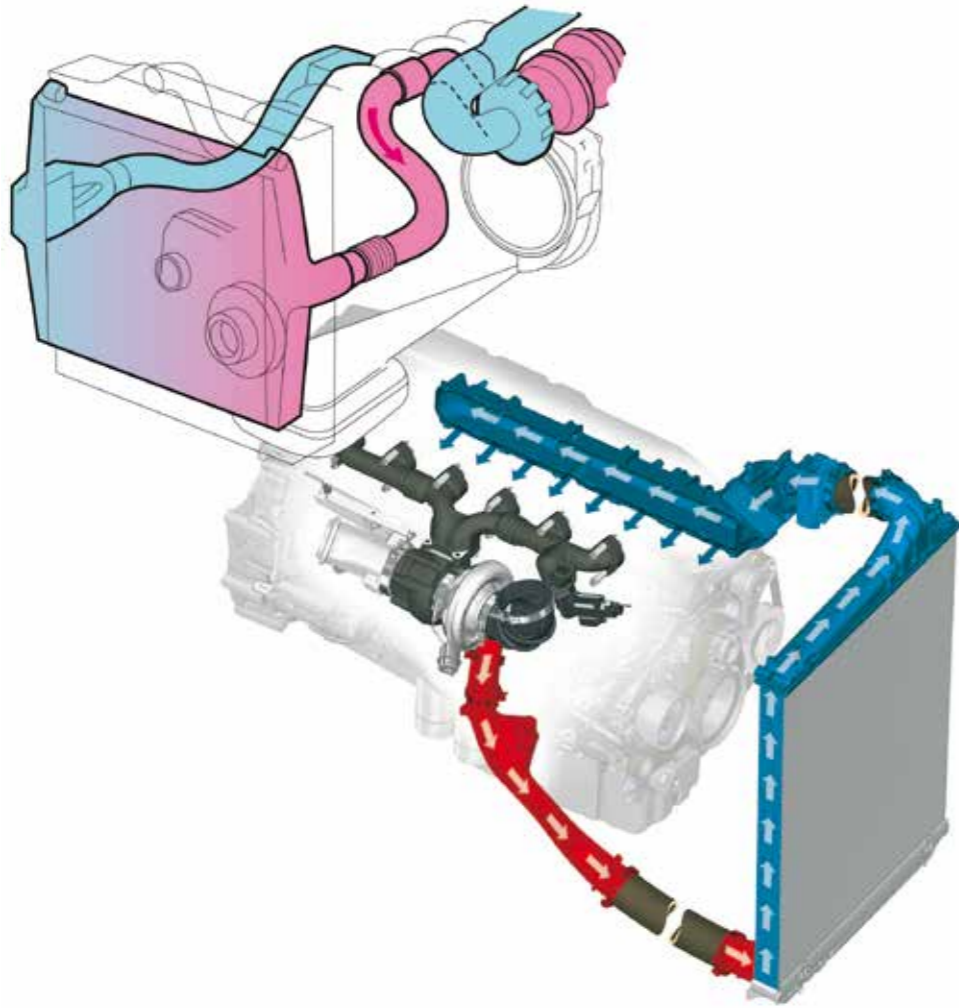


THE INTERCOOLER COMPONENTS

ALL ABOUT THE INTERCOOLER

RENAULT
TRUCKS
DELIVER

PRODUCT
COMMERCIAL KNOWLEDGE



PRACTICAL ADVICE

MAXIMISE THE SALE

Don't just sell the intercooler – look for further opportunities to maximise the sale:

- Radiator to intercooler mounting bolts, they always seize solid and have to be drilled out.
- Replacement of the lower intercooler hose.
- Drain & re-gas the air conditioning system – condenser being dropped forward for access.
- Condenser damaged in removal of intercooler.

RENAULT FITTED-PART

- One year warranty.
- Fitted by Renault Trucks trained technicians.

