PPro-Seal™

Natural Polypropylene Piping System

→Pipe, Valves, Fittings
→Electrofusion
→Mechanical Joint

+GF+

GEORG FISCHER
PIPING SYSTEMS

GF Piping Systems **PPro-Seal™**

High Purity Natural Polypropylene

PPro-Seal pipe, valves and fittings are manufactured from a virgin polypropylene copolymer that meets the requirements of ASTM D4101 and is compliant with FDA 21.CFR 177.1520 Sections A1, B and C.

There are no plasticizers, pigments or any other contaminants that could affect the fluid medium. The result is a highly pure product ideal for use in piping systems where purity is not only required, but is essential.

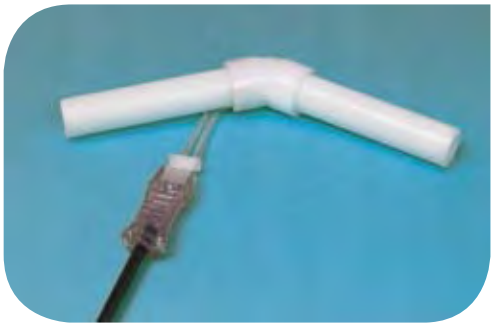
To preserve cleanliness and prevent contamination in transit, all PPro-Seal pipe, valves and fittings are specially packaged at the point of manufacture.

Applications

Natural Polypropylene's (PPn) chemical and physical properties make it ideal for laboratory and industrial piping where mixtures of acids, bases, and solvents are involved, such as

- → deionized water systems
- → reverse osmosis systems
- → chemical effluent treatment plants
- → chemical processing
- → food and beverage processing

Joining Methods



The PPro-Seal system utilizes the patented Fuseal® electrofusion joining method, using electrical resistance coils that are energized by one of our state of the art fusion units.

Threaded fittings are also available and are an ideal solution if future disassembly is needed.

An engineer or contractor can combine the benefits of the PPro-Seal electrofusion joint and the mechanical joint in a single system. PPro-Seal joints are made quickly, surely and economically.

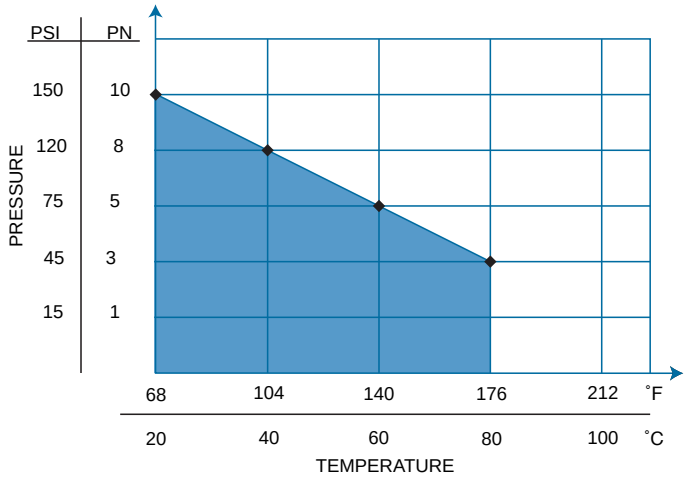
The MSA250-SE or EX unit is the most advanced fusion unit in our industry, featuring advanced transformer technology. These units can be used to join all the George Fischer Sloane, Inc. specified products including Fuseal, Fuseal Squared™, and Fuseal 25/50™ PVDF.

Flow, Temperature and Pressure Rating

PPro-Seal's smooth interior walls result in lower pressure loss and a higher volume of flow that results in a Hazen-Williams C Factor of 150.

PPro-Seal handles corrosive fluids up to 176°F (80°C), beyond the range of many thermoplastics. The maximum pressure for the electrofusion system is 150 psi (10 bar) @ 68°F (20°C).

Threaded systems are not recommended for pressure applications.



Easy and Reliable Solution for Natural Polypropylene Piping Systems

→ Excellent Chemical and Corrosion Resistance

PPro-Seal has excellent resistance to attack by most organic and inorganic chemicals in common use. In general, it is attacked only by strong oxidizing acids and is weakened by certain organic solvents and chlorinated hydrocarbons.

Like all thermoplastic products, PPro-Seal will not rust, pit, scale or corrode. PPro-Seal is not subject to electrolysis, providing years of maintenance-free, leak-free service.

→ Rugged

PPro-Seal has excellent impact strength at ambient temperatures and retains much of its impact resistance down to 0°F (-17.8°C).

Dimensions

PPro-Seal pipe, valves and fittings are available in standard IPS sizes from ½" to 3" and threaded fittings are available in standard IPS sizes from ½" to 2".

True Union Ball Valves

PPro-Seal True Union Ball Valves Type 375 meet the same rigid design and construction as other George Fischer valves, featuring PTFE seats backed with FPM O-rings, a blowout-proof stem with double seals, a floating ball design, and a fully serviceable and adjustable seat carrier. The valves are supplied with both electrofusion socket and female NPT threaded end connectors.

Specification for PPro-Seal Piping System

Natural Polypropylene Pipe and Fittings

Pipe will be manufactured to the dimensions and tolerances of ASTM D1785 as supplied by George Fischer Sloane, Inc. Fittings will be manufactured to the dimensions and tolerances of George Fischer Sloane, Inc. and be compatible with the pipe. The material will be natural virgin copolymer polypropylene with no added plasticizers, pigments or re-grind that meets the requirements of ASTM D4101 and is compliant with FDA 21.CFR 177.1520 Sections A1, B and C. All pipe and fittings shall have a pressure rating up to 150 psi at 68°F. All pipe and fittings shall be packaged in polybags at the point of manufacturing to preserve cleanliness.

