

OmniPass Adapter Deluge Nozzle Accessory

General Description

The OmniPass Adapter is a fitting that, when used directly adjacent to a deluge nozzle, will drastically reduce the likelihood of the nozzle clogging due to pipe debris. The OmniPass Adapter must be installed into a tee, elbow, or tee with reducing bushing, with the adapter strainer extending below the centerline of the pipe. The appropriate adapter length is dependent upon the fitting it is being installed into and the diameter of the pipe. These adapters should be installed and inspected in conjunction with a robust service and maintenance program. The OmniPass Adapter can be used in any deluge system where corrosion and nozzle blockages are a problem.

NOTICE

The OmniPass Adapter described herein must be installed and maintained in compliance with this document, and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of this device. OmniPass manufactured and supplied by Tyco Fire Protection Products under license from RigDeluge Global Limited.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

Technical Data

Approvals
UL Listed

Thread Connection
3/4 x 1/2 Inch or 1 x 1 Inch

Adapter Lengths
Refer to Figure 1

Hydraulic Data
Refer to Graphs A and B

Discharge Coefficient Data
Refer to Table B

Material
Brass or Titanium*

*Contact your local sales representative for more information

Physical Characteristics

OmniPass Adapters are available with either 3/4 Inch male x 1/2 Inch female NPT threaded pipe connections in six length sizes or 1 Inch male x 1 Inch female NPT pipe threaded connections in five length sizes. Slots around the perimeter of the strainer end are nominally 0.04 inches (1 mm) wide, varying in number and length per adapter connection length configuration. Refer to Figure 1 for details.

Design Criteria

Hydraulic Calculations

Hydraulic calculations for deluge systems are made as part of the piping system design to verify that the minimum required flowing pressure is available at each nozzle in the system.

Note: Recalculate pressure losses when retrofitting existing systems.

The equivalent pipe length for flow across a single OmniPass Adapter installed perpendicular to the flow in various pipe sizes is shown in Table A.

Additional pressure drops caused by the OmniPass Adapter based on system flow rates in various pipe sizes are shown in Graphs A (3/4 Inch x 1/2 Inch) and B (1 Inch x 1 Inch).



K-Factor Reduction

Each deluge nozzle will have a reduction in K-Factor when installed adjacent to an OmniPass Adapter. Table B provides a range of original deluge nozzle K-Factors with its corresponding reduction when installed adjacent to an OmniPass Adapter based upon an adapter without debris around the strainer.

The 3/4 Inch x 1/2 Inch x Size 1 Adapter shall not be installed adjacent to any deluge nozzle with a K-Factor higher than K=5.5 (K79).

Location Criteria

Install the OmniPass Adapter in a supply pipe that has a minimum 1 inch inside diameter and a maximum 3 inch inside diameter. Only one OmniPass Adapter will service a deluge nozzle.

OmniPass Adapter Sizing

Determining the optimal OmniPass Adapter size relies on an in field measurement due to different system designs. To choose the correct adapter size to complement your system refer to Figure 2. Only one reducing bushing, either male or female, shall be installed in either the adapter or tee outlet to facilitate tee or nozzle fit. Do not install additional piping between the adapter and deluge nozzle.

Compatible Nozzle	Adapter Pipe Thread Connection ANSI B1.20.1 NPT Inch (DN)		Characteristics per Connection Size						Adapter Size	Characteristics per Adapter Size			
			Dimensions Inches (mm)							Dimensions Inches (mm)			Weight lbs. (kg)
			A	B	C	D	E	F		G	H	J	
Type MV	3/4 (DN20)	1/2 (DN15)	0.50 (12,7)	0.44 (11,1)	0.65 (16,1)	0.75 (19,1)	1.09 (27,7)	1.25 (31,8)	1	2.69 (68,3)	1.05 (26,7)	1.60 (40,6)	0.40 (0,2)
									2	3.04 (77,2)	1.29 (32,8)	1.95 (49,5)	0.41 (0,2)
									3	3.48 (88,4)	1.70 (43,2)	2.39 (60,7)	0.42 (0,2)
									4	3.76 (95,5)	1.70 (43,2)	2.67 (67,8)	0.43 (0,2)
									5	4.11 (104,4)	2.00 (50,8)	3.02 (76,7)	0.44 (0,2)
									6	4.46 (113,3)	2.00 (50,8)	3.37 (85,6)	0.46 (0,2)
Type HV*	1 (DN25)	1 (DN25)	0.56 (14,3)	0.56 (14,3)	0.69 (17,5)	1.00 (25,4)	1.25 (31,8)	1.63 (41,4)	7	3.62 (91,9)	1.65 (41,9)	2.38 (60,5)	0.65 (0,3)
									8	3.98 (101,1)	1.80 (45,7)	2.73 (69,3)	0.67 (0,3)
									9	4.37 (111,0)	2.00 (50,8)	3.12 (79,2)	0.69 (0,3)
									10	4.72 (119,9)	2.00 (50,8)	3.47 (88,1)	0.71 (0,3)
									11	5.16 (131,1)	2.25 (57,2)	3.91 (99,3)	0.73 (0,3)