RENAULT TRUCKS 24/7

- Professional roadside assistance 24 hrs a day, 7 days a week, 365 days a year.
- Dedicated to getting customers' trucks back on the road with minimum delay.



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Renault Trucks SAS with a capital of 50 000 000 € - 954 506 077 RCS Lyon Crédit photos : © Renault Trucks - 01/2017



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FACT

Avoid excessive thermal stress on your engine and increase its service life through the fitment of a GENUINE Renault Trucks intercooler.

If a vehicle's intercooler is not working properly there is a risk of increased fuel consumption, a loss of power and increased indirect wear on the engine's components. In addition it has a very exposed position at the very front of the vehicle where it is subject to the ingress of dirt, and susceptible to holes that can also let dirt into the air system and damage to cylinders – scoring the bore and grit into the fuel system.

THE DIAMOND DISTINCTION

1 | Renault Trucks testing

Extremely intensive and long test programme; at component level by the OEM supplier to the Renault Trucks test laboratory and then finally the proving ground at Hällered for field tests in a complete vehicle to ensure the highest quality in material properties and performance of each component.

GENUINE Renault Trucks intercooler is key to ensuring an operator's engine is always running at the correct temperature and power output performance, minimising the indirect increase of premature wear on an engine's components and delivering long-life performance and up time.



RISKS OF FITTING NON GENUINE



If an intercooler is not working properly, through leakage of charge air or as a result of poor cooling, it could result in the following consequences:

- A reduction in engine power as leakage in the charge air system means that the engine will not be supplied with the correct charge air pressure.
- High exhaust emissions because of high exhaust temperatures into the engine due to a reduced cooling effect will generate high NOx levels.
- Increased fuel consumption as the engine control unit increases the fuel volume, in the form of an increased AdBlue consumption in the after treatment system to compensate for high NOx levels.

2 | Material specification

Made of aluminium to provide the component with a low weight, strength and long service life – intercoolers are extremely exposed positioned at the very front of the truck.

3 | Renault trucks quality

Since the introduction of long life material in GENUINE Renault Trucks intercooler c.1994 – the service life of an intercooler has been extended fivefold in respect of corrosion.

- De-rating is the final safety measure that the vehicle takes to protect the engine if there is an acute problem with the cooling performance of the intercooler.
- Increased indirect wear on the turbocharger exhaust gas turbine – if the intercooler is not working properly and is providing air that is too hot, too little air or is operating at too high an altitude (1,500m or above), this leads to indirect wear on the exhaust gas turbine side of the turbocharger and increases the risk of turbocharger failure, which in the worst case scenario can also lead to engine failure.

FEATURES

Supplied within a strong wooden crate packaging.

Aluminium in construction.

Thinner construction.

High Quality welding.

Supplied with complete fixings.

Supplied with protective caps over the air intake/exit holes.

BENEFITS

Easier transportation, reduces the chance of damage resulting in downtime.

Provides for low weight, strength and a long service interval.

Designed to fit with other components, allows more air circulation – cooling of charge air.

Stronger and more resistant to vibration and damage.

Easier fitting, less downtime.

Prevents ingress of contamination.

TWO PARTS MAY LOOK ALIKE, BUT...

There will always be non-genuine suppliers wanting to sell intercoolers to Renault Trucks operators. The quality of these non-genuine makes naturally varies as much as their prices. However, even if a well-known non-genuine Renault Trucks make is chosen – it is by no means certain that the intercoolers is tailored and to the specification of a Renault Trucks charge air system in the same way as a GENUINE Renault Trucks part.

DEVELOPED IN HARMONISATION

All of the component parts of a charge air system have been developed together as a complete system so as to create the necessary flawless interplay between them – to ensure the maximum performance and service life from the turbo, intercooler and engine components.