Pipe and fittings are joined by either electrofusion or threaded connections. Electrofusion joints will conform to ASTM F1290 and consist of a polypropylene coated wire. Threaded joints will conform to NPT dimensions and tolerances. (Note: Threaded fittings are not recommended for pressure systems).

PPro-Seal Type 375 Natural Polypropylene Valve

Ball valves shall be of True Union design with two-way blocking capability as supplied by George Fischer Sloane, Inc. Valves shall have a blow-out proof stem with double stem seals. All O-rings shall be FPM and the valve seats shall be PTFE with an elastomeric backing of the same material as the valve seals. The valve shall be of floating ball design with full Schedule 80 bore. All ball valves shall have an adjustable seat carrier that can be adjusted or removed using the valve handle as a spanner wrench. All valves shall be supplied with both electrofusion socket and NPT threaded end connectors. The material will be natural virgin copolymer polypropylene with no added plasticizers, pigments or re-grind that meets the requirements of ASTM D4101 and is compliant with FDA 21.CFR 177.1520 Sections A1, B and C. The valve Type 375 shall have a pressure rating up to 150 psi at 68°F. All valves shall be packaged in containers at the point of manufacturing to preserve cleanliness.

The technical data given in this publication implies no warranty of whatever kind and is subject to change without notice. Please consult our Terms and Conditions of Sale.

PPro-Seal Installation and Engineering Data

Thermal Expansion Compensation

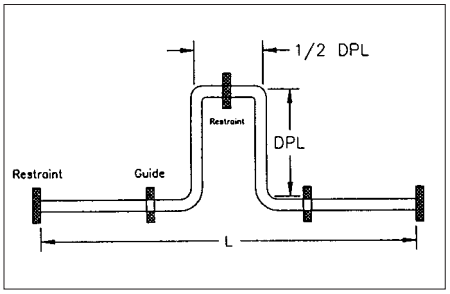
PPro-Seal Expansion Loop

Polypropylene PPro-Seal		Length of Run (feet)									
		10	20	30	40	50	60	70	80	90	100
Pipe Size	O.D. of Pipe	Minimum Deflected Pipe Length (inches)									
1 1/2"	1.900	22	31	37	43	48	53	57	61	65	68
2"	2.375	24	34	42	48	54	59	64	68	72	76
3"	3.500	29	41	51	59	66	72	78	83	88	93
4"	4.500	33	47	58	67	74	81	88	94	100	105
6"	6.625	40	57	70	81	90	99	107	114	121	128
8"	8.625	46	65	80	92	103	113	122	130	138	146

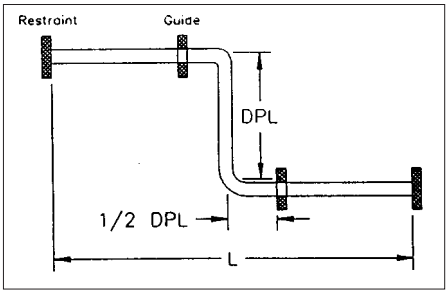
PPro-Seal Offsets and Change of Directions

Polypropylene PPro-Seal		Length of Run (feet)									
		10	20	30	40	50	60	70	80	90	100
Pipe Size	O.D. of Pipe	Minimum Deflected Pipe Length (inches)									
1 1/2"	1.900	31	43	53	61	68	75	81	86	92	97
2"	2.375	34	48	59	68	76	84	90	97	103	108
3"	3.500	41	59	72	83	93	102	110	117	124	131
4"	4.500	47	67	81	94	105	115	124	133	141	149
6"	6.625	57	81	99	114	128	140	151	161	171	180
8"	8.625	65	92	113	130	146	160	172	184	195	206

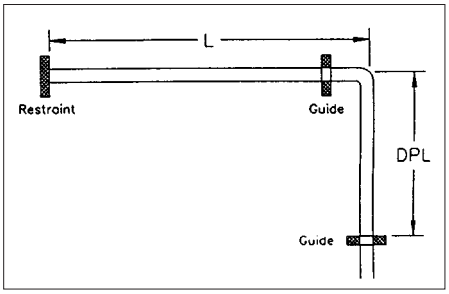
Expansion Loop and Offset Configuration for Polypropylene



Expansion Loop



Expansion Offset



Change of Direction

Pressure Rated System

The PPro-Seal Electrofusion piping system is pressure rated at 150 psi (10 bar) @ 72°F (23°C). The derating factors for elevated temperatures are as follows:

Derating Factor for PPro-Seal Electrofusion

106°F	142°F	178°F
0.7	0.5	0.25

PPro-Seal Valve Pressure Ratings

Valves are pressure rated at:

Size	**½"**	**¾"**	**1"**	**1½"**	**2"**
psi (bar)	150	140	140	120	150

Surge Pressure

The following table gives the surge pressure (water hammer) in copolymer polypropylene pipe for various velocities at 73°F (23°C). The surge pressure should be added to the static line pressure to determine the maximum system operating pressure. In no case should this be over $1^1/_2$ times the recommended working pressure. This will, under normal conditions, ensure adequate safety to absorb the shock of closing valves.

