



NSF International

Special Engineered Specification
NSF SE 14974

Push Fit Drain, Waste and
Vent (DWV) Fittings

**The Public
Health and Safety
Company.™**



NSF SE 14974 SPECIFICATIONS FOR A SPECIAL ENGINEERED (SE) PRODUCT

Push Fit Drain, Waste and Vent (DWV) Fittings

1. Purpose:

Product specific requirements for Push Fit Drain, Waste and Vent (DWV) Fittings are not covered by any nationally recognized standard. This specification defines the product specific requirements for Push Fit DWV Fittings for NSF/ANSI Standard 14 by NSF International. This specification serves as a guide for manufacturers, specifiers, contractors, installers and regulators to provide a basis for evaluation and acceptance as alternate materials and methods of construction.

2. Scope of Specification:

This specification covers the application, testing requirements, materials, marking and in-plant QC requirements for Push Fit DWV Fittings.

3. Application:

This specification is intended to provide Push Fit DWV Fittings suitable for the drainage and venting of sewage and certain other liquid wastes.

4. Reference Documents:

ASTM Standards:

- 4.1 ASTM D1784 Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
- 4.2 ASTM D2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
- 4.3 ASTM D2444 Test Method for Determination of the Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)
- 4.4 ASTM D3311 Specification for Drain, Waste, and Vent (DWV) Plastic Fittings Patterns
- 4.5 ASTM D3965 Standard Classification System and Basis for Specifications for Rigid Acrylonitrile-Butadiene-Styrene (ABS) Materials for Pipe and Fittings
- 4.6 ASTM D4396 Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds for Plastic Pipe and Fittings Used in Nonpressure Applications
- 4.7 ASTM D6284 Standard Test Method for Rubber Property – Effect of Aqueous Solutions with Available Chlorine and Chloramine
- 4.8 ASTM A240 Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
- 4.9 ASTM F477 Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

NSF Standards:

- 4.10 NSF/ANSI Standard 14 Plastics Piping System Components and Related Materials

5. Materials:

Push Fit Drain, Waste and Vent Fittings produced against this specification shall meet the following requirements:

- 5.1 *Fitting Body* – The fitting body shall be made of either: 1) virgin PVC compounds meeting or exceeding the requirements of Class 12454 as defined in Specification ASTM D1784 or Class 11432 as defined in



Specification ASTM D4396 or 2) virgin ABS compounds meeting or exceeding the requirements of Class 32222 as defined in Specification ASTM D3965.

5.2 *Elastomers* – The materials used in elastomeric seals shall meet the requirements of Specification ASTM F477.

5.3 *Ferrous Metal Parts* – Ferrous materials shall be at a minimum stainless steel Series 300 complying with the requirements of ASTM A240.

6. Testing Requirements:

6.1 Workmanship:

6.1.1 – Push Fit DWV Fittings produced against these requirements shall not, upon a visual inspection, contain imperfections that would interfere with the performance of the DWV system in which it is installed.

6.2 Dimensions and Tolerances:

6.2.1 – The geometries, dimensions and laying lengths of fittings shall meet the requirements of ASTM D3311 and TABLE 1 of this document when tested in accordance with ASTM D2122.

6.3 Testing:

6.3.1 The pressure tests described in this standard are laboratory hydrostatic tests that are intended to verify joint/system integrity. They are not intended for use as field tests of installed systems.

6.3.2 Couplings are the only Push Fit DWV Fitting configurations required to be subjected to the Unrestrained Hydrostatic Test, Shear Test and Deflection Test.

6.3.3 For Unrestrained Hydrostatic Test (6.3.6), Shear Test (6.3.7) and Deflection Test (6.3.8): Use pipe conforming to ASTM D2665 which has a diameter between nominal and maximum tolerance. 1.5" pipe shall have a diameter of 1.900" - 1.906", 2" pipe shall have a diameter of 2.375" - 2.381" and 3" pipe shall have a diameter of 3.500" - 3.508". The restrained pipe shall be between 12 inches and 36 inches long. The unrestrained pipe shall be 5 feet 9 inches (\pm 3 inches) long.

6.3.4 *Deflection Load* – Unassembled fittings shall withstand a minimum load of 750 lbf/ft (11 kN/m) of centerline length without cracking or other visible evidence of failure.

