

Clamp-on Gas Quick Guide



Small Pipe Air Application Limits

Pipe Size ANSI (DIN)	Pipe Wall inches (mm)	Min. Pressure psig (bar)	Maximum Velocity, ft/s (m/s)		
			Single Traverse	Triple Traverse	Five Traverse
¾ (20)	≤0.07 (1.8)	60 (5.1)	—	90 (27.4)	90 (27.4)
1 (25)	≤0.14 (3.6)	60 (5.1)	—	90 (27.4)	90 (27.4)
1½ (40)	≤0.15 (3.8)	60 (5.1)	—	90 (27.4)	57 (17.4)
2 (50)	≤0.16 (4.1)	60 (5.1)	90 (27.4)	75 (22.9)	45 (13.7)
3 (75)	≤0.22 (5.6)	60 (5.1)	120 (36.6)	69 (21.0)	—
4 (100)	≤0.24 (6.1)	60 (5.1)	120 (36.6)	53 (16.2)	—
	≤0.34 (8.6)	180 (13.4)			
	≤0.68 (17.3)	300 (21.7)			

Large Pipe Air Application Limits

Pipe Size ANSI (DIN)	Pipe Wall inches (mm)	Min. Pressure psig (bar)	Maximum Velocity, ft/s (m/s)		
			Single Traverse	Double Traverse	Triple Traverse
6 (150)	≤0.28 (7.2)	60 (5.1)	90 (27.4)	72 (22.0)	54 (16.5)
	≤0.44 (11.2)	180 (13.4)			
	≤0.87 (22.1)	300 (21.7)			
8 (200)	≤0.33 (8.4)	60 (5.1)	80 (24.4)	64 (19.5)	48 (14.6)
	≤0.50 (12.7)	180 (13.4)			
	≤0.88 (22.4)	300 (21.7)			
10 (250)	≤0.37 (9.4)	60 (5.1)	70 (21.3)	56 (17.1)	42 (12.8)
	≤0.50 (12.7)	180 (13.4)			
	≤1.00 (25.4)	300 (21.7)			
12 (300)	≤0.38 (9.7)	60 (5.1)	55 (16.8)	44 (13.4)	33 (10.1)
	≤0.50 (12.7)	180 (13.4)			
	≤1.00 (25.4)	300 (21.7)			
14 (350)	≤0.38 (9.7)	90 (7.2)	87 (26.5)	70 (21.3)	52 (15.9)
	≤0.50 (12.7)	270 (19.6)			
16 (400)	≤0.38 (9.7)	90 (7.2)	76 (23.2)	61 (18.9)	45 (13.7)
	≤0.50 (12.7)	270 (19.6)			
18 (450)	≤0.38 (9.7)	90 (7.2)	67 (20.4)	54 (16.5)	40 (12.2)
	≤0.50 (12.7)	270 (19.6)			
20 (500)	≤0.38 (9.7)	90 (7.2)	60 (18.3)	48 (14.6)	36 (11.0)
	≤0.50 (12.7)	270 (19.6)			
24 (600)	≤0.38 (9.7)	90 (7.2)	49 (14.9)	39 (11.9)	29 (8.8)
	≤0.50 (12.7)	270 (19.6)			

Small Pipe Natural Gas Application Limits

Pipe Size ANSI (DIN)	Pipe Wall inches (mm)	Min. Pressure psig (bar)	Maximum Velocity, ft/s (m/s)			
			Single Traverse	Dual Traverse	Triple Traverse	Four Traverse
2 (50)	≤0.16 (4.1)	200 (14.8)	110 (33.5)	88 (26.8)	66 (20.5)	—
3 (75)	≤0.22 (5.6)	200 (14.8)	120 (36.6)	96 (29.3)	72 (22.0)	48 (14.6)
4 (100)	≤0.24 (6.1)	150 (11.4)	120 (36.6)	96 (29.3)	72 (22.0)	48 (14.6)
	≤0.34 (8.6)	400 (28.6)				
	≤0.68 (17.3)	800 (56.2)				
6 (150)	≤0.28 (7.2)	150 (11.4)	120 (36.6)	96 (29.3)	72 (22.0)	—
	≤0.44 (11.2)	400 (28.6)				
	≤0.87 (22.1)	800 (56.2)				