Surge Pressure, Ps (psi) — Schedule 80 PP

Water Velocity (ft./sec.)	**Nominal Pipe Size (in.)**				
	½	**¾**	**1**	**1½**	**2**
1	23.5	20.9	20.0	17.1	15.9
2	47.0	41.8	40.0	34.2	31.6
3	70.5	62.7	60.0	51.3	47.4
4	94.0	83.6	80.0	68.4	63.2
5	117.5	104.5	100.0	85.5	79.0
6	141.0	125.4	120.0	102.6	94.8

$$Ps = V \left(\frac{Et\ 3960}{Et + 3 \times 10^5\ Di} \right)^{1/2}$$

Where:

V = Water Velocity, ft./sec.

E = Modulus of Elasticity 1.5×10^5 psi

t = Wall Thickness, in.

Support Spacing

When thermoplastic piping systems are installed above ground, they must be properly supported to avoid unnecessary stresses and possible sagging. On horizontal runs, hangers of the various types should be used at approximately the spacing given in the following chart. Note that additional support is needed as temperatures increase. At elevated temperatures, continuous support, in the form of a smoothly textured structural angle or channel, is required.

Support Spacing, (ft.), Copolymer Polypropylene — Schedule 80

Pipe Size (in.)	1/2	3/4	1	1 1/2	2
73°F	3 3/4	4	4 1/2	5	5 1/2
120°F	3 1/2	3 3/4	4	4 3/4	5
140°F	3	3 1/2	3 3/4	4 1/4	4 1/2
160°F	3	3	3 1/2	4	4 1/4
180°F	2 3/4	3	3 1/4	3 3/4	4

Table based on .100 in . sag between supports.

Short Term Collapse Pressure

Polypropylene pipe is often used for suction lines or in applications where external pressures are applied to the pipe, such as in heat exchangers or underwater loading conditions. The differential pressure rating of the pipe is determined by derating the short term collapse pressures. Collapse pressure must be adjusted for temperature differences other than for room temperature. The Short-Term Collapse Pressure chart used to adjust pipe pressure rating may be used for this purpose (see note below table).

Short Term Collapse Pressure (psi), Pressure Polypropylene — Schedule 80

Pipe Size (in.)					
1/2	3/4	1	1 1/4	1 1/2	2
1011	876	823	612	412	278

Note: These are short term ratings, long term should be reduced by 1/3 to 1/2 of the short term ratings.

Soil Load — Schedule 80 Pipe

Underground pipe is subjected to external loads caused by the weight of the backfill material and by loads applied at the surface of the fill. These can range from static to dynamic loads.

Static loads comprise the weight of the soil above the top of the pipe and any additional material that might be stacked above ground. An important point is that the load in a flexible pipe will be less than on a rigid pipe buried in the same manner. This is because the flexible conduit transfers part of the load to the surrounding soil and not the reverse. Soil loads are minimal with narrow trenches until a pipe depth of 10 feet is attained.

Dynamic loads are loads caused by moving vehicles such as trucks, trains and other heavy equipment. For shallow burial conditions, live loads should be considered and added to static loads, but at depths greater than 10 feet, live loads have very little effect.

Live Loads for Buried Flexible Pipe (lb./in.ft.)

Pipe Size (in.)	H 20 Wheel Loads for Various Depths of Pipe (lb./in. ft.)				
	2	4	6	8	10
2	309	82	38	18	16
3	442	118	56	32	21
4	574	154	72	42	27
6	837	224	106	61	40
8	1102	298	141	82	53
10	1361	371	176	101	66
12	1601	440	210	120	73

Note: H 20 wheel load is 16,000 lb./wheel

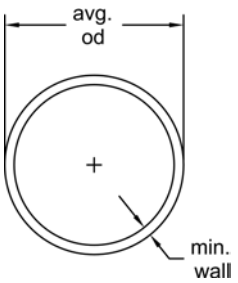
Section 3

PPro-Seal™ Natural PP Piping System

Serviced by GF Little Rock

PPro-Seal™ Natural PP

PPro-Seal Pipe



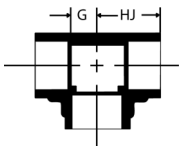
Schedule 80 PPn

20' lengths available upon request
All pipe must be ordered in lift quantities to maintain cleanliness.

Size [inch]	**lengths** [ft]	**Part No.**	**Lift Qty** [ft]	**Minimum Order Qty** [ft]	**avg. od** [inch]	**min. wall** [inch]	
½	10	**N8008-005AA ***	250	250	0.840	0.147	
¾	10	**N8008-007AA ***	150	150	1.050	0.154	
1	10	**N8008-010AA ***	100	100	1.315	0.179	
1 ½	10	**N8008-015AA ***	40	40	1.900	0.200	
2	10	**N8008-020AA ***	30	30	2.375	0.218	
3	10	**N8008-030AA ***	10	10	3.500	0.300	

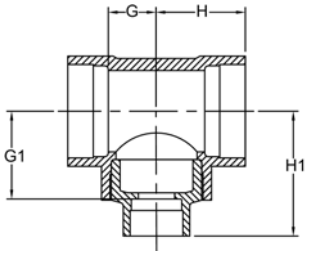
PPro-Seal™ Natural PP

PPro-Seal Electrofusion Fittings



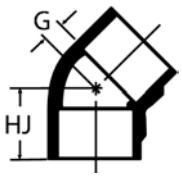
Tee (S x S x S)

Size [inch]	Part No.	Minimum Order Qty	G [inch]	HJ [inch]
½	**801-005F**	5	0.51	1.22
¾	**801-007F**	5	0.58	1.36
1	**801-010F**	5	0.70	1.67
1 ½	**801-015F**	2	1.00	2.03
2	**801-020F**	2	1.26	2.32
3	**801-030F**	1	1.87	3.72



