Carrier

Turn to the experts

PURON ADVANCE™

A NEW REFRIGERANT FOR A BETTER FUTURE

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Puron ADVANCE™

Carrier
Turn to the experts

Dear Carrier Expert:

LIMITS HAVE BEEN ESTABLISHED, DATES HAVE BEEN SET, AND WE'RE READY TO ROLL – WITH PURON ADVANCE™.

After much deliberation, the Environmental Protection Agency has delivered its final rulings on lower global warming potential (GWP) refrigerants. Maximum GWP ratings are locked in. Manufacturing dates are settled. And transportation, handling and storage procedures are established. It's time to begin a new era with a new type of refrigerant – Puron Advance.

If you've been following the communication trail, it should be no surprise that:

- Puron Advance is Carrier's choice for all ducted and ductless residential and light commercial products
- Puron Advance – R-454B – delivers a 75% decrease in GWP
- With a GWP of 466, it easily meets the 2025 maximum of 700 GWP
- New products and systems have been designed to make the transition as seamless as possible for technicians in the field

Today, less than a year away from full implementation of the 2025 lower-GWP requirements, we are ready. And with all the resources available, you'll be ready too. The materials in this 2024 Puron Advance Launch Kit build on the information shared in the introductory launch kit sent out in spring of 2023 and should be a helpful next step with content including:

- A summary of final EPA requirements, including scheduled dates for new manufacturing, installations, servicing and sell-through of current stock
- A detailed look at the field-installed dissipation system and optional accessories
- New alerts/notifications associated with Puron Advance dissipation systems
- Product line updates
- Training course summaries

Thank you for taking this journey with us. It's a process, and we trust the materials in this kit will help set you up for a smooth transition to selling, installing, and servicing our new product lines with Puron Advance. All this material and more is available on HVACpartners, and we will continue to provide updates as new information becomes available.

Thank you for your support!

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Puron Advance Overview

Summarizing the EPA's Final EPA Ruling: What You Need to Know

As anticipated, the EPA's final ruling, released in late 2023, sets the new global warming potential (GWP) for residential HVAC products and systems at a maximum of 700. The ruling includes final dates of manufacturing and dates of install, guidelines for servicing existing systems with Puron® (R-410A) and makes the distinction between "products", "parts", and "systems" under the terms of the ruling.

NOTABLE HIGHLIGHTS

Takes effect January 1, 2025:

On this date, all newly manufactured or imported HVAC indoor units, outdoor units, SPP, Mini-VRF, VRF, and light commercial products must be designed for use with a low GWP refrigerant.

VRF vs. Mini-VRF:

Mini-VRF (<65k BTU) now follows the January 1, 2025, systems compliance date vs. January 1, 2026, for VRF (≥65kBTU).[3]

Last date of manufacture or import for R-410A products:

Manufacturing or importing of new products or system components using R-410A is to be discontinued after December 31, 2024.

One-year sell-through for split systems:

You can install existing inventory of new, pre-2025 R-410A split systems until December 31, 2025, as long as the outdoor unit and indoor coil were manufactured or imported into the United States prior to January 1, 2025.

Three-year sell-through for SPP and light commercial rooftops:

You can install existing inventory of pre-2025 R-410A SPP and light commercial products until December 31, 2027. In Washington state, however, there is a one-year sell-through restriction with December 31, 2025, as the cutoff for installing these products.

Service provisions:

Any component of an R-410A system including a complete indoor or a complete outdoor unit can be serviced at any time as long as the servicing does not qualify as a new system installation per the new ruling. The following situations would qualify as a new system installation and would require new R-454B product: 1) Assembling a system for the first time from new or used components; 2) Increasing the cooling capacity, in BTU per hour, of an existing system; or 3) Replacing 75% or more of evaporators (by number) and 100% of the compressor racks, condensers, and connected evaporator loads of an existing system.

In order to meet the DOE efficiency requirements, residential R-410A AC/HP splits must be labeled "For Service Only" and meet the "Outdoor Unit With No Match" (OUWNM) test procedure.[4] Carrier will continue to manufacture R-410A indoor coil components in 2025 and beyond for indoor coil replacements only, and these individual components will be available through RC.

Requirement	Final Rule - As of 12/26/23			
	Packaged	Splits	Mini-VRF (< 65k BTU)	VRF (≥ 65k BTU)
GWP	700	700	700	700
RNC Date	1/1/2025 Date of Manufacture or Import	1/1/2025 Date of Manufacture or Import	1/1/2025 Date of Manufacture or Import	1/1/2026 Date of Installation
AOR New Systems Date	1/1/2025 Date of Manufacture or Import	1/1/2025 Date of Manufacture or Import	1/1/2025 Date of Manufacture or Import	1/1/2026 Date of Installation
AOR Service Restrictions	Parts Only	Parts + Indoor Coil + Complete R-410A Outdoor Unit[1,2]	Parts + Indoor Coil + Complete R-410A Outdoor Unit[1,2]	Parts + Complete R-410A Outdoor Unit[1,3]
R-410A Inventory Sell-Through	Three-Year	One-Year (New) Indefinite (Service)	One-Year (New) Indefinite (Service)	Indefinite (Service)

[1] New R-410A air conditioners and heat pumps will not be allowed for service in the state of California or Washington after January 1, 2025.
[2] Outdoor units must be labeled "For Service Only" and meet the Outdoor Unit With No Match (OUWNM) test procedure.
[3] VRF (≥65kBTU) with R-410A can be manufactured for one additional year, but new systems must be installed with R-454B starting January 1, 2026.
[4] OUWNM testing requirements only apply to residential products.

IS IT A SYSTEM, PART, OR PRODUCT?

SYSTEM

A system is defined as any HVAC equipment where its major components, including complete indoor and outdoor units, are assembled into a system and charged in the field. Examples of HVAC systems include split-system air conditioners or split-system heat pumps matched with fan coils, furnace coils, etc.

COMPONENT

For service provisions in the ruling, indoor coil components and complete outdoor units are considered service components and can be installed according to the methodology in the ruling. While the EPA allows an R-410A outdoor condensing unit to be designated as a service component by labeling it "For Service Only", those units must meet the DOE Outdoor Unit With No Match (OUWNM) test procedure.[3] Individual components for service will be available through RC.

PRODUCT

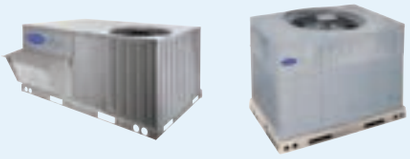
A product is defined as any HVAC equipment where all its components are installed, and the unit is charged by the manufacturer. These units only require power or water to be connected in the field during installation. Examples of HVAC products include SPP units and Light Commercial rooftop units.

SYSTEMS vs. PRODUCTS

In this final ruling, the EPA has divided the HVAC market into two categories - systems and products. The regulation requirements will differ for each of the two categories, as noted below.

HVAC SYSTEMS

HVAC PRODUCTS



TIMING: LAST DATE OF INSTALL OR MANUFACTURE FOR R-410A

Last date of manufacture or import of new R-410A equipment is December 31, 2024. There will be a one-year sell-through period for these HVAC systems. Therefore, the last date of installation for a system manufactured or imported prior to December 31, 2024, will be December 31, 2025.[2] For these systems to be installed in 2025, both the outdoor unit and indoor coil must be manufactured or imported prior to December 31, 2024

Last date of manufacture or import of new R-410A equipment is December 31, 2024. There will be a three-year sell-through period for these HVAC products. Therefore, the last date of installation for a product manufactured or imported prior to December 31, 2024, will be December 31, 2027.

EXISTING R-410A SERVICE METHODOLOGY

Individual components of the system including air conditioner[1], heat pump[1], furnace coil, etc. can be changed out. The entire system (i.e. indoor unit and outdoor unit) *cannot* be changed out at the same time for service utilizing R-410A product.

While the EPA allows an R-410A outdoor condensing unit to be designated as a service component by labeling it "For Service Only", those units must meet the DOE Outdoor Unit With No Match (OUWNM) test procedure.[3]

Indoor coils are considered service components and can continue to be manufactured and installed for service replacements of R-410A indoor coils. Individual components for service will be available through RC.

Individual parts of a product may be changed out for like parts designed for R-410A. Entire *products* cannot be changed out for service with new R-410A products.

[1] New R-410A air conditioners and heat pumps will not be allowed for service in the state of California or Washington after January 1, 2025.
[2] VRF (≥65k BTU) with R-410A can be manufactured for one additional year, but new systems must be installed with R-454B starting January 1, 2026.
[3] OUWNM testing requirements only apply to residential products.

EPA Final Ruling FAQs

HVAC SYSTEM FAQS –
Air conditioner, heat pump, fan coil, furnace coil, etc.

What is considered an "HVAC system" in this final EPA ruling?	An HVAC system consists of all components necessary for a split air conditioner or heat pump system to operate. That means all condenser coils, compressors, expansion devices, and furnace coils. Anything less than a total system is considered a specified component.
In an AC or HP split system, is my indoor unit or outdoor unit considered a system all by itself?	No. They are considered components of a system because they have to installed together on site to operate.
What is considered the date of install of a system?	The date of install will be considered as the day in which the system was assembled and charged for operation on site.
When is the last date that I can install new systems containing R-410A equipment?	December 31, 2025[1] will be the last day that a new system containing R-410A can be installed, however the indoor and outdoor units must be manufactured or imported prior to January 1, 2025.
Can an R-410A system be serviced after December 31, 2024?	Yes, any component of an R-410A system including an indoor coil component or a complete outdoor unit[1] can be serviced at any time as long as the entire system is not replaced. If replacing the complete outdoor unit, it must be labeled "For Service Only" and meet the DOE OUWNM test procedure.[2]
Can all components of an R-410A system be replaced at one time after January 1, 2026?	No. If all the components of a R-410A system need to be replaced at one time, then the system is considered a new installation and must contain a low GWP refrigerant.
Can the capacity of an R-410A system be increased via service after January 1, 2025?	Any service that would increase the capacity of the system greater than the original design would be considered changing the system to a new system and would require the use of low GWP refrigerants.
Who is responsible for ensuring that new systems will be installed using low GWP refrigerants after January 1, 2025?	The party or parties responsible for the installation and charging of the system will be responsible for ensuring the system is designed with equipment using low GWP refrigerants.
Do these requirements apply to any system installed outside of the United States?	No, this ruling currently only applies to equipment installed within the United States and its territories.

[1] New R-410A air conditioners and heat pumps will not be allowed for service in the state of California or Washington after January 1, 2025.
[2] OUWNM testing requirements only apply to residential products.

HVAC PRODUCTS FAQS – Packaged units

What is considered an “HVAC Product” in this final EPA ruling?	An HVAC product is defined as any air conditioner or heat pump that has all components installed at the manufacturer and the manufacturer charges the equipment to the necessary amount for operation.
When is the last date of manufacture of a product containing R-410A?	The last date of manufacture or import into the U.S. of R-410A product will be December 31, 2024. All products manufactured on or after January 1, 2025, will require a low GWP refrigerant.
What is the last date that R-410A products can be installed?	The last date for installation of product containing R-410A is December 31, 2027. (Not applicable in Washington State)
Can product containing R-410A equipment be serviced after January 1, 2025?	Yes, there is no restriction on the date in which parts or a product containing R-410A can be serviced.
What is considered service for a product containing R-410A?	Any action taken to return the product to operational capability is considered service as long as it does not increase the design capacity of the product or replace 75% or more of the evaporators (by number) and 100% of the compressor racks, condensers, and connected evaporator loads of an existing product.
During service can the entirety of an existing R-410A product be replaced with a similar product containing R-410A?	Product containing R-410A can be used to service an existing installation if that product was manufactured before January 1, 2025 and the service occurred prior to January 1, 2028. (Not applicable in Washington State)
Who is responsible for ensuring that product manufactured after January 1, 2025, will only contain low GWP refrigerants?	The OEM is responsible for ensuring that all product manufactured after January 1, 2025, will contain only a low GWP refrigerant.
Who is responsible for ensuring that product containing R-410A is not sold, distributed, imported, or exported after January 1, 2028?	All parties in the HVAC distribution chain will be responsible for ensuring that they are not selling, distributing, importing, or exporting product containing R-410A after January 1, 2028.
Do these requirements apply to any product installed outside of the United States?	No, this ruling only applies to equipment installed within the United States and its territories.

