

**Refrigerant Management
System Automatic
for R-134a and R-1234yf**



User's Manual

WARNING! CAUTION!

Before operating this unit, please read this manual thoroughly. You must understand the procedures outlined in this manual. Failure to follow these procedures could void all warranties.

Before handling refrigerants, read the material safety data sheet (MSDS) from the refrigerant manufacturer.

Inhalation of high concentration of refrigerant vapors is harmful and may cause heart irregularities, unconsciousness, or death. Deliberate inhalation of refrigerants is extremely dangerous. Death can occur without warning. Vapors reduce oxygen available for breathing and are heavier than air. Decomposition products are hazardous. Liquid contact can cause frostbite. All refrigerant containers, equipment, and hoses are under pressure.

37840, 37860 Refrigerant Management System

Specifications

Refrigerants: 37840 – Factory set for R-134a
37860 – R-1234yf

Electrical:
Compressor: Single 1/2 HP Hermetic Compressor
Power Source: 120V AC 60Hz for US Models
Amperage: 10 amps
Auxiliary Outlets: 10 amps maximum
2 amps during recovery

Size:
Height: 45 inches
Width: 22 inches
Depth: 29 inches
Weight: Maximum 265 lb. with full tank

Pressure:
Low side: Factory tested 186 psig
High side: Factory tested 350 psig

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General Safety Instructions

Know your equipment. Read and understand the operation manual and labels affixed to the unit. Learn its application and limitations as well as the specific potential hazards of your equipment.

ALWAYS WEAR SAFETY GOGGLES.

Ground all equipment. This unit is equipped with an approved 3 prong grounding-type plug. The green ground wire should never be connected to a live terminal.

Use the Proper Extension Cords. Use the following guide for choosing the proper extension cord and keep such cords at a minimal length. 16 Ga. Minimum.

Cord Gauge – Maximum Length

16 Ga. - 25 feet
14 Ga. - 50 feet
12 Ga. - 100 feet

Avoid Dangerous Environments. Do not use this unit in damp locations or expose it to rain. This equipment should be used in a location with mechanical ventilation that provides at least four air changes per hour. This equipment should not be used near open containers of flammable liquids.

Disconnect Unit from Power Supply Before Servicing. An electrical shock hazard is present when the unit is disassembled or the cowling is removed.

Repair Damaged Parts. Do not operate the unit with a defective part. Have unit repaired to proper operating conditions. Only use factory authorized parts. Any service to the machine not outlined in this manual should only be done by factory authorized service personnel. Ritchie Engineering is not responsible for any lost refrigerant.

Use Recommended Accessories. Follow the instructions that accompany all accessories. Improper use of accessories may damage equipment or create a hazard.

Use Caution When Connecting or Disconnecting. Improper usage may result in refrigerant burns (frostbite). If a major refrigerant leak occurs, proceed immediately to a well

ventilated area. The hoses included with this unit are supplied with couplers that, when closed, prevent refrigerant vapors from venting when disconnecting from the automobile.

Only Use the 37840 and 37860 with the Correct Refrigerants.

The 37840 and 37860 are only approved for R-134a and R-1234yf. Take care to only use the refrigerant that the machine is currently configured for.

CAUTION! The 37840 and 37860 are designed to handle multiple refrigerants but not concurrently. Only service systems containing the refrigerant for which the machine is currently configured to run.

Operate the Unit within the Design

Environment. The 37840 and 37860 are designed to operate in a temperature range from 40°F to 120°F. The unit should also not be operated in a wet location.

WARNING! Refrigerant, in liquid and vapor form, is a potentially hazardous material. Please consult the manufacturer's Material Safety Data Sheet for additional information and adhere to the following safety guidelines:

- Avoid breathing high concentrations of vapors.
- Use with sufficient ventilation to keep operator exposure below recommended limits, especially in enclosed and low lying areas.
- Avoid contact of liquid refrigerant with the eyes and prolonged skin exposure.
- Wear goggles and protective gloves.
- Do not attempt to operate this unit above 120°F ambient temperature.
- Do not allow refrigerants to contact open flame. Refrigerant decomposition in a flame results in phosgene gas. Breathing phosgene gas can be fatal.

FIRST AID: If high concentrations of refrigerant are inhaled, immediately remove the victim to fresh air. Call a physician or emergency medical technician. Keep calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do not give epinephrine or similar drugs.

- **EYE:** In case of liquid contact, immediately flush eyes with plenty of water. Call a physician.
- **SKIN:** Flush with water. Treat for frostbite, if necessary, by gently warming the affected area.

CAUTION! All refrigerant hoses, recovery tanks, refrigerant lines, and other vessels containing refrigerants should be handled as if under high pressure.

CAUTION! Improper use or handling of equipment could lead to damage increasing the risk potential of leaks. Always use care when transporting equipment and when servicing components to avoid damaging refrigerant tubing.

CAUTION! This machine should only be operated by certified personnel.

CAUTION! Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose, and throat. To remove refrigerant from the A/C system, use only equipment certified for the type of refrigerant being removed. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.

CAUTION! Do not pressure test or leak test equipment and/or vehicle air conditioning systems with compressed air. Some mixtures of air and refrigerant have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.

WARNING! R-1234yf is classified as an A2L flammable refrigerant. Caution should be taken when working with this refrigerant. See refrigerant manufacturers SDS for more information.

Component Diagram

1. Tablet (Control Panel)
2. Auto High Side Hose (Red)
3. Auto Low Side Hose (Blue)
4. Tank Vapor Hose (Red)
5. Tank Liquid Hose (Blue)
6. Oil Drain Bottle
7. Tool Trays
8. Main Power Switch
9. Refrigerant Storage Tank
10. Vacuum Pump
11. Tank Temperature Clamp
12. Auxiliary outlets



Tablet Use Overview

Tablet Home Desktop Screen



The 37840 and 37860 are controlled via Bluetooth connection with an easy-to-use App that comes pre-installed on a tablet running the most up-to-date Windows operating system. Tablet technologies and operating systems do change over time so take a minute and familiarize yourself with the general use of the tablet.

The tablet comes already Bluetooth paired with the machine and the App, a remote help program, and the system manual ready on the desktop for easy accessibility.

When the App is started it will automatically start trying to connect with the machine it was shipped and paired with. While the app is searching for connection to the machine a box reading "Connecting" will appear on the screen. Once the machine is on and the connection is complete the box will go away. If during operation if the tablet and machine get out of Bluetooth signal range or somehow become disconnected the machine will

continue running its last command until further commands are needed at which point the machine will wait for its next command. Once the tablet is back in range the App will automatically reconnect and continue where the machine left off.

If at any point your tablet becomes unpaired with your machine or ManTooth Pressure gauges or you replace your tablet you will need to re-pair the Bluetooth connection. To re-pair the tablet and the machine follow these steps: from the tablet desktop tap on the Windows logo in the bottom left hand corner. Next select "Settings" from the popup menu. In the Settings menu choose devices and then Bluetooth. Make sure your tablet's Bluetooth is on as well as your Automotive Recovery Machine. The tablet will search for available Bluetooth devices. Once you see your machine, which is named by the machine's serial number printed above the recovery tank, select the machine and pair with it. This only has to be done if the machine and tablet become unpaired.

Prepare Tablet

Periodic updates to the App for running the machine are released for improved user information and for optimized system performance. Before operating the machine it is recommended to contact Ritchie Engineering to guarantee that the latest software version is installed. If the software is current proceed with setup otherwise tech support will assist in updating the software.

Note: For tech support to assist in updating the tablet software the tablet needs to be connected on a local Wi-Fi connection. The machine does not need to be present to update the tablet software.

Note: All versions of released software will allow the user to accurately and safely perform service. Updates to the software are made, for example, to improve user work flow within the software.

Tablet Display Overview

Tablet App Display

Tablet display provides the unit operator with continual updates of the status of the machine while allowing the operator to move away from the machine. In addition, the display will prompt the technician for the user input needed to continue operation. The display also shows error codes for rapid diagnosis of abnormal conditions.

App Home Screen



Perform Service

This option will bring you to the start of a job to recover refrigerant, vacuum out an open system, charge a system, or do a full cycle.

Choose Reports

Choose this option to view service history. Here you can view previous jobs to show customer history.

System Configuration

This leads to diagnostic tools for use only by remote support.

Machine Maintenance

Here you will be able to check the scale calibration, re-zero the pressure transducers, and find the procedure to change the filter drier. Additionally if your machine is a 37840 this is the location to begin the one-time changeover procedure to change the configuration of the machine from R-134a to R-1234yf.

Save and Exit

Saves the current job and closes out of the app.

Initial Setup

To ensure quick, successful integration of the YELLOW JACKET Automotive Recovery, Reclaim, and Recharge Machine into your shop, please follow these set-up procedures and read the entire manual before the first use of the unit. The initial setup including the unpacking and tank fill can take one to two hours so plan accordingly.

UNPACKAGE THE UNIT

1. Remove the outer packaging, either by cutting open the top, cutting down one corner of the box, then folding away the box, or; cutting 6" above the staples just above the pallet and lifting away the box
2. Remove the plastic bag. e.
3. Remove the accessory kit (and Surface tablet if included) at the rear of the machine by cutting the strap.
4. Remove the tank and tank support from the machine.
5. Remove the 2 lag bolts located next to the scale with a 3/8" socket identified by the red tape.
6. Place machine on level ground.
7. Verify that the vent fans on the lower left rear of the machine are not obstructed.
8. Open the blue tank valve and allow the nitrogen in the tank to vent.
9. Install the tank onto the scale and secure the tank to the scale using the provided bolts if desired.
10. Connect the hoses to the fittings on the tank and verify that the red hose goes to the tank vapor and the blue hose goes to the tank liquid as printed on the knobs.

Note: Tanks for R-134a use right-hand-threaded fittings and tanks for R-1234yf use left-hand-threaded fittings

11. Make sure that the temperature clamp is securely on the red hose/tank vapor ball valve nut and the grounding wire is attached to any unpainted metal on the tank.

INSPECT / FILL VACUUM PUMP WITH OIL

1. Inspect site glass for proper oil level.
NOTE: Oil level will appear to be low due to oil settling into the cartridge during shipping. Oil level will rise during pump operation. Level should appear in bottom of sight glass. If oil is not visible in the bottom of the sight glass, remove plastic red cap by pulling upward, then unscrew the brass vented fill cap located on top of the vacuum pump.

2. Using a funnel, fill oil to near the proper fill line in the sight glass.
3. Replace the brass vented oil fill cap.
4. Verify red cap is removed, brass vented screw cap is tight and power switch on right side of vacuum pump is in the on position.
5. Verify during initial operation of vacuum pump that the oil level is near the proper fill line in the sight glass. If not fill as in step 2 above.