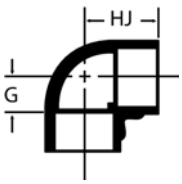
Tee - Reducing (S x S x S)

Size [inch]	Part No.	Minimum Order Qty	G [inch]	G1 [inch]	H [inch]	H1 [inch]
1 x ½	**801-130FFB ***	2	0.70	1.75	1.67	2.46
1 ½ x ½	**801-209F**	2	0.88	1.35	1.91	1.88
1 ½ x 1	**801-211FFB ***	2	1.00	2.03	2.03	3.00
2 x ½	**801-247F**	2	0.86	1.62	2.02	2.16
2 x 1	**801-249FFB ***	2	1.26	2.29	2.32	3.26



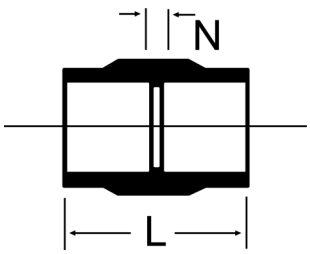
45° Ell (S x S)

Size [inch]	Part No.	Minimum Order Qty	G [inch]	HJ [inch]
½	**817-005F**	5	0.31	1.02
¾	**817-007F**	5	0.33	1.11
1	**817-010F**	5	0.39	1.36
1 ½	**817-015F**	2	0.52	1.55
2	**817-020F**	2	0.64	1.70
3	**817-030F**	1	0.81	2.66



90° Ell (S x S)

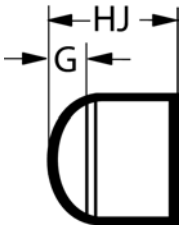
Size [inch]	Part No.	Minimum Order Qty	G [inch]	HJ [inch]
½	**806-005F**	5	0.51	1.22
¾	**806-007F**	5	0.58	1.36
1	**806-010F**	5	0.70	1.67
1 ½	**806-015F**	2	1.00	2.03
2	**806-020F**	2	1.26	2.32
3	**806-030F**	1	1.87	3.72



Coupling (S x S)

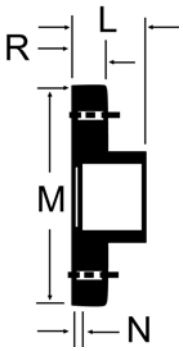
Size [inch]	Part No.	Minimum Order Qty	L [inch]	N [inch]
½	**829-005F**	5	1.56	0.12
¾	**829-007F**	5	1.68	0.12
1	**829-010F**	5	2.06	0.12
1 ½	**829-015F**	2	2.25	0.18
2	**829-020F**	2	2.26	0.13
3	**829-030F**	1	4.00	0.31

PPro-Seal™ Natural PP



Cap (S)

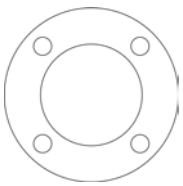
Size [inch]	Part No.	Minimum Order Qty	G [inch]	HJ [inch]
½	**847-005F**	5	0.42	1.14
¾	**847-007F**	5	0.45	1.23
1	**847-010F**	5	0.53	1.50
1 ½	**847-015F**	2	0.63	1.71
2	**847-020F**	2	0.75	1.84
3	**847-030F**	1	1.00	2.38



Flange (S) without Backing Ring

Flange Backing Ring recommended for assembly
3" Flange is Van Stone Style

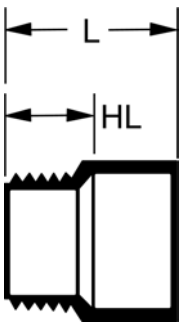
Size [inch]	Part No.	# holes	bolt hole dia. [inch]	bolt cir. dia. [inch]	L [inch]	M [inch]	N [inch]	R [inch]
½	**859-005F**	4	0.50	2.38	0.86	3.50	0.14	0.41
¾	**859-007F**	4	0.50	2.75	0.97	3.88	0.19	0.47
1	**859-010F**	4	0.50	3.13	1.16	4.25	0.19	0.53
1 ½	**859-015F**	4	0.50	3.88	1.24	5.00	0.21	0.66
2	**859-020F**	4	0.63	4.75	1.34	6.00	0.28	0.71
3	**854-030F**	4	0.63	6.00	2.33	7.50	0.48	1.00



Flange Backing Ring

Flange Ring Material : PVC Coated Metal

Size [inch]	Part No.
½	**855-005F ***
¾	**855-007F ***
1	**855-010F ***
1 ½	**855-015F ***
2	**855-020F ***
3	**855-030F ***

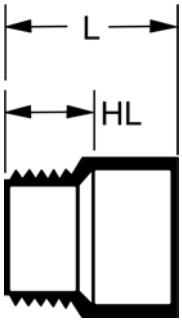


Male Adapter (MPT x S)

Threaded fittings not recommended for pressure applications

Size [inch]	Part No.	Minimum Order Qty	HL [inch]	L [inch]
½	**836-005F**	5	1.02	1.73
¾	**836-007F**	5	1.05	1.83
1	**836-010F**	5	1.28	2.25
1 ½	**836-015F**	2	1.32	2.35
2	**836-020F**	2	1.37	2.43
3	**836-030F**	1	2.08	3.93

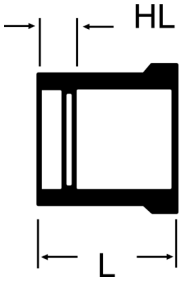
PPro-Seal™ Natural PP



Male Adapter - Reducing (S x MPT)

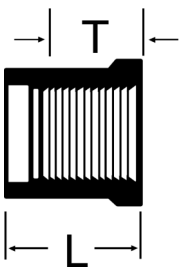
Threaded fittings not recommended for pressure applications

