

ROBINAIR

Service Manual

Series 12134A/12135A/12136A
Recovery/Recycling/Recharging Unit
For R-12 and R-134A

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Theory of Operation and Safety Precautions

The Series 12134A recovery, recycling, evacuating and recharge units are designed for R-12 and R-134A refrigerant only. These units are UL approved and meet SAE J1770 standards.

These units began production in March of 1995. The date code and serial number can be found on a white tag on the back of the unit near the tank.

DEPRESSURIZING THE UNIT

1. Disconnect the black lead wire from the compressor relay.
2. Connect the 96" blue low side hose to the oil drain port (if the unit is in the R-134A setting, you must use a low side coupler connector and tee supplied to you, part numbers 16301 and 15554).
3. Open both the high and low side manifold valves on the unit's control panel.
4. Open the oil drain valve.
5. Close the liquid and vapor valves on the 50 lb. tank.
6. Disconnect all hoses from the 50 lb. tank.
7. Connect the red **vapor** tank hose to the high side of a hand held manifold gauge set.
8. Connect the blue **liquid** tank hose to the low side of a hand held manifold gauge set.
9. Connect the yellow center port of the hand-held manifold gauge set to the inlet of a prepared recovery unit (for R-12, use a 17650, R-134a, use a 34650). Open the high and low side valves on the hand-held manifold gauge set.
10. Turn on the unit being serviced (12134A). Press SHIFT/RESET to access the program mode.
11. Press SHIFT/RESET and "1" at the same time to start the recycle mode.
12. Start the separate recovery unit (17650 or 34650).
13. When the recovery light on the separate recovery unit shuts off, wait ten minutes and watch your hand-held manifold gauge set for a pressure rise above zero. Repeat Steps 11 and 12 until positive pressure does not develop on the 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.

▲ WARNING!

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

To order parts please call Robinair Customer Service at 1-419-485-5561. Or FAX your order to 1-419-485-4330.

All service related questions should be directed to the Robinair Technical Assistance Line at 1-800-822-5561.

Component Descriptions

RECOVERY

1. **18190A R-134a Low Side Coupler (blue actuator, smaller I.D.)** — Allows access to the low side on an R-134a system.
RA19115 Replacement Front O-Ring Only
2. **RA19329 R-134a Low Side Hose** — Provides flow from the low side coupler to the low side port on the unit (14mm x 1/2 Acme Quick Seal).
17773 Replacement R-134a Quick Seal O-Ring
17772 Coupler O-Ring
2. **RA19309 (R-12) 96" Blue Hose Double Quick Seal** — Low side service hose to the vehicle.
18180 Replacement Quick Seal O-Ring
40300 Quick Seal Repair Kit
3. **40352 Schraeder Core** — Package of six (6) replacement Schraeder valves.
4. **RA19279 (RA19319 metric) 2³/₄ Low Side Gauge** — Used to read pressure entering the low side hose.
RA19257 2³/₄ Replacement Gauge Lens
5. **RA19044 Low Side Manifold Valve** — Allows flow from the low side hose to the center manifold port.
6. **18191A R-134a High Side Coupler (red actuator, larger I.D.)** — Allows access to the high side on an R-134a system.
RA19115 Replacement Front O-Ring Only
7. **RA19328 R-134a High Side Hose** — Provides flow from the high side coupler to the high side port of the unit (14mm x 1/2 Acme Quick Seal).
17773 Replacement R-134a Quick Seal O-Ring
17772 Coupler O-Ring
7. **RA19308 (R-12) 96" Red Hose Double Quick Seal** — High side service hose to the vehicle.
18180 Replacement R-12 Quick Seal O-Ring
40300 Quick Seal Repair Kit
3. **40352 Schraeder Core** — Package of six (6) replacement Schraeder valves.
8. **RA19280 (RA19318 metric) 2³/₄ High Side Gauge** — Used to read pressure entering the high side hose.
RA19257 2³/₄ Replacement Gauge Lens
9. **RA19044 High Side Manifold Valve** — Allows flow from the high side hose to the center manifold port.
10. **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 to vacuum.
11. **RA19330 Suction Line Strainer** — Filters the refrigerant coming from the high and low side manifold valves before entering into the manifold assembly.
41. **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 balls. In the recovery mode solenoids 30 (Vacuum), 37 (Recycling), and 39 (Charging) are all closed (no power is supplied).
Note: RA19258 Solenoid Rebuild Kits are available for all of the solenoids in this manifold block.
RA19236 Check Ball with Spring
12. **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 turned off or in any mode other than recovery.
13. **RA17328 Vacuum Sensor** — A normally closed sensor designed to open when a 17" vacuum is reached in the inlet manifold.
14. **RA18760 System Oil Separator** — Performs three functions. Internal heat causes incoming saturated vapor to evaporate. This is important to insure that no liquid enters the compressor and that oil droplets contained in the refrigerant will drop out in the separator. The third function will be discussed later.
15. **RA19291 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.

Component Descriptions

Note: It is very important that the oil drain procedure be done after each recovery.

RA17419 Oil Drain Bottle

16. **34430 Filter Drier** — Removes moisture, acid and oil from the refrigerant.
40084 Replacement Hose Gasket
17. **RA19302 (RA19314 220 volt) Compressor** — Converts a low pressure entering gas into a high pressure exiting gas. This is a $\frac{1}{3}$ horse power oil-less compressor. To help eliminate vibration, this is a hose-plumbed compressor with flare connections on the unit end of the hose.
18. **RA17416 (RA17516 220 volt) Fan** — Assists in cooling the compressor during normal operation.
19. **RA19331 (RA19327 220 volt) High Side Diver-sion Solenoid** — A three-way normally closed solenoid. During normal operation the refrigerant passes through to the system oil separator (ports 1 and 3). In the self clearing mode the solenoid is energized passing the refrigerant directly to the discharge solenoid of the selected refrigerant type (ports 1 and 2).
20. **RA17529 High Pressure Cut Out** — A normally closed sensor that turns 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 and have two solid red wires attached to them.
21. **RA17522 (RA17578 220 volt) Pressure Equal-izing Solenoid** — A normally open solenoid that allows the suction and discharge pres-sures on the compressor to equalize and forces pressure down on the oil separator to drain the oil recovered from the A/C system when the solenoid loses power. This solenoid receives power whenever the compressor is running.
14. **RA18760 System Oil Separator** — At this point high pressure, high temperature vapor enters the separator and passes through a condensing coil. The vapor cools and condenses by giving up heat to the incoming refrigerant.
22. **RA19198 R-12 Auto Air Purge Device** — Liquid refrigerant is circulated through the upper section during recycling to establish a reference pressure.
- 22a. **RA19242 R-134a Auto Air Purge Device** — Liquid refrigerant is circulated through the upper section during recycling to establish a reference pressure.
23. **RA19287 Recovery Check Valve ($\frac{1}{4}$ MFL x $\frac{1}{8}$ MPT)** — Allows flow in one direction only and prevents refrigerant in the tank from coming back into the unit during shutdown.
24. **RA19006 (RA19088 220 volt) Discharge Solenoid (R-12 or R-134a)** — A normally closed solenoid that allows refrigerant flow to the vapor side of the tank for the selected refrigerant type only.
RA19258 Solenoid Rebuild Kit
25. **RA19282 Recovery Check Valve ($\frac{1}{8}$ MPT x $\frac{1}{8}$ MPT)** — Allows flow in one direction only and prevents refrigerant in the tank from coming back into the unit during shut down.
26. **RA19312 (R-12) or RA19307 (R-134a) 36" Red Tank Hose** — Delivers refrigerant being recovered or recycled to the vapor side of the 50 lbs. tank.
18180 Replacement R-12 Quick Seal O-Ring
40300 Quick Seal Repair Kit (R-12 only)
17773 Replacement R-134a Quick Seal O-Ring
27. **17506 (R-12) or 34750 (R-134a) Refillable Refrigerant Tank** — Stores refrigerant to be recycled later.
29. **RA19310 (R-12) or RA19313 (R-134a) Air Purge Hose** — Supplies pressure from the top of the recovery tank to the air purge control.
18180 Replacement R-12 Quick Seal O-Ring
40300 Quick Seal Repair Kit (R-12 only)
17773 Replacement R-134a Quick Seal O-Ring
38. **RA19006 (RA19088 220 volt) Air Purge Sole-noids (R-12 or R-134a)** — Prevents flow of refrigerant into the lower cavity of the air purge device of the selected refrigerant type until energized 60 seconds after the recycling process has been engaged.
Note: Power is dropped from the solenoid after 10 minutes of purging.
RA19258 Solenoid Rebuild Kit

Component Descriptions

EVACUATION

1. **18190A R-134a Low Side Coupler (blue actuator, smaller I.D.)** — Allows access to the low side on an R-134a system.
RA19115 Replacement Front O-Ring Only
2. **RA19329 R-134a Low Side Hose** — Provides flow from the low side coupler to the low side port on the unit (14mm x 1/2 Acme Quick Seal).
17773 Replacement R-134a Quick Seal O-Ring
17772 Coupler O-Ring
2. **RA19309 (R-12) 96" Blue Hose Double Quick Seal** — Low side service hose to the vehicle.
18180 Replacement Quick Seal O-Ring
40300 Quick Seal Repair Kit
3. **40352 Schraeder Core** — Package of six (6) replacement Schraeder valves.
4. **RA19279 (RA19319 metric) 2³/₄ Low Side Gauge** — Used to read pressure entering the low side hose.
RA19257 2³/₄ Replacement Gauge Lens
5. **RA19044 Low Side Manifold Valve** — Allows flow from the low side hose to the center manifold port.
6. **18191A R-134a High Side Coupler (red actuator, larger I.D.)** — Allows access to the high side on an R-134a system.
RA19115 Replacement Front O-Ring Only
7. **RA19328 R-134a High Side Hose** — Provides flow from the high side coupler to the high side port of the unit (14mm x 1/2 Acme Quick Seal).
17773 Replacement R-134a Quick Seal O-Ring
17772 Coupler O-Ring
7. **RA19308 (R-12) 96" Red Hose Double Quick Seal** — High side service hose to the vehicle.
18180 Replacement R-12 Quick Seal O-Ring
40300 Quick Seal Repair Kit
3. **40352 Schraeder Core** — Package of six (6) replacement Schraeder valves.
8. **RA19280 (RA19318 metric) 2³/₄ High Side Gauge** — Used to read pressure entering the high side hose.
RA19257 2³/₄ Replacement Gauge Lens
9. **RA19044 High Side Manifold Valve** — Allows flow from the high side hose to the center manifold port.
10. **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 to vacuum.
11. **RA19330 Suction Line Strainer** — Filters the refrigerant coming from the high and low side manifold valves before entering into the manifold assembly.
41. **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 balls. In the evacuation mode solenoids 12 (Recovery), 37 (Recycling), and 39 (Charging) are all closed (no power supplied).
Note: RA19258 Solenoid Rebuild Kits are available for all of the solenoids in this manifold block.
RA19236 Check Ball with Spring
30. **RA19258 Vacuum Solenoid Rebuild Kit** — Normally closed solenoid designed to prevent flow to the vacuum pump during recovery or charging.
31. **111877 Vacuum Hose** — Provides flow from the vacuum solenoid to the intake of the vacuum pump.
40084 Replacement Hose Gasket
32. **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.
13203 Pump Oil
15369 Base and Foot Assembly
33. **RA19323 (R-12) or RA19322 (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

Component Descriptions

RECYCLING

27. **17506 (R-12) or 34750 (R-134a) Refillable Refrigerant Tank** — Stores refrigerant to be recycled later.
28. **RA19311 (R-12) or RA19306 (R-134a) 36" Blue Tank Hose** — Allows flow from the liquid side of the tank to the liquid solenoid.
- 18180 Replacement R-12 Quick Seal O-Ring**
40300 Quick Seal Repair Kit (R-12 only)
17773 Replacement R134a Quick Seal O-Ring
3. **40352 Schraeder Core** — Package of six (6) replacement Schraeder valves.
40. **107021 Liquid Line Strainer** — Filters liquid coming from the blue tank hose before going to the liquid solenoid. This strainer is a filter screen that is installed between the liquid solenoid and the bulkhead fitting (see page 32 for details).
34. **RA19006 (RA19088 220 volt) Liquid Solenoid** — Allows flow to the expansion valve and recycle solenoid of the selected refrigerant type only.
- RA19258 Solenoid Rebuild Kit**
35. **RA17577 Moisture Indicator** — References the moisture content of the refrigerant being recycled. Pale yellow indicates wet; light mint green indicates dry. During recycling the moisture indicator is normally filled with liquid refrigerant and warm to the touch.
43. **RA19288 Manifold By-Pass Check Valve (1/8 MPT x 1/4 MFL)** — Prevents flow during the recovery, recycle and charging mode to the manifold bypass solenoid.
36. **RA19316 Expansion Valve and Tube** — Converts incoming liquid refrigerant into a low pressure saturated vapor. The calibration of the expansion valve can be checked at the oil drain port with a pressure gauge. The tolerance of the valve is 30 to 40 psi and minimum recycling time is five minutes before checking.
41. **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 balls. In the recycling mode solenoids 12 (Recovery), 30 (Vacuum), and 39 (Charging) are all closed (no power supplied).
- Note:* RA19258 Solenoid Rebuild Kits are available for all of the solenoids in this manifold block.
- RA19236 Check Ball with Spring**
37. **RA19258 Recycling Solenoid Rebuild Kit** — A normally closed solenoid that prevents the flow of refrigerant into the system oil separator while the unit is turned off or in any mode other than recycling.
13. **RA17328 Vacuum Sensor** — A normally closed sensor designed to open when a 17" vacuum is reached in the inlet manifold.
14. **RA18760 System Oil Separator** — Performs three functions. Internal heat causes incoming saturated vapor to evaporate. This is important to insure that no liquid enters the compressor and that oil droplets contained in the refrigerant drop out in the separator. The third function will be discussed later.
15. **RA19291 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**
16. **34430 Filter Drier** — Removes moisture, acid and oil from the refrigerant.
- 40084 Replacement Hose Gasket**
17. **RA19302 (RA19314 220 volt) Compressor** — Converts a low pressure entering gas into a high pressure exiting gas. This is a 1/3 horse power oil-less compressor. To help eliminate vibration this is a hose-plumbed compressor with flare connections on the unit end of the hose.

Component Descriptions

18. **RA17416 (RA17516 220 volt) Fan** — Assists in cooling the compressor during normal operation.
19. **RA19331 (RA19327 220 volt) High Side Diversion Solenoid** — A three-way normally closed solenoid. During normal operation the refrigerant passes through to the system oil separator (ports 1 and 3). In the self clearing mode the solenoid is energized passing the refrigerant directly to the discharge solenoid of the selected refrigerant type (ports 1 and 2).
20. **RA17529 High Pressure Cut Out** — A normally closed sensor that turns 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 and have two solid red wires attached to them.
21. **RA17522 (RA17578 220 volt) Pressure Equalizing Solenoid** — A normally open solenoid that allows the suction and discharge pressures on the compressor to equalize and forces pressure down on the oil separator to drain the oil recovered from the A/C system when the solenoid loses power. This solenoid receives power whenever the compressor is running.
14. **RA18760 System Oil Separator** — At this point high pressure, high temperature vapor enters the separator and passes through a condensing coil. The vapor cools and condenses by giving up heat to the incoming refrigerant.
22. **RA19198 R-12 Auto Air Purge Device** — Liquid refrigerant is circulated through the upper section during recycling to establish a reference pressure.
- 22a. **RA19242 R-134a Auto Air Purge Device** — Liquid refrigerant is circulated through the upper section during recycling to establish a reference pressure.
23. **RA19287 Recovery Check Valve (1/4 MFL x 1/8 MPT)** — Allows flow in one direction only and prevents refrigerant in the tank from coming back into the unit during shutdown.
24. **RA19006 (RA19088 220 volt) Discharge Solenoid (R-12 or R-134a)** — A normally closed solenoid that allows refrigerant flow to the vapor side of the selected refrigerant type only.
- RA19258 Solenoid Rebuild Kit**
25. **RA19282 (Recovery Check Valve (1/8 MPT x 1/8 MPT))** — Allows flow in one direction only and prevents refrigerant in the tank from coming back into the unit during shutdown.
26. **RA19312 (R-12) or RA19307 (R-134a) 36" Red Tank Hose** — Delivers refrigerant being recovered or recycled to the vapor side of the 50 lb. tank.
- 18180 Replacement R-12 Quick Seal O-Ring**
40300 Quick Seal Repair Kit (R-12 Only)
17773 Replacement R-134a Quick Seal O-Ring
27. **17506 (R-12) or 34750 (R-134a) Refillable Refrigerant Tank** — Stores refrigerant to be recycled later.
28. **RA19310 (R-12) or RA19313 (R-134a) Air Purge Hose** — Supplies pressure from the top of the recovery tank to the air purge control.
- 18180 Replacement R-12 Quick Seal O-Ring**
40300 Quick Seal Repair Kit (R-12 Only)
17773 Replacement R-134a Quick Seal O-Ring
38. **RA19006 (RA19088 220 volt) Air Purge Solenoids (R-12 or R-134a)** — Prevents flow of refrigerant into the lower cavity of the air purge device of the selected refrigerant type until energized 60 seconds after the recycling process has been engaged.
- Note:* Power is dropped from the solenoid after 10 minutes of purging.
- RA19258 Solenoid Rebuild Kit**
22. **RA19198 (R-12) or RA19242 (R-134a) Auto Air Purge Device** — After the recycling sequence has been running for 60 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 the pressure on the lower cavity exceeds the pressure of the upper cavity by 7 psi or more, a valve inside the device opens to release the air pressure out of the cavity. When the pressures come within 3 psi of each other, the device stops purging.

