

Fisher™ 6060 WhisperTube Modal Attenuator



General Application

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.

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.
- **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.



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NPS 2 CL600 WHISPERTUBE



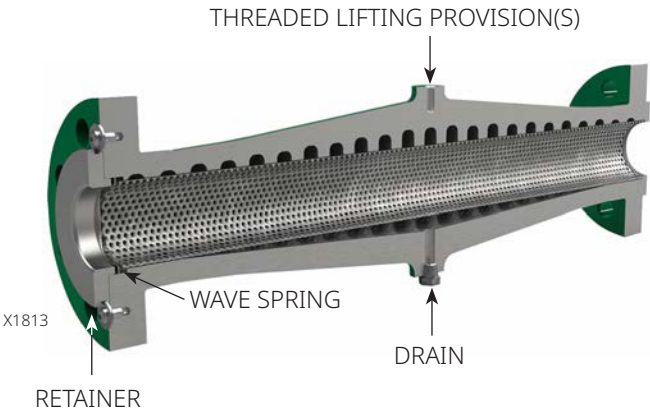
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NPS 8 CL600 WHISPERTUBE

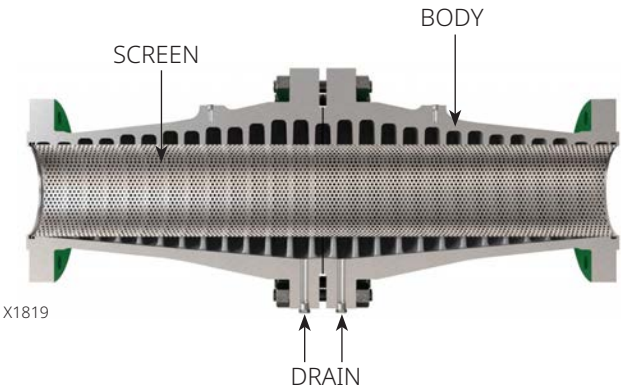
Specifications

Body Sizes and End Connection Styles	Weights and Threaded Lifting Lug Details
NPS ■ 2, ■ 3, ■ 4, ■ 6, ■ 8, ■ 10, and ■ 12 with CL150, CL300 or CL600 raised-face flanges compatible with ASME B16.5 DN -50, -80, -100, -150, -200, -250, -300 with PN10, PN16, PN25, PN40, PN63, PN100 raised-face flanges	See Table 2
Maximum Inlet Pressure	Dimensions
Consistent with CL150, CL300 or CL600 pressure-temperature ratings per ASME B16.34	See Table 3
Temperature Capability	Acoustic Performance Data
-46 to 371°C / -50 to 700°F	■ See Table 4 (air) ■ See Table 5 (natural gas) ■ See Table 6 (steam)
Construction Materials	Design Standards
See Table 1	The WhisperTube pressure boundary is designed in accordance with ASME Boiler and Pressure Vessel Code, Section VIII, Division 2.

Figure 1. Sectional View of WhisperTube and Drain



NPS 2 THROUGH 6 - SINGLE PIECE BODY



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
	CF8M	-254 to 371	-425 to 700
	CF8M / 1.4408	-254 to 371	-425 to 700
Retainer ⁽³⁾	LF2	-46 to 427	-50 to 800
	WCC / 1.0619 ⁽²⁾	-10 to 427	14 to 800
	S31600	-254 to 371	-425 to 700
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/RATING	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		

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Table 2. Assembly Weight and Threaded Lifting Provision Details (continued)

VALVE SIZE, NPS	PRESSURE CLASS/RATING	WEIGHT		THREADED LIFTING PROVISION	
		kg	lbs	Size	Quantity
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		
DN50	PN10/16	30	67	3/8-16 UNC	1
	PN25/40	30	67		
	PN63	35	77		
	PN100	37	82		
DN80	PN10/16	48	105	3/8-16 UNC	1
	PN25/40	49	108		
	PN63	53	117		
	PN100	59	130		
DN100	PN10/16	98	216	3/8-16 UNC	2
	PN25/40	102	225		
	PN63	106	234		
	PN100	113	249		
DN150	PN10/16	203	448	1/2-13 UNC	2
	PN25/40	208	459		
	PN63	228	503		
	PN100	238	525		

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Table 2. Assembly Weight and Threaded Lifting Provision Details (continued)

VALVE SIZE, NPS	PRESSURE CLASS/RATING	WEIGHT		THREADED LIFTING PROVISION	
		kg	lbs	Size	Quantity
DN200	PN10	462	1019	1/2-13 UNC	2
	PN16	462	1019		
	PN25	468	1032		
	PN40	474	1045		
	PN63	586	1292		
	PN100	612	1349		
DN250	PN10	744	1640	5/8-11 UNC	2
	PN16	748	1649		
	PN25	758	1671		
	PN40	774	1706		
	PN63	913	2013		
	PN100	956	2108		
DN300	PN10	1001	2207	3/4-10 UNC	2
	PN16	1007	2220		
	PN25	1021	2251		
	PN40	1047	2308		
	PN63	1211	2670		
	PN100	1284	2831		