Size [inch]	Part No.	Minimum Order Qty	HL [inch]	L [inch]	
½ x ¼	**836-036F**	5	0.79	2.00	



Reducer Bushing (Spg x S)

Size [inch]	Part No.	Minimum Order Qty	HL [inch]	L [inch]	
¾ x ½	**837-101F**	5	1.14	1.86	
1 x ½	**837-130F**	5	1.03	1.75	
1 x ¾	**837-131F**	5	1.10	1.88	
1 ½ x ¾	**837-210F**	2	0.95	1.67	
1 ½ x 1	**837-211F**	2	1.03	2.00	
2 x 1	**837-249F**	2	1.03	2.00	
2 x 1 ½	**837-251F**	2	0.81	1.84	
3 x 1 ½	**837-337F**	1	0.91	2.40	
3 x 2	**837-338F**	1	0.88	2.40	



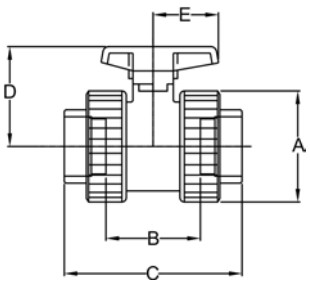
Reducer Bushing (Spg x FPT)

Threaded fittings not recommended for pressure applications

Size [inch]	Part No.	Minimum Order Qty	L [inch]	T min. [inch]	Style	
¾ x ½	**838-101F ^**	5	1.13	0.53	Flush	
1 x ½	**838-130F ^**	5	1.75	0.53	Extended	
1 x ¾	**838-131F ^**	5	1.31	0.55	Flush	
1 ½ x ¾	**838-210F ^**	2	1.67	0.55	Flush	
1 ½ x 1	**838-211F ^**	2	1.67	0.68	Flush	
2 x 1	**838-249F ^**	2	2.00	0.68	Extended	
2 x 1 ½	**838-251F ^**	2	1.81	0.72	Flush	
3 x 1 ½	**838-337F ^**	1	2.40	0.72	Flush	
3 x 2	**838-338F ^**	1	2.40	0.76	Flush	

PPro-Seal™ Natural PP

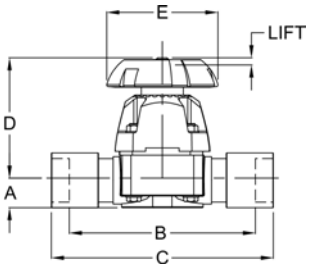
PPro-Seal Valves



Type 375 Ball Valve (S x S) and (FPT x FPT)

O-Ring Material : FPM

Size [inch]	FPM Part No.	A [inch]	B [inch]	C [inch]	D [inch]	E [inch]
½	**1088375005F**	1.88	1.84	3.86	2.31	1.44
¾	**1088375007F**	2.27	2.08	4.37	2.50	1.44
1	**1088375010F**	2.63	2.34	4.86	3.05	1.85
1 ½	**1088375015F**	3.67	3.13	5.87	3.60	2.41
2	**1088375020F**	4.48	3.68	6.73	3.95	2.41
3	**1088375030F**	6.51	5.67	9.60	5.28	3.07



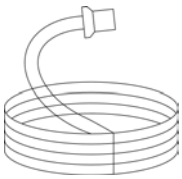
Type 315 Diaphragm Valve (S x S)

Diaphragm &Backing Ring Material : EPDM

Size [inch]	EPDM Part No.	A [inch]	B [inch]	C [inch]	D [inch]	E [inch]	Lift [ft]
½	**1088315005F ***	0.55	5.12	6.54	3.54	3.15	0.31
¾	**1088315007F ***	0.69	5.82	7.50	4.02	3.15	0.43
1	**1088315010F ***	0.83	6.06	8.00	4.67	3.70	0.51
1 ½	**1088315015F ***	1.28	8.27	10.33	5.47	4.61	0.83
2	**1088315020F ***	1.53	9.10	11.22	6.77	5.98	1.10

PPro-Seal™ Natural PP

PPro-Seal Fusion Accessories

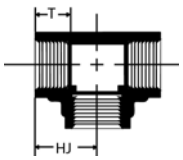


Loose Coil

Size [inch]	Part No.	Minimum Order Qty	
½	**6076 ***	10	
¾	**6077 ***	10	
1	**6078 ***	10	
1 ½	**6086 ***	10	
2	**6089 ***	10	
3	**6091 ***	10	

PPro-Seal™ Natural PP

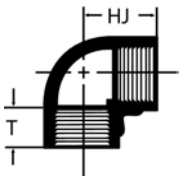
PPro-Seal Threaded Fittings



Tee (FPT x FPT x FPT)

Threaded fittings not recommended for pressure applications

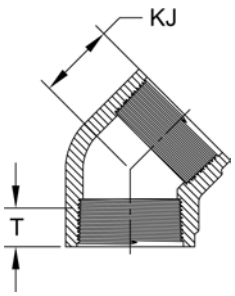
Size [inch]	Part No.	Minimum Order Qty	HJ [inch]	T min. [inch]
½	**805-005F**	5	1.22	0.53
¾	**805-007F**	5	1.36	0.55
1	**805-010F**	5	1.67	0.68
1 ½	**805-015F**	2	2.03	0.72
2	**805-020F**	2	2.32	0.76



90° Ell (FPT x FPT)

