

Original Instructions  
Instrucciones originales  
Consignes originales

**Model: AC1234-6**



R-1234yf A/C Recover, Recycle, Recharge Machine

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*Description: Recover, recycle, and recharge machine for use with R-1234yf equipped air conditioning systems.*

### **PRODUCT INFORMATION**

Record the serial number and year of manufacture of this unit for future reference. Refer to the product identification label on the unit for information.

AC1234-6

Serial Number: \_\_\_\_\_ Year of Manufacture: \_\_\_\_\_

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# Safety Precautions

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## Explanation of Safety Signal Words Used in this Manual

The safety signal word designates the degree, or level, of hazard seriousness.

 **DANGER:** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

 **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

**CAUTION:** Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, could result in property damage.

These safety messages cover situations Robinair is aware of. Robinair cannot know, evaluate, or advise as to all possible hazards. The user must verify that conditions and procedures do not jeopardize personal safety.

## Explanation of Safety Decals Used on the Machine

	Carefully read the instructions.
	Do not use in open air in case of rain or high humidity.
	Wear gloves.
	Wear protection goggles.
	Alternating voltage.
	Grounding protection.
	Electrical shock hazard.

# Safety Precautions



## **WARNING: To prevent personal injury,**



**ALLOW ONLY QUALIFIED PERSONNEL TO OPERATE THE MACHINE.** Before operating the machine, read and follow the instructions and warnings in this manual. The operator must be familiar with air conditioning and refrigeration systems, refrigerants, and the dangers of pressurized components. If the operator cannot read this manual, operating instructions and safety precautions must be read and discussed in the operator's native language.



**USE THE MACHINE AS OUTLINED IN THIS MANUAL.** Using the machine in a manner for which it was not designed will compromise the machine and nullify the protections provided.



**PRESSURIZED TANK CONTAINS LIQUID REFRIGERANT.** Do not overfill the internal storage vessel (ISV). Overfilling can cause explosion resulting in personal injury or death. Do not recover refrigerants into nonrefillable containers; use only type-approved refillable containers that have pressure relief valves.



**HOSES CAN CONTAIN LIQUID REFRIGERANT UNDER PRESSURE.** Contact with refrigerant can cause personal injury, including blindness and frozen skin. Wear protective equipment, including goggles and gloves. Disconnect hoses using extreme caution. Ensure the phase is complete before disconnecting the machine to prevent the release of refrigeration to the atmosphere.



**AVOID BREATHING A/C REFRIGERANT AND LUBRICANT VAPOR OR MIST.** Exposure can irritate eyes, nose, and throat. To remove refrigerant from the A/C system, use only equipment certified for the type of refrigerant being removed. Use the unit in locations with mechanical ventilation that provides at least four air changes per hour. If accidental system discharge occurs, ventilate the work area before resuming service.

**DO NOT DISPERSE REFRIGERANT INTO THE ENVIRONMENT.** Prevent the possible presence of refrigerant in the working environment.



**TO REDUCE THE RISK OF FIRE,** do not use the machine in the vicinity of spilled or open containers of gasoline or other flammable substances.

**TO REDUCE THE RISK OF FIRE,** do not use an extension cord. An extension cord can overheat and cause fire. If an extension cord must be used, use the shortest possible cord with a minimum size of 14 AWG.

**TO REDUCE THE RISK OF FIRE,** do not use the machine in the vicinity of flames and hot surfaces. Refrigerant can decompose at high temperatures and free toxic substances to the environment that can be noxious to the user.

**TO REDUCE THE RISK OF FIRE,** do not use the machine in environments containing explosive gases or vapors.

**TO REDUCE THE RISK OF FIRE,** protect the machine from conditions that can cause electrical failure or other hazards relating to ambient interaction.



**CAUTION—DO NOT PRESSURE TEST OR LEAK TEST EQUIPMENT AND/OR VEHICLE AIR CONDITIONING SYSTEMS WITH COMPRESSED AIR.** Some mixtures of air and refrigerant have been shown to be combustible at elevated pressures. These mixtures, if ignited, can cause injury or property damage.



**HIGH VOLTAGE ELECTRICITY INSIDE THE MACHINE HAS A RISK OF ELECTRICAL SHOCK.** Exposure can cause personal injury. Disconnect power before servicing the machine.

**NEVER LEAVE THE MACHINE LIVE IF AN IMMEDIATE USE IS NOT SCHEDULED.** Disconnect the electrical supply before a long period of inactivity or before internal maintenance is performed.

**DO NOT MODIFY THE PRESSURE RELIEF VALVE OR CHANGE THE CONTROL SYSTEM SETTINGS.** Using the machine in a manner for which it was not designed will compromise the machine and nullify the protections provided.

**Additional health and safety information can be obtained from refrigerant and lubricant manufacturers.**

# Safety Precautions

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## CAUTION : To prevent equipment damage,

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**TO PREVENT CROSS-CONTAMINATION, USE THIS MACHINE WITH R-1234YF REFRIGERANT ONLY.**

The machine is equipped with special connectors to recover, recycle, and recharge only R-1234yf refrigerant. Do not attempt to adapt the machine for another refrigerant. Do not mix refrigerant types through a system or in the same container; mixing of refrigerants will cause severe damage to the machine and the vehicle air conditioning system.

**DO NOT USE THIS MACHINE IN DIRECT SUNLIGHT.** Position the machine far from heat sources, such as direct sunlight, which can cause excessive temperatures. The use of this machine under normal environmental conditions (10°C to 50°C) keeps pressures under reasonable limits.



**DO NOT USE THIS MACHINE OUTDOORS DURING RAIN OR HIGH HUMIDITY.** Protect the machine from conditions that can cause electrical failure or other hazards relating to ambient interaction.

**DO NOT USE THIS MACHINE IN AREAS WHERE THERE IS A RISK OF EXPLOSION.**

**SET UP THE MACHINE ON AN EVEN SURFACE AND UNDER SUFFICIENT LIGHTING. LOCK THE FRONT WHEELS, AND DO NOT SUBJECT THE MACHINE TO VIBRATION.**

**Additional health and safety information can be obtained from refrigerant and lubricant manufacturers.**

## Protective Devices

The machine is equipped with the following protective devices:

- Over pressure valves.
- A maximum pressure switch stops the compressor when excessive pressure is sensed.



**WARNING: Tampering with these protective devices could result in serious injury.**

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## J2843 Requirement Regarding Lubricant

Only new lubricant, as specified by the system manufacturer, shall be installed in the MAC (Mobile Air Conditioning) system. Lubricant removed from the system and / or the equipment shall be disposed of in accordance with applicable federal, state, and local procedures and regulations.

This machine is designed and certified to SAE J2843 HFO-1234yf Recovery / Recycling / Recharging Equipment for Flammable Refrigerants for Mobile Air-Conditioning Systems.

The machine is designed to recover and recycle R-1234yf refrigerant, evacuate air after the system has been open, and recharge refrigerant.

Other functions include system flush, diagnostic pressures, and retention of service data by vehicle VIN for recall and printout.

The machine is a single-pass system (i.e. refrigerant flows through a filter once) that meets SAE J2099 specifications for recycled refrigerant. The machine also meets oil cross-contamination requirements for high-voltage system charge. Follow recommended service procedures for the containment of R-1234yf.

*Note: R-1234yf systems require special oils. Refer to the A/C system manufacturer's service manual for oil specifications.*

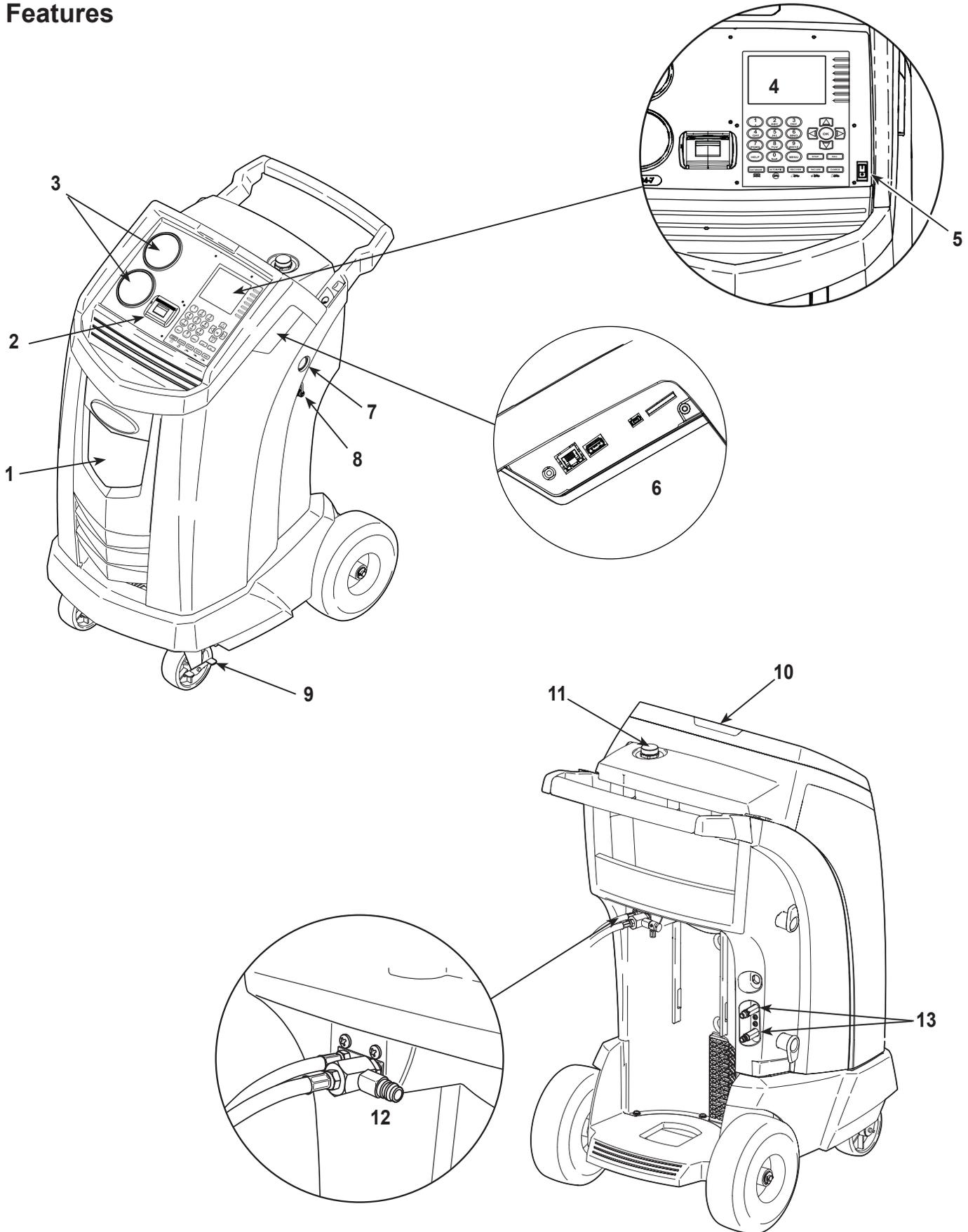


## Technical Specifications

<b>Compressor</b>	1/3 HP
<b>Dimensions</b>	107 cm x 56 cm x 80 cm
<b>Display</b>	1/4 VGA color graphic
<b>Filter Capacity</b>	150 kg
<b>Humidity</b>	90°F (32.2°C), 86% RH non-condensing
<b>Pressure Gauges</b>	∅ 100 mm
<b>Maximum Pressure</b>	30 bar
<b>Noise</b>	<70 dB(A)
<b>Nominal Voltage</b>	103V to 127V, 60 Hz
<b>Oil Drain Bottle</b>	355 ml
<b>Operating Temperature</b>	50°F to 122°F (10°C to 50°C)
<b>Power Consumption</b>	1150 VA
<b>Pump Free-Air Displacement</b>	1.5 CFM (35 l/m)
<b>Service Hoses</b>	250 cm / SAE J2888
<b>Tank Capacity</b>	9.50 kg (20.94 lb.)
<b>Weight</b>	107 kg (235 lb.)

# Introduction

## Features



<b>Item No.</b>	<b>Description</b>
1	Oil Drain Bottle
2	Printer
3	Low-side (blue) and High-side (red) Manifold Gauges
4	Graphic Display and Keypad
5	Power ON / OFF Switch
6	Audio, Ethernet, USB, Mini-USB, and SD Card Connections
7	Vacuum Pump Oil Sight Glass
8	Vacuum Pump Oil Drain Fitting
9	Wheel Lock
10	Visual Alert
11	Vacuum Pump Oil Fill Cap and Port
12	Contaminant Recovery Port
13	Service Hose Storage Ports

