

# 1 System Data Sheet

## PureFlow Press Fittings



Viega PureFlow Press fittings are available in zero lead bronze and polymer and include a factory-assembled, stainless steel sleeve with three viewing holes and a tool

locator ring to ensure a proper PEX press connection. Viega PureFlow Press is the most complete potable water and hydronic system solution available in North America.

PureFlow Press fittings are available in sizes ranging from  $\frac{5}{16}$ " to 2" in elbows, tees, adapters, couplings, polymer manifolds, and valves. The  $\frac{5}{16}$ " and  $\frac{3}{8}$ " bronze fittings are not zero lead and are for use in radiant systems only.

### Components

- Zero lead bronze fittings use high quality zero lead material
- Polymer fittings use high-grade polymer (Radel® R)
- Stainless steel press sleeves are 304 stainless steel

### Operating Parameters

- Operating Temperature: 180°F max (potable)  
200°F max (hydronic)
- Operating Pressure: 160 psi max at 73°  
100 psi max at 180°F
- Test Pressure: Recommended: 100 psi, Maximum: 160 psi

### Listings and Certifications

- ASTM E84
- ICC-ES PMG 1038/1015
- ASTM F3347
- NSF-pw 372
- ASTM F3348
- UL 1821
- CAN/ULC S101 / S102.2
- UL 263
- CSA B137.5
- HUD MR-1276

### Compliant With

- International Mechanical Code (IMC)
- International Plumbing Code (IPC)
- International Residential Code (IRC)
- National Fire Protection Association - 13D (NFPA)
- National Standard Plumbing Code (NSPC)
- Uniform Mechanical Code (UMC)
- Uniform Plumbing Code (UPC)
- Housing for Urban Development (HUD)
- Canadian Standards Association (CSA)
- National Plumbing Code of Canada (NPCC)
- National Building Code of Canada (NBCC)

### Approved Applications

- Hot and cold potable water
- Rainwater/gray water
- Hydronic heating and cooling\*
- Fire Sprinkler\*\* - NFPA 13D

\*Viega Barrier PEX tubing only.

\*\*Black Viega PureFlow PEX sizes  $\frac{3}{4}$ " through 2" only.

For more specific information on applications for PureFlow systems, contact Viega Technical Services at 1-800-976-9819.

Viega's PureFlow systems meet or exceed all requirements of ASTM F876/877 and are approved for installations above and below ground.

### Recommended Tools

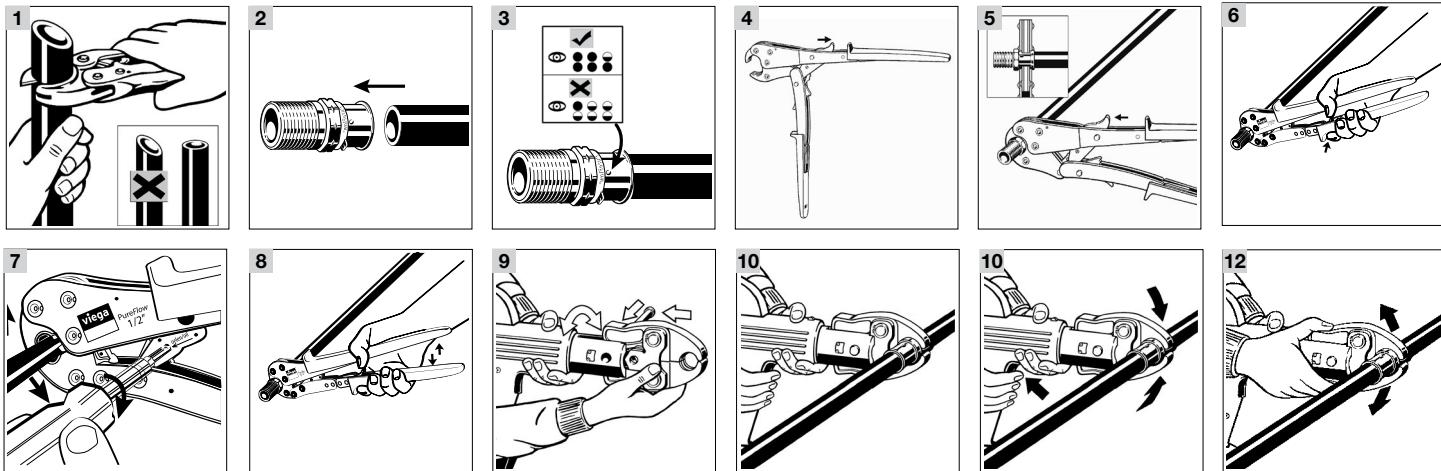
- Compact-size press tools (minimum hydraulic ram output of 5,400 lbs.) can be used to press  $\frac{5}{16}$ " to 1 $\frac{1}{2}$ "
- Standard press tools (minimum hydraulic ram output of 7,200 lbs.) can be used to press  $\frac{1}{2}$ " to 2"
- Hand tools ( $\frac{5}{16}$ " to 1")

