R-125

Multimedia Enhanced

Whirlpool CORPORATION

SERVICE MANUAL

R600A Refrigerant

W11105483

FORWARD

This Whirlpool Service Manual, (Part No. W11105483), provides the In-Home Service Professional with service information for the “R600A Refrigerant Sealed System.”

GOALS AND OBJECTIVES

The goal of this Service Manual is to provide information that will enable the In-Home Service Professional to properly diagnose malfunctions and repair the “R600A Sealed system.”

The objectives of this Service Manual are to:

- Understand and follow proper safety precautions.
- Understand the R600a Refrigerant.
- Successfully perform necessary repairs.
- Successfully return the refrigerator to its proper operational status.

WHIRLPOOL CORPORATION assumes no responsibility for any repairs made on our products by anyone other than authorized In-Home Service Professionals.

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Section 1: General Information

This section provides general safety, parts, and information for the R600A repair process.

- Refrigeration Safety
- R600A Introduction
- Approved R600a Containers
- Storage, Handling, and Transportation of R600a
- Leak Detection
- Evacuation
- Tools and Supplys
- Charging Kit

Refrigeration Safety

Your safety and the safety of others are very important.

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.

This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word "DANGER" or "WARNING." These words mean:

⚠DANGER — **You can be killed or seriously injured if you don't immediately follow instructions.**

⚠WARNING — **You can be killed or seriously injured if you don't follow instructions.**

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

IMPORTANT SAFETY INSTRUCTIONS

WARNING: To reduce the risk of fire, electric shock, or injury when using your refrigerator, follow these basic precautions:

- Plug into a grounded 3 prong outlet.
- Connect to a potable water supply only.
- Do not remove ground prong.
- Do not use an adapter.
- Do not use an extension cord.
- Disconnect power before servicing.
- Replace all parts and panels before operating.
- Remove doors from your old refrigerator
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety
- Remove doors from your old refrigerator.
- Use nonflammable cleaner.
- Keep flammable materials and vapors, such as **gasoline, away from refrigerator.**
- Use two or more people to move and install refrigerator.
- Use two or more people to move and install refrigerator
- Disconnect power before installing ice maker (on icemaker kit ready models only).
- Use a sturdy glass when dispensing ice (on some models).
- Do not hit the refrigerator glass doors (on some models).
- Children should be supervised to ensure that they do not play with the appliance.

SAVE THESE INSTRUCTIONS

NOTICE TO THE TECHNICIAN

It is the responsibility of the Service Technician to comply with all EPA Regulations and Standards and posses all necessary State and Federal licenses when servicing refrigerators.

Federal regulations and Standards can be found on the United States Government EPA Web Site.

State Regulations and Standards and licensing requirements, in most cases, can be found on the State Government Web Site.

R600a

⚠ WARNING	⚠ WARNING
	
Electrical Shock Hazard **Disconnect power before servicing. Replace all parts and panels before operating. Failure to do so can result in death or electrical shock.**	**Explosion Hazard** **Keep open flame, such as a torch, away from refrigerant tubing. Technicians specifically trained in handling flammable refrigerants should service refrigerators and freezers containing these refrigerants. Failure to do so can result in death, explosion, or fire.**

Introduction

Introduction

Whirlpool is introducing R600a as a new refrigerant for new production household refrigerators and freezers. R600a is a hydrocarbon with the benefits of zero ozone depletion potential (ODP) and a very low global warming potential (GWP) as compared to other refrigerants. An important characteristic of R600a--ahydrocarbon is it's flammability. This Manual details the procedure for performing sealed system work on refrigerators and freezers utilizing R600a hydrocarbon refrigerant. Special attention is given to mitigating flammability concerns.

Hydrocarbons

Hydrocarbons are flammable organic compounds made up of hydrogen and carbon.

Hydrocarbon refrigerants are desirable because they have zero ozone depletion potential (ODP) and a very low global warming potential (GWP) compared to other refrigerants.

Hydrocarbon (HC) refrigerants have been used extensively in household refrigerators and freezers for over 15 years in countries such as Germany, the United Kingdom, Australia, and Japan.

R600a

The EPA is updating the safe handling requirements under Section 608 that currently applies to ozone depleting refrigerants and extending them to substitutes like hydrofluorocarbons
(HFCs). These changes strengthen the existing program, in particular, by requiring a number of industry best practices.

Link to the EPA testing and regulations: https://www.epa.gov/section608/revised-section-608-refrigerant-management-regulations

Isobutane is a hydrocarbon approved for use by the EPA as a refrigerant in household refrigerators and freezers. As a hydrocarbon, the EPA has exempted R600a from the requirement to recapture used refrigerant. This service manual covers the procedure for venting R600a to atmosphere.

Link: https://www.epa.gov/snap/snap-regulations

R600a is the designation given to refrigerant grade isobutane by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE). ASHRAE categorizes R600a in the A3 safety group. The A3 safety group is reserved for refrigerants with lower toxicity, and higher flammability.

National Refrigerants, INC. Safety Data Sheet Link; www.refrigerants.com/pdf/SDS%20R600a%20%20Isobutane.pdf

Other uses for Isobutane Link: http://www.cosmeticsinfo.org/ingredient/isobutane

Approved R600a Containers

This is a Example of a Charging kit from Vulkan (Figure K). Follow all handling instructions listed on the cylinder or provided by the supplier. Quantity of R600a transported should be limited to one 420 gram cylinders.