6.3.4.1 Test 3 specimens. Shim fittings to give full centerline contact with platens. Terminate the test when the load reaches 750 lbf/ft (11 kN/m) of centerline length. Observe the load and deflection at the first evidence of cracking, if any. Record the location and type of failure.

6.3.5 *Impact Resistance* – The minimum impact resistance of unassembled fittings, when tested at the time of manufacture, shall comply with TABLE 2 of this document. Test in accordance with Test Method ASTM D2444 using Tup A and Holder B. Use a 12-lb (5-kg) tup.

6.3.5.1 Couplings are exempt from this requirement.

6.3.5.2 Test 10 specimens. When 9 or 10 specimens pass, accept the lot. When 2 or more specimens fail, test 10 additional specimens. When 17 of 20 specimens tested pass, accept the lot. When 4 or more of the 20 specimens test fail, test 20 additional specimens. When 32 of 40 specimens pass, accept the lot. When 9 or more of 40 specimens fail, the lot does not meet the requirements of this specification.

6.3.5.3 Failure in the test specimens shall be shattering or any crack or break extending entirely through the pipe wall and visible to the unaided eye.

6.3.6 *Unrestrained Hydrostatic Test* – Assemble each coupling according to the manufacturer’s instructions between two sections of pipe as specified in 6.3.3. Set up assembly as shown in Fig 1. One restrained support shall be no further than 2 inches from the closest point to the test specimen. Support the pipe in a manner that does not restrain joint movement. Fill the pipe assembly with water, expelling all air. Increase the hydrostatic pressure at a rate of 1 psi (6.9 kPa) every 30 s until 15 psi (103.4 kPa) is reached. When 15 psi is reached, hold this pressure for 5 min. Any leakage shall mean failure.

6.3.6.1 Test 1 specimen.

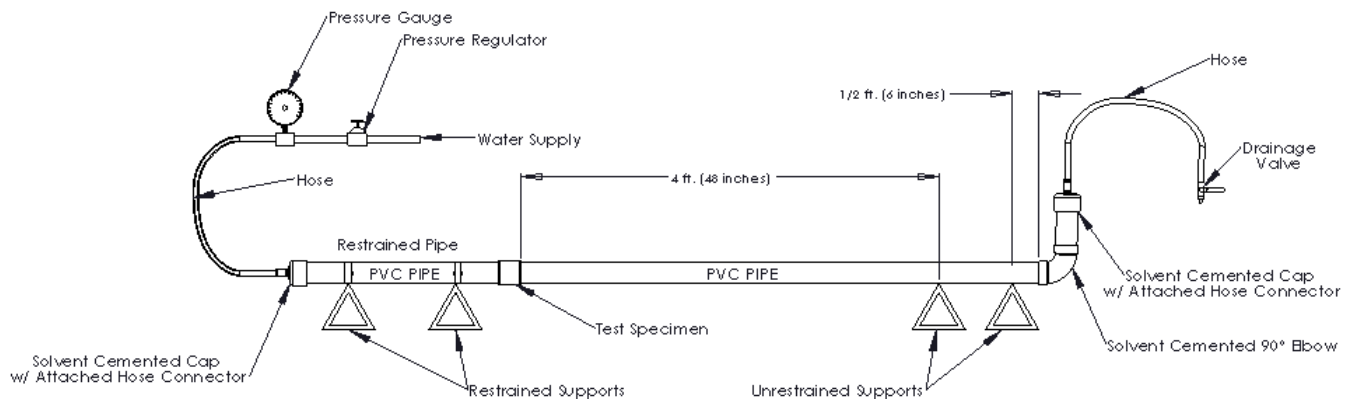


Fig 1 Unrestrained Hydrostatic Test

6.3.7 *Shear Test* – Assemble each coupling according to the manufacturer’s instructions between two sections of pipe as specified in 6.3.3. Set up assembly as shown in Fig 2. One restrained support shall be no further than 2 inches from the closest point to the test specimen. Fill the assembly with water, expel all air and hydrostatically pressurize to 4.3 psi (29.6 kPa) for the duration of the test. Apply a load of 20 lbs/in of nominal diameter pipe on a 12 inch (± 1 inch) long load distribution pad located immediately adjacent to the coupling. Maintain the pressure for 5 min. Any leakage shall mean failure.

