

Instruction Manual
(original instructions)

Manual de instrucciones
Guide d'utilisation

Model AC1234-4SL



Recover, Recycle, Recharge Machine
for R1234yf A/C System

Description: Recover, recycle, and recharge machine for use with R1234yf 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.

Serial Number: _____ Year of Manufacture: _____

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Safety Precautions

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, do not use this machine in ATEX classified zones or areas. 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. Mixtures of air and R1234yf refrigerant can be combustible at elevated pressures. These mixtures are potentially dangerous and can result in fire or explosion causing personal injury and/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

CAUTION : To prevent equipment damage,



TO PREVENT CROSS-CONTAMINATION, USE THIS MACHINE WITH R1234YF REFRIGERANT ONLY.

The machine is equipped with special connectors to recover, recycle, and recharge only R1234yf 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.

TO AVOID CHEMICAL INCOMPATIBILITIES WITH THE INTERNAL COMPONENTS OF THE MACHINE, USE ONLY OILS APPROVED BY THE VEHICLE MANUFACTURER. Problems resulting from the use of non-approved oils will void the warranty.

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.

Refrigerant Tank Test

Official records and recurring tests necessary for pressurized instruments are governed by laws and/or national regulations dependent upon the country where the refrigerant tank is used. The system manager is responsible for compliance with laws, regulations, and technical rules. During normal service, refrigerant tanks do not need maintenance. Refer to the Maintenance section of this manual for more information.

J2843 Requirement Regarding Lubricant

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

This machine is used on R1234yf equipped vehicles and is designed to be compatible with existing service equipment and standard service procedures. This machine is a single-pass system (i.e. refrigerant flows through a filter once) that meets specifications for recycled refrigerant. Follow recommended service procedures for the containment of R1234yf

In order to meet the SAE J2843 specification for a machine that is capable of servicing both conventional belt-driven compressors and the high-voltage electric compressors found on hybrid vehicles, the internal oil charge feature has been removed, and both service hose flush and vehicle A/C system flush features have been added.

The unit includes a 1.5 cfm (42 l/m) high-vacuum pump for fast, thorough evacuation. The compressor pulls the A/C system to 0 psig, then works in series with the vacuum pump to achieve highly efficient recovery and immediate recharge. If the system is not opened for service, there is no need to pull additional vacuum. If the system is opened for service, use the unit's vacuum cycle to remove air and moisture from the A/C system. (A minimum 10-minute vacuum is recommended, or follow the vehicle manufacturer's specifications.)

CAUTION: R1234yf systems require special oils. To prevent equipment damage, refer to the A/C system manufacturer's service manual for oil specifications.

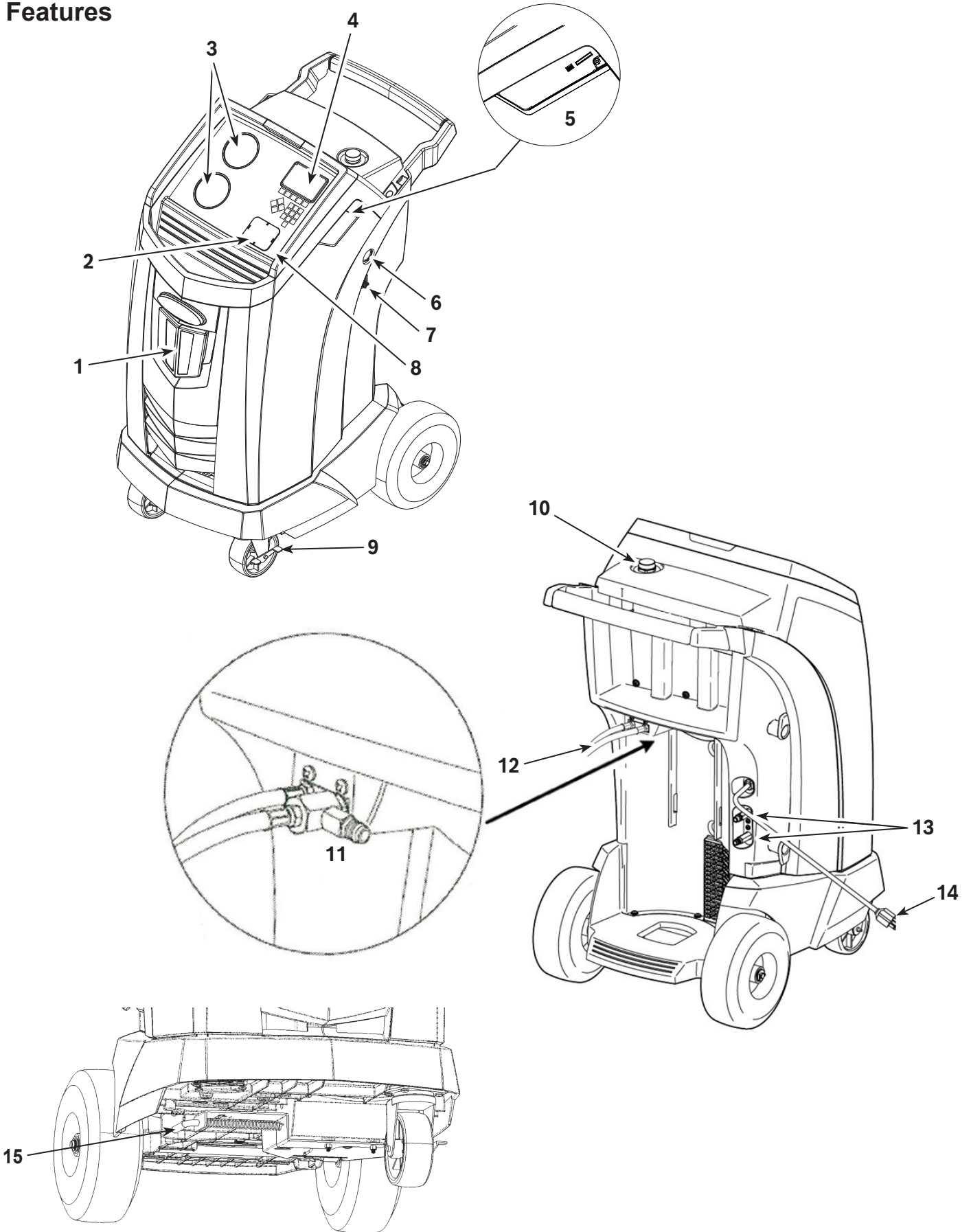


Technical Specifications

Dimensions	107 cm x 56 cm x 80 cm
Display	5 × 9 cm (4.3-in. diag) graphical LCD
Filter	150 kg (330 lb)
Humidity	10-50°C (50-122°F), 86% RH non-condensing
Manometer	Ø 100 mm (3.9 in.)
Maximum Pressure	31 bar (450 PSI)
Noise	<70 dB(A)
Nominal Voltage	
AC1234-4SL	115V, 60 Hz
Oil Bottle Capacity	355 ml (12 oz)
Operating Temperature	10°C to 50°C (50°F to 122°F)
Power Consumption	1380 VA
Vacuum Pump Free-Air Displacement	
	1.5 CFM (42 L/m) @ 60 Hz
Service Hoses	2.74 m / SAE J2888
Tank Capacity	9.5 kg (20.94 lb)
Weight	82 kg (176 lb)

Introduction

Features



Item No.	Description
1	Oil Drain Bottle
2	Printer Cap
3	Low-side (blue) and High-side (red) Manifold Gauges
4	Graphic Display and Keypad
5	USB and SD Card Connections (detailed view shown without protective cover)
6	Vacuum Pump Oil Sight Glass
7	Vacuum Pump Oil Drain Fitting
8	Power Switch
9	Wheel Lock
10	Vacuum Pump Oil Fill Cap and Port
11	Contamination Recovery Port
12	Service Hoses
13	Service Hose Storage Ports
14	Power Cord
15	Scale-locking Mechanism

Introduction

Control Panel Functions

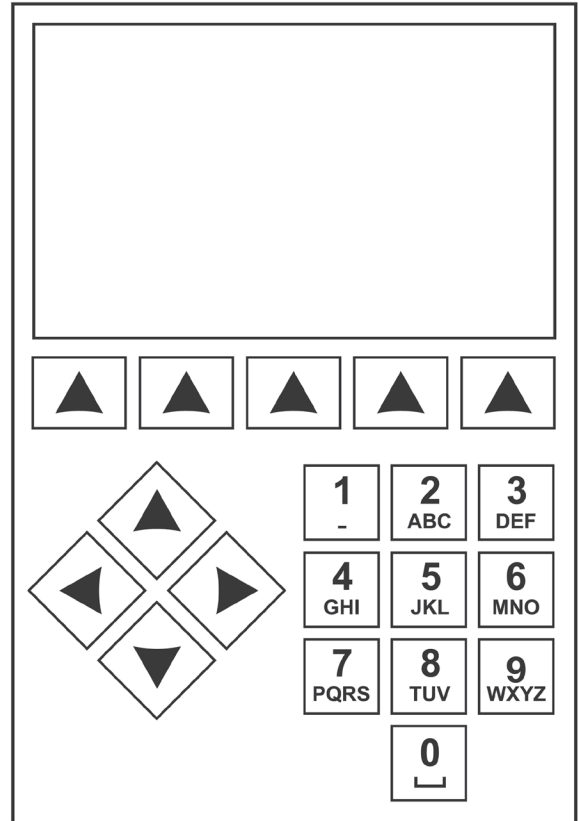
ARROW UP highlights the previous item.

ARROW DOWN highlights the following item.

ARROW RIGHT scrolls to next screen.

ARROW LEFT scrolls to previous screen.

SELECTIONARROWS make a selection or answer a query.



Control Panel Keypad

Icon Legend



AUTOMATIC ICON

Pressing the key under this icon will enter the automatic refrigerant recovery, vacuum, and charge process.



RECOVER ICON

Pressing the key under this icon will enter the refrigerant recovery process.



VACUUM ICON

Pressing the key under this icon will enter the system vacuum process.



CHARGE ICON

Pressing the key under this icon will enter the refrigerant charge process.



NEXT/FORWARD ICON

Pressing the key under this icon will proceed to additional menu selection options, or proceed to an additional step in a function or process.



BACK ICON

Pressing the key under this icon will return to previously seen menu selection options, or return to the previous screen within a function or process.



HELP ICON

Pressing the key under this icon will provide help and information corresponding to the current screen and/or function being viewed or performed.



DATABASE ICON

Pressing the key under this icon will enter the vehicle database retrieval process.



