

# Sample Cylinders

SC and MC Series



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# Sample Cylinders

## SC Series

### Design

FITOK sampling cylinders are designed and manufactured to stringent Department of Transportation specifications to provide long performance life and maximum safety to the user.

The cylinders are fabricated from seamless tubing with increased wall thickness in the threaded area which prevents expansion when valves are installed. Completely formed ends maximize strength and eliminate potential leak paths. Internal sandblasting smooth surface imperfections and removes foreign particles.



### Features

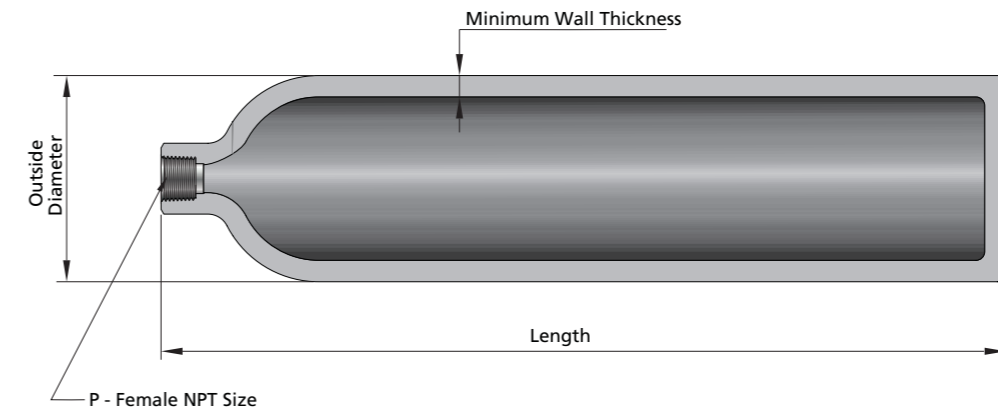
- Maximum working pressure is 5000 psig (345 bar).
- Volume varies from 40 to 3785 cml.
- Seamless tubing body provides consistent wall thickness, size and capacity.
- Cylinder inlet end is 1/8, 1/4 and 1/2 female NPT connections.
- Heavy wall end connections provide strength and are flaring-resistant.
- Full-penetration gas tungsten arc-weld construction provides leak-tight sample containment.
- 304L and 316L and alloy 400 stainless steel materials resist intergranular corrosion.

### Single -Ended Cylinders

- 150, 300 and 500 cm<sup>3</sup> volume meet a variety of sampling needs.

#### Testing

DOT-4B 500 cylinders are hydrostatically proof tested at 2 times the working pressure.

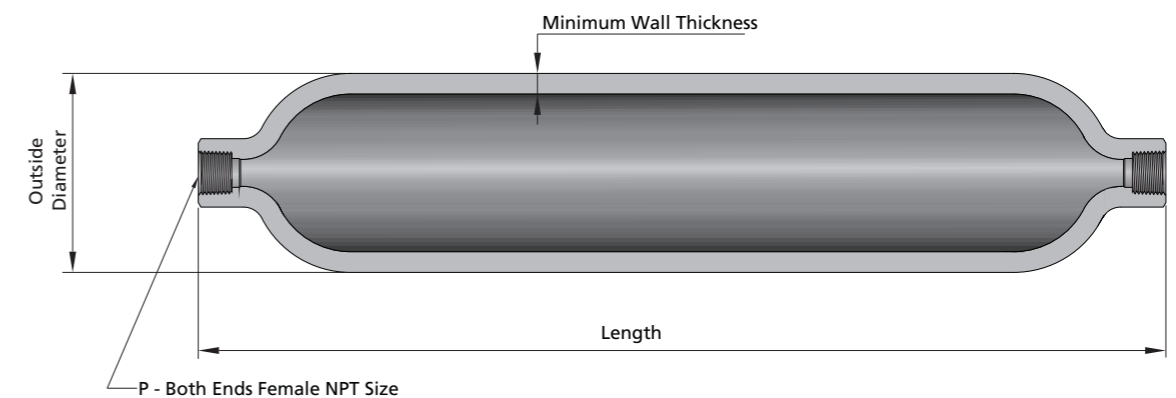


### Double-ended Cylinders

- Volume from 40 to 3785 cm<sup>3</sup>
- 304L and 316L stainless steel double-ended cylinders are available with dual certification to DOT and TC requirements.

