YELLOW JACKET®

Automatic Refrigerant Recovery/Recycling/Recharging & Flushing System

For Automotive Applications

Model 39830

Operation Manual

YELLOW JACKET®
RITCHIE ENGINEERING COMPANY, INC.

WARNING! CAUTION!

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,

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

Model 830 Series Refrigerant Management Systems

Specifications

Refrigerants:	All Models: R-134a	
Compressor:	1/2 HP Hermetic Compressor	
Power Source:	120V AC 60Hz for US Models/	230V AC 50Hz for CE Models
Amperage:	RLA: 9.3	RLA:
	FLA: 11.0	FLA:
	LRA: 30.0	LRA: 19.0
Size:	**830 Series**	
Height:	45 in	
Width:	19.5 in	
Depth:	29 in	
Weight:	Maximum is deluxe unit at 225 lb. w/ Tank	

Table of Contents

General Safety Instructions

Know your equipment. Read and understand the operation manual and labels affixed to the unit. Learn it's 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:

Wire	Maximum Length
18 Ga.	10 feet
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 4 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. Repair unit to proper operating conditions.

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 Model 830 Series with the Correct Refrigerants. See the specifications for a list of compatible refrigerants.

Operate the Unit within the Design Environment. The Model 830 series was 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 addition 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.

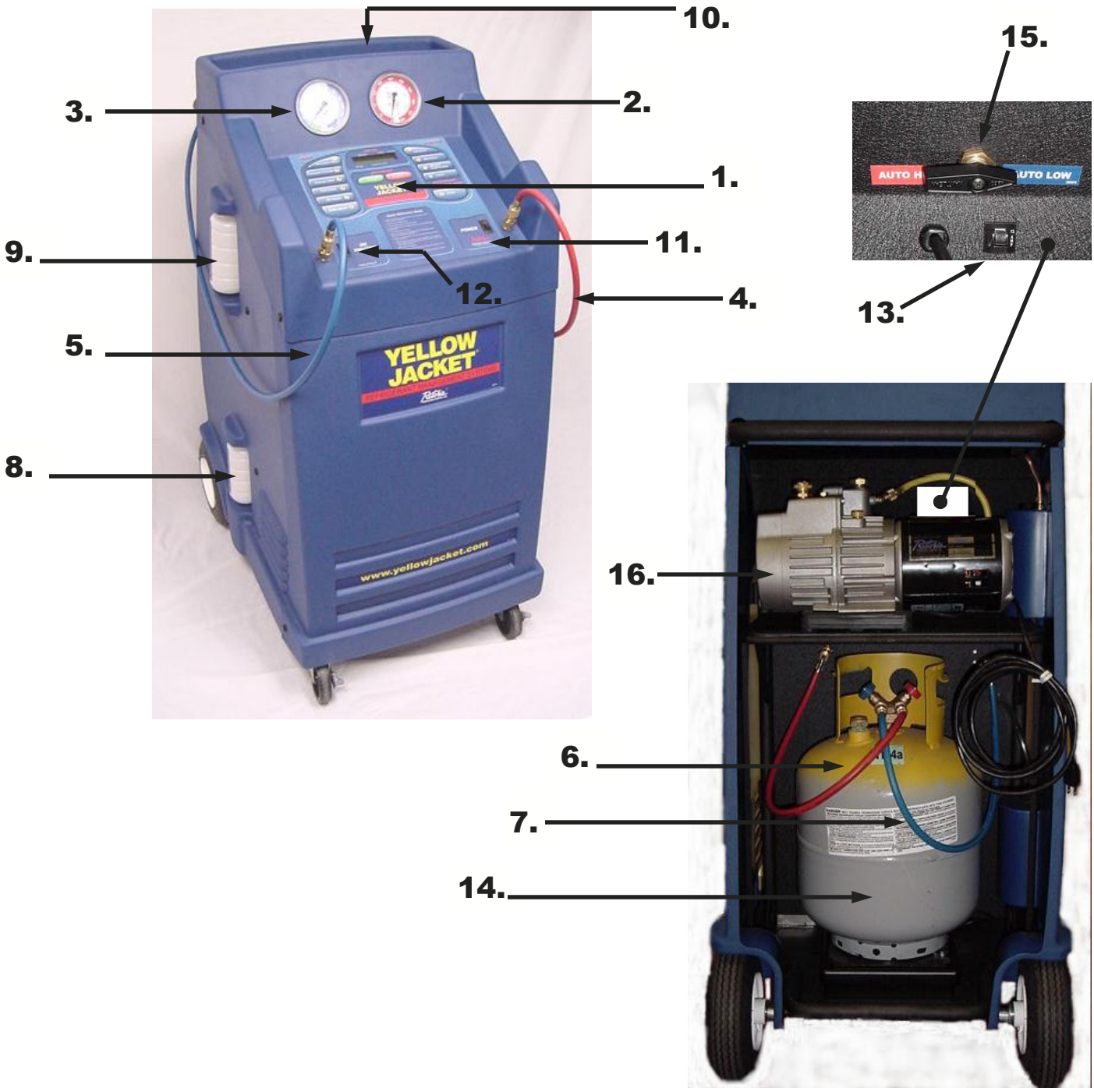
FIRST AID: If high concentrations of refrigerant are inhaled, immediately remove the victim to fresh air. Call a physician or emergency medical technician. Keep calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do not give epinephrine or similar drugs.

