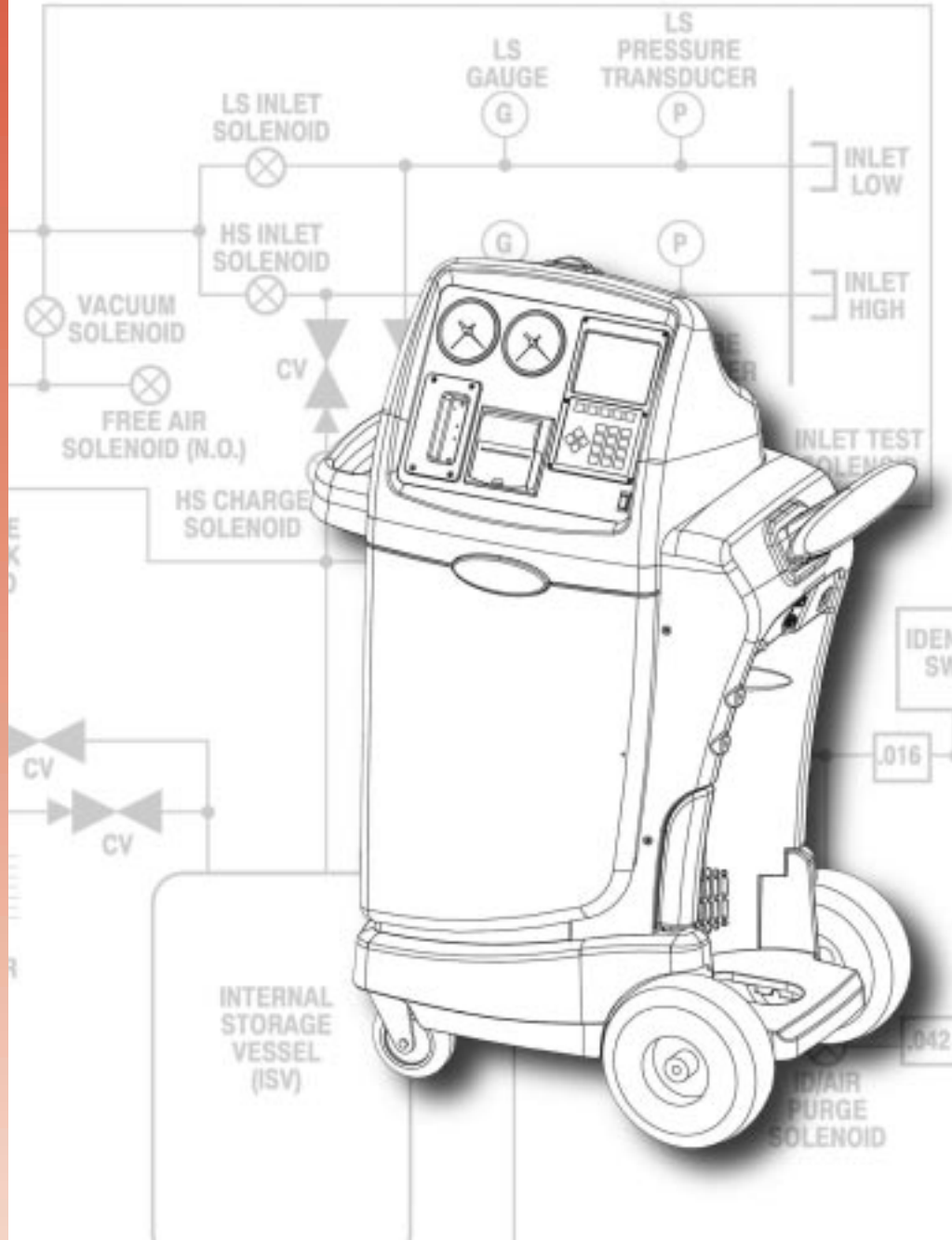


ROBINAIR



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SERIES: ACR2000
KENT-MOORE: J-43600

SPX **ROBINAIR**
Air Conditioning and Refrigerant
Service Solution

Refrigerant: R134a

⚠ WARNING ⚠

PRESSURIZED TANK CONTAINS LIQUID REFRIGERANT. OVERFILLING OF THE TANK MAY CAUSE VIOLENT EXPLOSION AND POSSIBLE INJURY OR DEATH. Safety devices require the use of only authorized refillable refrigerant tanks. Refer to the instruction manual for tank specifications and ordering information. Do not recover refrigerants into a non-refillable storage container! Regulations require refrigerant to be transported only in specifically authorized containers.

ALL HOSES MAY CONTAIN LIQUID REFRIGERANT UNDER PRESSURE. Contact with refrigerant may cause injury. Wear proper protective equipment, including safety goggles. Disconnect hoses with extreme caution.

HIGH VOLTAGE ELECTRICITY INSIDE PANELS – RISK OF ELECTRICAL SHOCK. Disconnect power before servicing unit. Refer to the instruction manual.

TO REDUCE THE RISK OF FIRE, avoid the use of an extension cord. An extension cord may overheat. If you must use an extension cord, the cord must be No. 14 AWG minimum and as short as possible. Do not use this equipment in the vicinity of spilled or open containers of gasoline or other flammable substances.

Use this equipment in locations with mechanical ventilation that provides at least four air changes per hour, or locate the equipment at least 18 inches above the floor.

Verify all safety devices are functioning correctly before operating the unit. Before operating, read and follow the instructions and warnings in the manual.

CAUTION: UNIT SHOULD BE OPERATED BY QUALIFIED PERSONNEL. Operator must be familiar with air conditioning and refrigeration systems, refrigerants, and the dangers of pressurized components.

Use with R134a refrigerant only. This equipment is not designed for any other purpose than recovering, recycling and recharging refrigerants! Do not mix refrigerant types!

OPERATING NOTES

Change the filter-drier when the display shows the Change Filter message. Follow the instructions for the changeover. At temperatures exceeding 120° F / 49° C, wait 10 minutes between recovery jobs.

R134a WARNINGS!

Use the ACR2000 unit only with R134a refrigerants! Cross-contamination with other refrigerant types will cause severe damage to the A/C system and to service tools and equipment. Do not mix refrigerant types through a system or in the same container!

Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose, and throat. To remove R134a from the A/C system, use service equipment certified to meet the requirements of SAE J2210 (R134a recycling equipment). If accidental system discharge occurs, ventilate work area before resuming service.

R134a service equipment or vehicle A/C systems should not be pressure tested or leak tested with compressed air. Some mixtures of air/R134a have been shown to be combustible at elevated pressures. These mixtures are potentially dangerous and may result in fire or explosion, causing injury or property damage.

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

This equipment is protected by one or more of the following patents: US: 4,938,031; 5,005,369; 5,248,125; 4,261,178; 4,768,347. Other U.S. and Foreign Patents Pending.

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This manual contains important safety procedures concerning the operation, use, and maintenance of this product. Failure to follow the instructions contained in this manual may result in serious injury. If you are unable to understand any of the contents of this manual, please bring it to the attention of your supervisor. Do not operate this equipment unless you have read and understand the contents of this manual.

The ACR2000 is a complete air conditioning service center for R134a. It recovers, recycles, evacuates, and recharges refrigerant quickly, accurately, and automatically, with little attention needed from the technician. A microprocessor controls the unit's functions, and prompts on the display lead you through the operation. These prompts are written so they are easy to understand and follow.

The entire service procedure can be done with one hook-up to the vehicle. A built-in refrigerant identifier checks for contaminated refrigerant before recovery. Pressures are shown on the high and low side gauges, and other operating information is shown on the display.

Refrigerant is recovered into and charged out of an internal storage vessel (ISV). The ACR2000 unit automatically refills this vessel with refrigerant from an external source tank as needed in order to maintain a constant 12-15 lbs. (5.45 - 6.82 kg) of refrigerant available to be charged. Quick connections are all that's needed to replace the source tank when it's empty.

Other timesaving features include automatic air purge, single pass recycling, and automatic oil drain. The unit also automatically clears refrigerant after every job. A red light on the top of the unit flashes whenever a process is complete, or when the unit needs attention from the user.

