Theory of Operation and Safety Precautions

The Series AC900 recovery, recycling, evacuation, and recharging units are designed for R-12 and R-134a refrigerants only. These units are UL approved and meet SAE J-1770 standards.

These units began production in March of 1997. The model, serial number, and manufacturing date code can be found on a white tag located on the back of the unit above the tank.

DEPRESSURIZING THE UNIT

NOTE: Since the series AC900 has separate components for each refrigerant type, it is only necessary to depressurize the side in need of repairs.

1. Close both the blue liquid and red vapor valves on the 30 pound recovery tank.
2. Disconnect all hoses from the 30 pound recovery tank.
3. Disconnect the red high side and blue low side hoses from a hand-held manifold gauge set.
4. Connect the blue 36" liquid hose to the low side (blue handle) of the hand-held manifold gauge set. Connect the red 36" vapor hose to the high side (red handle) of the manifold gauge set.
5. Connect the yellow hose attached to the center port of the hand-held manifold gauge set to the inlet of a separate recovery unit.
6. Open both manifold valves on the hand-held manifold gauge set.
7. Plug in the separate recovery unit and start its recovery process.
8. When the hand-held gauge set shows 0 psi, stop the recovery process. Wait 10 minutes and watch the hand-held manifold gauges for a pressure rise above zero. Repeat steps 7 and 8 until positive pressure does not develop on the hand-held gauge set.
9. Disconnect the blue 36" liquid and red 36" vapor hoses from the hand-held manifold gauge set.
10. Close the high side manifold valve on the control panel of the AC900. Disconnect the red 96" hose from the back of the unit. Connect the yellow 36" air purge hose to the low side (blue handle) of a hand-held manifold gauge set. Connect a hose from the high side port of the machine to the high side of the hand-held manifold gauge set. Connect the hose from the center port of the hand-held manifold set to the inlet of the separate recovery unit.
11. Open both the high and low side gauge valves on the control panel of the AC900 and the hand-held gauge set.
12. Start the recovery process on the separate recovery unit.
13. When the pressure on the hand-held gauge set shows 0 psi, stop the recovery process. Wait 10 minutes and watch the hand-held manifold gauges for a pressure rise above zero. Repeat Steps 12 and 13 until positive pressure does not develop on the hand-held gauge set.

WARNING

Always wear safety goggles when working with refrigerants. Contact with refrigerant can cause eye injury. Disconnect lines and hoses with extreme caution! Pressurized refrigerant may be present in lines and hoses. Always point lines and hoses away from you and anyone nearby.

Always unplug the station from the power source before removing any of the shrouding or beginning any service work.

To order parts, please FAX your order to 1-800-222-7805.

All service related questions should be directed to Robinair Inside Sales and Service at 1-800-822-5561.
Component Descriptions

1. **18190A R-134a Low Side Coupler (blue actuator, smaller I.D.)** — Allows access to the low side of an R-134a system.
   - RA19115 Coupler Repair Kit (front O-ring only)
2. **18191A R-134a High Side Coupler (red actuator, larger I.D)** — Allows access to the high side of an R-134a system.
   - RA19115 Coupler Repair Kit (front O-ring only)
3. **62096 R-134a Low Side Hose** — Provides flow from the low side coupler to the low side port on the station (14mm x ½” Acme).
   - 17772 Hose to Coupler O-ring
4. **63096 R-134a High Side Hose** — Provides flow from the high side coupler to the high side port on the station (14mm x ½” Acme).
   - 17772 Hose to Coupler O-ring
5. **68296A R-12 96” Blue Quick Seal Hose** — Low side service hose to the vehicle.
   - 18180 Replacement R-12 Quick Seal O-ring
   - 18451 450 ¼” Flare Quick Seal Repair Kit
6. **68396A R-12 96” Red Quick Seal Hose** — High side service hose to the vehicle.
   - 18180 Replacement R-12 Quick Seal O-ring
   - 18451 450 ¼” Flare Quick Seal Repair Kit
7. **68126 36” Red R-134a Tank Hose** — Delivers refrigerant being recovered or recycled to the vapor side of the R-134a storage tank.
   - 17773 Replacement R-134a Quick Seal O-ring
   - 40302 R-134a Quick Seal Repair Kit
8. **68127 36” Blue R-134a Tank Hose** — Allows flow from the liquid side of the R-134a tank to the recycling and charging solenoids.
   - 17773 Replacement R-134a Quick Seal O-ring
   - 40302 R-134a Quick Seal Repair Kit
9. **68128 36” Yellow R-134a Tank Hose** — Supplies pressure from the top of the recovery tank to the air purge control.
   - 17773 Replacement R-134a Quick Seal O-ring
   - 40302 R-134a Quick Seal Repair Kit
10. **68121A 36” Red R-12 Tank Hose** — Delivers refrigerant being recovered or recycled to the vapor side of the R-12 storage tank.
    - 18180 Replacement R-12 Quick Seal O-ring
    - 18451 450 ¼” Flare Quick Seal Repair Kit
11. **68122A 36” Blue R-12 Tank Hose** — Allows flow from the liquid side of the R-12 tank to the recycling and charging solenoids.
    - 18180 Replacement R-12 Quick Seal O-ring
    - 18451 450 ¼” Flare Quick Seal Repair Kit
12. **68123A 36” Yellow R-12 Tank Hose** — Supplies pressure from the top of the recovery tank to the air purge control.
    - 18180 Replacement R-12 Quick Seal O-ring
    - 18451 450 ¼” Flare Quick Seal Repair Kit
13. **RA19402 2¼” R-134a High Side Gauge** — Reads pressure entering the high side hose.
    - 11715 Replacement Gauge Lens
14. **RA19403 2¼” R-134a Low Side Gauge** — Reads pressure entering the low side hose.
    - 11715 Replacement Gauge Lens
15. **RA19400 2¼” R-12 High Side Gauge** — Reads pressure entering the high side hose.
    - 11715 Replacement Gauge Lens
16. **RA19401 2¼” R-12 Low Side Gauge** — Reads pressure entering the low side hose.
    - 11715 Replacement Gauge Lens
17. **RA19044 Low and High Side Manifold Valves** — Allows refrigerant flow from the high and low side hoses to the center manifold port.
18. **RA19266 Vacuum Pump Protection Switch** — A normally open sensor that closes when pressure greater than 25 psi is present in the A/C system. If the pressure is less than 25 psi in the recovery mode, the display reads “CH-P.” In the vacuum mode, the display reads “U-HI” if the pressure is 25 psi or greater in the A/C system. This indicates that a recovery procedure must be performed before attempting a vacuum.
19. **119305 R-134a Suction Line Strainer** — Filters the refrigerant coming from the high and low side manifold valves before entering into the manifold assembly.
20. **119303 R-12 Suction Line Strainer** — Filters the refrigerant coming from the high and low side manifold valves before entering into the manifold assembly.
21. **RA18752 Vacuum Sensor** — A normally closed sensor that sends a signal to the main board when a 13” Hg vacuum has been reached on the inlet line. The switch has two orange wires attached to it.
Component Descriptions (Continued)

