



# EMERSON R407C Digital Scroll Compressor Instruction Manual

[Home](#) » [Emerson](#) » EMERSON R407C Digital Scroll Compressor Instruction Manual 

## Contents

- [1 EMERSON R407C Digital Scroll Compressor](#)
- [2 Product Information](#)
- [3 Product Usage Instructions](#)
- [4 Collaboration Delivers High Profile Innovative Solution](#)
- [5 Challenge](#)
- [6 Solution](#)
- [7 Documents / Resources](#)
  - [7.1 References](#)
- [8 Related Posts](#)



**EMERSON R407C Digital Scroll Compressor**



## Product Information

- The Tekgard H42-T104-C Environmental Control Unit is a high-profile innovative solution designed for military applications. It exclusively uses Copeland™ fixed and digital scroll compressors, specifically the Copeland™ ZPD54K5E-PFV-130 digital scroll compressor. Tekgard partners with Emerson due to their wide range of Copeland product offerings and exceptional industry reputation, ensuring credibility and trust.
- The HVACR technology labs in Sidney, Ohio provide advanced testing capabilities for future innovations. With over 200,000 square feet of labs, testing, and engineering facilities, Tekgard conducts a cumulative test of 2 million hours per year. They have 500 compressor test stands and testing chambers, along with a team of 400 engineers and researchers.
- For more information, visit [Climate.Emerson.com](https://Climate.Emerson.com)

## Product Usage Instructions

To use the Tekgard H42-T104-C Environmental Control Unit:

1. Ensure that the unit is properly installed in the desired location. Follow the installation instructions provided in the user manual.
2. Connect the necessary power supply to the unit according to the electrical specifications mentioned in the user manual.
3. Before operating the unit, make sure all connections and tubing are secure and properly attached.
4. Refer to the control panel or interface of the unit for operating instructions. Follow the indicated controls to adjust temperature, fan speed, or any other desired settings.
5. If any issues or abnormalities occur during operation, refer to the troubleshooting section of the user manual or contact customer support for assistance.
6. Regularly clean and maintain the unit as instructed in the user manual to ensure optimal performance and longevity.

For further technical details, refer to the user manual provided with the Tekgard H42-T104-C Environmental Control Unit.

## Collaboration Delivers High Profile Innovative Solution

### Result

- Emerson and Tekgard's teamwork, open communication and collaboration, along with Emerson's resources and expertise, enabled them to identify a solution in less than two weeks
- A decrease in product and material loss within the compressed timeframe
- The affected unit was retrofitted quickly, meeting the needs of the U.S. Army



### Application

Tekgard exclusively uses Copeland™ fixed and digital scroll compressors in their military applications. They partner with Emerson because of the broad range of Copeland product offerings in addition to an exceptional industry reputation. They also wanted a company they knew they could trust and would enhance their credibility.

### Challenge

- With their end user being the U.S. Army, Tekgard manufactures and provides ECU's (Environmental Control Units) for military applications that endure rigorous qualification testing to ensure full compliance of military standards and specifications including severe shock and vibration requirements as well as significant collision impacts. These units must meet these requirements due to being faced with both harsh natural and manmade environments on a regular basis. In addition, they must be able to sustain numerous transportation methods including air transportation that need to withstand hard impact landings, railcar impact collisions during coupling

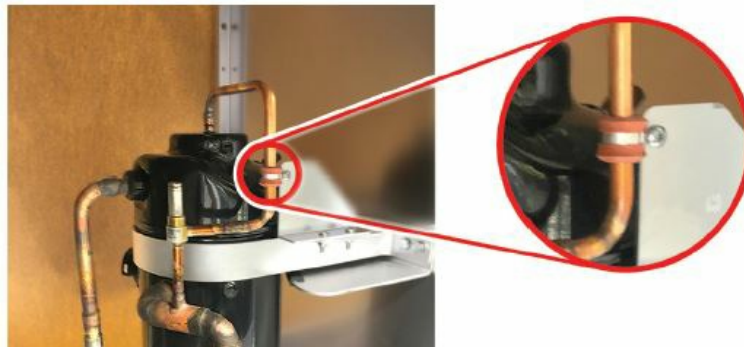
which involves significant vibrations, sudden and unexpected jarring, additionally, they must survive severe conditions where the HMMWV (High Mobility Multipurpose Wheeled Vehicle) are subjected to extreme terrains and environments.

- Because of all these factors, when unloader valve tubing started cracking on a new model, Tekgard knew this was a critical challenge that needed to be solved in a timely manner.
- These breakages started occurring when they made the switch from the R407C digital compressors to the R-410A single phase digital compressors. The change in compressor along with the mounting configuration for the mobile application resulted in a harmonic resonance that was causing vibration of the unloader valve. The vibration was fatiguing and breaking tubing on the bottom of the unloader valve near the suction line connection.



## **Solution**

Although the issue was not being caused by Copeland compressors, Tekgard contacted Emerson with the intent to collaborate, share data, and identify the root cause of the problem. Subsequently, Tekgard shipped their ECU to Sidney, Ohio labs to troubleshoot and identify a solution. With Emerson's expertise and assets on hand, including new state-of-the-art labs, equipment and electronics and vibration harmonics, the Applied Mechanics group was able to pinpoint the issue and confirm the effectiveness of a proposed unloader valve bracket. This quick collaboration resulted in a design improvement and retrofit to restore the reliability of these ECU's.



Tekgard H42-T104-C  
Environmental Control Unit

New HVACR technology labs in Sidney, Ohio enable advanced testing for future innovations

- **200K+**
  - square feet of labs, testing and engineering
- **500**
  - compressor test stands and testing chambers
- **2M**
  - cumulative test hours per year
- **400**
  - engineers and researchers




Copeland™ ZPD54K5E-PFV-130 digital scroll compressor

- This is the first time that we have made this type of request and we were blown away by Emerson's support!

### [Climate.Emerson.com](https://climate.emerson.com)

2020ECT-26 (8/20) Emerson and Copeland are trademarks of Emerson Electric Co. or one of its affiliated companies. ©2020 Emerson Climate Technologies, Inc. All rights reserved.

## Documents / Resources

	<p><b><a href="#">EMERSON R407C Digital Scroll Compressor</a></b> [pdf] Instruction Manual R407C Digital Scroll Compressor, R407C, Digital Scroll Compressor, Scroll Compressor, Compressor</p>
---	---

## References

- [C Copeland Worldwide | Copeland US](#)