Feedback Report from Toyota South Africa Motors

Thank you for affording Toyota SA the time and giving us the opportunity to investigate your concerns relating to Fortuner stability on unpaved roads. We understand your concern and we respect it but we want to assure you that the Fortuner's rear suspension dynamic's performs well within its design parameters. Please allow us to explain to you briefly Toyota's philosophy regarding product development and design.

Background

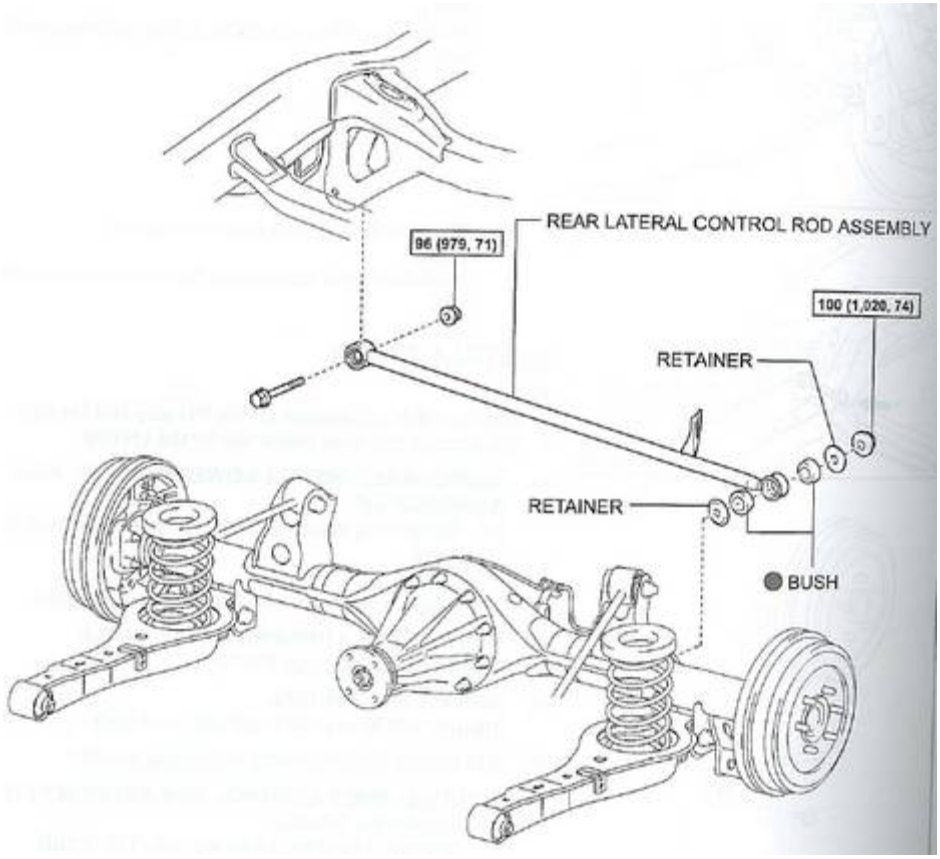
Basic concept proposals incorporate long-range views in many areas – consumer needs, legal and societal environment trends, and new development trends both inside and outside the company – to determine the planned suspension performance (output, handling, etc.), number of shocks/coils, shocks/coils arrangement, displacement, and other items.

Toyota evaluates their suspensions for overall performance, unpaved, paved roads and high speed, as well as driveability, vibration, and NVH, amongst other things. All suspensions are tested; their performance proved in every imaginable driving condition, from continuous high-speed operation to multiple short trips. For this purpose, all kinds of endurance tests are conducted, and in Fortuner's case road tests were conducted all over the country. These evaluation and analysis results are fed back into the design process, which is then repeated until a finished product emerges.

Technical Facts for Fortuner Rear Suspension

Description: 4-link Coil Spring with Lateral Rod Type Rigid Axle Suspension

<Diagram of Rear Suspension Layout (excl shocks)>



<Explanation of why the movement occurs on this type of rear axle>
The rear lateral rod runs across the vehicle, usually the entire width of the chassis (as per Fortuner). One end is pivoted on the axle and the other end is pivoted on the chassis. The rear lateral rod does not provide vertical up and down motion at the end attached to the axle because it arcs about the end pivoted on the frame and there is a slight sideways motion. If the bar is long, if it is horizontal at normal ride height, and if the axle vertical motion is small, then the sideways motion is small and of no significance.

The lateral motion allowed by the rod gives a rear-axle steering effect when the wheels rise and fall over bumps. This tends to make the car wander, particularly when going over undulating roads at high speeds. Small bumps will generally not cause any problem because they cause only a small amount of axle travel.

Also take into consideration that the wheelbase of the Fortuner is shorter than that of the Hilux pick-up, which will change the overall handling characteristics.

<Technical Tips when driving on unpaved roads>

- Check/Correct Tyre pressure 2.1 bar (laden/unladen) – weekly
- Use steel valve caps as they tend not to leak air
- Get own tyre pressure gauge to check pressures - weekly
- Check/Adjust wheel alignment (every 20,000km & 30,000km)
- Adjust vehicle speed to match the road conditions
- Check/Replace rear shock absorbers as per usage conditions (shock absorber damping or for leaks)
- Do not overload vehicle (stay within manufacturers specifications) – refer to below table

<Technical Tips when towing>
Refer to below table with all the necessary specifications

A	B	C	D	E	F
Model	Gross Vehicle Mass (GVM)	Tare Weight	Load Capacity Including Passengers	Load Capacity+Passengers+Towing (Towball Weight = 100kg max)	Maximum Towing Weight
V6 4x2 manual	2510kg	1720kg	B-C = 790kg	790kg-100kg = 690kg	1500kg
V6 4x4 manual	2510kg	1830kg	B-C = 680kg	680kg-100kg = 580kg	1500kg
V6 4x4 auto	2510kg	1845kg	B-C = 665kg	665kg-100kg = 565kg	1500kg
3.0 Diesel 4x2 manual	2510kg	1790kg	B-C = 720kg	720kg-100kg = 620kg	1500kg
3.0 Diesel 4x4 manual	2510kg	1895kg	B-C = 615kg	615kg-100kg = 515kg	1500kg

- Check/Correct Tyre pressure 2.1 bar (if fully laden with a fully laden trailer/caravan you can push up the Fortuner's tyre pressure to 3.0 bar maximum, nothing more)
- Check/Correct Trailer/Caravan tyre pressure as per manufacturer's specifications

Conclusion

Toyota's suspensions must meet the diversified and advancing needs of consumers, this we understand fully. In other words, while there is a rising demand for improved performance / refineness and overall comfort as is the case especially for Fortuner SUV, safety and emissions also needs to be satisfied, all of this needs to be built into our vehicles, from the tyres to other related suspension components. Most Fortuner SUV's are driven in town or paved roads, which makes it a necessity for a suspension that can handle high speed driving and to a lesser degree unpaved roads. Further, with more and more vehicles being equipped with high power diesel/petrol engines as is the case with Fortuner, low-to-high range performance suspensions for both paved/unpaved road characteristics are of even greater importance. Thus Toyota has sought to establish the proper and most acceptable balance between low-to-high range suspension performances for high power output engines. After testing together with all the customers on the specific chosen road we can now conclude that the Fortuner suspension performed well within the design specifications/limitations.