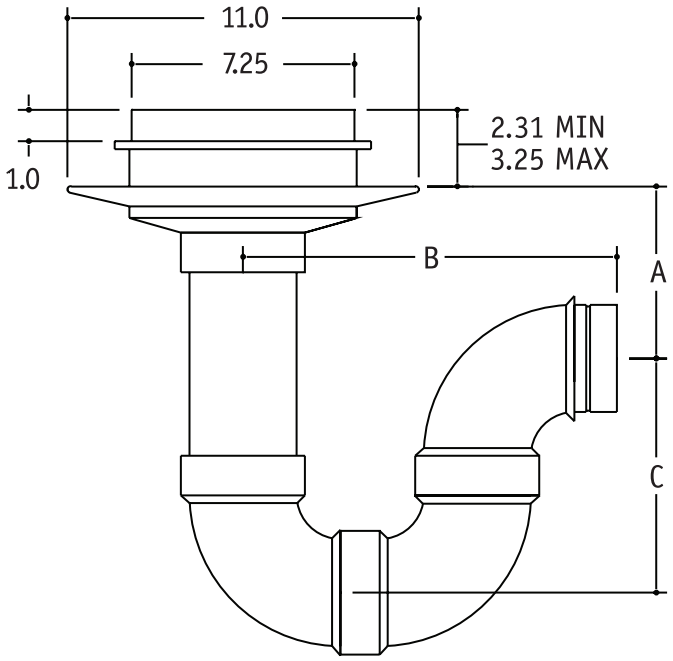
Representative:_____

Floor Drain AWFDPT

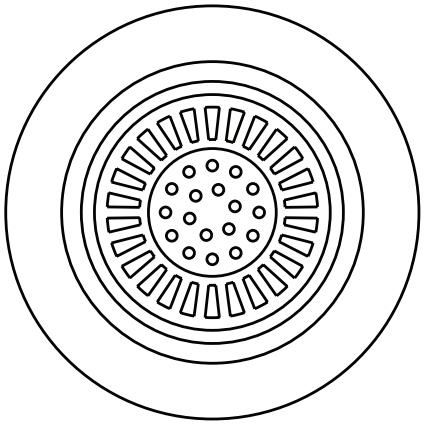
No-Hub/Plain End

Floor Drain with trap
Complete with grate and plug
Grate is designed to withstand 10,000 lbs.
Check appropriate boxes

Size:	A	B	C
☐ 2" MJ	5.87	9.33	5.92
☐ 3" MJ	6.57	12.31	7.71
☐ 4" MJ	6.04	15.24	9.64



☐ Funnel
☐ ½" Trap Primer FIP
☐ Sediment Bucket
☐ Flashing Clamp
☐ Solid Cover
☐ Vandal Proofing



☐ ORION AWFDPT (integral trap) Corrosion Resistant Floor Drain manufactured from Fire Retardant Polypropylene material conforming to ASTM D4101. Grate, plug, and covers are to be made from fiber-filled polypropylene for strength and durability.

☐ ORION AWFDPT (integral trap) Corrosion Resistant Floor Drain manufactured from PVDF material conforming to ASTM D3222. Grate, plug, and covers are to be made from fiber-filled PVDF for strength and durability.

ORION®

Engineer:_____

Job Name: _____

Contractor:_____

Job Location: _____

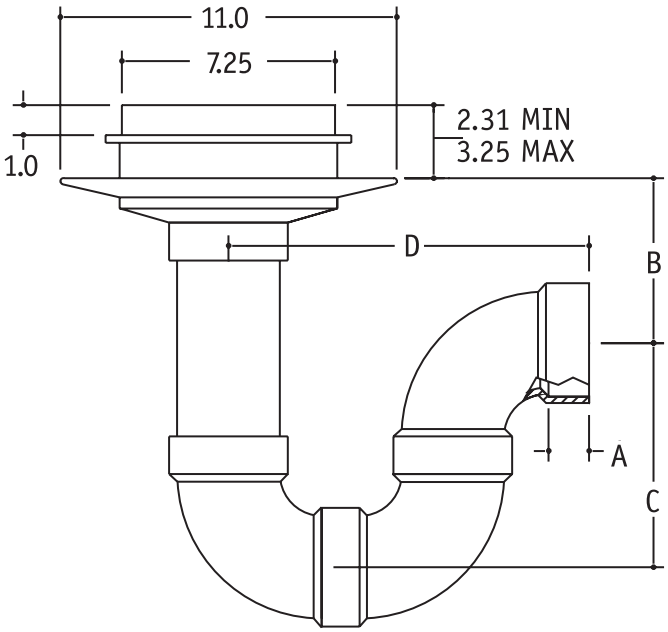
Representative:_____

Floor Drain AWFDPT

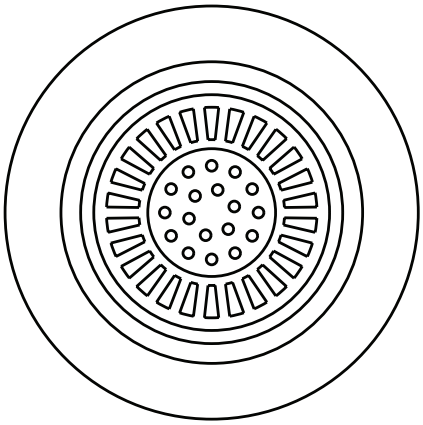
Socket Fusion

Floor Drain with trap
Complete with grate and plug
Grate is designed to withstand 10,000 lbs.
Check appropriate boxes