- **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 effected area.

CAUTION! All refrigerant hoses, recovery tanks, refrigerant lines, the Model 830 series, and other vessels containing refrigerants should be handled as if under high pressure.

Component Location and Description

1. Touch Pad (Control Panel)
2. High Gauge
3. Low Gauge
4. Auto High Side Hose (Red)
5. Auto Low Side Hose (Blue)
6. Tank Liquid Hose (Red)
7. Tank Vapor Hose (Blue)
8. Oil Drain Bottle
9. Oil Inject Bottle
10. Tool Tray
11. Main Power Switch
12. Oil Inject Switch
13. Circuit Breaker
14. Storage Tank
15. Charge Selector Switch
16. Vacuum Pump

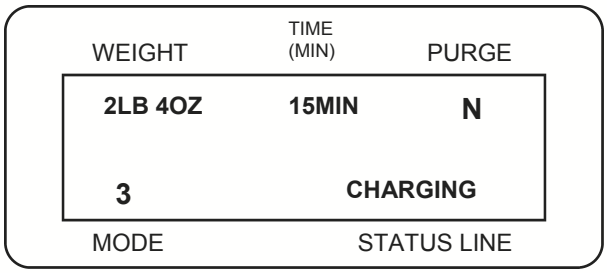


Control Panel Features

LCD Display

The Liquid Crystal Display (LCD) display provides the unit operator with continual updates of the Model 830's status. In addition, the display will prompt the technician for the user input needed to continue operation. The LCD shows error codes for rapid diagnosis of abnormal conditions.

The display is divided into five fields which aid the technician in rapidly reading information.



1. **Weight -** Shows the weight of refrigerant being processed in each mode.
2. **Time (MINS) -** Shows the time set for either Flush or Vacuum. Timer will count down to display the time left.
3. **Purge -** A "Y" in this field indicates non-condensable gases such as air are present in the storage tank. The unit will purge automatically next time the unit is turned on when the "Y" is displayed. An "N" indicates non-condensable gases are below the set limit. An "E" indicates the unit purged for thirty (30) seconds and non-condensable gases are still present. This is a safety feature which prevents excess purging when a malfunction occurs somewhere in the system. See the Purging Non-Condensable Gas section for further details.
4. **Mode -** Displays the Mode number of the current operation.
5. **Status Line -** Displays programming commands and informs the user of current status of the unit.

Mode Selection Keys

The Mode Selection Keys allow the technician to select a specific operation. Six Mode keys are located on the left side of the control panel. One key, the Refrigerant Management System Key, is located on the right side.

1. **MODE 1 -**Recover Only, is used to recover and recycle refrigerant from an automobile A/C system. This mode is most often used prior to opening an A/C system to atmosphere to replace a system component.
2. **MODE 2 -**Vacuum & Charge, is used to Vacuum air from a system previously opened to the atmosphere. This mode will then proceed to recharge the A/C system. This mode also allows the technician to verify the A/C system will hold a vacuum for a certain length of time.
3. **MODE 3 -**Charge Only, adds refrigerant to an A/C system and is most commonly used to "top off" the system.
4. **MODE 4 -**Full Cycle, performs a complete recovery, recycling, evacuating and charging of an automobile A/C system.
5. **MODE 5 -**Oil Flush, removes oil and refrigerant from an A/C system.
6. **MODE 6 -** Tank Refill, is used to add new refrigerant to the storage tank.
7. **MODE 7 -**Refrigerant Management System, gives the technician access to information about refrigerant use to date.

Function Keys

The Function Keys are used to enter data into the system in a variety of modes.

FUNCTION A - INCREASE. Press INCREASE to raise values on the display for user-input information. Holding the button depressed will increase the rate of change.

FUNCTION B - DECREASE. Press DECREASE to lower values on the display for user-input information. Holding the button depressed will increase the rate of change.

FUNCTION C- WEIGHT CONVERSION. Press WEIGHT CONVERSION to change the displayed units of weight. The choices are: pounds/ounces, pounds, ounces, and kilograms.

ENTER- Press ENTER to accept the value on the LCD after using the INCREASE or DECREASE keys.

Operation Keys

START- Press START to begin a selected operational mode.

RESET- Press RESET to cancel the current operation. The RESET may have to be pushed more than once to return to "Select Mode" screen.

Initial Setup

To ensure quick, successful integration of the Model 830 series into your shop, please follow these set-up procedures before the first use of the unit.

Step 1: FILL VACUUM PUMP WITH OIL

1. Remove thumbscrews located under the vacuum pump shelf.
2. Rotate the front of the vacuum pump out to expose the oil fill port.
3. Remove the red protective cap from the oil fill port and discard it.
4. Remove the fill cap located on top of the vacuum pump.
5. Using a funnel, fill with oil to the oil level line with the provided YELLOW JACKET® vacuum pump oil.
6. Replace the oil fill cap.
7. Rotate the vacuum pump back into its original position and replace the thumbscrews.