(Figure K)

Use Conditions

The use conditions are:

1) R600a can only be used in new equipment designed specifically and clearly identified for the refrigerant.
2) Refrigerators or freezers using R600a must meet all requirements listed in Supplement SA to UL 250.
3) A 150 gram charge size limitation is imposed.
4) Refrigerators and freezers must meet labeling requirements.
5) Identifying Refrigerators Containing R600a

To implement the proper safety precautions, it is necessary to identify refrigerator using R600a refrigerant.

Check the Model and Serial Number tag inside the refrigerator compartment. This tag lists the type and quantity of refrigerant used.

Storage, Handling, and Transportation of R600a

It is the responsibility of the Service Company and Service Technician to understand and comply with all Federal, and local laws.

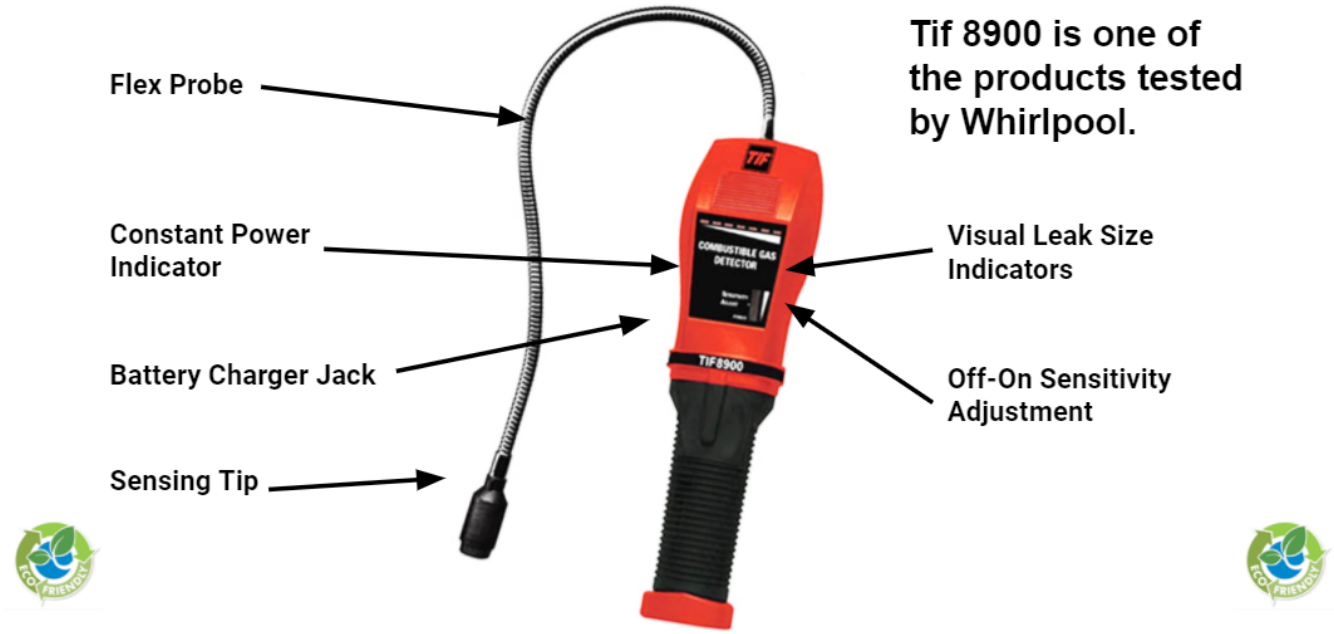
Technician Certification

Technicians must:

- Pass a certification EPA exam offered by an approved technician certification program in order to maintain, service, repair, or dispose of appliances containing ODS or substitute refrigerants.
- The certification exam will be updated to reflect the new rules and new refrigerants prior to this date.
- Keep a copy of their certificate at their place of business.
- Maintain a copy of their certificate until three years after no longer operating as a technician.
- Link; https://www.epa.gov/sites/production/files/2016-09/documents/608_fact_sheet_technicians_0.pdf

Note: The Gas detector needs to be activated before any repairs are attempted and is to remain on during the complete repair.

Locate the Gas detector at the lowest point and close to the work is being done.



Leak detection

Most electronic leak detectors used for HFC and HCFC leak detection are not safe and sensitive for use with flammable refrigerants, so electronic detectors specifically designed for flammable gases (or leak detection spray) must be used.

The TIF TIF8900 is the perfect tool to be used in a situation where a combustible gas, vapor or residue needs to be found. It is a highly-sensitive, cordless, combustible gas detector that identifies a broad range of natural gases including propane, methanol, butane, and gasoline. Its uses include: Gas lines and Pipes, Exhaust and Fuel leaks, Propane filling stations, Fuel in marine bilges, Heat Exchanger leaks, Check manholes for safety, Detect arson residue, IAQ (Indoor Air Quality) tests, and Liquid or gas fired heating systems.

Use a combustible gas leak detector to perform a background check around the appliance. Technicians must be trained in the use, and the device must be certified for use with the specific refrigerant class being serviced.

Operating Instructions

Once the batteries are fully charged, the instrument is ready to use (before use, carefully read and understand the warnings and Cautions).

