Fisher™ 6060 WhisperTube Modal Attenuator

As the industrial market continues to reduce the noise level to provide a safer working environment, consider the NPS 2 through 12 Fisher 6060 WhisperTube Modal Attenuator the solution that provides optimum noise attenuation with no impact on process flow.

The WhisperTube is a passive reactive silencer designed for installation downstream of the control valve or other equipment contributing to system noise. Requiring negligible pressure drop across the device, the WhisperTube achieves system noise reduction across a wide range of fluid flow rates, pressures and temperatures.

Retrofit the WhisperTube into noisy, problematic applications or pair it with new equipment to attain noise attenuation results without impacting the process.

X1815

NPS 2 CL600 WHISPERTUBE

X1820

NPS 8 CL600 WHISPERTUBE

Features

- **Broadband Noise Reduction**—Patented design with internal acoustic cavities of varying sizes reduce noise across a broad range of frequencies.
- **Application Versatility**—Designed for a wide range of fluid flow rates, pressures and temperatures. Reduce noise inside the pipe for all sources upstream. Pair the WhisperTube with any equipment used in compressible fluid service.
- **Maximize Flow Capacity**—Negligible pressure drop across the WhisperTube other than the normally expected line loss for a pipe spool piece of equivalent length equates to noise attenuation with no impact on process flow.
- **Passive Reactive Silencer**—Internal cavities produce acoustic wave reflections that reduce noise propagating downstream.
- **Reliable Performance**—No internal acoustic packing material to fail from moisture absorption. Cast internal drain channel ensures any potential liquid buildup can be removed, ensuring optimum performance.
- **Compatible with Piggable Systems**—Straight through flow geometry with inside diameter that matches the pipe accommodates pigging operations when required for cleaning and maintenance.
- **Sour Service Capability**—NACE ISO 15156 compliant materials of construction as standard for applications involving sour gas or vapor.

Features (continued on 2)

Specifications

Body Sizes and End Connection Styles

NPS ■ 2, ■ 3, ■ 4, ■ 6, ■ 8, ■ 10, and ■ 12 with CL150, CL300, or CL600 raised-face flanges compatible with ASME B16.5

Maximum Inlet Pressure

Consistent with CL150, CL300, or CL600 pressure-temperature ratings per ASME B16.34

Temperature Capability

-46 to 371°C (-50 to 700°F)

Construction Materials

See table 1

Weights and Threaded Lifting Lug Details

See table 2

Dimensions

See table 3

Acoustic Performance Data

- See table 4 (air)
- See table 5 (natural gas)
- See table 6 (steam)

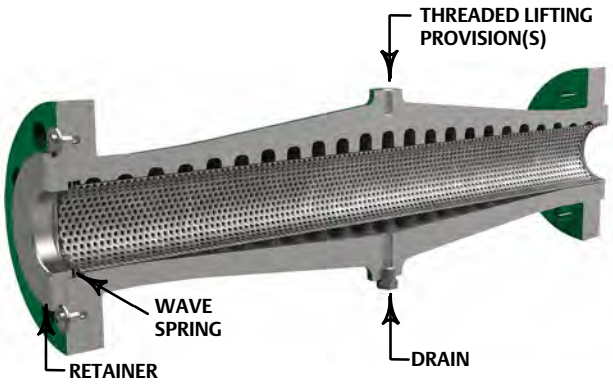
Design Standards

The WhisperTube pressure boundary is designed in accordance with ASME Boiler and Pressure Vessel Code, Section VIII, Division 2

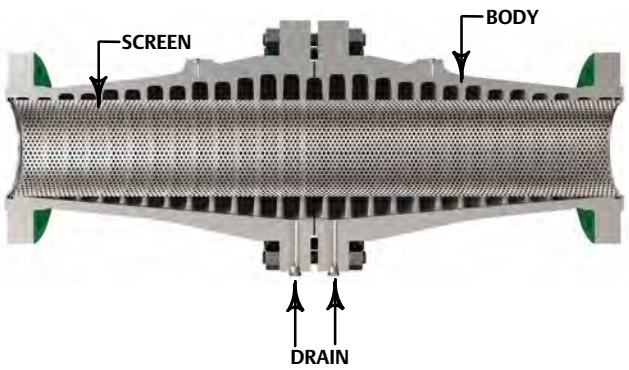
Features (continued)

- Quick and Easy Maintenance—Removeable cylindrical stainless steel screen for easy cleaning if required with no special tools needed.
- Easy Installation—Threaded lifting provisions accommodate fitting the body with hoist rings or lifting eye bolts for optimized product control during installation.

