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Air Conditioning FAQs

By Larry Carley, Copyright AA1Car.com

Why is my A/C not blowing cold air?

One of several things can prevent your vehicle's A/C system from blowing cold air. The most common reason for no cold air is no or low refrigerant in the A/C system (usually because of a refrigerant leak). Another cause might be that your A/C compressor is not engaging when you turn the A/C on. The underlying cause for this could be low refrigerant in the system, a defective compressor clutch, or a blown compressor clutch fuse. Another possible cause of no cooling could be a defective or stuck air flow control flap inside the HVAC system that prevents air from circulating through the A/C evaporator core. The system is cooling but the cold air is not being routed into your vehicle.

For additional help see [Troubleshooting an A/C system that blows warm air](#)

Why is my A/C system low on refrigerant?

A/C systems are pressurized and are not supposed to leak. But over time, seals and hoses can deteriorate allowing refrigerant to leak. The compressor shaft seal is a

common leak point. Other places where refrigerant can leak include the A/C condenser in front of the radiator, or the A/C evaporator inside the HVAC plenum under the dash.

How can I find a refrigerant leak?

Look for oily residue on the outside of refrigerant hoses or where hoses and pipes connect to other components in the system. Oily streaks radiating outward from the front of the A/C compressor would indicate a leak shaft seal. Look for damage to the A/C condenser caused by rocks or other road debris. Leaks in the evaporator core are impossible to see because of its hidden location inside the HVAC system, so an electronic leak detector may be needed to reveal such a leak.

If the A/C system still contains some refrigerant or has been recharged, turn the system on and spray soapy water on suspected leak points. If you see bubbles, you have found the leak.

Refrigerant that contains colored or UV dye can also be added to an A/C system to find a leak. Run the A/C for 20 minutes or so to give the dye plenty of time to circulate, then look for telltale dye stains on hose and plumbing connections, around the compressor and condenser.

How do I fix an A/C refrigerant leak?

The right way to fix a leak is to replace the leaky component (hose, o-ring seal, compressor, condenser or evaporator). However, some small leaks can be sealed by adding a sealer product designed for use in an A/C system. The sealer will circulate with the refrigerant and hopefully plug the leak, saving the labor and cost of replacing system components.

Can I recharge my A/C system myself?

Yes. Most auto parts stores sell do-it-yourself A/C recharging kits that include a hose connector and valve for attaching a can of refrigerant to the LOW PRESSURE service port on your A/C system. Just make sure you make the connection to the LOW PRESSURE service port, not the HIGH PRESSURE port which could cause the can of refrigerant to explode! Wear eye protection and avoid skin contact with any refrigerant that might leak out of the can because it can cause frostbite.

Once the can is connected to the LOW side of the A/C system, start the engine, turn the A/C on and open the valve that allows refrigerant to flow from the can into the system. It's a slow process that can take 10 to 15 minutes or longer depending on the ambient temperature and how much refrigerant is in the system.

For step-by-step instructions, see [How To Recharge Your Car's Air Conditioner](#).

Can I replace a bad A/C compressor myself?

Yes. But you are not supposed to intentionally vent any refrigerant that may still be in the A/C system into the atmosphere. A repair facility with a refrigerant recovery machine can capture the refrigerant for recycling and reuse. If there is no refrigerant in the system, then replacing the A/C compressor is a simple matter of disconnecting the hoses and drive belt from the compressor, then removing the compressor and installing the new one in its place.

Once the new compressor is installed and all the hoses have been reconnected, the A/C system needs to be vacuum purged to suck out all the air and moisture from the system. This is absolutely essential before you recharge the system with refrigerant. If the air is not removed, it will prevent the system from accepting a full charge of refrigerant, resulting in poor cooling. Also, moisture is a contaminant that can form acids and sludge that can damage a new compressor.

Be sure to add the specified amount of the correct compressor oil for your vehicle. The oil can be added with the refrigerant through the LOW side service port.

How hard is it to replace an A/C evaporator core?