SETUP MENU ICON

Pressing the key under this icon will enter the Setup Menu.



YES/ACCEPT ICON

Pressing the key under this icon will accept any choices made on the current screen and proceed to the next step of the function.



NO/CLOSE ICON

Pressing the key under this icon will reject any choices made on the current screen and return to the previous step of the function or the Main Menu.



RETRY ICON

Pressing the key under this icon will retry the current process or function.



CHARGE PATH SELECTION ICON

Pressing the key under this icon will toggle the desired path of refrigerant charge between high side, low side, and both side.



ON/OFF ICON

Pressing the key under this icon will toggle the highlighted function on or off as desired.



BACKSPACE ICON

Pressing the key under this icon will delete a text character to the left of the current selection.



PAUSE ICON

Pressing the key under this icon will pause the current process.



RESUME ICON

Pressing the key under this icon will resume a process that has been paused.



PRINT ICON

Pressing the key under this icon will print a summary corresponding to the current completed process.



DELETE ICON

Pressing the key under this icon will delete a selected entry from the memory of the machine.



CHANGE UNITS ICONS



Pressing the key under one of these icons will toggle the unit of measurement for the current entry field.

Introduction

Setup Menu Functions

Access the following functions by pressing the Menu key and selecting Setup.

Calibration Check

Use to verify internal scale calibration. Refer to Calibration Check in the Maintenance section of this user manual.

Edit Print Header

Programs information that will appear on the printout each time a print function is used.

Filter Maintenance

The filter removes acid, particulates, and moisture from the refrigerant. To meet requirements, it is mandatory to replace the filter after 150 kg (330 lb) of refrigerant has been filtered.

This menu item displays the filter capacity remaining until the machine locks down and no longer functions. Refer to Filter Maintenance in the Maintenance section.

Flush Hoses

Flushes residual oil from the machine's service hoses to prepare for service of next vehicle.

Production Menu

For Robinair production use only.

Pump Maintenance

Displays the amount of time remaining until the next vacuum pump oil change is needed. For maximum vacuum pump performance, change vacuum pump oil every time the filter is replaced. Refer to the Change Vacuum Pump Oil in the Maintenance section.

Refrigerant Management

Displays the amount of refrigerant recovered, charged, and replenished (for the life of the machine), and filtered since the last filter change.

Select Language

Select a language for screen prompts. English is the default language.

Service Menu

For Robinair service center use only.

Vacuum Default Time

Program machine with a value to use as a default time during vacuum service.

Replace Service Hoses

Use to replace service hoses on the machine.

Select Units

Program the machine to display units of measure.

Date and Time

Program the machine for current date and time.

System Flush

Provides a method of removing oil by forcing liquid refrigerant through an A/C system or components of an A/C system. After flushing, the refrigerant is recovered by the machine and filtered by the recycling circuit.

System Information

Displays the revision level of the software in the machine.

Tank Fill

Use this Setup Menu item to transfer refrigerant from a source tank to the ISV. The tank fill value may be adjusted up or down to suit the user's needs. Refer to Tank Fill in the Maintenance section.

Unit Activation

Failure to register and activate the machine within 30 days of initial startup will cause the machine to lock out and no longer function. Select this Setup Menu item and follow the prompts before the trial period expires.

View Service Data

Displays vehicle information that was entered into the Enter Service Data screen. Vehicles are displayed by date of service and VIN number. The database stores 25 VIN entries.

Hose Equalize

Use this Setup Menu item to recover refrigerant from the service hoses back into the vehicle A/C system. This item is useful after performing diagnostics which do not require the need to recover the A/C system into the RRR machine. The user will be prompted to connect the low side service hose to the appropriate port and to start the vehicle's A/C system on max.

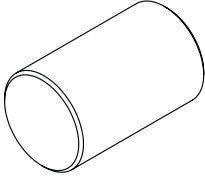

Adjust Background Fill Target

Program the machine with a value to set as the automatic fill amount when the machine is idle.

Note: Requires external connection to the tank fill hose.

Unpack the Accessory Kit

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

Calibration Check Weight 535 g (1.18 lb)	
Tank Fill Hose Adapter	
Pouch containing the user manual, SDSs, EPA information, MACS information, and a service center list.	



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.

Initial Setup

Installing Machine in a Vehicle

Installing the A\C machine in a vehicle is optional, and the following steps a recommendation only by the manufacturer.

1. Use ratchet straps (not supplied) to hook to machine and fasten to the floor of the vehicle as shown in Figure 1.
2. Ratchet the straps until tight. Fold and secure the excess strap length.

Note: If machine is being installed into a mobile service vehicle, do not mount the machine near the vehicle's power generator. This could cause inaccurate scale weight values.

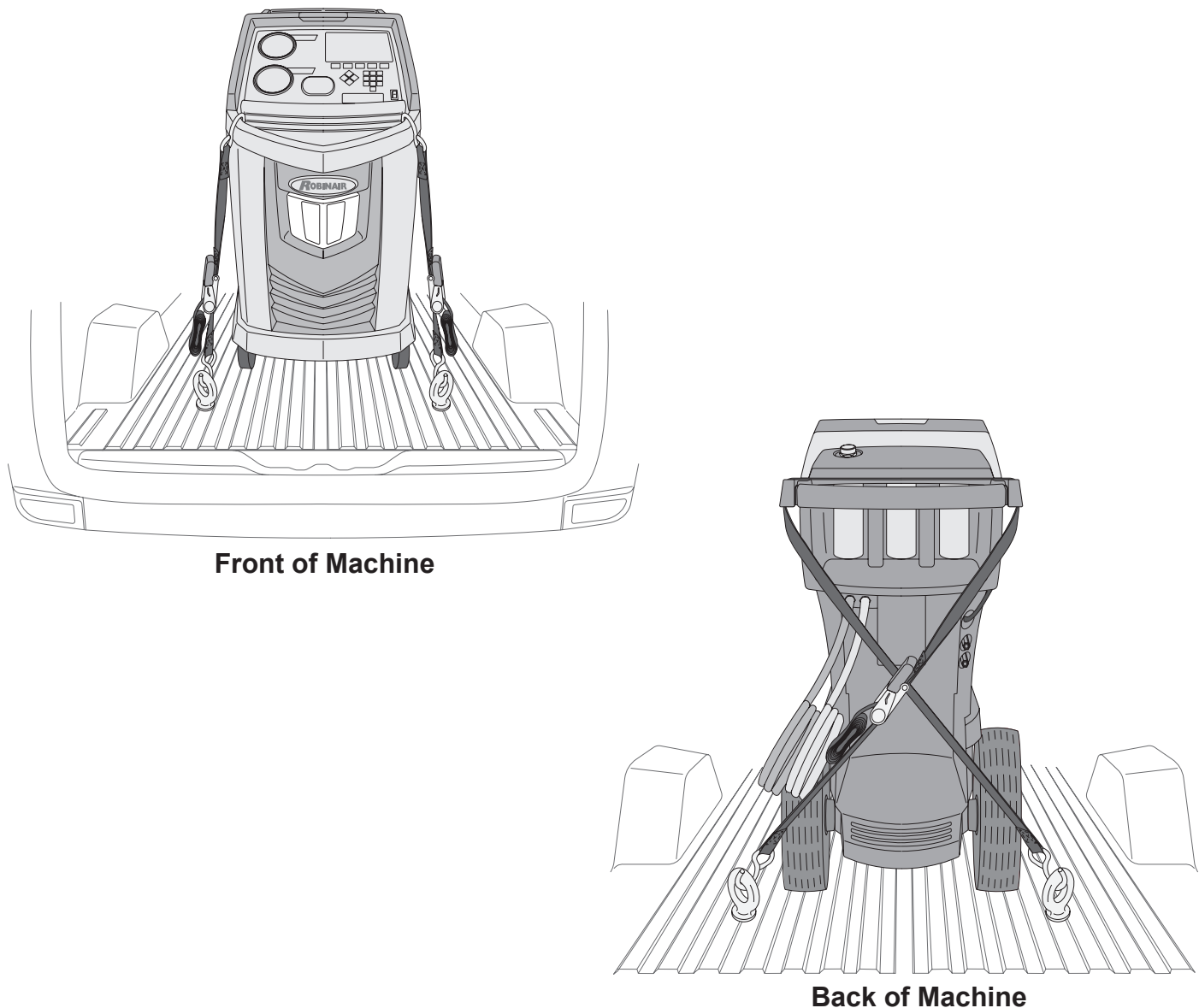


Figure 1

Optional Warning Light Installation and Specification

When installing the A/C machine into a vehicle, an optional warning light can also be installed. This light will luminate to warn the user when the scale-lock mechanism is not in lock position.

1. It is recommended to install an L.E.D. light that is rated for 2-60 Vdc and a maximum current draw of 100mA. See Figure 2.

Note: Pig tail wires for the connection of this warning light are located inside the unit and fastened to the harness on the center sheet metal panel. Cut the plastic fasteners holding the pigtail wires to the harness, feed the wires through the hole in the bottom of the cart, and run under the cart to the vehicle.

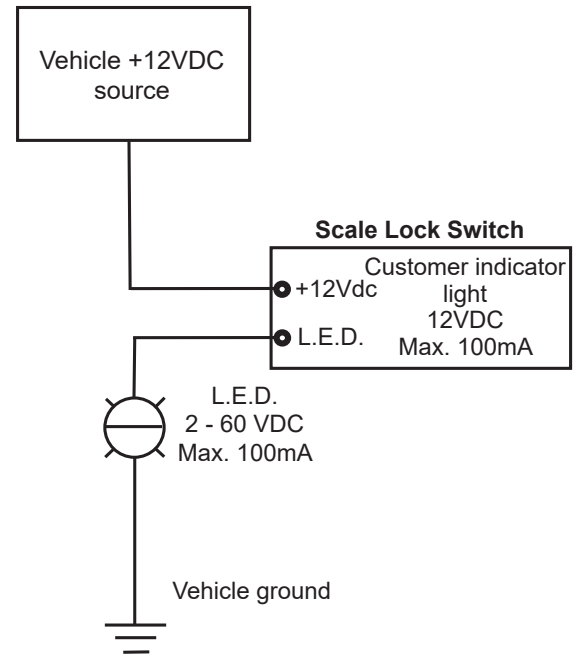


Figure 2

IMPORTANT:

- Perform this initial setup procedure BEFORE the machine is needed for its first vehicle A/C service. This procedure can take several hours.
- 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.

