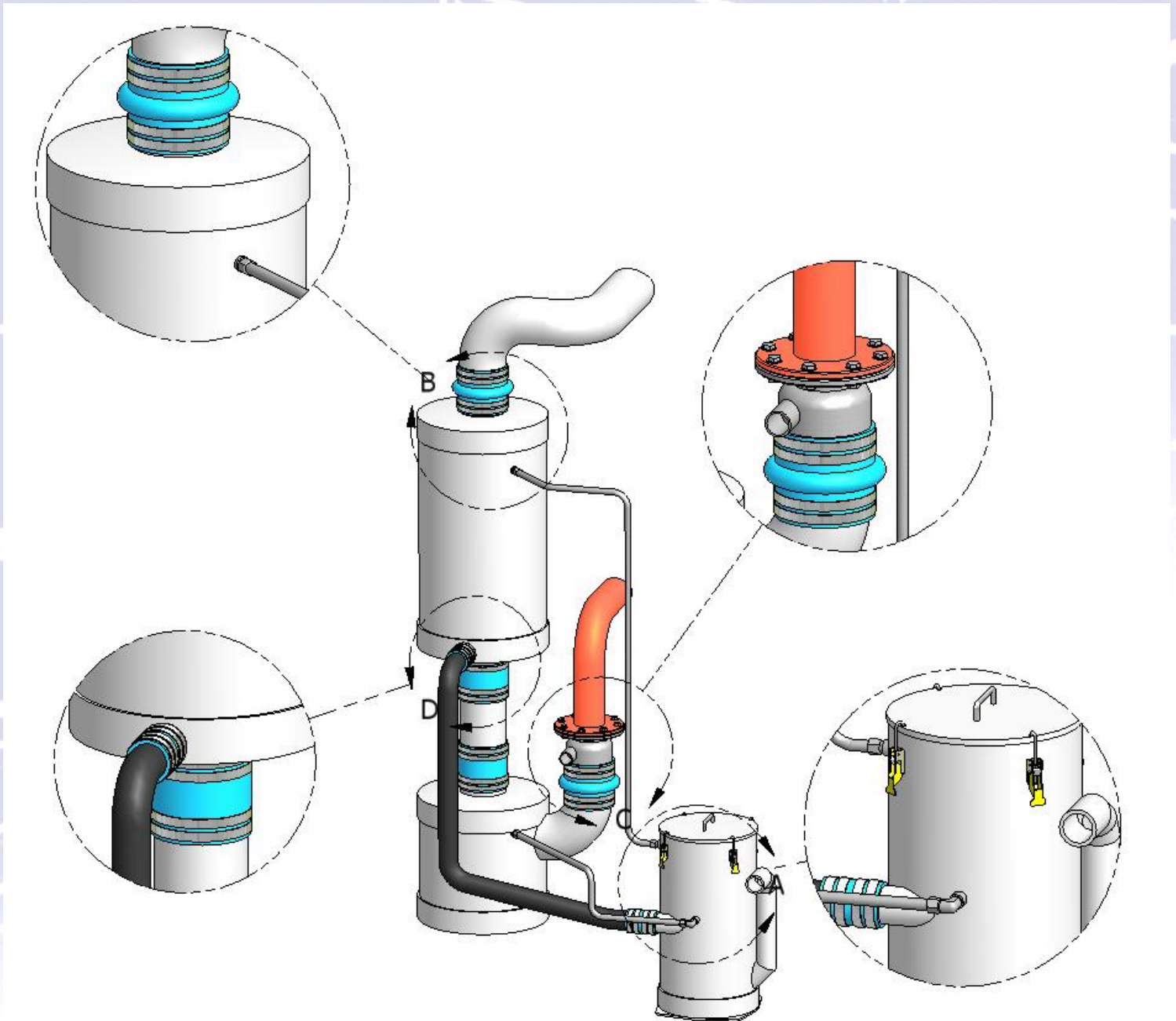


SEE DETAIL E

Soundown Exhaust Components Sizing and Configuration Guide



Classic Waterdrop Silencer Sizing and Configuration Guide

The classic waterdrop silencer is ideal in installations where the waterline is low and foot print area is at a premium.

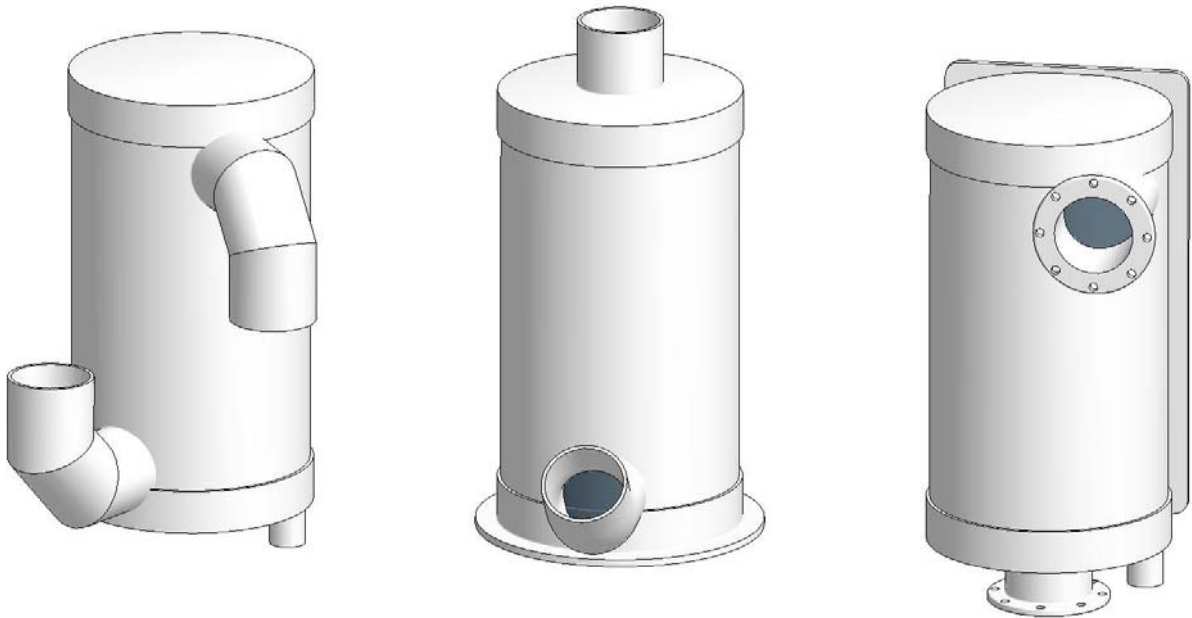
- Inlet locations are typically at the lowest or highest point of silencer.
- Outlets in most cases can be located anywhere on the silencer.
- Drain is located on the lowest part of the shell, or on the bottom face.