1. Turn the Instrument on in a non-contaminated atmosphere by moving the slide switch to the ON position. The light should be lit. No sound should be heard.
2. The leftmost LED will illuminate to show that the unit is switched on.
3. After the automatic warm up period is completed (about 30 seconds), a ticking sound should be heard.
4. Adjust the sensitivity control upwards until a rapid signal is heard (Hi sensitivity).

Gas detector Continued

5. The frequency of the tick (sound) is an indication of the sensitivity. Move the knob until the ticking is rapid, for High sensitivity, or slow for Low sensitivity.

NOTE: If a steady tick cannot be maintained, it is indicative that the batteries may need to be recharged.

6. Search the general area of the suspected refrigerant leak. When a detectable compound enters the tip, the tick rate speeds up.

7. In conjunction with the increased speed of the tick the LEDs will light from left to right as a combustible is detected. The larger the concentration, the more the LEDS will light.

8. In most cases, it will not be necessary to adjust the sensitivity of the detector. However, if the siren sounds before a possible leak source can be found, it is likely that air is contaminated with heavy concentrations of gas. Therefore, you may desensitize the detector by moving the adjustment knob down to low sensitivity until the ticking slows to normal.

9. If your are searching for extremely small leaks, Make certain the control knob is in the High position or you hear rapid ticking.

Utilize vacuum pumps, recovery equipment, and other tools that are rated for and certified for use with A3 flammable refrigerants. Vacuum pumps must be certified for the refrigerant being used.

Evacuation:

If a vacuum pump rated for A3-refrigerant is not available, check with your vacuum pump manufacturer for instructions about using equipment for A3s such as R600a.

Refrigerants

Refrigerants

The use of flammable refrigerants in refrigeration systems was discontinued after the appearance and large scale production of CFC refrigerants. CFC refrigerants became the refrigerants of choice because they are low in cost, non-toxic and are not flammable.

However, studies have shown that CFCs have damaged, and continue to threaten, the Earth's delicate ozone layer. In light of this, the Montreal Protocol was established to manage the discontinuation of these refrigerants.

Various alternative refrigerants to CFC12 were studied and some are now being used by the refrigeration industry worldwide. Among them, are some flammable refrigerants.

Refrigerants such as (R 600a) isobutane have increased in popularity with the consumer population primary because of its environmentally benign properties. More specifically, hydrocarbon refrigerants are safe to the Earth's ozone layer.

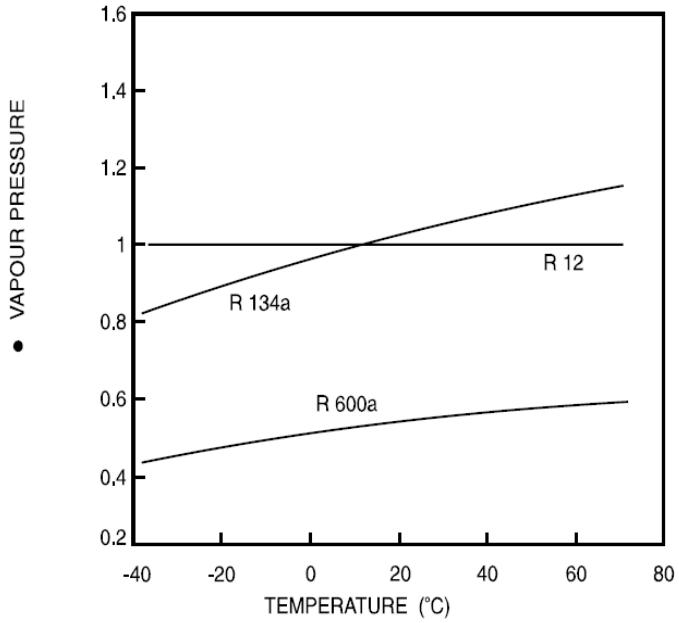
The Isobutane Refrigerant

Isobutane refrigerant, like other alternative refrigerants, presents different thermodynamic characteristics different from those of R 12 or R134a (see figure 1).

Figure 1 shows that isobutane (R 600a) presents lower vapour pressures than R 12 or R 134a, in the standard operational temperature range for a refrigeration system.

To better observe the impact of substituting R 12 for R 600a in refrigeration applications, please see the table.

Fig.1. - Behavior of vapor pressure of R 600a and R 134a in relation to R 12, according to temperature.



- IN RELATION TO R 12

Compressor Label

Tools & Supplies

Tools & Supplies

- Vacuum Pump; Preferred to have a rating 6 CFM capacity
- Gram measuring Scale
- ¼" High Pressure Hose
- ¼" Low Pressure Hose
- Exclusive manifold gages and hoses should be used for servicing R600a Appliances. (High, Low, and Vacuum) Hose requirements for R600a are still being defined.
- Rubber Charging Hose with "T" Adapter & Shutoff Valve
- 20' PVC Recovery Hose
- R600a Refrigerant Maximum 420 Gram Cylinder
- Piercing Pliers
- Pinch Off Pliers
- Tubing Cutters
- Rubber Mallet
- Certified and calibrated combustible gas leak detector to test for leaks if the system is charged with an A2L or A3 refrigerant.
- Liquid Charging Fitting
- Quick Disconnect Fittings
- Shutoff Valves
- Fire Extinguisher dry-powder fire extinguisher rated for Class B fires
- Ventilation Fan
- Note: All tools are suggested to be Spark less tools. Whirlpool requires and AHAM recommends using a leak detector during the entire process. If gas or a leak is detected, stop work and do not use tools that could cause a spark during operation.