Threaded fittings not recommended for pressure applications

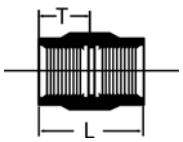
Size [inch]	Part No.	Minimum Order Qty	HJ [inch]	T min. [inch]
½	**808-005F**	5	1.22	0.53
¾	**808-007F**	5	1.36	0.55
1	**808-010F**	5	1.67	0.68
1 ½	**808-015F**	2	2.03	0.72
2	**808-020F**	2	2.32	0.76



45° Ell (FPT x FPT)

Threaded fittings not recommended for pressure applications

Size [inch]	Part No.	Minimum Order Qty	KJ [inch]	T min. [inch]
½	**819-005F**	5	1.02	0.53
¾	**819-007F**	5	1.11	0.55
1	**819-010F**	5	1.36	0.68
1 ½	**819-015F**	2	1.55	0.72
2	**819-020F**	2	1.70	0.76

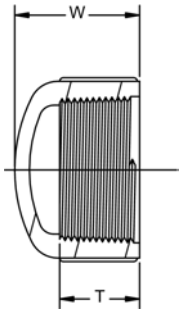


Coupling (FPT x FPT)

Threaded fittings not recommended for pressure applications

Size [inch]	Part No.	Minimum Order Qty	L [inch]	T min. [inch]
½	**830-005F**	5	1.56	0.53
¾	**830-007F**	5	1.68	0.55
1	**830-010F**	5	2.06	0.68
1 ½	**830-015F**	2	2.25	0.72
2	**830-020F**	2	2.26	0.76

PPro-Seal™ Natural PP

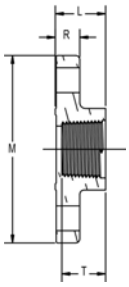


Cap (FPT)

Threaded fittings not recommended for pressure applications

Size [inch]	Part No.	Minimum Order Qty	W [inch]	T min. [inch]	
½	**848-005F**	5	1.14	0.53	
¾	**848-007F**	5	1.23	0.55	
1	**848-010F**	5	1.50	0.68	
1 ½	**848-015F**	2	1.71	0.72	
2	**848-020F**	2	1.84	0.76	

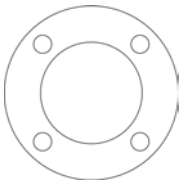
PPro-Seal™ Natural PP



Flange (FPT) without Backing Ring

Flange Backing Ring recommended for assembly
Threaded fittings not recommended for pressure applications

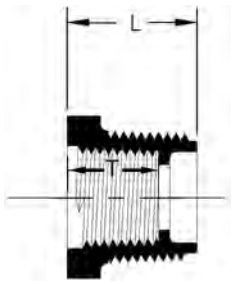
Size [inch]	Part No.	# holes	bolt hole dia. [inch]	bolt cir. dia. [inch]	L [inch]	M [inch]	R [inch]	T min. [inch]
½	**852-005F**	4	0.50	2.38	0.86	3.50	0.41	0.69
¾	**852-007F**	4	0.50	2.75	0.97	3.88	0.47	0.69
1	**852-010F**	4	0.50	3.13	1.16	4.25	0.53	0.81
1 ½	**852-015F**	4	0.50	3.88	1.24	5.00	0.66	0.88
2	**852-020F**	4	0.63	4.75	1.34	6.00	0.71	0.94



Flange Backing Ring

Flange Ring Material : PVC Coated Metal

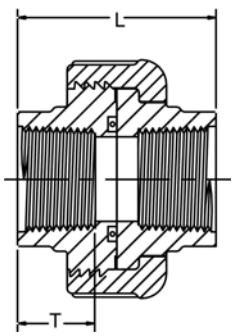
Size [inch]	Part No.
½	**855-005F ***
¾	**855-007F ***
1	**855-010F ***
1 ½	**855-015F ***
2	**855-020F ***



Reducer Bushing (MPT x FPT)

Threaded fittings not recommended for pressure applications

Size [inch]	Part No.	Minimum Order Qty	L [inch]	T min. [inch]
¾ x ½	**839-101F ^**	5	1.70	0.53
1 x ½	**839-130F ^**	5	1.77	0.53
1 x ¾	**839-131F ^**	5	1.89	0.55
1 ½ x 1	**839-211F ^**	2	2.00	0.68
2 x 1	**839-249F ^**	2	2.00	0.68
2 x 1 ½	**839-251F ^**	2	1.81	0.72



Union (FPT x FPT)

Threaded fittings not recommended for pressure applications

Size [inch]	Part No.	Minimum Order Qty	L [inch]	T min. [inch]
½	**898-005F**	5	2.00	0.53
¾	**898-007F**	5	2.08	0.55
1	**898-010F**	5	2.50	0.68
1 ½	**898-015F**	2	2.69	0.72
2	**898-020F**	2	2.88	0.76

Further Information

If you have any questions regarding the Fuseal System contact your
+GF+ Area Sales Manager.

For further information about the fusion units, see the instruction manuals.
The machines need to be calibrated and serviced every year according to the service label on the machine.

Place business card here!!

