

HAPCO

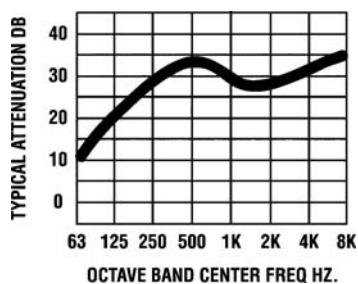
Critical Grade VRS Series

End Inlet - End Outlet

SIZE MODEL	DWG #	A	B	C	D	E	WT (Lbs.)
58VRS1	800A-1	1	5	8	13	2.5	10
58VRS1-4	801A-1	1.25	5	8	13	2.5	10
68VRS1-8	802A-1	1.5	6	8	13	2.5	12
712VRS2	803A-1	2	7	12	18	3	15
822VRS2-8	804A-1	2.5	8	22	28.75	3.375	25
824VRS3	805A-1	3	8	24	30.75	3.375	27
924VRS3-8	806A-1	3.5	9	24	31.75	3.875	35
1030VRS4	806B-1	4	10	30	37.5	3.75	45
1220VRS4	807A-1	4	12	20	28.5	4.25	43
1224VRS5	808A-1	5	12	24	32.5	4.25	45
1236VRS5	809A-1	5	12	36	45.5	4.75	58
1438VRS6	810A-1	6	14	38	47.5	4.75	81
1442VRS6	811A-1	6	14	42	51.5	4.75	85
1648VRS6	812A-1	6	16	48	57.5	4.75	160
1844VRS8	813A-1	8	18	44	56	6	222
2248VRS8	814A-1	8	22	48	63.5	7.75	365
2458VRS10	815A-1	10	24	58	73.5	7.75	401
2468VRS12	816A-1	12	24	68	85.5	8.75	460
2874VRS12	817A-1	12	28	74	92.75	9.375	516
3080VRS14	818A-1	14	30	80	99	9.5	791
3690VRS16	819A-1	16	36	90	110.5	10.25	932
36102VRS18	820A-1	18	36	102	122.5	10.25	1275
4296VRS20	821A-1	20	42	96	121.25	12.625	1390
42104VRS22	822A-1	22	42	104	129.25	12.625	1840
48112VRS24	823A-1	24	48	112	140.5	14.25	2192
54126VRS26	824A-1	26	54	126	154.5	14.25	2489
54140VRS28	825A-1	28	54	140	168.5	14.25	2822
60160VRS30	826A-1	30	60	160	188.5	14.25	3561
66180VRS32	827A-1	32	66	180	214	17	4484
72242VRS34	828A-1	34	72	242	278	18	6500
74242VRS36	829A-1	36	74	242	278	18	7500

*For price information see Section 2 Page 4

*Note Estimated weight only



Recommended Applications:

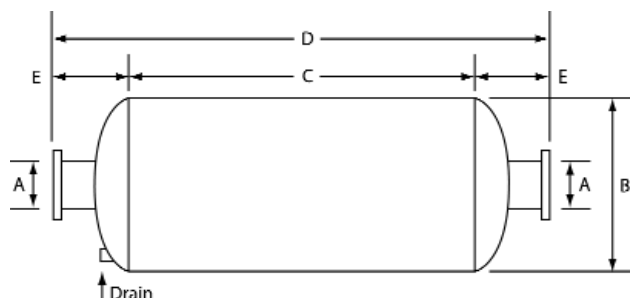
- Hospitals
- Ships, Tug and Fishing Boats
- Waste Water Plants
- Schools
- High Tech Industries
- And other environmental impact areas

Features:

- Attenuation 18-32 dBA
- Listed sound data is based on average sound curves and is not to be used as absolute
- Exhaust gases flow through the silencer in a vortex motion and noise reduction is accomplished by a combination of absorption & annulling of noise waves resulting in reduced silencer diameters
- Sound data is based on **Flow Velocity Not To Exceed 9000 FPM**, see engineering section chart
- Standard heavy duty all welded steel construction with high temperature primer and black paint
- Optional stainless steel construction or zinc based high heat and high corrosion resistant paint
- Inlet sizes 1" - 3.50" are MPT

Accessories:

- Flexible Connectors
- Mounting Bands
- Hanger Brackets
- Wye Connectors
- Wall and Roof Thimbles
- Rain Caps



HARCO Manufacturing Co. • 1000 Industrial Parkway • Newberg OR 97132 • USA
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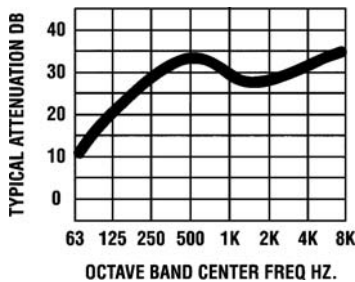
E-mail: sales@harcomanufacturing.com • www.harcomanufacturing.com

HAPCO
Critical Grade VRS Series
Side Inlet

MODEL INLET SIZE	DWG #	A	B	C	D	E	F	G	H	I	WT (Lbs.)
514VRS1SI	900A-1	1	5	14	16.5	0.5	2	1.75	1.5	14.75	9
516VRS1-4SI	901A-1	1.25	5	16	18.5	0.5	2	2	2	16.5	10
620VRS1-8SI	902A-1	1.5	6	20	22.5	0.5	2	2.5	2.5	20	14
720VRS2SI	903A-1	2	7	20	23.875	0.5	3.375	2.125	2.5	21.75	15
824VRS2-8SI	904A-1	2.5	8	24	28.625	0.75	3.875	2.875	2.5	25.75	28
827VRS3SI	905A-1	3	8	27	31.625	0.75	3.875	2.875	2.5	28.75	33
926VRS3-8SI	906A-1	3.5	9	26	30.625	0.75	3.875	3.875	3	26.75	41
1036VRS4SI	907A-1	4	10	36	40.75	0.875	3.875	4	4	36.75	70
1230VRS4SI	908A-1	4	12	30	34.75	0.875	3.875	4.5	4	30.25	83
1236VRS5SI	909A-1	5	12	36	40.75	0.875	3.875	5	4	35.75	101
1439VRS5SI	910A-1	5	14	39	43.75	0.875	3.875	5	4	38.75	125
1448VRS6SI	911A-1	6	14	48	52.75	0.875	3.875	6	4	46.75	161
1644VRS6SI	912A-1	6	16	44	49.25	1	4.375	6	4	43.25	186
1860VRS8SI	913A-1	8	18	60	69.5	3	6.5	11	4	58.5	265
2268VRS10SI	914A-1	10	22	68	79	3.5	7.5	10.75	4	68.25	361
2676VRS12SI	915A-1	12	26	76	88	4	8	12.5	4	75.5	473
3096VRS14SI	916A-1	14	30	96	109.5	4.5	9	15.5	4	94	744
36103VRS16SI	917A-1	16	36	103	117.75	5.25	9.5	16.75	4	101	950
36112VRS18SI	918A-1	18	36	112	127	5.25	9.75	19	5	108	1472
42120VRS20SI	919A-1	20	42	120	137.375	6.625	10.75	20.875	5	116.5	1626
42129VRS22SI	920A-1	22	42	129	146.875	6.625	11.25	22.875	5	124	1988
48136VRS24SI	921A-1	24	48	136	157.5	8.25	13.25	23	5	134.5	2375
54146VRS26SI	922A-1	26	54	146	169.25	10	13.25	27	5	142.25	2890
60160VRS28SI	923A-1	28	60	160	185	10	15	28	5	157	3487
60176VRS30SI	924A-1	30	60	176	201	10	15	29	5	172	4110
66218VRS32SI	925A-1	32	66	218	245	11	16	28	6	217	5375
72296VRS34SI	926A-1	34	72	296	324.12	12.12	16	31.12	6	293	7000
74296VRS36SI	927A-1	36	74	296	324.12	12.12	16	31.12	6	293	8000

*For price information see Section 2 Page 4

*Note Estimated weight only



Recommended Applications:

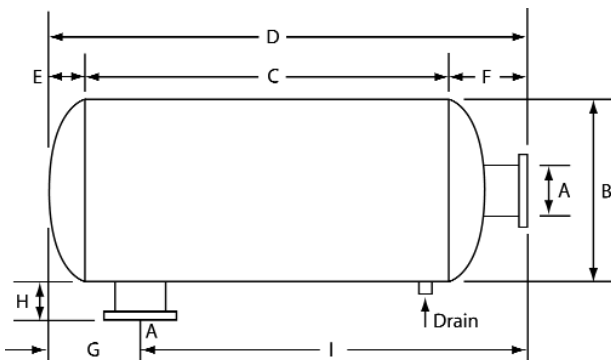
- Hospitals
- Ships, Tug and Fishing Boats
- Waste Water Plants
- Schools
- High Tech Industries
- And other environmental impact areas

Features:

- Typical Attenuation 18-32 dBA
- Listed sound data is based on average sound curves and is not to be used as absolute
- Exhaust gases flow through the silencer in a vortex motion and noise reduction is accomplished by a combination of absorption & annulling of noise waves resulting in reduced silencer diameters
- Sound data is based on **Flow Velocity Not To Exceed 9000 FPM**, see engineering section chart
- Standard heavy duty all welded steel construction with high temperature primer and black paint
- Optional stainless steel construction or zinc based high heat and high corrosion resistant paint
- Drain included
- Inlet size 4" and up flanged, smaller size MPT

Accessories:

- Flexible Connectors
- Mounting Bands
- Hanger Brackets
- Wye Connectors
- Wall and Roof Thimbles
- Rain Caps
- High Temp Exhaust Blankets

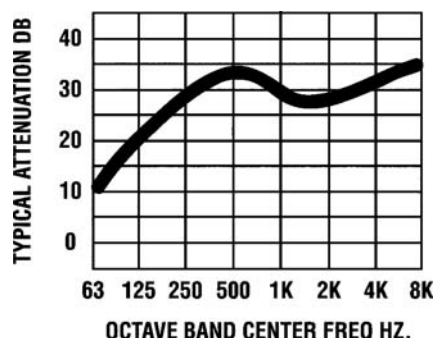


HAPCO
Critical Grade VRS Series
Side Inlet - Side Outlet

SIZE MODEL	DWG #	A	B	C	D	E	F	G	H	WT (Lbs.)
926VRS3SI-SO	1000A-1	3	9	26	27.5	0.75	3	3.375	20.75	42
1029VRS3-8SI-SO	1001A-1	3.5	10	29	30.75	0.875	3	4	23.25	55
1236VRS4SI-SO	1002A-1	4	12	36	37.75	0.875	3	4	29.75	102
1442VRS5SI-SO	1003A-1	5	14	42	43.75	0.875	3.5	4.5	34.75	132
1648VRS6SI-SO	1004A-1	6	16	48	50	1	4	5.75	38.5	195
2068VRS8SI-SO	1005A-1	8	20	68	74.5	3.25	4	10.75	53	380
2678VRS10SI-SO	1006A-1	10	26	78	86	4	4	13	60	460
2888VRS12SI-SO	1007A-1	12	28	88	96.75	4.375	4	14.375	68	525
3098VRS14SI-SO	1008A-1	14	30	98	107	4.5	5	15.5	76	750
36118VRS16SI-SO	1009A-1	16	36	118	128.5	5.25	5	17.25	94	1200
36124VRS18SI-SO	1010A-1	18	36	124	134.5	5.25	5	17.5	99.5	1600
42130VRS20SI-SO	1011A-1	20	42	130	143.25	6.625	5	21.25	100.75	2100
48136VRS22SI-SO	1012A-1	22	48	136	152.5	8.25	5	23.25	106	2400
54156VRS24SI-SO	1013A-1	24	54	156	176	10	5	24.75	128	2900
60156VRS26SI-SO	1014A-1	26	60	156	176	10	5	24.75	128	3900

*For price information see Section 2 Page 4

*Note Estimated weight only



Recommended Applications:

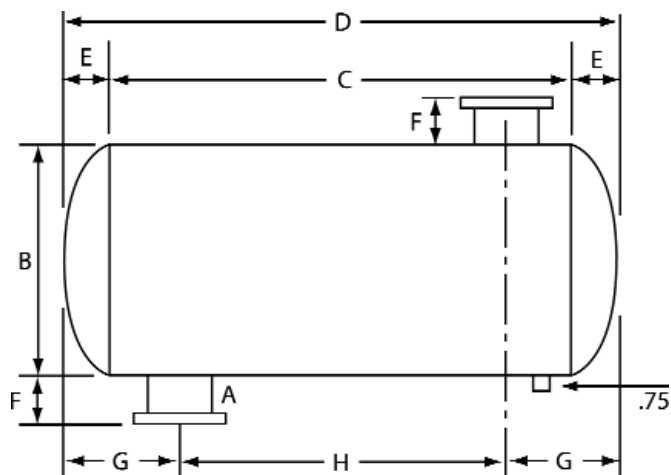
- Hospitals
- Ships, Tug and Fishing Boats
- Waste Water Plants
- Schools
- High Tech Industries
- And other environmental impact areas

Features:

- Attenuation 18-32 dBA
- Listed sound data is based on average sound curves and is not to be used as absolute
- Exhaust gases flow through the silencer in a vortex motion and noise reduction is accomplished by a combination of absorption & annulling of noise waves resulting in reduced silencer diameters
- Sound data is based on **Flow Velocity Not To Exceed 9000 FPM**, see engineering section chart
- Standard heavy duty all welded steel construction with high temperature primer and black paint
- Optional stainless steel construction or zinc based high heat and high corrosion resistant paint

Accessories:

- Flexible Connectors
- Mounting Bands
- Hanger Brackets
- Wye Connectors
- Wall and Roof Thimbles
- High Temp Exhaust Blankets
- Support Legs for Vertical Mounting
- Rain Caps
- Exhaust Pipe Spools
- Backfire Relief Vents
- Flanges of all types
- Clean Outs or Inspection Ports
- Gaskets - Hi Temp
- Nuts & Bolts



Dual Side Inlet Vortex Assisted Exhaust for Low Pressure Drop

SIZE MODEL	DWG #	A1	A	B	C	D	E	F	G	H	I	WT (Lbs.)
1034VRS2-8x2-8x4	1100A-1	2.5	4	10	34	39.125	0.875	4.25	5.5	4	33.5	65
1236VRS3x3x5	1101A-1	3	5	12	36	41.625	0.875	4.75	5.5	4	36	145
1648VRS4x4x6	1102A-1	4	6	16	48	53.75	1	4.75	5.5	4	48	168
2060VRS5x5x8	1103A-1	5	8	20	60	70.5	3.25	7.25	9.75	4	60.75	395
2468VRS6x6x10	1104A-1	6	10	24	68	79.5	3.75	7.75	11	6	68.5	596
2878VRS8x8x12	1105A-1	8	12	28	78	90.625	4.375	8.25	12.5	6	79	835
30108VRS8x8x14	1106A-1	8	14	30	108	121	4.5	8.5	12.5	6	108.5	1255
36120VRS10x10x16	1107A-1	10	16	36	120	134.5	5.25	9.25	13.25	8	121.25	1417
42138VRS12x12x18	1108A-1	12	18	42	138	154.625	6.625	10	15.25	8	139.75	1985
54150VRS12x12x20	1109A-1	12	20	54	150	173.25	10	13.25	18.25	8	153.25	2679
60180VRS18x18x30	1110A-1	18	30	60	180	205.25	10	15.25	21.75	8	183.25	3566
72218VRS20x20x36	1111A-1	20	36	72	218	246.87	12.12	16.75	24.25	8	209.75	897

*For price information see Section 2 Page 5

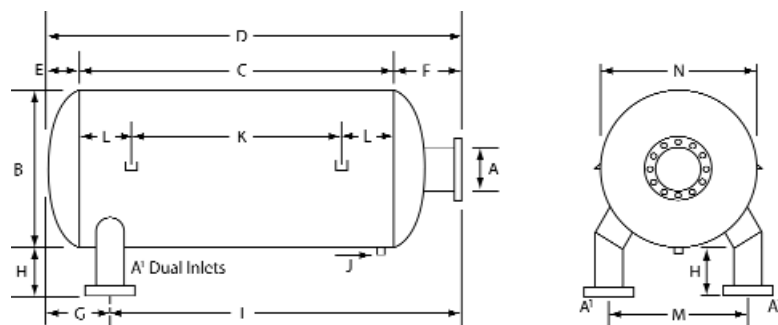
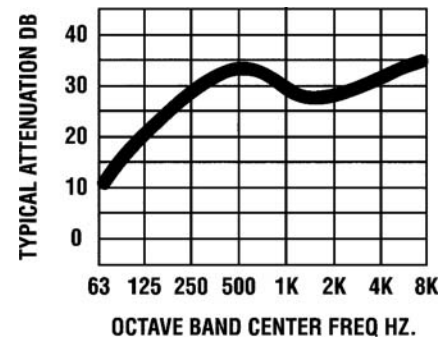
*Note Estimated weight only