The ACR2000 is UL listed and meets SAE specifications for recycled refrigerant.

Glossary of Terms

A/C	Air conditioner or air conditioning
A/C System	The vehicle air conditioning system
Unit	The refrigerant recovery/recycling/recharging unit (ACR2000)
Source Tank	The refrigerant source tank
ISV	Internal Storage Vessel

GENERAL OPERATING GUIDELINES

1. The voltage at the unit must be $\pm 10\%$ of the unit's rated voltage. Errors will be displayed on the screen. Extension cords must be a minimum of 14 AWG and kept as short as possible. Common causes for electrical problems include:
 - Long extension cords
 - Faulty, overloaded electrical circuits
 - Drop lights
 - Incorrect ground or incorrect polarity

NOTE: If your electrical circuits have reversed polarity, the screen displays the following messages:

VOLTAGE LINE ERROR

CHECK POLARITY

VOLTAGE READOUT WILL BE DISABLED

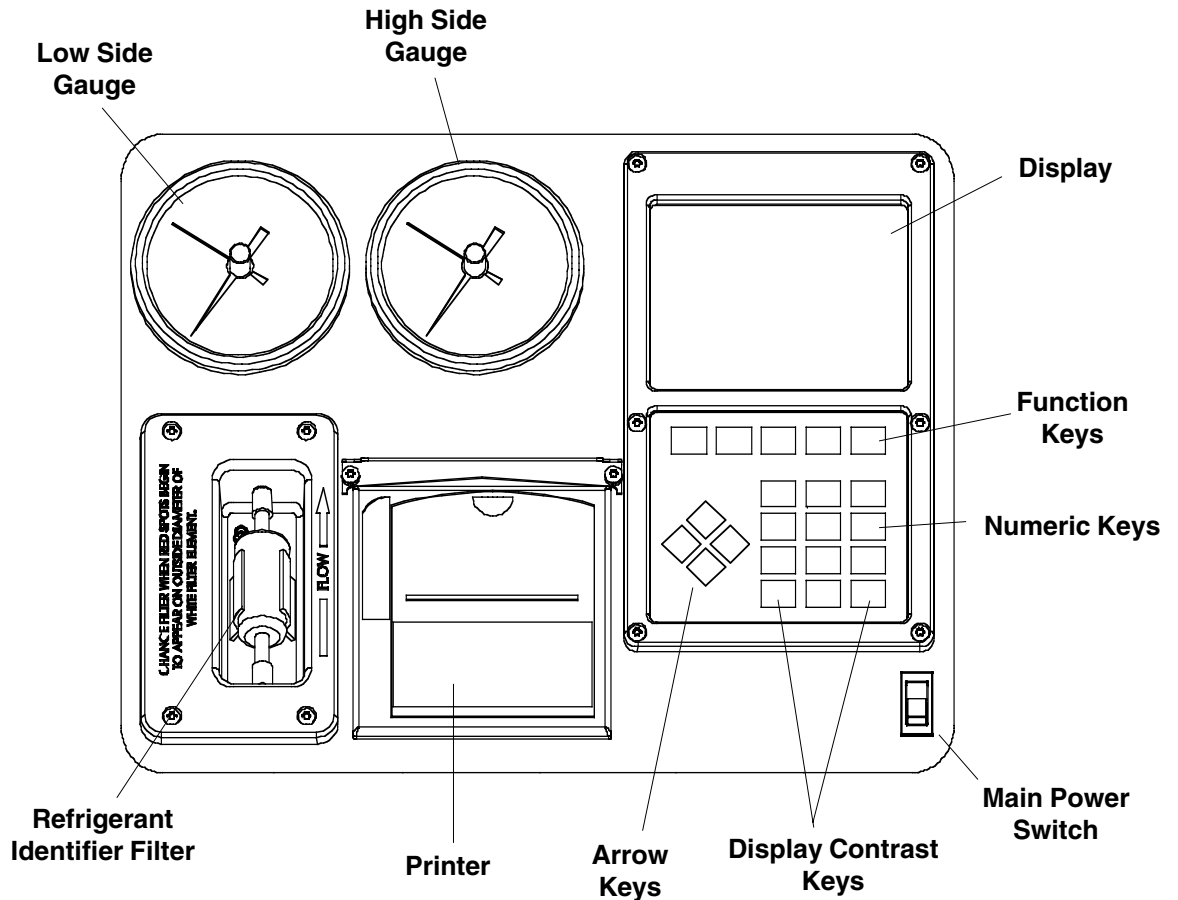
with an option to continue.

NOTE: If you choose the CONTINUE option, the over- and under-voltage protection built into the circuit board will be disabled. The unit may not operate correctly. To ensure correct operation, you must use a circuit with the correct polarity.

2. The display shows options and gives instructions for most service maintenance tasks. Read the display prompts and follow the directions given there.
3. To interrupt any function, press the **PAUSE** key, then press the **CONTINUE** key to restart the procedure.
4. The ACR2000 prompts you to check the system oil drain bottle (on the back of the unit) for recovered oil. Any system oil that is lost is automatically drained during recovery. You must measure and record the lost amount so you know how much new oil to add during charging. Refer to the A/C system manufacturer's service manuals for oil specifications. Dispose of used oil correctly.
5. In general, it is best to leave the ACR2000 main power ON throughout the workday. This allows plenty of time for the unit to purge air from the tank and refill the internal storage vessel. Turn the unit OFF at the end of the day.

