Nu-Calgon Product Bulletin

BOOSTS COMPRESSOR PERFORMANCE AND PROVIDES NEW ADDITIVE TECHNOLOGY FOR ENHANCED SYSTEM STABILITY.

- For use in air conditioning and heat pump systems only
- Ideally formulated to be used with R-454B, R-32, R-410A, R-407C, R-22 and others
- Improves compressor performance
- Optimized lubrication improves compressor service life
- Improves energy of compressors in service
- Quiets noisy compressors
- New additive technology improves system stability
- Aids sticking reversing valves and TEVs caused by friction
- Ideal for new systems or to address a system in service
- Two types available – liquid and Connect Inject versions
- Single dosage treats up to 5 tons. Multiple dosages are required for larger systems

Refrigeration Oil

A/C Re~New

4057-55 4057-56

Description

A/C Re-New has been successfully used for many years to improve the performance of air conditioning and heat pump systems. A/C Re-New provides several benefits including savings in energy usage, quiets noisy systems, improves the service life of the system by optimizing compressor lubrication, resolves sticking TEVs or reversing valves in heat pumps that are not modulating correctly due to friction.

A/C Re-New has been enhanced for the latest generation of refrigerants. For example, R-454B contains an unsaturated carbon-carbon molecule (HFO) unlike R-410A, its predecessor. This unsaturated carbon-carbon molecule leads to reduced levels of stability both in the atmosphere and in refrigerant system operation. Certain unplanned chemicals that exist in the refrigerant system can accelerate the degradation of the refrigerant and lubricant in the system. Additive response in lubricants used in refrigerants containing HFO refrigerants (used in R-454B) needs to be considered.

In addition to providing its traditional benefits, A/C Re-New is now formulated to maintain system stabilization due to various operational stresses and chemical interactions. A/C Re-New is a two-in-one product ideal for proactive treatment for new or in service systems to provide enhanced system stabilization and compressor lubrication.

Application

A/C Re-New is for use in air conditioner and heat pump systems. The treatment is now enhanced for all of today's air conditioning refrigerant options including for R-32, R-454B, R-410A, R-407C, R-22, R-134a, and others.

A/C Re-New is available in several popular packaging options. Both the traditional four fluid ounce canister or four fluid ounce Connect Inject option can treat up to five tons in system capacity. With the four fluid ounce bottle, it requires Nu-Calgon's Universal Treatment Injector (p/n: 4779-0) or other market option to inject the treatment into the system.

A/C Re-New Connect Inject is a quick, one-time disposable injector option for introducing A/C Re-New into the air conditioning system where the vessel is pre-charged with four fluid ounces of treatment. The use of the Nu-Calgon's Connect Injector Tool (p/n: 4155-01) or Universal Treatment Injector is recommended to add into the system.

The Connect Inject version, sold at a slight premium to the traditional approach, provides the benefit of being a quick billable option of not requiring the purchase or inventory management of the traditional Universal Treatment Injector for all service trucks in the organization.

For treating larger air conditioners or heat pumps beyond 5 tons, use two canisters (4057-55) or injectors (4057-56) for systems between 5 to 10 tons in capacity. For larger commercial systems, 10% of the oil sump charge needs to be A/C Re-New. Remove equal amount of existing lubricant first before adding A/C Re-New.

Packaging

4 fluid ounce can	**4057-55**
Universal Treatment Injector	**4779-0**
A/C Re~New Connect Inject	**4057-56**
Connect Inject Tool	**4155-01**

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A/C Re~New Technology Test Results

Residential air conditioning systems account for up to 70% of the home's energy consumption. And when the outdoor temperature rises, the system works longer and harder. Through tests on actual installations*, the A/C Re-New technology has demonstrated its ability to reduce the air conditioning systems energy use on average by 11% It has also been found to improve the system's cooling performance and quiet noisy systems.

Energy Savings

Number of units tested	Outdoor Temperature	Average Running amps Before A/C Re~New	Average Running amps After A/C Re~New	% Savings
26 12	73.3°F 56.4°F	15.8 17.4	14.1 16.5	10.8% 5.2%

* Data available upon request.