### Smart Connect® Technology

Viega PureFlow Press fittings are manufactured with Viega's unique Smart Connect technology. Designed into the fitting itself, Viega Smart Connect technology allows identification of an unpressed fitting during pressure testing.

# 3 Product Instructions

## PureFlow Press Connections



### Viega PureFlow Press Fittings

- 1 Square off tubing to proper length. Uneven, jagged, or irregular cuts will produce unsatisfactory connections.
- 2 Insert PureFlow Press fitting with attached sleeve into tubing and engage fully.
- 3 Ensure full tubing insertion at view holes in attached press sleeve. Full insertion means tubing must be completely visible in at least two view holes and partially visible in the one.

**i** If using hand tools continue with steps 4 to 8. If using power tools skip to steps 9 to 12.

- 4 For the 1" tool, open the tool handles fully (thumb grip is available to maintain open jaw). Then close tool jaws to engage ratchet (ensure that thumb grip is returned fully forward before closing jaws).
- 5 Position the PureFlow press tool perpendicular over the press sleeve, resting it against the tool locator ring. For 1" tool, close tool jaws to engage ratchet (ensure that thumb grip is returned fully forward before closing jaws). Make sure the PureFlow press tool is properly aligned (see step 7 if it is not).

**i** The tool locator ring must be in the factory-installed position while making a press to ensure a consistent leak-proof connection. It may be necessary to rotate the tool locator ring to avoid interference between the ring and tool.

- 6 Close handles, using trigger to reduce grip span if desired.

- 7 If the PureFlow press tool is not properly aligned with the locator ring, use the emergency release (using a screw driver to turn the emergency release) to open the press tool. Once released, align the PureFlow press tool properly and go back to step 5.

**WARNING!**  
The connection is not leak-proof when the tool has been opened by emergency release. The tool locator ring must be present to ensure a proper PureFlow Press connection.

- 8 Extend the PureFlow press tool handle and continue ratcheting until automatic tool release occurs at the proper compression force.

**CAUTION!**  
Do not press twice.

- 9 Insert the appropriate PureFlow press jaw into the press tool and push in the holding pin until it locks.

- 10 Open jaw and position perpendicular over press sleeve, resting it against the tool locator ring.

**i** The tool locator ring must be in the factory-installed position while making a press to ensure a consistent leak-proof connection. It may be necessary to rotate the tool locator ring to avoid interference between the ring and tool.

- 11 Start the pressing process; hold the trigger until the jaw has automatically released.

- 12 When press connection is complete, open and remove the jaw.

**WARNING!**  
The tool locator ring must be present to ensure a proper PureFlow Press connection.

**CAUTION!**  
Do not press twice.

# 4 Engineering Specifications

## PureFlow System

### Part 1: General

#### 1.1 Summary

This specification covers branch and main, parallel water distribution systems (ManaBloc), cross-linked polyethylene tubing, and fittings using PureFlow press and PureFlow crimp technology for hot and cold water distribution systems. The system is assembled when the fitting barb is inserted fully into the tubing and either a stainless press sleeve or copper crimp ring is pressed/crimped over the tubing and fitting using the appropriate tool to create a leak proof permanent joint.

#### 1.2 References

ANSI/UL 263: Fire test of building construction and materials.

Standard methods of fire endurance tests of building construction and materials.

ASTM E84: surface burning characteristics of building materials

ASTM F1807: specification for metal insert fittings utilizing a copper crimp ring for SDR9 cross-linked polyethylene (PEX) tubing

ASTM F2023: test method for evaluating the oxidative resistance of cross-linked (PEX) tubing and systems to hot chlorinated water.

ASTM F2159: specification for plastic insert fittings utilizing a copper crimp ring for SDR9 cross-linked polyethylene (PEX) tubing

ASTM F3347: Standard Specification for Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing

ASTM F3348: Standard Specification for Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing

ASTM F876: specification for cross-linked polyethylene (PEX) tubing

ASTM F877: specification for cross-linked polyethylene (PEX) plastic hot and cold water distribution systems.