Why Puron Advance vs. R-32

For Ducted and Ductless Residential and Light Commercial Applications

Puron Advance is the latest chapter in the evolution of refrigerants for Carrier and our solution for meeting the EPA's requirements for a non-ozone depleting, low-GWP refrigerant.[1] It is the refrigerant we are transitioning to for our ducted and ductless residential and light commercial products.

Puron Advance became our leading choice for replacing Puron due to the performance similarities between the two.

To give you more insight into our refrigerant decision, here's a closer look at the similarities and differences between Puron Advance and R-32:

ODP & GWP	Both Puron Advance and R-32 maintain the zero Ozone Depletion Potential (ODP) of R-410A. Puron Advance does so with 30% less Global Warming Potential (GWP) than R-32, allowing an overall reduction of 75% of the GWP from R-410A.
Charge Reduction	Both Puron Advance and R-32 will allow for a similar charge reduction when compared to an R-410A system with similar coil construction.[2,3] Puron Advance units see up to a 30% reduction in charge compared to an R-410A system with similar coil construction.[4]
Cycle Pressures	R-32 operates at slightly higher pressures than R-410A whereas Puron Advance operates at slightly lower pressures than R-410A.
Glide	R-32 is a single constituent refrigerant with no glide. Puron Advance is a blended refrigerant and has a small glide. While no glide is preferred, our testing[2] has shown that the glide present in Puron Advance has little to no impact on overall system performance.
Lubrication	Carrier Puron Advance light commercial and residential HVAC equipment will continue to use POE-32 oil, which was also used in legacy R-410A equipment. R-32 HVAC equipment will require a different POE oil approved for use with R-32 refrigerant. In all instances, only use the oil that is specifically directed to be used by the unit manufacturer.
Discharge Temperature	R-32 has a higher discharge temperature than Puron Advance. If the temperature of the oil gets too high, the oil can begin to break down and lead to compressor damage or reliability concerns. Therefore, higher discharge temperatures may require additional equipment protections to ensure that the compressor oil does not overheat in hot environments.

Puron ADVANCE™

Carrier is committed to providing our planet and people a better future by offering the best refrigerant for each application. Puron Advance was selected for ducted and ductless residential and light commercial products due to its performance similarities to the R-410A system designs. After years of research and development, we are confident in our choice of Puron Advance.

[1] *https://www.ahrinet.org/system/files/2023-06/AHRI_CARB_Compliance_Seminar_Presentation_2-14-20_0.pdf*
[2] https://www.ahrinet.org/system/files/2023-06/AHRI_Low_GWP_AREP_Rpt_052_0.pdf
[3] https://www.ahrinet.org/system/files/2023-06/AHRI%20Low-GWP%20AREP-Rpt-022.pdf
[4] Based on evaluation of ratings for the air conditioner model 26SCA548

Training for the Transition

As you know, important changes are coming in the HVAC industry with the new requirements for A2L refrigerants. But don't worry – My Learning Center is dedicated to providing training resources for you and your teams to aid in a smooth transition.

Visit My Learning Center to access online content 24/7 and register for hands-on training classes at our new Technical Training Center in Indianapolis.

ONLINE TRAINING OPTIONS

Industry Safe Application

- This course includes a brief overview of GWP standards with a focus on what agencies require for safe operation when A2L refrigerants are utilized and how our equipment is designed to comply, using R-454B specifically. Eligible for FAD and NATE credit.

Safety, Storage and Transportation

- In this course, we'll answer some specific questions surrounding safe handling of A2L refrigerants. Questions include: How do I store the refrigerant safely in a warehouse? Do I need to make changes to my truck to carry this refrigerant? Will my equipment be different when working with A2L refrigerant? And do any processes change when I charge or braze on an A2L system? Eligible for FAD and NATE credit.

Installation and Service

- In this course, we'll cover some practical considerations for how the installation and servicing of residential split systems will be impacted by R-454B. Becoming familiar with the new R-454B dissipation systems and their components, in addition to current best practices for installing and servicing units, can go a long way in helping you be confident when you transition to the new refrigerant. Eligible for FAD and NATE credit.

Residential Split, Ductless and Light Commercial – Product Overview

- This course will touch on how the past few years have set us up for success with regard to the upcoming refrigerant change, why this new refrigerant is needed and what specific changes to expect from our products.

Recovery, Evacuation and Charging

- This course is a 3D simulation-based training that can be completed on your desktop, laptop or with VR equipment. The course will walk through a simulated service call that includes the discovery of leaks, repair of leaks, recovery, evacuation and leak testing for both R-410A and R-454B units. Eligible for FAD and NATE credit.

Coming Soon

The following courses will be made available to you soon on My Learning Center:

- Installation and Service (Ductless)
- Dissipation System Troubleshooting (3D/VR Simulations)
- Fan and Furnace Coil Components and Functionality

INDIANAPOLIS TECHNICAL TRAINING CENTER

My Learning Center is excited to offer hands-on technical training at our Technical Training Center in Indianapolis, IN. All classes are a combination of classroom instruction and hands on activities in our labs. R-454B content is being seamlessly integrated into our schedule of courses. Use the QR codes to view the current schedule and check back often as we regularly add new dates and course offerings. Schedule and registration is available through the events catalog of My Learning Center, simply search Technical Training Center.

DEALER SCHEDULE

DISTRIBUTOR SCHEDULE

Understanding Active Dissipation: What It Is, How It Works, and How It's Installed

WHAT IT IS

All products and systems designed for Puron Advance will require an active dissipation system to mitigate refrigerant leaks. Our active dissipation system includes a factory-installed leak sensor and a factory- or field-installed dissipation control board (depending upon the system) that overrides the thermostat when a leak is detected.

Our active dissipation system exceeds industry expectations and ensures customer peace of mind with additional sensitivity than what is required by UL Solutions. For additional peace of mind, homeowners may choose to purchase an **optional**, field-installed audible notification accessory, available for all tiers – Infinity® System, Performance™ Series and Comfort™ Series.

HOW IT WORKS

- The leak sensor triggers active dissipation when it detects the presence of refrigerant at a lower flammability limit (LFL)* of 20% – lower than the 25% required by regulation for added safety.
- The dissipation control board shuts off potential ignition sources – heating operation and high voltage outdoor units.
- Simultaneously, the indoor blower is activated to dilute the leaked refrigerant for ten minutes – or until elevated levels of refrigerant are no longer detected.
- During a dissipation event, Carrier zoning equipment will remain open. Once the dissipation event is over, normal zoning operation will resume.
- If the refrigerant levels drop below the trigger point of 20% LFL during the 10 minute blower-on period, the system will wait five additional minutes with the blower off and monitor the refrigerant sensor. If it does not reactivate, normal operation is resumed. If it reactivates, the dissipation cycle restarts.
- When active dissipation is triggered on one of our communicating systems, notifications are sent to both the Infinity System Control and the Connected Portal. Portal notification assumes the homeowner has opted in to data sharing and dealer notifications through the portal.
- A test button will be included on the dissipation board which will allow you to check that the system executes a dissipation cycle. Additionally, the previous seven error codes can be viewed by holding down the test button.
- If the audible notification accessory is installed, it will alert homeowners that the dissipation system has activated. They should then contact their dealer for service.

Note: Lower flammability limit represents the lower end of the concentration range of a flammable gas, normally expressed in percentage by volume in air, which can ignite with air at normal temperature and pressure. Below the lower flammability limit, there is not enough fuel to support combustion; the fuel/air mixture is too weak, and no exacerbation will occur.

HOW IT'S INSTALLED

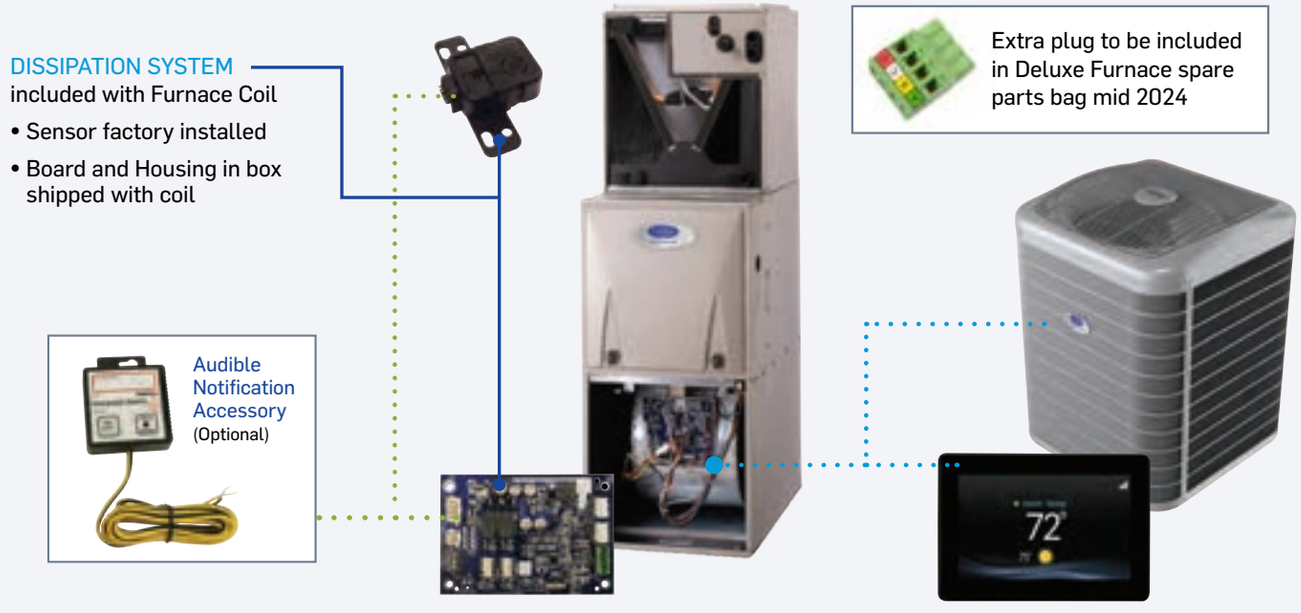
Installing new systems with active dissipation will vary based on the type of equipment:

If the indoor unit is a fan coil or the equipment is a packaged product:

- The leak sensor and active dissipation control board are both factory installed inside the fan coil.
- No special wiring is required – connections are made as usual for both 24V thermostats and communicating controls.
- The optional audible notification accessory is wired to the active dissipation control board.

If the indoor unit is a furnace:

- The leak sensor is factory installed on the evaporator coil.
- The active dissipation control board is field installed with low voltage connections to the gas furnace control board and to the evaporator coil leak sensor. It will be shipped with the evaporator coil in a box that includes the board, an enclosure, and 8-feet of low voltage wire. For deluxe systems, an extra 4-wire plug will be included in the furnace spare parts bag.
- Wiring connections are made as usual for both 24V thermostats and communicating controls.
- The optional audible notification accessory is wired to the active dissipation control board.



Dissipation System Alerts and Notifications

When an indoor coil has a refrigerant leak, a dealer would typically have to wait to receive a call from the homeowner because their system isn't heating or cooling. Now, our products and systems with Puron Advance provide additional information to help the technician remedy the issue faster. Our active dissipation system can make troubleshooting and repair easier via the following three notification paths:

1 Dissipation Control Board Fault Code LED

The active dissipation system includes its own set of fault codes. An LED on the dissipation control board can alert the technician of the following fault states:

- System Activation
- Sensor Malfunctions
- Blower Output Malfunction
- Test Button Malfunction
- Inverted Wiring
- Shorted Wiring

2 Communicating System Notifications

When active dissipation is triggered on one of our communicating systems, notifications are sent to both the Infinity System Control and the Connected Portal. Portal notification assumes the homeowner has opted in to data sharing and dealer notifications through the portal.