Noise Reduction

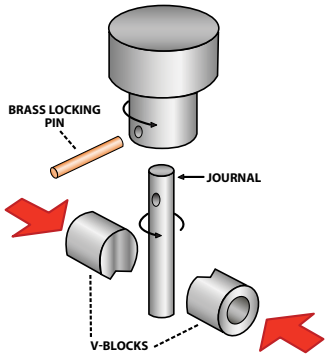
Average Decibel Before A/C Re~New	Average Decibel After A/C Re~New	Decibel Drop
77.08	75.12	1.96

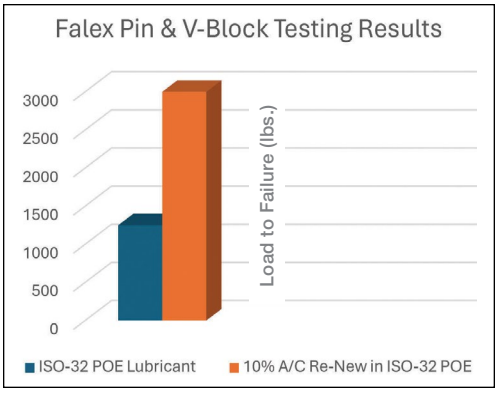
Cooling Performance

Average Air Duct Temp. Before A/C Re~New	Average Air Duct Temp. After A/C Re~New	Temperature Drop
57.4°F	54.2°F	3.2°F

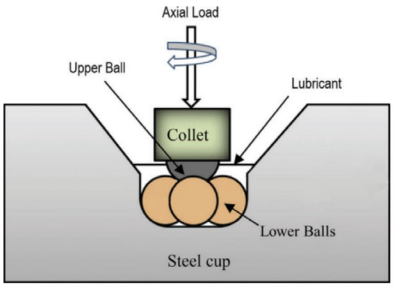
Falex Pin/Four Ball Testing

This test is used to evaluate wear and tear, friction and extreme pressure properties of materials and lubricants. A rotating pin, also referred to as a journal, is lubricated with the test product and is compressed between two V-shaped blocks. Pressure (depicted by the red arrows) is added at increasing levels until the pin fails. The goal is to determine how much load or force the lubricant can withstand before it fails. Therefore, the higher the load, the better the lubricant. Three typical industry oils (Mineral Oil, Alkylbenzene and POE) were tested, both alone and then mixed appropriately with the product. A/C Re-New significantly improved the oil's load-to-failure points.

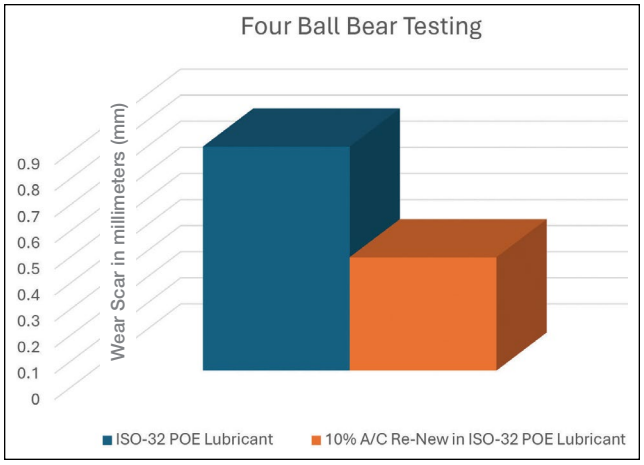




Conclusions from the Falex Pin and Four Ball Testing show A/C Re-New greatly improves the load carry capability and wear reduction when compared to standard POE lubricant performance. Reducing bearing wear and improving friction can result in energy efficiency gains and less debris circulating in the system which have performance benefits. These reasons with its new acid scavenging technology feature for R454B systems, make it an ideal treatment for new systems – or to improve an system already in service!



Four Ball Bear Testing



Compressor Wear Test

This test evaluated how well A/C Re-New reduced metal wear in operating compressors. Six reciprocating compressors were tested with refrigerant and refrigeration oil for a period of 500 hours. A/C Re-New was applied to half of the compressors. As shown in the pictures to the right, the bearing wear on the compressors was significantly reduced in those compressors containing A/C Re-New. Less wear means the equipment will last longer and reduced friction results in lower energy consumption. Similar results were achieved in scroll compressors (photos available).

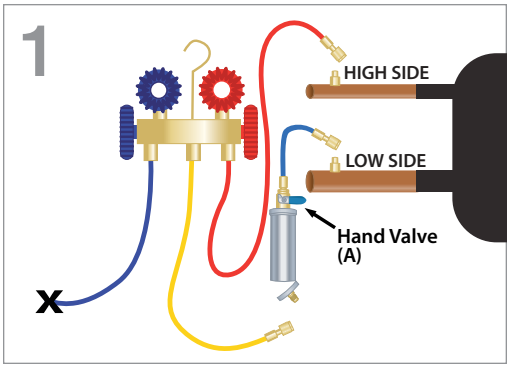
Reciprocating - Upper Journal

Without A/C Re~New

With A/C Re~New
Fewer Scars

Directions for Liquid Bottle (4057-55)

