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## **REFINEMENT PUTS COMMODORE A CLASS ABOVE**

- **Cabin acoustics rival luxury car levels**
- **Significant noise and vibration improvements on all models**
- **Stiffer structure reduces vibrations**

Holden's engineers benchmarked luxury rivals to help create a new acoustic environment and deliver the quietest and most refined Commodore ever produced.

Quiet zone tuning and tactics designed to block or absorb sound and diminish or eliminate vibrations have been applied to all areas of the VF's design.

For Holden engineers, the goal of quiet zone tuning was to isolate vehicle occupants from as much unwanted noise as possible - while transmitting desirable sound such as engine note character on sports models.

In taking extra measures to dampen vibration and harshness, the team also had to ensure drivers received the suspension and steering feedback essential to retain Commodore ride and handling character.

VF Commodore Chief Engineer, Brett Vivian, said advanced acoustic measurement and analytical technologies were used to combat powertrain, road and wind noise intrusion.

"The process involved virtual and physical testing to validate aerodynamic, structural and body sealing measures, engine bay isolation and noise path reduction as part of a multitude of soundproofing initiatives," he said.

"As a result, the quietest-ever Commodore cabin decibel measurement of 38.4dB at idle puts it well into luxury car territory and well above segment competitors. The 'sound of silence' we've achieved represents a new hallmark for the Holden brand."

"Where VF Commodore excels is best measured by how it sounds in motion. Turn off the radio, cruise up to highway speed and you won't hear much at all – wind, tyre noise, passing traffic.

"Noise intrusion is minimised without entirely eliminating the great engine notes that are so much a part of the Commodore sports driving experience.

"By positioning against the best, we went above and beyond to give Commodore customers one of the quietest and most comfortable cabin environments they could experience."

### **Engine noise isolation**

Extensive modifications to the steel front-of-dash barrier between the cabin and engine compartment were an essential part of isolating engine noise.

The number and size of engine noise paths in the barrier (pass-through areas for steering column, wiring harness, pedals, heating and air conditioning components, for example) have been minimised.

New sealing methods ensure that potential engine noise transmitters passing through to the cabin from even the smallest openings are effectively blocked.

A new lower steel plenum, replacing a polypropylene component, also forms a more effective engine noise barrier.

Engine compartment insulation is further improved with more liberal application of absorbent compression moulded textile material over a wider area on both sides of the steel cabin barrier. Under the bonnet, Holden's engineers have also improved the fit of the car's acoustic insulation panel.

### **New instrument panel, all-aluminium IP beam**

The addition of an aluminium instrument panel beam – made in Melbourne by Diver Industries - constitutes a major structural advance.

Lighter, equally as strong and much stiffer than the steel support it replaces, the new IP beam is more rigid and brings about significant upgrades in vibration damping and noise reduction performance. As result, Commodore's redesigned instrument panel is now a one-piece module, with levels of fit and finish and noise isolation benchmarked by Holden engineers and applied to the VF model program as a whole.

### **Textile wheelhouse liners**

Road noise is significantly reduced by new wheelhouse liners with improved acoustic properties.

Constructed from a recyclable, felt-like textile, they effectively absorb stone 'ping' noise on loose gravel and crushed rock surfaces. In rainy conditions, the wheelhouse liners also soak up the 'sizzle' sound transmitted by tyre spray on wet road surfaces.

### **Glass**

Side window glass on VF Commodore is 5mm thick – 25 per cent up on original VE specification. Together with new wind seals, it delivers significantly better isolation from air noise.

### **Sealing strategies**

The VF Commodore body shell is better and more meticulously sealed than ever. A variety of sealants, adhesives and heat expandable baffles, applied using different techniques combine to block road noise, wind noise and other unwanted sounds from entering the passenger compartment via the smallest of apertures.

### **Tyre selection**

Two new 18" and 19" comfort tyres have been developed exclusively for VF. The aim is to offer the large wheels and tyres customers demand on luxury variants while maintaining the refinement that is expected. New tread patterns and construction techniques were employed to minimise road noise and maximise ride comfort.

### **Acoustic Headliner**

The headliner is of polypropylene and glass fibre compression moulded design and faced in foam-backed knitted fabric. It incorporates a three-layer structure for superior sound isolation.

## **Carpet**

A new for VF carpet is layered with lightweight high-tech acoustic insulation material which has excellent sound-deadening properties.

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