Figure 2. Sectional View of WhisperTube

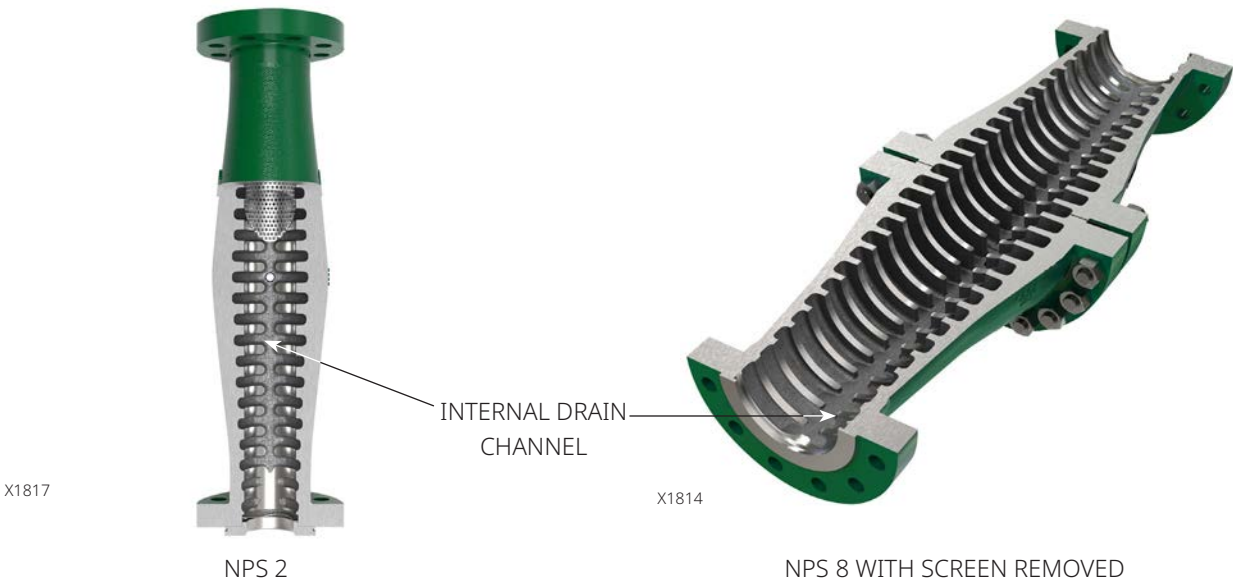


Figure 3. Fisher WhisperTube NPS 2 and NPS 3 Envelope Dimensions

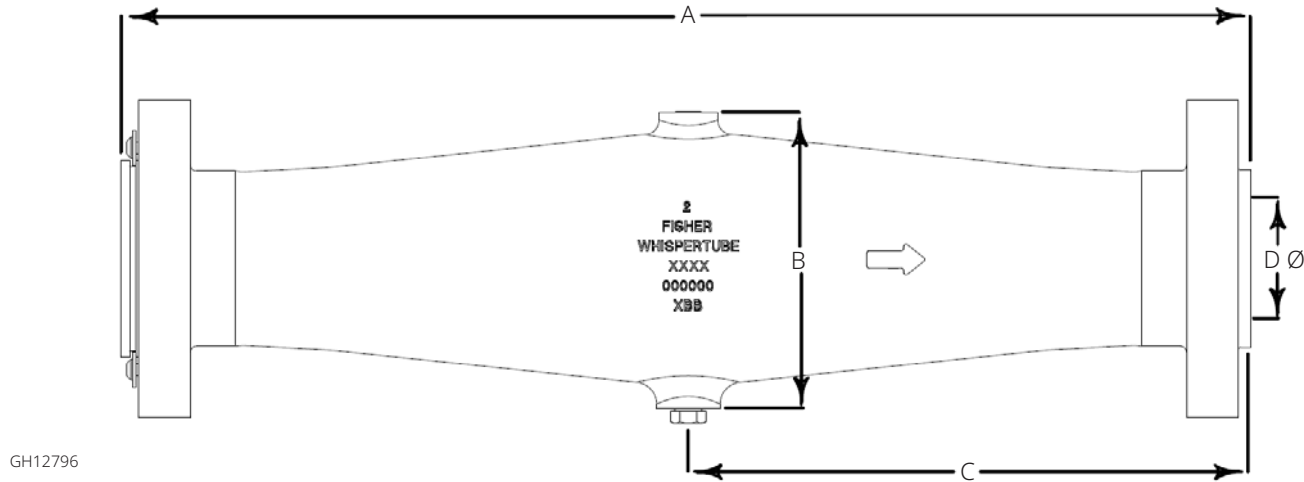


