

Oil and Dye in Late Model Compressors



Global Parts Distributors, LLC

TECH TIP

#90

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With the EPA's requirement for better fuel economy to reduce greenhouse gasses in modern vehicles (42MPG by 2020 & 54.5MPG by 2025), the EPA is helping auto-makers by giving them "credits" towards overall MPG rating; that is if they can reduce greenhouse gasses in other areas than just the engine exhaust. This has brought about the introduction, in the air conditioning field, to changes in refrigerant that has a lower global warming potential (R1234yf) and compressor designs.

Compressors require roughly 40% of the "traditional" oil charge in an A/C system to remain in the compressor to keep it cool and lubricated. The rest of the oil circulates throughout the air conditioning system being carried by the refrigerant. Compressor manufacturers understand that if they can keep the oil within the compressor, they can reduce the amount of oil needed in the A/C system. They can also stop the oil from sticking to the condenser and evaporator, which increases the efficiency of the heat exchange.

Now, some of the compressors being released have an oil separator included within the new design (refer to tech tip #50) that traps the oil within the compressor to keep it internally lubricated. This drastically reduces the amount of oil needed in the compressor with some systems running as low as 2.7oz of oil. Adding oil to this type of system will have a dramatic effect on the compressor and will put it into an overcharge situation.

Another issue with the newly designed compressors is dye detection. As we know, the dye needs the refrigerant to circulate; these new compressors will treat the dye like oil due to its composition. Even though the new compressors do leak a very small amount of oil, putting a normal charge of dye in the system will not work as it will be trapped in the compressor and overcharge it.

Using sealants in this system will have the same effect. gpd does not recommend using sealants with any of its compressors.

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