



Smith-Blair Restraint Products

Tried and True Technologies in Pipe Pull Out Prevention

Cam-Lock Restraints For DI and PVC

Two big advantages of Smith-Blair Cam-Locks is they have fewer wedges to torque and less torque to actuate them. To most crews that adds up to efficiency and cost savings.



With black wedge assemblies, the 111 Series is made for DI and Steel connections. With red wedge assemblies, the 120 Series is for PVC connections. Cam-Locks come in 3"-48" for DI as well as 3"-36" for PVC and 3"-12" for steel and PVC IPS sized pipe use.

Cam-Lock joint restraints can be adapted for use on new or existing pipelines.

Pipe-Locks To Restrain, Join, Transition

We call Pipe-Locks versatile. They are designed in different styles in straight, transition and reducing versions that can join and restrain plain end PVC, DI and Steel in any combination.



They are shipped as complete assemblies and include a center sleeve, Cam-Locks, gaskets and hardware. Each component can also be shipped separately. Pipe-Locks are available with Multi-Seal gaskets to provide more flexibility when joining DI to IPS size pipe through 12". Each sleeve and gland is protected with our proprietary Flexi-Coat fusion bonded epoxy coating to resist corrosion and that meets AWWA C213 and is certified to NSF/ANSI 61 & 372. Longer sleeves and numerous pipe connection combinations are available.

Flange-Locks For MJ Coupling Adapters

These are flanged mechanical joint coupling adapters with Cam-Lock joint restraints. Sleeve weldment allows pipe to completely pass through for ease of installation



There are a wide variety of sizes, lengths and flange drillings available to meet your specific job requirements. All Flange-Locks have our proprietary Flexi-Coat fusion-bonded epoxy coating to resist corrosion and that meets AWWA C213 and is certified to NSF/ANSI 61 & 372.

MJ-Locks (formerly 115 Bell-Locks)



MJ-Locks are designed as an efficient means to connect MJ style fittings such as hydrants and valves.

They can be installed on existing pipelines. MJ-Locks have a split design and bi-directional serrations to ease installations. Sizes : PVC - 4"-24" ; Ductile Iron: 4"-16"

Bell-Locks For Restraining Bell & Spigot Connections

Bell-Locks make restraining PVC and DI easy and fast. Just like our MJ-Lock design, Bell-Locks incorporate a split design with bi-directional machined serrations for easier installations. They are available for PVC pipe connections through 24" DI size and through 12" IPS size.



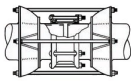
MAXI-GRIP EZ-W Restraint Family

One of the latest additions to the Smith-Blair family of water restraint products is MAXI-GRIP, that was adapted from the EZ Series in the gas market. It can be ordered in various configurations to join and transition among DI, PVC, HDPE (with proper stiffener) and steel. MAXI-GRIP products pressure test to over one and a half times their rated pressure. They also test for pull-out resistance on HDPE, according to ASTM D2513 Category 1 and 3. A tensile test replicates conditions of axial pipe movement and dynamically tests the restraining capability of the fitting. The specially designed stab-fit gasket provides easy installation and a full seal before the restraint engages. Our grip rings are engineered with an optimum tooth angle, providing maximum grip and virtually 360 degrees of engagement, without pipe detriment. The is available in many sizes and configurations to join, transition, reduce, flange adapt and cap. It comes in a straight, reducing, transition and long sleeve with an MJ adapter. Minimum wall thickness for plastic pipe includes: PVC (DIPS)-25DR and PVC (IPS)-26DR. For other DRs contact Smith-Blair.



Other Smith-Blair Restraints

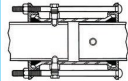
AWWA M-11 Style Harness Assembly



The purpose of these are to restrain flexible couplings on steel pipelines. These are typically field welded and come in a variety of sizes and pressure requirements.

Harness assemblies should be used where calculations show forces resulting from a lateral connection, change in pipeline direction, unstable soil, thermal expansion/contraction or other service conditions that could cause pipe pull-out. Angular deflection may be restricted by harness assemblies or anchor studs. Customers are encouraged to call Smith-Blair engineering for more information. Application sizes 6" and up.

Fittings With Anchor Studs



Anchor stud couplings are designed as an alternative coupling method to harness assemblies for applications where moderate longitudinal stresses are encountered. They are not intended to replace fixed pipe support.

Studs are leak resistant and can be threaded through couplings into pipe for a secure lock. These are used on Steel or Ductile Iron pipe applications. Working pressure is determined based on application. See specific products for sizing. Materials in the manufacturing can vary and it is best to consult with a Smith-Blair engineer prior to placing an order.

907 Restraint Plates



Restraint plates are used to adapt a flange x flange connection using extension plates and tie rods. Smith-Blair restraint plates feature triangular metal plates, connected behind the flanges using the existing flange bolting hardware. The plates are connected using tie rods. Optional stainless restraint plates are constructed of 304 or 316 Stainless Steel and typical offerings are Carbon Steel covered with Smith-Blair's fusion-bonded epoxy coating as shown. Smith-Blair restraint plates for flanged connections come in any size and style. See Smith-Blair's Water Catalog for more information.