Step 2: FILL SOURCE TANK WITH REFRIGERANT (also see page 11)

1. Attach the tank refill adapter (Part No. 19153) to the R134a virgin cylinder.
2. Plug unit into a grounded 110V outlet.
3. Turn on the main power switch.
4. When the display reads “SELECT MODE” press the TANK REFILL key.
5. Follow the user prompts to complete the tank refill process.
6. When the display reads “SUPPLY TANK EMPTY” disconnect blue hose.
7. Remove the tank refill adapter from empty R134a virgin cylinder and place it in the tool tray located on top of the unit.

The unit is now ready for operation.

Pre-Operation Check List

1. Open tank valves on storage tank. Turn valves counter clockwise to open.
2. Empty the oil drain bottle.
3. Place charge selector valve in desired position. The unit can charge either on the high side of the automobiles A/C system or the low side.

Note: Charging directly on the A/C compressors low side may damage the compressor. Please follow the OEM recommended charging procedure. YELLOW JACKET® is not responsible for any damage that occurs from not following the recommended service procedure.

Changing User Options

The user can change the settings of some automatic options that this unit offers. To change these options do the following:

AUTO RECOVERY HOLD TIME

The unit comes pre-set from the factory to perform the Recovery Hold Time. The Recovery Hold Time automatically performs the hold times that are recommended in the SAE J 2211 standard to insure that all of the refrigerant is recovered from the automobiles A/C system. This process ensures that all the refrigerant is removed from the A/C system and also prevents overcharging the A/C system when you recharge it.

To turn this feature off, perform the following steps:

1. Turn the unit off.
2. Hold the ENTER key down and turn on the main power switch.
3. When the display reads “PRESS START FOR OP” release the ENTER key.
4. Press the START key.
5. Press and release the START key until the display reads “RECOVERY HOLD TIME”.
6. Press the ENTER key.
7. Press the INCREASE key until the display reads “N”.
8. Press the ENTER key to set change.
9. Turn the unit off to exit the control function.

There are several other user defined options that are preset from the factory and should not be changed unless instructed to do so by a factory service technician or an authorized YELLOW JACKET® service center.

Here is a list of options and the default settings.

MAX RECOVERY TIME	45 MIN
MAX CHARGE TIME	10 MIN
MAINTENANCE REMINDERS	Y

Mode 1– Recovery Only

The Recovery Only mode should be used to fully evacuate 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.

MODE 1 Operational Steps

1. Refer to Pre-Operation Check List.
2. Verify the automobile air conditioning system is off.
3. Press MODE 1 for recovery operations. The LCD should read **"CONNECT HOSES ENTER TO CONTINUE."**

NOTE: If desired, the gauges of the 830 SERIES can now be used to aid investigation of an A/C system problem. Ensure the automobile A/C system is turned off prior to selecting a mode on the 830 SERIES.

2. 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.
3. Press ENTER to begin recovery operations.

(Models with the optional refrigerant identifier)

The unit will display **"ID REFRIGERANT Y/N."** To make your selection use the increase and decrease keys to toggle from Y to N. Press the enter key to enter your selection, If yes is selected the unit will begin the refrigerant identification process.

If the refrigerant does not pass the identification process (98% pure) the unit will clear itself and display an error message **"REFRIG ID FAILED."** If this occurs run the identification process again to insure that the proper identification of the refrigerant purity level.

If it fails a second time, disconnect hoses from the automobile and take the appropriate measures to recover the refrigerant from the automobile with a separate unit designated to recover contaminated refrigerant and have the refrigerant properly disposed of.

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.

During the recovery operation, refrigerant is removed from both the high and low side of the automobile air conditioning system. The LCD will display the amount of refrigerant being recovered and the status line will read **"RECOVERING REFRIG."**

Note: If "RECOVERY HOLD" Option is selected
The unit will stop at 6" of Mercury and hold for five min as required by EPA Per SAE J2211. If the pressure rises to 0 psi the compressor will restart and the unit will pull down to the required 6" of Mercury and hold for two minutes. The unit will repeat this process until the system pressure remains stable at vacuum for two minutes or until it fails this process five times. If the process fails five times the status line will read **" LEAK CHECK FAILED."** This may mean that the automobile A/C system has a gross leak and it will not hold a vacuum.

If this occurs take the appropriate steps to locate the leak and properly repair it.

If the **"RECOVERY HOLD"** option is not selected the unit will shut off at the required level of vacuum and the operator must insure that the EPA standard (SAE J2211) is met..

After the system turns off, the unit will beep to alert the technician the job is complete. The oil removed from the auto will drain into the oil drain bottle on the side of the unit. Because a small amount of gas will be released as the oil drains, a small hissing sound may come from the bottle.

6. Verify the message on the LCD reads **"RECOVERY COMPLETE."**
7. Press the RESET button. The LCD should read **"CHECK OIL LEVELS."**
8. Shut the service valves and disconnect the high and low side auto service hoses from the automobile.
9. Measure the oil in the oil drain bottle. Dispose of recovered oil in a proper manner.
10. Use the oil injection switch to add new oil back into the automobile A/C low side port in accordance with the automobile manufacturer's

recommendations. Add an amount of new oil equal to the amount collected in the oil drain bottle.