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 power switch are of easy access for the operator. Verify the fan vents on the rear of the machine are not obstructed.
3. Lock the front wheels.
4. Unlock the scale-locking mechanism on underside of unit by pulling the pin and turning it 90°. See Figure 3.
5. Toggle the power switch on the control panel to turn the machine ON.

The machine launches into the initial Setup mode.

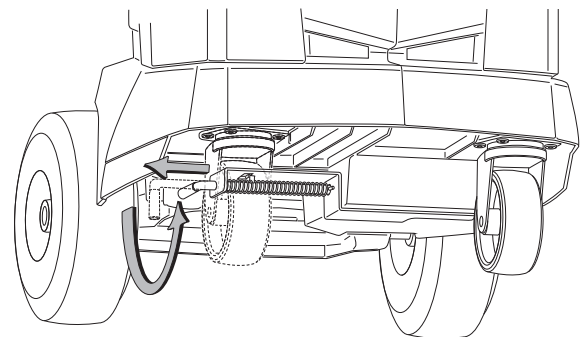


Figure 3

Initial Setup

Select Language

The operator selects the language for the screen prompt displays. English is the default language.

1. Use the **UP** or **DOWN** arrow key to toggle through the available languages one line at a time.
2. Select ✓ to set the selected language.

Note: To update an existing language or to add a new language, refer to Load Language in the Maintenance section of this manual.

Load Language

Use the following instructions to add or update a language from an SD card.

1. Choose **SELECT LANGUAGE** from the **SETUP MENU**.
2. Use the arrow keys to scroll to **LOAD NEW**. Select ✓.
3. Insert the SD card containing the language data into the side panel on the machine. See Figure 4.
4. Follow the prompts to select the language to load or update. If loading a new language, select which language to replace.

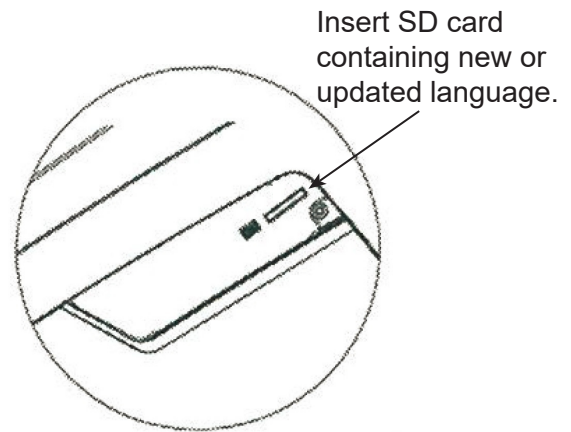


Figure 4

Select Units

The operator sets the display for units of measure. Metric is the default.

1. Use the **ARROW UP** or **ARROW DOWN** key to toggle Imperial or Metric units.

Note: If Imperial is selected, weights will be displayed in Metric units (per SAE standard J2843); pressures and temperature will be displayed in Imperial units.

2. Select ✓ to choose the displayed unit of measure.

Set Date and Time

Use the arrow keys to move the cursor. Use the keypad to modify the information displayed.

1. Use the **ARROW UP** and **ARROW DOWN** keys to select which item to change: day, month, year, or time. Select **I/O** to toggle between AM and PM.
2. Use the multi-tap interface on the numeric keypad to modify the information.
3. Select ✓ to save.

Edit Print Header

This machine has the capability to store recovery, vacuum, charge, and flush information for up to 25 vehicles. The information loaded into Edit Print Header will appear on each printout.

1. Enter text by using the arrows and the multi-tap interface on the numeric keypad:
 - **ARROW LEFT** and **X** key act as backspace key.
 - **ARROW RIGHT** moves the cursor to the right.
 - **0 (ZERO)** acts as a spacebar when pressed twice.
 - **ARROW UP** and **DOWN** navigate between the rows.
2. Select **✓** to save/exit the function; select **X** to return to the previous header without saving data.

Service Vacuum




At this point the machine clears its internal plumbing before proceeding with setup.

1. Check the vacuum pump oil level sight glass and verify the oil level is at the center of the sight glass.
2. When prompted, connect the service hoses from the machine to their storage ports as shown in Figure 5. Select **▶▶** to continue.
3. The machine enters a 5-minute vacuum and will automatically enter the next set-up process when complete.

Adjust Background Fill Target

This machine possesses a background tank fill feature. An external refrigerant storage vessel can be fluidly connected to the machine (using the black tank fill hose) for a continuous topping off of the internal storage vessel. Drawing from the refrigerant within the connected external storage vessel, the machine will periodically charge the ISV tank to the desired fill target.

Using the arrows and the numeric keypad, enter the desired fill target (default amount is 3.6 kg).

	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.
	
	

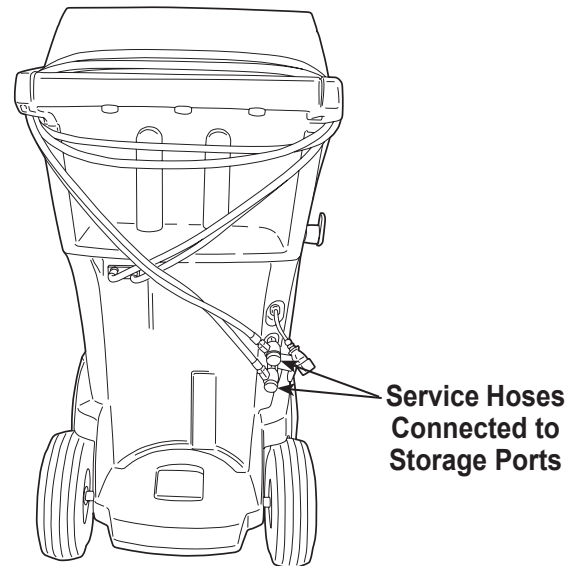


Figure 5

Initial Setup

Tank Fill

This procedure transfers refrigerant from a source tank to the internal storage vessel (ISV) in the machine. The maximum capacity of the ISV is 9.5 kg (21 lb). Use arrow keys to move the cursor; use the keypad to enter a value.

1. The machine displays fields for desired tank fill amount, charge capacity, and the amount of recoverable refrigerant (recover capacity) within the internal storage vessel. Enter the desired tank fill amount.

Note: Add at least 3.6 kg of refrigerant to ensure enough is available for charging.

2. Connect the tank fill (black) hose to the liquid connector on the source tank.
3. Open the source tank valve.
4. Position the source tank in such a way that liquid refrigerant is supplied to the connection.
5. Select ✓. The machine checks the refrigerant in the source tank to verify that it is R1234yf and not contaminated.
6. Select ✓ to start the tank fill process. The machine begins filling the internal storage vessel (ISV). Add at least 3.6 kg of refrigerant to ensure enough is available for charging. This process takes 15–20 minutes.
7. The machine stops when the designated amount of refrigerant has been transferred to the ISV or when the source tank is empty. Follow the messages on the display.
8. Close the source tank valve.
9. Select ✓ to return to the Setup Menu.

The machine is ready for operation.

Note:

- *There is no need to calibrate the scale; it is calibrated at the factory.*
- *After the tank fill process is complete, the display does 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 0.67 kg (1.4 lb) less than the total amount of refrigerant in the tank.

Note:

Charge Capacity: *The amount of refrigerant in the ISV that can be charged into a vehicle A/C system.*

Recover Capacity: *The amount of additional refrigerant that could be recovered into the ISV.*

Unit Activation

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

1. Select Unit Activation from the Setup Menu. The machine displays

XX Days Left on Trial
Period to activate unit.
Activate Now?

2. Select to start the activation process. The machine displays

Product Activation

Personal product code:
XXXXXXXXXXXX

Enter code:
XXXXXXXXXXXX

3. Open a web browser on a personal computer and enter <https://bosch.service-solutions.com>.
4. Enter the user name and password, and log in to the website.
Note: If a first-time user, select REGISTER to create a user name and password.
5. On the personal computer, enter the Personal Product Code of the machine into the Product Activation key box on the website to receive an activation code.
6. On the machine, enter the activation code into the correct field. Note: Enter the code exactly as received. Capitalization is required.
7. Record the activation code on a piece of paper and file it in a secure place. Select .
8. The machine displays

Activation successful.

Select **▶▶**. The machine has been activated.

Operating Instructions

Enter Service Data

After selecting any service function, information about the vehicle may be entered into and stored in the machine's database.

The machine displays

Enter service data new

1. Select ✓ to enter a new record, or scroll to select a previously serviced vehicle and then select ✓. The highlighted selection will be in red. The machine displays

Enter service data

VIN: _____

Mileage: _____

Make: _____

Model: _____



2. Use the arrow keys to move between rows and the multi-tap keypad to enter text.

Information entered on this screen is stored by date and vehicle identification number (VIN). The database stores the latest 25 entries, with the most recent at the top of the list.

The information will also appear on service summary printouts.





Recover Refrigerant from a Vehicle

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. Reinstall the oil drain bottle. See Figure 6.
2. Connect the high-side (red) and low-side (blue) service hoses to the vehicle A/C system.
3. Open the coupler valves on the hoses by turning the collars clockwise.
4. Select **RECOVER**  from the **MAIN MENU**.
5. The machine will enter the service data entry form. Enter all applicable data and select  to continue. The machine checks the refrigerant in the vehicle to confirm that it is R1234yf and not contaminated. If the refrigerant purity is acceptable, the machine begins the recovery process. A clicking noise indicates the solenoid is opening and closing — this is normal.

The machine runs a self-clearing cycle to clear any internal refrigerant from its internal plumbing.

System recovery begins and includes a timed vacuum, deep recovery process.

After recovery, the machine will perform an oil drain, which may require up to 90 seconds to complete.

6. After the oil drain is complete, a summary is displayed showing the total amount of refrigerant recovered. The user is prompted to “Check Oil Drain Bottle” to note amount of oil drained. Recovery information can be printed by selecting  on machines equipped with a printer.
7. Select  to return to the Main Menu.

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

Note: 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.

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



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.