Available Sizes

Classic Waterdrop Silencers				
Power Ratings (Genset/ME)	Description	Inlet/Outlet Pipe Diameter	Part #	Flanged Connections
15kW/25hp	10x12 Classic Waterdrop	2" to 3"	ED10X12G	N/A
40kW/60hp	12x17 Classic Waterdrop	2.5" to 4.5"	ED12X17G	N/A
90kW/140hp	14x23 Classic Waterdrop	3.5" to 6"	ED14X23G	N/A
150kW/240hp	17x31 Classic Waterdrop	5" to 8"	ED17X31G	Available
200kW/350hp	19x32 Classic Waterdrop	8" to 10"	ED19X32G	Available
300kW/650hp	22x32 Classic Waterdrop	8" to 12"	ED22X32G	Available
400kW/1000hp	25x36 Classic Waterdrop	10" to 14"	ED25X36G	Available
2000hp	32x54 Classic Waterdrop	14" to 16"	ED32X54G	Available
2600hp	38x55 Classic Waterdrop	16" to 18"	ED38X55G	Available

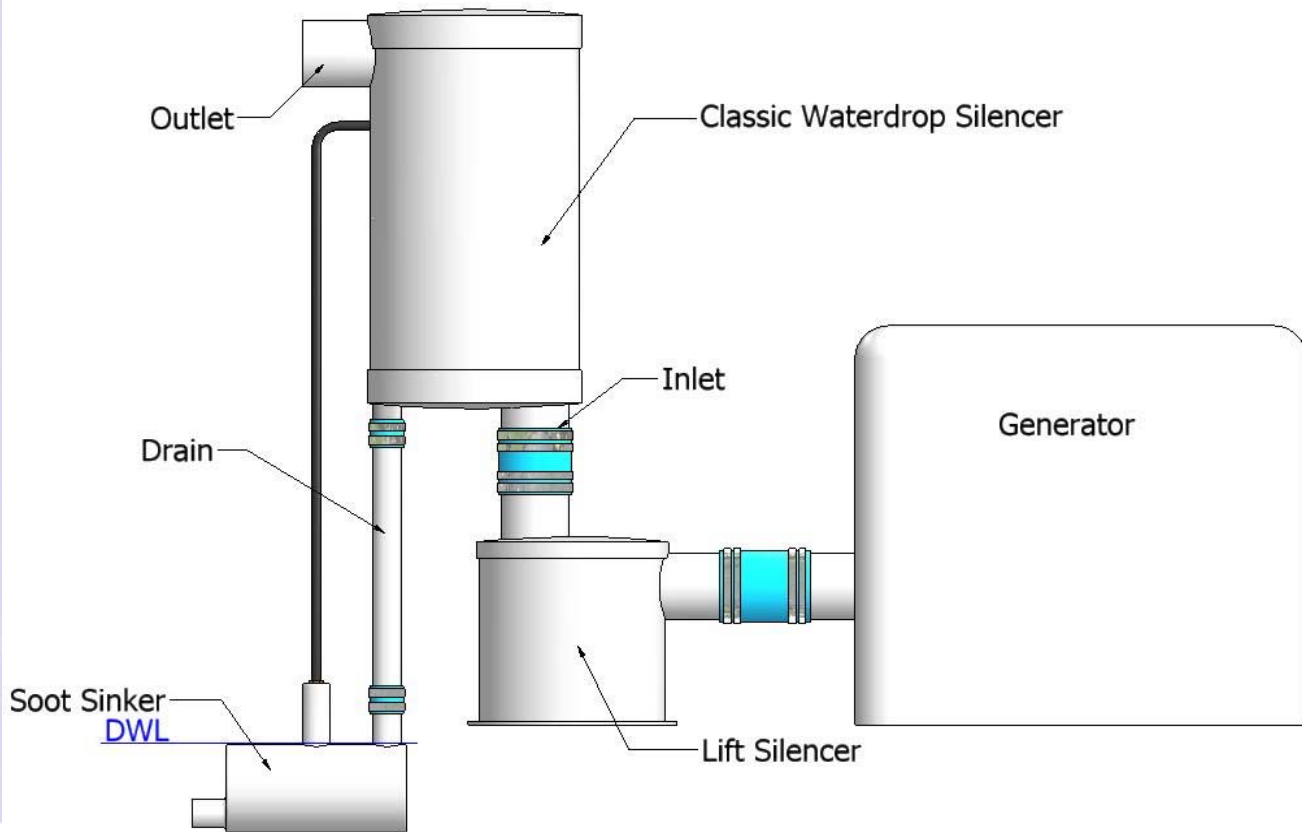
Available Options

- Flanged connections with rotational backing rings.
- Custom sweep and mitered elbows
- NPT ports for pressure testing, thermocouples, etc.
- Wide range of custom mounting rings, feet, etc.
- High-grade finish.



Classic Waterdrop Generator Exhaust Installation Notes

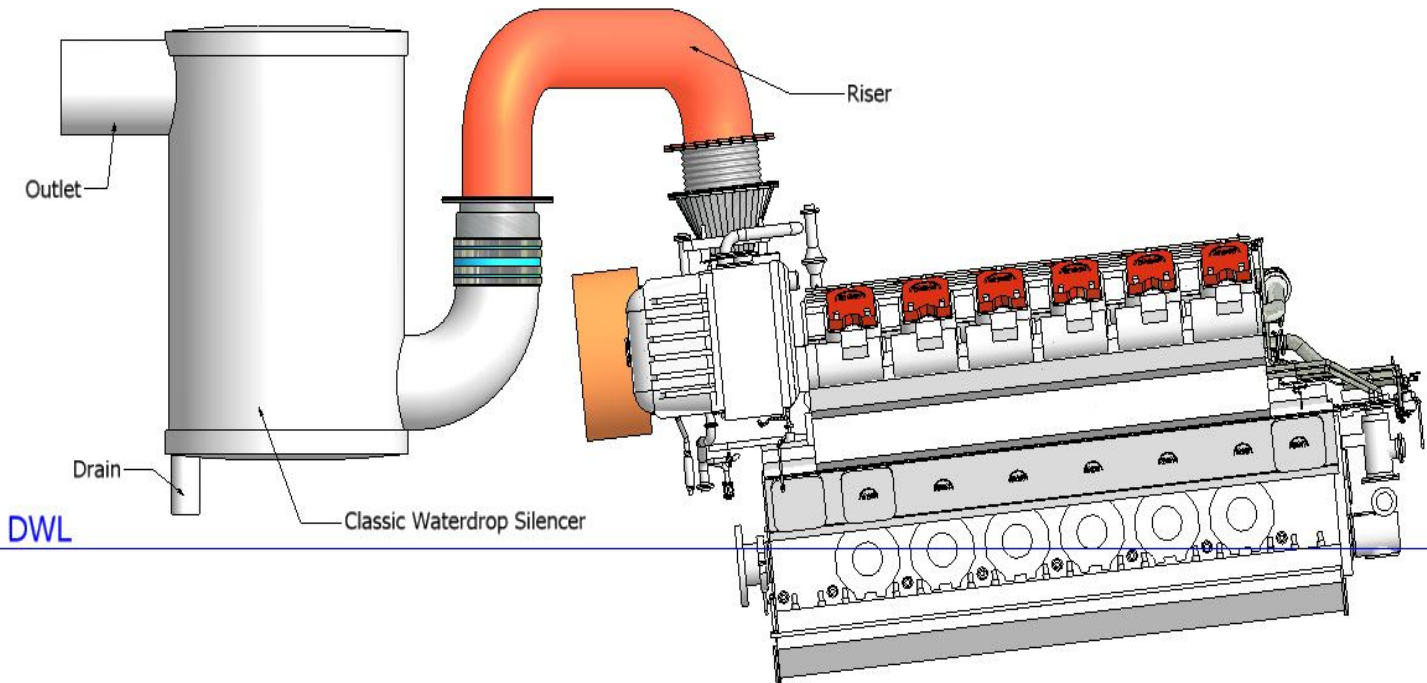
Generator Exhaust System



- Keep exhaust components in close proximity to one another.
- Drains should be minimum 12" above waterline. Drain should travel to min. 6" below DWL. All horizontal runs should be minimized and pitched.
- Path from lift to silencer should be as direct as possible to minimize backpressure.
- Minimize bends in the piping between lift & waterdrop. If silencers are offset from each other, rise from the lift then run to the waterdrop.
- Minimize or eliminate bends and upward inclines in all exhaust pipe routing.
- Drain piping must not be restricted in cross sectional area along the route to discharge.
- Partial raw water bypass is a potential requirement of all exhaust systems.

Classic Waterdrop Propulsion Exhaust Installation Notes

Propulsion Exhaust System



- Silencer to be installed level.
- Silencer to be below dry riser or wet elbow.
- Silencer to be at or above DWL.
- Minimize or eliminate bends and upward inclines in all exhaust pipe routing.
- Drain piping must not be restricted in cross sectional area along the route to discharge.
- Partial raw water bypass is a potential requirement of all exhaust systems.

