THE AXCES GROUP

PRODUCT CATALOGUE

AXCES

AXCES

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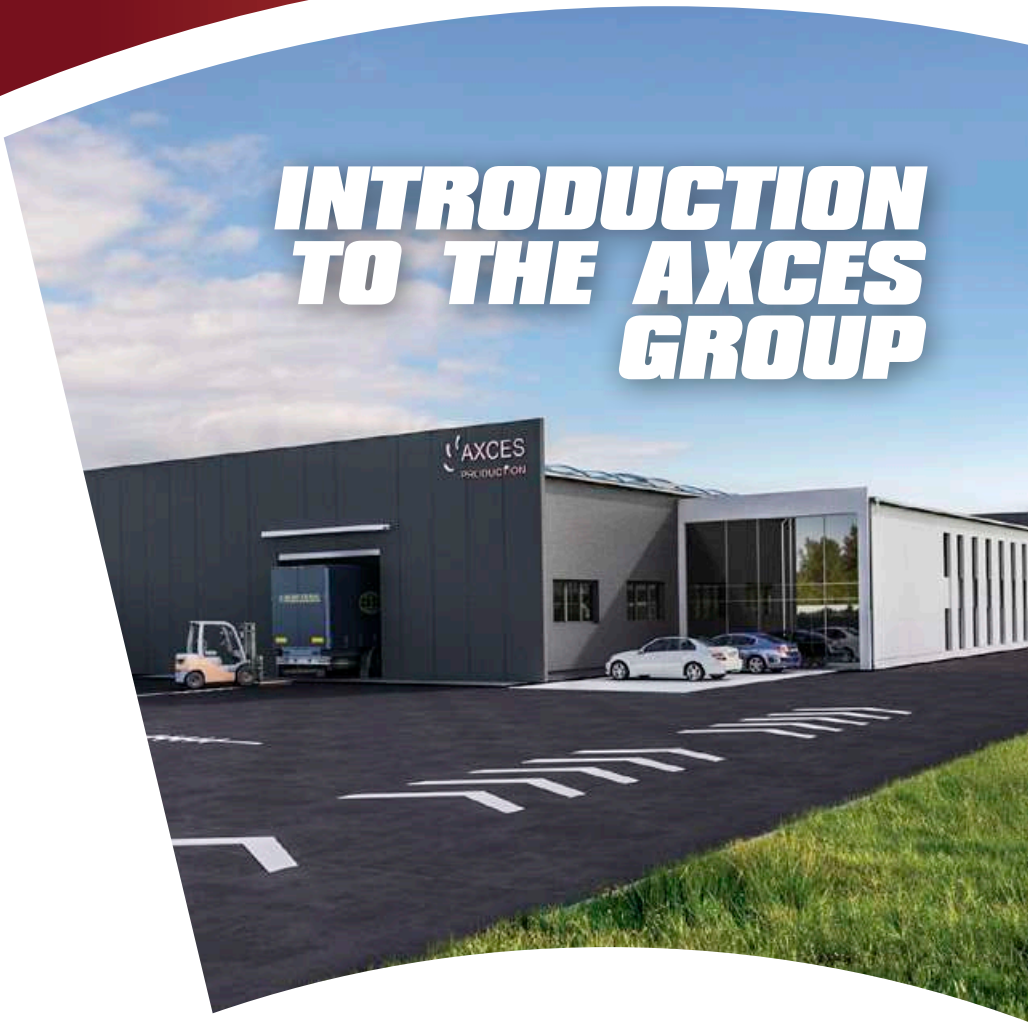
INTRODUCTION TO THE AXCES GROUP



AXCES

THE AXCES GROUP

IT'S TIME TO BREAK THE SILENCE ON AXCES

Axces consists of a group of companies that provide fully-integrated exhaust systems for combustion engines with exhaust silencers as its core-business. Anything installed after the outlet connection of a diesel engine, Axces delivers. Fully customized to individual ships, propulsion systems or industrial machines.

Specialized in the complete process of design, engineering, manufacturing and supply Axces offers total exhaust system supply solutions. Relatively basic solutions can be found in its wide range of standard products. Axces is also the technical and acoustical partner that meets the most challenging noise requirements and specific silencer configurations against minimum back pressure results. Axces meets custom needs with a clear focus on output, efficiency and reliability.

ACOUSTICAL XCELLENCE IN COMPETENT EXHAUST SYSTEMS

Axces represents: Acoustical Xcellence in Competent Exhaust Systems. Added value is offered by translating the results of extensive scientific research into practical, cost and time saving solutions. Combining intelligence with clearness. It is a philosophy that is proven to be very successful. In a few years time literally thousands of exhaust silencers have been installed in inland and sea-going vessels, in power plants and by engine manufacturers, operating daily all over the world.

Within Axces, high-level scientists team up with field-experts to develop exhaust silencers and complete exhaust gas systems for diesel engines that help Axces' clients outperform their competition.

FULLY INTEGRATED EXHAUST SYSTEMS

Axces' working field is defined within the framework regarding everything installed after the exhaust turbo of a combustion engine. Delivery of Fully-Integrated Exhaust Systems customized to individual requirements, is our key.

DESIGN

Axces is guaranteed to meet any noise requirement with tailor-made silencer solutions. With strong expertise both in acoustics and physics, Axces specializes in custom engineering.

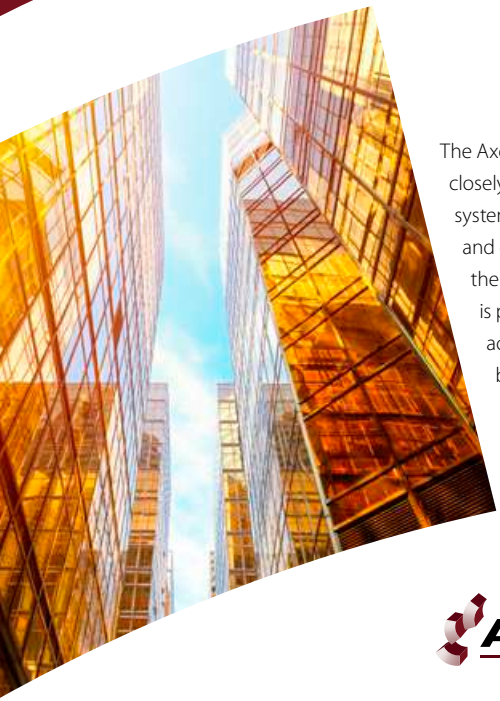
MANUFACTURING

Axces' knowledge centre, sales and distribution is based in the Netherlands. Axces production in Poland produces top quality solutions at a very competitive price.

SUPPLY

Axces can provide you with everything you need. Axces is able to deliver most common used accessories within 24 hours. Every part or system comes with full-service and full technical support.

ADDED VALUE OF THE AXCES GROUP



The Axces Group consists of several Axces divisions working closely together to bring the best possible solution in exhaust systems. Each Axces division has profound knowledge and experience in its own specialty and is equipped with the best tools to apply that knowledge. Because Axces is present worldwide, the Axes Group has always quick access to the latest technologies, through cooperation between the different locations.

This means Axes can deliver the best possible exhaust system for every conceivable situation for the lowest price possible and at the best conditions.

AXCES Wet Exhaust Systems

AXCES Industrial Stacks

AXCES Holding

AXCES Emission Technology

AXCES Industrial Exhaust systems

AXCES Asia (Singapore)

AXCES Production

AXCES MARKET SEGMENTS

MARITIME

Axces delivers worldwide and in many industries, and is also specialized in the shipping industry.

ENGINE POWER

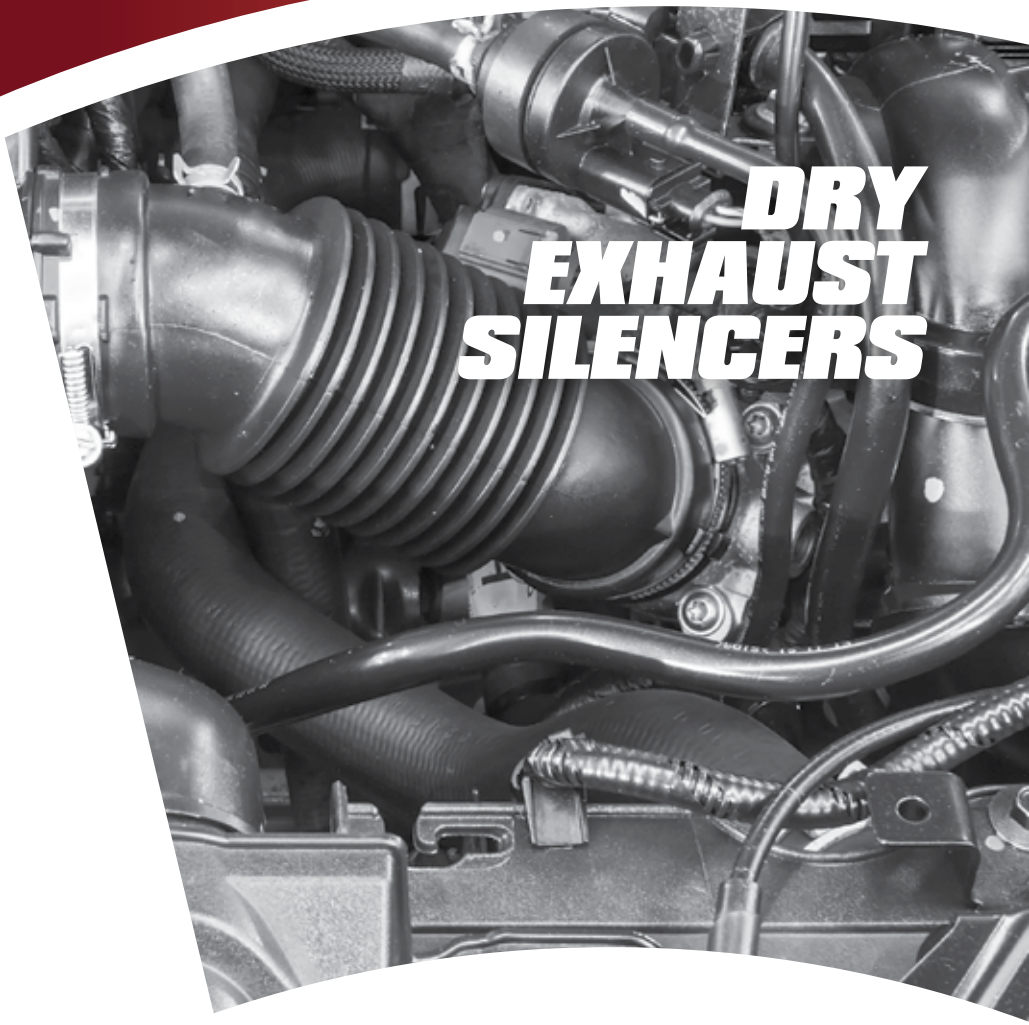
Axces engineers deliver ideal exhaust systems for a wide range of engines.

ENERGY SYSTEMS

Axces is leading the way when it comes to exhaust solutions. From basic parts that keep temporary power supplies running to essential parts for safe, efficient and clean generators.

AUTOMOTIVE

Axces specializes in exhaust systems for heavy-duty machinery that has to keep going, no matter what.



DRY EXHAUST SILENCERS

AXCES

INTRODUCTION TO AN INDUSTRIAL SILENCER

The purpose of an exhaust silencer is to reduce engine noise emission. An engine without a silencer will create an unbearable amount of exhaust noise in our environment. Noise is defined as unwanted sound.

Sound is a pressure wave formed from pulses of alternating high and low pressure air. In a combustion engine, pressure waves are generated when the exhaust valve repeatedly opens and lets high-pressure gas into the exhaust system. These pressure pulses are the sound we hear. As the RPM of the engine increases so do the pressure fluctuations and therefore the sound emitted is of a higher frequency.

All noise emitted by an engine does not specifically come from the exhaust system. Other contributors to engine noise emission include intake noise, mechanical noise and vibration induced noise from the engine's body and transmission.

The industrial silencer has to be able to allow the passage of exhaust gasses whilst restricting the transmission of sound.

EXHAUST SILENCER DESIGN

There are numerous variations of the two main types of silencers designs commonly used, namely Absorptive and Reactive. Generally industrial silencer will have both reactive and absorptive properties.

The Reactive Silencer

The Reactive Silencers use the phenomenon of destructive interference to reduce noise. This means that they are designed so that the sound waves produced by an engine partially cancel themselves out in the muffler. For complete destructive interference to occur, a reflected pressure wave of equal amplitude which is 180 degrees out of phase needs to collide with the transmitted pressure wave. Reflections occur, where there is a change in geometry or an area discontinuity.

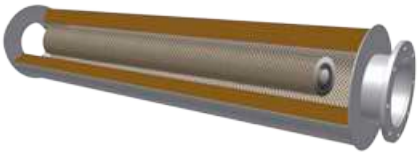
A Reactive silencer generally consists of a series of resonating and expansion chambers that are designed to reduce the sound pressure level at certain frequencies. The inlet and outlet tubes are generally offset and have perforations that allow sound pulses to scatter out in numerous directions inside a chamber resulting in destructive interference.

Reactive silencers are used widely in an exhaust systems where the exhaust gas flow and hence noise emission varies within time.

Reactive silencers have the ability to reduce noise at various frequencies due to the numerous chambers and changes in geometry that the exhaust gasses are forced to pass through.

The downside to Reactive mufflers is that larger back pressure is created.

The Aborptive silencer



An Absorptive muffler uses absorption to reduce sound energy. Sound waves are reduced as their energy is converted into heat in the absorptive material. A typical Absorptive muffler consists of a straight, circular and perforated pipe that is encased in a larger steel housing. Between the perforated pipe and the casing is a layer of sound absorptive material that absorbs some of the pressure pulses.

Absorptive mufflers create less back pressure then reactive mufflers. However, they do not reduce noise as well as Reactive mufflers.

Generally Reactive silencer use resonating chambers that target specific frequencies to control noise whereas an Absorptive silencer reduces noise considerably over the entire spectrum and more so at higher frequencies.

It is good practice to design a silencer to work best in the frequency range where the engine has the highest sound energy. In practice the sound spectrum of an engine exhaust is continually changing, as it is dependent on the engine speed that is continually varying. It is impossible to design a muffler that achieves complete destructive interference, some interference will always occur.

Noise spectrum variation makes silencer design quite difficult and testing is the only sure way to determine whether the silencer performs well at all engine speeds. However, as a general rule of thumb, exhaust noise is generally limited to the fundamental frequency and the first few harmonics, which can be calculated. These frequencies should therefore be used as a starting point for preliminary muffler design.

A practical way of determining the frequency range to be controlled is to measure the unsilenced engine noise. This measured spectrum can then be used to identify the frequencies, at which the higher noise levels occur. The high noise level frequencies should be treated with appropriate noise control to achieve an overall noise reduction.

FUNCTIONAL REQUIREMENTS OF AN INDUSTRIAL EXHAUST SILENCER

There are numerous functional requirements that should be considered when designing a silencer for a specific application. Such functional requirements may include adequate insertion loss, back pressure, size, durability, desired sound, cost, shape and style. These functional requirements are detailed below focusing on an muffler's functional requirements.

Insertion Loss and Transmission Loss

The main function of a silencer is to "silence" or attenuate sound. An effective silencer will reduce the sound pressure of the noise source to the required level. In the case of an industrial muffler the noise in the exhaust system, generated by the engine, is to be reduced.

A mufflers performance or attenuating capability is generally defined in terms of insertion loss or transmission loss. Insertion loss is defined as the difference between the acoustic power radiated without and with a muffler fitted. The transmission loss is defined as the difference in decibels between the sound power incident at the entry to the silencer to that transmitted by the silencer.

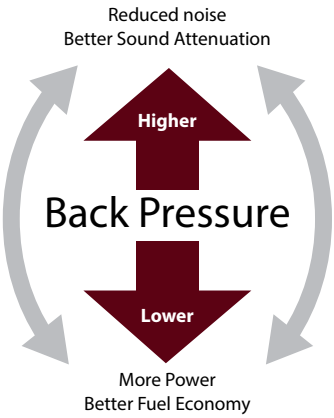
The silencer designer must determine the required insertion loss so that a suitable style of muffler can be designed for the specific purpose.

As a general principle when designing a muffler, a Reactive muffler with many area discontinuities will achieve a greater attenuation than one with fewer area discontinuities. The addition of sound absorptive material will always increase the attenuation capacity of a muffler, but should be located in an appropriate place.

Back Pressure

Back pressure represents the extra static pressure exerted by the muffler on the engine through the restriction in flow of exhaust gasses.

Generally the better a muffler is at attenuating sound the more back pressure is generated. In a Reactive muffler where good attenuation is achieved, the exhaust gasses are forced to pass through numerous geometry changes and a fair amount of back pressure may be generated, which reduces the power output of the engine. Back pressure should be kept to a minimum to avoid power losses.



Every time the exhaust gasses are forced to change direction, additional back pressure is created. Therefore, to limit backpressure, geometric changes are to be kept to a minimum. A typical example of this is a "straight through" absorption silencer. Exhaust gasses are allowed to pass virtually unimpeded through the straight perforated pipe.

Durability

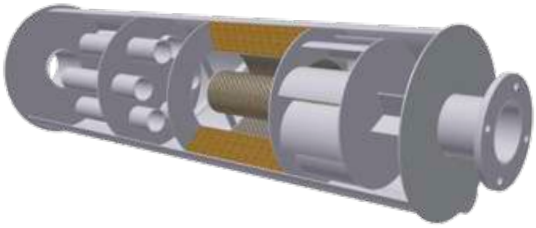
The life expectancy of a silencer is another important functional requirement, especially when dealing with hot exhaust gasses and absorptive silencers that are found in performance vehicles.

Overtime, hot exhaust gasses tend to clog the absorptive material with unburnt carbon particles or burn the absorptive material in the muffler. This causes the insertion loss to deteriorate. There are however, good products such as mineral wool, fibreglass, sintered metal composites and white wool that resist such unwanted effects.

Reactive type silencers with no absorptive material are very durable and their performance does not diminish with time.

Generally silencers are made from corrosion resistive materials such as stainless steel. Mild steel is generally used for temperatures up to 500°C, type 409 stainless steel up to 700 °C and type 321 stainless steel for even higher temperatures. Diesel exhaust gas temperatures are usually around 550°C.

Shape and Style



Industrial silencers can be manufactured in all different shapes, styles and sizes depending on the desired application. Generally industrial silencers consist of an inlet and outlet tube separated by a larger chamber that is oval or round in geometry. The inside detail of this larger chamber may be one of numerous constructions. The end user of silencers usually does not care what is inside this chamber as long as the muffler produces the desired sound and is aesthetically pleasing. It is therefore the task of the muffler designer to ensure that the muffler is functional as well as marketable.

HOW SOUND IS MEASURED

Noise is measured in units called decibels, shown as dB. Some sounds, which can be measured, cannot be detected by the human ear. For example, people cannot usually hear bats communicating at very high frequencies or when whales use very low frequencies. To account for the way that the human ear responds to sound of various frequencies a frequency weighting, known as the A-weighting, is commonly applied when measuring noise. The exception is when measuring peak noises, where a C-weighting is applied to ensure that proper account is taken of the sound energy in the peak sound.

Noise can contain many different frequencies. However, when considering ways to control noise, low-frequency noise needs to be treated differently to high-frequency noise. So the division of the A-weighted measurement into its constituent frequencies (frequency analysis) becomes necessary.

NOISE ACTION AND LIMIT VALUES

The Noise Regulations require employers to take specific action at certain action values. These relate to:

- The levels of exposure to noise of employees averaged over a working day or week
- The maximum noise (peak sound pressure) to which employees are exposed in a working day

Lower Exposure Action Values (LEAV)

- Daily or weekly exposure of 80 dB
- Peak sound pressure of 135 dB

There are also levels of noise exposure which must not be exceeded (but take account of any reduction in exposure provided by hearing protection)

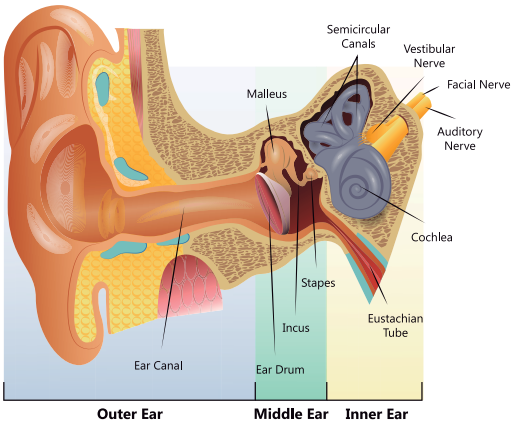
- Exposure Limit Values (ELV)
- Daily or weekly exposure of 87 dB
- Peak sound pressure of 140 dB

NOISE EXPOSURE

The noise exposure level takes account of both the sound pressure level and exposure time. Generally the potential for hearing to be damaged by noise is related to the noise 'dose' a person receives. Being exposed to a noise level of 105 dB (a band) for 5 minutes would be the same dose as being exposed to 94 dB (a factory) for 1 hour, or 88 dB (chamber music) for 4 hours.

Each 3 dB added doubles the sound energy. When 10dB is added, the energy is increased ten-fold, while adding 20 dB is a hundred-fold increase. Therefore:

- If the sound intensity is doubled, the noise level increases by 3 dB
- Two instruments with the same noise level of 85 dB together produce 88 dB
- A noise level reduction of 3 dB halves the sound pressure level



Halving the noise dose can be achieved either by halving the exposure time, or by halving the noise level, which corresponds to a reduction of 3 dB. These noise exposures are identical:

- 80 dB for 8 hours
- 83 dB for 4 hours
- 86 dB for 2 hours
- 89 dB for 1 hour
- 92 dB for 30 minutes

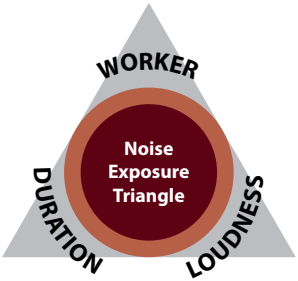
Upper Exposure Action Values (UEAV):

- Daily or weekly exposure of 85 dB
- Peak sound pressure of 137 dB

Average Noise level (dB)	Time taken to receive a dose equivalent to the upper exposure action value (85 dB)
85	8 hours
95	45 minutes
100	15 minutes
105	5 minutes
110	Under 2 minutes
115	Under 30 seconds

EXPOSURE WHEN NOT AT WORK

It is important that people consider noise exposure when not at work because cumulative exposure leads to hearing damage, whether or not it is work-related. Sound exposure includes all the sounds heard during each day. Common off-hours exposure to high noise levels may include audio and video equipment (personal car stereos, computer speakers, televisions), concerts, clubs and cinemas, sporting events, power tools and noisy hobbies. In general, an employer needs only to consider the work-related noise exposure when deciding what action to take to control risks. However the employer needs to consider whether risk-control measures need to be adapted in certain situations, for example if it is known that an employee is exposed to noise during other employment.



Reove any element and overexposure to noise is prevented

Reduce **loudness** or **duration** and exposure is reduced

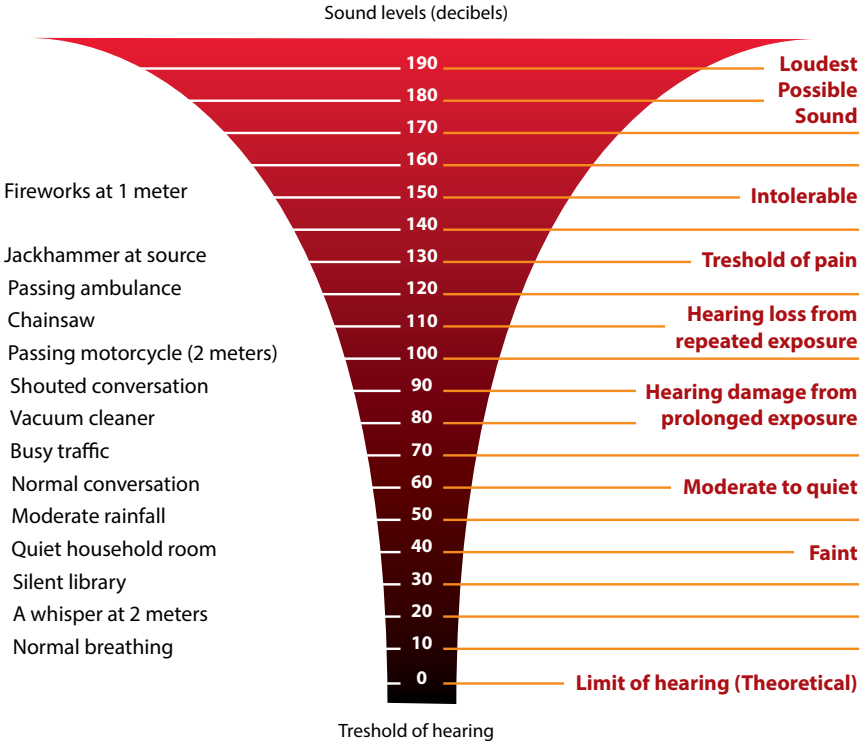
SYMPTOMS OF HEARING DAMAGE

Hearing loss can be temporary or permanent. People often experience temporary deafness after leaving a noisy place such as a machine room or a factory. Although hearing recovers within a few hours, this should not be ignored. It is a sign that if you continue to be exposed to high levels of noise, your hearing could be permanently damaged. Permanent hearing damage can be caused immediately by sudden, extremely loud, explosive noises such as caused by pyrotechnics. Remember that the hearing of young people can be damaged as easily as the old.

Hearing loss is usually gradual because of prolonged exposure to noise. It may only be when damage caused by noise over years combines with hearing loss due to ageing that people realise how deaf they have become. This may mean their family complains about the television being too loud, they cannot keep up with conversations in a group, or they have trouble using a telephone. Eventually everything becomes muffled and people find it difficult to catch sounds like 't', 'd', and 's', so they confuse similar words.

Hearing loss is not the only problem. People may develop tinnitus, a distressing condition that can lead to disturbed sleep. Other rarer conditions include hyperacusis (a general intolerance or oversensitivity to everyday sounds) and diplacusis (a difference in the perception of sound by the ears, either in frequency or time). Research among symphony orchestras suggests more than 27% of musicians suffer hearing loss, with 24% suffering from tinnitus, 25% from hyperacusis, 12% from distortion and 5% from diplacusis. However, there are other studies which give a range of figures from 10-60% for hearing damage among musicians.

DECIBEL SCALE



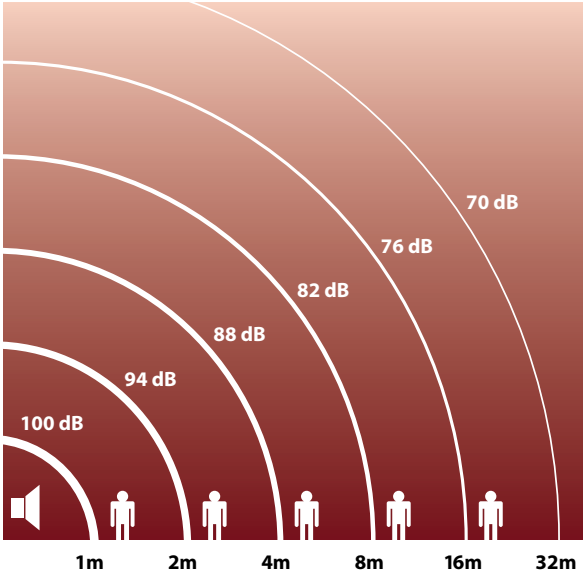
NOISE LEVEL EXPOSURE TIME

This graph shows sound intensity and how long humans can endure this without harm.

HARMFUL SOUND LEVEL		
180 dB	Rocket launch	**IMMEDIATE EARDRUM RUPTURE**
134 dB	Jet Engine (30m distance)	**0.3 SECONDS**
125 dB	Pain Treshold	
RISKY SOUND LEVEL		
110 dB	Disco, Headphones, Music Studio	**2 MINUTES**
90 dB	Lawnmower, Heavy Truck Passing	**2.5 HOURS**
85 dB	Max. Workspace Noise Level	**8 HOURS**
SAFE SOUND LEVEL		
80 dB	Trafficked Street	
60 dB	Normal Conversation	

DISTANCE ATTENUATION

This graph shows the inner relation between sound intensity over distance. For a lineair reduction of the sound intensity a doubling of the distance has to occur.



INSTALLATION RECOMMENDATIONS

BEFORE INSTALLATION

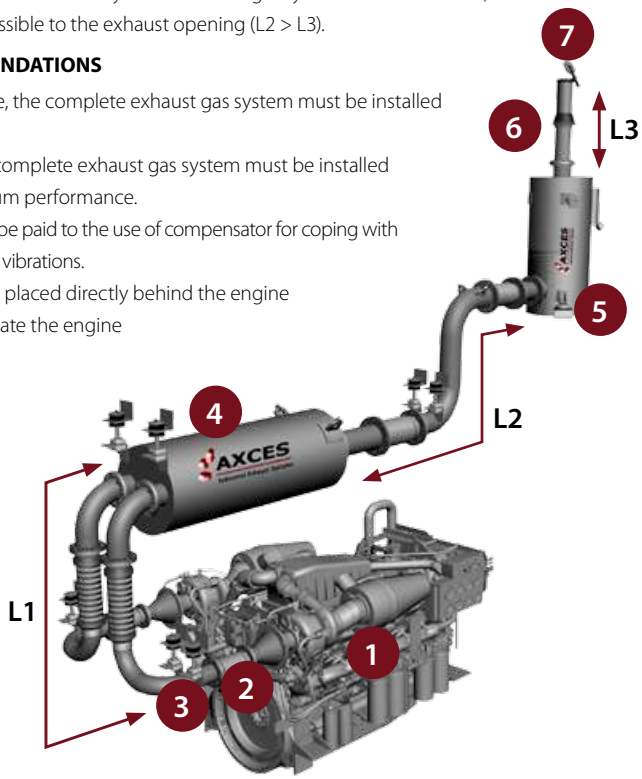
- Remove all packing material.
- Check the product for damage. If there are any abnormalities, these must be reported as quickly as possible to the Customer Service Department on +31 (0)166 603 285.

SILENCER LOCATION/POSITION

- The silencers can be installed either vertically or horizontally, depending on the given flow direction.
- Single silencer (4) may be installed anywhere between the engine (1) and halfway to the exhaust gas system, preferably as close as possible to the engine. (L1 < L2).
- The primary silencer (4) as described above with double silencers, the secondary silencer (5) anywhere between halfway to the exhaust gas system and the exhaust; preferably as close as possible to the exhaust opening (L2 > L3).

INSTALLATION RECOMMENDATIONS

- For optimal performance, the complete exhaust gas system must be installed vibration-free.
- The silencer (4) and the complete exhaust gas system must be installed vibration-free for optimum performance.
- Sufficient attention must be paid to the use of compensator for coping with expansions and excessive vibrations.
- A fixed point (3) must be placed directly behind the engine compensator (2) to alleviate the engine compensator when starting and stopping the engine (1) and to limit line resonance as much as possible.
- Take notice of the flow indicator.



- Any condensate tapping device (the drain) must be at the lowest point.
- Provide correct acoustic dismantling if the condensate tapping point is connected to a drain line.
- Always provide a smooth flow through the lines and avoid right angled bends and/or other abrupt flow changes to prevent unnecessary pressure loss.
- If the silencer is provided with a spark arrestor, install the silencer so that the spark collector can be regularly cleaned.
- If the silencer is installed on and/or via flexible (rubber) supports and/or suspension, provide sufficient ventilation to prevent overheating of the rubber. The suspension points must therefore not be shortened too far. Also look carefully at the installation of the "thermoplaque" insulators below and above the supports.
- If an exhaust gas pipe has to be fed through a deck, it is preferable for a deck duct (6) to be used.
- If the extraction section is installed vertically, it is preferable for a hood (7) to be used.

AFTER-CARE

- It is recommended to check the bolt connections after the installation has been at operating temperature several times.
- If the silencer is provided with a spark arrestor, this must be cleaned at least once every 2 months.

WARNING/DANGER

- Take notice of the maximum power of the engine supply.
- Exhaust gases are always toxic, even after the installation of a catalyst and/or soot trap.
- Exhaust gas systems (including the silencer) contain very hot parts when operational and for a long time after use.
- Never remove drain plugs, other cleaning plugs or inspection hatches during operation.

INFORMATION "CE-MARKING"

- The machine guideline came into force on 1 January 1995. Machines sold on the European market must be provided with a statement in accordance with this guideline.
- On the basis of this guideline, the exhaust silencer(s) we supply can be classed as a "machine without a CE-stamp, working nonindependently and intended for incorporation". As in: 89/392/EEC,91/368/EEC,93/44/EEC page L183/2F paragraph B.

FINALLY

- If you have any questions or would like advice, we are always at your service.

AXCES SILENCER

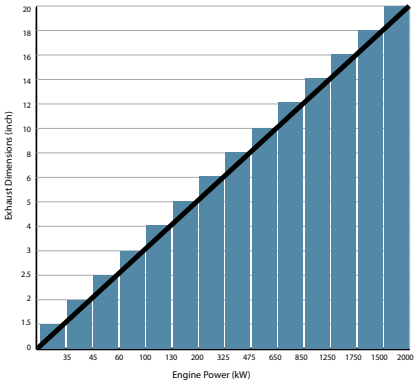
Axces Silencer	Pipe Diameter	Attennuation dB(A)	Type	Frequency	Application	Spark Arrestor
ABS	1.5" - 20"	-25	Absorptive	Mid-Higher	Dry Silencer	No
ABS-IS	1.5" - 20"	-25	Absorptive	Mid-higher	Dry Silencer	Yes
REAB35	1.5" - 20"	-35	Reactive/Absorptive	All ranges	Dry Silencer	No
REAB35-IS	1.5" - 20"	-35	Reactive/Absorptive	All ranges	Dry Silencer	Yes
REAB40	2" - 20"	-40	Reactive/Absorptive	All ranges	Dry Silencer	No
REAB40-IS	2" - 20"	-40	Reactive/Absorptive	All ranges	Dry Silencer	Yes
REAB45	4" - 20"	-45	Reactive/Absorptive	All ranges	Dry Silencer	No
REAB45-IS	3" - 20"	-45	Reactive/Absorptive	All ranges	Dry Silencer	Yes
REF25	1.5" - 20"	-20	Reactive	Lower	Dry Silencer	No
REF45	1.5" - 20"	-30	Reactive	Lower	Dry Silencer	No
AOR35	2" - 20"	-35	Reactive/Absorptive	All ranges	Oval Silencer	No
AOR35-IS	2" - 20"	-35	Reactive/Absorptive	All ranges	Oval Silencer	Yes
AOR45	2" - 20"	-45	Reactive/Absorptive	All ranges	Oval Silencer	No
AOR45-IS	2" - 20"	-45	Reactive/Absorptive	All ranges	Oval Silencer	Yes
ACR	2" - 20"	-35	Reactive/Absorptive	All ranges	Compact Silencer	No
ACR-IS	2" - 20"	-35	Reactive/Absorptive	All ranges	Compact Silencer	Yes
AIS25	12" - 40"	-25	Absorptive	Mid-Higher	Intake Silencer	No
AIS35	12" - 40"	-25	Absorptive	Mid-Higher	Intake Silencer	No
AVS	4" - 16"	-40	Absorptive	Mid-Higher	Vent Silencer	No

Axces Spark Arrestor	Pipe Diameter	Attennuation dB(A)	Type	Frequency	Application	Spark Arrestor
SA	1.5" - 20"	-	None	None	Spark arrestor (SA)	Yes
CP18	1.5" - 20"	-18	Reactive	Lower	SA which attenuates noise	Yes
CP24	2" - 20"	-24	Reactive	Lower	SA which attenuates noise	Yes
CP32	3" - 20"	-32	Reactive	Lower	SA which attenuates noise	Yes

PIPE DIAMETERS

The silencer size is important as well as the pipe diameter of the exhaust system. To calculate the optimal diameter and silencer for your engine, a rough indication is given in the next graph:

100 pk = 73.5 kW
(1 pk = 1 / 1.36 kW)



100 kW = 136 pk
(1 kW = 1.36 * pk)

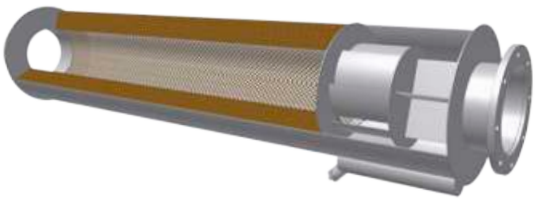
Axces Silencer	Size (inch)	NB (mm)	Pipe (mm)
0 kW - 35 kW	1.5	40	48.3
35 kW - 45 kW	2	50	60.3
45 kW - 60 kW	2.5	65	76.1
60 kW - 100 kW	3	80	88.9
100 kW - 130 kW	4	100	114.3
130 kW - 200 kW	5	125	139.7
200 kW - 325 kW	6	150	168.3
325 kW - 475 kW	8	200	219.1
475 kW - 650 kW	10	250	273.0
650 kW - 850 kW	12	300	323.9
850 kW - 1250 kW	14	350	355.6
1250 kW - 1500 kW	16	400	406.4
1500 kW - 1750 kW	18	450	457.2
1750 kW - 2000 kW	20	500	508.0

EXHAUST SILENCER TYPES

Axces has a wide range that covers all applications and engine sizes. These silencers are divided in series depending on the application, damping technique and the desired damping levels. All of our silencers can be found in the Silencer section in our webshop.

ABSORPTIVE TYPE

The noise is absorbed by specific acoustical fibre inside the silencer. The Absorptive Type silencer is most effective in the middle and high frequency range.



Axces Silencer	Pipe Diameter	Attennuation dB(A)	Spark Arrestor	Type	Frequency	Application
ABS	1.5" - 20"	-25	No	Absorptive	Mid-higher	Main Silencer

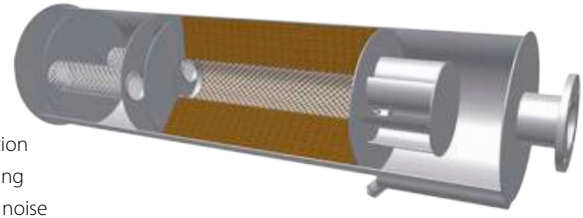
REACTIVE TYPE

The noise is reduced by creating a gas flow through separate chambers in the silencer. The Reactive Type silencer is most effective in lower and middle frequency range.

Axces Silencer	Pipe Diameter	Attennuation dB(A)	Spark Arrestor	Type	Frequency	Application
REF25	1.5" - 20"	-20	No	Reactive/Absorptive	Lower	Pre-silencer for extra low freq.
REF45	1.5" - 20"	-30	No	Reactive	Lower	Pre-silencer for extra low freq.

EXHAUST SILENCER TYPES

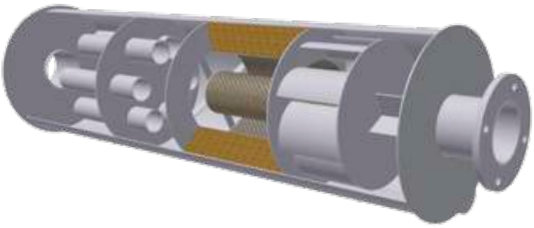
REACTIVE-ABSORPTIVE TYPE



The Reflection | Absorption Type silencers are based on a combination of Absorptive and Reactive damping techniques in order to reduce the noise in the complete frequency range.

Axces Silencer	Pipe Diameter	Attennuation dB(A)	Spark Arrestor	Type	Frequency	Application
REAB35	1.5" - 20"	-35	No	Reactive/Absorptive	All ranges	Main Silencer
REAB40	1.5" - 20"	-40	No	Reactive/Absorptive	All ranges	Main Silencer
REAB45	1.5" - 20"	-45	No	Reactive/Absorptive	All ranges	Main Silencer

SILENCER TYPES WITH INTEGRATED SPARK ARRESTOR



Axces silencers can be equipped with an internal spark arrestor. Axces spark arrestors are DNV and RMRS type approved.

Axces Silencer	Pipe Diameter	Attennuation dB(A)	Spark Arrestor	Type	Frequency	Application
ABS-IS	1.5" - 20"	-25	Yes	Absorptive	Mid-higher	Main Silencer
REAB 35-IS	1.5" - 20"	-35	Yes	Reactive/Absorptive	All ranges	Main Silencer
REAB 40-IS	1.5" - 20"	-40	Yes	Reactive/Absorptive	All ranges	Main Silencer
REAB 45-IS	1.5" - 20"	-45	Yes	Reactive/Absorptive	All ranges	Main Silencer

EXHAUST SILENCER TYPES

SPARK ARRESTOR WITH ATTENUATION

Axces has a wide range of Spark Arrestors with Attenuation which can be mounted in the exhaust gas system. Axces spark arrestors are DNV, BV and RMRS type approved.

Axces Silencer	Pipe Diameter	Attennuation dB(A)	Spark Arrestor	Type	Frequency	Application
CP18	1.5" - 20"	-18	Yes	Reactive	Lower	SA with damping level
CP24	2" - 20"	-24	Yes	Reactive	Lower	SA with damping level
CP32	3" - 20"	-32	Yes	Reactive	Lower	SA with damping level

SPARK ARRESTOR

Axces has a wide range of separate Spark Arrestors which can be mounted in the exhaust gas system. Axces spark arrestors are DNV, BV and RMRS type approved.

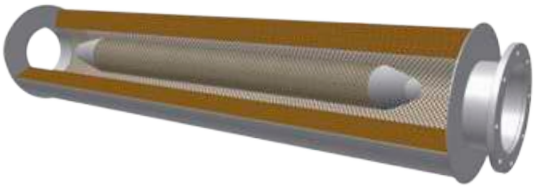
Axces Silencer	Pipe Diameter	Attennuation dB(A)	Spark Arrestor	Type	Frequency	Application
SA Spark Arr.	1.5" - 20"	-	Yes	None	None	Spark arrestor (SA)

AIR INTAKE SILENCER TYPES

Axces has a wide range that covers all applications and engine sizes. These silencers are divided in series depending on the application, damping technique and the desired damping levels. You can find all of our silencers in the Silencer section in our webshop.

AIS25

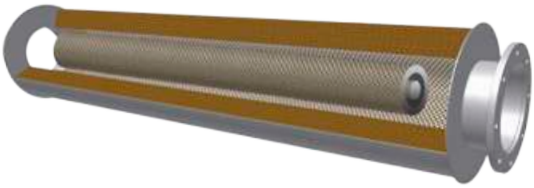
The noise is absorbed by specific acoustical fibre inside the silencer. The Absorptive Type silencer is most effective in the middle and high frequency range.



Axces Silencer	Pipe Diameter	Attennuation dB(A)	Spark Arrestor	Type	Frequency	Application
AIS25	12" - 40"	-25	No	Absorptive	Mid-higher	Main Silencer

AIS35

The noise is absorbed by specific acoustical fibre inside the silencer. The Absorptive Type silencer is most effective in the middle and high frequency range.

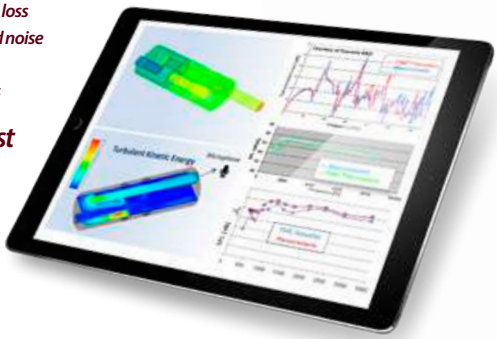


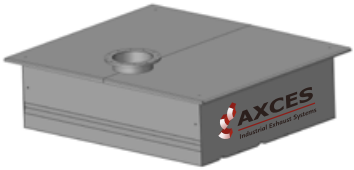
Axces Silencer	Pipe Diameter	Attennuation dB(A)	Spark Arrestor	Type	Frequency	Application
AIS35	12" - 40"	-35	No	Absorptive	Mid - Higher	Main Silencerv

CUSTOM MADE EXHAUST SILENCERS

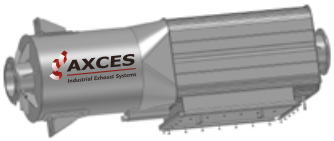
Axces designs its silencers and exhaust systems using the best Aero-Vibro-Acoustic Simulations software. This software can thoroughly calculate every aspect related to noise in an early stage of the design of the system. These calculations guarantee:

- ✓ *Customized compact design*
- ✓ *Accurate efficient and simulation of:*
  - *Pipe noise*
  - *Transmission loss*
  - *Shell radiated noise*
  - *Flow noise*
  - *CFD Analyses*
- ✓ *Lower cost*



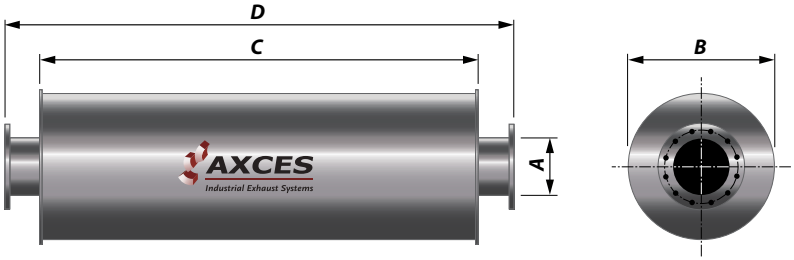


CUSTOM MADE EXHAUST SILENCERS

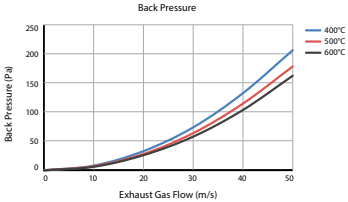


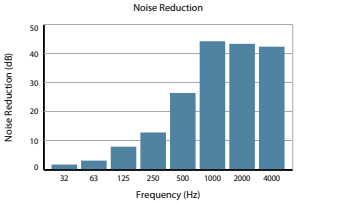
TYPE ABS

Damping level 20-25 dB(A)
without integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
130100000015	1.5	40	48.3	114	620	750	6
130100000020	2	50	60.3	143	670	800	8
130100000025	2.5	60	76.1	172	750	880	10
130100000030	3	80	88.9	187	820	950	15
130100000040	4	100	114.3	243	1000	1140	25
130100000050	5	125	139.7	313	1220	1250	30
130100000060	6	150	168.3	376	1250	1450	50
130100000080	8	200	219.1	388	1500	1700	95
130100000100	10	250	273.0	584	2000	2250	175
130100000120	12	300	323.9	611	2000	2250	225
130100000140	14	350	355.6	671	2250	2500	270
130100000160	16	400	406.4	751	2750	3000	350
130100000180	18	450	457.2	851	3250	3500	420
130100000200	20	500	508.0	951	3750	4000	500





Damping Of The Noise Level ± 20-25 dB(A).

Damping Basics of the silencers type ABS are according the absorbtion principal.

Spark Arrestor The silencers type ABS are excluding an integrated Spark Arrestor.