6.3.7.1 Test 1 specimen.

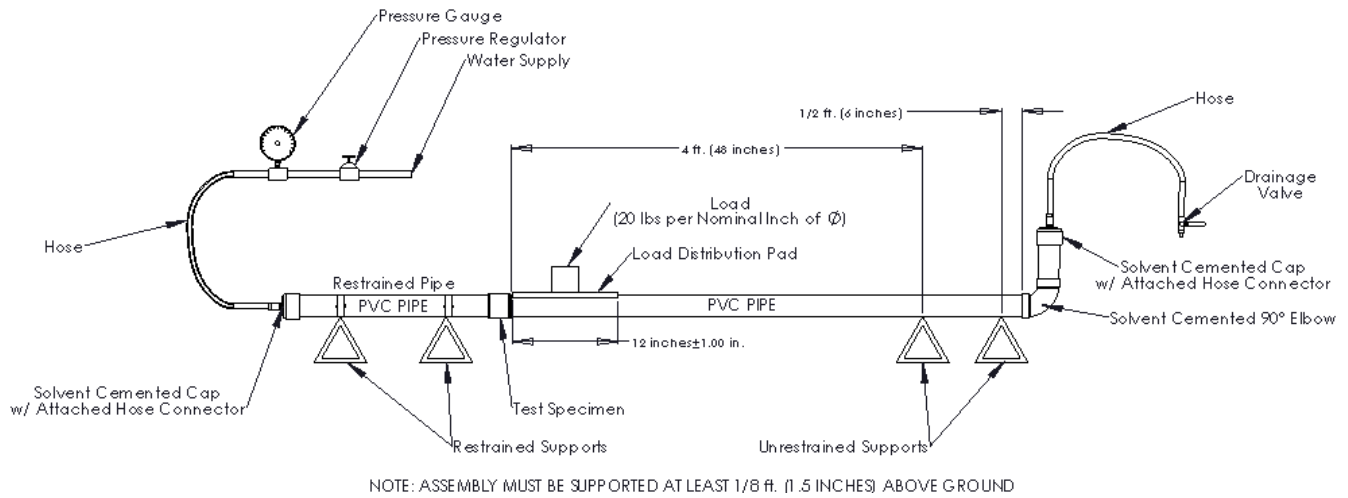


Fig 2 Shear Test

6.3.8 *Deflection Test* – Assemble each coupling according to the manufacturer’s instructions between two sections of pipe as specified in 6.3.3. Set up assembly as shown in Fig 3. One restrained support shall be no further than 2 inches from the closest point to the test specimen. The lift shall be 5 feet from the end of the coupling. Fill the assembly with water, expel all air and hydrostatically pressurize to 4.3 psi (29.6 kPa) for the duration of the test. Using the lift that is 5 feet from the end of the coupling, raise the unrestrained pipe 2-1/2” inches (63.5 mm). Maintain the pressure for 5 min. Any leakage shall mean failure.