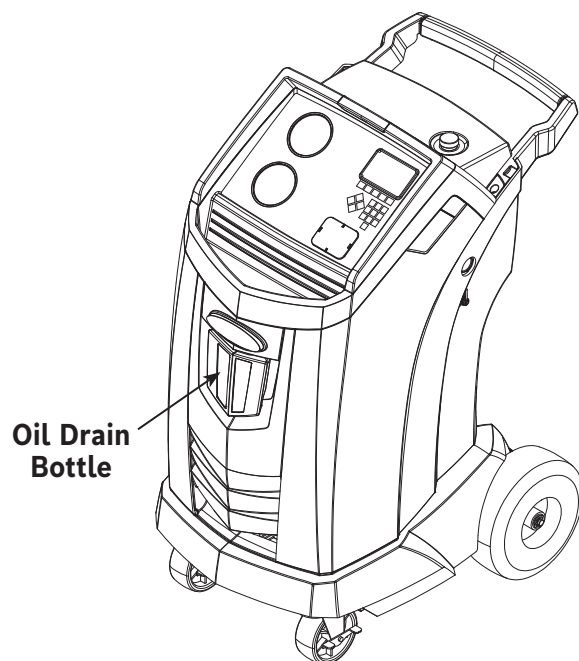




Figure 6

Operating Instructions




Evacuate the Vehicle A/C System

1. Connect the service hoses to the vehicle's service ports.
2. Open the service hose coupler valves by turning the collars clockwise.
3. Select **VACUUM**  from the **MAIN MENU**.
4. Select Vacuum Leak Check, if desired, to automatically perform a 5-minute pressure rise leak check after the vacuum.
5. Select  to accept the 10-minute default evacuation time, or enter a desired vacuum time using the number keys.

Note: The vacuum process will halt if pressure rises above .35 bar (5 psi). Recover refrigerant before proceeding.

The machine pulls a vacuum on the A/C system for the programmed amount of time.

Vacuum information can be printed by selecting  on machines equipped with a printer.

6. Select  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.

Flushing the Hoses

If the next vehicle to be serviced contains a different type of oil than the previous vehicle serviced, it is recommended the service hoses be flushed of residual oil to prevent contamination.

1. Select **FLUSH HOSES** from the **SETUP MENU**. The machine displays

Connect service hoses to storage ports and open coupler valves.

2. Connect the service hoses to the machine's storage port connections as shown in Figure 7.
3. Open the service hose coupler valves by turning the collars clockwise.
4. Select to begin the hose flush process, which runs for three minutes, followed by a recovery.

When the hose flushing process is complete, the display reads

FLUSH HOSES
Complete

5. Select **▶▶** to return to the Setup Menu.
6. Close the coupler valves by turning the collars counterclockwise.

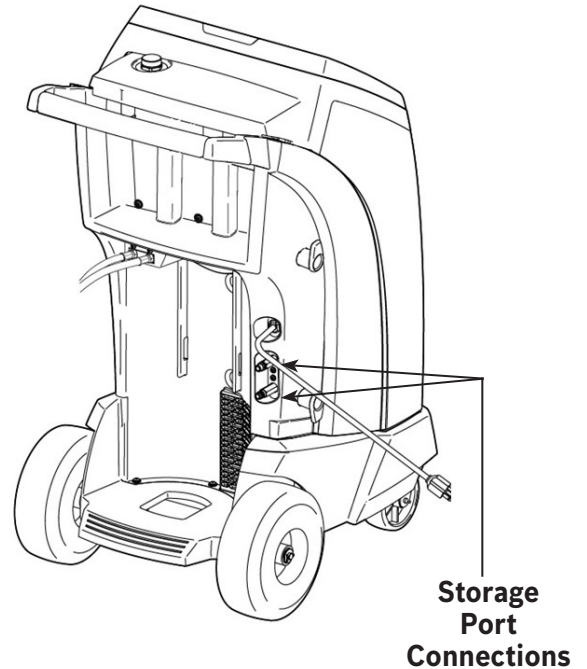
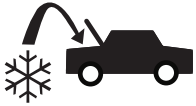


Figure 7

Operating Instructions



Recharge the Vehicle A/C System

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

- Vacuum test 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.*
- *The 15% charge is automatically recovered before recharging the programmed amount.*
- *To avoid false failures, the temperatures of the vehicle system and the recovery machine should be within $\pm 5^{\circ}\text{C}$.*

1. Select **CHARGE**  from the **MAIN MENU**.

The display shows

Is the service being performed on a system with an electric compressor using POE oil?

2. If the system does NOT have an electric compressor with POE oil, select **X** to continue. If the system has an electric compressor with POE oil, select **✓** to flush all residual oil from the hoses. The user will be prompted to "Connect service hoses to storage ports and open coupler valves." See "Figure 7" on page 21. Continuing will begin the process of flushing the hoses. Once complete, select **▶▶** to continue through the Charge process.
3. The user will be prompted to enter service data. Select **✓** once complete to continue. The display shows

Charge: XX.XXX kg on High Side

4. Connect both service hoses to the vehicle's service ports and open coupler valves.
5. Use the arrow keys and the numeric keypad to enter the desired charge amount. Select **kg|lbs|oz** to change units.

6. Using the arrow keys, maneuver to the charge path selection. High Side is default. To change, select **HSL** on the control panel. This will allow the user to toggle between high, low, and both side charge paths. The current selection is indicated on the display.

7. Select **✓** to start the charge process. Moving or bumping the machine at this point may result in an inaccurate charge. When the charge cycle approaches the desired weight value, the machine slows down. It will charge, settle, charge again, settle, etc.

8. When prompted, select **✓** to perform hose equalization.

Note: Hose Equalize utilizes the vehicle's AC system to clear refrigerant from the service hoses. This requires starting the vehicle.

9. When the **CHARGE COMPLETE** screen appears, it includes a summary of charge results. The user may select **☰** to print the summary, if a printer is installed. Select **▶▶** to proceed to clear the service hoses.


10. The user will be prompted to close the coupler valves and disconnect the hoses from the vehicle. Select **▶▶** to recover any remaining refrigerant from the hoses. Once the hose clear is complete, the machine will return to the Main Menu.

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






Automatic Function

The **AUTOMATIC** function allows a user to perform an automatic recovery, vacuum, leak test, and/or charge sequence. A total automatic sequence may take up to an hour to complete.


1. Connect high-side (red) and low-side (blue) service hoses to the A/C system.
2. Open the service hose coupler valves by turning the collars clockwise.
3. Select **AUTOMATIC**  from the **MAIN MENU**. The display shows

Vacuum Time: XX:XX
Vacuum Leak Test: ON
Charge: XX.XXX kg on High Side

4. Use the numeric keypad to enter the desired length of vacuum.
5. Using the arrow keys, maneuver downwards to choose whether to perform a vacuum leak test or not. ON is the default setting. To toggle, select **I/O** on the control panel.
6. Use the arrow keys and the numeric keypad to enter the desired charge amount.
7. Using the arrow keys, maneuver to the “charge path selection.” High Side is default. To change, select **HSL** on the control panel. This will allow the user to toggle between high, low, and both side charge paths. The text on the display will change to the current selection.
8. Select  to begin the **AUTOMATIC** cycle. The unit will now automatically proceed through all applicable functions: **RECOVER**, **VACUUM**, and **CHARGE**. If the vehicle being serviced has previously undergone a recover and vacuum procedure, the machine will only perform a **CHARGE**.
9. When the **AUTOMATIC COMPLETE** screen appears, it includes a summary of results. The user may select  to print the summary, if a printer is installed. Select  to proceed.



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.

10. The user will be prompted to close the coupler valves and disconnect the hoses from the vehicle. Select  to recover any remaining refrigerant from the hoses. Once the clear is complete, the machine will return to the Main Menu.

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

Notes:

- The **CHARGE** function for vehicles equipped with a single-service fitting should be carried out manually according to procedures in the vehicle manufacturer's service manual.
- After the **RECOVER** process, the user will be prompted to “Check oil bottle and enter oil to be added.” The amount of oil added should be equal to the amount of oil drained and can be found by looking at the graduations on the drain bottle.
- If problems are encountered during the automatic sequence, an audio alert sounds three times. The sequence remains paused until the user enters a decision regarding how to proceed.

Operating Instructions

System Flush

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

- Vacuum test 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.*
- *The 15% charge is automatically recovered before recharging the programmed amount.*
- *To avoid false failures, the temperatures of the vehicle system and the recovery machine should be within $\pm 5^{\circ}\text{C}$.*

The **SYSTEM FLUSH** function is performed using a vehicle manufacturer-approved flushing adapter. Refer to the instructions included with the adapter while the following steps are performed.

1. Verify the flusher filter and strainer are not plugged.
2. Mount the flusher to the rear of the machine.
3. Remove the oil drain bottle (see Figure 8) from the Robinair machine. Drain the oil bottle, and dispose of the oil according to applicable regulations. Reinstall the oil drain bottle on the machine.
4. Recover all refrigerant from system to be flushed.
5. Note the amount of oil collected during recovery. This amount must be replaced, as well as any oil collected during flush.

Note: The amount of oil collected and reported during system flush does not include the amount of oil collected during the initial recovery.

6. Verify there are at least 6.0 kg (13.2 lb) of refrigerant in the machine. The machine will not be able to complete a system flush without at least 6.0 kg of refrigerant in the ISV.

Note: If the machine does not have at least 6.0 kg (13.2 lb) of refrigerant on-board, see "Tank Fill" on page 16.

7. Disconnect the machine from the vehicle.
8. Refer to the vehicle service manual, and connect the appropriate flushing adapters and bypasses.



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.

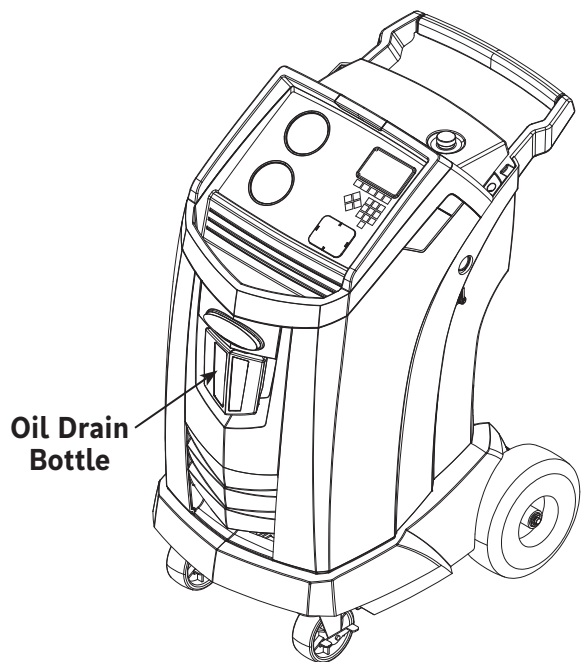



Figure 8


Operating Instructions

9. Connect the low-side (blue) service hose directly to the filter of the flushing kit.
10. Remove the high-side (red) service coupler, and connect the high-side (red) service hose to the system suction line adapter.
11. Use the supplied hose to connect the system discharge adapter to the flusher inlet.
12. Connect hoses according to the instructions included with the flush kit.
13. Select **SYSTEM FLUSH** from the **SETUP MENU**. The unit will prompt for any service data entry, if desired. Select ✓ to continue to the system flushing process. The user may be prompted to enter in a total Flush Time depending upon which flush process is enabled.