22. **RA19320 (RA19321 220 volt) Manifold Assembly** — Block assembly that houses the recovery, recycling, charging, and vacuum solenoids; this manifold also houses the vacuum sensor and three check valves.
   • RA19326 Replacement Check Valve with Spring

23. **RA19258 Recovery Solenoid Rebuild Kit** — A normally closed solenoid, designed to prevent the flow of refrigerant into the system oil separator while the unit is off or in any mode other than Recovery.

24. **RA19258 Recycling Solenoid Rebuild Kit** — A normally closed solenoid that prevents the flow of refrigerant into the system oil separator when the unit is not in Recycling Mode.

25. **RA19258 Charging Solenoid Rebuild Kit** — A normally closed solenoid preventing flow into the A/C system when the unit is turned off or in any mode other than Charging.

26. **RA19258 Vacuum Solenoid Rebuild Kit** — A normally closed solenoid designed to prevent flow to the vacuum pump during Recovery or Charging.

27. **RA15425 (RA15428 220 volt) Vacuum Pump** — A 6 CFM, two stage rotary vane pump designed to pull moisture and air from an A/C system.
   • 111877 Vacuum Hose
   • 40084 Replacement Hose Gasket
   • 13203 Pump Oil
   • 15369 Base and Foot Assembly

28. **RA18760 System Oil Separator** — Performs three functions. Internal heat evaporates the saturated vapor, preventing liquid from entering the compressor. Any oil droplets contained in the refrigerant drop out in the separator. The system oil separator's third function is that it acts as a heat exchanger.

29. **RA19044 Oil Drain Valve** — Allows the oil removed from the system to be drained when Recovery is complete. The same amount of oil should be returned during charging.
   
   **NOTE:** It is very important that the oil drain procedure be done after each recovery.
   • RA17419 Oil Drain Bottle

30. **34430 Filter-Drier** — Removes moisture, acid, and oil from the refrigerant.
   • 40084 Replacement Filter Gasket

31. **RA17434 (RA17411 220 volt) Compressor** — Converts low pressure, low temperature incoming gas into high pressure, high temperature discharge gas.
   • 111043 Replacement Start Capacitor

32. **119248 Compressor Oil Separator** — Traps compressor oil that has migrated out with refrigerant while passing through the compressor. The oil is stored in the separator until the equalization solenoid loses power and allows the oil to be returned to the compressor.

33. **RA17522 (RA17578 220 volt) Equalization Solenoid** — A normally open solenoid that allows oil trapped in the compressor oil separator to be forced back into the suction side of the compressor, equalizing pressure on the high and low side of the compressor and pressurizing the system oil separator as power is dropped to the solenoid.

34. **RA17529 High Pressure Cutout** — A normally closed sensor that shuts off the unit when the discharge pressure reaches 435 psi.

   **NOTE:** This switch has three contacts; the outer two contacts (numbered 1 and 3) are normally closed.

35. **RA19288 Recovery Check Valve** — Allows flow in one direction only and prevents refrigerant in the tank from coming back into the unit during shutdown.

36. **RA19412 Automatic Expansion Valve** — Converts incoming liquid refrigerant into a low pressure saturated vapor. The calibration of the expansion valve can be checked at the service port with a pressure gauge. The allowable tolerance of the valve is 30 to 40 psi during Recycling.

   **NOTE:** Allow the unit to recycle 10 minutes with a minimum of 10 pounds of refrigerant in the tank before checking or adjusting the pressure.

37. **RA17577 Moisture Indicator** — References the moisture content of the refrigerant being recycled. Pale yellow indicates wet and light mint green indicates dry. During recycling, the moisture indicator is normally filled with liquid refrigerant and warm to the touch.

38. **RA19242 R-134a Air Purge Device** — After the recycling sequence has run for 30 seconds, a timer (programmed in the main board) opens the normally closed solenoid of the selected refrigerant type, allowing pressure to enter the lower cavity of the air purge device. When pressure on the lower cavity exceeds pressure on the upper cavity by 7 psi or more, a valve inside the device opens to release the air pressure from the cavity. When the pressures come within 3 psi of each other, the device stops purging.
Component Descriptions (Continued)

39. **RA19198 R-12 Air Purge Device** — After the recycling sequence has run for 30 seconds, a timer (programmed in the main board) opens the normally closed solenoid of the selected refrigerant type allowing pressure to enter the lower cavity of the air purge device. When pressure on the lower cavity exceeds pressure on the upper cavity by 7 psi or more, a valve inside the device opens to release the air pressure from the cavity. When the pressures come within 3 psi of each other, the device stops purging.

40. **RA19006 (RA19088 220 volt) Air Purge Solenoid** — Prevents the flow of refrigerant into the lower cavity of the air purge device until energized by the main board 30 seconds after the recycling process has been engaged. Note: Power is dropped from the solenoid after 10 minutes of purging.
   - **RA19258 Solenoid Rebuild Kit**

41. **17105 R-12 Recovery Tank** — Stores refrigerant to be recycled at a later time. The tank has two valves; the vapor valve is an open fitting to the tank and the liquid valve has a draw tube extending to within 2 inches of the bottom of the tank.

42. **34705 R-134a Recovery Tank** — Stores refrigerant to be recycled at a later time. The tank has two valves; the vapor valve is an open fitting to the tank and the liquid valve has a draw tube extending to within 2 inches of the bottom of the tank.