Features:

- Attenuation 19-32 dBA
- The rotation of exhaust gas allows for a clean transition through the silencer with limited pressure loss
- This type of design allows for a change in the noise frequency to a higher band, the results are a much simpler sound to attenuate
- This is accomplished by the absorbing and annulling of the noise by a series of chambers with acoustical packing.
- The multi-chambered design also allows us to attenuate the lower frequency bands present in the exhaust
- A side branch designed chamber provides the last step to de-energize the noise
- Hanger brackets and condensation drain included
- Exhaust gases flow through the silencer in a vortex motion and noise reduction is accomplished by a combination of absorption & annulling of noise waves resulting in reduced silencer diameters
- Sound data is based on **Flow Velocity Not To Exceed 9000 FPM**, see engineering section chart
- Standard heavy duty all welded steel construction with high temperature primer and black paint
- Optional stainless steel construction or zinc based high heat and high corrosion resistant paint

Applications:

- Hospitals
- Ships, Tug and Fishing Boats
- Waste Water Plants
- Schools
- High Tech Industries
- And other environmental impact areas



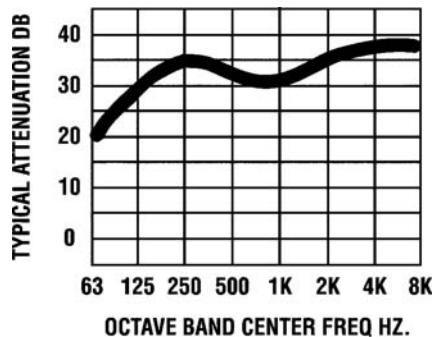
- Mounting Bands
- Hanger Brackets
- Wye Connectors
- Wall and Roof Thimbles
- High Temp Exhaust Blankets
- Support Legs for Vertical Mounting
- Exhaust Pipe Spools
- Backfire Relief Vents
- Flanges of all types
- Clean Outs or Inspection Ports
- Gaskets - Hi Temp
- Nuts & Bolts

HAPCO**Critical Grade CSCS - Exhaust Silencer****Center Side Inlet - End Outlet**

SIZE MODEL	DWG #	A	B	C	D	E	F	G	H	I	WT (Lbs.)
938CSCS2-8	1200A-1	2.5	9	38	42.375	0.75	3.625	21.25	3	21.25	51
1040CSCS3	1201A-1	3	10	40	45	0.875	4.125	23.5	3.5	21.25	75
1246CSCS3-8	1202A-1	3.5	12	46	51.625	0.875	4.75	26.75	4	24.875	90
1246CSCS4	1203A-1	4	12	46	51.625	0.875	4.75	26.75	4	24.875	145
1648CSCS5	1204A-1	5	16	48	54	1	5	29	4	25	145
1854CSCS6	1205A-1	6	18	54	64	3	7	34	4	30	210
2460CSCS8	1206A-1	8	24	60	71.5	3.75	7.75	37.75	4	33.75	395
2676CSCS10	1207A-1	10	26	76	88	4	8	46	4	42	486
2880CSCS12	1208A-1	12	28	80	94.75	4.375	10.375	50.5	4	44.25	543
3698CSCS14	1209A-1	14	36	98	114.5	5.25	11.25	60.25	4	54.25	1400
42116CSCS16	1210A-1	16	42	116	135.25	6.625	12.625	72.25	4.5	63	1900
48130CSCS18	1211A-1	18	48	130	152.5	8.25	14.25	80.5	4.5	72	2400