3 Optional Audible Notification Accessory

This optional accessory can be purchased by the homeowner and is field installed by your technician. The device will make an intermittent audible signal any time the dissipation system has been activated. If your customer chooses this option, be sure to relay the following information:

- Do NOT call 911 – the notification does not indicate imminent danger
- The audible notification indicates a system issue that requires a service call from a qualified Carrier dealer
- The audible notification lets them know that the dissipation system is doing its intended job
- Audible notification comes standard on most ductless indoor units

	Homeowner		Dealer	
Dissipation System Alerts and Notifications	Infinity System	Non-Communicating Systems	Infinity System	Non-Communicating Systems
Wall Control Notification	•		•	
Dealer Portal Notification			•	
LED Light on Dissipation Control Board	•	•	•	•
Optional Audible Notification Accessory	•	•	•	•

R-454B Compatible Tools Through Replacement Components

The industry transition to R-454B refrigerant impacts not just the equipment, but also the tools used to service that equipment. Vacuum pumps, recovery machines, leak detectors, and other tools must be updated to a sparkproof design as well as have suitable provisions to avoid refrigerant cross-contamination. Replacement Components has both the products and expertise to support you and your customers through this change.

RC Value Proposition	Detail
Comprehensive Offering	Full line of tools required for refrigerant service – vacuum pumps, recovery machines and cylinders, gauges, manifolds, hoses, adapters, leak detectors, etc.
Refrigerant Implications	Detailed tool-specific refrigerant implications, explaining if and why a tool is impacted by the new refrigerant.
Selection Guides	In many cases, multiple options exist for each tool. Selection guides simplify the decision-making process.

Link to *RC Catalog*

Vacuum pumps with sparkless design and purge feature for compatibility with new and existing refrigerants

Recovery machines with sparkless design and purge feature for compatibility with new and existing refrigerants

Sparkless leak detectors compatible with new and existing refrigerants

Gauges updated with saturation temperatures of new refrigerants

Latest digital manifolds and accessories with wireless connectivity for enhanced usability

Reverse thread adaptors for use with new refrigerant cylinders

General supplies such as spray-on leak detectors (no change for new refrigerant)

General tools such as refrigerant scales (no change for new refrigerant)

Needed safety supplies when working with brazing equipment

Replacement Components has the products and resources to support you through the industry transition to a new class of refrigerants.

Puron Advance
Product Enhancements - Ducted

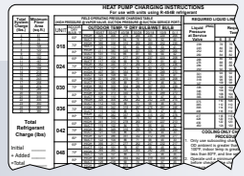
In order to meet the EPA and UL requirements with the switch to Puron Advance, we have had to make a series of modifications and enhancements to our outdoor and indoor products. In addition to optimizing our products to work with the new refrigerant, we are also taking the required steps to assess our products' electrical systems and mitigate any potential ignition sources within them. Review the callouts below for the most important changes.

DESIGN CHANGES TO OUTDOOR AIR CONDITIONERS AND HEAT PUMPS

Compressor Upgrades

- The new compressors have been optimized for R-454B refrigerant.
- The enclosed (molded) plugs on our compressors have been assessed and provide the necessary isolation from ignition.
- Protection is factory-installed on wiring to prevent pinching and arcing.
- Wire sleeves or sheaths have been installed on compressor and crankcase heater wiring to mitigate potential ignition points.

Total System Charge Label



- This label has been added to all outdoor units with Puron Advance for technicians to record total system charge information.

New Contactor

- A new safety rated contactor on single-stage and two-stage models to enable mistake proof safety wiring.
- Minimal air gaps inside the contactor act as a flame arrestor.

Modified R-454B Service Valves and Ports

- All service valves are now straight, with no bell, to allow for use of mechanical fittings.
- If brazing is desired, either create a swedge on one of the two copper tubes or use a copper coupling to connect the two tubes.
- Outdoor unit service ports will be covered with a red cap to denote the use of R-454B refrigerant.

Metering Devices

- EXV/Pistons have been optimized for the new R-454B refrigerant.

New Filter Drier

- The filter drier is shipped with the unit and now has a straight tube with no bell.
- These new straight tubes allow for use of mechanical fittings making installation and service quicker and easier.

Puron Advance Hang Tags

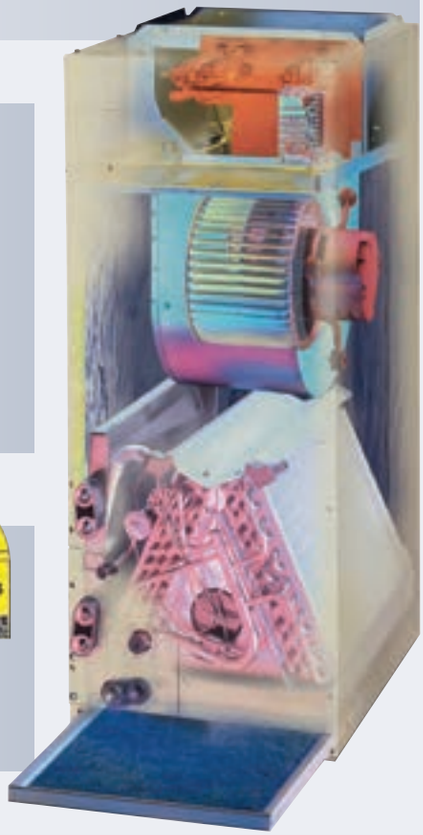
- All Carrier products with Puron Advance will be shipped with a yellow hang tag calling out that it is to be used with the new refrigerant only.

Use this QR code to access more information about Puron Advance.

DESIGN CHANGES TO FAN COILS AND FURNACE COILS

Audible Notification (Optional)

- When the dissipation system is activated, this optional feature produces an audible notification so the homeowner will know to call for service.
- The audible notification is a 60dB chirp much like the low-battery notification of a smoke detector.
- There is a dry contact connection between the accessory and the dissipation board.



Dissipation Board*

- Flashing LED lights provide system status and fault codes.
- Fault codes are listed on the dissipation housing or access panel for easy identification.
- Flexible mounting within 8' of system installation for furnace coils.

Modified Service Valves

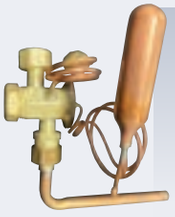
- All service valves are now straight, with no bell, to allow for use of mechanical fittings.
- If brazing is desired, either create a swedge on one of the two copper tubes or use a copper coupling to connect the two tubes.

Leak Sensor

- Factory-installed leak sensor in the coil ensures accurate leak detection.
- Multi-use sensor continues to work after leak detection and is designed to match the lifespan of the coil.
- Leak sensor trips dissipation system to clear the vapor leak and return system to normal operation with minimal downtime.

Puron Advance Hang Tags

- All Carrier products with Puron Advance will be shipped with a yellow hang tag calling out that it is to be used with the new refrigerant only.



TXV with Mechanical Fittings

- The new, factory-installed TXVs have been optimized for R-454B refrigerant.
- The mechanical fittings – found on our new fan coils and furnace coils – make installation and service simple and fast.
- The equalizer tube will now connect to the coil via a flare fitting, thus removing a tricky braze joint.

* For all Carrier systems that contain R-454B refrigerant at installation, a dissipation system will be shipped with the indoor unit.

Puron Advance
Product Enhancements - Ductless

In order to meet the EPA and UL requirements with the switch to Puron Advance, we have had to make a series of modifications and enhancements to our ductless outdoor and indoor products as well. In addition to optimizing our products to work with the new refrigerant, we are also taking the required steps to assess our products' electrical systems and mitigate any potential ignition sources within them. Review the callouts below for the most important changes.

DESIGN CHANGES TO DUCTLESS OUTDOOR

Compressor Upgrades

- The new compressors have been optimized for R-454B refrigerant to match R-410A performance.

Emergency Shut-Off Valve

- Multi-zone heat pumps are now equipped with emergency shut-off valves. If the indoor unit detects a leak, the shut-off valve will close.

New super capacitor

- Allows for emergency shut-off valve to function during power failure.

Electronic Expansion Valves

- The new expansion valves have been optimized for R-454B refrigerant to match R-410A performance.

R-454B Service Ports

- Outdoor unit service ports will be covered with a red cap to denote the use of R-454B refrigerant.

Puron Advance Hang Tags

- All Carrier products with Puron Advance will be shipped with a yellow hang tag calling out that it is to be used with the new refrigerant only.

DESIGN CHANGES TO DUCTLESS INDOOR

Audible Alarm

- Built-in audible notification when the dissipation system is active so the homeowner will know to call for service.

Leak Sensor

- Factory-installed leak sensor in the coil ensures accurate leak detection.
- Multi-use sensor continues to work after leak detection and is designed to match the lifespan of the coil.
- Leak sensor trips dissipation system to clear the vapor leak and return system to normal operation with minimal downtime.

Dissipation Board*

- Boards already present in equipment have been upgraded with new active dissipation logic, as well as connections for the leak sensor.
- New fault codes to identify active dissipation or a fault sensor.

Puron Advance Hang Tags

- All Carrier products with Puron Advance will be shipped with a yellow hang tag calling out that it is to be used with the new refrigerant only.

Tool Changes

The following chart compares service items and tools you will need when working with Puron Advance and how this compares to the ones you are used to using with Puron. It is always recommended to inspect refrigerant service tools and equipment for damage and to ensure compatibility with both A1 and A2L refrigerants. If you're unsure about the compatibility of any of your tools or instruments, check the AHRI website or contact your Carrier distributor to learn more.

Service Item / Tool	Use with Puron Advance (vs. Puron)
Gauge manifold	**No change**
Charging hoses	Separate set for each type of refrigerant
Refrigerant leak detector	Move to A2L-compatible
Electric hand tools	Non-sparking required
Ventilation fan	Similar (may be differences in machine rooms)
Dry chemical / CO2 fire extinguisher	Chemical-compatible
Scales	**No change**
Vacuum pump	Check with manufacturer
Recovery machine	Move to A2L-compatible
Refrigerant recovery cylinder	Must be for flammable gas (GHS label); Left-hand threads
Refrigerant cylinder	Left-hand threads

Field Service Procedural Changes

We've covered tools and equipment – what about processes and procedures: practical tasks you perform in the field? Review the chart below for a comparison of how required field service procedures are – or are not – changing with the move from Puron to Puron Advance.

Requirement	Puron	Puron Advance
Remove refrigerant safely following local and national codes	Required	Required
Purge circuit with inert gas (nitrogen)	Best Practice	**Required**
Evacuate	Best Practice	**Required**
Purge with inert gas for five minutes	Best Practice	**Required**
Evacuate again	Best Practice	**Required**
Open the circuit by cutting or brazing	Final Step	Final Step
For repairs, purge with nitrogen during brazing	Required	Required
Pressure test	Best Practice	**Required**
Leak test	Best Practice	**Required**
Evacuate system again after service	Required	Required
Charge system	Required	Required

Many actions that are now required with Puron Advance were already best practice. So, if you've been taking those extra precautions already, your processes won't need to change at all. With Puron Advance, we're requiring you to take extra precaution to ensure all the refrigerant is out of the system prior to opening it for repair or replacement service. Always refer to the installation manual for procedures that may have changed with Puron Advance.

Transportation

The U.S. DOT classification for A2L refrigerants requires compliance with certain transportation regulations. These regulations are specific to units that contain greater than 26.4 lbs (12kg) of any A2L refrigerant, including R-454B and R-32. Carrier's residential units are under 26.4 lbs (12kg) of refrigerant and qualify for the exemption to these regulations.

- Transporting A2L refrigerants is permitted within the United States.
- Transporting units containing 26.4 lbs (12kg) to 44.1 lbs (20kg) of refrigerant must be accompanied by DOT-SP 21287 special permit.
- Transporting units containing 44.1 lbs (20kg) or greater of refrigerant must be accompanied by DOT-SP 21379 special permit and must have UN 3358 labels on four sides of the unit. Additionally, units containing this amount of refrigerant require transport on a ventilated trailer, like a flatbed.
- Air freight is prohibited with A2L refrigerants, and the US DOT permits cannot be used to export the units outside of the United States.
- Ocean export is permitted for units with less than 26.4 lbs (12kg) of an A2L refrigerant with additional regulations.