It is a time-consuming and difficult job because it requires a lot of disassembly. The evaporator core is located inside the HVAC unit behind the dash, so the dash usually has to be removed to access and open up the HVAC plenum assembly. The job can easily take 6 to 8 hours or more. We recommend leaving this job to a professional.

I have an older vehicle with an R-12 A/C system. It needs refrigerant but I can't find any R-12. What can I do?

R-12 has been out of production for many years, so your only repair options are to use an alternative R-12 refrigerant, or to convert your R-12 system to R-134a. The alternative refrigerants are drop-in substitutes for R-12 so you should encounter no problems. Avoid any that are classified as flammable (which are illegal in most states).

Converting to R-134a may or may not be a simple matter of substituting one refrigerant for another. R-134a is chemically different than R-12 and does not cool quite as well when used in an R-12 system. It also requires a different compressor oil (PAG or POE oil instead of mineral oil).

For more information about converting an older R-12 system to R-134a, see [R-134a Retrofit Guide](#).

Why did R-134a replace R-12?

R-12 was used up until the mid 1990s in all automotive A/C systems because it cooled well. But it has a major drawback: it was a CFC that contained chlorine. If it leaked into the atmosphere, the chlorine caused damage to the Earth's protective ozone layer.

When this was discovered, the decision was made to phase it out and replace it with a non_CFC refrigerant. R-12 is no longer produced in the U.S.

R-134a was introduced as the chlorine-free ozone friendly replacement for R-12 in 1992, and became standard in 1995 on all cars and light trucks in the U.S. R-134a does not cool quite as efficiently as R-12, but it's pretty close. Unfortunately, it was later discovered that R-134a is a potent global greenhouse gas that contributes to global warming the same as carbon dioxide. So the decision was made to phase it out and replace it with yet another refrigerant R-1234yf.

As long as R-134a remains sealed inside an A/C system, it causes no environmental harm. But if it escapes and enters the atmosphere because of a leak or an accident that punctures the A/C condenser, it adds to the global warming problem. The small amount of refrigerant (less than 1 to 2 lbs. in most cases) that would leak from a typical automotive A/C system is not a big deal in itself, but when you consider that the world vehicle population now exceeds 1 BILLION vehicles, it can add up because the Global Warming Potential (GWP) rating of R-134a is 1300 times higher than carbon dioxide.

Currently, there are no plans to ban the production of R-134a, so if you need R-134a refrigerant later on it should always be available.

Why did R-1234yf replace R-134a?

R-1234yf is the latest "environmentally friendly" refrigerant to go widespread use. It contains no CFCs (ozone friendly), has a substantially lower Global Warming Potential (GWP) rating of 4 compared to 1300 for R-134a, and is mostly nonflammable (except under certain unlikely conditions). R-1234yf also breaks down faster than R-134a if it leaks into the atmosphere (11 days versus 13 years for R-134a!).

R-1234yf was first used in a few 2013 and 2014 model year vehicles, but has since been added to more and more late model vehicles. R-1234yf A/C systems can be identified by a service label under the hood and different service fittings.

However, R-1234yf does not cool as efficiently as R-134a or R-12, so it requires some changes in the A/C system such as a more efficient condenser, a pipe-style receiver-dryer on the condenser rather than an accumulator and orifice tube, and slightly different operating pressures. A special type of PAG compressor oil is also required for R-1234yf compressors, as well as a J2843 compliant refrigerant recovery machine for recovering refrigerant from the A/C system.

NOTE: R-1234yf is way more expensive than R-134a, so you may be tempted to substitute R-134a for R-1234yf if your A/C system needs refrigerant. The auto makers do NOT recommend using anything other than R-1234yf in a late model A/C system that was designed for R-1234yf. R-134a will work but possibly not as well as R-1234yf.

Also the type of PAG oil required for a R-1234yf system is different than the PAG oils used in R-134a systems. Using the wrong oil may damage the A/C compressor. Refer to the A/C service decal or your owners manual for the correct type of PAG oil to use in your A/C system.

For more information see [HFO-1234yf Refrigerant](#).