

**WET
EXHAUST
SYSTEMS**



AXCES WET EXHAUST SYSTEMS

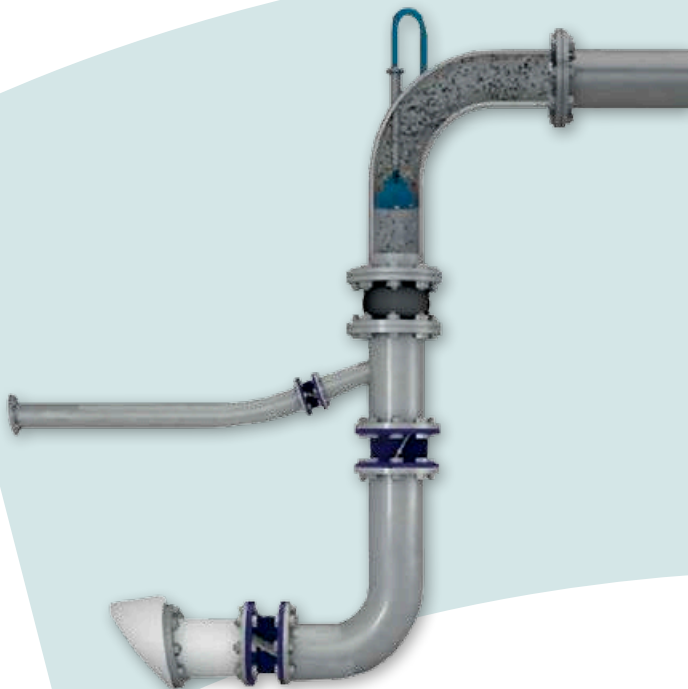
'YOUR PARTNER IN WATER INJECTED EXHAUST SYSTEM TECHNOLOGY'

Axces Wet Exhaust Systems is specialized in the custom made design of water injected exhaust system technology. Delivery of Fully-Integrated Exhaust Systems customized to the individual project and customer is our key. In a Unique way Axces provides 'Value for customers' in total exhaust system supply solutions, with Acoustic & Physics as the elementary field.

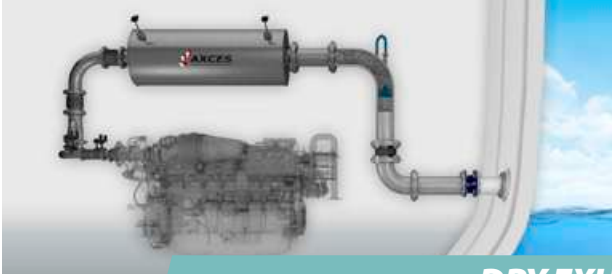
These fundamentals, together with an integrity of the coordinated specialties: Design, Engineering, Manufacturing & Supply, are supported by using a wide and complete product range.

Advice is based on directives these are established by several institutes, which are the results of scientific research. Regarding the activities of designing, Axces' vision sounds: 'combining intelligence with clearness'. This basically means that our point of departure in designing has a scientific background, translated in a clear and practical way.

The experience gained over many projects during the last decade, results in trustworthy reliable solutions for customers in this unique market.

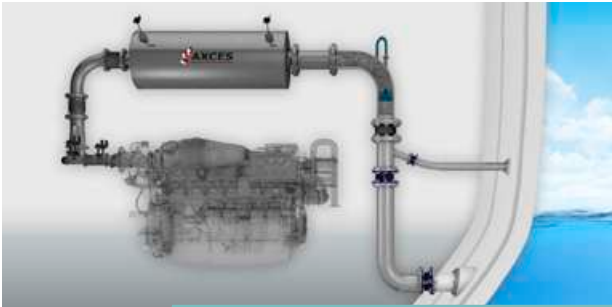


COOLING WITH WATER INJECTION



DRY EXHAUST SILENCER OUTLET ABOVE THE WATERLINE

- ✓ Attenuation of noise in the hot exhaust gas before water injection
- ✓ The total back pressure in the hot exhaust section is relatively low
- ✗ Noisy sound of injected water leaving the outlet
- ✗ Hot exhaust section before the water injection has to be insulated



DRY EXHAUST SILENCER OUTLET UNDER THE WATERLINE

- ✓ Attenuation of noise in the hot exhaust gas before water injection
- ✓ Exhaust gasses and the injected water leave the hull under the waterline
- ✗ The total back pressure of the underwater outlet is relatively high
- ✗ Hot exhaust section before the water

COOLING WITH WATER INJECTION



EXHAUST GAS-WATER SEPARATOR WITH INTEGRATED SILENCER

- ✓ The injected water will leave the hull under the waterline
- ✓ The exhaust gas will be cooled down when leaving the hull
- ✗ The possibility that exhaust gasses will be blown back onto the deck



WATERLIFT-SILENCER COMBINATION

- ✓ Very high attenuation of noise by the waterlift silencer
- ✓ The possibility to place the combustion engine under the waterline
- ✗ Noisy sound of injected water leaving the outlet
- ✗ The total back pressure of the waterlift silencer is relatively high

ADDITIONAL PRODUCTS



EXHAUST GAS COOLING

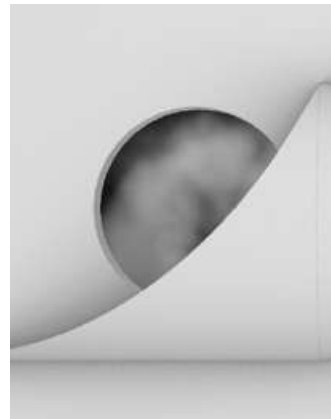
For yachts with an exclusive and durable coating system, it is of great importance that the exhaust gasses, which are leaving the outlet in the hull of the vessel are cooled down. By spraying seawater under great amount of pressure, into the streamline of the exhaust gas flow, the hot exhaust gasses are immediately cooled down to less than 70 °C over a length of around 1 meter piping.

In order to manage this controlled process for variable outputs of the power of the engine, Axces has a test facility to study the optimum procedures in cooling of exhaust gas by spraying seawater. Tests are performed regarding the pump capacity and its work pressure, the unique spraying angle, its amount of waterflow and the individual temperature and pressure drop.

SCOOP DESIGN FOR UNDERWATER OUTLET SOLUTIONS

In order to reduce the back pressure caused by the underwater outlet, Axces is able to design and produce an exhaust “scoop”. The scoop creates a vacuum when the vessel is sailing. This vacuum creates the effect that exhaust gasses will be pulled out of the outlet pipe, greatly reducing the overall back pressure.

To design a scoop which operates properly it is of great importance that the difference in the Design Waterline (DWL) and the actual waterline (which may be higher or lower than the DWL) and also the length waterline or Load WaterLine (LWL) are taken into account. The LWL is the length of the boat where it meets the water when loaded to its designed capacity.



CERTIFICATIONS

- ✓ Lloyd's Register Type Approved (all products)
- ✓ ABS American Bureau of Shipping (type approval)
- ✓ ABYC American Boat & Yacht Council (exceeds guidelines for wet exhaust systems)
- ✓ ISO International Organization for Standardization
- ✓ Copies of Certifications available upon request



ISO 9001:2008



MEMBER OF

- ✓ NMMA National Marine Manufacturing Association
- ✓ MRAA Marine Retailers Association of America
- ✓ AMI Association of Marina Industries
- ✓ MEEF Marine Environmental Education Foundation
- ✓ NCBC National Clean Boating Campaign



CUSTOMIZED SOLUTIONS

Axces is flexible in meeting its customers' needs by offering multiple exhaust options for both gasoline and diesel engines. Axces will work with the customer to obtain the correct specifications (rate of exhaust gas, cooling water flow and maximum back pressure allowed) for the engine operating conditions. These specifications are generally available from the engine manufacturer, although Axces maintains extensive files on many of the more popular marine engines.



More than half of the exhaust applications that Axces creates for their customers require customized exhaust designs. Axces is the marine industry leader in providing this innovative service to its customers. Axces maintains an in-house dynamometer to load a marine engine to provide testing capability on many new exhaust designs.



State of the art sound pressure level and back pressure measurement equipment is used to collect data to evaluate product performance while insuring that maximum power output of the engine is not negatively impacted. Axces conducts periodic destructive internal pressure tests on its products to ensure the best possible structural integrity.



PRODUCT FINISHES

Axces can provide a range of finishes from spray black or white paint to beautiful "yacht quality" glossy white. The yacht quality finish provides total world class engine room appearance.

Axces offers a high gloss Yacht Quality Finish and Yacht Plus Finish to satisfy the most discriminating designers to complete a modern engine room appearance. Available upon request.

A flat Gel-Coat Finish is available upon request for those who require a smooth exterior surface.

The enamel White or Black Finish is Axces' standard.



Yacht Quality



Gel Coat



Standard White



Standard Black

PRODUCT DESCRIPTION

INLINE SILENCERS

The Vernatone exhaust muffler is the original FRP water-cooled marine muffler. This style has been used by boat builders and boaters world wide for over 50 years. The Vernatone family of inline mufflers includes eight basic products with hundreds of variations in length, width, height, inlets and outlets. Builders and boaters requested these variations for specific engine or location requirements in a particular vessel. These mufflers also vary in size which influences the acoustical performance.



LIFT SILENCERS

The Vernalift muffler was originally designed for small auxiliary propulsion engines installed near or below the water line in sailboats. In the early 70's the quieting capabilities of lift mufflers were recognized. The Vernalift family expanded to include new and larger engines.



UNDERWATER SILENCERS

This exhaust silencer was designed specifically for use with underwater exhaust systems. It combines Axces' experience in muffler design with all the benefits of an underwater discharge. One of the benefits includes the elimination of the exhaust gases flowing back into the boat, commonly referred to as the "station wagon effect". Another benefit is the elimination of engine exhaust deposits (soot) staining the exterior surfaces of the boat. The underwater exhaust is available in a vertical design for installation in the engine room as well as a horizontal design for mounting under the deck in the cockpit area.



