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APPROVAL REPORT

Project No: PR458492

Class: 1920

Product Type: Press-Fit Pipe Fittings for Use with Aboveground Fire Protection Systems
MegaPress Press-Fit Pipe Fittings


Product Name: 1/2 through 2 inch NPS
For Use with ASME B36.10M Schedule 10 and Schedule 40 Aboveground Steel Sprinkler Pipe with FKM Gasket Material

Name of Report Holder: Viega LLC

Address of Report Holder: 585 Interlocken Blvd
Broomfield, Colorado 80021
United States

Customer ID: 107062

Prepared by

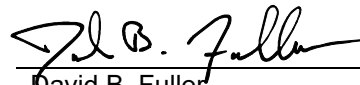


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March 11, 2022
Date of Approval

1 INTRODUCTION

1.1 Viega LLC requested an FM Approval examination of their press-fit pipe fittings with rated working pressures in accordance with the following:

Project Scope - Press-Fit Pipe Fittings					
Model	Product Type	Nominal Pipe Size inch	Rated Working Pressure		Pipe
			psi	kPa	
5911	Press x MNPT Adapter	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5912	Press x FNPT Adapter	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5912	Press x FNPT Reducing Adapter	3/4 x 1/2 1 x 1/2, 3/4 1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 3/4, 1, 1-1/2	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5915	Press x Press Coupling with Stop	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5915.1	FTG x Press Reducer	3/4 x 1/2 1 x 1/2, 3/4 1-1/4 x 3/4, 1 1-1/2 x 3/4, 1, 1-1/4 2 x 1, 1-1/4, 1-1/2	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5915.5	Press x Press Coupling without Stop	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5916	Press x Press 90 Degree Elbow	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5916.1	FTG x Press 90 Degree Elbow	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5917.2	Press x Press x FNPT Reducing Tee	3/4 x 3/4 x 1/2 1 x 1 x 1/2, 3/4 1-1/4 x 1-1/4 x 1/2, 3/4, 1 1-1/2 x 1-1/2 x 1/2, 3/4, 1 2 x 2 x 1/2, 3/4, 1	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5917.2	Press x Press x FNPT Equal Tee	3/4 x 3/4 x 3/4	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5918	Press x Press x Press Equal Tee	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5918	Press x Press x Press Reducing Tee	3/4 x 3/4 x 1/2 1 x 1 x 1/2, 3/4 1-1/4 x 1-1/4 x 1/2, 3/4, 1 1-1/2 x 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5926	Press x Press 45 Degree Elbow	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	1205	ASME B36.10M Schedule 10 and Schedule 40

Project Scope - Press-Fit Pipe Fittings					
Model	Product Type	Nominal Pipe Size inch	Rated Working Pressure		Pipe
			psi	kPa	
5926.1	FTG x Press 45 Degree Elbow	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5956	End Cap	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5959.5	Flange Adapter	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	1205	ASME B36.10M Schedule 10 and Schedule 40
5960	Press x Press Union	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	1205	ASME B36.10M Schedule 10 and Schedule 40

1.2 The press-fit pipe fittings detailed in Section 1.1 are nearly identical to the press-fit pipe fittings detailed in Project Identification numbers 3044100, dated May 21, 2012 and 3047543, dated December 23, 2013 with the only difference is the gasket material. Viega LLC has requested that the fittings detailed in Section 1.1 be available with o-rings formulated from FKM rubber instead of the currently Approved o-rings formulated from EPDM rubber. No other design features were changed.

1.3 This Report may be freely reproduced only in its entirety and without modification.

1.4 Standards

1.4.1 FM Approvals Standards

Title	Number	Issue Date
Pipe Couplings and Fittings for Aboveground Fire Protection Systems	1920	November, 2007

1.5 Listing

The product(s) will be updated in the Approval Guide, an on-line resource of FM Approvals, as detailed in an attachment at the end of this report. Deletions from any current product listing are shown with strikethroughs and additions to the Approval listing are shown in red text.

2 DESCRIPTION

2.1 Carbon Steel Press-Fit x Press-Fit Pipe Fittings

The various carbon steel press-fit fittings are used to connect press-fit pipe or fittings to other press-fit pipe or fittings. The fittings are manufactured from Grade E235 Material S235 JRG2 Carbon Steel manufactured to DIN 2394 specifications with an external zinc-nickel coating of 2 - 5 nm and are sealed with a FKM elastomer o-ring.