# Introduction

## Control Panel Functions

**ARROW UP** moves selection of a menu item to the previous item; turns up audio volume.

**ARROW DOWN** moves selection of a menu item to the following item; turns down audio volume.

**ARROW RIGHT** scrolls to next screen; fast forwards the video.

**ARROW LEFT** scrolls to previous screen; rewinds the video.



**AUTOMATIC** activates a menu to set up an automatic recovery / vacuum / leak test / charge sequence.



**CHARGE** activates a sequence to charge the vehicle A/C system with a programmed amount of refrigerant.



**DATABASE** supplies information regarding charge capacity by vehicle model.

**ESC** returns the test sequence to the previous screen; or answers a query.

**HELP** displays information related to the current display.

**MENU** accesses additional functions and setup parameters.

**OK** highlights the menu item or answers a query.

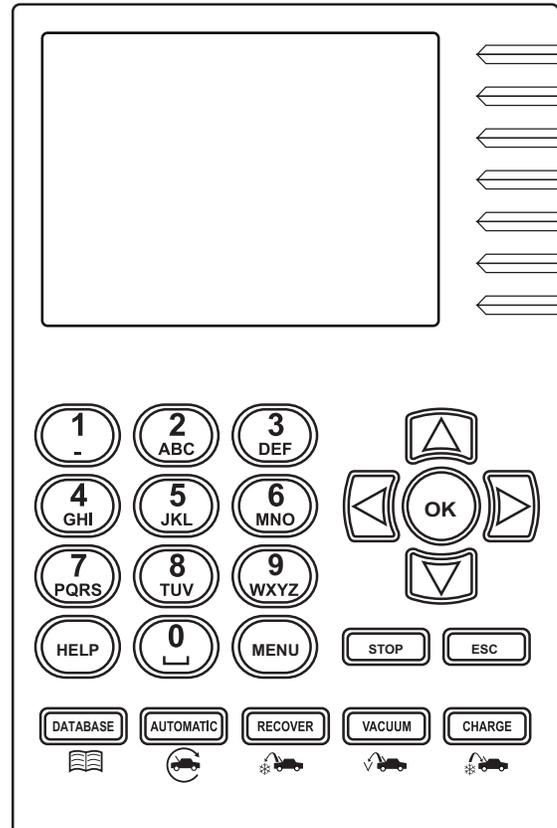


**RECOVER** activates a sequence to recover refrigerant from the vehicle A/C system.

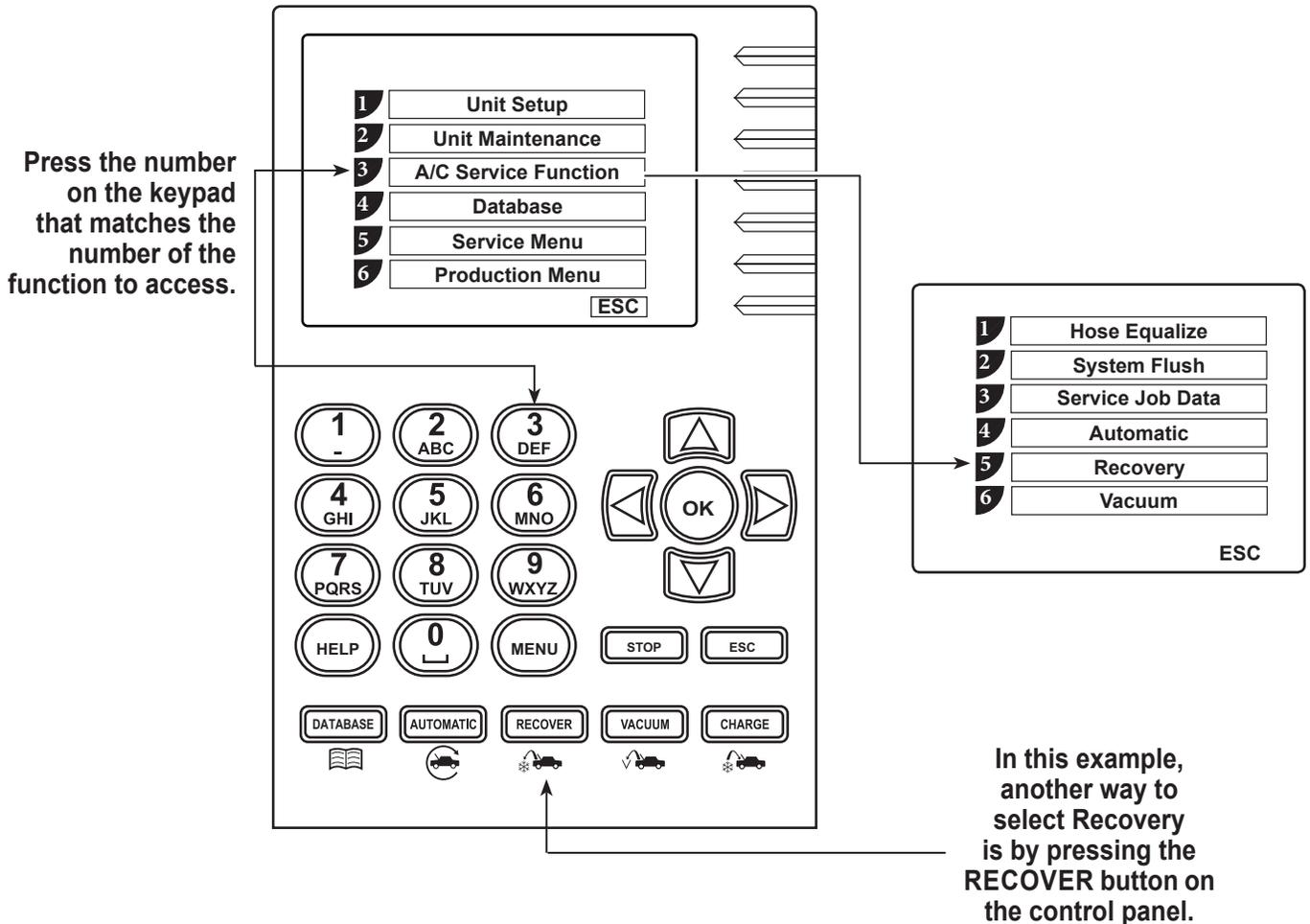
**STOP** interrupts the active function. Press once to pause, twice to terminate.



**VACUUM** activates a sequence to pull a deep vacuum on the vehicle A/C system to remove air and moisture.



*Control Panel Keypad*



Notes regarding main menu items not outlined in this manual:

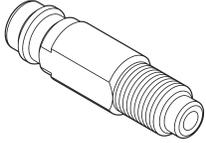
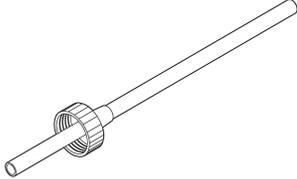
- **Database** - not available at this time
- **Service Menu** - for service centers' use only
- **Production Menu** - for manufacturer's use only
- **Administrator** - for manufacturer's use only

# Initial Setup Procedure

## Unpack the Accessory Kit

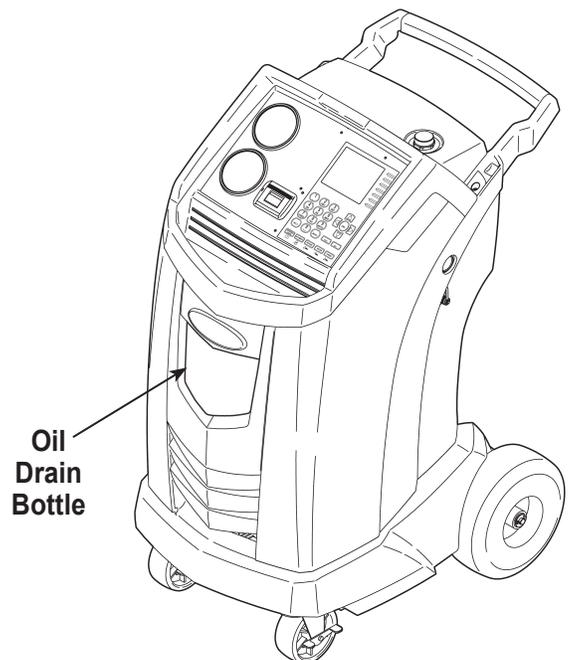
Unpack the accessory kit from the box, and remove the plastic packaging.

### Accessory Kit

<p>Calibration Check Weight</p> 	<p>Tank Fill Hose Adapter</p> 
<p>Cap and Filler Tube</p> 	<p>Vacuum Pump Oil 16 oz.</p> 
<p>Oil Drain Bottle</p> 	<p>Pouch containing a warranty card to be filled out and mailed, SDSs, EPA information, MACS information, and a service center list.</p>

## Install the Oil Drain Bottle

Hold the oil drain bottle straight and insert the connector into the hole behind the shroud until it snaps into place.



# Initial Setup Procedure

## Important:

- This procedure can take several hours. Perform this initial setup procedure **BEFORE** the machine is needed for its first vehicle A/C service.
- During initial setup, the machine prompts through the following steps. Any changes to these settings after the initial setup can be completed through the Unit Setup menu.

**CAUTION:** The machine is programmed to run the setup procedure as outlined here. To prevent personal injury, do **NOT** operate the machine without the oil fill port plug installed, because the vacuum pump is pressurized during normal operation.

## Power Up the Machine

1. Unwind the power cord from the handle, and plug it into a correct voltage, grounded outlet.
2. Position the machine so the plug and the main power switch are within easy access of the operator. Verify the fan vents on the rear of the machine are not obstructed.
3. Lock the front wheels.
4. Turn on the main power switch.

## Register the Machine

When the ProductActivation screen appears on the display, follow on-screen prompts to register the machine.

1. Open a web browser on a personal computer. Enter the web address shown in the Activation Process screen on the AC1234-6 machine.

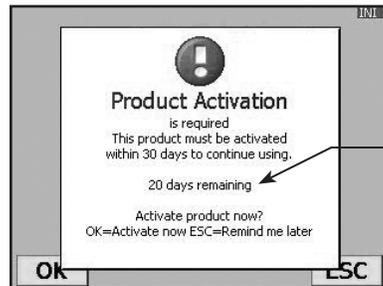
Enter your user name and password, and log in to the website.

First-time users, click the **REGISTER** button to create a user name and password.

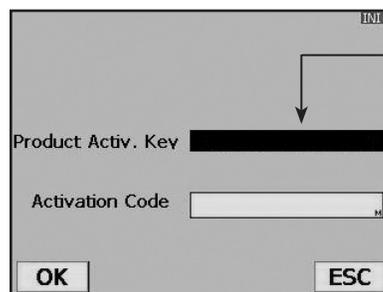
2. On the AC1234-6 machine, press **OK**. The machine displays fields for the product activation key and an activation code.
3. Enter the product activation key into the correct field on the web page. This generates an activation code.
4. Enter the activation code into the field on the AC1234-6 display and press **OK**.

*Note: Capitalization is required. A standard USB keyboard can be connected to the machine to enter information.*

5. Record the product activation key and code and file it in a secure place.
6. Press **OK**. The AC1234-6 has been activated.



Failure to register and activate the AC1234-6 within 30 days of initial startup will cause the machine to lock out and no longer function.



The Product Activation Key will be displayed in this field.



# Initial Setup Procedure

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## Language Selection

The operator selects the language for screen prompt displays.

1. Use the **UP** or **DOWN** arrow key to toggle through the available languages.
2. Press **OK** to set the selected language.

## End User License Agreement

Approve the End User License Agreement to proceed with the initial setup.

## Unit of Measure

Program the machine to display units of measure in kilograms or pounds. The default display is English.

*Note: If English is selected, weights will be displayed in metric units (per SAE standard J2843); pressures and temperatures will be displayed in English units.*

1. Use the **UP** or **DOWN** arrow key to toggle Metric or English units.
2. Press **OK** to choose the displayed unit of measure.

# Initial Setup Procedure

## Dealer Info

This machine has the capability to print out recovery, vacuum, charge, and flush information for each vehicle tested. A printout can be obtained any time the display screen shows **OK=PRN**. The information entered in the fill fields on the Dealer Info screen will appear on each printout.

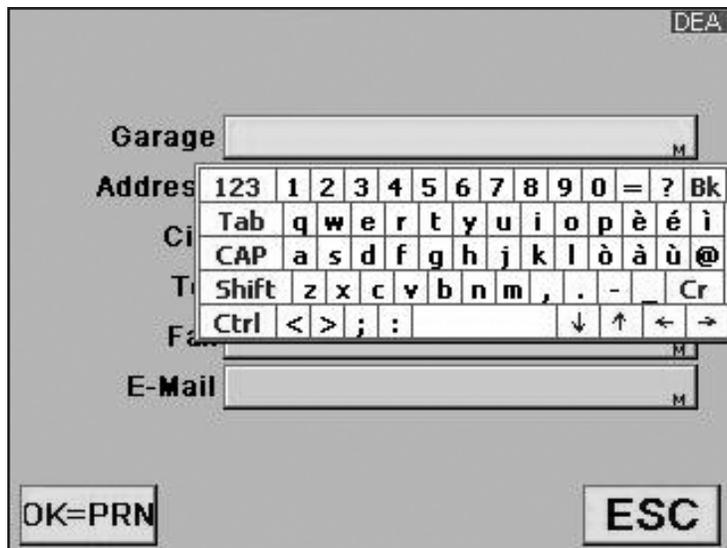
1. The cursor is blinking in the **GARAGE** field. Refer to Figure 1.
2. Press the **MENU** key and a virtual keyboard appears as shown in Figure 2.

*Note: A standard USB keyboard can be connected to the machine and used to enter information.*

3. Use the arrow keys on the machine's keypad to move around the keyboard. Press **OK** to enter a character. The cursor will move to the next character.
4. Press the **MENU** key to exit the virtual keyboard. Use the arrow keys to move to the next field. Press **OK** to save the data once all applicable fields are filled in. Press **ESC** when done.

Garage	<input type="text"/>
Address	<input type="text"/>
City	<input type="text"/>
Tel	<input type="text"/>
Fax	<input type="text"/>
E-mail	<input type="text"/>

**Figure 1**



**Figure 2**

Use the arrow keys in the virtual keyboard to move the cursor within the fill field.

Use the arrow keys on the machine's keypad to move around the virtual keyboard.



# Initial Setup Procedure

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## Date and Time Setup

The machine is programmed at the factory for the local time zone using a 24-hr clock and date.

*Note: The date changes only by scrolling through an entire day.*

1. Use the **LEFT** and **RIGHT** arrow keys to modify the minutes displayed.
2. Use the **UP** and **DOWN** arrow keys to modify the hour displayed.
3. Press **OK** to accept the date and time.

## Service Vacuum

Follow the prompts to connect the machine's service hoses to the storage ports and open the service couplers. The machine performs a 5-minute vacuum to remove air from its internal plumbing and the ISV (internal storage vessel).

When prompted, press **OK** to continue Initial Setup.

## Tank Fill Adjustment

The operator can either accept the machine's pre-set default weight of 3.5 kg of refrigerant stored in the internal storage vessel (ISV), or change the amount to accommodate the application.

The maximum amount allowed for new refrigerant is 6.8 kg, which leaves room for additional recovery. The minimum amount is 1.8 kg.

1. Select **TANKFILLADJUSTMENT** from the Unit Setup menu.
2. The machine displays the default amount of refrigerant:

---

TANK LEVEL  
03.500 KG

---

3. Press **OK** to accept the default amount, or use the keypad to enter an amount and press **OK**.

# Initial Setup Procedure

## Tank Filling

1. Connect an R-1234yf source tank to the tank fill hose at the rear of the machine. Hand tighten the tank fill hose. See Figure 3.

*Note: The tank fill hose and the tank access port have left-hand threads.*

2. Open the tank valve.
3. Mount the source tank on the shelf at the rear of the machine, oriented to supply liquid refrigerant to the connection. Tighten the holding strap around the source tank. Verify the tank does not restrict air flow from the vent.
4. The machine displays

---

FILL AMOUNT  
XX.XXX  
CONNECT SOURCE TANK TO FILL HOSE

---

5. Press **OK**. The machine checks the refrigerant in the source tank to verify it is R-1234yf and not contaminated, and displays the following:

---

WARM UP

---

CALIBRATION IN PROGRESS

---

GAS IDENTIFY

---

REFRIGERANT PURITY ACCEPTABLE

---

After completing the above steps, the machine begins filling the internal storage vessel (ISV).

