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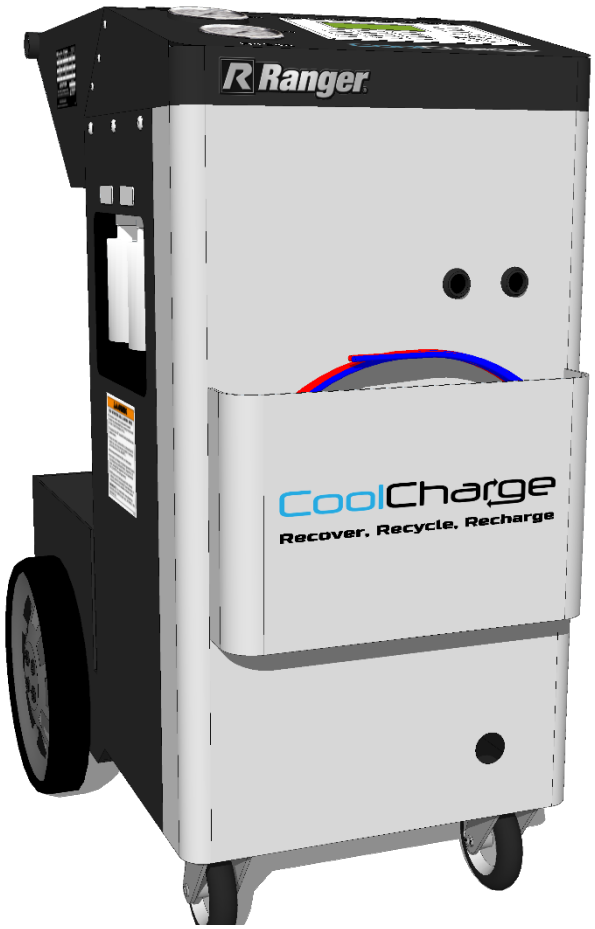
CoolCharge™ Vehicle AC Servicer

Setup and Operation Manual

Manual P/N 5900968 — Manual Revision A1 — July 2018

Model:

- AC-134a



⚠ DANGER

Read the *entire* contents of this manual ***prior*** to setup or operation. Failure to follow the instructions and safety precautions in this manual can result in serious injury or death. Make sure all other operators also read this manual. Keep the manual near the product for reference. By proceeding with setup and operation, you agree that you fully understand the contents of this manual.

Manual. CoolCharge™ Vehicle Air Conditioning Servicer, *Setup and Operation Manual*, P/N 5900968, Manual Revision A1, Released July 2018.

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Limitations. Every effort has been made to ensure complete and accurate instructions are included in this manual. However, product updates, revisions, and/or changes may have occurred since this manual was published. BendPak reserves the right to change any information in this manual without incurring any obligation for equipment previously or subsequently sold. BendPak is not responsible for typographical errors in this manual. Feel free to contact us at any time to get the latest information about any product: **rangerproducts.com**.

Warranty. The BendPak Ranger warranty is more than a commitment to you: it is also a commitment to the value of your new product. For full warranty details and to register your new Ranger product, contact your nearest Ranger dealer or visit **www.bendpak.com/support/warranty**.

Safety. Your equipment was designed and manufactured with safety in mind. However, your safety also depends on proper training, appropriate clothing and protective equipment, and thoughtful operation. Do not set up, operate, or repair the unit without reading and understanding this manual and the labels on the unit; ***do not use the product unless you can do so safely!***

Owner Responsibility. In order to maintain your product properly and to ensure operator safety, it is the responsibility of the product owner to read and follow these instructions:

- Follow all setup and operation instructions.
- Make sure product setup conforms to all applicable local, state, and federal codes, rules, and regulations, such as state and federal regulations and electrical codes.
- Read and follow all safety instructions. Keep them readily available for operators.
- Make sure that all operators are properly trained, have all required certifications, know how to safely and correctly operate the unit, and are properly supervised.
- Do not operate the product until you are certain that all parts are in place and operating correctly.
- Carefully inspect the product on a regular basis and perform all maintenance as required.
- Service and maintain the unit only with approved replacement parts.
- Keep all instructions permanently with the product and make sure all labels are clean and visible.
- **Only use the product if it can be used safely!**

Unit Information. Enter the Model Number, Serial Number, and Date of Manufacture below. This information is required for part or warranty issues.

Model: _____

Serial: _____

Date of Manufacture: _____

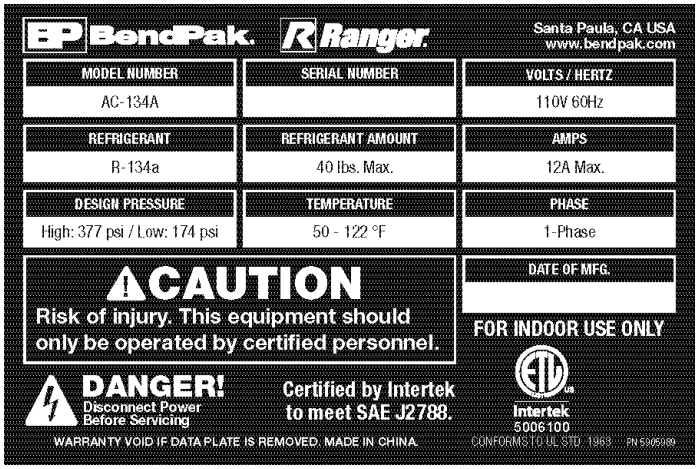


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Introduction

This manual describes the CoolCharge™ Motor Vehicle Air Conditioning Servicer, Model AC-134a, from Ranger Products, which recovers, recharges, and recycles R-134a motor Vehicle air conditioning (AC) Refrigerant. More information about Ranger Products is available at **rangerproducts.com**.

The AC-134a has been certified by Intertek to meet SAE J2788, which covers the recovery and recycling of R-134a Refrigerant that has been directly removed from, and is intended for reuse in, mobile AC systems.

⚠ **CAUTION** Only use the AC-134a on vehicles using R-134a Refrigerant. The AC-134a is ***not*** designed to be used with any other type of Refrigerant. If you use the AC-134a with another type of Refrigerant, you void the AC-134a warranty and you could damage the Vehicle you are servicing and/or the AC-134a.

This manual is for all users of the product, including anyone who sets it up, operates it, or services it.

⚠ **DANGER** Be very careful when setting up, operating, and servicing this equipment; failure to do so could result in fire, property damage, injury, or death. Make sure only trained and certified personnel operate this equipment. All repairs must be performed by an authorized technician. Do not make modifications to the unit; this voids the warranty and increases the chances of injury or property damage. Make sure to read and follow the instructions on the labels on the unit.

Keep this manual on or near the product so that everyone who uses or services it can read it.

For Technical Support, contact your distributor, visit **www.bendpak.com/support/**, or call **(800) 253-2363** or **(805) 933-9970**.

You may also contact BendPak Ranger for consultation on parts replacement (please have the serial number and model number of your unit handy).

Shipping Information

The AC-134a is carefully checked before shipping. Nevertheless, if you can, thoroughly inspect your shipment before you sign to acknowledge that you received it.

The signed bill of lading is acknowledgement by the carrier of receipt in good condition of the items on your invoice. If any of the items listed on the bill of lading are damaged or were not sent, do not accept the shipment until the carrier makes a notation on the freight bill of the missing and/or damaged goods. Do this for your own protection.

If you discover missing or damaged goods ***after*** you receive the shipment and have signed the bill of lading, notify the carrier at once and request the carrier to make an inspection. If the carrier will not make an inspection, prepare a signed statement to the effect that you have notified the carrier (on a specific date) and that the carrier has failed to comply with your request.

It is difficult to collect for loss or damage after you have given the carrier a clear receipt. File your claim with the carrier promptly. Support your claim with copies of the bill of lading, freight bill, invoice, and photographs, if available. Our willingness to assist in helping you process your claim does not make us responsible for collection of claims or replacement of lost or damaged materials.

Safety Considerations

Read this manual carefully before using your new product. Do not set up or operate the product until you are familiar with all operating instructions and warnings. Do not allow anyone else to operate the product until they are also familiar with all operating instructions and warnings.

General Safety Information

Please note the following:

- The AC-134a is a motor Vehicle AC servicer. Use it only for its intended purpose. Do not make any modifications to the product.
- Only trained, certified personnel may operate the AC-134a.

NOTICE All technicians who repair or service a motor Vehicle AC system ***must*** be properly trained and certified under section 609 of the Clean Air Act. Refer to the website of the United States Environmental Protection Agency (EPA) (**https://www.epa.gov/mvac**) for more information.

- To be certified, technicians must be trained by an EPA-approved program and pass a test demonstrating their knowledge of the subject matter.
- All technicians ***must*** comply with all federal, state, and local rules and regulations that apply to the servicing of motor Vehicle AC systems.
- Technicians must be familiar with technical information concerning servicing motor Vehicle AC systems, including the latest information from Refrigerant manufacturers.
- Technicians must be familiar with all special instructions from their organization related to servicing motor Vehicle AC systems and handling Refrigerant.
- Be very careful when moving the AC-134a; avoid shaking it as much as possible.
- Always keep the AC-134a upright.
- Only use the AC-134a indoors.
- Use only BendPak Ranger-approved storage cylinders with the AC-134a.

- Only use R-134a Refrigerant with the AC-134a. If other Refrigerants are mixed in, it can damage the AC-134a and the motor Vehicle's AC system.
- Do not use refrigerants R-12 or R-1234yf with the AC-134a. It is not designed to use those Refrigerants.
- Do not service electric or hybrid Vehicles with the AC-134a. It is not designed for use with those types of Vehicles.
- Only use Polyalkylene Glycol (PAG) Oil that is compatible with the compressor of the motor Vehicle being serviced. If other kinds of oil are mixed in, or the wrong viscosity of PAG Oil is used, it can damage the motor Vehicle's AC system.

⚠ CAUTION Only use PAG Oil that is compatible with the compressor of the motor Vehicle being serviced. Using other oil or PAG oil of the wrong viscosity for the compressor can result in reduced performance of, or damage to, the AC system of the motor Vehicle.

- Do not use the AC-134a in the vicinity of spilled or open containers of gasoline.
- This equipment should be used in locations with mechanical ventilation that provides at least four air changes per hour or the unit should be located at least 18 inches (457 mm) above the floor.
- Do not inhale Refrigerant vapor; although it is non-toxic, it displaces the oxygen you need to breathe. Additionally, exposure may irritate your eyes, nose, or throat. *To avoid inhaling Refrigerant vapor, always wear an industrial respirator when using the AC-134a*.
- Do not let liquid Refrigerant touch your skin. Liquid Refrigerant is very cold; if it touches your skin it can freeze it, causing symptoms similar to frostbite. *To avoid touching Refrigerant, always wear industrial safety gloves, leather work boots with steel toes, and industrial safety glasses or goggles*.
- To reduce the risk of fire, only connect the AC-134a to a circuit that provides 18 amperes maximum branch circuit overcurrent protection, in accordance with the National Electric Code, ANSI/NFPA 70.
- Avoid using an extension cord; they can overheat. If you must use an extension cord, make sure it is No. 14 AWG minimum.
- Each time before you start up the AC-134a, make sure it is not damaged. Do not use the AC-134a if it is damaged. Instead, take it out of service and make arrangements for it to be fixed.
- Always use the On/Off Switch on the back of the AC-134a for powering the unit on and off. Do not leave the device unattended when it is powered on.
- Before turning off the AC-134a, make sure the program you were running has ended. If you do not, Refrigerant can leak.
- To remove Refrigerant from the AC system of the Vehicle being serviced, use only equipment certified for the type of Refrigerant being removed to meet the requirements of SAE J2210 (HFC-R134a recycling equipment). Additional health and safety information may be obtained from the Refrigerant manufacturer.
- Do not pressure test or leak test equipment and/or the Vehicle's AC system with compressed air. Some mixtures of air and Refrigerant have been shown to be combustible at elevated pressures. These mixtures, if ignited, can cause injury or property damage. Additional health and safety information may be obtained from the Refrigerant manufacturer.

Liability Information

BendPak Ranger assumes no liability for damages resulting from:

- Use of the product for purposes other than those described in this manual.
- Modifications to the equipment without prior, written permission from BendPak Ranger.
- Damage to the device from external influences.
- Incorrect operation of the device.

Symbols

Following are the symbols used in this manual:

⚠ **DANGER**	Calls attention to an immediate hazard that **will** result in injury or death.
⚠ **WARNING**	Calls attention to a hazard or unsafe practice that **could** result in injury or death.
⚠ **CAUTION**	Calls attention to a hazard or unsafe practice that could result in minor personal injury, product, or property damage.
NOTICE	Calls attention to a situation that, if not avoided, could result in product or property damage.
Tip	Calls attention to information that can help you use your product better.

Frequently Asked Questions (FAQ)

Question: What does the AC-134a do?

Answer: It recovers, recycles, and recharges the R-134a Refrigerant in motor Vehicle AC systems. It is designed to be used in commercial automotive shops.

