

2022 CHEVROLET CORVETTE SERVICE MANUAL

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Refrigerant Recovery and Recharging (R-1234yf)

Special Tools

- GE-45037 $\tilde{\text{A}}$, $\hat{\text{A}}$ A/C Oil Injector
- GE-50078 $\tilde{\text{A}}$, $\hat{\text{A}}$ Electronic Leak Detector
- GE-50300 $\tilde{\text{A}}$, $\hat{\text{A}}$ R-1234yf Air Conditioning Refrigerant Recovery/Recharge Cart
- GE-50744 $\tilde{\text{A}}$, $\hat{\text{A}}$ A/C R-1234yf PAG Oil Injector Hose
- GE-50745 $\tilde{\text{A}}$, $\hat{\text{A}}$ A/C R-1234yf POE Oil Injector Hose
- GE-50957 $\tilde{\text{A}}$, $\hat{\text{A}}$ Machine R-1234yf Contaminated Refrigerant

Equivalent regional tools: Special Tools

Refrigerant label symbols: Refrigerant Label Symbols

General Information

Warning:

Refer to R-1234yf Proper Service Procedures Warning.

R-1234yf (HFO-1234yf) - 2,3,3,3 - Tetrafluoroprop-1-ene (CF_3CFCH_2), is an olefin containing hydrogen, fluorine and carbon with thermodynamic properties similar to R-134a. This refrigerant is a mildly flammable gas. It has a boiling point of -29.2°C , a vapor pressure of 583 kPa absolute at 20°C , no ozone depletion potential, and a global warming potential (GWP) of 4.

R-1234yf supply tank is white with red band to denote flammability.

Note:

In certain regions, technicians repairing or servicing motor vehicle air conditioning (MVAC) systems must be trained and certified by the appropriate regional or national regulatory agency.

- In the USA, refer to the EPA website for MVAC training requirements. <http://www.epa.gov/ozone/title6/609/technicians/609certs.html>
- In Canada, refer to the Environment Canada website for MVAC training requirements. <http://www.ec.gc.ca/ozone/default.asp?lang=En&n=943E1CAB-1#ws4E6F6835>
- In Europe, refer to Commission Regulation (EC) No 307/2008 for MVAC training requirements. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:092:0025:0027:EN:PDF>

MVAC service shops must certify to the EPA that they have acquired and are properly using approved refrigerant recovery equipment. Service shops must also verify (with on site documentation) that each person using the equipment has been properly trained and certified. MVAC service shops must maintain records of the names and addresses of facilities to which the refrigerant they recover is sent. (<http://www.epa.gov/ozone/title6/609/technicians/appequip.html>)

Vehicles equipped with R-1234yf refrigerant systems have unique low and high side service fittings.

The proper handling procedures should be followed for all refrigerants as designated by the refrigerant manufacturer's $\tilde{\text{A}}$, $\hat{\text{A}}$ Material Safety Data Sheet (MSDS).

Refrigerant Recovery and Recharging

To remove, recycle and install R-1234yf from/to a vehicles refrigerant system only use GE-50300 $\tilde{\text{A}}$, $\hat{\text{A}}$ R-1234yf Air Conditioning Refrigerant Recovery/Recharge Cart or refrigerant recovery recharge equipment certified to meet the requirements of Society of Automotive Engineers (SAE)

J2843 and approved by the EPA. (<http://www.epa.gov/ozone/title6/609/technicians/appequip.html>)

To remove contaminated refrigerant from a vehicles refrigerant system use *GE-50957* $\tilde{\Delta}$, $\hat{\Delta}$ Machine R-1234yf Contaminated Refrigerant or only service equipment designed for contaminated refrigerant removal and certified to meet the requirements of SAE J2851. Refrigerant recovered by this equipment cannot be reused or recycled on site and must be sent to an EPA approved reclamation facility for reprocessing or disposal. (<http://www.epa.gov/ozone/title6/608/reclamation/reclist.html>)

To prevent accidental release of refrigerant and minimize safety concerns, the installation of any refrigerant service equipment to the vehicle shall only be done with the engine off and after the refrigerant high side pressure has been reduced (approximately 2 $\tilde{\Delta}$ $\hat{\Delta}$ 3 minutes).

Open the windows and/or doors before charging the vehicle to prevent an accumulation of refrigerant in case of a major refrigerant leak.

Warning:

R-1234yf is heavier than air and may accumulate in low or pit areas $\tilde{\Delta}$ $\hat{\Delta}$ make sure these areas are properly ventilated. Failure to follow this precaution may cause personal injury.

Refrigerant service equipment is required to ensure adequate refrigerant recovery to reduce emissions and provide for accurate recharging of mobile air conditioning systems. Venting refrigerant to the atmosphere is illegal per United States Environmental Protection Agency (EPA) Clean Air Act Section 608.