Carrier

Puron Advance Product Lineups

PURON ADVANCE AIR CONDITIONER PRODUCT LINEUP

Puron						
Tier	Model Family	Stage	Region	Coastal Option	Grille	Tonnage
Infinity	24VNA6	VS	All	No	Louvers	2 - 5
	24VNA9	5	All	No	Louvers	2 - 5
Performance	24TP(A/B)7	2	All†	Yes	Louvers	2 - 5
	24SPA6	1	All	No		1.5 - 5
Comfort	34SCA5	1	All	No	Horiz	1.5 - 5
	24SCA5	1	All†	Yes	Dense	1.5 - 5
	24SCA4	1	N	N o	Dense	1.5 - 5
Builder	GA7TAN4	2	All	No	Dense	2 - 5
	GA5SAN4	1	All	No	Dense	1.5 - 5
	GA4SAN4	1	N	No	Dense	1.5 - 5
3-Phase Comfort	24ABB3	1	All	No	Dense	3 - 5
3-Phase Builder	CA16(P/E)	1	All	No	Dense	3 - 5

Puron Advance						
Tier	Model Family	Stage	Region	Coastal Option	Grille	Tonnage
Infinity	Use 27VNA3 Heat Pump as an alternative					
	26VNA1[1]	VS	All	No	Louvers	2 - 5
Performance	26TPA8[2]	2	All[3]	Yes	Louvers	2 - 5
	26SPA6[2]	1	All	No	Louvers	1.5 - 5
Comfort	Use 37MURA/37MUHA as an alternative					
	26SCA5	1	All[3]	Yes	Dense	1.5 - 5
	26SCA4	1	N	No	Dense	1.5 - 5
Builder	GA8TAN5	2	All	No	Dense	2 - 5
	GA5SAN5	1	All	No	Dense	1.5 - 5
	GA4SAN5	1	N	No	Dense	1.5 - 5
3-Phase Comfort	26SCA4	1	All	No	Dense	3 - 5
Use GH8T 3-phase Heat Pump as an alternative						

[1] Infinity Fully Communicating
[2] InteliSense Connected Technology
[3] Includes Coastal Model

Air Conditioners	1	2	3	4	5	6	7 - 8	9	10	11	12
Title	Airflow Type	Refrigerant Type	Design Type	Tier	Major Series	Efficiency	Nominal Cooling Capacity	Region	Feature	Special Feature	Voltage
Product #/Letter	**2**	**6**	**S**	**C**	**A**	**4**	**36**	**W**	**0**	**0**	**3**
Descriptions	2 = Vertical Discharge 3 = Horizontal Discharge	6 = Puron Advance	S = Single-Stage T = Two-Stage V = Variable-Speed	C = Comfort P = Performance N = Infinity	A - Z	4 = North Compliant 5 = Southwest Compliant 6 = 16.0 SEER2 7 = 17.0 SEER2 8 = 18.0 SEER2 9 = 19.0 SEER2 0 = 20.0 SEER2 1 = 21.0 SEER2 2 = 22.0 SEER2	18 = 1.5 tons 24/25 = 2 tons 30 = 2.5 tons 36/37 = 3 tons 42/43 = 3.5 tons 48/49 = 4 tons 60/61 = 5 tons	E = Std SE N = Std North W = Std SW	0 = Standard C = Coastal	0 = Standard	3 = 208-230-1 or 208/230-1 5 = 208-230-3 or 208/230-3 6 = 460-3 7 = 230-1-50 9 = 400-3-50 1 = 575-3

Builder Air Conditioners	1	2	3	4	5	6	7	8 - 9	10	11	12
Title	Brand	Product Type	Efficiency	Design Type	Major Series	Voltage	Refrigerant Type	Nominal Cooling Capacity	Feature	Special Feature	Region
Product #/Letter	**G**	**A**	**5**	**S**	**A**	**N**	**5**	**36**	**0**	**0**	**W**
Descriptions	G= Builder	A = AC	4 = North Compliant 5 = Southwest Compliant 6 = 16.0 SEER2 7 = 17.0 SEER2 8 = 18.0 SEER2 9 = 19.0 SEER2 0 = 20.0 SEER2 1 = 21.0 SEER2 2 = 22.0 SEER2	S = Single-Stage T = Two-Stage	A - Z	N = 208-230-1 or 208/230-1 P = 208-230-3 or 208/230-3 E = 460-3 S = 575-3	5 = Puron Advance	18 = 1.5 tons 24/25 = 2 tons 30 = 2.5 tons 36/37 = 3 tons 42/43 = 3.5 tons 48/49 = 4 tons 60/61 = 5 tons	0= Standard	0= Standard	E = Std SE N = Std North W = Std SW

PURON ADVANCE HEAT PUMP PRODUCT LINEUP

Puron

Tier	Model Family	Stage	Region	Coastal Option	Grille	Tonnage
Infinity						
	25VNA4[1]	VS	All	No	Louvers	2 - 5
	25VNA8[1]	5	All	No	Louvers	2 - 5
Performance	25TP(A,B)7	2	All[3]	Yes	Louvers	2 - 5
	25SPA5	1	All	No	Louvers	1.5 - 5
	38MURAQ**AB3	VS	All	No	Horiz	1.5 - 5
	38MURAQ**AA3	VS	All	No	Horiz	1.5 - 5
Comfort	25SCA5	1	All[3]	Yes	Dense	1.5 - 5
Builder	GH7TAN4	2	All	No	Dense	2 - 5
	GH5SAN4	1	All	No	Dense	1.5 - 5
3-Phase Perf	25HPB6	1	All	No	Dense	3 - 5
3-Phase Comfort	25HCE4	1	All	No	Dense	3 - 5

Puron Advance

Tier	Model Family	Stage	Region	Coastal Option	Grille	Tonnage
Infinity	27VNA1[1]	VS	North/Cold Climate HP	No	Louvers	4.5
	27VNA3[1]	VS	All	No	Louvers	2 - 5[4]
	27VNA0[1]	VS	All	No	Louvers	2 - 5
Performance	27TPA8[2]	2	All[3]	Yes	Louvers	2 - 5
	27SPA6[2]	1	All	No	Louvers	1.5 - 5
	37MUHAQ	VS	All	No	Wire	1.5 - 5
Comfort	27SCA5	1	All[3]	Yes	Dense	1.5 - 5
	37MURAQ	VS	All	No	Wire	1.5 - 5
Builder	GH8TAN5	2	All	No	Dense	2 - 5
	GH5SAN5	1	All	No	Dense	1.5 - 5
3-Phase Perf	Use GH8T 3-phase heat pump as an alternative					
3-Phase Comfort	27SCA5	1	All	No	Dense	3 - 5

[1] Infinity Fully Communicating
[2] InteliSense Connected Technology
[3] Includes Coastal Model
[4] 2T model will launch in 2025 - date TBA

Heat Pumps	1	2	3	4	5	6	7 - 8	9	10	11	12
Title	Airflow Type	Refrigerant Type	Design Type	Tier	Major Series	Efficiency	Nominal Cooling Capacity	Region	Feature	Special Feature	Voltage
Product #/Letter	2	7	T	P	A	8	36	A	0	0	3
Descriptions	2 = Vertical Discharge 3 = Horizontal Discharge	7 = Puron Advance	S = Single-Stage T = Two-Stage V = Variable-Speed	C = Comfort P = Performance N = Infinity	A - Z	5 = National Compliant 6 = 16.0 SEER2 7 = 17.0 SEER2 8 = 18.0 SEER2 9 = 19.0 SEER2 0 = 20.0 SEER2 1 = 21.0 SEER2 2 = 22.0 SEER2 3 = 23.0 SEER2	18 = 1.5 tons 24/25 = 2 tons 30 = 2.5 tons 36/37 = 3 tons 42/43 = 3.5 tons 48/49 = 4 tons 54 = 4.5 (CCHP) 60/61 = 5 tons	A = Std HP	0 = Standard C = Coastal	0 = Standard	3 = 208-230-1 or 208/230-1 5 = 208-230-3 or 208/230-3 6 = 460-3 7 = 230-1-50 9 = 400-3-50 1 = 575-3

Horizontal Heat Pumps	1	2	3 - 4	5	6	7	8 - 9	10	11	12
Title	Product	Refrigerant	Model Type		Major Series	Unit Type	Nominal Capacity (BTUH)	# of Indoor Units	Variation	Electrical
Product #/Letter	3	7	MU	R	A	Q	36	A	A	3
Descriptions	3 = Horizontal Discharge	7 = Puron Advance	MU = Unitary	R = Entry-Tier H = Mid-Tier	A - Z	Q = Heat Pump C = Cooling Only	18/19 = 18,000 24/25 = 24,000 30/31 = 30,000 36/37 = 36,000 42/43 = 42,000 48/49 = 48,000 60/61 = 60,000	X = 0 A =1 B = 2 C = 3 D = 4 E = 5	A - Z	1 = 115/1/60 3 = 208-230/1/60

Builder Heat Pumps	1	2	3	4	5	6	7	8 - 9	10	11	12
Title	Brand	Product Type	Efficiency	Design Type	Major Series	Voltage	Refrigerant Type	Nominal Cooling Capacity	Feature	Special Feature	Region
Product #/Letter	G	H	8	T	A	N	5	36	0	0	A
Descriptions	G = Builder	H = HP	5 = National Compliant 6 = 16.0 SEER2 7 = 17.0 SEER2 8 = 18.0 SEER2 9 = 19.0 SEER2 0 = 20.0 SEER2 1 = 21.0 SEER2 2 = 22.0 SEER2	S = Single-Stage T = Two-Stage	A - Z	N = 208-230-1 or 208/230-1 P = 208-230-3 or 208/230-3 E = 460-3 S = 575-3	5 = Puron Advance	18 = 1.5 tons 24/25 = 2 tons 30 = 2.5 tons 36/37 = 3 tons 42/43 = 3.5 tons 48/49 = 4 tons 60/61 = 5 tons	0 = Standard	0 = Standard	A = Std HP

PURON ADVANCE FURNACE COIL PRODUCT LINEUP

Puron			
Tier	**Model Family**	**Orientation**	**Cased**
A-Coil	CAPVU	Vertical	No
	CAPMP	Multi-Poise	Yes
	40MULAQ	Multi-Poise	Yes
N-Coil	CNPVP	Vertical	Yes
Slab Coil	CSPHP	Horizontal	Yes
V-Coil	CVPVA	Vertical	Yes
	CVPMA	Multi-Poise	Yes

Puron Advance			
Tier	**Model Family**	**Orientation**	**Cased**
A-Coil	CAAVU	Vertical	No
	CAAMP	Multi-Poise	Yes
	45MULAQ*	Multi-Poise	Yes
N-Coil	No Puron Advance Conversion		
Slab Coil	CSAHP	Horizontal	Yes
V-Coil	CVAVA	Vertical	Yes
	CVAMA	Multi-Poise	Yes

* This coil is to be used with the 37MURAQ and 37MUHAQ heat pumps only.