2.2 Carbon Steel Press-Fit x Threaded Pipe Fittings

The various carbon steel press-fit by threaded pipe fittings are used to connect press-fit pipe or fittings to threaded pipe or fittings. The fittings are manufactured from Grade E235 Material S235 JRG2 Carbon Steel manufactured to DIN 2394 specifications with an

external zinc-nickel coating of 2 - 5 nm and are sealed with a FKM elastomer o-ring. The various carbon steel press-fit fittings are supplied with NPT threads according to ANSI/ASME B1.20.1 specifications.

2.3 Carbon Steel Press-Fit x Flanged Pipe Fittings

The various carbon steel press-fit x flanged pipe fittings are used to connect press-fit pipe or fittings to valves or other fittings supplied with ANSI B16.5 Class 150 flanges. The fittings are manufactured from Grade E235 Material S235 JRG2 Carbon Steel manufactured to DIN 2394 specifications with an external zinc-nickel coating of 2 - 5 nm and are sealed with a FKM elastomer o-ring.

2.4 Carbon Steel Press-Fit x FTG Pipe Fittings

The various carbon steel press-fit x FTG threaded pipe fittings are used to connect press-fit pipe or fittings to other press-fit pipe or fittings. The fittings are manufactured from Grade E235 Material S235 JRG2 Carbon Steel manufactured to DIN 2394 specifications with an external zinc-nickel coating of 2 - 5 nm and are sealed with a FKM elastomer o-ring. The fittings are available with a street connection that slides into another press-fit fitting which can then be secured using a press tool.

2.5 Carbon Steel Press-Fit End Connections

All products discussed throughout this Report are based on the use of a mechanical press connection at one or more ends of the pipe. The desired connection is achieved by encircling the female end of the pipe/fitting connection with specifically designed jaws and then using an installation tool to mechanically press the pipe and fitting together. The design of the jaws prevents over-compression of the joint – once the jaws are completely closed, the joint is properly secured.

3 EXAMINATIONS AND TESTS

3.1 Samples were submitted for examination and testing. The samples were considered to be representative of the product line and were examined, tested, and compared to the manufacturer's drawings. All data remains on file at FM Approvals along with other documents and correspondence applicable to this program.

3.2 All testing and analysis considered appropriate was conducted and verified to be in compliance with the standards defined in Section 1.4.

3.3 Detailed analysis of the examination and testing can be found as an attachment at the end of this Report.

4 MARKING

4.1 The following information is laser etched onto each product discussed in this Report and meets Standard requirements:

- Manufacturer's Name or Trademark
- Product Model Number
- Manufacturing Source Code
- Nominal Pipe Size
- FM Approvals Certification Mark

5 REMARKS

- 5.1 The FM Global Property Loss Prevention Data Sheets should be strictly adhered to when installing this product.
- 5.2 Installations shall comply with the latest edition of the manufacturer's instruction manual.
- 5.3 Tampering and/or replacement with non-factory components may adversely affect the safe use of the product.

6 SURVEILLANCE AUDIT

The design and manufacturing facilities at the following locations are subject to follow-up audit inspections. The facilities and quality control procedures in place have been found to be satisfactory to manufacture product identical to that examined and tested as described in this Report. A revision request form shall be submitted to FM Approvals for requesting any additional manufacturing facilities which are not listed below. The Products discussed in this Report are FM Approved only when designed and manufactured in the following facilities:

Design

Viega LLC
12303 Airport Way, Suite 395
Broomfield, Colorado 80021
United States

Manufacturing

Viega GmbH & Co. KG
Viegestraße 1
Grossheringen 99518
Germany

Viega GmbH & Co. KG
Zum Langen Acker 7
Attendorn-Ennest 57439
Germany

7 MANUFACTURER'S RESPONSIBILITIES

- 7.1 Documentation considered critical to this Approval is on file at FM Approvals and is listed in the Documentation File, Section 8, of this Report. No changes of any nature shall be made unless notice of the proposed change has been given and written authorization obtained from FM Approvals. The revision request form shall be forwarded to FM Approvals as notice of proposed changes.
- 7.2 The manufacturer is responsible for control of the product marking and installation instructions for the product.
- 7.3 The manufacturer shall provide installation, operating, and maintenance manual(s) with each system.
- 7.4 The manufacturer is responsible for performing the Manufacturing and Production Tests specified in the Standard defined in Section 1.4 of this Approval Report.

8 DOCUMENTATION FILE

All pertinent Report documents are outlined in the ATTACHMENTS list below.

