

Product description

Volkswagen Genuine silencers



Objectives

Reduction of noise emissions

The aim of the silencers is to attenuate and relax the powerful impulses (bangs) emanating from the combustion chamber in such a way as to ensure that a defined noise level is not exceeded

To influence the flow of exhaust gases during the silencing process in such a way as to maintain the optimum power of the engine

Full functionality must be guaranteed ...

... in all **driving situations**

Even with frequent short-distance driving (with the increasing condensate formation this occasions)

... through the entire **life of the silencer**

Product range

Volkswagen Genuine front, middle and rear silencers

Product line

Volkswagen Economy front, middle and rear silencers

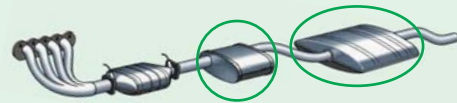
Exhaust pipes (Genuine, Economy)

Catalytic converter

Exhaust manifold

Design characteristics

The vehicle silencer system comprises one or more silencers (front, middle and rear silencers). A distinction is made between **reflection silencers**, **absorption silencers** and **combined reflection-absorption silencers**



Inlet pipe

1

Reflection chamber (expansion)

Reflection silencing uses baffles, placed in the path of the sound waves. The sound waves are reflected and deflected. In this process, they partially cancel each other out

2

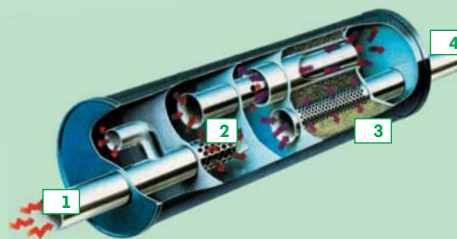
Absorption chamber

Sound waves are directed into a porous material (absorbent wool). This destroys part of the sound energy, and this is perceived as noise reduction

3

Outlet pipe

4



Components that work together

Silencer → catalytic converter

Connecting pipes link the catalytic converter to the silencers

Rear silencer → tail pipe

From the rear silencer, the exhaust gases are vented to the outside via the tailpipe

Silencer → exhaust fixing parts

These secure the exhaust system underneath the vehicle and damp vibrations to the vehicle floor, preventing the vibrations from being heard and felt inside the car

Performance/product advantages

Safety

Gas tightness by the use of high-grade materials and optimum material strength
This safety factor eliminates the risk of fire. It also prevents combustion gases finding their way into the vehicle interior and posing a health hazard to the vehicle occupants

Comfort and design

Optimum silencing by means of excellent acoustic silencing properties

Harmonic matching to the engine characteristics

Attractive design

On certain vehicle types, including the Golf R, the rear silencers are also design elements. They give the vehicle a certain recognition value. For this reason, a high priority is placed in ensuring that the visible elements of Economy rear silencers are indistinguishable from Genuine silencers

Standards and requirements

ISO standard

Legal requirements: 70/157/EEC

VW standard

Volkswagen sets specific benchmarks, which exceed the relevant ISO standards and legislative requirements, to achieve maximum quality. The sound emissions from Volkswagen Genuine and Economy silencers are at least 2 decibels lower than the relevant legal limits

Long life

Condensate extraction is used to remove most of the developing condensation from the rear silencer and exhaust it through the tailpipe
This significantly reduces corrosion from the inside of the component to the outside

Corrosion proofing

Use of high-grade stainless steel / hot-dip aluminized steel increases corrosion resistance (from outside to inside)

Specific product advantages

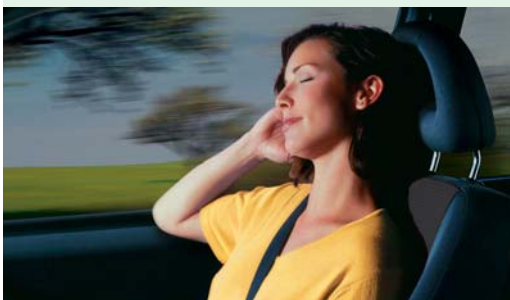
Optimal support for the power development of the engine
To achieve this, the silencer is thoroughly tested for back pressure, using special test methods

Optimal coordination of all components

The type and arrangement of the silencers, together with the length and cross-section of the connecting pipes, are carefully coordinated. This reduces the noise level of the gases of combustion to a level below the legal requirements. The gas flow resistance is also kept low in order to maintain optimum engine performance

The **perforations** of the silencer inner pipes and the silencer bottoms are also extremely important in the acoustic design of the component

The perforation patterns are engineered specifically for the component and the vehicle to guarantee an optimum noise level





How do faults occur?

