Engineering Specifications

ProPress® Zero Lead Fitting System With Smart Connect® Technology

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Viega products are designed to be installed by licensed and trained plumbing and mechanical professionals who are familiar with Viega products and their installation. **Installation by non-professionals may void Viega LLC's warranty.**

Zero Lead identifies Viega® products meeting the lead free requirements of NSF 61 through testing under NSF/ANSI 372 (0.25% or less maximum weighted average lead content).

Part 1: General

1.1 Summary

Copper Tubing and Fitting System for Hot and Cold Water Distribution Systems, Sprinkler and Standpipe Systems and Hydronic Piping Systems

1.2 Definitions

ASME: American Society of Mechanical Engineers
ASTM: American Society for Testing and Materials
EPDM: Ethylene-propylene-diene-monomer
IAPMO: International Association of Plumbing & Mechanical Officials
ICC: International Code Council
MSS: Manufacturers Standardization Society
AWWA: American Water Works Association
NSF: National Sanitation Foundation
CSA: Canadian Standards Association
UL: Underwriters Laboratory
NFPA: National Fire Protection Association
FM: Factory Mutual

1.3 References

ASME A13.1: Scheme for the Identification of Piping Systems
ASME B1.20.1: Pipe Threads, General Purpose (inch)
ASME B16.18: Cast Copper Alloy Solder Joint Pressure Fittings
ASME B16.22: Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings
ASME B16.26: Cast Copper Alloy Fittings for Flared Copper Tube
ASME B31.9: Building Services Piping
ASTM B75: Standard Specification for Seamless Copper Tube
ASTM B88: Standard Specification for Seamless Copper Water Tube
ASTM B813: Standard Specification for Liquid and Paste Fluxes for Soldering Applications of Copper and Copper Alloy Tube
ASTM B828: Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings
AWWA C651: Standard for Disinfecting Water Mains
IAPMO: Uniform Mechanical Code
IAPMO: Uniform Plumbing Code
IAPMO PS-117: Press and Nail Connections
ICC: International Plumbing Code
ICC: International Mechanical Code
MSS-SP-58 Pipe Hangers and Supports Materials, Design and Manufacturer
NFPA 13 Standard for the Installation of Sprinkler Systems
NFPA 13D Standard for the Installation of Sprinkler Systems in One/Two Family Dwellings and Mobile Homes
NFPA 13R Standard for the Installation of Sprinkler Systems for Residential Occupancies up to and including Four Stories in Height
NFPA 14 Standard for the Installation of Standpipe and Hose Systems
NSF 61 Drinking Water System Components – Health Effects
NFPA 54 National Fuel Gas Code

1.4 Quality Assurance

A. Installer shall be a qualified installer, licensed within the jurisdiction, and familiar with the installation of ProPress copper press joint systems.
B. ProPress copper press fittings shall be installed using the proper tool, actuator, jaws and rings as instructed by the press fitting manufacturer.
C. The installation of copper tubing for hot and cold water distribution systems shall conform to the requirements of the ICC International Plumbing Code or IAPMO Uniform Plumbing Code.
D. The installation of copper tubing in sprinkler or standpipe systems shall conform to NFPA 13, 13D, 13R and 14.
E. The installation of copper tubing in Hydronic systems shall conform to the requirements of the ICC International Mechanical Code or the IAPMO Uniform Mechanical Code.
F. ASME Compliance: ASME B31.9 for building services piping valves.

1.5 Delivery, Storage And Handling

A. Copper tubing shall be shipped to the job site on truck or in such a manner to protect the tubing. The tubing and fittings shall not be roughly handled during shipment. Tubing and fittings shall be unloaded with reasonable care.
B. Protect the stored product from moisture and dirt. Elevate above grade. When stored inside, do not exceed the structural capacity of the floor.
C. Protect fittings and piping specialties from moisture and dirt.

1.6 Project Conditions

A. Verify length of tubing required by field measurements.

1.7 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 fittings shall not be responsible for the improper use,handling or installation of the product.

Part 2: Products

2.1 Manufacturer (Press Fittings)

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Broomfield CO, 80021
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www.viega.us

2.2 Material

A. Tubing Standard: Copper tubing shall conform to ASTM B 75 or ASTM B88.
B. Fitting Standard: Copper fittings shall conform to ASME B16.18, ASME B16.22 or ASME B16.26.
C. Press Fitting: Copper and copper alloy press fittings shall conform to material requirements of ASME B16.18 or ASME B16.22 and performance criteria of IAPMO PS 117. Sealing elements for press fittings shall be EPDM. Sealing elements shall be factory installed or an alternative supplied by fitting manufacturer. Press ends shall have the Smart Connect technology design (leakage path). In ProPress ½" to 4" dimensions the Smart Connect technology assures leakage of liquids and/or gases from inside the system past the sealing element of an unpressed connection. The function of this feature is to provide the installer quick and easy identification of connections which have not been pressed prior to putting the system into operation.
D. Threaded Fittings: Pipe Threads shall conform to ASME B1.20.1.
E. Hanger Standard: Hangers and supports shall conform to MSS-SP-58.

