Operating Guideline # 314

Secondary Braking Devices

September 30, 2019

PURPOSE:
The purpose of this Operating Guideline (OG) is to establish policy and procedures for the safe use of secondary braking devices found on department apparatus.

GUIDELINE:
General
1. The use of secondary braking devices can greatly enhance the stopping power and safety for apparatus drivers, but they can also cause apparatus to lose control if improperly used.
Procedure
2. Engine brakes are also called “Jake Brakes” and compression released brakes capture the retarding forces within an engine and are used to slow down a motor vehicle, as opposed to using additional external braking mechanisms such as friction brakes or magnetic brakes. Engine brakes are often controlled by two switches on the cab dash. The first switch turns the Jacobs brake on or off, the second switch is a two position switch which toggles the engine brake between high and low settings.

3. With the first switch turned on if the system senses that there is a no-fuel condition (accelerator released) the system causes the engine to become an air compressor and absorb energy and retard the motion of the apparatus. Depending on the position of the second switch will determine the amount of retardation that will take place. In order for the system to work efficiently, the engine must be operating at higher rpms. The Jacobs system integrates with the transmission to call for a lower gear, thus raising the rpms and making the engine brake work more effectively. This is generally noticed by the abrupt downshift that may occur once the engine brake is activated.
4. Engine brake systems also integrate with anti-lock brakes to prevent the wheels locking up in a skid condition. If a wheel skid is detected, the engine brake is disengaged allowing the apparatus to remain under control. However, in the split second that it may take the antilock brake to disengage the engine brake a skid may be initiated, and therefore **DO NOT** use the engine brakes on wet, snow covered or icy roads. The additional braking effort on the wheels can cause them to lock up which could result in an uncontrollable skid before the antilock brake system disengages engine brakes.
5. The engine brake should only be engaged when apparatus is being driven on dry, even pavement.
6. The engine brake shall remain in the “OFF” position at all times until activated by the Emergency Vehicle Operator.

RESPONSIBILITY:
It is the responsibility of all Emergency Operations Division staff to comply with the provisions of this Operating Guideline.