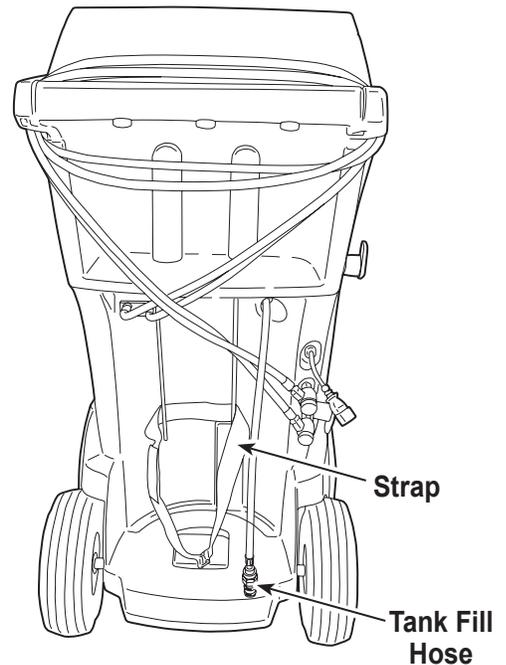
6. The machine automatically stops when the preset tank fill level is reached or the source tank is empty. To stop tank fill before the preset level is reached, select **ESC**; press **OK** to continue.
7. If using a non-refillable tank, the machine must display

---

SOURCE TANK EMPTY

---

before the tank can be discarded.



**Figure 3**

# Setup Menu

---

## Setup Menu Optional Items

Many of the functions included in the Initial Setup Procedure can also be accessed through the Setup Menu. Additional Setup Menu functions are explained here.

1. Press the **MENU** key.
2. Select **UNIT SETUP** from the menu listings.

## Beeper Setting

1. Select **BEEPER SETTING** from the Unit Setup menu.
2. Press the **OK** button to toggle the audio “beep” OFF and ON.

## Ethernet Settings

Enable or disable DHCP for Ethernet port.

## Default Charge Target

Use this menu item to change the default charge amount that appears on the charge programming screen.

1. Select **DEFAULT CHARGE TARGET** from the Unit Setup menu.
2. The machine displays the current default charge amount:

---

0.000 KG

---

3. Press **OK** to accept the default amount, or use the keypad and arrow keys to change the amount. Press **OK** to continue or **ESC** to quit.

## Legal

This menu selection displays the end user license agreement.

## System Information

Selecting this menu item displays the revision level, serial number, and other information about the software and machine.

## Date Format Selection

Select the display order for the basic components of the calendar year - day, month, and year. Press **OK**.

## VIN Entry

After selecting any A/C Service function, information about the vehicle and the vehicle identification number (VIN) can be entered into the machine.

Use the arrow keys to select a field, and use the virtual keypad to enter information.

*Note: A standard USB keyboard can be connected to the machine and used to enter information.*

The information that is entered in this menu item is saved in **Service Job Data**.

## A/C Pressure Snapshot

The A/C Pressure Snapshot function is used to capture vehicle system operating pressures. The captured data can be viewed, printed, or exported to SD card as part of a service record.

The following values are captured:

- System high-side pressure
- System low-side pressure
- Ambient temperature
- Ambient humidity

At the start of the **RECOVER** and **AUTOMATIC** processes, the option to perform an A/C Pressure Snapshot to capture the pre-service operating conditions is given. Again, at the end of the **CHARGE** and **AUTOMATIC** processes, the option is given to perform the function to allow post-service operating conditions to be captured.

While the data can be printed at the time of capture, it will also be stored, printed, or exported with the service record created for the **AUTOMATIC**, **RECOVER**, or **CHARGE** process.

After the A/C Pressure Snapshot function is completed, the machine will perform a hose equalization and hose clear as part of the **CHARGE** or **AUTOMATIC** function. This is necessary to reduce charge loss due to the A/C Pressure Snapshot.

# A/C Service Function

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## Printouts

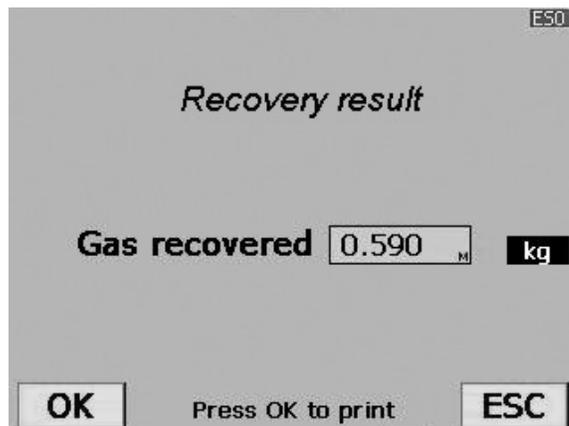
### At the End of Every Function

Data for the most recently completed function can be printed from the results screen by pressing **OK** on the machine's control panel. See Figure 4.

### After the Service is Completed and Exited

A summary of the complete service can be printed from Service Job Data:

1. Press **MENU** on the machine's control panel.
2. Select **AC SERVICE FUNCTION** and then **SERVICE JOB DATA**.
3. The choices are:
  - **VIEW JOB RECORD** — a list of VINs is displayed. Use the UP or DOWN arrow to highlight the VIN for which to print service data.
  - **MOVE JOB RECORD** — follow the prompts for this option to transfer all records to an SD card. The most recent 100 records will also be retained in Service Job Data.
  - **COPY JOB RECORD** — see "Service Job Data" on page 22.



Press OK to print data for the function just completed.

**Figure 4**

## Hose Equalize

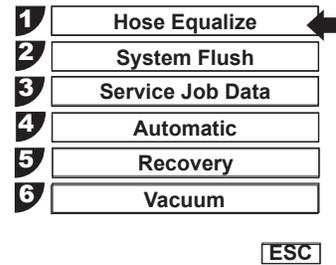
This A/C Service Function menu item directs the user through clearing the service hoses after running the A/C system to perform diagnostics. Use this function when the service hoses were connected, but no refrigerant was charged into the system.

Following hose equalization prompts prevents leaving part of the vehicle's refrigerant charge in the service hoses, a situation which can cause a loss of A/C performance on lower-capacity systems.

1. Place the vehicle gear selector in park or neutral, with the emergency brake ON. Connect the low-side hose to the A/C system; disconnect the high-side hose.
2. Start the vehicle. Set the A/C system at the maximum setting.

During this operation, the high side and low side are connected internally, allowing the majority of refrigerant to be pulled back into the A/C system's low side.

3. When prompted, disconnect the low-side hose and turn off the vehicle. Press **OK**.
4. The machine performs an internal clearing of its plumbing, and sounds an alarm when complete. Press **OK** to exit.



**Figure 5**

*Screen 1 of the A/C Service Function Menu*

# A/C Service Function

## System Flush

This machine provides a method of removing oil by forcing liquid refrigerant through an A/C system, or components of an A/C system. A special flushing adapter accesses the A/C system at the compressor block. After flushing, the refrigerant is recovered by the machine and filtered by the recycling circuit, returning it to SAE purity levels.

A/C systems vary and might require the adapting and flushing of individual components. Refer to service bulletins as needed during this procedure.

## Setup

1. Verify the oil drain bottle on the front of the machine is empty. See Figure 6. Recover refrigerant as outlined in this manual.
2. Close service coupler valves and disconnect hoses from vehicle access ports.
3. Close the valve on the external source tank.

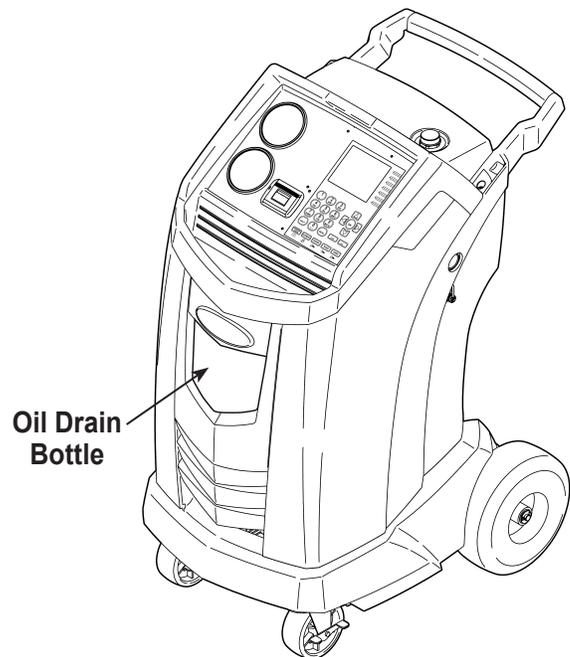
*Note: During this procedure, up to 4.5 kg (10 lb.) of refrigerant is charged into the vehicle A/C system. If the flushing cycle is stopped before it is complete and the external source valve is open, the machine automatically adds refrigerant to the ISV, and there will be no room to recover the refrigerant used for flushing.*

4. Remove the A/C system expansion device, and reconnect the fittings to create a bypass.
5. Disconnect the refrigerant lines from the vehicle compressor.
6. Attach the compressor block adapter (from the flushing kit) to the system side of the compressor block.
7. Configure the block connectors to provide forward- or back-flushing of the refrigerant, which flows from the machine through the red high-side connection hose. Open the red service coupler.
8. Connect the filter housing to the desired return side of the adapter block and to the blue low-side hose. Open the blue service coupler.
9. Verify that a flushing filter is correctly installed in the flushing filter housing. Open the isolation valve on the hose.

	<b>WARNING:</b> To prevent personal injury while working with refrigerant, read and follow the instructions and warnings in this manual, and wear protective equipment such as goggles and gloves.
---	--

### Notes:

- The machine must have at least 4.5 kg (10 lb.) of refrigerant available in the ISV (as indicated on the display) for charging.
- If the flush process is interrupted by an accidental power-down or other fault, use the recovery mode to remove the refrigerant from the vehicle.



**Figure 6**

## Operating Instructions

1. Select **SYSTEM FLUSH** from the A/C Service Function menu.
2. Perform the VIN entry function.
3. Select **START** to accept the default flush time of 10 minutes, or enter the desired flush time using the keypad and select **START**.
4. The following tests are automatic and performed as required by SAE J2843:
  - vacuum that runs 5–20 minutes to achieve the correct level
  - 5-minute vacuum rise test
  - 15% charge
  - manual leak test using a leak detector certified to SAE J2913

### Notes:

- *J2843 leak testing is intended to find a gross leak before charge, for safety reasons. It is not intended to take the place of other established leak test practices.*
- *To avoid false failures, the temperatures of the vehicle system and the recovery machine should be within  $\pm 5^{\circ}\text{C}$ .*

Refer to the vehicle service manual for specific vehicle instructions.

5. The machine flushes the system for the designated length of time, and then enters a recovery mode.
6. Oil that has been collected drains into the graduated oil drain bottle. Remove the bottle and measure oil.  
Dispose of oil according to the laws in your jurisdiction. It is the responsibility of the user to determine if a material is a hazardous waste at the time of disposal.
7. When the machine displays FLUSH COMPLETE, close service couplers, remove hoses, and reassemble the vehicle's A/C system to its original state.
8. Open the valve on the source tank.
9. Evacuate and recharge the vehicle according to the instructions in this manual.

---

---

**! WARNING:** Do NOT disconnect service couplers during the flushing process. Refrigerant could spray out of the fittings, and exposure can cause personal injury.

---

---

---

---

**CAUTION:** To prevent vehicle damage, use an oil inject tool to replace the system oil. Flushing removes all oil from the system except what remains in the compressor.

---

---

## Operating Tips

*If the external flushing filter is plugged, the unit displays*

---

SYSTEM FLUSH  
POSSIBLE CLOGGED FLUSHING  
FILTER OR CLOSED CHARGE  
COUPLER VALVE ESC TO RECOVER  
REFRIGERANT PRESS OK TO RETRY

---

*After the filter is cleared or replaced, restart System Flush from the A/C Service Function menu.*

# A/C Service Function

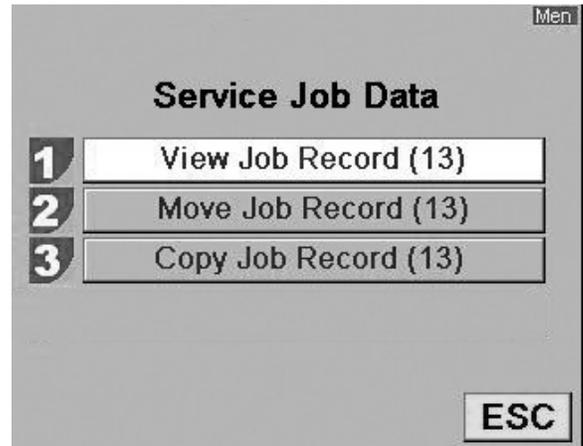
## Service Job Data

The machine stores service data for VINs logged into the VIN Entry screen. Complete service results can be printed at the end of the vehicle's entire service by selecting the VIN from the **SERVICE JOB DATA** menu.

Service results include

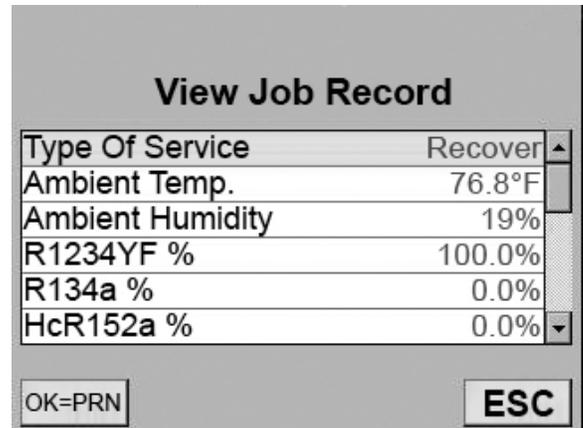
- VIN
- vehicle information, if entered
- type of service
- ambient temperature and humidity
- refrigerant purity
- recovered amount
- vacuum type
- vacuum time
- vacuum successful
- charge mode
- charged amount
- flush time

1. Press **MENU** on the machine's control panel.
2. Select **A/C SERVICE FUNCTION**.
3. Select **SERVICE JOB DATA**.
4. Refer to Figure 7. The choices are:
  - **VIEW JOB RECORD** — a list of VINs is displayed. Use the UP or DOWN arrow to highlight the VIN for which to print service data.
  - **MOVE JOB RECORD** — follow the prompts for this option to transfer all records to an SD card. The most recent 100 records will also be retained in Service Job Data.
  - **COPY JOB RECORD** — follow the prompts for this option to select the service job to copy to the SD memory card.