FILL SOURCE TANK WITH REFRIGERANT

(also see page 25)

1. Open the red and blue tank valves
2. Open the ball valves on the red and blue tank hoses.
3. Attach the tank refill adapter (Part No. 19153 for R-134a virgin cylinders, Part No. 19244 for R-1234yf virgin cylinders) to a virgin refrigerant tank.

WARNING

DO NOT OVER-TIGHTEN THE TANK REFILL ADAPTER.

WARNING

ONLY FILL THE SOURCE TANK WITH THE REFRIGERANT THAT THE MACHINE IS CURRENTLY CONFIGURED FOR. FACTORY DEFAULT IS R-134a FOR THE 37840 AND R-1234yf FOR THE 37860.

4. Plug unit into a grounded 110V outlet.
5. Turn on the machine's main power switch.
6. Turn on the tablet and open the Main App.
7. Once the App is open it will automatically connect to the machine via Bluetooth. This process may take up to 30 seconds. The "Connecting" box on the App will go away and the machine will beep once the tablet is connected to the machine.
8. Select TANK REFILL from the Machine Maintenance menu.
9. Follow the user prompts in the black window to complete the tank refill process.
10. When the display reads "SUPPLY TANK EMPTY" disconnect the blue hose.
11. Remove the tank refill adapter from the empty virgin cylinder and place it in the tool tray located on top of the unit.

The unit is now ready for operation

Checking System Performance

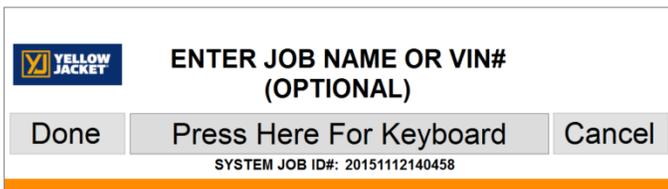
To check the performance of the vehicle's AC system before or after servicing the system, use the included ManTooth pressure gauges and the performance check to get an accurate reading of the vehicle's running pressures. Using the included ManTooth gauges to measure system pressures helps to ensure that the most accurate charge possible is going into each vehicle as well as minimizing refrigerant loss and reducing unnecessary recoveries.

System Performance Check Steps

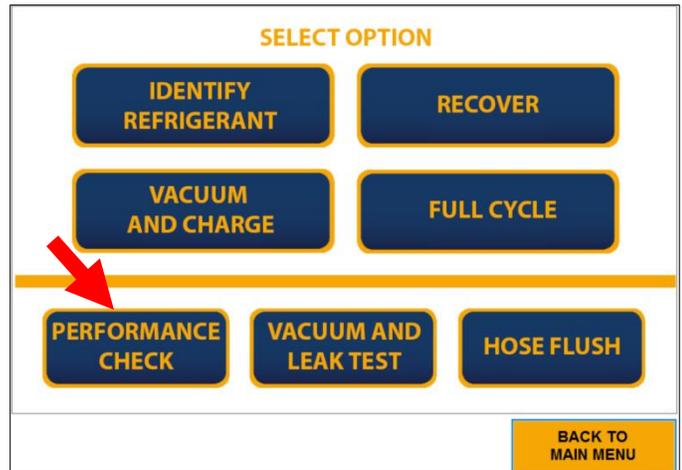
1. Do not turn the vehicle on until ready. Before turning the vehicle's air conditioning system on verify that the ManTooth is securely connected to the vehicle and that the RRR Machine is not connected to the to the system.
2. From the main menu select **PERFORM SERVICE**.



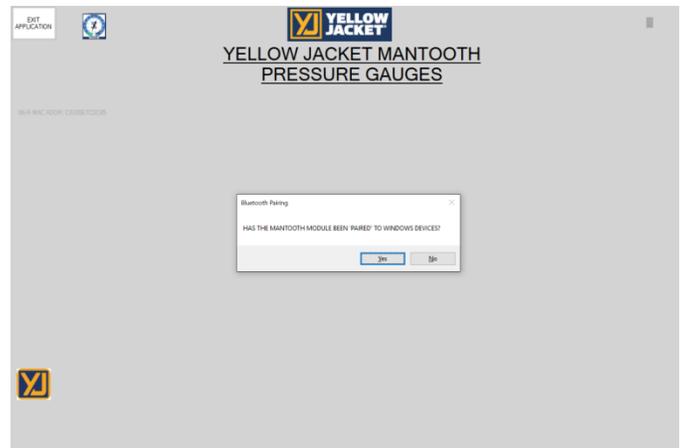
3. If desired enter a unique job name. This name will be tied to this job can help you keep track of AC jobs on specific vehicles.



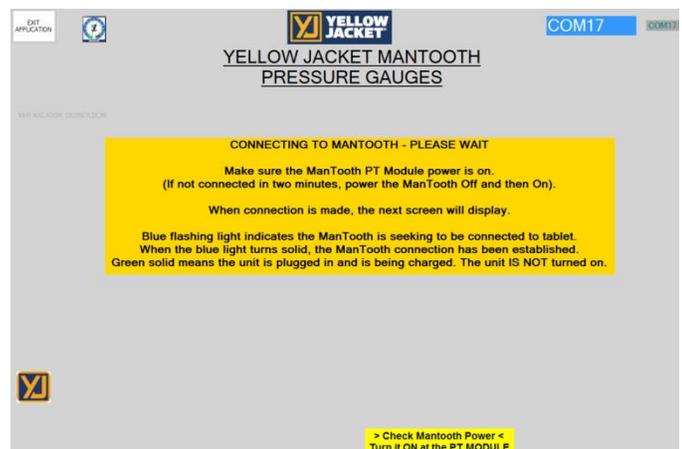
4. Select **PERFORMANCE CHECK**.



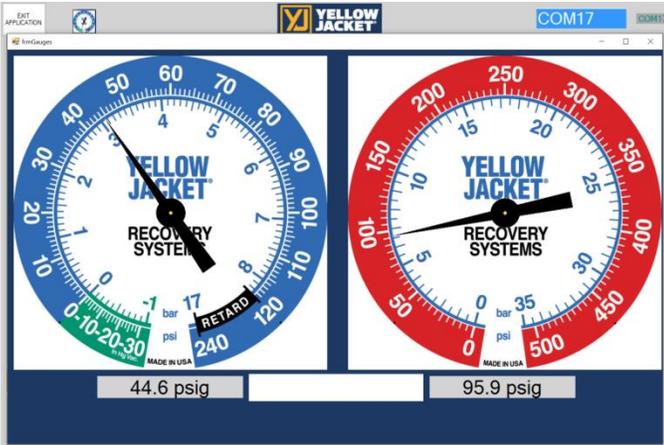
5. If the ManTooth has already been paired with the tablet confirm this with the app. Otherwise follow the directions to pair the ManTooth with the tablet.



6. Ensure that the ManTooth is turned on and allow the app to connect with it.



- Once the app has connected to the ManTooth, high and low side gauges will automatically pop up.



- Turn on the vehicle's AC system to read the running pressures on the tablet screen. The needles on the gauges will point to the correct pressures and the digital readout will provide a more accurate pressure reading.
- After analyzing the running pressures hit the Exit Application button to close the gauges and return to the main app.

Alternate Startup

Another way to start the Performance Check is to directly start the gauges app using the icon on the desktop. Starting the Performance Check this way enables the user to check the running pressures of a vehicle without having to bring the entire RRR machine over to the vehicle.

Recover

The Recovery Option should be used to fully recover and recycle all refrigerant from an air conditioning system. For instance, if the system needs to be opened to atmosphere to replace a part, all refrigerant must be removed before opening the system.

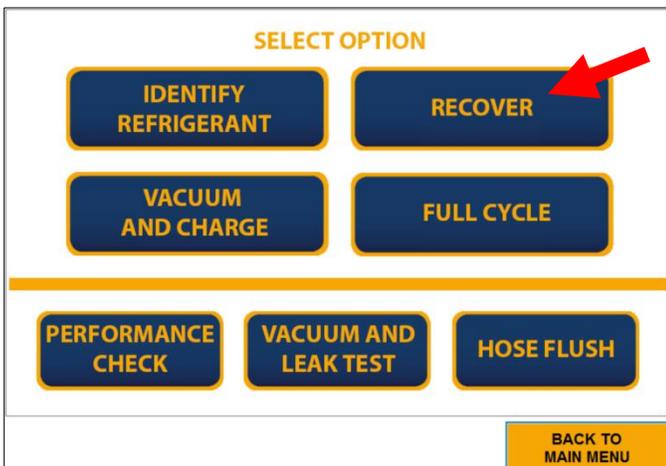
RECOVER Operational Steps

1. Verify that the vehicle and its air conditioning system are off.
2. From the main menu select PERFORM SERVICE.



3. If desired enter a unique job name. This name will be tied to this job can help you keep track of AC jobs on specific vehicles.

4. Select RECOVER.



5. Fill out the job form as it pertains to the vehicle being serviced and hit NEXT.

6. The black display box should read "CONNECT SERVICE HOSES TO VEHICLE ENTER TO CONTINUE."
7. Connect the high and low side auto service hoses to the respective high and low side service ports on the automobile A/C system.
8. Open the service hose valves by tightening the knob on the top of the service hose coupler.
9. Press START to begin recovery operations.

WARNING

DO NOT RECOVER CONTAMINATED REFRIGERANT WITH THIS UNIT. RECOVERING CONTAMINATED REFRIGERANT WILL VOID ALL WARRANTIES AND MAY CAUSE DAMAGE TO OTHER AUTOMOBILES SERVICED IN THE FUTURE.



10. During the recovery operation, refrigerant is removed from both the high and low side of the automobile air conditioning system. The tablet will display the amount of refrigerant currently recovered during the cycle and the

status window will read “RECOVERING REFRIGERANT.” If you wish to see the pressures of the high and low side during recovery simply hit the gauges button once the recovery has started.

Note: Always inspect hoses, o-rings, and fittings for damage before using equipment. Replace worn or damaged components. Failure to insure that hoses, o-rings and fittings are in working order can increase a build-up of NCG’s in the recovered refrigerant.

11. Verify the message on the display reads “RECOVERY COMPLETE.”
12. Press the RESET key. The display should read “CHECK OIL LEVELS.”
13. Measure the oil in the oil drain bottle. Dispose of recovered oil in a proper manner.
14. Inject the same amount of oil back into the vehicle as what was removed during the recovery process. This can be done now or after the full refrigerant charge has been added back into the vehicle.

Note: Use only new lubricant to replace the amount removed during the recycling process. Discard used lubricant per applicable federal, state and local requirements.

15. Close the service valves and disconnect the high and low side auto service hoses from the automobile.
16. When you are done with a service remember to not just turn off the machine but also to fully turn off the tablet and charge it if necessary so that it will be ready for the next service.

