

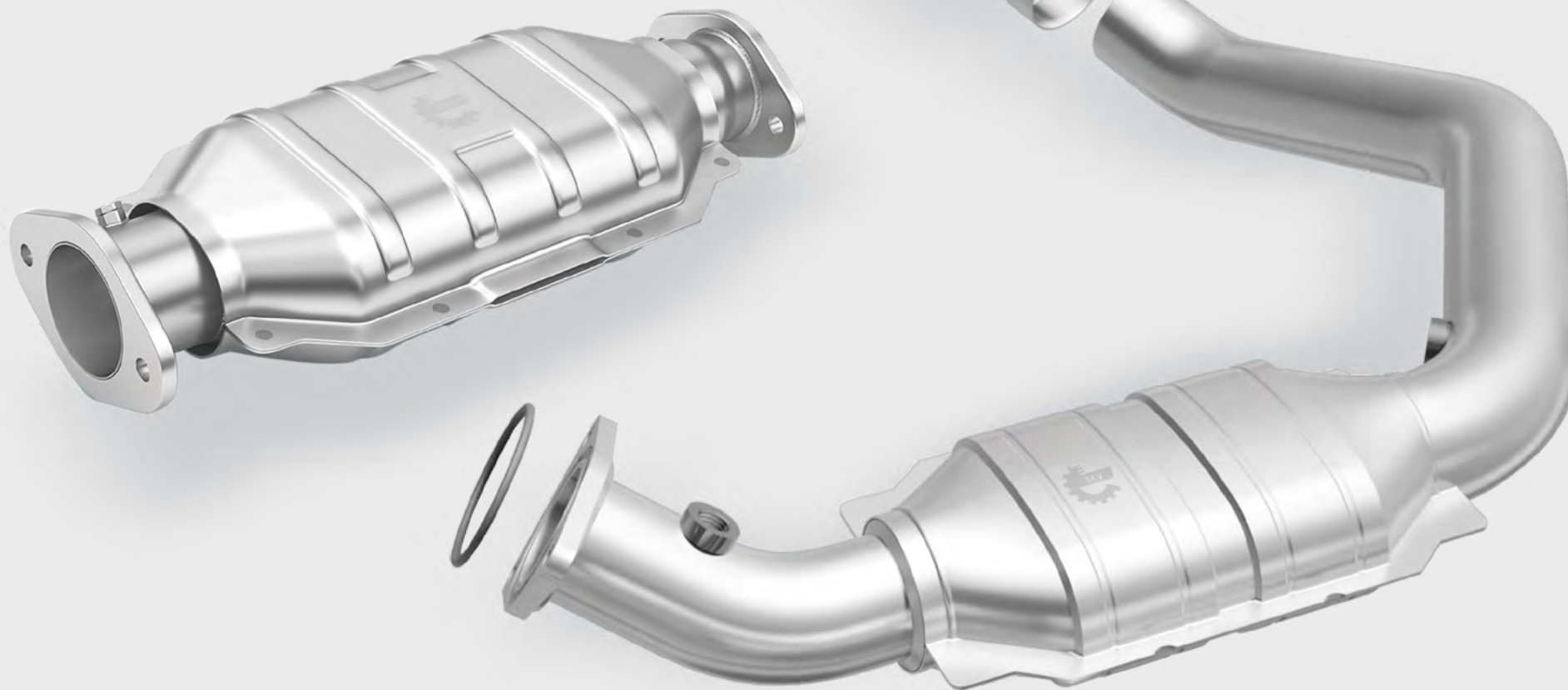
The SKV CATALYTIC CONVERTERS

Aftermarket price, OE quality.

PRODUCT
GROUP

62

SKV



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The SKV CATALYTIC CONVERTERS

standards and certifications

What is a catalytic converter?

A catalytic converter also referred to as a converter or a catalytic reactor, is a crucial part of the exhaust system. Its task is to **reduce the amount of harmful compounds in the exhaust gases**. The catalytic converters became mandatory in 1993, with the introduction of **the first EURO 1 emission standard**.