9 CONCLUSION

The Products described in Section 1 of this Report meet FM Approvals requirements when manufactured at the facilities detailed in Section 6 of this Report. Since a duly signed Master Agreement is on file for this manufacturer, Approval is effective the date of this report.

PROJECT DATA RECORD: PR458492

ATTACHMENTS: Appendix A Non-Gasketed Pipe Fitting Approval Guide Listing
Appendix B Detailed Analysis
Appendix C Critical Document List (CDL)

APPROVAL GUIDE LISTING

Non-Gasketed Pipe Fittings

Fire Protection – Automatic Sprinkler Systems – Pipes and Fittings for Aboveground – Pipe Fittings – Compression Type

ViEGA LLC

585 Interlocken Blvd., Broomfield, Colorado 80021 United States

Model No	Description	Nominal Pipe Size, in	Rated Working Pressure		Remarks
			psi	(kPa)	
4111	MegaPress Adapter (Press x MNPT)	1/2 x 1/2 3/4 x 1/2, 3/4 1 x 1 1 1/2 x 1 1/2 2 x 2	175	(1205)	a, b, c
4112	MegaPress Adapter (Press x FNPT)	1/2 x 1/2 3/4 x 3/4 1 x 1 1 1/2 x 1 1/2 2 x 2	175	(1205)	a, b, c
4115	MegaPress Coupling with Stop (Press x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, c
4115.1	MegaPress Reducer (FTG x Press)	3/4 x 1/2 1 x 1/2, 3/4 1 1/2 x 3/4, 1 2 x 1, 1 1/2	175	(1205)	a, b, c
4115.2	MegaPress Reducer (Press x Press)	3/4 x 1/2 1 x 3/4 1 1/2 x 1 2 x 1 1/2	175	(1205)	a, b, c
4115.5	MegaPress Coupling without Stop (Press x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, c
4116	MegaPress 90° Elbow (Press x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, c
4116.1	MegaPress 90° Elbow (FTG x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, c
4117.2	MegaPress Equal Tee (Press x FNPT)	3/4	175	(1205)	a, b, c
4117.2	MegaPress Reducing Tee (Press x FNPT)	3/4 x 3/4 x 1/2 1 x 1 x 1/2, 3/4 1 1/2 x 1 1/2 x 1/2, 3/4, 1 2 x 2 x 1/2, 3/4, 1	175	(1205)	a, b, c
4118	MegaPress Equal Tee (Press x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, c

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Model No	Description	Nominal Pipe Size, in	Rated Working Pressure		Remarks
			psi	(kPa)	
4118	MegaPress Reducing Tee (Press x Press)	3/4 x 3/4 x 1/2 1 x 1 x 1/2, 3/4 1 1/2 x 1 1/2 x 1/2, 3/4, 1 2 x 2 x 1/2, 3/4, 1, 1 1/2	175	(1205)	a, b, c
4126	MegaPress 45° Elbow (Press x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, c
4126.1	MegaPress 45° Elbow (FTG x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, c
4156	MegaPress End Cap (Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, c
4159	MegaPress 2 Piece Flange (Flange x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, c
4160	MegaPress Union (Press x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, c
5111	MegaPress Adapter (Press x MNPT)	1/2 x 1/2 3/4 x 1/2, 3/4 1 x 1 1 1/2 x 1 1/2 2 x 2	175	(1205)	a, b, d
5112	MegaPress Adapter (Press x FNPT)	1/2 x 1/2 3/4 x 3/4 1 x 1 1 1/2 x 1 1/2 2 x 2	175	(1205)	a, b, d
5115	MegaPress Coupling with Stop (Press x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, d
5115.1	MegaPress Reducer (FTG x Press)	3/4 x 1/2 1 x 1/2, 3/4 1 1/2 x 3/4, 1 2 x 1, 1 1/2	175	(1205)	a, b, d
5115.2	MegaPress Reducer (Press x Press)	3/4 x 1/2 1 x 3/4 1 1/2 x 1 2 x 1 1/2	175	(1205)	a, b, d
5115.5	MegaPress Coupling without Stop (Press x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, d
5116	MegaPress 90° Elbow (Press x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, d
5116.1	MegaPress 90° Elbow (FTG x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, d
5117.2	MegaPress Equal Tee (Press x FNPT)	3/4	175	(1205)	a, b, d