PRODUCT DESCRIPTION

GAS/WATER SEPARATION SILENCERS

The routing of exhaust gas and cooling water in some complex vessels brought about the development of new types of muffler products. Axces has met these needs with its gas/water separation mufflers. Separation systems are very effective where engines are located amidships or well forward in the hull and extremely effective in reducing exhaust noise.



GEN-SEP

The Gen-Sep is used in conjunction with a Vernalift muffler on generator sets. The water drain from the Gen-Sep can be located below the water line to eliminate irritating water splash during overnight moorings.



COMBO-SILENCER SEPERATOR

The patented Combo-Sep combines a Vernalift muffler and a highly efficient gas/water separator into a single space saving unit. The Combo-Sep is excellent for mid-range generators and propulsion engines installed amidship or forward. Axces recommends the Combo-Sep for above water line installations for maximum silencing and excellent water separation.



PRODUCT DESCRIPTION

ACCESSORIES

Axces also offers thru-hull fittings (with and without flappers), check valves, exhaust flanges, crush sleeves, and scupper drains.



CHOOSING THE RIGHT WET MUFFLER

PRODUCT SELECTION

Why use fiberglass reinforced plastics to make wet marine mufflers? FRP will not corrode or deteriorate when exposed to gasoline or diesel fumes mixed with salt or fresh water. Electrolysis and welds in stainless steel, which often cause early failure, are eliminated. Resistance to higher temperatures will not result in warping or melting often observed in some rubber or plastic mufflers.

The right muffler for any given vessel should be determined by answering the following basic questions:

1. ENGINE LOCATION

Engines located at or below the Loaded Water Line (LWL) require some type of a lift muffler, (Vernalift). Engines located aft or mid ship and above the LWL can utilize a muffler of the Vernatone family.

2. EXHAUST SYSTEM SIZE (DIAMETER)

Larger engines with higher horsepower require larger diameter exhaust systems and more space. The muffler and accompanying tubing, hose and fittings must be large enough to carry the cooling water and gases through the system without creating back pressure in excess of the engine manufacturer's recommendations. Axces's engineering expertise assures accurate sizing.

3. NOISE REDUCTION

Muffler size and internal design will determine the amount of noise reduction achievable in a given installation. Larger mufflers normally provide better silencing than small mufflers. Space limitations for installations will often determine the size and type of muffler that can be used.



EXHAUST SYSTEM SIZE

The size of the wet marine exhaust muffler is determined by the engine it's power (hp) and the engine manufacturer's allowable back pressure. Diesel engines are particularly sensitive to back pressure.

The sizing table below is for general recommendations only.

NOTE: For V-Block engines where twin exhaust lines are desired, divide the hp by two and then match to the appropriate size.

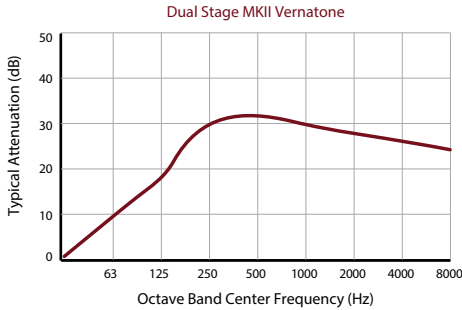
Sound Attenuation Is Based On A Comparison To Straight Exhaust

Fair	10-12 dB
Good	15-18 dB
Better	22-28 dB
Best	25-30 dB

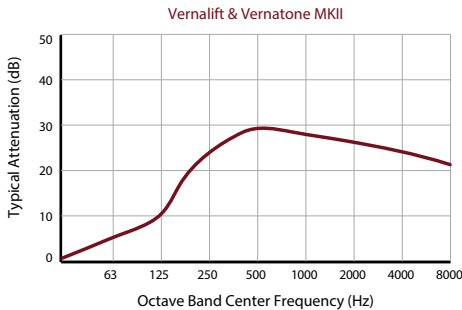
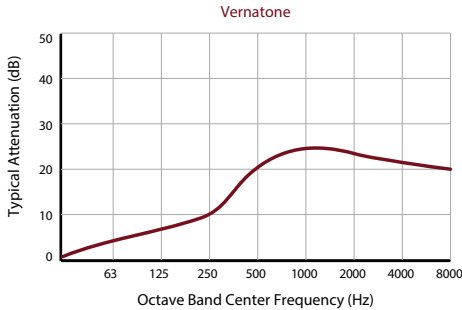
Diameter	Gasoline hp	Diesel hp
1.50 or 1.63	30	10
2.00"	60	25
2.50"	110	40
3.00"	160	60
3.50"	220	85
4.00"	280	125
4.50"	320	170
5.00"	370	210
6.00"	440	280
8.00"	-	420
10.00"	-	680
12.00"	-	900
14.00"	-	1150
16.00"	-	1800
18.00"	-	2000
20.00"	-	2500
22.00"	-	2700

Larger sizes are available upon request. Contact Axces for more information.

EXHAUST SYSTEM SIZE



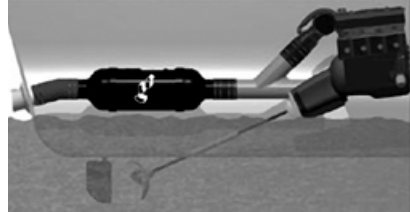
The attenuation curves as shown are typical only for the products as shown and meant to display their comparative acoustical properties. Actual results will depend highly on the engine to which the product is applied and the operating parameters of that engine.



TYPICAL INSTALLATION DIAGRAMS

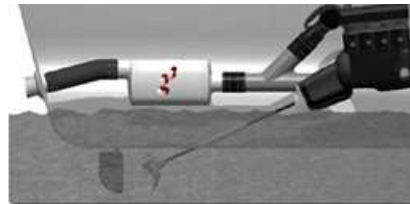
VERNATONE

Engine installation above the LWL with inline muffler. See detailed Vernatone installation instructions accompanying the new muffler.



VERNATONE MKII

Engine installation above the LWL with inline muffler. See detailed Vernatone MK II installation instructions accompanying the new muffler.



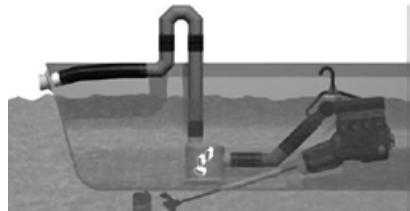
VERNALIFT - ABOVE LWL

Engine installation above the LWL with a Vernalift muffler. See detailed installation instructions accompanying the new muffler.



VERNALIFT - BELOW

Engine installation near or below the LWL with space available below the engine for a Vernalift muffler. See detailed installation instructions.

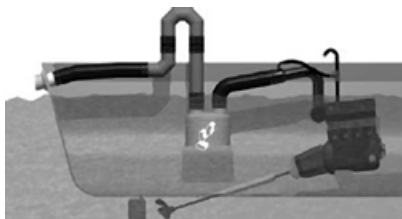


***LWL = Lowest Waterline**

TYPICAL INSTALLATION DIAGRAMS

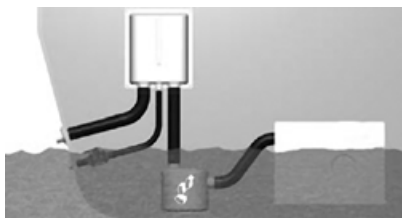
VERNALIFT - BELOW LWL

Engine installation near or below the LWL with no or limited space below the engine for a lift muffler. See detailed installation instructions accompanying the new muffler.



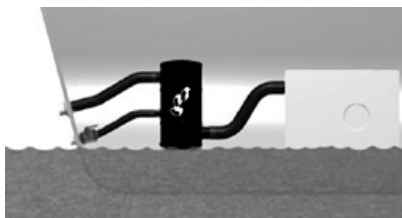
GEN-SEP

Engine/generator installation near or below the LWL with a Vernalift™ muffler and the Gen-Sep™ water separator. See detailed installation instructions accompanying the new muffler.



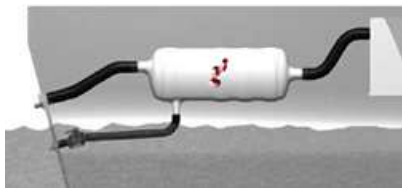
COMBO-SEP

Generator installation above the LWL with combo-sep water separation muffler. See detailed installation instructions accompanying the new muffler.



COMBO-SEP HORIZONTAL

Generator installation above the LWL with horizontal combo-sep water separation muffler. See detailed installation instructions accompanying the new muffler.

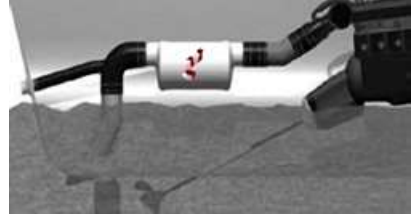


***LWL = Lowest Waterline**

TYPICAL INSTALLATION DIAGRAMS

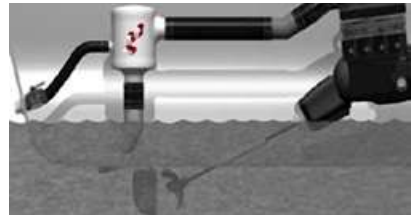
HORIZONTAL UNDERWATER EXHAUST

Engine installation above the LWL with the underwater exhaust muffler. See detailed installation instructions accompanying the new muffler.

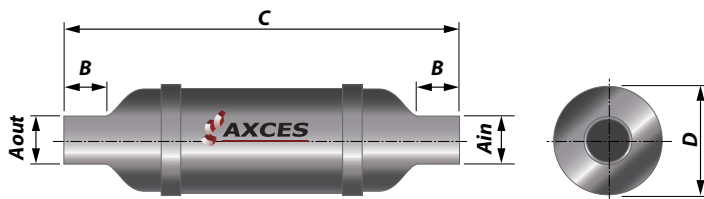


VERTICAL UNDERWATER EXHAUST

Engine installation above the LWL with the underwater exhaust muffler. See detailed installation instructions accompanying the new muffler.