Figure 2

Figure 3: Vulkan R600a Cylinder

Figure 1

Figure 1: This is an example of a manifold gauge, vacuum pump combination. Figure 2: Typical 6 cfm vacuum pump without gauges. Figure 3: Vulkan R600a Cylinder

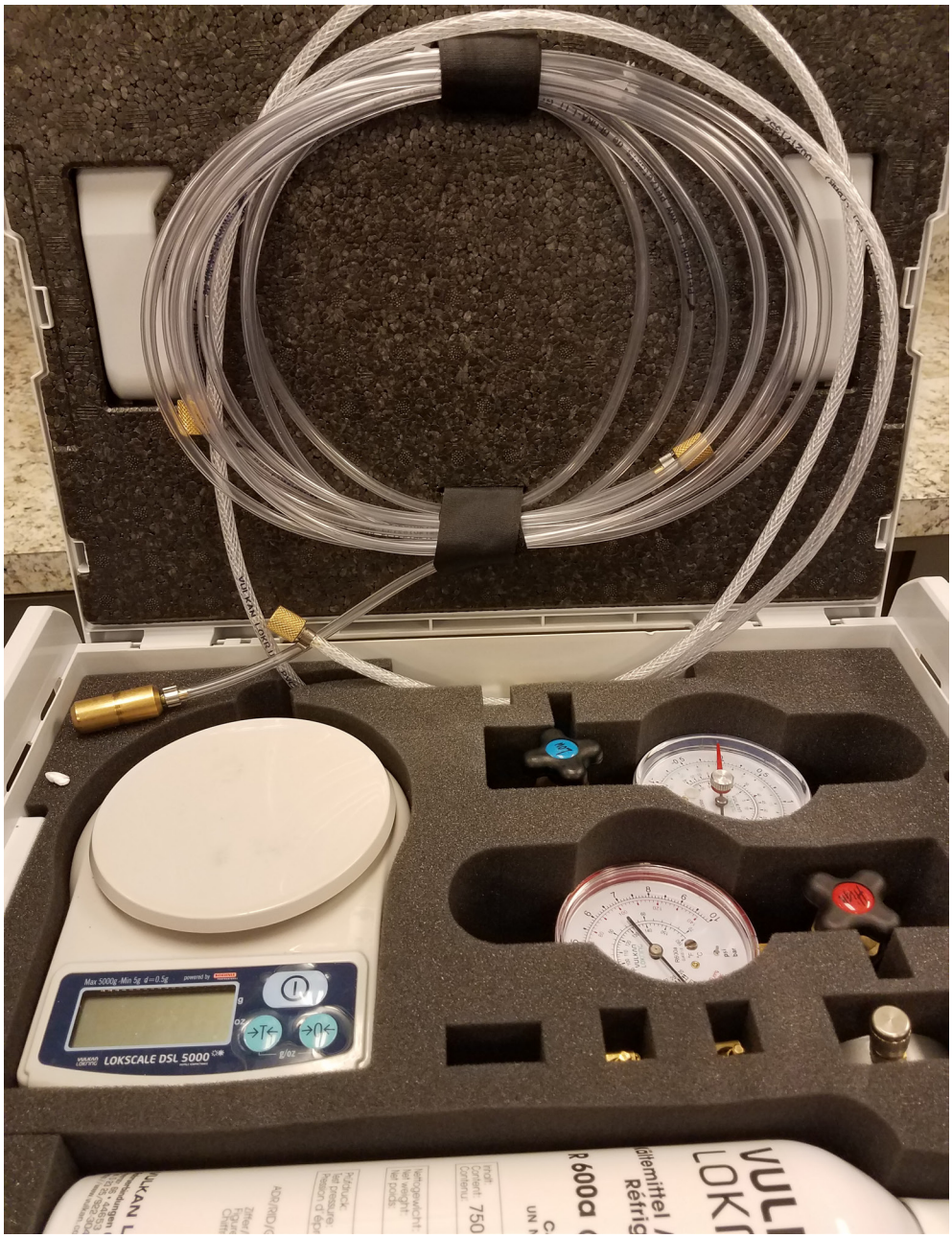


Figure 4 The LOKBOX Charging Facility is a hard plastic box with carrying handle. It is suitable for the transport of sufficient quantities of R600a. In addition to a charging scale, hoses, and fittings, it has a foam compartments suitable for the storage and transport of one 420 gram R600a cylinders. Figure 4

Vulcan Charging Kit includes:

- 4 - ¼" High Pressure Hoses 19" long
- Both High side and Low side manifold gages
- 1 "T" Adapter
- 1 "T" Adapter & Shut off Valves
- 20' PVC Recovery Hose
- R600a Refrigerant placement storage pod
- Liquid Charging Fitting
- Vapor Charging Fitting Quick Disconnect Fittings
- 2 Shutoff Valves

With this complete kit you will have the proper tools to remove the refrigerant before your repair.

Then after the sealed system repair you can use the same kit to assist you in evacuating and charging procedure on the product.

Section 2:
Sealed System Repair

This section provides operational Sealed system Evacuating and Charging process.