Component Descriptions

CHARGING

26. **17506 (R-12) or 34750 (R-134a) Refillable Refrigerant Tank** — Stores refrigerant.
27. **RA19311 (R-12) or RA19306 (R-134a) 36" Blue Tank Hose** — Allows flow from the liquid side of the tank to the liquid solenoid.
- 18180 Replacement R-12 Quick Seal O-Ring**
40300 Quick Seal Repair Kit
17773 Replacement R134a Quick Seal O-Ring
3. **40352 Schraeder Core** — Package of six (6) replacement Schraeder valves.
40. **107021 Liquid Line Strainer** — Filters liquid coming from the blue tank hose before going to the liquid solenoid. This strainer is a filter screen that is installed between the liquid solenoid and the bulkhead fitting (see page 32 for details).
34. **RA19006 (RA19088 220 volt) Liquid Solenoid** — Allows flow to the expansion valve and recycle solenoid of the selected refrigerant type only.
- RA19258 Solenoid Rebuild Kit**
35. **RA17577 Moisture Indicator** — References the moisture content of the refrigerant being recycled. Pale yellow indicates wet; light mint green indicates dry. During recycling the moisture indicator is normally filled with liquid refrigerant and warm to the touch.
41. **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 balls. In the charging mode solenoids 12 (Recovery), 30 (Vacuum), and 37 (Recycling) are all closed (no power supplied).
- Note:* RA19258 Solenoid Rebuild Kits are available for all of the solenoids in this manifold block.
- RA19236 Check Ball with Spring**
39. **RA19258 Charging Solenoid Rebuild Kit** — Normally closed solenoid preventing flow to the A/C system when the unit is turned off or in any mode other than charging.
11. **RA19330 Suction Line Strainer** — Filters the refrigerant coming from the high and low side manifold valves before entering into the manifold assembly.
10. **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 to vacuum.
5. **RA19044 Low Side Manifold Valve** — Allows flow from the low side hose to the center manifold port.
9. **RA19044 High Side Manifold Valve** — Allows flow from the high side hose to the center manifold port.
4. **RA19279 (RA19319 metric) 2³/₄ Low Side Gauge** — Used to read pressure entering the low side hose.
- RA19257 2³/₄ Replacement Gauge Lens**
8. **RA19280 (RA19318 metric) 2³/₄ High Side Gauge** — Used to read pressure entering the high side hose.
- RA19257 2³/₄ Replacement Gauge Lens**
3. **40352 Schraeder core** — Package of six (6) replacement Schraeder valves.
2. **RA19329 R-134a Low Side Hose** — Provides flow from the low side coupler to the low side port on the unit (14mm x 1/2 Acme Quick Seal).
- 17773 Replacement R-134a Quick Seal O-Ring**
17772 Coupler O-Ring
2. **RA19309 96" (R-12) Blue Hose Double Quick Seal** — Low side service hose to the vehicle.
- 18180 Replacement Quick Seal O-Ring**
40300 Quick Seal Repair Kit
1. **18190A R-134a Low Side Coupler (blue actuator, smaller I.D.)** — Allows access to the low side on an R-134a system.
- RA19115 Replacement Front O-Ring Only**

Component Descriptions

3. **40352 Schraeder Core** — Package of six (6) replacement Schraeder valves.
7. **RA19328 R-134a High Side Hose** — Provides flow from the high side coupler to the high side port of the unit. (14mm x 1/2 Acme Quick Seal)
17773 Replacement R-134a Quick Seal O-Ring
17772 Coupler O-Ring
7. **RA19308 96" (R-12) Red Hose Double Quick Seal** — High side service hose to the vehicle.
18180 Replacement R-12 Quick Seal O-Ring
40300 Quick Seal Repair Kit
6. **18191A R-134a High Side Coupler (red actuator, larger I.D.)** — Allows access to the high side on an R-134a system.
RA19115 Replacement Front O-Ring Only

Component Descriptions

SELF CLEARING FIRST STAGE 10 MINUTES COMPRESSOR ONLY

1. **18190A R-134a Low Side Coupler (blue actuator, smaller I.D.)** — Allows access to the low side on an R-134a system. Coupler is closed in the self clearing mode.
RA19115 Replacement Front O-Ring Only
2. **RA19329 R-134a Low Side Hose** — Provides flow from the low side coupler to the low side port on the unit. (14mm x 1/2 Acme Quick Seal)
**17773 Replacement R-134a Quick Seal O-Ring
17772 Coupler O-Ring**
2. **RA19309 96" (R-12) Blue Hose Double Quick Seal** — Low side service hose to the vehicle. Hose is disconnected from vehicle in the self clearing mode.
**18180 Replacement Quick Seal O-Ring
40300 Quick Seal Repair Kit**
3. **40352 Schraeder Core** — Package of six (6) replacement Schraeder valves.
4. **RA19279 (RA19319 metric) 2³/₄ Low Side Gauge** — Used to read pressure entering the low side hose.
RA19257 2³/₄ Replacement Gauge Lens
5. **RA19044 Low Side Manifold Valve** — Allows flow from the low side hose to the center manifold port. Valve is open in the self clearing mode.
6. **18191A R-134a High Side Coupler (red actuator, larger I.D.)** — Allows access to the high side on an R-134a system. Coupler is closed in the self clearing mode.
RA19115 Replacement Front O-Ring Only
7. **RA19328 R-134a High Side Hose** — Provides flow from the high side coupler to the high side port of the unit (14mm x 1/2 Acme Quick Seal).
**17773 Replacement R-134a Quick Seal O-Ring
17772 Coupler O-Ring**
7. **RA19308 (R-12) 96" Red Hose Double Quick Seal** — High side service hose to the vehicle. Hose is disconnected from the vehicle in the self clearing mode.
**18180 Replacement R-12 Quick Seal O-Ring
40300 Quick Seal Repair Kit**
3. **40352 Schraeder Core** — Package of six (6) replacement Schraeder valves.
8. **RA19280 (RA19318 metric) 2³/₄ High Side Gauge** — Used to read pressure entering the high side hose.
RA19257 2³/₄ Replacement Gauge Lens
9. **RA19044 High Side Manifold Valve** — Allows flow from the high side hose to the center manifold port. Valve is open in the self clearing mode.
10. **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 to vacuum.
11. **RA19330 Suction Line Strainer** — Filters the refrigerant coming from the high and low side manifold valves before entering into the manifold assembly.
12. **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 turned off or in any mode other than recovery.
13. **RA17328 Vacuum Sensor** — A normally closed sensor designed to open when a 17" vacuum is reached in the inlet manifold.
34. **RA19006 (RA19088 220 volt) Liquid Solenoid** — A normally closed solenoid that allows flow to the expansion valve and charging solenoid of the selected refrigerant type only.
RA19258 Solenoid Rebuild Kit
35. **RA17577 Moisture Indicator** — References the moisture content of the refrigerant being recycled. Pale yellow indicates wet; light mint green indicates dry. During recycling the moisture indicator is normally filled with liquid refrigerant and warm to the touch.

Component Descriptions

43. **RA19288 Manifold By-pass Check Valve (1/8 MPT x 1/4 MFL)** — Prevents flow during the recovery, recycle and charging mode to the manifold by pass solenoid.
36. **RA19316 Expansion Valve and Tube** — Converts incoming liquid refrigerant into a low pressure saturated vapor. The calibration of the expansion valve can be checked at the oil drain valve with a pressure gauge. The tolerance of the valve is 30 to 40 psi and minimum recycling time is five minutes before checking.
37. **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 the recycling mode.
38. **RA19258 Charging Solenoid Rebuild Kit** — Normally closed solenoid preventing flow to the A/C system when the unit is turned off or in any mode other than charging.
41. **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 balls. In the first ten minute stage of self clearing, solenoids 12 (Recovery), 37 (Recycle), and 39 (Charging) are all open (receiving power). This block assembly allows the compressor to totally remove all the refrigerant from the unit to change from one refrigerant type to the next.
- Note:* RA19258 Solenoid Rebuild Kits are available for all of the solenoids in this manifold block.
- RA19236 Check Ball with Spring**
30. **RA19258 Vacuum Solenoid Rebuild Kit** — Normally closed solenoid designed to prevent flow to the vacuum pump during recovery or charging (no power supplied).
14. **RA18760 System Oil Separator** — Performs three functions. Internal heat causes saturated vapor to evaporate. This is important to insure that no liquid enters the compressor and that oil droplets contained in the refrigerant will drop out in the separator. The third function will be discussed later.
15. **RA19291 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**
16. **34430 Filter Drier** — Removes moisture, acid and oil from the refrigerant.
- 40084 Replacement Hose Gasket**
23. **RA19287 Recovery Check Valve (1/4 MFL x 1/8 MPT)** — Allows flow in one direction only and prevents refrigerant in the tank from coming back into the unit during shutdown.
22. **RA19198 R-12 Auto Air Purge Device** — Liquid refrigerant is circulated through the upper section during recycling to establish a reference pressure.
- 22a. **RA19242 R-134a Auto Air Purge Device** — Liquid refrigerant is circulated through the upper section during recycling to establish a reference pressure.
14. **RA18760 System Oil Separator** — At this point high pressure, high temperature vapor enters the separator and passes through a condensing coil. The vapor cools and condenses by giving up heat to the incoming refrigerant.
20. **RA17529 High Pressure Cut Out** — A normally closed sensor that turns 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 and have two solid red wires attached to them.
19. **RA19327 (117327 220 volt) High Side Diversion Solenoid** — A three-way normally closed solenoid. During normal operation the refrigerant passes through to the system oil separator. In the self clearing mode the solenoid is energized passing the refrigerant directly to the discharge solenoid of the selected refrigerant type. Refrigerant back seats against port 3.

Component Descriptions

21. **RA17522 (RA17578 220 volt) Pressure Equalizing Solenoid** — A normally open solenoid that allows the suction and discharge pressures on the compressor to equalize and forces pressure down on the oil separator to drain the oil recovered from the A/C system when the solenoid loses power. This solenoid does not receive power in the self clearing mode.
17. **RA19302 (RA19314 220 volt) Compressor** — Converts a low pressure entering gas into a high pressure exiting gas. This is a 1/3 horse power oil-less compressor. To help eliminate vibration this is a hose plumbed compressor with flare connections on the unit end of the hose. In the first stage of the self clearing the compressor runs for a minimum of ten minutes and until a 17" vacuum is reached at the vacuum sensor.
18. **RA17416 (RA17516 220 volt) Fan** — Assists in cooling the compressor during normal operation.
19. **RA19331 (RA19327 220 volt) High Side Diversion Solenoid** — A three way normally closed solenoid. During normal operation the refrigerant passes through to the system oil separator. In the self clearing mode the solenoid is energized passing the refrigerant directly to the discharge solenoid of the selected refrigerant type (ports 1 and 2).
41. **RA19006 (RA19088 220 volt) Manifold By-pass Solenoid** — A normally closed solenoid that opens only in the second ten minutes of the self clearing process. This solenoid opens allowing access to the discharge of the compressor when the vacuum pump starts running.
23. **RA19287 Recovery Check Valve (1/8 MPT x 1/4 MFL)** — Allows flow in one direction only and prevents refrigerant in the tank from coming back into the unit during shutdown.
24. **RA19006 (RA19088 220 volt) Discharge Solenoid (R-12 or R-134a)** — Allows refrigerant flow to the red vapor side of the selected refrigerant type only.
25. **RA19282 Recovery Check Valve (1/8 MPT x 1/8 MPT)** — Allows flow in one direction only and prevents refrigerant in the tank from coming back into the unit during shutdown.
26. **RA19312 (R-12) or RA19307 (R-134a) 36" Red Tank Hose** — Delivers refrigerant being recovered or recycled to the vapor side of the 50 lbs. tank.
27. **17506 (R-12) or 34750 (R-134a) Refillable Refrigerant Tank** — Stores refrigerant.

RA19258 Solenoid Rebuild Kit

- 18180 Replacement R-12 Quick Seal O-Ring
- 40300 Quick Seal Repair Kit (R-12)
- 17773 Replacement R-134a Quick Seal O-Ring

RA19258 Solenoid Rebuild Kit

Component Descriptions

SELF CLEARING SECOND STAGE 10 MINUTES VACUUM PUMP ONLY

In the second stage of the self clearing mode everything is the same as in the first stage with the exception that:

- A. The 17 (Compressor) and 24 (Discharge) solenoids are not powered.
- B. The following items are allowing flow.
 - 42. **RA19006 (RA19088 220 volt) Manifold By-Pass Solenoid** — A normally closed solenoid that opens only in the second ten minutes of the self clear process. This solenoid opens allowing access to the discharge of the compressor when the vacuum pump starts running.

RA19258 Solenoid Rebuild Kit
 - 43. **RA19288 Manifold By-Pass Check Valve (1/8 MPT x 1/4 MFL)** — Prevents flow during the recovery, recycle and charging mode to the manifold by-pass solenoid.
 - 41. **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 balls. In the second ten minute stage of self clearing, solenoids 12 (Recovery), 30 (Vacuum), 37 (Recycle), and 39 (Charging) are all open (receiving power). This block assembly allows the vacuum pump to remove any moisture or air from the unit to change from one refrigerant type to the next.

Note: RA19258 Solenoid Rebuild Kits are available for all of the solenoids in this manifold block.

RA19236 Check Ball with Spring

- 30. **RA19258 Vacuum Solenoid Rebuild Kit** — Normally closed solenoid preventing flow to the vacuum pump during recovery or charging.
- 31. **111877 Vacuum Hose** — Provides flow from the vacuum solenoid to the intake of the vacuum pump.

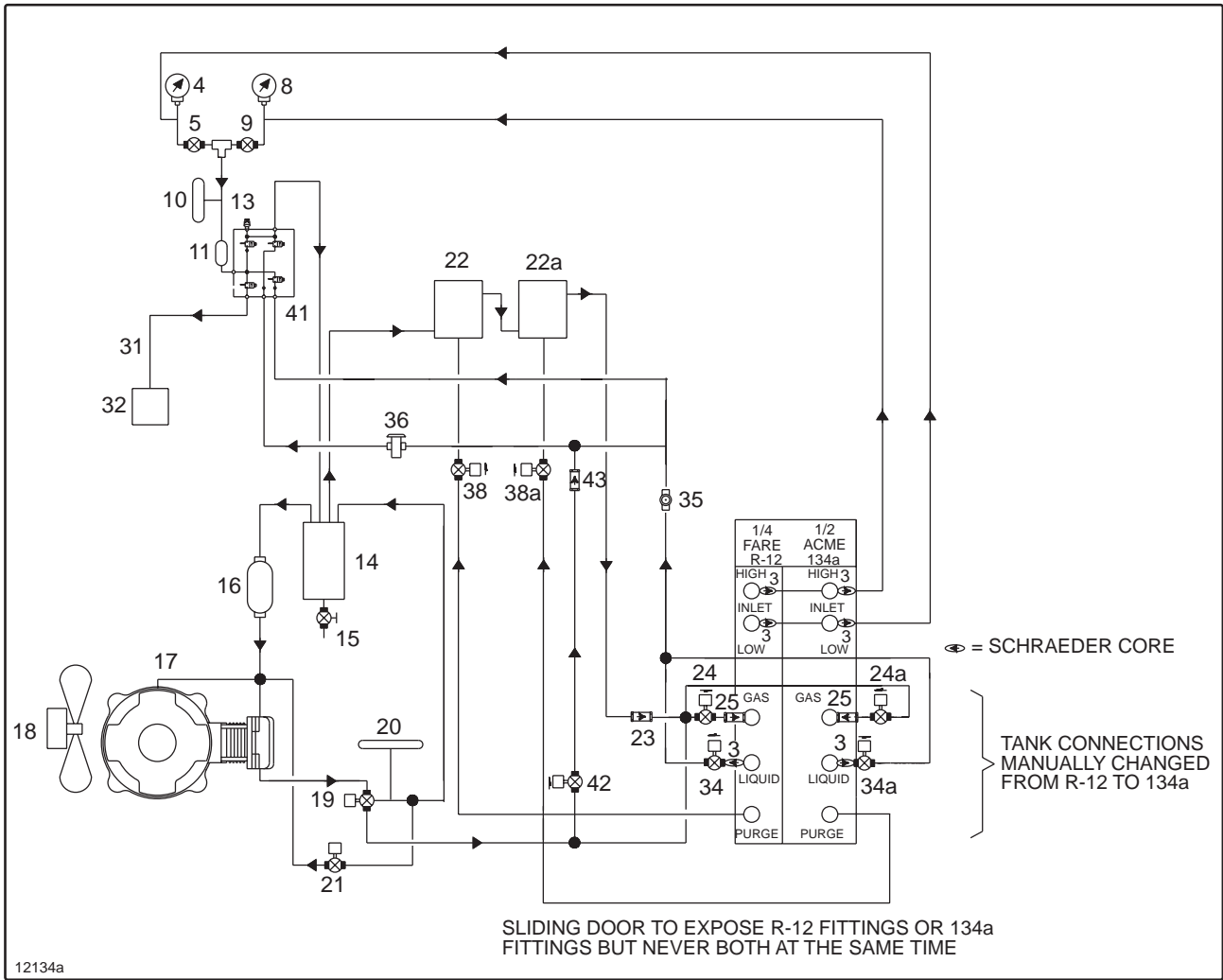
40084 Replacement Hose Gasket
- 32. **RA15425 (RA15428 220 volt) Vacuum pump** — A 6 CFM, two stage rotary vane pump designed to pull moisture and air from an A/C system. In the self clearing mode the pump pulls a vacuum on the recovery unit.

Component Descriptions

ELECTRICAL

10. **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 to vacuum.
13. **RA17328 Vacuum Sensor** — A normally closed sensor that sends a signal to the main board when a 17” vacuum has been reached in the inlet line. The switch has two orange wires attached to it.
18. **RA17416 (RA17516 220 volt) Fan** — Cools the cabinet temperature.
20. **RA17529 High Pressure Cut Out** — A normally closed sensor that turns off the unit when the discharge pressure reaches 435 psi. This switch has three contacts: the outer two contacts (numbered 1 and 3) are normally closed.
44. **RA40994 (RA17135 220 volt) Main Power Switch** — Controls the power between the power cord and the main board.
45. **RA19301 (RA19246 220 volt) Main Board** — Controls the unit function, automatic or programmed.
46. **RA19008 Scale** — Sends a signal to the main board for accurate weight readings and tank overflow protection.
47. **RA19253 Keypad** — Programs the main board.
48. **RA17459 (RA17324 220 volt) System Relays** — Energizes the compressor and vacuum pump allowing the sensors to turn off the machine. The relay has two sets of contacts which close when the coil is energized.
50. **117334 Power Entry Connector** — Female socket where the power cord connects.
51. **RA19303 (117581 220 volt) Power Cord** — Provides power to the unit.

