

ASAHI/AMERICA

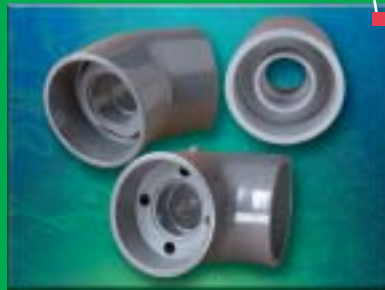
Double Containment Piping Systems



Duo-Pro® Engineered Double Containment

PolyFlo® PP and HDPE Double Containment

ProLock™ PVC Double Containment



Why Use Double Containment?

Protecting our environment is everyone's responsibility. Asahi/America pioneered thermoplastic double containment piping systems with precisely this in mind. Our systems are engineered to protect our eco-system from the dangers of exposed aggressive chemicals.

Additionally, the Environmental Protection Agency (EPA) has directed the underground transport of hazardous materials be protected from release into the environment in its Standard 40 CFR, Part 280 & 281. In order to be in compliance, systems must:

- Be Double Contained
- Have Automated Leak Detection for Pressurized Systems
- Have at least Manual Leak Detection for Drainage Systems
- Have Outer Containment able to retain Media Transport for a minimum of 30 days

Double containment should be specified for more applications than regulated by the EPA. Hazardous chemicals should be protected from escape in areas where there are chemicals transported above work stations, or any other potential safety hazards due to exposure to the media.



Asahi/America, Leadership in Double Containment

Asahi/America has been the industry leader in engineered thermoplastic double contained piping systems for decades. Our systems have been successfully installed with confidence across a broad range of industries.



We offer the broadest range of quality thermoplastic double contained piping systems available. Ranging in sizes from 1x2 to 16x20 and above, choosing Asahi/America provides maximum flexibility in system engineering and design. Materials of construction by standard size and system include:

Duo-Pro

Available Sizes: 1x3 thru 16x20

Materials: Polypropylene, PVDF and E-CTFE (HALAR)

Ratings: 150 psi and Drainage

Poly-Flo

Available Sizes: 1x2 thru 4x6

Materials: Black Polypropylene & High Density Polyethylene

Ratings: 100 psi and Drainage

Pro-Lock

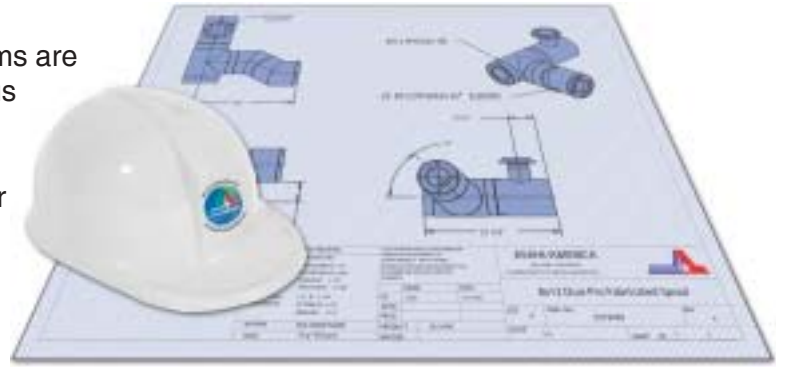
Available Sizes: 1/2x2 thru 4x8

Materials: PVC and C-PVC

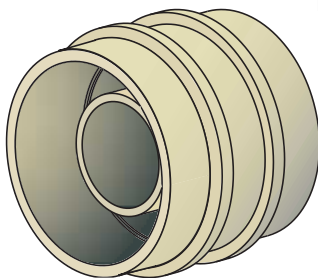
Ratings: Schedule 40x40, 80x40 and 80x80

Engineered Design

All of Asahi/America's Double Contained Systems are thoroughly designed and engineered for rigorous and demanding applications. Our stringent engineering review process ensures proper installation application and design. Applying our expertise in thermoplastics, we engineer systems that provide security and reliability.