Size:	A	B	C	D
☐ 2" SF	.90	5.87	5.92	9.33
☐ 3" SF	1.13	6.52	7.76	12.36
☐ 4" SF	1.40	6.04	9.64	15.24



☐ Funnel
☐ ½" Trap Primer FIP
☐ Sediment Bucket
☐ Flashing Clamp
☐ Solid Cover
☐ Vandal Proofing



☐ ORION AWFDPT (integral trap) Corrosion Resistant Floor Drain manufactured from Fire Retardant Polypropylene material conforming to ASTM D4101. Grate, plug, and covers are to be made from fiber-filled polypropylene for strength and durability.

☐ ORION AWFDPT (integral trap) Corrosion Resistant Floor Drain manufactured from PVDF material conforming to ASTM D3222. Grate, plug, and covers are to be made from fiber-filled PVDF for strength and durability.

ORION®

Engineer:_____

Job Name: _____

Contractor:_____

Job Location: _____

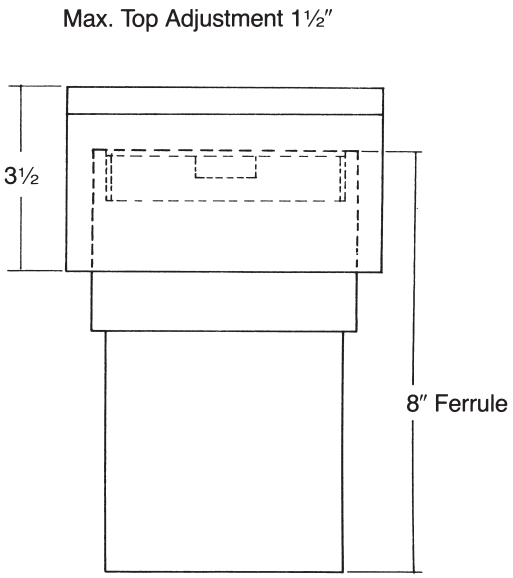
Representative:_____

Acid Waste Floor Cleanout Submittal

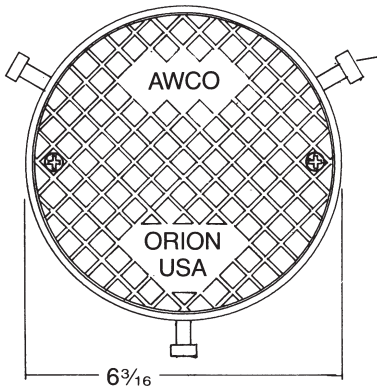
Model & Size	Finish Available
☐ 3" FCO Square	Nickel Bronze; Brushed Bronze
☐ 4" FCO Square	Nickel Bronze; Brushed Bronze
☐ 3" FCO Round	Nickel Bronze, PP PVDF Brushed Bronze
☐ 4" FCO Round	Nickel Bronze; PP PVDF Brushed Bronze

☐ ORION FCO corrosion resistant finished floor cleanout. Manufactured from fire retardant polypropylene material conforming to ASTM D4101, ferrule supplied with countersunk plug and adjustable top with round (square) nickel bronze (brushed bronze) cover, with AWCO (Acid Waste Cleanout) cast in cover.

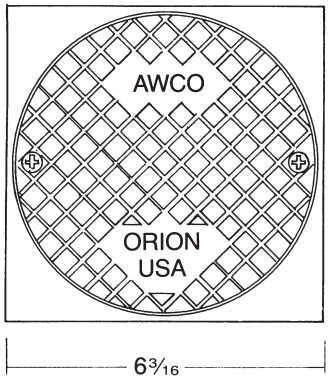
☐ ORION FCO corrosion resistant finished floor cleanout. Manufactured from PVDF material conforming to ASTM D3222, ferrule supplied with countersunk plug and adjustable top with round (square) nickel bronze (brushed bronze) cover, with AWCO (Acid Waste Cleanout) cast in cover.



FCO-RD



FCO-SQ



ORION®

Engineer:_____

Job Name: _____ Contractor:_____

Job Location: _____ Representative:_____

Notes

Notes

ACID WASTE PIPING SYSTEMS

Represented By:

A Watts Water Technologies Company

USA: Tel: (913) 342-1653 • Fax: (913) 342-7218 • www.orionfittings.com

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