Large Pipe Natural Gas Application Limits

Pipe Size ANSI (DIN)	Pipe Wall inches (mm)	Min. Pressure psig (bar)	Maximum Velocity, ft/s (m/s)		
			Single Traverse	Dual Traverse	Triple Traverse
8 (200)	≤0.33 (8.4)	175 (13.1)	100 (30.5)	80 (24.4)	60 (18.3)
	≤0.50 (12.7)	400 (28.6)			
	≤0.88 (22.4)	800 (56.2)			
10 (250)	≤0.37 (9.4)	200 (14.8)	85 (25.9)	68 (20.7)	51 (15.6)
	≤0.50 (12.7)	500 (35.5)			
	≤1.00 (25.4)	800 (56.2)			
12 (300)	≤0.38 (9.7)	250 (18.3)	70 (21.3)	56 (17.1)	42 (12.8)
	≤0.50 (12.7)	500 (35.5)			
	≤1.00 (25.4)	800 (56.2)			
14 (350)	≤0.38 (9.7)	300 (21.7)	103 (31.4)	77 (23.5)	62 (18.9)
	≤0.50 (12.7)	800 (56.2)			
16 (400)	≤0.38 (9.7)	300 (21.7)	90 (27.4)	67 (20.4)	54 (16.5)
	≤0.50 (12.7)	800 (56.2)			
18 (450)	≤0.38 (9.7)	300 (21.7)	78 (23.8)	59 (18.0)	47 (14.3)
	≤0.50 (12.7)	800 (56.2)			
20 (500)	≤0.38 (9.7)	300 (21.7)	70 (21.3)	52 (15.9)	42 (12.8)
	≤0.50 (12.7)	800 (56.2)			
24 (600)	≤0.38 (9.7)	300 (21.7)	56 (17.1)	42 (12.8)	34 (10.4)
	≤0.50 (12.7)	800 (56.2)			

Clamping Fixtures and High Temperature Dampening

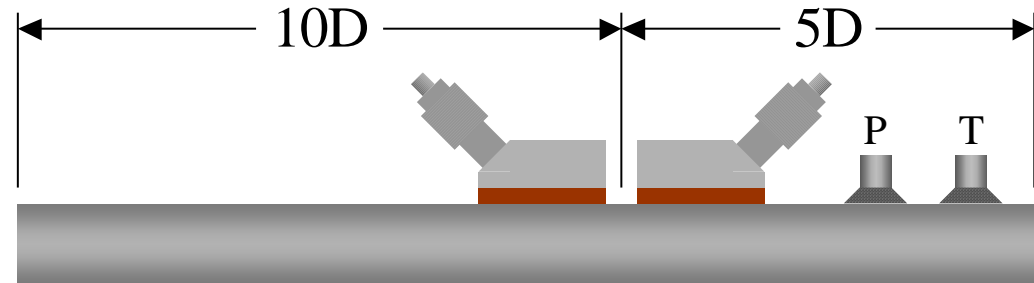
Pipe Size (inches, mm)	Fixture Type	Dampening Jacket
¾ (20) to 1 ¼ (30)	CFG-V1	N/A
1 ½ (40) to 4 (100)	CFG-V4	PDJ-3, PDJ-4
5 (130) to 8 (200)	CFG-V8	PDJ-5, PDJ-6, PDJ-8
10 (250) to 12 (300)	CFG-V12	PDJ-10, PDJ-12
14 (350) to 24 (600)	CFG-PI	N/A