43. **RA19323(R-12) or RA19411(R-134a) Oil Injector Assembly** — Controls the flow of oil from the injection bottle to the vehicle.
   - **113025 Oil Injector Check Valve**
   - **RA19141 Oil Bottle**
   - **RA19291 Replacement Valve**

44. **RA19049 (117581 220 volt) Power Cord** — Conducts power to the unit.

45. **RA19181 Power Cord Receptacle** — Female socket where the power cord connects.

46. **RA19047 Vacuum Pump Outlet** — Female socket where the vacuum pump power cord connects.

47. **RA19343 Main Power Switch** — Controls the power between the power cord and the main board.

48. **RA17416 (RA17516 220 volt) Fan** — Runs as soon as the MAIN POWER switch is turned on to cool the cabinet temperature.

49. **117684 Refrigerant Selector Switch** — Indicates which refrigerant type the machine is set-up for.

50. **RA19396 Main Board** — Controls the unit’s functions, automatic or programmed.

51. **RA19397 Keypad** — Programs the main board.

52. **RA19210 Scales** — Sends a signal to the main board for accurate weight readings and tank overfill protection.
   - **114659 Replacement Thumbscrew**
   - **119073 Replacement Scale Platform**

53. **RA17459 (RA17324 220 volt) System Relays** — Energizes the compressors and vacuum pump, allowing the sensors to turn off the unit. The relay has two sets of contacts which close when the coil is energized.

54. **RA19404 Casters**
   - **113540 Caster Screws (7 required)**
   - **109525 Caster Nuts (7 required)**

55. **RA19405 Wheels**
   - **102755 Wheel Washers (6 required)**
   - **100723 Cotter Pin (2 required)**
**Flow Diagram Components**

13. RA19402 2¾" R-134a High Side Gauge
   - RA19402 11715 Replacement Gauge Lens
14. RA19403 2¾" R-134a Low Side Gauge
   - RA19403 11715 Replacement Gauge Lens
15. RA19400 2¾" R-12 High Side Gauge
   - RA19400 11715 Replacement Gauge Lens
16. RA19401 2¾" R-12 Low Side Gauge
   - RA19401 11715 Replacement Gauge Lens
17. RA19044 High and Low Side Manifold Valves
18. RA19266 Vacuum Pump Protection Switch
19. RA19045 R-134a Suction Line Strainer
20. RA19046 R-12 Suction Line Strainer
21. RA18752 Vacuum Sensor
22. RA19320 (RA19321 220 volt) Manifold Assembly
   - RA19320 119305 Replacement Check Valve with Spring
27. RA15425 (RA15428 220 volt) Vacuum Pump
   - RA15425 119305 Replacement Vacuum Hose
   - RA15425 119303 Replacement Hose Gasket
   - RA15425 13203 Pump Oil
   - RA15425 15369 Base and Foot Assembly
28. RA18760 System Oil Separator
29. RA19253 Oil Drain Valve
   - RA19253 119253 Oil Drain Bottle
30. RA19326 Replacement Check Valve with Spring
31. RA17434 (RA17411 220 volt) Compressor
   - RA17434 111043 Replacement Start Capacitor
32. RA19326 Compressor Oil Separator
33. RA17522 (RA17578 220 volt) Equalization Solenoid
34. RA17529 High Pressure Cutout
35. RA19288 Recovery Check Valve
36. RA19412 Automatic Expansion Valve
37. RA17577 Moisture Indicator
38. RA19242 R-134a Air Purge Device
39. RA19198 R-12 Air Purge Device
40. RA19006 (RA19088 220 volt) Air Purge Solenoid
21. RA18752 Vacuum Sensor

22. RA19320 (RA19321 220 volt) Manifold Assembly
   • RA19326 Replacement Check Valve with Spring
   • RA19258 Normally Closed Solenoid Rebuild Kit

28. RA18760 System Oil Separator

30. 34430 Filter-Drier
   • 40084 Replacement Filter Gasket

31. RA17434 (RA17411 220 volt) Compressor

32. 119248 Compressor Oil Separator

33. RA17522 (RA17578 220 volt) Equalization Solenoid

34. RA17529 High Pressure Cutout

38. RA19242 R-134a Air Purge Device

39. RA19198 R-12 Air Purge Device

40. RA19006 (RA19088 220 volt) Air Purge Solenoid
   • RA19258 Solenoid Rebuild Kit

48. RA17416 (RA17516 220 volt) Fan
Pictorial View — Side

27. **RA15425 (RA15428 220 volt)** Vacuum Pump
   - 111877 Vacuum Hose
   - 40084 Replacement Hose Gasket
   - 13203 Pump Oil
   - 15369 Base and Foot Assembly

29. **119253** Oil Drain Valve
   - **RA17419** Oil Drain Bottle

52. **RA19210** Scales
   - 114659 Replacement Thumbscrew
   - 119073 Replacement Scale Platform

54. **RA19404** Casters
   - 113540 Caster Screws (7 required)
   - 109525 Caster Nuts (7 required)

55. **RA19405** Wheels
   - 102755 Wheel Washers (6 required)
   - 100723 Cotter Pin (2 required)
27. RA15425 (RA15428 220 volt) Vacuum Pump
   • 111877 Vacuum Hose
   • 40084 Replacement Hose Gasket
   • 13203 Pump Oil
   • 15369 Base and Foot Assembly
29. 119253 Oil Drain Valve
    • RA17419 Oil Drain Bottle
45. RA19181 Power Cord Receptacle
46. RA19047 Vacuum Pump Outlet
52. RA19210 Scales
    • 114659 Replacement Thumbscrew
    • 119073 Replacement Scale Platform
55. RA19405 Wheels
    • 102755 Wheel Washers (6 required)
    • 100723 Cotter Pin (2 required)
Main Circuit Board Diagram
Display Definitions

ADD  There is less than 6 pounds of refrigerant in the tank.
CAL  The scale is out of calibration.
CH-F  The unit has recovered the recommended maximum amount of refrigerant. Change the filter-drier.
CH-P  Less than 25 psi at the inlet of the machine.
CL-L  The low side clearing routine is in progress.
CON  The vacuum pump runs continuously.
CPL  The specified cycle function (recovery, evacuation, charging or adding refrigerant) is complete.
FIL  The filter-drier change is in progress.
FULL  The refrigerant recovery tank is full.
HI-P  Internal pressure in unit is above 435 psi.
OIL  Time to change the vacuum pump oil. To reset, press MODE and ENTER at the same time while “OIL” is displayed.
SCAL  The scale is damaged, disconnected, out of calibration or overloaded. It cannot exceed 45 pounds total weight.
U-HI  There is positive pressure on the vacuum pump. Press MODE, then RECOVER to remove the pressure. Continue the evacuation procedure.