VERNATONE INLINE



Part Number	A	B	C	D
	In/Out (Inch/mm)	I/O Length (Inch/mm)	Length (Inch/mm)	Diameter (Inch/mm)
1000103	2.50 / 64	3.00 / 76	21.62 / 549	5.58 / 142
1000145	3.00 / 76	3.50 / 89	20.12 / 511	7.07 / 180
1000104	3.00 / 76	3.50 / 89	25.84 / 656	7.07 / 180
1000105	3.50 / 89	3.50 / 89	30.00 / 762	8.09 / 205
1000165	4.00 / 102	3.50 / 89	25.50 / 648	9.06 / 230
1000106	4.00 / 102	3.50 / 89	33.69 / 856	9.06 / 230
1000107	4.50 / 114	4.00 / 102	35.62 / 905	10.10 / 257
1000108	5.00 / 127	4.40 / 112	38.75 / 984	11.00 / 279
1000112	6.00 / 152	5.00 / 127	31.43 / 798	12.20 / 310
1000111	6.00 / 152	5.00 / 127	41.50 / 1,054	12.20 / 310
1000117	6.00 / 152	6.00 / 152	39.62 / 1,006	16.21 / 412
1000113	6.00 / 152	6.00 / 152	52.75 / 1,340	16.21 / 412
1000120	8.00 / 203	6.00 / 152	39.62 / 1,006	16.21 / 412
1000119	8.00 / 203	6.00 / 152	52.75 / 1,340	16.21 / 412

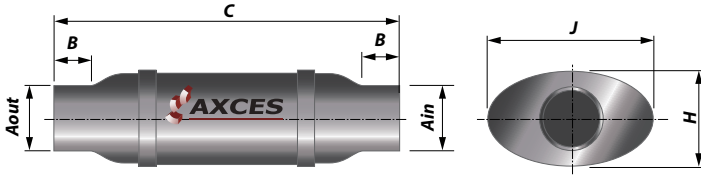
Note: For 10"-14" in/out range please reference our Vernatone MKII round or the MKII Dual Stage round.



CHARACTERISTICS

- ✓ Application: All Inboards
- ✓ Fuel Type: Gas/Diesel
- ✓ Waterline: Above Only
- ✓ Sound Rating: Good

VERNATONE INLINE OVAL



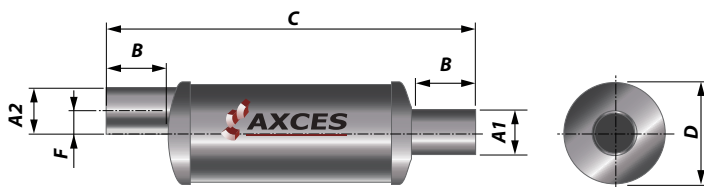
Part Number	A In/Out (Inch/mm)	B I/O Length (Inch/mm)	C Length (Inch/mm)	H Height (Inch/mm)	J Width (Inch/mm)
1000229	5.00 / 127	5.00 / 127	35.13 / 892	7.00 / 178	14.75 / 375
1000263	6.00 / 152	5.00 / 127	42.33 / 1.075	9.00 / 229	15.00 / 381
1000139	8.00 / 203	5.70 / 145	54.00 / 1.372	12.00 / 305	19.00 / 483
1000194	10.00 / 254	7.50 / 191	65.50 / 1.664	14.50 / 368	24.50 / 622



CHARACTERISTICS

- ✓ Application: All Inboards
- ✓ Fuel type: Gas/Diesel
- ✓ Waterline: Above only
- ✓ Sound rating: Good

VERNATONE MKII INLINE



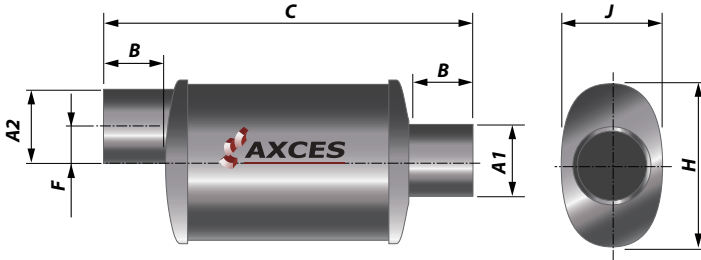
Part Number	A1 Inlet (Inch/mm)	A2 Outlet (Inch/mm)	B I/O Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)	F I/O Offset (Inch/mm)
1400003	2.00 / 51	2.00 / 51	2.50 / 64	16.00 / 406	6.38 / 162	1.85 / 47
1400002	2.38 / 60	2.38 / 60	3.00 / 76	16.00 / 406	6.38 / 162	1.66 / 42
1400032	2.50 / 64	2.50 / 64	3.00 / 76	18.00 / 457	6.38 / 162	1.60 / 41
1400015	3.00 / 76	3.00 / 76	3.00 / 76	19.00 / 483	8.38 / 213	2.38 / 60
1400016	3.50 / 89	3.50 / 89	4.00 / 102	23.00 / 584	8.38 / 213	2.13 / 54
1400017	4.00 / 102	4.00 / 102	4.00 / 102	25.38 / 645	10.04 / 255	2.66 / 68
1400018	4.50 / 114	4.50 / 114	4.50 / 114	28.50 / 724	10.04 / 255	2.41 / 61
1400006	5.00 / 127	5.00 / 127	5.00 / 127	31.50 / 800	10.04 / 255	2.16 / 55
1400040	5.00 / 127	6.00 / 152	5.00 / 127	40.00 / 1016	12.50 / 318	2.84 / 72
1400007	6.00 / 152	6.00 / 152	6.00 / 152	38.00 / 965	12.50 / 318	2.84 / 72
1400039	6.00 / 152	8.00 / 203	8.00 / 203	50.50 / 1283	16.25 / 413	3.72 / 94
1400008	8.00 / 203	8.00 / 203	8.00 / 203	50.50 / 1283	16.25 / 413	3.72 / 94
1400030	8.00 / 203	10.00 / 254	10.00 / 254	61.00 / 1549	18.50 / 470	3.85 / 98
1400009	10.00 / 254	10.00 / 254	10.00 / 254	63.00 / 1600	18.50 / 470	3.85 / 98
1400010	12.00 / 305	12.00 / 305	12.00 / 305	75.50 / 1918	22.25 / 565	4.25 / 108
1400011	14.00 / 356	14.00 / 356	12.00 / 305	87.00 / 2210	22.25 / 565	3.25 / 83



CHARACTERISTICS

- ✓ Application: All Inboards
- ✓ Fuel type: Gas/Diesel
- ✓ Waterline: Above only
- ✓ Sound rating: Better

VERNATONE MKII INLINE OVAL



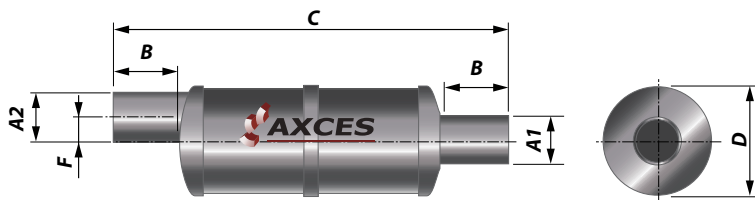
Part Number	A1 Inlet (Inch/mm)	A2 Outlet (Inch/mm)	B I/O Length (Inch/mm)	C Length (Inch/mm)	H Height (Inch/mm)	J Width (Inch/mm)	F I/O Offset (Inch/mm)
1400042	5.00 / 127	5.00 / 127	5.50 / 140	31.50 / 800	15.00 / 381	9.00 / 229	4.56 / 116
1400037	5.00 / 127	6.00 / 152	6.00 / 152	38.00 / 965	15.00 / 381	9.00 / 229	4.06 / 103
1400043	6.00 / 152	6.00 / 152	6.00 / 152	32.38 / 822	15.00 / 381	9.00 / 229	4.06 / 103
1400014	6.00 / 152	8.00 / 203	8.00 / 203	50.50 / 1.283	19.00 / 483	12.00 / 305	5.06 / 129
1400044	8.00 / 203	8.00 / 203	8.00 / 203	50.50 / 1.283	19.00 / 483	12.00 / 305	4.81 / 122
1400045	10.00 / 254	10.00 / 254	10.00 / 254	63.00 / 1.600	24.50 / 622	14.50 / 368	6.85 / 174
1400046	12.00 / 305	12.00 / 305	12.00 / 305	75.50 / 1.918	30.00 / 762	18.00 / 457	8.25 / 210
1400047	12.00 / 305	14.00 / 356	12.00 / 305	77.13 / 1.959	30.00 / 762	18.00 / 457	7.25 / 184
1400028	14.00 / 356	14.00 / 356	12.00 / 305	77.00 / 1.956	30.00 / 762	18.00 / 457	7.25 / 184



CHARACTERISTICS

- ✓ Application: All Inboards
- ✓ Fuel type: Gas/Diesel
- ✓ Waterline: Above only
- ✓ Sound rating: Better

VERNATONE MKII DUAL INLINE



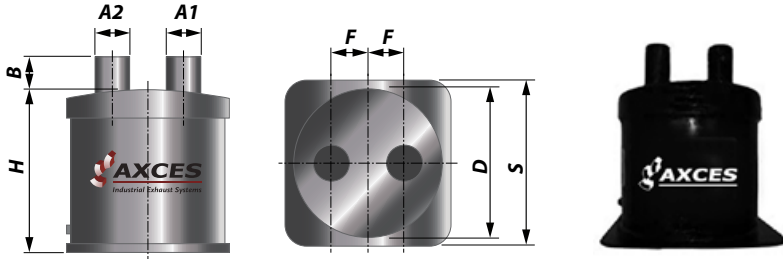
Part Number	A1 Inlet (Inch/mm)	A2 Outlet (Inch/mm)	B I/O Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)	F I/O Offset (Inch/mm)
1420300	3.00 / 76	3.00 / 76	3.00 / 76	29.00 / 737	8.38 / 213	2.13 / 54
1420350	3.50 / 89	3.50 / 89	3.50 / 89	30.00 / 762	8.38 / 213	1.88 / 48
1420400	4.00 / 102	4.00 / 102	4.00 / 102	38.50 / 978	10.06 / 256	2.50 / 64
1420500	5.00 / 127	5.00 / 127	5.00 / 127	46.00 / 1.168	10.06 / 256	2.00 / 51
1420600	6.00 / 152	6.00 / 152	6.00 / 152	54.00 / 1.372	12.38 / 314	2.63 / 67
1420800	8.00 / 203	8.00 / 203	8.00 / 203	66.00 / 1.676	16.25 / 413	3.50 / 89
1421000	10.00 / 254	10.00 / 254	8.00 / 203	81.00 / 2.057	18.50 / 470	3.63 / 92
1421200	12.00 / 305	12.00 / 305	10.00 / 254	94.00 / 2.388	22.25 / 565	4.50 / 114
1421400	14.00 / 356	14.00 / 356	10.00 / 254	113.00 / 2.870	22.25 / 565	3.50 / 89