Mounting The silencers type ABS can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

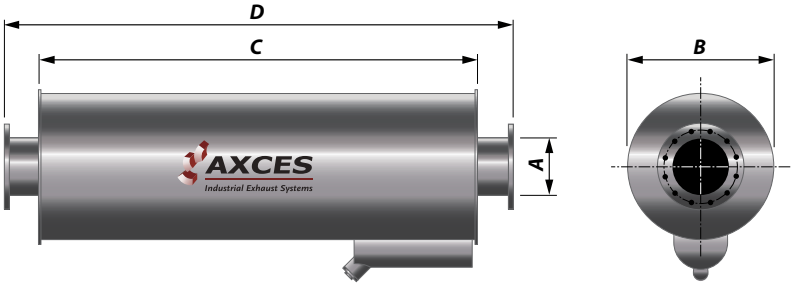
Material Silencers type ABS are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

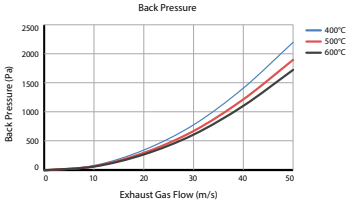
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

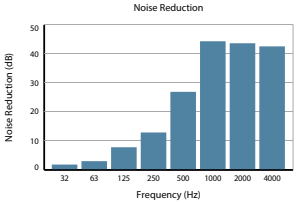
TYPE ABS-IS

Damping level 20-25 B(A)
with integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
131100000015	1.5	40	48.3	114	710	840	10
131100000020	2	50	60.3	143	870	1000	15
131100000025	2.5	60	76.1	172	1020	1150	20
131100000030	3	80	88.9	187	1120	1250	25
131100000040	4	100	114.3	243	1250	1420	45
131100000050	5	125	139.7	313	1300	1440	60
131100000060	6	150	168.3	376	1560	1710	90
131100000080	8	200	219.1	388	1850	2030	110
131100000100	10	250	273.0	584	2000	2250	250
131100000120	12	300	323.9	611	2250	2500	295
131100000140	14	350	355.6	671	2500	2750	350
131100000160	16	400	406.4	751	2750	3000	450
131100000180	18	450	457.2	851	3250	3500	500
131100000200	20	500	508.0	951	3750	4000	625





Damping Of The Noise Level 20-25 dB(A).

Damping Basics of the silencers type ABS-IS are according the reflectionabsorption principal.

Spark Arrestor The silencers type ABS-IS are excluding an integrated Spark Arrestor.

Mounting The silencers type ABS-IS can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

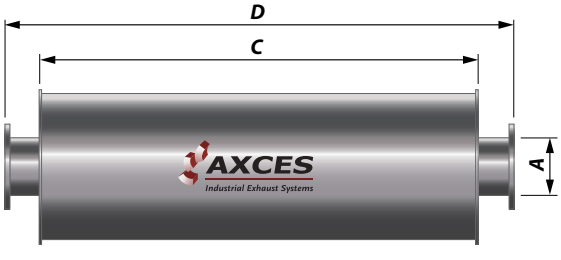
Material Silencers type ABS-IS are produced out of Steel 37-2 (S235JRG2).

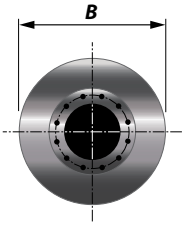
Temperature Maximum allowable temperature is 600°C.

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

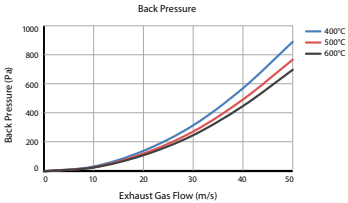
TYPE REAB35

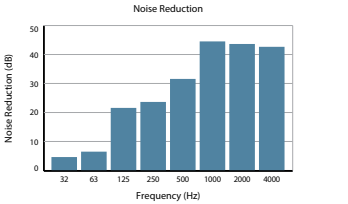
Damping level 35 dB(A)
without integrated Spark Arrestor





Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
140100000015	1.5	40	48.3	200	750	900	10
140100000020	2	50	60.3	200	750	900	15
140100000025	2.5	60	76.1	260	850	1000	22
140100000030	3	80	88.9	310	850	1000	30
140100000040	4	100	114.3	360	1270	1500	50
140100000050	5	125	139.7	400	1270	1500	65
140100000060	6	150	168.3	475	1500	1750	125
140100000080	8	200	219.1	560	1750	2000	170
140100000100	10	250	273.0	635	2250	2500	250
140100000120	12	300	323.9	760	2500	2750	320
140100000140	14	350	355.6	800	2750	3000	410
140100000160	16	400	406.4	860	3000	3250	500
140100000180	18	450	457.2	910	3250	3500	565
140100000180	20	500	508.0	960	3500	3750	640





Damping Of The Noise Level ±35 dB(A).

Damping Basics of the silencers type REAB35 are according the reflectionabsorption principal.

Spark Arrestor The silencers type REAB35 are excluding an integrated Spark Arrestor.

Mounting The silencers type REAB35 can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

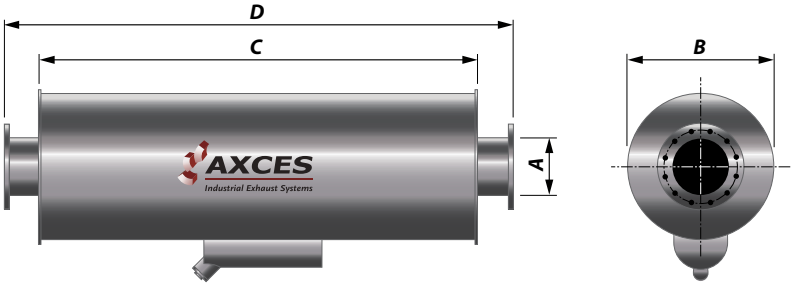
Material Silencers type REAB35 are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

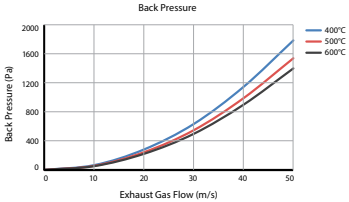
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

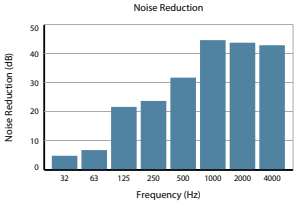
TYPE REAB35-IS

Damping level 35 dB(A)
with integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
141200000015	1.5	40	48.3	200	750	900	10
141200000020	2	50	60.3	200	750	900	15
141200000025	2.5	60	76.1	260	850	1000	22
141200000030	3	80	88.9	310	850	1000	30
141200000040	4	100	114.3	360	1270	1500	50
141200000050	5	125	139.7	400	1270	1500	65
141200000060	6	150	168.3	475	1500	1750	125
141200000080	8	200	219.1	560	1750	2000	170
141200000100	10	250	273.0	635	2250	2500	250
141200000120	12	300	323.9	760	2500	2750	320
141200000140	14	350	355.6	800	2750	3000	410
141200000160	16	400	406.4	860	3000	3250	500
141200000180	18	450	457.2	910	3250	3500	565
141200000200	20	500	508.0	960	3500	3750	640





Damping Of The Noise Level ± 35 dB(A).

Damping Basics of the silencers type REAB35-IS are according the reflection-absorption principal.

Spark Arrestor The silencers type REAB35-IS are including an integrated Spark Arrestor.

Mounting The silencers type REAB35-IS can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas.

Speed between 20-50 m/s.

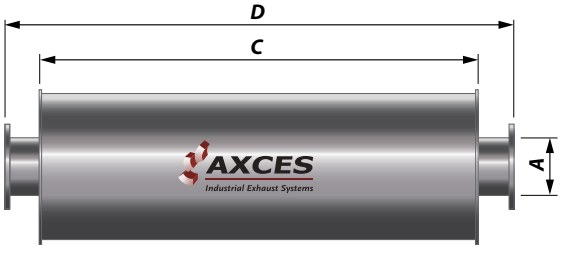
Material Silencers type REAB35-IS are produced out of Steel 37-2 (S235JRG2).

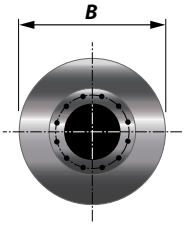
Temperature Maximum allowable temperature is 600°C.

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

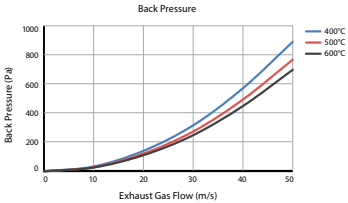
TYPE REAB40

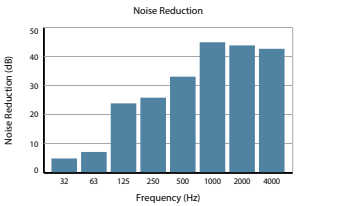
Damping level 40 dB(A)
without integrated Spark Arrestor





Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
140300000015	1.5	40	48.3	250	750	900	20
140300000020	2	50	60.3	250	750	900	25
140300000025	2.5	60	76.1	300	750	900	35
140300000030	3	80	88.9	300	1000	1250	40
140300000040	4	100	114.3	400	1250	1500	80
140300000050	5	125	139.7	400	1500	1750	90
140300000060	6	150	168.3	480	1500	1750	130
140300000080	8	200	219.1	600	1750	2000	200
140300000100	10	250	273.0	700	2250	2500	300
140300000120	12	300	323.9	800	2500	2750	400
140300000140	14	350	355.6	950	3000	3250	625
140300000160	16	400	406.4	950	3500	3750	800
140300000180	18	450	457.2	1100	4000	4250	1250
140300000200	20	500	508.0	1200	4500	4750	1500





Damping Of The Noise Level ±40 dB(A).

Damping Basics of the silencers type REAB40 are according the reflectionabsorption principal.

Spark Arrestor The silencers type REAB40 are excluding an integrated Spark Arrestor.

Mounting The silencers type REAB40 can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

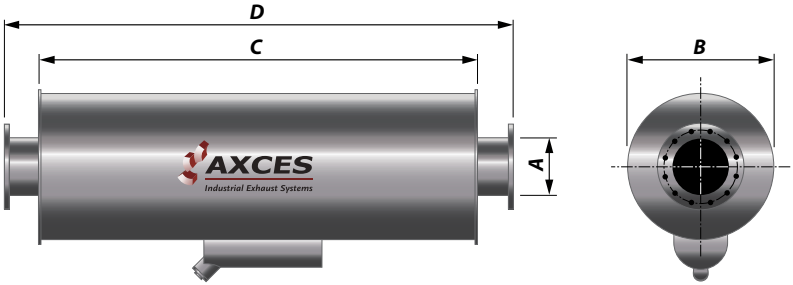
Material Silencers type REAB40 are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

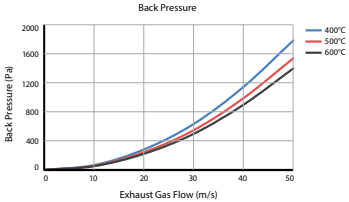
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

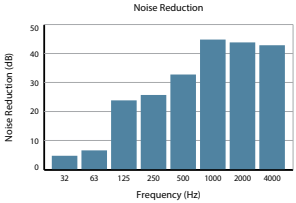
TYPE REAB40-IS

Damping level 40 dB(A)
with integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
141300000015	1.5	40	48.3	250	750	900	20
141300000020	2	50	60.3	250	750	900	25
141300000025	2.5	60	76.1	300	750	900	35
141300000030	3	80	88.9	300	1000	1250	40
141300000040	4	100	114.3	400	1250	1500	80
141300000050	5	125	139.7	400	1500	1750	90
141300000060	6	150	168.3	480	1500	1750	130
141300000080	8	200	219.1	600	1750	2000	200
141300000100	10	250	273.0	700	2250	2500	300
141300000120	12	300	323.9	800	2500	2750	400
141300000140	14	350	355.6	950	3000	3250	625
141300000160	16	400	406.4	950	3500	3750	800
141300000180	18	450	457.2	1100	4000	4250	1250
141300000200	20	500	508.0	1200	4500	4750	1500





Damping Of The Noise Level ± 40 dB(A).

Damping Basics of the silencers type REAB40-IS are according the reflectionabsorption principal.

Spark Arrestor The silencers type REAB40-IS are including an integrated Spark Arrestor.

Mounting The silencers type REAB40-IS can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

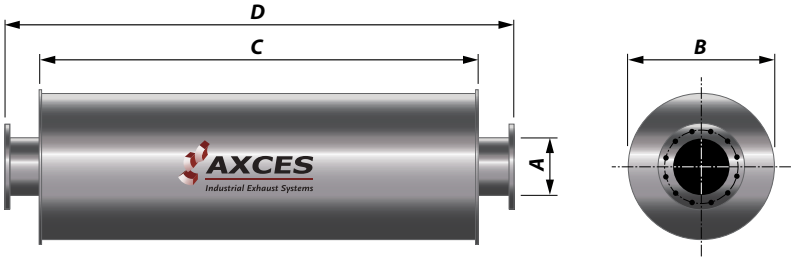
Material Silencers type REAB40-IS are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

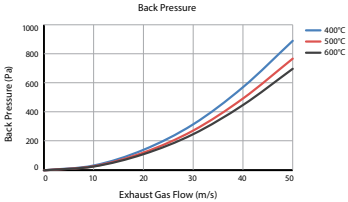
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

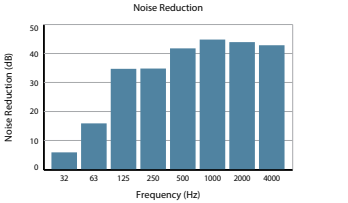
TYPE REAB45

Damping level 45 dB(A)
without integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
140400000015	1.5	40	48.3	260	850	1000	30
140400000020	2	50	60.3	310	850	1000	40
140400000025	2.5	60	76.1	360	1250	1500	60
140400000030	3	80	88.9	380	1250	1500	70
140400000040	4	100	114.3	475	1500	1750	120
140400000050	5	125	139.7	475	1500	1750	130
140400000060	6	150	168.3	560	2250	2500	200
140400000080	8	200	219.1	660	2250	2500	260
140400000100	10	250	273.0	860	2750	3000	480
140400000120	12	300	323.9	910	3000	3250	550
140400000140	14	350	355.6	960	3500	3750	690
140400000160	16	400	406.4	1060	4000	4250	1050
140400000180	18	450	457.2	1210	4500	4750	1400
140400000200	20	500	508.0	1300	5000	5250	1735





Damping Of The Noise Level ±45 dB(A).

Damping Basics of the silencers type REAB45 are according the reflectionabsorption principal.

Spark Arrestor The silencers type REAB45 are excluding an integrated Spark Arrestor.

Mounting The silencers type REAB45 can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

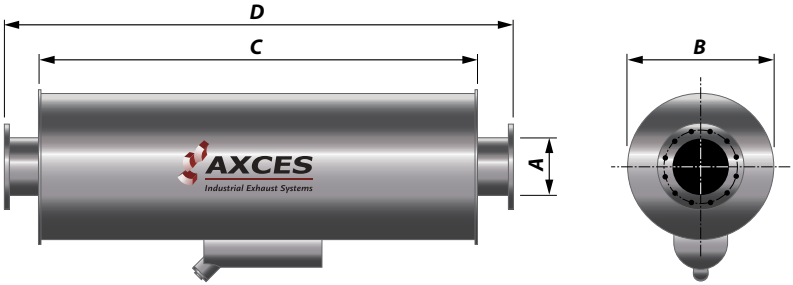
Material Silencers type REAB45 are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

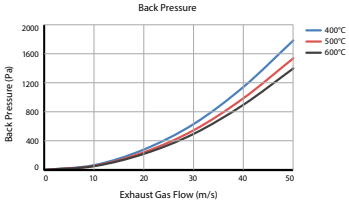
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

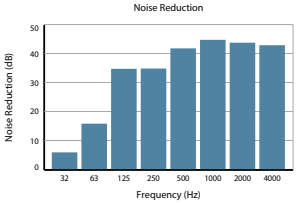
TYPE REAB45-IS

Damping level 45 dB(A)
with integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
141400000015	1.5	40	48.3	260	850	1000	30
141400000020	2	50	60.3	310	850	1000	40
141400000025	2.5	60	76.1	360	1250	1500	60
141400000030	3	80	88.9	380	1250	1500	70
141400000040	4	100	114.3	475	1500	1750	120
141400000050	5	125	139.7	475	1500	1750	130
141400000060	6	150	168.3	560	2250	2500	200
141400000080	8	200	219.1	660	2250	2500	260
141400000100	10	250	273.0	860	2750	3000	480
141400000120	12	300	323.9	910	3000	3250	550
141400000140	14	350	355.6	960	3500	3750	690
141400000160	16	400	406.4	1060	4000	4250	1050
141400000180	18	450	457.2	1210	4500	4750	1400
141400000200	20	500	508.0	1300	5000	5250	1735





Damping Of The Noise Level ± 45 dB(A).

Damping Basics of the silencers type REAB45-IS are according the reflectionabsorption principal.

Spark Arrestor The silencers type REAB45-IS are including an integrated Spark Arrestor.

Mounting The silencers type REAB45-IS can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

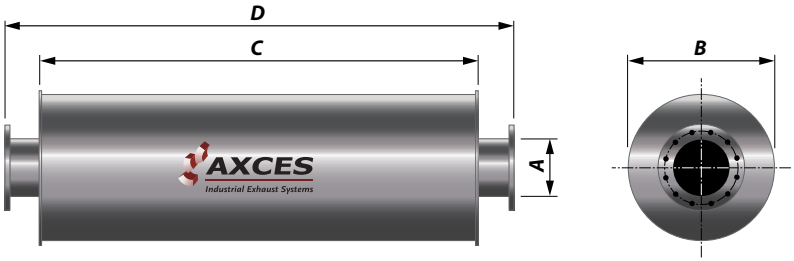
Material Silencers type REAB45-IS are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

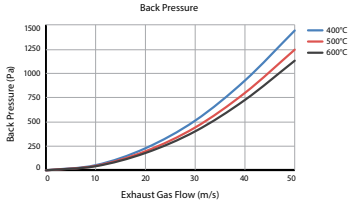
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

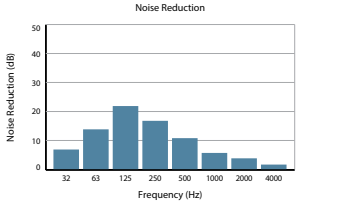
TYPE REF25

Damping level 20 dB(A)
without integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
150100000015	1.5	40	48.3	200	750	900	15
150100000020	2	50	60.3	200	750	900	16
150100000025	2.5	60	76.1	260	850	1000	22
150100000030	3	80	88.9	310	850	1000	30
150100000040	4	100	114.3	360	1270	1500	50
150100000050	5	125	139.7	400	1270	1500	65
150100000060	6	150	168.3	475	1500	1750	120
150100000080	8	200	219.1	560	1750	2000	165
150100000100	10	250	273.0	635	2250	2500	230
150100000120	12	300	323.9	760	2500	2750	330
150100000140	14	350	355.6	860	2750	3000	380
150100000160	16	400	406.4	910	3000	3250	410
150100000180	18	450	457.2	960	3250	3500	480
150100000200	20	500	508.0	1060	3500	3750	705





Damping Of The Noise Level ±20 dB(A).

Damping Basics of the silencers type REF25 are according the reflection principal.

Spark Arrestor The silencers type REF25 are excluding an integrated Spark Arrestor.

Mounting The silencers type REF25 can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

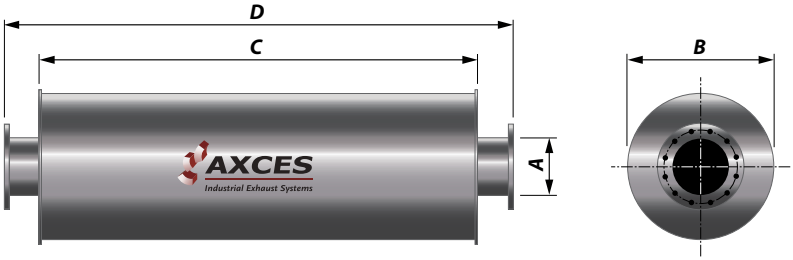
Material Silencers type REF25 are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

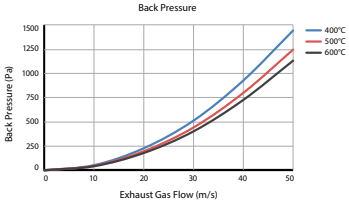
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

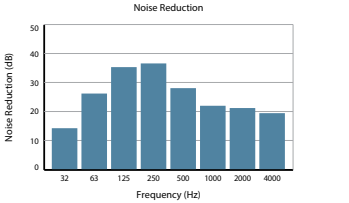
TYPE REF45

Damping level 30 dB(A)
without integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
150400000015	1.5	40	48.3	260	750	900	17
150400000020	2	50	60.3	310	850	1000	25
150400000025	2.5	60	76.1	360	850	1000	30
150400000030	3	80	88.9	400	1250	1500	48
150400000040	4	100	114.3	475	1500	1750	100
150400000050	5	125	139.7	475	1750	2000	135
150400000060	6	150	168.3	560	2250	2500	180
150400000080	8	200	219.1	660	2250	2500	210
150400000100	10	250	273.0	860	2750	3000	380
150400000120	12	300	323.9	910	3000	3250	410
150400000140	14	350	355.6	960	3500	3750	560
150400000160	16	400	406.4	1060	4000	4250	750
150400000180	18	450	457.2	1210	4500	4750	1100
150400000200	20	500	508.0	1300	5000	5250	1400





Damping Of The Noise Level ±30 dB(A).

Damping Basics of the silencers type REF45 are according the reflection principal.

Spark Arrestor The silencers type REF45 are excluding an integrated Spark Arrestor.

Mounting The silencers type REF45 can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

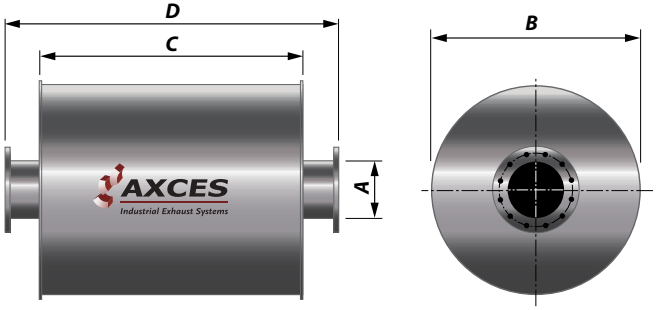
Material Silencers type REF45 are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

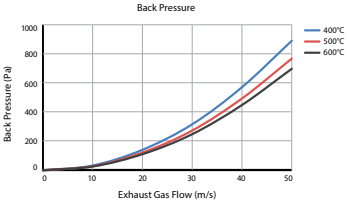
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

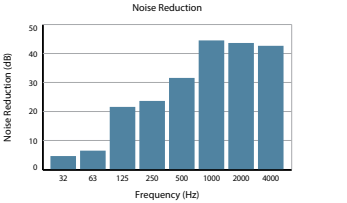
TYPE ACR

Damping level 25 dB(A)
without integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
170100000020	2	50	60.3	206	215	300	10
170100000025	2.5	60	76.1	306	320	420	14
170100000030	3	80	88.9	306	320	420	20
170100000040	4	100	114.3	356	390	540	25
170100000050	5	125	139.7	401	535	650	30
170100000060	6	150	168.3	482	606	750	40
170100000080	8	200	219.1	556	756	900	50
170100000100	10	250	273.0	708	856	1000	60
170100000120	12	300	323.9	800	1006	1200	70
170100000140	14	350	355.6	908	1256	1500	100
170100000160	16	400	406.4	1060	1408	1600	160
170100000180	18	450	457.2	1212	1510	1700	200
170100000200	20	500	508.0	1312	1810	2000	250





Damping Of The Noise Level ±25 dB(A).

Damping Basics of the silencers type ACR are according the reflection absorption principal.

Spark Arrestor The silencers type ACR are excluding an integrated Spark Arrestor.

Mounting The silencers type ACR can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

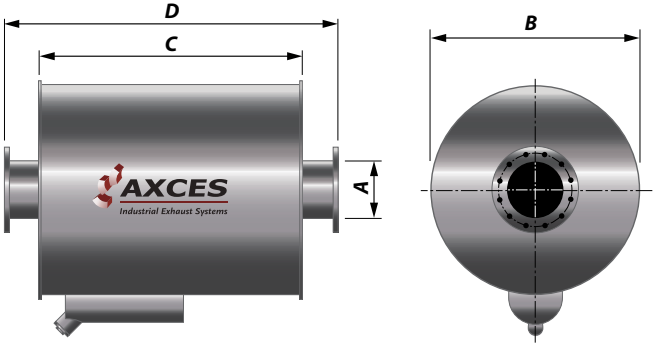
Material Silencers type ACR are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

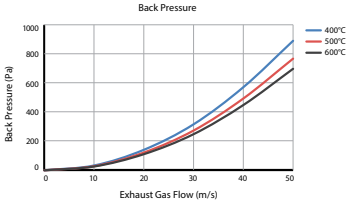
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

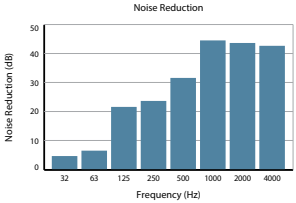
TYPE ACR-IS

Damping level 25 dB(A)
with integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
170200000020	2	50	60.3	206	215	300	10
170200000025	2.5	60	76.1	306	320	420	14
170200000030	3	80	88.9	306	320	420	20
170200000040	4	100	114.3	356	390	540	25
170200000050	5	125	139.7	401	535	650	30
170200000060	6	150	168.3	482	606	750	40
170200000080	8	200	219.1	556	756	900	50
170200000100	10	250	273.0	708	856	1000	60
170200000120	12	300	323.9	800	1006	1200	70
170200000140	14	350	355.6	908	1256	1500	100
170200000160	16	400	406.4	1060	1408	1600	160
170200000180	18	450	457.2	1212	1510	1700	200
170200000200	20	500	508.0	1312	1810	2000	250





Damping Of The Noise Level ±25 dB(A).

Damping Basics of the silencers type ACR-IS are according the reflection absorption principal.

Spark Arrestor The silencers type ACR-IS are excluding an integrated Spark Arrestor.

Mounting The silencers type ACR-IS can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

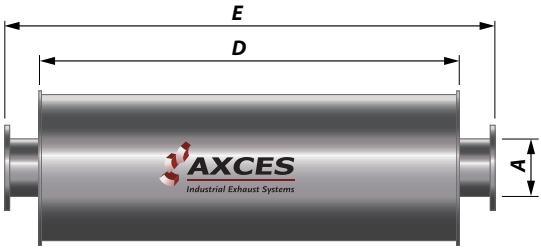
Material Silencers type ACR-IS are produced out of Steel 37-2 (S235JRG2).

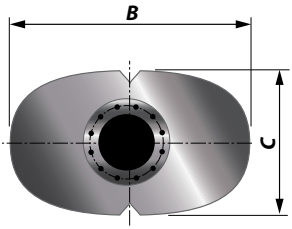
Temperature Maximum allowable temperature is 600°C.

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

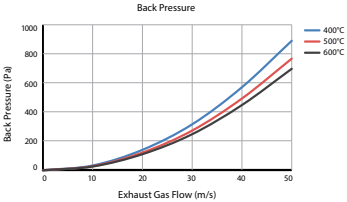
TYPE AOR 35

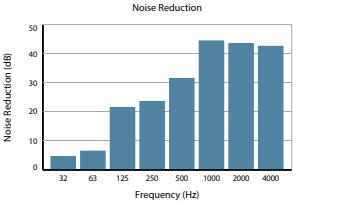
Damping level 35 dB(A)
without integrated Spark Arrestor





Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Weight (kg)
180100000020	2	50	60.3	280	150	750	900	20
180100000025	2.5	60	76.1	350	180	850	1000	30
180100000030	3	80	88.9	420	220	850	1000	40
180100000040	4	100	114.3	480	240	1270	1500	60
180100000050	5	125	139.7	535	270	1270	1500	80
180100000060	6	150	168.3	635	320	1500	1750	150
180100000080	8	200	219.1	750	375	1750	2000	200
180100000100	10	250	273.0	850	425	2250	2500	180
180100000120	12	300	323.9	1000	510	2500	2750	360
180100000140	14	350	355.6	1065	535	2750	3000	450
180100000160	16	400	406.4	1150	570	3000	3250	550
180100000180	18	450	457.2	1210	610	3250	3500	625
180100000200	20	500	508.0	1275	640	3500	3750	700





Damping Of The Noise Level ±35 dB(A).

Damping Basics of the silencers type AOR35 are according the reflection absorption principal.

Spark Arrestor The silencers type AOR35 are excluding an integrated Spark Arrestor.

Mounting The silencers type AOR35 can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

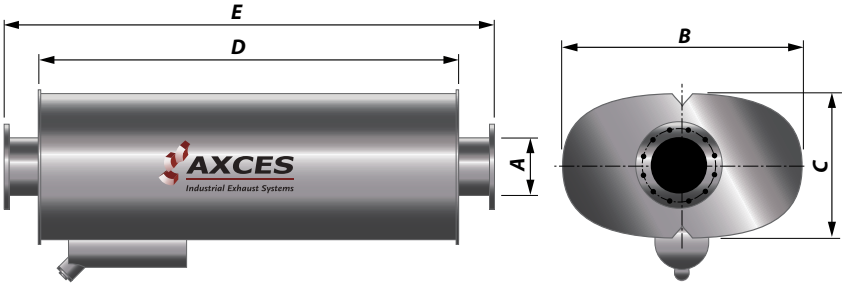
Material Silencers type AOR35 are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

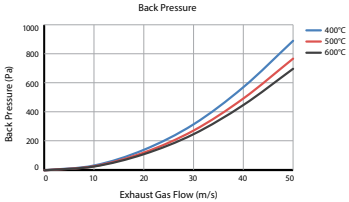
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

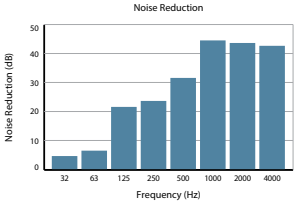
TYPE AOR 35-IS

Damping level 35 dB(A)
with integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Weight (kg)
180110000020	2	50	60.3	280	150	750	900	20
180110000025	2.5	60	76.1	350	180	850	1000	30
180110000030	3	80	88.9	420	220	850	1000	40
180110000040	4	100	114.3	480	240	1270	1500	60
180110000050	5	125	139.7	535	270	1270	1500	80
180110000060	6	150	168.3	635	320	1500	1750	150
180110000080	8	200	219.1	750	375	1750	2000	200
180110000100	10	250	273.0	850	425	2250	2500	180
180110000120	12	300	323.9	1000	510	2500	2750	360
180110000140	14	350	355.6	1065	535	2750	3000	450
180110000160	16	400	406.4	1150	570	3000	3250	550
180110000180	18	450	457.2	1210	610	3250	3500	625
180110000200	20	500	508.0	1275	640	3500	3750	700





Damping Of The Noise Level ±35 dB(A).

Damping Basics of the silencers type AOR35-IS are according the reflection absorption principal.

Spark Arrestor The silencers type AOR35-IS are excluding an integrated Spark Arrestor.

Mounting The silencers type AOR35-IS can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

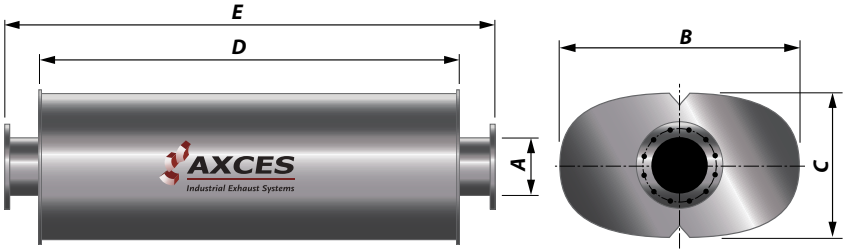
Material Silencers type AOR35-IS are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

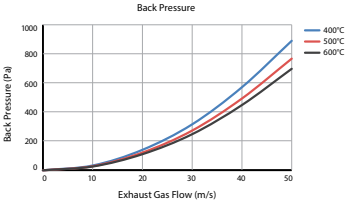
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

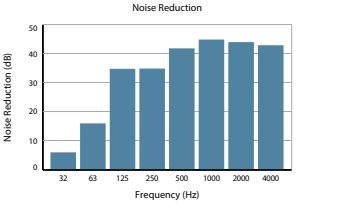
TYPE AOR 45

Damping level 45 dB(A)
without integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Weight (kg)
180210000020	2"	50	60.3	420	220	850	1000	45
180210000025	2.5"	60	76.1	480	240	1250	1500	68
180210000030	3"	80	88.9	510	260	1250	1500	80
180210000040	4"	100	114.3	635	320	1500	1750	130
180210000050	5"	125	139.7	635	320	1500	1750	145
180210000060	6"	150	168.3	750	375	2250	2500	225
180210000080	8"	200	219.1	875	440	2250	2500	300
180210000100	10"	250	273.0	1150	570	2750	3000	510
180210000120	12"	300	323.9	1210	610	3000	3250	610
180210000140	14"	350	355.6	1275	640	3500	3750	750
180210000160	16"	400	406.4	1410	705	4000	4250	1100
180210000180	18"	450	457.2	1605	805	4500	4750	1460
180210000200	20"	500	508.0	1725	865	5000	5250	1800





Damping Of The Noise Level ±45 dB(A).

Damping Basics of the silencers type AOR45 are according the reflection absorption principal.

Spark Arrestor The silencers type AOR45 are excluding an integrated Spark Arrestor.

Mounting The silencers type AOR45 can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

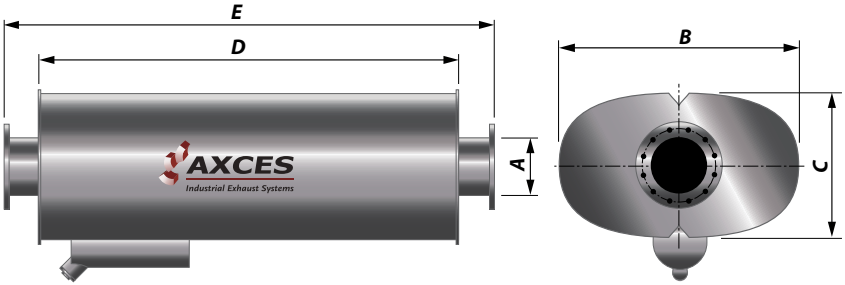
Material Silencers type AOR45 are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

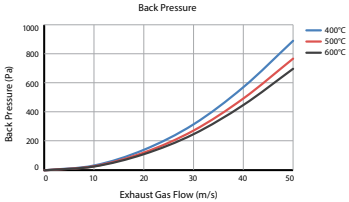
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

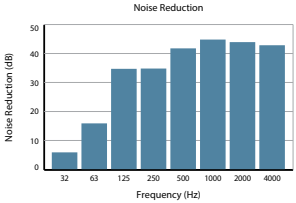
TYPE AOR 45-IS

Damping level 45 dB(A)
with integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Weight (kg)
180200000020	2"	50	60.3	420	220	850	1000	45
180200000025	2.5"	60	76.1	480	240	1250	1500	68
180200000030	3"	80	88.9	510	260	1250	1500	80
180200000040	4"	100	114.3	635	320	1500	1750	130
180200000050	5"	125	139.7	635	320	1500	1750	145
180200000060	6"	150	168.3	750	375	2250	2500	225
180200000080	8"	200	219.1	875	440	2250	2500	300
180200000100	10"	250	273.0	1150	570	2750	3000	510
180200000120	12"	300	323.9	1210	610	3000	3250	610
180200000140	14"	350	355.6	1275	640	3500	3750	750
180200000160	16"	400	406.4	1410	705	4000	4250	1100
180200000180	18"	450	457.2	1605	805	4500	4750	1460
180200000200	20"	500	508.0	1725	865	5000	5250	1800





Damping Of The Noise Level ±45 dB(A).

Damping Basics of the silencers type AOR45-IS are according the reflection absorption principal.

Spark Arrestor The silencers type AOR45-IS are excluding an integrated Spark Arrestor.

Mounting The silencers type AOR45-IS can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

Material Silencers type AOR45-IS are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

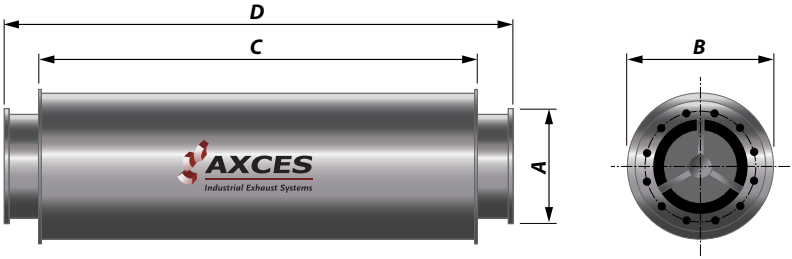
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

AIR INTAKE SILENCERS

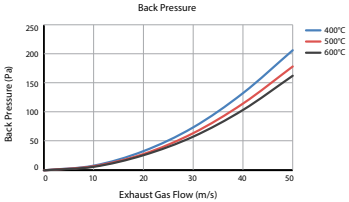
AXCES

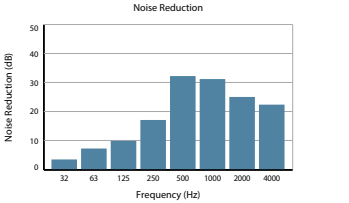
TYPE AIS25

Damping level 25 dB(A)
Low Back Pressure



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
160100000120	12	300	323.9	500	900	1100	100
160100000140	14	350	355.6	550	900	1100	115
160100000160	16	400	406.4	600	1000	1200	150
160100000180	18	450	457.2	650	1000	1200	160
160100000200	20	500	508.0	700	1100	1400	190
160100000220	22	550	560.0	750	1100	1400	200
160100000240	24	600	609.6	800	1200	1500	225
160100000260	26	650	664.0	850	1300	1600	250
160100000280	28	700	711.2	900	1300	1600	300
160100000300	30	750	762.0	950	1400	1700	350
160100000320	32	800	812.8	1050	1500	1800	400
160100000340	34	850	863.6	1100	1600	1900	425
160100000360	36	900	914.4	1150	1700	2000	450
160100000380	38	950	960.2	1200	1800	2100	550
160100000400	40	1000	1016.0	1250	1900	2200	700





Damping Of The Noise Level 25 dB(A).

Damping Basics of the silencers type AIS25 are according the absorbtion principal.

Spark Arrestor The silencers type AIS25 are excluding an integrated Spark Arrestor.

Mounting The silencers type AIS25 can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

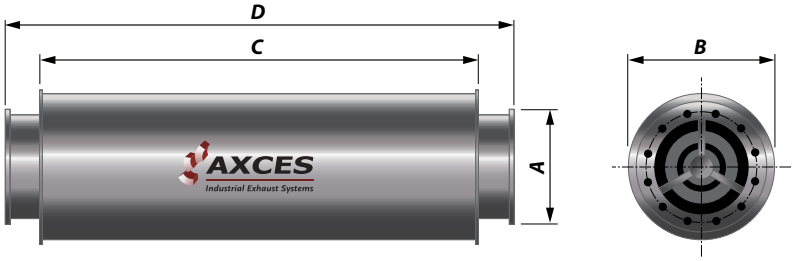
Material Silencers type AIS25 are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

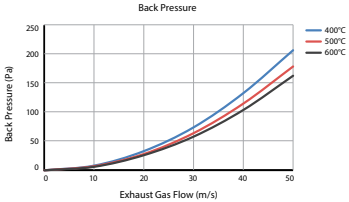
Custom Made Axces silencers are also manufactured based on specific dimensions or client's requirements.

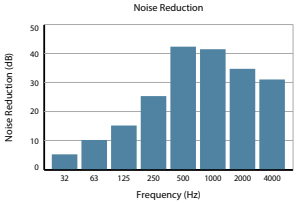
TYPE AIS35

Damping level 35 dB(A)
Low Back Pressure



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
160200000120	12	300	323.9	500	900	1100	100
160200000140	14	350	355.6	550	900	1100	115
160200000160	16	400	406.4	600	1000	1200	150
160200000180	18	450	457.2	650	1000	1200	160
160200000200	20	500	508.0	700	1100	1400	190
160200000220	22	550	560.0	750	1100	1400	200
160200000240	24	600	609.6	800	1200	1500	225
160200000260	26	650	664.0	850	1300	1600	250
160200000280	28	700	711.2	900	1300	1600	300
160200000300	30	750	762.0	950	1400	1700	350
160200000320	32	800	812.8	1050	1500	1800	400
160200000340	34	850	863.6	1100	1600	1900	425
160200000360	36	900	914.4	1150	1700	2000	450
160200000380	38	950	960.2	1200	1800	2100	550
160200000400	40	1000	1016.0	1250	1900	2200	700





Damping Of The Noise Level 35 dB(A).

Damping Basics of the silencers type AIS35 are according the absorbtion principal.

Spark Arrestor The silencers type AIS35 are excluding an integrated Spark Arrestor.

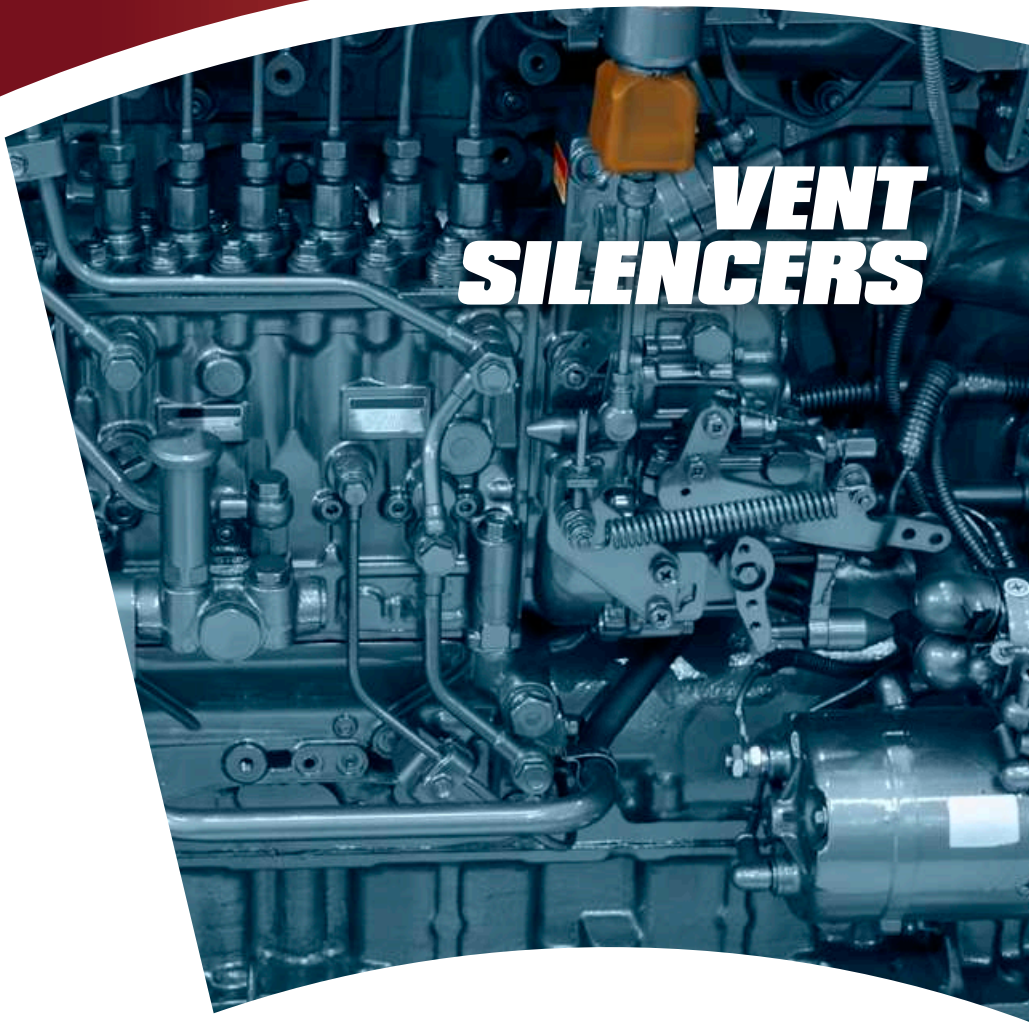
Mounting The silencers type AIS35 can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

Material Silencers type AIS35 are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

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

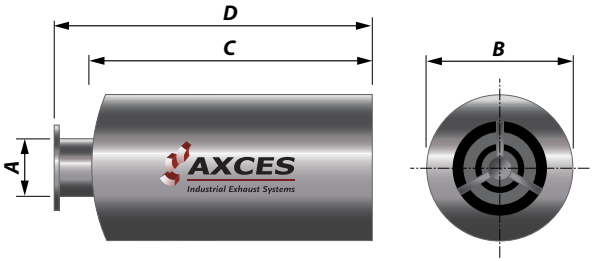


VENT SILENCERS

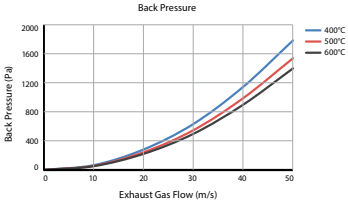
AXCES

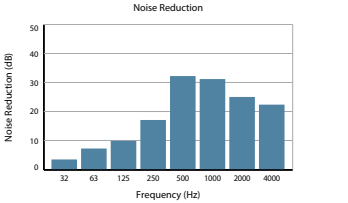
TYPE AVS

Damping level 40 dB(A)
without integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)
180200000020	4"	100	114.3	350	975	1100
180200000025	6"	150	168.3	550	1475	1600
180200000030	8"	200	219.1	650	1675	1800
180200000040	10"	250	273.0	750	1950	2075
180200000050	12"	300	323.9	900	2450	2575
180200000060	14"	350	355.6	1000	2650	2775
180200000080	16"	400	406.4	1150	3050	3175





Damping Of The Noise Level ±40 dB(A).

Damping Basics of the silencers type AVS are according the reflection absorption principal.

Spark Arrestor The silencers type AVS are excluding an integrated Spark Arrestor.

Mounting The silencers type AVS can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

Material Silencers type AVS are produced out of Steel 37-2 (S235JRG2).

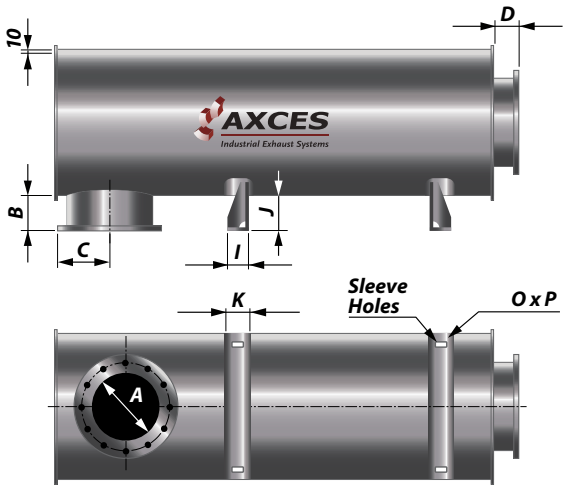
Temperature Maximum allowable temperature is 600°C.

