Indirect intercoolers for passenger cars and commercial vehicles

Brief Information

Thermal management

- *First indirect intercooler in the Behr Hella Service range*
- *Reduction of NO_x values (nitrogen oxides)*
- *Reduction of CO_2 emissions and fuel consumption*
- *Helps vehicles meet the Euro-5 standards for passenger cars and commercial vehicles as well as the future Euro-6 commercial vehicles standard*

Product features

- The cooling system of the indirect intercooler is usually made up of a complete coolant circuit independent of the engine cooling circuit.
- A low-temperature coolant radiator and a charge air/coolant radiator are integrated in this circuit
- The charge air waste heat is transferred to the coolant first, and is then discharged to the surrounding air in the low-temperature coolant radiator. This low-temperature coolant radiator is installed in the front end of the vehicle, where the charge air/air radiator is located in air-cooled direct charge air cooling systems.
- The cooling of charge air by coolant (indirect intercooling) is considered more efficient than cooling by wind blast (predominant type of direct intercooling).
- Since the low-temperature coolant radiator requires significantly less space than a comparable charge air/air radiator (direct intercooling), this makes more space available in the front-end. In addition, the voluminous charge air pipes from the vehicle front-end to the engine are no longer required. Overall, the packaging in the front-end is significantly simpler, which improves the cooled air flow through the engine compartment. The relatively compact indirect intercooler or charge air/coolant radiator can be mounted further back in the engine compartment, saving space.

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Description

Intercooling increases the air density in the cylinder and reduces combustion temperature. In the case of indirect intercooling, the charge air is not cooled by air - as is usually the case - but by a liquid coolant, a water-glycol mixture such as the one also used for engine cooling. The charge air waste heat is transferred to the coolant first, and is then discharged to the surrounding air in the low-temperature coolant radiator. The advantage of this system is that situation-dependent temperature control of the compressed air in the engine is possible through controlled intercooling. In turn, this contributes to an optimum engine operating temperature. In the case of diesel engines, it also increases the regeneration speed of the particulate filter.

Indirect intercooling components meet the requirements necessary for increasing engine performances coupled with reduced emissions: greater charge air pressure with higher air density and a lower intake temperature.

This means the intercooler design allows further so-called “down-sizing” with subsequent reduction of fuel consumption, and it is also sturdy and can cope with increasing charge air pressure in future. An intermediate indirect intercooler is required for modern commercial vehicle engines with two-step charging.

Due to improved cooling of the charge air, the NO_x emissions caused during combustion can be significantly reduced. This helps passenger cars and commercial vehicles to meet the existing Euro 5 exhaust gas standard, and commercial vehicles to meet the future Euro 6 standard.