COMPONENT LOCATION AND IDENTIFICATION

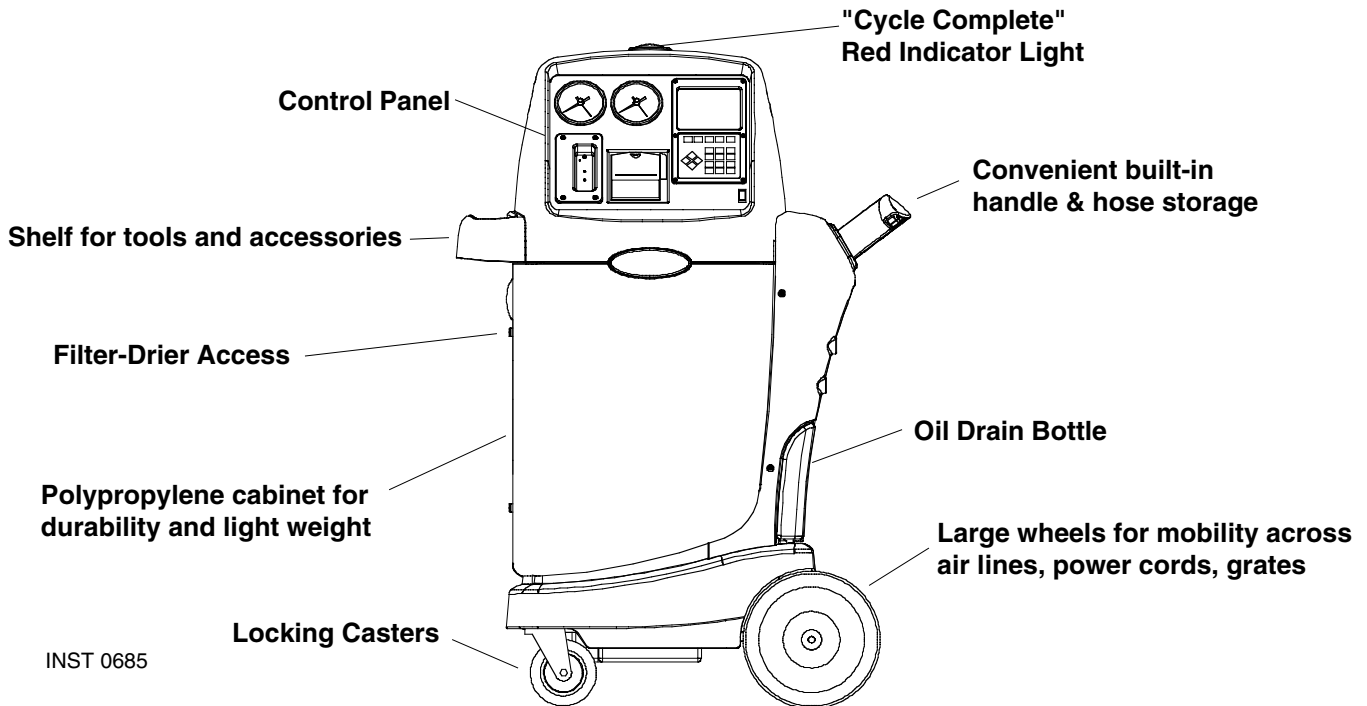
ACR2000 CONTROL PANEL



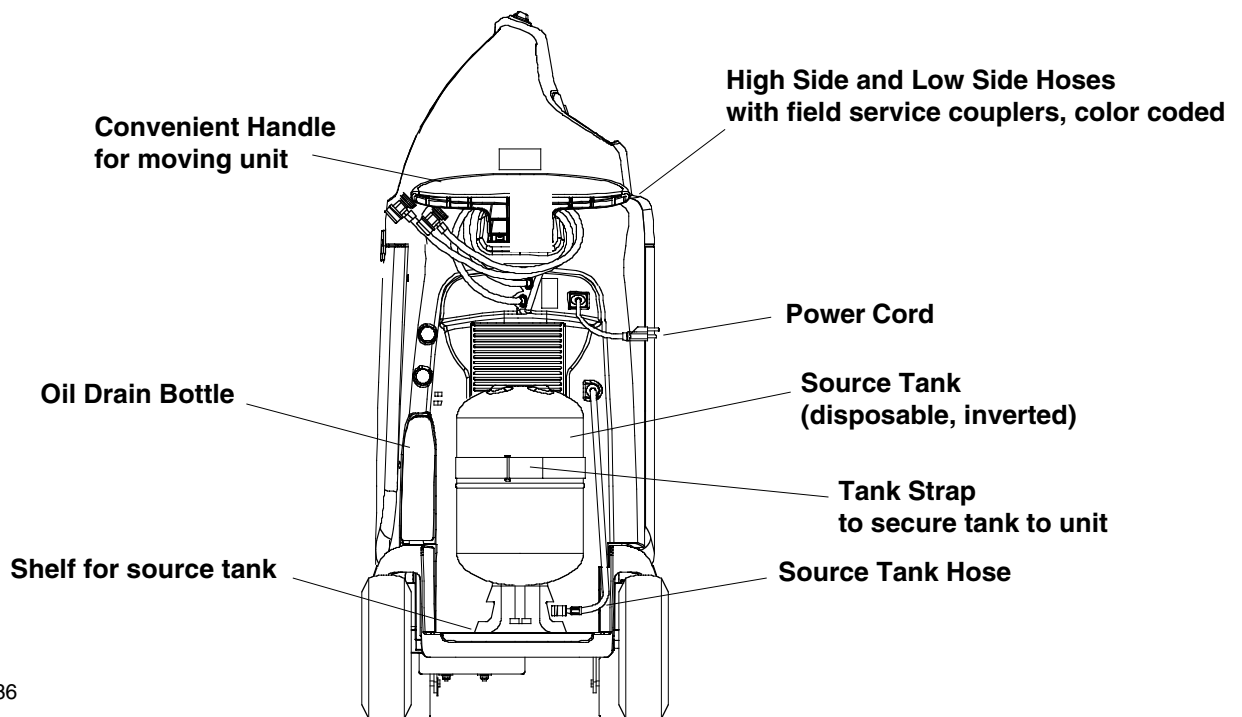
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COMPONENT LOCATION AND IDENTIFICATION

ACR2000 FRONT VIEW



ACR2000 SIDE VIEW



ACR2000 OVERVIEW

1. **POWER UP**—When the power is turned ON, the unit performs self-diagnostics. When tests are complete, the display shows SELECT OPERATION. Use the function keys (F-1 to F-5) to select the desired operating mode.

If the ACR2000 is turned off with refrigerant pressure in the hoses, the unit will prompt you to clear the hoses on power-up. Make sure the service couplers are disconnected from any A/C system being serviced. If a hose clear is performed when connected to an A/C system, the system will be recovered into the ACR2000 without being tested for contamination. Introduction of contaminated refrigerant into the unit will require service which is NOT COVERED under warranty.

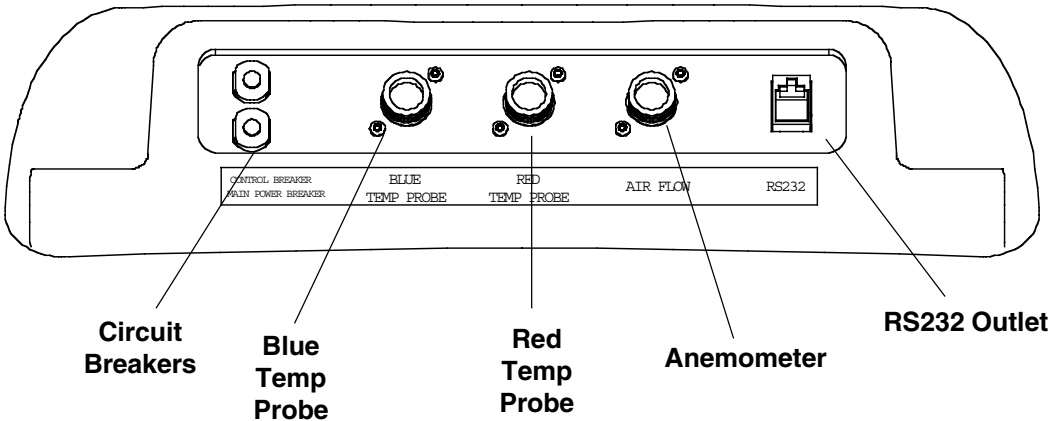
2. **MAIN MENU**—Shows the amount of refrigerant available for charging, the current temperature, humidity, date, time, inlet valve status, and operational status. The information appears in the upper corners of the display. Use the function keys (F-1 to F-5) to select the mode, or press SCROLL MENU for more choices.
3. **SNAPSHOT MODE**—Displays operating data about the vehicle's A/C system, including refrigerant purity, system pressure, A/C outlet temperature; also A/C outlet air velocity using optional anemometer attachment.
4. **RECOVER MODE**—Removes refrigerant from the A/C system, and filters it during recovery for reuse.
5. **VACUUM MODE**—Evacuates air from the A/C system.
6. **CHARGE MODE**—Recharges the A/C system; charge amount can be entered in pounds and hundredths of a pound, pounds and ounces, or kilograms.
7. **HOSE RECOVER MODE**—Removes all excess refrigerant from the hoses.
8. **FLUSH MODE**—Clears oil from the A/C system by reversing the flow of refrigerant; then filters out the contaminants.
9. **SET-UP MODE**—Allows you to configure the ACR2000 and run internal diagnostics.

Before you begin any procedure, familiarize yourself with the components of the unit (see diagrams in this section) and the operation.

For your safety, observe all warnings and cautions printed in this manual.