* Type HV nozzles featuring 1 Inch NPT threads only

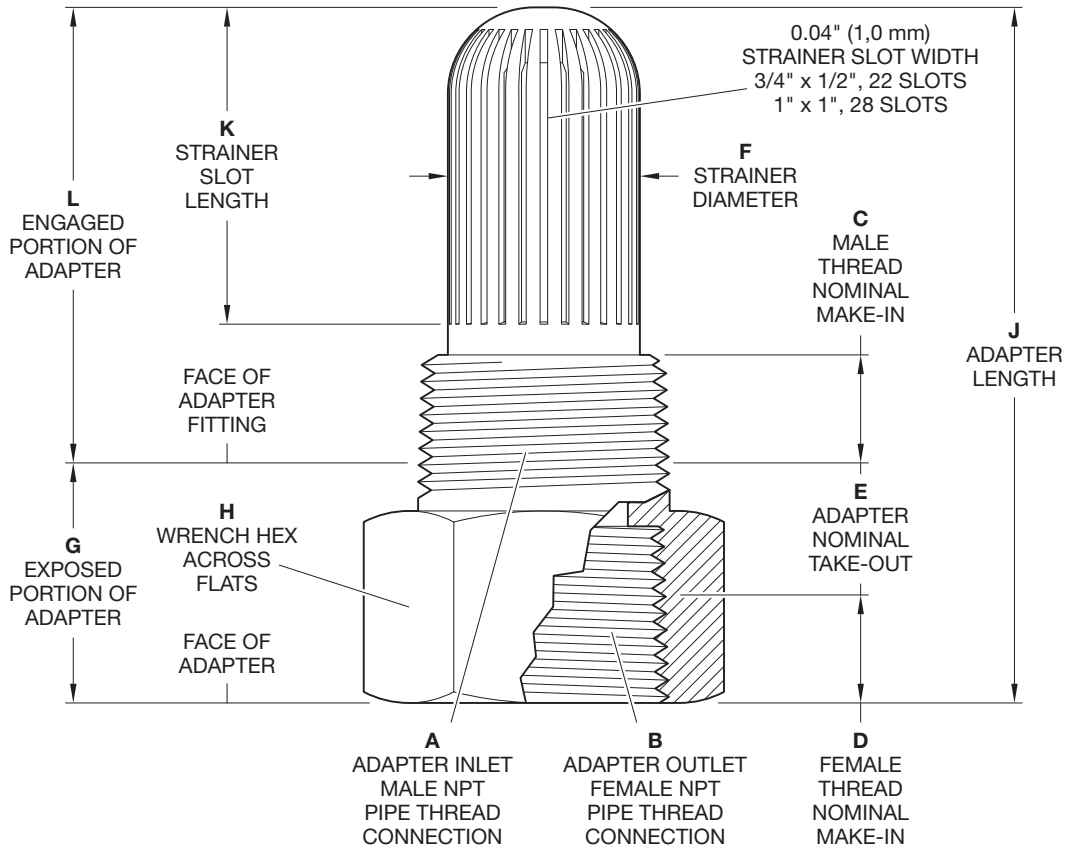


FIGURE 1
OMNIPASS ADAPTER
DIMENSIONS

Selection Procedure

Step 1. Measure P

Step 2. $P + M$ (Table 2A per Pipe Run Size) = L Opt

Step 3. $P + N$ (Table 2A per Pipe Run Size) = L Max

Step 4. Find L value (Table 2B or 2C per Thread Connection) within range between L Opt and L Max