FM APPROVALS PROJECT NO: PR458492

Model No	Description	Nominal Pipe Size, in	Rated Working Pressure		Remarks
			psi	(kPa)	
5117.2	MegaPress Reducing Tee (Press x FNPT)	3/4 x 3/4 x 1/2 1 x 1 x 1/2, 3/4 1 1/2 x 1 1/2 x 1/2, 3/4, 1 2 x 2 x 1/2, 3/4, 1	175	(1205)	a, b, d
5118	MegaPress Equal Tee (Press x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, d
5118	MegaPress Reducing Tee (Press x Press)	3/4 x 3/4 x 1/2 1 x 1 x 1/2, 3/4 1 1/2 x 1 1/2 x 1/2, 3/4, 1 2 x 2 x 1/2, 3/4, 1, 1 1/2	175	(1205)	a, b, d
5126	MegaPress 45° Elbow (Press x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, d
5126.1	MegaPress 45° Elbow (FTG x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, d
5156	MegaPress End Cap (Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, d
5159	MegaPress 2 Piece Flange (Flange x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, d
5160	MegaPress Union (Press x Press)	1/2, 3/4, 1, 1 1/2, 2	175	(1205)	a, b, d
5911	MegaPress Adapter (Press x M)	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	(1205)	e, f, g
5912	MegaPress Adapter (Press x F)	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	(1205)	e, f, g
5912	MegaPress Reducing Adapter (Press x F)	3/4 x 1/2 1 x 1/2, 3/4 1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 3/4, 1, 1-1/2	175	(1205)	e, f, g
5915	MegaPress Coupling with Stop (Press x Press)	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	(1205)	e, f, g
5915.1	MegaPress Reducer (FTG x Press)	3/4 x 1/2 1 x 1/2, 3/4 1-1/4 x 3/4, 1 1-1/2 x 3/4, 1, 1-1/4 2 x 1, 1-1/4, 1-1/2	175	(1205)	e, f, g
5915.5	MegaPress Coupling without Stop (Press x Press)	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	(1205)	e, f, g
5916	MegaPress 90 Degree Elbow (Press x Press)	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	(1205)	e, f, g
5916.1	MegaPress 90 Degree Elbow (FTG x Press)	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	(1205)	e, f, g

Model No	Description	Nominal Pipe Size, in	Rated Working Pressure		Remarks
			psi	(kPa)	
5917.2	MegaPress Reducing Tee (Press x Press x F)	3/4 x 3/4 x 1/2 1 x 1 x 1/2, 3/4 1-1/4 x 1-1/4 x 1/2, 3/4, 1 1-1/2 x 1-1/2 x 1/2, 3/4, 1 2 x 2 x 1/2, 3/4, 1	175	(1205)	e, f, g
5917.2	MegaPress Equal Tee (Press x Press x F)	3/4 x 3/4 x 3/4	175	(1205)	e, f, g
5918	MegaPress Equal Tee (Press x Press x Press)	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	(1205)	e, f, g
5918	MegaPress Reducing Tee (Press x Press x Press)	3/4 x 3/4 x 1/2 1 x 1 x 1/2, 3/4 1-1/4 x 1-1/4 x 1/2, 3/4, 1 1-1/2 x 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2	175	(1205)	e, f, g
5926	MegaPress 45 Degree Elbow (Press x Press)	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	(1205)	e, f, g
5926.1	MegaPress 45 Degree Elbow (FTG x Press)	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	(1205)	e, f, g
5956	MegaPress End Cap (Press)	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	(1205)	e, f, g
5959.5	MegaPress Flange Adapter (FL x Press)	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	(1205)	e, f, g
5960	MegaPress Union (Press x Press)	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	175	(1205)	e, f, g

Press = Press Joint, M = Male Thread, F = Female Thread, FL = Flange, FTG = Street Connection

Remarks:

- a. FM Approved for use with ASTM A312 Schedule 10S Stainless Steel Pipe in Wet or Dry Sprinkler Systems
- b. FM Approved for use with ASTM A312 Schedule 40S Stainless Steel Pipe in Wet or Dry Sprinkler Systems
- c. Manufactured from Grade 1.4301 Type 304 Stainless Steel according to EN 10217-7 specifications
- d. Manufactured from Grade 1.4404 Type 316L Stainless Steel according to EN 10217-7 specifications
- e. FM Approved for use with ASME B36.10M Schedule 10 Steel pipe in Wet Sprinkler Systems
- f. FM Approved for use with ASME B36.10M Schedule 40 Steel pipe in Wet Sprinkler Systems
- g. Manufactured from Grade E235 Material S235 JRG2 Carbon Steel manufactured to DIN 2394 specifications

DETAILED ANALYSIS

1 EXAMINATION

The manufacturer provided samples of their gasketed pipe fittings as detailed below for examination and testing. The samples were considered to be representative of the product line and were examined, tested, and compared to the manufacturer's drawings. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.