6.3.8.1 Test 1 specimen.

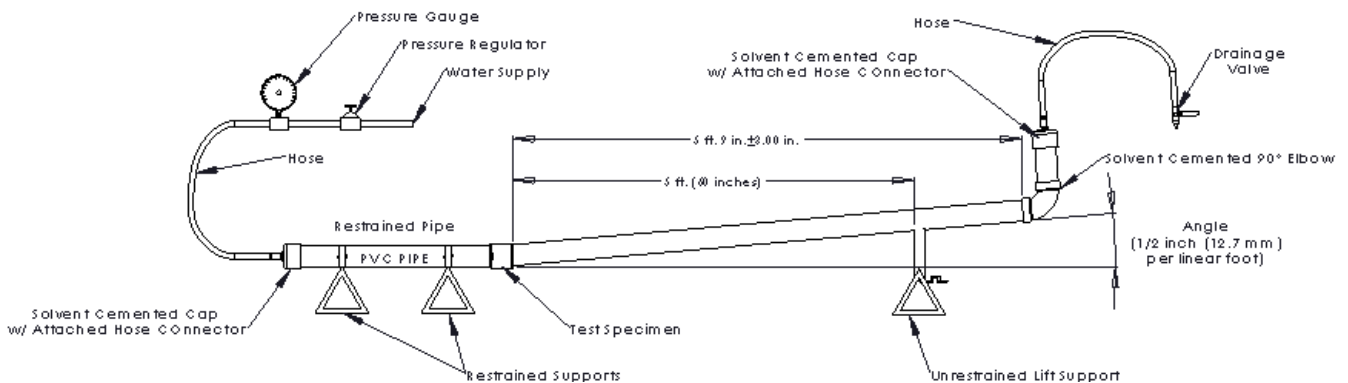


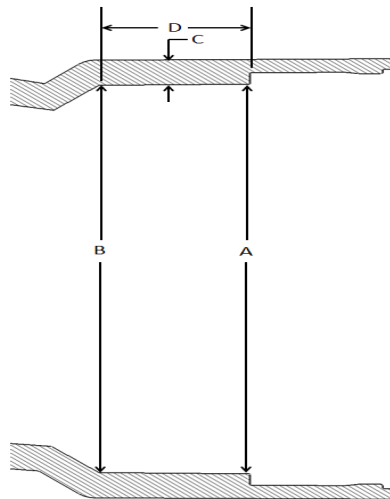
Fig 3 Deflection Test



7. Retest and Rejection

7.1 If the results of any test(s) do not meet the requirements of this specification, the test(s) shall be conducted again only by agreement between the purchaser and the seller. Under such agreement, minimum requirements shall not be lowered, changed or modified, nor shall specification limits be changed. If, upon retest, failure occurs, the quantity of product represented by the test(s) does not meet the requirements of this specification.

TABLE 1 Dimensions and Tolerances for Fitting Sockets for Push Fit Drain, Waste and Vent Fittings



Nominal Pipe Size	A			B			C	D
	Socket Entrance Diameter			Socket Bottom Diameter				
	Average	Tolerance on Avg.	Out-of- Roundness	Average	Tolerance on Avg.	Out-of- Roundness	min. (at Socket Bottom) ^A	min. Below Gasket,
	in. (mm)							
1 ½	1.920 (48.77)	±0.005 (±0.13)	0.015 (0.38)	1.904 (48.36)	±0.004 (±0.10)	0.015 (0.38)	0.156 (3.96)	0.500 (12.70)
2	2.395 (60.83)	±0.005 (±0.13)	0.015 (0.38)	2.380 (60.45)	±0.005 (±0.13)	0.015 (0.38)	0.156 (3.96)	0.500 (12.70)
3	3.525 (89.54)	±0.005 (±0.13)	0.020 (0.51)	3.506 (89.05)	±0.006 (±0.15)	0.020 (0.51)	0.219 (5.56)	0.750 (19.05)

^A The wall thickness is a minimum value except that a ±10% variation resulting from core shift is allowable. In such case, the average of the two opposite wall thicknesses shall equal or exceed the value shown in the table.



TABLE 2 Impact Resistance of Push Fit Schedule 40 Drain, Waste and Vent Fittings

Description	Impact Resistance, min., ft-lbf (J) 73°F (23° C)
Fitting sizes and types (larger than 2 in. nominal OD)	15 (20)
Fitting sizes and types (2 in. and smaller nominal OD)	7.5 (10)

8. Product Marking:

8.1 *Quality of Marking* – Markings shall be molded, hot stamped or applied in some other permanent manner so as to remain legible under normal handling and installation practices. Where recessed marking is used, care shall be taken to see that wall thicknesses are not reduced below the specified minimums.

8.2 *Content of Marking:*

8.2.1 Fittings shall be marked with the following:

8.2.2 – Manufacturer’s name or trademark

8.2.3 – Material from which the fitting body is made

8.2.4 – “NSF® dwv SE”

8.2.5 – Size

9. In-plant Q.C. Requirements:

The tests below are to be performed at start-up and designated frequencies thereafter and performed in accordance with Section 6 of this document.

Test	Frequency
Deflection Load	Annually
Impact @ 22.8° C (73° F)	Weekly
Unrestrained Hydrostatic Test	Startup
Shear Test	Startup
Deflection Test	Startup
Dimensions	
Socket Bottom Avg. Diameter and Out of Roundness	24 h
Socket Entrance Avg. Diameter and Out of Roundness	24 h
Minimum Wall Thickness at Socket Bottom	Weekly
Minimum Socket Depth Below Gasket	Only required to be verified at the time a new tool is “qualified” or when new or repaired cores are made

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