Furnace Coils	**1**	**2**	**3**	**4**	**5**	**6 - 7**	**8 - 9**	**10**	**11**	**12**
Title	Component	Coil Type	Refrigerant Type	Coil Configuration	Cabinet Finish	Unit Capacity (BTUH)	Cabinet Width	Major Series	Included Equipment	Variations
Product #/Letter	**C**	**A**	**A**	**M**	**P**	**36**	**17**	**A**	**M**	**A**
Descriptions	C = Furnace Coil	A = A-Coil S = Slab Coil	A = Puron Advance	H = Horizontal M = Multi-Poise V = Vertical (UPFL/DNFL) U = Uncased	P = Painted Cabinet U = Unpainted/ Uncased	18-23 = 18,000 24-29 = 24,000 30-35 = 30,000 36-41 = 36,000 42-47 = 42,000 48-51 = 48,000 60+ = 60,000	12 = 11.8" 14 = 14.5" 17 = 17.5" 21 = 21" 24 = 24.5"	A = Revision	M = w/Dissipation System R = Replacement	A = Blank

Furnace Coils	**1**	**2**	**3 - 4**		**5**	**6**	**7**	**8 - 9**	**10**	**11**	**12**
Title	Product	Refrigerant	Model Type			Major Series	Unit Type	Nominal Capacity (BTUH)	Not Used	Variation	Electrical
Product #/Letter	**4**	**5**	**MU**	**A**		**A**	**Q**	**36**	**X**	**X**	**3**
Descriptions	4 = Indoor Unit	5 = Puron Advance	MU = Unitary	L= Coil A= Entry-Tier Air Handler H= Mid-Tier Air Handler		A - Z	Q = Heat Pump C = Cooling Only	18/19 = 18,000 24/25 = 24,000 30/31 = 30,000 36/37 = 36,000 42/43 = 42,000 48/49 = 48,000 60/61 = 60,000		A - Z	1 = 115/1/60 3 = 208-230/1/60

Vertex Coils	**1**	**2**	**3**	**4**	**5**	**6 - 7**	**8 - 9**	**10**	**11**	**12**
Title	Component	Coil Type	Refrigerant Type	Coil Configuration	Major Series	Unit Capacity (BTUH)	Cabinet Width	Metering Device	Included Equipment	Variations
Product #/Letter	**C**	**V**	**A**	**V**	**A**	**36**	**17**	**X**	**M**	**A**
Descriptions	C = Furnace Coil	V = V-Coil	A = Puron Advance	V = Cased Vertical Upflow/Downflow M = Cased Multi-Poise	A = Original Release B = 2nd Release, etc.	18-23 = 18,000 24-29 = 24,000 30-35 = 30,000 36-41 = 36,000 42-47 = 42,000 48-51 = 48,000 60+ = 60,000	12 = 11.8" 14 = 14.5" 17 = 17.5" 21 = 21" 24 = 24.5"	X = TXV	M = Micro-Channel w/Dissipation System R = Replacement	A = Blank

PURON ADVANCE FAN COIL PRODUCT LINEUP

Puron				
Tier	**Model Family**	**Motor**	**Metering Device**	**Stage**
Infinity	FE4B[1]	VCA	TXV	VS
Performance	FT4B[2]	VCA	TXV	2
	40MUAAQ	ECM	EEV	Multi-Speed
Comfort	FJ4D	FCT-5	TXV	1
Multifamily	FMA4X	FCT-5	TXV	1
	FMA4P	PSC	Piston	1
	FM(C/U)4Z	FCT-5	TXV	1
	FM(C/U)4X	PSC	TXV	1
Builder	FG4	VCA	TXV	2

Puron Advance				
Tier	**Model Family**	**Motor**	**Metering Device**	**Stage**
Infinity	FE5B[1]	VCA	TXV	VS
Performance	FT5[2]	VCA	TXV	2
	45MUHAQ†	ECM	EEV	Multi-Speed
Comfort	FJ5	FCT-5	TXV	1
	45MUAAQ[3]	ECM	EEV	Multi-Speed
Multifamily	FMA5X	FCT-5	TXV	1
	FMA5L	PSC	TXV	1
	FM(C/U)5Z	FCT-5	TXV	1
	FM(C/U)5X	PSC	TXV	1
Builder	FG5	VCA	TXV	2

Motor Key: VCA = Variable-Speed Constant Airflow
ECM = Electronic Commutating Motor
FCT = Fixed-Speed Constant Torque
PSC = Permanent Split Capacitor

[1] Infinity Fully Communicating
[2] InteliSense Connected Technology
[3] This coil is to be used with the 37MUHAQ and 37MURAQ heat pumps only.

Fan Coils	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8 - 9**	**10**	**11 - 12**
Title	Product	Type/ Tier	Refrigerant Type	Major Series	Electrical	Cabinet/ Expansion Device	Cabinet Width	Nominal Cooling Capacity	Coil Type	Electric Heater Size
Product #/Letter	**F**	**E**	**5**	**B**	**N**	**X**	**B**	**42**	**L**	**00**
Descriptions	F = Fan Coil	E = Infinity® Series T = Performance™ Series J = Comfort™ Series G = Builder	5 = Puron Advance	A - Z	N = 208/230v-1ph - 60hz	B = 2-piece, TXV X = 1-piece, TXV	A = 14" B = 17" C = 21" D = 24"	18 = 18,000 24 = 24,000 30 = 30,000 36 = 36,000 42 = 42,000 48 = 48,000 60 = 60,000	L = Aluminum	00 = No heat 05 = 5kW 08 = 8kW 10 = 10kW 15 = 15kW ## = kW size

Multifamily Fan Coils	**1**	**2**	**3**	**4**	**5**	**6 - 7**	**8 - 9**	**10**	**11**
Title	Unit	Type	Installation Type	Refrigerant	Metering Device	Nominal Capacity (BTUH)	Electric Heater Size	Revision	Sales Code/ Features
Product #/Letter	**F**	**M**	**U**	**5**	**Z**	**18**	**00**	**A**	**L**
Descriptions	F = Fan Coil	M = Multifamily	U = Uncased[1] C = Cased[1] A = Apartment[2]	5 = Puron Advance	X = TXV & PSC Motor[1] Z = TXV & ECM Motor[1] L = TXV & PSC Motor[2] X = TXV & ECM Motor[2]	18 = 18,000 = 1.5 tons 24 = 24,000 = 2 tons 30 = 30,000 = 2.5 tons 36 = 36,000 = 3 tons	00 = No Heat[1,2] 05 = 5kW[2] 08 = 7.5kW[2] 10 = 10kW[2] ## = kW size	A = Mktg Revision	L = Aluminum Coils

[1] Ceiling Mount model [2] Wall Mount model

Furnace Coils	**1**	**2**	**3 - 4**	**5**	**6**	**7**	**8 - 9**	**10**	**11**	**12**
Title	Product	Refrigerant	Model Type		Major Series	Unit Type	Nominal Capacity (BTUH)	Not Used	Variation	Electrical
Product #/Letter	**4**	**5**	**MU**	**A**	**A**	**Q**	**36**	**X**	**X**	**3**
Descriptions	4 = Indoor Unit	5 = Puron Advance	MU = Unitary	L= Coil A= Entry-Tier Air Handler H= Mid-Tier Air Handler	A - Z	Q = Heat Pump C = Cooling Only	18/19 = 18,000 24/25 = 24,000 30/31 = 30,000 36/37 = 36,000 42/43 = 42,000 48/49 = 48,000 60/61 = 60,000		A - Z	1 = 115/1/60 3 = 208-230/1/60

PURON ADVANCE SMALL PACKAGED PRODUCT LINEUP

Puron							
Tier	Model Family	Type	Cool Stage	Heat Stage	Standard HX	Std Indoor Coil	Grille
Standard							
Performance	48VG	YAC	2	2	Stainless	Tin-Plated Copper	Louver
	50VG	PAC	2	N/A	N/A	Tin-Plated Copper	Louver
	48VR	DF	2	2	Stainless	Tin-Plated Copper	Louver
	50VR	PHP	2	2	N/A	Tin-Plated Copper	Louver
Comfort	48VL	YAC	1	1	Stainless	Aluminum	Louver
	50VL	PAC	1	N/A	N/A	Aluminum	Louver
	48VT	DF	1	1	Stainless	Aluminum	Louver
	50VT	PHP	1	1	N/A	Aluminum	Louver
MH	50ZP	PAC	1	N/A	N/A	Aluminum	Louver
	50ZH	PHP	1	1	N/A	Aluminum	Louver
Low NOx							
Performance	48VG	YAC	2	2	Stainless	Tin-Plated Copper	Louver
	48VR	DF	2	2	Stainless	Tin-Plated Copper	Louver
Comfort	48VL	YAC	1	1	Stainless	Aluminum	Louver
	48VT	DF	1	1	Stainless	Aluminum	Louver
Ultra-Low NOx							
Perf	48VG	YAC	2	2	Stainless	Tin-Plated Copper	Louver
Comf	48VL	YAC	1	1	Stainless	Aluminum	Louver

Puron Advance							
Tier	Model Family	Type	Cool Stage	Heat Stage	Standard HX	Std Indoor Coil	Grille
Standard							
Performance	48NG	YAC	2	2	Stainless	Tin-Plated Copper	Louver
	No Puron Advance Conversion						
	48NR	DF	2	2	Stainless	Tin-Plated Copper	Louver
	50NR	PHP	2	2	N/A	Tin-Plated Copper	Louver
Comfort	48NL	YAC	1	1	Stainless	Aluminum	Louver
	50NL	PAC	1	N/A	N/A	Aluminum	Louver
	48NT	DF	1	1	Stainless	Aluminum	Louver
	50NT	PHP	1	1	N/A	Aluminum	Louver
MH	50NP	PAC	1	N/A	N/A	Aluminum	Louver
	50NH	PHP	1	1	N/A	Aluminum	Louver
Low NOx							
Performance	48NG	YAC	2	2	Stainless	Tin-Plated Copper	Louver
	48NR	DF	2	2	Stainless	Tin-Plated Copper	Louver
Comfort	48NL	YAC	1	1	Stainless	Aluminum	Louver
	48NT	DF	1	1	Stainless	Aluminum	Louver
Ultra-Low NOx							
Perf	48NG	YAC	2	2	Stainless	Tin-Plated Copper	Louver
Comf	48NL	YAC	1	1	Stainless	Aluminum	Louver

Small Packaged Products (G-Chassis)	**1 - 2 - 3 - 4**	**5**	**6**	**7 - 8**	**9 - 10 - 11**	**12**	**13**
Title	Unit Family/ Type	Low NOx	Major Series	Cooling Capacity	Heating Size	Voltage	Minor Series
Product #/ Letter	**50NT**	**-**	**B**	**36**	**---**	**3**	**A**
Description	50NT = Package HP 48NT = Package Dual-Fuel 50NL = Package AC 48NL = Packaged Year-Round AC 50NR = Two-Stage HP 48NR = Two-Stage Dual-Fuel 48NG = Two-Stage Year-Round AC	– = Standard NOx N = Low NOx U = Ultra-Low NOx	A - Z	24 = 2 Ton 30 = 2.5 Ton 36 = 3 Ton 42 = 3.5 Ton 48 = 4 Ton 60 = 5 Ton	– – – = No Gas Heat 040 = 40K BTU 060 = 60K BTU 090 = 90K BTU 115 = 115K BTU 130 = 130K BTU	3 = 208/230-1ph 5 = 208/230-3ph 6 = 460-3ph	A - Z

Small Packaged Products (MH Chassis)	**1 - 2 - 3 - 4**	**5**	**6 - 7**	**8 - 9 - 10**	**11**	**12**
Title	Unit Family/ Type	Major Series	Cooling Capacity	Heating Size	Voltage	Minor Series
Product #/ Letter	**50NP**	**B**	**024**	**---**	**3**	**A**
Description	50NP = Dedicated Horizontal Packaged AC 50NH = Dedicated Horizontal Packaged HP	A - Z	024 = 2 Ton 030 = 2.5 Ton 036 = 3 Ton 042 = 3.5 Ton 048 = 4 Ton 060 = 5 Ton	– – – = No Gas Heat	3 = 208/230-1ph	A - Z

PURON ADVANCE GEOTHERMAL LINEUP

Note: New Puron Advance model photography coming soon!