#### Testing

- DOT-3A 1800/TC-3ASM 124 cylinders are hydrostatically tested at 5/3 times the working pressure.
- DOT-3E 1800/TC-3EM 124 cylinders are hydrostatically proof tested at 3500 psig (241 bar). One cylinder of each lot is burst tested.
- DOT-3A 5000/TC-3ASM 344 cylinders are hydrostatically proof tested at 8700 psig (600 bar).



### Pressure vs. Temperature:

Material	316L SS	316L SS, 304L SS	304L SS
DOT Specification	3A 5000	3E 1800 3A 1800	4B 500
Temperature, °F (°C)	Working pressure, psig (bar)		
-65 (53) to 100 (37)	5000 (344)	1800 (124)	500 (34.4)
200 (93)	3960 (272)	1360 (93.7)	
300 (148)	3570 (245)	1230 (84.7)	
400 (204)	3290 (226)	1130 (77.8)	
500 (260)	3060 (210)	1050 (72.3)	
600 (315)	2920 (201)	1000 (68.9)	
650 (343)	2870 (197)	980 (67.5)	
700 (371)	2810 (193)	970 (66.8)	
750 (398)	2750 (189)	950 (65.4)	
800 (426)	2700 (186)	930 (64.0)	
850 (454)	2640 (181)	—	

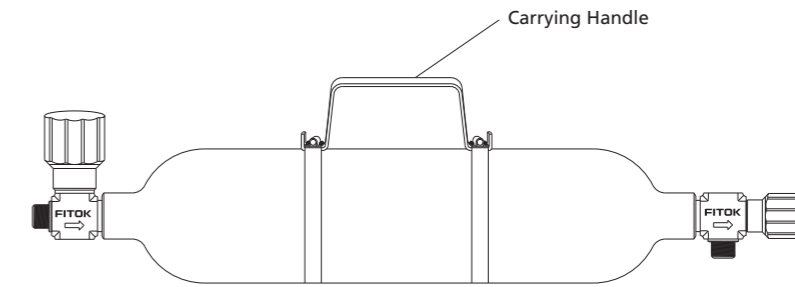
- Working temperature limited to 300°F (148°C) maximum with PTFE internal coating.
- Working pressure and temperature may be limited by individual local government regulations.

### Technical Data

Material Grade/Cylinder Specification	Working Pressure psig (bar)	Internal Volume cm <sup>3</sup> ± 5%	P - Female NPT	Dimension, in. (mm)			
				Outside Diameter	Length	Minimum wall thickness	Weight lb (kg)
<b>Single-Ended</b>							
304L SS/ DOT-4B	500 (34.4)	150	1/4	2.00 (50.8)	4.88 (124)	0.093 (2.4)	1.10 (0.50)
		300			8.62 (219)		1.80 (0.82)
		500			13.6 (330)		2.70 (1.23)
<b>Double-Ended</b>							
304L SS/ DOT-3E 1800 TC-3EM 124	1800 (124)	40	1/8	1.25 (31.8)	3.88 (98.6)	0.070 (1.8)	0.31 (0.14)
		50	1/4	1.50 (38.1)	3.75 (95.2)	0.093 (2.4)	0.38 (0.17)
		75			4.94 (125)		0.62 (0.28)
		150	1/4	2.00 (50.8)	5.25 (133)		0.94 (0.43)
		300			8.94 (227)		1.80 (0.82)
		400			11.4 (290)		2.10 (0.95)
500	13.8 (351)	2.60 (1.18)					
304L SS/ DOT-3A 1800 TC-3ASM 124	1800 (124)	1000	1/4 or 1/2	3.50 (88.9)	10.9 (277)	0.180 (4.6)	6.50 (2.90)
		2250		4.00 (102)	17.2 (437)	0.206 (5.2)	14.00 (6.40)
		3785 (1 gal)			26.7 (678)		21.00 (9.50)
316L SS/ DOT-3E 1800 TC-3EM 124	1800 (124)	150	1/4	2.00 (50.8)	5.25 (133)		0.093 (2.4)
		300			8.94 (227)	1.80 (0.82)	
		500			13.8 (351)	2.60 (1.20)	
316L SS/ DOT-3A 5000 TC-3ASM 344	5000 (344)	150	1/4 or 1/2	1.90 (48.2)	8.00 (203)	0.240 (6.1)	3.00 (1.40)
		300			14.5 (368)		5.60 (2.50)
		500			23.5 (597)		9.10 (4.10)
Alloy 400	1800 (124)	150	1/4	2.00 (50.8)	5.25 (133)	0.093 (2.4)	0.94 (0.43)
		300			8.94 (227)		1.80 (0.82)
		500			13.8 (351)		2.90 (1.3)