Control Panel Components

13. RA19402 2¾” R-134a High Side Gauge
   • 11715 Replacement Gauge Lens
14. RA19403 2¾” R-134a Low Side Gauge
   • 11715 Replacement Gauge Lens
15. RA19400 2¾” R-12 High Side Gauge
   • 11715 Replacement Gauge Lens
16. RA19401 2¾” R-12 Low Side Gauge
   • 11715 Replacement Gauge Lens
17. RA19044 Low and High Side Manifold Valves
37. RA17577 Moisture Indicator
47. RA19343 Main Power Switch
49. 117684 Refrigerant Selector Switch
51. RA19397 Keypad
RA17459 (RA17324 220 volt) System Relays

The system relay is used to energize the compressor or the vacuum pump and allow the sensors to shut the unit off. The relay has two sets of contacts which close when the coil is energized.

Coil contacts 0 and 1, when energized, should have 110 volts across the terminals. While voltage is applied, the coils forms a magnetic field pulling the 2 and 4 and the 6 and 8 contacts together.

The 2 and 4 and the 6 and 8 contacts have power supplied to one terminal of the pair. When the coil is energized, it closes the contacts and supplies power to the mating contact.

Troubleshooting

Manual Override Ear Not Pulled In

1. Check the proper voltage to the 0 and 1 contacts. If there is voltage, replace the relay. If there is no voltage, replace the main board.

Manual Override Ear Pulled In

1. Check for proper voltage from the power supply contact to ground. If there is no voltage, check the voltage supply source.

2. Check for proper voltage from the mating supply contact to ground. If there is no voltage, replace the relay.

NOTE: Use of improper extension cord size can damage contact points.
Component Specifications

RA18752 Vacuum Sensor
The vacuum sensor is a normally closed sensor. If a 13” (±2”) Hg rating is reached at the intake, the switch opens and breaks the coil contacts, shutting off the unit. The contacts are closed when a vacuum above 13” Hg is present in the lower cavity. When a 13” Hg vacuum is achieved in the lower cavity, the spring contact has room to force away from the mating contact.

TROUBLESHOOTING
With pressure in the accumulator (open the oil drain valve to be sure pressure is present), the switch should have continuity. If it does not, replace the switch.
If the unit is shutting off before reaching a 13” Hg vacuum, check the inlet for obstructions before replacing the switch.

RA17529 High Pressure Cutout
The high pressure cutout is a normally closed sensor designed to shut the unit off if the discharge pressure reaches 435 psi.
Pressure is detected through the orifice in the base of the sensor. In the normal setting (less than 435 psi on orifice), the 1 and 3 contacts are closed. When 435 psi is introduced to the orifice, the pressure forces up on the drive pin which forces the center contact to disengage the 1 and 3 contact and engage the 1 and 2 contacts. When this takes place, the unit shuts off and the display reads “HI-P.”

RA19266 Vacuum Pump Protection Switch
The vacuum pump protection switch is a normally open sensor. If a 25 psi (±2”) psi rating is reached at the intake, the switch closes, sending a signal to the main board.
The contacts are closed when anything greater than 25 psi is present in the lower cavity. When 25 psi is achieved in the lower cavity, the spring contact is forced into the mating contact.
COMPRESSOR SPECIFICATIONS

Type: 1/3 hp hermetic (piston type) compressor

Oil Capacity: 11 ounces of 150 viscosity (POE) refrigeration oil

Amperage: 4-6 running amperage/3-4.5
           20-25 locked rotor amperage/16-19

Voltage: 110V/220V

PROCEDURE FOR CHECKING OIL

1. Depressurize the unit.
2. Remove the compressor from the unit.
3. Place the compressor on a flat surface.
4. Tilt the compressor 30 degrees (see figure above). At this angle, there should be oil in the suction fitting.

PROCEDURE FOR ADDING OIL

1. Install a hose on the suction fitting and place the loose end of the hose into a bottle containing 2 ounces of oil.
2. Start the compressor. Plug the intake fitting with a cap but leave the discharge fitting open. The compressor will pull the oil from the bottle.
3. Recheck the oil level. If it is still low, add 2 ounces until a proper level is achieved.

TROUBLESHOOTING

Compressor Won’t Run

1. Check for voltage to the compressor (110/220V). If there is no voltage, check the power supply for defects.
2. Jumper the thermal overload. If the compressor runs, take an amp draw on the compressor. If it is okay, replace the thermal overload. If the compressor still doesn’t run, take another amp draw. If it is drawing locked rotor amperage, replace the compressor. If there is no amp draw, inspect the start components and replace as necessary.

Compressor Runs, No Suction

1. Cap the intake fitting.
2. Install a low side gauge on the suction fitting.
3. Be sure the discharge has nothing connected to it.
4. Start the compressor and monitor the suction readings. It should pull a 25” Hg vacuum.
5. If the compressor has weak suction, check the oil level and add if necessary.
6. If the oil level is okay or oil was added with no improvement, replace the compressor.

Compressor Runs, No Discharge

1. Check the oil level and add if necessary.
2. Install a high pressure gauge on the discharge fitting.
3. Check the intake and suction fittings for obstructions.
4. Start the compressor.
5. Pressure should build to 350 psi in about 4 minutes. If pressure doesn’t rise or reach at least 350 psi, replace the compressor.
Troubleshooting

UNIT WILL NOT COME OUT OF CL-L, COMPRESSOR RUNS (WILL NOT RECOVER)

1. If the unit is being run through an extension cord, eliminate its use.

2. Disconnect the high and low side hose from the vehicle with the gauge valves open. If the pressure on the gauges drops while the display shows CL-L, the recovery solenoid may need to be replaced or rebuilt.

3. Check the oil drain valve. Verify that it is closed and not bleeding through.

4. Install the low side hose on the service port with the low side valve closed. Check the gauge. If it has positive pressure, go to Step 5. If psi is below a 20" Hg vacuum, test the vacuum sensor for continuity. If there is continuity, replace the sensor. If there is no continuity, check the vacuum sensor wires for continuity. If the wires have continuity, replace the main board.