Transducers

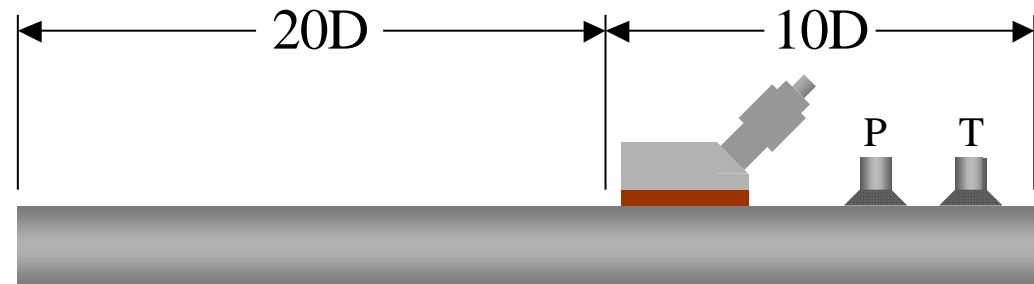
Pipe Size (inches, mm)	Pipe Thickness (inches, mm)	Transducer Type @ Temp. (°F, °C)	Transducer Frequency (MHz)
¾ (20) to 2 (50)	Any	CRS-402 (<300, 150) CRL-308 (<450, 232)	1.0
2 ½ (60) to 12 (300)	< 0.2 (5.1) or Plastic	CRS-401 (<300, 150) CRL-307 (<450, 232)	0.5
2 ½ (60) to 12 (300)	>= 0.2 (5.1)	CRV-310 (<266, 130) CRL-307 (<450, 232)	0.5
6 (150) to 24 (600)	>= 0.2 (5.1), high P	CRW-312 (<266, 130) CRW-318 (<350, 176)	0.2 (0.25 for Portable)

Pipe Geometry

- Minimum length > 10 ft (3 m) for 2-inch (50 mm) or smaller Pipes/Tubing
- Highest number of traverses without exceeding V_{max} with even number preferred



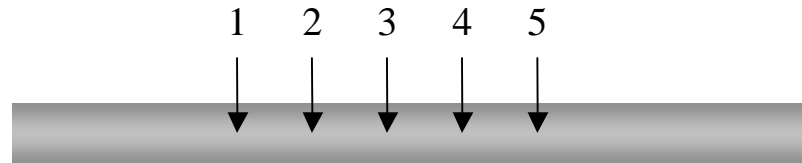
Flow →



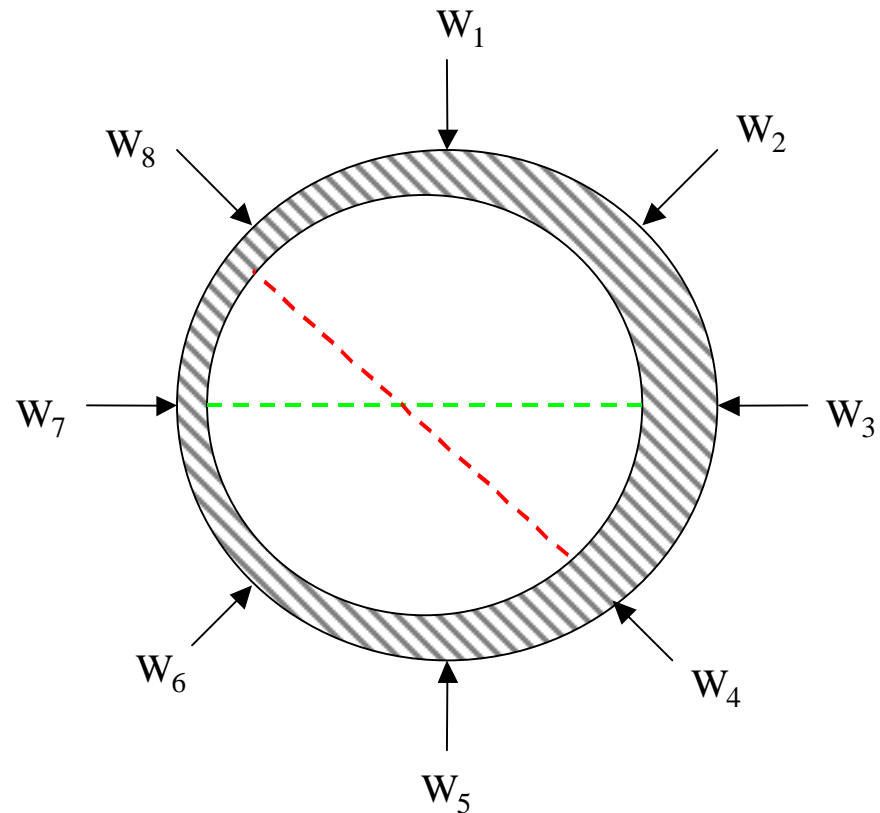
Flow →

Pipe Survey

- Thickness variation < 0.01 inch (0.25 mm) along length



- Avoid seams and circumferential welds
- Measure at 8 points and program average thickness
- Measure average OD