Step 5. Select Adapter Size per L value

Example

Determine OmniPass Adapter size given components:
1" NPT Type HV Nozzle, 3" x 3" x 2" Reducing Tee, 2" x 1" Reducing Bushing (shown in illustration below)

Step 1. $P = 1.79"$ (45,5 mm)

Step 2. $1.79" + 0.96" = 2.75"$ L Opt
(45,5 mm + 24,4 mm = 69,9 mm)

Step 3. $1.79" + 1.64" = 3.43"$ L Max
(45,5 mm + 41,7 mm = 87,1 mm)

Step 4. Find L within L Opt and L Max range
 $2.75" < L = 3.12" < 3.43"$
(69,9 < L = 79,2 < 87,1 mm)

Step 5. Select 1" x 1" x Size 9 Adapter

Note: P may vary per fitting specifications (Cast Iron, Malleable Iron, etc.)

Table 2A			Table 2B		Table 2C	
TEE Run Nominal Pipe Size ANSI Inch (DN)	M Inches (mm)	N Inches (mm)	3/4 x 1/2 Inch Pipe Thread Connection Adapters		1 x 1 Inch Pipe Thread Connection Adapters	
			L Inches (mm)	Adapter Size	L Inches (mm)	Adapter Size
1 (DN25)	0.39 (9,9)	0.61 (15,5)	1.60 (40,6)	1	2.38 (60,5)	7
1-1/4 (DN32)	0.45 (11,4)	0.73 (18,5)	1.95 (49,5)	2	2.73 (69,3)	8
1-1/2 (DN40)	0.52 (13,2)	0.86 (21,8)	2.39 (60,7)	3	3.12 (79,2)	9
2 (DN50)	0.65 (16,5)	1.11 (28,2)	2.67 (67,8)	4	3.47 (88,1)	10
2-1/2 (DN65)	0.83 (21,1)	1.39 (35,3)	3.02 (76,7)	5	3.91 (99,3)	11
3 (DN80)	0.96 (24,4)	1.64 (41,7)	3.37 (85,6)	6		

**FIGURE 2
OMNIPASS ADAPTER
SIZE SELECTION**

Adapter Size Selection

Select the OmniPass Adapter in accordance with this section. Refer to Figure 2 for dimensions and data described. Refer to the Ordering Procedure for Part Numbers (P/N).

Step 1. Measure distance between face of adapter fitting and outside diameter surface of run pipe (P)

Note: Hold straight edge (square, level, etc.) flush against face of adapter fitting to facilitate measurement.

Step 2. Add P to M Optimum (Table 2A per Pipe Run Size) to determine L Optimum

Step 3. Add P to N Maximum (Table 2A per Pipe Run Size) to determine L Maximum

Step 4. Find L value (Table 2B or 2C per Thread Connection) greater than L Optimum but less than L Maximum

Step 5. Select adapter size associated with identified L value

Installation

Install OmniPass Adapters in accordance with this section.

General Instructions

A leak-tight fitting joint should be obtained by applying pipe-thread sealant to the adapter male inlet threads and wrench-tightening using a wrench accommodating the adapter wrench hex (Ref. Figure 1).

Adapter Installation

Step 1. Apply pipe-thread sealant to adapter threads

Step 2. Hand-tighten adapter into adapter fitting, do not apply force to adapter strainer

Step 3. Apply wrench to adapter wrench hex

Step 4. Wrench-tighten adapter to obtain leak-tight joint either 1-1/4 to 1-1/2 turns beyond hand-tightened or by applying minimum-to-maximum torques as follows:

- **3/4 x 1/2 Inch Adapters**
 10 to 20 ft.-lbs. (13,4 to 26,8 Nm)
- **1 x 1 Inch Adapters**
 20 to 30 ft.-lbs. (26,8 to 40,2 Nm)

NOTICE

Higher levels of torque can distort the adapter with consequent leakage or impairment of the adapter and the installed nozzle.