5. Close the tank’s liquid valve. If pressure starts dropping on the gauge and the unit starts a recovery sequence, clean and rebuild the recycling solenoid.

6. Inspect the filter for flow obstructions and check for leaks around the gasket area.

**NOTE:** The filter nuts should only be finger tight. Replace gaskets if needed. When installing gaskets, be sure to lubricate them with vacuum grease or refrigerant oil.

7. Verify that the equalization solenoid is receiving 110/220 volts from the main board. If it is not receiving the voltage, check the lead wires for continuity. If they have continuity, replace the main board.

8. If the equalization solenoid is receiving power, check the equalization solenoid for bleed through to the suction side of the compressor. Replace the solenoid if it is bleeding through while receiving power. Go to Step 9 if the solenoid is functioning properly.

9. Check the compressor discharge and suction pressure.
Troubleshooting

UNIT WILL NOT COME OUT OF CL-L, COM-
PRESSOR IS OFF (WILL NOT RECOVER)

1. If the unit is being run through an extension cord, eliminate its use.

2. Remove the shroud and look for loose wires.

3. Check for voltage to the coil of the compressor relay (energized). If there is no voltage, check the wires from the main board to the compressor relay for continuity. If they have continuity, replace the main board.

4. If the compressor relay is energized (receiving 110/220 volts to the coil), check for voltage from the #4 contact to ground with a volt meter (it should be 110/220 volts). If there is no voltage, replace the compressor relay.

5. Check for voltage to the compressor. If there is no voltage, check the wires between the compressor and the compressor relay for continuity. Repair or replace as necessary.

6. If voltage is present at the compressor, jumper the thermal overload. If the compressor runs, check the compressor amp draw. If it is drawing higher than 6 amps or not running, replace the compressor. If the compressor is cool and drawing low amperage, replace the thermal overload.
Troubleshooting

UNIT WILL NOT START OR COMPLETE RECOVERY

Display Reads HI-P
1. Check to be sure both tank valves are open.
2. Check the tank pressure. It should not exceed 300 psi. If the pressure is high, bleed the pressure down to 200 psi by recycling and allowing the automatic air purge to operate.
3. Check the red vapor tank hose for proper installation. Be sure there is no obstruction at the tank fitting.
4. Check the 2 amp fuse on the back of the main board for continuity and replace if necessary. If the replacement fuse blows, check the compressor relay for shorted contacts. Replace as necessary.
5. Check the wires between the high pressure cutout and the main board for continuity. Repair or replace as necessary.
6. Inspect the recovery check valve for obstructions. Repair or replace as necessary.
7. Replace the high pressure cutout and retest the unit.

Display Reads FULL
1. Check the tank weight and replace the tank if it is full.
2. Recalibrate the scale if necessary.
3. Adjustment of the P-1 pots (see main board diagram for location) may be necessary. See “Setting the P1-pot” in the function test for detailed instructions.
4. Verify that the scale is connected properly.

Display Reads CPL
1. Verify that there is positive pressure on the unit’s manifold gauges. If there is no positive pressure, connect to a vapor supply source and attempt recovery again.

NOTE: Inspect the Schraeder cores to verify that they are depressing properly.

2. Look for loose or broken wires in the unit.
3. Verify that the suction line strainer is not plugged. See tubing schematic for location.
4. Install the low side hose (coupler) on the service port with the low side valve closed. Open the oil drain valve. Look for a psi reading. If the pressure is below 13” Hg, test the vacuum sensor for continuity. If the vacuum sensor has continuity, replace it. If it does not, check the vacuum sensor wires for continuity. If the wires have continuity, replace the main board.
Troubleshooting

UNIT WILL NOT START OR COMPLETE RECOVERY (continued)

5. If there is no positive pressure, verify that the inlet check valve is operating properly. Also, verify that the recovery solenoid is opening and allowing flow. Repair and replace as necessary.

Display Reads “CH-P”

1. If there is less than 25 psi at the inlet, attempt recovering from a positive pressure source.
2. Verify that the wires that control the vacuum pump protection switch have continuity.
3. If there is more than 25 psi at the inlet, replace the vacuum pump protection switch.
4. If the sensor is operating properly, press CONT to override.
5. If the main board will not let you override, verify that the keypad is sending the signal. If it is, replace the main board. If it is not sending a signal, replace the keypad.

Display Reads “CH-F”

1. The filter change time has elapsed. To reset the timer, refer to the operating manual for the filter change procedure.
2. If, after attempting to reset the timer, the “CH-F” warning does not disappear, replace the main board.

Display Reads “15.00 Vacuum Program Minutes”

1. If the display does not respond to keypad commands, verify that the keypad is plugged in. If the keypad is plugged in but not responding, replace the keypad. If the keypad is functional, a tone will be heard when a key is pressed.

Display Reads “Scale”

1. Check the scale calibration and P1-pot adjustments. Recalibrate and adjust as necessary. Refer to function check for detailed instructions.
2. Check the scale cable to be sure it is connected to the main board.
3. Disconnect the scale cable from the main board and jumper the white and black leads. If the display still reads “Scale”, replace the main board. If the display clears the message “Scale”, replace the scale.
Troubleshooting

UNIT WILL NOT EVACUATE, PUMP IS RUNNING

1. Verify that the manifold gauge valves are open.
2. Verify that the high and low side hoses (couplers) are tight at all fittings.
3. Be sure the vacuum hose is snug at both ends and not obstructed. Check the hose gaskets for leaks.
4. Check for suction at the intake of the pump. If there is none, replace the pump.
5. Remove the shroud and look for loose wires to the vacuum solenoid.
6. Check for voltage to the vacuum solenoid. If voltage is present, rebuild the solenoid or inspect for debris.
7. If no voltage is present check the lead wires for continuity. If continuity is present, replace the main board.
8. Check the low side gauge for proper operation and calibration.

UNIT WILL NOT EVACUATE, PUMP IS OFF

“U HI” on Display

1. Be sure pressure is present at the vacuum protection switch. Recover before evacuation. Unplug the switch.
2. If “U HI” goes out, check for pressure at the sensor. If there is none, replace the sensor.
3. If “U HI” remains on, replace the main board.