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

SUPPORTS

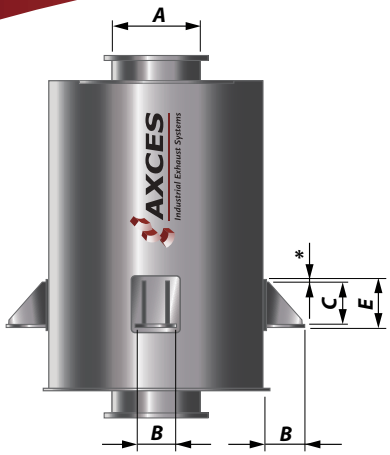
AXCES

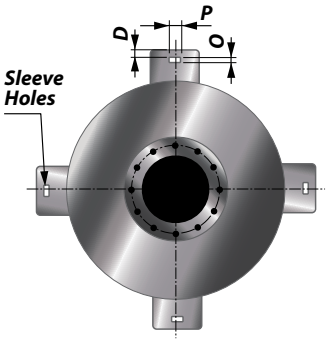
HORIZONTAL SUPPORTS



A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	I (mm)	J (mm)	K (mm)	O x P
2	50	60.3	80	85	100	80	100	60	36 x 18
2.5	65	76.1	80	95	100	80	100	60	36 x 18
3	80	88.9	80	100	100	80	100	60	36 x 18
4	100	114.3	100	110	125	100	125	80	45 x 24
5	125	139.7	100	125	125	100	125	80	45 x 24
6	150	168.3	100	140	125	100	125	80	45 x 24
7	175	192.2	130	165	125	120	155	100	45 x 24
8	200	219.1	130	165	125	120	155	100	45 x 24
10	250	273.0	130	195	125	120	155	100	45 x 24
12	300	323.9	130	225	125	140	155	120	45 x 24
14	350	355.6	130	250	125	140	155	120	45 x 24
16	400	406.4	170	275	125	170	200	150	45 x 24
18	450	457.2	170	305	125	170	200	150	45 x 24
20	500	508.0	170	330	125	170	200	150	45 x 24

VERTICAL SUPPORTS





A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	E (mm)	O x P
2	50	60.3	80	70	35	100	10 x 20
2.5	65	76.1	80	70	35	100	10 x 20
3	80	88.9	100	120	35	150	10 x 20
4	100	114.3	100	120	35	150	10 x 20
5	125	139.7	150	150	45	200	18 x 24
6	150	168.3	150	150	45	200	18 x 24
7	175	192.2	175	200	45	250	18 x 24
8	200	219.1	175	200	45	250	18 x 24
10	250	273.0	175	200	45	250	18 x 24
12	300	323.9	200	250	45	300	18 x 24
14	350	355.6	200	250	50	300	25 x 45
16	400	406.4	250	340	50	400	25 x 45
18	450	457.2	250	340	50	400	25 x 45
20	500	508.0	250	340	50	400	25 x 45

SPARK ARRESTORS

AXCES

INSTRUCTIONS FOR INSTALLATION

This installation and maintenance manual is intended for exhaust systems with spark arrestors manufactured by Axces B.V., Netherlands. By following the guidance in this publication, you will be able to get optimal use of the spark arrestor concerning back pressure, effectiveness and a prolonged lifetime. It discusses precautions, handling, mounting and maintenance of the spark arrestor. The requirements of these guidelines are binding.

INSTALLATION AND COMMISSIONING

- Information regarding dimensions and weight is sealed on one of the end covers of the spark arrestor.
- Under roof dry storage is required.
- The spark arrestors can be lifted on the lifting lugs or with hoisting equipment round the body.
- Before installation remove end covers.
- In case a spark arrestor is installed type (REAB35-IS), (ABS-IS), (CP), (SA) leave enough space. around the soot container to clean it.
- Do not cover the nut cap of the soot container in the heat insulation.
- Special care must be taken to the direction of mounting. On the body of the silencer is a flow direction arrow mounted.
- Before start up check that all the bolts of the flange connections are tight, and a gasket is installed.

GENERAL INFORMATION

- Axces spark arrestors are designed for mounting in exhaust gas lines of diesel and gas engines.
- The working is according to the centrifugal principle.
- The optimal gas speed is between 20 and 50 meters per second.
- The maximum allowable temperature is 500 degrees centigrade.
- The material used is (stainless) steel.

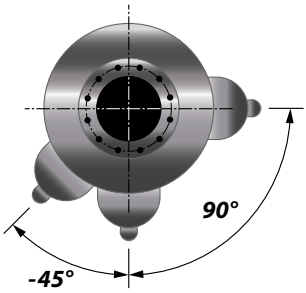
SPARE PARTS INFORMATION

- There are no recommended spare parts.
- All bolts and nuts have metric thread; therefore no special tools are required.

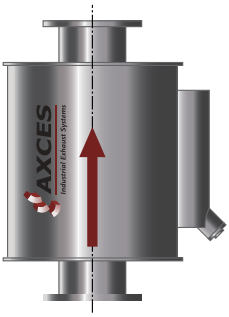
Type Approval acc. BV / DNV / RMRS

INSTALLATION OF SPARK ARRESTOR

Horizontal



Vertical



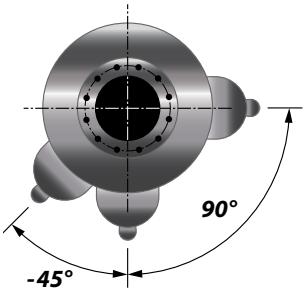
SPARK ARRESTOR POSITIONING

Horizontal

Soot box needs to be situated between -45° and 90°

Vertical

Soot box needs to be situated with plug facing downwards



SILENCER WITH SPARK ARRESTOR POSITIONING

Horizontal

Soot box needs to be situated between -45° and 90°

Vertical

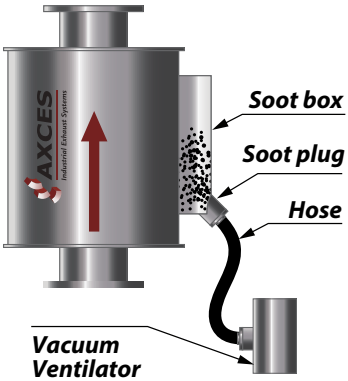
Soot box needs to be situated with plug facing downwards

CLEANING INSTRUCTIONS

ALL TYPES

Soot cleaning is compulsory and must be performed every six months. The following precautions must be respected.

- The exhaust spark arrestor or parts thereof may be hot. Injury danger.
- Exhaust gasses are poisonous. Do not inhale.



PROCEDURE

- If the engine runs, stop the engine.
- Remove the soot plug from the soot box (See picture).

OPTION 1

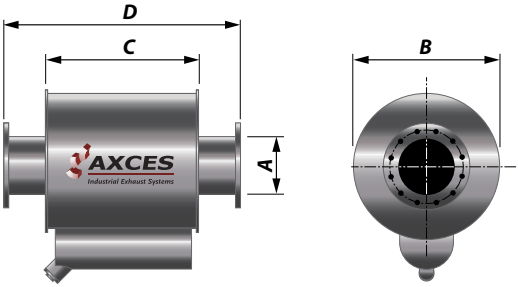
- Connect a socket extended with a rubber hose. The hose must end outdoors or at least in a properly ventilated space.
- Use a container to collect the soot.
- Start the engine and partly cover the tail pipe to increase pressure in the exhaust system. The soot will flow along with exhaust gasses through the rubber hose.

OPTION 2

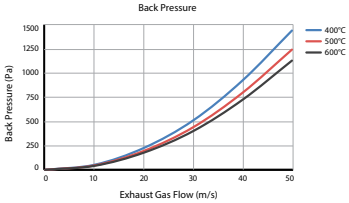
- Connect the socket to a vacuum cleaner and vacuum clean the soot box.
- Install the plug back into the soot box socket.
- Check for proper sealing of the plug so there are no leaks.

It is advisable to clean the spark arrestor with compressed air at regular intervals.

SPARK ARRESTOR TYPE SA



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
111000000015	1.5	40	48.3	114	118	208	2
111000000020	2	50	60.3	143	136	246	5
111000000025	2.5	60	76.1	172	186	276	7
111000000030	3	80	88.9	187	165	285	10
111000000040	4	100	114.3	243	220	360	12
111000000050	5	125	139.7	313	295	435	15
111000000060	6	150	168.3	376	325	485	20
111000000080	8	200	219.1	480	355	565	25
111000000100	10	250	273.0	564	645	895	30
111000000120	12	300	323.9	611	985	985	35
111000000140	14	350	355.6	671	800	1050	50
111000000160	16	400	406.4	751	1000	1300	80
111000000180	18	450	457.2	851	1250	1550	100
111000000200	20	500	508.0	951	1350	1640	120



Function The operation of the Spark Arrestors is based on physical centrifugal forces. Gases are forced creating a rotary movements by way of a fixed number of angeled positioned blades. As a result the heavy carbon particles are smoothly collected in the designed soot box.

Maintenance For correct operation of the spark arrestor, it is important to remove the cap at regular intervals, so catched particles can be removed.

Principal The Spark Arrestor type SA has its function to prevent materials usually sparks and other flameable carbon particles leaving the exhaust system.

Spark Arrestor The Spark Arrestor type SA can be installed in exhaust systems where sparks, flamable carbon particles, or other parts have to be separated.

Mounting The Spark Arrestor can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20 –50 m/s.

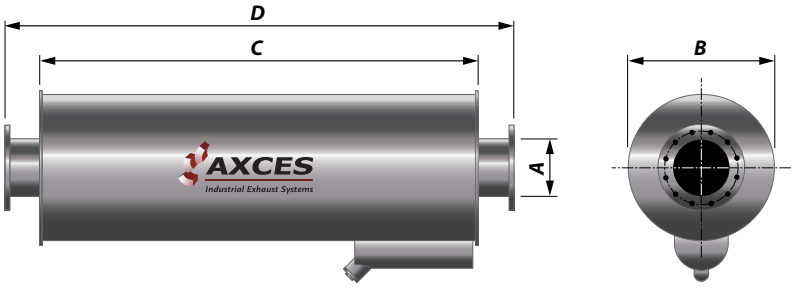
Material Spark Arrestors are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

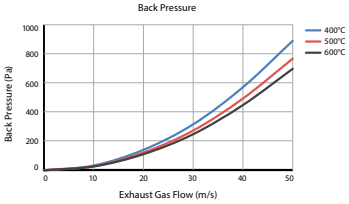
Custom Made Spark Arrestors are also manufactured based on specific dimensions or client's requirements.

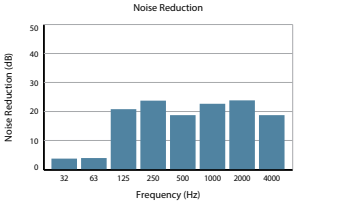
TYPE CP18

Damping level 18 dB(A)
with integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
121000000015	1.5	40	48.3	200	500	650	16
121000000020	2	50	60.3	200	500	650	16
121000000025	2.5	60	76.1	260	565	715	22
121000000030	3	80	88.9	310	565	715	26
121000000040	4	100	114.3	360	845	1075	40
121000000050	5	125	139.7	400	845	1075	50
121000000060	6	150	168.3	475	1000	1250	70
121000000080	8	200	219.1	560	1165	1415	100
121000000100	10	250	273.0	635	1500	1750	135
121000000120	12	300	323.9	760	1665	1915	185
121000000140	14	350	355.6	800	1835	2085	215
121000000160	16	400	406.4	860	2000	2250	250
121000000180	18	450	457.2	910	2165	2415	285
121000000200	20	500	508.0	960	2335	2585	320





Damping Of The Noise Level ±18 dB(A).

Damping Basics of the silencers type CP18 are according the reflection principal.

Spark Arrestor The silencers type CP18 can be installed in exhaust systems where sparks, flamable carbon particles, or other parts have to be separated.

Mounting The silencers type CP18 can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

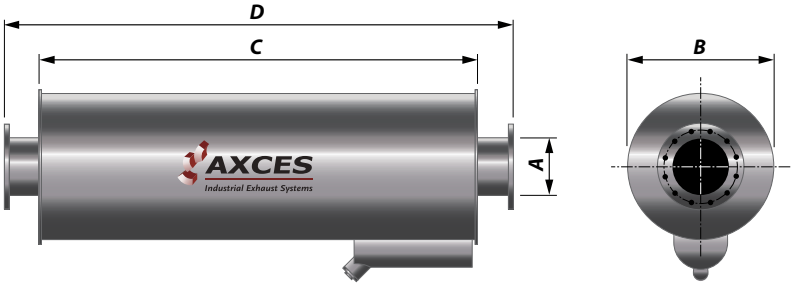
Material Silencers type CP18 are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

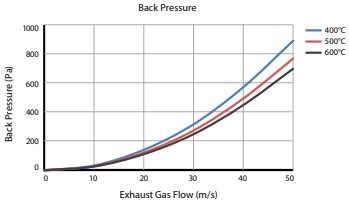
Custom Made Silencers type CP18 are also manufactured based on specific dimensions or client's requirements.

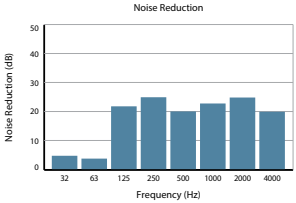
TYPE CP24

Damping level 24 dB(A)
with integrated Spark Arrestor



Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
121100000020	2	50	60.3	250	500	650	20
121100000025	2.5	60	76.1	300	500	650	25
121100000030	3	80	88.9	300	665	915	30
121100000040	4	100	114.3	400	835	1085	45
121100000050	5	125	139.7	400	1000	1250	55
121100000060	6	150	168.3	480	1000	1250	75
121100000080	8	200	219.1	600	1165	1415	105
121100000100	10	250	273.0	700	1500	1750	150
121100000120	12	300	323.9	800	1665	1915	195
121100000140	14	350	355.6	950	2000	2250	275
121100000160	16	400	406.4	950	2335	2585	305
121100000180	18	450	457.2	1100	2665	1915	405
121100000200	20	500	508.0	1200	3000	3250	510





Damping Of The Noise Level ±24 dB(A).

Damping Basics of the silencers type CP24 are according the reflection principal.

Spark Arrestor The silencers type CP24 can be installed in exhaust systems where sparks, flamable carbon particles, or other parts have to be separated.

Mounting The silencers type CP24 can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

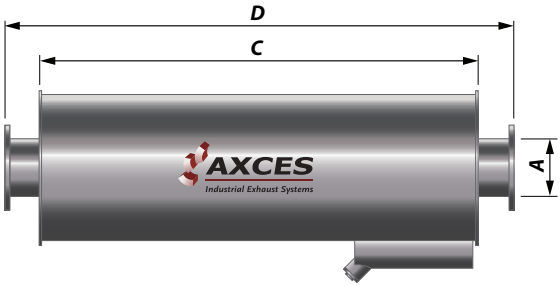
Material Silencers type CP24 are produced out of Steel 37-2 (S235JRG2).

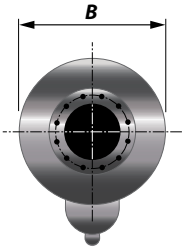
Temperature Maximum allowable temperature is 600°C.

Custom Made Silencers type CP24 are also manufactured based on specific dimensions or client's requirements.

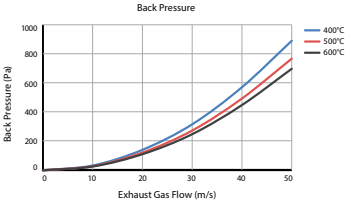
TYPE CP32

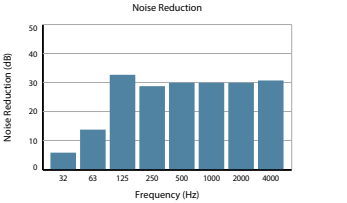
Damping level 32 dB(A)
with integrated Spark Arrestor





Article No.	A (inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
121200000030	3	80	88.9	380	835	1085	40
121200000040	4	100	114.3	475	1000	1250	65
121200000050	5	125	139.7	475	1000	1250	70
121200000060	6	150	168.3	560	1500	1750	110
121200000080	8	200	219.1	660	1500	1750	140
121200000100	10	250	273.0	860	1835	2085	220
121200000120	12	300	323.9	910	2000	2250	255
121200000140	14	350	355.6	960	2335	2585	310
121200000160	16	400	406.4	1060	2665	2915	380
121200000180	18	450	457.2	1210	3000	3250	510
121200000200	20	500	508.0	1300	3335	3585	575





Damping Of The Noise Level ±32 dB(A).

Damping Basics of the silencers type CP32 are according the reflection principal.

Spark Arrestor The silencers type CP32 can be installed in exhaust systems where sparks, flamable carbon particles, or other parts have to be separated.

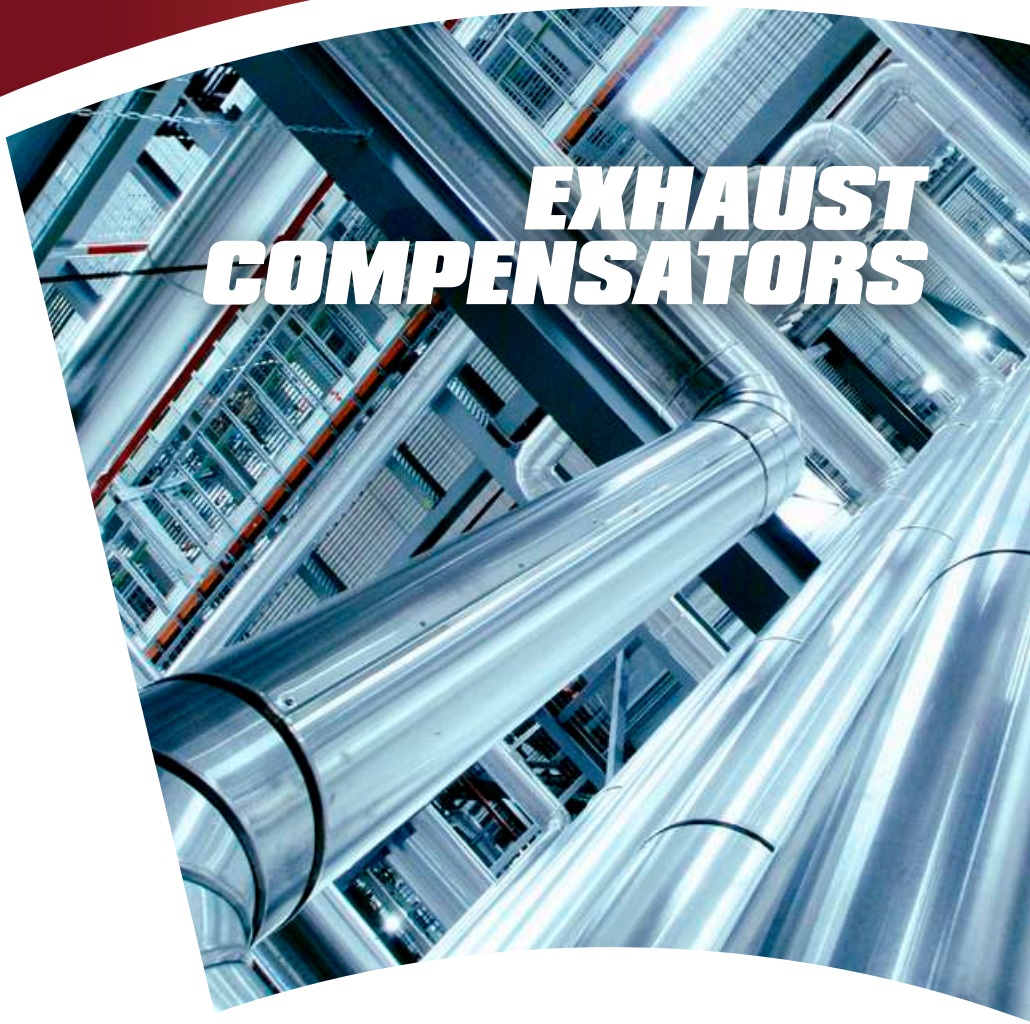
Mounting The silencers type CP32 can be installed both horizontal and vertical.

Exhaust Gas Speed Advised Exhaust Gas Speed between 20-50 m/s.

Material Silencers type CP32 are produced out of Steel 37-2 (S235JRG2).

Temperature Maximum allowable temperature is 600°C.

Custom Made Silencers type CP32 are also manufactured based on specific dimensions or client's requirements.



EXHAUST COMPENSATORS

AXCES

STAINLESS STEEL COMPENSATORS

EXHAUST COMPENSATORS

Stainless steel compensators are used in appliances, machines, apparatus and pipe systems where space is restricted:

- To compensate for movement
- To compensate for expansion
- To reduce tension
- To absorb noise and oscillation transmission
- To compensate for ground and foundation settlement
- As adapters to compensate for installation inaccuracies
- As dismantling pieces for fittings stainless steel compensators are flexible pipe connection elements and are used in a variety of industrial applications:

- Machine engineering
- Domestic industry
- Chemical industry
- Process plant engineering
- Gas and water supply
- Exhaust technology

STAINLESS STEEL BELLOWS

Structure

Axces stainless steel bellows are available in a variety of structures and versions. The steel bellows is the flexible ele- ment of every compensator. It must fulfil the requirement for good movability with simultaneous pressure resistance.

Variable parameters (wall thickness, number of plies, convolution geometry, number of convolutions) determine the pressure resistance, movement absorption and spring rate (self- resisting force) of the bellows. One-ply, two-ply and multiply bellows are manufactured from various materials with different wall thicknesses. The calculation methods ascertain the stability limits. The ability to withstand buckling is the prime criterion for smaller bellows diameters, whereas in larger bellows diameters it is convolution stability.

Material qualities

Axces compensator bellows are manufactured from top quality sheet metal. Different material qualities are used to cover the many operating conditions in various industrial applications. The outstanding characteristic of the steels and alloys is their particular resistance to chemically aggressive liquid media. Please ask our Technical Consulting Service for detailed information about the media resistance of individual materials.

RATING & SERVICE LIFE

Stainless steel bellows, as a rule, are rated for a temperature of +20 ° C, the nominal pressure and a load of 1000 load cycles. One load cycle refers to the procedure beginning at zero position, from where the compensator moves to the maximum elongation (positive) position, back through the zero position to the maximum compression (negative) position, and back to the zero position.

Together with the tolerable operating conditions.

- Pressure
- Temperature
- Movement
- Number of load cycles

The following parameters can also influence the service life of compensators:

- Corrosion
- High-frequency oscillations
- Sympathetic vibration
- Pressure shocks
- Temperature shocks
- Incorrect installation

Corrosion can be caused by incorrect selection or combination of materials, conveyance of aggressive media and inappropriate cleaning with chemical agents.
High-frequency oscillations and sympathetic vibration must be avoided by all means, because this will result in fatigue failure/fracture.
Pressure and temperature shocks must be avoided. It is important not to exceed the permitted maximum values.
Incorrect installation can be prevented by compliance with the installation and assembly instructions.
In the case of unrestrained compensators, the absence of fixed points can cause the pipeline to shift. This usually destroys the compensator.

Lifetime of compensators.

CONNECTION PARTS

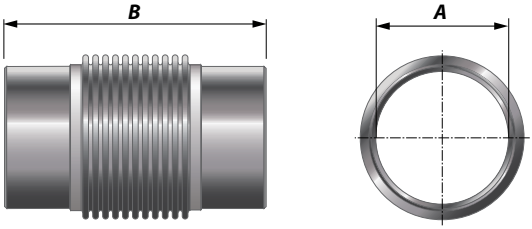
Axces steel compensators are supplied ready for installation. They are connected to pipes and fittings, by flanges, welding ends or threaded connections. The connections are standardized to fit commercially available flanges, threads and pipes.

Flanges

Stainless steel compensators can be supplied with rotating flanges or fixed flanges.
Standard flanges are drilled in accordance to DIN2573 PN6. Standard screws can be used because the flanges are drilled for standard bolts. Other flange connections under DIN, ANSI, JIS are also available.

TYPE AC13

Compensators with welded ends



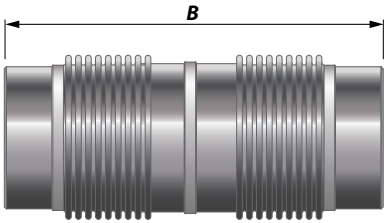
Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	Movements	
					Axial ± (mm)	Lateral ± (mm)
331085195015	1.5	40	48.3	195	35	18
331085195020	2	50	60.3	195	35	18
331085210025	2.5	65	76.1	210	38	16
331085250030	3	80	88.9	250	32	22
331085290040	4	100	114.3	290	32	28
331085305050	5	125	139.7	305	32	22
331085305060	6	150	168.3	305	32	20
331085310080	8	200	219.1	310	32	16
331085320100	10	250	273.0	320	40	17
331085320120	12	300	323.9	320	40	15
331085330140	14	350	355.6	330	40	14
331085340160	16	400	406.4	340	64	13
331085340180	18	450	457.2	340	64	11
331085340200	20	500	508.0	340	64	10
331085350240	24	600	609.6	350	64	9

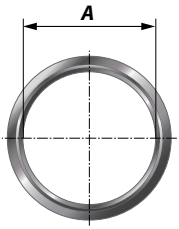
CHARACTERISTICS

- ✓ Stainless steel expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double Ply Bellows material
- ✓ Max. temperature: 550 °C
- ✓ Carbon steel welded ends
- ✓ All are stock items
- ✓ Standard length

TYPE AC14

Double Compensators with welded ends





Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	Movements	
					Axial ± (mm)	Lateral ± (mm)
331285400030	3	80	88.9	400	80	35
331285400040	4	100	114.3	400	69	40
331285400050	5	125	139.7	400	70	60
331285500060	6	150	168.3	500	75	70
331285500080	8	200	219.1	500	75	70
331285500100	10	250	273.0	500	55	32
331285500120	12	300	323.9	500	64	43
331285500140	14	350	355.6	500	64	39
331285600160	16	400	406.4	600	90	75
331285600180	18	450	457.2	600	90	69
331285600200	20	500	508.0	600	90	62
331285600240	24	600	609.6	600	90	52
331285600280	28	700	711.2	600	90	45
331285600320	32	800	812.8	600	90	39
331285600360	36	900	914.4	600	90	35
331285600400	40	1000	1016.0	600	90	31

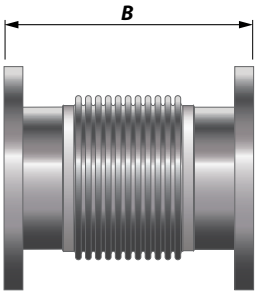
*Movements (axial/lateral) are not in combination.

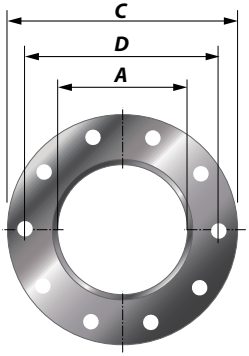
CHARACTERISTICS

- ✓ Stainless steel expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double Ply Bellows material
- ✓ Max. temperature: 550°C
- ✓ Twin bellows construction
- ✓ Carbon steel weld ends
- ✓ All are stock items
- ✓ Long length

TYPE AC15

Compensators with rotatable flanges PN6





Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	Flange			Movements*	
					C O.D. (mm)	Holes x d (mm)	D Bolt circle (mm)	Axial ± (mm)	Lateral ± (mm)
331405195015	1.5	40	48.3	195	130	4 x 14	100	35	18
331405195020	2	50	60.3	195	140	4 x 14	110	35	18
331405210025	2.5	65	76.1	210	160	4 x 14	130	38	16
331405250030	3	80	88.9	250	190	4 x 18	150	32	22
331405290040	4	100	114.3	290	210	4 x 18	170	32	28
331405305050	5	125	139.7	305	240	8 x 18	200	32	22
331405305060	6	150	168.3	305	265	8 x 18	225	32	20
331405310080	8	200	219.1	310	320	8 x 18	280	32	16
331405320100	10	250	273.0	320	375	12 x 18	335	40	17
331405320120	12	300	323.9	320	440	12 x 22	395	40	15
331405330140	14	350	355.6	330	490	12 x 22	445	40	14
331405340160	16	400	406.4	340	540	16 x 22	495	64	13
331405340180	18	450	457.2	340	595	16 x 22	550	64	11
331405340200	20	500	508.0	340	645	20 x 22	600	64	10
331405350240	24	600	609.6	350	755	20 x 26	705	64	9

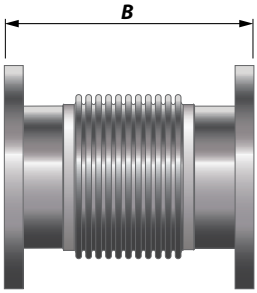
*Movements (axial/lateral) are not in combination.

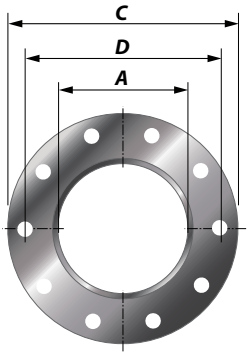
CHARACTERISTICS

- ✓ Carbon steel flanges according to DIN 2573 - PN6
- ✓ Stainless steel rotatable expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double Ply Bellows material
- ✓ Max. tempe rature: 550 °C
- ✓ All are stock items
- ✓ Standard length

TYPE AC16

Compensators with rotatable flanges PN10





Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	Flange			Movements*	
					C O.D. (mm)	Holes x d (mm)	D Bolt circle (mm)	Axial ± (mm)	Lateral ± (mm)
331415195015	1.5	40	48.3	195	150	4 x 18	110	35	18
331415195020	2	50	60.3	195	165	4 x 18	125	35	18
331415210025	2.5	65	76.1	210	185	4 x 18	145	38	16
331415250030	3	80	88.9	250	200	8 x 18	160	32	22
331415290040	4	100	114.3	290	220	8 x 18	180	32	28
331415305050	5	125	139.7	305	250	8 x 18	210	32	22
331415305060	6	150	168.3	305	285	8 x 22	240	32	20
331415310080	8	200	219.1	310	340	8 x 22	295	32	16
331415320100	10	250	273.0	320	395	12 x 22	350	40	17
331415320120	12	300	323.9	320	445	12 x 22	400	40	15
331415330140	14	350	355.6	330	505	16 x 22	460	40	14
331415340160	16	400	406.4	340	565	16 x 26	515	64	13
331415340180	18	450	457.2	340	615	20 x 26	565	64	11
331415340200	20	500	508.0	340	670	20 x 26	620	64	10
331415350240	24	600	609.6	350	780	20 x 30	725	64	9

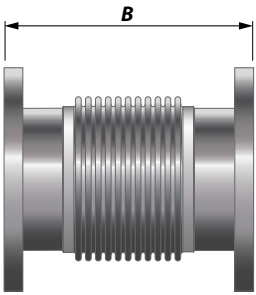
*Movements (axial/lateral) are not in combination.

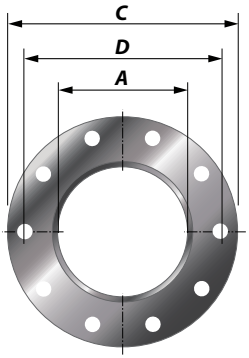
CHARACTERISTICS

- ✓ Carbon steel flanges according to DIN 2576 - PN10
- ✓ Stainless steel rotatable expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double Ply Bellows material
- ✓ Max. tempera ture: 550 °C
- ✓ All are stock items
- ✓ Standard length

TYPE AC17

Compensators with rotatable flanges DIN86044





Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	Flange			Movements*	
					C O.D. (mm)	Holes x d (mm)	D Bolt circle (mm)	Axial ± (mm)	Lateral ± (mm)
33145195015	1.5	40	48.3	195	130	4 x 14	100	35	18
331405195020	2	50	60.3	195	140	4 x 14	110	35	18
331405210025	2.5	65	76.1	210	160	4 x 14	130	38	16
331405250030	3	80	88.9	250	190	4 x 18	150	32	22
331405290040	4	100	114.3	290	210	4 x 18	170	32	28
331405305050	5	125	139.7	305	240	8 x 18	200	32	22
331405305060	6	150	168.3	305	265	8 x 18	225	32	20
331405310080	8	200	219.1	310	320	8 x 18	280	32	16
331405320100	10	250	273.0	320	375	12 x 18	335	40	17
331405320120	12	300	323.9	320	440	12 x 22	395	40	15
331405330140	14	350	355.6	330	490	12 x 22	445	40	14
331405340160	16	400	406.4	340	540	16 x 22	495	64	13
331405340180	18	450	457.2	340	595	16 x 22	550	64	11
331405340200	20	500	508.0	340	645	20 x 22	600	64	10
331405350240	24	600	609.6	350	755	20 x 26	705	64	9

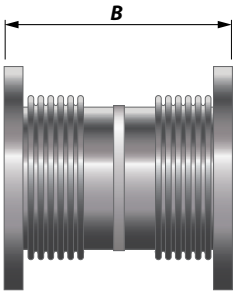
*Movements (axial/lateral) are not in combination.

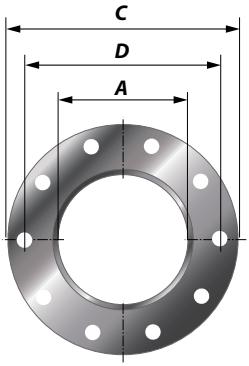
CHARACTERISTICS

- ✓ Carbon steel flanges according to DIN 86044
- ✓ Stainless steel rotatable expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double Ply Bellows material
- ✓ Max. temperature: 550°C
- ✓ All are stock items
- ✓ Standard length

TYPE AC18

Double Compensators with rotatable flanges PN6





Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	Flange			Movements*	
					C O.D. (mm)	Holes x d (mm)	D Bolt circle (mm)	Axial ± (mm)	Lateral ± (mm)
331605400030	3	80	88.9	400	200	8 x 18	160	80	35
331605400040	4	100	114.3	400	220	8 x 18	180	69	40
331605400050	5	125	139.7	400	250	8 x 18	210	70	60
331605500060	6	150	168.3	500	285	8 x 22	240	75	70
331605500080	8	200	219.1	500	320	8 x 18	280	75	70
331605500100	10	250	273.0	500	375	12 x 18	335	55	32
331605500120	12	300	323.9	500	440	12 x 22	395	64	43
331605500140	14	350	355.6	500	490	12 x 22	445	64	39
331605600160	16	400	406.4	600	540	16 x 22	495	90	75
331605600180	18	450	457.2	600	595	16 x 22	550	90	69
331605600200	20	500	508.0	600	645	20 x 22	600	90	62
331605600240	24	600	609.6	600	754	20 x 22	700	90	52
331605600280	28	700	711.2	600	856	24 x 22	800	90	45
331605600320	32	800	812.8	600	958	24 x 22	900	90	39
331605600360	36	900	914.4	600	1060	28 x 22	1010	90	35
331605600400	40	1000	1016.0	600	1162	32 x 22	1110	90	31

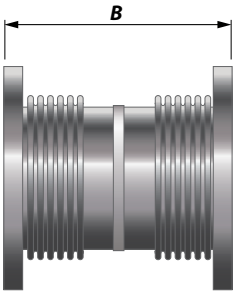
*Movements (axial/lateral) are not in combination.

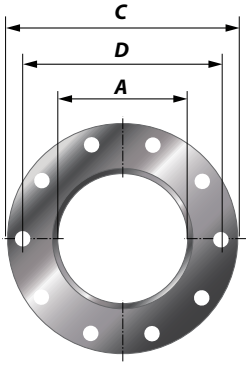
CHARACTERISTICS

- ✓ Stainless steel expansion joint AISI321
- ✓ Alternative flange dimensions available
- ✓ With rotatable flanges according to DIN2573 - PN6
- ✓ Supplied at pre-stressed lenght
- ✓ Max. Pressure: 2.5 bar (20°C)
- ✓ Single ply bellows material
- ✓ Max. Temperature: 550°C
- ✓ Twin bellows construction
- ✓ All are stock items
- ✓ Long length

TYPE AC19

Double Compensators with rotatable flanges PN10





Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	Flange			Movements*	
					C O.D. (mm)	Holes x d (mm)	D Bolt circle (mm)	Axial ± (mm)	Lateral ± (mm)
331615400030	3	80	88.9	400	200	8 x 18	160	80	35
331615400040	4	100	114.3	400	220	8 x 18	180	69	40
331615400050	5	125	139.7	400	250	8 x 18	210	70	60
331615500060	6	150	168.3	500	285	8 x 22	240	75	70
331615500080	8	200	219.1	500	320	8 x 18	280	75	70
331615500100	10	250	273.0	500	375	12 x 18	335	55	32
331615500120	12	300	323.9	500	440	12 x 22	395	64	43
331615500140	14	350	355.6	500	490	12 x 22	445	64	39
331615600160	16	400	406.4	600	540	16 x 22	495	90	75
331615600180	18	450	457.2	600	595	16 x 22	550	90	69
331615600200	20	500	508.0	600	645	20 x 22	600	90	62
331615600240	24	600	609.6	600	754	20 x 22	700	90	52
331615600280	28	700	711.2	600	856	24 x 22	800	90	45
331615600320	32	800	812.8	600	958	24 x 22	900	90	39
331615600360	36	900	914.4	600	1060	28 x 22	1010	90	35
331615600400	40	1000	1016.0	600	1162	32 x 22	1110	90	31

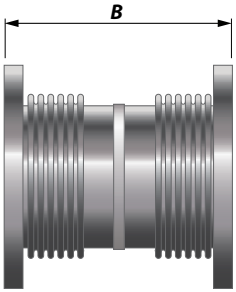
*Movements (axial/lateral) are not in combination.

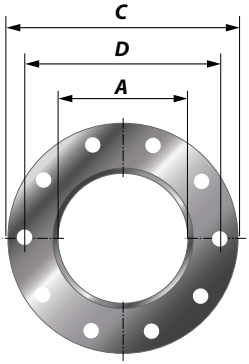
CHARACTERISTICS

- ✓ Stainless steel expansion joint AISI321
- ✓ Alternative flange dimensions available
- ✓ With rotatable flanges according to DIN2573 - PN10
- ✓ Supplied at pre-stressed lenght
- ✓ Max. Pressure: 2.5 bar (20°C)
- ✓ Single ply bellows material
- ✓ Max. Temperature: 550°C
- ✓ Twin bellows construction
- ✓ All are stock items
- ✓ Long length

TYPE AC20

Double Compensators with rotatable flanges DIN86044





Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B Length (mm)	Flange			Movements*	
					C O.D. (mm)	Holes x d (mm)	D Bolt circle (mm)	Axial ± (mm)	Lateral ± (mm)
331625400030	3	80	88.9	400	200	8 x 18	160	80	35
331625400040	4	100	114.3	400	220	8 x 18	180	69	40
331625400050	5	125	139.7	400	250	8 x 18	210	70	60
331625500060	6	150	168.3	500	285	8 x 22	240	75	70
331625500080	8	200	219.1	500	320	8 x 18	280	75	70
331625500100	10	250	273.0	500	375	12 x 18	335	55	32
331625500120	12	300	323.9	500	440	12 x 22	395	64	43
331625500140	14	350	355.6	500	490	12 x 22	445	64	39
331625600160	16	400	406.4	600	540	16 x 22	495	90	75
331625600180	18	450	457.2	600	595	16 x 22	550	90	69
331625600200	20	500	508.0	600	645	20 x 22	600	90	62
331625600240	24	600	609.6	600	754	20 x 22	700	90	52
331625600280	28	700	711.2	600	856	24 x 22	800	90	45
331625600320	32	800	812.8	600	958	24 x 22	900	90	39
331625600360	36	900	914.4	600	1060	28 x 22	1010	90	35
331625600400	40	1000	1016.0	600	1162	32 x 22	1110	90	31

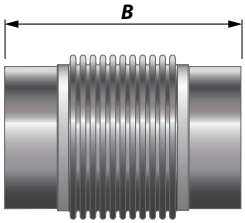
*Movements (axial/lateral) are not in combination.

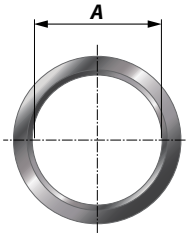
CHARACTERISTICS

- ✓ Stainless steel expansion joint AISI321
- ✓ Alternative flange dimensions available
- ✓ With rotatable flanges according to DIN 86044
- ✓ Supplied at pre-stressed lenght
- ✓ Max. Pressure: 2.5 bar (20°C)
- ✓ Single ply bellows material
- ✓ Max. Temperature: 550°C
- ✓ Twin bellows construction
- ✓ All are stock items
- ✓ Long length

TYPE AC21

Compensators with stainless steel welded ends





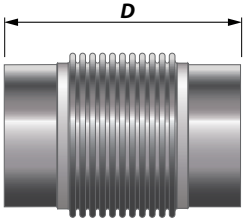
Article No.	A Size (inch)	NB (mm)	Pipe (mm)	B (mm)	Movements	
					Axial ± (mm)	Lateral ± (mm)
322085160015	1.5	40	48.3	245	24	18
322085160012	2	50	60.3	245	30	18
322085160025	2.5	65	76.1	245	32	16
322085160030	3	80	88.9	245	20	22
322085160040	4	100	114.3	245	38	28
322085160050	5	125	139.7	245	38	22
322085160060	6	150	168.3	245	37	20
322085160080	8	200	219.1	245	38	16
322085160100	10	250	273.0	245	±38	17

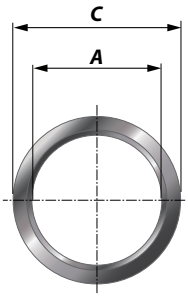
CHARACTERISTICS

- ✓ Stainless steel expansion joint: AISI321
- ✓ **Stainless steel welded ends**
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double Ply Bellows material
- ✓ Max. temperature: 550°C
- ✓ All are stock items
- ✓ Standard length

TYPE AC22

Compact Compensators with welded ends



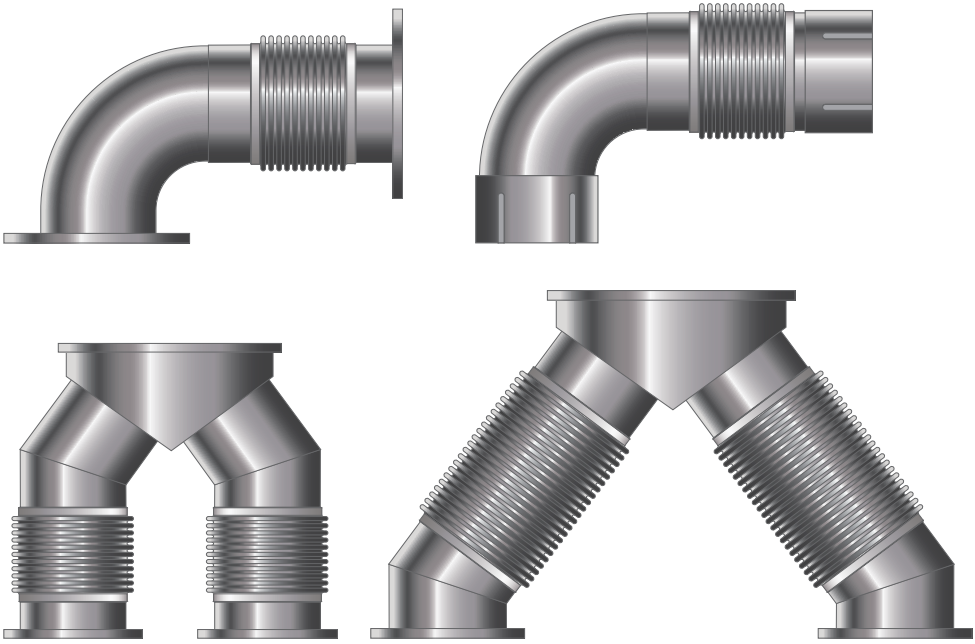


Article No.	A Size (inch)	NB (mm)	Pipe (mm)	D (mm)	C (mm)	Movements		Springrate	
						Axial ± (mm)	Lateral ± (mm)	Axial ± (mm)	Lateral ± (mm)
322085150015	1.5	40	48.3	150	60.3	25	8	47	89
322085150020	2	50	60.3	150	78.3	25	8	68	166
322085150025	2.5	65	76.1	150	96.7	25	8	56	169
322085150030	3	80	88.9	150	109.7	25	8	63	219
322085150040	4	100	114.3	150	140.5	25	6	59	293
322085150050	5	125	139.7	150	165.7	25	5	71	420
322085150060	6	150	168.3	150	200.5	25	5	56	389
322085150080	8	200	219.1	150	251.1	25	5	69	608
322085150100	10	250	273.0	150	305.2	25	4	86	933
322085150120	12	300	323.9	150	360.9	25	4	81	1042

CHARACTERISTICS

- ✓ Stainless steel expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Double ply bellows material
- ✓ Max. temperature: 550°C
- ✓ Carbon steel weld ends
- ✓ All are stock items
- ✓ Compact Line

CUSTOM MADE COMPENSATORS



Custom made compensators are available in every shape, with or without flange in sizes ranging from 4 to 40 inch.

CHARACTERISTICS

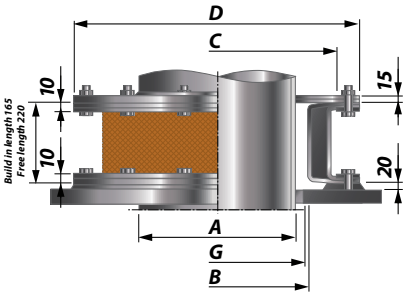
- ✓ **Stainless steel expansion joint AISI 321**
- ✓ **Max. pressure: 2.5 bar (20°C)**
- ✓ **Double ply bellows material**
- ✓ **Max. temperature: 550°C**
- ✓ **Carbon steel weld ends**

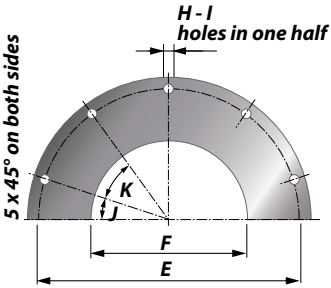
FABRIC COMPENSATORS

AXCES

TYPE AFC01

Flanged Fabric Compensators





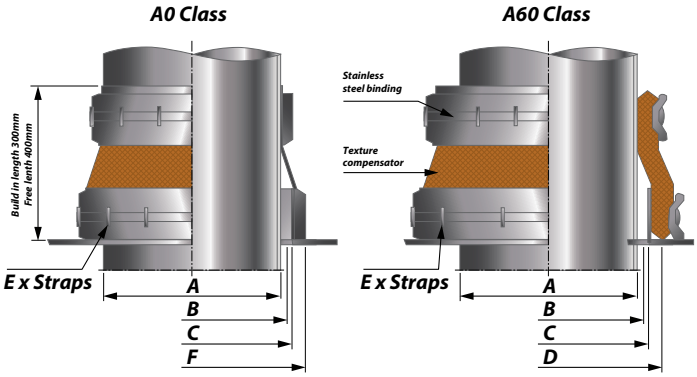
Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)
351000000020	2	50	60.3	169	259	359	309	61	130	ø14	3	30°	2 x 60°
351000000025	2.5	65	76.1	169	259	359	309	77	130	ø14	3	30°	2 x 60°
351000000030	3	80	88.9	169	259	359	309	90	130	ø14	3	30°	2 x 60°
351000000040	4	100	114.3	195	285	385	335	116	155	ø14	3	30°	2 x 60°
351000000050	5	125	139.7	220	310	410	360	141	180	ø14	4	22.5°	3 x 45°
351000000060	6	150	168.3	248	338	438	388	170	210	ø14	4	22.5°	3 x 45°
351000000080	8	200	219.1	300	390	490	440	220	265	ø14	4	22.5°	3 x 45°
351000000100	10	250	273.0	353	443	543	493	274	315	ø14	4	22.5°	3 x 45°
351000000120	12	300	323.9	403	475	575	525	325	370	ø14	4	22.5°	3 x 45°
351000000140	14	350	355.6	435	520	620	570	357	400	ø14	5	18°	4 x 36°
351000000160	16	400	406.4	486	576	676	626	408	450	ø14	5	18°	4 x 36°
351000000180	18	450	457.2	537	620	720	670	459	510	ø14	5	18°	4 x 36°
351000000200	20	500	508.0	588	678	778	728	510	560	ø18	6	15°	5 x 30°

CHARACTERISTICS

- ✓ Compensation of thermal and/ or mechanical movement
- ✓ In axial, lateral or angular direction.
- ✓ Isolation of vibration and heat as well as pipe work borne
- ✓ Sound transmission.
- ✓ Low reaction force due to movements.
- ✓ Separation of compartments.
- ✓ Compensation of pipework misalignment.
- ✓ LRoS type approval.