The machine will then automatically enter the **VACUUM** process and proceed to a leak test.

Once the vacuum and leak tests are completed, the unit will enter the actual system flushing process, followed by an oil drain.
14. When the Flush Complete screen appears, it includes a system flush result summary. The user may select  to print the summary, if a printer is installed. Select ►► to return to the **SETUP MENU**.

The vehicle A/C system has been flushed.

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

CAUTION: The flushing kit has a replaceable filter as well as a debris strainer, both of which can get plugged. At the end of the flush cycle, check the high-side (red) gauge for system pressure, and check the adapter for complete removal of refrigerant.

If pressure exists or refrigerant remains, exit the flushing cycle and enter the recovery mode to recover refrigerant through both the high-side (red) and low-side (blue) hoses. Then service the filters and repeat the flush process.

Maintenance

Maintenance Schedule

Maintenance Task	Recommended Interval
Change filter	After 150 kg (330 lb) of refrigerant has been filtered. Refer to Filter Maintenance in the Maintenance section of this manual.
Change vacuum pump oil	When the filter is replaced. Refer to Change Vacuum Pump Oil in the Maintenance section of this manual.
Change refrigerant identifier sample hose	When filter is replaced, refer to Refrigerant Identifier section of this manual.
Check casters and wheels for ease of operation	Monthly.
Check internal scale calibration	Monthly. Refer to Calibration Check in the Maintenance section of this manual.
Check machine for leaks	Monthly. Check hoses and connections for leakage. Disconnect power, remove the shroud, and use an electronic leak detector to check fittings.
Clean airflow outlet panel (see Figure 9)	Monthly. Use a clean cloth.
Clean cabinet and control panel	Monthly. Use a clean cloth.
Inspect power cord and hoses for cuts and abrasions	Daily.
Lubricate wheel bearings and inspect brake components	Monthly.
Pressure Test	Every 10 years. Performed by an authorized Robinair service center.

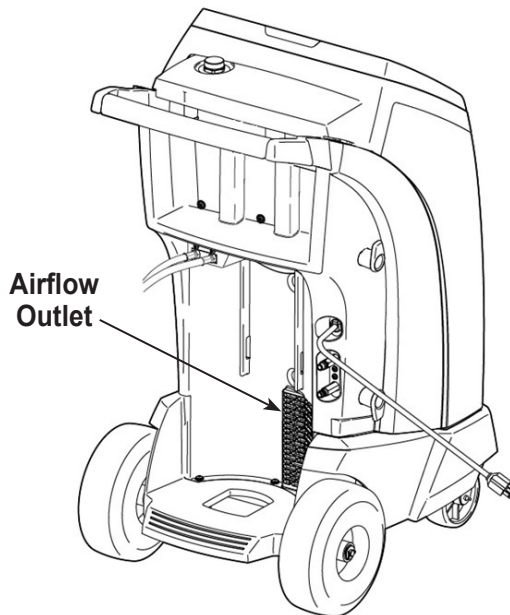


Figure 9



WARNING: To prevent personal injury only qualified personnel may perform inspections and repairs to this machine. Read and follow instructions and warnings in this manual, and wear protective equipment such as goggles and gloves.

Adjust Background Fill Target

This machine possesses a background tank fill feature. An external refrigerant storage vessel can be fluidly connected to the machine (using the black tank fill hose) for a continuous topping off of the internal storage vessel. Drawing from the refrigerant within the connected external storage vessel, the machine will periodically charge the ISV tank to the desired fill target.

1. Select **ADJUST BACKGROUND FILL TARGET** in the **SETUP MENU**.
2. Using the arrows and the numeric keypad, enter the desired fill target. Select ✓ to save the new value and exit. Select ✕ to exit and continue to use the previously entered amount.

Tank Fill

This menu item is used to transfer refrigerant from a source tank to the ISV.

The maximum capacity of the internal storage vessel (ISV) is 9.5 kg (21 lb). Use the arrow keys to move the cursor; use the keypad to enter a value.

Note: Add at least 3.6 kg of refrigerant to ensure sufficient refrigerant is available for charging.

1. Connect the tank fill (black) hose to the liquid connector on a full source tank.

Note: Tank fill hose and tank access port have left-handed threads.

2. Position the source tank in such a way that liquid refrigerant is supplied to the connection. Open the source tank valve and verify that the tank does not restrict airflow from the vent.
3. Select **TANK FILL** from the **SETUP MENU**. The machine displays

Tank Fill

Fill Amount: XX.XYY

Charge Capacity: XX.XXYY

Recover Capacity: XX.XXYY

4. Enter the quantity to recover, and select ✓. The machine checks the refrigerant in the source tank to verify that it is R1234yf and not contaminated.

Note: Add at least 3.6 kg of refrigerant to ensure sufficient refrigerant is available for charging.



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.

5. The machine begins filling the ISV and automatically stops when the preset tank fill level is reached. To stop the tank fill before the preset level is reached, select II. An option to exit will appear on the display.
6. Once complete, remove the hose from the source tank.

Maintenance

Filter Maintenance

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 (330 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 (330 lb) filter capacity has been reached and will no longer function.

Check Remaining Filter Capacity

1. Select **FILTER MAINTENANCE** from the **SETUP MENU** or when the machine prompts. The machine displays

Remaining Filter Capacity: XXX.X kg
Replace filter now?

The machine displays the amount of filter capacity remaining until the machine locks down.

2. Select ✓ to change the filter; select ✗ to resume using the machine.

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



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.

Replace the Filter

1. If ✓ was selected to change the filter, the machine prompts for the new filter code to be entered.

Enter new filter serial number

Use the keypad to enter the serial number that appears on the new filter, and select ✓ to continue.

Note: If "Invalid serial number" is displayed, the serial number has been incorrectly entered, or the filter has already been used in this machine.

2. The machine clears the existing filter and displays

Serial number accepted.

Turn power off and replace filter.

Turn off the machine. Remove the oil bottle. Remove the four screws holding the shroud. See Figure 10.

3. Hang the shroud on the back of the machine as shown in Figure 11.
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.
6. Install the new filter by threading it clockwise into place. Verify the filter is positioned correctly as shown in Figure 11. Tighten the filter to 20 Nm.
7. Power the machine on. The Change Vacuum Pump Oil operation will begin, and the screen will display

Warming oil for drain XX:XX

See "Change Vacuum Pump Oil" on page 31 procedure in this manual for more information.

The machine will then begin the Leak Check operation. See the "Leak Check" on page 32 procedure in this manual for more information.

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.

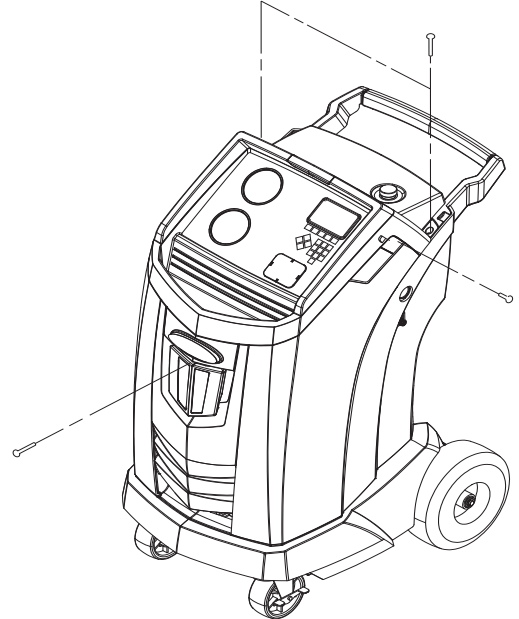


Figure 10

Hang Shroud Here

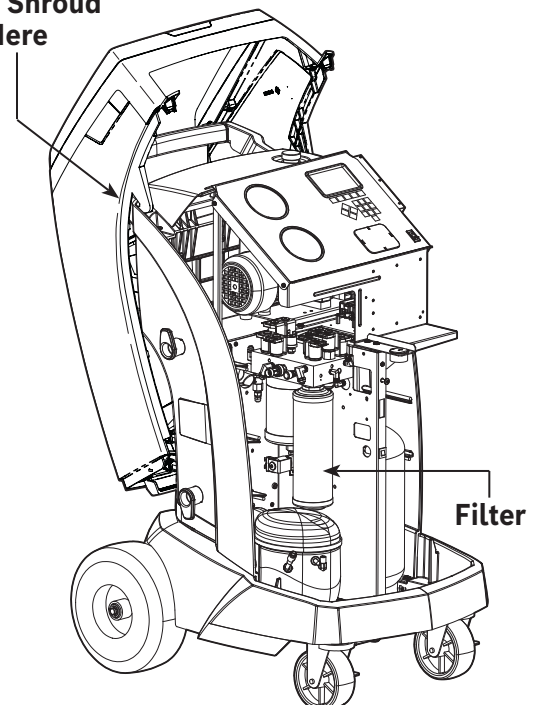


Figure 11

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. Refer to Figure 12, and verify the magnet on the bottom of the machine is clean.
2. Select **CALIBRATION CHECK** from the **SETUP MENU**.
The machine displays

Place calibration weight onto the magnet located on the bottom of the machine.

3. Attach the calibration weight to the magnet on the bottom of the machine. Select ✓ to continue.
4. The machine displays

Remove calibration weight from the magnet located on the bottom of the machine.

Remove the calibration weight from the magnet. Select ✓ to continue.

- If the display shows

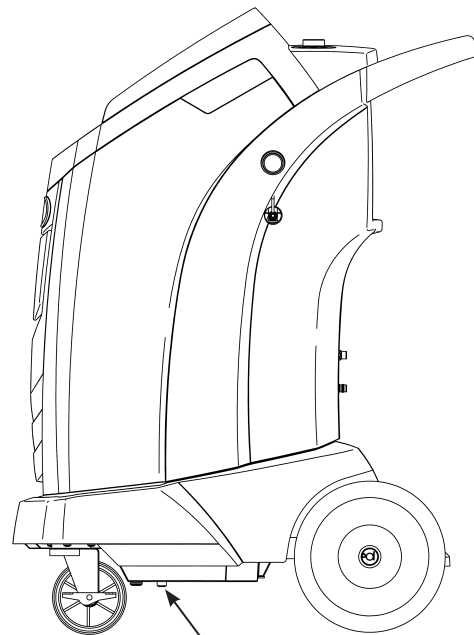
Calibration check passed

the scale is in calibration. Select ►► to return to the Setup Menu.