Axial Waterdrop Silencer Sizing and Configuration Guide

The axial silencers are ideal in installations where water line is high.

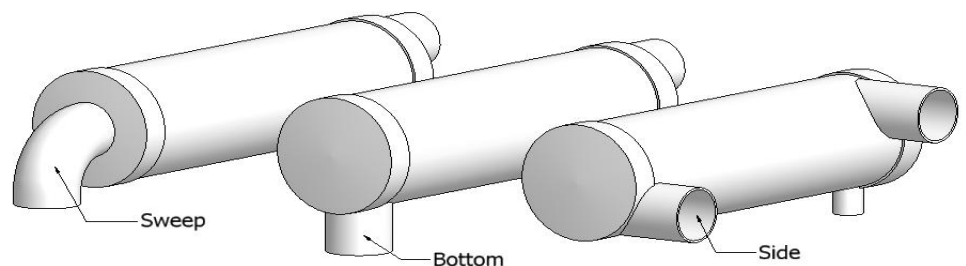
- Inlets are located on the end plate or side shell near one end of the silencer.
- Outlets are located high on the end opposite the inlet.
- Drains are optional and located on the outlet end, low on the silencer body.
- Elliptical silencers are available if standard cylindrical dimensions do not meet spatial requirements.

Axial/Elliptical Silencer Sizing				
Power Ratings (Genset/ME)	Description	Inlet/Outlet Pipe Diameter	Part #	Flanged Connections
15kw/25hp	8" Axial	2" to 3"	EDA8X2_	N/A
40kW/60hp	10" Axial 8"X14" Elliptical Axial	2.5" to 4.5"	EDA10X_ EDAELIP8	N/A
90kW/140hp	12" Axial	3.5" to 6"	EDA12X_	N/A
150kW/240hp	14" Axial 13"X18" Elliptical Axial	5" to 8"	EDA14X4_ EDAELIP13	Available
200kW/350hp	17" Axial 16"X24" Elliptical Axial	8" to 10"	EDA17X6_ EDAELIP16	Available
300kW/650hp	19" Axial 17"X26" Elliptical Axial	8" to 12"	EDA19X6_ EDAELIP17	Available
400kW/1000hp	22" Axial 20"X32" Elliptical Axial	10" to 14"	EDA22X6_ EDAELIP20	Available
2000hp	25" Axial 23"X48" Elliptical Axial	14" to 16"	EDA25X6_ EDAELIP23	Available
2600hp	32" Axial	16" to 18"	EDA32X10_	Available
3600hp	36" Axial/28"x44" Ellipse	18" to 20"	EDA32X10_	Available

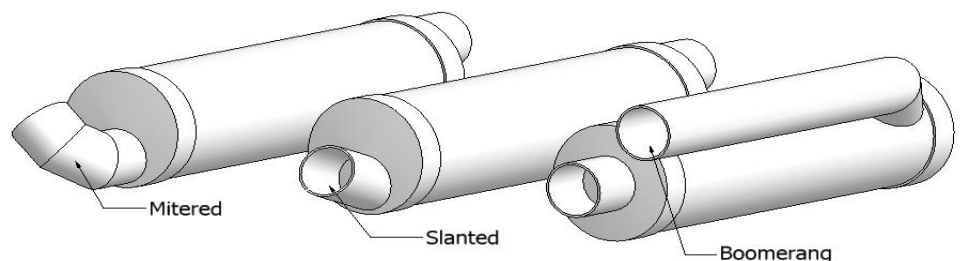
Available Options

- Flanged connections with rotational backing rings.
- Custom sweep and mitered elbows
- NPT ports for pressure testing, thermocouples, etc.
- Wide range of custom mounting rings, feet, etc.
- High-grade finish.