Models with the refrigerant identifier (37860, 37840 converted to R-1234yf, or 37840 with identifier enabled).

1. After entering the job name select RECOVER. The identifier screen will pop up automatically.
2. Turn on the identifier and connect it via the USB cable to the tablet.
3. Connect the sample hose to the low side of the vehicle and follow the directions on the identifier screen to get the refrigerant sample.
4. After the refrigerant has been verified to be a minimum of 98% pure, go back to Step 4 of the RECOVER and continue the recovery process as normal.

Note: If the refrigerant does not pass the identification process (98% purity) the unit will display the error message “CONTAMINATED” and the screen will show the results of the identification. Press the Reset key and follow the instructions on the screen and the unit will clear itself automatically. Repeat the identification process to insure the proper identification of the refrigerant purity level.

If the unit fails the second time, follow the on screen instructions and take the appropriate steps to remove the contaminated refrigerant with a separate contaminated refrigerant recovery unit such as the Yellow Jacket 37825 for removal of contaminated refrigerant.

WARNING

DO NOT RECOVER CONTAMINATED REFRIGERANT WITH THIS UNIT. RECOVERING CONTAMINATED REFRIGERANT WILL VOID ALL WARRANTIES AND MAY CAUSE DAMAGE TO OTHER AUTOMOBILES THAT YOU SERVICE IN THE FUTURE.

Vacuum and Leak Check

The vacuum function of this machine is designed to remove air/moisture from the automobile A/C system by pulling a deep vacuum. This mode is most often used after completing a repair that required opening the A/C system to the atmosphere. Moisture in an A/C system can cause erratic operation and/or damage and must be removed before recharging the system with refrigerant.

VACUUM Operational Steps

1. Verify that the vehicle and its air conditioning system are off.
2. From the main menu select PERFORM SERVICE

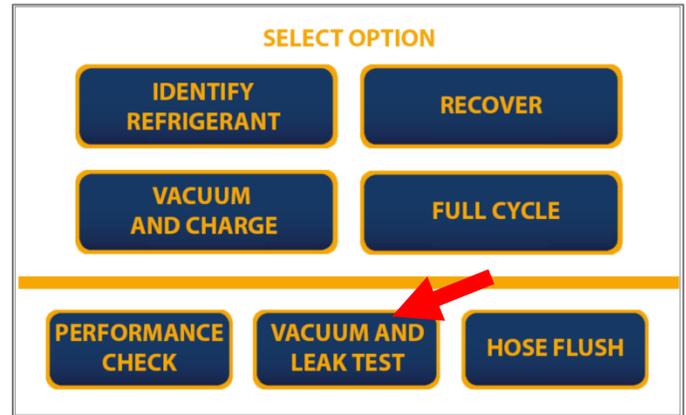


3. If desired enter a unique job name. This name will be tied to this job can help you keep track of AC jobs on specific vehicles.


ENTER JOB NAME OR VIN# (OPTIONAL)

SYSTEM JOB ID#: 20151112140458

4. Select VACUUM AND LEAK TEST.



5. Fill out the job form as it pertains to the vehicle being serviced and hit SUBMIT.

SUBMIT JOB FORM

Vacuum Time (5-200 Minutes)

Vacuum Hold Time (0-200 Minutes)

Note: The default minimum vacuum time is 5 minutes and a 10-15 minute minimum vacuum time is recommend to ensure full evacuation of the system and accurate charging for normal size vehicles.

Note: On the 37840 machine configured for R-134a the Vacuum Hold Time can be bypassed if the time is set to zero. On 37860 machines and machines configured for R-1234yf the minimum Vacuum Hold Time is 5 minutes per SAE requirements.

6. The display will read "CONNECT SERVICE HOSES TO THE VEHICLE. PRESS START TO BEGIN".

PP

CONNECT SERVICE HOSES TO THE VEHICLE.
PRESS START TO BEGIN.

Job Name: 2015050414035
Refrigerant Configured

COUNTDOWN

0.0 psig

CHARGEABLE

WEIGHT @ START

VACUUM HOLD

WEIGHT CHANGE

7. Connect the high and low side auto service hoses to the respective high and low side service ports on the automobile A/C system.
8. Open the service hose valves by tightening the knob on the top of the service hose coupler.
9. Press the START key to begin the vacuum operation.

Note: If the automobile A/C system has pressure in it, the unit will automatically begin a recovery cycle to insure that no refrigerant is released into the atmosphere.

10. The machine will begin to evacuate the A/C system and will beep to indicate the end of the vacuum time.

Note: Per the SAE J2843 standard, while configured for R-1234yf the vacuum level must reach a minimum vacuum level of at least 26.6 inHg for 3 minutes during evacuation and continue to run while the pressure holds at or below this level. If a vacuum level of 26.6 inHg is not reached or maintained during the last 3 minutes of the machine's set evacuation time the machine will report VACUUM ERROR Check System for Leaks.

11. Following the Vacuum Time the unit will begin the vacuum hold automatically. The current vacuum level and the vacuum level at the start of vacuum hold will be shown on the display. The hold time will count down on the display and the unit will beep at the end of the hold time.
12. Note the final vacuum level shown on the display and the starting vacuum level. If the two recorded vacuum levels are different, the A/C system may have a leak and might not retain refrigerant when charged.

Note: Per the SAE J2843 standard while configured for R-1234yf the machine will perform an automatic leak decay test during the vacuum hold by monitoring the vacuum level in the system being serviced. If the vacuum level rises too high or too rapidly the machine will report VACUUM ERROR Check System for Leaks.

13. Verify the message on the display reads "VACUUM COMPLETE."
14. Close the service valves and disconnect the high and low side auto service hoses from the automobile.

Charge Only

The Charge Only function is designed to add a precise amount of refrigerant when the A/C system is low on refrigerant. This mode is most often used when the A/C system is working but does not produce sufficiently cold air. This function may also be used to charge refrigerant into a system that has been opened to the atmosphere for work then evacuated with the Vacuum and Leak Test function.

Due to SAE regulations this feature is only available on machines configured for R-134a.

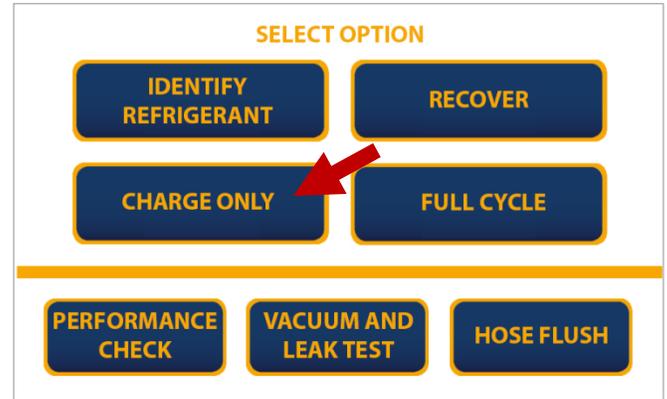
Charge Only Operational Steps:

1. Verify that the vehicle and its air conditioning system are off.
2. From the Main Menu select PERFORM SERVICE.



3. If desired enter a unique job name. This name will be tied to this job can help you keep track of AC jobs on specific vehicles.

4. Select CHARGE.



5. Fill out the job forms as they pertain to the vehicle being serviced and hit NEXT.

Note: Due to SAE regulations the charge amount can only be entered in grams/kilograms. However there is a unit conversion function built into the Job Form screen if needed. Simply tap the CONVERT button then in the pop up window enter the charge amount in the appropriate section and hit CONVERT. This will tell you what the equivalent weight is in kilograms. Last hit PRESS TO UPDATE and the app will fill in the equivalent charge amount into the JOB FORM for you.

YELLOW JACKET

Equivalent Kilograms
1.111

PRESS TO UPDATE
Submit Job Form

SUBMIT JOB FORM

Enter ONLY DECIMAL POUNDS (ex: 2.54 Pounds)

CONVERT

Enter Whole Pounds And Decimal Ounces (ex: 2 Pounds and 2.6 Ounces)
2 7.2

Enter ONLY DECIMAL OUNCES (ex: 26.3 Ounces)

6. For hybrid vehicles it may be necessary to perform a hose flush. If necessary perform a hose flush.
7. The display should read “CONNECT SERVICE HOSES TO THE VEHICLE. PRESS START TO BEGIN.”
8. Connect the high and low side auto service hoses to the respective high and low side service ports on the automobile A/C system.
9. Open the service hose valves by tightening the knob on the top of the service hose coupler and push START.

Job Name: 2016080414055
Refrigerant Configured

CONNECT SERVICE HOSES TO THE VEHICLE.
PRESS START TO BEGIN.

COUNTDOWN 00:00:00

0.0 psig 3.4 psig

CHARGEABLE 0 kg

WEIGHT @ START 13.126 kg

VACUUM HOLD

WEIGHT CHANGE 0.003 kg

START ENTER RESET

YES NO

BACK

10. After pressing start the machine then will read “STABILIZING PLEASE WAIT” The machine will then start the charge cycle.
 11. The display will show the charging process progress. The unit will beep when the desired charge amount has been transferred to the A/C system.
- NOTE:** The last 3 oz. of refrigerant charge will be metered in by the charging solenoid. It is normal to hear a clicking sound while charging.
12. Verify the message on the display reads “CHARGE COMPLETE.”
 13. Close the service valves and disconnect the high and low side auto service hoses from the automobile.
 14. After disconnecting the service hoses from the vehicle press the RESET key and allow the machine to complete its automatic hose clearing procedure.

15. If any lubricant was pulled out of the system during service replace it with the same amount of only new lubricant using an oil injector such as the YELLOWJACKET 37842 for R-134a or the YELLOWJACKET 37862 for R-1234yf to prevent system contamination.

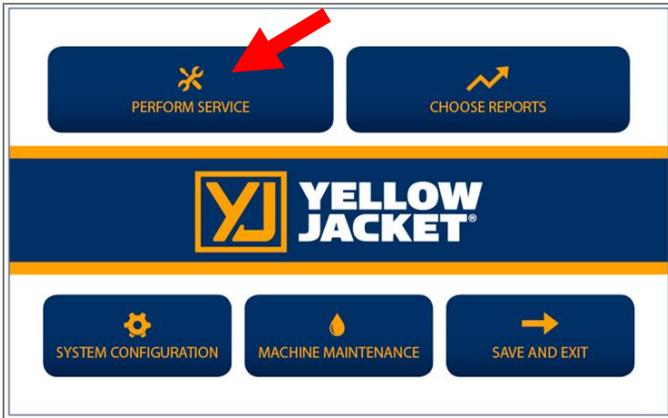
Vacuum and Charge

The Vacuum and Charge function for R-1234yf is designed to add a precise amount of refrigerant when the A/C system is low on refrigerant. This mode is most often used when the A/C system is working but does not produce sufficiently cold air.