**Figure 7**

Screen shows the Service Job Data options.



**Figure 8**

Screen shows some of the information available under View Job Record.

## Procedure to Move Job Records

1. Lift the rubber flap on the upper right hand side of the machine, and install an unlocked SD card into the SD card slot.
2. Select **MOVE JOB RECORD** from the A/C Service Function Menu.
3. After the files have been successfully moved to the SD card, the machine displays

---

FILE TRANSFERRED  
PRESS OK TO CONTINUE

---

4. Press **OK** and remove the SD card.
5. Upload the files from the SD card to a personal computer for storage.

*Note: Job records should be transferred to a PC for permanent storage. An SD card will be erased if left in the A/C machine and a web update is performed.*

6. The **MOVE JOB RECORD** and **COPY JOB RECORD** screens will now show there are no files available to move.

## Procedure to Copy Job Record

1. Lift the rubber flap on the upper right hand side of the machine, and install an unlocked SD card into the SD card slot.
2. Select **COPY JOB RECORD** from the A/C Service Function Menu.
3. Select the job record to copy and press **OK**. See Figure 9.
4. After the files have been successfully moved to the SD card, the machine displays

---

COPY SUCCESSFUL

---

See Figure 10. Press **OK** and remove the SD card.

5. Upload the files from the SD card to a personal computer for storage.

*Note: Job records should be transferred to a PC for permanent storage. An SD card will be erased if left in the A/C machine and a web update is performed.*



**Figure 9**

Screen shows job records available to copy.



**Figure 10**

Screen shows job record was copied to SD card.

# A/C Service Function



## Automatic

The automatic function allows a user to program an automatic recovery, vacuum, leak test, and / or charge sequence. The user can choose to skip any step in the automatic operation during the programming. A total automatic sequence can take up to an hour.

1. Connect service hoses to the vehicle's service ports and open the couplers.
2. Select **AUTOMATIC**.
3. Enter vehicle data (optional). Select **OK** to continue.
4. The machine displays

<b>1</b>	HP	
<b>2</b>	LP	
<b>3</b>	HP + LP	
<b>5</b>	Refrigerant	0.000 kg

Use the number keys on the keypad to make selections 1–3 for the vehicle A/C system.

For selection 5, accept the default value or enter a value and press **OK**.

5. Select a vacuum time:
  - Press **OK** to accept the default evacuation time, or enter the desired vacuum time using the number keys, and press **OK**.
  - The machine pulls a vacuum on the A/C system for the programmed amount of time. During the vacuum process, the machine will perform an air purge if needed.



**WARNING:** To prevent personal injury while working with refrigerant, read and follow the instructions and warnings in this manual, and wear protective equipment such as goggles and gloves.

*Note: If problems are encountered during the automatic sequence, the machine will “beep” three times, the red lights on the front of the machine will blink, and the control panel readout will pinpoint the problem encountered. The sequence remains paused until the user enters a decision regarding how to proceed.*

6. If a charge amount was entered, the machine displays

---

## CHARGING A HIGH VOLTAGE SYSTEM WITH POE OIL?

---

If **OK** is selected, the machine prompts for a Hose Flush procedure. Connect high-side (red) and low-side (blue) service hoses to the storage ports, and open the coupler valves. Press **OK**.

When prompted by the machine, move the service hoses to the vehicle's service ports and open the couplers. Press **OK**.

If **ESC** is selected, the machine continues on to recovery or vacuum (if there is no pressure for a recovery).

7. If pressure is detected, the machine checks the refrigerant in the vehicle to verify it is R-1234yf and not contaminated, which is required by SAE J2843.

If the purity reading is acceptable, the machine performs a recovery, and system oil is drained at the end. If vacuum time was programmed, the machine performs a vacuum.

8. **If pressure is detected**, the machine will give the option to run diagnostic pressures before recovery.

Press **OK** to run diagnostic pressures; press **ESC** to continue with **RECOVERY**.

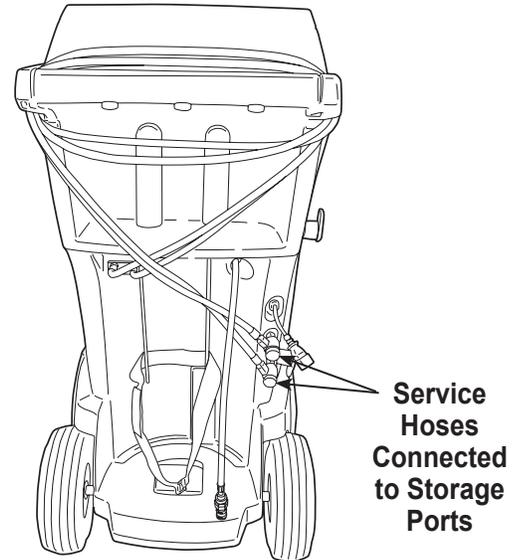
9. If **OK** was selected, follow prompts to start the vehicle and set the A/C system according to service manual A/C performance test requirements. Press **OK** after pressure stabilizes. Press **OK** again to print data; press **ESC** to continue with **RECOVERY**.

10. When prompted, perform a manual leak test using a leak detector certified to SAE J2913. Once the leak test has been completed, **AUTOMATIC** continues.

11. After the machine charges the system, the machine again gives the option to run a Diagnostic Pressures test.

Press **OK** to run diagnostic pressures; press **ESC** to continue with **RECOVERY**.

12. Follow prompts to equalize liquid refrigerant into the vehicle A/C system for maximum charge accuracy.



**Figure 11**

# A/C Service Function

---

13. When the sequence is complete, close the high-side (red) and low-side (blue) coupler valves.
14. When prompted, remove service hoses from the A/C system and install them on the machine's storage ports. Select **OK** to begin clearing hoses. This prepares the machine for the next service.
15. The machine displays a summary of actions performed during the automatic sequence.

---

**CAUTION: If the low-side (blue) or high-side (red) coupler valve is left open during the hose clearing process, the system will pull refrigerant back out of the vehicle.**

---



## Recovery

1. Empty the oil drain bottle before starting a recovery. Remove the oil drain bottle from the machine by pulling the bottle straight down — do not use a twisting or rocking motion. Refer to Figure 12.
2. Connect the high-side (red) and low-side (blue) hoses to the vehicle A/C system.
3. Open the coupler valves on the hoses by turning the collars clockwise.
4. Select the recovery function by pressing the **RECOVER** button on the control panel, or by selecting Recovery from the A/C Service Function menu.
5. Perform the VIN entry function.
6. If pressure is detected, the machine will continue. If no pressure is detected, machine will notify user that no refrigerant has been detected. The machine will print the details and a service record will be saved. If no pressure is detected, the system should be vacuumed before proceeding to other service. Ensure that there are no leaks before charging.
7. The machine checks the refrigerant in the vehicle to verify it is R-1234yf and not contaminated. If the refrigerant purity is acceptable, the machine begins the recovery process. A clicking noise indicates a solenoid is opening and closing — this is normal.
8. The machine displays:

---

### RUN DIAGNOSTIC PRESSURES?

---

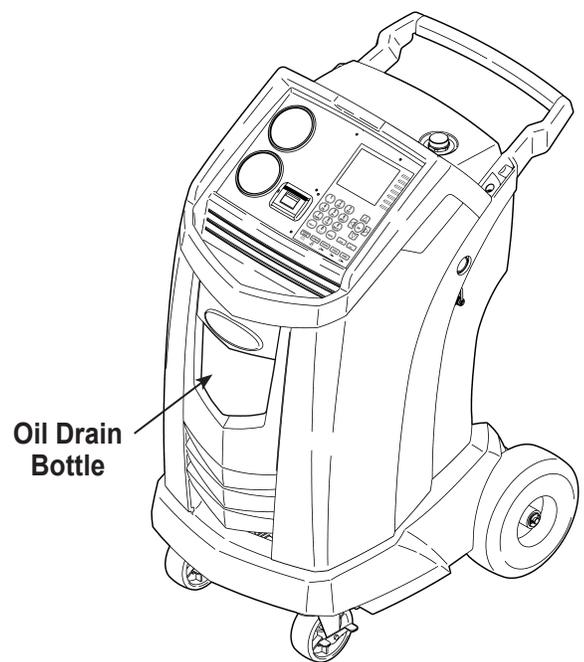
To store and/or print diagnostic pressures at this point, follow the prompts to start the vehicle and set the A/C system according to service manual A/C performance test requirements. Press **OK**.

The machine displays when to capture the values and when they can be printed.

9. The machine runs a self-clearing cycle to clear refrigerant from its internal plumbing.
10. When the system has recovered to 0 psi, the vacuum pump starts and runs until recovery is complete.
11. After oil drain is complete, the machine displays a summary of gas recovered. At this point recovery information and pre-recovery diagnostics can be printed by selecting **OK**.



**WARNING:** To prevent personal injury while working with refrigerant, read and follow the instructions and warnings in this manual, and wear protective equipment such as goggles and gloves.



**Figure 12**

# A/C Service Function

---

The displayed recovered weight can vary depending on ambient conditions and should not be used as an indicator of scale accuracy.

12. The amount of oil that was removed from the A/C system is the amount of new oil that should be charged into the A/C system after evacuation is complete.
- Use only new oil to replace the oil removed during the recycling process.
  - Dispose of used oil according to government regulations.

Recovery is complete.

## Vacuum

1. Connect service hoses to the vehicle's service ports.
2. Open the coupler valves by turning the collars clockwise.
3. Press **VACUUM**.
4. Enter vehicle data (optional). Select **OK** to continue.
5. Press **OK** to accept the default evacuation time, or enter the desired vacuum time using the number keys, and press **OK**.
  - The machine pulls a vacuum on the A/C system for the programmed amount of time. During the vacuum process, the machine will perform an air purge if needed.
  - The machine stops when the specified amount of time has elapsed. At this point vacuum information can be printed by selecting **OK**. Press **ESC** to return to the main menu.



**WARNING:** To prevent personal injury while working with refrigerant, read and follow the instructions and warnings in this manual, and wear protective equipment such as goggles and gloves.

**IMPORTANT:** The unit pulls a deep vacuum on the vehicle A/C system to remove air and boil off moisture that might be present in the system.

**Achievement of a sufficient deep vacuum depends greatly on vacuum pump oil condition. Change vacuum pump oil after 10 hours of pump operation; change vacuum pump oil more frequently if the equipment is used on A/C systems that have been open for extended periods of time.**

*Note: When the vacuum pump has operated for 10 hours, the machine prompts for an oil change. Select **OK** to proceed with an oil change; select **ESC** to continue with the vacuum process. Refer to "Maintain Vacuum Pump Oil" on page 33.*



## Charge

The following tests are automatic and performed as required by SAE J2843:

- vacuum that runs 5–20 minutes to achieve the correct level
- 5-minute vacuum rise test
- 15% charge
- manual leak test using a leak detector certified to SAE J2913

### Notes:

- *J2843 leak testing is intended to find a gross leak before charge, for safety reasons. It is not intended to take the place of other established leak test practices.*
- *To avoid false failures, the temperatures of the vehicle system and the recovery machine should be within  $\pm 5^{\circ}\text{C}$ .*

Refer to the vehicle service manual for specific vehicle instructions.

1. Connect service hoses to the vehicle's service ports and open the couplers.
2. Press **CHARGE**.
3. Enter vehicle data (optional). Select **OK** to continue.
4. The machine displays

<b>1</b>	HP	
<b>2</b>	LP	
<b>3</b>	HP + LP	
<b>7</b>	Refrigerant	0.000 kg

Use the number keys on the keypad to select a HP, LP, or HP / LP charge mode for the vehicle A/C system.

For selection 7, accept the default or enter a value and press **OK** twice. *Note: If the default value is 0.000 kg, a value must be entered to continue.*

5. The machine displays

---

### CHARGING A HIGH VOLTAGE SYSTEM WITH POE OIL?

---

If **OK** is selected, the machine prompts for a Hose Flush procedure. Connect high-side (red) and low-side (blue) service hoses to the storage ports, and open the coupler valves. Press **OK**. If **ESC** is selected, the machine continues with **CHARGE**.



**WARNING:** To prevent personal injury while working with refrigerant, read and follow the instructions and warnings in this manual, and wear protective equipment such as goggles and gloves.

# A/C Service Function

---

6. Move the service hoses to the vehicle's service ports and open the couplers. Press **OK**. The machine performs automatic tests on the system as required by SAE J2843.
7. When prompted, perform a manual leak test using a leak detector certified to SAE J2913. Once the leak test has been completed, **CHARGE** continues.

Moving or bumping the machine at this point can result in an inaccurate charge. When the charge cycle gets close to the desired weight value, the machine slows down. It will charge, settle, charge again, settle, etc.

8. At the end of **CHARGE**, the machine prompts through a Diagnostic Pressures test. The machine displays:

---

## RUN DIAGNOSTIC PRESSURES?

---

To store and/or print diagnostic pressures at this point, follow the prompts to start the vehicle and set the A/C system according to service manual A/C performance test requirements. Press **OK**.

The machine displays when to capture the values and when they can be printed.

This process is optional. Select **ESC** to skip.

9. Follow prompts to equalize liquid refrigerant into the vehicle A/C system for maximum charge accuracy.
10. When prompted, close the coupler valves and remove the service hoses from the A/C system. Install the hoses on machine's storage ports.
11. Press **OK** to begin clearing hoses to prepare the machine for the next service.
12. When the hoses are clear, the display shows a summary of charge results, which can be printed by pressing **OK**.

*Note: Complete service results can be printed at the end of the vehicle's entire service by selecting the vehicle VIN from the **SERVICE JOB DATA** menu.*

The **SERVICE JOB DATA** menu is found by pressing **MENU** and choosing **A/C SERVICE FUNCTIONS**.

The vehicle A/C system is now ready for use.