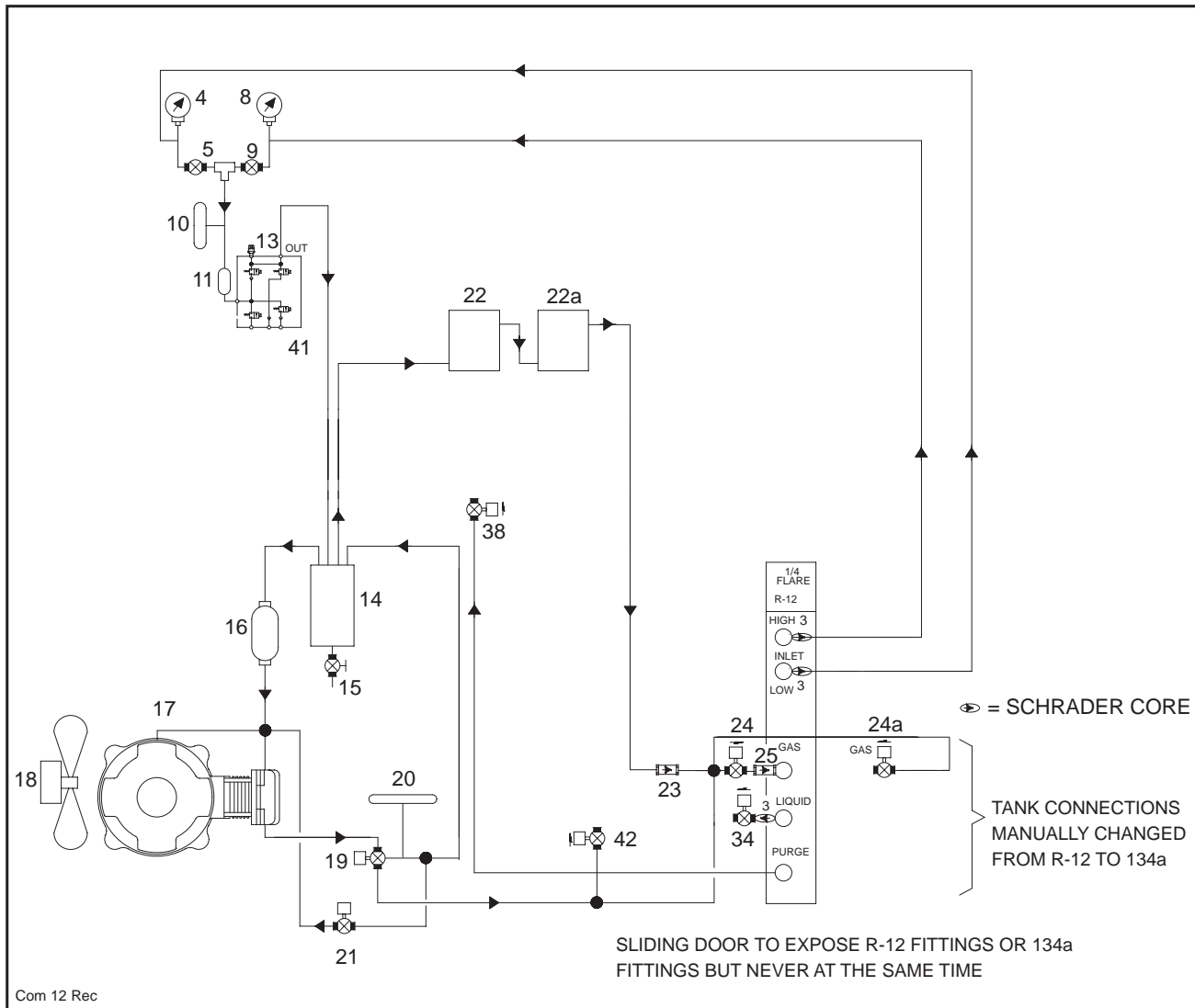
Flow Diagram



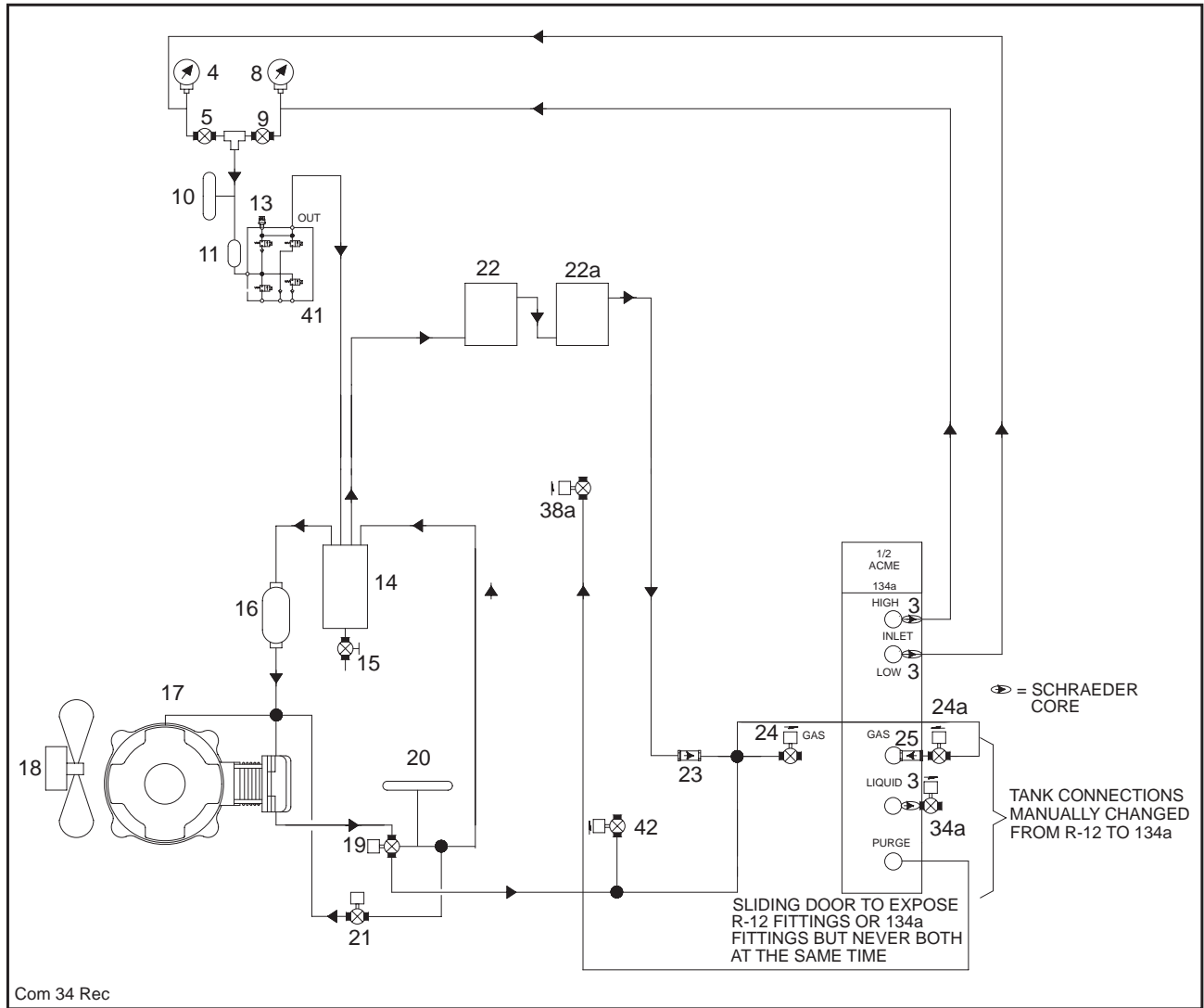
Flow Diagram

- | | |
|--|--|
| <p>3. 40352 Schraeder Core</p> <p>4. RA19279 (RA19319 Metric) Low Side Gauge
RA19257 Replacement Lens</p> <p>5. RA19044 Low Side Manifold Valve</p> <p>8. RA19280 (RA19319 Metric) 2³/₄ High Side Gauge
RA19257 Replacement Lens</p> <p>9. RA19044 High Side Manifold Valve</p> <p>10. RA19266 Vacuum Pump Protection Switch</p> <p>11. RA19330 Suction Line Strainer</p> <p>13. RA17328 Vacuum Sensor</p> <p>14. RA18760 System Oil Separator</p> <p>15. RA19291 Oil Drain Valve
RA17419 Oil Drain Bottle</p> <p>16. 34430 Filter
40084 Gaskets</p> <p>17. RA19302 (RA19314 220 volt) Compressor</p> <p>18. RA17416 (RA17516 220 volt) Fan</p> <p>19. RA19331 (RA19327 220 volt) High Side Diversion Solenoid</p> <p>20. RA17529 High Pressure Switch</p> <p>21. RA17522 (RA17578 220 volt) Pressure Equalizing Solenoid</p> <p>22. RA19198 R-12 Auto Air Purge</p> <p>22a. RA19242 R-134A Auto Air Purge</p> <p>23. RA19287 Recovery Check Valve (1/4 MFL x 1/8 MPT)</p> <p>24. RA19006 (RA19088 220 volt) R-12 Discharge Solenoid
RA19258 Solenoid Rebuild Kit</p> <p>24a. RA19006 (RA19088 220 volt) R-134A Discharge Solenoid
RA19258 Solenoid Rebuild Kit</p> | <p>25. RA19282 Recovery Check Valve (1/8 MPT x 1/8 MPT)</p> <p>31. 111877 Vacuum Hose
40084 Replacement Hose Gasket</p> <p>32. RA15425 (RA15428 220 volt) Vacuum Pump
13203 Pump Oil
15369 Base and Foot Assembly</p> <p>34. RA19006 (RA19088 220 volt) R-12 Liquid Solenoid
RA19258 Solenoid Rebuild Kit</p> <p>34a. RA19006 (RA19088 220 volt) R-134a Liquid Solenoid
RA19258 Solenoid Rebuild Kit</p> <p>35. RA17577 Moisture Indicator</p> <p>36. RA19316 Expansion Valve and Tube</p> <p>38. RA19006 (RA19088 220 volt) R-12 Air Purge Solenoid
RA19258 Solenoid Rebuild Kit</p> <p>38a. RA19006 (RA19321 220 volt) R-134A Air Purge Solenoid
RA19258 Solenoid Rebuild Kit</p> <p>41. RA19320 (RA19321 220 volt) Manifold Assembly</p> <p>42. RA19006 (RA19088 220 volt) Manifold By-Pass Solenoid</p> <p>43. RA19288 Manifold By-Pass Check Valve (1/8 MPT x 1/4 MFL)</p> |
|--|--|