CHARACTERISTICS

- ✓ Application: All Inboards
- ✓ Fuel type: Gas/Diesel
- ✓ Waterline: Above only
- ✓ Sound rating: Best

VERNALIFT TOP IN - TOP OUT



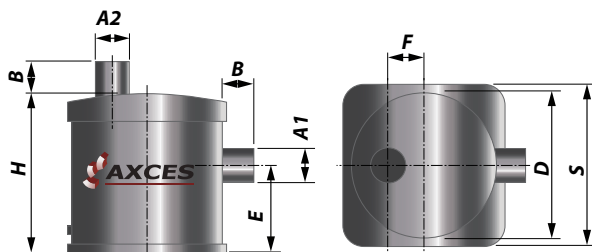
Part Number	A1	A2	B	D	F	H	S
	Inlet (Inch/mm)	Outlet (Inch/mm)	I/O Length (Inch/mm)	Diameter (Inch/mm)	I/O Offset (Inch/mm)	Height (Inch/mm)	Square Base (Inch/mm)
1500060	1.50 / 38	1.50 / 38	2.50 / 64	8.36 / 212	2.00 / 51	8.00 / 203	9.00 / 229
1500219	1.50 / 38	2.00 / 51	2.50 / 64	8.36 / 212	2.00 / 51	8.00 / 203	9.00 / 229
1500220	1.63 / 41	1.50 / 38	2.50 / 64	8.36 / 212	2.00 / 51	8.00 / 203	9.00 / 229
1500270	1.63 / 41	1.63 / 41	2.00 / 51	6.38 / 162	1.50 / 38	9.00 / 229	7.00 / 178
1500003	1.63 / 41	1.63 / 41	2.50 / 64	8.36 / 212	2.00 / 51	8.00 / 203	9.00 / 229
1500143	1.63 / 41	1.88 / 48	2.50 / 64	8.36 / 212	2.00 / 51	8.00 / 203	9.00 / 229
1500005	1.75 / 44	1.75 / 44	2.50 / 64	8.36 / 212	2.00 / 51	8.00 / 203	9.00 / 229
1500007	1.88 / 48	1.88 / 48	2.50 / 64	8.36 / 212	2.00 / 51	8.00 / 203	9.00 / 229
1500221	2.00 / 51	1.50 / 38	2.50 / 64	8.36 / 212	2.00 / 51	8.00 / 203	9.00 / 229
1500009	2.00 / 51	2.00 / 51	2.50 / 64	8.36 / 212	2.00 / 51	8.00 / 203	9.00 / 229
1500010	2.00 / 51	2.00 / 51	2.50 / 64	10.04 / 255	2.50 / 64	10.16 / 258	10.50 / 267
1500126	2.00 / 51	2.38 / 60	2.50 / 64	8.36 / 212	2.00 / 51	8.00 / 203	9.00 / 229
1500011	2.25 / 57	2.25 / 57	2.50 / 64	8.36 / 212	2.00 / 51	8.00 / 203	9.00 / 229
1500012	2.25 / 57	2.25 / 57	2.50 / 64	10.04 / 255	2.50 / 64	10.16 / 258	10.50 / 267
1500013	2.38 / 60	2.38 / 60	2.50 / 64	8.36 / 212	2.00 / 51	8.00 / 203	9.00 / 229
1500015	2.50 / 64	2.50 / 64	2.50 / 64	10.04 / 255	2.50 / 64	10.16 / 258	10.50 / 267
1500141	2.50 / 64	2.50 / 64	3.00 / 76	12.34 / 313	2.75 / 70	12.00 / 305	13.00 / 330
1500138	2.50 / 64	3.00 / 76	3.00 / 76	10.04 / 255	2.50 / 64	10.16 / 258	10.50 / 267
1500016	2.88 / 73	2.88 / 73	3.00 / 76	10.04 / 255	2.50 / 64	10.16 / 258	10.50 / 267
1500017	3.00 / 76	3.00 / 76	3.00 / 76	10.04 / 255	2.50 / 64	10.16 / 258	10.50 / 267
1500063	3.00 / 76	3.00 / 76	4.00 / 102	12.34 / 313	2.75 / 70	12.00 / 305	13.00 / 330
1500150	3.00 / 76	3.50 / 89	4.00 / 102	12.34 / 313	2.75 / 70	12.00 / 305	13.00 / 330
1500064	3.50 / 89	3.50 / 89	4.00 / 102	12.34 / 313	2.75 / 70	12.00 / 305	13.00 / 330
1500065	4.00 / 102	4.00 / 102	4.00 / 102	12.34 / 313	2.75 / 70	12.00 / 305	13.00 / 330
1500066	4.50 / 114	4.50 / 114	4.00 / 102	12.34 / 313	3.00 / 76	12.00 / 305	13.00 / 330
1500067	4.50 / 114	4.50 / 114	4.00 / 102	16.17 / 411	4.00 / 102	16.00 / 406	17.00 / 432
1500271	5.00 / 127	5.00 / 127	5.00 / 127	12.34 / 313	3.31 / 84	12.00 / 305	13.00 / 330
1500068	5.00 / 127	5.00 / 127	5.00 / 127	16.17 / 411	4.00 / 102	16.00 / 406	17.00 / 432
1500069	6.00 / 152	6.00 / 152	5.00 / 127	16.17 / 411	4.00 / 102	16.00 / 406	17.00 / 432
1500131	8.00 / 203	8.00 / 203	8.00 / 203	22.00 / 559	5.00 / 127	22.00 / 559	23.00 / 584
1500154	10.00 / 254	10.00 / 254	8.00 / 203	28.50 / 724	7.00 / 178	28.00 / 711	30.00 / 762

CHARACTERISTICS

- ✓ Application: Inboards, Sail boats & Generators
- ✓ Fuel type: Gas/Diesel

- ✓ Waterline: Above or below
- ✓ Sound rating: Better

VERNALIFT SIDE IN - TOP OUT



Part Number	A1	A2	B	D	E	F	H	S
	Inlet (Inch/mm)	Outlet (Inch/mm)	I/O Length (Inch/mm)	Diameter (Inch/mm)	Inlet Height (Inch/mm)	I/O Offset (Inch/mm)	Height (Inch/mm)	Square Bas (Inch/mm)
1500071	1.50 / 38	1.50 / 38	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500142	1.50 / 38	2.00 / 51	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500222	1.63 / 41	1.50 / 38	3.00 / 76	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500262	1.63 / 41	1.63 / 41	2.00 / 51	6.38 / 162	5.81 / 148	1.50 / 38	9.00 / 229	7.00 / 179
1500020	1.63 / 41	1.63 / 41	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500123	1.63 / 41	1.63 / 41	2.50 / 64	10.04 / 255	6.50 / 165	2.50 / 64	10.16 / 258	10.50 / 267
1500140	1.63 / 41	1.75 / 44	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500073	1.63 / 41	2.00 / 51	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500125	1.75 / 44	1.50 / 38	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500022	1.75 / 44	1.75 / 44	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500148	1.75 / 44	2.00 / 51	2.50 / 64	10.04 / 255	6.50 / 165	2.50 / 64	10.16 / 258	10.50 / 267
1500146	1.88 / 48	1.63 / 41	2.50 / 64	10.04 / 255	6.50 / 165	2.50 / 64	10.16 / 258	10.50 / 267
1500024	1.88 / 48	1.88 / 48	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500263	1.88 / 48	1.88 / 48	2.00 / 51	6.38 / 162	5.81 / 148	1.50 / 38	9.00 / 229	7.00 / 179
1500075	1.88 / 48	2.00 / 51	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
15000210	2.00 / 51	1.50 / 38	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500077	2.00 / 51	1.63 / 41	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500121	2.00 / 51	1.88 / 48	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500074	1.88 / 48	1.88 / 48	2.50 / 64	10.04 / 255	6.50 / 165	2.50 / 64	10.16 / 258	10.50 / 267
1500078	2.00 / 51	1.88 / 48	2.50 / 64	10.40 / 264	6.50 / 165	2.50 / 64	10.16 / 258	10.50 / 267
1500264	2.00 / 51	2.00 / 51	2.00 / 51	6.38 / 162	5.81 / 148	1.50 / 38	9.00 / 229	7.00 / 179
1500026	2.00 / 51	2.00 / 51	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500027	2.00 / 51	2.00 / 51	2.50 / 64	10.04 / 255	6.50 / 165	2.00 / 51	10.16 / 258	10.50 / 267
1500120	2.00 / 51	2.00 / 51	2.00 / 51	12.34 / 313	8.50 / 216	2.50 / 64	12.00 / 305	13.00 / 330
1500147	2.00 / 51	2.25 / 57	3.00 / 76	12.34 / 313	8.50 / 216	2.50 / 64	12.00 / 305	13.00 / 330
1500137	2.00 / 51	2.50 / 64	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500055	2.00 / 51	2.50 / 64	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500079	2.00 / 51	2.50 / 64	2.50 / 64	10.04 / 255	6.50 / 165	2.50 / 64	10.16 / 258	10.50 / 267
1500132	2.00 / 51	2.50 / 64	3.00 / 76	12.34 / 313	8.50 / 216	2.50 / 64	12.00 / 305	13.00 / 330