TYPE ACC01

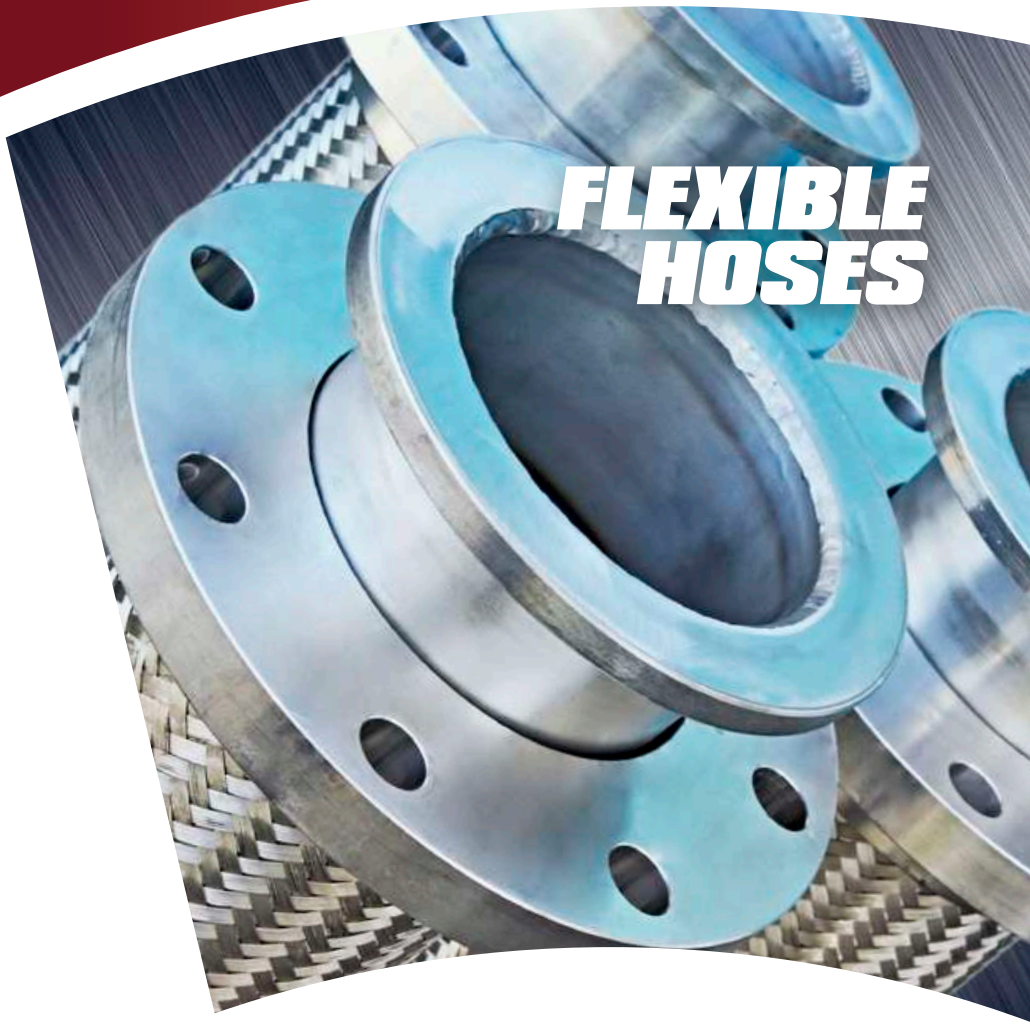
Clamped Fabric Compensators



Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
361000000050	5	125	139.7	180	199	300	2	240
361000000060	6	150	168.3	210	231	330	2	270
361000000080	8	200	219.1	260	282	380	2	320
361000000100	10	250	273.0	315	336	435	2	375
361000000120	12	300	323.9	365	386	485	2	425
361000000140	14	350	355.6	395	418	520	2	460
361000000160	16	400	406.4	450	469	570	3	510
361000000180	18	450	457.2	500	521	620	3	560
361000000200	20	500	508.0	550	571	670	3	610

CHARACTERISTICS

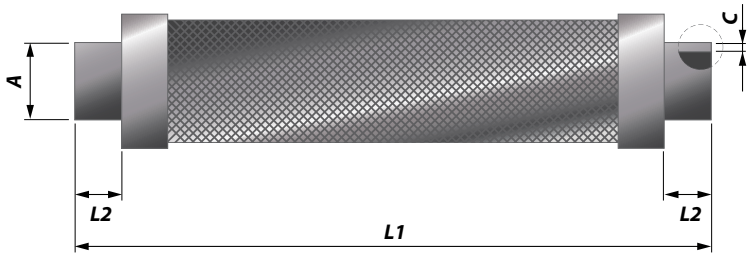
- ✓ Compensation of thermal and/ or mechanical movement
- ✓ in axial, lateral or angular direction.
- ✓ Isolation of vibration and heat as well as pipe work borne
- ✓ sound transmission.
- ✓ Low reaction force due to movements.
- ✓ Separation of compartments.
- ✓ Compensation of pipework misalignment.
- ✓ LRoS type approval.



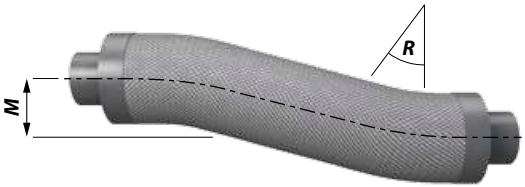
FLEXIBLE HOSES

AXCES

TYPE FH01

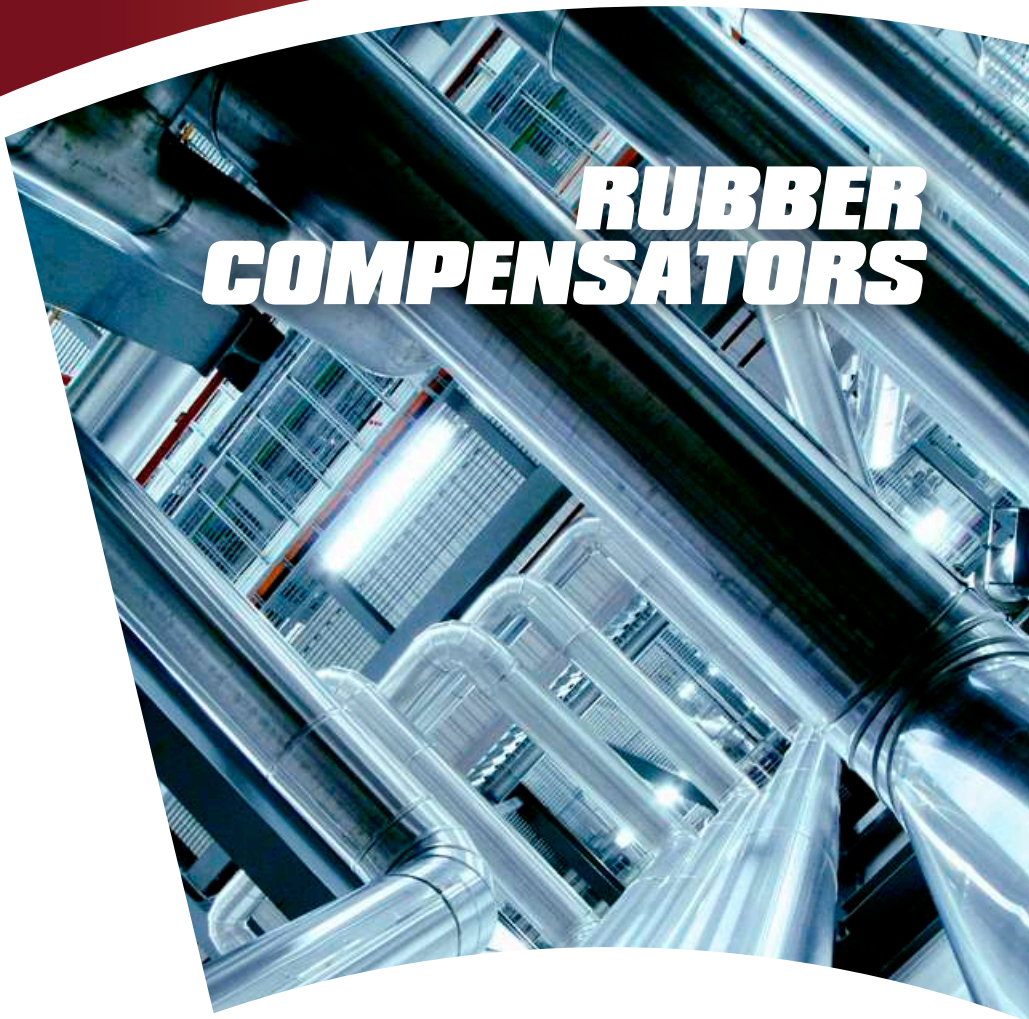


Article No.	A Size (inch)	NB (mm)	Pipe (mm)	L1 (mm)	L2 (mm)	C (mm)	R (mm)	M (mm)	Weight (kg)
230100000010	1	25	33.4	300	45	2.6	200	7	0.5
230100000013	1.25	32	42.2	300	45	2.6	250	6	0.6
230100000015	1.5	40	48.3	300	45	2.6	250	6	0.8
230100000020	2	50	60.3	400	45	2.9	350	9	1.0
230100000025	2.5	60	76.1	400	45	2.9	410	7	1.5
230100000030	3	80	88.9	500	45	3.2	450	12	2.0
230100000040	4	100	114.3	500	45	3.6	560	12	3.0
230100000050	5	125	139.7	500	45	3.6	710	8	3.5
230100000060	6	150	168.3	500	45	3.6	815	7	4.5



CHARACTERISTICS

- ✓ Expansion joint AISI 321
- ✓ Max. pressure: 2.5 bar (20°C)
- ✓ Single ply bellows material
- ✓ Max. temperature: 550°C
- ✓ Carbon steel weld ends
- ✓ All sizes are stock items
- ✓ Axces flexible hoses are also manufactured based on specific dimensions or client's requirements.



RUBBER COMPENSATORS

AXCES

RUBBER COMPENSATORS

For use in Hot Liquid Mediums

Yellow ring rubber bellows are made from a nitrile rubber compound (ECO) and provide resistance to water up to 70°C and oil up to 90°C, however this is influenced by the working pressure.

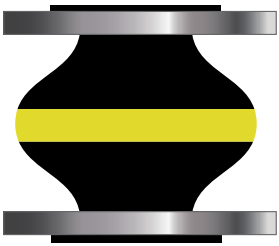
Rubber bellows with flanges have a special flow-assisting convoluted shape of the bellows which minimize detrimental turbulence of the medium and pressure loss.

High tensile strength texture cord plies combined with proven synthetic rubber mixes guarantee maximum reliability and an extended working life.

The rubber bellows are produced with a vulcanized steel ring to guarantee a perfect sealing of the profiled sealing rings in the special chamber of the swivel flanges.

Average installed insulation is about 25 dB, a figure which is further improved by compressed installation.

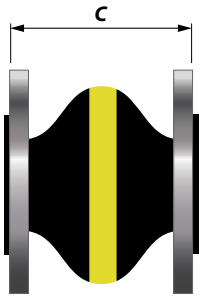
The standard flange range is made of carbon steel S235JR, drilled according to DIN PN10/16 and electrolytic galvanized.

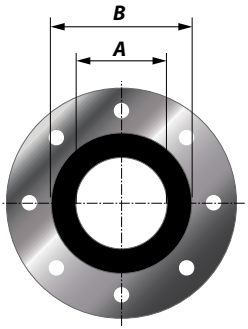


Type approvals

TYPE RC01

For us in Hot Liquid Medium





Article No.	Bellows dimensions			Allowable displacement			Effective bellows area (cm^2)	Weight (kg)	Min-Max. pressure (abs)		Installation length	
	A (mm)	B (mm)	C (mm)	Ax. (mm)	Lat. (mm)	Ang. (°)			(kPa)	(MPa)	Min. (mm)	Max. (mm)
341000000010	25	72	130	-30/+20	±20	±35	35	1.9	20	1.6	120	135
341000000013	32	72	130	-30/+20	±20	±35	35	2.0	20	1.6	120	135
341000000015	40	79	130	-30/+20	±20	±35	50	3.5	20	1.6	120	135
341000000020	50	89	130	-30/+20	±20	±35	74	4.3	20	1.6	120	135
341000000025	65	104	130	-30/+20	±20	±30	87	5.5	20	1.6	120	135
341000000030	80	120	130	-30/+20	±20	±30	120	6.2	30	1.6	120	135
341000000040	100	139	130	-30/+20	±20	±25	143	7.7	40	1.6	120	135
341000000050	125	164	130	-30/+20	±20	±25	210	8.7	60	1.6	120	135
341000000060	150	189	130	-30/+20	±20	±15	283	11.3	60	1.6	120	135
341000000080	200	237	130	-30/+20	±20	±15	525	16.2	70	1.0	115	140
341000000100	250	289	130	-30/+20	±20	±10	636	20.5	70	1.0	125	140
341000000120	300	338	130	-30/+20	±20	±10	897	24.0	80	1.0	125	140
341000000140	350	390	200	-30/+20	±20	±10	1290	34.0	80	1.0	190	210
341000000160	400	455	200	-30/+20	±20	±10	1628	37.5	80	1.0	190	210
341000000180	500	555	200	-30/+20	±20	±10	2546	47.0	80	1.0	190	210

CHARACTERISTICS

- ✓ **The maximum working pressure is 16 Bar (10 Bar*) with a test pressure of 25 Bar and even a burst pressure of over 60 Bar (30 Bar*)**
  (* for bellows larger than NB 150)
- ✓ **Flange type acc. DIN2576 - PN10**

AXCES

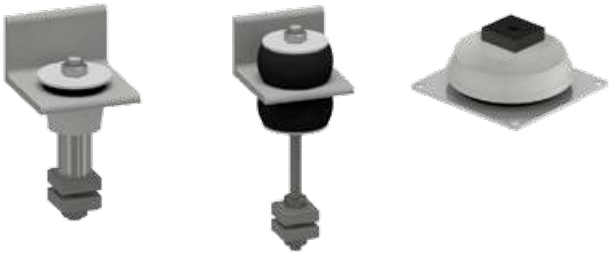
FLEXIBLE SUSPENSION

Noise and Vibrations

In an exhaust system for diesel engines, there will be vibrations caused by the engine. While these vibrations travel through the exhaust system they can cause disturbing noise as well as vibrations to be emitted through the entire structure of the vessel or building. Together with the client, Axces is able to design an exhaust system which will reduce these vibrations and noise emissions as much as possible. Axces does this by flexibly mounting the exhaust gas system with flexible suspension. These flexible suspension elements are made from a rubber-metal combination which dampen the vibrations and thus reduce noise emitted by vibrations. By carefully designing and positioning the rubber-metal elements it is possible to obtain a reduction of 8 to 10 dB (A) across the majority of the frequency range of 63 to 4000 Hz. Every installation takes into account the weight of the appropriate section of the system. Axces uses two different types of flexible suspension, Fixed Supporting Points and Sliding Supporting Points to obtain the optimum mounting.

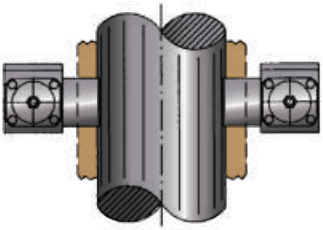
Fixed Supporting Points take the static and dynamic forces and determine the direction of the expansion in the exhaust system.

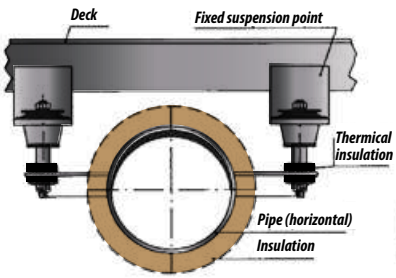
Sliding Supporting Points allow the thermal expansion movements caused by the high exhaust temperature which is transferred to the exhaust piping to be controlled. When an exhaust pipe is installed in a horizontal direction, the sliding supporting points also carry the weight of the exhaust pipe.



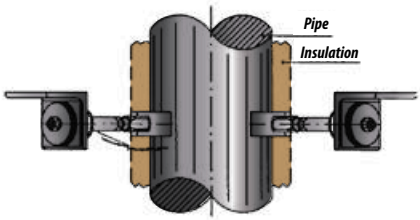
MOUNTING INSTRUCTIONS

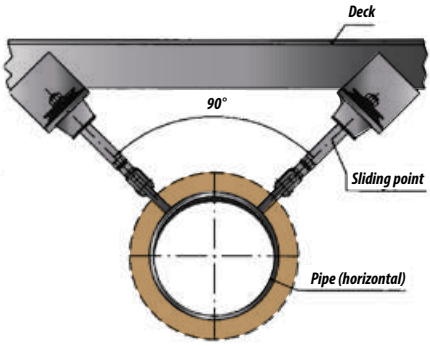
Fixed suspension points



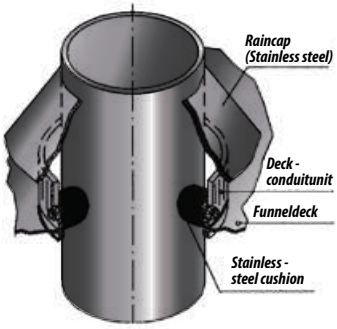


Sliding points

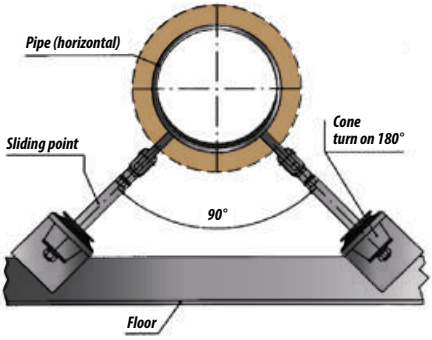




Deck conduit unit

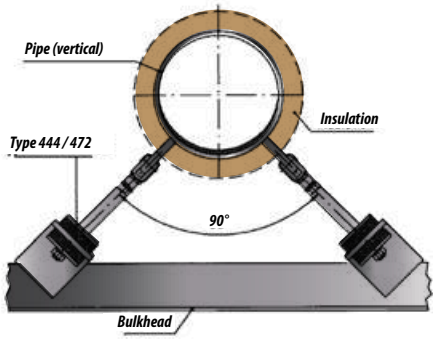


Slidingpoints for supporting

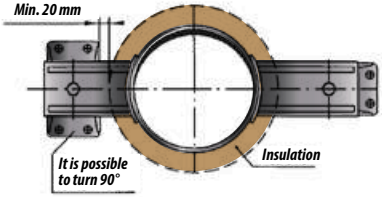


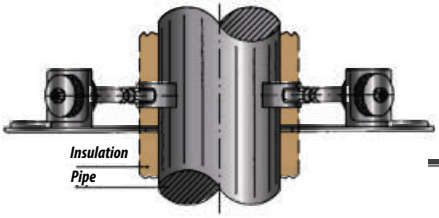
MOUNTING INSTRUCTIONS

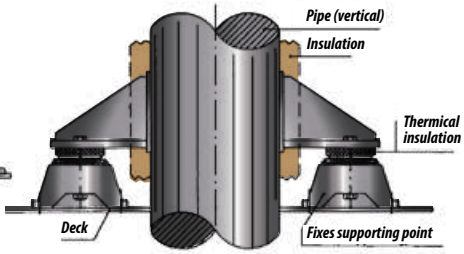
Sliding points 444/472



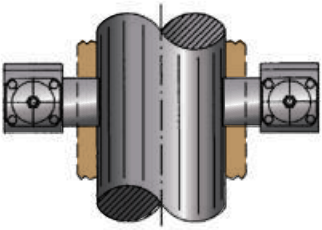
Fixed supporting points



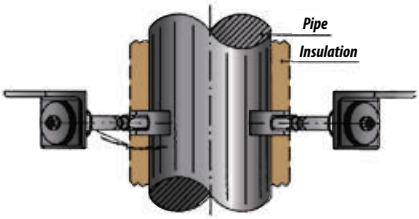




Fixed suspension points

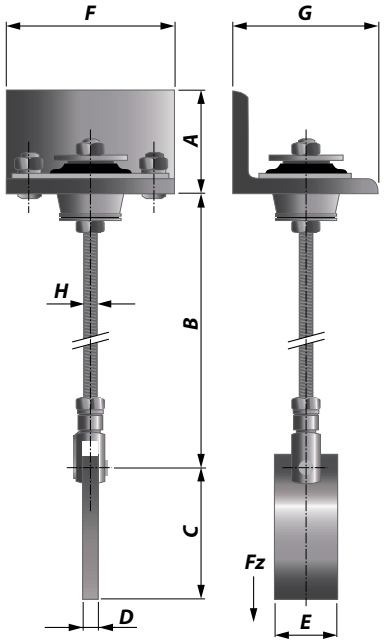


Sliding points



SLIDING SUPPORTING POINTS

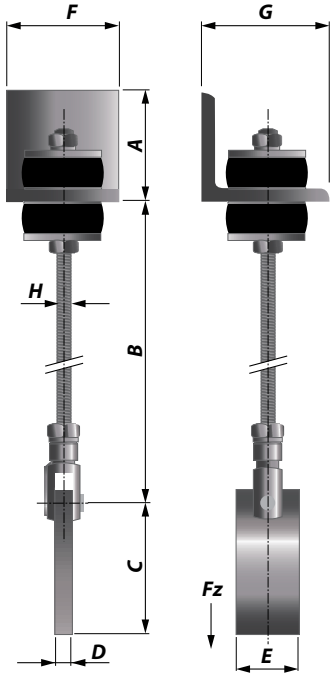
PAX-90



Type	Article No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H	Weight (kg)	Fz max (kg)	Hardness
PAX 90 - 45°	430104510009	50	320	118	8	50	95	75	M10	1.4	50	45°
PAX 90 - 60°	430106010009	50	320	118	8	50	95	75	M10	1.4	90	60°

SLIDING SUPPORTING POINTS

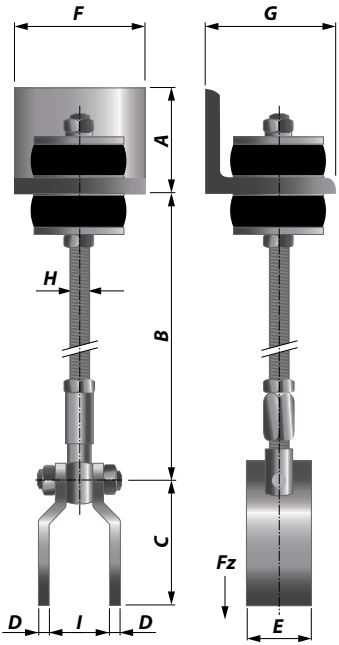
PAX-300/PAX-450



Type	Article No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H	Weight (kg)	Fz max (kg)	Hard-ness
PAX 300 - 45°	430104512030	65	300	135	10	60	100	100	M12	2.6	175	45°
PAX 300 - 60°	430106012030	65	300	135	10	60	100	100	M12	2.6	250	60°
PAX 450 - 45°	430104516045	80	470	130	15	70	120	120	M16	5.0	300	45°
PAX 450 - 60°	430106016045	80	470	130	15	70	120	120	M16	5.0	450	65

SLIDING SUPPORTING POINTS

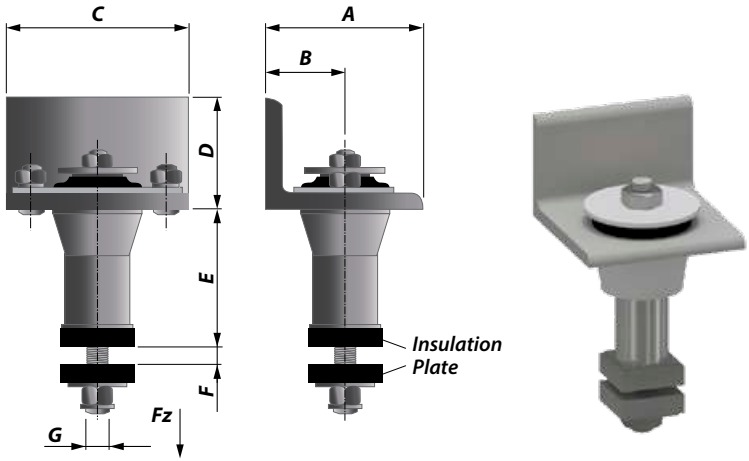
PAX-900/PAX-2000/PAX-3600



Type	Article No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H	Weight (kg)	Fz max (kg)	Hard-ness
PAX 900 - 45°	430104524090	100	530	115	10	40	150	150	M24	70	650	45°
PAX 900 - 60°	430106024090	100	530	115	10	40	150	150	M24	70	900	60°
PAX 2000 - 45°	430104530200	100	530	130	10	50	180	200	M30	80	1000	45°
PAX 2000 - 60°	430106530200	100	530	130	10	50	180	200	M30	80	2000	65°
PAX 3600 - 45°	430104536360	100	555	215	15	65	230	200	M36	140	1800	45°
PAX 3600 - 60°	430106536360	100	555	215	15	65	230	200	M36	140	3600	65°

HANGING SUPPORTING POINTS

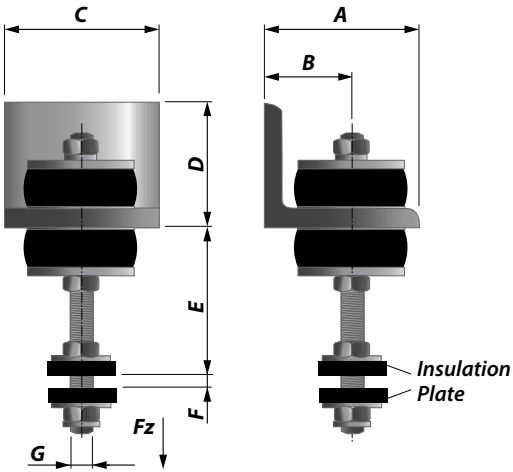
VOAX-90/VOAX-520/VOAX-950



Type	Article No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Insulation Plate (mm)	Weight (kg)	Fz max (kg)	Hard-ness
VOAX 90-45°	430204510009	75	40	95	50	50	Max. 20	M10	35x35x12	0.9	50	45°
VOAX 90-60°	430206010009	75	40	95	50	50	Max. 20	M10	35x35x12	0.9	90	60°
VOAX 520-45°	430204512052	100	55	110	65	88	Max. 15	M12	40x40x12	2.1	230	45°
VOAX 520-60°	430206012052	100	55	110	65	88	Max. 15	M12	40x40x12	2.1	420	60°
VOAX 520-70°	430207012052	100	55	110	65	88	Max. 15	M12	40x40x12	2.1	520	70°
VOAX 950-45°	430204516950	120	68	135	80	97	Max. 20	M16	50x50x12	3.8	400	45°
VOAX 950-60°	430206016950	120	68	135	80	97	Max. 20	M16	50x50x12	3.8	620	60°
VOAX 950-70°	430207016950	120	68	135	80	97	Max. 20	M16	50x50x12	3.8	950	70°

HANGING SUPPORTING POINTS

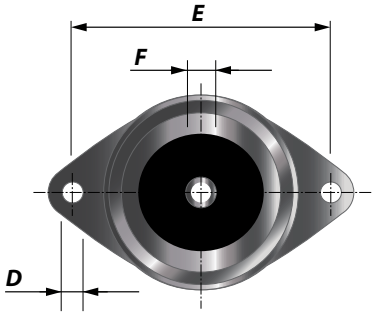
VOAX-300/VOAX-450/VOAX-900/VOAX-2000/VOAX-3400

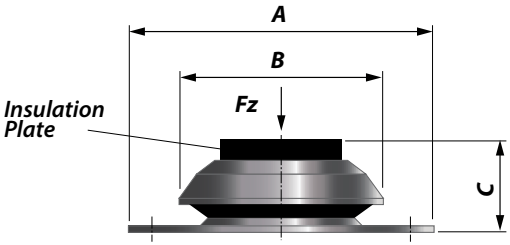


Type	Article No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	G (mm)	Insulation Plate (mm)	Weight (kg)	Fz max (kg)	Hard-ness
VOAX 300-45°	430204512030	100	55	65	50	105	M12	40x40x12	1.9	175	45°
VOAX 300-60°	430206012030	100	55	65	50	105	M12	40x40x12	1.9	250	60°
VOAX 450-45°	430204516045	120	65	80	65	100	M16	50x50x12	3.5	300	45°
VOAX 450-60°	430206016045	120	65	80	65	100	M16	50x50x12	3.5	450	60°
VOAX 900-45°	430204524090	150	80	100	65	130	M24	60x60x12	7.3	650	45°
VOAX 0900-60°	430206024090	150	80	100	80	130	M24	60x60x12	7.3	900	60°
VOAX 2000-45°	430204530200	200	110	100	65	130	M30	70x70x12	10.1	1000	45°
VOAX 2000-65°	430206530200	200	110	100	80	130	M30	70x70x12	10.1	2000	60°
VOAX 3400-45°	430104536340	200	110	100	80	155	M36	80x80x12	17.0	1700	45°
VOAX 3400-65°	430106536340	200	110	100	80	155	M36	80x80x12	17.0	3400	60°

STANDING SUPPORTING POINTS

OAX-225/OAX-475

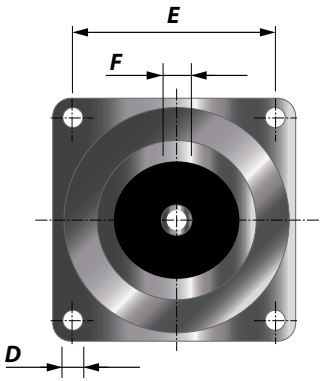


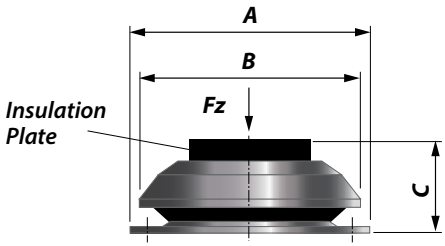


Type	Article No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Insulation Plate (mm)	Weight (kg)	Fz max (kg)	Hard-ness
OAX 225-45°	430304512022	134	82	45	11 (2x)	105	M12	40x40x12	0.5	85	45°
OAX 225-55°	430305512022	134	82	45	11 (2x)	105	M12	40x40x12	0.5	160	55°
OAX 225-65°	430306512022	134	82	45	11 (2x)	105	M12	40x40x12	0.5	225	65°
OAX 475-45°	430304512047	170	113	55	13 (2x)	140	M12	40x40x12	1.1	375	45°
OAX 475-55°	430305512047	170	113	55	13 (2x)	140	M12	40x40x12	1.1	500	55°
OAX 475-65°	430306512047	170	113	55	13 (2x)	140	M12	40x40x12	1.1	560	65°

STANDING SUPPORTING POINTS

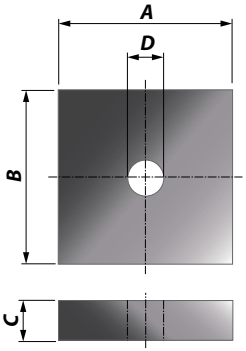
OAX-1400/OAX-3600





Type	Article No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Insulation Plate (mm)	Weight (kg)	Fz max (kg)	Hard-ness
OAX 1400-45°	430304516140	168	150	66	13 (4x)	132	M16	80x80x12	2.2	750	45°
OAX 1400-55°	430305516140	168	150	66	13 (4x)	132	M16	80x80x12	2.2	930	55°
OAX 1400-65°	430306516140	168	150	66	13 (4x)	132	M16	80x80x12	2.2	1180	65°
OAX 3600-45°	430304520360	220	206	94	18 (4x)	180	M20	100x100x20	5.4	2650	45°
OAX 3600-55°	430305520360	220	206	94	18 (4x)	180	M20	100x100x20	5.4	3550	55°
OAX 3600-65°	430306520360	220	206	94	18 (4x)	180	M20	100x100x20	5.4	5200	65°

INSULATION PLATES

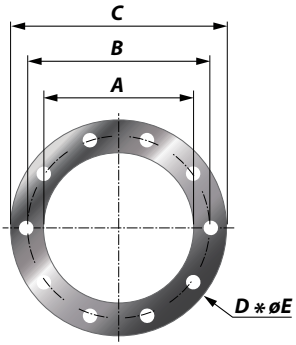


Article No.	A (mm)	B (mm)	C (mm)	D (mm)
430000000001	40	40	12	13
430000000002	50	50	12	13
430000000003	50	50	12	17
430000000004	80	80	12	17

FLANGES & GASKETS

AXCES

FLANGE TYPE DIN 2573 - PN6



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
212000120010	1	25	33.4	35	75	100	4	11	12	1
212000120013	1.25	32	42.2	43	90	120	4	14	12	1
212000120015	1.5	40	48.3	49	100	130	4	14	12	1
212000120020	2	50	60.3	61	110	140	4	14	12	2
212000120025	2.5	65	76.1	73	130	160	4	14	12	2
212000120030	3	80	88.9	90	150	190	4	18	12	2
212000120040	4	100	114.3	116	170	210	4	18	12	2
212000160050	5	125	139.7	142	200	240	8	18	16	4
212000160060	6	150	168.3	171	225	265	8	18	16	4
212000160080	8	200	219.1	222	280	320	8	18	16	5
212000160100	10	250	273.0	276	335	375	12	18	16	6
212000160120	12	300	323.9	327	395	440	12	22	16	8
212000160140	14	350	355.6	360	445	490	12	22	16	10
212000160160	16	400	406.4	411	495	540	16	22	16	11
212000160180	18	450	457.2	461	550	595	16	22	16	13
212000200200	20	500	508.0	512	600	645	20	22	16	14
212000200240	24	600	609.6	614	705	755	20	26	20	22
212000200280	28	700	711.2	716	810	860	24	26	20	25
212000200320	32	800	812.8	818	920	975	24	30	20	31
212000200360	36	900	914.4	920	1020	1075	24	30	20	35
212000200400	40	1000	1016.0	1022	1120	1022	28	30	20	38

CHARACTERISTICS

Flanges Hole pattern according type DIN 2573 - PN6

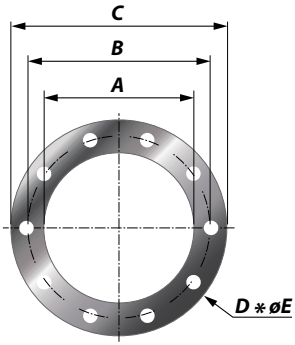
Material Flanges are produced out of Steel S235JRG2

Range Diameter range from 33.4 mm up to 1016 mm

Thickness From minimum 12 mm up to maximum 20 mm

Temperature The maximum allowable temperature is 600°C

FLANGE TYPE DIN 2576 - PN10



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
212010120010	1	25	33.4	35	85	115	4	14	12	1
212010120013	1.25	32	42.2	43	100	140	4	18	12	1
212010120015	1.5	40	48.3	49	110	150	4	18	12	1
212010120020	2	50	60.3	61	125	165	4	18	12	2
212010120025	2.5	65	76.1	73	145	185	4	18	12	2
212010120030	3	80	88.9	90	160	200	4	18	12	2
212010120040	4	100	114.3	116	180	220	4	18	12	2
212010160050	5	125	139.7	142	210	250	8	18	16	4
212010160060	6	150	168.3	171	240	285	8	22	16	4
212010160080	8	200	219.1	222	295	340	8	22	16	5
212010160100	10	250	273.0	276	350	395	12	22	16	6
212010160120	12	300	323.9	327	400	445	12	22	16	8
212010200140	14	350	355.6	360	460	505	12	22	16	10
212010200160	16	400	406.4	411	515	565	16	26	16	11
212010200180	18	450	457.2	461	565	615	16	26	16	13
212010200200	20	500	508.0	512	620	670	20	26	16	14
212010200240	24	600	609.6	614	725	780	20	30	20	22
212010200280	28	700	711.2	716	840	895	24	30	20	25
212010200320	32	800	812.8	818	950	1015	24	33	20	31
212010200360	36	900	914.4	920	1050	1115	24	33	20	35
212010200400	40	1000	1016.0	1022	1160	1230	28	36	20	38

CHARACTERISTICS

Flanges Hole pattern according type DIN 2576 - PN10

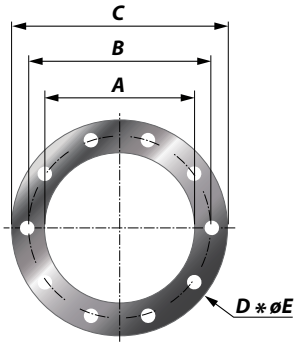
Material Flanges are produced out of Steel S235JRG2

Range Diameter range from 33.4 mm up to 1016 mm

Thickness From minimum 12 mm up to maximum 20 mm

Temperature The maximum allowable temperature is 600°C

FLANGE TYPE DIN 86044



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
212020160100	10	250	273.0	276	335	375	12	18	16	6
212020160120	12	300	323.9	327	395	440	12	22	16	8
212020160140	14	350	355.6	360	445	490	12	22	16	10
212020160160	16	400	406.4	411	495	540	16	22	16	11
212020160180	18	450	457.2	461	550	595	16	22	16	13
212020160200	20	500	508.0	512	600	645	20	22	16	14
212020200220	22	550	560.0	563	650	703	20	22	20	20
212020200240	24	600	609.6	614	700	754	20	22	20	22
212020200260	26	650	664.0	665	750	805	20	22	20	24
212020200280	28	700	711.2	716	800	856	24	22	20	25
212020200300	30	750	762.0	767	860	907	24	22	20	27
212020200320	32	800	812.8	818	900	958	24	22	20	29
212020200360	36	900	914.4	920	1010	1060	28	22	20	32
212020200380	38	950	698.0	970	1060	1110	28	22	20	34
212020200400	40	1000	1016.0	1022	1110	1167	32	22	20	36
212020200440	44	1100	1120.0	1126	1210	1266	32	22	20	39
212020200480	48	1200	1220.0	1226	1310	1366	36	22	20	42
212020200520	52	1300	1324.0	1326	1410	1466	40	22	20	45

CHARACTERISTICS

Flanges Hole pattern according type DIN 86044

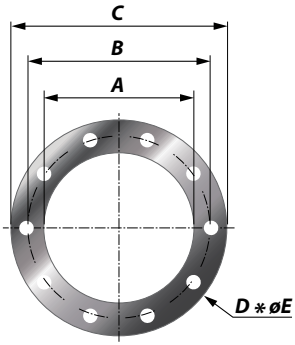
Material Flanges are produced out of Steel S235JRG2

Range Diameter range from 273 mm up to 1324 mm

Thickness From minimum 16 mm up to maximum 20 mm

Temperature The maximum allowable temperature is 600°C

FLANGE TYPE ANSI 150



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
212030150010	1	25	33.4	35	79	110	4	16	15	1
212030160013	1.25	32	42.2	43	89	120	4	16	16	1
212030180015	1.5	40	48.3	49	99	130	4	16	18	1
212030200020	2	50	60.3	61	121	150	4	19	20	2
212030230025	2.5	65	76.1	73	140	180	4	19	23	4
212030240030	3	80	88.9	90	153	190	4	19	24	4
212030240040	4	100	114.3	116	191	230	8	19	24	6
212030240050	5	125	139.7	142	216	255	8	22	24	6
212030260060	6	150	168.3	171	242	280	8	22	26	8
212030290080	8	200	219.1	222	299	345	8	22	29	13
212030310100	10	250	273.0	276	362	405	12	26	31	17
212030320120	12	300	323.9	327	432	485	12	26	32	27
212030350140	14	350	355.6	360	476	535	12	30	35	35
212030370160	16	400	406.4	411	540	600	16	30	37	42
212030400180	18	450	457.2	461	578	635	16	33	40	53
212030430200	20	500	508.0	512	635	700	20	33	43	65
212030480240	24	600	609.6	614	750	815	20	36	48	92

CHARACTERISTICS

Flanges Hole pattern according type ANSI 150 Standard

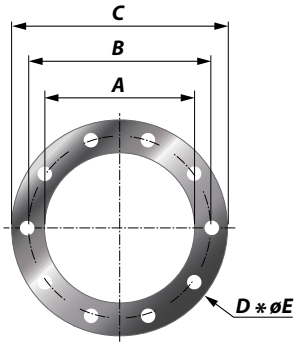
Material Flanges are produced out of Steel S235JRG2

Range Diameter range from 33.4 mm up to 609.6 mm

Thickness From minimum 15 mm up to maximum 48 mm

Temperature The maximum allowable temperature is 600°C

FLANGE TYPE JIS B2220 - 5K



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
212040100010	1	25	33.4	35	75	95	4	12	10	1
212040100013	1.25	32	42.2	43	90	115	4	15	12	1
212040100015	1.5	40	48.3	49	95	120	4	15	12	1
212040140020	2	50	60.3	61	105	130	4	15	14	1
212040140025	2.5	65	76.1	77	130	155	4	15	14	2
212040140030	3	80	88.9	90	145	180	4	19	14	2
212040160040	4	100	114.3	116	165	200	8	19	16	2
212040160050	5	125	139.7	142	200	235	8	19	16	3
212040180060	6	150	168.3	167	230	265	8	19	18	4
212040200080	8	200	219.1	218	280	320	8	23	20	6
212040220100	10	250	273.0	270	345	385	12	23	22	9
212040220120	12	300	323.9	321	390	430	12	23	22	10
212040240140	14	350	355.6	358	435	480	12	25	24	14
212040240160	16	400	406.4	409	495	540	16	25	24	17
212040240180	18	450	457.2	460	555	605	16	25	24	22
212040240200	20	500	508.0	511	605	655	20	25	24	23
212040260240	24	600	609.6	613	715	770	20	27	26	32
212040260280	28	700	711.2	715	820	875	24	27	26	38
212040280320	32	800	812.8	817	930	995	24	33	28	52
212040300360	36	900	914.4	919	1030	1095	24	33	30	61
212040320400	40	1000	1016.0	1021	1130	1195	28	33	32	71

CHARACTERISTICS

Flanges Hole pattern according type JIS Standard

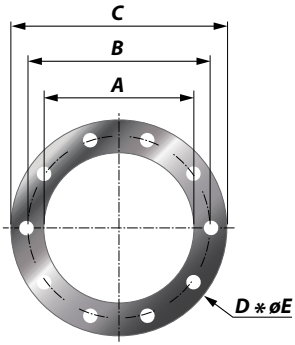
Material Flanges are produced out of Steel S235JRG2

Range Diameter range from 33.4 mm up to 1016 mm

Thickness From minimum 10 mm up to maximum 32 mm

Temperature The maximum allowable temperature is 600°C

FLANGE TYPE JIS B2220 - 10K



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
212050140010	1	25	34.5	35	90	125	4	19	14	1
212050160013	1.25	32	43.2	43	100	135	4	19	16	2
212050160015	1.5	40	49.1	49	105	140	4	19	16	2
212050160020	2	50	61.1	61	120	155	4	19	16	2
212050180025	2.5	65	77.1	77	140	175	4	19	18	3
212050180030	3	80	90.0	90	150	185	8	19	18	3
212050180040	4	100	115.4	116	175	210	8	19	18	3
212050200050	5	125	141.2	142	210	250	8	23	20	5
212050220060	6	150	166.6	167	240	280	8	23	22	6
212050220080	8	200	218.0	218	290	330	12	23	22	8
212050240100	10	250	269.5	270	355	400	12	25	24	12
212050240120	12	300	321.0	321	400	445	16	25	24	14
212050260140	14	350	358.1	358	445	490	16	25	26	16
212050280160	16	400	409.0	409	510	560	16	27	28	23
212050300180	18	450	460.0	460	565	620	20	27	30	30
212050300200	20	500	511.0	511	620	675	20	27	30	34
212050320240	24	600	613.0	613	730	795	24	33	32	46
212050340280	28	700	715.0	715	840	905	24	33	34	60
212050360320	32	800	817.0	817	950	1020	28	33	36	76
212050380360	36	900	919.0	919	1050	1120	28	33	38	89
212050400400	40	1000	1021.0	1021	1160	1235	28	39	40	109

CHARACTERISTICS

Flanges Hole pattern according type JIS Standard

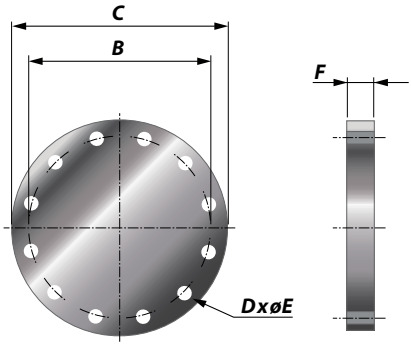
Material Flanges are produced out of Steel S235JRG2

Range Diameter range from 34.5 mm up to 1021 mm

Thickness From minimum 14 mm up to maximum 40 mm

Temperature The maximum allowable temperature is 600°C

BLIND FLANGE TYPE DIN 2573 - PN6



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
212000120010	1	25	33.4	75	100	4	11	12	1
212000120013	1.25	32	42.2	90	120	4	14	12	1
212000120015	1.5	40	48.3	100	130	4	14	12	1
212000120020	2	50	60.3	110	140	4	14	12	1
212000120025	2.5	65	76.1	130	160	4	14	12	2
212000120030	3	80	88.9	150	190	4	18	12	3
212000120040	4	100	114.3	170	210	4	18	12	3
212000160050	5	125	139.7	200	240	8	18	16	6
212000160060	6	150	168.3	225	265	8	18	16	7
212000160080	8	200	219.1	280	320	8	18	16	10
212000160100	10	250	273.0	335	375	12	18	16	14
212000160120	12	300	323.9	395	440	12	22	16	19
212000160140	14	350	355.6	445	490	12	22	16	24
212000160160	16	400	406.4	495	540	16	22	16	29
212000160180	18	450	457.2	550	595	16	22	16	36
212000200200	20	500	508.0	600	645	20	22	16	42
212000200240	24	600	609.6	705	755	20	26	20	72
212000200280	28	700	711.2	810	860	24	26	20	93
212000200320	32	800	812.8	920	975	24	30	20	119
212000200360	36	900	914.4	1020	1075	24	30	20	145
212000200400	40	1000	1016.0	1120	1022	28	30	20	173

