

Compressor oils and refrigerants

Mixing old and new

- > With the new R1234yf refrigerant reaching Europe in 2017, DENSO's A/C experts explain which mixtures will work and how to avoid causing costly damage by using incorrect oils.

New requirements

Since 1 January 2017 all new manufactured vehicles with destination Europe has to have an A/C system filled with the new type refrigerant R1234yf. This means that vehicles which were originally designed for R134a type refrigerant and already manufactured before the first of January 2017 needed a manufacturing upgrade of the vehicle A/C system to R1234yf type refrigerant, to comply with the new EU regulation.

The update also brings with it a new type of compressor oil for workshops and suppliers to be aware of.



In with the new

DENSO uses ND-oil 8 for its R134a type refrigerant compressors, a PAG 46 oil. The new refrigerant type uses ND-oil 12, also a PAG 46 oil but with additives specifically for the R1234yf type refrigerant.

However, this doesn't mean the two oils are interchangeable; while ND-oil 12 can be used for both R134a and R1234yf, it doesn't work the other way around and ND-oil 8 cannot be used for R1234yf type refrigerant.

It can get confusing with the number of different compressors, each with a specific DENSO oil. To clear this up, there is an overview of different types of DENSO oils for R134a and R1234yf type refrigerants which are available to the aftermarket on the following page.



ND-oil 8	ND-oil 9	ND-oil 11	ND-oil 12
DENSO P/N 997635-8250	DENSO P/N 446963-2040	DENSO P/N 042198-0080	DENSO P/N 446963-0300
Available in 250 ml	Available in 250 ml	Available in 250 ml	Available in 250 ml
			
PAG 46 oil for R134a	PAG 100 oil for R134a	POE oil for R134a & R1234yf	PAG 46 oil for R134a & R1234yf
DENSO ND-oil 8 is used in piston and rotary type (scroll & SV) compressors with R134a type refrigerant	DENSO ND-oil 9 is used in through vane type compressors (TV) with R134a type refrigerant	DENSO ND-oil 11 is used in the electric driven scroll compressors with either R134a or R1234yf type refrigerant	DENSO ND-oil 12 is used in piston and rotary type (scroll) compressors with either R1234yf or R134a type refrigerant

Mixing oils

While mixing A/C compressor oils is usually not recommended, as it can lead to A/C compressor damage and failure, the new ND-oil 12 can be used with both R1234yf and the old R134a type refrigerants.

However, once A/C systems have been upgraded to R1234yf type refrigerants, A/C compressors pre-filled with ND-oil 8 can no longer be used in the system. When R1234yf type refrigerant comes in contact with ND-oil 8, it will decompose and resin parts of the A/C system will start to deteriorate, so it is never recommended to use ND-oil 8 in combination with R1234yf type refrigerant.

The new ND-oil 12 can be used in R134a type refrigerant systems without needing to flush the system and remove the remaining ND-oil 8 from the A/C system, though technicians must make sure there is no dirt in the A/C system.



  

 R-1234yf 525g +/-15g

 PAG ND-oil 12

 

 R-134a 525g +/-15g

 PAG ND-oil 12



 

 R-134a 525g +/-15g

 PAG ND-oil 8

  

 R-1234yf 525g +/-15g

 PAG

Important

Always check the compressor installation guide for the right installation procedure. You will find the compressor installation guide in the box with the new compressor, in TecDoc and on our aftermarket website: www.denso-am.eu



Impact on the aftermarket

The first changes in the aftermarket have appeared for FIAT applications. DENSO previously supplied the DCP09003 compressor, which was used for several models with R134a type refrigerant A/C systems, and pre-filled with ND-oil 8. The DCP09003 has now been replaced with the DCP09060. The new compressor is used for the same FIAT models, but is equipped with R1234yf type refrigerant A/C systems and pre-filled with ND-oil 12.

	DENSO P/N	Refrigerant	Oil
Old	DCP09003	R134a	ND-Oil 8
New	DCP09060	R134a/R1234yf	ND-Oil 12

With the demands of the market shifting all the time, and automotive manufacturers updating their products and models, DENSO is developing new compressor part numbers, pre filled with ND-Oil 12 to provide the most advanced service on the market.

Further details of DENSO's thermal range are available online at denso-am.eu, on TecDoc or from your local DENSO Aftermarket contact.

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