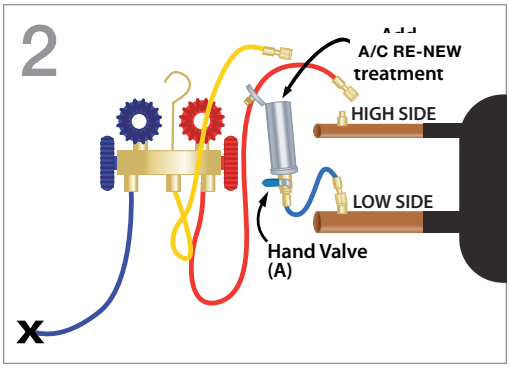
Four fl. oz. Dosage Treats up to 5 Tons



STEP 1:

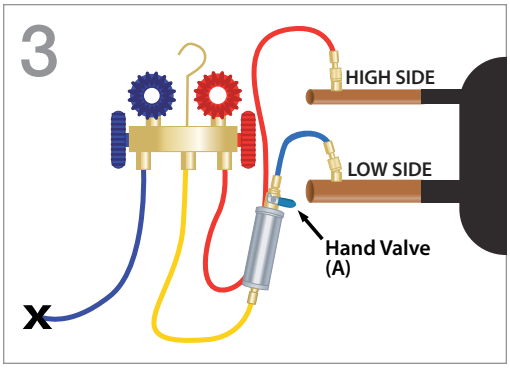
- Make sure system is running and low side and high side service ports are properly identified. If unit is a heat pump, be sure it is in cooling mode. Hand-valve (A) must be closed.
- Unscrew the aluminum injector cap with 1/4" male inlet fitting.
- Connect the 1/4" SAE fitting of blue hose to suction service port of system.
- Crack open hand valve (A) on injector to chase the remaining air out of the blue hose, then close hand valve (A).

Use with Universal Treatment Injector P/N 4779-0
See bulletin 3-143 for added information on this tool.



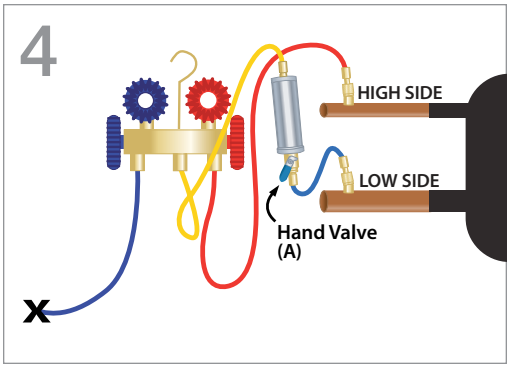
STEP 2:

- Pour in 4 fl. oz. of Nu-Calgon A/C Re-New.
- Recap the Injector with the aluminum cap with 1/4” male inlet fitting. Make sure the cap is hand tight to ensure a good seal is made at the cap.



STEP 3:

- Make sure both valves on gauge set are closed. Connect high side (red) line of manifold gauge set to the high side service port.
- Barely thread the middle manifold hose (yellow) to the 1/4” male inlet fitting of the Universal Treatment Injector (side opposite of the valve/blue hose). Do not thread to the point of depressing the Schrader core.
- Briefly crack open high side manifold valve to purge air out of the yellow hose, then quickly tighten yellow hose fitting at the injector, and close high side manifold valve.



STEP 4:

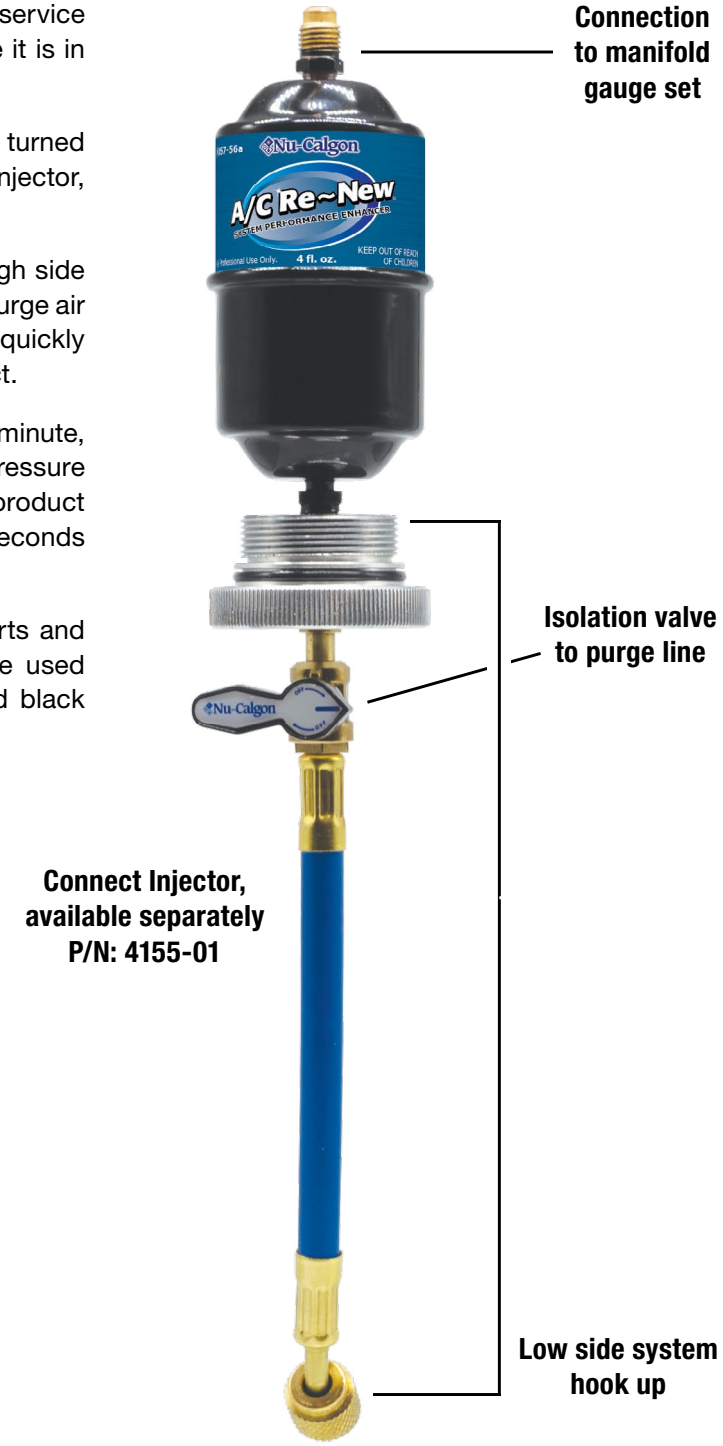
- Open injector hand valve (A) so A/C Re-New will be allowed to flow from injector into the low side of the system.
- Briefly open high side valve of the manifold gauge set to allow a little high side liquid to flow through the yellow hose/injector. Close high side manifold valve. Repeat process as necessary for a one minute duration for A/C Re-New to be fully injected into the low side of the system.
- Close high side valve of the manifold gauge set and wait an additional one minute for the injector assembly to equalize to suction pressure.
- Fully close hand valve (A) on Universal Treatment Injector and remove blue hose from suction service port.
- Once disconnected from system, slowly open hand valve (A) on injector so it equalizes the assembly to atmospheric pressure - ensure outlet fitting is pointed toward the ground. Close hand valve (A).
- Ensure injector remains capped to prevent contamination on its next use.

Note: Use two canisters (4057-55) or eight fluid ounces for A/C systems between 5-10 tons. For larger A/C systems, approximately 10% of the oil charge needs to be A/C Re-New. Remove equal amount of existing oil first before adding the A/C Re-New.

Directions for A/C Re~New Connect Inject (4057-56)

One Injector Treats up to 5 Tons

1. Make sure system is running and low side and high side service ports are properly identified. If unit is a heat pump, be sure it is in cooling mode. Remove caps from the Connect Inject.
2. Make sure isolation valve on Connect Injector (4155-01) is turned off and connect to low side service port. Barely screw on Injector, briefly open valve to purge hose and then tighten.
3. Connect high side (red) line of manifold gauge set to the high side service port. Briefly crack open high side manifold valve to purge air out of the yellow hose. Close high side manifold valve, then quickly tighten yellow hose fitting to the A/C Re-New Connect Inject.
4. Open isolation valve on Connect Injector. Over the next minute, with the vessel in a vertical position, slowly modulate high pressure through injector by opening high side manifold valve so product flows into system. Close manifold valve and allow a few seconds for Injector to stabilize to low side pressure.
5. Remove manifold and Injector from the system service ports and replace caps. Remove Connect Injector Tool so it can be used for the next installation – do not discard. Properly discard black colored Injector.



Note: Use two canisters (4057-56) or eight fluid ounces for A/C systems between 5-10 tons. For larger A/C systems, approximately 10% of the oil charge needs to be A/C Re-New. Remove equal amount of existing oil first before adding beyond two canisters of 4057-56.

Read and understand the product's label and Safety Data Sheet ("SDS") for precautionary and first aid information. The SDS is available on the Nu-Calgon website at www.nucalgon.com. Always wear protective eye wear and gloves when handling any NU-Calgon product.

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