



Swagelok Pittsburgh | Tri-State Area

SWAGELOK®
BEND RADIUS GUIDE
FOR HOSE & FLEXIBLE TUBING



Swagelok Hose and Flexible Tubing Nomenclature

Bend Radius

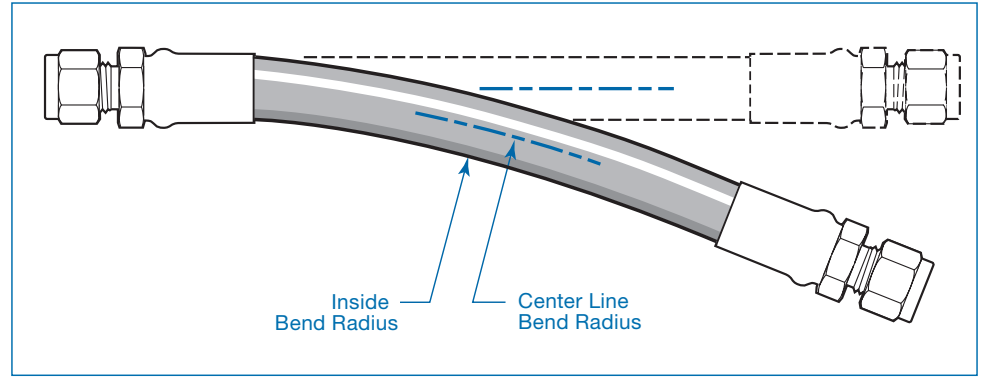
The radius of the bent section of hose, measured to the center line inside of the curved section.

Minimum Dynamic Bend Radius

The smallest bend radius that a hose is rated to perform in a dynamic application.

Minimum Static Bend Radius

The smallest bend radius that a hose is rated to perform in a static application.



FX SERIES METAL HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Center Line Bend Radius in. (cm)	
			Static	Dynamic
1/4 (6.4)	0.25 (6.4)	0.71 (18.0)	1.5 (3.81)	5.5 (14.0)
3/8 (9.7)	0.38 (9.5)	0.94 (23.9)	2.5 (6.40)	7.0 (17.8)
1/2 (12.7)	0.51 (13.0)	1.01 (25.7)	3.0 (7.62)	8.0 (20.3)
3/4 (19.0)	0.75 (19.0)	1.44 (36.4)	4.0 (10.2)	10.0 (25.4)
1 (25.4)	1.00 (25.4)	1.73 (43.9)	5.0 (12.7)	11.0 (27.9)
1 1/4 (31.8)	1.25 (31.8)	2.03 (51.6)	6.5 (16.5)	12.5 (31.8)
1 1/2 (38.1)	1.50 (38.1)	2.40 (60.9)	7.5 (19.1)	13.0 (33.0)
2 (50.8)	2.00 (50.8)	2.85 (72.4)	9.0 (22.9)	14.0 (35.6)

FJ SERIES METAL HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Center Line Bend Radius in. (cm)	
			Static	Dynamic
1/4 (6.4)	0.25 (6.4)	0.48 (12.2)	1.00 (2.54)	4.33 (11.0)
3/8 (9.7)	0.38 (9.5)	0.69 (17.5)	1.20 (3.05)	5.91 (15.0)
1/2 (12.7)	0.50 (12.7)	0.82 (20.8)	1.50 (3.81)	6.50 (16.5)
3/4 (19.0)	0.75 (19.0)	1.21 (30.7)	2.10 (5.33)	8.86 (22.5)
1 (25.4)	1.00 (25.4)	1.51 (38.4)	2.70 (6.86)	10.2 (25.9)
1 1/4 (31.8)	1.25 (31.8)	1.82 (46.2)	3.10 (7.87)	11.8 (30.0)
1 1/2 (38.1)	1.50 (38.1)	2.14 (54.4)	3.90 (9.91)	13.4 (34.0)
2 (50.8)	2.00 (50.8)	2.69 (68.3)	5.10 (13.0)	15.4 (39.1)

FM SERIES METAL HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Center Line Bend Radius in. (cm)	
			Static	Dynamic
1/4 (6.4)	0.28 (7.1)	0.53 (13.5)	2.25 (5.72)	10.0 (25.4)
3/8 (9.7)	0.42 (10.6)	0.69 (17.5)	3.00 (7.62)	12.0 (30.5)
1/2 (12.7)	0.53 (13.5)	0.85 (21.6)	4.50 (11.4)	16.0 (40.6)
3/4 (19.0)	0.80 (20.3)	1.15 (29.1)	6.00 (15.2)	17.0 (43.2)
1 (25.4)	1.03 (26.0)	1.45 (36.9)	6.75 (17.1)	20.0 (50.8)
1 1/4 (31.8)	1.30 (33.0)	1.77 (45.0)	4.50 (11.4)	23.0 (58.4)
1 1/2 (38.1)	1.53 (38.9)	2.02 (51.3)	5.25 (13.3)	26.0 (66.0)
2 (50.8)	2.05 (52.1)	2.57 (65.3)	6.75 (17.1)	32.0 (81.3)