Figure 1. Sectional View of WhisperTube and Drain



X1813 **NPS 2 through 6 - Single Piece Body**



X1819 **NPS 8 through 12 - Two Piece Body**

Table 1. Construction Materials

PART	MATERIAL	TEMPERATURE LIMITS	
		°C	°F
Body	WCC / LCC(1)	-46 to 427	-50 to 800
	WCC / 1.0619(2)	-10 to 427	14 to 800
	LCC	-46 to 343	-50 to 650
Retainer(3)	LF2	-46 to 427	-50 to 800
	WCC / 1.0619(2)	-10 to 427	14 to 800
Retainer Gasket(3)	Laminated Graphite	-254 to 427	-425 to 800
Screen	S30400	-254 to 427	-425 to 800
Wave Spring	N07750	-254 to 371	-425 to 700
Studs(4)	B7M	-48 to 427	-55 to 800
Nuts(4)	2HM	-48 to 427	-55 to 800
Spiral Wound Gasket(4)	N06600/Graphite	-254 to 454	-425 to 850

1. WCC and LCC dual certified.
2. WCC and EN 10213 1.0619 dual certified.
3. NPS 2 through NPS 6 constructions only.
4 NPS 8 through NPS 12 constructions only.

Table 2. Assembly Weight and Threaded Lifting Provision Details

VALVE SIZE, NPS	PRESSURE CLASS	WEIGHT		THREADED LIFTING PROVISION	
		kg	lbs	Size	Quantity
2	150	30	67	3/8-16 UNC	1
	300	32	70		
	600	33	73		
3	150	48	105	3/8-16 UNC	1
	300	52	115		
	600	55	120		
4	150	102	224	3/8-16 UNC	2
	300	109	239		
	600	118	259		
6	150	205	452	1/2-13 UNC	2
	300	224	492		
	600	246	542		
8	150	464	1020	1/2-13 UNC	2
	300	500	1100		
	600	614	1350		
10	150	750	1650	5/8-11 UNC	2
	300	811	1785		
	600	966	2125		
12	150	1025	2255	3/4-10 UNC	2
	300	1109	2440		
	600	1264	2780		