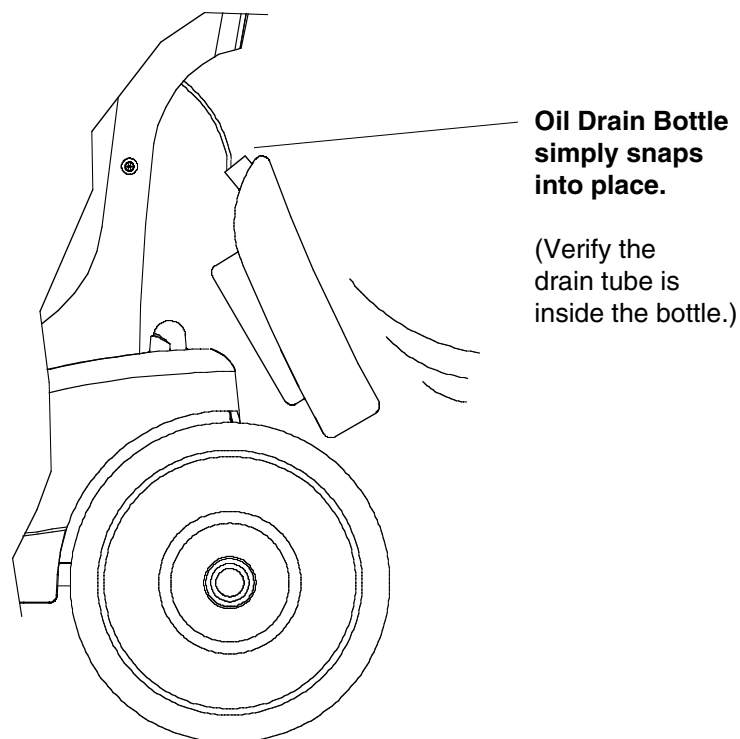
COMPONENT LOCATION AND IDENTIFICATION

**ACR2000
Temperature and Velocity Probes
(located on back panel)**



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**A/C System
Close-Up of Oil Drain Connection
(located on side panel near tank)**

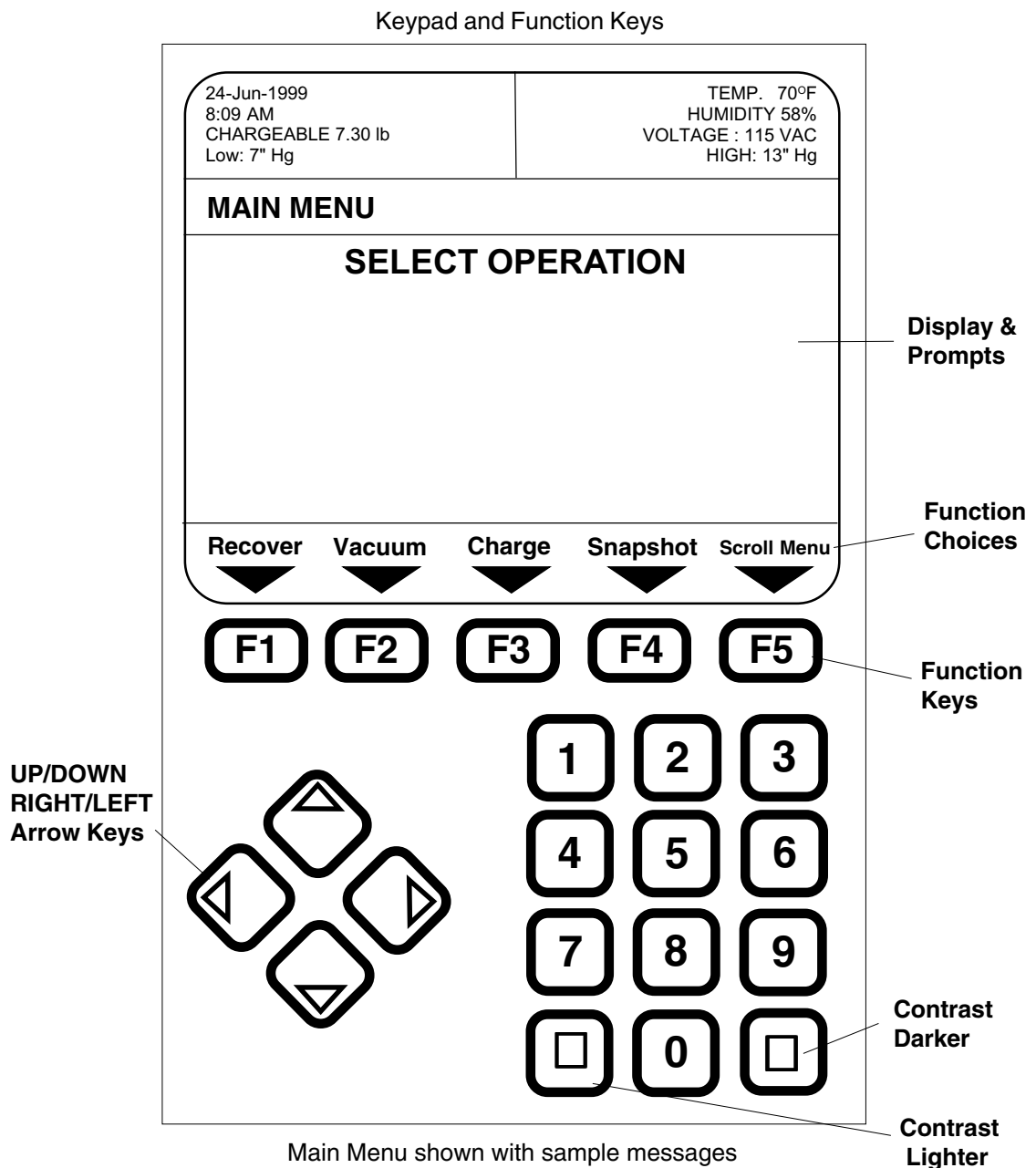


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FUNCTION KEYS

The function keys (F-1 to F-5) change depending on the service operation and unit's status. The display shows five labels along the bottom with arrows pointing to the function keys below. Each label shows what action a particular function key will activate. To make a selection, press the function key immediately below the label/arrow. (This display is not a touch screen—you must press the key.)

As an example, the last label in the illustration shows SCROLL MENU. To see what other options are available, press the key immediately below SCROLL MENU (F-5) to go to another menu. All five keys are not always active. Follow the labels on the display. There is always a selection for MAIN MENU.



NUMBER KEYS

Use these keys to change the evacuation time, vacuum level, or recharge weight if you want an amount different than the default shown on the display. These keys are also used to enter other numeric values, such as your area's elevation above sea level.

UP/DOWN AND LEFT/RIGHT ARROW KEYS

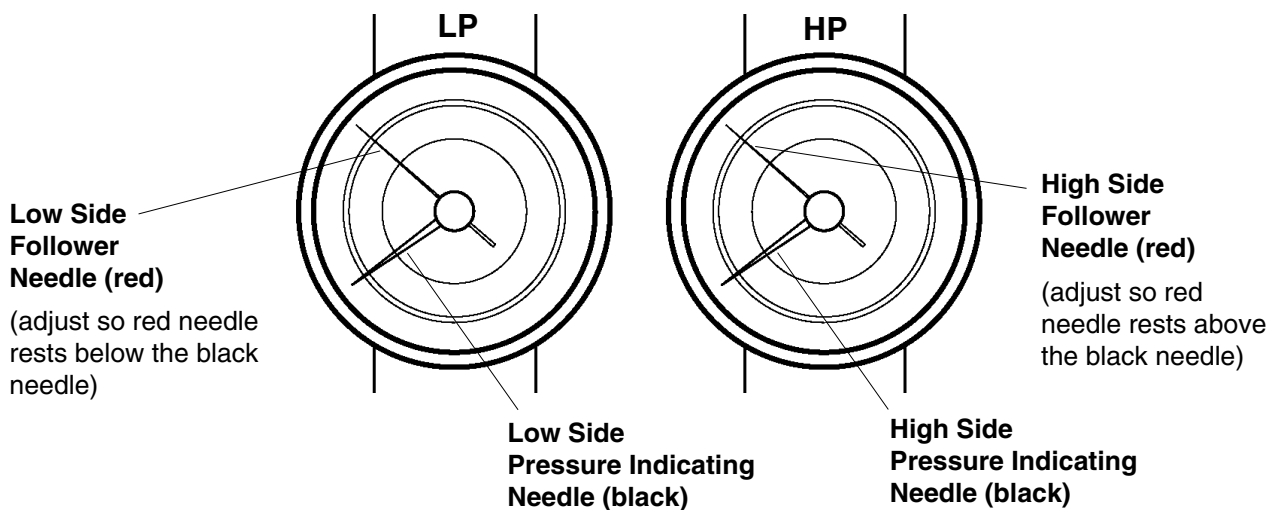
Pressing the **UP/DOWN** and **RIGHT/LEFT** keys moves the cursor on the screen in that direction (up, down, right, or left). In addition, during numeric programming, pressing the **UP** arrow increases the number; pressing the **DOWN** arrow decreases the number.

PRESSURE GAUGES

Both the high and low side gauges are equipped with red "follower" needles to show either the maximum or minimum pressure reached during operation. The follower is carried with the pressure gauge to the highest or lowest operating pressure, and stays there when the regular needle indicates other pressures.