Puron					
Tier	**Model Family**	**Unit Type**	**Motor**	**Metering Device**	**Stage**
Infinity	GC	Package	VCA	TXV	2
Performance	GP	Package	VCA	TXV	2
Comfort	GB	Package	VCA	TXV	1
Splits					
Infinity	GZ	Water-to-Air	N/A	TXV	2
Perf	GW	Water-to-Water	N/A	TXV	2

Puron Advance					
Tier	**Model Family**	**Unit Type**	**Motor**	**Metering Device**	**Stage**
Infinity	GCA	Package	VCA	TXV	2
Performance	TBA in 2025				
Comfort	GBA	Package	VCA	TXV	2
Splits					
Infinity	GZ***SA	Water-to-Air	N/A	TXV	2
Perf	GW***WA	Water-to-Water	N/A	TXV	2

Motor Key VCA = Variable-Speed Constant Airflow | FCT = Fixed-Speed Constant Torque

Geothermal - Packaged Product	**1**	**2**	**3**	**4 - 5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Title	Product	Tier	Refrigerant Type	Nominal Cooling Capacity	Cabinet Configuration	Discharge Air Configuration	Return Air Configuration	Coaxial Options	Hot Water Options	Fan Motor Options	Air Coil Coating	Voltage	Dissipation System
Product # / Letter	**G**	**B**	**A**	**36**	**V**	**T**	**L**	**C**	**D**	**C**	**C**	**1**	**D**
Description	G = Geothermal	B = Comfort V = Performance C = Infinity	A = Puron Advance	18 24 30 36 42 48 60 72	V = Vertical H = Horizontal C = Counterflow	T = Top Vert E = End Horiz S = Side Horiz B = Bottom Vert	L = Left Return R = Right Return	C = Copper N = Cupronickel	D = with Desuperheater X = without Desuperheater	C = Multi-Speed Constant Torque (FCT) E = ECM Variable-Speed Constant Air Flow (VCA)	C = Coated Tin Plate T = Tin Plate	1 = 208/230/60/1	D = with Dissipation X = without Dissipation

Geothermal - Split Systems	**1**	**2**	**3 - 4 - 5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Title	Product	Tier	Nominal Cooling Capacity	Unit Type	Refrigerant Type	Future Use	Coaxial Options	Hot Water Options	Future Use	Air Coil Coating	Voltage	Dissipation System
Product # / Letter	**G**	**W**	**036**	**W**	**A**	**X**	**D**	**D**	**X**	**X**	**1**	**D**
Description	G = Geothermal	W = Performance Z = Infinity	024 036 048 060 072 120	W = Water-to-Water Split S = Water-to-Air Split	A = Puron Advance	X = None	GW uses: D = Copper G = Cupronickel GZ uses: C = Copper N = Cupronickel	D = with Desuperheater X = without Desuperheater	X = None	X = No Air Coil	1 = 208/230/60/1	D = with Dissipation X = without Dissipation

PURON ADVANCE DUCTLESS PRODUCT LINEUP

Puron			Puron Advance		
Tier	**Model Family**	**Description**	**Tier**	**Model Family**	**Description**
Infinity	38MPRBQ	Single Zone Heat Pump	Infinity	37MPRAQ	Single Zone Heat Pump
	40MPHBQ	High Wall		45MPHAQ	High Wall
				37MAHAQ	Single Zone Heat Pump
				37MGHAQ	Multi-Zone Heat Pump
				37MBHAQ	Light Commercial Heat Pump
Performance	38MARBQ	Single Zone Heat Pump	Performance		
	38MGHBQ	Multi-Zone Heat Pump			
	38MGRBQ	Multi-Zone Heat Pump		37MGRAQ	Multi-Zone Heat Pump
	38MBRCQ	Light Commercial Heat Pump		37MBRAQ	Light Commercial Heat Pump
				37MARAQ	Single Zone Heat Pump
	40MAHBQ	High Wall		45MAHAQ	High Wall
	40MCCAQ	1-Way Cassette		45MCCAQ	1-Way Cassette
	40MBCQ	4-Way Cassette		45MBCAQ	4-Way Cassette
	40MBCAQ	4-Way Cassette			
	40MBFAQ	Floor Console		45MBFAQ	Floor Console
	40MBFQ	Console - Ceiling/Floor		45MCFAQ	Console - Ceiling/Floor
	40MBDQ	Slim Duct		45MBDAQ	Slim Duct Standard and High Static
	40MBDAQ	Slim Duct - High Static			
	40MBABQ	Air Handler		45MBAAQ	Air Handler
Comfort	38MHRCQ	Single Zone Heat Pump	Comfort	37MHRAQ	Single Zone Heat Pump
	40MHHAQ	High Wall		45MHHAQ	High Wall
	38MHRDC	Single Zone - Cooling Only		37MHRAC	Single Zone - Cooling Only HP
	40MHHAC	High Wall - Cooling Only		45MHHAC	High Wall - Cooling Only
Value	38MVRAQ	Single Zone Heat Pump	Value	37MVRAQ	Single Zone Heat Pump
	DHMVHAQ	High Wall		D5MVHAQ	High Wall
	38MTRAQ	Multi-Zone Heat Pump		37MTRAQ	Multi-Zone Heat Pump

Ductless - Outdoor Units	**1**	**2**	**3 - 4 - 5**	**6**	**7**	**8 - 9**	**10**	**11**	**12**
Title	Product	Refrigerant	Model Type	Major Series	Unit Type	Nominal Capacity (BTUH)	# of Indoor Units	Variation	Electrical
Product #/Letter	**3**	**7**	**MAR**	**A**	**Q**	**36**	**A**	**A**	**3**
Descriptions	3 = Horizontal Discharge	7 = Puron Advance	MAH MAR MBH MBR MGH MGR MHR MPR MTR MVR	A - Z	Q = Heat Pump C = Cooling Only	18/19 = 18,000 24/25 = 24,000 30/31 = 30,000 36/37 = 36,000 42/43 = 42,000 48/49 = 48,000 60/61 = 60,000	X = 0 A =1 B = 2 C = 3 D = 4 E = 5	A - Z	1 = 115/1/60 3 = 208-230/1/60

Ductless - Indoor Units	**1**	**2**	**3 - 4**	**5**	**6**	**7**	**8 - 9**	**10**	**11**	**12**
Title	Product	Refrigerant	Model Type	Indoor Type	Major Series	Unit Type	Nominal Capacity (BTUH)	# of Indoor Units	Variation	Electrical
Product #/Letter	**4**	**5**	**MC**	**C**	**A**	**Q**	**36**	**X**	**X**	**3**
Descriptions	4 = Indoor Unit	5 = Puron Advance	MA MB MC MH MP	A = Air Handler C= Cassette D = Ducted F = Console H = High Wall	A - Z	Q = Heat Pump C = Cooling Only	18/19 = 18,000 24/25 = 24,000 30/31 = 30,000 36/37 = 36,000 42/43 = 42,000 48/49 = 48,000 60/61 = 60,000	X = 0		1 = 115/1/60 3 = 208-230/1/60

PURON ADVANCE MINI-VRF LINEUP

Puron		
Tier	Model Family	Description
Outdoor Units	38VMH-1P	Single Phase Heat Pump
Indoor Units	40VMV	Vertical AHU
	40VMC	Compact 4-Way Cassette
	40VMF	4-Way Cassette
	40VMW	High Wall
	40VML	Low Static Ducted Unit
	40VMM	Medium Static Ducted Unit
	40VMI	1-Way Cassette
	40VMR	Recessed Console Unit
	40VMU	Underceiling / Console Unit
	40VMH	High Static Ducted Unit
	40VMW	High Wall
	40VMV	Vertical AHU
	40VMA	Outside Air Unit
	40VMZ	Reheat Unit

Puron Advance		
Tier	Model Family	Description
Outdoor Units	37VMH-1P	Single Phase Heat Pump
Indoor Units	45VMV	Vertical AHU
	45VMC	Compact 4-Way Cassette
	45VMF	4-Way Cassette
	45VMW	High Wall
	45VML	Low Static Ducted Unit
	45VMM	Medium Static Ducted Unit
	TBA Winter 2025	1-Way Cassette
		Recessed Console Unit
		Underceiling / Console Unit
		High Static Ducted Unit
		High Wall
		Vertical AHU
		Outside Air Unit
		Reheat Unit

VRF Outdoor	**1 - 2**	**3 - 4**	**5**	**6 - 7 - 8**	**9**	**10**	**11**	**12**	**13**	**14**
Title	Product	Product Type	Revision Number	Nominal Capacity	System Type	Variations	Cabinet Type	Voltage	Blank	Packaging
Product #/Letter	**37**	**VM**	**A**	**036**	**H**	**D**	**S**	**3**	**-**	**3**
Descriptions	37 = Outdoor Unit	VM = VRF	A = No Revision B = Design Revision	036 = 3 ton 048 = 4 ton 060 = 5 ton	H = Heat Pump	D = Domestic	S = Standard	3 = 208/230-1-60		3 = USA & Canada

VRF Indoor	**1 - 2**	**3 - 4**	**5**	**6 - 7 - 8**	**9**	**10**	**11**	**12**
Title	Product	Product Type	Model Number Modifier	Nominal Capacity	Revision Number	Undefined Placeholder	Undefined Placeholder	Voltage
Product #/Letter	**45**	**VM**	**F**	**030**	**A**	**-**	**-**	**3**
Descriptions	45 = Indoor Unit	VM = VRF	A = Outside Air C = Compact 4-Way Cassette D = Multiport Distribution Controller F = 4-Way Cassette H = High Static Ducted Unit I = 1-Way Cassette L = Low Static Ducted Unit M = Medium Static Ducted Unit R = Floor Console (Recessed) U = Underceiling / Floor Console V = Vertical AHU W = High Wall Z = Reheat Unit	005 = 5000 007 = 7000 009 = 9000 012 = 12000 015 = 15000 018 = 18000 024 = 24000 030 = 30000 036 = 36000 048 = 48000 054 = 54000 060 = 60000 072 = 72000 096 = 96000	- = No Revision A = Design Revision B = Design Revision	- = Undefined	- = Undefined	3 = 208/230-1-60

PURON ADVANCE TOSHIBA CARRIER MINI-VRF LINEUP

Puron		
Tier	Model Family	Description
Outdoor Units	MCY-MAP***7HS-UL	Mini VRF Heat Pump
Indoor Units	MMK-UP***1HP-UL	High Wall
	MMU-UP***1YHP-UL	1-Way Cassette
	MMU-UP***1HP-UL	4-Way Cassette
	MMD-UP***1MHP-UL	4-Way Cassette - Compact
	MMD-UP***1BHP-UL	Medium Static Slim Duct
	MMD-UP***1VHG-UL	Vertical Air Handler Unit
	MMD-UP***1SPH-UL	Low-Static Slim Duct
	MMD-UP***1HP-UL	High-Static Slim Duct
	MMC-UP***1HP-UL	Underceiling Console
	MML-UP***1H-UL	Floor Console - Exposed
	MML-UP***1BH-UL	Floor Console - Recessed
	MMD-UP***1HFP-UL	Outside Air Unit

Puron Advance		
Tier	Model Family	Description
Outdoor Units	MCY-MUB-***8HS2P-UL	Mini VRF Heat Pump
Indoor Units	MMK-UB***1HP-UL	High Wall
	MMU-UB***1YHP-UL	1-Way Cassette
	MMU-UB***1HP-UL	4-Way Cassette
	MMU-UB-***1MHP-UL	4-Way Cassette - Compact
	MMD-UB***1BHP-UL	Medium Static Slim Duct
	MMD-UB***1VHN-UL	Vertical Air Handler Unit
	TBA Winter 2025	Low-Static Slim Duct
		High-Static Slim Duct
		Underceiling Console
		Floor Console - Exposed
		Floor Console - Recessed
		Outside Air Unit

Toshiba Carrier Outdoor	**1 - 2 - 3 - 4**	**5**	**6**	**7**	**8 - 9 - 10**	**11**	**12**	**13**	**14**	**15 - 16**	**17**	**18-19**
Title	ODU Type	Module	System Version	Refrigeration Type	Nominal Capacity	System Type	Model Series	System Type	Configuration	Production Location	Blank	Sales Location
Product #/Letter	**MCY-**	**M**	**U**	**B**	**036**	**-**	**8**	**H**	**S**	**2P**	**-**	**UL**
Descriptions	MCY- = Single Phase Heat Pump	M = Single Module	U = u-Series	B = R-454B	036 = 3 ton 048 = 4 ton 060 = 5 ton	Blank = Standard Mode H = Elite High Heat	1 = Unrevised 2 - 9 = Revision Number	H = Heat Pump	S = Side Blow	Blank = Japan 2P = Thailand	-	UL = USA & Canada

Toshiba Carrier Indoor	**1 - 2 - 3**	**4**	**5**	**6**	**7 - 8 - 9**	**10**	**11**	**12**	**13**	**14**	**15**	**16 - 17**
Title	IDU Type	Blank	IDU Version (Protocol)	Refrigerant Type	Nominal Capacity	Model Series	Identifier	Cooling / Heating IDU Type	Undefined	Production Location	Blank	Sales Location
Product #/Letter	**MMD**	**-**	**U**	**B**	**024**	**1**	**B**	**H**		**P**	**-**	**UL**
Descriptions	MMD = Ducted IDU MMC = Underceiling Unit MML = Console Unit MMK = High Wall MMU = Cassette	-	U = u-Series	B = R-454B	005 = 5000 007 = 7000 009 = 9000 012 = 12000 015 = 15000 018 = 18000 024 = 24000 030 = 30000 036 = 36000 048 = 48000 054 = 54000 060 = 60000 072 = 72000 096 = 96000	1 = Unrevised 2 - 9 = Revision Number	V = Vertical AHU S = Low Static Ducted Unit B = Medium Static Ducted Unit Y = 1-Way Cassette (MMU Prefix) M = Compact 4-Way Cassette (MMU Prefix) B = Recessed Console (MML Prefix)	H = Heat Pump Blank = Cooling Only	F = Outside Air Unit Blank = Other IDUs	2 = Japan P = Thailand N = Nanhai (China) G = USA	-	UL = USA & Canada