AXCES WET EXHAUST SYSTEMS

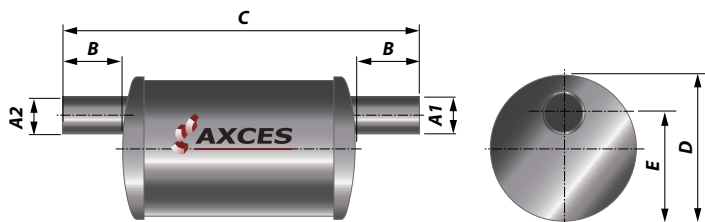


CHARACTERISTICS

- ✓ Application: Inboards, Sailboats & Generators
- ✓ Fuel type: Gas/Diesel
- ✓ Waterline: Above or below
- ✓ Sound rating: Better

Part Number	A1 Inlet (Inch/mm)	A2 Outlet (Inch/mm)	B I/O Length (Inch/mm)	D Diameter (Inch/mm)	E Inlet Height (Inch/mm)	F I/O Offset (Inch/mm)	H Height (Inch/mm)	S Square Bas (Inch/mm)
1500028	2.25 / 57	2.25 / 57	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500029	2.25 / 57	2.25 / 57	2.50 / 64	10.04 / 255	6.50 / 165	2.50 / 64	10.16 / 258	10.50 / 267
1500080	2.25 / 57	2.38 / 60	2.50 / 64	12.34 / 313	8.34 / 212	2.50 / 64	12.00 / 305	13.00 / 330
1500030	2.38 / 60	2.38 / 60	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500031	2.38 / 60	2.38 / 60	2.50 / 64	10.04 / 255	6.50 / 165	2.50 / 64	10.16 / 258	10.50 / 267
1500081	2.38 / 60	2.38 / 60	2.50 / 64	12.34 / 313	7.25 / 184	2.50 / 64	12.00 / 305	13.00 / 330
1500082	2.38 / 60	2.50 / 64	2.50 / 64	10.04 / 255	6.30 / 160	2.50 / 64	10.16 / 258	10.50 / 267
1500083	2.50 / 64	2.38 / 60	2.50 / 64	12.34 / 313	8.25 / 210	2.50 / 64	12.00 / 305	13.00 / 330
1500032	2.50 / 64	2.50 / 64	2.50 / 64	10.04 / 255	6.50 / 165	2.50 / 64	10.16 / 258	10.50 / 267
1500128	2.50 / 64	3.00 / 76	3.00 / 76	12.34 / 313	7.25 / 184	2.75 / 70	12.00 / 305	13.00 / 330
1500033	2.88 / 73	2.88 / 73	3.00 / 76	10.04 / 255	6.19 / 157	2.50 / 64	10.16 / 258	10.50 / 267
1500139	2.88 / 73	3.00 / 76	3.00 / 76	10.04 / 255	6.19 / 157	2.50 / 64	10.16 / 258	10.50 / 267
1500084	3.00 / 76	2.88 / 73	3.00 / 76	12.34 / 313	8.00 / 203	2.75 / 70	12.00 / 305	13.00 / 330
1500034	3.00 / 76	3.00 / 76	3.00 / 76	10.04 / 255	6.50 / 165	2.50 / 64	10.16 / 258	10.50 / 267
1500085	3.00 / 76	3.00 / 76	3.00 / 76	12.34 / 313	8.00 / 203	2.75 / 70	12.00 / 305	13.00 / 330
1500152	3.00 / 76	3.50 / 89	3.50 / 89	10.04 / 255	6.50 / 165	2.50 / 64	10.16 / 258	10.50 / 267
1500086	3.50 / 89	3.00 / 76	3.50 / 89	12.34 / 313	7.75 / 197	2.75 / 70	12.00 / 305	13.00 / 330
1500087	3.50 / 89	3.50 / 89	3.50 / 89	12.34 / 313	7.75 / 197	2.75 / 70	12.00 / 305	13.00 / 330
1500151	3.50 / 89	5.00 / 127	5.00 / 127	12.34 / 313	7.75 / 197	2.75 / 70	12.00 / 305	13.00 / 330
1500130	4.00 / 102	3.50 / 89	4.00 / 102	12.34 / 313	7.25 / 184	2.75 / 70	12.00 / 305	13.00 / 330
1500088	4.00 / 102	4.00 / 102	4.00 / 102	12.34 / 313	7.50 / 191	2.75 / 70	12.00 / 305	13.00 / 330
1500149	4.00 / 102	5.00 / 127	5.00 / 127	16.17 / 411	8.75 / 222	4.00 / 102	16.00 / 406	17.00 / 432
1500089	4.50 / 114	4.50 / 114	4.50 / 114	12.34 / 313	7.25 / 184	2.75 / 70	12.00 / 305	13.00 / 330
1500091	5.00 / 127	5.00 / 127	5.00 / 127	12.34 / 313	6.00 / 152	2.75 / 70	12.00 / 305	13.00 / 330
1500090	5.00 / 127	5.00 / 127	5.00 / 127	16.17 / 411	8.75 / 222	4.00 / 102	16.00 / 406	17.00 / 432
1500092	6.00 / 152	6.00 / 152	5.00 / 127	16.17 / 411	8.75 / 222	4.00 / 102	16.00 / 406	17.00 / 432
1500094	8.00 / 203	8.00 / 203	6.00 / 152	18.50 / 470	10.50 / 267	3.00 / 76	18.00 / 457	19.00 / 483
1500159	10.00 / 254	10.00 / 254	8.00 / 203	24.60 / 625	12.00 / 305	6.00 / 152	24.00 / 610	26.00 / 660

VERNALIFT INLINE



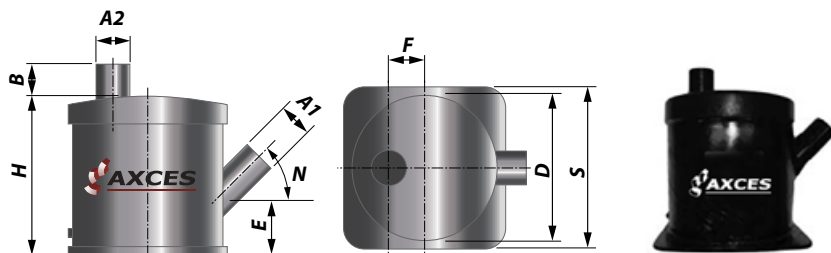
Part Number	A1 Inlet (Inch/mm)	A2 Outlet (Inch/mm)	B I/O Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)	E I/O Offset (Inch/mm)
1500035	1.50 / 38	1.50 / 38	2.00 / 51	10.50 / 267	6.36 / 162	4.88 / 124
1500036	1.63 / 41	1.63 / 41	2.00 / 51	10.50 / 267	6.36 / 162	4.88 / 124
1500037	1.63 / 41	1.63 / 41	2.00 / 51	14.00 / 356	8.36 / 212	6.18 / 157
1500155	1.63 / 41	1.63 / 41	2.00 / 51	17.00 / 432	10.04 / 255	7.52 / 191
1500038	1.75 / 44	1.75 / 44	2.00 / 51	10.50 / 267	6.36 / 162	4.68 / 119
1500039	1.75 / 44	1.75 / 44	2.00 / 51	14.00 / 356	8.36 / 212	6.18 / 157
1500040	1.88 / 48	1.88 / 48	2.00 / 51	10.50 / 267	6.36 / 162	4.88 / 124
1500041	1.88 / 48	1.88 / 48	2.00 / 51	14.00 / 356	8.36 / 212	6.18 / 157
1500042	2.00 / 51	2.00 / 51	2.00 / 51	10.50 / 267	6.36 / 162	4.88 / 124
1500043	2.00 / 51	2.00 / 51	2.00 / 51	14.00 / 356	8.36 / 212	6.18 / 157
1500044	2.00 / 51	2.00 / 51	2.00 / 51	17.50 / 445	10.04 / 255	7.52 / 191
1500095	2.00 / 51	2.50 / 64	2.50 / 64	17.00 / 432	10.04 / 255	7.52 / 191
1500059	2.00 / 51	3.00 / 76	3.00 / 76	17.50 / 445	10.04 / 255	7.52 / 191
1500045	2.25 / 57	2.25 / 57	2.25 / 57	14.00 / 356	8.36 / 212	6.18 / 157
1500046	2.25 / 57	2.25 / 57	2.25 / 57	17.50 / 445	10.04 / 255	7.52 / 191
1500047	2.38 / 60	2.38 / 60	2.38 / 60	14.00 / 356	8.36 / 212	6.18 / 157
1500048	2.38 / 60	2.38 / 60	2.38 / 60	17.50 / 445	10.04 / 255	7.52 / 191
1500049	2.50 / 64	2.50 / 64	2.50 / 64	17.50 / 445	10.04 / 255	7.52 / 191
1500050	2.88 / 73	2.88 / 73	3.00 / 76	17.50 / 445	10.04 / 255	7.52 / 191
1500051	3.00 / 76	3.00 / 76	3.00 / 76	17.50 / 445	10.04 / 255	7.52 / 191
1500096	3.00 / 76	3.00 / 76	3.00 / 76	20.00 / 508	12.34 / 313	9.17 / 233
1500119	3.50 / 89	3.50 / 89	3.50 / 89	17.00 / 432	10.04 / 255	7.52 / 191
1500098	4.00 / 102	4.00 / 102	4.00 / 102	22.00 / 559	12.34 / 313	9.17 / 233
1500099	4.50 / 114	4.50 / 114	5.00 / 127	22.00 / 559	12.34 / 313	9.17 / 233
1500100	5.00 / 127	5.00 / 127	5.00 / 127	22.00 / 559	12.34 / 313	9.17 / 233
1500101	6.00 / 152	6.00 / 152	6.00 / 152	28.00 / 711	16.17 / 411	12.47 / 317
1500102	8.00 / 203	8.00 / 203	6.00 / 152	32.00 / 813	18.50 / 470	13.75 / 349
1500169	10.00 / 254	10.00 / 254	8.00 / 203	40.00 / 1016	22.00 / 559	16.00 / 400



CHARACTERISTICS

- ✓ Application: Inboards, Sailboats, & Generators
- ✓ Fuel type: Gas/Diesel
- ✓ Waterline: Above or below
- ✓ Sound rating: Better