1. The follower on the low side gauge should be adjusted so it rests on the bottom side of the black needle when the A/C system is not in operation.
2. The follower on the high side gauge should be adjusted so it rests on the top side of the black needle when the A/C system is not in operation.

When set up this way, the follower will be carried to the highest pressure or lowest pressure registered by the individual gauge.



INITIAL SET-UP INSTRUCTIONS



WARNING



It is extremely important to follow these instructions! **DO NOT** attach any hoses or accessories until prompted by the unit. Incorrect set-up and failure of the unit will result!

The unit display gives directions and explanations based on current vehicle/service status. Read and follow these display prompts at all times!

1. Unpack the ACR2000.
2. Attach the power cord to a 115V 60 Hz, 15 amp grounded outlet. Do not use extension cords.
3. Turn the Power Switch to the ON position.
4. There is a brief initialization period of several seconds. You will be prompted for the initial set-up of the ACR2000. (This sequence occurs **ONLY** during initial start-up of a new ACR2000. Subsequent changes can be made in the Set-Up Menu at any time).
5. Prompts are as follows:
 - A. Select Language—Press the **UP/DOWN** arrow to toggle between selections. Press **ENTER** when your choice appears on the screen.
 - B. Select Units—English or Metric; follow the same procedure as above.
 - C. Set Elevation above sea level for your location \pm 500 feet. (Call your area airport or library for your area's elevation. On the Internet, go to **www.topozone.com** and type your city name to view an elevation chart at no charge).
 - D. Calibrate the Pressure Transducer—Follow the prompts. You must disconnect the hoses from the ACR2000 during calibration.
 - E. Set Date and Time.

You will now be prompted to connect the correct hoses and accessories to the ACR2000.

6. Open the accessory box packaged with the ACR2000.



WARNING



Always wear eye protection when working with refrigerants. Refrigerants can cause injury. Read and follow all warnings at the beginning of this manual before operating this unit.

CAUTION! R134a. systems have special fittings (per SAE specifications) to avoid cross-contamination with R-12 systems. Do not attempt to adapt your unit for another refrigerant type—system failure will result!

IMPORTANT!
You can access the Set-Up Menu at any time to change any of these selections by pressing **SET-UP MENU**.

7. Attach the high and low side service hoses (found in the accessory box) to the 1/2" acme connections below the handle on the unit. Connect the blue low side hose to the bottom fitting, marked "LP." Connect the red high side hose to the top fitting, marked "HP."
8. Attach the red (front) 15 foot temperature probe and blue (rear) 30 foot temperature probe and optional airflow sensor to the appropriately labeled connections at the upper rear (see diagram on Page 7).
9. Press NEXT. The ACR2000 will now evacuate all air from the internal circuit.

NOTE: Introduction of contaminated refrigerant into the unit will require service which is NOT COVERED under warranty. It is imperative that a new tank of R134a refrigerant be used. The tank should be tested for contamination before installation. The tank of refrigerant used for initial fill of the internal storage vessel is not automatically identified. Introduction of contaminated refrigerant into the unit will require service which is NOT COVERED under warranty.

10. The ACR2000 will now prompt you to test the source tank. Attach a 1/2" acme x low side service adapter to the source tank (do not invert). Use the vapor valve on refillable tanks. Attach the blue low side service hose to the adapter, and open the coupler. Open the source tank valve.
11. The unit will now test the tank. When the test is complete, the unit will prompt you to install the source tank. Install a tank of new R134a refrigerant on the lower shelf of the unit, below the handle. The ACR2000 can handle 30 lb. (14 kg) or 50 lb. (23 kg) tanks. The source tank should be installed so liquid refrigerant is available (normally the tank is inverted). Secure the tank to the unit by placing the strap around the tank, and tightening it.
 - Virgin tank should be inverted.
 - Refillable tank should be upright with hose connected to liquid valve.
12. Press START and the ACR2000 pre-charges the tank with 12 pounds of R134a available for charge. This process takes approximately 15 to 20 minutes.

To avoid the possibility of lost refrigerant, virgin tanks should be checked for leakage around the tank valve after being connected and the valve opened. If leakage is found, close the valve, and keep it closed at all times EXCEPT during manual tank refill. (Before pressing MANUAL TANK REFILL button, open the valve. Close the valve immediately after the process is complete). The manufacturer does not reimburse for lost refrigerant.

The ACR2000 is now set up and ready for operation.

IMPORTANT:
Always test source tanks before installation on the ACR2000. See the following page for procedure.

POWER UP

1. Turn the Main Power Switch ON.
2. The display shows MAIN MENU and SELECT OPERATION when the unit is ready for operation.

VEHICLES WITH CONTAMINATED SYSTEMS

Before every recovery, the ACR2000 automatically samples the refrigerant in the vehicle system. The operator cannot bypass this procedure. If a system fails the purity level required, the ACR2000 tests a second time. In the event the system fails a second time, the ACR2000 prompts you to disconnect the hoses from the vehicle. Follow the on-screen prompts in order to clear out the ACR2000.

NOTE: The ACR2000 must be disconnected from the vehicle before starting the cleaning process. **It is illegal to knowingly vent, or allow refrigerant to vent, to the atmosphere.** Illegal venting will occur if the machine is left attached to the vehicle.

Please refer to your shop's policy for dealing with contaminated refrigerant.

TESTING SOURCE TANKS

Robinair recommends that all source tanks be sampled before installation on the ACR2000. The ACR2000 does not automatically test the contents of the source tank *before* adding refrigerant to the internal storage vessel. If a source tank contains contaminants, these contaminants are transferred to the internal storage vessel.

After a tank fill, the unit samples the contents of the internal storage vessel. When the internal storage vessel is contaminated the unit displays:

INTERNAL TANK CONTAMINATION or ID-MALFUNCTION CONTACT SERVICE

Turn off the unit, and restart to clear the message. If the message does not clear, contact the Technical Support Line immediately.

The ACR2000 locks out all functions until a certified service center decontaminates the machine. *This decontamination is not covered by the warranty.*

To sample a source tank, follow these instructions:

1. Recover any refrigerant left in the hoses by pressing the **RECOVER** key.
2. Attach a 1/2" acme x low side coupler to the source tank. Use the vapor valve on the refillable tanks.
3. Attach the blue low side service hose to the adapter, and open the coupler.
4. Open the source tank valve.
5. Turn the ACR2000 ON.
6. Press the **SNAPSHOT** key.
7. Press the **START** key.
8. The ACR2000 now samples the contents of the source tank.
9. Once the sampling process is complete, close the tank valves, recover the refrigerant from the hoses, and reattach the blue low side hose to the low side port on the unit.
10. **If the source tank is not contaminated**, follow the instructions for TANK REFILL.

If the source tank is contaminated, close the tank valve. Disconnect the blue hose, and remove the tank from the unit.

DIAGNOSING SYSTEM OPERATION USING SNAPSHOT MODE



WARNING



Always wear eye protection and protective clothing when working with refrigerants. Observe all warnings listed at the beginning of this manual.

Verify the vehicle is in **PARK** before turning on the engine. Provide adequate ventilation, or pipe exhaust to outside. Vehicle exhaust fumes can cause injury or death.

IMPORTANT:
The automatic air purge periodically vents air. Any brief release of air you hear is normal activation of the air purge.

To assist in system diagnostics, the ACR2000 Snapshot mode allows the technician to monitor and record key operating information from the vehicle being serviced. This data includes:

- Date/Time
- Ambient Temperature and Humidity
- Low Side System Pressure minimum value
- High Side System Pressure maximum value
- Front Duct Temperature minimum value
- Rear Duct Temperature minimum value
- Refrigerant Identifier Results

Additionally, the amount of refrigerant recovered and refrigerant charged can be captured after completion of each of these operations.

