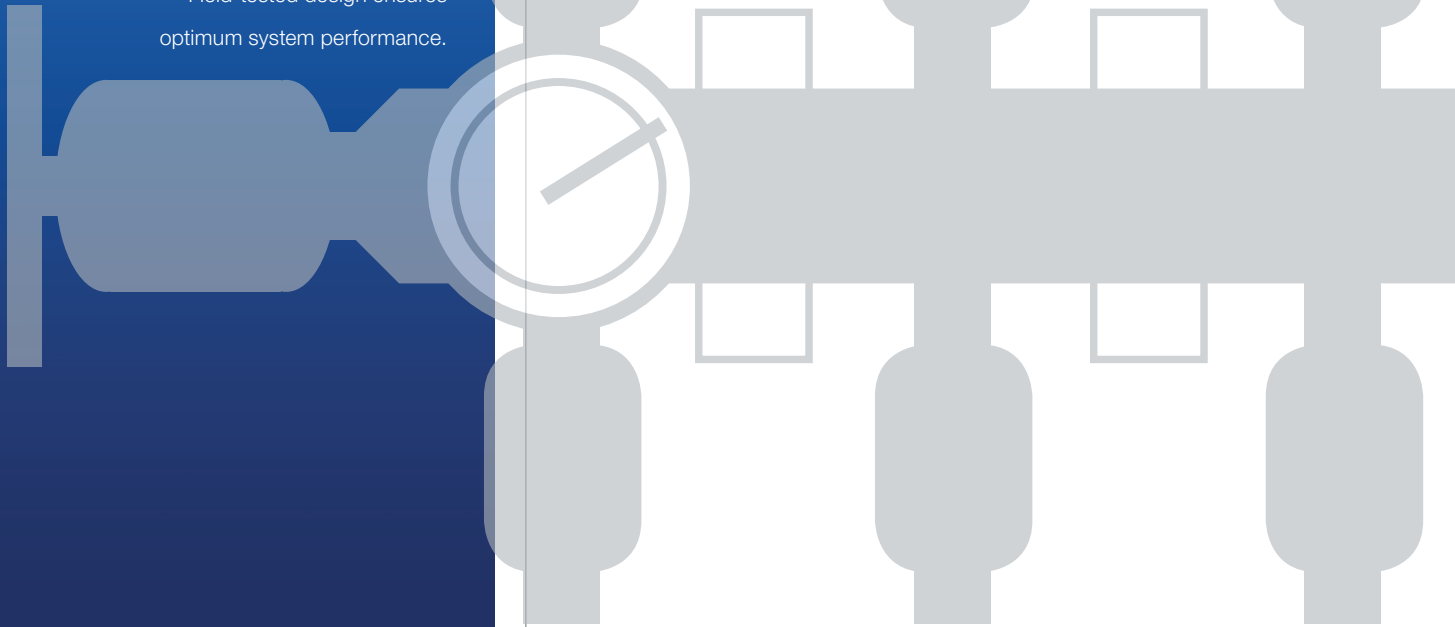


# Fluid Distribution Header

Application Guide

**A Swagelok® Pre-Engineered  
Subsystem**

- Pre-engineered subsystems available in weeks, not months.
- Field-tested design ensures optimum system performance.



- Versatile manifold for gas and liquid applications
- Swagelok components for reliability
- Fluid distribution headers can be connected inline to create longer lengths

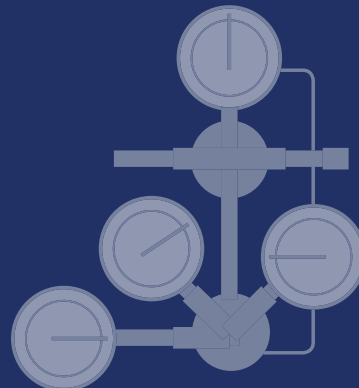
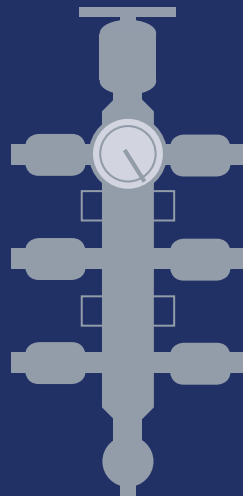
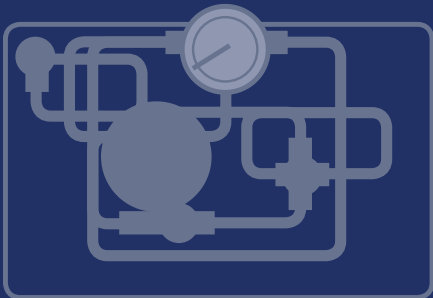
Swagelok®

## Swagelok Pre-Engineered Subsystems

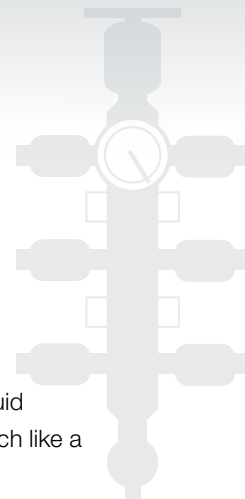
Swagelok now offers a series of predesigned and preassembled subsystems for use in all types of plants and facilities where fluids are being processed. Use Swagelok pre-engineered subsystems to create fully documented fluid sampling and control systems and bring consistency to your operations. Easy to install and operate, these subsystems offer the high quality and support you expect from Swagelok.

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# The Swagelok Fluid Distribution Header (FDH)



## Why Use a Fluid Distribution Header?

Fluid distribution headers are common components used in a variety of gas and liquid applications. An FDH provides a flow path while allowing multiple outlets, acting much like a large branch fitting.

A fluid distribution header is characterized by an inlet on one end, a drain on the other end, with multiple outlets on the sides. Typical fluid distribution headers are manufactured from a piece of pipe or bar and feature welded or threaded end connections.