Q: Does the AC-134a meet the SAE J2788 requirements required by the United States Environmental Protection Agency?

A: Yes. The AC-134a has been certified by Intertek to meet the SAE J2788 requirements.

Q: What is R-134a Refrigerant?

A: R-134a is a Refrigerant used in motor Vehicle AC systems. It is similar to R-12 (commonly called Freon™), but has a much smaller impact on the environment.

Q: Can I use other Refrigerants in the AC-134a?

A: No. The AC-134a is designed to work ***only*** with R-134a Refrigerant. Using a different Refrigerant with the AC-134 voids your warranty and could damage the unit.

Q: Is the R-134a Refrigerant dangerous?

A: Yes. You must wear protective glasses and gloves when working with the AC-134a. In liquid form, the Refrigerant is very cold, so if it gets on your skin it can freeze it, causing symptoms similar to frostbite. The vapor is non-toxic, but it is heavier than air so if it gets into your lungs it can displace the air you need to breathe.

Q: What is PAG Oil?

A: PAG stands for PolyAlkylene Glycol, which is a synthetic oil designed to lubricate motor Vehicle AC system compressors. Three viscosities are common: 46, 100, and 150. You ***must*** use the correct viscosity for the compressor of the Vehicle being serviced.

Q: Does the AC-134a have a special startup procedure?

A: Yes. There are a number of steps you have to do before putting the AC-134a into normal operation.

Q: Something that looks like smoke is coming from the AC-134a, what's going on?

A: Nothing to worry about—it is almost certainly water vapor that was removed from the AC system of the Vehicle being serviced and needs somewhere to go. Water vapor is not a danger to the AC-134a, to people, or to the environment; it is ***not*** Refrigerant. After a few seconds, the vapor will dissipate. Having said that, if the vapor does not stop and it smells like smoke, you need to investigate further.

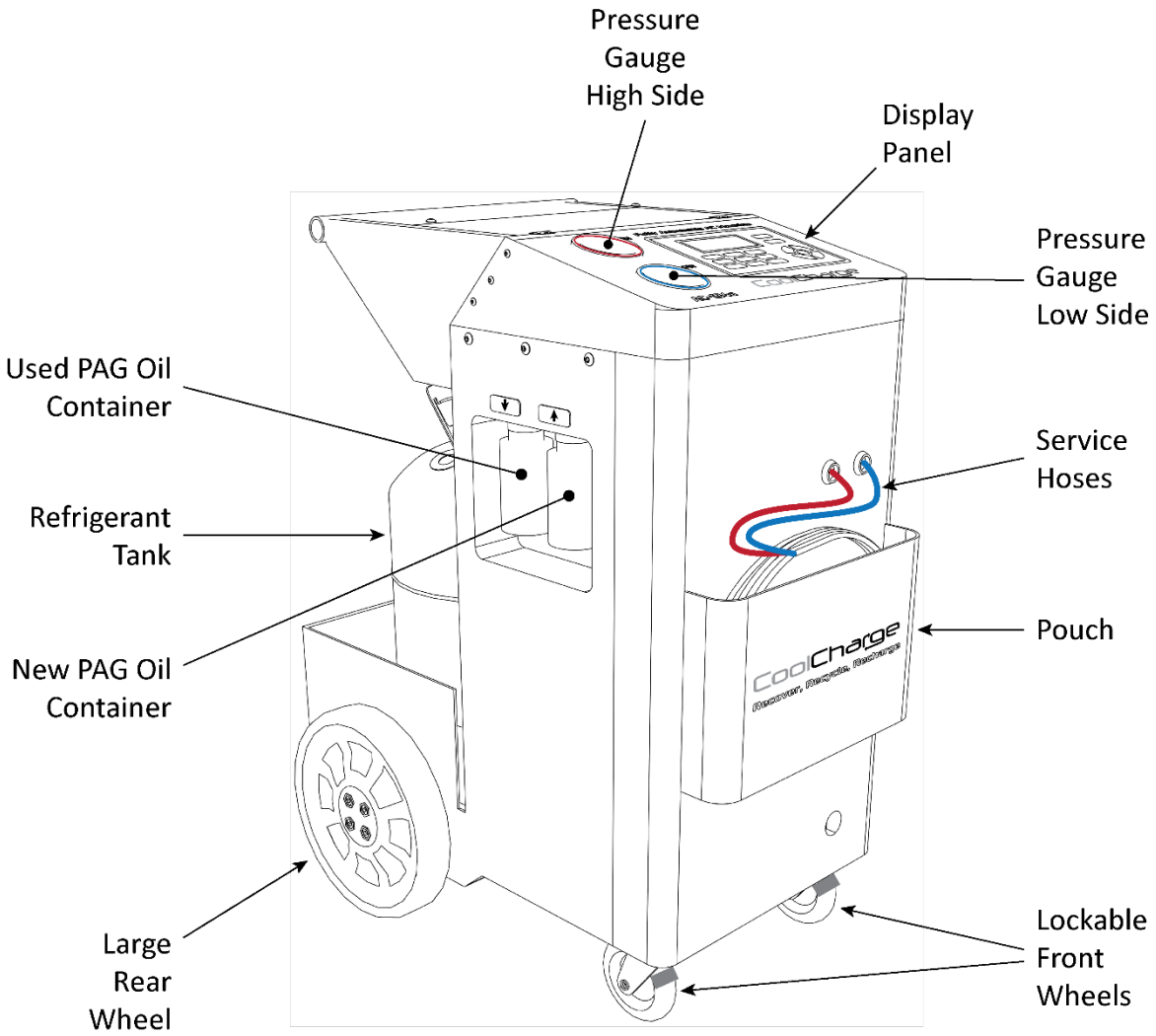
Q: Can I service my hybrid or electric Vehicle with the AC-134a?

A: No. The AC-134a is ***not*** designed to work with those types of Vehicles. You could severely damage the AC systems of those Vehicles.

Components

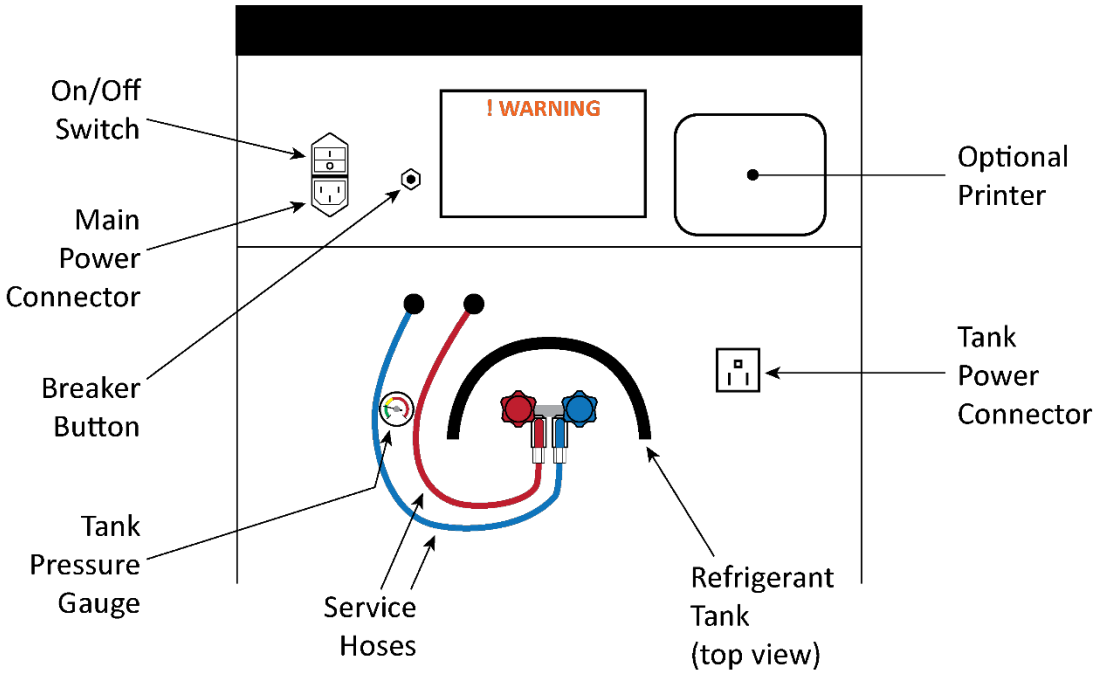
Components on the front, top, and side of the AC-134a include:

- **Display Panel**. Shows status messages and helps you control the AC-134a.
- **Pressure Gauge, High Side**. Shows the high-pressure side of the Vehicle's AC system.
- **Pressure Gauge, Low Side**. Shows the low-pressure side of the Vehicle's AC system.
- **Service Hoses**. Service Hoses on the ***front*** connect to the Vehicle being serviced (when performing a service) or are stored in the pouch (when not performing a service).
- **Used PAG Oil Container**. Holds used, contaminated PAG Oil. Container is empty to start.
- **New PAG Oil Container**. Holds new, clean PAG Oil. Do not use the AC-134a until the New PAG Oil Container has clean PAG Oil of the appropriate viscosity for the Vehicle being serviced.
- **Refrigerant Tank**. Holds R-134a Refrigerant. Do not use the AC-134a until the Refrigerant Tank has Refrigerant in it. Do ***not*** fill the Refrigerant Tank to capacity.
- **Wheels**. The Large Rear Wheels make it easy to move the unit, the Lockable Front Wheels let you lock the unit in place once you find a suitable location.



Components on the rear of the AC-134a include:

- **On/Off Switch**. Turns the AC-134a On and Off. The round circle (O), the down toggle position, is Off. The straight line (|), the up toggle position, is On.
- **Main Power Connector**. Connects the AC-134a to power via the supplied Power Cable.
- **Breaker Button**. Thermal breaker; press to reset the AC-134a if it is tripped.
- **Tank Power Connector**. Provides power to the Heating Pad that goes around the Refrigerant Tank.
- **Tank Pressure Gauge**. Shows the amount of pressure in the Refrigerant Tank.
- **Service Hoses**. Service Hoses on the ***rear*** of the unit connect to the Refrigerant Tank and then go inside the AC-134a.
- **Printer**. Prints a record of the operations the AC-134a has performed; optional feature.
- **Scale**. Not shown in the drawing below, the Refrigerant Tank sits on top of a Scale. The Scale uses precise measurements to determine how much Refrigerant is in the Refrigerant Tank. You can use the 200 gram weight that came with the AC-134a and the **Scale Validate** function to check the accuracy of the Scale.



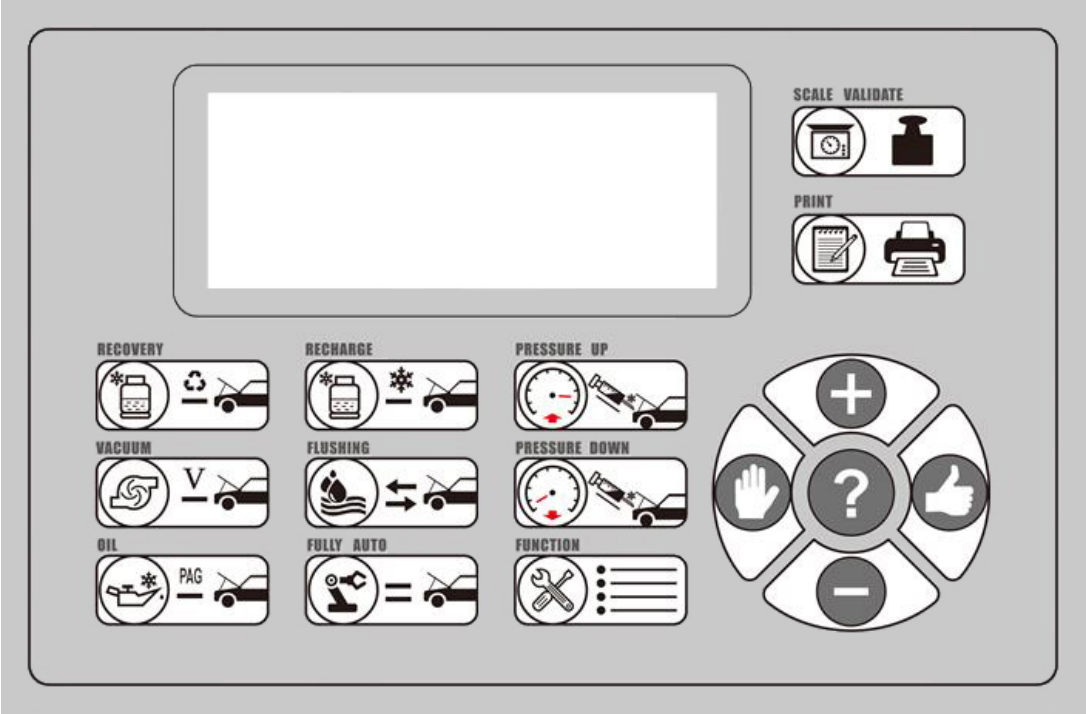
Specifications

Compressor Flow Rate	1/3 HP / 12 cc
Vacuum Pump	70 L/min / 0.05 mbar / dual stage
Filter Drier	710 cc / double
Tank Capacity	50 lbs. (23 kg)
Hose Length	9 feet (2.75 m)
Manometers	3.5" (80 mm) pulse-free class 1
Tank Manometers	1.5" (38 mm)
High Pressure and Low Pressure Transducers	No
Pump Oil	50 H
Display	4" x 1.5" (102 mm x 38 mm) LCD
Front Wheels	4" (102 mm) casters w/ locks
Rear Wheels	12" (305 mm) rubber tread
Unit Height	38" (965 mm)
Unit Width	18" (457 mm)
Unit Depth	30" (762 mm)
Unit Weight	221 lbs. (100 kg)
Operating Temperature	41°F to 104°F, 5°C to 40°C
Languages	English, French, Spanish, Chinese
Voltage	110 VAC / 60 Hz

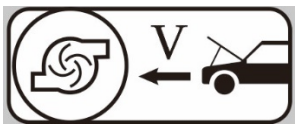
User Interface

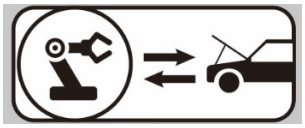
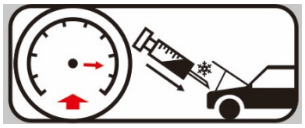
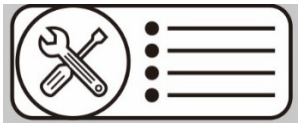
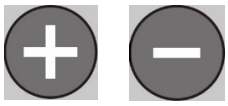
The AC-134a user interface includes a Display Screen, buttons for various functions, and keys to assist you with the functions.