Table of European emission standards for passenger cars (EURO standards)

Stage	Date	CO	HC	HC+NOx	NOx	PM	PN
		g/km					
Positive Ignition (Gasoline)							
Euro 1†	1992.07	2.72 (3.16)	-	0.97 (1.13)	-	-	-
Euro 2	1996.01	2.2	-	0.5	-	-	-
Euro 3	2000.01	2.30	0.20	-	0.15	-	-
Euro 4	2005.01	1.0	0.10	-	0.08	-	-
Euro 5	2009.09 ^b	1.0	0.10 ^d	-	0.06	0.005 ^{e,f}	-
Euro 6	2014.09	1.0	0.10 ^d	-	0.06	0.005 ^{e,f}	6.0×10 ^{11 e,g}
Compression Ignition (Diesel)							
Euro 1†	1992.07	2.72 (3.16)	-	0.97 (1.13)	-	0.14 (0.18)	-
Euro 2, IDI	1996.01	1.0	-	0.7	-	0.08	-
Euro 2, DI	1996.01 ^a	1.0	-	0.9	-	0.10	-
Euro 3	2000.01	0.64	-	0.56	0.50	0.05	-
Euro 4	2005.01	0.50	-	0.30	0.25	0.025	-
Euro 5a	2009.09 ^b	0.50	-	0.23	0.18	0.005 ^f	-
Euro 5b	2011.09 ^c	0.50	-	0.23	0.18	0.005 ^f	6.0×10 ¹¹
Euro 6	2014.09	0.50	-	0.17	0.08	0.005 ^f	6.0×10 ¹¹

* At the Euro 1..4 stages, passenger vehicles > 2,500 kg were type approved as Category N₁ vehicles

† Values in brackets are conformity of production (COP) limits

a. until 1999.09.30 (after that date DI engines must meet the IDI limits)

b. 2011.01 for all models

c. 2013.01 for all models

d. and NMHC = 0.068 g/km

e. applicable only to vehicles using DI engines

f. 0.0045 g/km using the PMP measurement procedure

g. 6.0×10¹² 1/km within first three years from Euro 6 effective dates

With the ever-increasing awareness of environmental issues, the permissible emission limits for new vehicles sold in the EU member states are changing. That, in turn, compels car manufacturers to employ increasingly **advanced technologies** in the design and manufacture of catalytic converters.

The features of the our Catalytic Converters:



Certificate
EPA



up to
**EURO
6/IV**



Certificate
TÜV



Warranty
3 YEARS

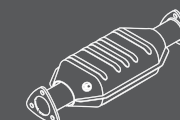


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The SKV CATALYTIC CONVERTERS

product description

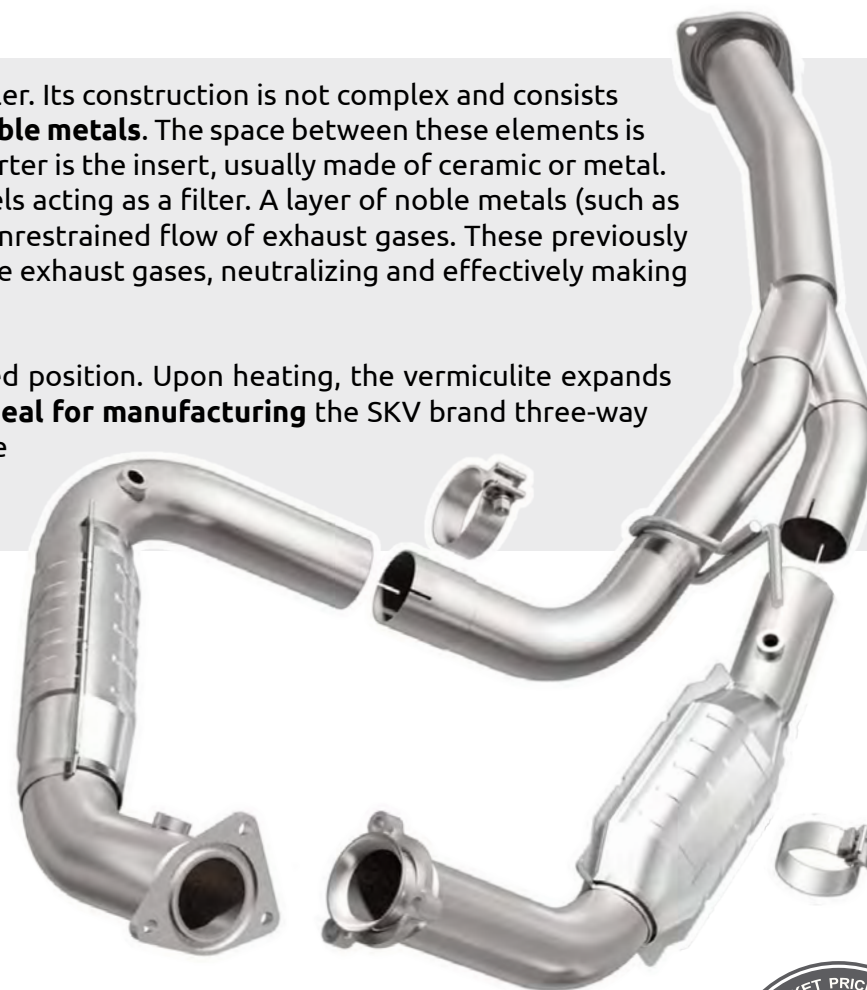
Manufacturing of **the SKV brand three-way catalytic converters** (TWC) demands carefully selected materials and the most advanced technologies. From the design phase to production, our catalytic converters are subjected to detailed inspections to meet **rigorous emission standards**. Our products are ready to work with today's OBD II systems monitoring emission standards in all car models.