Timer Counting Down

1. Verify that the vacuum pump is plugged in.
2. Check the voltage at the pump receptacle.
3. If proper voltage is present, be sure that the pump is not overfilled with oil. If it is, drain the pump. Start and properly refill the pump. If proper voltage is present, replace the pump.
4. If proper voltage is not present, remove the shroud and look for loose wires.
5. Check the voltage to the vacuum pump relay coil. If there is no voltage, check the wires between the vacuum pump relay and the main board for continuity. If the wires are okay, replace the main board. If there is voltage at the vacuum pump relay coil, replace the relay.
6. Check for voltage from the #4 contact to ground. If there is no voltage, replace the relay.
Troubleshooting

UNIT WILL NOT RECYCLE, RECYCLE PROMPT IS OFF (NO FLOW)

1. Check that all recovery tank hoses are properly installed.
2. Verify that the recovery tank valves are completely open.
3. Be sure there is a minimum of 10 pounds of refrigerant in the tank.
4. Install the low side of a manifold gauge set to the service port.
5. If positive pressure is present at the service port, remove the cover and look for loose wires to the vacuum sensor. If there are no loose wires, check for continuity on the vacuum sensor. If there is none, replace the vacuum sensor.
6. Inspect the orange wires between the main board and the vacuum sensor for continuity. If the wires and the vacuum sensor have continuity, jumper the orange wires together.
7. Start recycling if the service port is being pulled into a vacuum. Look for loose wires to the recycling solenoid and verify that 110 volts is being sent to the recycling solenoid. If there is no voltage, inspect the controlling wires for continuity. Replace the main board if the wires have continuity.
8. Verify that you have flow through the blue tank hose and the moisture indicator. Replace and clean as necessary.
9. If the hose or moisture indicator is not plugged, attempt to recalibrate the expansion valve. If you are unable to recalibrate the expansion valve, rebuild the recycling solenoid and replace the expansion valve.
10. If all previous attempts have failed, replace the main board.
Troubleshooting

UNIT WILL NOT RECYCLE, RECYCLE PROMPT IS ON (NO FLOW)

1. Check that all recovery tank hoses are properly installed.
2. Verify that the recovery tank valves are completely open.
3. Be sure there is a minimum of 10 pounds of refrigerant in the tank.
4. Verify that the oil drain valve is closed, and not bleeding through.
5. Install the low side of a manifold gauge set to the service port.
6. Verify that the expansion valve calibration is at 35 psi. Always check the expansion valve pressure after recycling for 10 minutes with at least 10 pounds of refrigerant in the tank.
7. Check the filter for flow obstructions. Be sure gaskets are not crushed and are sealing properly.
8. Check the equalization solenoid for internal bleed through. Replace if necessary.
9. If the compressor is not running, verify that 110 volts is being supplied to the compressor. If it is not receiving 110 volts, check the wiring for continuity and the system relay for proper operation.
10. If the compressor is receiving 110 volts but is not running, inspect the compressor start components and check the amp draw. Refer to compressor specifications. Replace the compressor as necessary.
11. If the compressor is running, check the compressor suction and discharge pressures as well as the oil level. Add oil if needed. If the oil is fine but there is no suction or discharge pressure, replace the compressor.
Troubleshooting

UNIT WILL NOT RECYCLE, RECYCLE PROMPT IS ON (WITH FLOW)

1. Verify that the recovery tank valves are completely open.
2. Be sure there is a minimum of 10 pounds of refrigerant in the tank.
3. Replace the filter and recycle for 1½ hours minimum.
4. Replace the moisture indicator if it will not turn green.

UNIT WILL NOT PERFORM AN AIR PURGE

NOTE: The air purge only operates the first 10 minutes of recycling and then drops power to the air purge solenoid. A minimum of 6 pounds of refrigerant must be in the tank for the air purge to function properly.

1. Verify that the recovery tank has excess air pressure in it. The only accurate way to do this is to connect a hand-held manifold gauge set to the recovery tank's air purge fitting and check the pressure in the tank and compare with a temperature/pressure chart.
2. If excess air pressure is confirmed, verify that all recovery tank hoses are properly connected to the tank.
3. Slowly open the yellow hose where it attaches to the back of the unit. If the tank is allowing access and the yellow hose is unobstructed, pressure will be released. Repair and replace as necessary.
4. If the yellow hose has flow, remove the front cover and verify that the exhaust port of the air purge device is not obstructed.
5. After recycling for at least 3 minutes, verify that 110/220 volts is being sent to the air purge solenoid. If it is not getting 110/220 volts, inspect the control wires for continuity. Repair or replace as necessary. If the air purge solenoid is getting 110/220 volts, go to Step 7.
6. If the wires have continuity, replace the main board.
7. If the solenoid is receiving 110/220 volts, remove the air purge solenoid and verify that pressure passes through it when receiving power. Rebuild or replace as necessary.
8. If the air purge solenoid is operating properly, replace the air purge device and retry recycling.
Troubleshooting

UNIT WILL NOT CHARGE, NO PRESSURE ON GAUGES

1. Verify that the tank’s liquid valve is open.
2. Verify that the manifold valves are completely open and unobstructed.
3. Inspect the liquid hose for proper installation on the tank and check for crushed hose gaskets.
4. Verify that the main board has accepted the program.
5. Remove the shroud and look for loose wires.
6. If the main board does not accept the program, replace it. Be sure the keypad is sending a program signal before replacing. If the keypad is sending a signal, an audible tone will sound when keys are pressed.
7. Check the voltage at the charging solenoid. If there is no voltage, check the lead wires for continuity. If the wires have continuity, replace the main board. If there is proper voltage to the solenoid, rebuild or replace the solenoid.

UNIT WILL NOT CHARGE, PRESSURE ON GAUGES

1. Verify that unit is gaining access to the A/C system.
2. Be sure there is a minimum of 6 pounds of refrigerant in the tank.
3. Be sure scale is able to move freely.
4. Verify the unit is charging through both the high and low side hoses.
5. Check for proper voltage to the charging solenoid (not erratic voltage drop). If voltage is okay, go to step 6. If there is a problem with the voltage, replace the main board.
6. Close the high side valve, start the engine and pull in the remaining charge on the low side of the system. When the remaining charge has been pulled from the tank, the charging solenoid will close, preventing a possible overcharge.
Diagnostic Procedures

Press MODE and ENTER simultaneously to enter diagnostics, use the UP and DOWN keys to select the mode and press ENTER to start mode.