Typical Generator Axial Configurations

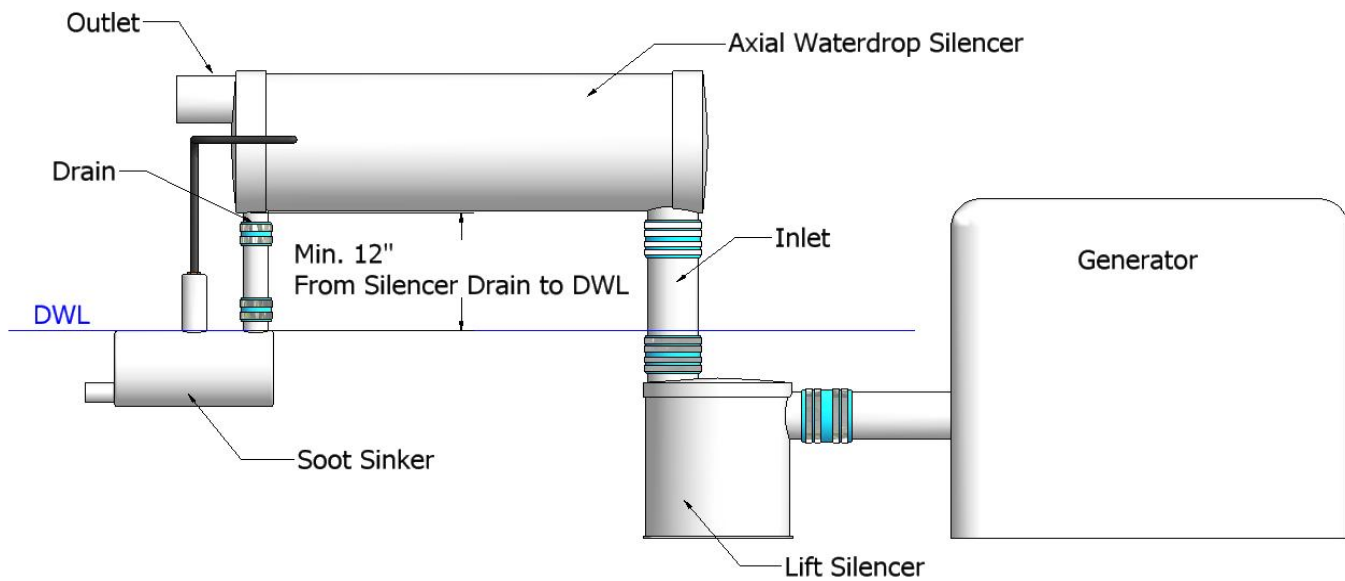


Typical Propulsion Axial Configurations



Axial Generator Exhaust Installation Notes

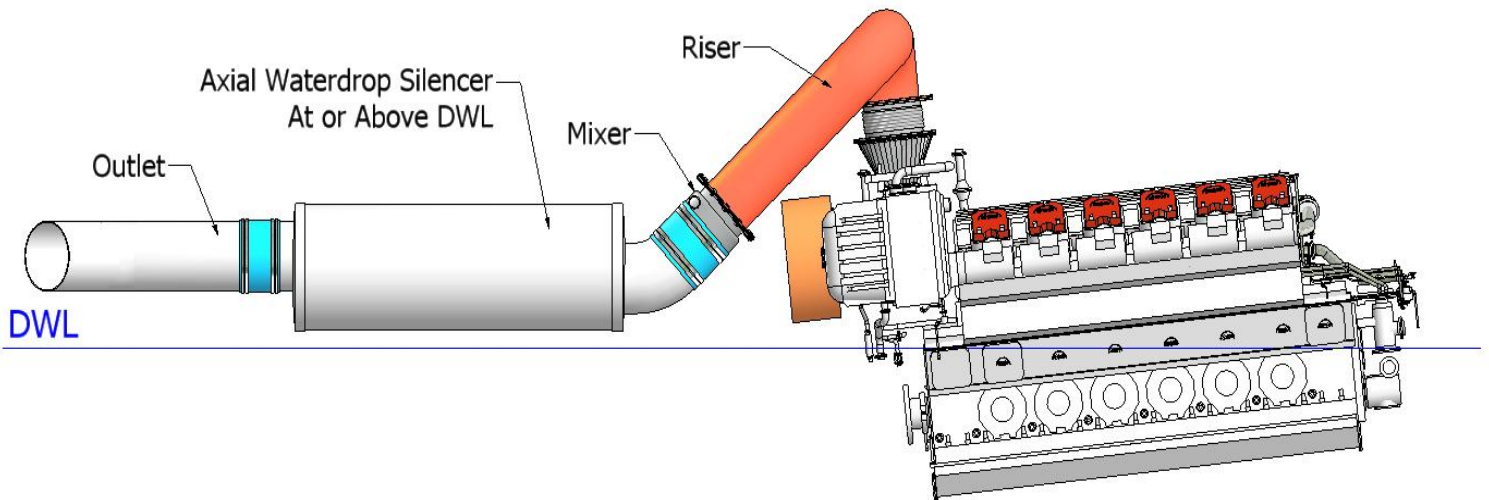
Generator Exhaust System



- Silencer to be installed level.
- Keep exhaust components in close proximity to one another.
- Drains should be minimum 12" above waterline. Drain should travel to min. 6" below DWL. All horizontal runs should be minimized and pitched.
- Path from lift to silencer should be as direct as possible to minimize backpressure.
- Minimize bends in the piping between lift & waterdrop. If silencers are offset from each other, rise from the lift then run to the waterdrop.
- Minimize or eliminate bends and upward inclines in all exhaust pipe routing.
- Drain piping must not be restricted in cross sectional area along the route to discharge.
- Partial raw water bypass is a potential requirement for all exhaust systems.

Axial Propulsion Exhaust Installation Notes

Propulsion Exhaust System



- Silencer to be installed level.
- Silencer to be installed below dry riser or wet elbow
- Silencer to be installed at or above DWL.
- Minimize or eliminate bends and upward inclines in all exhaust pipe routing.
- Partial raw water bypass is a potential requirement for all exhaust systems.

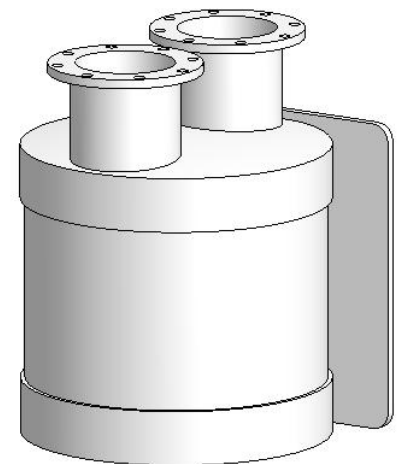
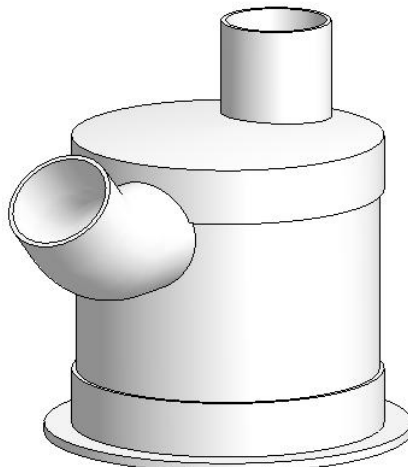
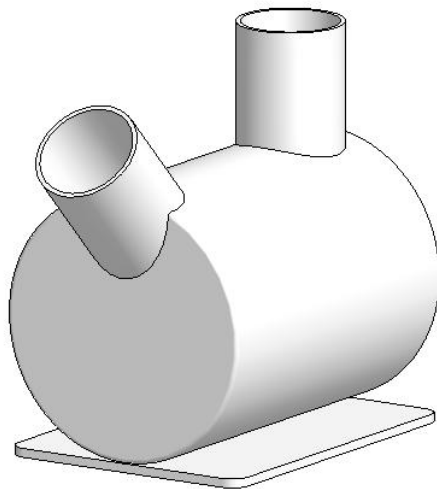
Water Lifts Sizing and Configuration Guide

Available Sizes

Available Water Lift Sizes				
Power Ratings (Genset/ME)	Description	Inlet/Outlet Pipe Diameter	Part #	Flanged Connections
15kw/25hp	10" Lift	2" to 3"	EDLIFT__	N/A
40kW/60hp	12" Lift	2.5" to 4.5"	EDLIFT__	N/A
90kW/140hp	14" Lift	3.5" to 6"	EDLIFT__	N/A
150kW/240hp	17" Lift	5" to 8"	EDLIFT__	Available
200kW/350hp	19" Lift	8" to 10"	EDLIFT__	Available
300kW/650hp	22" Lift	8" to 12"	EDLIFT__	Available
400kW/1000hp	25" Lift	10" to 14"	EDLIFT__	Available

Available Options

- Flanged connections with rotational backing rings.
- Custom sweep and mitered elbows
- NPT ports for pressure testing, thermocouples, etc.
- Wide range of custom mounting rings, feet, etc.
- High-grade finish.



Underwater Discharge Tower Silencer/Low Speed Bypass Silencer Sizing and Configuration Guide

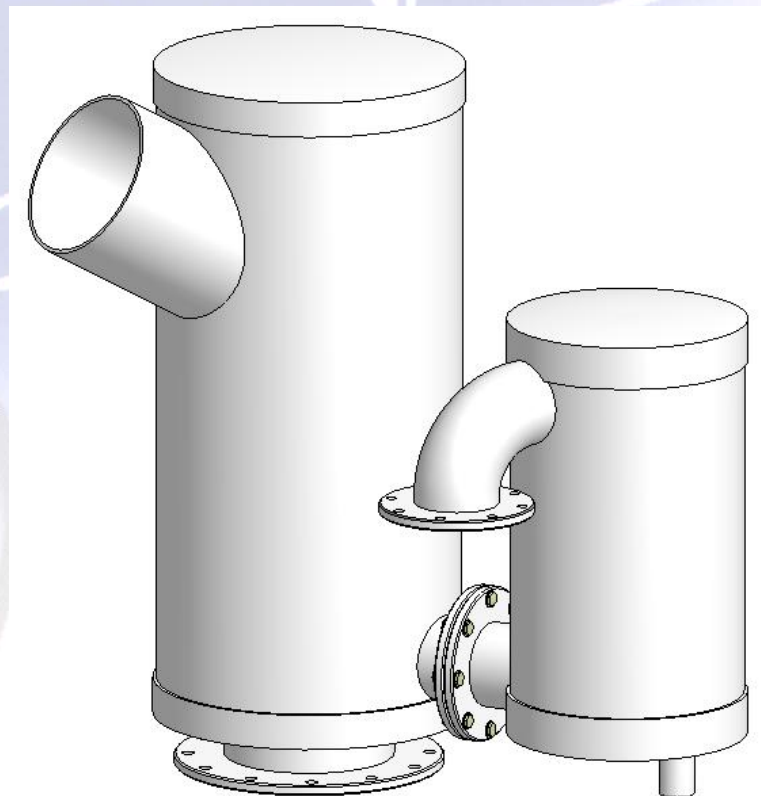
Tower silencers with low speed bypass silencers are ideal for high power propulsion engines.

- Inlets are located at upper portion of canister.
- Outlets typically go straight out the bottom towards underwater discharge penetration.
- Low speed bypass may be of Classic Waterdrop or Axial Waterdrop design.