- Pre-Work Checks
- Sealed System Access
- Venting Process
- Refrigerant Temporary Recovery Procedure
- Sealed System Evacuating Procedure
- Charging Process

Pre-Work Checks

Pre-Work Checks

Prior to work on an R600a refrigerator, ensure the immediate area is suitable for working safely, and the appropriate precautions are in place. Proper safety checks before beginning work will minimize the potential for an ignition event. Take the following precautions before working on the sealed system:

Ensure the area work environment is safe.

- The work area should be sufficiently sized.
- R600a refrigerators should not be serviced in small poorly ventilated spaces such as very small 'galley' kitchens, storage closets.
- Suggested that you not perform sealed system maintenance in spaces smaller than 6' X 6'.
- Refrigerators in insufficiently sized spaces should be moved to a larger area to work safely.
- The work area should be properly ventilated. Proper ventilation allows any refrigerant inadvertently released to disperse safely.
- When working behind the appliance, create as much clearance as possible between the appliance and the wall, or other obstructions, to allow proper air movement. Locate the leak detector also behind the appliance.
- Use supplemental ventilation, such as a fan. Ensure the fan is located at minimum of 9 feet/3 meters from the nearest sealed system component.
- Ensure a dry-powder fire extinguisher rated for Class B fires is accessible on site.
- Use of a suitable gas detector will alert the technician of the presence of flammable gas.
- If flammable refrigerant is detected, immediately ventilate the room, evacuate the area, and notify the owner or customer.
- Recheck with a combustible gas leak detector before proceeding.
- If questioned, inform the customer the detector allows the work to be done safely.
- Remove any ignition sources from the work area Disconnect power by unplugging the appliance before servicing.
- The area should be free of open flame or burning materials, including cigarettes, candles, or similar materials.
- Do not operate appliances that utilize open flames or have hot surfaces electric or gas ranges, electric or gas dryers, toasters, electric or battery powered tools, and other small appliances while servicing the appliance.
- Inform the homeowner/consumer that no open ignition sources should be present in or near the area, including cigarette smoking materials.
- Check the area and the appliance for any signs of ignition that might have occurred prior to the service.
- If there are signs of ignition, stop work and ventalate the work area. Maintain a safe zone around the appliance during service work to prevent ignition sources or entry by the customers.
- An appliance on/off switch, or power button, is not adequate for removing power, as voltage will still be present in the unit.
- Ensure all necessary supplies, tools, and parts are on-hand.
- Maintain all equipment in accordance with manufacturer specifications.
- Inspect all equipment and hoses for damage prior to each use. Do not use damaged equipment or hoses.

Sealed System Access

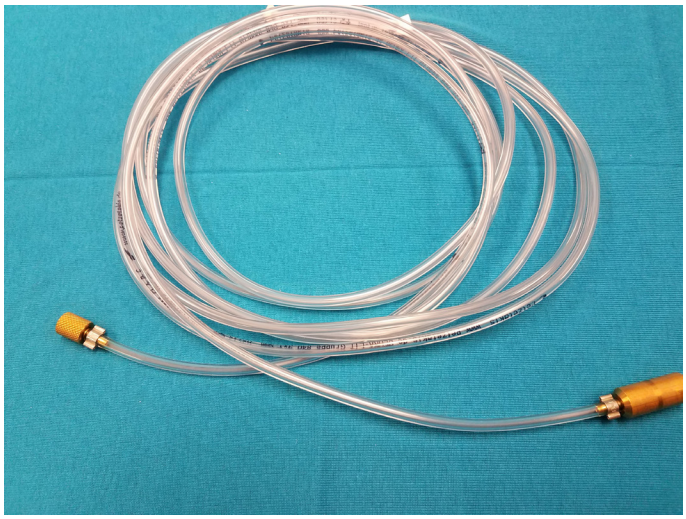
- ➢ DO NOT access the sealed system by means of cutting or breaking the sealed system piping.
- ➢ DO NOT access the sealed system by means of a torch or any type of open flame.
- ➢ The sealed system should only be accessed through the process tube and through the drier.
- ➢ Quick disconnect fittings must be used when accessing the sealed system. Use of quick disconnect valves minimize or eliminate the discharge of any flammable refrigerant into the work area. Quick disconnect fittings can be used with Schrader valves, if present, or with piercing pliers.
- ➢ If there is no direct means of accessing the sealed system, use piercing pliers.
- ➢ If the sealed system is accessed by piercing, ensure the correct diameter fitting is selected based on the size of the sealed system pipe.

Sealed System Access Procedure

- First, Verify Failure
- REQUIRED to Activate the Combustible Gas Detector before any work is started. Place the Detector at the lowest point of the work area.
- Ensure Pre-Work Checks in Section 2.2 are Completed.
- If you are working on a Sealed system with a Three Way Valve.
- Position 3-Way Valve to Home Position.
- Enter diagnostic mode.
- Initiate Step To open the Three Way Valve (refer to tech sheet) and wait 1 minute.
- Unplug the refrigerator.
- Remove the Machine Compartment Cover.
- Attach quick disconnect fittings to High Side Fitting.
- Attach to Schrader Valve if present.
- If Schrader Valve is not present, use piercing pliers to access High Side of the sealed system. Attach quick disconnect fitting to the piercing pliers. If the compressor is non functional, connect a second piercing pliers to the suction process tube.

