Holden Commodore VL Computer Fault Codes

Code 11 - Crank Angle Sensor and/or Circuit Fault
Code 12 - Air Mass Sensor and/or Circuit Fault
Code 13 - Engine Coolant Temperature Sensor and/or Circuit Fault
Code 21 - Ignition Signal Missing
Code 23 - Throttle Position Sensor and/or Circuit Fault
Code 24 - Transmission Neutral Switch Fault
Code 31 - System Pass (OK) - No A/C
Code 31 - Air Conditioner Circuit Faulty
Code 32 - Starter Signal Circuit Faulty
Code 34 - Detonation Sensor Faulty - Turbo version only!
Code 44 - System Pass (OK) - With A/C

HOLDEN VL COMMODORE KNOWN PROBLEMS AND FAULTS
V8 & 6 CYLINDER

ENGINE PROBLEMS:
Lifters 6cyl - VL 3.0ltr overhead cam engines use valve followers, which are Basically a small lifter. These lifters, like any other hydraulic lifter, require Adequate oil supply and pressure to operate properly. As engines wear, and Carbon builds up in the oil galleries, oil supply and pressure can be restricted and The lifters become noisy. Some high quality oil system cleaners can rectify or Improve oil delivery, but sometimes the damage caused is irreversible. These Lifters are expensive, especially when they're a 12 of them.
Overheating 6cly - There are a few theories floating around on this subject, so Here are a few of them! The 3.0 engines derived from the Nissan Skyline, sits
Lower in the Skyline than in the Commodore. This in effect causes the engine Water jackets to be at a higher point than the radiator. This is correct, and there Are provisions on the inlet manifold, to allow for the removal of air from the water? Jackets when topping up coolant. Radiator design as listed above can also be a Contributing factor.

6cyl Radiator - Most automotive cross flow (side tank) radiators circulate coolant In one tank, though the core and out the other tank. VL radiators have the inlet And outlet on the right tank. The only thing that makes the coolant flow through The core is a separator plate in the middle of the right tank. The separator plate is Soldered in, but can dislodge and fall to the bottom of the tank. This inevitably Allows coolant to flow through the right tank, but not through the core where is Can be effectively cooled, therefore causing overheating issues. Thorough Coolant system checks are highly advised.

Engine fan 6cyl - The plastic engine fan has seven blades, and these blades Crack as they meet in the centre. This can eventuate is blades breaking off from The fan assembly, but that is very rare.

6cyl Distributor gear - The metal distributor gear wears with age, as does the Timing belt and cogs. Worn gears and belts can create a slight gear rattle or Chatter during engine deceleration.

6cyl Exhaust manifold - The standard cast iron exhaust manifold is bolted to The alloy head by 12 studs and nuts. Because iron and alloy expand and contract At different rates, a lot of stress is placed on the studs. Eventually these studs Break and the manifold gasket can get blown out. Broken studs and exhaust Leaks are most common on # 6 exhaust port. Broken studs usually need to be Drilled out and tapped for new studs to be fitted. It is usually advisable to have The face of the exhaust manifold machined flat to ensure adequate sealing when Replaced, along with the new studs and gaskets.

6cyl Front engine pipe - The front engine exhaust pipe bolts to the exhaust Manifold. The flange gasket surface of the engine pipe warps, which reduces the Clamping force on the flange gasket. This usually results in exhaust flange gasket Failure and exhaust leaks. This surface can not be machined, and usually the Front engine pipe needs to be replaced.

Inlet manifold V8 - Alloy V8 intake manifolds are renowned for corrosion around The four water port faces and the thermostat housing. The manifold faces also Warp around the EGR (Exhaust Gas Re-circulation) ports because of the hot
Exhaust gases crossing under the manifold. This can be externally evident by oil pooling in the middle of each side of the manifold below the carburetor. Manifolds can be re-welded and refaced, but only to a certain limit.

**Cam and lifters V8** - Major problems can arise when cam lobes wear down, as insufficient lobe lift will restrict valve opening and therefore cylinder operation. After many kilometers, V8 cams and lifters wear naturally, but can equate in reduced engine power and noisy valve train operation.

**Rocker gear V8** - Rocker gear wear is inevitable. Alloy rocker bridges and steel rockers arms wear with age, and wear increases noise and reduces valve lift. New rocker arms and bridges are available.