Step 5. Install nozzle in accordance with nozzle technical data sheet:

- Type MV – TFP807
- Type HV – TFP815

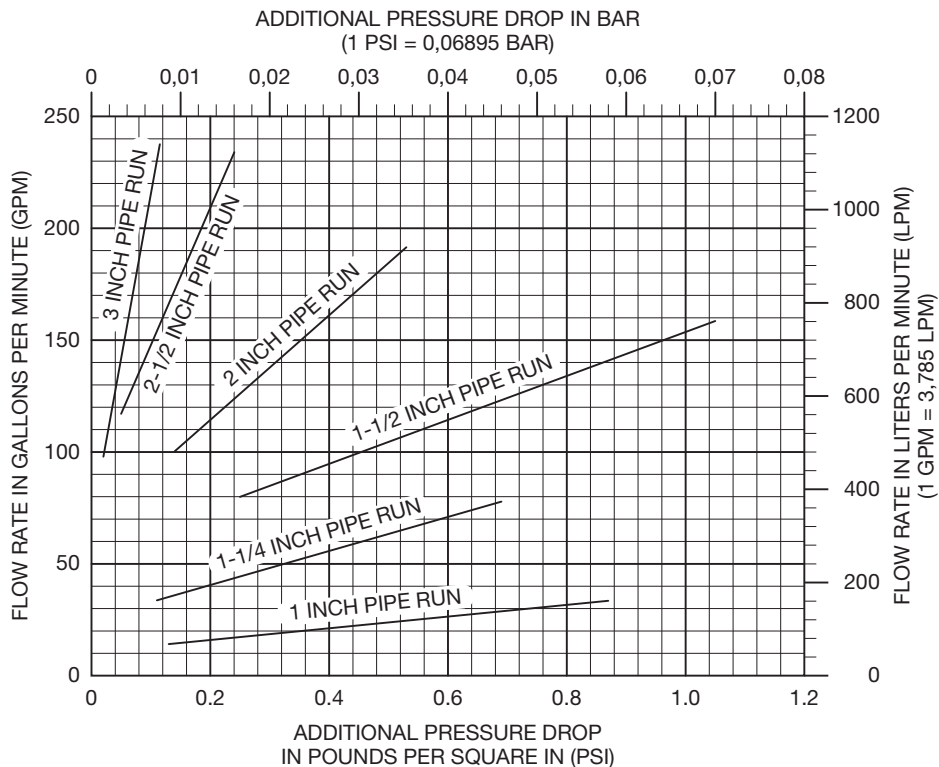
Adapter Pipe Thread Connection ANSI B1.20.1 NPT Inch (DN)	Tee Run Nominal Pipe Size Inch (DN)					
	Equivalent Length of Pipe Decimal Feet (meters)					
	1 (DN25)	1-1/4 (DN32)	1-1/2 (DN40)	2 (DN50)	2-1/2 (DN65)	3 (DN80)
3/4 x 1/2 (DN20 x DN15)	1.00 (0,30)	1.10 (0,34)	1.00 (0,30)	1.00 (0,30)	1.25 (0,38)	1.80 (0,55)
1 x 1 (DN25 x DN25)	N/A	1.70 (0,52)	1.00 (0,30)	1.50 (0,46)	1.50 (0,46)	2.90 (0,88)