## Using the Fluid Distribution Header as a Distribution Manifold

As a distribution manifold or header, an FDH connects several users to the source of a utility fluid. Typical applications include:

- Cooling water
- Steam
- Compressed air
- Plant nitrogen

In a typical analyzer house, for instance, one FDH is an instrument air header, another FDH is the plant nitrogen header, and yet another FDH is the LP steam header. If needed, multiple FDH subsystems can be screwed together end-to-end to make longer header runs.

Typically, an FDH has a main isolation valve and several outlets, each with its own isolation valve. For potentially wet gases, such as compressed air or steam, it is best to install the FDH vertically with a drain valve at the bottom.

For liquid service, it is best to install the FDH vertically, with the supply entering at the bottom and the top valve acting as a vent for removing trapped air or allowing air in for draining the FDH during maintenance.



**Typical Swagelok  
Fluid Distribution Header (FDH)**

## Using the Fluid Distribution Header as a Collection Manifold

As a collection manifold or header, an FDH collects several fluid streams and provides a single connection for disposal. Typical disposal points include:

- Low-pressure return to process
- Flare header
- Atmospheric vent
- Drain or sewer

### Key Features

The Swagelok FDH is a pre-engineered and fully documented piping assembly that can act as a distribution manifold or collection manifold in gas or liquid applications.

The Swagelok FDH offers several distinctive features:

- Available in 1 and 2 in. sizes, an extruded manifold body design features squared sides that mount solidly and prevent twisting.
- Standard branch locations offer flexibility; additional outlets can be added to the header without welding.
- The FDH can be ordered with 2 to 16 branch outlets, with or without valves, so users can add ports as needed.
- A choice of high-quality valves and end connections, all manufactured by Swagelok.
- Working pressures up to 3000 psig (206 bar).
- Mounting brackets can be positioned by the installer.
- The 1 in. FDH has a 3/4 in. female NPT on both ends for quick and easy adaptability.

## How to Select a Fluid Distribution Header

**Branch outlets:** The first step in selecting an FDH is determining the number and location of branch outlets. Branch outlets are available on the left, front, and right sides of the system, or on a combination of two sides.

**Gauge:** The FDH can be ordered with or without a Swagelok B model pressure gauge, a general-purpose stainless steel gauge.

**Drain valve:** The FDH can be ordered with or without a drain valve on the opposite end to drain the system.

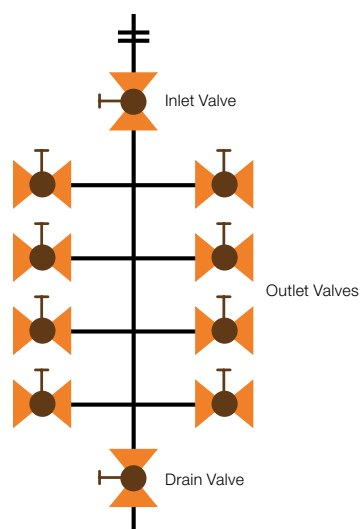
**Valve selection:** A variety of Swagelok valves are available to meet temperature and pressure requirements of specific applications. See page 7 for pressure-temperature ratings.

- Swagelok 40G series instrumentation ball valves
- Swagelok 40 series instrumentation ball valves
- Swagelok 60T series process ball valves
- Swagelok 1 and 18 series integral bonnet needle valves
- Swagelok P4T and P6T plug valves

Special notes:

The main isolation valve and individual inlet isolation valves are optional when the FDH is used as a collection manifold.

For gas headers that are installed horizontally, specify the necessary number of inlets on the top side of the header and one outlet on the underside for a drain valve.



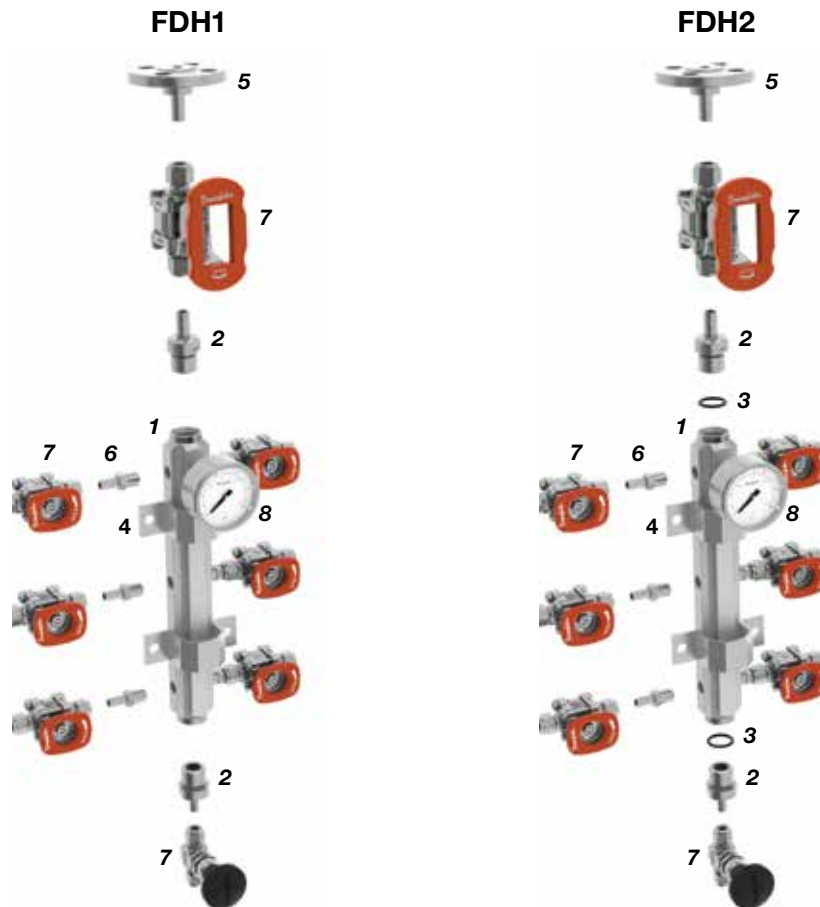
## Materials of Construction

For detailed product data, including additional seat materials and nonwetted materials of construction, see individual product catalogs.