The construction of an SKV brand catalyst.

At first glance, a catalytic converter, due to its cylindrical shape, resembles a muffler. Its construction is not complex and consists of a housing made of **stainless steel SS 409** and a ceramic/metal insert **coated with noble metals**. The space between these elements is filled with a protective expansion mat made of **vermiculite**. The very core of the converter is the insert, usually made of ceramic or metal. Its structure resembles a honeycomb. It consists of a system of densely spaced channels acting as a filter. A layer of noble metals (such as **platinum, palladium, or rhodium**) covering these minuscule channels allows for the unrestrained flow of exhaust gases. These previously mentioned metals/elements undergo chemical reactions catalyzed by substances in the exhaust gases, neutralizing and effectively making them less harmful.

The thermal protective mat's sole purpose is to keep the catalyst insert in a fixed position. Upon heating, the vermiculite expands due to evaporation of water from its crystalline structure. These properties make it **ideal for manufacturing** the SKV brand three-way catalytic converters. Thanks to its characteristics, the mat changes its volume under the heat, providing the necessary pressure to keep the monolith securely in place.

Mounting kits are available exclusively for dedicated catalytic converters.



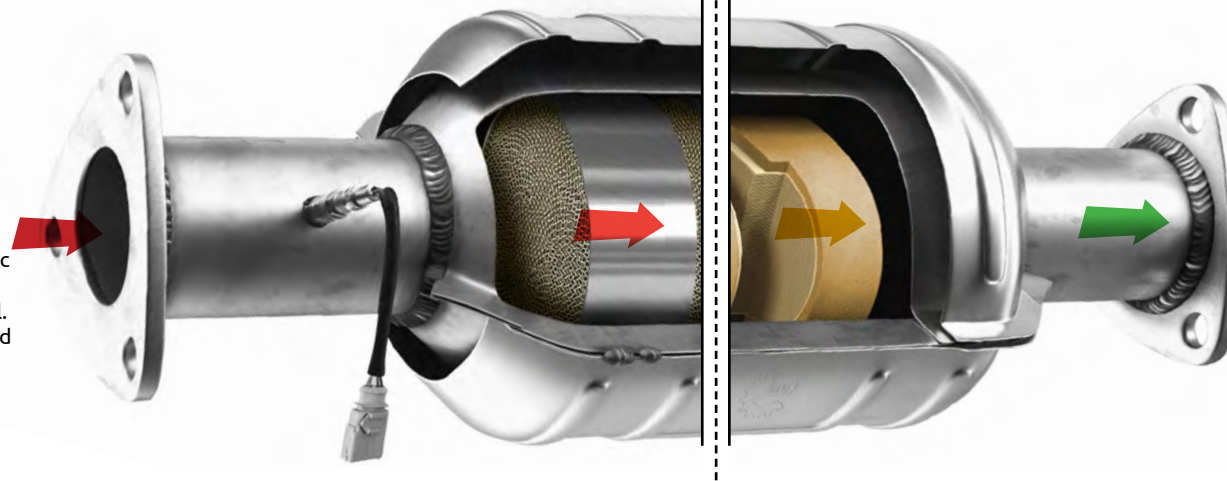
The SKV CATALYTIC CONVERTERS

structure

The construction of catalytic converters with ceramic and metal inserts is remarkably similar.

Cross-section of a catalytic converter with a metal insert

Cross-section of a catalytic converter with a ceramic insert.

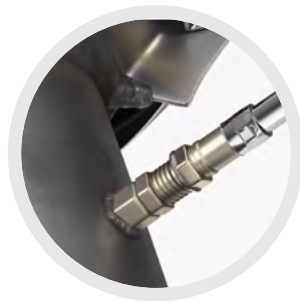
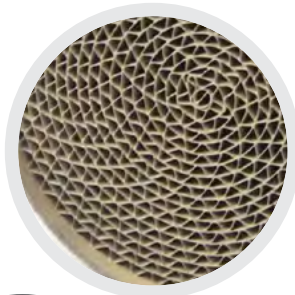


Exhaust inlet/outlet

Both the inlet and outlet pipes for exhaust gases from the catalytic converter are made of highly temperature-resistant SS 409 steel.
* Note: flanges are not standardized for all catalytic converters.