FM 1920 Sample Requirements - Gasketed Fittings						Samples Required by Test										
NOTES: a) use hydrostatic strength test sample for bending moment resistance test. b) use vacuum test sample for leakage - assembly w/o gasket test. c) for products other than mechanical tees, the recommended overall length of sample assembly is 4-1/2 feet. d) for mechanical tees, the minimum overall length of run pipe is 2 feet and the minimum overall length of branch pipe is 1 foot.						Hydrostatic Strength	Bending Moment Resistance	Rot. Bending Moment Resistance	Vibration Resistance	Cycling Pressure Resistance	Vacuum Resistance	Hot Gasket	Cold Gasket	Leakage – Assembly w/o Gasket	Friction Loss Determination	TOTALS
Model	Product Type	Pipe Used	Size NPS	X	Tee NPS	c,d	c,d	c,d								
5918	P x P x P Equal Tee with FKM Gasket Material	ASME B36.10M Sch. 10	2	X	2		X				1	1	1		3	
Total:						0	0	0	0	0	1	1	1	0	0	

2 DESCRIPTION

2.1 Vacuum Resistance

Samples as detailed above were assembled with the joint of interest in the center of short lengths of steel sprinkler pipe, capped at each end. The assembly was filled with water, cleared of all entrapped air, and subjected to its rated working pressure for 5 minutes. The assembly was then drained and subjected to an internal vacuum of 25 inHg (85 kPa) for 5 minutes. Following the vacuum test, the assembly was pneumatically pressurized from zero to 50 psi (354 kPa) while submerged in a water bath. There was no observed evidence of leakage or permanent deformation as a result of this test. These results are considered satisfactory.

2.2 Hot Gasket Test

Samples as detailed above were assembled to short lengths of steel sprinkler pipe and capped at each end. The assembly was filled with water, cleared of all entrapped air, and subjected to its rated working pressure for 5 minutes. The assembly was then drained and placed in an air oven at a temperature of 275°F (135°C) for a period of 45 days. Following the exposure period, the assembly was removed from the oven, allowed to cool to room temperature, and then pneumatically pressurized from zero to 50 psi (354 kPa) while submerged in a water bath. There was no observed evidence of leakage as a result

of this test. The assembly was then disassembled and the gasket was removed. The gasket was squeezed so that the opposite sides touched, squeezed again in an orientation 90 degrees from the first, twisted into a figure eight shape, and checked for signs of cracking or tearing. There was no observed evidence of cracking or tearing as a result of this test. These results are considered satisfactory.

2.3 Cold Gasket Test

Samples as detailed above were assembled to short lengths of steel sprinkler pipe and capped at each end. The assembly was filled with water, cleared of all entrapped air, and subjected to its rated working pressure for 5 minutes. The assembly was then drained and placed in a freezer at a temperature of -40°F (-40°C) for a period of 4 days. Following the exposure period, the assembly was removed from the freezer, and then pneumatically pressurized from zero to 50 psi (354 kPa) while submerged in a bath of -40°F (-40°C) anti-freeze. There was no observed evidence of leakage as a result of this test. The assembly was then disassembled and the gasket was removed. The gasket was squeezed so that the opposite sides touched, squeezed again in an orientation 90 degrees from the first, twisted into a figure eight shape, and checked for signs of cracking or tearing. There was no observed evidence of cracking or tearing as a result of this test. These results are considered satisfactory.

3 Conclusion

Based on the above results, no additional tests were deemed necessary.

CRITICAL DOCUMENT LIST (CDL)

The following drawings describe the various press-fit pipe fittings discussed in this Report and are filed under the project identification number 3024760.