*Note: The charge process includes an automatic vacuum leak test, after which the system is pressurized with a small amount of refrigerant for a manual leak test.*

- *If the vacuum leak test passes, 15% of the programmed charge will be added for leak testing with an electronic leak detector, and the remainder of the programmed charge is added after passing this test.*
- *If the vacuum leak test fails, 15% of the programmed charge can be added for leak testing, but the leak must be corrected and the process restarted from the beginning.*

---

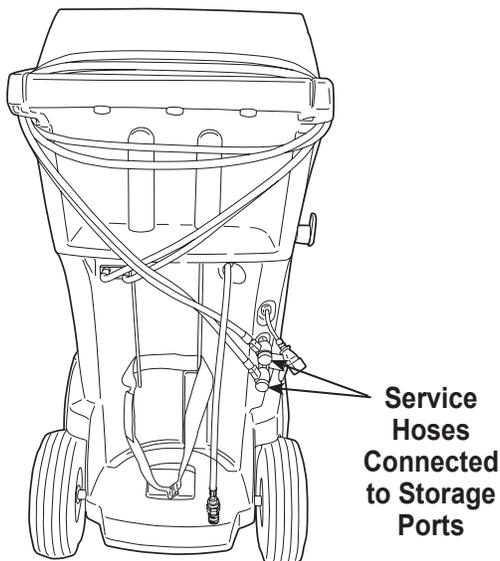
**CAUTION: If the low-side (blue) or high-side (red) coupler valve is left open during the hose clearing process, the system will pull refrigerant back out of the vehicle.**

---

## Hose Flush

Selecting this menu item will cause the machine to flush its internal plumbing and remove any residual oil from previous services. This is useful when servicing systems with incompatible oil types.

1. When prompted, connect the service hoses from the machine to their storage ports and open coupler valves as shown in Figure 13.
2. Check the vacuum pump oil level sight glass and verify the oil level is correct.
3. Open the service couplers by turning the couplers clockwise.
4. The machine performs an internal clearing of its plumbing, and sounds an alarm when complete. Press **OK** to exit.



**Figure 13**



**WARNING:** To prevent personal injury,



- Only qualified personnel may perform inspections and repairs to this machine.



- Read and follow the instructions and warnings in this manual, and wear protective equipment such as goggles and gloves.



- Do not operate the machine when the shroud has been removed.

# Unit Maintenance

## Tank Filling

This menu item is used to transfer refrigerant from a source tank to the ISV. This procedure works only if the ISV contains less than the maximum amount of refrigerant programmed under Tank Fill Adjustment.

*Note: If a source tank is connected to the tank fill hose while the machine is sitting idle, the machine automatically adds refrigerant up to the level set during Tank Fill Adjustment.*

1. Connect an R-1234yf source tank to the tank fill hose at the rear of the machine. See Figure 14.

*Note: The tank fill hose and the tank access port have left-hand threads.*

2. Hand tighten the tank fill hose.
3. Open the tank valve.
4. Mount the source tank on the shelf at the rear of the machine, oriented to supply liquid refrigerant to the connection. Tighten the holding strap around the source tank. Verify the tank does not restrict air flow from the vent.
5. Select **TANK FILLING** from the Unit Maintenance menu. The machine displays

---

FILL AMOUNT

XX.XXX

CONNECT SOURCE TANK TO FILL HOSE

---

6. Press **OK**. The machine checks the refrigerant in the source tank to verify it is R-1234yf and not contaminated. The machine displays the following screens:

---

WARM UP

---

CALIBRATION IN PROGRESS

---

GAS IDENTIFY

---

REFRIGERANT PURITY ACCEPTABLE

---

and after five seconds begins filling the internal storage vessel (ISV).

7. The machine automatically stops when the preset tank fill level is reached. To stop the tank fill before the preset level is reached, select **ESC**.
8. If using a non-refillable tank, the machine must display

---

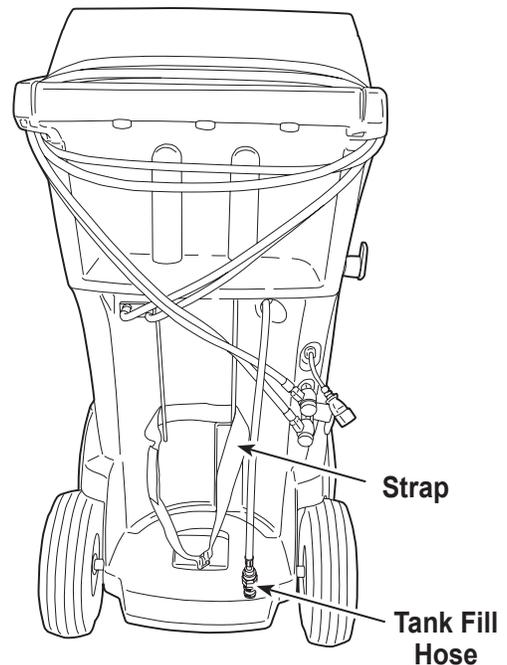
SOURCE TANK EMPTY

---

before the tank can be discarded.



**WARNING:** To prevent personal injury while working with refrigerant, read and follow the instructions and warnings in this manual, and wear protective equipment such as goggles and gloves.



**Figure 14**

*Note: After the tank fill process is complete, the display will not show the same amount as the programmed fill level.*

*The display shows the amount of refrigerant that is **available** for charging, which is approximately 0.91 kg less than the total amount of refrigerant in the tank.*

## Maintain Vacuum Pump Oil

1. Select **MAINTAIN VACUUM PUMP OIL** from the Unit Maintenance menu or when prompted. The display shows how long the vacuum pump has operated since the last oil change.

---

X HOURS X MINUTES  
CHANGE OIL?

---

2. Press **OK**. The machine will display

---

WARMING OIL FOR BETTER DRAINING  
PLEASE WAIT  
X:XX

---

The vacuum pump will run 30 seconds to warm the oil. The display shows

---

OIL CHANGE  
UNIT CLEARING  
WAIT

---

while the compressor runs to eliminate any pressure in the vacuum pump.

3. After the compressor stops, **slowly** open the oil fill cap to verify there is no pressure in the machine. Then carefully remove the cap. See Figure 15.
4. The display shows

---

DRAIN THE OLD OIL  
ADD 150 ML OF NEW OIL  
PRESS OK TO CONFIRM  
PRESS ESC TO EXIT

---

Remove the oil drain fitting cap, and drain the oil into a suitable container for disposal. Replace the cap and close tightly.

5. Slowly add approximately 150 ml of vacuum pump oil to the pump through the oil fill port. Press **OK** to start the vacuum pump.
6. The display shows

---

FILL PUMP TO CENTER OF SIGHT GLASS  
PRESS OK WHEN COMPLETE

---

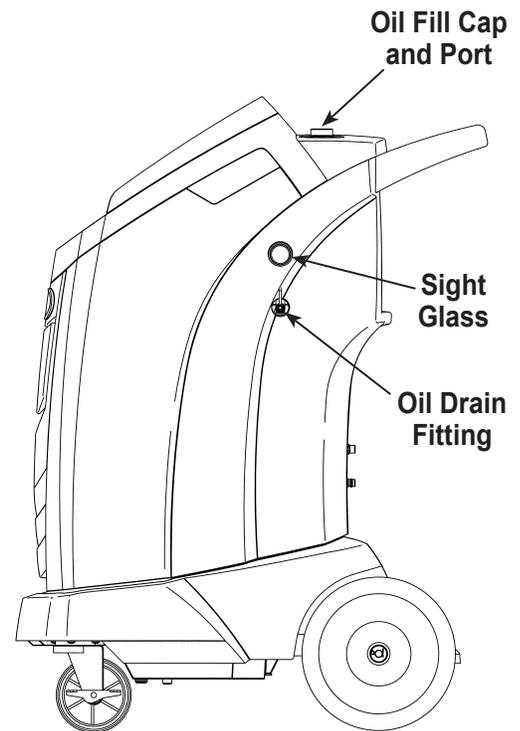
Slowly add vacuum pump oil to the pump through the oil fill port until the oil level rises to the center of the sight glass.

7. Install the cap on the oil fill port and close tightly. Press **OK** to return to the Unit Maintenance menu.

---

**CAUTION:** To prevent personal injury, do **NOT** operate the machine at any other time without the oil fill port cap installed, because the vacuum pump is pressurized during normal operation.

---



**Figure 15**

---

**Caution:** It is the responsibility of the user to monitor vacuum pump oil level and clarity. If contaminated oil is not removed from the vacuum pump and replaced, the vacuum pump will be permanently damaged.

---

# Unit Maintenance

## Maintain Filter

The filter is designed to trap acid and particulates, and to remove moisture from refrigerant. To meet the mandate for adequate moisture and contaminant removal, the filter must be replaced after 150 kg (331 lb.) of refrigerant has been filtered.

The machine gives a warning when 100 kg (220 lb.) of the filter capacity has been used; the machine locks down when the 150 kg (331 lb.) filter capacity has been reached and will no longer function.

---

**⚠ WARNING:** Components in the machine are under high pressure. To prevent personal injury, change the filter only when the machine prompts.

---

## Check Remaining Filter Capacity

1. Select **MAINTAIN FILTER** from the Unit Maintenance menu or when the machine prompts. The machine displays the amount of filter capacity remaining until the machine locks down.
2. When prompted, select **OK** to change the filter; select **ESC** to resume using the machine.

## Replace the Filters and Sample Hose Assembly

1. If **OK** was selected to change the filter, the machine clears the filter, then prompts for the new filter code to be entered. Use the keypad to enter the serial number that appears on the new filter and select **OK**. If **SERIAL NUMBER IS NOT VALID** is displayed, the serial number has been incorrectly entered, or the filter has already been used in this machine.
2. The machine displays

---

TURN UNIT OFF  
REMOVE SHROUD AND REPLACE FILTER,  
IDENTIFIER FILTER, AND  
IDENTIFIER SAMPLE HOSE ASSEMBLY

---

Shut off the machine. Remove the oil bottle. Remove the four screws holding the shroud. See Figure 16.



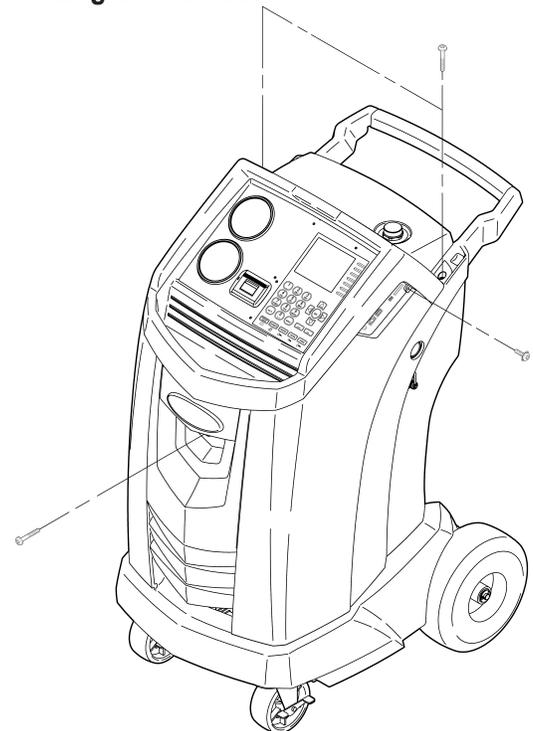
**WARNING:** To prevent personal injury while working with refrigerant, read and follow the instructions and warnings in this manual, and wear protective equipment such as goggles and gloves.

---

**Caution:** To prevent equipment damage, use only authentic Robinair No. 34724 filters in this machine. All performance tests and claims are based on using this specific filter.

---

Remove the four screws holding the shroud.



**Figure 16**

3. Hang the shroud on the back of the machine as shown in Figure 17.
4. Remove the filter by turning it counterclockwise (as viewed from the bottom of the filter).
5. Look at the new filter—verify both o-rings are lubricated and correctly located in the grooves as shown in Figure 18.
6. Install the new filter by threading it clockwise into place. Tighten the filter to 20 N•m.

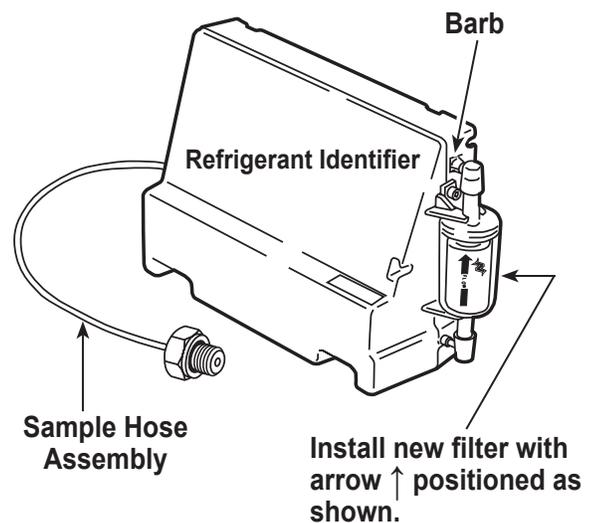
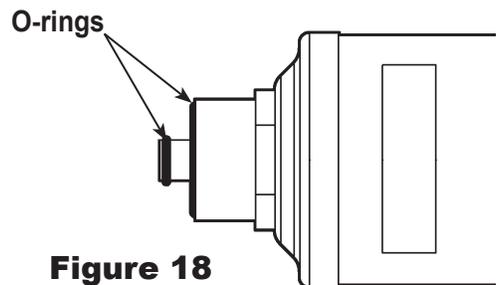
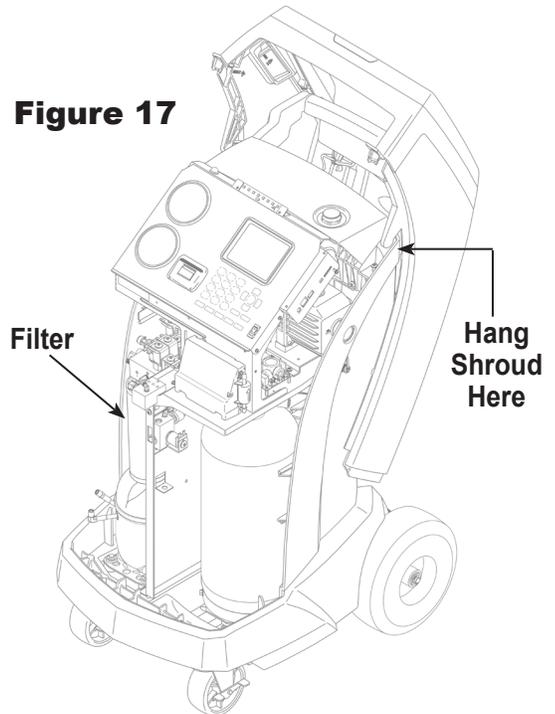
## Refrigerant Identifier

The refrigerant identifier samples refrigerant going into the ISV to verify it is R-1234yf and not contaminated. Replace the sample hose assembly during every filter change and also if prompted by an error message saying the hose is clogged. See Figure 19.