For specific questions about the fusion units, contact our Machine Service Department.
Address for Machine Service and technical questions:

George Fischer Inc.
Machine Service Department
2882 Dow Avenue
Tustin, CA 92780

Phone: (714) 368-4284
Fax: (714) 731-9056

WM TAO & ASSOCIATES
CONSULTING ENGINEERS

Shop Drawing Submittal Review

Transmitted To: Cannon Design

Date: November 3, 2016

Attention: **stl-cac@cannondesign.com**

Contact Person / WTA Field Inspector: Patrick Garner

Project Name: Webster University-**ISB**

Reviewed by: Mike Whitworth (WES)

Project No. WT 14127.01
WES 607

[ ] UPS [ ] Courier [X] **Email**

Copies	No.	Description
1 PDF	226700P01	(Submittal No.'s)
		(Cannon #226700-005) - (Paric #15051-0286) – (WES #607)
		➢ **RO/DI Plastic Pipe and Fittings Product Data**

*Remarks: See Submittal Review from Webb Enginnering.

c: **Kelvin Patel**
Kpatel@cannondesign.com

[X] ***Reviewed** [X] ***Amend and Resubmit**

[ ] [ ]

Corrections or comments made on shop drawings during this review do not relieve contractor from compliance with requirements of drawings and specifications. This check is only for review of general conformance with the design concept of project and general compliance with information given in contract documents. Contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and satisfactory manner.

WEBB ENGINEERING SERVICES INC.

1400 S. 3rd Street, Suite 201
St. Louis, Missouri 63104
Phone: (314) 588-0600
Fax: (314) 588-0604

Letter of Transmittal

To: wtashop@wmtao.com

From: Mike Whitworth

Date: November 02, 2016

Re: Webster University ISB

WES No: 607

☐ For your Files ☐ For Review ☐ Please Comment ☐ Please Reply

Item No.	Description	No. of Copies	Date
1	Shop Drawing Review – 22 6700 Proce ssed Water Systems for Laboratory Facilities	1	11-02-2016

•Signature: Mike Whitworth

WES
WEBB ENGINEERING SERVICES INC.
1400 S. 3rd Street, Suite 201 • St. Louis, Missouri 63104 • 314.588.0600 • *fax* 314.588.0604
www.webb-engineering.com

The review of this submittal is limited to the general conformance with the designated design concept and intent of this project and with the general compliance of the information provided in the contract documents. All comments, remarks and notations made on the submittal(s) as a result of this review do not relieve the contractor from full compliance with requirements of the contract documents. Approval for a specific item shall not include approval of an assembly of which the item is not a component. The contractor is solely responsible for rough-in and installation confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordination of this work with that of other trades on this project; and in a safe and satisfactory manner. All work shall be installed in full compliance with the manufacturer's recommendation, Federal, State and Local rules and regulation and the Authority Having Jurisdiction (AHJ) and applicable adopted codes and standards.

PROJECT NAME: Webster University ISB
LOCATION: St. Louis Missouri
CLIENT PROJ. No.: N/A
WES PROJ. No.: 607
SPEC SECTION: 22 6700 Processed Water System for Laboratory Facilities
SUBMITTAL ITEM:: See Below -

CONTRACTOR: ICON Mechanical.
CTR. SUBMITTAL #: 22 6700-005
SUBMITTAL DATE: October 13, 2016
DATE RECEIVED: October 20, 2016
RECEIVED VIA: E-Mail
RECEIVED FROM: WTA
DATE RETURNED: NOVEMBER 02, 2016
RETURNED VIA: E-MAIL
RETRURNED TO: WTASHOP@WMTAO.COM

STATUS KEY:

NO EXCEPTION TAKEN
MAKE CORRECTIONS NOTED, NO RESUBMITTAL:
AMEND AND RESUBMIT
REJECTED, SEE REMARKS:
REVIEWED ONLY

NEC	MCN	AAR	REJ	REV	ITEM	REMARKS
		X			DI/RO Piping and Fittings PPro-Seal Georg Fisher	Information submitted is catalog pages, with no indication of product to be used for this project. Resubmit with items to be considered marked, but not limited to: 1. Fitting type and joining method to be used. 2. Valve type and model number. 3. Submittal is not complete with all components as detailed in the construction document. Refer to drawing P0502, details 2 and 10. Also address the issues raised in the 'Product Substitution Request Form' dated 07/21/2016.

REVIEWED BY: Michael R. Whitworth DATE: November 02, 2016

THESE COMMENTS ARE TO BE ATTACHED TO ALL COPIES OF THE SHOP DRAWING REFERENCED ABOVE.

CANNONDESIGN

SUBMITTAL IDENTIFICATION SHEET

To be completed by Contractor/CM

WEBSTER UNIVERSITY ISB
PROJECT NAME

8274 BIG BEND BLVD
ADDRESS

NUMBER

WEBSTER UNIVERSITY
OWNER

CANNON DESIGN
ARCHITECT / ENGINEER

Joe Voypick
SUBMITTED BY

226700-005
CONTRACTOR / CM SUBMITTAL NO.

CANNON DESIGN SUBMITTAL NO.

DRAWING / DETAIL REFERENCE

226700
SPECIFICATION SECTION / PARAGRAPH

Icon Mechanical
MANUFACTURER / SUPPLIER

ITEM / PRODUCT ID

REQUIRED DATE

PRIORITY

◯ CRITICAL

ITEM BEING SUBMITTED (check only one)

- ◯ Shop Drawings
- ◯ Samples (_____ copies)
- ◯ LEED Submittal
- ◯ Certification / Qualifications
- ◯ Record Documents
- ◉ Product Data
- ◯ Coordination Drawing
- ◯ Calculations
- ◯ Schedules
- ◯ O&M Manuals
- ◯ Other _____

ITEM BEING SUBMITTED FOR (check only one)

◉ Action ◯ Information Only ◯ Record

REMARKS OR DEVIATIONS

CONTRACTOR / CM CERTIFICATION
(SUBMITTALS NOT CERTIFIED WILL BE RETURNED WITHOUT REVIEW)

PARIC

PARIC CORPORATION
SUBMITTAL STAMP

THIS SHOP DRAWING HAS BEEN REVIEWED BY PARIC CORPORATION

Subcontractor remains responsible for dimensions, quantities, coordination with other trades and compliance with contract documents.