Drawing No.	Description	Rev. Level
101035	1/2 inch MegaPress Press-end Detail	N
101036	3/4 inch MegaPress Press-end Detail	M
101037	1 inch MegaPress Press-end Detail	N
101038	1-1/4 inch MegaPress Press-end Detail	L
101039	1-1/2 inch MegaPress Press-end Detail	M
101040	2 inch MegaPress Press-end Detail	M
234825	1-1/4 inch MegaPress Grip Ring	M
239346	1-1/2 inch MegaPress Grip Ring	K
239378	2 inch MegaPress Grip Ring	J
239381	1 inch MegaPress Grip Ring	K
239385	3/4 inch MegaPress Grip Ring	M
239392	1/2 inch MegaPress Grip Ring	M
503624	1-1/4 inch MegaPress Separator Ring	C
549291	1-1/2 inch MegaPress Separator Ring	C
549294	1 inch MegaPress Separator Ring	C
549298	2 inch MegaPress Separator Ring	C
549303	1/2 inch MegaPress Separator Ring	C
549306	3/4 inch MegaPress Separator Ring	C
550342	1/2 inch MegaPress FKM Sealing element	A
550343	3/4 inch MegaPress FKM Sealing element	A

Drawing No.	Description	Rev. Level
550344	1 inch MegaPress FKM Sealing element	A
550345	1-1/4 inch MegaPress FKM Sealing element	B
550346	1-1/2 inch MegaPress FKM Sealing element	B
550347	2 inch MegaPress FKM Sealing element	A
1029518	Marking Variants MegaPress FKM	E
1031598	1/2 inch MegaPress Male Adapter w/FKM, P x M NPT	A
1031600	3/4 inch MegaPress Male Adapter w/FKM, P x M NPT	A
1031602	1 inch MegaPress Male Adapter w/FKM, P x M NPT	A
1031603	1-1/4 inch MegaPress Male Adapter w/FKM, P x M NPT	B
1031604	1-1/2 inch MegaPress Male Adapter w/FKM, P x M NPT	B
1031605	2 inch MegaPress Male Adapter w/FKM, P x M NPT	A
1031623	1/2 inch MegaPress Female Adapter w/FKM, P x F NPT	A
1031624	3/4 inch MegaPress Female Adapter w/FKM, P x F NPT	A
1031626	1 inch MegaPress Female Adapter w/FKM, P x F NPT	A
1031627	1-1/4 inch MegaPress Female Adapter w/FKM, P x F NPT	B
1031628	1-1/2 inch MegaPress Female Adapter w/FKM, P x F NPT	B
1031629	2 inch MegaPress Female Adapter w/FKM, P x F NPT	A
1031822	1/2 inch MegaPress Tee w/FKM, P x P x P	B
1031825	3/4 inch MegaPress Tee w/FKM, P x P x P	B
1031826	1 inch MegaPress Tee w/FKM, P x P x P	B
1031827	1-1/4 inch MegaPress Tee w/FKM, P x P x P	C
1031828	1-1/2 inch MegaPress Tee w/FKM, P x P x P	D

Drawing No.	Description	Rev. Level
1031829	2 inch MegaPress Tee w/FKM, P x P x P	B
1031837	1 x 1 x 1/2 inch MegaPress Reducing Tee w/FKM, P x P x P	B
1031839	1 x 1 x 3/4 inch MegaPress Reducing Tee w/FKM, P x P x P	B
1031840	1-1/4 x 1-1/4 x 1/2 inch MegaPress Reducing Tee w/FKM, P x P x P	C
1031841	1-1/4 x 1-1/4 x 3/4 inch MegaPress Reducing Tee w/FKM, P x P x P	B
1031842	1-1/4 x 1-1/4 x 1 inch MegaPress Reducing Tee w/FKM, P x P x P	C
1031843	1-1/2 x 1-1/2 x 1/2 inch MegaPress Reducing Tee w/FKM, P x P x P	C
1031844	1-1/2 x 1-1/2 x 3/4 inch MegaPress Reducing Tee w/FKM, P x P x P	C
1031845	1-1/2 x 1-1/2 x 1 inch MegaPress Reducing Tee w/FKM, P x P x P	C
1031847	1-1/2 x 1-1/2 x 1-1/4 inch MegaPress Reducing Tee w/FKM, P x P x P	D
1031848	2 x 2 x 1/2 inch MegaPress Reducing Tee w/FKM, P x P x P	B
1031849	2 x 2 x 3/4 inch MegaPress Reducing Tee w/FKM, P x P x P	B
1031850	2 x 2 x 1 inch MegaPress Reducing Tee w/FKM, P x P x P	B
1031851	2 x 2 x 1-1/4 inch MegaPress Reducing Tee w/FKM, P x P x P	C
1031852	2 x 2 x 1-1/2 inch MegaPress Reducing Tee w/FKM, P x P x P	C
1031863	1/2 inch MegaPress Elbow 90° w/FKM, FTG x P	B
1031864	3/4 inch MegaPress Elbow 90° w/FKM, FTG x P	B
1031865	1 inch MegaPress Elbow 90° w/FKM, FTG x P	B
1031866	1-1/4 inch MegaPress Elbow 90° w/FKM, FTG x P	B
1031867	1-1/2 inch MegaPress Elbow 90° w/FKM, FTG x P	B
1031868	2 inch MegaPress Elbow 90° w/FKM, FTG x P	B
1031869	1/2 inch MegaPress Elbow 90° w/FKM, P x P	A