Component	Manufacturer, Model	Material
<b>1</b> Extrusion	Swagelok	316 stainless steel
<b>2</b> End caps (FDH2) / Adapter (FDH1)	Swagelok	
<b>3</b> O-rings <sup>①</sup>	Various	Fluorocarbon FKM
<b>4</b> Mounting brackets	Swagelok	316 stainless steel
<b>5</b> End connections	Swagelok	316 stainless steel
<b>6</b> Adapter fittings	Swagelok	316 stainless steel
<b>7</b> Valves	Swagelok 60 series	See Swagelok Ball Valves, General Purpose and Special Application—60 Series catalog, MS-01-146
	Swagelok 40G and 40 series ball valves	See Swagelok One-Piece Instrumentation Ball Valves—40G Series and 40 Series catalog, MS-02-331
	Swagelok 1 and 18 series needle valves	See Swagelok Integral-Bonnet Needle Valves—O, 1, 18, 20, and 26 Series catalog, MS-01-164
	Swagelok P4T and P6T series plug valves	See Swagelok Plug Valves—P4T and P6T Series catalog, MS-01-59
<b>8</b> Gauge	Swagelok B model	See Swagelok Pressure Gauges, Industrial and Process—PGI Series catalog, MS-02-170

Wetted components listed in *italics*.

① The standard 1 in. FDH does not use O-rings.



## Pressure-Temperature Ratings

Ratings of FDH subsystems are based on the ratings of the extrusion and the valves selected for the inlet, outlet, and drain. The valve with the lowest pressure rating at any given temperature limits the pressure rating. The valve with the most restrictive temperature rating limits the temperature rating. See **Ordering Information**, page 14, for the availability of each valve series in inlet, outlet, and drain functions.

For ratings of FDH subsystems with ASME class 150 flanges, see ASME B16.5-2003, Table 2-2.2 and Table F2-2.2.

### FDH1 (1 in. Pipe Platform)

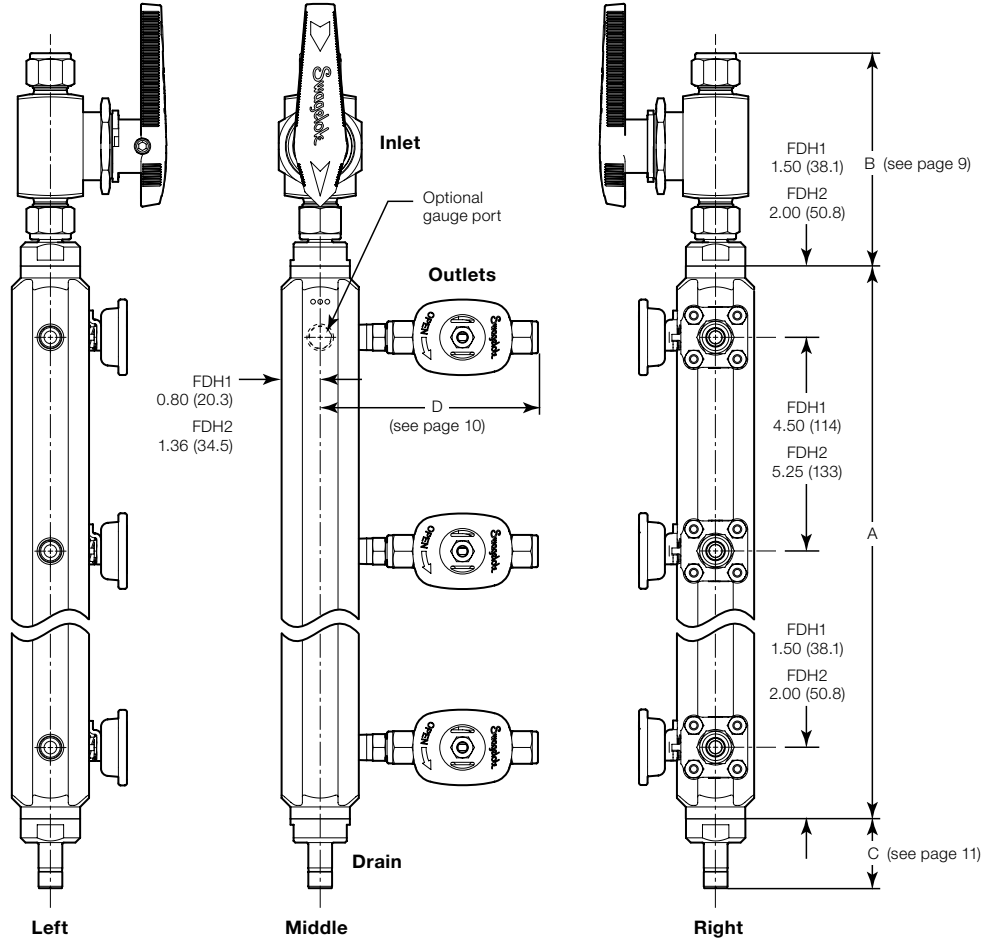
Inlet, Outlet, or Drain Valve	None, 1, or 18 Series	40G or 40 Series		60 Series	P4T or P6T Series
End Connection Size	All	1/4 in., 6 mm	3/8 to 1 in., 10 to 25 mm	All	All
Temperature, °F (°C)	Working Pressure, psig (bar)				
-40 (-40) to -20 (-28)	3000 (206)	3000 (206)	—	—	—
-20 (-28)	3000 (206)	3000 (206)	—	2200 (151)	—
-10 (-23)	3000 (206)	3000 (206)	—	2200 (151)	3000 (206)
50 (10)	3000 (206)	3000 (206)	2500 (172)	2200 (151)	3000 (206)
100 (37)	3000 (206)	3000 (206)	2500 (172)	2200 (151)	3000 (206)
150 (65)	2797 (192)	3000 (206)	2500 (172)	1850 (127)	3000 (206)
200 (93)	2595 (178)	2600 (179)	—	1500 (103)	3000 (206)
250 (121)	2465 (169)	2550 (175)	—	1150 (79.2)	2000 (137)
300 (148)	2340 (161)	2500 (172)	—	800 (55.1)	1000 (68.9)
400 (204)	2145 (147)	—	—	330 (22.7)	1000 (68.9)