FL SERIES METAL HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Center Line Bend Radius in. (cm)	
			Static	Dynamic
1/4 (6.4)	0.25 (6.4)	0.45 (11.4)	1.00 (2.54)	5.50 (14.0)
3/8 (9.5)	0.38 (9.5)	0.70 (17.8)	1.00 (2.54)	4.00 (10.2)
1/2 (12.7)	0.50 (12.7)	0.81 (20.6)	1.75 (4.45)	7.00 (17.8)
3/4 (19.0)	0.75 (19.0)	1.22 (31.0)	1.70 (4.32)	6.40 (16.3)
1 (25.4)	1.00 (25.4)	1.54 (39.1)	2.10 (5.33)	7.10 (18.0)
1 1/4 (31.8)	1.25 (31.8)	1.84 (46.7)	2.50 (6.35)	7.90 (20.1)
1 1/2 (38.1)	1.50 (38.1)	2.16 (54.9)	3.10 (7.87)	11.0 (27.9)
2 (50.8)	2.00 (50.8)	2.69 (68.3)	4.00 (10.2)	13.0 (33.0)

FN FLEXIBLE SERIES METAL HOSE

Nominal Tubing Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Center Line Bend Radius in. (cm)	
			Static	Dynamic ^①
1/4 (6.4)	0.27 (6.9)	0.41 (10.4)	1.00 (2.54)	—
3/8 (9.7)	0.38 (9.7)	0.54 (13.7)	1.20 (3.05)	—
1/2 (12.7)	0.53 (13.5)	0.75 (19.1)	1.50 (3.81)	—

FZ FLEXIBLE SERIES METAL HOSE

Nominal Tubing Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Center Line Bend Radius in. (cm)	
			Static	Dynamic
1/4 (6.4)	0.27 (6.9)	0.41 (10.4)	1.00 (2.54)	4.50 (11.4)
3/8 (9.7)	0.38 (9.7)	0.54 (13.7)	1.20 (3.05)	5.00 (12.7)
1/2 (12.7)	0.53 (13.5)	0.75 (19.1)	1.50 (3.81)	5.50 (13.9)

^① Annealed product is not rated for highly dynamic applications.

AH SERIES METAL HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Center Line Bend Radius in. (cm)	
			Static	Dynamic
1/2 (12.7)	0.50 (12.7)	0.82 (20.8)	1.50 (3.81)	6.50 (16.5)
3/4 (19.0)	0.75 (19.0)	1.21 (30.7)	2.10 (5.33)	8.86 (22.5)
1 (25.4)	1.00 (25.4)	1.51 (38.4)	2.70 (6.86)	10.2 (25.9)
1 1/2 (38.1)	1.50 (38.1)	2.12 (53.8)	3.90 (9.91)	13.4 (34.0)
2 (50.8)	2.00 (50.8)	2.67 (67.8)	5.10 (13.0)	15.4 (39.1)

FV VACUUM-INSULATED METAL HOSE

Nominal Hose Size in. (mm)	Insulation Level	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Center Line Bend Radius in. (cm)	
				Static	Dynamic ^①
1/2 (12.7)	Vacuum	0.47 (11.9)	1.27 (32.3)	5.00 (12.7)	—
	Vacuum & Radiant barrier		1.62 (41.2)	6.15 (15.6)	—
3/4 (19.0)	Vacuum	0.79 (20.1)	1.62 (41.2)	6.15 (15.6)	—
	Vacuum & Radiant barrier		2.38 (60.5)	9.41 (23.9)	—
1 (25.4)	Vacuum	0.98 (25.0)	1.95 (49.5)	7.62 (19.4)	—
	Vacuum & Radiant barrier		2.38 (60.5)	9.41 (23.9)	—

① Annealed product is not rated for highly dynamic applications.