Drawing No.	Description	Rev. Level
1031870	3/4 inch MegaPress Elbow 90° w/FKM, P x P	A
1031871	1 inch MegaPress Elbow 90° w/FKM, P x P	A
1031872	1-1/4 inch MegaPress Elbow 90° w/FKM, P x P	A
1031873	1-1/2 inch MegaPress Elbow 90° w/FKM, P x P	A
1031874	2 inch MegaPress Elbow 90° w/FKM, P x P	A
1031907	1/2 inch MegaPress Elbow 45° w/FKM, P x P	A
1031908	3/4 inch MegaPress Elbow 45° w/FKM, P x P	A
1031909	1 inch MegaPress Elbow 45° w/FKM, P x P	A
1031910	1-1/4 inch MegaPress Elbow 45° w/FKM, P x P	A
1031911	1-1/2 inch MegaPress Elbow 45° w/FKM, P x P	A
1031912	2 inch MegaPress Elbow 45° w/FKM, P x P	A
1031940	3/4 x 3/4 x 1/2 inch MegaPress Female Reducing Tee w/FKM, P x P x F NPT	A
1031941	3/4 x 3/4 x 3/4 inch MegaPress Female Reducing Tee w/FKM, P x P x F NPT	A
1031942	1 x 1 x 1/2 inch MegaPress Female Reducing Tee w/FKM, P x P x F NPT	A
1031943	1 x 1 x 3/4 inch MegaPress Female Reducing Tee w/FKM, P x P x F NPT	A
1031944	1-1/4 x 1-1/4 x 1/2 inch MegaPress Female Reducing Tee w/FKM, P x P x F NPT	B
1031945	1-1/4 x 1-1/4 x 3/4 inch MegaPress Female Reducing Tee w/FKM, P x P x F NPT	B
1031946	1-1/4 x 1-1/4 x 1 inch MegaPress Female Reducing Tee w/FKM, P x P x F NPT	B
1031947	1-1/2 x 1-1/2 x 1/2 inch MegaPress Female Reducing Tee w/FKM, P x P x F NPT	B
1031948	1-1/2 x 1-1/2 x 3/4 inch MegaPress Female Reducing Tee w/FKM, P x P x F NPT	B
1031949	1-1/2 x 1-1/2 x 1 inch MegaPress Female Reducing Tee w/FKM, P x P x F NPT	B
1031950	2 x 2 x 1/2 inch MegaPress Female Reducing Tee w/FKM, P x P x F NPT	A

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Drawing No.	Description	Rev. Level
1031951	2 x 2 x 3/4 inch MegaPress Female Reducing Tee w/FKM, P x P x F NPT	A
1031952	2 x 2 x 3/4 inch MegaPress Female Reducing Tee w/FKM, P x P x F NPT	A
1031955	3/4 x 3/4 x 1/2 inch MegaPress Reducing Tee w/FKM, P x P x P	A
1031957	1/2 inch MegaPress Coupling w/Stop w/FKM, P x P	B
1031969	3/4 inch MegaPress Coupling w/Stop w/FKM, P x P	A
1031976	1/2 inch MegaPress Elbow 45° w/FKM, FTG x P	A
1031977	3/4 inch MegaPress Elbow 45° w/FKM, FTG x P	A
1031978	1 inch MegaPress Elbow 45° w/FKM, FTG x P	A
1031979	1-1/4 inch MegaPress Elbow 45° w/FKM, FTG x P	A
1031980	1 inch MegaPress Coupling w/Stop w/FKM, P x P	B
1031981	1-1/2 inch MegaPress Elbow 45° w/FKM, FTG x P	A
1031982	2 inch MegaPress Elbow 45° w/FKM, FTG x P	A
1032004	1-1/4 inch MegaPress Coupling w/Stop w/FKM, P x P	C
1032005	1-1/2 inch MegaPress Coupling w/Stop w/FKM, P x P	B
1032006	2 inch MegaPress Coupling w/Stop w/FKM, P x P	A
1032016	1/2 inch MegaPress Coupling w/No Stop w/FKM, P x P	B
1032017	3/4 inch MegaPress Coupling w/No Stop w/FKM, P x P	C
1032018	1 inch MegaPress Coupling w/No Stop w/FKM, P x P	B
1032019	1-1/4 inch MegaPress Coupling w/No Stop w/FKM, P x P	C
1032020	1-1/2 inch MegaPress Coupling w/No Stop w/FKM, P x P	C
1032021	2 inch MegaPress Coupling w/No Stop w/FKM, P x P	B
1032057	1/2 inch MegaPress Union w/FKM, P x P	A