VERNALIFT SIDE ANGLE IN- TOP OUT



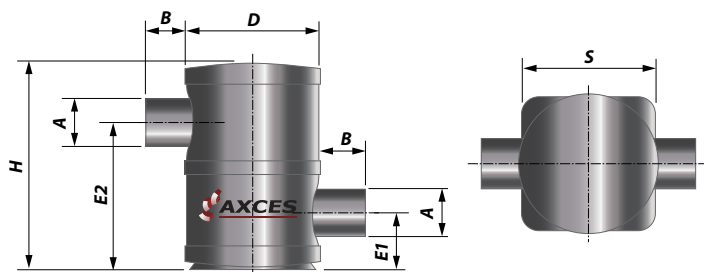
Part Number	A1 Inlet (Inch/mm)	A2 Outlet (Inch/mm)	B I/O Length (Inch/mm)	D Diameter (Inch/mm)	E Inlet Height (Inch/mm)	F I/O Offset (Inch/mm)	H Height (Inch/mm)	N Angle	S Square Base (Inch/mm)
1500223	1.50 / 38	1.50 / 38	2.50 / 64	8.36 / 212	4.43 / 113	2.50 / 64	8.00 / 203	45°	9.00 / 229
1500265	1.63 / 41	1.63 / 41	2.00 / 51	6.36 / 162	4.43 / 113	1.50 / 38	6.00 / 152	45°	7.00 / 178
1500266	1.63 / 41	1.63 / 41	2.00 / 51	6.36 / 162	6.57 / 168	1.50 / 38	9.00 / 267	45°	7.00 / 178
1500104	1.63 / 41	1.63 / 41	2.00 / 51	8.36 / 212	4.43 / 113	2.00 / 51	8.00 / 203	45°	9.00 / 229
1500127	1.75 / 45	1.75 / 45	2.00 / 51	8.36 / 212	4.43 / 113	2.00 / 51	8.00 / 203	45°	9.00 / 229
1500267	1.88 / 48	1.88 / 48	2.00 / 51	6.36 / 162	6.57 / 168	1.50 / 38	9.00 / 267	45°	7.00 / 178
1500157	1.88 / 48	1.88 / 48	2.00 / 51	8.36 / 212	4.43 / 113	2.00 / 51	8.00 / 203	45°	9.00 / 229
1500106	1.88 / 48	1.88 / 48	2.00 / 51	10.04 / 255	5.30 / 135	2.50 / 64	10.16 / 258	45°	10.50 / 267
1500268	2.00 / 51	2.00 / 51	2.00 / 51	6.36 / 162	6.63 / 168	1.50 / 38	9.00 / 267	45°	7.00 / 178
1500171	2.00 / 51	2.00 / 51	2.00 / 51	8.36 / 212	4.43 / 113	2.00 / 51	8.00 / 203	45°	9.00 / 229
1500107	2.00 / 51	2.00 / 51	2.00 / 51	10.04 / 255	5.30 / 135	2.50 / 64	10.16 / 258	45°	10.50 / 267
1500108	2.25 / 57	2.25 / 57	2.00 / 51	10.04 / 255	5.30 / 135	2.50 / 64	10.16 / 258	45°	10.50 / 267
1500109	2.25 / 57	3.00 / 76	2.50 / 64	10.04 / 255	5.30 / 135	2.50 / 64	10.16 / 258	45°	10.50 / 267
1500122	2.38 / 61	2.38 / 61	2.00 / 51	10.04 / 255	5.30 / 135	2.50 / 64	10.16 / 258	45°	10.50 / 267
1500110	2.50 / 64	2.50 / 64	2.00 / 51	10.04 / 255	5.30 / 135	2.50 / 64	10.16 / 258	45°	10.50 / 267
1500160	2.50 / 64	3.00 / 76	3.00 / 76	12.34 / 313	6.67 / 170	2.75 / 70	12.00 / 305	45°	13.00 / 330
1500111	2.88 / 73	2.88 / 73	2.50 / 64	10.04 / 255	5.30 / 135	2.50 / 64	10.16 / 258	45°	10.50 / 267
1500112	3.00 / 76	3.00 / 76	3.00 / 76	12.34 / 313	6.67 / 170	2.75 / 70	12.00 / 305	45°	13.00 / 330
1500153	3.00 / 76	4.00 / 102	4.00 / 102	12.34 / 313	6.92 / 176	2.75 / 70	12.00 / 305	30°	13.00 / 330
1500113	3.50 / 89	3.50 / 89	3.50 / 89	12.34 / 313	7.50 / 191	2.75 / 70	12.00 / 305	30°	13.00 / 330
1500134	3.50 / 89	5.00 / 127	4.50 / 114	12.34 / 313	7.75 / 197	2.75 / 70	12.00 / 305	45°	13.00 / 330
1500114	4.00 / 102	4.00 / 102	4.00 / 102	12.34 / 313	6.92 / 176	2.75 / 70	12.00 / 305	30°	13.00 / 330
1500115	4.50 / 114	4.50 / 114	4.00 / 102	12.34 / 313	7.25 / 184	2.75 / 70	12.00 / 305	45°	13.00 / 330
1500116	5.00 / 127	5.00 / 127	5.00 / 127	12.34 / 313	6.00 / 152	2.75 / 70	12.00 / 305	30°	13.00 / 330
1500117	6.00 / 152	6.00 / 152	5.00 / 127	16.17 / 411	8.75 / 222	4.00 / 102	14.50 / 368	45°	17.00 / 432
1500118	8.00 / 203	8.00 / 203	6.00 / 152	18.50 / 470	10.00 / 254	3.00 / 76	18.00 / 457	45°	19.00 / 483
1500136	10.00 / 254	10.00 / 254	8.00 / 203	24.60 / 625	12.00 / 305	6.00 / 152	24.00 / 610	45°	26.00 / 660

CHARACTERISTICS

- ✓ Application: Inboards, Sailboats, & Generators
- ✓ Fuel type: Gas/Diesel
- ✓ Waterline: Above or below
- ✓ Sound rating: Better

VERNALIFT DUAL STAGE

For Above Waterline Installations



Part Number	A1 In/Out (Inch/mm)	B I/O Length (Inch/mm)	D Diameter (Inch/mm)	E1 In Height (Inch/mm)	E2 Out Height (Inch/mm)	H Height (Inch/mm)	S Square Base (Inch/mm)
1520200	2.00 / 51	2.50 / 64	8.38 / 213	4.00 / 102	8.00 / 203	11.25 / 286	9.00 / 229
1520250	2.50 / 64	2.50 / 64	8.38 / 213	4.25 / 108	9.00 / 229	12.50 / 318	9.00 / 229
1520300	3.00 / 76	3.00 / 76	10.06 / 256	4.75 / 121	10.25 / 260	14.25 / 362	10.50 / 267
1520350	3.50 / 89	3.50 / 89	10.06 / 256	5.25 / 133	11.00 / 280	15.25 / 387	10.50 / 267
1520400	4.00 / 102	4.00 / 102	12.38 / 314	5.00 / 127	11.50 / 292	16.25 / 413	12.00 / 305
1520500	5.00 / 127	5.00 / 127	12.38 / 314	5.75 / 146	13.75 / 349	19.00 / 483	12.00 / 305
1520600	6.00 / 152	6.00 / 152	16.25 / 413	7.00 / 178	16.25 / 413	22.50 / 572	17.00 / 432
1520800	8.00 / 203	8.00 / 203	18.50 / 470	9.00 / 229	21.00 / 534	29.25 / 743	19.00 / 483
1521000	10.00 / 254	8.00 / 203	22.00 / 559	12.00 / 305	26.25 / 667	36.00 / 915	24.00 / 610
1521200	12.00 / 305	10.00 / 254	24.63 / 626	13.00 / 330	30.00 / 762	41.00 / 1.042	26.50 / 673

Vernalift Dual Stage is also available in Oval Shapes.



CHARACTERISTICS

- ✓ Application: Inboards
- ✓ Fuel type: Gas/Diesel
- ✓ Waterline: Above
- ✓ Sound rating: Best

WATER - GAS SEPERATOR



'A1' Diameter inlet or gas out
'A2' Diameter water out

Part Number	A1	A2	H	J	K
	In/Out (Inch/mm)	Drain (Inch/mm)	Height (Inch/mm)	Width (Inch/mm)	Depth (Inch/mm)
1020150	1.50 / 38	1.25 / 32	15.63 / 397	12.38 / 314	5.03 / 128
1020162	1.62 / 41	1.25 / 32	15.63 / 397	12.38 / 314	5.03 / 128
1020200	2.00 / 51	1.50 / 38	15.63 / 397	12.38 / 314	5.03 / 128
1020250	2.50 / 64	1.50 / 38	20.50 / 521	17.50 / 445	7.00 / 178
1020300	3.00 / 76	1.50 / 38	20.50 / 521	17.50 / 445	7.00 / 178
1020350	3.50 / 89	2.00 / 51	27.00 / 686	23.50 / 597	9.00 / 229
1020400	4.00 / 102	2.50 / 64	27.00 / 686	23.50 / 597	9.00 / 229
1020450	4.50 / 114	2.50 / 64	30.00 / 762	28.00 / 711	7.25 / 184
1020500	5.00 / 127	3.00 / 76	30.00 / 762	28.00 / 711	7.25 / 184

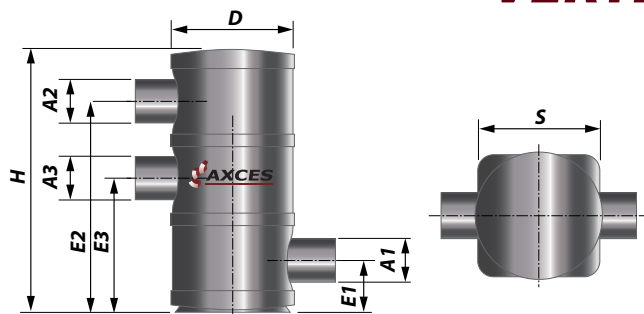
The Inlets & Outlets are also available in other configurations.



CHARACTERISTICS

- ✓ Application: Generators
- ✓ Fuel type: Gas/Diesel
- ✓ Waterline: Above only
- ✓ Sound rating: Best
- ✓ Must be used in conjunction with a Vernalift.