SNAPSHOT MODE OPERATION

1. Press the **SNAPSHOT** key or the **SCROLL MENU** key to reach a screen with the **SNAPSHOT** key.
2. You will be prompted to perform the following steps: Connect service hoses. Open the service couplers. Connect both the red (15 ft.) and the blue (30 ft.) duct temperature probes. Start the vehicle, and turn the vehicle A/C system to Maximum Cool or Recirculate setting.
3. Press the **START** key.
4. After identifying the vehicle refrigerant, the ACR2000 displays and updates minimum and maximum values described above. Pressing the **RESET MIN/MAX** key resets and begins tracking new minimum and maximum values. You may press the **PRINT** key at any time to capture and print the screen information. The printout contains the following data:

IMPORTANT:
Let the A/C system run long enough to reach typical operating temperatures/pressures.

SNAPSHOT SUMMARY

Date

Time

AMBIENT DATA

Humidity

Temperature (F° or C°)

VEHICLE DATA

Main Vent Temperature (minimum)

Back Vent Temperature (minimum)

High Side Maximum Pressure (psi/kPa)

Low Side Minimum Pressure

Charged Weight (the last amount charged)

Recovered Weight (the last amount recovered)

IDENTIFIER RESULTS

R134a: This percentage refers to the amount of R134a that is present in proportion to any other refrigerants present.

Air: This percentage refers to the amount of air, by weight, that is present in the system.

CODE:

For GM Internal Use

The unit display gives directions and explanations based on current vehicle/service status. Read and follow these display prompts at all times!

NOTE:

- The last recovered and charged amounts will always appear, indicating the most recent recovered and charged amounts. If a charge or recover has not been performed since the unit was powered up, the display will read zero.
 - All snapshot screens have been changed to include identical information. The only identifying difference is the title at the top of the printout:
SNAPSHOT SUMMARY – initial snapshot started with SNAPSHOT key.
RECOVERY SUMMARY – snapshot after a recovery. Only available if recovery was started from an initial snapshot.
CHARGE SUMMARY – snapshot immediately after a charge.
5. When you have the necessary information, turn OFF the engine. Press the **RECOVERY** key to go directly into Recovery, or you can exit to the MAIN MENU using the **MAIN MENU** key.

If all data is satisfactory, and you will not be doing any service work, allow the system to equalize in order to minimize refrigerant loss. Close the service couplers on the high and low side hoses. Disconnect the hoses from the vehicle access ports.

TO RECOVER REFRIGERANT

Recovery speed and accuracy are highly dependent on underhood temperature and air flow across components. Cold refrigerant can pool in the accumulator, evaporator, or condenser, and will continue to increase system pressures even after the recovery process has ended. For maximum recovery speed and accuracy, bring the engine to operating temperature before recovering refrigerant. Run the heater on maximum temperature, maximum blower, and recirculate. DO NOT run the A/C system, as excessive oil loss will result.

IMPORTANT: If you operate the engine during recovery, see warnings at the front of this manual and take extreme care to avoid moving parts.

NOTE: There must be 25 psi in the system to recover refrigerant. If there is not sufficient pressure, you will be prompted to evacuate the system. This step prevents inadvertent recovery of air or other contaminants from a leaking system.

1. Verify the vehicle engine is OFF.
2. From the MAIN MENU, press the **RECOVER** key, or the **SCROLL MENU** key to move to the screen showing the **RECOVER** key.
3. Follow the on-screen prompts to connect the service hoses to the vehicle and open the service couplers, if they are not already connected.
4. Empty the ACR2000 oil drain bottle before starting.
5. Press the **START** key to begin the recovery process.
6. If sufficient pressure is detected, the ACR2000 tests the vehicle system to determine the purity of the refrigerant in the vehicle system. If the purity is sufficient, recovery begins. If the refrigerant is contaminated, see page 12, *Vehicles with Contaminated Refrigerant*.
7. Before and immediately after recovery the ACR2000 will, if necessary, go into a clearing mode. This mode clears all refrigerant from hoses and internal components into the tank to provide maximum recovery accuracy.
8. When the system has been recovered to a vacuum of 9" Hg, the recovery process stops automatically. Several things occur at this time:
 - The red indicator light flashes and the beeper sounds at completion.
 - The display reads RECOVER COMPLETE, and shows the weight of the recovered refrigerant.
 - System oil is automatically drained into the oil drain bottle.
9. You now have the following options:
 - Proceed with evacuation or repairs, if needed.
 - Press the **RESTART RECOVERY** key to remove any additional refrigerant which may have vaporized in the system.
 - Wait for the ACR2000 to automatically restart and pull any additional refrigerant which has vaporized in the system. (This occurs after five minutes if a positive pressure is detected).

Additional recovered refrigerant is added to the amount shown on the screen.

IMPORTANT: Press PAUSE to stop recovery at any time.

NOTE: If you have entered the RECOVERY mode through the SNAPSHOT mode, the unit will automatically return to SNAPSHOT when you exit RECOVERY, and will give you an updated printout.

MAKING REPAIRS

When all refrigerant has been removed from the vehicle, make any repairs or component replacements. Before making repairs, disconnect the unit from the vehicle; close the high and low side service coupler valves, then disconnect the hoses from the vehicle access ports.

PULLING A VACUUM

Before recharging a vehicle, it is critical that you evacuate the system to remove any air. Air can affect system operation, but evacuation ensures air and other contaminants have been removed, and that the system is ready for a recharge.

1. If you have disconnected the ACR2000 to make repairs, reconnect the blue low side and red high side service hoses, and open the service connectors.
2. Press the **VACUUM** key (or press the **SCROLL MENU** key to find the correct screen with the **VACUUM** function key, then press **VACUUM**) to begin operation. OR, from the SNAPSHOT recovery mode, press the SNAPSHOT SUMMARY key, then press the MAIN MENU key.
3. The default evacuation time of 3.00 minutes appears on the screen. This function provides a minimum of three minutes of evacuation, and will then shut off if a vacuum of 28" Hg is achieved.
4. If you desire to evacuate for more than three minutes, change the time using the numeric keypad, or use the **UP** arrow to increase the time. (See page 9.)
5. Press the **START** key to accept the evacuation time and begin the process.
6. When the unit reaches a vacuum of 28" Hg., the red indicator light flashes and the beeper sounds to indicate the process is complete. If 28" Hg is not achieved after 10 minutes of evacuation, the process stops, the light and beeper signal that attention is needed, and you are prompted to check for a leak.

NOTE: Depending on your altitude, you may not be able to achieve 28" Hg. For this reason, it is important that the altitude setting in the Set-Up Menu is correct for your location. The ACR2000 uses this information to calculate and provide an equivalent set point for your altitude. (For instance, at 7000 feet, the ACR2000 pulls to 21" Hg before completing evacuation.)

REPLACING SYSTEM OIL

The system oil lost during recovery must be replaced. After evacuation, immediately measure the amount of system oil captured in the oil drain bottle. Discard the oil following accepted procedures. Add system oil following the instructions provided with your oil injector.

CHARGING THE VEHICLE

IMPORTANT:
For greatest accuracy, do not disturb the unit during charging.

The ACR2000 has a built-in default charge amount of two pounds (.91 kg). Other charge amounts can be programmed in pounds and hundredths, pounds and ounces, or kilograms. **NOTE:** To achieve optimum performance, it is important to pull a good vacuum before charging. The ACR2000 automatically prevents you from starting a full charge into an insufficiently evacuated system. If this occurs, follow display prompts.

1. Service hoses should be connected to the system, and the service couplers should be open.
2. Press the **CHARGE** key, or the **SCROLL MENU** key to reach the screen with the **CHARGE** function key; then press **CHARGE**.
3. You now have several options:
 - Press the **NEXT** key to accept the 2.00 lb. default.
 - Press the **UNITS** key to change programming units. If you press the **UNITS** key again, the program toggles through pounds and hundredths, pounds and ounces, and kilograms. Stop on the unit of measure you want.
 - Use the numeric keypad and directional arrows to change the programmed amount of the charge.
 - Change the default charge program. The unit will charge through the High Side unless you program it for Low Side charging. To do this, press the **LOW SIDE** key.
4. After you have selected the units, high or low side charging, and the amount to charge, press the **NEXT** key to enter your selections.
5. You will now be prompted to press the **START** key to begin the charging process, or the **BACK** key to change variables.
6. UPON PRESSING THE **START** KEY, THE ACR2000 BEGINS TO CHARGE THE A/C SYSTEM. IT IS IMPORTANT THAT YOU DO NOT DISTURB OR BUMP THE ACR2000 DURING CHARGE, AS ANY JARRING MOVEMENT CAN AFFECT THE CHARGE ACCURACY.