### FDH2 (2 in. Pipe Platform)

Inlet, Outlet, or Drain Valve	None, 1, 18, P4T or P6T Series	40 Series	60 Series
Temperature, °F (°C)	Working Pressure, psig (bar)		
-10 (-23) to 50 (10)	1000 (68.9)	—	1000 (68.9)
50 (10)	1000 (68.9)	1000 (68.9)	1000 (68.9)
100 (37)	1000 (68.9)	1000 (68.9)	1000 (68.9)
150 (65)	930 (64.0)	930 (64.0)	930 (64.0)
200 (93)	865 (59.5)	—	865 (59.5)
250 (121)	820 (56.4)	—	820 (56.4)
300 (148)	780 (53.7)	—	780 (53.7)
400 (204)	715 (49.2)	—	330 (22.7)

## Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change.



Shown with outlet branch one side right.

### FDH Body—"A" Dimension and Weight

FDH1 inside diameter: 0.79 in. (20.1 mm); FDH2 inside diameter: 1.85 in. (47.0 mm).

Weights include end caps.

Outlet Branch Side	Number of Outlets Per Side	FDH1 (1 in. Pipe Platform)	FDH2 (2 in. Pipe Platform)	FDH1 (1 in. Pipe Platform)	FDH2 (2 in. Pipe Platform)
		A, in. (mm)		Weight, lb (kg)	
Valves on one side	4	16.5 (419)	19.8 (503)	6.3 (2.86)	16.7 (7.58)
	6	25.5 (648)	30.2 (767)	9.8 (4.45)	24.3 (11.0)
	8	34.5 (876)	40.8 (1036)	13.2 (5.99)	31.9 (14.5)
Valves on two sides	2	7.50 (190)	9.25 (235)	2.9 (1.32)	9.1 (4.13)
	3	12.0 (305)	14.5 (368)	4.6 (2.09)	12.9 (5.85)
	4	16.5 (419)	19.8 (503)	6.3 (2.86)	16.7 (7.58)
	5	21.0 (533)	25.0 (635)	8.1 (3.67)	20.5 (9.30)
	6	25.5 (648)	30.2 (767)	9.8 (4.45)	24.3 (11.0)
	7	30.0 (762)	35.5 (902)	11.5 (5.22)	28.1 (12.7)
	8	34.5 (876)	40.8 (1036)	13.2 (5.99)	31.9 (14.5)

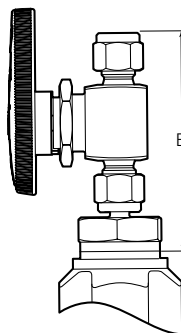


## Dimensions

Dimensions are for reference only and are subject to change.

### FDH1 (1 in. Pipe Platform) Inlet—"B" Dimension

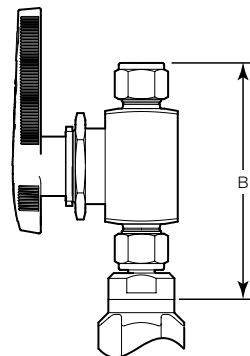
End Connections		Inlet Valve		
		No Valve	40G or 40 Series	60 Series
Type	Size	B, in. (mm)		
Female NPT	3/8 in.	0.67 (17.0)	3.43 (87.1)	3.63 (92.2)
	1/2 in.	1.22 (31.0)	4.17 (106)	3.75 (95.2)
	3/4 in.	—	—	4.60 (117)
Fractional Swagelok tube fitting	1/2 in.	1.58 (40.1)	4.61 (117)	4.73 (120)
	3/4 in.	1.58 (40.1)	4.61 (117)	4.73 (120)
	1 in.	1.85 (47.0)	—	6.03 (153)
Metric Swagelok tube fitting	12 mm	1.57 (39.9)	4.70 (119)	4.82 (122)
	25 mm	1.85 (47.0)	—	6.14 (156)
Swagelok tube adapter	3/8 in.	1.37 (34.8)	—	—
	1/2 in.	1.59 (40.4)	—	—
	3/4 in.	1.65 (41.9)	—	—
	1 in.	1.90 (48.3)	—	—
ASME class 150 flange	1/2 in.	2.47 (62.7)	—	5.69 (145)
	1 in.	3.05 (77.5)	—	7.12 (181)



**40 Series Inlet Valve with Swagelok Tube Fitting End Connections Shown**

### FDH2 (2 in. Pipe Platform) Inlet—"B" Dimension

End Connections		Inlet Valve		
		No Valve	40 Series	60 Series
Type	Size	B, in. (mm)		
Female NPT	1/2 in.	1.73 (43.9)	5.23 (133)	4.81 (122)
	3/4 in.	2.21 (56.1)	—	5.67 (144)
	1 in. <sup>①</sup>	0.88 (22.4)	—	5.75 (146)
Fractional Swagelok tube fitting	1/2 in.	2.60 (66.0)	5.67 (144)	5.79 (147)
	3/4 in.	2.60 (66.0)	5.67 (144)	5.79 (147)
	1 in.	2.81 (71.4)	—	7.09 (180)
	2 in.	3.19 (81.0)	—	10.8 (274)
Metric Swagelok tube fitting	25 mm	2.80 (71.1)	—	7.17 (182)
	50 mm	3.19 (81.0)	—	—
Swagelok tube adapter	3/4 in.	2.70 (68.6)	—	—
	1 in.	2.95 (74.9)	—	—
	2 in.	3.51 (89.2)	—	—
ASME class 150 flange	1/2 in.	3.52 (89.4)	—	6.09 (155)
	1 in.	4.10 (104)	—	8.18 (208)
	2 in.	4.96 (126)	—	12.2 (310)



**40 Series Inlet Valve with Swagelok Tube Fitting End Connections Shown**

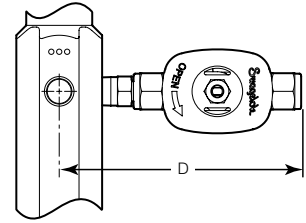
① 1 in. female NPT end caps are used on all assemblies, except where the desired end connections are: 2 in. Swagelok, 50mm Swagelok, and 2 in. TA end connections.