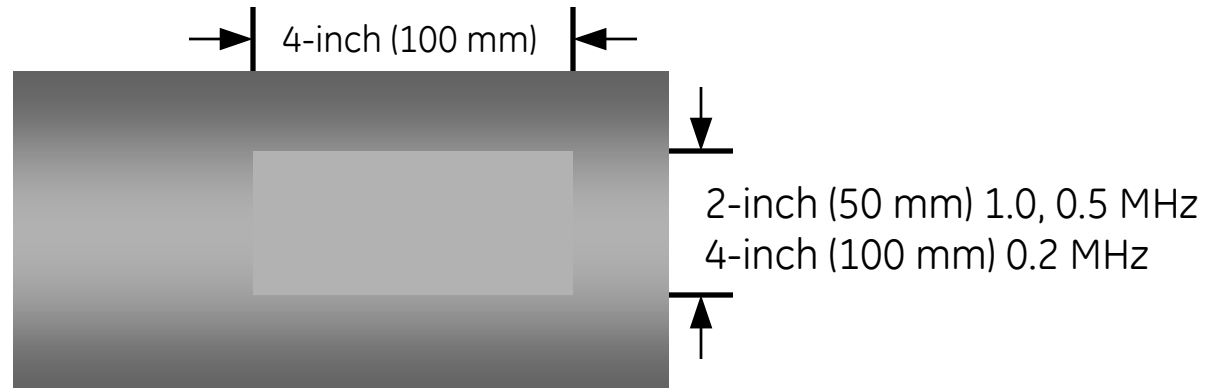


Pipe Preparation

- Remove insulation and loose/thick paint

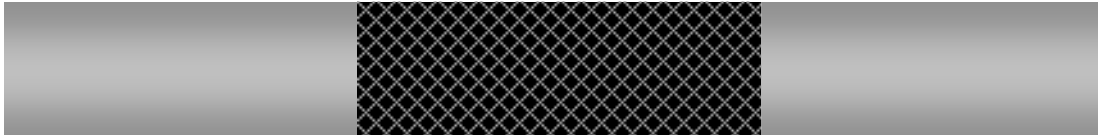


- Polish transducer location area

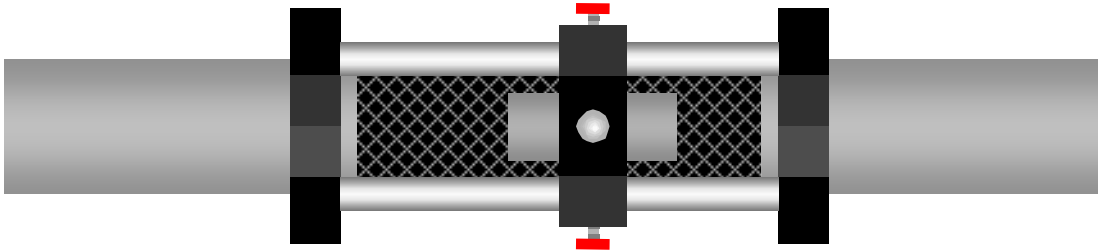


Dampening/Fixture Installation

Operating Temperature <150 °F (65 °C)



Installation Temperature >45 °F (7 °C)



