



How To Recharge Your Car's Air Conditioner

by [Larry Carley](#) copyright 2019 AA1Car.com

LOW REFRIGERANT

If your air conditioner is not cooling well because the system is low on refrigerant, recharging the system with refrigerant should restore normal operation. This can usually be done with a few cans of refrigerant and a simple service hose connection.

A/C RECHARGING PRECAUTIONS

First, wear safety glasses to protect your eyes. Also avoid skin contact with refrigerant. The chilling effect of spilled refrigerant can cause instant frostbite on bare skin or eyes!

WHAT TYPE OF REFRIGERANT?

Next, you need to figure out what type of refrigerant your vehicle requires:
On 1995 and newer passenger cars and light trucks up to about 2015, the correct

refrigerant is **R-134a**. DO NOT use any other type of refrigerant in these vehicles. Refer to the A/C information decal under the hood to make sure your A/C system is a R-134a system.

Starting with model years 2014-2015 a growing number of vehicles now use a different type of refrigerant called [R-1234yf](#). For these applications, use R-1234yf only, never R-134a.

- On most 1994 and older passenger cars and light trucks, the original refrigerant was R-12. R-12 is no longer available to do-it-yourselfers (although some bootleg R-12 of questionable purity and quality is still coming into the U.S. from south of the border). When older vehicles with R-12 A/C systems need refrigerant, they can be refilled with recycled R-12 from other older cars (this requires taking your car to a repair shop for professional service), or with an [alternative refrigerant](#) other than R-12, or with R-134a (which requires certain modifications).

CAUTION: Mixing different types of refrigerants is NOT recommended. Use the same type of refrigerant that is already in the system unless you are converting an older R-12 system to R-134a or another refrigerant.

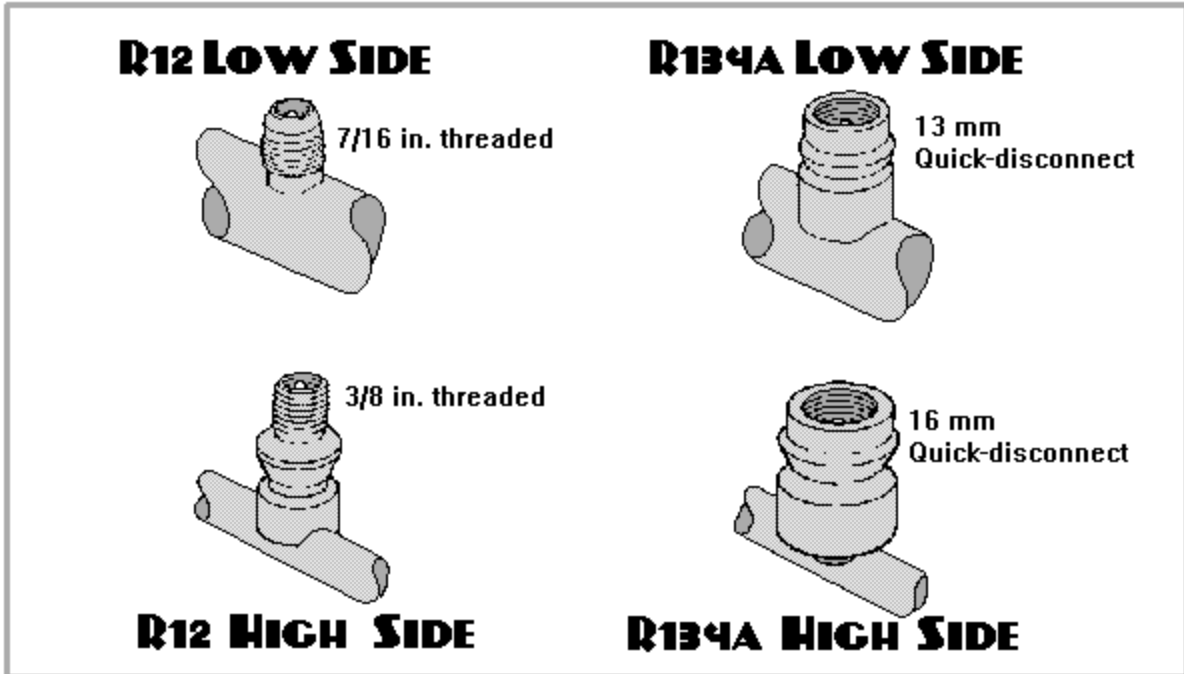
WARNING: Flammable refrigerants are illegal. DO NOT use any type of flammable refrigerant (propane, butane or flammable hydrocarbons).

For more information, see [Flammable Refrigerants](#)

[Click here](#) for more information about retrofitting older vehicles with R-12 A/C systems to R134a.

LOCATE THE SERVICE FITTINGS

Next, you need to locate the service fittings on the A/C system. There are two: a LOW side fitting and a HIGH side fitting. The LOW side fitting is usually located on the suction hose or line that goes from the accumulator to the compressor. The HIGH side fitting is located on the line that goes from the compressor to the condenser.