1. Disconnect the existing sample hose assembly between the solenoid and the refrigerant identifier, and install a new sample hose assembly.

*Note: If the filter is any color but white, the filter needs to be replaced also.*

2. Pull the filter out of the brackets while removing the barbs from the rubber connectors.
3. Install a new filter with the arrow pointing upward as shown. Push the filter barbs into the rubber connectors.
4. Install the shroud on the machine and switch the power ON.



**Figure 19**

Replace the sample hose assembly during every filter change.

# Unit Maintenance

---

## Calibration Check

This function is used to ensure the machine's internal scale is always calibrated. During this test, use only the calibration weight that is provided with the machine.

1. Select **CALIBRATION CHECK** in the Unit Maintenance menu. The machine displays

---

ATTACH WEIGHT TO BOTTOM OF MACHINE  
PRESS OK TO CONFIRM PRESS ESC TO QUIT

---

2. Refer to Figure 20, and verify the magnet on the bottom of the machine is clean.
3. Attach the calibration weight to the magnet on the bottom of the machine. Select **OK**.
  - If the display shows

---

PROCEDURE COMPLETED

---

the scale is in calibration. Select **OK**.

- If the display shows

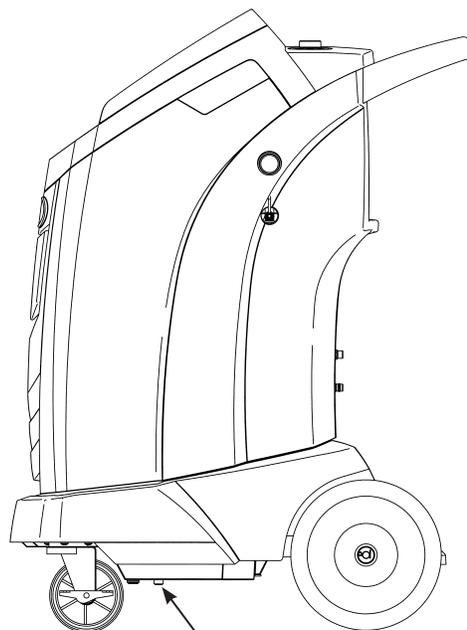
---

CALIBRATION REJECTED

---

the scale is out of calibration. Contact an authorized Robinair service center for assistance.

4. Remove the calibration weight from the scale.



Magnet

**Figure 20**

## Refrigerant Management

This Unit Maintenance menu item displays the amount of refrigerant recovered, charged, and replenished (for the life of the machine), and filtered since the last filter change.

## Air Purge Info

This Unit Maintenance menu item displays the internal storage vessel (ISV) pressure and temperature. Use this information to check the ISV for excessive pressure.

## Backlight

Select this Unit Maintenance menu item and use the left and right arrow keys to adjust the contrast on the display screen.

## Replace Service Hoses and/or Service Couplers

Ensure pressure has been removed from service hoses before disconnecting a hose or coupler from the machine. Pressure gauges must read at or below 0 psig.

If pressure exists, recover the refrigerant from the hoses before disconnecting a hose or coupler.

1. The machine performs a 30 second vacuum to ensure hoses are empty.
2. The machine displays

---

DISCONNECT OLD HOSES AND  
REPLACE WITH NEW HOSES  
PRESS OK TO CONTINUE  
PRESS ESC TO EXIT

---

Remove and replace old service hoses. Press **OK**.

3. The unit directs the user to connect hoses to the storage ports and press **OK** to begin unit conditioning.
4. A vacuum is performed on the unit until excess air has been removed from the service hoses.
5. The machine is now ready to use.

# Maintenance Procedures

---

## General Maintenance

Wipe off the machine often using a clean cloth to remove grease and dirt.

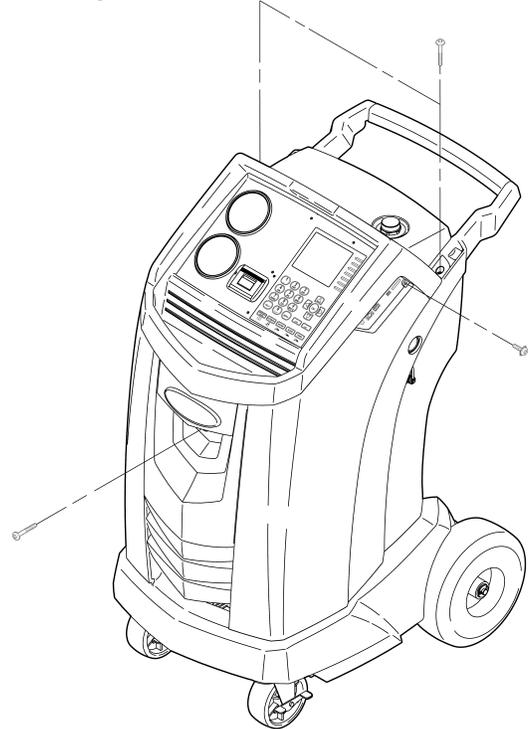
Periodically check hoses and connections for leakage. Use a J2913 electronic leak detector to check fittings when the unit has been disconnected from its power source and the shroud has been removed. If a leak is detected and cannot be repaired, contact a Robinair authorized service center.

## Electrical Protection

The machine may be equipped with a fuse located inside the front shroud. Try to determine the cause of the fuse failure, such as an incorrect power source or an extension cord that is too long.

1. Disconnect the machine from its power source.
2. Remove the oil drain bottle.
3. Remove the four screws shown in Figure 21, and remove the shroud.
4. Locate the fuse on the center sheet metal. Replace the fuse with the same amperage and type.
5. Replace the shroud and the oil bottle.

Remove the four screws holding the shroud.



**Figure 21**

## Replace the Oxygen Sensor in the Refrigerant Identifier

The refrigerant identifier in the machine contains a replaceable oxygen sensor that can affect the way the machine works if the sensor is not functioning correctly.

- If the machine displays the following message, immediately replace the oxygen sensor:

---

OPERATING TIME OF THE IDENTIFIER AND UNIT  
ARE LIMITED  
REPLACE ID O2 SENSOR SOON  
UNIT WILL BECOME NONFUNCTIONAL

---

- If the machine displays the following message, the oxygen sensor has expired. Neither the identifier nor the machine is able to recover or add refrigerant to the internal tank.

---

ANALYZER ERROR 6  
O2 SENSOR FAILURE  
SENSOR MUST BE REPLACED  
UNIT WILL NOT RECOVER OR ALLOW TANK FILL  
SEE MANUAL

---

### Replacement Procedure

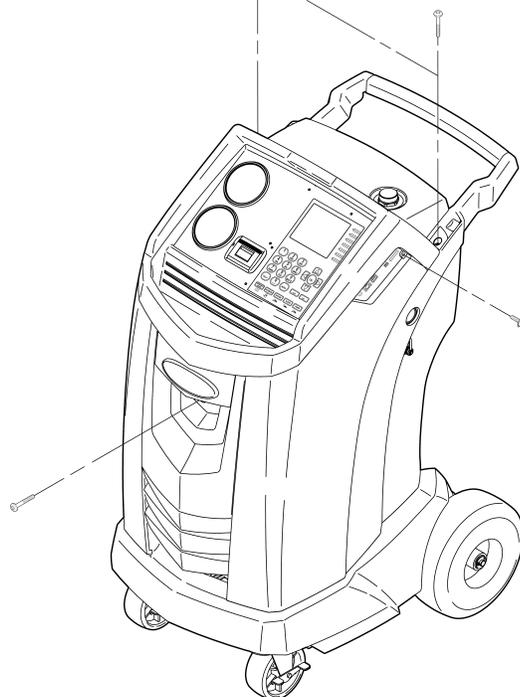
1. Disconnect the machine from its power source.
2. Remove the oil bottle, and remove the four screws holding the shroud. See Figure 22. Hang the shroud on the back of the machine.
3. Disconnect the wire harness, USB connector, and sample hose from the identifier. See Figure 23.
4. Remove the two screws holding the identifier to the machine, and remove the identifier.
5. Carefully pry the oxygen sensor cap from the housing. Gently pull on the cap and wires until the connector exits the housing.

---

**CAUTION:** The wire connected to the cap is connected internally to the identifier. To prevent equipment damage, do NOT pull on this wire.

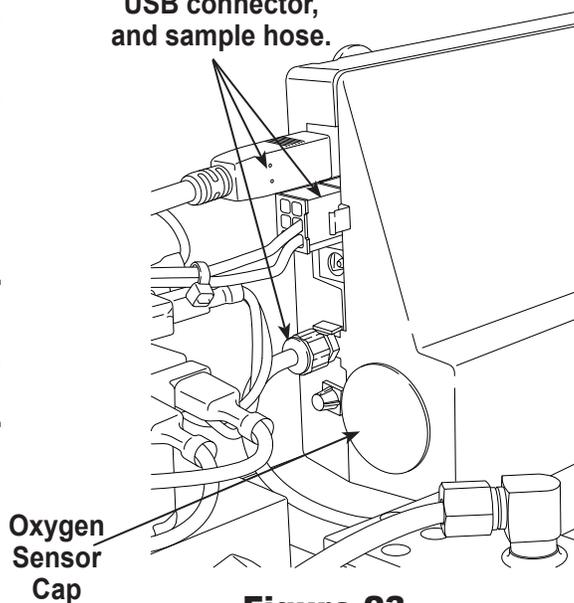
---

Remove four screws holding shroud.



**Figure 22**

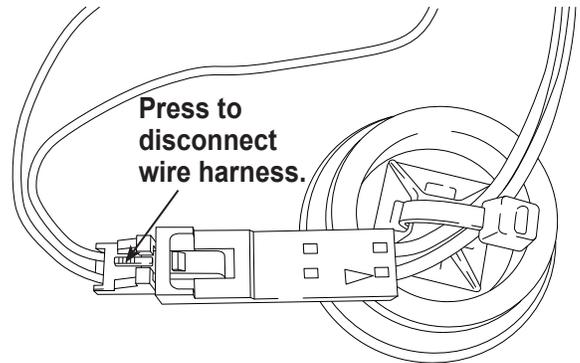
Disconnect wire harness, USB connector, and sample hose.



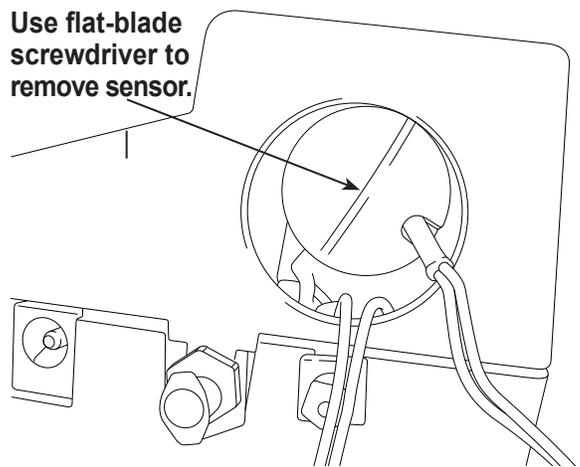
**Figure 23**

# Maintenance Procedures

6. Disconnect the wire harness at the connector by pressing on the center tab. Pull the connectors apart. See Figure 24.
7. Move the cap and harness aside. Hold the lead from the sensor, and use a flat-blade screwdriver to unthread and remove the oxygen sensor. See Figure 25.
8. Remove the pink protective film from the threaded end of the new oxygen sensor.
9. Install the new oxygen sensor, using the screwdriver to thread it into place. Tighten the sensor to 4 in. lb.
10. Reconnect the lead at the connector, and tuck the wires into the opening.
11. Replace the cap and push until it “clicks” into place. Install the identifier onto the machine, and reconnect the wire harness, USB connector, and sample hose.
12. Verify the wiring is not binding, and replace the shroud.



**Figure 24**



**Figure 25**

## Tank Fill Hose Filter Service

The tank fill hose at the rear of the machine (see Figure 26) contains a filter that can be cleaned when it appears that refrigerant flow is restricted.

When the machine senses low flow, it can display one of the following messages:

- SOURCE TANK EMPTY, but the source tank is known to contain refrigerant, connections are secure, and the source tank valve is open.
- REPLACE IDENTIFIER FILTER, but the refrigerant identifier filter is known to be unrestricted, the source tank contains refrigerant, connections are secure, and the source tank valve is open.

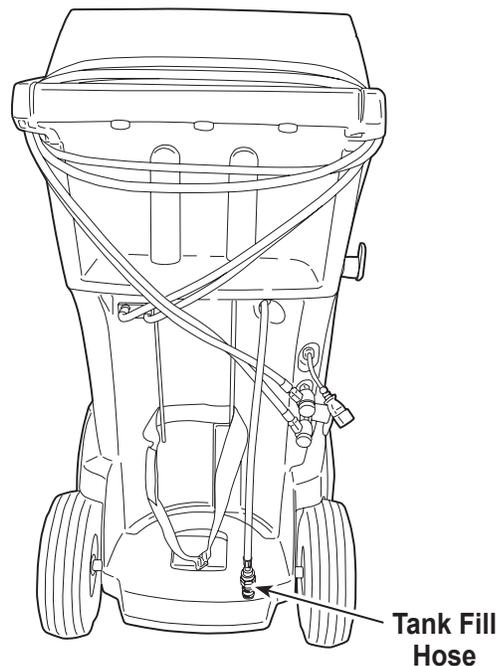
The tank fill hose filter might be plugged.

## Cleaning the Tank Fill Hose Filter

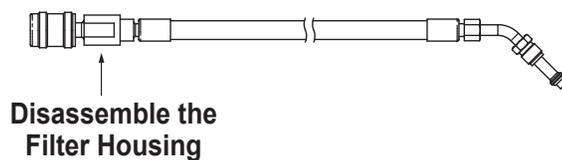
1. First ensure that pressure does not exist in the line. Disconnect the external source tank, and perform a manual tank fill to capture any refrigerant in the line.
2. Disassemble the tank fill hose at the filter housing as shown in Figure 27.
3. Remove the filter. The recommended method to remove debris from the filter is by using air pressure.