Dogbone®



At the heart of all Asahi/America's Double Contained Systems is our patented Dogbone fitting. The unique engineered design of the Dogbone provides numerous advantages to reliable and secure Double Containment Systems which include:

- Transition from Double Contained to Single Wall Systems
- Locking of the inner pipe to the outer pipe for proper stress control
- The means for system compartmentalization in case of carrier leak
- Control of thermal expansion forces and system restraint

Leak Detection Options

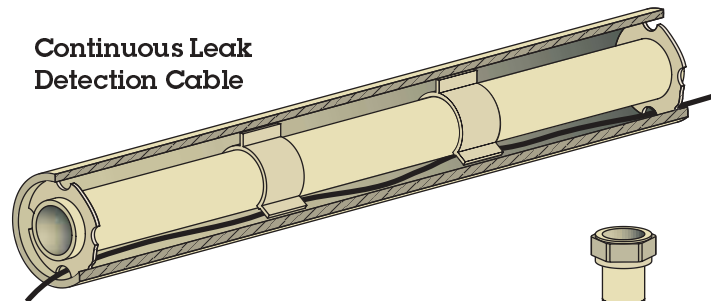
Asahi/America offers a variety of quality leak detection options to match our engineered systems. Leak detection can be accomplished in multiple ways. These include in-line monitoring Dogbones (for pressure gauge or drip leg applications), low-point detection stations (for manual as well as probe/switch applications), or continuous sensing cable. Many systems combine leak detection options to meet application requirements.

Continuous monitoring systems are required for all pressurized underground installations as mandated by EPA Standard 40 CFR 280 & 281. Cable leak detection systems are capable of identifying a leak location within 5ft. of the source; allowing for minimal repair excavation.

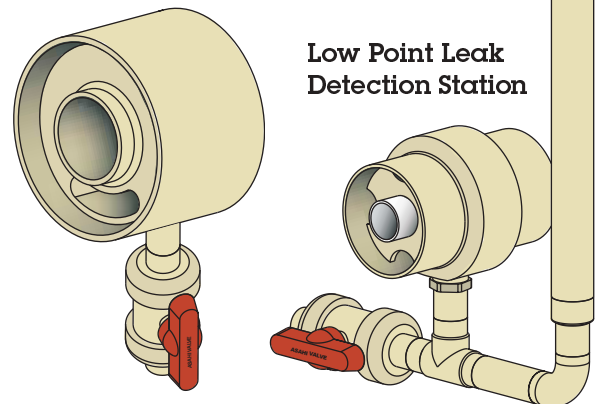
We also offer a low point/probe design, which provides a flexible, modular low-point monitoring system for use with in-line probes and switches.

Asahi/America's technical design and installation services are available to assist with proper selection, specification, installation, and commissioning of leak detection systems based on your application requirement.

Continuous Leak Detection Cable



Low Point Leak Detection Station



Manual Leak Detection Port

Duo-Pro®

PP, PVDF & E-CTFE

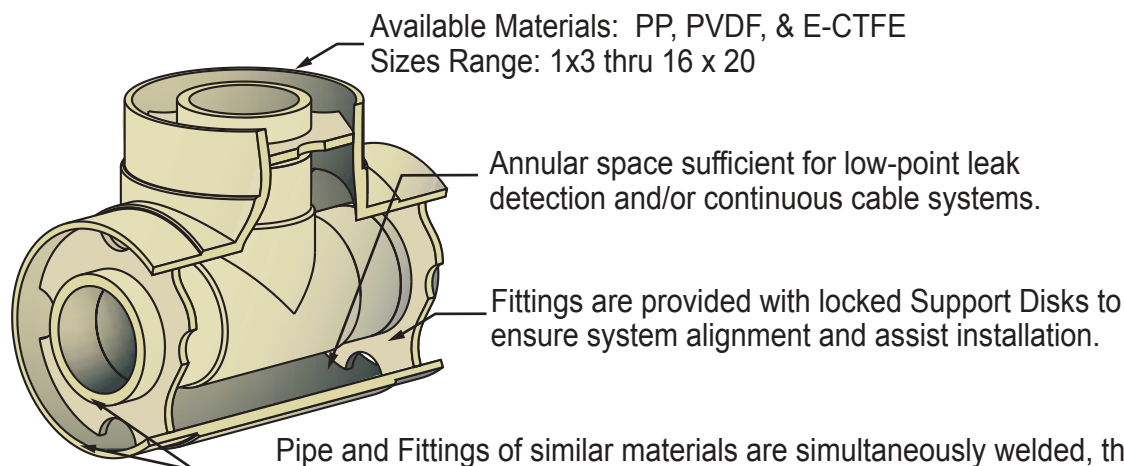
Double Containment

The premier double containment piping system offered on the market today, Duo-Pro has been successfully installed in Fortune 500 in semiconductor, pharmaceutical and chemical processing industries.



