

# Gearbox Assembly: Showcasing Integrated Sealing, Venting, and Manufacturing Capabilities

## Overview

Our engineering team built a demo gearbox to showcase our in-house manufacturing processes—including machining, cutting, additive manufacturing, and adhesive dispensing—integrated with trusted supplier components for real-world industrial and off-highway applications.

## Challenge

Gearbox assemblies used in industrial vehicles and off-highway equipment demand reliability in harsh environments. They must be sealed against contaminants, vented to withstand pressure fluctuations, and assembled with precision components.

## Sealing Devices' Solution:

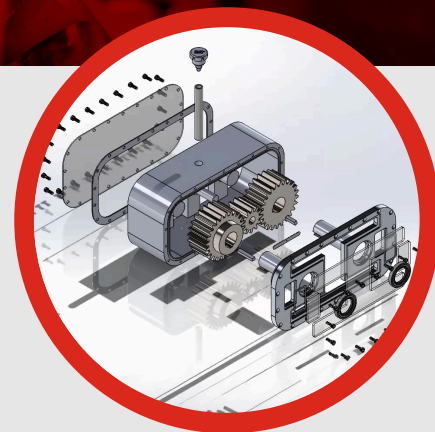
Sealing Devices combined in-house manufacturing, sealing and venting expertise, and trusted supplier components to build a demo gearbox.

The project showcased precision machining, additive manufacturing, automated adhesive dispensing, and integrated assembly — demonstrating our ability to deliver complete, engineered solutions for demanding applications.

## Results:

The demonstration gearbox serves as a tangible example of Sealing Devices' ability to integrate sealing, venting, machining, cutting, additive manufacturing, adhesive dispensing, and assembly—all under one roof.

This project illustrates our value as a single-source partner capable of managing complex assemblies and delivering components designed for durability, reliability, and performance in rugged environments.



## Customer Requirements

- Prevent fluid leaks and contamination ingress.
- Withstand pressure changes and temperature extremes.
- Ensure durability in harsh, high-vibration environments.
- Maintain compatibility with lubricants and housing materials.
- Support proper venting to avoid pressure build-up.

## Solution Partners





## PROBLEM

Gearbox assemblies in industrial and off-highway equipment operate in harsh environments where they are exposed to high loads, temperature fluctuations, vibration, and contaminants. Failure of seals or vents can lead to fluid leaks, pressure build-up, contamination ingress, and premature wear—resulting in costly downtime and maintenance.

## SOLUTION

Sealing Devices leveraged its multi-process manufacturing capabilities, supplier relationships, and engineering expertise to design and assemble a gearbox demo that integrates a range of components and processes:

### Sealing Solutions

- Rogers HT-800 gaskets (0.093" and 0.062" thick) – flashcut in-house.
- Freudenberg BAUMSL rotary oil seals – sourced through our trusted supplier network.
- 3M VHB gaskets – precision laser cut for clean adhesion interfaces.
- Robotically dispensed Loctite adhesive – automated application ensures consistent sealing.

### Venting Solutions

- Gore PMF100570 protective vent – provides pressure equalization while preventing ingress of water and contaminants.

### Precision Manufacturing

- CNC machining
- Waterjet cutting
- SLA and FDM 3D printing

### Assembly Support

- Integrated silicone tubing and hardware supplied by Sealing Devices.
- Coordinated sourcing of specialized components through supplier partners.

## ABOUT US

Sealing Devices is celebrating 60 years as a privately held manufacturer and distributor of seals, gaskets, O-rings, EMI shielding, custom molded rubber, and adhesives.

Throughout its six decades of operation, the company's commitment to innovation and excellence has been unwavering. Sealing Devices is headquartered outside of Buffalo, NY, with additional offices in Rochester, NY; Erie, PA; and Melbourne, FL.

They are Veteran-Owned and Small Business & ITAR registered.