- If the display shows

Calibration check failed. Retry?

the scale is out of calibration. To retry, select ↺. If calibration continues to fail, contact an authorized Robinair service center for assistance.



Magnet

Figure 12

Change Vacuum Pump Oil

1. Select **PUMP MAINTENANCE** from the **SETUP MENU** or when prompted. The display shows how long the vacuum pump has operated since the last oil change.

Remaining oil life:
XXX:XX (hhh:mm)
Change oil now?

2. Select to change vacuum pump oil. If the machine displays

Warming oil for drain
XX:XX

allow the vacuum pump to run for up to two minutes to warm up the oil. If the oil is already warm, the display shows:

Drain used oil from pump
and replace with 150 ml of new oil
Remove fill cap to speed draining of oil

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 13.
4. Remove the oil drain fitting cap and drain the oil into a suitable container for disposal. Replace the cap and close tightly. Slowly add 150 ml of vacuum pump oil to pump through oil fill port. Select **▶▶** to continue.
5. The machine displays

Fill vacuum pump to the center
of the sight glass
Reinstall fill cap

Slowly add vacuum pump oil to the pump through the oil fill port until the oil reaches the center of the sight glass. Install the cap on the oil fill port and close tightly. Select **▶▶** to return to the **SETUP MENU**.

Note: For proper oil level, ensure the machine is on a flat, level surface.

⚠ WARNING: 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.

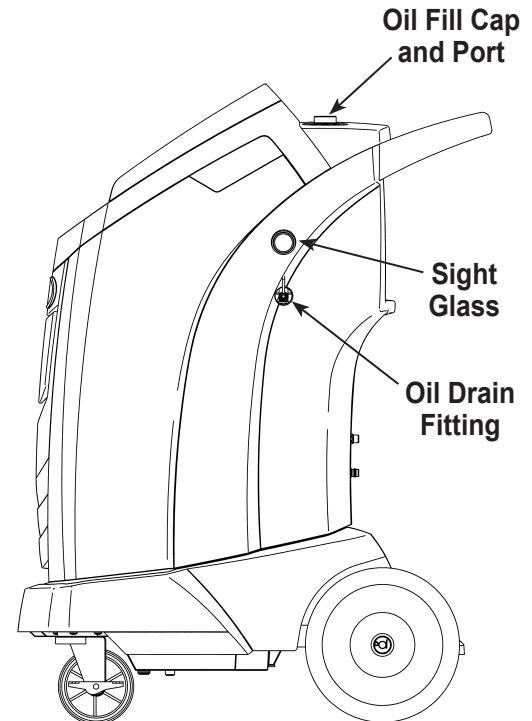


Figure 13

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.

Maintenance

Leak Check

A leak test may be performed on the machine at any time. During this test, components containing refrigerant are pressurized and monitored for pressure decay, which could indicate a leak.

1. Select **LEAK CHECK** from the **SETUP MENU**. The machine displays

Connect service hoses to storage ports and open coupler valves

2. Connect the service hose couplers to the storage ports at the rear of the machine. Open the couplers by turning the collars clockwise.
3. Select ✓ to start. The machine performs a self-recovery and displays

Recover in progress

The machine performs a 30-second vacuum test and displays

Vacuum leak check in progress

If the vacuum test fails, the machine will prompt to check for leaks.

Once the machine passes the vacuum test, a controlled pressure is applied to its internal components. The machine displays

Pressure leak check in progress

Pressure is held for five minutes and monitored for decay. Minutes and seconds count down on the display.

- If an acceptable pressure decay is detected, the machine recovers refrigerant and returns to the Setup Menu, ready for normal operation.
- If an unacceptable pressure decay is detected, the machine will prompt to check for leaks. Take the machine to an authorized Robinair service center for repair.



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.

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 R1234yf.

Edit Print Header

To make changes to text that appears in this screen:

1. Select **EDIT PRINT HEADER** from the **SETUP MENU**.
2. The cursor is in the first field. Update the text by using the arrows and the multi-tap interface on the numeric keypad:
 - **ARROW LEFT** and **X** act as a backspace key.
 - **ARROW RIGHT** moves the cursor to the right.
 - **ZERO (0)** key acts as a spacebar.
 - **ARROW UP** and **DOWN** navigate between the rows.
3. Select **✓** to save the changes and return to the Setup Menu; select **X** to return to the previous header and exit to the Setup Menu.

Replace Printer Paper (if equipped)

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 14.
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.

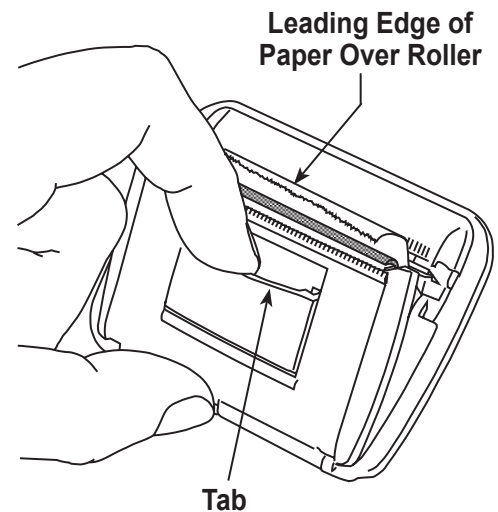


Figure 14

Maintenance

Install a Printer

1. Turn **OFF** the machine and disconnect it from its power source.
 2. Remove the oil drain bottle.
 3. Remove the screws holding the shroud. See Figure 10.
 4. Hang the shroud on the back of the machine as shown in Figure 11.
 5. Remove the two screws on the top corners of the control panel, allowing the control panel to swivel forward.
 6. Remove the cap from the printer location cutout by pressing on the cap's tabs from the back of the control panel and pushing the cap out of the panel.
 7. Remove the two locking arms from the printer by inserting the face of a flathead screwdriver under each tab near the back of its locking arm. Pry the tab outward while sliding the entire arm away from the printer.
 8. Place the printer into the cut-out area on the control panel. Press the face of the printer flush to the panel, oriented with the paper coming out at the top of the printer as shown in Figure 14.
 9. Replace the printer locking arms from within the inside of the control panel. Push them forward until they come into firm contact with the inside face of the control panel.
 10. Using the harness included with the printer, connect to the control board as shown in Figure 15. The wires are marked with their respective connector labels.
 11. Attach the two free connectors to the appropriate connectors on the back of the printer.
 12. Swivel the control panel back into place and fasten it using the two screws removed in Step 5.
 13. Assemble the shroud back onto the machine and install the screws removed in Step 3.
 14. Reinstall the oil drain bottle.
- The printer is now ready for use.

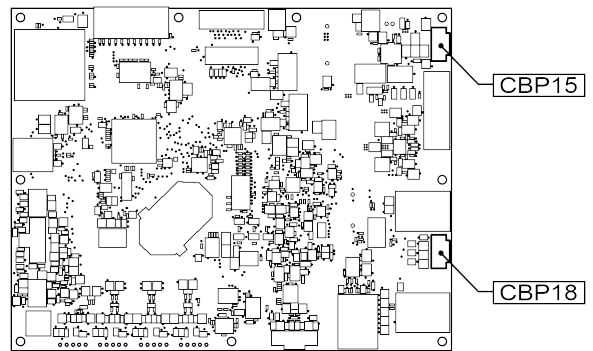


Figure 15

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 16. Hang the shroud on the back of the machine.
3. Disconnect the wire harness, USB connector, and sample hose from the identifier. See Figure 17.
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.

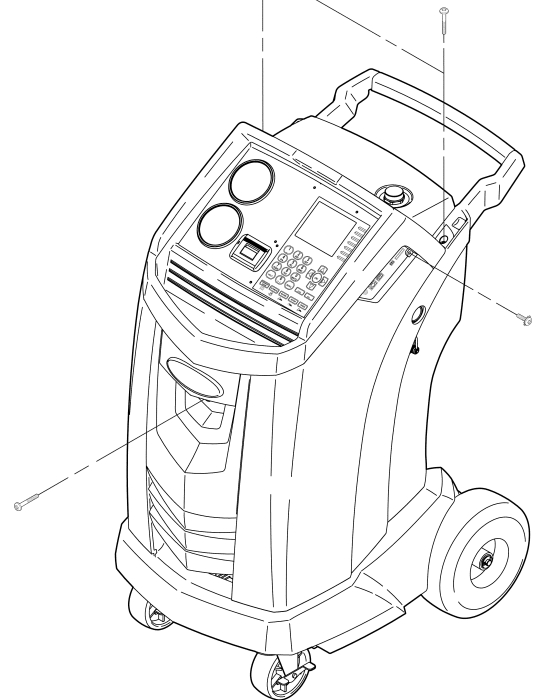
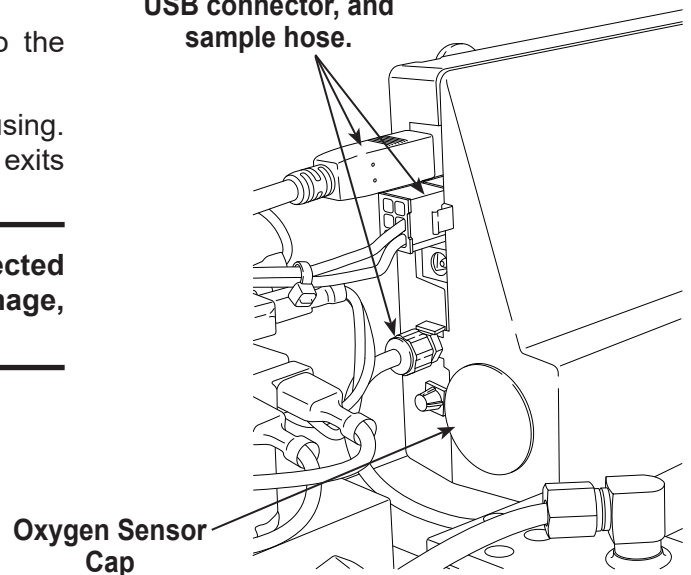


Figure 16

Disconnect wire harness, USB connector, and sample hose.