*For price information see Section 2 Page 6

*Note Estimated weight only

**Recommended Applications:**

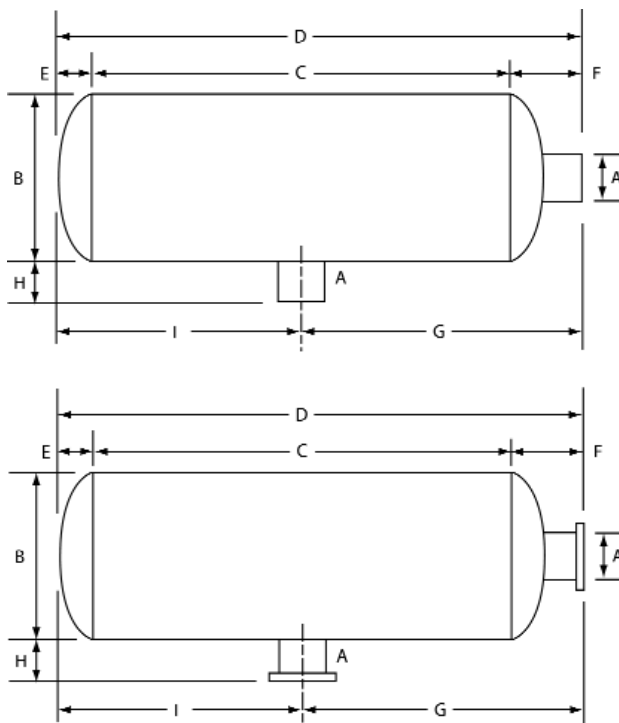
- Hospitals
- Ships, Tug and Fishing Boats
- Waste Water Plants
- Schools
- High Tech Industries
- And other environmental impact areas

Features:

- Attenuation 20-32 dBA
- See engineering section for proper sizing
- Exhaust gases flow through the silencer in a vortex motion and noise reduction is accomplished by a combination of absorption & annulling of noise waves resulting in reduced silencer diameters
- Sound data is based on **Flow Velocity Not To Exceed 9000 FPM**, see engineering section chart
- Standard heavy duty all welded steel construction with high temperature primer and black paint
- Optional stainless steel construction or zinc based high heat and high corrosion resistant paint
- Condensation drain
- 3" and larger flanged
- Optional dual inlets available - Call for quote on changes

Accessories:

- Flexible Connectors
- Mounting Bands
- Hanger Brackets
- Wye Connectors
- Wall and Roof Thimbles
- High Temp Exhaust Blankets
- Support Legs for Vertical Mounting
- Rain Caps
- Exhaust Pipe Spools
- Backfire Relief Vents
- Flanges of all types
- Clean Outs or Inspection Ports
- Gaskets - Hi Temp
- Nuts & Bolts



HAPCO
Critical Grade - VWT Exhaust Heat Recovery Silencer
Note: End Inlet - End Outlet Only

SIZE MODEL	DRAWING	A	B	B1	C	D	E
1038VWT-2	1300A-1	2	10	12	38	45	3.5
1648VWT3-8	1301A-1	3.5	16	18	48	55	3.5
1872VWT5	1302A-1	5	18	20	72	84	6
2080VWT6	1303A-1	6	20	22	80	92	6
2486VWT8	1304A-1	8	24	26	86	99.5	6.75
28110VWT10	1305A-1	10	28	30	110	123.5	6.75
30114VWT14x12	1306A-1	12	30	32	114	128.5	7.25
30120VWT12	1307A-1	12	30	32	120	134.5	7.25
36142VWT12	1308A-1	12	36	38	142	160	9
36132VWT14	1309A-1	14	36	38	132	150	9
38144VWT16	1310A-1	16	38	40	144	164	10
42160VWT18	1311A-1	18	42	44	160	183	11.5

**Consult factory for current price information*

**Note Estimated weight only*

Ordering Information:

- Sizing data needed when placing a request for quotation:
 - Exhaust Temp:
 - Exhaust CFM:
 - Type of Engine or Heat Source:
 - Water Temp. from engine to heat recovery system:
 - G.P.M. of water:
 - PSI of water:
 - Type of use for heated water:
 - Heated water temp. requirement:
 - GPM of heated water needed:

Recommended Applications:

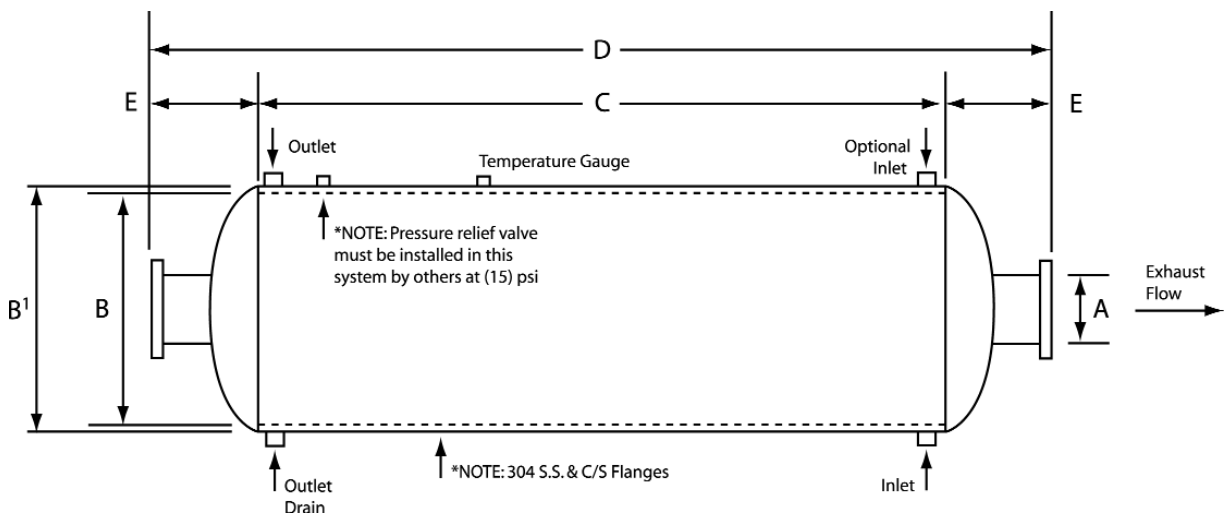
- Oil Drill Rigs
- Remote Cabins
- Motor Vessel Heating
- Heating of fluids such as paint with hot water

Features:

- Water jacket type design for heating water with engine exhaust or cooling engine exhaust on oil drill rigs
- Stainless Steel Construction

Accessories:

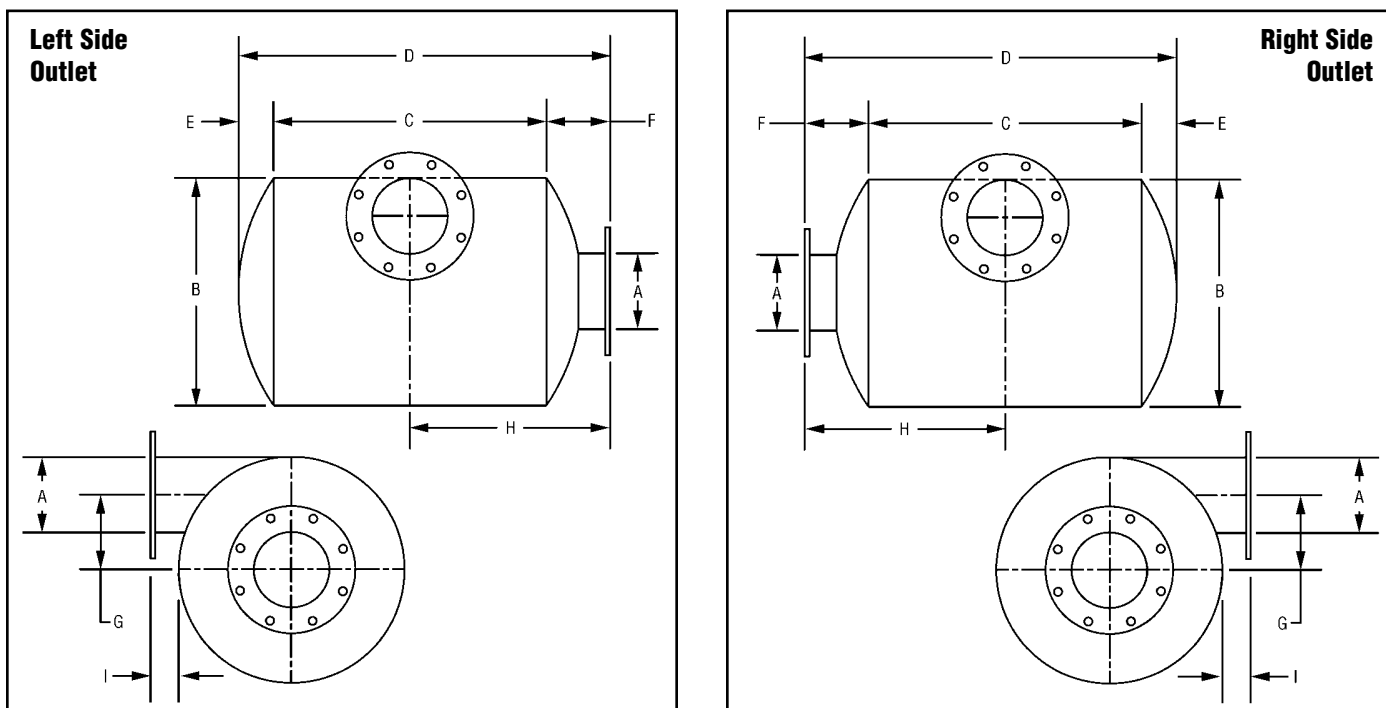
- Flexible Connectors
- Mounting Bands
- Hanger Brackets
- Wye Connectors
- Wall and Roof Thimbles
- High Temp Exhaust Blankets
- Support Legs for Vertical Mounting
- Rain Caps
- Exhaust Pipe Spools
- Backfire Relief Vents
- Flanges of all types
- Clean Outs or Inspection Ports
- Gaskets - Hi Temp
- Nuts & Bolts