COMBO SEPERATOR VERTICAL



Part Number	A1 Inlet (Inch/mm)	A2 Gas Out (Inch/mm)	A3 Water Out (Inch/mm)	D Diameter (Inch/mm)	E1 Inlet (Inch/mm)	E2 Gas Out (Inch/mm)	E3 Water Out (Inch/mm)	H Height (Inch/mm)	S Square Base (Inch/mm)
1040200	2.00 / 51	1.50 / 38	1.25 / 32	10.00 / 254	3.75 / 95	16.50 / 419	8.13 / 207	20.00 / 508	10.50 / 267
1040250	2.50 / 64	2.00 / 51	1.50 / 38	10.00 / 254	3.75 / 95	16.50 / 419	8.13 / 207	20.00 / 508	10.50 / 267
1040300	3.00 / 76	2.50 / 64	1.50 / 38	10.00 / 254	3.75 / 95	16.50 / 419	8.13 / 207	20.00 / 508	10.50 / 267
1040350	3.50 / 89	3.00 / 76	2.00 / 51	12.34 / 313	5.00 / 127	21.00 / 533	10.50 / 267	26.00 / 660	12.00 / 305
1040400	4.00 / 102	3.00 / 76	2.50 / 64	12.34 / 313	5.00 / 127	21.00 / 533	10.70 / 272	26.00 / 660	12.00 / 305
1040500	5.00 / 127	4.00 / 102	2.50 / 64	14.36 / 365	6.00 / 152	25.00 / 635	12.38 / 314	30.00 / 762	15.00 / 381
1040600	6.00 / 152	5.00 / 127	3.00 / 76	16.25 / 413	7.00 / 178	29.25 / 743	14.25 / 362	35.00 / 889	17.00 / 432
1040800	8.00 / 203	6.00 / 152	4.00 / 102	18.50 / 470	9.25 / 235	37.75 / 959	19.00 / 483	45.00 / 1,143	19.00 / 483
1041000	10.00 / 254	8.00 / 203	5.00 / 127	22.00 / 559	11.25 / 286	46.25 / 1,175	22.63 / 575	55.00 / 1,397	23.00 / 584
1041200	12.00 / 305	10.00 / 254	6.00 / 152	28.50 / 724	13.25 / 337	55.13 / 1,400	26.00 / 660	64.00 / 1,626	30.00 / 762

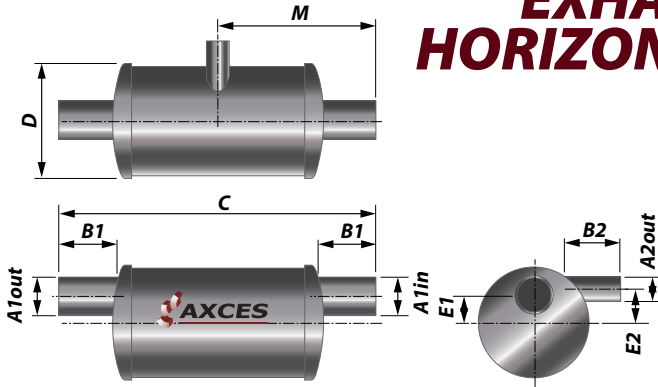
The Inlet/Outlets are also available in other configurations.



CHARACTERISTICS

- ✓ Application: Generators & Inboards
- ✓ Fuel type: Gas/Diesel
- ✓ Waterline: Above only
- ✓ Sound rating: Best

UNDERWATER EXHAUST HORIZONTAL



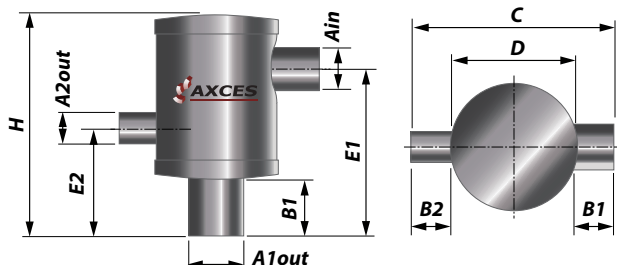
Part Number	A1	A2	B1	B2	C	D	E1	E2	M
	In/Out (Inch/mm)	Bypass (Inch/mm)	I/O Length (Inch/mm)	BP Length (Inch/mm)	Length (Inch/mm)	Diameter (Inch/mm)	I/O Elev. (Inch/mm)	BP Elev. (Inch/mm)	SBP Offset (Inch/mm)
107H500	5.00 / 127	2.50 / 64	5.00 / 127	3.00 / 76	28 / 711	10.40 / 264	2.16 / 55	2.75 / 70	13.82 / 351
107H600	6.00 / 152	3.00 / 76	6.00 / 152	3.50 / 89	34 / 864	12.34 / 313	2.84 / 72	2.81 / 71	17.00 / 432
107H800	8.00 / 203	4.00 / 102	8.00 / 203	4.50 / 114	45 / 1,143	16.11 / 409	3.72 / 94	3.75 / 95	22.50 / 572
107H100	10.00 / 254	5.00 / 127	8.00 / 203	5.00 / 127	52 / 1,321	18.41 / 468	3.80 / 97	3.81 / 97	26.00 / 660
107H120	12.00 / 305	6.00 / 152	8.00 / 203	6.00 / 152	60 / 1,524	24.60 / 625	5.75 / 146	5.75 / 146	30.00 / 762
107H140	14.00 / 356	6.00 / 152	8.00 / 203	6.00 / 152	66 / 1,676	28.50 / 724	6.75 / 171	6.75 / 171	33.00 / 838
107H160	16.00 / 406	8.00 / 203	10.00 / 254	8.00 / 203	78 / 1,981	28.50 / 724	5.75 / 146	5.75 / 146	39.00 / 991
107H180	18.00 / 457	8.00 / 203	10.00 / 254	8.00 / 203	85 / 2,159	34.00 / 864	7.75 / 197	7.75 / 197	42.50 / 1080



CHARACTERISTICS

- ✓ Application: Inboards
- ✓ Fuel type: Gas/Diesel
- ✓ Waterline: Above Only
- ✓ Sound rating: Best

UNDERWATER EXHAUST VERTICAL



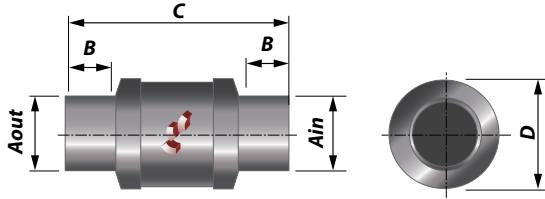
Part Number	A1 In/Out (Inch/mm)	A2 Bypass (Inch/mm)	B1 I/O Length (Inch/mm)	B2 BP Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)	E1 Inlet Elev. (Inch/mm)	E2 BP Elev. (Inch/mm)	H Height (Inch/mm)
107V500	5.00 / 127	2.50 / 64	5.00 / 127	3.00 / 76	20.50 / 521	12.50 / 318	16.00 / 406	2.75 / 70	21.00 / 533
107V600	6.00 / 152	3.00 / 76	6.00 / 152	3.50 / 89	24.00 / 610	14.50 / 368	18.00 / 457	2.81 / 71	24.50 / 622
107V800	8.00 / 203	4.00 / 102	8.00 / 203	4.50 / 114	31.00 / 787	18.50 / 470	23.25 / 590	3.75 / 95	31.50 / 800
107V100	10.00 / 254	5.00 / 127	9.00 / 229	5.00 / 127	36.00 / 914	22.00 / 559	27.75 / 705	3.81 / 97	37.50 / 953
107V120	12.00 / 305	6.00 / 152	10.00 / 254	6.00 / 152	40.75 / 1,035	24.75 / 629	33.00 / 838	5.75 / 146	44.50 / 1,130
107V140	14.00 / 356	6.00 / 152	11.00 / 279	6.00 / 152	45.50 / 1,156	28.50 / 724	38.75 / 984	6.75 / 171	50.50 / 1,283
107V160	16.00 / 406	8.00 / 203	12.00 / 305	8.00 / 203	55.00 / 1,397	35.00 / 889	45.63 / 1,159	5.75 / 146	58.00 / 1,473
107V180	18.00 / 457	8.00 / 203	13.00 / 330	8.00 / 203	56.00 / 1,422	35.00 / 889	46.75 / 1,187	7.75 / 197	62.00 / 1,575



CHARACTERISTICS

- ✓ Application: Inboards
- ✓ Fuel type: Gas/Diesel
- ✓ Waterline: Above Only
- ✓ Sound rating: Best

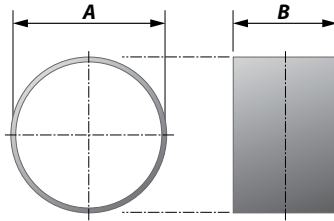
NON RETURN VALUES



Part Number	A Nom. O.D. (Inch/mm)	B I/O Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)
1200403	1.50/38	2.00/51	9.75/248	4.34/110
1200263	1.63/41	2.00/51	9.75/248	4.34/110
1200398	1.88/48	2.00/51	9.75/248	4.34/110
1200328	2.00/51	1.50/38	8.37/213	4.34/110
1200426	2.25/57	3.00/76	10.50/267	5.31/135
1200449	2.38/60	3.00/76	10.50/267	5.31/135
1200307	2.50/64	3.00/76	10.50/267	5.31/135
1200274	3.00/76	3.00/76	10.50/267	5.31/135
1200411	3.50/89	3.00/76	12.00/305	6.38/162
1200369	4.00/102	3.00/76	12.00/305	6.38/162
1200479	4.50/114	4.00/102	15.00/381	8.38/213
1200377	5.00/127	4.00/102	15.00/381	8.38/213