## Dimensions

Dimensions are for reference only and are subject to change.

### FDH1 (1 in. Pipe Platform) Outlet—"D" Dimension

End Connections		Outlet Valve				
		No Valve	40G or 40 Series	60 Series	1 or 18 Series	P4T or P6T Series
Type	Size	D, in. (mm)				
Female NPT	1/4 in.	0.80 (20.3)	3.72 (94.5)	3.82 (97.0)	3.78 (96.0)	4.04 (103)
	3/8 in.	2.03 (51.6)	4.18 (106)	4.38 (111)	4.68 (119)	—
	1/2 in.	2.29 (58.2)	—	4.50 (114)	4.80 (122)	4.68 (119)
Fractional Swagelok tube fitting	1/4 in.	2.02 (51.3)	3.89 (98.8)	4.85 (123)	3.95 (100)	3.85 (97.8)
	3/8 in.	2.10 (53.3)	4.73 (120)	4.85 (123)	4.26 (108)	4.34 (110)
	1/2 in.	2.24 (56.9)	—	5.82 (148)	4.58 (116)	4.66 (118)
Metric Swagelok tube fitting	6 mm	2.02 (51.3)	4.11 (104)	4.89 (124)	3.99 (101)	3.89 (98.8)
	10 mm	2.14 (54.4)	4.79 (122)	4.92 (125)	4.32 (110)	4.40 (112)
	12 mm	2.24 (56.9)	—	5.90 (150)	4.66 (118)	4.82 (122)
Swagelok tube adapter	1/4 in.	1.99 (50.5)	—	—	—	—
	3/8 in.	2.06 (52.3)	—	—	—	—
	1/2 in.	2.28 (57.9)	—	—	—	—



**60 Series Outlet Valve with Swagelok Tube Fitting End Connections Shown**

### FDH2 (2 in. Pipe Platform) Outlet—"D" Dimension

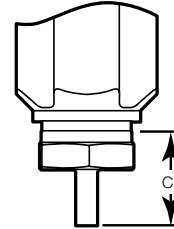
End Connections		Outlet Valve				
		No Valve	40 Series	60 Series	1 or 18 Series	P4T or P6T Series
Type	Size	D, in. (mm)				
Female NPT	3/8 in.	2.39 (60.7)	4.85 (123)	5.05 (128)	5.35 (136)	—
	1/2 in.	1.36 (34.5)	5.57 (141)	5.15 (131)	5.45 (138)	5.33 (135)
	3/4 in.	3.00 (76.2)	—	6.02 (153)	—	—
	1 in.	3.14 (79.8)	—	5.24 (133)	—	—
Fractional Swagelok tube fitting	3/8 in.	2.80 (71.1)	5.44 (138)	5.56 (141)	4.97 (126)	5.05 (128)
	1/2 in.	2.91 (73.9)	6.40 (163)	6.52 (166)	5.28 (134)	5.36 (136)
	3/4 in.	2.97 (75.4)	6.40 (163)	6.52 (166)	6.28 (160)	—
	1 in.	3.24 (82.3)	—	7.90 (201)	—	—
Metric Swagelok tube fitting	10 mm	2.81 (71.4)	5.50 (140)	5.63 (143)	5.03 (128)	5.11 (130)
	12 mm	2.91 (73.9)	6.45 (164)	6.57 (167)	5.33 (135)	5.49 (139)
	25 mm	3.24 (82.3)	—	7.96 (202)	—	—
Swagelok tube adapter	3/8 in.	2.76 (70.1)	—	—	—	—
	1/2 in.	2.98 (75.7)	—	—	—	—
	3/4 in.	3.04 (77.2)	—	—	—	—

## Dimensions

Dimensions are for reference only and are subject to change.

### FDH1 (1 in. Pipe Platform) Drain—"C" Dimension

End Connections		Drain Valve				
		No Valve	40G or 40 Series	60 Series	1 or 18 Series	P4T or P6T Series
Type	Size	C, in. (mm)				
Female NPT	1/4 in.	0.67 (17.0)	3.01 (76.5)	3.11 (79.0)	3.07 (78.0)	3.04 (77.2)
	3/8 in.	0.67 (17.0)	3.43 (87.1)	3.63 (92.2)	3.93 (99.8)	—
	1/2 in.	1.22 (31.0)	4.17 (106)	3.75 (95.2)	4.05 (103)	3.93 (99.8)
	3/4 in.	—	—	4.60 (117)	—	—
Fractional Swagelok tube fitting	1/4 in.	1.44 (36.6)	3.09 (78.5)	3.87 (98.3)	2.97 (75.4)	2.87 (72.9)
	3/8 in.	1.46 (37.1)	3.76 (95.5)	3.88 (98.6)	3.29 (83.6)	3.37 (85.6)
	1/2 in.	1.58 (40.1)	4.61 (117)	4.73 (120)	4.49 (114)	3.57 (90.7)
	3/4 in.	1.58 (40.1)	—	—	—	—
	1 in.	1.85 (47.0)	—	—	—	—
Metric Swagelok tube fitting	6 mm	2.35 (59.7)	4.43 (113)	5.21 (132)	4.31 (109)	4.21 (107)
	10 mm	1.48 (37.6)	3.81 (96.8)	3.94 (100)	3.34 (84.8)	3.42 (86.9)
	12 mm	1.57 (39.9)	4.7 (119)	4.82 (122)	3.58 (90.9)	3.74 (95.0)
	25 mm	1.85 (47.0)	—	—	—	—
Swagelok tube adapter	1/4 in.	1.30 (33.0)	—	—	—	—
	3/8 in.	1.37 (34.8)	—	—	—	—
	1/2 in.	1.59 (40.4)	—	—	—	—
	3/4 in.	1.65 (41.9)	—	—	—	—
	1 in.	1.90 (48.3)	—	—	—	—
ASME class 150 flange	1/2 in.	2.47 (62.7)	—	5.69 (145)	—	—
	1 in.	3.05 (77.5)	—	7.12 (181)	—	—
Plug	—	0.80 (20.3)	—	—	—	—