Figure 2. Sectional View of WhisperTube

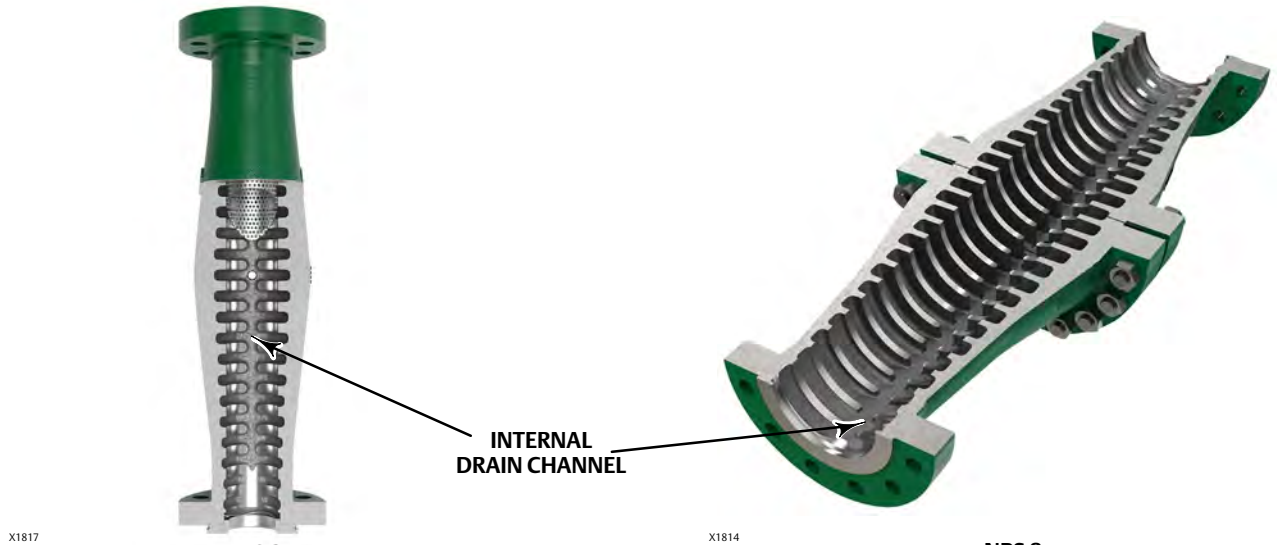


Figure 3. Fisher WhisperTube NPS 2 and NPS 3 Envelope Dimensions

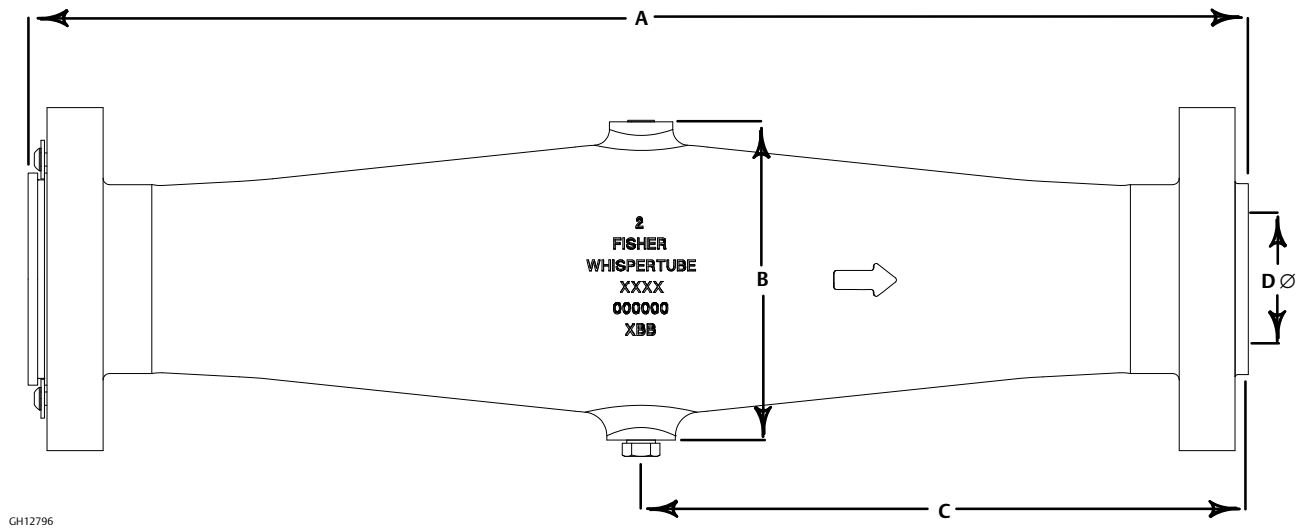


Figure 4. Fisher WhisperTube NPS 4 and NPS 6 Envelope Dimensions

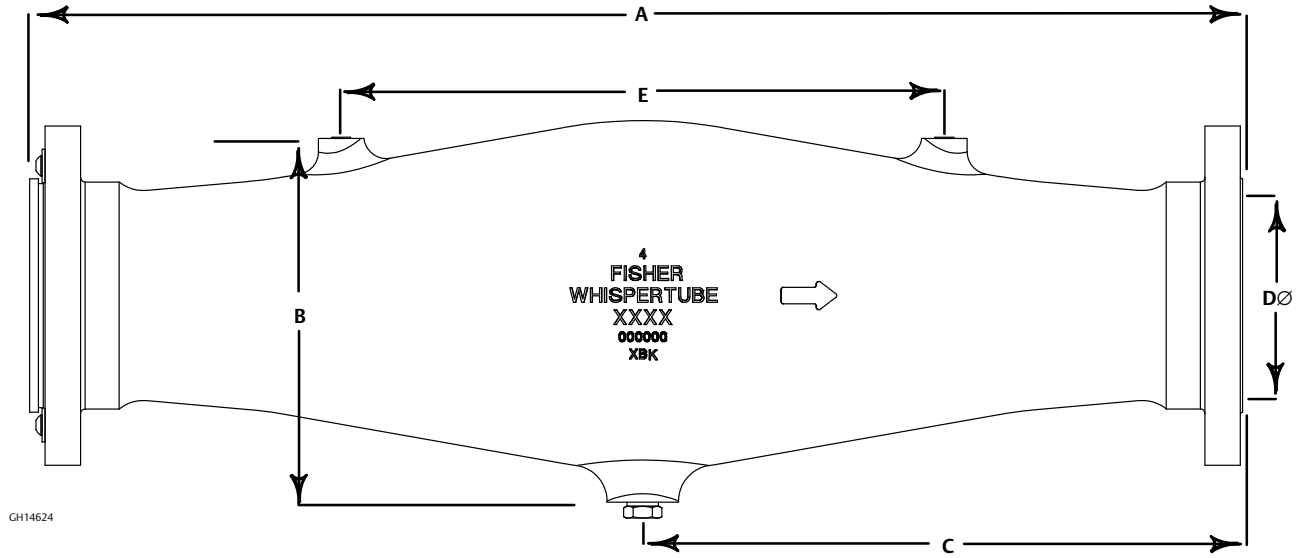


Figure 5. Fisher WhisperTube NPS 8 through 12 Envelope Dimensions

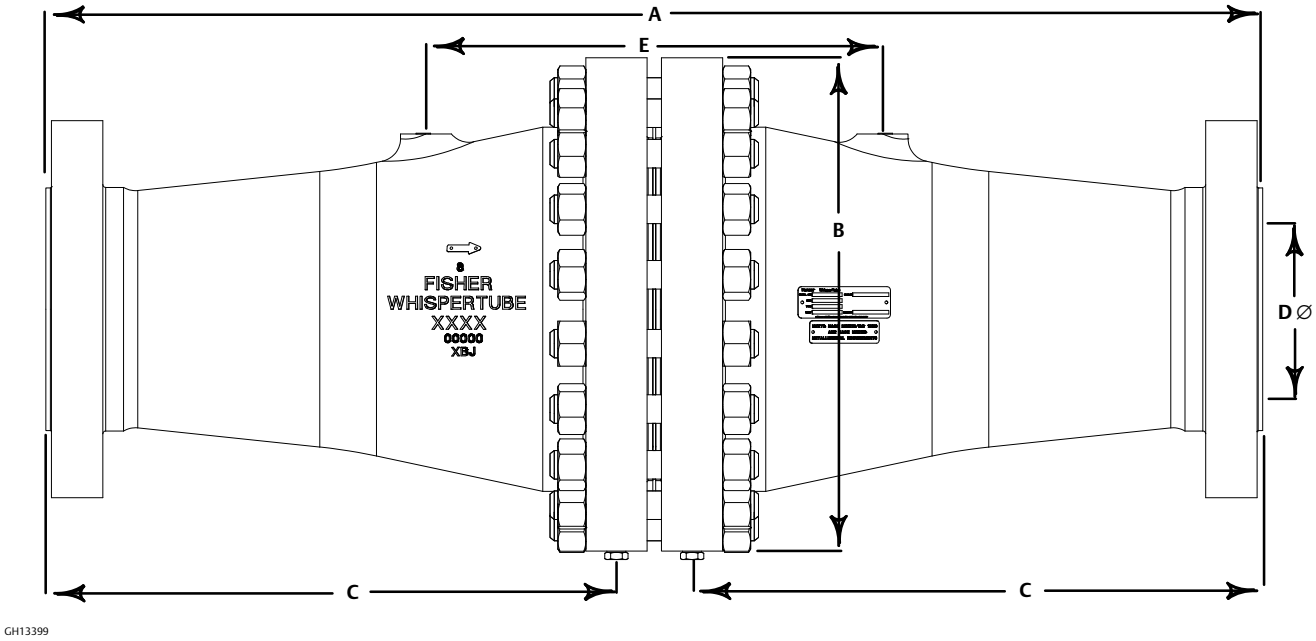


Table 3. Envelope Dimensions

VALVE SIZE, NPS	PRESSURE CLASS	A	B	C	D SCREEN INSIDE DIAMETER	E
mm						
2	150	587	155	290	53	---
	300					
	600			292		
3	150	601	188	297	78	---
	300					
	600			299		
4	150	817	259	404	102	406
	300					
	600			407		
6	150	1076	330	533	154	406
	300					
	600			536		
8	150	1353	508	648	204	513
	300					
	600		548	634		
10	150	1594	635	765	257	598
	300					
	600		679	750		
12	150	1838	699	886	297	709
	300					
	600		733	869		
Inches						
2	150	23.12	6.10	11.41	2.07	---
	300					
	600			11.51		
3	150	23.68	7.40	11.69	3.07	---
	300					
	600			11.79		
4	150	32.17	10.20	15.91	4.02	16.00
	300					
	600			16.01		
6	150	42.35	13.00	21.00	6.07	16.00
	300					
	600			21.10		
8	150	53.25	20.00	25.50	8.04	20.21
	300					
	600		21.58	24.97		
10	150	62.75	25.00	30.13	10.11	23.55
	300					
	600		26.75	29.53		
12	150	72.35	27.50	34.87	11.69	27.93
	300					
	600		28.88	34.21		