Duo-Pro offers maximum versatility to meet the unique requirements of each individual application. The mix and match feature allows system designers to specify pipe material and ratings based on media and pressure changes throughout an entire system. Duo-Pro systems are shipped fully fabricated and ready for installation from component pieces or can be shipped factory prefabricated spools, welded by trained professionals.

Duo-Pro® Engineered Design



Pipe and Fittings of similar materials are simultaneously welded, there by saving installation costs via the simple and quick butt fusion process. Dissimilar materials systems are fabricated using a staggered butt fusion process, making one weld at a time. No costly and cumbersome electrofusion couplings required.

Why Specify Duo-Pro® Systems

Duo-Pro has been created to solve all the previously encountered problems in double containment piping.

- The system uses proven, highly corrosion resistant materials such as Copolymer Polypropylene, Super Proline PVDF and E-CTFE/Halar®
- Fluids can be pumped through the carrier pipe up to 150 psi
- Can be assembled using simultaneous butt or staggered butt fusion
- Leak detection cable can be easily installed in sizes 3x6 and higher

Duo-Pro®

Ideal Applications Include:

- Drainage applications
- Pressurized transfer lines
- Manufacturing
- Chemical Resistance causes dissimilar materials to be the best choice
- Underground installations

Poly-Flo®

PP & HDPE

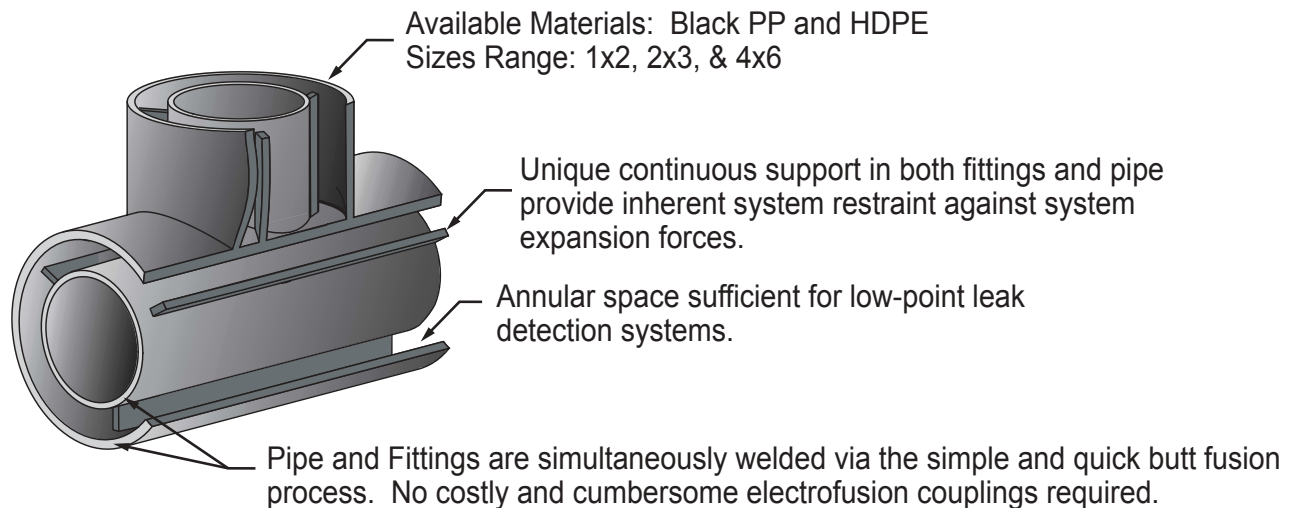
Double Containment

Poly-Flo's unique unitary construction saves time and labor on each project. Low cost and easy installation makes Poly-Flo the ideal system for drainage systems, pressurized transfer lines and industrial applications needing up to 4" carrier pipe.