The metal core of the catalytic converter

consists of a system of densely and spirally arranged channels coated with a layer of noble metals (platinum, palladium, or rhodium), serving as a filter.



The lambda sensor socket

is a threaded port located in the exhaust channel, used for installing a sensor that measures the oxygen content in the exhaust gases.

The stainless steel SS 409 housing

protects the interior of the catalytic converter while also serving as a sturdy casing that allows for installation in the exhaust system.



Thermal shield

Its purpose is to protect the vehicle chassis from the high temperatures generated by the engine's operation.
Note: the shield is standardized for all catalytic converter models.

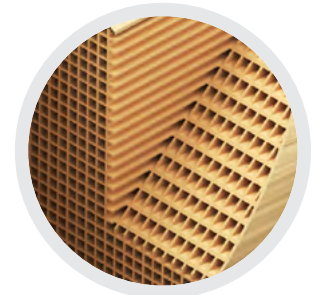


The vermiculite thermal mat

secures the ceramic insert of the catalytic converter from movement and protects it from mechanical damage. Vermiculite is a non-combustible mineral that expands in volume when heated due to its properties. Additionally, it is chemically inert and corrosion-resistant.

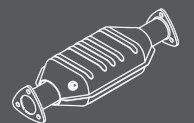
The ceramic core of the catalytic converter

resembles the structure of a honeycomb. The ceramic monolith is a dense network of channels with walls coated in a layer of noble metals. This solution increases the exhaust gas flow and accelerates the catalytic process.



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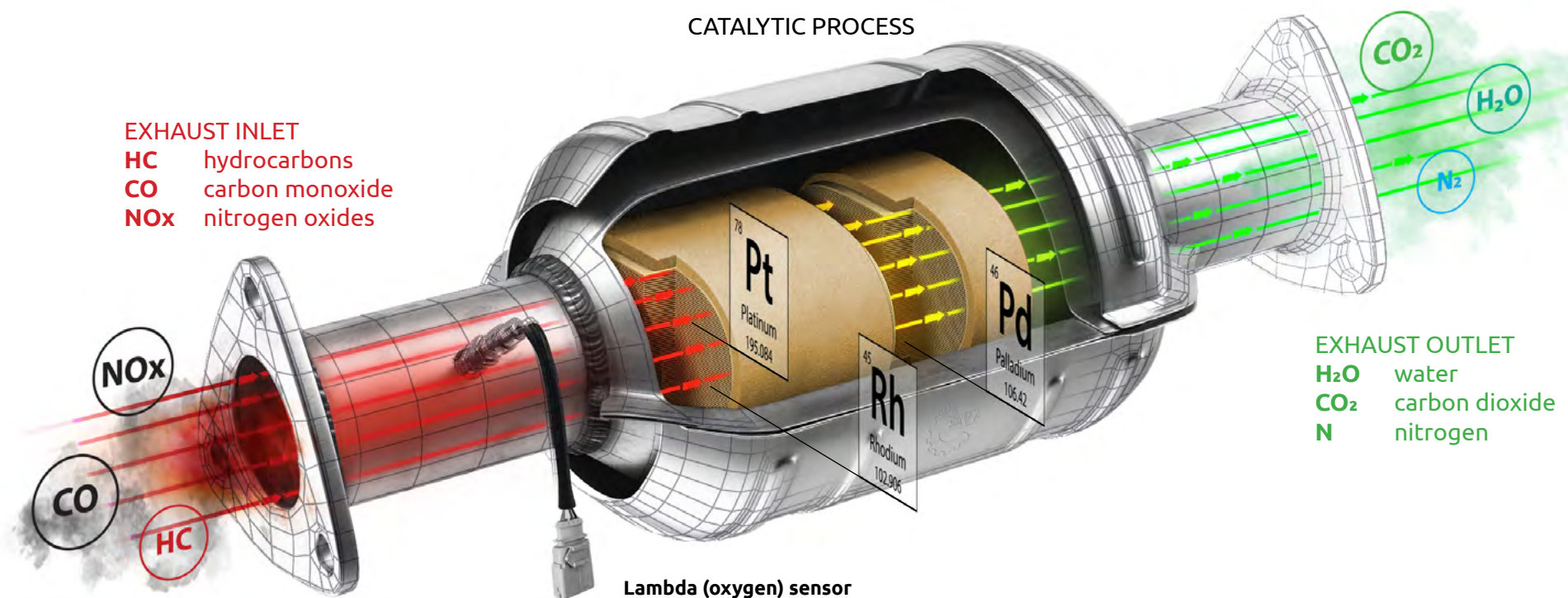
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The SKV CATALYTIC CONVERTERS