Table 4. Acoustic Data - Air[2], 15°C (60°F) - Noise Insertion Loss (dB) vs Frequency (Hz)

WHISPERTUBE SIZE			FREQUENCY BAND (H_z)								
NPS	DN		≤ 400	500	630	800	1,000	1,250	1,600	2,000	2,500
2	50	Insertion Loss (dB)[1]	0	0	0	0	0	0	0	0	0
3	80		0	0	0	0	0	0	0	4	9
4	100		0	0	0	0	0	0	5	10	15
6	150		0	0	0	0	4	8	14	15	15
8	200		0	0	0	5	10	15	15	14	14
10	250		0	0	5	10	15	15	14	14	13
12	300		0	4	9	14	15	15	14	13	12
NPS	DN		3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
2	50		5	10	15	15	14	14	13	12	11
3	80		14	15	15	14	13	12	11	10	9
4	100		15	14	14	13	12	11	10	9	8
6	150		14	13	12	11	10	9	9	8	8
8	200		13	12	11	10	9	8	8	8	8
10	250		12	11	10	9	8	8	8	8	8
12	300		11	10	9	9	8	8	8	8	8

1. Fluid velocity mach number less than or equal to 0.3
2. Assumed sound speed = 340 m/s (1116 ft/s)

Table 5. Acoustic Data - Natural Gas[2], 37°C (100°F) - Noise Insertion Loss (dB) vs Frequency (Hz)

WHISPERTUBE SIZE			FREQUENCY BAND (H_z)								
NPS	DN		≤ 500	630	800	1,000	1,250	1,600	2,000	2,500	3,150
2	50	Insertion Loss (dB)[1]	0	0	0	0	0	0	0	0	0
3	80		0	0	0	0	0	0	0	3	8
4	100		0	0	0	0	0	0	4	9	14
6	150		0	0	0	0	3	8	13	15	15
8	200		0	0	0	4	9	14	15	15	14
10	250		0	0	4	9	14	15	15	14	13
12	300		0	3	8	13	15	15	14	13	12
NPS	DN		4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000	
2	50		4	9	14	15	15	14	13	12	
3	80		13	15	15	14	13	12	11	10	
4	100		15	15	14	13	12	11	10	9	
6	150		14	13	12	11	10	10	9	8	
8	200		13	12	11	10	9	8	8	8	
10	250		12	11	10	9	8	8	8	8	
12	300		11	10	10	9	8	8	8	8	

1. Fluid velocity mach number less than or equal to 0.3
2. Assumed sound speed = 440 m/s (1444 ft/s)

Table 6. Acoustic Data - Superheated Steam[2], 315°C (600°F) - Noise Insertion Loss (dB) vs Frequency (Hz)

WHISPERTUBE SIZE		Insertion Loss (dB)[1]	FREQUENCY BAND (H_z)							
NPS	DN		≤ 630	800	1,000	1,250	1,600	2,000	2,500	3,150
2	50		0	0	0	0	0	0	0	0
3	80		0	0	0	0	0	0	0	2
4	100		0	0	0	0	0	0	3	8
6	150		0	0	0	0	2	7	12	15
8	200		0	0	0	3	9	13	15	15
10	250		0	0	3	8	13	15	15	14
12	300		0	2	7	12	15	15	14	13
NPS	**DN**		**4,000**	**5,000**	**6,300**	**8,000**	**10,000**	**12,500**	**16,000**	**20,000**
2	50		0	3	8	13	15	15	14	13
3	80		7	12	15	15	14	13	12	11
4	100		13	15	15	14	13	12	11	10
6	150		15	14	13	12	11	11	10	9
8	200		14	13	12	11	10	9	9	8
10	250		13	12	11	10	10	9	8	8
12	300		12	11	11	10	9	8	8	8

1. Fluid velocity mach number less than or equal to 0.3
2. Assumed sound speed = 580 m/s (1903 ft/s)

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