Oxygen Sensor Cap

Figure 17

Maintenance

6. Disconnect the wire harness at the connector by pressing on the center tab. Pull the connectors apart. See Figure 18.
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 19.
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.

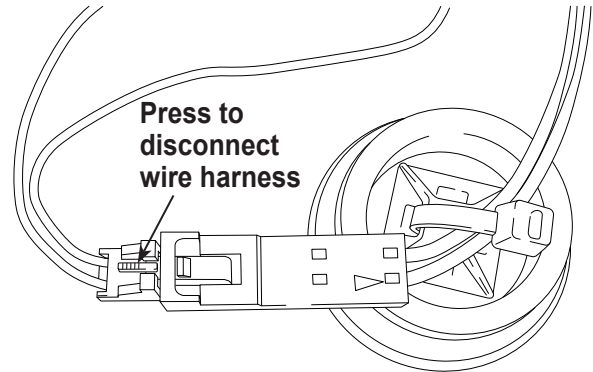


Figure 18

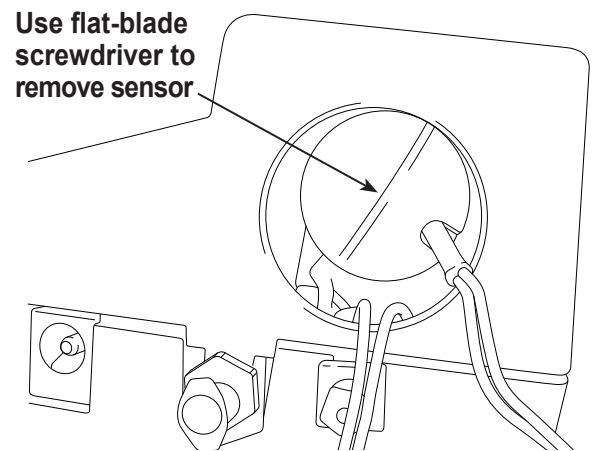


Figure 19

Refrigerant Identifier

The refrigerant identifier samples refrigerant going into the ISV to verify that it is R1234yf and not contaminated. Replace the sample hose assembly during every filter change and also if prompted by an error message saying that the hose is clogged. See Figure 20.

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**.

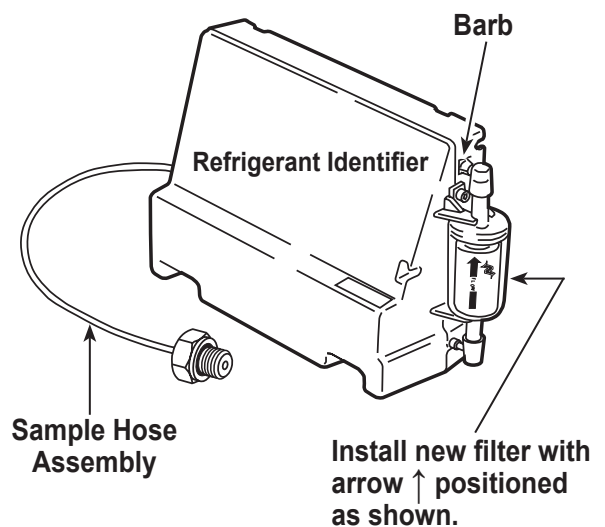


Figure 20

Replace the sample hose assembly during every filter change.

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.

Tank Fill Hose Filter Service

The tank fill hose at the rear of the machine (see Figure 21) 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.

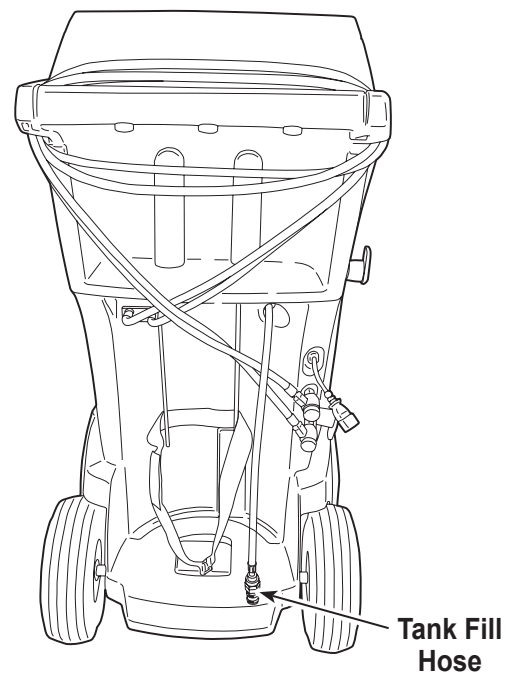


Figure 21

Maintenance

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 22.
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.).

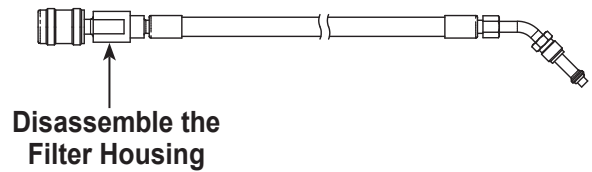



Figure 22

Replacement Parts

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

Component	Replacement Part No.
Calibration Weight	16214
Filter	34724
Oil Drain Bottle	19100
Printer	30038
Printer Paper (3 rolls)	34214
LP Service Coupler	18122
HP Service Coupler	18123
Service Coupler Set (high-side [red] and low-side [blue] couplers)	18124
Hose Set without Couplers (high-side [red] and low-side [blue])	71234
Service Hose without Coupler (low-side, blue)	70123
Service Hose without Coupler (high-side, red)	70124
Vacuum Pump Oil (pint)	13119
Vacuum Pump Oil (quart)	13203
Vacuum Pump Oil (gallon)	13204
Vinyl Dust Cover (optional)	17499
Identifier Filter	16913
Identifier Oxygen Filter	16916
Identifier Sample Hose	16106
Tank Fill Hose Filter	10233

 **WARNING:** 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.

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.

Internal Storage Vessel (ISV) : The refillable refrigerant storage tank designed specifically for this machine; 9.5 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. AC1234-4SL.


Leak Check : Components containing refrigerant are pressurized and monitored for pressure decay, which could indicate a leak.

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









Refrigerant : R1234yf

Troubleshooting Messages

Note: The scale-lock mechanism must be disengaged before the unit will power on. If the unit will not power on, ensure that the-scale lock pin is in the disengaged position.

Display	Cause	Solution
CALIBRATION CHECK FAILED	Internal scale is out of calibration.	Select  to retry calibration check. If calibration continues to fail, exit current test and contact a Robinair authorized service center for repair.
CHARGE STALLED!	Refrigerant is stalled in the ISV or the machine.	Verify connections are secure, valves are in correct position, and ISV contains enough refrigerant to complete charge.
DATABASE NOT AVAILABLE	Machine is not shipped with database installed.	Contact a Robinair authorized service center for more information.
EXCESS TANK WEIGHT	Overfill safety circuit tripped. Machine is locked out because of too much refrigerant in ISV.	Contact a Robinair authorized service center for more information.
FILTER CAPACITY EXHAUSTED, FILTER MUST BE REPLACED FILTER WEIGHT XXX.XYY REPLACE FILTER NOW?	150 kg (330 lb) or more refrigerant has been recovered since last filter change.	Refer to Filter Maintenance section of this manual for instructions to change filter.
FILTER SERIAL NUMBER HAS ALREADY BEEN USED. RE-ENTER OR EXIT?	Filter serial number entered into the machine is not correct.	Filter has already been used on this machine. Obtain new Robinair filter No. 34724.
HIGH TANK PRESSURE	Machine is locked out because pressure in ISV is too high, possibly because of excessively high tank temperature.	Allow machine to cool before performing additional A/C service. If problem continues, contact a Robinair authorized service center for more information.
INSUFFICIENT REFRIGERANT. 6.00 KG REQUIRED FOR SYSTEM FLUSH	Not enough refrigerant in the ISV to perform a system flush.	Refer to Tank Fill in Maintenance section of this manual.
INSUFFICIENT REFRIGERANT AVAILABLE FOR CHARGE SELECTED: XX.XXYY AVAILABLE: XX.XXYY	After a desired weight is entered, if the charge process will leave less than 0.67 kg (1.4 lb) of refrigerant in ISV, the charge function will not start.	Refer to Tank Fill in the Maintenance section of this manual.

Troubleshooting Messages

Display	Cause	Solution
INVALID CODE	Activation code entered into the machine is not correct.	Verify activation code is entered exactly as received. Capitalization is required.
INVALID SERIAL NUMBER!	Filter serial number entered into the machine is not correct.	Verify serial number entered matches serial number on filter. Verify filter has not been used on machine previously.
NO PRESSURE ON INLETS CHECK CONNECTIONS RECOVER ANYWAY?	System pressure is below 0.35 bar gauge.	Verify high-side (red) and low-side (blue) hoses are connected and coupler valves open. Select   to RECOVER; select   to bypass recover and proceed to VACUUM.
OIL DRAIN HALTED. PRESSURE ERROR, RETRY OR EXIT?	Accumulator pressure failed to rise above 1.10 bar within the minute before an oil drain was supposed to occur.	Adequate pressure is required within the accumulator to force the oil, which has been separated from the refrigerant, out of the system. Select  to retry; select  to exit.
OIL DRAIN HALTED. FLOW ERROR, RETRY OR EXIT?	Accumulator pressure failed to drop below 0.62 bar, indicating all oil failed to drain within the time given for oil drain.	Unit may need time to drain all the oil back due to low temperature, thick oil viscosity, or large oil quantity. Select  to retry, or select  to escape.
OIL LIFE REMAINING XX:XXX CHANGE OIL NOW?	Display shows vacuum pump oil life remaining until machine locks down.	Refer to Maintenance section of this manual for instructions to change vacuum pump oil.
OUT OF RANGE ACCUMULATORPRESSURE	Accumulator pressure transducer is not reading pressure correctly.	Exit current test and contact a Robinair authorized service center for more information.
OUT OF RANGE ISV PRESSURE	Internal storage vessel pressure transducer is not reading pressure correctly.	Exit current test and contact a Robinair authorized service center for more information.
OUT OF RANGE ISV TEMPERATURE	Internal storage vessel temperature sensor is not reading temperature correctly.	Exit current test and contact a Robinair authorized service center for more information.