principle of operation

The principle of the catalytic converter's operation is quite simple. Exhaust gases flow through a dense network of channels **coated with an active layer of noble metals**. The elements contained in this layer bind and neutralize harmful components produced during the engine's operation. In this way, only environmentally benign compounds are released into the environment. However, it is crucial for the catalytic converter to get adequately heated. The catalytic converter fulfills its function only after reaching a specific operating temperature, which is a minimum of 300°C. Its highest efficiency is achieved within a temperature **range of 400 to 800°C**, as **catalytic reactions** that activate the exhaust gas purification occur under such conditions.



This sensor is indispensable as it plays an exceptionally significant role in the functioning of the exhaust system of an internal combustion engine. Its task is to monitor the oxygen levels in the exhaust gases, indirectly enabling the delivery of the appropriate quantity and quality of the fuel mixture.

Familiarize yourself with the extensive range of SKV brand lambda (oxygen) sensors (reference numbers starting from 09SKV001)

The SKV CATALYTIC CONVERTERS

damage and malfunctions

What are the main reasons for failures and damage of catalytic converters in cars?

Mechanical or thermal damage is a common cause of exhaust catalytic converter failures, directly influenced by the positioning of the component beneath the car chassis.

- **Mechanical damage** most often occurs when the car's undercarriage hits a protruding curb, speed bump, etc.
- Failures resulting from a **sudden cooling** of a heated catalytic converter, caused, i.e., by driving into a puddle of cold water or a snowdrift, can be classified as a typical thermal damage. It occurs due to a rapid temperature drop, causing the catalytic converter's housing to contract and potentially fracture its core
- **The blockage of channels** within the catalytic converter's insert is usually caused by a faulty ignition system, which can lead to the entry of unburned fuel into the catalytic converter.
- Failures resulting from assembly errors or incorrect configuration of **LPG gas systems** can cause a blockage of the core due to insufficiently processed sulfur.



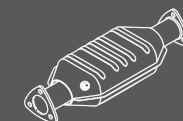
How to properly take care of a catalytic converter?

It's advised to always use the appropriate fuel, oil, and additives for your car and making sure that the vehicle is serviced according to the manufacturer's specifications.



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Materiały prezentacyjne firmy ESEN właściciela marki SKV / 2023



The SKV CATALYTIC CONVERTERS

product's features

Is it possible to drive a car without a catalytic converter without repercussions?

According to the current regulations, driving a car on a public road without a catalytic converter is illegal. Documents such as Article 66 of the Road Traffic Law (Poland) or Regulation 715/2007/EC & Directive 2014/45/EU (European Union) state that a vehicle cannot emit harmful substances beyond the levels specified in detailed regulations. Furthermore, significant fines are also outlined in the Polish Penal Code, such as Article 96, which indicates that if a vehicle is "not properly equipped," with a fine of equivalent to up to €1200 should be expected. **It is worth mentioning that the European Union law in this regard is not lenient, with many cases being much more severe.**

Using high-quality certified SKV catalytic converters is an optimal solution.

The SKV automotive catalytic converters are characterized by:

- ✓ Completeness - mounting elements included in the kit (except for the universal types)
- ✓ Necessary approvals such as the TÜV Certificate & EPA Certificate
- ✓ Compliance with stringent emission standards of EURO 2 / 3 / 4 / 5 / 6
- ✓ Constructed from selected materials: vermiculite / SS 409 steel/cordierite or metal
- ✓ Optimal selection of cell density in the core structure
 - *CPSi meeting both EURO norm requirements and OE specifications
- ✓ Reliability, robustness, and exceptional craftsmanship
- ✓ Hassle-free installation
- ✓ a 3-year warranty
- ✓ a wide range of the most popular models, backed by high availability

*CPSi - cells per square inch - otherwise known as cell density in the catalytic converter.

The SKV catalytic converters reference numbers start from number 001, within the 62 group.

62 SKV 001

↓ ↓ ↓
Category Manufacturer Product
number code number

group
62
SKV

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Service support



The SKV products are factory-new parts:

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- manufactured on the same production lines as parts from the world's leading manufacturers;
- subjected to the same quality controls as OE parts

SKV - Aftermarket price, OE quality

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