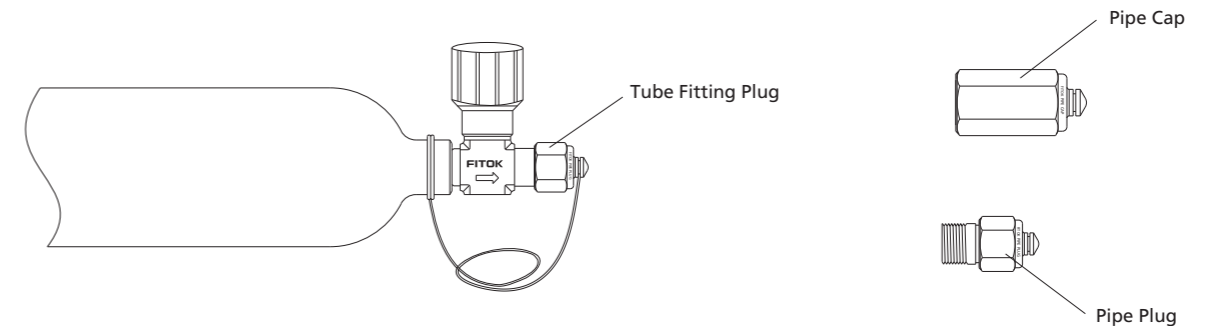
### Carrying Handle

This carrying handle provides convenience to carry sample cylinder. The handle is made of 304 stainless steel.



### Caps and Plugs

Caps and plugs protect FITOK tube fitting or NPT end connections on valves during cylinder transport. Contact the authorized representative or FITOK Group for details.



### Rupture Disc Models

FITOK rupture disc models are supplied with a pre-bulged rupture disc which provides excellent resistance to a broad range of corrosive materials, protecting cylinders from over-pressurization by venting cylinder contents to atmosphere. The rupture disc is welded to a body that is threaded into a valve body or a rupture disc tee and sealed by a PTFE gasket.

### Materials of Construction

Description	Material Grade / ASTM Specification
Body	316 SS/A479
Rupture disc	Alloy 600/B168
Gasket	PTFE/D1710

### Ordering Information

Nominal Burst Pressure at 70°F (20°C)	Ordering Number
2850±150 psig (196±10.3 bar)	SS-RDD-8-2850
1900±100 psig (130±6.8 bar)	SS-RDD-8-1900

# Outage Tubes

## Features

- Standard materials are 316 stainless steel or alloy 400 tubing
- Standard size 1/4 or 1/2 male NPT

## Construction

Outage tube is welded to the male inlet end of an adapter. This adapter is threaded into the female port of a sample cylinder.

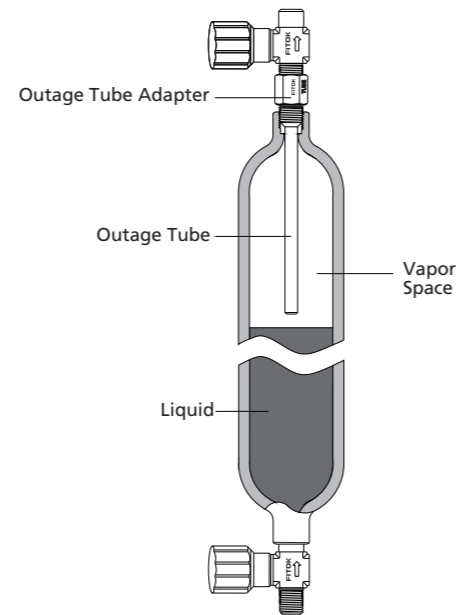
## Usage

Outage tube is used to keep a certain space for gaseous phase, the space is determined by the length of outage tube.

$$\% \text{ outage} = (\text{vapor space} / \text{total volume}) \times 100$$

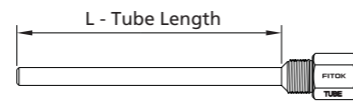
To obtain an exact outage, each outage tube and cylinder assembly should be calibrated by a suitable method.