**F00 - LB/KG mode select**
ENTER toggles between modes and MODE locks chosen mode.

**F01 - Diagnostic Vacuum**
Vacuum only. Mode switch may be changed between R12 and R134A in this mode and a vacuum will be pulled on the side chosen.

**F02 - UL circuit adjustment**
Setting the P1-Pots.

**F03 - Filter weight**
Displays weight recovered through filter on whichever side (R12 or R134A) is selected. Mode switch may be changed between R12 and R134A without exiting, allowing both filter weights to be checked. Press RECOVER and RECYCLE ONLY to reset.

**F04 - Audit Trail**
Displays date and number of scale calibrations. Press RECOVER and RECYCLE ONLY keys simultaneously to set the number of calibrations to 001.

**F05 - Segment Test**
Lights all segments of LCD.

**F06 - Calibration check**
Checks the scale accuracy.

**F07 - Refrigerant Weight**
Estimated weight of refrigerant in the selected tank will be displayed. Because tank weights will vary, this can only be considered an estimate. Either tank can be selected in this mode by moving the mode switch between R12 and R134A.

**F08 - Step Test**
When this mode entered, the display will blank. Press RECOVER and RECYCLE ONLY keys simultaneously to continue. Display will count up from 001 to 015 as corresponding outputs are cycled on and off. This test can be accelerated at any time by pressing any key. After the step test, the display will give a code for any input that is not in its normal state, as listed below. To continue when this occurs, the input must be put into its normal state. If all inputs are in their normal state, the unit will resume normal operation.

**Input Codes**
- “r12” - “CH-P” R12 Vacuum Protection Switch
- “r12” - “CL-L” R12 Low Pressure Switch
- “r134” - “CH-P” R134a Vacuum Protection Switch
- “r134” - “CL-L” R134a Low Pressure Switch
- “ref” R12/R134a Mode Switch

**F09 - Scale Calibration**
See RECALIBRATING THE SCALE for detailed instructions.

**F10 - Default Codes**
When this mode entered, the display will blank. Press RECOVER and RECYCLE ONLY keys simultaneously to continue. The display will show a three digit code that controls the default oil timer, filter weight, and vacuum time. The default value for this code is 356. The first digit represents the default vacuum time and is multiplied by 5 minutes to get the default. The second digit represents the vacuum pump oil timer and is multiplied by 2 hrs. to get the default. The third digit represents the default filter weight and is multiplied by 50 lbs. to get the default. This code can be changed by using the UP and DOWN arrow keys. The ENTER key locks in the new code and resets the unit with the new settings.

**F11 - F99**
Not Used
RA19210 Scale Identification, Accuracy Check and Recalibration

The AC900 series uses the same scales that are used in the 12134B series of units. The scales will only handle 30 lb. tanks and have an overfill protection switch set at 43 lbs.

CHECKING THE SCALE ACCURACY

1. Turn on the MAIN POWER switch.
2. Press the MODE key until the program prompt is highlighted on the screen.
3. When the screen has the program prompt highlighted, press the MODE and ENTER key simultaneously to enter Diagnostic Mode.
4. Remove all weight from both scale platforms.
5. Using the UP and DOWN keys toggle the display to read “F06”.
6. Press the ENTER key to turn the scale into a direct reading weight scale.

NOTE: Whatever weight is on the scale when Enter is pressed will not be shown on the display. By pressing Enter, the unit automatically zeros the weight on the scale of the selected refrigerant type. If you remove the weight, the display will show the change in total weight but will not show a negative sign. The refrigerant selector switch may be changed during the procedure to check both scales.

Verify that the scales are plugged into the main board, if the scales will not react to testing.

RECALIBRATING THE SCALES

1. Remove all weight from the scale platforms.
2. Turn on the Main Power switch.

NOTE: If the unit is just being turned on, the screen will default to display the selected refrigerant type. Press MODE until the program message is displayed.

3. Press the MODE and ENTER keys simultaneously to enter Diagnostic Mode. Use the UP and DOWN keys to toggle the display to “F02”.
4. Press the ENTER key. The display will show “000”.

NOTE: The zero on the left of the display is for R-12, and the zero on the right of the display is for R-134A. Since the AC900 uses two 30 lb. tanks, the full limit should be set at 43 lbs.

5. Place a known weight of 43 lbs. on the R-12 scale. The zero on the left of the display should change to a “1”. The display should be reading “100”. At this point, adjust the R-12 P-1 pot so the full limit is set at 43 lbs. Turning the P-1 pot clockwise will decrease the amount of weight you can put on the scale before the zero changes to a “1” which indicates the full limit has been reached. Turning the P-1 pot counterclockwise will increase the amount of weight allowed before the zero changes to a “1” indicating that the full limit has been reached.

6. Repeat step 5 on the 134A scale.

NOTE: The zero on the right of the display will indicate the 134A full limit. Once the 134A full limit is reached, the display will read “001”.

7. Make sure nothing is on or touching the R-12 scale platform. Press ENTER.
8. The display will flash “A1” then read “0.00”.
9. Place a certified weight, between 10 and 40 pounds, in the center of the scale platform. Using the UP and DOWN keys, toggle to that weight on the display, then press ENTER.
10. The display will flash “134A” then read “2Ero” (zero).
11. The display will flash “A1” then read “0.00”.
12. Place a certified weight, between 10 and 40 pounds, in the center of the scale platform. Using the UP and DOWN keys, toggle to that weight on the display, then press ENTER. The display then shows the selected refrigerant type.
13. Check the scale accuracy.
14. Setting the P-1 POT

1. Remove all weight from the scale platforms.
2. Turn on the MAIN POWER switch.

NOTE: If the unit is just being turned on, the screen will default to display the selected refrigerant type. Press MODE until the program message is displayed.

3. Press the MODE and ENTER keys simultaneously to enter Diagnostic Mode. Use the UP and DOWN keys to toggle the display to “F02”.
4. Press the ENTER key. The screen will display “000”.

NOTE: The zero on the left of the display is for R-12, and the zero on the right of the display is for R-134A. Since the AC900 uses two 30 lb. tanks, the full limit should be set at 43 lbs.