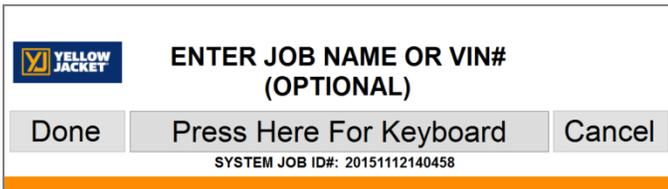
Due to SAE Regulations the Charge Only function is only available on machines configured for R-134a. All R-1234yf models must vacuum the system before charging.

Vacuum and Charge Operational Steps:

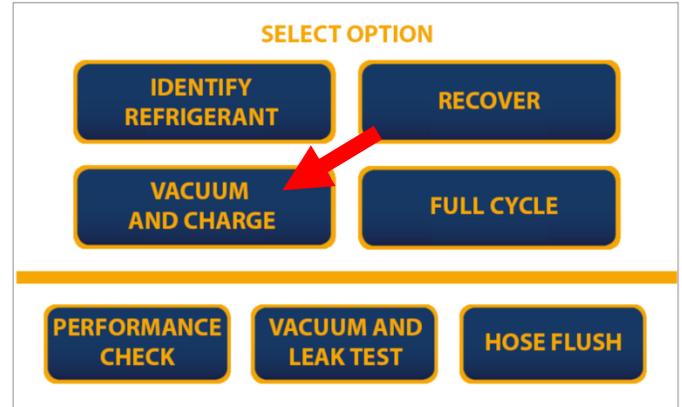
1. Verify that the vehicle and its air conditioning system are off.
2. From the Main Menu select PERFORM SERVICE.



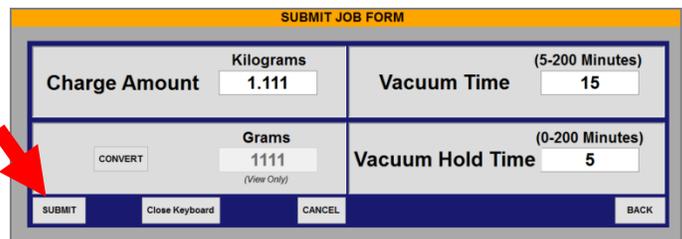
3. If desired enter a unique job name. This name will be tied to this job can help you keep track of AC jobs on specific vehicles.



4. Select VACUUM AND CHARGE.



5. Fill out the job form as it pertains to the vehicle being serviced and hit NEXT.



Note: The minimum vacuum time is 5 minutes and a 10-15 minute minimum vacuum time is recommend to ensure full evacuation of the system and accurate charging for normal sized systems.

Note: Due to SAE regulations the charge amount can only be entered in grams/kilograms. However there is a unit conversion function built into the Job Form screen if needed. Simply tap the CONVERT button then in the pop up window enter the charge amount in the appropriate section and hit CONVERT. This will tell you what the equivalent weight is in kilograms. Last hit PRESS TO UPDATE and the app will fill in the equivalent charge amount into the JOB FORM for you.

- For hybrid vehicles it may be necessary to perform a hose flush. If necessary perform a hose flush.
- The display should read “CONNECT SERVICE HOSES TO THE VEHICLE. PRESS START TO BEGIN.”

- Connect the high and low side auto service hoses to the respective high and low side service ports on the automobile A/C system.
- Open the service hose valves by tightening the knob on the top of the service hose coupler and push START.
- The machine will now go through the vacuum and leak test procedure required before charging per SAE J2843 as outlined in the [Vacuum and Leak Check](#) section.
- After the vacuum and vacuum hold time the display will read “STABILIZING PLEASE WAIT” The unit will then automatically start the charge cycle.

The display will show the charging process progress. The unit will beep when the

desired charge amount has been transferred to the A/C system.

NOTE: The last 3 oz. of refrigerant charge will be metered in by the charging solenoid. It is normal to hear a clicking sound while charging.

- The machine will now charge 15% of the total charge weight for SAE pressurized leak testing.
- Once 15% of the total charge has been added to the system the machine will instruct the user to check for leaks using an SAE approved leak detector then inquire if these mandatory leak checks have been performed. If any of the leak checks fail, the machine will lock out any further charging and will only allow for recovery and re-vacuuming of the system so that the leak may be repaired.
- Upon successful completion of the leak checks, the remaining 85% of the charge will be added to the system.
- Verify the message on the display reads “CHARGE COMPLETE.”
- Close the service valves and disconnect the high and low side auto service hoses from the automobile.
- After disconnecting the service hoses from the vehicle press the RESET key and allow the machine to complete its automatic hose clearing procedure.
- If any lubricant was pulled out of the system during service replace it with the same amount of only new lubricant using an oil injector such as the YELLOWJACKET 37842 for R-134a or the YELLOWJACKET 37862 for R-1234yf to prevent system contamination.

Full Cycle

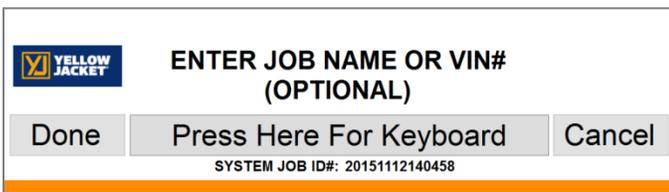
The Full Cycle function is designed to remove, clean, and recharge all refrigerant in an A/C system by transferring the refrigerant to the storage tank, filtering out contaminants, removing any moisture in the system by pulling a vacuum, and charging the system back up with a precise amount of refrigerant.

Operational Steps

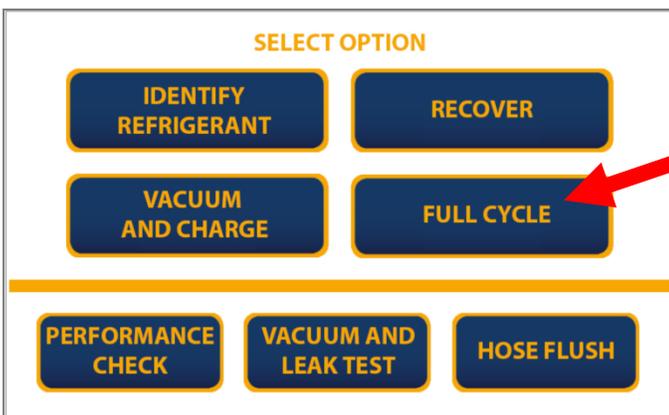
1. Verify that the vehicle and its air conditioning system are off.
2. From the Main Menu select PERFORM SERVICE



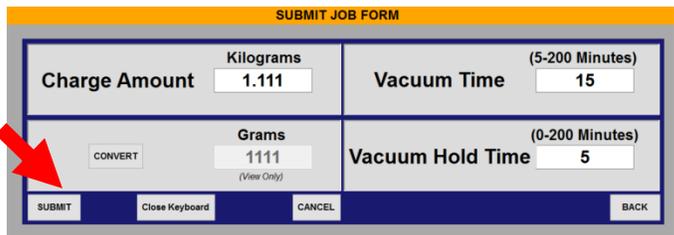
3. If desired enter a unique job name. This name will be tied to this job can help you keep track of AC jobs on specific vehicles.



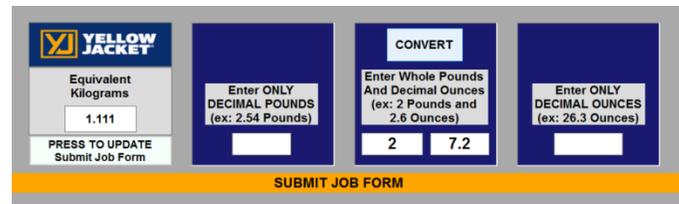
4. Select FULL CYCLE.



5. Fill out the job form as it pertains to the vehicle being serviced and hit NEXT.



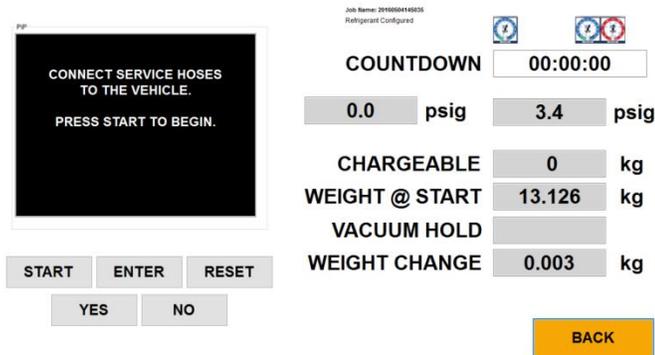
Note: Due to SAE regulations the charge amount can only be entered in grams/kilograms. However there is a unit conversion function built into the Job Form screen if needed. Simply tap the CONVERT button then in the pop up window enter the charge amount in the appropriate section and hit CONVERT. This will tell you what the equivalent weight is in kilograms. Last hit PRESS TO UPDATE and the app will fill in the equivalent charge amount into the JOB FORM for you.



Note: The minimum vacuum time is 5 minutes and a 10-15 minute minimum vacuum time is recommend to ensure full evacuation of the system and accurate charging for normal sized systems.

Note: On the 37840 machine configured for R-134a the Vacuum Hold Time can be bypassed if the time is set to zero. On 37860 machines and machines configured for R-1234yf the minimum Vacuum Hold Time is 5 minutes.

- The display should read “CONNECT SERVICE HOSES TO VEHICLE”.



- Connect the hoses to the vehicle and press START to begin full cycle operations.
- The unit will begin to recover as outlined in the [Recover](#) Only cycle. Once the refrigerant has been recovered, the machine will automatically begin evacuating the system with the same procedure as [Vacuum and Leak Check](#) and will beep to indicate the end of the Vacuum Time and after the Vacuum Hold if Vacuum Hold is used.
- After the Vacuum and Vacuum Hold Time the display will read “STABILIZING PLEASE WAIT” The machine will then start the charge cycle.
- The display will show the charging process progress. The unit will beep when the desired charge amount has been transferred to the A/C system.
- Per the SAE J2843 standard, machines configured for R-1234yf will have 15% of the total charge weight initially charged into the vehicle for pressurized leak testing.
- Once 15% of the total charge has been added to the system the machine will instruct the user to check for leaks using an SAE approved leak detector then inquire if these mandatory leak checks have been performed. If any of the leak checks fail the machine will lock out further charging and will only allow for recovery and re-

vacuuming of the system so that the leak may be repaired.

- Upon successful completion of the leak checks the remainder of the charge will be added to the system.

NOTE: The last 3 oz. of refrigerant charge will be metered in by the charging solenoid. It is normal to hear a clicking sound while charging.