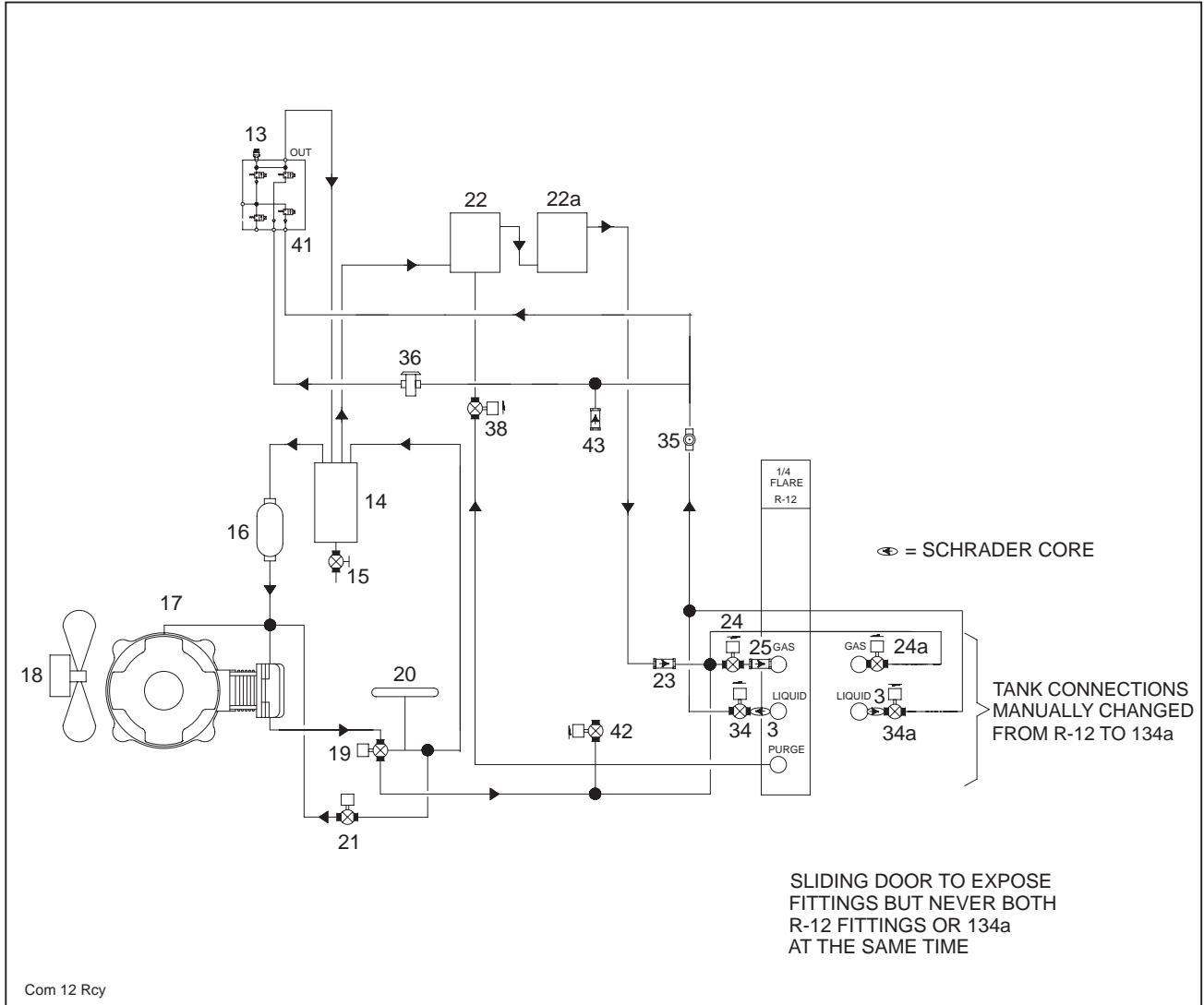
Flow Diagram R-12 Recovery



Flow Diagram R-134a Recovery

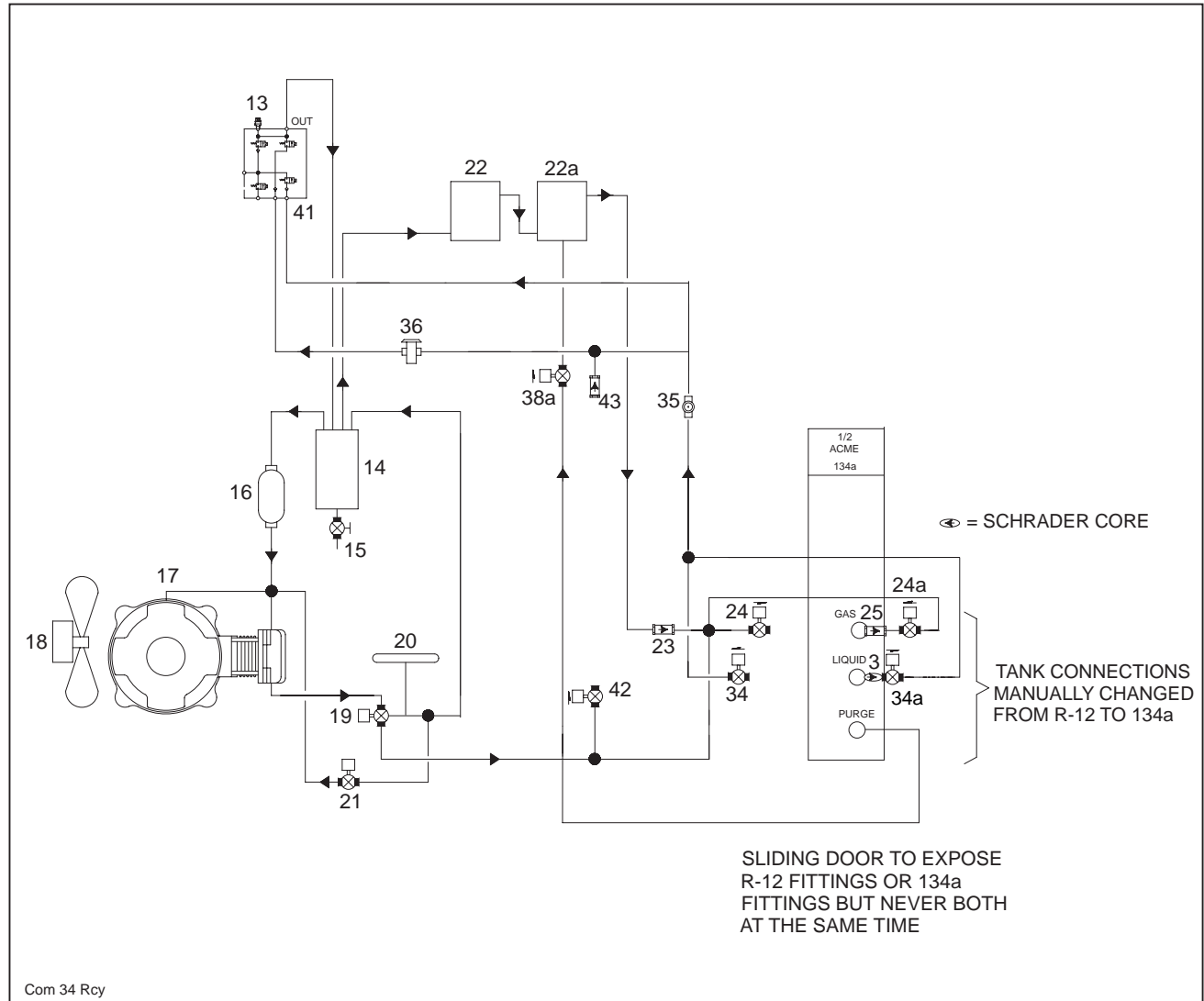


Flow Diagram R-12 Recycling

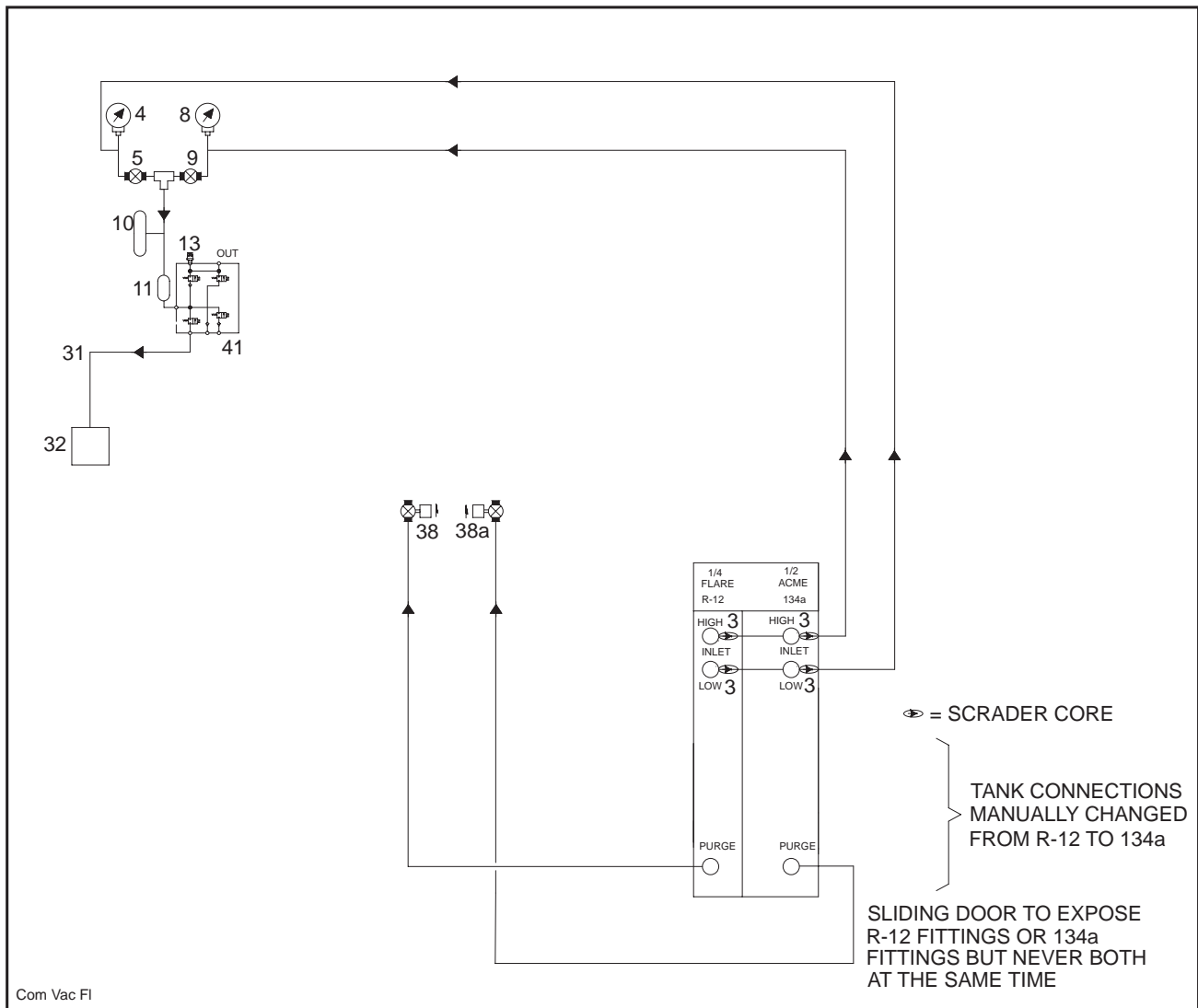


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Flow Diagram R-134a Recycling

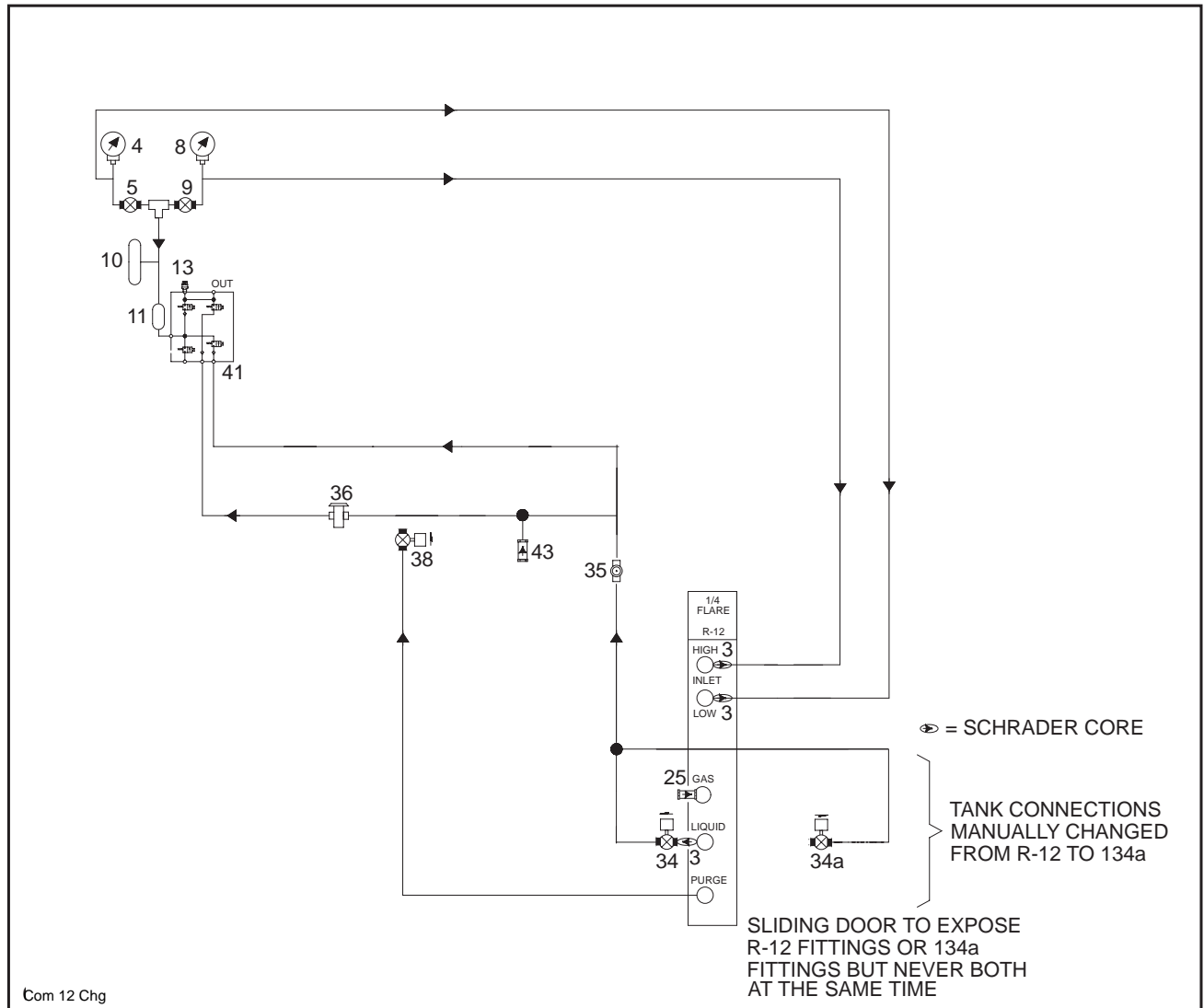


Vacuum Flow Diagram

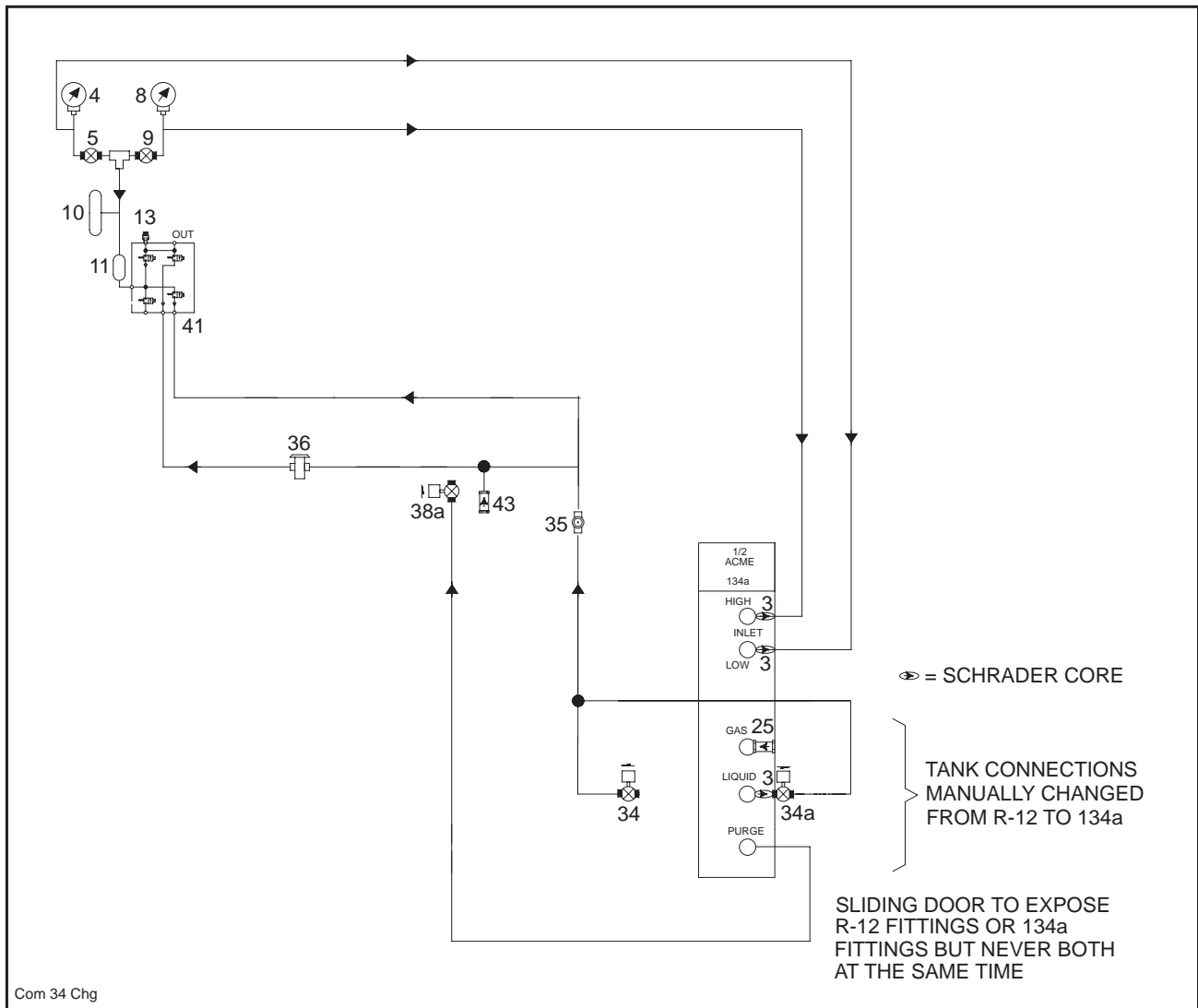


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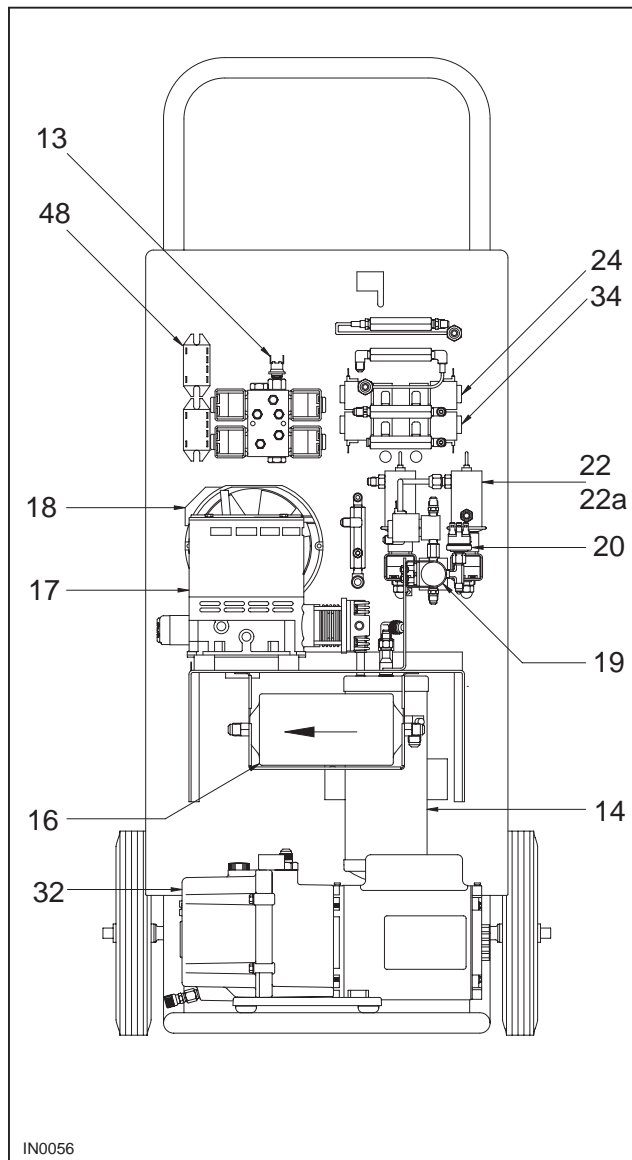
Flow Diagram R-12 Charging



Flow Diagram R-134a Charging

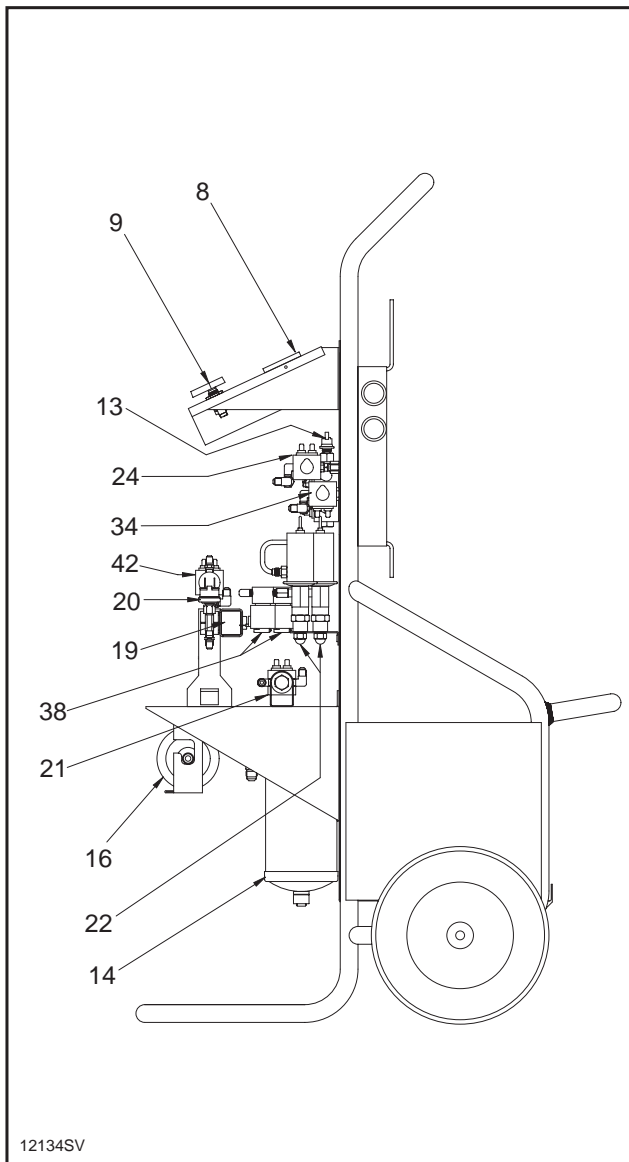


Pictorial Views



- 13. **RA17328** Vacuum Sensor
- 14. **RA18760** System Oil Separator
- 16. **34430** Filter
40084 Gaskets
- 17. **RA19302 (RA19314 220 volt)** Compressor
- 18. **RA17416 (RA17516 220 volt)** Fan
- 19. **RA19331 (RA19327 220 volt)** High Side
Diverson Solenoid
- 20. **RA17529** High Pressure Cut Out
- 22. **RA19198** R-12 Auto Air Purge
- 22a. **RA19242** R-134a Auto Air Purge
- 24. **RA19006 (RA19088 220 volt)** Discharge
Solenoid
RA19258 Solenoid Rebuild Kit
- 32. **15425 (RA15428 220 volt)** Vacuum Pump
13203 Pump Oil
15369 Base and Foot Assembly
- 34. **RA19006 (RA19088 220 volt)** Liquid Solenoid
RA19258 Solenoid Rebuild Kit
- 48. **RA17459** System Relay