Troubleshooting Messages

Display	Cause	Solution
OUT OF RANGE LS PRESSURE SENSOR	Low-side pressure transducer is not reading pressure correctly.	<i>Exit current test and contact a Robinair authorized service center for more information.</i>
POWER BOARD COMMUNICATION FAILED	Failed communication with relay board.	<i>Cycle power. If problem continues, contact a Robinair authorized service center for more information.</i>
PRESSURE LEAK TEST FAILED CHECK UNIT FOR LEAKS	A leak in vehicle A/C system.	<i>Exit current test and perform repairs on vehicle A/C system.</i>
PURITY TEST FAILED	Refrigerant tested is not R1234yf or it is contaminated.	<i>Do not recover contaminated refrigerant into the machine; use an external refrigerant recovery machine dedicated to contaminated refrigerant. See "Recover Refrigerant from a Vehicle" on p. 17.</i>
SOURCE TANK IS EMPTY	Refrigerant cannot be transferred to the ISV because the source tank is empty.	<i>Exit current test and replace the source tank.</i>
TANK FULL. REMOVE REFRIGERANT BEFORE CONTINUING	ISV is too full to recover additional refrigerant.	<i>Perform a charge process to remove refrigerant from ISV before any further recovery attempts.</i>
TRIAL PERIOD EXPIRED UNIT ACTIVATION REQUIRED TO CONTINUE USE	Failure to register and activate the machine within 30 days of initial startup will cause the machine to lock out and no longer function.	<i>Select ✓ and refer to Unit Activation section in this manual to register the machine.</i>
VACUUM TEST FAILED. CHECK SYSTEM FOR LEAKS	A leak in vehicle A/C system.	<i>Exit current test and perform repairs on vehicle A/C system.</i>
PRESS CONTINUE TO HOSE EQUALIZE PRESS ABORT TO HOSE COMPENSATE	Choose method to complete Charge service.	<i>Choose F3 key to complete service by Hose equalize. Vehicle needs to be turned ON to complete the procedure. Otherwise choose F3 to complete by compensation.</i>

Troubleshooting Messages

Display	Cause	Solution
CLOGGED FILTER	Debris in the Flush Filter may be restricting flow.	<i>Follow screen instructions. Recover refrigerant and replace filter.</i>
INSUFFICIENT VACUUM FOR SETUP	Leak found in the A/C system.	<i>Contact service center.</i>
FILTER CAPACITY LOW	Warning message to prepare user for filter replacement.	<i>Filter will lock-out soon. Replace filters. See screen information to order parts.</i>
O2 SENSOR ON THE IDENTIFIER WILL HAVE TO BE REPLACED SOON	Warning message to replace O2 sensor on the identifier.	<i>System will be locked-out once the sensor goes bad. Contact service center to replace O2 sensor.</i>
VACUUM LEAK TEST FAILED	Leak found in the vehicle A/C unit.	<i>Exit current test and perform repairs on the A/C system.</i>
PRESSURE LEAK TEST FAILED	Leak found in the vehicle A/C unit.	<i>Exit current test and perform repairs on the A/C system.</i>
REFRIGERANT IDENTIFIER ERROR	Problem with the connection to the identifier.	<i>Follow screen instructions. Contact service center if issue persists.</i>
PRINTER OUT OF PAPER	Empty printer paper.	<i>Replace printer paper and continue.</i>
USED OIL BOTTLE FULL	Used oil bottle is filled completely.	<i>Empty bottle to avoid overflow of oil.</i>
AIR FLOW ERROR	Not enough air flow inside the equipment.	<i>Check for obstruction. Machine is not safe to operate. Contact service center.</i>
REAL-TIME CLOCK FAILURE	System clock is incorrect.	<i>Contact service center. The time on the machine is incorrect. Data stored and printed on the machine is inaccurate.</i>
VACUUM HALTED. INLET PRESSURE IS TOO HIGH.	Vacuum cannot be performed with high inlet pressure.	<i>Check for pressure. Perform recovery.</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 R1234yf 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 (Robinair 25700) dedicated to contaminated refrigerant is required for the following steps. Refer to Figure 23.

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 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.

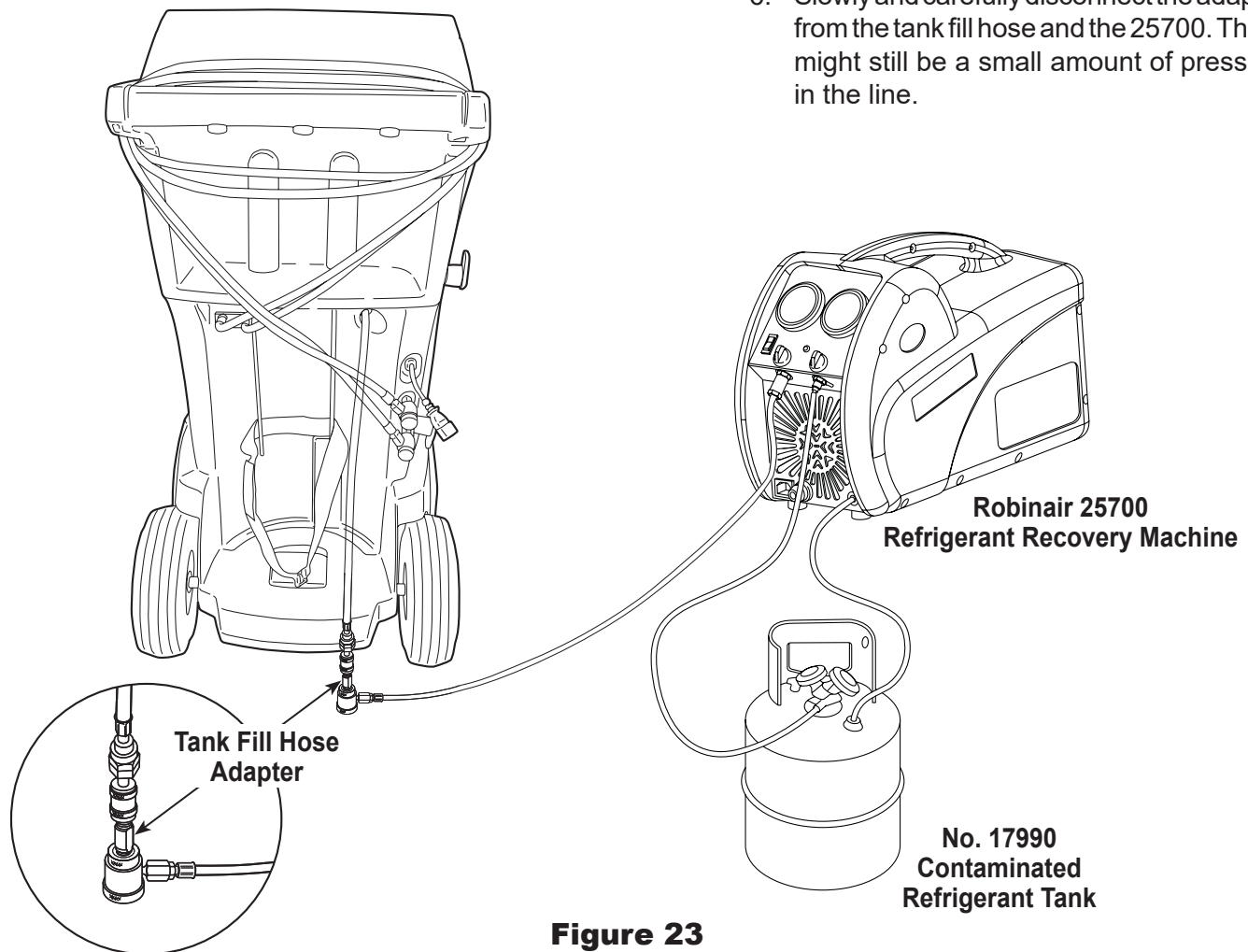


Figure 23

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 R1234yf. 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 (Robinair 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 24. 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.

Connect Robinair 25700 contaminated refrigerant recovery machine here.

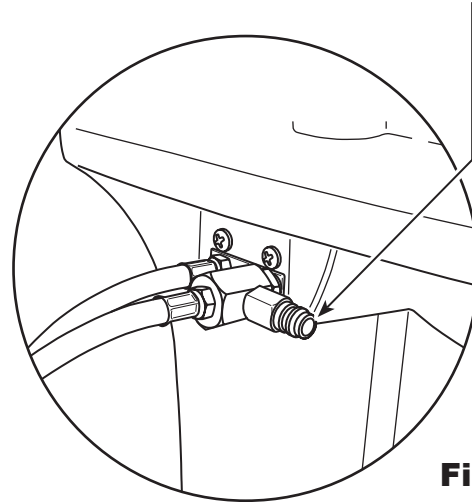


Figure 24

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 25.
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°C and 60°C (0°F and 140°F).
4. Lock the front wheels.

Transportation of Equipment

! **WARNING:** To prevent personal injury, should the machine require transport to a Robinair service center, follow local government regulations regarding transportation of equipment containing R1234yf.

1. Ensure the scale locking pin is securely engaged.
-

CAUTION: The scale-locking mechanism must be engaged when transporting the machine.

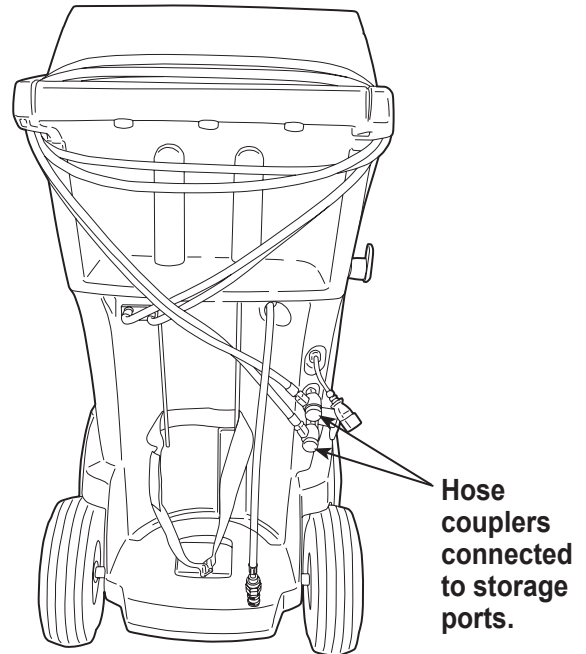


Figure 25

Disposal of Equipment



At the end of its useful life, dispose of the R1234yf 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.

CAUTION: R1234yf systems have special fittings (per SAE specifications) to avoid cross-contamination. Do not adapt your unit to a different refrigerant system, as failure will result.

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Freescale MQX RTOS 4.0.2

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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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