

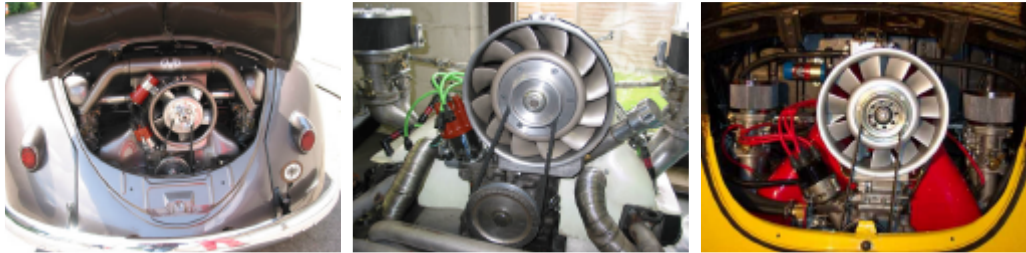
# Porsche 911 Cooling Kits

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## Overview

There have been a lot of statements and rumors about 911 cooling kits on the net. The reason for this tech article is to give you some additional information on this subject so that you can make up your own opinion.



First of all I want to thank Gerd Weiser, Gerd Kummetat and Rolf Klaus for providing me with the information needed for this article. I was overwhelmed by the material that Rolf Klaus showed me on this subject. The information in this article is based on a Technical University engineer's essay, original VW and Porsche efficiency diagrams and several dyno diagrams and dyno reports from the forum.

You also have to understand that the kits were developed in a country that has no speed limits. The cooling system needs to provide adequate cooling at high speeds for a period of time. In most other countries a tuned engine is used for the drag strip or for some sort of illegal street racing.

## How do the different systems compare?

Efficiency ratings for several cooling systems:

- Porsche 911 -> 70-73%
- VW 411 -> 43% (much better than T1)
- VW T1 -> 30% (without oil cooler, 20% with oil cooler)
- VW GOL (VW T1, only in Brazil) -> 80% (Has extra piece in front of the Axial fan to get optimal airflow into the fan)
- KHD (for industrial AC engines) -> 70%

These numbers are based on original VW and Porsche diagrams. They are related to cooling fin spacing / surface area and airflow resistance on the engines they belong to. A very primitive example for the efficiency rating of 70% would be for example an engine producing 10hp would produce 7hp in cooling. Again, this is a very simple and primitive example. You need to take into account as well the Air Pressure, Air Velocity and the Air Density.

## How does this relate to Porsche cooling kits on AC VW engines?

Well, it does not. Looking at original Porsche efficiency diagrams you can actually say that the Porsche cooling kit will not work very well on AC VW engines using Porsche pulley ratios. The reason for this is the bad relation of cooling fin spacing / surface area and airflow resistance. From the Porsche diagram you can tell that the fan will lose a substantial amount of its cooling effectiveness. This is the reason why the fan RPM needs to be increased to get better cooling for i.e. a T4 engine with higher pulley ratios. The ratio that should be used is about 1.6-1. To give you an example for this effect would be an airplane ascending too steep and lift is lost.

So the amount of cooling can be regulated by the pulley ratio and which Porsche fan blade is used. Looking at original Porsche material the best fan is actually the rare 911 Turbo 11 blade fan. It has a diameter of 225mm.



Measurement showed that turning down a C2 (12 blade curved) fan will give you a 40% loss in airflow. This 225mm C2 setup is still good on smaller engines up to 140hp where not that much cooling is needed. The diameter of the fan blade is given anyway by the Porsche cooling kit you will use or buy. There are quite a few choices when it comes to Porsche kits.



There are many different ring diameters:

- 270mm -> Used for most original Porsche rings
- 260mm -> Made to offer low cost systems with their own rings
- 240mm -> Made to make the kit more compact so it will fit under W decklids and to make use of central airfilters.
- There are also other manufacturers that offer other kits with other ring diameters.

**Who are manufactures of Porsche cooling kits?**

As of my knowledge these are the companies that make Porsche cooling kits for T1 and T4 engines:  
FAT, Sharpbuilt, MSS, Remmele, CIP1, Willibald, Riechert, Klaus, PowerTuningParts, and Bergmann





There is a lot more documented information based on tests that were done by VW and Porsche for their cooling systems. I think that I covered the more important information that relates to the T1 and T4 engine enthusiast. One last thing needs to be said: The Porsche cooling kit will **NOT** overcool your engine if it is properly setup. If not it will not actually cool very well which I hopefully explained well enough in this article. With some of the kits that do not have a good fitment you should also seal the shroud to the engine and to the fan ring to achieve the best cooling for this setup.

If you have any questions please [email](#) me.

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