**Vacuum advance unit V8** - advance diaphragms are bolted to the distributor and advance engine timing during acceleration. The rubber diaphragm can split which results in loss of timing advance and therefore loss of power. These diaphragms are no longer available and are usually not separated from second hand distributors.

**Harmonic balancer V8** - Harmonic balancers usually consist of inner and outer hemispheres which are located together by vulcanized rubber. Over time the rubber perishes or loosens and the outer hemisphere can move freely of the inner hemisphere. A few problems arise here, one being the danger of damage from loose parts, and the other being the loss of timing position which is located on the outer hemisphere.

**V8 Rear Main seal** - Commodore rear main seals are rope, and these rope seals squeeze against the crankshaft at the rear of the engine. Hot engine oil and age reduces the seals ability to work effectively and this results in an oil leak from the back of the crankshaft. To replace the rear main seals the crank needs to be removed from the engine, which usually means that the engine needs to be out of the vehicle. Some tools (Sneaky Pete by Lisle) are available from auto parts stores, which are used for removing and replacing the rear seal with the crank still in place, but are not always successful.

**V8 Exhaust butterfly** - Between the right hand exhaust manifold and front engine pipe is an exhaust preheat butterfly, which apparently was designed to reduce engine warm up time by restricting exhaust gas flow when cold. The butterfly seizes, sometimes open, sometimes closed, and when closed, engine power can be reduced dramatically. Sometimes the housing of the exhaust
Butterfly cracks, which results in an exhaust leak, which can also be responsible for engine power loss.

**V8 Fuel filter** - Most early Commodores did not have an external fuel filter fitted, as they relied on the fuel tank sender unit sock to trap dirt particles. As the quality of our fuel has decreased, the need for an external replaceable filter becomes very important.

**V8 Idle** - Most V8's should have an idle solenoid on the carburetor, which is externally adjustable. In many cases solenoids are not adjusted correctly, and the idle adjustment has been done with the throttle stop screw. This may often cause the engine to "run on", as when the ignition is turned off, the throttle needs to be shut off further than it's idle position. Always set the base idle by the idle solenoid, and ensure that the throttle stop screw is backed off, which allows the throttle linkage to return past idle when the ignition is turned off.

**GEARBOX PROBLEMS:**

**Gearbox Mount** - Eventually all rubber mounts fail, either from fatigue or oil saturation. When these mounts do fail, driveline vibrations can occur. New mounts are easily available.

**Power button** - The power button uses a spring loaded clip to engage, but these clips can break.

**DIFFERENTIAL PROBLEMS:**

**Pinion Backlash** - Two main items of any differential are the crown wheel and pinion. These items are matched together and are preset to specific tolerances. And one of these tolerances is backlash (movement between gears). Due to age and stresses on the gears, the amount of tolerance between the teeth of the crown wheel and the pinion will increase. This can be evident by increased tail shaft rotation before axle movement. As backlash increases the likelihood of differential failure also increases.

**Tail shaft centre mount** - Commodores use a 2-piece tail shaft and the centre is supported by a centre mount bearing which is bolted to the floor. The centre mount bearing is caged in rubber which helps absorb torsion twist and vibrations, but the rubber can split which allows the centre of the tail shaft to rotate unsupported. Tail shaft centre mount bearings are readily available, but the tail shaft needs to be separated for installation, and correct reassembly is important. And best left to qualified repairers. The tail shaft centre mount bracket is also
Responsible for tail shaft drive angle. When a vehicle is lowered, repositioning of
the centre mount bracket spacers is required to correct the drive angle, and
reduce vibrations during take off.

**BRAKE PROBLEMS:**
**Disc rotor problems** - All disc rotors have a minimum recommended
thickness.
As the brake rotor wears it becomes thinner and the recommended minimum
thickness indicates when the brake rotor should be thrown away. This
thickness is crucial for optimum braking, and many disc rotors are marked with their
recommended thickness. Genuine rotors are useable down to 21mm, where
as some aftermarket rotors can be used down to 20mm. If the rotor is used
beyond this point, braking efficiency is greatly reduced.
**Hand brake Problems** - Commodores fitted with disc rear brakes use the internal area of the disc as a brake drum for the park brake. Incorrect or
inadequate adjustment of the handbrake shoes and cable will result in poor
handbrake operation.