By:
Devin D. Gates

Joe Voypick
REVIEWED BY

10/18/16
DATE

To be completed by Reviewer

22 6700-005
CANNON DESIGN SUBMITTAL NUMBER

10/18/16
RECEIVED DATE

- ◯ A. No Exceptions Taken
  No further review of submittal is required.
- ◯ B. Make Corrections Noted
  Incorporate corrections in work; resubmission is not required.
- ◯ C. Revise and Resubmit
  Revise as noted, and resubmit for review.
- ◯ D. Rejected
  Submittal is not in compliance with Contract Documents; provide new submittal.
- ◯ E. For Record / Information Only
  Submittal was reviewed for Record / Information purposes only.
- ◯ F. Not Required for Review
  Submittal is not required by Contract Documents and has not been reviewed.

Review is for conformance with the design concept of this project and for general compliance with contract documents. Contractor is responsible for quantities, dimensions and compliance with contract documents and for information that pertains to fabrication processes, construction techniques and coordination of this work with all trades which will be affected thereby. This review is null and void if submittal deviates from contract documents and does not indicate or note deviations.

A/E COMMENTS ◯ See attached sheet(s) for additional comments

REVIEWED BY

DATE

77 Westport Plaza
Suite 250
St. Louis, MO 63146

TRANSMITTAL

No. 15051-0286

Paric Corporation

PROJECT: 15051-Webster University Interdisciplinary Science Building

DATE: 10/18/2016

TO: Cannon Design
1100 Clark Ave
St Louis MO 63102

RE: RO/DI Plast Pipe and Fittings Product Data

ATTN: Kelvin Patel

JOB: 15051

WE ARE SENDING:	SUBMITTED FOR:	ACTION TAKEN:
☐ Shop Drawings	☑ Approval	☐ Approved as Submitted
☐ Letter	☐ Your Use	☐ Approved as Noted
☐ Prints	☐ As Requested	☐ Returned After Loan
☐ Change Order	☐ Review and Comment	☐ Resubmit
☐ Plans		☐ Submit
☐ Samples	**SENT VIA:**	☐ Returned
☐ Specifications	☐ Attached	☐ Returned for Corrections
☑ Other: Product Data	☐ Separate Cover Via:	☐ Due Date:

Item	*Package*	*Code*	*Rev.*	*Copies*	*Date*	*Description*	*Status*
Submittal		226700-005	1		10/18/2016	RO/DI Plast Pipe and Fittings Product Data	Submitted

NOTES:

CC:

Signed: _____

Devin Gates

icon Mechanical

LETTER OF TRANSMITTAL

TO: Paric Corporation
77 West Port Plaza #250
St. Louis, MO 63146

ATTN: Jason Szachnieski, Devin Gates

DATE: 10/17/16
JOB # : 5768
RE: Webster ISB

We are sending you
( ) Attached ( ) Under separate cover
(X) Shop drawings ( ) Prints ( ) Plans ( ) Samples ( ) Specifications
( ) Copy of letter ( ) Change order ( ) Other

COPIES	DATE	NO.	DESCRIPTION
1	10/17/16	226700-2.3	RO/DI Plastic Pipe & Fittings

These are transmitted as checked below:

( ) For signature ( ) Approved as submitted ( ) Resubmit ( ) copies for approval
( ) For your use ( ) Approved as noted (X) Submit ( ) copies for distribution
( ) As requested ( ) Returned for corrections ( ) Return ( ) corrected prints
( ) For bids due ( ) Prints returned after loan to us
(X) For review and comment ( ) Other

Remarks: Please return by 10/31/16

COPY TO: file

SIGNED: Alex Chambers

Webster University ISB
Webster Groves, MO

Submittal #:	226700-2.3
Submittal Description:	RO/DI Plastic Pipe & Fittings
Return By:	10/25/16

Please Note: To avoid scheduling delays and equipment release delays, please submit by the "Return By" date.

CHECKED BY:

DESIGNER: ENGINEER:

X	NO EXCEPTION TAKEN		MAKE CORRECTIONS NOTED
	SUBMIT SPECIFIED ITEM		REVISE AND RESUBMIT
	REJECTED		

Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Equipment supplier is responsible for: dimensions which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction; coordination of his work with that of all other trades; and satisfactory performance of his work.

Job #:	5768
Date:	10/17/16
By:	ARC

+GF+

GEORG FISCHER
PIPING SYSTEMS

Georg Fischer LLC
2882 Dow Avenue
Tustin, California 92780-7258
USA
Phone +1 (714) 731-8800
Toll free (800) 854-4090
us.ps@georgfischer.com
www.gfpiping.com

Submittal Package for PPro-Seal Piping Systems

Date:	OCTOBER 13, 2016
Project Name:	WEBSTER ISB RO PIPING
Submitted To:	ICON MECHANICAL
From:	INDELCO PLASTIC CORP

This document includes:

1. Submittal Form
2. Technical Information – material
3. Product Information
    a. PPro-Seal Natural
4. Joining Technology
    a. Electro Fusion
5. Warranty Statement

Information submitted is catalog pages, with no indication of product to be used for this project.
Resubmit with items to be considered marked, but not limited to:
1. Fitting type and joining method to be used.
2. Valve type and model number.
3. Submittal is not complete with all components as detailed in the construction document. Refer to drawing P0502, details 2 and 10.

Also address the issues raised in the `Product Substitution Request Form' dated 07/21/2016.

Rev. 01 (9/2009)