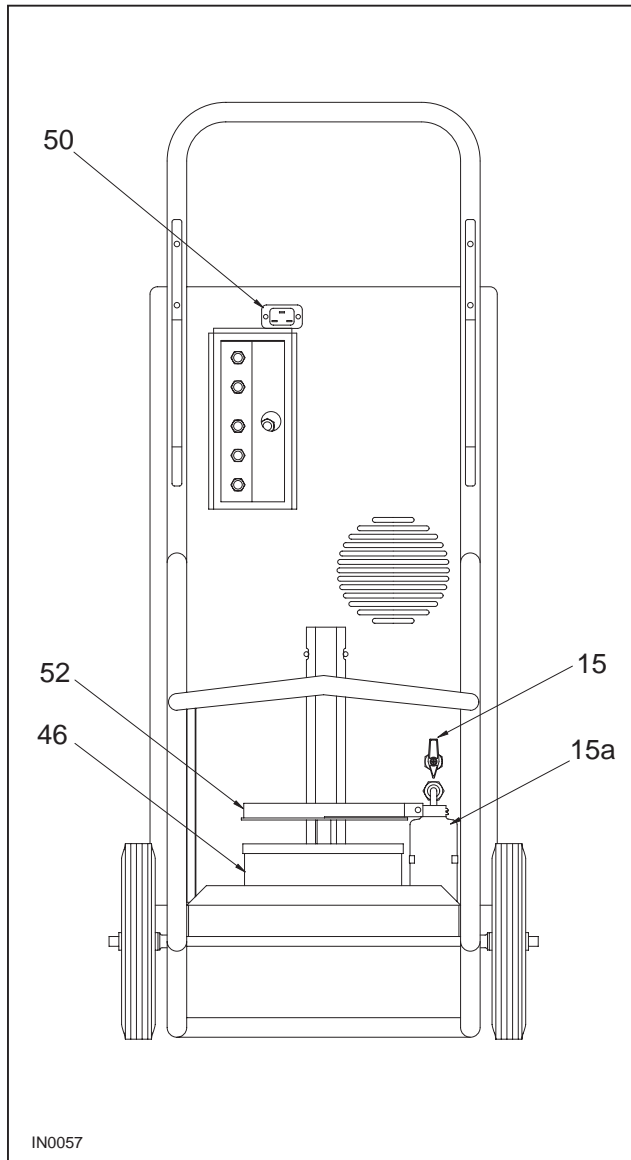
Pictorial Views



- 8. **RA19280 (RA19318 metric) 2³/₄ High Side Gauge**
- 9. **RA19044 High Side Manifold Valve**
- 13. **RA17328 Vacuum Sensor**
- 14. **RA18760 System Oil Separator**
- 16. **34430 Filter Drier**
- 19. **RA19331 (RA19327 220 volt) High Side Diversion Solenoid**
- 20. **RA17529 High Pressure Cut Out**
- 21. **RA17522 (RA17578 220 volt) Pressure Equalizing Solenoid**
- 22. **RA19198 Auto Air Purge**
- 24. **RA19006 (RA19088 220 volt) Discharge Solenoid**
RA19258 Solenoid Rebuild Kit
- 34. **RA19006 (RA19088 220 volt) Liquid Solenoid**
RA19258 Solenoid Rebuild Kit
- 38. **RA19006 (RA19088 220 volt) Air Purge Solenoid**
RA19258 Solenoid Rebuild Kit
- 42. **RA19006 (RA19088 220 volt) Manifold By-pass Solenoid**
RA19258 Solenoid Rebuild Kit

12134SV

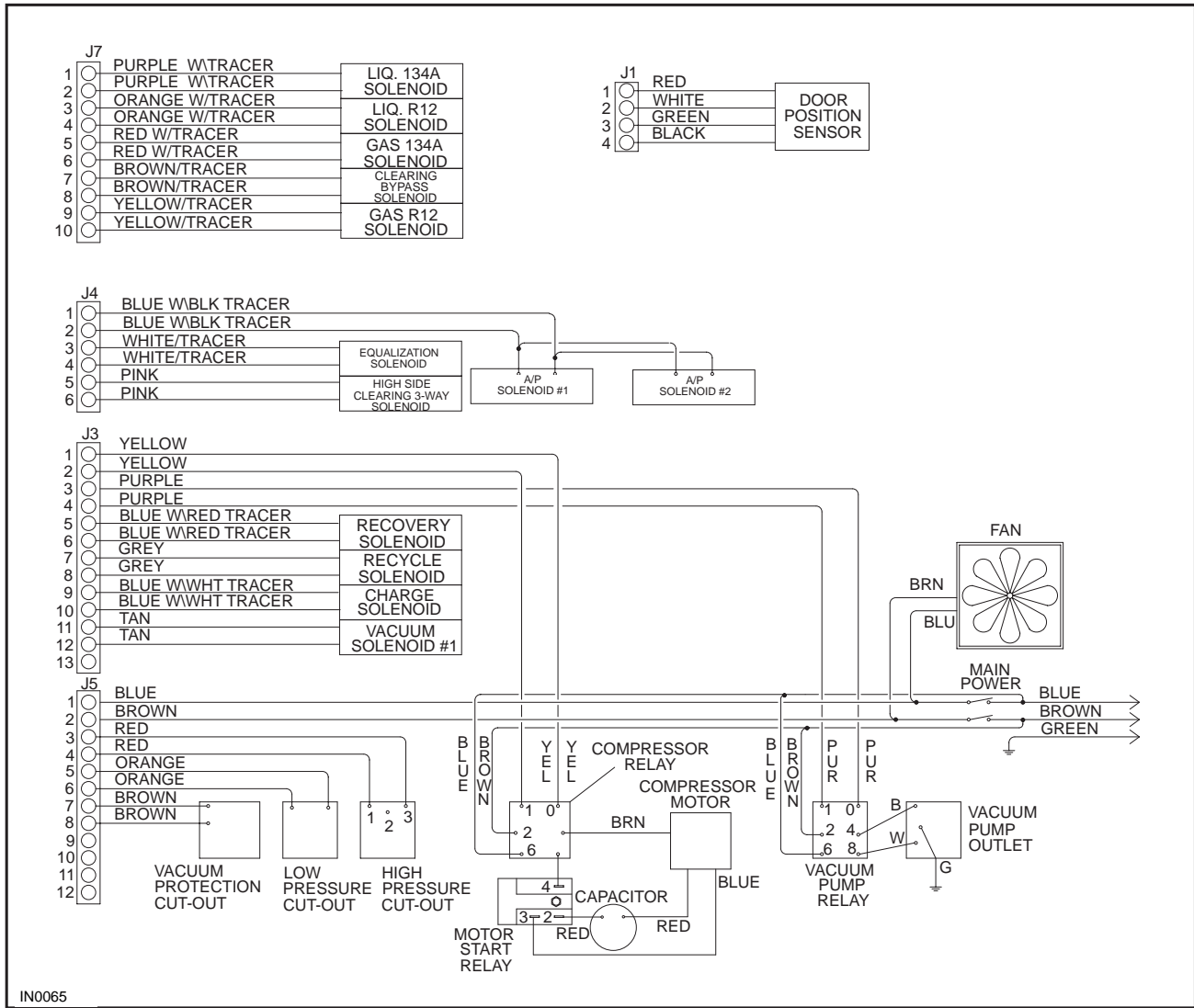
Pictorial Views



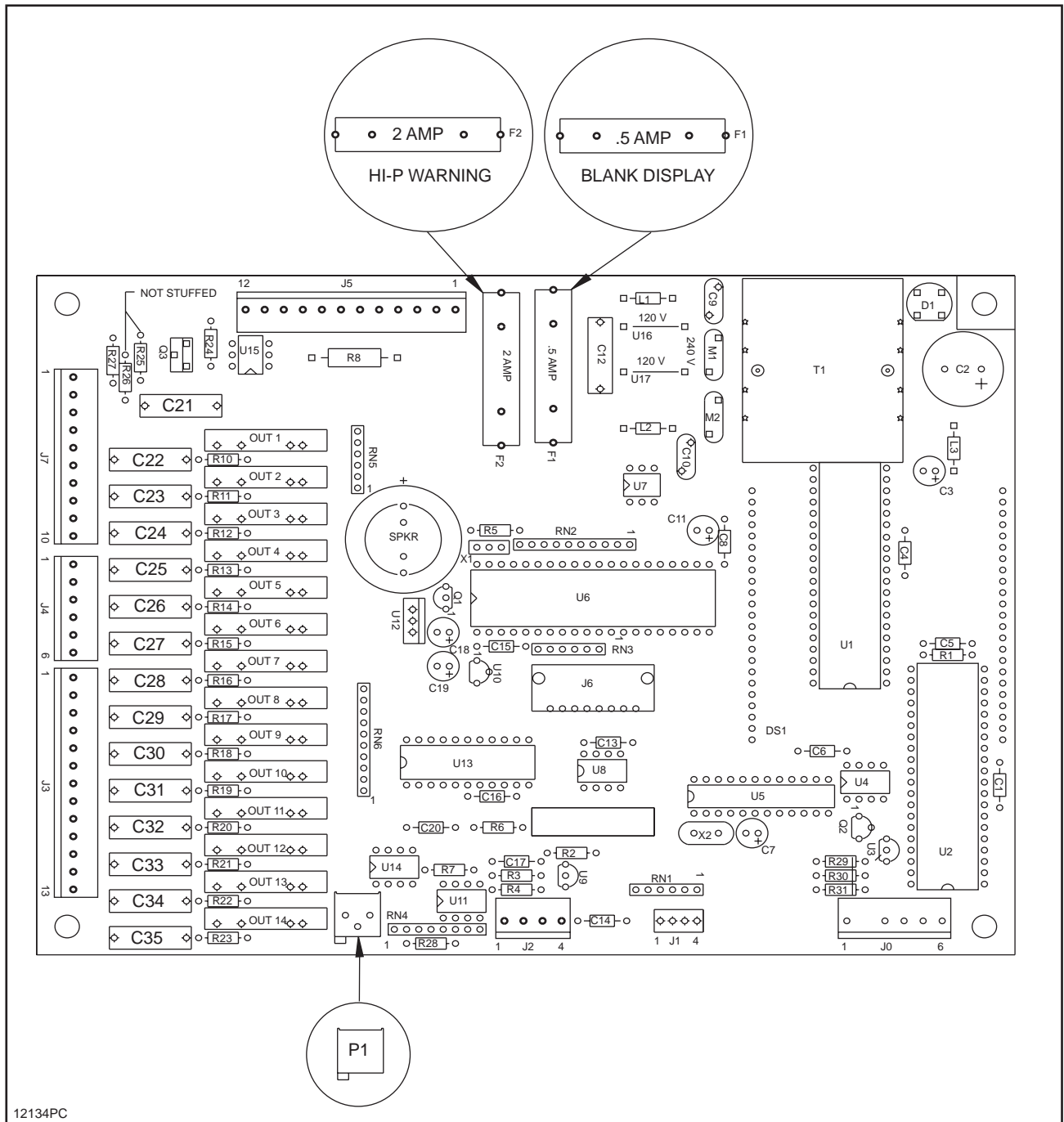
- 15. RA19291 Oil Drain Valve
RA17419 Oil Drain Bottle
- 46. RA19008 Scale
- 52. RA14967 Scale Platform
- 50. 117334 Power Entry Connector

IN0057

Wiring Diagram



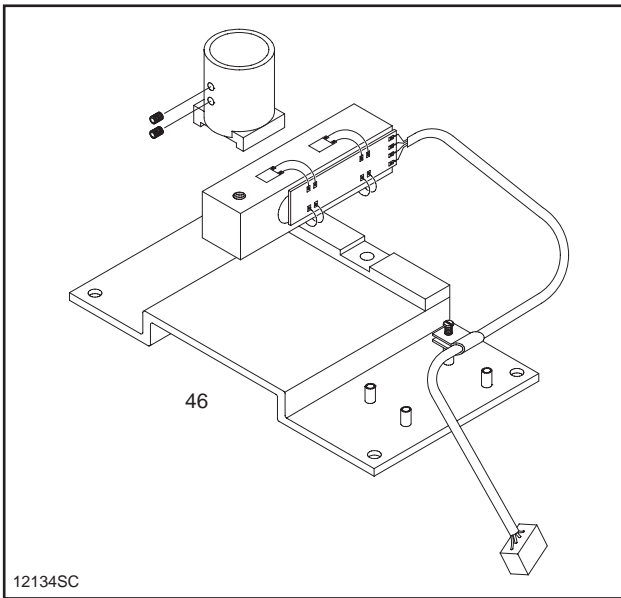
Main Board Diagram



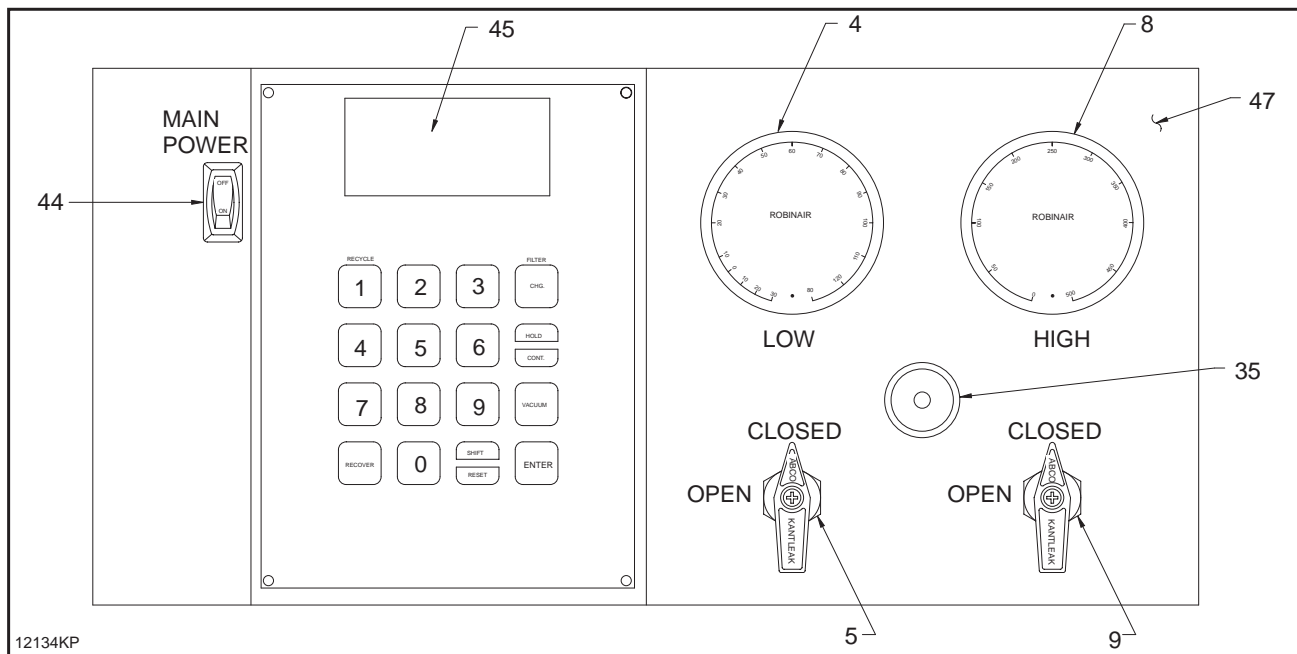
12134PC

Components Specifications

- ADD** The recovery tank has less than 8 lbs. of refrigerant left or is beginning the add process.
- CAL** Calibrate the scale.
- CH-F** Change the filter-drier.