R600a Refrigerant

- The LOKBOX Charging Facility is equipped with a 20' PVC Recovery Hose. This length should be sufficient to reach an outdoor location in most instances.



- Unlike traditional CFC's and HCFC's, the EPA allows venting of R600a refrigerant to the outside atmosphere.
- Venting is the preferred method of removing refrigerant from a sealed system.

Venting Process

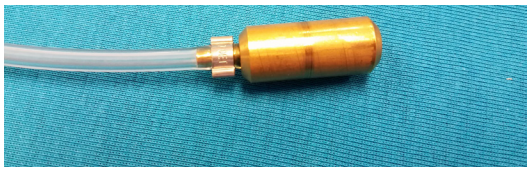
- When (all requirements are met, venting allows the refrigerant to be safely dispersed in the natural environment, removing the hazard of concentrating and transporting flammable immediately.
- When venting, it expands to atmospheric pressure. Venting times will vary for many reasons, including but not limited to, the size of charge, atmospheric pressure, whether the compressor is running. Continue venting the appliance for an additional 10 minutes after the pressure coming out ends.
- ATTENTION: Do not vent R600a refrigerant indoors.
- ATTENTION: Ensure there is no source of ignition near the discharge hose.

R600a vent locations must meet the following criteria:

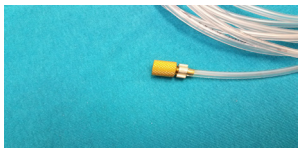
- R600a must be discharged to the outside environment.
- Discharge location must not be a public area or area where people are unaware of the procedure taking place.
- There must be no sources of ignition near the hose discharge.
- Ensure that there is no posibilty for refrigerant to be blown back into any buildings, or to a location below ground level.

Sealed System Refrigerant Venting Procedure (Preferred)

- Route the weighted end of the 20' PVC Recovery Hose to an outdoor location.



- Connect the opposite end on the 20' Recovery Hose to the quick disconnect fitting on the High Side piercing pliers to begin venting.



- If the compressor is functional, run the compressor to speed the venting process.
- Monitor the Recovery Hose and discharge point.
- Ensure the hose remains kink free.
- Ensure the Refrigerant Venting Requirements are met continually throughout the venting process.
- Observe the mirage effect at the hose discharge as the R600a refrigerant exits. Note when the mirage effect stops.
- A mirage is a naturally occurring optical phenomenon in which light rays are bent to produce a displaced image of distant objects or the sky.
- Hitting the compressor with a Rubber Mallet at this time will remove any trapped R600a from the oil.
- Continue Venting for an additional 10 minutes to ensure system is fully vented. After the sealed system is fully vented, disconnect the Recovery Hose from the quick disconnect fitting.

Refrigerant Temporary Recovery Procedure

- If direct venting is not possible due to the appliance location or other reason, the refrigerant must be captured. The captured refrigerant should be vented outdoors before leaving the premises. Do not travel with any reclaimed R600A Sealed System Refrigerant. Venting is the Preferred Method.
- Connect one end of the Recovery Hose to the quick disconnect fitting on the approvd Recovery Vessel.
- Connect the other end of the Recovery Hose to the quick disconnect fitting on the piercing pliers or shrader valve.
- If the compressor is functional, run the compressor to speed the venting process.
- Allow the refrigerant to vent into the approved Recovery Vessel for 40 minutes.
- Monitor the hose to ensure it remains kink free
- After the sealed system is fully vented, disconnect the Recovery Hose from the quick disconnect fitting.
- Purge the Recovery Hose with the leak detection trace gas mixture to remove residual R600a.
- Immediately remove the approved Recovery Vessel to a suitable outdoor location and vent the bag to atmosphere, removing all R600a refrigerant.

Recovery Vessel

ATTENTION:

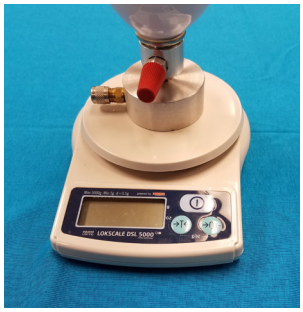
Ensure Refrigerant Measuring Equipment is Maintained and Calibrated in Accordance With Manufacturer Specifications.

Sealed System Evacuating Procedure

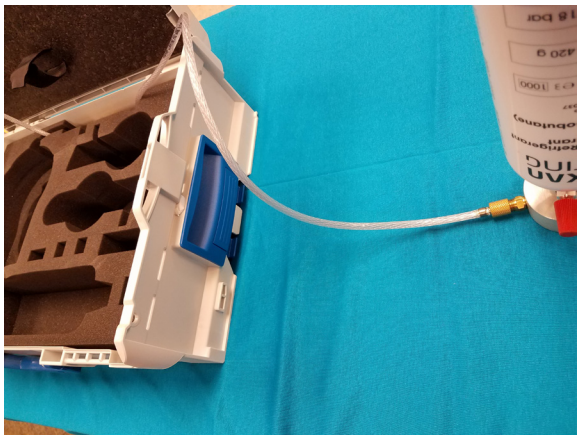
R600a is an extremely efficient refrigerant. This high efficiency means refrigerators using R600a refrigerant use a much smaller charge size than a comparable refrigerator with CFC refrigerant.