PURON ADVANCE TOSHIBA CARRIER RAV LINEUP

Puron		
Tier	Model Family	Description
Outdoor Units	RAV*AT2	Heat Pump
Indoor Units	RAV*KR2	High Wall
	RAV*BT2	Medium Static Slim Duct
	RAV*UT2	4-Way Cassette
	RAV*CT2	Underceiling

Puron Advance		
Tier	Model Family	Description
Outdoor Units	RAV*BAT	Heat Pump
Indoor Units	RAV*BKR2	High Wall
	RAV*BBT2	Medium Static Slim Duct
	RAV*BUT2	4-Way Cassette
	RAV*BCT2	Underceiling

Toshiba Carrier RAV Outdoor	**1 - 2 - 3**	**4**	**5 - 6**	**7 - 8 - 9**	**10**	**11**	**12**	**13**	**14**	**15 - 16**
Title	Product Series	Undefined	System Version	Nominal Capacity	Unit Type	System Type	Power Supply	Production Location	Undefined	Sales Location
Product #/Letter	**RAV**	**-**	**BP**	**241**	**A**	**T**	**2**	**P**	**-**	**UL**
Descriptions	RAV = RAV Series Unit		BP = Super Digital Inverter CDU (R-454B)	121 = 1 ton 181 = 1 ton 241 = 1 ton 301 = 1 ton 361 = 1 ton 421 = 1 ton 481 = 1 ton	A = Outdoor Unit	T = Inverter Heat Pump	2 = 208/230 -1-60	2 = Japan P = Thailand		UL = USA & Canada

Toshiba Carrier RAV Indoor	**1 - 2 - 3**	**4**	**5 - 6**	**7 - 8 - 9**	**10**	**11**	**12**	**13**	**14 - 15**
Title	Product Series	Undefined	System Version	Nominal Capacity	Model Series	System Type	Production Location	Blank	Sales Location
Product #/Letter	**RAV**	**-**	**HB**	**241**	**B**	**T**	**P**	**-**	**UL**
Descriptions	RAV = RAV Series Unit		HB = Super Digital Inverter FCU (R-454B)	121 = 1 ton 181 = 1 ton 241 = 1 ton 301 = 1 ton 361 = 1 ton 421 = 1 ton 481 = 1 ton	B = Medium Static Ducted C = Underceiling KR = High Wall U = 4-Way Cassette	T = Inverter Heat Pump	2 = Japan P = Thailand		UL = USA & Canada

Light Commercial – Setting the Stage

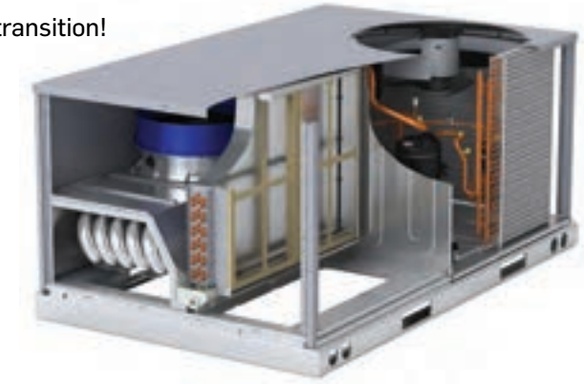
Due to the full-system approach that Carrier took to become #2023Ready, the transition to R-454B will be far less of a change for our customers. Let's take a moment to recap some of the 2023 highlights that put Carrier, and our customers, in a position to move into this refrigerant transition with ease.

To reach the strict 2023 efficiency levels, we made the choice to include our EcoBlue™ Fan Technology on all our new products. The addition of the EcoBlue fan has set us apart from our competition by offering our customers the industry's first Vane Axial indoor fan with an electronically commutated variable-speed motor on a rooftop unit. EcoBlue fan assemblies contain 75% fewer parts and are 40% more efficient when compared to standard belt-pulley fan units. This system, in combination with our redesigned refrigerant circuits, offer customers a more efficient, easier to service, and cost-effective rooftop unit.

Additionally, Carrier continues to improve our controls offering on our WeatherMaker/WeatherMaster/WeatherExpert™ rooftop units with our SystemVu™ controller option. SystemVu provides customers with intuitive controls and networking with the ability to display key unit diagnostics right on the controller.

These technology and serviceability improvements give our lineup a competitive advantage that will create a lasting positive effect on the overall equipment performance for years to come.

We are ready for the 2025 refrigerant transition!



PURON ADVANCE LIGHT COMMERCIAL LINEUP

	Puron			
	Family	**Heat Type**	**Stage**	**Tonnage**
WeatherMaker™	48FC	Gas Heat	2	3 - 27.5
	50FC	Electric Heat (Optional)	2	3 - 27.5
	50FCQ	Heat Pump	2	3 - 25
WeatherMaster™	48GC	Gas Heat	2	3 - 25
	50GC	Electric Heat (Optional)	2	3 - 25
	50GCQ	Heat Pump	2	3 - 10
WeatherExpert™	48JC	Gas Heat	VS	3 - 5
	48LC	Gas Heat	3	6 - 23
	50JC	Electric Heat (Optional)	VS	3 - 5
	50LC	Electric Heat (Optional)	3	6 - 23

	Puron Advance				
	Family	**Heat Type**	**Stage**	**Tonnage**	**Target Release**
WeatherMaker™	48FE	Gas Heat	2	3 - 27.5	2024
	50FE	Electric Heat (Optional)	2	3 - 27.5	
	50FEQ	Heat Pump	2	3 - 25	
WeatherMaster™	48GE	Gas Heat	2	3 - 25	2024
	50GE	Electric Heat (Optional)	2	3 - 25	
	50GEQ	Heat Pump	2	3 - 25	
WeatherExpert™	48JE	Hybrid Heat	VS	3 - 25	2025
	50JE	Heat Pump	VS	3 - 25	

Frequently Asked Questions

Frequently Asked Questions

Puron Advance – General

1) Why is Carrier switching to a refrigerant that falls in the A2L classification – which makes it mildly more flammable than Puron?
In order to meet the new requirement a low GWP refrigerant, that also maintains no ozone depletion, the industry as a whole had to move to this new A2L classification.

2) What does A2L mean?
A2L is a newly created classification on the ANSI/ASHRAE Standard 34 chart for classifying refrigerants. The chart is broken down between A and B and 1 through 3. "A" means lower toxicity, while 2 represents the flammability level. Previously, A2L was just A2. The "L" was added to the chart because the new refrigerant did not burn at a rate similar to an "A2" classified refrigerant, but there was a minimal flame propagation potential requiring a new classification.

3) If Puron has always had a high GWP, then why use the same refrigerant (R-32) that is already a large component of Puron? Why is this only a problem when the patent ran out?
Puron was selected for use because it had zero ozone-depleting potential. After its introduction, GWP became more readily understood and more of a concern. The driving factor of Puron's high GWP is the R-125 constituent. Puron Advance replaces that with R-1234yf, which has a very low GWP.

4) Why is Puron Advance categorized as "mildly flammable"?
In order for Puron Advance to propagate there must be a direct flame source and a high concentration of refrigerant. Even with these conditions, a flame is difficult to ignite and difficult to sustain – hence the term "mildly flammable".

5) Is it safe to breathe in Puron Advance?
The ASHRAE classification of A in A2L means it's non-toxic, same as the A in R-410A that is an A1. Additionally, per the material safety data sheet, respiratory protection is not required. Link for legal reference *https://nationalref.com/wp-content/uploads/2019/05/SDS_R454B_CLP.pdf*

6) How concerned should we be if there is residual refrigerant left in a unit during a compressor replacement?
Puron Advance is not explosive, it is mildly flammable. Additionally, the refrigerant that is absorbed into the oil is not capable of reaching the lower flammability limit of a workspace when servicing the equipment. Proper safety procedures should be followed to reclaim the refrigerant prior to service.

7) Can Puron Advance be used as a drop-in refrigerant for Puron?
No. Puron Advance is not a drop-in replacement for Puron. Currently, there is no drop-in replacement for Puron.

8) Is Puron Advance more efficient than Puron?
Puron Advance is a near drop-in in terms of performance compared to Puron, with very similar temperatures and pressures.

9) Will I need special certification to work with Puron Advance?
As of today, the existing EPA 608 certification is still the only needed requirement for refrigerant handling, including R-454B. We highly recommend continuous education and training as a best practice for any field work. You can find thorough A2L refrigerant training on *MLCtraining.com*. And be sure to always check for any local requirements governed by municipalities in your area.

10) Does this refrigerant contain propane?
No. There is zero propane gas in the new Puron Advance refrigerant.

11) Will I still be able to get Puron for my customers' existing equipment?
Yes. Puron will continue to be available for existing installed equipment. Be aware, however, the availability of Puron will be limited in the coming years as the phasedown of R-410A continues. With limited quantities, this will likely result in increased pressure on the cost of Puron.

12) What is the benefit to a homeowner of switching over to a Puron Advance system as soon as available?
The benefit of switching over to a Puron Advance system, when available, would ensure the homeowner is not utilizing a system with a refrigerant that is being phased down. This is important when considering the life of the equipment and potential future repairs.

13) What is the benefit to a dealer of switching over to selling Puron Advance systems as soon as possible?
The dealer helps to ensure that their customers are up to code and helps them avoid potentially expensive repair costs down the road on R-410A equipment.

14) Does the new refrigerant regulation apply to Canadian markets?
At this time, decisions are pending for the Canadian market. Check back regularly to make sure you are up to date with the latest legislation from the Canadian government.

15) What is changing on the Ductless inverter systems as we transition to Puron Advance?
The changes occurring to Carrier Ductless equipment are very similar to standard split systems. All ductless and ducted indoor units come with a factory-installed dissipation sensor for consistent safety design across all platforms.

Installation/Service

16) How will the installation process change with a Puron Advance system?
Installation of a Puron Advance system will be quite similar to a Puron system. However, there are some field service practices that will become required where before they were recommended. See page 21 for a complete list of required procedures.

17) Do I need to get a completely new set of tools in order to work with Puron Advance?
It depends on your current tools. Electronic tools will need to be spark-proof. Saturation temperature visual aids will need to be updated. An inverted thread adapter will need to be used on refrigerant cylinders only. You will need to make sure you have separate charging hoses for each unique refrigerant type. We recommend you review new tool requirements with your distributor.

18) Will I be required to replace the furnace coil or the fan coil, or can I just replace the outdoor unit with a Puron Advance unit?
A new Puron Advance indoor coil will be required when installing a new Puron Advance outdoor unit – due to the required dissipation system and optimized metering device.

19) Will I need to use a torch to braze the R-454B units?
Mechanical fittings compatibility will be standard on all Puron Advance equipment.

20) Will units with R-454B use the same oil as current units using R-410A?
Yes. Unlike with the transition from R-22 to R-410A, R-454B models will use the same oil as is currently used with R-410A models.

21) R22 and mineral oil have an affinity to co-mingle in the compressor crankcase. Is this also true of Puron Advance and is a crankcase heater needed/advised?
Similar to R-410A, R-454B will migrate to the coldest part of the system and in some cases will require a crankcase heater to ensure liquid refrigerant does not migrate to the compressor sump in sufficient quantity to cause a reliability concern. A crankcase heater is recommended or factory installed in certain cases. This is not required for all system installs. See installation instructions and product data for more details.

22) What are the requirements concerning refrigerant line sets when replacing an existing residential or commercial central five-ton split system that relies on R-454B?
Local building codes will regulate what will be needed for refrigerant runs. For high-rise buildings, fire breaks will be required. From a system standpoint, you will not need to replace line sets with R-454B as it uses the same POE oil as R-410A as long as the line set meets the current building code.