Warning:

To prevent personal injury, avoid breathing any refrigerant vapor and lubricant mist. Servicing of R-1234yf systems shall only be done in well ventilated work areas. To remove R-1234yf refrigerant from the A/C refrigerant system, recover using SAE J2843 certified equipment. Uncontrolled release of R-1234yf refrigerant in the work area may result in high concentrations of R-1234yf that can be flammable. If an accidental system discharge occurs, ventilate the work area before continuing service. Failure to follow these precautions may cause personal injury and/or damage to the vehicle or its components.

Warning:

For personal protection, goggles and lint-free gloves must be worn and a clean cloth wrapped around fittings, valves, and connections when doing work that includes opening the refrigerant system. If refrigerant comes in contact with any part of the body severe frostbite and personal injury can result. The exposed area should be flushed immediately with cold water and prompt medical help should be obtained.

Caution:

Air Conditioning (A/C) desiccant must be replaced if the A/C refrigerant system has been open to atmosphere for more than four hours, or if the A/C refrigerant oil has been contaminated. Failure to replace the A/C desiccant will result in damage to the A/C refrigerant system.

Caution:

Use only the refrigerant and the charge amount specified in $\tilde{\Delta}$ $\hat{\Delta}$ Refrigerant System Specifications $\tilde{\Delta}$ $\hat{\Delta}$ found in HVAC Service Manual or the vehicles under hood refrigerant label. Use of incorrect refrigerant or charge amounts may result in poor system performance and premature system failure.

Caution:

Use only the lubricant specified for this vehicles refrigerant system. Do not mix refrigerant oils which may result in system contamination and unknown reaction by-products which may cause HVAC System failure.

To protect the refrigerant supply *GE-50300* $\tilde{\Delta}$, $\hat{\Delta}$ R-1234yf Air Conditioning Refrigerant Recovery/Recharge Cart or SAE J-2843 equipment requires the refrigerant to be analyzed for purity prior to its recovery or transfer. The equipment is required to receive an acceptable reading from the integrated refrigerant identifier prior to recovery or transfer. An acceptable reading is $\tilde{\Delta}$ $\hat{\Delta}$ 98% -1/+2 R-1234yf.

If an unacceptable reading is received (and the presence of foreign gases detected) the refrigerant is considered contaminated and the equipment will not allow its recovery or transfer to an onboard storage vessel. If refrigerant is contaminated use *GE-50957* $\tilde{\Delta}$, $\hat{\Delta}$ Machine R-1234yf Contaminated Refrigerant or SAE J2851 compliant equipment to recover for reclamation and/or disposal at an EPA approved facility (<http://www.epa.gov/ozone/title6/608/reclamation/reclist.html>).

As a safety precaution *GE-50300* $\tilde{\Delta}$, $\hat{\Delta}$ R-1234yf Air Conditioning Refrigerant Recovery/Recharge Cart or SAE J2843 compliant equipment requires the Mobile Air Conditioning (MAC) system to pass a pre-charge leak test (to detect the possibility of a gross system leak prior to charging, >0.3 g/s) prior to allowing the MAC system to be charged. The pressurized portion of this test will require the technician set the vehicles Heater, Ventilation and Air Conditioning (HVAC) blower motor on high, A/C switch off and air distribution mode set to floor. The technician shall insert a *GE-50078* $\tilde{\Delta}$, $\hat{\Delta}$ Electronic Leak Detector or GE-50078 compliant electronic leak detector, set to low sensitivity (14 grams/year leak rate) into the center of a floor duct outlet, as far as possible. When the technician confirms that the vehicle is set up for the pressurized leak check the *GE-50300* $\tilde{\Delta}$, $\hat{\Delta}$ R-1234yf Air Conditioning Refrigerant Recovery/Recharge Cart will install 15% of the programmed charge into the vehicles refrigerant system. The technician monitors the electronic leak detector for 5 minutes or until the detector alarms.

The equipments display will then ask the following:

1. Was this test performed? If the technician replies Yes, the display next shall ask,
2. Was a leak found? If technician replies Yes, the machine shall only allow recovery and evacuation to allow repair. If the technician replies No, the display shall continue with,
3. Is there an auxiliary evaporator? If the technician replies No the machine shall permit completion of the recharge process. If the technician replies Yes, the display shall instruct the technician to perform a leak check with *GE-50078* Å,Å Electronic Leak Detector or a *GE-50078* compliant detector at a rear evaporator outlet, then ask,
4. Was an auxiliary evaporator leak check performed? If the technician replies Yes, the display will continue with Was a leak found? and if the answer is Yes, the machine shall only allow recovery and evacuation to allow repair. If the technician replies No, the machine shall permit completion of the recharge process.

A/C Refrigerant System Oil Charge Replenishing

If oil was removed from the A/C system during the recovery process or due to component replacement, the oil must be replenished. Oil can be injected into a charged system using *GE-45037* Å,Å injector with *GE-50744* Å,Å A/C R-1234yf PAG Oil Injector Hose or *GE-50745* Å,Å A/C R-1234yf POE Oil Injector Hose. For the proper quantities of oil to add to the A/C refrigerant system, refer to Approximate Fluid Capacities and Air Conditioning Compressor Oil Balancing.

After completing the recharge process, install and torque the charge port caps to 1.3 N-m (12 lb in)