ANTI CRUSH SLEEVES



Part Number	A Nom. /O.D. (Inch/mm)	B Length (Inch/mm)
1200584	4.00 / 102	4.00 / 102
1200585	5.00 / 127	4.00 / 102
1200586	6.00 / 152	4.00 / 102
1200593	6.63 / 168	4.00 / 102
1200587	8.00 / 203	4.00 / 102
1200594	8.63 / 219	4.00 / 102
1200588	10.00 / 254	4.00 / 102
1200595	10.63 / 270	4.00 / 102
1200589	12.00 / 305	4.00 / 102
1200590	14.00 / 356	4.00 / 102
1200591	16.00 / 406	4.00 / 102
1200592	18.00 / 457	4.00 / 102

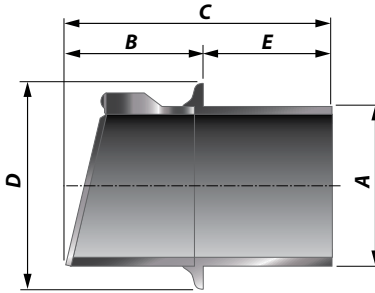


Fits inside Inlet/Outlet to prevent damage due to over tightening of hose clamps



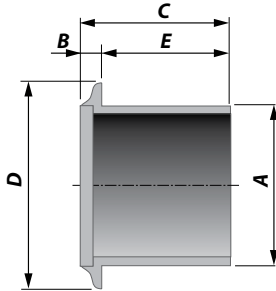
Crush Sleeves

THRU HULL FITTING WITH FLAPPER



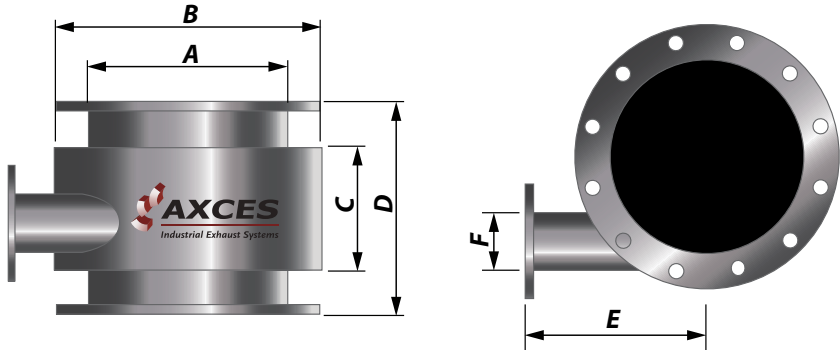
Part Number	A Nom. O.D. (Inch/mm)	B Ext. Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)	E T-H Length (Inch/mm)
1200300 - W	2.00 / 51	1.75 / 44	4.50 / 114	3.50 / 89	2.75 / 70
1200301 - BL	2.00 / 51	1.75 / 44	4.50 / 114	3.50 / 89	2.75 / 70
1200298 - W	3.00 / 76	2.50 / 64	5.50 / 140	4.88 / 124	3.00 / 76
1200299 - BL	3.00 / 76	2.50 / 64	5.50 / 140	4.88 / 124	3.00 / 76
1200326 - W	4.00 / 102	3.25 / 83	7.75 / 197	6.00 / 152	4.50 / 114
1200325 - BL	4.00 / 102	3.25 / 83	7.75 / 197	6.00 / 152	4.50 / 114
1200342 - W	5.00 / 127	3.44 / 87	9.06 / 230	7.50 / 191	5.63 / 143
1200343 - BL	5.00 / 127	3.44 / 87	9.06 / 230	7.50 / 191	5.63 / 143

THRU HULL FITTING WITHOUT FLAPPER



Part Number	A Nom. O.D. (Inch/mm)	B Ext. Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)	E T-H Length (Inch/mm)
1200302 - W	2.00 / 51	0.44 / 11	3.19 / 81	3.50 / 89	2.75 / 70
1200303 - BL	2.00 / 51	0.44 / 11	3.19 / 81	3.50 / 89	2.75 / 70
1200287 - W	3.00 / 76	0.63 / 16	3.63 / 92	4.88 / 124	3.00 / 76
1200288 - BL	3.00 / 76	0.63 / 16	3.63 / 92	4.88 / 124	3.00 / 76
1200324 - W	4.00 / 102	0.63 / 16	5.13 / 130	6.00 / 152	4.50 / 114
1200323 - BL	4.00 / 102	0.63 / 16	5.13 / 130	6.00 / 152	4.50 / 114
1200337 - W	5.00 / 127	0.75 / 19	6.38 / 162	7.50 / 191	5.63 / 143
1200338 - BL	5.00 / 127	0.75 / 19	6.38 / 162	7.50 / 191	5.63 / 143

AXCES WATER INJECTION RING



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Capacity (m ³ /h)
AXWIR000040	4	100	114.3	210	125	225	185	48.3	4
AXWIR000050	5	125	139.7	240	125	225	200	48.3	6
AXWIR000060	6	150	168.3	265	150	250	215	60.3	8
AXWIR000080	8	200	219.1	320	175	275	240	76.1	10
AXWIR000100	10	250	273.0	375	200	340	270	76.1	12
AXWIR000120	12	300	323.9	440	200	340	300	88.9	14
AXWIR000140	14	350	355.6	490	250	390	325	88.9	16
AXWIR000160	16	400	406.4	540	250	410	350	114.3	18
AXWIR000180	18	450	457.2	595	275	435	375	114.3	20
AXWIR000200	20	500	508.0	645	300	460	400	114.3	22



The Axces Water Injection Ring is used to inject engine cooling water into the exhaust system in order to reduce the exhaust gas temperature.

Material of the Flanges AISI304

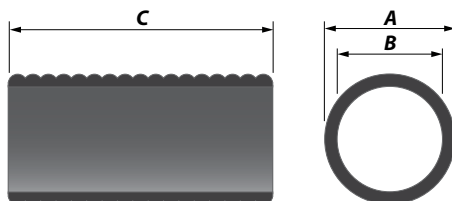
Material Duplex / AISI316L

Temperature Maximum allowable temperature is 600°C

Mounting The Axces Water Injection Ring should be installed at an angle of at least 25 degrees facing downwards

Custom Made Axces Valves are also manufactured based on specific dimensions or client's requirements

RUBBER EXHAUST HOSE



Article No.	Size (Inch)	A (mm)	B (mm)	C (mm)
AXREH000010	1	33	25	20
AXREH000012	1.25	40	32	20
AXREH000015	1.5	46	38	20
AXREH000017	1.75	54	45	20
AXREH000020	2	60	51	20
AXREH000022	2.25	70	60	20
AXREH000025	2.5	74	65	20
AXREH000027	2.75	86	76	20
AXREH000030	3	90	80	20
AXREH000035	3.5	100	90	20
AXREH000040	4	113	102	20
AXREH000045	4.5	121	110	20
AXREH000050	5	137	127	20
AXREH000060	6	163	150	20
AXREH000080	8	219	203	20
AXREH000120	12	325	305	20



CHARACTERISTICS

- ✓ Temperature range -25 C to +100 C
- ✓ Flexible material
- ✓ Lloyds and RINA type approved According ISO 13363



GALVANIZED EXHAUST HOSE CLAMP



Article No.	Clamping Range (mm)	C (mm)	Thickness (mm)	Bolt
AXGEC000040	43 - 40	20	1.5	M8
AXGEC000044	47 - 44	20	1.5	M8
AXGEC000048	51 - 48	20	1.5	M8
AXGEC000052	55 - 52	20	1.5	M8
AXGEC000056	59 - 56	20	1.5	M8
AXGEC000060	63 - 60	25	1.5	M8
AXGEC000064	67 - 64	25	1.5	M8
AXGEC000068	73 - 68	25	1.5	M8
AXGEC000074	79 - 74	25	1.5	M8
AXGEC000080	85 - 80	25	1.5	M8
AXGEC000086	91 - 86	25	1.5	M8
AXGEC000092	97 - 92	25	1.5	M8
AXGEC000098	103 - 98	25	1.5	M8
AXGEC000104	112 - 104	25	1.5	M8
AXGEC000113	121 - 113	25	1.5	M8
AXGEC000122	130 - 122	25	1.5	M8
AXGEC000131	139 - 131	25	1.5	M8
AXGEC000140	148 - 140	25	1.5	M8
AXGEC000149	161 - 149	25	1.5	M8
AXGEC000162	174 - 162	25	1.5	M8
AXGEC000175	187 - 175	25	1.5	M8
AXGEC000188	200 - 188	25	1.5	M8
AXGEC000201	213 - 201	25	1.5	M8
AXGEC000214	226 - 214	25	1.5	M8
AXGEC000227	234 - 227	25	1.5	M8
AXGEC000240	252 - 240	25	1.5	M8

CHARACTERISTICS

- ✓ High strength
- ✓ Galvanized according DIN 50941

STAINLESS STEEL EXHAUST HOSE CLAMP



Article No.	Clamping Range (mm)	C (mm)	Thickness (mm)	Bolt
AXSEC000026	28 - 26	20	1.5	M6
AXSEC000029	31 - 29	20	1.5	M6
AXSEC000032	35 - 32	20	1.5	M6
AXSEC000039	39 - 32	20	1.5	M6
AXSEC000040	43 - 40	20	1.5	M6
AXSEC000044	47 - 44	20	1.5	M6
AXSEC000048	51 - 48	20	1.5	M8
AXSEC000052	55 - 52	20	1.5	M8
AXSEC000056	59 - 56	20	1.5	M8
AXSEC000060	63 - 60	25	1.5	M8
AXSEC000064	67 - 64	25	1.5	M8
AXSEC000068	73 - 68	25	1.5	M8
AXSEC000074	79 - 74	25	1.5	M8
AXSEC000080	85 - 80	25	1.5	M8
AXSEC000086	91 - 86	25	1.5	M8
AXSEC000092	97 - 92	25	1.5	M8
AXSEC000098	103 - 98	25	1.5	M8
AXSEC000104	112 - 104	25	1.5	M8
AXSEC000113	121 - 113	25	1.5	M8
AXSEC000131	139 - 131	25	1.5	M8
AXSEC000140	148 - 140	25	1.5	M8
AXSEC000149	161 - 149	25	1.5	M8
AXSEC000162	174 - 162	25	1.5	M8

CHARACTERISTICS

- ✓ High Strength
- ✓ Made out of AISI316