The following figure shows the user interface.



The items on the user interface are:

AC-134a Air Conditioning Service Center Refrigerant 12.2 kg H	**Display Screen**: Shows system menus and messages.
	**Recovery**: Moves Refrigerant from the AC system of the Vehicle being serviced into the Refrigerant Tank.
	**Vacuum/Vacuum Test**: Extracts non-condensable gases and moisture from the AC system of the Vehicle being serviced, then pulls and tests a vacuum (to check for leaks in the system).
	**Oil**: Puts new PAG Oil (for the compressor) into the AC system of the Vehicle being serviced.
	**Recharge**: Moves Refrigerant from the Refrigerant Tank into the AC system of the Vehicle being serviced.

	**Flushing**: Replaces and recharges the Refrigerant and the PAG Oil in the AC system of the Vehicle being serviced. Think of Flushing as a “face lift” for an older AC system.
	**Fully Auto**: Lets you perform multiple functions by pushing one button and entering some parameters. Performs a Recovery, Vacuum/Vacuum Test, Oil, and Recharge.
	**Pressure Up**: Adds pressure/Refrigerant to the AC system of the Vehicle being serviced. *The Vehicle’s AC needs to be on during this procedure.*
	**Pressure Down**: Removes pressure/Refrigerant from the AC system of the Vehicle being serviced. *The Vehicle’s AC needs to be on during this procedure.*
	**Function**: Lets you select a service/maintenance function.
	**Scale Validate**: Checks the calibration of the Scale under the Refrigerant Tank.
	**Print**: Displays the last three operations the AC-134a performed and/or prints a receipt if the optional printer is installed.
	**Plus** and **Minus**: Let you select between available options.
	**Start / OK**: Press to start an operation or when a desired selection is displayed.
	**Stop / Escape**: Press to stop or cancel an operation.
	**Hint**: Provides information about the current operation.

Important: The motor and the AC system of the Vehicle being serviced must be ***off*** during all procedures except **Pressure Up** and **Pressure Down**.

Safety Requirements

Always exercise care when working with or near the AC-134a.

NOTICE All technicians who repair or service a motor Vehicle AC system ***must*** be properly trained and certified under section 609 of the Clean Air Act. Refer to the website of the United States Environmental Protection Agency (EPA) (**https://www.epa.gov/mvac**) for more information.

General Safety Warnings

- Only trained, certified personnel may operate the AC-134a.
- You must not make any modifications to the AC-134a.
- Do not use the AC-134a in the vicinity of spilled or open containers of gasoline.
- To reduce the risk of fire, only connect the AC-134a to a circuit that provides 18 amperes maximum branch circuit overcurrent protection, in accordance with the NEC, ANSI/NFPA 70.
- Avoid using an extension cord; they can overheat. If you must use an extension cord, make sure it is No. 14 AWG minimum and that it is grounded.
- All technicians ***must*** comply with all federal, state, and local rules and regulations that apply to the servicing of motor Vehicle AC systems.
- Technicians must be familiar with technical information concerning servicing motor Vehicle AC systems, including the latest information from Refrigerant manufacturers.
- Technicians must be familiar with all special instructions from their organization related to servicing motor Vehicle AC systems.
- Always keep the AC-134a upright and only use it indoors.
- *Do not let liquid Refrigerant touch your skin*. Liquid Refrigerant is very cold; if it touches your skin it can freeze it, causing symptoms similar to frostbite. *To avoid touching Refrigerant,* ***always*** *wear industrial safety gloves, leather work boots with steel toes, and industrial safety glasses or goggles*.
- Only use the AC-134a in locations with mechanical ventilation that provides at least four air changes per hour or the equipment should be located at least 18 inches (457 mm) above the floor.
- Do not inhale R-134a vapor. Although the vapor is non-toxic, it is heavier than air so if it gets into your lungs it can displace the air you need to breathe. It may also irritate your eyes, nose, or throat.

⚠ **WARNING** ***To avoid inhaling Refrigerant vapor, BendPak Ranger recommends wearing an industrial respirator when using the AC-134a***.

- Do not pressure test or leak test equipment and/or the Vehicle's AC system with compressed air. Some mixtures of air and Refrigerant have been shown to be combustible at elevated pressures. These mixtures, if ignited, can cause injury or property damage.

Protective Equipment

All technicians must wear appropriate protective equipment when using the AC-134a:

- Industrial safety glasses (with side shields) or goggles
- Industrial safety gloves; chemical-resistant gloves recommended
- Sturdy leather work boots with steel toes
- Industrial respirator

Legal Requirements

There are federal regulations associated with using R-134a Refrigerant and equipment that uses R-134a Refrigerant:

- **Technicians**. All technicians who repair or service a motor Vehicle AC system ***must*** be properly trained and certified under section 609 of the Clean Air Act. If you are a technician, you must have an EPA-issued card certifying that you have taken the legally required training.

  Detailed information ***for technicians*** is available online on the **EPA website**.

- **Service Shops**. Shops that are servicing motor Vehicle AC systems for the first time must certify to their EPA regional office that they have acquired and are properly using approved Refrigerant handling equipment. A signed statement that includes relevant information is required.

  Detailed information ***for service shops*** is available online on the **EPA website**.

Important: Violation of federal regulations could lead to prosecution. If found guilty, you could be subject to fines and/or federal imprisonment.

Initial Setup

There are a number of things you have to do before you start using the AC-134a:

- Check the delivery condition of the AC-134a
- Set it up and turn it on
- Prepare the PAG Oil containers
- Put R-134a Refrigerant into the Refrigerant Tank

When these items are done, the AC-134a is ready for normal operation.

NOTICE All technicians who repair or service a motor Vehicle AC system, including filling the AC-134a Tank, ***must*** be properly trained and certified under section 609 of the Clean Air Act. Refer to the website of the United States Environmental Protection Agency (**https://www.epa.gov/mvac**) for more information. *Do everything you can to avoid letting Refrigerant liquid or vapor escape into the environment.*

Important: Before using the AC-134a, make sure it is ***properly grounded*** and on a level, flat surface (this ensures that measurements are made correctly).

Condition on Delivery

The AC-134a should be delivered in an upright condition with the Service Hoses connected to the Refrigerant Tank on the back of the unit. The Service Hoses on the front will be sitting in the pouch on the front of the unit.

The AC-134a comes with two power cords:

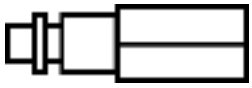
- **Main Power Cord**. One end connects to the Main Power Connector on the back of the unit. The other end connects to a 110 VAC power source. This cord provides power to the AC-134a.
- **Tank Power Cord**. One end connects to the Tank Power Connector on the back of the unit next to the Refrigerant Tank. The other end comes attached to the Heating Pad. This cord provides the power to warm the Refrigerant Tank when needed.

The AC-134a also comes with:

- **Two extra PAG Oil containers**. You can use them as replacements for the two working PAG Oil containers or you can use them for different viscosities of PAG Oil, giving you one container for PAG 46, one for PAG 100, and one for PAG 150.

  If you use them for the different viscosities, BendPak/Ranger recommends clearly marking the viscosity number on the container, so you do not get the containers mixed up.

- **One Refill Adapter**. Used to get R-134a Refrigerant from an external source into the Refrigerant Tank of the AC-134a.



- **One 200-gram weight**. Used to calibrate the Scale the Refrigerant Tank sits on.



Setting Up and Switching On

The location you select for the AC-134a needs to be indoors, have a level surface, and be near a *grounded* 110 VAC / 60 Hz power source.

To set up and switch on the AC-134a:

1. Move the AC-134a to the desired location and lock the front wheels.
2. Plug the Main Power Cord into the back of the unit and into a 110 VAC power source.

   ⚠ **WARNING** The Main Power Cord ***must*** be grounded. Do not operate the AC-134a unless the power connection is grounded. If you need to use an extension cord, use a three-prong extension cord and connect it to a three-prong outlet. The entire path from the AC-134a to the power source ***must*** be grounded. If the entire path is not grounded, you run the risk of damaging the AC-134a, damaging your electrical system, and shocking persons working on or near the AC-134a.

3. Turn On the AC-134a using the On/Off Switch on the back of the unit.

   The AC-134a comes up in Standby Mode.

   The Display shows:

   ```
   Ranger
   Mobile AC Servicer
   Refrigerant **.** KG
                          ?
   ```

   `Refrigerant **.** KG` is the quantity of Refrigerant currently in the Refrigerant Tank. The **?** in the lower right corner means you can press **?** on the keypad to get additional information.

   When the AC-134a is turned on, it automatically runs several self-checks. The Display may show information about the Pump, the Filter Drier, or the Scale, telling you they need to be replaced or, in the case of the Scale, needs to be recalibrated. This is normal; just follow the on-screen instructions and refer to **Maintenance** for additional information.

4. Check the sides of the Refrigerant Tank to make sure they are not touching the AC-134a; if the Refrigerant Tank is touching the AC-134a, even just a little, it throws off the Scale.
5. Press and hold **?** on the keypad to see additional information.

   ```
   Hints: C21-12345678-SAE
   Temp              22 °C
   Pump              48 H
   Filter            68 kg
   ```

   Hints shows the version ID of the software.

   Temp shows the temperature where the AC-134a is located, in Celsius.

   Pump shows the number of hours left before the oil in the Vacuum Pump needs to be replaced.

   Filter shows the amount of Refrigerant that has been filtered by the AC-134a filters.

Install the PAG Oil Bottles

PAG Oil is used in R-134a motor Vehicle AC systems to lubricate the compressor. The AC-134a removes used, contaminated PAG Oil during servicing and replaces it with new, clean PAG Oil.

Important: The AC-134a requires new, clean PAG Oil, but it is not supplied with the unit.

There are three common viscosities for PAG Oil: 46, 100, and 150. You must use the correct viscosity for the Vehicle being serviced.

⚠ **CAUTION** Using the AC-134a without enough new, clean PAG Oil or the wrong viscosity PAG Oil could damage the Vehicle being serviced and/or the AC-134a. Make sure the New PAG Oil Container on the AC-134a has enough fresh PAG Oil and that it is the correct viscosity for the Vehicle being serviced.

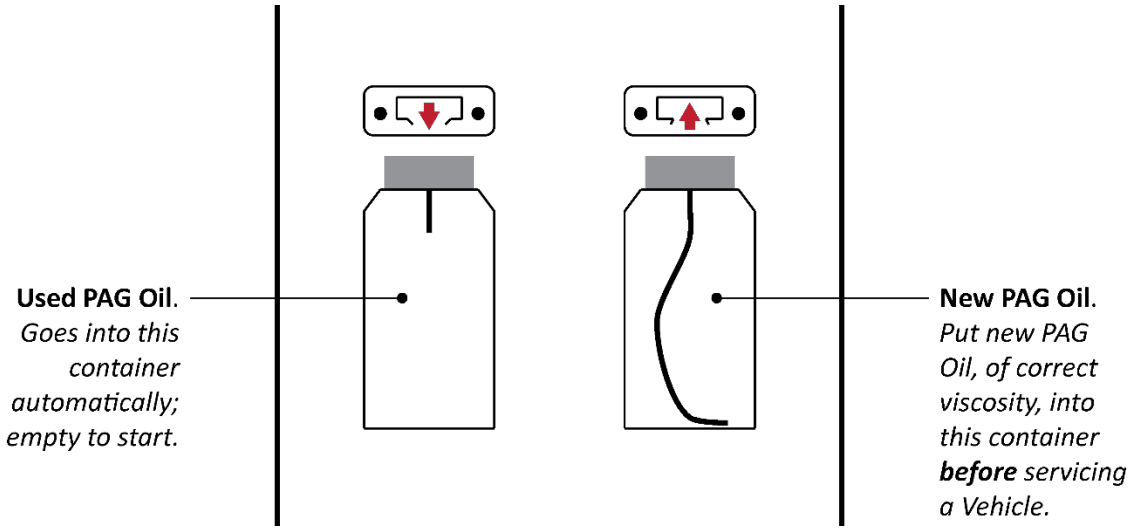
Two PAG Oil containers must be installed on the AC-134a at all times:

- **Used PAG Oil Container**. Starts empty. Used, contaminated PAG Oil that is extracted from the AC system of the Vehicle being serviced automatically drains into this container. Used PAG Oil should be considered a hazardous waste and disposed of properly; refer to **Disposal** for more information.
- **New PAG Oil Container**. Requires clean, unused PAG Oil, of the correct viscosity for the Vehicle being serviced; must be put into place ***before*** servicing the Vehicle.

