# HOLDEN – COMMODORE VK

#T0003

**Make: Holden**

**Model: Commodore VK EST**

**Subject: Pinging**

A very common problem associated with Holden VK Commodores fitted with EST (Electronic Spark Timing) engines is detonation (pinging) under cruise and light load conditions. Providing that the engine has correct air and fuel mixtures, the EST module is operating correctly and the engine temperature is within normal operating range, Injectronics has found that the most likely cause of pinging at light load and cruise conditions is faulty EGR operation. The following items can cause detonation also under full load conditions and need to be checked / tested:

1. Air/Fuel ratio - Check carburettor shaft wear, manifolds leaks, float level, blocked carburettor jets etc.
2. Incorrect compressions - Head machining, oversized pistons, carbon build up.
3. Ignition - Incorrect spark plug reach, incorrect distributor alignment.

The function of the EGR valve is to admit approximately 10 - 15 percent of exhaust gas into the inlet manifold. This non-combustible exhaust gas displaces some of the air/fuel mixture which would have normally entered the cylinder. Less air fuel mixture means lower combustion temperatures and pressures, which in turn means lower NOx emissions. EGR operation is normally confined to light load cruising speeds when the engine is at operating temperature.

Testing the EGR valve:

1. Allow the engine to warm up thoroughly. Place a finger through the EGR valve aperture and feel the diaphragm while raising the engine speed. Drop engine speed back to idle and a movement in diaphragm position should be noticed.

2. Whilst the vehicle is idling, physically apply the EGR valve with your finger through the valve aperture and a sudden loss of engine idle quality should be noticed. If there is no change in idle quality, the EGR valve and ports may require cleaning.

EGR Cleaning:

To access the EGR port, the carburettor and EGR valve need to be removed from the manifold. The primary and secondary bore tubes also need to be removed from the manifold. Using a screwdriver, clean out the EGR ports situated directly under the carburettor flange. Also clean the EGR and EGR flange mounting ports (be sure not to use corrosive sprays on diaphragm). Using a vacuum cleaner, suck out all carbon deposits from ports and manifold. Replace the primary and secondary bore tubes and ensure index tag of primary tube is correctly fitted within the slot of the secondary tube. Refit carburettor (with new gaskets) and EGR valve and then carry out initial EGR valve tests. If ok, reset engine tune and test drive.