**ELECTRICAL PROBLEMS:**
**Tail lamp problems** - Many tail lamps suffer from a bad electrical earth
connection, which results in erratic globe operation. E.g. indicators coming on
with the brakes, brakes going off during indicating etc. This problem can be
rectified by soldering in a fresh earth to the tail lamp wiring loom. Other
problems also arise due to corroded or rusted globe holder terminals. Cleaning these
terminals with some sand paper or steel wool can help, or second hand
holders may be needed.
**Indicator stalk problems** - Commodore indicator stalks are a common
downfall.
The high beam circuit is activated through the indicator stalk, which has a
habit of failing. The main part of the stalk is flimsy cast metal which is crimped over a
steel plate to hold the high/low switch in place. Because of continuous
indicator use, the steel plate often breaks away from the cast, and this can result in no
low beam lights, although high beam and parkers will still operate.
**Distributor 6cyl problems** - The 6cyl VL distributor contains a crank angle
sensor which is responsible for the ignition signal, and sends references to the
ECU for injector timing. There are 2 inherent problems with the crank angle
sensor. The first is the wiring connector from the engine wiring harness, which
has a rubber insulating boot over it to prevent moisture from entering the
connector. The rubber boot perishes and allows moisture to enter the
connector and cause contact problems, which can prevent the engine from starting. The
Second problem is crank angle sensor failure, which also prevents engine starting. The distributor also has an ignition module bolted to the front edge, which can fail generally or through excessive heat.

**Oil sender unit problems** - The oil sender unit is responsible for a variable earth signal to the oil light, to warn of low oil pressure. The oil sender unit is bolted into an oil gallery on the right side of the engine block, and receives full engine oil pressure. Over time, the switch unit can separate and leak oil, and under full oil pressure they leak severely.

**Air mass meter** - The air mass meter uses a hot wire (like a light globe element) to register the amount of air entering the engine intake. Backfiring can damage this hotwire and prevent the engine from starting. The internal electrical components of the air flow meter can fail, which also prevents the engine from starting. The air mass meter also has an adjuster to alter the air/fuel ratio. This adjuster is preset from the factory and should not be altered. If this adjuster has been tampered with it should be specifically adjusted back to factory specs to ensure correct mixtures.

**ECU** - The Engine Control Unit governs the majority of the engine electrical operation, and is subject to failure like any electrical component. Onboard diagnostic procedures allow testing of the ECU and engine components to help with fault diagnosis. Care should be taken with any vehicle that has an ECU, as voltage spikes or electrical failures can cause irreversible damage. Jump-starting is a common cause of damage, and should only be performed with quality surge protected leads.

**Temperature sender unit** - The temperature sender unit provides the ECU with a varying voltage, which is used to calculate fuel delivery depending on engine temperature. If the sender unit fails, and the wrong voltage is sent to the ECU, the ECU fuel delivery calculations will be incorrect, and this can lead to excessive fuel consumption.

**Oxygen sensor** - The Oxygen (O2) sensor is an exhaust probe that measures the amount of un-burnt fuel in the exhaust gases. The ECU uses this sensor to trim fuel delivery and maximize efficiency. O2 sensors are a common item to fail.
And can cause erratic engine idle and performance.

**Starter motor** - Noisy starter motor engagement is usually the first sign of starter motor failure, and as VL’s age, starter motor noise is becoming more apparent.

**Oil gauge** - Commodores with an oil pressure gauge require a different sender unit than those with only a light. If the wrong sender unit is used, the oil gauge will show maximum pressure with the ignition on, and without the engine running.

**Fuse rail** - Plastic fuse rails can melt from excessive current draw. Headlamp fuses (#2 high beam and #3 low beam) and heater fan fuse (#5) are common because of their inherent current draw. Fuse rails can be replaced, but it is advisable to look beyond the visible damage and install relays where required to reduce the current draw through the fuse rail.

**Calais eyelid operation** - The pop-up headlight covers on VL Calais are mechanically operated by a central motor. The motor is powered by a relay, which is triggered by the headlight switch. The relay can be faulty and is a good place to check first. The mechanisms of the headlight lids can become seized, and will prevent the lids from lifting, or even break some mounting points. Another problem that has been found, is the wires going into the motor become dry at the soldering joint, and wires can either fall off, or not be contacting at all! If the eyelids don't sit correctly or evenly, they can be adjusted.

**6cyl Fuel pumps** - The internal primer fuel pump and the external high pressure pump both require adequate fuel for lubrication. Continuously running with very little fuel or running out of fuel can damage the pumps, as there is no fuel for lubrication. If the pumps are run without fuel, the heat generated can seize the pumps and no fuel will be delivered to the injection system. The EFI (Electronic Fuel Injection) system requires approximately 30-40 PSI to operate effectively.