Power Ratings	Description	Inlet/Outlet Pipe Diameter	Part #	Flanged Connections
650hp	17" Tower	8" to 10"	EDA17X6_	Available
300kW/650hp	19" Tower	8" to 12"	EDA19X6_	Available
400kW/1000hp	22" Tower	10" to 14"	EDA22X6_	Available
2000hp	25" Tower	14" to 16"	EDA25X6_	Available
2600hp	32" Tower	16" to 18"	EDA32X10_	Available
3600hp	42" Tower	18" to 20"	EDA42x10_	Available

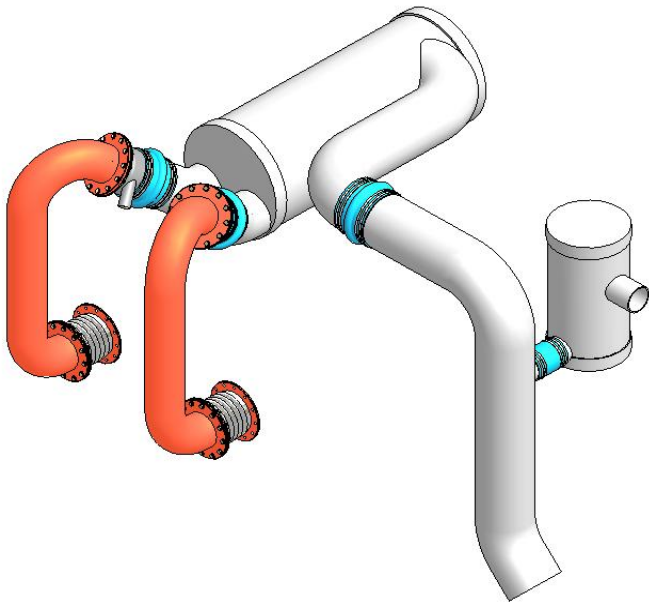
Available Options

- Horizontal (Flying Tower) configurations.
- Flanged connections with rotational backing rings.
- Custom sweep and mitered elbows
- NPT ports for pressure testing, thermocouples, etc.
- Wide range of custom mounting rings, feet, etc.
- Remote bypass locations.
- High-grade finish.

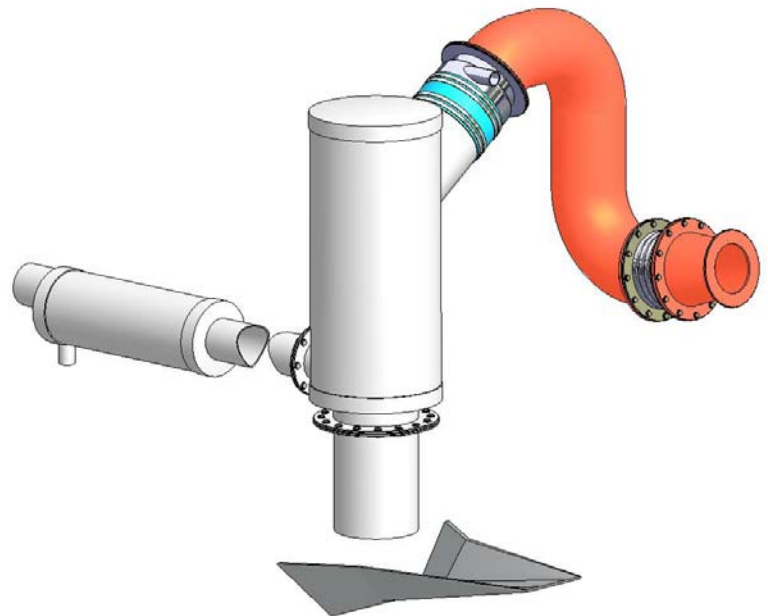


Underwater Discharge Tower Silencer/Low Speed Bypass Silencer Sizing and Configuration Guide

Flying Tower with Remote Bypass



Tower with Axial Bypass



- Silencer to be installed level.
- Silencer to be installed below dry riser or wet elbow
- Silencer to be installed at or above DWL.
- Minimize or eliminate bends and upward inclines in all exhaust pipe routing.
- Drain piping must not restrict in area along the route to discharge.
- Partial raw water bypass in a around silencer system is a potential requirement of all systems.
- Drain piping must not be restricted in cross sectional area along the route to discharge.

Combination Lift/Silencer Sizing and Configuration Guide

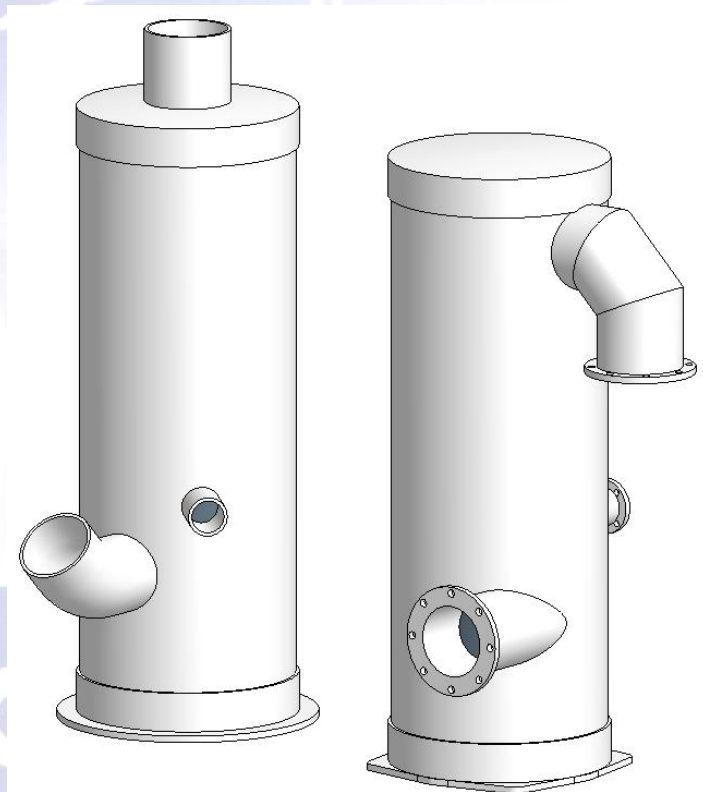
The combination lift silencer is ideal for low waterline situations.

- The inlet needs to be in the lower third of the silencer body.
- Outlet should be in upper third on the silencer body, or exit out the top.
- Drain is located above the inlet.
- Drain needs to be above DWL, preferably 12" or more.

Combination Lift/Silencer				
Power Ratings (Genset/ME)	Description	Inlet/Outlet Pipe Diameter	Part #	Flanged Connections
15kw/25hp	10" Combi	2" to 3"	ED10COMBI	N/A
40kW/60hp	12" Combi	2.5" to 4.5"	ED12COMBI	N/A
90kW/140hp	14" Combi	3.5" to 6"	ED14COMBI	N/A
150kW/240hp	17" Combi	5" to 8"	ED17COMBI	Available
200kW/350hp	19" Combi	8" to 10"	ED19COMBI	Available
300kW/650hp	22" Combi	8" to 12"	ED22COMBI	Available
400kW/1000hp	25" Combi	10" to 14"	ED25COMBI	Available