FP SERIES HYBRID

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Center Line Bend Radius in. (cm)	
			Static	Dynamic
1/4 (6.4)	0.18 (4.6)	0.38 (9.7)	2.13 (5.4)	4.33 (10.9)
1/2 (12.7)	0.37 (9.4)	0.73 (18.5)	4.33 (10.9)	6.50 (16.5)

T SERIES PTFE HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)	
			Static	Dynamic
304 SS Braid (TH and TC)				
1/4 (6.4)	0.19 (4.8)	0.31 (7.9)	1.50 (3.81)	2.00 (5.08)
3/8 (9.5)	0.31 (7.9)	0.44 (11.1)	3.50 (8.89)	5.00 (12.7)
1/2 (12.7)	0.41 (10.3)	0.56 (14.3)	4.50 (11.4)	6.00 (15.2)
3/4 (19.0)	0.63 (15.9)	0.81 (20.6)	6.00 (15.2)	7.50 (19.0)
1 (25.4)	0.88 (22.2)	1.03 (26.2)	9.00 (22.9)	11.3 (28.7)
Alloy 400 Braid (TL4)				
1/4 (6.4)	0.19 (4.8)	0.31 (7.9)	1.50 (3.81)	2.00 (5.08)

B SERIES PTFE HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)	
			Static	Dynamic
1/8 (3.2)	0.125 (3.2)	0.25 (6.4)	1.50 (3.81)	3.75 (9.52)

X SERIES PTFE HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)	
			Static	Dynamic
1/4 (6.4)	0.25 (6.4)	0.46 (11.7)	1.25 (3.18)	4.20 (10.7)
3/8 (9.6)	0.38 (9.6)	0.57 (14.5)	1.75 (4.44)	4.40 (11.2)
1/2 (12.7)	0.50 (12.7)	0.76 (19.3)	2.50 (6.35)	4.55 (11.6)
3/4 (19.0)	0.75 (19.0)	1.00 (25.4)	3.50 (8.89)	6.38 (16.2)
1 (25.4) ^①	1.00 (25.4)	1.32 (33.5)	5.50 (14.0)	7.15 (18.2)

S SERIES PTFE HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)	
			Static	Dynamic
1/8 (3.2) ^①	0.125 (3.2)	0.42 (10.7)	1.50 (3.81)	3.75 (9.52)
1/4 (6.4)	0.25 (6.4)	0.55 (14.0)	1.25 (3.18)	4.20 (10.7)
3/8 (9.6)	0.38 (9.6)	0.71 (18.0)	1.75 (4.44)	4.40 (11.2)
1/2 (12.7)	0.50 (12.7)	0.86 (21.8)	2.50 (6.35)	4.55 (11.6)
3/4 (19.0)	0.75 (19.0)	1.12 (28.4)	3.50 (8.89)	6.38 (16.2)
1 (25.4) ^②	1.00 (25.4)	1.55 (39.4)	5.50 (14.0)	7.15 (18.2)

C SERIES PTFE HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)	
			Static	Dynamic
1/2 (12.7)	0.50 (12.7)	0.76 (19.3)	2.50 (6.35)	3.75 (9.52)
3/4 (19.0)	0.75 (19.0)	1.00 (25.4)	3.00 (7.62)	3.90 (9.91)
1 (25.4)	1.00 (25.4)	1.32 (33.5)	5.50 (14.0)	7.15 (18.2)
1 1/2 (38.1)	1.50 (38.1)	2.03 (51.6)	6.00 (15.2)	7.80 (19.8)
2 (50.8)	2.00 (50.8)	2.54 (64.5)	7.50 (19.0)	9.75 (24.8)

J SERIES PTFE HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)	
			Static	Dynamic
1/2 (12.7)	0.50 (12.7)	0.88 (22.4)	2.50 (6.35)	3.75 (9.52)
3/4 (19.0)	0.75 (19.0)	1.12 (28.4)	3.00 (7.62)	3.90 (9.91)
1 (25.4)	1.00 (25.4)	1.47 (37.3)	5.50 (14.0)	7.15 (18.2)

N SERIES PTFE HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)	
			Static	Dynamic
3/8 (9.6)	0.37 (9.4)	0.70 (17.8)	2.50 (6.35)	4.00 (10.2)
1/2 (12.7)	0.51 (13.0)	0.86 (21.8)	3.50 (8.89)	5.25 (13.3)
3/4 (19.0)	0.75 (19.0)	1.12 (28.4)	4.50 (11.4)	5.85 (14.9)

W SERIES PTFE HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)	
			Static	Dynamic
3/8 (9.6)	0.35 (8.9)	0.75 (19.0)	2.75 (6.98)	4.40 (11.2)
1/2 (12.7)	0.50 (12.7)	0.92 (23.4)	4.25 (10.8)	6.38 (16.2)
3/4 (19.0)	0.75 (19.0)	1.19 (30.2)	6.75 (17.1)	8.00 (20.3)

F SERIES PTFE HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)	
			Static	Dynamic
1/4 (6.4)	0.25 (6.4)	0.41 (10.4)	2.75 (6.99)	5.50 (14.0)
3/8 (9.6)	0.38 (9.6)	0.55 (14.0)	3.25 (8.26)	5.20 (13.2)
1/2 (12.7)	0.50 (12.7)	0.70 (17.8)	5.25 (13.3)	7.88 (20.0)
3/4 (19.0)	0.75 (19.0)	0.94 (23.9)	6.50 (16.5)	8.45 (21.5)

