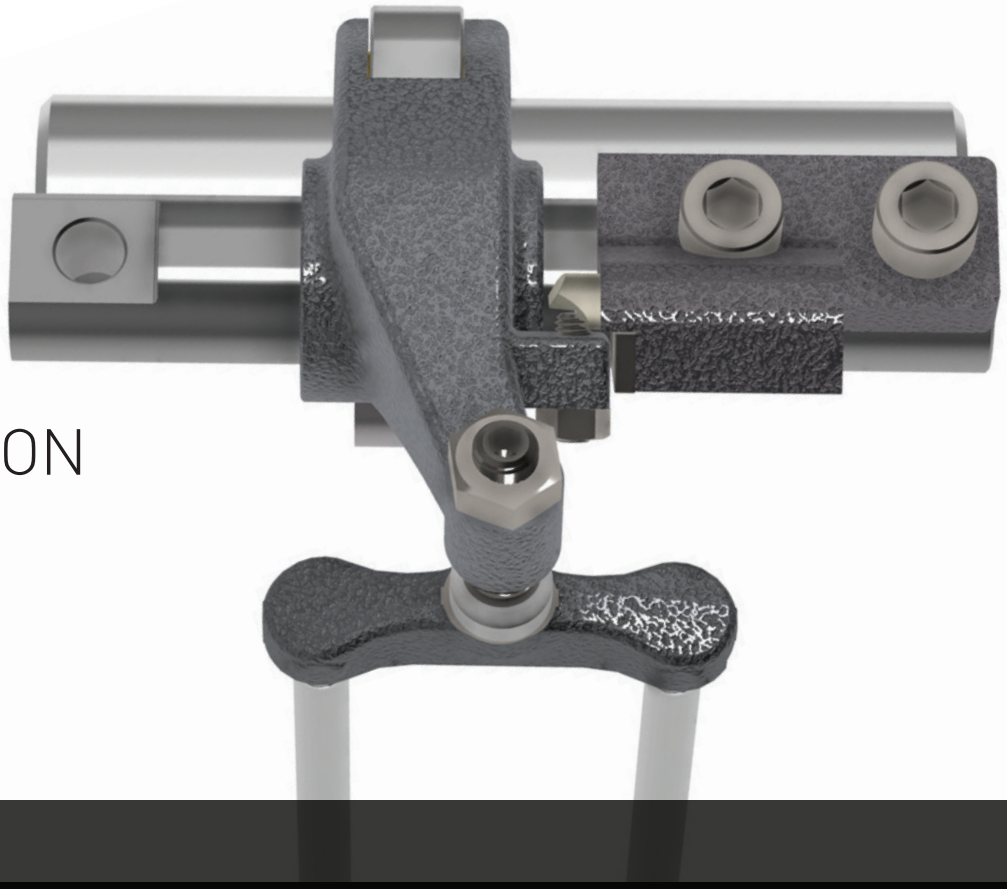
Jacobs Vehicle Systems®

ADT

ACTIVE
DECOMPRESSION
TECHNOLOGY®



JACOBS ADT™ FOR START-UP AND SHUTDOWN ENGINE STRATEGIES

When drivers expressed frustration with anti-idling regulations, Jacobs' engineers developed a device to improve start-up and shutdown engine technology. ADT allows drivers to experience smoother start-ups with faster starting times and engine shutdown without engine-induced cabin vibration.

- Eliminates engine-shutdown-induced cabin vibration
- Improves driver satisfaction
- Increases engine cranking speed for easier start-up
- Improves cold start
- Lowers cranking torque & current draw
- Reduces starter system wear
- Simple, cost effective design
- Compliments start-stop fuel savings strategies

BENEFITS

Improved Driver Satisfaction

- Eliminates engine shake at start up - Engine-induced cabin vibration during engine shutdown is eliminated for increased driver comfort.
- Sleeper mode - Drivers sleep through automated engine start/stop during engine charging events to maintain hotel battery load.
- Increases driver acceptance of stop/start anti-idle technology - Allows an increase in the frequency of engine shutdown, improves fuel economy, and reduces idling emissions.

Reduced Start Up Emissions & Fuel Consumption

- Start/Stop - no engine idling
- Reduced unburned hydrocarbons during start up
- Greenhouse gas credits
- Reduced energy consumption during cranking

Increased Durability of Starter System

- 40% Lower Cranking Torque & Current Draw - Decreases wear on starter gear and allows for less design margin for starter and fly wheel gear. Reduces loading on engine components during start-up.
- Increases Engine Cranking Speed - Up to two times normal speed for smoother starting and improved cold start.

Cost Effective Design - The device easily integrates onto multiple engine platforms.

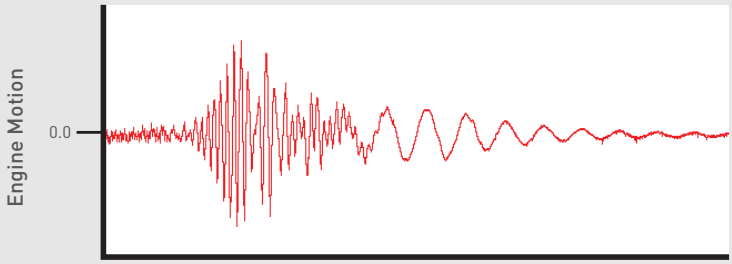
HOW ADT WORKS

During Start Up - When the engine is turned on, the ECU automatically activates the device to keep the engine valve open. This keeps the engine in a decompressed state, which decreases the cranking torque and allows the engine to spin at a higher speed.

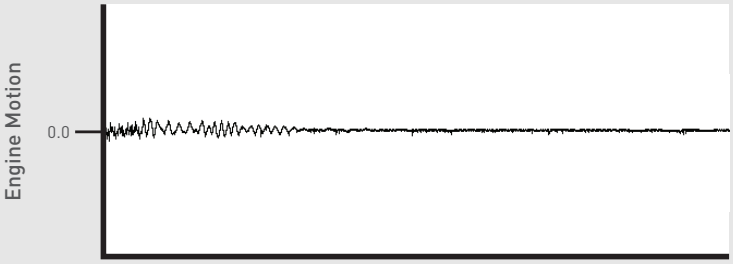
During Shutdown - Upon shutdown the ECU activates the device to keep the engine valves open. By keeping the valves open, the engine is able to coast to a smooth shutdown without causing the cab to shake.

Cold Start Up - In cold temperatures when an inlet air heater is used, the engine can be turned over while decompressed. This allows pre-warming the inlet air and engine cylinders without the engine load from compression. This is especially important when battery levels are low due to freezing temperatures. After the warm-up period is completed, the engine compression can be reactivated and fueling can begin.

Shake During Normal Engine Shutdown



Shake During Engine Shutdown with ADT



Visit **jacobsvehiclesystems.com/adt** to view the ADT video and find additional information.