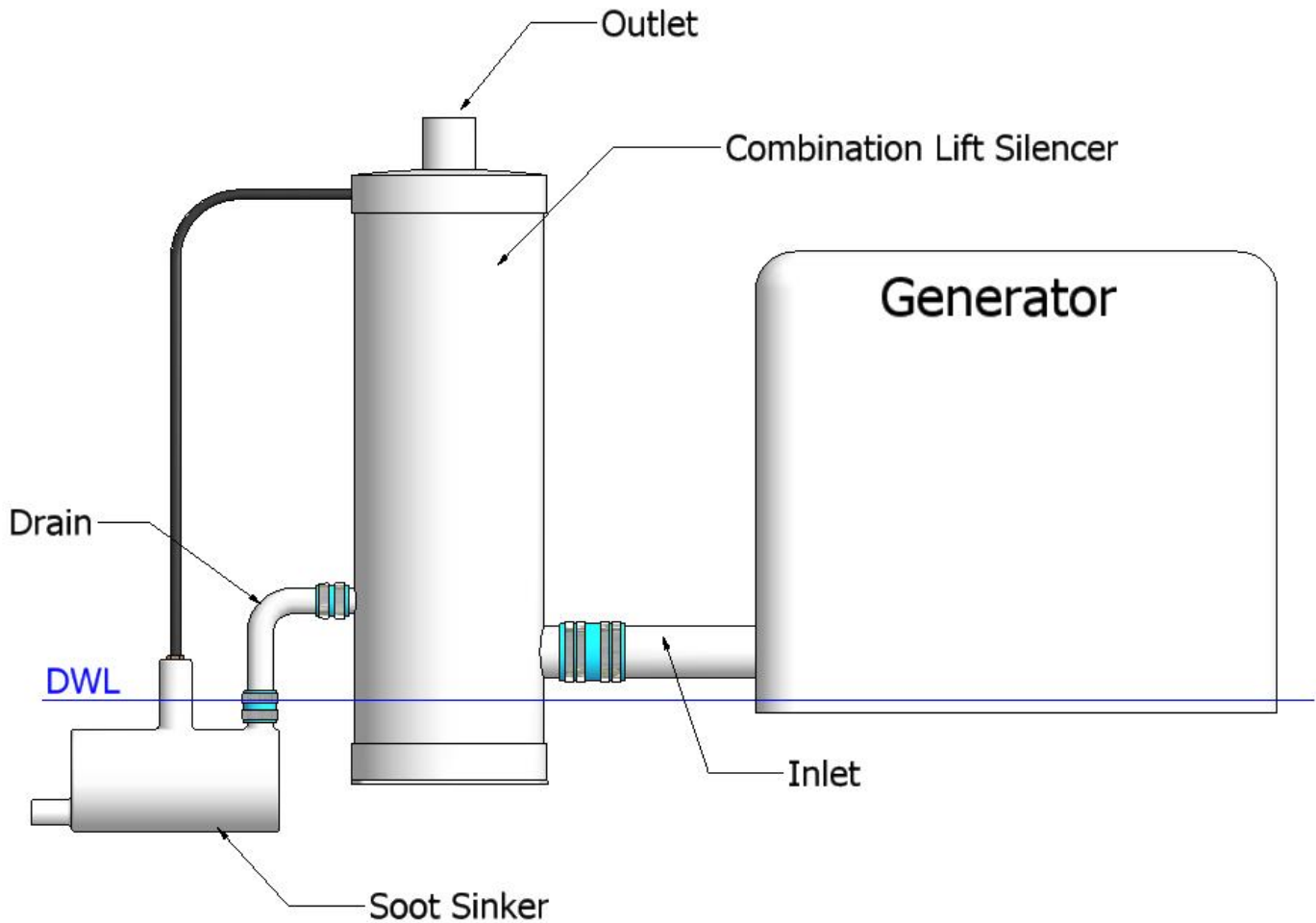
Available Options

- Flanged connections with rotational backing rings.
- Custom sweep and mitered elbows
- NPT ports for pressure testing, thermocouples, etc.
- Wide range of custom mounting rings, feet, etc.
- High-grade Finish



SEE DETAIL E

Combination Lift/Silencer Exhaust Installation Notes



- Silencer to be installed level.
- Keep exhaust components in close proximity to one another.
- Drains should be minimum 12" above waterline. Drain should travel to min. 6" below DWL. All horizontal runs should be minimized and pitched.
- Path from lift to silencer should be as direct as possible to minimize backpressure.
- Minimize bends in the piping between lift & waterdrop. If silencers are offset from each other, rise from the lift then run to the waterdrop.
- Minimize or eliminate bends and upward inclines in all exhaust pipe routing.
- Drain piping must not be restricted in cross sectional area along the route to discharge.
- Partial raw water bypass is a potential requirement for all exhaust systems.

SEE DETAIL E

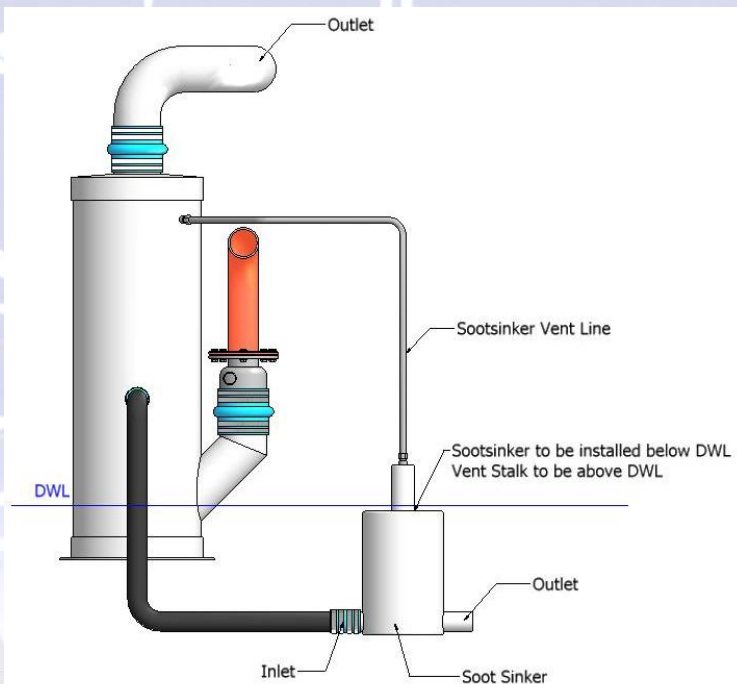
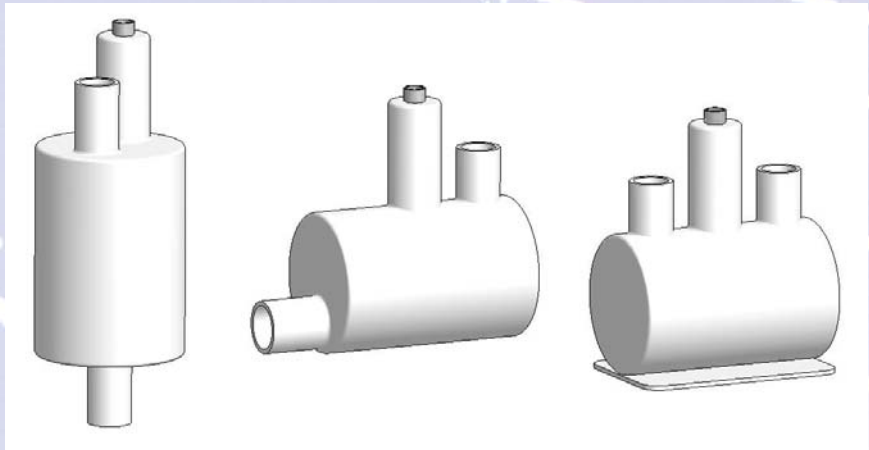
Soot Sinkers Sizing and Configuration Guide

Available Sizes

Soot Sinkers				
Description	Cooling Water	Drain Size	Part #	Flanged Connections
8"Dia X 10"	1 to 75gpm	1.5" to 2.5"	EDSO0812G	Available
10.5"Dia X 16"	60 to 150gpm	2" TO 3.5"	EDSO1016	Available

Available Options

- Flanged Connections
- Sweep/Mitered/Straight Pipes
- NPT ports for pressure testing, etc.
- Custom mounting rings, feet, etc.
- High-grade finish.



Soot Sinkers Installation Notes

- Soot sinkers must be installed below DWL.
- Soot sinkers are vented to silencer.
- All connections fully rotational.
- Keep exhaust components in close proximity to one another.
- Path to and from lift should be straight as possible.
- Exhaust piping should be as straight as possible.