NOTE: If an insufficient pressure differential exists between the tank and system, charging suspends, and the ACR2000 goes into a power charge mode to increase tank pressure to complete the charge. This normally occurs only when the ACR2000 has been in a very cool environment before use.

7. When charging is complete, the red indicator light flashes and the beeper sounds to indicate the process is complete. The ACR2000 automatically goes to the SNAPSHOT mode, allowing you to provide an after-service snapshot of key operating information. See page 14 for details on the SNAPSHOT mode.
8. Press the **DONE** key to exit the SNAPSHOT mode and prepare for the next service job, or press **CHARGE MORE** to add more refrigerant.

YOU ARE NOW PROMPTED TO CLOSE THE SERVICE COUPLERS AND DISCONNECT THE SERVICE HOSES. THIS STEP IS VERY IMPORTANT TO ENSURE THE ACR2000 RECOVERS ANY RESIDUAL REFRIGERANT FROM THE HOSES.

FAILURE TO DISCONNECT HOSES WILL RESULT IN RECOVERY OF THE VEHICLE'S REFRIGERANT.

Replace caps on the vehicle's access ports.

9. Press the **START** key to recover refrigerant from the hoses.

IMPORTANT: If the coupler valves on the high or low side are left open, the system will pull the refrigerant back out of the vehicle.



WARNING!



Always close the service couplers before disconnecting from the system to prevent any release of refrigerant.

FLUSHING PROCESS

The ACR2000 provides a method of removing oil by forcing liquid refrigerant through the A/C system, or components of the A/C system. A special flushing adapter, which is available as an accessory, accesses the system at the compressor block. After flushing, the refrigerant is recovered by the ACR2000 and is filtered by the recycling circuit, returning it to SAE purity levels. A/C system configurations vary, and may require the adapting and flushing of individual components. The following procedure works with an orifice tube system.

IMPORTANT!
Always follow
vehicle
manufacturer's
instructions
for flushing.

NOTE: The ACR2000 must have at least 7 lbs. refrigerant available for charging in the internal storage vessel.

1. Locate the ACR2000 MAIN MENU on the control panel, and press the **SCROLL MENU** key. Press the **OIL FLUSH** key. Follow the on-screen instructions.
2. Follow these instructions and consult any service bulletins as needed:
 - Recover refrigerant as described under RECOVERY on page 16 of this manual. Verify the ACR2000 oil drain bottle (on the side of the unit) is empty and in place at this time. Close service coupler valves, and disconnect hoses from the vehicle access ports.
 - **Close the valve on the external source tank.**

NOTE: During flushing, up to 12 pounds of refrigerant is charged into the vehicle A/C system. If you exit the flushing cycle prior to completion without having closed the valve, the ACR2000 will automatically add refrigerant to the internal storage vessel, and there will be no room to recover the refrigerant used for flushing.

- Remove the A/C system orifice tube, and reconnect the fittings to create a bypass.
- Disconnect the compressor block at the rear of the compressor.
- Attach the compressor block adapter (provided in the flushing kit) to the system side of the compressor block.
- Configure the block connectors as desired to provide forward or back flushing of the refrigerant. The red high side connection hose from the ACR2000 is the refrigerant source, and refrigerant flows through it into the system. Open the red service coupler.
- 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.
- Verify that a flushing filter is correctly installed in the flushing filter housing. Open the isolation valve on the hose.

**The orifice
tube must be
removed and a
TXV needs to
be bypassed.**

3. Press the **NEXT** key.

If the refrigerant has not been recovered, the ACR2000 will now identify and recover. It then prompts you to make correct system connections (as outlined above) before evacuation or pulling a vacuum.

4. Press the **VACUUM** key. Choose the default or program the evacuation time; then press the **START** key. The unit begins evacuation to remove air in the system.
5. The display next asks for a flush time. The default time is 10 minutes. You can change the flush time using the numeric keys. Press the **START** key to accept the time and begin the flush procedure.

IMPORTANT!
Remember to replace system oil. Flushing removes all oil from the system. Follow instructions packed with the oil injector.



WARNING!



Do not disconnect service couplers during flushing. Doing so will cause refrigerant to spray out of the fittings!

6. The ACR2000 flushes the system for the designated amount of time, then goes into a CLEAR mode as it recovers refrigerant from the system.
NOTE: If the external flushing filter plugs, you will be prompted to change the filter.
7. The unit automatically drains any collected oil into the graduated oil drain bottle on the side of the ACR2000. Remove this bottle, measure the oil, and dispose of the oil correctly. Be sure to replace lost oil with an equal amount of new oil.
8. The display shows FLUSHING COMPLETE when the process is finished. Close service couplers on hoses, and remove them.
9. Re-configure the vehicle's A/C system to the way it was before flushing.
10. Open the valve on the source tank.
11. Evacuate and recharge the vehicle following instructions on pages 15-16.

HELP SCREENS

VACUUM

- Connect service hoses to vehicle, and open coupler valves.
- The system must have less than 25 psi of pressure for correct operation of the vacuum pump.
- If greater than 25 psi, you must recover the refrigerant before proceeding.

OIL FLUSH

- Recover any refrigerant in the vehicle.
- Remove and bypass the Orifice Tube or TXV.
- Install compressor bypass block and filter kit.
- Connect blue low side service hose to the filter; then open the service coupler.
- Connect the filter to the compressor bypass block. Open the service coupler.
- Empty the oil drain bottle.
- Press the **OIL FLUSH** key on the ACR2000 to begin the process.
- Program increased vacuum and flushing time, or press the **ENTER** key to accept default values.
- Install compressor and expansion devices.
- Evacuate; replenish lost oil; charge refrigerant.
- See Service Bulletins for specific vehicle instructions.

SNAPSHOT

- Install red (15 ft.) temperature probe into vehicle front air outlet duct.
- Install blue (30 ft.) temperature probe into vehicle rear air outlet duct (as required).
- Install airflow probe into the front duct (optional).
- Start the vehicle, and set A/C to MAX COOL.
- Press the **PRINT** key to capture and print, or reset MAX/MIN to update.

CHARGE

- The vehicle's A/C system must be evacuated before charging.
- If the A/C system did not hold a vacuum, it may have a leak.
- If not evacuated, the charge amount is limited to .5 lbs.

RECOVER

- Verify the service hoses are connected and the coupler valves are open.
- The system must have at least 25 psi of pressure for correct operation of the refrigerant ID.

SET-UP MENU (Use the **UP/DOWN** arrows to highlight selections.)

- *Language*
 - Press TOGGLE SELECTION to select English, Spanish, or French.
 - Press the **MAIN** key to exit.
- *Select Units (Selects the units of measure in English or Metric.)*
 - Press TOGGLE SELECTION.
 - Press the **MAIN** key to exit.
- *Clock Adjust (Adjusts the date and time.)*
 - Press the **ENTER** key.
 - Use the **UP/DOWN** arrows to change the date and time.
- *Change Elevation (Sets the altitude above sea level for your location.)*
 - Enter the numeric value.
- *Calibrate Pressure (Calibrates high and low side pressure transducers.)*
 - Disconnect service hoses, and press the **ENTER** key.
- *Anemometer (Enables and calibrates optional anemometer.)*
 - Instruction detail included with the anemometer.
- *Manual Oil Drain (Allows user to manually drain any oil from the ACR2000.)*
 - Press the **ENTER** key.
 - Press the **EXIT** key.
- Hose Length
 - Allows accurate charging with varying lengths of hose.
- Refrigerant Management
 - Displays details on refrigerant usage.

CHANGING THE FILTER-DRIER

The filter-drier is specially blended to remove maximum moisture, acid, and other contaminants. It will recycle about 300 pounds (136.36 kg) of refrigerant before a replacement is needed. The unit keeps track of jobs and total recycled refrigerant, and signals when it's time to change the filter-drier.