AWWA C904: cross-linked polyethylene (PEX) pressure pipe, 1/2 in. (12 mm) through 3 in. (76 mm), for water service.

CAN/ULC S102.2: standard method of testing for surface burning characteristics of flooring, floor covering and miscellaneous materials and assemblies.

CSA CAN/CSA B137.5: cross-linked polyethylene (PEX) tubing systems for pressure applications.

cULus - UL 1821: listing for multipurpose residential fire sprinkler systems (Viega Pureflow PEX black with PureFlow press bronze and polymer fittings in sizes 3/4 to 2)

IAPMO Uniform Mechanical Code

IAPMO Uniform Plumbing Code

ICC International Mechanical Code

ICC International Plumbing Code

NAPHCC National Standard Plumbing Code

NSF 14: plastic piping component and related materials

NSF 61: drinking water system components – health effects

#### 1.3 Quality Assurance

A. The installer shall be a qualified installer, licensed within the jurisdiction, and familiar with the installation of cross-linked polyethylene (PEX) tubing systems.

B. The installation of cross-linked polyethylene (PEX) tubing for hot and cold water distribution systems shall conform to the requirements of the ICC International Plumbing Code or IAPMO Uniform Plumbing Code.

## 1.4 Delivery, Storage, And Handling

- A. The cross-linked polyethylene (PEX) tubing shall be shipped to the job site on truck or in such a manner to protect the tubing. The cross-linked polyethylene fittings and manifolds shall not be handled roughly during shipment. The tubing and fittings shall be unloaded with reasonable care.
- B. Cross-linked polyethylene plastic tubing and fittings shall be stored in a flat, dry, well ventilated location, not exposed to direct sunlight. Normal care in handling shall be exercised to avoid abuse of the tubing. The tubing and fittings shall not be thrown or dropped on the ground, walked on, or dragged.

## 1.5 Project Conditions

- A. The location of a manifold with valves shall be accessible and in an area not subject to freezing. Proper support of the manifold shall be provided.
- B. PEX tubing should not be left exposed in direct sunlight for extended periods of time – short periods not to exceed 6 months are permissible.
- C. Plastic manifolds and fittings should not be left exposed in direct sunlight for extended periods of time — short periods not to exceed 15 days are permissible.

## 1.6 Warranty

- A. The tubing and fittings manufacturer shall warrant that the tubing and fittings are free from defects and conform to the designated standard. The warranty shall only be applicable to tubing and fittings installed in accordance with the manufacturer's installation instructions.
- B. The manufacturer of the tubing and fittings shall not be responsible for improper use, handling, or installation of the products.

# Part 2: Products

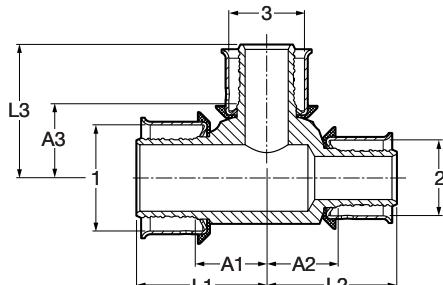
## 2.1 Manufacturer

Viega LLC  
585 Interlocken Blvd.  
Broomfield CO, 80021  
Phone: (800) 976-9819  
[www.viega.us](http://www.viega.us)

## 2.2 Material

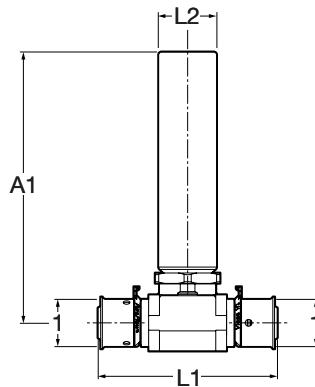
- A. **Tubing Standard:** Viega PureFlow PEX high-density cross-linked polyethylene tubing shall be manufactured to the requirements of ASTM F876 and meet the standard grade hydrostatic pressure ratings from Plastic Pipe Institute in accordance with TR-4/03. The following three standard grade ratings are required:
  - 200 degrees F (93 degrees C) at 80 psig (551 kPa)
  - 180 degrees F (82 degrees C) at 100 psig (689 kPa)
  - 73.4 degrees F (23 degrees C) at 160 psig (1102 kPa)
  1. **Chlorine testing:** According to ASTM F876 shall meet or exceed the following end use condition.
    - a. End use conditions of : 100% @ 140°F. Per PEX 5306 (CL5).
  2. **UV testing:** According to ASTM F876 PEX tubing products shall meet or exceed the following exposure limits.
    - a. Viega PureFlow PEX 6 months.
- B. **Fitting Standard:** PureFlow Press fittings shall be manufactured from UNS, C87700, C87710 Bronze or Radel R® polymer, meeting the requirements of ASTM F877 and ASTM F3347 (metallic) or ASTM F3348 (polymer) tested as a system with Viega PureFlow PEX tubing. The PureFlow Press sleeve shall be manufactured out of a 304 grade or better stainless steel and have three view holes (attached sleeve) to ensure proper PEX tubing insertion. The attached sleeve fitting will incorporate a tool locator ring that shall be in place while making a proper press connection. The PureFlow Press connection shall be made with a Viega supplied ratcheting PureFlow Press hand tool or PureFlow Press power tool.