CHARACTERISTICS

Flanges Hole pattern according type DIN2573 - PN6 Standard

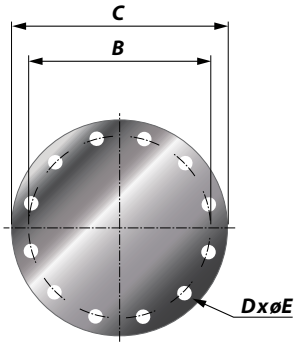
Material Flanges are produced out of Steel S235JRG2

Range Diameter range from 34.4 mm up to 1016 mm

Thickness From minimum 14 mm up to maximum 40 mm

Temperature The maximum allowable temperature is 600°C

BLIND FLANGE
TYPE DIN 2576 - PN10



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
212010120010	1	25	33.4	85	115	4	14	12	1
212010120013	1.25	32	42.2	100	140	4	18	12	1
212010120015	1.5	40	48.3	110	150	4	18	12	1
212010120020	2	50	60.3	125	165	4	18	12	1
212010120025	2.5	65	76.1	145	185	4	18	12	2
212010120030	3	80	88.9	160	200	4	18	12	3
212010120040	4	100	114.3	180	220	4	18	12	3
212010160050	5	125	139.7	210	250	8	18	16	6
212010160060	6	150	168.3	240	285	8	22	16	7
212010160080	8	200	219.1	295	340	8	22	16	10
212010160100	10	250	273.0	350	395	12	22	16	14
212010160120	12	300	323.9	400	445	12	22	16	19
212010200140	14	350	355.6	460	505	12	22	16	24
212010200160	16	400	406.4	515	565	16	26	16	29
212010200180	18	450	457.2	565	615	16	26	16	36
212010200200	20	500	508.0	620	670	20	26	16	42
212010200240	24	600	609.6	725	780	20	30	20	72
212010200280	28	700	711.2	840	895	24	30	20	93
212010200320	32	800	812.8	950	1015	24	33	20	119
212010200360	36	900	914.4	1050	1115	24	33	20	145
212010200400	40	1000	1016.0	1160	1230	28	36	20	173

CHARACTERISTICS

Flanges Hole pattern according type DIN2573 - PN10 Standard

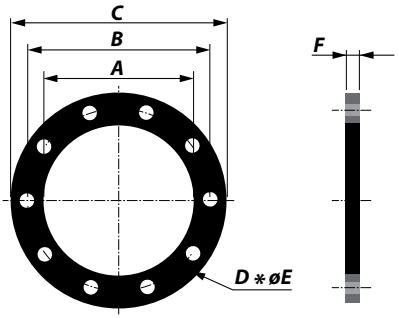
Material Flanges are produced out of Steel S235JRG2

Range Diameter range from 34.4 mm up to 1016 mm

Thickness From minimum 14 mm up to maximum 40 mm

Temperature The maximum allowable temperature is 600°C

GRAPHITE GASKET TYPE FULL FACE DIN 2573 - PN6



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
213100020010	1	25	33.4	35	75	100	4	11	2	0.1
213100020013	1.25	32	42.2	43	90	120	4	14	2	0.1
213100020015	1.5	40	48.3	49	100	130	4	14	2	0.1
213100020020	2	50	60.3	61	110	140	4	14	2	0.1
213100020025	2.5	65	76.1	73	130	160	4	14	2	0.2
213100020030	3	80	88.9	90	150	190	4	18	2	0.2
213100020040	4	100	114.3	116	170	210	4	18	2	0.2
213100020050	5	125	139.7	142	200	240	8	18	2	0.2
213100020060	6	150	168.3	171	225	265	8	18	2	0.3
213100020080	8	200	219.1	222	280	320	8	18	2	0.3
213100020100	10	250	273.0	276	335	375	12	18	2	0.3
213100020120	12	300	323.9	327	395	440	12	22	2	0.3
213100020140	14	350	355.6	360	445	490	12	22	2	0.4
213100020160	16	400	406.4	411	495	540	16	22	2	0.4
213100020180	18	450	457.2	461	550	595	16	22	2	0.4
213100020200	20	500	508.0	512	600	645	20	22	2	0.5
213100020240	24	600	609.6	614	705	755	20	26	2	0.8
213100020280	28	700	711.2	716	810	860	24	26	2	0.8
213100020320	32	800	812.8	818	920	975	24	30	2	0.8
213100020360	36	900	914.4	920	1020	1075	24	30	2	1
213100020400	40	1000	1016.0	1022	1120	1022	28	30	2	1

CHARACTERISTICS

Gaskets Hole pattern according type DIN 2573 - PN6

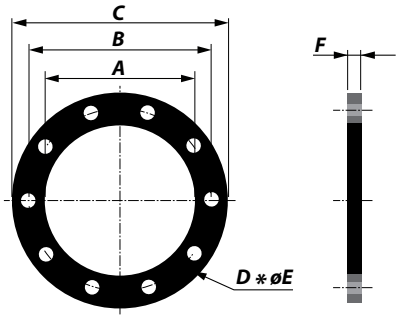
Material Gaskets are produced out of graphite

Range Diameter range from 33.4 mm up to 1016 mm

Thickness 2 mm, with an option for 3 and 4 mm

Temperature The maximum allowable temperature is 600°C

GRAPHITE GASKET TYPE FULL FACE DIN 2576 - PN10



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
213110020010	1	25	33.4	35	85	115	4	14	2	0.1
213110020013	1.25	32	42.2	43	100	140	4	18	2	0.1
213110020015	1.5	40	48.3	49	110	150	4	18	2	0.1
213110020020	2	50	60.3	61	125	165	4	18	2	0.1
213110020025	2.5	65	76.1	73	145	185	4	18	2	0.2
213110020030	3	80	88.9	90	160	200	4	18	2	0.2
213110020040	4	100	114.3	116	180	220	4	18	2	0.2
213110020050	5	125	139.7	142	210	250	8	18	2	0.2
213110020060	6	150	168.3	171	240	285	8	22	2	0.3
213110020080	8	200	219.1	222	295	340	8	22	2	0.3
213110020100	10	250	273.0	276	350	395	12	22	2	0.3
213110020120	12	300	323.9	327	400	445	12	22	2	0.3
213110020140	14	350	355.6	360	460	505	12	22	2	0.4
213110020160	16	400	406.4	411	515	565	16	26	2	0.4
213110020180	18	450	457.2	461	565	615	16	26	2	0.4
213110020200	20	500	508.0	512	620	670	20	26	2	0.5
213110020240	24	600	609.6	614	725	780	20	30	2	0.8
213110020280	28	700	711.2	716	840	895	24	30	2	0.8
213110020320	32	800	812.8	818	950	1015	24	33	2	0.8
213110020360	36	900	914.4	920	1050	1115	24	33	2	1
213110020400	40	1000	1016.0	1022	1160	1230	28	36	2	1

CHARACTERISTICS

Gaskets Hole pattern according type DIN 2576 - PN10

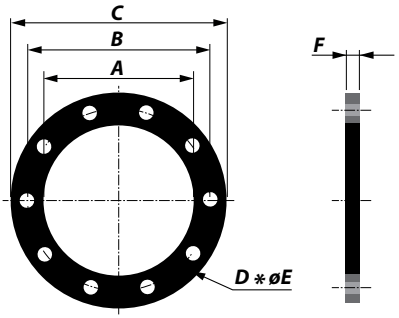
Material Gaskets are produced out of graphite

Range Diameter range from 33.4 mm up to 1016 mm

Thickness 2 mm, with an option for 3 and 4 mm

Temperature The maximum allowable temperature is 600°C

GRAPHITE GASKET TYPE FULL FACE DIN 86044



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
213120020100	10	250	273.0	276	335	375	12	18	2	0.3
213120020120	12	300	323.9	327	395	440	12	22	2	0.3
213120020140	14	350	355.6	360	445	490	12	22	2	0.4
213120020160	16	400	406.4	411	495	540	16	22	2	0.4
213120020180	18	450	457.2	461	550	595	16	22	2	0.4
213120020200	20	500	508.0	512	600	645	20	22	2	0.5
213120020220	22	550	560.0	563	650	703	20	22	2	0.5
213120020240	24	600	609.6	614	700	754	20	22	2	0.8
213120020260	26	650	664.0	665	750	805	20	22	2	0.8
213120020280	28	700	711.2	716	800	856	24	22	2	0.8
213120020300	30	750	762.0	767	860	907	24	22	2	0.8
213120020320	32	800	812.8	818	900	958	24	22	2	0.8
213120020360	36	900	914.4	920	1010	1060	28	22	2	1
213120020380	38	950	698.0	970	1060	1110	28	22	2	1
213120020400	40	1000	1016.0	1022	1110	1167	32	22	2	1
213120020440	44	1100	1120.0	1126	1210	1266	32	22	2	1
213120020480	48	1200	1220.0	1226	1310	1366	36	22	2	1
213120020520	52	1300	1324.0	1326	1410	1466	40	22	2	1

CHARACTERISTICS

Gaskets Hole pattern according type DIN 86044

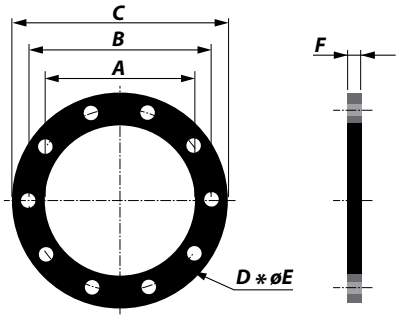
Material Gaskets are produced out of graphite

Range Diameter range from 273 mm up to 1324 mm

Thickness 2 mm, with an option for 3 and 4 mm

Temperature The maximum allowable temperature is 600°C

GRAPHITE GASKET TYPE FULL FACE ANSI 150



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
213130020010	1	25	33.4	35	79	110	4	16	2	0.1
213130020013	1.25	32	42.2	43	89	120	4	16	2	0.1
213130020015	1.5	40	48.3	49	99	130	4	16	2	0.1
213130020020	2	50	60.3	61	121	150	4	19	2	0.1
213130020025	2.5	65	76.1	73	140	180	4	19	2	0.2
213130020030	3	80	88.9	90	153	190	4	19	2	0.2
213130020040	4	100	114.3	116	191	230	8	19	2	0.2
213130020050	5	125	139.7	142	216	255	8	22	2	0.2
213130020060	6	150	168.3	171	242	280	8	22	2	0.3
213130020080	8	200	219.1	222	299	345	8	22	2	0.3
213130020100	10	250	273.0	276	362	405	12	26	2	0.3
213130020120	12	300	323.9	327	432	485	12	26	2	0.3
213130020140	14	350	355.6	360	476	535	12	30	2	0.4
213130020160	16	400	406.4	411	540	600	16	30	2	0.4
213130020180	18	450	457.2	461	578	635	16	33	2	0.4
213130020200	20	500	508.0	512	635	700	20	33	2	0.5
213130020240	24	600	609.6	614	750	815	20	36	2	0.8

CHARACTERISTICS

Gaskets Hole pattern according type ANSI 150 Standard

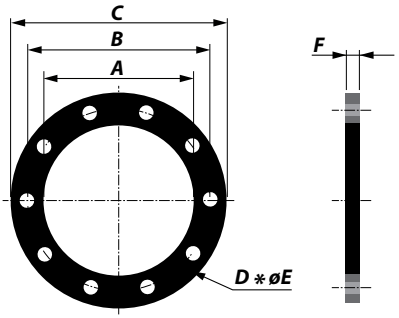
Material Gaskets are produced out of graphite

Range Diameter range from 33.4 mm up to 609.6 mm

Thickness 2 mm, with an option for 3 and 4 mm

Temperature The maximum allowable temperature is 600°C

GRAPHITE GASKET TYPE FULL FACE JIS B2220 - 5K



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
213140020010	1	25	33.4	35	75	95	4	12	2	0.1
213140020013	1.25	32	42.2	43	90	115	4	15	2	0.1
213140020015	1.5	40	48.3	49	95	120	4	15	2	0.1
213140020020	2	50	60.3	61	105	130	4	15	2	0.1
213140020025	2.5	65	76.1	77	130	155	4	15	2	0.2
213140020030	3	80	88.9	90	145	180	4	19	2	0.2
213140020040	4	100	114.3	116	165	200	8	19	2	0.2
213140020050	5	125	139.7	142	200	235	8	19	2	0.2
213140020060	6	150	168.3	167	230	265	8	19	2	0.3
213140020080	8	200	219.1	218	280	320	8	23	2	0.3
213140020100	10	250	273.0	270	345	385	12	23	2	0.3
213140020120	12	300	323.9	321	390	430	12	23	2	0.3
213140020140	14	350	355.6	358	435	480	12	25	2	0.4
213140020160	16	400	406.4	409	495	540	16	25	2	0.4
213140020180	18	450	457.2	460	555	605	16	25	2	0.4
213140020200	20	500	508.0	511	605	655	20	25	2	0.5
213140020240	24	600	609.6	613	715	770	20	27	2	0.8
213140020280	28	700	711.2	715	820	875	24	27	2	0.8
213140020320	32	800	812.8	817	930	995	24	33	2	0.8
213140020360	36	900	914.4	919	1030	1095	24	33	2	1
213140020400	40	1000	1016.0	1021	1130	1195	28	33	2	1

CHARACTERISTICS

Gaskets Hole pattern according type JIS Standard

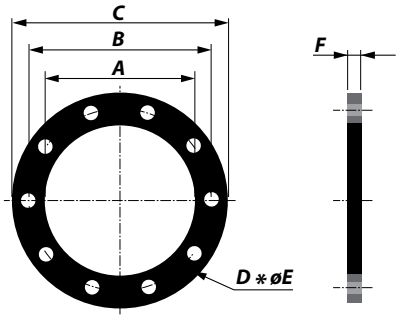
Material Gaskets are produced out of graphite

Range Diameter range from 33.4 mm up to 1016 mm

Thickness 2 mm, with an option for 3 and 4 mm

Temperature The maximum allowable temperature is 600°C

GRAPHITE GASKET TYPE FULL FACE JIS B2220 - 10K



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D Number of holes	E Diameter of holes (mm)	F (mm)	Weight (kg)
213150020010	1	25	34.5	35	90	125	4	19	2	0.1
213150020013	1.25	32	43.2	43	100	135	4	19	2	0.1
213150020015	1.5	40	49.1	49	105	140	4	19	2	0.1
213150020020	2	50	61.1	61	120	155	4	19	2	0.1
213150020025	2.5	65	77.1	77	140	175	4	19	2	0.2
213150020030	3	80	90.0	90	150	185	8	19	2	0.2
213150020040	4	100	115.4	116	175	210	8	19	2	0.2
213150020050	5	125	141.2	142	210	250	8	23	2	0.2
213150020060	6	150	166.6	167	240	280	8	23	2	0.3
213150020080	8	200	218.0	218	290	330	12	23	2	0.3
213150020100	10	250	269.5	270	355	400	12	25	2	0.3
213150020120	12	300	321.0	321	400	445	16	25	2	0.3
213150020140	14	350	358.1	358	445	490	16	25	2	0.4
213150020160	16	400	409.0	409	510	560	16	27	2	0.4
213150020180	18	450	460.0	460	565	620	20	27	2	0.4
213150020200	20	500	511.0	511	620	675	20	27	2	0.5
213150020240	24	600	613.0	613	730	795	24	33	2	0.8
213150020280	28	700	715.0	715	840	905	24	33	2	0.8
213150020320	32	800	817.0	817	950	1020	28	33	2	0.8
213150020360	36	900	919.0	919	1050	1120	28	33	2	1
213150020400	40	1000	1021.0	1021	1160	1235	28	39	2	1

CHARACTERISTICS

Gaskets Hole pattern according type JIS Standard

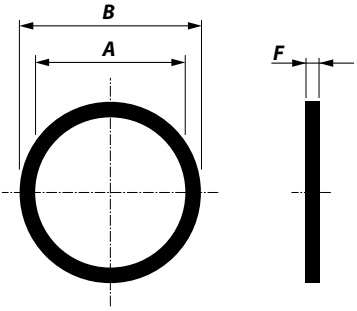
Material Gaskets are produced out of graphite

Range Diameter range from 34.5 mm up to 1021 mm

Thickness 2 mm, with an option for 3 and 4 mm

Temperature The maximum allowable temperature is 600°C

GRAPHITE GASKET TYPE CIRCULAR DIN 2573 - PN6



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	F (mm)	Weight (kg)
213300030010	1	25	33.4	35	75	2	0.1
213300030013	1.25	32	42.2	43	90	2	0.1
213300030015	1.5	40	48.3	49	100	2	0.1
213300030020	2	50	60.3	61	110	2	0.1
213300030025	2.5	65	76.1	73	130	2	0.2
213300030030	3	80	88.9	90	150	2	0.2
213300030040	4	100	114.3	116	170	2	0.2
213300030050	5	125	139.7	142	200	2	0.2
213300030060	6	150	168.3	171	225	2	0.3
213300030080	8	200	219.1	222	280	2	0.3
213300030100	10	250	273.0	276	335	2	0.3
213300030120	12	300	323.9	327	395	2	0.3
213300030140	14	350	355.6	360	445	2	0.4
213300030160	16	400	406.4	411	495	2	0.4
213300030180	18	450	457.2	461	550	2	0.4
213300030200	20	500	508.0	512	600	2	0.5
213300030240	24	600	609.6	614	705	2	0.8
213300030280	28	700	711.2	716	810	2	0.8
213300030320	32	800	812.8	818	920	2	0.8
213300030360	36	900	914.4	920	1020	2	1
213300030400	40	1000	1016.0	1022	1120	2	1

CHARACTERISTICS

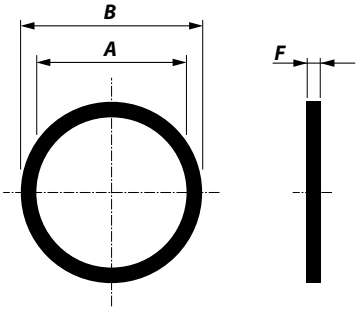
Material Gaskets are produced out of graphite

Range Diameter range from 33.4 mm up to 1016 mm

Thickness 2 mm, with an option for 3 and 4 mm

Temperature The maximum allowable temperature is 600°C

GRAPHITE GASKET TYPE CIRCULAR DIN 2576 - PN10



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	F (mm)	Weight (kg)
213310030010	1	25	33.4	35	85	2	0.1
213310030013	1.25	32	42.2	43	100	2	0.1
213310030015	1.5	40	48.3	49	110	2	0.1
213310030020	2	50	60.3	61	125	2	0.1
213310030025	2.5	65	76.1	73	145	2	0.2
213310030030	3	80	88.9	90	160	2	0.2
213310030040	4	100	114.3	116	180	2	0.2
213310030050	5	125	139.7	142	210	2	0.2
213310030060	6	150	168.3	171	240	2	0.3
213310030080	8	200	219.1	222	295	2	0.3
213310030100	10	250	273.0	276	350	2	0.3
213310030120	12	300	323.9	327	400	2	0.3
213310030140	14	350	355.6	360	460	2	0.4
213310030160	16	400	406.4	411	515	2	0.4
213310030180	18	450	457.2	461	565	2	0.4
213310030200	20	500	508.0	512	620	2	0.5
213310030240	24	600	609.6	614	725	2	0.8
213310030280	28	700	711.2	716	840	2	0.8
213310030320	32	800	812.8	818	950	2	0.8
213310030360	36	900	914.4	920	1050	2	1
213310030400	40	1000	1016.0	1022	1160	2	1

CHARACTERISTICS

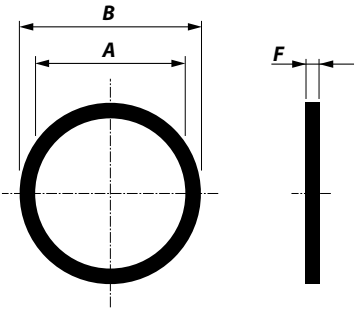
Material Gaskets are produced out of graphite

Range Diameter range from 33.4 mm up to 1016 mm

Thickness 2 mm, with an option for 3 and 4 mm

Temperature The maximum allowable temperature is 600°C

GRAPHITE GASKET TYPE CIRCULAR DIN 86044



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	F (mm)	Weight (kg)
213320030100	10	250	273.0	276	335	2	0.3
213320030120	12	300	323.9	327	395	2	0.3
213320030140	14	350	355.6	360	445	2	0.4
213320030160	16	400	406.4	411	495	2	0.4
213320030180	18	450	457.2	461	550	2	0.4
213320030200	20	500	508.0	512	600	2	0.5
213320030220	22	550	560.0	563	650	2	0.5
213320030240	24	600	609.6	614	700	2	0.8
213320030260	26	650	664.0	665	750	2	0.8
213320030280	28	700	711.2	716	800	2	0.8
213320030300	30	750	762.0	767	860	2	0.8
213320030320	32	800	812.8	818	900	2	0.8
213320030360	36	900	914.4	920	1010	2	1
213320030380	38	950	698.0	970	1060	2	1
213320030400	40	1000	1016.0	1022	1110	2	1
213320030440	44	1100	1120.0	1126	1210	2	1
213320030480	48	1200	1220.0	1226	1310	2	1
213320030520	52	1300	1324.0	1326	1410	2	1

CHARACTERISTICS

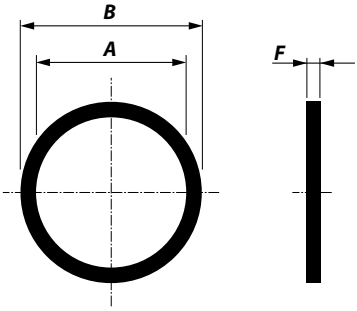
Material Gaskets are produced out of graphite

Range Diameter range from 273 mm up to 1324 mm

Thickness 2 mm, with an option for 3 and 4 mm

Temperature The maximum allowable temperature is 600°C

GRAPHITE GASKET TYPE CIRCULAR ANSI 150



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	F (mm)	Weight (kg)
213330030010	1	25	33.4	35	79	2	0.1
213330030013	1.25	32	42.2	43	89	2	0.1
213330030015	1.5	40	48.3	49	99	2	0.1
213330030020	2	50	60.3	61	121	2	0.1
213330030025	2.5	65	76.1	73	140	2	0.2
213330030030	3	80	88.9	90	153	2	0.2
213330030040	4	100	114.3	116	191	2	0.2
213330030050	5	125	139.7	142	216	2	0.2
213330030060	6	150	168.3	171	242	2	0.3
213330030080	8	200	219.1	222	299	2	0.3
213330030100	10	250	273.0	276	362	2	0.3
213330030120	12	300	323.9	327	432	2	0.3
213330030140	14	350	355.6	360	476	2	0.4
213330030160	16	400	406.4	411	540	2	0.4
213330030180	18	450	457.2	461	578	2	0.4
213330030200	20	500	508.0	512	635	2	0.5
213330030240	24	600	609.6	614	750	2	0.8

CHARACTERISTICS

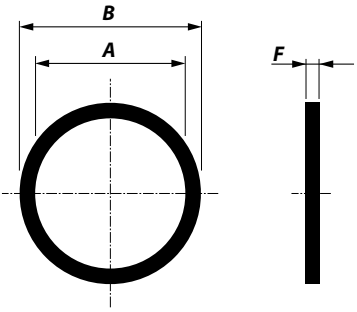
Material Gaskets are produced out of graphite

Range Diameter range from 33.4 mm up to 609.6 mm

Thickness 2 mm, with an option for 3 and 4 mm

Temperature The maximum allowable temperature is 600°C

GRAPHITE GASKET TYPE CIRCULAR JIS B2220 - 5K



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	F (mm)	Weight (kg)
213340030010	1	25	33.4	35	75	2	0.1
213340030013	1.25	32	42.2	43	90	2	0.1
213340030015	1.5	40	48.3	49	95	2	0.1
213340030020	2	50	60.3	61	105	2	0.1
213340030025	2.5	65	76.1	77	130	2	0.2
213340030030	3	80	88.9	90	145	2	0.2
213340030040	4	100	114.3	116	165	2	0.2
213340030050	5	125	139.7	142	200	2	0.2
213340030060	6	150	168.3	167	230	2	0.3
213340030080	8	200	219.1	218	280	2	0.3
213340030100	10	250	273.0	270	345	2	0.3
213340030120	12	300	323.9	321	390	2	0.3
213340030140	14	350	355.6	358	435	2	0.4
213340030160	16	400	406.4	409	495	2	0.4
213340030180	18	450	457.2	460	555	2	0.4
213340030200	20	500	508.0	511	605	2	0.5
213340030240	24	600	609.6	613	715	2	0.8
213340030280	28	700	711.2	715	820	2	0.8
213340030320	32	800	812.8	817	930	2	0.8
213340030360	36	900	914.4	919	1030	2	1
213340030400	40	1000	1016.0	1021	1130	2	1

CHARACTERISTICS

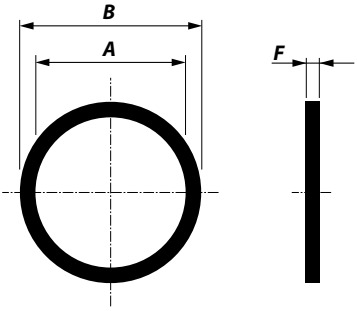
Material Gaskets are produced out of graphite

Range Diameter range from 33.4 mm up to 1016 mm

Thickness 2 mm, with an option for 3 and 4 mm

Temperature The maximum allowable temperature is 600°C

GRAPHITE GASKET TYPE CIRCULAR JIS B2220 - 10K



Article No.	Size (Inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	F (mm)	Weight (kg)
213350030010	1	25	34.5	35	90	2	0.1
213350030013	1.25	32	43.2	43	100	2	0.1
213350030015	1.5	40	49.1	49	105	2	0.1
213350030020	2	50	61.1	61	120	2	0.1
213350030025	2.5	65	77.1	77	140	2	0.2
213350030030	3	80	90.0	90	150	2	0.2
213350030040	4	100	115.4	116	175	2	0.2
213350030050	5	125	141.2	142	210	2	0.2
213350030060	6	150	166.6	167	240	2	0.3
213350030080	8	200	218.0	218	290	2	0.3
213350030100	10	250	269.5	270	355	2	0.3
213350030120	12	300	321.0	321	400	2	0.3
213350030140	14	350	358.1	358	445	2	0.4
213350030160	16	400	409.0	409	510	2	0.4
213350030180	18	450	460.0	460	565	2	0.4
213350030200	20	500	511.0	511	620	2	0.5
213350030240	24	600	613.0	613	730	2	0.8
213350030280	28	700	715.0	715	840	2	0.8
213350030320	32	800	817.0	817	950	2	0.8
213350030360	36	900	919.0	919	1050	2	1
213350030400	40	1000	1021.0	1021	1160	2	1

CHARACTERISTICS

Material Gaskets are produced out of graphite

Range Diameter range from 34.5 mm up to 1021 mm

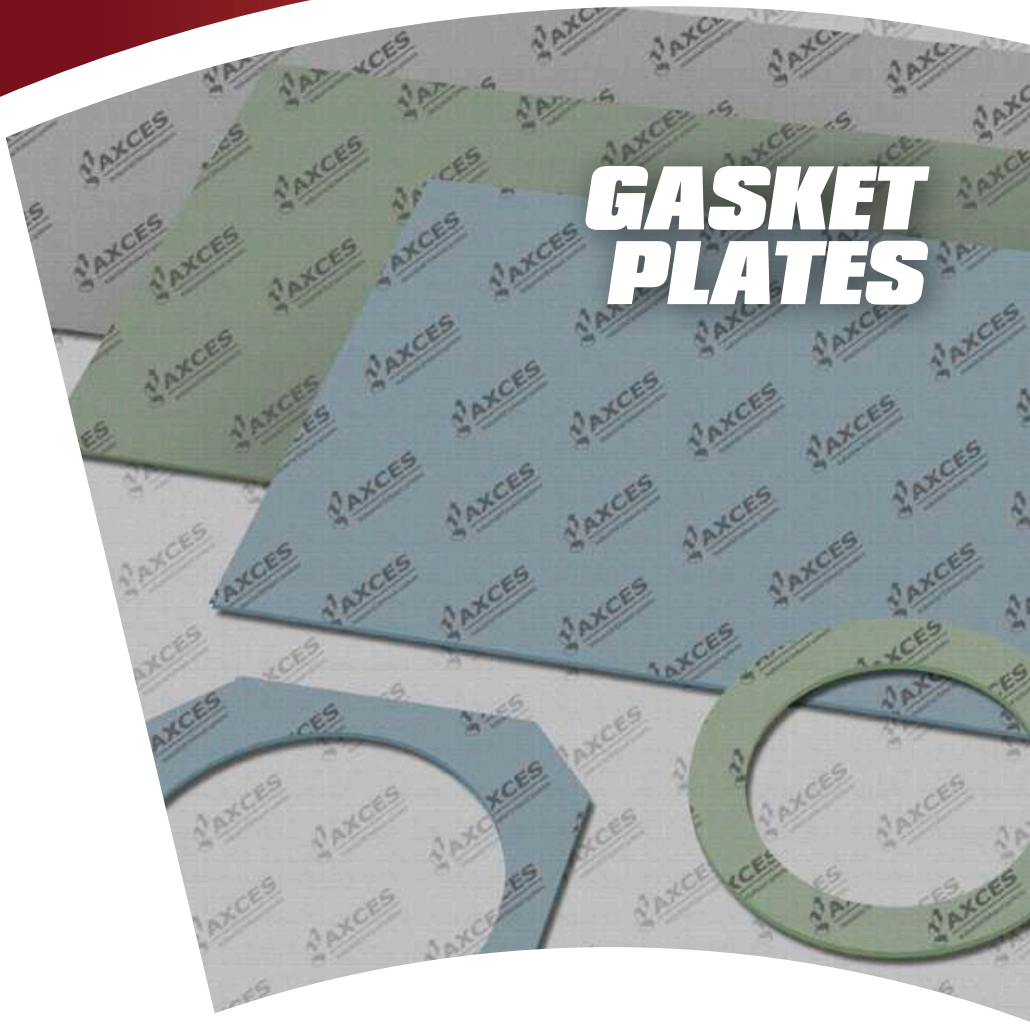
Thickness 2 mm, with an option for 3 and 4 mm

Temperature The maximum allowable temperature is 600°C

M-SIZES BOLTS & NUTS

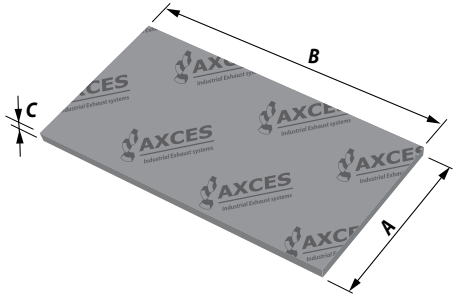
M-sizes bolts & nuts vs. flange types & sizes

Size (Inch)	NB (mm)	Pipe (mm)	DIN2573 PN6	DIN2576 PN10	DIN86044	ANSI#150	JIS 5K	JIS 10K
1	25	33.4	M10 x 40	M12 x 40	-	M12 x 60	M10 x 40	M16 x 60
1.25	32	42.2	M12 x 50	M16 x 50	-	M12 x 60	M12 x 50	M16 x 60
1.5	40	48.3	M12 x 50	M16 x 50	-	M12 x 60	M12 x 50	M16 x 60
2	50	60.3	M12 x 50	M16 x 50	-	M16 x 60	M12 x 50	M16 x 60
2.5	65	76.1	M12 x 50	M16 x 50	-	M16 x 65	M12 x 50	M16 x 60
3	80	88.9	M16 x 60	M16 x 50	-	M16 x 65	M16 x 60	M16 x 60
4	100	114.3	M16 x 60	M16 x 50	-	M16 x 65	M16 x 60	M16 x 60
5	125	139.7	M16 x 60	M16 x 55	-	M20 x 70	M16 x 60	M20 x 70
6	150	168.3	M16 x 60	M20 x 60	-	M20 x 70	M16 x 60	M20 x 70
8	200	219.1	M16 x 60	M20 x 60	M20 x 60	M24 x 90	M20 x 70	M20 x 70
10	250	273.0	M16 x 60	M20 x 60	M20 x 60	M24 x 90	M20 x 70	M20 x 70
12	300	323.9	M20 x 60	M20 x 60	M20 x 60	M24 x 90	M20 x 70	M20 x 70
14	350	355.6	M20 x 60	M20 x 60	M20 x 60	M27 x 100	M24 x 80	M24 x 80
16	400	406.4	M20 x 60	M24 x70	M20 x 60	M27 x 105	M24 x 80	M24 x 80
18	450	457.2	M20 x 60	M24 x70	M20 x 60	M30 x 110	M24 x 80	M27 x 90
20	500	508.0	M20 x 60	M24 x70	M20 x 60	M30 x 115	M24 x 80	M27 x 90
24	600	609.6	M24 x 70	M27 x70	M20 x 70	-	M24 x 80	M30 x 105
28	700	711.2	M24 x 70	M27 x70	M20 x 70	-	M24 x 80	M30 x 105
32	800	812.8	M27 x 75	M30 x75	M20 x 70	-	M30 x 95	M30 x 105
36	900	914.4	M27 x 75	M30 x75	M20 x 70	-	M30 x 95	M30 x 105
40	1000	1016.0	M27 x 75	M30 x75	M20 x 70	-	M30 x 95	M36 x 120



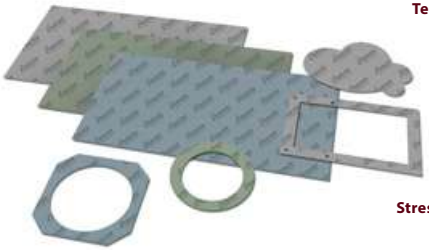
AXCES

GRAPHITE GASKET LINE



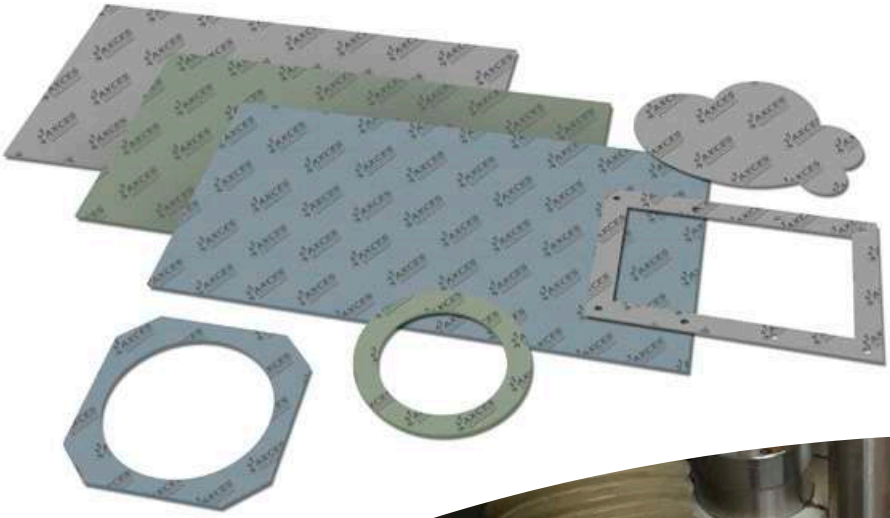
Article No.	A (mm)	B (mm)	C (mm)
861000000001	1000	1000	2
861000000002	1500	1500	2
861000000003	1250	2000	2
861000000004	1000	1000	3
861000000005	1500	1500	3
861000000006	1250	2000	3

CHARACTERISTICS



Ash content	<2%
Temperature resistance (between the flanges)	550°C max.
Workload	100 Bar max.
Number of carrier plates per plate	1
Carrier plate material	316 RVS
Thickness of the carrier plate	0.1 mm
Gas Density (DIN 3535)	< 0.6 cm^3/min.
Stress relaxation 16h, 300 ° C, starting 50 N/mm^2	> 48 N/mm^2
Compressibility	30-40%
Return	15-20%
Maximum permissible surface pressure (mounting)	140 N/mm^2

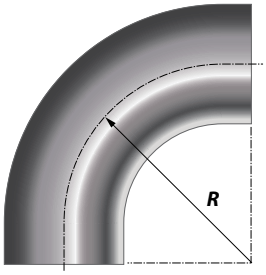
CUSTOM MADE GASKETS



Axces is able to cut all types of different shapes on request.

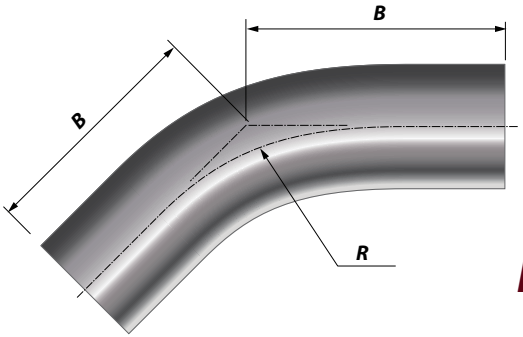
PIPING

AXCES



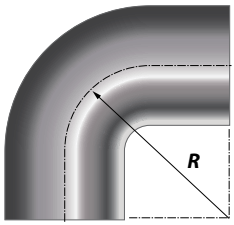
ELBOWS LONG RADIUS

Article No,	A Size (Inch)	NB (mm)	Pipe (mm)	R (mm)	Wall Thickness	
					S235JR (mm)	Stainless Steel (mm)
510300000020	2	50	60.3	135	2.9	2
510300000025	2.5	65	76.1	175	2.9	2
510300000030	3	80	88.9	205	3.2	2
510300000040	4	100	114.3	270	3.6	2
510300000050	5	125	139.7	330	4.0	3
510300000060	6	150	168.3	390	4.0	3



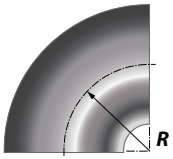
ELBOWS LONG RADIUS 45°

Article No,	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	R (mm)	Wall Thickness	
						S235JR (mm)	Stainless Steel (mm)
510400000020	2	50	60.3	56	135	2.9	2
510400000025	2.5	65	76.1	73	175	2.9	2
510400000030	3	80	88.9	85	205	3.2	2
510400000040	4	100	114.3	112	270	3.6	2
510400000050	5	125	139.7	137	330	4.0	3
510400000060	6	150	168.3	162	390	4.0	3



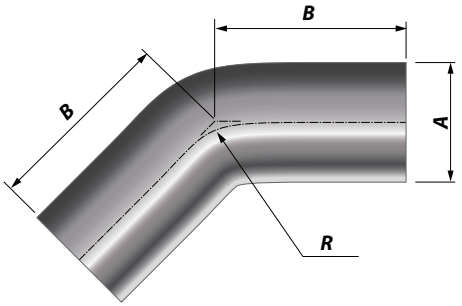
ELBOWS SHORT RADIUS

Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	R (mm)	Wall Thickness	
					S235JR (mm)	Stainless Steel (mm)
510500000020	2	50	60.3	76	2.9	2
510500000025	2.5	65	76.1	95	2.9	2
510500000030	3	80	88.9	114	3.2	2
510500000040	4	100	114.3	152	3.6	2
510500000050	5	125	139.7	190	4.0	3
510500000060	6	150	168.3	229	4.5	3
510500000080	8	200	219.1	309	6.3	3
510500000100	10	250	273.0	381	6.3	3
510500000120	12	300	323.9	457	7.1	3



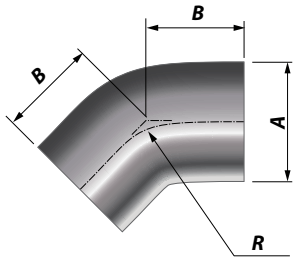
ELBOWS SHORT RADIUS TANGENT CUT

Article No,	A Size (Inch)	NB (mm)	Pipe (mm)	R (mm)	Wall Thickness	
					S235JR (mm)	Stainless Steel (mm)
510600000020	2	50	60.3	51	2.9	2
510600000025	2.5	65	76.1	63	2.9	2
510600000030	3	80	88.9	76	3.2	2
510600000040	4	100	114.3	102	3.6	2
510600000050	5	125	139.7	127	4.0	3
510600000060	6	150	168.3	152	4.5	3
510600000080	8	200	219.1	203	6.3	3
510600000100	10	250	273.0	254	6.3	3
510600000120	12	300	323.9	305	7.1	3



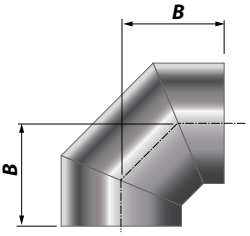
ELBOWS SHORT RADIUS 45°

Article No,	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	R (mm)	Wall Thickness	
						S235JR (mm)	Stainless Steel (mm)
510700000020	2	50	60.3	32	76	2.9	2
510700000025	2.5	65	76.1	40	95	2.9	2
510700000030	3	80	88.9	47	124	3.2	2
510700000040	4	100	114.3	63	152	3.6	2
510700000050	5	125	139.7	75	190	4.0	3
510700000060	6	150	168.3	95	229	4.5	3



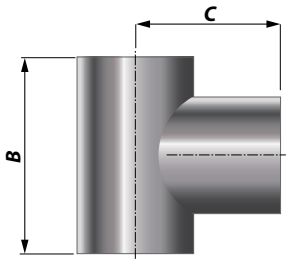
ELBOWS SHORT RADIUS 45° TANGENT CUT

Article No,	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	R (mm)	Wall Thickness	
						S235JR (mm)	Stainless Steel (mm)
510800000020	2	50	60.3	21	51	2.9	2
510800000025	2.5	65	76.1	26	63	2.9	2
510800000030	3	80	88.9	32	76	3.2	2
510800000040	4	100	114.3	42	102	3.6	2
510800000050	5	125	139.7	53	127	4.0	3
510800000060	6	150	168.3	64	203	4.5	3



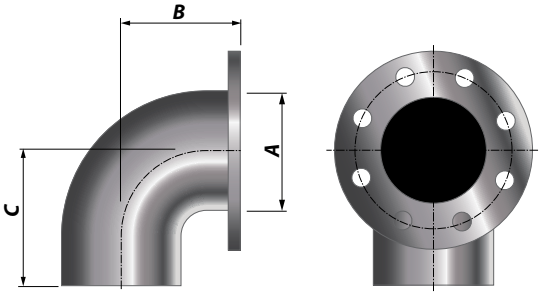
SEGMENTED ELBOWS SHORT RADIUS TANGENT CUT

Article No,	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	Wall Thickness (mm)
512000000080	8	200	219.1	220	3
512000000100	10	250	273.0	275	3
512000000120	12	300	323.9	325	3
512000000140	14	350	355.6	360	3
512000000160	16	400	406.4	410	3
512000000180	18	450	457.2	460	3
512000000200	20	500	508.0	510	3
512000000220	22	550	560.0	560	4
512000000240	24	600	609.6	610	4
512000000260	26	650	664.0	665	4
512000000280	28	700	711.2	715	4
512000000300	30	750	762.0	765	4



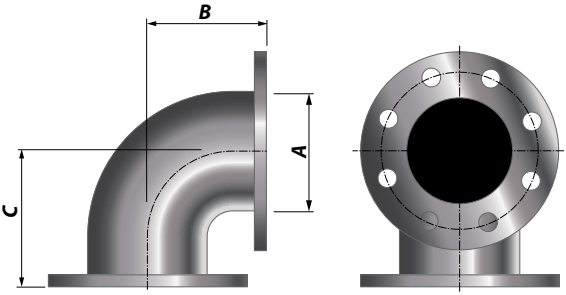
T-JOINTS

Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	Wall Thickness (mm)
517000000080	8	200	219.1	400	200	3
517000000100	10	250	273.0	500	250	3
517000000120	12	300	323.9	600	300	3
517000000140	14	350	355.6	700	350	3
517000000160	16	400	406.4	800	400	3
517000000180	18	450	457.2	900	450	3
517000000200	20	500	508.0	1000	500	3
517000000220	22	550	560.0	1100	550	4
517000000240	24	600	609.6	1200	600	4
517000000260	26	650	664.0	1300	650	4
517000000280	28	700	711.2	1400	700	4
517000000300	30	750	762.0	1500	750	4



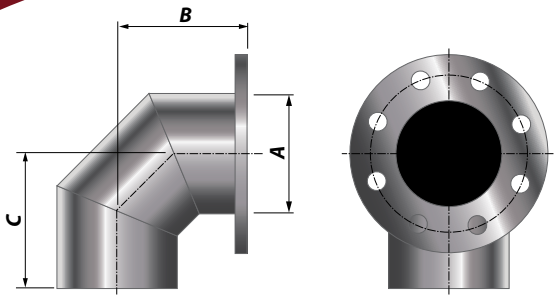
ELBOWS ONE END FLANGED

Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	Wall Thickness (mm)
510100000040	4	100	114.3	112	190	2
510100000050	5	125	139.7	133	229	3
510100000060	6	150	168.3	159	279	3
510100000080	8	200	219.1	254	310	3
510100000100	10	250	273.0	279	356	3
510100000120	12	300	323.9	310	406	3



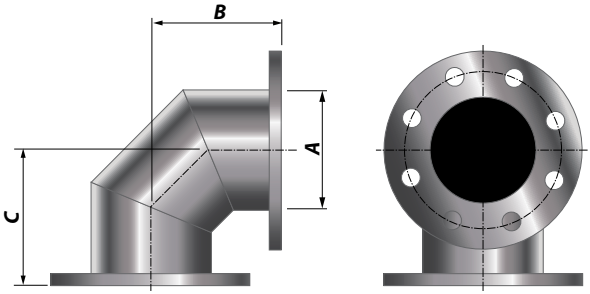
ELBOWS BOTH ENDS FLANGED

Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	Wall Thickness (mm)
510200000040	4	100	114.3	19	19	2
510200000050	5	125	139.7	23	23	3
510200000060	6	150	168.3	28	28	3
510200000080	8	200	219.1	30	30	3
510200000100	10	250	273.0	36	36	3
510200000120	12	300	323.9	41	41	3



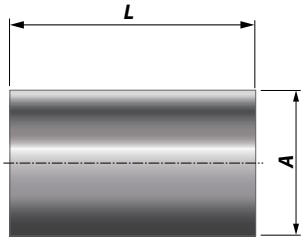
SEGMENTED ELBOWS ONE END FLANGED

Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	Wall Thickness (mm)
510900000080	8	200	219.1	20	20	3
510900000100	10	250	273.0	25	25	3
510900000120	12	300	323.9	30	30	3
510900000140	14	350	355.6	36	36	3
510900000160	16	400	406.4	41	41	3
510900000180	18	450	457.2	46	46	3
510900000200	20	500	508.0	51	51	3
510900000220	22	550	560.0	56	56	4
510900000240	24	600	609.6	61	61	4
510900000260	26	650	664.0	66	66	4
510900000280	28	700	711.2	71	71	4
510900000300	30	750	762.0	76	76	4