2.3 Source Quality Control (for FM approved projects see notation D)

A. All fittings in contact with drinking water shall be listed by a third party agency to NSF 61 Annex G.
B. All fittings used in Fuel Gas Applications shall be listed by a third party agency as being acceptable for fuel gas piping systems.
C. All fittings used in Fire Sprinkler Applications shall be UL listed.
D. All fittings used in Fire Sprinkler Applications shall be FM approved.

Part 3: Execution

3.1 Examination

A. The installing contractor shall examine the copper tubing and fittings for defects, sand holes or cracks. There shall be no defects of the tubing or fittings. Any damaged tubing or fittings shall be rejected.
B. The installing contractor shall insure that sealing elements are properly in place and free from damage. For Sizes 2-1/2" to 4", installer should insure that the stainless steel grip ring is in place.

3.2 Preparation

A. Copper tubing shall be cut with a wheeled tubing cutter or approved copper tubing cutting tool. The tubing shall be cut square to permit proper joining with the fittings.
B. Remove scale, slag, dirt and debris from inside and outside of tubing and fittings before assembly. The tubing end shall be wiped clean and dry. The burrs on the tubing shall be reamed with a deburring or reaming tool.

3.3 Installation General Locations

Plans indicate general location and arrangement of piping systems. Identified locations and arrangements are used to size tubing and calculate friction loss, expansion, pump sizing and other design considerations. Install piping as indicated, except where deviations to layout are approved on coordination drawings.

3.4 Installation

A. Pressure Rating: Install components having a pressure rating equal to or greater than the system operating pressure.
B. Install piping free of sags, bends and kinks.

C. Change in Direction: Install fittings for changes in direction and branch connections. Where approved, changes in direction may also be made by bending of Types K and L tube.
D. Solder Joints: Solder joints shall be made in accordance with ASTM B 828. The temperature of the joint during soldering shall not be raised above the maximum temperature limitation of the flux.
E. Threaded Joints: Threaded joints shall have pipe joint compound or teflon tape applied to the male threads only. Tighten joint with a wrench and backup wrench as required.
F. Flared Joints: Flared copper tube joints shall be made by the appropriate use of cast copper alloy fittings. Flared ends of copper tube shall be of the 45-degree flare type and shall only be made with a flaring tool designed specifically for that purpose.
G. Press connections: Copper and copper alloy press connections shall be made in accordance with the manufacturer's installation instructions. The tubing shall be fully inserted into the fitting and the tubing marked at the shoulder of the fitting. The fitting alignment shall be checked against the mark on the tubing to assure the tubing is fully engaged (inserted) in the fitting. The joints shall be pressed using the tool(s) approved by the manufacturer.
H. Pipe Protection: Provide protection against abrasion where copper tubing is in contact with other building members by wrapping with an approved tape, pipe insulation or otherwise suitable method of isolation.
I. Penetration Protection: Provide allowance for thermal expansion and contraction of copper tubing passing through a wall, floor, ceiling or partitionby wrapping with an approved tape or pipe insulation or by installing through an appropriately sized sleeve. Penetrations for fire resistant rated assemblies shall maintain the rating of the assembly.
J. Backfill Material: Backfill material shall not include any ashes, cinders, refuse, stones, boulders or other materials which can damage or break the tubing or promote corrosive action in any trench or excavation in which tubing is installed.
K. Horizontal Support: Install hangers for horizontal piping in accordance with MSS-SP-58 or the following maximum spacing and minimum rod sizes.
L. Vertical Support: Vertical copper tubing shall be supported at each floor.
M. Galvanic Corrosion: Hangers and supports shall be either copper or vinyl coated to prevent galvanic corrosion between the tubing and the supporting member.
N. Seismic Restraint: In seismic areas, copper tubing shall be installed to withstand all seismic forces.
O. Piping Identification: Copper tubing systems shall be identified in accordancewith the requirements of ASME A13.1.

3.5 Field Quality Control

A. Water Testing: The copper tubing system shall be water tested for joint tightness. The piping system shall be filled with water. The system shall be pressurized to the maximum pressure and length of time required by the code or standard. The system shall have no leaks at the rated pressure.
B. Air Testing: The copper tubing system shall be air tested for joint tightness. The piping system shall be pressurized with air to the maximum pressure of the system or to the code or standard required minimum for the required length of time. The system shall have no leaks at the rated pressure.

3.6 Cleaning (potable water systems)

A. Disinfection: The copper hot and cold water distribution system shall be disinfected prior to being placed in service. The system shall be disinfected in accordance with AWWA C651 or the following requirements:
   1. The piping system shall be flushed with potable water until discolored water does not appear at any of the outlets.
   2. The system shall be filled with a water chlorine solution containing at least 50 parts per million of chlorine. The system shall be valved off and allowed to stand for 24 hours or the system shall be filled with a water chlorine solution containing at least 200 parts per million of chlorine. The system shall be valved off and allowed to stand for 3 hours.
   3. Following the standing time, the system shall be flushed with water until the chlorine is purged from the system.

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