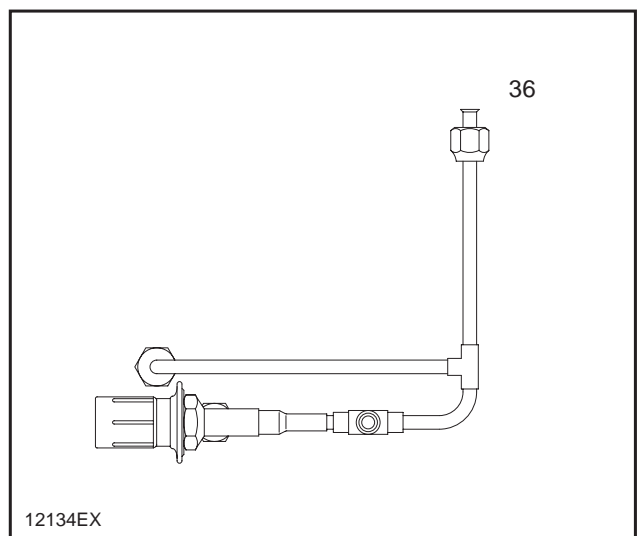
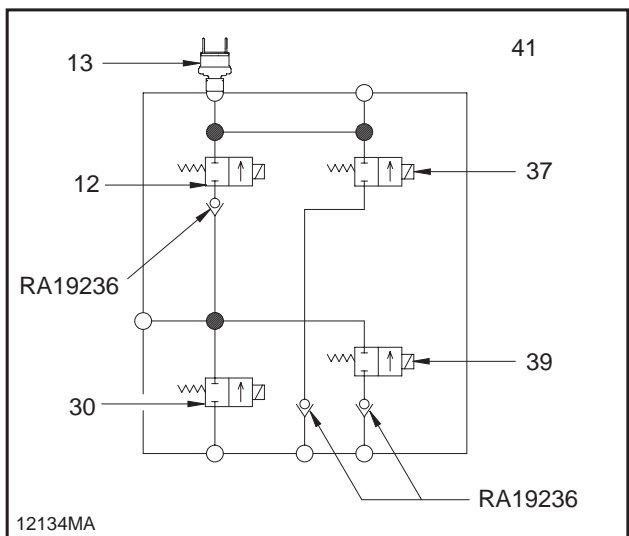
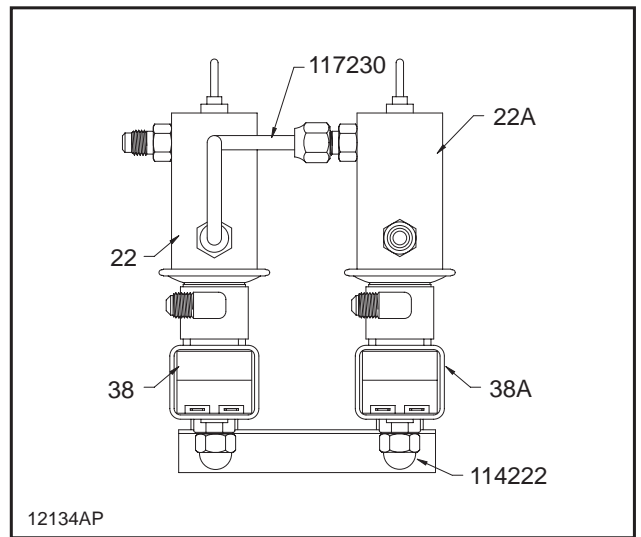
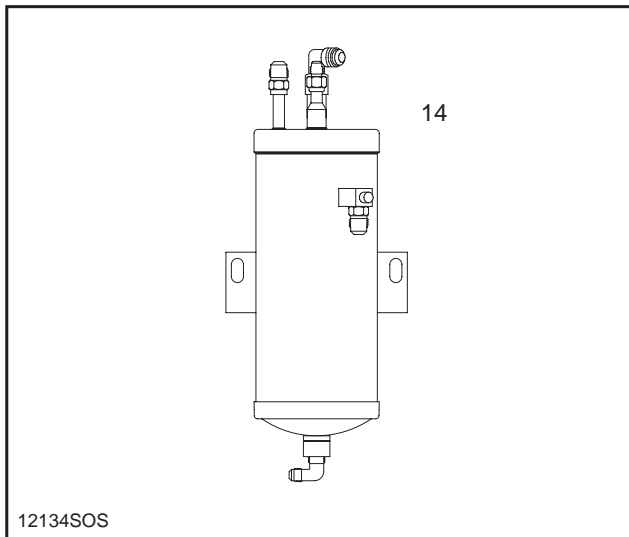
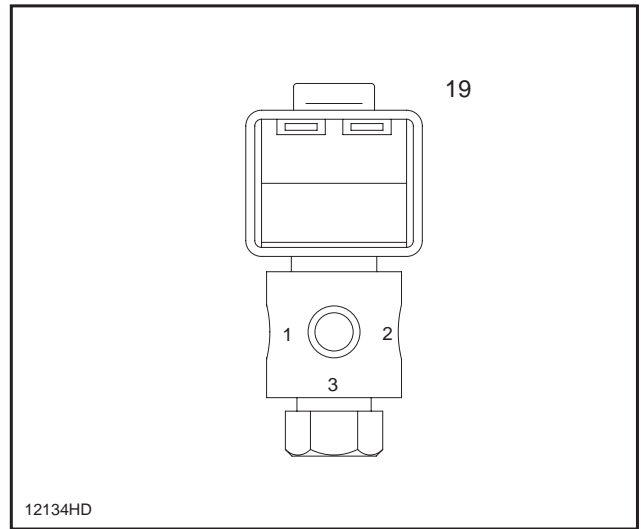
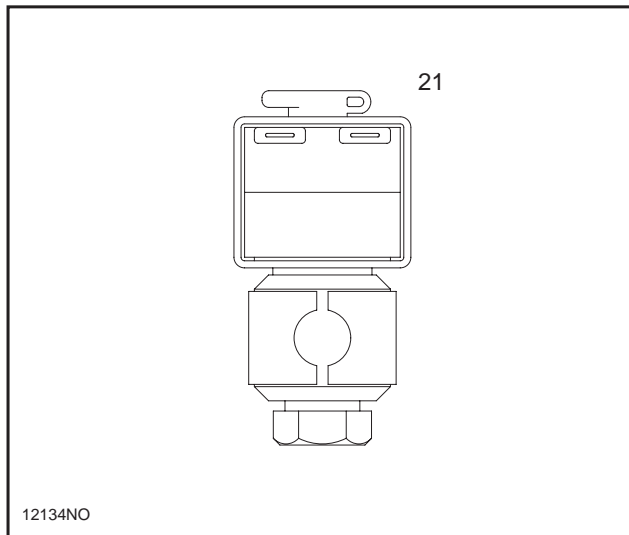


- CH-P** Less than 25 psi at inlet of machine.
- CL-L** Low side clearing routine in progress.
- CL-R** Clearing; changing refrigerant type.
- CON** Continuous; the vacuum pump will run continuously.
- CPL** Complete; cycle process is finished.
- FIL** Filter-drier change out process.
- FULL** Refrigerant tank full.
- HI-P** High pressure, internal unit pressure is above 435 psi.
- OIL** Change the vacuum pump oil (to reset press SHIFT/RESET and ENTER at the same time while "OIL" is being displayed.)
- U-HI** High pressure to vacuum pump.
- SCAL** Scale problem; scale may be broken or disconnected, or tank weight has exceeded 80 pounds (36 kilograms).
- 99LB** The maximum amount displayed during recovery is 99 pounds (or 99 kilograms); reset the unit.

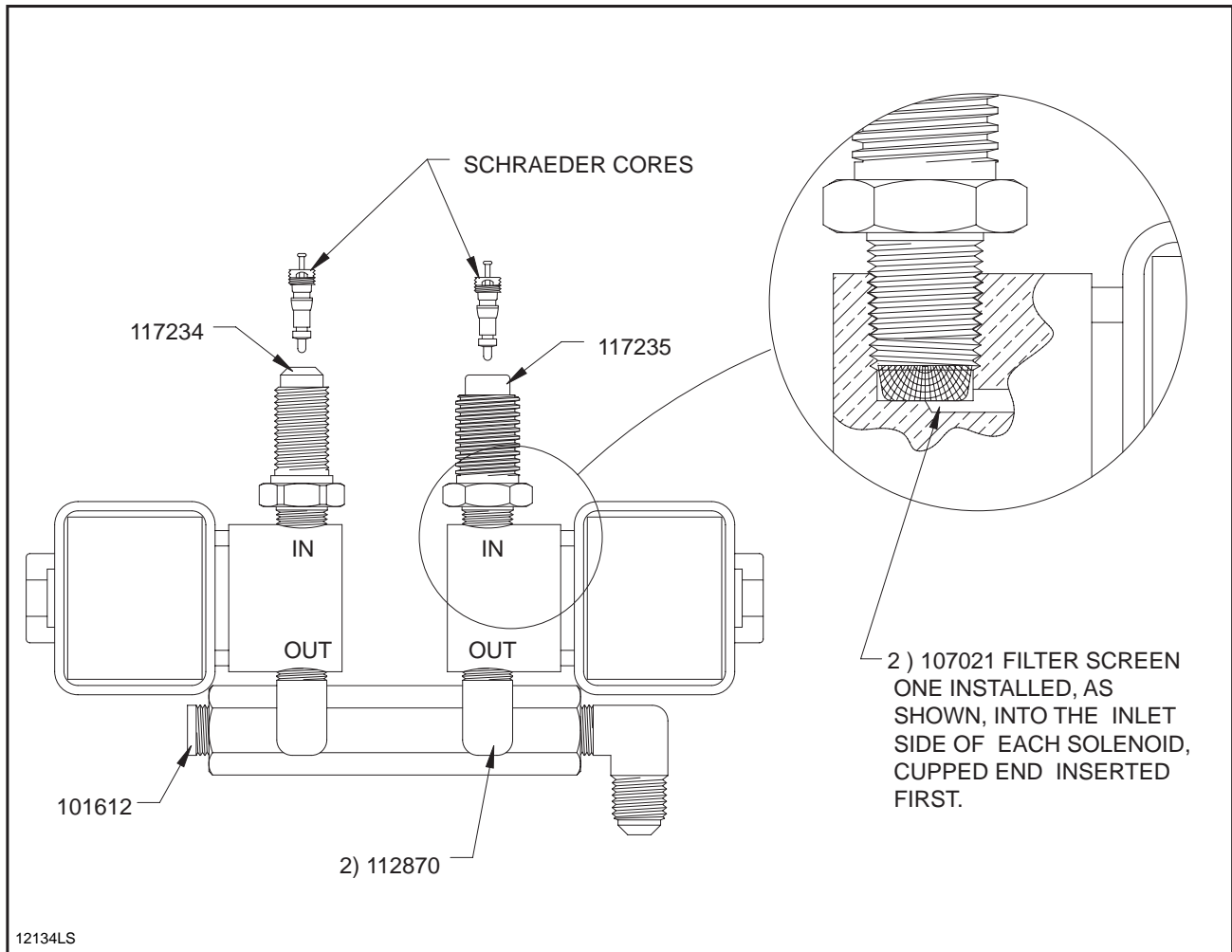


- 4. RA19279 (RA19319 metric) Low Side Gauge
- 5. RA19044 Low Side Manifold Valve
- 8. RA19280 (RA19318 metric) High Side Gauge
- 9. RA19044 High Side Manifold Valve
- 35. RA17577 Moisture Indicator
- 44. RA40994 (RA17135 220 volt) Main Power Switch
- 45. RA19301 (RA19246 220 volt) Main Board
- 47. RA19253 Keypad

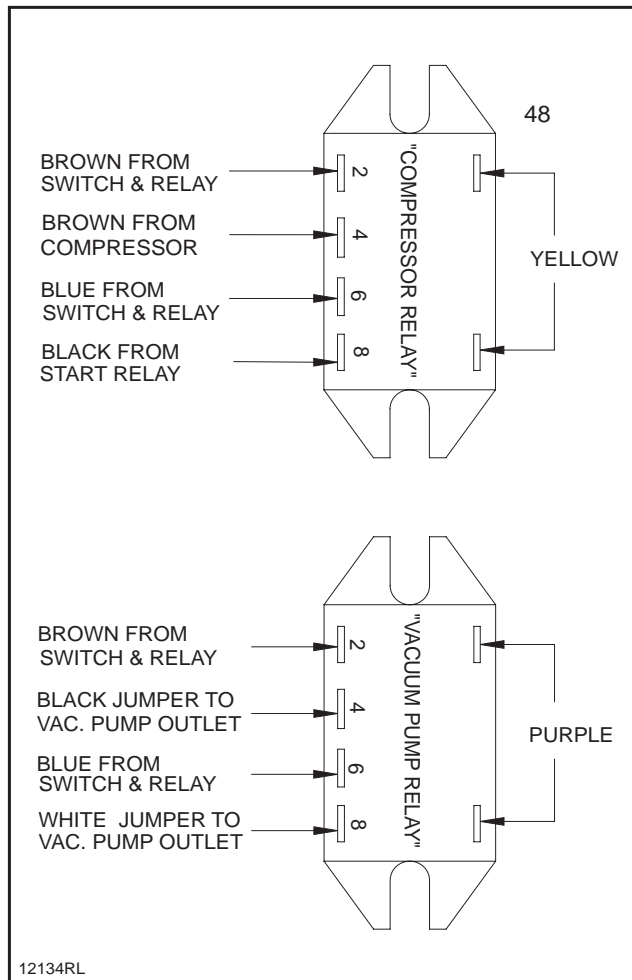
Components Specifications



Components Specifications



Components Specifications



The system relay is used to energize the compressor or 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, they should have power (110/220 volts) across the terminals. While voltage is applied, the coil forms a magnetic field pulling the 2 and 4, 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 for proper voltage to the 0 and 1 contacts. If there is proper voltage, replace the relay. If there is not proper voltage, replace main board.

Manual Override Ear Pulled In

1. Check for proper voltage from the power supply contact to the ground. If there is not proper voltage, check the voltage supply source.
2. Check for proper voltage from the mating supply contact to the ground. If there is not proper voltage, replace relay.

Note: Use of improper extension cord size can damage contact points.

RA17328 VACUUM SENSOR

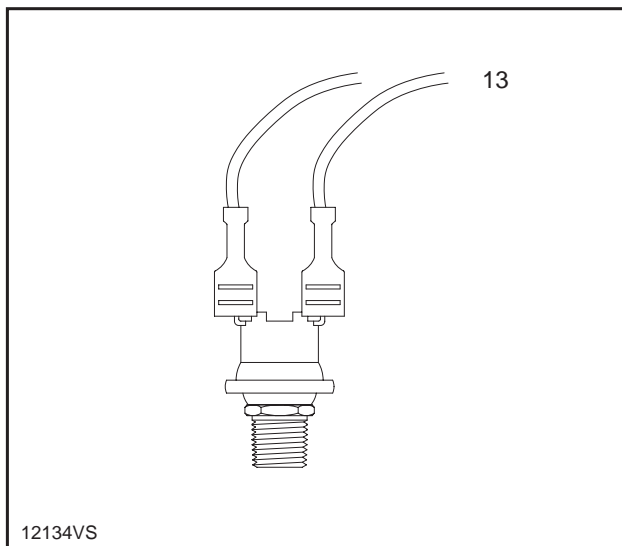
The vacuum sensor is a normally closed sensor. If a 17" \pm 2" rating is reached at the intake, the switch opens and breaks the coil contacts shutting the unit off.

The contacts are closed when anything above 17" is present in the lower cavity. When 17" is achieved in the lower cavity, the spring contact has room to force away from the mating contact.

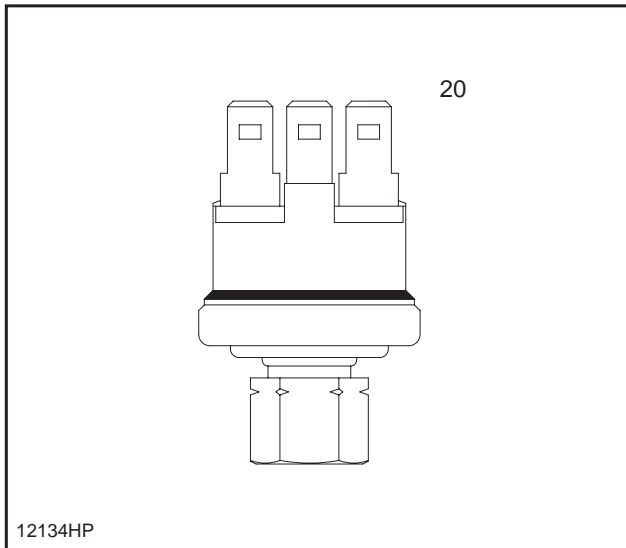
TROUBLESHOOTING

With pressure in the accumulator (open the oil drain valve to ensure pressure is present) the switch should have continuity. If it does not, replace the switch.

If the unit is shutting off before reaching 17" rating, inspect the inlet for obstructions before replacing the switch.



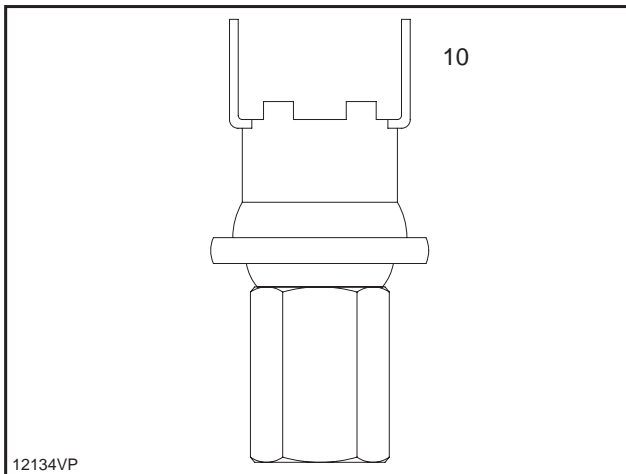
Components Specifications



RA17529 HIGH PRESSURE CUT OUT

The high pressure cut out 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 contactor to disengage the 1 and 3 contacts and engage the 1 and 2 contacts. When this takes place the unit shuts off and the display reads "HI-P."

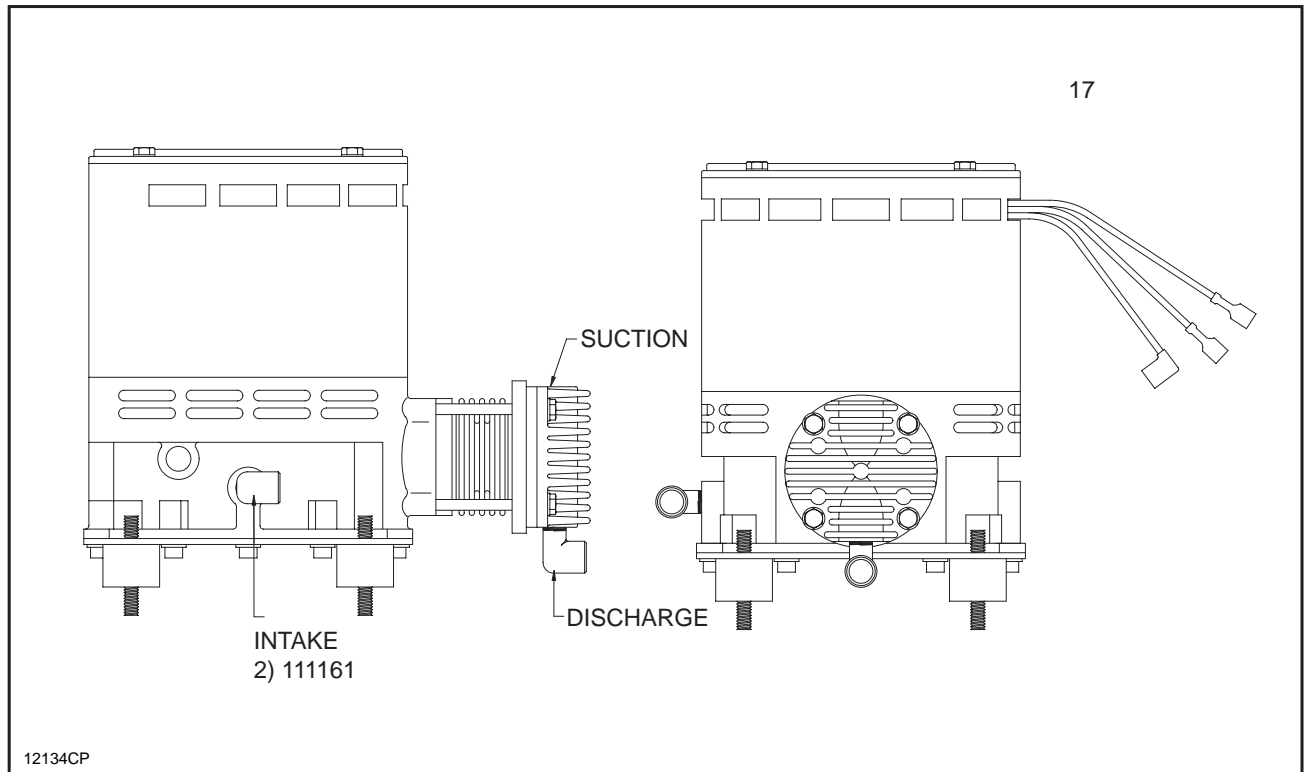


RA19266 VACUUM PUMP PROTECTION SWITCH

The vacuum pump protection switch is a normally open sensor. If a 25 psi \pm 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 and Service



COMPRESSOR SPECIFICATIONS

1/3 hp Oil-Less Compressor

4-6 Running Amperage/3-4.5

20-25/16-19 Locked Rotor Amperage

110/220 Voltage

TROUBLESHOOTING

Compressor Won't Run

1. Check for proper power (110/220 volts) to compressor. If there is not proper power, inspect the power source for defect.
2. Take an amp draw of the compressor. If it is drawing locked rotor amps, replace the compressor.