The AC-134a comes with two additional PAG Oil containers. You can use these as backups for the two that must be installed at all times or you can use the extra two containers to hold PAG Oil of different viscosities.

Important: The two PAG Oil container locations are ***not*** interchangeable. Make sure the new, clean PAG Oil goes into the container on the right.

The PAG Oil container locations are shown in the following drawing.



To install or remove PAG Oil containers:

- To ***install***, turn the container counterclockwise (to the left) until it stops moving.
- To ***remove***, turn the container clockwise (to the right) until it comes off.

To add clean PAG Oil to an empty container:

1. If the container is in place, remove it.

   Make sure you are removing the correct container; see drawing above.

2. Add approximately 5 ounces / 150 ml of clean PAG Oil to the container, if it's empty.

   If there is already some clean PAG Oil in the container, add enough to bring the total amount up to approximately 5 ounces / 150 ml.

   Important: Make sure you are using the correct viscosity PAG Oil for the Vehicle you will be servicing.

3. Carefully screw the container back into place.

To dispose of used PAG Oil:

1. Carefully unscrew the Used PAG Oil container.
2. Put the used PAG Oil into an appropriate container until it can be disposed of properly or take it directly for disposal.

   Do not dispose of used PAG Oil in your regular trash, it must be treated as a hazardous waste.

   Refer to **Disposal** for more information.

3. Carefully screw the now-empty container back into place.

How Do I Know What PAG Oil Viscosity to Use?

There are three common viscosities for PAG Oil: 46, 100, and 150. Which PAG Oil to use is based on the compressor that is used in the Vehicle's AC system.

Most Vehicles have a sticker under the hood that addresses the issue of what Refrigerant and PAG Oil to use for that particular Vehicle. If you want to know what PAG Oil viscosity to use for a Vehicle, this sticker is the place to start. Note that a particular Vehicle might have more than one sticker.

The following graphic shows Refrigerant and PAG Oil information for a Hyundai Vehicle.



Refrigerant Type. *Must be R-134a; do not use the AC-134a with any other type of Refrigerant.*

Amount of Refrigerant. *This is the amount of Refrigerant you need to replace in the Vehicle.*

PAG Oil Viscosity. *Most Vehicles are 46, 100, or 150. Use the correct viscosity for the Vehicle being serviced.*

Amount of PAG Oil. *Replace the amount that comes out plus 15 mL, not the full amount shown here.*

Some key things to remember about PAG Oil:

- The graphic above shows “46” as part of the Compressor Lubricant Type, which tells you that this Vehicle needs a PAG Oil with a 46 viscosity. Unfortunately, not all Vehicle stickers are so clear about the required PAG Oil viscosity.
- Many Vehicle stickers have a code instead of a clear statement about what PAG Oil viscosity to use. In such a case, you need to find the meaning of the code in the owner’s manual or search on the Internet.
- There are two ways to determine how much PAG Oil to put back (sometimes called injecting) into the AC system of the Vehicle being serviced.

  Note that this amount will be relatively small, no matter which method you choose, as the AC-134a removes only used, contaminated PAG Oil. And that removed amount is what you are replacing, not the entire capacity of PAG Oil.

  The first method applies if you are performing steps one at a time. In this case, take the amount of PAG Oil that comes out during the Recovery and Vacuum phases and add 15 mL to that amount. The sides of the PAG Oil containers have measurements on them to help you determine how much came out.

  The second method applies if you are doing a **Fully Auto**, where you have to put in a PAG Oil replacement value before you know how much is going to come out during the Recovery and Vacuum phases. In this case, enter a value of 3 or 4 percent of the total amount of PAG Oil the compressor can hold.

  For example, the sticker on the previous page shows 90 to 110 grams (grams and mL are approximately the same in this situation) for the total amount of PAG Oil the compressor needs, so you would take 3 to 4 percent of that value and enter it at the beginning of the **Fully Auto**.

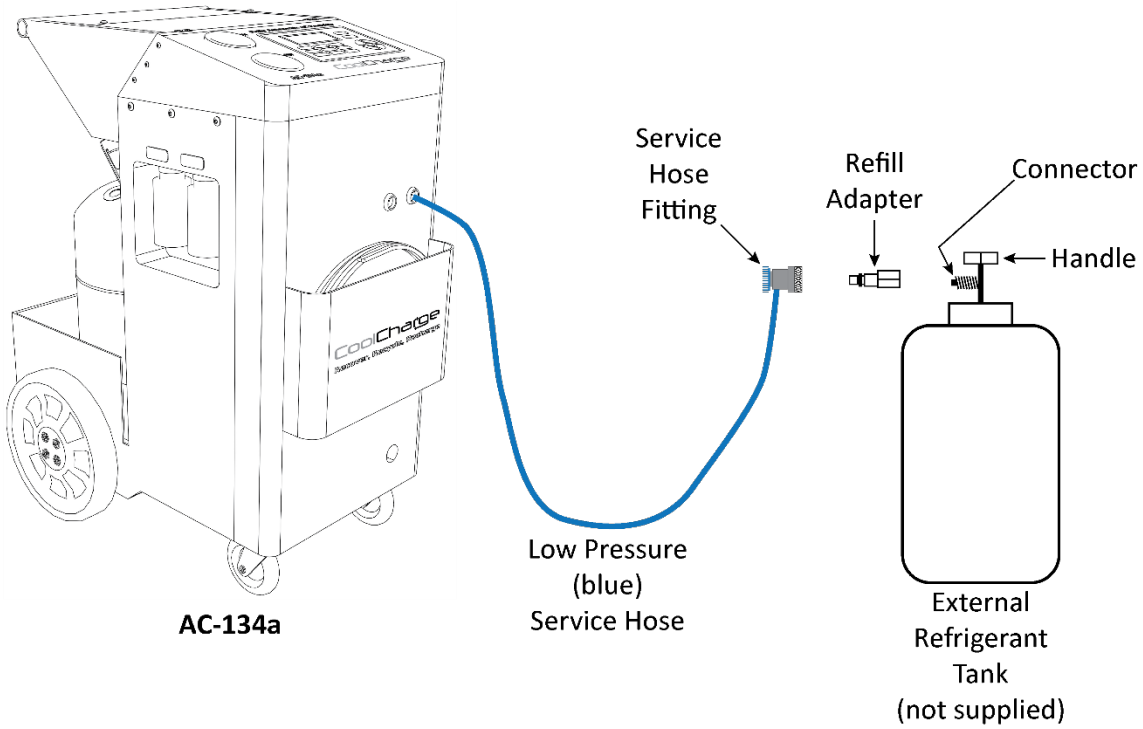
Putting Refrigerant into the Tank

You must put some R-134a Refrigerant into the Refrigerant Tank ***before*** you can service a Vehicle.

NOTICE ***Do not fill the Refrigerant Tank***. During operation, the AC-134a will be pulling Refrigerant from the Vehicles being serviced and storing it in the Refrigerant Tank. If the Refrigerant Tank is full, there is nowhere for this additional Refrigerant to go. BendPak Ranger recommends filling the Refrigerant Tank from 30 to 40 percent at startup. The maximum capacity of the Refrigerant Tank is 50 pounds / 22.5 kg, so 30 to 40 percent is 15 to 20 pounds / 6.75 to 9 kg.

The items you need to put R-134a Refrigerant into the Refrigerant Tank are:

- **External Refrigerant Tank**. *Not included with the AC-134a*. Must be R-134a Refrigerant. BendPak Ranger recommends putting in 15 to 20 pounds / 6.75 to 9 kg of R-134a into the Refrigerant Tank at initial startup, so you will need an External Refrigerant Tank with at least that much Refrigerant.
- **AC-134a**. The Knob and the Shutoff Valve for the Low Pressure (blue) Service Hose — located on the top of the Tank on the back of the AC-134a — must both be Open. Connect the Low Pressure (blue) Service Hose coming out of the front of the unit to the Refill Adapter.
- **Refill Adapter**. Included with the AC-134a. Attaches to the connector on the External Refrigerant Tank on one end and to the fitting on the front of the Low Pressure (blue) Service Hose on the other end.

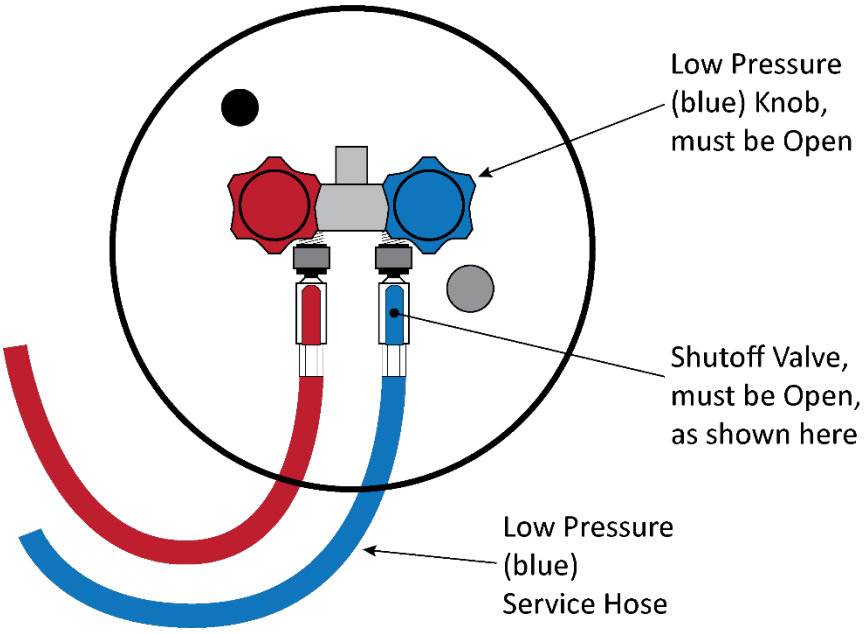


To put Refrigerant into the Refrigerant Tank from an External Refrigerant Tank:

1. Read the instructions on the side of the External Refrigerant Tank; ***you must follow all safety rules***.
2. On the AC-134a, make sure the unit is turned On and is in Standby Mode.
3. With the External Refrigerant Tank standing upright, connect the Refill Adapter to the connector on the top of the External Refrigerant Tank; tighten securely.
4. Connect the Fitting on the Low Pressure (blue) Service Hose to the Refill Adapter.

   You do not need to use the High Pressure (red) Service Hose for this procedure.

   Make sure to get a good, tight fit; otherwise, Refrigerant could leak out. Refer to **Attaching Service Hoses** for more information about connecting a Service Hose Fitting to a port.
5. Turn the Handle on the External Refrigerant Tank to open it.
6. Turn the External Refrigerant Tank upside down.
7. Make sure the Knob and the Shutoff Valve for the Low Pressure (blue) Service Hose on the top of the Refrigerant Tank on the back of the AC-134a are both set to Open.



   If either are closed, open them.
8. On the AC-134a Display, press **Function**, then select **Inner Tank Refill**.
9. Press **Start / OK**.

   The Display shows:

   `Inner Tank Refill`

   `Connect LP Hose to the`

   `Source Tank, Open Valve,`

   `Liquid Gas Only!`

   If any of these items have ***not*** been done yet, you must do them now.
10. Press **Start / OK**.

The Display shows:

Inner Tank Refill

Enter amount to fill:

11. Enter the amount of Refrigerant you want to move into the AC-134a Tank from the External Refrigerant Tank, then press **Start / OK**.

    The Display shows:

    Refill

    Running **.**

    Recovered *****G

    The filling stops automatically when the specified quantity of Refrigerant is reached.

    The Display shows:

    Inner Tank Refill

    Finished!

    Press OK to Confirm

12. Close the Handle on the External Refrigerant Tank, then press **Start / OK**.
13. Press **Start / OK** again to start the Recovery.

    This process recovers the Refrigerant in the Service Hose and moves it back into the Refrigerant Tank.