**SUSPENSION PROBLEMS:**

**Pan hard rod** - The Pan hard rod is a stabilizing bar used to locate the differential laterally. One end of the rod is connected to the right side of the diff, with the other end connected to the left chassis rail. As the suspension is lowered, the differential assembly moves to the right and may cause the right wheel to foul against the guard. When this style of suspension set-up is lowered, an adjustable Pan hard rod is usually required to re-centre the diff. Some Pan hard rods are also available with a bend to increase exhaust clearance.

**Upper diff arms** - The upper diff arms locate the top of the diff housing to the
inside of the rear chassis rails. These arms (2) have rubber bushes pressed in at either end that wear with age. When these bushes wear, the diff can tilt during acceleration and deceleration, which places more load on other suspension components. New bushes are readily available, as too are change over arms to save on time and tools.

**Lower diff arms** - The lower diff arms locate the bottom of the diff housing to the outside of the rear chassis rails. These arms (2) have a rubber bush pressed in at the chassis ends that wear with age. When these bushes wear, the diff can tilt during acceleration and deceleration, which places more load on other suspension components. New bushes are readily available, as too are change over arms to save on time and tools. The differential housing contains the other pressed in bush that the lower diff arms connect to. These diff bushes are harder to replace as special tools are required.

**Radius rod bushes** - The radius rod is the bar that joins the front lower control arm to the front of the engine cross member. The engine cross member houses the front radius rod bushes. Over time, these rubber bushes soften or split and basically allow the lower control arm and strut assembly to move back and forwards which effectively alters the wheel alignment. Oil leaks are one of the main reasons for radius rod bush fatigue, as the oil softens the rubber.

Original front radius rod bushes are pressed in, and need to be either pressed out or cut out for new items to be fitted. After market bushes are 2 piece, which makes fitment a lot easier.

**Steering rack** - Steering racks have a few inherent problems as they age. Leaks are common, either from the rack ends, which fills up the dust boots, or from the top hub seal. The left hand inner shaft bush wears, which can cause a knocking sound while driving. Low pressure power steering line hoses also leak as they become brittle with age. One inherent problem V8 power steering metal lines have is they rub against the engine sump and wear away either the line or the sump until one begins to leak. Tie rod arm sockets also wear which can affect wheel alignment.

**Strut bearing plates** - The top strut bearing plates are responsible for mounting the top of the strut to the strut tower. As the shocker wears and looses its absorbing qualities, the rubber strut bearing plates try to absorb bumps, and
eventually begin to distort and push the strut tower up towards the bonnet. It is quite common to see strut towers and strut bearing plates severely concaved, and in rare occasions the strut bearing plate has pushed through and hit the bonnet. There are several styles of replacement strut bearing plates available, standard, semi-adjustable and fully adjustable. Semi-adjustable and fully adjustable strut bearing plates allow for camber adjustment of the front struts, where as standard do not. In most cases the semi-adjustable items suit both standard and lowered ride heights and the fully adjustable items are usually reserved for heavily lowered vehicles or vehicles requiring more wheel alignment options.

**AIR CON:**
**Slide control switch** - The fan speed slide control switch is responsible for variable control of the fan speed motor. The circuit board of the switch distorts due to current draw and age and can stop working in certain positions, or sometimes all together. GMH made upgraded circuit boards which were thicker and more durable.

**Air conditioning switch** - The normal/re-circulating air con toggle switch can fail by the plastic switch breaking, or by current draw.

**GLASS AND WINDOWS:**
**Master window switch** - The main reasons for the master window switch to stop working are dirt, dust, spilt drinks, cigarette ash etc, which fall in past the switch buttons and contaminate the internal electrical contacts. Once the contacts become dirty, current draw is increased through the switch, which in turn melts the plastic internals of the switch, and the switch no longer works. If you do get a new one, make sure you keep it clean.

**Cast front Power window regulators** - The front Power window regulators are bolted to the inside of the door frame, and these bolts can work loose over time. If left unchecked the mechanism can begin to twist and eventually snap in several places. The latter model VK and VL pressed steel regulators and motors can be used in VB's and are more durable.