Internal corrosion, caused by condensing gases of combustion (water, sulfurous acid)
With short-distance driving in particular, condensation rapidly collects inside the exhaust system. This can lead to corrosion and the destruction of the silencer (particularly in the colder rear components)

Outside corrosion, caused by weather influences and grit salt in winter

High temperatures and wide temperature fluctuations, particularly in the front part of the exhaust system

Heavy mechanical stressing from stone impacts, vehicle body movement and engine vibrations

With cheaper competitor products:

Broken brackets, rusting, split weld seams as a result of reduced material thickness, poor material and defective manufacturing
This results in a shorter life of only around 2.5 years (without any guarantee of proper function)

Rusting due to an **absence of condensate extraction**
The glass wool absorbs the condensate (in absorption silencers), and as the wool dries, it no longer completely expands. In addition, the corrosion of the material is accelerated. The consequence is loss of performance of the rear silencer

How are faults identified?

Significant increase in the noise level

Rattling noise, caused by parts which have worked loose inside the silencer or on the exhaust suspension brackets

Increased smoking through perforations, caused by corrosion

Soot traces and rusting are signs of leaking or damaged areas

Consequences of faults

Escape of gases of combustion into the vehicle interior /engine compartment
The vehicle occupants are then increasingly exposed to these health-harmful exhaust gases. Drowsiness, loss of concentration and a risk of asphyxiation can result. There is also a risk of fire. These are situations that can become dangerous for all road users

Loss of concentration
Being subject to loud noise causes a loss of concentration. This can be hazardous for all road users

Stress
A continuously high noise level causes stress and can lead to long-term illness

Inability to hear possible sources of **danger**
Such as approaching emergency vehicles

Parts dropping off
Can pose a risk for all road users

Practical tips/Selling points	
Volkswagen Genuine silencers are the best solution for you (the customer), ...	Volkswagen Economy silencers are the best solution for you (the customer in segments II/III), ...
... because they are identical with new-vehicle production standard because you can make a genuine saving . By reducing manufacturing costs while retaining all technical and qualitative functions, these parts ensure good time-value based repairs.
... because they are manufactured to high Volkswagen quality standards because they are full of Volkswagen expertise .
... because they have excellent acoustic silencing properties , so are particularly effective at silencing engine noise. <i>Volkswagen Genuine silencers are 2 dB lower than the legal requirements for production silencers</i>	... because they enable an economical repair of your vehicle. <i>Because of its modular geometric adaptation, an Economy silencer is suitable for use on several vehicle models. This produces a cost benefit which we are happy to pass on to you</i>
... because they are thoroughly tested for back pressure and therefore optimally support the performance of the engine because they are made of very good materials (hot-dip aluminized steel) – with greater material thickness, corresponding to the time value of the vehicle. This makes a repair of a somewhat older vehicle very economical. <i>High-grade stainless steel is used for visible elements</i>
... because they meet extremely exacting standards and are capable of withstanding extreme temperature fluctuations because they have a long life , relative to the time value (around 4 years) with full functionality , and are therefore very economical.
... because they are corrosion and heat resistant because they include condensate extraction , which minimizes the risk of corrosion .
... because they maintain full functionality over a very long life (around 8-10 years) and are therefore extremely economical.	... because they are harmonically tuned to the engine characteristics .
... because they include condensate extraction , which minimizes the risk of corrosion because only high-grade materials (stainless steel) are used, and this promotes a particularly long life .
... because they are harmonically tuned to the engine characteristics .	You (the customer) should take care, ...
... because only high-grade materials (stainless steel) are used, and this promotes a particularly long life to drive the vehicle up to temperature as frequently as possible. <i>This removes any residual moisture on and inside the silencer</i>
You (the customer) should take care, ...	Did you (the customer) know, ...
... to drive the vehicle up to temperature as frequently as possible. <i>This removes any residual moisture on and inside the silencer</i>	... that every combustion cycle of a non-silenced engine would sound as loud as a bursting car tire ?