**TABLE A
 OMNIPASS ADAPTER
 EQUIVALENT LENGTH OF PIPE
 PER TEE RUN SIZE**

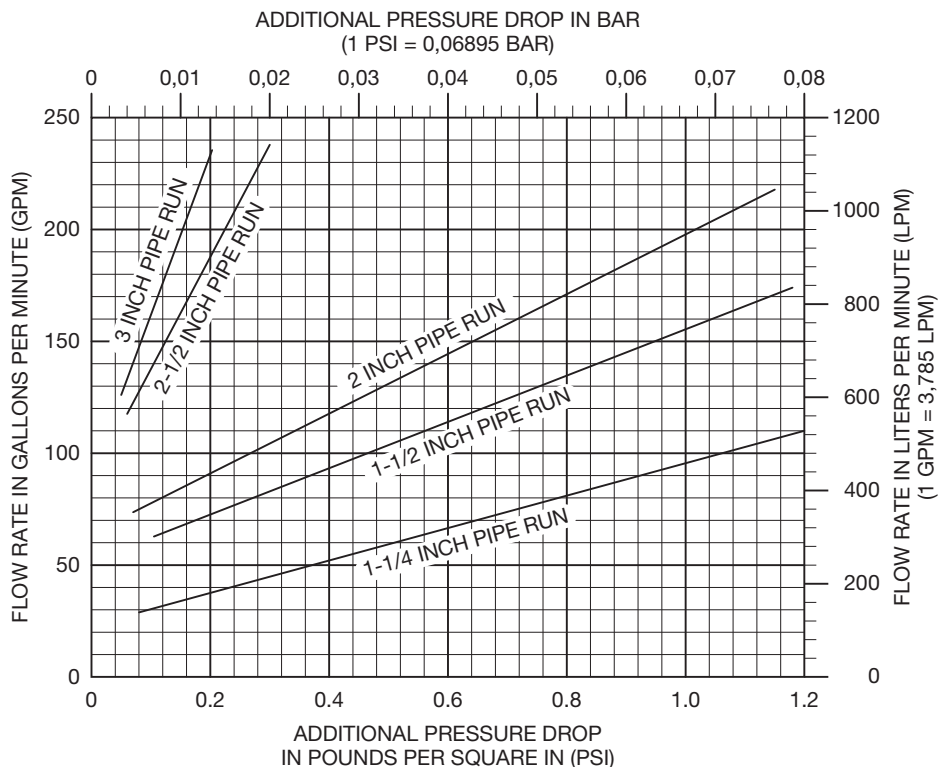
OmniPass Adapter Size	Nozzle K-Factor Derating, Percent
1*	10%
2	
3	
4	
5	
6	
7	6%
8	
9	
10	
11	

* Limit nozzle installed in Size 1 adapter to 5.5K (K79)

**TABLE B
 OMNIPASS ADAPTER
 NOZZLE K-FACTOR
 DERATING REDUCTIONS**



GRAPH A
3/4 X 1/2 INCH OMNIPASS ADAPTER
ADDITIONAL PRESSURE DROP VS. FLOW



GRAPH B
1 X 1 INCH OMNIPASS ADAPTER
ADDITIONAL PRESSURE DROP VS. FLOW

Care and Maintenance

The OmniPass Adapter must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, permission to shut down the affected fire protection system must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

The OmniPass Adapter must never be painted, plated, coated or altered in any way after leaving the factory; otherwise, the performance may be impaired.

Care must be exercised to avoid damage to the adapters before, during, and after installation. Adapters damaged by dropping, striking, wrench twist slippage, or the like, must be replaced.

Frequent visual inspections are recommended to be initially performed for adapters installed in potentially corrosive atmospheres to verify the integrity of the materials of construction as they may be affected by the corrosive conditions present for a given installation. Thereafter, annual inspections by NFPA 25 are required.

Water spray fixed systems for fire protection service require regularly scheduled care and maintenance by trained personnel. In addition to inspecting nozzles for proper spray performance during water flow trip tests of the system, it is recommended that nozzles be periodically inspected for broken or missing parts (including dust caps where applicable), loading/obstructions, or other evidence of impaired protection. The inspections should be scheduled in accordance with a robust service and maintenance program. After each discharge of the system each OmniPass Adapter installed is to be removed and cleaned, and the pipe should be flushed to remove collected pipe debris in the system.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

It is recommended that water spray fixed systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

OmniPass Adapter

Specify: OmniPass Adapter, (specify material), (specify thread connection), Size (specify), P/N (specify):

Brass

3/4" x 1/2" NPT Thread Connection

Size 1	56-493-0-110
Size 2	56-493-0-146
Size 3	56-493-0-189
Size 4	56-493-0-217
Size 5	56-493-0-252
Size 6	56-493-0-287

1" x 1" NPT Thread Connection

Size 7	56-491-0-181
Size 8	56-491-0-217
Size 9	56-491-0-255
Size 10	56-491-0-291
Size 11	56-491-0-330

Titanium

3/4" x 1/2" NPT Thread Connection

Size 1	00-000-0-000
Size 2	00-000-0-000
Size 3	00-000-0-000
Size 4	00-000-0-000
Size 5	00-000-0-000
Size 6	00-000-0-000

1" x 1" NPT Thread Connection

Size 7	00-000-0-000
Size 8	00-000-0-000
Size 9	00-000-0-000
Size 10	00-000-0-000
Size 11	00-000-0-000