**Window tilt** - As the front window regulators wear with age and use, the windows may tilt forward while being wound up. If this is left untreated, damage to the regulator, rubbers and glass may occur. Holden's have allowed for adjustment of the front window regulators which is mounted to the inner frame of the door, and has a slide, which is moveable. 2 10 mm bolts hold this slide in position, and with the door trim removed they are clearly visible. With the window
90% up, loosen these 2 bolts and pull the slide down. Retighten the 2 bolts and check window operation. If the window still tilts and the slide is as far down as possible, a new regulator may be required. It is also important to make sure that all window rubbers are in their correct place, as dislodged window rubbers can stress the regulator beyond useable. Bailey channel rubbers (go around the window in the top of the door frame), are available genuine and non-genuine new. Belt mould rubbers (sit against the base of the glass, and are usually responsible for scratching the glass) are also available non-genuine new. Early SL/E’s with electric windows, use a cast window regulator. These have a tendency to crack and fall apart, and many times damage the inner door frame. If a window regulator starts to loosen from the door frame, eventually it will damage the mounting positions on the door frame, and in some cases, a new door is required. If you need to replace a VB to VH electric front regulator, you are better off installing a VK-VL pressed steel type, and do away with the cast type. VK-VL regulators bolt directly into VB-H doors and are more durable.

**Leaking head lights** - Leaks are mainly caused by the glass rubber seal not sealing. The glass can be removed and new seals are available. Sometimes either moisture and/or water enters via the rear rubber cap that covers the globe. It has also been found that the mounting brackets (which are riveted to the body of the headlight) become loose. Re-riveting with the use of sealant usually works.

**Water leaks** - If you have isolated the front windscreen as a possible leak, and there is no obvious rust, there is a body join that does leak. Up underneath each end of the dash is a body join, where the plenum chamber meets the door pillars. These are sealed when on the assembly line, but after time this sealant can become brittle.

**INTERIOR:**

**Door lock spring** - The internal door lock mechanism has a small over sprung spring, which helps locate the lock lever, and provides a positive feel to the lock and unlock position. These springs snap from fatigue, which results in sloppy lock actuation. When these springs snap, the door can be opened from the lock position when the outside handle is manipulated. These springs are not available on their own, which usually means a second hand mechanism is required.
**Indicator cancellation** - Indicator cancellation is left up to 2 small springs located behind the steering wheel and mounted to the indicator switch mechanism. These springs do break, and are relatively easy to change once the steering wheel has been removed.

**Speedometer** - The main downfall of commodore speedometer assemblies is the odometer, they usually stop working. The main odometer drive cog is cast alloy, and is pressed onto a hardened steel shaft, that also supports the numbered odometer cogs. The cast alloy drive cog wears and no longer grips the steel shaft, and then the numbered cogs stop turning.

**Seat belts** - Seat belt fray is common in any aging car, and is illegal and unsafe. New seat belts are available for auto parts stores. Seat belt stalk buttons can fail and not properly lock when the belt buckle is inserted. In either situation, the seat belt unit should be changed to ensure occupant safety. The seat belts should also be changed if the vehicle has ever been in an accident, because the seat belt material stretches to absorb inertia.

**Steering wheel** - Steering wheel padding is molded around a round metal bar, and after a lot of use the padding rotates freely around the bar. This is defectable, as it compromises grip. Steering wheels are designed specifically to collapse with the steering column during an accident. For this reason sports steering wheels are illegal in most states, unless used with a certified boss.

**Ignition barrel** - Ignition barrels and keys wear, and eventually the barrel can be turned without the key. This doesn't leave much in the way of security. New ignition barrels are readily available and require the steering wheel to be removed for installation.

**Ignition Return Spring** - The ignition barrel moves a rod in the ignition switch, which is located approximately a 1/3 of the way down the steering column. When the barrel is turned to crank position, the rod extends completely to engage the starter motor. The ignition switch itself is designed to return from the crank position on its own, but can weaken with age! To assist its return, a metal tab is bolted to the ignition switch. These metal tabs snap off, and with the combination of worn switch and broken tab, the ignition barrel may not return from the crank position effectively.

**Preload Spring** - Part number 7804410

**Cracked driver’s seat floor** - It is very common to see and hear cracked seat mountings, where the driver’s seat bolts to the floor. This is not good, as the seat
is able to move beyond acceptable safe limits. GMH have recognized this as a design fault, and will rectify one seat per car free of charge! In odd occasions the left seat mounting points crack, but in most cases, the driver’s seat is worse affected.