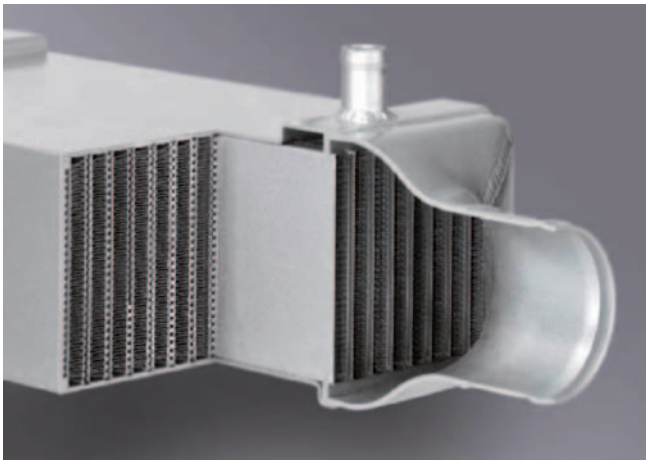


Fig: Cross-section of an indirect intercooler

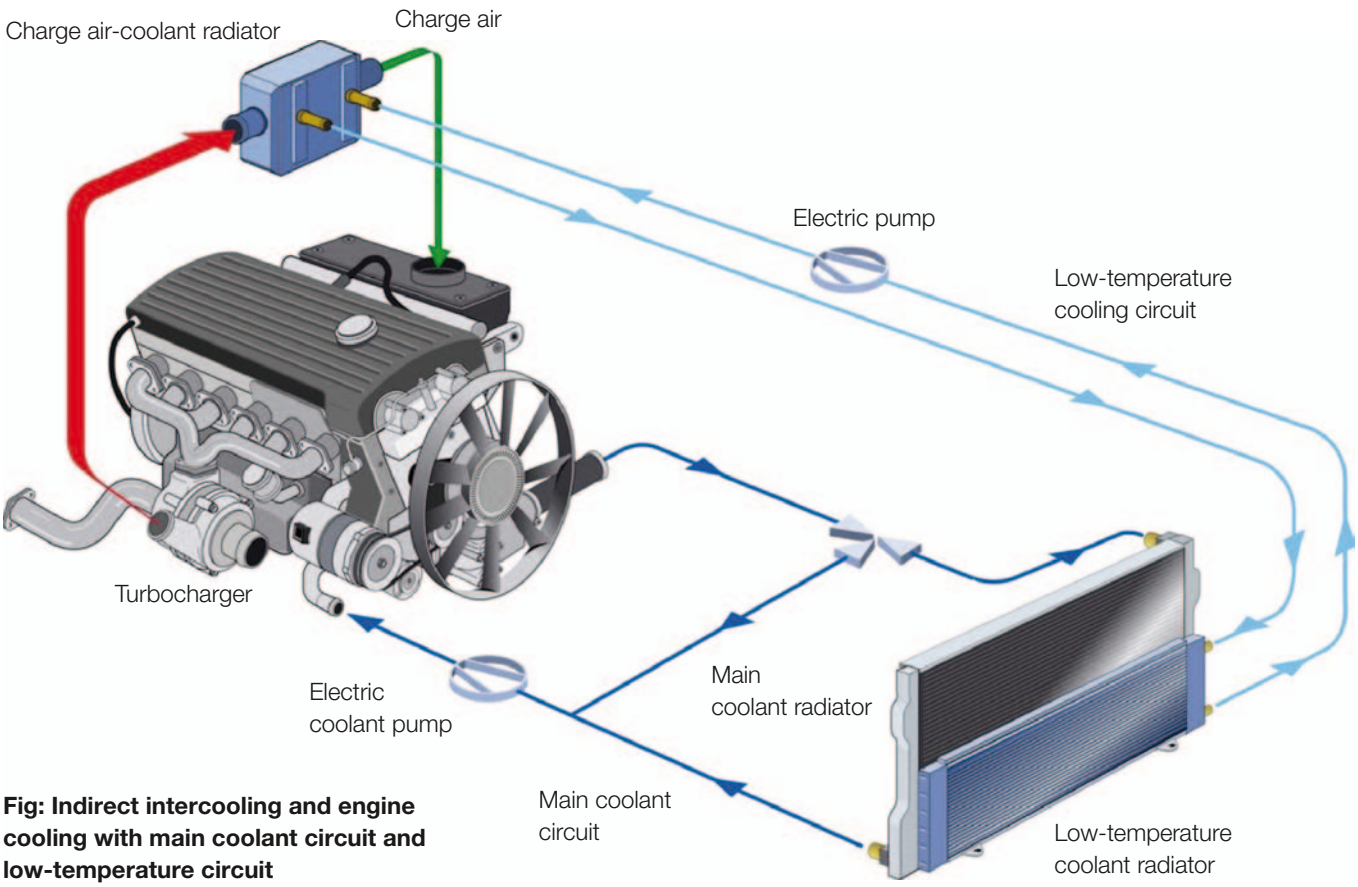
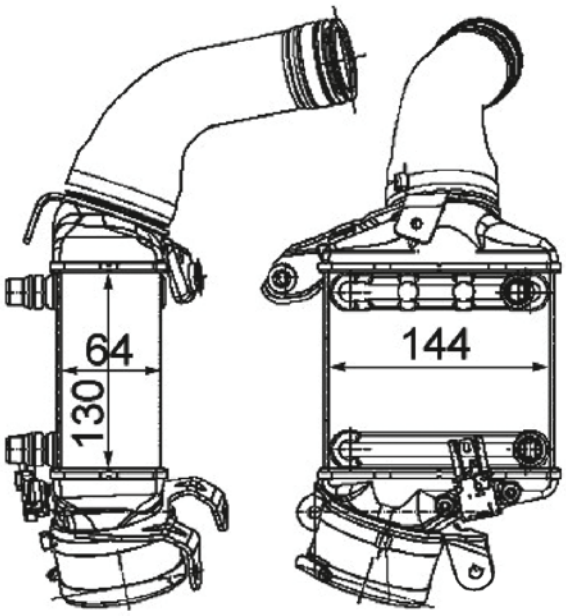
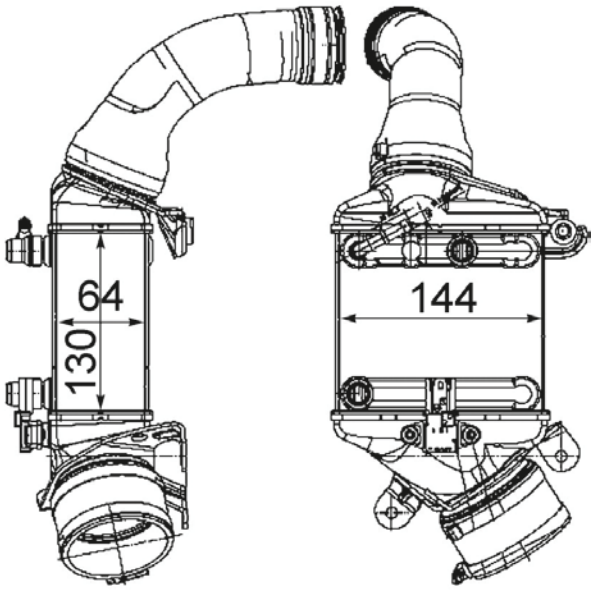