Drawing No.	Description	Rev. Level
1032060	1/2 inch MegaPress Cap w/FKM, Cap x P	B
1032061	3/4 inch MegaPress Union w/FKM, P x P	A
1032064	1 inch MegaPress Union w/FKM, P x P	A
1032067	1-1/4 inch MegaPress Union w/FKM, P x P	B
1032070	1-1/2 inch MegaPress Union w/FKM, P x P	B
1032073	2 inch MegaPress Union w/FKM, P x P	A
1032081	3/4 x 1/2 inch MegaPress Female Adapter w/FKM, P x F NPT	A
1032082	1 x 1/2 inch MegaPress Female Adapter w/FKM, P x F NPT	A
1032084	1 x 3/4 inch MegaPress Female Adapter w/FKM, P x F NPT	A
1032085	1-1/4 x 1/2 inch MegaPress Female Adapter w/FKM, P x F NPT	B
1032086	1-1/4 x 3/4 inch MegaPress Female Adapter w/FKM, P x F NPT	B
1032087	1-1/4 x 1 inch MegaPress Female Adapter w/FKM, P x F NPT	B
1032088	1-1/2 x 1/2 inch MegaPress Female Adapter w/FKM, P x F NPT	B
1032089	1-1/2 x 3/4 inch MegaPress Female Adapter w/FKM, P x F NPT	B
1032090	1-1/2 x 1 inch MegaPress Female Adapter w/FKM, P x F NPT	B
1032091	1-1/2 x 1-1/4 inch MegaPress Female Adapter w/FKM, P x F NPT	B
1032093	2 x 3/4 inch MegaPress Female Adapter w/FKM, P x F NPT	A
1032094	2 x 1 inch MegaPress Female Adapter w/FKM, P x F NPT	A
1032095	2 x 1-1/2 inch MegaPress Female Adapter w/FKM, P x F NPT	A
1032101	3/4 inch MegaPress Cap w/FKM, Cap x P	B
1032106	1 inch MegaPress Cap w/FKM, Cap x P	B
1032107	1-1/4 inch MegaPress Cap w/FKM, Cap x P	C

Drawing No.	Description	Rev. Level
1032109	1-1/2 inch MegaPress Cap w/FKM, Cap x P	C
1032110	2 inch MegaPress Cap w/FKM, Cap x P	B
1032355	1/2 inch MegaPress Flange w/FKM, P x Flange	A
1032356	3/4 inch MegaPress Flange w/FKM, P x Flange	A
1032357	1 inch MegaPress Flange w/FKM, P x Flange	A
1032358	1-1/4 inch MegaPress Flange w/FKM, P x Flange	A
1032359	1-1/2 inch MegaPress Flange w/FKM, P x Flange	A
1032360	2 inch MegaPress Flange w/FKM, P x Flange	A
1032556	3/4 x 1/2 inch MegaPress Reducer w/FKM, FTG x P	A
1032566	1 x 1/2 inch MegaPress Reducer w/FKM, FTG x P	A
1032567	1 x 3/4 inch MegaPress Reducer w/FKM, FTG x P	B
1032581	1-1/4 x 1 inch MegaPress Reducer w/FKM, FTG x P	B
1032703	1-1/4 x 3/4 inch MegaPress Reducer w/FKM, FTG x P	A
1032704	1-1/2 x 3/4 inch MegaPress Reducer w/FKM, FTG x P	A
1032707	1-1/2 x 1 inch MegaPress Reducer w/FKM, FTG x P	A
1032711	1-1/2 x 1-1/4 inch MegaPress Reducer w/FKM, FTG x P	B
1032717	2 x 1 inch MegaPress Reducer w/FKM, FTG x P	A
1032720	2 x 1-1/4 inch MegaPress Reducer w/FKM, FTG x P	B
1032725	2 x 1-1/2 inch MegaPress Reducer w/FKM, FTG x P	B