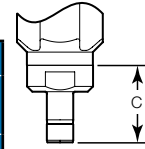
No Drain Valve with Swagelok Tube Adapter End Connection Shown

## Dimensions

Dimensions are for reference only and are subject to change.

### FDH2 (2 in. Pipe Platform) Drain—"C" Dimension

End Connections		Drain Valve				
		No Valve	40 Series	60 Series	1 or 18 Series	P4T or P6T Series
Type	Size	C, in. (mm)				
Female NPT	3/8 in.	1.73 (43.9)	4.49 (114)	4.70 (119)	4.99 (127)	—
	1/2 in.	1.73 (43.9)	5.23 (133)	4.81 (122)	5.11 (130)	4.99 (127)
	3/4 in.	2.21 (56.1)	—	5.67 (144)	—	—
	1 in. <sup>ⓐ</sup>	0.88 (22.4)	—	5.75 (146)	—	—
Fractional Swagelok tube fitting	3/8 in.	2.17 (55.1)	4.26 (108)	4.93 (125)	4.34 (110)	4.42 (112)
	1/2 in.	2.60 (66.0)	5.67 (144)	5.79 (147)	5.55 (141)	4.63 (118)
	3/4 in.	2.60 (66.0)	5.67 (144)	5.79 (147)	5.55 (141)	—
	1 in.	2.81 (71.4)	—	7.09 (180)	—	—
	2 in.	3.19 (81.0)	—	10.8 (274)	—	—
Metric Swagelok tube fitting	10 mm	2.33 (59.2)	5.56 (141)	5.69 (145)	5.09 (129)	5.17 (131)
	12 mm	2.56 (65.0)	5.70 (145)	5.82 (148)	4.58 (116)	4.74 (120)
	25 mm	2.80 (71.1)	—	7.17 (182)	—	—
	50 mm	3.19 (81.0)	—	—	—	—
Swagelok tube adapter	3/8 in.	2.41 (61.2)	—	—	—	—
	1/2 in.	2.64 (67.1)	—	—	—	—
	3/4 in.	2.70 (68.6)	—	—	—	—
	1 in.	2.95 (74.9)	—	—	—	—
ASME class 150 flange	1/2 in.	3.52 (89.4)	—	6.09 (155)	—	—
	1 in.	4.10 (104)	—	8.18 (208)	—	—
	2 in.	4.96 (126)	—	12.2 (310)	—	—
Plug	—	1.86 (47.2)	—	—	—	—

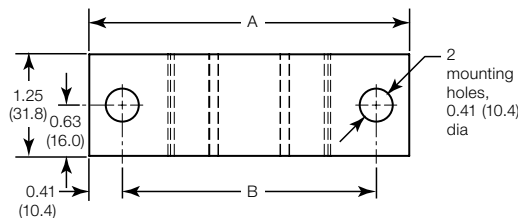


No Drain Valve with Swagelok Tube Adapter End Connection Shown

ⓐ 1 in. female NPT end caps are used on all assemblies, except where the desired end connections are: 2 in. Swagelok, 50mm Swagelok, and 2 in. TA end connections.

### Mounting Brackets

Model	Dimensions, in. (mm)	
	A	B
FDH1	3.94 (100)	3.13 (79.5)
FDH2	5.06 (126)	4.25 (108)



Outlet Branch Side	Number of Outlets Per Side	Number of Mounting Brackets
Valves on one side	4	2
	6	3
	8	4
Valves on two sides	2	1
	3	2
	4	2
	5	2
	6	3
	7	3
8	4	

## Ordering Information

Build an FDH subsystem ordering number by combining the designators in the sequence shown below.

### FDH1 (1 in. Pipe Platform)

1 2 3 4 5 6 7 8 9  
 FDH1 - **A C - C 1 - C 1 - C 3 - 0**

#### 1 Outlet Branch Sides

- A** = 1 side right
- B** = 1 side left
- C** = 2 sides 180° apart
- D** = 2 sides right/middle 90° apart
- E** = 2 sides left/middle 90° apart

#### 2 Number of Outlets

- A** = 4
- B** = 6
- C** = 8
- D** = 10 (2-side configurations *only*)
- E** = 12 (2-side configurations *only*)
- F** = 14 (2-side configurations *only*)
- G** = 16 (2-side configurations *only*)

#### 3 Inlet Connections

- B** = 3/8 in. female NPT
- C** = 1/2 in. female NPT
- D** = 3/4 in. female NPT<sup>①</sup>
- H** = 1/2 in. Swagelok tube fitting
- J** = 3/4 in. Swagelok tube fitting
- K** = 1 in. Swagelok tube fitting<sup>①</sup>
- P** = 12 mm Swagelok tube fitting
- Q** = 25 mm Swagelok tube fitting<sup>①</sup>
- S** = 1/2 in. NPS ASME class 150 flange<sup>①</sup>
- T** = 1 in. NPS ASME class 150 flange<sup>①</sup>
- W** = 3/8 in. Swagelok tube adapter<sup>②</sup>
- X** = 1/2 in. Swagelok tube adapter<sup>②</sup>
- Y** = 3/4 in. Swagelok tube adapter<sup>②</sup>
- Z** = 1 in. Swagelok tube adapter<sup>②</sup>

<sup>①</sup> Available with no inlet valve and 60 series valve *only*.