Typical installations are in waste treatment, carrying sulfuric acid or caustic soda, in chemical processing applications, for bulk storage chemicals such as sodium hydroxide and aluminum nitrite, and in semiconductor plants, handling sulfuric, nitric, and hydrofluoric acids for wet stations.

Poly-Flo® Engineered Design



Why Specify Poly-Flo® Systems

The Poly-Flo System is a unique dual extruded and molded system. All other double containment systems are made from single wall components and then assembled into a double wall configuration. The Poly-Flo System thereby reduces fabrication resulting in significant cost savings. Asahi/America's patented extrusion process locks the pipe together by use of continuous support ribs. This unique process is applied to molding fittings as well. The continuous support provides inherent restraint to expansion forces thus eliminating the requirement of Dogbone fittings in the Poly-Flo System.

Poly-Flo's patented double O-ring flanges allow systems to be efficiently pre-assembled then easily bolted into place in the field.

The Poly-Flo system is available with manual and low point leak detection sensors only. The use of leak detection cable is not possible due to limited annular space.

Poly-Flo®

Ideal Applications Include:

- For installations with tight space constraints
- Water treatment facilities using multiple chemicals
- For outside applications, due to UV resistance
- For systems where thermal expansion & contraction are present

Pro-Lock™

PVC & C-PVC

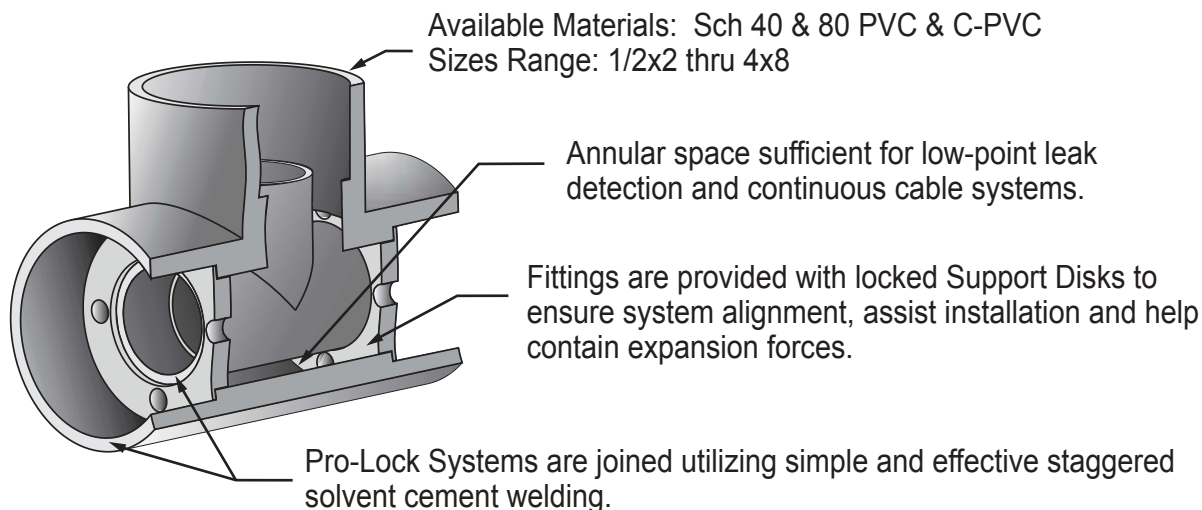
Double Containment

Pro-Lock systems by Asahi-America combine engineering design with cost effective materials. The result is reliable double contained piping systems for a variety of applications. Pro-Lock exceeds the requirements of EPA Standard 40 CFR, Part 280 & 281 for underground transport of hazardous chemicals.



Pro-Lock is ideally suited for use in water and wastewater treatment applications and anywhere sodium hypochlorite is used.