23) Will charging a system with Puron Advance be different than one with Puron?
No. Fundamental charging practices will remain the same.

24) Will charging a system with Puron Advance be more difficult than charging one with Puron due to fractionating?
No. Puron Advance has similar fractionation properties to that of Puron. You will follow similar procedures as you do today when re-charging units in the field.

25) What all goes into the calculation of the total system charge during installation?
The total system charge is the sum of the line set, indoor coils, and the outdoor unit - in other words, any component that holds refrigerant.

26) Can I use the same charging hoses for Puron Advance that I used for Puron?
You should use a separate set of hoses for each unique refrigerant type to avoid any mixing of refrigerants.

27) After December 31, 2024, if the existing Puron system has a small evaporator leak, can the evaporator be replaced, or must the whole system (evaporator and outdoor unit) be replaced?
Yes. Entire evaporator coils or their components can be replaced when servicing Puron systems. Evaporator coils manufactured beyond 2024 will ship with a “For Service Only” label.

28) After December 31, 2024, can I replace a complete R-410A fan coil?
No. The DOE does not consider a complete Fan Coil (coil with integrated blower) a replacement/service component, as defined in the DOE M1 test standard. You will need to use the R-454B units for complete unit replacements. From 2025 onward, only replacement fan coil components will continue to be available through RC.

29) How will repairs be made to the current Puron equipment with the changeover to Puron Advance?
All Puron equipment that is available today will have replacement parts available through Replacement Components for the intended service life of that product.

30) Does the refrigerant leak detection sensor need to be replaced after each time it is activated?
The sensor that Carrier has chosen is considered a multi-use sensor and will continue to “reset” and function after each detection event.

31) Does the dissipation system come with the AC/HP or the coil?
The sensor will be installed on the indoor coil and the dissipation system control board will be shipped with the indoor coil. For a fan coil, the dissipation system will be fully factory-installed.

32) What happens if the leak detection sensor fails?
If the dissipation system sensor fails, the control board will “fail safe”. This means that the unit will stay in dissipation mode not allowing the system to operate in heating or cooling until the sensor is replaced. This is the primary reason the sensors that we are installing have been tested for durability and longevity.

33) How can you tell if the leak detection sensor and/or dissipation system is working properly?
The dissipation system performs constant self-tests to determine functionality and displays a light on the board to indicate normal operation. If this self test fails, the unit will display an error LED and activate dissipation.

34) Can I just replace the refrigerant on my Puron equipment with the new Puron Advance refrigerant?
No. The compressors and expansion devices are different between Puron and Puron Advance equipment. You cannot add Puron Advance to a piece of equipment designed for Puron.

Installation/Service con't

35) Can we pair a new Puron Advance furnace coil with an existing furnace?
Yes. The dissipation control will come with the new coil and it will directly interface with the existing furnace through the Y, W, and G terminals – stopping a call for heating or cooling and activating the blower in the event of a detected leak.

36) Will indoor air quality products need to be replaced or upgraded when a new Puron Advance system is installed?
No. Carrier has tested all our indoor air quality products to ensure they are compatible with these new products. Technicians will also be able to check the installation manual to see if any third-party products present any concerns when paired with our equipment.

37) Will Carrier zoning products need to be replaced or upgraded when a new Puron Advance system is installed?
Carrier Infinity zoning products will meet the requirements to work with a new Puron Advance system. However, Carrier 24V zoning will need to be replaced with an updated zoning panel.

38) Can I use the same recovery tanks for Puron Advance that I currently use for Puron?
No. It is important to avoid mixing the refrigerants so you must use separate tanks for each unique refrigerant type.

39) What if I accidentally connect a Puron cylinder to a Puron Advance system?
If this occurs, you will need to follow the proper evacuation procedure listed in the installation manual. To reduce the occurrence of this happening, the Puron Advance products will have a R-454B label near the service valves and a red indicator attached to the service valves per UL regulation.

40) Will the thread pattern be reversed from the standard set of residential service gauges?
Gauges and service valves will not have reverse threads. A thread adaptor will be needed for the cylinder – and these can be purchased through Replacement Components.

41) How will I be able to tell the Puron Advance cylinders from the Puron ones?
The Puron Advance cylinders – while a similar green-gray color – will also have red stripe around the top as a clear visual distinction and left-hand threads.

42) Why is it important to reclaim Puron?
With the phasedown of HFC refrigerants, the availability and cost of the refrigerant will begin to change. If Puron is reclaimed it can be recycled and reused for service and repairs and is not restricted by the phasedown of this refrigerant.

43) At what pressures will the Puron Advance coils operate?
The pressures and temperatures of Puron Advance coils will operate similarly to Puron. The pressure for Puron Advance will be roughly 7% less than current Puron products. This has allowed us to utilize the same coils with changes to the TXV and dissipation system being the only necessary changes for performance.

44) Are there other benefits to the new products featuring Puron Advance?
There will be standard stub outs on HPs/ACs/furnace coils/fan coils to give flexibility for installation options, mechanical TXVs on furnace coils, QR codes on products for quick access to installation instructions, and InteliSense technology on all mid-tier AC/HP units.

Safety

45) Why are you including a dissipation system on all ducted products?
All Carrier ducted products with Puron Advance ship with more than 3.9 pounds of refrigerant – meeting the UL m2 level requiring dissipation systems. The decision to go with a consistent safety design across all of our products using Puron Advance provides you with the extra confidence that all our units have safety measures built-in.

46) How can installers feel comfortable about their safety working with Puron Advance?
Closely following the required and recommended field service procedures is the first step in technician safety. Furthermore, Carrier will be installing a leak dissipation system on all of our units, regardless of charge amount. This consistent safety design provides you with the extra confidence that all our units have built-in safety measures.

47) What does “flame speed” refer to?
Flame speed refers to the rate at which a flame spreads. Puron Advance has a very slow flame speed – less than half a mile per hour, which is a rate you out pace by casually walking.

48) How long will the blower motor run after a leak is detected to ensure dissipation?
Once the leak is no longer detected, the blower will run for 10 minutes upon the initiation of a dissipation cycle. If the leak is no longer detected at the completion of that first 10 minutes, then the blower will turn off for an additional five minutes to ensure that the sensor is not reactivated.

49) Are there any concerns for homeowner safety with Puron Advance?
No. Homeowners should not feel concerned about updating to a Puron Advance system. Carrier is committed to safety and reliability as evidenced by our rigorous testing protocols on all products. Plus, we have built a leak detection/dissipation system into each Puron Advance system for added safety.

50) Will homeowners need to purchase an additional type of detector for their home to ensure their safety with this new refrigerant?
No. Carrier has put technician and homeowner safety first when developing our new products with Puron Advance. We have built leak detection safety measures into each Puron Advance system.

51) Will homeowners remain safe even when the HVAC system in their home has been turned off – i.e., during nice weather?
Yes. When the system is set to off, the leak detection system is still monitoring for any refrigerant leak and can override the thermostat to turn on the blower motor to mitigate the leak.

Storage and Transportation

52) How can we store multiple containers of Puron Advance in our unconditioned warehouse? Will we need sprinklers and obtain a local fire dept. inspection and certification first?
The current ruling says that 20,000 lbs of refrigerant can be stored in a single control area in an unconditioned warehouse without a sprinkler system. To increase storage capability, fire-rated walls can be installed to establish additional control areas, or a sprinkler system can be installed.

53) How must we transport it in service and installation vehicles?
The transport of A2L refrigerants will be similar to that of Puron. There will be a need for a Class B dry powder fire extinguisher.

54) What are technicians supposed to do in areas like Arizona, where the temperature inside the service truck can easily exceed 125 degrees during the summer?
The ambient temperature in a vehicle carrying A2L refrigerants should not exceed 125° F as is currently the case with R-410A.

55) Are service vans required to have ventilation?
The area where cylinders are stored must have adequate ventilation. If this is inside the vehicle, ventilation must be to the outside, not just inside the vehicle. Proper ventilation helps maintain a safe temperature, as well.

56) Does the refrigerant have to be stored vertically in the service van?
Cylinders can be transported in the upright/vertical position or the horizontal position. *Note:* In Canada, cylinders cannot be transported in horizontal position.

57) How much equipment can be transported without requiring additional DOT measures?
There is no limit to the amount of equipment transported when it contains less than 26.4 lbs of refrigerant. Transporting any equipment that carries more than that amount of refrigerant will require additional DOT measures. Contact your Carrier distributor for further details, if needed.

58) How much refrigerant can be transported without requiring additional DOT measures?
Vehicles are allowed to transport up to 440 lbs of refrigerant without requiring additional DOT measures.

Puron Advance Key Messaging

Keeping with its long history of leading environmental stewardship, Carrier has once again taken a leadership role in offering the refrigerant of the future. Here are the key messages for you to remember as you work through this transition.

1 **Carrier is focused on providing a refrigerant that offers a higher efficiency and the lowest GWP that will positively impact people, our planet, and our communities.**

- Carrier Global Corporation has set an ambitious goal to help our customers avoid more than one gigaton of greenhouse gas (GHG) emissions from their carbon footprint by 2030 by leveraging our energy-efficient products, using lower global warming potential (GWP) refrigerants and more.
- With its GWP of 466, Puron Advance was selected as the best refrigerant solution for ducted and ductless residential and light commercial products to minimize environmental impact and energy use, while providing performance, safety, and durability.
- With the switch to Puron Advance, we will dramatically reduce the GWP level while maintaining no ozone depletion. This will continue to aid in the reduction of damage to the ozone layer – the layer around the earth that inhibits UV radiation from negatively impacting the environment and human health.
- Carrier Global Corporation's ducted and ductless residential and light commercial products switching to Puron Advance is like avoiding the greenhouse gas emissions from over 5 million gas powered passenger vehicles each year.* That's a big impact!

2 **Carrier is easing fears of dealers, technicians, and homeowners through robust training resources and product enhancements.**

- Switching to Puron Advance will be a relatively easy transition for technicians because it operates at temperatures and pressures like those of our current refrigerant, Puron.
- Carrier technicians and installers have access to thorough training so they can be educated on how to properly install and maintain Puron Advance, and properly reclaim Puron..
- Puron Advance falls under the classification of A2L by ASHRAE. A2L refrigerants have lower toxicity and lower flammability than A2 refrigerants. While A2Ls are more flammable than A1s, such as R-410A, they are still much less flammable than natural gas or propane and even things like rubbing alcohol and nail polish remover like you may already have in your home.
- Carrier is committed to safety and will, therefore, include a dissipation system in all products containing Puron Advance. Technicians and homeowners alike can be confident that the required safety measures have been built into our system designs.

3 **Carrier goes beyond the regulatory minimums and thinks about long-term innovations and solutions.**

- As a leader in the HVAC industry, we have been working towards creating a more GWP-friendly refrigerant since before 2010. Puron Advance will deliver comfort, efficiency and a dramatically reduced GWP of 466 to meet regulations expected to take effect in 2025.
- With the EPA's decision to require GWP's to be at or below 700 by January 1, 2025, our choice of Puron Advance, with a GWP of 466, will be able to meet and exceed this requirement. Puron Advance represents a 75% reduction in GWP compared to Puron.

* Assuming Carrier Corporation residential, DLS and light commercial units shipped with refrigerant annually. *https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator*

Where to Go for More Information

HVAC PARTNERS

LAUNCH MATERIALS

Visit *HVACpartners.com* for access to the Puron Advance launch page where you will find a link to a PDF of this kit as well as links to additional marketing support materials.

Go to: *HVACpartners > Marketing > Sales Tools > Marketing Launch Kits > Puron Advance*

CONTENT INCLUDES:

- Launch Kit PDF
- Brochures
- Product Presentations
- Videos

MERCHANDISING MATERIALS

Visit HVACpartners to access a variety of Puron Advance merchandising materials.

Go to: *HVACpartners > Marketing > Marketing Your Business > Marketing Merchandise*

CONTENT INCLUDES:

- Banner Stands
- Branded Apparel
- Vehicle Graphics

[MY] Learning Center

TRAINING

Visit *MLCtraining.com* and search Puron Advance in the Online course catalog and video section to access available training.

Turn to the experts

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