Soot Catcher Sizing and Configuration Guide

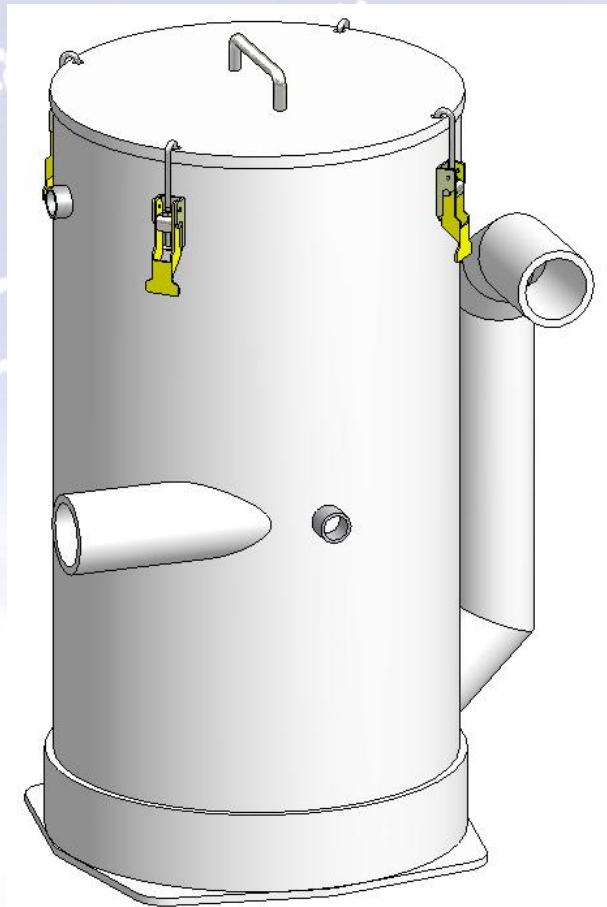
Our latest patented contribution to our product line is the soot catcher, also known as "Sootdown". This innovative soot abatement unit was thoughtfully designed with regard to the environment as our #1 goal. While the first generation "Sootsinker" mitigates floating soot by reducing bubbles entrained in the drainage and saturating the soot particulates, the second generation "Sootdown" unit uses the entrained air bubbles to channel these oily deposits along with the carbon solids to a holding chamber at the top of the unit. The top of the unit is conveniently equipped with a removable lid under which is a removable material that captures the black residue, and can be removed from the overboard discharge.

Available Sizes

Soot Catcher				
Description	Cooling Water	Drain Size	Part #	Flanged Connections
12"Dia X 24"	1 to 75gpm	1.5" to 2.5"	EDSO0812G	Available
17"Dia X 30"	60 to 150gpm	2" TO 3.5"	EDSO1016	Available
22"Dia X 50"	125 to 300gpm	3" to 4.5"	EDSO0812G	Available

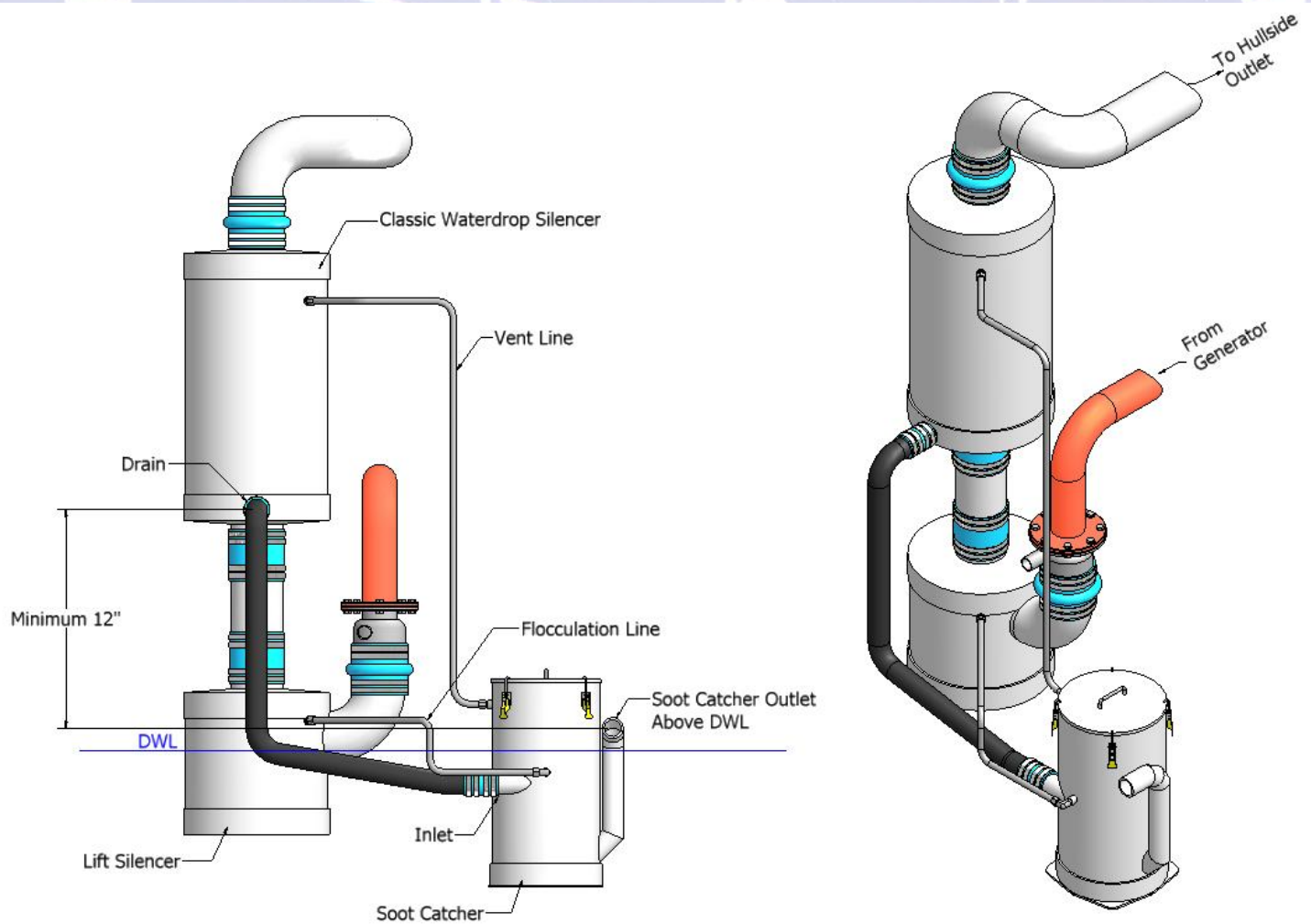
Available Options

- Flanged Connections
- Sweep/Mitered/Straight Pipes
- NPT ports for pressure testing, etc.
- Custom mounting rings, feet, etc.
- High-grade finish.