Pro-Lock™ Engineered Design



Why Specify Pro-Lock™ Systems

Pro-Lock system's design consists of a centralizing support disk inside the containment pipe & fitting, minimizing carrier pipe deflection & extending the system's life. Fittings are made of the same resin as the pipe and are available in a variety of configurations for pressure applications. Fittings are supplied from the factory dual contained and locked together ready for installation.

Pro-Lock is assembled in the field using staggered or simultaneous joining methods. Joining cements are recommended based on your application. Pro-Lock fittings and pipe are NSF-61 certified and IAPMO approved.

Pro-Lock™

Ideal Applications Include:

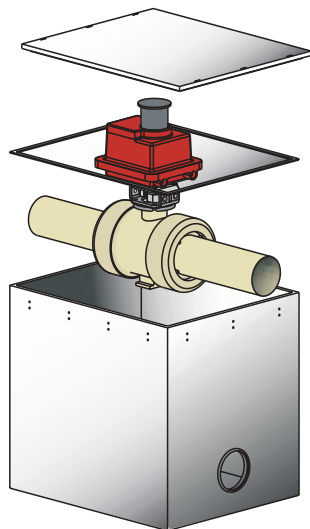
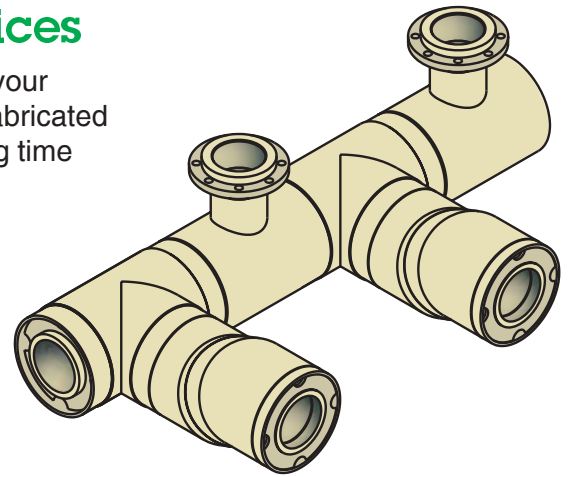
- Water Treatment
- Wastewater Treatment
- Anywhere sodium hypochlorite is the media being transported

Fabrication and Installation Services

Allow Asahi/America's team of professionals to prefabricate your double wall system in our factory. Most systems can be prefabricated in our factory, minimizing field installation requirement; saving time and installation costs.

Prior to assembly our engineering staff will work with you to ensure the system structural integrity through their involvement with overall system design and project layouts, pressure rating review, stress analysis, takeoffs, support spacing and burial techniques.

Our field team is available to train your installation team on joining methods, installation tips and address any site specific concerns.



Specialty Fittings and Components

Enhance any double containment system by adding specialty fittings and component options.

Access Ports-Gain quick and easy access to your system. Provides convenient cost effective option to getting to your system without wasting time breaking ground.

Low Point Stations-Manual or automatic solutions to determine if the system has a leak. Easily added to any system.

Valve Boxes-Protect your valves with a corrosion resistant box or pipe configuration. Available for all Asahi/America valves, with or without stem extensions.

Joining Techniques

The type of material and system will dictate the welding method and tool selection. On all Asahi/America double wall systems, butt fusion is the recommended system offered due to its ideal functionality. Be certain not to weld in the rain, as rain will damage equipment and improperly influence the weld. In addition, high winds and cold temperature below 40 F will negatively influence the welding process. Please consult Asahi-America's chart on page F-46 in Asahi/America's *Engineering Design Guide* for tool selection recommendations.

Tools Available:

Asahi/America has a wide array of welding machines available for purchase or rent. We offer industrial tools to fit almost every application installation. From manual tools that can be modified for use in tight space constraints, to trench tools that can weld in adverse site conditions, to tools that can weld in difficult positions, we are poised to supply the tool that meets your job's unique demands.