    You do not want Refrigerant in the Service Hose when you disconnect it from the External Refrigerant Tank, as Refrigerant could leak, which is a danger to people and bad for the environment.

14. When the Recovery is done, press **Start / OK** to acknowledge.

    The AC-134a goes back into Standby Mode.

15. Turn the External Refrigerant Tank upright, make sure the Handle is still closed, disconnect the blue Service Hose Fitting, and then remove the Refill Adapter.

    Keep the Refill Adapter for future use.

    The AC-134a now has R-134a Refrigerant in the Refrigerant Tank.

Normal Operation

The AC-134a functions you can perform during normal operation include:

- **Recovery**. Moves **all** of the Refrigerant from the AC system of the Vehicle being serviced into the Refrigerant Tank; cleans and filters it along the way.
- **Vacuum** and **Vacuum Test**. Extracts non-condensable gases and moisture from the AC system of the Vehicle being serviced, creating a vacuum. The Vacuum Test checks the quality of the vacuum. If a vacuum is not holding, the most likely explanation is a leak in the AC system.
- **Oil**. Puts clean PAG Oil into the AC system of the Vehicle being serviced, replacing the used PAG Oil that was removed during Recovery.
- **Recharge**. Moves Refrigerant from the Refrigerant Tank back into the AC system. Prompts to clean the Service Hoses when complete.
- **Flushing**. Removes moisture, acid, gases, and used lubricant from a Vehicle's AC system. Think of it as a "face lift" for an older AC system.
- **Fully Auto**. Lets you perform multiple functions by pushing one button and entering some parameters. Prompts to clean the Service Hoses when complete.
- **Pressure Up**. Manually adds pressure/Refrigerant to the AC system of the Vehicle being serviced. *The Vehicle's AC needs to be on during this procedure.*
- **Pressure Down**. Manually removes pressure/Refrigerant from the AC system of the Vehicle being serviced. *The Vehicle's AC needs to be on during this procedure.*
- **Function**. Lets you select a service/maintenance function.
- **Scale Validate**. Checks the Scale under the Refrigerant Tank for correct calibration.
- **Print**. Displays the previous three operations the AC-134a performed and can print a receipt if the optional printer is installed.

Each of these functions have their own button on the user interface.

All of these functions are covered in this section.

NOTICE All technicians who repair or service a motor Vehicle AC system ***must*** be properly trained and certified under section 609 of the Clean Air Act. Refer to the website of the United States Environmental Protection Agency (**https://www.epa.gov/mvac**) for more information.

⚠ **CAUTION** Do not use the AC-134a to service electric or hybrid vehicles.

Methods for Using the AC-134a

There are two ways to use the AC-134a:

- Perform four main functions – **Recovery**, **Vacuum/Vacuum Test**, **Oil**, and **Recharge** – mostly automatically using the **Fully Auto** function.
- Perform all main functions independently: **Recovery**, then **Vacuum/Vacuum Test**, then **Oil**, and then **Recharge**.

The end result of both methods is the same: a serviced Vehicle. The main difference between the two methods is the convenience of using **Fully Auto**; you can set the parameters and then only have to return once to complete the functions.

Whichever method you use, be sure to clean the Service Hoses before you power down the AC-134a.

Check the Sticker

All Vehicles *should* have a sticker under the hood (the location varies) that describes what Refrigerant must be used and what PAG Oil (compressor lubricant) the Vehicle's compressor requires (PAG 46, 100, and 150 are the most common).

NOTICE You ***must*** check the Vehicle's sticker before servicing the Vehicle using the AC-134a. If you do not, you void the AC-134a warranty and significantly increase the chances of using an incorrect amount of Refrigerant or the wrong type or amount of PAG oil.

⚠ CAUTION Use of R-12 (also called Freon™) has been banned in the United States for use in new Vehicles since 1994. Do not use Freon with the AC-134a; you will damage the AC-134a, the Vehicle you are servicing, and you will be breaking federal law. Do not service Vehicles that use R-1234yf with the AC-134a; it is not designed to use that Refrigerant and will not work correctly.

The following is a sample sticker from a Hyundai Vehicle. ***Your sticker will be different.***



Refrigerant Type. *Must be R-134a; do not use the AC-134a with any other type of Refrigerant.*

Amount of Refrigerant. *This is the amount of Refrigerant you need to replace in the Vehicle.*

PAG Oil Viscosity. *Most Vehicles are 46, 100, or 150. Use the correct viscosity for the Vehicle being serviced.*

Amount of PAG Oil. *Replace the amount that comes out plus 15 mL, not the full amount shown here.*

The relevant portions of this sticker are:

- **Refrigerant Type**: *R-134a*. Shows R-134a, which is supported by the AC-134a.
- **Refrigerant Amount**: *475 to 525 g*. Shows 475 to 525 grams (16.75 to 18.5 ounces), which is the amount of Refrigerant you would tell the AC-134a to put back into the Vehicle during Recharge (assuming all of it was removed in Recovery, which is the normal method).
- **Compressor Lubricant Type**: *PAG(FD46XG)*. "PAG(FD46XG)" is a Hyundai code for the type of PAG oil required by the Vehicle's compressor. In this particular case, the PAG number (46) is included in the Hyundai code, ***but this is not necessarily true for other codes***. If the code for a Vehicle is not described in the manual, search for it on the Internet.
- **Compressor Lubricant Amount**: *90 to 110 g*. This is the full amount of PAG Oil the compressor can use. *When you are using the AC-134a, you only need to replace the amount that was removed during service plus 15 mL or 3 to 4 percent of the full amount shown here*. Do not replace the full amount.

Attaching Service Hoses

Many of the AC-134a functions require that the Service Hoses are attached to the AC system of the Vehicle being serviced.

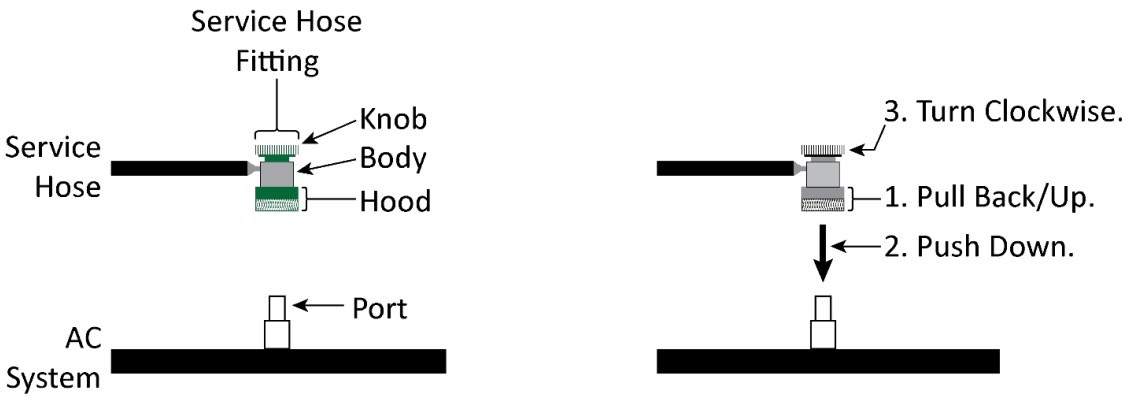
Note: The high pressure and low pressure ports to which the Service Hose Fittings attach are different sizes, making it difficult to attach a Service Hose Fitting to the wrong port.

To attach the Service Hoses to a Vehicle:

1. Drive the Vehicle to a location near the AC-134a.
2. Open the hood of the Vehicle.
3. Locate the high pressure port and the low pressure port on the Vehicle's AC system.
4. Check both Service Hose Fittings to make sure both are fully closed (turned fully ***counterclockwise***).

   If either one is not, turn it counterclockwise until it is fully closed.
5. Attach the *red* Service Hose Fitting to the *high pressure port* and the blue Service Hose Fitting to the low pressure port.

   Make sure to attach the correct Service Hose Fitting to the correct port. The Fittings on the High and Low Pressure Service Hoses are different sizes, which makes it difficult to attach a Service Hose to the wrong port. Nevertheless, attaching them incorrectly could lead to damage to the Vehicle and/or to the AC-134a.



6. To attach a Service Hose Fitting:
   a. Pull the Hood back (up), over the Body, and hold it there.
   b. Push the entire Service Hose Fitting down onto the port.
   c. Release the Hood.
   d. Jiggle the Service Hose Fitting a little to make sure it is firmly connected to the port (if it's not, try again; if it continues to ***not*** firmly connect, make sure you are putting the right fitting on the right port).
   e. When the fitting is firmly connected, turn the Knob on the top of the fitting ***clockwise*** (which opens the connection, allowing Refrigerant to flow when you start servicing the Vehicle).

⚠ **CAUTION** Keep the Service Hose Fittings away from dirt; do not leave them on the ground. If you get the fittings dirty, that contamination could get into a Vehicle's AC system.

Recovery

Recovery is the process where the AC-134a pulls the Refrigerant from the AC system of the Vehicle being serviced, cleans it, and stores it in the Refrigerant Tank.

Recovery can be performed as a standalone function or as part of a **Fully Auto** process.

Important: During a Recovery, the AC-134a removes ***all*** of the Refrigerant from the Vehicle's AC system. So when it comes time to **Recharge**, make sure to put the correct amount back (check the sticker to see how much is needed or replace the amount that was removed). If you are doing a **Fully Auto** process, you will be prompted for the amount to put back before the process begins.

To perform a Recovery:

1. Make sure the Service Hoses are attached to the correct ports with a good, secure fit for both connections. Refer to **Attaching Service Hoses** for more information.
2. Check the values on the High and Low Pressure Gauges.

   If they are at or very near 0, it means there is little or no Refrigerant in the Vehicle's AC system, so you may not need to perform a **Recovery**.

   The two mostly likely causes for no Refrigerant in a Vehicle's AC system is that there is a leak and all the Refrigerant leaked out over time or that a **Recovery** was performed, removing all Refrigerant, but no Refrigerant was returned. In either case, for the Vehicle's AC system to work correctly, Refrigerant will need to be added.
3. If there is pressure, press and release **Recovery**.

   The Display shows:

   ```
   Recovery
   Filter Drier ** kg
   Tank Space ** kg
   Press Escape to stop
                          R
   ```

   Note: The **R** on the lower right corner of the Display means you can press *and hold* the **Recovery** button to recover Refrigerant manually—for as long as you keep pressing and holding the **Recovery** button. The Recovery process stops if you release the **Recovery** button. The amount of Refrigerant recovered cannot be measured using this method. ***This is not the recommended method.***

   During the Recovery process, the Display shows information about the phases it goes through.
4. Press **Start / OK** to begin.
5. When the Recovery process is over, an alarm sounds and the Display shows:

   ```
   Recovery Finished!
   Total Ref   ** g
   Press OK to confirm
   ```

   `** g` is the amount of Refrigerant that was recovered from the Vehicle's AC system.
6. Press **Start / OK** to stop the alarm and to end the Recovery process.

Vacuum and Vacuum Test

Vacuum is the process where the AC-134a evacuates the Vehicle's AC system into a vacuum state. It should only be done ***after*** the Refrigerant has been removed via a Recovery.

Important: During Vacuum, you may notice vapor coming out of the AC-134a. This is almost certainly water vapor, which is not a danger to people or the environment. It is very unlikely that it is smoke. After a few seconds, the vapor will dissipate.

At the end of the Vacuum, you will be prompted to begin the Vacuum Test. You can also check the High and Low Pressure Gauges yourself. During the Vacuum, both gauges will go ***below*** zero. At the conclusion of the Vacuum, watch the gauges for a moment or two to see if they start rising back up towards zero. If they do, it means the Vacuum is not holding; the most likely reason is that there is a leak somewhere in the Vehicle's AC system (which you should fix).

To perform a Vacuum:

1. Make sure the Service Hoses are attached to the correct ports with a good, secure fit for both connections. Refer to **Attaching Service Hoses** for more information.
2. Press **Vacuum**.

   The Display shows:

   ```
   Vacuum
   Default **:**
   Press Escape to quit!
                          V
   ```

   The **V** in the lower right corner of the Display means you can press *and hold* **Vacuum** to pull a Vacuum manually. If you do so, whatever is pulled out of the Vehicle's AC system is released into the atmosphere. Be careful performing this operation: if the introduced pressure is less than 0.5 bar or when the gases come out, vacuum pump oil could be released.
3. Use **Plus** or **Minus** to set the time for the **Vacuum** process.

   25 minutes is recommended if the Vehicle's AC system has been open to air recently. (Opening the system to air — for a repair to the AC system, for example — lets additional moisture into the AC system, which has to be removed.) 10 minutes is recommended if the AC system has ***not*** been open to air recently.
4. Press **Start / OK**.

   The Display shows:

   ```
   Vacuum Test
   Test Time **:**
   ```
5. Use **Plus** or **Minus** to set the time for the **Vacuum Test**.
6. Press **Start / OK**.

   The **Vacuum** process begins.

   The Display shows:

   ```
   Vacuum
   Running **:**
   ```

   The **Vacuum** process finishes automatically when time expires.