Note: If there is no amp draw, inspect the start components and replace if necessary.

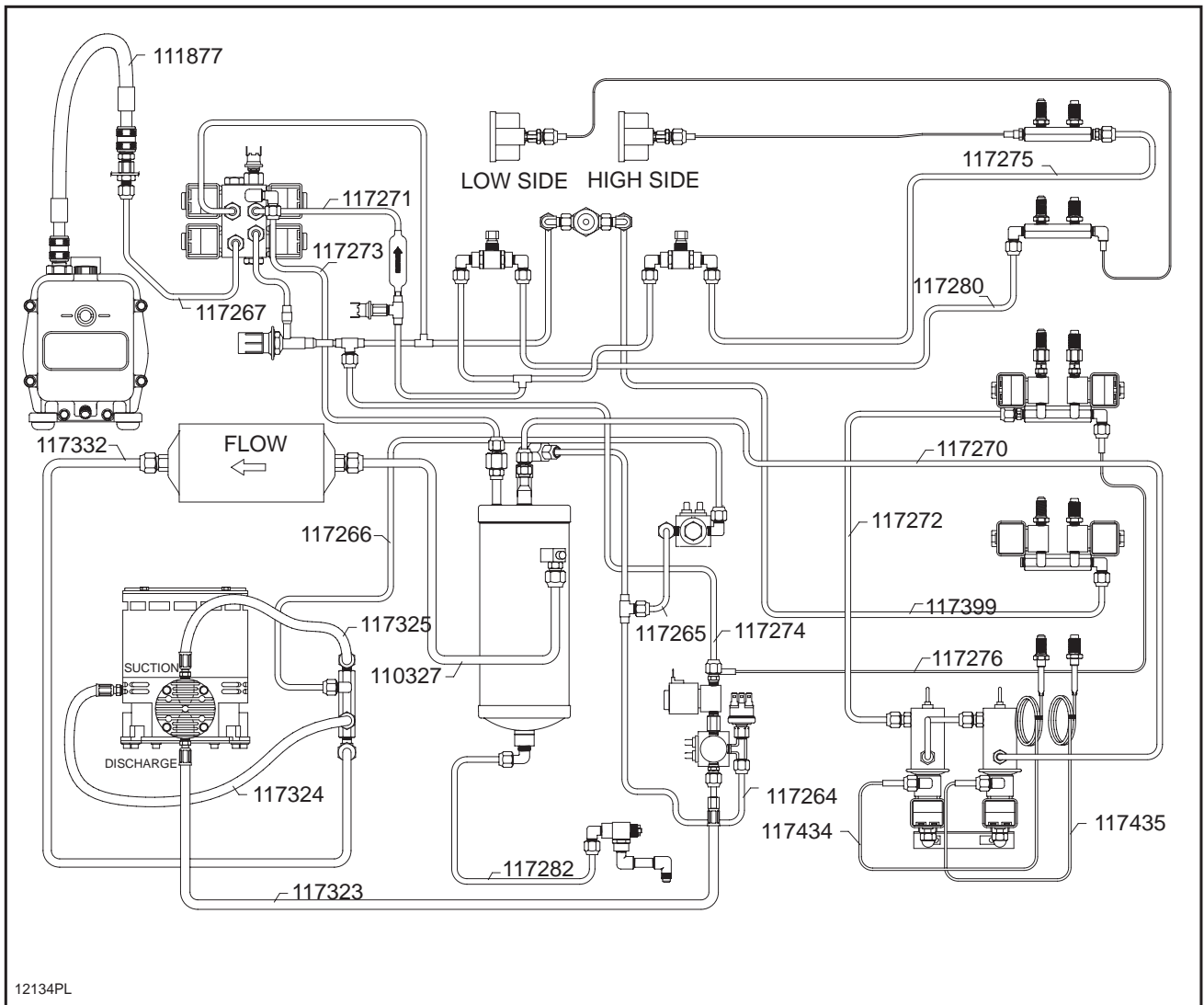
Compressor Runs — No Suction

1. Cap the intake fitting.
2. Install the 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 20" to 25").
5. Replace the compressor as needed.

Compressor Runs — No Discharge

1. Install the high pressure gauge on the discharge port.
2. Be sure the intake and suction are not plugged.
4. Start the compressor.
5. Pressure should build to 150 psi in about four minutes. If pressure doesn't rise or reach at least 150 psi, replace the compressor.

Tubeing Schematic



TROUBLESHOOTING

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

1. If the unit is being run through an extension cord, eliminate its use.
2. Disconnect the high and low side hoses (couplers) from the vehicle with the gauge valves open. If the pressure on the gauges drops while the display says "CL-L" the recovery solenoid needs rebuilt or cleaned.
3. Check the oil drain valve; verify that it is closed and not bleeding through.
4. Inspect the filter for flow obstructions and leaks around the gasket area.
Note: Fittings on quick disconnects should only be hand tight. Replace gaskets if needed. When installing gaskets, be sure to lubricate them with vacuum grease or refrigerant oil if needed.
5. Install the low side hose (coupler) on the oil drain port with the low side valve closed (see page 2, Step 2, for more details). Open the oil drain valve. Look at the psi reading. If pressure is below 25" test the vacuum sensor for continuity. If the vacuum sensor has continuity, replace it. If it doesn't, check the vacuum sensor wires for continuity. If the wires have continuity, replace the main board.
6. Verify that the equalization solenoid is receiving power (110/220 volts) from the main board. If it is not receiving the voltage, check the solenoid's power supply wires for continuity. If they have continuity, replace the main board.
7. If the equalization solenoid is receiving power check the equalization solenoid for bleed through to the suction side of the compressor. Clean or replace the solenoid if it is bleeding through while receiving power.
8. Check the compressor discharge and suction pressure (refer to page 35 for detailed instructions). The compressor should have 20"-25" at the suction port and should build pressure to 150 psi on the discharge. Replace the compressor as necessary.

TROUBLESHOOTING

UNIT WILL NOT COME OUT OF CL-L, COMPRESSOR IS OFF

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 power (110/220 volts) 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 powered (receiving 110/220 volts to the coil), unplug the unit and check for continuity from #2 contact to #4 contact and #6 contact to #8 contact with an ohm meter. There should be continuity on both sets of contacts with the ear on the relay depressed. If there is no continuity, replace the compressor relay.
5. Check for voltage to the compressor. If there is no voltage, inspect the wires between the compressor and the compressor relay for continuity. Repair or replace as necessary.
6. If voltage is present at the compressor, check the compressor amp draw. If it is drawing higher than 6 amps or not running, replace the compressor.

UNIT WILL NOT START OR COMPLETE A RECOVERY

Display Reads "HI-P"

1. Verify that both tank valves are open.
2. Check the tank pressure. It should not exceed 300 psi. If it 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 and obstructions.
4. Verify that the vapor solenoid of the selected refrigerant type is receiving power (110/220 volts) from the main board. If it is not receiving the voltage, check the power supply wires for continuity. If they have continuity, replace the main board.
5. Inspect the wires between the high pressure cut out and the main board for continuity. Repair or replace as necessary.

TROUBLESHOOTING

UNIT WILL NOT START OR COMPLETE A RECOVERY (CONTINUED)

6. Check the two-amp fuse on the back of the main board for continuity. Replace if necessary. If the replacement fuse blows again, inspect the compressor relay for shorted contacts and replace as necessary.
7. Inspect the recovery check valves for obstructions. Repair or replace as necessary.
8. Replace the high pressure cut out and retest the unit.

Display Reads "Full"

1. Check the tank weight. If the tank is full, replace the tank.
2. Recalibrate the scale if necessary.
3. Adjustment of the P-1 pot (located on the main board; see page 29 for location) may be necessary. See "Recalibrating the Scale" on page 52.
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 page 36, part number RA19330).
4. Install the low side hose (coupler) on the oil drain port with the low side valve closed (see page 2, Step 2, for more details). Open the oil drain valve. Look at the psi reading. If pressure is below 25" test the vacuum sensor for continuity. If the vacuum sensor has continuity, replace it. If it doesn't, check the vacuum sensor wires for continuity. If the wires have continuity, replace the main board.
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 or replace as necessary.

TROUBLESHOOTING

UNIT WILL NOT START OR COMPLETE A RECOVERY (CONTINUED)

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 filter change procedure.
2. If after attempting to reset the timer the "CH-F" warning doesn't 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 recalibrate if necessary. Refer to the scale calibration instructions on page 52.
2. Check the scale's cable to be sure it is connected to the main board.
3. Disconnect the scale cable from the main board, jumper the white and black leads if the display still reads "Scale" and replace the main board. If the display clears the message "Scale" replace the scale.

TROUBLESHOOTING

UNIT WILL NOT EVACUATE, PUMP RUNS

1. Verify that the manifold gauge valves are open.
2. Verify that the high and low side hoses (couplers) are tight at all fittings and the Schraeder cores are depressed.
3. Check that the vacuum pump hose is snug at both ends and not obstructed (inspect hose gaskets for leaks).
4. Check for suction at the intake of the vacuum pump. If there is no suction, replace the vacuum pump.
5. Remove the shroud and look for loose wires to the vacuum solenoid.
6. Check for power (110/220 volts) to the vacuum solenoid. If power is present, rebuild the solenoid or inspect for debris.
7. Verify that the suction line strainer is not plugged.
8. Check the low side gauge for proper operation and calibration.

TROUBLESHOOTING

UNIT WILL NOT EVACUATE,
PUMP IS OFF

“U-HI” On Display

1. There is 25 psi or greater at the vacuum pump protection switch (recover before evacuating). Unplug the switch. If “U-HI” goes out, check for pressure at the sensor. If there is none, replace the sensor.
2. If “U-HI” remains on, replace the main board.

Timer Counting Down

1. Verify that the vacuum pump is plugged in.
2. Check the power (110/220 volts) at the vacuum pump receptacle.
3. If there is proper power (110/220 volts), check that the vacuum pump is not overfilled with oil. If it is, drain the oil from the vacuum pump then start and refill the vacuum pump properly. If there is not, replace the vacuum pump.
4. If there is not proper voltage, remove the cover and look for loose wires.
5. Check for voltage to the coil of the vacuum pump relay. If there is no voltage, inspect the wires between the vacuum pump relay and the main board for continuity. If they are okay, replace the main board.
6. If the vacuum pump relay is powered (receiving 110/220 volts to the coil), unplug the unit and check for continuity from #2 contact to #4 contact and #6 contact to #8 contact with an ohm meter. There should be continuity on both sets of contacts with the ear on the relay depressed. If there is no continuity, replace the vacuum pump relay.

TROUBLESHOOTING

**UNIT WILL NOT RECYCLE,
RECYCLE PROMPT OFF
(COMPRESSOR OFF) - NO FLOW**

1. Check that all recovery tank hoses are connected properly and Schraeder cores are depressed.
2. Verify that the recovery tank valves are completely open.
3. Check that there is a minimum of 6 pounds of refrigerant in the recovery tank.
4. Install the low side of a manifold gauge set to the oil drain port (see page 2, Step 2). Open the oil drain valve.
5. If positive pressure is present at the oil drain 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 no continuity, 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 oil drain port is being pulled into a vacuum, look for loose wires to the recycling solenoid and verify that power (110/220 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. If the recycling solenoid is receiving power, look for loose wires to the liquid solenoid of the selected refrigerant type and verify that power (110/220 volts) is being sent to the liquid solenoid. If there is no voltage, inspect the controlling wires for continuity. Replace the main board if the wires have continuity.
9. If the liquid solenoid of the selected refrigerant type is receiving power, inspect the liquid line strainer (see page 32) for obstructions. Replace or clean as necessary.
10. If the strainer is not plugged, attempt recalibrating the expansion valve. Replace the expansion valve and tube as necessary.
11. If all previous attempts have failed, replace the main board.

TROUBLESHOOTING

UNIT WILL NOT RECYCLE, RECYCLE PROMPT ON - NO FLOW

1. Check that all recovery tank hoses are installed properly and Schraeder cores are depressed.
2. Verify that the recovery tank valves are completely open.
3. Check that there is a minimum of 6 pounds of refrigerant in the recovery tank.
4. Check the oil drain valve for leaks (the valve should be closed).
5. Inspect the liquid line strainer for debris and clean or replace as necessary (see page 32).
6. Install the low side of a manifold gauge set to the oil drain port (see page 2, Step 2). Open the oil drain valve.
7. Verify that the expansion valve calibration is at 35 psi (always check the expansion valve pressure while recycling for ten minutes with at least 6 pounds of refrigerant in the tank).
8. Inspect the filter for flow obstructions and leaks around the gasket area.

Note: Fittings on quick disconnects should only be hand tight. Replace gaskets if needed. When installing gaskets, be sure to lubricate them with vacuum grease or refrigerant oil as needed.
9. Check the equalization solenoid for internal bleed through. Clean or replace as necessary.
10. If the compressor is not running, verify that power (110/220 volts) is being supplied to the compressor. If the compressor is not receiving power, check the wiring for continuity and the system relay for proper operation.
11. If the compressor is receiving power (110/220 volts) but not running, inspect the compressor start components and check the amp draw (refer to page 35). Replace the compressor as necessary.
12. If the compressor is running, check the compressor suction and discharge pressures. The compressor should have 20"-25" at the suction port and should build pressure to 150 psi on the discharge. Replace the compressor as necessary.

TROUBLESHOOTING

**UNIT WILL NOT RECYCLE,
PROMPT ON - WITH FLOW -
MOISTURE INDICATOR WILL
NOT TURN GREEN**

1. Verify that the tank valves are completely open.
2. Check the tank for a minimum of 6 pounds capacity.
3. Replace the filter and moisture indicator. Recycle for 1^{1/2} hours minimum.

UNIT WILL NOT PERFORM AN AIR PURGE

Note: The air purge will only operate after 60 seconds of recycling for a maximum of 10 minutes and then drop 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 does have excess air pressure in it. The only accurate way to do this is to connect the high side of a hand held gauge set to the recovery tank's air purge fitting and check the pressure in the tank in relationship to 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 disconnect 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 or 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 of the selected refrigerant type is not obstructed.
5. While recycling for at least three minutes, verify that power (110/220 volts) is being sent to the air purge solenoid of the selected refrigerant type. If the solenoid is not getting power, inspect the control wires for continuity. Repair or replace as necessary. If the air purge solenoid is getting power, proceed to Step 7.
6. If the wires have continuity, replace the main board.
7. If the solenoid of the selected refrigerant type is receiving power (110/220 volts), remove the air purge solenoid and verify that pressure is allowed through it when receiving power. Clean or rebuild as necessary.
8. If the air purge solenoid is operating properly, replace the air purge device of the selected refrigerant type and re-attempt recycling.

TROUBLESHOOTING

UNIT WILL NOT CHARGE, NO PRESSURE ON GAUGES

1. Verify that the liquid tank valve is open.
2. Verify that the manifold gauge valves are completely open and unobstructed.
3. Inspect the liquid hose for proper installation and flow. Verify that the Schraeder cores are depressed.
4. Verify that the main board has accepted the charge program.
5. Remove the units cover and look for loose wires.
6. Be sure the keypad is sending a program signal before replacing. If the keypad is sending a signal, an audible tone should be heard when the keys are pressed. If the main board does not accept the program, replace the main board.
7. Check the voltage at the charging solenoid. If there is no voltage, inspect the wires for continuity. If the wires are okay, replace the main board. If power (110/220 volts) is going to the solenoid, clean or rebuild the solenoid.
8. Verify that the liquid solenoid of the selected refrigerant type is receiving power (110/220 volts). If there is no voltage, check the wires for continuity. If the wires have continuity, replace the main board. If there is proper voltage to the solenoid, rebuild or replace as necessary.
9. Verify that the liquid line strainer is unobstructed (see page 32). Replace or clean as necessary.

UNIT WILL NOT CHARGE, PRESSURE ON GAUGES

1. Verify that there is access to the A/C system.
2. Verify that there is a minimum of 6 pounds of refrigerant in the recovery tank.
3. Check that the scale is able to move freely.
4. Verify that charging is being attempted through both the high and low side hoses and that proper adapters are being used.
5. Check for power (110/220 volts) to the charging solenoid and see if the voltage is being eractically dropped to the charging solenoid. If there is no voltage, inspect the controlling wires for continuity. Replace the main board if the wires have continuity.

TROUBLESHOOTING

UNIT WILL NOT CHARGE, PRESSURE ON GAUGES (CONTINUED)

6. Check for power (110/220 volts) to the liquid solenoid of the selected refrigerant type. If there is no voltage, inspect the controlling wires for continuity. Replace the main board if the wires have continuity.
7. Verify that the liquid line strainer is unobstructed (see page 32). Replace or clean as necessary.
8. Close, the high side valve. Start the vehicle 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 and liquid solenoid will close preventing a possible overcharge.

UNIT WILL NOT COME OUT OF FIRST STAGE SELF CLEARING AFTER TEN MINUTES, COMPRESSOR IS OFF

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 power (110/220 volts) 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 powered (receiving 110/220 volts to the coil), unplug the unit and check for continuity from #2 contact to #4 contact and #6 contact to #8 contact with an ohm meter. There should be continuity on both sets of contacts with the ear on the relay depressed. If there is no continuity, replace the compressor relay.
5. Check for voltage to the compressor. If there is no voltage, inspect the wires between the compressor and the compressor relay for continuity. Repair or replace as necessary.
6. If voltage is present at the compressor, check the compressor amp draw. If it is drawing higher than 6 amps or not running, replace the compressor.