- Verify the message on the display reads “CHARGE COMPLETE.”
- Close the service valves and disconnect the high and low side auto service hoses from the automobile.
- After disconnecting the service hoses from the vehicle press the RESET key and allow the machine to complete its automatic hose clearing procedure.
- If any lubricant was pulled out of the system during service replace it with the same amount of only new lubricant using an oil injector such as the YELLOWJACKET 37842 for R-134a or the YELLOWJACKET 37862 for R-1234yf to prevent system contamination.

Models with the refrigerant identifier (37860, 37840 converted to R-1234yf, or 37840 with identifier enabled)

- After entering the job name, select FULL CYCLE. The identifier screen will pop up automatically.
- Turn on the identifier and connect it via the USB cable to the tablet.
- Connect the sample hose to the low side of the vehicle and follow the directions on the identifier screen to get the refrigerant sample.
- After the refrigerant has been verified to be a minimum of 98% pure go back to Step 4 of the RECOVER and continue the recovery process as normal.

Note: If the refrigerant does not pass the identification process (98% purity) the unit will display the error message “CONTAMINATED” and the screen will show the results of the identification. Press the Reset key and follow the instructions on the screen and the unit will clear itself automatically. Repeat the identification process to

insure the proper identification of the refrigerant purity level.

If the unit fails the second time follow the on screen instructions and take the appropriate steps to remove the contaminated refrigerant with a separate contaminated refrigerant recovery unit such as the Yellow Jacket 37825 for removal of contaminated refrigerant

WARNING
DO NOT RECOVER CONTAMINATED REFRIGERANT WITH THIS UNIT. RECOVERING CONTAMINATED REFRIGERANT WILL VOID ALL WARRANTIES AND MAY CAUSE DAMAGE TO OTHER AUTOMOBILES THAT YOU SERVICE IN THE FUTURE.

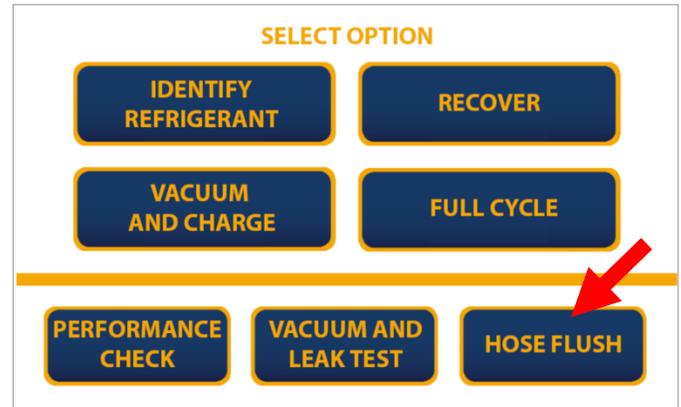
Hybrid Hose Flush

The Hybrid Hose Flush feature is used to remove residual oil and contaminants from the unit and hoses. The SAE J2788 standard for R-134a and the SAE J2843 standard for R-1234yf require that the unit remove the residual oil so there isn't a risk of cross contaminating the oil in a hybrid A/C system. Failure to perform this function before working on a hybrid A/C system can cause serious issues with the electrical system. Having too much of the wrong type of oil in a hybrid A/C system can cause damage to the compressor as well as conduct the electricity to the outside of the A/C compressor creating the risk of shock.

SERVICING HIGH VOLTAGE A/C SYSTEMS.

Due to issues with oil contamination in High Voltage A/C systems, the 37840 and 37860 have a unique flushing feature that reduces cross contamination of oil to a level below specifications set by SAE and OEMs.

It is therefore necessary to perform the following procedure before working on a High Voltage A/C system.



1. After submitting a job name select HOSE FLUSH.
2. When the display reads "PLEASE CONNECT FLUSH ADAPTER" connect the supplied flush adapter between the high and low side hoses. (Replacement part numbers 19153 for R-134a or 19244 for R-1234yf)
3. Press the ENTER key to begin the process.
4. The display will then read "FLUSHING HOSES PLEASE WAIT".
5. When the process is complete press the BACK key to return to the main menu to continue with the vehicle service.

WARNING
FAILURE TO PERFORM THIS PROCESS CAN CAUSE DAMAGE TO THE A/C SYSTEM COMPRESSOR AS WELL AS OTHER ELECTRICAL COMPONENTS RELATED TO THE A/C SYSTEM. THE POSSIBILITY OF ELECTRICAL SHOCK TO THE TECHNICIAN OR OTHERS MAY ALSO OCCUR BY NOT PERFORMING THIS PROCESS.

Tank Refill

In order to use the charging mode, you must have at least ten (10) pounds of refrigerant in the storage tank. Follow this procedure to add refrigerant to the storage tank. When adding refrigerant to the onboard storage tank you will need to use the tank refill adapter (**Part Number 19153 for R-134a or Part Number 19244 for 1234yf**) supplied in the accessory kit. The adapter connects the low side vehicle hose to the tank of new refrigerant. It should be stored in the tool tray on the top of the unit.

1. Select TANK REFILL from the Machine Maintenance menu.
2. Connect the blue low side auto service hose to the new refrigerant source tank and open the tank valve. Turn the source tank upside down to enable all of the refrigerant is transferred to the storage tank on the unit. Press the ENTER key.
3. Press the START key. Refrigerant will transfer to the storage tank. The unit will shut off automatically when either the supply tank is empty or the storage tank is full.
4. Press the BACK button to return to the main menu.
5. Remember to remove the tank fill adapter from the refrigerant source tank before disposing of the empty cylinder. Save adapter for future use.

WARNING

ONLY FILL THE SOURCE TANK WITH THE REFRIGERANT THAT THE MACHINE IS CURRENTLY CONFIGURED FOR. R-134A FOR THE 37840 WHEN CONFIGURED FOR R-134a AND R-1234YF FOR THE 37860 AND FOR THE 37840 ONLY WHEN IT HAS BEEN CONFIGURED FOR R-1234yf.

Models with the refrigerant identifier (37860, 37840 converted to R-1234yf, or 37840 with identifier enabled)

1. From the Machine Maintenance menu Select TANK REFILL. The identifier screen will pop up automatically.
2. Turn on the identifier and connect it via USB cable to the tablet.
3. Connect the sample hose to the refill tank and follow the directions on the identifier screen to get the refrigerant sample.
4. After the refrigerant has been verified to be a minimum of 98% pure go back to Step 2 of the TANK REFILL and continue the tank fill process as normal.

Note: If the refrigerant does not pass the identification process (98% purity) the unit will display the error message "CONTAMINATED" and the screen will show the results of the identification. Press the Reset key and follow the instructions on the screen and the unit will clear itself automatically. Repeat the identification process to insure the proper identification of the refrigerant purity level.

If the unit fails the second time follow the on screen instructions and take the appropriate steps to remove the contaminated refrigerant with a separate contaminated refrigerant recovery unit such as the Yellow Jacket 37825 for removal of contaminated refrigerant.

WARNING

DO NOT RECOVER CONTAMINATED REFRIGERANT WITH THIS UNIT. RECOVERING CONTAMINATED REFRIGERANT WILL VOID ALL WARRANTIES AND MAY CAUSE DAMAGE TO OTHER AUTOMOBILES THAT YOU SERVICE IN THE FUTURE.

Refrigerant Management System

The Refrigerant Management System built into the machine tracks all aspects of refrigeration usage. This information can significantly help you manage your automobile A/C repair business. In addition, new federal regulations require strict records of your refrigerant usage. The software in this system is designed to ensure the highest possible accuracy in managing refrigerant usage.

Uses of the refrigerant data include:

- Improved record keeping
- Accurate determination of net profits

- Reduced billing errors
- Minimized refrigerant loss from leaks and theft
- Reduced operator errors

The refrigerant management system keeps track not just of each individual job that the machine performs but also the compressor life, the vacuum pump life, and filter drier life to keep the user informed on when the next recommended service is due.

System Calibrations

It is recommended that every two months the pressure transducers and the scale be checked for accuracy. After extended use the 37840 and 37860 may require the pressure transducers to be re-zeroed and or the scale to be recalibrated.

Zero Pressure Transducers

1. Select MACHINE MAINTENANCE in the main menu.
2. Next select ZERO PRESSURE TRANSDUCERS.
3. Follow the onscreen instructions and disconnect the Low Side (blue) Vehicle Hose from the machine and press START.
4. The machine will automatically check the pressure transducers and rezero them if necessary.

Scale Calibration Check

1. With the tank still connected and on the scale select SYSTEM CONFIGURATION in the main menu.
2. Select CHECK SCALE.
3. Press the "START" key to stabilize.
4. After stabilizing, machine will display "PLACE THE TEST WEIGHT ON THE TANK" (calibration check weight supplied).
5. Press the "START" key.
6. Check to see if the displayed weight and value of the test weight are within 0.005Kg.

7. If out of calibration follow the steps displayed on the display to recalibrate scale.

Example:

Test weight = 500g (0.500 kg)

Machine reading: 0.494 kg = Out of Calibration

Machine reading: 0.500 kg = Good

Machine reading: 0.506 kg = Out of Calibration

Note: 1 Lb = 0.454 kg

If the scale calibration changes, a message reading "**WARNING SCALE CALIBRATION**" may appear on the screen. To reset the warning message follow the on screen instructions or do the following:

1. Select MACHINE MAINTENANCE in the main menu.
2. Select CALIBRATE SCALE.
3. The display will then read "REMOVE TANK FROM SCALE".
4. Disconnect the hoses and remove the tank from the scale.
5. Once the tank is removed and there is nothing on the scale press the START key.
6. The display will then read "CALIBRATING PLEASE WAIT".
7. When the display reads "POWER OFF AND RESTART SYSTEM" turn the machine's main power switch off.
8. Carefully place the tank back on the scale and reconnect the hoses, temperature clamp, and ground wire and turn the main power switch back on.

Purging Non Condensable Gases

The 37840 and 37860 are designed to automatically purge Non Condensable Gases (NCGs) such as air present in the storage tank. The machine uses an algorithm based on the temperature and pressure of the tank and the refrigerant inside to determine if there are NCGs present. When it is determined that there are NCGs in the onboard tank, the unit will purge the excess NCGs.

The unit will automatically check for NCGs at the beginning of any job cycle that includes charging of refrigerant into a vehicle, such as a full cycle. You can also have the machine check for NCGs at other times. To manually check for and purge NCGs, from the home screen go into Machine Maintenance and select TANK NCG PURGE. This will tell the machine to check for NCGs, perform a purge if necessary, and then clear the system.