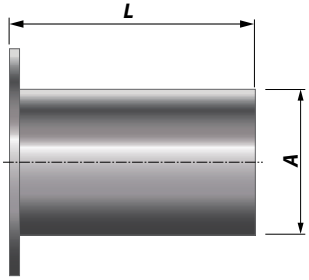
SEGMENTED ELBOWS BOTH ENDS FLANGED

Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	Wall Thickness (mm)
511000000080	8	200	219.1	20	20	3
511000000100	10	250	273.0	25	25	3
511000000120	12	300	323.9	30	30	3
511000000140	14	350	355.6	36	36	3
511000000160	16	400	406.4	41	41	3
511000000180	18	450	457.2	46	46	3
511000000200	20	500	508.0	51	51	3
511000000220	22	550	560.0	56	56	4
511000000240	24	600	609.6	61	61	4
511000000260	26	650	664.0	66	66	4
511000000280	28	700	711.2	71	71	4
511000000300	30	750	762.0	76	76	4



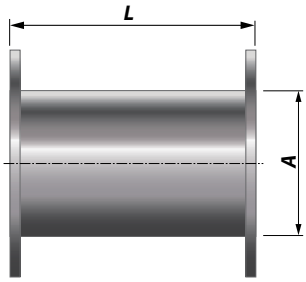
WELDED TUBES

Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	L (mm)
513000000015	1.5	40	48.3	100 - 8000
513000000020	2	50	60.3	100 - 8000
513000000025	2.5	65	76.1	100 - 8000
513000000030	3	80	88.9	100 - 8000
513000000040	4	100	114.3	100 - 8000
513000000050	5	125	139.7	100 - 8000
513000000060	6	150	168.3	100 - 8000
513000000080	8	200	219.1	100 - 8000
513000000100	10	250	273.0	100 - 8000
513000000120	12	300	323.9	100 - 8000
513000000140	14	350	355.6	100 - 8000
513000000160	16	400	406.4	100 - 8000
513000000180	18	450	457.2	100 - 8000
513000000200	20	500	508.0	100 - 8000
513000000220	22	550	560.0	100 - 8000
513000000240	24	600	609.6	100 - 8000
513000000260	26	650	664.0	100 - 8000
513000000280	28	700	711.2	100 - 8000
513000000300	30	750	762.0	100 - 8000



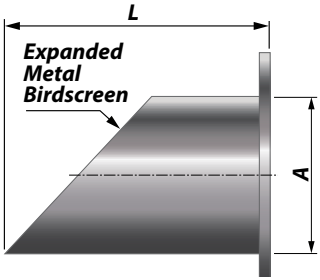
WELDED TUBES ONE END FLANGED

Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	L (mm)
514000000040	4	100	114.3	100 - 8000
514000000050	5	125	139.7	100 - 8000
514000000060	6	150	168.3	100 - 8000
514000000080	8	200	219.1	100 - 8000
514000000100	10	250	273.0	100 - 8000
514000000120	12	300	323.9	100 - 8000
514000000140	14	350	355.6	100 - 8000
514000000160	16	400	406.4	100 - 8000
514000000180	18	450	457.2	100 - 8000
514000000200	20	500	508.0	100 - 8000
514000000220	22	550	560.0	100 - 8000
514000000240	24	600	609.6	100 - 8000
514000000260	26	650	664.0	100 - 8000
514000000280	28	700	711.2	100 - 8000
514000000300	30	750	762.0	100 - 8000



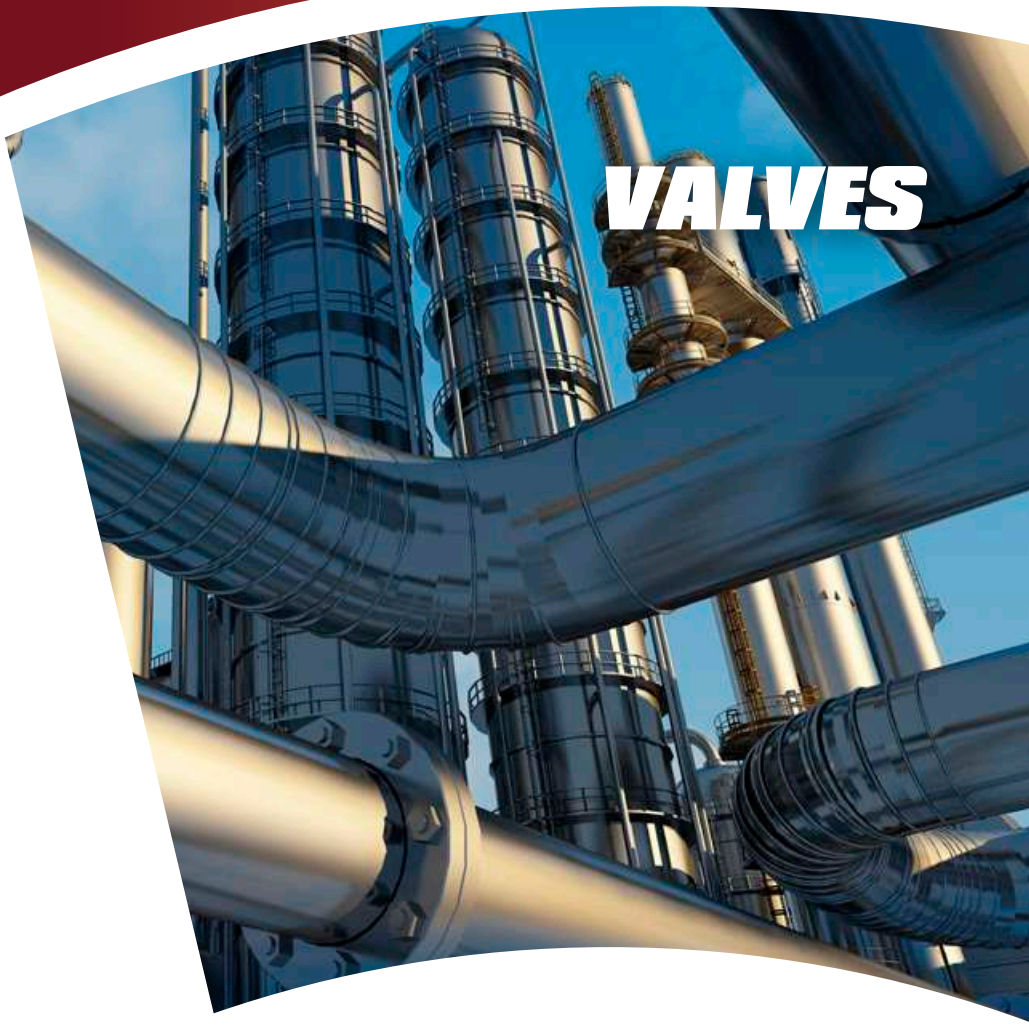
WELDED TUBES BOTH ENDS FLANGED

Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	L (mm)
515000000040	4	100	114.3	100 - 8000
515000000050	5	125	139.7	100 - 8000
515000000060	6	150	168.3	100 - 8000
515000000080	8	200	219.1	100 - 8000
515000000100	10	250	273.0	100 - 8000
515000000120	12	300	323.9	100 - 8000
515000000140	14	350	355.6	100 - 8000
515000000160	16	400	406.4	100 - 8000
515000000180	18	450	457.2	100 - 8000
515000000200	20	500	508.0	100 - 8000
515000000220	22	550	560.0	100 - 8000
515000000240	24	600	609.6	100 - 8000
515000000260	26	650	664.0	100 - 8000
515000000280	28	700	711.2	100 - 8000
515000000300	30	750	762.0	100 - 8000



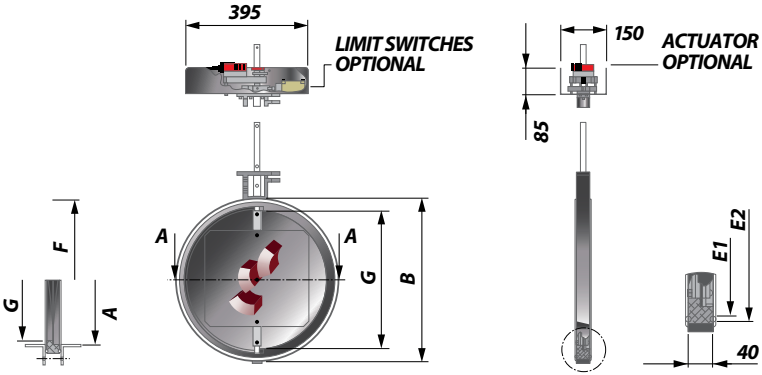
WELDED TUBES CUT WITH BIRDSCREEN

Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	L (mm)
516000000040	4	100	114.3	100 - 8000
516000000050	5	125	139.7	100 - 8000
516000000060	6	150	168.3	100 - 8000
516000000080	8	200	219.1	100 - 8000
516000000100	10	250	273.0	100 - 8000
516000000120	12	300	323.9	100 - 8000
516000000140	14	350	355.6	100 - 8000
516000000160	16	400	406.4	100 - 8000
516000000180	18	450	457.2	100 - 8000
516000000200	20	500	508.0	100 - 8000
516000000220	22	550	560.0	100 - 8000
516000000240	24	600	609.6	100 - 8000
516000000260	26	650	664.0	100 - 8000
516000000280	28	700	711.2	100 - 8000
516000000300	30	750	762.0	100 - 8000



AXCES

TYPE AV10



Article No.	Size (inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	E1 (mm)	E2 (mm)	F (mm)	G (mm)
211000060171	8	200	219.1	171	225	202	220	165	147
211000060221	10	250	273.0	221	275	252	270	215	197
211000060270	12	300	323.9	270	325	302	320	265	247
211000060321	14	350	355.6	321	425	352	370	315	297
211000060371	16	400	406.4	371	475	402	420	365	347
211000060471	20	500	508.0	471	525	502	520	465	447
211000060571	24	600	609.6	571	625	625	620	565	547
211000060671	28	700	711.2	671	725	702	720	665	647

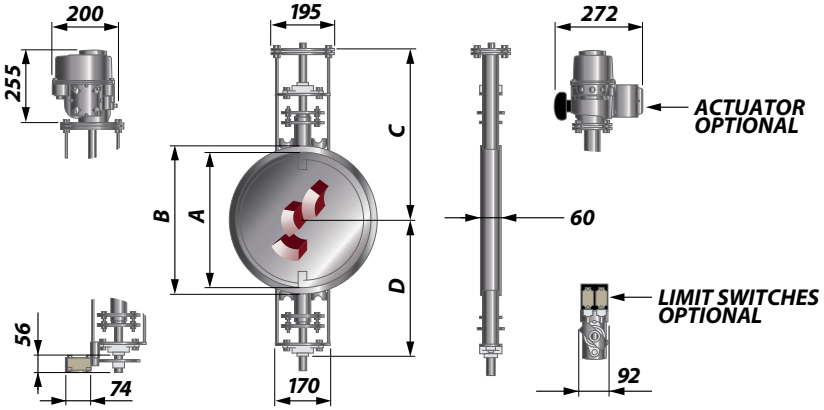
CHARACTERISTICS

Material Valves type AV10 are produced out of Steel 37-2 (S235JRG2)

Temperature Maximum allowable temperature is 600°C

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

TYPE AV25



Article No.	Size (inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D (mm)
210100060080	8	200	219.1	212	242	406	304
210100060100	10	250	273.0	288	318	453	349
210100060120	12	300	323.9	388	368	480	377
210100060140	14	350	355.6	350	390	492	402
210100060160	16	400	406.4	420	460	530	425
210100060180	18	450	457.2	450	490	541	442
210100060200	20	500	508.0	500	540	572	468
210100060240	24	600	609.6	600	640	623	520
210100060280	28	700	711.2	710	750	680	576
210100060320	32	800	812.8	800	840	724	622
210100060360	36	900	914.4	900	940	777	673
210100060400	40	1000	1016.0	1000	1040	827	723

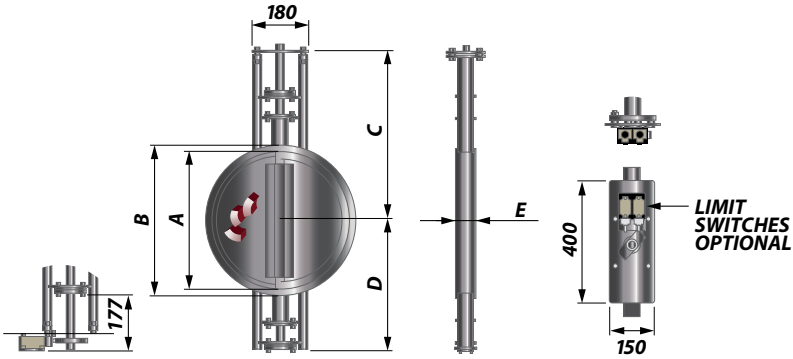
CHARACTERISTICS

Material Valves type AV25 are produced out of Steel 37-2 (S235JRG2)

Temperature Maximum allowable temperature is 600°C

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

TYPE AV30



Article No.	Size (inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
210200000122	4	100	114.3	122	160	320	198	50
210200000212	6	150	168.3	158	192	279	157	50
210200000288	8	200	219.1	212	242	361	239	50
210200000338	10	250	273.0	288	318	469	347	60
210200000350	12	300	323.9	338	368	494	372	60
210200000420	14	350	355.6	350	390	505	383	60
210200000450	16	400	406.4	420	460	543	421	60
210200000158	18	450	457.2	450	490	555	433	60
210200000500	20	500	508.0	500	540	580	458	60
210200000600	24	600	609.6	600	640	730	608	80
210200000710	28	700	711.2	710	750	758	663	80
210200000800	32	800	812.8	800	840	830	708	80
210200000900	36	900	914.4	900	940	880	758	80
210200001000	40	1000	1016.0	1000	1040	990	868	80

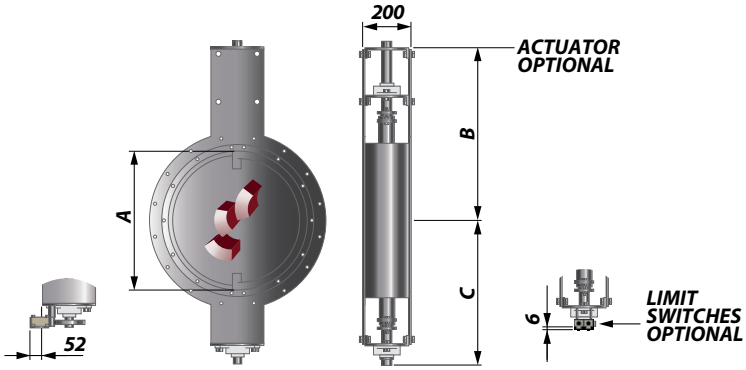
CHARACTERISTICS

Material Valves type AV30 are produced out of Steel 37-2 (S235JRG2)

Temperature Maximum allowable temperature is 600°C

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

TYPE AV40



Article No.	Size (inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)
210030000213	8	200	219.1	213	407	355
210030000248	10	250	273.0	248	427	376
210030000319	12	300	323.9	319	464	420
210030000350	14	350	355.6	350	480	448
210030000400	16	400	406.4	400	504	470
210030000450	18	450	457.2	450	530	490
210030000509	20	500	508.0	509	555	515
210030000600	24	600	609.6	600	706	590
210030000700	28	700	711.2	700	755	680
210030000800	32	800	812.8	800	800	690
210030000900	36	900	914.4	900	850	740
210030001000	40	1000	1016.0	1000	905	790
210030001200	48	1200	1220.0	1200	1000	890

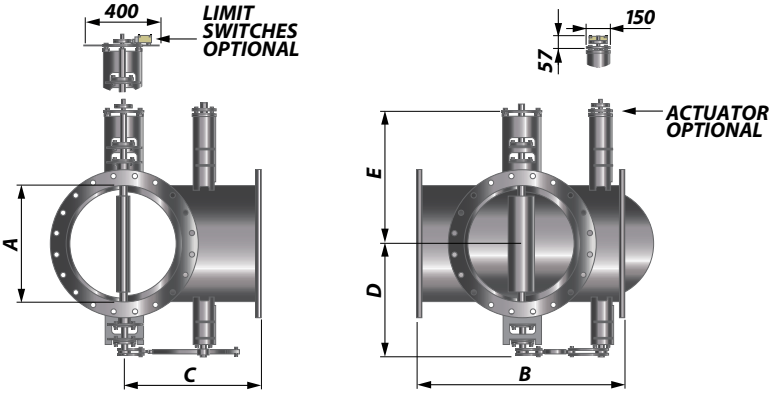
CHARACTERISTICS

Material Valves type AV40 are produced out of Steel 37-2 (S235JRG2)

Temperature Maximum allowable temperature is 600°C

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

TYPE AV50



Article No.	Size (inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
210000500213	8	200	219.1	213	400	200	407	355
210000500213	10	250	273.0	248	500	250	427	367
210000500319	12	300	323.9	319	600	300	464	420
210000500350	14	350	355.6	350	700	350	480	448
210000500400	16	400	406.4	400	800	400	504	470
210000500450	18	450	457.2	450	900	450	530	490
210000500509	20	500	508.0	509	1000	500	555	515
210000500600	24	600	609.6	600	1200	600	706	590
210000500700	28	700	711.2	700	1400	700	755	680
210000500900	32	800	812.8	800	1600	800	800	690
210000500900	36	900	914.4	900	1800	900	850	740
210000501000	40	1000	1016.0	1000	2000	1000	905	790
210000501200	48	1200	1220.0	1200	2400	1200	1000	890

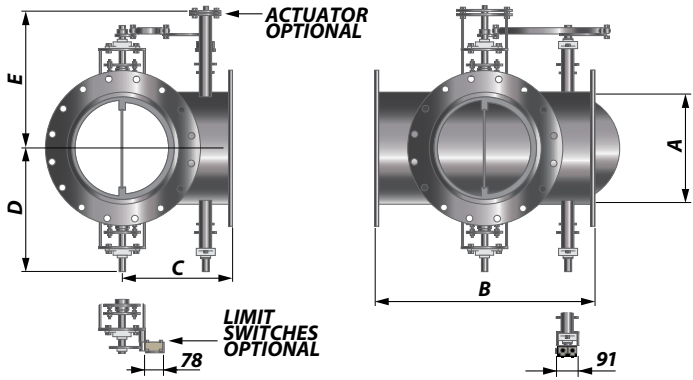
CHARACTERISTICS

Material Valves type AV50 are produced out of Steel 37-2 (S235JRG2)

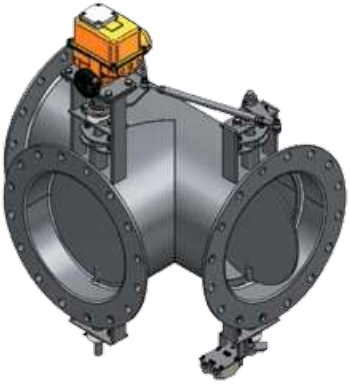
Temperature Maximum allowable temperature is 600°C

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

TYPE AV60



Article No.	Size (inch)	NB (mm)	Pipe (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
210000500158	6	150	168.3	158	300	200	193	196
210000500213	8	200	219.1	213	400	225	335	407
210000500213	10	250	273.0	248	500	250	347	427
210000500319	12	300	323.9	319	600	300	400	464
210000500350	14	350	355.6	350	700	350	428	480
210000500400	16	400	406.4	400	800	400	450	504
210000500450	18	450	457.2	450	900	450	470	530
210000500509	20	500	508.0	509	1000	500	495	555
210000500600	24	600	609.6	600	1200	600	570	706
210000500700	28	700	711.2	700	1400	700	660	755
210000500900	32	800	812.8	800	1600	800	670	800
210000500900	36	900	914.4	900	1800	900	720	850
210000501000	40	1000	1016.0	1000	2000	1000	770	905
210000501200	48	1200	1220.0	1200	2400	1200	870	1000

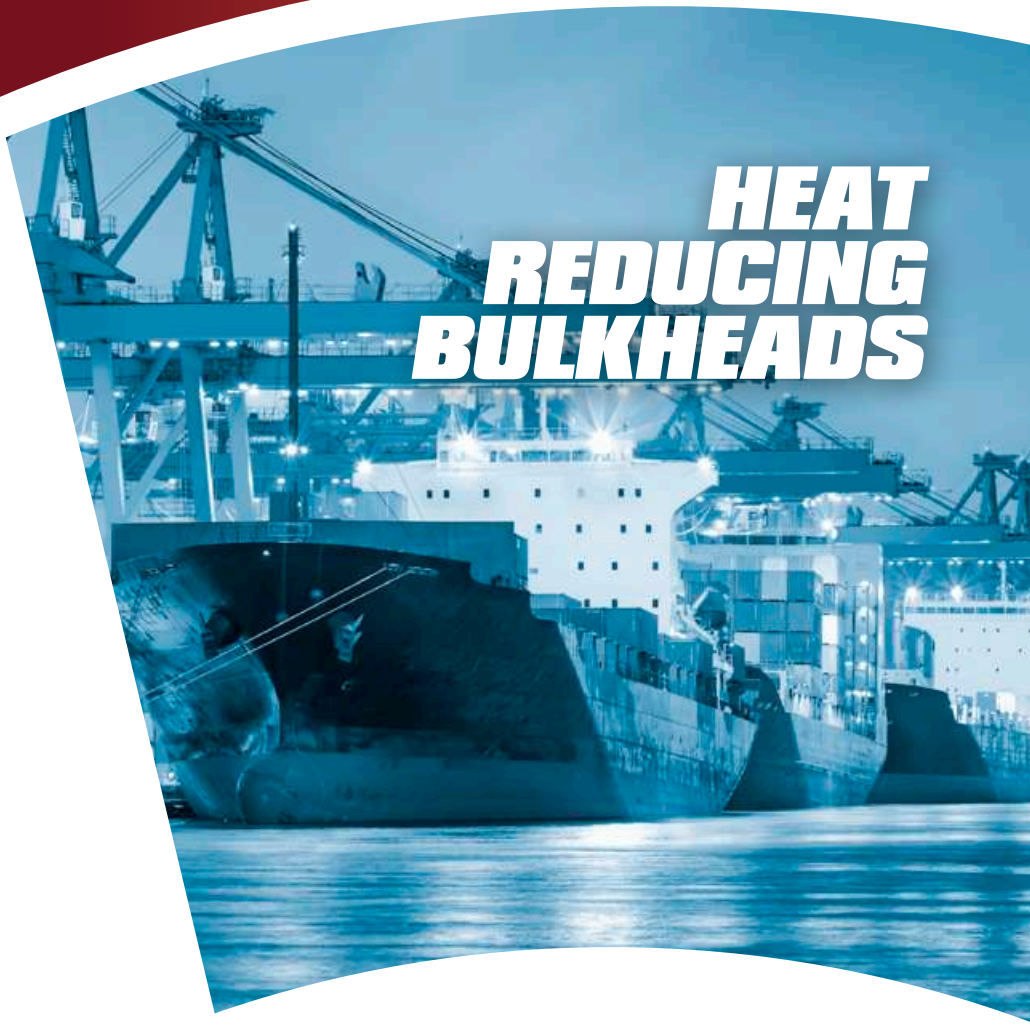


CHARACTERISTICS

Material Valves type AV60 are produced out of Steel 37-2 (S235JRG2)

Temperature Maximum allowable temperature is 600°C

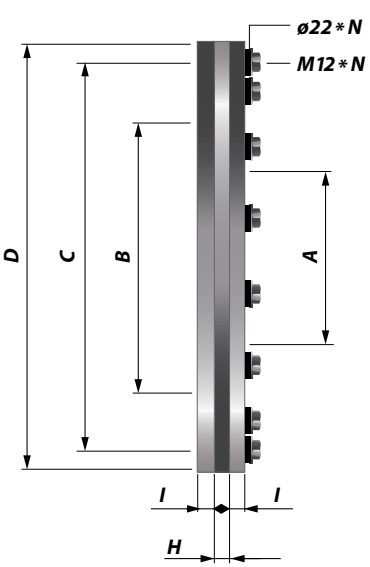
Custom Made Axces Valves are also manufactured based on specific dimensions or client's requirements



HEAT REDUCING BULKHEADS

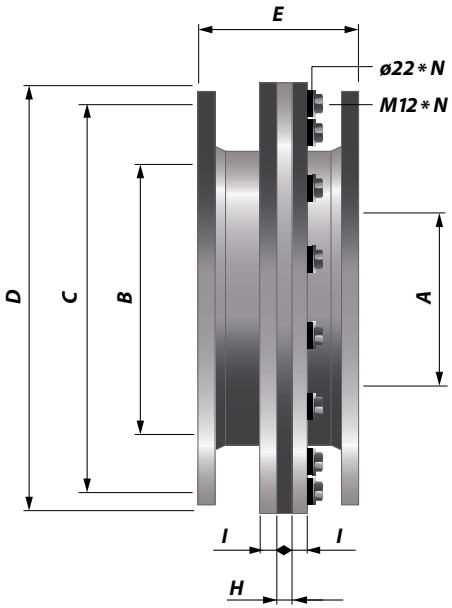
AXCES

HEAT REDUCING BULKHEAD PENETRATION - I



Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	ø22 x N (mm)	M12 x N (mm)	H (mm)	I (mm)
278420000020	2	50	60.3	171	240	285	Ø22x8	M12x8	15	16
278420000025	2.5	60	76.1	171	240	285	Ø22x8	M12x8	15	16
278420000030	3	80	88.9	171	240	285	Ø22x8	M12x8	15	16
278420000040	4	100	114.3	171	240	285	Ø22x8	M12x8	15	16
278420000050	5	125	139.7	196	270	315	Ø22x8	M12x8	15	16
278420000060	6	150	168.3	222	295	340	Ø22x8	M12x8	15	16
278420000070	7	175	193.7	276	350	95	Ø22x12	M12x12	15	16
278420000080	8	200	219.1	276	350	395	Ø22x12	M12x12	15	16
278420000100	10	250	273.0	327	395	440	Ø22x12	M12x12	20	16
278420000120	12	300	323.9	411	495	540	Ø22x16	M12x16	20	16
278420000140	14	350	355.6	411	495	540	Ø22x16	M12x16	20	16
278420000160	16	400	406.4	461	550	595	Ø22x16	M12x16	20	16
278420000180	18	450	457.0	512	600	645	Ø22x20	M12x20	20	16
278420000200	20	500	508.0	614	700	745	Ø22x20	M12x20	20	16

HEAT REDUCING BULKHEAD PENETRATION - II

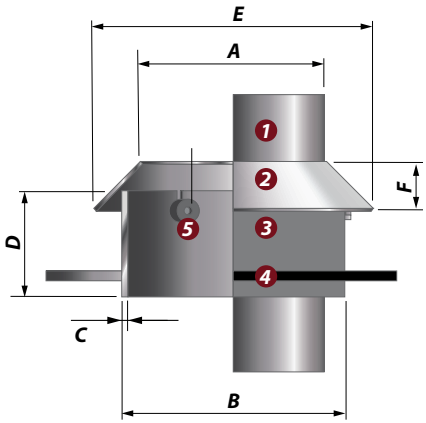


Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	E (mm)	ø22 x N (mm)	M12 x N (mm)	H (mm)	I (mm)
278420000020	2	50	60.3	171	240	285	180	Ø22x8	M12x8	15	16
278420000025	2.5	60	76.1	171	240	285	180	Ø22x8	M12x8	15	16
278420000030	3	80	88.9	171	240	285	200	Ø22x8	M12x8	15	16
278420000040	4	100	114.3	171	240	285	200	Ø22x8	M12x8	15	16
278420000050	5	125	139.7	196	270	315	200	Ø22x8	M12x8	15	16
278420000060	6	150	168.3	222	295	340	200	Ø22x8	M12x8	15	16
278420000070	7	175	193.7	276	350	95	200	Ø22x12	M12x12	15	16
278420000080	8	200	219.1	276	350	395	200	Ø22x12	M12x12	15	16
278420000100	10	250	273.0	327	395	440	200	Ø22x12	M12x12	20	16
278420000120	12	300	323.9	411	495	540	200	Ø22x16	M12x16	20	16
278420000140	14	350	355.6	411	495	540	200	Ø22x16	M12x16	20	16
278420000160	16	400	406.4	461	550	595	200	Ø22x16	M12x16	20	16
278420000180	18	450	457.0	512	600	645	200	Ø22x20	M12x20	20	16
278420000200	20	500	508.0	614	700	745	200	Ø22x20	M12x20	20	16

ROOF EXITS

AXCES

ROOF EXIT SETS



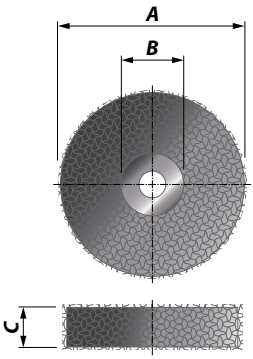
1. Exhaust Pipe
2. Rain Hood
3. Roof Conduit
4. Roof Deck
5. Stainless Steel Cushions

Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Number of cushions	Weight (kg)
258001000005	2	50	60.3	109.8	5.6	130	215	75	3 x ø67 x 120°	3.5
258001000006	2.5	65	76.1	127.1	6.3	130	230	75	3 x ø67 x 120°	4.0
258001000008	3	80	88.9	136.0	5	130	240	75	3 x ø67 x 120°	4.0
258001000010	4	100	114.3	161.0	5	130	265	75	3 x ø67 x 120°	4.5
258001000013	5	125	139.7	187.0	6	130	290	75	3 x ø67 x 120°	6.0
258001000015	6	150	168.3	215.0	8	160	318	75	3 x ø67 x 120°	9.5
258001000020	8	200	219.1	266.0	8	160	369	75	3 x ø67 x 120°	11.0
258001000025	10	250	273.0	320.0	8	160	423	75	3 x ø67 x 120°	13.0
258001000030	12	300	323.9	370.0	8	160	474	75	4 x ø60 x 90°	15.0
258001000035	14	350	355.6	402.0	8	200	506	75	4 x ø60 x 90°	20.0
258001000040	16	400	406.4	453.0	8	200	556	75	4 x ø60 x 90°	22.5
258001000045	18	450	457.2	505.0	8	200	607	75	5 x ø60 x 72°	25.5
258001000050	20	500	508.0	555.0	8	200	658	75	5 x ø60 x 72°	27.5
258001000060	24	600	609.6	655.0	8	200	758	75	5 x ø60 x 72°	32.0
258001000070	28	700	711.2	758.0	8	200	862	75	5 x ø60 x 72°	37.0
258001000080	32	800	812.8	860.0	8	200	970	75	8 x ø60 x 45°	42.5
258001000090	36	900	914.4	961.0	8	200	1065	75	8 x ø60 x 45°	47.0
258001000100	40	1000	1016.0	1063.0	8	200	1173	75	8 x ø60 x 45°	52.5

CHARACTERISTICS

- ✓ Stainless Steel
- ✓ Silent
- ✓ Balanced
- ✓ Maintenance Free
- ✓ Sustainable
- ✓ Easy to Install
- ✓ Rain Hood and Conduit Can also be ordered seperately

STAINLESS STEEL CUSHIONS



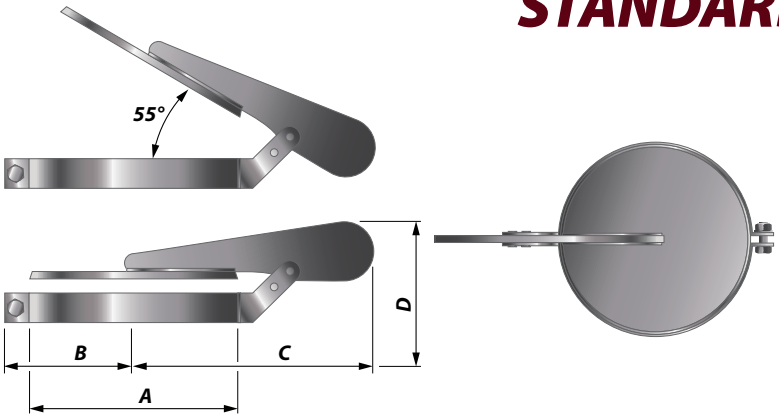
Article No.	A (mm)	B (mm)	C (mm)
258301025060	60	22	25

CHARACTERISTICS

- ✓ Stainless Steel
- ✓ Silent
- ✓ Balanced
- ✓ Maintenance Free
- ✓ Suistainable
- ✓ Easy to Install

AXCES

RAIN CAPS STANDARD

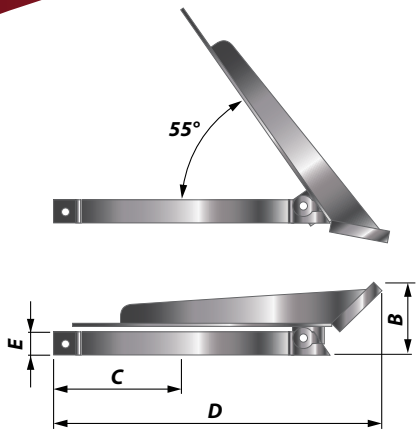


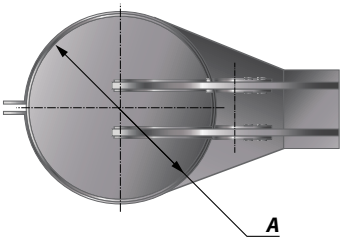
Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
258001000004	1.5	40	48.3	62	138	82	1
258001000005	2	50	60.3	68	143	82	1
258001000006	2.5	65	76.1	76	151	82	1
258001000008	3	80	88.9	83	158	87	1
258001000010	4	100	114.3	95	170	87	1
258001000013	5	125	139.7	108	272	97	2
258001000015	6	150	168.3	123	297	97	2
258001000020	8	200	219.1	148	310	97	3
258001000025	10	250	273.0	174	345	97	3
258001000030	12	300	323.9	165	280	110	4
258001000035	14	350	355.6	180	290	125	4
258001000040	16	400	406.4	200	300	125	4
258001000045	18	450	457.2	200	300	125	4

CHARACTERISTICS

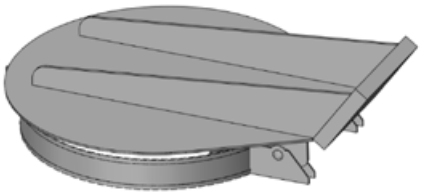
- ✓ Stainless Steel
- ✓ Silent
- ✓ Balanced
- ✓ Maintenance Free
- ✓ Suistainable
- ✓ Easy to Install

RAIN CAPS OFFSHORE





Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Weight (kg)
217102000015	1.5	40	48.3	82	65	72	30	2
217102000020	2	50	60.3	82	70	90	30	2
217102000025	2.5	65	76.1	82	78	114	30	2
217102000030	3	80	88.9	87	84	135	30	2
217102000040	4	100	114.3	87	95	170	30	2
217102000050	5	125	139.7	97	108	210	30	4
217102000060	6	150	168.3	97	123	250	30	4
217102000080	8	200	219.1	97	150	330	40	6
217102000100	10	250	273.0	97	176	410	40	6
217102000120	12	300	323.9	110	201	485	40	8
217102000140	14	350	355.6	125	220	560	40	8
217102000160	16	400	406.4	135	245	610	40	8
217102000180	18	450	457.2	150	270	685	40	8

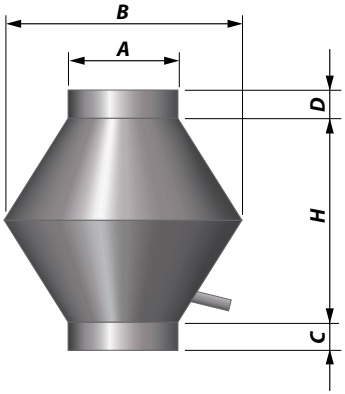


CHARACTERISTICS

- ✓ Stainless Steel
- ✓ Silent
- ✓ Balanced
- ✓ Maintenance Free
- ✓ Suistainable
- ✓ Easy to Install

AXCES

RAIN HOODS



Article No.	A Size (Inch)	NB (mm)	Pipe (mm)	B (mm)	C (mm)	D (mm)	H (mm)	Weight (kg)
221330000100	4	100	114.3	200	75	25	200	7
221330000125	5	125	139.7	250	75	25	250	8
221330000150	6	150	168.3	300	75	25	300	8
221330000200	8	200	219.1	400	75	50	400	13
221330000250	10	250	273.0	500	125	50	500	16
221330000300	12	300	323.9	600	125	50	600	23
221330000350	14	350	355.6	700	150	50	700	30
221330000400	16	400	406.4	800	150	50	800	55
221330000450	18	450	457.2	900	150	50	900	65
221330000500	20	500	508.0	1000	150	50	1000	85
221330000600	24	600	609.6	1200	150	50	1200	150
221330000700	28	700	711.2	1400	200	75	1400	200

CHARACTERISTICS

Material Rain Hoods are produced out of stainless steel

Temperature Maximum allowable temperature is 600°C

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

INSULATION

AXCES

INSULATION WRAP SPECIFICATIONS

Custom Designed Flexible, Removable Insulation Blankets Properties	Temperature Rating: 593°C
Temperature Range	-6 °C - 600 °C process temperatures
Thickness	100 mm
Insulation	120 kg/m³ density insulation composed of 100% Type "E" fibers
Inner Jacket	0.5 kg vermiculite coated thermal cloth
Attachments	High-temp Velcro strips and belts with stainless steel double D-Rings
Tags	Tags Stainless Steel

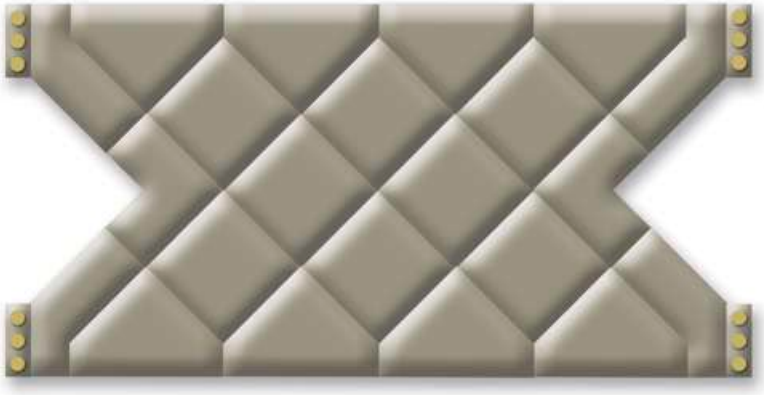
Physical Properties	
Surface Temperature	Used on surfaces up to 600 °C
Fire Resistance	Incombustible
Density (approximate)	120 kg/m³
Loss in Weight @ 650 °C	Up to 2%
Moisture Absorption	Negligible
Softening Point	815 °C
Strain Point	600 °C
Annealing Point	650 °C

Thermal Conductivity - K Value at 11 lbs./cubic ft. (per ASTM C 177)	
Temperature	K btu-in/sq ft./hr/°F
300° F	0.40
500° F	0.50
700° F	0.65

Thermal wrap provides a tough, durable exterior that can be custom fitted for nearly any product or accessory. The wrap is composed of 100 mm, 120 kg/m³ insulation composed of 100% Type "E" fibers, fabricated in a mat form free of asbestos. The wrap is easy to install, and significantly reduces surface temperature. The color is typically gray.

CUSTOM MADE INSULATION MATRASSES

Insulation matrasses for use in the exhaust system.

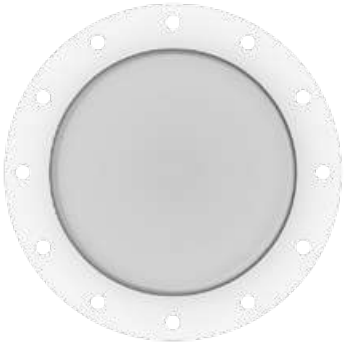


ACOUSTICAL MINERAL FIBER

Axces Mineral Fiber used in the exhaust silencers is available upon request.

AXCES

RUPTURE DISCS



Materials of Construction (1)	Stainless Steel / Teflon / Insulation / Stainless Steel
Maximum Operation Pressure: RVD-I (3)	70% of the minimum burst pressure for nom. BP ≤ 0.1 barg 60% of the minimum burst pressure for nom. BP > 0.1 barg 60% of the minimum burst pressure for rectangular shapes
Maximum Operation Pressure: RVD-R-I (3)	80% of the minimum burst pressure for nom. BP ≤ 0.1 barg 70% of the minimum burst pressure for nom. BP > 0.1 barg 70% of the minimum burst pressure for rectangular shapes
Burst Pressure Tolerance (2)	± 15 mbarg for burst pressure ≤ 70 mbarg 25 mbarg for burst pressure > 70 mbarg and ≤ 250 mbarg 50 mbarg for burst pressure > 250 mbarg
Operating Temperature Range (4)	RVD-I -40°C to 450°C / RVD-R-I-HT -40°C to 600°C

NOTES

1. Other materials are available on request.
2. For certain sizes and burst pressures, reduced tolerances may be available, consult Axces.
3. Momentary Pressure only.
4. For higher temperatures: consult Axces.

FEATURES

- ✓ **Full Opening**
- ✓ **Certified Burst Pressure**
- ✓ **No Maintenance**
- ✓ **High Operating Ratio**
- ✓ **Suitable for Vacuum Service**

DESCRIPTION

The RVD-I and RVD-R-I type vents are high performance explosion vents specifically used for high process temperatures, and they offer venting of explosions of industrial equipment. This explosion vent provides excellent service life for static to light pressure cycling conditions.

This type explosion vents come in 2 maximum working temperature ranges: RVD-(S)-I up to maximum 450°C and RVD-(S)-I-HT for use op to maximum 600°C.

RUPTURE DISCS

Type RVD-I and RVD-R-I

DIN 2632 PN10	Relief Area	ANSI 150	Min. Burst Pressure mbarg		Max. Burst Pressure	Thickness	
			RVD-I	RVD-R-I		RVD-(S)-I	RVD-(S)-I-HT
150	0.013	6	220	415	1030	18	23
200	0.026	8	200	300	1030	18	23
250	0.045	10	140	250	760	18	23
300	0.066	12	110	200	690	18	23
350	0.080	14	100	180	690	18	23
400	0.109	16	85	150	690	18	23
500	0.176	20	50	125	690	18	23
600	0.260	24	40	100	690	18	23
700	0.410	28	35	100	690	18	23
800	0.474	32	35	100	690	18	23
900	0.600	36	35	70	690	18	23
1000	0.750	40	35	70	690	18	23

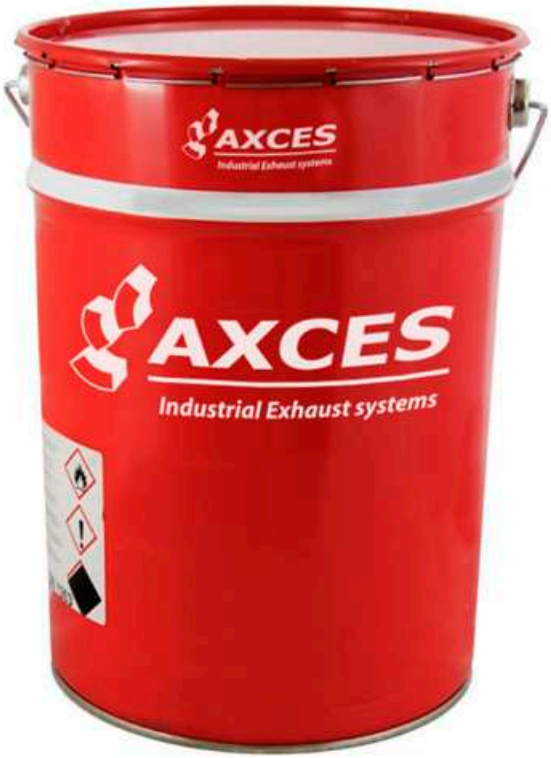
DIN 2632 PN10	Relief Area	ANSI 150	Min. Burst Pressure mbarg		Max. Burst Pressure	Thickness	
			RVD-I	RVD-R-I		RVD-(S)-I	RVD-(S)-I-HT
150	0.013	6	220	415	1030	18	23
200	0.028	8	200	310	1030	18	23
250	0.045	10	140	250	750	18	23
300	0.066	12	110	200	690	18	23
350	0.081	14	100	180	690	18	23
400	0.109	16	85	150	690	18	23
500	0.176	20	50	120	690	18	23
550	0.233	22	50	120	520	18	23
600	0.260	24	40	110	470	18	23
700	0.360	28	35	90	340	18	23
750	0.410	30	35	90	300	18	23
800	0.474	32	35	80	260	18	23
850	0.540	34	35	80	215	18	23
900	0.600	36	35	80	200	18	23
10000	0.748	40	35	70	160	18	23

Relief Area (m^2)	Nom. Size (mm)	Min. Burst Pressure mbarg		Max. Burst Pressure	Thickness	
		RVD-I	RVD-R-I		RVD-(S)-I	RVD-(S)-I-HT
0.20	500x400	100	120	500	18	23
0.25	500x500	70	120	500	18	23
0.26	470x570	90	100	500	18	23
0.30	500x600	70	120	440	18	23
0.35	500x700	50	110	380	18	23
0.39	625x625	70	100	380	18	23
0.40	500x800	50	100	320	18	23
0.45	500x900	50	100	260	18	23
0.50	500x1000	50	50	200	18	23
0.50	566x900	50	100	200	18	23
0.60	600x1000	35	50	200	18	23
0.69	625x1110	35	100	200	18	23
0.70	700x1000	35	50	200	18	23
0.80	800x1000	35	50	200	18	23
0.81	900x900	35	100	200	18	23
0.90	900x1000	35	50	200	18	23
1.00	1000x1000	35	100	200	18	23

COATINGS

AXCES

TOP COATINGS



AVAILABLE COLORS

- Aluminium
- Dark Greay
- Black

2- COMPONENTS PRIMER AND TOPCOAT

- ✓ **25 Liter**
- ✓ **Axces primer and topcoat.**

CHARACTERISTICS

Thermoresistant	Up to 600°C
Colours	All
Application	For protective-decorative painting of objects exposed to the influence of increased temperature, e.g. heaters, pipelines etc., with the coating thickness up to 30µm it is possible to weld the painted elements.
Characteristics	The paint is a suspension of flaked aluminium in a solution of resins with an addition of plasticisers and auxiliary substances in organic solvents.
Preparation of the base	Clean the steel surface up to cleanliness class SA 2 1/2 in accordance with PN-EN ISO 8501-1: 2008 the base prepared for painting should be dry, free of salt, grease and any other contamination.
Dilution	With a diluent intended for carbamide products
Application	With a brush, spraying
Recommended number of layers	2

Selected technical parameters

- viscosity measured with Ford cup no. 4: s	45-65
- covering: degree I - thermal resistance: °C	to 600
- content of non-volatile substances: % of volume	30
- layer thickness: µm (“wet method”)	50
- coating thickness: µm (“dry method”)	15
- theoretical efficiency: m2/l	20

Drying time (at the temperature of 20 +/-2°C and relative humidity of 55 +/-5%)

- degree 1 (dustdryness): h 0.5

The specified parameters can be changed along with changes in the conditions of the environment, the number and the thickness of layers.

Hardening time	(at the temperature of 200 +/-10°C) total hardening: h 1.5
Storage	In closed boxes away from fire and heat sources. Protect children against access to the product. Carry out painting works in good ventilation conditions. Temp. Storage temperature not lower than 5 °C.
Standard	PN-C-81918: 2002. The product should meet the requirements of the standard throughout the 12 months following the date of production. Any possible condensation disappears after the diluent is added in the amount of ca. 5%.
Note	The product contains harmful volatile substances. Use in closed rooms only when the ventilation is operating efficiently.