Fig: Indirect intercooling and engine cooling with main coolant circuit and low-temperature circuit

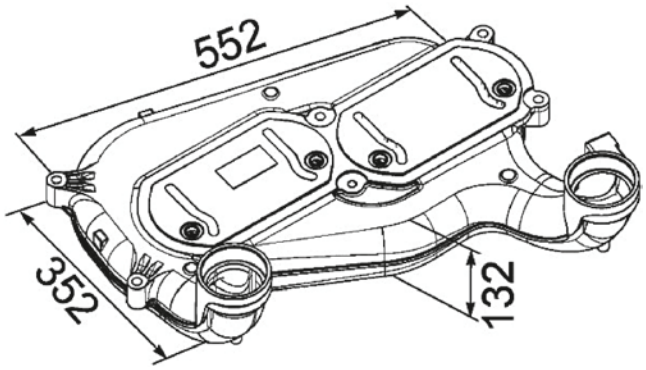
Technical drawings



Indirect intercooler passenger cars
8ML 376 746-431

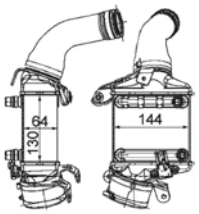
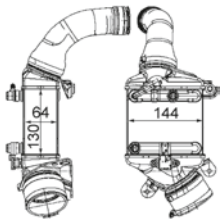
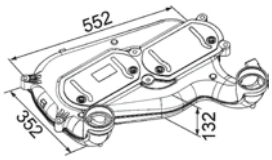


Indirect intercooler passenger cars
8ML 376 746-441



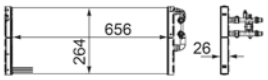
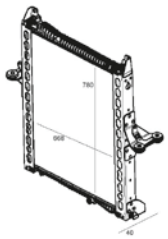
Indirect intercooler commercial vehicles
8ML 376 756-001

Product overview

Product photo	Part number	Description	OE numbers*	Use	Installation location
	**8ML 376 746-431**	Indirect intercooler	**13717575405** **17517575403**	BMW 750i (F01, F02) [10.2008-] BMW 750i xDrive (F01, F02) [09.2009-] BMW X6 50i (E71) [05.08-]	left
	**8ML 376 746-441**	Indirect intercooler	**13717575406** **17517575404**	BMW 750i (F01, F02) [10.2008-] BMW 750i xDrive (F01, F02) [09.2009-] BMW X6 50i (E71) [05.08-]	right
	**8ML 376 756-001**	Indirect intercooler	**51095007129**	MAN TGL/TGM Series 6-cylinder engines	–

* OE numbers are only for comparative purposes

Low-temperature radiator for indirect intercooling

Product photo	Part number	Description	OE numbers*	Use
	**8MK 376 754-111**	Low-temperature radiator	**17117576827**	BMW 750i (F01, F02) [10.2008-] BMW 750i xDrive (F01, F02) [09.2009-] BMW X6 50i (E71) [05.08-]
	**8MK 376 755-411**	Low-temperature radiator	**81061010063**	MAN TGL/TGM Series

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