5. Place a known weight of 43 lbs. on the R-12 scale. The zero on the left of the display should change to a “1”. The display should be reading “100”. At this point, adjust the R-12 P-1 pot so the full limit is set at 43 lbs. Turning the P-1 pot clockwise will decrease the amount of weight you can put on the scale before the zero changes to a “1” which indicates the full limit has been reached. Turning the P-1 pot counterclockwise will increase the amount of weight allowed before the zero changes to a “1” indicating that the full limit has been reached.

6. Repeat step 5 on the 134A scale.

NOTE: The zero on the right of the display will indicate the 134A full limit. Once the 134A full limit is reached, the display will read “001”.
Function Test

RECOVERY CHECK

1. Turn on the MAIN POWER switch.
2. Install the loose end of the low side hose (coupler) to the service port located between the filter and accumulator.
3. Close the low side manifold valve.
4. Open the high side manifold valve.
5. Verify that all tank hoses are properly attached to the recovery tank.
6. Completely open both tank valves.
7. Press RECOVER. The compressor will start and the low side gauge will pull into a 13" Hg vacuum.

NOTE: The unit’s low side gauge will pull to a 13“ Hg vacuum and start the recovery process. Recovery is engaged when the scale reading is displayed. The low side gauge will pull to a 13" Hg vacuum again and the unit will shut off.

8. When recovery is complete, the display will show a scale weight, then display the “CPL” message.
9. The low side manifold gauge will build positive pressure and a pressure transfer should be heard. This is the result of the equalization solenoid opening and returning oil to the compressor. If no pressure rise occurs, the equalization solenoid and its tubing must be inspected for obstructions.
10. Disconnect the low side hose (coupler) from the service port and open the low side manifold valve.
11. Press RECOVER. The unit will recover to 13" Hg of vacuum and shut off.

EVACUATION & RECYCLING CHECK

NOTE: The recovery tank must have at least 6 pounds of refrigerant in it to perform this test.

1. Close the high side manifold valve.
2. Install the loose end of the low side hose (coupler) from a separate hand-held manifold gauge set to the service port. Verify that the valves are closed on the hand-held manifold gauge set.
3. Program a 20 minute vacuum into the main board and start the automatic vacuum process. The vacuum pump will start.
4. Verify that the low side manifold valve on the unit’s control panel is open.
5. The low side gauge on the unit will start registering a vacuum.
6. Within 10 to 15 seconds of the vacuum pump starting, the RECYCLE prompt will appear on the display and a click will be heard. The compressor is starting and the recycling solenoid is being energized.
7. After 60 seconds of recycling, the air purge solenoid will be receiving 110/220 volts to open it. If air is being purged, the solenoid is getting 110/220 volts. In some cases, no air will be present and the voltage needs to be checked to verify the solenoid operation.
8. After 5 minutes, the low side gauge on the unit’s control panel will be in a 29" to 30" Hg vacuum.
9. The low side gauge on the hand-held manifold gauge set will rise to around a 30 to 40 psi reading (expansion valve pressure). If the expansion valve setting is not in range, adjust accordingly.
10. After 20 minutes of recycling, the moisture indicator will turn mint green, indicating that the refrigerant is dry.
11. When the unit shuts off automatically (vacuum process completed), disconnect the low side hose coupler from the service port.
12. The low side manifold gauge on the unit’s control panel should hold a vacuum. If it does not, inspect the hoses for leaks.
13. Close the tank’s red vapor valve.
14. Disconnect the tank’s red vapor hose from the tank.
15. Using a separate manifold gauge set, verify that the manifold gauge valves are closed.

16. Connect the tank’s red vapor hose to the high side of the separate manifold gauge set.

17. Connect the hose from the center port of the hand-held manifold gauge set to the tank’s vapor fitting.

18. Open the tank’s red vapor valve but do not open the red high side valve on the hand-held manifold gauge set.

19. Press the MODE key until the program VACUUM prompt is displayed.

20. Press the RECYCLE ONLY key. The unit will begin recycling and the high side manifold gauge will start increasing pressure.

21. The unit will shut off when the high side manifold gauge shows a pressure of 435 psi (+20 psi). The display will show the “HI-P” message.

22. You will see an initial drop in pressure to around 275/300 psi. After the initial drop in pressure, the pressure should hold for 3 minutes. If the pressure drops instantly or bleeds off steadily, the recovery check valve needs to be replaced.

23. After checking for pressure loss, slowly open the high side manifold valve to equalize the unit and tank pressure.

24. Once the pressure is equalized, close the tank’s red vapor valve.

25. Close the high side manifold valve and disconnect (at the tank end) the hose between the tank’s red vapor valve and the manifold gauge set.

26. Disconnect the tank’s red vapor hose from the manifold gauge set.

27. Reconnect the tank’s red vapor hose to the tank’s red vapor valve.

28. Open both manifold gauge valves on the unit’s control panel and press RECOVER. Allow the unit to recover until it automatically shuts off.

**CHARGING AND SCALE CHECK**

1. Turn on the MAIN POWER switch.

2. Press MODE and ENTER simultaneously. Use the UP and DOWN keys and toggle to “F06”. Press ENTER.

3. Check the scale accuracy and recalibrate if necessary. See scale section for detailed instructions.

4. Install the high and low side hoses to the vapor and liquid valves of a separate reusable cylinder.

5. Program a 2 pound charge into the main board.

6. Open both manifold gauge valves and start the automatic charging process. The charging process will stop when the programmed amount of weight has been lost from the scale. The display will show the “CPL” message.

7. Recover the refrigerant charged into the tank.

8. Repeat full function test for the other refrigerant type as necessary.

**NOTE:** To ensure a complete charge, recycle for at least five minutes before attempting to charge. During this process the refrigerant is heated in the recovery tank.

**LABOR RATES**

Robinair authorizes a 2 hour charge to troubleshoot and complete a full function test on units that are covered under factory warranty. This includes leak testing. The authorized time for parts replacement is 15 minutes per part. If repairs are estimated to exceed 3 hours, prior authorization from Robinair is required.

**NOTE:** The RA19258 Solenoid Rebuild Kit is the standard method for repairing a RA19006 solenoid. If a solenoid must be replaced, it must be described in detail on the warranty claim to justify its replacement and reimbursement.

Robinair considers filters to be a consumable item and they are not covered under the factory warranty. This includes parts and labor.