AEROSOLS

AVAILABLE COLORS

- Aluminium
- Dark Greay
- Black

AEROSOL

✓ **Spraying bushes to spray damage sites**

MEASURING DEVICES

AXCES

BACK PRESSURE INSTRUMENTS

Pressure (difference) meters are suitable for measuring pressure and pressure difference of non-corrosive, non-aggressive, non-viscous and non-crystallizing gases.

S2601

- ✓ Compact and ergonomic design
- ✓ Protective cushion with magnets
- ✓ Large LCD display display
- ✓ Automatic reset after startup device and manual reset
- ✓ Temperature compensation
- ✓ No position effect
- ✓ Auto Range Setting (Auto-Range)
- ✓ Hold function
- ✓ NEN-EN 50379 Part 2 Certified

S4601

Features like the S2601 with extra:

- ✓ Automatic pressure drop test
- ✓ Adjustable limit values with alarm
- ✓ Power with rechargeable Li-Ion battery or power supply
- ✓ Large TFT color screen (readable in almost all conditions)
- ✓ Simple, Dutch-language, menu-driven operation
- ✓ Print function with optional EUROprinter IR
- ✓ Display of maximum and minimum measurement value

S4601 ST

Features like the S4601 with extra:

- ✓ Measurement of barometric pressure
- ✓ Bluetooth® Smart for wireless communication
- ✓ Communication with EuroSoft mobile software and App
- ✓ Storage of 100 measurement results on MicroSD card
- ✓ Database Memory for storage of 10.000 measurement results with additional (address) data (option)
- ✓ Data Collection (Option)
- ✓ Import of address data for reporting
- ✓ Optional pitot function for air velocity and air quantity measurements (S4602 ST)

EXHAUST ANALYZER EUROLIZER STX

CHARACTERISTICS

- ✓ Display TFT color display 2.8 "(240 x 320 pixels)
- ✓ Power supply via battery charger / AC adapter
- ✓ Battery NiMH battery with approximately 8 hours of use
- ✓ Operating temperature 0 ° C to +40 ° C
- ✓ Storage temperature -10 ° C to +50 ° C
- ✓ Dimensions (L x W x D) 215 x 65 x 45 mm (including protective cover)
- ✓ Weight Approx. 450 grams (excluding protective cover and flue gas probe)
- ✓ Material housing Plastic
- ✓ Data communication
- ✓ Wireless infrared connection with optional EUROprinter IR
- ✓ USB 2.0 Bluetooth® (optional)
- ✓ Printer (Optional) External Wireless Thermal Printer (EUROprinter IR)
- ✓ Memory (optional) MicroSD card with time / date structure
- ✓ Certification NEN-EN50379 Part 2
- ✓ Warranty
- ✓ 12 month warranty on battery and sensors
- ✓ 24 month warranty on material or product defects
- ✓ 7 year full warranty with KWSe service and calibration provided that the instrument is maintained and calibrated by EURO-INDEX every 12 months
- ✓ The warranty applies to the entire instrument, including sensors, battery and consumables (such as filters)

The Eurolyzer STx offers a complete and efficient solution for installation, inspection and maintenance of central heating systems. By using state-of-the-art technology, this service analyst offers unprecedented accuracy, functionality and ease of use.

TEMPERATURE ANALYZER S2600-12K(D)

CHARACTERISTICS

- ✓ Compact and ergonomic design
- ✓ Protective cushion with magnets
- ✓ Large LCD display display
- ✓ S2600-12K: 1 connection for K-type thermocouple
- ✓ S2600-12KD: 2 connections for K-type thermocouple
- ✓ Measurement of temperature difference (S2600-12KD)
- ✓ MIN / MAX function
- ✓ Hold function
- ✓ NEN-EN 50379 Part 2 Certified

With the S2600-12K, the measured temperature can easily be read on the large, clear LCD. This is provided with display lights, which can be read by reading the measurement results under illuminated conditions. The display shows both the measured value and the minimum or maximum measured value. If desired, the measured value can be held on the display with the hold function. This is especially useful when measurements are to be made in a position where the display is poorly visible. With the S2600-12KD not only can you keep a minimum and maximum registration of the individual temperatures, but also the temperature difference (T1-T2).

LASER DISTANCE METER

Attach the Fluke 414D to your toolbelt and measure it further than with the usual tape measure - up to 50 m (165 ft). This professional laser rangefinder is fast and user-friendly, has greater accuracy and reduces measurement errors. You save time and money at each step.

CHARACTERISTICS

- ✓ **The most advanced laser technology for measuring distances**
- ✓ **Simple operation with one button for directly measuring the distance between two objects**
- ✓ **Measure up to 50 m (165 ft) with accuracy of 2 mm (0.08 inch)**
- ✓ **Clear laser for easy targeting even at greater distances**
- ✓ **Quick calculation of area (square feet / meter) and volume**
- ✓ **Easy addition and subtraction function**
- ✓ **Pythagoras function for indirect height measurement via two other measurements**
- ✓ **Storage of up to five measurement results**
- ✓ **Battery life of 3000 measurements due to automatic power off**
- ✓ **Two-way display with display hold function (until the next press of a button)**
- ✓ **Carrying case for attachment to your tool strap**
- ✓ **Fueled by two AAA batteries**
- ✓ **Reduction of calculation errors, saving both time and money**
- ✓ **The most advanced 2-laser technology for measuring distances**
- ✓ **Direct measurement with one press of the button**
- ✓ **Easy addition and subtraction function**
- ✓ **Quick calculation of area (square meters) and volume**
- ✓ **Easily add and subtract measurements**
- ✓ **Minimum / Maximum Function**
- ✓ **Longer battery life thanks to automatic power off**
- ✓ **Pythagoras calculation for indirectly determining the distance via two other measurements**
- ✓ **Carrying case with Fluke logo**
- ✓ **Three year warranty**

SOUND LEVEL ANALYZER

CHARACTERISTICS

- ✓ **Measurement range - sound level: 30 - 130 dB**
- ✓ **Frequency range: 20 - 10000 Hz**
- ✓ **Sound level resolution: 0.01 dB**
- ✓ **Accuracy: ±1.1 dB**
- ✓ **Pick-up time: Fast, slow, pulse**
- ✓ **Can be calibrated to: ISO / DKD**
- ✓ **Power supply: 6 NiMH rechargeable batteries (AA)**
- ✓ **Dimensions: (W x H x D) 115 x 220 x 90 mm**

Fully numeric sound level measurement for class 2 with two independent measurement systems in line with IEC 61672. Each programmable channel can be weighted independently of time and frequency. The analyzer is a real time octave and third octave Frequency analyser according to IEC 61260.

The results of measurement can be recorded in the device memory. Later evaluation of measured data is easy using the device's serial port and the Sound Link LITE software application that is included with purchase.

ULTRASONIC WALL THICKNESS GAUGE

CHARACTERISTICS

- ✓ Resolution of 0.01 mm
- ✓ Large LCD display with backlight remembers the last measurement
- ✓ Easy operation
- ✓ Special headers available for various applications
- ✓ Display in mm and inch
- ✓ For measurements underwater, cables up to 15 meters are available
- ✓ CE certified
- ✓ Includes NIST Calibration Certificate

The new CHECKLINE TI-25M Ultrasonic wall thickness meter accurately measures the metal thickness and size of metal corrosion by corrosion. In addition, the meter measures the thickness of ceramic, glass and most types of (hard) plastic - on one side only!

The TI-25M wall thickness gauge can be used for single measurements or for continuous measurement, dragging the head over the surface to be measured. The lowest observed value during the measurement is shown.

The measuring head of the TI-25M is waterproof and can measure underwater. The meter is shockproof and ecologically sealed for trouble-free use under all conditions.

AXCES

AXCES WET EXHAUST SYSTEMS

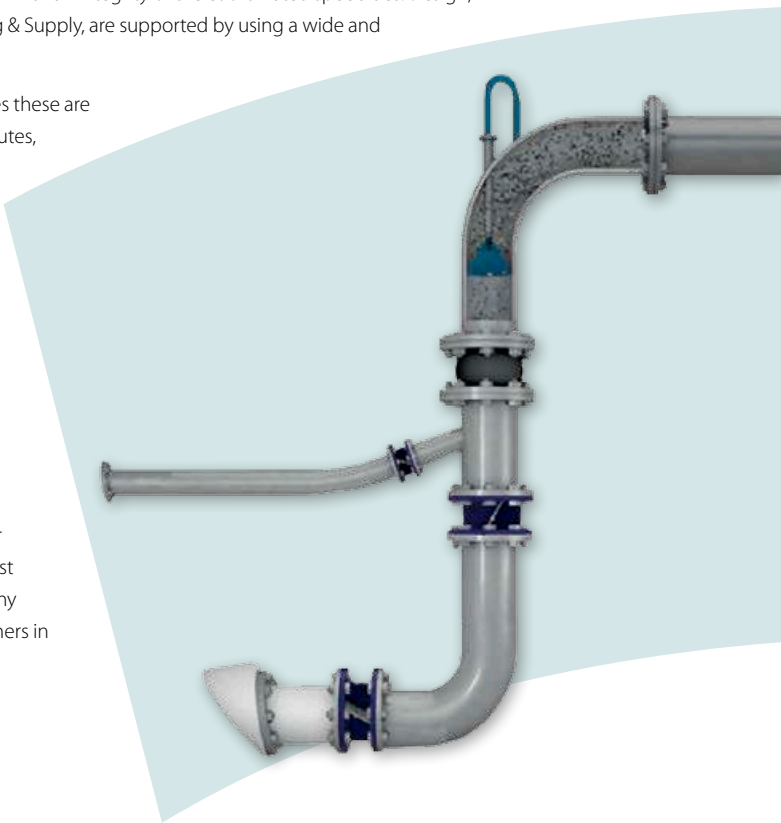
'YOUR PARTNER IN WATER INJECTED EXHAUST SYSTEM TECHNOLOGY'

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.

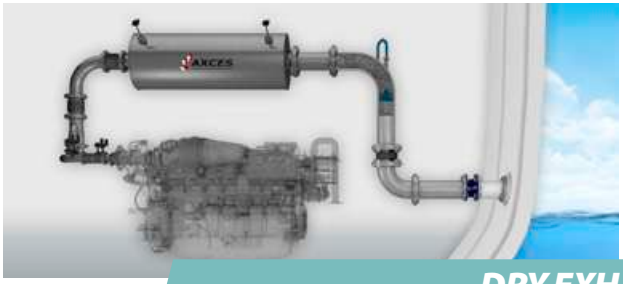
These fundaments, together with an integrity of the coordinated specialties: Design, Engineering, Manufacturing & Supply, are supported by using a wide and complete product range.

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

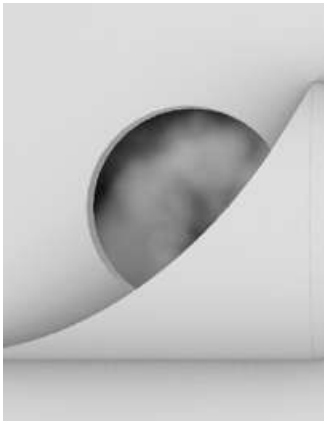
For yachts with an exclusive and durable coating system, it is of great importance that the exhaust gasses, which are leaving the outlet in the hull of the vessel are cooled down. By spraying seawater under great amount of pressure, into the streamline of the exhaust gas flow, the hot exhaust gasses are immediately cooled down to less then 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 invidual 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 lenght 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

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 ailboats. 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.

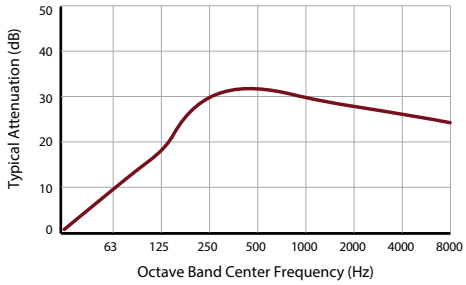
Sound Attenuation Is Based On A Comparison To Straight Exhaust	
Fair	10-12 dB
Good	15-18 dB
Better	22-28 dB
Best	25-30 dB

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

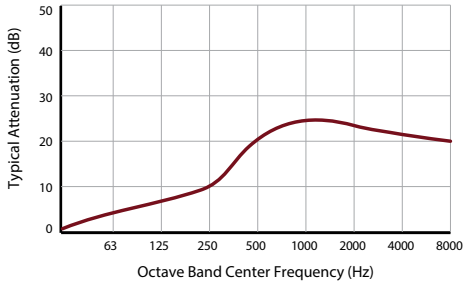
Larger sizes are available upon request. Contact Axces for more information.

EXHAUST SYSTEM SIZE

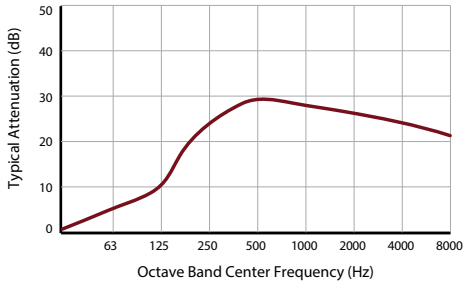
Dual Stage MKII Vernatone



Vernatone



Vernalift & Vernatone MKII

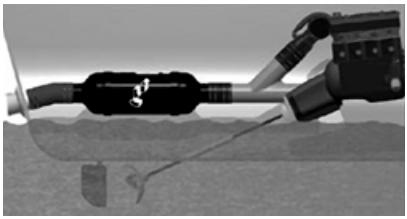


The attenuation curves as shown are typical only for the products as shown and meant to display their comparative acoustical properties. Actual results will depend highly on the engine to which the product is applied and the operating parameters of that engine.

TYPICAL INSTALLATION DIAGRAMS

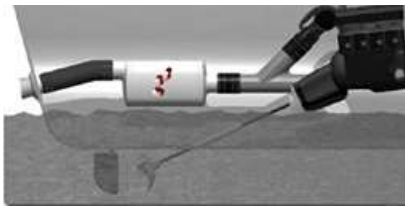
VERNATONE

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.



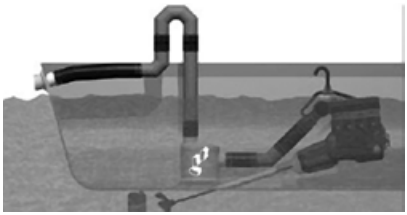
VERNALIFT - ABOVE LWL

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.

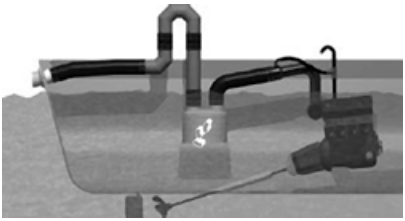
***LWL = Lowest Waterline**



TYPICAL INSTALLATION DIAGRAMS

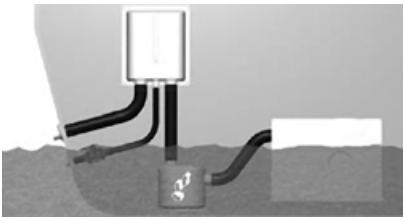
VERNALIFT - BELOW LWL

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.



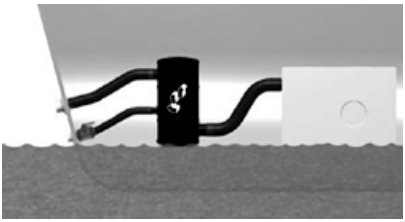
GEN-SEP

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

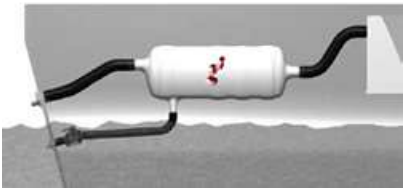
Generator installation above the LWL with combo-sep water separation muffler. See detailed installation instructions accompanying the new muffler.



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**



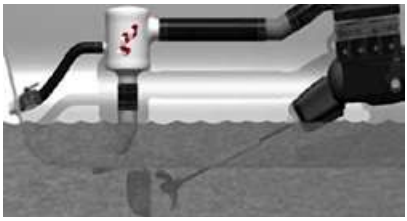
TYPICAL INSTALLATION DIAGRAMS

HORIZONTAL UNDERWATER EXHAUST

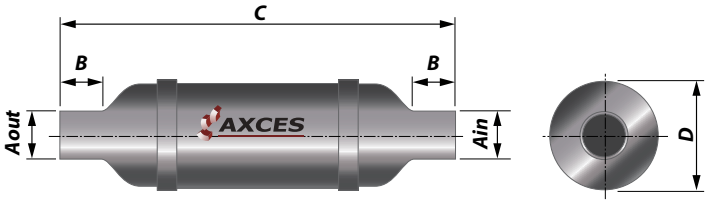
Engine installation above the LWL with the underwater exhaust muffler. See detailed installation instructions accompanying the new muffler.

VERTICAL UNDERWATER EXHAUST

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



VERNATONE INLINE



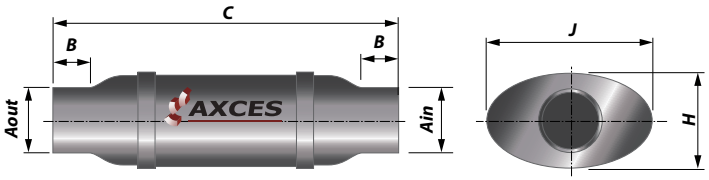
Part Number	A In/Out (Inch/mm)	B I/O Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)
1000103	2.50 / 64	3.00 / 76	21.62 / 549	5.58 / 142
1000145	3.00 / 76	3.50 / 89	20.12 / 511	7.07 / 180
1000104	3.00 / 76	3.50 / 89	25.84 / 656	7.07 / 180
1000105	3.50 / 89	3.50 / 89	30.00 / 762	8.09 / 205
1000165	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

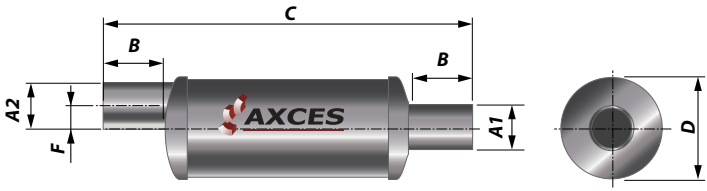


Part Number	A In/Out (Inch/mm)	B I/O Length (Inch/mm)	C Length (Inch/mm)	H Height (Inch/mm)	J Width (Inch/mm)
1000229	5.00 / 127	5.00 / 127	35.13 / 892	7.00 / 178	14.75 / 375
1000263	6.00 / 152	5.00 / 127	42.33 / 1.075	9.00 / 229	15.00 / 381
1000139	8.00 / 203	5.70 / 145	54.00 / 1.372	12.00 / 305	19.00 / 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

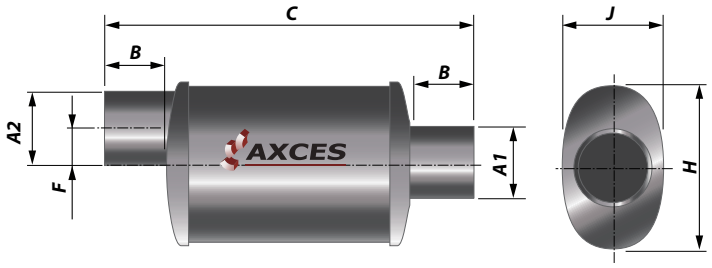


Part Number	A1 Inlet (Inch/mm)	A2 Outlet (Inch/mm)	B I/O Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)	F I/O Offset (Inch/mm)
1400003	2.00 / 51	2.00 / 51	2.50 / 64	16.00 / 406	6.38 / 162	1.85 / 47
1400002	2.38 / 60	2.38 / 60	3.00 / 76	16.00 / 406	6.38 / 162	1.66 / 42
1400032	2.50 / 64	2.50 / 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 / 1.016	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 / 1.283	16.25 / 413	3.72 / 94
1400008	8.00 / 203	8.00 / 203	8.00 / 203	50.50 / 1.283	16.25 / 413	3.72 / 94
1400030	8.00 / 203	10.00 / 254	10.00 / 254	61.00 / 1.549	18.50 / 470	3.85 / 98
1400009	10.00 / 254	10.00 / 254	10.00 / 254	63.00 / 1.600	18.50 / 470	3.85 / 98
1400010	12.00 / 305	12.00 / 305	12.00 / 305	75.50 / 1.918	22.25 / 565	4.25 / 108
1400011	14.00 / 356	14.00 / 356	12.00 / 305	87.00 / 2.210	22.25 / 565	3.25 / 83

CHARACTERISTICS

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

VERNATONE MKII INLINE OVAL

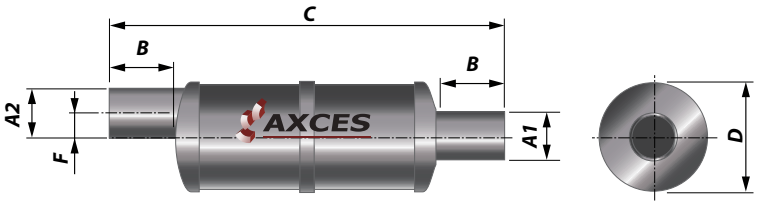


Part Number	A1 Inlet (Inch/mm)	A2 Outlet (Inch/mm)	B I/O Length (Inch/mm)	C Length (Inch/mm)	H Height (Inch/mm)	J Width (Inch/mm)	F I/O Offset (Inch/mm)
1400042	5.00 / 127	5.00 / 127	5.50 / 140	31.50 / 800	15.00 / 381	9.00 / 229	4.56 / 116
1400037	5.00 / 127	6.00 / 152	6.00 / 152	38.00 / 965	15.00 / 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

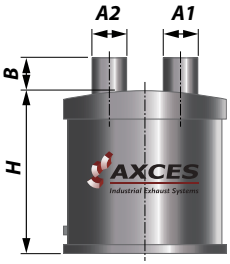


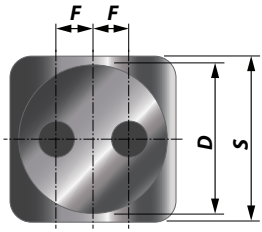
Part Number	A1 Inlet (Inch/mm)	A2 Outlet (Inch/mm)	B I/O Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)	F I/O Offset (Inch/mm)
1420300	3.00 / 76	3.00 / 76	3.00 / 76	29.00 / 737	8.38 / 213	2.13 / 54
1420350	3.50 / 89	3.50 / 89	3.50 / 89	30.00 / 762	8.38 / 213	1.88 / 48
1420400	4.00 / 102	4.00 / 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



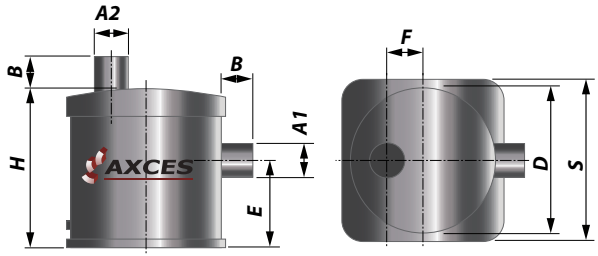


Part Number	A1 Inlet (Inch/mm)	A2 Outlet (Inch/mm)	B I/O Length (Inch/mm)	D Diameter (Inch/mm)	F I/O Offset (Inch/mm)	H Height (Inch/mm)	S Square Base (Inch/mm)
1500060	1.50 / 38	1.50 / 38	2.50 / 64	8.36 / 212	2.00 / 51	8.00 / 203	9.00 / 229
1500219	1.50 / 38	2.00 / 51	2.50 / 64	8.36 / 212	2.00 / 51	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



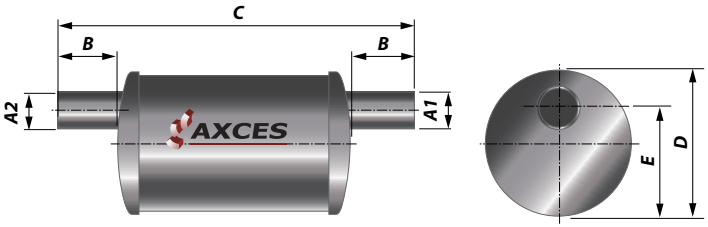
Part Number	A1 Inlet (Inch/mm)	A2 Outlet (Inch/mm)	B I/O Length (Inch/mm)	D Diameter (Inch/mm)	E Inlet Height (Inch/mm)	F I/O Offset (Inch/mm)	H Height (Inch/mm)	S Square Bas (Inch/mm)
1500071	1.50 / 38	1.50 / 38	2.50 / 64	8.36 / 212	4.68 / 119	2.00 / 51	8.00 / 203	9.00 / 229
1500142	1.50 / 38	2.00 / 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
1500210	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

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

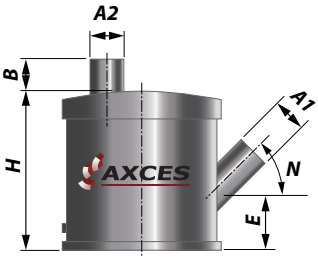


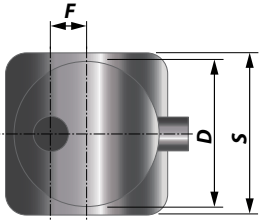
Part Number	A1 Inlet (Inch/mm)	A2 Outlet (Inch/mm)	B I/O Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)	E I/O Offset (Inch/mm)
1500035	1.50 / 38	1.50 / 38	2.00 / 51	10.50 / 267	6.36 / 162	4.88 / 124
1500036	1.63 / 41	1.63 / 41	2.00 / 51	10.50 / 267	6.36 / 162	4.88 / 124
1500037	1.63 / 41	1.63 / 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 / 1.016	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





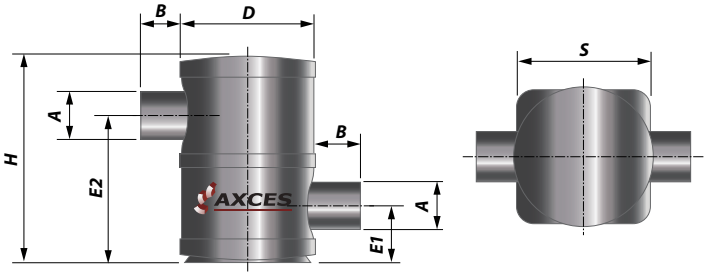
Part Number	A1 Inlet (Inch/mm)	A2 Outlet (Inch/mm)	B I/O Length (Inch/mm)	D Diameter (Inch/mm)	E Inlet Height (Inch/mm)	F I/O Offset (Inch/mm)	H Height (Inch/mm)	N Angle	S Square Base (Inch/mm)
1500223	1.50 / 38	1.50 / 38	2.50 / 64	8.36 / 212	4.43 / 113	2.50 / 64	8.00 / 203	45°	9.00 / 229
1500265	1.63 / 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



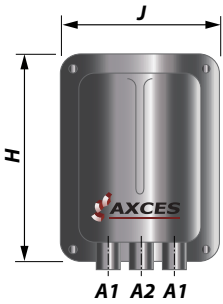
Part Number	A1 In/Out (Inch/mm)	B I/O Length (Inch/mm)	D Diameter (Inch/mm)	E1 In Height (Inch/mm)	E2 Out Height (Inch/mm)	H Height (Inch/mm)	S Square Base (Inch/mm)
1520200	2.00 / 51	2.50 / 64	8.38 / 213	4.00 / 102	8.00 / 203	11.25 / 286	9.00 / 229
1520250	2.50 / 64	2.50 / 64	8.38 / 213	4.25 / 108	9.00 / 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

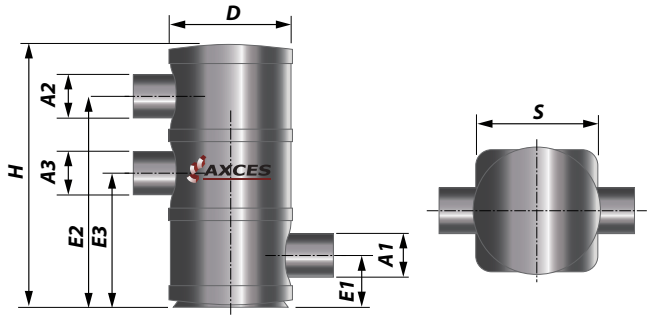
Part Number	A1 In/Out (Inch/mm)	A2 Drain (Inch/mm)	H Height (Inch/mm)	J Width (Inch/mm)	K Depth (Inch/mm)
1020150	1.50 / 38	1.25 / 32	15.63 / 397	12.38 / 31	5.03 / 128
1020162	1.62 / 41	1.25 / 32	15.63 / 397	12.38 / 314	5.03 / 128
1020200	2.00 / 51	1.50 / 38	15.63 / 397	12.38 / 314	5.03 / 128
1020250	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



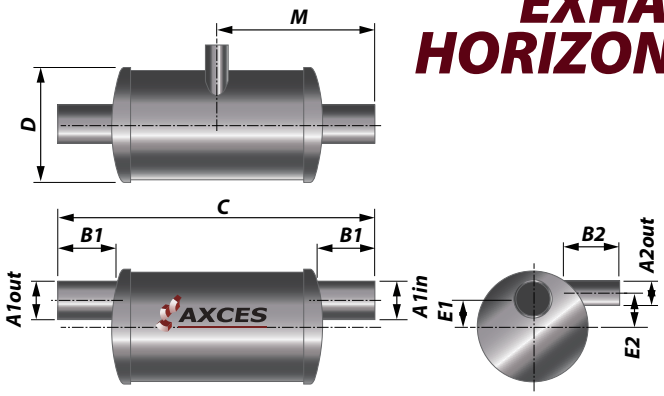
Part Number	A1 Inlet (Inch/mm)	A2 Gas Out (Inch/mm)	A3 Water Out (Inch/mm)	D Diameter (Inch/mm)	E1 Inlet (Inch/mm)	E2 Gas Out (Inch/mm)	E3 Water Out (Inch/mm)	H Height (Inch/mm)	S Square Base (Inch/mm)
1040200	2.00 / 51	1.50 / 38	1.25 / 32	10.00 / 254	3.75 / 95	16.50 / 419	8.13 / 207	20.00 / 508	10.50 / 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

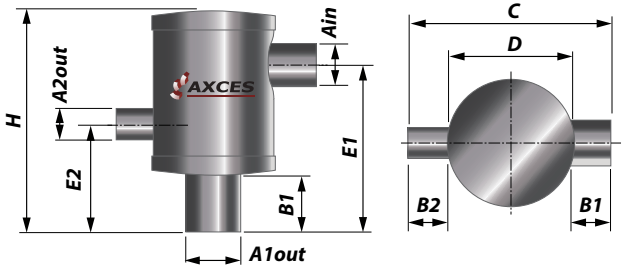


Part Number	A1 In/Out (Inch/mm)	A2 Bypass (Inch/mm)	B1 I/O Length (Inch/mm)	B2 BP Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)	E1 I/O Elev. (Inch/mm)	E2 BP Elev. (Inch/mm)	M SBP Offset (Inch/mm)
107H500	5.00 / 127	2.50 / 64	5.00 / 127	3.00 / 76	28 / 711	10.40 / 264	2.16 / 55	2.75 / 70	13.82 / 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

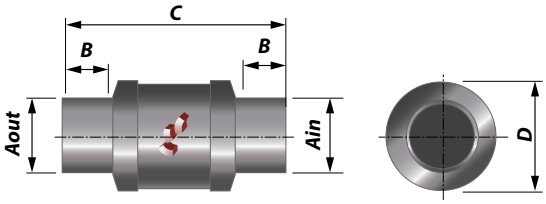


Part Number	A1 In/Out (Inch/mm)	A2 Bypass (Inch/mm)	B1 I/O Length (Inch/mm)	B2 BP Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)	E1 Inlet Elev. (Inch/mm)	E2 BP Elev. (Inch/mm)	H Height (Inch/mm)
107V500	5.00 / 127	2.50 / 64	5.00 / 127	3.00 / 76	20.50 / 521	12.50 / 318	16.00 / 406	2.75 / 70	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

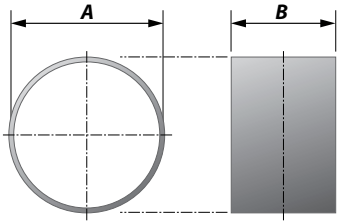
- ✓ Application: Inboards
- ✓ Fuel type: Gas/Diesel
- ✓ Waterline: Above Only
- ✓ Sound rating: Best

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

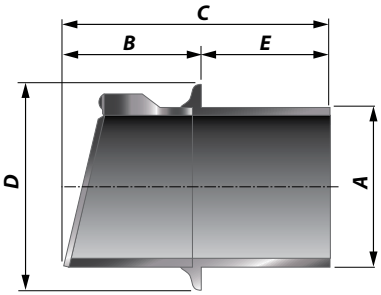
ANTI CRUSH SLEEVES



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

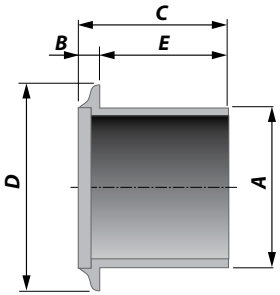
Fits inside Inlet/Outlet to prevent damage due to over tightening of hose clamps

THRU HULL FITTING WITH FLAPPER



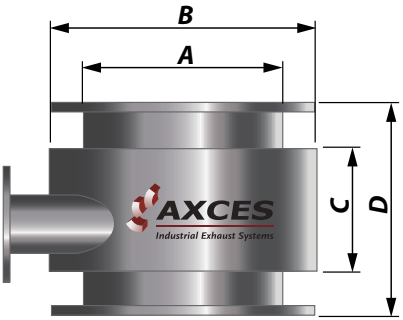
Part Number	A Nom. O.D. (Inch/mm)	B Ext. Length (Inch/mm)	C Length (Inch/mm)	D Diameter (Inch/mm)	E T-H Length (Inch/mm)
1200300 - W	2.00 / 51	1.75 / 44	4.50 / 114	3.50 / 89	2.75 / 70
1200301 - BL	2.00 / 51	1.75 / 44	4.50 / 114	3.50 / 89	2.75 / 70
1200298 - W	3.00 / 76	2.50 / 64	5.50 / 140	4.88 / 124	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 / 14

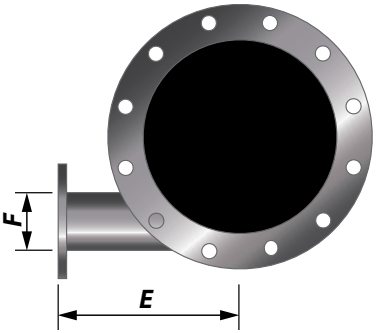
THRU HULL FITTING WITHOUT FLAPPER



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 / 14

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

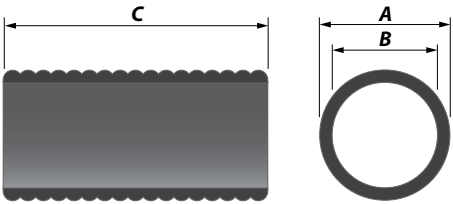
Material Duplex / AISI316L

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

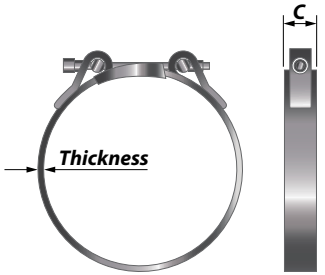


Article No.	Size (Inch)	A (mm)	B (mm)	C (mm)
AXREH000010	1	33	25	20
AXREH000012	1.25	40	32	20
AXREH000015	1.5	46	38	20
AXREH000017	1.75	54	45	20
AXREH000020	2	60	51	20
AXREH000022	2.25	70	60	20
AXREH000025	2.5	74	65	20
AXREH000027	2.75	86	76	20
AXREH000030	3	90	80	20
AXREH000035	3.5	100	90	20
AXREH000040	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

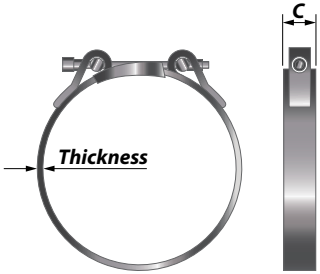


Article No.	Clamping Range (mm)	C (mm)	Thickness (mm)	Bolt
AXGEC000040	43 - 40	20	1.5	M8
AXGEC000044	47 - 44	20	1.5	M8
AXGEC000048	51 - 48	20	1.5	M8
AXGEC000052	55 - 52	20	1.5	M8
AXGEC000056	59 - 56	20	1.5	M8
AXGEC000060	63 - 60	25	1.5	M8
AXGEC000064	67 - 64	25	1.5	M8
AXGEC000068	73 - 68	25	1.5	M8
AXGEC000074	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

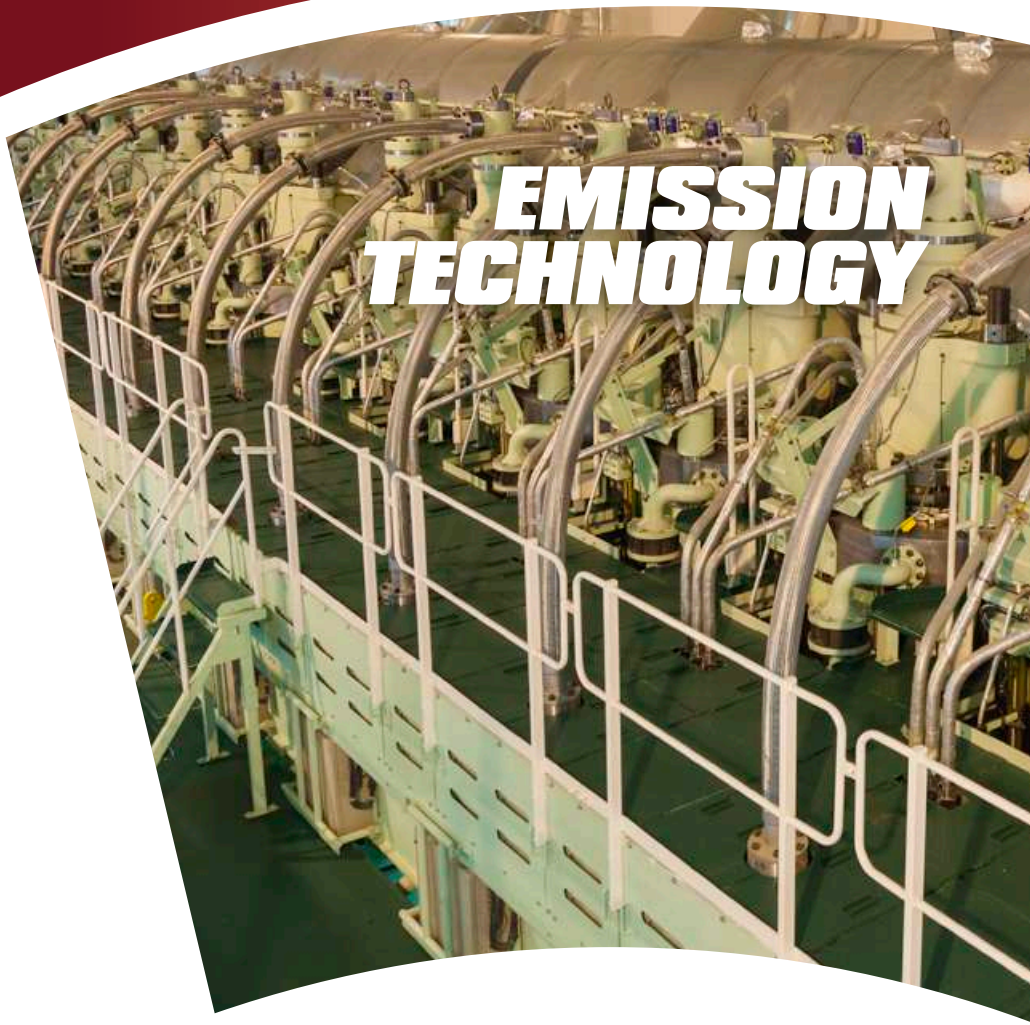
STAINLESS STEEL EXHAUST HOSE CLAMP



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

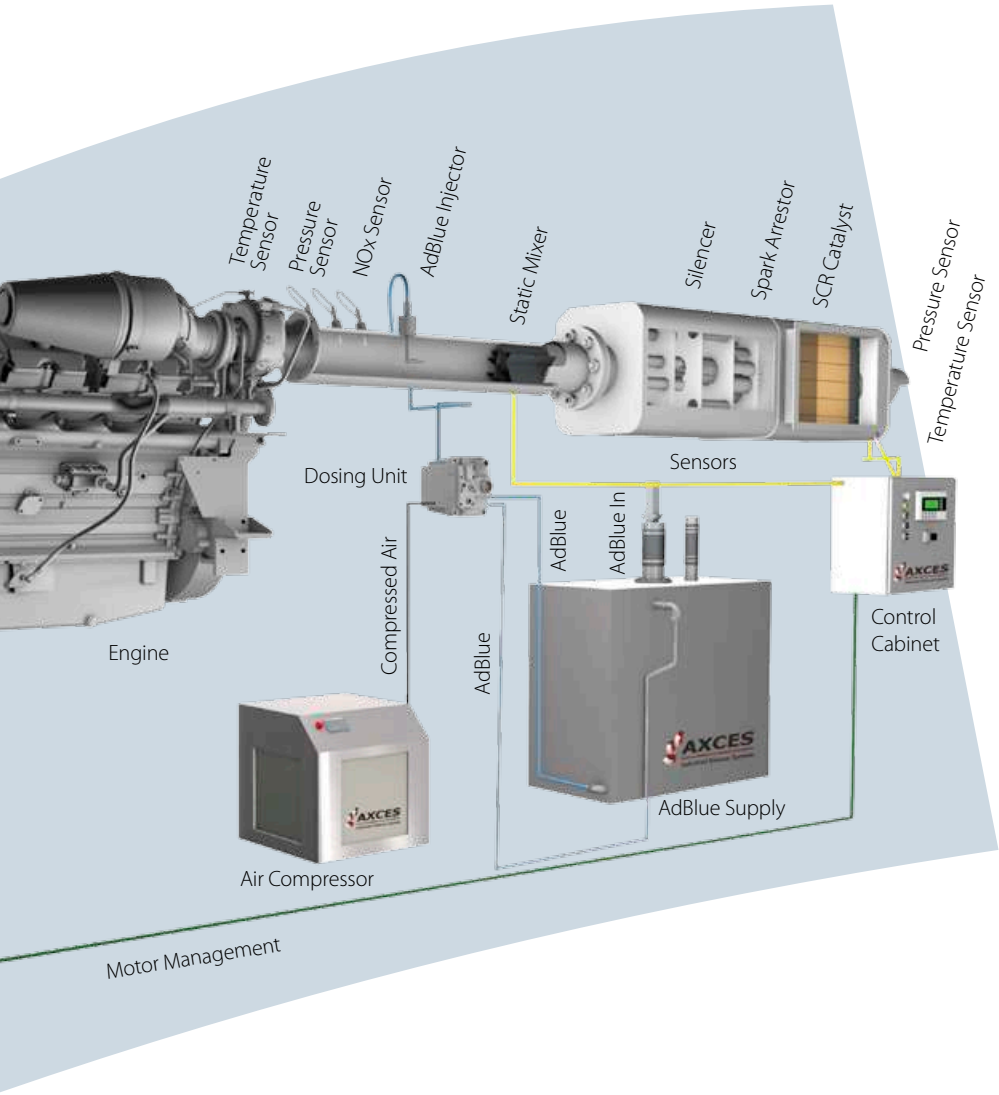
- ✓ High Strength
- ✓ Made out of AISI316



EMISSION TECHNOLOGY

AXCES

AXCES EMISSION TECHNOLOGY

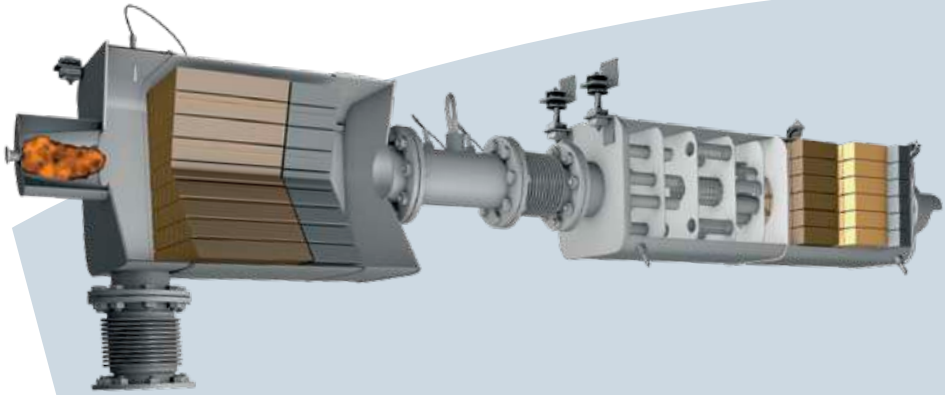


SCR SYSTEMS WITH INTEGRATED SILENCER AND TYPE APPROVED SPARK ARRESTOR

Moving forward to IMO Tier III and in-line with current EPA and IMO standards, regulating the release of harmful NOx compounds from exhaust systems.

The integrated SCR/silencer reactor is a noval solution making Axces a market leader in this field. The new IDE - NOx reactor can very easily be swapped with the existing noise reduction elements.

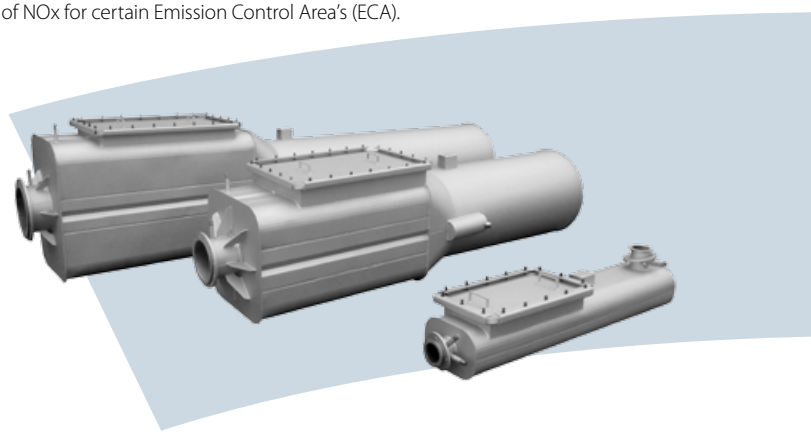
This upgrade of reactor leads to a reduction in the release of toxic NOx compounds through selective catalystic reduction. At the same time it operates as a exhaust silencer, with noise reduction of more then 45 dB(A).



THE IMO TIER III NOx SYSTEM

To comply with the IMO Tier 3, EU Stage V, EPA Tier 4 and local land based NOx emissions, NOx requirements the Axces modular Zero NOx System for diesel engines in generator set applications offers reliable reduction of NOx for certain Emission Control Area's (ECA).

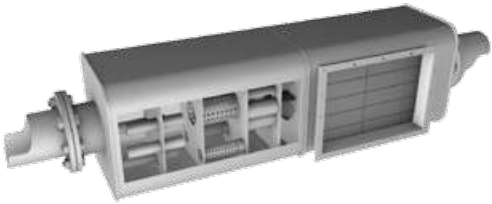
The Selective Catalytic Reduction (SCR) reduces NOx with use of UREA (Ad Blue) injection in the exhaust stream.