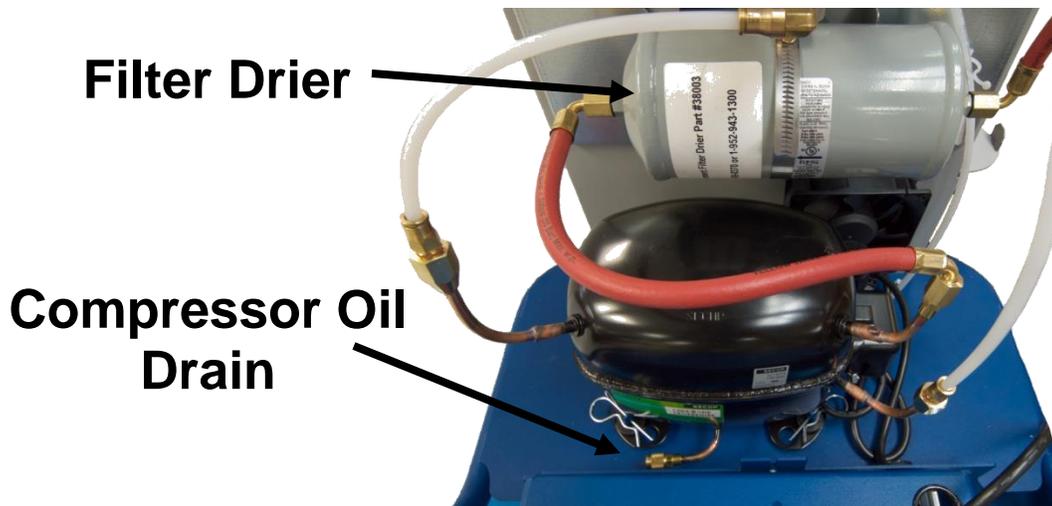
The maximum purge time is set to 15 seconds to minimize potential refrigerant loss. If you suspect that a purge cycle was insufficient to remove all NCGs from the recovery tank you can repeat the purge cycle by pressing the TANK NCG PURGE button again. If after multiple purge cycles the machine continues to purge, there may be an error in the system. Check the pressure in the tank to determine if the system is purging unnecessarily.

Contact Ritchie Engineering Customer Service at (800)769-8370.

Note: The best time to check for NCGs is after the unit has sat overnight and the tank temperature is uniform and stable.

Note: To ensure proper purging the temperature probe clamp must be on the nut of the RED tank vapor hose to guarantee accurate tank temperature readings.

Regular Maintenance



Filter Drier

MAINTENANCE WARNING! CHANGE FILTER DRIER

The 37840 and 37860 have a unique filter system which ensures the refrigerant transferred to the storage cylinder is clean and moisture-free. The filters must be changed after they have processed 150lbs of refrigerant to ensure that the refrigerant being processed meets purity requirements. A maintenance reminder will prompt you when to change your filter. All refrigerant must be removed from the old filter before it is removed. Follow the filter change procedures carefully to minimize refrigerant loss and to ensure only clean, moisture-free refrigerant is transferred into the storage tank.

SAE standards require that the further function of the machine is disabled (locked out) if the filter drier is not replaced at the proper interval. The unit will prompt you when the filter is near the end of its life. When the filter drier has processed 100 lbs (45.36 kg) of refrigerant it will warn the user that it is nearing the end of its life. When the filter drier has processed 150 lbs (680.4 kg) of refrigerant, the machine will lock the user out and will require a filter change before the unit can be used again. The filter driers are marked with a unique code that will be required to unlock the unit. Each filter and filter code may only be used once.

Filter Change Procedure

Follow these steps to change the filter drier

1. From the main menu enter MACHINE MAINTENANCE.
2. Select filter change.

3. The machine will now go through a clearing procedure to prevent refrigerant loss.
4. When prompted, turn off and unplug the unit.
5. Remove front covers of unit (2 bolts and 2 wing nuts).
6. Slowly loosen and detach the hoses from the old filter.
7. Write down the filter code as printed on the new filter.
8. Install the new filter and attach the hoses making sure it is in the proper orientation (the arrow should point towards the compressor) and that the fittings are tight.
9. Replace the front covers.
10. Plug the machine in and power it on.
11. When prompted enter the filter code as printed on the new filter.
12. The display should read "FILTER LIFE CLEARED PRESS RESET TO CONTINUE".
13. The machine is now ready to continue service.

Compressor Oil

It is recommended to change the compressor oil regularly. The machine automatically keeps track of the run time of the compressor and will pop up the following alert after a set interval.

MAINTENANCE WARNING! CHANGE COMPRESSOR OIL

The oil in the compressor should be checked for contamination and proper oil level when the

compressor oil maintenance reminder is displayed. Select RESET to turn reminder off until the next time you start the unit. Select ENTER when the oil has been changed.

Instructions for Compressor Oil Maintenance

Oil Level Check

1. Place unit on a level surface
2. Run a recovery cycle with the unit not connected to a vehicle.
3. Turn off and unplug the unit.
4. Remove front covers of unit.
5. **SLOWLY** remove oil port cap on compressor.

Note: High pressure may be present, remove cap slowly.

6. Place an oil pan or similar method for collecting the oil under the oil drain port.
7. Place rear wheels of unit on a 2 x 4.
8. Oil should drip out of oil drain port.
9. If oil runs out of port rapidly, allow the oil to drain until it is slowly dripping out.
10. Replace oil port cap and cover.
11. Replace the side covers.
12. Discard used lubricant per applicable federal, state and local requirements.

Compressor Oil Replacement Procedure

1. Place unit on a level surface
2. Run a recovery cycle with the unit not connected to a vehicle.
3. Turn off and unplug the unit.
4. Remove front covers of unit.
5. Carefully disconnect and remove the onboard tank.
6. **SLOWLY** remove oil port cap on compressor.

Note: High pressure may be present, remove cap slowly.

7. Place an oil pan or similar method for collecting the oil under the oil drain port.
8. Lock the front wheels and carefully tilt unit at 45° angle towards oil drain port and allow all oil to be drained.

Warning! Unit is heavy. Take care when tilting unit to prevent injury or damage.

9. Replace the oil drain cap.
10. With the unit back on level ground refill with proper amount and type of oil through the compressor suction port. The proper oil

charge is 16.0 ounces of 150 VISCOSITY (SUS) POE oil. If you are unsure of the amount of oil added to the compressor follow the instructions for an Oil Level Check to ensure a proper oil fill.

11. Reconnect the compressor suction hose and replace the front covers.
12. Discard used lubricant per applicable federal, state and local requirements.

Note: Failure to perform oil maintenance can cause the compressor to overfill with oil and severely damage the compressor.

Vacuum Pump Oil

It is recommended to change the vacuum pump oil regularly. The machine automatically keeps track of the run time of the vacuum pump and will pop up the following alert after a set interval.

MAINTENANCE WARNING! CHANGE VACUUM PUMP OIL.

Select ENTER to turn the reminder off until the next time you start the unit. Select RESET when the oil has been changed. For additional vacuum pump care see the vacuum pump manual that was included with the machine.

Vacuum Pump Oil Level Check

While the vacuum pump is running the normal oil level should be 1/2 to 5/8 up in the sight glass. This level is necessary for proper operation.

Vacuum Pump Oil Replacement Procedure

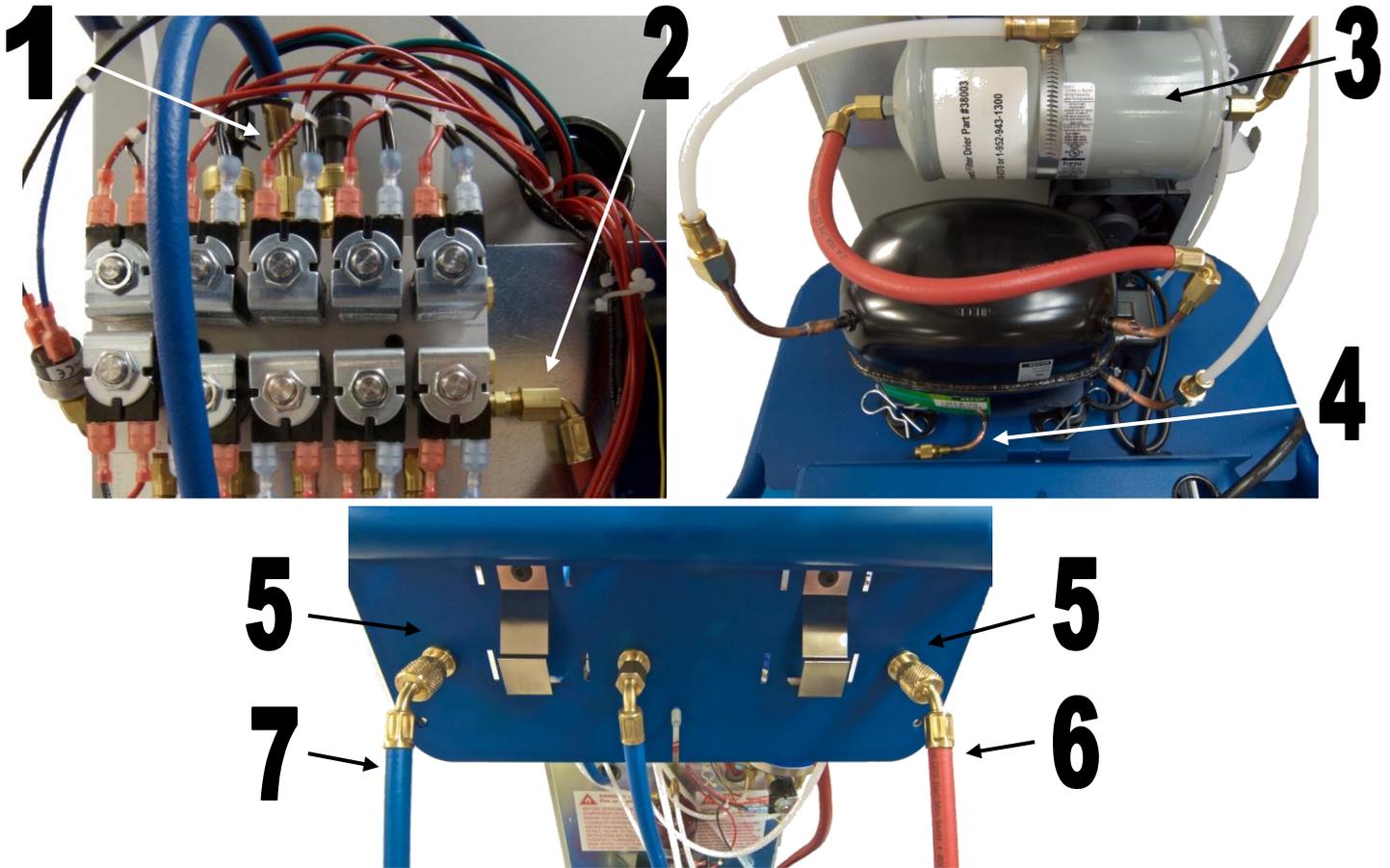
This maintenance is best performed when the oil is warm.