1. If the CHANGE FILTER message comes on during a job, it's best to complete that job before changing the filter-drier. FILTER CHANGE will show on the display until the filter has been replaced.

CAUTION! The filter change process should not be done with the unit connected to the vehicle. Disconnect the unit by closing the service coupler valves and disconnecting the high and low side hoses from the vehicle.

2. Select **MAIN MENU**, then press **SCROLL MENU**.
3. Press the **FILTER CHANGE** function key.
4. Press the **START** key. The unit will run to clear the filter-drier.
5. When clearing is complete, follow the on-screen prompts.
6. Turn the unit OFF, and disconnect the power cord from the power outlet.



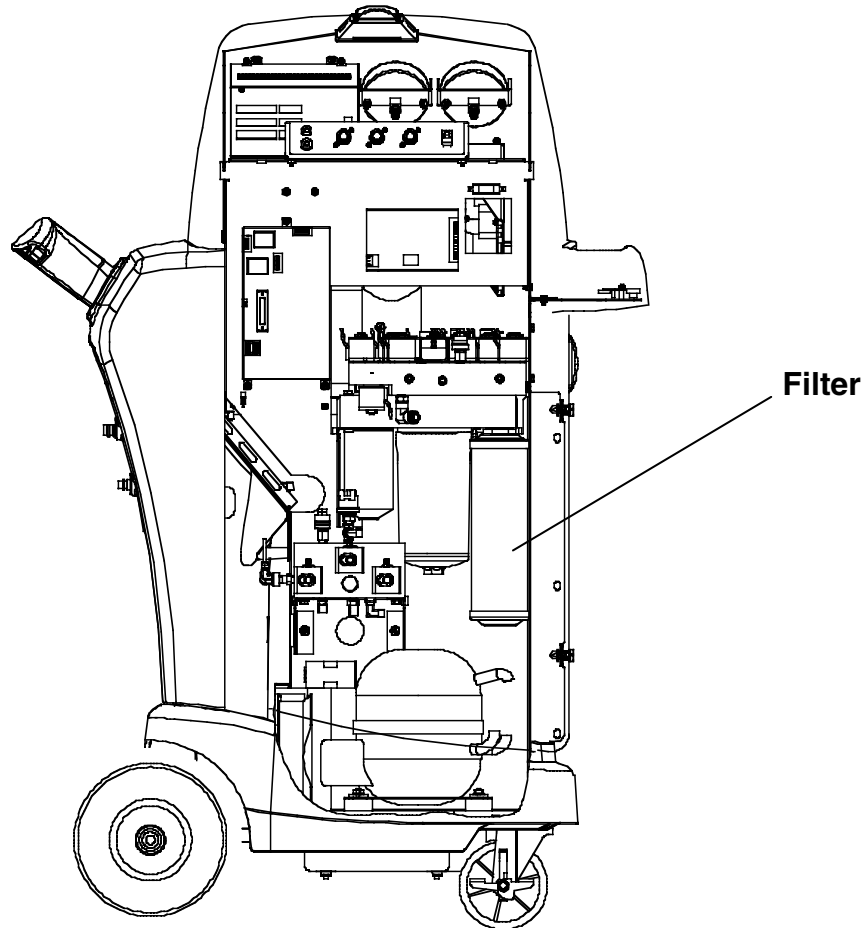
WARNING



Always disconnect the unit from the power source before making repairs or replacements to components. Risk of electrical shock!

7. Open the unit's front panel, remove the old filter-drier, and replace it with a new one. Hand-tighten the new filter. Dispose of the used filter-drier correctly.
8. Close the front panel door.
9. Plug the power cord into an appropriate power supply. Turn ON the main power switch. The display will show the FILTER CHANGE mode. Follow the on-screen prompts.
10. Press the **START** key. The unit will run briefly to pull an internal vacuum, removing any air that entered the system during the changeover.
11. Press MAIN MENU to exit when the process is complete.

CHANGING THE FILTER-DRIER



INST0719

ELECTRICAL PROTECTION

The ACR2000 monitors voltage and disables circuitry if the voltage drops below 103.5 volts, or increases above 135 volts. It also detects incorrectly wired connections and warns of the potential hazard. Additionally, the ACR2000 is protected by circuit breakers located on the back panel (see page 7). If the circuit breaker trips, all power to the unit is lost. Press the circuit breaker button to reset. (The circuit breaker is located near the temperature probes on the back of the unit.)

REPLACING THE SOURCE TANK

To reduce the likelihood of leakage, the black hose should always be connected to a source tank.

Periodically, the source tank on the back of the unit will run out of refrigerant. The internal storage vessel contains enough refrigerant for several jobs, but it's important to replace the tank soon after the message is displayed so you don't deplete the refrigerant supply in the internal vessel.

1. The message CHECK SOURCE TANK is displayed.
2. Close the source tank valve. Disconnect the black tank hose from the source tank valve.
3. Release the tank strap, and remove the tank from the back of the unit.
4. Before installing a new source tank, test the contents for contamination following instructions on page 12, "Testing Source Tanks."
5. Place a new disposable tank on the platform and secure it with the tank strap. The tank must be set up to supply liquid—usually this means it is inverted.
6. Connect the black tank hose to the tank's fitting. Open the tank valve.
7. The automatic refill will add refrigerant to the internal storage vessel as the unit works. However, if you want to fill it immediately, press **MAIN MENU**; then **SCROLL MENU**. Press the **TANK REFILL** key.

REPLACING PRINTER PAPER

1. Open the printer cover.
2. Press the **PUSH** button on the right side of the printer, and the entire printer mechanism will lift up.
3. Insert paper as shown on the lid of the printer. The paper will feed automatically. Push the printer mechanism down.
4. Tear off paper at the top of the feed slot.
5. Close the printer cover. Press and hold the **FEED** button; paper will feed up through the printer cover.

REPLACING THE IDENTIFIER FILTER

CAUTION! Visually inspect the identifier filter every day. If it begins to turn red, replace it immediately! You risk damaging the identifier if the filter isn't replaced.

The built-in refrigerant identifier has an inlet filter to protect the sensor. Periodically, this becomes clogged with contaminants and must be replaced. REPLACE THIS FILTER IMMEDIATELY!

1. The filter is located on the top of the unit's control panel. Unplug it, and remove it from the unit.
2. Plug in a new inlet filter.

GENERAL MAINTENANCE

1. On a regular basis, wipe off the unit with a clean cloth to remove grease, dust, and other dirt.
2. Periodically check the internal components for leaks—over time, fittings can loosen as the unit is moved. Turn OFF the unit. Disconnect it from the power source. Open the front door panel, and trace lines with a leak detector. Also check connections on the back and sides of the unit. Tighten any loose fittings or connections you may find.

SPARE PARTS

Description	Kent Moore Part No.
Filter Drier (spin-on)	J-43600-1
Identifier Filter	J-43600-2
Printer Paper	J-43600-3
Temp. Probe, 15 ft.	J-43600-4
Temp. Probe, 30 ft.	J-43600-5
Flush Adapter	J-43600-6
Anemometer	J-43600-7
Oil Bottle	J-43600-8
Gauge Lens	J-43600-9
Red Light	J-43600-10
Printer	J-43600-11
Hose, Red (96 in.)	J-43600-12
Hose, Blue (96 in.)	J-43600-13
Service Coupler (red)	J-43600-14
Service Coupler (blue)	J-43600-15
Service Couple O-Ring Kit	J-43600-16
Internal Storage Vessel (ISV)	J-43600-17
ISV Air Purge Hose	J-43600-18
ISV Fill Hose	J-43600-20
ISV Vapor Hose	J-43600-21

This product is warranted to be free from defects in workmanship, materials, and components for a period of two years 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 also 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 Robinair must be obtained before shipping to either an authorization service center or the factory.
5. Warranty service claims are subject to factory inspection for product defects(s).
6. Robinair 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, 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 Robinair recovery/recycling equipment with unauthorized refrigerants will void our warranty. Authorized refrigerants are listed on the equipment, or are available through our Technical Service Department.

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.
- Source tanks are not tested for purity before installation on the unit.