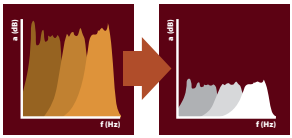
- Both Inline and Compact IDE-NOx System available in every size engine room.
- It is possible to combine a customised Zero Soot Systems, to avoid guests experience particulates on deck, common diesel fuel in swimming water and diesel fuel smell.
- The Axces system range has been designed to form a match with the auxiliary and generators from 100 kW up to 8.000 kW.
- The PLC control ensures an smart trouble free operation for all available parameters, alarms & events, history and data logging.
- Integrated sound attenuation.

SCR SYSTEMS WITH INTEGRATED SILENCERS

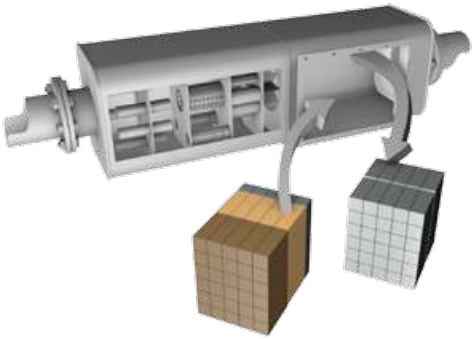
EXCELLENT SILENCER UNIT



This system has an excellent Prepared Silencer to SCR unit with an attuentation of more then 45 dB(A), which silences the complete frequency range.



NOx REDUCTION UNIT



The damping units are easily swappable and guarrantee a NOx Reduction of more then 80%. The catalyst is a high quality Vanadium Based unit, which ensures minimum back pressure.

PERFORMANCE

NOx – Nitrogen oxides*	>80-90% reduction
HC (Hydro-Carbons	20 - 30%*
CO (Carbon-Monoxide)	20 - 30%*
Sound attenuation **	ca. 35/45 dB(A)

* depending on exhaust temperatures
** lower value for In-Line systems / higher value for compact systems

SYSTEM PARTS

CONTROLLER

PLC control terminal
Full colour 7" HMI touch screen
Logging of history
Communication with motor management
External I/O: Inputs: Engine load signal, Engine on.
Outputs: System ON, Alarm.

UREA DOSING PUMP

UREA PUMP SET

UREA INJECTOR

SENSORS

Temperature and back pressure transmitter

WIRING

Wiring by electrician

OPERATIONAL CONDITIONS

Application	Sea going vessels, inland vessels, superyachts, power plants, CO-generation
Ambient Temperature	5 + 60°C (lower temperatures on request)
Degree of Protection	IP55
Relative humidity	5 to 95% Non-condensing
Inspection & service interval	1x per year or 4.000 operating hours
Compressed air for urea atomizer	8-12 Nm3/h @ min 6 barg (2-phase nozzle)
Urea nozzle type	2-phase nozzle, compressed air atomization
Urea specification	AUS32 or AUS40 or equivalent

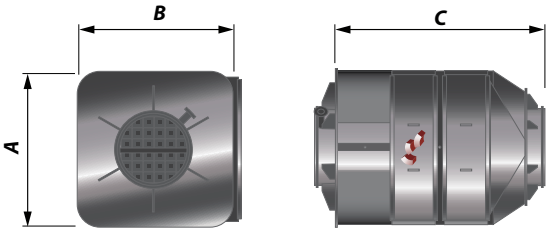
SUPPLIES

Fuel	EN590 (Diesel), DMA, DMX (max 2000 ppm S)
Power supply	230VDC

DESIGN DATA

Materials	Aisi 304 / 316 (mixing tube)
Temperature exhaust in	0 - 520 °C (optional higher temperatures)
Max system pressure (design)	100 mbar (for housing design) design temperature 600°C
Max pressure drop	20 mbar (wet exhaust)
Emission reduction	NOx ca. 80% to reach IMO III Tier limit of 2 g/kWh CH / CO >30-50% (depending on temperature)
Operational temperature	>220°C (EN590 fuel) >250°C (max 2000 ppm sulphur)
Control strategy	Open loop (Standard) Closed loop with NOx sensor (optional with EN 590 fuel only)
Supports	Bottom (standard), top support possible
Thermal insulation	Max. 80 mm insulation / Blankets or cladded insulation (by customer)

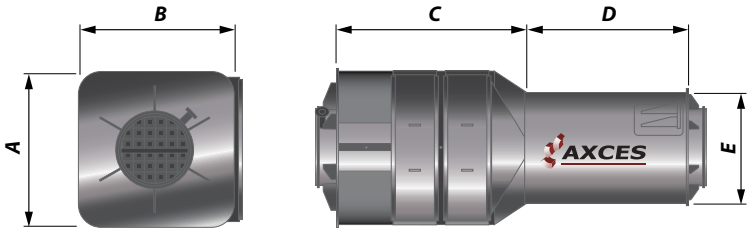
SEPERATE SCR



Engine Power (kW)	Nominal Bore (NB)	A (mm)	B (mm)	C (mm)
100	100	500	200	1250
150	125	350	350	1300
200	150	350	500	1350
250	150	350	650	1350
300	200	350	650	1450
350	200	500	500	1450
400	200	500	650	1450
450	250	500	650	1550
500	250	650	650	1550
550	250	650	650	1550
600	250	650	650	1550
650	300	650	850	1650
700	300	650	850	1650
750	300	650	850	1650
800	300	850	850	1650
850	350	850	850	1750
900	350	850	850	1750
950	350	850	850	1750
1000	350	850	950	1750
1100	350	850	950	1750
1200	400	850	1200	1850
1300	400	850	1200	1850
1400	400	950	950	1850
1500	450	950	1200	1950
1600	450	950	1200	1950
1700	450	1200	1200	1950
1800	450	1200	1200	1950
1900	450	1200	1200	1950
2000	500	1200	1350	2050
2100	500	1200	1350	2050
2200	500	1350	1350	2050

SCR SYSTEMS

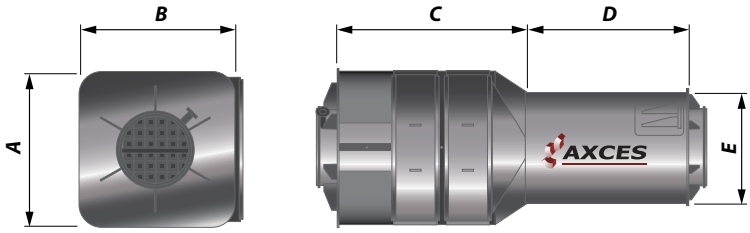
With Integrated Silencer Type AES - 35



Engine Power (kW)	Nominal Bore (NB)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Attenuation (dB(A))
100	100	500	200	1250	600	360	35
150	125	350	350	1300	750	400	35
200	150	350	500	1350	800	475	35
250	150	350	650	1350	800	475	35
300	200	350	650	1450	1000	560	35
350	200	500	500	1450	1000	560	35
400	200	500	650	1450	1000	560	35
450	250	500	650	1550	1200	635	35
500	250	650	650	1550	1200	635	35
550	250	650	650	1550	1200	635	35
600	250	650	650	1550	1200	635	35
650	300	650	850	1650	1500	760	35
700	300	650	850	1650	1500	760	35
750	300	650	850	1650	1500	760	35
800	300	850	850	1650	1500	760	35
850	350	850	850	1750	1900	800	35
900	350	850	850	1750	1900	800	35
950	350	850	850	1750	1900	800	35
1000	350	850	950	1750	1900	800	35
1100	350	850	950	1750	1900	800	35
1200	400	850	1200	1850	2100	860	35
1300	400	850	1200	1850	2100	860	35
1400	400	950	950	1850	2100	860	35
1500	450	950	1200	1950	2500	910	35
1600	450	950	1200	1950	2500	910	35
1700	450	1200	1200	1950	2500	910	35
1800	450	1200	1200	1950	2500	910	35
1900	450	1200	1200	1950	2500	910	35
2000	500	1200	1350	2050	2700	960	35
2100	500	1200	1350	2050	2700	960	35
2200	500	1350	1350	2050	2700	960	35

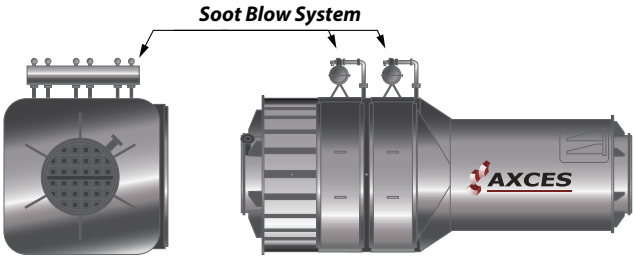
SCR SYSTEMS

With Integrated Silencer Type AES - 45



Engine Power (kW)	Nominal Bore (NB)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Attenuation (dB(A))
100	100	500	200	1250	600	475	45
150	125	350	350	1300	750	475	45
200	150	350	500	1350	800	560	45
250	150	350	650	1350	800	560	45
300	200	350	650	1450	1000	660	45
350	200	500	500	1450	1000	660	45
400	200	500	650	1450	1000	660	45
450	250	500	650	1550	1200	860	45
500	250	650	650	1550	1200	860	45
550	250	650	650	1550	1200	860	45
600	250	650	650	1550	1200	860	45
650	300	650	850	1650	1500	910	45
700	300	650	850	1650	1500	910	45
750	300	650	850	1650	1500	910	45
800	300	850	850	1650	1500	910	45
850	350	850	850	1750	1900	960	45
900	350	850	850	1750	1900	960	45
950	350	850	850	1750	1900	960	45
1000	350	850	950	1750	1900	960	45
1100	350	850	950	1750	1900	960	45
1200	400	850	1200	1850	2100	1100	45
1300	400	850	1200	1850	2100	1100	45
1400	400	950	950	1850	2100	1100	45
1500	450	950	1200	1950	2500	1270	45
1600	450	950	1200	1950	2500	1270	45
1700	450	1200	1200	1950	2500	1270	45
1800	450	1200	1200	1950	2500	1270	45
1900	450	1200	1200	1950	2500	1270	45
2000	500	1200	1350	2050	2700	1300	45
2100	500	1200	1350	2050	2700	1300	45
2200	500	1350	1350	2050	2700	1300	45

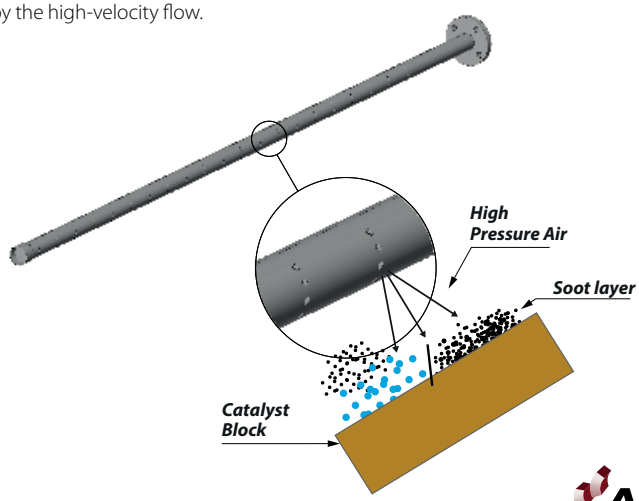
SCR WITH SOOT BLOWER



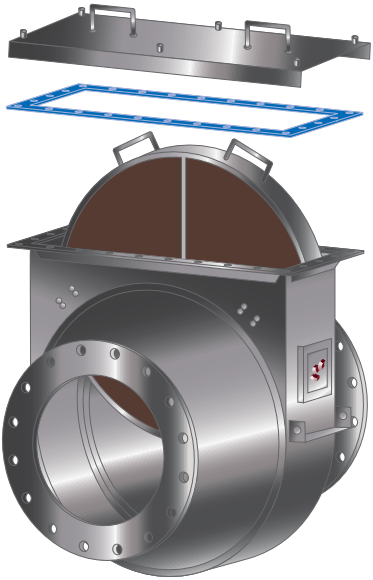
Axces has an integrated soot blower system available for internal cleaning of soot residue on the surface of the catalyst blocks. The Axces sootblow system has excellent results in cleaning performance, using the most effective cleaning lance tube with a maximized cleaning impact.

Sootblowers clean the surface of the SCR blocks by extending a lance tube into the SCR and blowing high pressure air directly onto the surfaces of the catalyst blocks. The effectiveness of a sootblower is primarily dependent on the ability of the nozzles at the end of the lance tube to convert the potential energy of high-pressure air into a coherent jet of high-velocity flow.

In turn, the high-velocity air flow impacts the soot deposits on the surface of the catalyst blocks and removes them by fracturing the residue and sweeping them off the catalyst blocks via shear stresses imposed by the high-velocity flow.



DOC: DIESEL OXIDATION CATALYST



A Catalytic converter is used on diesel engines to reduce hydrocarbon and carbon monoxide emissions.

The diesel oxidation catalyst (DOC) owes its name to its ability to promote oxidation of several exhaust gas components by oxygen, which is present in small quantities in diesel exhaust. When passed over an oxidation catalyst, the following diesel pollutants can be oxidized to harmless products, and thus can be controlled using the DOC:

- Carbon monoxide (CO)
- Gas phase hydrocarbons (HC)

It converts three harmful substances into harmless ones: carbon monoxide (a poisonous gas) into carbon dioxide, nitrogen oxides (cause acid rain and smog) into nitrogen, oxygen and hydrocarbons (cause smog and respiratory problems) into carbon dioxide and water.

Catalytic converters consist of a stainless steel box attached to the muffler and containing ceramic beads or honeycomb coated with catalysts.

Common applications include natural gas engines and diesel engines, power generation, co-generation.

FEATURES

- Cover plates for easy removal and service of individual DPF elements.
- Individual DPF elements can be lifted by hand without the need for special lifting equipment.
- Modular, scalable design for any size engine.
- Available in a variety of connection types, including ANSI and DIN bolt pattern flanges.
- Heavy gauge housing, available in stainless and mild steel.

DPF: DIESEL PARTICULATE FILTERS

DPF's are used for high efficiency (>85%) reduction of particulates (soot) in stationary diesel engines, providing long term passive regeneration.

Diesel engines produce a variety of particles during combustion of the fuel/air mix due to incomplete combustion. The composition of the particles varies widely dependent upon engine type, age, and the emissions specification that the engine was designed to meet.

Diesel particulate matter resulting from the incomplete combustion of diesel fuel produces soot (black carbon) particles. These particles include tiny nanoparticles—smaller than a thousandth of a millimeter (one micron). Soot and other particles from diesel engines worsen the particulate matter pollution in the air and are harmful to health.

New particulate filters can capture from 30% to greater than 95% of the harmful soot. With an optimal diesel particulate filter (DPF), soot emissions are being enormously decreased.

The quality of the fuel also influences the formation of these particles. For example, a high sulfur content diesel produces more particles. Lower sulfur fuel produces fewer particles, and allows use of particulate filters. The injection pressure of diesel also influences the formation of fine particles.

FEATURES

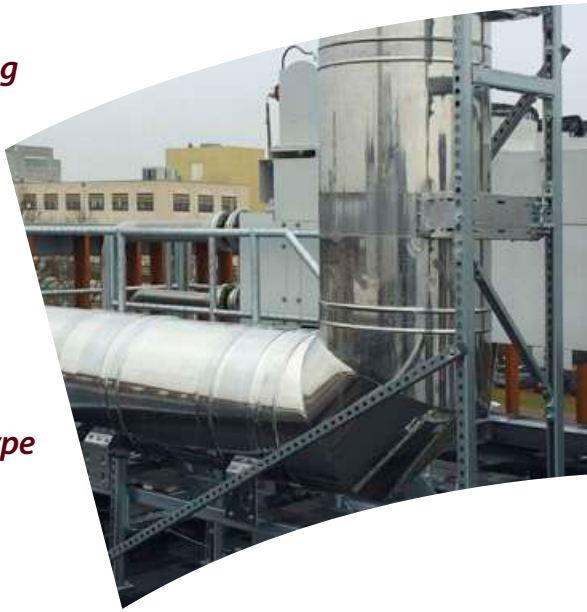
- Cover plates for easy removal and service of individual DPF elements.
- Individual DPF elements can be lifted by hand without the need for special lifting equipment.
- Modular, scalable design for any size engine.
- Available in a variety of connection types, including ANSI and DIN bolt pattern flanges.
- Heavy gauge housing, available in stainless and mild steel.
- Space for future upgrade.

AXCES

TYPES OF CHIMNEYS

Axces designs custom made chimneys for each project in types:

- ✓ *Single wall free standing*
- ✓ *Single wall guided*
- ✓ *Double wall free standing*
- ✓ *Double wall guided*
- ✓ *Several flues in outer shell*
- ✓ *Several flues satellite type with bearing mast*
- ✓ *Several flues in steel constructions*



In order to design a chimney Axces uses data and information which are determined together with the client. Design criteria can be based on location, with its own wind caracteristics, architectural or clients personal wishes on the visual aspect, the process(es) which create the exhaust, flue or process gasses, chemical data on which Axces determines the materials and corrosion allowance, technical data such as flow, temperature, pressure drop, heat balances, and emissions height.

For each complicated emission problem Axces has an answer available.

DESIGN AND CODES

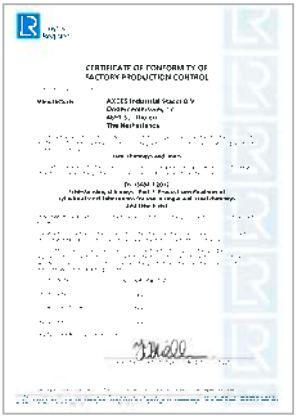
Chimneys and constructions are designed according to design codes and standards. Lots of countries have their own regulation and code we know our way in the web of regulations and codes. Examples of different design codes which can be used are:

- National codes and standards.
- The Euro code (new code for Europe).
- The DIN 4133 (German design code free standing chimneys).
- The CICIND (International Committee on Industrial chimneys).

Axces designs on above standing codes a safe design and a suitable chimney for your project.

EARTHQUAKE DESIGN

In many places, stacks have to be calculated taken earthquake risk into consideration. In this case Axces checks if the stack silencer combination for the overturning moment does not exceed the bending moment due to the wind. Axces adapts the design to the outcome of the earthquake calculation if necessary.


CERTIFICATE OF CONFORMITY OF FACTORY PRODUCTION CONTROL

AXCES Industrial Stacks B.V.

CERTIFICATION EN 13084-7 & CE MARKING

Axces is certified by Lloyds to give CE marking on each chimney and also on each chimney/silencer combination. In this combination Axces Industrial Stacks is the only company in Europe allowed to give CE marking on the complete system. The EN 13084-7 is the guideline for design and construction for chimneys which ensures that the design is correct.

SPECIALISM

Axces has lots of experience in al sorts of silencer/stack combinations, freestanding, within a steel construction or combined exhaust on a central column. The costs of a project can be dominated by transport costs. Axces designs system silencers and stacks exactly to dimensions so that an optimum is found for:

- The best technic for low engine sound level, with dimensions limited to fit container size.
- The right dimensions to make sure the velocity in the chimney and at outburst will not exceed the maximum pressure drop.
- Unlimited possibility's in carbon steel and stainless steel combinations.
- Complete dynamic behavior calculations and foreseen with a dynamic shock absorbtion.
- Materials for different circumstances to avoid condensate or corrosion problems.
- Solutions to prevent corrosion or incoming rain, which can lead to corrosion due to the acidulous gasses.
- Platforms and ladders can be pre-mounted to ensure perfect fitting.
- Easy to handle parts on sliding frames to unload containers with only a forklift and a small crane.
- Maximum deadweight of the parts can be adapted to the available crane in the project.

An optimum design to fit your containers results in the lowest costs per project. In budget stage of the project Axces can determine the number of containers to use so there won't be any surprises after the order.

BUILD YOUR OWN STACK

The Axces BYOS (Build Your Own Stack) program is especially for those clients who have the capability and equipment to build chimneys, but lack in special knowledge. Axces Industrial Stacks can be your solution; Axces can provide all the knowledge to Build Your Own Stack.

BYOS 1

What Axces supplies:

- ✓ The calculation of the loadings on the foundation.
- ✓ The static dynamic calculation of the stack, which indicates all necessary details to roughly build the stack.
- ✓ Anchorbasket design.

This program can be used by customers who build stacks before, used for stacks without Tuned Mass Dampers.

BYOS 2

What Axces supplies:

- ✓ The calculation of the loadings on the foundation.
- ✓ The static dynamic calculation of the stack, which indicates all necessary details to roughly build the stack.
- ✓ Anchorbasket design.
- ✓ Tuned Mass Damper design, and delivery of essential parts.

This program can be used by customers who build stacks before, used for stacks with Tuned Mass Dampers.

BUILD YOUR OWN STACK

BYOS 3

What Axces supplies:

- The calculation of the loadings on the foundation.
- The static dynamic calculation of the stack, which indicates all necessary details to build the stack.
- Anchorbasket design.
- Tuned Mass Damper design, and delivery of essential parts.
- Flange and bolted connection details.
- Re-inforcement selection for apertures.
- All documents as sketches.

This program can be used by customers who want to build their own stack.

BYOS 4

What Axces supplies:

- The complete design and engineering of the stack is performed.
- All calculations, detailed drawings and digital information.
- All welding details and special attention points are indicated.
- Tuned Mass Damper design, and delivery of essential parts.

With this program a shop familiar with handling rolled steel plates can build its own stack.

ELEMENT SYSTEM CHIMNEYS

Element system chimneys are used in systems with low underpressure or overpressure, small diameters, for boilers heaters diesel engines and hot air. Axces has systems for wet fluegas and systems for hot fluegasses for engines and special purposes. All types are easy to fit, less weight and simply to order, most parts Axces has on stock.

The diameter range is starting with 100 mm next 130. 150. 180. 200. 250. 300. 350. 400. 450. 500. 600 and the biggest 700 mm. Length of parts are standard 1 m, intermediate pieces, T-piece, segmented elbow, reducers, cones on request.

- ✓ Double-walled stainless steel chimney system.
- ✓ Element construction with spigot and socket connection, CE certified.
- ✓ Consisting of inner tube, stainless steel material no. 1.4404.
- ✓ T = 0.5 mm, 25 mm mineral fiber insulation and
- ✓ Stainless steel outer tube, material no. 1.4301. t = 0.6 mm, including necessary fittings and connections.

CHIMNEY ELEMENTS

AXCES

TYPE ASKFTG

Hot Exhaust

The double-wall insulated system used as a standalone external chimney for open combustion chamber boilers and fireplaces. It allows for setting the heating unit (furnace, fireplace) anywhere in the facility. The chimney is carried outside and mounted on the wall. It comes in two versions: Premium for gas, oil, wood, pellets. Standard for boilers working on gas and oil. The system can operate only in dry working conditions at temperatures up to 600°C.

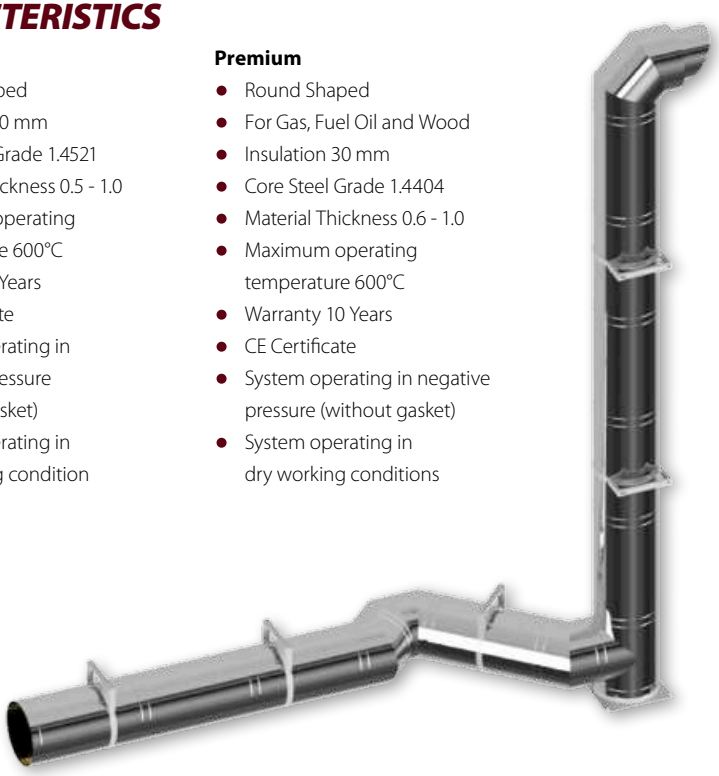
CHARACTERISTICS

Standard

- Round Shaped
- Insulation 30 mm
- Core Steel Grade 1.4521
- Material Thickness 0.5 - 1.0
- Maximum operating temperature 600°C
- Warranty 5 Years
- CE Certificate
- System operating in negative pressure (without gasket)
- System operating in dry working condition

Premium

- Round Shaped
- For Gas, Fuel Oil and Wood
- Insulation 30 mm
- Core Steel Grade 1.4404
- Material Thickness 0.6 - 1.0
- Maximum operating temperature 600°C
- Warranty 10 Years
- CE Certificate
- System operating in negative pressure (without gasket)
- System operating in dry working conditions



TYPE ASKFKS

Cold Exhaust

The double-wall insulated system used as a standalone external chimney for boilers using condensation of steam generated during combustion (condensing and turbo boilers). It allows for setting the heating unit (condensing or turbo boiler) anywhere in the facility. The chimney is carried outside and mounted on the wall. The system has grooves for gaskets, and all elements of the system are air tight. It comes in two versions: Premium for oil, gas, wood. Standard for boilers working on gas and oil. The system can operate only in wet working conditions at temperatures up to 200°C.

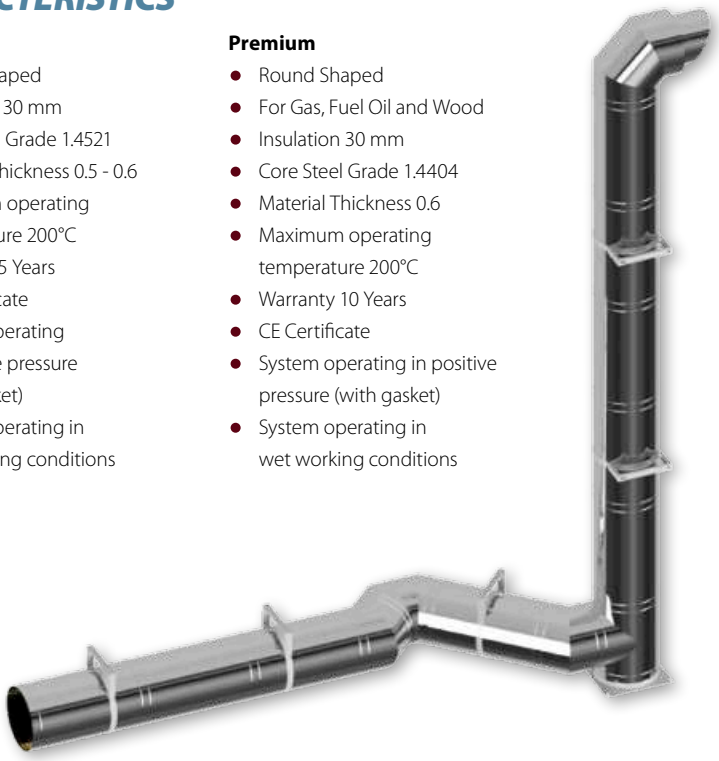
CHARACTERISTICS

Standard

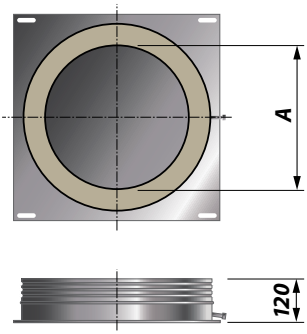
- Round Shaped
- Insulation 30 mm
- Core Steel Grade 1.4521
- Material Thickness 0.5 - 0.6
- Maximum operating temperature 200°C
- Warranty 5 Years
- CE Certificate
- System operating in positive pressure (with gasket)
- System operating in wet working conditions

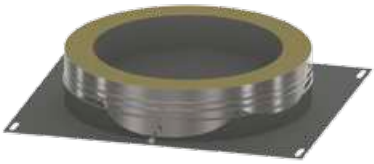
Premium

- Round Shaped
- For Gas, Fuel Oil and Wood
- Insulation 30 mm
- Core Steel Grade 1.4404
- Material Thickness 0.6
- Maximum operating temperature 200°C
- Warranty 10 Years
- CE Certificate
- System operating in positive pressure (with gasket)
- System operating in wet working conditions



BASE ELEMENT





TYPE ASKFTG

		ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)	ø600 (mm)
Insulation 30	A	190	210	240	260	280	310	360	410	460	510	560	610	710
Insulation 60	A	250	270	300	320	350	370	420	470	520	570	620	670	770

TYPE ASKFKS

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Insulation 30	A	190	210	240	260	280	310	360	410	460	510	560	610	710
Insulation 60	A	250	270	300	320	350	370	420	470	520	570	620	670	770

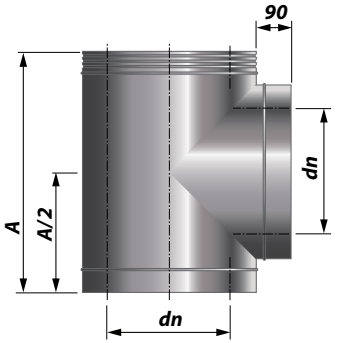
'HOT' SYSTEM TYPE ASKFTG

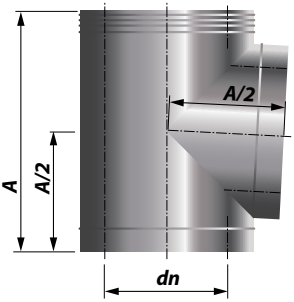
- ✓ Temperatures up to 600°C
- ✓ Pressure up to 5000 Pa.
- ✓ 1.4404 (AISI 316L) flue
- ✓ Gas & Diesel engines
- ✓ 30 mm or 60 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

'WET' SYSTEM TYPE ASKFKS

- ✓ Condensating boiler ducting/chimneys
- ✓ Temperatures below dewpoint up to 200°C
- ✓ 1.4404 (AISI 316L) flue
- ✓ Boilers and process lines
- ✓ 30 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

SIDE CONNECTION 90°/87°





TYPE ASFTSG 90°

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)	ø600 (mm)
Insulation 30	A	330	370	400	420	450	470	520	570	620	670	720	70	870
Insulation 60	A	410	430	460	480	510	530	580	630	680	730	780	830	930

TYPE ASFKS 87°

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Insulation 30	A	350	205	400	400	450	450	500	520	570	620	670	720	870
Insulation 30	A	179	186	205	206	231	232	257	268	294	321	247	373	400
Insulation 30	A	164	174	190	201	216	227	240	253	280	306	332	359	400

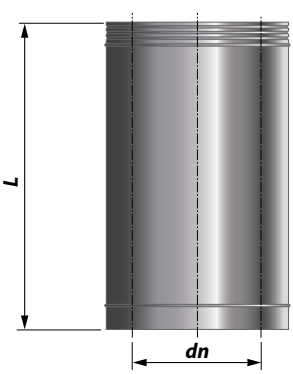
'HOT' SYSTEM TYPE ASFTSG

- ✓ Temperatures up to 600°C
- ✓ Pressure up to 5000 Pa.
- ✓ 1.4404 (AISI 316L) flue
- ✓ Gas & Diesel engines
- ✓ 30 mm or 60 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

'WET' SYSTEM TYPE ASFKS

- ✓ Condensating boiler ducting/chimneys
- ✓ Temperatures below dewpoint up to 200°C
- ✓ 1.4404 (AISI 316L) flue
- ✓ Boliers and process lines
- ✓ 30 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

STRAIGHT ELEMENT



TYPE ASRTG

Length (mm)	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)	ø600 (mm)
250	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
500	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

TYPE ASRTK

Length (mm)	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)	ø600 (mm)
250	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
500	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

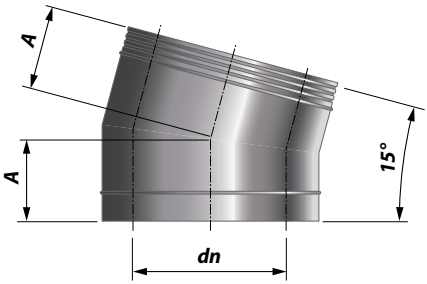
'HOT' SYSTEM TYPE ASRTG

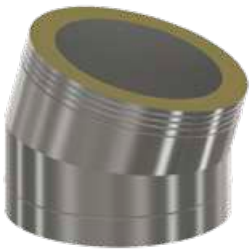
- ✓ Temperatures up to 600°C
- ✓ Pressure up to 5000 Pa.
- ✓ 1.4404 (AISI 316L) flue
- ✓ Gas & Diesel engines
- ✓ 30 mm or 60 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

'WET' SYSTEM TYPE ASRTK

- ✓ Condensating boiler ducting/chimneys
- ✓ Temperatures below dewpoint up to 200°C
- ✓ 1.4404 (AISI 316L) flue
- ✓ Boliers and process lines
- ✓ 30 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

ELBOW 15°





TYPE ASBGTG 15°

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)	ø600 (mm)
Insulation 30	A	105	106	108	109	111	112	115	119	122	125	129	132	160
Insulation 60	A	150	170	170	170	170	170	170	190	190	190	220	220	230

TYPE ASBGK 15°

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Insulation 30	A	104	106	108	109	111	112	114	115	119	122	145	129	132

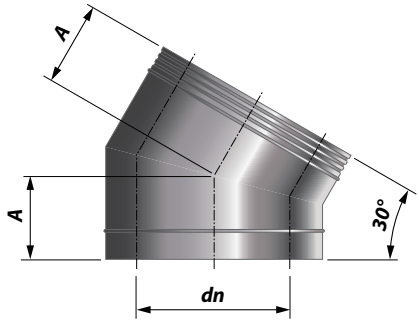
'HOT' SYSTEM TYPE ASBGTG

- ✓ Temperatures up to 600°C
- ✓ Pressure up to 5000 Pa.
- ✓ 1.4404 (AISI 316L) flue
- ✓ Gas & Diesel engines
- ✓ 30 mm or 60 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

'WET' SYSTEM TYPE ASBGK

- ✓ Condensating boiler ducting/chimneys
- ✓ Temperatures below dewpoint up to 200°C
- ✓ 1.4404 (AISI 316L) flue
- ✓ Boliers and process lines
- ✓ 30 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

ELBOW 30°



TYPE ASBGTG 30°

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)	ø600 (mm)
Insulation 30	A	113	114	120	123	127	130	137	143	150	157	163	170	200
Insulation 60	A	150	160	170	170	190	190	190	220	220	220	250	250	255

TYPE ASBGK 30°

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Insulation 30	A	114	116	120	123	127	130	133	137	143	150	157	163	170

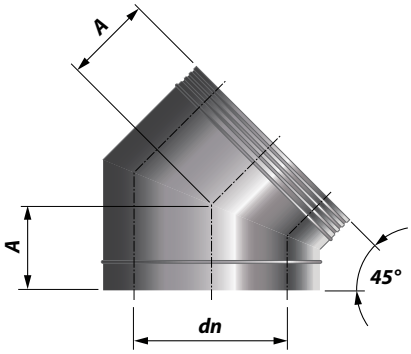
'HOT' SYSTEM TYPE ASBGTG

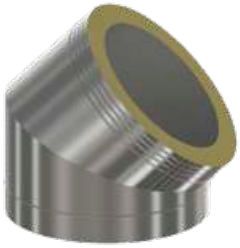
- ✓ Temperatures up to 600°C
- ✓ Pressure up to 5000 Pa.
- ✓ 1.4404 (AISI 316L) flue
- ✓ Gas & Diesel engines
- ✓ 30 mm or 60 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

'WET' SYSTEM TYPE ASBGK

- ✓ Condensating boiler ducting/chimneys
- ✓ Temperatures below dewpoint up to 200°C
- ✓ 1.4404 (AISI 316L) flue
- ✓ Boliers and process lines
- ✓ 30 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

ELBOW 45°





TYPE ASBGTG 45°

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)	ø600 (mm)
Insulation 30	A	124	128	134	138	145	149	159	170	180	190	201	211	232
Insulation 60	A	138	142	148	153	153	159	173	184	194	204	215	225	247

TYPE ASBGK 45°

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Insulation 30	A	124	128	134	138	145	149	165	159	170	180	190	201	211

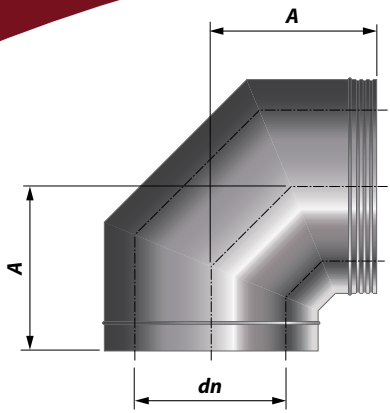
'HOT' SYSTEM TYPE ASBGTG

- ✓ Temperatures up to 600°C
- ✓ Pressure up to 5000 Pa.
- ✓ 1.4404 (AISI 316L) flue
- ✓ Gas & Diesel engines
- ✓ 30 mm or 60 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

'WET' SYSTEM TYPE ASBGK

- ✓ Condensating boiler ducting/chimneys
- ✓ Temperatures below dewpoint up to 200°C
- ✓ 1.4404 (AISI 316L) flue
- ✓ Boliers and process lines
- ✓ 30 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

ELBOW 90°



TYPE ASBGTG 90°

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)	ø600 (mm)
Insulation 30	A	210	223	241	254	261	271	278	303	328	353	378	403	470
Insulation 60	A	225	235	250	260	275	285	310	335	360	385	410	435	500

TYPE ASBGK 90°

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Insulation 30	A	189	198	213	222	236	246	258	270	293	317	341	365	388

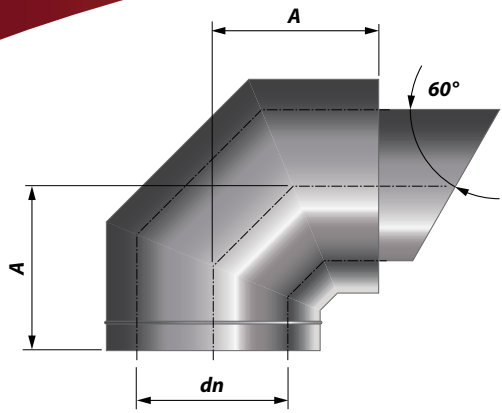
'HOT' SYSTEM TYPE ASBGTG

- ✓ Temperatures up to 600°C
- ✓ Pressure up to 5000 Pa.
- ✓ 1.4404 (AISI 316L) flue
- ✓ Gas & Diesel engines
- ✓ 30 mm or 60 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

'WET' SYSTEM TYPE ASBGK

- ✓ Temperatures up to 600°C
- ✓ Pressure up to 5000 Pa.
- ✓ 1.4404 (AISI 316L) flue
- ✓ Gas & Diesel engines
- ✓ 30 mm or 60 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

END PIPE



TYPE ASTH

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)	ø600 (mm)
Insulation 30	A	210	223	241	254	251	271	278	303	328	353	378	403	470
Insulation 60	A	225	235	250	260	275	085	310	335	335	385	410	435	500

TYPE ASTW

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Insulation 30	A	210	223	241	254	251	271	278	303	328	353	378	403	470
Insulation 60	A	225	235	250	260	275	285	310	335	335	385	410	435	500

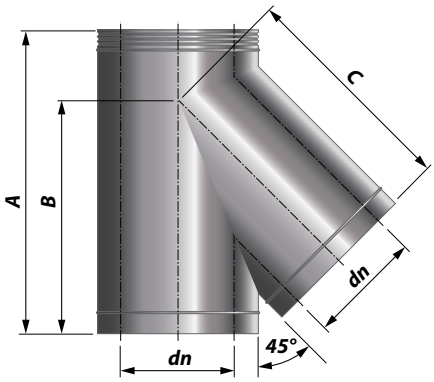
'HOT' SYSTEM TYPE ASTH

- ✓ Temperatures up to 600°C
- ✓ Pressure up to 5000 Pa.
- ✓ 1.4404 (AISI 316L) flue
- ✓ Gas & Diesel engines
- ✓ 30 mm or 60 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

'WET' SYSTEM TYPE ASTW

- ✓ Condensating boiler ducting/chimneys
- ✓ Temperatures below dewpoint up to 200°C
- ✓ 1.4404 (AISI 316L) flue
- ✓ Boliers and process lines
- ✓ 30 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

SIDE CONNECTION 45°



TYPE ASKDT

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)	ø600 (mm)
Insulation 30	A	510	540	570	570	650	650	820	820	1000	1000	1000	1250	1400
	B	335	355	380	390	445	454	464	589	704	729	789	904	1030
	C	350	370	409	433	496	493	574	634	694	755	815	925	1047
Insulation 60	A	510	530	580	600	650	680	750	830	910	1000	1070	1150	1300
	B	355	375	415	435	475	500	560	625	690	760	820	885	1000
	C	350	370	405	430	470	495	555	615	675	735	795	860	990

TYPE ASKKD

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Insulation 30	A	430	430	500	500	550	580	615	650	720	800	870	940	1020
	B	285	295	345	355	395	420	450	480	540	605	665	725	790
	C	285	295	345	355	420	420	420	480	480	605	665	725	790

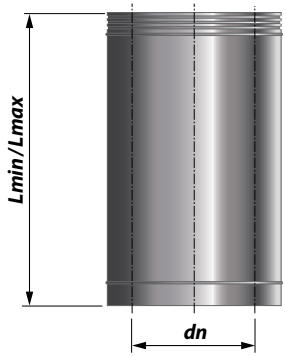
'HOT' SYSTEM TYPE ASKDT

- ✓ Temperatures up to 600°C
- ✓ Pressure up to 5000 Pa.
- ✓ 1.4404 (AISI 316L) flue
- ✓ Gas & Diesel engines
- ✓ 30 mm or 60 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining apearance
- ✓ Easy to install

'WET' SYSTEM TYPE ASKKD

- ✓ Condensating boiler ducting/chimneys
- ✓ Temperatures below dewpoint up to 200°C
- ✓ 1.4404 (AISI 316L) flue
- ✓ Boliers and process lines
- ✓ 30 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

VARIABLE STRAIGHT PIPE



TYPE ASRTJ

	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Lmin	370	370	370	370	370	370	370	370	370	370	370	370	370
Lmax	500	500	500	500	500	500	500	500	500	500	500	500	500

TYPE ASRKJ

	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Lmin	370	370	370	370	370	370	370	370	370	370	370	370	370
Lmax	500	500	500	500	500	500	500	500	500	500	500	500	500

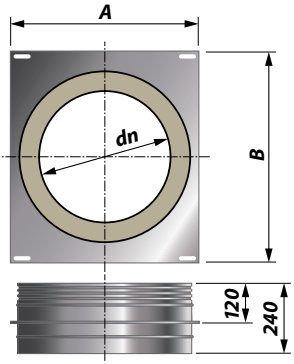
'HOT' SYSTEM TYPE ASRTJ

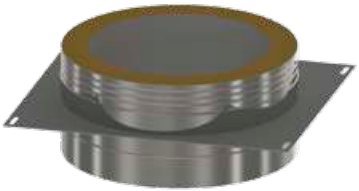
- ✓ Temperatures up to 600°C
- ✓ Pressure up to 5000 Pa.
- ✓ 1.4404 (AISI 316L) flue
- ✓ Gas & Diesel engines
- ✓ 30 mm or 60 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

'WET' SYSTEM TYPE ASRKJ

- ✓ Condensating boiler ducting/chimneys
- ✓ Temperatures below dewpoint up to 200°C
- ✓ 1.4404 (AISI 316L) flue
- ✓ Boliers and process lines
- ✓ 30 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

INTERMEDIATE ELEMENT





TYPE ASKFSG

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)	ø600 (mm)
Insulation 30	A	190	210	240	260	290	310	360	410	460	510	560	610	710
	B	270	290	320	340	370	390	440	490	540	590	640	690	790
Insulation 60	A	250	270	300	320	350	370	420	470	520	570	620	670	770
	B	330	350	380	400	430	450	500	550	600	650	700	750	850

TYPE ASKFSK

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Insulation 30	A	190	210	240	260	290	310	360	410	460	510	560	610	710
	B	270	290	320	340	370	390	440	490	540	590	640	690	790
Insulation 60	A	250	270	300	320	350	370	420	470	520	570	620	670	770
	B	330	350	380	400	430	450	500	550	600	650	700	750	850

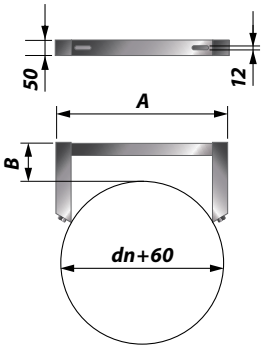
'HOT' SYSTEM TYPE ASKFSG

- ✓ Temperatures up to 600°C
- ✓ Pressure up to 5000 Pa.
- ✓ 1.4404 (AISI 316L) flue
- ✓ Gas & Diesel engines
- ✓ 30 mm or 60 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

'WET' SYSTEM TYPE ASKFSK

- ✓ Condensating boiler ducting/chimneys
- ✓ Temperatures below dewpoint up to 200°C
- ✓ 1.4404 (AISI 316L) flue
- ✓ Boliers and process lines
- ✓ 30 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

CONSTRUCTION CLAMP



TYPE WHT 1

(mm)

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Insulation 30	A	180	198	222	240	266	283	305	326	370	413	456	500	540
	B	100	118	142	160	186	203	225	246	290	322	376	420	463

TYPE WHT 2

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Insulation 30	A	180	198	222	240	266	283	305	326	370	413	456	500	540
	B	100	118	142	160	186	203	225	246	290	322	376	420	463

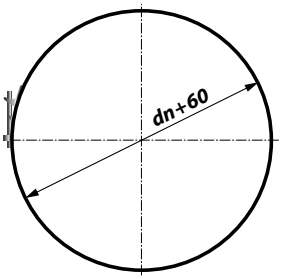
TYPE WHT 3

	dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
Insulation 30	A	180	198	222	240	266	283	305	326	370	413	456	500	540
	B	100	118	142	160	186	203	225	246	290	322	376	420	463

'WET' SYSTEM TYPE WHT

- ✓ Condensating boiler ducting/chimneys
- ✓ Temperatures below dewpoint up to 200°C
- ✓ 1.4404 (AISI 316L) flue
- ✓ Boliers and process lines
- ✓ 30mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

CLAMPING BAND



TYPE ASKBTS

dn	ø80 (mm)	ø100 (mm)	ø130 (mm)	ø150 (mm)	ø180 (mm)	ø200 (mm)	ø225 (mm)	ø250 (mm)	ø300 (mm)	ø350 (mm)	ø400 (mm)	ø450 (mm)	ø500 (mm)
A	84	84	84	84	84	84	84	84	84	84	84	84	84

'WET' SYSTEM TYPE ASKBTS

- ✓ Condensating boiler ducting/chimneys
- ✓ Temperatures below dewpoint up to 200°C
- ✓ 1.4404 (AISI 316L) flue
- ✓ Boliers and process lines
- ✓ 30 mm insulation wool
- ✓ Internal thermal expansion
- ✓ CE marking
- ✓ Light weighted
- ✓ Nice shining appearance
- ✓ Easy to install

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