*Note: If a solvent is used, allow adequate drying time before reassembly.*

4. After the filter has been installed back into the filter housing, torque the housing assembly to 8.5 N•m (6 ft. lb.).



**Figure 26**



**Figure 27**

# Maintenance Procedures

## Edit Print Header

To make changes to the text that appears in the header on each printout:

1. Select **DEALER INFO** from the Unit Setup menu.
2. Use the arrow key to move to the field that needs to be changed.
3. Press the **Menu** key to display a virtual keyboard.
4. Use the arrow keys to move around the keyboard. Press **OK** to enter a character.
5. Press the **Menu** key to exit the keyboard and move to the next fill field.
6. Press **OK** to save the data and press **ESC** to exit the keyboard.
7. This procedure is explained in more detail in “Dealer Info” on page 13.

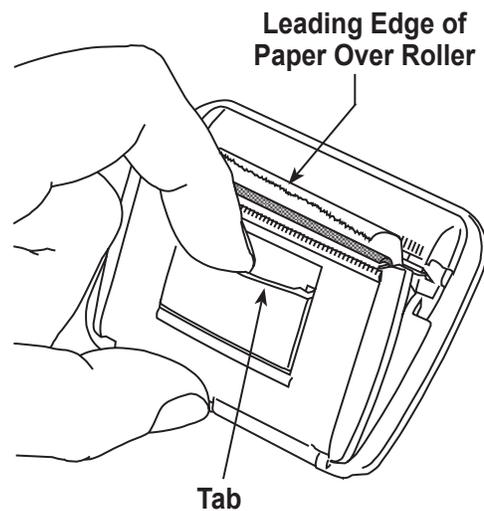
Garage	<input type="text"/>
Address	<input type="text"/>
City	<input type="text"/>
Tel	<input type="text"/>
Fax	<input type="text"/>
E-mail	<input type="text"/>

**Figure 28**

## Replace Printer Paper

To install a new paper roll in the printer:

1. Remove the cover on the printer by pulling out on the tab as shown in Figure 29.
2. Remove the paper core.
3. Install the new roll of paper with the end of the paper at the top of the roll.
4. Assemble the cover onto the printer with the leading edge of the paper over the roller.



**Figure 29**

# Replacement Parts and Glossary

## Replacement Parts

Component	Replacement Part No.
Calibration Weight	16214
Contaminated Refrigerant Tank ( <i>optional</i> )	17990
Filter	34724
Filter Maintenance Kit ( <i>includes filter and vacuum pump oil</i> )	13172
Identifier Filter	16913
Identifier Oxygen Sensor	16916
Identifier Sample Hose Assembly	16106
Oil Drain Bottle	19100
Printer Paper (1 roll)	34214
Service Coupler, High-Side ( <i>red</i> )	18123
Service Coupler, Low-Side ( <i>blue</i> )	18122
Service Coupler Set ( <i>high-side [red] and low-side [blue] couplers</i> )	18124
Service Hose ( <i>low-side, blue</i> )	70123
Service Hose ( <i>high-side, red</i> )	70124
Service Hose Set ( <i>high-side [red] and low-side [blue] hoses</i> )	71234
Tank Fill Hose Filter	10233
Vacuum Pump Oil ( <i>quart</i> )	13203
Vacuum Pump Oil ( <i>gallon</i> )	13204
Vinyl Dust Cover ( <i>optional</i> )	17499

 **CAUTION:** To prevent personal injury, use only those repair parts called out in this parts list. Items found in this parts list have been carefully tested and selected by Robinair.

Contact Robinair Customer Service (1-800-533-6127) for more information regarding the replacement parts listed here.

## Glossary

**A/C System :** The vehicle air conditioning system being serviced.

**Evacuation :** Moisture and other non-condensables are removed from an A/C system by a vacuum pump capable of pulling the system to 0.5 mbar absolute.

**Internal Storage Vessel (ISV) :** The refillable refrigerant storage tank designed specifically for this machine; 9.50 kg (20.94 lb.) capacity.

**Leak Test (Vacuum) :** Components containing refrigerant are evacuated and monitored for pressure rise, which could indicate a leak.

**Machine :** Model No. AC1234-6

**PAG :** Polyalkylene Glycol

**POE :** Polyolester Oil

**Recovery / Recycling :** Refrigerant is recovered from an A/C system, filtered, and stored in the ISV.

**Refrigerant :** R-1234yf

# Troubleshooting Messages

Display	Cause	Solution
AIR CALIBRATION LOW	Possible refrigerant in external calibration air.	<i>Check air ventilation and air flow.</i>
AIR FLOW ERROR	Fan is not working. Air flow is blocked.	<i>Exit current test. Contact Robinair authorized service center.</i>
CHARGE IN PROGRESS AIR PURGE	Non-condensable gas is present in ISV that could contaminate A/C system.	<i>Before it charges, the machine purges air out of the ISV.</i>
EXHAUST CLOGGED	Identifier exhaust port obstructed.	<ol style="list-style-type: none"> <li>1. <i>Check exhaust port for obstructions.</i></li> <li>2. <i>Contact Service.</i></li> </ol>
HIGH OUTPUT	Possible electromagnetic or RF (radio frequency) interference.	<i>Move unit away from EMF or RFI sources.</i>
IDENTIFIER FILTER AND SAMPLE TUBE MAY NEED REPLACEMENT	<ol style="list-style-type: none"> <li>1. Insufficient refrigerant flow to identifier.</li> <li>2. Sample hose or filter inside refrigerant identifier is plugged or contaminated with oil.</li> </ol>	<ol style="list-style-type: none"> <li>1. <i>Check source tank for pressure and secure valve connections.</i></li> <li>2. <i>Refer to "Maintain Filter" on page 34 to change identifier filter and sample hose.</i></li> </ol>
IDENTIFIER OUT OF TEMPERATURE RANGE	Identifier temperature outside operating range.	<i>Check unit ventilation and ambient conditions.</i>
INSUFFICIENT PRESSURE	If pressure is less than 0.7 bar, refrigerant cannot be identified.	<i>Refer to the "Vacuum" on page 28 and follow instructions to evacuate system.</i>
INSUFFICIENT REFRIGERANT	After selecting <b>CHARGE</b> and entering a desired weight, if the weight entered will leave less than .91 kg (2 lb.) of refrigerant in ISV after charge, charge function will not start.	<i>Refer to "Tank Filling" on page 32.</i>
ISV CONDITION	Machine is circulating refrigerant to build ISV pressure for a charge cycle.	<i>Charge process is automatically interrupted and machine operates in a mode to build tank pressure. Once tank pressure is sufficient, machine automatically completes charge.</i>
OIL OUT OF LIMIT	Vacuum pump has run for 10 hours; vacuum pump oil should be replaced.	<i>Refer to "Maintain Vacuum Pump Oil" on page 33 for instructions.</i>
PRESSURE TOO HIGH	Excessive pressure has been detected.	<i>Press <b>ESC</b>. Refer to "Recovery" on page 27 and recover refrigerant before proceeding.</i>

# Troubleshooting Messages

Display	Cause	Solution
PURITY TEST FAILED	Refrigerant in vehicle is either not R-1234yf or it is contaminated.	<i>Refer to “Setup, Tank Fill, and Background Tank Fill Functions” on page 46. Use 27500 external recovery machine to recover refrigerant.</i>
PURITY TEST FAILED XX% AIR	<ol style="list-style-type: none"> <li>1. Insufficient refrigerant flow to identifier.</li> <li>2. Excessive air in source tank.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check source tank for pressure and secure valve connections.</li> <li>2. Replace source tank with good refrigerant.</li> </ol>
SOURCE TANK EMPTY	<ol style="list-style-type: none"> <li>1. Machine senses low pressure.</li> <li>2. Filter in tank fill hose is plugged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the source tank for pressure and secure valve connections.</li> <li>2. Refer to “Tank Fill Hose Filter Service” on page 41.</li> </ol>
SYSTEM PRESSURE TOO LOW TO CONTINUE	If pressure is less than 0.7 bar, the refrigerant cannot be identified.	<i>If vehicle is very cold, allow vehicle to warm up and retest. Otherwise enter Vacuum mode and evacuate system.</i>
UNSTABLE OUTPUT	<ol style="list-style-type: none"> <li>1. Insufficient refrigerant flow to identifier.</li> <li>2. Possible electromagnetic or RF (radio frequency) interference.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check source tank for pressure and secure valve connections.</li> <li>2. Move unit away from EMF or RFI sources.</li> </ol>
VACUUM DECAY TEST FAILED	A leak in the vehicle A/C system.	<i>Exit current test and perform repairs on the vehicle A/C system.</i>

# Troubleshooting Procedures

## Setup, Tank Fill, and Background Tank Fill Functions

### Display Message: Purity Test Failed

During **SETUP**, **TANK FILL**, or **BACKGROUND TANK FILL**, if the machine displays

---

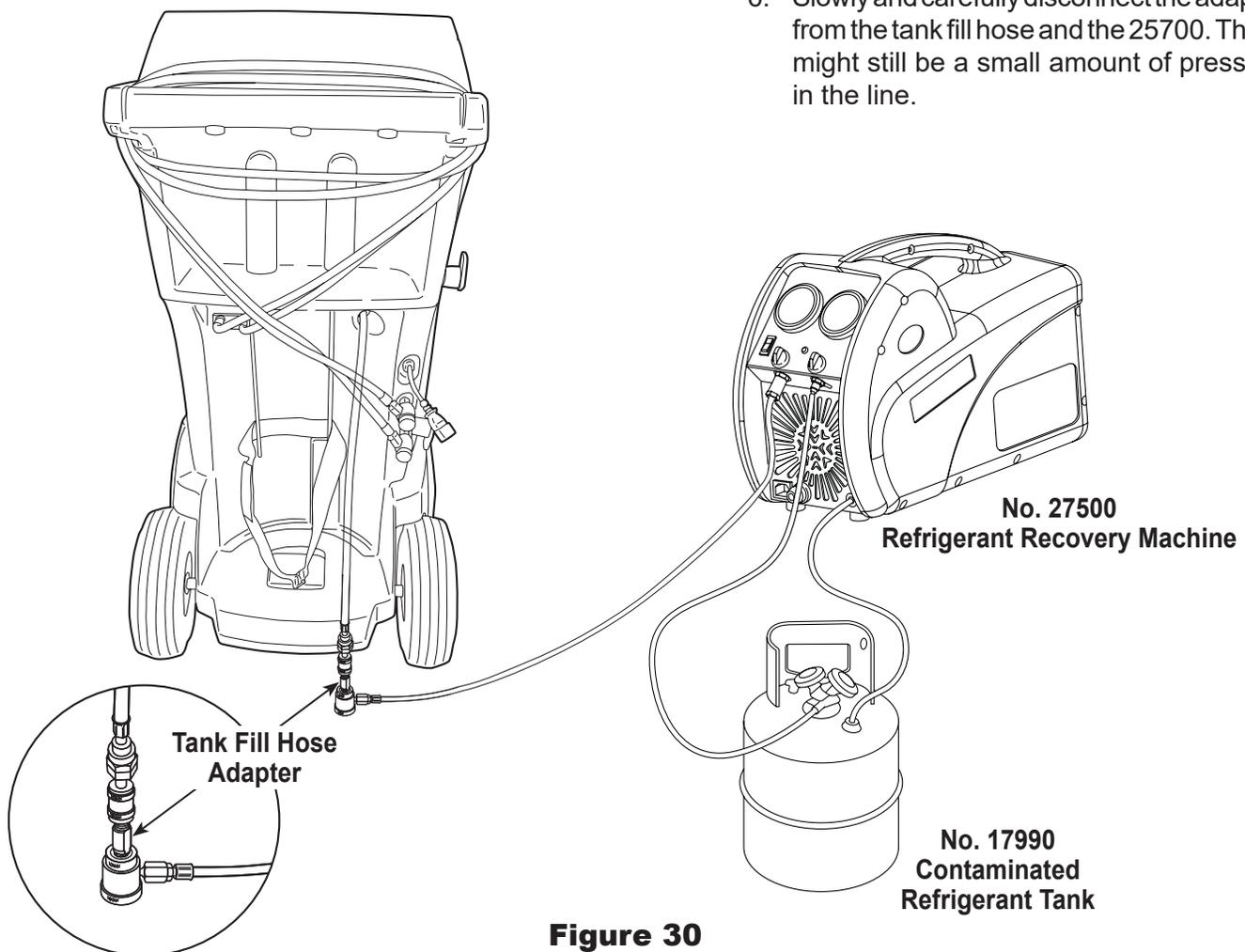
PURITY TEST FAILED  
RECOVER CONTAMINATED  
REFRIGERANT FROM SYSTEM  
AND HOSES.  
OK TO RETRY ESC TO QUIT

---

the refrigerant in the source tank is either not R-1234yf or it is contaminated. In either case, it should not be added to the internal storage vessel (ISV) in the machine. The contaminated refrigerant sampled by the refrigerant identifier in the machine must be removed.

A refrigerant recovery machine (No. 25700) dedicated to contaminated refrigerant is required for the following steps. Refer to Figure 30.

1. Connect the tank fill hose adapter (provided in the Accessory Kit) to the low-side coupler of the 25700 refrigerant recovery machine.
2. Connect the other end of the adapter to the tank fill hose fitting on the machine.
3. Connect the discharge hose from the 25700 to a tank specified to receive contaminated refrigerant.
4. Start the 25700 and open the coupler valve. Run a recovery until the gauge on the 25700 indicates vacuum.
5. Shut off the 25700.
6. Slowly and carefully disconnect the adapter from the tank fill hose and the 25700. There might still be a small amount of pressure in the line.