When the **Vacuum** is over, the **Vacuum Test** begins automatically.

During the **Vacuum Test**, the Display shows:

Vacuum Test

Vacuum Finished 09:00

Testing… 01:00

Press Escape to Exit

When the Vacuum Test finishes, the Display shows:

Vacuum and Test Vacuum Finished

Vacuum Status OK?

Esc=Quit OK=Continue

- If the test finished successfully, meaning the vacuum held, press **Start / OK**. The AC-134a will record the Vacuum Test as passed.
- If the test finished unsuccessfully, meaning the vacuum was leaking, press **Stop / Escape**. The AC-134a will record the Vacuum Test as failed.

7. Press the appropriate button.

Oil

Oil is the process of replacing used, contaminated PAG Oil that was removed from the Vehicle's AC system during **Recovery** with new, clean PAG Oil.

You only need to replace the amount that was removed plus 15 mL. *Do not replace the full capacity*.

If you prefer not to measure how much PAG Oil came out during Recovery, replace 3 to 4 percent of the entire amount the compressor supports (which should be listed on the Vehicle's sticker). *Do not replace the full capacity*.

The Vehicle's AC system must be in a vacuum state when you replace the PAG Oil, so it should be done after a **Vacuum** process.

To replace PAG Oil:

1. Make sure there is at least 50 ml / 1.75 ounces of clean, new PAG Oil in the New PAG Oil Container on the AC-134a.
2. Press and release the **Oil** button.

   The Display shows:

   Oil Injection

   Injection 20 ml

2. Use **Plus** or **Minus** to adjust the quantity of PAG Oil you want to replace, then press **Start / OK**.

   The default amount of PAG Oil to replace is 20 ml / .67 ounces. The rules for how much to replace are the amount that was removed plus 15 mL ***or*** 3 to 4 percent of the entire amount the compressor supports.

   You could also press *and hold* the **Oil** button, which would cause clean PAG Oil to be pushed into the Vehicle's AC system as long as you continued to press the **Oil** button. If you do it this way, watch the PAG Oil container; when the desired amount of PAG Oil has been added, release the **Oil** button. ***This is not the recommended method.***

   The **Oil** process finishes automatically.

   The Display shows:

   Oil Injection

   Replaced 20 ml

   Press OK to Exit

3. Press **Start / OK**.

Recharge

Recharge fills the Vehicle's AC system with Refrigerant.

The Vehicle's AC system must be a vacuum state to perform a **Recharge**.

To perform a **Recharge**, the AC-134a Refrigerant Tank must have at least 3 kg / 6.5 pounds of Refrigerant in it. The Refrigerant Tank will normally have more than this amount of Refrigerant in it; the exact amount varies based on how much Refrigerant was pulled out during the **Recovery** process.

If no Refrigerant was pulled out during **Recovery** (because the Refrigerant leaked out over time, for example), then the amount of Refrigerant in the Refrigerant Tank could be low. In such a case, add additional Refrigerant to the Refrigerant Tank before beginning the Recharge.

How much Refrigerant should you put back in to the Vehicle's AC system? **Recovery** removed all of it, so you need to fill it back up. The Vehicle's sticker should give you an exact amount or a range. Use that information when you are prompted for the quantity of Refrigerant for the **Recharge**. If you wrote down how much was removed in **Recovery**, replace that amount.

To perform a Recharge:

1. From Standby Mode, press **Recharge**.

   If there is air in the Refrigerant Tank, it is purged automatically.

   The Display shows:

   Recharge

   Default ****G

   G

   Note: The **G** at the lower right corner means you can add Refrigerant to the Vehicle's AC system by pressing and holding **Recharge**. You cannot measure the amount of Refrigerant being put into the Vehicle's AC system using this method. ***This is not the recommended method***. Ignore any reference to accessing a database.

2. Press **Plus** or **Minus** to adjust the quantity of Refrigerant.

3. When you are ready, press **Start / OK** to begin the **Recharge**.

   The Display shows:

   Recharge

   Running **:

   There ***g Left!

   The process stops automatically when the specified amount of Refrigerant has been moved into the Vehicle's AC system.

   The Display shows:

   Recharge Finished!

   Recharged * g**

   Press OK to Confirm!

4. Press **Start / OK**.

   You are prompted to begin a hose cleaning. Remove the Service Hoses from the Vehicle, then press **Start / OK**. Standby Mode appears when the hose cleaning is done.

Flushing

Flushing replaces and recharges the Refrigerant and PAG Oil in an older AC system. Think of it as a "face lift" for an older AC system.

Note that the AC system: has to be in working condition, needs to have been running for about 2 minutes prior to starting the Flushing, and there needs to be a good supply of new, fresh PAG Oil available in the New PAG Oil Container.

To perform a Flushing:

1. Run the Vehicle's AC system for at least 2 minutes prior to beginning the **Flushing**.
2. With the AC-134a in Standby Mode, press **Flushing**.

   The Display shows:

   Please Confirm AC System

   Is Basically OK

   Press OK to Next

   In other words, the AC system has no known leaks or damaged components.
3. If the Vehicle's AC system is basically OK, press **Start / OK**.

   The Display shows:

   Please Power On AC

   And Run for about 2 Mins

   Press OK to Next
4. When you have run the Vehicle's AC system for two minutes, press **Start / OK**.

   The Display shows:

   Please Confirm the PAG

   Oil is More than 150 ml

   Press OK to Next
5. If the New PAG Oil Container has more than 150 ml of fresh PAG Oil in it, press **Start / OK**.

   If the New PAG Oil Container does ***not*** have more than 150 ml of fresh PAG Oil in it, you must add some until it has 150 ml or more, then press **Start / OK**.

   The Display shows:

   Default 20:00

   Press OK to Start
6. Press **Plus** or **Minus** to adjust the amount of time you want the **Flushing** to run, then press **Start / OK**.

   The **Flushing** begins.

   The **Flushing** process stops automatically when the specified amount of time has passed.

Fully Auto

Fully Auto performs multiple operations: **Recovery**, **Vacuum** / **Vacuum Test**, **Oil**, and **Recharge**—in two steps.

Before **Fully Auto** can start, you must confirm there is enough PAG Oil in the New PAG Oil Container; if there is not, add some until you to at least 150 mL.

⚠ **CAUTION** Performing a **Fully Auto** *without* enough clean PAG Oil runs the risk that air could be introduced into the Vehicle's AC system, which could damage it or result in degraded performance.

To perform a Fully Auto:

1. Make sure the Service Hoses are attached to the correct ports with a good, secure fit for both connections. Refer to **Attaching Service Hoses** for more information.
2. In Standby Mode, press **Fully Auto**.

   If there is air in the Refrigerant Tank, it is purged automatically.

   The Display shows:

   ```
   Important
   Please Confirm the PAG
   Oil is More Than 150 ml
   Press OK to Next
   ```

3. Make sure the New PAG Oil Container holds more than 150 ml oil, then press **Start / OK**.

   The Display shows:

   ```
   Please Input
   Refrigerant 500 g


   Press OK to Start
   ```

   Note: Ignore any references to accessing a database.

4. Use **Plus** and **Minus** to adjust the amount of Refrigerant that will be put back into the AC system of the Vehicle during the **Recharge** portion of the **Fully Auto**.

   Consult the Vehicle's sticker for this information. See **Check the Sticker** for more information.

5. Press **Start / OK** when the Refrigerant value is correct.

   The Display shows:

   ```
   Please Input
   Vacuum time 10 Minutes
   Press OK to Next
   ```

6. Use **Plus** and **Minus** to adjust the **Vacuum** time.

   25 minutes is recommended if the Vehicle's AC system has been open to air recently (for a repair, for example). 10 minutes is recommended if the AC system has ***not*** been open to air recently.

7. Press **Start / OK** when the **Vacuum** time is correct.

The Display shows:

Please Input

V. Test time 5 Minutes

Press OK to Next

8. Use **Plus** and **Minus** to adjust the **Vacuum Test** time.

   The default setting is 5 minutes.

9. Press **Start / OK** when the **Vacuum Test** time is correct.

   The Display shows:

   Please Input

   New Oil 20 ml

   Press OK to Next

10. Use **Plus** and **Minus** to adjust the amount of PAG Oil that will be put back into the AC system of the Vehicle being serviced during the **Oil** portion of the **Fully Auto**.

    The default setting is 20 mL. BendPak Ranger recommends setting this value to 3 to 4 percent of the entire amount the compressor can support, which should be listed on the Vehicle's sticker. See **Check the Sticker** for more information.

11. Press **Start / OK** when the **Oil** value is correct.

    The **Fully Auto** process begins: The AC-134a automatically runs **Recovery** and **Vacuum / Vacuum Test** operations.

    When the **Vacuum Test** is complete, the audible alarm sounds.

    The Display shows:

    Vacuum and Test

    Vacuum Finished

    Vacuum Status OK?

    Esc=Quit OK=Continue

    If the gauges are still below 0, press **Start / OK**. If they have risen above 0, press **Stop / Escape**.

12. Read the Display, then press the appropriate button.

    Important: If you press **Stop / Escape**, the **Fully Auto** ends. If you do this, the Vehicle's AC system has no Refrigerant. In that situation, you must perform a **Recharge** to put Refrigerant back into the Vehicle's AC system.

    The AC-134a automatically runs **Oil** and **Recharge** operations.

    When the **Recharge** is complete, the Display shows:

    Auto Finished

    Press OK to Complete

13. Press **Start / OK** to complete the **Fully Auto**.

    You are prompted to begin a hose cleaning (removing Refrigerant from the Service Hoses).

14. Remove the Service Hoses from the Vehicle, then press **Start / OK**.

Pressure Up

When the pressure in a Vehicle's AC system is lower than desired due to not enough Refrigerant in it, use **Pressure Up** to add Refrigerant to the AC system, which causes the pressure to rise.

Note: The amount of Refrigerant added using **Pressure Up** *cannot* be measured.

To perform a Pressure Up:

1. Press **Pressure Up**.

   The Display shows:

   Pressure Increase

   Please Press and Hold

   the Up Key When

   Pressure is Desired

2. Press and hold **Pressure Up** to raise the pressure.

   Watch the gauges to see the pressure rising.

3. Release **Pressure Up** when the pressure is in the desired range.

Pressure Down

When the pressure in a motor Vehicle's AC system is higher than desired due to too much Refrigerant in the AC system, use **Pressure Down** to remove some Refrigerant from the system, which causes the pressure to drop.

Note: The amount of removed Refrigerant removed using **Pressure Down** *cannot* be measured.

To bring down pressure in a motor Vehicle's AC system:

1. Press the **Pressure Down** button.

   The Display shows:

   Pressure Down

   Please Press and Hold

   The Down Key, Release It

   When Pressure is OK

2. Press and hold **Pressure Down** to lower the pressure.

   Watch the gauges to see the pressure lowering.

3. Release **Pressure Down** when the pressure is in the desired range.

Scale Validate

Scale Validate checks the accuracy of the Scale on which the Refrigerant Tank is sitting.

The Scale sits under the AC-134a Refrigerant Tank. It monitors the weight of the Tank so that you always know how much Refrigerant is in the Tank.

In order to make sure Refrigerant quantities are correct, the Scale must be checked regularly and calibrated if necessary.

Because the scale is so sensitive, there are a number of things that can impact its accuracy:

- the AC-134a has been shaken; for example, during transport on bumpy roads or if it has been rolled a long distance over a bumpy surface
- a month has passed since the Scale was last calibrated
- some part of the Refrigerant Tank is pressing against the sides of the unit. In this case, move the Refrigerant Tank to the center of the Scale and then perform a **Scale Validate**.

Additionally, if the gauges show values outside the green several Vehicle services in a row and you do not understand why, you should perform a **Scale Validate** to make sure the problem is not the calibration of the Scale.

To perform a Scale Validate:

1. From Standby Mode, press **Scale Validate**.

   The Display shows:

   ```
   WEIGH SCALE VERIFY
   W1 :        0   MIN :   4687
   GAS      4653   MAX :  15506
   TANK:   12750   ZERO:      0
   ```

2. Carefully put the 200 gram weight on the top of the Refrigerant Tank.

   Make sure not to touch any part of the AC-134a during the accuracy check. The Scale is very sensitive; any touch or vibration will throw it off.

3. After a few seconds, check the **W1** value on the Display.

   - If it shows 200 (plus or minus 2), the Scale is accurate; no need to calibrate it.
   - If it shows 203 or greater or 197 or less, then you need to calibrate the Scale.

Refer to **Weight Scale Zero** for more information about calibrating the Scale.

Print

Print displays a record of the last three operations the AC-134a has performed.

Use **Plus** and **Minus** to select between records.

The content of the records may include:

- RECY. The **Recovery** and recycle Refrigerant amount.
- VACU. The Vacuum minutes.
- NEW OIL. The new PAG Oil injection amount.
- RECG. The **Recharge** Refrigerant amount.

If there is a printer on the unit, the records can be printed as a receipt for the customer.