## PureFlow Press Tee Zero Lead Bronze P x P x P - Model 2818ZL



Part No.	Size (in)			A1 (in)	A2 (in)	A3 (in)	L1 (in)	L2 (in)	L3 (in)
	1	2	3						
94020	1/2	x 1/2	x 1/2	0.47	0.47	0.47	0.97	0.97	0.97
94022	1/2	x 1/2	x 3/4	0.62	0.62	0.59	1.12	1.12	1.09
94040	3/4	x 3/4	x 3/4	0.59	0.59	0.59	1.09	1.09	1.09
94032	3/4	x 1/2	x 1/2	0.59	0.59	0.62	1.09	1.09	1.12
94034	3/4	x 1/2	x 3/4	0.59	0.62	0.59	1.09	1.12	1.09
94036	3/4	x 3/4	x 1/2	0.59	0.59	0.62	1.09	1.09	1.12
94060	1	x 1	x 1	0.88	0.88	0.88	1.50	1.50	1.50
94037	1	x 1/2	x 1/2	0.58	0.59	0.82	1.20	1.08	1.32
94039	1	x 1/2	x 1	0.76	0.74	0.76	1.38	1.24	1.38
94038	1	x 3/4	x 1/2	0.58	0.59	0.82	1.20	1.08	1.32
94052	1	x 3/4	x 3/4	0.80	0.76	0.84	1.40	1.26	1.34
94053	1	x 3/4	x 1	0.76	0.71	0.76	1.38	1.20	1.38
94050	1	x 1	x 1/2	0.68	0.68	0.84	1.30	1.30	1.34
94056	1	x 1	x 3/4	0.80	0.80	0.84	1.42	1.42	1.34
94070	1 1/4	x 1 1/4	x 1 1/4	1.00	1.00	1.00	1.87	1.87	1.87
94071	1 1/4	x 1	x 3/4	0.73	0.74	0.98	1.59	1.36	1.48
94073	1 1/4	x 1	x 1	0.81	0.82	0.99	1.67	1.44	1.61
94072	1 1/4	x 1 1/4	x 3/4	0.79	0.73	0.99	1.59	1.59	1.48
94074	1 1/4	x 1 1/4	x 1	0.81	0.81	0.99	1.67	1.67	1.61
94080	1 1/2	x 1 1/2	x 1 1/2	1.14	1.14	1.14	2.01	2.01	2.01
94081	1 1/2	x 1	x 3/4	0.73	0.66	1.13	1.59	1.28	1.62
94082	1 1/2	x 1	x 1	0.85	0.86	1.13	1.71	1.48	1.75
94083	1 1/2	x 1 1/2	x 3/4	0.73	0.73	1.13	1.59	1.59	1.62
94084	1 1/2	x 1 1/2	x 1	0.85	0.85	1.19	1.71	1.71	1.81
94085	1 1/2	x 1 1/2	x 1 1/4	0.98	0.98	1.14	1.85	1.85	2.00
94090	2	x 2	x 2	1.33	1.33	1.33	2.38	2.38	2.38
94091	2	x 1 1/2	x 1	1.34	1.36	1.35	2.38	2.22	1.97
94092	2	x 1 1/2	x 1 1/4	1.34	1.36	1.40	2.38	2.22	2.26

## PureFlow Press Tee Arrestor Zero Lead Brass P x P - Model 2894ZL



Part No.	Size (in)		A1 (in)	L1 (in)	L2 (in)
	1	1			
97114	1/2	x 1/2	3.90	2.59	0.84