Mode 2– Vacuum & Charge

The Vacuum & Charge function of the 830 SERIES is designed to remove moisture from the automobile A/C system by pulling a deep vacuum and charging the system with a precise amount of refrigerant. 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 must be removed before recharging the system with refrigerant.

MODE 2 Operational Steps

1. Refer to the Pre-Operation Check List.

NOTE: If desired, the gauges of the 830 SERIES can now be used to aid investigation of an A/C system problem. Ensure the automobile A/C system is turned off prior to selecting a mode on the 830 SERIES.

2. Verify the automobile air conditioning system is off.
3. Press MODE 2 for Vacuum & Charge.
4. The LCD will read **"CONNECT HOSES PRESS ENTER TO CONTINUE"**
5. 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.
6. Press the ENTER key.
7. When the LCD reads **"SET CHARGE AMOUNT,"** set the amount of Refrigerant to be charged into the A/C system by pressing and holding INCREASE or DECREASE until the desired amount is shown. Release the button and press ENTER to accept the charge amount shown on the LCD.

7. When the LCD reads **"SET VACUUM TIME,"** set the vacuum time by pressing and holding INCREASE or DECREASE until the desired time is shown. Release the button and press ENTER to accept the vacuum time shown on the LCD. Vacuum time can be bypassed if the time is set to zero.
8. When the LCD reads **"SET VACUUM HOLD TIME,"** set the vacuum hold time by pressing and holding INCREASE or DECREASE until the desired time is shown. Release the button and press ENTER to accept the vacuum hold time shown on the LCD. Vacuum hold time can be bypassed if the time is set to zero. Answer Question: **OIL INJECT PAUSE ? Y**
9. The LCD should read **"PUSH ▲▼ START."**
10. Press START key to begin vacuum and charging operations.

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

12. The 830 SERIES will begin to evacuate the A/C system and will beep to indicate the end of the vacuum time.
13. The unit will prompt you to **"INJECT OIL NOW"** press and hold the OIL INJECT switch until the desired amount of oil has been injected into the system.
14. Press the ENTER key to continue
15. Record the vacuum level shown on the low pressure gauge and press START to begin the vacuum hold time. The hold time will count down on the LCD and the unit will beep at the end of the hold time. **If vacuum hold time was set to zero, the unit will transition into charge mode.**
16. Record the final vacuum level shown on the low pressure gauge. If the two recorded vacuum levels are different, the A/C system may have a leak and might not retain refrigerant when charged. The 830 SERIES will automatically start the charge cycle.

The unit will begin the charge process using the vacuum charge method. If the charge amount is not charged in 2 minutes time the unit will begin a power charge cycle to insure that an accurate charge is achieved.

17. Verify the message on the LCD reads **"VAC & CHRG COMPLETE."**
18. Press the RESET button. The LCD should read **"CHECK OIL LEVELS."** Unit will force a hose clearing routine (see Full cycle).
19. Shut the service valves and disconnect the high and low side auto service hoses from the automobile.

Press the RESET button to return to the **"SELECT MODE"** status.

Mode 3– Charge Only

The Charge Only function of the Model 830 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.

MODE 3 Operational Steps

1. Refer to the Pre-Operation Check List.

NOTE: If desired, the gauges of the Model 830 can now be used to aid investigation of an A/C system problem. Ensure the automobile A/C system is turned off prior to selecting a mode on the Model 830.

2. Verify the automobile air conditioning system is off.
3. Press MODE 3 for Charge Only.
4. The LCD will read **CONNECT HOSES ENTER TO CONTINUE**. Press the **ENTER** key.
5. 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.
6. When the LCD reads **"SET CHARGE AMOUNT,"** set the amount of refrigerant to be charged into the A/C system by pressing and holding INCREASE or DECREASE key until the desired amount is shown. Release the key and press ENTER to set the charge amount shown on the LCD.
7. The LCD should read **"PUSH START."**
8. Press START key to begin charging operations. The 830 Series will start the charge cycle.

The LCD will display the progress of the charging process. When the desired charge amount has been transferred to the A/C system, the unit will beep.

9. Verify the message on the LCD reads **"CHRG ONLY COMPLETE."** Unit will force a hose clearing routine (See Full cycle).
10. Shut the service valves and disconnect the high and low side auto service hoses from the automobile.
11. Press the RESET key to return to the **"SELECT MODE"** status.

Mode 4– Full Cycle

The Full Cycle function of the Model 830 is designed to remove and recycle all refrigerant in an A/C system by transferring the refrigerant to the storage tank, remove moisture in the system by pulling a vacuum, and charging the system with a precise amount of refrigerant.

MODE 4 Operational Steps

1. Refer to the Pre-Operation Check List.

NOTE: If desired, the gauges of the Model 830 can now be used to aid investigation of an A/C system problem. Ensure the automobile A/C system is turned off prior to selecting a mode on the Model 830.

2. Verify the automobile air conditioning system is off.
3. Press MODE 4 for Full Cycle. The LCD will read **"CONNECT HOSES"**
4. 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.
5. When the LCD reads **"SET VACUUM TIME,"** set the vacuum hold time by pressing and holding INCREASE or DECREASE until the desired time is shown. Release the button and press ENTER to accept the vacuum hold time shown on the LCD.

NOTE: Vacuum hold time can be bypassed if the time is set to zero.