To print a receipt:

1. Press **Print**.

   The Display shows:

   History 1/3

   Recy. 500 g Vacu 10 min

   New Oil 20 ml Recg. 500 g

   Press OK to Print

   You can press **Plus** or **Minus** to show the other records.

2. Press **Start / OK** to print.

Maintenance

To service your AC-134a, press **Function**, then use **Plus** or **Minus** to select the desired service.

Maintenance operations include:

- **Inner Tank Refill**. The procedure for adding R-134a Refrigerant into the AC-134a Refrigerant Tank. Has to be done at initial startup and as needed afterwards.
- **Language Select**. Lets you choose between English, Spanish, French, and Chinese.
- **Weight Unit**. Lets you choose between kilograms (kg) and pounds (lb).
- **Weight Scale Zero**. Lets you reset the Scale.
- **Pressure Sensor Zero**. Not implemented at this time.
- **Vacuum Pump Oil Reset**. Lets you reset the Vacuum Pump Oil to zero after changing the oil.
- **Filter Drier Reset**. Lets you reset the Filter Driers to zero after putting in new ones.
- **Other Service**. Provides access to additional services. You should only access these services if directed to do so by BendPak Ranger Technical Support.

These operations are described in this section.

Inner Tank Refill

Refer to **Putting Refrigerant into the Tank** for complete instructions.

Language Select

You can select from English, Spanish, French, or Chinese.

To change the Display language:

1. Press **Function**.
2. Press **Plus** and **Minus** to highlight **Language Select**, then press **Start / OK**.
3. Use **Plus** and **Minus** to highlight the desired language.
4. Press **Start / OK**.

Weight Unit

You can choose between kilograms (kg) and pounds (lb).

To specify a Weight Unit:

1. Press **Function**.
2. Press **Plus** and **Minus** to highlight **Weight Unit**, then press **Start / OK**.
3. Use **Plus** and **Minus** to highlight the desired Weight Unit, kilograms (kg) or pounds (lb).
4. Press **Start / OK**.

Weight Scale Zero

The Scale (which the Refrigerant Tank sits on) must be checked regularly, and calibrated if necessary, so that the measurement of Refrigerant in the Refrigerant Tank is accurate.

Calibration may be necessary if:

- the gauges show values outside the green for several Vehicle services in a row
- the AC-134a has been shaken; for example, during transport on bumpy roads or if it has been rolled a long distance over a bumpy surface
- a month has passed since the Scale has been calibrated



Tip The Scale could appear to be not working correctly if any part of the Refrigerant Tank is pressing against the sides of the unit. If you notice the Refrigerant Tank touching the sides of the unit, move it into the center, service another Vehicle, and see if the gauges are back in the green.

To check the accuracy of the Scale:

1. In Standby Mode, press **Scale Validate**.

   The Display shows:

   ```
   WEIGH SCALE VERIFY
   W1 :        0   MIN :   4687
   GAS      4653   MAX :  15506
   TANK:   12750   ZERO:      0
   ```

2. Carefully put the 200 gram weight on the top of the Tank.

   Make sure not to touch any part of the AC-134a. The Scale is sensitive; any touch or vibration will throw off the measurement.

3. After a few seconds, check the **W1** value on the Display.
   - If it shows 200 (plus or minus 2), the Scale is calibrated correctly.
   - If it shows 203 or greater or 197 or less, then you need to calibrate the Scale.

To calibrate the Scale:

1. In Standby Mode, press **Function**.
2. Use **Plus** and **Minus** to select **Zero Balance**.

   The Display shows:

   ```
   Zero Balance
   Press OK When
   ```

3. Remove the screw that holds the Refrigerant Tank in place, then lift it off the Scale.
4. When there is ***nothing*** on the Scale, press **Start / OK**.
5. After finishing, the system returns to Standby Mode automatically.

   The Display shows:

   ```
   AC-134a
   Mobile Air Conditioning Servicer
   ```

Refrigerant -9.00 kg

The display should show -9 kg, which indicates that the calibration was done properly.

5. Put the Refrigerant Tank back on the Scale, and then put the screw back into place.

Pressure Sensor Zero

This function is not implemented at this time.

Vacuum Pump Oil Reset

The AC-134a's Vacuum Pump (located inside the unit) must have its oil changed every 50 hours of use (or sooner).

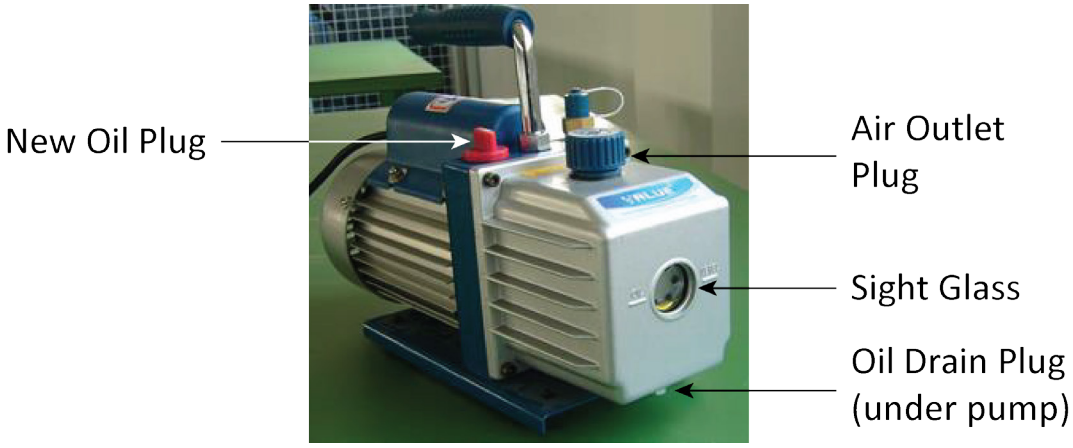
To do that, you need to drain the used Vacuum Pump Oil from the Vacuum Pump and then replace it with new, clean Vacuum Pump Oil.

Vacuum Pump Oil helps the Vacuum Pump extract non-condensable gases and moisture from the Vehicle's AC system. As the oil extracts gas and moisture, its efficiency is reduced. Replacing the AC-134a's Vacuum Pump Oil every 50 hours of use ensures that the oil is always working efficiently.

Tip BendPak/Ranger recommends keeping a rag handy; oil sometimes leaks.

Make sure to switch off the AC-134a ***and*** unplug the Main Power Cord from the power source before opening the unit. This is a precaution to make sure there are no electrical issues during the oil change.

Before changing the oil, you should run the Vacuum Pump for about 10 minutes (manually using the menu).



To change the Vacuum Pump Oil:

1. In Standby Mode, press **Vacuum**.
2. Use **Plus** and **Minus** to specify the amount of time you want the **Vacuum** to run.

   BendPak Ranger recommends at least 10 minutes.
3. Press **Start / OK**.

   The **Vacuum** begins.

4. When the **Vacuum** is over, turn Off the AC-134a using the On/Off Switch on the back of the unit, then unplug the Power Cord from the power source.

   ⚠ **WARNING** The Main Power Cord ***must*** be disconnected from the AC-134a for this procedure. This is a preventative measure to ensure the safety of the persons working on the Vacuum Pump. Failure to disconnect the Main Power Cord could result in serious personal injury, including, in rare cases, death.

5. Open the front door of the unit by removing the two screws on the right side.

   You will need a hex key (sometimes called an Allen key) to remove the screws.

   Make sure to keep the screws, you will need to put them back into place at the end of this procedure.

6. Position a container that can hold at least 1/2 liter / 17 ounces under the Oil Drain Plug.
7. Unscrew the Oil Drain Plug.

   The used oil drains out of the Vacuum Pump. Make sure to catch it in the container.

8. When the used oil has been completely drained, screw the Oil Drain Plug back in.
9. Put new oil into the Vacuum Pump via the New Oil Plug,

   You want the oil level to be in the middle of the Sight Glass.

   Try not to get any dirt or other contaminants into the oil as you put it into the pump.

10. Screw the New Oil Plug back in.
11. Close the front door, screw in the two screws that hold it in place, reconnect the Main Power Cord, and then turn On the AC-134a.
12. Press **Function**, then use **Plus** or **Minus** to select **Vacuum Pump Oil**.
13. Enter the password, 7278, then press **Start / OK**.
14. Press **Start / OK** to reset the count.

Filter Drier Reset

The Filter Driers need to be replaced periodically to make sure they are correctly purifying the Refrigerant that passes through them.

Important: Before you can replace your existing Filter Driers, you need to purchase new ones from BendPak Ranger and have them sent to you. To do this, call **Ranger Products at (800) 253-2363 or (805) 933-9970**, ask for the Parts department, and tell them you need to order two AC-134A Filter Driers (ZL DRS302), part number 5585516. When you receive them, you can perform the procedure in this section.

Replacing and resetting the Filter Driers requires the use of multiple codes:

- **Equipment ID**. The ID number specific to each AC-134a. To find the Equipment ID of your AC-134a, press the Function button, highlight option 8, **Other Service** and press **Start / OK**, enter 0573 and press **Start / OK**; when the Equipment ID appears, write down the number.
- **Drier Code**. The Code for a specific set of Filter Driers. Each Code is 12 digits and is written on each of the Filter Driers.
- **Activation Code**. This Code is known only to BendPak Ranger Technical Support. After the two Filter Driers have been replaced in the unit, you need to contact BendPak Ranger Technical Support at **(800) 253-2363** or **(805) 933-9970** and provide them with the Equipment ID for your AC-134a and the Drier Code of your new Filter Driers. They will give you a new Activation Code that you can use to activate your unit.

Make sure to switch Off the AC-134a ***and*** unplug the Main Power Cord from the power source before opening the unit. This is a precaution to make sure there are no electrical issues during the procedure.

⚠ **WARNING** The Main Power Cord ***must*** be disconnected from the AC-134a for this procedure. This is a preventative measure to ensure the safety of the persons working on the Filter Driers. Failure to disconnect the Main Power Cord could result in serious personal injury, including, in rare cases, death.

To replace the Drier Filters:

1. Turn Off the AC-134a, then unplug the Main Power Cord from the power source.
2. Open the front door of the AC-134a by removing the two screws on the right side.

   You will need a hex key (sometimes called an Allen key) to remove the screws.

   Make sure to keep the screws, you will need to put them back into place later.
3. Remove the Filter Driers and replace them with the new ones.

   When inserting a new filter cartridge, observe the flow direction (flow arrow must point downwards).
4. Double check to make sure both new Filter Driers are firmly in place.
5. Close the front door back on, put the screws back, and then reconnect the AC-134a to power.
6. Contact BendPak Ranger Customer Service and give them the Equipment ID of your AC-134a.

   They will provide you with an Activation Code.
7. Press the Function button, highlight option 7, **Filter Drier Reset**, enter the Drier Code from the outside of the Filter Driers you just installed, then press **Start / OK**.
8. Enter the Activation Code you received, then press **Start / OK**.

   The new Filter Driers are now activated.

Other Service

The Other Service option provides access to additional services.

Only access these services if directed to do so by BendPak Ranger Technical Support.

Disposal

This section describes how to dispose of used fluids, packaging material, and the AC-134a unit.

Disposing of Used Fluids

Used Refrigerant cannot be let out into the environment. It can either be recycled on-site using approved equipment designed to both recover and recycle Refrigerant (such as the AC-134a) or sent off-site to a reclamation facility to be purified according to ARI Standard 700.

Refrigerant sent off-site must be sent to an **EPA-certified Refrigerant reclaimer**.

Used PAG Oil is hazardous waste. Do not mix used it with any other fluids. Keep it in in suitable containers prior to disposal.

Used PAG Oil should be taken to a hazardous waste collection facility:

- Cities, counties, and states often support both recycling facilities and hazardous waste collection facilities. Contact them to see if and where they have these programs.
- If you have large amounts of fluid, consider contacting a commercial waste disposal company. In all cases, the best approach is to find an appropriate facility and contact them — in advance — to ask them: what kinds of fluids they accept, what kind of containers it must be in, what hours they are open, their location, and any other information specific to their facility.

If you are unable to find an appropriate facility, the website **earth911.com** has resources that may be of help.

Disposing of Packaging Material

Dispose of the cardboard packaging material in which the unit arrived with other waste paper.

Plastic packaging material should be added to other recyclable waste.

Disposing of the AC-134a

If you wish to dispose of the AC-134a, first completely drain it of all fluids (and dispose of them as described above), then take the unit to a recycling center.

Troubleshooting

This section describes how to troubleshoot the AC-134a.

Note: If the AC-134a is not functioning correctly, you must ***take it out of service*** until it is fixed.

Important: All repair work on the AC-134a ***must*** be done by qualified personnel.