1. Remove thumb screws under vacuum pump platform and the vacuum pump hose.
2. Tilt the vacuum pump at a 45° angle towards the drain plug.
3. Place a container under the oil drain plug and remove the oil drain plug.
4. Drain oil into a container.
5. Discard used lubricant per applicable federal, state and local requirements.
6. Replace the oil drain plug and refill the vacuum pump with YELLOW JACKET Vacuum Pump oil 93192 to the correct level.
7. Replace the vacuum pump to its original position and reinstall the thumb screws and hose.

Changeover Procedure

The 37840 has been designed to meet SAE J3030 requirements such that the machine can undergo a **one-time** changeover procedure that will enable the 37840 to change from only being able to service R-134a to only being able to service R-1234yf. To perform the change over, conversion kit PN 37845 is needed which will contain the parts necessary to convert the machine from a R-134a unit to a R-1234yf unit. Compressor oil not included. Reminder SAE standards require the use of a refrigerant identifier for units running R-1234yf.

1. Tank liquid hose
2. Tank vapor hose
3. Filter Drier
4. Compressor Oil Drain
5. Vehicle Hose Bulkhead Fittings
6. Vehicle High Side Hose
7. Vehicle Low Side Hose



To change a factory default 37840 unit from the setting of R-134a to R1234yf the following procedure is to be performed.

1. Select MACHINE CONVERSION from the Machine Maintenance menu.
2. When prompted connect the hose flush adapter to the vehicle service hoses and press ENTER to start a hose flush.
3. When prompted close the tank liquid valve.
4. After the hose flush, the machine will now confirm that you wish to change refrigerants. REMEMBER THIS CAN NOT BE UNDONE.
5. Follow the onscreen instructions to perform a hose flush and system clearing procedure.
6. After the hoses have been flushed, turn off the machine and close the vapor valve on the tank then remove the tank from the machine.

7. Use a separate refrigerant recovery machine on the tank hoses to remove any remaining refrigerant from the tank hoses such as the YELLOWJACKET LTE 95730.

CAUTION: Failure to recover the refrigerant from the tank hoses may result in high pressure being present in these hoses which could lead to user injury or damage to the machine.

Note: During the mechanical portion of the changeover procedure the tablet and App do not need to be on. The App will automatically pick up where it left off when reconnected.

8. Unplug the machine then remove the 4 bolts to remove the top console and the 2 bolts and 2 wing nuts to remove the front shrouds.
9. Carefully disconnect the red and blue tank hoses from the manifold block.
10. Disengage the black hose retainers and remove the two tank hoses.
11. Disconnect and remove the two plastic hoses running from the Vehicle Hose Bulkhead Fittings and from where they connect to the manifold. To disconnect the hoses push the hose into the fitting then push the fitting collar into the fitting before pulling the hose free.
12. Remove the vehicle hose bulkhead fittings.
13. Remove the filter drier hoses and filter drier.
14. Remove any additional aftermarket refrigerant filters.
15. Dispose of all removed hoses in an environmentally friendly manner and according to local laws.
16. Drain and replace the compressor oil by following the Compressor Oil Replacement Procedure on page 29.
17. Write down the filter code as printed on the new filter.
18. Install the new filter and filter drier hoses making sure the filter drier is in the proper orientation (the arrow should point towards the compressor) and that the fittings are tight.

19. Install the new R-1234yf vehicle hose bulkhead fittings.
20. Install the new plastic hoses into the bulkhead fitting and back into the corresponding manifold location.

Note: Make sure to firmly push the plastic hose all the way into the fitting and give a gentle tug to make sure the hose is properly installed and engaged.

21. Feed the tank hoses through the plumbing panel snapping the hose retainers into place.
22. Connect the tank hoses to the manifold and ensure the ball valves on the ends of the hoses are closed.
23. Connect the new R-1234yf vehicle hoses.

Note: Remember to check all of the hose connections and make sure that they are secure and will not leak before reassembling the machine. Also remember to properly reconnect any electrical components you may have disconnected as well.

24. Make a note of the filter drier code then replace the front shrouds and top console.
25. Plug the machine back in and turn it on.
26. The machine will now ask to confirm that all the necessary hoses have been changed.
27. After you have confirmed that the necessary changes have been performed, the machine will go into a 30 minute vacuum cycle to ensure that there is no cross contamination between the refrigerants.
28. After the vacuum cycle, the machine will ask for the new filter drier code. Enter the new filter drier code.
29. Install the new R-1234yf tank

Note: R-1234yf tank fittings use left-hand-threaded fittings.

30. Perform a tank refill before beginning service.

Troubleshooting Information

The 37840 and 37860 have a number of sophisticated features which make it easy to perform fast and efficient service. Although these units are manufactured with high quality components, a component failure could cause it to operate incorrectly.

The following section is designed to provide you with additional information to help diagnose the system. If a problem occurs, please read this section thoroughly prior to calling technical support. This will reduce the time needed to restore your system to normal operation. Please call technical support number at (800)769-8370.

Common Problems and Potential Solutions

Problem	Possible Causes	Possible Solutions
Unit cannot pull automobile A/C system into a vacuum.	<ul style="list-style-type: none"> • Automobile A/C system has a leak. • Service valves on hoses not properly installed. • Service ball valve seals are worn. • Hoses on unit are loose or leak. • Vacuum pump is not turned on. 	<ul style="list-style-type: none"> • Find and repair leak in A/C system. • Check valve seals and threads and replace if needed. • Replace valve seals and Schrader core depressor. • Tighten or replace hoses on unit. • Turn on vacuum pump.
High side gauge readings above normal.	<ul style="list-style-type: none"> • Restriction in A/C system or Schrader core. • Service hose ball valve closed. • Incorrect charge amount entered in unit. 	<ul style="list-style-type: none"> • Check hose connection and fix restriction. Replace Schrader core. • Open the valve. • Recover, check scale calibration, and recharge system.
Refrigerant not being transferred during Tank Refill.	<ul style="list-style-type: none"> • Valve on supply tank closed. • Ball valve on blue service hose closed or hose is constricted. • Wrong hose installed on new refrigerant tank. • Storage tank is full. 	<ul style="list-style-type: none"> • Open valve. • Open valve or straighten hose. • Install blue service hose on refrigerant tank. • Close valve on new supply. Disconnect service hose.
Unit will not accept commands.	<ul style="list-style-type: none"> • App is frozen. • The machine is not connected to the tablet/app. • The tablet became unpaired from the machine. • Machine is not powered on. • Control board malfunction. 	<ul style="list-style-type: none"> • Close out of the App and restart. • Restart the machine and the app then wait to hear the beep from the machine confirming connection • Open Bluetooth settings in the tablet and re-pair the tablet with the machine. • Turn on machine. • Call Technical Support.
Fan not running/fan lockout.	<ul style="list-style-type: none"> • Loose power wire to fan. • Fan airflow is blocked or fan blades stuck. • Control board malfunction. • Fan malfunction. 	<ul style="list-style-type: none"> • Locate loose fitting and reconnect. • Remove obstruction from fan. • Call Technical Support. • Call Technical Support.
Unit will not turn on.	<ul style="list-style-type: none"> • Power cord is not plugged into a 120 Volt outlet. • Tablet battery is dead. • Circuit breaker tripped on shop power panel. • Bad Main Power switch. • Loose wire. 	<ul style="list-style-type: none"> • Plug into outlet. • Charge tablet. • Reset circuit breaker. If circuit breaker immediately trips, do not reset. Consult a qualified electrician. • Call Technical Support. • Repair loose wire.

	<ul style="list-style-type: none"> • Malfunction of control board. 	<ul style="list-style-type: none"> • Call Technical Support.
Unit will not recover refrigerant from A/C system.	<ul style="list-style-type: none"> • Valves on service hoses shut. • Service hose is constricted. • Unit storage tank valve is closed. • Tablet is not connected to the unit. • Compressor not operating. 	<ul style="list-style-type: none"> • Open valves. • Straighten hose. • Open tank valves. • Make Bluetooth connection between the tablet and the unit. • Call Technical Support.
Unit will not charge refrigerant into vehicle.	<ul style="list-style-type: none"> • Valves on service hoses shut. • Service hose is constricted. • Unit storage tank valve is closed. • Hoses to unit storage tank not connected to the correct tank valves 	<ul style="list-style-type: none"> • Open valves • Straighten hose • Open tank valves • Make sure the blue tank hose is connected to the tank liquid port and the red tank hose is connected to the tank vapor port.
Refrigerant leaking during charging.	<ul style="list-style-type: none"> • Service valves on hoses not properly installed on A/C system. • Service ball valve seals are worn. • Hoses on unit are loose or leak. • Automobile A/C system has a leak 	<ul style="list-style-type: none"> • Check valve seals and threads and replace if needed. • Replace valve seals and Schrader core depressor • Tighten or replace hoses on unit • Find leak in A/C system and repair.
Weight measurements from unit are not correct.	<ul style="list-style-type: none"> • Tank hoses improperly installed. • Scale calibration has drifted. • Scale is damaged and can not be calibrated. 	<ul style="list-style-type: none"> • Ensure tank hoses are not pinched or rubbing on the machine frame. • Check scale calibration and recalibrate if necessary. • Call Technical support

Error Messages

ERROR NUMBER	MESSAGE	DESCRIPTION	TROUBLESHOOTING
ERROR 1	HIGH PRESSURE	HIGH PRESSURE SWITCH IS TRIPPED (NORMALLY CLOSED SWITCH)	<ul style="list-style-type: none"> • MAKE SURE TANK VALVE IS OPEN • TEST HIGH PRESSURE SWITCH • CHECK SV AND CHECK VALVE OP • CHECK TANK PRESSURE
ERROR 2	TANK FULL	TANK WEIGHT OVER 80% OF CAPACITY	<ul style="list-style-type: none"> • CHECK SCALE CALIBRATION • REMOVE SOME REFRIGERANT FROM STORAGE TANK
ERROR 3	RECOVERY TIME OUT	RECOVERY PROCESS HAS EXCEEDED 1 HR FACTORY DEFAULT	<ul style="list-style-type: none"> • IF AC SYSTEM CONTAINS MORE THAN 3 LBS OF REFRIGERANT INCREASE DEFAULT TIME • CHECK FOR LEAKS (HOSES, FITTINGS AND AUTO AC SYSTEM)