The table below shows approximate outage tube length for standard sample cylinders:

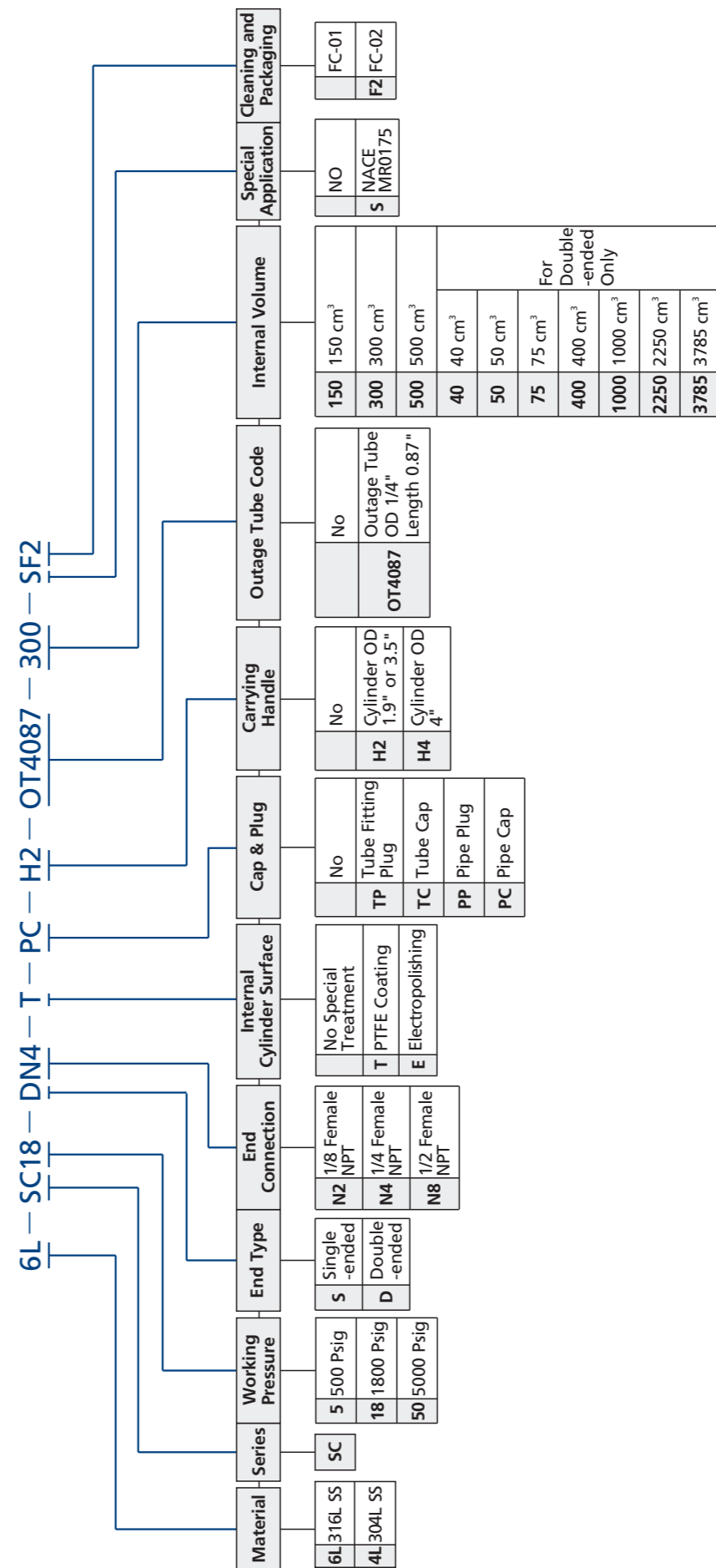


## Tube Lengths

Tube O.D.	Internal Volume (cm³ ±5%)	Code	Minimum Vapor, %				
			Tube Length, in.				
			10	20	30	40	50
1/4"	40	4087	0.87	1.11	1.35	1.59	1.84
	50	5085	0.85	1.07	1.28	1.50	1.71
	75	5102	1.02	1.34	1.66	1.98	2.31
	150	5112	1.12	1.45	1.79	2.13	2.46
	300	5165	1.65	2.32	2.99	3.67	4.34
	400	5200	2.00	2.90	3.79	4.69	5.59
	500	5226	2.26	3.38	4.50	5.62	6.74
	1000	5231	2.31	3.06	3.81	4.56	5.31
5/16"	2250	5717	3.30	4.59	5.88	7.17	8.46
	3785 (1 gal)	51114	4.62	6.79	8.96	11.14	13.31
	1000	8221	2.21	2.96	3.71	4.46	5.21
	2250	8846	3.30	4.59	5.88	7.17	8.46
	3785 (1 gal)	8452	4.52	6.69	8.86	11.04	13.21
	150	5109	1.09	1.43	1.77	2.12	2.46
	300	5159	1.59	2.27	2.96	3.65	4.34
	500	5560	2.16	3.30	4.45	5.60	6.74



Standard tube length is 10" (25.4 cm).  
Tube can be cut to desired length.



# Miniature Sample Cylinders

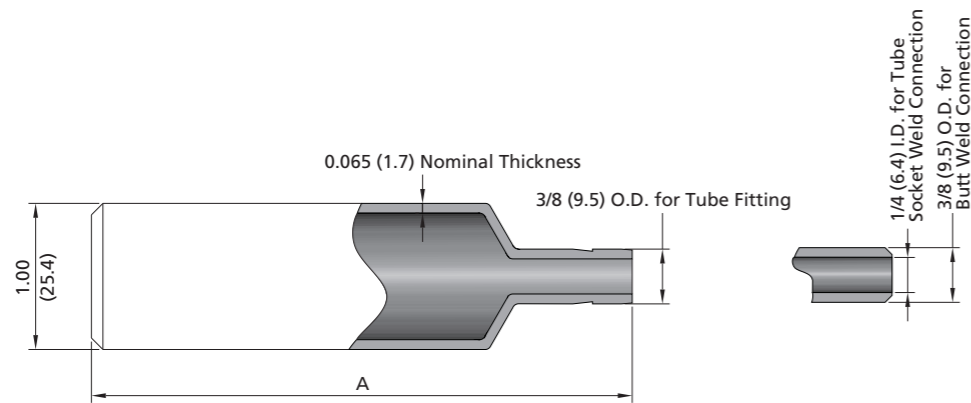
## MC Series

### Features

- Maximum working pressure: 1000 psig (68.9 bar)
- Capacity: 10, 25 and 50 cm<sup>3</sup>
- Single-ended and double-ended designs
- End connection: connected to 3/8" FITOK tube fittings or welded to 1/4" or 3/8" tubing
- Corrosion-resistant stainless steel construction
- Full-penetration butt weld construction

### Dimensions

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



Cylinder Model	Internal Volume cm <sup>3</sup>	Volume Tolerance	Working Pressure psig (bar)	A in. (mm)	Average Weight oz (g)
Single-ended	10	±10%	1000 (68.9)	2.19 (55.6)	2.2 (62)
	25	±5%		3.69 (93.7)	3.2 (91)
	50			6.25 (159)	5.6 (159)
Double-ended	10	±10%		2.75 (69.8)	1.9 (54)
	25	±5%		4.25 (108)	3.3 (94)
	50			6.81 (173)	5.1 (145)

### Testing

Each cylinder is tested at 2000 psig (138 bar) with nitrogen.

### Cautions:

- Strong impingement should be rooted out for sample cylinder.
- Sample cylinder should be kept off insulation and baking.
- Sample cylinders are strictly prohibited roasting by fire when valve is freezed.
- When the cylinder is using, the working pressure can not exceed its max working pressure.

### Ordering Information