EXTENSIVE TESTING

Extremely intensive and long test procedure, encompassing:

- Component testing is carried out at the supplier and in our own test laboratory.
- Each component is subjected to pressure pulses, temperature cycling, bump testing and corrosion testing.
- The tests are carried out on at least six components in each instance, and for a period corresponding to the service life of the truck.
- This is carried out to verify the mechanical properties and cooling performance of each component.
- In-vehicle cooling performance and service life testing.
- Cooling performance testing is carried out in Renault Trucks's chassis dynamometer for each engine and vehicle model.
- Forced service life testing is carried out on a complete vehicle on the Renault Trucks proving ground at Hällered.
- Field test in a complete vehicle.
- The entire system is tested for at least two years of the most extreme road and weather conditions.

INCREASED DEMANDS

Very high performance requirements – an intercooler must cool up to 450 litres of air per second.

OPERATING CONDITIONS

The intercooler operates in conditions of extreme vibration, temperature (up to 230°C and down to less than -50°C) and pressure (2-4.5 Bar depending on the engine). In addition it has a very exposed position at the very front of the vehicle where it is subject to the ingress of dirt, and this calls for extreme material properties.

WHY GENUINE RENAULT TRUCKS PARTS FOR YOUR COOLING SYSTEM?

- To ensure a reliable and durable charge air system.
- Correct power to the engine.
- The right exhaust emissions from the engine.
- Long service intervals and low maintenance costs.

✓ **By choosing a GENUINE Renault Trucks intercooler, you are sure to reach the performance requirements that Renault Trucks has specified for its engines.**

THE INTERCOOLER - HOW IT WORKS

THE INTERCOOLER (CHARGE AIR COOLER)

The inlet air entering the engine is increased in temperature and in volume as it is compressed by the turbocharger. This heated air contains less oxygen per volumetric unit, which as a result counteracts with the principles of combustion – which is to supply as much oxygen as possible to burn the fuel and convert chemical energy into a mechanical energy.

To cool the hot charge air from the turbocharger and to ensure the correct power to the engine and the right exhaust emissions from the engine, it must first pass through an intercooler – also known as the charge air cooler – located in front of the engine's cooling radiator.

If the air is cooled on its exit from the turbocharger, its volume is reduced so more air (oxygen) can be pressed into the cylinders. This makes it possible to feed more fuel and thus produce more engine power.

When the temperature of the air has decreased, it will again contain its original amount of oxygen, increasing the engine's output by 10-15%.

What is more, the engine's service life increases since there is less thermal stress on the engine.

A turbocharged diesel engine with an intercooler has the best efficiency rating of all internal combustion engines.

AIR TO AIR COOLING

This is the most common type of charge air cooling in vehicles. The charge air cooler (intercooler) reduces the air temperature by roughly 100°C, raising engine power output by approx 10%. Torque is also higher and fuel consumption drops.

AIR TO WATER COOLING

Adopted for Euro 6, an air to water intercooler uses water to dissipate the transfer of heat. Cool water is pumped through the air/water intercooler extracting the heat from the compressed air as it passes through. The heated water is then pumped through another cooling circuit whilst the cooled compressed air is pushed into the engine.

Water is more efficient at heat transfer than air and has a greater stability and ability to handle a wider range of temperatures.

An air to water cooling system would require an additional radiator, water pump and hoses.



USEFUL FACTS

- A charge air cooler is simply an all-encompassing term, meaning that it cools the turbo's air charge before it is routed into the engine.
- Usually a charge air cooler means an air-to-air cooler where the heat is rejected using ambient air flowing through the heat exchanger, much like the engine's coolant radiator.
- The term intercooler is widely used to mean in-between the turbocharger and the engine.
- An intercooler, or "charge air cooler", is an air-to-air or air-to-liquid heat exchange device used on turbocharged and supercharged (forced induction) internal combustion engines to improve their volumetric efficiency by increasing intake air-charge density through isochoric cooling.
- A decrease in air intake temperature provides a denser intake charge to the engine and allows more air and fuel to be combusted per engine cycle, increasing the output of the engine.