Restraint Products Sizes, Applications & Pressures

Model	Product	Applications	Sizes	Pipe Types	Working Pressure
111	Cam-Lock	Restraining and sealing pipe ends on MJ fittings	3"-48"	Ductile Iron, Steel	3"-16" = 350 PSI; 18"-48" 250 PSI 3"-12" = 250 PSI (Carbon Steel)
115	MJ-Lock	Restraining pipe ends to MJ, hydrants, valves and fittings	4"-16" Ductile Iron; 4"-24"PVC	Ductile Iron, PVC	Ductile Iron & PVC = Up to 250 PSI
120	Cam-Lock	Restraining and sealing pipe ends on MJ fittings	3"-12"	PVC (IPS Sized)	3"-12" = Up to 250 PSI
120	Cam-Lock	Restraining and sealing pipe ends on MJ fittings	4"-36"	PVC (DI Sized)	Rated at the pressure of the PVC pipe used, Up to 250 PSI
136	Bell-Lock	Restraining PVC plain-end pipe to push-on fittings	4"-8" PVC (DI Sized)	PVC	Rated at the pressure of the PVC pipe used, Up to 235 PSI. For use on DR14 or DR18.
165	Bell-Lock	Restraining push on pipe bells	4"-24" PVC Pipe	PVC	Rated restraining the pressure of the PVC pipe on which it is used: up to 235 PSI Ductile Iron size, Up to 250 PSI IPS
471	Pipe-Lock	Connecting plain end pipe	3"-48" Ductile Iron; 3"-12" IPS Steel	Ductile Iron, Steel	Ductile Iron 3"-16" = 350 PSI; Ductile Iron 18"-48" = 250 PSI; Steel = Up to 250 PSI
472	Pipe-Lock	Connecting plain end pipe	3"-12" IPS Size; 4"-36" DI Size	PVC	At the rating of PVC Pipe Used. 3"-24"= up to 235 PSI for DI Size; 30"=150 PSI; 36"=125 PSI and 250 PSI on IPS Sizes
473	Pipe-Lock	Connecting plain end pipe Ductile Iron or Steel to PVC-Transition	4"-36" DI Size; 3"-12" IPS Size	Ductile Iron, Steel, PVC	At the rating of PVC Pipe Used. 3"-24"= up to 235 PSI for DI Size; 30"= 150 PSI; 36"=125 PSI and 250 PSI on IPS Size
474	Pipe-Lock	Connecting plain end Ductile Iron or Steel--Reducing	3"-48" Ductile Iron; 3"-12" Steel	Steel x Steel; Steel x Ductile Iron	Rating based on larger of the two O.D.s: 3"-16" = 350 PSI; 18"-48" = 250 PSI; 250 PSI IPS Steel
475	Pipe-Lock	Connecting plain end PVC --Reducing	4"-36" Ductile Iron; 3"-12" IPS Size	PVC x PVC	Rating based on larger of the two O.D.s rating on PVC pipe on which it is installed; 3"-24" = Up to 250 PSI; 30"= 150 PSI; 36"= 125 PSI
476	Pipe-Lock	Connecting plain end PVC to plain end Ductile Iron OR Steel--Reducing	4"-36" PVC; 3"-48" Ductile Iron; 3"-12" IPS	PVC x Ductile Iron; PVC x Steel	Rated at pressure rating of the larger O.D. pipe on which it is used; 3"-24"= Up to 250 PSI; 30"=150 PSI; 36"= 125 PSI
477	Pipe-Lock Sleeve	Sleeve only--Straight and Reducing	3"-48"	PVC, Ductile Iron, Steel	3"-16" = 350 PSI; 18"-42" =250 PSI; 48" = 200 PSI
911	Flange-Lock	Connecting & restraining plain end pipe to flanges	3"-48" Ductile Iron; 3"-12" IPS Steel	Ductile Iron & Steel	3"-12" = 175 PSI; Greater than 14" = 150 PSI
920	Flange-Lock	Connecting & restraining plain end pipe to flanges	3"-36"	PVC	3"-12"= 175 PSI; Greater than 14" = 150 PSI
	Maxi-Grip EZ-W Couplings	Connecting & restraining plain-end pipe	1 1/4"-12"	Ductile Iron, PVC, Polyethylene, Steel	Steel = 300 PSI; Polyethylene = 200 PSI; PVC= 235 PSI; Ductile Iron = 300 PSI
	Maxi-Grip EZ-W Couplings	Connecting & restraining plain-end pipe	1 1/4"-12"	Ductile Iron, PVC, Polyethylene, Steel	Steel = 300 PSI; Polyethylene = 200 PSI; PVC= 235 PSI; Ductile Iron = 300 PSI
	Maxi-Grip EZ-W FCAs	Connecting and restraining plain end pipe to flanged pipe	2"-12"	Ductile Iron, PVC, Polyethylene, Steel	175 PSI or according to design
	Maxi-Grip EZ-W Line Caps	Self restraining pipe end cap	2"-12"	Ductile Iron, PVC, Polyethylene, Steel	Steel = 300 PSI; Polyethylene = 200 PSI; PVC = 235 PSI; Ductile Iron = 300 PSI
907	Restraint Plates	Restraining flange x flange piping connections	Any Size and Style of Bolted Flange	Any flange x flange material	Based on Application
909	AWWA M-11 Style Harness Assembly	Restraining Steel Pipe Joints	6" and larger	Steel	Based on Application
N/A	Anchor Studs	Fittings With Optional Anchor Studs	See Specific Products For Sizes	Steel or Ductile Iron	Based on Application