ERROR 4	CHARGING TIME OUT	CHARGING PROCESS HAS EXCEEDED 20 MIN FACTORY DEFAULT	<ul style="list-style-type: none"> • OPEN TANK VALVES • OPEN SERVICE COUPLERS • SWITCH TO LOW SIDE CHARGING • CHECK TANK WEIGHT (10 LB MIN) • INCREASE VACUUM TIME
ERROR 5	NO TANK ON SCALE	SCALE NOT READING TANK WEIGHT	<ul style="list-style-type: none"> • PLACE TANK ON SCALE • CHECK SCALE CALIBRATION
ERROR 6	TANK EMPTY	REFRIGERANT AMOUNT BELOW 5 % OF TANK CAPACITY	<ul style="list-style-type: none"> • REFILL TANK • CHECK SCALE CALIBRATION
ERROR 7	NOT ENOUGH REFRIGERANT	UNIT IS LOW ON REFRIGERANT (10 LB MIN)	<ul style="list-style-type: none"> • REFILL ONBOARD REFRIGERANT TANK
ERROR 8	TANK REFILL TIME OUT	TANK REFILL HAS EXCEEDED DEFAULT TIME	<ul style="list-style-type: none"> • RUN TANK REFILL MODE AGAIN • CHECK FOR LEAKS
ERROR 10	SYSTEM EQUALIZED	PRESSURE EQUALIZED DURING CHARGING	<ul style="list-style-type: none"> • INCREASE VACUUM TIME • CHANGE TO LOW SIDE CHARGE, CLOSE THE HIGH SIDE VEHICLE FITTING, AND RUN THE VEHICLE TO DRAW IN THE REMAINING REFRIGERANT CHARGE
ERROR 11	HOSE CLEARING TIME OUT	CLEARING TIME OUT AFTER CHARGING	<ul style="list-style-type: none"> • CLOSE SERVICE VALVES AND DISCONNECT
ERROR 12	SCALE MALFUNCTION	SCALE NOT READING TANK PROPERLY	<ul style="list-style-type: none"> • CHECK TANK PLACEMENT • CHECK SCALE CALIBRATION • REPLACE SCALE ASSEMBLY
ERROR 13	VACUUM ERROR	R-134a SYSTEM NOT MAINTAINING PROPER VACUUM LEVEL	<ul style="list-style-type: none"> • CHECK SYSTEM FOR LEAKS • INCREASE VACUUM TIME
ERROR 14	LEAK CHECK FAILED	SYSTEM NOT HOLDING PROPER VACUUM LEVEL	<ul style="list-style-type: none"> • CHECK SYSTEM FOR LEAKS • INCREASE VACUUM TIME
ERROR 15	SOLENOID MALFUNCTION	SOLENOID COMMUNICATION ERROR	<ul style="list-style-type: none"> • CHECK SOLENOID CONNECTIONS • REPLACE FAULTY SOLENOID
ERROR 16	SCALE CALIBRATION	SCALE CALIBRATION MAY HAVE CHANGED	<ul style="list-style-type: none"> • RECALIBRATE ONBOARD SCALE
ERROR 17	STABILIZING ERROR	SCALE READINGS NOT STABILIZING	<ul style="list-style-type: none"> • DO NOT MOVE MACHINE WHILE SCALE IS STABILIZING • CALIBRATE SCALE • REPLACE SCALE
ERROR 19	UNIDENTIFIED PRESSURE DETECTED	MACHINE HAS DETECTED PRESSURE WHILE TRYING TO PULL A VACUUM	<ul style="list-style-type: none"> • ON R-1234yf MACHINES IF THE PRESSURE IN THE SYSTEM IS ABOVE ATMOSPHERIC PRESSURE THEN THE SYSTEM MUST BE RECOVERED TO BELOW ATMOSPHERIC PRESSURE BEFORE VACUUM CAN

			<p>OCCUR</p> <ul style="list-style-type: none"> • CLOSE THE VEHICLE SERVICE COUPLERS AND ALLOW MACHINE TO CLEAR THE HOSES VIA THE VACUUM PUMP • FOLLOW THE PROPER RECOVERY PROCEDURE BEFORE PROCEEDING TO THE VACUUM CYCLE
ERROR 20	IDENTIFIER CALIBRATION ERROR	IDENTIFIER COULD NOT CALIBRATE	<ul style="list-style-type: none"> • ENSURE IDENTIFIER IS DISCONNECTED FROM ANY REFRIGERANT SOURCE DURING CALIBRATION • CHECK IDENTIFIER FILTER
ERROR 21	SYSTEM UNDER PRESSURE	PRESSURE TRANSDUCERS ARE UNDER PRESSURE WHILE MACHINE IS ATTEMPTING TO ZERO	<ul style="list-style-type: none"> • ENSURE BLUE VEHICLE HOSE IS DISCONNECTED FROM THE MACHINE AND THAT THE RED VEHICLE HOSE IS DISCONNECTED FROM ANY REFRIGERANT SOURCE • REPLACE PRESSURE TRANSDUCERS
ERROR 22	VACUUM ERROR	R-1234yf REQUIRED VACUUM LEVEL NOT REACHED OR NOT MAINTAINED	<ul style="list-style-type: none"> • CHECK SYSTEM FOR LEAKS • INCREASE VACUUM TIME
ERROR 23	REFEGERANT PURITY FAIL	IDENTIFIER HAS DETECTED CONTAMINATED REFRIGERANT	<ul style="list-style-type: none"> • RECALIBRATE IDENTIFIER AND TRY IDENTIFICATION AGAIN • RECOVER CONTAMINATED REFRIGERANT USING MACHINE DESIGNED TO HANDLE CONTAMINATED REFRIGERANT
ERROR 24	FAN SPEED PROBLEM	FAN IS RUNNING AT AN IRREGULAR SPEED	<ul style="list-style-type: none"> • CHECK FAN FOR OBSTRUCTIONS • CHECK FAN WIRING • REPLACE FAN

Repair Parts List

<u>Part #</u>	<u>Description</u>	<u>Part #</u>	<u>Description</u>
41301	R-134a High Side Coupler	41441	R-1234yf High Side Coupler
41302	R-134a Low Side Coupler	41442	R-1234yf Low Side Coupler
01215	R-134a Auto Low Side Blue Hose (10ft)	17830	R-1234yf Auto Low Side Blue Hose (10ft)
01216	R-134a Auto High Side Red Hose (10ft)	17870	R-1234yf Auto High Side Red Hose (10ft)
19240	R-134a Tank Vapor Red Hose	19234	R-1234yf Tank Vapor Red Hose
19241	R-134a Tank Liquid Blue Hose	19243	R-1234yf Tank Liquid Blue Hose
19153	R-134a Tank Refill Adapter	19244	R-1234yf Tank Refill Adapter
95026	R-134a 50lb Refrigerant Tank	95028	R-1234yf 50lb Refrigerant Tank
37842	R-134a Oil Injector	37862	R-1234yf Oil Injector
38132	R-134a Hybrid Hose Flush Adapter	19245	R-1234yf Hybrid Hose Flush Adapter
67008	R-134a Automotive ManTooth	67009	R-1234yf Automotive ManTooth
38019	Oil Bottle	37845	37840 R-134a to R-1234yf Changeover Kit
95157	Circuit Breaker, 15 Amp	93192	Vacuum Pump Oil
38113	Automatic Scale Assembly	37913	Dust Cover
95423	High Pressure Switch	37911	Replacement Tablet
38003	Filter-Dryer (1 per unit)	37865	Refrigerant Identifier
38155	Caster Wheels (2 pack)	69336	Refrigerant Leak Detector
19246	500g Scale Check Weight	19239	Replacement Magnet Set
19247	Replacement Side Hooks		

Limited Warranty for 37840 & 37860

EXCLUSIVE WARRANTY – LIMITATION OF LIABILITY

The Limited Warranty is the only Warranty for this unit given by Ritchie Engineering Company Inc. No one is authorized to make any other warranties on our behalf. Ritchie Engineering's sole liability, with respect to any defect, shall be set forth in this limited warranty, and any claims for incidental or consequential damages are excluded. Some states do not allow limitations on how long an implied warranty last, or for the exclusion of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This Limited Warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

Reasonable proof of the date of purchase of your Refrigerant Management System may be required to establish its "in-warranty" status. Otherwise, the effective date of this Limited Warranty will be the date of sale to Distributor.

GENERAL

Ritchie Engineering Company Inc. warrants its product to be free from factory defects in materials and workmanship, under normal use and service, for the applicable warranty period. At its option Ritchie Engineering Company Inc. will credit, repair or replace the defective Refrigerant Management System, or defective component part(s), in accordance with the terms of this Limited Warranty, if it fails in normal use and service during the applicable warranty period. The replacement Refrigerant Management System must be manufactured by Ritchie Engineering. The replacement component part(s) must be Ritchie Engineering authorized component part(s). The replacement unit will be warranted only for the unexpired portion of the original unit's applicable warranty period.

WARRANTY EXCLUSIONS

This Limited Warranty will not cover:

- 1) Service trips to teach you how to install, use or maintain this Refrigerant Management System.
- 2) Damages, malfunction or failures resulting from failure to maintain clean uncontaminated oil in the Vacuum Pump and Compressor.
- 3) Damages, malfunctions, or failures resulting from improper installation or failure to operate and maintain the Refrigerant Management System in accordance with the manufacturer's instructions provided.
- 4) Damages, malfunctions, or failures caused by misuse, abuse, accident, fire, flood, freeze, lightning, acts of God, and the like.
- 5) Damages, malfunctions, or failures caused by operating the Management Refrigerant System with modified, altered, or unapproved parts installed.

THE EFFECTIVE DATE

The effective date of warranty coverage (or the beginning of the Applicable Warranty Periods) is the date of purchase of the Refrigerant Management System, if properly documented. If you are not able to provide the documentary proof of the date of original purchase, the effective date will be the date of sale to the Distributor.

APPLICABLE WARRANTY PERIODS

Ritchie Engineering Company Inc. YELLOW JACKET Refrigerant Management Systems part number 37840 and 37860 is covered by a one year warranty for parts and labor. The Vacuum Pump has a standard 2 year parts and labor warranty.

BEFORE REQUESTING SERVICE

Please review the applicable technical documentation to insure proper installation and correct customer control for the system. If the problem persists, please arrange for warranty service.

TO OBTAIN WARRANTY SERVICE

Promptly contact Ritchie Engineering Company Inc. at 1-800-769-8370 for service, repair or return. If service cannot be completed over the phone and/or through Remote Access Troubleshooting by Ritchie Engineering Company's Technical Services an Independent Service Center may be dispatched. If return is required you must obtain an authorization number prior to return. All returns must be PREPAID.

Ritchie Engineering Company Inc. Phone: 952-943-1333
Recovery Division Toll Free: 800-769-8370
6701 W. 110th Street Fax: 952-943-1605
Bloomington, MN 55438 USA Toll Free: 800-322-8684

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