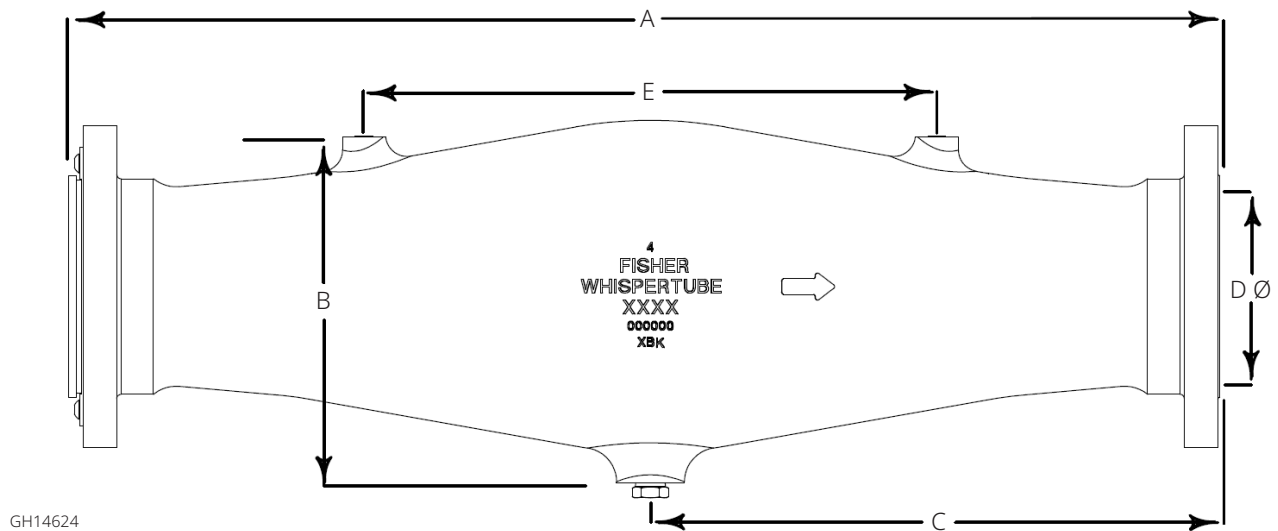
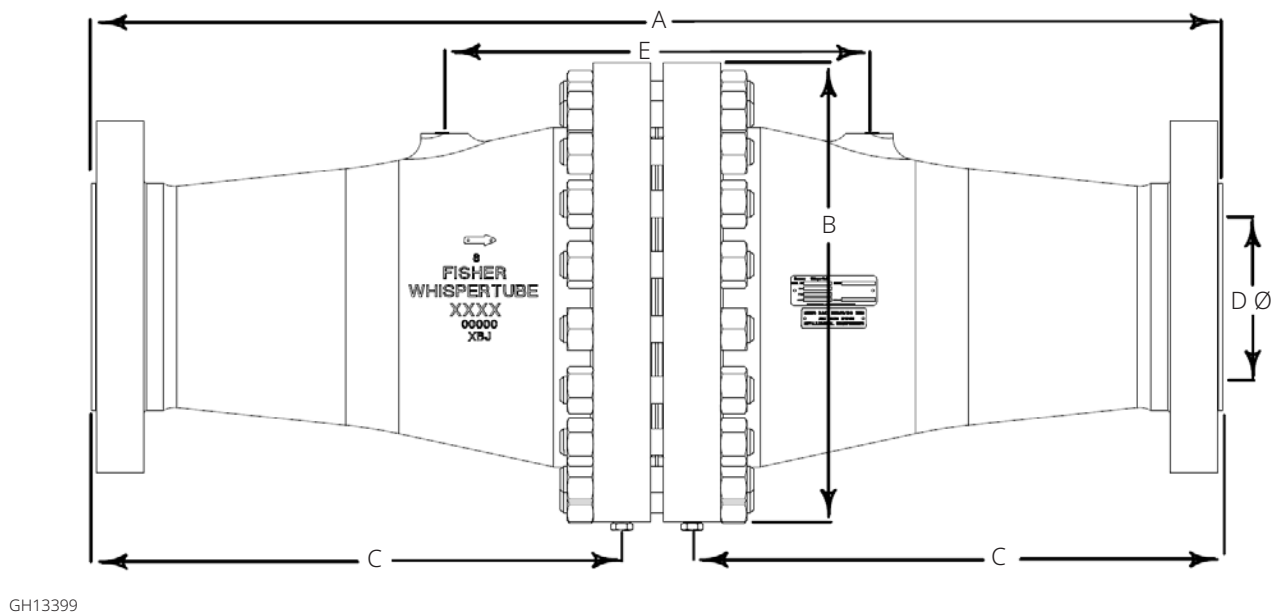
Figure 4. Fisher WhisperTube NPS 4 and NPS 6 Envelope Dimensions**Figure 5. Fisher WhisperTube NPS 8 through 12 Envelope Dimensions**