Issue	**Action to Take**
No text visible on Display.	Make sure AC-134a is plugged in to a working power source and the Main Power Switch on back of unit is set to On.
An error code with message appeared on the Display.	See **Error Messages** for the error code that displayed.
The Used PAG Oil Container is full.	You need to empty the container. Refer to **Disposal** for disposal information.
The New PAG Oil Container is empty.	You need to purchase PAG Oil and put the recommended amount of PAG Oil, of the correct viscosity for the Vehicle being serviced, into the New PAG Oil Container.
New PAG Oil isn't going into the Vehicles being serviced.	Make sure the container with the New PAG Oil is on the right and has clean PAG Oil in it. Make sure the container to hold the User PAG Oil is empty and on the left.
The Refrigerant values the AC-134a shows don't seem right.	Check the calibration of the Scale; recalibrate if necessary.
You can't get the fittings on the Service Hoses to fit.	Make sure you are connecting the Low Side Service Hose (blue) to the low side port on the Vehicle and the High Side Service Hose (red) to the high side port on the Vehicle. Make sure to pull the Fitting's Hood back, and hold it there, while putting the rest of the Fitting onto the port. Refer to **Attaching Service Hoses** for more information.
You can't get Refrigerant into the AC-134a from an External Refrigerant Tank.	Is there Refrigerant in the External Refrigerant Tank? Is the Refill Adapter in place? Is the Fitting on the Service Hose in the Open Position? Are you using the Low Pressure (blue) Service Hose?
Refrigerant doesn't seem to be going into the Vehicle's AC system.	Are the Knobs and the Shutoff Valves in the Open positions? Is there Refrigerant in the Refrigerant Tank? Are the Fittings on the ends of the Service Hoses open?
You don't know how much PAG Oil/ Refrigerant to use for a Vehicle.	You need to check the sticker under the hood of the Vehicle for this information. If there is no sticker, check the Vehicle owner's manual or search on the Internet.

If you continue to have problems with your AC-134a, visit **www.bendpak.com/support/** or call **Ranger Products at (800) 253-2363 or (805) 933-9970**.

Error Messages

Fault (on Display)	Cause	Solution
Code W16 **Not enough pressure to recover**	This message is normal; it occurs during a **Recovery**.	Press **Stop / Escape** to continue other operations. Make sure there is no Refrigerant in the AC system.
Code 02 **Inner tank filled.**	The inner tank is full of Refrigerant.	Drain the internal Refrigerant container in the proper manner.
Code W01 **Tank pressure is too high.**	This message is normal during **Recovery**.	Stop and wait for the Refrigerant Tank to cool. If necessary, release some Refrigerant.
Code W08 **Refrigerant is not enough.**	Displays during **Recharge**. The quantity of Refrigerant is less than 2 kg.	Refill the Refrigerant in the internal tank.
Code W03 **Pressure in system recovery start.**	Displays during a **Vacuum**. There is Refrigerant in the AC system.	Recover the Refrigerant.

If you continue to have problems with the AC-134a, visit **www.bendpak.com/support/** or call Ranger Products at **(800) 253-2363** or **(805) 933-9970**.

Spare Parts

Spare parts available for the AC-134a include:

Ranger Part Number	Description
5180374	AC-134A Hermetic R134A Compressor ZL COM002
5150010	AC-134A Vacuum Pump ZL PMP002
5585516	AC-134A Filter Drier ZL DRS302
5150011	AC-134A Pump Oil ZL POL250
5346917	AC-134A Solenoid Valve(SV3) ZL VAL001
5310233	AC-134A Low Pressure Gauge ZL LAH080
5310234	AC-134A High Pressure Gauge ZL GAH080
5180375	AC-134A Tank Pressure Gauge ZL GAT040
5326047	AC-134A Heating Belt ZL HTB300
5401126	AC-134A Blue Hose ZL BHS250
5401127	AC-134A Red Hose ZL RHS250
5105543	AC-134A Low Side Adapter ZL LFX134
5105546	AC-134A High Side Adapter ZL HFX134
5745027	AC-134A Load Cell ZL ELC030
5580220	AC-134A Key Pad(AC1000) ZL KPD011
5520221	AC-134A C21 Relay Board ZL RDB021
5520222	AC-134A C21 Main Board ZL MCB021
5328392	AC-134A LCD DisplayZL DSP192
5180180	AC-134A Low Pressure Switch ZL SW2000
5180181	AC-134A High Pressure Switch ZL SW1018
5326271	AC-134A Drain Oil Switch ZL SW3075
5326272	AC-134A Power Switch ZL PSW002
5326273	AC-134A Switch Power Supply ZL SPW002
5325520	AC-134A Oil Bottle ZL BOT250

Labels

A

CoolCharge

B

CoolCharge

Recover, Recycle, Recharge

C

Ranger

D

AC-134a

E

Fully Automatic AC Machine

F

FILTER UNLOCK CODE

For personal record keeping. Please keep track of the date and the filter unlock code used.

UNLOCK CODE	DATE	UNLOCK CODE	DATE
UNLOCK CODE	DATE	UNLOCK CODE	DATE
UNLOCK CODE	DATE	UNLOCK CODE	DATE
UNLOCK CODE	DATE	UNLOCK CODE	DATE

PN 5905269

G

⚠WARNING

READ INSTRUCTIONS AND ALL WARNING LABELS.

- This equipment should be used in locations with mechanical ventilation that provides at least four air changes per hour or should be located at least 18 inches above the floor.
- This equipment should NOT be used in the vicinity of spilled or open gasoline containers.
- To reduce the risk of fire, connect only to a circuit provided with 20 amperes max. branch circuit overcurrent protection in accordance with the National Electric Code, ANSI/NFPA 70.
- Always wear personal protective clothing and safety glasses.
- Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. To remove refrigerant from A/C system, use only certified equipment to meet the requirements of SAE J2210 (HFC-R134a recycling equipment).
- DO NOT pressure test or leak test equipment and/or vehicle air conditioning system with compressed air. Some mixtures of air and refrigerant have shown to be combustible at elevated pressures.

CONSUMER NOTICE: This product contains chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

PN 5905960

H

BendPak Ranger Santa Paula, CA USA www.bendpak.com

MODEL NUMBER	SERIAL NUMBER	VOLTS / HERTZ
AC-134A		110V 60Hz
REFRIGERANT	**REFRIGERANT AMOUNT**	**AMPS**
R-134a	40 lbs. Max.	12A Max.
DESIGN PRESSURE	**TEMPERATURE**	**PHASE**
High: 377 psi / Low: 174 psi	50 - 122 °F	1-Phase

⚠CAUTION

Risk of injury. This equipment should only be operated by certified personnel.

DATE OF MFG.

FOR INDOOR USE ONLY

DANGER! Disconnect Power Before Servicing

Certified by Intertek to meet SAE J2788.

Intertek 5006100

WARRANTY VOID IF DATA PLATE IS REMOVED. MADE IN CHINA.

I

⚠WARNING

ELECTRICAL SHOCK & FIRE HAZARD

Failure to follow these instructions can result in electrical shock, fire or death.

TO REDUCE THE RISK OF FIRE avoid the use of an extension cord because it may overheat. However, if you must use an extension cord, the cord shall be No. 14 AWG minimum.

- **NEVER** remove ground prong from plug end.
- **DISCONNECT POWER** before servicing or removing any panels and covers.
- Plug into a grounded three-prong GFCI protected receptacle only.
- **NEVER** modify this equipment in any way or warranty will be voided.
- All repairs must be done by an authorized technician.

Ranger Products cannot be held liable for any modifications made to this unit by any party, whether purchaser or third party. Technical support and service is available directly from your distributor or by calling Ranger Products Technical Support Hotline at: 805-933-9970 for the distributor nearest you. You may also contact the Support Hot Line for consultation on parts replacement. Please have serial number and model number of unit available.

PN 5905986

J

⚠WARNING

- Hoses may contain liquid refrigerant under pressure.
- Contact with refrigerant may freeze your skin.
- Wear protective equipment, including safety goggles.
- Make sure to recover service hoses after recharge process.
- Disconnect hoses using extreme caution.

PN 5905987

K

⚠CAUTION CRUSH HAZARD



Moving parts. DO NOT operate this equipment when cover is removed. Disconnect power before servicing.

⚠CAUTION BURN HAZARD



Hot parts. Keep hands away from hot surfaces. Allow to cool before servicing.

⚠CAUTION SHOCK HAZARD



Uninsulated live part. Disconnect power source before servicing this equipment.

PN 5905988

L

Ranger

Part No.:
5150998

Refrigerant Type:
R-134a

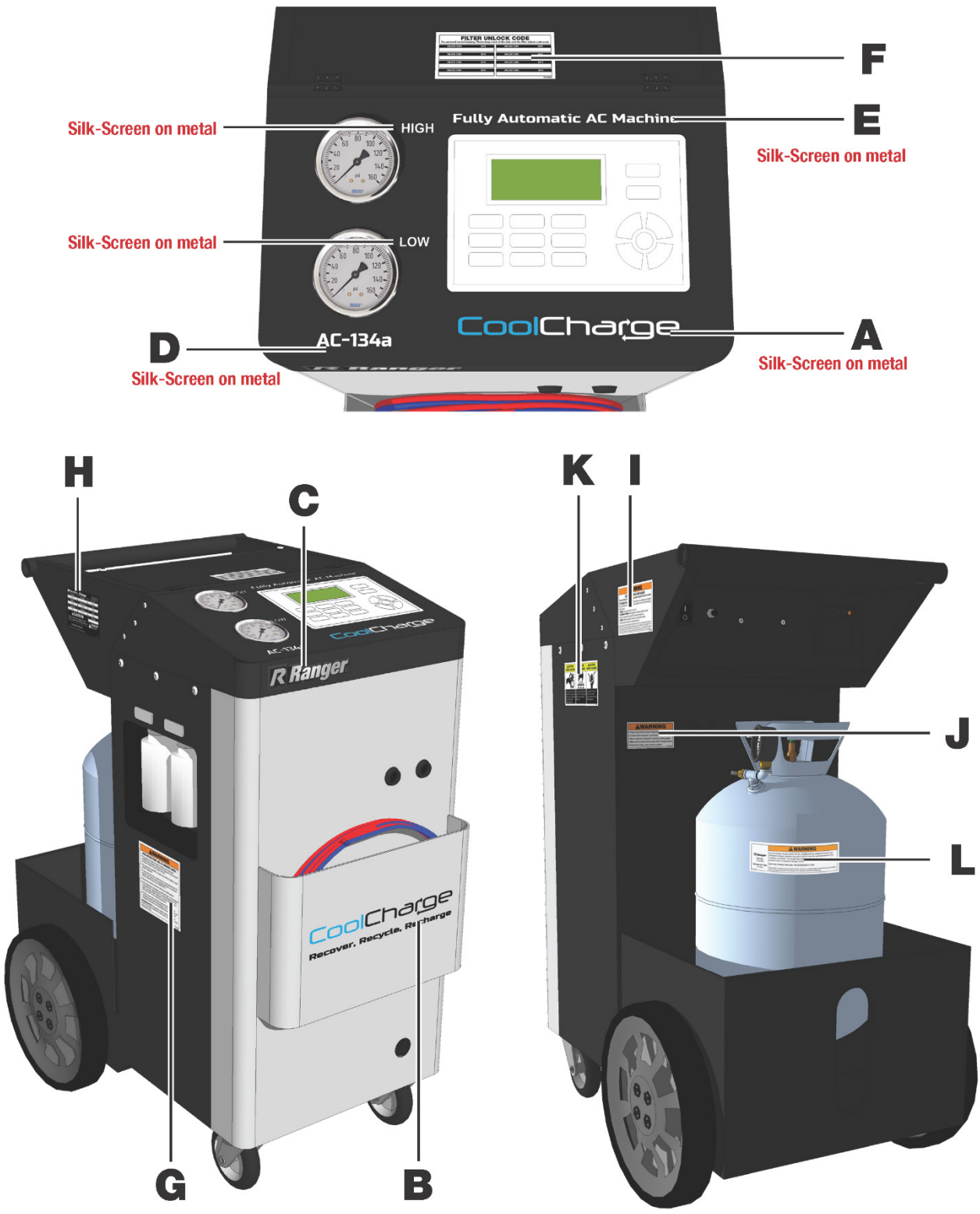
PN 5905985

⚠WARNING

Use only Ranger storage cylinder Part No. 5150998 with this refrigerant recovery unit. Refrigerant storage containers may vent or explode when the working pressure of the container is exceeded. This storage tank contains the refrigerant R-134a. To prevent personal injury or equipment damage, DO NOT MIX REFRIGERANTS.

USE THIS STORAGE TANK ONLY FOR REFRIGERANT R-134a

IMPORTANT: To operate recovery model, this tank must be in an upright position during the recovery procedure. Read and follow instructions and warnings in the operating manual and refillable tank.


FILTER UNLOCK CODE
F
Silk-Screen on metal
HIGH
Fully Automatic AC Machine
E
Silk-Screen on metal
Silk-Screen on metal
LOW
AC-134a
CoolCharge
A
Silk-Screen on metal
D
Silk-Screen on metal
H
C
K
I
R Ranger
CoolCharge
Recover, Recycle, Recharge
J
L
G
B

Maintenance Log

Maintenance Log

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