U SERIES PTFE HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)	
			Static	Dynamic
1/2 (12.7)	0.50 (12.7)	0.81 (20.6)	1.50 (3.81)	4.50 (11.4)
3/4 (19.0)	0.75 (19.0)	1.13 (28.7)	2.50 (6.35)	5.20 (13.2)
1 (25.4)	1.00 (25.4)	1.48 (37.6)	4.00 (10.2)	6.50 (16.5)
1 1/2 (38.1)	1.50 (38.1)	2.00 (50.8)	7.00 (17.8)	9.10 (23.1)
2 (50.8)	2.00 (50.8)	2.50 (63.5)	7.00 (17.8)	9.10 (23.1)

NG SERIES NYLON HOSE

Hose Style (Series)	Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)
Single (NGS)	1/4 (6.4)	0.26 (6.6)	0.63 (16.0)	2.00 (5.08)
	3/8 (9.6)	0.38 (9.6)	0.77 (19.6)	4.00 (10.2)
	1/2 (12.7)	0.52 (13.2)	0.89 (22.6)	5.50 (14.0)
Twin (NGT)	1/4 (6.4)	0.26 (6.6)	0.63 (16.0)	2.00 (5.08)
	3/8 (9.6)	0.38 (9.6)	0.77 (19.6)	4.00 (10.2)
Vent ^① (NGV)	1/4 (6.4)	Fill 0.26 (6.6) Vent 0.26 (6.6)	Fill 0.63 (16.0) Vent 0.63 (16.0)	2.00 (5.08)
	3/8 (9.6)	Fill 0.38 (9.6) Vent 0.26 (6.6)	Fill 0.77 (19.6) Vent 0.63 (16.0)	4.00 (10.2)

① Low-pressure vent line does not have static dissipative core.

7R AND 8R SERIES NYLON HOSE

Specification (Series)	Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)
SAE J517 100R7 (7R series)	1/4 (6.4)	0.25 (6.4)	0.52 (13.2)	1.25 (3.18)
	3/8 (9.6)	0.38 (9.8)	0.67 (17.0)	2.00 (5.08)
	1/2 (12.7)	0.50 (12.7)	0.82 (20.8)	3.00 (7.62)
SAE J517 100R8 (8R series)	1/4 (6.4) ^①	0.25 (6.4)	0.53 (13.5)	2.00 (5.08)
	3/8 (9.6)	0.38 (9.8)	0.67 (17.0)	2.50 (6.35)
	1/2 (12.7)	0.50 (12.7)	0.84 (21.3)	4.00 (10.2)
	3/4 (19.0)	0.75 (19.0)	1.15 (29.2)	6.50 (16.5)
	1 (25.4)	1.00 (25.4)	1.48 (37.6)	10.0 (25.4)

① 1/4 in. (6.4 mm) size does not meet SAE J517 impulse cycle requirements at maximum temperature and minimum bend radius.

7N SERIES NYLON HOSE

Specification (Series)	Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)
SAE J517 100R7 (7N series)	1/4 (6.4)	0.26 (6.5)	0.49 (12.4)	1.25 (3.18)
	3/8 (9.6)	0.38 (9.8)	0.65 (16.5)	2.00 (5.08)
	1/2 (12.7)	0.50 (12.7)	0.80 (20.3)	3.00 (7.62)

7P SERIES—POLYETHYLENE HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)
1/4 (6.4)	0.25 (6.4)	0.52 (13.2)	1.25 (3.18)
3/8 (9.7)	0.38 (9.7)	0.66 (16.8)	2.00 (5.08)
1/2 (12.7)	0.50 (12.7)	0.81 (20.6)	3.00 (7.62)
3/4 (19.0)	0.75 (19.0)	1.14 (29.0)	5.00 (12.7)
1 (25.4)	1.00 (25.4)	1.48 (37.6)	8.00 (20.3)

PB SERIES RUBBER HOSE

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Inside Bend Radius in. (cm)
1/4 (6.4)	0.26 (6.6)	0.51 (12.8)	3.00 (7.62)
3/8 (9.7)	0.39 (9.9)	0.67 (17.0)	3.00 (7.62)
1/2 (12.7)	0.50 (12.7)	0.75 (19.0)	5.00 (12.7)
3/4 (19.0)	0.76 (19.3)	1.07 (27.2)	7.00 (17.8)
1 (25.4)	1.00 (25.4)	1.34 (34.0)	10.00 (25.4)



P: 412.761.3212

pittsburgh.swagelok.com



SwagelokPittsburgh



@swagelokpittsburgh



Swagelok-Pittsburgh-Tri-State-Area