SEE DETAIL E

Soot Catcher Installation

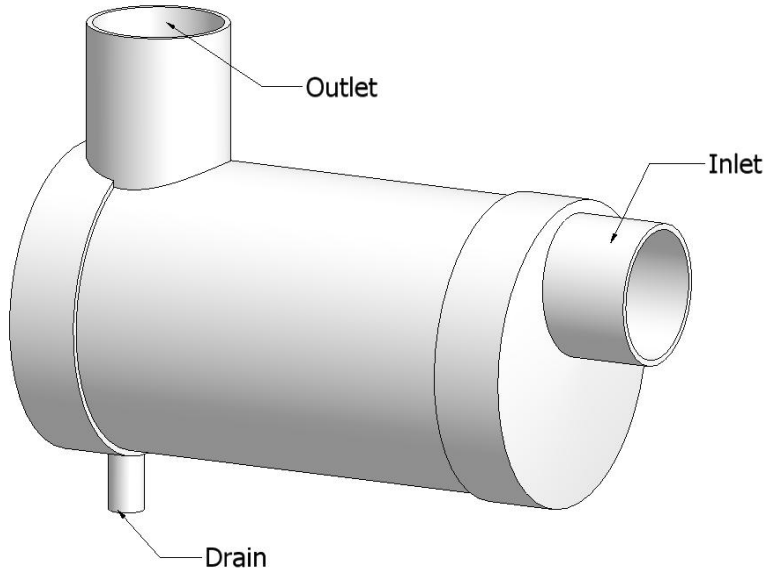


Installation Notes

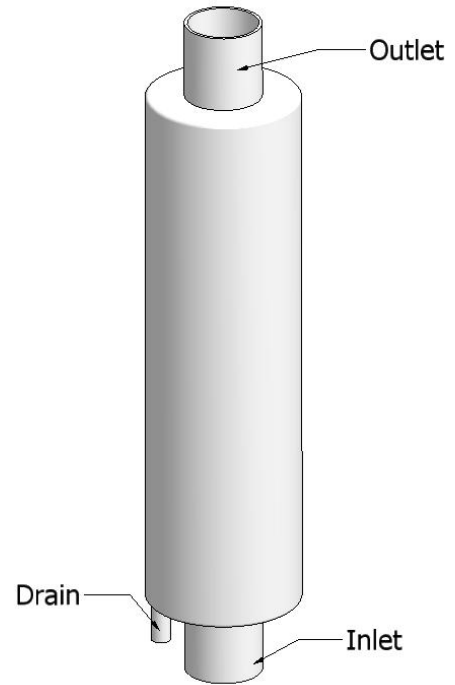
- Keep soot catcher in close proximity to silencers.
- Outlet of soot catcher must be minimum 12" below silencer drain.
- Outlet of soot catcher must be above DWL.
- Flocculation line taps into upper portion of lift silencer.
- Vent line is tapped into upper portion of the waterdrop silencer.
- Drain Line should be as straight as possible, traveling vertically to below DWL before making any horizontal runs. Air traps (high points) should be avoided, and long horizontal runs should be minimized.

Extras

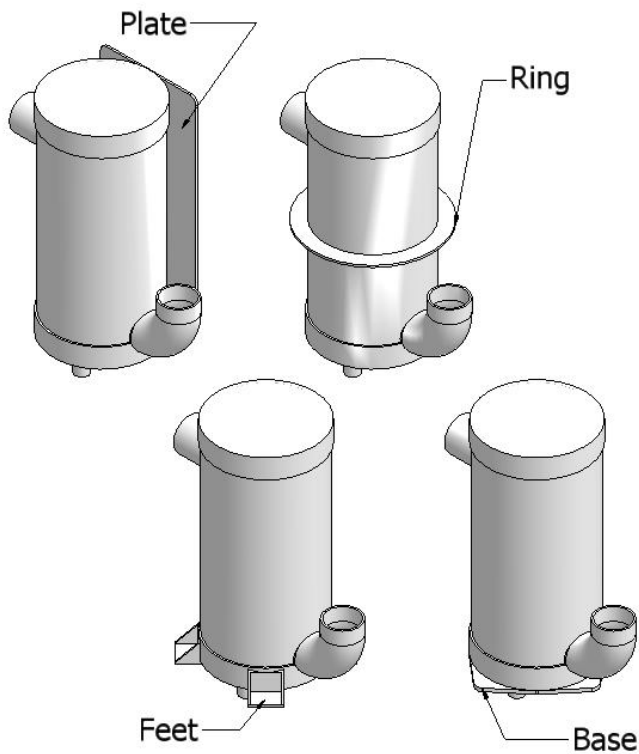
Stack Turn Separator



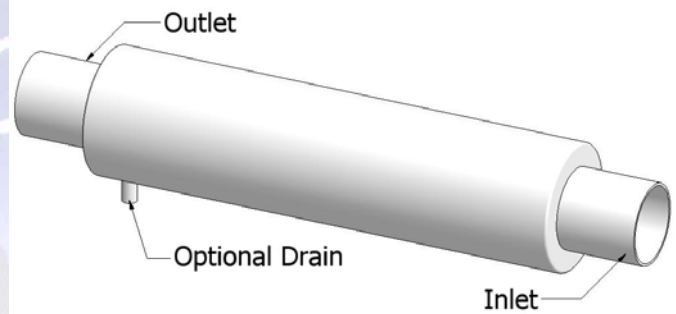
Secondary Separator for Stack Discharge



Example Mounting Options

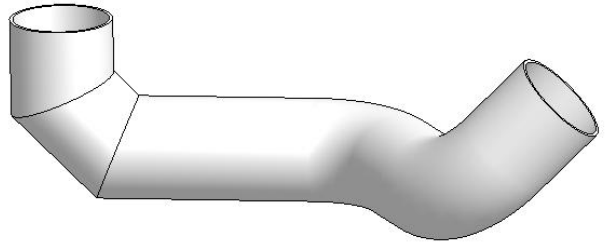


Tuned Tailpipe Resonator



Extras

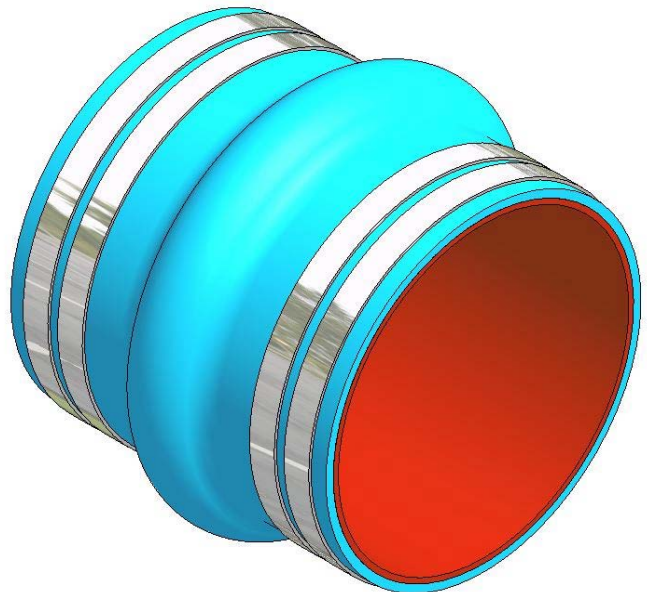
Custom Hot Risers & Fiberglass Sweeps



Mixing Tanks w/Mating Flange & Gaskets



Silicone Hump Hoses



Soundown Exhaust Installation and Commissioning Cautions

Flooding

Wet exhaust systems can flood the engine when used or installed improperly.

At first starting - after shut down of engine check connection at engine outlet to see if water has risen into the exhaust elbow or the engine.

In case of water rising into engine, contact engine supplier immediately regarding quick actions required to protect the engine from major damage. After engine recovery contact exhaust system designer to review options for greater security.

In case water has risen in the pipe, close to engine, contact exhaust system designer to review options for greater security, if required.

In case of failed engine start - after long cranking of the engine without starting, the engine sea water system will discharge into the exhaust, and some systems can backup with this water to the extent that the engine can be flooded when the cranking is stopped. After long cranking without starting release the connections to the silencer, or open the drain plug in the base of the silencer (if equipped with drain) and remove water prior to cranking again.

If there is any sign that engine may have already entered the engine - DO NOT CRANK until further checks have been QUICKLY made, as directed by engine supplier.

Temperature Protection

Composite exhaust silencers are rugged and corrosion resistant. In proper service they have a very long life. They are designed for use in water injected exhaust systems where temperatures are normally below 90° Centigrade. They can withstand temperatures up to 120° Centigrade in continuous duty, but higher temperatures will shorten the service life. Temperatures above 90° C are also likely to increase the system backpressure above the design point. It is the responsibility of the designer/supplier of the system upstream of the composite parts to see that the gas delivered to the exhaust is cooled to meet the temperature limits of those parts