6. When the LCD reads **"SET VAC HOLD TIME,"** set the vacuum time by pressing and holding INCREASE or DECREASE until the desired time is shown. Release the button and press ENTER to accept the vacuum hold time shown on the LCD.

NOTE: Vacuum hold time can be bypassed if the time is set to zero.

7. When the LCD reads **"SET CHARGE AMOUNT,"** set the amount of refrigerant to be charged into the A/C system by pressing and holding INCREASE or DECREASE until the de-

sired amount is shown. Release the button and press ENTER to accept the charge amount shown on the LCD.

8. The LCD should read **"PUSH START."**
9. Press START KEY to begin full cycle operations.
10. The unit will begin to recover as outlined for the Recovery Only cycle, and then evacuate the A/C system and will beep to indicate the end of the vacuum time— if Vacuum Hold is used.
11. Record the vacuum level shown on the low pressure gauge and press START to begin the vacuum hold time. The hold time will count down on the LCD and the unit will beep at the end of the hold time. If vacuum hold time was set to zero, the unit will transition into charge mode.
12. Record the final vacuum level shown on the low pressure gauge. If the two recorded vacuum levels are different, the A/C system may have a leak and may not retain refrigerant when charged. The Model 830 will automatically start the charge cycle.

The unit will prompt you to **"INJECT OIL NOW"** press and hold the oil inject switch until the desired amount of oil is injected into the A/C system.

The LCD will display the progress of the charging process. When the desired charge amount has been transferred to the A/C system, the unit will beep.

13. Verify the message on the LCD reads **"FULL CYCLE COMPLETE."**
14. Press the RESET button. The LCD should read **"CHECK OIL LEVELS."**

The LCD will read **"HOSES NEED CLEARING"**

15. Press the Enter Key.

The unit will then prompt you to **"DISCONNECT VEHICLE."**

16. Shut the service valves and disconnect the high and low side auto service hoses from the automobile.
17. Press the ENTER key, the LCD will read **"CLEARING HOSES."**
18. Measure the oil in the oil drain bottle. Dispose of recovered oil in a proper manner.
19. Press the RESET button to return to the **"SELECT MODE"** status.

Mode 5– Oil Flush

The Oil Flush mode is designed to remove oil from an automobile A/C system so new oil can be added. In this mode refrigerant is circulated through the A/C system and the Model 830. An oil separator in Model 830 removes the oil and returns oil-free refrigerant back into the A/C system. At the end of the cycle, the refrigerant is completely removed from the A/C system. The Oil Flush mode is not designed to flush dirt or debris from the A/C system. This mode can take up to 1 ½ hours to complete.

Because of the variety of A/C system configurations currently in service, the flush may bypass certain sections of the A/C system. To ensure the complete system is flushed, you may need to "pinch off" certain hoses to force the refrigerant flush throughout the system.

MODE 5 Operational Steps

1. Refer to the Pre-Operation Check List.
2. 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.
3. Press MODE 5 for Oil Flush
4. When the LCD reads **"SET FLUSH AMOUNT,"** set the flush amount by pressing and holding INCREASE or DECREASE until the desired amount is shown. Release the button and press ENTER to accept the flush amount shown on the LCD. Testing has shown the ideal flush amount is three (3) times the normal charge amount. For instance, if the correct charge amount for the A/C system being services is two (2) pounds, the ideal flush amount is four (4) pounds.
5. When the LCD reads **"SET FLUSH TIME,"** set the flush time by pressing and holding INCREASE or DECREASE until the desired time is shown. Release the button and press ENTER to accept the flush time shown on the LCD. A minimum flush time of thirty (30) minutes is recommended.

6. The LCD should read **"PUSH START."**
7. Press START to begin flushing operations. The Model 830 will recover any refrigerant in the A/C system and charge the system with the selected flush amount of refrigerant. The refrigerant will circulate throughout the A/C system and the Model 830. The unit's oil separator will remove the oil from the refrigerant and return the clean refrigerant to the A/C system. At the end of the cycle, all refrigerant and oil will be recovered from the automobile system.
8. The unit will beep to indicate the cycle is complete and the LCD will read **"FLUSH CYCLE COMPLETE."**

Mode 6– Tank Refill

In order to use the charging and flushing modes, you must have at least six (6) pounds of refrigerant in the storage tank. Follow this procedure to add refrigerant to the storage tank. When adding R-134a to the tank of either a Model 830, you will need to use the tank refill adapter supplied in the accessory kit. This adapter connects the low side auto service coupling to the tank of new R-134a refrigerant. It should be stored in the tool tray on the top of the unit.

1. Refer to the Pre-Operation Check List.
2. Select MODE 6– Tank Refill.

The LCD will read **"BLUE HOSE===> CYLINDER"**

3. 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 ensure all of the refrigerant is transferred to the storage tank on the unit.
4. Press the ENTER button. 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.

Press the RESET key to return to the **"SELECT MODE"** status.

Mode 7– Refrigerant Management System

The Refrigerant Management System (RMM) built into the Model 830 tracks all aspects of refrigeration usage. The information can significantly help you manage your automobile A/C repair business. In addition, new federal regulation require strict records of your refrigerant usage. The software in this system is designed to ensure the highest possible accuracy in managing refrigerant usage. Refrigerant measurement during charging is extremely accurate. In recovery mode, however, accuracy is plus or minus three ounces based on variations in air temperature and pressure.