TROUBLESHOOTING

UNIT WILL NOT COME OUT OF FIRST STAGE SELF CLEARING AFTER TEN MINUTES, COMPRESSOR IS RUNNING

1. If the unit is being run through an extension cord, eliminate its use.
2. Verify that the high and low side hoses (couplers) are disconnected from the vehicle and not leaking.
3. Verify that the manifold valves are open and not leaking.
4. Verify that the oil drain valve is closed and not bleeding through.
5. Inspect the filter for flow obstructions and check for leaks around the gasket area.

Note: Fittings on quick disconnects should only be hand tightened. Replace gaskets as needed. When installing gaskets, be sure to lubricate them with vacuum grease or refrigerant oil.

6. Install the low side hose (coupler) on the oil drain port (see page 2, step 2). With the low side valve closed, open the oil drain valve. Check the gauge. If psi is below 25" of 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.
7. Check the compressor discharge and suction pressure (refer to page 35 for detailed instructions). The compressor should have 20"-25" at the suction port and should build pressure to 150 psi on the discharge. Replace the compressor as necessary.
8. Verify that there is no voltage to the vacuum solenoid. If voltage is applied, replace the main board. If there is no voltage, disconnect the vacuum hose from the cart and put a gauge on the vacuum hose fitting (using a $\frac{3}{8}$ FFL x $\frac{1}{4}$ MFL adapter, part number 13064). If your gauge pulls a vacuum, clean or rebuild the vacuum solenoid.
9. Close the tank's liquid valve. If pressure starts dropping on the gauge, clean or rebuild the liquid solenoid of the selected refrigerant type.

TROUBLESHOOTING

**UNIT WILL NOT COME OUT OF FIRST STAGE
SELF CLEARING AFTER TEN MINUTES,
COMPRESSOR IS RUNNING
(CONTINUED)**

10. Remove the copper line running from the manifold by-pass solenoid to the expansion valve and tube. Connect the center port of a hand-held manifold to the fitting on the expansion valve and tube. Connect the high side hose of the hand-held manifold to the manifold by-pass solenoid. Close the high side manifold valve. Start the clearing process. If there is a rise on the high side gauge, clean or rebuild the manifold by-pass solenoid.

Note: Remember to reconnect tubing.

11. Verify that the high side diversion solenoid is receiving power (110/220 volt). If it is not receiving power, check the solenoid's power supply wires for continuity. If they have continuity, replace the main board.
12. Remove the copper line running from the equalization solenoid to the nearest flare connection from the high side diversion solenoid. Connect the center port of the hand-held manifold to the port on the equalization solenoid. Connect the high side of a hand held manifold gauge set to the open MFL fitting. Close the high side manifold valve and start the self clearing mode. If there is a pressure rise on the high side gauge, clean or replace the high side diversion solenoid.

**UNIT WILL NOT PULL A VACUUM IN THE
SECOND STAGE SELF CLEARING,
VACUUM PUMP IS NOT RUNNING**

1. Verify that the vacuum pump is plugged in.
2. Check the power (110/220 volts) at the vacuum pump receptacle.
3. If there is proper voltage, check that the vacuum pump is not overfilled with oil. If it is, drain the oil from the vacuum pump, then start and refill the vacuum pump properly. If it is not, replace the vacuum pump.
4. If there is not proper power (110/220 volts), remove the cover and look for loose wires.
5. Check for power (110/220 volts) to the coil of the vacuum pump relay. If there is no voltage, inspect the wires between the vacuum pump relay and the main board for continuity. If it is okay, replace the main board.
6. If voltage is present at the vacuum pump relay coil, replace the relay.

TROUBLESHOOTING

UNIT WILL NOT PULL A VACUUM IN THE SECOND STAGE SELF CLEARING, VACUUM PUMP IS NOT RUNNING (CONTINUED)

7. If the vacuum pump relay is energized (receiving 110/220 volts to the coil), unplug the unit and check for continuity from #2 contact to #4 contact and #6 contact to #8 contact with an ohm meter. There should be continuity on both sets of contacts with the ear on the relay depressed. If there is no continuity, replace the vacuum pump relay.

UNIT WILL NOT PULL A VACUUM IN THE SECOND STAGE SELF CLEARING, VACUUM PUMP IS RUNNING

1. Verify that the manifold gauge valves are open.
2. Verify that the high and low side hoses (couplers) are not leaking.
3. Check that the vacuum pump hose is snug at both ends and not obstructed (inspect hose gaskets for leaks).
4. Check for suction at the intake of the vacuum pump. If there is no suction, replace the vacuum pump.
5. Remove the shroud and look for loose wires to the vacuum solenoid.
6. Check for power (110/220 volts) to the vacuum solenoid. If power is present rebuild the solenoid or inspect for debris. If power is not present, check the solenoid's power supply wires for continuity. If they have continuity, replace the main board.
7. Verify that the suction line strainer is not plugged.
8. Check the low side gauge for proper operation and calibration.

RA19301 (110V) / RA19246 (220V) Replacement Main Board

The boards can easily be identified by the six digit part number stenciled in white lettering on the back side of the main board.

The **first generation** board — part numbers 116834 (110v) and 117570 (220v) performed several basic functions.

The low side clearing feature allows the user to receive a more accurate reading of the amount of refrigerant recovered. To do this the board does not apply power to the recovery solenoid when the recovery key is pressed. The solenoid is allowed to remain closed until the inlet tubing is in a 17" vacuum. When a vacuum is reached the vacuum sensor opens, the main board detects that and the recovery solenoid is then opened. After the recovery solenoid opens, the vacuum sensor closes and the scale starts showing the amount of refrigerant being recovered. Before the recovery solenoid opens, the screen will display "CL-L."

Other basic functions are automatic scale calibration and 10-hour oil change time. The board can be programmed for a minimum vacuum time, oil change time and filter change time. The board will automatically default to a 15-minute vacuum time, 10-hour oil change and 300-pound filter change. This board also has the CH-P warning initiated when recovery is engaged if less than 25 psi is at the inlet. This board can read the amount of refrigerant recovered over a period of time (week, month) depending upon how often the user wants to check on it. To access that function, the user must enter manual diagnostics and press "3." The amount recovered will be displayed and can be zeroed by performing a filter change. The user can also read the amount of refrigerant in the tank by accessing diagnostics and pressing "7."

When the unit is in the program charge mode and an amount is requested that will drop the recovery tank's capacity below 6 pounds, an "ADD" message will appear on the display. This notifies the operator that there is insufficient refrigerant in the tank to properly charge the system.

1. Low side clearing.
2. Recovery automatic shut down.
3. Display should read amount recovered.
4. Programmable vacuum time.
5. Programmable charge amount.
6. Auto scale calibration feature.
Note: See auto scale calibration instructions on page 52
7. Programmable settings for oil changes, filter change time, vacuum pump run time.
8. Running refrigerant counter.
9. Diagnostics 7 counter for refrigerant weight.

RA19008 Scale Identification, Accuracy Check and Recalibration

The type of scales used on the 12134A series is the same scale used on the 17700 Series units. The scales will only handle a 50-lb. tank and have the same overflow protection shut off of 73 pounds. Where the two scales differ is in the method of calibration. The scale calibration procedure is still done through the keypad but the procedure is different. The scales have been manufactured by different vendors and their identification can be determined using the Scale Specification charts on page 53.

CHECKING THE SCALE ACCURACY

1. Turn on the Main Power switch.
2. Press the SHIFT/RESET key until the program prompt is highlighted on the screen.
Note: If the unit is just being turned on, the screen will default to display the selected refrigerant type. Press SHIFT/RESET until the program message is displayed.
3. When the screen has the program prompt highlighted, press and hold the SHIFT/RESET key and then the ENTER key. The screen will read "FUNC" when the manual diagnostic mode has been entered properly.
4. Remove all weight from the scale platform.
5. Press "6", to turn the scale into a direct reading weight scale.

Note: Whatever weight is on the scale when "6" is depressed will not be shown on the display. By depressing "6" the unit automatically zeros the weight on the scale. If you remove the weight, the display will show the change in total weight but will not show a negative sign.

Note: Verify that the scale is plugged into the main board if the scale will not react to testing.

RECALIBRATING THE SCALE

1. Remove all weight from the scale platform.
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 SHIFT/RESET until the program message is displayed.
3. Press and hold SHIFT/RESET and then press ENTER. The display reads "FUNC."
4. Press "9." The display will be blank.
5. Press RECOVER and ENTER at the same time.

6. The display flashes "DATE" and then shows "0.00".
7. Enter the current month and year. For example, if the unit is being calibrated on November 8, 1996, you will enter 1196. Press ENTER.
8. The display will flash "CAL" then read "2Er0" (zero).
9. Make sure nothing is on or touching the scale platform. Press ENTER.
10. The display will flash "CAL" then read "A1."
11. Place a certified weight (between 10 and 80 pounds) in the center of the platform. Enter that weight on the display using the keypad, then press ENTER. The display returns to the vacuum mode.
7. Check the scale accuracy (see page 52).

SETTING THE P-1 POT

1. Remove all weight from the scale platform.
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 SHIFT/RESET until the program message is displayed.
3. Press SHIFT/RESET and ENTER at the same time. The display reads "FUNC."
4. Press "6."
Note: Whatever weight is on the scale when "6" is depressed will not be shown on the display. By depressing "6" the unit automatically zeros the weight on the scale. If you remove the weight, the display will show the change in total weight but will not show a negative sign.
5. Add weight to the scale platform until the "HOLD" indicator appears on the display. At this time turning the P-1 Pot clockwise will increase the amount you can put on the scale before the "HOLD" indicator appears. Turning the P-1 Pot counterclockwise will decrease the amount of weight allowed before "HOLD" appears.
6. Set the P-1 Pot so that with 73 pounds on the scale the "HOLD" indicator just comes on. Lift the weight on the scale and the "HOLD" indicator should disappear.

Note: If the scale won't calibrate, replace the scale.

RA19008 Scale Specifications

RA19008

Manufacturer Robinair
 Application 17700 Style Units
 Capacity 50 Lb. Tanks
 Control Main PC Board
 Cable Gray in color
 Connector 4 Pins
 Dimensions 6³/₄"W, 6"L
 Maximum Capacity 81.74 Lbs.

RA19008

Manufacturer Tedea Huntleigh
 Application 17700 Style Units
 Capacity 50 Lb. Tanks
 Control Main PC Board
 Cable Black in color
 Connector 4 Pins
 Dimensions 5³/₄"W, 7¹/₂" L
 Maximum Capacity 81.74 Lbs.
 Date first used 7/29/93

This scale could give floating scale readings and should be replaced if giving questionable performance.

RA19008

Manufacturer HITEC
(New Style)Application 17700 Style Units
Capacity 50 Lb. Tanks
Control Main PC Board
Cable Gray in color
Connector 4 Pins
Dimensions 5³/₄"W, 7¹/₂" L
Maximum Capacity 81.74 Lbs.
Date first used 8/16/93

Diagnostic Procedures

To access diagnostics, press SHIFT/RESET and ENTER at the same time. Diagnostics has been successfully entered when the display reads "FUNC." Then press:

- 1 Vacuum pump runs continuously.
- 2 "ADD" prompt displays, compressor starts.
- 3 Total amount of refrigerant recovered to date is displayed.
- 4 Shows last scale calibration date and number of calibrations performed.
- 5 Displays all lcd information.
- 6 Shows scale as a direct reading weight scale.
- 7 Shows weight on scale less 27 pounds
- 8 Not used.
- 9 Allows access to scale calibration.
- 0 Automatically switches from pounds to kilograms
- HOLD** Performs a manual air purge.

Function Check

RECOVERY CHECK

1. Plug in the unit.
2. Turn on the Main Power switch. The display reads the last selected refrigerant type. Press SHIFT/RESET.
3. Install the loose end of the low side hose (coupler) to the oil drain port (see page 2, Step 2). Open the oil drain valve.
4. Close the low side manifold valve.
5. Open the high side manifold valve.
6. Verify that all tank hoses are properly attached to the recovery tank.
7. Completely open both tank valves.
8. Press RECOVER. The compressor should start and the low side gauge should pull into a 17" vacuum. If the display reads "CH-P" press HOLD/CONT.
Note: The unit has low side clearing. The low side gauge will pull to a 17" vacuum and start the recovery process (recovery is engaged when the scale reading is displayed). The low side gauge should pull to a 17" vacuum again and the unit will shut off.
8. When recovery is complete the display will show a scale weight and then "CPL."
9. The low side manifold gauge should build positive pressure and a pressure transfer should be heard. This is the result of the equalization solenoid opening. If no pressure rise occurs, the equalization solenoid and its tubing must be inspected for obstructions
10. Close the oil drain valve. Disconnect the low side hose from the oil drain port and open the low side manifold valve.
11. Press HOLD/CONT, the unit should recover to 17" 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. Open the high side manifold valve.
2. Install the loose end of the low side hose to the oil drain port. Open the oil drain valve (see page 2, Step 2).
3. Program a 20 minute vacuum into the Main Board and start an automatic vacuum process. The vacuum pump should start.
4. Verify that the low side manifold valve is closed.
5. The high side gauge should start registering a vacuum.
6. Within 10 to 15 seconds of the vacuum pump starting, the recycle prompt should appear on the display and a click will be heard. (The compressor is starting. The recycling and liquid solenoids are being energized.)
7. After five minutes the high side gauge should be in a vacuum and the low side gauge should rise to around a 30 to 40 psi reading (expansion valve pressure).
8. After 20 minutes of recycling the moisture indicator should turn mint green, signifying the refrigerant is dry.
9. When the unit shuts off automatically (completes the vacuum process), close the oil drain valve and disconnect the low side hose from the oil drain port.
10. The high side manifold gauge valve should hold a vacuum. If it does not inspect the Quick Seal hose ends or couplers for leaks.
11. Close the tank's vapor valve.
12. Disconnect the tank's vapor hose from the tank.
13. Acquire a separate manifold gauge set of the selected refrigerant type and verify that the manifold gauge valves are closed.
14. Connect the tank's vapor hose to the high side of the separate manifold gauge set.
15. Connect a hose between the center port of the hand-held manifold gauge set to the tank's vapor fitting.
16. Open the tank's vapor valve but do not open the hand-held high side manifold gauge valve.
17. Press SHIFT/RESET.
18. Press SHIFT/RESET and "1" at the same time.
19. The unit should begin recycling. The high side manifold gauge of the hand held manifold should start increasing pressure.

Function Check

20. The unit should shut off and display "HI-P."
21. The high side manifold gauge should have a pressure of 435 psi. \pm 20 psi on it.
22. The pressure on the high side gauge should hold for at least three 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. This will equalize the unit and tank pressure.
24. Once the pressure is equalized, close the tank's vapor valve.
25. Close the high side manifold valve and disconnect the hose between the tank's vapor valve and the manifold gauge set at the tank end.
26. Disconnect the tank's vapor hose from the manifold gauge set.
27. Reconnect the tank's vapor hose to the vapor valve on the tank and open the valve.
28. Open both manifold gauge valves and press RECOVER.
29. Allow the unit to recover until it automatically shuts off.
30. Press SHIFT/RESET.
31. Press VACUUM.
32. Allow the pump to run for five minutes then press HOLD/CONT.
33. Check for a loss of vacuum on the low side gauge.
7. Program a two pound charge into the main board.
8. Start the automatic charging process.
9. The charging process should stop when the programmed amount of weight has been lost from the scale. There should be pressure on the gauges.
10. The display should show "CPL."
11. Recover the refrigerant charged into the tank.

CLEARING CHECK

CHARGING AND SCALE CHECK

Note: To ensure a complete charge, recycle for at least five minutes before attempting to charge.

1. Turn on the Main Power switch.
2. Press and hold SHIFT/RESET and press ENTER.
3. Press "6."
4. Check the scale accuracy and recalibrate if necessary (refer to page 52).
5. Install the high and low side hoses to the vapor and liquid valves of a separate reusable cylinder. Open the vapor and liquid valves on the tank.
6. Open the high and low side manifold valves.
1. Turn on the Main Power switch. The display reads the last selected refrigerant type. Press SHIFT/RESET until "CLR" appears on display.
2. Press HOLD/CONT.
3. The compressor should start and the unit's gauge should pull to a 17" vacuum.
4. After ten minutes the compressor should stop and the vacuum pump will start.
5. The vacuum pump should run for ten minutes.
6. When the pump stops, the unit should read "CPL" "HOLD." At this time move the sliding lockout panel to the position of the next desired refrigerant type.
7. Press SHIFT/RESET. The unit is now locked in for that refrigerant type and the display reads "15.00 program vacuum minutes."
8. Turn off the unit's power. Disconnect the wires from the exposed liquid solenoid.
9. Turn on the unit's power. The display should match the same refrigerant type as the position of the sliding lock out panel.
10. Press SHIFT/RESET until "Program" appears on the display.
11. Install a low side gauge of a hand-held manifold to the liquid fitting on the back of the unit. Close the low side valve on the hand-held manifold.
12. Start manual recycling by pressing SHIFT/RESET and "1" at the same time.
13. The low side gauge should not pull into a vacuum. If it does, clean or rebuild the liquid solenoid of the selected refrigerant type.
14. Turn off the unit and reconnect all wires and hoses.

Labor Rates

Robinair authorizes a 1³/₄ hour charge to troubleshoot and to complete a full function test on units that are covered under factory warranty (includes leak testing). The authorized time for parts replacement is 15 minutes per part. Some items require an additional amount of time to facilitate installation. These items and their times are listed below. If repairs are estimated to exceed three hours, prior authorization from Robinair is required.

Note: RA19258 Solenoid Rebuild Kit is the standard way of 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.

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

Components	Total Time
RA18760 System Oil Separator	30 minutes
RA19320 Manifold Assembly	45 minutes
RA19258 Recovery Rebuild Kit	30 Minutes
RA19258 Recycling Rebuild Kit	30 Minutes