- This small charge size increases the significance of any error in quantity charged. To obtain the precise charge required use Lokring's LOKBOX Charging Facility. This facility has a digital scale with a high degree of accuracy, in addition to the other required hoses and connections.
- Condensation forming on the refrigerant bottle will add weight to the bottle, resulting in charging errors.
- Open the case and remove the LP (vac) combination gauge manifold and set aside.

- Thread the closed extraction valve into the holder with the the bottle R600a cartridge.



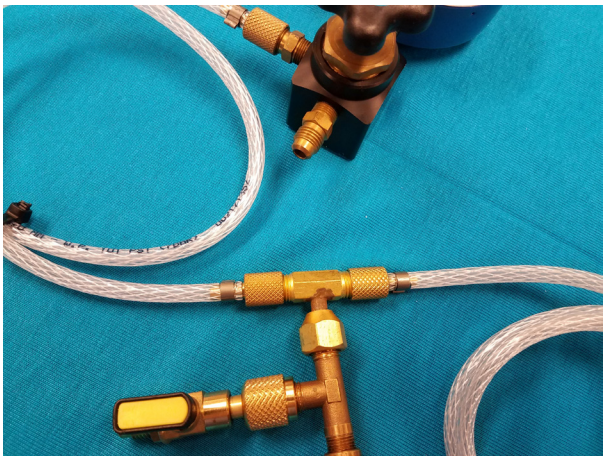
- Connect the refrigerant hose (zip tied to the charging case) to the extraction valve (the other end should be tightly connected to the one-way valve attached to charging case).



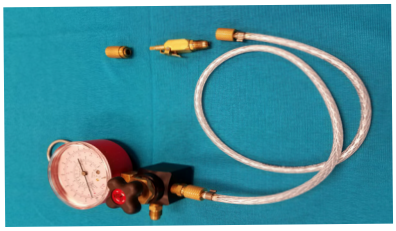
Sealed System Evacuation

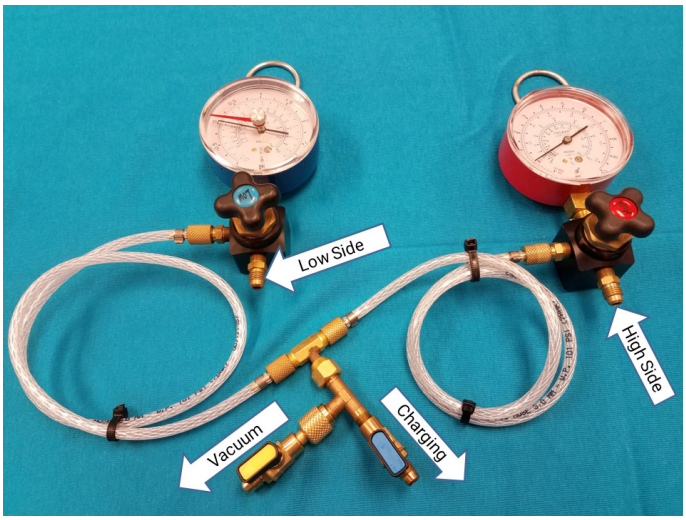
Due to the narrow charging tolerances associated with R600a refrigerant, it is necessary to draw a deep vacuum of at least 28” of vacuum to ensure proper evacuation. Oil in the vacuum pump should be changed frequently to ensure the ability to draw a deep vacuum.

- For evacuation connect both sides Low and high - Connect a hose to gauge manifolds side port and the opposite end to the upper brass-T.



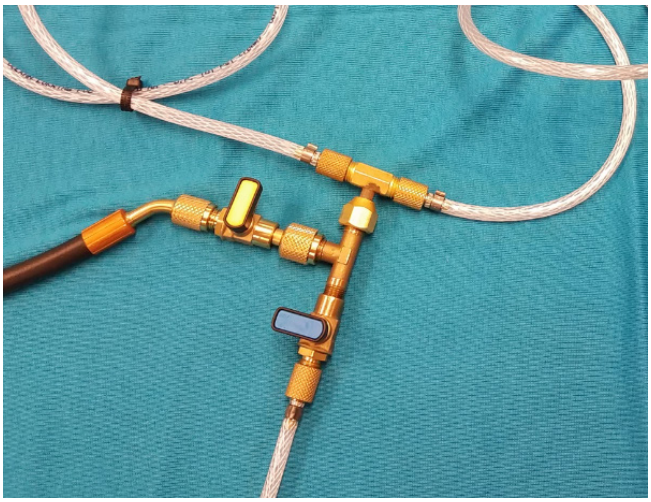
- Connect an additional charge hose to a Gauge manifold lower male port and the other hose end to the 2nd quick disconnect adapter. Unclip and thread the quick disconnect adapter cap onto the high side charge port, DO NOT CONNECT QUICK DISCONNECT TO THE ADAPTER CAP THAT IS ON THE PRODUCT AT THIS TIME.





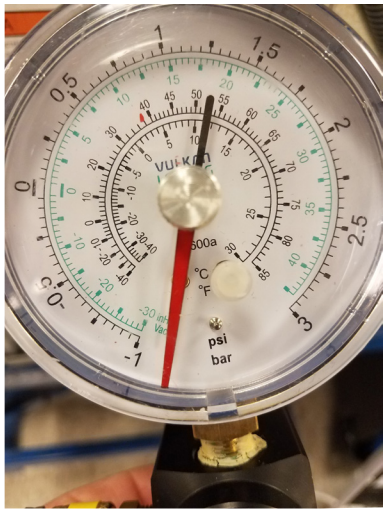
Gauges and Hose Connection Diagram

- Connect a charge hose with shut off valve between vacuum pump and lower Brass T side port.