Uses of the refrigerant data include:

- Improved record keeping
- Accurate determination of net profits for your business
- Reduced billing errors
- Minimized refrigerant loss from leaks and theft
- Reduced operator errors

The refrigerant management information is stored in nine registers. To access the information, press Mode 7, REFRIGERANT MANAGEMENT SYSTEM. Press INCREASE or DECREASE to cycle through the registers. The registers are:

Register 1: Total number of jobs to date.

Register 2: Cumulative run time in minutes.

Register 3: Refrigerant recovered during last job.

Register 4: Refrigerant charged in last job.

Register 5: Run time of last job.

Register 6: Total amount of refrigerant recovered to date.

Register 7: Total amount of refrigerant charged to date.

Register 8: Total of all new refrigerant added to the storage tank to date.

Register 9: Send data to the optional printer. Press ENTER to print the refrigerant management data.

Purging Non-Condensable Gases

The Model 830 is designed to purge automatically non-condesable gases such as air present in the storage tank. When the pressure in the tank exceeds a threshold value, the unit will automatically purge the excess pressure. The unit will only purge when it is first turned on. The current purge status is displayed in the upper right corner of the LCD when in Select Mode.

The purge status in the LCD should either be **"Y", "N",** or **"E."** A **"Y"** indicates air is present in the tank. The unit will purge next time it is turned off and on. An **"N"** in the windows indicates a purge is not needed.

An **"E"** will display on the LCD if the previous purge was insufficient to lower the non-condensable gas value below the limit. The purge time is set to 30 seconds to minimize refrigerant loss. If the LCD continues to display an **"E"** after several purge cycles, there may be an error in the system. Check the pressure in the tank to determine if the system is purging unnecessarily.

To check the tank pressure, let the unit sit undisturbed for at least three hours. Connect the high side service hose to the auxiliary port on the storage tank. Read the value on the high pressure gauge. The reading should be close to those in the following table.

If the unit continues to display **"Y"** or an **"E"** and the tank pressure is near the value in the table below, contact technical services at 1-800-769-8370.

	Approximate Pressure (psig)				
Temp (ºF)	**R-12**	**R-134a**	**Temp (ºF)**	**R-12**	**R-134a**
65	**74**	**74**	**90**	**110**	**120**
70	**80**	**81**	**95**	**118**	**126**
75	**87**	**88**	**100**	**127**	**135**
80	**96**	**97**	**105**	**136**	**145**
85	**102**	**115**	**110**	**146**	**155**

Maintenance Reminders

Maintenance—Compressor Oil
The oil should be checked for contamination and proper oil level when the compressor oil maintenance reminder is displayed. Pressing the ENTER key will turn the reminder off until the next time you start the unit. Pressing the RESET key will reset the reminder until the next scheduled maintenance.

Instructions for Oil Maintenance

Oil Level Check

1. Place unit on a level surface and run a recovery cycle with the unit.
2. Unplug unit.
3. Remove front cover of unit.
4. **Slowly** remove oil port cap on compressor.

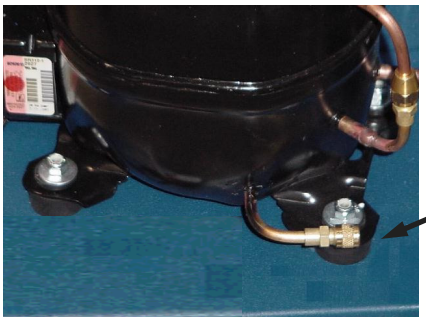
Note: High pressure may be present, remove cap slowly.

5. Place rear wheels of unit on a 2 by 4.
6. Oil should drip out of oil drain port.
7. If oil runs out of port rapidly, allow to drain.
8. Replace oil port cap and cover.
9. Dispose of oil properly.

Oil Replacement Procedure

1. Follow steps 1 thru 4 in the oil level check.
2. Tilt unit at 45° angle towards oil drain. port until all oil has been drained.
3. Refill with proper amount and type of oil. The proper oil charge is 8.0 ounces or 225 cc's of Artic 22 Castrol SW 22 POE oil.
4. Replace oil port cap and front cover.
5. Dispose of oil properly.

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



Maintenance— Vacuum Pump Oil
Pressing the ENTER key will turn the reminder off until the next time you start the unit. Pressing the RESET key will reset the reminder until the next scheduled maintenance.
Check oil level when pump is running.
When pump is running, oil level should be 1/2 to 5/8 up in the sight glass. This level is necessary for proper operation.

This Maintenance is Best Performed when the oil is warm.

1. Remove thumb screws under vacuum pump.
2. Rotate the front of the vacuum pump towards the rear of the unit.
3. Place a container under the oil drain plug and remove the oil drain plug.
4. Drain oil into the container.
5. Dispose of the oil properly.
6. Refill the vacuum pump with YELLOW JACKET® (Quart Part no. 93192) vacuum pump oil to the correct level.
7. Reverse Steps 1-2.

