

Duntroon Quarry Operations Fact Sheet: Engine or “Jake” Brakes

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When trucks employ their “Jake” or engine brakes on inclines, the noise is unmistakable and unpleasant. The use of engine brakes in residential areas is a concern to homeowners across the province. As an aggregate operation we hear this concern a lot. Though annoying, engine brakes do have a purpose. This fact sheet explains how the engine brake functions, why they are used and what we are doing to ask that our truckers limit their use. Please continue to ask questions, raise concerns and share ideas. We are constantly seeking new and innovative ways to improve our operations in ways that benefit the environment, our neighbours, and our business.



What is an engine brake or “Jake brake”?

An engine brake is a braking system used primarily on semi-trucks or other large vehicles that modifies engine valve operation to use engine compression to slow the vehicle. They are also known as compression release engine brakes.

Why do trucks use engine brakes?

The main use of the engine brake is to control engine and vehicle speed without using the wheel (service) brake.

Engine brakes are a safety feature and are most beneficial on down hill elevations where braking requires more effort. Using engine brakes on steep declines provides more braking control than using service brakes. They prevent the service brakes from being overused, becoming overheated and failing.

Using engine brakes rather than wheel service brakes eliminates wear and tear on wheel brakes. This means they last longer and require less maintenance.

We’re working on it...

To reduce noise from trucks leaving the quarry, we’ve implemented the following measures:

- ✓ We only load trucks with Ministry approved exhaust systems (no straight pipes)
- ✓ We’ve posted a sign at the quarry exit reminding drivers to refrain from using engine brakes whenever possible
- ✓ We have notified drivers to limit use of engine brakes whenever possible
- ✓ We’ve employed a retired police officer to periodically monitor speeds and use of engine brakes on haul routes





Noise from engine brakes

The loud noise associated with engine brakes is generated from the release of compression produced internally of the combustion chamber of the engine during the brake cycle.

The Jacobs company blames the noise you hear from passing trucks on the use of engine brakes in vehicles with poorly muffled or unmuffled exhaust systems (straight pipes, for example), exhaust systems that have been illegally modified or are poorly maintained.

How do engine brakes work?

An engine brake is a hydro-mechanical device mounted under an engine's valve cover that turns the power-producing diesel engine into a power-absorbing air compressor.

When the driver releases the accelerator pedal, the forward momentum of the truck continues to turn the drivetrain and engine. The pistons continue to move up and down, and the intake air compresses and expands in the cylinders. Once the

driver activates the brake using a switch in the cab, the engine brake opens the exhaust valves near the end of the compression stroke, releasing the highly compressed air through the exhaust system. Little energy is returned to the piston, and as the cycle repeats, the energy of the truck's forward motion is dissipated, causing the truck to slow down.

Did you know...

Jake Brake, or Jacobs Brake, describes a particular brand of engine brake manufactured and sold by Jacobs Vehicle Systems, Inc. It has become a genericized trademark (like Kleenex) and is often used to refer to engine brakes or compression release engine brakes in general.



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