Transducer Installation

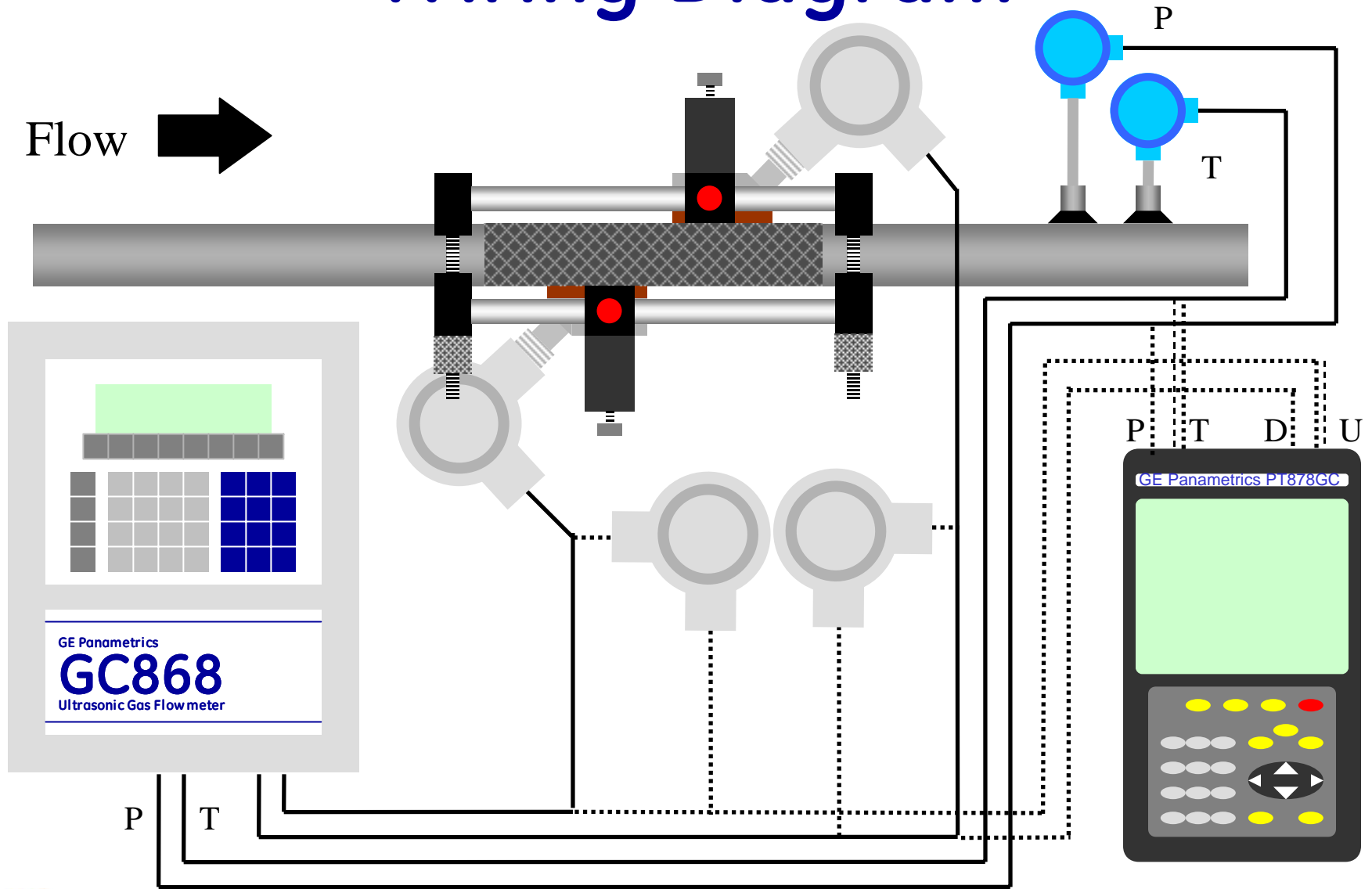
- **Couplants**

- CPL-01 (Silicone grease) or CPL-04 (Vacuum grease) for demonstrations and surveys
- CPL-16 (RTV) for permanent installations

- **Application**

- 0.25-inch (6.4 mm) wide strip for pipes/tubing smaller than 4-inches (100 mm)
- Entire transducer face for larger pipes

Wiring Diagram



Signal Troubleshooting



Flow Troubleshooting