On older R-12 systems, the LOW and HIGH pressure service fittings are screw-type schrader valves. On R-134a systems, the LOW and HIGH side service fittings are quick-connect style fittings. The LOW pressure fitting is SMALLER than the HIGH pressure fitting. Late model vehicles with R-1234yf also have unique service fittings that are different from R-134a or R-12 systems.

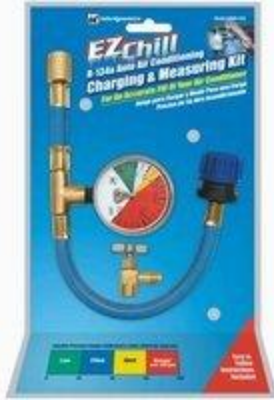


AIR CONDITIONING RECHARGE PROCEDURE

1. First, make sure you have the correct refrigerant for your vehicle. Use R-134a in R-134a systems only, and use R-1234yf in newer R-1234yf systems only. Do NOT intermix different types of refrigerant. Okay, now you can connect the recharge service hose and valve to a can of refrigerant.
2. Turn the valve on the service hose to puncture the top of the can.
3. SLOWLY turn the valve back out to release a small amount of refrigerant into the hose. This will blow air out of the hose (which you do not want in your A/C system).
4. Close the valve so no more refrigerant escapes, then quickly connect the other end of the service hose to the LOW pressure service fitting on the A/C system.
CAUTION: DO NOT connect a can of refrigerant to the HIGH side service fitting. The operating pressure inside the A/C system when it is running may exceed the burst strength of the can, causing the can to explode! This should be impossible to do because the service hose for recharging the A/C system will only fit the smaller LOW pressure service fitting. Even so, you should be aware of the danger.
5. Hold the can UPRIGHT so no refrigerant liquid enters the service hose. You only want VAPOR to be pulled into the A/C system (the compressor may be damaged if it sucks in a big dose of liquid!).
6. **OPTIONAL BUT HIGHLY RECOMMENDED:** You should use a gauge to monitor the recharging process. Though not absolutely necessary, a gauge will help you recharge your A/C system more accurately, and reduce the chance of undercharging or overcharging (either of which will reduce cooling performance).

A high pressure A/C gauge can be connected to the HIGH pressure service fitting, or a low pressure A/C gauge to the LOW pressure service fitting, or gauges can be attached to both fittings (that is what professional technicians do).

NOTE: Some DIY recharging kits include a low pressure gauge on the service hose or on a trigger-grip style can dispenser. The gauge may have different color coded zones for different types of refrigerants. Make sure you are looking at the correct pressure range for the type of refrigerant you are using.



7. Start the engine and turn the A/C on MAX/HIGH.

8. NOTE: The compressor may not engage if the system is too low on refrigerant. The low pressure cutout switch will prevent the compressor from running if the system is too low on refrigerant (this is done to protect the compressor from damage due to a lack of proper lubrication). The compressor must be running to suck refrigerant through the service hose into the system. So if it is not engaging when you turn the A/C on, you may have to supply battery voltage directly to the compressor clutch using a fused jumper wire. Look for a single wire connector near the front of the compressor, unplug it and hook up a jumper wire to the battery POSITIVE terminal. This should cause the clutch to engage and the compressor to run.

9. OPEN the valve on the service hose so refrigerant vapor will flow from the can into the A/C system. It may take up to 10 minutes or more per can to suck all of the refrigerant out of the can into the A/C system. Recharging will go more quickly during hot weather than cooler weather. Feel the air coming out of the A/C ducts inside the vehicle. It should be getting colder.

10. If you are using a high or low pressure gauge (or both) to monitor recharging, look at the gauge(s).

LOW pressure gauge: When the reading is between **25 and 40 psi** with the A/C running, **STOP**. The system is fully charged and should be cooling normally. DO NOT add any more refrigerant. If the gauge is over 50 psi, you have overcharged the system with too much refrigerant. If your gauge has different color coded zones for R-12, R-134a and/or R-1234yf, make sure you are within the correct range for your type of refrigerant.



High pressure gauge: When the reading gets up around **200 to 225 psi** (R-12), or **225 to 250 psi** (R-134a), **STOP**. The system is fully charged and should be cooling normally. DO NOT add any more refrigerant.

NOTE: The high and low pressure readings will vary depending on the system and ambient temperatures (higher temperatures cause higher system pressure readings).

Refer to the vehicle manufacturer specifications for normal system operating pressures, and the total refrigerant capacity of the system. Most newer passenger car A/C systems do not hold much refrigerant (only 14 to 28 oz.), so you don't want to add too much if the system is low. One can of R-134a typically holds 12 oz. of refrigerant.

11. If the system needs more refrigerant after adding one can, you can add a second can. CLOSE the valve on the service hose, then disconnect the hose from the empty can, screw a new can onto the service hose valve, turn the valve to puncture the new can, then turn the valve all the way back out again so refrigerant can flow through the hose into the A/C system.

When you have finished, turn the engine off. CLOSE the valve on the can of refrigerant before disconnecting the service hose from the LOW pressure fitting (in case there is any refrigerant left in the can). Don't vent any left over refrigerant from the can. Leave the service hose attached to the can with the valve closed so you can save the refrigerant for a future recharge.