**Figure 30**

# Troubleshooting Procedures

## Recovery Function or Automatic Function

### Display Message: Purity Test Failed

During the **RECOVERY** function or **AUTOMATIC RECOVERY** function, if the machine displays

---

PURITY TEST FAILED  
RECOVER CONTAMINATED  
REFRIGERANT FROM SYSTEM  
AND HOSES.  
OK TO RETRY ESC TO QUIT

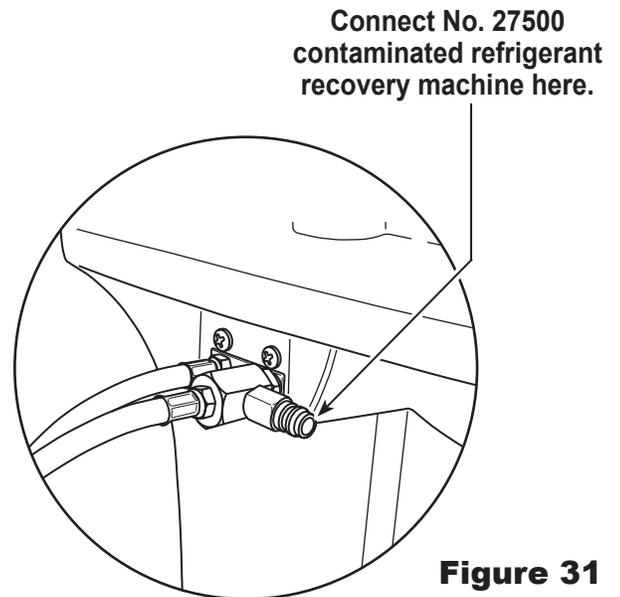
---

the refrigerant in the source tank or in the vehicle A/C system is either contaminated or it is not R-1234yf. In either case, it should not be added to the internal storage vessel in the machine.

The contaminated refrigerant sampled by the refrigerant identifier in the machine must be removed.

**A refrigerant recovery machine (No. 25700) dedicated to contaminated refrigerant is required for the following steps:**

1. With the machine still connected to the vehicle and the couplers open, connect the low-side (blue) coupler from the 25700 to the contaminant recovery port on the back of the machine. See Figure 31. Open the coupler valves.
2. Connect the discharge hose from the 25700 to a tank designed to receive contaminated refrigerant.
3. Start the 25700 and run a recovery according to instructions supplied with the machine.
4. Upon achieving a vacuum in the vehicle (or per recovery machine instructions), disconnect the 25700 from the machine.
5. Clear the vehicle of residual contamination according to the vehicle manufacturer's instructions before continuing service.



**Figure 31**

# Troubleshooting Procedures

---

## Recovery Function

### Display Message: System Pressure

If system pressure is below 0 bar gauge, until pressure increases, the display reads

---

NO REFRIGERANT DETECTED  
SYSTEM PRESSURE  
TOO LOW TO CONTINUE  
PRESS OK TO PRINT OR  
PRESS ESC TO QUIT

---

Verify high-side (red) and low-side (blue) hoses are connected and coupler valves open. Press **OK** to print results or **ESC** to exit.

### Display Message: Filter Weight XXX LB

If 100 kg (220 lb.) or more of refrigerant has been recovered since last filter change, display reads

---

FILTER WEIGHT XXX LB

---

To meet requirements, it is mandatory to replace the filter after 150 kg (331 lb.) of refrigerant has been filtered. The machine gives a warning to replace the filter when filter weight reaches 100 kg (220 lb.); when filter weight reaches 150 kg (331 lb.), the machine locks out and ceases to operate. Refer to "Maintain Filter" on page 34.

### Display Message: Identifier Filter and Sample Tube May Need Replacement

If the machine displays

---

IDENTIFIER FILTER AND SAMPLE TUBE MAY  
NEED REPLACEMENT

---

the filter inside the refrigerant identifier needs to be replaced. Press **OK** to confirm, and refer to "Maintain Filter" on page 34.

## Vacuum Function

### Display Message: Pressure Too High

Before the machine begins evacuating the A/C system, it checks for pressure in the system that might damage the vacuum pump. If pressure greater than 0.7 bar is detected, the machine displays

---

PRESSURE TOO HIGH  
CHECK CONNECTIONS

---

Select **OK**, and recover refrigerant before proceeding.

To ensure an accurate leak test, it is imperative that a thorough recovery and evacuation of the system be performed. During the recovery process, cold spots can develop in the A/C system. Pockets of refrigerant in desiccant and in system oil will continue to vaporize as the A/C system temperature equalizes toward ambient. As this occurs, A/C system pressure will increase, which can be interpreted by the machine as a leak. This will vary somewhat with ambient temperature conditions.

# Troubleshooting Procedures

---

## Automatic Function, System Flush, or Charge Function

### Display Message: Insufficient Refrigerant

If the weight entered is more than the refrigerant available in the ISV, the charge function will not start. The display reads

---

INSUFFICIENT REFRIGERANT

---

Refer to “Tank Filling” on page 32.

### Display Message: Pressure Too High

Before the machine begins evacuating the A/C system during the automatic sequence, it checks for any pressure in the system that can damage the vacuum pump. If pressure is detected, the machine displays

---

PRESSURE TOO HIGH

---

Press **ESC**. Recover refrigerant before proceeding.

### Display Message: Leak Test Failed

If a leak is detected, the machine displays

---

LEAK TEST FAILED  
PRESS OK TO RETRY

---

Press **ESC** to exit the sequence and perform needed repairs.  
Press **OK** to retry the leak test.

### Display Message: PURITY TEST FAILED

Refer to “Recovery Function or Automatic Function” on page 47.

# Storage and Transportation of Equipment

---

## Storage

Never leave the machine live if an immediate use is not scheduled.

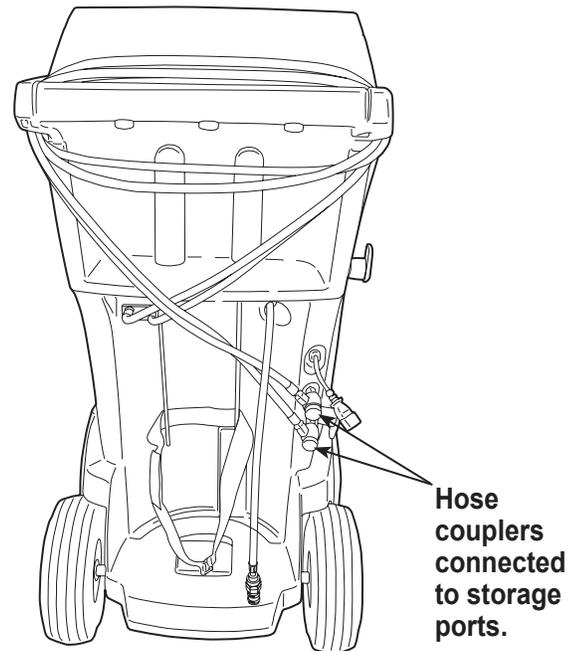
1. Disconnect the machine from its power supply.
2. Loop the service hoses around the handle twice and attach them to the storage ports. See Figure 32.
3. Store the machine in a dry, stable area, away from flames and hot surfaces. The temperature of the storage area should range between  $-18^{\circ}\text{C}$  and  $66^{\circ}\text{C}$  ( $0^{\circ}\text{F}$  and  $150^{\circ}\text{F}$ ).
4. Lock the front wheels.

## Transportation of Equipment

---

**⚠ WARNING:** To prevent personal injury should the machine require transport to a local Robinair service center, follow local government regulations regarding transportation of equipment containing R-1234yf.

---



**Figure 32**

# Disposal of Equipment

---



At the end of its useful life, dispose of the R-1234yf machine according to current government regulations.

- Public administration and producers of electrical / electronic equipment (EEE) are involved in facilitating the processes of the re-use and recovery of waste electrical / electronic equipment through the organization of collection activities and the use of appropriate planning arrangements.
- Do not dispose of this equipment as miscellaneous solid municipal waste. Arrange to have it collected separately. Unauthorized disposal of waste electrical / electronic equipment is punishable by law with appropriate penalties.
- The reuse and correct recycling of electrical / electronic equipment (EEE) is required for the protection of the environment and the well-being of humans.

## Disposal of Recycled Materials

It is the responsibility of the user to determine if a material is a hazardous waste at the time of disposal. The user must ensure compliance with all applicable laws and regulations.

1. Deliver the refrigerant recovered from A/C systems to gas suppliers for recycling or disposal.
2. Deliver the lubricants extracted from A/C systems to used oil collection centers.
3. Review the laws in your jurisdiction to determine correct disposal procedures for pump oil.

## Disposal of the Machine

1. Detach and vent the gas from the machine circuit. Completely discharge the refrigerant tank in compliance with current government regulations.
2. Deliver the machine to an appropriate disposal center.

## Disposal of Batteries



At the end of their useful life, dispose of batteries according to current government regulations. Batteries must be recycled or disposed of correctly. Do not throw away batteries as part of normal refuse disposal.



**WARNING: To prevent personal injury, do not throw batteries into open flame.**

---

---

## Limited Warranty Statement

Rev. May 15, 2015

This product is warranted to be free from defects in workmanship, materials, and components for a period of one year from date of purchase. All parts and labor required to repair defective products covered under the warranty will be at no charge. The following restrictions apply:

1. The limited warranty applies to the original purchaser only.
2. The warranty applies to the product in normal usage situations only, as described in the Operating Manual. The product must be serviced and maintained as specified.
3. If the product fails, it will be repaired or replaced at the option of the manufacturer.
4. Transportation charges for warranty service will be reimbursed by the factory upon verification of the warranty claim and submission of a freight bill for normal ground service. Approval from the manufacturer must be obtained prior to shipping to an authorized service center.
5. Warranty service claims are subject to authorized inspection for product defect(s).
6. The manufacturer shall not be responsible for any additional costs associated with a product failure including, but not limited to, loss of work time, loss of refrigerant, cross-contamination of refrigerant, and unauthorized shipping and/or labor charges.
7. All warranty service claims must be made within the specified warranty period. Proof-of-purchase date must be supplied to the manufacturer.
8. Use of recovery/recycling equipment with unauthorized refrigerants or sealants will void warranty.

- Authorized refrigerants are listed on the equipment or are available through the Technical Service Department.

- The manufacturer prohibits the use of the recovery/recycling equipment on air conditioning (A/C) systems containing leak sealants, either of a seal-swelling or aerobic nature.

### **This Limited Warranty does NOT apply if:**

- The product, or product part, is broken by accident.
- The product is misused, tampered with, or modified.
- The product is used for recovering or recycling any substance other than the specified refrigerant type. This includes, but is not limited to, materials and chemicals used to seal leaks in A/C systems.

## Declaración de garantía limitada

Revisión del 15 de mayo de 2015

Se garantiza que este producto no posee defectos de mano de obra, materiales y componentes por el período de un año a partir de la fecha de compra. Todas las partes y mano de obra requerida para reparar los productos con defecto cubiertos bajo la garantía no tendrán costo. Aplican las siguientes restricciones:

1. La garantía limitada aplica al comprador original únicamente.
2. La garantía aplica al producto en situaciones de uso normal únicamente, como lo indica el Manual de funcionamiento. Al producto se le debe dar servicio y mantenimiento como se especifica.
3. Si falla el producto, se debe reparar o reemplazar a discreción del fabricante.
4. Los cargos de transporte de servicio de garantía serán reembolsados por la fábrica al verificar el reclamo de garantía y presentar una boleta de flete por servicio terrestre regular. Se debe obtener la aprobación del fabricante antes de hacer el envío a un centro de servicio autorizado.
5. Los reclamos de servicio de garantía están sujetos a inspección de defectos del producto.
6. El fabricante no será responsable de los costos adicionales relacionados con fallas en el producto, que incluyen pero no se limitan a, tiempo improductivo, pérdida de refrigerante, contaminación de refrigerante y envío no autorizado o cargos por mano de obra.
7. Todo reclamo de servicio de garantía se debe hacer dentro del período de garantía establecido. Se debe proporcionar la fecha de la prueba de compra al fabricante.
8. El uso de equipo de recuperación/reciclaje con refrigerantes o selladores no autorizados anula la garantía.

- Los refrigerantes autorizados se indican en el equipo o están disponibles a través del Departamento de servicio técnico.

- El fabricante prohíbe el uso de equipo de recuperación/reciclaje en sistemas de aire acondicionado (A/C) con fugas de sellador, ya sea porque un sello se infla o es de naturaleza aeróbica.

### **Esta garantía limitada NO aplica si:**

- El producto, o parte de éste, se rompe accidentalmente.
- El producto se usa incorrectamente, se adultera o modifica.
- El producto se usa para recuperar o reciclar cualquier sustancia que sea diferente al tipo de refrigerante establecido. Esto incluye, pero no se limita a materiales y productos químicos utilizados para sellar fugas en sistemas de A/C.

## Énoncé de la garantie limitée

Révisée le 15 er mai 2015

Ce produit est couvert contre les défauts de matériau, de fabrication et de composant pendant un ans à compter de la date d'achat. Toutes les pièces et la main-d'œuvre nécessaires aux réparations sous garantie sont sans frais. Toutefois, les restrictions suivantes s'appliquent :

1. La garantie limitée s'applique uniquement à l'acheteur initial.
2. La garantie s'applique uniquement au produit utilisé dans des conditions de fonctionnement normales conformément au manuel d'utilisation. Il doit être réparé et entretenu conformément aux spécifications.
3. Si le produit subit une défaillance, il sera réparé ou remplacé à la discrétion du fabricant.
4. Les frais de transport pour les réparations sous garantie sont remboursés par l'usine après l'évaluation de la réclamation au titre de la garantie et après la soumission d'une facture de transport terrestre standard. L'approbation du fabricant est requise avant l'expédition du produit à un atelier de réparation autorisé.
5. Les réclamations au titre de la garantie sont sujettes à l'inspection du produit défectueux par un personnel autorisé.
6. Le fabricant ne peut être tenu responsable pour tout coût supplémentaire lié à la défaillance du produit incluant, sans toutefois s'y limiter, les interruptions de fonctionnement, la perte de liquide frigorigène, la contamination des liquides frigorigènes et l'expédition et/ou les frais de main-d'œuvre soumis par des ateliers non autorisés.
7. Toute réclamation pour des réparations au titre de la garantie doit être soumise durant la période de garantie. Une preuve d'achat doit être fournie au fabricant.
8. L'utilisation d'un appareil de récupération et de recyclage avec du liquide frigorigène ou des scellants non spécifiés annule la garantie.

- Les liquides frigorigènes autorisés sont indiqués sur l'appareil, ou ils peuvent être obtenus auprès du Service technique.
- Le fabricant interdit l'utilisation d'un appareil de récupération et de recyclage dans les systèmes de climatisation contenant des colmatants pour fuites, que ce soient des scellants à dilatation ou aérobiques.

### **Cette garantie limitée NE s'applique PAS si le produit :**

- ou une partie du produit a été endommagé par un accident.
- a été utilisé de façon inadéquate, ou qu'il a été altéré ou modifié.
- est utilisé pour la récupération et le recyclage de substances autres que le type de liquide frigorigène spécifié. Ces substances comprennent, sans toutefois s'y limiter, les matériaux et les produits chimiques utilisés pour colmater les fuites des systèmes de climatisation.

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