W4400 Trench 6



W2500 Shop 12

Double Containment Supply Range

Double
Containment
Size
Ranges

Duo-Pro®



PP	Pro150 x 150 Pro150 x 45 Pro45 x 45
PVDF	PVDF x Pro150 PVDF x Pro45 PVDF x PVDF
E-CTFE	Halar x Halar Halar x Pro150 Halar x Pro45

Poly-Flo®























Poly-Flo	PP HDPE
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Pro-Lock™



Pro-Lock	PVC 40 x 40 PVC 80 x 40 PVC 80 x 80 CPVC 80 x 80 CPVC x PVC 80/40 CPVC x PVC 80/80
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FITTINGS	Duo-Pro®			Poly-Flo®		Pro-Lock™	
	PP	PVDF	E-CTFE	PP	HDPE	PVC	CPVC
Pipe 	1X3 to 16x20	1X3 to 12x16	1X3 to 4x8	1x2 to 4x6	1x2 to 4x6	1x3 to 4x8	1/2x2 to 4x8
90 	1X3 to 16x20	1X3 to 12x16	1X3 to 4x8	1x2 to 2x3	1x2 to 2x3	1x3 to 4x8	1/2x2 to 4x8
Tees 	1X3 to 16x20	1X3 to 12x16	1X3 to 4x8	1x2 to 4x6	1x2 to 4x6	1x3 to 4x8	1/2x2 to 4x8
45 	1X3 to 16x20	1X3 to 12x16	1X3 to 4x8	1x2 to 4x6	1x2 to 4x6	1x3 to 4x8	1/2x2 to 4x8
Reducer-Concentric 	(3X1) (6x3) to (14x12)(18x16)	(3X1) (6x3) to (10x4)(14x8)	(3X1)(6x3) to (4x3)(8x6)	(2x1) (3x2) to (4x6) (6x3)	(2x1) (3x2) to (4x22) (6x3)	1x3 to 4x8	1/2x2 to 4x8
Dogbone 	1X3 to 16x20	1X3 to 12x16	1X3 to 4x8	Not Needed	Not Needed	1x3 to 4x8	1/2x2 to 4x8
Restraint Dogbone 	1X3 to 16x20	1X3 to 12x16	1X3 to 4x8	1x2 to 4x6	1x2 to 4x6	1x3 to 4x8	1/2x2 to 4x8
End Termination 	1X3 to 16x20	1X3 to 12x16	1X3 to 4x8	1x2 to 4x6	1x2 to 4x6	1x3 to 4x8	1/2x2 to 4x8
2 PC End Termination 	Not Available	Not Available	Not Available	Not Available	Not Available	1x3 to 4x8	1/2x2 to 4x8
Reducer Eccentric 	(3X1) (6x3) to (10x4)(14x18)	Not Available	Not Available	Not Available	Not Available	C.F.	C.F.
Low Point Station 	1X3 to 12x16	1X3 to 12x16	1X3 to 4x8	1x2 to 4x6	1x2 to 4x6	1x3 to 4x8	1/2x2 to 4x8
Access Tee 	1X3 to 12x16	1X3 to 12x16	1X3 to 4x8	Not Needed	Not Needed	1x3 to 4x8	1/2x2 to 4x8
Cap 	1X3 to 16x20	1X3 to 8x12	1X3 to 4x8	1x2 to 4x6	1x2 to 4x6	1x3 to 4x8	1/2x2 to 4x8
Dw Flange 	1X3 to 16x20	C.F.	Not Available	1x2 to 4x6	Not Available	Not Available	Not Available
Lateral 	1X3 to 16x20	1X3 to 8x12	C.F.	2x3 to 4x6	2x3 to 4x6	Not Available	Not Available
Lateral with 1/8 Bend 	1X3 to 16x20	1X3 to 8x12	C.F.	2x3 to 4x6	2x3 to 4x6	Not Available	Not Available
P Trap 	1X3 to 16x20	1X3 to 8x12	1X3 to 4x8	1x2 to 4x6	1x2 to 4x6	Not Available	Not Available
Floor Drain 	2X4 to 6x10	2x4 to 4x8	C.F.	2x3 to 4x6	2x3 to 4x6	Not Available	Not Available
Clean Out 	1X3 to 16x20	1X3 to 6x10	C.F.	1x2 to 4x6	1x2 to 4x6	1x3 to 4x8	1/2x2 to 4x6
Sanitary Tee 	1X3 to 16x20	1X3 to 8x12	C.F.	Not Available	Not Available	Not Available	Not Available