Remember to replace the plastic caps over the service fittings, and remove the jumper wire from the compressor if you had to jump it to make it run.

IF THE A/C SYSTEM STOPS BLOWING COLD AIR AFTER A FEW DAYS, WEEKS OR MONTHS

If your A/C stops blowing cold air several days, weeks or months after you recharged it, it means the system has a leak and the refrigerant is escaping. You should add some leak detection dye to the system to find the leak. The leak should then be repaired before the system is recharged again, otherwise you are just wasting your time recharging the system over and over again.

Update: December 2017

New Restrictions for Selling R-134a Start January 2018

For entities selling or distributing refrigerants for use in motor vehicles, there will be new restrictions for R-134a and other substitute refrigerants sold after Jan. 1, 2018. The rule establishes certification requirements for buying large containers of refrigerant and mandates that small containers include a self-sealing valve.

Under the new requirements, anyone purchasing a substitute refrigerant for R-12 in a greater-than-two-pound container must provide the seller with evidence that the

technician has a Section 609 Technician Certification. If the purchaser is not certified and is buying the refrigerant on behalf of a service facility, the seller must be presented with evidence that one or more technicians at the facility are certified.

Refrigerant wholesalers must retain an invoice listing the name of the purchaser, date of sale and quantity purchased. The wholesaler is not required to confirm any technician certification, but EPA is recommending that wholesalers obtain a statement certifying that the cylinders are to be resold to certified technicians.

Individuals do not need to have certification in order to purchase small cans (under two pounds) of R-134a. However, all cans produced after Jan. 1, must come equipped with a self-sealing valve capable of preventing the container from venting refrigerant after it is removed from the charging valves. Despite this new requirement, retailers are permitted to sell off their existing inventory of small cans that do not have the self-sealing valves, as long as they were purchased prior to Dec. 31, 2017.

Is It Legal to Vent Old Refrigerant from your A/C system into the air when making repairs to your vehicle?

Under former EPA rules, it was ILLEGAL for anyone (professional or DIY) to intentionally vent refrigerant from an A/C system into the air when servicing a vehicle. Professional repair shops are required to have refrigerant recovery machines. The machine must be hooked up to a vehicle BEFORE repairs are made to suck any residual refrigerant out of the system so that the vapors do not escape into the atmosphere when the A/C system is opened up to replace a component. The logic for doing this is to prevent older refrigerants such as R-12 that contain ozone depleting CFC compounds from getting into the atmosphere. It makes sense and is a good thing to do. But the EPA rules also applied to R-134a, which does not contain any CFCs and are not an ozone depleting threat. However, the rationale for also requiring R-134a to be recovered rather than vented is that it is a global warming gas, and therefore contributes to climate change. The EPA rules also require recovery of R-1234yf, but the rationale is less clear because R1234yf is neither an ozone depleting gas nor a global greenhouse gas.

Obviously a DIYer has no access to a refrigerant recovery machine so the issue of whether or not is acceptable to vent refrigerant when repairing an A/C system is moot. People just do it anyway. Besides, if your A/C system has a leak, chances are most or all of the refrigerant has already leaked out so there is nothing left to vent.

UPDATE: As of March 2020, the EPA has revised its venting and recovery rules.

The EPA published a new rule revising its previous rules that prohibited the venting of all refrigerants into the air when servicing a vehicle, whether or not they contain CFCs

or global warming gases. R-12 still should NOT be vented and should be recovered, but now apparently it is okay to vent R-134a and R-1234yf during servicing procedures. No recovery is required.

The new rule also eliminates previous regulatory requirements regarding leak inspection and repair for R-134a and R-1234yf because both do not contain ozone depleting CFC chemicals.

[.Click Here](#) to view the latest EPA rules regarding venting of refrigerants.

The EPA also issued a proposed rule that would adopt three technical standards developed by the SAE International for A/C recovery and recycling equipment for R-1234yf. The new rule would require this equipment to meet the following updated SAE standards :

J2843 Recovery/recycling/Recharging Equipment for Flammable Refrigerants for Mobile Air-Conditioning Systems.”

J2851 “Recovery Equipment for Contaminated R-134a or R-1234yf Refrigerant from Mobile Air Conditioning Systems;”

J3030 “Automotive refrigerant Recovery/Recycling/Recharging Equipment Intended for use with Both R-1234yf and R-134a.



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[Air Conditioning Inspection Checklist](#)

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[Troubleshooting Air Conditioning](#)

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[Air Conditioning Service Best Practices](#) (Procedures a repair shop should follow when servicing your A/C system)

[MACS Recommended A/C Service Procedures \(for professional technicians\)](#) (pdf file)

[A/C Compressor Failures](#)

[Compressor PAG Oil Application Chart](#)

[A/C Condenser Flushing](#)

[Alternative Refrigerants](#)

[New Refrigerants & A/C Systems](#)

[Flammable Refrigerants](#)

[California proposes ban on R-134a sales to motorists](#)

[R-1234yf: The Newest Refrigerant for Late Model Cars and Trucks. Update on R-134a Retrofit](#)

[R-134a Retrofit Guide](#)



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