Filter Maintenance

“MAINT-FILTER CHG DUE”

The Model 830 has a unique filter system which ensures the refrigerant transferred to the storage cylinder is clean and moisture-free. The filters must be changed periodically to ensure the system is working properly. A maintenance reminder prompts you when to change your filters. All refrigerant must be removed from the old filters before they are removed. Follow the filter change procedures carefully to minimize refrigerant loss and ensure only clean, moisture-free refrigerant is transferred into the storage cylinder.

Pressing the ENTER key will turn the reminder off until the next time you start the unit. Pressing the RESET key will reset the reminder until the next scheduled maintenance.

Filter Change Steps

1. Turn off the Main Power.
2. Press and hold the DECREASE button and turn on the power. This starts the unit in a special Filter Change Mode.
3. The LCD will display **“CLOSE LIQUID VALVE ON TANK, PUSH START.”**
4. Close the liquid valve on the storage cylinder. Normally this valve has a red handle.
5. Press START and the LCD will display **“CONNECT HIGH SIDE SERVICE HOSE.”**
6. Connect the red, high side auto service hose to the service port located on the “T” fitting connected to the tank vapor port. This port may have a brass or red plastic cap which must be removed before attaching the service hose. **Do not disconnect the short hose from the tank!**
7. Press START to begin filter evacuation. The LCD will display **“PLEASE WAIT-EVACUATING FILTERS.”**

The unit will completely evacuate all refrigerant from the two filters and the internal components of the unit. The red service hose will be the only component containing refrigerant when the cycle is complete. The outside of the filters will develop frost during evacuation. This is normal and indicates liquid refrigerant is being removed from the filters. This operation takes about twenty (20) minutes.

8. When the cycle is complete, the unit will beep and the LCD will display **“EVACUATION COMPLETE.”**
9. Remove the front cover of the unit.
10. Make note of the flow direction arrows on the old filters.
11. Loosen the filter bracket. Remove the filters and discard them. Replace with new filters ensuring the flow direction arrow is the same as it was on the old filters.
12. Check all fittings for leaks to ensure no refrigerant is lost during subsequent system operation.
13. Remove the red high side auto service hose from the “T” fitting and replace the service port cap. Open the liquid valve on the storage tank.

The 830 series is ready for operation.

Troubleshooting Information

The Model 830 has a number of sophisticated features which makes it by far the most user friendly A/C service system in the world. The unit was designed to be extremely easy to operate, service and troubleshoot. Although the Model 830 was manufactured with high quality components, a component failure could cause the 830 to operate incorrectly. YELLOW JACKET® recognizes the importance of keeping your equipment operational and rapidly restore it to service when a problem occurs.

Whenever a problem occurs, please read this section. It is designed to provide you with additional information to help diagnose a system problem. Read this section thoroughly prior to calling technical services. This will reduce the time needed to restore your system to normal operation. Technical support can be reached at 1-800-769-8370.

Common Problems and Potential Solution

Problem	Possible Causes	Possible Solutions
Model 830 cannot pull automobile A/C system into a vacuum	• 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.	• Check valve seals and threads and replace if needed. • Replace valve seals and schrader core depressor. • Tighten or replace hoses on unit.
High side gauge readings above normal	• Restriction in A/C system or schrader core. • Service hose ball valve closed. • Incorrect charge amount entered in unit.	• Check hose connection and fix restriction. Replace schrader core. • Open valve. • Recover, check scale calibration, and recharge system.
Refrigerant not being transferred during Tank Refill.	• 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.	• Open Valve. • Open valve or straighten hose. • Install blue service hose on refrigerant tank. • Close valve on new supply. Disconnect service hose.
Touch Pad will not accept commands	• Button on touch pad is stuck. • Bad Touch Pad. • Wire disconnected between touch pad and microprocessor. • Microprocessor malfunction.	• Feel for non-responsive button. If not responding, call Technical Services. • Call Technical Services. • Call Technical Services. • Call Technical Services.
Fan not running in any cycle	• Loose power wire to fan. • Microprocessor malfunction. • Fan malfunction.	• Locate loose fitting and reconnect. • Call Technical Services. • Call Technical Services.
Machine will not turn on	• Power cord is not plugged into a 120 Volt outlet. • Circuit breaker tripped on shop power panel. • Bad Main Power switch. • Loose wire. • Bad Transformer on microprocessor board.	• Plug into outlet. • Reset circuit breaker. If circuit breaker immediately trips, do not reset. Consult a qualified electrician. • Call Technical Services. • Repair loose wire. • Call Technical Services.
Unit will not recover refrigerant from A/C system	• Valves on service hoses shut. • Service hose is constricted. • Unit storage tank valve is closed. • Compressor not operating.	• Open valves. • Straighten hose. • Open tank valves. • Call Technical Services.
Unit will not charge refrigerant into vehicle	• Valves on service hoses shut • Service hose is constricted • Unit storage tank valve is closed • Compressor not operating	• Open valves • Straighten hose • Open tank valves • Call Technical Services
Refrigerant leaking during charge operations	• 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	• Check valve seals and threads and replace if needed. • Replace valve seals and schrader core de- • Tighten or replace hoses on unit • Find leak in A/C system and repair.