HAPCO HCY Impacter Series Critical Grade Exhaust Silencer

MODEL	A	B	C	D	E	F	G	H	I
1214HCY3	3.0	12.0	14.0	17.875	.875	3.0	4.5	9.5	2.75
1416HCY3-8	3.5	14.0	16.0	19.875	.875	3.0	5.25	10.75	3.0
1417HCY4	4.0	14.0	17.0	21.375	.875	3.5	5.0	11.5	3.25
1824HCY5	5.0	18.0	24.0	31.0	3.0	4.0	6.5	16.0	3.5
2024HCY6	6.0	20.0	24.0	32.75	3.25	5.5	7.0	17.0	3.75
2428HCY8	8.0	24.0	28.0	37.75	3.75	6.0	8.0	20.0	4.0

*For price information see Section 2 Page 3



Recommended Applications:

- All applications where space is limited

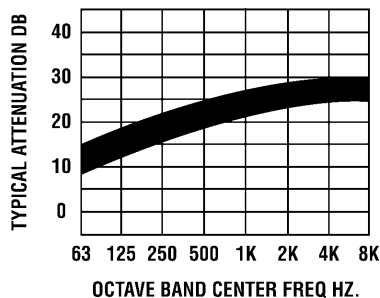
Ordering Information:

- Specify Right or Left side outlet**
- Engine:
- CFM:
- FPM:
- KW:
- WT:
- Pressure Drop H2O:
- Exhaust Pipe Size:
- Manufacturers recommended Max. Pressure Loss:

Features:

- Compact Design
- Low Pressure Drop
- Flange Connections
- Aluminized Steel Construction
- ABS Certified Welding
- Sound Impingement Design
- High temperature primer and paint

- Average dba at 7 meters = 70 dba
- Average pressure loss 9 - 10" H2O
- Sample Specification:** The silencer is to be a HCY Impacter Series constructed of aluminized steel (26" body diameter and smaller) or mild steel/aluminized steel combination



Accessories:

- Flexible Connectors
- Mounting Bands
- Saddle Supports
- Wye Connectors
- Wall and Roof Thimbles
- High Temp Exhaust Blankets
- Exhaust Stack Rain Guard
- Rain Caps
- Exhaust Pipe Spools
- Elbows
- Flanges of all types
- Clean Outs or Inspection Ports
- Gaskets - Hi Temp
- Nuts & Bolts

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