<sup>②</sup> Available with no inlet valve *only*.

#### 4 Inlet Valve

- 0** = None
- 1** = 40G (1/4 in. and 6 mm inlet connections) or 40 series (all other inlet connection sizes) ball valve
- 2** = 60 series ball valve

#### 5 Outlet Connections

- A** = 1/4 in. female NPT
- B** = 3/8 in. female NPT<sup>①</sup>
- C** = 1/2 in. female NPT<sup>①</sup>
- F** = 1/4 in. Swagelok tube fitting
- G** = 3/8 in. Swagelok tube fitting
- H** = 1/2 in. Swagelok tube fitting<sup>③</sup>
- M** = 6 mm Swagelok tube fitting
- N** = 10 mm Swagelok tube fitting
- P** = 12 mm Swagelok tube fitting<sup>③</sup>
- V** = 1/4 in. Swagelok tube adapter<sup>②</sup>
- W** = 3/8 in. Swagelok tube adapter<sup>②</sup>
- X** = 1/2 in. Swagelok tube adapter<sup>②</sup>

<sup>①</sup> Available with no outlet valve, 40G or 40 series valve, 1 or 18 series valve, and 60 series valve *only*.

<sup>②</sup> Available with no outlet valve *only*.

<sup>③</sup> Not available with 40 series valves

#### 6 Outlet Valve

- 0** = None
- 1** = 40G (1/4 in. and 6 mm outlet connections) or 40 series (all other outlet connection sizes) ball valve
- 2** = 60 series ball valve
- 3** = 1 or 18 series needle valve
- 4** = P4T or P6T series plug valve

#### 7 Drain Connection

- A** = 1/4 in. female NPT
- B** = 3/8 in. female NPT<sup>①</sup>
- C** = 1/2 in. female NPT
- D** = 3/4 in. female NPT<sup>②</sup>
- F** = 1/4 in. Swagelok tube fitting
- G** = 3/8 in. Swagelok tube fitting
- H** = 1/2 in. Swagelok tube fitting
- J** = 3/4 in. Swagelok tube fitting<sup>③</sup>
- K** = 1 in. Swagelok tube fitting<sup>③</sup>
- M** = 6 mm Swagelok tube fitting
- N** = 10 mm Swagelok tube fitting
- P** = 12 mm Swagelok tube fitting
- Q** = 25 mm Swagelok tube fitting<sup>③</sup>
- S** = 1/2 in. NPS ASME class 150 flange<sup>②</sup>
- T** = 1 in. NPS ASME class 150 flange<sup>②</sup>
- V** = 1/4 in. Swagelok tube adapter<sup>②</sup>
- W** = 3/8 in. Swagelok tube adapter<sup>③</sup>
- X** = 1/2 in. Swagelok tube adapter<sup>③</sup>
- Y** = 3/4 in. Swagelok tube adapter<sup>③</sup>
- Z** = 1 in. Swagelok tube adapter<sup>③</sup>
- ZZ** = Plug

<sup>①</sup> Available with no drain valve, 40G or 40 series valve, 1 or 18 series valve, and 60 series valve *only*.

<sup>②</sup> Available with no drain valve and 60 series valve *only*.

<sup>③</sup> Available with no drain valve *only*.

#### 8 Drain Valve

- 0** = None
- 1** = 40G (1/4 in. and 6 mm drain connections) or 40 series (all other drain connection sizes) ball valve
- 2** = 60 series ball valve
- 3** = 1 or 18 series needle valve
- 4** = P4T or P6T series plug valve

#### 9 Pressure Gauge

*Gauges are dual scale with bar primary and psig secondary scales.*

- 0** = None
- 1** = 0 to 10 bar (0 to 145 psig)
- 2** = 0 to 40 bar (0 to 580 psig)
- 3** = 0 to 100 bar (0 to 1450 psig)
- 4** = 0 to 160 bar (0 to 2320 psig)
- 5** = 0 to 250 bar (0 to 3625 psig)

## Ordering Information

Build an FDH subsystem ordering number by combining the designators in the sequence shown below.

### FDH2 (2 in. Pipe Platform)

1 2 3 4 5 6 7 8 9  
 FDH2 - **C** **G** - **T** **0** - **H** **2** - **H** **3** - **0**

#### 1 Outlet Branch Sides

- A** = 1 side right
- B** = 1 side left
- C** = 2 sides 180° apart
- D** = 2 sides right/middle 90° apart
- E** = 2 sides left/middle 90° apart

#### 2 Number of Outlets

- A** = 4
- B** = 6
- C** = 8
- D** = 10 (2-side configurations *only*)
- E** = 12 (2-side configurations *only*)
- F** = 14 (2-side configurations *only*)
- G** = 16 (2-side configurations *only*)

#### 3 Inlet Connections

- C** = 1/2 in. female NPT
- D** = 3/4 in. female NPT<sup>①</sup>
- E** = 1 in. female NPT<sup>①</sup>
- H** = 1/2 in. Swagelok tube fitting
- J** = 3/4 in. Swagelok tube fitting
- K** = 1 in. Swagelok tube fitting<sup>①</sup>
- L** = 2 in. Swagelok tube fitting<sup>①</sup>
- Q** = 25 mm Swagelok tube fitting<sup>①</sup>
- R** = 50 mm Swagelok tube fitting<sup>②</sup>
- S** = 1/2 in. NPS ASME class 150 flange<sup>①</sup>
- T** = 1 in. NPS ASME class 150 flange<sup>①</sup>
- U** = 2 in. NPS ASME class 150 flange<sup>①</sup>
- Y** = 3/4 in. Swagelok tube adapter<sup>②</sup>
- Z** = 1 in. Swagelok tube adapter<sup>②</sup>
- AA** = 2 in. Swagelok tube adapter<sup>②</sup>

<sup>①</sup> Available with no inlet valve and 60 series valve *only*.