LCD Error Messages and Potential Solution

Error	Possible Causes	Possible Solutions
Hi Pressure Limit	• Service valves on hoses closed. • Schrader core on A/C system not depressing	• Open valves • Replace schrader core
Tank Empty	• No refrigerant in storage tank • Tank not properly on scale • Scale cord not properly connected • Scale is out of calibration	• Refill storage tank using Mode 6, Tank Refill • Reposition scale • Check scale cord connection • Re-calibrate scale using Utility Mode
Supply Tank Empty	• Tank of new refrigerant is empty	• Close supply tank valve and disconnect hoses. If tank is not empty, see “Refrigerant not being transferred during Tank Refill.”
Tank Full	• Tank is 80% full • Scale is out of calibration • Tank not properly on scale	• Charge some refrigerant or transfer to another tank. • Re-calibrate scale using Utility Mode • Reposition tank
Time Limit (during charging cycles)	• Tank on unit is closed • Default time limit is too short • Compressor not running • Tank or scale misaligned	• Open tank valve • Use default time of 10 minutes unless A/C system • Call Technical Services • Reposition tank and scale
Time Limit (during recovery cycle)	• A/C system has a leak • Valves on service hoses shut • Service hose is constricted • Unit storage tank valve is closed • Compressor not operating	• Locate and repair leak • Open valves • Straighten hose • Open tank valves • Call Technical Services
No Scale	• Scale cord not connected • Scale cord damaged • Microprocessor malfunction	• Properly connect cord • Call Technical Services • Call Technical Services
No Tank	• Tank is not on scale • Scale out of calibration	• Place tank on scale • Calibrate scale using Utility Mode
Possible Overcharge	• Tank was disturbed during charging cycle • Internal failure of unit	• Re-start Full Cycle • Call Technical Services
Accum Time Limit	• Internal failure of unit	• Call Technical Services
Accum Hi Pressure	• Internal failure of unit	• Call Technical Services
Purge “Y”	• Non-condensable gases are present in storage tank	• Turn unit off and on to start purge cycle
Purge “N”	• Non-condensable gases are NOT present in storage tank	• Normal condition
Purge “E”	• Time limit was reached before purge cycle was complete.	• Turn unit off and on to start purge cycle. If “E” remains after three on-off cycles, contact Technical Services.

Model 830 Repair Parts List

Part #	Description	Part #	Description
95173	High Pressure Switch	27296	R-134a Auto Low Side Blue Hose (10ft)
38023	Vacuum Switch	27696	R-134a Auto High Side Red Hose (10ft)
	Capacitor	00849	R-134a Tank Vapor Blue Hose (30in)
	Relay	00853	R-134a Tank Liquid Red Hose (30in)
38026	Differential Switch	19153	R-134a Tank Refill Adapter
380401	Membrane Touch Pad	95006	50lb Refrigerant Tank
38007	Microprocessor	38003	Filter-Dryer (2 per unit)
95157	Circuit Breaker, 15 Amp	38019	Oil Bottle
95257	6” Fan Motor Assembly	38053	Service Compressor
		68836	Automatic Scale Assembly

Warranty Information

LIMITED WARRANTY

We guarantee Ritchie YELLOW JACKET® products to be free of defective material and workmanship which would affect the life of the product under normal use for the purpose for which it was designed.

This warranty does not cover items that have been altered, abused, misused, improperly maintained, or returned solely in need of field service maintenance. This warranty expressly excludes Vacuum Pump damage and failures caused by failure to maintain clean, uncontaminated oil in the pump – the major reason for pump returns. Therefore, problems related to non-maintained oil will void this warranty on that part of the product.

This warranty does not cover abuse, damage from over tightening valves, or broken gauges. “Series 41” Manifold valves can be reconditioned using replacement seating cylinder 41133. There will be a reconditioning charge for manifolds returned to the factory for repair.

If found defective, we will upon compliance with the return instructions either credit, replace, or repair, at our option, the defective product provided it is returned within one year of the date of factory shipment (90 days for tubing tools). Note: Hoses are Date Coded to help determine age of hose. See recommended hose safety inspection procedure. Leak Detectors have date of manufacture label on product.

Correction in the manner provided above shall constitute a fulfillment of all liabilities with respect to the quality, material and workmanship of the product.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF QUALITY, WHETHER WRITTEN, ORAL OR IMPLIED.

Returns (Warranty)

For HVAC&R Recovery Units and for Automotive Recovery, Recycle, Recharge equipment, call 1-800-769-8370 for instructions for service, repair, or return. Our automatic series (Models 39870, 39750, 39751, 39770, 39771, 39830, 39832, 39833, 39840, 39841, 39842, 39843) has a two year full parts and labor warranty, the semi– automatics (Models 39710, 39711, 39730, 39731, 39732, and 39733) and hand held machines (Models 39702 and 39704) have a full one years parts and labor warranty. For all other products, please return warranty items to the main factory in Bloomington, MN, prepaid for credit, replacement, or repair, at our option. No authorization is required. All returns must be PREPAID. On direct drive pumps, many of the problems can be solved over the telephone. Call 952-943-1333.

Returns (Non-Warranty)

Prior authorization must be obtained from home office for non-warranty returns. All returns must be PREPAID. Minimum restocking charge 20% on standard items of current date coding and manufacture. Special production items will have a higher restocking charge. Many items shown in our price list are custom-fabricated to customer’s order.

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