Table 3. Envelope Dimensions

VALVE SIZE, NPS	PRESSURE CLASS/RATING	A	B	C	D SCREEN INSIDE DIAMETER	E
mm						
2	150	587	155	290	53	---
	300			292		
	600					
3	150	601	188	297	78	---
	300			299		
	600					
4	150	817	259	404	102	406
	300			407		
	600					
6	150	1076	330	533	154	406
	300			536		
	600					
8	150	1353	508	648	204	513
	300		548	634		
	600					
10	150	1594	635	765	257	598
	300		679	750		
	600					
12	150	1838	699	886	297	709
	300		733	869		
	600					
DN50	PN10/16	587	155	290	53	---
	PN25/40			292		
	PN63					
	PN100					
DN80	PN10/16	601	188	297	78	---
	PN25/40			300		
	PN63					
	PN100					

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Table 3. Envelope Dimensions (continued)

VALVE SIZE, NPS	PRESSURE CLASS/RATING	A	B	C	D SCREEN INSIDE DIAMETER	E
mm						
DN100	PN10/16	817	259	404	102	406
	PN25/40					
	PN63					
	PN100					
DN150	PN10/16	1075	330	533	154	406
	PN25/40					
	PN63					
	PN100					
DN200	PN10	1353	508	648	204	513
	PN16					
	PN25					
	PN40		548	634		
	PN63					
	PN100					
DN250	PN10	1594	635	765	257	598
	PN16					
	PN25					
	PN40		679	750		
	PN63					
	PN100					
DN300	PN10	1838	699	885	297	709
	PN16					
	PN25					
	PN40		733	869		
	PN63					
	PN100					

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Table 3. Envelope Dimensions (continued)

VALVE SIZE, NPS	PRESSURE CLASS/RATING	A	B	C	D SCREEN INSIDE DIAMETER	E
in.						
2	150	23.12	6.10	11.41	2.07	---
	300			11.51		
	600					
3	150	23.68	7.40	11.69	3.07	---
	300			11.79		
	600					
4	150	32.17	10.20	15.91	4.02	16.00
	300			16.01		
	600					
6	150	42.35	13.00	21.00	6.07	16.00
	300			21.10		
	600					
8	150	53.25	20.00	25.50	8.04	20.21
	300		21.58	24.97		
	600					
10	150	62.75	25.00	30.13	10.11	23.55
	300		26.75	29.53		
	600					
12	150	72.35	27.50	34.87	11.69	27.93
	300		28.88	34.21		
	600					
DN50	PN10/16	23,11	6,10	11,42	2,09	---
	PN25/40			11,50		
	PN63					
	PN100					
DN80	PN10/16	23,67	7,40	11,69	3,07	---
	PN25/40			11,81		
	PN63					
	PN100					

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Table 3. Envelope Dimensions (continued)

VALVE SIZE, NPS	PRESSURE CLASS/RATING	A	B	C	D SCREEN INSIDE DIAMETER	E
in.						
DN100	PN10/16	32,16	10,20	15,91	4,02	15,98
	PN25/40					
	PN63					
	PN100					
DN150	PN10/16	42,34	12,99	20,98	6,06	15,98
	PN25/40					
	PN63					
	PN100					
DN200	PN10	53,25	20,00	25,50	8,03	20,21
	PN16					
	PN25					
	PN40		21,56	24,97		
	PN63					
	PN100					
DN250	PN10	62,76	25,00	30,13	10,12	23,56
	PN16					
	PN25					
	PN40		26,75	29,53		
	PN63					
	PN100					
DN300	PN10	72,36	27,50	34,86	11,69	27,93
	PN16					
	PN25					
	PN40		28,87	34,21		
	PN63					
	PN100					

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

WHISPERTUBE SIZE		Insertion Loss (dB) ⁽¹⁾	FREQUENCY BAND (Hz)								
NPS	DN		≤ 400	500	630	800	1000	1250	1600	2000	2500
2	50		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		3150	4000	5000	6300	8000	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		Insertion Loss (dB) ⁽¹⁾	FREQUENCY BAND (Hz)								
NPS	DN		≤ 500	630	800	1000	1250	1600	2000	2500	3150
2	50		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		4000	5000	6300	8000	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 (Hz)							
NPS	DN		≤ 630	800	1000	1250	1600	2000	2500	3150
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		4000	5000	6300	8000	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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