<sup>②</sup> Available with no inlet valve *only*.

#### 4 Inlet Valve

- 0** = None
- 1** = 40 series ball valve
- 2** = 60 series ball valve

#### 5 Outlet Connections

- B** = 3/8 in. female NPT<sup>①</sup>
- C** = 1/2 in. female NPT
- D** = 3/4 in. female NPT<sup>②</sup>
- E** = 1 in. female NPT<sup>②</sup>
- G** = 3/8 in. Swagelok tube fitting
- H** = 1/2 in. Swagelok tube fitting
- J** = 3/4 in. Swagelok tube fitting<sup>①</sup>
- K** = 1 in. Swagelok tube fitting<sup>②</sup>
- N** = 10 mm Swagelok tube fitting
- P** = 12 mm Swagelok tube fitting
- Q** = 25 mm Swagelok tube fitting<sup>②</sup>
- W** = 3/8 in. Swagelok tube adapter<sup>③</sup>
- X** = 1/2 in. Swagelok tube adapter<sup>③</sup>
- Y** = 3/4 in. Swagelok tube adapter<sup>③</sup>

<sup>①</sup> Available with no outlet valve, 40G or 40 series valve, 1 or 18 series valve, and 60 series valve *only*.

<sup>②</sup> Available with no outlet valve and 60 series valve *only*.

<sup>③</sup> Available with no outlet valve *only*.

#### 6 Outlet Valve

- 0** = None
- 1** = 40 series ball valve
- 2** = 60 series ball valve
- 3** = 1 or 18 series needle valve
- 4** = P4T or P6T series plug valve

#### 7 Drain Connection

- B** = 3/8 in. female NPT<sup>①</sup>
- C** = 1/2 in. female NPT
- D** = 3/4 in. female NPT<sup>②</sup>
- E** = 1 in. female NPT<sup>②</sup>
- F** = 1/4 in. Swagelok tube fitting
- G** = 3/8 in. Swagelok tube fitting
- H** = 1/2 in. Swagelok tube fitting
- J** = 3/4 in. Swagelok tube fitting<sup>①</sup>
- K** = 1 in. Swagelok tube fitting<sup>②</sup>
- L** = 2 in. Swagelok tube fitting<sup>②</sup>
- N** = 10 mm Swagelok tube fitting
- P** = 12 mm Swagelok tube fitting
- Q** = 25 mm Swagelok tube fitting<sup>②</sup>
- R** = 50 mm Swagelok tube fitting<sup>③</sup>
- S** = 1/2 in. NPS ASME class 150 flange<sup>②</sup>
- T** = 1 in. NPS ASME class 150 flange<sup>②</sup>
- U** = 2 in. NPS ASME class 150 flange<sup>②</sup>
- W** = 3/8 in. Swagelok tube adapter<sup>③</sup>
- X** = 1/2 in. Swagelok tube adapter<sup>③</sup>
- Y** = 3/4 in. Swagelok tube adapter<sup>③</sup>
- Z** = 1 in. Swagelok tube adapter<sup>③</sup>
- AA** = 2 in. Swagelok tube adapter<sup>③</sup>
- ZZ** = Plug

<sup>①</sup> Available with no drain valve, 40G or 40 series valve, 1 or 18 series valve, and 60 series valve *only*.

<sup>②</sup> Available with no drain valve and 60 series valve *only*.

<sup>③</sup> Available with no drain valve *only*.

#### 8 Drain Valve

- 0** = None
- 1** = 40 series ball valve
- 2** = 60 series ball valve
- 3** = 1 or 18 series needle valve
- 4** = P4T or P6T series plug valve

#### 9 Pressure Gauge

*Gauges are dual scale with bar primary and psig secondary scales.*

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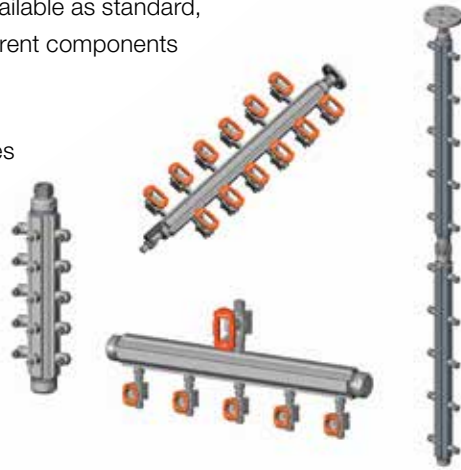
## Swagelok Custom Solutions

Although a wide variety of valves and fittings are available as standard, there may be those applications which require different components or configurations.

If a custom solution is required, Swagelok welcomes these requests.

Nonstandard assemblies may include:

- Customized port spacing
- Other Swagelok products
- Different manifold lengths.



## Regulatory Compliance

### Europe

- Pressure Equipment Directive (PED) 2014/68/EU
- Atmospheres Explosive Directive (ATEX) 2014/34/EU
- Restriction of Hazardous Substances Directive (RoHS) 2011/65/EU

### Americas

- Hazardous location electrical approval (CSA/UL)
- CRN registered in Canada (individual components of assembly)

Contact your authorized Swagelok representative for specific assembly compliance approvals and certifications available from the manufacturer.

## Testing

Every FDH subsystem is shell tested with nitrogen at 250 psig (17.2 bar) to a requirement of no detectable leakage with a liquid leak detector.

See individual valve product catalogs for shutoff testing information.

## Cleaning and Packaging

All FDH subsystems are cleaned in accordance with Swagelok *Standard Cleaning and Packaging (SC-10)*, MS-06-62.

**Safe Product Selection**

**When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.**

** WARNING**

**Do not mix/interchange Swagelok products or components not governed by industrial design standards, including Swagelok tube fitting end connections, with those of other manufacturers.**

## Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit [swagelok.com](http://swagelok.com) or contact your authorized Swagelok representative.