- Once you have all of your connections secure you can start the Vacuuming and Charging Process

- Turn the vacuum pump on and let it warm up for a few minutes (warm to touch). Once warm open the ball valve at the hose coming from the vacuum pump to T-connection. Open the Low Pressure gauge manifold valve. Watch needle on the low pressure gauge until it reaches it's lowest vacuum reading position.



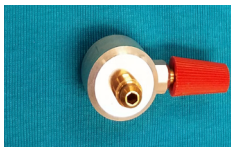
- When the Low Pressure gauge needle reaches the lowest vacuum reading, set the adjustable set pointer to cover the vacuum needle. Close the ball valve on vacuum pump hose. The Low Pressure / Vacuum gauge must hold without dropping for a minimum of 60 seconds. This test ensures that all connections of the filling equipment are tight and leak free.

- Connect the quick coupling to the Low and High side compressor filling tube. (If evacuating both sides) connect the High Pressure quick coupling to the dryer. Slowly open the ball valve in line to the vacuum pump.

- Evacuate until the Low Pressure gauge reaches the previously set position (about 5 mintes) of the adjustable shadow needle. Close off the Valve to the Vacuum Pump and wait at lease 60 seconds.
- Watch the shadow needle for any deflection. If you do not see any movement you can continue and Evacuate for addditional 10 minutes.
- If you do see movement in the needle you may have a leak in the sealed system that needs to be repaired.
- If no pressure change (vacuum needle stays steady behind shadow needle), the charging process can be started.

Charging Process

- At this point you can remove the High side quick connect from the filter dryer. Keep the High side valve open and connected. This is to remove the remaining refrigerant in the hoses in the last step.
- Close the ball valve to the charging station at the lower T-fitting. Switch on the scale and set to zero.
- Open the discharge valve on the refrigerant bottle and allow the gas to flow into the hoses.



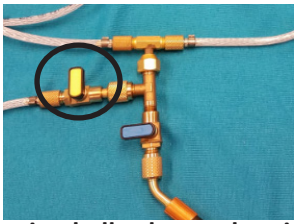
Discharge valve on the refrigerant bottle

- Note for liquid filling (This is the preferred process)
- When filling with liquid refrigerant, the bottle is screwed into the holder with the closed extraction valve in place on the bottle. The bottle is placed upside down on the scale.
- Switch the scale on and reset to zero(Figure S). Make sure Lower T-connection ball valve to charging case is closed.

Figure S

- Open the valve that is connected to the R600a and fill the hoses with refrigerant up to the ball valve of the charging case T-piece(Figure T).

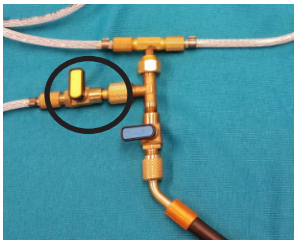
Figure T



T-connection ball valve to charging case

NOTES:

- Wait until the display of the scale remains constant (Stabilizes). The scale will display a weight change.
- Open the ball valve (Figure T) at the Lower T-connections to charging station and allow the refrigerant to flow into the refrigerator circuit until approximately 50% of the full charge is in the system.



- Close the ball valve of the charging case T- connection. Plug in the product and start the compressor.
- Complete charge in small steps by opening the ball valve to the Refrigerant only slightly and closing it immediately.
- As soon as the desired filling weight is reached, close the ball valve at the Lower T-piece to charging station.
- Then close the valve on the refrigerant bottle. Reopen the ball valve at the lower T- connection to charging station and allow the refrigerant remaining in the hoses to flow into the refrigerant circuit.
- After waiting 1 minute, start the compressor to suck the refrigerant from the hoses into the system. As soon as a pressure of less than 0 PSI is reached, the hoses are emptied. Now the ball valve of the T- connection can be closed. The Low Pressure Gauge can be read to check the evaporation pressure. After the pressure check disconnect the quick coupling and close the service connector.

PRODUCT SPECIFICATIONS & WARRANTY INFORMATION SOURCES

IN THE UNITED STATES:

FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL:

FOR WHIRLPOOL PRODUCTS: 1-800-253-1301
FOR KITCHENAID PRODUCTS: 1-800-422-1230

FOR TECHNICAL ASSISTANCE WHILE AT THE CUSTOMER'S HOME CALL:

THE TECHNICAL ASSISTANCE LINE: 1-800-832-7174

HAVE YOUR STORE NUMBER READY TO IDENTIFY YOU AS AN AUTHORIZED IN-HOME SERVICE PROFESSIONAL

FOR LITERATURE ORDERS (CUSTOMER EXPERIENCE CENTER):

PHONE: 1-800-253-1301

FOR TECHNICAL INFORMATION AND SERVICE POINTERS:

www.servicematters.com

IN CANADA:

FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL

1-800-461-5681

FOR TECHNICAL ASSISTANCE WHILE AT THE CUSTOMER'S HOME CALL:

THE TECHNICAL ASSISTANCE LINE: 1-800-488-4791

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